

**Cook Inlet Area Groundfish Management Report,
2005–2011**

by

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February 2013

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code		all standard mathematical signs, symbols and abbreviations	
deciliter	dL		AAC		
gram	g	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H _A
hectare	ha			base of natural logarithm	<i>e</i>
kilogram	kg	all commonly accepted		catch per unit effort	CPUE
kilometer	km	professional titles	e.g., Dr., Ph.D., R.N., etc.	coefficient of variation	CV
liter	L			common test statistics	(F, t, χ^2 , etc.)
meter	m	at	@	confidence interval	CI
milliliter	mL	compass directions:		correlation coefficient (multiple)	R
millimeter	mm	east	E	correlation coefficient (simple)	r
Weights and measures (English)		north	N	covariance	cov
cubic feet per second	ft ³ /s	south	S	degree (angular)	°
foot	ft	west	W	degrees of freedom	df
gallon	gal	copyright	©	expected value	<i>E</i>
inch	in	corporate suffixes:		greater than	>
mile	mi	Company	Co.	greater than or equal to	≥
nautical mile	nmi	Corporation	Corp.	harvest per unit effort	HPUE
ounce	oz	Incorporated	Inc.	less than	<
pound	lb	Limited	Ltd.	less than or equal to	≤
quart	qt	District of Columbia	D.C.	logarithm (natural)	ln
yard	yd	et alii (and others)	et al.	logarithm (base 10)	log
		et cetera (and so forth)	etc.	logarithm (specify base)	log ₂ , etc.
Time and temperature		exempli gratia		minute (angular)	'
day	d	(for example)	e.g.	not significant	NS
degrees Celsius	°C	Federal Information Code	FIC	null hypothesis	H ₀
degrees Fahrenheit	°F	id est (that is)	i.e.	percent	%
degrees kelvin	K	latitude or longitude	lat. or long.	probability	P
hour	h	monetary symbols		probability of a type I error	
minute	min	(U.S.)	\$, ¢	(rejection of the null hypothesis when true)	α
second	s	months (tables and figures): first three letters	Jan,...,Dec	probability of a type II error	
Physics and chemistry		registered trademark	®	(acceptance of the null hypothesis when false)	β
all atomic symbols		trademark	™	second (angular)	"
alternating current	AC	United States		standard deviation	SD
ampere	A	(adjective)	U.S.	standard error	SE
calorie	cal	United States of America (noun)	USA	variance	
direct current	DC	U.S.C.	United States Code	population sample	Var var
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm	U.S. state	use two-letter abbreviations		
parts per thousand	ppt, ‰		(e.g., AK, WA)		
volts	V				
watts	W				

FISHERY MANAGEMENT REPORT NO. 13-04

**COOK INLET AREA
GROUNDFISH MANAGEMENT REPORT, 2005–2011**

by

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February 2013

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This document should be cited as:

Russ, E., C. E. Trowbridge, and C. Russ. 2013. Cook Inlet Area groundfish management report, 2005–2011. Alaska Department of Fish and Game, Fishery Management Report No. 13-04, Anchorage.

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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	ii
LIST OF FIGURES	iii
LIST OF APPENDICES	iii
ABSTRACT	1
INTRODUCTION.....	1
SABLEFISH.....	3
Historical Background	3
2011 Season Summary and Outlook.....	4
Harvest Monitoring.....	4
ROCKFISH	5
Historical Background	5
2011 Season Summary and Outlook.....	6
Harvest Monitoring.....	7
LINGCOD	8
Historical Background	8
2011 Season Summary and Outlook.....	9
Harvest Monitoring.....	9
PACIFIC COD	10
Historical Background	10
2011 Season Summary and Outlook.....	12
Harvest Monitoring.....	13
POLLOCK.....	14
Historical Background	14
2011 Season Summary and Outlook.....	14
Harvest Monitoring.....	14
OTHER GROUND FISH	15
Historical Background	15
2011 Season Summary and Outlook.....	16
Harvest Monitoring.....	17
AT-SEA DISCARDS	17
CONCLUSIONS	17
ACKNOWLEDGEMENTS.....	18
REFERENCES CITED	19
APPENDIX A.	63

LIST OF TABLES

Table	Page
1. Species encountered in Central Region groundfish management.....	22
2. Emergency orders issued for commercial groundfish fisheries in the Cook Inlet Area, 2005–2011.	23
3. Landings and estimated exvessel values of Cook Inlet Area groundfish harvests, 1988–2011.....	25
4. Effort and harvest from the Cook Inlet Area commercial sablefish fishery, 1988–2011.	28
5. Average weight, average length, and sex ratio of commercially harvested sablefish in the Cook Inlet Area, 1999–2011.	29
6. Effort and harvest by district of Cook Inlet Area commercial rockfish, including black and dark rockfish from federal waters, 1988–2011.....	30
7. Harvest by assemblage of Cook Inlet Area commercial rockfish, including black and dark rockfish from federal waters, 1988–2011.....	31
8. Species composition of pelagic shelf rockfish sampled in the Cook Inlet Area, 1998–2011.....	32
9. Average length, average weight, average age, sex ratio, and corresponding sample sizes of commercially harvested black rockfish in the Cook Inlet Area, 1998–2011.....	33
10. Species composition of commercially harvested non-pelagic rockfish, including number sampled and proportion, in the Cook Inlet Area, 1998–2011.....	34
11. Commercial lingcod effort and harvest by gear type from the combined Cook Inlet area and adjacent federal waters, 1988–2011.	35
12. Commercial lingcod harvest from state and federal waters, 1988–2011.....	36
13. Average weight, average length, average age, sex ratio, and corresponding sample sizes of commercially harvested lingcod in the Cook Inlet Area, 1998–2011.	37
14. Cook Inlet Area Pacific cod parallel and state-waters season dates, 1997–2011.	38
15. Annual harvest and value for the Cook Inlet Area Pacific cod parallel and state-waters seasons, 1988–2011.....	40
16. Effort and harvest in the commercial Pacific cod parallel season in the North Gulf and Cook Inlet Districts, 1988–2011.	41
17. Annual effort and harvest by gear type of Pacific cod from the Cook Inlet Area parallel fisheries, 1988–2011.....	42
18. Commercial effort and harvest for the state-waters Pacific cod season in the North Gulf and Cook Inlet Districts, 1997–2011.	43
19. Annual effort and harvest by gear type of Pacific cod from the Cook Inlet Area state-waters season, 1997–2011.....	44
20. Annual guideline harvest level, harvest by gear type, and percent of GHLL harvested by gear type of Pacific cod from Cook Inlet Area state-waters season, 1997–2011.	45
21. Average weight, average length, and percent female of commercially harvested Pacific cod in the Cook Inlet Area, 1997–2011.....	46
22. Commercial pollock fishing effort and harvest in the Cook Inlet Area, 1988–2011.....	47
23. Average weight, average length, and percent female of commercially harvested walleye pollock in the Cook Inlet Area, 1997–2011.	48
24. Commercial effort and harvest of other groundfish species, octopus, and squid from the Cook Inlet Area, 1988–2011.	49
25. Reported at-sea discards from Cook Inlet Area groundfish fisheries, 1989–2011.	50
26. Average weight and percent female of commercially harvested octopus in the Cook Inlet Area, 1996–2011.....	51

LIST OF FIGURES

Figure	Page
1. Cook Inlet Management Area commercial groundfish area and district boundaries from 1997 to present.	52
2. Cook Inlet sablefish harvest and guideline harvest level, 1988–2011.....	53
3. Cook Inlet Area commercial rockfish harvest contribution by rockfish species assemblage and gear type, 1988–2011.....	54
4. Cook Inlet Area lingcod harvest by gear type, 1988–2011.	55
5. Cook Inlet Area parallel and state-waters seasons Pacific cod catch by gear type and the state-waters seasons guideline harvest level, 1997–2011; confidential data is excluded.	56
6. Cook Inlet state-waters season Pacific cod harvest percent contribution by month and dominant statistical areas, 1997–2011 combined.	57
7. Vessel no-transit and fixed gear Pacific cod fishing closure zones around Steller sea lion rookeries within the Cook Inlet Management Area.	58
8. Kachemak Bay groundfish pot closure area.	59
9. Kamishak Bay groundfish pot closure area.	60
10. Pacific cod length frequency distribution for Cook Inlet and North Gulf districts, 2011.....	61

LIST OF APPENDICES

Appendix	Page
A1. Frequently used acronyms and key words.....	64

ABSTRACT

The Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries manages all commercial groundfish fisheries within the Cook Inlet Area (Registration Area H), defined as territorial waters from the shoreline to 3 nautical miles (nmi) offshore located west of Cape Fairfield and north of the latitude of Cape Douglas. The area is divided into the Cook Inlet District and the North Gulf District. Additionally, ADF&G has management authority for lingcod *Ophiodon elongatus*, black rockfish *Sebastes melanops*, and dark rockfish *S. ciliatus* in waters of the exclusive economic zone (EEZ) located adjacent to the Cook Inlet Area and from 3 nmi offshore. Commercial groundfish fisheries are described for the years 1988–2011. During 2011, groundfish harvest totaled nearly 5.4 million lb and generated an estimated exvessel value of \$2.35 million, which is the largest harvest since 1999 and the highest value to date. Pacific cod *Gadus macrocephalus* has annually comprised the greatest economic yield from CI commercial groundfish harvests since 1990, and the 2011 Pacific cod value was just over \$2 million, the highest to date and nearly twice the value in 2010. Sablefish *Anoplopoma fimbria* has generated the second highest annual exvessel value since 2000, based primarily on a high dockside price that has more than doubled in the same time period (\$4.55/lb, round weight, in 2011). Rockfish harvest increased in 2011, although there has been an overall decline since 2000. Lingcod harvest declined in 2011 to less than half the 2010 harvest and is at its lowest level since 1990. Walleye pollock *Theragra chalcogramma* harvest has remained low. Several regulatory management changes through the period of 2005–2011 are described for area commercial groundfish fisheries and recent regulatory changes based upon Alaska Board of Fisheries action during the 2011–2012 meeting cycle are summarized.

Key words: Cook Inlet, Area H, commercial fisheries, groundfish, harvest, management, exvessel value, lingcod, *Ophiodon elongates*, black rockfish, *Sebastes melanops*, dark rockfish, *Sebastes ciliatus*, Pacific cod, *Gadus macrocephalus*, sablefish, *Anoplopoma fimbria*, walleye pollock, *Theragra chalcogramma*, yelloweye rockfish *Sebastes ruberrimus*, state waters, parallel, Annual Management Report

INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) Division of Commercial Fisheries manages all commercial groundfish fisheries within the territorial waters of the Cook Inlet Management Area (Registration Area H), which are defined as those waters from the shoreline to 3 nautical miles (nmi) offshore (5 AAC 39.975). Under state regulation 5 AAC 39.975 Definitions (21), groundfish are defined as all marine finfish except halibut, osmerids, herring, and salmonids. For territorial waters, the Alaska Board of Fisheries (BOF) establishes management regulations and ADF&G uses its emergency order (EO) authority to make adjustments to fishing time and area. The BOF schedules regular meetings for area groundfish on a triennial basis. Except for lingcod *Ophiodon elongatus*, black rockfish *Sebastes melanops*, and dark rockfish *S. ciliatus*, the National Marine Fisheries Service (NMFS) manages groundfish resources in waters of the exclusive economic zone (EEZ), located from 3 to 200 nmi offshore, under Fishery Management Plans (FMPs) developed by the North Pacific Fishery Management Council (NPFMC). Gulf of Alaska (GOA) waters under federal jurisdiction located adjacent to this management area are named the Central Gulf of Alaska (CGOA).

The Cook Inlet Area includes territorial waters west of Cape Fairfield (148° 50.25' W long) and north of the latitude of Cape Douglas (58° 51.10' N lat) and is divided into 2 districts, Cook Inlet and North Gulf (Figure 1). The Cook Inlet District includes waters of Cook Inlet north of a line from Cape Douglas to Point Adam (59° 15.27' N lat) and the North Gulf District comprises the remaining waters of the management area, primarily the waters along the outer Kenai Peninsula. Commercial harvests reported here are representative of the current area definition (since being redefined in 1996).

Within the Cook Inlet Area, directed fisheries occur for several commercially important groundfish including (Table 1): sablefish *Anoplopoma fimbria*, Pacific cod *Gadus macrocephalus*, walleye pollock *Theragra chalcogramma*, lingcod, and pelagic rockfish species (primarily black rockfish). State groundfish regulations also accommodate incidental groundfish bycatch from other directed groundfish, halibut, and salmon and herring gillnet fisheries. Some additional species landed as bycatch to directed groundfish fisheries include: Pacific spiny dogfish *Squalus suckleyi* (previously *Squalus acanthias*; Ebert et al. 2010), Pacific sleeper shark *Somniosus pacificus*, salmon shark *Lamna ditropis*, majestic squid *Berryteuthis magister*, giant Pacific octopus *Octopus dofleini*, skates *Raja* spp. and *Bathyraja* spp., and numerous rockfishes *Sebastes* spp. and *Sebastolobus* sp. Statewide regulations adopted in 1997 prohibited directed commercial fishing for sharks (5 AAC 28.084) and allowed skate fishing, of the order *Rajiformes*, only under a commissioner's permit (5 AAC 28.083). However, effective in 2005, the BOF provided for directed spiny dogfish fishing under the terms of a commissioner's permit. Few flatfish landings have occurred, although numerous species of flatfish comprise a significant portion of the groundfish biomass within Cook Inlet waters (Bechtol 2001; Gustafson and Bechtol 2001).

Commercial groundfish harvests are primarily monitored inseason through ADF&G fish tickets (regulation 5 AAC 39.130) with additional information derived from dockside sampling of the commercial catch, dockside interviews, and, for some fisheries, logbooks. Fish ticket information is collected both electronically through the eLandings systems, a multi-agency (ADF&G, NMFS, and International Pacific Halibut Commission) harvest accounting program, and through submission of preprinted hardcopy fish tickets. These records are reviewed by staff, batched and entered into a database. Dockside sampling involves the collection of biological data such as species, size, sex, gonad condition, and groundfish age structures (e.g., otoliths, vertebrae, fin spines, fin rays). Dockside interviews are used to verify information on harvest location and effort. Prior to 2001, dockside activities occurred opportunistically and contingent upon staff availability. Subsequently, through grant funding under the Alaska Fisheries Information Network, a groundfish sampling coordinator and a sampling technician were hired resulting in more consistent dockside sampling. In Cook Inlet, reporting requirements specify that all groundfish retained but not delivered for sale, such as catch that is retained for personal use or used as bait at sea, must be reported on an ADF&G fish ticket. One of the most reliable means of improving fisheries management is through complete and accurate documentation of fisheries mortality, particularly reporting of all harvest removals.

Legal gear types for groundfish fishing in Cook Inlet Area are longline, pelagic trawl, hand troll (hand jig), mechanical jig, and pots. In most area fisheries, if more than one gear type is legal, only one gear type may be aboard a vessel at a time. Fishermen operating groundfish gear or groundfish tenders in Cook Inlet Area waters must have an area registration prior to fishing or tendering. Another area regulation establishes a 24-hour delivery requirement following the closure of a directed season. Some open groundfish seasons are established in regulation 5 AAC 28.310. For many species, season openings are specified in regulation as calendar dates with season closures and other adjustments set by EO (Table 2). For Pacific cod, the parallel and state waters seasons established in regulation 5 AAC 28.367 are opened by emergency order contingent upon management actions for the Pacific cod fishery in the adjacent CGOA. For a miscellaneous groundfish species that is not otherwise identified in regulation, the fishing season is established as a provision of the miscellaneous groundfish commissioner's permit (regulation 5 AAC 28.379), a regulation first effective in 1999.

This report summarizes annual harvests, in pounds and exvessel values for commercial groundfish fisheries during 1988–2011 (Trowbridge et al. 2001, 2008, 2011; Table 3), describes management changes, through the period 2005–2011, and summarizes recent regulatory changes based upon BOF actions. Important groundfish fisheries are discussed in specific sections of this report.

SABLEFISH

HISTORICAL BACKGROUND

Cook Inlet sablefish harvests since 1988 have ranged from 2,996 lb in 1989 to 136,260 lb in 1988; effort has ranged from four vessels in 1989 to 79 vessels in 1992 (Table 4). During 2005–2011, harvest and effort averaged 69,549 lb and 11 vessels. The North Gulf District has yielded the majority of sablefish harvested while annual harvests from the Cook Inlet District have rarely exceeded 2,000 lb. In the North Gulf District, waters of Resurrection Bay, Aialik Bay, and in some years Day Harbor, have been the primary fishing areas. No sablefish have been landed from the Cook Inlet District since 1995.

The Cook Inlet Area sablefish fishery historically opened and closed on dates concurrent with the sablefish season in adjacent federal waters (Bechtol 1995b). Following implementation of the federal sablefish individual fishing quota (IFQ) program in 1995 (Sigler et al. 2003), the Cook Inlet sablefish fishery became one of only two open-access sablefish fisheries in the state. Beginning in 1995, the Cook Inlet fishery opened concurrently with the IFQ sablefish fishery on March 15, and closed by emergency order based upon harvest and catch rates. In 1997, the guideline harvest level (GHL) was set at the recent five-year average sablefish harvest of 104,000 lb from the North Gulf District using the pre-1996 district boundaries. The fishery GHL has subsequently been adjusted each year in proportion to the percentage annual change in sablefish total allowable catch (TAC) set by NPFMC for federal waters of the CGOA. The TAC is based on biomass estimates generated from annual surveys conducted by NMFS in the Gulf of Alaska. These biomass estimates, and the corresponding TACs for the CGOA, declined annually from 1994 to 1999 (Sigler et al. 2003) and increased from 2000 to 2004, and declined from 2004 to 2010, with a slight increase in 2011. Because sablefish in the Cook Inlet Area are believed to be part of the Gulf of Alaska stock, adjusting the state GHL proportional to changes in the CGOA TAC is a conservative approach to managing this historical nearshore fishery.

In response to public complaints of harvest being misreported from adjacent federal waters, and testimony suggesting improved sablefish catch rates in nearshore waters later in the year, a public proposal to change the sablefish season opening date to July 15 was considered by the BOF in 1998. Harvest data from 1988 to 1998 indicated the majority of harvest occurred during May and June, supporting the increased catch rate claims discussed at the November 1998 BOF meeting. The BOF adopted the proposal which was first implemented in 2000.

Sablefish catch rates in the North Gulf District have varied annually (Table 4). Despite declines in NMFS biomass estimates and corresponding decreases in state fishery GHLs from the mid-1990s to early 2000s, catch rates in the Cook Inlet Area sablefish fishery increased with average pounds per landing ranging from 501 lb in 1995 to a fishery high of 8,721 lb in 2003. Since 2003, catch rates declined to 837 lb per landing in 2009 then increased slightly to a CPUE of 1,471 lb in 2011.

As catch rates increased, season duration steadily declined from 1996 to 2004. For example, the 1996 season lasted 169 days and following the open season date change to July 15 in 2000, season duration declined further from 11 days in 2000 to the fishery low of one day in 2004. Although ADF&G adjusted season duration in response to catch rate increases, managing for the annual harvest targets remained problematic. GHGs were exceeded annually from 2000 to 2003 (Table 4; Figure 2) by 35% to 50%. In 2004, ADF&G submitted a proposal for an equal quota share that would divide the GHG equally among all registered participants. However, the proposal was amended to limit harvest per vessel to no more than 3,000 pounds of sablefish within two consecutive days. This vessel trip limit approach was adopted by the BOF as part of the *Cook Inlet Sablefish Management Plan* (5 AAC 28.360) which also included sablefish fishery-specific registration and a logbook requirement. First implemented during the 2005 season, the trip limit resulted in increased season duration and improved management precision for harvest targets. Season length was 8 days in 2005, 6 days in 2006 and 16 days in 2007. Since 2007, season duration continued to rise, more due to declining CPUE than harvest limits, and peaked at 87 days in 2009 and has since shortened down to 33 days in 2011.

Federal and state regulations allow a sablefish IFQ holder to participate in the state-managed sablefish fishery, provided the vessel catch does not exceed the allotted IFQ shares and the permit holders comply with both federal IFQ and state regulations. Similarly, individuals with halibut IFQ may participate in the state-managed sablefish fishery or retain state waters sablefish as bycatch during the open sablefish season. Sablefish may not be retained from Cook Inlet state waters when the state-managed fishery is closed.

2011 SEASON SUMMARY AND OUTLOOK

The 2011 Cook Inlet Area sablefish fishery opened at 12:00 pm July 15 and closed at 12:00 pm August 15 (33 days) with a 56,473 lb fishery GHG. Harvest was monitored via fish tickets and frequent contacts with fishermen and processors. Reported harvest totaled 57,350 lb from 39 landings by 10 vessels (Table 4). The average landing was approximately 1,471 lb, a 16% increase from the 2010 level of 1,270 lb, and a 76% increase from the 2009 level of 837 lb; although still well below the average CPUE for the most recent 10 years. During the recent five years, fishermen have reported less Pacific cod bycatch in the Cook Inlet Area sablefish fishery. Restricted to no more than 20% of the targeted catch aboard, Pacific cod composed a high proportion of landed bycatch at 18% in 2006, but has since declined to 9% in 2011 (from fish ticket data for management program State-Managed Sablefish in Area H).

