

REVIEW OF THE 2001 LOWER COOK INLET AREA COMMERCIAL FISHERY, PERSONAL USE COHO SALMON GILLNET FISHERY, AND SALMON ENHANCEMENT PROGRAMS

A REPORT TO THE ALASKA BOARD OF FISHERIES



by

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***LOWER COOK INLET
REPORT TO THE ALASKA BOARD OF FISHERIES
2001***

COMMERCIAL SALMON FISHERY

INTRODUCTION

The Lower Cook Inlet (LCI) salmon management area is bounded on the north by the latitude of Anchor Point, on the south by the latitude of Cape Douglas, and on the east by the longitude of Cape Fairfield (Figure 8). The area is divided up into five districts: Southern, Kamishak Bay, Barren Islands, Outer, and Eastern. Commercial salmon fishing occurs in all but the Barren Islands District. Purse seining and set gillnetting are the only allowable gear types. Approximately 85 seine permits are issued for LCI, but the areas where set gillnetting is permitted (Figure 9) is extremely limited, with an average of 21 permits participating in the fishery over the past decade.

Pink salmon have historically provided the bulk of the commercial salmon harvests, while sockeye salmon have provided the greatest exvessel value due to a variety of lake stocking enhancement projects throughout the management area. Enhancement continues to play a dominant role in both sockeye and pink salmon production in LCI.

2001 SEASON OVERVIEW

The 2001 Lower Cook Inlet salmon harvest of 906,000 fish (Tables 1 and 4) was the fifth lowest during the last two decades, falling well short of the most recent 10- and 20-year averages. The catch yielded an exvessel value of approximately \$1.24 million, representing less than two-thirds of the average annual value over the previous 10 years (Tables 2 and 3). The overall harvest also represented less than half of the preseason

forecast. The following table compares the actual catch by species to the preseason forecast and the long-term average:

SPECIES	'01 PROJECTED HARVEST	'01 ACTUAL HARVEST ^a	1981-2000 AVERAGE
Chinook	1,300 ^b	988	1,369
Sockeye	280,200	216,271	247,381
Coho	14,400 ^b	6,595	14,376
Pink	1,689,600	592,931	1,241,176
Chum	15,500 ^c	88,969	79,854
TOTAL	2,001,000	905,754	1,584,156

^a Preliminary data, which includes common property and hatchery cost recovery harvests and sport derby sales.

^b 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.

^c Forecasts for chum salmon are simply average annual commercial harvests since 1989.

Once again, LCI commercial salmon harvests relied heavily on the success of hatchery and enhanced fish production. Pink salmon production from Tutka Hatchery, operated by Cook Inlet Aquaculture Association (CIAA), was significantly below expectations, yet the harvest of this species returning to the facility comprised nearly 60% of the all-species catch. The overall return of pinks to Tutka Hatchery, estimated at 716,000 fish, was the second lowest for the facility during the past six seasons. Over 80% of the sockeye salmon harvest in numbers of fish, and 76% in terms of the sockeye exvessel value, was attributed to CIAA lake stocking and fertilization projects at Leisure and Hazel Lakes in the Southern District, Kirschner Lake in the Kamishak Bay District, and Bear and Grouse Lakes in the Eastern District. Another enhancement/rehabilitation project, undertaken by Chugach Regional Resources Commission (CRRC) and Port Graham Hatchery Corporation (PGHC) at English Bay Lakes in the Southern District, experienced a weak return that forced a season-long closure of both the commercial and subsistence set gillnet fisheries in Port Graham Subdistrict. As has been the case since hatchery programs were

taken over by private non-profit agencies in LCI, a significant portion of the salmon harvest was utilized to recoup expenses incurred by the hatchery facilities and the various stocking and enhancement projects throughout the management area. Over half of the total salmon harvest was taken by CIAA (Table 3) to support the sockeye lake stocking programs and Tutka Hatchery operations, equating to nearly 30% of the exvessel value of the LCI salmon fishery.

One notable factor that has affected the amount and distribution of seine effort, and ensuing harvest of salmon in LCI during the past eight seasons was the change in policy by major processors regarding tender service. Previously, processors routinely stationed a tender (or tenders) in remote districts, such as the Outer or Kamishak Bay Districts, in anticipation of salmon harvests and subsequent deliveries, even when run strengths and catches were marginal. This practice was abandoned in 1994, however, this forced seiners to devise their own means to transport fish from these remote areas to a processing plant in Homer or elsewhere. During 2001, significant surpluses of chum salmon on the west side of LCI provided sufficient incentive for regular tender service, but in other remote districts and for other species, tender availability effectively limited the amount of effort and actual catch. Additionally, the trend of decreasing prices paid for all salmon species continued to suppress the overall exvessel value of the salmon harvest in LCI.

SUMMARY BY SPECIES

Chinook Salmon

The 2001 harvest of chinook salmon, not normally a commercially important species in Lower Cook Inlet, was the lowest catch since 1986 at 988 fish. This was less than the long-term average of 1,369 and well below the record high harvest of 2,300 fish taken in 1995 (Figure 1, Table 5). Virtually all of the catch came from the Southern District (Table

5) and can be primarily attributed to enhanced production at Halibut Cove Lagoon and Seldovia Bay. Set gillnetters accounted for 88% of the Southern District chinook catch, with purse seiners taking the remaining 12%.

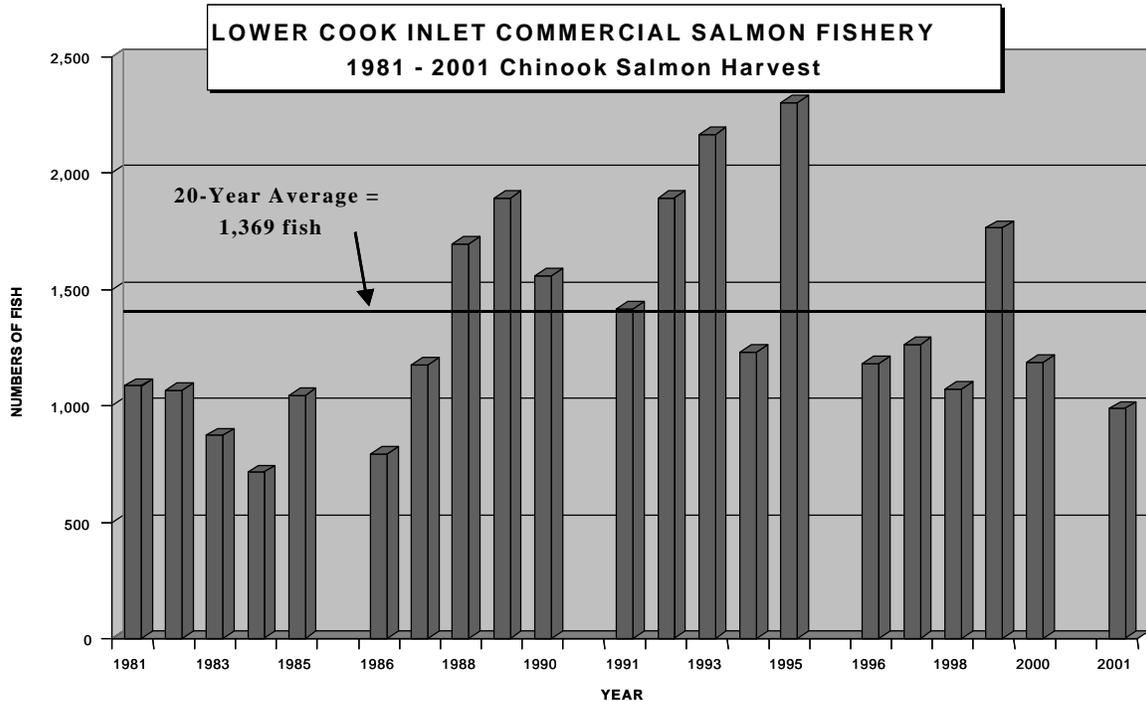


Figure 1. Historical commercial harvests of chinook salmon, Lower Cook Inlet, 1981 - 2001.

Sockeye Salmon

The 2001 LCI sockeye salmon harvest of 216,300 fish (Figure 2, Table 6) was the third lowest during the past decade and represented just over three-fourths of the preseason forecast. Despite accounting for only about one-fourth of the LCI salmon harvest in numbers of fish, sockeye salmon provided about 50% of the exvessel value of the entire salmon fishery during 2001 (Tables 2 and 3). Harvests of enhanced runs of sockeye salmon returning to Leisure and Hazel Lakes in the Southern District, at a combined total of an estimated 127,000 fish, provided nearly 60% of the LCI sockeye salmon total, but fell short of the combined preseason forecast of 150,000 fish for both systems. In the Kamishak Bay District, enhanced returns to Kirschner Lake produced a harvest of almost

39,000 sockeye salmon, nearly doubling the preseason forecast of 23,000 fish. At Bear Lake in Resurrection Bay of the Eastern District, the cumulative commercial seine and hatchery cost recovery catch of “early run” sockeye salmon totaled just over 3,000 fish, nearly achieving the preseason forecast of 3,200 sockeyes. The Grouse Lake return, in conjunction with “late run” adults returning from an experimental release of juveniles at Bear Lake, contributed an additional 10,800 sockeye salmon to commercial catches in the form of hatchery cost recovery.

