Fishery Management Report No. 09-28

2008 Lower Cook Inlet Annual Finfish Management Report

by

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and

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Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye to fork	MEF
mideye to tail fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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The Fishery Management Reports series was established in 1989 by the Division of Sport Fish for the publication of an overview of management activities and goals in a specific geographic area, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm. This publication has undergone regional peer review.

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ABSTRACT

The 2008 Lower Cook Inlet commercial salmon fishery was characterized by above average sockeye *Oncorhynchus nerka* and chum *O. keta* salmon harvests but below average Chinook *O. tshawytscha*, coho *O. kisutch*, and pink *O. gorbuscha* salmon harvests. The all-species commercial harvest totaled approximately 1.092 million fish, dominated by pink salmon at 46% and sockeye salmon at 37%. The commercial fishery exvessel value was approximately $3.96 million, the highest figure since 1988. Although participation remained at relatively low levels for the only two allowable gear groups, purse seine and set gillnet, both showed increases over the previous season. Despite the continued importance of salmon enhancement in commercial harvests due to numerous sockeye salmon lake stocking projects and remote releases, for the first time in many seasons no hatchery-produced pink salmon contributed to Lower Cook Inlet commercial catches in 2008. The harvest of salmon for cost recovery purposes by hatchery facilities in Lower Cook Inlet, expressed as a proportion of total commercial catches, was estimated at approximately 9% in numbers of fish and 14% in exvessel value for the season, considerably less than the historical average.

The Southern District Personal Use Coho Salmon Fishery in Kachemak Bay produced an estimated harvest of 1,840 coho salmon, falling within the guideline harvest range of 1,000 to 2,000 coho salmon. Participation in the fishery, at 107 permits actively fished, was the highest figure since 2001.

The commercial Pacific herring *Clupea pallasi* fishery in Lower Cook Inlet was closed during 2008 for the tenth consecutive season due to continuing low abundance levels.

Key words: Lower Cook Inlet, commercial salmon harvest, salmon enhancement, hatchery, cost recovery, personal use fishery, purse seine, set gillnet, escapement, sockeye *Oncorhynchus nerka*, pink *O. gorbuscha*, chum *O. keta*, coho *O. kisutch*, Pacific herring *Clupea pallasi*, Annual Management Report, AMR.

2008 COMMERCIAL SALMON FISHERY

INTRODUCTION

The Lower Cook Inlet (LCI) management area, 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, is divided into five commercial salmon 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.

The 2008 LCI all-species commercial salmon harvest of 1.09 million fish (Table 1, Figure 7) was the third lowest during the past decade, representing only 61% of the recent 10-year average of 1.79 million (Appendix A5). The overall harvest failed to achieve the cumulative preseason forecast of 1.25 million fish (revised to 1.33 million; Appendix C1), in large part due to smaller than anticipated harvests of natural runs of pink salmon *Oncorhynchus gorbuscha*. However, relatively strong returns of both sockeye *O. nerka* and chum salmon *O. keta* resulted in commercial harvests totaling nearly 408,000 and 176,000 fish, respectively (Tables 1, 3, and 6; Figures 8 and 11), considered excellent for these species. Increased prices paid for all salmon species this season yielded an estimated exvessel value of approximately $3.96 million (Table 7), making the value of the 2008 LCI harvest more than twice the recent 10-year average (Appendix A2) and the fourth highest since statehood. Seine fishing effort showed an increase over the previous year, but with only 27 of 85 permit holders making deliveries this season (Appendix A1), participation continued to follow a recent low trend. The number of active set gillnet permits in 2008 was 18 (Appendix A1), a slight increase over the 2007 season.

For the third consecutive season, LCI commercial salmon harvests in 2008 were not dominated by hatchery and enhanced fish production, primarily because no pink salmon returned to the

Tutka Hatchery facility, where operations were suspended after 2004, and also because the minimal pink return to Port Graham Hatchery did not contribute to commercial catches. Hatchery production did contribute to sockeye salmon catches with approximately 44% of the LCI sockeye salmon harvest in numbers of fish attributed to Cook Inlet Aquaculture Association (CIAA) lake stocking, fertilization, and/or remote release projects. These projects were conducted at Leisure and Hazel Lakes and (more recently) Tutka Bay Lagoon in the Southern District, Kirschner Lake in the Kamishak Bay District, and Bear Lake in the Eastern District. Another newer sockeye salmon enhancement project, conducted by the Port Graham Hatchery Corporation (PGHC) in the Southern District, contributed an additional 6% to LCI sockeye catches, but all fish were utilized for hatchery cost recovery. The overall area-wide commercial harvest of sockeye salmon in LCI, at just under 408,000 fish, exceeded the recent 10-year average of 311,000 sockeye salmon by over 30% (Appendix A13).

Returns of pink salmon, usually the dominant species in numbers of commercially harvested salmon in LCI, were considered reasonably good this year, but the overall catch of 506,000 fish (Tables 1 and 5, Figure 10) was only about 61% of the preseason harvest forecast of 826,000 pink salmon. The 2008 harvest represents the fifth lowest commercial pink salmon total since 1988 (Appendix A5), a time period that was dominated by LCI hatchery production. Numerous and fairly liberal openings to target relatively strong natural returns of pink salmon resulted in good catches in some areas (Port Dick-Outer District) but no catches in others (Bruin Bay-Kamishak Bay District).

Although private non-profit (PNP) corporations in LCI continued to harvest fish for sale this season, for the third consecutive year a much smaller than average portion of the overall salmon harvest was utilized as hatchery cost recovery to recoup expenses incurred by the various stocking and enhancement projects throughout the management area. Only about 9% of the all-species salmon harvest in numbers of fish was taken by CIAA and Port Graham Hatchery Corporation (PGHC) to support the LCI lake stocking and remote release programs, representing about 14% of the exvessel value of the LCI salmon fishery (Table 7).

The shortage of regular tender service in remote districts, a persistent factor affecting the amount and distribution of seine effort, and ensuing harvest of salmon, in LCI over the past decade, seemed to have less impact on overall harvests during 2008 than in many previous seasons. 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. For many years after 1994, however, seiners were forced to devise their own means to transport fish from these remote areas to a processing facility. 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 others retained the flexibility to fish these traditional areas because of onboard chilling equipment. The stronger markets for all salmon species in 2008, pink salmon in particular, seemed to reduce processors' apprehension about providing remote tender service, contributing to the reasonably good catches in Port Dick.

Prices paid in LCI were sharp increases over any recent season for all salmon species (Appendix A3), potentially explaining the increase in effort this season. Nonetheless, even with these elevated prices and increased numbers of active permit holders compared to recent years, the majority of seine permit holders in LCI chose to refrain from participating in 2008, thus contributing to a continuing trend of low overall levels of seine effort.

PRESEASON SUMMARY

The projected 2008 LCI all-species salmon harvest of approximately 1.25 million fish was approximately 25% less than the recent 20-year average actual harvest. However, that original projection was revised just prior to the field season to a new all-species harvest total of approximately 1.33 million fish due to changes in the numbers of sockeye salmon predicted to return to CIAA enhancement projects in 2008. Formal total forecasts for natural salmon runs other than pink salmon were not prepared because escapement and age, weight, and length data are limited for those species. However, the pink salmon catch projections were calculated from relative estimates of parental run size, average age composition data, and recent relative productivity trends.

Preseason LCI harvest projections and actual catches for all species in 2008 are listed below:

Species	Original Projected Harvest	Revised Projected Harvest	Actual Harvest	1988–2007 Average
Chinook	1,250	1,250	190	1,387
Sockeye	372,700	452,400	407,591	279,578
Coho	13,850	13,850	2,966	12,200
Pink	825,800	825,800	505,700	1,326,409
Chum	38,600	38,600	175,730	52,726
Total	**1,252,200**	**1,331,900**	**1,092,177**	**1,672,299**

Enhanced runs to Bear Lake in the Eastern District, Leisure and Hazel Lakes in the Southern District, and Kirschner Lake in the Kamishak Bay District were expected to comprise the bulk of the LCI sockeye salmon harvests this season. The sockeye salmon run to the English Bay Lakes system in the Southern District, although important in some recent years, was not expected to produce any harvestable surplus for commercial set gillnet harvests in LCI due to a weak forecast resulting from low level smolt outmigrations in previous years. Although Chenik Lake in the Kamishak Bay District benefited from regular fry stocking and intermittent fertilization during the 1980s and early 1990s, the program was suspended after 1996 due to an epizootic of Infectious Hematopoietic Necrosis Virus (IHNV) within the system in previous years. Despite this lack of enhanced production, adult sockeye salmon returns to Chenik Lake from 2003–2007 were surprisingly good, resulting in the first directed effort at this stock in over a decade and annual commercial harvests ranging from 12,000 to 162,000 sockeye salmon between 2004 and 2007. Because of the unexpectedly strong runs the previous five seasons, the outlook for the adult sockeye salmon return at Chenik Lake in 2008 was cautiously optimistic, and many fishermen expected reasonable harvest opportunities.

With the suspension of operations at Tutka Bay Hatchery after the 2004 season, no pink salmon were slated to return to that facility for the second consecutive year. Additionally, the volitional release of pink salmon juveniles upon emergence from Port Graham Hatchery (no short-term rearing) in 2007 led to the hypothesis that few if any pink salmon would return to that facility in 2008. Thus, for the first time in many years, no hatchery-produced pink salmon were expected to contribute to LCI catches this season.

Reasonably good pink salmon escapements to major systems in 2006 contributed to a harvest projection of nearly 826,000 naturally produced pink salmon throughout the entire LCI management area this season. Port Dick, Windy Bay, and Rocky Bay Subdistricts in the Outer District, Bruin Bay, Ursus Cove, and Rocky Cove Subdistricts in the Kamishak Bay District, and Seldovia Bay Subdistrict in the Southern District, all figured to provide the potential for harvestable surpluses, but the projected fishing effort in the remote districts was debatable due to uncertain markets and questionable levels of available tender service.

Because seven of the past eight seasons' chum salmon runs and commercial catches in LCI were relatively strong, the chum salmon harvest outlook in 2008 once again appeared bright. Most west-side LCI systems experienced good to excellent escapements during the 2003 and 2004 parent years, and recent years' runs to area systems have continued to display a generally encouraging trend. Numerous systems, especially those in northern Kamishak Bay, seemed to effectively rebound from chronic low level returns in the 1990s decade, while chum runs to the larger Big and Little Kamishak Rivers have also been comparatively strong during seven of the past eight years. The good catches during this time period, as well as the recent overall trend, suggested that harvest opportunities for chum could be numerous in 2008.

2008 SEASON SUMMARY

Chinook Salmon

The 2008 harvest of Chinook salmon *O. tshawytscha*, not normally a commercially important species in LCI, totaled just under 200 fish (Table 2), or less than 20% of the average during the last decade (Appendix A12) and the lowest figure for this species since 1975. Virtually all of the catch came from the Southern District, with the majority taken in Tutka Bay Subdistrict. Set gillnetters this season accounted for 79% of the Southern District Chinook salmon catch, with purse seiners taking the remaining 21%.

Sockeye Salmon

The 2008 sockeye salmon harvest of 407,600 fish (Table 3; Figure 8) was the third highest for LCI in the last decade and the fourth highest since statehood, exceeding the 20-year average of 279,600 fish by over 45% (Appendix A13). Sockeye salmon accounted for 37% of the LCI salmon harvest in total numbers of fish, yet provided 69% of the exvessel value of the entire salmon fishery this season (Table 7). The 2008 LCI commercial sockeye salmon harvest was characterized by much weaker than expected returns to key enhanced systems at Leisure and Hazel Lakes in the Southern District and Bear Lake in the Eastern District. In contrast, natural sockeye salmon returns within the management area ranged from fair to outstanding, with four of five major systems achieving or exceeding their respective sustainable escapement goals (SEG's). Of particular note was the formerly enhanced system of Chenik Lake, located in the Kamishak Bay District on the west side of LCI, where the sockeye salmon return this season was the best on modern record. The 2008 commercial catch in nearby waters totaled over 170,000 fish (Appendix A16), which was the highest reported harvest since statehood. Stocking of Chenik Lake was discontinued after the 1996 season, thus all present production is considered natural, and this season's total return was estimated at approximately 182,500 sockeye salmon, continuing a six-year trend of excellent runs to the system.

Sockeye salmon runs to major Southern District enhancement sites, which have at times provided the bulk of the annual LCI sockeye salmon catch, were weak for the fifth consecutive

season, continuing a recent pattern of disappointing returns to these enhancement locations. Harvests of enhanced runs of sockeye salmon returning to Leisure and Hazel Lakes were originally predicted to cumulatively total almost 130,000 fish in 2008 (revised to 149,000), but the estimated combined actual commercial harvest amounted to only around 64,700 fish (Figure 9; Appendix A15). This figure was less than half of the recent 10-year average of 147,500 sockeye salmon and also represented the third lowest combined total since adults began returning to both the Leisure and Hazel Lakes enhancement sites in 1991 (prior to that year, only Leisure Lake sockeye salmon contributed to the 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 sockeye salmon for harvest there.

Also in the Southern District, the sockeye salmon run to English Bay Lakes was considerably better than expected, achieving the desired inriver escapement goal while also providing modest harvest opportunities for commercial set gillnetters in Port Graham Subdistrict and subsistence set gillnetters from the two local native villages. Both the commercial and subsistence set gillnet fisheries in waters of Port Graham Subdistrict remained closed for the early portion of the sockeye salmon run in order to protect fish for escapement purposes. The subsistence fishery in those waters was only allowed to reopen on June 30 after the escapement goal was assured, while the commercial fishery opened a week later, resulting in a seasonal harvest of approximately 5,400 sockeye salmon (Table 3) for the latter user group. The continued viability of the sockeye salmon return to the English Bay Lakes system may rest on the future success of the inconsistent rehabilitation project being conducted by Chugach Regional Resources Commission (CRRC) in conjunction with Nanwalek Salmon Enhancement Project (NSEP), operated by the village of Nanwalek. This sockeye salmon project has encountered setbacks in recent seasons due to viral and disease outbreaks in the pen rearing of juveniles, as well as years when no or reduced numbers of broodstock were collected. For the 2008 season, an estimated 246,000 juvenile sockeye salmon were released back into the English Bay Lakes system as "fall fry", the first such release in the past three seasons, but no sockeye salmon were collected for broodstock.

In the Kamishak Bay District, the enhanced run of sockeye salmon to Kirschner Lake produced a catch of less than 12,000 fish (Table 3), representing only about 43% of the original preseason harvest forecast of 26,900 fish. All of the sockeye salmon harvested at Kirschner Lake in 2008 were utilized for hatchery cost recovery, with none taken by commercial seiners.

At Bear Lake in Resurrection Bay of the Eastern District, the cumulative seine and hatchery catch of "early run" sockeye salmon destined for Bear Lake totaled just over 90,000 fish (Table 3; Appendix A17), falling short of the original preseason harvest forecast of 106,600 sockeye salmon. Nonetheless, the desired inriver sockeye salmon goal for Bear Lake was achieved despite the weaker than predicted return.

The LCI management area has only six lake systems with significant naturally occurring sockeye salmon runs, and four of five achieved or exceeded their SEG's in 2008, while the sixth system has no formal escapement goal. In East Nuka Bay Subdistrict of the Outer District, a strong return to Delight Lake produced an escapement estimate, enumerated via a combination of picket weir and aerial surveys, of nearly 24,000 sockeye salmon (Appendix A24), surpassing its SEG of 6,000 to 12,600 fish. The peak daily aerial survey escapement estimate at nearby Desire Lake totaled 10,700 sockeye salmon, falling within the SEG range of 8,800 to 15,200

(Appendix A24). Commercial seine fishing effort on the sockeye salmon run bound for the Delight Lake system in East Nuka Bay resulted in a harvest totaling only 1,400 sockeye salmon for the season (Table 3) despite reasonable harvest opportunities during July. A third system in East Nuka Bay, known as Delusion (Ecstasy) Lake, is a recently formed glacial system that supported no documented salmon run prior to the mid 1980s. The sockeye salmon run to this system, which has no formal SEG, showed a peak aerial escapement estimate of about 1,800 sockeye salmon in 2008 (Table 3).

Targeted fishing effort was allowed on sockeye salmon returning to Chenik Lake in the Kamishak Bay District for the fifth consecutive season in 2008. From 1994 through 2002, returns to that system had been poor due to the after-effects of an outbreak of IHNV, a naturally occurring viral disease, in the early 1990s. The outbreak caused increased mortality to young salmon, subsequently resulting in weak adult returns, and CIAA ultimately suspended a traditional stocking program at Chenik Lake after the 1996 season. The sockeye salmon run to Chenik this year, the sixth consecutive strong run, was considered outstanding, with a total return estimated at over 180,000 sockeye salmon, consisting of a commercial seine harvest of 171,300 fish and an approximate escapement of 11,300 as documented by video and aerial surveillance (Appendix A16). The latter figure slightly exceeded the sockeye salmon escapement goal range of 2,000 to 9,300. It is important to note that all sockeye adults returning to Chenik Lake in the last six seasons were entirely the result of natural production since the stocking program has not been conducted at this system since 1996.

Waters of Aialik Bay in the Eastern District were not opened to commercial fishing for a second consecutive season in 2008 due to a relatively weak sockeye salmon return to Aialik Lake. Consequently, no harvest resulted and all fish entered the system as escapement, estimated by aerial surveys at 4,200 fish, falling within the SEG range of 3,700 to 8,000 sockeye salmon (Table 3; Appendix A24). At Mikfik Lake in the Kamishak Bay District, a weak run resulted in an escapement estimated by aerial surveys at less than 5,600 sockeye salmon (Table 3; Appendix A24), falling short of the established goal range of 6,300 to 12,200. No seine effort targeting Mikfik sockeye salmon occurred despite continuous fishing time allowed in June, thus no harvest resulted.

Coho Salmon

The coho salmon *O. kisutch* resource in the LCI management area is not extensive, and this species is therefore only occasionally targeted in the commercial fishery. The 2008 commercial harvest of 3,000 coho salmon (Table 4) was only about one-fourth of the average catch during the past 10 years (Appendix A18) and was the lowest figure since 1977. The Eastern District, which frequently contributes the bulk of the LCI coho catches because of the Seward Silver Salmon Derby and CIAA hatchery cost recovery at Bear Lake, accounted for around 55% of the areawide coho harvest this season (Appendix A18). The two sources split the Eastern District's cumulative total of just over 1,600 coho salmon at a ratio of 75% for the derby and 25% for CIAA (Table 4). It should be noted that the organizer of the derby, the city of Seward, annually sells the derby entries to a commercial processor as a means to generate revenue, hence these derby entries are listed as "commercial" harvests. The remainder of the LCI coho catch was divided between set gillnetters (24%) and seiners (20%) in the Southern District, while hatchery fishermen in the Southern District and seiners in the Kamishak Bay and Outer Districts caught negligible numbers.

Because the coho resource in LCI, and assessment of it, is limited, commercial coho harvests can rarely be used to accurately gauge coho salmon run strength. Additionally, market conditions in recent years have discouraged directed effort, making the incidental commercial harvest of this species an unreliable indicator. Sport and personal use harvests generally provide the best indicators of run strength. The weak commercial catches, and other informal signs, indicated that returns during 2008 were likely average or slightly below average, while catches in the personal use gillnet fishery suggested relatively strong returns in Kachemak Bay. The single aerial survey flown specifically for coho salmon assessment in 2008 showed good escapement at Clearwater Slough in the Northshore Subdistrict of the Southern District (Table 4).

Pink Salmon

Returns of pink salmon, usually the dominant species in numbers of commercially harvested salmon in LCI, were considered generally good this year, with an overall harvest of 505,700 fish (Table 5; Figure 10). This figure is just over one-third of the most recent 10-year average and represents the fifth lowest catch of this species during the past two decades (Appendix A19). Despite the numerous and fairly liberal openings to target reasonably strong natural stocks this season, erratic tender service in some remote areas kept pink salmon catches lower than potentially possible. Harvests this season were comprised entirely of naturally produced fish for the first time in many seasons. The suspension of operations at Tutka Hatchery in the Southern District, LCI's oldest hatchery, meant no hatchery-produced pink salmon returning to that facility for the third consecutive season, while the return to Port Graham Hatchery was questionable due to less than optimal release conditions for juveniles in 2007.

The majority of the pink salmon catch this season was taken in the Outer District, where the commercial seine harvest totaled approximately 468,000 pink salmon (Table 5; Appendix A19), which was nearly 70% greater than the recent 10-year district-wide average. The majority of this district's catch came from the Port Dick Subdistrict, totaling 344,500 pink salmon, while directed effort in Windy Bay Subdistrict produced an additional total of approximately 114,700 pink salmon (Table 5).

In the Southern District, which has historically dominated LCI pink salmon catches because of the hatchery facilities, the pink salmon harvest totaled a paltry 9,900 fish (Table 5; Appendix A19), all taken by common property fishermen. The extremely weak return to Port Graham Hatchery, informally estimated at 5,000-9,000 pink salmon by aerial surveys, did not contribute to commercial harvests in 2008. In the Kamishak Bay District on the west side of LCI, the pink salmon harvest of 28,200 fish (Table 5; Appendix A19) was considered incidental during directed efforts targeting both chum and sockeye salmon at Kamishak Rivers, Rocky Cove, and Kirschner Lake. Pink salmon escapements to all monitored systems within the management area were sufficient to achieve or exceed SEG's (Appendix A25).

Chum Salmon

Coming on the heels of a disappointingly weak chum salmon season in 2007, especially considering that the previous seven consecutive years exhibited relatively strong runs, chum salmon returns in 2008 were a major bright spot for the LCI area. The chum salmon harvest of 175,700 fish (Table 6; Appendix A22) was the third highest figure for the species in LCI during the past two decades and was almost three times the average harvest over the past 10 years. In sharp contrast to historical catches, commercial chum salmon harvests cumulatively totaling just over 73,000 fish in Kamishak Bay District, on the west side of LCI, were overshadowed by those

from the Outer District, which totaled nearly 101,000 chum salmon (Table 6; Appendix A22). Of particular note was the catch from Port Dick Subdistrict, totaling more than 87,000 chum salmon, as well as an additional catch near tiny Petrof River in Nuka Island Subdistrict, totaling 10,400 chum salmon (Table 6). Escapements into most LCI chum salmon systems were sufficient to achieve goals (Appendix A26), with the exception of McNeil River, where the escapement fell short of its established goal range for the fourteenth time in the last 19 years, partly because of the consistently high seasonal abundance of bears at McNeil River Falls.

2008 EXVESSEL VALUE

The estimated exvessel value of the 2008 commercial salmon harvest in LCI, not including any postseason adjustments in price paid to fishermen, was approximately $3.96 million (Table 7; Appendix A2), making it more than double the average during the past decade and the highest figure since 1988. Purse seine gear in the common property fishery, which normally generates the majority of the catch and value, accounted for about $3.12 million or approximately 79% of the overall exvessel total (Table 7), while set gillnets accounted for $277,000 or 7%. An estimated $553,000, or about 14% of the entire exvessel value of the LCI salmon fishery, was utilized for hatchery cost recovery purposes, while the remainder (<1%) consisted of coho salmon entered into the Seward Silver Salmon Derby and subsequently sold by organizers of that event. Estimated average salmon prices paid to fishermen in 2008, not including any postseason adjustments, were as follows: Chinook–$3.42/pound; sockeye–$1.45/pound; coho–$0.76/pound; pink–$0.23/pound; and chum–$0.55/pound (Table 9; Appendix A3). Prices for all species were the highest paid in close to twenty years.

2008 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 up to 25 set net permits.

The 2008 LCI all-species set gillnet harvest totaled 30,800 fish (Table 1), representing only about two-thirds of the recent 10-year average (Appendix A7) and a fifth consecutive poor all-species total for this gear group. The sockeye salmon catch of just under 27,000 fish, however, was the second highest since 2003 and was nearly equal to the average over the past two decades. The greatest set gillnet catches of sockeye salmon this season occurred in Seldovia Bay and Tutka Bay Subdistricts (Table 3).

Salmon species composition in the 2008 LCI commercial salmon set gillnet fishery, with sockeye at 87%, pink at 6%, and chum at 5%, was considerably different than the average over the past decade, when typical salmon species composition in the fishery was 67% sockeye, 20% pink, 7% chum, 4% coho, and 2% Chinook salmon. The catch of Chinook salmon, at less than 150 fish, was far less than the recent 10-year average of 1,000 and was the lowest harvest in over 30 years. The highest Chinook salmon catches in the 2008 LCI set gillnet fishery occurred in Tutka Bay Subdistrict.

Based on the weak preseason forecast for sockeye salmon 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 kept closed at the start of the set gillnet season (early June) to protect fish for escapement, but the run proved stronger than anticipated. Once achievement of the SEG could be projected, and local residents were given an opportunity to harvest fish for subsistence needs, waters of Port Graham Subdistrict were opened to commercial fishing in early July. Despite the late start, commercial set gillnetters in this subdistrict still managed to harvest about 5,400 sockeye salmon for the season (Table 3), while the final estimated escapement of 12,000 fish at English Bay Lakes (Table 3; Appendix A24) fell within the desired inriver goal range of 7,300 to 15,000 sockeye salmon. Local subsistence fishermen from the village of Port Graham reported catching 550 sockeye salmon for subsistence needs (though catch reports were considered incomplete; Appendix A29), while harvest figures for residents of Nanwalek were considered very good at 3,615 fish (Appendix A30). The situation surrounding the English Bay Lakes sockeye return this year was similar to the 2000, 2001, and 2004-2007 seasons, when complete fishing closures or severe restrictions were implemented due to weak sockeye salmon returns.

After the English Bay Lakes sockeye salmon return was over, waters of Port Graham Subdistrict remained open to commercial set gillnet fishing for the remainder of the regulatory season. Despite the open season in August and September, no actual effort or harvest occurred. Escapement of pink salmon into Port Graham River was above the long-term average, falling within the SEG for that system (Appendix A25).

LCI set gillnet fishing effort in 2008 increased marginally over the previous season with a total of 18 permits actively fished. This figure fell below both the 10- and 20-year averages of 21 permits annually fished (Appendix A1).

Seine Fishery

Sockeye Salmon

The overall 2008 catch of sockeye salmon by all gear types in the Southern District, at 132,300 fish, was the second highest for this species since 2003 (Appendix A13) but was still less than three-fourths of the recent 10-year average. Purse seiners in the common property fishery accounted for about 47% of the sockeye salmon landed in the district in 2008, or approximately 62,700 fish, while an additional 42,800 sockeye salmon (32%) were harvested by purse seine for hatchery cost recovery (Table 1). The relatively poor sockeye salmon catch in 2008 continued a 5-year trend of below average harvests for all gear types. Poor production rates from the district's two major sockeye salmon enhancement projects at Leisure and Hazel Lakes are contributing factors to the ongoing low catches, but reasons for this poor production are unclear.

Similar to 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 by emergency order (Table 8) five days per week beginning Monday, June 16, to allow seiners opportunity to target enhanced sockeye salmon runs 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. Traditionally, the SHA's remain closed to the common property commercial fishery until the preseason revenue goal established for each SHA is achieved.

Preseason combined harvest projections for sockeye salmon runs to the Leisure and Hazel Lakes' stocking sites were originally estimated at nearly 130,000 fish, but CIAA subsequently revised these projections prior to the season to a new cumulative harvest total of 149,000 sockeye salmon. The actual commercial harvest of adult fish produced as a result of the two enhancement projects was estimated at around 64,700 fish (Figure 9; Appendix A15), the lowest since 2004 and the third lowest since combined adult returns from the two lakes' projects began in 1991. The 2008 sockeye harvest estimate for Leisure and Hazel Lakes' returns comprised less than 16% of the entire LCI sockeye salmon harvest, considered far below the traditional proportion. Because of the close geographic proximity of these two projects, the overlapping area of harvest, and the lack of a tag/recovery program, no definitive assessment of separate runs to each system can be established. In previous seasons, fish returning as a result of these two projects not only contributed to seine catches in China Poot Subdistrict but also to those in adjacent Halibut Cove and Tutka Bay Subdistricts. This season, however, only a negligible seine harvest of sockeye salmon was reported from Halibut Cove Subdistrict, while no seine catch was reported from Tutka Bay Subdistrict. It was estimated that personal use dip net and sport fishermen harvested another 5,500 sockeye salmon at the head of China Poot Bay based on average catches from the early 1990's. The 2008 total cumulative run from both projects was estimated at around 70,000 sockeye salmon (Appendix A15), making it the third lowest total combined run of sockeye salmon to the two systems since adults began returning to Hazel Lake in 1991 and less than half of the average during that time period.

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 $150,000, an increase from the previous three years' annual total of $120,000. This figure was to be split amongst locations as follows: 66% from combined China Poot and Hazel Lake SHA's, both in the Southern District, and 34% from the Kirschner Lake SHA in the Kamishak Bay District. Cost recovery harvests inside the China Poot and Hazel Lake SHA's (Figure 3) were to proceed 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 28,700 sockeye salmon from the China Poot and Hazel Lake SHA's was necessary to achieve the combined goal of $98,700 for these two areas, assuming a preseason average price of $0.75 per pound and an average weight of 4.6 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 the 2001, 2002, 2004, and 2007 seasons, CIAA contracted one or more individual LCI seiners to conduct cost recovery within the Southern District SHA's. This differed from other recent years, when CIAA contracted the Cook Inlet Seiners Association (CISA) to undertake sockeye salmon cost recovery in LCI, with the latter organization relying on the use of volunteer vessels to undertake hatchery harvest. The first hatchery harvest in the China Poot Subdistrict occurred on July 14 in the China Poot SHA, netting only about 550 fish, which was considered both poor and extremely late based on historical run timing standards, and suggesting that the return was perhaps significantly weaker than forecasted. Catches in the common property fishery outside the SHA's were slow during the first week of July but picked up considerably during the second week, indicating that the run was building.

Hatchery harvesters reported that traditional "buildups" of sockeye salmon within the China Poot SHA were simply not occurring for the second consecutive season, and despite consistent

monitoring of the SHA waters over the next three weeks only three more deliveries resulted, cumulatively totaling about 9,700 fish. Reported concentrations of sockeye salmon within the Hazel Lake SHA were even more dismal, so much so that the contracted hatchery vessels failed to harvest any sockeye salmon in that SHA during the entire season. In addition, the actual price paid to CIAA for hatchery cost recovery fish was only $0.64 per pound, while the early average weight was just over five pounds, increasing the preseason projected number of fish necessary to achieve the hatchery revenue goal to a new cumulative total of 30,200. However, the previously described scarcity of sockeye salmon and subsequent lack of effort within the respective SHA's translated into an abysmal seasonal catch generating only $32,000 of revenue for hatchery fishermen, or about one-third of the established revenue goal. The peak daily hatchery harvest of the season, at less than 1,200 sockeye salmon, came on July 15 from the China Poot SHA, while the final hatchery harvest of the season occurred on August 6, considered extremely late by historical standards. Because the established revenue goal was never achieved, the China Poot and Hazel Lakes SHA's were not closed to cost recovery harvest during the season, and inside waters of both the China Poot and Hazel Lake Sections of China Poot Subdistrict remained closed to common property seining. In a curious account of fish behavior, hatchery fishermen reported concentrations of sockeye salmon staging in July along a stretch of beach at McKeon Flats, between China Poot and Neptune Bays, which was closed to both common property and hatchery seining. It was believed that these fish would eventually migrate into one or both of the SHA's and therefore be available for hatchery harvest, but the actual catches from these areas appeared to dispel that hypotheses, and the ultimate fate of these sockeye salmon, or their origins, remains unknown.

As mentioned earlier, common property seine catches in China Poot Subdistrict, outside of the SHA's, started slowly in early July but began to show promise during the second week of the month. However, these catches were reported entirely from the China Poot Section of the subdistrict, on the northeast side, while no early catches were reported from the Neptune Bay Section or from adjacent Tutka Bay Subdistrict, both to the southwest. Unfortunately, harvests in area waters never rose to levels suggested by the preseason forecast, with catches peaking in the China Poot Section on July 17 and 18 when 11 vessels took almost 16,000 sockeye salmon. Catches declined steadily thereafter, ending with a final harvest on August 4. In the Hazel Lake Section, the peak daily harvests occurred on July 15 and 16, with a catch totaling 11,600 sockeye salmon. One additional "spike" in catch occurred in the Neptune Bay Section on July 28, but effort and harvest fell quickly thereafter, with the last harvest in that section coming on August 1. The cumulative common property catches in the two sections totaled 62,200 sockeye salmon (Table 3) taken by 13 seiners. The harvest proportion for the season favored the China Poot Bay Section at approximately two-thirds of the cumulative common property seine catch from the two sections, which would suggest that the sockeye salmon return to Leisure Lake was stronger than that to Hazel Lake. This implication is further strengthened when the hatchery cost recovery harvests were factored in since no fish were caught by hatchery fishermen in the Hazel Lake Section.

As previously mentioned, very little seine effort for sockeye salmon occurred within adjacent waters of Tutka Bay Subdistrict to the southwest, or Halibut Cove Subdistrict to the northeast, of the China Poot Subdistrict. Thus, the additional sockeye harvest from these two subdistricts in 2008 was uncharacteristically negligible.

CIAA forecasted a return of just under 22,000 sockeye salmon to the new remote release site for this species at Tutka Lagoon. However, with a preseason projected price of $0.75 per pound and a revenue goal of $82,600 established for this hatchery project, CIAA expected that all returning fish would be required in pursuit of the cost recovery objective, and no targeted common property openings were anticipated. The first hatchery harvest of the season occurred on July 11, netting almost 1,100 sockeye salmon in waters of Tutka Lagoon, with four additional deliveries occurring over the next two weeks. Because of overlapping run timing for pink salmon returning to Tutka Lagoon Creek, hatchery fishermen were unable to avoid capturing pink salmon during cost recovery operations and were forced to manually sort fish in order to keep the incidental harvest of non-target species low. The final hatchery harvest of the season came on July 24, bringing the cumulative total catch to 14,600 sockeye salmon for the season (Table 3). Although the inseason price paid for these fish ($0.95) was higher than predicted, the seasonal proceeds from these efforts fell short of the revenue goal by approximately 35%. Hatchery harvesters informally estimated as many as 5,000 sockeye salmon remained in waters of Tutka Lagoon after cost recovery operations concluded.

At Port Graham Hatchery, a return of up to 14,000 sockeye salmon was forecasted as a result of the facility's recently begun saltwater release project, which uses broodstock originating from nearby English Bay Lakes. PGHC established a 2008 revenue goal of $217,500 for this project, and with the magnitude of the projected return, combined with anticipated average weights and prices, the facility anticipated that all returning fish would be required for cost recovery purposes and a modest broodstock collection of up to 1,500 fish. Sockeye adults appeared and began to concentrate in waters around the hatchery in early July, and a portion of the Port Graham SHA was opened to hatchery seining on a continuous basis beginning on July 9. Hatchery harvests began six days later and continued through July 24. The return was stronger than anticipated, and the season's hatchery cost recovery catch cumulatively totaled 26,300 sockeye salmon (Table 3) at an estimated value of approximately $83,000, or about 38% of the established revenue goal.

Pink Salmon

The 2008 season marked the first year since approximately 1978 that no hatchery-produced pink salmon contributed to Southern District commercial salmon harvests. With no pink salmon returning to the Tutka Hatchery for the third consecutive season, and a very questionable return slated for the Port Graham Hatchery, the final district-wide catch of less than 10,000 pink salmon (Table 5) was not surprising. Of the pink salmon harvest in the district, seiners in the common property fishery took half of the total, incidental harvest during sockeye salmon hatchery cost recovery accounted for just over 30%, and the commercial set gillnet fishery took the remainder.

Because the Tutka Bay SHA had been created in anticipation of the sockeye salmon return to the Tutka Lagoon remote release site, common property seining in waters of Tutka Bay Subdistrict was restricted to those waters outside of Tutka Bay proper, primarily to allow opportunity to target sockeye salmon returning to the Leisure and Hazel Lakes' enhancement sites. However, no seine effort was intentionally directed at pink salmon in the Southern District this season, thus seine harvests of pink salmon consisted solely of fish incidentally harvested during efforts directed at sockeye salmon. Commercial seine catches for the season cumulatively totaled 4,900 pink salmon in the Southern District (Table 1), with nearly 80% taken in the China Poot Section of China Poot Subdistrict and most of the remainder coming from the Neptune Bay Section. A negligible amount of pink salmon was harvested by seiners in Halibut Cove Subdistrict (Table 5).

At Port Graham in the Southern District, financial difficulties during the winter of 2006-2007 forced the facility to restrict and/or completely cancel many if not all activities in 2007. As a result, when pink salmon juveniles emerged in early 2007, they were allowed to volitionally leave the hatchery without any enumeration and without the benefit of the traditional short-term rearing and imprinting program. Although no formal forecast for the subsequent adult return was attempted, the release conditions and expected poor survival fostered a pessimistic informal prediction for the 2008 season. PGHC did not attempt any assessment, brood collection, or cost recovery for pink salmon during the 2008 season. Limited department aerial surveys during the season documented a daily peak estimate of around 8,000 pink salmon congregating in waters near the hatchery facility, though it could not be definitively determined that these were indeed hatchery-produced fish. Although waters of Port Graham Subdistrict were open to commercial set gillnet fishing during the pink salmon return, no active effort occurred and therefore no commercial harvest resulted. The natural return of pink salmon to Port Graham River was considered good, with a final escapement estimated at 24,700 fish (Table 5; Appendix A25), slightly exceeding the upper end of the established SEG range.

Returns of wild pink salmon stocks to other systems in the Southern District, as indicated by ground survey escapement counts, were good to excellent, but no seine openings directed at wild stock pink salmon occurred in the Southern District this season. Resulting pink salmon escapements into all Southern District systems fell within or exceeded their established SEG ranges (Table 5; Appendix A25).

Other Species

The Southern District chum salmon harvest in 2008 cumulatively totaled just under 1,600 fish for all gear types (Table 6; Appendix A22), nearly identical to the previous years' catch and the third lowest total for the district since statehood. Seiners took less than 5% of the total, hatchery fishermen accounted for around 8%, and set gillnetters caught the remainder. Set gillnet catches from Seldovia Bay Subdistrict dominated the all-gear-types totals (Table 6) at nearly half of the district-wide harvest, but seine catches of chum were highest in the China Poot Section of China Poot Subdistrict, undoubtedly as incidental catch during efforts targeting sockeye returning to the Leisure Lake stocking site. Escapements into Southern District chum salmon systems were considered fair to poor, but escapement at Port Graham River did fall within the SEG range (Appendix A26).

Although minor in total numbers of fish, Southern District Chinook salmon harvests frequently consist of incidental catches of adult fish returning to two of three separate enhancement projects. The 2008 Southern District harvest of 188 Chinook salmon by all gear types was the lowest since 1977, representing only 17% of the recent 10-year average of 1,111 fish (Appendix A12). Seiners took only 21% of the Southern District Chinook salmon total this season (Table 1), estimated to be near or slightly below the normal proportion for this gear type, with set gillnetters harvesting the remainder.

