Fishery Management Report No. 07-42

2006 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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ABSTRACT

The 2006 Lower Cook Inlet commercial salmon fishery was characterized by below average sockeye salmon *Oncorhynchus nerka* and Chinook salmon *O. tshawytscha* harvests, above average coho *O. kisutch* and chum *O. keta* salmon harvests, and near average pink salmon *O. gorbuscha* harvests. The all-species commercial harvest totaled approximately 1.801 million fish, dominated by pink salmon at 82% and sockeye salmon at 12%. The commercial fishery exvessel value was approximately $1.92 million, the fourth lowest over the past decade. Participation remained at low levels for the only two allowable gear groups, with commercial purse seine effort showing a slight decrease over the previous season, while commercial set gillnet effort experienced a marginal increase over the previous two seasons. Although salmon enhancement continued to play a key role in commercial harvests due to numerous sockeye salmon lake stocking projects, only one pink salmon hatchery provided supplemental production in 2006, a decrease from the long-term pattern of two such facilities. 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 19% in numbers of fish and 20% 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 1,300 coho salmon, falling within the guideline harvest range of 1,000 to 2,000 coho salmon. Participation in the fishery, at 62 permits actively fished, was a slight decrease from the previous two seasons and the lowest figure since 1974.

The commercial Pacific herring *Clupea pallasi* fishery in Lower Cook Inlet was closed during 2006 for the eighth 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*.

2006 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 2006 LCI all-species salmon harvest of 1.801 million fish (Table 1; Figure 7) was the fifth highest during the past decade, falling short of the recent 10-year average of 1.939 million by about 7% (Appendix A5). The overall harvest exceeded the cumulative preseason forecast of 1.18 million fish, in large part due to much stronger than anticipated natural runs of pink salmon *Oncorhynchus gorbuscha*. Relatively strong returns of chum salmon *O. keta* continued for the seventh straight year, resulting in a commercial catch of nearly 72,000 fish, the fourth highest since 1988. Prices paid for salmon this season yielded an estimated LCI exvessel value of approximately $1.92 million (Table 7), making the value of the 2006 harvest approximately equal to the recent 10-year average but still the fourth lowest during that time period (Appendix A2). Seine fishing effort showed a slight decrease over last season, but with only 24 of 86 permit holders making deliveries this season (Appendix A1), participation continued to follow a recent low trend. The number of active set gillnet permits was 22 (Appendix A1), a modest increase over the previous two seasons and equal to the recent 10-year average.

In a departure from a long-term trend, LCI commercial salmon harvests in 2006 were not dominated by hatchery and enhanced fish production, primarily because no pink salmon returned to the Tutka Hatchery facility in the Southern District since Cook Inlet Aquaculture Association (CIAA) suspended operations there after the 2004 season. Hatchery production continued to dominate sockeye salmon *O. nerka* catches, however, and nearly 84% of the LCI sockeye harvest in numbers of fish was attributed to lake stocking and fertilization projects, most of which were originally begun by the ADF&G but are currently maintained by CIAA. These projects were conducted at Leisure and Hazel Lakes in the Southern District, Kirschner Lake in the Kamishak Bay District, and Bear Lake in the Eastern District. Another traditional sockeye salmon enhancement program, conducted by the Nanwalek Salmon Enhancement Project (NSEP) in conjunction with Chugach Regional Resources Commission (CRRC) at English Bay Lakes in the Southern District, failed to contribute to commercial LCI harvests for the second consecutive season but did provide limited opportunity for local subsistence users. Unfortunately, the overall area-wide commercial harvest of sockeye salmon in LCI, at just over 224,000 fish, was considerably below the recent 10-year average of 321,000 sockeye (Appendix A13).

Returns of pink salmon, usually the dominant species in numbers of commercially harvested salmon in LCI, were considered surprisingly good this year, with an overall catch of almost 1.5 million fish. This number represents the seventh highest commercial harvest during the last 20 years, exceeding the average catch of 1.32 million fish for that time period. These statistics were most unexpected considering that no pinks returned to Tutka Hatchery in 2006, and that the hatchery return to Port Graham failed to achieve the modest preseason forecast. The catch of 248,000 pinks at Port Graham Hatchery (Table 9) was used entirely in an unsuccessful attempt to achieve the facility's annual revenue goal, while an additional 28,000 pinks, not accounted for in commercial catch totals, were taken for hatchery broodstock purposes by the facility.

Although private non-profit (PNP) corporations in LCI continued to harvest fish for sale this season, 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 19% of the all-species salmon harvest in numbers of fish was taken by CIAA and Port Graham Hatchery Corporation (PGHC) to support the lake stocking programs and Port Graham Hatchery operations, representing about 20% of the exvessel value of the LCI salmon fishery (Table 7). Similar to the past several seasons, strong natural runs of chum salmon bound for LCI drainages provided commercial fishermen with the fourth highest harvest of that species since 1988 at almost 72,000 fish (Appendix A21). It should be noted that all chum salmon in LCI are a result of natural production since enhancement programs for this species have not occurred for many years. And coho salmon *O. kisutch* harvests in LCI were nearly triple the recent 10-year average at just over 32,000 fish (Appendix A17), the second highest figure on record for the species.

The shortage of regular tender service in remote districts, a persistent factor that has affected the amount and distribution of seine effort, and ensuing harvest of salmon, in LCI over the past decade, seemed somewhat less influential on overall harvests during 2006 than in previous recent 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. Once that policy was abandoned, however, seiners were

forced to devise their own means to transport fish from these remote areas to a processing plant in Homer or elsewhere. Due to equipment limitations and the high cost of contracting out for tendering services, significant numbers of fishermen were often unable to fish in remote areas, while others retained the flexibility to fish these traditional areas because of onboard chilling equipment. The relatively strong pink salmon returns to Port Dick, and perhaps a generally stronger market for this species, seemed to promote a greater level of tender service in this remote area in 2006. Another promising statistic showed that prices for all salmon species in LCI improved this season (Appendix A3). Nonetheless, the low prices paid for the most abundant species, pink salmon, coupled with the small numbers of available buyers and sometimes limited tender service, frequently dictated the fishing strategy of individual fishermen, even to the point of total non-participation, thus contributing to continuing low levels of seine effort.

PRESEASON FORECAST

The projected 2006 LCI all-species salmon harvest of approximately 1.18 million fish was approximately 29% less than the recent 20-year average actual harvest. 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, 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 2006 are listed below:

Species	Projected Harvest	Actual Harvest	1986–2005 Average
Chinook	1,300	639	1,430
Sockeye	330,900[a]	224,345	274,235
Coho	13,400	32,230	11,933
Pink	799,800	1,471,578	1,318,945
Chum	35,000	71,954	61,024
Total	**1,184,200**	**1,800,746**	**1,667,567**

[a] CIAA issued a revised Bear Lake projection just prior to the season, reducing the harvest forecast by 12,000 sockeye; that reduction is not reflected in the figures above.

Enhanced runs to Leisure and Hazel Lakes in the Southern District, Kirschner Lake in the Kamishak Bay District, and Bear Lake in the Eastern District were expected to comprise the bulk of the LCI sockeye harvests this season. The sockeye 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 1980's and early 1990's, 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 2003–2005 were surprisingly good, with those of 2004 and 2005 resulting in the first directed effort at this stock

in over a decade and commercial harvests totaling 33,000 and 47,000 sockeye salmon during those years, respectively. Because of the unexpectedly strong runs the previous three seasons, the outlook for the adult sockeye return at Chenik Lake in 2006 was cautiously optimistic, with fishermen hoping for 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 first time in nearly 30 years. Thus, the only hatchery-produced pinks returning to LCI would be at Port Graham, with a forecasted harvest of 491,000 fish, all of which would be likely be required for cost recovery. The projection was based on typical recent-year survivals from a release of approximately 27 million fry from Port Graham Hatchery in 2005 (Appendix A34). Broodstock requirements were expected to total an additional 200,000 pink salmon at Port Graham Hatchery.

Fair pink salmon escapements to major systems in 2004 contributed to a harvest projection of only around 309,000 naturally produced pink salmon throughout the entire LCI management area this season. Port Dick, Windy Bay, Rocky Bay, and Port Chatham Subdistricts in the Outer District, as well as Ursus Cove and Rocky Cove Subdistricts in the Kamishak Bay District, all figured to provide the most potential for harvestable surpluses, but the projected fishing effort in these remote districts was uncertain due to the modest forecast, uncertain markets, and unknown levels of available tender service.

Due to six consecutive seasons of relatively strong chum salmon runs and catches in LCI, the chum salmon harvest outlook in 2006 once again appeared bright. Most west-side LCI systems experienced reasonably good escapements during the 2001 and 2002 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 1990's decade, while chum runs to the larger Big and Little Kamishak Rivers have also been comparatively strong during the past 6 years. The good catches during the last six seasons, as well as the recent overall trend, suggested that harvest opportunities for chum could be numerous in 2006.

2006 SUMMARY BY SPECIES

Chinook Salmon

The 2006 harvest of Chinook salmon *O. tshawytscha*, not normally a commercially important species in LCI, was the second lowest for this species since 1980 at 639 fish (Table 2; Appendix A12), or less than half of the 20-year average of 1,430. Virtually the entire catch came from the Southern District, with about half coming from Halibut Cove Subdistrict, the location of a remote release site. Even though this Chinook enhancement project, and a similar one in Seldovia Bay of the Southern District, are intended to primarily benefit recreational fishermen, adult fish returning to the stocking sites are incidentally taken in the commercial fishery. Set gillnetters accounted for about 91% of the LCI Chinook catch, considered near the historical proportion for that gear group, with purse seiners taking the remaining 9%.

Sockeye Salmon

The 2006 sockeye salmon harvest of 224,300 fish (Table 3; Figure 8) was the third lowest for LCI since 1996, representing about 82% of the 20-year average of 274,000 fish (Appendix A13). Despite accounting for only 12% of the LCI salmon harvest in total numbers of fish, sockeye salmon still provided slightly more than half of the exvessel value of the entire salmon fishery

this season (Table 7). The 2006 LCI commercial sockeye harvest was characterized by much weaker than expected returns to key Southern District enhanced systems at Leisure and Hazel Lakes, a much stronger than anticipated enhanced return to Kirschner Lake in the Kamishak Bay District, and a return achieving the preseason forecast at the Bear Lake enhancement site in the Eastern District. Natural runs to systems within the management area were considered fair to good, with those of Chenik Lake in the Kamishak Bay District and Desire Lake in the Outer District contributing to commercial seine harvests. As has been the case during past seasons, non-local stocks were thought to have intermixed with local stocks while migrating through the Southern District terminal harvest areas, providing additional sockeye salmon for harvest there.

Sockeye salmon runs to Southern District enhancement sites, which frequently provide the bulk of the annual LCI sockeye catch, were even weaker than the poor returns experienced in 2005, continuing a 3-year trend of relatively meager runs to these enhancement sites. Harvests of enhanced runs of sockeye salmon returning to Leisure and Hazel Lakes were predicted to cumulatively total about 148,000 fish, but the estimated combined harvest amounted to only around 75,000 fish (Figure 9; Appendix A15). This figure was well below the recent 10-year average of nearly 164,000 sockeye 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).

Also in the Southern District, the sockeye run to English Bay Lakes was considerably better than expected, achieving the desired inriver escapement goal while also providing modest harvest opportunities for subsistence set gillnetters in the two local native villages. The commercial set gillnet fishery in waters of Port Graham Subdistrict remained closed for the duration of the sockeye salmon run in order to protect fish for escapement purposes, while the subsistence gillnet fishery in those waters was only allowed to reopen once the escapement goal was assured. The continued viability of the sockeye salmon returns to the English Bay Lakes system may rest on the future success of the inconsistent rehabilitation project originally initiated by ADF&G in the late 1980's and presently being conducted by Chugach Regional Resources Commission (CRRC) in conjunction with NSEP, operated by the village of Nanwalek. This sockeye 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 2006 season, no juvenile sockeye salmon were released back into the English Bay Lakes system for the first time since 2002, and no broodstock were collected from the system for the second consecutive season.

In the Kamishak Bay District, the enhanced run of sockeye salmon to Kirschner Lake produced a catch of over 50,000 fish (Table 3) or more than twice the preseason harvest forecast of just over 24,000 fish. Approximately 48% of the sockeye salmon returning to Kirschner Lake in 2006 were utilized for hatchery cost recovery, with the remainder 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 over 62,000 fish (Table 3), falling short of the original preseason harvest forecast of 74,000 sockeye salmon but virtually achieving the revised forecast of 63,300 sockeye that was issued by CIAA just prior to the fishing season. The desired inriver sockeye goal for Bear Lake was also achieved.

The LCI management area has only six lake systems with significant naturally occurring sockeye salmon runs, and five achieved or slightly exceeded their sustainable escapement goals (SEG's)

in 2006, while the sixth system has no formal escapement goal. In East Nuka Bay Subdistrict of the Outer District, Delight Lake escapement, enumerated via a picket weir and aerial surveys, fell within the goal of 6,000 to 12,600 sockeye with an estimate of 10,900 fish (Appendix A23). The peak daily aerial survey escapement estimate at nearby Desire Lake totaled 18,600 sockeye, slightly exceeding the SEG range of 8,800 to 15,200. Only limited commercial seine fishing effort on the sockeye salmon run bound for the Desire Lake system in East Nuka Bay was allowed in 2006, thus the resulting harvest totaled a modest 3,100 sockeye for the season (Table 3). 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 1980's. The sockeye run to this system showed a peak aerial escapement estimate of 1,000 sockeye salmon in 2006.

Similar to the previous two seasons, targeted fishing effort was allowed on sockeye salmon returning to Chenik Lake in the Kamishak Bay District for only the third time since 1993. 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 1990's. 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 run to Chenik this year, the fourth consecutive good run, was not as strong as the previous two, with a total return estimated at 25,700 sockeye salmon, consisting of a commercial seine harvest of 11,800 fish and an approximate escapement of 13,900 (Appendix A16). The latter figure slightly surpassed the escapement goal range of 2,000 to 9,300. It is important to note that all adults returning to Chenik Lake in the last four seasons were 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 opened to commercial fishing in mid-July of 2006 after verification that the Aialik Lake sockeye salmon SEG had been achieved, and despite the minimal effort that ensued, a surprising harvest of 4,600 sockeye resulted (Table 3). The final estimate of escapement at Aialik Lake based on aerial surveys was just under 4,800 fish, falling within the SEG range of 3,700 to 8,000 sockeye (Table 3; Appendix A23). At Mikfik Lake in the Kamishak Bay District, a relatively strong run resulted in an escapement estimated at around 17,700 sockeye (Table 3; Appendix A23), which exceeded the established goal range of 6,300 to 12,200. Despite the good return, only minimal seine effort targeting Mikfik sockeye salmon occurred despite continuous fishing time allowed in June, and the resulting harvest totaled just fewer than 1,300 sockeye (Table 3).

Coho Salmon

The coho salmon resource in the LCI management area is not extensive, therefore this species rarely attains commercial prominence. However, returns of coho to some areas of the management area were uncharacteristically strong in 2006, resulting in a commercial harvest of over 32,000 fish (Table 4), which is the second highest LCI total for this species on record and approximately three times the average catch during the past 10 years (Appendix A17). This season, the largest percentage of coho in LCI was harvested by seiners in the Kamishak Bay District, with a total take of over 24,000 fish (Table 4), or about three-fourths of the management area total. In most years, the greatest proportion of the LCI coho harvests are taken in Resurrection Bay of the Eastern District, but this season the combined catches of hatchery cost recovery operations at Bear Lake and entries into the Seward Silver Salmon Derby totaled about 3,800 fish, or 12% of the area-wide total. 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 split between set gillnetters (8%) in the Southern District, and seiners in the Outer (4%) and Southern (2%) Districts.

Because the coho resource in LCI, and assessment of it, is limited, commercial coho harvests can sometimes be used to gauge coho run strength. However, 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. Nonetheless, the exceptionally strong commercial catches suggested that returns to the Kamishak Bay District during 2006 were well above average, while those to other areas within LCI were slightly above average. The aerial surveys flown specifically for coho salmon assessment in 2006 showed excellent escapement at Douglas (reef) Rivers in Kamishak Bay District and at Clearwater Slough in the Northshore Subdistrict of the Southern District.

Pink Salmon

Returns of pink salmon, usually the dominant species in numbers of commercially harvested salmon in LCI, were considerably better than expected this year, with an overall harvest of nearly 1.5 million fish (Table 5; Figure 10). This number represents the fourth highest commercial catch over the past 10 years (Appendix A18) but was nearly double the preseason harvest forecast of just under 800,000 pinks. Harvests undoubtedly could have been greater, since natural returns to several areas exhibited significant harvestable surpluses, but the spotty tender service in remote areas, low prices, and lack of available buyers combined to keep pink catches lower than potentially possible. Uncharacteristically, harvests this season were comprised mainly of naturally produced fish as opposed to fish returning to the two major hatchery facilities in LCI in past years. The strongest natural pink salmon returns occurred in Port Dick Subdistrict of the Outer District, where the surprising runs resulted in the only real effort directed at this species. The suspension of operations at Tutka Hatchery in the Southern District meant no hatchery-produced return to that facility for the first time in 30 years.

The majority of the pink salmon catch this season was taken in the Outer District, where the commercial seine harvest totaled approximately 1.12 million pinks (Table 5; Appendix A18), the highest total for this species in the district since 1981. The majority of this district’s catch came as a result of unexpectedly strong returns to Port Dick Subdistrict, resulting in a catch of over 1.09 million pinks there. The only other pink catches in the district, both of which were minor, came from directed effort in Windy Bay and from incidental harvest in East Nuka Bay during efforts directed at sockeye salmon.

In the Southern District, which normally dominates LCI pink salmon catches because of the hatchery facilities, the pink salmon return to Port Graham Hatchery was weaker than expected, with an overall return estimate of about 281,000 fish (Table 9). Approximately 88% of the hatchery’s run was taken for hatchery cost recovery, while an additional 28,000 pinks (10%) were harvested for hatchery broodstock purposes. The remainder was estimated as escapement into tiny Duncan Slough, adjacent to the hatchery complex.

In the Kamishak Bay District on the west side of LCI, the pink salmon harvest of 82,500 fish (Table 5; Appendix A18) was primarily caught incidentally during directed efforts targeting sockeye salmon for hatchery cost recovery at Kirschner Lake and also targeting chum salmon in

the common property fishery throughout the district. Pink salmon escapements to all systems within the management area were sufficient to achieve or exceed SEG's (Appendix A24).

Chum Salmon

The 2006 commercial chum salmon harvest of nearly 72,000 fish (Table 6), which exceeded the recent 10-year average by about 26%, was the fifth highest catch for this species since 1988 Appendix A21), maintaining a 7-year trend of good catches for this species in LCI. The harvest was not surprising based on the recent pattern of comparatively strong returns and concurrently good escapements, especially to systems in Kamishak Bay. The majority of the Kamishak Bay District harvest, totaling 56,600 chum salmon this season, was taken in the northern end of the district by effort targeting another reasonably strong Cottonwood Creek run, while the Douglas River Subdistrict in the southern portion of the district also produced good catches. Virtually all chum systems in the management area achieved or exceeded their SEG's as a result of the reasonable runs, including McNeil River in the Kamishak Bay District, which fell within its chum salmon SEG range for only the fifth time in the past 17 years (Appendix A25).

2006 EXVESSEL VALUE

The estimated exvessel value of the 2006 commercial salmon harvest in LCI, not including any postseason adjustments in price paid to fishermen, was approximately $1.92 million (Table 7; Appendix A2), making it virtually identical to the average during the past decade. Purse seine gear in the common property fishery, which normally generates the majority of the catch and value, accounted for nearly $1.36 million or slightly more than 70% of the overall exvessel total (Table 7), while set gillnets accounted for $180,000 or 9%. An estimated $376,000, or about 20% 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 prices paid to fishermen in 2006, not including any postseason adjustments, were as follows: Chinook–$2.25/pound; sockeye–$1.01/pound; coho–$0.54/pound; pink–$0.11/pound; and chum–$0.31/pound (Table 10; Appendix A3). Prices for all species increased over the previous season.

2006 DISTRICT INSEASON MANAGEMENT SUMMARIES

Southern District

Set Gillnet Fishery

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

The 2006 LCI all-species set gillnet harvest totaled 31,500 fish, representing only about half of the recent 10-year average (Appendix A7) and a third consecutive exceptionally poor all-species total for this gear group. The sockeye catch of 14,200 fish was the lowest since 1994 and was less than 36% of the average over the past decade. For comparison, species composition in 2006, with sockeye at 45% and pink salmon at 39%, was considerably different than the average over the past decade, when typical species composition in the commercial set gillnet fishery was 64% sockeye, 25% pink, 6% chum, 4% coho, and 2% Chinook. The catch of Chinook salmon, at only

580 fish, was far less than the recent 10-year average of 1,100 and was the second lowest harvest since the early 1980's. Highest Chinook catches in the set gillnet fishery occurred in Halibut Cove Subdistrict, site of a Chinook salmon enhancement project directed primarily at a recreational fishery in Halibut Cove Lagoon.

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 for the duration of that run to protect fish for escapement, and therefore no sockeye harvest was recorded in the commercial fishery. The run did prove stronger than anticipated, and once achievement of the SEG was projected, subsistence-only set gillnetting in waters of Port Graham Subdistrict was opened near the end of June. The final estimated escapement of 15,500 sockeye (Table 3; Appendix A23) slightly exceeded the desired inriver goal of 7,300 to 15,000 sockeye, while local fishermen from the village of Port Graham reported catching less than 50 sockeye for subsistence needs. Harvest figures for villagers from Nanwalek were unavailable at the time of publishing. This situation was similar to the 2000, 2001, 2004, and 2005 seasons, when complete fishing closures or severe restrictions were implemented due to weak sockeye returns.

After the English Bay Lakes sockeye return was over, waters of Port Graham Subdistrict did not reopen to commercial set gillnet fishing for pink salmon since the Port Graham Hatchery pink salmon forecast suggested that all returning fish would be required to meet hatchery cost recovery and broodstock requirements. The hatchery return proved weaker than predicted, and the pink salmon cost recovery, broodstock, and egg take goals for Port Graham Hatchery were not met. Escapement of pink salmon into Port Graham River was above average, exceeding the SEG for that system (Appendix A24).

Once the sockeye and pink salmon runs were over, there was no longer a need to keep waters of Port Graham Subdistrict closed to commercial set gillnet fishing to protect fish for escapement purposes. Additionally, an aerial survey of marine waters near the mouth of Port Graham River in late August suggested above average numbers of coho salmon returning to that system. As a result, waters of Port Graham Subdistrict were reopened to set gillnetting on September 4 to allow opportunity for fisherman to fish in those waters until the regulatory closure on September 30. Although effort was light, nearly 1,500 coho (Table 4) were harvested by set gillnetters prior to the closure, representing the highest total for this subdistrict in many seasons.

LCI set gillnet fishing effort in 2006 increased over the previous two seasons with a total of 22 permits actively fished. This figure was identical to both the 10- and 20-year averages (Appendix A1).

Seine Fishery

Sockeye Salmon

The overall catch of sockeye salmon by all gear types in the Southern District, at 89,500 fish, was the second lowest for this species since 1994 (Appendix A13) and was only about 40% of the recent 10-year average. Purse seiners in the common property fishery accounted for about 58% of the sockeye salmon landed in the district in 2006, or approximately 52,000 fish, while an additional 23,300 sockeye (26%) were harvested by purse seine for hatchery cost recovery (Table 1). The poor sockeye catch in 2006 continued a 3-year trend of below average sockeye harvests for all gear types. Poor production rates from the district's two major sockeye

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 5 days per week beginning Monday, June 19, to target enhanced sockeye 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, 7 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 runs to the Leisure and Hazel Lakes' stocking sites were estimated at nearly 148,000 fish. The actual commercial harvest of adult fish produced as a result of the two enhancement projects was estimated at around 75,500 fish (Figure 9; Appendix A15), comprising only about one-third of the entire LCI sockeye salmon harvest. Because of the close geographic proximity of these two projects, the overlapping area of harvest, and the lack of tagging, no definitive assessment of separate runs to each system can be established. However, fish returning as a result of these two projects not only contributed to seine catches in China Poot Subdistrict but also to those in adjacent Halibut Cove and Tutka Bay Subdistricts. It was estimated that personal use dip net and sport fishermen harvested another 5,500 sockeye salmon at the head of China Poot Bay based on average catches from the early 1990's. The 2006 total cumulative run from both projects was estimated at slightly less than 82,000 sockeye (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 slightly more 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 $120,000 for the second consecutive year. This figure was to be split amongst locations as follows: two-thirds from combined China Poot and Hazel Lake SHA's, both in the Southern District, and one-third 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 22,700 sockeye from the China Poot and Hazel Lake SHA's was necessary to achieve the combined goal of $79,800 for these two areas, assuming a preseason average price of $0.72 per pound and an average weight of 4.88 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 2005, 2003, and years prior to 2001, CIAA contracted the Cook Inlet Seiners Association (CISA) to undertake sockeye cost recovery in LCI, with the latter organization relying on the use of volunteer vessels to undertake hatchery harvest in 2006. This differed from the 2001, 2002, and 2004 seasons, when CIAA contracted specific individual LCI seiners to conduct cost recovery within the Southern District SHA's. The first hatchery harvest in the China Poot Subdistrict occurred on June 29 in the China Poot SHA, netting about 1,500 fish, which was considered close to normal by historical run timing standards and suggested that the return might be at least as strong as forecasted. Up until that time, vessels participating in the

common property fishery outside the SHA's were experiencing rather poor catches, reporting that numbers of fish present in area waters were scattered and not numerous.

As sockeye numbers built within the China Poot and Hazel Lake SHA's, hatchery harvests continued, with the first catch from the Hazel Lake SHA reported on July 2. Up until July 4, the actual price paid for hatchery cost recovery fish was $1.02 per pound, but a price reduction was announced in early July, to a new price of $0.77 per pound. Nonetheless, both prices were greater than the preseason forecasted price, thus reducing the number of fish necessary to achieve the hatchery revenue goal. Between June 29 and July 18, a total of 9 hatchery deliveries were reported from the China Poot SHA, while an additional 6 occurred in the Neptune Bay SHA between July 2 and July 12. The final hatchery harvest of the season, which also proved to be the peak daily catch at nearly 5,300 sockeye, came on July 19, with deliveries coming from both SHA's. This brought the cumulative reported catch in the China Poot and Hazel Lakes SHA's to 23,200 sockeye salmon, totaling 101,500 pounds. These figures translated into almost $82,000 revenue for the season, slightly exceeding the goal established for the Southern District SHA's. As a result, the China Poot and Hazel Lakes SHA's were closed to cost recovery harvest on the afternoon of July 19, and waters of both the China Poot and Hazel Lake Sections of China Poot Subdistrict were opened to common property seining 7 days per week beginning the next morning. A small portion of the China Poot Section near the mouth of China Poot Creek remained closed to commercial fishing on weekends in deference to the heavy sport/personal use traffic in the vicinity.

As mentioned earlier, common property seine catches in China Poot Subdistrict, outside of the SHA's, were relatively weak during late June, creating pessimism within the fleet. Catches never rose to levels suggested by the preseason forecast, with the peak harvest in the China Poot Section occurring on July 14 when 7 vessels took 3,800 sockeye. Two more small harvest "spikes" in the China Poot Section occurred thereafter, one on July 20 (the day common property fishing opened inside the SHA) and one on July 23–24. In the Hazel Lake Section, the peak daily harvest occurred on the day inside waters of the bay were opened to common property fishing, with a catch totaling just under 3,100 sockeye. Very little effort or harvest took place in the Hazel Lake Section after the peak catch on July 20, while catch rates in the China Poot Section fell steadily after July 24. The final landing came on August 3, bringing the cumulative commercial catch in the two sections to nearly 50,500 sockeye (Table 3) taken by 16 seiners. Just over 80% of this harvest, or about 41,000 sockeye, was taken in the China Poot Section, suggesting that the Leisure Lake sockeye return was considerably stronger than the Hazel Lake return.

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, resulting in an additional cumulative harvest of just over 1,500 fish (Table 3) from these two subdistricts.

Pink Salmon

Returns of pink salmon to the Port Graham Hatchery contributed to an overall (all gear types) Southern District harvest of nearly 263,700 fish (Table 5; Appendix A18), only about one-fifth of the recent 10-year average and considerably less than the preseason hatchery-only harvest forecast of 491,000 fish. With no pinks returning to the Tutka Hatchery for the first time in approximately 30 years, the decrease in catches was not surprising. Of the pink harvest in the

district, seiners in the common property fishery took only around 1% of the total, set gillnetters 5%, and hatchery cost recovery accounted for the remainder.

Because no hatchery-produced pink salmon would be returning to waters of Tutka Bay this season, CIAA planned no cost recovery or broodstock harvest and therefore no Tutka Bay SHA was created or utilized. Waters of Tutka Bay Subdistrict outside of Tutka Bay proper, along with a portion of waters in China Poot Subdistrict and those waters of Halibut Cove Subdistrict outside of Halibut Cove Lagoon, opened to commercial seining 5 days per week beginning June 19, on a 5-days-per-week basis, primarily to target sockeye 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. Seine catches for the season cumulatively totaled just over 3,400 pinks in the Southern District (Table 1), with over 90% taken in the China Poot Section of China Poot Subdistrict.

At Port Graham in the Southern District, a spring 2005 fry release of about 26.6 million pink salmon from Port Graham Hatchery was expected to produce an adult return with a midpoint of nearly 691,000 fish this season. With a hatchery broodstock goal of around 200,000 fish, the Port Graham Hatchery Corporation (PGHC) anticipated a harvestable surplus of approximately 491,000 pink salmon. Using an average weight of 3.2 pounds per fish and an average midpoint price of $0.11 per pound, harvest of all available fish would likely be necessary in pursuit of the established hatchery revenue goal of $400,000. Thus, no directed common property effort or harvest was expected.

Since the Port Graham Hatchery pink salmon broodstock goal of 200,000 fish (of hatchery origin) seemed attainable based on the forecast, the capture of wild-stock fish near the mouth of or within nearby Port Graham River, for use as hatchery broodstock, would not be necessary. Nonetheless, a hatchery egg removal schedule for Port Graham River was summarized in the AMP as a contingency. The forecast for the wild stock return to Port Graham River was estimated at approximately 44,000 pinks, exceeding the SEG range of 7,000 to 20,000 fish. Recognizing that the forecasts for the hatchery pink salmon run to Port Graham suggested that the entire return would likely be required to fulfill broodstock and cost recovery requirements, the staff elected to leave the commercial set gillnet fishery in waters of Port Graham closed to protect returning pink salmon. This fishery had originally been closed since early June to protect sockeye returning to nearby English Bay Lakes for escapement purposes.

The first ground survey of Port Graham River confirming the presence of pink salmon was completed on July 14, but counts numbered less than 20 fish, not a surprising figure for this early date based on historical run timing information. As assessment continued, ADF&G aerial and ground surveys in early August showed only a modest escapement of pinks into Port Graham River, with no single survey estimate achieving the low end of the SEG range established for this system. However, significantly greater numbers of pink salmon were seen staging in marine waters near the hatchery net pens, located at the source of fresh water for imprinting purposes, and near Duncan Slough, adjacent to the hatchery facility. Such observations annually imply that these fish are primarily of hatchery origin. In order to allow PGHC to initiate cost recovery operations and broodstock collection, waters of the Port Graham SHA (Figure 6) east of the U.S. Coast Guard navigational buoy were opened to harvest by authorized agents of PGHC on a continuous basis beginning August 4. Restricting PGHC to this relatively small area was felt to provide sufficient protection to natural-stock fish bound for Port Graham River while still

allowing the hatchery opportunity to pursue its objectives. Further manipulation of time and area within the SHA would be considered in order to secure escapement and/or hatchery requirements.

