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Review of Prince William Sound Management Area Groundfish Fisheries, 2008; a Report to the Alaska Board of Fisheries

by

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and

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

Symbols and Abbreviations

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

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

Mathematics, statistics

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

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The Special Publication series was established by the Division of Sport Fish in 1991 for the publication of techniques and procedures manuals, informational pamphlets, special subject reports to decision-making bodies, symposia and workshop proceedings, application software documentation, in-house lectures, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Special Publications are intended for fishery and other technical professionals. Special Publications are available through the Alaska State Library, Alaska Resources Library and Information Services (ARLIS) and on the Internet: http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm. This publication has undergone editorial and peer review.

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ABSTRACT

The Alaska Department of Fish and Game (ADF&G) Division of Commercial Fisheries manages commercial groundfish fisheries within Prince William Sound Registration Area E that includes territorial waters of Alaska from Cape Sucking at 144°00' W. longitude to Cape Fairfield at 148°50.25 W. longitude. Harvests of sablefish *Anoplopoma fimbria*, walleye pollock *Theragra chalcogramma*, lingcod *Ophiodon elongatus* and Pacific cod *Gadus macrocephalus* are managed on a season basis for specific guideline harvest levels (GHL). Rockfish species (genera *Sebastes and Sebastolobus*) are managed collectively as bycatch to other directed fisheries. The harvest of miscellaneous groundfish species including flatfish, sharks, skates, as well as octopus and squid, are also landed incidental to other directed groundfish fisheries. ADF&G also has management authority of lingcod and black rockfish *Sebastes melanops* in federal waters of the exclusive economic zone (EEZ) from 3–200 nmi offshore. The 2008 groundfish harvest through September 30 has totaled 1.85 million lb. The total pollock harvest was 1.39 million lb or 38% of the 3.6 million lb GHL. The directed sablefish harvest of 199,924 lb is 82% of the 242,000 GHL and is within 95% of the recent 5-year-average harvest. The rockfish harvest of 101,705 lb and lingcod harvest of 39,829 lb have increased compared to that of recent years while the Pacific cod harvest of 70,292 lb is considerably reduced from recent years. Sablefish generated the highest exvessel value based upon a round weight dock price of $2.52/lb and walleye pollock generated the second highest exvessel value based upon a round weight dock price of $0.15/lb. The combined value of the sablefish and pollock harvest is $0.71 million or 84% of the total value of the groundfish harvest through September.

Key words: Prince William Sound, Registration Area E, commercial fisheries, groundfish, Pacific cod, *Gadus macrocephalus*, walleye pollock, *Theragra chalcogramma*, Sablefish, *Anoplopoma fimbria*, lingcod, *Ophiodon elongatus*, rockfish, *Sebastes melanops*, squid, *Beryteuthis majister*, Pacific sleeper shark *Somniosus pacificus*, salmon shark, *Lamna ditropis.*

INTRODUCTION

This report describes the commercial groundfish fisheries managed by Alaska Department of Fish and Game (ADF&G) in the Prince William Sound (PWS) Management Area through September 2008 and the outlook for the 2009 season. State managed fisheries for rockfish, walleye pollock *Theragra chalcogramma*, Pacific cod *Gadus macrocephalus*, sablefish *Anoplopoma fimbria*, lingcod *Ophiodon elongatus*, and miscellaneous groundfish species will be discussed. Because the state accepted management authority for black rockfish *Sebastes melanops* and lingcod in adjacent federal waters of the exclusive economic zone (EEZ) in 1998, harvests of these species are also included. Miscellaneous groundfish species are reported, including sharks, skates, flatfish, sculpin, and greenling that are harvested as bycatch in other directed fisheries and identified on fish tickets. Finally, other non-groundfish bycatch of significance, including salmon, octopus, and squid is summarized.

Boundaries of the PWS Area have been adjusted several times since 1996. These changes primarily affected rockfish and lingcod management and are described in those sections. The PWS Area currently encompasses waters of Alaska from 144°00′ W. longitude, near Cape Suckling, to the longitude of Cape Fairfield at 148°50.25′ W. longitude (Figure 1). The area is divided into the Inside and Outside Districts. The Inside District is waters enclosed by lines from Point Whitshed to Point Bentinck, from Cape Hinchinbrook to Zaikof Point, and from Cape Cleare to Cape Puget. The Outside District, comprised of the Gulf of Alaska waters 0-3 miles from shore, is divided into the Western and Eastern Sections. The Western Section includes waters between Cape Fairfield and 147°00′W. longitude and the Eastern Section includes waters between 147°00′ W. longitude and 144°00′ W. longitude.

Regulations restrict legal gear types for groundfish to longline, pelagic trawl, hand troll, seine, mechanical jigging machine, dinglebar troll, and pots. Although area regulations restricted non-pelagic trawl gear in 1997, shrimp trawl vessels may retain groundfish bycatch not to exceed 10% of the gross weight of the landed shrimp. In addition, there is a single bottom trawl permit in the limited entry sablefish fishery. Area regulations also allow groundfish bycatch taken in the salmon gillnet fishery to be retained at specified levels.

In 2001, the Alaska Board of Fisheries (BOF) adopted regulations giving the commissioner authority to close fishing areas to protect endangered Steller sea lions. This action complemented National Marine Fisheries Service (NMFS) closures at two locations in the Outside District. All groundfish fishing was closed within 3 nm of Seal Rocks in Hinchinbrook Entrance and Wooded Island along outer Montague Island (Figure 2).

ROCKFISH

PROPOSAL 21

BACKGROUND

Rockfish (genera *Sebastes* and *Sebastolobus*) are categorized into pelagic shelf, demersal shelf, and slope species assemblages defined in regulation 5 AAC 39.975. Pelagic shelf rockfish are usually associated with near shore, rocky reef areas, may exhibit a midwater schooling behavior, and are often harvested in directed fisheries with mechanical and hand jig gear. Pelagic shelf species common to PWS include black *S. melanops*, dusky *S. ciliatus*, and yellowtail *S. flavidus* rockfishes (Bechtol 2000). Demersal shelf rockfish are also associated with rocky, reef areas, but tend to be bottom dwelling and often occur at greater depths than pelagic shelf species. Yelloweye *S. ruberrimus* and quillback *S. maliger* rockfishes are common demersal shelf species in PWS and are most likely to be taken with longline gear. Slope rockfish include any rockfish not specified as either demersal shelf or pelagic shelf rockfish. Slope rockfish are typically found near the bottom in waters deeper than 200 meters and therefore are most likely to be taken with longline gear. Common slope species in PWS include rougheye *S. aleutianus*, shortraker *S. borealis*, and thornyhead *Sebastolobus* spp. rockfishes.

Rockfish were not actively managed in PWS prior to 1989 and seasons remained open all year. From 1989 through 1991, rockfish seasons were set by emergency order to coincide with NMFS inseason adjustments for the federal Central Gulf of Alaska Regulatory Area (CGOA). Favorable market conditions, in conjunction with lengthy seasons in adjacent federal waters, resulted in large annual harvests from PWS. Following dramatic increases in rockfish harvests, the BOF adopted the PWS Rockfish Management Plan (5AAC 28.265) in 1992. Original provisions of the management plan included a 150,000 lb guideline harvest level (GHL) for all rockfish species with a trip limit of 3,000 lb within a 5-day period, and a 20% bycatch allowance once the directed fishery closed. The PWS rockfish directed season opening date remained January 1.

When the management plan was adopted, PWS was defined to include only that area currently described as the Inside District, and the GHL was based on mean annual harvests (Bechtol 1992). In 1996, the BOF redefined the PWS Area for groundfish management to include waters from Cape Fairfield to Cape Suckling. The BOF also amended the management plan to reduce

overall rockfish harvests by making the 150,000 lb GHL a harvest cap. In 1997, the management area was further expanded to include waters from Cape Suckling to 140 00'° W. longitude, near Yakutat and in 1998 the State of Alaska accepted management authority for black rockfish in adjacent EEZ waters (DiCosimo et al. 2000). Finally, in January 2000, the eastern PWS boundary was moved to the current location at 144°00' W. longitude. Despite these changes in the size of the management area, the magnitude of the rockfish GHL remained unchanged.

Following adoption of the 150,000 lb rockfish harvest cap, ADF&G managed the fishery by identifying a harvest level at which the directed fishing season closed with the balance of the GHL allocated to a subsequent bycatch only fishery. However, assignment of a directed fishery harvest level proved problematic due to the uncertainty in projecting bycatch needs for other directed fisheries. In setting a directed rockfish harvest level, ADF&G was placed in the role of allocating rockfish harvest between directed and bycatch fisheries. In addition to the directed rockfish fishery, rockfish were taken as bycatch in fisheries for Pacific cod, halibut *Hippoglossus stenolepis*, sablefish, walleye pollock, and lingcod. Beginning in 1997, ADF&G used emergency orders to set rockfish bycatch at 10% of the gross round weight of all delivered groundfish species. Subsequently, ADF&G increased the rockfish bycatch level to 20% for the 1998 and 1999 PWS sablefish fisheries to accommodate demonstrated bycatch levels.

The BOF again amended the Prince William Sound Rockfish Management Plan (5 AAC 28.265) in 2000. Current regulations for the fishery include:

1) 150,000 lb harvest cap for all rockfish species combined,
2) a bycatch-only fishery with mandatory full retention of all rockfish bycatch,
3) bycatch allowances of 20% to sablefish, 5% to state waters Pacific cod, and 10% to all other groundfish and halibut, and
4) proceeds from the sale of bycatch overages accrue to the State of Alaska.