HARVEST MONITORING

Sablefish biological sampling began consistently in 2000. During 2000–2011, dockside sampling yielded average sablefish lengths ranging from 57.1 cm to 63.0 cm and average weights ranging from 2.07 kg to 2.77 kg with the largest sablefish documented in 2005 (Table 5). Sablefish average weights were lowest in 2011. Sex ratios dropped to 54% female in 2010 with the high of 68% occurring in 2002; the first year sex ratio data was available. In 2011, percent female increased to 66%, above the average of 63% for the period since data has been collected.

ROCKFISH

HISTORICAL BACKGROUND

Within the Cook Inlet Area, the North Gulf District has historically yielded greater than 95% of the commercial rockfish catch during any year, except 85% in 2008, and has also supported active sport and personal use rockfish fisheries. The rocky, high-relief habitat typical of the North Gulf District is more suitable to nearshore rockfish than the glacial-mud substrate of the Cook Inlet District. Since 1988, harvest and effort has ranged from 25,388 lb by 45 vessels in 2007 to 502,046 lb by 120 vessels in 1995 with peak harvest years occurring during 1991–1996 (Table 6).

Pelagic shelf rockfish (PSR), particularly black rockfish taken primarily by jig gear, comprised over 50% of the total harvest in most years through 2005 with harvests exceeding 300,000 lb in 1994 and 1995 (Bechtol 1998; Table 7; Figure 3). A decline in PSR began in 2006, with a historical low of 3,154 lb harvested in 2009 due to low jig effort in the directed pelagic rockfish fishery. However, the most recent two years have seen a marked increase with harvest in 2011 at 44,105 lb, nearly the level in 2005.

Demersal shelf rockfish (DSR), predominantly yelloweye rockfish *Sebastes ruberrimus* harvested by longline gear, has been the second most dominant assemblage and averaged 36% of the annual harvest since 1996. From 2001 to 2003, yelloweye rockfish harvest by jig gear exceeded that harvested by longline gear and peaked at 33,063 lb harvested by jig gear in 2003. However, since then jig harvest of DSR species has declined significantly and 1,794 lb was harvested in 2011.

Finally, slope species (including thornyhead rockfishes, *Sebastolobus* spp.) predominantly represented by shortraker *Sebastes borealis* and rougheye *Sebastes aleutianus* rockfish, have consistently comprised the smallest proportion of the harvest, except for 2009 due to low jig effort, averaging 8% of the annual harvest since 1992.

Overall rockfish harvests during 2004–2007 showed a declining trend, again due primarily to reduced directed jig effort resulting from low price and limited markets. However, since 2009, total rockfish harvest has doubled with harvest of 66,432 lb in 2011, which was similar to the 2005 level with renewed interest by the jig fleet (Table 7; Figure 3).

Rockfish are managed via the *Cook Inlet Rockfish Management Plan* (5 AAC 28.365), first implemented in 1993, which established a 150,000 lb fishery GHL for all rockfish species, provided for a bycatch fishery when the GHL was attained, and five-day trip limits of 4,000 lb for the North Gulf District and 1,000 lb for the Cook Inlet Districts. From 1993 to 1996, rockfish opened to directed fishing January 1, closed when the 150,000 lb GHL was attained and remained open as a bycatch-only fishery for the balance of the year. In 1996, due to bycatch harvest levels that exceeded directed fishery removals in some years and a lack of stock abundance information, the BOF adopted a more conservative approach by making the 150,000 lb GHL a harvest cap rather than a “trigger” for opening the bycatch fishery. Management under the harvest cap approach, begun in 1997, proved problematic, as it required ADF&G to anticipate the amount of rockfish bycatch needed for other directed fisheries such as halibut and Pacific cod.

In 1998, the NPFMC amended the pelagic rockfish assemblage, as defined in the federal GOA federal FMP, by removing black and blue rockfishes (DiCosimo et al. 1997). This action, requested by the state to address misreporting problems associated with the fishery, effectively transferred management responsibility for these species in federal waters, to the State of Alaska (5 AAC 28.010). Although blue rockfish has not been reported in the Cook Inlet Area, black rockfish is a pelagic species commonly found in the North Gulf District. Also in 1998, the BOF established a July 1 directed rockfish season opening date and restricted gear for targeting rockfish to mechanical jig or hand troll (hand jig). These measures were adopted to align the directed rockfish season with the lingcod season due to similarities in gear and species habitat requirements and to focus the directed fishery on black rockfish, rather than yelloweye rockfish that are more susceptible to overfishing. However, once these changes became effective, individual jig landings dominated by yelloweye rockfish, increased in the directed jig rockfish fishery. By the year 2001, yelloweye rockfish harvest by jig gear surpassed the amount harvested from longline gear as bycatch to other directed groundfish fisheries. In addition, changes in the commercial harvest species composition heightened concern about stock sustainability because DSR, such as yelloweye, require a much longer rebuilding period than PSR in the event overfishing occurs. In response to the increased DSR harvest from jig gear, ADF&G submitted a proposal in 2004 that was subsequently adopted by the BOF to restrict the directed fishery to PSR species and require logbooks. The effect of these regulatory changes focused the jig fishery on PSR species and provides better resolution on harvest location. Because rockfish are generally non-migratory (Love et al. 2002), information on specific areas of harvest provides a tool to monitor high levels of removals in localized areas. Another successful proposal provided for full retention of all rockfish captured. For those fishermen taking rockfish primarily as bycatch, this action eliminated concern over a bycatch overage. These changes were first effective in 2005. Prior to 2004, two varieties of dusky rockfish were identified under the name *Sebastes ciliatus*; a dark colored variety that inhabited inshore, shallow waters, and a lighter colored variety that inhabited deeper water offshore. In 2004 these two varieties of dusky rockfish were designated as distinct species, the dark colored variety is now recognized as dark rockfish, *Sebastes ciliatus*, and the light colored variety is now recognized as dusky rockfish, *Sebastes variabilis* (Orr and Blackburn 2004). In 2008, dark rockfish were removed from the GOA FMP and management responsibility of that species in federal waters was delegated to the State of Alaska. Prior to 2011, rockfish bycatch allowances in the Cook Inlet Area ranged from 5% to 20% depending on target species. In 2010, ADF&G submitted a proposal to adjust and standardize rockfish bycatch allowances to halibut and directed groundfish species and also to define DSR bycatch allowances in the directed PSR jig fishery. This proposal was adopted by the BOF and implemented in 2011. The rockfish bycatch allowances for the Cook Inlet Management Area are 10% to halibut and directed groundfish fisheries, except that the bycatch allowance of DSR is 20% in the directed PSR jig fishery.

2011 SEASON SUMMARY AND OUTLOOK

The 2011 rockfish season opened January 1 to bycatch only with limits of 10% to directed groundfish with a mandatory retention requirement. The directed rockfish season opened July 1 and closed December 31. Cook Inlet Area rockfish harvest totaled 66,432 lb from 121 landings by 50 vessels (Table 6). The harvest was composed of 66% PSR (44,105 lb), predominantly black rockfish, taken primarily in the directed PSR jig fishery; 29% DSR (19,327 lb), predominantly yelloweye; and 5% combined slope and thornyhead rockfishes (3,000 lb)

(Table 7). Renewed interest and increased effort in the directed PSR rockfish fishery that began to build in 2010 continued in 2011. Harvest in the directed PSR rockfish fishery was twice the 2010 harvest and similar to the 2005 level after a decline from 2006 through 2009. Demersal shelf, slope, and thornyhead rockfish species were caught as bycatch to other directed, primarily longline, groundfish and halibut fisheries. Both DSR and slope/thornyhead rockfish harvest was somewhat lower than 2010 levels (Table 7).

Between 2001 and 2005, ADF&G conducted a series of research projects to assess black rockfish populations within the North Gulf District¹ (Byerly and Bechtol 2005). One goal of these studies was to develop a standardized approach to index the abundance of black rockfish and associated species in nearshore waters. Initial surveys attempted to estimate local abundances of black rockfish in areas that may serve as long-term survey locations to monitor population trends. Mark-recapture and underwater scuba transects were used to estimate local abundances. Low recapture success and biases detected during scuba transects made these methods unusable. A follow-up study evaluated the use of hydroacoustic counts and mechanical jigging CPUE as low-cost methods to index black rockfish population abundance on a management district scale. Mechanical jigging CPUE was found not to be a predictable index of abundance while hydroacoustic counts showed some promise and continued evaluation of this method may prove it to be effective.

HARVEST MONITORING

Dockside sampling of PSR harvests began consistently in 1998, although there were no samples collected in 2008 due to low effort and very few sampling opportunities for directed jig landings. Sampling of commercial landings during 1998–2009 indicated that black rockfish was the predominate species harvested in the directed fishery and comprised 91% to nearly 100% of the PSR harvest, with dusky and dark rockfish comprising <1% to 9%, and yellowtail rockfish (less than 1%) making up the remainder of the sampled harvest (Table 8). Species composition reported on fish tickets differed somewhat from dockside sampling indices suggesting a systematic underreporting of dusky and dark rockfish in landings of pelagic shelf rockfish, with combined dark and dusky rockfish comprising no more than 3% of reported PSR harvest for those same years. Also contributing to the discrepancy in species composition between reported versus sampled harvest, is that the majority of sampled PSR come from directed jig landings, which tend to have a higher percentage of other species besides black rockfish, which is reflected in the higher percentages of dark rockfish sampled in 2010 (9%) and 2011 (25%). This was particularly true for the Cook Inlet District in 2011. Average weight of black rockfish ranged from 2.0 kg to 2.6 kg, average length ranged from 47 cm to 53 cm, and average age ranged from 12 years to 21 years (Table 9). The smallest black rockfish for all variables were sampled in 2000, with no alignment for maximums between variables. In 2011 fish were on the smaller and younger side with an average age of 16 years, one year older than the mean age of 15 years for the years sampled, and the percent females was the lowest for all years sampled at 40%.

Harvests of non-pelagic rockfish during this period were predominately bycatch to longline fisheries for halibut, sablefish and Pacific cod, with some harvest occurring in the directed rockfish and lingcod jig fisheries. In 2011, yelloweye rockfish made up the highest proportion

¹ Byerly, M. M. and C. Worton. *Unpublished* (2007). Development of a black rockfish population index [In]: Nearshore Marine Research in Alaska (V): Final Comprehensive Progress Report, NOAA Cooperative Agreement NA03NMF4370202. Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau.

(58%) of the sampled non-pelagic rockfish catch and was followed by rougheye (34%); and silvergray (4%); with other species (quillback, thornyhead, China, shortraker, copper, tiger, canary, and redbanded) each comprising 1% or less (Table 10).

LINGCOD

HISTORICAL BACKGROUND

Since 1988, Cook Inlet Area commercial lingcod harvests have ranged from 2,894 lb in 1989 to 87,370 lb in 1993 (Table 11). Effort ranged from 10 vessels in 1989 to 84 vessels in 1992. The North Gulf District, which supports active commercial and recreational lingcod fisheries, has historically accounted for virtually all of the harvest. Lingcod harvest from the Cook Inlet District has been low, totaling 6,699 lb (less than 1% of total) since 1988. Harvest differences between districts were reflective of the relative amounts of suitable lingcod habitat. Interest in the directed lingcod fishery has been low in recent years and the fishery remained opened through the entire regulatory season 2007–2011. Historically, effort has been sporadic and the fishery did not close during 1999 and 2002–2005, similar to the recent five years, but closed on August 30 in 2000, October 22 in 2001 and December 21 in 2006.

Although harvest distribution prior to 1997 varied between state and federal waters, the majority of harvests since then have come from state waters (Table 12). In the Central Region, the state first asserted management authority for lingcod in the EEZ in 1995. It is unknown whether subsequent changes in harvest distribution indicated shifts in relative abundance, harvest areas, or harvest reporting. Most lingcod harvest has come from jig gear since 1991 (Figure 4), however there have been exceptions, particularly in recent years, with very low jig harvest in 2009 (5,571 lb) and 2011 (2,283 lb) due to low effort in the directed fishery. Historically, jig gear has persisted as the dominant gear, accounting for 69% of total harvest since 1988 with the combined longline, pot, and trawl gears accounting for the remainder. Due to confidentiality requirements, these data cannot be presented separately. However, the differences in gear types were attributable to greatly increased harvest by pot gear in certain years although the majority of historical harvest other than jig/troll is by longline gear.

In 1993, the BOF adopted regulatory season dates of July 1 to December 31 and a minimum size requirement of 35 inches overall or 28 inches measured from the front of the dorsal fin to the tip of the tail. The season dates close lingcod fishing during the first half of the year to protect spawning and nest-guarding lingcod at a time when they are particularly vulnerable to capture (Vincent-Lang and Bechtol 1992). The minimum legal size is intended to allow sexually mature lingcod to spawn in at least two successive years prior to being subjected to harvest removal. From 1997 until 2002, the commercial lingcod fishery was managed for a 35,000 lb GHL that was established in 1997 as 50% of the recent five-year harvest. ADF&G adopted this conservative approach due to a lack of lingcod abundance and biomass information, and evidence of localized recruitment failures, particularly in Resurrection Bay, during the early 1990s (Vincent-Lang and Bechtol 1992). Since 1993, Resurrection Bay has been closed to lingcod fishing, initially by emergency order and later by regulation, to protect depressed lingcod stocks. The most recent surveys indicated little recruitment had occurred in this area (Bethe and Meyer 2002). Directed fishing for lingcod was restricted to jig gears (mechanical or hand troll) beginning in 1999. Lingcod may be retained by other gear types at a 20% bycatch level only during the open directed season because survival of released fish was relatively high.

In 2002, ADF&G increased the allowable harvest to 52,500 lb, or 75% of the average harvest during 1992–1996. This increase in the GHL was consistent with the approach applied by NPFMC groundfish plan teams and for groundfish stocks in federal waters. Under Amendment 56 adopted by the NPFMC for the *Bering Sea/Aleutian Groundfish Fishery Management Plan*, a fishery is classified as a Tier 6 fishery if the only reliable assessment data are catch history. For a Tier 6 fishery, acceptable biological catch (ABC) is defined as 75% of the historical annual average harvest.

During the 2004 meeting on Cook Inlet groundfish, the BOF adopted a regulation giving ADF&G EO authority to require, if necessary, that lingcod be landed with the head on and the vent intact to allow biological sampling of the catch. This change became effective in 2005 but has not been implemented by EO. Very few lingcod are landed with the head removed and most fishermen are aware of the need to leave the vent intact for sampling purposes.

2011 SEASON SUMMARY AND OUTLOOK

The 2011 directed and bycatch lingcod fisheries opened July 1 with a 52,500 lb GHL and remained open through December 31. Lingcod harvest from the Cook Inlet Area totaled 9,195 lb from 46 landings by 30 vessels (Table 11). Eight vessels fishing jig gear caught approximately 2,406 lb (23%) of the 2011 harvest total with the remaining caught as bycatch to other gear types (mainly by longline gear). Directed effort remained low in this fishery although markets do exist. In 2011, the total harvest and jig/troll harvest were both the third lowest since 1988. State waters harvest accounted for 70% (7,306 lb) of the total commercial harvest (Table 12), similar to the historical average of 65% from state waters. The lingcod season has remained open for the entire regulatory season in 9 of the recent 10 years.

HARVEST MONITORING

Dockside sampling of lingcod began in 1998, although no samples were collected in 1999. Information collected by dockside samplers has included fishing location and effort as well as fish length, sex, gonad condition, and otoliths or fin rays for age determination. Sample data indicate some variability in weight, length, age, and sex ratio. Average weight for lingcod ranged from 13.0 to 17.3 kg, average length ranged from 105 to 119 cm, and average age ranged from 13 to 20 years (Table 13). The largest and oldest lingcod sampled were from 2005 whereas smallest fish were sampled in 2010, and youngest in 1998. In 2011, lingcod average weight was 15.1 kg, average length was 114 cm, and average age was 18 years. Female lingcod made up the majority of the harvest; averaging 67% and ranging from 50% to 88% across years (Table 13). In 2011, females constituted 72% of lingcod sampled. The high percentage of female lingcod was consistent with the minimum legal size of 35 inches (89 cm) total length, since mature female lingcod are significantly larger than male lingcod. External determination of sex was possible on many fish sampled. However, most lingcod were delivered gutted and some with the vent area removed, prohibiting collection of sex and maturity data on some fish which resulted in reduced sample sizes for those variables in some years. An experiment comparing ages estimated from otoliths and fin ray sections was conducted in 2001 through 2005 and analysis produced results that were comparable. Therefore, the decision was made to switch to collecting otoliths as the preferred age structure for all commercial lingcod age determination in the Central Region beginning in 2006 since significantly less labor was required to process otoliths versus fin rays.

PACIFIC COD

HISTORICAL BACKGROUND

Historically the Cook Inlet commercial Pacific cod fishery was managed via emergency order to coincide with seasons in the adjacent federal CGOA. First implemented in 1997, the *Cook Inlet Pacific Cod Management Plan* (5 AAC 28.367) defines two seasons, a “parallel season” and a “state-waters season.” Similar to historical management, the parallel season was set by emergency order to coincide with the federal CGOA fishery for Pacific cod with respect to season dates and allowable gears, provided those gear types were legal in state waters, and was further guided by statewide regulation 5 AAC 28.087. The state-waters season occurs after the initial parallel season and was managed for a separate allocation. Dates for these seasons are listed in Table 14.

Since 1997, total Pacific cod removals in parallel and state-waters seasons combined have ranged from approximately 1.5 million lb in 2001 to 5.2 million lb in 2011, with corresponding exvessel value of \$0.6 to \$2.0 million (Table 15). While fishing with both jig and pot gears can be productive from late winter through late spring, the most effective period for jig gear has been March to May. Although ADF&G has only limited data on spring Pacific cod distributions in the Cook Inlet Area (Bechtol 2001), studies from other areas suggest that cod aggregate in major spawning areas during January through March, then migrate to shallower, nearshore waters as part of a spring post-spawning migration (Shimada and Kimura 1994).

Parallel season Pacific cod annual harvest and effort during 1988–1996 ranged from 36,846 lb from 21 landings by nine vessels in 1989 to 5,441,421 lb from 868 landings by 190 vessels in 1992 (Table 16). The parallel season harvest first exceeded 1.0 million lb in 1991 and averaged 3.3 million lb annually during 1991–2000 (Figure 5A). Historically, the majority of the harvest came from longline gear in the North Gulf District. However, the 1990s expansion of the pot fishery shifted the largest component of parallel Pacific cod harvest to the Cook Inlet District for the first time in 2001 (Table 16), and it comprised the larger portion of the harvest in 2003–2006 and in 2011. Pot gear has taken the larger portion of the parallel season harvest in those years and also in 2010, and took the highest percentage, 93% of the parallel harvest, in 2004 (Bechtol 1995a; Trowbridge et al. 2011; Table 17). However, longline gear overtook pot gear as the dominant gear from 2007 through 2009, taking the highest percentage, 84% of the parallel harvest, in 2009, before shifting back to pot gear as the dominant gear type in 2010. After 2000, parallel fishery harvests totaled less than 1.0 million lb annually, primarily due to a shift to the Kodiak Area by the local longline fleet. Anecdotally, this shift was partially attributable to high bycatch of spiny dogfish in the North Gulf District. The 2011 parallel season Pacific cod harvest of 778,857 lb was the highest since 2002 and had a value of \$0.3 million (Table 15).

Early parallel Pacific cod seasons spanned January 1 to approximately mid-March and more recently, have ranged from one to two months duration (Table 14). During 1997–1999, NMFS reopened Pacific cod for a second directed fishing period in September or October (Trowbridge et al. 2008). These were typically short openings ranging from four days to five weeks in duration. Beginning in 2006, ADF&G opened a second parallel season on September 1 to coincide with the federal season. In both 2006 and 2007, these seasons remained open through December 31. In more recent years, seasons have lasted approximately one month, although in 2010 it lasted less than two weeks. In 2011, a third parallel season was opened December 27 to coincide with a late-season federal fishery opening to harvest the remaining quota.