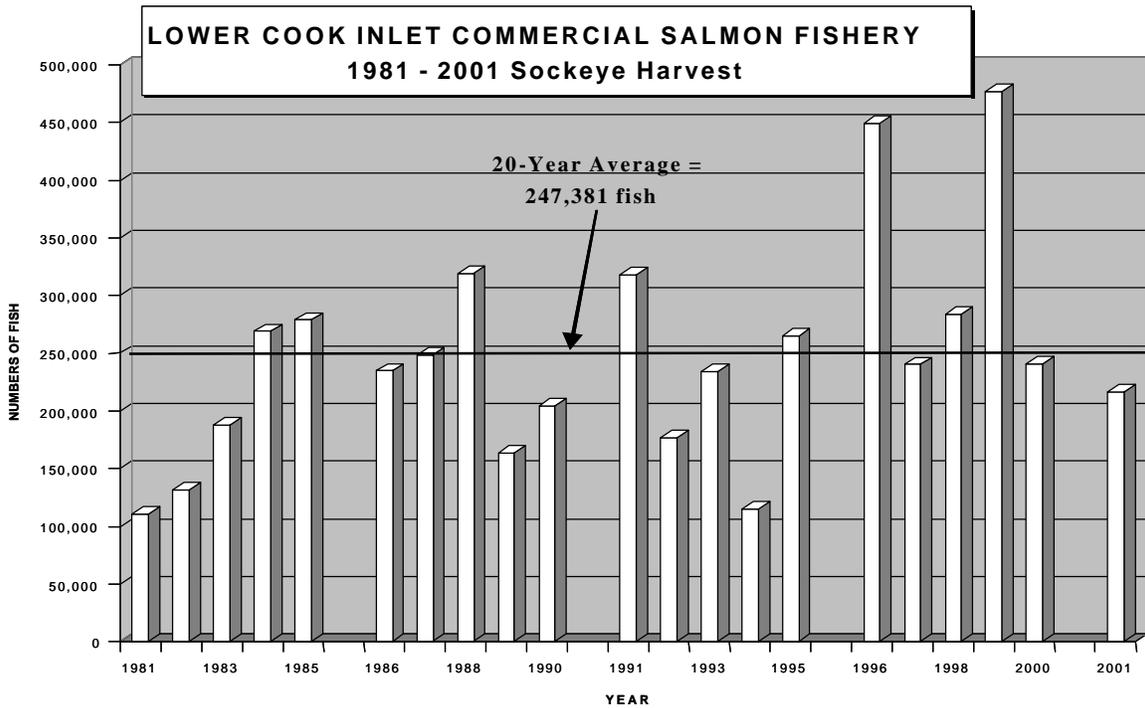


Figure 2. Historical commercial harvests of sockeye salmon, Lower Cook Inlet, 1981 - 2001.

Natural returns of sockeye salmon to LCI systems were considered relatively good, with three of four systems achieving escapement goals. In the Outer District, Delight Lake escapement, enumerated via a picket weir, achieved its goal of 10,000 sockeye salmon and had a small harvestable surplus of 7,300 fish taken by the seine fleet. The peak daily aerial survey escapement estimate at nearby Desire Lake, with an identical escapement goal, totaled only 5,500 sockeye salmon. Weather and visibility hampered surveys throughout the season at that lake, and as a result, the staff felt that actual escapement was likely

much nearer to the escapement goal. At Mikfik Lake in the Kamishak Bay District, only minor fishing effort and harvest occurred during the season, thus the entire run entered the system as escapement and achieved the established goal. The sockeye salmon return to small Aialik Lake in the Eastern District attained the escapement goal but no harvests resulted. At English Bay Lakes in the Southern District, the weak sockeye salmon return failed to achieve the desired escapement goal of 15,000 fish for the second consecutive season, forcing a closure of the commercial and subsistence gillnet fisheries in the Port Graham Subdistrict. Recent returns to this system are the result of an ongoing rehabilitation project originally initiated by ADF&G in the late 1980's and presently being conducted by CRRC in conjunction with the village of Nanwalek.

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 commercial harvest of 6,600 coho salmon in 2001 was the lowest LCI total for this species since 1992 (Figure 3, Table 7),

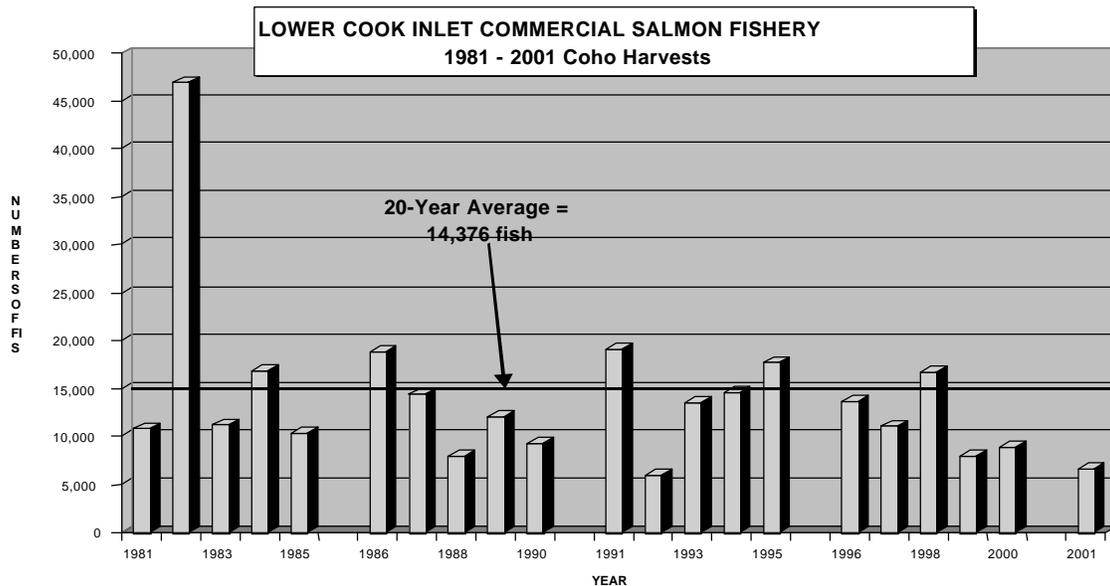


Figure 3. Historical commercial harvests of coho salmon, Lower Cook Inlet, 1981 - 2001.

representing less than half of the 20-year average. The majority of the harvest (57%) once again occurred in the Eastern District, primarily for the Seward Silver Salmon Derby and CIAA cost recovery at Bear Lake. Set gillnetters in the Southern District accounted for another 27% of the coho catch, while seiners in the Southern District took the remainder. Regarding sport derby catches, it should be noted that all 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 2001, a total of nearly 2,200 cohos were entered into the Seward Silver Salmon Derby.

Coho run assessment in LCI is limited, with commercial, sport, and personal use harvests providing the best indicators of run strength, and overall the returns during 2001 were considered average to slightly above average. Two aerial surveys were flown specifically for coho salmon this season, indicating outstanding escapement into the major index stream at the head of Kachemak Bay.

Pink Salmon

Returns of pink salmon, the dominant species in numbers of commercially harvested fish in LCI, fell considerably below preseason expectations in 2001, with an overall harvest of just 593,000 fish (Figure 4, Table 8). This figure is less than half of the most recent 20-year average and represents the sixth lowest catch during the past two decades. Just over 90% (543,000 pinks) of the total was taken in the Southern District (Table 8), the bulk of which came as a direct result of

Tutka Hatchery production. However, over three-fourths (422,000 pinks) of the Southern District total was utilized for Tutka Hatchery cost recovery. The estimated hatchery return,

including escapement, brood stock, and commercially harvested fish, was 716,000 pinks, representing less than 40% of the preseason projection of 1.84 million fish.

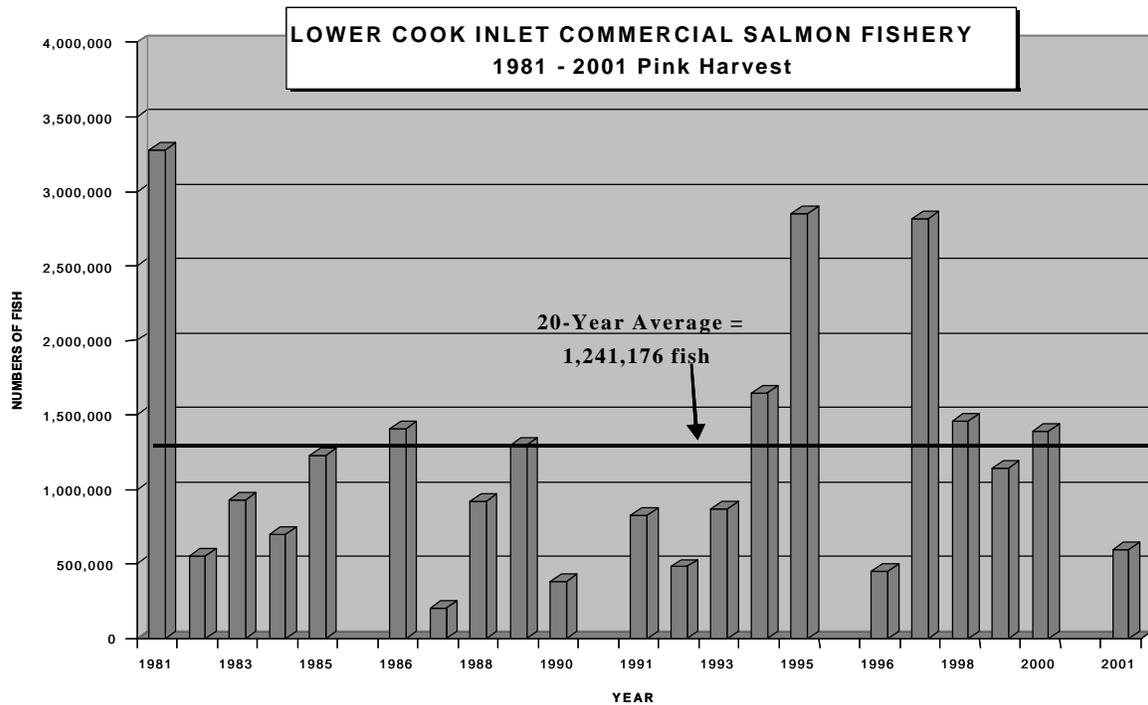


Figure 4. Historical commercial harvests of pink salmon, Lower Cook Inlet, 1981 - 2001.

The Outer District produced the greatest contribution of naturally produced pinks in LCI, with a total harvest of nearly 49,000 fish (Table 8). The majority of the catch came from East Nuka Bay Subdistrict, closely followed by Port Dick Subdistrict, with Windy Bay also providing additional harvest. A number of systems along the outer Gulf of Alaska coast experienced strong returns, but most received little or no directed fishing effort due to the lack of tender service to this remote district and low prices paid for this species. In the Kamishak Bay District, most returns of pinks were relatively weak and provided little incentive for targeted harvest given the low prices and lack of tender service. Pink salmon escapements within the management area were strong to most Outer District (Gulf coast) systems, while the remainder of the management area experienced relatively weak returns.

