

Fishery Management Report 08-64

2009 Report to the Alaska Board of Fisheries, Groundfish Fisheries, Region 1: Southeast Alaska— Yakutat

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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

FISHERY MANAGEMENT REPORT 08-64

**2009 REPORT TO THE BOARD OF FISHERIES, GROUND FISH
FISHERIES, REGION 1: SOUTHEAST ALASKA - YAKUTAT**

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ABSTRACT

This report includes summaries of reported catch and effort information and management actions for the period 2005–2008 for the groundfish fisheries managed by the Alaska Department of Fish and Game (ADF&G) in the Eastern Gulf of Alaska (EGOA). State-managed groundfish were demersal shelf rockfish (DSR) *Sebastes spp.*, black rockfish (*Sebastes melanops*), and lingcod (*Ophiodon elongates*) in state and federal waters and all groundfish harvest in internal state waters. In 2008 there were directed fisheries for sablefish (*Anaploploma fimbria*), DSR, black rockfish, lingcod, and Pacific cod (*Gadus macrocephalus*). Reported harvest of groundfish in Southeast Alaska totaled 4,349,031 round lbs in 2005, 4,237,796 round lbs in 2006, 3,861,236 round lbs in 2007, and 3,724,412 round lbs in 2008. The estimated ex-vessel value ranged from \$6.4 million in 2007 to \$7.6 million in 2008. Sablefish accounted for 83% of the ex-vessel value. In addition to groundfish landed in groundfish and halibut fisheries, 58,404 round lbs of groundfish (primarily lingcod and black rockfish) were landed in salmon fisheries and 167,861 round lbs of groundfish (primarily sablefish) were landed in testfish fisheries conducted by ADF&G and the International Pacific Halibut Commission (IPHC).

Key words: Sablefish, rockfish, lingcod, Pacific cod, flatfish, longline, dinglebar, Southeast Alaska, commercial fishing, Board of Fisheries, groundfish

INTRODUCTION

The Eastern Gulf of Alaska (EGOA) regulatory area for groundfish management encompasses all waters surrounding the Alexander Archipelago from Dixon Entrance (54°30' N latitude) northwestward along the outer coast to 144° W longitude (Figure 1).

Seven state groundfish management areas have been established in Southeast Alaska (Figure 1). These areas encompass the Southeast District (SE). The Icy Bay Subdistrict (IBS), 144° to 140° including Yakutat Bay three miles seaward of a line from Ocean Cape, was added to the Southeast Region in 1999. Four of the areas, East Yakutat (EYKT) section, Northern Southeast Outside (NSEO) section, Central Southeast Outside (CSEO) section, and Southern Southeast Outside section (SSEO), are along the outer coast and make up the Southeast Outside (SEO) District. The remaining two areas, Northern Southeast Inside (NSEI) Subdistrict and Southern Southeast Inside (SSEI) Subdistrict, are in internal waters. For the purposes of lingcod management and black rockfish management the southern areas are redefined as two sectors, Southern Southeast Internal Waters (SSEIW) and Southern Southeast Outer Coast (SSEOC) (Figure 2).

The Alaska Department of Fish and Game (ADF&G) has management jurisdiction over all groundfish resources within state waters in the EGOA area. State waters include all internal waters of Southeast Alaska and Yakutat Bay, and waters within three miles of shore along the outer coast. In addition, a provision in the Gulf of Alaska Federal Groundfish Fisheries Management Plan (FMP) authorizes the state to execute in-season management of Demersal Shelf Rockfish (DSR) in both state and federal waters in the SEO district (outer coastal waters east of 140° W longitude). Black and blue rockfish were removed from the FMP in 1998 and are under state jurisdiction in both state and federal water. It is expected that early in 2009 dark rockfish will also be removed from the FMP and management responsibility will shift to the State of Alaska. Lingcod are under state jurisdiction in both state and federal waters because they are not defined as a groundfish under the FMP.

In addition to having direct management responsibility for certain groundfish species, the Region I Groundfish Project provides harvest information and other resource data from the adjacent Exclusive Economic Zone (EEZ) to the National Marine Fisheries Service (NMFS) and North Pacific Fishery Management Council (NPFMC) under the terms of a cooperative agreement with

NMFS. Under this agreement, ADF&G staff has the responsibility of collecting, editing, and verifying all fish tickets from the domestic harvest of groundfish and halibut in Alaska waters. Since May 2006 fish tickets are being entered by processors via e-Landings, a web based data entry system, and subsequently validated by department staff. The state is also involved in the management of groundfish in the EEZ through the groundfish project leader's participation on the Gulf of Alaska Groundfish Plan Team.

This document details information on reported harvest, effort, and management for the state-managed groundfish fisheries in Southeast Alaska for the period 2005 through October 2008. There is no at-sea observer coverage so data on at-sea discards is not available. Catch and effort data included in this document detail the DSR, black rockfish, and lingcod harvest for the entire EGOA and all groundfish species harvested in NSEI and SSEI. The primary state-managed fisheries within the region include sablefish, demersal shelf rockfish, black rockfish, lingcod, and Pacific cod. By regulation, sablefish can be fished only with longline and pot gear, and state-managed rockfish and lingcod fisheries are restricted to hook and line gear in the Southeast District. Fisheries targeting sablefish or demersal shelf rockfish almost exclusively use longline gear and directed lingcod fisheries use primarily dinglebar troll gear. Flatfish (*Platichthys*, *Lepidopsetta* and *Pleuronectes spp*) can be harvested with beam trawl gear in limited areas of NSEI and SSEI. Other trawl gear is prohibited unless specified in a commissioner's permit.

A 3.2 nm square area surrounding the Cape Edgecumbe pinnacles was closed to all removals of groundfish by the BOF in 1998 and to all halibut and groundfish by the NPFMC in 1999. This represents the first no-take groundfish marine reserve in Alaska.

Harvest of state-managed groundfish reported in commercial groundfish and halibut fisheries in Southeast Alaska totaled 4,349,031 round lbs in 2005, 4,237,796 round lbs in 2006, 3,861,236 round lbs in 2007, and 3,724,412 round lbs in 2008 (Table 1). The estimated ex-vessel value has risen from \$6.4 million in 2007 to \$7.6 million in 2008 (Table 1). In addition to groundfish landed in groundfish and halibut fisheries, 58,404 round lbs of groundfish (primarily lingcod and black rockfish) were landed in salmon fisheries and 167,861 round lbs of groundfish (primarily sablefish) were landed in testfish fisheries conducted by ADF&G and the IPHC (Tables 2 and 3).

LINGCOD

Lingcod are the largest member of the greenling family, attaining a maximum length of 5 feet (Figure 3). This cold-water species occurs from the intertidal to depths of 270 fm from northern Baja, California to the Bering Sea. Adults tend to be resident although they exhibit some seasonal movement related to spawning and individual fish occasionally move great distances. Females attain a greater size and age than males. Lingcod live to a maximum age of at least 20 years; maximum age estimated for Southeast Alaska is 36 years¹. Greenlings have an unusual reproductive strategy. Male lingcod move into nearshore rocky areas in the fall and set up territories. Females move into this area just prior to spawning in the winter. The females lay large egg masses and the males, after fertilizing the eggs, guard the egg mass from predation until hatching, generally from 7 to 11 weeks. During the nest-guarding period, males are particularly susceptible to harvest.

¹ Unpublished data, Kristen Munk, ADF&G Age Determination Unit, Juneau, Alaska.

FISHERIES DEVELOPMENT AND HISTORY

Prior to 1987, lingcod taken in the Southeast District were landed incidentally in fisheries targeting other species (Gordon 1994). Lingcod are a significant bycatch in the longline fishery for DSR. In some areas and seasons, bycatch rates of lingcod taken in the DSR fishery have exceeded 50%, by weight, of the DSR catch. Lingcod have also been taken as bycatch in the salmon troll and halibut longline fisheries.

The directed lingcod fishery has developed steadily since its inception in 1987 when a small fleet using dinglebar gear harvested 163,500 lbs of lingcod from the NSEO and the northern portion of CSEO. In 1991, the directed fishery catch of 490,873 round lbs accounted for almost half of the total catch (Table 4). The directed fishery occurred primarily out of Sitka with major fishing grounds off the outer coasts of Baranof, Chichagof, and Kruzof Islands. In 1995, there was a major expansion of the directed fishery to the EYKT, primarily the Fairweather Ground. The peak directed fishery harvest occurred in 1995, with 665,860 round lbs taken. The total harvest of lingcod was highest in 1991, with 1,058,611 round lbs landed by all commercial gears (Table 5). Since 1990 the directed fishery accounted for well over half of the ex-vessel value of commercial lingcod landings in all years except 2001 (Table 4).

Current fisheries for lingcod include allocations for directed fishing (dinglebar gear), sport fishing, and bycatch in the longline, jig and salmon troll fisheries (Table 6), with the largest commercial annual harvest objective (AHO) allocated to the EYKT fisheries (Table 7).

REGULATION DEVELOPMENT

The Board of Fisheries (BOF) first addressed Southeast Alaska lingcod management at its 1989 meeting when they implemented a size limit of 27" for lingcod in an attempt to prevent harvest of sexually immature females. In 1991 a guideline harvest limit (GHL) of 300,000 to 500,000 round lbs was established for the Southeast District (east of 137° W longitude) based on catch histories in the CSEO fishery. In addition, a winter closure inside the surf line was implemented from January 1 through May 31 in an attempt to protect nest-guarding males.