Rockfish harvests from PWS from 1988–2000 ranged from 71,987 lb in 1999 to 506,468 lb in 1990 (Table 1). Annual rockfish harvests in the Inside District during 1988–2000 ranged from 60,539 lb in 1999 to 489,154 lb in 1990. The peak harvest in 1990 was attributed to market conditions that encouraged targeting of rockfish. Historically, the majority of the harvest from the Inside District was comprised of rougheye and shortraker rockfishes harvested by longline gear. From 1988–2000, annual rockfish harvest in the Outside District ranged from 2,762 lb in 1991 to 313,489 lb in 1988. The harvest of 228,417 lb of rockfish by trawl gear in 1988 was mostly black rockfish (Table 2). However, catch composition in the Outside District varied by species assemblage and gear type. The predominant harvest component from 1993–1997 was pelagic shelf species and demersal shelf species during 1998–2000. The relatively high harvests during 1994–1996 are attributed to misreporting during periods when the directed fishery in state waters was closed but adjacent federal waters remained open.

Rockfish harvests have declined since elimination of the directed rockfish fishery in 2000. From 2001–2007, Inside District harvests ranged from 35,240 lb in 2003 to 67,242 lb in 2002 and Outside District harvests ranged from 7,369 lb in 2002 to 15,282 lb in 2007. Low or no participation in recent years by vessels fishing longline gear in the parallel Pacific cod fishery explain a portion of the reduction in rockfish harvest.

2008 SEASON SUMMARY

The commercial harvest for all rockfish species through September 2008 was 101,705 lb (Table 1). Harvest from the Inside District totaled 87,671 lb from 148 landings by 57 vessels. Outside District harvest totaled 14,034 lb from 44 landings by 15 vessels. ADF&G sampled PWS rockfish dockside during 2008. Most rockfish were sampled during the PWS sablefish, lingcod, and halibut IFQ fisheries. Yelloweye rockfish was the predominant rockfish species sampled (n=142) as bycatch to the halibut IFQ and directed lingcod fisheries. Shortraker rockfish was the predominate species sampled (n=45) during the sablefish fishery. Samples of thornyhead and rougheye rockfishes totaled 42 and 34 respectively.

2008 MANAGEMENT OUTLOOK

ADF&G will continue to monitor rockfish harvest, conduct stock and habitat assessment projects, encourage adherence to the full retention and reporting requirements for rockfish bycatch, and attempt to achieve catch-sampling goals by maintaining close contact with the industry.

PACIFIC COD

PROPOSALS 34, 35, 36, 37, 38, AND 39

BACKGROUND

Pacific cod fisheries in the PWS Area are managed under the PWS Pacific Cod Management Plan (5AAC 28.267), which provides for two seasons, the parallel season and the state waters season.

Statewide regulations for groundfish pots specify a tunnel eye perimeter not to exceed 36 inches and a biodegradable escape panel in the pot wall. Area regulations specify a groundfish pot closure area in waters of eastern PWS and in waters greater than 75 fathoms deep in Hinchinbrook Entrance.

PARALLEL FISHERY

The commercial Pacific cod fishery in state waters was historically regulated via emergency order to coincide with inseason adjustments to the adjacent federal CGOA fishery. The fishery was adopted into regulation in 1996, defined as a “parallel season”, and was open to longline, pot, and jig gears. Early seasons spanned January 1 to approximately mid-March and more recently have shortened to approximately 2 months in duration. During 1997–1999, NMFS reopened Pacific cod for a second directed fishing period in September or October. These were typically short openings ranging from 4 days to 5 weeks in duration. In 2001 NMFS began managing Gulf of Alaska Pacific cod in a split season allocating 60% to an “A” season that opened January 1 and 40% to a “B” season that opened September 1. Beginning in 2001, a regulation restricted the parallel season to the initial, or A season, fishing period unless the state waters Pacific cod GHL had been achieved or unless other regulatory criteria applied. A 20% bycatch allowance was in place during Pacific cod parallel season closures. In 2007 and 2008 when the “B” season opened, ADF&G reopened parallel Pacific cod season under subsection (d) of the plan. The 2007 fall season remained open through December 31. In 2008 the parallel season dates were January 1–February 20 and September 1–October 3.

Since 1988, annual catch and effort in the parallel Pacific cod fishery ranged from 11,204 lb from 38 landings by 24 vessels in 2005 to 2.2 million lb from 234 landings by 88 vessels in 1991 (Table 3). Peak harvests occurred during 1990–1995 and averaged 1.7 million lb annually. From 1996–2000, harvests declined to less than 1.0 million lb in all years except 1999, when the harvest totaled 1.3 million lb. Prior to 1990, nearly all Pacific cod was harvested by longline gear. Following expansion of the pot fishery for Pacific cod in 1991, the proportion harvested by pot gear increased to a high of 83% in 1994. Overall harvest since 2001 has declined 76% with longline gear accounting for the majority of the parallel fishery Pacific cod harvest. The 2006 and 2007 parallel seasons were open 59 and 180 days respectively. The Pacific cod harvest during these seasons totaled 18,994 lb in 2006 and 80,417 lb in 2007 and occurred predominantly as bycatch to other directed groundfish and halibut fisheries throughout the year. The decline in parallel season catch and effort can be attributed to a variety of biological and economic factors such as shortened season, loss of yelloweye rockfish harvest opportunity due to restructuring of the PWS rockfish fishery to a bycatch-only fishery, high exvessel prices for halibut and sablefish relative to Pacific cod, and increased fixed costs.

STATE WATERS FISHERY

The state waters Pacific cod season was adopted by the BOF in October 1996 to provide a Pacific cod harvest opportunity, with low halibut bycatch, by local fleets following closure of the parallel season. Current elements of the PWS state waters Pacific cod fishery include:

1) Open by emergency order 7 days following closure of the federal CGOA season ;
2) GHL calculated as 10% of the total allowable harvest of Pacific cod for the federal Eastern Gulf of Alaska Regulatory Area (EGOA);
3) Pot closure when 60% of the GHL is reached, or December 31;
4) State season applies only to the Inside District and the Western Section of the Outside District;
5) PWS is an exclusive registration area for Pacific cod;
6) Gear limits are 5 jigs or 60 pots with a pot buoy tag requirement; and
7) Rockfish bycatch limited to 5% when directed fishing for rockfish is closed.

Harvest and GHL have varied inversely in the PWS state waters Pacific cod fishery. For example, the fishery harvested almost half of a 0.9 million lb GHL in 1998 and declined to 228 lb of a 2.62 million lb GHL in 2001 (Table 3). The disparity between harvest and GHL is the result of a decline in Pacific cod fishing effort and an increase in Pacific cod allowable harvest in the EGOA. Although the pot limit and exclusive area registration requirement were relaxed on October 31 each year, as stipulated in the management plan, these changes had no apparent effect on the fishery. Pot gear harvested up to 75% of the pot allocation in the early years, peaked at 385,817 lb in 1998 and declined to zero in 2001. Jig harvest peaked in 1999 at 79,147 lb.

In 2003, the BOF reduced the PWS state waters Pacific cod GHL from 25% to 10% of the estimated total allowable harvest of Pacific cod for the EGOA and provided for the allocation to subsequently increase to 15% and then 25% following years when the allocation is harvested. Reducing the regulatory allowance for Pacific cod aligned industry expectations with past fishery

performance. Providing for an incremental percentage increase was also consistent with the initial structure of other state waters Pacific cod fisheries.

Harvest totals of Pacific cod in the state waters fishery from 2003 through 2006 are confidential due to the low number of participants and although harvest totals have approached 45% of the GHL during one year, collectively they have averaged less than 25% of the combined GHL's. The 2007 harvest was 345,684 lb or 38% of the 911,000 lb GHL from 20 landings by 3 vessels.

2008 SEASON SUMMARY

The 2008 parallel Pacific cod season was open January 1–February 20 and September 1–October 3. The harvest total in the parallel season, which also includes bycatch to other directed groundfish and halibut fisheries, totaled 63,654 lb from 71 landings by 33 vessels and primarily occurred by vessels fishing longline gear (Table 3).

Due to the sporadic nature of these landings, opportunities for commercial catch sampling of Pacific cod were limited and sampling goals were not achieved.

The state waters season opened on February 27 with a GHL of 944,460 lb. The state waters season closed on September 1 to accommodate the parallel fishery but opened again on October 4. The season through September totaled 7,297 lb from 5 landings by 3 vessels.

2009 MANAGEMENT OUTLOOK

The parallel Pacific cod fishery will open January 1 and is expected to close in late February. The GHL for the state waters fishery will be announced after the Pacific cod harvest allocation for the EGOA is established. The state waters Pacific cod fishery will open seven days following closure of the parallel fishery. Fishing effort for Pacific cod in PWS is expected to remain at a low level.

SABLEFISH

PROPOSALS 29, 30, AND 31

BACKGROUND

The PWS sablefish fishery developed in the late 1970's in response to increased sablefish value and declines in shrimp and crab fisheries (Bechtol and Morrison 1997). Most sablefish harvests historically occurred in the Inside District. However, Outside District catches comprised almost 20% of the total harvest in some years (Table 4). Regulations have restricted the fishery to the Inside District since 1997. Most of the Inside District fishing effort has concentrated in a deep water trench between Lone Island and the Naked Island group (Figure 3). Other harvest areas include Port Wells, Knight Island Passage, and the deeper waters of central PWS near the tanker traffic lane.

Early sablefish management included a commissioner's permit requirement and a 242,000 lb GHL, approximately equal to the midpoint of a 97,000–385,900 lb guideline harvest range (GHR) derived from a yield-per-habitat model (Bechtol and Morrison 1997). From 1987 to 1992, PWS sablefish seasons opened concurrently with sablefish seasons in federal waters of the CGOA and closed by emergency order when the state waters GHL was attained. From 1993 to 1995, ADF&G staff established the duration of the fishing period based on the GHL, the projected number of participants, and past fishery performance. As effort and efficiency of the

PWS fleet increased, fishing seasons became more restrictive. Seasons were comprised of 1 or 2 fishing periods with total fishery duration ranging from 96 hours in 1993 to 48 hours in 1995. A season opening date of May 1 was first effective in 1997.

