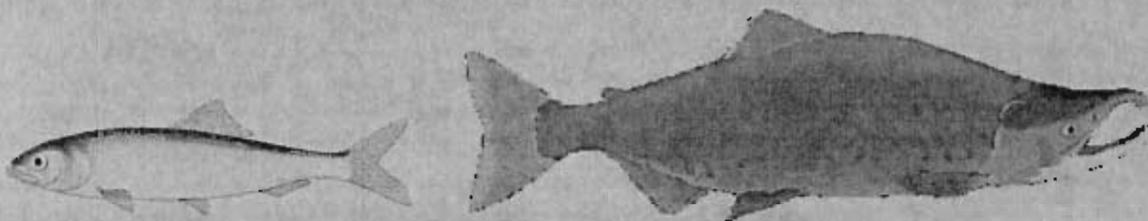




State of Alaska
DEPARTMENT of
FISH and GAME

2002 LOWER COOK INLET
ANNUAL FINFISH MANAGEMENT
REPORT



Regional Information Report No. 2A03-04

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2002 LOWER COOK INLET ANNUAL FINFISH MANAGEMENT REPORT



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Regional Information Report¹ 2A03-04

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¹ Contribution from the Homer area office. The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data; this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author(s) or the Division of Commercial Fisheries.

ACKNOWLEDGMENTS

2002 DIVISION OF COMMERCIAL FISHERIES STAFF

The finfish operations for the Division of Commercial Fisheries in Lower Cook Inlet employed six permanent full-time employees, nine permanent seasonal employees, and one non-permanent seasonal employee in various area management and research programs during the 2002 season. Appreciation is extended to all personnel for a successful program during 2002.

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ANNUAL MANAGEMENT REPORT
LOWER COOK INLET
2002

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 fishing district where no salmon fishing occurs, with the remaining four 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 2002 LCI all-species salmon harvest of 2.314 million fish (Table 1, Figure 8) was the third highest during the past decade and was almost 40% greater than the recent 10-year average of 1.675 million (Appendix Table 5). Unfortunately, the overall harvest represented less than two-thirds of the preseason forecast. Prices paid for salmon this season yielded a LCI exvessel value of approximately \$1.359 million (Table 7), making the value of the 2002 harvest the third lowest over the past ten years and representing approximately 70% of the recent 10-year average (Appendix Table 2). Seine fishing effort was identical to the previous year, with only 25 of 85 permit holders making deliveries this season (Appendix Table 1). The number of active set gillnet permits was 24 (Appendix Table 1), an increase over the 2001 season but similar to the prior six years.

Once again, LCI commercial salmon harvests in 2002 relied heavily on the success of hatchery and enhanced fish production. Nearly 70% of the sockeye salmon harvest in numbers of fish was attributed to joint Alaska Department of Fish and Game (ADF&G) and Cook Inlet Aquaculture Association (CIAA) lake stocking and fertilization projects. These projects were conducted at Leisure and Hazel Lakes in the Southern District, Kirschner Lake in the Kamishak Bay District, and

Bear Lake in the Eastern District. Another traditional sockeye salmon enhancement project, conducted by Chugach Regional Resources Commission (CRRC) at English Bay Lakes in the Southern District, contributed about 35,000 sockeyes, or 12% of the LCI sockeye total, to commercial set gillnet and cost recovery harvests this season, while providing additional fish for subsistence harvests. Pink salmon production from Tutka Hatchery, now operated by CIAA, was once again very disappointing, with an overall return of an estimated 872,000 fish (Table 9). This total represented only about 40% of the preseason projection.

As has been the case since hatchery programs were taken over by private non-profit (PNP) 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. About 45% of the total salmon harvest in numbers of fish was taken by CIAA and PGHC to support the lake stocking programs and Tutka and Port Graham Hatcheries operations, representing about 28% of the exvessel value of the LCI salmon fishery (Table 7). Unlike many previous seasons, natural returns of salmon bound for LCI drainages did provide significant commercial harvests in 2002, primarily pink salmon from the Bruin Bay Subdistrict in the Kamishak Bay District and Port Dick Subdistrict in the Outer District.

The absence of tender service in remote districts, a notable factor that has affected the amount and distribution of seine effort, and ensuing harvest of salmon, in LCI during recent seasons, was a less significant influence during 2002. The policy to severely restrict or eliminate such remote tender service was adopted in 1994 by major processors as a means to reduce costs. Prior to that time processors routinely stationed a tender (or tenders) in remote districts in anticipation of salmon harvests, even when run strengths and catches were marginal. Once that policy was abandoned, however, seiners were forced to devise their own means to transport fish from these remote areas to a processing plant in Homer or elsewhere. Due to equipment limitations and the high cost of contracting out for tendering services, significant numbers of fishermen were often unable to fish in remote areas, while some retained the flexibility to fish these traditional areas because of onboard chilling equipment. Over the past three seasons, but especially in 2002, strong natural returns and

relatively liberal fishing openings resulted in more consistent tender service in remote areas than during the previous five years, leading to increased effort and resultant catches in these districts.

Another influential element that continued to affect harvest and effort in LCI revolved around worldwide market situations. Salmon prices remained depressed, with those for sockeyes, cohos, and chums the lowest since the early 1970's, while the price for pinks fell to an all-time record low. This pricing structure frequently dictated the fishing strategy of individual fishermen, even to the point of total non-participation, which might account for the low amount of seine effort.

PRESEASON FORECAST

The projected 2002 LCI all-species salmon harvest of over 3.8 million fish was more than two and one-half times the 20-year average. This optimism resulted almost entirely from the expected success of pink salmon stocking programs at Tutka and Port Graham Hatcheries. 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. Preseason harvest projections and actual catches for all species in 2002 are listed in the following table:

SPECIES	PROJECTED HARVEST	ACTUAL HARVEST	1982-2001 AVERAGE
Chinook	1,300	1,553	1,364
Sockeye	215,300	290,654	252,682
Coho	14,400	8,329	14,136
Pink	3,583,000	1,970,061	1,106,863
Chum	21,100	43,259	67,497
TOTAL	3,835,100	2,313,856	1,442,542

Enhanced runs to Leisure and Hazel Lakes in the Southern District, and Kirschner Lake in the Kamishak Bay District, were expected to comprise the bulk of the sockeye returns, while the return to Bear Lake in the Eastern District was expected to be relatively weak. The sockeye return to the English Bay Lakes system in the Southern District, increasingly important in recent years, was also predicted to produce a significant contribution to LCI set gillnet harvests. Although Chenik Lake in the Kamishak Bay District benefited from regular fry stocking and intermittent fertilization during the 1980's and early 1990's, adult sockeye returns in 2002 were again anticipated to be very poor due to the suspension of the stocking program (after 1996) as well as the lingering effects of an epizootic of Infectious Hematopoietic Necrosis Virus (IHNV) within the system. As a result, the entire Chenik run was to be protected for escapement.

Returns to the Tutka Bay Hatchery were once again expected to be the mainstay of the pink salmon fishery, with a forecasted harvest totaling over 2.0 million fish. The projection was based on a release of 99.3 million fry from Tutka Hatchery in 2001 (Appendix Table 34), and typical ocean survival rates for even-year runs were expected to produce an overall adult return approaching 2.2 million fish.

Good to excellent pink salmon escapements to major systems in 2000 contributed to a harvest projection of over 900,000 naturally produced pinks throughout the entire LCI management area this season, considered quite good for an even year since LCI has been odd-year dominant for pinks during most of the past two decades. Port Dick Subdistrict in the Outer District and Bruin Bay Subdistrict in the Kamishak Bay District were forecasted to provide the most potential for harvestable surpluses, but the expected fishing effort in these remote districts was uncertain due to the unknown levels of tender service.

After the strong catches of chum salmon experienced during the 2000 and 2001 seasons, the chum salmon harvest outlook in 2002 remained questionable. Most west-side LCI systems experienced reasonably good escapements during the 1997 and 1998 parent years, and recent years' returns to area systems have displayed a generally positive trend. Numerous systems, such as those in northern Kamishak Bay, seemed to be responding positively to conservative management measures

employed in recent seasons, while chum returns to the larger Big and Little Kamishak Rivers had been unexpectedly strong during the previous two years. The strong catches in 2000 and 2001 led many fishermen to believe that the trend would continue in 2002.

2002 SUMMARY BY SPECIES

Chinook Salmon

The harvest of chinook salmon, not normally a commercially important species in LCI, was the third highest catch for this species over the past decade at 1,553 fish (Table 2, Appendix Table 12). The entire 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 about 97% of the LCI chinook catch, with purse seiners taking the remaining 3%.

Sockeye Salmon

The 2002 LCI sockeye salmon harvest of 291,000 fish (Figure 9, Table 3) exceeded both the preseason forecast and the recent 10-year average, and additionally represented the third highest catch for this species in the past decade (Appendix Table 13). Sockeyes accounted for only about 13% of the LCI salmon harvest in total numbers of fish, yet provided about 60% of the exvessel value of the entire salmon fishery this season (Table 7). The 2002 LCI commercial sockeye harvest was characterized by returns to all enhanced systems that were equal to or greater than the preseason forecasts. Natural returns to all systems within the management area were also considered good, with those in East Nuka Bay of the Outer District, and to a lesser extent that in Aialik Bay of the Eastern District, contributing to seine harvests. As has been the case during past seasons, non-local stocks were thought to have intermixed with local stocks while migrating through the Southern District terminal harvest areas, providing additional sockeyes for harvest there.

Returns to enhancement sites, which typically provide the bulk of the LCI sockeye catch, were good in 2002. In the Southern District, harvests of enhanced runs of sockeye salmon returning to Leisure and Hazel Lakes were predicted to total only about 67,000 fish combined. However, the estimated combined harvest total of 151,000 fish (Figure 10, Appendix Table 15) produced as a result of these two enhancement projects was over twice the preseason forecast. This year's harvest figure represents the fourth highest combined total since adults began returning to Hazel Lake in 1991 (prior to that year, only Leisure Lake sockeyes contributed to the harvests).

Also in the Southern District, the sockeye return to English Bay Lakes was strong, as predicted, easily achieving the desired in-river return while providing a harvestable surplus to both the commercial and subsistence set gillnet fisheries. The Nanwalek Salmon Enhancement Project (NSEP) additionally harvested over 20,000 sockeyes for hatchery cost recovery. The continued viability of the sockeye return to this system may rest on the future success of the ongoing rehabilitation project originally initiated by ADF&G in the late 1980's and presently being conducted by Chugach Regional Resources Commission (CRRC) in conjunction with NSEP, operated by the village of Nanwalek. Unfortunately, the sockeye project has encountered setbacks in recent seasons due to viral outbreaks in the pen rearing of juveniles and unexpected adult behavior that resulted in the failure to collect brood stock in 2001.

In the Kamishak Bay District, the enhanced return to Kirschner Lake produced a harvest of over 32,000 sockeyes (Table 3), exceeding the preseason harvest forecast of 20,000 fish by about 60%. No fishing was allowed on sockeyes returning to Chenik Lake in the Kamishak Bay District since that return was expected to be poor due to the after-effects of an outbreak of IHN, a naturally occurring viral disease, in the early 1990's. The outbreak caused increased mortality to young salmon, subsequently resulting in weak adult returns. CIAA suspended the stocking program at Chenik Lake after the 1996 season.

At Bear Lake in Resurrection Bay of the Eastern District, the cumulative commercial seine and hatchery cost recovery catch of "early run" sockeyes totaled just over 16,000 fish, exceeding the

preseason forecast of 11,000 sockeyes. The desired in-river sockeye return for Bear Lake was also achieved.

The LCI management area has only four lake systems with significant naturally occurring sockeye salmon runs, and all four achieved their sustainable escapement goals (SEG's) in 2002. In the Outer District, Delight Lake escapement, enumerated via a picket weir, exceeded its goal of 6,000 to 12,600 sockeyes with an estimate of 19,600 fish (Appendix Table 23), while the peak daily aerial survey escapement estimate at nearby Desire Lake totaled 16,000 sockeyes, slightly exceeding the SEG for that system. The seine fleet harvested an additional 21,000 fish (Table 3) from returns bound for these two systems in East Nuka Bay. Waters of Aialik Bay, including Aialik Lagoon, in the Eastern District were opened to fishing in early July, but only marginal effort occurred and the ensuing harvest was minimal. The final estimate of escapement at Aialik Lake fell near the midpoint of the SEG range (Table 3, Appendix Table 23) of 3,700 to 8,000 sockeyes. At Mikfik Lake in the Kamishak Bay District, a relatively strong return resulted in an escapement estimated at nearly 17,000 sockeyes, but no seine effort occurred despite continuous fishing time allowed in June. Returns to Delusion (Ecstasy) Lake, a recently formed glacial lake system in East Nuka Bay of the Outer District which supported no documented salmon run prior to the mid-1980's, had a peak aerial escapement estimate of 3,550 sockeye salmon in 2002.

Coho Salmon

The coho salmon resource is not extensive in the LCI management area, and as a result this species rarely attains commercial prominence. The 2002 commercial harvest of 8,300 coho salmon (Table 4) was the sixth lowest LCI total for this species over the past 20 years, representing only about half of the average catch during that time period (Appendix Table 17). As is typical, the majority (just over 50%) of the harvest came as a combination of hatchery cost recovery operations at Bear Lake and entries into the Seward Silver Salmon Derby, both in Resurrection Bay of the Eastern District, with the remainder split between set gillnetters (29%) and seiners (17%) in the Southern District. Coho run assessment in LCI is limited, with commercial, sport, and personal use harvests providing the best indicators of run strength. Based on these indicators, returns during

2002 were considered above average. Also as is common, the combination of low prices and the lack of late-season remote tender service seemed to discourage the seine fleet from targeting cohos, especially in the Kamishak Bay District, thus the commercial harvest may not have been truly indicative of run strengths. Two aerial surveys were flown in August and September at Clearwater Slough in the Northshore Subdistrict of the Southern District, specifically for coho salmon assessment. The resulting peak daily index count of 1,300 cohos, recorded during a survey on September 10, was considered excellent by historical standards.

Pink Salmon

Returns of pink salmon, usually the dominant species in numbers of commercially harvested salmon in LCI, were considered excellent for an even year, with an overall harvest of nearly 2.0 million fish (Figure 11, Table 5). This number represents the third highest commercial catch for any year during the last 20 years and was well above both the recent 10- and 20-year averages (Appendix Table 18). The majority of the catch was taken in the Southern District (Table 5, Appendix Table 18) as a direct result of Tutka and Port Graham Hatchery production, but nearly all of this district's total, or about 942,000 fish, was utilized for hatchery cost recovery (Tables 1 and 5) by the two facilities. An additional 243,000 fish, not accounted for in commercial catch totals, were taken for hatchery brood stock purposes (Tables 5 and 9). The estimated overall Tutka Hatchery return, including escapement into Tutka Creek, brood stock, commercially harvested fish, and sport harvest, was 872,000 pinks (Table 9), falling far short of the preseason projection of nearly 2.2 million fish. The 2002 estimated survival rate of less than 1% was one of the lowest on record and considered well below the potential for this facility.

The Outer and Kamishak Bay Districts produced the greatest contribution of natural pinks to LCI catches, with a total combined harvest of over 1.0 million fish (Table 5, Appendix Table 18). About 80% of the Outer District harvest of 570,000 pinks was taken by directed effort in Port Dick Subdistrict, with the remainder coming from East Nuka Subdistrict primarily as incidental harvest during the sockeye fishery there. On the west side of LCI, Bruin Bay River experienced an extraordinary pink salmon return, with the Bruin Bay Subdistrict harvest totaling over 330,000

pinks and an escapement estimate into Bruin Bay River of nearly 1.6 million pinks (Table 5, Appendix Table 24). Pink returns to virtually all remaining systems within the management area were considered good to excellent, and pink salmon SEG's at all major systems throughout LCI were achieved (Appendix Table 24).

Chum Salmon

The 2002 commercial chum salmon harvest of over 43,000 fish (Table 6) maintained a three-year trend of relatively strong catches and was nearly double the recent 10-year average (Figure 12, Appendix Table 21). These numbers were not completely surprising based on the recent pattern of increasingly better returns and concurrently good escapements, especially to systems in Kamishak Bay. Whereas the majority of the previous two seasons' chum catches were concentrated in the Kamishak and Douglas Rivers Subdistricts, cumulative harvests totaling 35,000 chums this season were spread along the entire length of Kamishak Bay District. Of this total, almost half came from the two northernmost subdistricts of Cottonwood/Iliamna and Iniskin Bays. Virtually all chum systems achieved their SEG's as a result of the reasonable returns. McNeil River in the Kamishak Bay District was the single exception, failing to attain the lower end of its SEG range of 13,800 to 25,800 fish (Appendix Table 25) despite a subdistrict closure and complete lack of directed fishing effort.

2002 EXVESSEL VALUE

The estimated exvessel value of the 2002 salmon harvest in LCI, not including any postseason adjustments in price paid to fishermen, was approximately \$1.36 million (Table 7, Appendix Table 2), making it the fourth lowest in the past decade. Purse seine gear in the common property fishery, which normally accounts for the majority of the catch and value, comprised about \$738,000 or 54% of the overall total (Table 7), while set gillnets accounted for \$223,000 or 16%. An estimated \$387,000, or about 28% of the entire exvessel value of the LCI salmon fishery, was utilized for hatchery cost recovery purposes. Estimated average prices paid to fishermen in 2002,

not including any postseason adjustments, were as follows: chinook - \$1.11/pound; sockeye - \$0.55/pound; coho - \$0.33/pound; pink - \$0.07/pound; and chum - \$0.16/pound (Appendix Table 3). The pink price in LCI this season was the lowest on record, while prices for sockeyes, cohos, and chums were the lowest in over 25 years.

2002 DISTRICT INSEASON MANAGEMENT SUMMARIES

Southern District

Set Gillnet Fishery

An Area H commercial set gillnet permit is valid for fishing in any part of Cook Inlet (Upper or Lower), 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 during open fishing periods (Figure 2). The limited area provides only enough productive fishing sites to accommodate approximately 25 set net permits.

The 2002 LCI all-species set gillnet harvest totaled 62,000 fish, slightly greater than the recent 10-year average (Appendix Table 7). Approximately 75% of the catch was comprised of sockeyes, followed by pinks at 11%. For comparison, these figures are considerably different than those of the past decade, where typical species composition in the commercial set gillnet fishery has been 49% sockeyes, 39% pinks, 6% chums, 4% cohos, and 2% chinooks. Catches of chinook salmon, at 1,513 fish, were the highest since 1995 and about 25% greater than the recent 10-year average. Enhancement efforts, directed at recreational fisheries in Seldovia Bay and Halibut Cove Lagoon, are primarily responsible for the commercial gillnet chinook catch during 2002.

Based on an optimistic preseason forecast for sockeyes returning to English Bay Lakes, the commercial set gillnet fishery in the Port Graham Subdistrict, including both the English Bay and

Port Graham Sections, was allowed to open as scheduled by regulation at the beginning of the season. The forecast proved accurate, resulting in a commercial set gillnet harvest of over 14,000 sockeyes in the two sections (Table 3) and hatchery cost recovery harvests totaling nearly 21,000 fish. The desired in-river return of 7,300 to 15,000 sockeyes was also achieved (Appendix Table 23), while subsistence fishermen were allowed to fish without any emergency closures for the entire season. This situation contrasted sharply with the past two seasons, when complete fishing closures or severe restrictions were implemented due to weak sockeye returns.

After the English Bay Lakes sockeye return was over, waters of Port Graham Subdistrict remained open to commercial set gillnet fishing primarily because of the promising forecast of pinks returning to Port Graham Hatchery. The projected return was expected to total over 800,000 pinks, and although most would be required for brood stock and cost recovery purposes, the anticipated amount of gillnet effort would not likely pose a threat to either the hatchery return or the natural return to nearby Port Graham River. The hatchery return proved considerably weaker than predicted, and no set gillnet effort occurred after the sockeye return was over. Due to the weakness of the pink return to Port Graham Hatchery, the brood stock and egg take goals were not achieved, and cost recovery revenues fell far short of the preseason goal. Escapement of pinks into Port Graham River achieved the SEG (Appendix Table 24) but was believed to contain a fairly high percentage of hatchery strays. Brood stock for the Port Graham Hatchery pink program was originally collected from Port Graham River.

LCI set gillnet fishing effort in 2002 increased over the low levels experienced the previous year, with a total of 24 set gillnet permits actively fished. This figure was slightly lower than the 20-year average (25; Appendix Table 1) but more than the recent 10-year average (21).

Seine Fishery

Sockeye Salmon

The overall catch of sockeye salmon by all gear types in the Southern District, at 218,200 fish, was the third highest in the last 20 years (Appendix Table 13) and exceeded the recent 10-year average by almost 25%. Purse seiners in the common property fishery accounted for over half of the sockeye salmon landed in the district in 2002, or approximately 121,000 fish (Table 1), while an additional 29,500 sockeyes (14%) were harvested by purse seine for hatchery cost recovery.

As in recent years, waters of Halibut Cove Subdistrict, as well as the outer waters of China Poot Bay and Tutka Bay Subdistricts, were opened to seining five days per week beginning Monday, June 17, to target enhanced returns to Leisure and Hazel Lakes. Within these subdistricts, however, waters of the China Poot and Hazel Lake Special Harvest Areas (SHA's; Figure 3) were opened only to authorized agents of CIAA at this time, seven days per week, for the express purpose of hatchery cost recovery. The SHA's were to be kept closed to the common property commercial fishery until the preseason revenue goal established for each SHA was achieved.

Preseason combined harvest projections for returns to the Leisure and Hazel Lakes stocking projects were estimated at only 67,000 sockeyes. The actual commercial harvest of fish returning to the two sites was estimated at 151,000 fish (Figure 10, Appendix Table 15), comprising about 52% of the total LCI sockeye salmon harvest (Table 3). Because of the close geographic proximity of these two projects, the overlapping area of harvest, and the lack of tagging, no definitive assessment of separate returns to each system can be established. However, fish returning as a result of these two projects not only contributed to seine catches in China Poot Bay Subdistrict but also to those in adjacent Halibut Cove and Tutka Bay Subdistricts. It was estimated that personal use dip net and sport fishermen harvested another 4,900 sockeyes at the head of China Poot Bay based on recent years' average catches. The 2002 total cumulative return from both projects was estimated at 157,000 sockeyes (Appendix Table 15). Although the

disparity between the preseason forecast and the actual return cannot be fully explained, higher than average fresh and/or salt water survival was likely responsible.

As outlined in the Trail Lakes Hatchery Annual Management Plan (AMP) prior to the season, the CIAA revenue goal necessary to meet operational expenses incurred in LCI sockeye salmon lake stocking projects was set at \$107,500. This figure was to be split amongst locations as follows: 73% from combined China Poot and Hazel Lake SHA's, both in the Southern District, and 27% from the Kirschner Lake SHA in the Kamishak Bay District. No cost recovery was planned at Chenik Lake in 2002 since stocking has been discontinued and 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 as early as possible in the runs since harvests could take place without interference or competition from the fleet at large. A minimum harvest of 35,500 sockeyes from the China Poot and Hazel Lake SHA's was necessary to achieve the combined goal of \$78,500 for these two areas, assuming an average price of \$0.55 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.

Similar to past years, CIAA once again contracted the Cook Inlet Seiners Association (CISA) to undertake sockeye cost recovery in LCI for the 2002 season. As was the case in 2001, CISA dedicated a single vessel from within the fleet to direct efforts solely at cost recovery, and the first such harvest in the China Poot Subdistrict occurred on June 28 in the China Poot SHA, netting about 2,500 fish. This harvest was considered relatively early by historical standards, suggesting that the return could be stronger than forecasted. Additionally, vessels participating in the common property fishery outside the SHA's reported that numbers of fish present in area waters were quite good considering the early date. Although the contract price for cost recovery sockeyes had dropped to \$0.53 per pound, this low price was offset by a higher than expected average weight of about 4.8 pounds per fish. As a result, the number of fish necessary to achieve the revenue goal was revised downward to a new combined total of approximately 31,000 fish.

The first cost recovery effort of the season in the nearby Hazel Lake SHA occurred on June 30, with a harvest of 1,300 fish. Sockeyes continued to build within the respective SHA's, and cost recovery efforts persisted in both SHA's over the next week and a half, with the peak daily harvest of the season occurring on July 3 in the Hazel Lake SHA with a catch of over 10,000 fish. A final effort on July 9 brought the cumulative harvest in the two SHA's to 29,500 sockeyes, totaling almost 149,000 pounds and effectively achieving the desired revenue goal. As a result, the China Poot and Hazel Lakes SHA's were closed to cost recovery harvest on July 10, and waters of both the China Poot and Hazel Lake Sections of China Poot Subdistrict were opened to common property seining seven days per week beginning Thursday, July 11. A small portion of the China Poot Section near the mouth of China Poot Creek remained closed to commercial fishing on weekends in deference to the heavy sport/personal use traffic in the vicinity.

Common property seine catches in China Poot Subdistrict, outside of the SHA's, showed relatively good strength during the last week of June, and seiners remained optimistic that the returns would continue to build in early July. Catches remained fairly steady during the first week of July in both sections, but on July 8 cumulative catches in the Neptune Bay Section "spiked" to nearly 7,500 sockeyes for the day. Over the next eight days, harvests in that section averaged about 6,100 sockeyes per day fished, while the average in the China Poot Section was 1,300 fish per day fished. On July 11, the day that common property fishing was allowed in all waters of China Poot Subdistrict (since the hatchery revenue goal had been achieved), combined catches for both sections peaked at 12,300 sockeyes for the day, taken by an estimated 10-12 vessels. Catches in the Neptune Bay Section dropped steadily after July 16, and after July 19 in the China Poot Section, with the last landing made on July 22. The cumulative commercial catch in the two sections totaled 97,000 sockeyes (Table 3). Approximately two-thirds of this harvest, or about 66,500 sockeyes, was taken in the Neptune Bay Section, suggesting that the Hazel Lake sockeye return was stronger than the Leisure Lake return. Very little seine effort for sockeyes occurred within adjacent waters of Tutka Bay Subdistrict to the southwest, resulting in an additional harvest of only 6,400 fish, but seiners in Halibut Cove Subdistrict to the northeast took nearly 18,000 sockeyes. Although no tag/recovery efforts were conducted this season, it must be pointed

out that a small portion of the sockeyes taken in the Tutka Bay Subdistrict may have been returning to the Tutka Hatchery as the result of low level smolt releases in prior years.

Pink Salmon

Returns of pink salmon to the Tutka Bay Hatchery contributed to an overall (all gear types) Southern District harvest of 954,000 fish (Table 5, Appendix Table 18), representing just over three-fourths of the recent 10-year average but disappointingly short of the preseason hatchery-only harvest forecast of over 2.0 million fish. Of the pink harvest in the district, seiners in the common property fishery took less than 1% of the total, while hatchery cost recovery accounted for nearly 99% of the harvest.

Waters of Tutka Bay Subdistrict outside of Tutka Bay proper first opened to commercial seining five days per week beginning June 17, as has been the case in recent years. The open waters consisted of those waters offshore of a line running from the “rock quarry” on the north shore of Tutka Bay to the Tutka Bay Lodge on the south shore (Figure 4). 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 June 24. 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, estimated at \$627,000 for FY02. A minimum of 178,000 fish (133,000 females) was desired for hatchery brood stock in order to achieve the goal of 125 million eggs, and an additional 12-19,000 pinks were needed to meet the sustainable escapement goal established for Tutka Creek. At a projected average weight of 2.8 pounds and a preseason projected price range of \$0.05 to \$0.15 per pound for cost recovery fish, about 1.46 million to 4.54 million fish would be required to achieve hatchery objectives. The forecast suggested that fish would be available for common property harvest only if the inseason price reached the upper end of the projected range; otherwise, virtually all hatchery pinks would be necessary for revenue, brood stock, and escapement goals. Because of this, the Tutka Hatchery AMP contained a clause stating that additional common property fishery

restrictions within Tutka Bay Subdistrict would be implemented if the aforementioned goals could not be projected by July 5.

The contracted hatchery cost recovery vessels and crews were available and ready to begin harvesting in late June, with the first harvest occurring on July 1. Three cost recovery vessels were under contract this season, and the hatchery harvest strategy was designed to encourage as much fishing outside of Tutka Lagoon as possible in order to promote product quality and reduce the logistical difficulties of moving tender vessels through waters of the shallow access channel connecting the lagoon to Tutka Bay proper. Day-to-day operations of the catcher boats and tenders were adjusted depending on fish returns, tides, and weather.

Initial cost recovery catches showed relative promise, averaging about 56,000 pinks per day over the first seven days of the month. These catches suggested that the return was either early and/or strong. Although no common property effort directed at Tutka pinks had yet occurred, hatchery goals could not be projected with any degree of certainty by July 4, and as a result the common property seine closure line in Tutka Bay Subdistrict was moved seaward beginning July 5 to discourage effort on this stock and allow as many fish as possible to reach waters near the facility.

The hatchery cost recovery vessels fished on a daily basis, except for four days, between July 1 and July 24. The peak daily cost recovery harvest occurred on July 4, with a total of only 68,000 pinks taken. Daily catches averaged just over 35,000 pinks for each day fished during the month. Pinks harvested for cost recovery averaged 3.0 pounds per fish, slightly greater than the expected average weight. Despite the larger fish, catches and catch rates dropped off significantly after July 7, and as the month progressed cost recovery efforts became more financially inefficient. Sex ratios and catch rates additionally indicated that the return was far weaker than predicted. Towards the end of July, CIAA officials indicated that cost recovery fishing would voluntarily cease and that the revenue goal for FY02 would not be achieved. Waters of Tutka SHA were never opened to common property seining at any time during the 2002 season. The final cost recovery harvest occurred on July 24, resulting in a cumulative hatchery cost recovery catch of

only 703,200 pinks for the season (Table 9). The overall value of the harvest was about \$170,100 (Table 7), substantially short of the revenue goal of \$627,000. An additional 147,000 fish were utilized for hatchery brood stock.

The weak return provided little incentive for seiners to target pinks destined for Tutka Hatchery, and as a result the seine fleet took less than 1,000 pinks in Tutka Bay Subdistrict during 2002. The estimated pink salmon escapement of 15,900 fish into Tutka Creek (Table 5, Appendix Table 24) fell within the system's SEG range of 12-19,000 fish. As in recent years, this escapement was thought to contain a disproportionately high percentage of males discarded during hatchery sorting operations. The total return of pinks to Tutka Hatchery, including commercial, cost recovery, brood stock, and sport harvest, as well as escapement, was estimated at 872,200 fish (Table 9), representing only about 40% of the preseason forecast.

At Port Graham in the Southern District, a spring 2001 fry release of over 27.0 million pinks from Port Graham Hatchery was expected to produce an adult return exceeding 800,000 fish this season. The Port Graham Hatchery Corporation (PGHC) anticipated that a common property harvest of hatchery fish could potentially occur if the forecast was accurate and if prices were near the high end of the projected range of \$0.05 to \$0.15 per pound; otherwise, all returning fish would be required to meet brood stock and revenue requirements. The Port Graham Hatchery pink salmon revenue goal, as established in the 2002 Port Graham Hatchery Annual Management Plan (AMP), was \$200,000.

The preseason forecasted return of pinks to Port Graham Hatchery suggested that sufficient hatchery brood stock would be available for harvest within waters of Port Graham Special Harvest Area (SHA), alleviating the necessity of capturing wild stock fish near the mouth of or within nearby Port Graham River. Nonetheless, a hatchery egg removal schedule for Port Graham River was summarized in the AMP as a contingency. The forecast for the wild stock return to Port Graham River was estimated at nearly 22,000 pinks, exceeding the SEG range of 7,000 to 20,000 fish. Given the reasonable forecasts for both the natural and hatchery returns, a

closure of the common property set gillnet fishery was not anticipated unless hatchery and/or escapement requirements appeared in jeopardy.

The first ground survey of Port Graham River confirming the presence of pink salmon was completed on July 23, but counts numbered less than 500 fish. The ground survey team noted considerable pink salmon jumper activity in salt water near the mouth of Port Graham River, suggesting that these were natural-stock fish destined for the river. Port Graham Hatchery officials simultaneously reported significant numbers of pinks staging in waters adjacent to the hatchery net pens, located at the source of fresh water for imprinting purposes, and in Duncan Slough, adjacent to the hatchery facility. The latter observations implied that these fish were primarily of hatchery origin. In order to allow PGHC to initiate brood stock collection and cost recovery operations, waters of the Port Graham SHA east of the U.S. Coast Guard navigational buoy were opened to harvest by authorized agents of PGHC on a continuous basis beginning July 26. Restricting PGHC to this relatively small area was felt to provide sufficient protection to natural-stock fish bound for Port Graham River while still allowing the hatchery opportunity to pursue their objectives. Further manipulation of time and area within the SHA would be considered in order to secure escapement and/or hatchery requirements.

Hatchery cost recovery harvests in the Port Graham SHA began on July 30 with a harvest of about 16,500 pinks for the day. As the harvests progressed over the next several days, catch rates, observations by hatchery personnel, and sex ratios indicated that the return was weaker than forecasted. Hatchery efforts continued until August 11, with a peak daily harvest of 68,000 pinks taken on August 6. The cost recovery harvest within Port Graham SHA totaled about 239,000 pinks, while an additional 96,400 pinks were collected for brood stock (Table 5). The total estimated return of approximately 335,000 pinks to the Port Graham Hatchery represented less than 40% of the preseason forecast. The final escapement into Port Graham River, estimated at nearly 59,000 pinks (Table 5, Appendix Table 24), was the highest on record for this system but was believed to be comprised of a high percentage of hatchery strays (it should be noted that original hatchery brood stock came from Port Graham River). The commercial set gillnet fishery in Port Graham Subdistrict remained open to fishing for the entire season on a schedule of the two standard

48-hour fishing periods per week, but a lack of interest and low prices for pinks resulted in no effort or harvest.

Returns of wild pink salmon stocks to other systems in the Southern District, as indicated by ground survey escapement counts, were generally not strong enough to sustain commercial fishing effort, therefore no directed seine openings were allowed. Nonetheless, pink escapements into Humpy Creek, Seldovia, and Barabara Creeks all fell within the respective established SEG ranges (Table 5, Appendix Table 24).