The district-wide coho salmon catch of 1,300 fish by all gear types was the lowest since 2000 and was just under half of the recent 10-year average (Appendix A18). Seiners accounted for approximately 55% of the Southern District coho salmon total during efforts directed at sockeye, while set gillnetters took 45% (Table 1). The majority of coho salmon taken by purse seiners were from the China Poot Section of China Poot Subdistrict.

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 ninth consecutive year, waters of Paint River Subdistrict were included in this district-wide opening because the stocking program at Paint River Lakes was discontinued (except for an experimental, one-time stocking in 2002), and no sockeye salmon were expected back to that location this season. The weekly fishing schedule for open waters within the district was set at seven days per week for the tenth successive year. This schedule was originally implemented because the complexion of the fishery had evolved after 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 reasoned that opening waters of Kamishak Bay District to commercial fishing on a continuous basis would allow seiners opportunity to harvest salmon without unduly jeopardizing spawning escapement requirements. In 2008, the district-wide commercial sockeye salmon harvest totaled 183,500 fish (Table 3; Appendices A10 and A13), the third highest total recorded in the district since statehood and approximately triple the recent 10-year average.

The earliest natural sockeye salmon run to the Kamishak Bay District, at Mikfik Creek in the McNeil River Subdistrict, normally appears in fresh water during the first few days of June. During the 2006 and 2007 seasons, the run displayed distinctly late run timing characteristics, but in 2008 run timing was closer to the more traditional early pattern. The first sockeye salmon of the season were documented via aerial survey on June 9, and at an estimated 1,200 fish, this initial observation showed a dramatic increase over the previous survey three days earlier, when no fish were seen. Unfortunately, no increase was detected by aerial surveys over the next two weeks, until June 23 when 3,600 sockeye salmon were estimated in fresh water. One week later, nearly 5,600 sockeye salmon were estimated in fresh waters of Mikfik Creek and Lake, which ultimately proved to be the peak daily survey estimate of the season. Despite the continuous fishing time allowed in McNeil River Subdistrict during June, no effort directed at Mikfik sockeye salmon occurred this season, thus all returning fish entered freshwater. No increase in cumulative escapement was detected after the July 1 survey, thus the final estimated sockeye salmon escapement index was 5,600 fish (Table 3; Appendix A24), falling just short of the established SEG of 6,300 to 12,150 fish. It should be noted that a remote video enumeration project conducted by the department at the outlet of Mikfik Lake documented an escapement of just over 9,100 sockeye salmon, or about 3,500 fish more than estimated by aerial surveys.

After the Mikfik sockeye salmon run, seiners next normally turn their attention to the Chenik and/or Douglas River Subdistricts during the final days of June. Although the stocking program at Chenik Lake was suspended in the mid-1990's, and sockeye salmon returns to the system had been minimal in the late 1990's and early 2000's due to the lingering effects of an IHNV outbreak in previous years, surprisingly strong returns from 2003 through 2007 created continuing optimism for 2008. Aerial surveys began to detect fish in salt waters of Chenik Lagoon on June 23, and with an estimate of over 1,300 sockeye salmon the run was displaying indications of significant strength. Just over a week later on July 1, however, the estimated figure jumped dramatically to over 30,000 sockeye salmon in salt water, while an additional 3,000 sockeye salmon were estimated during the same survey as escapement in fresh water. Historical

run timing for the Chenik sockeye salmon stock indicated that the run was still in its earliest stages, thus suggesting an extremely strong return. Given these excellent figures, and an escapement that was already within the established SEG range of 1,900 to 9,300 sockeye salmon for the system, commercial salmon seining was allowed in Chenik Subdistrict south of 59° 16′ N. latitude beginning July 2 on the same seven-days-per-week fishing schedule as already established for other open areas within Kamishak Bay District at that time. Waters of Chenik Subdistrict north of 59° 16′ N. latitude were kept closed to seining to protect a small return of sockeye salmon to tiny Amekdedori Creek. Marker placements around the mouth of Chenik Lake Creek, combined with typically harsh weather conditions in Kamishak Bay, were expected to limit fishing activity and allow adequate numbers of fish into fresh water for escapement.

The first catch from Chenik Subdistrict was reported on July 2, the same day as the initial opening, and at over 12,000 sockeye salmon taken for that single day, the run continued to appear very strong. As expected, near steady fishing effort persisted as new fish continuously arrived in area waters, and by July 10 the reported harvest had reached over 90,000 sockeye salmon in Chenik Subdistrict. Because CIAA did not operate a counting weir at the outlet of Chenik Lake in 2008 to monitor escapement into fresh water, as had been the case during the previous three seasons, management of the fishery was aided by a department operated remote video escapement recorder near the outlet of Chenik Lake, the fifth consecutive season for this annual project. Using a combination of aerial survey and video counts, the estimated freshwater escapement into the lake had increased to nearly 10,000 sockeye salmon by July 10, slightly exceeding the SEG range of 1,900 – 9,300 sockeye salmon. In response, markers protecting the mouth of Chenik Lake Creek were repealed beginning July 12, allowing continuous seining inside waters of Chenik Lagoon. Seining north of 59° 16′ N. latitude was kept closed to protect sockeye salmon returning to small Amakdedori Creek, where escapement was not strong.

Effort targeting Chenik sockeye salmon remained steady through the month of July, with peak daily catches occurring on July 12 and 13 when the cumulative two-day harvest totaled over 52,000 sockeye salmon. The last harvest of the season occurred on August 6, and the final cumulative catch in Chenik Subdistrict for the season totaled 171,300 sockeye salmon (Table 3), the highest figure on record for these waters (Appendix A16). Escapement into the lake continued into August, and the remote video escapement recorder project continued to operate through September 5, tallying a total of 10,650 sockeye salmon. The cumulative escapement into Chenik Lake for the season as estimated by a combination of aerial survey and video counts was 11,300 sockeye salmon (Table 3, Appendix A24), slightly greater than the SEG range. The overall run of sockeye salmon to Chenik Lake in 2008 totaled nearly 182,500 (Appendix A16), establishing a new record for the system and marking the sixth consecutive year of strong returns to this system.

No effort was directed at sockeye salmon in the Douglas River (Silver Beach) Subdistrict during 2008, but incidental catch of sockeye salmon during efforts directed at chum salmon in Kamishak River Subdistrict in late July resulted in a cumulative harvest of just under 700 fish (Table 3). Not surprisingly, the outstanding return to Chenik Lake kept seiners occupied during the peak of the sockeye returns to other subdistricts and discouraged any additional effort in those waters.

The next sockeye salmon run in Kamishak Bay District was to Kirschner Lake in the Bruin Bay Subdistrict, the site of a traditional CIAA sockeye salmon lake stocking project. At this location, where a steep falls at tide line precludes escapement into the lake, the original preseason prediction of up to 27,000 sockeye salmon returning to the site was revised to a new forecast of

32,000 fish prior to the start of the season. As outlined in the Trail Lakes Hatchery Annual Management Plan (AMP), the revenue goal necessary to meet operational expenses incurred in all LCI sockeye salmon lake stocking projects was set at $150,000. This amount was to be split between two Southern District SHA's (China Poot Bay/Leisure Lake and Neptune Bay/Hazel Lake; Figure 3) at 66% of the total and the single Kamishak SHA (Kirschner Lake; Figure 4) at 34%, or $51,200. Because CIAA anticipated harvesting the entire return of sockeye salmon to Kirschner Lake for cost recovery purposes in pursuit of the revenue goal, no directed common property effort on this stock was expected.

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 16 while simultaneously closing it to common property seining. The intent was to allow opportunity for CIAA to harvest fish for cost recovery without competition from the seine fleet. If the revenue goal was met or its achievement 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 arranged prior to the season for a small number of LCI seine vessels to act as authorized agents in order to conduct cost recovery in Kamishak Bay. Initiation of cost recovery fishing generally requires a substantial buildup of fish in salt water near the Kirschner falls, and 2008 was no exception. The first effort occurred in the Kirschner Lake SHA on July 19, late by historical standards, and netted only about 4,000 fish. Because the inseason contract price for Kirschner sockeye salmon, starting at $0.64 per pound, was 60% greater than the preseason projected price, attainment of the revenue goal not only became a distinct possibility if the return came in as forecasted, but it also left open the possibility of additional common property harvest. Unfortunately, the number of fish returning to the Kirschner Lake enhancement site was disappointing, and only two more hatchery harvests occurred during the season, with the final one taking place on July 28. The cumulative hatchery harvest of sockeye salmon at Kirschner Lake for the year totaled only 11,600 fish (Table 3) and 47,300 pounds, worth $30,300. Since this figure represented less than two-thirds of the revenue goal, waters of the Kirschner Lake SHA were never opened to common property seining. When the hatchery harvest was combined with an estimated 2,000 unharvested fish, the total return to Kirschner Lake was estimated at 13,600 sockeye salmon, or about half of the revised preseason prediction for the system. This proved disappointing since the Kirschner Lake sockeye salmon enhancement project has long been considered one of LCI's steadiest producers.

Pink Salmon

Preseason pink salmon projections for the Kamishak Bay District in 2008 were moderate, with a cumulative harvestable surplus totaling approximately 260,000 fish forecasted primarily for Bruin Bay Subdistrict. Aerial surveys of the district first documented pink salmon in fresh water in mid-July, considered slightly earlier than normal and suggesting that the forecast might be overly conservative. As surveys continued for the remainder of the month and into August, observations revealed that the pink salmon return to Bruin Bay River in Bruin Bay Subdistrict was reasonably strong and would allow ample opportunity for harvest, but the returns of this species to Sunday Creek in Rocky Cove Subdistrict and Brown's Peak Creek in Ursus Cove Subdistrict were both considerably weaker than anticipated.

Despite continuous openings in the vicinity of major pink salmon systems, the lack of tender service to this remote district and difficult fishing conditions in Bruin Bay discouraged directed effort on Kamishak Bay pink salmon in 2008. The cumulative Kamishak Bay District pink salmon harvest for the season totaled 28,200 fish (Table 5; Appendix A19), the majority of which came as incidental catch during efforts directed at chum salmon returns to Kamishak Rivers and at Rocky Cove. Escapement at the three major monitored pink salmon systems in the district all fell within their respective SEG ranges (Table 5; Appendix A25).

Chum Salmon

Following a 2007 season marked by weak chum salmon returns in LCI and no directed effort at this species in the Kamishak Bay District, chum salmon returns rebounded in 2008 and provided excellent harvest opportunity for seiners in this remote district. The final 2008 Kamishak Bay District harvest totaled 73,300 chum salmon (Table 6; Appendix A22), the fourth highest in the past decade and approximately 37% greater than the average catch during that time period. Chum escapements throughout the district were variable, but most systems achieved their SEG's.

Because chum salmon runs to McNeil River have not been strong for two decades, waters of McNeil River Subdistrict were closed to commercial fishing as a precaution beginning June 28, even though no seiners were known to be present in area waters. Aerial surveys to monitor chum salmon returns in Kamishak Bay began in mid/late June, with the first fish of the season noted in McNeil River on July 1, considered close to normal by historical run timing standards. Unfortunately, the first observations of chum salmon in early July were small at less than 500 fish during each of the first three aerial surveys between July 1 and July 8, suggesting that the return was indeed very weak. Escapement estimates at McNeil River showed only modest increases for the remainder of the month, with a meager increase occurring on July 22, when 4,800 chum salmon were estimated in fresh water. Aerial surveys at McNeil River continued for about two more weeks, and the season's peak single aerial estimate came during the final survey on August 4 when 5,700 chum salmon were estimated in fresh water. Postseason analysis of aerial survey data using the revised area under the curve (AUC) method yielded a final estimated escapement index at McNeil River of just over 9,800 chum salmon, falling substantially short of the SEG range of 24,000 to 48,000 fish (Appendix A26).

Chum salmon runs to nearly all other Kamishak Bay systems were somewhat variable but overall were considered relatively strong. In the southern portion of the district, which had been opened to fishing seven days per week at the beginning of the season, aerial surveys to document chum salmon escapement were conducted in early August, well after the majority of those runs had entered freshwater. Final estimates indicated chum salmon run at Little Kamishak River was excellent, while that of Big Kamishak River was thought to be similar but could not be confirmed because extremely turbid water conditions persisted, resulting in only minimal aerial observations. Seiners in area waters substantiated the perception of strong returns by targeting chum salmon in nearby marine waters, harvesting a cumulative total of 53,500 chum salmon from Kamishak River Subdistrict for the season (Table 6). The final escapement estimate of 21,300 chum salmon into Little Kamishak River fell within the system's SEG range (Table 6; Appendix A26), while that for Big Kamishak River totaled only 4,500 chum salmon but once again was felt to be much higher based on escapement into nearby Little Kamishak River as well as commercial seine catches.

Following a similar pattern as more southerly systems, central and northern Kamishak Bay chum salmon runs were variable this season. At Bruin Bay River, small numbers of chum salmon first began to appear in fresh water in early July, and numbers increased steadily over the course of the month. The peak individual aerial survey of Bruin Bay River occurred on July 29 when an estimated 17,500 chum salmon were documented, which was also the final index of escapement (Appendix A26). The good chum return to this system and continuous fishing time still failed to attract any directed effort, thus no harvest occurred in this subdistrict during 2008.

Because the run timing for the more northerly chum salmon systems is later than that in southern and central Kamishak areas, aerial evaluation of northern Kamishak systems typically begins in late July. Those initial surveys revealed small numbers of fish in fresh waters of Cottonwood Creek and Iniskin River. Subsequent aerial surveys showed small increases to the former system in early August, but a noticeable "spike" in escapement was documented at Iniskin River on August 20. Chum salmon returns to streams at the head end of Ursus Cove seemed considerably weaker, although freshwater escapement looked sufficient to achieve SEG's. Only limited seine fishing effort directed at chum salmon occurred in the central and northern portions of Kamishak Bay District during 2008, netting a cumulative total of about 18,000 chum salmon for Ursus Cove, Rocky Cove, and Iniskin Bay Subdistricts (Table 6). Final harvest figures for the Kamishak Bay District totaled 73,300 chum salmon for the season (Table 6; Appendix A22). Escapement goals were met or exceeded at Little Kamishak River, Bruin Bay River, Ursus Cove systems, Cottonwood Creek, and Iniskin River, while falling short at Big Kamishak River (primarily due to low estimates resulting from poor survey conditions) and McNeil River (Appendix A26).

Other Species

Chinook salmon harvests in the Kamishak Bay District historically have been insignificant (Appendix A12) and only negligible harvest occurred this season (Table 2). On the other hand, coho salmon harvests within the district have at times been substantial (Appendix A18), providing fishermen with some lucrative late season catches. Coho salmon assessment in LCI is very limited, but early signs from other areas within LCI suggested that returns were fair to good. No directed effort occurred, and the harvest for coho salmon in the Kamishak Bay District was also negligible (Tables 1 and 4).

Outer District

Sockeye Salmon

Outer District sockeye salmon harvests have traditionally focused on natural runs to the Delight and Desire Lakes systems in East Nuka Bay Subdistrict. A lake stocking project in the Port Dick area during the late 1980s provided additional fish for harvest in the early 1990s, but stocking was discontinued after 1989 and a small harvest in 1993 was the last documented catch. Preseason projections, based solely on the long-term average catch, forecasted a harvest of up to 21,000 sockeye salmon for the entire Outer District this year. The actual harvest totaled only 1,700 fish (Table 3; Appendices A8 and A13), the third lowest harvest in the district since 1976 and less than 10% of the recent 10-year average.

Aerial surveys to assess the Delight and Desire Lake systems in East Nuka Bay began on June 19, and sockeye salmon were observed in freshwater at Delight Lake but numbers were very small. About 300 sockeye salmon were estimated in saltwater near the mouth of Desire Lake

Creek during the same survey. Freshwater escapement increased insignificantly at both systems later that week, and during a survey on June 30, 2,200 sockeye salmon were estimated in freshwater at Delight Lake while only 700 sockeye salmon were seen at Desire Lake. Because both figures for the respective lakes were well short of the SEG ranges (8,800 to 15,200 sockeye for Desire Lake; 5,950 to 12,550 for Delight Lake), no openings were announced as aerial surveys continued to assess the returns. Additionally, an ADF&G (Alaska Department of Fish and Game) operated counting weir at the outlet of Delight Lake became operational on July 2 and began to register reasonably good fish counts into the lake immediately.

On July 8, an aerial survey of Delight Lake estimated nearly 6,000 sockeye salmon as escapement in freshwater, achieving the low end of the SEG range. Escapement into nearby Desire Lake was proceeding more slowly, with about 3,900 sockeye salmon estimated in freshwater. As a result, marine waters of East Nuka Subdistrict near Delight Lake Creek, south of the latitude of James Lagoon, were opened to seining beginning July 10 five days per week. Regulatory markers near the mouth of Delight Lake Creek remained in effect during the opening to protect sockeye salmon staging in those waters. Marine waters north of the latitude of James Lagoon in East Nuka Subdistrict were kept closed to seining to protect sockeye salmon returning to Desire Lake since the observed escapement was still considerably below the established SEG range of 8,800 to 15,200 sockeye salmon.

Although limited commercial seine fishing directed at Delight Lake sockeye salmon occurred immediately after the initial opening in East Nuka Subdistrict, numbers of fish available for harvest were apparently not sufficient to maintain continued effort. Unexpectedly strong counts from the ADF&G weir at Delight Lake between July 22 and 24 increased the cumulative freshwater escapement at Delight Lake to over 16,000 sockeye, exceeding the upper end of the SEG for the system. As a result, seining in waters of East Nuka Subdistrict south of the latitude of the entrance to James Lagoon was liberalized to seven days per week beginning July 25, and markers protecting the mouth of Delight Lake Creek and McCarty Lagoon were simultaneously rescinded. Waters north of the latitude of James Lagoon remained closed to fishing to protect sockeye returning to Desire Lake, where escapement was not considered strong.

Despite the increased fishing time in marine waters near Delight Lake, the only harvest of the season was reported just two days after the initial opening, totaling 1,400 sockeye salmon (Table 3) and representing the lowest total for waters of this subdistrict since 2005 and the second lowest over the past decade. No further effort occurred in waters of East Nuka Subdistrict because seiners found more lucrative fishing elsewhere in the district later in July.

Aerial surveys to monitor the East Nuka Bay sockeye returns continued through July, finally detecting a reasonably strong escapement into Desire Lake at the very end of July, estimated at 10,700 sockeye (peak estimate, used as final index of escapement; Table 3; Appendix A24). By this time, however, the run was nearly over and no fishery openings were called to target this return. At nearby Delight Lake, the peak aerial survey estimate of the season was made on July 23 when 12,800 sockeye were observed. 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 the summer, but such conditions were not a factor for the second consecutive season. The final cumulative escapement count at Delight Lake, estimated by a combination of weir and aerial survey, totaled nearly 24,000 sockeye (Table 3, Appendix A24), the third highest for that system over the past twenty years.

A third system of lakes known as Delusion (or Ecstasy or Delectable) Lakes in East Nuka Subdistrict has been monitored for nearly two decades to document the sockeye salmon return there. Located near the head of the East Arm of Nuka Bay, the two-lake system is relatively new, formed during the late 1970s and early 1980s by a receding glacier. A review of charts and maps drawn prior to the mid-1980s substantiated this fact as no lakes are indicated at the site of the present bodies of water. Before the 1980s, 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 2008 aerial count of 1,800 sockeye salmon in freshwater (Table 3) was recorded during an aerial survey on August 6. Little is known of the origins of this return, although the predominant hypothesis suggests that sockeye salmon probably strayed from nearby Desire and/or Delight Lake to colonize this new lake system. ADF&G personnel conducted sampling of sockeye salmon 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 (6 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

Good escapements during the 2006 parent year fostered relative optimism for significant pink salmon harvest opportunities in the Outer District in 2008, with a projected harvest figure of nearly 475,000 fish, or almost 75% greater than the recent 10-year average of 276,400 pink salmon. The bulk of the harvestable surpluses were expected at Port Dick, with lesser amounts predicted at Rocky Bay, Windy Bay, and Port Chatham. The actual catch of 467,600 pink salmon (Table 5; Appendix A19) virtually achieved the forecast and was the third highest catch of this species in Outer District waters over the past 20 years.

For the sixth consecutive year, ADF&G 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 predicated upon real-time aerial assessment of pink salmon returns and escapements in the Outer District. Based on the forecast, as well as low levels of anticipated effort, waters of the South, Outer, and Taylor Bay Sections of Port Dick Subdistrict were opened to seining on conservative schedule of two 40-hour periods per week, from 6:00 a.m. Monday until 10:00 p.m. Tuesday, and from 6:00 a.m. Thursday until 10:00 p.m. Friday, beginning July 14. This set opening date was intended to encourage effort early in the returns, normally dominated by males, and to promote product quality. The North Section of Port Dick Subdistrict was kept closed to fishing to protect the chum salmon return to Island Creek, which has historically displayed a later run timing than the chum salmon return to Port Dick (head end) Creek, until the return could be adequately assessed.

Aerial surveys in Port Dick began on July 11, four days before the initial opening, and observations were encouraging, with unexpectedly good numbers of pink salmon seen staging on the saltwater flats at the head end of the bay and abundant jumper activity along the north shore. During the next survey conducted on the day of the opening, estimated numbers in saltwater increased, totaling almost 19,000 pink salmon on the head end flats. Numbers of fish and jumper activity along the entire north shore were also notably good, but those same parameters on the south shore were distinctly poor, somewhat of a reversal based on historical observations in waters of Port Dick. In addition, aerial surveyors believed that a significant number of chum

salmon were mixed in with pink salmon, but estimating proportions proved challenging. An aerial survey of Port Dick later that same week showed that pink salmon protected by closed waters markers on the head end flats had increased to an estimated 40,000 fish, considered excellent for the date, while fish activity along the north shore continued but was conspicuously absent along the south shore. Despite the relatively good showing, no seine effort occurred during the first week after the initial opening.

Because of the encouraging numbers of pink salmon staging in saltwater and protected by markers on the Port Dick head end flats, the weekly fishing period in the South, Outer, and Taylor Bay Sections of Port Dick Subdistrict was liberalized to five days per week beginning July 21. Active seine fishing effort began on the first day of the extended opening, and catches that day proved quite good but were unexpectedly comprised almost equally of pink salmon and chum salmon. Although the proportion of chum salmon in the catches decreased steadily thereafter, the number of chum salmon taken by seiners in Port Dick Subdistrict remained much higher than anticipated throughout the season. Also, the majority of the fishing effort in Port Dick was occurring in deeper waters near the middle of the bay and towards the eastern end of the main bay (south of Island Creek); very little effective effort was occurring in the nearshore areas in open waters along the south shore.

Freshwater pink salmon escapement into Port Dick (head end) Creek was proceeding very slowly, with less than 1,000 pink salmon documented by a department ground survey on July 22. A series of extreme low tides beginning July 30 was expected to force a significant number of pink salmon out from behind closed waters markers at the head end of Port Dick, making them extremely vulnerable to commercial harvest. Since such a situation could potentially jeopardize achievement of the system's SEG, waters of the South Section of Port Dick Subdistrict west of Shelter Cove were closed to seining for a one-week period from July 30 until August 6. Catches through the end of the month in Port Dick Subdistrict totaled about 105,000 pink salmon.

Despite the temporary closure near the head end of Port Dick, and the weekend closures during normal fishing periods, pink salmon escapement continued to lag at Port Dick (head end) Creek, with a department ground survey on August 14 showing only about 10,000 pink salmon in freshwater, representing slightly more than half of the low end of the SEG range of 18,550 to 58,300 pink salmon. In response, waters of the South Section of Port Dick Subdistrict were closed to seining by emergency order beginning August 18 to protect pink salmon bound for Port Dick (head end) Creek for escapement purposes. Waters of the Outer and Taylor Bay Sections of Port Dick Subdistrict remained open in order to allow limited effort on pink salmon returning to other systems, while waters of the North Section remained closed to protect fish returning to systems along that shore.

No catches were reported from open areas in Port Dick between August 18 and August 21, likely because the "prime" fishing areas were closed at the time. But a department ground survey of Island Creek on the north shore of Port Dick on August 20 showed excellent freshwater escapement of both pink and chum salmon. With estimated survey totals of nearly 19,000 pink salmon and 7,300 chum salmon into Island Creek, the SEG's for both species were assured, therefore fishing in both the North and South Sections of Port Dick east of 151° 09.66' W. longitude was opened to seining seven days per week beginning August 21. The restriction in waters open to fishing was intended to allow seiners opportunity to primarily target the strong pink salmon return to Island Creek, while simultaneously protecting pink returns to systems in Port Dick west of that line. For two days after the opening, effort and catches of pink salmon in

the two sections were strong, but both harvests and effort declined thereafter, with the last catch from Port Dick reported on August 26. The cumulative harvest from Port Dick Subdistrict for 2008 totaled 344,500 pink salmon (Table 5; Appendix A21), slightly more than the 325,000 pink salmon forecasted for the subdistrict. Harvests were reported from only two of the four Port Dick sections, with South Section catches comprising 94% of the subdistrict's total and the North Section contributing the remainder. It is believed that limited effort and harvest occurred in the Outer and/or Taylor Bay Sections of Port Dick Subdistrict, but no harvest was formally reported on fish tickets from these sections. Effort levels, at 16 different permits making deliveries in 2008, were the highest observed in Port Dick Subdistrict for many seasons.

Elsewhere in the Outer District, a relatively strong pink salmon return also occurred at Windy Bay. Waters of Windy Bay Subdistrict were opened to seining five days per week beginning July 21, after a department aerial survey estimated numbers of fish protected by markers near the stream mouths, as well as additional fish actively entering the bay, indicative of a return that would achieve the SEG's and allow reasonable harvest opportunities. Other than a temporary closure of a small area near the regulatory closed waters markers, to protect fish during an extreme series of low tides similar to that in Port Dick, waters of Windy Bay Subdistrict remained open to fishing on the original fishing schedule through the end of August, producing a harvest of nearly 115,000 pink salmon for the season (Table 5; Appendix A21).

The final escapement estimate of 34,200 pink salmon for Port Dick (head end) Creek fell slightly below the midpoint of the SEG range of 18,550–58,300 fish established for this system (Table 5; Appendix A25). The pink salmon return to Island Creek was stronger, with a final estimate of escapement totaling almost 50,000 pink salmon (Table 5; Appendix A25), or nearly double the upper end of the SEG range of 7,200–28,300. Interestingly, the ten highest pink salmon escapement totals on record for Island Creek have all occurred after 1995. Smaller systems in Port Dick and Taylor Bay, though not having established SEG's, also experienced good pink salmon escapements. At Windy Left Creek in Windy Bay Subdistrict, final escapement was estimated at 64,100 pink salmon, while the figure for Windy Right Creek was 12,500 pink salmon, both of which exceeded the SEG's for the respective systems (Table 5; Appendix A25).

Pink salmon returns to both Rocky River and South Nuka Island Creek were both considered sufficient to allow commercial seine opportunity, with openings at each location beginning on August 8, but fishermen apparently deemed fishing in other areas to be more lucrative and thus no effort occurred in either area. However, the pink salmon harvest of 8,300 fish (Table 5) that did occur in waters of Nuka Island Subdistrict this season came entirely as incidental catch during efforts directed at the strong chum salmon return to Petrof River. The final escapement at Rocky River totaled an estimated 91,000 pink salmon, or about 68% greater than the upper end of the SEG range for that system (Table 5; Appendix A25), while that at South Nuka Island Creek was estimated at 12,300 pink salmon, falling near the upper end of the established SEG of 2,700 to 14,300 (Table 5; Appendix A25). Elsewhere in the Outer District, aerial observations at Port Chatham suggested a relatively weak return, and waters of Port Chatham Subdistrict were never opened to seining. Postseason analysis of ground survey data indicated an estimated cumulative escapement of 16,400 pink salmon into Port Chatham systems (Table 5; Appendix A25), falling within the SEG range. Desire Lake Creek, with an SEG range of 1,900 to 20,200 pink salmon, experienced a fair pink return, with an escapement estimated at nearly 9,500 fish (Table 5; Appendix A25). The liberal seven-days-per-week seine fishing schedule that carried

over from the earlier sockeye salmon returns in East Nuka Bay Subdistrict failed to attract any effort directed at pink salmon and produced only a negligible incidental harvest (Table 5).

Chum Salmon

Chum salmon returns to the Outer District were undoubtedly the biggest and most positive surprise in LCI during 2008. Because chum salmon numbers have remained at relatively low levels in the Outer District since the peak harvest years of the late 1970s and early 1980s, large returns were once again not anticipated this season. However, because of the strong returns, one specific commercial opening targeting chum salmon occurred in the Outer District this season, the first such opening at this small system in many years, while the majority of the harvest came unexpectedly during openings primarily targeting pink salmon. The final harvest of almost 101,000 chum salmon (Table 6; Appendix A22) was the highest in the Outer District since 1981 and the eighth highest on record since statehood.

Strong catches of chum salmon in the Outer District began during the first efforts of the season in Port Dick, which were originally intended to target pink salmon. In fact, on the first day of reported deliveries from Port Dick Subdistrict on July 21, the cumulative harvest of nearly 72,000 salmon was almost equally split between the two species in numbers of fish. Though the chum salmon catches dropped noticeably after first day, they remained uncharacteristically above traditional figures through July and well into August. The final harvest of 87,500 chum salmon from Port Dick Subdistrict (Table 6) was the highest harvest from these waters since 1981 (Appendix A23).

Department aerial surveys at tiny Petrof River, located in Nuka Island Subdistrict, began in early July, but noticeably strong escapement was documented during a routine survey on July 28, when almost 1,800 chum salmon were observed, a figure far greater that that typically seen in this system. Additional and significant salmon jumper activity was noted during the same survey in marine waters near the mouth of the river, suggesting that new fish were continuing to enter the system as escapement. As a result, marine waters around Petrof River were opened to seining beginning July 29 five days per week, and the regulatory 500-yard closed waters restriction near the mouth of Petrof River was rescinded at the same time, allowing commercial seining up to freshwater at that location. Seiners quickly capitalized on this opening, harvesting a cumulative total of over 10,000 chum salmon in the first three days after the opening (Table 6), while incidentally harvesting more than 8,300 pink salmon during these efforts (Table 5). No additional effort or harvest occurred after this time at this location.

Escapements at all four of the chum salmon systems with formal SEG's in the Outer District fell within their respective ranges, and at least two were considered strong. Port Dick (head end) Creek experienced an escapement of approximately 11,800 chum salmon (Table 6), the highest since 2002 (Appendix A26) and the third highest on record since statehood. Chum salmon escapement at Island Creek fell near the upper end of its SEG range of 6,400 to 15,600 fish, with a final total of 12,900 fish (Table 6; Appendix A26). Rocky River escapement totaled 3,800 chum salmon, while chum escapement at Koyuktolik (Dogfish) Bay systems, with a combined SEG range of 3,300–9,200 chum salmon, was estimated at 6,200 fish (Table 6; Appendix A26), the highest since 2003. Chum salmon escapement at small Petrof River, with no formal escapement goal, was estimated at 7,500 fish for the season (Table 6).

Eastern District

Sockeye Salmon

The Eastern District showed potential for harvestable surpluses of sockeye salmon in Aialik and Resurrection Bay Subdistricts during 2008, with an original district-wide preseason projection totaling 113,000 fish. This forecast was modified to a new total of nearly 155,000 sockeye salmon after CIAA revised their prediction for the sockeye salmon return to Bear Lake. Actual harvest in the Eastern District totaled about 90,000 sockeye salmon (Table 3; Appendix A13), falling well below the preseason forecast but nonetheless double the recent 10-year average. The seine fleet harvested about 63% of the Eastern District sockeye salmon total, exclusively from the Resurrection Bay Subdistrict (Tables 1 and 3), while the remaining 37% was taken as hatchery cost recovery in saltwater of Resurrection Bay and in freshwater at the Bear Creek weir for the Bear Lake sockeye salmon enhancement project near Seward.

Sockeye salmon enhancement activities by CIAA at Bear Lake resulted in a revised projected run ranging up to 160,000 fish assuming optimum survival of various smolt and fry releases. If the forecast proved true, the expected harvestable surplus was about 148,000 fish after accounting for the desired inriver escapement requirements for Bear Lake, established as a range of 5,600 to 13,200 sockeye salmon in the 2008 Trail Lakes Hatchery Annual Management Plan.

In the fall of 2004, the Alaska Board of Fisheries (BOF) passed a proposal that amended the Bear Lake Management Plan. The new section of the plan, implemented for the first time in the 2005 fishery, stipulated that equal shares of the harvestable surplus of sockeye salmon destined for Bear Lake be allocated to the common property seine fleet and to CIAA for hatchery cost recovery. Although new management strategies were required to satisfy this regulation, several measures from previous years' experience were carried over in the fishery. The seine fleet was to begin fishing on the Bear Lake sockeye run at a relatively early date (mid/late May) in Resurrection Bay in order to promote product quality. In addition, fishing would be allowed five days per week (Monday through Friday), which would theoretically allow sufficient opportunity to harvest sockeye without jeopardizing the desired inriver escapement goal for Bear Lake. Closed waters markers were once again posted 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 once again utilized in order to protect enhanced returns of Chinook salmon, which are allocated entirely to the sport fleet and are illegal to retain in the commercial fishery.

Considering the experience gained from the previous year's fishery, plans in 2008 called for common property seining in marine waters to proceed during the earliest portions of the run while catches and escapement were continuously monitored, to determine if and when a hatchery-only opening in marine waters was warranted to balance harvests. Weekly fishing periods, and potential hatchery openings in marine waters of Resurrection Bay, would be adjusted inseason, with the goal of achieving an equal harvest total for CIAA and commercial seiners. CIAA was additionally prepared to harvest fish in the fresh water SHA at the Bear Creek weir for cost recovery purposes once achievement of the escapement goal was met or its attainment could be projected.

Waters of Resurrection Bay Subdistrict north of the latitude of Caines Head were opened to common property seining by emergency order beginning on Monday, May 26 (Table 8), in

keeping with the traditional recent-year opening time of mid to late May. Prior to 1998, these waters were opened on the second Monday in May, but experience demonstrated that sockeye salmon 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 broodstock utilized for the project had a documented run timing peaking in early June), the first three years of adult runs from 1992 through 1994 actually trickled in over the course of two months. Between 1995 and 2007, with larger numbers of fish returning, the majority of the run appeared in marine waters at the head of Resurrection Bay during the first two weeks of June.

When the area first opened in 2008, fishermen were understandably cautious because recent years' runs had not met preseason expectations. As usual, all effort was concentrated at the head end of Resurrection Bay, and landings on the first day of the opening were meager at less than 200 sockeye salmon. By the middle of that week, however, catches began to increase as the return began to build. Catch rates continued to increase the following week, which traditionally constitutes the peak fishing time of the season, and these harvests suggested that the revised preseason forecast might be accurate. By the end of the second full five-day fishing period (June 6), cumulative seine catches had totaled about 35,000 sockeye salmon (about 24% of the preseason harvest forecast), but escapement at the Bear Creek weir totaled less than 200 sockeye salmon. In an effort to both promote escapement and allow a more balanced harvest between the two user groups, the normal weekend seine closure of June 7 and 8 was extended to include June 9, and a 12-hour hatchery-only opening was allowed on June 9 (Table 8). The common property fishery was scheduled to reopen on June 10, still on a schedule of five days per week.

The hatchery-only opening on June 9 produced a harvest of approximately 12,500 sockeye salmon. Common property harvests over the next two days pushed the cumulative seine catch up to about 49,000 sockeye salmon, but sockeye escapement into Bear Lake through June 11 totaled only 700 sockeye salmon. Since it was believed that the peak of the run was over by this time, indications were that the return was weaker than predicted. Given the fact that the harvest proportion stood at about 80% for seiners and 20% for CIAA, and that escapement represented only 6% of the desired inriver level, it appeared that the remainder of the sockeye run to Bear Lake would be required to meet escapement and hatchery objectives. As a result, the seine fishery was closed effective on June 12, while hatchery fishing in marine waters of the Bear Lake SHA was opened seven days per week beginning June 13 (Table 8).

Despite concerted efforts, hatchery fishermen managed to harvest only another 16,900 sockeye salmon from marine waters of the Bear Lake SHA over the next ten days, and of that total, less than 600 sockeye salmon were taken during the final two days of that time period. Hatchery fishermen essentially gave up because fishing was no longer cost effective. During this same period, escapement remained inexplicably slow, cumulatively totaling only about 2,800 sockeye salmon through June 23. Because of the lagging escapement, and the fact that CIAA traditionally collects its sockeye broodstock requirements from lake escapement, waters of the Bear Lake SHA (both fresh and salt) were closed to hatchery fishing effective on the evening of June 23 (Table 8) in an effort to promote escapement into the lake. Marine waters of the SHA would remain closed for the rest of the season.

Fortunately, escapement numbers increased noticeably beginning on July 24 and remained reasonably strong for the next two weeks. Fresh waters of the Bear Lake SHA were reopened to hatchery harvest on July 2, and beginning on July 10, with an escapement near the upper end of the desired inriver escapement range for sockeye salmon (13,400), CIAA began to selectively

harvest sockeye salmon for cost recovery at the Bear Creek weir. Harvests at the weir continued through July 29, peaking between July 10 and July 14, when the daily catch averaged almost 500 sockeye salmon per day. The cumulative seasonal catch from the Bear Creek weir totaled 3,700 sockeye salmon (Table 3).

The final analysis of the 2008 sockeye run to Bear Lake showed a commercial seine harvest of 57,100 fish, combined hatchery harvest of 33,000 sockeye salmon, and an escapement of 13,400 fish (Table 3; Appendix A17). The resulting cumulative total of 103,500 sockeye salmon is the largest return to this system since the enhancement program began in the late 1980's, but still significantly below the revised preseason forecast of approximately 160,000 sockeye salmon. Inseason management tactics, which did not differ significantly from previous seasons, were not as effective as was hoped in balancing harvests between seiners and CIAA in 2008. Atypical fish behavior in marine waters near the head of Resurrection Bay may have had a direct impact on this particular outcome – seiners reported that sockeye salmon approaching the freshwater mouth of Resurrection River were not overly eager to continue migrating upstream once at that point, and would frequently "back out" to marine waters, thus making them vulnerable to harvest once again. This differed from most years, when fish that escaped past the commercial fishery would steadily continue migrating upstream towards Bear Lake, where they were allowed to enter the system as escapement or were harvested by CIAA for hatchery cost recovery. One informal hypothesis for this atypical fish behavior revolved around the late spring thaw in the area and the lingering below average fresh water temperatures.

At Aialik Lake in Aialik Subdistrict, aerial surveys began on June 19, and although sockeye salmon were documented in freshwater at that time, only about 200 fish were seen. Escapement figures remained relatively low through the end of June but picked up during the first week of July when 2,000 sockeye salmon were estimated during a survey on July 3. Since this figure fell short of the SEG (3,700–8,000), no openings were announced for waters of Aialik Subdistrict. Two more aerial surveys were conducted over the next 11 days, and the final aerial survey of the season on July 14 produced the peak estimate of escapement at Aialik Lake, totaling approximately 4,200 sockeye salmon (Table 3, Appendix A24), falling within the SEG range. No commercial fishery openings were ever allowed in Aialik Subdistrict this season.