State-waters season Pacific cod harvests have ranged from 730,469 lb from 306 landings by 42 vessels in 1998 to 4.4 million lb from 359 landings by 40 vessels in 2011 (Table 18). Most of the harvest in all years, except 2010, came from the Cook Inlet District. Although jig gear harvested 67% of the 1997 season harvest total, this occurred during the “implementation year” in which regulations became effective on April 3, only four days prior to the spring pot closure (Table 19). Pot gear has remained the dominant gear in the fishery (Figure 5B). Jig harvest fell to 26% of the 1998 harvest and averaged less than 2% of the harvest during 2000–2002 and, although jig harvest reached 30% of the total in 2003, jig gear has never achieved its allocation. The CI state-waters Pacific cod GHL has only been achieved in 2003 (Table 20; Figure 5B). However, the pot allocation has been achieved in all years since 2003, except 2006 and 2007 when catch rates were low despite relatively high estimates of Pacific cod abundance. For all years combined, the majority of harvest during the CI state-waters season has occurred during the month of March (Figure 6A) and the highest percentage of harvest has come from statistical areas 515905 (Chugach Islands, North Gulf District) and 515907 (Kachemak Bay, Cook Inlet District), which have both comprised 20% of the total harvest (Figure 6B). The 2011 state-waters season harvest of 4,400,339 lb was the highest since the fishery began, due in part to the highest GHL available to date (Table 20), and had a value of \$1.7 million (Table 15). The highest values have occurred during the most recent three years.

Since adoption in 1997, the state-waters Pacific cod season, which was designed to provide additional Pacific cod fishing opportunity to local vessels using pot and jig gear, has been modified numerous times. The plan originally specified a state-waters season that began seven days following closure of the parallel season, and closing each time the federal CGOA directed Pacific cod season reopened (under parallel season rules), and a pot closure period of April 7 to June 15. This latter element addressed an industry concern for reduced quality of post-spawn product. Each of these original plan elements has been amended. In 2000, the seven-day closure between the parallel and state-waters seasons, meant to ensure separation of the fisheries and facilitate accurate seasonal catch accounting, was reduced to 24 hours and the plan was further modified to enable the state-waters season to remain open despite subsequent federal CGOA openings, which would have normally resulted in a parallel season. Although the product quality concerns meant to be addressed by the pot closure period were not realized, the closure period was retained, but reduced to May 1 through June 15 by BOF action in 1999. The closure was retained due to user interest in ensuring a fall season Pacific cod fishing opportunity while providing an additional three weeks of pot fishing time.

Due to attainment of the 2003 GHL and consistent with the management plan, beginning in 2004, the state-waters Pacific cod allocation increased from 2.25% to 3.00% of the federal CGOA total allowable harvest. During its 2004 meeting cycle, the BOF adopted several changes to state-waters Pacific cod regulations that became effective during 2005. These changes included increasing the percent calculation for the GHL from 3.00% to 3.75%, setting a harvest cap of 25% of the GHL for vessels greater than 58 ft in length, and new gear allocations that changed from 50% each to 75% for pot and 25% for jig gear.

Current elements of the Cook Inlet state-waters season include:

- Season opens by EO 24 hours following closure of the initial federal season in the CGOA area by NMFS;
- Exclusive area registration: stipulates a vessel may not validly register for more than one exclusive Pacific cod registration area during a state-waters season;
- GHL calculated as 3.75% of the CGOA estimated total allowable harvest;
- Legal gear is 60 pots (buoy tag requirement) or 5 jigging machines;
- Allocated 75% to pot gear prior to October 1 and 25% to jig gear;
- A 25% cap on vessels longer than 58 ft and fishing pot gear;
- Pot gear closure from May 1 to June 15;
- If the jig allocation is not achieved before September 1, the balance of the allocation becomes available to pot gear; and
- Gear limits and the exclusive area registration requirement may be relaxed after October 30 if ADF&G judges the action necessary to achieve the GHL.

In 2001, the BOF recognized NMFS fishing gear closures for Pacific cod in critical habitat around the haulouts and rookeries of endangered Steller Sea lions (SSL) by giving the commissioner emergency order authority to adopt the federal closures surrounding these areas. As a result, fishing with longline or pot gear within 10 nmi of Sugarloaf Island (within the Barren Islands group) and Outer Pye Island has been closed annually since 2001 via emergency order (Figure 7).

Beginning in 2002, the BOF also adopted the federal vessel monitoring system requirement, for all parallel fisheries. This action was adopted to provide more precise location information in support of fishery enforcement efforts and protection for essential fish habitat and habitat areas of particular concern.

Statewide regulations for groundfish pots specify a tunnel eye perimeter of 36 inches or less and a biodegradable escape panel in the pot wall. Area regulations specify localized closures to groundfish pots in portions of Kachemak and Kamishak Bays to protect depressed king crab *Paralithodes platypus* stocks and rebuilding Tanner crab *Chionoecetes bairdi* stocks (Bechtol et al. 2002; Figures 8 and 9). The Kachemak Bay pot closure regulation, partially defined by a depth contour, was amended in 2002 and defined by latitude and longitude coordinates. Limited onboard observer data from vessels using pot gear in Kachemak Bay, suggests this closure area achieves the goal of protecting crab in critical habitat.

2011 SEASON SUMMARY AND OUTLOOK

The 2011 Cook Inlet Area parallel Pacific cod season opened January 1 through 12:00 pm January 29, with a second opening from 12:00 pm September 1 through 12:00 pm October 9, and again from 12:00 pm December 27 until December 31 (Table 14). Harvest and effort totaled 778,857 lb from 144 landings by 49 vessels, and was the highest harvest since 2002 (Table 17). Pot gear dominated the catch at 579,007 lb, 74% of the total harvest, the largest proportion since 2006, resulting from increased pot effort during the parallel season. Harvest was concentrated in

the Cook Inlet District which produced 559,053 lb or 72% of the total harvest (Table 16). The parallel season value of \$303,754 was the highest since 2007 (Table 15).

The 2011 Cook Inlet Area state-waters season opened to pot and jig gear at 12:00 pm on January 30 with a GHF of 4.45 million lb. This was the largest GHF in the fishery's history and was attributable to the high abundance of Pacific cod indicated by the NMFS stock assessment. The state-waters season closed to vessels greater than 58 feet in overall length fishing pot gear at 5:00 pm March 13. The season closed to pot vessels less than or equal to 58 feet at 12:00 pm on March 19. The season for jig gear remained open until 12:00 pm September 1 when the second parallel season opened. After the parallel season was prosecuted, and gear limits were relaxed, the state-waters season opened to both pot and jig gear at 12:00 pm October 9 until 12:00 pm December 27 when the third parallel season was opened (Table 14). Harvest and effort totaled 4,400,339 lb from 359 landings by 40 vessels (Table 19). The majority of the harvest was from pot gear at 3,902,154 lb or 89% of total harvest and was caught by 11 vessels. However, jig harvest and effort was the highest since the first year of the state-waters fishery (1997) at 498,185 lb and was a ten-fold increase from 2010. Thirty-one jig vessels participated compared to 6 vessels in 2010 and the increased effort is attributed to the economic decline in recent years on the Kenai Peninsula and attempts by the sport fish charter fleet to diversify. The Cook Inlet jig fishery is considered a relatively inexpensive fishery to participate in regarding gear costs and because it is prosecuted mainly in Kachemak Bay, fuel costs are lower than in other fisheries with long commutes. Preliminary data suggests a similar trend for the jig fishery in 2012.

At the 2011 BOF meeting, the BOF adopted new regulations to adjust the parallel and state-waters seasons in order to coordinate with new federal gear sector allocations that will be implemented in 2012. Additionally, the BOF adopted new pot and jig gear allocations for the Cook Inlet Area among other changes to the *Cook Inlet Pacific Cod Management Plan*. The regulatory changes will go into effect in 2012 and will allow for staggered seasons by gear type.

HARVEST MONITORING

Dockside sampling of Pacific cod and fishermen interviews were conducted during the CI parallel and state-waters seasons. Information collected by dockside samplers included fishing location and effort as well as fish length, weight, sex, maturity stage and age structures.

Pacific cod biological data have been collected since the state-waters season was implemented in 1997, although only length data was recorded the first year of sampling. Average weights of Pacific cod have ranged from 2.9 kg to 3.8 kg, average lengths ranged from 61 cm to 66 cm, and sex ratio has ranged from 51% to 60% female (Table 21). In 2011, 2,811 fish were sampled for length in the Cook Inlet Area, composed of 2,361 from the CI District and 450 from the North Gulf District. Fish sampled from the North Gulf District have averaged consistently larger than those in the CI District historically, and that trend continued in 2011. Cook Inlet District fish averaged 63 cm in fork length, while fish from the North Gulf District averaged 64 cm (Figure 10).

Otoliths were collected from approximately 50% of the samples. Pacific cod age determination can be problematic and age accuracy has been unresolved in past years (Carlile 2005). Because Pacific cod in the GOA are managed by NMFS using a length, rather than age-structured model, a decision was made to reduce otolith sampling and archive otoliths for future age determination. However, recent indications of greater site fidelity in Pacific cod than was previously

assumed (Shi et al. 2007) suggest that further analysis and more focused assessment of state-waters Pacific cod may be warranted.

Ancillary information on Pacific cod age, sex, size, and distribution was also collected during the annual trawl surveys in Kachemak and Kamishak Bays; survey results were reported under separate titles (Bechtol 2001).

POLLOCK

HISTORICAL BACKGROUND

Walleye pollock seasons in the Cook Inlet Area were historically managed via emergency order as parallel fisheries with state seasons set to coincide with NMFS actions in the adjacent waters of the federal EEZ. The cumulative reported pollock harvest from area state waters between 1988 and 1995 was 473,201 lb (Table 22; 1989 confidential data omitted). Directed pollock fishing with midwater trawls occurred in the North Gulf District during 1996–1999. Annual pollock harvest during these years ranged from approximately 1.9 million lb in 1996 to 9.7 million lb in 1998, with midwater trawls yielding over 99% of the harvest. Since mid-1999, directed fishing for pollock has required a commissioner's permit under 5 AAC 28.379 *Permit for Miscellaneous Groundfish*. Temporal and geographical fishing restrictions associated with SSL protective measures complicated pollock harvesting opportunities beginning in 2000, effectively closing all of the North Gulf District to pollock trawl fishing. Due to lack of interest, no commissioner's permits were issued through 2003. A single commissioner's permit was issued in 2004 to allow the pelagic trawl harvest of pollock in state waters for 24 hours between 149 and 150 degrees longitude, except within 3 nmi of SSL haulouts, while the season was open in the federal CGOA area. That vessel, in combination with deliveries of incidentally caught pollock by other vessels, resulted in a total 2004 pollock harvest of 342,305 lb. The BOF generated a proposal in 2004, to consider reestablishing the Cook Inlet pollock trawl fishery in the Resurrection Bay area, which was tabled until October 2006 pending comment from NMFS in regard to Steller sea lion protections. The proposal failed and there has been no directed pollock fishing in the Cook Inlet Area since 2004. Combined harvest since 2004, excluding confidential data, totaled 12,869 lb and was caught as bycatch to other directed groundfish fisheries.

Limited deliveries of pollock also occur under regulation 5 AAC 28.075, which was intended to encourage improved retention and utilization of pollock and Pacific cod, although regulatory compliance was believed poor. These measures are anticipated to continue in the future.

2011 SEASON SUMMARY AND OUTLOOK

In 2011 pollock harvest totaled 5,750 lb from 32 landings by 10 vessels (Table 22). All harvest was bycatch to other directed groundfish fisheries and included some harvest from vessels harvesting Pollock during the state-waters Pacific cod fishery as defined in 5 AAC 28.075, as described above.

HARVEST MONITORING

In years of directed harvest (1997–1999 and 2004) walleye pollock were monitored through dockside and on-board observer sampling of commercial catches. Information collected by dockside samplers included fishing location and effort as well as fish length, weight, sex,

maturity stage and otoliths for age determination. Average length ranged from 44 cm to 56 cm and average weight ranged from 0.9 kg to 2.3 kg. Sex ratios averaged 47% female and ranged from 43% to 54% female (Table 23).

OTHER GROUNDFISH

HISTORICAL BACKGROUND

Assorted species of skates, flatfish, sharks, and other groundfish have been harvested in both directed and bycatch fisheries in the Cook Inlet Area (Table 24). Historically, for any groundfish species that lacked specific regulatory management measures, state waters fishing seasons were set by emergency order to coincide with NMFS fishing seasons in adjacent federal waters. However, due to the potential for rapidly expanding and uncontrolled fisheries on species for which there is little biological data, the BOF adopted a variety of regulatory measures allowing ADF&G and the BOF to take a precautionary approach toward new or rapidly developing fisheries.

Among the more pertinent measures adopted by the BOF are:

- 5 AAC 28.089 - *Guiding Principles for Groundfish Fishery Regulations*
- 5 AAC 39.210 - *Management Plan for High Impact Emerging Fisheries*
- 5 AAC 28.083 - *Permit Requirements for Skates and Rays*
- 5 AAC 28.084 - *Fishing Seasons, Landing Requirements, and Utilization for Sharks*
- 5 AAC 28.379 - *Permit for Miscellaneous Groundfish*

Historically, skates were open to directed fishing with little regulatory oversight beyond general reporting requirements. Effective in May 1998, statewide regulation 5 AAC 28.083 established a commissioner's permit requirement for directed skate fishing which may restrict or specify conditions such as depth of fishing, season dates, fishing areas, minimum size limits, gear, logbooks, as well as other conditions the commissioner finds "necessary for conservation and management purposes." Skate harvests in the Cook Inlet Area have varied over time and remained small, likely due to lack of market development and the relative abundance of more valuable species. Harvest from 1988 to 2003 ranged from 66 lb in 2000 to 62,381 lb in 1998 (Table 24). Most harvest has come from longline gear, much of it as bycatch to other directed groundfish and halibut fisheries and primarily during the months of February to April.

The first applications for permits to target skates in Cook Inlet were received in 2004. ADF&G issued nine permits and the harvest totaled 18,728 lb. Permits were valid for 90 days, restricted gear to longline or jig, required logbooks and two hour prior notice of landing, and agreement to carry an ADF&G observer upon request. Catch reporting by species was required and in 2004 ADF&G's fish ticket reporting system was amended to provide species codes to facilitate reporting of the two species most commonly harvested skates, longnose *Raja rhina* and big *Raja binoculata*. Big skates comprised approximately 97% of the total landed harvest.

No commissioner's permits for skates have been issued since 2004 in response to a NMFS action that moved skates to bycatch-only status in federal fisheries due to concern of overfishing and lack of adequate stock assessment. Skates continue to be harvested as bycatch to halibut and other directed groundfish fisheries. There was some increased interest in skates in 2008 when

harvests reached 11,177 lb, the highest since 2004, and, although harvests declined in 2009, harvest surpassed the 2008 level in 2011 at 12,241 lb (Table 24).

Annual shark harvests from the Cook Inlet Area have ranged from no reported landings to 6,594 lb in 1999 (Table 24). In 1997, the BOF closed directed shark fishing and permitted retention of shark bycatch. Directed shark fishing remains open in the EEZ. Little new biological information has become available since the 1997 BOF actions. Data that might be used to develop a state management plan, such as stock structure, biomass and abundance levels, existing fishing mortality, and ecological linkages, are still lacking. High annual variability of sharks in ADF&G surveys is consistent with current literature, which confirms most shark species are highly migratory (Weng et al. 2008; McFarlane and King 2003). Effective in 2005, after adoption by the BOF in 2004, a new regulation allowed a directed spiny dogfish fishery via commissioner's permit. A single commissioner's permit was issued in 2006 since the regulation took effect. There has been no reported harvest of sharks in 10 of the last 12 years, although in 2006 harvest was close to the level in 1999. Because retention of sharks has been minimal as allowed under current commercial regulations in recent years, interest in shark fisheries in 2006 does not appear related to increased market demand, but instead to reducing hook competition with other, more valuable, target species.

Incidental captures of shark species can approach nuisance levels, particularly spiny dogfish. Catch and discard mortality are poorly documented, but reportedly high, among the fishing fleet in some areas and at some times. Cook Inlet Area shark bycatch, comprised primarily of spiny dogfish as evidenced by reported at-sea discards was comparatively high 2000–2010, although declined in 2011 and was the lowest reported since 1999 (Table 25).

Octopus, which is defined as a miscellaneous shellfish in state regulations, is considered a groundfish species in federal regulation. While directed fishing for octopus never fully developed in the Cook Inlet Area, the bycatch of octopus, particularly from the pot fishery for Pacific cod, is significant. Octopus harvests ranged from no reported landings during 1988–1990 to 38,518 lb landed in 2002 (Table 24). An octopus management plan (5 AAC 38.360), implemented in 2000, established a bycatch-only fishery with a bycatch limit of 20% and a GHL of 35,000 lb. Squid *Berryteuthis magister* was also defined in state regulation as a miscellaneous shellfish and was reported here as a bycatch component of the pollock pelagic trawl fisheries. Squid landings peaked at 26,980 lb in 1998, with 2004 the only year with reported harvest since 1999.

The NPFMC Groundfish Plan Team continues to move species out of the “other species” category into more discrete species groups, and is providing an ABC and TAC for each species (as with longnose and big skates). Historically, miscellaneous species were lumped into the “other species” category and managed under an aggregate TAC that was set as a fixed percentage of the aggregate harvest biomass of all species for which TACs had been established.

2011 SEASON SUMMARY AND OUTLOOK

Reported harvest of other groundfish in 2004 in the Cook Inlet Area was 50,020 lb from 145 landings by 30 vessels (Table 24). Octopus (75%) and skates (24%) comprised more than 99% of the total other groundfish harvest. In 2011 skate harvest was 12,241 lb in the Cook Inlet Area. For octopus in 2011, the GHL was attained and closed to retention by emergency order at 5:00 PM March 4. No shark harvest was reported in 2011.

HARVEST MONITORING

There is currently no sampling effort on skates in the Cook Inlet Area. The most recent dockside sampling of skates in CI occurred in 2004, the last year that there was directed effort. Information collected by dockside samplers included fish length, sex, weight and vertebrae for age determination. Age structures were shipped to the NMFS age lab in Seattle; final age estimates have not been received to date. Preliminary analysis indicates commercially harvested skates from the Cook Inlet area range from 8 to 22 years in age (Gburski et al. 2007). Species composition of the directed skate harvest sample was 93% big skate and 7% longnose skate. Female skates made up 73% of the harvest sampled. Big and longnose skates averaged 144 cm (n=115) and 115 cm (n=9) total length, respectively.

Samples of spiny dogfish were collected in 2005 and 2006, in response to BOF actions to allow a commissioner's permit. Length, weight, sex, and age structures were collected from spiny dogfish in those years. Spiny dogfish averaged 4.3 kg (n=65) with an average age of 22 years (n=41) in 2005 (sampled fish caught as bycatch in salmon set gillnets), and in 2006 had an average weight of 4.1 kg (n=247) and average age of 25 years (n=243).

Octopus are sampled by dockside samplers for sex and weight. Average weight of octopus sampled in 2011 was 13.0 kg (Table 26) with male octopus (14.3 kg) averaging heavier than female octopus (10.8 kg). Female octopus made up 38% of the harvest, the lowest percentage since sampling began in 2000.

AT-SEA DISCARDS

At-sea discards reported by vessels fishing in Cook Inlet Area waters ranged from 18 lb in 1999 to 138,236 lb in 1996 (Table 25). For 1988–2011 at-sea discards combined, sharks comprised the largest component (29%) with skates (25%) and flatfish (24%) comprising the next largest components. In 2011, at-sea discards had a somewhat different composition, although sharks contributed the highest amount (40%), followed by skates (25%), Pacific cod (15%), and sablefish (11%). Most reported discards come from NFMS and International Pacific Halibut Commission survey cruises with a smaller proportion coming from vessels carrying observers. Reporting of at-sea discards is somewhat dependent upon factors such as location and timing of fishery, changes to fishing technology, market conditions, requirements of vessel operator, etc. However, based on relative catch abundances observed in ADF&G surveys, actual discard rates are much higher than reported (Bechtol 2001; Gustafson and Bechtol 2001).

CONCLUSIONS

Groundfish resources in the Cook Inlet Area represent a wide array of species targeted by commercial, recreational, and subsistence users. Formal management plans or strategies have been adopted for some of the more commercially important species. However, limited data are available on which to base management decisions for many species with limited or poorly documented historical harvests. In addition, there is typically a poor understanding of the ecological linkages for such species. Thus, management strategies often involve actions that deliberately operate in concert with federal management strategies in adjacent federal waters, particularly when transboundary species are being considered. In this way, ADF&G can take advantage of biological information derived from NMFS stock assessments for adjacent federal waters.

While providing for directed fishing opportunities, it is also important to minimize resource waste by providing for retention of incidentally captured species, particularly when incidental captures are unavoidable. However, bycatch allowances must be sufficiently restrictive to serve as a disincentive to increasing the incidental capture.