Other Species

Southern District chum salmon returns maintained a trend of relative weakness for the thirteenth consecutive year. The chum harvest of 4,800 fish (Table 6) was nonetheless the second highest since 1988 and exceeded the recent 10-year average (Appendix Table 21). Set gillnets accounted for over 97% of the total, with Tutka Bay (57%), and Barabara Creek (23%) Subdistricts' catches dominating the totals (Table 6). Escapements into Southern District chum systems were generally fair to good, and an escapement within the SEG range was achieved at Port Graham River (Appendix Table 25). Seldovia River, with no formal SEG, experienced a weaker chum return than the previous two seasons, with a final escapement totaling 5,000 fish.

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 2002 Southern District harvest of 1,553 chinooks was slightly greater than the recent 10-year average of 1,500 fish (Appendix Table 12). However, seiners took only about 3% of the chinook total, with set gillnetters harvesting the remainder. The district-wide coho salmon catch of 3,800 fish slightly exceeded the recent 10-year average (Appendix Table 17), with seiners accounting for just over one-third of the total and set gillnetters taking the rest (Table 1).

Kamishak Bay District

Sockeye Salmon

The entire Kamishak Bay District, with the exception of Chenik Subdistrict, opened to salmon seining by regulation on June 1. For the third consecutive year, waters of Paint River Subdistrict were allowed to open along with the rest of the Kamishak Bay District because the stocking program at Paint River Lakes has been discontinued, and once again few sockeyes were expected back to that location this season. The weekly fishing schedule for the district was set at seven days per week for the fourth consecutive year. This schedule was originally implemented because the complexion of the fishery had evolved since 1994, when fish processors ended the routine practice of stationing a tender(s) in this remote district at the start of each season. As a result, effort and ensuing catches declined as fishermen were forced to devise their own transport of all salmon harvested. Recognizing this shift in effort levels, as well as the harsh weather that typically limits effective fishing activity, the staff determined that opening waters of Kamishak Bay District to commercial seine fishing seven days per week would allow opportunity to harvest salmon without unduly jeopardizing spawning escapement requirements.

The earliest natural sockeye salmon return to the management area, at Mikfik Creek in the McNeil River Subdistrict, appeared bleak during the first week of June, typically a time of building numbers, because few fish were observed in either fresh or salt water. However, it should be noted that winter conditions in Kamishak Bay persisted considerably longer than normal, as exemplified by an ice coverage estimate of 90% on Mikfik Lake made during an aerial survey on June 4. The first observation of significant numbers of sockeyes was made on June 14, traditionally a time when peak numbers are documented, but only about 900 fish were estimated in fresh water on that date. The bulk of the return entered fresh water very quickly after this time, as evidenced by an estimate of nearly 17,000 sockeyes made during the next survey on June 18, with 60% of the total already in the lake itself.

Despite the continuous fishing time allowed in McNeil River Subdistrict, no effort directed at Mikfik sockeyes occurred this season and therefore no harvest was recorded. The Mikfik sockeye return was decidedly late, informally estimated at 7-10 days based on historical standards. No increase in escapement was detected after the June 18 survey, and the fresh water total from this survey turned out to be the peak daily estimate for the season. The final estimated escapement index of 17,000 sockeyes (Table 3, Appendix Table 23) easily exceeded the established SEG of 6,300 to 12,150 fish.

After the Mikfik sockeye return, seiners would next normally turn their attention to the Chenik or Douglas River Subdistricts during the final days of June. Once again, however, no fishing occurred at Chenik Lake this year due to the suspension of the stocking program, the lingering effects of the IHNV outbreak in previous years, and the subsequent fishing closure to protect the few returning fish for escapement. Despite the weak projection, modestly increasing returns to Chenik Lake during recent seasons fostered optimism that the run might approach the escapement goal of 10,000 sockeyes. Unfortunately, a ninth consecutive year of small returns occurred, and even with no fishing effort during the entire season, the total escapement at Chenik Lake was estimated by aerial surveys at 4,700 sockeyes (Table 3, Appendix Table 23). This figure represented the second highest escapement estimate for Chenik Lake since 1992. Only minimal effort directed at sockeyes occurred in the Douglas River/Silver Beach Subdistrict, resulting in a cumulative harvest of about 1,400 fish (Table 3), with about one-fourth of the total considered incidental harvest taken during efforts directed at chum salmon returning to nearby systems in late July and early August.

The next sockeye return in Kamishak Bay District was to Kirschner Lake in the Bruin Bay Subdistrict, the traditional site of a sockeye salmon lake stocking project. A similar project at nearby Bruin Bay Lake was discontinued, and no fish were expected to return to that site this season. At Kirschner Lake, where a steep falls at tideline precludes escapement into the lake, 19,700 sockeyes were predicted to return. As outlined in the Trail Lakes Hatchery Annual Management Plan (AMP) prior to the season, the revenue goal necessary to meet operational expenses incurred in all LCI sockeye salmon lake stocking projects was set at \$107,500. This

amount was to be split between the Southern District SHA's (Leisure/Hazel) at 73% of the total and the Kamishak SHA (Kirschner) at 27%. No cost recovery was planned at Chenik Lake in 2002 since a weak return was once again expected. A projected harvest of 19,700 sockeyes from the Kirschner Lake SHA (Figure 5), or virtually the entire return, was anticipated in order to achieve the revenue goal of \$29,025, assuming an average price of \$0.3725 per pound and an average weight of 4.0 pounds per fish.

Preseason management strategy for the Bruin Bay Subdistrict, as outlined in the Trail Lakes Hatchery AMP, was to open the Kirschner SHA to hatchery cost recovery fishing on a continuous basis beginning June 17 while simultaneously keeping it closed to common property seining. The intent was to allow opportunity for CIAA to achieve the sales harvest goal quickly at the beginning of the run. As soon as the goal was met or could be projected, the 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.

CIAA had made arrangements prior to the season for a CISA vessel to conduct cost recovery in Kamishak Bay. The first effort occurred in the Kirschner Lake SHA on July 11, netting an estimated harvest of nearly 12,000 fish. Unfortunately, the contract price for Kirschner sockeyes had dropped to approximately \$0.19 per pound, necessitating an upward revision of the number of fish necessary to achieve the revenue goal. Two more harvests occurred over the next two weeks, resulting in a cumulative catch of 32,500 sockeyes (and a small incidental harvest of other species) with a total value of \$26,600. Although this value was shy of the preseason revenue goal of \$29,025, CIAA voluntarily ceased cost recovery efforts after the last harvest on July 25 due to the small numbers of fish reportedly remaining in waters of the Kirschner SHA and the questionable product quality of those fish. In response, waters of the Kirschner SHA were closed to hatchery cost recovery fishing on July 30.

Because sockeye salmon returning to the Kirschner Lake stocking site are prevented from entering the lake by a steep waterfall at tideline, no escapement is possible and a total harvest is desired. In an effort to provide maximum opportunity to achieve a 100% harvest, all waters of Bruin Bay

Subdistrict were opened to continuous commercial salmon seining 18 hours after waters of the SHA were closed to hatchery fishing, or beginning July 31. No directed common property effort on Kirschner sockeyes occurred for several reasons, including the aforementioned quantity and quality issues, as well as ongoing efforts directed at an enormous pink salmon return to nearby Bruin Bay River. The total return to Kirschner Lake was estimated at 33,000 to 36,000 sockeyes (including unharvested fish), exceeding the preseason prediction for the system by around 70%. The Kirschner Lake sockeye enhancement project has remained one of LCI's steadiest producers.

Pink Salmon

Preseason pink salmon projections for the Kamishak Bay District in 2002 were moderate, with harvestable surpluses cumulatively totaling just under 100,000 fish forecasted for Bruin Bay, Rocky Cove, and Ursus Cove Subdistricts. The first aerial survey of the season that documented significant numbers of pinks in Bruin Bay River occurred on July 18, when over 34,000 pinks were estimated. This figure was considered exceptionally strong for the early date, and it was just the initial sign of what would eventually turn out to be an astounding return. Surveys continued through the remainder of the month and into August, with estimates sometimes increasing by an order of magnitude. Because of the strong return, regulatory markers protecting the mouth of Bruin Bay River were repealed on July 31, and continuous fishing was allowed in all waters of the subdistrict beginning on that date. Regulatory markers at the mouth of Sunday Creek in Rocky Cove Subdistrict, just north of Bruin Bay, were also repealed due to a relatively strong pink return to that system, and once again continuous commercial fishing was allowed.

Seiners responded by aggressively targeting pinks over the next two weeks, aided by regular tender service. Unfortunately, the number of participating seiners was no match for the magnitude of the pink return to Bruin Bay River, but diligent efforts by the fleet resulted in the harvest of over 446,000 pinks in the Kamishak Bay District (Table 5, Appendix Table 18), the majority of which came from Bruin Bay Subdistrict. All three major monitored pink systems in the district, Bruin Bay River, Sunday Creek and Brown's Peak Creek, exceeded their SEG

ranges, (Table 5, Appendix Table 24), with the Bruin Bay River final pink salmon escapement estimate reaching an astonishing 1.6 million fish.

Chum Salmon

For the third consecutive season, significant catches of chum salmon occurred in the LCI management area. Seiners in Kamishak Bay District took about 80% of the total LCI catch of 43,000 chums this season (Table 6, Appendix Table 21), and chum returns throughout the district were once again generally strong.

Aerial surveys to monitor chum returns in Kamishak Bay began in mid/late June, with the first chums of the season noted in McNeil River on June 21. Because chum runs to McNeil River have not been strong over the past decade, waters of McNeil River Subdistrict were closed to commercial fishing as a precaution beginning June 30, even though no seiners were present in area waters. Escapement into McNeil River was relatively stagnant into mid-July, as evidenced by aerial counts that remained relatively low and consistent between surveys during this time period. The return was decidedly weak, with a peak single survey estimate of nearly 11,000 chums made on July 30. Post-season analysis of aerial survey data using the standard area under the curve (AUC) method yielded a final estimated escapement index at McNeil River of slightly over 11,000 fish, falling short of the low end (13,750) of the SEG range for the eleventh time in the last 13 years (Appendix Table 25) despite the complete absence of fishing mortality throughout the duration of the 2002 return.

Chum returns to nearly all other Kamishak Bay systems were strong. After experiencing two consecutive seasons of impressive chum returns, seiners were anxious to see if the trend would continue. In the southern portion of the district, which had been opened to fishing seven days per week at the beginning of the season, seiners began targeting chums returning to systems in the Kamishak and Douglas River Subdistricts during the fourth week of July. Aerial surveys suggested that escapement rates into the Big and Little Kamishak Rivers were sufficient to attain the SEG's for these systems, but catches indicated that the returns were not as strong as the

previous two years. Although harvestable surpluses existed, the volumes were insufficient to encourage continuous fishing efforts by the available fleet, especially considering the remarkable run strength of the simultaneous pink return occurring at Bruin Bay. Nonetheless, seiners harvested over 12,000 chums from the two southerly subdistricts (Table 6) in late July and early August. Escapements were also positive, with final estimates of 17,000 chums into Big Kamishak River and 16,000 into Little Kamishak River (Table 6, Appendix Table 25), falling within the respective SEG's established for each system.

Following the same pattern as that in the Kamishak Rivers, central and northern Kamishak Bay chum returns were also relatively strong this season. At Bruin Bay River, chums began to show in fresh water in early July, continually building well into mid-July. The peak individual aerial survey of Bruin Bay River occurred on July 12, when nearly 10,000 chums were documented. No effort was directed specifically at this stock, although a minor incidental harvest of chums occurred during the later pink salmon fishery in waters of Bruin Bay Subdistrict. As a result, the majority of the return entered the river as escapement, which was estimated at 10,000 chums (Appendix Table 25).

Because the run timing for the more northerly chum systems is later than that in southern and central Kamishak areas, aerial evaluation of northern Kamishak systems typically begins in late July. Exceptionally good chum numbers were observed at Iniskin River on August 2, suggesting that return would be strong, while estimates for Cottonwood Creek and Ursus Cove were more moderate. Nonetheless, all systems appeared on track to achieve their respective SEG's, therefore no changes to the seven-day-per-week fishing schedule were made. Seiners ventured to the more northerly subdistricts, but apparently the catches were not sufficient to justify continuous fishing and only intermittent effort occurred.

By mid-August, escapements into Ursus Cove and Iniskin Bay systems had progressed to the point that stream mouth regulatory markers were no longer necessary to protect escapements. Therefore, in order to allow additional opportunity for seiners to target the strong chum returns to these locations, regulatory marker restrictions at Ursus Cove Lagoon and Iniskin River were

removed beginning August 14. Despite the liberalized fishing schedules, no seine effort directed at chums occurred in Ursus Cove and Iniskin Bay Subdistricts after August 9, and harvests from these subdistricts cumulatively totaled about 9,500 chums for the season (Table 6). At Rocky Cove, seiners harvested approximately 3,200 chums, but most were taken incidentally during the directed pink salmon fishery. In Cottonwood Bay, a very late surge of chums at the end of August resulted in the repeal of the stream mouth markers at Cottonwood Creek beginning August 27. The ensuing effort, along with harvest prior to the marker change, brought the cumulative harvest in this subdistrict to nearly 8,000 chums for the season. The cumulative Kamishak Bay District chum catch totaled nearly 35,000 fish for the season (Table 6, Appendix Table 21), the third highest since 1988. Interestingly, the three largest annual catch totals in this district since 1988 have occurred during the past three years.

Escapements at all Kamishak chum systems, with the exception of McNeil River, met their respective SEG's (Appendix Table 25). The third consecutive season of strong district-wide returns was a positive sign that the trend of weak chum salmon runs has passed a turning point and will hopefully remain at more traditional levels.

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 signs from other areas within LCI suggested that returns could potentially be strong. Unfortunately, low prices and uncertain run strengths conspired to preclude any effort or harvest, other than a negligible incidental catch (Appendix Table 17), for the seventh consecutive season in this district.

Outer District

Sockeye Salmon

Outer District sockeye harvests have traditionally 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 23,000 sockeyes for the entire Outer District, but those projections were based solely on the long-term average catch. The actual harvest totaled 21,200 fish (Table 3), nearly triple the 2001 harvest and about 50% greater than the recent 10-year average (Appendix Table 13).

Aerial surveys to assess the Delight and Desire Lake systems in East Nuka Bay began on June 16, and small numbers of fish were observed in both lake systems. Three more surveys conducted prior to the end of June showed no appreciable increases in escapement, but observation on all surveys was hampered by poor lighting, glare, and/or surface ripples on the water surface. A survey on July 3 showed an increase to about 3,000 sockeyes in fresh water at Delight Lake, roughly half of the low end of the SEG range. Escapement at nearby Desire Lake (SEG range 8,800 – 15,200) was lagging, with an estimate of around 1,000 sockeyes made during a survey the same day. By the time of the next survey two days later, escapement at Delight Lake had jumped to approximately 7,500 sockeyes in fresh water, yet that of Desire Lake had only increased marginally to 1,400 fish. For the third straight season, this situation contradicted the traditional run timing trend for these two systems, in which sockeyes normally appear in fresh water at Delight Lake later than those at Desire Lake, therefore in most years the sockeye escapement level at Desire Lake increases noticeably earlier than that into Delight Lake.

Since the July 5 escapement figure for Delight Lake exceeded the system's established SEG of 6,000 to 12,600 fish, waters of East Nuka Subdistrict south of the entrance to James Lagoon were opened to commercial seining five days per week beginning July 8. The regulatory markers

protecting the mouth of Delight Lake Creek were not in effect for this opening, and waters of nearby McCarty Lagoon were also opened to fishing on the same aforementioned fishing schedule. Waters near Desire Lake (north of the latitude of James Lagoon) were kept closed to fishing while monitoring of that system's sockeye return continued.

The initial commercial seine catches near Delight Lake, on the first day of the opening, at 3,000 sockeyes suggested a relatively strong return. Aerial surveys over the next week indicated that reasonable numbers of sockeyes were escaping the commercial fishery and building in the fresh water lagoon at Delight Lake, so no changes to the fishing schedule were being considered. Meanwhile, escapement at Desire Lake during this time period was increasing steadily, reaching an estimated 5,000 sockeyes in fresh water during a survey on July 12, with about 1,000 additional fish observed in salt water. Because poor survey conditions had hampered aerial observation throughout the season up to that point, the staff believed that aerial escapement estimates for Desire Lake were minimal and that the lower end of the SEG range had already been achieved. As a result, marine waters of East Nuka Subdistrict near Desire Lake (north of the entrance to James Lagoon) were opened to commercial seining five days per week beginning July 15. Regulatory markers protecting the mouth of Desire Lake Creek were left intact as a precautionary measure.

Effort in East Nuka Subdistrict, originally directed at sockeyes bound for Delight Lake, began on July 8 and remained modest but steady for the duration of the season. Peak daily catches occurred on July 16, when commercially open waters of East Nuka Subdistrict were expanded to include all waters of the subdistrict, with approximately 4,000 sockeyes taken. After that, catches averaged about 450 sockeyes per delivery. Fishing continued into late August, but by that time catches were dominated by pink salmon returning in good numbers to Desire Lake Creek. The final sockeye landing was made on August 21, bringing the cumulative catch in East Nuka Subdistrict to 21,150 sockeyes for the season (Table 3, Appendix Table 14).

Low water levels, and subsequent cessation of upstream salmon migration, are typical conditions observed at Delight Lake following extended periods of warm weather and limited precipitation during mid to late summer periods. However, water levels and flow rates at Delight Lake during

2002 never appeared to reach the “critically” low stage, i.e. making fish passage impossible. Nonetheless, after a brief burst of escapement into the lake during the first week of July, as noted by the adult counting weir located at the lake outlet, sockeyes inexplicably delayed their migration from the freshwater lagoon between July 9 and July 17, creating a relatively large buildup of fish in the lagoon. Once fish began moving after this time, the migration progressed steadily and water levels were never an issue. The final escapement estimate at Delight Lake, derived from weir counts combined with the final aerial survey estimate of fish downstream of the weir site just prior to removal of the weir, was 19,600 sockeyes (Table 3, Appendix Table 23). At Desire Lake, aerial surveys were utilized to generate a final escapement index of 16,000 sockeyes.

A third system of lakes known as Delusion (or Ecstasy or Delectable) Lakes in East Nuka Subdistrict has been monitored over the last decade 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. A review of charts and maps drawn prior to the mid-1980's substantiated this fact 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 2002 aerial count of 3,550 sockeyes was recorded during an aerial survey on August 9. Little is known of the origins of this return, although the predominant hypothesis suggests that sockeyes probably strayed from nearby Desire and/or Delight Lake to colonize this new lake system. ADF&G personnel conducted sampling of sockeyes in this system during 1992, 1993, and 1994, with help from University of Alaska students on site. 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

Reasonably good escapements during the 2000 parent year fostered an optimistic pink salmon harvest forecast of nearly 716,000 fish for the Outer District in 2002, more than seven times the recent 10-year average. The bulk of the harvestable surpluses were expected at Port Dick, although lesser amounts were forecasted at virtually all other locations. The actual harvest of nearly 570,000 pinks (Table 5, Appendix Table 18) was below the forecast but still nearly six times the recent 10-year average.

For the first time since 1997, the staff announced prior to the season that certain waters in Port Dick Subdistrict would open on a set calendar date, as opposed to a management strategy based on real-time aerial assessment of returns and escapements in the Outer District. Based on the optimistic forecast, as well as relatively low levels of anticipated effort, waters of the South, Outer, and Taylor Bay Sections of the subdistrict were opened to seining on a schedule of two 40-hour periods per week beginning July 15. This set opening date was intended to encourage effort early in the return, normally dominated by males, and to promote product quality.

Aerial surveys in Port Dick began in early July, with pinks first observed in deeper salt water off the shallow “flats” near the head end, and on the “flats” themselves, on July 16. Estimates made during this survey were substantial for the given date, totaling over 40,000 pinks and suggesting that the preseason forecast was on target. A ground survey on July 18 documented nearly 5,000 chums in fresh water, indicating a reasonably strong chum return and thus alleviating the fear that commercial fishing would jeopardize chum salmon escapement into Port Dick (head end) Creek. By July 25, aerial observations showed pinks entering fresh water, while estimates of pinks on the head end salt water “flats” continued to remain high. Although pink escapement into fresh water was not yet approaching the minimum desired goal of 19,000 fish, the numbers staging in salt water inside the regulatory markers at the head end suggested that the return was at least as strong as forecasted and that the SEG would likely be met. As a result, the seine fishing schedule in waters of the subdistrict already open to fishing was expanded to five days per week beginning July 22.

Seiners began actively fishing in Port Dick Subdistrict on July 22, and by July 30 the cumulative catch for the subdistrict totaled nearly 125,000 pinks. Aerial and ground surveys that same day showed that the return was continuing to build and that the SEG for Port Dick (head end) Creek was virtually assured based on numbers already in fresh water and protected by markers in salt water. In response, waters of the North Section of Port Dick Subdistrict west of Middle Creek were opened to seining on the same five-day-per-week schedule as the remainder of the subdistrict beginning July 31. Those waters of the North Section east of Middle Creek were kept closed to protect fish returning to both Middle and Island Creeks since the run timing for those returns is slightly later than that for Port Dick (head end) Creek. Additionally, an exceptionally strong return of pink salmon to nearby Taylor Bay systems permitted the repeal of the regulatory closed waters markers in that section and allowed fishing up to the stream mouths in Taylor Bay, also beginning July 31.

By August 15, the building returns to North Section systems, as well as the continuing strong return to the head end of Port Dick, justified further liberalization of the commercial fishing restrictions. As a result, all waters of Port Dick Subdistrict were opened to seining seven days per week beginning August 16. As a precaution, regulatory markers remained in effect at all locations except in Taylor Bay, where they had been repealed at the end of July. Despite the increased fishing time and area, effort had already abated as seiners and processors left area waters. The steady effort by seiners in Port Dick Subdistrict between July 22 and August 9 peaked in early August when five vessels were fishing area waters. Catches averaged about 35,000 pinks per day during the first week of August, with the bulk of the catch during that time coming from waters of Taylor Bay Section. Uncharacteristically consistent tender service, prompted by the strong returns, helped to maintain the steady seine effort this season. The final cumulative seine catch in all sections of Port Dick Subdistrict totaled 454,000 pinks (Table 5, Appendix Table 20), the highest catch for any year since 1985 and the greatest even-year catch since 1964.

Even with the numerous and liberal openings throughout the Port Dick Subdistrict beginning in mid-July, escapements were never in jeopardy at any local systems. Ground assessment showed that movement of pink salmon into fresh water of Port Dick (head end) Creek

progressed steadily into late August, with a final escapement estimate of 107,000 pinks (Table 5, Appendix Table 24). Pink salmon escapement at nearby Island Creek in Port Dick began in late July, with the first observation of pinks made on the last day of the month. However, with a count of less than 50 fish, the return was demonstrating the traditional pattern of a slightly later run timing than that of Port Dick (head end) Creek. The lack of any directed effort allowed the entire Island Creek return to enter fresh water as escapement, with a final estimate of 44,100 pinks (Table 5, Appendix Table 24). Escapements at Middle Creek and Slide Creek, at 13,000 and 33,000 pinks respectively (Table 5), were also considered excellent. Interestingly, the six highest pink salmon escapement totals on record for Island Creek have all occurred since 1996.

Aerial surveillance of Nuka Island streams began in early July, with pinks first observed in South Nuka Island Creek on July 9, which is considered early, but numbers were small. The return progressed rather slowly through the month. By August 9, the freshwater escapement estimate of 7,700 pinks fell near the midpoint of the established SEG for this system, and additional pinks were observed staging in salt water off the creek mouth. In response, waters on the south end of Nuka Island were opened to seining beginning August 12 five days per week. Waters along the western shore of Nuka Island were kept closed to fishing to protect the smaller systems there, where returns showed insufficient strength to support commercial exploitation. Despite the opening, no effort occurred in Nuka Island Subdistrict, and the final escapement into South Nuka Island Creek was estimated at 14,800 pinks (Table 5, Appendix Table 24).

A number of other systems throughout the Outer District exhibited reasonably strong pink salmon returns in 2002, although none nearing the magnitude of Port Dick. Waters of Windy Bay Subdistrict were opened to commercial seining five days per week beginning July 31, after aerial surveys indicated that the numbers of pink salmon in fresh water or protected by markers virtually assured the SEG's at both Windy Right and Windy Left Creeks. The pink return to nearby Rocky River was also very strong, as evidenced by an aerial estimate of around 24,000 fish in fresh water on July 30, with over 8,000 additional pinks observed in marine and intertidal waters. As a result, waters of Rocky River Subdistrict were opened to seining on the same schedule as in Windy Bay Subdistrict, also beginning July 31. However, with seiners concentrating their efforts on the

extraordinarily strong pink returns to Port Dick, no effort occurred in either Windy Bay or Rocky Bay Subdistricts. Final escapements totaled 112,500 pinks at Rocky River, 29,000 pinks at Windy Left Creek, and 14,400 pinks at Windy Right Creek (Table 5, Appendix Table 24). It is interesting to note that the last three even-year pink escapements at Rocky River are the highest since those just prior to the 1964 earthquake.

Elsewhere in the Outer District, aerial and ground observations at Port Chatham suggested that the pink return was not as strong as forecasted, and no openings were allowed there this season. Postseason analysis of ground survey data indicated an estimated cumulative escapement of 18,100 pinks into Port Chatham systems (Table 5, Appendix Table 24). Desire Lake Creek, with an SEG range of 2-20,000 pinks, experienced an exceptionally strong pink return. With waters of East Nuka Subdistrict opened to seining during July to target the relatively strong sockeye returns to both Delight and Desire Lakes, seiners first began harvesting pinks incidentally to the sockeyes. As the sockeye returns tapered off, the pink catch escalated, and persistent efforts by fishermen into mid/late August resulted in a final harvest totaling nearly 116,000 pinks in East Nuka Subdistrict (Table 5, Appendix Table 20). Even with the liberal five-day-per-week fishing schedule allowed in East Nuka Subdistrict, the pink salmon SEG for Desire Lake Creek was never in jeopardy, with a final escapement estimate totaling 78,400 pinks (Table 5, Appendix Table 24).

Chum Salmon

Chum salmon numbers had experienced dramatic declines in the Outer District since the peak harvest years of the late 1970's and early 1980's, and large returns were once again not expected in 2002 due to a succession of poor runs over the past decade. Surprisingly, 2002 chum returns to systems in the Outer District showed incremental signs of improvement. In a continuing effort to reverse the trend of weak returns and allow stocks maximum protection, no specific commercial openings targeting chum salmon occurred in the Outer District this season. The final harvest of 3,800 chums (Table 6, Appendix Table 21), virtually all taken incidentally during the directed pink salmon fishery in Port Dick, was the highest for the district since 1991.

Despite the increased chum catches in the Outer District, SEG's at the four monitored chum salmon systems in the Outer District were achieved or exceeded. At Koyuktolik (Dogfish) Bay systems, with a combined SEG range of 3,300 – 9,200 chums, the returns were estimated at 10,100 chums (Table 6, Appendix Table 25). Port Dick (head end) Creek experienced its second highest escapement on record, with a total of over 12,000 fish, while Rocky River escapement amounted to 5,700 chum salmon, the highest total since 1981 (Appendix Table 25). Chum escapement at Island Creek fell near the upper end of the SEG range of 6,400 to 15,600 fish, with a final total of 15,300 fish.

Eastern District

Sockeye Salmon

The Eastern District had potential for harvestable surpluses of sockeye salmon in Aialik and Resurrection Bay Subdistricts during 2002, with a district-wide preseason projection totaling just over 19,000 fish. Actual harvest totaled 17,400 sockeyes (Table 3, Appendix Tables 13 and 14), nearly achieving the forecast but representing less than half of the recent 10-year average. Of the total catch, the seine fleet in Resurrection and Aialik Bays harvested approximately 85%, with the remaining 15% taken as hatchery cost recovery for the Bear Lake enhancement project (Tables 1 and 3) near Seward in the Resurrection Bay Subdistrict.

Sockeye enhancement activities by CIAA at Bear Lake resulted in a projected return ranging up to 23,000 fish assuming optimum survival of various smolt and fry releases. If the forecast proved true, the projected harvestable surplus was about 11,000 fish after accounting for the desired in-river escapement requirements for Bear Lake, established at 5,600 – 13,200 sockeyes in the 2002 Trail Lakes Hatchery Annual Management Plan.

Based upon the expected long-term increase of sockeyes returning to the Bear Lake system, a Resurrection Bay Management Strategy was developed during the winter of 1991-92. The plan allows the seine fleet 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. In addition, several modifications to the plan, first implemented by emergency order in 1996, were utilized after that time. The first change increased fishing time from two 40-hour periods per week to a single five-day period (Monday through Friday). Based on experience during the seasons prior to 1996, this increase would allow greater opportunity to harvest sockeyes without jeopardizing the desired in-river escapement goal for Bear Lake. The second change posted closed waters markers at the mouth of the Resurrection River to better define the river's mouth and the fishing boundaries, which had been problematic prior to 1996. Finally, an area of closed waters along the west side of Resurrection Bay between Caines Head and the city of Seward was implemented in order to protect returning chinook salmon, which are allocated entirely to the sport fleet and are illegal to retain in the commercial fishery.

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 beginning on May 20, in keeping with the traditional recent year opening time of mid-May. Prior to 1998, these waters were opened on the second Monday in May, but experience had demonstrated that sockeyes did not begin arriving in Resurrection Bay in appreciable numbers until the end of the month. 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. Between 1995 and 2001, with larger numbers of fish returning, the majority of the run appeared in waters at the head of Resurrection Bay during the first two weeks of June.

As was the case in 2001, the weekly fishing schedule in 2002 was set at two 40-hour periods per week, as opposed to five days per week in the previous four years, due to the modest forecast and the need to protect sufficient numbers of fish for escapement. When the area first opened in 2002, fishermen were expectedly skeptical of fishing given the moderate prediction. The first landing occurred on May 24, at the end of the first week of opening, but fish concentrations were predictably meager. During the next week (the last week of May), effort picked up, resulting in a cumulative total reported harvest approaching 1,700 sockeyes, while escapement through the Bear

Creek weir had just begun and numbered fewer than 50 sockeyes, suggesting that the preseason forecast was on track.

Both effort and harvest increased as expected over the first week of June, with a peak daily harvest of about 3,900 sockeyes landed on June 4 by five vessels. Cumulative harvest at the end of that week totaled about 13,500 fish, suggesting a potentially stronger return than forecasted. Unfortunately, despite the weekly seine fishing schedule designed to allow for adequate escapement during mid-week and weekend closures, only about 1,800 sockeyes had been documented past the Bear Creek enumeration weir through June 8. Since an escapement near the upper end of the desired in-river range of 5,600 to 13,200 was sought, and given the relatively small preseason forecast, the staff reasoned that the remainder of the return would likely be necessary to achieve the escapement objectives. Therefore, the commercial seine fishery in Resurrection Bay was closed beginning on June 10.

The closure accomplished the desired results, as escapement progressed steadily, peaking on June 18, with about 1,400 sockeyes passing through the weir on that day. Passage rates through the weir dropped after this time and the escapement goal was in question until late in June, but by that time the projected surplus was deemed inadequate to justify reopening the commercial fishery. Additionally, a fishery targeting sockeyes could easily jeopardize local chum returns, which normally begin around this time and are relatively small in magnitude. By the end of June, the cumulative sockeye escapement count past the weir was considered adequate to achieve the desired in-river return. As a result, cost recovery efforts were initiated beginning on June 30, and no further escapement was allowed into Bear Lake. The final cumulative escapement past the Bear Creek weir totaled 12,500 sockeyes (Table 3, Appendix Table 23). Cost recovery efforts directed at Bear Lake sockeyes netted about 2,700 fish through the end of July (Tables 1 and 3). When hatchery harvest totals were combined with the commercial seine catch and Bear Lake escapement, the total Bear Lake sockeye return was estimated at 28,600 fish, exceeding the preseason forecast of 23,000. Just over one-fourth of the sockeyes harvested for cost recovery at the Bear Creek weir this season were considered unsaleable due to quality concerns and were therefore donated to local dog mushers.

A second, more recent sockeye enhancement project was initiated at nearby Grouse Lake in 1996, when over 200,000 juvenile fish were planted in the system. As outlined in the Trail Lakes Basic and Annual Management Plans, the entire sockeye return to Grouse Lake was allocated specifically to CIAA for the purpose of hatchery cost recovery. Grouse Lake was subsequently stocked for two additional years, but adult returns failed to meet expectations for unknown reasons, and CIAA suspended the enhancement of Grouse Lake after the 1998 season. No sockeyes were expected to return to Grouse Lake in 2002, therefore no provisions to facilitate hatchery cost recovery harvest of Grouse Lake sockeyes were enacted.

At Aialik Lake in Aialik Subdistrict, the first aerial survey of the season on June 17 produced an estimate of 280 sockeyes present in fresh water, considered a reasonable number of fish for the given date. Surveys continued for the remainder of the month, and despite relatively good observation conditions, escapement estimates did not increase. In fact, two surveys during this time period, including one survey with near perfect conditions, produced estimates of zero fish in the lake, suggesting that the early arriving fish immediately migrated into deeper water and were therefore not visible from the air. Finally, on July 3, an estimated 1,200 sockeyes were documented via aerial survey in Aialik Lake, followed two days later by an estimate of 3,500 fish, indicating that the return was building. Given the developing return, and that the latter escapement estimate was approaching the low end of the SEG (3,700 – 8,000), waters of Aialik Subdistrict, including Aialik Lagoon, were opened to seining five days per week beginning July 8. Only minor seine effort ensued, with a total harvest of 1,200 sockeyes in the subdistrict (Table 3). The last aerial survey of the season on July 16, with an estimate of 6,100 sockeyes in fresh water, proved to be the peak daily estimate this year and was used as the final index of escapement for Aialik Lake (Table 3, Appendix Table 23).