Chum Salmon

Chum salmon were undoubtedly the bright spot in the 2001 LCI commercial salmon season. The chum harvest of almost 90,000 fish was the highest catch for the species in LCI since 1988 and also exceeded the 20-year average of 80,000 (Figure 5, Table 9). This was the second consecutive season of above average chum harvests, fueled once again by strong returns to systems in Kamishak Bay on the west side of LCI. Escapements into most Kamishak Bay chum systems were good, with the exception of McNeil River, where the escapement fell short of its established goal range of 20,000 to 40,000 fish for the tenth time in the last 12 years. Elsewhere in the management area, chum returns were considered fair to poor, with variable escapements, and no other directed harvests occurred.

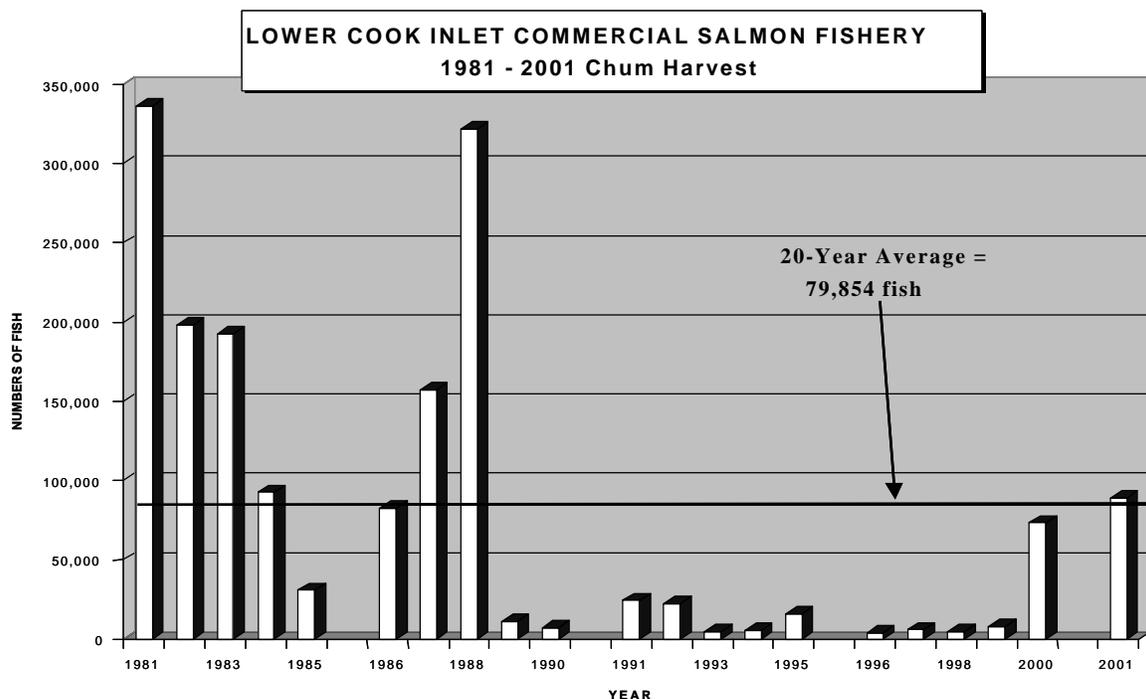


Figure 5. Historical commercial harvests of chum salmon, Lower Cook Inlet, 1981 - 2001.

SET GILLNET FISHERY

An Area H set gillnet permit allows fishing in any part of Cook Inlet (both Upper and Lower), but there are only five beaches in Lower Cook Inlet, all located along the south shore of Kachemak Bay in the Southern District (Figure 9), where commercial set gillnets may be used. The limited area provides only enough productive fishing sites to accommodate approximately 25 set gillnet permits.

The 2001 LCI set gillnet harvest totaled 48,100 fish (Figure 6, Table 10), less than both the 1981-2000 average and the most recent 10-year average. Catches were dominated by sockeyes at 59% followed by pinks at 28%. For comparison, typical species composition in the commercial set gillnet fishery during the past decade has been 50% sockeyes, 38% pinks, 5.5% cohos, 4.5% chums, and 2% chinooks. Catches of chinook salmon, at 865

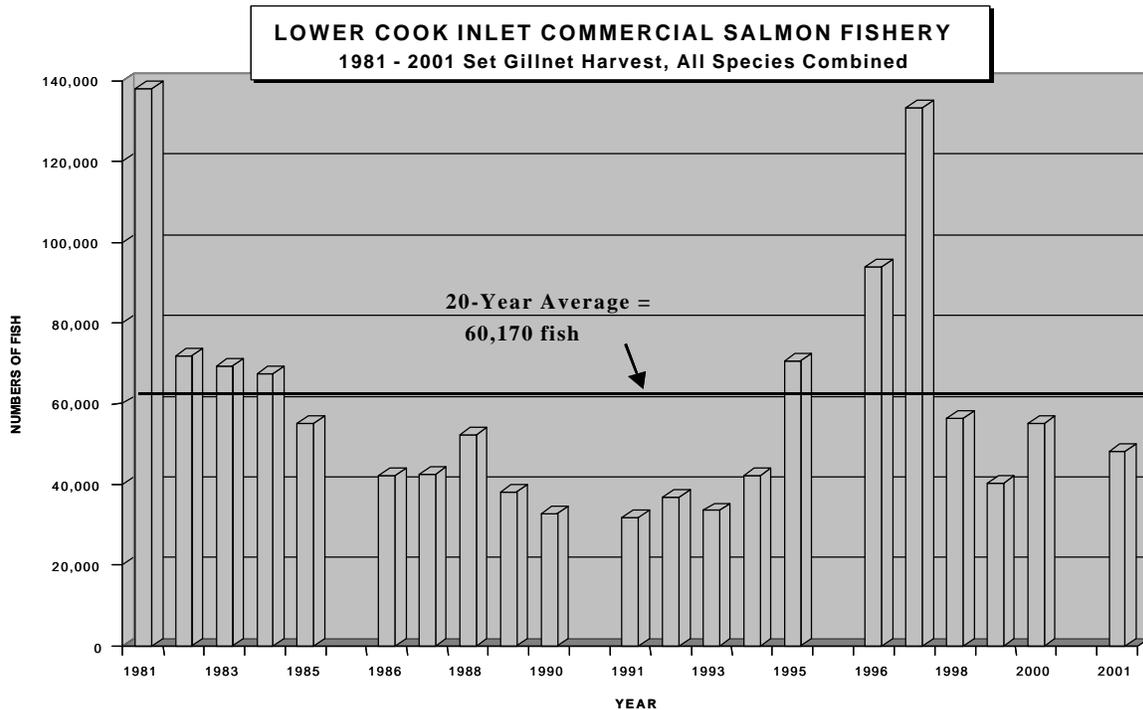


Figure 6. Historical commercial set gillnet harvests, Lower Cook Inlet, 1981 - 2001.

fish, were the second lowest during the last 10 years and below the most recent 10- and 20-year averages for the species. Enhancement efforts directed at recreational fisheries in

Seldovia Bay and Halibut Cove Lagoon are primarily responsible for producing the chinooks taken by commercial gillnets during 2001.

2002 LOWER COOK INLET SALMON HARVEST PROJECTIONS

SOCKEYE SALMON

Sockeye salmon harvest projections in Lower Cook Inlet are based on both forecasts of fish returning to enhancement sites and average historical harvests of natural runs. The preliminary 2002 forecasted harvest of sockeye salmon is 215,000 fish, nearly identical to the 216,000 fish landed in 2001 but almost 23% less than the average annual catch of 280,000 fish during the last decade. If realized, this harvest would represent the third lowest for sockeye salmon in LCI over the past 10 years. Returns to Leisure and Hazel Lakes in the Southern District, with a harvest forecast of 67,000 fish, to Bear Lake in the Eastern District, with a catch predicted to approach 11,000 fish, to Kirschner Lake in the Kamishak Bay District, with a harvest forecast of 23,000 fish, and to English Bay Lakes in the Southern District, predicted to produce a harvest of 30,000 fish, are once again expected to be the major contributors to enhanced sockeye production. Stocking at Grouse Lake in Resurrection Bay of the Eastern District was suspended after the 1996 season, and no adults are expected to return to that system in 2002. Natural returns to the Southern, Outer, Eastern, and Kamishak Bay Districts are expected to contribute up to 84,000 sockeyes to the 2002 commercial harvests.

PINK SALMON

Although LCI pink salmon have traditionally been considered odd-year dominant over the past two decades, that trend was thrown into question following relatively strong

returns to at least some systems in the management area in 1998 and 2000. The 2002 LCI pink salmon harvest is projected to approach 3.4 million fish. Returns to Tutka Bay Hatchery are once again expected to provide the bulk of the catch, contributing over 2.0 million pinks to the harvest, while the return to Port Graham Hatchery is forecasted to provide a harvest of nearly 500,000 pinks. Pink salmon escapements to most major systems in 2000 were considered quite good, and the resulting natural production could theoretically contribute up to 900,000 fish to the 2002 harvests. However, as has been the case in recent years, market conditions and tender availability in remote districts will likely play a larger role in actual commercial pink harvests than the magnitude of the returns themselves.

CHUM SALMON

Based solely on the average annual catch since 1989, chum salmon harvests in LCI during 2002 are forecasted to exceed 21,000 fish. However, LCI runs of chum salmon have been relatively strong for two consecutive seasons, especially to systems in Kamishak Bay on the west side of LCI, which suggests that next season's harvests could actually surpass the forecast. Because the price paid and market demand for this species will likely affect the actual harvests, the chum forecast should be interpreted with caution.

CHINOOK AND COHO SALMON

No formal harvest forecast is prepared for chinook or coho salmon in LCI. However, average annual harvests since 1980 suggest that about 1,300 chinook and 14,000 coho salmon can be expected to contribute to LCI commercial harvests in 2002.