Pink Salmon

Only a small harvestable surplus of slightly more than 12,000 pink salmon was forecasted in Eastern District waters for 2008, not surprising given the primarily weak returns in most recent years. Because of the expensive nature to adequately assess the small streams there, and also because no directed openings were expected, surveys of Resurrection Bay systems are of a low-priority nature. In 2008, ground surveys of Resurrection Bay streams were scheduled but were subsequently cancelled for the second consecutive season due to poor weather and conflicts with other, higher priority surveys. Nonetheless, due to the trend of primarily weak but highly variable returns during recent years, no openings for pink salmon were allowed in Resurrection Bay this season and therefore no harvest occurred.

Other Species

Chinook salmon have never played an important role in Eastern District commercial fisheries. Chum salmon, on the other hand, have occasionally been an important component of commercial catches in the Eastern District, but catches during the past 10 years have averaged only about 360 fish annually. This season's chum salmon harvest failed to achieve that figure, amounting to only

35 fish (Table 6; Appendix A22), all taken incidentally during the directed sockeye salmon fishery in Resurrection Bay. Due to a pattern of weak Eastern District runs over the past 10–15 years, no directed openings for chum salmon were allowed there this season. Although a single ground survey per system was conducted for chum salmon in Resurrection Bay during 2008, the minimal escapement estimates (Table 6) generated by these earlier than normal surveys were not considered sufficient to adequately characterize returns this season.

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 ADF&G to manage coho stocks 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 2008, a total of just over 1,200 coho salmon 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 normally harvested at the Bear Creek weir by CIAA as cost recovery for expenses incurred. During years when the salmon market was strong, CIAA customarily sold most hatchery-caught coho salmon to a commercial processor(s). Because market forces now make product quality a central issue, most coho salmon taken at the weir are unmarketable due to excessive fresh water marking. As has become commonplace in recent seasons, all coho caught at the Bear Creek weir this year were donated to various individuals, many of whom were dog mushers. Total hatchery harvest from the Bear Creek weir was approximately 400 coho salmon (Tables 1 and 4), comprising about 5% of the entire LCI coho catch this season. Approximately 285 coho salmon were collected for hatchery broodstock, while an additional 370 fish were allowed into Bear Lake as escapement (Table 4). Total commercial catch in the entire Eastern District amounted to just over 1,600 coho salmon (Table 4; Appendix A18), falling far short of the recent 10-year average of 5,800 fish.

2008 SALMON ENHANCEMENT AND REHABILITATION

INTRODUCTION

Fisheries enhancement has played a major role in LCI salmon production for three 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 overall survival rates. Since their inception in the mid 1970s, 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 very important in future years.

Projects initiated by the ADF&G and presently being undertaken by CIAA and/or PGHC provided an estimated 19% (207,600 salmon) of the total 2008 LCI commercial harvest of 1,092,000 fish. The Leisure/Hazel, Kirschner, and Bear Lakes sockeye salmon enhancement projects produced approximately 41% (166,400 fish) of the total LCI sockeye harvest of 407,600 fish in 2008. For the first time in many seasons, the entire pink salmon catch in 2008 was a result of only natural production.

Using average weights per fish and average prices per pound in LCI, salmon produced by CIAA and PGHC contributed an estimated 44% ($1.72 million) to the $3.96 million total value of the 2008 LCI commercial salmon harvest. About 14% ($0.55 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 AND REMOTE RELEASE SITE

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 1993–1994, increased its capacity to approximately 150 million eggs. Pink salmon were the primary species produced at the hatchery, while secondary chum enhancement during earlier years was ultimately discontinued in favor of experimental efforts directed toward sockeye salmon in later years. Although the hatchery had a sockeye salmon egg capacity of 1.8 million eggs, and raceways to accommodate the resulting fry, efforts to incubate and rear sockeye to the smolt stage were plagued by the IHN virus, and the sockeye program was relatively short lived. In 2004, CIAA announced suspension of all Tutka Hatchery operations, essentially ending the annual full-scale pink salmon incubation and release program. The last adult pink salmon return to the facility occurred in 2005, the result of brood collection in 2003 and subsequent fry release in 2004.

In a matter related to the LCI sockeye salmon lake stocking program, CIAA has begun to utilize Tutka Lagoon as a remote release site for sockeye salmon in an effort to develop an adult return to that location. The permit for this program is held by CIAA's Trail Lakes Hatchery, located in Moose Pass, and all incubation and rearing activities are conducted at that facility. Such a program became necessary when the original sockeye salmon brood source for the LCI lake stocking program, Tustumena Lake in Upper Cook Inlet, became unavailable due to a federal court ruling. In an effort to overcome this obstacle and continue the LCI sockeye program, CIAA applied for and successfully received a permit to temporarily collect and incubate sockeye salmon eggs from Hidden Lake, in the Kenai River drainage of Upper Cook Inlet, for use in this project. Plans allow for an egg collection from that location for five years from 2006 through 2010, incubation of the eggs and rearing of fry at Trail Lakes Hatchery, and release of smolt at Tutka Lagoon. Ultimately CIAA expects to utilize sockeye salmon adults returning to Tutka Lagoon as the source of eggs to supply the LCI lake stocking program that includes Leisure, Hazel, and Kirschner Lakes.

The first return of adult sockeye salmon as a result of the Tutka Lagoon remote releases occurred in 2008. CIAA harvested approximately 14,600 sockeye (Table 3) for hatchery cost recovery purposes in waters of the lagoon, while collecting an additional 150 sockeye for experimental use to develop a remote egg take procedure at the site. Onsite hatchery personnel estimated that up to 5,000 sockeye remained unharvested in waters of Tutka Lagoon at the conclusion of the 2008 field efforts. The combined figures produced an estimated adult return to Tutka Lagoon totaling nearly 20,000 sockeye salmon. In 2008, CIAA released an estimated 480,000 sockeye salmon smolts from Tutka Lagoon as part of this program (Appendix A32) and performed an experimental egg take, collecting approximately 103,000 eggs.

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 evaluation of 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, located approximately three miles south of Leisure Lake and emptying into Neptune Bay. Since their inception, these projects have produced over 3.1 million adult sockeye salmon, making significant contributions to the commercial, personal use, and recreational sockeye salmon 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 salmon return to Leisure and Hazel lakes in 2008 was estimated at just over 70,000 fish (Figure 9; Appendix A15), the third lowest figure since those two returns have been tallied together beginning in 1991. The cumulative estimated commercial harvest of 64,700 fish produced by the two projects comprised approximately 49% of the Southern District sockeye harvest and about 16% of the total LCI sockeye salmon harvest. The total Southern District sockeye salmon harvest of 132,300 fish was the fifth consecutive below average harvest over the past decade (Appendix A6).

Leisure Lake was stocked with 2.05 million sockeye fry in 2008, about 31% greater than the recent 10-year average of 1.57 million, while Hazel Lake was stocked with 1.16 million sockeye fry, or just over 28% greater than the recent average of 907,000 (Appendix A32).

As previously mentioned, the brood source for the LCI lake stocking programs, from Tustumena Lake, became unavailable to CIAA after 2004. CIAA initiated a remote sockeye salmon release program from Tutka Lagoon (described previously), utilizing sockeye eggs collected from Hidden Lake broodstock in Upper Cook Inlet. Egg collections from this location are expected to continue through 2009, after which time the adult sockeye returning to the Tutka Lagoon release site will be utilized as the permanent brood source to supply not only the Leisure/Hazel releases but the Kirschner Lake sockeye salmon enhancement project in Kamishak Bay as well.

ENGLISH BAY LAKES SOCKEYE SALMON REHABILITATION

The English Bay Lakes system has the only significant stock of sockeye salmon native to the Southern District of LCI. Unfortunately, English Bay sockeye runs 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 those years (1993) was well below the 20-year average of 7,800 fish for the years 1973 through 1992. The decline of the English Bay sockeye returns resulted in a very restrictive management strategy for this area, with commercial, sport, and subsistence fisheries 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 A32). Chugach Regional Resources Commission (CRRC), in cooperation with the village of Nanwalek (formerly English Bay) and the Bureau of Indian Affairs (BIA), has since taken over this

enhancement project, now known as the Nanwalek Salmon Enhancement Project (NSEP). NSEP has attempted to continue broodstock collection, egg collection and 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 with a counting weir, operated by CRRC/NSEP. The cumulative total that first year numbered 13,800 sockeye salmon (Appendix A24), up to that time 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 recorded figure since statehood.

In the early 1990s, optimum escapement for this system was estimated to be less than the original maximum goal of 20,000 sockeye (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 1995–1996. This escapement goal remained in place during the years 1996–2001. After the 2001 season, ADF&G 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 (SEG's) proposed by ADF&G, and the new goals were implemented for the first time in 2002. Based on ADF&G's analysis, the new SEG for English Bay Lakes was expressed as a range of 6,000 to 13,500 sockeye salmon. When the sockeye salmon enhancement project's annual broodstock requirements, which are removed from the escapement into the lakes, were added onto the SEG, the desired inriver goal became a range of 7,450 to 14,950 sockeye salmon (midpoint 11,200) for the 2008 season.

Unfortunately, the preseason forecast for sockeye salmon returning to the English Bay Lakes system was only 3,100 fish in 2008. Since this figure was less than the low end of the SEG and the desired inriver goal, waters of Port Graham Subdistrict, including both Port Graham and English Bay Sections, were not allowed to open to commercial set gillnet fishing in early June this season. In addition, the subsistence fishing season in local waters, which initially opened by regulation on April 1, was also closed by emergency order beginning May 31 (Table 8) since all returning adults would likely be required for biological requirements. The poor adult return forecast this year was due to an absence of hatchery-produced smolts, and low overall smolt emigration numbers, in both 2005 and 2006. An egg removal schedule for English Bay Lakes was included in the 2008 Port Graham Hatchery (PGH) Annual Management Plan as a contingency to allow a limited egg take should the return be stronger than forecast.

The CRRC/NSEP enumeration weir was installed and became operational on May 26, with the first adult fish passage documented on May 29. Fish passage remained very low over the next 12 days, with daily counts ranging zero to 16, but rates started to increase beginning June 11. Counts "spiked" on June 13, when 150 sockeye salmon were counted, then began to increase in earnest one week later. Daily counts peaked on June 25 when 1,100 sockeye were tallied, bringing the cumulative escapement total to just over 3,900 sockeye salmon. By June 29 the cumulative total had reached 6,800 sockeye salmon, falling within the SEG range of 6,000-13,500 fish. As a result, ADF&G issued an emergency order opening subsistence set gillnet fishing in waters of Port Graham Subdistrict, including both the Port Graham and English Bay Sections, on the regularly scheduled weekly fishing periods beginning the morning of June 30

(Table 8). Recognizing the greater harvesting potential of the commercial set gillnet fishery, ADF&G elected to keep that fishery closed.

Daily escapement passage remained relatively strong, and through July 2 the cumulative weir counts totaled 8,200 sockeye salmon. Additionally, on-grounds observation by NSEP personnel indicated good numbers of sockeye salmon present in freshwater downstream of the weir. Since the cumulative number of sockeye in freshwater approached, or possibly achieved, the midpoint of the desired inriver goal, additional sockeye salmon could be made available for harvest without jeopardizing escapement requirements. As a result, the commercial set gillnet fishery in waters of Port Graham Subdistrict was opened by emergency order beginning July 7 on the regular schedule of two 48-hour fishing periods per week (Table 8).

The commercial set gillnet fishery in Port Graham Subdistrict remained opened to fishing for the remainder of the regulatory season in 2008, although no effort occurred once the sockeye run was over. Commercial harvest in the subdistrict totaled nearly 5,400 sockeye (Table 3) despite the late start to the season and the limited amount of effort. The 2008 subsistence harvest by residents of Port Graham, annually compiled by ADF&G's Subsistence Division, was estimated at around 550 sockeye (Appendix A29), but the division considers this estimate to be incomplete. Estimates for the village of Nanwalek showed a harvest of 3,600 sockeye (Appendix A30). Because of the close geographic proximity of the sockeye salmon returns to English Bay Lakes and the Port Graham Hatchery saltwater release project, and the lack of a mark/recapture program, definitive proportions contributed by each source to the commercial and/or subsistence harvests cannot be determined. However, it is logical to assume that both sources contributed to the respective catches in each fishery.

The English Bay River counting weir remained in operation through July 15, tallying a cumulative escapement figure of 12,000 sockeye salmon for the season (Table 3; Appendix A24), or slightly greater than the midpoint of the desired inriver goal range. Because the sockeye salmon run was stronger than forecast and the escapement fell well within the desired inriver range, NSEP was authorized to collect a full permitted complement of broodstock from the English Bay Lakes system as outlined in the hatchery's Annual Management Plan. However, they elected not to do so and no sockeye eggs were taken from this system in 2008. The preliminary forecast for the adult sockeye salmon run to English Bay Lakes in 2009 is just under 2,700 fish, or less than half of the low end of the SEG range. As a result, a broodstock collection and sockeye egg take will only be allowed in 2009 if the return is stronger than forecast and actual escapement falls within the SEG range.

Under contract to CIAA, eggs collected in 2007 by PGHC from English Bay Lakes sockeye salmon broodstock were incubated, and fry subsequently reared, at Trail Lakes Hatchery near Seward. An estimated 246,000 juveniles were released directly into English Bay "Second" Lake during October 2008 as "fall fry" or "pre-smolt" (Appendix A32).

BEAR LAKE AND RESURRECTION BAY SOCKEYE SALMON ENHANCEMENT

Bear Lake, located at the head of Resurrection Bay in the Eastern District, has been the target of sockeye salmon enhancement efforts for two decades. Since 1962, this system has also been the centerpiece of a Division of Sport Fish coho salmon enhancement program, part of which originally 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 sockeye 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 salmon fingerlings. Since then, additional releases of fry, fingerlings, and accelerated growth ("zero check") smolts have occurred, ranging from 0.2 to 3.4 million juvenile sockeye salmon each year (Appendix A32).

The first year of enhanced adult sockeye salmon runs in 1992 was discouraging, with a total of less than 2,000 fish, but returns increased during each of the following three seasons. The run in 1996 was almost identical to that of 1995, totaling nearly 53,000 sockeye salmon, but between 1996 and 2004, return totals diminished and were not meeting the system's hypothesized potential. Returns in both 2005 and 2006 displayed considerable improvement, totaling 70,000 and 75,000 sockeye salmon, respectively, while the 2007 return totaled a disappointing 36,700 sockeye (Appendix A17).

Management objectives in the commercial salmon fishery in Resurrection Bay during 2008 remained the same as those of the previous three seasons, after the Alaska Board of Fisheries passed a proposal in the fall of 2004 allocating equal harvest shares of Bear Lake sockeye salmon to CIAA and the commercial seine user group. Generally, the management strategy calls for opening the commercial seine fishery in mid/late May, and continuously monitoring catches as well as escapement counts at the Bear Creek weir to determine if and/or when a hatchery opening in salt water is appropriate to equalize catches. Additionally, CIAA normally harvests sockeye salmon that are excess to escapement requirements at the Bear Creek weir.

The harvestable surplus of sockeye salmon bound for Bear Lake, originally predicted to total approximately 107,000 sockeye salmon, was revised by CIAA to a new forecast of 148,000 fish in 2008. The actual common property seine harvest totaled just over 57,000 sockeye for the season, while the hatchery seine harvest in marine waters totaled 29,300 sockeye, (Table 3). CIAA harvested an additional 3,700 sockeye in freshwater at the Bear Creek weir for cost recovery, and the final cumulative Bear Lake escapement (including 4,400 collected for broodstock) was 13,400 sockeye salmon (Table 3; Appendix A24). Combining these figures, the 2008 Bear Lake total run was estimated at just over 103,000 sockeye salmon (Appendix A17), falling well short of the revised preseason forecasted total return of approximately 160,000 fish. Nonetheless, the 2008 return was the highest since the inception of the Bear Lake enhancement project.

A cumulative total of approximately 2.4 million sockeye salmon fry were released into Bear Lake/Creek during 2008 (Appendix A32), while an additional 1.6 million sockeye smolts were short-term reared in saltwater netpens and released into Resurrection Bay as part of CIAA's revamped release strategy. An estimated 6.0 million sockeye salmon eggs were collected for incubation over the 2008–2009 winter at Trail Lakes Hatchery in Moose Pass. The newly implemented release tactics for Bear Lake and Resurrection Bay are expected to improve survival rates and increase adult returns commensurately in future years.

PORT GRAHAM HATCHERY AND SOCKEYE SALMON SALTWATER RELEASE

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 2 and 5). The hatchery conducted experimental pink salmon egg takes and fry releases via a scientific/educational permit from 1990 through 1992, but these activities have

subsequently been permitted in the Port Graham Hatchery (PGH) Basic and Annual Management Plans (BMP/AMP). Original startup broodstock was collected from a natural run of pink salmon in the Port Graham River, at the head of Port Graham, and the PNP permit for PGHC allows for continued pink salmon broodstock collection from this source. However, the Port Graham River pink run has historically 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 broodstock collection schedule based on the sustainable escapement goal for Port Graham River, as well as historical escapement levels, was developed to offer maximum protection to the wild pink salmon stock during years of weak returns.

Historically, the PGH pink salmon program experienced quite variable success rates, with estimated adult returns ranging from 2,700 to 1.36 million fish between 1992 and 2007. Unfortunately, the facility has been without a manager for the past two seasons, while simultaneously encountering financial difficulties. As a result, the last pink salmon egg take for the facility occurred in 2006, but the release of the resultant fish in 2007 was much less than optimal since juveniles were allowed to outmigrate volitionally from the facility at emergence, with no enumeration and no short-term pen rearing as is customarily the practice. Due to the poor release conditions, the adult return in 2008 was expected to be minimal and was estimated by department aerial surveyors at up to 8,000 pink salmon, though verification that these were all hatchery-produced fish was impossible since PGHC did not attempt any assessment, brood collection, or cost recovery for pink salmon during the 2008 season. The future of the pink salmon program at Port Graham Hatchery remains in doubt at least until the hatchery manager position can be filled.

Although all efforts prior to 1993 were directed towards pink salmon, sockeye salmon production has also been underway at the PGH. During some but not all years since 1993, the facility has incubated sockeye salmon eggs collected from English Bay Lakes broodstock as part of that enhancement project, with the resulting fry destined for eventual release back into the lake system (for additional information, see the previous "**English Bay Sockeye Salmon Rehabilitation**" section). Prior to 1993, eggs from this collection site were incubated at Big Lake Hatchery near Wasilla. More recently, PGHC has contracted with CIAA in some years to incubate sockeye salmon eggs and rear sockeye salmon fry originating from English Bay Lakes broodstock at Trail Lakes Hatchery in Moose Pass.

In 2003, PGH obtained a permit to collect sockeye salmon eggs from nearby English Bay Lakes for the purpose of developing an adult sockeye return to the hatchery facility. The returns are intended to benefit both subsistence and commercial fishing opportunities in area waters, as well as to generate revenue for hatchery cost recovery. The first actual release occurred in 2004 when 110,000 sockeye smolts were released (Appendix A32), but inconsistencies in funding, broodstock collection, and hatchery incubation/rearing have resulted in only one additional release since that time.

The success of the first release in 2004 was considered very poor and few if any adults returned to the hatchery facility. Better success was anticipated from the 2006 release of almost a half-million sockeye smolts, returns from which began in 2008. Informal reports from PGH personnel on July 7 suggested that sockeye numbers were building near the hatchery facility. The preseason forecast for sockeye salmon returning to PGH as the result of their recently established saltwater release program was 7,300 to 20,300 fish (midpoint 13,800). PGH officials expected to

utilize up to 1,450 of the returning sockeye salmon as broodstock to continue the saltwater release program, while the remainder was to be harvested and sold for cost recovery and value added market development. A department aerial survey of waters near PGH on July 8 showed significant salmon jumper activity in waters adjacent to the hatchery facility, although estimation of numbers was hindered by poor survey conditions. The department designated a Special Harvest Area around the PGH facility, opening it to continuous hatchery fishing on July 9.

Hatchery agents began their efforts to harvest sockeye salmon on July 15 and continued through July 24. Catches over that time totaled approximately 26,300 sockeye (Table 3), nearly doubling the midpoint of the preseason forecast. As previously described, adult sockeye resulting from the PGH saltwater release project also likely contributed to both subsistence and commercial harvests in area waters, but estimates of these contributions could not be determined. Unfortunately, no eggs were collected from either the adult return to PGH or that to English Bay Lakes this season for use in the PGH saltwater release program, but up to 120,000 sockeye juveniles, reared under contract by CIAA at their Trail Lakes Hatchery facility, are slated for release as smolts from PGH in the spring or early summer of 2009.

2009 COMMERCIAL SALMON FISHERY OUTLOOK

SOCKEYE SALMON

Commercial sockeye salmon harvests in LCI during 2009 could approach 305,000 fish, which is only slightly less than the recent 10-year average catch of 310,600. Nearly 70% of the total sockeye salmon harvest is expected to result from continuing enhancement and lake stocking projects in LCI. Because of a shortfall in stocking during 2006, forecasted returns to enhancement sites at Leisure and Hazel Lakes in the Southern District during 2009 are expected to be very poor, with a harvest projection of only about 20,600 sockeye salmon anticipated at Leisure Lake/China Poot Bay and an additional 5,300 sockeye salmon expected at Hazel Lake/Neptune Bay.

Kirschner Lake in the Kamishak Bay District, after experiencing a similar “hole” in the stocking program, is expected to produce a return totaling only 2,000 adult sockeye salmon in 2009. This projection is based on actual stocking rates combined with average assumed 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 runs are expected back to these systems in 2009. Despite the discontinuation of the stocking program at Chenik Lake in the Kamishak Bay District, the sockeye salmon run to that system, and potential harvest opportunities, remain cautiously optimistic in 2009 even though no formal forecast was generated. It should be noted that the adult sockeye salmon runs to that site over the past six seasons, all entirely the result of natural production, were unexpectedly the strongest since 1993 and included a record harvest of over 171,000 sockeye salmon in 2008. This clearly suggests that a reasonably strong return could once again produce a harvestable surplus in 2009.

The 2009 enhanced sockeye salmon run to Bear Lake (seventeenth year of enhanced returns) is expected to produce a harvest of almost 174,000 fish after accounting for broodstock and escapement requirements. The management plan in place for the past four seasons, adopted by the Alaska Board of Fisheries at their November 2004 meeting in Anchorage and implemented for the first time in 2005, specified that the harvestable surplus is to be split equally between CIAA for hatchery cost recovery and the common property seine fleet. However, CIAA

submitted an out-of-cycle emergency petition to the Alaska Board of Fisheries during the winter of 2008-09, and the outcome of that petition could ultimately change the management of the Bear Lake sockeye salmon return.

The preseason forecast for sockeye salmon returning to English Bay Lakes in the Southern District is estimated to total only 2,700 fish this season, or less than half of the low end of the SEG range of 6,000 to 13,500. As a result, very restrictive management measures, including the potential for total closures, will likely be implemented in both the commercial and subsistence set gillnet fisheries of Port Graham Subdistrict until run strength can be adequately assessed. It should be noted that the sockeye salmon return to English Bay Lakes during each of the past three seasons was stronger than initially forecasted and did allow for limited fishery openings. At nearby Port Graham Hatchery, an estimated 24,000 sockeye salmon are expected back as a result of the intermittent saltwater release project conducted by that facility, but PGHC has indicated that all fish will likely be necessary to satisfy hatchery requirements and no surplus is anticipated for commercial common property harvest.

Based solely on average historical harvests, natural sockeye salmon run projections for LCI could be expected to contribute up to 92,000 fish to commercial catches in 2009. Although not reaching preseason expectations during any recent year (with the exception of Chenik Lake in Kamishak Bay District), natural sockeye returns in LCI have nevertheless been generally positive, with concurrently reasonable spawning escapements and, at times, harvestable surpluses at 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 and/or Chenik Lakes in the Kamishak Bay District.

PINK SALMON

Harvest of pink salmon in LCI during 2009 could approach 1.0 million fish, with natural production expected to provide the entire total for only the second time in approximately 30 years. No adult pink salmon are expected to return to either Tutka Bay or Port Graham Hatcheries in the Southern District because the former has suspended all activities, while the latter has not released any juveniles since 2007.

Natural pink salmon spawning escapement levels into most major LCI systems were considered good to excellent in 2007, contributing to the harvest projection of 998,000 pink salmon throughout the entire LCI management area (Otis *In prep*). The bulk of the 2009 predicted surplus is expected to occur in Kamishak Bay District at Rocky and Ursus Coves and Bruin Bay. In the Outer District, systems at Port Dick are expected to produce the greatest potential for harvestable surpluses, with Rocky Bay and Windy Bay holding potential for smaller amounts. Surpluses in the Southern District could occur at Humpy Creek, Seldovia, and Port Graham in 2009. The pink salmon forecast, however, must be viewed with caution based on the recent history of erratic tender service, sometimes weak markets, and a lack of active buyers, and it therefore remains questionable whether the harvest forecast of naturally produced pink salmon will be realized in 2009.

CHUM SALMON

Based solely on average harvests since 1988, the total LCI commercial chum salmon catch is projected to reach over 45,000 fish during 2009. Chum salmon runs were relatively strong between

2000 and 2006, and again in 2008, however, resulting in commercial catches that exceeded the 2009 forecast figure during all but three of the past nine seasons. This suggests that actual harvests during 2009 could be greater than the projection, and based on the recent years' patterns (except for 2007), the greatest potential for harvest opportunities will likely occur in the Kamishak Bay District. The LCI chum salmon 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 either Chinook or coho salmon in LCI. However, average annual harvests since 1980 indicate that about 1,200 Chinook and 13,500 coho salmon can be expected to contribute to LCI commercial harvests in 2009.

The following table shows the projected harvest figures by species in the Lower Cook Inlet management area during 2009:

Species	Harvests of Natural Returns	Harvests of Enhanced Returns	Total Harvest
Chinook	[a]	[a]	1,200[a]
Sockeye	91,800[b]	212,800[c]	304,600
Coho	[a]	[a]	13,500[a]
Pink	997,800	0	997,800
Chum	45,400[b]	0	45,400
Total	**1,135,000**	**212,800**	**1,362,500**

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

[c] Includes common property plus cost recovery harvests.

2008 SUBSISTENCE AND PERSONAL USE SALMON NET FISHERIES

KACHEMAK BAY PERSONAL USE SALMON GILLNET 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 affected the status of this fishery during the 1980s and early 1990s, 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" classification, the subsistence fishery and the regulations governing it were no longer valid. The BOF readopted 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 personal use 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 Nick Dudiak Fishing Lagoon, located on the Homer Spit. A former coho enhancement project at Fox Creek/Caribou Lake, near the head of Kachemak Bay, provided additional fish for harvest in the 1980s and 1990s, but the program was eliminated and no adults from that project returned after 1997. The regulations governing the fishery are found in the Personal Use Coho Salmon Fishery Management Plan (**5 AAC 77.549**). During its 1998 meeting in Homer, the BOF listened to the staff's concerns regarding the harvest of wild stocks of coho salmon and subsequently 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 coho. The lower GHR was implemented for the first time during the 1999 season. Incorporated into the management plan is a requirement that coho salmon 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 2008 personal use fishery. Legal gear was limited to a single set gillnet not exceeding 35 fathoms in length, 45 meshes in depth, and six inches in mesh size. Nets were not allowed more than 500 feet from the mean high water mark, and a net could not be set offshore of another net. A permit from the Homer office was required, with an Alaska resident sport fishing license necessary to obtain a permit. The seasonal limit was 25 salmon per head of household and 10 additional salmon per each dependent. There were two scheduled 48-hour fishing periods each week, from Monday 6:00 a.m. until Wednesday 6:00 a.m. and Thursday 6:00 a.m. until Saturday 6:00 a.m. By regulation the Southern District personal use salmon set gillnet fishery opens August 16. However, because August 16 fell on a Saturday this year, fishing would have legally begun in darkness at 12:01 a.m. if allowed to open by regulation, and would subsequently close only six hours later. Therefore, the opening was delayed by emergency order until the next regularly scheduled fishing period beginning at 6:00 a.m. Monday, August 18, in order to give participants adequate daylight to set gear and allow more efficient enforcement (Table 8). Prior to 1991, little ADF&G management interaction occurred and the fishery often proceeded until the regulatory closing date of September 15, regardless of the harvest level. Between 1991 and 2007, years of intensive management for the GHR, fishing time allowed in this fishery ranged from 72 to 216 hours.

In 2008, no coho salmon had been reported during the early August Seldovia subsistence fishery, thus having no impact on the GHR in the later personal use fishery. Prior to the opening on August 18, ADF&G requested voluntary daily reporting from each permit holder during the fishery, as has been the case since 1991. Catch information reported after the first 48-hour period indicated a catch of 561 coho salmon reported by only 32% of the permit holders, suggesting a relatively strong coho return. By August 22, or the midpoint of the second weekly fishing period, reports from 43% of the permit holders showed a total of nearly 1,100 coho salmon harvested. Using this information, as well as data collected from past personal use fisheries, department staff projected that the catch would fall near the middle to upper end of the GHR by the end of the second fishing period. Therefore, the 2008 Personal Use Coho Salmon Fishery was closed by emergency order at 6:00 a.m. Saturday, August 23, for the remainder of the season after 96 hours of fishing time.

A total of 146 permits were issued for the 2008 fishery (Appendix A27), while 142 permit holders (97%) phoned in their catches or returned their permits. Of the total number issued, 107 permit holders (73%) actively fished, 35 (24%) did not fish at all, and the remaining 4 permit holders (3%) did not report or return their permit. Based on returned permits and voluntary catch reports, the harvest was estimated to be 1,844 coho salmon, 687 pink salmon, 92 sockeye salmon, 2 Chinook salmon, and 14 chum salmon (Appendix A27). The 2008 coho total represents the second highest catch in the personal use gillnet fishery since the new GHR was implemented in 1999.

The coho harvest total this season approached the upper end of the 1,000 to 2,000 fish GHR. Similar to last year, but contrary to other recent years, the area from Fritz Creek to Swift Creek, located along the north shore of Kachemak Bay, produced the highest percentage of coho harvest (42%) and received a high proportion of effort (23%). On average between 1999 and 2006, this area received less than 10% of the active effort and produced only 10% of the overall coho catch each season. Prior to 2006, the majority of coho catches in the personal use fishery came from the east side of the Homer Spit, but effort there this season produced only about 17% of the total coho harvest.

The duration of the 2008 Southern District personal use fishery (96 hours of fishing time) was shorter than the average (128 hours) since intensive management of the fishery began in 1991. While the number of permits issued this season (146) was the highest since 2001, it still fell well short of the 1991–2007 average of 215 permits. The number of actively fished permits (107) was greater than the average over the past eight years and was also the highest since 2002 (Appendix A27). The increase in permits issued and actively fished could be a result of the uncommonly conspicuous presence of coho salmon jumper activity in Mud Bay, at the base of the Homer Spit, this season. Nevertheless, the increases experienced during the past two seasons reverse an overall downward trend that occurred in these parameters over the previous seven years.

In an effort to provide additional sport fishing opportunities and continuity with the earlier return of Chinook salmon to the Nick Dudiak Fishing Lagoon on the Homer Spit, the Division of Sport Fish has stocked coho salmon with both early (Ship Creek brood) and late (Bear Lake brood) run timing characteristics since 2001. Adults resulting from the early run release return as early as the third week of July, which roughly coincides with the end of the enhanced Chinook return. The early run coho return generally peaks during the first week of August and ends approximately August 15, closely corresponding with the regulatory opening date of the personal use fishery, while the midpoint of the late run coho return is approximately the end of August. The potential for overlapping run timing windows from the tail end of the early coho run and beginning of the late coho run could potentially increase catch rates in the personal use fishery, particularly during the first 24-hour period.

Due to the abbreviated nature of the personal use fishery since 1991, the staff annually makes 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. Although this prior knowledge of the brevity of the fishery has at times led to intense competition for desirable fishing sites along the east side of the Homer Spit, the reduced participation in the fishery in recent seasons appears to have tempered this competitive character. Nonetheless, this area continues to remain an extremely popular location to fish, undeniably due to the coho enhancement project at the Nick Dudiak Fishing Lagoon. When enhancement on the Spit first began, the greatest fishing success in the personal use fishery traditionally occurred in those

waters adjacent to the enhancement lagoon, but beginning in 2006 other areas produced total catches approaching or exceeding those of the area on the east side of the Spit.

Prior to enhancement, the Spit was considered only average in terms of harvest productivity. The Spit's easy road access and the enhanced coho returns have frequently combined to incite fishermen to clamor for fishing sites on the Spit, a situation which resulted in numerous violations during some previous gillnet fisheries. Although Division of Alaska Wildlife Troopers (AWT) officers have issued few formal citations since the 1994 fishery, numerous verbal warnings have been issued, and many complaints received via telephone in the Homer ADF&G office regarding infractions. Unfortunately, this year several fishing violations occurred, resulting in three citations and two verbal warnings. The prominently noticeable coho salmon jumper activity in the closed waters of Mud Bay this season likely influenced illegal net placement in these incidents.

The lower GHR implemented in 1999 appears to have succeeded in protecting the majority of naturally produced coho salmon by prompting a fishery closure prior to the peak of those stocks' migration. Although no tagged adult fish returned to the enhancement lagoon this year, tag recovery analysis from catches along the east side of the Spit during the 1999 and 2000 personal use fisheries indicated that approximately 80% of coho caught in that area were of hatchery origin. In years when the coho catches along the east side of the Spit made up the highest percentage of the harvest, this information, would logically suggest that relatively small numbers of wild stock fish were presumably taken in the gillnet fishery. In 2008, however, the majority of the catch was reported from the north shore area between Fritz Creek and Swift Creek, and with no tagging study, it is impossible to estimate the catch composition.

Overall run strength of coho returns to Kachemak Bay this year was estimated to be below average as indicated by the incidental catch in the commercial fishery. However, commercial coho catches have proven to be an unreliable indicator of overall returns since this species is rarely targeted in that fishery. For example, the coho catch in the commercial fishery for the Southern District this year was approximately 1,300 fish, or less than half of the recent 10-year average of 2,800 fish, while fishing in the personal use fishery was considered quite good, as evidenced by the short duration of the fishery and a harvest near the upper end of the GHL range. Conversely, Southern District commercial catches totaled 2,700 fish in 2005, a year in which the personal use fishery was open for 216 hours yet still failed to meet the minimum harvest level of 1,000 coho. Informal observations conducted this year in the local sport fishery by Division of Sport Fish staff indicated mediocre returns to the enhancement lagoon. This year's only aerial survey of Clearwater Slough, the major coho index stream at the head of Kachemak Bay, suggested above average returns of wild stock coho salmon to the area. Approximately 800 coho were estimated (Table 4) on the September 22 survey, which was lower than the previous two years, but higher than the average historical index for the system.

The 2008 catch of two Chinook salmon (Appendix A27) was the lowest since 1974 and considerably lower than the long term average (1969–2007) of 46 fish. The declining trend observed in the harvest of this species in the personal use fishery over the past several years can clearly be attributed to the discontinuation of the Division of Sport Fish program to stock late run juvenile Chinook salmon after 1999 at the Homer Spit. Because of this, catches of Chinook salmon are expected to remain low in future personal use fisheries.

Catches in the 2009 personal use fishery are expected to be comparable to the previous 10-year period, 1999–2008, but the length of time to achieve a harvest within the GHR is difficult to forecast. The total amount of fishing time allowed in recent years has varied considerably, ranging from 72 to 216 hours. Additionally, the overlapping run timing of the two stocked coho runs could hypothetically serve to reduce the length of time needed to achieve a harvest within the GHR. This in turn would provide further protection to the wild stock coho salmon bound primarily for the Fox River drainage at the head of Kachemak Bay, which exhibit a slightly later run timing. However, low participation and effort levels in, and thus a longer duration of, the 2009 fishery could easily mitigate the previous statement. As observed in recent years, alternative personal use fisheries elsewhere in Cook Inlet could again impact effort levels in the LCI fishery. Although limited as an inseason management tool, voluntary catch reports will once again be employed to help determine an appropriate closure time in 2009. Based on experience gained during the past 18 years' fisheries, and especially that of the past 10 seasons, management for a harvest within the GHR is considered realistic and likely.

NANWALEK/PORT GRAHAM SUBSISTENCE FISHERY

One of Lower Cook Inlet's two subsistence salmon fisheries during 2008 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 (Figures 2 and 5). Gear in this fishery is limited to set gillnets. Most fishing occurs within close proximity to the respective villages, primarily targeting Chinook salmon transiting area waters and 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. A newer saltwater release project at Port Graham Hatchery likely provides added sockeye salmon harvest opportunities. 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. Despite being open to fishing for each of the past seven seasons, waters of Port Chatham and Windy Bay Subdistricts have not experienced any known effort but do provide additional opportunity for participants to meet subsistence requirements.

The sockeye salmon run to English Bay Lakes was severely depressed for much of the late 1980s and early 1990s, with runs failing to achieve the minimum escapement goal for nine consecutive years between 1985 and 1993. More recently, returns have been bolstered in some years 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. However, disease outbreaks in the lake-rearing portion of the program, erratic adult behavior that caused difficulty in capturing broodstock, and financial difficulties have combined to plague the program and led to inconsistent adult returns.

With less than 3,100 adult sockeye forecasted to return to English Bay Lakes in 2008, and a desired inriver return range of 7,500 to 15,000 fish, the commercial set gillnet fishery in waters of Port Graham Subdistrict, including both the Port Graham and English Bay Sections, was kept closed at the start of the commercial season in early June. Additionally, the subsistence set gillnet fishery, which opened in the same waters on April 1, was closed beginning June 1 until the sockeye return could be assessed. Early weir counts from English Bay River suggested a weak run, but as the run progressed towards the latter part of June, it appeared to be stronger than

originally predicted. Near the end of June, increased counts prompted the staff to project that an escapement within the desired inriver return range would be achieved. As a result, subsistence salmon set gillnet fishing in waters of Port Graham Subdistrict was reopened on the regular weekly fishing schedule starting June 30. Because of the increased harvesting power of the commercial set gillnet gear group, that fishery was kept closed until July 7, when staff determined that the mid to upper end of the desired inriver range would most likely be attained.

The transition to a new resident village subsistence coordinator in 2008 resulted in incomplete data for end-of-year harvest and effort summaries in the Port Graham subsistence fishery. The preliminary data set compiled by ADF&G's Division of Subsistence indicated that the all-species salmon harvest for the village residents of Port Graham cumulatively totaled less than 700 fish in 2008, the third lowest figure over the past 20 years (Appendix A29). For the village of Nanwalek, the total all-species catch of 7,700 salmon topped the 1988-2007 average of 4,000 but was considerably less than the record high of 13,400 fish in 2002 (Appendix A30). Sockeye salmon comprised the bulk of this year's subsistence catch, in Port Graham at 80% of the salmon harvest (550 fish) and in Nanwalek at 47% of the salmon catch (3,615 fish). The enumeration weir operated by NSEP at English Bay River monitored sockeye escapement inseason, as has been the case since 1994, with a final estimate of 12,000 fish (Table 3; Appendix A24), falling slightly above the midpoint of the desired inriver return range of 7,000–15,000. NSEP normally collects sockeye salmon broodstock for their enhancement program from lake escapement, but in 2008 they elected not to do so for the third time in the past four seasons.