In 1994, the Department met with industry representatives, including directed fishers, longliners, and trollers, and developed a lingcod management plan to present to the BOF. The board adopted an interim management strategy for Southeast Alaska lingcod in 1994. Using a habitat-based approach, GHL ranges were set between 0.25 mt/nm² and 0.50 mt/nm² of rocky habitat for each management area. Seasonal and area allocations were also set for the directed and salmon troll fisheries in CSEO and NSEO. The seasonal closure in waters of Alaska was changed to December 1 through April 30 and the closure line was extended out to three miles offshore. A mandatory logbook program was established and legal gear types were defined as hook and line only.

In 1997, the BOF imposed additional gear restrictions, changed bycatch levels, and created year-round closures in two small areas. Longline gear was prohibited in the directed fishery and the percent bycatch in the DSR longline fishery was increased from 20 to 35%. The Sitka Sound area was closed to the retention of lingcod except in the halibut longline fishery and the pinnacle area off of Cape Edgumbe was permanently closed to the taking of lingcod by all users. Beginning in 1997, the winter closure of the waters of Alaska was extended until May 16 by emergency order to further protect nest-guarding males.

In 2000, the BOF took significant actions regarding lingcod fishery management including AHO reductions, inclusion of the sport harvest in the total AHO, and allocation of lingcod between fishing sectors and areas (Table 6). They also defined an additional subdistrict (IBS), and two sectors in the Southeast District. The western boundary of the Eastern Gulf of Alaska (Southeast District) was extended from 140° W longitude to 144° W longitude. The IBS comprises all waters between 140° and 144° W longitude including Yakutat Bay three miles seaward of a line from Ocean Cape at 59°30' W latitude. The new sectors redefine the Southern Southeast area as follows: SSEOC includes all waters of the SSEO and all waters of the SSEI that are south of 56° N latitude, and west of Prince of Wales Island, or, if south of 54°43' N. latitude, that are west of 132° W longitude; SSEIW Sector includes all waters of the SSEI Subdistrict not included in the SSEOC Sector (Figure 2).

Other lingcod regulations adopted by the BOF at the 2000 meeting:

1. In the directed lingcod fishery, the vessel owner or the owner's agent must register the vessel with the Department before directed fishing for lingcod.
2. Trip limits may be imposed in the directed lingcod fishery by emergency order to promote an orderly fishery and to conserve the stocks.
3. Lingcod may be taken in a directed lingcod fishery only from May 16 through November 30.
4. Lingcod may be taken in a directed lingcod fishery only by mechanical jigging machines, dinglebar troll gear, and hand troll gear.
5. Lingcod may only be taken as bycatch with hook and line gear (no pots, trawls or other net gears).
6. Trollers may only retain lingcod from May 16 through November 30.

In 2003, the BOF took the following action regarding lingcod:

1. Allowed the Department to set groundfish bycatch in troll fisheries by Emergency Order (therefore ensuring that salmon trollers have an opportunity to harvest their lingcod allocation).
2. Allowed for the development of a directed fishery in the IBS by combining the commercial catch allocation into one allocation of 66.66 percent combined for longline bycatch, salmon troll bycatch, and directed commercial fishing (33.33 % is allocated to the sport sector).
3. Established IBS as a super-exclusive registration area for directed lingcod fishing.
4. Provided for a small allocation of lingcod to the black rockfish jig fishery.

In 2006 the BOF took the following action regarding lingcod:

1. Prohibited lingcod from being taken by scuba divers using a spear between December 1 and May 15.
2. The upper end of the GHL for EYKT was increased from 200,000 to 225,000 round lbs with the increase going to the directed fishery. The regulation stipulates that in years when the GHL is 200,000 round lbs or less the percents as described in regulation 5AAC 28.165 are used.
3. The bycatch of lingcod in the halibut fishery was increased from 5% to 10% in the IBS Subdistrict.

STOCK ASSESSMENT AND MANAGEMENT

The department is not currently able to reliably estimate lingcod biomass or abundance in Southeast Alaska. Lacking abundance estimates, and given the complex life history and behavior of lingcod, impacts to lingcod populations from fishing are difficult to assess. Analysis of catch per unit effort data (CPUE), in terms of fish per hook-hour for 1988–1998, showed a decline in CPUE ranging from 21% to 62% in areas where a directed fishery and increased recreational catch had developed. Consequently, the quota for lingcod was reduced in all areas in 1999. Commercial logbook data for the period 1997-2008 shows an increasing trend in CPUE for the CSEO management area with small dips in 2001 and 2006 (Figure 4). For the same period in NSEO and SSEOC commercial logbook data shows a rise in CPUE until 2002 but since then there have been very few participants in the directed fishery in those areas. Consequently for several of the recent years CPUEs are shown only for years with 3 or more vessels. CPUE shows a level trend in the EYKT management area; although the overall CPUE is higher than in CSEO and NSEO.

Because the movement of local stocks of lingcod in Southeast Alaska is not well understood, a tagging study was launched in the spring of 1996. To date, over 9,076 lingcod have been tagged and 421 tags have been recovered. Tagging of lingcod continues on a limited and volunteer basis.

Management of lingcod in Southeast Alaska is based upon a combination of guideline harvest ranges, season and gear restrictions. The state has management authority for lingcod in both state and federal waters. Regulations include a winter closure for all users except longliners between December 1 and May 15 to protect nest-guarding males. Guideline harvest limits were greatly reduced in 2000 in all areas and allocations were made between the directed commercial fishery, sport fishery, longline fisheries, and salmon troll fisheries. This was the first time sport catch was included in a quota allocation. The 27" minimum commercial size limit remains in effect. Fishermen can be required (by emergency order) to land their lingcod with the head on, and proof of gender intact to facilitate biological sampling of the commercial catch. Vessel registration is required and trip limits can be implemented by the Department when needed to stay within allocations. In 2003 the Board of Fisheries established a super-exclusive directed fishery for lingcod in the IBS subdistrict.

2005-2008 SEASON SUMMARY

In the Southeast District the total reported commercial harvest of lingcod has increased by 19% from 2005 to 2008 (Table 8). These increases have occurred primarily in the directed sector (Table 5). Longline bycatch of lingcod was reduced in the years 2005 through 2007 in part due to management actions in the DSR fishery. There was no DSR fishery in EYKT in 2006-2007 and no DSR fishery in CSEO and SSEO in 2005-2007 reducing the opportunity for lingcod longline bycatch. Another factor reducing the opportunity for retention of lingcod in the longline fisheries is the reduction of halibut quota in area 2C. A directed DSR fishery was conducted in EYKT and SSEO in 2008. Consequently, bycatch of lingcod in longline fisheries is up slightly this year, but it is still 15% lower than in 2004.

An increase in total landings occurred in the directed lingcod fishery between 2005 and 2008. Landings from the directed fishery in IBS were higher in 2006 and 2007 than in 2008 (Table 8). The NSEO and SSEOC areas had low effort with considerable AHO remaining at the end of

each year in the reporting period. Excellent trolling seasons and high salmon prices in 2005-2007 played a role in reducing participation levels in the directed lingcod fishery in those years. In 2007 and 2008 there was renewed interest in directed lingcod fishing in CSEO. Harvest of lingcod in the directed fishery in EYKT was at or below the AHO from 2005-2007 with a substantial over run in 2008.

In 2007 and 2008 the directed fishery for lingcod in federal waters was hindered by the federal requirement for Vessel Monitoring Systems (VMS) for vessels using dinglebar gear. Access to VMS reports, which provide a live-feed of vessel positions as well as a history of activity, was helpful in the management of the directed fishery in 2007. But even with information available from VMS the quota was exceeded in EYKT in 2008.

ROCKFISHES AND THORNYHEADS

More than 30 species of rockfishes from two genera (*Sebastolobus* and *Sebastes*) are landed in Region I groundfish fisheries. Shortspine thornyhead rockfish (*Sebastolobus alascanus*) inhabit the continental slope in waters as deep as 6,000 feet. The *Sebastes* rockfishes are divided into three assemblages for management purposes because cohabitating species groups are generally caught together. The assemblages are based on habitat preference and behavior. The demersal shelf rockfish assemblage is comprised of seven species of nearshore, bottom-dwelling species and includes yelloweye rockfish (*S. ruberrimus*). The pelagic shelf rockfish (PSR) assemblage is comprised of six nearshore schooling species including black rockfish (*S. melanops*), dusky rockfish (*S. variabilis*), dark rockfish (*S. ciliatus*), blue rockfish (*S. mystinus*), yellowtail rockfish (*S. flavidus*) and widow rockfish (*S. entomelas*). Formerly there were five species in this assemblage but in recent years “light” dusky rockfish were determined to be a separate species from dark rock fish and were given a new scientific name. The final rule is pending to remove dark rockfish from the FMP and give management responsibility to the State of Alaska. The slope rockfish assemblage is found along the edge of the continental shelf and on the continental slope in depths as great as 400 fm. This group contains all remaining species of rockfish. Roughey rockfish (*S. aleutianus*), shorttraker rockfish (*S. borealis*), and redbanded rockfish (*S. babcocki*) are the predominant commercial species in this group. For the purposes of this report, catch of shortspine thornyhead is included in the slope rockfish assemblage.