Development of new fisheries, or increased harvests for existing species, can be accommodated through existing management plan development guidelines, including miscellaneous fisheries commissioner's permits. These permits allow exploratory approaches to determine the economic and management viability of resource development without establishing exclusive fishing rights. However, it must be stressed that exploratory approaches place increased demands upon ADF&G staff for oversight and management and, in many cases; staff may be unable to commit the necessary resources for development of new fisheries. Furthermore, industry may be called upon to shoulder some of the expenses of project development. Above all, development of new fisheries will be contingent upon adequate biological information. New or expanding harvests that are significantly detrimental to the stock status of target or incidentally caught species will not be approved. For this reason, it is critical that the industry participate as fully as possible in the information gathering process. One important part of this process is the complete and accurate documentation of fishery removals and fishery discards. A common misconception is that a particular removal, such as personal use or discards, is insignificant. However, the cumulative impact of incremental removals can have biological significance on sustained yield management. In addition, accurate at-sea discard information provides data on relative encounter rates for many species that, while not retained at this time, may become economically important for future fisheries. Although some species of concern, such as sharks, have been discarded at sea by the industry for many years, the lack of documentation on relative encounter rates has impeded development of management strategies to provide for sustained yield. Resource management will continue to rely heavily on input from all user groups, along with an increasing understanding and awareness of ecosystem impacts as a component of resource removal.

ACKNOWLEDGEMENTS

The data contained in this report was collected with the help of many ADF&G staff. We thank Philip Cowan and Andrew Pollak for their contributions of biological sampling, dockside fishermen interviews, and ageing of walleye pollock, demersal shelf rockfish, and pelagic shelf rockfish species. We thank Kris Munk, Jodi Neil, Kara Hilwig and the rest of the staff at the ADF&G Age Determination Unit for their contributions of ageing sablefish, lingcod, and slope rockfish species. We also thank Ken Goldman and Mike Byerly for providing input regarding Central Region groundfish research.

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TABLES AND FIGURES

Table 1.—Species encountered in Central Region groundfish management.

ADF&G Species Code	Common Name	Scientific Name
710	Sablefish	<i>Anoplopoma fimbria</i>
110	Pacific Cod	<i>Gadus macrocephalus</i>
270	Walleye Pollock	<i>Theragra chalcogramma</i>
130	Lingcod	<i>Ophiodon elongatus</i>
870	Giant Pacific Octopus	<i>Octopus dofleini</i>
875	Majestic Squid	<i>Berryteuthis magister</i>
692	Pacific Sleeper Shark	<i>Somniosus pacificus</i>
690	Pacific Salmon Shark	<i>Lamna ditropis</i>
691	Pacific Spiny Dogfish	<i>Squalus suckleyi</i>
700	Other Skates	Family Rajidae
701	Longnose Skate	<i>Raja rhina</i>
702	Big Skate	<i>Raja binoculata</i>
703	Alaska Skate	<i>Bathyraja parmifera</i>
704	Aleutian Skate	<i>Bathyraja aleutica</i>
NA	Assorted Flatfishes	Order Pleuronectiformes
Pelagic Shelf Rockfish		
142	Black Rockfish	<i>Sebastes melanops</i>
155	Yellowtail Rockfish	<i>Sebastes flavidus</i>
172	Dusky Rockfish	<i>Sebastes variabilis</i>
173	Dark Rockfish	<i>Sebastes ciliatus</i>
Demersal Shelf Rockfish		
138	Copper Rockfish	<i>Sebastes caurinus</i>
145	Yelloweye Rockfish	<i>Sebastes ruberrimus</i>
146	Canary Rockfish	<i>Sebastes pinniger</i>
147	Quillback Rockfish	<i>Sebastes maliger</i>
148	Tiger Rockfish	<i>Sebastes nigrocinctus</i>
149	China Rockfish	<i>Sebastes nebulosus</i>
150	Rosethorn Rockfish	<i>Sebastes helvomaculatus</i>
Slope Rockfish		
136	Northern Rockfish	<i>Sebastes polyspinis</i>
137	Bocaccio Rockfish	<i>Sebastes paucispinis</i>
141	Pacific Ocean Perch	<i>Sebastes alutus</i>
151	Rougheye Rockfish	<i>Sebastes aleutianus</i>
152	Shortraker Rockfish	<i>Sebastes borealis</i>
153	Redbanded Rockfish	<i>Sebastes babcocki</i>
157	Silvergray Rockfish	<i>Sebastes brevispinis</i>
158	Redstripe Rockfish	<i>Sebastes proriger</i>
159	Darkblotched Rockfish	<i>Sebastes crameri</i>
166	Sharpchin Rockfish	<i>Sebastes zacentrus</i>
182	Splitnose Rockfish	<i>Sebastes diploproa</i>
176	Harlequin Rockfish	<i>Sebastes variegatus</i>
143	Shortspine Thornyhead	<i>Sebastolobus alascanus</i>

Table 2.—Emergency orders issued for commercial groundfish fisheries in the Cook Inlet Area, 2005–2011.

Emergency Order Number	Effective Date	Explanation
2011		
2-GF-H-10-11	12/27/11	Closed the state-waters and opened the parallel Pacific cod season.
2-GF-H-09-11	10/31/11	Removed exclusive area registration and gear limits for state-waters Pacific cod season.
2-GF-H-08-11	10/9/11	Closed the parallel and opened the state-waters Pacific cod season and removed gear allocations.
2-GF-H-07-11	9/1/11	Closed the state-waters and opened the parallel Pacific cod season.
2-GF-H-06-11	8/15/11	Closed the sablefish season at 12:00 pm.
2-GF-H-05-11	7/15/11	Opened the sablefish season at 12:00 pm.
2-GF-H-04-11	3/19/11	Closed the state-waters Pacific cod season to pot gear.
2-GF-H-03-11	3/13/11	Closed state-waters Pacific cod season to pot vessels >58' at 5:00 pm.
2-GF-H-02-11	1/29/11	Closed parallel and opened state-waters Pacific cod seasons; establish 20% maximum allowable bycatch level for Pacific cod.
2-GF-H-01-11	1/1/11	Opened the parallel Pacific cod season.
2010		
2-GF-H-07-10	10/31/10	Removed exclusive area registration and gear limits for state-waters Pacific cod season.
2-GF-H-06-10	9/13/10	Closed the parallel and opened the state-waters Pacific cod seasons and removed gear allocations.
2-GF-H-05-10	9/1/10	Closed the state-waters and opened the parallel Pacific cod season.
2-GF-H-04-10	7/15/10	Opened the sablefish season at 12:00 pm.
2-GF-H-03-10	3/28/10	Closed the state-waters Pacific cod season to pot gear.
2-GF-H-02-10	1/31/10	Closed parallel and opened state-waters Pacific cod seasons; establish 20% maximum allowable bycatch level for Pacific cod.
2-GF-H-01-10	1/1/10	Opened the parallel Pacific cod season.
2009		
2-GF-H-11-09	10/31/09	Removed exclusive area registration and gear limits for state-waters Pacific cod season.
2-GF-H-10-09	10/9/09	Closed the sablefish season at 6:00 pm.
2-GF-H-09-09	10/1/09	Closed the parallel and opened the state-waters Pacific cod season and removed gear allocations.
2-GF-H-08-09	9/1/09	Closed the state-waters and opened the parallel Pacific cod season.
2-GF-H-07-09	7/15/09	Opened the sablefish season at 12:00 pm.
2-GF-H-06-09	3/18/09	Closed state-waters Pacific cod season to pot vessels <58' at 12:00 pm.
2-GF-H-05-09	3/18/09	Closed state-waters Pacific cod season to pot vessels >58' at 6:00 am.
2-GF-H-04-09	3/16/09	Rescinded EO 2-GF-H-03-09 and state-waters Pacific cod season remained open to vessels >58' due to inclement weather slowing harvest.
2-GF-H-03-09	3/16/09	Closed state-waters Pacific cod season to pot vessels >58' at 12:00 pm.
2-GF-H-02-09	1/27/09	Closed parallel and opened state-waters Pacific cod seasons; establish 20% maximum allowable bycatch level for Pacific cod.
2-GF-H-01-09	1/1/09	Opened the parallel Pacific cod season.

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Table 2.–Page 2 of 2.

Emergency Order Number	Effective Date	Explanation
2008		
2-GF-H-08-08	10/31/08	Removed exclusive area registration and gear limits for state-waters Pacific cod season.
2-GF-H-07-08	10/3/08	Closed the parallel and opened the state-waters Pacific cod season and removed gear allocations.
2-GF-H-06-08	9/1/08	Closed the state-waters and opened the parallel Pacific cod season.
2-GF-H-05-08	8/9/08	Closed Cook Inlet sablefish season at 6:00 pm.
2-GF-H-04-08	7/15/08	Opened the sablefish season at 12:00 pm.
2-GF-H-03-08	4/1/08	Closed the state-waters Pacific cod season to vessels >58' at 10:00 am.
2-GF-H-02-08	2/20/08	Closed parallel and opened state-waters Pacific cod season; establish 20% maximum allowable bycatch level for Pacific cod.
2-GF-H-01-08	1/1/08	Opened the parallel Pacific cod season.
2007		
2-GF-H-05-07	9/1/07	Closed the state-waters and opened the parallel Pacific cod season.
2-GF-H-04-07	8/1/07	Closed the sablefish season at 12:00 pm.
2-GF-H-03-07	7/15/07	Opened the sablefish season at 12:00 pm.
2-GF-H-02-07	2/27/07	Closed parallel and opened state-waters Pacific cod season; establish 20% maximum allowable bycatch level for Pacific cod.
2-GF-H-01-07	1/1/07	Opened the parallel Pacific cod season.
2006		
2-GF-H-07-06	12/21/06	Closed the lingcod season at 12:00 pm.
2-GF-H-06-06	10/2/06	Closed the state-waters and opened the parallel Pacific cod season.
2-GF-H-05-06	9/1/06	Removed gear allocations for state-waters Pacific cod season.
2-GF-H-04-06	7/21/06	Closed the sablefish season at 3:00 pm.
2-GF-H-03-06	7/15/06	Opened the sablefish season at 12:00 pm.
2-GF-H-02-06	3/1/06	Closed parallel and opened state-waters Pacific cod season; establish 20% maximum allowable bycatch level for Pacific cod.
2-GF-H-01-06	1/1/06	Opened the parallel Pacific cod season.
2005		
2-GF-H-08-05	10/30/05	Removed exclusive area registration and gear limits for state-waters Pacific cod season.
2-GF-H-07-05	9/1/05	Opened the state-waters Pacific cod season to pot gear.
2-GF-H-06-05	7/23/05	Closed the sablefish season at 3:00 pm.
2-GF-H-05-05	7/15/05	Opened the sablefish season at 12:00 pm.
2-GF-H-04-05	3/26/05	Closed the state-waters Pacific cod season to pot gear at 3:00 pm.
2-GF-H-03-05	3/16/05	GHL increased to 3.75% of CGOA TAC; pot and jig allocations effective.
2-GF-H-02-05	1/26/05	Closed parallel and opened state-waters Pacific cod season; establish 20% maximum allowable bycatch level for Pacific cod.
2-GF-H-01-05	1/1/05	Opened parallel Pacific cod season.

Table 3.—Landings and estimated exvessel values of Cook Inlet Area groundfish harvests, 1988–2011.

	Sablefish	Rockfish	Lingcod	Pacific Cod	Pollock	Other Species	Total
1988 Harvest							
Round Wt (lb)	136,260	213,298	24,948	517,497	2,380	2,819	897,202
Price (\$/lb)	\$1.02	\$0.12	\$0.22	\$0.21	\$0.08	\$0.21	
Value	\$139,421	\$26,307	\$5,487	\$107,970	\$193	\$587	\$279,965
1989 Harvest							
Round Wt (lb)	2,996	81,060	2,894	36,846	250	234	124,280
Price (\$/lb)	\$0.71	\$0.07	\$0.37	\$0.07	\$0.00	\$0.15	
Value	\$2,116	\$5,662	\$1,058	\$2,587	\$0	\$34	\$11,457
1990 Harvest							
Round Wt (lb)	8,480	30,580	6,769	378,799	61,817	2,309	488,754
Price (\$/lb)	\$0.55	\$0.29	\$0.36	\$0.13	\$0.07	\$0.03	
Value	\$4,631	\$8,930	\$2,432	\$49,851	\$4,441	\$65	\$70,350
1991 Harvest							
Round Wt (lb)	103,597	223,822	62,183	1,916,636	9,528	34,649	2,350,415
Price (\$/lb)	\$0.48	\$0.20	\$0.24	\$0.27	\$0.06	\$0.33	
Value	\$49,533	\$44,971	\$15,134	\$513,991	\$534	\$11,556	\$635,719
1992 Harvest							
Round Wt (lb)	126,852	358,877	42,218	5,441,421	3,875	8,799	5,982,042
Price (\$/lb)	\$0.69	\$0.25	\$0.22	\$0.23	\$0.01	\$0.20	
Value	\$87,269	\$89,927	\$9,434	\$1,250,924	\$45	\$1,732	\$1,439,331
1993 Harvest							
Round Wt (lb)	95,016	189,396	87,370	3,661,744	154,345	14,489	4,202,360
Price (\$/lb)	\$0.87	\$0.32	\$0.43	\$0.24	\$0.08	\$0.46	
Value	\$83,002	\$59,947	\$37,498	\$880,826	\$13,007	\$6,636	\$1,080,916
1994 Harvest							
Round Wt (lb)	45,008	402,040	56,836	2,685,562	238,264	18,201	3,445,911
Price (\$/lb)	\$1.38	\$0.42	\$0.38	\$0.19	\$0.00	\$0.31	
Value	\$62,097	\$168,348	\$21,690	\$511,595	\$0	\$5,585	\$769,315
1995 Harvest							
Round Wt (lb)	22,551	502,045	77,176	4,408,651	2,995	7,854	5,021,272
Price (\$/lb)	\$2.06	\$0.58	\$0.46	\$0.24	\$0.00	\$0.72	
Value	\$46,489	\$291,247	\$35,865	\$1,045,991	\$3	\$5,683	\$1,425,278
1996 Harvest							
Round Wt (lb)	81,067	196,577	59,296	4,644,945	1,943,659	204,735	7,130,279
Price (\$/lb)	\$1.94	\$0.57	\$0.52	\$0.24	\$0.09	\$0.07	
Value	\$157,502	\$111,450	\$30,951	\$1,105,026	\$171,700	\$14,298	\$1,590,927

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Table 3.—Page 2 of 3.

	Sablefish	Rockfish	Lingcod	Pacific Cod	Pollock	Other Species	Total
1997 Harvest							
Round Wt (lb)	125,349	217,364	32,147	4,112,154	3,895,099	104,164	8,486,277
Price (\$/lb)	\$2.33	\$0.59	\$0.47	\$0.27	\$0.09	\$0.21	
Value	\$292,635	\$128,461	\$15,135	\$1,105,001	\$344,807	\$21,958	\$1,907,997
1998 Harvest							
Round Wt (lb)	69,689	80,321	41,239	3,414,058	9,693,429	150,465	13,449,201
Price (\$/lb)	\$1.43	\$0.51	\$0.47	\$0.24	\$0.08	\$0.10	
Value	\$99,800	\$40,816	\$19,368	\$810,160	\$744,006	\$15,254	\$1,729,404
1999 Harvest							
Round Wt (lb)	76,741	87,652	28,162	4,701,085	2,983,371	141,264	8,018,275
Price (\$/lb)	\$1.52	\$0.58	\$0.50	\$0.37	\$0.09	\$0.07	
Value	\$116,481	\$50,499	\$13,981	\$1,724,949	\$262,032	\$9,662	\$2,177,604
2000 Harvest							
Round Wt (lb)	103,662	159,409	33,517	2,737,178	615	25,464	3,059,845
Price (\$/lb)	\$2.04	\$0.48	\$0.58	\$0.40	\$0.06	\$0.49	
Value	\$211,022	\$77,010	\$19,395	\$1,105,020	\$37	\$12,479	\$1,424,963
2001 Harvest							
Round Wt (lb)	133,435	116,323	40,793	1,511,103	3,129	24,630	1,829,413
Price (\$/lb)	\$1.77	\$0.40	\$0.51	\$0.39	\$0.07	\$0.49	
Value	\$235,581	\$46,741	\$20,782	\$586,390	\$206	\$11,989	\$901,689
2002 Harvest							
Round Wt (lb)	108,966	111,508	20,177	2,220,817	1,381	38,934	2,501,783
Price (\$/lb)	\$1.98	\$0.55	\$0.58	\$0.33	\$0.07	\$0.42	
Value	\$215,613	\$60,878	\$11,621	\$732,505	\$102	\$16,267	\$1,036,986
2003 Harvest							
Round Wt (lb)	122,098	142,729	27,154	1,874,366	21	29,528	2,195,866
Price (\$/lb)	\$2.21	\$0.53	\$0.60	\$0.37	\$0.00	\$0.39	
Value	\$269,355	\$75,816	\$16,306	\$693,504	\$00	\$11,468	\$1,066,449
2004 Harvest							
Round Wt (lb)	82,836	118,089	36,644	2,499,587	342,305	55,292	3,134,870
Price (\$/lb)	\$1.70	\$0.49	\$0.57	\$0.32	\$0.07	\$0.15	
Value	\$140,580	\$57,389	\$20,933	\$811,610	\$23,739	\$8,200	\$1,062,451
2005 Harvest							
Round Wt (lb)	84,023	65,145	20,793	2,511,226	99	38,953	2,720,239
Price (\$/lb)	\$2.02	\$0.41	\$0.61	\$0.31	\$0.00	\$0.14	
Value	\$169,660	\$26,873	\$12,595	\$790,939	\$0	\$5,479	\$1,005,546
2006 Harvest							
Round Wt (lb)	88,695	27,924	57,588	2,068,642	14	36,858	2,279,721
Price (\$/lb)	\$2.39	\$0.54	\$0.58	\$0.43	\$0.00	\$0.58	
Value	\$211,554	\$15,111	\$33,674	\$888,230	\$0	\$21,321	\$1,164,890

-continued-

Table 3.—Page 3 of 3.

	Sablefish	Rockfish	Lingcod	Pacific Cod	Pollock	Other Species	Total
2007 Harvest							
Round Wt (lb)	76,889	25,388	47,080	2,135,654	1,694	36,255	2,322,960
Price (\$/lb)	\$2.44	\$0.45	\$0.60	\$0.49	\$0.09	\$0.61	
Value	\$187,461	\$11,361	\$28,137	\$1,042,105	\$149	\$22,256	\$1,291,469
2008 Harvest							
Round Wt (lb)	68,724	29,930	44,032	2,807,005	85	46,495	2,996,271
Price (\$/lb)	\$2.85	\$0.58	\$0.66	\$0.60	\$0.00	\$0.40	
Value	\$195,900	\$17,359	\$29,061	\$1,675,317	\$0	\$18,598	\$1,963,235
2009 Harvest							
Round Wt (lb)	55,263	31,192	19,180	3,073,988	5,269	39,749	3,224,640
Price (\$/lb)	\$2.89	\$0.48	\$0.63	\$0.34	\$0.14	\$0.43	
Value	\$159,959	\$14,972	\$12,083	\$1,045,156	\$722	\$17,076	\$1,249,968
2010 Harvest							
Round Wt (lb)	55,899	52,615	21,966	3,549,867	78	40,591	3,721,016
Price (\$/lb)	\$3.55	\$0.56	\$0.77	\$0.29	\$0.20	\$0.43	
Value	\$198,441	\$29,464	\$16,914	\$1,029,461	\$16	\$17,454	\$1,291,751
2011 Harvest							
Round Wt (lb)	57,350	66,432	9,195	5,179,196	5,751	50,019	5,367,942
Price (\$/lb)	\$4.55	\$0.63	\$0.77	\$0.39	\$0.21	\$0.43	
Value	\$260,941	\$41,520	\$7,080	\$2,019,886	\$1,208	\$21,508	\$2,352,143

Note: Prices and values are derived from fish ticket information.

Table 4.—Effort and harvest from the Cook Inlet Area commercial sablefish fishery, 1988–2011.

Year	Vessels	Landings	Round Weight (lb)			GHL ^c	CPUE (lb/landing)
			Commercial Harvest ^a	ADF&G Survey ^b	Total Harvest		
1988	37	86	136,260		136,260		1,566
1989	4	5	2,996		2,996		599
1990	22	24	8,480		8,480		339
1991	25	33	103,597		103,597		3,139
1992	79	103	126,852		126,852		1,208
1993	36	52	95,016		95,016		1,827
1994	39	56	45,008		45,008		790
1995	33	45	22,551		22,551		501
1996	25	79	81,067		81,067	32,000–172,000	1,013
1997	39	97	125,349		125,349	72,000	1,279
1998	29	57	69,689		69,689	72,000	1,223
1999	23	40	73,695	3,046	76,741	63,400	1,842
2000	16	31	102,639	1,023	103,662	67,000	3,207
2001	21	32	133,435		133,435	67,000	4,170
2002	23	26	108,117	849	108,966	67,000	4,158
2003	14	14	122,098		122,098	75,000	8,721
2004	17	17	82,836		82,836	87,000	4,873
2005 ^d	10	37	84,023		84,023	86,000	2,271
2006	16	41	88,695		88,695	76,000	2,163
2007	10	36	76,889		76,889	74,000	2,136
2008	11	42	68,724		68,724	66,000	1,636
2009	13	66	55,263		55,263	59,880	837
2010	9	44	55,899		55,899	53,733	1,270
2011	10	39	57,350		57,350	56,473	1,471

^a Does not include reported at-sea discards.