The following table summarizes the preliminary projected harvest figures by species in the Lower Cook Inlet management area during 2002:

	<u>Natural</u>	<u>Enhanced</u>	<u>Total</u>
CHINOOK	^a	^a	1,300 ^a
SOCKEYE	83,800 ^b	131,500 ^c	215,300
COHO	^a	^a	13,900 ^a
PINK	910,000	2,485,200 ^c	3,395,200
CHUM	21,100 ^b	0	21,100
Total	1,014,900	2,616,700	3,646,800

^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 Forecasts for naturally-produced sockeye and chum salmon are simply average annual commercial harvests since 1980 and 1989 (respectively).

^c Includes common property plus cost recovery harvests.

LCI SALMON ENHANCEMENT AND REHABILITATION

INTRODUCTION

Fisheries enhancement has played an important role in LCI salmon production for over 20 years. Natural adult salmon returns to the LCI area continue to demonstrate wide fluctuations, often the result of environmental impacts such as flooding or ice scouring on spawning grounds. Since their inception in the mid-1970's, enhancement and rehabilitation projects have made significant contributions to both commercial and sport fishing harvests. These contributions have historically ranged from 24% to 90% of the entire LCI commercial salmon harvest and are expected to remain high in future years.

Projects initiated by the ADF&G and presently being undertaken by CIAA and/or CRRC provided an estimated 79% (712,500 salmon) of the total 2001 LCI commercial harvest of 906,000 fish. The Leisure/Hazel, Kirschner, and Bear/Grouse Lakes sockeye salmon enhancement projects produced over 80% (179,700 fish) of the total LCI sockeye harvest

of 216,300 fish in 2001. Tutka Lagoon Hatchery production accounted for 90% (531,100 fish) of the 2001 LCI commercial pink salmon harvest of 593,000 million fish.

Using average fish weights and average prices per pound in LCI, the estimated contribution of CIAA-produced salmon was 60% (\$0.739 million) of the \$1.24 million total value of the 2001 LCI commercial salmon harvest. About 29% (\$0.358 million) of the total exvessel value of the fishery was utilized for hatchery cost recovery purposes (Table 3). A brief description of the current enhancement projects specifically affecting the commercial fishery in LCI follows.

TUTKA LAGOON HATCHERY

The Tutka Lagoon Salmon Hatchery/Rearing Facility, located in Tutka Bay of the Southern District (Figure 10), was constructed in 1976 by the state of Alaska, with an initial production capacity of 10 million salmon eggs. Operation of the facility was transferred to CIAA in the early 1990's, and expansion over time, including major renovation work during the winter of 1993-94, has increased its capacity to the present level of approximately 150 million eggs. Pink salmon have been the primary species produced at the hatchery, while secondary chum enhancement was discontinued in favor of experimental efforts directed toward sockeye salmon in the mid/late 1990's. 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 infectious hematopoietic virus (IHN) virus, resulting in an indefinite suspension of the sockeye program.

In 2001 the adult pink salmon produced by Tutka Lagoon Hatchery totaled approximately 716,000 fish. No attempt was made to separate the contribution resulting from natural spawning in Tutka Creek. The estimated 1.2% overall survival rate was less than half of the long-term average 2.5%. The commercial harvest, including cost recovery, of 531,100 pink salmon from Tutka Bay and Lagoon, accounted for approximately 98% of the pink

salmon landed in the Southern District and 90% of the entire LCI commercial pink salmon harvest. Pinks taken for hatchery cost recovery purposes from the Tutka Bay Subdistrict totaled 421,600 fish, worth approximately \$229,000 but failing to achieve CIAA's revenue goal of \$570,700. Approximately 99.3 million short-term reared pink salmon fry were released into Tutka Bay in 2001 (Table 11), the second highest on record.

LEISURE AND HAZEL LAKES SOCKEYE SALMON STOCKING

Leisure Lake, also called China Poot Lake and located on the south side of Kachemak Bay in the Southern District (Figure 10), 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 precludes any upstream migration and subsequent 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 is located approximately three miles south of Leisure Lake and empties into Neptune Bay. Since the initiation of these projects, over 2.0 million adult sockeyes were estimated to have returned as a result of these stocking programs, making a significant contribution to the commercial and recreational sockeye harvests in the Southern District.

Because of the close proximity of the two terminal harvest areas, and the absence of a mark/recovery program, adult returns to Leisure and Hazel Lakes cannot be separately identified through sampling within the commercial catches and are therefore presented as a combined total. The cumulative total sockeye return to Leisure and Hazel Lakes in 2001 was estimated to be slightly over 132,000 fish, about 40% greater than the 1981-2000 average and equal to the recent 10-year average. The cumulative commercial harvest of 127,000 fish comprised over 80% of the Southern District sockeye harvest and almost 60% of the total LCI sockeye salmon harvest.

Only about 89,000 sockeye salmon fry were released into Leisure Lake in 2001 (Table 11), while no sockeye fry were stocked into Hazel Lake. An outbreak of IHN at Trail Lakes Hatchery forced the destruction of nearly all sockeye fry slated for stocking in LCI this past season, thus severely reducing, or in some cases totally eliminating, the stocking of LCI lakes.

ENGLISH BAY SOCKEYE SALMON REHABILITATION

The English Bay Lakes system, located on the southwestern tip of the Kenai Peninsula (Figure 10), 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. 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 (Table 11). Chugach Regional Resources Commission (CRRC), in cooperation with the village of Nanwalek (formerly English Bay) and the Bureau of Indian Affairs, has since taken over this enhancement project and continued egg collections, fry stockings, and operation of a smolt/adult enumeration weir.

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 CRRC. Sockeye returns have improved significantly since 1994 with escapements reaching the desired goal of 15,000 fish in four out of the past seven seasons. Although extensive closures of the subsistence,

commercial, and sport fisheries have been much less frequent during the past several seasons due to improved returns, selective closures of individual fisheries have occurred to protect fish for escapement.

The preseason forecast for the sockeye return to English Bay Lakes in 2001 was only 7,300 fish, representing less than half of the desired escapement goal of 15,000 fish. As a result, the commercial, sport, and subsistence fisheries were closed beginning in late May to afford maximum protection to returning adults. The final escapement count past the weir, comprising the total return because of the fishery closures, amounted to less than 11,000 sockeyes (Table 6), short of the desired goal. Once in the lake, adults unexpectedly remained in deep water for a much longer than normal time period, leading to the cancellation of the annual brood stock collection by the NSEP this season, which means no fry will be available for release back into the lakes in 2002.

Between 150,000 and 200,000 sockeye fry were released annually into English Bay Lakes in 1996 and 1997 in the late fall via a long-term net pen rearing operation (Table 11). Releases in 1999/2000 and 2000/2001 cumulatively exceeded 1.0 million juveniles each season and were comprised of long-term reared fry released in the fall and fry held over winter for release the following spring. Due to a devastating fire that destroyed the Port Graham Hatchery and cannery, where English Bay sockeye eggs were being incubated, no fry were available for stocking in 1998. In 2001, NSEP was forced to destroy all rearing fry because of an IHN outbreak in the net pens, thus no juvenile sockeyes were released.

BEAR LAKE AND GROUSE LAKE SOCKEYE SALMON ENHANCEMENT

Bear Lake, located at the head of Resurrection Bay in the Eastern District (Figure 10), has been the target of sockeye salmon enhancement efforts over the past decade. In addition, this system has been the centerpiece of a Sport Fish Division coho salmon enhancement program since 1962, part of which included limiting the escapement of sockeye salmon into the lake. As a result, only a small remnant run of naturally spawning sockeye salmon remained at Bear Lake until the late 1980's. 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 (Table 11).

Adults returning to this stocking site are specifically intended for the commercial seine user group, with a 5-8,000 fish escapement range in place for Bear Lake. The first year of adult returns in 1992 was discouraging, with a total of less than 2,000 fish, but returns increased during each successive season, peaking in 1995 and 1996 at nearly 53,000 sockeyes each year. Since that time, adult sockeye returns to Resurrection Bay waters as a result of this project have averaged about 32,000 fish, which is hypothesized to be less than the system is capable of producing. Nonetheless, the program at Bear Lake has provided increased opportunity for commercial harvests, with annual seine catches ranging up to 36,000 fish and hatchery cost recovery harvests ranging as high as 21,000 fish.

CIAA began a more recent sockeye enhancement project at Grouse Lake, also in Resurrection Bay of the Eastern District (Figure 10), for the express purpose of hatchery cost recovery; no directed commercial seine fishery was planned or intended for the adult returns to this site. Since coming on line with the first adult return in 1996, the run has not

achieved the results desired by CIAA, either due to lower than expected returns or because of extremely low product quality of the returning fish. Based on the lack of success and disappointing returns since inception of the program, CIAA suspended the Grouse Lake stocking program after the 1998 season, and no adults resulting from this project are expected to return to the site in 2002. CIAA believes that by combining the Bear Lake and Grouse Lake salmon enhancement projects into one “early run” project at Bear Lake, it can meet the original goals of both projects.

NOTE: PROPOSAL #31 seeks to amend the existing Bear Lake Management Plan to limit the Resurrection Bay commercial salmon seine harvest to a maximum of 66K sockeyes and establish a saltwater Special Harvest Area in Resurrection Bay for Cook Inlet Aquaculture Association (CIAA).

To develop an adult sockeye return to Resurrection Bay deliberately sized to maintain the current Bear Lake salmon enhancement project and support operation of CIAA’s non-Tutka enhancement programs, CIAA proposes to increase sockeye salmon releases to Bear Lake through fall presmolt and spring smolt releases. CIAA estimates that the current Bear Lake spring fry release goal (2.4 million), combined with the proposed presmolt (800,000) and smolt (560,000) releases, will result in the annual production of 684,000 smolts and a subsequent return of 116,000 adults. Under the amended *Bear Lake Management Plan (5 AAC 21.375)*, CIAA has proposed to manage the adult sockeye return for a Resurrection Bay common property commercial harvest of 66,000 fish, a Bear Lake escapement of 12,000 fish, and a cost recovery harvest of all remaining sockeye salmon, in order to maintain the two projects’ objectives.