DEMERSAL SHELF ROCKFISHES

The assemblage definition for DSR has changed three times since its inception because of new information. The current DSR assemblage comprises seven species including yelloweye rockfish, quillback rockfish (*S. maliger*), tiger rockfish (*S. nigrocinctus*), china rockfish (*S. nebulosus*), canary rockfish (*S. pinniger*), copper rockfish (*S. caurinus*), and rosethorn rockfish (*S. helvomaculatus*).

All DSR are considered highly K selective, exhibiting slow growth are late maturing and are long lived (Adams 1980, Gunderson 1980, Archibald et al. 1981). Estimates of natural mortality are very low. Fishes with these life history characteristics are very susceptible to over-exploitation and are slow to recover once driven below the level of sustainable yield (Leaman and Beamish 1984; Francis 1985). An acceptable exploitation rate is assumed to be very low (Dorn 1999).

Yelloweye rockfish, the dominant species in the DSR assemblage (in terms of catch and biomass), occur in nearshore waters to 200 fm (although commonly to 100 fm) from northern

Baja California to the Aleutian Islands (Figure 3). These fish are habitat specific, occurring on rocky reefs, ridges, and pinnacles and are residential, with some seasonal movement but no migrations. This behavior, in combination with their life history characteristics make the stock susceptible to localized depletion. Yelloweye rockfish attain a maximum length of 36 inches and maximum reported age of 118 years (O'Connell and Funk 1986) although a yelloweye from SSEI was recently aged at 121 years (Brylinsky et al. 2007). They are slow growing, late maturing, and ovoviviparous or viviparous (Adams 1980, Gunderson 1980, Archibald et al. 1981, Boehlert and Yoklavich 1984, Boehlert et al. 1986).

FISHERY DEVELOPMENT AND HISTORY

DSR have been the target of a directed shore-based longline fishery in Southeast Alaska since the late 1970s. The fishery began in the Sitka Sound area as a small family-run, fresh-fish business, catching primarily black rockfish using skiffs and automatic jigging machines. By 1982 longline gear had replaced jigging machines and with the change in gear type the dominant species caught became yelloweye and quillback rockfish. Harvest increased six-fold in five years with total catch exceeding one million round lbs in 1986. Prior to 1984 well over half of the total Southeast Alaska rockfish landings were reported from CSEO. As effort and harvest continued to increase, much of the effort shifted into SSEI followed by a shift in the late 1980s to SSEO. A directed DSR fishery developed in EYKT in 1991, primarily targeting yelloweye rockfish on the Fairweather Grounds.

The directed fishery catch has ranged from 2.7 million round lbs worth \$1.4 million in 1987 to 3,078 round pounds worth \$4,000 in 2006. In 2008 the directed harvest was 105,373 round lbs worth \$174,070 (Table 9). The directed fleet size has ranged between 149 permits (1992) and 4 permits (2007). Total reported landings of DSR for all groundfish and halibut fisheries have ranged between 3.3 million round lbs worth \$1.65 million in 1987 to 491,992 round lbs worth \$466,776 in 2008. The majority of the DSR harvested in Southeast Alaska has been in EYKT, CSEO, and SSEO, with little effort and harvest in the inside waters (Figure 5).

The State of Alaska has not opened the directed fishery in NSEO since 1994 when the stock assessment survey in that area indicated a low abundance of fish. The EYKT fishery was not opened in 2002 and 2003 because of high levels of estimated DSR mortality in the halibut fishery. The EYKT management area did open to directed fishing in 2004, 2005 and 2008. The CSEO fishery has not been opened since 2004. The directed fishery in SSEO opened in 2008 after three closed years. Closures in CSEO and SSEO occurred because of high levels of sport fish catch of yelloweye rockfish in those areas and the department's desire to understand the impact of that fishery and other bycatch fisheries before continuing the directed fishery.

REGULATION DEVELOPMENT

The DSR fishery has been intensively managed since 1989 (O'Connell and Brylinsky 2001). Prior to 1989, the fishery occurred primarily in CSEO where a 1.3 million pound harvest cap was placed in 1984. In 1987 a draft management plan was written, and AHOs were set for five management areas. A portion of Sitka Sound was closed, by emergency order, to directed commercial fishing after public testimony underscored the concern regarding localized stock depletion.

The Department, concerned about the rapid increase in catch and effort, co-sponsored an industry workshop with the Commercial Fisheries Entry Commission (CFEC) and the Pacific States Marine Fisheries Commission (PSMFC), exploring management options for this fishery.

The workshop was funded through PSMFC. Several recommendations for management actions came from this working group and were implemented at the 1989 BOF meeting.

In the 1980s the fishery was managed with an October 1 start date. In 1989 regulations were passed to retain the small boat, fresh-product nature of the fishery. These regulations included providing for a three-period, split season to facilitate marketing of fresh product over an extended portion of the year, and imposing a trip limit of 7,500 round lbs per five-day period. Legal gear for DSR was defined as hook and line only. The AHOs were reduced substantially in all areas, and closures to directed commercial fishing were implemented for areas surrounding the ports of Sitka, Craig, and Ketchikan. In addition, logbooks were required by fishers directed fishing for DSR. A DSR directed fishery CFEC permit card for Southeast Alaska was introduced in 1990. Harvesters making directed landings from EYKT did not use this card until 1991 when EYKT was included in the SEO district.

The directed fishery season was curtailed in the summer of 1990 and again in the summer and fall of 1991 when the prohibited species cap for halibut (halibut mortality cap in non-halibut fisheries) was met. In 1991, the NPFMC set aside a separate allocation of halibut mortality for the DSR fishery that prevents the directed DSR fishery from being impacted by excessive halibut bycatch in other Gulf of Alaska fisheries.

Bycatch and wastage of DSR in other fisheries is a concern because these species often die when brought to the surface, making release ineffective in commercial fisheries. Consequently, a regulation was passed that allowed for unlimited retention of all DSR landed incidentally during the halibut fisheries. This was to minimize wastage of bycatch that occurred during the historic 24-hour halibut fisheries. Additionally, fishers may no longer target DSR while fishing for bait, and no more than 10% by weight of bait catch may be DSR.

In 1991, the NPFMC extended the SEO and the State's management authority for DSR, from 137° W longitude to 140° W longitude. Further regulation changes were made at the 1993 meeting, largely drafted by the Sitka Rockfish Working Group to reflect changes in the nature of the fishery. Reapportionment of DSR by season was made to allow for more product to be taken in the winter season when the price was best. New, lower guideline harvest limits were adopted for DSR and a directed fishery harvest limit for DSR in EYKT was implemented. Trip limits were set at 12,000 round lbs for EYKT and reduced from 7,500 to 6,000 round lbs in the other management areas.

In 1997, the BOF changed the DSR directed fishery season by regulation to reflect the way the fishery had been managed since the implementation of the halibut individual fishing quota (IFQ) fishery. Sixty-seven percent of the annual total allowable catch (TAC) was allocated to the winter season and 33 % to the fall season. In addition, the board set the lingcod bycatch to 35% in the longline fisheries, set opening and closing time to daylight hours, added dinglebar troll gear as legal gear for targeting DSR, clarified trip limits, and changed the directed fishery AHO for SSEI and NSEI to 50 mt in each area. Regulations also set the directed fishery AHO for the SEO by allocating the remainder of the acceptable biological catch (ABC) after accounting for an estimate of unreported DSR mortality in the halibut fishery.

In 2000, the BOF adopted regulations requiring full retention of DSR in all state waters of Southeast Alaska. A CFEC permit holder must retain, weigh, and report all DSR taken. All DSR in excess of the allowable bycatch limits shall be reported as bycatch overage on a fish ticket. If the fish are sold, proceeds from the sale of fish must be forfeited to the State of Alaska. The

North Pacific Fisheries Management Council (NPFMC) passed an amendment requiring full retention of DSR in federal water, this was published as a final rule in 2005. Fish caught in excess of allowable bycatch limits are subject to the same regulations as the state regulations listed above; however, no DSR caught in federal water can enter commerce. During the directed DSR fishery fishermen are also required to retain, weigh and report all DSR. Proceeds from the sale of fish in excess of trip limits of DSR will go to the State. In 2003, the BOF adopted regulations requiring permit holders to register prior to participating in the directed DSR fishery.

In 2006 the BOF adopted a regulation that allocates the DSR TAC between the commercial sector and the sport sector, 84% and 16% respectively. Regulations were also adopted to keep the season dates for the directed DSR fishery within the time that the IFQ halibut fishery is closed. The split season for the directed DSR fishery in SEO was changed so that there is only one opening which occurs early in the year before the IFQ halibut fishery begins. The split season remained unchanged in internal waters.

STOCK ASSESSMENT AND MANAGEMENT

The State conducts a multi-year stock assessment survey for DSR in the SEO. Biomass is estimated by management area as the product of density/km² determined from line transect surveys, the area of rocky habitat within the 100 fm contour, and the yelloweye rockfish average weight (O'Connell and Carlile 1993, Brylinsky et al. 2007). The NPFMC system requires that the ABC and overfishing levels be set based on a six-tier system. DSR falls under the fourth tier, where a reliable point estimate of B (biomass), F_{30%} (fishing mortality rate, F, equal to 30% of the biomass per recruit), and F_{40%} (F equal to 40% of the biomass per recruit) are available. Allowable biological catch for the SEO is set by multiplying the lower bound of the 90% confidence interval of biomass for yelloweye rockfish by the natural mortality rate (0.02) and adjusting for the 4.0% of other species landed in the DSR assemblage. This is more conservative than using F_{40%} (0.26) to determine the ABC. The overfishing level is set using a rate of F_{30%} (0.32). There is no stock assessment information available for NSEI and SSEI and these harvest levels are set at 55,125 round lbs each.