To facilitate fishery enforcement, emergency orders adjusted fishing periods for daylight openings and closures and restricted fishing for groundfish and with groundfish gear before and after the sablefish season. Closures prior to and after the fishery were of 120 and 24 hours in 1995, 72 and 48 hours in 1997, and 48 and 24 hours in the following years. ADF&G monitored the fishery on the grounds aboard the *R/V Montague*. Working with the Department of Public Safety, Division of Fish and Wildlife Protection (DPS/DFWP) staff, vessels were boarded prior to the fishery to verify the permit holder was aboard with all necessary licenses and permits. To the extent practical, fish holds were also inspected.

In 1996, the Commercial Fisheries Entry Commission (CFEC) adopted a limited entry program for the PWS sablefish fishery that established 4 vessel size classes (90, 60, 50, and 35 feet) and 2 gear classes, fixed (longline and pot gear) and net (trawl) gears (Muse et al. 1995). Based on the qualifying years 1991 to 1994, the program established a target of 49 permanent permits. The process of awarding permanent PWS sablefish permits is ongoing. Interim use permits were issued to individuals pending final adjudication. The 61 eligible permit holders in 2008 included 46 permanent permits and 17 interim use permits, comprised as 61 fixed gear permits and 1 trawl permit. More recently, the CFEC advised the board that the target number of permits could be increased to 59.

Despite adoption of the limited entry program, increased competition produced notable changes in fishing practices during 1997–2002. Increased fishing intensity resulted in shorter season duration and gear conflicts. These latter were typically related to tangled longlines and vessel crowding and resulted in lost gear when ground lines were parted. Minimum estimates of lost gear during this period ranged from 6,570 hooks in 1999 to 45,365 in 2002 (Table 5; Figure 4). Another source of "lost" gear was from ground lines that were cut when vessels set more gear than could be effectively retrieved in the fishing period. Sablefish and other bycatch mortality attributable to the lost gear are unknown.

In response to the gear conflicts and the undocumented mortality from lost gear and to provide for conservation of the resource, the BOF adopted a shared quota approach for the PWS sablefish fishery (5 AAC 28.272) in 2003. Elements of the restructured fishery included possession requirements, retention of all sablefish fish tickets aboard a sablefish fishing vessel, a registration deadline, a split fishing season, and a shared quota system. The registration deadline is 5:00 p.m. March 1 and registration occurs via a commissioner's permit. Season dates are March 15–May 15 and August 1–August 21. Quota allocations are derived such that half of the GHL is allocated equally among registered participants and the balance of the GHL is allocated according to the permit's vessel size class: Classes A and B (90 and 60 feet maximum length) vessels = 18.53%; Class C (50 feet maximum length) vessels = 70.33%; and Class D (35 feet maximum length) vessels = 11.14%. These percentages were derived from average harvest by each vessel size class from 2000 through 2002. Commissioner permit stipulations included a logbook requirement.

With adoption of the shared quota system, the need for two additional management changes became obvious. First, the extended season, with landings spread over a longer time period and among ports lacking ADF&G staff, would negatively impact the ADF&G's ability to sample the

sablefish harvest. Secondly, there was a need to amend CFEC regulations restricting fishing by a smaller vessel class permit aboard a larger vessel was unnecessary. Specifically, the importance of maintaining vessel permit classes was recognized while the need to restrict permit holders from fishing on vessels larger than their permitted size class, was found to be extraneous. ADF&G addressed the sampling issue by setting a 6-hour prior notice of landing requirement as a commissioner's permit stipulation. This provided ADF&G adequate opportunity to respond to sampling opportunities. The department also petitioned CFEC to amend regulation *20 AAC 05.779. Fishing capacity restrictions for Prince William Sound sablefish permits* to remove the restriction on sablefish fishing from vessels of a larger size class while maintaining the vessel size classification for the purposes of issuing the permit and allocating the resource among vessel classes. This change became effective for the 2005 season and allowed stakeholders to benefit from the efficiency of being able to harvest quota from any size vessel.

Benefits of the restructured fishery were reduced hook loss due to gear conflicts and provided those permit holders with halibut IFQ greater opportunity to retain and care for this product. A negative component of the extended season was a marked increased occurrence of Orca whale depredation on hooked sablefish during the March, April and early May portions of the season. Beginning in the early spring portion of the 2005 season ADF&G received complaints from fishery participants regarding Orca whale depredations. Speculative estimates of sablefish lost to whales during some trips were 50%–80% of the trip total.

In an attempt to reduce the occurrences of Orca depredation the Alaska Board of Fisheries approved a proposal in December 2005 to allow longline groundfish pot gear to be used in the PWS sablefish fishery. Adoption of the regulation was contingent upon changes to CFEC regulations and these became effective for the 2006 summer season. However, the use of longline pot gear in the fishery has been very limited and the harvest by this gear type remains confidential due to the limited number of participants.

In time, fishery participants realized the best means to avoid Orca depredations was to forfeit fishing opportunity during the spring season until the first week of May when it appears that many of the Orca whales depart Prince William Sound in pursuit of other available food sources. The number of reported Orca interactions as reported sablefish logs has decreased from 35 in 2005 to 10 in 2007 and 15 in 2008. Approximately 88% of these occurrences happen in March and April. Recognizing the forfeited fishing opportunity, ADF&G has extended the summer season 17 days to include the last week of July and later part of August for the past 3 seasons.

Since 1988, annual sablefish catch and effort ranged from 188,788 lb by 25 vessels in 1989 to 577,315 lb by 126 vessels in 1995 (Table 4). The 1995 peak in catch and effort was attributed to speculation about qualifying for the limited entry program. Since implementation of the limited entry program in 1996, catch and effort averaged 238,522 lb and 42 vessels.

2008 SEASON SUMMARY

The 2008 sablefish fishery opened on March 15 with a GHL of 242,000 lb. Sixty-one individuals were eligible to receive PWS sablefish permits for the season. ADF&G issued 52 commissioner's permits through offices in Anchorage, Homer, and Cordova. Quota allocations were 7,933 lb for A & B class permits, 4,566 lb for C class permits and 3,676 lb for D class permits.

Fishery harvest totaled 199,965 lb from 69 landings by 31 vessels which includes 41 lb of illegal incidental harvest from the Outside District (Table 4). Estimated total of lost gear was 250 hooks, from one vessel (Table 5). The number Orca interactions reported sablefish logs decreased to 15 in 2008.

ADF&G staff sampled 619 sablefish from 17 dockside deliveries. Data collected included length, weight, gonad maturity, and age structures. Sablefish length ranged from 470–1,090 mm and averaged 641 mm, larger than both the 2007 average of 617 mm and the 2006 average of 589 mm. The average weight was 3.0 kg (6.6 lb), again slightly greater than the 2007 average of 2.7 kg (5.9 lb) (Figure 5). Age structures were sent to the ADF&G Age Determination Unit (ADU) in Juneau for processing.

2009 MANAGEMENT OUTLOOK

In mid January ADF&G will issue a news release regarding the availability of registrations for the PWS sablefish fishery. The PWS sablefish fishery will open March 15 as specified in regulation. Fishing effort is expected to remain near the 2008 level.

POLLOCK

PROPOSAL 40

BACKGROUND

Prior to 1995, the PWS pollock fishery consisted of incidental harvests by jig, longline, and trawl gears during other directed fisheries with total harvests ranging from 272 lb in 1991 to 8,932 lb in 1992 (Table 6; Bechtol 1995). The directed trawl fishery for pollock in state waters of PWS began in 1995 when Kodiak based trawlers and a Cordova processor combined efforts to establish the fishery. ADF&G implemented a guideline harvest range of 2.1 to 4.4 million lb based on historical trawl survey data (Table 7; Haynes and Urban 1991). Several different approaches have been used in subsequent years to set the GHL, although all approaches relied on a basic assumption that pollock assessed in PWS during the summer are not sampled by the NMFS summer bottom trawl survey in adjacent federal waters (Bechtol 2002). Whereas winter acoustic surveys have documented substantial volumes of pollock in PWS, both during and after the close of the commercial fishery, the relationship between winter prespawning aggregations and the summer population is unknown (Thomas et al. 2001). Therefore, harvest levels for the PWS pollock fishery have been based on estimates of the PWS summer pollock population.

The 1996 fishery GHL was derived from a 1994 spring acoustic survey biomass estimate (Bechtol 1995). For the next several years, the GHL was calculated by either adjusting the previous year's GHL to mirror relative annual changes in harvest levels in federal waters of the Gulf of Alaska, or by applying 8–10% harvest rates to biomass estimates derived from ADF&G summer bottom trawl assessment surveys (Bechtol 1998a, 1998b, 1999). Beginning with the 2000 season, ADF&G set the GHL by applying the Tier 5 approach similar to that used by the North Pacific Fishery Management Council to establish the Acceptable Biological Catch (ABC) for some groundfish species. This method incorporates a biomass estimate, a factor of natural mortality of 0.30, and a precautionary factor of 0.75. The PWS pollock GHL increased from 3.1

million lb in 1996 to 4.6 million lb in 1999, and has since decreased as stock biomass estimates declined (Table 7; Bechtol 2002).

A pollock test fishery was conducted in most years since 1996 under ADF&G's program receipts authority. Revenues from the test fishery funded PWS commercial fishery management, groundfish stock assessment, inseason pollock catch sampling, and in some years, acoustic stock assessment surveys. ADF&G also cooperated with the Prince William Sound Science Center and the fishing industry to conduct acoustic biomass assessments of prespawning pollock in PWS during the winters of 1995, 1997, 1998, 2000, and 2001 (Thomas and Stables 1995; Kirsch 1997; Kirsch and Thomas 1998; Thomas et al. 2001). These surveys found substantial variability in pollock distribution. From 1995 to 1999, the commercial trawl fishery primarily occurred in Port Bainbridge with occasional catches along the southern end of Knight Island. The 1998 acoustic survey observed a previously undetected aggregation of pollock, distributed from Hinchinbrook Entrance to near Knowles Head (Bechtol 1998b; Kirsch 1997), an area historically closed to all trawling. Subsequent action by the BOF opened some of this area to the use of midwater trawl gear for pollock only.