Because of sub-par salmon returns to the Port Graham Subdistrict in some recent seasons, village residents have at times encountered difficulty meeting their subsistence salmon needs when restricted to fishing only in the Port Graham and Koyuktolik Subdistricts. Consequently, a proposal to add the previously mentioned waters of Port Chatham and Windy Bay to those areas 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 Koyuktolik 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 in those waters. No subsistence fishing effort or harvest has been known to occur in Port Chatham or Windy Bay Subdistricts since these areas were first opened to fishing in 2002.

SELDOVIA AREA SUBSISTENCE SALMON SET GILLNET FISHERY

The set gillnet fishery in waters near Seldovia on the south side of Kachemak Bay in 2008 was the thirteenth year of Lower Cook Inlet's most recently established 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 Chinook 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 ADF&G was required prior to fishing, and catches were to be recorded on the permit and also reported to ADF&G's Homer office inseason so that cumulative harvest totals could be monitored.

A total of 10 permits were issued for the early season, while two permits were issued for the August season. Because most fishermen ignore the requirement to call in their catches during the open season, inseason harvests are typically underreported. At the close of the early season, eight of the 10 permits were returned to ADF&G as required by regulation, and catches were determined from records on each permit. For the early season, 3 of 10 permit holders (30%) actively fished, 5 (50%) did not fish, and 2 permit holders (20%) failed to return his/her permit (Appendix A31). The reported salmon catch for the early season totaled only 3 Chinook and 15 sockeye salmon (Appendix A31), while in the late season, the two permits issued were actively fished and reported a harvest of 16 sockeye, 41 coho, 65 pink, and 5 chum salmon.

The 2008 early season Seldovia subsistence harvest of only three Chinook salmon was the lowest catch since the fishery was established (Appendix A31). Uncharacteristically, very few other salmon species were reported caught during the early season. The low Chinook and sockeye catch in 2008 is likely due in part to the low number of participants who actually fished (three), compared to an average of 11 fished during the past decade. The record catch for both species in the Seldovia subsistence fishery occurred in 2000 when 189 Chinook and 249 sockeye salmon were harvested (Appendix A31).

The harvest in the 2009 Seldovia early season subsistence fishery is difficult to predict given the low participation in the previous four fisheries. If the number of actively fishing permit holders increases next year to pre-2005 levels, then harvests could increase commensurately.

2008 COMMERCIAL HERRING FISHERY

INTRODUCTION

Similar to the salmon fishery, commercial Pacific herring *Clupea pallasi* fishing in LCI has historically occurred in four of the five management districts, with the Barren Islands District the sole area where commercial herring fishing has not occurred (Figure 1). LCI herring fishing first began in the Southern District in 1914 with the 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, averaging 16,000 st each of those years. After this time period, stocks sharply declined, apparently due to over-exploitation.

HISTORY AND DEVELOPMENT OF THE HERRING SAC ROE FISHERY

Introduction

Japanese market demand for salted herring roe resulted in the 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, and efforts to manage the resource frequently encountered difficulty keeping pace with this strong market demand and growth. In order to decrease the risk of a stock collapse and to sustain the fishery, ADF&G established conservative management strategies and guideline harvest levels. Following a period of suspected over-exploitation, 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.

Historically the only allowable gear type in the LCI herring sac roe fishery has been purse seine. The limited entry permit system for sac roe herring seining in Cook Inlet was implemented in 1977, and at the present time 75 permanent 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 through 2001 and, consequently, the Outer and Eastern Districts were not opened to purse seining in any season during that 9-year period. At its 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. Thus, no harvest or effort occurred in the Outer and Eastern Districts during the 2008 season.

Southern District

Sac roe herring seining in the Southern District began in the early 1960s, 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. Commercial harvests continued during the 1970's, albeit at much lower levels, but observed low abundance of herring during the past three decades has virtually precluded commercial openings in the Southern District. The only exception occurred in 1989, when 10 permits in a single 2.5-hour opening harvested 170 st of herring (Appendix B1) 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, 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 herring harvest and effort has occurred within the Kamishak Bay District (Figures 1 and 6). Historical commercial harvests ranged from a low of 240 st taken in 1973 to a high of 6,100 st taken in 1987, with estimated exvessel values ranging from $70,000 to $9.30 million (Appendix B2). 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 the end of the decade 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 relatively 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 essentially "open season until closed", but in 1978 it was changed to "closed season until opened by emergency order" (Appendix B3). This change required more active assessment of the herring stock by ADF&G 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 that season. Beginning in 1985, the commercial fishery in Kamishak Bay District was regulated to achieve a 10% to 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. 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 (Figure 12; Appendix B4), 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, ADF&G 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 (Hammarstrom and Otis 2001). After careful review, the BOF unanimously adopted the amended KBDHMP into regulation.

2008 HERRING 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. Because a commercial herring fishery has not occurred in the Outer and Eastern Districts in many years, and is not likely to occur in the near future, aerial surveys of these areas are no longer conducted. Additionally, the size of the area and the characteristically poor weather in the Gulf of Alaska precludes surveys on a regular basis and makes aerial biomass estimation in these districts impractical and expensive. 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 spawning events and 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 ft^2 (50 m^2) of school surface area sighted and the following 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 since 1994 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: a time 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 ADF&G 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, ADF&G 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 2008 Season Summary

Aerial survey coverage and observation conditions to assess the Kamishak Bay herring stock in 2008 were considered fair. A total of 12 surveys were completed in the Kamishak Bay District between April 25 and June 20. Several five to seven day "gaps" in coverage, or periods during which no surveys were flown due to poor weather, occurred in 2008. Based on historical observations, the arrival of herring in 2008 was considerably later than normal in the district for the fourth consecutive season, with fish first documented during a survey on May 6 when a cumulative total of 16 st were estimated throughout the district. The highest daily biomass estimation during the seasonal surveying period was made on May 15, with a cumulative estimate of 1,763 st observed in Chenik and Bruin Bay Subdistricts.

Ten sightings of spawning activity occurred during surveillance flights in 2008: three sightings on May 15 totaled approximately 0.2 miles in length; two sightings on May 16 totaled approximately 0.15 miles in length; and five sightings on May 22 totaled approximately 0.8 miles in length, for a grand total of 1.15 miles of observed spawn. Due to the often sporadic schedule of surveillance flights, however, correlation between documented spawning and herring abundance has traditionally not been attempted. Therefore, the infrequency of spawn sightings this year certainly substantiates the low abundances observed but is not in itself considered indicative of a weak herring return.

Coverage in 2008 resulted in a cumulative total of 2,098 st of herring observed by ADF&G surveyors in the Kamishak Bay District this season, the sixth lowest observed total in the past 19 seasons. The last eight consecutive years of disappointingly low aerial survey abundance indices indicate the lack of a significant herring recruitment event in Kamishak Bay during any recent season.

One hypothesis for the lack of recruitment in Kamishak Bay originates from the relatively poor condition of the fish observed recently, characterized by low average weights-at-age, which can

lead to higher than normal mortality. Furthermore, a surprisingly high percentage (37–52%) of herring collected in Kamishak Bay in mid-May 2005 was positive for *Ichthyophonus*, a protozoan pathogen that has been linked to population declines of Atlantic herring, though the incidence in 2007 was considerably less (20-32%). Another theory speculates that herring may not always return to their birthplace to spawn. This premise is based on the concept that, upon first achieving sexual maturity, the younger herring may simply follow older repeat spawners in a given school back to a spawning area, even if that area is not where the younger fish were originally spawned.

Unfortunately, for the first time since 1984, no herring age, sex, or size composition data were collected in Kamishak Bay during 2008 because no bids were received to conduct the vessel-based surveys required to collect these data. Normally two spring vessel charters are conducted in order to help assess the herring abundance and collect age composition samples. The early sampling period coincides with the arrival of the first fish on the grounds, while the second charter is used to collected age composition samples during the latter portion of the return. Without information traditionally provided by these charters, the ability of the ASA model used to generate the annual Kamishak herring forecast is seriously compromised. As a result, the department was forced to rely solely on aerial surveys to determine relative stock abundance in 2008, and no age composition data are available to report.

Southern District 2008 Season Summary

A total of eight aerial assessment surveys for herring in the Southern District were flown between April 24 and June 5 in 2008, all conducted under fair to good conditions. The number of surveys conducted this season was higher than the annual average of six flights made during the past five seasons. The 2008 run biomass, estimated as the sum of all daily biomass estimates, totaled 927 st, which was below the recent 5-year average of 1,257 st but well above the previous year's sum of only 379 st. Nonetheless, the observed total in 2008 continued to follow an overall pattern of low herring abundances in the Southern District during the past three decades. The peak 2008 individual biomass survey occurred on the sixth survey of the season, May 28, when 419 st were estimated. Peak surveys in areas where herring historically have been observed were as follows: Mallard Bay, 96 st on June 2; Glacier Spit/Halibut Cove, 295 st on May 28; west side Homer Spit, 130 st on June 5; and east side of the Homer Spit and in Mud Bay, 6 st on June 5. As has been the persistent trend over the past 30 years, low abundance levels in the Southern District, combined with the regulatory management plan mentioned previously, precluded any commercial fishing during the 2008 season.

Outer/Eastern Districts 2008 Season Summary

As in previous recent seasons, no herring assessment occurred in the Outer and Eastern Districts during 2008. 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 aerially 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.

2009 HERRING SEASON OUTLOOK

Kamishak Bay District

Because age data collection was impossible to conduct this year, there is no formal forecast for the 2009 return. However all information collected suggests that the biomass will be less than the KBDHMP regulatory threshold of 6,000 st for which a commercial harvest can be considered. As a result, the sac roe fishery in the Kamishak Bay district will remain closed for the 2009 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 2009, ADF&G's ability to collect age composition information will be greatly reduced. ADF&G expects to once again obtain samples using a chartered commercial seine vessel throughout the duration of the 2009 run, with sufficient funding expected for both an early and a late season charter. ADF&G 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 2009. Monitoring of the Southern District herring stocks will occur as in the past through the use of aerial surveys, possibly in conjunction with test fish sampling conducted on an opportunistic basis.

RECENT HERRING RESEARCH IN LOWER COOK INLET

Two additional research projects were recently completed, and another begun, 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. *Unpublished*). The extent to which these stocks intermix is poorly understood, however, and the ramifications of their mixing complicate the assessment and management of each stock. Therefore, in 2001 ADF&G successfully applied for a grant from the Exxon Valdez Oil Spill 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 among 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. Results showed that fatty acid composition of heart tissue has the potential to become a reliable stock identification biomarker. Using discriminate analysis, 157 of the 163 samples taken were correctly identified to their original herring stock. Unfortunately, stocks within the North Gulf of Alaska could not be reliably distinguished using the elemental composition of otoliths (Otis and Heintz 2003).

The second research project undertaken by ADF&G also stems from an alternative funding source. In 2002, the National Marine Fisheries Service funded an ADF&G 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. ADF&G captured those data into electronic maps, making them available for a variety of more in-depth analyses. Otis and Spahn (2003) reported on the results of this project, and the completed database (ADF&G 2002) is available on CD-ROM.

The latest research project is a follow-up to the promising pilot study (Otis and Heintz 2003) that demonstrated the ability to discriminate Alaska's herring stocks at relatively fine spatial scales (> 100 km) based on the fatty acid composition of heart tissue. Also funded by the EVOS-TC, this project will attempt to assess the temporal stability and biological variability of stock discrimination criteria derived from fatty acid analysis of herring cardiac tissues. Samples were collected during the spring and/or fall/winter of 2005, 2006, and 2007 from putative herring stocks in Sitka, PWS, Kamishak, Kodiak, Dutch Harbor, Togiak, and Kuskokwim Bay. Along with heart tissue for fatty acid analysis, ADF&G also collected otoliths and fin clips for further microchemistry and genetic analysis, respectively. Additional funding has been secured from the EFOS-TC to process the otolith samples using a laser-ablation, inductively-coupled plasma mass-spectrometer (LA-ICPMS), a far more precise instrument than was used in the otolith pilot study. Chemical analysis of the heart tissues and otoliths will be completed during the winter of 2008-09. The results derived from each method will be compared in order to evaluate their efficacy as stock identification tools for herring. Results should allow managers to better define ecologically significant stock boundaries, which would likely affect how commercially exploited herring populations are assessed and managed. The outcome of this study will be published in a peer-reviewed report and may lead to revision of fishery management plans for affected areas.

ACKNOWLEDGEMENTS

2008 DIVISION OF COMMERCIAL FISHERIES STAFF

The finfish operations for the Division of Commercial Fisheries in Lower Cook Inlet employed five permanent full-time employees and seven permanent/seasonal employees in various area management and research programs during the 2008 season. Appreciation is extended to all personnel for a successful program during 2008.

Permanent Employees during the 2008 season:

Lee Hammarstrom	Area Finfish Management Biologist
Ethan Ford	Fishery Biologist I
Edward O. "Ted" Otis	LCI Finfish Research Project Leader
Marnee Beverage	Program Technician
Mark Hottmann	Boat Officer III

Seasonal Employees:

Sigfus T. "Tom" Sigurdsson	Fish & Wildlife Technician III
Carla Armstrong	Fish & Wildlife Technician III
Robert "Bo" Fusco	Fish & Wildlife Technician III
Joe Loboy	Fish & Wildlife Technician II
Don Johenning	Fish & Wildlife Technician II
Josh Keller	Boat Officer I
Carolyn Bunker	Administrative Clerk II

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TABLES AND FIGURES

Table 1.–Commercial, hatchery, and derby salmon catches in numbers of fish by species, district, and gear type, Lower Cook Inlet, 2008.

District Harvest Type Gear Type	Chinook	Sockeye	Coho	Pink	Chum	Total
Southern						
Commercial						
Set gillnet	148	26,819	599	1,884	1,394	30,844
Purse seine	40	62,675	720	4,941	66	68,442
Hatchery						
Purse seine	0	42,785	1	3,124	119	46,029
Total	***188***	***132,279***	***1,320***	***9,949***	***1,579***	***145,315***
Outer						
Commercial						
Purse seine	***0***	***1,704***	***0***	***467,592***	***100,819***	***570,115***
Eastern						
Commercial:						
Purse seine	0	57,060	0	0	34	57,094
Hatchery:						
Purse seine	0	29,338	0	0	1	29,339
Weir	0	3,698	402	0	0	4,100
Derby[a]						
Hook & Line			1,223			1,223
Total	***0***	***90,096***	***1,625***	***0***	***35***	***91,756***
Kamishak Bay						
Commercial						
Purse seine	2	171,924	20	26,397	73,209	271,552
Hatchery						
Purse seine	0	11,588	1	1,762	88	13,439
Total	***2***	***183,512***	***21***	***28,159***	***73,297***	***284,991***
LCI Total	**190**	**407,591**	**2,966**	**505,700**	**175,730**	**1,092,177**
Percent	0.02%	37.32%	0.27%	46.30%	16.09%	100.00%
1988–2007 Avg.	1,387	279,578	12,200	1,326,409	52,726	1,672,299

Note: Figures for 2008 do not include a very small number of fish caught during commercial fishing periods but not sold (i.e. retained for personal use).

[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 or section, Lower Cook Inlet, 2008.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Halibut Cove (set gillnet)	19		19
China Poot Bay (seine)	39		39
Neptune Bay (seine)	1		1
Tutka/Kasitsna Bays (set gillnet)	80		80
Barabara Creek (set gillnet)	19		19
Seldovia Bay (set gillnet)	30		30
SOUTHERN DISTRICT TOTAL	***188***		***188***
OUTER DISTRICT TOTAL	***0***		***0***
EASTERN DISTRICT TOTAL	***0***		***0***
KAMISHAK BAY DISTRICT			
Kamishak Rivers	2		2
KAMISHAK BAY DISTRICT TOTAL	***2***		***2***
TOTAL LOWER COOK INLET	***190***		***190***

[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 or section, Lower Cook Inlet, 2008.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek		7	7
Halibut Cove			
Common Property (seine)	500		
Common Property (set gillnet)	3,568		
Total Catch			4,068
China Poot Bay (seine)/China Poot Cr.	41,260	103[b]	41,363
Neptune Bay			
Common Property (seine)	20,915		
Hatchery Cost Recovery (seine)	1,907		
Total Catch			22,822
Tutka/Kasitsna Bays			
Common Property (set gillnet)	6,414		
Hatchery Cost Recovery (seine)	14,604		
Tutka Creek		31	
Hatchery Broodstock		150[c]	
Unharvested Fish		5,350[d]	
Total			26,549
Barabara Creek (set gillnet)	2,994	5	2,999
Seldovia Bay (set gillnet) / Seldovia R.	8,451	5	8,456
Port Graham Section			
Common Property (set gillnet)	2,971		
Hatchery Cost Recovery (seine)	26,274		
Port Graham River		9	
Total			29,254
English Bay Section			
Common Property (set gillnet)	2,421		
English Bay Lakes Escapement		11,996[e]	
Total			14,417
SOUTHERN DISTRICT TOTAL	***132,279***	***17,656***	***149,935***

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Table 3.–Page 2 of 3.

Subdistrict/System	Catch	Escapement[a]	Total Run
OUTER DISTRICT			
Windy Bay			
Common Property (seine)	55		
Windy Left Creek		2	
Windy Right Creek		1	
Total			58
Port Dick South Section (seine)	4		
Port Dick (head end) Creek		5	
Total			9
Nuka Island (seine)	231		231
East Nuka Bay (seine)	1,414		
Delight Lake		23,933[f]	
Desire Lake		10,700	
Delusion Lake		1,790	
Total			37,837
OUTER DISTRICT TOTAL	***1,704***	***36,431***	***38,135***
EASTERN DISTRICT			
Aialik Bay / Aialik Lake		4,200	4,200
Resurrection Bay North			
Common Property (seine)	57,060		
Hatchery (seine)	29,338		
Hatchery (weir–sold)	3,497		
Hatchery (weir–donated)	201		
Bear Lake Escapement		9,000[g]	
Hatchery Broodstock		4,444[h]	
Total Run			103,540
EASTERN DISTRICT TOTAL	***90,096***	***17,644***	***107,740***
KAMISHAK BAY DISTRICT			
Kirschner Lake			
Hatchery Cost Recovery (seine)	11,588		
Unharvested Fish		2,000[b]	
Total Run			13,588
Chenik Lake (seine)	171,255		
Amakdedori Creek		3,200	
Chenik Creek/Lake		11,284[d]	
Total			185,739

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Table 3.–Page 3 of 3.

Subdistrict/System	Catch	Escapement[a]	Total Run
KAMISHAK BAY DISTRICT (cont'd)			
McNeil Cove / Mikfik Lake & Creek		5,560	5,560
Kamishak Bay (seine)/Big Kamishak R.	669	240	909
Douglas River / Silver Beach			
Douglas Reef Creek		2	
Douglas Clearwater Tributary		10	
Total			12
KAMISHAK BAY DISTRICT TOTAL	***183,512***	***22,296***	***205,808***
TOTAL LOWER COOK INLET	***407,591***	***94,027***	***501,618***

Note: Figures for 2008 do not include a very small number of fish caught during commercial fishing periods but not sold (i.e. retained for personal use).

[a] Escapement estimates derived from limited aerial surveys; numbers represent unexpanded aerial live counts unless otherwise noted.
[b] No freshwater escapement, prevented by barrier falls.
[c] Experimental broodstock.
[d] Unharvested sockeye salmon at Tutka Lagoon informally estimated by CIAA personnel.
[e] Weir counts.
[f] Escapement estimates derived from a combination of weir, aerial, and/or video counts.
[g] Weir counts for Bear Lake sockeye include 13,444 sockeye actually counted, minus the broodstock harvest of 4,444 fish (taken from lake escapement).
[h] Bear Lake sockeye broodstock figure includes 124 mortalities and 148 fish collected for broodstock but not utilized.

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 or section, Lower Cook Inlet, 2008.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Northshore Subdistrict			
Clearwater Slough		810	
Clay Creek		80	
Total			890
Halibut Cove			
Common Property (seine)	7		
Common Property (set gillnet)	100		
Total			107
China Poot Bay (seine)	553		553
Neptune Bay (seine)	160		160
Tutka/Kasitsna Bays			
Common Property (set gillnet)	360		
Hatchery (seine)	1		
Total			361
Barabara Creek (set gillnet)	112		112
Seldovia Bay (set gillnet)	27		27
SOUTHERN DISTRICT TOTAL	***1,320***	***890***	***2,210***
OUTER DISTRICT TOTAL	***0***		***0***
EASTERN DISTRICT			
Resurrection Bay North			
Hatchery (weir–donated)	402		
Sport Derby[b]	1,223		
Bear Lake Escapement (weir)		367	
Hatchery Broodstock		285[c]	
Total			2,277
EASTERN DISTRICT TOTAL	***1,625***	***652***	***2,277***
KAMISHAK BAY DISTRICT			
Kamishak Bay (seine)	15		15
Kirschner Lake (hatchery seine)	1		1
Ursus Cove (seine)	5		5
KAMISHAK BAY DISTRICT TOTAL	***21***		***21***
TOTAL LOWER COOK INLET	***2,966***	***1,542***	***4,508***

Note: Figures for 2008 do not include a small number of fish caught during commercial fishing periods but not sold (i.e. retained for personal use).

[a] Coho escapement estimates in Lower Cook Inlet are very limited; unless otherwise noted, escapement figures represent unexpanded peak aerial live counts.

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

[c] Bear Lake coho broodstock total includes 63 mortalities and 2 fish collected for broodstock but not utilized.

Table 5.–Commercial pink salmon catches (including hatchery cost recovery) and escapements in numbers of fish by subdistrict or section, Lower Cook Inlet, 2008.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek		90,870	90,870
Halibut Cove (seine)	35		35
China Poot Bay (seine) / China Poot Cr.	3,925	5,086	9,011
Neptune Bay			
Common Property (seine)	981		
Hatchery (seine)	77		
Total Catch			1,058
Tutka/Kasitsna Bays			
Common Property (set gillnet)	1,884		
Hatchery Cost Recovery	377		
Tutka Lagoon Creek		14,144	
Total			16,405
Barabara Creek		16,577	16,577
Seldovia Bay / River		53,484	53,484
Port Graham Section			
Hatchery (seine)	2,670		
Port Graham River		24,720	
Port Graham Left Hand Creek		38	
Duncan Slough		5,300[b]	
Total			32,728
SOUTHERN DISTRICT TOTAL	***9,949***	***210,219***	***220,168***
OUTER DISTRICT			
Dogfish Bay		7,988	7,988
Port Chatham		16,354	16,354
Windy Bay (seine)	114,724		
Windy Right Creek		12,491	
Windy Left Creek		64,068	
Total			191,283
Rocky Bay			
Rocky River		90,876	
Scurvy Creek		1,100	
Total			91,976

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Table 5.–Page 2 of 2.

Subdistrict/System	Catch	Escapement[a]	Total Run
OUTER DISTRICT (cont'd)			
Port Dick			
South Section (seine)	322,132		
North Section (seine)	22,401		
Port Dick (head end) Creek		34,228	
Slide Creek		16,668	
Middle Creek		8,963	
Island Creek		49,719	
Taylor Bay Creeks		14,700	
Total			468,811
Nuka Island (seine) / S. Nuka Island Cr.	8,324	12,300	20,624
E. Arm Nuka Bay (McCarty Fiord, seine)	11		
Delight Lake		600	
Desire Lake		9,546	
Total			10,157
OUTER DISTRICT TOTAL	***467,592***	***339,601***	***807,193***
EASTERN DISTRICT TOTAL	***0***	[c]	***0***
KAMISHAK BAY DISTRICT			
Iniskin Bay (seine)	125		
Sugarloaf Creek		1,118	
North Head Creek		8,889	
Total			10,132
Ursus Cove (seine) / Brown's Peak Cr.	151	17,400	17,551
Rocky Cove (seine) / Sunday Creek	6,274	20,434	26,708
Kirschner Lake Section – Hatchery (seine)	1,762		1,762
Bruin Bay / Bruin Bay River		150,717	150,717
Chenik Lake (seine)	46		46
Kamishak Bay (seine)	19,269		
Little Kamishak River		34,286	
Strike Creek		6,857	
Total			60,412
Douglas River / Silver Beach (seine)	532		532
KAMISHAK BAY DISTRICT TOTAL	***28,159***	***239,701***	***267,860***
TOTAL LOWER COOK INLET	***505,700***	***789,521***	***1,295,221***

Note: Figures for 2008 do not include a very small number of fish caught during commercial fishing periods but not sold (i.e. retained for personal use).

[a] Escapement estimates are derived from periodic ground or aerial surveys with stream life factors applied, unless otherwise noted.

[b] Duncan Slough pink escapement estimated by single late-season ADF&G aerial survey.

[c] No escapement surveys conducted in Eastern District in 2008.

Table 6.–Commercial chum salmon catches and escapements in numbers of fish by subdistrict or section, Lower Cook Inlet, 2008.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek		2,297	2,297
Halibut Cove			
Common Property (seine)	1		
Common Property (set gillnet)	41		
Total			42
China Poot Bay (seine)	46		46
Neptune Bay (seine)	19		19
Tutka/Kasitsna Bays			
Common Property (set gillnet)	429		
Hatchery (seine)	1		
Tutka Creek		1	
Total			431
Barabara Creek (set gillnet)	152		152
Seldovia Bay (set gillnet) & River	772	1,619	2,391
Port Graham/Port Graham River			
Hatchery (seine)	118		
Port Graham River		1,802	
Port Graham Left Hand Creek		10	
Total			1,930
SOUTHERN DISTRICT TOTAL	***1,579***	***5,729***	***7,308***
OUTER DISTRICT			
Dogfish Bay		6,200	6,200
Port Chatham		493	493
Windy Bay (seine)	2,997		
Windy Right Creek		823	
Windy Left Creek		1,057	
Total			4,877
Rocky Bay & River		3,763	3,763
Port Dick			
South Section (seine)	86,367		
North Section (seine)	1,090		
Port Dick (head end) Creek		11,774	
Slide Creek		6,162	
Middle Creek		1,937	
Island Creek		12,935	
Taylor Bay		3,200	
Total			123,465
Nuka Island/Petrof River	10,361	7,523	17,884
East Arm Nuka Bay (McCarty Fiord)	4		4
OUTER DISTRICT TOTAL	***100,819***	***55,867***	***156,686***

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Table 6.–Page 2 of 2.

Subdistrict/System	Catch	Escapement[a]	Total Run
EASTERN DISTRICT			
Resurrection Bay North			
Common Property (seine)	34		
Hatchery (seine)	1		
Spring Creek		113	
Tonsina Creek		111	
Total			249
EASTERN DISTRICT TOTAL	***35***	***224***	***249***
KAMISHAK BAY DISTRICT			
Iniskin Bay (seine)	7,341		
Iniskin River		20,042	
Sugarloaf Creek		2,207	
North Head Creek		820	
Total			30,410
Cottonwood Bay / Creek		11,561	11,561
Ursus Cove (seine)	1,718		
Brown's Peak Creek		2,130	
Ursus Lagoon Right Creek		4,893	
Ursus Cove Lagoon Creek		1,609	
Total			10,350
Rocky Cove (seine) / Sunday Creek	8,809	1,000	9,809
Kirschner Lake Section-Hatchery (seine)	88		88
Bruin Bay / River		17,535	17,535
Chenik Lake (seine)	65		65
McNeil River		9,840	9,840
Kamishak Bay / Reef (seine)	53,532		
Big Kamishak River		4,495	
Little Kamishak River		21,265	
Strike Creek		2,318	
Total			81,610
Douglas River / Silver Beach (seine)	1,744		
Douglas (Reef) River		1,259	
Douglas Beach Creek		3,834	
Total			6,837
KAMISHAK BAY DISTRICT TOTAL	***73,297***	***104,818***	***178,115***
TOTAL LOWER COOK INLET	***175,730***	***166,628***	***342,358***

Note: Figures for 2008 do not include a very small number of fish caught during commercial fishing periods but not sold (i.e. retained for personal use).

[a] Escapement estimates are derived from periodic ground or aerial surveys with stream life factors applied, unless otherwise noted.

Table 7.–Exvessel value of the commercial salmon catch in numbers of dollars by species, gear type, and harvest type, Lower Cook Inlet, 2008.

	Chinook	Sockeye	Coho	Pink	Chum	Total
COMMON PROPERTY–PURSE SEINE						
No. of Fish	42	293,363	740	498,930	174,128	967,203
Pounds	351	1,384,819	4,365	1,776,810	1,426,079	4,592,424
Price/lb.	$0.68	$1.39	$0.50	$0.23	$0.55	
Value	$237	$1,924,446	$2,180	$407,841	$784,610	$3,119,314
COMMON PROPERTY–SET GILLNET[a]						
No. of Fish	148	26,819	599	1,884	1,394	30,844
Pounds	3,926	154,600	4,055	7,174	10,711	180,466
Price/lb.	$3.67	$1.65	$0.83	$0.23	$0.25	
Value	$14,398	$254,690	$3,385	$1,650	$2,683	$276,806
HATCHERY–PURSE SEINE & WEIR						
No. of Fish		87,409	404	4,886	208	92,907
Pounds		381,220	3,679	16,814	1,835	403,548
Price/lb.		$1.44[b]	$0.50[b]	$0.19	$0.55	
Value		$548,986	$4	$3,121	$1,004	$553,115
SPORT FISHING DERBY[c]–HOOK & LINE						
No. of Fish			1,223			1,223
Pounds			9,781			9,781
Price/lb.			$0.85			
Value			$8,314			$8,314
TOTAL ALL GEARS						
No. of Fish	190	407,591	2,966	505,700	175,730	1,092,177
Pounds	4,277	1,920,639	21,880	1,800,798	1,438,625	5,186,219
Price/lb.	$3.42	$1.45[b]	$0.76[b]	$0.23	$0.55	
Value	$14,635	$2,728,122	$13,883	$412,612	$788,297	$3,957,549

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

[a] 2008 set gillnet totals do not include a very small number of fish not sold but retained for personal use.

[b] Average prices per pound for hatchery cost recovery sockeye and coho salmon, and average price for the all gears' total, reflect only those fish actually sold and do 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, 2008.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-001-08 May 21	Opens those waters of Resurrection Bay in the Eastern District north of the latitude of Caines Head to commercial salmon seine fishing on a weekly schedule of five days per week, from Monday 6:00 a.m. until Friday 10:00 p.m., effective Monday, May 26, 2008, until further notice. Based on the provisions of this emergency order, 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 all seining. In addition, this emergency order designates and establishes a Special Harvest Area (SHA) for Cook Inlet Aquaculture Association (CIAA) in the Resurrection Bay North Subdistrict in the Eastern District of the Lower Cook Inlet (LCI) management area. The Bear Lake SHA includes those marine waters of Resurrection Bay north of the latitude of Caines Head, as well as those fresh waters of Bear Creek, Salmon Creek, and Resurrection River downstream of, and including, the Bear Creek weir. This emergency order opens only the fresh waters of the Bear Lake SHA to the harvest and sale of salmon seven days per week by authorized agents of CIAA, effective at 6:00 a.m. Monday, May 26, 2008, until further notice. Marine waters of the Bear Lake SHA remain closed to hatchery fishing until further notice.
2-F-H-002-08 May 28	Establishes a seven-days-per-week fishing schedule in the Kamishak Bay District commercial salmon seine fishery, which opens by regulation on June 1, 2008. 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. This emergency order also opens Halibut Cove, Tutka Bay, Barabara Creek, and Seldovia Bay Subdistricts in the Southern District to commercial salmon set gillnet fishing effective at 6:00 a.m. Monday, June 2, 2008. In addition, this emergency order closes the Port Graham Subdistrict, including both the Port Graham and English Bay Sections, in the Southern District to commercial salmon set gillnet fishing until further notice. The weekly fishing period in areas of the Southern District open to commercial set gillnet fishing is two 48-hour periods per week, from 6:00 a.m. Monday until 6:00 a.m. Wednesday, and from 6:00 a.m. Thursday until 6:00 a.m. Saturday, as set forth in regulation.
2-F-H-003-08 May 28	Closes all waters of Port Graham Subdistrict, including both the Port Graham and English Bay Sections, to subsistence salmon set gillnet fishing, effective at 11:59 p.m. Saturday, May 31, 2008, until further notice.
2-F-H-004-08 June 6	Based on the provisions of the weekly fishing periods specified in ***LCI Emergency Order #1-08***, waters of Resurrection Bay in the Eastern District will close to commercial salmon seine fishing beginning at 10:00 p.m. Friday, June 6, 2008, until 6:00 a.m. Monday, June 9, 2008. The emergency order contained herein extends the weekend closure for commercial salmon fishing in waters of Resurrection Bay for an additional 24 hours, until 6:00 a.m. Tuesday, June 10, 2008. Based on the provisions of this emergency order, the commercial seine fishery in Resurrection Bay will resume at 6:00 a.m. Tuesday, June 10, on the previously established schedule of five days per week (see ***LCI Emergency Order #1-08***).

-continued-

Table 8.–Page 2 of 7.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-004-08 June 6 (continued)	This emergency order also opens marine waters of the Bear Lake Special Harvest Area (SHA; see ***Lower Cook Inlet Emergency Order #1-08***) to the harvest and sale of salmon by authorized agents of CIAA for a single twelve (12) hour period, from 6:00 a.m. until 6:00 p.m. Monday, June 9, 2008.
2-F-H-005-08 June 12	Closes waters of Resurrection Bay in the Eastern District to commercial salmon seine fishing, effective at 6:00 p.m. Thursday, June 12, 2008, until further notice. In addition, this emergency order opens marine waters of the Bear Lake Special Harvest Area (SHA; see ***Lower Cook Inlet Emergency Order #1-08***) to the harvest and sale of salmon by authorized agents of Cook Inlet Aquaculture Association (CIAA) seven days per week, effective at 6:00 a.m. Friday, June 13, 2008, until further notice.
2-F-H-006-08 June 13	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. 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 16, 2008, until further notice. 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 16, 2008, 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° 32.84' N. latitude, 151° 24.90' W. longitude, then to Lancashire Rock, then to the navigational light on Gull Island, then to Moosehead Point, effective June 16. In the Halibut Cove Subdistrict, seining shall be allowed only in waters outside of Halibut Cove Lagoon beginning June 16 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 a point on the west shore of Little Tutka Bay at approximately 59° 28.63' N. latitude, 151° 30.37' W. longitude, five days per week, effective 6:00 a.m. Monday, June 16, 2008. 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.

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Table 8.–Page 3 of 7.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-007-08 June 23	Closes both fresh and marine waters of the Bear Lake Special Harvest Area (SHA; see ***Lower Cook Inlet Emergency Orders #1-08*** and ***#5-08***) in Resurrection Bay of the Eastern District to the harvest and sale of salmon by authorized agents of Cook Inlet Aquaculture Association (CIAA), effective at 10:00 p.m. Monday, June 23, 2008, until further notice.
2-F-H-008-08 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 28, 2008, until further notice.
2-F-H-009-08 June 30	Reopens all waters of Port Graham Subdistrict, including both the Port Graham and English Bay Sections, to subsistence salmon set gillnet fishing, effective at 6:00 p.m. Monday, June 30, 2008, until further notice. This emergency order does not change the established weekly fishing period in Port Graham Subdistrict, which remains on the regulatory schedule of 10:00 p.m. Thursday to 10:00 a.m. Wednesday.
2-F-H-010-08 July 1	Opens waters of Chenik Subdistrict in the Kamishak Bay District south of 59° 16′ N. latitude to commercial salmon seining, effective at 6:00 a.m. Wednesday, July 2, 2008, until further notice. The weekly fishing period in waters of Kamishak Bay District was previously established at seven days per week (see ***LCI Emergency Order #2-F-H-002-08***) and remains unchanged for waters affected by this emergency order. Waters north of 59° 16′ N. latitude in Chenik Subdistrict will remain closed to fishing. Regulatory markers near the mouth of Chenik Creek remain in effect for this opening, and fishing is therefore prohibited in waters of Chenik Lagoon. In addition, this emergency order opens the fresh waters of the Bear Lake Special Harvest Area (SHA; see ***LCI Emergency Order #2-F-H-001-08***) to the harvest and sale of salmon seven days per week by authorized agents of CIAA, effective at 6:00 a.m. Wednesday, July 2, 2008, until further notice. Marine waters of the Bear Lake SHA remain closed to hatchery fishing until further notice.
2-F-H-011-08 July 4	Opens waters of the Port Graham Subdistrict, including both the Port Graham and English Bay Sections, in the Southern District to commercial salmon set gillnet fishing, effective at 6:00 a.m. Monday, July 7, 2008, until further notice. Fishing time for these waters, set in regulation at two 48-hour periods per week, from 6:00 a.m. Monday until 6:00 a.m. Wednesday, and from 6:00 a.m. Thursday until 6:00 a.m. Saturday, is not altered by this emergency order. In addition, this emergency order extends fishing time for commercial set gillnet fishing 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. Monday, July 7, 2008, until further notice.

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Table 8.–Page 4 of 7.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-012-08 July 8	Designates and establishes a Special Harvest Area (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 extending 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 south shore of Port Graham from Passage Island to (and including) Duncan Slough. This emergency order also opens those 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 to the harvest of salmon seven days per week by authorized agents of Port Graham Hatchery Corporation (PGHC), effective at 6:00 a.m. Wednesday, July 9, 2008, until further notice. Sockeye and pink salmon harvested during this opening may be utilized for both hatchery broodstock and hatchery cost recovery. Revenue obtained from the sale of these fish will be used for recovery of operational expenses associated with the Port Graham Hatchery sockeye and pink salmon enhancement programs in Lower Cook Inlet. In addition, this emergency order 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 6:00 a.m. Monday until 10:00 p.m. Friday, effective at 6:00 a.m. Thursday, July 10, 2008, until further notice. The closed waters markers near the mouth of Delight Lake Creek and the entrance to McCarty Lagoon **WILL BE** in effect for this opening, and fishing is not allowed up to the stream mouth or inside waters of McCarty Lagoon. Waters of East Nuka Subdistrict north of the latitude of James Lagoon remain closed to commercial salmon fishing, therefore fishing is prohibited in the vicinity of Desire Lake Creek.
2-F-H-013-08 July 10	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. This emergency order also opens the Tutka Bay SHA to the harvest and sale of salmon seven days per week by authorized agents of CIAA, effective at 4:00 p.m. Thursday, July 10, 2008, until further notice. Revenue obtained from the sale of any sockeye salmon will be used for recovery of operational expenses associated with the Trail Lakes Hatchery sockeye salmon remote release program in Tutka Bay. 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 the bay at approximately 59° 30.23' N. latitude, 151° 28.23' W. longitude, to a point on the west shore of Little Tutka Bay at approximately 59° 28.63' N. latitude, 151° 30.37' W. longitude, on a five-day-per-week basis (see ***LCI Emergency Order #2-F-H-006-08***). Waters of Tutka Bay between the HEA powerlines and the above-described line remain closed to all seine fishing.