Hatchery cost recovery efforts in the Port Graham SHA began on August 10 with a catch of 14,000 pink salmon. Harvests continued on an almost daily basis through the month of August, with the final harvest occurring on August 30. Catcher vessels averaged slightly more than 22,500 pinks reported per day actively fished during the month, while the peak daily catch occurred late in the return when just over 44,000 pink salmon were taken on August 27. The overall cost recovery harvest of pink salmon by Port Graham Hatchery totaled 248,000 fish (Tables 5 and 9), worth an estimated $95,200 or slightly less than one-fourth of the established revenue goal. Broodstock efforts netted an additional 28,000 fish (Tables 5 and 9), bringing the cumulative pink salmon return to Port Graham Hatchery to approximately 276,000 fish, or only about 40% of the preseason forecast. Hatchery personnel estimated an additional 5,000 pink salmon, believed to be of hatchery origin, as escapement into tiny Duncan Slough, located very near the hatchery facility. The final escapement into Port Graham River, estimated at 31,000 pinks (Table 5; Appendix A24), exceeded the upper end of the established SEG range by about 55%. The commercial set gillnet fishery in Port Graham Subdistrict remained closed to fishing for the duration of the pink salmon return, thus no common property harvest resulted.

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 escapements into all Southern District systems fell within or exceeded their established SEG ranges (Table 5; Appendix A24).

Other Species

The Southern District chum salmon harvest in 2006 cumulatively totaled 2,200 fish for all gear types, the sixth lowest total on record for the district (Table 6; Appendix A21). Seiners took less than 10% of the total, with set gillnetters accounting for the remainder. Set gillnet catches from Seldovia Bay Subdistrict dominated the all-gear-types totals (Table 6) at about 53% 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 systems were fair to poor, but an escapement within the SEG range was achieved at Port Graham River (Appendix A25) for the first time in 3 years. Seldovia River, with no formal SEG, experienced a better chum return than the extremely weak chum run of 2005, with a final escapement totaling around 3,600 fish in 2006 (Table 6).

Although minor in total numbers of fish, Southern District Chinook salmon harvests usually consist of incidental catches of adult fish returning to two of three separate enhancement projects. The 2006 Southern District harvest of 639 Chinook salmon by all gear types was the second lowest since 1980, representing only about half of the recent 10-year average of 1,245 fish (Appendix A12). Seiners took approximately 9% of the Southern District Chinook 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 3,000 fish by all gear types was higher than the previous two seasons but still only about 82% of the recent 10-year average (Appendix A17). Seiners accounted for approximately one-fifth of the Southern

District coho salmon total, while set gillnetters took the rest (Table 1). The majority of coho 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 seventh 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 once again few if any sockeye were expected back to that location this season. The weekly fishing schedule for open waters within the district was set at 7 days per week for the eighth successive year. This schedule was originally implemented because the complexion of the fishery had evolved since 1994, when fish processors ended the routine practice of stationing a tender(s) in this remote district at the start of each season. As a result, effort and ensuing catches declined as fishermen were forced to devise their own transport of all salmon harvested. Recognizing this shift in effort levels, as well as the harsh weather that typically limits effective fishing activity, the staff 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 2006, the district-wide commercial sockeye salmon harvest totaled approximately 65,000 fish (Table 3; Appendices A10 and A13), virtually identical to the previous season's catch and over 65% greater than 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. This season, however, the run displayed distinctly late run timing characteristics, with the first fish of the season observed via aerial survey on June 20, and at only 25 fish, this first indication suggested that the run was weak as well. Numbers built dramatically over the next week, and nearly 18,000 sockeye salmon were estimated in fresh water during a survey on June 27, 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, only minor effort directed at Mikfik sockeye occurred this season, with a resultant harvest of less than 1,300 fish (Table 3). No increase in cumulative escapement was detected after the June 27 survey, thus the final estimated sockeye escapement index was 17,700 fish (Table 3; Appendix A23), exceeding the upper end of the established SEG of 6,300 to 12,150 fish by about 46%.

After the Mikfik sockeye 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 had been suspended, and sockeye 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 2005 created continuing optimism for 2006. Aerial surveys began to detect fish in salt waters of Chenik Lagoon on June 27 with an estimate of 750 sockeye salmon. By the next survey 3 days later, the estimated figure had jumped to 4,000 sockeye in salt water. Historical run timing for the Chenik sockeye stock indicated that the run was in its earliest stages, thus suggesting a run strength sufficient enough to sustain commercial exploitation without jeopardizing escapement. As a result, waters of Chenik Subdistrict south of 59° 16′ N. latitude were opened to seining 5 days per week beginning July 3; seining north of this line was kept closed to protect sockeye salmon returning to small Amakdedori Creek, where

escapement was not strong. The weekend closures and marker placement 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.

Similar to 2005, CIAA once again funded and operated a counting weir at the outlet of Chenik Lake to monitor escapement into fresh water. Unfortunately, installation of the weir was delayed in early July, thus the first counts by the crew were reported on July 8. However, ADF&G staff was able to retrieve recorded information from its remote video escapement recorder (RVER), operated near the outlet of Chenik Lake for the third consecutive season, and determined that an estimated 4,800 sockeye salmon had escaped into Chenik Lake prior to installation of the counting weir.

Apparently the numbers of sockeye salmon available to fishermen in open marine waters around Chenik Creek were not sufficient to attract immediate effort, and the first catch was reported on July 7, 4 days after the original opening. A short lag in reporting this harvest, which at only 4,500 fish was considered modest at best, delayed the staff's knowledge of the catch. Meanwhile, sockeye staging near the mouth of Chenik Creek exhibited the annually familiar apprehension towards ascending the creek, and with a series of exceptionally low tides approaching, the staff reasoned that these fish could easily become vulnerable to harvest by forcing them out from waters protected by regulatory markers. As a result, waters of Chenik Subdistrict were closed to seining beginning July 8 to promote escapement into the lake system.

Assessment of the Chenik Lake sockeye escapement continued, and although the weir recorded a single day spike of over 2,000 fish on July 12, the escapement rate was considered relatively slow during the first 3 weeks of July. By July 24, escapement as reported by a combination of weir and video counts cumulatively totaled about 9,200 sockeye. Since this figure approached the upper end of the SEG range for the system (1,900 to 9,300 sockeye), waters of Chenik Subdistrict south of 59° 16′ N. latitude, including waters inside Chenik Lagoon, were reopened to seining 5 days per week beginning July 26.

Initial catches in Chenik Subdistrict on the day it reopened were reasonable at 6,800 sockeye, but harvests and effort declined sharply thereafter and only one more day of harvest occurred. Cumulative catch in Chenik Subdistrict for the season totaled just under 12,000 sockeye (Table 3). Escapement into the lake continued into August, and although the weir was removed on August 2, the video project continued to operate through August 12, tallying an additional 924 sockeye. The cumulative escapement into Chenik Lake for the season as estimated by weir and video was nearly 13,900 sockeye (Table 3, Appendix A23), or about 50% greater than the upper end of the SEG range. The overall run of sockeye to Chenik Lake in 2006 totaled approximately 25,700 sockeye (Appendix A16), marking the fourth consecutive year of relatively strong returns to this system.

Only minimal effort directed at sockeye salmon occurred in the Douglas River (Silver Beach) Subdistrict in mid-July, resulting in a cumulative harvest of 1,000 fish (Table 3). Apparently the low numbers discouraged any additional effort in this subdistrict during 2006.

The next sockeye run in Kamishak Bay District was to Kirschner Lake in the Bruin Bay Subdistrict, the site of a traditional sockeye salmon lake stocking project. At Kirschner Lake, where a steep falls at tide line precludes escapement into the lake, a run of 24,000 sockeye was predicted. As outlined in the Trail Lakes Hatchery Annual Management Plan (AMP) prior to the season, the revenue goal necessary to meet operational expenses incurred in all LCI sockeye

salmon lake stocking projects was set at $120,000. This amount was to be split between the Southern District SHA's (Leisure/Hazel Lakes; Figure 3) at 67% of the total and the Kamishak SHA (Kirschner Lake; Figure 4) at 33%, or $40,200. Because CIAA anticipated harvesting the entire return of sockeye to Kirschner Lake for cost recovery purposes in pursuit of the cost recovery 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 19 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 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 CISA vessel 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 2006 was no exception. The first effort occurred in the Kirschner Lake SHA between July 7 and 9, netting an estimated harvest of 7,600 fish. Because the inseason contract price for Kirschner sockeye, starting at $0.51 per pound, was nearly 28% greater than the preseason projected price, attainment of the revenue goal became a distinct possibility if the return came in as forecasted. Prices paid for Kirschner Lake cost recovery sockeye dropped to $0.47 per pound after this initial catch, but after two more harvests on July 14 and July 21, the cumulative catch totaled approximately 26,300 fish (Table 3) and 107,000 pounds worth an estimated $51,500. Since this figure exceeded the revenue goal, waters of the Kirschner Lake SHA were closed to hatchery fishing immediately after the July 21 harvest was confirmed, and subsequently opened to common property seining 7 days per week beginning July 23.

Seiners fished in waters of the Kirschner Lake SHA over the next 2 weeks, cumulatively harvesting just over 24,000 sockeye for the season (Table 3). When combined with the hatchery harvest, the total return to Kirschner Lake was estimated at over 50,000 sockeye salmon, or more than twice the preseason prediction for the system. The Kirschner Lake sockeye salmon enhancement project has remained one of LCI's steadiest producers.

Pink Salmon

Preseason pink salmon projections for the Kamishak Bay District in 2006 were negligible, with a cumulative harvestable surplus totaling only 30,000 fish forecasted for Ursus Cove, Rocky Cove, and Bruin Bay Subdistricts. Although aerial surveys of the district first documented pink salmon in fresh water during early August, considered slightly late for this species and location, the early estimates suggested that the forecast appeared overly conservative. As surveys continued through the remainder of the month, observations revealed that the pink salmon return to Bruin Bay River was much stronger than anticipated, providing a substantial harvest opportunity. Runs of pinks to Sunday Creek in Rocky Cove Subdistrict and Brown's Peak Creek in Ursus Cove Subdistrict were also stronger than expected.

Despite continuous openings in the vicinity of major pink salmon systems, the combination of weak markets and a lack of tender service discouraged directed effort on Kamishak Bay pink salmon in 2006. To further encourage seiners to target pinks, markers protecting the mouths of Bruin Bay River, Sunday Creek, and Brown's Peak Creek were removed beginning August 11,

but the strategy still failed to produce any effort. Though the cumulative Kamishak Bay District pink harvest for the season totaled 82,500 fish (Table 5; Appendix A18), the majority came as incidental catch during efforts directed at the Kirschner Lake sockeye salmon return, with lesser amounts taken during targeted chum salmon efforts. Escapement at all three major monitored pink systems in the district exceeded the upper ends of their respective SEG ranges (Table 5; Appendix A24), all by relatively significant amounts.

Chum Salmon

For the seventh consecutive season, significant effort directed at strong chum salmon runs resulted in outstanding catches in the LCI management area. The final overall LCI catch of chum salmon totaled almost 72,000 fish, with seiners in Kamishak Bay District taking nearly 80% of the total (Table 6; Appendix A21). The 2006 commercial chum harvest of nearly 57,000 fish in Kamishak Bay District was the fifth highest since 1988. Chum escapements throughout the district were once again generally strong, including McNeil River, where the escapement fell within the goal range for only the fifth time in the past 17 years.

Because chum runs to McNeil River have not been strong over the past 15 years, waters of McNeil River Subdistrict were closed to commercial fishing as a precaution beginning June 25, even though no seiners were present in area waters. Aerial surveys to monitor chum returns in Kamishak Bay began in mid/late June, with the first substantial chum salmon numbers of the season noted in McNeil River on June 27, considered close to normal by historical run timing standards. Escapement estimates at McNeil River showed only modest increases during the month of July, with a more substantial increase occurring in early August. A daily aerial estimate of 13,400 chum salmon on August 8, the last survey of the season for the system, ultimately proved to be the season's peak. Postseason analysis of aerial survey data using the standard area under the curve (AUC) method yielded a final estimated escapement index at McNeil River of 28,200 chum, falling just above the upper end of SEG range of 13,800 to 25,800 and the largest escapement since 1989 (Appendix A25).

Chum runs to nearly all other Kamishak Bay systems were considered strong. After six consecutive seasons of impressive chum returns, LCI seiners expected a continuation of the trend in 2006. In the southern portion of the district, which had been opened to fishing 7 days per week at the beginning of the season, aerial surveys to document chum escapement occurred in early August, well after the majority of those runs had entered freshwater. Final estimates indicated runs at Big and Little Kamishak Rivers were exceptionally strong. Unfortunately, results from the limited commercial effort early in the returns were likely deceiving as seiners obviously felt that further effort was not warranted. As a result, only minor harvests from the southern subdistricts took place during the traditional period of effort targeting chum (mid/late July). The final escapement estimate of over 58,000 chum salmon into Big Kamishak River was over two and one-half times greater than the upper end of the system's SEG range (Table 6; Appendix A25). At Little Kamishak River, nearly 43,000 chum were estimated as escapement, almost twice the upper end of that system's established SEG range. Harvest from the Douglas River Subdistrict for the season totaled about 15,200 chum salmon (Table 6), but the majority of this harvest came as incidental catch during late season efforts targeting strong coho salmon returns to area drainages.

Following the same pattern established during recent years, central and northern Kamishak Bay chum runs were once again relatively strong this season. At Bruin Bay River, chum salmon first

began to appear in fresh water in early July, but no sizeable increase was documented over the course of the month. The peak individual aerial survey of Bruin Bay River actually occurred on August 1, when an estimated 7,000 chum salmon were documented. The minimal seine effort directed specifically at this stock resulted in a harvest totaling about 1,800 chum (Table 6), while the peak escapement estimate was also used as the final index of escapement into Bruin Bay River (Appendix A25).

Because the run timing for the more northerly chum systems is later than that in southern and central Kamishak areas, aerial evaluation of northern Kamishak systems typically begins in late July, but weather this season delayed surveys until August. On August 1, good numbers of fish were already in fresh waters of Cottonwood Creek (3,900 chum) and Iniskin River (2,550 chum). Escapements continued to build, and by August 17, an aerial survey estimated Cottonwood Creek escapement at nearly 7,000 chum, that of Iniskin River totaled over 14,000 chum, and that of Ursus Cove systems was 13,000 chum, all indicative of reasonably strong runs. Steady seine fishing effort began to target these returns, primarily that of Cottonwood Creek, at the end of July, and postseason analysis of fish tickets showed a cumulative catch of over 32,000 chum from that system's subdistrict alone. Although not as impressive as catches in 2005, the steady harvests and good escapement estimates were clear indications that chum runs to area systems were once again fairly strong.

Due to escapements that met or exceeded SEG's, the regulatory markers protecting streams at Ursus Cove Lagoon (at the head end of Ursus Cove Subdistrict) and at the mouth of Iniskin River were repealed beginning August 21 in order to allow maximum opportunity for seiners to target the chum returns at those locations. At Cottonwood Creek, escapement was reasonable but was likely being slowed by the consistent commercial effort targeting this return, thus the staff elected to leave the markers in effect at this location.

Despite continuous fishing time and absence of markers protecting Ursus Cove and Iniskin River stream mouths, nearly all of the late season seine effort in northern Kamishak Bay was once again directed at the Cottonwood Creek chum salmon return, and for good reason. Final harvest figures for the Kamishak Bay District totaled nearly 57,000 chum salmon for the season (Table 6; Appendix A21), over 60% of which came from the Cottonwood/Iliamna Subdistrict. The district-wide catch was the fifth highest for the Kamishak Bay District since 1988. Interestingly, the seven largest annual catch totals in this district since 1988 have all occurred during the past 7 consecutive years. Escapements at all Kamishak chum systems met or exceeded the respective SEG's (Appendix A25). The seventh successive season of strong district-wide returns was a continuing sign that the trend of weak chum salmon runs experienced in the 1990's has passed, and future returns will hopefully remain at these stronger levels.

Other Species

Chinook salmon harvests in the Kamishak Bay District historically have been insignificant (Appendix A12). On the other hand, coho harvests within the district have at times been substantial, providing fishermen with some lucrative late season catches. Coho assessment in LCI is very limited, but early signs from other areas within LCI suggested that returns were above average. Seiners in Kamishak Bay took advantage of the liberal 7-days-per-week fishing schedule to target exceptionally strong coho salmon returns in the southern portion of the district in 2006, resulting in a district-wide harvest of over 24,000 fish (Table 4; Appendix A17). This figure represented the second highest catch on record for this species in the district. Aerial

surveys of streams emptying near the Douglas Reef indicated excellent escapement levels for coho salmon.

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 1980's provided additional fish for harvest in the early 1990's, but stocking was discontinued after 1989 and a small harvest in 1993 was the last documented catch. Preseason projections, based solely on the long-term average catch, forecasted a harvest of up to 22,000 sockeye for the entire Outer District this year. The actual harvest totaled approximately 3,200 fish (Table 3; Appendix A13), the third lowest harvest in the district over the past two decades and less than one-fifth of the recent 10-year average.

Aerial surveys to assess the Delight and Desire Lake systems in East Nuka Bay began on June 14, but sockeye were not observed in fresh water until the next survey on June 21. Fish numbers were low, however, totaling 50 fish or less at each system, not surprising given the date. Escapements built very slowly at both locations as surveys progressed into early July, but on July 12, estimates jumped significantly, with almost 10,000 fish seen in fresh water at Desire Lake and over 4,000 in the Delight Lake system. Since the figure for Desire Lake fell within the established SEG range for the system (8,800 to 15,200 sockeye), marine waters of East Nuka Subdistrict near Desire Lake Creek, north of the latitude of James Lagoon, were opened to seining beginning July 14 5 days per week. Regulatory markers near the mouth of Desire Lake Creek remained in effect during the opening to protect sockeye staging in those waters. Marine waters south of the latitude of James Lagoon in East Nuka Subdistrict were kept closed to seining to protect sockeye returning to Delight Lake since the observed escapement had not yet reached the established SEG range of 6,000 to 12,600 sockeye. An ADF&G-operated counting weir at the outlet of Delight Lake became operational on July 3 but registered very low numbers passing into the lake during the first 2 weeks of operation.

The initial commercial seine catches in East Nuka Subdistrict on the first day of the opening, at less than 1,000 sockeye, suggested that the Desire Lake return was probably not as strong as initially hoped. A catch of slightly more than 1,800 sockeye occurred on the next open day of fishing, following a weekend closure, but catches dropped dramatically during the remainder of that week. Only one additional landing was reported during the season, just prior to the end of July, bringing the final cumulative harvest to just over 3,100 sockeye (Table 3) in East Nuka Subdistrict.

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. Though the condition traditionally arises in mid-July, this season was instead marked by uncharacteristically high water beginning in mid-July. Mostly steady but occasionally very heavy rains, frequently accompanied by extreme winds, began on July 16 and continued unabated through July 25. The increased water flow in the creek seemed to motivate sockeye holding in the downstream lagoon to begin migrating upstream, resulting in steadily increased counts at the Delight Lake weir through July 22. But by the next day, the rapidly rising lake level and increasing flow of water in the creek overwhelmed the weir, thus no counts of sockeye were

made for several days. By the time water levels had sufficiently receded, the weir only operated for about two more days prior to the termination of the project near the end of the month, producing no further counts during that time. The final cumulative weir count totaled 10,900 sockeye. When combined with a single aerial estimate of fish escapement prior to installation of the weir, the final estimate of escapement at Delight Lake totaled just over 10,900 sockeye salmon (Appendix A23), falling within the established SEG range. Numbers of sockeye observed this season were never sufficient to justify a commercial opening to target the Delight Lake stock.

At Desire Lake, the aforementioned precipitation and poor weather precluded aerial escapement surveys for much of the month after the July 12 survey. Once surveys resumed, an estimate of almost 19,000 sockeye in fresh water at Desire Lake was made on July 28, representing the peak single daily estimate of the season. This figure was ultimately used as the final index of escapement estimate (Table 3; Appendix A23), exceeding the upper end of the established SEG of 8,800 to 15,200 sockeye by about 22%. Sockeye salmon escapement at Desire Lake in 2006 was the highest on record since statehood.

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 1970's and early 1980's by a receding glacier. A review of charts and maps drawn prior to the mid-1980's substantiated this fact as no lakes are indicated at the site of the present bodies of water. Before the 1980's, no salmon were known to utilize the system, but in approximately 1989, during a routine aerial survey, adult sockeye salmon were documented in the system by the staff for the first time. Each year since then, aerial surveys have revealed sockeye salmon as well as pink salmon in the system. The peak 2006 aerial count of 1,000 sockeye was recorded during an aerial survey on July 12. Little is known of the origins of this return, although the predominant hypothesis suggests that sockeye 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

Fair escapements during the 2004 parent year fostered little optimism for substantial pink salmon harvests in the Outer District in 2006, with a projected figure of just over 200,000 fish, or only slightly better than the recent 10-year average of 171,000 pinks. The bulk of the harvestable surpluses were expected at Port Dick, with much lesser amounts forecasted at Rocky Bay, Windy Bay, and Port Chatham. The actual harvest of over 1.12 million pink salmon (Table 5; Appendix A18) was considered astounding given the parent year escapements and represented the fifth highest catch on record for this species in the Outer District since statehood.

For the fourth consecutive year, the staff announced prior to the season that certain waters in Port Dick Subdistrict would open on a set calendar date, as opposed to a management strategy 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 17. 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 return to Port Dick (head end) Creek, until the return could be adequately assessed.

Aerial surveys in Port Dick began during the week prior to the opening, but no pink salmon were observed during the two surveys conducted that week, suggesting that returns could be weak and/or late. Poor weather precluded aerial surveys over the next 2 weeks, but when surveys resumed on July 28, approximately 27,000 pinks were estimated on the flats at the head end of Port Dick, considered quite reasonable given the modest forecast. In view of the anticipated effort levels, the fishing schedule was liberalized to 5 days per week beginning July 31, though no additional fishing area was opened. Seiners had only just started to fish Port Dick waters, reporting rather spotty catches earlier in the week, but by the time of the survey on July 28, catches were increasing.

Pink salmon catches in Port Dick Subdistrict continued to increase the following week, and an aerial survey on August 7 recorded good numbers of fish in both fresh and salt waters of Taylor Bay streams. As a result, regulatory markers protecting stream mouths at Taylor Bay systems were repealed beginning August 9, but no other changes were made in remaining waters of Port Dick Subdistrict since escapement levels and saltwater buildup of pinks were considered steady but not sufficient to justify additional fishing time or area.

Pink salmon catch rates continued to remain above expected levels in Port Dick Subdistrict, and by August 18, the reported catch cumulatively totaled 640,000 fish, or over five times the preseason forecast for those waters. Meanwhile, a ground survey on August 14 confirmed that the escapement of pink salmon into Port Dick (head end) Creek fell within the established SEG of 19,000 to 58,000 fish, while an aerial survey on August 18 documented a similar statistic for Island Creek. In an effort to allow additional opportunity to harvest the stronger than anticipated returns, waters of the North Section of Port Dick Subdistrict were opened to seining 5 days per week beginning August 21. All regulatory markers in Port Dick Subdistrict, except those repealed the previous week in Taylor Bay, remained in effect during open fishing periods.

By August 24, it became readily apparent that pink salmon escapement levels to those Port Dick systems with established SEG ranges would be easily met or exceeded, while the smaller systems without SEG's were nonetheless experiencing above average pink runs. In an effort to allow seiners maximum opportunity to harvest the available surpluses, all waters of Port Dick Subdistrict were opened to fishing on a continuous basis beginning August 25, and all regulatory markers protecting stream mouths at Port Dick (head end) Creek, Middle Creek, and Island Creek were simultaneously repealed. Seiners took advantage of the liberal openings by continuing to target pinks in the subdistrict for several more days, with the last delivery reported on August 28. The average daily harvest per day delivered was just under 44,000 pinks, while the peak daily harvest in the subdistrict came on August 9, when 7 seiners landed 114,000 pinks. The cumulative season catch for the four sections making up Port Dick Subdistrict was 1.093 million pink salmon (Table 5; Appendix A20), representing the third highest figure for these waters since statehood.

The final escapement estimate of 52,000 pinks for Port Dick (head end) Creek fell near the upper end of the SEG range of 19,000–58,000 fish established for this system (Table 5; Appendix A24). The pink salmon return to Island Creek was far stronger than expected and believed to be the predominant factor affecting the subdistrict's huge catches this season. The final estimate of escapement at Island Creek totaled nearly 108,000 pinks (Table 5; Appendix A24), or nearly four times the upper end of the SEG range of 7,200–28,300. Interestingly, the eight highest pink salmon escapement totals on record for Island Creek have all occurred after 1995.

Other pink salmon systems throughout the Outer District generally exhibited stronger than anticipated returns during 2006. Waters of Windy Bay Subdistrict were opened to commercial seining on a schedule of 5 days per week beginning July 31, but because of the strong returns to Port Dick, the Windy Bay opening attracted only minor interest and the resulting harvest totaled about 27,000 pinks (Table 5; Appendix A20). At Windy Left Creek, final escapement was estimated at 65,000 pinks, while the figure for Windy Right Creek was 17,000 pinks, both of which exceeded the SEG's for the respective systems (Table 5; Appendix A24). The final escapement at nearby Rocky River totaled almost 68,000 pink salmon, slightly exceeding the upper end of the SEG range for that system (Table 5; Appendix A24).

Surveys documented a weak pink salmon return to South Nuka Island Creek throughout the season, thus no openings occurred, and the final escapement was estimated at just over 5,000 pinks, within the established SEG of 2,700 to 14,000 (Table 5; Appendix A24). Elsewhere in the Outer District, early 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 over 24,000 pinks into Port Chatham systems (Table 5; Appendix A24), slightly exceeding the upper end of the SEG range. Desire Lake Creek, with an SEG range of 2,000 to 20,000 pink salmon, experienced a strong pink return, with an escapement estimated at around 75,000 fish (Table 5; Appendix A24). Despite a liberal 5-days-per-week fishing schedule that carried over from the earlier sockeye return, no effort specifically targeting pinks occurred at this location and thus the majority of the run entered the system as escapement.

Chum Salmon

Because chum salmon numbers had experienced dramatic declines in the Outer District since the peak harvest years of the late 1970's and early 1980's, large returns were once again not expected in 2006. The chum returns to systems in the Outer District this season were quite variable compared to recent years. However, in a continuing effort to reverse the trend of weak returns and allow stocks maximum protection, no specific commercial openings targeting chum salmon occurred in the Outer District this season. Nonetheless, the final harvest of nearly 13,000 chum salmon (Table 6; Appendix A21), all taken incidentally during directed pink salmon fisheries in the district, was the third highest since 1988.

Escapements within the four monitored chum salmon systems in the Outer District were variable in relation to their respective SEG's. Port Dick (head end) Creek experienced an escapement within but near the lower end of its SEG, with approximately 2,800 chum, while Rocky River escapement amounted to 11,200 chum salmon, the second highest total over the past two decades (Appendix A25). Chum escapement at Island Creek failed to achieve it's SEG range of 6,400 to 15,600 fish, with a final total of 5,600 fish, likely due to the liberal fishing periods in Port Dick

Subdistrict intended to harvest the strong pink returns. At Koyuktolik (Dogfish) Bay systems, with a combined SEG range of 3,300–9,200 chum salmon, the escapement was estimated at 5,400 fish (Table 6; Appendix A25), an improvement over the previous two seasons.

Eastern District

Sockeye Salmon

The Eastern District showed potential for harvestable surpluses of sockeye salmon in Aialik and Resurrection Bay Subdistricts during 2006, with an original district-wide preseason projection totaling 81,000 fish that was subsequently revised downward to about 70,000 sockeye just prior to the season. Actual harvest totaled 67,000 sockeye (Table 3; Appendices A13 and A14), nearly achieving the revised forecast but still greater than the recent 10-year average by over 50%. The seine fleet harvested about 48% of the Eastern District sockeye salmon total, almost exclusively from the Resurrection Bay Subdistrict (Tables 1 and 3), while the remaining 52% was taken as hatchery cost recovery in Resurrection Bay for the Bear Lake sockeye enhancement project near Seward.

Sockeye enhancement activities by CIAA at Bear Lake resulted in an original projected run ranging up to 86,000 fish assuming optimum survival of various smolt and fry releases. CIAA revised that figure based on a re-analysis of historic information, subsequently issuing a new forecasted run of about 75,000 sockeye. If the revised forecast proved true, the expected harvestable surplus was about 63,000 fish after accounting for the desired inriver escapement requirements for Bear Lake, established at 5,600 to 13,200 sockeye in the 2006 Trail Lakes Hatchery Annual Management Plan (AMP).

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 5 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 2006 called for common property seining in marine waters to proceed 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 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 22 (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 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 3 years of adult runs from 1992 through 1994 actually trickled in over the course of 2 months. Between 1995 and 2005, with larger numbers of fish returning, the majority of the run appeared in marine waters at the head of Resurrection Bay during the first 2 weeks of June.

When the area first opened in 2006, 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, with the first landings made on May 23. Fish concentrations were meager at the time, but catches picked up slightly as the week progressed. Although catch rates started slowly during the second week of fishing, harvests and effort picked up considerably by the end of the week, and the cumulative catch had risen to over 11,000 sockeye by that time. Unfortunately, sockeye were only just beginning to show up at the Bear Creek counting weir in early June, suggesting that the run was weak or that seiners in marine waters were effectively slowing the run.

Seine effort and harvest remained fairly steady during the third week of fishing, bringing the cumulative catch through June 9 to approximately 26,500 sockeye, or more than doubling the catch of the first 2 weeks. This figure represented approximately 40% of the harvest forecast of 63,000 sockeye. Given the harvest rate at the time, the total cumulative seine catch was expected to approach 50% of the harvest forecast in the next day or two of open fishing. Although fresh waters of the Bear Lake Special Harvest Area (SHA) had been opened to hatchery fishing on a continuous basis beginning May 22, no cost recovery harvest had occurred. The reported escapement at the Bear Creek weir totaled approximately 3,000 sockeye through June 11, representing only about one-fourth of the desired inriver escapement goal and considered slightly below the long-term average for the date.

At the time, all indicators suggested that the remainder of the sockeye run to Bear Lake would be required to achieve both escapement and hatchery objectives. In an effort to promote escapement into Bear Lake, and to provide additional opportunity for CIAA to conduct cost recovery on enhanced sockeye returning to Bear Lake, the commercial seine fishery in Resurrection Bay was closed on the evening of June 13, and marine waters of the Bear Lake SHA were opened to hatchery harvest the next day on a 5-days-per week basis. The weekend closure was intended to provide additional protection to sockeye for escapement purposes. Effort and catches during the last 2 days of common property fishing were more modest than anticipated, bringing the final cumulative seine harvest in Resurrection Bay to 27,800 sockeye for the season (Table 3) taken by 13 permits.

Despite the hatchery opening in marine waters of the SHA beginning June 14, very little effort actually occurred, as concentrations of available fish appeared rather scattered. Nonetheless, a total of 4,000 sockeye were harvested by seine (Table 3) in the marine SHA during the week after it opened to hatchery harvest. Meanwhile, at the Bear Lake weir, fish numbers increased steadily as the month progressed, no doubt aided by the minimal fishing effort in saltwater. By

June 21, nearly 8,600 sockeye had been allowed to pass into Bear Lake, and at that point CIAA initiated cost recovery efforts at the weir. CIAA continued to selectively harvest fish into early August, while also allowing smaller numbers into the lake. The peak harvest at the weir occurred between June 25 and July 2, when the daily catch averaged over 2,300 sockeye per day. By the conclusion of the run, CIAA had harvested a cumulative total of just under 31,000 sockeye at the weir (Table 3), while escapement into the lake totaled 12,400 sockeye (Table 3). When these numbers were combined with the common property and hatchery seine catches, the total sockeye salmon return to Bear Lake was estimated at nearly 75,000 fish (Table 3), achieving the revised preseason forecast while additionally representing the largest run since inception of the enhancement program at Bear Lake.

At Aialik Lake in Aialik Subdistrict, aerial surveys were initiated on June 16, and a surprising count of 620 sockeye salmon was noted in fresh water at this relatively early date. Unfortunately, escapement rose by only 300 fish over the next 12 days, with an aerial estimate totaling 900 sockeye in fresh water made on July 3. By the next survey on July 12, however, escapement had jumped to almost 4,800 fish, and since this figure fell within the SEG (3,700–8,000), waters of Aialik Subdistrict, including Aialik Lagoon, were opened to seining 5 days per week beginning July 14. The relative lateness of the opening, coupled with what was considered a modest return at best, resulted in only minor effort, but the cumulative harvest was still a reasonable 4,600 sockeye (Table 3). No further aerial surveys of the system were flown due to predominantly poor weather, thus the peak survey on July 12 ultimately was used to produce the final escapement index of just under 4,800 sockeye for Aialik Lake (Table 3; Appendix A23).