New density surveys were conducted during 2007 in CSEO. Yelloweye rockfish density for the stock assessment is based on the last best estimate by management area. The SSEO area was last surveyed in 2005, EYKT was last surveyed in 2003 and NSEO was surveyed in 2001. Density estimates by area range from 1068 to 3557 adult yelloweye per km². The total exploitable biomass for 2008 was estimated to be 40.4 million round lbs down 6% from 43.12 million round lbs in 2007.

The ABC and TAC are now set annually for the SEO as part of the NPFMC Fishery Evaluation and Stock Assessment process and are biomass-based. Bycatch needs for other fisheries are estimated first (including an estimate of unreported mortality) and deducted from the TAC prior to setting directed fishing levels in SEO. DSR have a closed swim bladder and suffer embolism mortality when caught; therefore, at-sea discards are included in fishing mortality. Prior to the 2005 stock assessment this estimated mortality did not include sport fish catch.

Although management of this stock has been conservative, there has been a steady decline in the density estimates in the CSEO area between 1997 and 2007 which may be an indication of localized overfishing. Harvest limits are set by management area based on density and habitat. Our harvest strategy suggests that we are taking 2% of the exploitable biomass per year and this level is sustainable. Yelloweye tend to be resident and tag return information indicates that adult

fish stay in the same area over years (O'Connell 1991). It is possible that mortality associated with the halibut fishery has been underestimated in CSEO. Alternately, a 2005 review of available sport fish catch data indicated that fishery was a source of significant and increasing exploitation. Sport fish harvest is now accounted for in total catch statistics and a portion of the annual TAC has been allocated to that sector.

2005-2008 SEASON SYNOPSIS

The total DSR harvest in the Southeast District decreased from 608,510 round lbs in 2005 to 491,992 round lbs in 2008 (through October) (Table 9). Directed fishery AHOs totaled 202,860 round lbs in 2005, 110,250 round lbs in 2006 and 2007, and 302,085 round lbs in 2008 (Table 10). The ex-vessel value in the directed fishery decreased slightly from \$184,611 in 2005 to \$174,070 in 2008, with substantial decreases in 2006 and 2007. Maximum price per pound for yelloweye has remained steady at \$2.00 per pound. The number of directed fishing permits was 17 in both 2005 and 2008, but only 4 permits fished in 2006 and 2007 (Table 9). No directed fishing for DSR opened in SEO in 2006 and 2007 resulting in the low ex-vessel value and low number of permits for those years.

The CSEO and SSEO fisheries were not opened in 2005 due to awareness of increasing levels of sport fish catch of DSR. The sport fish fishery catch combined with estimations of mortality associated with the halibut fishery caused managers to be concerned that the TAC could be exceeded. Before 2005, the sport fish data were not available for DSR and had not been considered in the estimation of total mortality. Early in 2006 the BOF adopted a regulation allocating the TAC between the commercial and sport sectors, 84% and 16% respectively. The decision was made to continue the directed closure in SEO for the remainder of 2006 and for 2007 while monitoring all DSR removals. In 2008 a directed commercial fishery was opened in SSEO and EYKT.

Management actions included updated area AHOs, and seasonal allocations. At the 2006 BOF meeting a regulation was adopted to remove the split season for the directed fishery in SEO to the winter season only (January 5 to the day before the IFQ halibut opening). The directed fishery in EYKT in 2005 was open for 6 days in January; there was insufficient quota to allow a fall opening that year. There was no directed fishery for DSR in any of the outer coast areas in 2006 or 2007. In 2008 the directed fishery opened in SSEO and EYKT on February 1 and stayed open until the day before the IFQ season with 64% and 39% of the quotas taken in each of those areas respectively. Very few vessels participated in the directed fishery in 2008. No directed fishing was allowed in NSEO.

2009 SEASON OUTLOOK

The most recent version of the DSR stock assessment was presented to the NPFMC Plan Team in November 2008 recommending a TAC of 362 metric tons for 2009. This is a reduction of 5% from the TAC used in 2008. By regulation the TAC will be apportioned 84% to commercial fisheries and 16% to sport fish fisheries. This results in a commercial TAC of 304 mt. At press time for this document it was not yet determined whether to open a directed DSR fishery for 2009. This decision rests in part on the anticipated bycatch of DSR in the halibut fishery. The preliminary halibut catch limits for 2009 are substantially reduced for area 2C and somewhat reduced for 3A so it is very likely that there will be sufficient DSR quota to support a directed fishery. An announcement will be made in January after the IPHC annual meeting.

PELAGIC SHELF, SLOPE ROCKFISHES, AND SHORTSPINE THORNYHEADS

FISHERY DEVELOPMENT AND HISTORY

Pelagic shelf rockfish are taken as bycatch in longline and troll fisheries in NSEI and SSEI (Table 11). A small black rockfish directed fishery developed in the early 1980s but was short-lived. A directed fishery using mechanical jigging machines developed rapidly in Southeast Alaska in 1992 and peaked in 1997 before becoming annually variable due to fluctuating effort. In 1999, the NPFMC removed black and blue rockfish from the FMP. The State of Alaska now has sole management and assessment responsibilities for these species in state and federal waters. The directed black rockfish harvest in SEO has ranged from 88,467 round lbs (9 vessels) in 2003 to a confidential harvest with only one vessel fishing in 2008 (Table 12).

Slope rockfish include all deepwater species of rockfish not included in the DSR and PSR assemblages. Shortspine thornyhead catches are included with this group although they are not rockfish in the *Sebastes* genus. Slope rockfishes and thornyheads are taken as bycatch in longline fisheries for sablefish, halibut, and DSR with the majority of the catch associated with the SSEI and NSEI sablefish fisheries (Table 13). In addition to the bycatch landings, a few longline fishermen targeted slope rockfish prior to 2003 (Table 1). In 2008 shortspine thornyhead accounted for 41% of the landed catch, followed by shortraker rockfish (30%), rougheye rockfish (16%), and redbanded rockfish (11%).

REGULATIONS

In 2003 the Board of Fisheries made shortspine thornyhead, longspine thornyhead, rougheye rockfish, shortraker rockfish and redbanded rockfish bycatch only species. A directed fishery for black rockfish is allowed in some areas of SEO and is managed using small area GHs, vessel registrations, gear restrictions and small area closures. All other non-DSR rockfish are managed under the terms of a Commissioner's permit. Harvest of rockfishes is limited to hook and line gear and longline gear is not a legal gear for directed fishing for PSR.

Full retention regulations passed at the 2000 BOF meeting require that all rockfish caught in internal waters be weighed and accounted for on fish tickets. Proceeds of sales in excess of legal landing limits are forfeited to the State of Alaska.

STOCK ASSESSMENT AND MANAGEMENT

The directed fishery for black rockfish focuses on fishing in nearshore, shallow water rock "reef" habitat, an area traditionally very difficult to assess. In 1999, the Department conducted a pilot study to evaluate the feasibility of a combination depletion experiment/mark-recapture survey for assessing nearshore black rockfish stocks. The pilot study focused on developing appropriate field methods, including the use of underwater cameras. Based on experiences in 1999, a revised study was conducted in 2000. The Department concentrated effort in two areas with high black rockfish abundance. A total of 2,483 black rockfish were tagged and released during the 2000 field season. Additionally, 20 tagged fish were recaptured; 17 of these fish had been released in 1999, and three fish had been released in 2000. During 2002, the Department conducted additional black rockfish stock assessment surveys. Three separate trips were made, two trips for the purpose of locating and sampling unfished stocks of black rockfish, and one trip to locate schools of fish in water deeper than is customarily fished with mechanical jigging machines. In

addition, historical catch data will be integrated with logbook and fish ticket data into a GIS application to estimate the number of removals in specific locations within the study area (Tydingco and Brylinsky 1999).

There are no assessment surveys for slope rockfishes and thornyheads although they are caught as a bycatch species on the annual longline surveys. Length data is collected for these species.

2005–2008 SEASON SUMMARY

The PSR reported catch for NSEI and SSEI took a drop from 2005 (4,773 round lbs) to 2006 (1,123 round lbs) and the catch remained low through 2008 (Table 11). Black rockfish catches from the SEO declined sharply in 2005 from previous years and have remained low (Table 12). Increasing fuel prices could be contributing to the decline in interest in this fishery.

The total catch of slope rockfishes and thornyheads has been less than 300,000 round lbs for the years 2005-2008 with 2006 having the highest catch in those years at 290,743 round lbs (Table 13). The BOF closed the directed fishery for slope rockfish in 2003.

2009 SEASON OUTLOOK

With the continued decline in participation in the directed black rockfish fishery it is difficult to predict the interest in 2009.

SABLEFISH

Sablefish occur only in the Bering Sea and the North Pacific Ocean and adjacent waters from Hokkaido, Japan to Baja California with the greatest abundance in the Gulf of Alaska (Figure 3). Adult sablefish inhabit the deep-water areas of the continental shelf, the slope, and the deep-water coastal fjords. Most adults live in depths of 200 to 500 fm although they have been found in less than 100 fm and greater than 1,000 fm (Allen and Smith 1988). In NSEI the average age from survey samples of this long-lived species is estimated at 15 years; their age range is 1-88 years of age (Carlile et al. 2002).