Emergency regulations adopted for the 1996 fishery included a January 13 registration deadline and a commissioner's permit requirement. For the 2000 season, an emergency regulation established the PWS Pollock Pelagic Trawl Management Plan (5 AAC 28.263), primarily as a means to increase protection for endangered Steller sea lions. The plan, subsequently adopted by the BOF, provided for the directed fishery to be apportioned among three sections of the Inside District, with no more than 40% of the GHL taken in any one section (Figure 6). The commissioner's permit provided ADF&G some annual flexibility to meet inseason management needs and was used to specify check-in and check-out requirements, catch reporting procedures, and logbooks. The season opened by emergency order at 12:00 noon January 20; concurrent with the opening of the pollock season in the CGOA.

The BOF considered several proposals for PWS pollock during the January 2003 meeting and adopted a March 31 season closure date. The duration of the PWS pollock fishery has generally increased over time (Table 7). From 1996 to 1998, the fishery averaged approximately 6.5 days in length. Since 1999 the duration of the fishery has ranged from 36 days in 1999 to 84 days in 2003 and has averaged 62 days. Prior to adoption of the new regulation, ADF&G had used a March 31 closure date by emergency order to avoid the potential for herring bycatch.

The directed fishery for pollock in PWS has typically experienced low bycatch rates relative to many other groundfish fisheries (Table 8). However, bycatch has increased through time. The most common species or species groups incidentally caught by midwater trawl were squid, sharks, rockfish, and salmon. Bycatch of squid *Beryteuthis majister* totaled 86,850 lb for the period 1995 to 2001, and ranged from 468 lb in 1996 to 31,101 lb in 2001. During the same period, bycatch of the other species or species groups totaled 32,049 lb of sharks, 6,059 lb of rockfish, and 4,228 lb of salmon. Relative to previous years, the 2002 pollock trawl fishery experienced a dramatic increase in bycatch (Berceli et al. 2002). As in previous years, bycatch was dominated by squid at 180,250 lb, followed by sharks at 52,486 lb, rockfish at 30,172 lb, miscellaneous species 3,431 lb, and salmon at 1,274 lb. During the BOF groundfish committee meeting in 2003, discussions addressed concerns for the increased bycatch observed during the 2002 pollock fishery. It was determined ADF&G would encourage cleaner fishing practices by adopting bycatch limits for the PWS pollock fishery. Although the board did not adopt these as

regulatory bycatch measures, it was understood that ADF&G would implement the following criteria during the 2003 PWS pollock season:

1) Establish a fishery bycatch cap of 5% of the pollock guideline harvest level (GHL), apportioned among 5 species groups.

2) Establish that the total bycatch from a management section not exceed 2% of the total round weight of pollock harvested from that section.

3) Establish bycatch group apportionments as: rockfish 0.49%, salmon 0.04%, shark 0.96%, squid 3.28%, and miscellaneous groundfish species 0.23%.

The 2000 PWS pollock fishery opened under the new management plan with a 3.1 million lb GHL and the 40% harvest restriction from any management section. Managing for the section harvest restriction proved problematic and approximately 1.0 million lb of pollock remained unharvested. Despite reduced effort, a more equal distribution of pollock among the three management sections contributed to attainment of the 2001 GHL. The 2002 and 2003 pollock fisheries, similar to 2000, closed with approximately 1.4 million lb unharvested due to pollock distribution among the three management sections. To provide additional harvest opportunity, the 2003 season was extended past the March 31 closure date but was ultimately closed to avoid harvest of post-spawning aggregations of pollock of poor quality and low value, and to avoid herring bycatch.

The 2004 and 2005 pollock seasons were similar in producing strong harvests from the Hinchinbrook Section in early March to achieve 40% of the 2.0 million lb GHL while harvests from the remaining Knight Island and Port Bainbridge Sections occurred later in March. In December of 2005, the Alaska Board of Fisheries adopted an ADF&G proposal to allow up to 60% of the GHL may be taken from any one management section. The intent of the increased harvest apportionment was to optimize the harvest when pollock were gathered in prespawing aggregations and to attempt to reduce incidental bycatch. However, this regulation did not pass into law in time for the 2006 season.

The 2006 pollock season again produced a strong harvest in the Hinchinbrook Section to achieve 39% of the 3.6 million lb. GHL and closed on March 3rd. The Port Bainbridge Section closed on March 10 with 17% of the GHL achieved due to the section bycatch cap for miscellaneous groundfish being exceeded. The Knight Island Section closed on March 24 having achieved 39% of the GHL. The pollock harvest for the 2006 season totaled 3,486,499 lb (96% of the GHL) from 15 landings by 8 vessels. Bycatch in the fishery totaled 64,614 lb or 1.9% of the directed species harvest (Table 8). After the fishery closed it was determined that the section bycatch cap for rockfish in the Hinchinbrook Section had been exceeded by 278 lb and that section bycatch caps for miscellaneous groundfish in the Port Bainbridge Section and Knight Island Section were exceeded by 715 lb and 8,146 lb respectively. Eulachon and Arrowtooth flounder comprised 61% and 27% of the miscellaneous groundfish bycatch species. The overall bycatch cap for miscellaneous groundfish species was exceeded by 13,166 lb and the bycatch cap for rockfish by 1,332 lb. While it is feasible to close the fishery when a section or fishery bycatch cap is approached or has been met, full accounting of bycatch may not be available until after the closure when all fish ticket data are reviewed.

The 2007 Pollock season was hindered by cold temperatures and gale force winds. The Hinchinbrook Section closed on March 30 having attained 62% of the 3.6 million lb GHL. The remaining sections closed by regulation on March 31. The harvest in the directed fishery totaled 2,339,978 lb or 64% of the GHL, taken by 5 vessels and 16 landings. The bycatch in the fishery totaled 26,906 lb or 1.1% of the directed species harvest and no bycatch caps or section caps were exceeded (Table 8). The post season test fishery harvested 259,155 lb of pollock.

2008 SEASON SUMMARY

ADF&G offices in Cordova and Kodiak issued 20 commissioner's permits for PWS pollock fishery. The directed trawl fishery opened January 20 with a GHL of 3.6 million lb. The following bycatch caps and section caps were announced:

	Species Group (lb)					
	Rockfish	Salmon	Shark	Squid	Miscellaneous	Total
Annual bycatch cap	17,824	1,455	34,921	119,314	8,367	181,881
60% section cap	10,695	873	20,953	71,588	5,020	109,129
40% section cap	7,130	582	13,968	47,726	3,347	72,752

The Hinchinbrook Section closed March 7 as the bycatch section cap for rockfish was exceeded by 8,403 lb. and consequently only 23% of the pollock GHL was attained. The remaining Port Bainbridge and Knight Island Sections closed on March 17 as the annual bycatch cap for rockfish had been exceeded by 2,966 lb. The total season harvest was 1,395,933 lb of pollock or (38% of the GHL) from 9 landings by 5 vessels. The total harvest by management section is confidential due to low participation. Bycatch in the fishery totaled 53,997 lb or 3.9% of the directed species harvest (Table 8). No other bycatch section caps or annual bycatch caps were exceeded.

ADF&G staff dockside sampled pollock and associated bycatch. Sampling included collection of length, weight, and gonad maturity data as well as age structures. A total of 350 pollock were sampled from 4 PWS deliveries. Average pollock length was 508 mm and average weight was 1.3 kg (2.9 lb), incrementally smaller than the 2007 average of 527 mm and 1.2 kg (2.7 lb).

2009 MANAGEMENT OUTLOOK

The 2009 PWS pollock fishery is expected to open at 12:00 noon January 20. The GHL will be announced via news release in late December. Registration packets will be available to the fleet on January 2, 2009. As in past years, ADF&G plans to conduct a test fishery immediately following the directed fishery closure.

LINGCOD

PROPOSALS 32 AND 33

BACKGROUND

Since 1998, ADF&G has managed lingcod harvest in both state and federal waters. A regulatory season of July 1 to December 31 exists to protect spawning and nest guarding lingcod during the first half of the year. 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, is intended to allow at least one spawning opportunity prior to being susceptible to harvest. Historically the PWS lingcod fishery was typically a bycatch fishery composed of many small landings, primarily by longline vessels. In recent years, directed harvests have occurred by vessels using jig gear.

Beginning in 1996, ADF&G established a lingcod fishery GHL calculated as 50% of the recent (1986–1995) 10-year harvest. In 2000, ADF&G increased the GHL to 75% of the average for these years. Establishing the GHL at 75% of the historical harvest is consistent with the most conservative alternative used by the North Pacific Fishery Management Council when considering fisheries with little data on abundance or stock structure. This resulted in a 5,500 lb GHL for the Inside District and a 19,000 lb GHL for the Outside District and adjacent federal waters. No lingcod retention is allowed during the closed season and mortality of released lingcod is believed to be low.

Lingcod catch between 1988 and 1999 ranged from 9,344 lb by 16 vessels in 1999 to 69,091 lb by 32 vessels in 1995, and averaged 34,657 lb by 26 vessels (Table 9). From 2000–2007 harvests have ranged from 20,170 lb by 20 vessels in 2002 to 30,695 lb by 34 vessels in 2007 and averaged 26,048 lb by 27 vessels. Consistent with most of the historical harvest, the majority of the harvest since 2002 was reported from adjacent federal waters of the EEZ.

To facilitate biological sampling, the BOF adopted regulation in 2003 that provides ADF&G with emergency order authority to require that all lingcod be delivered with the head attached and a 1-inch area of the vent intact as proof of gender. An emergency order has been issued each season since then to allow ADF&G greater opportunity to achieve the necessary sample sizes.