Pink Salmon

No harvestable surplus of pink salmon was forecasted in Eastern District waters for 2006. 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 were limited to on-grounds estimates in early September. Results and final estimates suggested that returns were not strong but generally fell within established SEG's. At Bear and Salmon Creeks, where the combined pink SEG is 4,900 to 21,700 fish, a total of 9,000 pinks were estimated (Table 5; Appendix A24), while the figure for Thumb Cove, with an SEG of 2,400 to 8,900, was estimated at 5,200 pinks. At Humpy Cove (900 to 3,200 SEG), about 1,900 fish were estimated, and a survey of Tonsina Creek produced an estimate of 6,500 pinks, slightly exceeding the SEG range of 500 to 5,900 pinks. 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. In Aialik Bay, although no directed pink salmon openings were allowed this season, a minor harvest of 3,500 pinks (Table 5) came as incidental catch during directed efforts at sockeye salmon in the subdistrict.

Other Species

Chum salmon have occasionally been an important component of commercial catches in the Eastern District, but catches during the past 10 years have averaged only about 350 fish annually. This season's chum harvest failed to achieve that figure, amounting to 270 fish (Table 6; Appendix A21), all taken incidentally during the directed sockeye salmon fishery in Aialik Bay in July. Due to a pattern of weak Eastern District runs over the past 10–15 years, no directed openings for chum salmon were allowed in the Eastern District this season. Approximately 400 chum salmon were estimated as escapement into Tonsina Creek in Resurrection Bay (Table 6),

continuing the trend of weak returns to this system. However, it should be noted that the single ground survey of Tonsina Creek in 2006 was conducted in early September, well after the normal run timing for chum salmon in that system.

Coho salmon are not normally a commercially important species in the Eastern District but are an integral component of an enhancement project, originating from Bear Lake, which benefits sport fishermen in area waters. Because the Resurrection Bay Salmon Management Plan specifically directs 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 2006, a total of 2,300 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 traditionally 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 to a commercial processor(s). Because market forces now make product quality a central issue, many coho 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 1,500 coho salmon (Tables 1 and 4), comprising about 5% of the entire LCI coho catch this season. Approximately 600 coho were collected for hatchery broodstock, while an additional 2,000 fish were allowed into Bear Lake as escapement (Table 4). Total commercial catch in the entire Eastern District amounted to about 3,800 coho salmon (Table 4; Appendix A17), falling short of the recent 10-year average of 6,100.

2006 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 1970's, enhancement and rehabilitation projects have made significant contributions to both commercial and sport fishing harvests. These contributions have historically ranged from 24% to 90% of the entire LCI commercial salmon harvest and are expected to remain very important in future years.

Projects initiated by the ADF&G and presently being undertaken by CIAA provided an estimated 11% (189,000 salmon) of the total 2006 LCI commercial harvest of 1.80 million fish. PGHC-produced fish contributed an additional 14%, or 248,000 fish, to LCI salmon harvests in 2006. The Leisure/Hazel, Kirschner, and Bear Lakes sockeye salmon enhancement projects produced approximately 84% (187,800 fish) of the total LCI sockeye harvest of 224,300 fish in 2006, an increase over the percentages from the previous 2 years and equal to the record high of 84% contributions in both 1995 and 1999. Port Graham Hatchery production accounted for 17% (248,000 fish) of the 2006 LCI commercial pink salmon harvest of 1.47 million fish.

Using average weights per fish and average prices per pound in LCI, salmon produced by CIAA and PGHC contributed an estimated 46% ($0.89 million) to the $1.92 million total value of the 2006 LCI commercial salmon harvest. About one-fifth ($0.38 million) of the total exvessel value of the fishery was utilized for hatchery cost recovery purposes (Table 7). A brief description of the current enhancement projects in LCI follows.

TUTKA LAGOON HATCHERY

The Tutka Lagoon Salmon Hatchery/Rearing Facility was constructed in 1976 with an initial production capacity of 10 million salmon eggs, but expansion over time, including major renovation work during the winter of 1993–1994, increased its capacity to approximately 150 million eggs. Pink salmon were the primary species produced at the hatchery, while secondary chum enhancement was discontinued in favor of experimental efforts directed toward sockeye salmon. Although the hatchery had a sockeye 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 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. 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 collect and incubate eggs from Hidden Lake sockeye salmon, in the Kenai River drainage of Upper Cook Inlet, for use in this project. Plans call for an egg collection from that location for 5 years beginning in 2006, incubation of the eggs and rearing of fry at Trail Lakes Hatchery in Moose Pass, and release of smolt at Tutka Lagoon. Ultimately CIAA expects to utilize sockeye adults returning to Tutka Lagoon as the source of eggs to supply the LCI lake stocking program that includes Leisure, Hazel, and Kirschner Lakes. In 2006, CIAA released an estimated 255,000 sockeye salmon smolts from Tutka Lagoon as part of this program (Appendix A34).

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 3 miles south of Leisure Lake and emptying into Neptune Bay. Since their inception, these projects have produced over 2.76 million adult sockeye (Appendix A15), making significant contributions to the commercial and recreational sockeye harvests in the Southern District.

Because of the close proximity of the two terminal harvest areas, and the absence of a mark/recovery program, adult returns to Leisure and Hazel Lakes cannot be separately identified through sampling within the commercial catches and are therefore presented as a combined total.

The cumulative total sockeye return to Leisure and Hazel Lakes in 2006 was estimated at just under 82,000 fish (Figure 10; Appendix A15), the third lowest figure since those two returns have been tallied together beginning in 1991. The cumulative estimated commercial harvest of 75,300 fish produced by the two projects comprised approximately 84% of the Southern District sockeye harvest and just over one-third of the total LCI sockeye salmon harvest. The total Southern District sockeye harvest of 89,500 fish was the third consecutive below average harvest over the past decade.

Leisure Lake was stocked with 0.68 million sockeye fry in 2006, well below the recent 10-year average of 1.62 million, while Hazel Lake was not stocked this season (Appendix A34). The reason for these low or absent figures is because CIAA was attempting to transition from the original egg source (Tustumena Lake) to the new temporary egg source (Hidden Lake), but the Hidden Lake sockeye return in 2005 was considerably less than expected. Additionally, CIAA was unable to secure permission from the U.S. Fish and Wildlife Service to collect eggs for this purpose until after the majority of adults had already spawned that year.

As previously mentioned, the brood source for the LCI lake stocking programs, from Tustumena Lake, became unavailable to CIAA after 2004. CIAA has initiated a remote sockeye salmon release program from Tutka Lagoon, utilizing sockeye eggs collected from Hidden Lake broodstock in Upper Cook Inlet. Egg collections from this location are expected to continue through 2010, 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 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 (Appendix A23). The decline of the English Bay sockeye run 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 A34). 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, and 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 (Appendix A23), 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 figure over the past 20 years.

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. When the sockeye enhancement project's annual broodstock requirements, which are removed from the escapement into the lakes, were added onto the SEG, the desired inriver escapement goal became a range of 9,400 to 16,900 sockeye (midpoint 13,150) for the 2006 season.

Unfortunately, the preseason forecast for sockeye salmon returning to the English Bay Lakes system was only 5,700 fish in 2006. Since this figure was less than the low end of the SEG, 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 on April 1, was also closed beginning June 1 since all returning adults would likely be required for biological requirements. The poor adult return forecast this year was due to low smolt emigration numbers in 2003 and 2004. An egg removal schedule for English Bay Lakes was included in the 2006 Port Graham Hatchery Annual Management Plan (AMP) 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 31, with the first fish passage documented on June 3, but at less than 25 fish numbers were expectedly low. Fish passage remained relatively low over the next week, at which time the weir became inoperable for 3 consecutive days due to high water. Upon resumption of weir operation, counts began to climb for the remainder of June, and by June 29 the cumulative escapement totaled about 6,800 sockeye, achieving the low end of the SEG range. As a result, subsistence set gillnet fishing in waters of Port Graham Subdistrict, including both the Port Graham and English Bay Sections, was reopened to fishing on the regularly scheduled weekly fishing periods beginning late on June 29. Recognizing the greater harvesting potential of the commercial set gillnet fishery, the staff elected to keep that fishery closed.

Daily escapement counts remained good through the second week of July, but the counting weir was shut down on July 12 due to fiscal issues. The final cumulative escapement for the season was estimated at 15,500 sockeye (Table 3; Appendix A23), falling near the upper end of the desired inriver escapement range. Nonetheless, because the sockeye run was stronger than forecast and the escapement fell within the desired inriver range, NSEP was authorized to collect a full complement of broodstock from the English Bay Lakes system as outlined in the hatchery's Annual Management Plan. For the second consecutive season, however, NSEP elected not to collect any fish for broodstock in 2006, therefore no egg take occurred. With another poor forecast for the adult sockeye run to English Bay Lakes, it is unclear whether sockeye eggs will be collected in 2007.

The commercial set gillnet fishery in Port Graham Subdistrict remained closed to fishing through the sockeye run in 2006, thus no harvest of this species occurred. The 2006 subsistence harvest by villagers from Port Graham, annually compiled by ADF&G's Subsistence Division, was estimated at only 31 sockeye, while that of Nanwalek was unavailable at the time of publication. Historical subsistence catches in these two villages can be found in Appendices A31 and A32. The cumulative total run of sockeye to English Bay Lakes in 2006, including escapement but excluding subsistence harvest, was estimated at 15,500 fish.

Since there was no sockeye salmon brood collection from English Bay Lakes in 2005, no fry were available for release back into the lakes in 2006. Historical release figures for this system are found in Appendix A34.

BEAR LAKE SOCKEYE SALMON ENHANCEMENT

Bear Lake, located at the head of Resurrection Bay in the Eastern District, has been the target of sockeye salmon enhancement efforts for over a decade. 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 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 A34).

The first year of enhanced adult sockeye 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. Between 1996 and 2004, runs did not meet the system's hypothesized potential, but the return in 2005 displayed considerable improvement.

Management objectives in the commercial salmon fishery in Resurrection Bay during 2006 remained the same as those of the 2005 season, 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. Initial plans called 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 a hatchery opening in salt water would be necessary to equalize catches. Additionally, CIAA intended to harvest sockeye salmon that were excess to escapement requirements at the Bear Creek weir.

The harvestable surplus of sockeye salmon bound for Bear Lake, originally forecasted at 73,000 fish, was revised to a new total of 63,300 fish in 2006. The initial commercial seine fishing schedule implemented in waters of Resurrection Bay was similar to the previous season at 5 days per week beginning May 22. Commercial harvests as well as escapement trends were monitored closely, with the first seine catches reported on May 23 and the first fish arriving at the weir on May 21, both considered somewhat early by historical standards although numbers were small. By the end of May, commercial seiners had harvested around 4,300 sockeye, but as expected catch rates picked up in early June. Seine catch figures rose to approximately 26,500 sockeye by June 9, or about 40% of the revised preseason harvest forecast, and the harvest rate at the time suggested that seiners would attain 50% of the preseason harvest projection in the next day or

two of open fishing. As a result, commercial seining in Resurrection Bay was closed on the evening of June 13 after a cumulative harvest of 27,800 sockeye (Table 3) taken by 13 seiners. Marine waters of the Bear Lake SHA were opened to hatchery-only fishing 5 days per week beginning June 14, but very little effort ensued, resulting in a cumulative hatchery seine harvest of 4,000 sockeye (Table 3). The hatchery catch at the weir totaled 30,650 sockeye for the season (Table 3), while the final cumulative escapement was 12,400 sockeye (Table 3; Appendix A23). The 2006 Bear Lake total run (escapement, hatchery, and commercial catch) came in at just under 75,000 sockeye, achieving the preseason forecast and also representing the largest return to Bear Lake since the inception of the enhancement program.

A cumulative total of approximately 3.4 million sockeye fry and smolts were released into Bear Lake/Creek during 2006 (Appendix A34), while 6.1 million sockeye eggs were collected for incubation over the 2006–2007 winter at Trail Lakes Hatchery in Moose Pass. Increased stocking levels in Bear Lake over the past five seasons are expected to increase adult returns commensurately in future years.

OTHER SOCKEYE SALMON LAKE STOCKING

Kirschner Lake in the Kamishak Bay District was first stocked with sockeye salmon fry in 1987 (Appendix A34), and 2006 marked the eighteenth year that adult sockeye have returned to this site. This year catch was split between common property seiners (24,100 sockeye) and hatchery cost recovery (26,300 sockeye; Table 3). The 2006 run, estimated just over 50,000 sockeye, was over twice the preseason forecast of 24,000 fish and represented the greatest return to this system since the start of the stocking program there. The Kirschner Lake system has remained one of the steadiest producers of LCI stocked lakes since the inception of the program. No sockeye salmon fry were stocked into Kirschner Lake in 2006 (Appendix A34) due to logistical and permit difficulties in obtaining broodstock from Hidden Lake (see **Leisure and Hazel Lakes Sockeye Salmon Stocking**).

No sockeye salmon were expected to return to four other Kamishak Bay lake systems (Bruin, Ursus, Upper Paint, and Lower Paint) in 2006. All of these systems were evaluated through pre-stocking studies conducted between 1986 and 1989 and were regularly stocked with sockeye fry between 1988 and 1996 (Appendix A34). After that time, all stocking at these sites was suspended, with one exception. CIAA was granted a one-time permit to experimentally stock Upper Paint Lake with 536,000 sockeye “pre-smolts” in early October of 2002. An amendment to the 2002 Trails Lake Annual Management Plan allowed the aquaculture association to stock juveniles that were surplus to the 2002 AMP stocking schedule, a result of unexpectedly high survival rates during the incubation phase at Trails Lake Hatchery. This was the first time the Paint River Lakes system has ever been stocked in the fall with fry that were reared to the pre-smolt stage; all previous releases were of traditional spring/early summer fry releases. Permit conditions for this experimental stocking required that CIAA conduct smolt outmigration studies in the spring of 2003, which resulted in a smolt count of only 7,000 fish, suggesting that over-winter survival was poor. Furthermore, follow-up hydroacoustic surveys in October 2003 revealed that no fingerlings were overwintering in the lake system, refuting the hypothesis that the stocked juveniles may have held over in the lake for an additional year. Adult sockeye resulting from the pre-smolt release began returning to Paint River in 2005, with a surprising estimate of 2,000 fish observed by aerial surveys. This return would suggest that the assessment work conducted in the spring of 2003 might have missed the majority of the smolt outmigration,

which likely occurred after ice-out but prior to installation of the enumeration weir. No adult sockeye were seen at the mouth of the Paint River in 2006.

HALIBUT COVE LAGOON AND SELDOVIA BAY CHINOOK SALMON ENHANCEMENT

Chinook salmon enhancement projects at the Southern District sites of Halibut Cove Lagoon and Seldovia Bay involve the remote release of Chinook salmon smolts, with the objective of increasing sport fishing opportunities in Kachemak Bay. The program at Halibut Cove Lagoon is the oldest and one of the most popular sport fishing enhancement projects in LCI, operating continually with an annual release of smolts since 1979. Although adult returns from the two stocking programs are not intended for commercial harvest, there is incidental harvest of these Chinook salmon in the commercial set gillnet and seine fisheries. The historical estimated incidental harvest of enhanced Chinook salmon by commercial fishermen in Halibut Cove Subdistrict thought to approach 30% of the total annual run, but no such estimates are available for the commercial fishery in Seldovia Bay Subdistrict. Percentage figures for the incidental Chinook harvest during 2006 were not generated but were thought to be below the historical average. The commercial harvest of Chinook salmon in Halibut Cove and Seldovia Bay Subdistricts this season totaled approximately 321 and 78 fish, respectively, while 160 Chinook were caught in Tutka Bay Subdistrict (Table 2). The cumulative Southern District Chinook salmon harvest of 636 during 2006 represents the second lowest total since 1980. Historical releases of juvenile Chinook salmon at these two project sites are found in Appendix A34.

PORT GRAHAM HATCHERY

In an effort to supplement natural fish production and provide increased employment opportunities in the native village of Port Graham, the Port Graham Hatchery Corporation (PGHC) applied for and received a permit to operate a private non-profit (PNP) hatchery in 1992. Port Graham is located approximately 21 nautical miles southwest of Homer on the south side of Kachemak Bay (Figure 2). The hatchery 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 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.

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

The approved Port Graham Hatchery BMP designated a salt water Special Harvest Area (SHA) to allow for broodstock collection and cost recovery harvest (Figure 5). The SHA was designed to provide a migration corridor on the northeast side of the bay for fish traveling to Port Graham River at the head of the bay, thus affording some limited protection to the natural spawning stocks of pink and chum salmon.

Pink salmon returns to Port Graham Hatchery have historically ranged from zero (1992 and 1993) to 1.36 million (2004), the latter a record for the facility to date. Unfortunately, annual returns have failed to achieve preseason projections during most years since the hatchery initiated operations, and in many years most if not all returning fish have been used solely for broodstock.

The release of 26.6 million pink salmon fry from the Port Graham Hatchery in the spring of 2005 was a considerable decrease from the record 57.2 million released in 2003 but still the second highest on record (Appendix A34), generating an adult return forecast for 2006 of approximately 691,000 fish. The actual total return (hatchery cost recovery and broodstock) totaled only about 281,000 fish, or about 40% of the preseason forecast. The bulk of the return (88%) was utilized to recoup operational expenses, with another 27,700 fish used for broodstock purposes. Hatchery personnel estimated that an additional 5,000 pinks, believed to be of hatchery origin, entered nearby Duncan Slough to attempt to spawn. In the Port Graham River approximately 31,000 pink salmon were estimated as escapement, surpassing the upper limit of the established SEG range (Appendix A24). An estimated 13.9 million pink salmon fry were released from the Port Graham Hatchery in the spring of 2006 (Appendix A34), the third consecutive year of reduced pink salmon releases.

Although all efforts prior to 1993 were directed towards pink salmon, sockeye salmon production has also been underway at the Port Graham Hatchery. 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. Prior to 1993, eggs from this collection site were incubated at Big Lake Hatchery near Wasilla. After incubation and hatching at the Port Graham Hatchery, fry were transported back to the English Bay Lakes the following spring for either direct release or long-term rearing in net pens prior to release (for additional information, see the previous "**English Bay Sockeye Salmon Rehabilitation**" section). 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, a hatchery permit alteration request (PAR) was submitted by the PGHC to allow development of a sockeye salmon return to marine waters near the village of Port Graham. The permit was approved for 2 years beginning in 2004, allowing the corporation to collect up to 1.8 million sockeye eggs from English Bay Lakes broodstock for incubation at the Port Graham Hatchery (this figure is in addition to the 1.35 million permitted egg capacity for the separate English Bay Lakes sockeye project). The original project plans called for rearing the emergent fry in impermeable rearing pens, also known as "vertical raceways", anchored in salt waters of Port Graham Bay near the hatchery facility. During the rearing process, fry were to be fed while gradually being acclimated to salt water. Upon full salt water acclimation, plans called for fry to be transferred into salt water net pens, where rearing continued until fry reach a size of 12 to 15 grams, at which time they were to be released. This year, fry resulting from the 2004 egg take at English Bay "Second" Lake were reared at Trail Lakes Hatchery, with a portion transported back

to English Bay Lakes and released in October 2005. The remaining sockeye (approximately 0.4 million) were transported to net pens in Port Graham Bay in spring of 2006 and subsequently released after a period of further rearing and imprinting (Appendix A34).

Late in 2006, Port Graham Hatchery submitted a PAR that was ultimately amended by ADF&G and subsequently approved. The resulting impact capped the hatchery's sockeye salmon egg capacity at 1.35 million, or the original upper limit for the English Bay Lakes enhancement project, while dividing this total between the English Bay Lakes project and the newer Port Graham Hatchery release project. After agreement by officials from the village of Nanwalek, up to 200,000 sockeye eggs could be collected from English Bay Lakes for subsequent release back into that system, while the remaining 1.15 million eggs would be available for eventual release from the Port Graham Hatchery facility. The permit for the Port Graham Hatchery project expires in 2009, while that for the English Bay Lakes project is effective through 2013.

PAINT RIVER FISH PASS

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

To test the feasibility of developing a sockeye salmon return to the fish pass project site, the Paint River Lakes were first stocked with sockeye fry in 1986 and annually from 1988 through 1996, except in 1994 when no fry were available (Appendix A34). Because adult returns from these plantings proved negligible, CIAA discontinued fry stocking after the 1996 season (except for an experimental release in 2002, see previous heading **"Other Sockeye Salmon Lake Stocking"**). Due to the small numbers of annually returning fish, the Paint River fish pass has never opened to migrating adult salmon and no freshwater escapement has ever occurred.

2007 COMMERCIAL SALMON FISHERY OUTLOOK

SOCKEYE SALMON

Commercial sockeye salmon harvests in LCI during 2007 could approach 367,000 fish, which is about 23% greater than the recent 10-year average catch of 298,000. Approximately two-thirds of the total sockeye harvest is expected to result from continuing enhancement and lake stocking projects in LCI. Forecasted returns to enhancement sites at Leisure and Hazel Lakes in the Southern District during 2007 are expected to increase over the previous three seasons, with a harvest projection of about 82,000 sockeye anticipated at Leisure Lake/China Poot Bay and an additional 24,000 sockeye expected at Hazel Lake/Neptune Bay.

Kirschner Lake in the Kamishak Bay District is expected to produce nearly 26,000 adult sockeye in 2007. 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 2007. Despite the discontinuation of the stocking program at Chenik Lake in the Kamishak Bay District, the sockeye run to that system, and potential harvest opportunities,

remain questionable in 2007. It should be noted that the adult sockeye runs to that site over the past four seasons, all entirely the result of natural production, were unexpectedly the strongest since 1993, leaving open the possibility that a reasonably strong return could produce a harvestable surplus in 2007.

The 2007 enhanced sockeye run to Bear Lake (sixteenth year of enhanced returns) is expected to produce a harvest of about 100,000 fish after accounting for broodstock and escapement requirements. The management plan now in place, adopted by the Alaska Board of Fisheries at their November 2004 meeting in Anchorage and implemented for the first time in 2005, specifies that the harvestable surplus is to be split equally between CIAA for hatchery cost recovery and the common property seine fleet.

The preseason forecast for English Bay Lakes in the Southern District calls for no harvestable surplus in 2007, resulting from low stocking levels and low smolt outmigration counts during previous years. The prediction for a weak return will likely dictate very restrictive management measures, including the potential for total closures, in both the commercial and subsistence set gillnet fisheries of Port Graham Subdistrict.

Based solely on average historical harvests, natural sockeye run projections for LCI could be expected to contribute up to 83,000 fish to commercial catches in 2007. Despite not reaching preseason predictions during recent years, natural sockeye runs have nevertheless been generally positive, with a concurrent improvement in both spawning escapements to and 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 2007 could approach 1.07 million fish, with natural production expected to provide just over 90% of the total. The pink return to Port Graham Hatchery is projected to produce a harvest of only about 77,000 fish based on a release of just under 14.0 million fry 2006. However, broodstock and cost recovery requirements will likely account for all pinks returning to the Port Graham Hatchery. Tutka Hatchery in the Southern District has suspended all activities, therefore no pink salmon are expected back to that site as a result of hatchery releases.

Natural pink salmon spawning escapement levels into most major LCI systems were considered good in 2005, contributing to a harvest projection of 988,000 naturally produced pink salmon throughout the entire LCI management area (Otis *In prep* b). The bulk of the 2007 predicted surplus is expected to occur at Port Dick in the Outer District, with Rocky Bay, Windy Bay, and Port Chatham holding potential for smaller surpluses. In Kamishak Bay, systems at Rocky and Ursus Coves are predicted to produce surpluses, while surpluses in the Southern District could occur at Humpy Creek, Seldovia, and Port Graham in 2007. The forecast, however, must be viewed with caution based on the recent history of erratic tender service, weak markets, and a lack of active buyers, and it therefore remains questionable whether the harvest forecast of naturally produced pinks will be realized in 2007.

CHUM SALMON

Based solely on average harvests since 1988, the total LCI commercial chum salmon catch is projected to reach almost 41,000 fish during 2007. Chum runs have rebounded in recent years, however, resulting in commercial catches that exceeded the 2007 forecast figure during all but one of the past seven seasons. This suggests that actual harvests during 2007 could be greater than the projection, and based on the recent years' pattern, the greatest potential for harvest opportunities will likely occur in the Kamishak Bay District. The LCI chum harvest will consist exclusively of natural production since chum salmon enhancement is no longer conducted in LCI.

CHINOOK AND COHO SALMON

No formal harvest forecast is prepared for Chinook or coho salmon in LCI. However, average annual harvests since 1980 indicate that about 1,300 Chinook and 14,000 coho salmon can be expected to contribute to LCI commercial harvests in 2007.

Following are the projected harvest figures by species in the Lower Cook Inlet management area during 2007:

Species	Harvests of Enhanced Returns	Harvests of Natural Returns	Total Harvest
Chinook	[a]	[a]	1,300[a]
Sockeye	250,700[b]	82,900[c]	366,600
Coho	[a]	[a]	14,100[a]
Pink	77,300[b]	988,000	1,065,300
Chum	0	40,600[c]	40,600
Total	**328,000**	**1,111,500**	**1,184,200**

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

[b] Includes common property plus cost recovery harvests.

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

2006 SUBSISTENCE AND PERSONAL USE SALMON NET FISHERIES

KACHEMAK BAY PERSONAL USE SET 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 1980's and early 1990's, 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 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 1980's and 1990's, 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**). The BOF last addressed this fishery during it's 1998 meeting in Homer. After hearing the staff's concerns regarding the harvest of wild stocks of coho, the BOF adopted a change to the regulatory guideline harvest range (GHR), from a former range of 2,500 to 3,500 coho salmon to a new range of 1,000 to 2,000 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 2006 personal use fishery. Legal gear was limited to a single set gillnet not exceeding 35 fathoms in length, 45 meshes in depth, and 6 inches in mesh size. Nets were not 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 Wednesday 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 6 hours later. Therefore, the opening was delayed by emergency order until the next regularly scheduled fishing period beginning at 6:00 a.m. Thursday, August 17, 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 2005, years of intensive management for the GHR, fishing time allowed in this fishery ranged from 72 to 216 hours.

No coho salmon were 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 17, ADF&G requested voluntary daily reporting from each permit holder during the fishery, as has been the case since 1991. Information collected after the first three 48-hour fishing periods indicated a cumulative catch of just over 1,000 coho salmon harvested by 48 (54%) of the 89 permit holders. The catch at this point was just over the lower end of the 1,000–2,000 coho guideline harvest range, and when compared to historical data, the catch and catch rates suggested a reasonably strong coho return. Department staff announced that one additional 48-hour period would be allowed, and that the 2006 Southern District personal use coho salmon gillnet fishery would then close effective at 6:00 a.m. Wednesday, August 30 (Table 8). The staff reasoned that the additional fishing period would likely result in a cumulative total harvest near the midpoint of the GHL and would not jeopardize any wild stocks. Total fishing time allowed this season was 192 hours, or four regular weekly periods.

A total of 89 permits were issued for the 2006 fishery (Appendix A29), while 82 permit holders (92%) either phoned in their catches or returned their permits. Of the total number issued, 62 permit holders (70%) actively fished, 20 (22%) did not fish at all, and the remaining 7 permit holders (8%) did not report or return their permit. Based on returned permits and voluntary catch reports, the harvest was estimated to be 1,295 coho, 221 pinks, 41 sockeye, 15 Chinook, and 5 chum salmon (Appendix A29). The 2006 coho total represents the third lowest catch in the personal use gillnet fishery over the past 30 years.

The number of permits issued for the 2006 personal use fishery (89) was a decrease from the previous year when 108 permits were issued and the lowest total since 1970, well before production from Kachemak Bay coho enhancement programs began contributing to the fishery. The percentage of permits that actually fished, at 70% of the total issued (or 62 of 89 permits), was considerably below the record high of 78% in 1994 but was equal to the recent 10-year average. Perhaps more importantly, only 20 permits fished on the east side of the Homer Spit this season, compared to an annual average number of 46 permits fished there since 1999. The harvest of 1,295 coho this season was about 13% less than the of average annual harvest of 1,489 coho between 1999 and 2005, years that the personal use fishery was managed for the lower 1,000 to 2,000 coho GHR.

The duration of the 2006 Southern District personal use fishery, at 192 hours of fishing time, was the second most allowed since intensive management of the fishery began in 1991, and was approximately 61% greater than the average duration of 119 hours during that same time period. Both the number of permits issued and the active fishing effort were decreases from the previous 2 years and were considered quite low when compared to historical levels (Appendix A29). Reasons for the declining trend in participation are likely due to the popularity of other alternative personal use fisheries in Upper Cook Inlet targeting sockeye salmon. Permits for, and catches in, the personal use fisheries north of Homer (e.g. the Kasilof and Kenai River dip and set gillnet fisheries) have been relatively high in recent years. Since current regulations prohibit issuance of more than one Cook Inlet personal use permit to a household in any calendar year, individuals must choose only one Cook Inlet fishery in which to potentially participate. Many individuals now choose to forego the LCI coho fishery and instead participate in one of the Upper Cook Inlet personal use sockeye fisheries, perhaps due to a preference for sockeye over coho, or perhaps due to a preference for the dip net gear type as opposed to set gillnets.

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 ADF&G 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 midpoint of the early run coho return is approximately mid-August and closely corresponds 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 overlapping run timing windows of the combined early and late coho runs likely tend to 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 usually leads 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. Since enhancement on the Spit began, the greatest fishing success in the personal use fishery has traditionally occurred in those waters adjacent to the enhancement lagoon, but in 2006 other areas, particularly along the south shore of Kachemak Bay, produced total catches approaching that 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 at times combined to incite fishermen to clamor for fishing sites on the Spit, a situation which resulted in numerous violations during some previous gillnet fisheries. The last time that Alaska Bureau of Wildlife Enforcement (ABWE) officers issued citations during this fishery was in 1994. Since then, numerous verbal warnings have been issued, and many complaints received via telephone in the Homer ADF&G office regarding infractions. This year ABWE officers were once again on site for the beginning of the fishery, and as is usually the case, the presence of these uniformed officials generated relatively expedient voluntary compliance. As a result, no formal citations were issued.

The lower GHR implemented in 1999 appears to have succeeded at 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. This information, when combined with a personal use coho harvest near the lower end of the 1,000 to 2,000 fish GHR, suggests that relatively small numbers of wild stock fish were presumably taken in the gillnet fishery this year.

Overall run strength of coho returns to Kachemak Bay this year was estimated to be average to slightly above 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 over 3,000 fish versus only 1,400 fish for 2004, a year when coho returns to the area were considered excellent. Informal observations conducted in the local sport fishery by Division of Sport Fish staff indicated reasonably strong returns to the enhancement lagoon. This year's only aerial survey of Clearwater Creek, the major coho index stream at the head of Kachemak Bay, suggested excellent returns of wild stock coho salmon to the area. Approximately 2,800 coho were estimated on the September 11 survey, one of the highest totals on record for this location.

The 2006 catch of 15 Chinook salmon (Appendix A29) was the third lowest since 1993 and considerably lower than the long term average (1969–2005) of 49 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. Because of this, catches of Chinook salmon are expected to remain low in future personal use fisheries.

Catches in the 2007 personal use fishery are expected to be comparable to the previous 7 year period, 1999–2006, but the length of time to achieve a harvest within the GHR is difficult to

forecast, particularly when comparing this year's relatively long fishery (192 hours) to that of some previous years' total of only 72 hours. Additionally, run timing of the earlier returning stocked coho should 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 later run timing. However, low participation and effort levels in, and thus a longer duration of, the 2007 fishery could easily mitigate the previous statement. Once again, other alternative personal use fisheries elsewhere in Cook Inlet will likely 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 2007. Based on experience gained during the past 15 years' fisheries, and especially that of the past eight 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 fisheries during 2006 occurred near the villages of Nanwalek (formerly English Bay) and Port Graham, located approximately 21 nautical miles southwest of Homer on the south side of Kachemak Bay (Figure 2). Gear in this fishery is limited to set gillnets. Most fishing occurs within close proximity to the respective villages, primarily targeting 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. Some additional fishing also occurs in Koyuktolik ("Dogfish") Bay, located about 7 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 five 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 1980's and early 1990's, with runs failing to achieve the minimum escapement goal for 9 consecutive years between 1985 and 1993 (Appendix A23). 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, coupled with erratic adult behavior that caused difficulty in capturing broodstock, have plagued the program and led to inconsistent adult returns.