The history of the Bear Lake sockeye salmon run is quite unique. Efforts were made by ADF&G, until about the mid-1980's, to eradicate the naturally occurring sockeye salmon run in order to maximize coho salmon production. The *Bear Lake Management Plan*, adopted in 1985, directs ADF&G to establish a sockeye salmon escapement goal and to manage fisheries to meet this goal. While an escapement goal of 1,000 sockeye salmon has been listed in various ADF&G reports since 1985, recent management of this run has been strongly influenced by the operation of Trail Lakes Hatchery (TLH) and the Bear Lake sockeye enhancement program. Prior to 2001, the TLH Annual Management Plan specified a minimum escapement goal of 5,000 sockeyes and a maximum of 8,000 for Bear Lake. These goals were established to ensure the availability of hatchery brood stock rather than to produce a sustained yield from a naturally spawning run. Once allowed to migrate past the weir and enter the lake, sockeyes are allowed to mature before being collected for brood stock; fish excess to brood stock requirements escape to spawn naturally within the system.

Because CIAA is proposing to expand production through increased stocking of Bear Lake, the egg take goal has increased commensurately. In an effort to facilitate achievement of this goal and assure adequate brood stock, the TLH Annual Management plan specified a new Bear Lake desired escapement goal (DEG) of 12,000 sockeyes beginning in 2001. The Department's recently completed review of escapement goals in Lower Cook Inlet yielded a sustainable escapement goal (SEG) range of 600 to 8,000 sockeyes for Bear Lake. Combined with CIAA's estimated annual brood stock requirement of 4,000 sockeyes, necessary to achieve an egg take goal of 6.0 million, the proposed escapement goal range for Bear Lake would become 4,600 to 12,000 sockeyes.

OTHER SOCKEYE SALMON LAKE STOCKING

Kirschner Lake in the Kamishak Bay District (Figure 10) has been the site of an ongoing fry stocking project since 1987, with annual fry plantings ranging from 0.173 to 0.867

million (Table 11). Nearby Bruin Lake was also stocked between 1990 and 1996, but stocking was suspended after that. Adults returning to the Kirschner Lake site are prevented from reaching the spawning grounds by a steep falls at tideline, therefore all fish are targeted for harvest by the seine fleet. Combined adult returns to these two stocking sites have averaged about 30,000 sockeyes annually, and the Kirschner Lake project has remained one of the Lower Inlet's steadiest producers of enhanced sockeyes despite limnological characteristics that would suggest otherwise. The estimated adult return to Kirschner Lake in 2001 approached 40,000 adults, almost double the preseason forecast of 23,000.

Several other lakes in the Kamishak Bay District, evaluated through pre-stocking studies conducted between 1986 and 1989, were stocked regularly in the late 1980's and early 1990's but failed to produce significant adult returns and the programs were suspended indefinitely. These lakes included Ursus Lake, Upper Paint Lake, Lower Paint Lake, and Elusivak Lake. Stocking at Chenik Lake, also in the Kamishak Bay District, was also suspended in the mid-1990's due to an outbreak of naturally occurring IHN within the lake system.

HALIBUT COVE LAGOON/SELDOVIA BAY CHINOOK SALMON ENHANCEMENT

The chinook salmon enhancement project at Halibut Cove Lagoon, located in the Southern District (Figure 10), involves the release of chinook salmon smolts, with the objective of increasing sport fishing opportunities in Kachemak Bay. This is the oldest and one of the most popular sport fishing enhancement projects in LCI, operating continually with an annual release of smolts since 1979. Although adult returns from the Halibut Cove Lagoon stocking program are not intended for commercial harvest, there is incidental harvest of these chinook salmon in the commercial set gillnet and seine fisheries. The long-term estimated incidental harvest of enhanced chinook salmon by

commercial fishermen in Halibut Cove Subdistrict has been around 30% of the total return. Figures for this incidental harvest during 2001 are unavailable but are thought to be near the historical average. Total commercial harvest of chinook salmon in Halibut Cove Subdistrict in 2001 was 325 fish.

The Seldovia Bay chinook salmon enhancement project in the Southern District (Figure 10) is very similar to that of Halibut Cove but has been in place only since 1987. Smolts are released into the small boat harbor at Seldovia, with adults returning to this site primarily for the benefit of recreational fishermen. Incidental harvest of these fish occurs in the Seldovia Bay commercial and subsistence gillnet fisheries, but because no mark/recovery program is in place to assess the returns, no attempt is made to identify the proportion of hatchery fish in the catches. Total chinook harvest in Seldovia Bay in 2001 was 161 in the commercial fishery and 134 in the subsistence fishery.

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 (Figures 9 and 10). The hatchery had conducted experimental egg-takes and fry releases via a scientific/educational permit from 1990 through 1992, while these activities have since been permitted in the Port Graham Hatchery Basic and Annual Management Plans (BMP/AMP). Adult returns to the hatchery prior to 1997 were disappointing and/or complete failures despite predictions of at least moderate returns. In 1997, returns finally achieved the preseason forecast level of 80,000 to 200,000 pinks, with a total run size estimated at about 130,000 fish. Since that time, however, pink returns have been poor, in 1999 due to the devastating fire that destroyed the hatchery and cannery complex in early 1998, and in other years due to

reduced releases or unknown reasons. Nonetheless, the hatchery plans to continue fry releases in an effort to establish a successful pink salmon program.

Although all efforts prior to 1993 were directed towards pink salmon, sockeye salmon production also has been underway at the Port Graham Hatchery. Under contract to the Nanwalek Salmon Enhancement Project (NSEP), the facility has incubated sockeye salmon eggs collected from English Bay Lakes, destined for release back into that system, since 1993. That project was also hampered by the 1998 fire, but the hatchery/cannery complex was subsequently rebuilt, and efforts to reestablish stable pink and sockeye salmon programs for the region continue.

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 (Table 11). Ten consecutive years of meager adult returns, with a high of 1,900 fish observed in 1998, have characterized this project's history. Because adult returns from the plantings have been negligible, CIAA discontinued fry stocking after the 1996 season.

PERSONAL USE SALMON NET FISHERY

KACHEMAK BAY FALL COHO SALMON 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 1995-2001, and as a “subsistence” fishery in 1991, 1992, and 1994. Numerous court rulings have affected the status of this fishery over the past two decades, 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 addressed this fishery during their last meeting in Homer (November, 1998). 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 Seldovia area subsistence salmon fishery be included as part of the personal use guideline.

All other regulations from the previous year's fishery remained essentially unchanged for the 2001 personal use fishery. The regulatory opening date for the fishery was August 16. 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 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 2000, years of intensive management for the GHR, the total amount of fishing time allowed in this fishery ranged from 72 to 192 hours, or 1.5 to four regularly scheduled fishing periods.

No coho salmon harvest was reported from the early August Seldovia subsistence fishery, therefore the GHR remained at 1,000 to 2,000 fish for the personal use fishery. Based on voluntary daily catch reports from permit holders during the first fishing period and early in the second period, the staff projected that the catch would likely fall near middle to upper end of the GHR by the end of the second period. It was reasoned that additional fishing, however, could easily result in a harvest exceeding the upper limit of the GHR. Therefore, the 2001 Personal Use Coho Salmon Fishery was closed by emergency order at 6:00 a.m. Wednesday, August 22, for the remainder of the season after only 96 hours of fishing time.

A total of 154 permits was issued for the 2001 fishery (Table 11). A total of 146 permit holders (95%) reported their catches by returning permits. Of this number, 112 permit holders (73%) actively fished, 34 (22%) did not fish at all, and the remaining 8 permit holders (5%) did not report. Based on permit returns, the harvest was estimated to be 1,579 coho salmon (Figure 7, Table 12), 150 pink salmon, 27 sockeye salmon, 86 chinooks, and 16 chums. The coho total represents the mid-point of the GHR of 1,000 to 2,000 fish. As was the case during 2000, when the Sport Fish Division analyzed tag recovery data, the catch east of the Homer Spit, where the majority of the effort and harvest occurred, was believed to be of hatchery origin resulting from the enhancement project at the Homer Spit fishing lagoon.

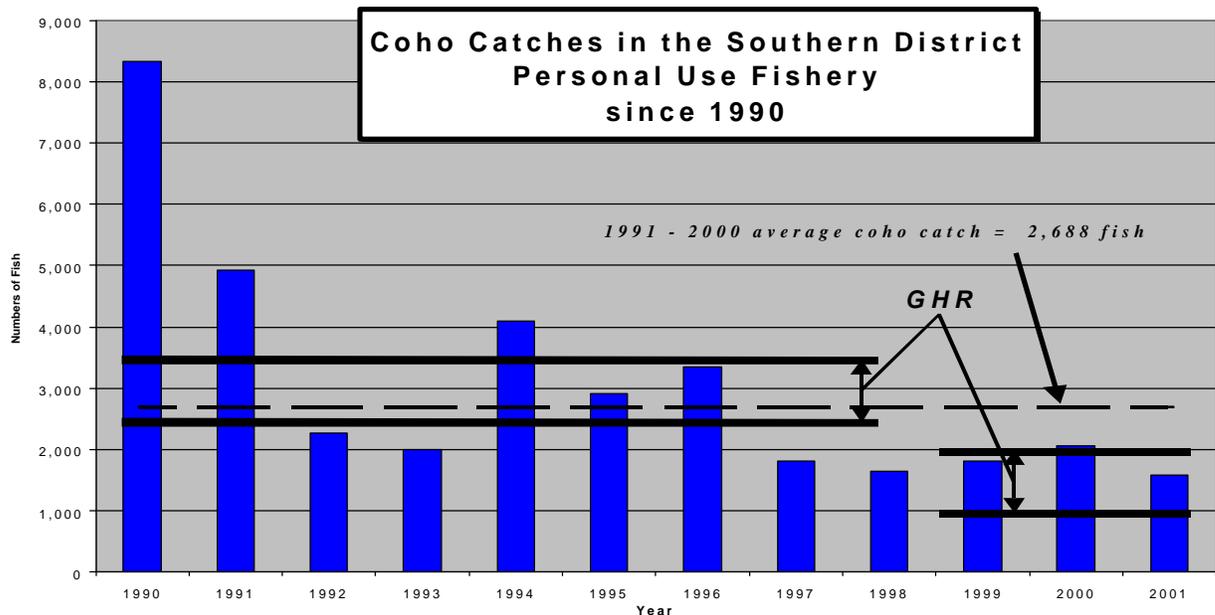


Figure 7. Harvests of coho salmon in the Southern District Coho Salmon Personal Use/Subsistence Set Gillnet Fishery, Lower Cook Inlet, 1991 - 2001.