Pink Salmon

A harvestable surplus of about 53,000 pinks was forecasted in Eastern District waters for 2002, but this projection was questionable due to weak returns in some recent years. Surveys of Resurrection Bay systems were limited to on-grounds estimates in early August and early September. Results and

final estimates suggested that returns were far below preseason forecasts. At Bear and Salmon Creeks, where the combined pink SEG is 4,900 – 21,700 fish, a total of 2,700 pinks were estimated (Table 5, Appendix Table 24), the lowest total since 1988. The figure for Thumb Cove, with an SEG of 2,400 – 8,900, was estimated at 3,700 pinks, while at Humpy Cove (900 – 3,200 SEG) only about 1,800 fish were estimated. Tonsina Creek produced an estimate of 6,900 pinks, slightly exceeding the SEG range of 500 – 5,900 pinks. Due to the trend of primarily weak but highly variable returns during recent years, no openings for pinks were allowed in Resurrection Bay this season and therefore no harvest occurred.

The fishing schedule in Aialik Subdistrict, originally set at five days per week beginning July 8 for sockeye salmon, was never altered after the sockeye run was effectively over. During some seasons in the 1990's, the subdistrict was allowed to remain open despite knowledge that seiners were fishing the outer areas later in the season, targeting pink salmon bound primarily for Prince William Sound. The staff elected to leave the area open again in 2002 because the relatively modest historical catches would not likely threaten either local or non-local stocks. No effort resulted, however, therefore no harvest occurred in Aialik Subdistrict.

Other Species

Chum salmon have occasionally been an important component of commercial catches in the Eastern District, but catches during the past 10 years have averaged only about 600 fish annually. This season's chum harvest amounted to only a trace (Table 6, Appendix Table 21), with all fish taken incidentally during the Resurrection Bay directed sockeye fishery in June. Due to a trend of weak Eastern District returns over the past 10-15 years, no directed openings for chum salmon were allowed in the Eastern District this season. An estimated 3,400 chums were estimated as escapement into Tonsina Creek in Resurrection Bay (Table 6), continuing the trend of weak returns to this system.

Coho salmon are not normally a commercially important species in the Eastern District but are an integral component of an enhancement project, originating from Bear Lake, which benefits sport

fishermen in area waters. Because the Resurrection Bay Salmon Management Plan specifically directs the Department to manage coho stocks there for recreational use only, coho salmon may not be retained in the commercial fishery. However, all sport-caught coho salmon entered into the Seward Silver Salmon Derby are subsequently sold by the city of Seward, organizer of this sport fishing derby, to a commercial processor. Therefore, these catches are considered “commercial harvests” and are listed in the commercial catch tables to document this fact. In 2002, a total of nearly 2,700 cohos were entered into the Seward Silver Salmon Derby (Tables 1 and 4). In addition, a portion of the returning adults from the enhancement project are harvested at the Bear Creek weir by CIAA as cost recovery for expenses incurred. During years when the salmon market was strong, CIAA traditionally sold most cost recovery cohos to a commercial processor(s). Because market forces now make product quality a central issue, many of the cohos taken at the weir are unmarketable due to excessive fresh water marking. As a result, the majority of cohos caught for cost recovery this season were donated to various individuals, many of whom were dog mushers, although the association did sell a small percentage. Total hatchery harvest from the Bear Creek weir was just over 1,700 cohos (Tables 1 and 4), comprising about one-fifth of the entire LCI coho catch this season. Just under 900 cohos were collected for hatchery brood stock, while an additional 900 fish were allowed into Bear Lake as escapement (Table 4). Total commercial catch in the entire Eastern District amounted to about 3,800 cohos (Table 4, Appendix Table 17), just over half of the recent 10-year average of 6,600.

SALMON ENHANCEMENT AND REHABILITATION

Introduction

Fisheries enhancement has played a major role in LCI salmon production for over two decades. Natural adult salmon returns to the LCI area continue to demonstrate wide fluctuations, often the result of environmental impacts such as streambed scour, de-watering, or redd freeze-out on spawning grounds, all of which potentially lower marine survivals. 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 ADF&G and presently being undertaken by CIAA provided an estimated 39% (907,600 salmon) of the total 2002 LCI commercial harvest of 2.3 million fish, while Port Graham Hatchery Corporation (PGHC) and Nanwalek Salmon Enhancement Project (NSEP)-managed projects produced an estimated cumulative harvest of 270,400 fish, or almost 12% of the total, in 2002. The Leisure/Hazel, Kirschner and Bear, Lakes sockeye salmon enhancement projects produced approximately 69% (199,700 fish) of the total LCI sockeye harvest of 290,650 fish in 2002, down from the record high of 84% contribution in 1995 and 1999. Tutka Lagoon Hatchery production accounted for 36% (707,900 fish) of the 2002 LCI commercial pink salmon harvest of 1.97 million fish.

Using average weights per fish and average prices per pound in LCI, the estimated contribution of ADF&G, CIAA and PGHC/NSEP-produced salmon was 57% (\$0.768 million) of the \$1.36 million total value of the 2002 LCI commercial salmon harvest. About 28% (\$0.39 million) 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 major renovation work during the winter of 1993-94, 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 was discontinued in favor of recent efforts directed toward sockeye salmon. Although the hatchery now has a sockeye egg capacity of 1.8 million eggs, and raceways to accommodate the resulting fry, efforts to incubate and rear sockeye smolts have been plagued by the IHN virus, resulting in an indefinite suspension of the sockeye program.

In 2002, the total return of adult pink salmon produced by Tutka Lagoon Hatchery amounted to approximately 872,000 fish (Table 9). No attempt was made to identify the contribution resulting from natural spawning in Tutka Creek. The estimated 0.9% overall survival rate this season was a decrease over the 1.1% survival experienced in 2001 and the third lowest since hatchery operations began. The commercial harvest, including cost recovery, of 707,900 pink salmon from Tutka Bay and Lagoon (Table 9), accounted for approximately 74% of the pink salmon landed in the Southern District and 36% of the entire LCI commercial pink salmon harvest. Pinks taken for hatchery cost recovery purposes from the Tutka Bay Subdistrict totaled 703,200 fish, worth approximately \$170,100, which fell short of the \$627,000 sales revenue goal for 2002. Approximately 100.0 million short-term reared pink salmon fry were released into Tutka Bay in 2002 (Appendix Table 34), the highest since 1996 and the second highest on record. In an effort to reduce predation on the newly released fry, and to improve efficiency in future cost recovery harvests, over 80 percent of the pink fry in 2002 were released outside of Tutka Lagoon (into Tutka Bay proper).

Leisure and Hazel Lakes Sockeye Salmon Stocking

Leisure (China Poot) Lake, located on the south side of Kachemak Bay across from the Homer Spit, 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 inception of these projects, nearly 2.3 million adult sockeyes were estimated to have returned as a result of these stocking programs (Appendix Table 15), making significant contributions 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 cumulative total sockeye return to Leisure and Hazel Lakes in 2002 was estimated at 156,700 fish (Figure 10, Appendix Table 15), an increase over last year's return of 132,500 fish. The cumulative commercial harvest of 151,000 fish comprised over 69% of the Southern District sockeye harvest and about 52% of the total LCI sockeye salmon harvest.

Leisure Lake was stocked with 2.25 million fry in 2002 (Appendix Table 34), while Hazel Lake was stocked with 1.3 million fry. These figures compare similarly to those of most other years during the past decade.

English Bay Sockeye Salmon Rehabilitation

The English Bay Lake system has the only significant stock of sockeye salmon native to 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). The decline of the English Bay sockeye run resulted in a very restrictive management strategy for this area. The commercial, sport, and subsistence fisheries were closed during the sockeye run for most years mentioned. Efforts to rehabilitate this depressed stock were initiated by ADF&G with an egg take in 1989 and the subsequent release of 350,000 sockeye salmon fry in 1990 (Appendix Table 34). Chugach Regional Resources Commission (CRRC), in cooperation with the village of Nanwalek (formerly English Bay) and the Bureau of Indian Affairs (BLA), has since taken over this enhancement project under the title of Nanwalek Salmon Enhancement Project (NSEP) and continued brood stock and egg collections/incubation, fry rearing, fry stocking, and operation of a smolt/adult enumeration weir.

Whereas the escapement figures for English Bay Lakes prior to 1994 were index estimates based on aerial surveys, escapements beginning with the 1994 season have been monitored through the use of a counting weir, operated by NSEP. The cumulative total that first year numbered 13,800 sockeyes (Appendix Table 23), 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 and 1996, the weir totals were 22,500 and 12,400, respectively, with the former representing the highest figure over the past 20 years.

In the early 1990's, optimum escapement for this system was estimated to be less than the original 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 was adopted by ADF&G staff, representatives of CRRC/NSEP, and village residents from Nanwalek during meetings held over the winter of 1995-96. This escapement goal remained in place during the years 1996 - 2001. After the 2001 season, the Department conducted an escapement goal review for all salmon systems in the LCI management area and presented the results to the Alaska Board of Fisheries (BOF) at its Anchorage meeting in November 2001. The BOF approved the new sustainable escapement goals proposed by the Department, and the new goals were implemented for the first time in 2002. Based on the Department's analysis, the new sustainable escapement goal (SEG) for English Bay Lakes was expressed as a range of 6,000 to 13,500 sockeyes. When the sockeye enhancement project's 2002 brood stock requirements, which are removed from the escapement into the lakes, were added onto the SEG, the desired in-river return became a range of 7,300 - 14,800 sockeyes (mid-point 11,050) for the 2002 season.

Approximately 30,000 harvestable adult sockeye salmon were forecasted to return to English Bay Lakes in 2002 as a result of combined fry and smolt releases of 1.15 million in 1999 and 1.0 million in 2000. Unlike last year, when a dismal sockeye forecast precluded the opening of the commercial set gillnet fishery, and the subsistence fishery was closed near the beginning of the sockeye return within both sections of the Port Graham Subdistrict, this year both fisheries were allowed to open and continue to the regulatory closing date of September 30. Over 14,800 sockeyes were harvested during the 2002 commercial set gillnet fishery, while residents of Nanwalek reported a harvest of more than 10,000 fish in the local subsistence and sport fisheries. Port Graham residents also likely took additional but undetermined numbers of sockeyes. Cost recovery efforts netted another 20,800 fish for NSEP, bringing the cumulative total to nearly 46,000 sockeyes, exceeding the forecasted harvest by an estimated 16,000 fish.

The NSEP enumeration weir was installed in English Bay River and became operational on June 3, after an estimated 300 sockeyes had already passed upstream. Relatively strong passage rates were documented throughout the return, with cumulative counts totaling higher than the historic average. The peak daily count occurred on June 26 when 2,862 fish were tallied, and on the last day of weir operation (July 28) the cumulative escapement totaled 16,850 sockeyes (Table 3, Appendix Table 23), surpassing the desired in-river goal.

No fry were released into English Bay Lakes during 2002 because no eggs were collected during the 2001 brood year. Normally brood stock are collected in late summer when fish move into shallow nearshore waters of the lakes to spawn, but in 2001 the fish inexplicably remained in deep water, making brood collection impossible. Brood stock and egg collection in 2002 was much more successful, with an estimated 1.419 million green sockeye eggs collected from 1,573 adult sockeyes this season.

Bear Lake Sockeye Salmon Enhancement

Bear Lake, located near Seward at the head of Resurrection Bay in the Eastern District, has been the target of sockeye salmon enhancement efforts over recent years. Since 1962, this system has also been the centerpiece of a Sport Fish Division coho salmon enhancement program, 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 fry, fingerlings, and accelerated growth ("zero check") smolts have occurred, ranging from 0.2 to 2.4 million juvenile sockeye salmon each year (Appendix Table 34).

The first year of enhanced adult returns in 1992 was discouraging, with a total of less than 2,000 fish, but returns increased during each of the following three seasons. The return in

1996 was almost identical to that of 1995, totaling nearly 53,000 sockeyes, the highest to date. Since 1996, returns have not met the system's hypothesized potential.

The forecast for harvestable sockeye bound for Bear Lake increased to 11,000 fish in 2002 (versus 3,000 in 2001, but still considerably less than peak years), mostly because of an increase in smolt outmigration numbers in 2000. Because of the relatively low adult return forecast, and because an escapement near the upper end of the desired in-river range of 3,000 to 13,000 sockeyes for Bear Lake was sought (to accommodate an increased egg-take goal), a conservative fishing schedule was again implemented in 2002 for the waters of Resurrection Bay. For the second consecutive season, fishing time was reduced from the previous years' five days per week to two 40-hour periods per week (from 6:00 a.m. Monday until Tuesday at 10:00 p.m. and from 6:00 a.m. Thursday until 10:00 p.m. on Friday) beginning May 20.

Commercial harvests as well as escapement trends were monitored closely, and by June 9, Resurrection Bay seine catches totaled more than 13,000 sockeyes, exceeding the projected harvest level and suggesting a stronger than forecasted return. However, only about 1,800 sockeyes had passed the Bear Lake weir by June 8, far short of the desired in-river escapement goal of 5,600 to 13,200 fish. Therefore, in an effort to increase the escapement rate into Bear Lake, commercial salmon seining was closed effective 6:00 a.m. Monday, June 10, until further notice. The closure succeeded in increasing escapement rates, which peaked with a daily count of 1,400 fish on June 18, and the final cumulative escapement was 12,500 sockeyes for the 2002 season. By the time the escapement goal was assured in late June, the projected surplus was deemed inadequate to justify commercial seining, therefore the fishery never reopened after the initial closure. The cumulative seine harvest for the season was 13,400 sockeyes, while CIAA cost recovery harvests of sockeyes at the Bear Creek weir totaled an additional 1,900 fish. When combined with the escapement and the 800 fish that were harvested at the weir and donated (due to product quality concerns), the 2002 Bear Lake total return equaled 28,700 sockeyes, making the commercial catch (common property, hatchery cost recovery and donations) the second lowest since 1994.

Approximately 2.40 million sockeye fry were released into Bear Lake during 2002 (Appendix Table 34), while 6.1 million sockeye eggs were collected for incubation over the 2002-2003 winter at Trail Lakes Hatchery in Moose Pass.

Grouse Lake Sockeye Salmon Stocking

A second sockeye enhancement project in Resurrection Bay of the Eastern District was initiated at Grouse Lake in 1994, and all returning Grouse Lake sockeyes were designated for hatchery cost recovery in accordance with the Trail Lakes Hatchery Basic Management Plan, therefore a directed common property seine fishery has never been allowed on this return. Brood stock for this project was originally collected from Packers Lake on Kalgin Island in Upper Cook Inlet (UCI), but in subsequent years brood stock was also taken from Tustamena Lake in UCI. These two stocks were selected specifically for their late run timing characteristics so as not to overlap with the earlier Bear Lake sockeye return.

The first adult salmon from the initial 1994 release were expected to return in 1996. Smolt releases continued annually through 1998, except in 1996 when the IHN virus was detected during Trail Lakes Hatchery operations and all fish were destroyed. The number of smolt released into Grouse Lake has ranged from 0.57 million in 1994 to 1.9 million in 1997 (Appendix Table 34), but sockeye stocking at Grouse Lake was discontinued after 1998. Because of inconsistent adult returns to Grouse Lake, ranging from an estimated 800 fish in 1996 to 100,000 in 1999, and also because of issues regarding product quality, CIAA ceased sockeye enhancement at Grouse Lake and instead began to increase early-run sockeye production at nearby Bear Lake. Due to the discontinuation of stocking after 1998, no adult return forecast was generated for Grouse Lake in 2002, and no attempt was made to harvest or enumerate the few adults that may have returned to the system this year.

Chenik Lake Sockeye Salmon Enhancement

Chenik Lake, located in Kamishak Bay on the west side of LCI, historically was an excellent sockeye producer prior to the 1940's when annual runs approached 150,000 fish. After that time,

The aforementioned schemes of reduced adult escapements and decreased stocking levels appeared to successfully reduce the incidence of IHN in the system as evidenced by the healthy smolt leaving the lake from 1994 - 1996. Unfortunately, the numbers of outmigrating smolts during that time were miniscule relative to the stocking levels, and measures taken failed to achieve the expected increase in production at Chenik Lake. As a result, CIAA could no longer justify the expense of stocking Chenik Lake and discontinued the project after the 1996 season. The Department and CIAA will continue to include Chenik Lake in future enhancement considerations, but new information will undoubtedly be required before any projects are undertaken at the system.

Other Sockeye Salmon Lake Stocking

Kirschner Lake in the Kamishak Bay District was stocked with sockeye fry for the first time in 1987 (Appendix Table 34), and 2002 marked the thirteenth year that adult sockeyes have returned to this site. The 2002 return totaled around 36,000 sockeyes, which included the hatchery cost recovery harvest of 32,500 fish plus an estimated 4,000 fish left on the grounds after the last harvest. This year's return once again exceeded the preseason forecast, by an estimated 82% or approximately 16,300 fish. About 302,000 fry were stocked into Kirschner Lake in 2002, slightly more than the traditional figure stocked throughout most of the 1990's. The Kirschner Lake system has remained one of the steadiest producers of LCI stocked lakes since the inception of the program at that site.

No fish were expected to return to nearby Bruin Lake in 2002 as well as three other Kamishak area lakes, Ursus Lake, Upper Paint Lake, and Lower Paint Lake. These lakes were all evaluated through pre-stocking studies conducted between 1986 and 1989, and were regularly stocked between 1988 and 1996 (Appendix Table 34). However, CIAA stocked Upper Paint Lake for the first time since 1996 with 536,000 sockeye fry/pre-smolts in early October of 2002. An amendment to the 2002 Trails Lake Annual Management Plan granted the association authorization to experimentally stock these juveniles that were surplus to the original 2002 AMP stocking schedule, a result of unexpectedly high survival rates during the incubation phase at Trails Lake Hatchery. This was the first time the Paint River Lakes system

has ever been stocked in the fall with fry that were reared to the pre-smolt stage; all previous releases were of traditional spring/early summer fry releases.

Halibut Cove Lagoon and Seldovia Bay Chinook Salmon Enhancement

Chinook salmon enhancement projects at Halibut Cove Lagoon and Seldovia Bay involve the release of chinook salmon smolts, with the objective of increasing sport fishing opportunities in Kachemak Bay. The program at Halibut Cove Lagoon is the oldest and one of the most popular sport fishing enhancement projects in LCI, operating continually with an annual release of smolts since 1979. Although adult returns from the two stocking programs are not intended for commercial harvest, there is incidental harvest of these chinook salmon in the commercial set gillnet and seine fisheries. The long-term estimated incidental harvest of enhanced chinook salmon by commercial fishermen in Halibut Cove Subdistrict has been approximately 30% of the total return. No such estimates are available for the commercial fishery in Seldovia Bay Subdistrict. Figures for the incidental chinook harvest during 2002 were not generated but were thought to be near the historical average. The commercial harvest of chinook salmon in Halibut Cove and Seldovia Bay Subdistricts this season totaled approximately 889 and 216 fish, respectively (Table 2), while just over 300 chinook were taken in Tutka Bay Subdistrict. Historical releases of juvenile chinook salmon at these two project sites are found in Appendix Table 34.

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 (PGHC) 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 subsequently been permitted in the Port Graham Hatchery Basic and Annual Management Plans (BMP/AMP). Original startup brood stock was collected from a natural run

of pinks in the Port Graham River, at the head of Port Graham, and the PNP permit for PGHC allows for continued pink salmon brood stock collection from Port Graham River. 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 sustainable escapement goal for 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.

Harvest of both natural and hatchery stocks could potentially occur in commercial purse seine and set gillnet fisheries as well as a subsistence set gillnet fishery in Port Graham since the returning hatchery fish would undoubtedly intermix with wild stocks bound for the Port Graham River. Management decisions attempt to address the effects of these various fisheries to protect natural stocks until adequate escapement into Port Graham River can be confirmed. 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 also strive to protect this species as well.

The approved Port Graham Hatchery BMP designated a salt water Special Harvest Area (SHA) to allow for brood stock collection and cost recovery harvest (Figure 6). 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, thus affording some limited protection to the natural spawning stocks of pink and chum salmon.

Initial adult returns to the hatchery in both 1992 and 1993 failed to appear 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, while only 2,700 fish returned in 1996, when the preseason forecast called for 7,000 to 10,000 returning pinks. In 1997, returns finally fell within the preseason forecast range of 80,000 to 200,000 pinks, with a total run size estimated at about 130,000 fish. Despite a forecast of 30,000 to

50,000 fish in 1998, the return totaled less than 13,000 pinks. Because of a fire in January 1998 that destroyed all of the hatchery pinks and sockeyes in incubation at the time, no pink salmon returned to the hatchery in 1999. In 2000, all returning pink salmon (38,500 fish) were taken for brood stock, as was the case in 2001 when 19,000 fish were tallied.

The release of 27.3 million pink salmon fry from the Port Graham Hatchery in the spring of 2001 was the highest release to date and generated a positive adult return forecast for 2002 of approximately 864,000 fish. However, the actual return, which included both fish taken for cost recovery as well as brood stock, totaled slightly over 335,000 fish, less than half the forecasted return but, nevertheless, a record return for the hatchery facility. Nearly 238,000 fish, or about 71% of the total return, were utilized for cost recovery purposes. In the Port Graham River approximately 58,500 pink salmon were counted as escapement, also a record high for that river. An estimated 6.604 million pink salmon fry were released from the Port Graham hatchery facility in the spring of 2002 (Appendix Table 34). A total of 96,400 pinks were collected by the hatchery for brood stock purposes in 2002, resulting in the collection of 77.362 million green eggs.

Although all efforts prior to 1993 were directed towards pink salmon, sockeye salmon production has also been underway at the Port Graham Hatchery. The facility has incubated sockeye salmon eggs collected from English Bay Lakes enhancement project since 1993 (eggs from this collection site were formerly incubated at Tutka Hatchery in the Southern District and Big Lake Hatchery near Wasilla), with the resulting fry destined for eventual release back into that system. Fry resulting from the sockeye brood stock are transported back to lake system the following spring for either direct release or long-term rearing in net pens prior to release into the lakes (for additional information, see the previous “English Bay Sockeye Salmon Rehabilitation” section).

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. ADF&G 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.

To test the feasibility of developing a sockeye salmon return to the fish pass project site, the Paint River Lakes were first stocked with sockeye fry in 1986 and annually from 1988 through 1996, except in 1994 when no fry were available (Appendix Table 34). Because adult returns from these plantings proved negligible, CIAA discontinued fry stocking after the 1996 season (except for this year's experimental release, see previous heading "**Other Sockeye Salmon Lake Stocking**"). Only 30 adult sockeyes were observed during aerial surveys of the Paint River mouth and Akjemguiga Cove during 2002, the twelfth consecutive year of meager returns to this enhancement site. Because of the small numbers of returning fish, the fish pass was never opened to migrating adult salmon and no freshwater escapement has ever occurred.

2003 COMMERCIAL SALMON FISHERY OUTLOOK

Sockeye Salmon

Commercial sockeye salmon harvests in LCI during 2003 could exceed 306,000 fish, which is about 14% greater than the recent 10-year average. Nearly three-fourths of the total sockeye harvest should be a result of continuing enhancement and lake stocking projects in LCI. Forecasted returns to enhancement sites at Leisure and Hazel Lakes in the Southern District during 2003 are considerably below the estimated average over the past decade, with a return of about 45,000 sockeyes anticipated at Leisure Lake/China Poot Bay and an additional 37,000 sockeyes expected to return to Hazel Lake/Neptune Bay.

Kirschner Lake in the Kamishak Bay District is expected to produce nearly 22,000 adult sockeyes in 2003. This projection is based on a lower than normal stocking rate in 1999 combined with average survival rates over the past decade. Stocking in other Kamishak Bay

systems, such as Bruin, Ursus, and Paint River Lakes, has now been discontinued, and no returns are expected back to these systems in 2003. No harvest is expected to occur at Chenik Lake in the Kamishak Bay District during 2003 as a result of the discontinuation of the stocking program and also the lingering effects of the previously described IHNV epizootic there.

The 2003 enhanced sockeye return to Bear Lake (twelfth year of enhanced returns) is expected to produce a harvest of over 40,000 fish after accounting for brood stock and escapement requirements. No sockeyes are expected to return to Grouse Lake, also near Seward in Resurrection Bay, in 2003 due to a suspension of the stocking program there.

The preseason forecast for English Bay Lakes in the Southern District calls for a harvest exceeding 75,000 sockeyes in 2003. This optimistic projection results from encouraging smolt outmigration counts combined with estimated survival rates during previous years.

Natural sockeye run projections for LCI are based solely on average historical harvests and could be expected to contribute up to 83,000 fish to commercial catches in 2003. Despite not reaching the preseason projection during recent years, natural sockeye runs have nevertheless improved, with a concurrent improvement in spawning escapements to most systems. The Southern District is expected to contribute the most to the harvest of non-enhanced 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 LCI during 2003 could exceed 1.5 million fish, with enhanced production expected to provide over 60% of the total. Tutka Hatchery in the Southern District is expected to contribute almost 1.0 million pinks to commercial harvests. However, if prices for this species continue to remain depressed, it is likely that Tutka Hatchery will require most if not all of its pink salmon return in order to meet brood stock and revenue requirements. The pink

return to Port Graham Hatchery is expected to provide only enough pinks to satisfy brood stock requirements due to low release levels in 2002.

Natural pink salmon spawning escapement levels into most major LCI systems ranged from fair to excellent in 2001, contributing to a harvest projection of about 570,000 naturally produced pinks throughout the entire LCI management area. The bulk of the predicted surplus is expected to occur in Port Dick. This relatively strong forecast, however, could be tempered by the recent history of erratic tender service in remote districts, and it remains questionable whether the harvest forecast of naturally produced pinks will be attained in 2003.

Chum Salmon

Based solely on recent years' average harvests (after 1988), the total LCI commercial chum salmon catch is projected to reach nearly 23,000 fish during 2003. Chum runs have rebounded during the past three seasons, however, resulting in commercial catches that exceeded the 2003 forecast figure in each of those years. This suggests that actual harvests during 2003 could be greater than the projection. The LCI chum harvest will consist exclusively of natural production since chum salmon enhancement is no longer conducted in LCI.

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 14,000 coho salmon can be expected to contribute to LCI commercial harvests in 2003.

The following table summarizes the projected harvest figures by species in the Lower Cook Inlet management area during 2003:

Species	Harvests of Enhanced Returns	Harvests of Natural Returns	Total Harvest
Chinook	^a	^a	1,300 ^a
Sockeye	224,300 ^b	82,600 ^c	306,900
Coho	^a	^a	13,800 ^a
Pink	960,300 ^b	568,300	1,528,600
Chum	0	22,700 ^c	22,700
TOTAL	1,184,600	673,600	1,873,000

^a Commercial harvest forecasts of chinook and coho salmon represent average harvests since 1980 and are comprised of a combination of naturally-produced fish as well as fish produced from enhancement programs in LCI; no attempt is made to separate the two components.

^b Includes common property plus cost recovery harvests.

^c Harvest forecasts for naturally-produced sockeye and chum salmon are simply average commercial harvests since 1980 and 1989, respectively.

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, 1993, and 1995-present, and as a “subsistence” fishery in 1991, 1992, and 1994. Numerous court rulings have affected the status of this fishery over the past 20 years, causing it to change in status between the two categories. The most recent court action, after the 1994 fishery, reestablished the “subsistence” and “non-subsistence” areas originally created by the Alaska Board of Fisheries (BOF) 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 BOF re-adopted personal use regulations governing this fishery into permanent regulation for the 1995 season and rescinded the subsistence regulations formerly governing the fishery; those personal use regulations have remained in effect since that time.

The target species in the Kachemak Bay gillnet fishery is 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, formerly, Fox

Creek/Caribou Lake 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). The BOF last addressed this fishery during their November 1998 meeting in Homer. After hearing the staff's concerns regarding the harvest of wild stocks of cohos, the BOF adopted a change to the regulatory guideline harvest range (GHR), from a former range of 2,500 to 3,500 coho salmon to a new range of 1,000 to 2,000 cohos. The new GHR was implemented for the first time during the 1999 season. Incorporated into the management plan is a requirement that cohos taken during the earlier Seldovia area subsistence salmon fishery be included as part of the personal use guideline.

All regulations from the previous year's fishery remained essentially unchanged for the 2002 personal use fishery. This year's fishery opened on the regulatory opening date of August 16. However, since the fishery occurs on a schedule of two 48-hour fishing periods per 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., the 2002 fishery would begin during darkness at 12:01 a.m. Friday, August 16, if allowed to open by regulation. Therefore, the Department delayed the opening through *LCI Emergency Order (E.O.) No. 2-F-H-017-02* for six hours until 6:00 a.m. Friday, August 16, thus providing participants with adequate daylight to set gear and allowing for more efficient 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. Prior to 1991, little inseason Department management interaction occurred and the fishery often proceeded until the regulatory closing date of September 15, regardless of the harvest level. Between 1991 and 2001, years of intensive management for the GHR, fishing time allowed in this fishery ranged from 72 to 192 hours.

One permit was issued for the early August Seldovia subsistence fishery, resulting in a catch of less than 15 cohos and thereby slightly reducing the personal use fishery guideline harvest range. Prior to the opening on August 16, the Department requested voluntary daily reporting from

each permit holder during the fishery, as has been the case since 1991. This year the first fishing period lasted only 24 hours because of the aforementioned delay in the opening time, closing on a Saturday morning. As a result, meaningful catch reporting did not commence until after the second fishing period was already underway. Catch information collected through the first day of the second period, which was slated for 48 hours, showed a total of 926 coho salmon harvested by 41 (or about 34%) of the 122 permit holders. When compared to historical data, the catch suggested an exceptionally strong coho return and catch rate. With nearly 93% of the lower end of the GHR already achieved, staff determined that the coho harvest would easily fall within the 1,000-2,000 fish GHR by the end of the current (second) fishing period. In addition, it became apparent once again that the low level of volunteer catch reporting was not accurately reflecting actual total catches. For these reasons, *LCI E.O. No. 2-F-H-020-02* was issued closing the 2002 Personal Use Coho Salmon Fishery at the conclusion of the second fishing period at 6:00 a.m. Wednesday, August 21, for the remainder of the season, after only 72 hours of fishing time.

A total of 122 permits were issued for the 2002 fishery (Appendix Table 29). Approximately 93%, or 113 permit holders, reported their catches by phone or returned their permits. A total of 93 permit holders (76%) actively fished, 20 (16%) did not fish at all, and the remaining 9 permit holders (8%) did not report or return their permit. Based on permits actually returned and voluntary catch reports, the harvest was estimated to be 1,521 coho salmon, 251 pink salmon, 33 sockeye salmon, 61 chinooks, and 12 chums (Appendix Table 29).

The duration of the 2002 Southern District personal use fishery (72 hours of fishing time) was the shortest since 1994 and 1995 when fishing time was 72 and 73 hours respectively. The number of permits issued (122) was the lowest since 1971, well before production from Kachemak Bay coho enhancement programs started contributing to the fishery. However, slightly over 76% of the permits issued actually fished, one of the highest percentages of actively fished nets since 1969, when harvest data for this fishery began. The harvest of 1,521 coho is nearly the same as last year's harvest of 1,579 fish and down slightly from the average harvest of 1,738 fish since 1999, when the lower 1000-2000 fish GHR was implemented.

Reasons for the decreased effort are difficult to explain. Permits for, and catches in, the personal use fisheries north of Homer (e.g. the Kasilof and Kenai River dip and set gill net fisheries) have been relatively high in recent years. Since current regulations prohibit issuance of more than one Cook Inlet personal use permit to a household in any calendar year, individuals must choose only one Cook Inlet fishery in which to potentially participate. Many individuals now choose to forego the LCI coho fishery and instead participate in one of the Upper Cook Inlet personal use sockeye fisheries, perhaps due to a preference for sockeyes over cohos, or perhaps due to a preference for dip netting as opposed to set gillnetting.

Fishing time for the 2002 season was only 72 hours, the shortest time since 1994 and 1995 and less than half of the 192 hours in 1999, the first year that the lower GHR was implemented. One possible explanation for the shortness in this year's fishery lies in the recent stocking and return of cohos with an earlier run timing. In an effort to provide added sport fishing opportunities and continuity with the earlier return of chinook salmon to the Homer Spit fishing lagoon, the Sport Fish Division last year began stocking coho salmon with earlier run timing characteristics (Ship Creek brood) than the traditional late run cohos (Bear Lake brood) previously stocked. Juvenile cohos from the traditional "late run" Bear Lake brood stock were also released in 2001, meaning that both early and late run fish would be returning to the lagoon during 2002. Adults resulting from the early run release were observed in the lagoon as early as July 20 this year, which roughly coincided with the end of the chinook return. The midpoint of the earlier returning coho is approximately mid-August and nearly corresponds with the regulatory opening date of the personal use fishery, while the midpoint of the late run fish is approximately the end of August. It is assumed that the recently introduced earlier returning coho, combined with the beginning of the traditional later run, increased the 2002 catch rates, particularly during the first 24-hour period, consequently leading to the shortened fishery. Stocking of the later returning coho may be discontinued unless additional funding sources are found.

Due to the abbreviated nature of the personal use fishery during most of this decade, the staff made a concerted effort prior to the opening to inform the public of the anticipated short duration, which has become common knowledge among experienced local participants. As usual, this prior knowledge of the brevity of the fishery led to intense competition for desirable fishing

sites, especially along the east side of the Homer Spit. This area continues to remain the most sought after location to fish, undeniably due to the coho enhancement project at the Homer Spit fishing lagoon. As expected, the most fishing success this season occurred in those waters adjacent to the Homer Spit enhancement lagoon. Other areas that previously produced reasonable catches during years of Caribou Lake enhancement, especially along the north shore of Kachemak Bay from Mud Bay to Swift Creek, were not expected to produce significant harvests this season and indeed didn't.

Prior to enhancement, the Spit was considered only average in terms of harvest productivity. The Spit's easy road access and the enhanced coho return have combined to incite fishermen to clamor for fishing sites on the Spit, a situation which resulted in numerous violations during some previous gillnet fisheries. The last time that Fish and Wildlife Protection (FWP) officers issued citations during this fishery was in 1994. Since then, numerous verbal warnings have been issued, and many complaints received via telephone in the Homer ADF&G office, regarding infractions. This year FWP officers were on site for the beginning of the fishery, with one additional follow-up visit on that first day and another check during the second fishing period. As is usually the case, the presence of these uniformed FWP officers generated relatively expedient voluntary compliance; no formal citations were issued and only one verbal warning given.