With less than 5,700 adult sockeye forecasted to return to English Bay Lakes in 2006, and an established SEG range of 6,000 to 13,500 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. By June 29, increased counts prompted the staff to project that an escapement within the SEG 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 late that same day. Because of the increased harvesting power of the commercial set gillnet gear group, that fishery was kept closed.

End-of-year harvest and effort summaries in the Port Graham/Nanwalek subsistence fishery, 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 300 fish in 2006, the lowest figure over the past 20 years (Appendix A31), undoubtedly due to the extended closure in area waters. No harvest figures were available for the village of Nanwalek in 2006 at the time of publication, but historical catch and effort figures are found in Appendix A32. 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 15,500 fish (Table 3; Appendix A23), falling slightly over the upper end of the SEG range of 6,000–13,500. NSEP normally collects sockeye salmon broodstock for their enhancement program from lake escapement, but in 2006 they elected not to do so for the second consecutive season.

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 GILLNET FISHERY

The set gillnet fishery in waters near Seldovia on the south side of Kachemak Bay in 2006 was the eleventh year of Lower Cook Inlet's newest subsistence salmon fishery. Established by the BOF at their LCI meeting in the fall of 1995, the fishery was designed to primarily target non-local stocks of Chinook salmon as they transited these waters. In considering initial seasons and bag limits, the BOF carefully restricted the fishery to reduce potential interception of enhanced Chinook salmon bound for a popular stocking site in the Seldovia small boat harbor. These enhanced fish were intended to principally benefit sport fishermen and were not considered "customary and traditional" for subsistence purposes.

Regulations in the fishery included a "split" season, the first occurring from April 1 through May 30 and the second occurring during the first 2 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 2 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 6 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 15 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, 12 of the 15 permits were returned to ADF&G as required by regulation, and catches were determined from records on each permit. For the early season, 6 of 15 permit holders (40%) actively fished, 6 (40%) did not fish, and 3 permit holders (20%) failed to return his/her permit (Appendix A33). The reported salmon catch for the early season totaled only 12 Chinook salmon (Appendix A33), while in the late season, one actively fished permit of the two permits issued reported a harvest of 21 pink salmon.

The 2006 early season Seldovia subsistence harvest of only 12 Chinook salmon was the lowest catch since the fishery was established (Appendix A33), and uncharacteristically, very few other salmon species were reported caught during the early season. The low Chinook catch is likely due in part to the low number of participants who actually fished, with only 6 permit holders actively fishing in 2006, compared to an average of 11 fished during the past decade. The low numbers of sockeye salmon harvested in the early season might be explained by the relatively weak return of that species to nearby English Bay Lakes this year. The record catch for both species in the Seldovia subsistence fishery occurred in 2000 when 189 Chinook and 249 sockeye salmon were harvested (Appendix A33).

The harvest in the 2007 Seldovia early season subsistence fishery is difficult to predict given the low participation in the previous two fisheries. If the number of actively fishing permit holders increases next year to pre-2005 levels, then harvests could increase commensurately.

2006 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 3 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 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 74 permanent and two interim-use permits are issued for the management area.

Outer/Eastern Districts

During the early years of sac roe herring fishing in LCI, seining occurred primarily in the Outer and Eastern Districts (Figure 1), with the majority of effort and harvest once again concentrated in Resurrection Bay of the Eastern District. The first major harvest occurred in 1969, when 760 st of herring were taken in the Eastern District. The catch increased dramatically in 1970 to a record high of 2,100 st in this district, but the stocks, and resultant harvests, declined over the next three seasons. The Alaska Board of Fish and Game allocated 1,000 st from the total LCI quota of 4,000 st to each of the Outer and Eastern Districts beginning with the 1974 season. However, stock abundance continued to decline and these quotas were never achieved. As a result, the Outer and Eastern Districts were closed to herring fishing from 1975 to 1984.

In 1985, the sac roe fishery was allowed to resume in the Outer and Eastern Districts on a very conservative basis, even though no noticeable change in spawning biomass had been observed. Because of the stocks' reduced abundance and extreme vulnerability to fishing, guideline harvest levels were set at 150 to 200 st for each of the four fishing areas created within these two districts. Fishing effort in 1985 was minimal and the majority of the harvest (216 st) once again was taken in Resurrection Bay. Only limited and sporadic harvests occurred in these two districts after 1985, with the majority of both the herring catch and the observed biomass comprised of fish age 4 and younger.

Despite considerable opportunity for exploratory fishing on a daily basis in the Outer and Eastern Districts during 1991 and 1992, the predominance of juvenile herring and the history of marginally acceptable roe recoveries from fish caught in these areas contributed to a lack of interest by fishermen and processors. These conditions prevailed from 1993 through 2001 and, consequently, the Outer and Eastern Districts were not opened to purse seining in any season during that 9-year period. At their November 2001 meeting, the Alaska Board of Fisheries (BOF) closed these districts to commercial herring fishing by regulation and simultaneously adopted a management plan containing seven specific criteria that must be addressed prior to allowing any commercial herring fishing in the Outer and/or Eastern Districts. Thus, no harvest or effort occurred in the Outer and Eastern Districts during the 2006 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 25 years has virtually precluded commercial openings in the Southern District. The only exception occurred in 1989, when 10 vessels in a single 2.5-hour opening harvested 170 st of herring (Appendix 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 (Appendix B1), 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 3 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 (Appendix B4). 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 (Appendix B1). 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.

2006 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 for the past 13 years to forecast herring abundance for Kamishak Bay, as well as to “hindcast” previous years’ total abundance. This dynamic model incorporates a variety of heterogeneous data sources including: 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 2006 Season Summary

Aerial survey coverage for Kamishak Bay in 2006 was considered poor, while overall observation conditions were considered fair. A total of 11 surveys were completed in the Kamishak Bay District between April 25 and June 20. Several 6 to 18 day "gaps" in coverage, or periods during which no surveys were flown due to poor weather, occurred in 2006. Based on historical observations, the arrival of herring in 2006 was considerably later than normal in the district for the second consecutive season, with fish first documented during a survey on May 15 when a cumulative total of 198 st were estimated throughout the district. The highest daily biomass estimation during the seasonal surveying period was made on June 20, with a cumulative estimate of 360 st made on that date, all observed in Bruin Bay District. It should be noted that the date of this survey occurred well after the historically traditional surveying period.

No sightings of spawning activity occurred during surveillance flights in 2006, considered abnormal by recent standards. Due to the often sporadic schedule of surveillance flights, however, correlation between documented spawning and herring abundance has traditionally not been attempted. Therefore, the lack of spawn sightings this year certainly substantiates the low abundances observed but is not in itself considered indicative of a weak herring return.

The poor assessment coverage in 2006 resulted in a cumulative total of less than 1,415 st of herring observed by ADF&G surveyors in the Kamishak Bay District this season, which was more than 2004's record low of 900 st but still the second lowest observed total in the past 17 seasons. The last 6 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. This contrasts with other North Gulf of Alaska herring populations, such as those in the Kodiak management area, which have 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. 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 2006 was considerably less. 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.

Reasonably good weather once again contributed to successful coverage by ADF&G's two spring vessel charters to collect age composition samples during the periods May 2–8 and May 15–23. The early sampling period coincided with the arrival of the first fish on the grounds, which normally corresponds to the traditional timing of the commercial fishery, while the second charter collected age composition samples during the latter portion of the return in 2006. During the 15 days spent in the district, the contracted vessel collected over 1,400 fish for age, weight, and length (AWL) analysis. Unfortunately, information and samples collected from the two charters corroborated the overall low abundance of the population observed by ADF&G aerial surveyors, while additionally confirming the low recruitment of new fish.

Based on hindcast estimates, herring biomass steadily declined in Kamishak Bay between 1985 and 2001 and has now stabilized at a very low level over the past 6 years. The ASA model estimated the total 2006 return at just over 2,100 st (Table 11; Figure 12; Appendix B4), the lowest figure in the past two decades. Recruitment into the spawning population did occur in 2006, but the magnitude of this recruitment was not as great as was hoped. Nonetheless, postseason data analysis of test fishing samples indicate that the overall return this season was dominated by fish age 4, age 7, and age 6 at 16.2%, 15.8%, and 12.6% of the biomass by weight, respectively (Table 11; Figure 13). While the 1997 and 1998 cohorts each appeared relatively strong at just under 9% of the total biomass, they were estimated to be less than one-quarter of the size of the very strong 1988 cohort that supported the commercial fishery throughout most of the 1990s.

Southern District 2006 Season Summary

A total of seven aerial surveys for herring in the Southern District were flown between May 2 and June 8 in 2006, all conducted under good conditions. The 2006 run biomass, estimated as the sum of all daily biomass estimates, totaled 3,835 st, which was the highest figure since 2000 when approximately 7,200 st were estimated. The number of surveys conducted this season was a slight increase over the four to five flown in each of the previous three seasons, yet the biomass figure for 2006 was significantly higher than the totals in any of those seasons. Nonetheless, the observed total continued to follow a pattern of overall low herring abundances in the Southern District during the past 2.5 decades. The peak 2006 individual biomass surveys occurred on the final two surveys of the season, June 2 when 1,232 st were estimated and June 8 when 1,653 were observed. Peak surveys in areas where herring historically have been observed were as follows: Mallard Bay, 1,030 st on June 8; Glacier Spit/Halibut Cove, 257 st on May 26; west side Homer Spit, 254 st on June 2; and Peterson Bay/China Poot Bay, 216 st on June 2. Very few fish were documented on the east side of the Homer Spit and in Mud Bay in 2006. As has been the persistent trend over the past 25 years, low abundance levels in the Southern District, combined with the recently adopted regulatory management plan mentioned previously, precluded any commercial fishing during the 2006 season.

Outer/Eastern District 2006 Season Summary

As in previous recent seasons, no herring assessment occurred in the Outer and Eastern Districts during 2006. 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.

2007 HERRING SEASON OUTLOOK

Kamishak Bay District

The forecasted herring biomass generated by the ASA model for 2007 in the Kamishak Bay District is 2,286 st (Table 11; Figure 12; Otis *In prep* a). This total falls below the KBDHMP regulatory threshold of 6,000 st for which a commercial harvest can be considered. Additionally, one-half of the predicted return by weight in 2007 should be comprised of fish age 5 and younger, with the single age-5 year class projected to make up approximately 23% of the overall return (Table 11; Figure 13). Since the KBDHMP directs ADF&G to limit the harvest of fish age 5 and younger, and because the forecasted abundance falls below threshold, the sac roe fishery in the Kamishak Bay district will remain closed for the 2007 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 2007, 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 2007 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 2007. 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 fall/winter of 2005 and 2006 from putative herring stocks from 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. Funding has been secured to process the otolith samples using a more precise instrument than was used in the pilot study. ADF&G plans to compare the results derived from each method 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. Results will be published in a peer-reviewed report and may lead to revision of fishery management plans for affected areas.

ACKNOWLEDGEMENTS

2006 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 eight permanent/seasonal employees in various area management and research programs during the 2006 season. Appreciation is extended to all personnel for a successful program during 2006.

A special acknowledgment is extended to two long-time Division of Commercial Fisheries employees in Lower Cook Inlet. Mark Dickson retired from ADF&G in November 2006 after 20 years of state service and 30 consecutive field seasons with the Department, nearly all spent at the Homer area office. Greg "Chief" Demers retired in September 2006 after 28 consecutive field seasons working out of the Homer area office. These individuals' dedicated and conscientious work ethic led to significant contributions for the finfish management and research programs in Lower Cook Inlet during their tenure. Mark and Greg, the staff would like to wish you much success and happiness in your retirement, and thanks from all of us!!

Permanent Employees during the 2006 season:

Lee Hammarstrom	Area Finfish Management Biologist
Mark Dickson	Fish & Wildlife Technician IV
Edward O. "Ted" Otis	LCI Finfish Research Project Leader
Marnee Beverage	Program Technician
Mark Hottmann	Boat Officer III

Seasonal Employees:

Greg Demers	Fish & Wildlife Technician III
Carla Armstrong	Fish & Wildlife Technician III
Robert "Bo" Fusco	Fish & Wildlife Technician III
Sigfus T. "Tom" Sigurdsson	Fish & Wildlife Technician II
Colby Sander	Fish & Wildlife Technician II
Sid Wolford	Vessel Technician II
Josh Mumm	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, 2006.

District Harvest Type Gear Type	Chinook	Sockeye	Coho	Pink	Chum	Total
Southern						
Commercial						
Set gillnet	580	14,219	2,426	12,289	2,019	31,533
Purse seine	56	52,020	610	3,446	163	56,295
Hatchery						
Purse seine	0	23,283	0	248,014	0	271,297
Total	***636***	***89,522***	***3,036***	***263,749***	***2,182***	***359,125***
Outer						
Commercial						
Purse seine	***3***	***3,198***	***1,139***	***1,121,892***	***12,883***	***1,139,115***
Eastern						
Commercial:						
Purse seine	0	32,393	1	3,460	270	36,124
Hatchery:						
Purse seine	0	4,004	0	0	0	4,004
Weir	0	30,651	1,511	0	0	32,162
Derby[a]						
Hook & Line			2,274			2,274
Total	***0***	***67,048***	***3,786***	***3,460***	***270***	***74,564***
Kamishak Bay						
Commercial						
Purse seine	0	38,267	24,269	77,833	56,494	196,863
Hatchery						
Purse seine	0	26,310	0	4,644	125	31,079
Total	***0***	***64,577***	***24,269***	***82,477***	***56,619***	***227,942***
LCI Total	**639**	**224,345**	**32,230**	**1,471,578**	**71,954**	**1,800,746**
Percent	0.04%	12.46%	1.79%	81.72%	4.00%	100.00%
1986–2005	1,430	274,235	11,933	1,318,945	61,024	1,667,567

Note: Figures for 2006 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, 2006.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Halibut Cove (set gillnet)	321		321
China Poot Bay (seine)	56		56
Tutka/Kasitsna Bays (set gillnet)	160		160
Barabara Creek (set gillnet)	21		21
Seldovia Bay (set gillnet)	78		78
SOUTHERN DISTRICT TOTAL	***636***		***636***
OUTER DISTRICT			
Port Dick – South Section	3		3
OUTER DISTRICT TOTAL	***3***		***3***
EASTERN DISTRICT TOTAL	***0***		***0***
KAMISHAK BAY DISTRICT TOTAL	***0***		***0***
TOTAL LOWER COOK INLET	***639***		***639***

Note: Figures for 2006 do not include a very small number of fish caught during commercial fishing periods but not sold (i.e. retained for personal use).

[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, 2006.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek		31	31
Halibut Cove			
Common Property (seine)	68		
Common Property (set gillnet)	1,790		
Total Catch			1,858
China Poot Bay			
Common Property (seine)	41,059		
Hatchery Cost Recovery	14,205		
China Poot Creek		820[b]	
Total			56,084
Neptune Bay			
Common Property (seine)	9,415		
Hatchery Cost Recovery	9,078		
Total Catch			18,493
Tutka/Kasitsna Bays			
Common Property (seine)	1,478		
Common Property (set gillnet)	4,387		
Total Catch			5,865
Barabara Creek (set gillnet)	1,686		1,686
Seldovia Bay (set gillnet)	6,356		6,356
English Bay Lakes		15,454[c]	15,454
SOUTHERN DISTRICT TOTAL	***89,522***	***16,305***	***105,827***
OUTER DISTRICT			
Dogfish Bay / Creek		10	10
Windy Bay / Windy Left Creek		1	1
Port Dick			
South Section	41		
Taylor Bay Section	2		
North Section	9		
Port Dick (head end) Creek		6	
Island Creek		2	
Total			60
East Nuka Bay	3,146		
Delight Lake		10,929[d]	
Desire Lake		18,600	
Delusion Lake		960	
Total			33,635
OUTER DISTRICT TOTAL	***3,198***	***30,508***	***33,706***

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Table 3.–Page 2 of 2.

Subdistrict/System	Catch	Escapement[a]	Total Run
EASTERN DISTRICT			
Aialik Bay / Aialik Lake	4,600	4,760	9,360
Resurrection Bay North			
Common Property (seine)	27,793		
Hatchery (seine)	4,004		
Hatchery (weir–sold)	29,867		
Hatchery (weir–donated)	784		
Bear Lake Escapement		8,338[e]	
Hatchery Broodstock		4,060[f]	
Bear & Salmon Creeks		4	
Total Run			74,850
EASTERN DISTRICT TOTAL	***67,048***	***17,162***	***84,210***
KAMISHAK BAY DISTRICT			
Iniskin Bay	10		10
Cottonwood/Iliamna Bays	92		92
Kirschner Lake			
Common Property (seine)	24,130		
Hatchery Cost Recovery	26,310		
Total Run			50,440
Bruin Bay/ Bruin Bay River		20	20
Chenik Lake	11,783		
Amakdedori Creek		300	
Chenik Creek/Lake		13,868[g]	
Total			25,951
McNeil Cove / Mikfik Lake & Creek	1,260	17,700	18,960
Kamishak Bay / Big Kamishak River		10	10
Douglas River / Silver Beach	992		992
KAMISHAK BAY DISTRICT TOTAL	***64,577***	***31,898***	***96,475***
TOTAL LOWER COOK INLET	***224,345***	***95,873***	***320,218***

Note: Figures for 2006 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] Weir counts for English Bay Lakes include 8,510 sockeye actually counted, an estimated 660 sockeye that entered the lake system during periods when the weir was not operational, and an estimated 6,284 sockeye that were mixed with pink salmon entering the system.

[d] Delight Lake escapement estimate derived from a combination of weir and aerial counts.

[e] Weir counts for Bear Lake sockeye include 12,398 sockeye actually counted, minus the broodstock harvest of 4,060 fish (taken from lake escapement).

[f] Hatchery broodstock figure for Bear Lake sockeye includes 150 mortalities.

[g] Chenik Lake escapement estimate derived from a combination of weir and video counts.

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, 2006.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Northshore Subdistr./Clearwater Slough		2,800	2,800
Halibut Cove (set gillnet)	175		175
China Poot Bay (seine)	489		489
Neptune Bay (seine)	104		104
Tutka/Kasitsna Bays			
Common Property (seine)	17		
Common Property (set gillnet)	599		
Total Catch			616
Barabara Creek (set gillnet)	133		133
Seldovia Bay (set gillnet)	48		48
Port Graham Section (set gillnet)	1,471		1,471
SOUTHERN DISTRICT TOTAL	***3,036***	***2,800***	***5,836***
OUTER DISTRICT			
Windy Bay	18		18
Port Dick (South Section)			
South Section	827		
Taylor Bay Section	3		
North Section	290		
Total Catch			1,120
East Arm Nuka Bay (McCarty Fiord)	1		1
OUTER DISTRICT TOTAL	***1,139***		***1,139***
EASTERN DISTRICT			
Aialik Bay	1		1
Resurrection Bay North			
Hatchery Harvest (donated)	1,511		
Sport Derby[b]	2,274		
Bear Lake Escapement (weir)		2,042	
Hatchery Broodstock		604[c]	
Total			6,431
EASTERN DISTRICT TOTAL	***3,786***	***2,646***	***6,432***

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Table 4.–Page 2 of 2.

Subdistrict/System	Catch	Escapement[a]	Total Run
KAMISHAK BAY DISTRICT			
Iniskin Bay	7		7
Cottonwood/Iliamna Bays	7		7
Chenik Lake	2		2
Rocky Cove	1		1
Ursus Cove	33		33
Douglas River / Douglas Reef River	24,219	10,400	34,619
KAMISHAK BAY DISTRICT TOTAL	***24,269***	***10,400***	***34,669***
TOTAL LOWER COOK INLET	***32,230***	***15,846***	***48,076***

Note: Figures for 2006 do not include a very 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 broodstock total includes 487 coho actually spawned and 117 mortalities (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, 2006.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek		48,368	48,368
China Poot Bay			
Common Property (seine)	3,211		
Hatchery Cost Recovery	19		
China Poot Creek		7,242	
Total			10,472
Neptune Bay			
Common Property (seine)	207		
Hatchery Cost Recovery	5		
Total Catch			212
Tutka/Kasitsna Bays			
Common Property (seine)	28		
Common Property (set gillnet)	11,195		
Tutka Lagoon Creek		25,824	
Total			37,047
Barabara Creek (set gillnet)	1,094	3,554	4,648
Seldovia Bay / River		70,045	70,045
Port Graham			
Hatchery Cost Recovery	247,990		
Port Graham River		31,173	
Duncan Slough		5,000[b]	
Hatchery Broodstock		27,741[c]	
Total			311,904
SOUTHERN DISTRICT TOTAL	***263,749***	***218,947***	***482,696***
OUTER DISTRICT			
Dogfish Bay		8,038	8,038
Port Chatham		24,210	24,210
Windy Bay	26,719		
Windy Right Creek		17,146	
Windy Left Creek		65,155	
Total			109,020
Rocky Bay & River		67,840	67,840

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Table 5.–Page 2 of 3.

Subdistrict/System	Catch	Escapement[a]	Total Run
OUTER DISTRICT (cont'd)			
Port Dick			
Outer Section	21,790		
South Section	704,318		
Taylor Bay Section	199,824		
North Section	167,794		
Port Dick (head end) Creek		51,500	
Slide Creek		13,471	
Middle Creek		16,366	
Island Creek		107,683	
Taylor Bay Creeks		40,989	
Total			1,323,735
Nuka Island / South Nuka Island Creek		5,100	5,100
East Arm Nuka Bay (McCarty Fiord)	1,447		
Delight Lake		8,884	
Desire Lake		74,774	
Delusion Lake		4,478	
Total			89,583
OUTER DISTRICT TOTAL	***1,121,892***	***505,634***	***1,627,526***
EASTERN DISTRICT			
Aialik Bay	3,460		3,460
Resurrection Bay North			
Bear/Salmon Creeks		9,033	
Sawmill Creek		657	
Spring Creek		476	
Tonsina Creek		6,453	
Humpy Cove		1,905	
Thumb Cove (Likes Creek)		5,205	
Total			23,729
EASTERN DISTRICT TOTAL	***3,460***	***23,729***	***27,189***
KAMISHAK BAY DISTRICT			
Iniskin Bay / North Head Creek	4,836		
Sugarloaf Creek		1,000	
North Head Creek		5,269	
Total			11,105
Cottonwood/Iliamna Bays	8,219		8,219
Ursus Cove	491		
Ursus Head Creek		394	
Brown's Peak Creek		35,703	
Total			36,588
Rocky Cove / Sunday Creek	10,743	70,037	80,780

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Table 5.–Page 3 of 3.

Subdistrict/System	Catch	Escapement[a]	Total Run
KAMISHAK BAY DISTRICT (cont'd)			
Kirschner Lake Section			
Common Property (seine)	46,332		
Hatchery (seine)	4,644		
Total			50,976
Bruin Bay / Bruin Bay River	1,835	515,114	516,949
Chenik Lake / Amakdedori Creek	3,216	1,071	4,287
Kamishak Bay / Little Kamishak River			
Little Kamishak River		77,000	
Strike Creek		55,000	
Total			132,000
Douglas River	2,161		2,161
KAMISHAK BAY DISTRICT TOTAL	***82,477***	***760,588***	***843,065***
TOTAL LOWER COOK INLET	***1,471,578***	***1,508,898***	***2,980,476***

Note: Figures for 2006 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 Port Graham Hatchery personnel.

[c] Port Graham Hatchery broodstock figure for 2006 includes 24,194 pinks actually spawned and 3,547 mortalities (collected for broodstock but not utilized).

Table 6.–Commercial chum salmon catches and escapements in numbers of fish by subdistrict or section, Lower Cook Inlet, 2006.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek		1,650	1,650
Halibut Cove			
Common Property (seine)	1		
Common Property (set gillnet)	26		
Total Catch			27
China Poot Bay (seine)	138		138
Neptune Bay (seine)	23		23
Tutka/Kasitsna Bays			
Common Property (seine)	1		
Common Property (set gillnet)	660		
Tutka Creek		4	
Total			665
Barabara Creek (set gillnet)	182		182
Seldovia Bay (set gillnet) & River	1,151	3,635	4,786
Port Graham/Port Graham River		2,231	2,231
SOUTHERN DISTRICT TOTAL	***2,182***	***7,520***	***9,702***
OUTER DISTRICT			
Dogfish Bay		5,394	5,394
Port Chatham		1,112	1,112
Windy Bay	940		
Windy Right Creek		543	
Windy Left Creek		307	
Total			1,790
Rocky Bay & River		11,200	11,200
Port Dick			
Outer Section	624		
South Section	10,424		
Taylor Bay Section	5		
North Section	884		
Port Dick (head end) Creek		2,786	
Slide Creek		1,592	
Middle Creek		754	
Island Creek		5,615	
Total			22,684
Nuka Island/Petrof River		1,950	1,950
East Arm Nuka Bay (McCarty Fiord)	6		6
OUTER DISTRICT TOTAL	***12,883***	***31,253***	***44,136***
EASTERN DISTRICT			
Aialik Bay	269		269

-continued-

Table 6.–Page 2 of 2.

Subdistrict/System	Catch	Escapement[a]	Total Run
EASTERN DISTRICT (cont'd)			
Resurrection Bay North (seine)	1		
Sawmill Creek		14	
Spring Creek		44	
Thumb Cove		20	
Tonsina Creek		396	
Total			475
EASTERN DISTRICT TOTAL	***270***	***474***	***744***
KAMISHAK BAY DISTRICT			
Iniskin Bay	1,502		
Iniskin River		15,640	
Sugarloaf Creek		2,526	
Total			19,668
Cottonwood Bay / Creek	34,672	13,243	47,915
Ursus Cove	2,316		
Ursus Lagoon Right Creek		9,726	
Ursus Cove Lagoon Creek		5,937	
Total			17,979
Rocky Cove / Sunday Creek	946	100	1,046
Kirschner Lake Section			
Common Property (seine)	699		
Hatchery (seine)	125		
Total			824
Bruin Bay / River	1,110	7,000	8,110
Chenik Lake	21		21
McNeil River		28,176	28,176
Kamishak Bay / Reef			
Big Kamishak River		58,173	
Little Kamishak River		42,929	
Strike Creek		7,600	
Total			108,702
Douglas River / Silver Beach	15,228		
Douglas Reef Creek		438	
Douglas Clearwater Tributary		169	
Douglas Beach Creek		6,553	
Total			22,388
KAMISHAK BAY DISTRICT TOTAL	***56,619***	***198,210***	***254,829***
TOTAL LOWER COOK INLET	***71,954***	***237,457***	***309,411***

Note: Figures for 2006 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, 2006.

	Chinook	Sockeye	Coho	Pink	Chum	Total
COMMON PROPERTY–PURSE SEINE[a]						
No. of Fish	59	125,878	26,019	1,206,631	69,810	1,428,397
Pounds	730	550,402	193,853	4,304,603	581,391	5,630,979
Price/lb.	$0.50	$1.10	$0.50	$0.11	$0.31	
Value	$365	$605,442	$96,927	$473,506	$180,231	$1,356,471
COMMON PROPERTY–SET GILLNET[a]						
No. of Fish	580	14,219	2,426	12,289	2,019	31,533
Pounds	7,926	77,206	20,091	48,521	16,729	170,473
Price/lb.	$2.41	$1.74	$0.82	$0.11	$0.26	
Value	$19,102	$134,338	$16,475	$5,337	$4,350	$179,602
HATCHERY–PURSE SEINE & WEIR						
No. of Fish		84,248	1,511	252,658	125	338,542
Pounds		385,220	8,993	882,353	911	1,277,477
Price/lb.		$0.73[b]	$0.00[b]	$0.11	$0.27	
Value		$278,598	$0	$97,059	$246	$375,903
SPORT FISHING DERBY[c]**–HOOK & LINE**						
No. of Fish			2,274			2,274
Pounds			15,920			15,920
Price/lb.			$0.65			
Value			$10,348			$10,348
TOTAL ALL GEARS						
No. of Fish	639	224,345	32,230	1,471,578	71,954	1,800,746
Pounds	8,656	1,012,828	238,857	5,235,477	599,031	7,094,849
Price/lb.	$2.25	$1.01[b]	$0.54[b]	$0.11	$0.31	
Value	$19,467	$1,018,378	$123,750	$575,902	$184,827	$1,922,324

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] 2006 seine and set gillnet totals do not include a very small number of fish not sold but retained for personal use.

[b] Average price 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, 2006.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-001-06 May 17	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 5 days per week, from Monday 6:00 a.m. until Friday 10:00 p.m., effective Monday, May 22, 2006, 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 seining. In addition, this emergency order designates and establishes a Special Harvest Area (SHA) for Cook Inlet Aquaculture Association (CIAA) in 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 in the Eastern District 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 7 days per week by authorized agents of CIAA, effective at 6:00 a.m. Monday, May 22, 2006, until further notice. Marine waters of the Bear Lake SHA remain closed to hatchery fishing until further notice.
2-F-H-002-06 May 26	Establishes a 7-day-per-week fishing schedule in the Kamishak Bay District commercial salmon seine fishery, which opens by regulation on June 1, 2006. 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 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. In addition, this emergency order 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. Thursday, June 1, 2006. The weekly fishing period in the Southern District commercial set gillnet fishery 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-003-06 May 26	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. Wednesday, May 31, 2006, until further notice.

-continued-

Table 8.–Page 2 of 7.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-004-06 June 12	Closes waters of Resurrection Bay in the Eastern District to commercial salmon seine fishing, effective at 6:00 p.m. Tuesday, June 13, 2006, 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 #1-06*) to the harvest and sale of salmon by authorized agents of CIAA 5 days per week, from 6:00 a.m. Monday until 10:00 p.m. Friday, effective at 6:00 a.m. Wednesday, June 14, 2006, until further notice.
2-F-H-005-06 June 16	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 7 days per week by authorized agents of CIAA, effective at 6:00 a.m. Monday, June 19, 2006, 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 5 days per week, from Monday 6:00 a.m. until Saturday 6:00 a.m., effective 6:00 a.m. Monday, June 19, 2006, until further notice. In the China Poot Subdistrict, commercial seining shall be allowed 5 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 19. In the Halibut Cove Subdistrict, seining shall be allowed only in waters outside of Halibut Cove Lagoon beginning June 19 on a 5-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, 5 days per week, effective 6:00 a.m. Monday, June 19, 2006. 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.
2-F-H-006-06 June 16	Extends the weekly fishing period for hatchery fishing in marine waters of the Bear Lake Special Harvest Area (SHA) in Resurrection Bay of the Eastern District to 7 days per week, effective at 10:00 p.m. Friday, June 16, 2006, until further notice.

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Table 8.–Page 3 of 7.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-007-06 June 24	Closes waters of McNeil River and Paint River Subdistricts in the Kamishak Bay District to commercial salmon seining effective at 6:00 a.m. Sunday, June 25, 2006, until further notice.
2-F-H-008-06 June 29	Reopens all waters of Port Graham Subdistrict, including both the Port Graham and English Bay Sections, to subsistence salmon set gillnet fishing, effective at 10:00 p.m. Thursday, June 29, 2006, 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-009-06 June 30	Opens waters of Chenik Subdistrict in the Kamishak Bay District south of 59° 16′ N. latitude to commercial salmon seining 5 days per week, from 6:00 a.m. Monday until 6:00 a.m. Saturday, effective at 6:00 a.m. Monday, July 3, 2006, until further notice. 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 extends fishing time for commercial set gillnet fishing in Halibut Cove Subdistrict of the Southern District to 5 days per week, from 6:00 a.m. Monday until 6:00 a.m. Saturday, effective at 6:00 a.m. Wednesday, July 5, 2006, until further notice.
2-F-H-010-06 July 7	Closes waters of Chenik Subdistrict in the Kamishak Bay District to commercial salmon seining effective at 6:00 a.m. Saturday, July 8, 2006, until further notice.
2-F-H-011-06 July 10	Removes the seine restriction line in waters of Tutka Bay and opens waters of Tutka Bay Subdistrict within the Southern District of Lower Cook Inlet to commercial salmon seining 5 days per week, from Monday 6:00 a.m. until Saturday 6:00 a.m., effective 6:00 a.m. Wednesday, July 12, 2006, until further notice. Waters of Tutka Lagoon will remain closed to commercial salmon seining for this opening.
2-F-H-012-06 July 14	Opens those waters of East Nuka Subdistrict in the Outer District north of the latitude of the entrance to James Lagoon at approximately 59° 33.50' N. latitude to commercial salmon seining 5 days per week, from Monday 6:00 a.m. until Saturday 6:00 a.m., effective at 6:00 a.m. Friday, July 14, 2006, until further notice. The closed waters markers at the mouth of Desire Lake Creek **WILL BE** in effect for this opening, and fishing is not allowed up to the stream mouth. Waters of East Nuka Subdistrict south of the latitude of James Lagoon remain closed to commercial salmon fishing, therefore fishing is prohibited in the vicinity of Delight Lake Creek. Fishing is also prohibited north of the regulatory markers near the former Parks Service tent camp in East Nuka Bay.