2008 SEASON SUMMARY

The 2008 lingcod season opened July 1 with harvest levels established at 100% of the historical harvest. This equates to a 7,300 lb. GHL for the Inside District, and a 25,300 lb. GHL for the Outside District of Prince William Sound and adjacent federal waters of the EEZ. The Outside District, including adjacent federal waters, closed at 12:00 noon July 25 with a harvest of 31,778 lb. Approximately 3,200 of lingcod were taken as bycatch in federal waters trawl fisheries prior to the July 1st opening of the season and approximately 1,350 lb of lingcod were taken in federal waters by longline gear after the season closure. The Inside District closed at 12:00 noon August 30 and harvest total was 8,051 lb. Therefore, the total lingcod harvest for all PWS waters, including federal waters, was 39,829 lb from 49 landings by 30 vessels (Table 9).

Since the adoption of regulation to require lingcod be landed with their head on, ADF&G sampling efforts have improved dramatically. ADF&G staff sampled 389 lingcod from 14 deliveries. Lengths of male lingcod ranged from 815–1,130 mm and averaged 928 mm. Lengths of female lingcod ranged from 830–1,260 mm and averaged 1,046 mm. Round weight of male lingcod averaged 8.6 kg (18.9 lb) while females averaged 11.5 kg (25.3 lb). In addition, staff also collected age structures that were forwarded to ADF&G's ADU in Juneau for processing.

2009 MANAGEMENT OUTLOOK

The fishery will open on July 1 with the established GHL's. ADF&G will continue to monitor the fishery and continue to pursue commercial catch sampling. In the absence of a lingcod stock

assessment program, commercial catch samples allow ADF&G to characterize stock structure of fishery removals and infer relative cohort strength.

MISCELLANEOUS GROUNDFISH

PROPOSALS 41 AND 42

BACKGROUND

Miscellaneous groundfish, including numerous species of flatfish, sharks, skates, as well as octopus and squid, have been landed incidental to PWS groundfish fisheries and targeted only sporadically (Table 10). Additionally, these species have been discarded at sea during other directed fisheries. Seasons for miscellaneous groundfish were typically set by emergency order to coincide with seasons set by NMFS in the adjacent federal waters of the EEZ. However, BOF action in 1998 and in 2000 made two significant changes to management of miscellaneous groundfish. The 1998 action closed directed fishing for sharks and established a permit requirement for targeting skates. These actions were consistent with the lack of information on stock size necessary to conduct a sustainable fishery. ADF&G issued no PWS skate permits. In 2003, NMFS adopted a bycatch-only status for skates and ADF&G adopted a similar approach. Shark bycatch, particularly Pacific sleeper shark *Somniosus pacificus* in longline and trawl fisheries, has been reported to be significant. Similarly, there is an incidental catch of salmon sharks *Lamna ditropis* during salmon seine fisheries. The 2000 BOF action established a Miscellaneous Groundfish Permit requirement. This is a commissioner's permit that provides a mechanism for developing fisheries while providing ADF&G a flexible tool to insure adequate data collection and manageability. Most miscellaneous groundfish catch in commercial fisheries is discarded at sea, with discarded bycatch largely undocumented. Exceptions emerge from observer coverage in the pollock trawl and shrimp trawl fisheries as well as other agency stock assessment survey data. An indication of incidental catch in longline fisheries is also provided by the ADF&G longline survey.

Octopus and squid, although considered shellfish under state regulation, fall under the "Other" groundfish category in federal regulation. Octopus harvested incidental to Pacific cod in the pot fishery were usually sold or kept for personal use as bait. A bycatch allowance of 20% was set for octopus. Squid harvest of any magnitude is a recent phenomenon in PWS. Squid landings, particularly in the pollock trawl fishery have varied widely among years. Harvest levels in 1997, 2001, and 2002 were the highest on record (Tables 8 and 10). Sharks, squid, skates, and flatfish dominated the historical harvest of landed or discarded miscellaneous groundfish.

2008 SEASON SUMMARY

ADF&G has not issued any Miscellaneous Groundfish Permits for the PWS area. Therefore, all reported miscellaneous groundfish was either landed as bycatch or discarded at sea. The reported harvest of miscellaneous groundfish species totaled 61,756 lb, consisting of 30,619 lb of squid, 19,613 lb of sharks, 48 lb of salmon, and 11,476 lb was comprised of skates, flatfish, and other groundfish (Table 10). All reported squid and flatfish landings, landings occurred incidentally to the directed pollock and trawl shrimp fishery. No octopus harvest was reported in 2008.

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TABLES AND FIGURES

Table 1.–Commercial effort and harvest of rockfish from the Inside and Outside Districts and black rockfish from federal waters of the Prince William Sound Area, 1988–2008.

	Inside District			Outside District			Total
Year[a]	Vessels	Landings	Pounds	Vessels	Landings	Pounds	Pounds
1988	64	170	113,253	18	25	313,489	426,742
1989	35	95	93,307	7	8	25,124	118,431
1990	93	391	489,154	10	11	17,314	506,468
1991	88	239	153,889	6	6	2,762	156,650
1992	106	275	178,621	16	24	12,882	191,503
1993	67	183	81,095	20	33	27,478	108,573
1994	65	160	97,710	31	51	104,670	202,380
1995	122	211	153,107	35	60	156,839	309,946
1996	86	208	108,372	31	51	76,315	184,686
1997	90	234	136,593	26	36	29,245	165,838
1998	80	198	100,120	13	23	8,914	109,034
1999	81	214	60,539	21	31	11,447	71,987
2000	97	260	111,171	18	31	10,749	121,919
2001	94	205	60,597	17	37	13,485	74,082
2002	81	161	67,242	13	26	7,369	74,612
2003	72	168	35,240	30	58	12,751	47,990
2004	61	149	40,582	23	47	12,219	52,801
2005	72	166	47,528	17	47	13,322	60,850
2006	91	167	61,095	22	51	15,176	76,271
2007	59	165	66,322	25	57	15,282	81,604
2008	57	148	87,671	15	44	14,034	101,705
Average[b]	80	201	112,777	20	36	44,342	157,118
Percent of Total			72%			28%	

[a] Preliminary data through September 2008.

[b] Average through 2007.

Table 2.–Annual Prince William Sound rockfish harvest by gear type, including black rockfish from federal waters, 1988-2008.

			Harvest (lb)				
Year[a]	Vessels	Landings[b]	Troll/Jig	Trawl	Longline	Pots	Total
1988	80	195	54,097	228,417	144,228	0	426,742
1989	39	103	[c]	997	104,633	[c]	118,431
1990	96	402	[c]	20,238	455,789	[c]	506,468
1991	89	247	15,624	11,162	129,864	0	156,650
1992	114	299	[c]	28,510	152,945	[c]	191,503
1993	80	209	13,905	[c]	81,978	[c]	108,573
1994	92	211	94,588	[c]	104,811	[c]	202,380
1995	134	269	182,031	[c]	127,616	[c]	309,946
1996	99	257	57,103	3,507	124,076	0	184,686
1997	106	266	34,047	[c]	130,141	[c]	165,838
1998	88	220	2,903	[c]	104,888	[c]	109,034
1999	92	244	1,130	1,951	68,905	0	71,987
2000	100	284	2,401	2,061	117,210	247	121,919
2001	101	233	[c]	4,495	68,400	[c]	74,082
2002	87	190	0	30,553	44,059	0	74,612
2003	89	243	256	4,752	42,983	0	47,990
2004	71	197	283	3,735	48,783	0	52,801
2005	80	206	[c]	8,863	51,542	[c]	60,850
2006	72	226	1,008	12,391	62,866	6	76,271
2007	73	213	1,215	10,970	69,419		81,604
2008	63	186	149	21,265	80,291		101,705
Average[d]	89	236	27,107	19,536	111,757	148	157,118

[a] Preliminary data through September 2008.

[b] Total landings may be less than shown on Table 1 due to vessels fishing multiple districts in a single trip.

[c] Confidential data due to less than 3 participants.

[d] Average through 2007.

Table 3.–Annual effort and harvest by gear type from the Prince William Sound parallel and state waters Pacific cod fisheries, 1988-2008.

Parallel Season			Harvest (lb)				
Year[a]	Vessels	Landings	Other[b]	Longline	Pot	Jig[c]	Total
1988	39	87		330,718			330,718
1989	23	47	[d]	[d]		[d]	73,600
1990	84	307	[d]	1,203,118	[d]	[d]	1,219,979
1991	88	234	17,074	1,248,217	961,912	[d]	2,227,428
1992	140	524	[d]	1,359,176	594,741	[d]	1,972,969
1993	57	205	[d]	810,831	466,202	[d]	1,304,977
1994	46	197		316,550	1,584,722	[d]	1,902,336
1995	75	205	24,539	359,765	1,204,451	6,982	1,595,736
1996	50	135	218,170	214,021	420,183	1,663	854,037
1997	60	172	1,506	334,086	582,325	4,333	922,249
1998	50	150	5,879	534,553	138,243		678,675
1999	54	196	[d]	687,169	641,523	[d]	1,330,710
2000	58	175	[d]	403,230	332,310		735,963
2001	23	63	[d]	143,641	[d]		170,445
2002	22	51	[d]	17,700			17,831
2003	26	45	[d]	14,051			14,292
2004	17	45	[d]	13,247			13,604
2005	24	38	221	10,983			11,204
2006	30	59	587	18,407			18,994
2007	31	82	18	64,807	[d]	[d]	80,417
2008	33	71	[d]	63,654	[d]	[d]	63,654

State Waters Season				Harvest (lb)		
Year[a]	Vessels	Landings	Guideline Harvest Level	Pot	Jig[c]	Total
1997	9	36	880,000	192,142	8,378	200,520
1998	9	33	860,000	385,817	33,177	418,994
1999	7	27	930,000	314,987	79,147	394,134
2000	12	37	2,950,000	268,765	22,377	291,142
2001	3	3	2,620,000	0	228	228
2002	0	0	1,900,000	0	0	0
2003	[d]	4	750,000	[d]	0	[d]
2004	[d]	6	970,000	[d]	0	[d]
2005	[d]	3	897,000	[d]	0	[d]
2006	[d]	7	911,000	[d]	[d]	[d]
2007	3	20	911,000	[d]	[d]	345,684
2008	3	4	944,000	[d]	[d]	7,297

[a] Preliminary data through September 2008.