The lower GHR implemented in 1999 appears to have succeeded at protecting the majority of naturally produced cohos by prompting a fishery closure prior to the peak of those stocks' migration. Catch data indicates that the coho harvest fell near the midpoint of the 1,000-2,000 fish GHR. Although no tagged adult fish returned to the enhancement lagoon this year, tag recovery analysis from 2000 indicated that approximately 80% of the cohos caught during the set gillnet fishery were of hatchery origin.

Overall run strength of coho returns to Kachemak Bay this year appeared to range between average and above average. Sport and commercial catches are normally utilized as indicators of run strength, but as has become commonplace in recent years, commercial catches in LCI did not accurately reflect the strength of the 2002 coho return due to a lack of directed effort.

Informal observations conducted in the local sport fishery by Sport Fish Division staff, indicated relatively strong returns to the enhancement lagoon. This year's aerial surveys of Clearwater Creek, the major coho index stream at the head of Kachemak Bay, substantiated the above average return of cohos to the area. Two surveys were conducted, the first on August 28 when 400 cohos were estimated, and the second on September 10 when over 1,300 cohos were estimated. The latter figure was considered excellent for this drainage by historical standards.

The 2002 catch of 61 chinook salmon was approximately 5% higher than the long term average (1969-2001), but the lowest since returns of late-run chinook salmon, stocked by the Sport Fish Division, began overlapping personal use season dates (Appendix Table 29). Furthermore, the Sport Fish Division discontinued stocking the late-run chinook in 1999, which will undoubtedly result in reduced catches of chinook in future personal use fisheries.

The catch for the 2003 personal use fishery is expected to be comparable to the previous four-year period, 1999-2002, a period when adult contribution from Caribou Lake enhancement no longer contributed to the fishery. However, the length of time to achieve a harvest within the GHR is difficult to forecast particularly when comparing this year's relatively short fishing time of 72 hours to that as recently as 1999 (192 hours). Additionally, if the newly introduced earlier returning coho continue with the same timing as this year, the length of time needed to achieve a harvest within the GHR could continue to be minimal, which should serve to provide further protection to the wild stock coho salmon bound primarily for the Fox River drainage at the head of Kachemak Bay. This stock of wild coho exhibits a later return timing, which peaks near the first of September. Fishing effort and participation in the 2003 fishery is expected to be comparable to that of the past four years when the fishery was managed with the 1,000-2,000 fish GHR in place, but once again could be affected by other 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. Based on experience gained during the past ten years' fisheries, and especially that of the past five seasons, it should be possible to keep the harvest within the GHR.

NANWALEK/PORT GRAHAM SUBSISTENCE FISHERY

One of LCI's two subsistence fisheries during 2002 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). Gear in this fishery is limited to set gillnets. Most fishing occurs within close proximity to the respective villages, primarily targeting sockeye salmon returning to the English Bay Lakes system early in the summer, although participants will occasionally target pink salmon returning to Port Graham and English Bay Rivers later in the summer. 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 was severely depressed for much of the late 1980's and early 1990's, with returns failing to achieve the minimum escapement goal for nine consecutive years between 1985 and 1993 (Appendix Table 23). Recent returns have been bolstered as a result of a rehabilitation/enhancement project initiated by ADF&G and subsequently taken over by the Nanwalek Salmon Enhancement Project (NSEP) in conjunction with Chugach Regional Resources Commission (CRRC) and the village of Nanwalek.

Approximately 30,000 harvestable adult sockeye salmon were forecasted to return to English Bay Lakes in 2002 as a result of combined fry and smolt releases of 1.15 million in 1999 and 1.0 million in 2000. Unlike last year when a dismal sockeye forecast forced the premature closure of the subsistence fishery near the beginning of the sockeye return (May 30) within both sections of the Port Graham Subdistrict, this year the fishery was allowed to open on the regulatory opening date of April 1 and continue to the regulatory closing date of September 30. Subsistence Division end-of-year summaries were incomplete at the time of publishing but did indicate that the strong sockeye return to English Bay Lakes allowed the residents of Nanwalek to harvest over 10,000, the highest total on record (Appendix Table 32). It must be pointed out that this figure includes harvests from all gear types, including set gillnet, rod-and-reel, and handline. Salmon harvests for the village residents of Port Graham in 2002 were not available at the time of this report, but historical catches appear in Appendix Table 31. The

enumeration weir operated by NSEP at English Bay River monitored sockeye escapement inseason, as has been the case since 1994, with a final escapement estimate of 16,850 fish, surpassing the upper end of the 6,000-13,500 fish desired in-river goal.

Because of recent sub-par salmon returns to the Port Graham Subdistrict, village residents have encountered difficulty meeting their subsistence salmon needs during some seasons. Consequently, a proposal to add waters of Port Chatham and Windy Bay to the area open to subsistence fishing was submitted to the Alaska Board of Fisheries (BOF) at their November 2001 meeting. The BOF amended and subsequently adopted the proposal, allowing fishing weekly from 10:00 p.m. Thursday to 10:00 a.m. Wednesday between April 1 and September 30 in waters of Port Graham and Koyuktoalik Subdistricts. However, in waters of Port Chatham and Windy Bay Subdistricts, the BOF established identical weekly fishing periods but chose season dates for these two subdistricts from April 1 until August 1 to protect returning coho salmon. Because of the strong sockeye return to English Bay Lakes this season, no subsistence fishing effort was known to occur in Port Chatham or Windy Bay Subdistricts during 2002.

SELDOVIA AREA SUBSISTENCE SALMON GILLNET FISHERY

The set gillnet fishery in waters near Seldovia on the south side of Kachemak Bay in 2002 was the seventh year of LCI's newest subsistence salmon fishery. Established by the BOF at their LCI meeting in the fall of 1995, the fishery was designed to primarily target non-local stocks of chinook salmon as they transited these waters. In considering initial seasons and bag limits, the BOF carefully restricted the fishery to reduce potential interception of enhanced chinook salmon bound for a popular stocking site in the Seldovia small boat harbor. These enhanced fish were intended to principally benefit sport fishermen and were not considered "customary and traditional" for subsistence purposes.

Regulations in the fishery included a "split" season, the first occurring from April 1 through May 30 and the second occurring during the first two weeks of August. A guideline harvest

limit of 200 chinook salmon was established for the early season, while the annual possession limit was set at 20 chinooks per household. During the April/May season, fishing was allowed during two 48-hour periods each week, while in August the fishery was only open during the first two weekends of the month. Waters open to fishing included those along the eastern shore of Seldovia Bay as well as a short stretch of water outside of Seldovia Bay proper just west of Point Naskowhak (also called the “outside beach”). Gear was limited to set gillnets not exceeding 35 fathoms in length, 45 meshes in depth, and six inches (stretched) mesh size, identical to gear regulations governing the nearby Port Graham/English Bay subsistence fishery. A permit issued by the Department was required prior to fishing, and catches were to be recorded on the permit and also reported to the Department’s Homer office inseason so that cumulative harvest totals could be monitored.

A total of 20 permits was issued for the early season, while one permit was issued for the August season. Although permit holders were required to call in their catches inseason, few actually did, and therefore inseason catch totals were severely underreported. At the close of the early season, 18 of the 20 permits were returned to the Department as required by regulation, and catches were determined from records on each permit. For the early season, 12 of 20 permit holders (60%) actively fished, six (30%) did not fish, and two permit holders (10%) failed to return his/her permit. Total reported catch was 123 chinook salmon and 222 sockeyes (Appendix Table 33). In the late season, the one issued permit reported a harvest of 9 sockeyes, 13 cohos, 31 pinks, and 6 chums.

The 2002 early season all-species subsistence harvest of 348 fish was the second highest since the fishery was established, surpassed only by the 2000 fishery when the harvest totaled 452 fish. This season’s harvest was also higher than the historical average of 243 fish. Sockeye salmon comprised the greatest part of the catch with 222 harvested, up from the 124 caught in 2001 but lower than the record high of 249 sockeyes taken in 2000. The chinook harvest totaled 123 fish, down slightly from last year’s harvest of 134 fish, but higher than the historical average of 118 fish. The relatively high harvests can be attributed to a longer season for the fifth straight year (the BOF adopted a 10-day extension for the early season, from May 20 to May 30, beginning with the 1998 season). This extra time equated to additional

opportunity for participants during a time when numbers of chinook and sockeye salmon in Seldovia area waters were greater, subsequently increasing subsistence harvests. In addition, participants continued to improve their knowledge of fishing techniques and productive locations.

The fishery in 2003 is expected to be similar to that of 2002. Because the fishery is still relatively new, fishermen are continuing to learn the most productive fishing sites and successful techniques. Based on these factors, the harvest during the early season could approach or exceed the guideline harvest limit in 2003.

COMMERCIAL HERRING FISHERY

INTRODUCTION

Similar to the salmon fishery, commercial herring fishing has historically occurred in four of the five management districts, with the Barren Islands District being the sole area where commercial herring fishing has not occurred (Figure 1). LCI herring fishing first occurred in the Southern District in 1914 with development of a gillnet fishery within Kachemak Bay. Eight saltries, including six near Halibut Cove, were operating during the peak of the fishery. A purse seine fishery in Kachemak Bay began in 1923, but after three successive years of average annual harvests approaching 8,000 short tons (st; 1 short ton = 2,000 pounds), herring populations, and hence the fishery, collapsed.

The next LCI herring fishery began in 1939 and was centered in the Resurrection Bay and Day Harbor areas of the Eastern District (Figure 1). Product from this purse seine fishery was used exclusively for oil and meal reduction. Although the fishery continued through 1959, peak harvests occurred from 1944 to 1946 and averaged 16,000 st each of those years. After this time period, stocks sharply declined, apparently due to over-exploitation.

HISTORY AND DEVELOPMENT OF THE SAC ROE FISHERY

Introduction

Japanese market demand for salted herring roe resulted in development of a sac roe fishery in the 1960s. The relatively high prices paid to fishermen caused rapid expansion of the fishing fleet and harvest. In an effort to decrease the risk of a stock collapse and to sustain the fishery, the department established conservative management strategies and guideline harvest levels. Following a period of suspected overexploitation, herring stocks throughout LCI generally declined after 1973. Concern over the declining trend led the Alaska Board of Fish and Game, prior to the start of the 1974 season, to establish a quota of 4,000 st for all of LCI.

The only allowable gear type in the LCI herring sac roe fishery is purse seine. The limited entry permit system for sac roe herring seining in Cook Inlet was implemented in 1977, and at the present time 74 permanent and two interim use permits are issued for the management area.

Outer/Eastern Districts

During the early years of sac roe herring fishing in LCI, seining occurred primarily in the Outer and Eastern Districts (Figure 1), with the majority of effort and harvest once again concentrated in Resurrection Bay of the Eastern District. The first major harvest occurred in 1969, when 760 st of herring were taken in the Eastern District. The catch increased dramatically in 1970 to a record high of 2,100 st in this district, but the stocks, and resultant harvests, declined over the next three seasons. The Alaska Board of Fish and Game allocated 1,000 st from the total LCI quota of 4,000 st to each of the Outer and Eastern Districts beginning with the 1974 season. However, stock abundance continued to decline and these quotas were never achieved. As a result, the Outer and Eastern Districts were closed to herring fishing from 1975 to 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 the stocks' reduced 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) once again was taken in Resurrection Bay. Only limited and sporadic harvests occurred in these two districts after 1985, with the majority of both the herring catch and the observed biomass comprised of fish age 4 and younger.

Despite considerable opportunity for exploratory fishing on a daily basis in the Outer and Eastern Districts during 1991 and 1992, the predominance of juvenile herring and the history of marginally acceptable roe recoveries from fish caught in these areas contributed to a lack of interest by fishermen and processors. These conditions prevailed from 1993 - 2001 and, consequently, the Outer and Eastern Districts were not opened to purse seining in any season during that nine-year period. During their November 2001 meeting, the Alaska Board of Fisheries (BOF) closed these districts to commercial herring fishing by regulation and simultaneously adopted a management plan containing seven specific criteria that must be addressed prior to allowing any commercial herring fishing in the Outer and/or Eastern Districts. Consequently, no harvest or effort occurred in the Outer and Eastern Districts during the 2002 season.

Southern District

Sac roe herring seining in the Southern District began in the early 1960's, but catches were sporadic and relatively insignificant until 1969. That year, over 550 st were taken, followed the next season by a district record high harvest of 2,700 st. Although commercial harvests continued during the 1970's, albeit at much lower levels, observed low abundance of herring has virtually precluded commercial openings during the past 20 years in the Southern District. The only exception occurred in 1989, when 10 vessels in a single 2.5-hour opening harvested 170 st of herring (Appendix Table 35) averaging 8.9% roe recovery.

Similar to the Outer and Eastern Districts, the BOF expressed concern for the herring stock in the Southern District and responded at their November 2001 meeting by closing the Southern District to commercial fishing by regulation and also including it in the previously mentioned management

plan adopted for the Outer and Eastern Districts. Under the new plan, the BOF must address seven specific management considerations prior to allowing a commercial herring fishery in this district.

Kamishak Bay District

Since 1973, the majority of LCI sac roe harvest and effort has occurred within the Kamishak Bay District. Historical commercial harvests ranged from a low of 240 st taken in 1973 to a high of 6,100 st taken in 1987 (Appendix Table 35), with estimated exvessel values ranging from \$70,000 to \$9.30 million (Appendix Table 36). After the initial harvest in 1973, Kamishak Bay herring catches increased dramatically over the next three years, peaking at 4,800 st in 1976. Harvests dropped sharply during the ensuing three seasons, and by 1980 the stock had declined to a point that the Kamishak Bay fishery was closed entirely beginning with the 1980 season.

Although the Kamishak Bay District herring season remained fairly constant during the 1970's, roughly from late April through June, a significant management change occurred during this time. From 1973 through 1977, the fishery was basically "open season until closed", but in 1978 it was changed to "closed season until opened by emergency order" (Appendix Table 37). This change required more active assessment of the herring stock by the Department in order to determine appropriate opening times and harvest levels.

The Kamishak Bay herring stock appeared to respond positively and rebuild rather quickly following the 5-year closure that began in 1980. The fishery was reopened in 1985, with a resulting harvest of 1,100 st (Appendix Table 38). Beginning in 1985, the commercial fishery in Kamishak Bay District was regulated to achieve a 10 – 20% exploitation rate mandated by the Board of Fisheries. From 1985 through 1989, harvests averaged about 3,900 st, with a peak catch of 6,100 st in 1987 (Appendix Table 35). By 1989, fishing efficiency had increased to a level where intensive regulatory management was required to maintain harvests within guideline levels, to direct the fishery at herring aggregations with high quality roe, and to protect younger age herring from harvest.

Management of the Kamishak Bay District between 1990 and 1997 stabilized the average harvest at roughly 40% of the 1987 record high catch. However, hindcast biomass estimates generated by an age-structured-assessment (ASA) model show that stocks were declining steadily throughout the decade (Appendix Table 38, Figure 14), and by 1998 the cumulative commercial herring catch in the Kamishak Bay District totaled only 300 st despite several extended district-wide openings. The fishery was closed beginning with the 1999 season due to low abundance levels and has remained closed since.

The initial Kamishak Bay District Herring Management Plan (KBDHMP) was formally adopted into regulation beginning with the 1993 season. Highlights of the original plan included a minimum biomass threshold of 8,000 st, a maximum exploitation rate of 20% (scaled depending on the forecasted biomass), and a management strategy intended to limit the harvest of herring age 5 and younger. In addition, because the spawning stock of Kamishak Bay herring is believed to reside in waters of north Shelikof Strait in the Kodiak Management Area for at least a part of the year, the KBDHMP dictated that 10% of the allowable harvest of Kamishak Bay herring be allocated to the Shelikof food/bait fishery.

At the November 2001 BOF meeting, Department staff proposed amendments to the KBDHMP in order to make it more conservative. The two key components of the new plan included a reduction in the maximum exploitation rate allowed in the fishery, from a former level of 20% of the forecasted herring biomass to a new level of 15%, and a reduction in the biomass threshold (the minimum volume necessary in order to allow a fishery) from 8,000 st to 6,000 st. The staff reasoned that the decreased exploitation rate, although equating to a smaller annual harvest for the fleet, would help to preclude the extended closures that have plagued the Kamishak Bay commercial herring fishery since its inception. The new threshold level was the result of a biomass threshold analysis conducted by the LCI research staff (Otis, 2001). After careful review, the BOF unanimously adopted the amended KBDHMP into regulation.

2002 SEASON OVERVIEW

Assessment Methods

The primary method of herring biomass assessment in LCI is the aerial survey. Aerial surveys are conducted annually throughout the herring spawning season in the Kamishak Bay and Southern Districts, from late April through early June, to determine relative abundance and distribution of herring. Aerial surveys of the Outer and Eastern Districts are not normally conducted due to the size of the area and the characteristically poor weather in the Gulf of Alaska, which precludes surveys on a regular basis and makes aerial biomass estimation in these districts impractical. Data collection methods in the Kamishak Bay and Southern Districts are consistent between seasons, with numbers and distribution of herring schools, location and extent of milt, and visibility factors affecting survey results recorded on index maps for each survey. Three standard conversion factors are used to estimate herring biomass based on each 538 ft² (50 m²) of school surface area sighted and water depth parameters: 1) 1.52 st for water depths of 16 ft or less; 2) 2.56 st for water depths between 16 and 26 ft; and 3) 2.83 st for water depths greater than 26 ft (Lebida and Whitmore 1985).

Due to invariably poor weather and water clarity, aerial surveys rarely provide reliable estimates of total herring biomass returning to Kamishak District Bay waters (Otis et al. 1998). As a result, an age-structured-assessment (ASA) model has been used for the past nine years to forecast herring abundance for Kamishak Bay, as well as to "hindcast" previous years' total abundance. This dynamic model incorporates a variety of heterogeneous data sources including: times series of commercial catch age composition; total run age composition; and aerial survey biomass estimates from years with adequate survey conditions and coverage. The model simultaneously minimizes the differences between expected and observed return data for each of its components, updates hindcasts of previous years' abundance, and returns a forecasted estimate of the following year's return.

Another tool the Department annually utilizes to aid in herring assessment in the Kamishak Bay District, and opportunistically in the Southern District, is a chartered commercial seine vessel. In years when no commercial fishery occurs, the Department is unable to utilize the fleet to collect

samples for age composition analysis. By chartering a commercial purse seine vessel, samples and other related information can be collected and used to further aid in understanding the dynamics of the herring stocks. As long as sufficient funding is available, separate sampling charters are conducted to sample different portions of the spawning migration (early and late). In years when a fishery occurs (traditionally in the early part of the migration), a single “late season” sampling charter is employed to obtain a more complete picture of the overall return. Hydroacoustic observations and water temperature/depth parameters are concurrently accumulated during the charters. The information gathered during these sampling efforts provides age class data that: 1) allows the staff to generate an age composition estimate of the overall biomass observed by aerial surveyors throughout the entire duration of the spawning migration; and 2) facilitates the evaluation of the relative strength of recruiting year classes. This is critical in generating the annual herring forecast. The charters further serve to informally verify the relative magnitude of herring biomass observed by aerial surveyors.

Kamishak Bay District 2002 Season Summary

Aerial survey coverage for Kamishak Bay in 2002 was considered excellent, while overall observation conditions were considered fair. For the first time in many seasons, no significant “gaps” in coverage, or periods during which no surveys were flown due to poor weather, occurred. A total of 16 surveys were completed in the Kamishak Bay District between April 19 and June 7. Based on historical observations, herring in 2002 were considered rather late arriving in the district, first documented during a survey on April 26 when less than two tons were estimated near Dry Bay at the northern extreme of the district. The highest daily biomass estimation during the seasonal surveying period was made on both May 13 and May 20, with a cumulative estimate of about 780 st made on each of those dates. The largest percentage of each of those surveys’ totals was observed in the Ursus Cove index area.

Only three sightings of spawning activity occurred during surveillance flights, considered relatively normal by recent standards and cumulatively amounting to less than one-fifth of a linear mile of spawn. Due to the often sporadic schedule of surveillance flights, however, no correlation between

documented spawning and herring abundance was attempted. Therefore, the low number of spawn sightings this year is not in itself considered indicative of a weak herring return.

Despite the good coverage and weather, Department aerial surveyors only observed a cumulative total of 3,750 st of herring in the Kamishak Bay District this season, similar to the 2001 season's observed total of around 3,500 st but considerably less than the 10,500 st observed during 2000. Although both the 2001 and 2002 totals were disappointingly low, they served to confirm that the relatively large biomass observed during the 2000 season did not result in the expected recruitment of younger fish into the Kamishak spawning population during the ensuing two years. One hypothesis for this lack of recruitment includes the possibility that a significant portion of the herring observed in Kamishak Bay during 2000 was not of Kamishak origin. Another suggests that poor fitness of the fish, characterized by low average weights-at-age, contributed to higher than normal over-winter mortality.

Good weather once again contributed to the success of the Department's two vessel charters to collect age composition samples during the periods April 27 - May 5 and May 15 - 22. The early sampling period coincided with the arrival of the first fish on the grounds, which in turn corresponds to the traditional timing of the commercial fishery. The second charter, to collect age composition samples during the latter portion of the return in 2002, was particularly crucial in documenting the overall low abundance of the population. During the 17 days spent in the district, the contracted vessel made a cumulative total of 13 successful sets, resulting in the collection of nearly 5,800 fish for age/weight/length (AWL) analysis. Information and samples collected during the 2002 charters confirmed that the influx of young, newly recruited fish did not materialize to the extent suggested by the information collected in the 2000 season.

Although herring biomass had been declining in Kamishak Bay through 1998, that trend now appears to have reversed, but the annual increases since that time have been very small. The ASA model estimated the total 2002 return at just over 4,000 st (Otis *in preparation*; Table 10, Appendix Table 38, Figure 14), a modest increase over the 2001 hindcast estimate of 3,900 st. Recruitment into the spawning population did occur in 2002, but the magnitude of this recruitment does not appear to be as great as was anticipated. Nonetheless, postseason data

analysis of test fishing samples indicate that the overall return this season was dominated by fish age 6, age 9, and age 8 at 23%, 16%, and 16% of the biomass by weight, respectively (Table 10, Figure 14). While the 1993 and 1994 cohorts each appeared relatively strong at approximately one-sixth of the forecasted biomass, they were estimated to be only about 25% of the size of the very strong 1988 cohort that supported the commercial fishery throughout most of the 1990's.

Southern District 2002 Season Summary

A total of eight aerial surveys of the Southern District were flown between May 2 and June 7 in 2002, all but one conducted under relatively good conditions. The 2002 run biomass, estimated as the sum of all daily biomass estimates, totaled only 2,970 st, more than twice 2001's total of 1,380 st but still a sharp decrease from the 2000 estimate of 7,200 st, which was the highest in many years. The peak 2002 individual biomass survey (1,231 st) occurred on May 21, with the majority of herring observed that day near Glacier Spit. Peak surveys in areas where herring historically have been observed were as follows: Mallard Bay, 162 st on May 21; east of the Homer Spit/Mud Bay, 150 st on May 21; Glacier Spit/Halibut Cove, 739 st on May 21; and Tutka Bay, 249 st on May 28. Similar to observations in Kamishak Bay, herring seemed to appear later than usual in Southern District waters this year. As has been the persistent trend over the past two decades, low abundance levels in the Southern District, combined with the newly adopted regulatory management plan mentioned previously, precluded any commercial fishing during the 2002 season.

Outer/Eastern District 2002 Season Summary

As in previous recent seasons, no herring assessment occurred in the Outer and Eastern Districts during 2002. Unlike the Southern and Kamishak Bay Districts, historical samples from the Outer and Eastern Districts have contained up to 14% age-2 (sexually immature) herring. Formal sampling has not occurred in recent years and was very limited in previous years. However, two small, informal samples of herring from two separate schools observed aurally in Day Harbor (Eastern District, late June) and Port Dick (Outer District, early July) were obtained by handline jigging during the 2000 season. Scales were not collected for age composition analysis, but the size

of all fish caught suggested that they were age-2 juveniles. No discernible shift to older age herring has ever been observed in this area, suggesting the possibility that the Outer and Eastern Districts may be feeding and rearing grounds for juvenile fish from another area.

Update on Recent Research

Two additional research projects were recently undertaken to better understand Kamishak Bay herring stock structure and its relationship to other North Gulf of Alaska herring stocks. The KBDHMP dictates that 10% of the allowable harvest for Kamishak Bay be allocated to the Shelikof food/bait fishery because it appears these two stocks mix during part of the year around the north end of Shelikof Strait (Johnson et. al. 1988; unpublished data). The extent to which these stocks intermix is poorly understood, however, the ramifications of their mixing greatly complicate the assessment and management of each stock. Therefore, the Department successfully applied for a grant from the Exxon Valdez Trustee Council (EVOS-TC) to investigate the feasibility of using two relatively new stock identification techniques, fatty acid composition of heart tissue and elemental composition of otoliths, to distinguish between several Alaska herring stocks. Representative samples were collected from Sitka, Prince William Sound, Kamishak, Kodiak, and Togiak spawning aggregations during the spring of 2001. Chemical analysis of those samples was completed during 2002. Fatty acid composition of heart tissue has the potential to become a reliable stock identification biomarker. Using discriminant analysis, 157 of the 163 samples taken were correctly identified to their original herring stock. Unfortunately, stocks could not be reliably distinguished using the elemental composition of otoliths. Project results are currently being documented in a manuscript, which will be submitted for publication in a peer-reviewed journal.

The second recent research project undertaken by the Department also stems from an alternative funding source. In 2002, the National Marine Fisheries Service funded a Department project to synthesize all of the historical Kamishak Bay herring stock assessment and commercial fishery data into a geo-referenced database. Much of this historical information, dating back to 1973, previously existed only in hard copy form on aerial survey

field maps. During the past year, the Department captured those data into electronic maps, making them available for a variety of more in-depth analyses. The completed database is available on CD-ROM.

2003 SEASON OUTLOOK

Kamishak Bay District

The forecasted herring biomass generated by the ASA model for 2003 in the Kamishak Bay District is 4,771 st (Table 10, Figure 14). This total falls below the KBDHMP regulatory threshold of 6,000 st for which a commercial harvest can be considered. Additionally, over 40% of the predicted return in 2003 should be comprised of fish age 5 and younger, with the single age-3 year class projected to make up over one-fourth of the overall return (Table 10, Figure 15). Since the KBDHMP directs the Department to limit the harvest of fish age-5 and younger, and because the forecasted abundance falls below threshold, the sac roe fishery in the Kamishak Bay district will remain closed for the 2003 season. The resource, and hence the commercial fishery, is best served by protecting the remaining spawning population in order to rebuild it to a harvestable level.

Without a commercial fishery in 2003, the Department's ability to collect age composition information will be greatly reduced. The Department expects to once again obtain samples using a chartered commercial seine vessel throughout the duration of the 2003 run, with sufficient funding expected for both an early and a late season charter. The Department will also attempt to conduct comprehensive aerial surveys throughout the spawning season, from mid-April to early June, as conditions permit.

Other Districts

Based on the persistent trend of low herring abundance in the Southern District and a historical preponderance of juvenile herring in the Outer and Eastern Districts, as well as the stipulations

contained within the Eastern, Outer, and Southern Districts Management Plan, the commercial herring fishery in these areas will remain closed during 2003. Monitoring of the Southern District herring stocks will occur as in the past through the use of aerial surveys, possibly in conjunction with test fishing samples collected on an opportunistic basis.

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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, 2002.

<i>District</i>		Chinook	Sockeye	Coho	Pink	Chum	Total
Gear Type							
Southern							
Commercial:							
Set gillnet		1,513	46,812	2,393	6,741	4,681	62,140
Purse seine		40	121,054	1,376	5,342	122	127,934
Hatchery:							
Purse seine			29,517		941,877		971,394
Weir			20,820				20,820
Total		1,553	218,203	3,769	953,960	4,803	1,182,288
Outer							
Commercial:							
Purse seine		0	21,154	74	569,955	3,810	594,993
Eastern							
Commercial:							
Purse seine		0	14,647	0	0	5	14,652
Hatchery:							
Weir			2,729	1,745			4,474
Derby ^a :							
Hook & Line				2,687			2,687
Total		0	17,376	4,432	0	5	21,813
Kamishak							
Commercial:							
Purse seine		0	1,429	52	438,352	34,604	474,437
Hatchery:							
Purse seine			32,492	2	7,974	37	40,325
Total		0	33,921	54	446,146	34,641	514,762
LCI Total		1,553	290,654	8,329	1,970,061	43,259	2,313,856
Percent		0.07%	12.56%	0.36%	85.14%	1.87%	100.00%
1982-2001							
Average		1,364	252,682	14,136	1,106,863	67,497	1,442,542

^a Derby catches are fish entered into the Seward Silver Salmon Derby that are subsequently 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, 2002.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Halibut Cove	889		889
China Poot Bay	11		11
Neptune Bay	23		23
Tutka/Kasitsna Bays	305		305
Barabara Creek	90		90
Seldovia Bay	216		216
Port Graham	19		19
SOUTHERN DISTRICT TOTAL	1,553		1,553
OUTER DISTRICT TOTAL	0		0
EASTERN DISTRICT TOTAL	0		0
KAMISHAK BAY DISTRICT TOTAL	0		0
TOTAL LOWER COOK INLET	1,553		1,553

^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, 2002.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Humpy Creek		75	75
Halibut Cove	27,509		27,509
China Poot Bay			
Common Property Fishery	30,463		
Hatchery Cost Recovery	9,272		
China Poot Creek		51 ^b	
Total Run			39,786
Neptune Bay			
Common Property Fishery	66,533		
Hatchery Cost Recovery	20,245		
Oxbow Creek		110	
Waterfall Creek		4	
Total Run			86,892
Tutka/Kasitsna Bays; Tutka Head End	14,318	1	14,319
Barabara Creek	5,055	1	5,056
Seldovia Bay/River	9,500	6	9,506
Port Graham/Port Graham River	3,576	1	3,577
English Bay			
Common Property Fishery	10,912		
Hatchery Harvest (sold)	20,245		
Hatchery Harvest (donated)	575		
English Bay Lakes		15,277 ^c	
Hatchery Broodstock		1,573	
Total Run			48,582
SOUTHERN DISTRICT TOTAL	218,203	17,099	235,302
OUTER DISTRICT			
East Arm Nuka Bay (McCarty Fiord)	21,154		
Delight Lake		19,555	
Desire Lake		16,000	
Delusion Lake		3,550	
Total Run			60,259
OUTER DISTRICT TOTAL	21,154	39,105	60,259

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Table 3. (page 2 of 2)

Subdistrict/System	Catch	Escapement ^a	Total Run
EASTERN DISTRICT			
Aialik Bay & Aialik Lake	1,200	6,100	7,300
Resurrection Bay North			
Common Property Fishery	13,447		
Hatchery Harvest (sold)	1,940		
Hatchery Harvest (donated)	789		
Bear Lake Escapement		8,441 ^e	
Hatchery Brood Stock		4,063 ^d	
Bear & Salmon Creeks		42	
Total Run			<u>28,722</u>
EASTERN DISTRICT TOTAL	<u>17,376</u>	<u>18,646</u>	<u>36,022</u>
KAMISHAK BAY DISTRICT			
Ursus Cove/Ursus Lagoon Creek		2	2
Kirschner Lake			
Common Property Fishery	0		
Hatchery Cost Recovery	32,492		
Total Run			32,492
Bruin Bay/ Bruin Bay River		50	50
Chenik Lake			
Amakdedori Creek		3,200	
Chenik Creek/Lake		4,650	
Total Run			7,850
Paint River		30 ^c	30
McNeil Cove			
Mikfik Creek & Lake		16,650	
McNeil River		25	
Total Run			16,675
Kamishak Bay/ River			
Big Kamishak River		3,300	
Little Kamishak River		20	
Total Run			3,320
Douglas River/Silver Beach	<u>1,429</u>		<u>1,429</u>
KAMISHAK BAY DISTRICT TOTAL	<u>33,921</u>	<u>27,927</u>	<u>61,848</u>
TOTAL LOWER COOK INLET	290,654	102,777	393,431

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

^b No freshwater escapement, prevented by barrier falls.

^c Weir counts.

^d Brood stock total at Bear Lake includes 5 mortalities.

^e No freshwater escapement, ladder not opened during 2002.

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, 2002.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Northshore Subd./Clearwater Slough		1,300 ^a	1,300
Halibut Cove	237		237
China Poot Bay	269		269
Neptune Bay	954		954
Tutka/Kasitsna Bays	1,618		1,618
Barabara Creek	616		616
Seldovia Bay	71		71
Port Graham	3		3
English Bay	1		1
SOUTHERN DISTRICT TOTAL	3,769	1,300	5,069
OUTER DISTRICT			
Port Dick	1		1
East Arm Nuka Bay (McCarty Fiord)	73		73
OUTER DISTRICT TOTAL	74		74
EASTERN DISTRICT			
Resurrection Bay North			
Hatchery Harvest (sold)	309		
Hatchery Harvest (donated)	1,436		
Sport Derby	2,687		
Bear Lake (weir counts)		875	
Hatchery Brood Stock		864 ^b	
Total Run			6,171
EASTERN DISTRICT TOTAL	4,432	1,739	6,171
KAMISHAK BAY DISTRICT			
Kirschner Lake (Hatchery incidental)	2		2
Douglas River/Silver Beach	52		52
KAMISHAK BAY DISTRICT TOTAL	54		54
TOTAL LOWER COOK INLET	8,329	3,039	11,368

^a Coho escapement estimates in Lower Cook Inlet are very limited; 2 escapement surveys were conducted during 2002, escapement figure represents unexpanded peak aerial live count.

^b Bear Lake brood stock figure includes 200 mortalities, therefore total brood fish actually used was 664.