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E.O. Number/ Issue Date	DESCRIPTION
2-F-H-012-06 July 14 (continued)	In addition, this emergency order opens waters of Aialik Subdistrict, including Aialik Lagoon, in the Eastern District to commercial salmon seining 5 days per week, from Monday 6:00 a.m. until Saturday 6:00 a.m., effective at 6:00 a.m. Friday, July 14, 2006, until further notice.
2-F-H-013-06 July 14	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 17, 2006, 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-014-06 July 19	Closes waters of the China Poot and Hazel Lakes Special Harvest Areas (see ***LCI E.O. #2-F-H-005-06***) in the Southern District to salmon hatchery cost recovery harvest by Cook Inlet Aquaculture Association effective immediately. In addition, this emergency order opens waters of China Poot Subdistrict, including both the China Poot and Hazel Lake Sections, to commercial salmon seining **west** (or offshore) of the regulatory markers located near the HEA power lines in China Poot Bay on a **7-day-per-week basis**, effective at 6:00 a.m. Thursday, July 20, 2006, until further notice. Waters of China Poot Bay **east** (or inshore) of these markers will be open to commercial seining **5 days per week**, from Monday 6:00 a.m. until Saturday 6:00 a.m., also effective at 6:00 a.m. Thursday, July 20, 2006, until further notice. The regulatory markers designating the Dungeness crab sanctuary in the north arm of China Poot Bay remain in effect for these openings. At China Poot Creek, the regulatory markers near the creek mouth will be in effect during the Monday through Saturday opening. At Neptune Bay, no markers will be in effect and fishing is allowed up to the Wosnesenski River mouth.
2-F-H-015-06 July 22	Closes waters of the Kirschner Lake Special Harvest Area (SHA) in the Kamishak Bay District (see *LCI Emergency Order #2-F-H-005-06***)** to hatchery cost recovery harvest, effective immediately, and also opens all waters of Bruin Bay Subdistrict, including the Kirschner Lake SHA, to commercial salmon seining effective at 12:00 noon Sunday, July 23, 2006, until further notice. The weekly fishing period in those waters of Bruin Bay Subdistrict previously open to commercial salmon seining, established at 7 days per week by *LCI Emergency Order #2-F-H-010-06*, remains in effect and also applies to waters of the Kirschner Lake SHA included in this emergency order.

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E.O. Number/ Issue Date	DESCRIPTION
2-F-H-015-06 July 22 (continued)	In addition, this emergency order opens all waters of East Nuka Subdistrict in the Outer District to commercial salmon seining 5 days per week, from Monday 6:00 a.m. until Saturday 6:00 a.m., effective at 6:00 a.m. Monday, July 24, 2006, until further notice. The closed waters markers at the mouths of both Desire Lake Creek and Delight Lake Creek **REMAIN IN EFFECT** for this opening, therefore fishing is **PROHIBITED** in waters of McCarty Lagoon.
2-F-H-016-06 July 24	Reopens waters of Chenik Subdistrict in the Kamishak Bay District south of 59° 16′ N. latitude to commercial salmon seining 7 days per week, effective at 6:00 a.m. Wednesday, July 26, 2006, until further notice. In addition, provisions of this emergency order rescind regulatory markers near the mouth of Chenik Lake Creek, and fishing is therefore allowed in waters of Chenik Lagoon beginning July 26. Waters north of 59° 16′ N. latitude in Chenik Subdistrict will remain closed to fishing.
2-F-H-017-06 July 28	Opens waters of Windy Bay Subdistrict in the Outer District of Lower Cook Inlet to commercial salmon seining on a schedule of 5 days per week, from 6:00 a.m. Monday until 10:00 p.m. Friday, effective at 6:00 a.m. Monday, July 31, 2006, until further notice. All normal regulatory markers and closed waters in Windy Bay Subdistrict will be in effect for this opening. In addition, this emergency order expands 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 5 days per week, effective at 6:00 a.m. Monday, July 31, until further notice.
2-F-H-018-06 August 3	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 7 days per week by authorized agents of Port Graham Hatchery Corporation (PGHC), effective at 6:00 a.m. Friday, August 4, 2006, until further notice. 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 pink salmon enhancement program in Lower Cook Inlet.

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Table 8.–Page 6 of 7.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-019-06 August 8	Repeals the closed waters markers in the Taylor Bay Section (statistical reporting area 232-08) of Port Dick Subdistrict, and fishing is therefore allowed up to the stream mouths in Taylor Bay, effective at 6:00 a.m. Wednesday, August 9, 2006, until further notice. All other closed waters and normal regulatory markers will be in effect in Port Dick Subdistrict, and the weekly fishing period in all waters of Port Dick Subdistrict open to commercial salmon seining remains unchanged at 5 days per week.
2-F-H-020-06 August 10	Repeals the commercial fishing regulatory closed waters markers near the mouths of Sunday Creek in Rocky Cove Subdistrict, Brown's Peak Creek in Ursus Cove Subdistrict, and Bruin Bay River in Bruin Bay Subdistrict, all in the Kamishak Bay District, effective at 12:00 noon Friday, August 11, 2006, until further notice. Based on the provisions of this emergency order, commercial salmon seining will be allowed up to the aforementioned stream mouths beginning at 12:00 noon Friday, August 11. The weekly fishing schedule for waters affected by this emergency order remains the same as that in all other waters open to fishing in Kamishak Bay District at 7 days per week.
2-F-H-021-06 August 14	Delays the opening of the 2006 Southern District (Kachemak Bay) personal use set gillnet fishery for coho salmon until 6:00 a.m. Thursday, August 17, 2006.
2-F-H-022-06 August 18	Opens waters of the North Section of Port Dick Subdistrict (or statistical reporting area 232-09) to commercial salmon seining 5 days per week, from 6:00 a.m. Monday until 10:00 p.m. Friday, effective at 6:00 a.m. Monday, August 21, 2006, until further notice. All normal regulatory markers and closed waters in the North Section of Port Dick Subdistrict will be in effect during open fishing periods. Weekly fishing periods for other sections in Port Dick Subdistrict were previously set at 5 days per week (see ***LCI Emergency Order #2-F-H-017-06***) and remain unchanged. In addition, this emergency order repeals the commercial fishing regulatory markers near the mouth of Iniskin River in Iniskin Subdistrict, and also at the entrance to Ursus Lagoon in Ursus Cove Subdistrict, both of the Kamishak Bay District, effective at 6:00 a.m. Saturday, August 19, 2006, until further notice. Based on the provisions of this emergency order, commercial salmon seining will be allowed up to the stream mouth at Iniskin River and inside waters of Ursus Lagoon beginning at 6:00 a.m. Saturday, August 19. The weekly fishing schedule for waters affected by this emergency order remains the same as that in all other waters open to fishing in Kamishak Bay District at 7 days per week.

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Table 8.–Page 7 of 7.

E.O. Number/ Issue Date	DESCRIPTION
2-F-H-023-06 August 24	Expands the weekly fishing period for commercial salmon seining in waters of Port Dick Subdistrict in the Outer District of Lower Cook Inlet to 7 days per week, effective at 12:00 noon Friday, August 25, 2006, until further notice. In addition, this emergency order repeals the commercial fishing regulatory markers and closed waters near Island Creek, Middle Creek, and Port Dick (head end) Creek, all located in Port Dick Subdistrict of the Outer District, and commercial salmon seining is therefore allowed up to each of the aforementioned stream mouths 7 days per week, also effective at 12:00 noon Friday, August 25, 2006, until further notice.
2-F-H-024-06 August 28	Closes the Southern District (Kachemak Bay) personal use set gillnet fishery for coho salmon, effective at 6:00 a.m. Wednesday, August 30, for the remainder of the 2006 season.
2-F-H-025-06 September 1	Opens waters of Port Dick Subdistrict in the Outer District to commercial salmon seining on a continuous basis, effective at 6:00 a.m. Saturday, September 2, 2006, until 11:59 p.m. Friday, September 8, 2006. This emergency order also repeals the regulatory markers and closed waters near the mouths of Port Dick (head end) Creek, Middle Creek, and Island Creek, and also those in Taylor Bay, all of which are in Port Dick Subdistrict, and fishing is therefore allowed up to the stream mouths at all aforementioned locations on a continuous basis, effective at 6:00 a.m. Saturday, September 2, 2006, until 11:59 p.m. Friday, September 8, 2006. In addition, this emergency order reopens waters of Port Graham Subdistrict, including both the Port Graham and English Bay Sections, to commercial salmon set gillnet fishing on the regular schedule of two 48-hour periods per week, from 6:00 a.m. Monday until 6:00 a.m. Wednesday and from 6:00 a.m. Thursday until 6:00 a.m. Saturday, effective at 6:00 a.m. Monday, September 4, 2006, until further notice. The commercial set gillnet fishery in all areas of Lower Cook Inlet, including Port Graham Subdistrict, closes by regulation on September 30.

Table 9.–Total estimated return of adult pink salmon to the Port Graham Hatchery in the Southern District of Lower Cook Inlet, and estimated pink salmon escapement into nearby Port Graham River, 2006**.**

COMMERCIAL HARVEST	
Port Graham Section (stat area 241-20)	
Purse Seine	0
Set Gillnet	0
Hatchery Cost Recovery	247,990
Tutka Commercial Harvest	*247,990*
BROODSTOCK	
Port Graham Hatchery Broodstock[a]	27,741
OTHER	
Duncan Slough Escapement[b]	5,000[b]
Estimated Total Hatchery Return	***280,731***
ESCAPEMENT	
Port Graham River	31,173

[a] Port Graham Hatchery broodstock figure for 2006 includes 24,194 pinks actually spawned and 3,547 mortalities (collected for broodstock but not utilized).

[b] Fish entering Duncan Slough are assumed to be hatchery fish, numbers are estimated by Port Graham Hatchery personnel.

Table 10.–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, 2006.

DISTRICT	Number Permits Fished	Landings	Chinook		Sockeye		Coho		Pink		Chum	
			Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Eastern (231)	15	190	0	0	67,048	351,409	3,786	24,923	3,460	11,989	270	2,202
Outer (232)	11	162	3	79	3,198	16,485	1,139	8,130	1,121,892	3,991,222	12,883	106,750
Southern (241)	40	503	636	8,577	89,522	405,312	3,036	23,687	263,749	925,336	2,182	18,072
Kamishak Bay (249)	6	38	0	0	64,577	239,622	24,269	182,117	82,477	306,930	56,619	472,007
LCI Grand Total	**49**	**893**	**639**	**8,656**	**224,345**	**1,021,828**	**32,230**	**238,858**	**1,471,578**	**5,235,477**	**71,954**	**599,031**
Avg. Wt.				13.54		4.51		7.41		3.56		8.33
Avg. Price				$2.25		$1.01[a]		$0.54[a]		$0.11		$0.31

Note: Figures for 2006 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 11.–Total biomass estimates and commercial catch of Pacific herring *Clupea pallasi* in short tons by age class, Kamishak Bay District, Lower Cook Inlet, 2006, and 2007 forecast.

Age	2006 Est. Spawning Biomass	Percent by Weight	2006 Commercial Harvest[a]	Percent by Weight	2006 Total Biomass	Percent by Weight	2007 Forecast Biomass	Percent by Weight
1								
2								
3	221.4	10.3	--	--	221.4	10.3	202.1	8.8
4	346.9	16.2	--	--	346.9	16.2	414.9	18.2
5	204.7	9.5	--	--	204.7	9.5	526.2	23.0
6	270.9	12.6	--	--	270.9	12.6	246.4	10.8
7	339.8	15.8	--	--	339.8	15.8	245.6	10.7
8	191.8	8.9	--	--	191.8	8.9	257.4	11.3
9	184.7	8.6	--	--	184.7	8.6	118.1	5.2
10	150.9	7.0	--	--	150.9	7.0	92.8	4.1
11	109.8	5.1	--	--	109.8	5.1	96.1	4.2
12	64.8	3.0	--	--	64.8	3.0	47.8	2.1
13+	58.5	2.7	--	--	58.5	2.7	38.5	1.7
TOTALS	**2,144.3**	**100.0**	**--**	**--**	**2,144.3**	**100.0**	**2,286.0**	**100.0**

[a] Due to the low forecasted biomass, the commercial herring fishery in Kamishak Bay was not opened in 2006.

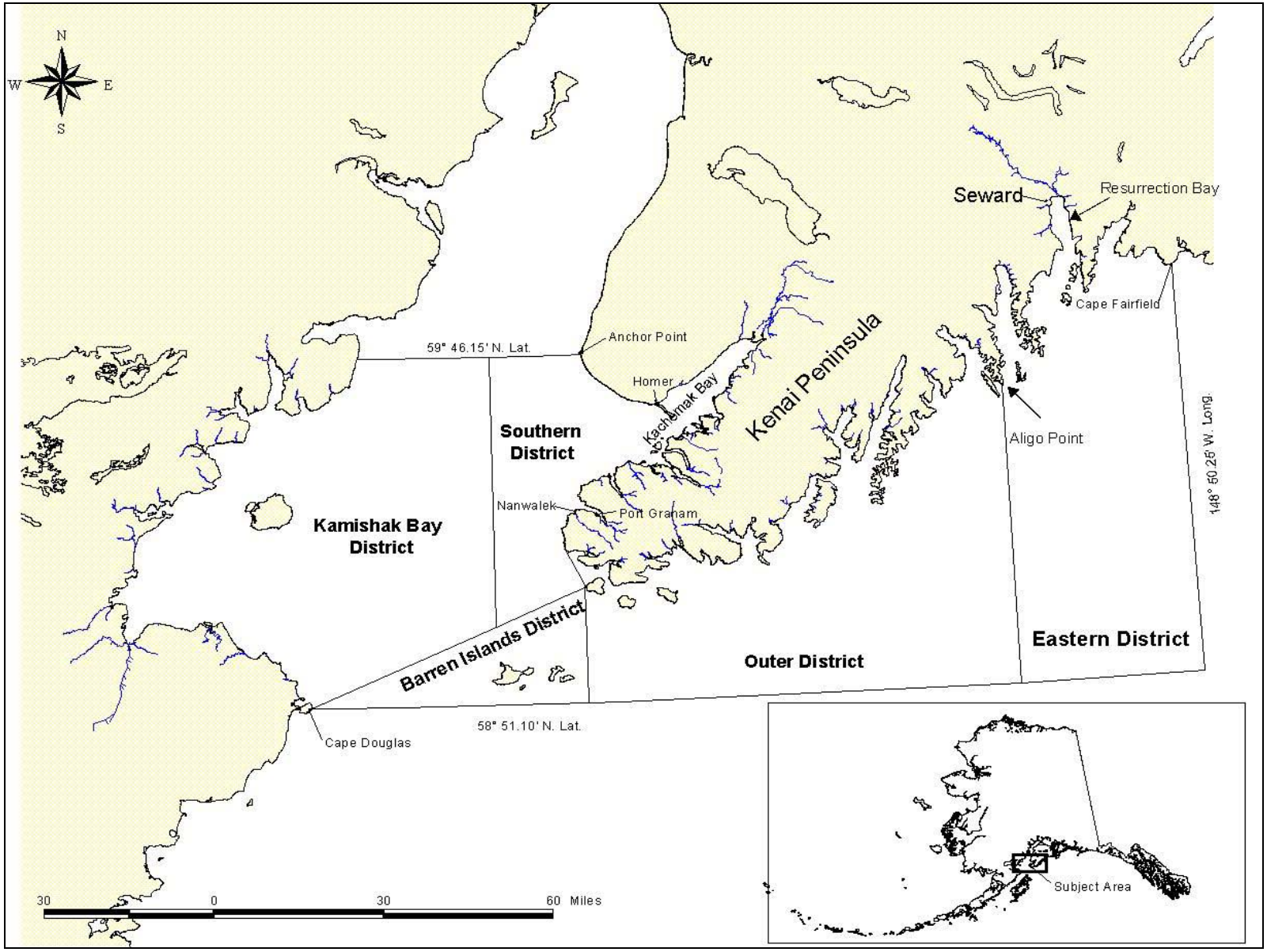

Figure 1.–Lower Cook Inlet management area for commercial salmon and herring fisheries.

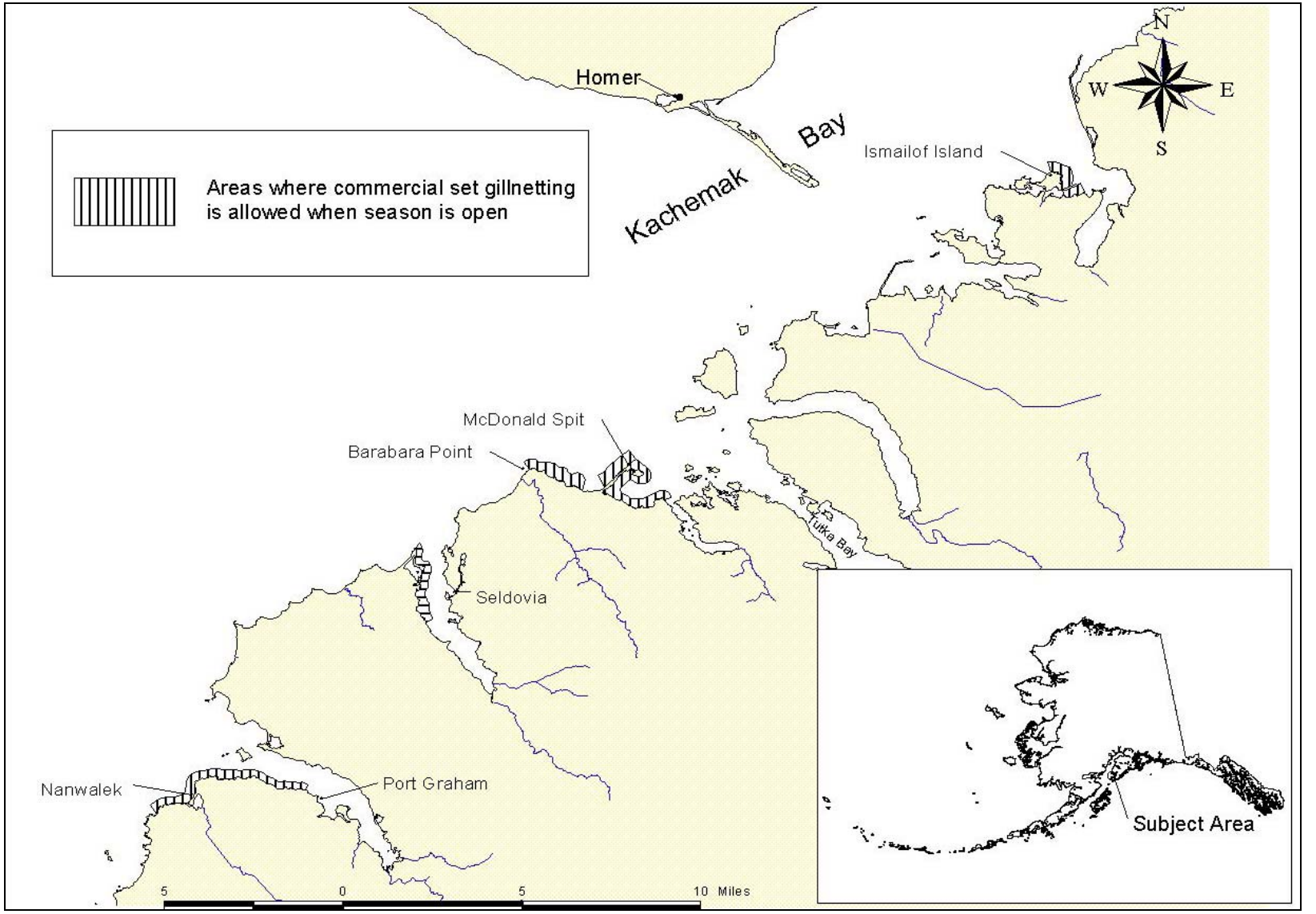

Figure 2.–Commercial set gillnet locations in the Southern District of Lower Cook Inlet.

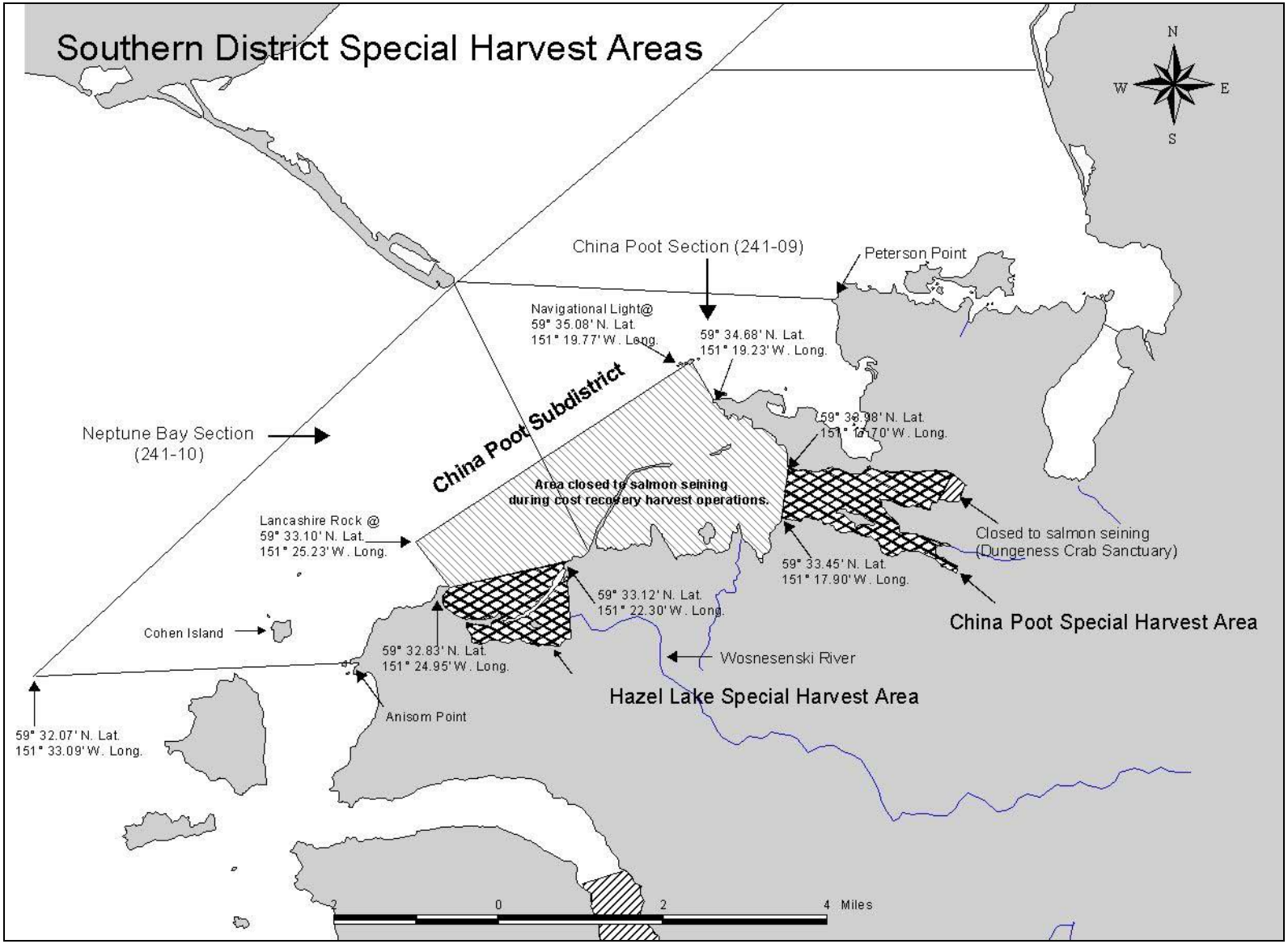

Figure 3.–China Poot and Hazel Lake Special Harvest Areas for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

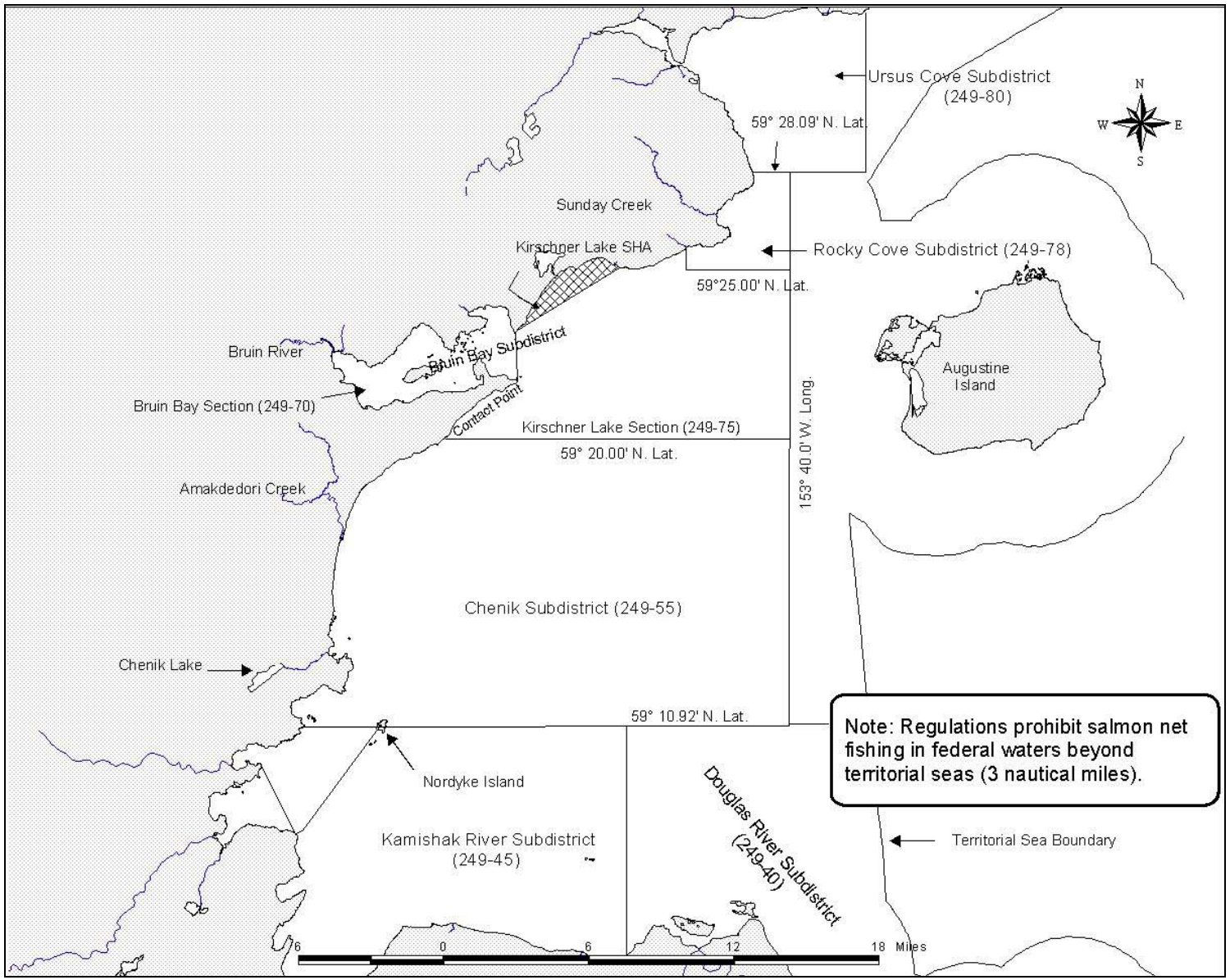

Figure 4.–Kirschner Lake Special Harvest Area for salmon hatchery cost recovery in Kamishak Bay District of Lower Cook Inlet.