The duration of the 2001 Southern District personal use fishery (96 hours of fishing time) was identical to that of 2000 and slightly less than the 1991 – 2000 average of 112 hours. Both the number of permits issued and the active fishing effort were similar to those figures for 1999 but less than those for 2000, and the 2001 figures were the second lowest totals since 1975 (Table 11). The coho harvest of 1,579 fish was similar to that of the previous four seasons.

The current GHR, implemented in 1999, appears to be producing the desired results of limiting the personal use set gillnet harvest of naturally produced cohos in Kachemak Bay waters. Two aerial surveys of Clearwater Creek, the major coho index stream at the head of Kachemak Bay, were conducted in September to gauge escapements. The peak coho count of over 3,200 cohos, obtained on September 26, was considered outstanding.

The run timing of naturally-produced cohos, occurring near the end of August, generally is considered later than that of enhanced fish, thus the natural component of the gillnet catch during the first two weeks after the August 16 opening tends to be diminished in most years. This could very likely change in future years because the brood stock source used for the spit enhancement project is shifting to one of earlier run timing. The reduced number of these earlier arriving cohos available to the gillnet fishery would theoretically lengthen amount of time necessary to achieve the GHR, which in turn would result in the harvest of more naturally-produced fish. The first adult coho return exhibiting the earlier run timing is expected in 2002.

The fishery in 2002 is expected to be similar to this year's fishery. Both early and late run timing coho adults are expected back during the upcoming season since both varieties were stocked as juveniles. As during the past two seasons, attainment of the GHR is expected to occur within two to four 48-hour fishing periods, given average returns. Fishing effort and participation in 2002 is expected to be similar to recent years but could be affected by other alternative fisheries, and the strength of the corresponding salmon returns, elsewhere in Cook Inlet. Although limited as an inseason management tool, voluntary catch reports will once again be employed to help determine an appropriate closure time for the 2002 fishery. Based on experience gained during the past 11 years' fisheries, especially the last three, achieving a harvest within the GHR of 1,000 to 2,000 cohos appears quite practical.

Table 1. Commercial, hatchery, and derby salmon catches in numbers of fish by species, district, and gear type, Lower Cook Inlet, 2001.

District		Chinook	Sockeye	Coho	Pink	Chum	Total
Southern							
Commercial:							
Set gillnet		865	28,503	1,811	13,393	3,487	48,059
Purse seine		121	99,866	895	107,967	293	209,142
Hatchery:							
Purse seine			27,042		421,615	9	448,666
Total		986	155,411	2,706	542,975	3,789	705,867
Outer							
Commercial:							
Purse seine			7,339	5	48,559	408	56,311
Eastern							
Commercial:							
Purse seine			2,629			6	2,635
Hatchery:							
Weir			11,180	1,720			12,900
Derby ^a :							
Hook & Line				2,155			2,155
Total			13,809	3,875		6	17,690
Kamishak							
Commercial:							
Purse seine		2	9,972	9	131	84,766	94,880
Hatchery:							
Purse seine			29,740		1,266		31,006
Total		2	39,712	9	1,397	84,766	125,886
LCI Total		988	216,271	6,595	592,931	88,969	905,754
Percent		0.11%	23.88%	0.73%	65.46%	9.82%	100.00%
1981-2000							
Average		1,369	247,381	14,376	1,241,176	79,854	1,584,156

^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. Exvessel value of the commercial salmon harvest in thousands of dollars by species, Lower Cook Inlet, 1981 - 2001^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1981	18	740	69	5,334	1,346	7,507
1982	28	827	367	406	820	2,448
1983	20	704	57	696	513	1,990
1984	23	1,393	120	635	242	2,413
1985	47	1,637	86	974	78	2,822
1986	21	1,414	132	1,245	201	3,013
1987	27	1,951	118	295	598	2,989
1988	32	3,812	127	2,237	2,548	8,756
1989	33	1,213	59	1,660	39	3,004
1990	29	1,287	28	306	31	1,681
1991 ^b	19	1,115	36	275	48	1,493
1992 ^b	30	1,152	19	212	53	1,466
1993 ^b	27	802	41	287	7	1,164
1994 ^b	18	496	93	745	9	1,361
1995 ^b	48	1,381	62	1,245	24	2,760
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
1981–2000 Avg.	29	1,395	79	978	340	2,819
2001 % of Total	1.94%	50.65%	1.21%	22.37%	23.83%	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.

Table 3. Exvessel value^a of the commercial salmon catch in numbers of dollars by species, gear type, and harvest type, Lower Cook Inlet, 2001.

	Chinook	Sockeye	Coho	Pink	Chum	Total
COMMON PROPERTY - PURSE SEINE						
No. of Fish	123	119,806	909	156,657	85,473	362,968
Pounds	1,345	590,003	5,838	490,080	806,380	1,893,646
Price/lb.	\$0.74	\$0.64	\$0.30	\$0.09	\$0.36	
Value	\$1,012	\$379,689	\$1,755	\$44,107	\$289,292	\$715,855
COMMON PROPERTY - SET GILLNET						
No. of Fish	865	28,503	1,811	13,393	3,487	48,059
Pounds	12,070	164,151	12,603	52,158	27,543	268,525
Price/lb.	\$1.87	\$0.73	\$0.43	\$0.05	\$0.20	
Value	\$22,571	\$119,830	\$5,419	\$2,608	\$5,509	\$155,937
HATCHERY - PURSE SEINE, BEACH SEINE, & WEIR						
No. of Fish	0	67,962	1,720	422,881	9	492,552
Pounds	0	302,710	12,900	1,280,992	64	1,596,666
Price/lb.	\$0.00	\$0.48 ^b	\$0.89 ^b	\$0.18	\$0.22	
Value	\$0	\$127,658 ^b	\$250 ^b	\$230,237	\$14	\$358,159
SPORT FISHING DERBY^c - HOOK & LINE						
No. of Fish			2,155			2,155
Pounds			18,318			18,318
Price/lb.			\$0.43			
Value			\$7,877			\$7,877
TOTAL ALL GEARS						
No. of Fish	988	216,271	6,595	592,931	88,969	905,754
Pounds	13,415	1,056,864	49,659	1,823,230	833,987	3,777,155
Price/lb.	\$1.76	\$0.62 ^b	\$0.41 ^b	\$0.15	\$0.28	
Value	\$23,583	\$627,177 ^b	\$15,301 ^b	\$276,952	\$294,815	\$1,237,828

^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 and value for 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 4. Commercial salmon catch in numbers of fish by species, Lower Cook Inlet, 1981 - 2001^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1981	1,086	110,255	10,776	3,279,183	336,093	3,737,393
1982	1,066	131,320	46,892	551,589	198,185	929,052
1983	873	187,645	11,219	927,607	192,319	1,319,663
1984	714	268,950	16,797	700,622	92,540	1,079,623
1985	1,043	278,694	10,327	1,229,708	30,640	1,550,412
1986	796	234,861	18,852	1,408,293	82,688	1,745,490
1987	1,179	248,848	14,354	201,429	157,018	622,828
1988	1,694	319,008	7,946	921,296	321,911	1,571,855
1989	1,893	163,271	12,089	1,296,926	11,305	1,485,484
1990	1,560	203,895	9,297	383,670	6,951	605,373
1991	1,419	317,947	19,047	828,709	24,232	1,191,354
1992	1,891	176,644	5,902	479,768	22,203	686,408
1993	2,168	233,834	13,477	866,774	4,367	1,120,620
1994	1,231	115,418	14,673	1,647,929	5,469	1,784,720
1995	2,303	265,423	17,709	2,848,464	15,636	3,149,535
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	8,909	1,387,307	73,254	1,711,590
2001	988	216,271	6,595	592,931	88,969	905,754
20-Year Avg.	1,369	247,381	14,376	1,241,176	79,854	1,584,156
1981-90 Avg.	1,190	214,675	15,855	1,090,032	142,965	1,464,717
1991-2000 Avg.	1,548	280,088	12,898	1,392,320	16,742	1,703,595
2001 % of Total	0.11%	23.88%	0.73%	65.46%	9.82%	100.00%

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

Table 5. Commercial chinook salmon catch in numbers of fish by district, Lower Cook Inlet, 1981 - 2001^a.

Year	Southern	Outer	Kamishak	Eastern	Total
1981	1,024	61	1	0	1,086
1982	926	129	11	0	1,066
1983	858	14	1	0	873
1984	661	3	3	47	714
1985	1,007	19	6	11	1,043
1986	776	6	14	0	796
1987	1,158	14	7	0	1,179
1988	1,655	5	33	1	1,694
1989	1,889	1	3	0	1,893
1990	1,546	2	12	0	1,560
1991	1,399	2	17	1	1,419
1992	1,852	0	39	0	1,891
1993	2,162	2	4	0	2,168
1994	1,230	0	0	1	1,231
1995	2,289	12	2	0	2,303
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
20-Year Avg.	1,344	14	8	3	1,369
1981-90 Avg.	1,150	25	9	6	1,190
1991-2000 Avg.	1,539	2	6	1	1,548
2001 % of Total	99.80%	0.00%	0.20%	0.00%	100.00%

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

Table 6. Commercial sockeye salmon catch (including hatchery cost recovery) in numbers of fish by district, Lower Cook Inlet, 1981 - 2001^a.