^b Sablefish caught during the longline assessment survey and sold to defray survey costs.

^c Prior to implementation of the federal IFQ program, sablefish seasons were set to coincide with federal sablefish seasons and an annual state-water GHL was not established.

^d Vessel trip limits implemented, 3,000 lb within two days.

Table 5.—Average weight, average length, and sex ratio of commercially harvested sablefish in the Cook Inlet Area, 1999–2011.

Year	Average weight (kg)	n	Average length (cm)	n	Average Age (Years)	n	Percent female	n
1999	^a	9	^a	9	-	0	^a	9
2000	2.73	199	61.7	199	^b	199	^c	
2001	2.30	100	57.1	180	^b	178	^c	
2002	2.61	47	59.9	398	^b	397	68%	397
2003	2.13	367	57.5	439	4	388	62%	439
2004	2.30	460	60.0	500	6	500	63%	498
2005	2.77	400	63.0	400	10	393	66%	400
2006	2.62	358	61.7	360	8	359	64%	360
2007	2.22	560	59.5	560	7	530	67%	540
2008	2.42	441	60.3	441	9	437	66%	441
2009	2.46	511	60.6	511	8	510	58%	511
2010	2.55	409	60.6	409	9	408	54%	408
2011	2.07	613	58.0	613	7	596	66%	613

Note: n = sample size.

^a Select samples and small samples sizes in 1999 provide insufficient data to evaluate biological variables.

^b Age structures were submitted to Age Determination Unit laboratory in Juneau, AK; data has not been analyzed.

^c Insufficient gender data to evaluate sex ratio for 2000 and 2001 samples; in 2000, 100%, and in 2001, 44%, recorded as sex unknown.

Table 6.—Effort and harvest by district of Cook Inlet Area commercial rockfish, including black and dark rockfish from federal waters, 1988–2011.

Year	Vessels	Landings	Round Weight (lb)			Total Harvest ^{a, b, c}
			Cook Inlet District	North Gulf District	Federal Waters	
1988	44	102	2,859	148,227	62,213	213,298
1989	12	31	^d	22,762	^d	81,060
1990	31	41	^d	29,807	^d	30,580
1991	62	161	^d	222,993	^d	223,822
1992	121	408	1,029	334,149	23,699	358,877
1993	86	292	2,641	68,177	118,579	189,396
1994	74	277	110	205,451	196,480	402,040
1995	120	406	4,190	270,351	227,504	502,046
1996	124	343	700	120,777	75,101	196,577
1997	130	369	3,269	179,763	34,332	217,364
1998	110	303	^d	72,887	7,423	80,321
1999	95	285	0	86,007	1,645	87,652
2000	96	243	0	133,431	25,978	159,409
2001	76	166	^d	109,175	^d	116,323
2002	71	158	^d	106,638	^d	111,508
2003	64	135	^d	142,207	^d	142,729
2004	60	114	246	117,843	0	118,089
2005	50	123	^d	64,950	^d	65,145
2006	56	109	556	27,379	0	27,935
2007	45	118	105	24,950	332	25,388
2008	48	113	4,430	25,441	59	29,930
2009	57	137	317	30,841	36	31,194
2010	52	112	52	52,057	506	52,615
2011	50	121	1,148	65,241	42	66,432
Average	72	194	941	110,896	35,235	147,072

^a Includes reported at-sea discards.

^b Data combined from ADF&G Neptune and Venus fish ticket software applications.

^c Differences in harvest totals are due to rounding.

^d Confidential data.

Table 7.—Harvest by assemblage of Cook Inlet Area commercial rockfish, including black and dark rockfish from federal waters, 1988–2011.

Year	Demersal Shelf		Pelagic Shelf		Slope		Total Pounds (lb)
	Pounds (lb)	Percent of total	Pounds (lb)	Percent of total	Pounds (lb)	Percent of total	
1988	5,536	3	148,326	70	59,436	28	213,298
1989	10,376	13	69,046	85	1,639	2	81,060
1990	1,252	4	21,751	71	7,577	25	30,580
1991	7,217	3	190,212	85	26,392	12	223,822
1992	126,726	35	217,379	61	14,772	4	358,877
1993	27,802	15	155,780	82	5,814	3	189,396
1994	35,074	9	354,263	88	12,704	3	402,040
1995	37,812	8	454,241	90	9,992	2	502,046
1996	38,999	20	150,201	76	7,376	4	196,577
1997	49,809	23	153,139	70	14,417	7	217,364
1998	24,268	30	45,361	56	10,692	13	80,321
1999	46,129	53	32,298	37	9,225	11	87,652
2000	24,229	15	127,021	80	8,159	5	159,409
2001	26,894	23	83,608	72	5,821	5	116,323
2002	36,171	32	72,439	65	2,898	3	111,508
2003	44,808	31	96,367	68	1,554	1	142,729
2004	32,819	28	84,883	72	387	<1	118,089
2005	16,454	25	46,741	72	1,950	3	65,145
2006	13,298	48	12,972	46	1,664	6	27,935
2007	15,264	60	5,689	22	4,434	17	25,388
2008	17,817	59	6,171	21	5,942	20	29,930
2009	18,606	60	3,154	10	9,434	30	31,194
2010	24,406	46	22,843	43	5,365	10	52,615
2011	19,327	29	44,105	66	3,000	5	66,432
Average	29,212	28	108,250	63	9,610	9	147,072

Table 8.—Species composition of pelagic shelf rockfish sampled in the Cook Inlet Area, 1998–2011.

Year	Black		Dusky ^a		Dark		Yellowtail/Widow ^b		Total Sampled
	n	Percent	n	Percent	n	Percent	n	Percent	
1998	361	91.6	32	8.1			1	0.3	394
1999	311	92.6	25	7.4			0		336
2000	723	96.0	30	4.0			0		753
2001	440	92.4	35	7.4			1	0.2	476
2002	441	94.6	25	5.4			0		466
2003	481	93.8	28	5.5			4	0.8	513
2004	532	91.7	48	8.3			0		580
2005	259	99.6	1	0.4			0		260
2006	248	99.6	1	0.4			0		249
2007 ^c	73	91.3	4	5.0	3	3.8	0		80
2008 ^d	0		0		0		0		0
2009	62	93.9	3	4.5	1	1.5	0		66
2010	320	87.7	11	3.0	34	9.3	0		365
2011	351	67.2	25	4.8	132	25.3	14	2.7	522

Note: n = sample size.

^a Dusky rockfish includes light dusky and dark dusky specimens 1998–2006, *Sebastes ciliatus*.

^b The only incidence of widow rockfish was one specimen in 2003; all other specimens are yellowtail rockfish.

^c In 2004, light dusky and dark dusky rockfish were split into dusky rockfish, *Sebastes variabilis* (name resurrected) and dark rockfish, *Sebastes ciliatus*. However, the new nomenclature was not adopted into ADF&G regulation until 2007.

^d Reduced effort in directed jig fishery resulted in lower incidence of rockfish sampling opportunities.

Table 9.—Average length, average weight, average age, sex ratio, and corresponding sample sizes of commercially harvested black rockfish in the Cook Inlet Area, 1998–2011.

Year	Average Length (cm)	n	Average Weight (kg)	n	Average Age (years)	n	Percent Female	n
1998	52	361	2.3	111	21	113	n/a	
1999	48	311	2.3	67	18	58	49	59
2000	47	723	2.0	510	12	157	53	590
2001	49	440	2.1	229	13	429	47	390
2002	50	441	2.4	180	14	347	60	331
2003	49	481	2.3	369	13	387	62	447
2004	50	532	2.5	468	14	531	66	469
2005	51	259	2.5	130	15	184	62	236
2006	51	248	2.6	60	16	248	61	99
2007	52	73	2.6	73	14	70	59	61
2008		0		0		0		0
2009	53	62	2.4	1	19	62	47	62
2010	50	320	2.4	320	15	296	47	318
2011	49	351	2.1	351	16	351	40	351

Note: n = sample size.

Table 10.—Species composition of commercially harvested non-pelagic rockfish, including number sampled and proportion, in the Cook Inlet Area, 1998–2011.

Year	Thornyhead		Yelloweye		Quillback		Rougheye		Shortraker		Silvergray		Other ^a		Total Samples
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
1998	0		0		1	6	13	72	0		0		4	22	18
1999	23	6	77	22	58	16	86	24	32	9	16	4	65	18	357
2000	0		49	56	21	24	7	8	2	2	4	5	4	5	87
2001	17	8	80	38	6	3	95	45	6	3	8	4	0		212
2002	0		136	74	0		15	8	0		1	1	32	17	184
2003	0		204	88	0		15	6	0		12	5	1	<1	232
2004	0		141	95	7	5	0		0		0		0		148
2005	0		81	86	12	13	0		0		0		1	1	94
2006	0		306	82	15	4	46	12	1	<1	2	<1	5	1	375
2007	0		417	93	14	3	5	1	0		10	2	2	<1	448
2008	0		322	97	0		0		0		0		11	3	333
2009	3	<1	523	71	53	7	135	18	10	1	0		8	1	732
2010	1	<1	492	81	30	5	29	5	10	2	2	<1	41	7	605
2011	5	1	356	58	6	1	211	34	2	<1	27	4	9	1	616

Note: n = sample size.

^a Other non-pelagic rockfish (demersal and slope species): redstripe, Pacific ocean perch, northern, bocaccio, canary, tiger, China, rosethorn, redbanded, and unspecified Sebastes.

Table 11.—Commercial lingcod effort and harvest by gear type from the combined Cook Inlet area and adjacent federal waters, 1988–2011.

Year	Vessels	Landings	Round weight (lb)		
			Jig/Troll	Other ^a	Total Harvest ^{b, c}
1988	16	37	6,512	18,436	24,948
1989	10	20	399	2,495	2,894
1990	22	22	1,306	5,463	6,769
1991	31	96	57,691	4,492	62,183
1992	84	192	6,998	35,220	42,218
1993	18	64	86,724	646	87,370
1994	14	30	56,505	331	56,836
1995	43	72	72,489	4,687	77,176
1996	39	58	47,986	11,310	59,296
1997	34	49	17,572	14,575	32,147
1998	23	41	27,284	13,955	41,239
1999	41	66	10,741	17,421	28,162
2000	41	72	29,488	4,029	33,517
2001	33	73	29,472	11,321	40,793
2002	33	64	16,383	3,794	20,177
2003	29	64	23,124	4,030	27,154
2004	30	63	31,009	5,635	36,644
2005	28	55	13,328	7,465	20,793
2006	28	55	11,679	45,899	57,578
2007	50	90	22,536	24,543	47,080
2008	33	66	26,966	17,066	44,032
2009	37	70	5,571	13,609	19,180
2010	31	53	13,298	8,669	21,966
2011	30	46	2,406	8,036	10,442

^a “Other” includes longline, pot, trawl, or salmon gillnet gears.

^b Does not include reported at-sea discards.

^c Sum discrepancies are due to rounding.

Table 12.—Commercial lingcod harvest from state and federal waters, 1988–2011.

Year	Commercial Harvest		
	State Waters	Federal Waters	Total Harvest ^{a, b}
	Round weight (lb)		
1988	18,362	6,586	24,948
1989	1,833	1,060	2,894
1990	2,496	4,272	6,769
1991	59,196	2,987	62,183
1992	24,660	17,558	42,218
1993	7,627	79,743	87,370
1994	21,782	35,054	56,836
1995	44,314	32,862	77,176
1996	29,461	29,835	59,296
1997	30,948	1,199	32,147
1998	39,781	1,458	41,239
1999	19,841	8,320	28,162
2000	26,524	6,992	33,517
2001	30,184	10,609	40,793
2002	18,664	1,513	20,177
2003	24,864	2,290	27,154
2004	35,632	1,012	36,644
2005	18,075	2,718	20,793
2006	19,495	38,083	57,578
2007	32,695	14,385	47,080
2008	36,781	7,251	44,032
2009	13,116	6,064	19,180
2010	17,312	4,655	21,966
2011	7,306	3,136	10,442

^a Does not include reported at-sea discards.

^b Sum discrepancies are due to rounding.

Table 13.—Average weight, average length, average age, sex ratio, and corresponding sample sizes of commercially harvested lingcod in the Cook Inlet Area, 1998–2011.

Year	Weight		Length		Age		Sex Ratio	
	(kg)	n	(cm)	n	(Years)	n	% female	n
1998	14.1	304	110	304	13	80	66	157
1999 ^a	n/a		n/a		n/a		n/a	
2000	13.2	26	108	26	15	26	n/a	
2001	13.5	179	109	179	14	113	52	67
2002	14.3	152	111	152	16	149	50	28
2003	14.8	83	113	83	17	69	66	56
2004	15.5	155	115	155	18	143	77	108
2005	17.3	108	119	108	20	12	79	108
2006	15.5	139	115	139	18	129	79	134
2007	13.6	275	110	275	15	157	81	274
2008	16.2	103	117	103	18	80	87	103
2009 ^b	14.1	177	111	177	15	127	88	176
2010 ^b	13.0	194	105	194	16	161	71	163
2011	15.1	95	114	95	18	95	72	39

^a Sample size in 1999 insufficient for biological data analysis (n=2).

^b Age analysis incomplete for 2009 and 2010, n=samples that have been aged.

Table 14.–Cook Inlet Area Pacific cod parallel and state-waters season dates, 1997–2011.

Year	Dates and Times ^a	Season and Gear
1997 ^b	1/1/97 - 3/11/97; 10/2/97 - 10/26/97	Parallel season, all gear
	4/4/97 - 10/2/97; 10/26/97 - 12/31/97	State-waters season jig
	4/4/97 - 4/7/97; 6/15/97 - 10/2/97; 10/26/97 - 12/31/97	State-waters season pot
1998 ^b	1/1/98 - 3/1/98; 10/5/98 - 10/9/98	Parallel season, all gear
	3/17 - 10/5/98; 10/9/98 - 12/31/98	State-waters season jig
	3/17/98 - 4/7/98; 6/15/98 - 10/5/98; 10/9/98 - 12/31/98	State-waters season pot
1999 ^b	1/1/99 - 3/14/99; 9/1/99 - 10/5/99	Parallel season, all gear
	3/21/99 - 9/1/99; 10/5/99 - 12/31/99	State-waters season jig
	3/21/99 - 5/1/99; 6/15/99 - 9/1/99; 10/5/99 - 12/31/99	State-waters season pot
2000 ^b	1/1/00 - 3/4/00	Parallel season, all gear
	3/5/00 - 12/31/00	State-waters season jig
	3/5/00 - 5/1/00; 6/15/00 - 12/31/00	State-waters season pot
2001 ^b	1/1/01 - 2/26/01	Parallel season, longline gear
	1/1/01 - 3/4/01	Parallel season, pot/jig gears
	3/5/01 - 12/31/01	State-waters season jig
2002 ^b	3/5/01 - 5/1/01; 6/15/01 - 12/31/01	State-waters season pot
	1/1/02 - 3/9/02	Parallel season, all gear
	3/10/02 - 12/31/02	State-waters season jig
2003 ^b	3/10/02 - 5/1/02; 6/15/02 - 8/5/02; 9/1/02 - 12/31/02	State-waters season pot
	1/1/03 - 2/9/03; bycatch until 9/9 then closed to retention	Parallel season, all gear
	2/10/03 - 5:00 PM 12/8/03	State-waters season jig
2004 ^b	2/10/03 - 5:00 PM 2/27/03; 9/1/03 - 5:00 PM 12/8/03	State-waters season pot
	1/1/04 - 1/31/04	Parallel season, all gear
	2/1/04 - 12/31/04	State-waters season jig
2005 ^{b, c, d}	2/1/04 - 5:00 PM 2/23/04; 9/1/04 - 12/31/04	State-waters season pot
	1/1/05 - 1/26/05	Parallel season, all gear
	1/27/05 - 12/31/05	State-waters season jig
2006	1/27/05 - 3/16/05 ^d ; 3/16/05 ^d - 3 PM 3/26/05; 9/1/05 - 12/31/05	State-waters season pot vessels <58
	1/27/05 - 3/16/05 ^d ; 3/16/05 ^d - 3 PM 3/26/05; 9/1/05 - 12/31/05	State-waters season pot vessels >58
	1/1/06 - 2/28/06; 10/2/06 - 12/31/06	Parallel season, all gear
	3/1/06 - 10/2/06	State-waters season jig
	3/1/06 - 5/1/06; 6/15/06 - 10/2/06	State-waters season pot vessels <58
	3/1/06 - 5/1/06; 6/15/06 - 10/2/06	State-waters season pot vessels >58

-continued-

Table 14.–Page 2 of 2.

Year	Dates and Times ^a	Season and Gear
2007	1/1/07 - 2/27/07; 9/1/07 - 12/31/07	Parallel season, all gear
	2/28/07 - 12/31/07	State-waters season jig
	2/28/07 - 5/1/07; 6/15/07 - 9/1/07	State-waters season pot vessels <58
	2/28/07 - 5/1/07; 6/15/07 - 9/1/07	State-waters season pot vessels >58
2008 ^b	1/1/08 - 2/20/08; 9/1/08 - 10/3/08	Parallel season, all gear
	2/21/08 - 9/1/08; 10/4/08 - 12/31/08	State-waters season jig
	2/21/08 - 5/1/08; 6/15/08 - 9/1/08; 10/4/08 - 12/31/08	State-waters season pot vessels <58
	2/21/08 - 10 AM 4/1/08; 10/4/08 - 12/31/08	State-waters season pot vessels >58
2009 ^b	1/1/09 - 1/27/09; 9/1/09 - 10/1/09	Parallel season, all gear
	1/28/09 - 9/1/09; 10/1/09 - 12/13/09	State-waters season jig
	1/28/09 - 3/18/09; 10/1/09 - 12/31/09	State-waters season pot vessels <58
	1/28/09 - 6:00 AM 3/18/09; 10/1/09 - 12/31/09	State-waters season pot vessels >58
2010 ^b	1/1/10 - 1/31/10; 9/1/10 - 9/13/10	Parallel season, all gear
	2/1/10 - 9/1/10; 9/13/10 - 12/31/10	State-waters season jig
	2/1/10 - 4 PM 3/28/10; 9/13/10 - 12/31/10	State-waters season pot (all vessels)
2011	1/1/11 - 1/29/11; 9/1/11-10/9/11; 12/27/11-12/31/11	Parallel season, all gear
	1/30/11 -9/1/11; 10/9/11-12-27/11	State-waters season jig
	1/30/11 - 3/19/11; 10/9/11-12/27/11	State-waters season pot vessels <58
	1/30/11 – 5 PM 3/13/11; 10/9/11-12/27/11	State-waters season pot vessels >58

^a Opening and closure times occurred at 12:00 pm unless otherwise noted; except that openings on January 1 occurred at 12:01 am and closures on December 31 occurred at 12:00 am.

^b Gear and area registration requirements relaxed on October 31.

^c New regulations became effective in 2005 limiting vessels >50' to 25% of the guideline harvest level.

^d New regulations became effective 3/16/05 changing the allocation from 3.0% to 3.75% of the federal acceptable biological catch.

Table 15.—Annual harvest and value for the Cook Inlet Area Pacific cod parallel and state-waters seasons, 1988–2011.

Year	Price per lb	Parallel Season Harvest (lb) ^{a, b}	Parallel Season Value	State-waters Season Harvest (lb) ^a	State-waters Season Value	Total Combined Pacific cod Harvest (lb) ^c	Total Combined Pacific cod Fishery Value
1988	\$0.21	517,497	\$107,970			517,497	\$107,970
1989	\$0.07	36,846	\$2,587			36,846	\$2,587
1990	\$0.13	378,799	\$49,851			378,799	\$49,851
1991	\$0.27	1,916,636	\$513,991			1,916,636	\$513,991
1992	\$0.23	5,441,421	\$1,250,924			5,441,421	\$1,250,924
1993	\$0.24	3,661,744	\$880,826			3,661,744	\$880,826
1994	\$0.19	2,685,562	\$511,595			2,685,562	\$511,595
1995	\$0.24	4,408,651	\$1,045,991			4,408,651	\$1,045,991
1996	\$0.24	4,644,945	\$1,105,026			4,644,945	\$1,105,026
1997 ^d	\$0.27	3,273,240	\$879,572	838,913	\$225,429	4,112,154	\$1,105,001
1998	\$0.24	2,683,589	\$636,819	730,469	\$173,341	3,414,058	\$810,160
1999	\$0.37	3,183,178	\$1,167,990	1,517,907	\$556,959	4,701,085	\$1,724,949
2000	\$0.40	1,587,390	\$640,842	1,149,788	\$464,178	2,737,178	\$1,105,020
2001	\$0.39	615,752	\$238,945	895,351	\$347,445	1,511,103	\$586,390
2002	\$0.33	891,970	\$294,204	1,328,847	\$438,301	2,220,817	\$732,505
2003	\$0.37	420,798	\$155,695	1,453,538	\$537,809	1,874,336	\$693,504
2004	\$0.32	387,902	\$125,945	2,111,685	\$685,627	2,499,587	\$811,610
2005	\$0.31	193,075	\$60,811	2,318,151	\$730,128	2,511,226	\$790,939
2006	\$0.43	591,121	\$252,386	1,477,521	\$630,844	2,068,642	\$883,230
2007	\$0.49	693,305	\$338,302	1,442,349	\$703,803	2,135,654	\$1,042,105
2008	\$0.60	413,464	\$246,770	2,393,541	\$1,428,547	2,807,005	\$1,675,317
2009	\$0.34	541,453	\$184,094	2,532,535	\$861,062	3,073,988	\$1,045,156
2010	\$0.29	426,241	\$123,610	3,123,626	\$905,852	3,549,867	\$1,029,461
2011	\$0.39	778,857	\$303,754	4,400,339	\$1,716,132	5,179,196	\$2,019,886

^a Harvest is reported in round pounds.