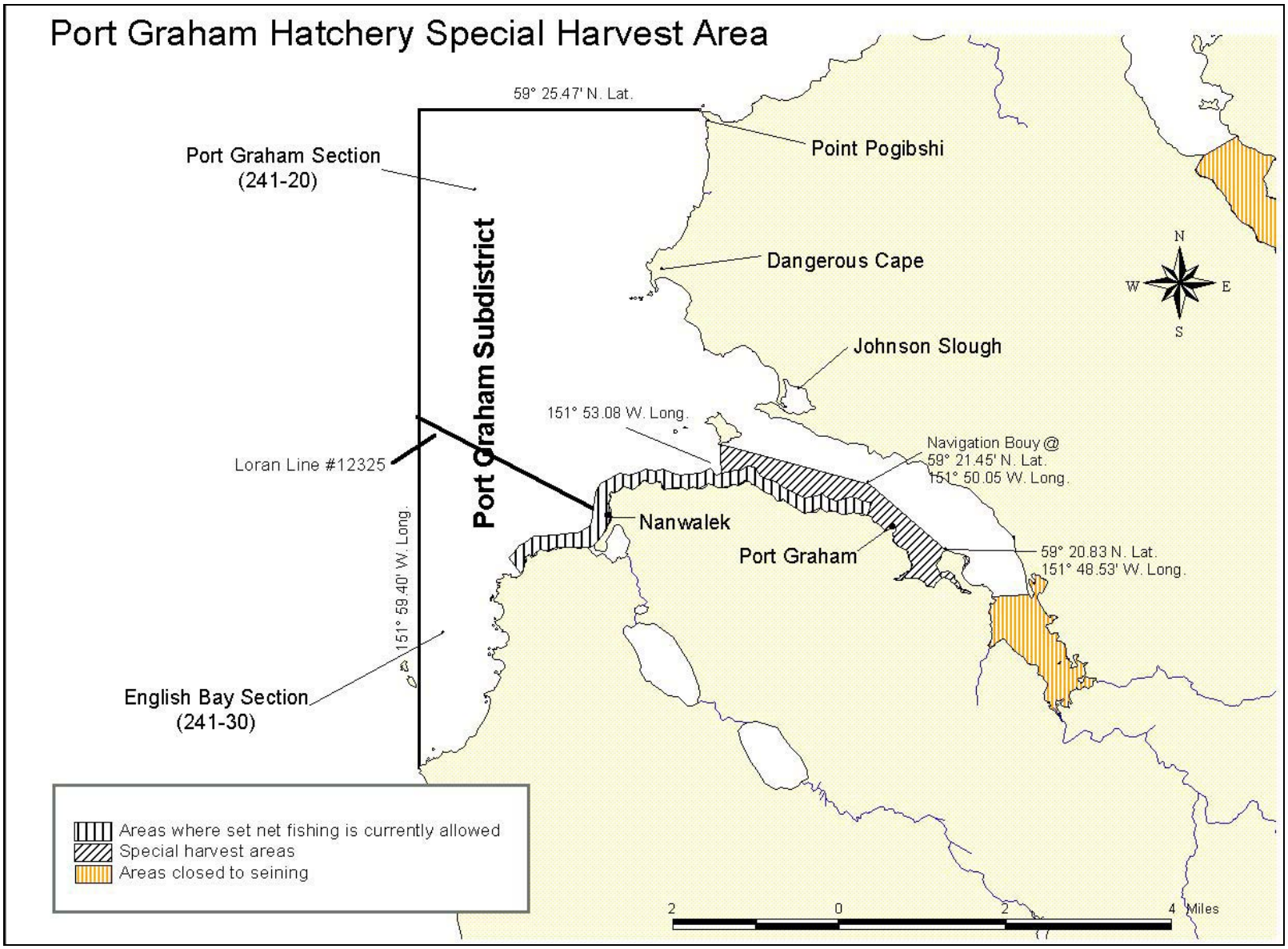

Figure 5.–Port Graham Special Harvest Area for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

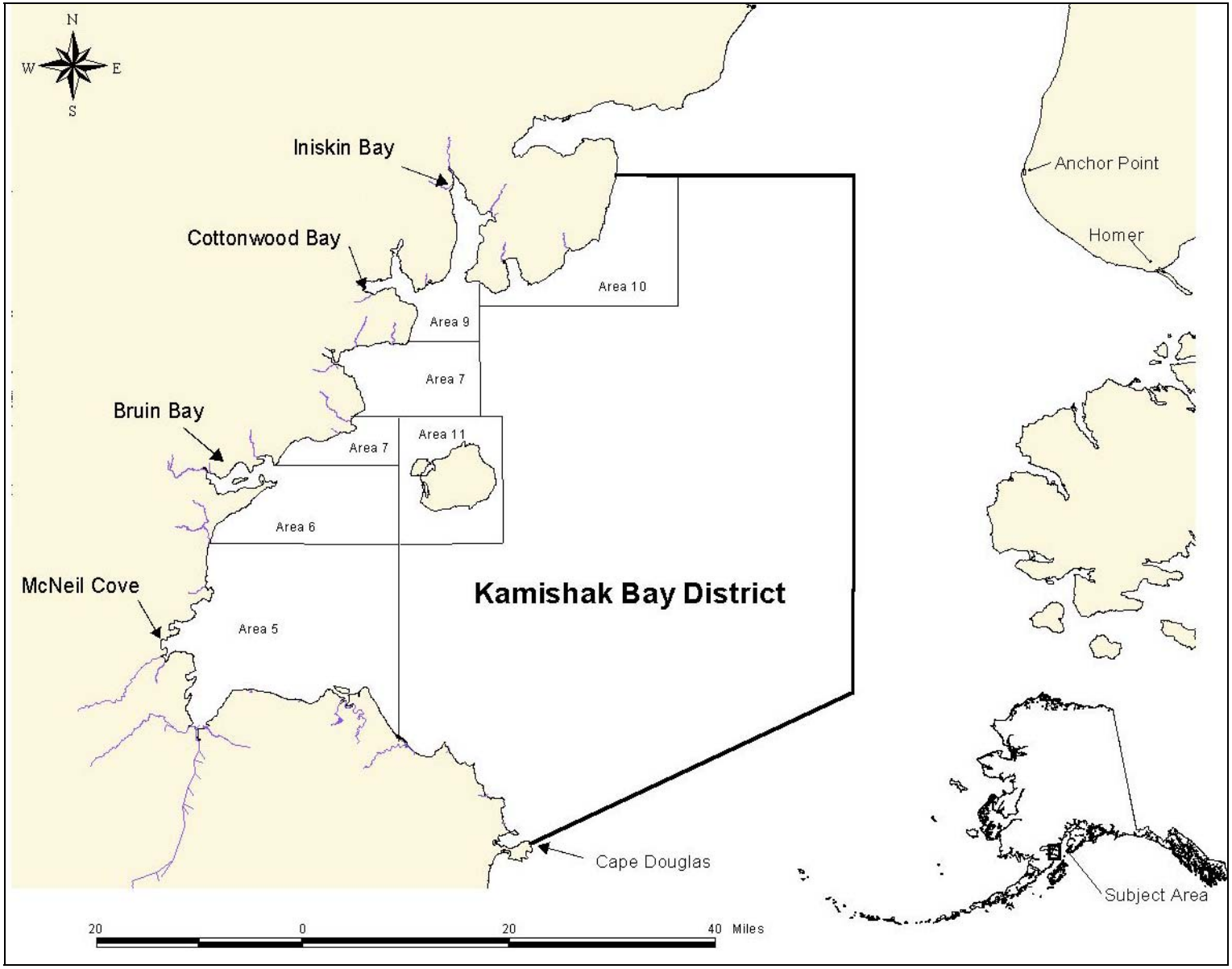

Figure 6.–Commercial herring fishing areas for management purposes in Kamishak Bay District of Lower Cook Inlet.

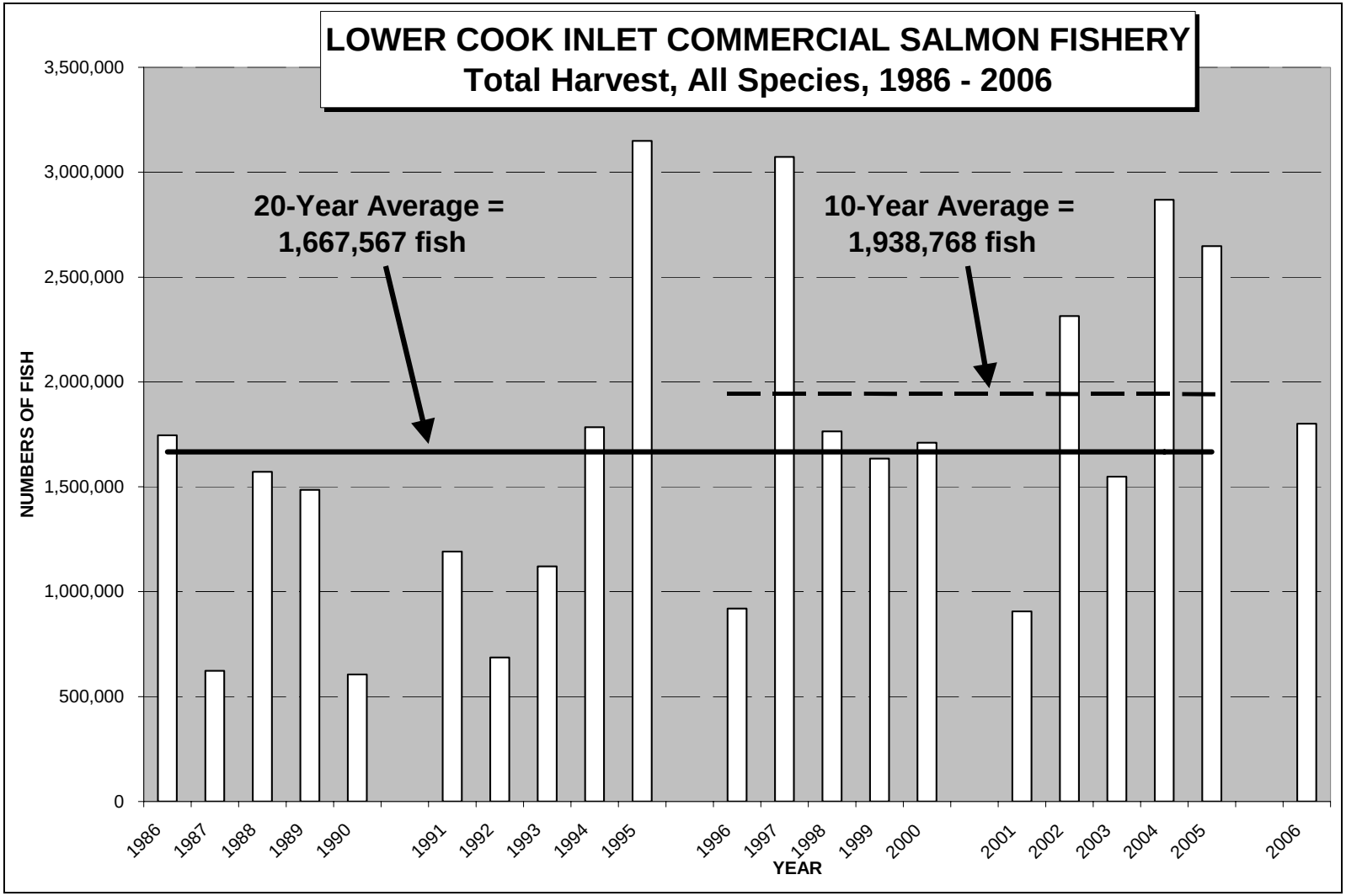

Figure 7.–Total commercial salmon catch, Lower Cook Inlet, 1986–2006.

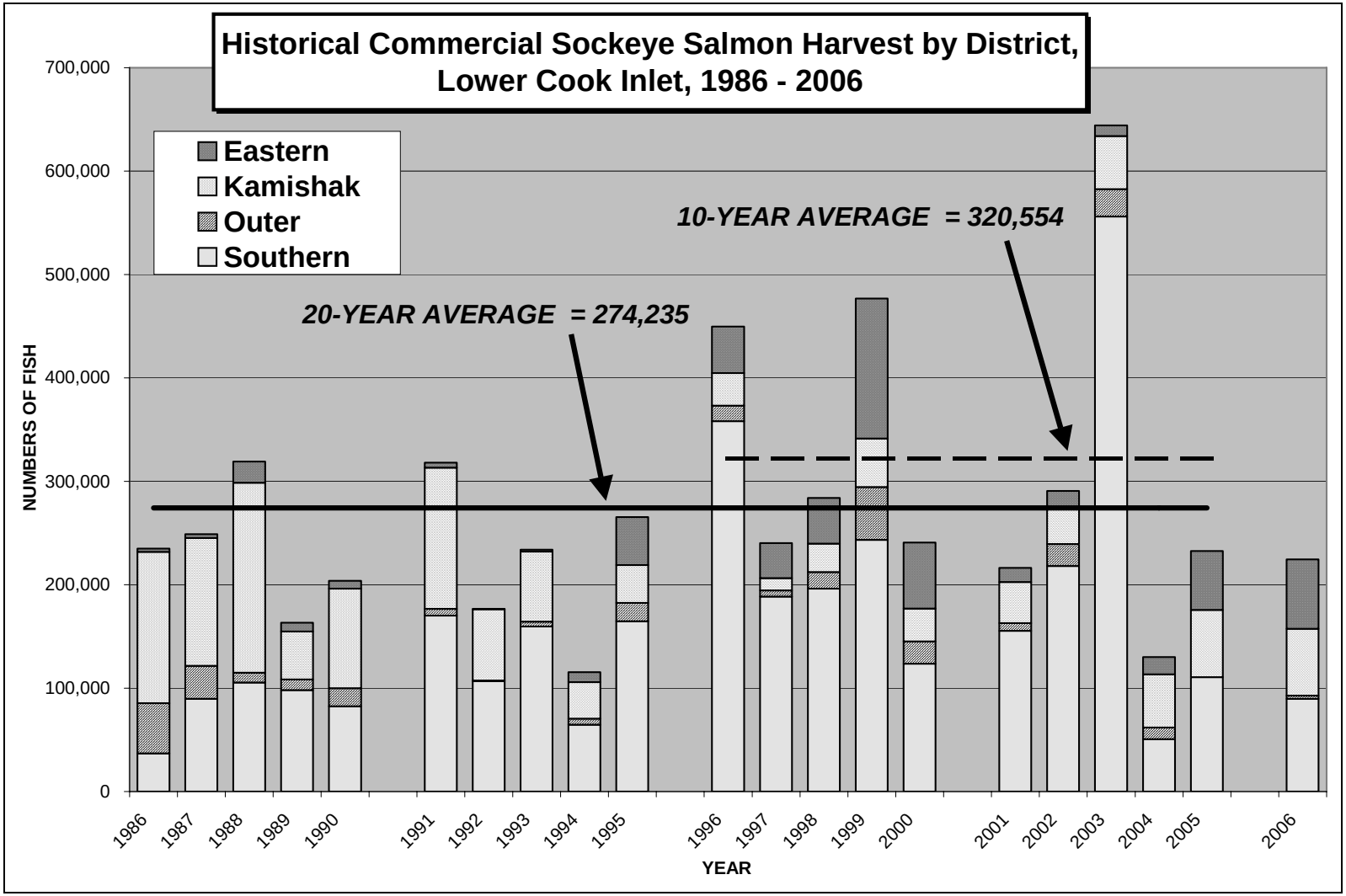

Figure 8.–Commercial sockeye salmon catch by district, Lower Cook Inlet, 1986–2006.

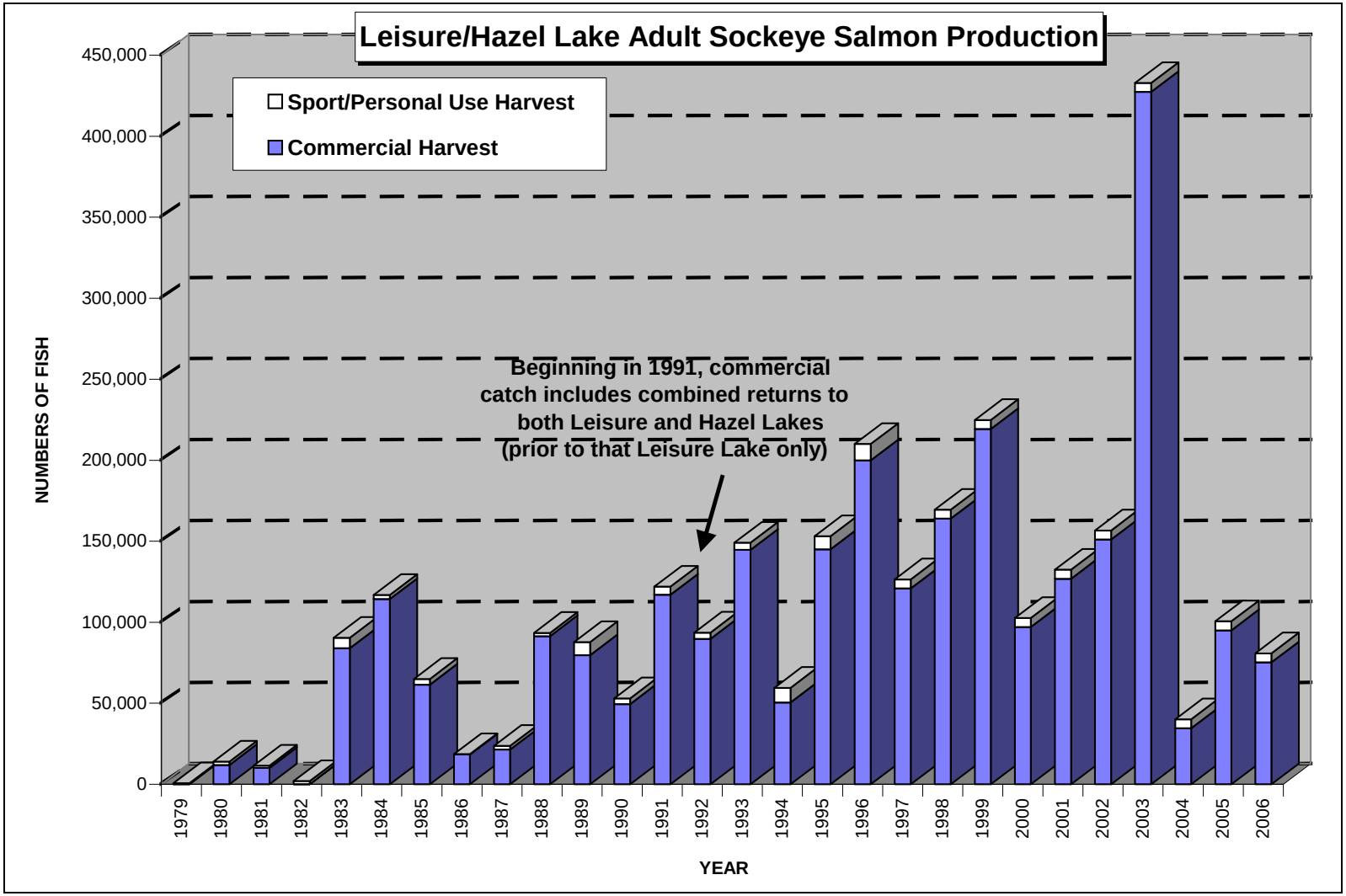

Figure 9.–Sockeye salmon returns to Leisure and Hazel Lakes in the Southern District of Lower Cook Inlet, 1979–2006.

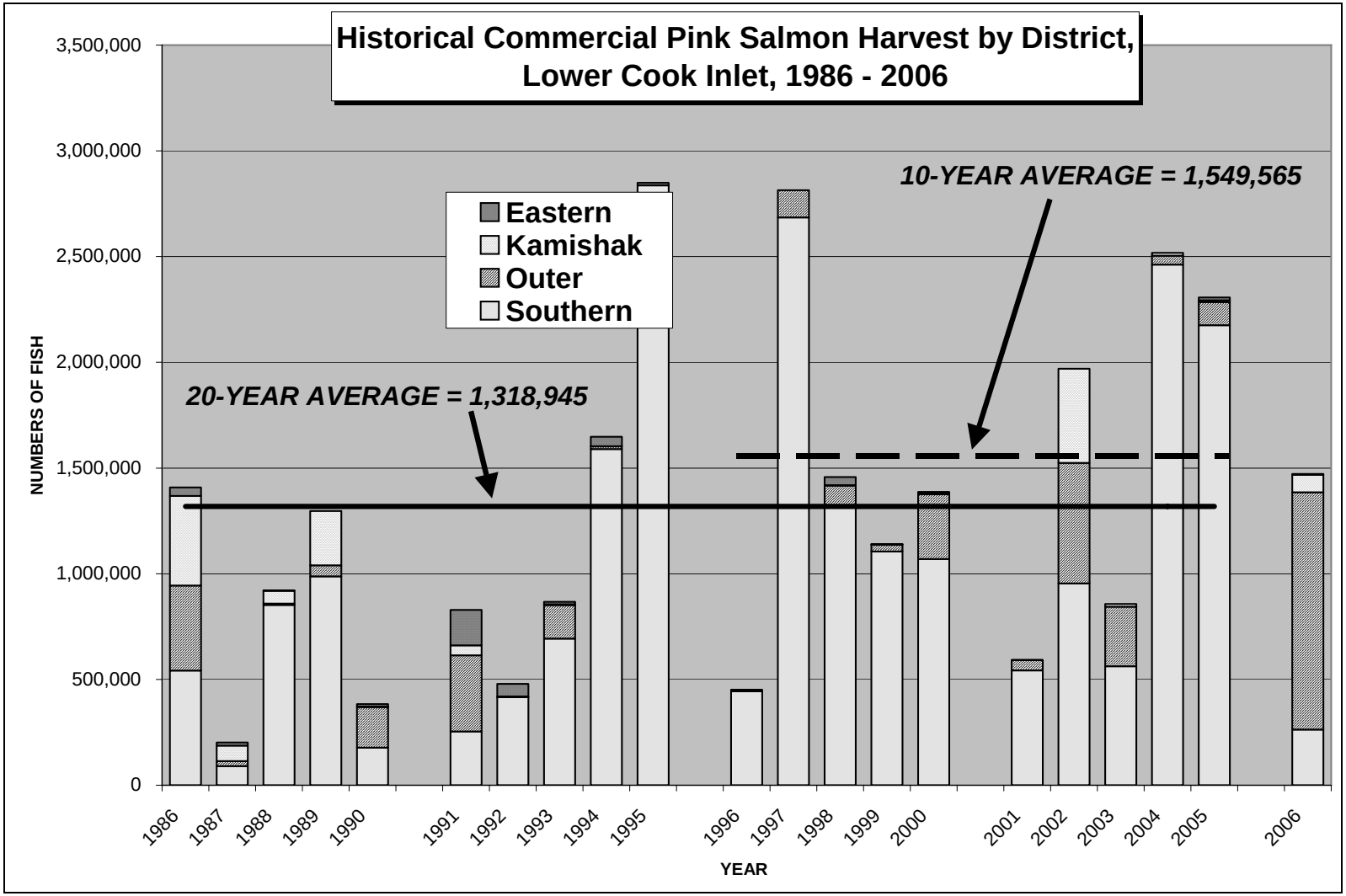

Figure 10.–Commercial pink salmon catch by district, Lower Cook Inlet, 1986–2006.

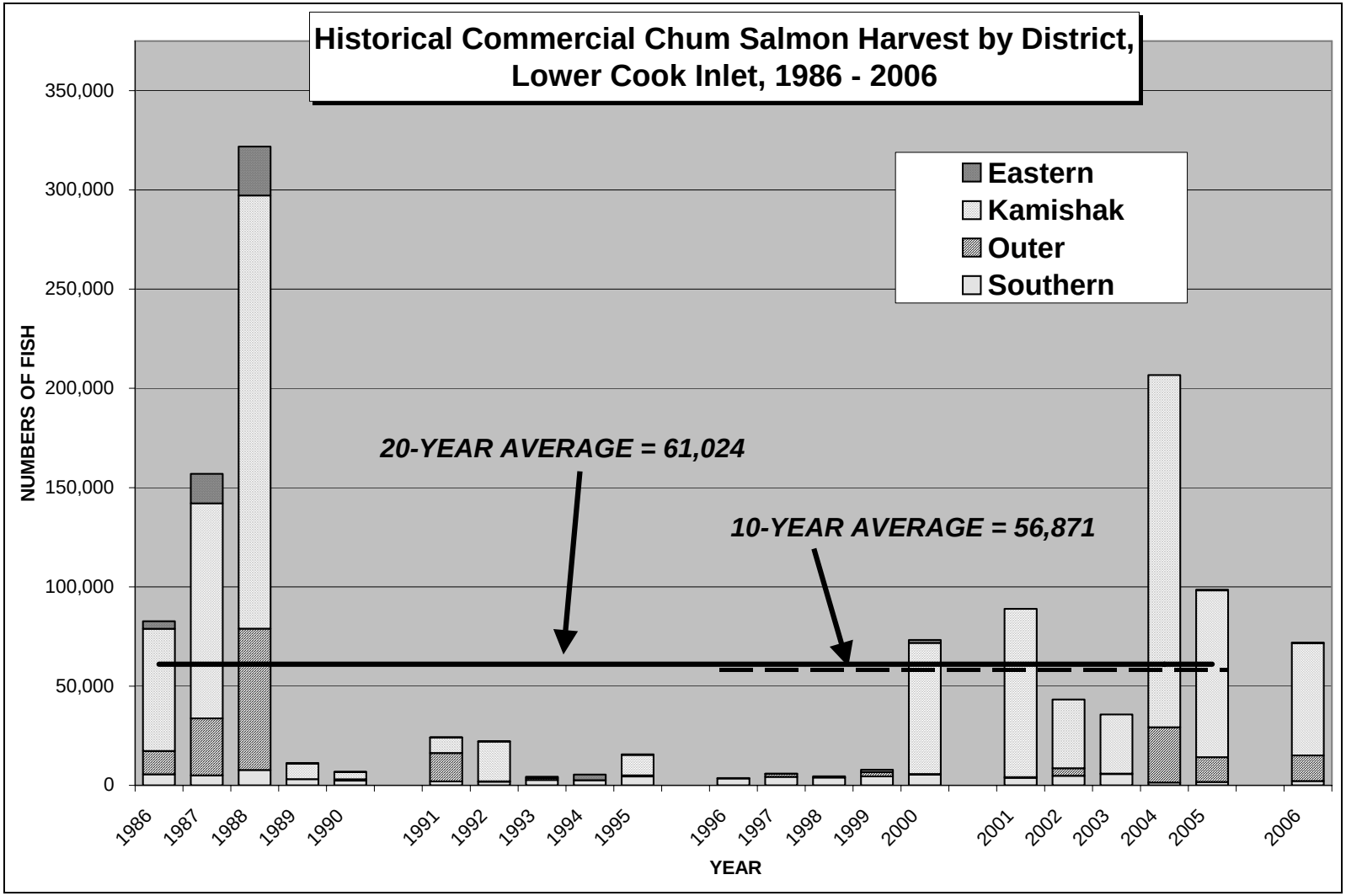

Figure 11.–Commercial chum salmon catch by district, Lower Cook Inlet, 1986–2006.

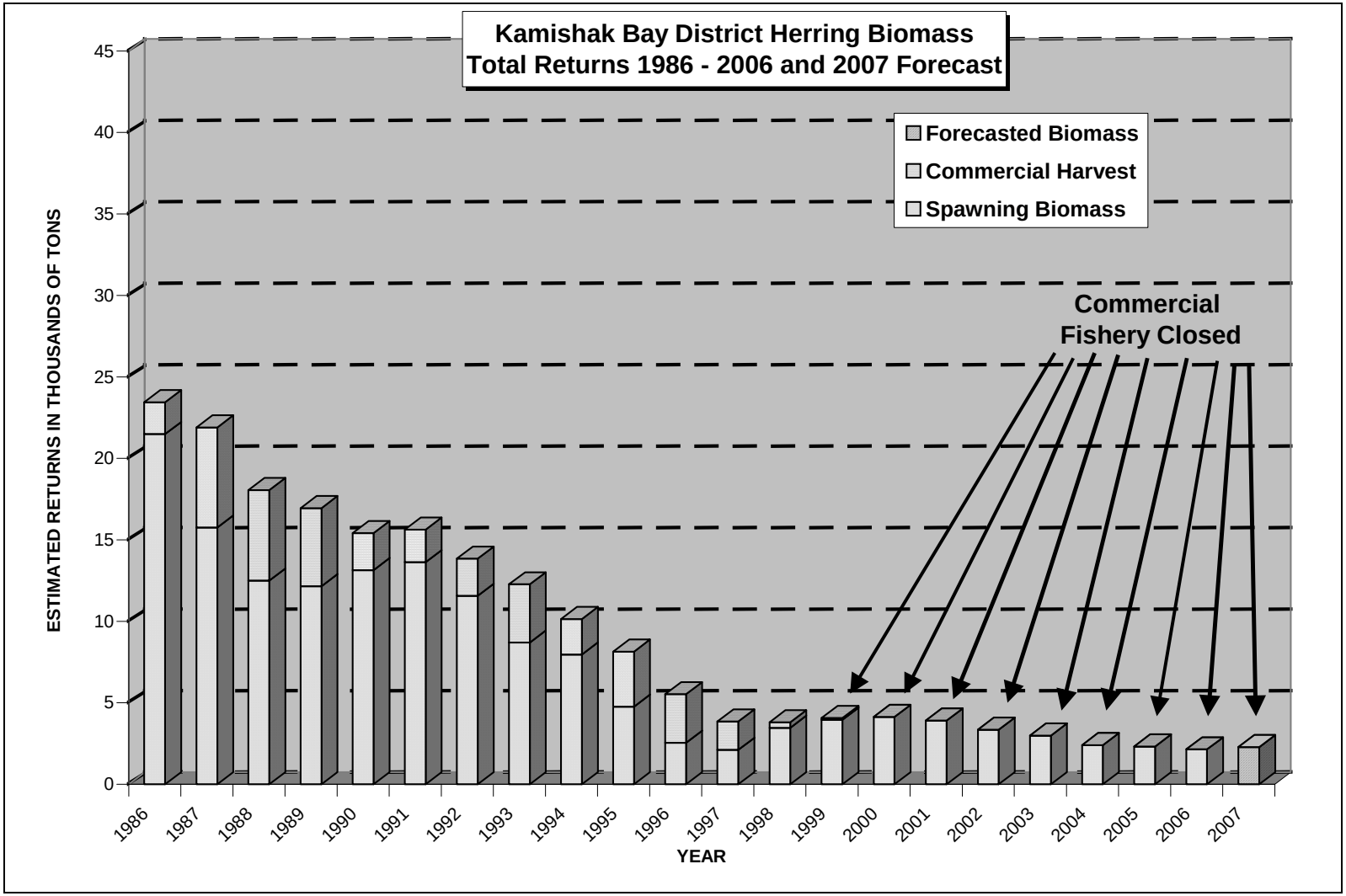

Figure 12.–Biomass estimates and commercial harvests of Pacific herring *Clupea pallasi* in the sac roe seine fishery, Kamishak Bay District, Lower Cook Inlet, 1986–2006, and 2007 projection.

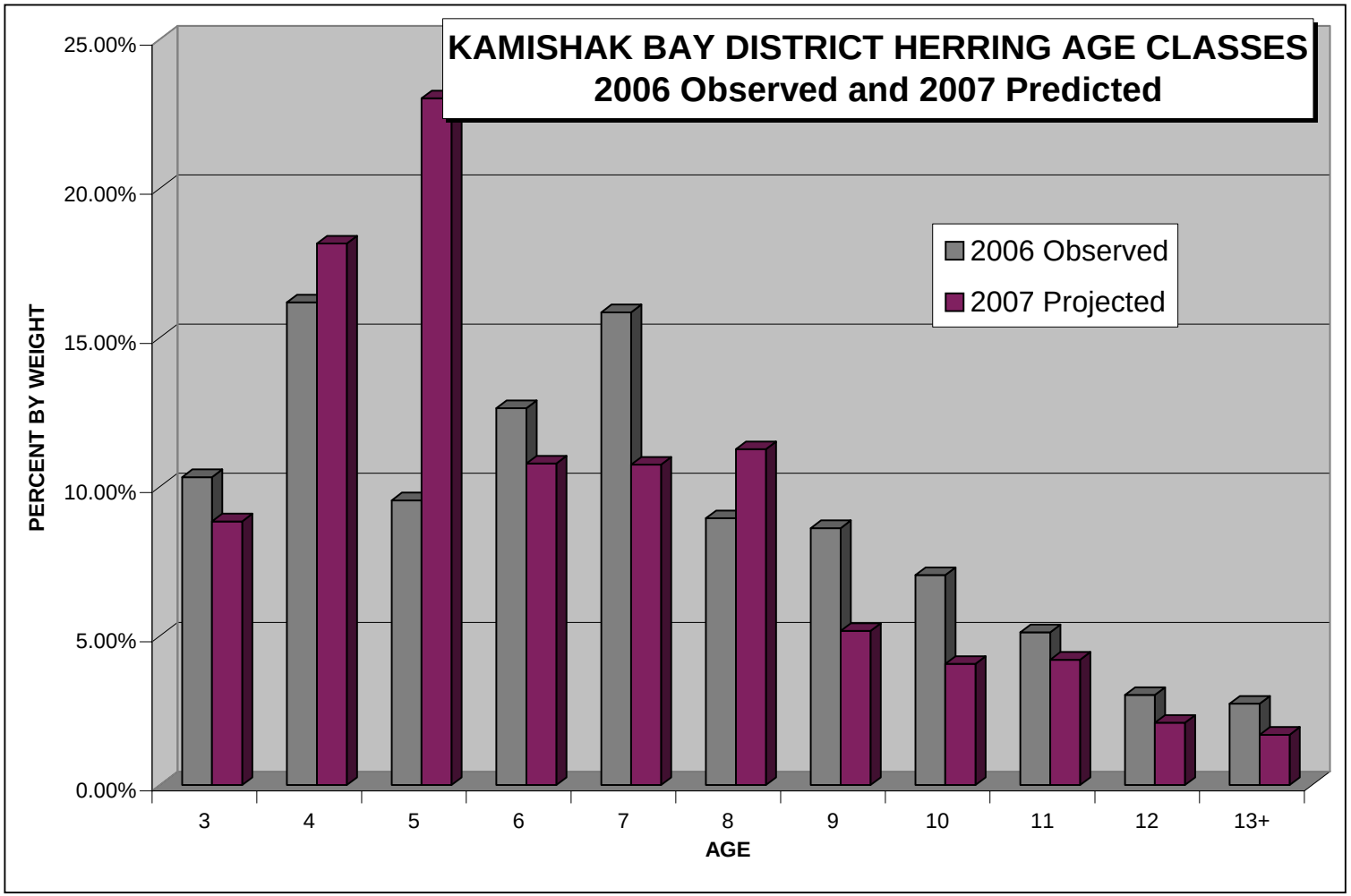

Figure 13.–Herring age composition from samples collected in Kamishak Bay District, Lower Cook Inlet, 2006, and 2007 forecast.

APPENDIX A. HISTORICAL SALMON TABLES

Appendix A1.–Salmon fishing permits issued and fished, by gear type, Lower Cook Inlet, 1986–2006.

Year	Seines				Set Net Permits Fished
	Permanent Permits	Interim Permits	Total Issued	Actively Fished	
1986	79	0	79	62	34
1987	79	0	79	66	29
1988	79	0	79	71	27
1989	83	0	83	64	23
1990	82	1	83	71	20
1991	82	1	83	68	20
1992	82	1	83	63	21
1993	82	1	83	51	17
1994	82	1	83	32	16
1995	83	1	84	49	23
1996	84	1	85	34	24
1997	84	1	85	23	25
1998	84	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	84	2	86	24	22
1986–2005 Avg.	83	1	84	45	22
1996–2005 Avg.	84	2	86	31	22

Source: Commercial Fisheries Entry Commission *Unpublished;* ADF&G fish ticket database *Unpublished*.