Table 5. Commercial pink salmon catches (including hatchery cost recovery) and escapements in numbers of fish by subdistrict, Lower Cook Inlet, 2002.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Northshore Subd./Clearwater Slough		2	2
Humpy Creek		37,051	37,051
Halibut Cove	252		252
China Poot Bay/Creek	468	6,543	7,011
Neptune Bay	4,195		4,195
Tutka/Kasitsna Bays			
Common Property Fishery	4,725		
Hatchery Cost Recovery	703,205		
Hatchery Brood Stock		146,897	
Tutka Lagoon Creek		15,884	
Tutka Head End Creek		5,548	
Total Run			876,259
Barabara Creek	1,120	3,241	4,361
Seldovia Bay & River	1,303	26,938	28,241
Port Graham			
Common Property Fishery	14		
Hatchery Cost Recovery	238,672		
Port Graham River		58,527	
Port Graham Left Creek		8,077	
Hatchery Brood Stock		96,433 ^b	
Total Run			401,723
English Bay	6		6
SOUTHERN DISTRICT TOTAL	953,960	405,141	1,359,101
OUTER DISTRICT			
Dogfish Bay		1,288	1,288
Port Chatham		18,078	18,078
Chugach Bay		5,197	5,197
Windy Bay			
Windy Right Creek		14,401	
Windy Left Creek		28,946	
Total Run			43,347
Rocky Bay			
Scurvy Creek		1,454	
Rocky River		112,527	
Total Run			113,981

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Table 5. (page 2 of 3)

Subdistrict/System	Catch	Escapement ^a	Total Run
OUTER DISTRICT (cont'd)			
Port Dick			
South Section	232,504		
North Section	53,939		
Taylor Bay Section	167,652		
Port Dick (head end) Creek		107,045	
High Tech Creek		497	
Well Flagged Creek		530	
Slide Creek		33,265	
Middle Creek		12,940	
Island Creek		44,105	
Taylor Bay Creeks		21,366	
Total Run			673,843
Nuka Island			
Tonsina Bay		674	
South Nuka Island Creek		14,811	
Mike's Bay		366	
Home Cove		149	
Herring Pete Bay		2,094	
Total Run			18,094
East Arm Nuka Bay (McCarty Fiord)	115,860		
Delight Lake		1,800	
Desire Lake		78,410	
Delusion Lake		14,906	
James Lagoon		3,080	
Total Run			214,056
OUTER DISTRICT TOTAL	569,955	517,929	1,087,884
EASTERN DISTRICT			
Resurrection Bay North			
Bear/Salmon Creeks		2,689	
Grouse Creek		420	
Clear Creek		478	
Sawmill Creek		239	
Spring Creek		100	
Tonsina Creek		6,949	
Humpy Cove		1,832	
Thumb Cove (Likes Creek)		3,694	
Total Run			16,401
EASTERN DISTRICT TOTAL	0	16,401	16,401

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Table 5. (page 3 of 3)

Subdistrict/System	Catch	Escapement ^a	Total Run
KAMISHAK BAY DISTRICT			
Inisksin Bay	146		
North Head Creek		1,941	
Sugarloaf Creek		438	
Total Run			2,525
Ursus Cove	24,045		
Ursus Head Creek		10,816	
Brown's Peak Creek		27,480	
Ursus Lagoon Creek		540	
Total Run			62,881
Rocky Cove/Sunday Creek	86,011	81,949	167,960
Kirschner Lake	12,132 ^c		12,132
Bruin Bay/Bruin Bay River	321,571	1,598,454	1,920,025
Little Kamishak River		3,400	3,400
Douglas River/Silver Beach	2,241		2,241
KAMISHAK BAY DISTRICT TOTAL	446,146	1,725,018	2,171,164
TOTAL LOWER COOK INLET	1,970,061	2,664,489	4,634,550

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

^b Brood stock figure for Port Graham Hatchery includes 74,742 pinks actually spawned plus 21,691 "excess males".

^c Harvest figure for Kirschner Lake includes 4,338 pinks taken during common property fishing and 7,794 pinks incidentally taken during hatchery sockeye cost recovery efforts.

Table 6. Commercial chum salmon catches and escapements in numbers of fish by subdistrict, Lower Cook Inlet, 2002.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Humpy Creek		1,035	1,035
Halibut Cove	42		42
China Poot Bay	35		35
Neptune Bay	57		57
Tutka Bay/Tutka Head End Creek	2,741	78	2,819
Barabara Creek	1,117		1,117
Seldovia Bay & River	409	4,992	5,401
Port Graham/Port Graham River	132	5,253	5,385
English Bay	270		270
SOUTHERN DISTRICT TOTAL	4,803	11,358	16,161
OUTER DISTRICT			
Dogfish Bay		10,062	10,062
Port Chatham		1,476	1,476
Windy Bay			
Windy Right Creek		22	
Windy Left Creek		133	
Total Run			155
Rocky Bay & River		5,655	5,655
Port Dick			
South Section	2,879		
North Section	840		
Taylor Bay Section	36		
Port Dick (head end) Creek		12,047	
High Tech Creek		89	
Well Flagged Creek		185	
Slide Creek		2,760	
Middle Creek		1,674	
Island Creek		15,251	
Total Run			35,761
Nuka Island/Petrof River		209	209
East Arm Nuka Bay/James Lagoon	55	1,086	1,141
OUTER DISTRICT TOTAL	3,810	50,649	54,459

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Table 6. (page 2 of 2)

Subdistrict/System	Catch	Escapement ^a	Total Run
EASTERN DISTRICT			
Resurrection Bay North	5		
Clear Creek		5	
Sawmill Creek		116	
Spring Creek		425	
Thumb Cove		459	
Tonsina Creek		3,376	
Total Run			4,386
EASTERN DISTRICT TOTAL	5	4,381	4,386
KAMISHAK BAY DISTRICT			
Iniskin Bay	9,261		
Iniskin River		28,486	
Sugarloaf Creek		2,003	
North Head Creek		2,733	
Total Run			42,483
Cottonwood Bay & Creek	7,775	42,194	49,969
Ursus Cove	213		
Brown's Peak Creek		2,940	
Ursus Lagoon Right Creek		5,869	
Ursus Cove Lagoon Creek		11,275	
Ursus Head Creek		7,000	
Total Run			27,297
Rocky Cove/Sunday Creek	3,223	4,052	7,275
Kirschner Lake	37		37
Bruin Bay & River	1,961	9,852	11,813
McNeil River		11,293	11,293
Kamishak River/Reef	5,145		
Big Kamishak River		17,350	
Little Kamishak River		16,400	
Strike Creek		1,114	
Total Run			40,009
Douglas River/Silver Beach	7,026		
Douglas Beach Creek		450	
Douglas Reef Creek		39	
Total Run			7,515
KAMISHAK BAY DISTRICT TOTAL	34,641	163,050	197,691
TOTAL LOWER COOK INLET	43,259	229,438	272,697

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

Table 7. Exvessel value^a of the commercial salmon catch in numbers of dollars by species, gear type, and harvest type, Lower Cook Inlet, 2002.

	Chinook	Sockeye	Coho	Pink	Chum	Total
COMMON PROPERTY - PURSE SEINE						
No. of Fish	40	158,284	1,502	1,013,649	38,541	1,212,016
Pounds	297	833,859	10,369	3,635,693	319,823	4,800,041
Price/lb.	\$0.30	\$0.56	\$0.17	\$0.06	\$0.16	
Value	\$89	\$466,961	\$1,763	\$218,142	\$51,172	\$738,127
COMMON PROPERTY - SET GILLNET						
No. of Fish	1,513	46,812	2,393	6,741	4,681	62,140
Pounds	21,521	274,743	17,310	26,650	37,608	377,832
Price/lb.	\$1.12	\$0.68	\$0.25	\$0.03	\$0.19	
Value	\$24,104	\$186,825	\$4,328	\$800	\$7,146	\$223,203
HATCHERY - PURSE SEINE & WEIR						
No. of Fish		85,558	1,747	949,671	37	1,037,013
Pounds		388,733	13,122	2,997,576	271	3,399,702
Price/lb.		\$0.43 ^b	\$0.66 ^b	\$0.07	\$0.12	
Value		\$163,162 ^b	\$1,552 ^b	\$222,144	\$33	\$386,890
SPORT FISHING DERBY^c - HOOK & LINE						
No. of Fish			2,687			2,687
Pounds			24,293			24,293
Price/lb.			\$0.43			
Value			\$10,446			\$10,446
TOTAL ALL GEARS						
No. of Fish	1,553	290,654	8,329	1,970,061	43,259	2,313,856
Pounds	21,818	1,497,335	65,094	6,659,919	357,702	8,601,868
Price/lb.	\$1.11	\$0.55 ^b	\$0.33 ^b	\$0.07	\$0.16	
Value	\$24,193	\$816,948 ^b	\$18,089 ^b	\$441,086	\$58,351	\$1,358,667

^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 Average price per pound and value for hatchery cost recovery sockeyes and cohos include only those fish actually sold and does not include hatchery fish that were donated.

^c 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 fisheries in Lower Cook Inlet, 2002.

Number/ Issue Date	DESCRIPTION
2-F-H-001-02 May 15	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 weekly schedule of two 40-hour periods per week, from Monday 6:00 a.m. until Tuesday 10:00 p.m. and Thursday 6:00 a.m. until Friday 10:00 p.m., effective Monday, May 20, 2002, until further notice. All waters along the west shore of Resurrection Bay west of a line from the old military dock pilings north of Caines Head to a regulatory marker near the Seward Airport will remain closed to seining.
2-F-H-002-02 May 29	Establishes a seven-day-per-week fishing schedule in the Kamishak Bay District commercial salmon seine fishery, which opens by regulation on June 1, 2002. Waters of Chenik Subdistrict within the Kamishak Bay District will remain closed to commercial salmon seining until further notice based on the provisions of this emergency order.
2-F-H-003-02 June 9	Closes waters of Resurrection Bay in the Eastern District to commercial salmon seining effective at 6:00 a.m. Monday, June 10, 2002, until further notice.
2-F-H-004-02 June 12	Designates and establishes Special Harvest Areas (SHA's) for Cook Inlet Aquaculture Association (CIAA) in China Poot and Bruin Bay Subdistricts of the Lower Cook Inlet (LCI) management area. It also designates and establishes an English Bay SHA for the Port Graham Hatchery Corporation (PGHC) in the English Bay Section of Port Graham Subdistrict, located in the Southern District of the LCI management area. This emergency order closes the Kirschner Lake SHA to the common property salmon seine fishery, while concurrently opening waters of the Kirschner Lake SHA 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 17, 2002, until further notice. The English Bay SHA will remain closed to hatchery fishing until the desired in-river return of 7,300 to 14,800 sockeyes into English Bay Lakes can be projected and the sockeye salmon subsistence needs of Nanwalek and Port Graham villagers are met.
	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 17, 2002, 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 a marker on the west shore of Neptune Bay at approximately 59° 32.83' N. latitude, 151° 24.95' W.

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Table 8. (page 2 of 7)

Number/ Issue Date	DESCRIPTION
2-F-H-004-02 June 12 (continued)	<p>longitude, then to Lancashire Rock, then to the navigational light on Gull Island, then to Moosehead Point, effective June 17. In the Halibut Cove Subdistrict, seining shall be allowed only in waters outside of Halibut Cove Lagoon beginning June 17 on a five days per week basis; waters within Halibut Cove Lagoon will remain closed to commercial fishing. 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° 30.23' N. latitude, 151° 28.23' W. longitude, to the Tutka Bay Lodge on the south side of the bay at approximately 59° 28.45' N. latitude, 151° 28.95' W. longitude, five days per week, effective 6:00 a.m. Monday, June 17, 2002.</p> <p>This emergency order also repeals the regulatory closed waters markers near the HEA power lines in China Poot Bay, and establishes temporary closed waters at the head of China Poot Bay to provide a Dungeness crab sanctuary.</p>
2-F-H-005-02 June 19	<p>Designates and establishes a Special Harvest Area (SHA) for the Cook Inlet Aquaculture Association (CIAA) in Tutka Bay Subdistrict within the Southern District of Lower Cook Inlet. The Tutka Bay SHA consists of all marine waters of Tutka Bay Subdistrict southeast of the Homer Electric Association powerline crossing, including waters of Tutka Lagoon. In addition, this emergency order opens the Tutka Bay SHA to the harvest and sale of salmon seven days per week by authorized agents of CIAA, effective at 6:00 a.m. Monday, June 24, 2002, until further notice. Revenue obtained from the sale of these fish will be used for recovery of operational expenses associated with the Tutka Lagoon Hatchery salmon enhancement programs in Lower Cook Inlet.</p> <p>The commercial purse seine fishery in the Tutka Bay Subdistrict is currently restricted to those waters seaward of a line extending from the "rock quarry" on the north side of Tutka Bay at approximately 59° 30.23' N. latitude, 151° 28.23' W. longitude, to the Tutka Bay Lodge on the south side of the bay at approximately 59° 28.95' N. latitude, 151° 28.45' W. longitude, on a five day per week basis. Waters of Tutka Bay between the HEA powerlines and the above-described line remain closed to all seine fishing.</p> <p>This emergency order also designates and establishes a SHA for the Port Graham Hatchery Corporation (PGHC) in the Port Graham Subdistrict within the Southern District of Lower Cook Inlet. The Port Graham SHA consists of all marine waters of the Port Graham Subdistrict east of 151° 53.08' W. longitude, and south and west of a line from the southernmost tip of Passage Island to the Coast Guard navigational buoy at approximately 59° 21.45' N. latitude, 151° 50.05' W. longitude, then southeast to a point on the mainland at approximately 59° 20.83' N. latitude, 151° 48.53' W. longitude. This area is located along the</p>

-continued-

Table 8. (page 3 of 7)

Number/ Issue Date	DESCRIPTION
2-F-H-005-02 June 19 (continued)	south shore of Port Graham from Passage Island to (and including) Duncan Slough. No fishing periods for the Port Graham SHA are being established at this time.
2-F-H-006-02 June 26	Closes waters of McNeil River and Paint River Subdistricts in the Kamishak Bay District to commercial salmon seining effective at 6:00 a.m. Saturday, June 29, 2002, until further notice.
2-F-H-007-02 June 28	<p>Opens the English Bay Special Harvest Area (SHA) to the harvest of salmon seven days per week by authorized agents of Port Graham Hatchery Corporation (PGHC) effective at 12:00 noon Friday, June 28, 2002, until further notice.</p> <p>In the Southern District, the English Bay SHA consists of all waters of English Bay River beginning at (and including) the adult sockeye salmon counting weir site operated by Chugach Regional Resources Commission (CRRC) to a point approximately 300 yards downstream of this site. The English Bay SHA is defined as those waters of English Bay River between 59° 20.53' N. latitude and 59° 20.88' N. latitude (see LCI Emergency Order #2-F-H-004-02).</p>
2-F-H-008-02 July 3	<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 at 6:00 a.m. Friday, July 5, 2002, until further notice.</p> <p>This emergency order also restricts commercial salmon seining in Tutka Bay Subdistrict within the Southern District to those waters seaward (northwest) of a line beginning at the "rock quarry" on the north side of the bay at approximately 59° 30.23' N. latitude, 151° 28.23' W. longitude, to a point on the west shore of the entrance to Little Tutka Bay at approximately 59° 28.73' N. latitude, 151° 30.37' W. longitude, effective at 6:00 a.m. Friday, July 5, 2002. The weekly fishing period for purse seining in waters of Tutka Bay Subdistrict, already established at five days per week (see LCI Emergency Order #2-F-H-004-02), is not altered and remains the same.</p>
2-F-H-009-02 July 5	<p>Opens those waters of East Nuka Subdistrict in the Outer District south of the latitude of the entrance to James Lagoon at approximately 59° 33.50' N. latitude 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. Monday, July 8, 2002, until further notice. The closed waters markers at the mouth of Delight Lake Creek WILL NOT BE in effect for this opening, and fishing will be allowed up to the stream</p>

-continued-

Table 8. (page 4 of 7)

Number/ Issue Date	DESCRIPTION
2-F-H-009-02 July 5 (continued)	<p>mouth. In addition, seining will be allowed inside waters of McCarty Lagoon near Delight Lake. Waters north of the latitude of the entrance to James Lagoon also remain closed to fishing, therefore fishing is prohibited in the vicinity of Desire Lake Creek.</p> <p>In addition, this emergency order opens waters of Aialik Subdistrict, including Aialik Lagoon, in the Eastern District 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. Monday, July 8, 2002, until further notice.</p>
2-F-H-010-02 July 10	<p>Closes waters of the China Poot and Hazel Lakes Special Harvest Areas (see LCI E.O. #2-F-H-004-02) in the Southern District to salmon hatchery cost recovery harvest by Cook Inlet Aquaculture Association effective immediately. 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. Thursday, July 11, 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. Thursday, July 11, 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-011-02 July 12	<p>Opens all waters of East Nuka Subdistrict to commercial salmon seining five days per week, from 6:00 a.m. Monday until 6:00 a.m. Saturday, effective at 6:00 a.m. Monday, July 15, until further notice. Closed waters markers at the mouth of Delight Lake Creek and Desire Lake Creek ARE NOT in effect, and fishing is allowed up to the stream mouth at both locations. In addition, waters of McCarty Lagoon near Delight Lake are also open to fishing, but waters of the freshwater lagoon at Delight Lake Creek remain closed. Fishing is also prohibited north of the regulatory markers near the former Parks Service tent camp.</p> <p>This emergency order also opens waters of the South, Outer, and Taylor Bay Sections of Port Dick Subdistrict, or statistical reporting areas 232-06, 232-07, and 232-08, in the Outer District, to commercial salmon seining on a schedule of two 40-hour periods per week, from 6:00 a.m. Monday until 10:00 p.m.</p>

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Table 8. (page 5 of 7)

Number/ Issue Date	DESCRIPTION
2-F-H-011-02 July 12 (continued)	Tuesday and from 6:00 a.m. Thursday until 10:00 p.m. Friday, effective at 6:00 a.m. Monday, July 15, 2002, until further notice. All normal regulatory markers and closed waters, including those in Taylor Bay, Tacoma Cove, and Sunday Harbor, will be in effect for this opening. Additionally, waters of the North Section of Port Dick Subdistrict, or statistical reporting area 232-09, will remain closed to fishing.
2-F-H-012-02 July 19	Extends commercial salmon seine fishing time in waters of the South, Outer, and Taylor Bay Sections of Port Dick Subdistrict, or statistical reporting areas 232-06, 232-07, and 232-08, in the Outer District, to a schedule of five days per week, from 6:00 a.m. Monday until 6:00 a.m. Saturday, effective at 6:00 a.m. Monday, July 22, until further notice. All closed waters and normal regulatory markers will be in effect in Port Dick. Waters of the North Section of Port Dick Subdistrict, or statistical reporting area 232-09, remain closed to fishing.
2-F-H-013-02 July 24	Opens those waters of the Port Graham Special Harvest Area (see <i>LCI Emergency Order #2-F-H-005-02</i>) east of the longitude of the U.S. Coast Guard navigational buoy at approximately 151° 50.05' W. longitude to the harvest of salmon seven days per week by authorized agents of Port Graham Hatchery Corporation (PGHC), effective at 6:00 a.m. Friday, July 26, 2002, until further notice. Pink salmon harvested during this opening will be utilized for both hatchery brood stock and hatchery cost recovery.
2-F-H-014-02 July 30	Closes waters of the Kirschner Lake Special Harvest Area (SHA) in the Kamishak Bay District (see <i>LCI Emergency Order #2-F-H-004-02</i>) to hatchery cost recovery harvest, effective immediately, and also opens all waters of Bruin Bay Subdistrict, including the Kirschner Lake SHA, to commercial salmon seining effective at 11:00 a.m. Wednesday, July 31, 2002, until further notice. The weekly fishing period in those waters of Bruin Bay Subdistrict previously open to commercial salmon seining, established at seven days per week by <i>LCI Emergency Order #2-F-H-002-02</i> , remains in effect and also applies to waters of the Kirschner Lake SHA included in this emergency order. In addition, this emergency order repeals the closed waters regulatory markers in Bruin Bay and Rocky Cove Subdistricts, also in Kamishak Bay District, effective at 6:00 a.m. Wednesday, July 31, 2002, until further notice, and fishing after that time is allowed up to the mouths of Bruin Bay River and Sunday Creek.
	In the Outer District, this emergency order opens waters of Rocky River and Windy Bay Subdistricts, as well as those waters of the North Section of Port Dick Subdistrict west of 151° 14' W. longitude , to commercial salmon seining

-continued-

Table 8. (page 6 of 7)

Number/ Issue Date	DESCRIPTION
2-F-H-014-02 July 30 (continued)	five days per week, from 6:00 a.m. Monday until 6:00 a.m. Saturday, effective at 6:00 a.m. Wednesday, July 31, 2002, until further notice. Waters of the South, Outer, and Taylor Bay Sections of Port Dick Subdistrict were previously opened on the same weekly fishing schedule (see LCI Emergency Order #2-F-H-012-02). In addition, this emergency order repeals the closed waters markers in the Taylor Bay Section (statistical reporting area 232-08) of Port Dick Subdistrict, and fishing is allowed up to the stream mouths in Taylor Bay, also effective at 6:00 a.m. Wednesday, July 31, 2002, until further notice
2-F-H-015-02 August 8	Opens all waters of the Port Graham Special Harvest Area (SHA; see LCI Emergency Order #2-F-H-005-02) to the harvest of salmon seven days per week by authorized agents of Port Graham Hatchery Corporation (PGHC), effective at 6:00 a.m. Friday, August 9, 2002, until further notice. Pink salmon harvested in these waters will be utilized for both hatchery brood stock and hatchery cost recovery. Waters of the Port Graham SHA east of the longitude of the U.S. Coast Guard navigational buoy at approximately 151° 50.05' W. longitude were previously opened to continuous hatchery fishing on July 26 (see LCI Emergency Order #2-F-H-013-02).
2-F-H-016-02 August 9	Opens those waters of South Nuka Island Subdistrict south of the latitude of the southwestern-most point of Westdahl Cove at approximately 59° 19.00' N. latitude and east of the longitude of the entrance to Tonsina Bay at approximately 150° 52.87' W. longitude to commercial salmon seining five days per week, from 6:00 a.m. Monday until 6:00 a.m. Saturday, effective at 6:00 a.m. Monday, August 12, 2002, until further notice. Closed waters markers near the mouth of South Nuka Island Creek will NOT be in effect for this opening, and fishing is allowed up to the stream mouth.
2-F-H-017-02 August 14	Delays the opening of the Southern District (Kachemak Bay) personal use set gillnet fishery for coho salmon until 6:00 a.m. Friday, August 16, 2002.
2-F-H-018-02 August 14	Repeals the regulatory closed waters markers in Ursus Cove and Iniskin Bay Subdistricts of the Kamishak Bay District, and allows continuous commercial salmon seine fishing inside Ursus Cove Lagoon and up to the stream mouths at Brown's Peak Creek and Iniskin River, effective at 6:00 a.m. Thursday, August 15, 2002, until further notice.
2-F-H-019-02 August 15	Opens all waters of the North Section of Port Dick Subdistrict, or statistical reporting area 232-09, in the Outer District to commercial salmon seining seven days per week, and additionally extends the weekly commercial seine fishing schedule in all other waters of Port Dick Subdistrict to seven days per week,

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Table 8. (page 7 of 7)

Number/ Issue Date	DESCRIPTION
2-F-H-019-02 August 15 (cont'd)	effective at 6:00 a.m. Friday, August 16, 2002, until further notice. All normal closed waters regulatory markers in Port Dick Subdistrict, except for those previously repealed in Taylor Bay (see LCI Emergency Order #2-F-H-014-02), remain in effect during open fishing periods.
2-F-H-020-02 August 20	Closes the Southern District (Kachemak Bay) personal use set gillnet fishery for coho salmon, effective at 6:00 a.m. Wednesday, August 21, 2002, for the remainder of the season.
2-F-H-021-02 August 26	Repeals the regulatory closed waters markers in Cottonwood Bay Subdistrict of the Kamishak Bay District and allows continuous commercial salmon seine fishing up to the mouth of Cottonwood Creek, effective at 6:00 a.m. Tuesday, August 27, 2002, until further notice.
2-F-H-022-02 September 10	Extends the fishing season for authorized agents of Port Graham Hatchery Corporation (PGHC) in all waters of the Port Graham Special Harvest Area (SHA; see LCI Emergency Order #2-F-H-005-02) until September 20, 2002, effective at 6:00 a.m. Wednesday, September 11, 2002.

Table 9. Total return of adult pink salmon to the Tutka Bay Hatchery in the Southern District of Lower Cook Inlet, 2002.

<u>COMMERCIAL HARVEST</u>	
Tutka Bay/Lagoon:	
Purse Seine	432
Set Gillnet	4,293 ^a
Hatchery Cost Recovery	<u>703,205</u>
TUTKA COMMERCIAL HARVEST	707,930
 <u>SPORT HARVEST</u>	
TOTAL SPORT HARVEST (Tutka Bay and Lagoon)	1,500^b
 <u>ESCAPEMENT</u>	
Tutka Creek and Channel	15,884
Tutka Hatchery Brood Stock	<u>161,864</u>
TOTAL ESCAPEMENT	177,748
<hr/>	
TOTAL RETURN	887,178

^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.

^b Figure represents estimated average sport catch of pinks in Tutka Bay from 1990 -- 1999.

Table 10. Total biomass estimates and commercial catch of Pacific herring (*Clupea pallasii*) in short tons by age class, Kamishak Bay District, Lower Cook Inlet, 2002, and 2003 forecast.

Age	2002 Est. Spawning Biomass	Percent by Weight	2002 Commercial Harvest ^a	Percent by Weight	2002 Total Biomass	Percent by Weight	2003 Forecast Biomass	Percent by Weight
1								
2								
3	507	12.6			507	12.6	334	7.0
4	150	3.7			150	3.7	1,381	29.0
5	437	10.8			437	10.8	268	5.6
6	943	23.4			943	23.4	502	10.5
7	417	10.3			417	10.3	841	17.6
8	630	15.6			630	15.6	307	6.4
9	641	15.9			641	15.9	442	9.3
10	187	4.6			187	4.6	480	10.0
11	57	1.4			57	1.4	146	3.1
12	43	1.1			43	1.1	37	0.8
13+	23	0.6			23	0.6	33	0.7
TOTALS	4,033	100.0	0		4,033	100.0	4,771	100.00

^a Due to the low forecasted biomass and an age structure dominated by young fish, the commercial herring fishery in Kamishak Bay was not opened in 2002.

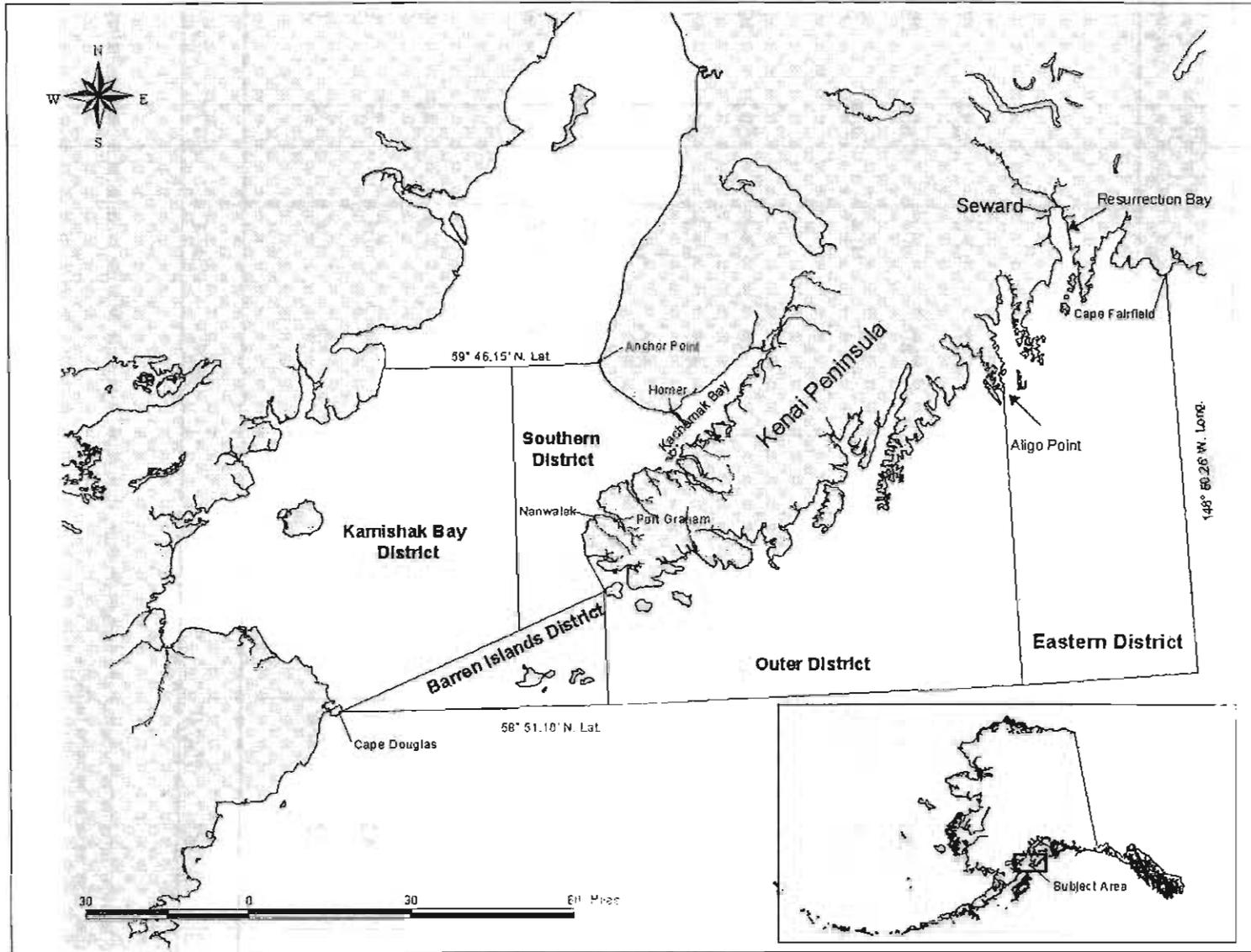


Figure 1. Lower Cook Inlet salmon and herring management area.

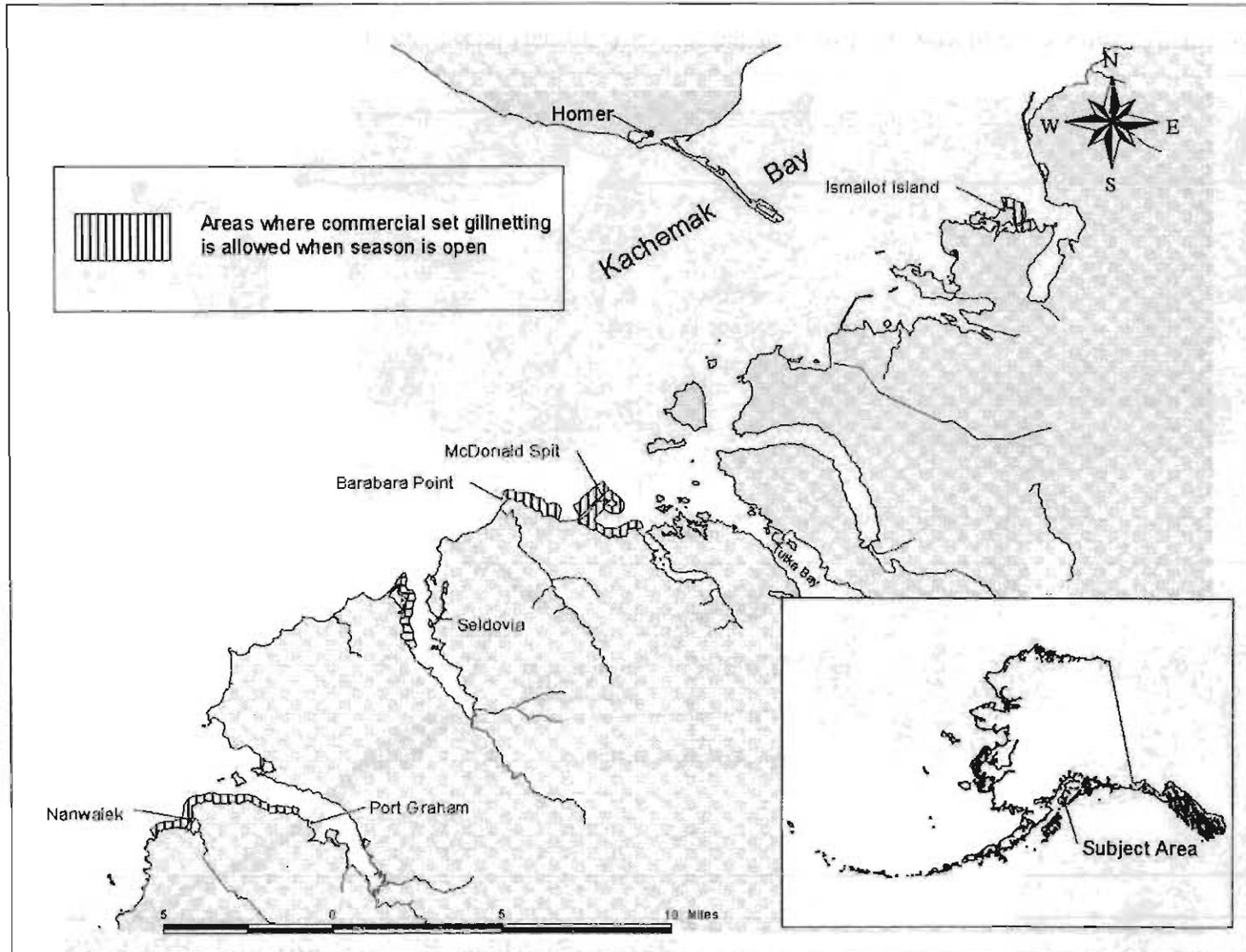


Figure 2. Commercial set gillnet locations in the Southern District of Lower Cook Inlet.