[b] "Other" includes trawl and gillnet.

[c] Includes mechanical jig and hand troll.

[d] Confidential data due to limited number of participants.

Table 4.–Annual sablefish harvest and effort, including test fish, from the Inside and Outside Districts of the Prince William Sound Area, 1988–2008.

			Annual Harvest (lb)			
Year[a]	Vessels	Landings	Inside	Outside	Test Fishery[b]	Total
1988	54	145	219,416	27,958		247,374
1989	25	95	188,042	746		188,788
1990	71	251	211,486	4,929		216,414
1991	78	157	326,235	24,398		350,633
1992	63	126	432,172	33,684		465,856
1993	60	92	316,602	74,943		391,546
1994	66	102	280,700	60,359		341,059
1995	126	134	565,547	11,767		577,315
Limited entry program implemented						
1996	69	77	247,545	33,475	10,376	291,396
1997	51	81	196,370	2,689	9,311	208,370
1998	59	60	233,004	14	11,676	244,695
1999	42	45	206,142	0	7,765	213,907
2000	32	32	342,854	77	13,582	356,513
2001	47	49	310,217	0	13,692	323,908
2002	49	51	320,694	0	7,924	328,618
2003	39	67	213,932	0	9,914	223,757
2004	38	67	225,003	0	9,994	234,996
2005	34	70	220,392	0	6,687	227,079
2006	27	72	185,494	0	0	195,562
2007	28	61	199,213	0	0	199,213
2008	31	69	199,924	41	0	199,965
Average[c]	42	62	238,522			249,851

[a] Preliminary data through September 2008.

[b] Fish landed and sold under the department's program receipts authority are listed as "test fishery" and not included in vessels or landings.

[c] Average 1996-2008.

Table 5.–Number of vessels and estimated number of hooks set and lost by gear type in the Prince William Sound sablefish fishery as derived from logbook data, 1998–2008.

	Type and Number of Hooks Set				Hooks Lost	
Year	Vessels	Snap	Vessels	Conventional	Snap	Conventional
1998	28	140,770	27	423,525		
1999	16	56,704	23	300,605	0	6,570
2000	11	50,412	16	484,875	0	12,600
2001	21	99,390	25	534,770	1,320	28,120
2002	23	100,646	24	375,715	1,620	43,745
2003	21	140,226	16	252,313	517	1,255
2004	20	156,756	16	239,482	775	1,020
2005	19	244,048	11	250,513	2,350	0
2006	15	249,829	11	304,788	400	612
2007	24	384,845	4	97,245	0	0
2008	25	436,715	4	88,127	250	0

Table 6.–Annual effort and pollock harvest by gear type in the Prince William Sound Area, 1988–2008.

			Harvest (lb)			
Year[a]	Vessels	Landings	Other Gear[b]	Trawl Gear[c]	Test Fishery[d]	Total
1988	[e]	[e]	1,548	[e]		1,548
1989	6	9	639	919		1,558
1990	8	14	1,514	6,588		8,102
1991	5	7	272			272
1992	15	23	2,591	6,341		8,932
1993	3	7	191	5,442		5,633
1994	5	7	5,811			5,811
Average	6	10	1,795	2,756		4,551
Directed Trawl Fishery Begins						
1995	23	66	10,220	6,325,575	215,025	6,550,820
1996	13	28	1,296	3,271,583	421,137	3,694,016
1997	16	49	3,762	4,323,129	539,123	4,866,014
1998	17	51	2,680	4,013,725	631,751	4,648,156
1999	15	62	11,890	4,673,074	490,761	5,175,725
2000	16	49	4,039	2,260,510	366,724	2,631,273
2001	5	20	[e]	3,128,066	381,502	3,509,669
2002	3	21	0	2,364,143	177,071	2,541,214
2003	5	28	0	2,422,364	54,224	2,476,588
2004	5	18	0	1,929,009	400,677	2,329,686
2005	8	20	0	1,677,157	317,183	1,995,145
2006	8	15	0	3,486,499	590	3,487,089
2007	7	16	6	2,340,728	259,155	2,599,889
2008	5	7		1,395,933		1,395,933
Average[f]	11	34	4,249	3,247,413	327,302	3,577,330

[a] Preliminary data through September 2008.

[b] Includes jig, pot, and longline harvest from the Inside and Outside Districts.

[c] Includes pollock bycatch in PWS shrimp trawl fishery.

[d] Fish landed and sold under the department's program receipts authority are listed as "test fishery" and not included in vessels or landings.

[e] Confidential data due to the low number of participants.

[f] Averages 1995–2008 only.

Table 7.–Annual guideline harvest level (GHL), season length, and harvest from the Prince William Sound pollock fishery, 1995–2008.

Year	GHL (million lb)	Season Days	Vessels	Total Harvest (lb)
1995	2.1-4.4	26	9	6,325,575
1996	3.1	5	11	3,265,740
1997	3.9	8	10	4,319,707
1998	3.9	7	11	4,031,725
1999	4.6	36	6	4,673,074
2000[a]	3.1	70	4	2,256,504
2001	3.1	64	2	3,128,037
2002	3.8	70	3	2,364,143
2003	3.8	84	3	2,421,773
2004	2.0	68	3	1,928,458
2005	2.0	48	6	1,677,157
2006	3.6	58	8	3,486,449
2007	3.6	69	5	3,486,499
2008	3.6	56	5	1,395,933

[a] Pollock harvest sections were created in 2000.

Table 8.–Pollock harvest and bycatch by species or group in the Prince William Sound pollock fishery, 1995–2008.

	Reported Bycatch (lb)[a]							
Year	Pollock	Rockfish	Salmon	Shark	Squid	Misc.	Total Bycatch	% Bycatch
1995	6,325,575	67	104	378	1,346	2,308	4,203	0.07
1996	3,265,740	13		2,738	468	3,884	7,103	0.22
1997	4,319,707	12	90	648	18,316	2,188	21,254	0.49
1998	4,013,725	10	371	8,026	23,577	10,293	42,277	1.05
1999	4,673,074	325	2,148	14,133	6,162	3,135	25,903	0.55
2000	2,256,504	1,421	860	2,042	5,880	982	11,185	0.50
2001	3,128,037	4,211	655	4,084	31,101	1,644	41,695	1.33
2002	2,364,143	30,172	1,274	52,486	180,250	3,431	267,613	11.32
2003	2,421,773	3,912	195	8,054	20,547	8,385	41,093	1.70
2004	1,928,458	3,236	151	3,648	11,175	3,848	22,058	1.14
2005	1,677,157	8,289	775	11,483	6,044	9,841	36,432	2.17
2006	3,486,499	11,303	672	3,410	31,768	17,846	64,999	1.86
2007	2,340,728	10,262	613	2,650	11,155	2,226	26,906	1.15
2008[b]	1,395,933	20,790	72	1,450	30,619	1,066	53,997	3.87

[a] Includes at-sea discards.

[b] Totals through September 2008.

Table 9.–Annual effort and harvest in the commercial lingcod fishery from the Prince William Sound Area, and adjacent federal waters, 1988–2008.

		Harvest (lb) [a]				
Year[b]	Vessels	Landings	Inside	Outside	Federal	Total
1988	20	27	1,338	7,106	18,508	26,952
1989	20	24	1,279	5,335	15,096	21,710
1990	25	31	8,117	3,154	31,628	42,899
1991	21	34	19,358	4,928	7,559	31,845
1992	43	55	2,349	3,786	19,611	25,746
1993	25	45	246	7,462	58,873	66,581
1994	27	52	9,542	831	33,300	43,673
1995	32	44	138	2,751	66,202	69,091
1996	27	46	5,799	790	22,164	28,753
1997	42	73	22,890	2,933	12,375	38,198
1998	18	27	3,399	1,468	6,229	11,096
1999	16	18	1,483	5,352	2,509	9,344
2000	18	41	5,113	12,174	6,568	23,855
2001	32	49	4,359	18,796	3,657	26,812
2002	20	27	1,007	777	18,386	20,170
2003	32	51	5,593	7,023	11,619	24,235
2004	30	47	6,024	6,791	17,477	30,292
2005	30	46	6,193	8,986	9,065	24,244
2006	22	46	5,119	6,303	15.869	28,083
2007	34	41	6,866	2,615	21,215	30,695
2008	30	49	8,051	1,822	29,956	39,829
Average[c]	27	42	5,955	5,294	20,374	31,624

[a] Does not include harvest reported as area 640.

[b] Preliminary data through September 2008.

[c] Average through 2008.

Table 10.–Annual reported harvest of miscellaneous groundfish species, including at-sea discards, from the Prince William Sound Area, 1988–2008.

Year	Vessels	Landings	Flatfish[b]	Salmon	Sharks[c]	Skates	Other[d]	Octopus	Squid	Totals
1988	9	15	15,457		34	11,770	315			27,576
1989	5	8	56			614	644		1,467	2,781
1990	19	77	72,973				454		2,166	75,593
1991	27	53	5,742		175	11,022	2,124	15		19,077
1992	33	76	8,942		1,338	19,192	17,008	1,230	399	48,109
1993	18	69	664		1,080	1,565	2,781	5,625	317	12,031
1994	21	69	1,216		2,465	4,435	19,203	5,798		33,117
1995	34	99	10,421	79	1,368	9,668	5,534	3,814	1,367	32,250
1996	33	76	76,346	0	32,052	26,700	3,603	994	468	140,163
1997	25	79	320	72	4,840	37,256	1,326	3,547	18,316	65,678
1998	24	66	4,182	371	8,692	44,790	6	2,928	23,577	84,546
1999	10	62	462	2,148	14,233	868	1,240		6,162	25,113
2000	12	43	7,637	545	2,044	999	129		5,951	17,304
2001	9	45	1,235	372	7,149	4,158	457		31,101	44,472
2002	10	42	4,214	1,274	188,256	6,402	776	20	180,250	381,192
2003	10	47	3,893	189	47,939	8,938	5,718	2,697	20,547	89,922
2004	11	31	4,515	156	36,757	7,758	1,850	380	11,175	62,590
2005	21	55	5,562	775	70,177	85,971	5,486	5	7,117	175,075
2006	16	31	6,826	635	159,462	10,845	11,240	90	31,813	220,911
2007	9	22	2,449	872	11,169	2,587	460		11,805	29,342
2008	16	30	515	48	19,613	10,050	911		30,619	61,756

[a] Preliminary data through September 2008.