Appendix A2.–Exvessel value of the commercial salmon harvest in thousands of dollars by species, Lower Cook Inlet, 1986–2006.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	21	1,414	132	1,245	201	3,013
1987	27	1,951	118	295	598	2,989
1988	32	3,812	127	2,237	2,548	8,756
1989	33	1,213	59	1,660	39	3,004
1990	29	1,287	28	306	31	1,681
1991[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
20 Year Avg.	27	1,368	50	664	236	2,344
1986–1995 Avg.	28	1,462	72	851	356	2,769
1996–2005 Avg.	26	1,273	28	477	116	1,920
2006 % of Total	0.99%	52.97%	6.45%	29.97%	9.63%	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, 1986–2006.

Year	Chinook	Sockeye	Coho	Pink	Chum
1986	1.25	1.40	0.85	0.26	0.30
1987	1.25	1.60	1.00	0.42	0.46
1988	1.25	2.50	1.80	0.80	0.84
1989	1.25	1.60	0.70	0.40	0.40
1990	1.35	1.55	0.60	0.30	0.50
1991	1.12	0.83	0.29	0.13	0.27
1992	1.29	1.47	0.43	0.14	0.27
1993	1.02	0.80	0.51	0.12	0.28
1994	0.95	1.06	0.62	0.15	0.25
1995	1.17	1.11	0.47	0.15	0.24
1996	1.33	0.91	0.40	0.08	0.18
1997	1.29	0.93[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
20-Year Avg.	1.34	1.11	0.58	0.20	0.31
1986–1995 Avg.	1.19	1.39	0.73	0.29	0.38
1996–2005 Avg.	1.49	0.83	0.43	0.11	0.23

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, 1986–2006.

Year	Chinook	Sockeye	Coho	Pink	Chum
1986	20.6	4.3	8.6	3.4	8.1
1987	18.1	4.9	8.2	3.5	8.3
1988	15.3	4.8	8.9	3.0	9.4
1989	14.1	4.6	7.0	3.1	8.6
1990	13.8	4.1	7.1	2.8	8.9
1991	12.3	4.2	6.6	2.6	7.5
1992	12.3	4.4	7.7	3.2	8.8
1993	12.0	4.4	6.0	2.7	6.2
1994	15.0	4.1	10.2	3.0	6.4
1995	17.8	4.7	7.4	2.9	6.4
1996	16.9	5.2	7.6	2.9	8.0
1997	13.9	4.9	7.8	3.1	7.6
1998	13.1	4.6	8.5	3.1	7.4
1999	14.8	4.7	6.6	2.5	7.9
2000	14.7	5.3	8.2	2.5	9.3
2001	13.6	4.9	7.5	3.1	9.4
2002	14.0	5.2	7.8	3.4	8.3
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
20-Year Avg.	14.6	4.7	7.6	3.0	8.0
1986–1995 Avg.	15.1	4.4	7.8	3.0	7.9
1996–2005 Avg.	14.1	4.9	7.5	3.1	8.2

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

Appendix A5.–Commercial salmon catch in numbers of fish by species, Lower Cook Inlet, 1986–2006.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	796	234,861	18,852	1,408,293	82,688	1,745,490
1987	1,179	248,848	14,354	201,429	157,018	622,828
1988	1,694	319,008	7,946	921,296	321,911	1,571,855
1989	1,893	163,271	12,089	1,296,926	11,305	1,485,484
1990	1,560	203,895	9,297	383,670	6,951	605,373
1991	1,419	317,947	19,047	828,709	24,232	1,191,354
1992	1,891	176,644	5,902	479,768	22,203	686,408
1993	2,168	233,834	13,477	866,774	4,367	1,120,620
1994	1,231	115,418	14,673	1,647,929	5,469	1,784,720
1995	2,303	265,423	17,709	2,848,464	15,636	3,149,535
1996	1,181	449,685	13,572	451,506	3,764	919,708
1997	1,261	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
20-Year Avg.	1,430	274,235	11,933	1,318,945	61,024	1,667,567
1986–1995 Avg.	1,613	227,915	13,335	1,088,326	65,178	1,396,367
1996–2005 Avg.	1,247	320,554	10,532	1,549,565	56,871	1,938,768
2006 % of Total	0.04%	12.46%	1.79%	81.72%	4.00%	100.00%

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

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

Appendix A6.–Commercial salmon catch in numbers of fish by species in the Southern District, Lower Cook Inlet, 1986–2006.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	776	36,838	3,095	542,521	5,560	588,790
1987	1,158	89,662	2,163	90,522	5,030	188,535
1988	1,655	105,302	2,987	852,382	7,742	970,068
1989	1,889	98,052	6,667	987,488	3,141	1,097,237
1990	1,546	82,412	1,552	178,087	2,433	266,030
1991	1,399	170,224	9,415	253,962	1,962	436,962
1992	1,852	106,793	1,277	417,021	1,885	528,828
1993	2,162	159,747	4,431	692,794	2,788	861,922
1994	1,230	64,531	1,373	1,589,709	2,631	1,659,474
1995	2,289	164,798	5,161	2,475,312	4,530	2,652,090
1996	1,180	358,163	9,543	444,236	3,511	816,633
1997	1,261	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
20-Year Avg.	1,420	163,965	3,753	1,069,874	3,842	1,242,854
1986–1995 Avg.	1,596	107,836	3,812	807,980	3,770	924,994
1996–2005 Avg.	1,245	220,093	3,694	1,331,769	3,914	1,560,715
2006 % of Total	0.18%	24.93%	0.85%	73.44%	0.61%	100.00%

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

[a] 2004–2006 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, 1986–2006.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	745	21,807	2,827	14,244	2,426	42,049
1987	653	28,209	2,025	9,224	2,419	42,530
1988	1,145	14,758	2,819	29,268	4,423	52,413
1989	1,281	13,970	4,792	16,210	1,877	38,130
1990	1,361	15,863	1,046	12,646	1,938	32,854
1991	842	20,525	5,011	3,954	1,577	31,909
1992	1,288	17,002	848	15,958	1,687	36,783
1993	1,089	14,791	3,088	12,008	2,591	33,567
1994	1,103	14,004	1,073	23,621	2,419	42,220
1995	2,078	19,406	3,564	41,654	3,958	70,660
1996	1,054	69,338	5,779	14,813	2,792	93,776
1997	1,135	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
20-Year Avg.	1,121	28,907	2,498	16,900	3,065	52,491
1986–1995 Avg.	1,159	18,034	2,709	17,879	2,532	42,312
1996–2005 Avg.	1,083	39,781	2,287	15,921	3,599	62,671
2006 % of Total	1.84%	45.09%	7.69%	38.97%	6.40%	100.00%

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

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

Appendix A8.–Commercial salmon catch in numbers of fish by species in the Outer District, Lower Cook Inlet, 1986–2006.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	6	48,472	5,052	401,755	11,701	466,986
1987	14	31,845	2,481	23,890	28,663	86,893
1988	5	9,501	2	6,094	71,202	86,804
1989	1	10,286	72	52,677	43	63,079
1990	2	17,404	74	191,320	614	209,414
1991	2	6,408	12	359,664	14,337	380,423
1992	0	572	1	146	181	900
1993	2	4,613	119	159,159	970	164,863
1994	0	5,930	993	13,200	32	20,155
1995	12	17,642	1,272	192,098	474	211,498
1996	0	14,999	96	7,199	3	22,297
1997	0	6,255	63	128,373	1,575	136,266
1998	0	15,991	45	102,172	611	118,819
1999	3	51,117	1,482	32,484	2,062	87,148
2000	2	21,623	20	306,555	302	328,502
2001	0	7,339	5	48,559	408	56,311
2002	0	21,154	74	569,955	3,810	594,993
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
20-Year Avg.	3	16,442	594	151,490	8,878	177,407
1985–1994 Avg.	4	15,267	1,008	140,000	12,822	169,102
1995–2004 Avg.	1	17,618	181	162,979	4,934	185,712
2006 % of Total	0.00%	0.00%	0.00%	89.79%	10.21%	100.00%

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

Appendix A9.–Commercial salmon catch in numbers of fish by species in the Eastern District, Lower Cook Inlet, 1986–2006.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	0	3,055	770	40,243	3,757	47,825
1987	0	3,687	1,631	14,333	14,913	34,564
1988	1	20,253	486	1,740	24,668	47,148
1989	0	8,538	5,346	92	312	14,288
1990	0	7,682	7,645	11,815	307	27,449
1991	1	4,703	7,283	167,250	80	179,317
1992	0	432	3,136	60,007	86	63,661
1993	0	1,824	8,924	10,616	9	21,373
1994	1	9,661	10,410	44,987	2,792	67,851
1995	0	46,556	5,192	12,000	330	64,078
1996	0	44,919	3,932	36	223	49,110
1997	0	33,783	5,344	1	66	39,194
1998	1	44,274	14,365	38,829	51	97,520
1999	1	135,305	3,794	1,930	1,232	142,262
2000	1	64,099	7,408	4,473	1,540	77,521
2001	0	13,809	3,947	0	6	17,762
2002	0	17,376	4,432	0	5	21,813
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
20-Year Avg.	0	27,195	5,593	21,093	2,539	56,420
1986–1995 Avg.	0	10,639	5,082	36,308	4,725	56,755
1996–2005 Avg.	0	43,751	6,103	5,877	353	56,084
2006 % of Total	0.00%	89.92%	5.08%	4.64%	0.36%	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 in numbers of fish by species in the Kamishak Bay District, Lower Cook Inlet, 1986–2006.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	14	146,496	9,935	423,774	61,670	641,889
1987	7	123,654	8,079	72,684	108,412	312,836
1988	33	183,952	4,471	61,080	218,299	467,835
1989	3	46,395	4	256,669	7,809	310,880
1990	12	96,397	26	2,448	3,597	102,480
1991	17	136,612	2,337	47,833	7,853	194,652
1992	39	68,847	1,488	2,594	20,051	93,019
1993	4	67,650	3	4,205	600	72,462
1994	0	35,296	1,897	33	14	37,240
1995	2	36,427	6,084	169,054	10,302	221,869
1996	1	31,604	1	35	27	31,668
1997	0	11,733	0	293	7	12,033
1998	0	27,502	0	1,776	29	29,307
1999	0	46,913	0	807	23	47,743
2000	1	31,636	7	6,214	66,072	103,930
2001	2	39,712	9	1,397	84,766	125,886
2002	0	33,921	54	446,146	34,641	514,762
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
20-Year Avg.	7	66,632	1,993	76,489	45,766	190,886
1986–1995 Avg.	13	94,173	3,432	104,037	43,861	245,516
1996–2005 Avg.	1	39,092	553	48,940	47,670	136,256
2006 % of Total	0.00%	28.33%	10.65%	36.18%	24.84%	100.00%

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

Appendix A11.–Total commercial salmon catch in numbers of fish by district, Lower Cook Inlet, 1986–2006.

Year	Southern	Outer	Kamishak	Eastern	Total
1986	588,790	466,986	641,889	47,825	1,745,490
1987	188,535	86,893	312,836	34,564	622,828
1988	970,068	86,804	467,835	47,148	1,571,855
1989	1,097,237	63,079	310,880	14,288	1,485,484
1990	266,030	209,414	102,480	27,449	605,373
1991	436,962	380,423	194,652	179,317	1,191,354
1992	528,828	900	93,019	63,661	686,408
1993	861,922	164,863	72,462	21,373	1,120,620
1994	1,659,474	20,155	37,240	67,851	1,784,720
1995	2,652,090	211,498	221,869	64,078	3,149,535
1996	816,633	22,297	31,668	49,110	919,708
1997	2,885,284	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
20-Year Avg.	1,242,854	177,407	190,886	56,420	1,667,567
1986–1995 Avg.	924,994	169,102	245,516	56,755	1,396,367
1996–2005 Avg.	1,560,715	185,712	136,256	56,084	1,938,768
2006 % of Total	19.94%	63.26%	12.66%	4.14%	100.00%

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

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

Appendix A12.–Commercial Chinook salmon catch in numbers of fish by district, Lower Cook Inlet, 1986–2006.

Year	Southern	Outer	Kamishak	Eastern	Total
1986	776	6	14	0	796
1987	1,158	14	7	0	1,179
1988	1,655	5	33	1	1,694
1989	1,889	1	3	0	1,893
1990	1,546	2	12	0	1,560
1991	1,399	2	17	1	1,419
1992	1,852	0	39	0	1,891
1993	2,162	2	4	0	2,168
1994	1,230	0	0	1	1,231
1995	2,289	12	2	0	2,303
1996	1,180	0	1	0	1,181
1997	1,261	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
20-Year Avg.	1,420	3	7	0	1,430
1986–1995 Avg.	1,596	4	13	0	1,613
1996–2005 Avg.	1,245	1	1	0	1,247
2006 % of Total	99.53%	0.47%	0.00%	0.00%	100.00%

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

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

Appendix A13.–Commercial sockeye salmon catch in numbers of fish by district, Lower Cook Inlet, 1986–2006.

Year	Southern	Outer	Kamishak	Eastern	Total
1986	36,838	48,472	146,496	3,055	234,861
1987	89,662	31,845	123,654	3,687	248,848
1988	105,302	9,501	183,952	20,253	319,008
1989	98,052	10,286	46,395	8,538	163,271
1990	82,412	17,404	96,397	7,682	203,895
1991	170,224	6,408	136,612	4,703	317,947
1992	106,793	572	68,847	432	176,644
1993	159,747	4,613	67,650	1,824	233,834
1994	64,531	5,930	35,296	9,661	115,418
1995	164,798	17,642	36,427	46,556	265,423
1996	358,163	14,999	31,604	44,919	449,685
1997	188,402	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
20-Year Avg.	163,965	16,442	66,632	27,195	274,235
1986–1995 Avg.	107,836	15,267	94,173	10,639	227,915
1996–2005 Avg.	220,093	17,618	39,092	43,751	320,554
2006 % of Total	39.90%	1.43%	28.78%	29.89%	100.00%

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

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

Appendix A14.–Commercial sockeye salmon catch in thousands of fish by subdistrict, Lower Cook Inlet, 1959–2006.

Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Resurrection Bay	0	0.1	0	0	0	0	0	0	0	74.5	99.4	1.8	2.2
Aialik Bay	1.3	0.2	4.3	2.6	0.5	0	0	0	0	0	0	3.1	0
Nuka Bay	8.3	6.7	8.2	5.1	0.5	0	2.0	0	2.2	1.5	0	1.0	1.6
Port Dick	0	0	0	0	0	0	0	0	0	0	0	0	0
Halibut Cove & Lagoon	1.3	1.4	0.8	2.0	1.1	0.7	1.4	1.5	1.9	2.7	1.7	1.3	1.3
Tutka/Barabara	1.1	1.7	3.0	5.2	2.9	9.0	5.2	6.0	11.8	6.3	5.6	6.0	10.0
Seldovia Bay	0.4	1.2	1.2	1.7	1.2	2.1	0.9	1.0	2.2	1.9	1.1	1.2	1.5
Port Graham Bay	6.6	7.8	5.2	6.8	7.8	5.5	3.5	2.7	10.4	7.7	4.3	3.7	5.6
Kamishak/Douglas	0	0	0	0	0	0	0	0	0	0	0	0	0
McNeil (Mikfik)	0	0.7	0	0	0	1.9	0.2	0	0	0	8.9	2.8	0
Paint River	0	0	0	0	0	0	0	0	0	0	0	0	0
Chenik Lake	0	0	0	0	0	0	0	0	0.2	0	1.9	0	0
Bruin/Kirschner	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	2.6	4.9	0.1	1.9	1.1	1.5	0.8	4.1	0.3	0.6	0.1	0	0
Totals	21.6	24.7	22.8	25.3	15.1	20.7	14.0	15.3	29.0	95.2	122.8	20.9	22.2

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

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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
Nuka Bay	91.8	48.4	31.8	9.5	10.3	5.7	1.8	0	3.5	5.9	17.6	15.0	6.2
Port Dick	0	0	0	0	0	11.7	4.6	0.6	1.0	0	0	0	0
Halibut Cove & Lagoon	63.2	15.2	69.1	24.9	46.6	20.3	36.0	14.7	19.0	12.2	9.0	75.3	12.3
China Poot[c]				63.6	35.8	49.9	116.7	76.0	127.6	38.7	133.4	225.2	116.1
Tutka/Barabara	14.9	16.3	14.7	12.9	13.4	7.9	13.4	12.9	8.4	11.0	15.4	27.8	14.4
Seldovia Bay	2.6	3.2	3.5	2.5	1.8	4.3	4.0	3.3	4.4	2.7	4.2	11.9	12.5
Port Graham Bay	3.5	2.0	2.4	1.4	0	0	0	0	0	0	2.6	17.9	33.1
Kamishak/Douglas	0.7	7.6	2.3	5	0	0.1	7.0	9.9	1.3	3.4	2.7	0	2.6
McNeil (Mikfik)	67.0	27.5	21.4	14.6	7.0	9.1	12.9	4.0	0.9	0	0.1	0	0.2
Paint River	0	0	0	0	0	0	0.4	0	0	0	0	0	0
Chenik Lake	10.6	111.3	98.5	164.2	38.9	70.3	60.4	14.4	24.6	0	0	0	0
Bruin/Kirschner	0	0	0	0	0.2	14.5	55.9	40.5	39.7	31.9	33.6	31.6	9.0
Miscellaneous	0	0.4	1.6	0.2	0.8	2.4	0.1	0	1.5	0	0.2	0	0
Totals	278.7	234.9	248.8	319.0	163.3	203.9	317.9	176.6	233.8	115.4	265.4	449.7	240.2

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

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, 1979–2006.

Return Year	Sport Harvest	Personal Use Harvest	Commercial Harvest	Unharvested Fish	Total Return
1979	650	0	[a]	0	650
1980	1,000	1,000	12,000	0	14,000
1981	1,500	0	10,000	0	11,500
1982	450	1,320	200	1,430	3,400
1983	480	5,910	84,020	10	90,420
1984	500	2,000	114,360	500	117,360
1985	500	3,000	61,500	920	65,920
1986	100	150	18,350	200	18,800
1987	200	2,000	21,500	0	23,700
1988	500	1,500	91,469	470	93,939
1989	1,000	7,000	79,714	0	87,714
1990	500	3,000	49,587	0	53,087
1991	1,000	4,000	117,000[b]	0	122,000
1992	300	3,500	89,791[b]	0	93,591
1993	400	4,000	144,677[b]	0	149,077
1994	500	8,500	50,527[b]	0	59,527
1995	1,000	7,000	145,392[b]	450	153,842
1996	1,000	9,000	200,000[b]	441	210,441
1997	650[c]	4,900[d]	120,900[b]	1,130	127,620
1998	650[c]	4,900[d]	164,000[b]	380	170,542
1999	650[c]	4,900[d]	219,300[b]	522	225,983
2000	650[c]	4,900[d]	97,100[b]	256	102,906
2001	650[c]	4,900[d]	126,900[b]	57	132,507
2002	650[c]	4,900[d]	151,100[b]	51	156,701
2003	650[c]	4,900[d]	427,327[b]	121	432,998
2004	650[c]	4,900[d]	34,612[b]	448	40,610
2005	650[c]	4,900[d]	95,070[b]	1	100,621
2006	650[c]	4,900[d]	75,303[b]	820	81,673
1986–2005 Average	618	4,690	122,204	226	127,737

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

[a] No data.

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

[c] The final "Sport Harvest" figures for 1997–2006 represent the estimated previous 10-year average.

[d] The final "Personal Use Harvest" figures for 1997–2006 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, 1976–2006.

Return Year	Commercial Harvest	Escapement[a]	Total Return
1976	[b]	900	900
1977	[b]	200	200
1978	[b]	100	100
1979	[b]	[c]	[c]
1980	[b]	3,500	3,500
1981	[b]	2,500	2,500
1982	[b]	8,000	8,000
1983	2,800	11,000	13,800
1984	16,500	13,000	29,500
1985	10,500	3,500	14,000
1986	111,000	7,000	118,000
1987	102,000	10,000	112,000
1988	164,200	9,000	173,200
1989	38,905	12,000	50,905
1990	70,347	17,000	87,347
1991	60,397	10,189	70,586
1992	13,793	9,269	23,062
1993	24,567	4,000	28,567
1994	0[d]	808	808
1995	0[d]	1,086	1,086
1996	0[d]	2,990	2,990
1997	0[d]	2,338	2,338
1998	0[d]	1,880	1,880
1999	0[d]	2,850	2,850
2000	0[d]	4,800	4,800
2001	0[d]	250	250
2002	0[d]	4,650	4,650
2003	0[e]	13,825	13,825
2004	33,177	17,000	50,177
2005	47,013	14,507[f]	61,520
2006	11,783	13,868[f]	25,651
Avg. Since 1985	33,270	7,272	40,542

[a] Estimated from aerial surveys between 1976–1990 and 1998-present, weir counts between 1991–1997, unless otherwise noted.

[b] Closed to fishing.

[c] No data.

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

[e] 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.

[f] Estimated from a combination of weir and video counts.

Appendix A17.–Commercial coho salmon catch in numbers of fish by district, Lower Cook Inlet, 1986–2006.

Year	Southern	Outer	Kamishak	Eastern	Total
1985	4,258	3,210	2,024	835	10,327
1986	3,095	5,052	9,935	770	18,852
1987	2,163	2,481	8,079	1,631	14,354
1988	2,987	2	4,471	486	7,946
1989	6,667	72	4	5,346	12,089
1990	1,552	74	26	7,645	9,297
1991	9,415	12	2,337	7,283	19,047
1992	1,277	1	1,488	3,136	5,902
1993	4,431	119	3	8,924	13,477
1994	1,373	993	1,897	10,410	14,673
1995	5,161	1,272	6,084	5,192	17,709
1996	9,543	96	1	3,932	13,572
1997	5,597	63	0	5,344	11,004
1998	2,243	45	0	14,365	16,653
1999	2,757	1,482	0	3,794	8,033
2000	768	20	7	7,408	8,203
2001	2,706	5	9	3,947	6,667
2002	3,769	74	54	4,432	8,329
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
20-Year Avg.	3,753	594	1,993	5,593	11,933
1986–1995 Avg.	3,812	1,008	3,432	5,082	13,335
1996–2005 Avg.	3,694	181	553	6,103	10,532
2006 % of Total	9.42%	3.53%	75.30%	11.75%	100.00%

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

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

Appendix A18.–Commercial pink salmon catch in numbers of fish by district, Lower Cook Inlet, 1986–2006.

Year	Southern	Outer	Kamishak	Eastern	Total
1986	542,521	401,755	423,774	40,243	1,408,293
1987	90,522	23,890	72,684	14,333	201,429
1988	852,382	6,094	61,080	1,740	921,296
1989	987,488	52,677	256,669	92	1,296,926
1990	178,087	191,320	2,448	11,815	383,670
1991	253,962	359,664	47,833	167,250	828,709
1992	417,021	146	2,594	60,007	479,768
1993	692,794	159,159	4,205	10,616	866,774
1994	1,589,709	13,200	33	44,987	1,647,929
1995	2,475,312	192,098	169,054	12,000	2,848,464
1996	444,236	7,199	36	35	451,506
1997	2,685,764	128,373	293	1	2,814,431
1998	1,315,042	102,172	1,776	38,829	1,457,819
1999	1,105,267	32,484	807	1,930	1,140,488
2000	1,070,065	306,555	6,214	4,473	1,387,307
2001	542,975	48,559	1,397	0	592,931
2002	953,960	569,955	446,146	0	1,970,061
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
20-Year Avg.	1,069,874	151,490	76,489	21,093	1,318,945
1986–1995 Avg.	807,980	140,000	104,037	36,308	1,088,326
1996–2005 Avg.	1,331,769	162,979	48,940	5,877	1,549,565
2006 % of Total	17.92%	76.24%	5.60%	0.24%	100.00%

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

[a] 2004 and 2005 totals do not include a very small number of fish retained for personal use.

Appendix A19.–Commercial pink salmon catch in thousands of fish by subdistrict during odd-numbered years, Lower Cook Inlet, 1959–2005.

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

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 A20.–Commercial pink salmon catch in thousands of fish by subdistrict during even-numbered years, Lower Cook Inlet, 1960–2006**.**

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

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 chum salmon catch in numbers of fish by district, Lower Cook Inlet, 1986–2006.

Year	Southern	Outer	Kamishak	Eastern	Total
1986	5,560	11,701	61,670	3,757	82,688
1987	5,030	28,663	108,412	14,913	157,018
1988	7,742	71,202	218,299	24,668	321,911
1989	3,141	43	7,809	312	11,305
1990	2,433	614	3,597	307	6,951
1991	1,962	14,337	7,853	80	24,232
1992	1,885	181	20,051	86	22,203
1993	2,788	970	600	9	4,367
1994	2,631	32	14	2,792	5,469
1995	4,530	474	10,302	330	15,636
1996	3,511	3	27	223	3,764
1997	4,260	1,575	7	66	5,908
1998	3,956	611	29	51	4,647
1999	4,624	2,062	23	1,232	7,941
2000	5,340	302	66,072	1,540	73,254
2001	3,789	408	84,766	6	88,969
2002	4,803	3,810	34,641	5	43,259
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	71,954
20-Year Avg.	3,842	8,878	45,766	2,539	61,024
1986–1995 Avg.	3,770	12,822	43,861	4,725	65,178
1996–2005 Avg.	3,914	4,934	47,670	353	56,871
2006 % of Total	3.03%	17.90%	78.69%	0.38%	100.00%

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

[a] 2004 and 2005 totals do not include a very small number of fish retained for personal use.

Appendix A22.–Commercial chum salmon catch in thousands of fish by subdistrict, Lower Cook Inlet, 1959–2006**.**

Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Tutka Bay	0.1	2.4	1.8	2.9	2.4	5.6	1.1	3.9	4.0	1.3	0.7	1.6	0.5
Port Graham	2.3	1.8	0.5	4.0	3.8	2.1	0.9	5.3	3.0	2.3	1.3	4.8	2.0
Dogfish Bay	4.9	0.4	0.1	0	0.2	0	0	7.0	15.3	0.1	0	50.9	114.5
Port Chatham	1.0	2.5	0	2.8	4.3	5.2	0	17.8	0	1.0	0	0.1	2.4
Rocky/Windy Bays	14.9	6.4	2.2	8.5	0.3	33.8	8.1	1.7	0	0.5	0	39.4	1.4
Port Dick	42.4	51.0	36.8	112.0	110.8	227.4	14.2	60.9	36.0	10.9	5.4	41.2	0.7
E. Nuka Bay	1.7	8.4	1.7	0.5	1.5	0	0	0	1.5	6.9	0	5.9	0.1
Resurrection Bay	0.1	0.5	0	0	0	0	0	0	0.1	0.7	0	0.6	0.4
Douglas River	0.2	0	0	0	0	0	0	0	0	0	0	0	0
Kamishak River	0	0	0	0	0	0	0	0	0	3.7	0.4	0	0
McNeil River	0	0.4	0	0	0	2.7	0.9	0	0.4	8.3	4.4	1.9	0
Bruin Bay	0	0.3	0.5	0	0.1	0	0.4	0	1.0	7.5	0	12.8	1.6
Ursus/Rocky Coves	8.5	8.6	1.8	1.1	2.8	1.2	0	4.0	2.9	1.0	3.6	8.9	10.3
Cottonwood/Iniskin	12.1	33.4	10.2	41.7	10.9	38.4	0	0	19.0	25.5	44.4	71.9	14.5
Miscellaneous	22.6	0	0	5.8	1.4	6.9	2.5	28.5	2.2	5.4	1.0	2.4	0.2
Totals	110.8	116.1	55.6	179.3	138.5	323.3	28.1	129.1	85.4	75.1	61.2	242.4	148.6

Location	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Tutka Bay	1.3	0.8	1.4	2.0	0.9	0.8	2.6	2.7	1.8	7.9	8.3	9.9	3.4
Port Graham	3.2	2.6	1.0	2.2	0.5	5.0	2.4	4.3	2.5	11.2	7.4	1.7	3.6
Dogfish Bay	41.1	0.4	0	0	0	9.4	0	8.5	2.1	71.8	15.6	2.8	1.1
Port Chatham	0	0.4	0	0.6	0	0.1	0	1.7	1.3	59.5	14.1	2.1	0
Rocky/Windy Bays	0	0.9	0	0.3	0	17.7	0	76.7	2.1	7.4	0	3.2	0
Port Dick	0	33.4	8.1	6.8	0	25.6	10.3	79.0	19.0	95.8	32.5	18.0	1.9
E. Nuka Bay	2.3	40.8	3.9	3.6	0.4	17.4	0.4	14.7	7.8	3.8	0.9	0.8	0.2
Resurrection Bay	0.7	0	0	0	0	0	0.1	0	0.7	2.4	7.7	6.9	3.0
Douglas River	0	0	0	0.1	7.1	4.0	2.9	0.7	10.0	46.7	37.1	27.2	9.2
Kamishak River	2.4	0	1.8	0	10.5	0	23.9	17.8	2.8	8.6	9.2	23.9	16.2
McNeil River	2.3	0	2.0	0	16.9	38.5	4.9	6.5	6.3	11.6	32.6	67.9	12.0
Bruin Bay	1.8	0	0.7	0	0	0	0	4.0	11.0	1.7	1.3	2.6	5.9
Ursus/Rocky Coves	0.2	5.7	0	2.0	2.8	7.8	1.9	0.5	0.3	1.5	7.2	0	3.7
Cottonwood/Iniskin	19.7	29.9	0	2.8	11.5	15.3	14.9	0.2	5.4	3.5	21.6	21.4	23.0
Miscellaneous	0.5	0.6	0.3	1.2	0.2	4.2	9.2	1.2	0.4	2.7	2.5	3.9	9.3
Totals	75.5	115.5	19.2	21.6	50.8	145.8	73.5	218.5	73.5	336.1	198.0	192.3	92.5

Location	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Tutka Bay	3.2	3.9	3.9	4.7	2.5	1.5	0.8	0.6	0.9	0.8	1.6	1.0	1.1
Port Graham	1.3	0.8	0.4	1.2	0	0	0	0	0	0	0.7	0.7	2.0
Dogfish Bay	0	0	0	0	0	0	0	0	0	0	0	0	0
Port Chatham	1.3	0	0	0	0	0.1	0.1	0	0.1	0	T	0	0
Rocky/Windy Bays	0	0	0	0	0	0	0.5	0	0.1	0	0.4	0	1.6
Port Dick	9.6	10.4	27.1	64.4	0	0.5	13.7	0.2	0.7	T	0	0	0
E. Nuka Bay	0.8	1.3	1.6	6.8	0	T	T	0	T	T	0.1	T	T
Resurrection Bay	3.0	3.5	13.9	23.9	0	0	0	0	0	2.5	0.3	0.2	0
Douglas River	8.0	11.6	23.7	24.8	0	0.1	3.0	12.5	T	T	0.7	0	0
Kamishak River	0.1	0.1	24.6	26.7	0	T	0.7	1.5	0	0	0.1	0	0
McNeil River	0	13.7	32.9	104.0	0.1	0.1	0.1	2.0	0.4	0	0	0	T
Bruin Bay	0	5.4	0.1	2.8	4.4	1.6	2.6	0.8	T	0	4.9	T	T
Ursus/Rocky Coves	0	22.1	17.2	20.7	3.4	0	0	2.7	0	0	2.2	0	0
Cottonwood/Iniskin	0	8.8	9.7	39.2	0	0	1.0	0.2	0	0	2.3	0	0
Miscellaneous	3.3	1.1	1.9	2.7	0.9	3.0	1.7	1.6	2.1	2.1	2.3	1.9	1.2
Totals	30.6	82.7	157.0	321.9	11.3	7.0	24.2	22.2	4.4	5.5	15.6	3.8	5.9

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Location	1998	1999	2000	2001	2002	2003	2004	2005	2006
Tutka Bay	0.9	1.5	1.8	1.4	2.7	2.6	0.7	0.8	0.7
Port Graham	0.8	0	T	0	0.4	0.1	0.2	0	0
Dogfish Bay	0	0	0	0	0	0	0	0	0
Port Chatham	0.1	0	0	0	0	0	0	0	0
Rocky/Windy Bays	0.3	0	0	0.3	0	0.1	0	5.6	0.9
Port Dick	0.1	0	0.1	0.1	3.8	T	27.8	5.3	11.9
E. Nuka Bay	T	2.1	0.2	T	0.1	T	0.1	0	T
Resurrection Bay	0	0	1.5	T	T	T	T	0.1	T
Douglas River	0	0	19.9	10.3	7.0	T	6.7	2.8	15.2
Kamishak River	0	0	43.7	73.0	5.1	0	0	0	0
McNeil River	0	0	0	T	0	0	0	0	0
Bruin Bay	T	T	2.4	0	2.0	0.1	7.0	7.0	1.9
Ursus/Rocky Coves	0	0	0	1.5	3.4	0	1.8	0	3.3
Cottonwood/Iniskin	0	0	0	0	17.0	29.7	161.9	74.1	36.2
Miscellaneous	2.3	4.4	3.6	2.4	1.8	3.1	0.5	2.9	1.8
Totals	4.6	7.9	73.3	89.0	43.3	35.7	206.7	98.6	72.0

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

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

Appendix A23.–Estimated sockeye salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1986–2006.