Sablefish is one of the most valuable finfish in Southeast Alaska. The ex-vessel value of sablefish has continued to increase; with the average price of \$3.15 per round lb in 2008 compared to \$2.49 per round lb in 2005. These numbers are likely underestimates of price-per-pound as retroactive payment information is not included in these calculations.

FISHERY DEVELOPMENT AND HISTORY

Sablefish have been harvested in the internal waters of Southeast Alaska since the early 1900s. The fishery is split into two areas: NSEI, where fishing occurs primarily in Chatham Strait, and SSEI, where fishing occurs primarily in Clarence Strait and the adjacent waters of Dixon Entrance.

Prior to the 1940s, sablefish were primarily landed as bycatch in the halibut fishery. Halibut longline gear was modified in the late 1940s to target sablefish. Until the 1970s, harvest levels fluctuated widely due to low price and better opportunities in other fisheries. Pot gear was first introduced in 1970 in the SSEI and Dixon Entrance areas and accounted for 33% of the harvest in the early 1970s. By 1979, pot gear accounted for less than 5% of the catch.

Season limitations were first imposed in 1945 for NSEI and in 1982 for SSEI (Bracken 1983). Seasons were shortened as effort escalated in the 1970s and 1980s. Guideline harvest ranges

(GHR) based on historic catches were established for both areas in 1980. Fleet effort and efficiency continued to increase dramatically and in NSEI the season was reduced to five days by 1984 (Table 14). In 1985, a limited entry program was implemented for the sablefish fishery in both NSEI and SSEI. However, the number of vessels and overall operating efficiency of the longline fleet increased significantly after the limited entry program was implemented. In order to stay within GHRs, the Department continued to reduce the number of fishing days in both areas. In NSEI, the number of fishing days fell from 76 in 1980 to one in 1987. A one-day opening continued through 1993. In that year, the fleet harvested 3,640,000 dressed lbs, 2,140,000 dressed lbs over the upper bounds of the 1,500,000 dressed lbs GHR. In an effort to improve management, the BOF adopted an equal quota share system (EQS) for NSEI in 1994. This system had been recommended by a working group of industry representatives and state fisheries managers. In SSEI, the number of fishing days declined from 200 days in 1980 to two days in 1996 (Table 15). In 1997, at the request of industry, the BOF adopted a similar EQS system for SSEI. In addition to minimizing the risk of overharvest and loss of gear, the EQS allowed the five limited-entry pot permits to re-enter the fishery. These pot permits had been functionally excluded due to the short season in recent years.

REGULATIONS

Management regulations, including GHLs, fishing seasons, and gear specifications, are defined separately for the NSEI and SSEI sablefish fisheries. The EQS system requires the Department to divide the AHO equally among the CFEC permits eligible for each fishery. In NSEI the GHLs are set based on the determination of sablefish biomass (from a mark-recapture estimate) with an applied harvest rate. Only longline gear can be used to take sablefish in the NSEI fishery. Both longline and pot gear are legal in the SSEI fishery and pot gear may be longlined. There is no sablefish fishery in the state-managed 0-3 mile zone in outside coastal waters of Southeast Alaska.

The NSEI fishery is open between August 15 and November 15. In 2003 new regulations allowed for an off-season fishery in the NSEI area in an effort to collect biological data on sablefish residing in Chatham Strait during winter and spring months. The SSEI fishery is open for longline gear between June 1 and August 15 and for pot gear from September 1 to November 15. The SSEI seasons are split to avoid possible gear conflicts.

Also in 2003 the BOF adopted regulations allowing fishermen to carry forward a 5% overage or underage of the EQS in an effort to reduce discard mortality and to acknowledge the difficulties in landing exact amounts of fish. Sablefish may no longer be taken for use as bait.

STOCK ASSESSMENT AND MANAGEMENT

In 1988, the Department began annual longline research surveys in both NSEI and SSEI to assess the relative abundance of sablefish over time. Previous research indicated some movement of sablefish into and out of NSEI and substantial movement into and out of SSEI. The extent of movement is unknown; therefore, Department surveys are conducted a few weeks prior to the start of each fishery to examine stock condition of sablefish near the time of these fisheries. Fixed sampling stations were randomly assigned within statistical areas in both Chatham and Clarence Strait, where the majority of fleet fishing effort is focused. Once established, the same stations are fished in a similar manner each year to estimate change in relative abundance over time. A general linear multivariate model (GLMM) has been used to detect significant CPUE

trends over time. Biological data collected during the surveys include length, weight, sex, stage of maturity and otoliths (aging structures). These data are used to describe the age and size structure of the populations and detect recruitment events.

In 1997, the Department changed the survey design (Cartwright 2000). Prior to this year, the survey gear was retrieved one hour after it was deployed. There were concerns that a 1-hour soak in certain depths and tidal/current conditions might not adequately represent relative abundance. Therefore, a 3 to 11 hour soak time for longline survey gear was implemented beginning in 1997. At the same time, we standardized our survey methods with the National Marine Fisheries Service (NMFS) sablefish longline survey (3-hour minimum soaks, squid bait, and 78" hook spacing). In 2000 the department constructed and purchased survey gear to ensure standardization between survey vessels.

In 1997 and 1998, a mark-recapture study was conducted to estimate absolute abundance in NSEI (single event-Petersen method). Using longline gear we tagged and released over 5,000 sablefish in the NSEI survey each year and a small proportion of the tags were recaptured in the fishery. Preliminary results suggested "hook shyness" might be present which may result in overestimates of abundance. In 2000, the Department began using pot gear for initial capture and tagging, to reduce the chance of hook shyness and thereby promote more accurate estimates of abundance (Richardson 2001). Preliminary results indicate that hook-shyness decreased with this new approach. Tags may also be useful to estimate an annual exploitation rate and to describe movement patterns of sablefish between the internal waters of Alaska, the Gulf of Alaska, and British Columbia. Application of an age-structured model (ASA) using fishery and survey data is also being explored to estimate abundance of sablefish. The NMFS uses an ASA for the Bering Sea and Gulf of Alaska sablefish assessment. However, several assumptions necessary to use an ASA appear to be violated with the NSEI sablefish data (Carlile et al. 2002).

In the past, the Department set the AHOs for the sablefish fisheries after the survey was completed, just prior to the opening of the fishery. Because the tagging and the age structure data cannot be analyzed until after the NSEI fishery has been prosecuted, the Department now sets the overall AHO for a given year prior to the survey, using the survey and fishery data from the previous years.

In February of 2002, the Alaska Department of Fish and Game convened a multi-agency panel to conduct an independent review of the stock assessment program for the NSEI sablefish fishery. A report detailing past stock assessment and management programs was prepared and given to the review committee in advance of the panel meeting (Carlile et al. 2002). The panel met with ADF&G staff to discuss the stock assessment report and to gain further insight into the details of the fishery and assessment. They then convened privately to draft recommendations for consideration (Leaman et al. 2002). Based, in part, on this review and on additional assessment data available in 2002, the Department took a new approach for setting the AHO for NSEI sablefish. The AHO was set based on a harvest rate applied to an estimate of biomass. A Peterson estimator applied to mark-recapture data from tail-clipped fish was calculated (Seber 1982). Previous AHOs have been set based on historical catch levels and evaluation of fishery and survey data.

The abundance of sablefish in the NSEI is estimated using mark-recapture methods. For example, based on Chapman's modification of the Petersen estimator, there were an estimated 2,427,828 sablefish in the NSEI Management Area at the time of the 2006 fishery. The 90%

confidence interval for the sablefish abundance estimate was 2,259,843-2,620,065 sablefish. The estimated number of sablefish was decremented to account for natural mortality and a number of age-4 recruits equal to that of 2006 was added. Then, the exploitable numbers and biomass of sablefish for 2007 was forecasted. The forecast for 2007 was 2,203,396 sablefish and 16,750,915 round lbs of sablefish. An $F_{40\%}$ (0.116) harvest rate was applied to the forecasted lower 90% confidence limit to yield a preliminary ABC of 1,623,219 round lbs for the 2007 NSEI sablefish fishery. This ABC was decremented 135,000 lbs to account for estimated mortality in the halibut fishery, dead loss in the directed fishery, and mortality in subsistence and sport fish fisheries. The resulting value was rounded to the nearest thousand pounds to yield the final quota (TAC) of 1,488,000 round pounds for the 2007 NSEI sablefish fishery.

SSEI is assessed for change in relative abundance of sablefish using survey and fishery CPUE data as well as age and length frequency distributions. Sablefish appear to move substantially in and out of this area, which violates the assumption of a closed population. Consequently, Peterson mark-recapture estimates of abundance or exploitation rate are not possible for this fishery.

2005-2008 SEASON SUMMARY

The total reported sablefish landings from both state-managed fisheries was 2.7 million round lbs in 2005 and 2006 and 2.1 million round lbs in 2007. Landings for 2008 were slightly under 2.1 million round lbs (Table 1). The average ex-vessel price per round pound of sablefish increased from \$2.49 per round lb in 2005 to \$3.15 per round lb in 2008.