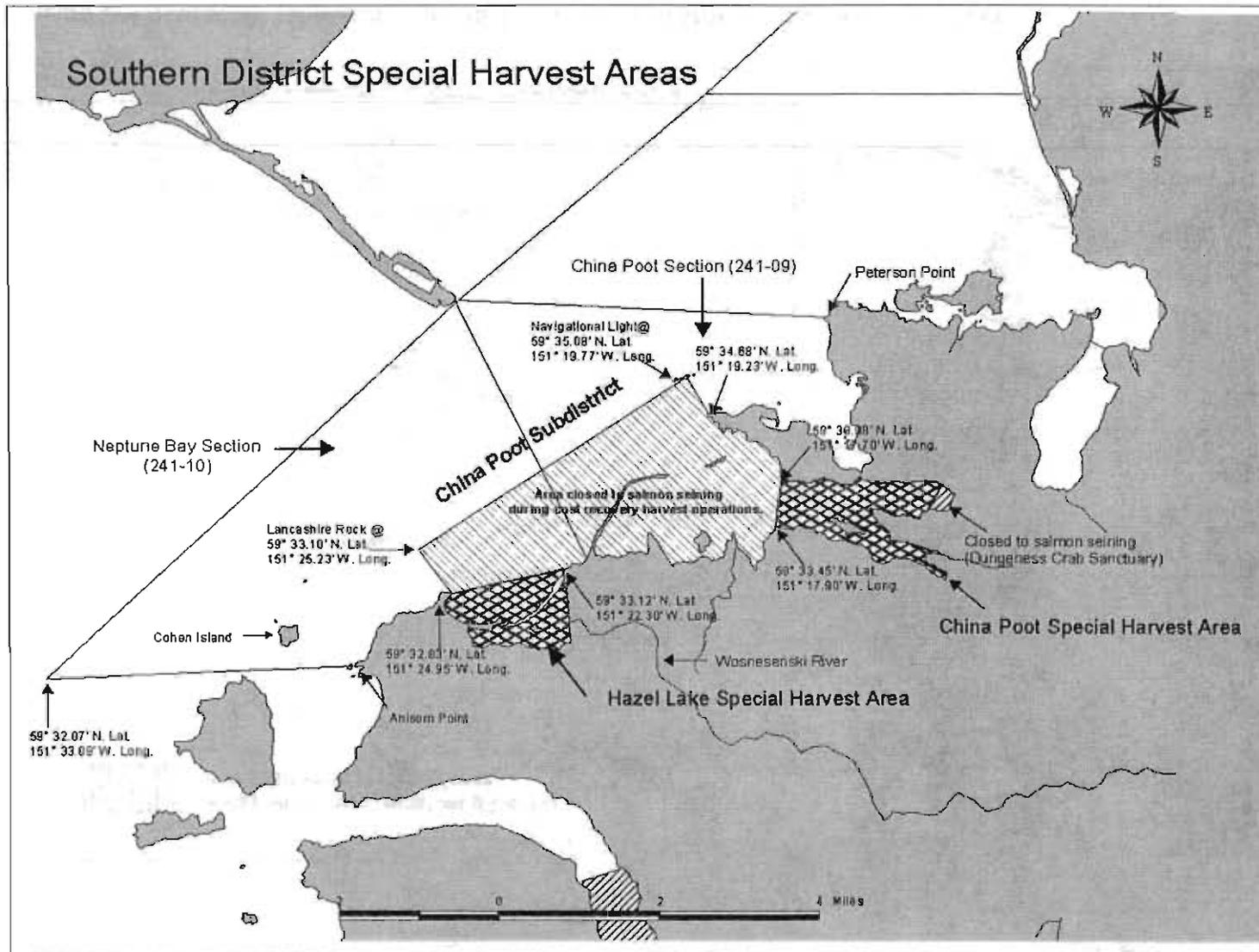


Figure 3. China Pool and Hazel Lake Special Harvest Areas for hatchery cost recovery in the Southern District of Lower Cook Inlet.

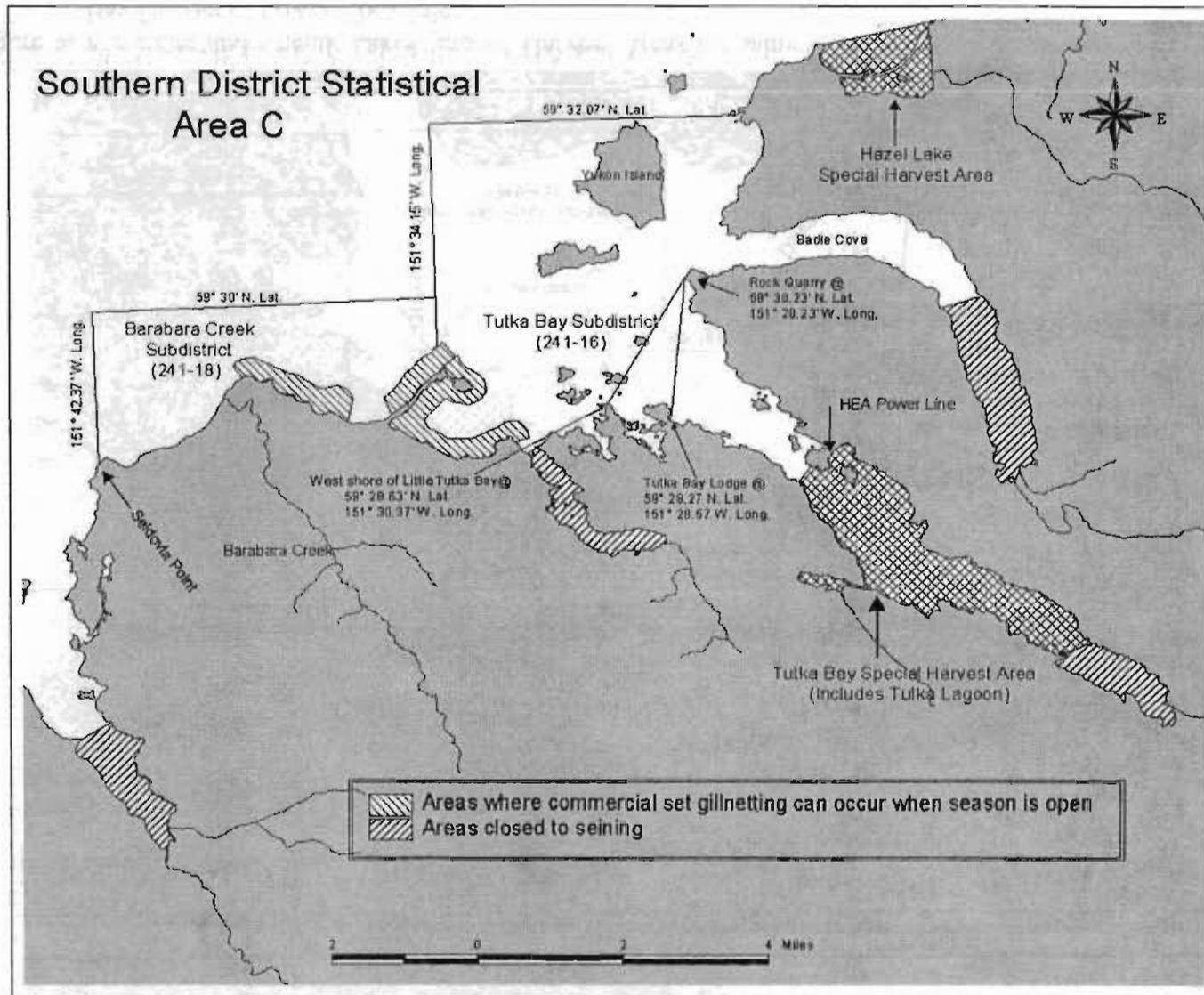


Figure 4. Tulka Bay Special Harvest Area for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

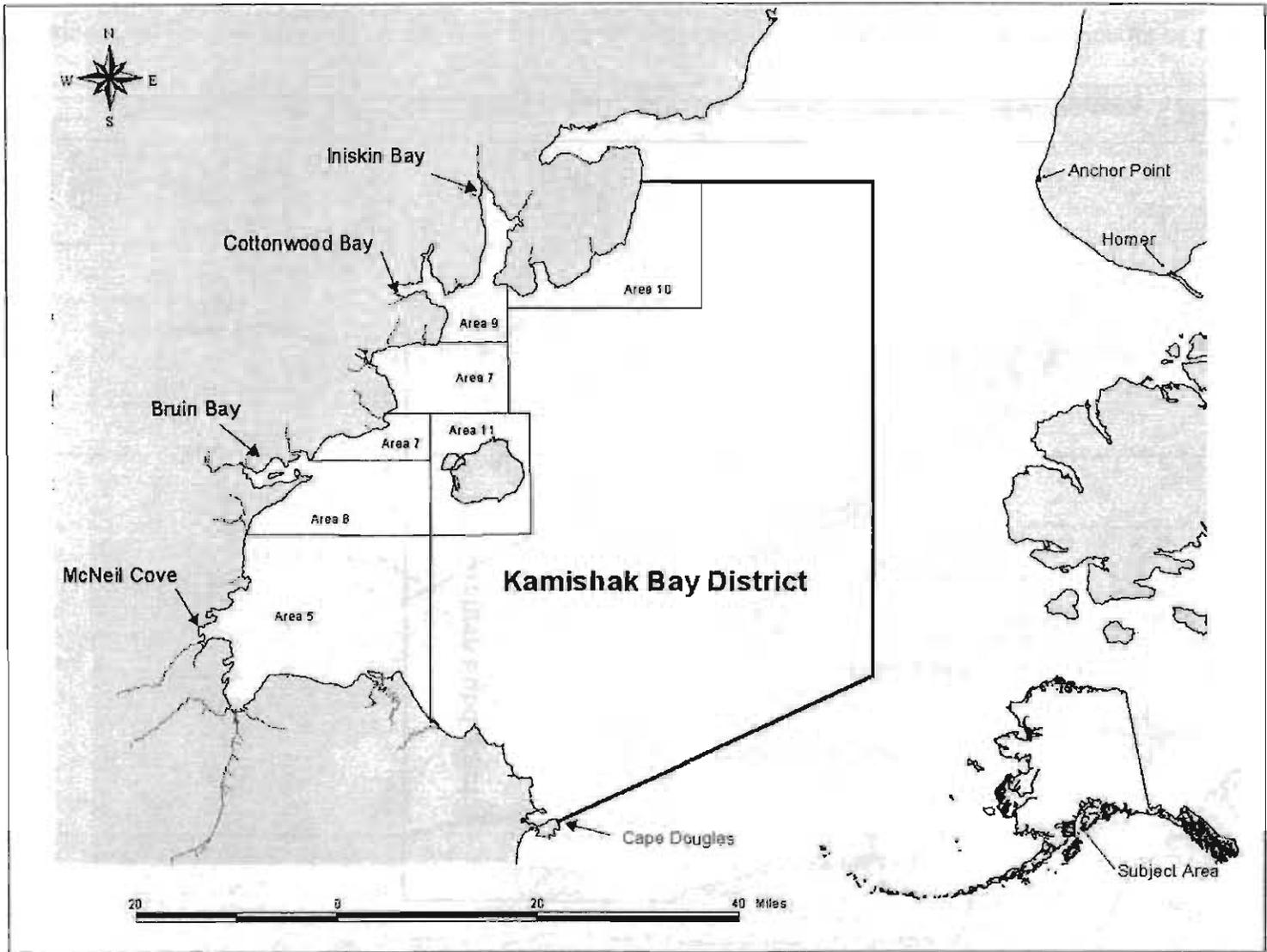


Figure 7. Commercial herring fishing areas for management purposes in Kamishak Bay District of Lower Cook Inlet.

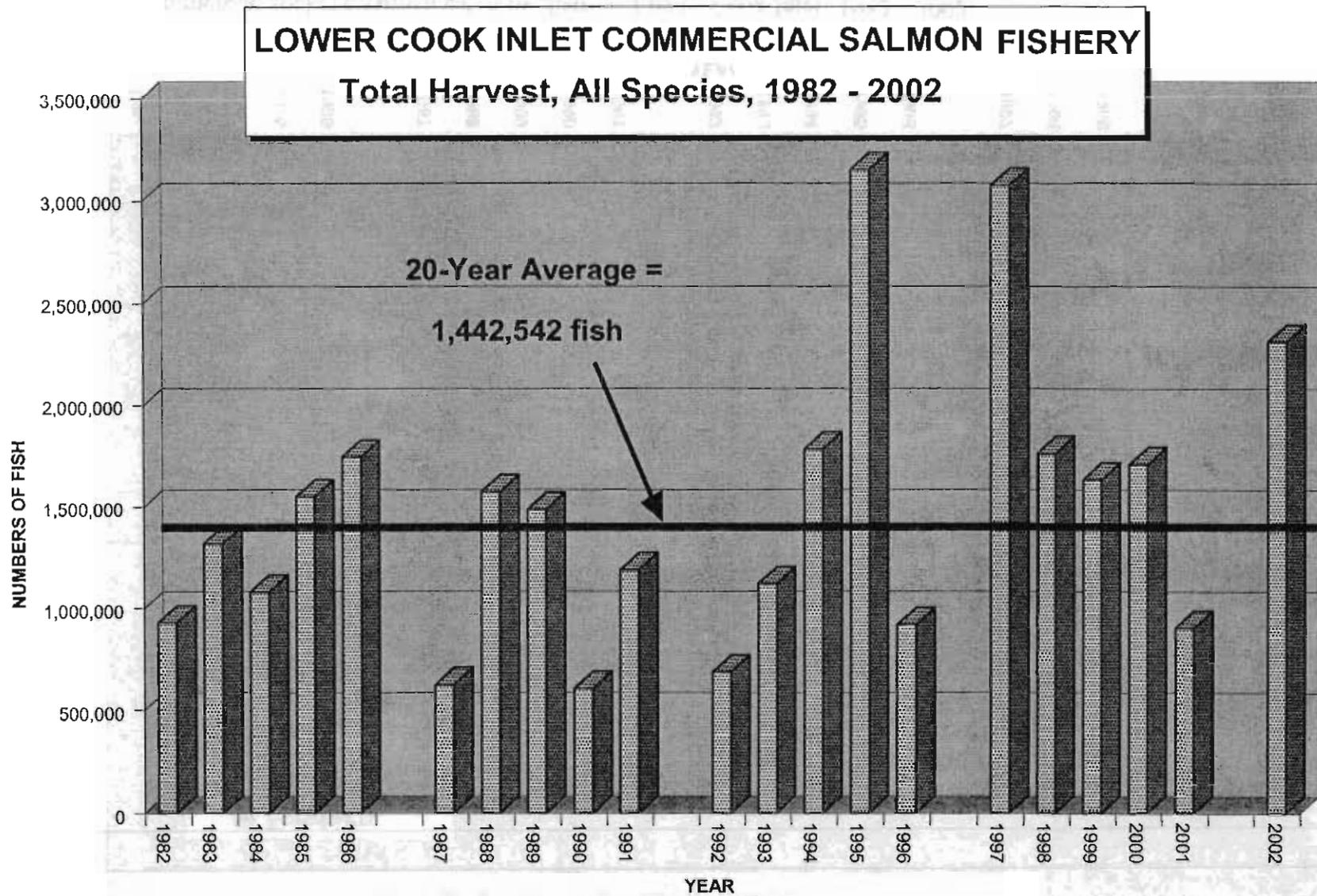


Figure 8. Total commercial salmon catch, Lower Cook Inlet, 1982 -2002.

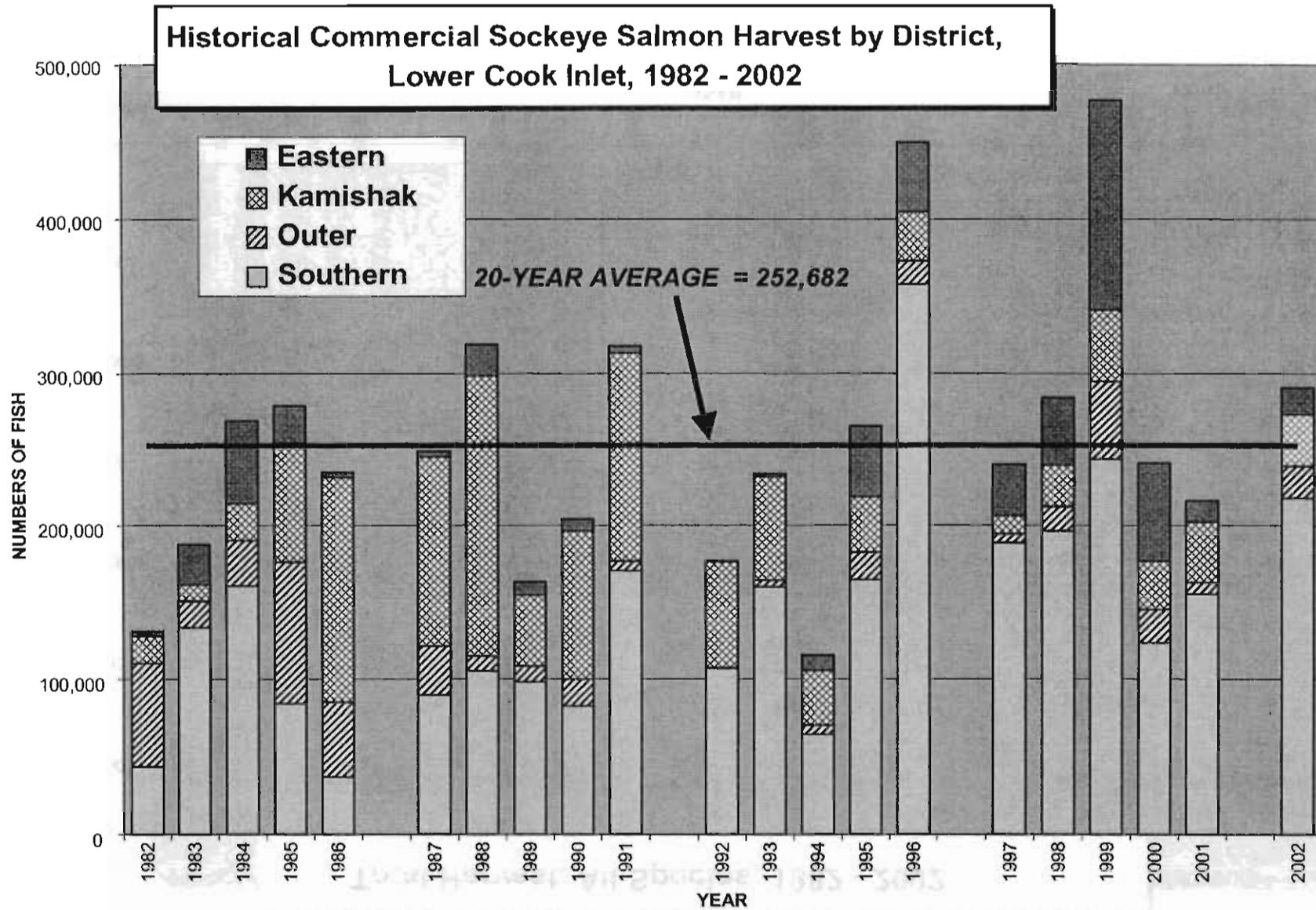


Figure 9. Commercial sockeye salmon catch by district, Lower Cook Inlet, 1982 - 2002.

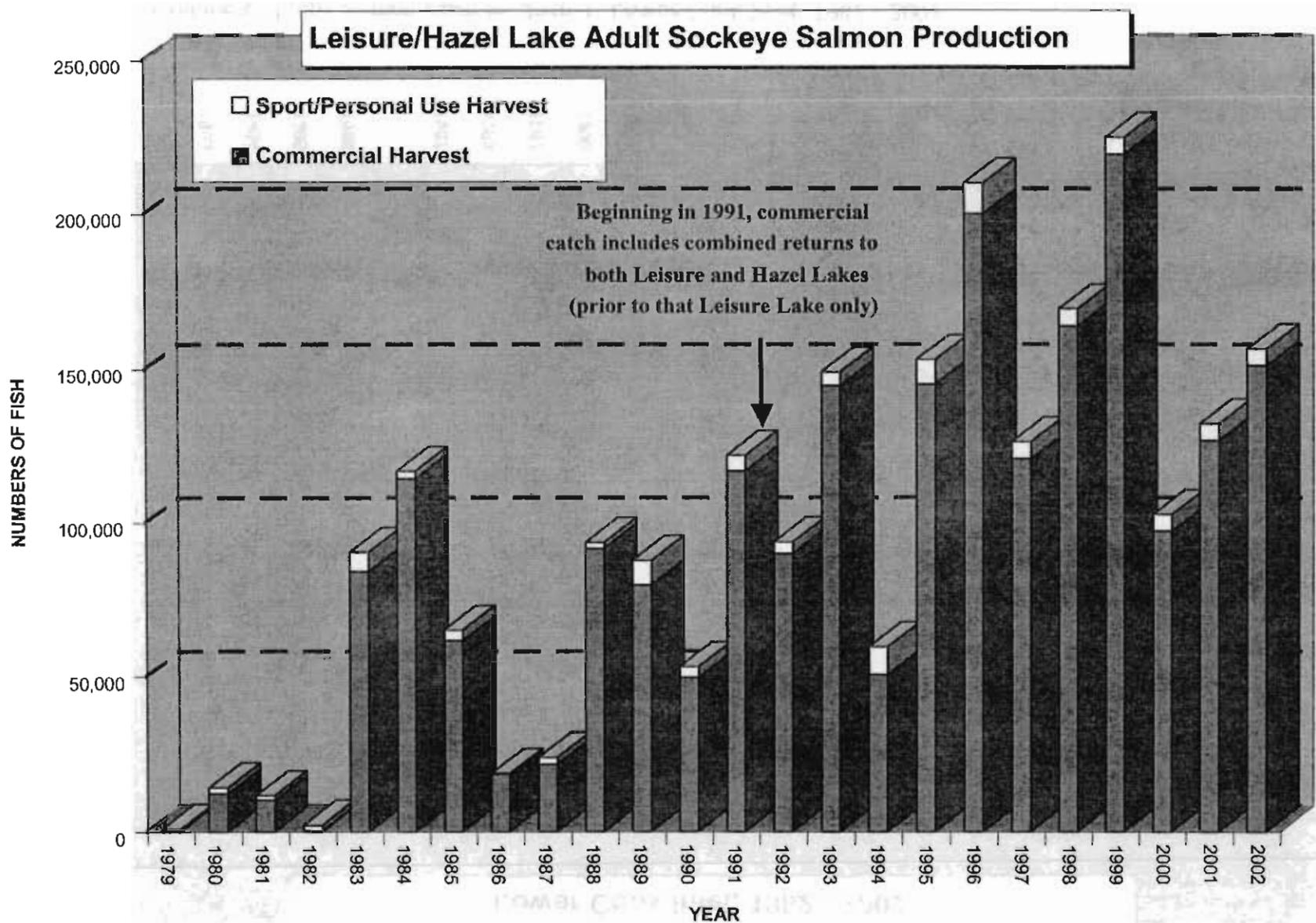


Figure 10. Sockeye salmon returns to Leisure and Hazel Lakes in the Southern District of Lower Cook Inlet, 1979 -2002.

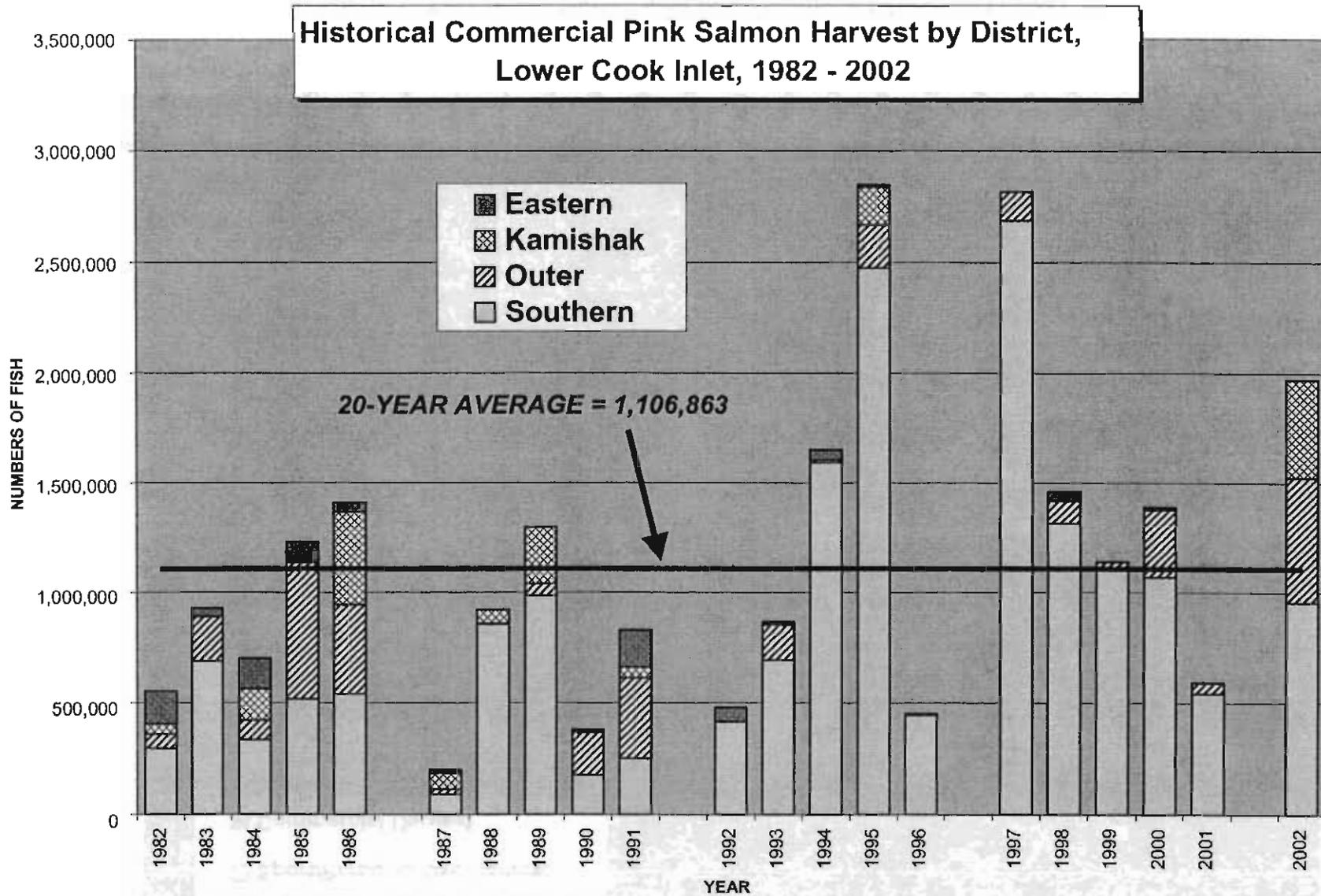


Figure 11. Commercial pink salmon catch by district, Lower Cook Inlet, 1982 - 2002.

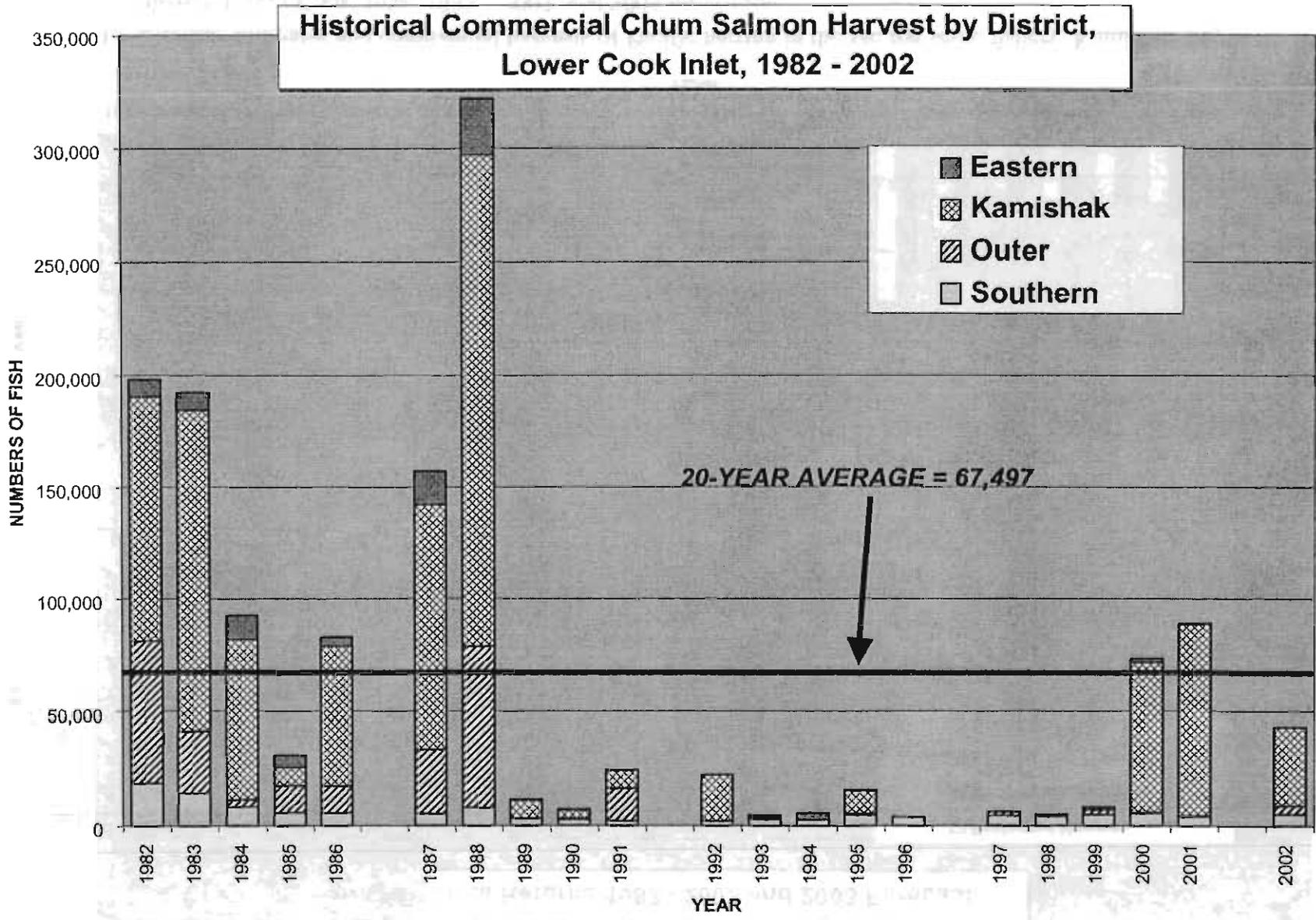


Figure 12. Commercial chum salmon catch by district, Lower Cook Inlet, 1982 - 2002.

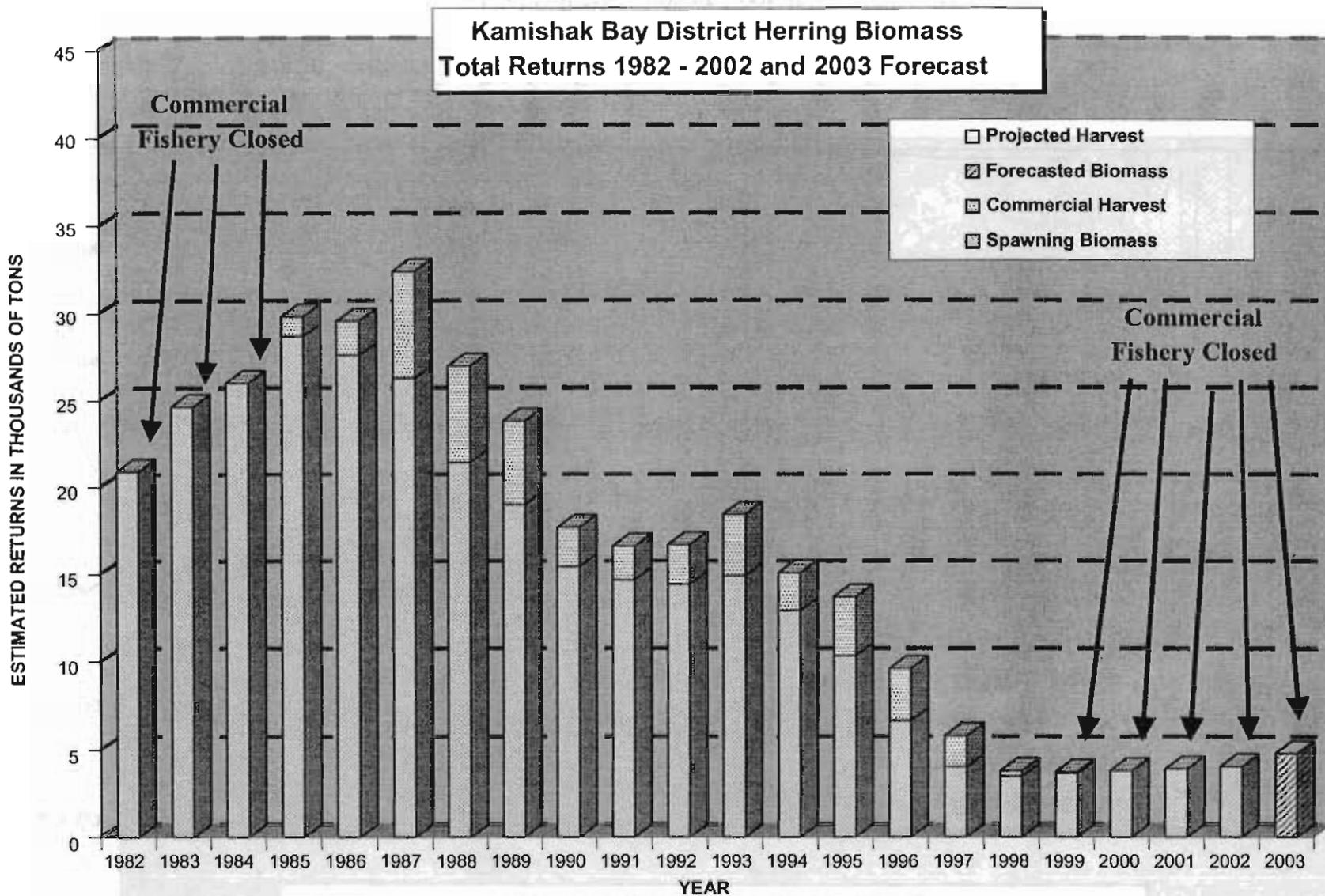


Figure 13. Biomass estimates and commercial harvests of Pacific herring in the sac roe seine fishery, Kamishak Bay District, Lower Cook Inlet, 1982 - 2002, and 2003 projection.