[b] Flatfish includes general flatfish, flounders, sole and turbot.

[c] Sharks include spiny dogfish, salmon, Pacific sleeper and unspecified sharks.

[d] Other includes general groundfish, miscellaneous. unidentified fish, eel, greenling and sculpin.

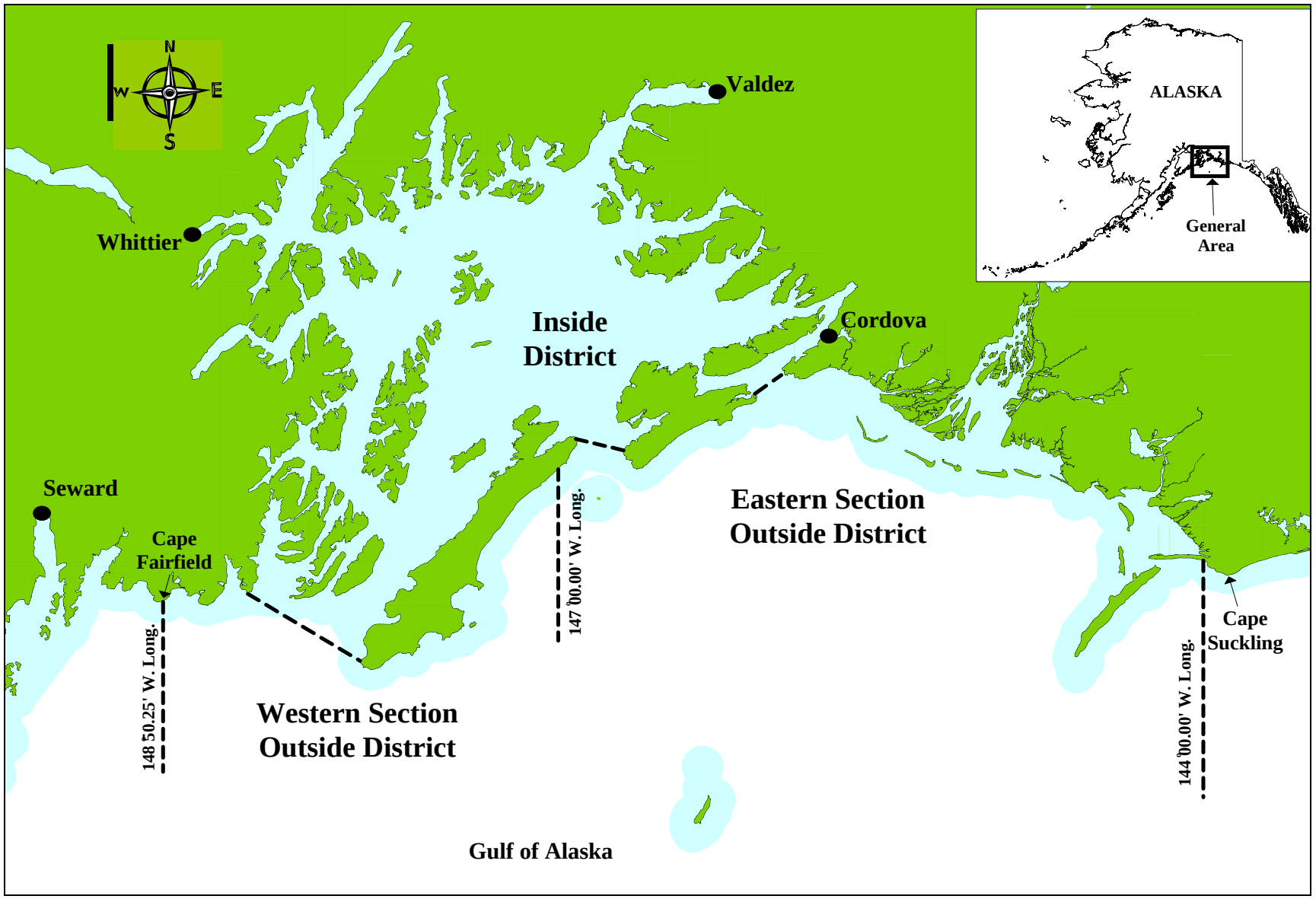

Figure 1.–Groundfish fishing districts of the Prince William Sound Management Area, 2008.

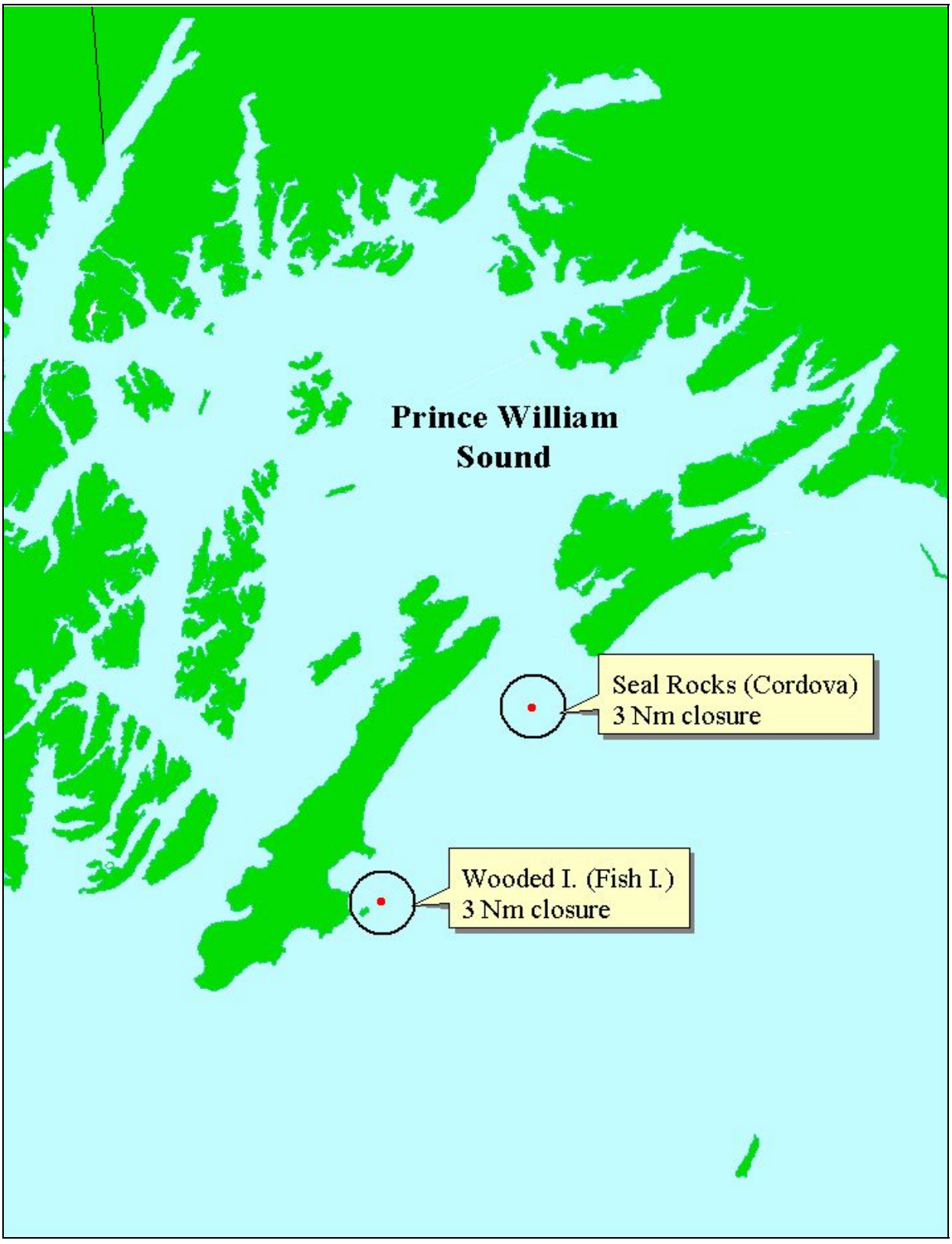

Figure 2.–Prince William Sound groundfish fishing closures implemented for Steller sea lion protection.