NSEI

The NSEI sablefish fishery AHO was 2.053 million round lbs in 2005 and 2006, 1.488 million round lbs in 2007, and 1.508 million round lbs in 2008 (Table 14). The Commercial Fisheries Entry Commission (CFEC) issued 106 permits in 2005, 105 permits in 2006, 103 in 2007, and 96 permits in 2008. The EQS has decreased from 19,400 round lbs in 2005 to 15,710 round lbs in 2008.

The commercial catch rates (standardized for hook spacing) rose over the reporting period, ranging between 0.71 and 0.9 round lbs per hook. These rates are considerably higher than those reported for 1998-2001 (Figure 6).

During 2004 and 2005, ADF&G issued permits to allow permit holders to fish outside of the regular season. Vessels participating in this program were required to take an ADF&G biologist on the trip and data regarding catch rates, bycatch, and biological samples were taken. In 2004 one vessel fished in early February and 5 vessels (7 permits) fished in late April. In 2005, 3 vessels fished in mid-February, 2 vessels (3 permits) fished in mid-March, and 5 vessels (6 permits) fished in late April. In general, catch rates were low in February and there were very high bycatch rates of spiny dogfish (*Squalus acanthias*). The CPUE improved by mid-March and was strong by April. No early season fishing has been conducted since 2005.

SSEI

The SSEI sablefish fishery was managed within the AHO of 696,000 round lbs in each of the years from 2005-2008 (Table 15). The EQS was 24,860 round lbs in 2005 and decreased to 21,750 round lbs in 2006-2008 due to the addition of 4 permits into the fishery. During this reporting period, the survey CPUEs in round lbs per hook were 1.14 in 2006, 0.97 in 2007 and

0.95 in 2008. There was no survey conducted in 2005 due to restrictions on testfish funding. The commercial longline CPUE, standardized to hook spacing, in round lbs per hook dropped from 0.52 to 0.38 from 2005 to 2008. The 2005 SSEI sablefish fishery showed the highest CPUE on record (Figure 7).

2009 SEASON OUTLOOK

NSEI

The abundance and biomass of sablefish in NSEI during 2008 will be estimated using Chapman's modification of the Peterson estimator and used to forecast the biomass for the 2009 season. The abundance and biomass estimate should be available in June 2009.

SSEI

The 2009 AHO is expected to be no greater than last year (696,000 round lbs). The Department anticipates looking more closely at the trends in catch and AWL data in SSEI to determine if the AHO needs to be reduced in that area.

PACIFIC COD

Pacific cod are found from the northern Yellow Sea in China through the Bering Sea as far north as the Chukchi Sea, and south along the Gulf of Alaska and the coast of North America to Monica Bay, California (Love 1991; Westrheim 1996). Pacific cod inhabit the waters of the continental shelf and the upper continental slope waters (Bakkala et al. 1984; Westrheim 1996).

FISHERY DEVELOPMENT AND HISTORY

It is difficult to piece together the catch history of the directed Pacific cod fishery in the inside waters of Southeast Alaska, because there are limited landing records for the fishery. Much of the catch is used as bait in other fisheries and fish ticket-reporting compliance of bait catch has been poor. Also, directed Pacific cod harvest is landed on a miscellaneous finfish card (M) and bycatch of Pacific cod harvested in other fisheries may also be landed on the M card.

The GHR for Pacific cod in the SSEI and NSEI Subdistricts combined is 750,000-1,250,000 round lbs. Total annual reported landings of Pacific cod from NSEI and SSEI have ranged from 142,405 round lbs (1985) to 962,434 round lbs (1993) with most of this harvest landed on M cards (Table 16). Between 21 and 179 M card permits have landed Pacific cod in any year between 1985 and 2008 (Table 16).

The reported landings of Pacific cod from NSEI and SSEI have varied widely over the past ten years with the highest catches in the 1990's (Table 16). The increase in catch in the 1990s was due to the development of a food market for Pacific cod. This market has been supplied in recent years by catches in the Central and Western Gulf.

Longline gear is the primary gear used in the directed Pacific cod fishery, which takes place in the internal waters of Southeast Alaska, although pots and other hook and line gear such as jig and dinglebar are also legal. The directed fishery for Pacific cod has remained open year round in state waters since the adoption of the GHR in 1993.

REGULATIONS

In 1991, the BOF implemented a regulation setting a guideline harvest range for Pacific cod at 750,000 to 1,250,000 round lbs. In 2000 the BOF limited lawful gear for the harvest of Pacific cod to longline, dinglebar troll gear, hand troll gear, mechanical jigging machines and pots.

STOCK ASSESSMENT AND MANAGEMENT

There are no stock assessment surveys for Pacific cod. Landed Pacific cod are sampled for biological data including length, sex, maturity, and otoliths. Aging of Pacific cod is problematic and estimated ages are not yet used for assessing stock condition.

A large portion of the Pacific cod taken in Southeast Alaska is used for bait in other fisheries, and is not reported on fish tickets. The implementation of additional bait regulations, including the requirement that a fish ticket be submitted to the Department detailing bait catches, have largely been unsuccessful in increasing the reporting of bait taken for personal use.

2005-2008 SEASON SYNOPSIS

Pacific cod landings have been fairly steady in the last four years, with 469,215 round lbs reported in 2005 and 505,742 round lbs through October 2008 (Table 16). As in the past, the majority of the harvest (98%) was taken in NSEI. In 2005 and again in 2008, the area around Fredrick Sound was closed to directed fishing in April in order to distribute directed fishery harvest. In both of those years over one third of the annual AHO had been taken in this area and there was concern this might be too much pressure on spawning stocks in Frederick Sound.

2009 SEASON OUTLOOK

Pacific cod continues to be an important food and bait fish and remains one of the few open access fisheries in Alaska. It is anticipated since the price of Pacific cod was high at the end of 2008 that there will be continued effort in this fishery through the winter into 2009.

FLATFISH

Starry flounder (*Platichthys stellatus*) are the primary species targeted in the beam trawl fishery for flatfish in Southeast Alaska. They occur in soft-bottom, shallow water estuaries generally shallower than 100 m, from the Beaufort Sea to Southern California and from the East Siberian Sea south to the Sea of Okhotsk and to the Sea of Japan off Korea (Mecklenburg et al. 2002).

FISHERY DEVELOPMENT AND HISTORY

There is relatively limited estuarine habitat in Southeast Alaska where trawl fisheries are likely to target flounder. A trawl fishery for flatfish was already established in the inside waters of Southeast Alaska by 1960 when landings of flatfish began to be documented. Between 1960 and 1965 approximately 40,000 round lbs of flatfish were harvested annually from Port Camden and delivered to the Yukon Fur Farm on Kupreanof Island for use as mink food. ADF&G reporting records beginning in 1970, show a substantial increase from this annual harvest to just under 1 million round lbs by 1973 with the harvest dropping substantially by 1980. The harvest in these early years came primarily from Port Camden, Level Island, and the Stikine Flats. These fish were primarily delivered south, often in chill-vans, which kept the product live. The fishery again escalated from minimal reported landings in the early 1980s to landings just over 800,000 round lbs in the late 80s, consisting primarily of starry flounder and some rock sole

(*Lepidopsetta spp*). All the flatfish harvested in 1996 and 1997 were processed in Southeast Alaska, a significant change from previous years. Harvests remained high from 1987-1991 and then fell substantially to less than 10,000 round lbs by 1995 and since that time have remained at 20,000 round lbs or less per season (Table 17). The GHRs are low in all areas due to limited habitat and high bycatch of crab, shrimp, and halibut (Bracken et al. 1991).

Trip limits of 20,000 round lbs were implemented by the BOF in 1993. These trip limits made it uneconomical for large trawl vessels traveling south from the Western Gulf to make a season end trip to Southeast Alaska, something they had historically done. Since that time the fishery has remained a small local fishery with very few participants. The recent harvest has been used locally in Wrangell and not all catches have been reported.

REGULATIONS

The trawl fishery for flatfish is limited to four areas: the Stikine Flats, Level Island, Port Camden, and Anita Bay, although Stikine Flats has been closed to directed fishing since 1989. The beam trawl fishery targets pre-spawning concentrations of flatfish; hence, fishing is productive over only a portion of the year. Fishing seasons are October 1 through April 15 for the Anita Bay area and October 15 through November 15 and February 15 through April 15 in the Port Camden and Level Island Fisheries. In 1993 the BOF implemented a 20,000 round lbs weekly trip limit that is intended to prevent overharvest of the small AHOs in this fishery. In 1997, the BOF rejected a proposal to increase the weekly trip limit to 35,000 round lbs. Legal gear for directed flatfish fishing in Southeast Alaska was limited to beam trawl gear beginning in 2001.

Department-issued permits are required to participate in the directed beam trawl flatfish fishery. The conditions of this permit require the operator to keep a detailed logbook. Open areas, gear restrictions, and reporting requirements are outlined in the individual permits. Permits are issued for 30 days and are renewable at the Department's discretion. The Department may also require on-board observer coverage.

STOCK ASSESSMENT AND MANAGEMENT

There are no stock assessment surveys for flatfish. Previously on-board observers collected information on CPUE and biological characteristics of the stock. Samples collected in 1988 indicated that the mature flatfish stock in the Stikine Flats area was in very poor condition and the fishery was in danger of recruitment overfishing (Bracken et al. 1991). Consequently, this area was closed to directed fishing in 1989 and has remained closed. There is no current onboard observer coverage of this fishery given the very low levels of effort in recent years.