Year	Southern	Outer	Kamishak	Eastern	Total
1981	77,880	18,133	4,972	9,270	110,255
1982	43,433	66,781	18,014	3,092	131,320
1983	133,671	16,835	11,207	25,932	187,645
1984	160,654	29,276	24,600	54,420	268,950
1985	84,149	91,957	78,250	24,338	278,694
1986	36,838	48,472	146,496	3,055	234,861
1987	89,662	31,845	123,654	3,687	248,848
1988	105,302	9,501	183,952	20,253	319,008
1989	98,052	10,286	46,395	8,538	163,271
1990	82,412	17,404	96,397	7,682	203,895
1991	170,224	6,408	136,612	4,703	317,947
1992	106,793	572	68,847	432	176,644
1993	159,747	4,613	67,650	1,824	233,834
1994	64,531	5,930	35,296	9,661	115,418
1995	164,798	17,642	36,427	46,556	265,423
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
20-Year Avg.	134,400	24,282	61,408	27,291	247,381
1981-90 Avg.	91,205	34,049	73,394	16,027	214,675
1991-2000 Avg.	177,595	14,515	49,422	38,556	280,088
2001 % of Total	71.86%	3.39%	18.36%	6.39%	100.00%

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

Table 7. Commercial coho salmon catch (including hatchery cost recovery and sales from sport derbies) in numbers of fish by district, Lower Cook Inlet, 1981 - 2001^a.

Year	Southern	Outer	Kamishak	Eastern	Total
1981	7,976	485	1,845	470	10,776
1982	7,165	92	38,685	950	46,892
1983	3,433	54	7,138	594	11,219
1984	3,193	41	13,027	536	16,797
1985	4,258	3,210	2,024	835	10,327
1986	3,095	5,052	9,935	770	18,852
1987	2,163	2,481	8,079	1,631	14,354
1988	2,987	2	4,471	486	7,946
1989	6,667	72	4	5,346	12,089
1990	1,552	74	26	7,645	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	8,114	8,909
2001	2,706	5	9	3,875	6,595
20-Year Avg.	4,253	783	4,853	4,488	14,376
1981-90 Avg.	4,249	1,156	8,523	1,926	15,855
1991-2000 Avg.	4,257	410	1,182	7,049	12,898
2001 % of Total	41.03%	0.08%	0.14%	58.76%	100.00%

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

Table 8. Commercial pink salmon catch (including hatchery cost recovery) in numbers of fish by district, Lower Cook Inlet, 1981 - 2001^a.

Year	Southern	Outer	Kamishak	Eastern	Total
1981	1,453,982	1,714,115	66,097	44,989	3,279,183
1982	296,556	67,523	43,871	143,639	551,589
1983	690,254	199,794	1,405	36,154	927,607
1984	336,595	89,085	138,145	136,797	700,622
1985	518,889	618,222	194	92,403	1,229,708
1986	542,521	401,755	423,774	40,243	1,408,293
1987	90,522	23,890	72,684	14,333	201,429
1988	852,382	6,094	61,080	1,740	921,296
1989	987,488	52,677	256,669	92	1,296,926
1990	178,087	191,320	2,448	11,815	383,670
1991	253,962	359,664	47,833	167,250	828,709
1992	417,021	146	2,594	60,007	479,768
1993	692,794	159,159	4,205	10,616	866,774
1994	1,589,709	13,200	33	44,987	1,647,929
1995	2,475,312	192,098	169,054	12,000	2,848,464
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
20-Year Avg.	899,822	233,276	64,961	43,117	1,241,176
1981-90 Avg.	594,728	336,448	106,637	52,221	1,090,032
1991-2000 Avg.	1,204,917	130,105	23,285	34,013	1,392,320
2001 % of Total	91.57%	8.19%	0.24%	0.00%	100.00%

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

Table 9. Commercial chum salmon catch in numbers of fish by district, Lower Cook Inlet, 1981 - 2001^a.

Year	Southern	Outer	Kamishak	Eastern	Total
1981	20,920	238,393	73,501	3,279	336,093
1982	18,466	63,075	108,946	7,698	198,185
1983	14,281	27,203	142,901	7,934	192,319
1984	8,065	3,204	70,736	10,535	92,540
1985	5,513	11,844	8,139	5,144	30,640
1986	5,560	11,701	61,670	3,757	82,688
1987	5,030	28,663	108,412	14,913	157,018
1988	7,742	71,202	218,299	24,668	321,911
1989	3,141	43	7,809	312	11,305
1990	2,433	614	3,597	307	6,951
1991	1,962	14,337	7,853	80	24,232
1992	1,885	181	20,051	86	22,203
1993	2,788	970	600	9	4,367
1994	2,631	32	14	2,792	5,469
1995	4,530	474	10,302	330	15,636
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
20-Year Avg.	6,332	23,824	45,449	4,248	79,854
1981-90 Avg.	9,115	45,594	80,401	7,855	142,965
1991-2000 Avg.	3,549	2,055	10,498	641	16,742
2001 % of Total	4.26%	0.46%	95.28%	0.01%	100.00%

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

Table 10. Commercial set gillnet catch of salmon in numbers of fish by species in the Southern District, Lower Cook Inlet, 1981 - 2001^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1981	222	53,665	6,735	68,794	8,524	137,940
1982	894	42,389	5,557	15,838	7,113	71,791
1983	822	41,707	1,799	20,533	4,377	69,238
1984	639	40,987	2,862	17,836	5,008	67,332
1985	958	23,188	3,908	22,898	4,221	55,173
1986	745	21,807	2,827	14,244	2,426	42,049
1987	653	28,209	2,025	9,224	2,419	42,530
1988	1,145	14,758	2,819	29,268	4,423	52,413
1989	1,281	13,970	4,792	16,210	1,877	38,130
1990	1,361	15,863	1,046	12,646	1,938	32,854
1991	842	20,525	5,011	3,954	1,577	31,909
1992	1,288	17,002	848	15,958	1,687	36,783
1993	1,089	14,791	3,088	12,008	2,591	33,567
1994	1,103	14,004	1,073	23,621	2,419	42,220
1995	2,078	19,406	3,564	41,654	3,958	70,660
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
20-Year Avg.	1,039	29,565	3,063	22,763	3,741	60,170
1981-90 Avg.	872	29,654	3,437	22,749	4,233	60,945
1991-2001 Avg.	1,205	29,476	2,689	22,777	3,249	59,396
2001 % of Total	1.80%	59.31%	3.77%	27.87%	7.26%	100.00%

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

Table 11. 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 - 2001.

YEAR	JUVENILE SOCKEYE SALMON													TOTAL SOCKEYE
	Leisure Lake	Hazel Lake	Chenik Lake	Paint Upper	River Lower	Lakes Elusivak	Kirschner Lake	Bruin Lake	Ursus Lake	Port Dick Lake	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		1.270
1995	1.632	1.061	1.129	0.337	0.251		0.251	0.251	0.252		0	0.360		5.524
1996	1.490	1.030	0.951	0.500	0		0.250	0.250	0.250		0.155	0.864	0.217	5.957
1997	2.000	1.000	0				0.250				0.199	0.788	2.425	6.662
1998	2.005	1.302					0.250				0	0.265	2.021	5.843
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	0	6.004
2001	0.089	0.000					0.000				0 ^c	0.145		0.234
AVG.	1.634	0.882	1.635	0.540	0.261	0.507	0.290	0.250	0.200	0.452	0.398	1.234	0.584	5.836

^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 expected release in spring 2001.

^c All 2001 English Bay Lakes fry were lost to an outbreak of IHN while rearing over the summer.

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Table 11. (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	e	e	e		0.228	
AVG.	48.619	4.750	0.306	4.013	57.688	0.095	0.093	0.162	0.114	0.267	0.463

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

^e Figures for 2001 unavailable at time of publishing.

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Table 11. (page 3 of 3)

YEAR	JUVENILE COHO SALMON				
	Caribou Lake	Seldovia Lake	Homer Spit	Resurrection Bay ^c	TOTAL COHO
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			^g	0.431	
AVG.	0.148	0.061	0.122	0.655	0.874

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

^g Figures for 2001 unavailable at time of publishing.

Table 12. Personal use/subsistence set gillnet salmon catch in numbers of fish by species and effort, Southern District, Lower Cook Inlet, 1969 – 2001^a.

Year	Permits Issued	Permits Returned		Permits		Catch in Numbers of Fish						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 ^c	154	146	94.0	112	34	86	27	1,579	150	16	0	1,858
69-00 Avg.	299	280	93.6	195	85	51	59	3,027	702	44	26	3,909
91-00 Avg.	285	276	97.0	195	81	140	80	2,672	491	14	0	3,397

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

^b Steelhead trout (*Onchorhynchus mykiss*).

^c Figures derived from permit returns and oral reports through 10/17/01.