^b Includes Pacific cod bycatch to other directed groundfish and halibut fisheries in state-waters.

^c Any inconsistencies in totals are due to rounding.

^d State-waters season implemented in 1997.

Table 16.—Effort and harvest in the commercial Pacific cod parallel season in the North Gulf and Cook Inlet Districts, 1988–2011.

Year	North Gulf District			Cook Inlet District			Pooled Districts		
	Vessels	Landings	Harvest (lb) ^a	Vessels	Landings	Harvest (lb)	Vessels ^b	Landings	Harvest (lb)
1988	28	79	303,778	38	135	213,719	59	213	517,497
1989	7	18	29,256	4	4	7,590	9	21	36,846
1990	19	26	158,654	34	101	220,145	52	127	378,799
1991	79	158	980,179	77	331	936,458	122	489	1,916,636
1992	155	611	4,656,230	50	257	785,191	190	868	5,441,421
1993	89	265	2,752,451	29	162	909,294	109	427	3,661,744
1994	52	160	1,482,618	30	226	1,202,944	74	386	2,685,562
1995	112	255	3,014,296	50	415	1,394,355	140	669	4,408,651
1996	94	300	3,807,762	24	271	837,183	106	567	4,644,945
1997	109	290	2,050,031	39	286	1,223,209	137	576	3,273,240
1998	93	295	2,122,576	27	224	561,013	116	519	2,683,589
1999	88	255	2,103,345	33	202	1,079,834	112	457	3,183,178
2000	80	224	1,057,657	31	195	529,732	101	417	1,587,390
2001	68	120	269,982	27	125	345,769	86	243	615,752
2002	49	96	577,725	19	126	314,244	66	222	891,970
2003	29	42	162,757	19	101	258,041	45	142	420,798
2004	39	56	112,899	31	77	275,003	62	133	387,902
2005	31	62	67,194	15	57	125,881	43	118	193,075
2006	42	90	258,569	11	83	332,552	51	171	591,121
2007	36	107	394,640	16	96	298,665	47	202	693,305
2008	40	87	266,486	16	74	146,978	52	161	413,464
2009	38	98	438,766	24	74	102,687	57	172	541,453
2010	36	65	222,248	17	61	203,993	50	124	426,241
2011	31	68	219,804	23	79	559,053	49	144	778,857

^a Harvest includes reported at-sea discards.

^b Pooled vessels count is discrete vessels.

Table 17.—Annual effort and harvest by gear type of Pacific cod from the Cook Inlet Area parallel fisheries, 1988–2011.

Year	Vessels	Landings	Harvest (lb) ^a				Total
			Longline	Pot	Jig ^b	Other ^c	
1988	59	213	482,365	^d	^d	^d	517,497
1989	9	21	35,978	^d	^d		36,846
1990	52	127	250,888	20,244	^d	107,505	378,637 ^e
1991	122	489	1,347,759	525,774	17,284	25,819	1,916,636
1992	190	868	3,553,709	1,873,717	13,995		5,441,421
1993	109	427	2,316,492	1,336,799		8,454	3,661,744
1994	74	386	1,386,775	1,290,860	5,487	^d	2,685,562
1995	140	669	2,250,472	1,721,079	3,572	433,528	4,408,651
1996	106	567	2,219,948	987,626	25,645	1,411,726	4,644,945
1997	137	576	2,049,394	1,114,131	37,362	72,354	3,273,240
1998	116	519	1,900,375	529,355	42,453	211,406	2,683,589
1999	112	457	2,171,877	981,674	21,331	8,296	3,183,178
2000	101	417	815,742	770,298	^d		1,586,041 ^e
2001	86	243	301,654	314,098			615,752
2002	65	222	582,635	307,937	^d		890,573 ^e
2003	45	142	126,168	294,630			420,798
2004	62	133	27,026	360,637	^d		387,662 ^e
2005	44	118	25,720	167,320	^d		193,040 ^e
2006	51	171	70,507	520,613			591,121
2007	47	202	364,427	328,878			693,305
2008	52	161	267,991	145,473			413,464
2009	57	172	452,796	88,657			541,453
2010	50	124	197,795	228,429	^d		426,223 ^e
2011	49	144	199,613	579,007	237		778,857

^a Harvest is reported in round pounds.

^b Includes mechanical jig and hand troll gear.

^c “Other” includes trawl and gillnet gear.

^d Confidential data due to limited number of participants.

^e Total harvest does not include confidential data.

Table 18.—Commercial effort and harvest for the state-waters Pacific cod season in the North Gulf and Cook Inlet Districts, 1997–2011.

Year	North Gulf District			Cook Inlet District			Pooled Districts		
	Vessels	Landings	Harvest (lb)	Vessels	Landings	Harvest (lb)	Vessels ^a	Landings	Harvest (lb) ^{bc}
1997	29	81	291,565	35	288	547,349	55	367	838,913
1998	28	92	164,540	20	214	565,929	42	306	730,469
1999	20	56	359,511	23	274	1,158,396	38	329	1,517,907
2000	7	11	19,817	19	320	1,129,971	21	331	1,149,788
2001	5	15	60,310	9	194	835,042	14	209	895,351
2002	5	7	170,239	12	315	1,158,608	15	321	1,328,847
2003	15	41	616,306	14	260	837,232	19	300	1,453,538
2004	15	63	938,541	19	228	1,173,144	25	290	2,111,685
2005	7	25	798,623	15	208	1,519,528	17	233	2,318,151
2006	4	19	567,290	9	131	910,231	12	149	1,477,521
2007	8	31	809,949	11	122	632,400	17	152	1,442,349
2008	4	28	1,088,694	13	206	1,304,847	16	234	2,393,541
2009	9	35	1,142,965	15	189	1,389,570	18	222	2,532,535
2010	4	23	1,701,278	13	125	1,422,348	15	148	3,123,626
2011	16	90	2,126,614	30	271	2,273,725	40	359	4,400,339

^a Pooled vessel count is discrete vessels.

^b All harvest totals include reported at-sea discards.

^c Sum discrepancies are due to rounding.

Table 19.—Annual effort and harvest by gear type of Pacific cod from the Cook Inlet Area state-waters season, 1997–2011.

Year	Pot			Jig ^a			Combined Gear		
	Vessels	Landings	Harvest (lb)	Vessels	Landings	Harvest (lb) ^b	Vessels	Landings	Harvest (lb)
1997	10	136	276,966	46	233	561,947	55	367	838,913
1998	13	183	542,260	29	123	188,209	42	306	730,469
1999	24	278	1,390,678	14	51	127,229	38	329	1,517,907
2000	17	219	1,135,903	5	12	13,885	21	331	1,149,788
2001	9	196	875,923	5	13	19,428	14	209	895,351
2002	9	306	1,310,684	6	15	18,163	15	321	1,328,847
2003	10	140	1,023,854	15	160	429,684	19	300	1,453,538
2004	12	170	1,785,386	18	120	326,298	25	290	2,111,685
2005	10	205	2,227,417	8	28	90,734	17	233	2,318,151
2006	^c	^c	1,476,115	^c	^c	^c	12	149	1,476,115 ^d
2007	13	145	1,436,804	4	7	5,545	17	152	1,442,349
2008	13	227	2,379,085	3	7	14,456	16	234	2,393,541
2009	13	181	2,393,574	9	41	138,960	18	222	2,532,535
2010	9	128	3,074,871	6	20	48,754	15	148	3,123,626
2011	11	156	3,902,154	31	203	498,185	40	359	4,400,339

^a Includes mechanical jig and hand troll gear.

^b Harvest is reported in round pounds.

^c Confidential data due to limited number of participants.

^d Total harvest does not include confidential data.

Table 20.—Annual guideline harvest level (GHL), harvest by gear type, and percent of GHL harvested by gear type of Pacific cod from Cook Inlet Area state-waters season, 1997–2011.

Year	GHL	Harvest (lb) ^a					
		Total	Total % GHL	Pot	Pot % GHL	Jig ^b	Jig % GHL
1997	2,549,646	838,913	32.9	276,966	11%	561,947	22.0%
1998	2,434,565	730,469	30.0	542,260	22%	188,209	7.7%
1999	2,637,445	1,517,907	57.5	1,390,678	53%	127,229	4.8%
2000	2,160,255	1,149,788	53.2	1,135,903	53%	13,885	0.6%
2001	1,917,195	895,351	46.7	875,923	46%	19,428	1.0%
2002	1,571,455	1,328,847	84.6	1,310,684	83%	18,163	1.2%
2003	1,438,516	1,453,538	101.0	1,023,854	71%	429,684	29.9%
2004	2,367,765	2,111,685	89.2	1,785,386	75%	326,298	13.8%
2005	2,737,893	2,318,151	84.7	2,227,417	81%	90,734	3.3%
2006	3,131,088	^c	^c	1,476,115	47%	^c	^c
2007	3,131,088	1,442,349	46.1	1,436,804	46%	5,545	0.2%
2008	3,133,403	2,393,541	76.4	2,379,085	76%	14,456	0.5%
2009	2,606,393	2,532,535	97.2	2,393,574	92%	138,960	5.3%
2010	4,054,466	3,123,626	77.0	3,074,871	76%	48,754	1.2%
2011	4,449,911	4,400,339	98.9	3,902,154	79%	498,185	11.1%

^a Harvest is reported in round pounds.

^b Includes mechanical jig and hand troll gear.

^c Confidential data due to limited number of participants.

Table 21.—Average weight, average length, and percent female of commercially harvested Pacific cod in the Cook Inlet Area, 1997–2011.

Year	Average weight (kg)	n	Average length (cm)	n	Percent female	n
1997	n/a		61	2,480	n/a	
1998	3.3	92	66	1,186	n/a	
1999	2.9	527	64	3,602	53	2,340
2000	3.5	1,957	65	2,825	56	2,403
2001	3.1	716	61	1,318	58	817
2002	3.1	1,024	62	2,939	57	1,396
2003	3.4	590	64	1,714	51	624
2004	3.3	745	61	2,772	59	766
2005	3.3	545	61	1,642	57	650
2006	3.4	535	62	1,143	59	540
2007	3.7	632	65	2,833	59	623
2008	3.8	648	65	2,237	58	649
2009	3.3	776	63	1,595	60	776
2010	3.5	872	63	1,800	60	873
2011	3.0	1,418	63	2,811	56	1,419

Note: n = sample size.

Table 22.—Commercial pollock fishing effort and harvest in the Cook Inlet Area, 1988–2011.

Year	Vessels	Landings	Harvest (lb) ^a	CPUE ^b
1988	6	14	2,380	170
1989	^c	^c	^c	^c
1990	18	35	61,817	1,766
1991	3	3	9,528	3,176
1992	34	43	3,875	90
1993	33	47	154,345	3,284
1994	24	39	238,261	6,109
1995	22	33	2,995	91
1996	16	33	1,943,659	58,899
1997	25	59	3,895,099	66,019
1998	18	74	9,693,429	130,992
1999	12	24	2,983,371	124,307
2000	4	4	615	154
2001	7	12	3,129	261
2002	7	9	1,381	153
2003	^c	^c	^c	^c
2004	4	7	342,305	48,901
2005	^c	^c	^c	^c
2006	^c	^c	^c	^c
2007	4	6	1,694	282
2008	^c	^c	^c	^c
2009	16	26	5,269	203
2010	^c	^c	^c	^c
2011	10	32	5,751	180

^a Includes reported at-sea discards and test fish.

^b CPUE is catch per unit effort in pounds per landing.

^c Confidential data due to limited number of participants.

Table 23.—Average weight, average length, and percent female of commercially harvested walleye pollock in the Cook Inlet Area, 1997–2011.

Year	Average weight (kg)	n	Average length (cm)	n	Percent female	n
1997	1.5	600	56	598	45	598
1998	2.3	108	56	435	54	418
1999	1.0	124	50	1,226	47	1,218
2000-2003	n/a		n/a		n/a	
2004	0.9	200	44	199	43	199
2005-2011	n/a		n/a		n/a	

Table 24.—Commercial effort and harvest of other groundfish species, octopus, and squid from the Cook Inlet Area, 1988–2011.

Year	Vessels	Landings	Round weight (lb)						Total
			Flatfish ^a	Sharks ^b	Skates	Other ^c	Octopus	Squid	
1988	6	6	2,418	101	275	24	0	0	2,818
1989	3	3	0	234	0	0	0	0	234
1990	15	23	1,353	20	0	936	0	0	2,309
1991	10	12	31,866	0	2,321	40	422	0	34,649
1992	26	37	1,056	1,009	6,004	2,340	700	0	11,109
1993	21	57	4,560	0	2,967	5,001	6,461	0	18,989
1994	19	80	4,471	112	68	400	13,550	0	18,601
1995	14	47	283	100	180	3,800	7,285	0	11,648
1996	48	129	150,651	408	48,405	31	5,205	35	204,735
1997	42	190	51,929	394	22,006	561	25,148	3,972	104,010
1998	46	187	47,874	268	62,381	0	12,914	26,980	150,417
1999	22	129	86,410	6,594	2,679	165	22,052	23,073	140,973
2000	16	138	274	0	66	4	25,104	0	25,448
2001	10	106	31	0	0	193	24,406	0	24,630
2002	11	166	416	0	0	0	38,518	0	38,934
2003	13	138	333	0	270	3	28,922	0	29,528
2004	20	143	248	0	18,728	0	35,981	335	55,292
2005	11	108	0	25	3,951	0	34,977	0	38,953
2006	9	109	88	6,214	0	0	30,556	0	36,858
2007	14	84	0	0	252	0	36,003	0	36,255
2008	15	141	0	0	11,177	0	35,318	0	46,495
2009	18	113	50	0	2,442	147	37,110	0	39,749
2010	16	113	0	0	7,044	4	33,548	0	40,595
2011	30	145	207	0	12,241	8	37,564	0	50,020

^a Flatfish includes general flatfishes, flounders, and soles.

^b Sharks include spiny dogfish, salmon, Pacific sleeper, and unspecified sharks.

^c Other includes general groundfish, misc. unidentified fish, eel, greenling, and sculpin (not halibut).

Table 25.—Reported at-sea discards from Cook Inlet Area groundfish fisheries, 1989–2011.

Year	Round weight (lb)											Total
	Sablefish	Rockfish	Lingcod	Pacific Cod	Pollock	Flatfish	Sharks	Skates	Other	Octopus	Squid	
1989	0	18	0	0	0	0	0	0	0	0	0	18
1990	10	0	1,500	0	0	2,899	0	0	0	0	0	4,409
1991	0	27	1,528	200	3,830	60	0	400	1,610	0	0	7,655
1992	57	1,251	4,235	5,489	2,926	19,125	7,948	64,997	570	27	0	106,625
1993	13	0	1,180	6,906	4,470	13,396	10,704	43,607	1,900	329	2	82,507
1994	54	76	1,835	173	832	4,284	1,825	34,850	205	0	0	44,134
1995	1,000	356	2,950	5,007	1,550	4,387	19,531	34,486	0	0	0	69,267
1996	8,010	5,490	1	14,203	3,153	88,357	0	12,369	3,759	2,894	0	138,236
1997	0	0	0	0	25,000	0	500	300	0	10	0	25,810
1998	4,895	3,672	0	396	10,451	89,224	4,994	6,090	4,374	0	1,828	125,924
1999	0	0	68	0	137	241	864	959	1,188	0	690	4,147
2000	2,448	836	4,746	17,194	167	1,701	17,700	5,454	90	0	0	50,336
2001	1,510	0	7,549	1,253	1	734	23,651	2,709	111	113	0	37,631
2002	2,147	5	5,688	457	4	428	9,095	1,875	12	4	0	19,715
2003	3,445	30	3,277	645	0	206	23,206	2,892	47	1,400	0	35,148
2004	1,674	60	434	1,008	3	439	49,568	1,898	26	0	0	55,110
2005	833	9	1,643	1,002	0	620	14,915	3,862	37	0	0	22,920
2006	1,060	0	1,954	1,526	14	90	14,747	980	110	2	0	20,484
2007	1,139	0	2,086	742	9	192	27,707	4,730	373	15	0	36,994
2008	262	0	4,780	809	22	449	13,823	1,717	27	7	0	21,896
2009	1,183	0	1,531	1,332	16	767	20,895	6,401	30	407	0	32,563
2010	560	0	803	770	6	705	18,356	7,233	48	48	0	28,528
2011	853	0	453	1,175	10	259	3,147	1,977	13	42	0	7,929
Total	31,154	11,830	48,242	60,287	52,601	228,563	283,176	239,786	14,530	5,298	2,520	977,987
Average	1,640	789	2,412	3,173	2,768	10,844	14,904	11,418	765	408	420	42,521
% of Total	3%	1%	5%	6%	5%	23%	29%	25%	2%	<1%	<1%	100%

Table 26.—Average weight and percent female of commercially harvested octopus in the Cook Inlet Area, 1996–2011.

Year	Average weight (kg)	n	Percent female	n
1996	n/a		n/a	
1997	n/a		n/a	
1998	n/a		n/a	
1999	n/a		n/a	
2000	10.1	78	62	78
2001	n/a		n/a	
2002	15.5	129	60	123
2003	n/a		n/a	
2004	n/a		n/a	
2005	15.3	66	47	66
2006	13.0	143	45	131
2007	12.9	119	59	100
2008	12.9	238	59	229
2009	13.3	75	49	74
2010	13.8	119	52	115
2011	13.0	88	38	88

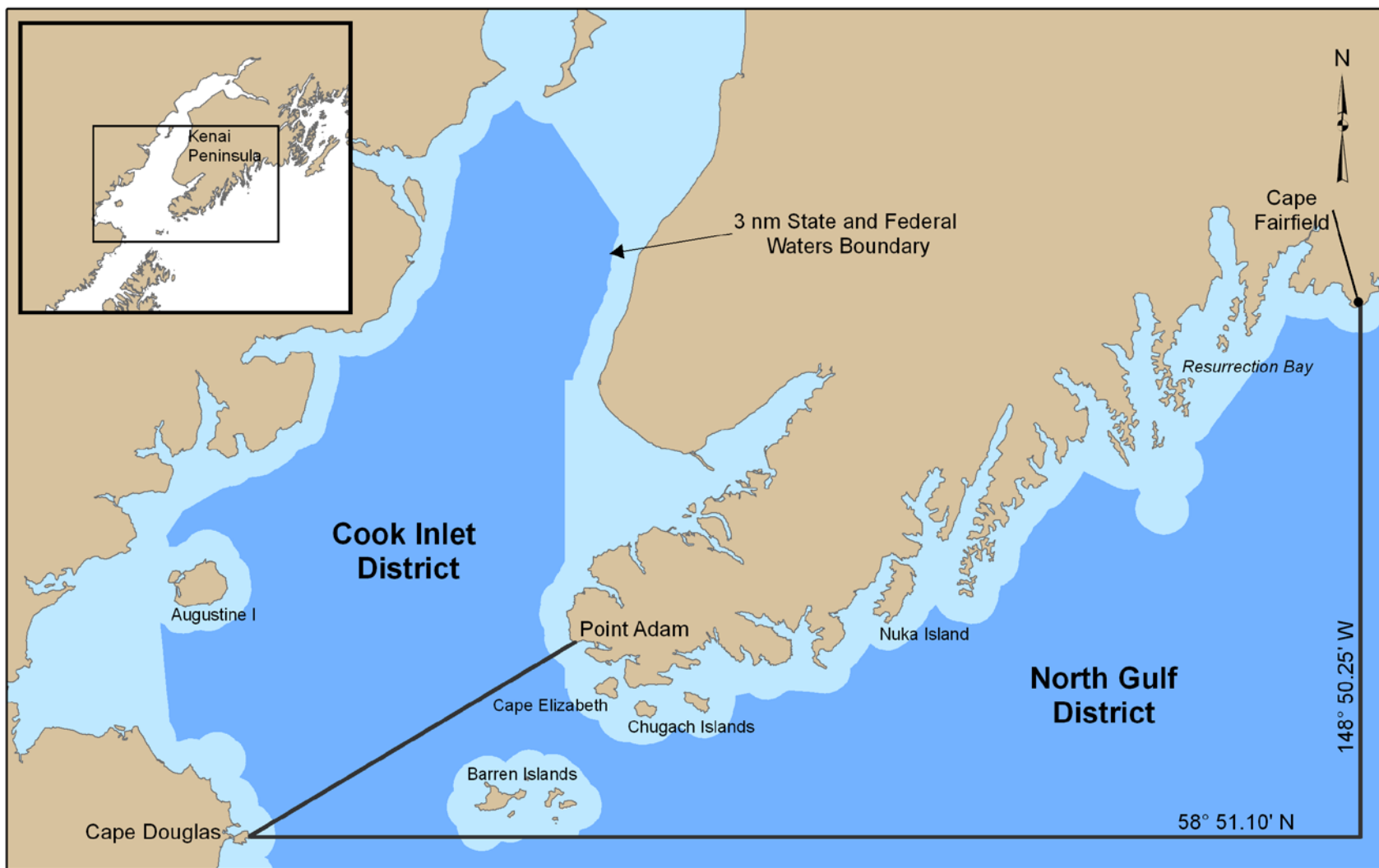


Figure 1.—Cook Inlet Management Area commercial groundfish area and district boundaries from 1997 to present.