The most recent management action for the flatfish fishery occurred in April of 1998 when the Department closed the Anita Bay area to directed trawl fishing when the area AHO had been met. There has been no directed fishing since 1998 in any area.

The Department currently knows little about the current condition of the flatfish resource in Southeast Alaska as there have been no fishery independent surveys or any commercial fishery in recent years.

2005-2008 SEASON SYNOPSIS

There was no participation in the directed flatfish fishery at any time during the reporting period. No one had registered to fish as of November 30 for the 2008 season.

2009 SEASON OUTLOOK

The Department will issue permits if requested with an emphasis on collecting biological data on flatfish as well as bycatch information.

OTHER SPECIES

Landings of other groundfish species in NSEI and SSEI continue to be low. The majority of other species are discarded at sea and not reported on fish tickets. Primary discards include Pacific sleeper sharks (*Somniosus pacificus*), spiny dogfish, spotted ratfish (*Hydrolagus colliei*), skates, arrowtooth flounder (*Atheresthes stomias*), hagfish, and grenadiers. During the reporting period minimal amounts of arrowtooth flounder, skates, and grenadier were landed. There has been increased interest in skates with prices as high as 70 cents per round lb with a consequent increase in landed catch in 2008.

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TABLES AND FIGURES

Table 1.—Reported catch in round lbs and ex-vessel value for state-managed groundfish taken in groundfish and halibut fisheries, Region 1, 1993 through October 2008.

Year	Species/ Area managed								
	Rockfish								
	Lingcod Southeast	Flatfish NSEI/SSEI	DSR Southeast	PSR NSEI/SSEI	Black SEO	Slope NSEI/SSEI	Pacific cod NSEI/SSEI	Sablefish NSEI/SSEI	Total
1993	950,562	23,259	1,563,811	18,092		175,694	962,434	6,619,985	10,313,837
	\$390,836	\$4,652	\$834,344	\$5,605		\$66,764	\$394,598	\$6,437,864	\$8,134,663
1994	786,766	11,375	1,619,214	16,920		331,568	402,475	5,580,340	8,748,658
	\$346,177	\$2,389	\$858,680	\$4,907		\$192,309	\$148,916	\$10,210,439	\$11,763,817
1995	829,629	22,016	747,872	9,237		426,904	339,312	5,221,110	7,596,080
	\$481,185	\$4,403	\$781,092	\$2,771		\$273,219	\$115,366	\$9,045,576	\$10,703,612
1996	755,771	1,185	1,008,417	8,365		510,210	639,343	5,176,160	8,099,451
	\$377,886	\$273	\$923,641	\$3,011		\$321,432	\$326,065	\$10,807,647	\$12,759,955
1997	612,950	5,614	913,492	15,105		622,581	778,033	5,478,464	8,426,239
	\$330,993	\$1,067	\$973,727	\$3,927		\$397,774	\$326,774	\$13,153,151	\$15,187,413
1998	581,364	14,631	953,538	6,740		905,127	647,940	5,266,064	8,375,404
	\$308,881	\$2,634	\$919,950	\$2,022		\$534,025	\$233,258	\$8,316,809	\$10,317,579
1999	515,291	12,968	969,777	49,833	42,957	654,469	823,342	3,704,697	6,773,334
	\$319,632	\$2,464	\$1,019,155	\$16,770	\$14,587	\$412,315	\$279,936	\$7,838,126	\$9,902,985
2000	481,034	4,418	786,706	44,375	36,782	733,227	593,104	3,672,579	6,352,225
	\$327,726	\$499	\$959,146	\$16,110	\$13,898	\$445,289	\$231,311	\$8,570,766	\$10,564,745
2001	330,569	1,392	860,958	22,533	17,288	487,407	356,790	2,793,295	4,870,232
	\$166,371	\$0	\$971,431	\$5,879	\$3,716	\$264,544	\$121,309	\$5,813,074	\$7,346,324
2002	351,421	2371	1,076,598	96,883	84,754	349,328	251,751	2,659,719	4,872,825
	\$208,136	\$237	\$1,027,351	\$33,781	\$27,024	\$191,941	\$100,700	\$6,102,368	\$7,691,538
2003	393,371	1124	800,892	96,690	91,676	306,946	386,548	2,658,579	4,735,826
	\$258,264	\$112	\$935,865	\$42,838	\$41,104	\$161,873	\$150,754	\$6,316,033	\$7,906,843
2004	360,682	802	874,526	50,981	45,458	222,781	451,446	2,878,801	4,885,477
	\$232,010	\$0	\$1,076,852	\$19,001	\$16,938	\$149,319	\$186,483	\$5,563,286	\$7,243,889
2005	324,323	1779	608,510	4,773	9,715	264,866	469,215	2,665,850	4,349,031
	\$223,473	\$0	\$599,880	\$2,661	\$4,365	\$159,856	\$208,396	\$6,378,833	\$7,577,464
2006	348,053	confidential	566,784	1,123	8,816	290,743	363,659	2,658,618	4,237,796
	\$282,165	\$0	\$458,240	\$801	\$4,317	\$183,797	\$165,453	\$6,501,059	\$7,595,832
2007	346,010	confidential	542,894	1,289	3,054	265,029	581,314	2,121,646	3,861,236
	\$277,168	\$0	\$409,647	\$491	\$1,076	\$144,598	\$269,965	\$5,269,200	\$6,372,145
2008	401,700	20,346	491,992	1,541	1,850	244,922	505,742	2,056,319	3,724,412
	\$378,627	\$7,552	\$466,776	\$529	\$425	\$141,638	\$285,072	\$6,365,469	\$7,646,088

Table 2.—Groundfish bycatch in round lbs reported in the Southeast Alaska salmon troll and Yakutat setnet fisheries, 1981 through October 2008.

Year	Demersal shelf rockfish	Pelagic rockfish	Slope rockfish	Pacific cod	Lingcod	Spiny Dogfish	Total round lbs	Total value	Total permits
1981	27,657	0	0	1,637	27,525	0	56,819	\$19,915	496
1982	5,236	0	0	1,176	38,658	0	45,070	\$14,573	429
1983	2,380	7	0	25	17,522	0	19,902	\$6,956	245
1984	3,734	20	0	165	24,742	0	28,641	\$12,428	323
1985	1,161	46	0	17	20,709	0	21,870	\$6,130	316
1986	188	4	13	0	3,984	0	3,984	\$5,411	83
1987	6,839	900	32	511	65,645	0	73,895	\$24,817	542
1988	3,498	1,370	192	67	69,695	0	74,755	\$27,412	542
1989	2,195	694	68	237	94,806	0	96,932	\$33,222	533
1990	2,284	1,059	222	0	79,914	0	83,479	\$26,869	520
1991	1,524	4,834	223	4	66,898	0	73,479	\$28,520	496
1992	1,099	5,368	553	28	43,578	0	50,598	\$16,226	432
1993	3,425	4,636	1,133	0	50,530	0	59,724	\$17,362	394
1994	2,641	3,356	1,283	0	44,630	0	51,910	\$18,625	318
1995	2,006	14,836	2,754	33	63,903	0	83,499	\$40,675	422
1996	1,162	9,205	1,232	0	36,600	0	48,199	\$20,239	280
1997	1,864	13,573	1,208	17	30,606	0	47,251	\$19,394	314
1998	2,314	15,445	1,926	274	28,343	0	48,302	\$18,868	310
1999	971	13,297	1,053	523	21,772	0	37,616	\$15,643	277
2000	1,481	13,846	2,294	164	32,545	35,881	86,211	\$27,518	376
2001	1,470	12,875	1,761	0	21,533	91,411	129,050	\$21,071	278
2002	5,117	19,354	4,359	60	57,317	1,256	87,463	\$35,940	246
2003	3,602	18,938	3,265	0	33,495	0	59,300	\$26,259	231
2004	4,793	19,235	2,662	345	34,856	0	61,891	\$32,524	234
2005	2,642	21,205	1,885	32	25,397	0	51,161	\$21,609	211
2006	2,060	18,086	6,318	0	35,101	25,375	86,940	\$35,280	261
2007	2,211	18,672	1,829	0	41,231	18,396	82,339	\$31,398	282
2008	1,853	22,339	2,059	9	31,848	296	58,404	\$24,952	255

Table 3.—Testfish landings in round lbs and ex-vessel values for Alaska Department of Fish and Game and International Pacific Halibut Commission surveys, by group and year for state-managed species.

Year	Pelagic rockfish	Demersal shelf rockfish	Lingcod	Pacific cod	Sablefish	Slope rockfish	Total
1999	26	5,813		1,028	93,044	6,205	106,115
	\$9	\$6,009		\$285	\$167,226	\$2,757	\$176,286
2000		18,379		413	128,421	4,967	152,181
		\$19,035		\$83	\$287,345	\$2,424	\$308,887
2001	826	16,944	1,038	514	145,966	6,692	171,980
	\$202	\$17,422	\$448	\$90	\$285,952	\$1,981	\$306,096
2002	2,104	6,438		214	137,654	5,528	151,939
	\$561	\$8,314		\$21	\$284,358	\$2,618	\$295,873
2003	62	18,076	1,739	2,125	151,755	9,958	183,715
	\$23	\$23,917	\$1,127	\$84	\$321,984	\$3,854	\$350,988
2004	4	6,956		1,232	139,976	4,900	153,068
	\$1	\$6,680		\$20	\$264,182	\$1,744	\$272,628
2005	18	12,613		709	128,042	4,018	145,400
	\$5	\$9,970		\$177	\$317,005	\$1,474	\$328,631
2006	3	6,757		487	146,855	4,846	158,948
	\$1	\$7,460		\$78	\$388,036	\$1,570	\$397,145
2007	96	10,846		614	148,305	6,583	166,444
	\$22	\$9,302		\$92	\$384,080	\$2,359	\$395,855
2008	71	7,663	1360	810	153,122	4,835	167,861
	\$15	\$11,167	\$0	\$210	\$475,956	\$1,744	\$489,092

Table 4.-The Southeast District reported harvest (round lbs), effort, and ex-vessel value for lingcod taken in commercial groundfish and halibut fisheries, 1987 through October 2008.