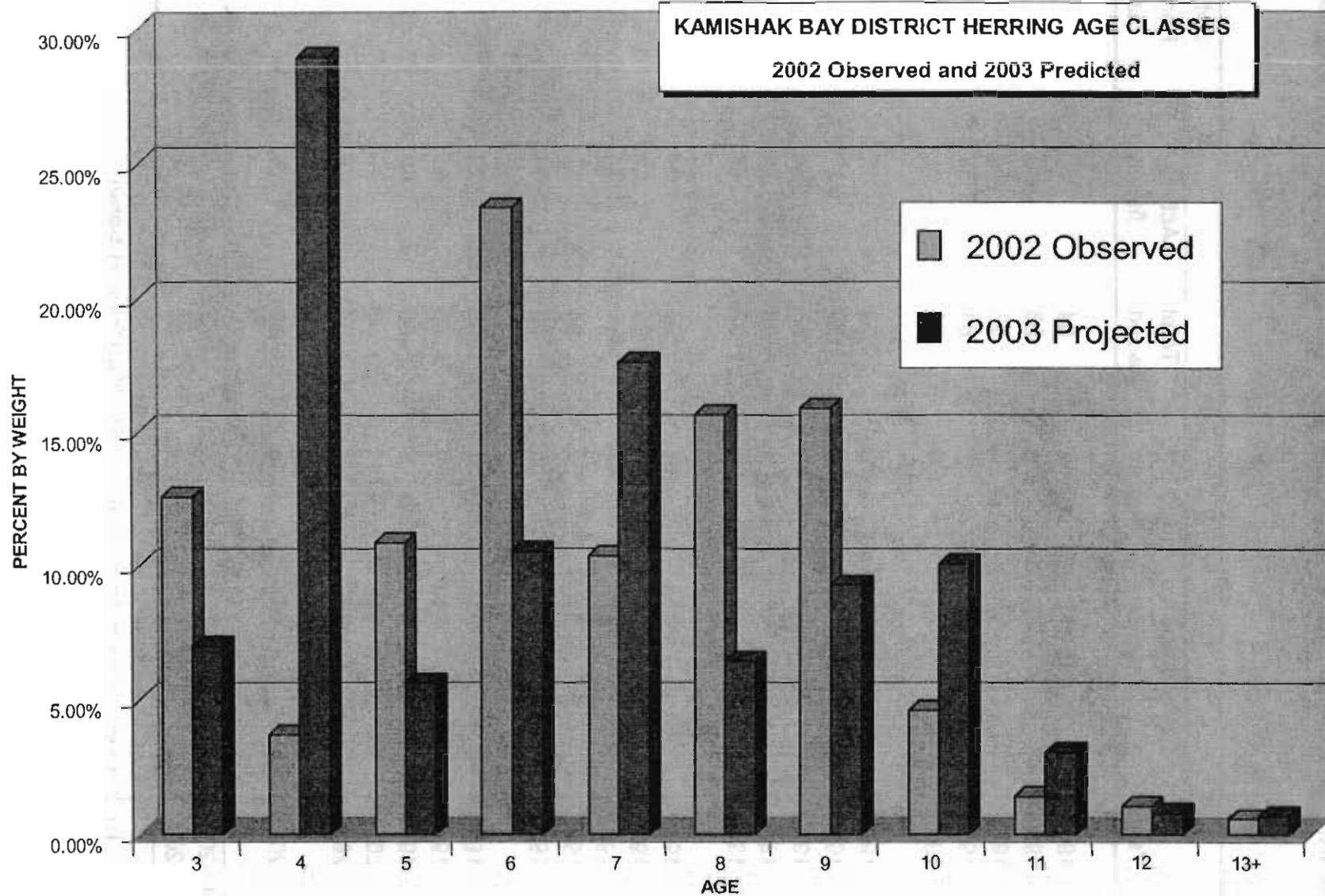


Figure 14. Herring age composition from samples collected in Kamishak Bay District, Lower Cook Inlet, 2002, and 2003 forecast.

Appendix Table 1. Salmon fishing permits issued and fished, by gear type, Lower Cook Inlet, 1982 - 2002^a.

Year	Seines			Actively fished	Set Net Permits fished
	Permanent Permits	Interim Permits	Total Issued		
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
1996	84	1	85	34	24
1997	84	1	85	23	25
1998	84	1	85	41	24
1999	84	1	85	45	20
2000	84	1	85	36	24
2001	84	1	85	25	18
2002	84	1	85	25	24
1982-2001 Avg.	82	1	83	53	25
1992-2001 Avg.	83	1	84	40	21

^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, 1982 - 2002^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1996 ^b	26	2,113	42	100	5	2,286
1997 ^b	23	1,066	36	1,286	10	2,421
1998 ^b	20	1,224	37	712	9	2,002
1999 ^b	51	2,459	23	470	20	3,023
2000 ^b	31	1,112	19	431	192	1,786
2001 ^b	24	627	15	277	295	1,238
2002 ^b	24	817	18	441	58	1,359
20 Year Avg.	29	1,389	76	725	287	2,506
1982–1991 Avg.	28	1,535	113	873	512	3,061
1992–2001 Avg.	30	1,243	39	577	62	1,951
2002 % of Total	1.77%	60.16%	1.33%	32.47%	4.27%	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, 1982 - 2002^a.

Year	Chinook	Sockeye	Coho	Pink	Chum
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
1996	1.33	0.91	0.40	0.08	0.18
1997	1.29	0.93 ^b	0.50 ^b	0.15	0.23
1998	1.45	0.96 ^b	0.36 ^b	0.16	0.27
1999	1.96	1.22 ^b	0.45 ^b	0.16	0.32
2000	1.86	0.87 ^b	0.60 ^b	0.12	0.28
2001	1.76	0.62 ^b	0.41 ^b	0.15	0.28
2002	1.11	0.55 ^b	0.33 ^b	0.07	0.16
20-Year Avg.	1.34	1.18	0.66	0.23	0.34
1982-91 Avg.	1.27	1.36	0.84	0.33	0.41
1992-2001 Avg.	1.41	0.99	0.47	0.14	0.26

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

^b Average price for sockeyes and cohos includes only those fish actually sold and does not include hatchery cost recovery fish that were donated, discarded, or harvested but not paid for due to contractual agreement with the processor.

Appendix Table 4. Salmon average weight in pounds per fish by species in the commercial fishery, Lower Cook Inlet, 1982 - 2002^a.

Year	Chinook	Sockeye	Coho	Pink	Chum
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
1996	16.9	5.2	7.6	2.9	8.0
1997	13.9	4.9	7.8	3.1	7.6
1998	13.1	4.6	8.5	3.1	7.4
1999	14.8	4.7	6.6	2.5	7.9
2000	14.7	5.3	8.2	2.5	9.3
2001	13.6	4.9	7.5	3.1	9.4
2002	14.0	5.2	7.8	3.4	8.3
20-Year Avg.	16.9	4.7	7.9	3.0	8.2
1982-91 Avg.	19.4	4.7	8.1	3.2	8.6
1992-2001 Avg.	14.4	4.7	7.8	2.9	7.7

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

Appendix Table 5. Commercial salmon catch in numbers of fish by species, Lower Cook Inlet, 1982 - 2002^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1996	1,181	449,685	13,572	451,506	3,764	919,708
1997	1,262	240,184	11,004	2,814,431	5,908	3,072,789
1998	1,071	284,029	16,653	1,457,819	4,647	1,764,219
1999	1,764	476,779	8,033	1,140,488	7,941	1,635,005
2000	1,188	240,932	8,203	1,387,307	73,254	1,710,884
2001	988	216,271	6,667	592,931	88,969	905,826
2002	1,553	290,654	8,329	1,970,061	43,259	2,313,856
20-Year Avg.	1,364	252,682	14,136	1,106,863	67,497	1,442,542
1982-91 Avg.	1,224	235,444	16,682	844,985	111,779	1,210,113
1992-2001 Avg.	1,505	269,920	11,589	1,368,742	23,216	1,674,971
2002 % of Total	0.07%	12.56%	0.36%	85.14%	1.87%	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, 1982 - 2002^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1996	1,180	358,163	9,543	444,236	3,511	816,633
1997	1,262	188,413	5,597	2,685,764	4,260	2,885,296
1998	1,070	196,262	2,243	1,315,042	3,956	1,518,534
1999	1,760	243,444	2,757	1,105,267	4,624	1,357,852
2000	1,184	123,574	768	1,070,065	5,340	1,200,931
2001	986	155,411	2,706	542,975	3,789	705,867
2002	1,553	218,203	3,769	953,960	4,803	1,182,288
20-Year Avg.	1,343	138,277	3,989	854,272	5,475	1,003,356
1982-91 Avg.	1,188	100,440	4,393	474,726	7,219	587,965
1992-2001 Avg.	1,498	176,114	3,586	1,233,819	3,731	1,418,747
2002 % of Total	0.13%	18.46%	0.32%	80.69%	0.41%	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, 1982 - 2002^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1996	1,054	69,338	5,779	14,813	2,792	93,776
1997	1,136	59,412	4,475	64,162	4,166	133,351
1998	952	26,131	1,057	24,403	3,754	56,297
1999	1,491	27,646	1,374	5,348	4,313	40,194
2000	1,019	26,503	621	21,845	5,214	55,202
2001	865	28,503	1,811	13,393	3,487	48,059
2002	1,513	46,812	2,393	6,741	4,681	62,140
20-Year Avg.	1,071	28,307	2,817	19,993	3,489	55,676
1982-91 Avg.	934	26,340	3,265	16,265	3,538	50,342
1992-2001 Avg.	1,208	30,274	2,369	23,721	3,440	61,011
2002 % of Total	2.43%	75.33%	3.85%	10.85%	7.53%	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, 1982 - 2002^a.

Year	Chinook	sockeye	Coho	Pink	Chum	Total
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
1996	0	14,999	96	7,199	3	22,297
1997	0	6,255	63	128,373	1,575	136,266
1998	0	15,991	45	102,172	611	118,819
1999	3	51,117	1,482	32,484	2,062	87,148
2000	2	21,623	20	306,555	302	328,502
2001	0	7,339	5	48,559	408	56,311
2002	0	21,154	74	569,955	3,810	594,993
20-Year Avg.	11	23,742	759	149,998	11,925	186,436
1982-91 Avg.	20	32,877	1,109	201,002	23,189	258,196
1992-2001 Avg.	2	14,608	410	98,995	662	114,676
2002 % of Total	0.00%	3.56%	0.01%	95.79%	0.64%	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, 1982 - 2002^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1996	0	44,919	3,932	36	223	49,110
1997	0	33,783	5,344	1	66	39,194
1998	1	44,274	14,365	38,829	51	97,520
1999	1	135,305	3,794	1,930	1,232	142,262
2000	1	64,099	7,408	4,473	1,540	77,521
2001	0	13,809	3,947	0	6	17,762
2002	0	17,376	4,432	0	5	21,813
20-Year Avg.	3	27,518	4,626	40,867	4,084	77,099
1982-91 Avg.	6	15,570	2,608	64,447	7,535	90,165
1992-2001 Avg.	0	39,466	6,645	17,288	634	64,033
2002 % of Total	0.00%	79.66%	20.32%	0.00%	0.02%	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, 1982 - 2002^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1996	1	31,604	1	35	27	31,668
1997	0	11,733	0	293	7	12,033
1998	0	27,502	0	1,776	29	29,307
1999	0	46,913	0	807	23	47,743
2000	1	31,636	7	6,214	66,072	103,930
2001	2	39,712	9	1,397	84,766	125,886
2002	0	33,921	54	446,146	34,641	514,762
20-Year Avg.	8	63,145	4,761	61,726	46,013	175,652
1982-91 Avg.	11	86,558	8,573	104,810	73,836	273,788
1992-2001 Avg.	5	39,732	949	18,641	18,189	77,516
2002 % of Total	0.00%	6.59%	0.01%	86.67%	6.73%	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, 1982 - 2002^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1996	816,633	22,297	31,668	49,110	919,708
1997	2,885,296	136,266	12,033	39,194	3,072,789
1998	1,518,573	118,819	29,307	97,520	1,764,219
1999	1,357,852	87,148	47,743	142,262	1,635,005
2000	1,200,931	328,502	103,930	78,227	1,711,590
2001	705,867	56,311	125,886	17,762	905,826
2002	1,182,288	594,993	514,762	21,813	2,313,856
20-Year Avg.	1,003,356	186,436	175,652	77,099	1,442,542
1982-91 Avg.	587,965	258,196	273,788	90,165	1,210,113
1992-2001 Avg.	1,418,747	114,676	77,516	64,033	1,674,971
2002 % of Total	51.10%	25.71%	22.25%	0.94%	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, 1982 - 2002^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1996	1,180	0	1	0	1,181
1997	1,262	0	0	0	1,262
1998	1,070	0	0	1	1,071
1999	1,760	3	0	1	1,764
2000	1,184	2	1	1	1,188
2001	986	0	2	0	988
2002	1,553	0	0	0	1,553
20-Year Avg.	1,343	11	8	3	1,364
1982-91 Avg.	1,188	20	11	6	1,224
1992-2001 Avg.	1,498	2	5	0	1,505
2002 % of Total	100.00%	0.00%	0.00%	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, 1982 - 2002^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1996	358,163	14,999	31,604	44,919	449,685
1997	188,413	6,255	11,733	33,783	240,184
1998	196,262	15,991	27,502	44,274	284,029
1999	243,444	51,117	46,913	135,305	476,779
2000	123,574	21,623	31,636	64,099	240,932
2001	155,411	7,339	39,712	13,809	216,271
2002	218,203	21,154	33,921	17,376	290,654
20-Year Avg.	138,277	23,742	63,145	27,518	252,682
1982-91 Avg.	100,440	32,877	86,558	15,570	235,444
1992-2001 Avg.	176,114	14,608	39,732	39,466	269,920
2002 % of Total	75.07%	7.28%	11.67%	5.98%	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 – 2002^{a,b}.

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	43.9	31.7
Aialik Bay	24.1	3.0	3.5	20.2	8.5	7.7	4.7	0.4	0.2	0.6	2.0	1.0	2.1
Nuka Bay	91.8	48.4	31.8	9.5	10.3	5.7	1.8	0	3.5	5.9	17.6	15.0	6.2
Port Dick	0	0	0	0	0	11.7	4.6	0.6	1.0	0	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	75.3	12.3
China Poot ^c				63.6	35.8	49.9	116.7	76.0	127.6	38.7	133.4	225.2	116.1
Tutka/Barabara	14.9	16.3	14.7	12.9	13.4	7.9	13.4	12.9	8.4	11.0	15.4	27.8	14.4
Seldovia Bay	2.6	3.2	3.5	2.5	1.8	4.3	4.0	3.3	4.4	2.7	4.2	11.9	12.5
Port Graham Bay	3.5	2.0	2.4	1.4	0	0	0	0	0	0	2.6	17.9	33.1
Kamishak/Douglas	0.7	7.6	2.3	5	0	0.1	7.0	9.9	1.3	3.4	2.7	0	2.6
McNeil (Mikfik)	67.0	27.5	21.4	14.6	7.0	9.1	12.9	4.0	0.9	0	0.1	0	0.2
Paint River	0	0	0	0	0	0	0.4	0	0	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	0	0
Bruin/Kirschner	0	0	0	0	0.2	14.5	55.9	40.5	39.7	31.9	33.6	31.6	9.0
Miscellaneous	0	0.4	1.6	0.2	0.8	2.4	0.1	0	1.5	0	0.2	0	0
Totals	278.7	234.9	248.8	319.0	163.3	203.9	317.9	176.6	233.8	115.4	265.4	449.7	240.2

- continued -

Appendix Table 14. (page 2 of 2)

Location	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Resurrection Bay	35.0	135.2	64.1	13.8	16.2								
Alalik Bay	8.6	0.1	T	0	1.2								
Nuka Bay	16.0	51.1	21.6	7.3	21.2								
Port Dick	0	0	T	T	0								
Halibut Cove & Lagoon	62.3	42.9	24.3	5.8	27.5								
China Poot ^c	100.2	170.6	78.3	117.7	126.5								
Tutka/Barabara	9.8	22.9	12.4	23.0	19.4								
Seldovia Bay	6.0	6.3	6.4	9.0	9.5								
Port Graham Bay	17.9	0.7	2.1	0	35.3								
Kamishak/Douglas	0	0	T	0.5	1.4								
McNeil (Mikfik)	0	7.2	0	0.3	0								
Paint River	0	0	0	0	0								
Chenik Lake	0	0	0	0	0								
Bruin/Kirschner	27.5	39.8	31.6	38.9	32.5								
Miscellaneous	0.7	0	T	0	0								
Totals	284.0	476.8	240.9	216.3	290.7								

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

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

^c 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 returning to China Poot and Neptune Bays in the Southern District of Lower Cook Inlet, by user group, 1979 - 2002^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
1996	1,000	9,000	200,000 ^c	441	210,441
1997	650 ^d	4,900 ^e	120,900 ^c	1,130	127,620
1998	650 ^d	4,900 ^e	164,000 ^c	380	170,542
1999	650 ^d	4,900 ^e	219,300 ^c	522	225,983
2000	650 ^d	4,900 ^e	97,100 ^c	256	102,906
2001	650 ^d	4,900 ^e	126,900 ^c	57	132,507
2002	650 ^d	4,900 ^e	151,100 ^c	51	156,701
1982-2001 Average	584	4,322	99,800	338	105,044

^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.

^d The final "Sport Harvest" figures for 1997 - 2002 represent the estimated previous 10-year average.

^e The final "Personal Use Harvest" figures for 1997 - 2002 represent the statewide sport fish harvest survey average for the years 1990 - 1995.

Appendix Table 16. Commercial catch and escapement of sockeye salmon at Chenik Lake in the Kamishak Bay District of Lower Cook Inlet, 1975 - 2002.

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	c
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
1996	0 ^d	2,990	2,990
1997	0 ^d	2,338	2,338
1998	0 ^d	1,880	1,880
1999	0 ^d	2,850	2,850
2000	0 ^d	4,800	4,800
2001	0 ^d	250	250
2002	0 ^d	4,650	4,650
Average Since 1985	33,095	5,821	38,916

^a Estimated from aerial surveys between 1975-90 and 1998-present, weir counts between 1991-97.

^b Closed to fishing.

^c No data.

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

Appendix Table 17. Commercial coho salmon catch in numbers of fish by district, Lower Cook Inlet, 1982 - 2002^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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	9,297
1991	9,415	12	2,337	7,283	19,047
1992	1,277	1	1,488	3,136	5,902
1993	4,431	119	3	8,924	13,477
1994	1,373	993	1,897	10,410	14,673
1995	5,161	1,272	6,084	5,192	17,709
1996	9,543	96	1	3,932	13,572
1997	5,597	63	0	5,344	11,004
1998	2,243	45	0	14,365	16,653
1999	2,757	1,482	0	3,794	8,033
2000	768	20	7	7,408	8,203
2001	2,706	5	9	3,947	6,667
2002	3,769	74	54	4,432	8,329
20-Year Avg.	3,989	759	4,761	4,626	14,136
1982-91 Avg.	4,393	1,109	8,573	2,608	16,682
1992-2001 Avg.	3,586	410	949	6,645	11,589
2002 % of Total	45.25%	0.89%	0.65%	53.21%	100.00%

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

Appendix Table 18. Commercial pink salmon catch in numbers of fish by district, Lower Cook Inlet, 1982 - 2002^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1996	444,236	7,199	36	35	451,506
1997	2,685,764	128,373	293	1	2,814,431
1998	1,315,042	102,172	1,776	38,829	1,457,819
1999	1,105,267	32,484	807	1,930	1,140,488
2000	1,070,065	306,555	6,214	4,473	1,387,307
2001	542,975	48,559	1,397	0	592,931
2002	953,960	569,955	446,146	0	1,970,061
20-Year Avg.	854,272	149,998	61,726	40,867	1,106,863
1982-91 Avg.	474,726	201,002	104,810	64,447	844,985
1992-2001 Avg.	1,233,819	98,995	18,641	17,288	1,368,742
2002 % of Total	48.42%	28.93%	22.65%	0.00%	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 – 2001^{a,b}.

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
Hallbut 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 Island	33.3	2.0	0.3	0	0.1	0	25.0	5.2	31.4	40.6
E. Nuka Bay							94.6	T	0	8.7
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	12.8	5.6	31.1	8.4
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	0
Hallbut Cove and Lagoon	27.1	11.1	18.8	5.9	30.5	254.4	91.1	100.2	1.9	2.6
China Pool ^c						8.5	135.7	50.6	12.9	14.5
Tutka/Barabara	416.8	1,026.6	616.0	491.2	56.5	632.1	117.6	539.4	2,428.5	2,511.2
Seldovia Bay	140.8	126.4	43.3	3.8	1.2	1.1	0.3	2.4	8.2	12.3
Port Graham Bay	124.7	45.9	4.1	12.5	2.3	0	0	0	10.2	145.1
Dogfish Bay	7.4	22.9	0.2	0	0	0	0	0	0	0
Port Chatham	174.4	47.6	3.3	7.0	0	9.7	7.5	14.7	17.6	0
Windy Bay	552.7	82.9	0	4.8	0	0	49.1	43.4	111.2	93.2
Rocky Bay	122.2	16.5	1.3	0	0	0	0	0	27.5	0
Port Dick Bay	964.8	1,140.9	140.0	455.6	3.0	0	289.7	26.6	0	0.6
Nuka Island	87.2	244.9	30.2	9.6	0	0	10.6	51.9	6.0	33.3
E. Nuka Bay	0.9	121.0	18.1	141.2	20.9	43.0	T	13.8	21.4	1.3
Resurrection Bay	0	32.6	27.1	74.6	11.8	0	0	0.7	0	0
Bruin Bay	40.3	51.9	0.3	0	1.2	202.8	45.1	0.1	104.8	0.3
Rocky/Ursus Coves	14.4	14.1	0	0	69.4	53.8	0	0	58.0	0
Iniskin/Cottonwood Bays	0.2	0	0.3	0	0.2	0	0	0	0	0
Miscellaneous	40.0	54.0	16.5	17.9	4.4	0.1	82.0	22.8	26.6	0
Total^d	2,990.9	3,279.2	927.6	1,229.7	201.4	1,296.9	828.7	866.8	2,848.5	2,814.4

- continued -

Appendix Table 19. (page 2 of 2)

Location	1999	2001	2003	2005	2007	2009	2011	2013	2015	2017
Humpy Creek	0	0								
Halibut Cove and Lagoon	3.4	0.2								
China Poot ^c	19.6	4.8								
Tutka/Barabara	1,080.8	533.1								
Seldovia Bay	1.5	4.9								
Port Graham Bay	0	0								
Dogfish Bay	0	0								
Port Chatham	0	0								
Windy Bay	0	9.4								
Rocky Bay	0	0								
Port Dick Bay	0	16.7								
Nuka Island	0	0								
E. Nuka Bay	32.5	22.4								
Resurrection Bay	0	0								
Bruin Bay	0.8	0								
Rocky/Ursus Coves	0	0.1								
Iniskin/Cottonwood Bays	0	0								
Miscellaneous	1.9	1.3								
Total	1,140.5	592.9								

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

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

^c China Poot Subdistrict, which includes China Poot, Neptune, and Peterson Bays, 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 – 2002^{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
Hallbut 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	29.0	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 Island	26.6	129.8	23.8	0	90.2	48.4	0	0	0	0
E. Nuka Bay							0.3	T	0.1	3.3
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	1.0	2.8	3.4
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	0	0
Hallbut Cove and Lagoon	4.7	1.0	10.9	14.0	106.8	91.0	58.4	105.6	2.3	2.4
China Poot ^c					5.4	46.1	35.7	24.2	8.2	3.3
Tutka/Barabara	312.5	184.9	262.0	400.2	723.9	37.4	320.9	1,454.5	428.2	1,300.6
Seldovia Bay	81.7	70.3	2.2	2.8	5.5	3.6	1.9	5.4	4.1	7.4
Port Graham Bay	30.5	35.4	8.0	8.8	10.7	0	0	0	1.5	0.6
Dogfish Bay	4.7	1.7	0.1	0	0	0	0	0	0	0
Port Chatham	1.8	12.6	0	0	0	22.1	0	0	0	9.4
Windy Bay	0	0	0	0	0	0	0	0	0	0
Rocky Bay	1.4	0	0	0	0	0	0	0	0	35.0
Port Dick Bay	133.3	44.0	84.6	304.0	5.9	169.1	0.1	1.6	0	2.4
Nuka Island	0	0	0	0	0	0	0	0	0	41.1
E. Nuka Bay	12.4	8.7	4.4	97.8	0.1	0.2	0	11.6	7.2	14.2
Resurrection Bay	155.8	137.4	122.3	36.5	0.5	0	0	T	T	0
Bruin Bay	100.6	13.3	125.2	349.7	5.0	0.4	1.9	T	T	1.8
Rocky/Ursus Coves	0	20.2	8.5	71.1	49.9	0	0.3	0	0	0
Iniskin/Cottonwood Bays	0.1	0.4	0.4	0.2	1.3	0	T	0	0	0
Miscellaneous	1.6	16.8	18.5	6.5	6.3	13.8	60.6	45.0	0	39.6
Total	889.7	551.6	700.6	1,408.3	921.3	383.7	479.8	1,647.9	451.5	1,457.8

- continued -

Appendix Table 20. (page 2 of 2)

Location	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018
Humpy Creek	0	0.0								
Halibut Cove and Lagoon	0.5	0.3								
China Poot ^c	4.0	4.7								
Tutka/Barabara	1,055.4	709.0								
Seldovia Bay	10.2	1.3								
Port Graham Bay	0	238.7								
Dogfish Bay	0	0.0								
Port Chatham	0	0.0								
Windy Bay	0	0.0								
Rocky Bay	0	0.0								
Port Dick Bay	306.6	454.1								
Nuka Island	0	0.0								
E. Nuka Bay	0.3	115.9								
Resurrection Bay	0.4	0.0								
Bruin Bay	5.5	333.7								
Rocky/Ursus Coves	0	110.1								
Iniskin/Cottonwood Bays	0	0.1								
Miscellaneous	4.4	2.2								
Total	1,387.3	1,970.1								

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

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

^c China Poot Subdistrict, which includes China Poot, Neptune, and Peterson Bays, 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, 1982 - 2002^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1996	3,511	3	27	223	3,764
1997	4,260	1,575	7	66	5,908
1998	3,956	611	29	51	4,647
1999	4,624	2,062	23	1,232	7,941
2000	5,340	302	66,072	1,540	73,254
2001	3,789	408	84,766	6	88,969
2002	4,803	3,810	34,641	5	43,259
20-Year Avg.	5,475	11,925	46,013	4,084	67,497
1982-91 Avg.	7,219	23,189	73,836	7,535	111,779
1992-2001 Avg.	3,731	662	18,189	634	23,216
2002 % of Total	11.10%	8.81%	80.08%	0.01%	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, 1959 – 2002^{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	0.9	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	1.0	1.1
Port Graham	1.3	0.8	0.4	1.2	0	0	0	0	0	0	0.7	0.7	2.0
Dogfish Bay	0	0	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	0	0
Rocky/Windy Bays	0	0	0	0	0	0	0.5	0	0.1	0	0.4	0	1.6
Port Dick	9.6	10.4	27.1	64.4	0	0.5	13.7	0.2	0.7	T	0	0	0
Nuka Bay	0.8	1.3	1.6	6.8	0	T	T	0	T	T	0.1	T	T
Resurrection Bay	3.0	3.5	13.9	23.9	0	0	0	0	0	2.5	0.3	0.2	0
Douglas River	8.0	11.6	23.7	24.8	0	0.1	3.0	12.5	T	T	0.7	0	0
Kamishak River	0.1	0.1	24.6	26.7	0	T	0.7	1.5	0	0	0.1	0	0
McNeil River	0	13.7	32.9	104.0	0.1	0.1	0.1	2.0	0.4	0	0	0	T
Bruin Bay	0	5.4	0.1	2.8	4.4	0.1	2.6	0.8	T	0	4.9	T	T
Ursus/Rocky Coves	0	22.1	17.2	20.7	3.4	0	0	2.7	0	0	2.2	0	0
Cottonwood/Iniskin	0	8.8	9.7	39.2	0	0	1.0	0.2	0	0	2.3	0	0
Miscellaneous	3.3	1.1	1.9	2.7	0.9	4.7	1.7	1.6	2.1	2.1	2.3	1.9	1.2
Totals	30.6	82.7	157.0	321.9	11.3	7.0	24.2	22.2	4.4	5.5	15.6	3.8	5.9

- continued -

Appendix Table 22. (page 2 of 2)

Location	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Tutka Bay	0.9	1.5	1.8	1.4	2.7								
Port Graham	0.8	0	T	0	0.4								
Dogfish Bay	0	0	0	0	0								
Port Chatham	0.1	0	0	0	0								
Rocky/Windy Bays	0.3	0	0	0.3	0								
Port Dick	0.1	0	0.1	0.1	3.8								
Nuka Bay	T	2.1	0.2	T	0.1								
Resurrection Bay	0	0	1.5	T	T								
Douglas River	0	0	19.9	10.3	7.0								
Kamishak River	0	0	43.7	73.0	5.1								
McNeil River	0	0	0	T	0								
Bruin Bay	T	T	2.4	0	2.0								
Ursus/Rocky Coves	0	0	0	1.5	3.4								
Cottonwood/Iniskin	0	0	0	0	17.0								
Miscellaneous	2.3	4.4	3.6	2.4	1.8								
Totals	4.6	7.9	73.3	89.0	43.3								

^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, 1982 - 2002^a.

Year	English Bay	Delight Lake	Desire Lake	Bear Lake ^{b,c}	Aialik Lake	Mikfik Lake	Chenik Lake	Amak-dedorl Creek	Kami-shak Rivers	Douglas River	Total
1982	20.0	25.0	18.0	0.5	22.4	35.0	8.0	3.2	1.0	4.2	137.3
1983	12.0	7.0	12.0	0.7	20.0	7.0	11.0	1.2	0.4	0.5	71.8
1984	11.1	10.5	15.0	0.5	22.0	6.0	13.0	1.4	0.1	0.0	79.6
1985	5.0	26.0	18.0	1.1	8.0	20.0	3.5	0.9	0.8	0.0	83.3
1986	2.8	13.0	10.0	0.8	7.6	7.8	7.0	1.9	5.0	0.2	56.1
1987	7.0	10.5	13.4	0.3	9.2	9.0	10.0	1.1	^d	0.1	60.6
1988	2.5	1.2	9.0	0.1	13.0	10.1	9.0	0.4	0.5	0.0	45.8
1989	4.5	7.7	9.0	0.1	6.5	11.5	12.0 ^c	1.2	0.5	0.6	53.6
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	^d	46.2
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	^d	50.0
1994	13.8 ^c	5.6	10.5	8.6	7.3	9.5	0.8 ^c	0.8	^d	^d	56.9
1995	22.5 ^c	15.8	15.8	8.3	2.6	10.1	1.1 ^c	2.4	^d	^d	78.6
1996	12.4 ^c	7.7	9.4	8.0	3.5	10.5	3.0 ^c	2.9	1.8	0.6	55.8
1997	15.4 ^c	27.8 ^c	14.7 ^c	7.9	11.4	8.5	2.3 ^c	1.5	^d	^d	89.5
1998	15.4 ^c	9.2 ^c	7.9	8.4	4.9	12.6	1.9	4.1	^d	^d	63.1
1999	15.8 ^c	17.0 ^c	14.6	7.8	3.8	15.7	2.9	8.8	2.2	0.4	89.0
2000	12.6 ^c	12.3	4.0	11.9	4.3	10.9	4.8	3.3	1.5	0.4	66.0
2001	10.5 ^c	10.1	5.5	12.8	5.1	5.4	0.3	2.7	2.5	^d	54.9
2002	16.9 ^c	19.6 ^c	16.0	12.5	6.1	16.7	4.7	3.2	3.3	^d	99.0
20-year Average	10.4	11.4	11.4	4.3	8.3	10.9	6.6	2.3	1.7	0.6	67.8
1982-91 Average	7.5	11.0	12.2	0.5	11.8	12.5	10.1	1.5	1.0	0.7	68.8
1992-2001 Average	13.2	11.7	10.5	8.1	4.8	9.3	3.0	3.0	2.8	0.4	67.0
Sustainable Esc. Goal ^f	6.0 – 13.5	5.95 – 12.55	8.8 – 15.2	0.7 – 8.3	3.7 – 8.0	6.3 – 12.15	1.88 – 9.3	^g	^g	^g	33.33 – 79.0

^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 estimate.

^e Combination of weir and video counts.

^f New sustainable escapement goals (SEG's) implemented for the first time beginning with the 2002 season.

^g No formal escapement goal established.