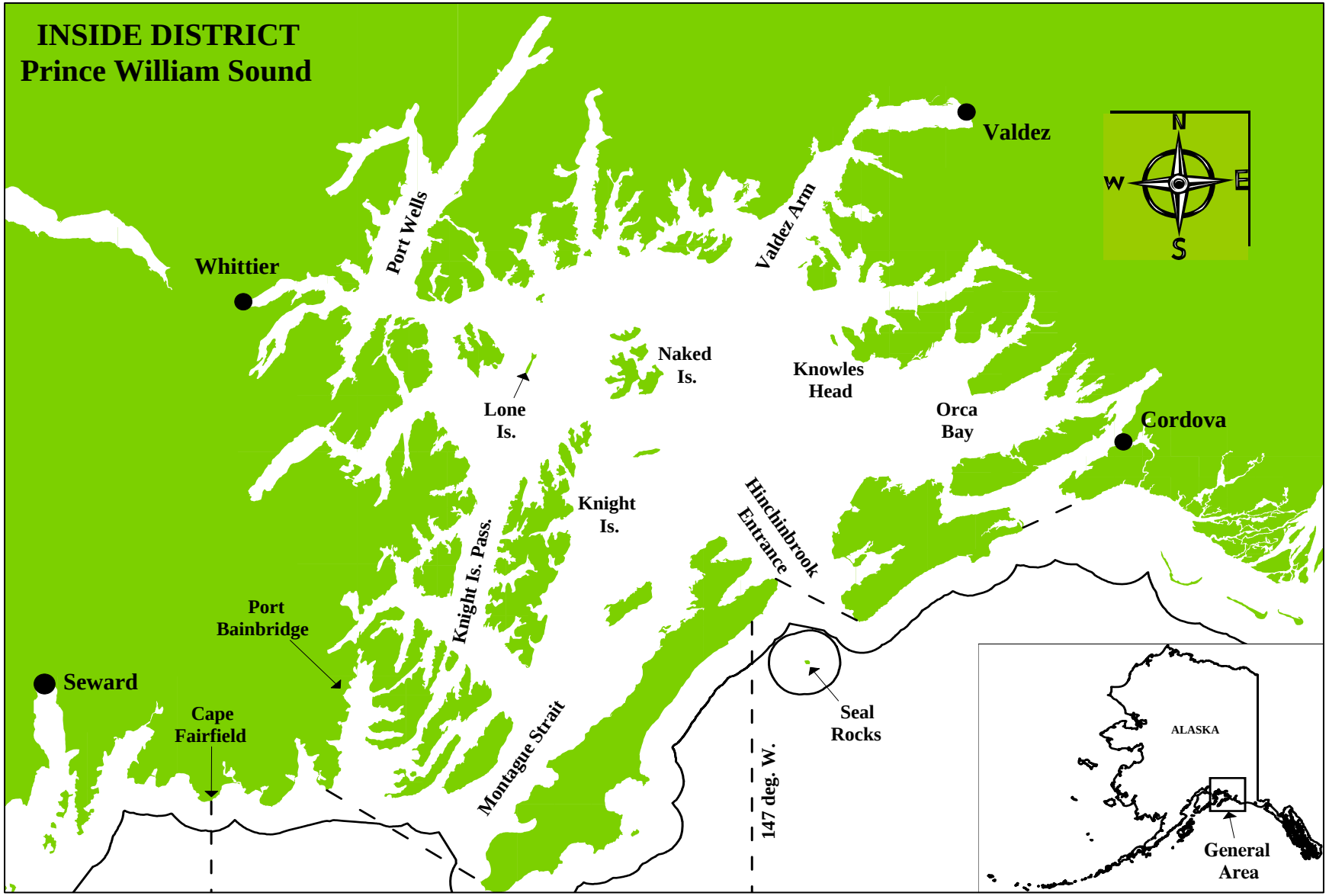

Figure 3.–Selected sites of the Inside District, Prince William Sound Area.

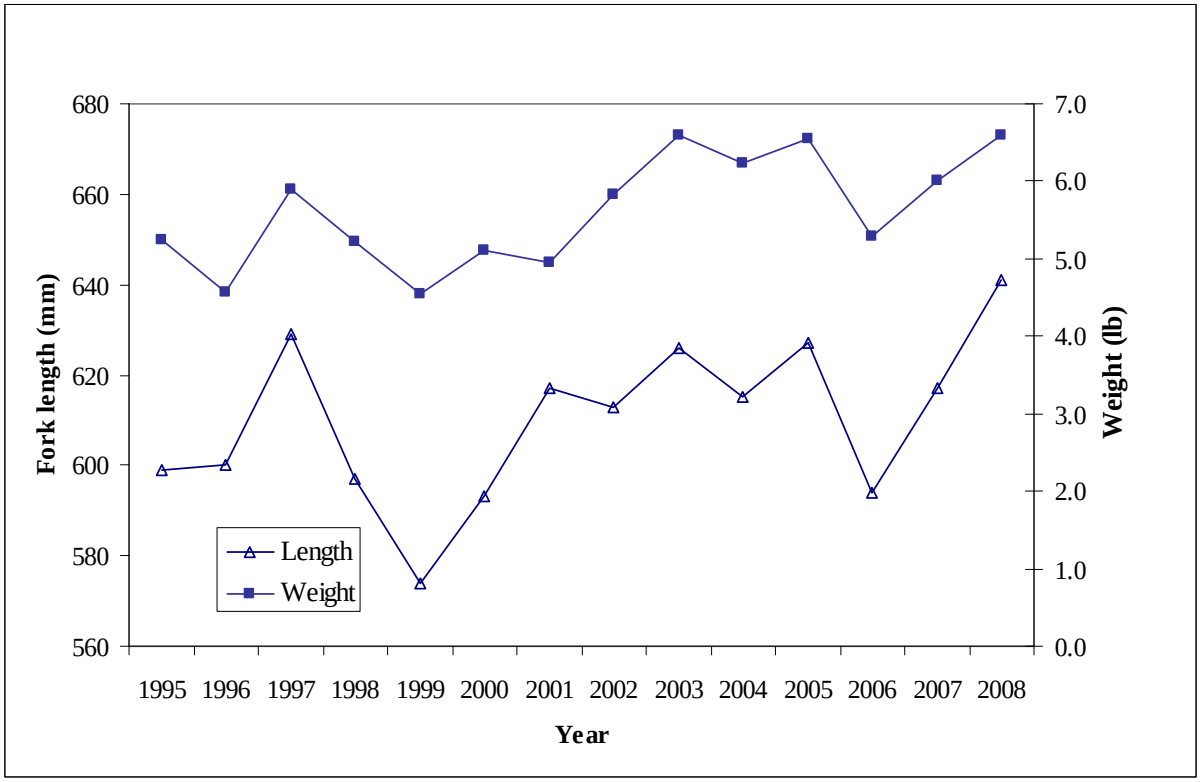

Figure 4.–Average sablefish length and weight from the Prince William Sound commercial sablefish fishery, 1995–2008.

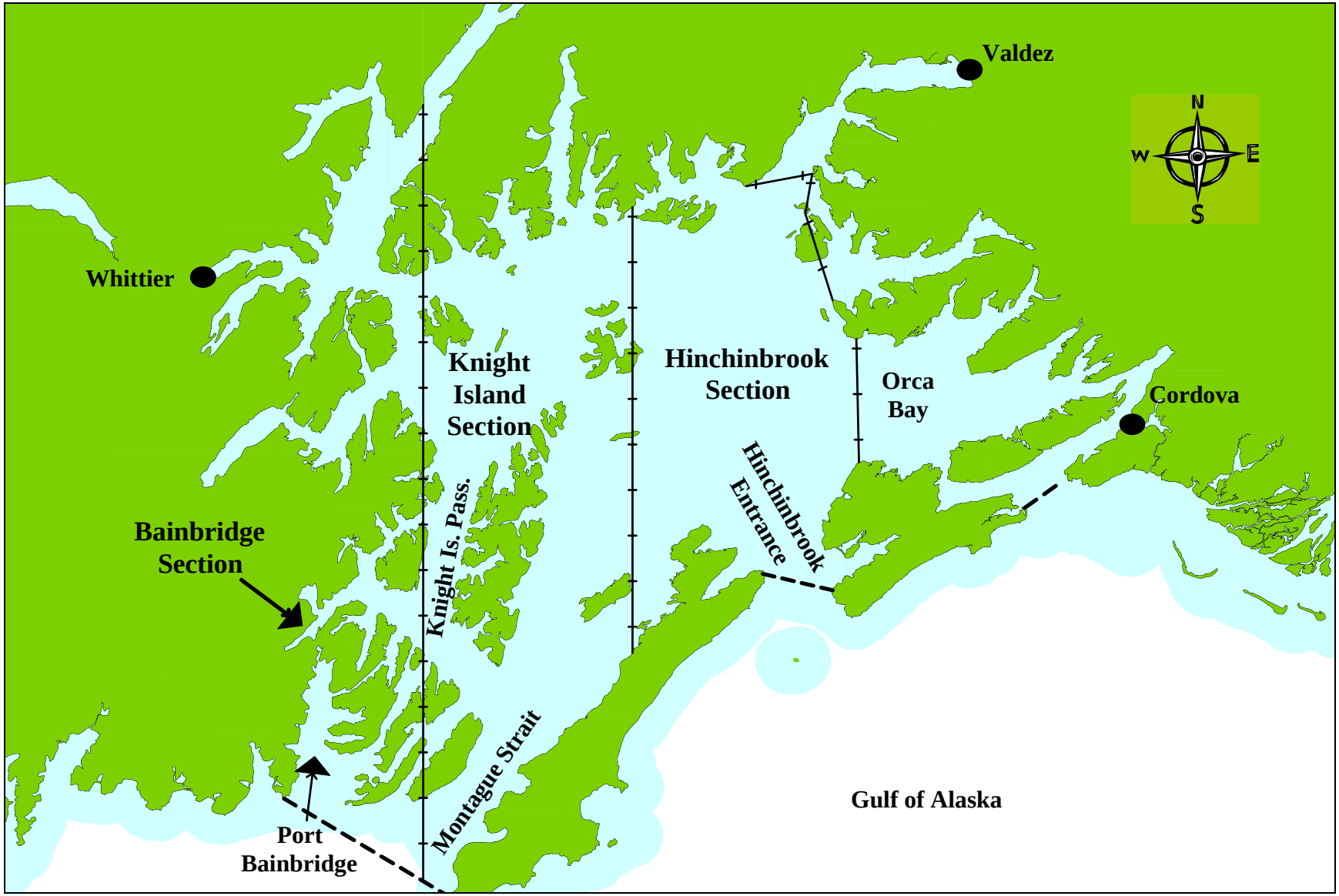

Figure 5.–Pollock management sections established in 2000 in the Inside District of the Prince William Sound Area.