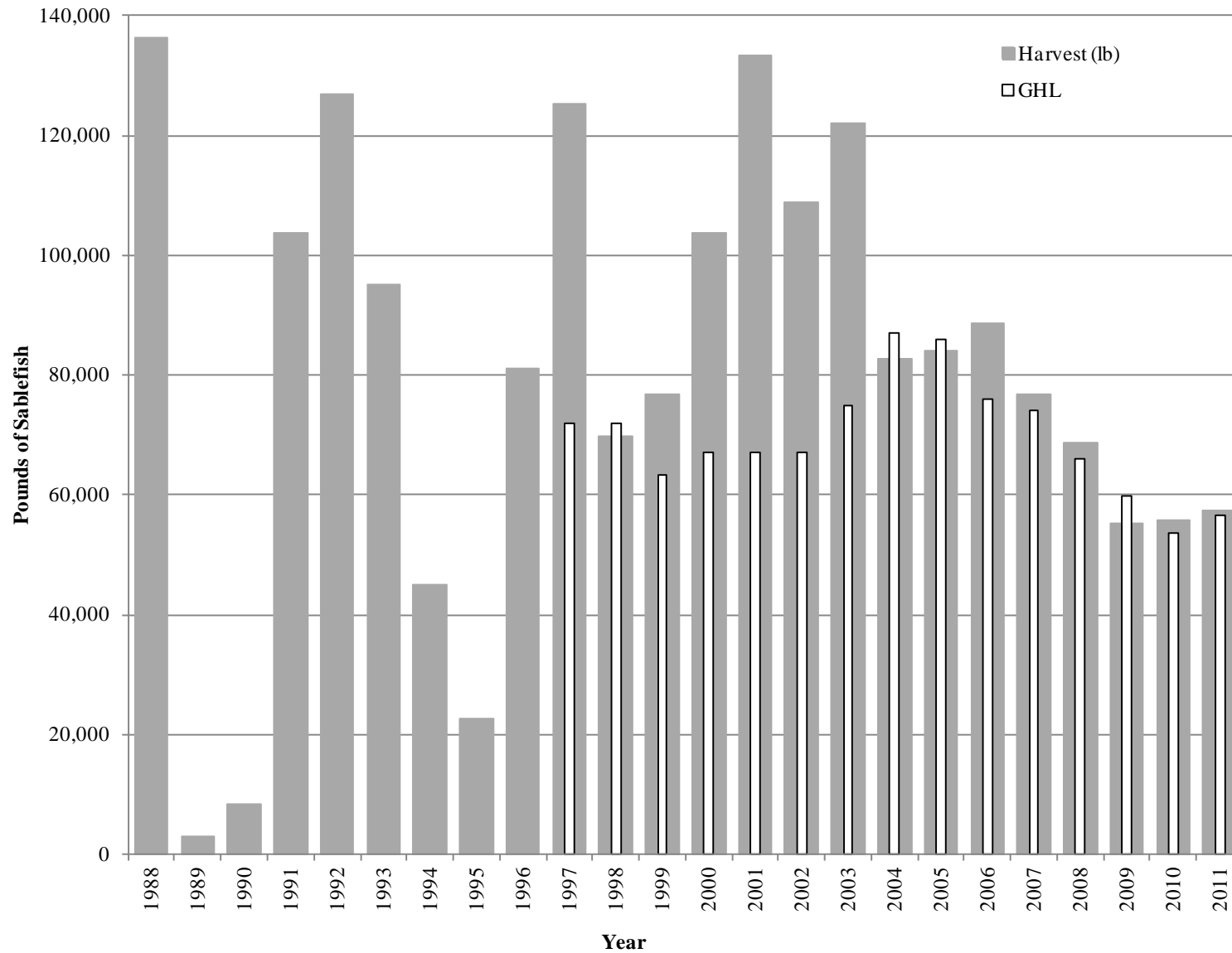


Figure 2.—Cook Inlet sablefish harvest and guideline harvest level (GHL), 1988–2011.

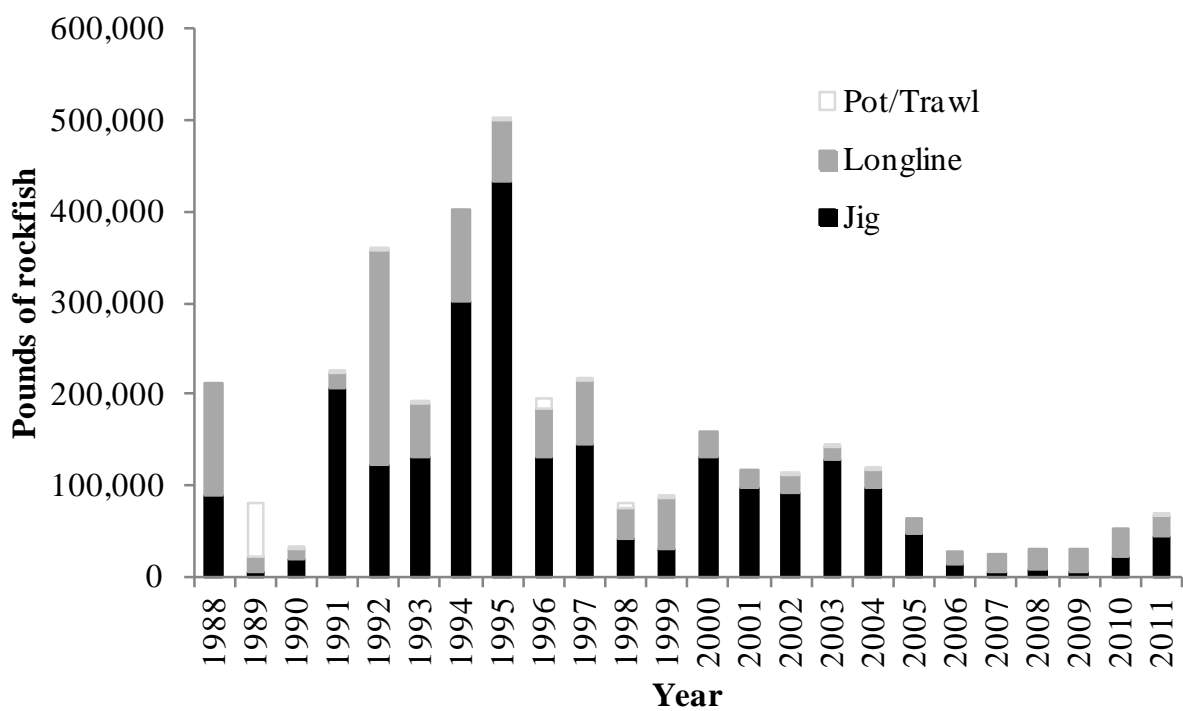
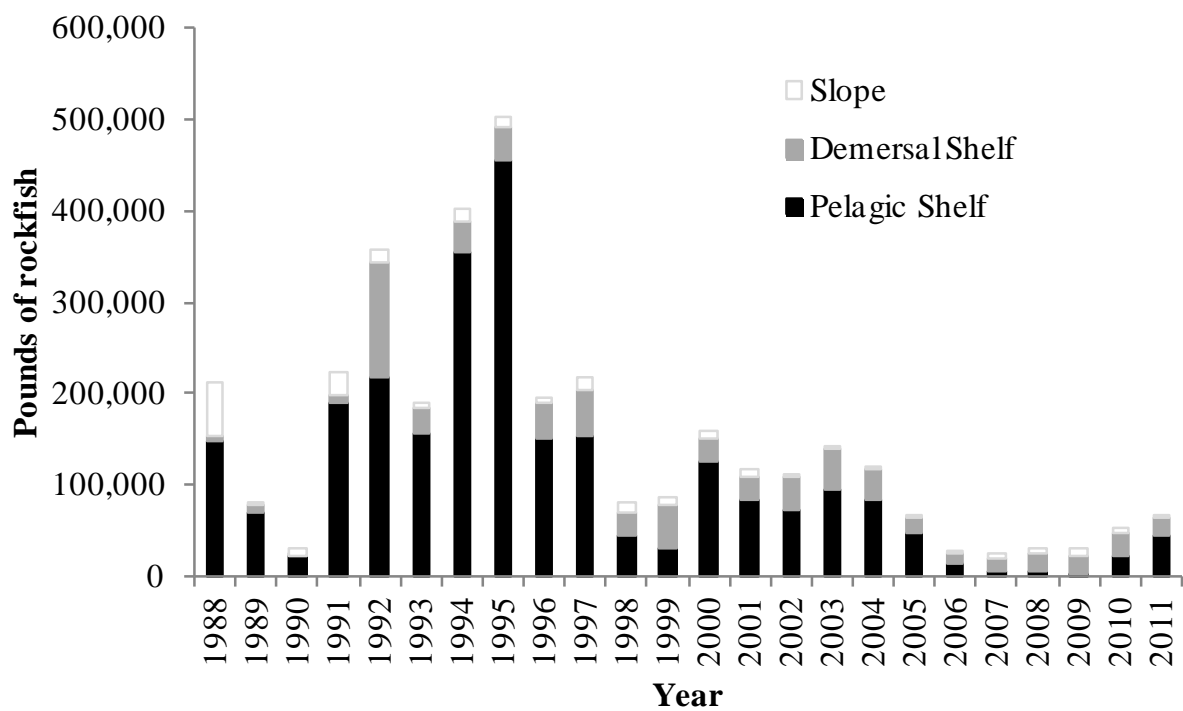


Figure 3.—Cook Inlet Area commercial rockfish harvest contribution by rockfish species assemblage and gear type, 1988–2011.

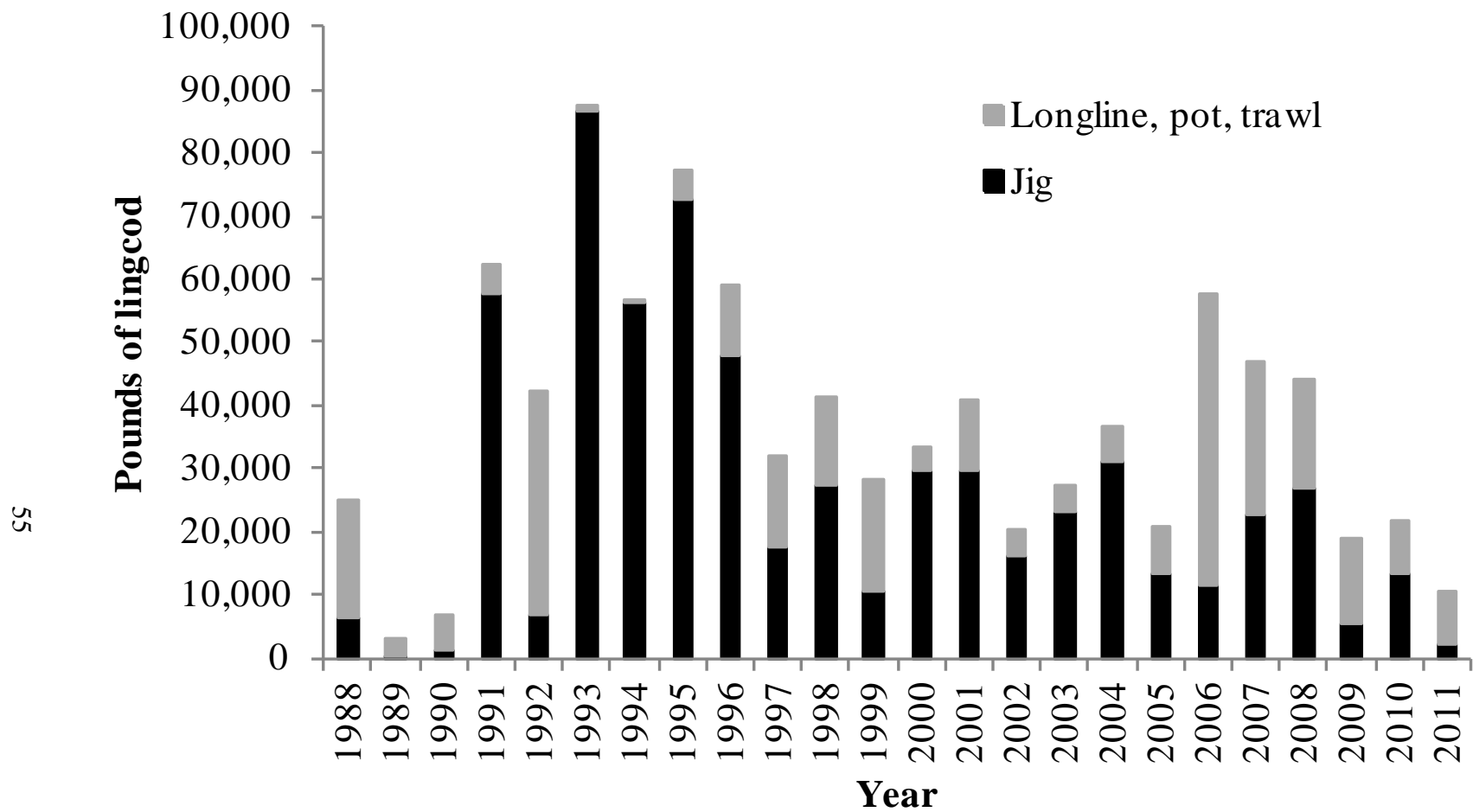


Figure 4.—Cook Inlet Area lingcod harvest by gear type, 1988–2011.

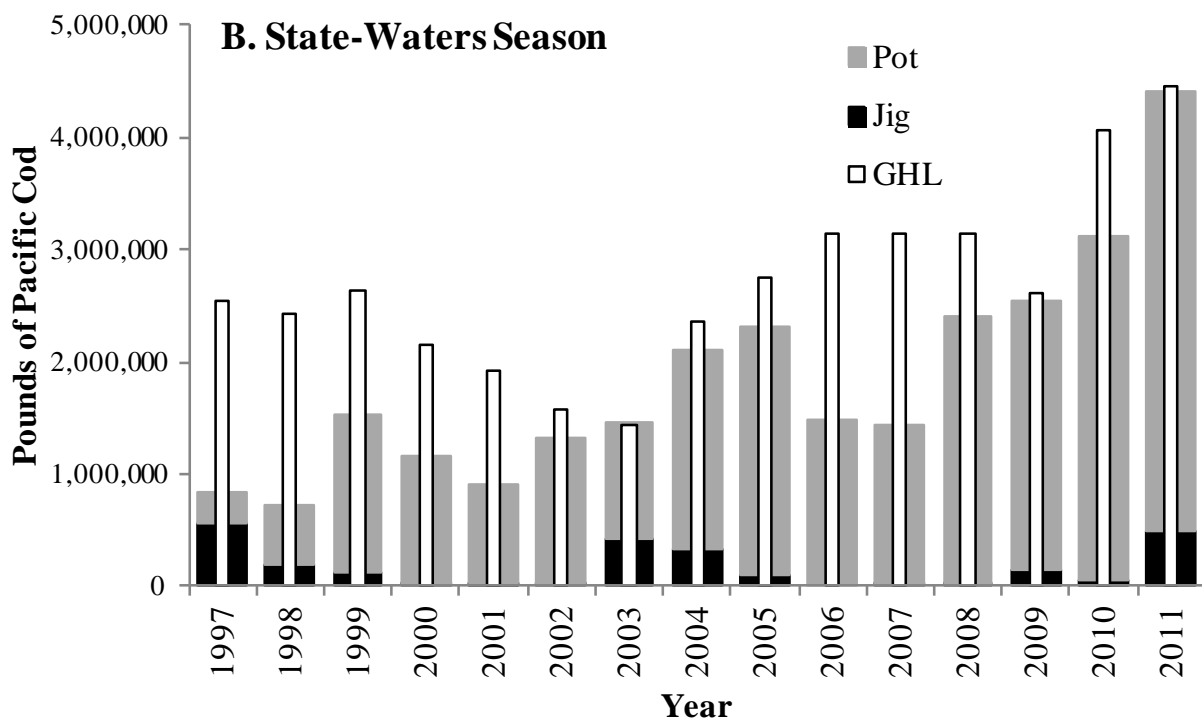
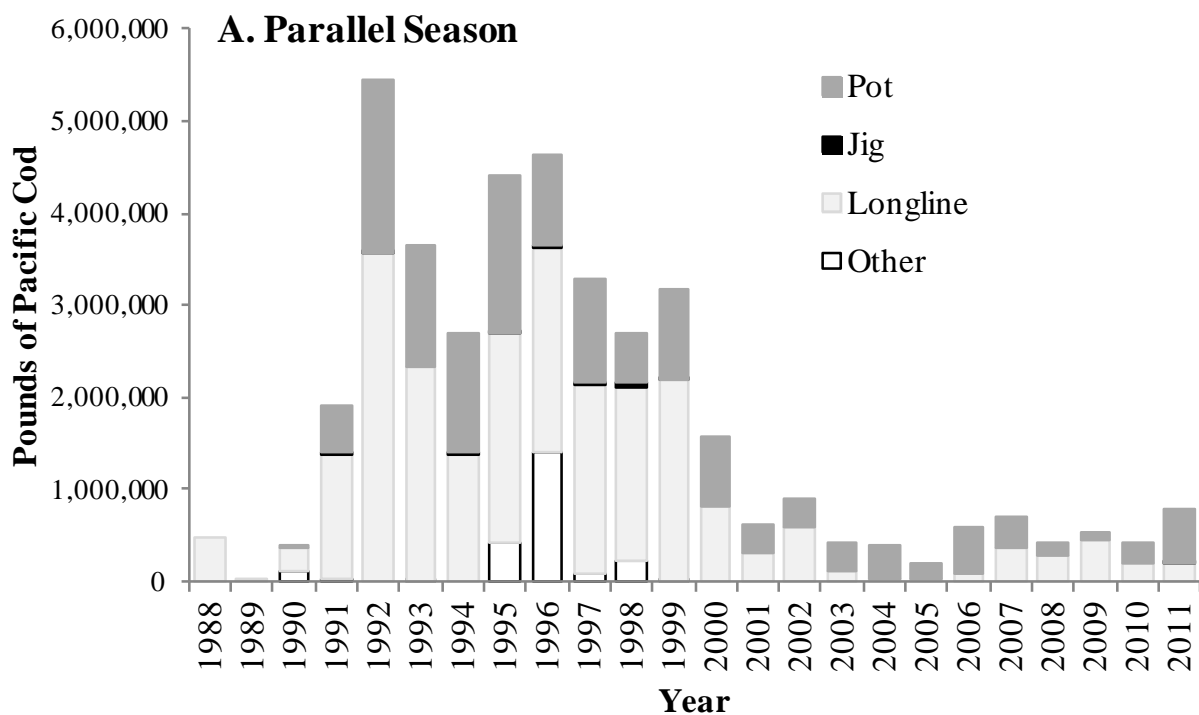


Figure 5.—Cook Inlet Area parallel (A) and state-waters (B) seasons Pacific cod catch by gear type and the state-waters seasons guideline harvest level (GHL), 1997–2011; confidential data is excluded.