Appendix Table 24. Estimated pink salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1960 – 2002^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 ^b	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	--	--	--	--	--	--	--	--	--	--	--
Alalik 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
Amakdedoni Creek	60.0	--	80.0	--	10.0	--	8.0	--	--	1.0	13.0
Brun 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

-continued-

Appendix Table 24. (page 2 of 5)

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 Pool 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	16.6
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 ^b	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
Deslire 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
Alalik 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

-continued-

Appendix Table 24. (page 3 of 5)

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 Pool 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	14.6	1.0	1.6	1.8	0.3	0.7	4.5	3.9	10.9	2.2
Saldovia 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	^d
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 ^b	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	—	—	^d
Bear Creek	7.9	0.8	7.7	4.1	14.0	3.5	0.2	1.7	4.4	15.4 ^c	2.3
Salmon Creek	21.0	0.5	10.2	2.1	8.3	1.7	0.1	1.6	—	^c	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	—	^d
Tonsina Creek	7.5	5.4	6.0	48.2	11.2	3.4	0.1	0.5	1.2	0.3	^d
Big Kamishak River	5.0	—	—	—	5.0	—	1.0	—	—	—	^d
Little Kamishak River	2.2	—	0.1	1.6	2.0	—	0.5	—	—	0.9	^d
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 Creek	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 5)

Location	Y E A R										
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Humpy Creek	36.0	14.1	89.3	9.0	78.3	17.5	12.8	22.4	30.5	37.1	
China Pool Creek	1.6	5.7	2.0	2.8	2.8	5.7	0.7	7.5	6.6	6.5	
Tutka Lagoon Creek	27.4	14.5	15.9	3.5	45.0	17.5	27.9	19.0	4.5	15.9	
Barabara Creek	11.9	4.5	10.8	2.4	12.5	2.8	3.9	5.6	2.3	3.2	
Seldovia River	43.4	24.4	48.5	17.8	39.1	31.5	12.2	53.5	12.3	26.9	
Port Graham River	12.8	7.6	10.0	7.0	12.5	12.6	9.7	15.6	10.3	58.5	
Dogfish Lagoon	0.3	1.3	13.3	2.3	20.0	6.7	12.4	11.1	2.0	1.3	
Port Chatham Creeks	22.2	3.3	14.0	8.6	42.7	22.2	10.7	16.7	17.9	18.1	
Windy Right Creek	13.6	2.2	11.4	9.9	13.9	19.5	5.2	23.0	10.3	14.4	
Windy Left Creek	25.9	3.0	31.6	2.5	64.6	12.9	24.0	20.1	61.8	28.9	
Rocky River	70.0	17.1	56.3	80.1	48.1	165.0	17.2	131.6	73.0	112.5	
Port Dick Creek ^b	37.0	18.1	6.6	23.2	36.9	59.1	8.5	124.4 ^e	44.7	108.0	
Island Creek	12.1	28.3	10.6	40.1	71.1	83.6	8.6	70.8	81.8	44.1	
South Nuka Island Creek	34.3	1.4	6.2	6.8	9.3	14.0	2.4	13.6	20.7	14.8	
Desire Lake Creek	19.3	—	—	—	6.2	6.2	6.8	21.1	67.5	78.4	
James Lagoon	3.3	0.8	0.6	—	—	—	—	3.9	2.3	3.1	
Aialik Lagoon	—	—	1.1	—	—	0.4	0.9	—	—	—	
Bear Creek	6.6 ^c	34.8 ^c	38.6 ^c	8.0 ^c	6.3 ^c	13.2 ^c	7.8 ^c	35.6 ^c	3.0 ^c	2.7 ^c	
Salmon Creek	c	c	c	c	c	c	c	c	c	c	
Thumb Cove	5.5	10.8	9.3	9.5	4.7	21.0	9.2	8.5	3.1	3.7	
Humpy Cove	0.9	2.2	1.8	3.4	2.2	1.2	4.0	1.7	0.3	1.8	
Tonsina Creek	3.2	7.0	0.5	0.4	0.4	2.3	0.5	6.6	2.8	6.9	
Big Kamishak River	—	—	—	16.7	—	2.0	5.7	14.9	—	—	
Little Kamishak River	—	—	—	—	—	—	4.2	13.0	—	3.4	
Amakdedon Creek	1.7	0.7	4.5	—	1.7	—	—	—	6.0	0.9	
Bruin Bay River	86.4	5.9	307.3	27.5	162.7	134.9	2.9	178.7	18.5	1,598.5	
Sunday Creek	57.8	3.1	95.9	2.8	52.5	24.0	5.3	39.8	26.2	81.9	
Brown's Peak Creak	41.6	1.3	96.7	2.4	42.3	7.9	2.6	9.8	19.2	27.5	
Totals	574.8	212.1	882.8	286.7	775.8	683.7	205.9	865.0	527.6	2,299.0	

-continued-

Appendix Table 24. (page 5 of 5)

Location	Y E A R							1960-2001	Sustainable
	2004	2005	2006	2007	2008	2009	2010	Average	Escapement Goal ^f
Humpy Creek								45.8	21.65 – 85.55
China Pool Creek								6.3	2.9 – 8.2
Tutka Lagoon Creek								15.2	11.6 – 18.9
Barabara Creek								4.7	1.9 – 9.0
Seldovia River								32.8	19.05 – 38.95
Port Graham River								14.5	7.0 – 19.85
Dogfish Lagoon								4.1	-
Port Chatham Creeks								12.2	7.8 – 21.0
Windy Right Creek								7.2	3.35 – 10.95
Windy Left Creek								16.4	3.65 – 29.95
Rocky River								36.5	9.35 – 54.25
Port Dick Creek ^b								41.2	18.55 – 58.3
Island Creek								17.5	7.2 – 28.3
South Nuka Island Creek								10.3	2.7 – 14.25
Desire Lake Creek								14.1	1.9 – 20.2
James Lagoon								4.3	-
Aialik Lagoon								3.8	-
Bear Creek								8.9	2.95 – 8.45
Salmon Creek								7.3	1.9 – 13.25
Thumb Cove								5.6	2.35 – 8.85
Humpy Cove								2.0	0.9 – 3.2
Tonsina Creek								4.6	0.5 – 5.85
Big Kamishak River								21.3	3.5 – 11.0
Little Kamishak River								10.8	0.6 – 3.7
Amakdedori Creek								7.9	-
Bruin Bay River								107.2	18.65 – 155.75
Sunday Creek								21.0	4.85 – 28.85
Brown's Peak Creek								16.8	2.45 – 18.8
Totals								436.5	157.25 – 675.35

^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 figures for Port Dick Creek include escapements for High Tech and Well Flagged Creeks beginning in 1998.

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

^d Insufficient data for escapement estimates.

^e Port Dick Creek counts derived from aerial data in 2000. Other methods also used to generate escapement estimates that season included ground surveys (91,795) and weir counts (142,450).

^f New sustainable escapement goals (SEG's) implemented for the first time beginning with the 2002 season.

Appendix Table 25. Estimated chum salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1982 - 2002^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
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	15.4	22.7	90.9
1996	3.7	6.7	2.0	2.3	6.9	11.1	4.4	16.1	14.9	7.6	16.1	7.8	99.6
1997	4.1	12.7	1.1	1.9	5.2	—	—	27.5	8.8	6.2	5.6	15.4	88.5
1998	5.1	9.8	0.7	1.8	3.4	7.1	9.7	23.5	9.4	4.6	2.3	18.6	96.0
1999	6.6	18.8	5.4	2.9	16.4	11.6	8.9	13.5	10.3	21.0	12.0	23.3	150.7
2000	11.4	19.6	4.2	3.4	12.1	45.3	26.9	18.6	13.6	41.7	24.1	23.6	244.5
2001	6.0	6.1	3.0	1.8	6.3	36.3	27.2	17.0	21.8	37.7	15.9	13.8	192.9
2002	5.3	10.1	5.7	12.3	15.3	17.4	16.4	11.3	9.9	17.1	42.2	28.5	191.6
20-Year Avg.	3.4	7.3	2.8	3.4	10.9	16.8	12.7	22.1	8.5	10.7	10.4	12.0	120.9
1982-91 Avg.	1.7	4.6	1.9	3.9	13.4	16.7	13.6	25.3	6.3	6.8	8.9	8.7	111.7
1992-2001 Avg.	5.0	9.5	2.5	2.9	7.7	17.9	12.4	18.2	10.6	14.6	12.0	15.6	128.8
Sustainable Esc. Goal ^c	1.45 – 4.8	3.35 – 9.15	1.2 – 5.4	1.9 – 4.45	6.4 – 15.6	9.35 – 24.0	6.55 – 23.8	13.75 – 25.75	6.0 – 10.25	6.05 – 9.85	5.75 – 12.0	7.85 – 13.7	69.6 – 158.75

^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.

^c New sustainable escapement goals (SEG's) implemented for the first time beginning with the 2002 season.

Appendix Table 26. Biological escapement goals (BEG's) prior to 2002 and sustainable escapement goals (SEG's) beginning in 2002 for chum salmon systems in Lower Cook Inlet, Alaska.

System	District	Former BEG		Year Adopted	New SEG			n ^a	% Change in Midpoint
		BEG	Mid-point		Low	High	Mid-point		
Chum Salmon									
Port Graham River	Southern	4,000-8,000	6,000	1982	1,450	- 4,800	3,125	26	-48%
Dogfish Lagoon	Outer	5,000-10,000	7,500	1982	3,350	- 9,150	6,250	26	-17%
Rocky River	Outer	20,000	20,000	1982	1,200	- 5,400	3,300	25	-84%
Port Dick Creek	Outer	4,000	4,000	1982	1,900	- 4,450	3,175	26	-21%
Island Creek	Outer	10,000-15,000	12,500	1979	6,400	- 15,600	11,000	26	-12%
Big Kamishak River	Kamishak	20,000	20,000	1982	9,350	- 24,000	16,675	22	-17%
Little Kamishak River	Kamishak	20,000	20,000	1982	6,550	- 23,800	15,175	23	-24%
McNeil River	Kamishak	20,000-40,000	30,000	1988	13,750	- 25,750	19,750	26	-34%
Bruin River	Kamishak	5,000-10,000	7,500	1988	6,000	- 10,250	8,125	26	8%
Ursus Cove	Kamishak	5,000-10,000	7,500	1982	6,050	- 9,850	7,950	26	6%
Cottonwood Creek	Kamishak	10,000	10,000	1982	5,750	- 12,000	8,875	26	-11%
Iniskin Bay	Kamishak	10,000	10,000	1982	7,850	- 13,700	10,775	26	8%

^a n = number of years of escapement data used in analysis.

Mean:	-20%
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Appendix Table 27. Biological escapement goals (BEG's) prior to 2002 and sustainable escapement goals (SEG's) beginning in 2002 for pink salmon systems in Lower Cook Inlet, Alaska.

System	District	Former BEG			New SEG				% Change in Midpoint
		BEG	Mid-point	Year Adopted	Low	High	Range Mid-point	n ^a	
Pink Salmon									
Humpy Creek	Southern	25,000-50,000	37,500	1982	21,650	- 85,550	53,600	26	43%
China Poot Creek	Southern	5,000	5,000	1982	2,900	- 8,200	5,550	26	11%
Tutka Creek	Southern	6,000-10,000	8,000	1982	11,600	- 18,900	15,250	18	91%
Barabara Creek	Southern	18,000-24,000	21,000	1982	1,900	- 9,000	5,450	26	-74%
Seldovia Creek	Southern	25,000-35,000	30,000	1982	19,050	- 38,950	29,000	26	-3%
Port Graham River	Southern	20,000-40,000	30,000	1977	7,000	- 19,850	13,425	26	-55%
Port Chatham	Outer	10,000-15,000	12,500	1982	7,800	- 21,000	14,400	25	15%
Windy Creek Right	Outer	10,000	10,000	1982	3,350	- 10,950	7,150	26	-29%
Windy Creek Left	Outer	30,000-50,000	40,000	1982	3,650	- 29,950	16,800	26	-58%
Rocky River	Outer	50,000	50,000	1982	9,350	- 54,250	31,800	26	-36%
Port Dick Creek	Outer	20,000-100,000	60,000	1982	18,550	- 58,300	38,425	26	-36%
Island Creek	Outer	12,000-18,000	15,000	1982	7,200	- 28,300	17,750	25	18%
S. Nuka Island Creek	Outer	10,000	10,000	1982	2,700	- 14,250	8,475	24	-15%
Desire Lake	Outer	10,000-20,000	15,000	1986	1,900	- 20,200	11,050	23	-26%
Bear Creek	Eastern	5,000	5,000	1982	2,950	- 8,450	5,700	24	14%
Salmon Creek	Eastern	10,000	10,000	1981	1,900	- 13,250	7,575	23	-24%
Thumb Cove	Eastern	4,000	4,000	1985	2,350	- 8,850	5,600	23	40%
Humpy Cove	Eastern	2,000	2,000	1985	900	- 3,200	2,050	22	3%
Tonsina Creek	Eastern	5,000	5,000	1982	500	- 5,850	3,175	23	-37%
Big Kamishak River	Kamishak	20,000	20,000	1982	3,500	- 11,000	7,250	11	-64%
Little Kamishak River	Kamishak	20,000	20,000	1982	600	- 3,700	2,150	12	-89%
Bruin River	Kamishak	25,000-50,000	37,500	1982	18,650	- 155,750	87,200	26	133%
Sunday Creek	Kamishak	10,000-20,000	15,000	1989	4,850	- 28,850	16,850	26	12%
Brown's Peak Creek	Kamishak	10,000-20,000	15,000	1989	2,450	- 18,800	10,625	26	-29%

^a n = number of years of escapement data used in analysis.

Mean:	-8%
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Appendix Table 28. Biological escapement goals (BEG's) prior to 2002 and sustainable escapement goals (SEG's) beginning in 2002 for sockeye salmon systems in Lower Cook Inlet, Alaska.

System	District	Former BEG			New SEG			n ^a	% Change in Midpoint
		BEG	Mid-point	Year Adopted	Low	High	Mid-point		
Sockeye Salmon									
English Bay	Southern	10,000-20,000	15,000	1982	6,000	13,500	9,750	25	-35%
Delight Lake	Outer	10,000	10,000	1982	5,950	12,550	9,250	26	-8%
Desire Lake	Outer	10,000	10,000	1982	8,800	15,200	12,000	26	20%
Bear Lake	Eastern	5,000-8,000	6,500	1985	700	8,300	4,500	23	-31%
Aialik Lake	Eastern	2,000-5,000	3,500	1982	3,700	8,000	5,850	26	67%
Mikfik Lake	Kamishak	5,000-7,000	6,000	1988	6,300	12,150	9,225	26	54%
Chenik Lake	Kamishak	10,000	10,000	1990	1,880	9,300	5,590	25	-44%
Amakdedori Creek	Kamishak	1,000	1,000	1984	1,250	2,600	1,925	26	93%
								Mean: 15%	

^a n = number of years of escapement data used in analysis.

Appendix Table 29. Personal use/subsistence set gillnet salmon catches, in numbers of fish by species, and effort, Southern District, Lower Cook Inlet, 1969 – 2002^a.

Year	Permits Issued	Permits Returned		Permits		Total			Catch				Total
		Number	%	Did Fish	Not Fished	Chinook	Sockeye	Coho	Pink	Chum	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	
1996	299	293	98.0	213	80	302	102	3,347	1,022	24	0	4,797	
1997	276	264	95.7	185	79	383	191	1,814	252	12	0	2,652	
1998	227	214	94.3	142	72	135	20	1,461	167	5	0	1,788	
1999	146	141	96.6	111	30	276	119	1,803	168	3	0	2,369	
2000	213	206	96.7	151	55	104	28	2,064	304	4	0	2,504	
2001	154	148	96.1	112	34	86	27	1,579	150	16	0	1,858	
2002	122	113	92.6	93	20	61	33	1,521	251	12	0	1,878	
69-01 Avg.	294	276	93.6	193	83	52	58	2,983	685	43	25	3,847	
92-01 Avg.	253	245	96.9	177	68	148	78	2,337	470	13	0	3,046	

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

^b Steelhead trout (*Onchorhynchus mykiss*).

Appendix Table 30. Summary of personal use/subsistence salmon gillnet fishermen in the Southern District of Lower Cook Inlet (excluding the Port Graham/Nanwalek subsistence fishery and the Seldovia subsistence fishery) by area of residence, 1982 - 2002.

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.	%	
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
1996	241	80.6	16	5.4	7	2.3	26	8.7	3	1.0	1	0.3	2	0.7	3	1.0	299
1997	232	84.1	13	4.7	3	1.1	20	7.2	4	1.4	0	0.0	1	0.4	3	1.1	276
1998	175	77.1	18	7.9	2	0.9	24	10.6	5	2.2	0	0.0	2	0.9	1	0.4	227
1999	96	65.8	18	12.3	1	0.7	23	15.8	3	2.1	0	0.0	4	2.7	1	0.7	146
2000	168	78.9	15	7.0	2	0.9	21	9.9	4	1.9	0	0.0	1	0.5	2	0.9	213
2001	109	70.8	10	6.5	3	1.9	20	13.0	5	3.2	0	0.0	4	2.6	3	1.9	154
2002	85	69.7	7	5.7	3	2.5	14	11.5	6	4.9	0	0.0	6	4.9	1	0.8	122
20-Year Avg.	257	77.9	21	6.5	5	1.4	34	10.4	5	1.4	0	0.0	3	1.0	5	1.4	330
1982-91 Avg.	315	77.4	26	6.3	5	1.3	44	10.7	6	1.4	0	0.0	4	1.1	7	1.7	408
1992-01 Avg.	199	78.8	17	6.8	4	1.5	25	9.9	3	1.3	0	0.0	2	0.8	2	0.8	253

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

Appendix Table 31. Subsistence and sport salmon catch in numbers of fish by species for the village of Port Graham, Lower Cook Inlet, 1982 - 2002^a.

Year	S A L M O N H A R V E S T						Dolly Varden	Households Reporting
	Chinook	Sockeye	Coho	Pink	Chum	Total		
1982	107	820	602	858	183	2,570	15	34
1983	67	1,026	431	174	95	1,793	1	30
1984	27	2,037	125	269	6	2,464	0	23
1985	141	481	91	32	24	769	0	23
1986	123	274	179	237	13	826	12	27
1987	20	219	575	230	70	1,114	20	33
1988	96	411	459	542	75	1,583	18	27
1989	51	94	460	640	58	1,303	159	20
1990	211	524	803	1013	102	2,653	666	32
1991	155	58	541	1494	185	2,433	257	33
1992	129	98	475	745	178	1,625	398	36
1993	253	154	346	997	135	1,885	214	31
1994	273	260	859	866	461	2,719	1,133	42
1995	486	379	369	786	376	2,396	66	49 ^b
1996	255	684	341	312	251	1,843	161	48
1997	202	324	203	497	152	1,378	57	25
1998	164	271	243	459	240	1,377	20	16
1999	383	360	427	150	214	1,534	64	21
2000	241	784	252	355	483	2,115		35
2001	104	176	557	32	20	889		15
2002 ^c								
1982-2001 Average	174	473	417	534	166	1,765	181	30

^a Data source: ADF&G, Subsistence Division, data files; gear types include set gillnet, rod/reel, and handline.

^b Salmon totals and permits include 3 reports from non-residents of Port Graham Village.

^c Information for 2002 was unavailable at time of publishing.

Appendix Table 32. Subsistence and sport salmon catch in numbers of fish by species for the village of Nanwalek (formerly English Bay), Lower Cook Inlet, 1982 – 2002^a.

Year	S A L M O N H A R V E S T						Dolly Varden	Households Reporting
	Chinook	Sockeye	Coho	Pink	Chum	Total		
1982	17	1,534	891	2,074	37	4,553	75	27
1983	0	1,454	40	13	0	1,507	0	16
1984	18	1,225	385	404	0	2,032	0	1
1985	5	696	530	313	2	1,546	0	1
1986	2	373	302	825	1	1,503	144	17
1987	1	682	339	484	44	1,550	20	22
1988	8	610	385	1,214	35	2,252	70	21
1989	0	63	695	855	16	1,629	523	24
1990	54	638	614	1,947	49	3,302	2,833	28
1991	8	630	1,512	3,093	36	5,279	848	30
1992	71	437	675	676	58	1,917	1,331	35
1993	24	994	567	1,666	122	3,373	577	25
1994	27	570	511	1,113	43	2,264	473	28
1995	99	1,416	169	487	0	2,171	465	38
1996	55	1,060	598	437	25	2,175	221	27
1997	0	1	0	14	1	16	0	1
1998	5	18	0	0	0	23	31	3
1999	102	2,755	1,320	1,873	890	6,940	631	32
2000	18	3,880	1,579	1,251	471	7,199		32
2001	29	909	1,434	196	1,238	3,806		
2002	176	10,203	414	1,681	967	13,441	230	49
1982-2001 Average	27	998	627	947	153	2,753	458	21

^a Data source: ADF&G Subsistence Division, data files; gear types include set gillnet, rod/reel, and handline.

Appendix Table 33. Salmon set gillnet catch in numbers of fish by species and permit/effort information for the Seldovia area subsistence fishery, Lower Cook Inlet, 1996 - 2002.

YEAR	NUMBER OF PERMITS				NUMBER OF SALMON HARVESTED					
	Issued	Returned	Fished	Not Fished	Chinook	Sockeye	Coho	Pink	Chum	Total
Early Season: April – May^a										
1996	41	41	13	28	51	7	0	0	0	58
1997	19	16	12	4	44	19	0	0	0	63
1998	20	19	10	9	132	61	0	8	0	201
1999	16	15	12	3	150	130	0	0	38	318
2000	28	21	17	4	189	249	0	0	14	452
2001	19	17	14	3	134	124	0	0	0	258
2002	20	18	12	6	123	222	0	0	3	348
Average	23	21	13	8	118	116	0	1	8	243
Late Season: August										
1996	4	3	1	2	0	1	0	0	0	1
1997	1	1	0	1	0	0	0	0	0	0
1998	3	2	1	1	0	0	0	0	0	0
1999	0									
2000	0									
2001	0									
2002	1	1	1	0	0	9	13	31	6	59
Average	2	2	1	1	0	3	3	8	2	15

^a Season dates in 1996 and 1997 were from April 1 – May 20; subsequent years were from April 1 – May 30.

Appendix Table 34. ADF&G, CIAA, and/or CRRC salmon stocking projects and releases of salmon fry, fingerling, and smolt, in millions of fish, Lower Cook Inlet, 1984 - 2002.

YEAR	JUVENILE SOCKEYE SALMON													TOTAL SOCKEYE
	Leisure Lake	Hazel Lake	Chenik Lake	Paint Upper	River Lower	Lakes Elusivak	Kirschner Lake	Bruin Lake	Ursus Lake	Dick Lake	Port English Bay Lakes	Bear Lake	Grouse Lake	
1984	2.110													2.100
1985	2.018													2.018
1986	2.350		0.839	0.500	0.320									4.009
1987	2.022		1.000				0.867			0.705				4.594
1988	2.100	0.783	2.600	1.100	0.552	0.521	0.521			0.222				8.399
1989	2.000	1.000	3.500	1.000	0.500	0.500	0.250			0.430		2.200		11.380
1990	1.750	1.250	3.250	1.000	0.500	0.500	0.250	0.500			0.350	2.400		11.750
1991	2.000	1.300	2.200	0.500	0.250		0.250	0.250			0.241	1.619		8.610
1992	2.000	1.000	2.750	0.500	0.250		0.250	0.250	0.250		0.290	2.370		9.910
1993	2.000	1.000	1.400	0.500	0.250		0.250	0.250	0.250		0.581	1.813		8.294
1994	0	0	0	0	0		0.300	0	0		0.800	0.170	0.570	1.327
1995	1.632	1.061	1.129	0.337	0.251		0.251	0.251	0.252		0	0.360	0.793	6.287
1996	1.490	1.030	0.951	0.500	0		0.250	0.250	0.250		0.155	0.864	0	5.657
1997	2.000	1.000	0				0.250				0.199	0.788	1.966	6.203
1998	2.005	1.302					0.250				0	0.265	1.288	5.610
1999	0.265	0.453					0.173				1.149 ^a	1.380	0	3.420
2000	1.708	1.248					0.248				1.006 ^b	1.794		6.004
2001	0.089	0					0				0	0.145		0.234
2002	2.249	1.280		0.500 ^c			0.302				0	2.407		6.738
AVG.	1.666	0.908	1.635	0.536	0.261	0.507	0.290	0.250	0.200	0.452	0.367	1.318	0.691	5.884

^a Sockeye release at English Bay consisted of 918,000 fry released in Nov. 1999 and 231,000 fry held over winter for release in spring 2000.

^b Sockeye release at English Bay consisted of 906,000 fry released in summer 2000 and an estimated 100,000 fry held over winter for release in spring 2001.

^c Fall fry release.

- continued -

Appendix Table 34. (page 2 of 3)

YEAR	JUVENILE PINK SALMON					JUVENILE CHINOOK SALMON					
	Tutka Bay Hatchery	Halibut Cove Lagoon	Homer Spit	Port Graham Hatchery	TOTAL PINKS	Seldovia Bay	Halibut Cove Lagoon	Homer Early	Spit Late	Resurrection Bay ^d	TOTAL CHINOOK
1984	19.560				19.560			0.080		0.111	0.191
1985	23.500				23.500		0.098	0.152		0.186	0.436
1986	23.100	2.000			25.100		0.101	0.104		0.101	0.306
1987	20.500	3.000	0.295		23.795	0.084	0.094	0.104		0.096	0.378
1988	12.000	3.000	0.300		15.300	0.084	0.094	0.104		0.205	0.487
1989	30.100	6.000	0.332		36.432	0.108	0.115	0.104		0.307	0.634
1990	23.600	6.000	0.303		29.903	0.099	0.112	0.212		0.329	0.752
1991	23.600	6.000	0.303	0.255	30.158	0.091	0.092	0.191		0.466	0.840
1992	23.600	6.000	0.300	1.800	31.700	0.113	0.117	0.226	0.126	0.370	0.952
1993	43.000	6.000		0	49.000	0.107	0.100	0.212	0.100	0.290	0.809
1994	61.000			1.295	62.295	0.106	0.107	0.192	0.157	0.270	0.832
1995	63.000			0.358	63.358	0.113	0.036	0.228	0.124	0.315	0.816
1996	105.000			6.470	111.470	0.109	0.103	0.101	0.121	0.415	0.849
1997	89.000			0.910	89.910	0.092	0.078	0.216	0.105	0.321	0.812
1998	90.000			0	90.000	0.079	0.073	0.137	0.120	0.307	0.716
1999	60.132			4.617	64.749	0.074	0.079	0.163	0.059	0.174	0.549
2000	65.120			1.144	66.264	0.068	0.083	0.220		0.322	0.693
2001	99.336			27.299	126.635	0.103	0.107	0.208		0.228	0.646
2002	100.000			6.604	106.604	0.083	0.106	0.190		0.194	0.573
AVG.	51.324	4.705	0.306	4.229	60.608	0.095	0.094	0.165	0.114	0.264	0.468

^d Chinook releases in Resurrection Bay are a cumulative total for all locations.

- continued -

Appendix Table 34. (page 3 of 3)

YEAR	JUVENILE COHO SALMON					TOTAL COHO
	Caribou Lake	Seldovia Lake	Homer Spit		Resurrection Bay ^c	
			Early	Late		
1984					0.341	0.341
1985	0.139	0.083			0.407	0.629
1986	0.138	0.072			0.622	0.832
1987	0.150	0.045			0.604	0.799
1988	0.150	0.045		0.060	0.530	0.785
1989	0.182	0.080		0.143	0.339	0.744
1990	0.180	0.050		0.123	1.126	1.479
1991	0.180	0.050		0.100	0.599	0.929
1992	0.150			0.100	0.265	0.515
1993	0.150			0.116	0.844	1.110
1994	0.064			0.156	0.560	0.780
1995				0.110	0.701	0.811
1996				0.150	0.676	0.826
1997				0.120	0.808	0.928
1998				0.148	0.726	0.874
1999				0.137	1.603	1.740
2000				0.122	0.618	0.740
2001			0.125	0.100	0.431	0.656
2002			0.096	0.121	0.241	0.458
AVG.	0.148	0.061	0.111	0.120	0.634	0.841

^c Coho releases in Resurrection Bay are a cumulative total for all locations.

Appendix Table 35. 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, 1982 - 2002^a.

Year	Southern		Kamishak		Eastern		Outer		Total	
	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits
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
1996	---		2,984	62	---		---		2,984	62
1997	---		1,746 ^b	45 ^b	---		---		1,746	45
1998	---		331 ^b	20 ^b	---		---		331	20
1999	---		100 ^c	1 ^c	---		---		100	1
2000	---		---		---		---		---	
2001	---		---		---		---		---	
2002	---		---		---		---		---	
20-Year										
Average	170	6	2,692	56	136	2	35	2	2,784	57
1982-91										
Average	170	6	3,404	60	159	3	40	2	3,599	62
1992-2001										
Average	---		2,070	52	0	0	0	0	2,070	52

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

^b Includes both commercial harvest and ADF&G test fish harvest.

^c Commercial fishery closed, ADF&G test fish harvest only.

Appendix Table 36. Preseason estimates of biomass and projected commercial sac roe seine harvests, and actual harvests, for Pacific herring (*Clupea pallasii*) in short tons, average roe recovery, numbers of permits making landings, and exvessel value in millions of dollars, Kamishak Bay District, Lower Cook Inlet, 1982 - 2002.

Year	PRESEASON		Actual Commercial Harvest (st) ^a	Average Roe %	No. of Permits w/Landings	Exvessel Value ^b (\$\$ millions)
	Forecasted Biomass (st)	Projected Harvest (st) ^a				
1982	^c	---	CLOSED	---	---	---
1983	^c	---	CLOSED	---	---	---
1984	^c	---	CLOSED	---	---	---
1985	^c	^d	1,132	11.3	23	1.00
1986	^c	^d	1,959	10.4	54	2.20
1987	^c	3,833	6,132	11.3	63	8.40
1988	^c	5,190	5,548	11.1	74	9.30
1989	37,785	5,000	4,801	9.5	74	3.50 ^e
1990	28,658	2,292	2,264	10.8	75	1.80
1991	17,256	1,554	1,992	11.3	58	1.30
1992	16,431	1,479	2,282	9.7	56	1.40
1993	28,805	2,592	3,570	10.2	60	2.20
1994	25,300	3,421	2,167	10.6	61	1.50
1995	21,998	2,970	3,378	9.8	60	4.00
1996	20,925	2,250	2,984	10.1	62	6.00 ^e
1997	25,300	3,420	1,746	9.3	45	0.40
1998	19,800	1,780	331	8.5	20	0.07
1999	^f	---	CLOSED	---	---	---
2000	6,330	---	CLOSED	---	---	---
2001	11,352	---	CLOSED	---	---	---
2002	9,020	---	CLOSED	---	---	---
<hr/>						
1982-2001						
Average	21,662	2,982	2,878	10.3	56	3.08

^a Kamishak Bay allocation only, does not include Shelikof Strait food/bait allocation.

^b Exvessel values exclude any postseason retroactive adjustments (except where noted).

^c Prior to 1989, preseason forecasts of biomass were not generated.

^d Prior to 1987, preseason harvest projections were not generated.

^e Includes retroactive adjustment.

^f 1999 preseason biomass calculated as a range of 6,000 to 13,000 st.

Appendix Table 37. Summary of herring sac roe seine fishery openings and commercial harvests in the Kamishak Bay District of Lower Cook Inlet, 1969 - 2002.

Year	Dates of Openings	Total Hrs. Open	Harvest (short tons)	Catch Rate (short tons/hour open)	Number of Permits w/Landings
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 through 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	74
1989	4/17 - 4/30	24.5	4,801	196.0	74
1990	4/22 - 4/23	8	2,264	283.0	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	4,760.0	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
1996	4/24	0.5	2,984	5,968.0	62
1997	4/25 ^b	0.5	0	0	0
	4/29	1.5	1,580	1,053.3	42
	4/30	8.0	61	7.6	^c
	5/1	12.0	51	4.3	4
	5/22 ^d	^d	54	^d	-
1998	4/21	0.5	160	320.0	12
	4/22	2.0	136	68.0	11
	5/14 ^d	^d	10	^d	-
	5/22 ^d	^d	23	^d	-
1999	CLOSED	CLOSED	100 ^d	^d	-

- continued -

Appendix Table 37. (page 2 of 2)

Year	Dates of Openings	Total Hrs. Open	Harvest (short tons)	Catch Rate (short tons/ hour open)	Number of Permits w/Landings
2000	CLOSED	CLOSED	0		
2001	CLOSED	CLOSED	0		
2002	CLOSED	CLOSED	0		

^a Management by emergency order began.

^b Despite the open fishing period, the entire fleet collectively agreed not to fish due to ongoing price negotiations with processors.

^c 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.

^d ADF&C test fishing harvest.

Appendix Table 38. Estimates of Pacific herring (*Clupea pallasii*) total biomass in short tons using two different methods, actual commercial sac roe seine harvest in short tons, and percent exploitation, Kamishak Bay District, Lower Cook Inlet, 1982 - 2002.

Year	Aerial Survey Total Biomass Estimate (st) ^a	ASA Model Total Biomass Estimate (st) ^{b,c}	Actual Commercial Harvest (st)	Estimated Exploitation Rate (%) ^b
1982	4,835	20,899	CLOSED	---
1983	4,750	24,651	CLOSED	---
1984	6,500	26,013	CLOSED	---
1985	13,320	28,697	1,132	3.9
1986	26,001	27,617	1,959	7.1
1987	35,332	26,308	6,132	23.3
1988	29,548	21,439	5,548	25.9
1989	35,701	19,021	4,801	25.2
1990	19,664	15,438	2,264	14.7
1991	18,163 ^d	14,669	1,992	13.6
1992	24,077	14,419	2,282	15.8
1993	32,439	14,892	3,570	24.0
1994	25,344 ^d	12,909	2,167	16.8
1995	25,115	10,312	3,378	32.8
1996	21,121	6,602	2,984	45.2
1997	-----	4,014	1,746	43.5
1998	-----	3,444	331	9.6
1999	-----	3,614	CLOSED	---
2000	-----	3,783	CLOSED	---
2001	-----	3,901	CLOSED	---
2002	-----	4,033	CLOSED	---
1982-2001				
Average	21,461	15,132	2,878	19.0

^a Diverse methods have been used to generate historical aerial survey biomass estimates; after 1989, see LCI herring forecast report or statewide herring forecast document to determine specific method for individual year.

^b Figures are based on the best available data at the time of publishing and are subject to change; therefore all figures herein supercede those previously reported.

^c ASA model integrates heterogeneous data sources and simultaneously minimizes differences between observed and expected return data to forecast the following year's biomass as well as hindcast previous years' biomass.

^d Due to poor aerial survey conditions, biomass was calculated from the pre-season estimate of abundance, adjusted to match observed age composition samples in the commercial catch.