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Table 8.–Page 5 of 7.

E.O. Number/ Issue Date	DESCRIPTION
	Rescinds regulatory markers near the mouth of Chenik Lake Creek in Chenik Subdistrict of Kamishak Bay District, and commercial salmon seine fishing is therefore allowed in waters of Chenik Lagoon, effective at 12:00 noon Saturday, July 12, 2008, until further notice. The weekly fishing period in waters affected by this emergency order, previously established at seven days per week (see ***LCI Emergency Order #2-F-H-002-08***), remains the same and is not altered by the provisions of this emergency order.
2-F-H-014-08 July 11	In addition, this emergency order 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. Tuesday, and from 6:00 a.m. Thursday until 10:00 p.m. Friday, effective at 6:00 a.m. Monday, July 14, 2008, until further notice. All normal regulatory markers and closed waters in all subdistricts, including those in Taylor Bay and Tacoma Cove, 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-015-08 July 18	Opens waters of Windy Bay Subdistrict in the Outer District of Lower Cook Inlet to commercial salmon seining five days per week, from 6:00 a.m. Monday until 10:00 p.m. Friday, effective at 6:00 a.m. Monday, July 21, 2008, until further notice. All normal regulatory markers and closed waters in Windy Bay Subdistrict remain in effect. This emergency order also extends the weekly fishing period 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, also in the Outer District, to the same schedule of five days per week as that in Windy Bay Subdistrict (above), also effective at 6:00 a.m. Monday, July 21, 2008, until further notice.
2-F-H-016-08 July 25	Extends the weekly fishing period for commercial salmon seining in those waters of East Nuka Subdistrict *south* of the latitude of the entrance to James Lagoon at approximately 59° 33.50' N. latitude in the Outer District of Lower Cook Inlet (see ***LCI Emergency Order # 2-F-H-012-08***) to seven days per week, effective from 10:00 p.m. Friday, July 25, 2008, until 10:00 p.m. Friday, August 15, 2008, or until superseded by subsequent emergency order. In addition, provisions of this emergency order repeal the regulatory closed waters markers near the mouth of Delight Lake Creek in East Nuka Subdistrict, also effective from 10:00 p.m. Friday, July 25, 2008, until 10:00 p.m. Friday, August 15, 2008, or until superseded by subsequent emergency order. As a result, commercial salmon seine fishing will be allowed up to freshwater at the stream mouth of Delight Lake Creek and inside waters of McCarty Lagoon on a continuous basis from 10:00 p.m. July 25 until 10:00 p.m. August 15. Commercial salmon fishing remains prohibited inside freshwater of any water body, including Delight Lake Creek and the lagoon at Delight Lake Creek, and also in marine waters north of the latitude of the entrance to James Lagoon in East Nuka Bay. Effective at 10:00 p.m. Friday, August 15, 2008, all waters of East Nuka Subdistrict will close to commercial salmon fishing until further notice.

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Table 8.–Page 6 of 7.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-017-08 July 28	Closes waters of Port Graham Special Harvest Area (see ***Lower Cook Inlet Emergency Order #2-S-H-012-08***) to the harvest of salmon by authorized agents of Port Graham Hatchery Corporation (PGHC), effective at 3:00 p.m. Monday, July 28, 2008, until further notice.
2-F-H-018-08 July 28	Opens those waters of Nuka Island Subdistrict west of 150° 48' W. longitude and north of 59° 20' N. latitude to commercial salmon seining five days per week, from 6:00 a.m. Monday until 10:00 p.m. Friday, effective at 6:00 a.m. Tuesday, July 29, 2008, until further notice. In addition, provisions of this emergency order repeal the regulatory 500-yard restriction protecting the creek mouth of Petrof River in Nuka Island Subdistrict, also effective at 6:00 a.m. Tuesday, July 29, 2008, until further notice. As a result, commercial salmon seine fishing will be allowed up to freshwater at the stream mouth of Petrof River during open fishing periods beginning at 6:00 a.m. Tuesday, July 29, 2008. The intent of this opening is to target a strong return of chum salmon to small Petrof River in Nuka Island Subdistrict. This emergency order also closes Outer District waters west of Shelter Cove at approximately 151° 17' W. longitude in the South Section of Port District Subdistrict, or statistical reporting area 232-07, and also those waters west of 151° 32' W. longitude in Windy Bay Subdistrict, to commercial salmon seining for a one week period, from 6:00 a.m. Wednesday, July 30, 2008, until 6:00 a.m. Wednesday, August 6, 2008. Beginning at 6:00 a.m. Wednesday, August 6, seining in the aforementioned waters up to the normally closed areas at the head end of each respective bay will resume on the same fishing schedule as that already in place in adjacent waters of the South Section of Port Dick Subdistrict and in waters of Windy Bay Subdistrict, respectively.
2-F-H-019-08 August 1	Rescinds the seine restriction line of 151° 32' W. longitude in Windy Bay Subdistrict (see ***Lower Cook Inlet Emergency Order #2-F-H-018-08***) imposed on July 29, 2008, and allows commercial salmon fishing up to the normal regulatory closed waters markers in Windy Bay, effective at 6:00 a.m. Monday, August 4, 2008, until further notice. In addition, provisions of this emergency order liberalize the weekly fishing period in waters of Windy Bay Subdistrict to seven days per week, also effective at 6:00 a.m. Monday, August 4, 2008, until further notice. As previously stated, all normal regulatory closed waters markers in Windy Bay Subdistrict remain in effect during open fishing periods.
2-F-H-020-08 August 7	Opens waters of Rocky River Subdistrict, as well as those waters of 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 seven days per week, effective at 6:00 a.m. Friday, August 8, 2008, until further notice.

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Table 8.–Page 7 of 7.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-021-08 August 13	Delays the opening of the 2008 Southern District (Kachemak Bay) personal use set gillnet fishery for coho salmon until 6:00 a.m. Monday, August 18, 2008.
2-F-H-022-08 August 15	Closes waters of the South Section of Port Dick Subdistrict, or statistical reporting area 232-07, in the Outer District of Lower Cook Inlet, effective at 6:00 a.m. Monday, August 18, 2008, until further notice. Waters of the North Section of Port Dick Subdistrict, or statistical reporting area 232-09, which have not been opened to commercial seining in 2008, remain closed to fishing, while waters of the Outer and Taylor Bay Sections of Port Dick Subdistrict, or statistical reporting areas 232-06 and 232-08, remain open to commercial salmon seining five days per week, from Monday 6:00 a.m. until Friday 10:00 p.m., until further notice (see ***LCI Emergency Order No. 2-F-H-018-08***).
2-F-H-023-08 August 20	Opens those waters east of 151° 09.66' W. longitude in the North and South Sections (statistical reporting areas 232-09 and 232-07) of Port Dick Subdistrict in the Outer District of Lower Cook Inlet to commercial salmon seining seven days per week, effective at 6:00 a.m. Thursday, August 21, 2008, until further notice. All normal regulatory markers and closed waters in areas open to fishing remain in effect, and commercial fishing in waters west of 151° 09.66' W. longitude in Port Dick Subdistrict is prohibited. In addition, this emergency order also extends the weekly fishing period in waters of the Outer and Taylor Bay Sections of Port Dick Subdistrict, or statistical reporting areas 232-06 and 232-08, also in the Outer District, to the same schedule of seven days per week as previously described for the North and South Sections of Port Dick Subdistrict (above), also effective at 6:00 a.m. Thursday, August 21, 2008, until further notice.
2-F-H-024-08 August 22	Closes the Southern District (Kachemak Bay) personal use set gillnet fishery for coho salmon, effective at 6:00 a.m. Saturday, August 23, for the remainder of the 2008 season.
2-F-H-025-08 August 26	Repeals the commercial fishing regulatory markers and closed waters near Island Creek and in Taylor Bay, both located in Port Dick Subdistrict of the Outer District, and allows commercial salmon seining up to freshwater at each of the stream mouths in the aforementioned locations seven days per week, effective at 6:00 a.m. Wednesday, August 27, 2008, until further notice. All waters west of 151° 09.66' W. longitude in Port Dick Subdistrict remain closed to fishing (see ***Lower Cook Inlet Emergency Order No. 2-F-H-023-08***).
2-F-H-026-08 August 27	Extends hatchery fishing in fresh waters of the Bear Lake Special Harvest Area (SHA; see ***LCI Emergency Order #2-F-H-001-08***) after August 31, allowing the harvest and sale of salmon seven days per week by authorized agents of Cook Inlet Aquaculture Association (CIAA), effective at 12:01 a.m. Monday, September 1, 2008, until further notice. This emergency order is intended to rectify an inadvertently incorrect expiration date utilized in previously issued ***LCI Emergency Order #2-F-H-010-08***.

Table 9.–Commercial salmon catch (in numbers and pounds of fish) and effort (in number of permits fished and number of landings) by district, Lower Cook Inlet, 2008.

DISTRICT	# of Permits Fished	# of Land-ings	Chinook		Sockeye		Coho		Pink		Chum	
			Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Eastern (231)	13	210	0	0	90,096	471,661	1,625	13,453	0	0	35	279
Outer (232)	16	146	0	0	1,704	9,720	0	0	467,592	1,666,561	100,819	840,661
Southern (241)	33	292	188	4,265	132,279	638,584	1,320	8,287	9,949	35,328	1,579	12,226
Kamishak Bay (249)	12	47	2	12	183,512	800,674	21	140	28,159	98,909	73,297	585,459
LCI Grand Total	**46**	**695**	**190**	**4,277**	**407,591**	**1,920,638**	**2,966**	**21,880**	**505,700**	**1,800,798**	**175,730**	**1,438,625**
Avg. Wt.				22.51		4.71		7.28		3.56		8.19
Avg. Price				$3.42		$1.45[a]		$0.76[a]		$0.23		$0.55

Note: Figures for 2008 do not include a very small number of fish caught during commercial fishing periods but not sold (i.e. retained for personal use).

[a] Average price per pound reflects only those fish actually sold and does not include hatchery fish that were donated.

Table 10.–Total biomass estimates and commercial catch of Pacific herring Clupea pallasi in short tons by age class, Kamishak Bay District, Lower Cook Inlet, 2007, and 2008 forecast (actual figures for 2008, and forecast for 2009, are unavailable due to a lack of samples).

Age	2007 Est. Spawning Biomass	Percent by Weight	2007 Commercial Harvest[a]	Percent by Weight	2007 Total Biomass	Percent by Weight	2008 Forecast Biomass	Percent by Weight
1								
2								
3	219.0	11.8	--	--	219.0	11.8	235.4	11.4
4	346.5	18.6	--	--	346.5	18.6	382.8	18.5
5	301.2	16.2	--	--	301.2	16.2	495.8	24.0
6	265.1	14.2	--	--	265.1	14.2	313.7	15.2
7	213.1	11.4	--	--	213.1	11.4	217.7	10.5
8	220.9	11.9	--	--	220.9	11.9	146.4	7.1
9	90.3	4.8	--	--	90.3	4.8	138.8	6.7
10	71.6	3.8	--	--	71.6	3.8	41.8	2.0
11	75.6	4.1	--	--	75.6	4.1	45.4	2.2
12	32.7	1.8	--	--	32.7	1.8	32.4	1.6
13+	27.6	1.5	--	--	27.6	1.5	19.0	0.9
TOTALS	1,863.6	100.0	--	--	1,863.6	100.0	2,069.2	100.0

[a] Due to the low forecasted biomass, the commercial herring fishery in Kamishak Bay was not opened in 2008.

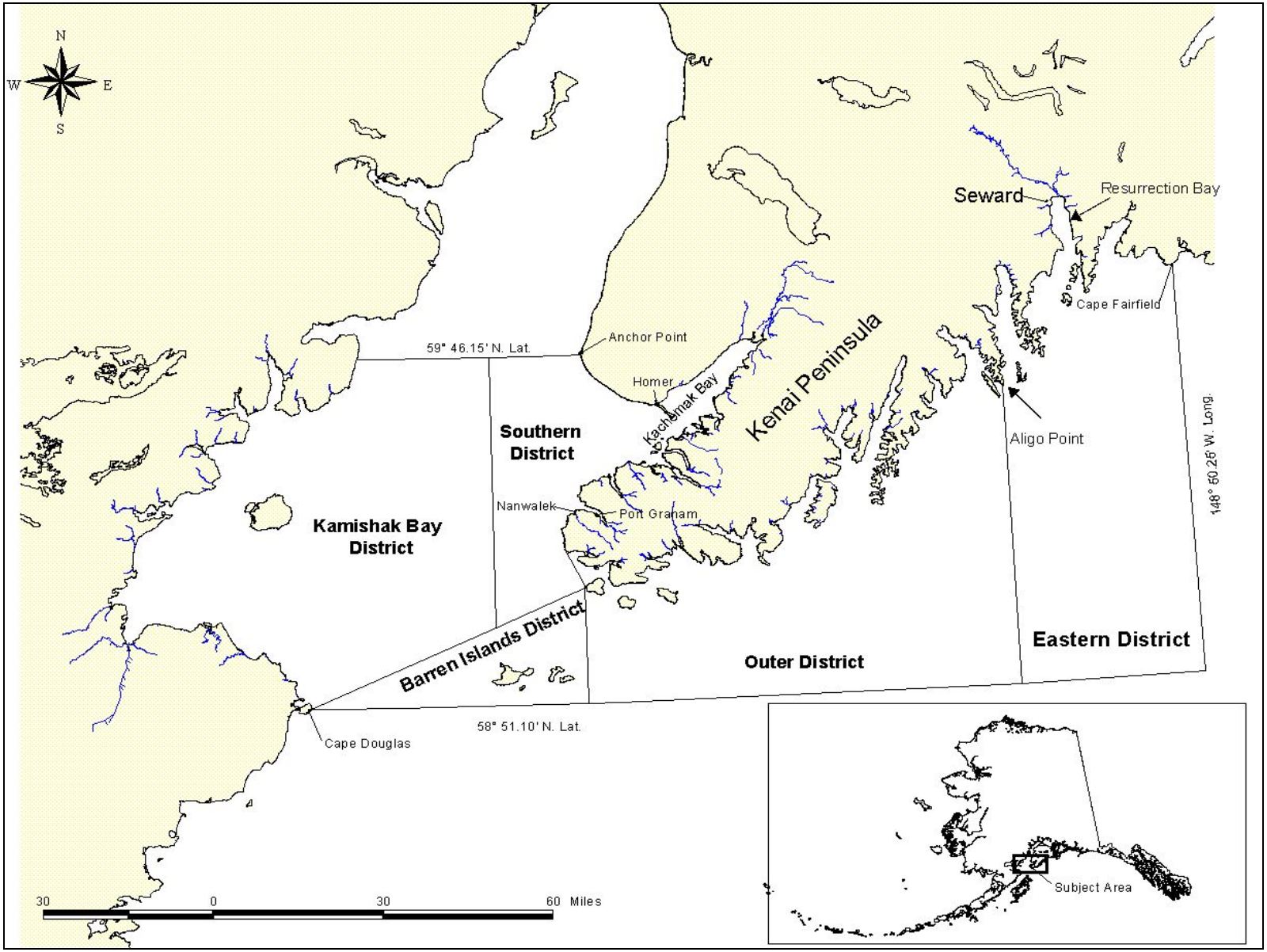

Figure 1.–Lower Cook Inlet management area for commercial salmon and herring fisheries.

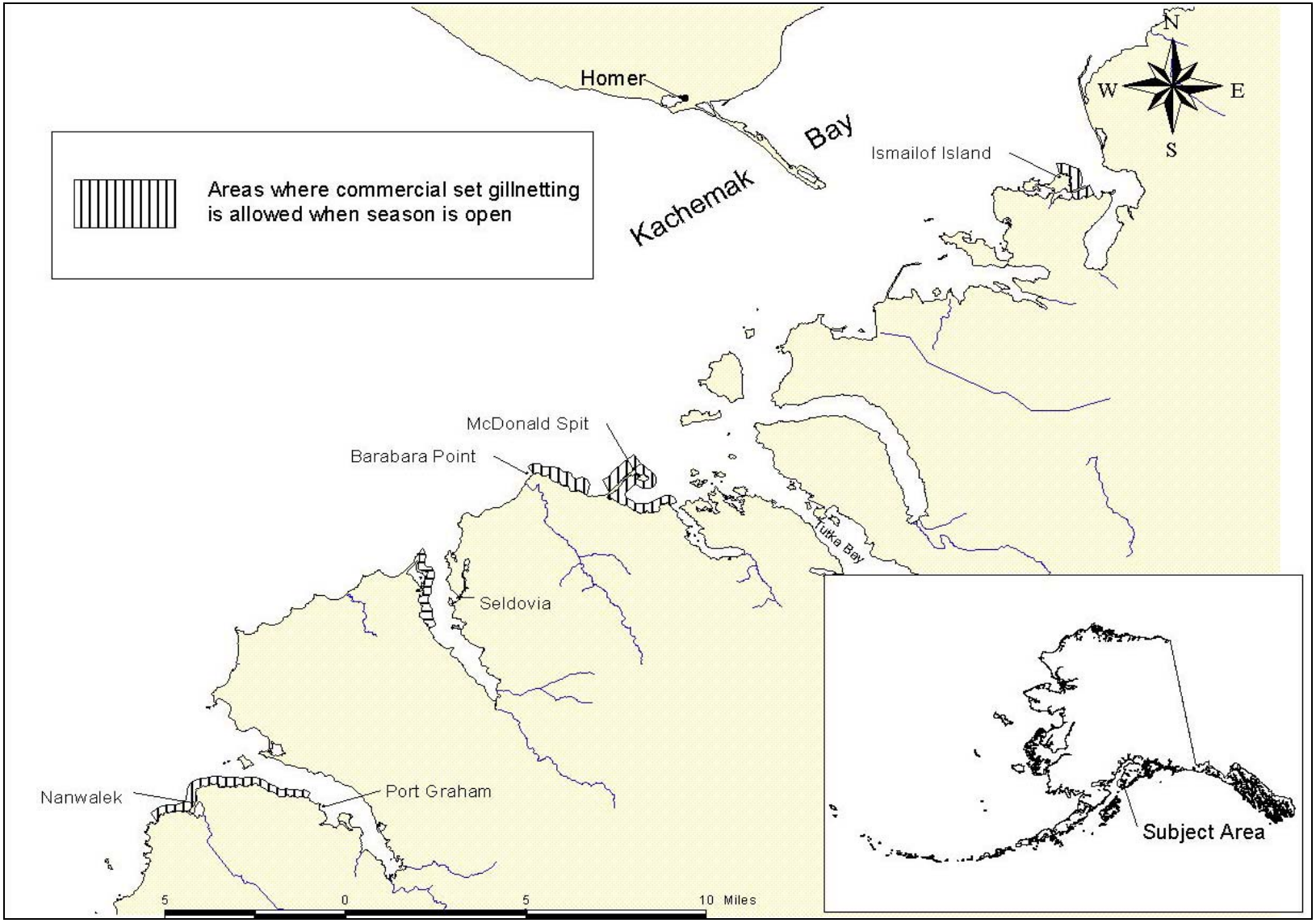

Figure 2.–Commercial set gillnet locations in the Southern District of Lower Cook Inlet.

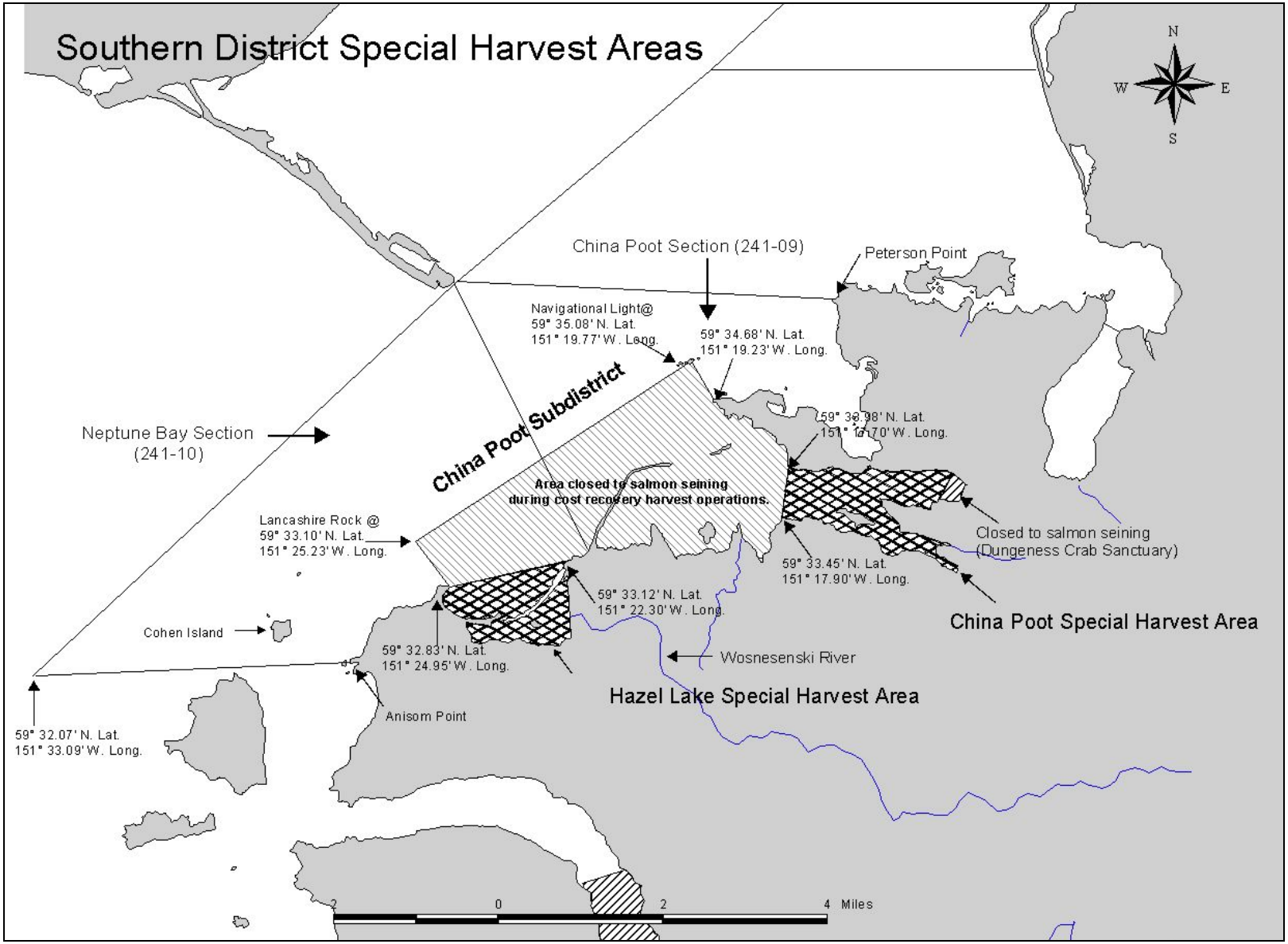

Figure 3.–China Poot and Hazel Lake Special Harvest Areas for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

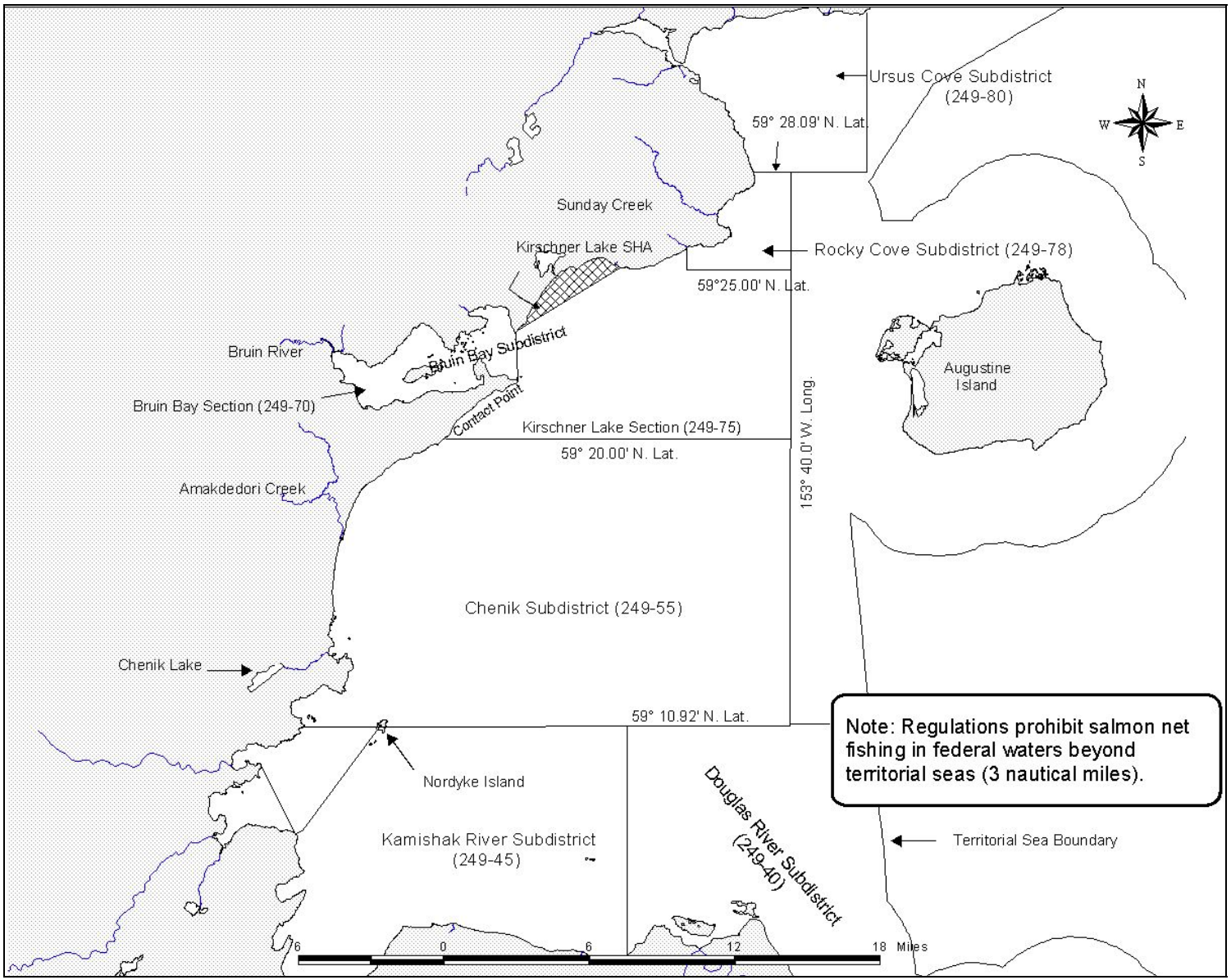

Figure 4.–Kirschner Lake Special Harvest Area for salmon hatchery cost recovery in Kamishak Bay District of Lower Cook Inlet.

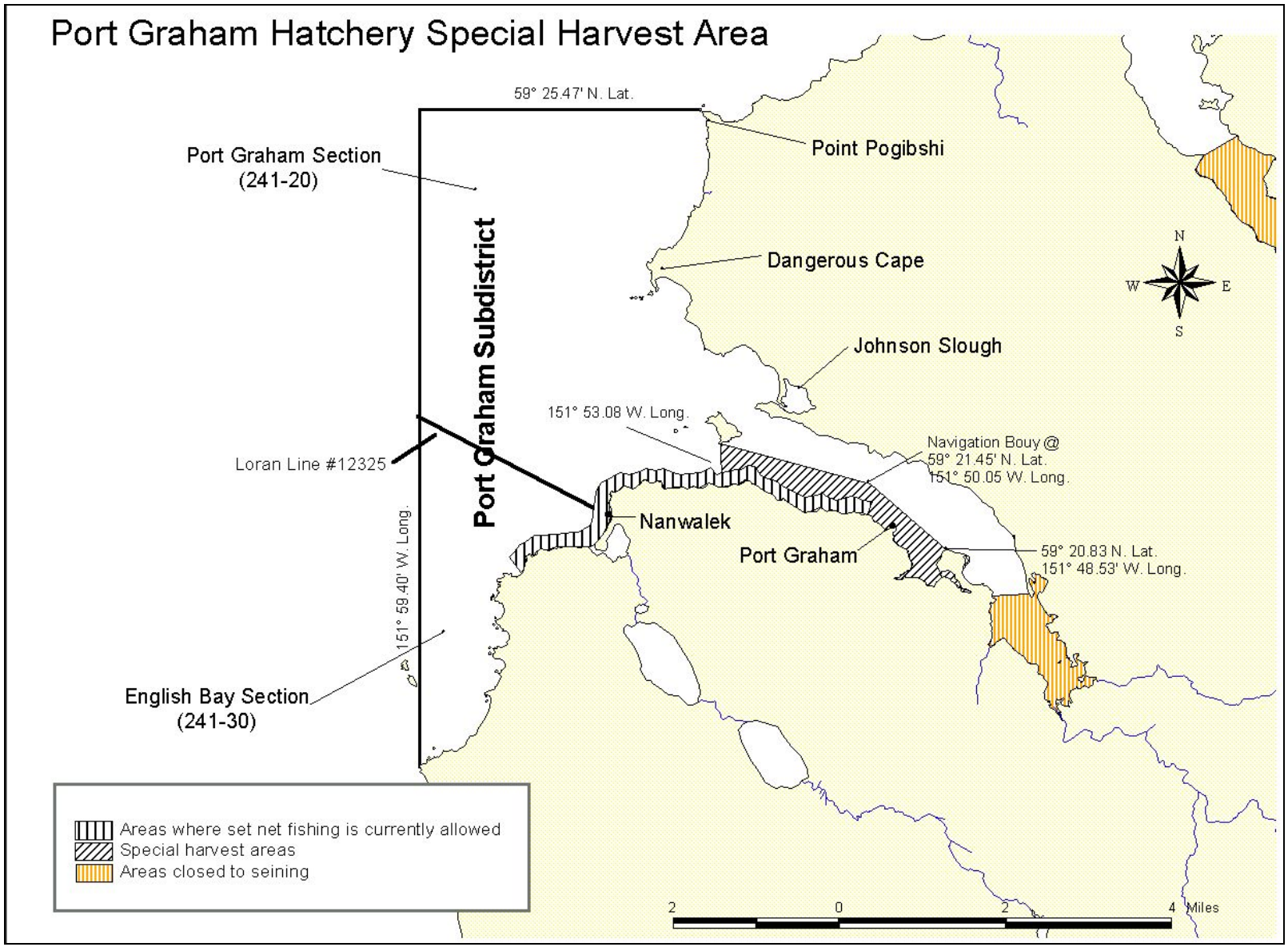

Figure 5.–Port Graham Special Harvest Area for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

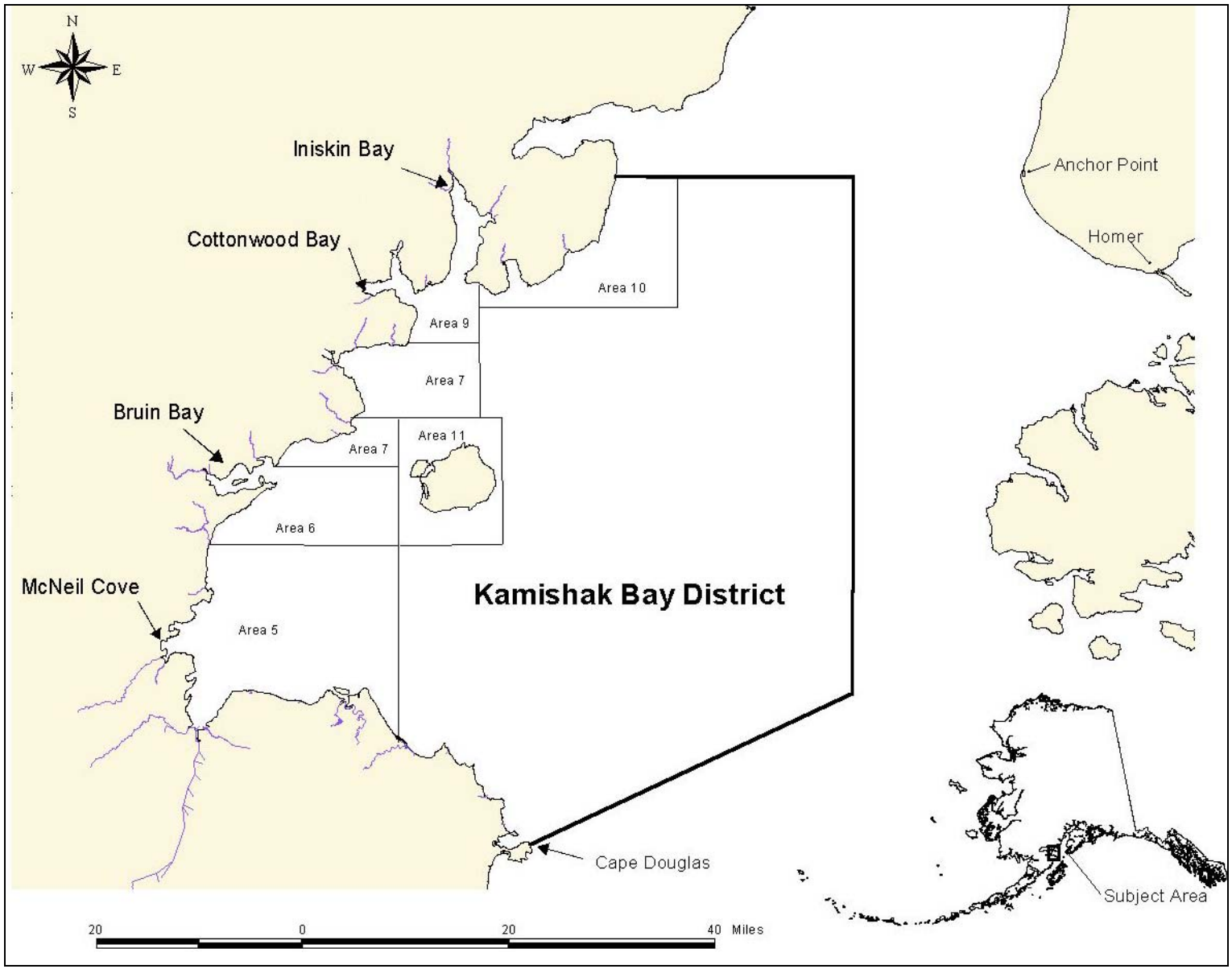

Figure 6.–Commercial fishing areas for herring management purposes in Kamishak Bay District of Lower Cook Inlet.

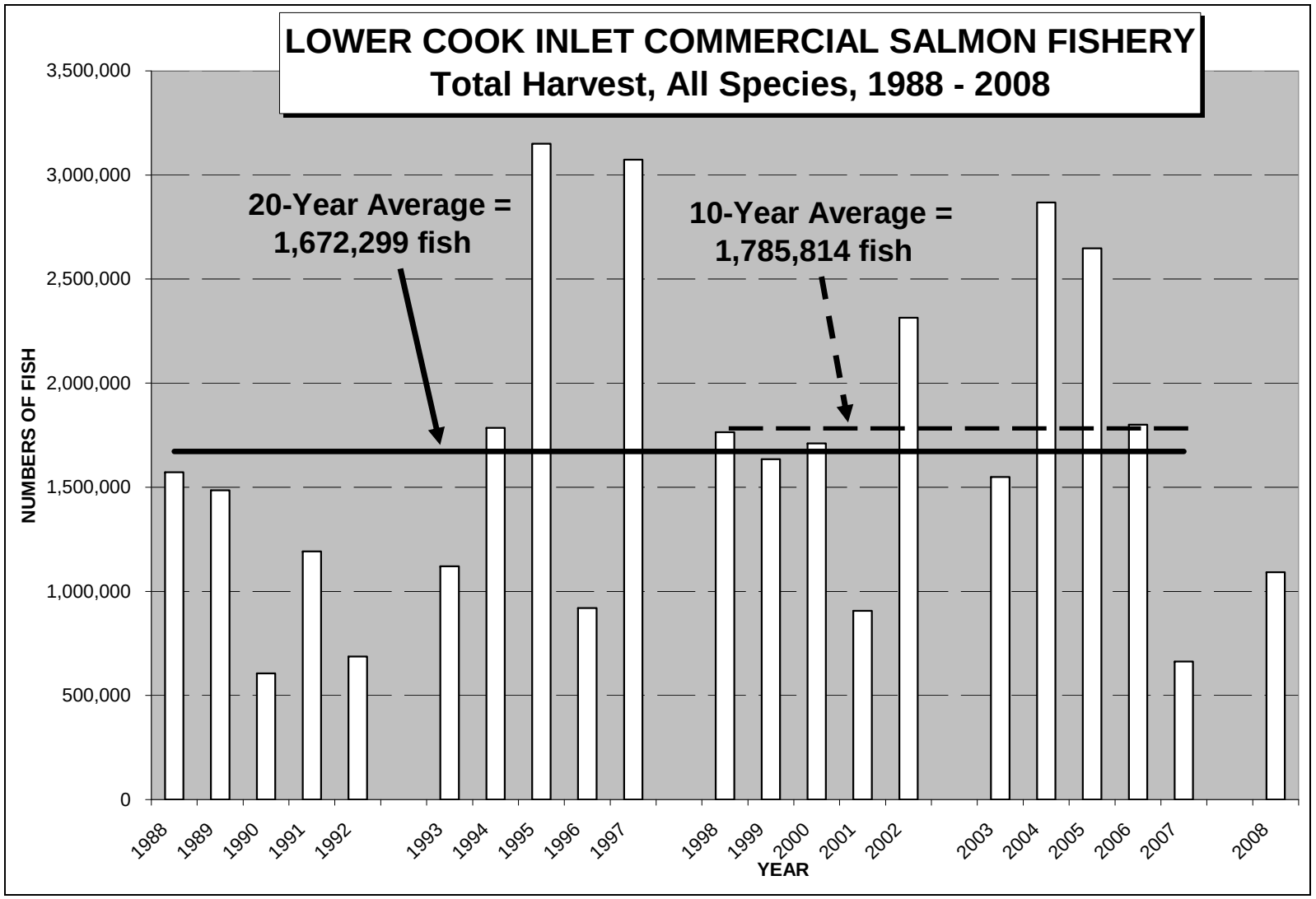

Figure 7.–Total commercial salmon catch, Lower Cook Inlet, 1988–2008.