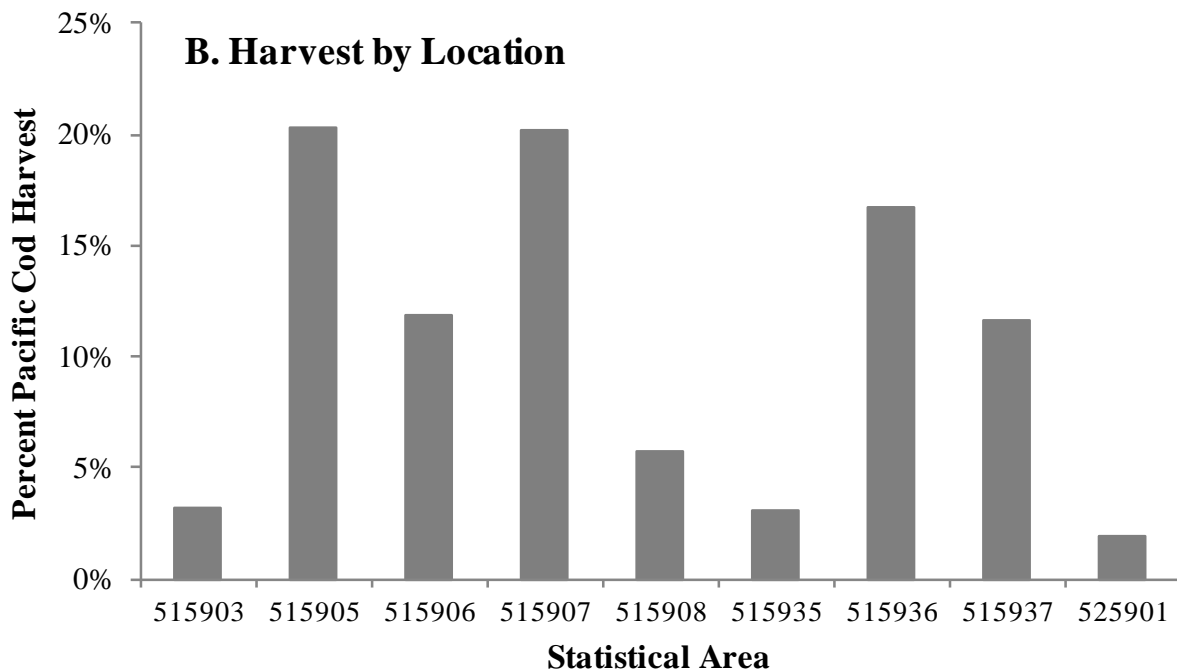
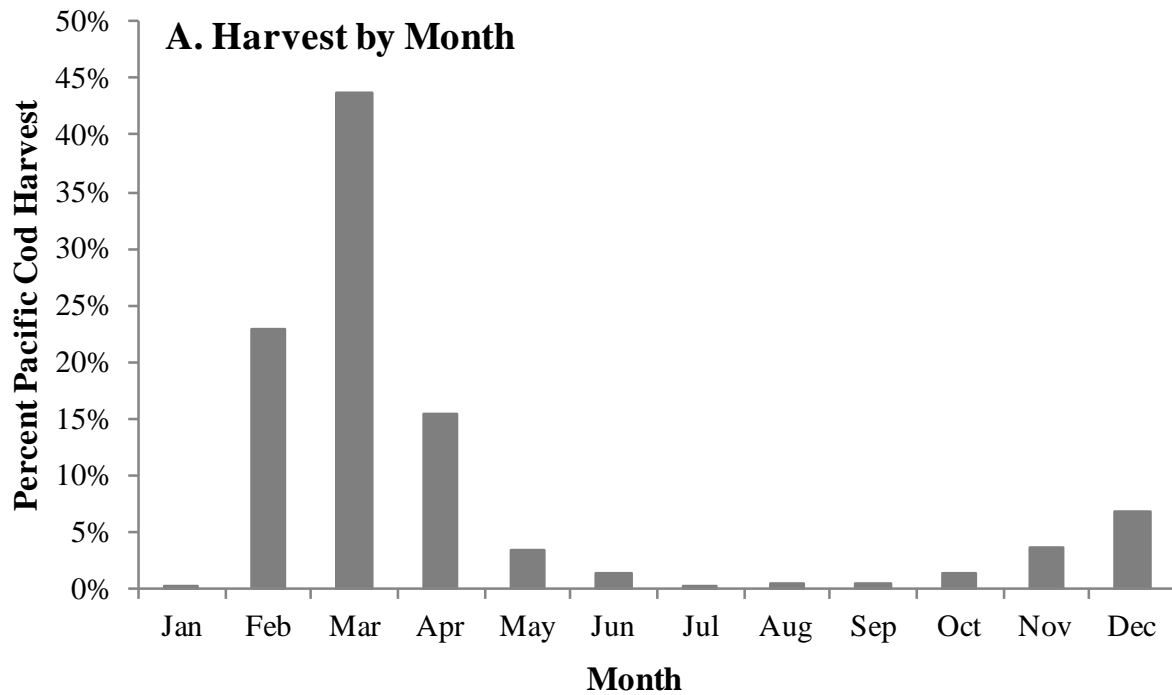


Figure 6.—Cook Inlet state-waters season Pacific cod harvest percent contribution by month (A) and dominant statistical areas (B), 1997–2011 combined.

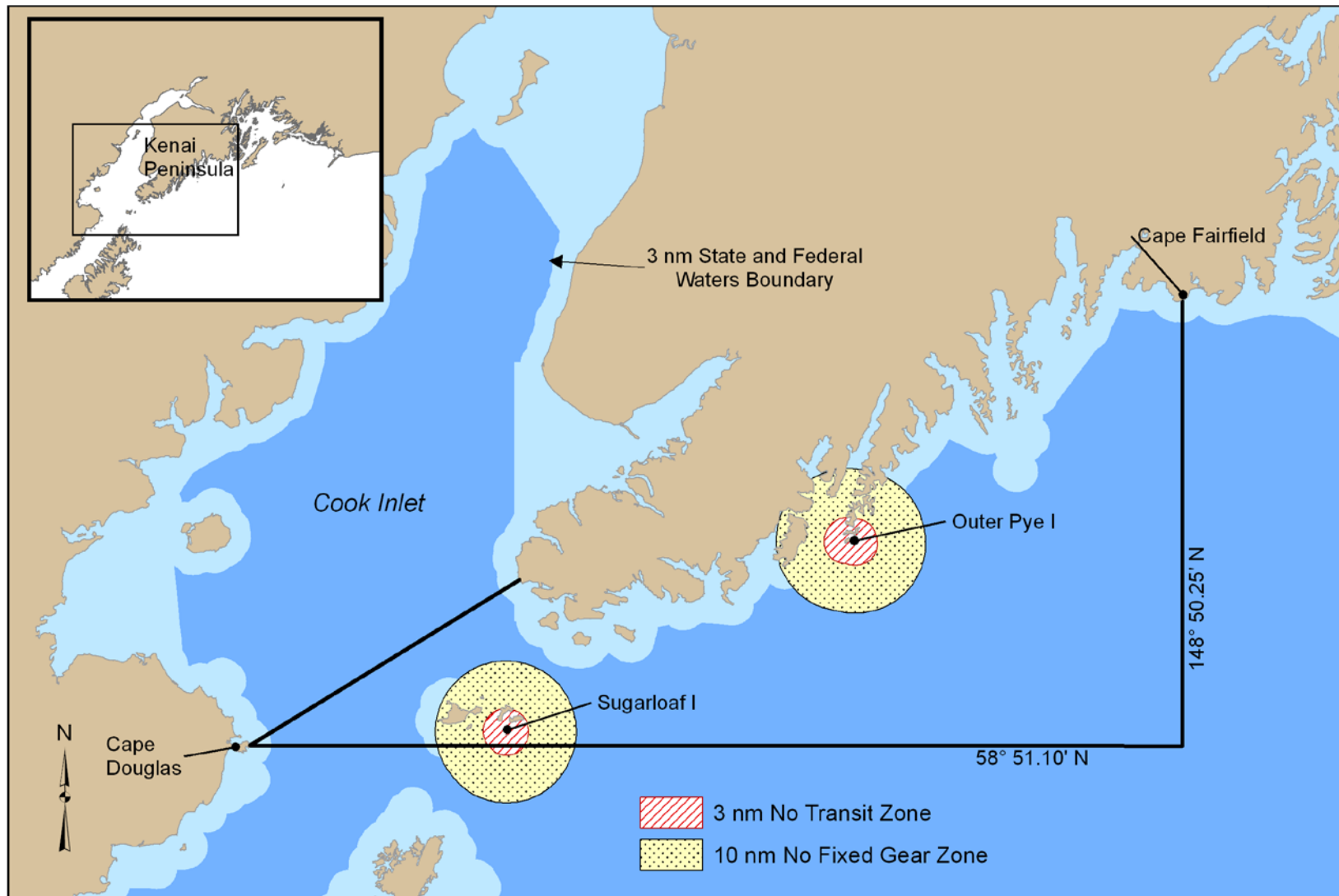


Figure 7.—Vessel no-transit and fixed gear Pacific cod fishing closure zones around Steller sea lion rookeries within the Cook Inlet Management Area.

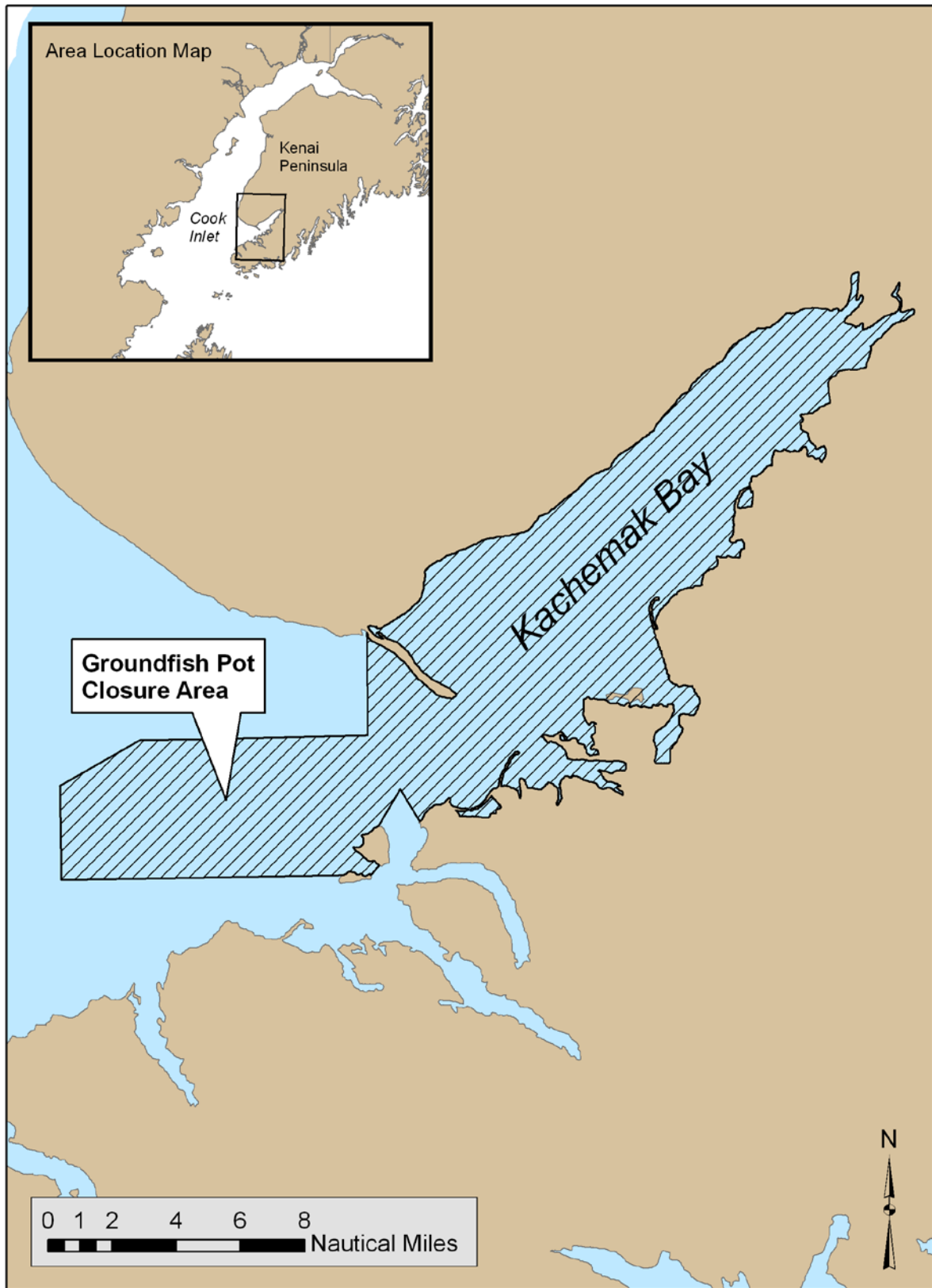


Figure 8.—Kachemak Bay groundfish pot closure area.

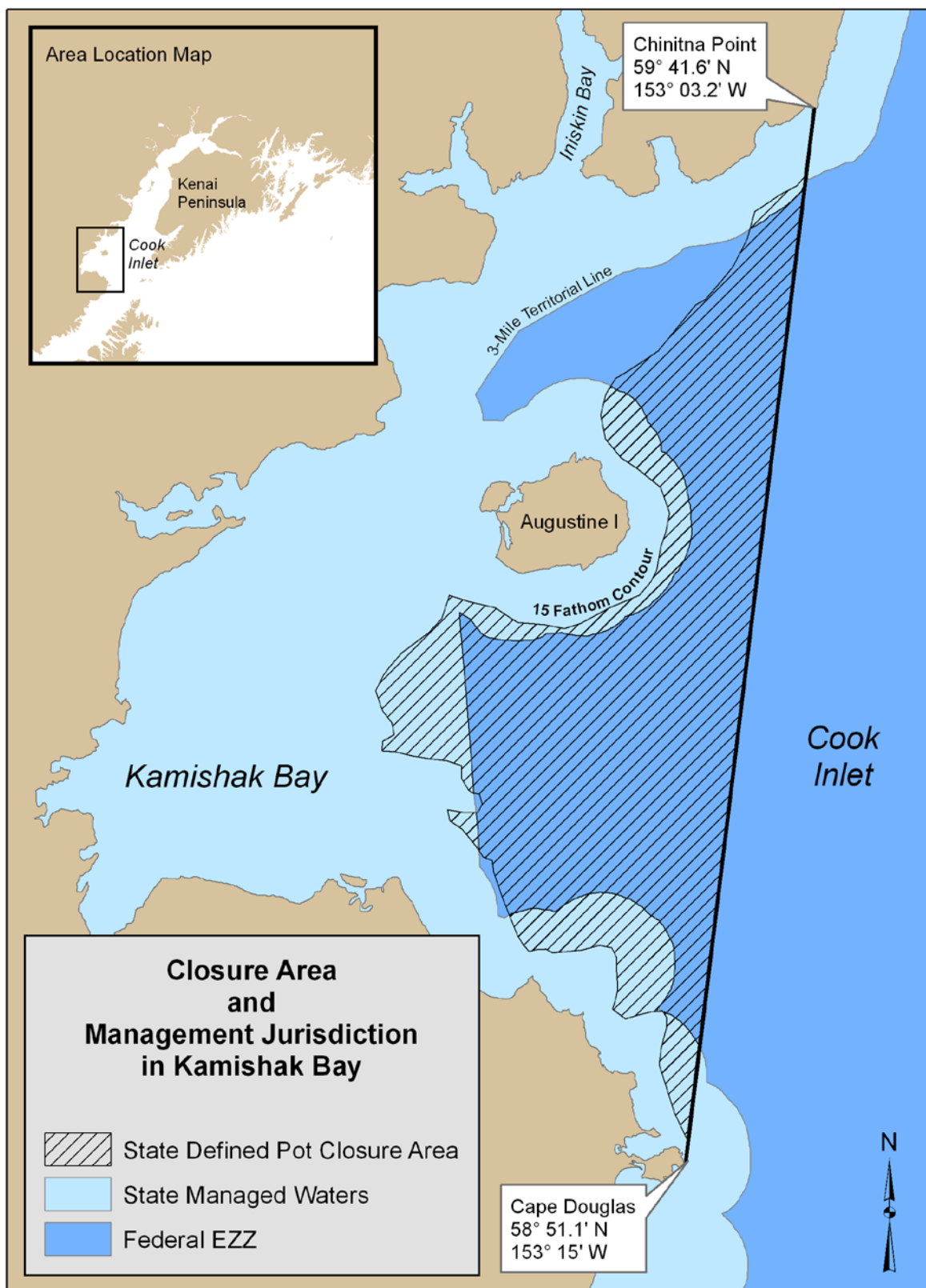


Figure 9.—Kamishak Bay groundfish pot closure area.

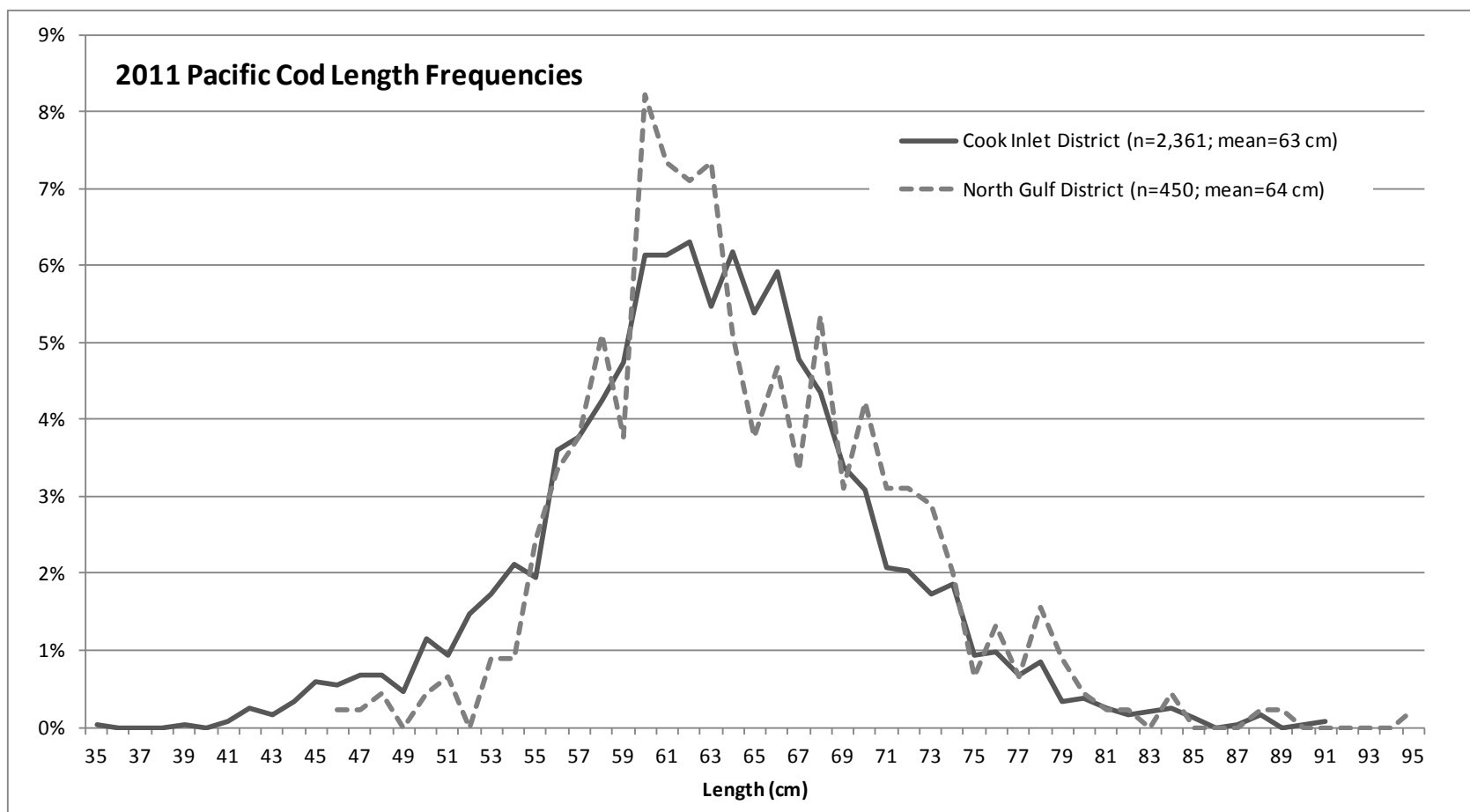


Figure 10.—Pacific cod length frequency distribution for Cook Inlet and North Gulf districts, 2011.

APPENDIX A.

Appendix A1.–Frequently used acronyms and key words.

Acronym	Definition
ABC	Acceptable biological catch, stock specification as set annually by the NPFMC.
ADF&G	Alaska Department of Fish and Game
BOF	The Alaska Board of Fisheries
CGOA	Central Gulf of Alaska; management areas 620 and 630
EGOA	Eastern Gulf of Alaska; management area 640
EEZ	Exclusive economic zone; from 3 to 200 nautical miles offshore
EO	Emergency order, management action taken by ADF&G to effect regulatory change
GHL	Guideline harvest level
GOA	Gulf of Alaska
mt	Metric tons (equal to 2,204.62 pounds)
nmi	Nautical mile (equal to 6,076 feet)
NMFS	National Marine Fisheries Service
NPFMC	North Pacific Fishery Management Council
Parallel fishery	State waters from 0 to 3 nautical miles opened via EO but with the same gear and seasons that apply to the federal fishery in the adjacent EEZ
State waters	Territorial sea from shore to 3 nautical miles offshore
State-waters fishery	Fishery occurring from shore to 3 nautical miles, open under state rules and managed exclusively by ADF&G
TAC	Total allowable catch, final federal harvest specification as recommended by NPFMC and set by NMFS