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
1986	2.8	13.0	10.0	no data	0.8	7.6	7.8	7.0	1.9	5.0	55.9
1987	7.0	10.5	13.4	no data	0.3	9.2	9.0	10.0	1.1	[c]	60.5
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[e]	8.4	2.0	13.2	5.4	12.8	13.8	11.8	2.6	97.5
2004	16.7[b]	7.3[e]	10.7	1.0	11.9	10.1	14.0	17.0	7.2	0.8	96.7
2005	8.2[b]	15.2[e]	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[e]	18.6	1.0	12.4	4.8	17.7	13.9[d]	0.3	[c]	95.1
20-year Average	11.1	10.4	10.2	1.5	6.7	6.1	10.0	7.3	3.1	2.3	68.6
1986–1995 Average	7.9	7.5	10.8	1.1	2.6	6.1	9.1	8.0	1.5	2.3	56.9
1996–2005 Average	14.3	13.4	9.6	1.7	10.8	6.0	10.9	6.5	4.7	2.3	80.2
Sustainable Esc. Goal[f]	6.0 –13.5	5.95 –12.55	8.8 –15.2	[g]	0.7 –8.3	3.7 –8.0	6.3 –12.15	1.88 –9.3	1.25 –2.6	[g]	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 and video counts.

[e] Combination of weir and aerial counts.

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

[g] No formal escapement goal established.

Appendix A24.–Estimated pink salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1960–2006.

	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

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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

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Location	YEAR 2004	2005	2006	1960–2005 Average	Sustainable Escapement Goal[e]
Humpy Creek	28.9	93.8	48.4	47.3	21.65–85.55
China Poot Creek	3.3	9.2	7.2	6.3	2.9–8.2
Tutka Lagoon Creek	17.8	133.6	25.8	18.2	11.6–18.9
Barabara Creek	5.4	14.4	3.6	5.0	1.9–9.0
Seldovia River	56.8	98.6	70.0	34.7	19.05–38.95
Port Graham River	44.0	69.1	31.2	17.3	7.0–19.85
Dogfish Lagoon	3.2	22.3	8.0	4.6	---
Port Chatham Creeks	26.4	44.4	24.2	14.1	7.8–21.0
Windy Right Creek	12.0	22.2	17.1	8.1	3.35–10.95
Windy Left Creek	23.3	72.0	65.2	19.5	3.65–29.95
Rocky River	53.8	198.7	67.8	47.5	9.35–54.25
Port Dick Creek[a]	13.3	122.2	51.5	45.2	18.55–58.3
Island Creek	33.6	26.4	107.7	20.9	7.2–28.3
South Nuka Island Creek	6.4	11.2	5.1	11.1	2.7–14.25
Desire Lake Creek	24.3	46.0	74.8	17.9	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	2.5	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	10.1	---
Amakdedori Creek	---	---	---	7.7	---
Bruin Bay River	66.5	98.3	515.1	142.3	18.65–155.75
Sunday Creek	31.5	116.2	70.0	33.0	4.85–28.85
Brown's Peak Creek	18.1	61.0	35.7	24.7	2.45–18.8
Totals	481.6	1,328.1	1,328.1	525.0	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 A25.–Estimated chum salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1986–2006.

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
1986	0.6	2.5	2.0	1.7	8.6	24.0	17.0	22.0	2.0	11.0	11.0	5.9	108.3
1987	1.5	2.0	0.2	6.1	13.2	12.0	18.0	26.0	10.0	9.9	17.0	9.1	125.0
1988	3.0	8.6	0.3	9.0	7.8	15.0	13.0	49.0	7.0	9.4	16.0	9.5	147.6
1989	1.3	1.8	1.2	3.3	4.8	30.0	12.0	34.0	8.0	6.3	8.0	5.9	116.6
1990	2.6	1.0	0.8	1.1	2.3	2.5	7.9	8.0	4.0	3.8	4.3	8.4	46.7
1991	1.1	3.1	---	7.4	17.3	8.7	8.4	10.0	6.0	1.3	7.7	8.3	79.3
1992	1.4	0.8	1.7	5.4	6.7	4.5	7.1	19.2	8.5	1.7	6.1	3.4	66.5
1993	2.5	5.4	0.1	2.5	3.6	9.1	6.3	17.4	6.0	7.7	12.0	8.0	78.8
1994	5.2	11.3	1.9	3.5	8.8	---	9.0	15.0	6.1	6.2	10.2	18.9	96.1
1995	3.8	4.2	5.1	3.3	7.7	[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
20-Year Avg.	3.5	7.2	3.4	4.4	9.9	19.7	15.1	19.7	10.2	13.1	16.6	14.4	137.3
1986–1995 Avg.	2.3	4.1	1.5	4.3	8.1	13.2	11.0	21.5	6.4	6.8	10.8	10.0	100.0
1996–2005 Avg.	4.7	10.3	5.1	4.5	11.8	25.4	19.2	17.9	13.9	19.5	22.5	18.8	173.7
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	13.75–25.75	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.

Appendix A26.–Biological escapement goals (BEG's) prior to 2002 and sustainable escapement goals (SEG's) beginning in 2002 for chum salmon systems in Lower Cook Inlet, Alaska.

Chum Salmon

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

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

Appendix A27.–Biological escapement goals (BEG's) prior to 2002 and sustainable escapement goals (SEG's) beginning in 2002 for pink salmon systems in Lower Cook Inlet, Alaska.

Pink Salmon

		Former BEG			New SEG					% Change
System	District	BEG	Midpoint	Year Adopted	Low		High	Range Midpoint	n[a]	In Midpoint
Humpy Creek	Southern	25,000–50,000	37,500	1982	21,650	-	85,550	53,600	26	43%
China Poot Creek	Southern	5,000	5,000	1982	2,900	-	8,200	5,550	26	11%
Tutka Creek	Southern	6,000–10,000	8,000	1982	6,500	-	17,000	11,700	16	46%
Barabara Creek	Southern	18,000–24,000	21,000	1982	1,900	-	9,000	5,450	26	-74%
Seldovia Creek	Southern	25,000–35,000	30,000	1982	19,050	-	38,950	29,000	26	-3%
Port Graham River	Southern	20,000–40,000	30,000	1977	7,000	-	19,850	13,425	26	-55%
Port Chatham	Outer	10,000–15,000	12,500	1982	7,800	-	21,000	14,400	25	15%
Windy Creek Right	Outer	10,000	10,000	1982	3,350	-	10,950	7,150	26	-29%
Windy Creek Left	Outer	30,000–50,000	40,000	1982	3,650	-	29,950	16,800	26	-58%
Rocky River	Outer	50,000	50,000	1982	9,350	-	54,250	31,800	26	-36%
Port Dick Creek	Outer	20,000–100,000	60,000	1982	18,550	-	58,300	38,425	26	-36%
Island Creek	Outer	12,000–18,000	15,000	1982	7,200	-	28,300	17,750	25	18%
S. Nuka Island Creek	Outer	10,000	10,000	1982	2,700	-	14,250	8,475	24	-15%
Desire Lake	Outer	10,000–20,000	15,000	1986	1,900	-	20,200	11,050	23	-26%
Bear Creek	Eastern	5,000	5,000	1982	[b]		[b]	[b]	27	[b]
Salmon Creek	Eastern	10,000	10,000	1981	[b]		[b]	[b]	26	[b]
Thumb Cove	Eastern	4,000	4,000	1985	2,350	-	8,850	5,600	23	40%
Humpy Cove	Eastern	2,000	2,000	1985	900	-	3,200	2,050	22	3%
Tonsina Creek	Eastern	5,000	5,000	1982	500	-	5,850	3,175	23	-37%
Big Kamishak River	Kamishak	20,000	20,000	1982	[c]	-	[c]	[c]		[c]
Little Kamishak River	Kamishak	20,000	20,000	1982	[c]	-	[c]	[c]		[c]
Bruin River	Kamishak	25,000–50,000	37,500	1982	18,650	-	155,750	87,200	26	133%
Sunday Creek	Kamishak	10,000–20,000	15,000	1989	4,850	-	28,850	16,850	26	12%
Brown's Peak Creek	Kamishak	10,000–20,000	15,000	1989	2,450	-	18,800	10,625	26	-29%
									Mean	-10%

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

[b] Based on BOF actions in November 2004, the SEG's for Bear and Salmon Creeks were combined to form a new SEG range of 5,000 to 23,500 pink salmon and a new midpoint of 14,250.

[c] Based on BOF actions in November 2004, the pink salmon SEG's for Big and Little Kamishak Rivers were removed.

Appendix A28.–Biological escapement goals (BEG's) prior to 2002 and sustainable escapement goals (SEG's) beginning in 2002 for sockeye salmon systems in Lower Cook Inlet, Alaska.

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

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

Appendix A29.–Personal use/subsistence set gillnet salmon catches, in numbers of fish by species, and effort, Southern District, Lower Cook Inlet, 1969–2006.

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
69–05 Avg.	274	256	93.5	180	76	49	57	2,795	635	40	23	3,599
96–05 Avg.	174	165	95.1	121	44	138	69	1,705	296	11	0	2,219

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

[a] Steelhead trout *Oncorhynchus mykiss*.

Appendix A30.–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, 1986–2006.

	Homer/ Fritz Cr.		Anchorage Area[a]		Halibut Cove		Anchor Pt./ Ninilchik		Seldovia		Pt. Graham/ Nanwalek		Kenai/ Soldotna		Other		Total Permits
Year	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Issued
1986	280	82.8	18	5.3	4	1.2	29	8.6	1	0.3	0	0.0	1	0.3	5	1.5	338
1987	284	78.7	25	6.9	3	0.8	37	10.2	7	1.9	0	0.0	2	0.6	3	0.8	361
1988	338	77.2	36	8.2	5	1.1	43	9.8	6	1.4	0	0.0	10	2.3	0	0.0	438
1989	348	74.7	36	7.7	5	1.1	51	10.9	8	1.7	0	0.0	6	1.3	12	2.6	466
1990	441	76.3	36	6.2	5	0.9	65	11.2	12	2.1	0	0.0	6	1.0	13	2.2	578
1991	384	81.4	27	5.7	8	1.7	41	8.7	6	1.3	0	0.0	4	0.8	2	0.4	472
1992	302	82.7	21	5.8	5	1.4	32	8.8	3	0.8	0	0.0	1	0.3	1	0.3	365
1993	242	74.2	25	7.7	5	1.5	44	13.5	3	0.9	0	0.0	5	1.5	2	0.6	326
1994	235	82.2	20	7.0	4	1.4	21	7.3	1	0.3	0	0.0	1	0.3	4	1.4	286
1995	191	81.3	15	6.4	7	3.0	20	8.5	1	0.4	0	0.0	0	0.0	1	0.4	235
1996	241	80.6	16	5.4	7	2.3	26	8.7	3	1.0	1	0.3	2	0.7	3	1.0	299
1997	232	84.1	13	4.7	3	1.1	20	7.2	4	1.4	0	0.0	1	0.4	3	1.1	276
1998	175	77.1	18	7.9	2	0.9	24	10.6	5	2.2	0	0.0	2	0.9	1	0.4	227
1999	96	65.8	18	12.3	1	0.7	23	15.8	3	2.1	0	0.0	4	2.7	1	0.7	146
2000	168	78.9	15	7.0	2	0.9	21	9.9	4	1.9	0	0.0	1	0.5	2	0.9	213
2001	109	70.8	10	6.5	3	1.9	20	13.0	5	3.2	0	0.0	4	2.6	3	1.9	154
2002	85	69.7	7	5.7	3	2.5	14	11.5	6	4.9	0	0.0	6	4.9	1	0.8	122
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
20-Year Avg.	219	78.1	19	6.9	4	1.4	28	9.9	4	1.5	0	0.0	3	1.1	3	1.1	280
1986–1995 Avg.	305	78.8	26	6.7	5	1.3	38	9.9	5	1.2	0	0.0	4	0.9	4	1.1	387
1996–2005 Avg.	133	76.5	13	7.3	3	1.6	17	10.0	4	2.1	0	0.0	3	1.6	2	0.9	174

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

Appendix A31.–Subsistence and sport salmon catch in numbers of fish by species for the village of Port Graham, Lower Cook Inlet, 1986–2006.

Year	Salmon Harvest						Dolly Varden	Households Reporting
	Chinook	Sockeye	Coho	Pink	Chum	Total		
1986	123	274	179	237	13	826	12	27
1987	20	219	575	230	70	1,114	20	33
1988	96	411	459	542	75	1,583	18	27
1989	51	94	460	640	58	1,303	159	20
1990	211	524	803	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
2005	192	31	1	26	24	274	207	[c]
1986–2005 Average	213	413	383	524	172	1,705	222	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] Figure for 2006 unavailable.

Appendix A32.–Subsistence and sport salmon catch in numbers of fish by species for the village of Nanwalek (formerly English Bay), Lower Cook Inlet, 1986–2006.

Year	Salmon Harvest						Dolly Varden	Households Reporting
	Chinook	Sockeye	Coho	Pink	Chum	Total		
1986	2	373	302	825	1	1,503	144	17
1987	1	682	339	484	44	1,550	20	22
1988	8	610	385	1,214	35	2,252	70	21
1989	0	63	695	855	16	1,629	523	24
1990	54	638	614	1,947	49	3,302	2,833	28
1991	8	630	1,512	3,093	36	5,279	848	30
1992	71	437	675	676	58	1,917	1,331	35
1993	24	994	567	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[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1986–2005 Average	41	1,669	698	1,145	150	3,703	522	27

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

[a] Harvest figures for 2006 unavailable.

Appendix A33.–Salmon set gillnet catch in numbers of fish by species and permit/effort information for the Seldovia area subsistence fishery, Lower Cook Inlet, 1996–2006.

	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
Average	20	18	11	7	94	100	0	1	11	206
Late Season: August										
1996	4	3	1	2	0	1	0	0	0	1
1997	1	1	0	1	0	0	0	0	0	0
1998	3	2	1	1	0	0	0	0	0	0
1999	0									
2000	0									
2001	0									
2002	1	1	1	0	0	9	13	31	6	59
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
Average	1	2	1	1	0	11	4	20	2	37

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

Appendix A34.–ADF&G, CIAA, and/or CRRC salmon stocking projects and releases of salmon fry, fingerling, and smolt, in millions of fish, Lower Cook Inlet, 1986–2006 (currently active projects highlighted in gray).

	Juvenile Sockeye Salmon															
YEAR	Leisure Lake	Hazel Lake	Tutka Bay	English Bay Lakes	Port Graham Hatchery	Chenik Lake	Paint River Lakes			Kirschner Lake	Bruin Lake	Ursus Lake	Port Dick Lake	Bear Lake	Grouse Lake	Total Sockeye
							Upper	Lower	Elusivak							
1986	2.350	---	---	---	---	0.839	0.500	0.320	---	---	---	---	---	---	---	4.009
1987	2.022	---	---	---	---	1.000	---	---	---	0.867	---	---	0.705	---	---	4.594
1988	2.100	0.783	---	---	---	2.600	1.100	0.552	0.521	0.521	---	---	0.222	---	---	8.399
1989	2.000	1.000	---	---	---	3.500	1.000	0.500	0.500	0.250	---	---	0.430	2.200	---	11.380
1990	1.750	1.250	---	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	0.255	0	0.455	---	---	---	---	0	---	---	---	3.393	---	4.750
'86–05 Average	1.701	0.949		0.357		1.635	0.536	0.261	0.507	0.290	0.250	0.200	0.452	1.570	0.762	6.456
'96–05 Average	1.617	0.968	0.096	0.346	0.055	0.476	0.500			0.232	0.250	0.250		1.579	0.897	5.457

-continued-

Appendix A34.–Page 2 of 2.

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		
1986	23.100	2.000	---	---	25.100	---	0.101	0.104	---	0.101	0.306	0.138	0.072	---	---	0.728	0.938
1987	20.500	3.000	0.295	---	23.795	0.084	0.094	0.104	---	0.096	0.378	0.150	0.045	---	---	0.604	0.799
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	---	---	0.125	0.324	0.971	1.534
’86–05 Average	55.159	4.750	0.306	11.384	62.931	0.096	0.096	0.175	0.114	0.283	0.692	0.149	0.057	0.140	0.117	0.726	0.951
’96–05 Average	80.502	---	---	16.705	89.157	0.092	0.095	0.183	0.101	0.291	0.702	---	---	0.140	0.121	0.782	0.972

[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.

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, 1986–2006.

	Southern		Kamishak		Eastern		Outer		Total	
Year	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits
1986	---	---	1,959	54	167	4	28	3	2,154	57
1987	---	---	6,132	63	584	4	202	9	6,918	69
1988	---	---	5,548	75	0	0	0	0	5,548	75
1989	170	6	4,801	75	0	0	0	0	4,971	75
1990	---	---	2,264	75	---	---	---	---	2,264	75
1991	---	---	1,992	58	0	0	0	0	1,992	58
1992	---	---	2,282	56	0	0	0	0	2,282	56
1993	---	---	3,570	60	---	---	---	---	3,570	60
1994	---	---	2,167	61	---	---	---	---	2,167	61
1995	---	---	3,378	60	---	---	---	---	3,378	60
1996	---	---	2,984	62	---	---	---	---	2,984	62
1997	---	---	1,746[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	---	---	---	---	---	---	---	---	---	---
20-Year Average	170	6	2,804	59	125	1	38	2	2,886	59
1986–1995 Average	170	6	3,409	64	125	1	38	2	3,524	64
1996–2005 Average	---	---	1,290	42	---	---	---	---	1,290	42

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

[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, 1986–2006.

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]				
1986	[c]	[d]	1,959	10.4	54	2.20
1987	[c]	3,833	6,132	11.3	63	8.40
1988	[c]	5,190	5,548	11.1	74	9.30
1989	37,785	5,000	4,801	9.5	74	3.50[e]
1990	28,658	2,292	2,264	10.8	75	1.80
1991	17,256	1,554	1,992	11.3	58	1.30
1992	16,431	1,479	2,282	9.7	56	1.40
1993	28,805	2,592	3,570	10.2	60	2.20
1994	25,300	3,421	2,167	10.6	61	1.50
1995	21,998	2,970	3,378	9.8	60	4.00
1996	20,925	2,250	2,984	10.1	62	6.00[e]
1997	25,300	3,420	1,746	9.3	45	0.40
1998	19,800	1,780	331	8.5	20	0.07
1999	[f]	---	- CLOSED[g] -	---	---	---
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 -	---	---	---
1986-2005 Average	17,521	2,982	3,012	10.2	59	3.24

[a] Kamishak Bay allocation only, does not include Shelikof Strait food/bait allocation.
[b] Exvessel values exclude any postseason retroactive adjustments (except where noted).
[c] Prior to 1989, preseason forecasts of biomass were not generated.
[d] Prior to 1987, preseason harvest projections were not generated.
[e] Includes retroactive adjustment.
[f] 1999 preseason biomass calculated as a range of 6,000 to 13,000 st.
[g] 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, 1969–2006.

Year	Dates of Openings	Total Hours Open	Harvest (short tons)	Catch Rate (short tons/ hour open)	Number of Permits w/Landings
1969–1973	No closed periods				
1974	1/1–5/20		2,114		26
1975	1/1–6/6	(Closed Iniskin Bay 5/17)	4,119		40
1976	1/1–5/21	(Closed Iniskin Bay 5/17; reopened Kamishak 6/2)	4,824		66
1977	1/1–5/31	(Closed Kamishak Dist. 5/12; reopened 5/14–5/17; reopened 5/29–5/31)	2,908		57
1978[a]	4/16–5/31	96	402	4.2	44
1979	5/12–5/15	72	415	5.8	36
1980–1984	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]	---
1999–2006	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, 1986–2006.

Year	Aerial Survey Total Biomass Estimate (st)[a]	ASA Model Total Biomass Estimate (st)[b,c]	Actual Commercial Harvest (st)	Estimated Exploitation Rate (%)[b]
1986	26,001	23,451	1,959	8.4
1987	35,332	21,896	6,132	28.0
1988	29,548	18,055	5,548	30.7
1989	35,701	16,955	4,801	28.3
1990	19,664	15,409	2,264	14.7
1991	18,163[d]	15,625	1,992	12.7
1992	24,077	13,848	2,282	16.5
1993	32,439	12,272	3,570	29.1
1994	25,344[d]	10,139	2,167	21.4
1995	25,115	8,143	3,378	41.5
1996	27,640	5,534	2,984	53.9
1997	---	3,863	1,746	45.2
1998	---	3,807	331	8.7
1999	---	4,066	- CLOSED[e] -	---
2000	---	4,134	- CLOSED -	---
2001	---	3,913	- CLOSED -	---
2002	---	3,348	- CLOSED -	---
2003	---	2,987	- CLOSED -	---
2004	---	2,401	- CLOSED -	---
2005	---	2,328	- CLOSED -	---
2006	---	2,144	- CLOSED -	---
1986–2005 Average	27,184	9,069	3,012	20.3

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.

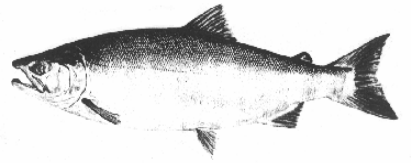
[e] ADF&G test fishing harvested 100 st.

APPENDIX C. 2006 LOWER COOK INLET SALMON OUTLOOK AND MANAGEMENT STRATEGY

Appendix C1.–Lower Cook Inlet 2006 outlook for commercial salmon fishing.

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

McKie Campbell, Commissioner
Denby S. Lloyd, Director



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Date Issued: 4/27/06
Time: 9:00 a.m.

2006 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 2006 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. Not all cost recovery revenue goals for the various hatchery Special Harvest Areas (SHA's) have been finalized. Once established, these goals, 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 2006 LCI commercial all-species salmon harvest, in numbers of fish, is predicted to total about 1.18 million, or less than half the actual harvest taken during 2005. 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 substantial percentages to both sockeye (74%) and pink (61%) salmon commercial harvests in LCI, but hatchery cost recovery is anticipated to account for a significant portion of the catches for both species. The following table summarizes the projected harvest by species:

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	Natural	**Enhanced**	**Total**
CHINOOK	[a]	[a]	1,300[a]
SOCKEYE	84,700[b]	246,200[c]	330,900
COHO	[a]	[a]	13,400[a]
PINK	309,000	490,800[c]	799,800
CHUM	38,800[b]	0	35,000
Total	432,500	737,000	1,184,200

[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.

The preceding numbers include the following natural and enhanced components:

ENHANCED RUNS

SOCKEYE SALMON		PINK SALMON	
Kirschner Lake	24,200	Tutka Hatchery	0
Leisure Lake	89,000	Port Graham Hatchery	490,800
Hazel Lake	59,000		
Tutka Lagoon	0	TOTAL	490,800
Bear Lake	74,000[a]		
English Bay Lakes	0[b]		
TOTAL	246,200		

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NATURAL RUNS

SOCKEYE SALMON[c]		PINK SALMON	
Southern District[d]	43,000	Southern District	71,000
Outer District	21,400	Outer District	208,000
Eastern District	7,000	Eastern District	0
Kamishak Bay District	13,300	Kamishak Bay District	30,000
TOTAL	84,700	TOTAL	309,000

[a] The figure for Bear Lake has subsequently been revised by CIAA to a new forecasted harvest total of 63,300 sockeye.

[b] Low level return is not expected to produce any harvestable surplus.

[c] Numbers for natural sockeye harvests are not forecasts but simply represent 1980–2005 average commercial catches.

[d] Incidental harvest of fish not originating from the Southern District.

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SUMMARY BY SPECIES

Sockeye Salmon

The forecasted 2006 LCI sockeye salmon harvest of 331,000 fish is approximately 40% greater than the 2005 catch of 233,000 but is only marginally greater than the most recent 10-year average catch of 324,000. The combined harvests (including cost recovery) of adult runs to enhancement projects at Leisure and Hazel Lakes in the Southern District are expected to total approximately 148,000 sockeyes, or about 45% of the 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. At Bear Lake in Resurrection Bay of the Eastern District, the original projected harvest total of approximately 74,000 sockeyes was revised by CIAA to a new lower total of about 63,000 fish. The management guidelines utilized last season are once again in place for the Resurrection Bay sockeye salmon fishery in 2006, 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 24,000 fish. After three successive seasons of relatively strong runs, as well as targeted commercial harvests during the past two years, the sockeye run to Chenik Lake in the Kamishak Bay District is questionable but could once again produce harvest opportunities in 2006. The 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 85,000 sockeyes from natural production.

Pink Salmon

Harvestable surpluses of pink salmon in LCI during 2006 are anticipated to total nearly 800,000, with enhanced production from the Port Graham Hatchery in the Southern District expected to provide over 60% of the total. As has been the case for several seasons, all of the fish returning to this facility will likely be required to recoup operating expenses and for use as broodstock. Natural pink salmon spawning escapement levels into most major systems were fair to good in 2004, resulting in a harvest projection of 309,000 naturally produced pinks throughout the entire LCI management area. Outer District systems are expected to have the greatest potential for harvest with a combined total of over 200,000 pinks, returning primarily to Port Dick, while systems at Windy Bay, Rocky Bay, and Port Chatham are expected to produce lesser amounts. Ursus and Rocky Coves in the Kamishak Bay District are also predicted to contribute only modest harvest potential, with a projected total of about 30,000 pinks in that district.

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 2006. However, chum salmon returns to LCI in recent years have been strong, and the resurgence of commercial harvests during the past six consecutive seasons resulted in the highest totals for this species since 1988. Such encouraging signs suggest that the potential for a chum harvest greater than the forecast is possible in 2006. This season's chum harvest will 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 22, on a schedule of 5 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. Last season, despite significantly more fishing time afforded to commercial seiners compared to hatchery fishers, common property catches were only about one-half of hatchery harvests. 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. Because the management strategy represents a radical departure from practices prior to 2005, the times and durations of openings in Resurrection Bay cannot be predicted with any certainty and are 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. The forecasted harvestable surplus for Bear Lake in 2006, originally set at approximately 74,000 sockeye, was revised by CIAA to a new lower total of 63,000 fish. 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 eight 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 planned 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 Thursday, 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 19. This SHA normally remains closed only until the established revenue goal is achieved, but this season CIAA expects to require the entire projected return (24,200 sockeyes) 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 2006 Trail Lakes Hatchery Annual Management Plan (AMP), which should be completed prior to the fishing season.

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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 four 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 chums returning to McNeil River and, potentially, sockeyes returning to Chenik Lake. The 7 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.

3) In the Southern District, the China Poot and Hazel Lake hatchery revenue goals for sockeye salmon will be combined, and to help expedite achievement of cost recovery goals, 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 19, on a 5-day-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 2006 Trail Lakes Hatchery Annual Management Plan (AMP), which should be completed prior to the fishing season.

   As announced by CIAA in 2004, operations at Tutka Bay Hatchery have been suspended, and no further hatchery produced pink salmon returns will occur. As a result, the Department will begin managing for achievement of the sustainable escapement goal (SEG) of 6,500 to 17,000 pinks into Tutka Creek. The management strategy to attain this objective will include the "offshore" seine restriction that has been used in past years beginning June 19. 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.

4) 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 late June if the run appears strong. However, sockeye returns to the Aialik system have been marginal during the past several seasons.

5) Because of another extremely weak forecasted return of sockeyes to English Bay Lakes 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 overall adult return is predicted to total about 4,600 sockeyes, falling below the low end of the SEG range of 6,000 to 13,500. Should the return prove stronger than projected, 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 weak forecast, the availability of broodstock for the English Bay Lakes enhancement project is in question.

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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 the moderate forecasted return of pink salmon to the Port Graham Hatchery, the commercial set gillnet fishery in Port Graham Subdistrict will likely remain closed for the entire 2006 season to protect pinks returning to the hatchery facility. The Port Graham Hatchery pink salmon revenue goal has not yet been established, but that figure totaled $400,000 during each of the past two seasons. Port Graham Hatchery will likely require all returning pink salmon to meet broodstock and cost recovery requirements, and therefore the potential for a targeted common property set gillnet or seine fishery is low. Specific information regarding the pink salmon return to Port Graham Hatchery can be found in the 2006 Port Graham Hatchery AMP.

6) 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 17, 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 weak this season, with a harvest forecast totaling only about 119,000 pinks.

   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 will be modest at best, and although openings could occur in the Rocky, Windy, Port Chatham Subdistricts, actual openings will be determined by inseason run strength assessment.

   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. ***THURSDAY, JUNE 1***, 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

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Web site at: *http://www.cf.adfg.state.ak.us/region2/finfish/salmon/uci/gcireg06.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:

ADF&G
Division 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 2006. 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 fourth consecutive season, announcements will be published in real time at the following web site:

http://csfish.adfg.state.ak.us/mariner/announceedit/publicfishannouncement.php?strDistrict=HOM&Year=2006

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 second 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.

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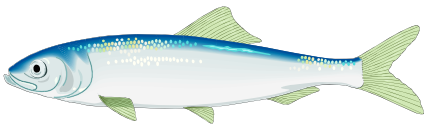
Charts of the LCI fishing district and subdistrict boundaries, complete with a statistical numbering scheme identifying distinct bays and specific fishing areas, are available at the Homer ADF&G office. Fishermen, dock foremen, and tendermen are requested to accurately record the sub-statistical area 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 2006.

APPENDIX D. 2006 LOWER COOK INLET HERRING FISHERY INFORMATION

Appendix D1.–2006 Lower Cook Inlet herring fishery information.

ALASKA DEPARTMENT OF FISH AND GAME
COMMERCIAL FISHERIES
NEWS RELEASE



McKie Campbell, Commissioner

Geron Bruce, Acting Director
Division of Commercial Fisheries
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2006 Herring Announcement No. 1
Issued at Homer, Alaska
September 12, 2005

2006 Lower Cook Inlet Herring Fishery Information

This notice provides information to fishermen and processors on the 2006 Kamishak Bay District herring season. The commercial sac-roe herring fishery in Kamishak Bay will not open in 2006 because the preliminary forecasted return is less than the established regulatory threshold of 6,000 short tons (st) necessary to consider allowing commercial exploitation. Postseason analysis of abundance and age composition data collected in 2005 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 2,650 st in 2006, continuing a declining trend observed over the past few seasons. Additionally, over 58% 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 to assess the Kamishak Bay herring stock in 2005 was considered fair to poor, while overall observation conditions were considered fair. Several 7- to 9-day "gaps" in coverage, or periods during which no surveys were flown due to poor weather, occurred in 2005. This relatively poor coverage resulted in a cumulative total of less than 1,422 st of herring observed by Department surveyors in the Kamishak Bay District this season, the second lowest volume in the past 16 years. The last 5 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 other North Gulf of Alaska herring populations, particularly 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. Furthermore, a surprisingly high percentage (37–52%) of herring collected in Kamishak Bay in mid-May was positive for *Ichthyophonus*, a protozoan pathogen that has been linked to population declines of Atlantic herring.

Reasonably good weather once again contributed to successful coverage by the Department's two spring vessel charters to collect age composition samples during the periods 29 April–7 May and 15–22 May. The early sampling period coincided with the arrival of the first fish on the grounds, which in turn corresponds to the traditional timing of the commercial fishery, while the second charter collected age composition samples during the latter portion of the return in 2005. 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.