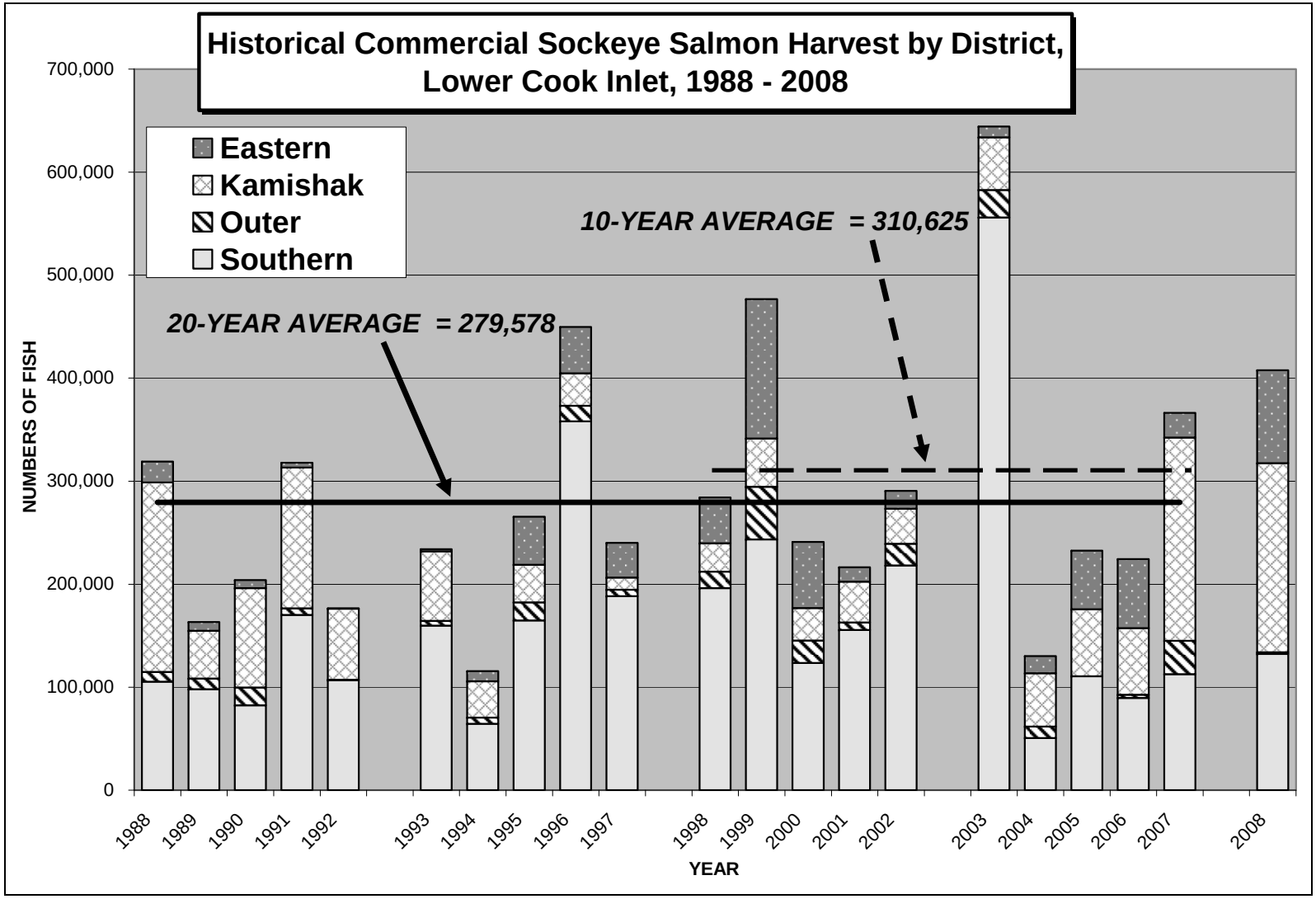

Figure 8.–Commercial sockeye salmon catch by district, Lower Cook Inlet, 1988–2008.

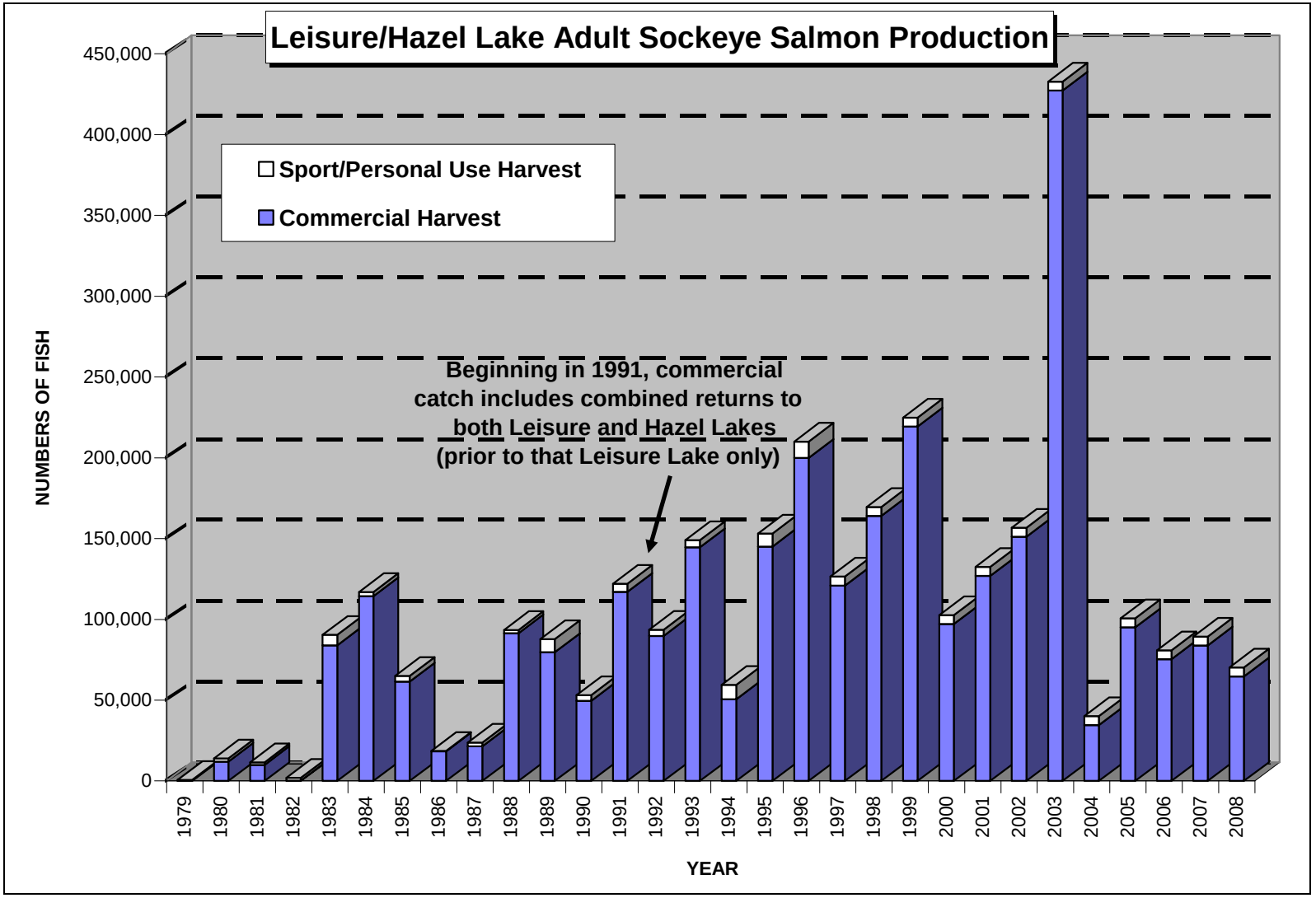

Figure 9.–Sockeye salmon returns to Leisure and Hazel Lakes in the Southern District of Lower Cook Inlet, 1979–2008.

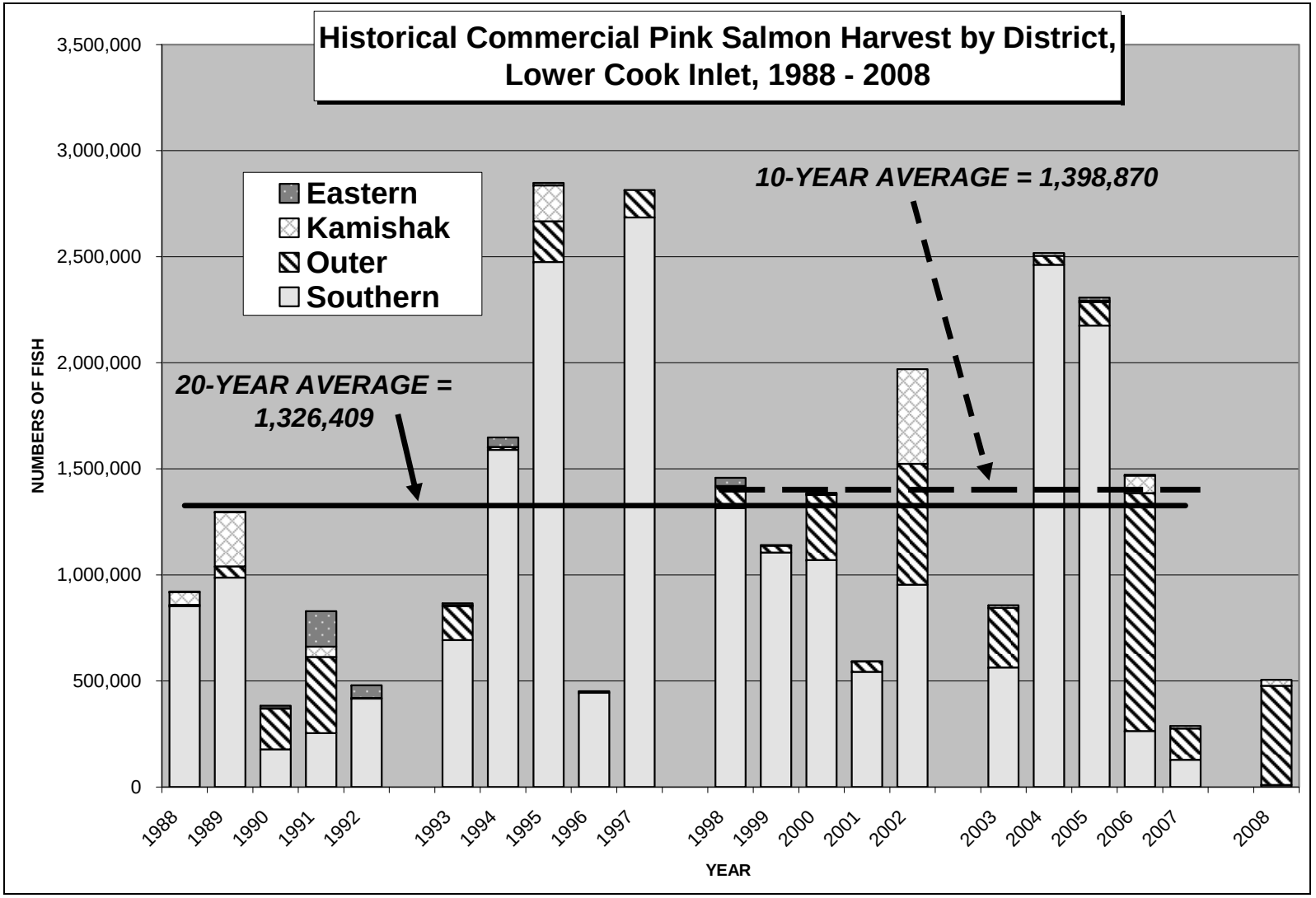

Figure 10.–Commercial pink salmon catch by district, Lower Cook Inlet, 1988–2008.

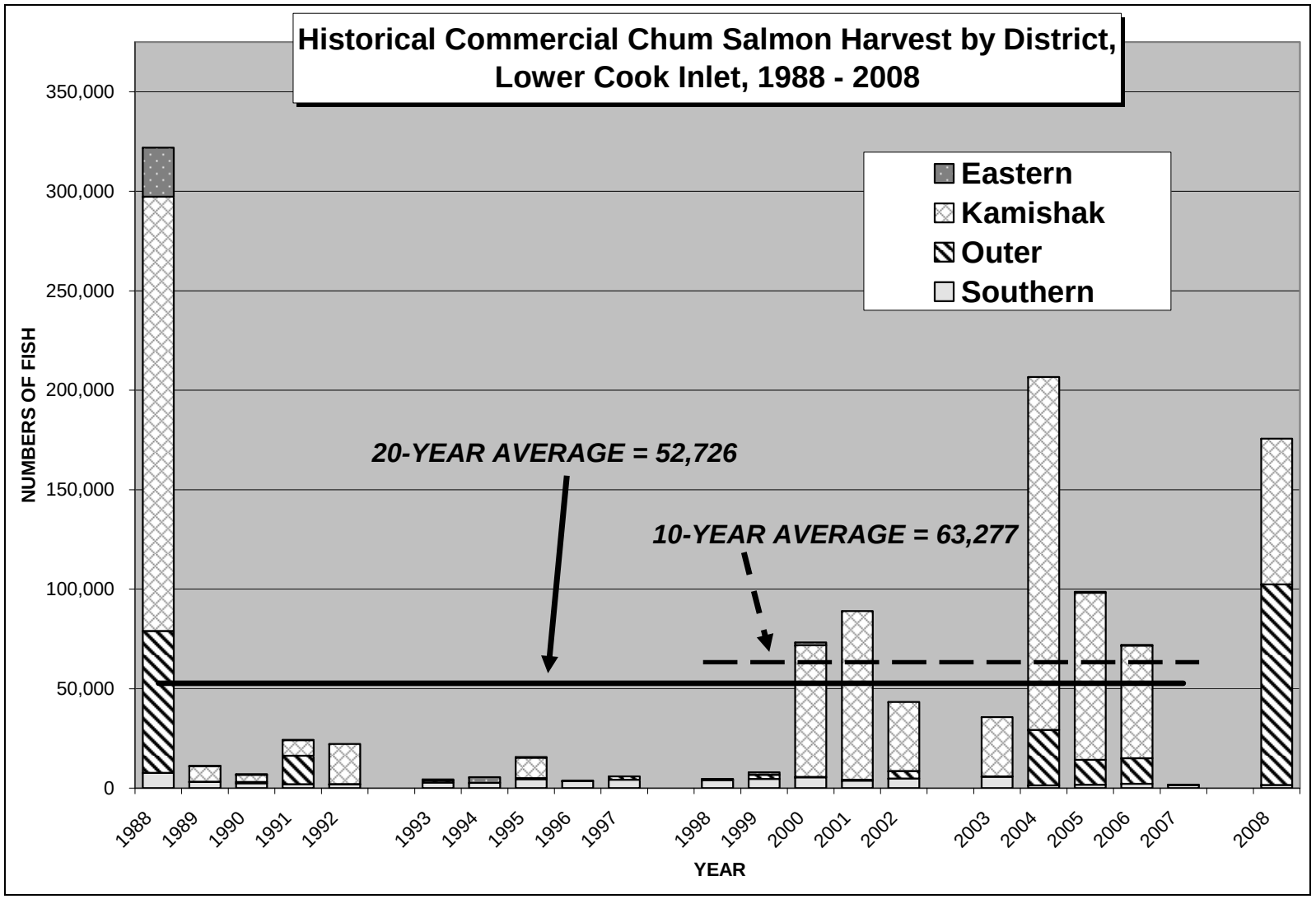

Figure 11.–Commercial chum salmon catch by district, Lower Cook Inlet, 1988–2008.

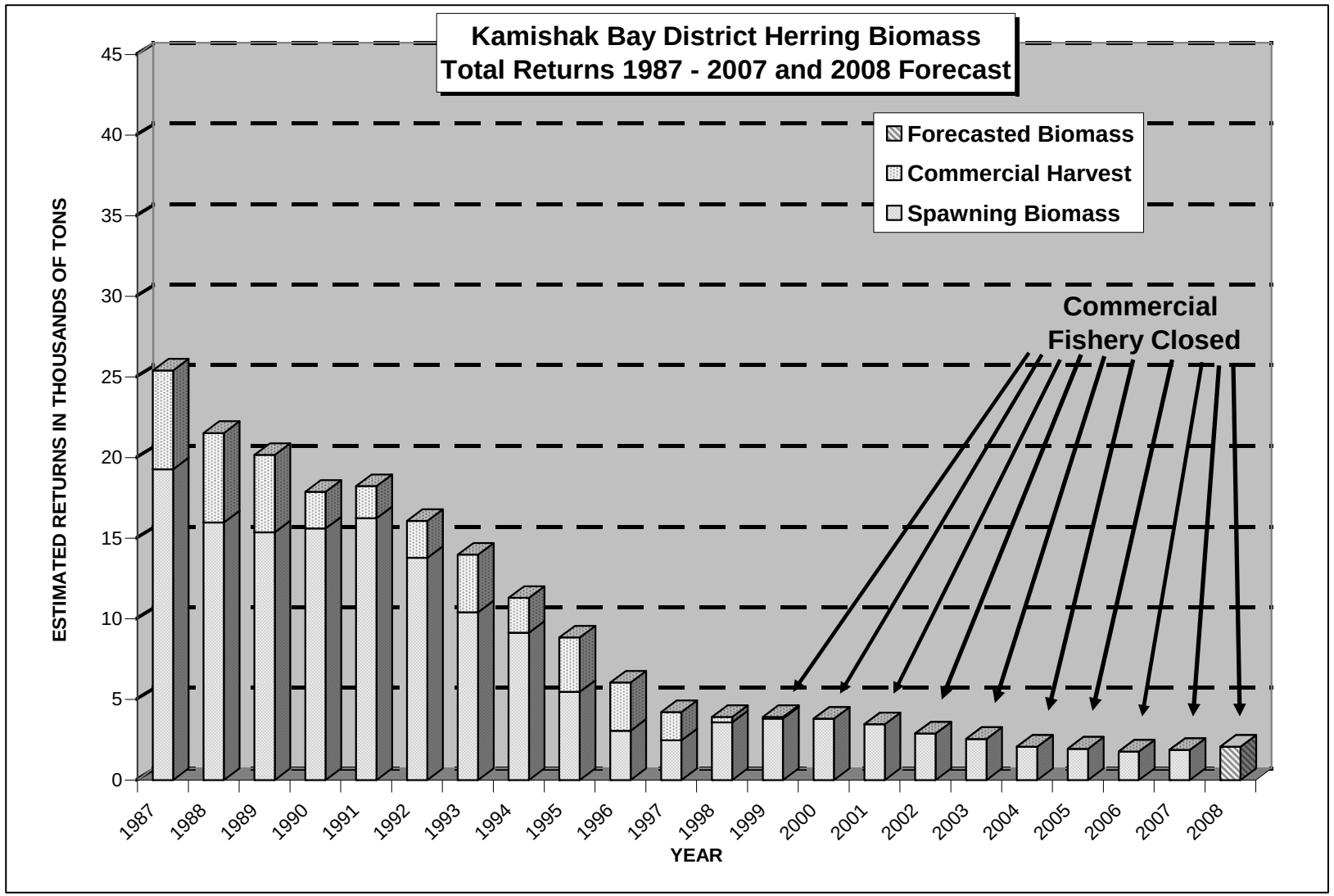

Figure 12.–Biomass estimates and commercial harvests of Pacific herring Clupea pallasi in the sac roe seine fishery, Kamishak Bay District, Lower Cook Inlet, 1987–2007, and 2008 projection (actual biomass estimate for 2008, and projection for 2009, are unavailable due to a lack of samples).

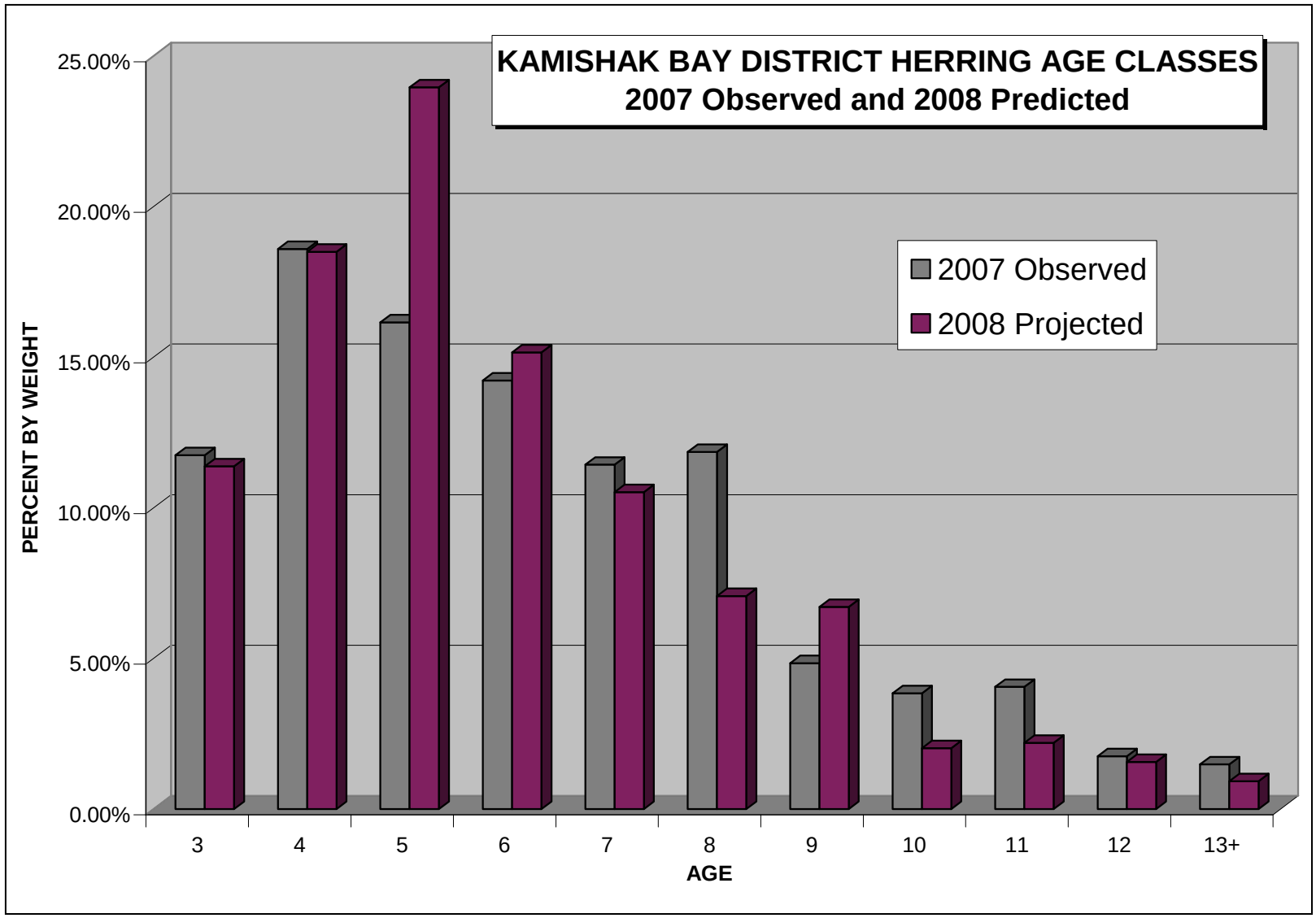

Figure 13.–Herring age composition from samples collected in Kamishak Bay District, Lower Cook Inlet, 2007, and 2008 forecast (actual age composition for 2008, and projection for 2009, are unavailable due to a lack of samples).

APPENDIX A:
HISTORICAL SALMON TABLES

Appendix A1.–Salmon fishing permits issued and fished, by gear type, Lower Cook Inlet, 1988–2008.

Year	Seines				Set Net Permits Fished
	Permanent Permits	Interim Permits	Total Issued	Actively Fished	
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	2	85	41	24
1999	84	2	86	45	20
2000	84	2	86	36	24
2001	84	2	86	25	18
2002	84	2	86	25	24
2003	84	2	86	27	24
2004	84	2	86	24	19
2005	84	2	86	29	17
2006	85	1	86	24	22
2007	85	0	85	19	16
2008	85	0	85	27	18
1988–2007 Avg.	83	1	84	41	21
1998–2007 Avg.	84	2	86	30	21

Source: ADF&G fish ticket database *Unpublished*. Commercial Fisheries Entry Commission License Statistics, 1974-2008, Juneau.

Appendix A2.–Exvessel value of the commercial salmon harvest in thousands of dollars by species, Lower Cook Inlet, 1988–2008.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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[a]	19	1,115	36	275	48	1,493
1992[a]	30	1,152	19	212	53	1,466
1993[a]	27	802	41	287	7	1,164
1994[a]	18	496	93	745	9	1,361
1995[a]	48	1,381	62	1,245	24	2,760
1996[a]	26	2,113	42	100	5	2,286
1997[a]	23	1,066	36	1,286	10	2,421
1998[a]	20	1,224	37	712	9	2,002
1999[a]	51	2,459	23	470	20	3,023
2000[a]	31	1,112	19	431	192	1,786
2001[a]	24	627	15	277	295	1,238
2002[a]	24	817	18	441	58	1,359
2003[a]	15	1,965	18	154	40	2,192
2004[a]	32	503	40	352	339	1,266
2005[a]	14	848	27	542	196	1,627
2006[a]	19	1,018	124	576	185	1,922
2007[a]	20	1,502	25	89	3	1,639
2008[a]	15	2,728	14	413	788	3,958
20 Year Avg.	27	1,326	44	620	206	2,222
1988–1997 Avg.	29	1,443	54	835	277	2,639
1998–2007 Avg.	25	1,208	35	404	134	1,805
2008 % of Total	0.38%	68.92%	0.35%	10.43%	19.91%	100.00%

Source: 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.

[a] Includes hatchery cost recovery.

Appendix A3.–Average salmon price in dollars per pound by species, Lower Cook Inlet, 1988–2008.

Year	Chinook	Sockeye	Coho	Pink	Chum
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[a]	0.50[a]	0.15	0.23
1998	1.45	0.96[a]	0.36[a]	0.16	0.27
1999	1.96	1.22[a]	0.45[a]	0.16	0.32
2000	1.86	0.87[a]	0.60[a]	0.12	0.28
2001	1.76	0.62[a]	0.41[a]	0.15	0.28
2002	1.11	0.55[a]	0.33[a]	0.07	0.16
2003	1.03	0.60[a]	0.28[a]	0.06	0.16
2004	1.56	0.77[a]	0.47[a]	0.04	0.20
2005	1.54	0.86[a]	0.53[a]	0.07	0.23
2006	2.25	1.01[a]	0.54[a]	0.11	0.31
2007	2.62	0.91[a]	0.60	0.10	0.25
2008	3.42	1.45[a]	0.76	0.23	0.55
20-Year Avg.	1.46	1.06	0.54	0.17	0.30
1988–1997 Avg.	1.20	1.27	0.63	0.24	0.35
1998–2007 Avg.	1.71	0.84	0.46	0.10	0.25

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

[a] Average price for sockeye and coho include only those fish actually sold and therefore does not include fish retained for personal use or hatchery cost recovery fish that were donated.

Appendix A4.–Salmon average weight in pounds per fish by species in the commercial fishery, Lower Cook Inlet, 1988–2008.

Year	Chinook	Sockeye	Coho	Pink	Chum
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
2003	12.6	5.1	6.8	3.2	7.2
2004	12.4	5.0	7.5	3.4	8.2
2005	14.5	4.3	6.7	3.4	8.6
2006	13.5	4.5	7.4	3.6	8.3
2007	16.6	4.5	6.7	3.2	7.0
2008	22.5	4.7	7.1	3.6	8.2
20-Year Avg.	14.2	4.7	7.5	3.0	8.0
1988–1997 Avg.	14.3	4.5	7.7	2.9	7.8
1998–2007 Avg.	14.0	4.8	7.4	3.1	8.2

Source: Values obtained from ADF&G fish ticket database *Unpublished.*

Appendix A5.–Commercial salmon catch for all gear and harvest types in numbers of fish by species, Lower Cook Inlet, 1988–2008.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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	1,261	240,173	11,004	2,814,431	5,908	3,072,777
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
2003	1,180	644,257	11,302	856,711	35,686	1,549,136
2004[a]	1,658	130,083	12,426	2,517,555	206,679	2,868,401
2005[a]	622	232,678	9,126	2,306,842	98,602	2,647,870
2006[a]	639	224,345	32,230	1,471,578	71,954	1,800,746
2007[a]	467	366,225	6,319	287,411	1,777	662,199
2008[a]	190	407,591	2,966	505,700	175,730	1,092,177
20-Year Avg.	1,387	279,578	12,200	1,326,409	52,726	1,672,299
1988–1997 Avg.	1,660	248,530	12,472	1,253,947	42,175	1,558,783
1998–2007 Avg.	1,113	310,625	11,929	1,398,870	63,277	1,785,814
2008 % of Total	0.02%	37.32%	0.27%	46.30%	16.09%	100.00%

Source: ADF&G fish ticket database *Unpublished.*

[a] 2004–2008 totals do not include a very small number of fish retained for personal use.

Appendix A6.–Commercial salmon catch for all gear and harvest types in numbers of fish by species in the Southern District, Lower Cook Inlet, 1988–2008.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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	1,261	188,402	5,597	2,685,764	4,260	2,885,284
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
2003	1,179	556,037	5,408	563,043	5,730	1,131,397
2004[a]	1,656	50,699	1,431	2,461,950	1,372	2,517,108
2005[a]	621	110,739	2,722	2,175,386	1,750	2,291,218
2006[a]	636	89,522	3,036	263,749	2,182	359,125
2007[a]	466	112,672	3,351	128,551	1,584	246,624
2008[a]	188	132,279	1,320	9,949	1,579	145,315
20-Year Avg.	1,379	167,749	3,810	1,057,837	3,501	1,234,276
1988–1997 Avg.	1,646	149,842	4,800	1,057,676	3,488	1,217,453
1998–2007 Avg.	1,111	185,656	2,819	1,057,999	3,513	1,251,098
2008 % of Total	0.13%	91.03%	0.91%	6.85%	1.09%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

[a] 2004–2008 totals do not include a very small number of fish retained for personal use.

Appendix A7.–Commercial set gillnet catch of salmon in numbers of fish by species in the Southern District, Lower Cook Inlet, 1988–2008.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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	1,135	59,401	4,475	64,162	4,166	133,339
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
2003	878	81,722	2,291	7,325	4,998	97,214
2004[a]	1,400	16,087	1,164	834	1,234	20,719
2005[a]	525	15,669	1,905	341	1,326	19,766
2006[a]	580	14,219	2,426	12,289	2,019	31,533
2007[a]	439	28,870	1,616	0	1,437	32,362
2008[a]	148	26,819	599	1,884	1,394	30,844
20-Year Avg.	1,095	28,561	2,458	16,341	2,996	51,450
1988–1997 Avg.	1,238	25,906	3,250	23,429	2,743	56,565
1998–2007 Avg.	966	31,216	1,666	9,252	3,249	46,349
2008 % of Total	0.48%	86.95%	1.94%	6.11%	4.52%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

[a] 2004–2008 totals do not include a very small number of fish retained for personal use.

Appendix A8.–Commercial salmon catch for all gear and harvest types in numbers of fish by species in the Outer District, Lower Cook Inlet, 1988–2008.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
2003	1	26,615	4	281,663	137	308,420
2004	2	11,082	13	42,636	27,911	81,644
2005	0	1	3	110,195	12,524	122,723
2006	3	3,198	1,139	1,121,892	12,883	1,139,115
2007	1	32,461	113	147,409	49	180,033
2008	0	1,704	0	467,592	100,819	570,115
20-Year Avg.	2	14,210	280	193,673	7,506	215,670
1988–1997 Avg.	2	9,361	270	110,993	8,943	129,570
1998–2007 Avg.	1	19,058	290	276,352	6,070	301,771
2008 % of Total	0.00%	0.30%	0.00%	82.02%	17.68%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

Appendix A9.–Commercial salmon catch for all gear and harvest types in numbers of fish by species in the Eastern District, Lower Cook Inlet, 1988–2008.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
2003	0	10,352	5,886	0	19	16,257
2004	0	16,645	5,615	0	1	22,261
2005[a]	0	56,951	6,309	13,500	385	77,145
2006	0	67,048	3,786	3,460	270	74,564
2007	0	23,834	2,850	0	53	26,767
2008	0	90,096	1,625	0	35	91,756
20-Year Avg.	0	31,404	5,805	18,537	1,622	57,367
1988–1997 Avg.	0	17,835	5,770	30,854	2,887	57,347
1998–2007 Avg.	0	44,972	5,839	6,219	356	57,387
2008 % of Total	0.00%	98.19%	1.77%	0.00%	0.04%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

[a] 2005 totals do not include a very small number of fish retained for personal use.

Appendix A10.–Commercial salmon catch for all gear and harvest types in numbers of fish by species in the Kamishak Bay District, Lower Cook Inlet, 1988–2008.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
2003	0	51,253	4	12,005	29,800	93,062
2004	0	51,657	5,367	12,969	177,395	247,388
2005	1	64,987	92	7,761	83,943	156,784
2006	0	64,577	24,269	82,477	56,619	227,942
2007	0	197,228	5	11,451	91	208,775
2008	2	183,512	21	28,159	73,297	284,991
20-Year Avg.	6	66,215	2,306	56,362	40,097	164,986
1988–1997 Avg.	11	71,491	1,631	54,425	26,856	154,414
1998–2007 Avg.	0	60,939	2,981	58,300	53,338	175,558
2008 % of Total	0.00%	64.39%	0.01%	9.88%	25.72%	100.00%

Source: ADF&G fish ticket database *Unpublished.*

Appendix A11.–Total commercial salmon catch for all gear and harvest types in numbers of fish by district, Lower Cook Inlet, 1988–2008.

Year	Southern	Outer	Kamishak	Eastern	Total
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	2,885,284	136,266	12,033	39,194	3,072,777
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
2003	1,131,397	308,420	93,062	16,257	1,549,136
2004	2,517,108[a]	81,644	247,388	22,261	2,868,401
2005	2,291,218[a]	122,723	156,784	77,145[a]	2,647,870
2006	359,152[a]	1,139,115	227,942	74,564	1,800,746
2007	246,624[a]	180,033	208,775	26,767	662,199
2008	145,315[a]	570,115	284,991	91,756	1,092,177
20-Year Avg.	1,234,276	215,670	164,986	57,367	1,672,299
1988–1997 Avg.	1,217,453	129,570	154,414	57,347	1,558,783
1998–2007 Avg.	1,251,098	301,771	175,558	57,387	1,785,814
2008 % of Total	13.31%	52.20%	26.09%	8.40%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

[a] 2004–2008 totals do not include a very small number of fish retained for personal use.

Appendix A12.–Commercial Chinook salmon catch for all gear and harvest types in numbers of fish by district, Lower Cook Inlet, 1988–2008.

Year	Southern	Outer	Kamishak	Eastern	Total
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	1,261	0	0	0	1,261
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
2003	1,179	1	0	0	1,180
2004	1,656[a]	2	0	0	1,658
2005	621[a]	0	1	0	622
2006	636[a]	3	0	0	639
2007	466[a]	1	0	0	467
2008	188	0	2	0	190
20-Year Avg.	1,379	2	6	0	1,387
1988–1997 Avg.	1,646	2	11	0	1,660
1998–2007 Avg.	1,111	1	0	0	1,113
2008 % of Total	98.95%	0.00%	1.05%	0.00%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

[a] 2004–2007 totals do not include a very small number of fish retained for personal use.

Appendix A13.–Commercial sockeye salmon catch for all gear and harvest types in numbers of fish by district, Lower Cook Inlet, 1988-2008.

Year	Southern	Outer	Kamishak	Eastern	Total
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	188,402	6,255	11,733	33,783	240,173
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
2003	556,037	26,615	51,253	10,352	644,257
2004	50,699[a]	11,082	51,657	16,645	130,083
2005	110,739[a]	1	64,987	56,951[a]	232,678
2006	89,522[a]	3,198	64,577	67,048	224,345
2007	112,672[a]	32,461	197,228	23,864	366,225
2008	132,279[a]	1,704	183,512	90,096	407,591
20-Year Avg.	167,749	14,210	66,215	31,404	279,578
1988–1997 Avg.	149,842	9,361	71,491	17,835	248,530
1998–2007 Avg.	185,656	19,058	60,939	44,972	310,625
2008 % of Total	32.45%	0.42%	45.02%	22.10%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

[a] 2004–2008 totals do not include a very small number of fish retained for personal use.

Appendix A14.–Commercial sockeye salmon catch for all gear and harvest types in thousands of fish by subdistrict, Lower Cook Inlet, 1959–2008.

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
East 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
East 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

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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
East 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[a]				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

Location	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Resurrection Bay	35.0	135.2	64.1	13.8	16.2	10.4	16.6	56.7	62.4	23.9	90.1
Aialik Bay	8.6	0.1	T	0	1.2	0	0	0.3	4.6	0	0
East Nuka Bay	16.0	51.1	21.6	7.3	21.2	26.6	11.1	0	3.1	32.5	1.4
Port Dick	0	0	T	T	0	0	T	T	0.1	T	T
Halibut Cove & Lagoon	62.3	42.9	24.3	5.8	27.5	74.2	2.7	7.6	1.9	3.0	4.1
China Poot[a]	100.2	170.6	78.3	117.7	126.5	366.2	33.4	90.6	73.8	83.8	64.1
Tutka/Barabara	9.8	22.9	12.4	23.0	19.4	33.4	7.2	9.2	7.6	12.4	24.0
Seldovia Bay	6.0	6.3	6.4	9.0	9.5	13.8	4.9	3.4	6.4	9.2	8.5
Port Graham Bay	17.9	0.7	2.1	0	35.3	68.5	2.6	0	0	4.3	31.7
Kamishak/Douglas	0	0	T	0.5	1.4	0.8	2.1	2.9	1.0	0.2	0.7
McNeil (Mikfik)	0	7.2	0	0.3	0	0	0	0	1.3	0	0
Paint River	0	0	0	0	0	0	0	0	0	0	0
Chenik Lake	0	0	0	0	0	0	33.2	47.0	11.8	161.6	171.3
Bruin/Kirschner	27.5	39.8	31.6	38.9	32.5	50.4	16.4	15.0	50.4	35.4	11.6
Miscellaneous	0.7	0	T	0	0	0	T	0.1	T	0	0
Totals	284.0	476.8	240.9	216.3	290.7	644.3	130.1	232.8	224.3	366.2	407.6

Source: ADF&G fish ticket database *Unpublished*.

Note: "T" denotes trace, less than 50 fish caught.

[a] China Poot Subdistrict, which includes China Poot, Peterson, and Neptune Bays, was part of Halibut Cove Subdistrict prior to 1988.

Appendix A15.–Harvest of sockeye salmon returning to China Poot and Neptune Bays in the Southern District of Lower Cook Inlet, by user group, 1988–2008.