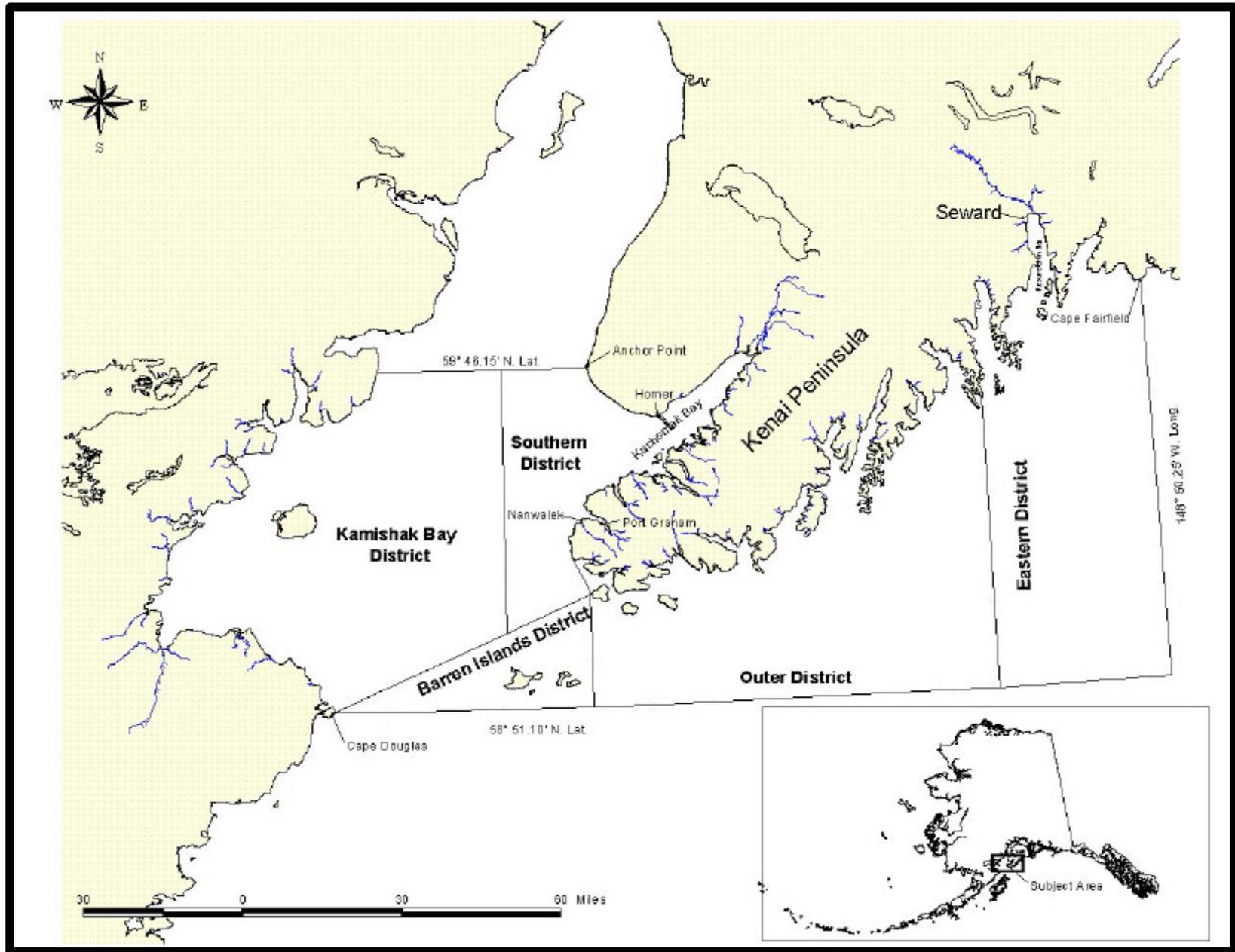


Figure 8. Lower Cook Inlet salmon and herring management area.

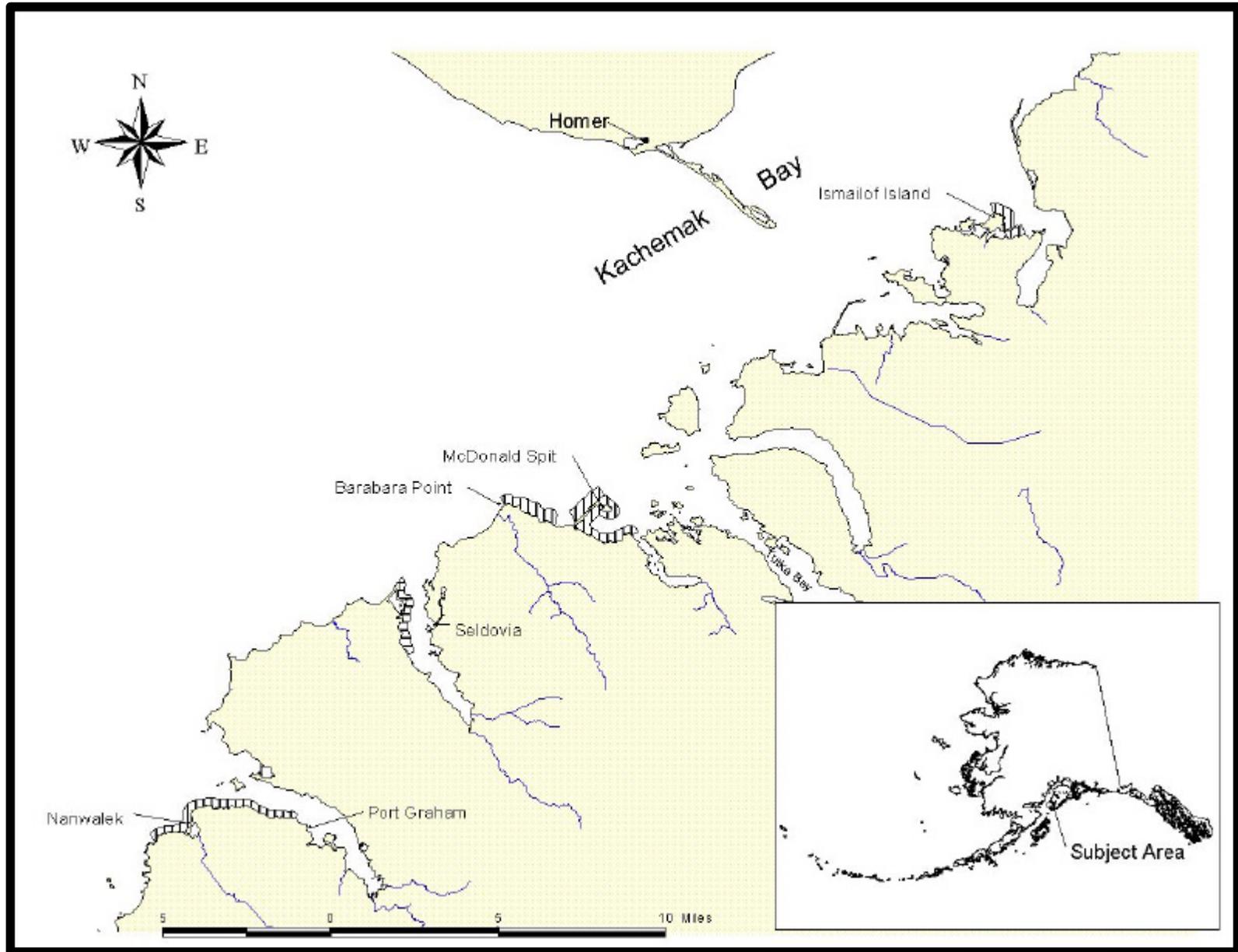


Figure 9. Commercial set gillnet locations in the Southern District of Lower Cook Inlet.

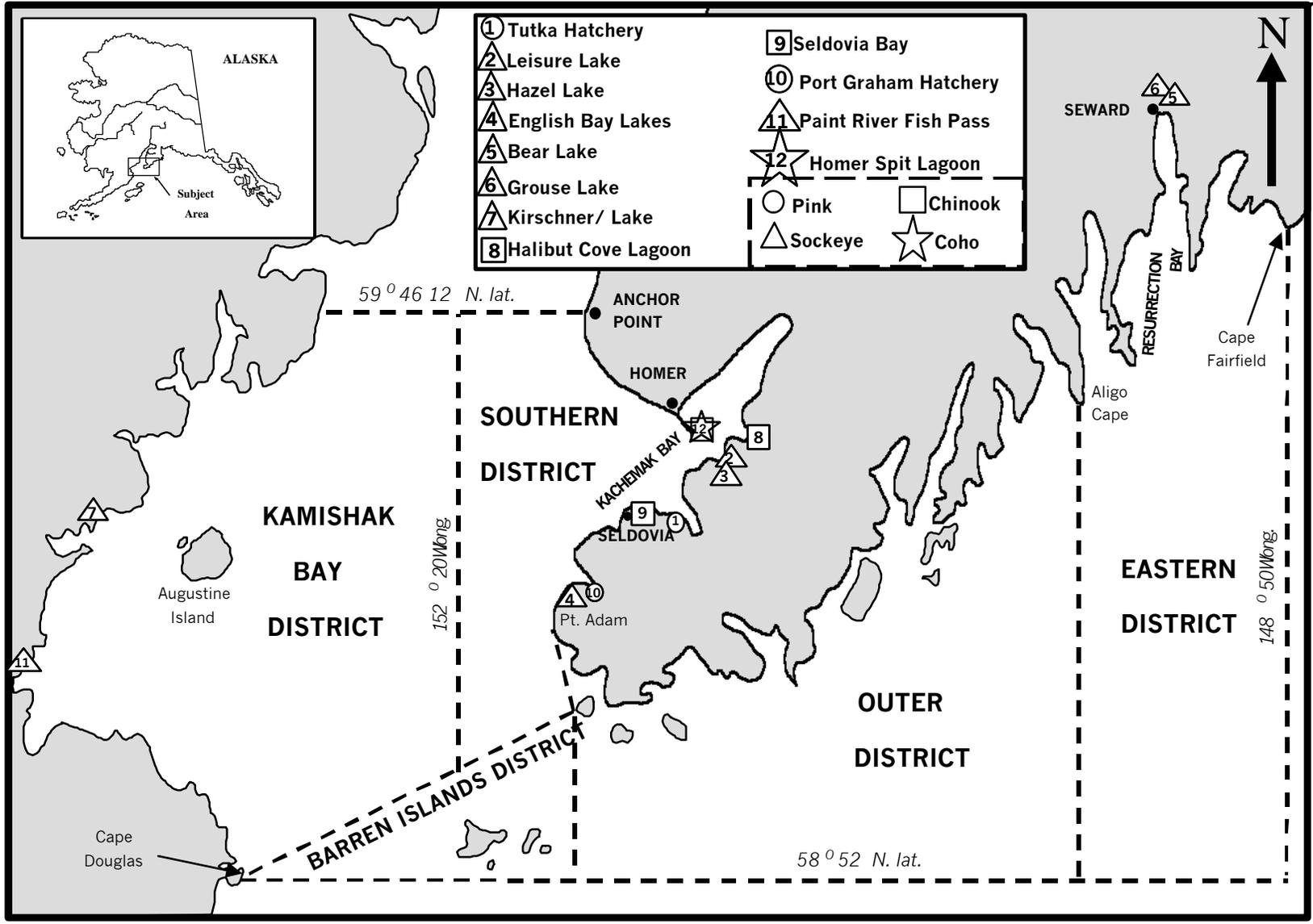


Figure 10. Salmon hatcheries and enhancement/rehabilitation sites in Lower Cook Inlet, Alaska.

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