Return Year	Sport Harvest	Personal Use Harvest	Commercial Harvest	Unharvested Fish	Total Return
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[a]	0	122,000
1992	300	3,500	89,791[a]	0	93,591
1993	400	4,000	144,677[a]	0	149,077
1994	500	8,500	50,527[a]	0	59,527
1995	1,000	7,000	145,392[a]	450	153,842
1996	1,000	9,000	200,000[a]	441	210,441
1997	650[b]	4,900[c]	120,900[a]	1,130	127,620
1998	650[b]	4,900[c]	164,000[a]	380	170,542
1999	650[b]	4,900[c]	219,300[a]	522	225,983
2000	650[b]	4,900[c]	97,100[a]	256	102,906
2001	650[b]	4,900[c]	126,900[a]	57	132,507
2002	650[b]	4,900[c]	151,100[a]	51	156,701
2003	650[b]	4,900[c]	427,327[a]	121	432,998
2004	650[b]	4,900[c]	34,612[a]	448	40,610
2005	650[b]	4,900[c]	95,070[a]	1	100,621
2006	650[b]	4,900[c]	75,303[a]	820	81,673
2007	650[b]	4,900[c]	83,802[a]	501	89,853
2008	650[b]	4,900[c]	64,668[a]	103	70,321
1988–2007 Average	668	5,073	128,166	282	134,189

Note: Through 1990, "Commercial Harvest" and "Total Return" include 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.

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

[b] The final "Sport Harvest" figures for 1997–2007 represent the estimated previous 10-year average.

[c] The final "Personal Use Harvest" figures for 1997–2008 represent the statewide sport fish harvest survey average for the years 1990–1995.

Appendix A16.–Commercial catch and escapement of sockeye salmon at Chenik Lake in the Kamishak Bay District of Lower Cook Inlet, 1988–2008.

Return Year	Commercial Harvest	Escapement[a]	Total Return
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[b]	808	808
1995	0[b]	1,086	1,086
1996	0[b]	2,990	2,990
1997	0[b]	2,338	2,338
1998	0[b]	1,880	1,880
1999	0[b]	2,850	2,850
2000	0[b]	4,800	4,800
2001	0[b]	250	250
2002	0[b]	4,650	4,650
2003	0[c]	13,825	13,825
2004	33,177	17,000	50,177
2005	47,013	14,507[d]	61,520
2006	11,783	13,868[d]	25,651
2007	161,630	18,230[d]	179,860
2008	171,255	11,284[d]	182,539
1988-2007 Avg.	31,291	8,027	39,318

[a] Estimated from aerial surveys between 1988–1990 and 1998-2004, weir counts between 1991–1997, unless otherwise noted.

[b] Due to low returns, the Chenik Subdistrict was kept closed to fishing for the entire season.

[c] Due to the previous decade of low returns to Chenik Lake, the Chenik Subdistrict was kept closed to all fishing to protect fish for escapement.

[d] Estimated from a combination of weir, video counts, and/or aerial counts.

Appendix A17.–Historical commercial catch and escapement of "early run" sockeye salmon to Bear Lake and Resurrection Bay in the Eastern District of Lower Cook Inlet, 1991–2008.

Year	Commercial Seine Fishery # of Permits	Commercial Seine Fishery Harvest	Cost Recovery Harvest	Total Combined Harvest	Escapement plus Broodstock	Total Adult Return
1991					748	748
1992					1,921	1,921
1993	[a]	[a]	[a]	1,654	5,033	6,687
1994	[a]	987	8,051	9,038	8,592	17,630
1995	18	23,655	20,930	44,585	8,328	52,913
1996	17	35,944	7,944	43,888	8,004	51,892
1997	9	8,933	10,056	18,989	7,945	26,934
1998	[a]	1,229	21,000	22,229	8,431	30,660
1999	11	22,630	8,600	31,230	7,814	39,044
2000	13	19,145	1,670	20,815	11,904	32,719
2001	[a]	2,629	400	3,029	12,801	15,830
2002	7	13,447	2,729	16,176	12,473	28,649
2003	10	7,341	3,011	10,352	13,233	23,585
2004	8	16,645	0	16,645	11,923	28,568
2005	15	19,018	37,654	56,672	13,407	70,079
2006	13	27,793	34,655	62,448	12,398	74,846
2007	11	15,407	8,457	23,864	12,841	36,705
2008	11	57,060	33,036	90,096	13,444	103,540
All Years Average	10	16,992	11,121	25,554	9,513	35,719

[a] To comply with **AS 16.05.815 CONFIDENTIAL NATURE OF CERTAIN REPORTS AND RECORDS**, effort (and in one case catch) data has been masked where fewer than 4 vessels fished in a given area.

Appendix A18.–Commercial coho salmon catch for all gear and harvest types in numbers of fish by district, Lower Cook Inlet, 1988–2008.

Year	Southern	Outer	Kamishak	Eastern	Total
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
2003	5,408	4	4	5,886	11,302
2004	1,441[a]	13	5,367	5,615	12,436
2005	2,722[a]	3	92	6,309	9,126
2006	3,036[a]	1,139	24,269	3,786	32,230
2007	3,351[a]	113	5	2,850	6,319
2008	1,320[a]	0	21	1,625	2,966
20-Year Avg.	3,810	280	2,306	5,805	12,200
1988–1997 Avg.	4,800	270	1,631	5,770	12,472
1998–2007 Avg.	2,819	290	2,981	5,839	11,929
2008 % of Total	44.50%	0.00%	0.71%	54.79%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

[a] 2004–2008 totals do not include a very small number of fish retained for personal use.

Appendix A19.–Commercial pink salmon catch for all gear and harvest types in numbers of fish by district, Lower Cook Inlet, 1988–2008.

Year	Southern	Outer	Kamishak	Eastern	Total
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
2003	563,043	281,663	12,005	0	856,711
2004	2,461,950[a]	42,636	12,969	0	2,517,555
2005	2,175,386[a]	110,195	7,761	13,500	2,306,842
2006	263,749[a]	1,121,892	82,477	3,460	1,471,578
2007	128,551[a]	147,409	11,451	0	287,411
2008	9,949[a]	467,592	28,159	0	505,700
20-Year Avg.	1,057,837	193,673	56,362	18,537	1,326,409
1988–1997 Avg.	1,057,676	110,993	54,425	30,854	1,253,947
1998–2007 Avg.	1,057,999	276,352	58,300	6,219	1,398,870
2008 % of Total	1.97%	92.46%	5.57%	0.00%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

[a] 2004 – 2008 totals do not include a very small number of fish retained for personal use.

Appendix A20.–Commercial pink salmon catch for all gear and harvest types in thousands of fish by subdistrict during odd-numbered years, Lower Cook Inlet, 1959–2008.

LOCATION	1959	1961	1963	1965	1967	1969	1971	1973	1975	1977
Humpy Creek	13.2	34.5	20.6	6.7	6.9	0.6	0	37.3	242.1	26.4
Halibut Cove & Lagoon	ND	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	ND	ND	ND	ND	ND	ND	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	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
Halibut Cove & Lagoon	27.1	11.1	18.8	5.9	30.5	254.4	91.1	100.2	1.9	2.6
China Poot[a]	[a]	[a]	[a]	[a]	[a]	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	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	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

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LOCATION	1999	2001	2003	2005	2007
Humpy Creek	0	0	0	0.0	0.0
Halibut Cove & Lagoon	3.4	0.2	6.5	0.8	0.0
China Poot[a]	19.6	4.8	41.3	26.6	10.6
Tutka/Barabara	1,080.8	533.1	511.8	1,637.0	0.0
Seldovia Bay	1.5	4.9	2.7	0.3	0.0
Port Graham Bay	0	0	0.7	510.9	118.0
Dogfish Bay	0	0	0	0.0	0.0
Port Chatham	0	0	0	0.0	0.0
Windy Bay	0	9.4	119.8	24.0	0.0
Rocky Bay	0	0	0	5.2	23.5
Port Dick Bay	0	16.7	137.4	81.0	90.7
Nuka Island	0	0	0	0.0	0.0
E. Nuka Bay	32.5	22.4	24.5	0.0	33.2
Resurrection Bay	0	0	0	0.4	0.0
Bruin Bay	0.8	0	12.0	3.0	9.8
Rocky/Ursus Coves	0	0.1	0	0.0	0.0
Iniskin/Cottonwood	0	0	0	4.7	0.0
Miscellaneous	1.9	1.3	0	13.1	1.6
Total	1,140.5	592.9	856.7	2,307.1	287.4

Source: ADF&G fish ticket database *Unpublished*.

Note: "T" denotes trace, less than 50 fish harvested

[a] China Poot Subdistrict, which includes China Poot, Neptune, and Peterson Bays, was part of Halibut Cove Subdistrict prior to 1988.

Appendix A21.–Commercial pink salmon catch for all gear and harvest types in thousands of fish by subdistrict during even-numbered years, Lower Cook Inlet, 1960–2008.

Location	1960	1962	1964	1966	1968	1970	1972	1974	1976	1978
Humpy Creek	51.0	73.9	53.5	24.6	2.6	85.2	1.7	33.3	3.3	16.3
Halibut Cove & 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	ND	ND	ND	ND	ND	ND	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	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
Halibut Cove & Lagoon	4.7	1.0	10.9	14.0	106.8	91.0	58.4	105.6	2.3	2.4
China Poot[a]	[a]	[a]	[a]	[a]	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	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

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Location	2000	2002	2004	2006	2008
Humpy Creek	0	0	0	0	0
Halibut Cove & Lagoon	0.5	0.3	T	0	T
China Poot[a]	4.0	4.7	1.5	3.4	5.0
Tutka/Barabara	1,055.4	709.0	1,176.8	12.3	2.3
Seldovia Bay	10.2	1.3	0.1	0	0
Port Graham Bay	0	238.7	1,283.5	248.0	2.7
Dogfish Bay	0	0	0	0	0
Port Chatham	0	0	0	0	0
Windy Bay	0	0	0	26.7	114.7
Rocky Bay	0	0	0	0	0
Port Dick Bay	306.6	454.1	41.6	1,093.7	344.5
Nuka Island	0	0.0	0	0	8.3
E. Nuka Bay	0.3	115.9	1.1	1.4	T
Resurrection Bay	0.4	0	0	0	0
Bruin Bay	5.5	333.7	1.5	52.8	1.8
Rocky/Ursus Coves	0	110.1	4.5	11.2	6.4
Iniskin/Cottonwood Bays	0	0.1	6.4	13.1	0.1
Miscellaneous	4.4	2.2	0.6	9.0	19.8
Total	1,387.3	1,970.1	2,517.5	1,471.6	505.7

Source: ADF&G fish ticket database *Unpublished*.

Note: "T" denotes trace, less than 50 fish harvested

[a] China Poot Subdistrict, which includes China Poot, Neptune, and Peterson Bays, was part of Halibut Cove Subdistrict prior to 1988.

Appendix A22.–Commercial chum salmon catch for all gear and harvest types in numbers of fish by district, Lower Cook Inlet, 1988–2008.

Year	Southern	Outer	Kamishak	Eastern	Total
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
2003	5,730	137	29,800	19	35,686
2004	1,372[a]	27,911	177,395	1	206,679
2005	1,750[a]	12,524	83,943	385	98,602
2006	2,182[a]	12,883	56,619	270[a]	71,954
2007	1,584	49	91	53	1,777
2008	1,579[a]	100,819	73,297	35	175,730
20-Year Avg.	3,501	7,506	40,097	1,622	52,726
1988–1997 Avg.	3,488	8,943	26,856	2,887	42,175
1998–2007 Avg.	3,513	6,070	53,338	356	63,277
2008 % of Total	0.90%	57.37%	41.71%	0.02%	100.00%

Source: ADF&G fish ticket database *Unpublished*.

[a] 2004 – 2006 and 2008 totals do not include a very small number of fish retained for personal use.

Appendix A23.–Commercial chum salmon catch for all gear and harvest types in thousands of fish by subdistrict, Lower Cook Inlet, 1959–2008.

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

Location	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Tutka Bay	1.6	0.5	1.3	0.8	1.4	2.0	0.9	0.8	2.6	2.7	1.8
Port Graham	4.8	2.0	3.2	2.6	1.0	2.2	0.5	5.0	2.4	4.3	2.5
Dogfish Bay	50.9	114.5	41.1	0.4	0	0	0	9.4	0	8.5	2.1
Port Chatham	0.1	2.4	0	0.4	0	0.6	0	0.1	0	1.7	1.3
Rocky/Windy Bays	39.4	1.4	0	0.9	0	0.3	0	17.7	0	76.7	2.1
Port Dick	41.2	0.7	0	33.4	8.1	6.8	0	25.6	10.3	79.0	19.0
E. Nuka Bay	5.9	0.1	2.3	40.8	3.9	3.6	0.4	17.4	0.4	14.7	7.8
Resurrection Bay	0.6	0.4	0.7	0	0	0	0	0	0.1	0	0.7
Douglas River	0	0	0	0	0	0.1	7.1	4.0	2.9	0.7	10.0
Kamishak River	0	0	2.4	0	1.8	0	10.5	0	23.9	17.8	2.8
McNeil River	1.9	0	2.3	0	2.0	0	16.9	38.5	4.9	6.5	6.3
Bruin Bay	12.8	1.6	1.8	0	0.7	0	0	0	0	4.0	11.0
Ursus/Rocky Coves	8.9	10.3	0.2	5.7	0	2.0	2.8	7.8	1.9	0.5	0.3
Cottonwood/Iniskin	71.9	14.5	19.7	29.9	0	2.8	11.5	15.3	14.9	0.2	5.4
Miscellaneous	2.4	0.2	0.5	0.6	0.3	1.2	0.2	4.2	9.2	1.2	0.4
Totals	242.4	148.6	75.5	115.5	19.2	21.6	50.8	145.8	73.5	218.5	73.5

Location	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Tutka Bay	7.9	8.3	9.9	3.4	3.2	3.9	3.9	4.7	2.5	1.5	0.8
Port Graham	11.2	7.4	1.7	3.6	1.3	0.8	0.4	1.2	0	0	0
Dogfish Bay	71.8	15.6	2.8	1.1	0	0	0	0	0	0	0
Port Chatham	59.5	14.1	2.1	0	1.3	0	0	0	0	0.1	0.1
Rocky/Windy Bays	7.4	0	3.2	0	0	0	0	0	0	0	0.5
Port Dick	95.8	32.5	18.0	1.9	9.6	10.4	27.1	64.4	0	0.5	13.7
E. Nuka Bay	3.8	0.9	0.8	0.2	0.8	1.3	1.6	6.8	0	T	T
Resurrection Bay	2.4	7.7	6.9	3.0	3.0	3.5	13.9	23.9	0	0	0
Douglas River	46.7	37.1	27.2	9.2	8.0	11.6	23.7	24.8	0	0.1	3.0
Kamishak River	8.6	9.2	23.9	16.2	0.1	0.1	24.6	26.7	0	T	0.7
McNeil River	11.6	32.6	67.9	12.0	0	13.7	32.9	104.0	0.1	0.1	0.1
Bruin Bay	1.7	1.3	2.6	5.9	0	5.4	0.1	2.8	4.4	1.6	2.6
Ursus/Rocky Coves	1.5	7.2	0	3.7	0	22.1	17.2	20.7	3.4	0	0
Cottonwood/Iniskin	3.5	21.6	21.4	23.0	0	8.8	9.7	39.2	0	0	1.0
Miscellaneous	2.7	2.5	3.9	9.3	3.3	1.1	1.9	2.7	0.9	3.0	1.7
Totals	336.1	198.0	192.3	92.5	30.6	82.7	157.0	321.9	11.3	7.0	24.2

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Location	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Tutka Bay	0.6	0.9	0.8	1.6	1.0	1.1	0.9	1.5	1.8	1.4	2.7
Port Graham	0	0	0	0.7	0.7	2.0	0.8	0	T	0	0.4
Dogfish Bay	0	0	0	0	0	0	0	0	0	0	0
Port Chatham	0	0.1	0	T	0	0	0.1	0	0	0	0
Rocky/Windy Bays	0	0.1	0	0.4	0	1.6	0.3	0	0	0.3	0
Port Dick	0.2	0.7	T	0	0	0	0.1	0	0.1	0.1	3.8
E. Nuka Bay	0	T	T	0.1	T	T	T	2.1	0.2	T	0.1
Resurrection Bay	0	0	2.5	0.3	0.2	0	0	0	1.5	T	T
Douglas River	12.5	T	T	0.7	0	0	0	0	19.9	10.3	7.0
Kamishak River	1.5	0	0	0.1	0	0	0	0	43.7	73.0	5.1
McNeil River	2.0	0.4	0	0	0	T	0	0	0	T	0
Bruin Bay	0.8	T	0	4.9	T	T	T	T	2.4	0	2.0
Ursus/Rocky Coves	2.7	0	0	2.2	0	0	0	0	0	1.5	3.4
Cottonwood/Iniskin	0.2	0	0	2.3	0	0	0	0	0	0	17.0
Miscellaneous	1.6	2.1	2.1	2.3	1.9	1.2	2.3	4.4	3.6	2.4	1.8
Totals	22.2	4.4	5.5	15.6	3.8	5.9	4.6	7.9	73.3	89.0	43.3

Location	2003	2004	2005	2006	2007	2008
Tutka Bay	2.6	0.7	0.8	0.7	0.6	0.4
Port Graham	0.1	0.2	0	0	T	0.1
Dogfish Bay	0	0	0	0	0	0
Port Chatham	0	0	0	0	0	0
Rocky/Windy Bays	0.1	0	5.6	0.9	T	3.0
Port Dick	T	27.8	5.3	11.9	T	87.5
E. Nuka Bay	T	0.1	0	T	T	T
Resurrection Bay	T	T	0.1	T	0.1	T
Douglas River	T	6.7	2.8	15.2	0	1.7
Kamishak River	0	0	0	0	0	53.5
McNeil River	0	0	0	0	0	0
Bruin Bay	0.1	7.0	7.0	1.9	0.1	0
Ursus/Rocky Coves	0	1.8	0	3.3	0	10.5
Cottonwood/Iniskin	29.7	161.9	74.1	36.2	0	7.3
Miscellaneous	3.1	0.5	2.9	1.8	0.9	11.5
Totals	35.7	206.7	98.6	72.0	1.8	175.7

Source: ADF&G fish ticket database *Unpublished*.

Note: "T" denotes trace, less than 50 fish harvested.

Appendix A24.–Estimated sockeye salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1988–2008.

Year	English Bay Lake	Delight Lake	Desire Lake	Delusion Lake	Bear Lake[a,b]	Aialik Lake	Mikfik Lake	Chenik Lake	Amakdedori Creek	Kamishak Rivers	Total
1988	2.5	1.2	9.0	no data	0.1	13.0	10.1	9.0	0.4	0.5	45.8
1989	4.5	7.7	9.0	2.0	0.1	6.5	11.5	12.0[b]	1.2	0.5	55.0
1990	3.3	5.2	9.5	0.3	0.1	5.7	8.8	17.0	1.8	0.2	51.9
1991	7.0	4.1	8.2	0.3	0.7	3.7	9.7	10.2[b]	1.9	0.7	46.5
1992	6.4	5.9	11.9	1.0	1.9	2.5	7.8	9.3[b]	1.9	4.9	53.5
1993	8.9	5.6	11.0	1.3	5.0	3.0	6.4	4.0[b]	2.0	4.1	51.3
1994	13.8[b]	5.6	10.5	1.3	8.6	7.3	9.5	0.8[b]	0.8	[c]	58.2
1995	22.5[b]	15.8	15.8	1.5	8.3	2.6	10.1	1.1[b]	2.4	[c]	80.1
1996	12.4[b]	7.7	9.4	0.7	8.0	3.5	10.5	3.0[b]	2.9	1.8	55.9
1997	15.4[b]	27.8[b]	14.7[b]	1.4	7.9	11.4	8.5	2.3[b]	1.5	[c]	90.9
1998	15.4[b]	9.2[b]	7.9	1.1	8.4	4.9	12.6	1.9	4.1	[c]	64.2
1999	15.8[b]	17.0[d]	14.6	1.1	7.8	3.8	15.7	2.9	8.8	2.2	89.7
2000	12.6[b]	12.3	4.0	2.1	11.9	4.3	10.9	4.8	3.3	1.5	67.7
2001	10.5[b]	10.1	5.5	2.8	12.8	5.1	5.4	0.3	2.7	2.5	57.7
2002	16.9[b]	19.6[b]	16.0	3.6	12.5	6.1	16.7	4.7	3.2	3.3	102.6
2003	20.0[b]	7.5[d]	8.4	2.0	13.2	5.4	12.8	13.8	11.8	2.6	97.5
2004	16.7[b]	7.3[d]	10.7	1.0	11.9	10.1	14.0	17.0	7.2	0.8	96.7
2005	8.2[b]	15.2[d]	4.8	1.1	13.4	5.3	6.0	14.5[d]	1.7	3.9	74.1
2006	15.5[b]	10.9[d]	18.6	1.0	12.4	4.8	17.7	13.9[d]	0.3	[c]	95.1
2007	16.5[b]	44.0[d]	10.0	2.1	12.8	5.4	11.2	18.2[d]	3.8	0.1	124.2
2008	12.0[b]	23.9[d]	10.7	1.8	13.4	4.2	5.6	11.3[d]	3.2	0.2	86.3
20-year Average	12.2	12.0	10.5	1.5	7.9	5.7	10.6	8.0	3.2	2.0	73.5
1988–1997 Average	9.7	8.7	10.9	1.1	4.1	5.9	8.9	6.9	1.7	1.8	59.6
1998–2007 Average	14.7	15.3	10.1	1.8	11.7	5.5	12.3	9.2	4.7	2.1	87.4
Sustainable Esc. Goal[e]	6.0 –13.5	5.95 –12.55	8.8 –15.2	[f]	0.7 –8.3	3.7 –8.0	6.3 –12.15	1.88 –9.3	1.25 –2.6	[f]	34.58 –81.6

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

[a] Escapement limited by Bear Lake Management Plan since 1971.

[b] Weir counts.

[c] Insufficient survey data to generate escapement estimate.

[d] Combination of weir, video, and/or aerial counts.

[e] New sustainable escapement goals (SEG's) implemented for the first time beginning with the 2002 season.

[f] No formal escapement goal established.

Appendix A25.–Estimated pink salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1960–2008.

	YEAR										
Location	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[a]	35.0	14.0	40.0	16.0	31.5	50.0	35.0	20.0	29.0	12.0	34.5
Island Creek	23.2	2.0	15.0	3.6	30.0	0.5	7.0	0.5	4.3	0.1	5.5
South Nuka Island Creek	20.0	2.0	22.0	0.1	10.0	---	10.0	---	10.0	3.0	11.0
Desire Lake Creek	---	---	18.0	---	1.3	---	---	---	---	---	---
James Lagoon	---	---	---	---	---	---	---	---	---	---	---
Aialik Lagoon	---	---	25.0	0.3	---	---	2.0	---	---	---	---
Bear Creek	1.4	---	3.1	---	6.4	---	---	---	3.1	---	---
Salmon Creek	---	---	---	---	---	---	---	---	---	---	---
Thumb Cove	---	---	---	---	---	---	---	---	---	---	---
Humpy Cove	---	---	---	---	---	---	---	---	---	---	---
Tonsina Creek	---	---	---	---	---	---		---	2.9	0.1	---
Big Kamishak River	---	---	100.0	75.0	75.0	---	13.0	---	---	---	---
Little Kamishak River	---	---	100.0	24.0	---	---	28.0	3.5	---	0.5	2.0
Amakdedori Creek	60.0	---	80.0	---	10.0	---	8.0	---	---	1.0	13.0
Bruin Bay River	18.0	---	300.0	25.0	---	---	20.0	0.5	---	5.0	40.0
Sunday Creek	1.5	---	5.0	2.0	---	---	20.0	---	---	1.0	2.0
Brown's Peak Creek	---	---	25.0	10.0	20.0	10.0	11.0	---	---	2.0	---
Totals	387.1	111.7	1,181.6	237.2	392.6	152.3	379.0	129.0	220.3	128.9	261.3

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

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Location	YEAR										
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Humpy Creek	31.9	104.0	84.2	117.0	49.7	26.6	21.4	93.0	27.0	17.4	14.9
China Poot Creek	3.1	14.1	8.4	1.9	11.5	3.1	3.9	8.5	4.2	2.6	4.1
Tutka Lagoon Creek	18.5	12.9	10.5	14.0	13.4	4.8	11.2	11.9	38.5	16.8	26.7
Barabara Creek	2.1	14.8	1.0	1.6	1.8	0.3	0.7	4.5	3.9	10.9	2.2
Seldovia River	38.4	27.9	14.2	22.8	28.2	7.6	16.9	26.2	27.8	30.0	14.7
Port Graham River	28.9	4.6	10.9	26.3	17.5	3.8	7.9	19.1	20.1	29.0	5.4
Dogfish Lagoon	2.6	1.0	0.6	0.2	0.4	1.2	0.3	0.2	7.1	9.3	[c]
Port Chatham Creeks	2.0	3.5	7.8	8.9	11.5	10.2	21.0	31.7	27.8	23.8	4.3
Windy Right Creek	4.7	4.3	3.4	5.4	2.5	2.0	1.3	6.6	7.1	20.7	3.9
Windy Left Creek	4.4	11.9	2.5	8.9	2.2	5.6	3.4	25.2	7.5	34.5	8.2
Rocky River	6.6	16.6	9.0	12.1	12.0	4.5	5.4	10.3	18.0	26.1	25.4
Port Dick Creek[a]	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[b]	2.3
Salmon Creek	21.0	0.5	10.2	2.1	8.3	1.7	0.1	1.6	---	[b]	5.3
Thumb Cove	7.9	4.9	4.2	14.5	4.0	2.7	0.3	4.2	---	3.4	0.4
Humpy Cove	4.0	2.0	2.5	5.0	0.9	0.3	0.4	1.0	3.8	---	[c]
Tonsina Creek	7.5	5.4	6.0	48.2	11.2	3.4	0.1	0.5	1.2	0.3	[c]
Big Kamishak River	5.0	---	---	---	5.0	---	1.0	---	---	---	[c]
Little Kamishak River	2.2	---	0.1	1.6	2.0	---	0.5	---	---	0.9	[c]
Amakdedori Creek	6.3	0.2	---	1.0	6.0	0.4	1.0	2.0	0.1	0.7	3.2
Bruin Bay River	75.0	4.0	110.0	3.5	1,200.0	24.0	29.0	350.0	19.0	74.9	3.2
Sunday Creek	12.0	4.7	12.0	11.4	109.0	29.7	18.0	103.0	2.8	20.9	2.9
Brown's Peak 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-

Location	YEAR										
	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	90.9
China Poot Creek	1.6	5.7	2.0	2.8	2.8	5.7	0.7	7.5	6.6	6.5	6.7
Tutka Lagoon Creek	27.4	14.5	15.9	3.5	45.0	17.5	27.9	19.0	4.5	15.9	30.9
Barabara Creek	11.9	4.5	10.8	2.4	12.5	2.8	3.9	5.6	2.3	3.2	5.1
Seldovia River	43.4	24.4	48.5	17.8	39.1	31.5	12.2	53.5	12.3	26.9	35.1
Port Graham River	12.8	7.6	10.0	7.0	12.5	12.6	9.7	15.6	10.3	58.5	14.9
Dogfish Lagoon	0.3	1.3	13.3	2.3	20.0	6.7	12.4	11.1	2.0	1.3	5.2
Port Chatham Creeks	22.2	3.3	14.0	8.6	42.7	22.2	10.7	16.7	17.9	18.1	35.0
Windy Right Creek	13.6	2.2	11.4	9.9	13.9	19.5	5.2	23.0	10.3	14.4	23.3
Windy Left Creek	25.9	3.0	31.6	2.5	64.6	12.9	24.0	20.1	61.8	28.9	82.8
Rocky River	70.0	17.1	56.3	80.1	48.1	165.0	17.2	131.6	73.0	112.5	287.4
Port Dick Creek[a]	37.0	18.1	6.6	23.2	36.9	59.1	8.5	124.4[d]	44.7	108.0	107.7
Island Creek	12.1	28.3	10.6	40.1	71.1	83.6	8.6	70.8	81.8	44.1	118.6
South Nuka Island Creek	34.3	1.4	6.2	6.8	9.3	14.0	2.4	13.6	20.7	14.8	41.4
Desire Lake Creek	19.3	---	---	---	6.2	6.2	6.8	21.1	67.5	78.4	34.8
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[b]	34.8[b]	38.6[b]	8.0[b]	6.3[b]	13.2[b]	7.8[b]	35.6[b]	3.0[b]	2.7[b]	4.4[b]
Salmon Creek	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
Thumb Cove	5.5	10.8	9.3	9.5	4.7	21.0	9.2	8.5	3.1	3.7	5.1
Humpy Cove	0.9	2.2	1.8	3.4	2.2	1.2	4.0	1.7	0.3	1.8	2.6
Tonsina Creek	3.2	7.0	0.5	0.4	0.4	2.3	0.5	6.6	2.8	6.9	5.2
Big Kamishak River	---	---	---	16.7	---	2.0	5.7	14.9	---	---	---
Little Kamishak River	---	---	---	---	---	---	4.2	13.0	---	3.4	---
Amakdedori 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	176.7	18.5	1,598.5	138.7
Sunday Creek	57.8	3.1	95.9	2.8	52.5	24.0	5.3	39.8	26.2	81.9	346.7
Brown's Peak Creek	41.6	1.3	96.7	2.4	42.3	7.9	2.6	9.8	19.2	27.5	285.0
Totals	574.8	212.1	882.8	286.7	775.8	683.7	205.9	865.0	527.6	2,299.0	1,707.5

-continued-

Location	YEAR					1960–2007 Average	Sustainable Escapement Goal[e]
	2004	2005	2006	2007	2008		
Humpy Creek	28.9	93.8	48.4	54.0	90.9	47.4	21.65–85.55
China Poot Creek	3.3	9.2	7.2	6.2	5.1	6.3	2.9–8.2
Tutka Lagoon Creek	17.8	133.6	25.8	5.7	14.1	18.1	11.6–18.9
Barabara Creek	5.4	14.4	3.6	25.2	16.6	5.4	1.9–9.0
Seldovia River	56.8	98.6	70.0	69.4	53.5	36.1	19.05–38.95
Port Graham River	44.0	69.1	31.2	25.6	24.7	17.8	7.0–19.85
Dogfish Lagoon	3.2	22.3	8.0	4.1	8.0	4.7	---
Port Chatham Creeks	26.4	44.4	24.2	14.5	16.4	14.3	7.8–21.0
Windy Right Creek	12.0	22.2	17.1	18.3	12.5	8.5	3.35–10.95
Windy Left Creek	23.3	72.0	65.2	37.3	64.1	20.8	3.65–29.95
Rocky River	53.8	198.7	67.8	190.0	90.9	50.9	9.35–54.25
Port Dick Creek[a]	13.3	122.2	51.5	44.2	34.2	45.3	18.55–58.3
Island Creek	33.6	26.4	107.7	87.2	49.7	24.1	7.2–28.3
South Nuka Island Creek	6.4	11.2	5.1	6.6	12.3	10.8	2.7–14.25
Desire Lake Creek	24.3	46.0	74.8	11.8	9.5	19.4	1.9–20.2
James Lagoon	---	---	---	---	---	4.2	---
Aialik Lagoon	---	0.8	---	---	---	3.6	---
Bear Creek	1.2[b]	34.5[b]	9.0[b]	---	---	9.1	2.95–8.45
Salmon Creek	[b]	[b]	[b]	---	---	7.3	1.9–13.25
Thumb Cove	4.3	8.7	5.2	---	---	5.6	2.35–8.85
Humpy Cove	1.0	14.6	1.9	---	---	2.4	0.9–3.2
Tonsina Creek	3.5	9.9	6.5	---	---	4.9	0.5–5.85
Big Kamishak River	---	---	---	---	---	21.3	---
Little Kamishak River	3.0	---	77.0	5.1	34.3	12.8	---
Amakdedori Creek	---	---	---	---	---	7.7	---
Bruin Bay River	66.5	98.3	515.1	350.4	150.7	155.5	18.65–155.75
Sunday Creek	31.5	116.2	70.0	394.8	20.4	42.3	4.85–28.85
Brown's Peak Creek	18.1	61.0	35.7	249.4	17.4	30.2	2.45–18.8
Totals	481.6	1,328.1	1,328.1	1,599.8	725.3	564.1	153.15–660.65

Note: 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.

[a] Escapement figures for Port Dick Creek include escapements for High Tech and Well Flagged Creeks beginning in 1998.

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

[c] Insufficient data for escapement estimates.

[d] 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).

[e] New sustainable escapement goals (SEG's) implemented for the first time beginning with the 2002 season.

Appendix A26.–Estimated chum salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1988–2008.

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
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	[a]	[a]	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
2003	2.9	13.3	5.5	5.6	16.3	16.4	22.2	23.3	13.1	30.4	72.8	18.7	240.5
2004	1.2	3.6	17.2	8.6	15.1	57.9	45.3	11.2	15.9	16.0	16.3	22.0	230.3
2005	0.7	2.7	6.1	4.8	20.7	25.7	12.1	17.4	21.2	12.2	17.9	16.5	158.0
2006	2.2	5.4	11.2	2.8	5.6	58.2	42.9	28.2	7.0	15.7	13.2	15.6	208.1
2007	1.9	4.9	1.6	2.8	3.1	14.8	15.6	13.6	3.1	20.9	12.5	5.3	100.0
2008	1.8	6.2	3.8	11.8	12.9	4.5	21.3	9.8	17.5	6.5	11.6	20.0	130.0
20-Year Avg.	3.6	7.3	3.9	4.3	9.3	21.9	16.4	19.4	10.1	13.9	16.5	14.7	141.3
1988–1997 Avg.	2.6	4.5	1.5	4.0	7.1	11.6	8.5	21.1	7.6	6.1	10.1	10.8	95.5
1998–2007 Avg.	4.6	10.2	6.0	4.7	11.4	29.1	22.7	17.8	12.5	21.7	22.9	18.6	182.2
Sustainable Esc. Goal[b]	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	24.0–48.0	6.0 –10.25	6.05–9.85	5.75–12.0	7.85– 13.7	69.6 –158.75

Note: 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.

[a] Insufficient data to generate escapement estimates.

[b] New sustainable escapement goals (SEG's) implemented for the first time beginning with the 2002 season, except for McNeil River, which was revised in 2007 and implemented beginning with the 2008 season.

Appendix A27.–Personal use/subsistence set gillnet salmon catches, in numbers of fish by species, and effort, Southern District (excluding the Port Graham/Nanwalek subsistence fishery and the Seldovia subsistence fishery), Lower Cook Inlet, 1969–2008.

Year	Permits Issued	Permits Returned		Permits		Harvest by Species						
		Number	%	Did Fish	Not Fished	Chinook	Sockeye	Coho	Pink	Chum	Other	Total
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[a]	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
2003	104	96	92.3	72	24	17	57	1,071	170	9	0	1,324
2004	91	83	91.2	65	18	7	56	1,554	172	16	0	1,805
2005	108	96	88.9	69	27	8	57	833	296	13	0	1,207
2006	89	82	92.1	62	20	15	41	1,295	221	5	0	1,577
2007	141	133	94.3	95	38	10	113	1,431	641	34	0	2,229
2008	146	142	97.3	107	35	2	92	1,844	687	14	0	2,639
69–07 Avg.	266	249	93.5	175	74	47	58	2,721	625	38	21	3,512
98–07 Avg.	140	131	94.1	97	34	72	55	1,461	254	12	0	1,854

Note: Figures after 1991 include information from both returned permits and inseason oral reports.

[a] Steelhead trout *Oncorhynchus mykiss*.

Appendix A28.–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, 1988–2008.

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.	%	
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
2003	74	71.2	9	8.7	2	1.9	11	10.6	4	3.8	0	0.0	4	3.8	0	0.0	104
2004	70	76.9	9	9.9	2	2.2	7	7.7	2	2.2	0	0.0	1	1.1	0	0.0	91
2005	80	74.1	12	11.1	2	1.9	8	7.4	1	0.9	0	0.0	3	2.8	2	1.9	108
2006	74	83.1	6	6.7	1	1.1	4	4.5	0	0.0	0	0.0	2	2.2	2	2.2	89
2007	116	82.3	11	7.8	3	2.1	7	5.0	0	0.0	0	0.0	1	0.7	3	2.1	141
2008	121	82.9	3	2.1	2	1.4	13	8.9	2	1.4	0	0.0	3	2.1	2	1.4	146
20-Year Avg.	200	77.9	18	7.0	4	1.5	25	9.8	4	1.5	0	0.0	3	1.2	3	1.1	257
1988–1997 Avg.	295	79.0	25	6.5	5	1.4	36	9.7	5	1.3	0	0.0	4	1.0	4	1.1	374
1998–2007 Avg.	105	75.2	12	8.3	2	1.5	14	10.0	3	2.2	0	0.0	3	1.9	1	1.0	139

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

Appendix A29.–Subsistence and sport salmon catch in numbers of fish by species for the village of Port Graham, Lower Cook Inlet, 1988–2008.

Year	Salmon Harvest						Dolly Varden	Households Reporting
	Chinook	Sockeye	Coho	Pink	Chum	Total		
1988	96	411	459	542	75	1,583	18	27
1989	51	94	460	640	58	1,303	159	20
1990	211	524	803	1,013	102	2,653	666	32
1991	155	58	541	1,494	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[a]
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	57	20	32	389		15
2002	250	417	90	150	74	981		23
2003	321	1,991	425	266	150	3,153	87	16
2004	283	572	514	363	130	1,862		50[b]
2005	265	192	51	349	52	909		46
2006	192	31	1	26	24	274	207	14
2007	92	552	0	74	63	781	12	24
2008[c]	77	550	0	36	22	685	37	18
1988–2007 Average	220	418	346	505	172	1,661	235	31

Source: ADF&G, Division of Subsistence, data files; gear types include set gillnet, rod/reel, and handline.

[a] Salmon totals and permits include 3 reports from non-residents of Port Graham Village.
[b] ADF&G Division of Subsistence estimate.
[c] Harvest reports for 2008 incomplete.

Appendix A30.–Subsistence and sport salmon catch in numbers of fish by species for the village of Nanwalek (formerly English Bay), Lower Cook Inlet, 1988–2008.

Year	Salmon Harvest						Dolly Varden	Households Reporting
	Chinook	Sockeye	Coho	Pink	Chum	Total		
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	1666	122	3,373	577	25
1994	27	570	511	1113	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	1,238	1,434	196	3,806		34
2002	96	10,203	967	1,681	414	13,441	230	56
2003	144	3,221	513	1,306	381	5,565	102	35
2004	52	2,968	842	1,277	95	5,234	291	24
2005	27	1,934	1,142	1,259	128	4,490	605	23
2006	111	2,215	1,179	2,038	207	5,750	679	39
2007[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2008	46	3,615	1,345	2,646	76	7,728	315	53
1988–2007 Average	49	1,818	763	1,243	167	4,040	583	28

Source: ADF&G, Division of Subsistence, data files; gear types include set gillnet, rod/reel, and handline.

[a] Harvest figures for 2007 unavailable.

Appendix A31.–Salmon set gillnet catch in numbers of fish by species and permit/effort information for the Seldovia area subsistence fishery, Lower Cook Inlet, 1996–2008.

	Number of Permits				Number of Salmon Harvested					
YEAR	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
2003	19	13	10	3	67	210	0	1	54	332
2004	13	10	9	1	91	63	0	0	15	169
2005	15	13	4	9	46	0	0	0	0	46
2006	15	12	6	6	12	10	0	1	0	23
2007	15	12	5	7	19	27	0	0	0	46
2008	10	8	3	5	3	15	0	0	0	18
Average	19	17	10	7	82	87	0	1	10	179
Late Season: August[b]										
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
2003	1	1	1	0	0	10	1	12	1	24
2004	1	1	1	0	0	0	4	0	0	4
2005	3	2	2	0	0	70	13	93	12	188
2006	2	2	1	1	0	0	0	21	0	21
2007	4	4	3	1	0	24	9	80	27	140
2008	2	2	2	0	0	16	41	65	5	127
Average	2	2	1	1	0	13	8	30	5	56

[a] Early season dates in 1996 and 1997 were from April 1–May 20; subsequent years were from April 1–May 30.

[b] Late season dates are restricted to the first two weekends in August.

Appendix A32.–ADF&G, CIAA, CRRC, and/or ASLC salmon stocking projects and releases of salmon fry, fingerling, and smolt, in millions of fish, Lower Cook Inlet, 1988–2008 (currently active projects highlighted in gray).

	Juvenile Sockeye Salmon															
YEAR	Leisure Lake	Hazel Lake	Tutka Lagoon	English Bay Lakes	Port Graham Hatchery	Chenik Lake	Paint River Lakes			Kirschner Lake	Bruin Lake	Ursus Lake	Bear Lake	Grouse Lake	Resur-rection Bay	Total Sockeye
							Upper	Lower	Elusivak							
1988	2.100	0.783	---	---	---	2.600	1.100	0.552	0.521	0.521	---	---	---	---	---	8.177
1989	2.000	1.000	---	---	---	3.500	1.000	0.500	0.500	0.250	---	---	2.200	---	---	10.950
1990	1.750	1.250	---	0.350	---	3.250	1.000	0.500	0.500	0.250	0.500	---	2.400	---	---	11.750
1991	2.000	1.300	---	0.241	---	2.200	0.500	0.250	---	0.250	0.250	---	1.619	---	---	8.610
1992	2.000	1.000	---	0.290	---	2.750	0.500	0.250	---	0.250	0.250	0.250	2.370	---	---	9.910
1993	2.000	1.000	---	0.581	---	1.400	0.500	0.250	---	0.250	0.250	0.250	1.813	---	---	8.294
1994	0	0	---	0.800	---	0	0	0	---	0.300	0	0	0.170	0.570	---	1.327
1995	1.632	1.061	---	0	---	1.129	0.337	0.251	---	0.251	0.251	0.252	0.360	0.793	---	6.287
1996	1.490	1.030	---	0.155	---	0.951	0.500	0	---	0.250	0.250	0.250	0.864	0	---	5.657
1997	2.000	1.000	---	0.199	---	0	---	---	---	0.250	---	---	0.788	1.966	---	6.203
1998	2.005	1.302	---	0	---	---	---	---	---	0.250	---	---	0.265	1.288	---	5.610
1999	0.265	0.453	---	1.149[a]	---	---	---	---	---	0.173	---	---	1.380	0	---	3.420
2000	1.708	1.248	---	1.006[b]	---	---	---	---	---	0.248	---	---	1.794	---	---	6.004
2001	0.089	0	---	0	---	---	---	---	---	0	---	---	0.145	---	---	0.234
2002	2.249	1.280	---	0	---	---	0.500[c]	---	---	0.302	---	---	2.407	---	---	6.738
2003	2.240	1.547	---	0.695	---	---	---	---	---	0.298	---	---	1.801	---	---	6.581
2004	2.002	0.351	---	0.050	0.110	---	---	---	---	0.251	---	---	3.012	---	---	5.776
2005	2.252	1.558	0.096	0.203	0	---	---	---	---	0.316	---	---	3.422	---	---	7.846
2006	0.680	0	0.260	0	0.455	---	---	---	---	0	---	---	3.393	---	---	4.750
2007	2.315	1.411	0.144	0	0	---	---	---	---	0.253	---	---	3.056	---	---	7.179
2008	2.053	1.161	0.483	0.246[c]	0	---	---	---	---	0.300	---	---	2.400	---	1.600	8.240
’88–07 Average	1.632	0.924	0.167	0.318	0.133	1.778	0.594	0.284	0.507	0.245	0.250	0.200	1.744	0.762	1.600	6.590
’98–07 Average	1.567	0.907	0.167	0.310	0.133		0.500			0.208			2.067	0.674	1.600	5.414

-continued-

YEAR	Juvenile Pink Salmon					Juvenile Chinook Salmon						Juvenile Coho Salmon					
	Tutka Bay Hatchery	Halibut Cove Lagoon	Homer Spit	Port Graham Hatchery	Total Pink Salmon	Seldovia Bay	Halibut Cove Lagoon	Homer Spit		Resurrection Bay[d]	Total Chinook	Caribou Lake	Seldovia Bay[e]	Homer Spit		Resurrection Bay[d]	Total Coho
								Early	Late					Early	Late		
1988	12.000	3.000	0.300	---	15.300	0.084	0.094	0.104	---	0.205	0.487	0.150	0.045	---	0.060	0.530	0.785
1989	30.100	6.000	0.332	---	36.432	0.108	0.115	0.104	---	0.307	0.634	0.182	0.080	---	0.143	0.339	0.744
1990	23.600	6.000	0.303	---	29.903	0.099	0.112	0.212	---	0.329	0.752	0.180	0.050	---	0.123	1.540	1.893
1991	23.600	6.000	0.303	0.255	30.158	0.091	0.092	0.191	---	0.466	0.840	0.180	0.050	---	0.100	0.599	0.929
1992	23.600	6.000	0.300	1.800	31.700	0.113	0.117	0.226	0.126	0.370	0.952	0.150	---	---	0.100	0.265	0.515
1993	43.000	6.000	---	0	49.000	0.107	0.100	0.212	0.100	0.290	0.818	0.150	---	---	0.116	0.843	1.109
1994	61.000	---	---	1.295	62.295	0.106	0.107	0.192	0.157	0.270	0.832	0.064	---	---	0.156	0.560	0.780
1995	63.000	---	---	0.358	63.358	0.113	0.036	0.228	0.124	0.315	0.816	---	---	---	0.110	0.701	0.811
1996	105.000	---	---	6.470	111.470	0.109	0.103	0.101	0.121	0.415	0.849	---	---	---	0.150	0.676	0.826
1997	89.000	---	---	0.910	89.910	0.092	0.078	0.216	0.105	0.521	1.012	---	---	---	0.120	0.807	0.927
1998	90.000	---	---	0	90.000	0.079	0.073	0.137	0.120	0.307	0.716	---	---	---	0.148	0.726	0.874
1999	60.132	---	---	4.617	64.749	0.074	0.079	0.163	0.059	0.174	0.549	---	---	---	0.137	0.529	0.666
2000	65.120	---	---	1.144	66.264	0.068	0.083	0.220	---	0.322	0.693	---	---	---	0.122	0.618	0.740
2001	99.336	---	---	27.299	126.635	0.103	0.107	0.208	---	0.228	0.646	---	---	0.125	0.100	0.681	0.906
2002	100.000	---	---	6.604	106.604	0.083	0.106	0.190	---	0.194	0.573	---	---	0.096	0.121	0.770	0.987
2003	67.967	---	---	57.158	125.125	0.108	0.107	0.206	---	0.220	0.641	---	---	0.223	0.103	0.903	1.229
2004	47.964	---	---	36.283	84.247	0.089	0.104	0.169	---	0.216	0.578	---	---	0.130	0.113	0.955	1.198
2005	---	---	---	26.568	26.568	0.115	0.113	0.221	---	0.312	0.761	---	---	0.126	0.091	1.153	1.370
2006	---	---	---	13.864	13.864	0.114	0.118	0.224	---	0.303	0.759	---	0.114	0.125	0.324	0.971	1.534
2007	---	---	---	[f]	[f]	0.054	0.055	0.227	---	0.118	0.454	---	0.097	0.127	0.101	1.022	1.347
2008	---	---	---	0	0	0.054	0.060	0.227	---	0.142	0.483	---	0.088	0.125	0.095	0.735	1.043
'88–07 Average	59.083	5.500	0.308	11.539	64.399	0.095	0.095	0.188	0.114	0.295	0.718	0.151	0.073	0.136	0.127	0.759	1.008
'98–07 Average	75.788			19.282	78.228	0.089	0.095	0.197	0.090	0.239	0.637		0.106	0.136	0.136	0.833	1.085

[a] Sockeye release at English Bay consisted of 918,000 fry released in November 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 ("pre-smolt") release.
[d] Chinook and coho salmon releases in Resurrection Bay are each a cumulative total for all locations.
[e] Coho releases in Seldovia Bay were from Seldovia Lake between 1985 and 1991 and from Seldovia (Fish Creek) Reservoir beginning in 2006.
[f] Pink salmon were released volitionally from Port Graham Hatchery upon emergence in 2007 but were not enumerated.

APPENDIX B:
HISTORICAL HERRING TABLES

Appendix B1.–Catch of Pacific herring Clupea pallasi in short tons and effort in number of permits by district in the commercial sac roe seine fishery, Lower Cook Inlet, 1988–2008.

	Southern		Kamishak		Eastern		Outer		Total	
Year	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits
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[a]	45[a]	---	---	---	---	1,746	45
1998	---	---	331[a]	20[a]	---	---	---	---	331	20
1999	---	---	100[b]	1[b]	---	---	---	---	100	1
2000	---	---	---	---	---	---	---	---	---	---
2001	---	---	---	---	---	---	---	---	---	---
2002	---	---	---	---	---	---	---	---	---	---
2003	---	---	---	---	---	---	---	---	---	---
2004	---	---	---	---	---	---	---	---	---	---
2005	---	---	---	---	---	---	---	---	---	---
2006	---	---	---	---	---	---	---	---	---	---
2007	---	---	---	---	---	---	---	---	---	---
2008	---	---	---	---	---	---	---	---	---	---
20-Year Average	170	6	2,597	54	0	0	0	0	2,611	54
1988–1997 Average	170	6	3,073	63	0	0	0	0	3,090	63
1998–2007 Average	---	---	216	11	---	---	---	---	216	11

Source: ADF&G fish ticket database *Unpublished*. Commercial Fisheries Entry Commission License Statistics, 1974-2008, Juneau.

[a] Includes both commercial harvest and ADF&G test fish harvest.
[b] Commercial fishery closed, ADF&G test fish harvest only.

Appendix B2.–Preseason estimates of biomass and projected commercial sac roe seine harvests, and actual harvests, for Pacific herring Clupea pallasi in short tons, average roe recovery, numbers of permits making landings, and exvessel value in millions of dollars, Kamishak Bay District, Lower Cook Inlet, 1988–2008.

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]				
1988	[c]	5,190	5,548	11.1	74	9.30
1989	37,785	5,000	4,801	9.5	74	3.50[d]
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	[e]	---	- CLOSED[f] -	---	---	---
2000	6,330	---	- CLOSED -	---	---	---
2001	11,352	---	- CLOSED -	---	---	---
2002	9,020	---	- CLOSED -	---	---	---
2003	4,771	---	- CLOSED -	---	---	---
2004	3,554	---	- CLOSED -	---	---	---
2005	3,058	---	- CLOSED -	---	---	---
2006	2,650	---	- CLOSED -	---	---	---
2007	2,286	---	- CLOSED -	---	---	---
2008	2,069	---	- CLOSED -	---	---	---
1988-2007 Average	15,849	2,904	2,824	10.1	59	2.86

[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] Includes retroactive adjustment.
[e] 1999 preseason biomass calculated as a range of 6,000 to 13,000 st.
[f] ADF&G test fishing harvested 100 st.

Appendix B3.–Summary of herring sac roe seine fishery openings and commercial harvests in the Kamishak Bay District of Lower Cook Inlet, 1969–2008.

Year	Dates of Openings	Total Hours Open	Harvest (short tons)	Catch Rate (short tons/ hour open)	Number of Permits w/Landings
1969–1972	No closed periods				
1973	Same		243		8
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
1980–1984	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	1,992	1,992.0	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]	---
1999–2008	CLOSED	0	100[e]		

[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 4 vessels fished in a given area.

[d] ADF&G test fish harvest.

[e] ADF&G test fish harvest in 1999.

Appendix B4.–Estimates of Pacific herring Clupea pallasi 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, 1988–2008.

Year	Aerial Survey Total Biomass Estimate (st)[a]	ASA Model Total Biomass Estimate (st)[b,c]	Actual Commercial Harvest (st)	Estimated Exploitation Rate (%)[b]
1988	29,548	21,526	5,548	30.7
1989	35,701	20,163	4,801	28.3
1990	19,664	17,872	2,264	14.7
1991	18,163[d]	18,228	1,992	12.7
1992	24,077	16,071	2,282	16.5
1993	32,439	13,982	3,570	29.1
1994	25,344[d]	11,304	2,167	21.4
1995	25,115	8,841	3,378	41.5
1996	27,640	6,047	2,984	53.9
1997	---	4,209	1,746	45.2
1998	---	3,916	331	8.7
1999	---	3,921	- CLOSED[e] -	---
2000	---	3,802	- CLOSED -	---
2001	---	3,461	- CLOSED -	---
2002	---	2,892	- CLOSED -	---
2003	---	2,555	- CLOSED -	---
2004	---	2,063	- CLOSED -	---
2005	---	1,949	- CLOSED -	---
2006	---	1,775	- CLOSED -	---
2007	---	1,864	- CLOSED -	---
2008	---	[f]	- CLOSED -	---
1988–2007 Average	26,410	8,322	2,824	17.8

Source: Otis 2004; Otis and Cope 2004; Yuen 1994.

[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 supersede 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 preseason estimate of abundance, adjusted to match observed age composition samples in the commercial catch.

[e] ADF&G test fishing harvested 100 st.

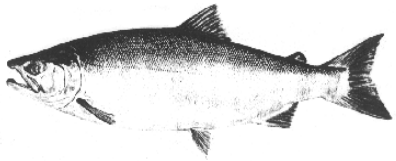
[f] No estimate of abundance generated in 2008 due to lack of samples.

APPENDIX C:
2008 LOWER COOK INLET SALMON OUTLOOK AND MANAGEMENT STRATEGY

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE

Denby S. Lloyd, Commissioner

John Hilsinger, Director



Contact:
Lee Hammarstrom, Area Finfish Management Biologist
Ethan Ford, Fishery Biologist I
Phone: (907) 235-8191
Fax: (907) 235-2448

Homer Area Office
3298 Douglas Place
Homer, AK 99603
Date Issued: 4/28/08
Time: 9:00 a.m.

2008 LOWER COOK INLET COMMERCIAL SALMON FISHERY OUTLOOK AND MANAGEMENT STRATEGY

In anticipation of the upcoming commercial salmon season, the Alaska Department of Fish and Game has completed its annual salmon forecast and outlook for the Lower Cook Inlet (LCI) management area. This news release is intended to provide basic information for fishermen and processors as they prepare for the 2008 season. Salmon management strategies in LCI are designed to insure continued health of the resource through adequate spawning escapements while providing for an orderly harvest of identifiable surpluses.

Because salmon enhancement plays a major role in LCI fisheries, hatchery cost recovery has become an integral component of the management strategy. Cost recovery revenue goals for the various hatchery Special Harvest Areas (SHA's) have now been (or soon will be) finalized, and management schemes to attain them will be published in the Annual Management Plans (AMP's) for Trail Lakes and Port Graham Hatcheries. Rough outlines of the expected management strategies for the SHA's can be found under ***GENERAL INFORMATION*** beginning on page 3.

The overall 2008 LCI commercial all-species salmon harvest, originally predicted to total about 1.25 million fish, was revised in late winter to a new total of over 1.33 million fish. The revised figure, based on an increase in the forecast of the enhanced sockeye salmon component, is approximately twice the actual harvest taken during 2007. However, it should be noted that this figure represents only the potential harvestable surplus, with no consideration given to market conditions, tender availability, and other similar influences on fishing activity. Enhancement efforts and resulting production are expected to contribute about 80% of the revised area-wide commercial sockeye salmon harvests this season, while no hatchery pink production is projected to contribute to LCI harvests. Hatchery cost recovery is anticipated to account for a significant portion of the sockeye salmon harvests. The following table summarizes the projected harvest by species:

- continued -

	Natural	Enhanced	Total
CHINOOK	[a]	[a]	1,250[a]
SOCKEYE	88,000[b]	284,700[c, d]	372,700[a, d]
COHO	[a]	[a]	13,850[a]
PINK	825,800	0[c]	825,800
CHUM	38,600[b]	0	38,600
Total	952,400	287,700[d]	1,252,200[d]

[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.
[d] Revised sockeye totals are: 364,400 (enhanced) and 452,400 (total); revised all-species total is 1,331,900 – see footnote "a" in table below.

The preceding numbers include the following natural and enhanced components:

ENHANCED RUNS

SOCKEYE SALMON		PINK SALMON	
Kirschner Lake	26,900[a]	Port Graham Hatchery	0[b]
Leisure Lake	76,500[a]		
Hazel Lake	53,000[a]		
Tutka Lagoon	21,700		
Bear Lake	106,600[a]		
English Bay Lakes	0[b]		
TOTAL	284,700[a]		
Port Graham Hatchery	*13,700*[a]		

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NATURAL RUNS

SOCKEYE SALMON[c]		PINK SALMON	
Southern District[d]	41,500	Southern District	79,300
Outer District	21,200	Outer District	474,500
Eastern District	6,700	Eastern District	12,100
Kamishak Bay District	18,600	Kamishak Bay District	259,900
TOTAL	88,000	TOTAL	825,800

[a] The figures for Kirschner, Leisure, Hazel, and Bear Lakes were subsequently revised by CIAA to new forecasted harvest totals of 32,000; 93,000; 56,000; and 148,000 sockeye salmon, respectively; the figure for Port Graham Hatchery was generated AFTER release of the original preseason forecast; as a result, the revised LCI enhanced-only sockeye TOTAL is 364,400.
[b] Low level returns are not expected to produce any commercial harvest.
[c] Numbers for natural sockeye harvests are not forecasts but simply represent 1980-2007 average commercial catches.
[d] Incidental harvest of fish not originating from the Southern District.

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SUMMARY BY SPECIES

Sockeye Salmon

The original forecasted 2008 LCI sockeye salmon harvest of 372,700 fish is only marginally greater than the 2007 catch of 366,200 but is about 25% greater than the most recent 10-year average catch of 298,000. However, it should be noted that CIAA subsequently revised their sockeye salmon forecast estimates at four different release sites, resulting in a new projected harvest estimate of over 452,000 sockeye salmon for the LCI area. The combined harvests (including cost recovery) of adult runs to enhancement projects at Leisure and Hazel Lakes in the Southern District are now expected to total approximately 149,000 sockeye salmon (originally 130,000), or about one-third of the revised area-wide projected sockeye harvest. At English Bay Lakes, where returns have contributed to Southern District commercial harvests in some recent years, no commercial sockeye harvest is expected due to another weak return, but returns to this system have been stronger than anticipated during the last two seasons. At Bear Lake in Resurrection Bay of the Eastern District, CIAA has forecasted a harvest of about 148,000 sockeye salmon (originally 107,000). The management guidelines utilized last season are once again in place for the Resurrection Bay sockeye salmon fishery in 2008, with highlights found under *GENERAL INFORMATION*. Kirschner Lake on the west side of Cook Inlet in the Kamishak Bay District, another enhanced sockeye system, is expected to produce an adult return approaching 32,000 fish (originally 27,000). After five successive seasons of relatively strong runs, as well as targeted commercial harvests during the past four years, the sockeye run to Chenik Lake in the Kamishak Bay District is questionable but could once again produce harvest opportunities in 2008. Other lake systems in the Outer, Eastern, and Kamishak Bay Districts, plus incidental harvest of fish not originating from the Southern District, in combination could provide up to 88,000 sockeye salmon from natural production.

Pink Salmon

Harvestable surpluses of pink salmon in LCI during 2008 are anticipated to total almost 826,000 fish, and for the first time in many seasons the entire catch should be a result of only natural production. Natural pink salmon spawning escapement levels into most major systems were excellent in 2006, contributing to a harvest projection of 826,000 naturally produced pink salmon throughout the entire LCI management area. Outer District systems are expected to have the greatest potential for harvest with a combined total of around 475,000 pink salmon, returning primarily to Port Dick, while systems at Rocky Bay, Windy Bay, and Port Chatham hold potential for lesser amounts. Bruin Bay, Ursus Cove, and Rocky Cove in the Kamishak Bay District are also predicted to contribute reasonable harvest potential, with a cumulative projected total of about 260,000 pink salmon in that district. In the Southern District, surpluses could potentially occur at Humpy Creek, Seldovia Bay, and Port Graham. At Port Graham Hatchery in the Southern District, the pink return is projected to be very weak and no harvest is expected this season. However, if the return is stronger than expected, all of the fish returning to this facility will likely be used as broodstock and/or sold to recoup operating expenses.

Chum Salmon

Based only on average catches since 1989, the total LCI commercial chum salmon harvest could be expected to total as much as 39,000 fish during 2008. However, chum salmon returns to LCI in recent years prior to 2007 were strong, and the resurgence of commercial catches during those seasons resulted in the highest harvest totals for this species since 1988. Such encouraging signs suggest that the potential for a chum harvest could be greater than the forecast in 2008. This season's chum harvest will again consist exclusively of natural production since chum salmon enhancement has been discontinued in LCI.

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GENERAL INFORMATION

1) In 2004, the Alaska Board of Fisheries adopted new management guidelines directing ADF&G to manage waters of Resurrection Bay to achieve an equal harvest allocation between commercial seiners and Cook Inlet Aquaculture Association (CIAA). As a result, waters of Resurrection Bay north of the latitude of Caines Head will initially open to commercial salmon seining on Monday, May 26, on a schedule of five days per week, from 6:00 a.m. Monday until 10:00 p.m. Friday. Commercial seine catches, as well as escapement at the Bear Creek weir, will be continuously monitored to determine if and when a hatchery opening in marine waters is justified. Weekly fishing periods, and potential hatchery openings in marine waters of Resurrection Bay, will be adjusted inseason, with the goal of achieving an equal harvest total for CIAA and commercial seiners. Experience gained from the previous three seasons demonstrated that the times and durations of openings in Resurrection Bay cannot be predicted with any certainty and are therefore expected to be highly variable based on catch and effort for each group. Additionally, management considerations must take into account the Bear Lake desired inriver return goal of 12,000 sockeye salmon. The new forecasted harvestable surplus for Bear Lake in 2008 is approximately 148,000 sockeye salmon (originally 107,000). Accurate and timely catch reporting and escapement counts will be critical in order to achieve the intent of the regulations, and both seiners and processors are advised that a lack of this information could result in overly restrictive management actions. Closed waters during the open season will be the same as during the past nine seasons for seine groups fishing in marine waters and will include those 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. Seiners participating in the Resurrection Bay sockeye fishery are advised to frequently check the LCI web page, call the Homer office commercial fishery recording, or otherwise take the necessary steps to remain informed of the status of fishery openings and closures. Seiners are also reminded that, by regulation, Chinook and coho salmon may not be taken in waters of Resurrection Bay.

2) The Kamishak Bay District commercial salmon seine season opens by regulation on Sunday, June 1. At that time, all areas with the exception of the Chenik Subdistrict will open by emergency order on a fishing schedule of seven days per week. The hatchery Special Harvest Area (SHA) at Kirschner Lake will close to commercial seining and remain open only to fishing for hatchery cost recovery by authorized agents of Cook Inlet Aquaculture Association (CIAA) beginning on June 16. This SHA normally remains closed only until the established revenue goal is achieved, but this season CIAA expects to require the entire projected return (32,000 sockeye salmon) for cost recovery based on anticipated prices. However, should the return prove stronger than forecasted, the Kirschner SHA will be closed to CIAA and opened to common property seining upon attainment of the revenue goal. At Kirschner Lake, no escapement is necessary and all returning fish will be available for harvest. Additional and more detailed information concerning hatchery cost recovery and SHA management can be found in the 2008 Trail Lakes Hatchery Annual Management Plan (AMP), which should be available prior to the fishing season.

   Fishermen are advised that fishery openings in Chenik Subdistrict will be based upon observed inseason sockeye salmon run strength and estimated escapement. Similar to the last six seasons, the Paint River Subdistrict will open to fishing on June 1 and likely remain open for the entire month of June. Beginning at the end of June or first of July, both the McNeil River and Paint River Subdistricts will be closed in order to afford maximum protection to chum salmon returning to McNeil River and, potentially, sockeye salmon returning to Chenik Lake. The seven day per week fishing schedule for open areas in the Kamishak Bay District could be restricted on relatively short notice inseason based on effort levels and escapement rates.

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In the Southern District, the combined China Poot and Hazel Lake hatchery revenue goal for sockeye salmon totals approximately $98,700 this season, and to help expedite achievement of the goal, a buffer zone outside the special harvest areas is once again expected to remain closed to all seining. Waters in China Poot Subdistrict outside of the buffer zone will open to seining by emergency order at 6:00 a.m. Monday, June 16, on a five-days-per-week basis. The China Poot and Hazel Lake SHA's will remain closed to commercial fishing and open to hatchery cost recovery harvests by CIAA until the preseason revenue goal is achieved or until the harvest termination date (if used) has lapsed. As in recent years, a Dungeness crab sanctuary at the head of China Poot Bay will remain closed to all seining for the duration of the season. Additional and more detailed information concerning hatchery cost recovery and SHA management can be found in the 2008 Trail Lakes Hatchery Annual Management Plan (AMP), which should be available prior to the fishing season.

Because operations at Tutka Bay Hatchery were suspended in 2004, no hatchery-produced pink salmon returns will occur at that location in 2008. As a result, the Department will be managing for achievement of the sustainable escapement goal (SEG) of 6,500 to 17,000 pink salmon into Tutka Creek. The management strategy to attain this objective will include the "offshore" seine restriction line that has been used in past years beginning June 16. Escapement into Tutka Creek will be monitored inseason, and if achievement of the escapement goal can be projected, the time and/or area seine restrictions in Tutka Bay Subdistrict could be liberalized to harvest identifiable surpluses of pink salmon. The adult sockeye salmon return to Tutka Lagoon, resulting from CIAA's remote release program at this location, is expected total up to 22,000 fish in 2008, all of which are expected to be used for cost recovery and broodstock testing. The CIAA sockeye salmon revenue goal for the Tutka SHA this season is $82,600.

3) Provided aerial surveys indicate adequate sockeye salmon run strengths, the Nuka Bay Subdistrict in the Outer District could open to commercial salmon seining by emergency order in late June or early July. An opening in Aialik Subdistrict, possibly including Aialik Lagoon, in the Eastern District also could be allowed in early July if the run appears strong. However, sockeye returns to the Aialik system have been marginal during the past several seasons.

   In a conservative strategy to protect adult sockeye salmon returning to English Bay Lakes until run strength can be determined this season, the Port Graham Subdistrict will not open to commercial set gillnet fishing at the beginning of June. Additionally, the subsistence set gillnet fishery in the same waters will also be closed near the end of May or the first of June. The system's SEG range is 6,000 to 13,500 sockeye, and if inseason information suggests this range will be achieved, an opening of the subsistence fishery would be considered. The staff intends to closely monitor the escapement counts at the English Bay weir to assess run strength and determine potential inseason modifications to fishing schedules in the aforementioned fisheries. Because of the questionable run strength, the availability of broodstock for the English Bay Lakes enhancement project remains unclear.

   Assuming that the commercial set gillnet fishery in Port Graham Subdistrict remains closed for the duration of the sockeye salmon return to English Bay Lakes, and given no forecasted return of pink salmon to the Port Graham Hatchery, the commercial set gillnet fishery in Port Graham Subdistrict will likely remain closed for an undetermined time after the sockeye run is over in order to protect pink salmon returning to Port Graham River until that return can be assessed. Although the Port Graham Hatchery pink salmon revenue goal has been established at $280,000 this season, very few returning pink salmon are expected to be available for harvest this season due to poor conditions surrounding the fry release in 2007. Therefore, the potential for a targeted common property set gillnet or seine fishery, or a hatchery cost recovery harvest, in waters of Port Graham Subdistrict is minimal. Specific information regarding the pink salmon return to Port Graham Hatchery can be found in the 2008 Port Graham Hatchery AMP.

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Port Graham Hatchery is also expecting an estimated 13,700 sockeye salmon to return to the facility in 2008 as a result of a smolt release in 2006. The Port Graham Hatchery sockeye salmon revenue goal for the Port Graham SHA this season is $217,500, while the broodstock goal is up to 1,500 fish. At expected prices and average weights, it is anticipated that all returning sockeye salmon will be utilized for broodstock and/or cost recovery harvest, and a common property opening to target these fish appears unlikely.

4) In the Outer District, waters of the Outer, South, and Taylor Bay Sections of Port Dick Subdistrict, or statistical reporting areas 232-06, 232-07, and 232-08, will open to commercial seining for pink salmon beginning Monday, July 14, on a schedule of two 40-hour periods per week, from Monday 6:00 a.m. until Tuesday 10:00 p.m. and from Thursday 6:00 a.m. until Friday 10:00 p.m. Modifications to areas open to seining and weekly fishing periods could occur on short notice inseason depending on run strength, amount and efficiency of the effort, and the observed escapement rates. Closed waters in Taylor Bay, Tacoma Cove, and Sunday Harbor, as defined in the Commercial Fishing Regulations 5 AAC 21.350. CLOSED WATERS (f) (3), (4) will remain in effect in this subdistrict. The projected return to Port Dick is relatively strong this season, with a harvest forecast totaling about 325,000 pink salmon.

5) Elsewhere in the Outer District, other areas will be opened to commercial seining for pink salmon by emergency order based on inseason assessment of run strengths. Areas open to seining and weekly fishing periods will be modified inseason depending on run strength, efficiency of the fleet, and the observed escapement rates. Preseason forecasts for pink salmon suggest that harvestable surpluses in the Outer District could occur in the Rocky, Windy, and Port Chatham Subdistricts, but actual openings will be determined by inseason run strength assessment.

6) Seiners should take note that waters of Windy Bay and Port Chatham Subdistricts will be open to ***subsistence set gillnet fishing*** on a weekly fishing schedule of 132 hours per week, from Thursday 10:00 p.m. until Wednesday 10:00 a.m., up until August 1 (closed to subsistence fishing after August 1). Should these waters be simultaneously opened to commercial fishing, seiners are cautioned to remain alert for subsistence set gillnet gear in order to avoid potential gear conflicts.

7) Because of a regulatory change adopted by the Alaska Board of Fisheries at their November 2004 meeting, ADF&G has been directed to open commercial set gillnetting in the Southern District by emergency order on or after June 1. As a result, commercial set gillnetting in the Halibut Cove, Tutka Bay, Barabara Creek, and Seldovia Bay Subdistricts will open by Emergency Order beginning at ***6:00 a.m. MONDAY, JUNE 2***, on the regular schedule of two 48-hour periods per week. As stated previously, commercial set gillnetting in Port Graham Subdistrict, including both the English Bay and Port Graham Sections, will remain closed at the start of the season.

8) CFEC set gillnet permit holders are reminded that they **MUST REGISTER WITH ADF&G PRIOR TO FISHING IN WATERS OF COOK INLET**. Registrations can be completed in person at ADF&G offices in Homer, Soldotna, or Anchorage. Alternatively, set gillnet registration forms for "Greater Cook Inlet", of which the Southern District is a part, are available on the ADF&G web site at: *http://www.cf.adfg.state.ak.us/region2/finfish/salmon/uci/gcireg08.pdf*. These forms may be printed out, completed, and then mailed to the Department's Homer, Soldotna, or Anchorage offices. At the time of registration, a valid CFEC permit number for the current fishing year must be known and entered onto the registration form. The permit holder need not be present at the time of registration. Mailing address for the Homer office is:

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ADF&G
Div. of Commercial Fisheries
3298 Douglas Place
Homer, AK 99603

9) Seiners are reminded that latitudes and longitudes for LCI announcements and emergency orders will be published in **DEGREES AND TENTHS OF MINUTES**. This conforms to established standards in the latest commercial salmon fishing regulations booklet.

10) The Homer ADF&G office will again be utilizing specific radio frequencies during 2008. Marine VHF channel 10 will be used to issue emergency order announcements and informational updates concerning the LCI area. In addition, the same information will be broadcast on SSB frequency 2512 kHz. Announcements are also relayed to public radio station KBBI. A 24-hour telephone recording in the Homer office may be reached by dialing (907) 235-7307 to obtain the most current information on the status of the fishery. ***This recording will be updated whenever any new information becomes available or management action affecting the LCI fishery is taken***.

For the sixth consecutive season, announcements will be published in real time at the following web site:
http://csfish.adfg.state.ak.us/newsrelease/select.php?year=2008&dist=HOM&species=400&submit=Go
Each time a new announcement is issued, it will be made available to and can be viewed (along with other fishing area announcements) at this site. Fishermen should note this Internet address as another source of LCI commercial salmon fisheries information.

For the fourth consecutive season, members of the public can view the preliminary inseason LCI catches on the internet as they become available. The web address for these catches is: *http://csfish.adfg.state.ak.us/mariner/lci/lcicatchxarea.php*. Whenever possible, the public is encouraged to frequently check this site for updated LCI catch information.

11) The Homer ADF&G staff once again emphasizes the importance of fish ticket catch reporting, especially the accuracy of the location/area of the catch. Such reporting has remained reasonably good during recent seasons, and continued cooperation from fishermen and processors is essential to effective management in LCI. Salmon management programs rely heavily on accurate and timely catch reporting in order to effect practical decisions, which ultimately benefit both the resource and the user groups. Fish ticket data are used by the staff to evaluate inseason run strength, attribute catches to various streams, evaluate enhancement projects, measure long-term production, establish and modify escapement goals, and generate forecasts.

Charts of the LCI fishing district and subdistrict boundaries, complete with a statistical numbering scheme identifying distinct bays and specific fishing areas, are available at the Homer ADF&G office. Fishermen, dock foremen, and tendermen are requested to accurately record the sub-statistical area on the fish ticket at the time of delivery, *showing where the catch actually occurred*. Additionally, including the name of the nearest bay or headland on the fish ticket will significantly improve catch records. *Please DO NOT merely record the location of the tender vessel where the catch was delivered*. If the catch from a particular delivery is from more than one area, please include each sub-statistical area on the fish ticket and provide the estimated catch from each area. If there are any questions concerning fish tickets and/or catch reporting, please do not hesitate to call the Homer ADF&G office at (907) 235-8191.

The ADF&G staff in Homer wishes to extend its appreciation to fishermen and processors for their past support and cooperation in the management of Lower Cook Inlet salmon fisheries, and we look forward to a successful season in 2008.

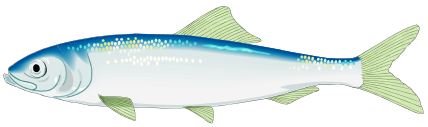
APPENDIX D:
2008 LOWER COOK INLET HERRING FISHERY INFORMATION

Appendix D1.–2008 Lower Cook Inlet herring fishery information.

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE

Denby S. Lloyd, Commissioner

John Hilsinger, Director



Contact: Lee Hammarstrom, Area Finfish Mgt. Biologist
Ted Otis, Finfish Research Project Leader
Ethan Ford, Fishery Biologist I
Lower Cook Inlet

Phone: (907) 235-8191
Fax: (907) 235-2448

Homer Area Office
3298 Douglas Place
Homer, AK 99603

2008 LCI Herring Announcement #1
Date Issued: 9/24/07
Time: 9:00 a.m.

2008 Lower Cook Inlet Herring Fishery Information

This notice provides information to fishermen and processors on the 2008 Kamishak Bay District herring season. The commercial sac-roe herring fishery in Kamishak Bay will not open in 2008 because the preliminary forecasted return is less than the established regulatory threshold of 6,000 short tons (st) necessary to consider allowing commercial exploitation. Post-season analysis of abundance and age composition data collected in 2007 is ongoing, and more detailed information regarding stock status will be available later this fall. This news is being released now as an early notification to Kamishak Bay herring fishermen and processors, and also to report Kamishak Bay herring stock status to potential participants of the upcoming Kodiak Management Area food/bait fishery. Because Kodiak and Kamishak herring stocks mix, regulations require that Kodiak food/bait harvest guidelines take into account the status of Kamishak herring stocks.

The Kamishak Bay District Herring Management Plan (KBDHMP) specifies that the spawning biomass must exceed a threshold of 6,000 st before a commercial sac roe harvest can be considered for Kamishak Bay. Preliminary estimates from the age-structured-analysis (ASA) model used to generate the annual Kamishak herring forecast show a projected biomass of around 2,069 st in 2008, continuing a declining trend observed over the past few seasons. Additionally, over 53% of the forecasted biomass by weight is predicted to be fish age-5 and younger. Since the KBDHMP stipulates that commercial harvests must target older, repeat spawners in order to protect recruit-class herring that represent the future of the population and the fishery, closure of the Kamishak fishery should allow increased opportunity for the herring stock to rebuild.

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Aerial survey coverage and observation conditions to assess the Kamishak Bay herring stock in 2007 were considered fair, with several 5- to 11-day "gaps" in coverage, or periods during which no surveys were flown due to poor weather. This coverage resulted in a cumulative total of 1,237 st of herring observed by Department surveyors in the Kamishak Bay District this season, the second lowest volume in the past 18 years. The last seven consecutive years of disappointingly low aerial survey abundance indices indicate the lack of a significant recruitment event in Kamishak Bay during any recent season. This contrasts with nearby Kodiak area stocks, which have generally experienced population growth due to strong recruitment events in recent years. One hypothesis for the lack of recruitment in Kamishak Bay originates from the relatively poor condition of the fish observed recently, characterized by low average weights-at-age, which can lead to higher than normal mortality. Another contributing factor may be disease. In 2007, an ongoing ADF&G-conducted disease assessment program documented *Ichthyophonus* infection rates ranging from 20-32% in herring sampled from three locations in Kamishak Bay. *Ichthyophonus* is a protozoan pathogen that has been linked to population declines of Atlantic herring. While it is uncertain what role this pathogen played, or continues to play, in the recent trend of poor recruitment and survival, its prevalence in the Kamishak stock is concomitant with the loss of older age classes (> age-8) from the population.

Relatively poor weather hindered the ability of the Department's two spring vessel charters to survey effectively and collect age composition samples during the periods 9-17 May and 21-28 May. The early sampling period coincided with the arrival of the first fish on the grounds, which was about two weeks later than the traditional timing of the commercial fishery. The second charter collected age composition samples during the latter portion of the return in 2007. Unfortunately, data from the two charters corroborated the overall low abundance of the population observed by Department aerial surveyors. Information and samples collected during the Department's two charters indicated that the Kamishak herring population is comprised mainly of young, recruit-aged herring, albeit in low abundance. Comprehensive results from the post-season data analysis will be available later this fall.