Year	Directed harvest	Directed value	Directed permits	Total harvest in groundfish and halibut fisheries	Value in groundfish and halibut fisheries	Groundfish and halibut permits landing lingcod
1987	163,305	\$70,493	35	463,932	\$194,951	435
1988	249,295	\$118,849	59	589,930	\$250,128	562
1989	180,516	\$94,094	40	543,725	\$208,865	602
1990	312,820	\$157,298	46	688,723	\$278,192	635
1991	490,873	\$231,589	57	966,842	\$393,755	646
1992	457,801	\$194,380	61	929,640	\$317,785	680
1993	496,771	\$248,730	64	964,671	\$392,551	577
1994	419,291	\$216,110	72	796,774	\$345,951	603
1995	665,860	\$405,392	83	856,641	\$481,185	474
1996	525,510	\$262,068	101	772,488	\$379,283	462
1997	421,262	\$234,817	60	642,385	\$331,606	442
1998	370,739	\$213,784	52	564,222	\$308,881	429
1999	276,707	\$191,051	39	495,652	\$319,632	478
2000	306,658	\$229,968	35	481,115	\$327,726	427
2001	137,290	\$79,781	25	328,918	\$166,371	421
2002	178,892	\$125,763	28	351,387	\$208,136	397
2003	243,926	\$178,544	33	394,913	\$258,264	377
2004	164,639	\$124,800	28	359,510	\$232,010	329
2005	177,525	\$146,860	27	324,323	\$223,473	298
2006	236,079	\$228,815	30	345,813	\$282,165	305
2007	233,870	\$228,767	32	341,650	\$277,168	334
2008	269,594	\$291,637	39	401,700	\$378,627	304

Table 5.—The Southeast District lingcod reported harvest (round lbs) for commercial groundfish, halibut and salmon troll fisheries, by gear, 1990 through October 2008.

Year	Directed	Salmon troll	Groundfish and halibut longline	Groundfish jig bycatch	Total
1990	312,820	110,647	357,988	18,319	799,774
1991	490,873	93,751	462,269	11,718	1,058,611
1992	457,801	67,288	460,265	5,506	990,860
1993	496,771	71,788	465,386	4,377	1,038,323
1994	419,291	94,768	378,886	881	893,826
1995	665,860	89,219	189,068	213	944,360
1996	525,510	49,771	235,755	318	811,354
1997	421,262	42,508	213,261	61	677,092
1998	370,739	39,365	196,304	2,632	609,041
1999	276,707	30,220	233,682	660	541,269
2000	306,658	43,326	173,374	1,000	524,358
2001	137,290	27,753	190,376	186	355,605
2002	178,857	57,273	170,634	1,011	407,775
2003	243,926	33,350	149,115	366	426,756
2004	164,639	34,622	195,116	869	395,246
2005	177,525	25,400	145,687	132	348,744
2006	236,079	34,937	110,557	211	381,784
2007	233,870	41,231	107,241	35	382,377
2008	269,594	31,860	132,118	0	433,572

Table 6.–Lingcod guideline harvest limits (GHL; round lbs) and allocations between sectors.

	Icy Bay	East Yakutat*	NSEO	CSEO	SSEOC	SSEIW	NSEI
GHL	0–100,000	0–200,000	0–40,000	0–240,000	0–167,000	0–52,000	0–32,000
Sector	Percent allocation						
Sport Fishery	33%	2%	22%	30%	44%	92%	50%
Directed Fishery		43%	43%	36%	30%	0%	0%
Longline Bycatch	67%	47%	27%	23%	17%	4%	30%
Salmon Troll Bycatch		8%	8%	7%	2%	4%	20%
Hand troll & Jig Bycatch	0%	0%	0%	4%	7%	0%	0%

*GHL actually 0–225,000: when the AHO exceeds 200,000 round lbs then 4,000 round lbs to sport, 94,000 to longline, 16,000 to troll, and the remainder to directed fisheries.

Table 7.–Commercial lingcod annual harvest objective by fishery and management area in round lbs.

2008 Annual Harvest Objective (round lbs)					
Management area	Directed	Salmon troll	Longline	Hand troll and Jig	Total
IBS	combined			0	66,660
EYKT	111,000	16,000	94,000	0	221,000
NSEO	17,200	3,200	10,800	0	31,200
CSEO	86,400	16,800	55,200	9,600	168,000
SSEOC	50,100	3,340	28,390	11,690	93,520
NSEI	0	6,400	9,600	0	16,000
SSEIW	0	2,080	2,080	0	4,160
Total					600,540

Table 8.—The Southeast District lingcod reported harvest (round lbs) for commercial groundfish fisheries, halibut fisheries, and salmon troll fisheries by management area, 2002 through October 2008. Blank cells represent no allocation.

Year	Fishery	CSEO	EYKT	IBS	NSEI	NSEO	SSEIW	SSEOC	Grand total
2002	directed	60,160	93,173	0		15,264		10,261	178,857
	salmon	13,581	29,394	2,154	1,822	9,594	44	684	57,273
	longline	55,988	41,230	19,583	8,607	15,878	2,873	26,475	170,634
Total		129,729	163,797	21,737	10,429	40,736	2,917	37,420	406,765
2003	directed	75,652	101,419	confidential		14,493		48,762	confidential
	salmon	12,637	8,488	1,427	1,615	4,047	2,030	3,106	33,350
	longline	45,202	41,578	10,822	9,771	13,319	2,747	25,676	149,115
Total		133,491	151,485	confidential	11,386	31,859	4,777	77,544	confidential
2004	directed	23,088	100,891	28,846		2,609		confidential	confidential
	salmon	8,377	10,951	6,552	420	4,118	673	3,531	34,622
	longline	38,845	94,983	12,457	9,982	12,391	1,943	24,515	195,116
Total		70,310	206,825	47,855	10,402	19,118	2,616	confidential	confidential
2005	directed	54,034	80,085	40,748		2,659		0	177,525
	salmon	8,812	5,299	3,436	1,195	3,894	381	2,383	25,400
	longline	19,453	64,901	24,712	10,220	11,039	2,655	12,707	145,687
Total		82,299	150,285	68,896	11,415	17,592	3,036	15,090	348,612
2006	directed	46,916	108,650	63,432		confidential		16,646	confidential
	salmon	13,391	8,552	46	3,776	4,711	584	3,877	34,937
	longline	20,054	33,954	16,793	9,615	11,846	3,161	15,134	110,557
Total		80,361	151,156	80,271	13,391	confidential	3,745	35,657	confidential
2007	directed	69,805	100,614	63,021		confidential		confidential	confidential
	salmon	16,575	14,242	287	2,063	3,753	928	3,383	41,231
	longline	18,540	35,306	11,333	11,825	12,117	2,884	15,236	107,241
Total		104,920	150,162	74,641	13,888	confidential	3,812	confidential	confidential
2008	directed	84,571	140,867	38,168		5,313		confidential	confidential
	salmon	9,441	11,633	2,599	1,982	3,695	833	1,677	31,860
	longline	16,444	50,837	25,949	12,008	7,625	1,240	18,016	132,118
Total		110,456	203,337	66,716	13,990	16,633	2,073	confidential	confidential

Table 9.—The Southeast District demersal shelf rockfish (DSR) reported harvest, effort and value for DSR taken in commercial groundfish and halibut fisheries, 1987 through October 2008.

Year	Directed harvest		Directed permits	Total harvest		
	round lbs	Directed value		round lbs	Total value	Total permits
1987 ^a	2,745,762	\$1,427,763		3,300,563	\$1,650,282	646
1988 ^a	1,555,607	\$777,804		1,935,895	\$1,065,043	819
1989 ^a	997,388	\$498,694		1,400,966	\$768,302	833
1990 ^a	690,253	\$403,752	144	1,122,095	\$600,190	789
1991 ^b	1,147,267	\$734,251	136	1,484,328	\$777,496	862
1992 ^b	1,087,554	\$626,336	149	1,591,020	\$768,960	919
1993 ^b	976,368	\$657,066	122	1,563,811	\$834,344	834
1994 ^b	982,745	\$680,863	133	1,619,214	\$858,680	847
1995 ^b	398,401	\$442,783	66	747,872	\$781,092	811
1996 ^c	782,776	\$787,585	125	1,008,417	\$923,641	736
1997 ^c	651,346	\$828,122	105	913,492	\$973,727	718
1998 ^c	622,289	\$749,599	88	953,538	\$919,950	733
1999 ^c	593,638	\$727,855	83	969,777	\$1,019,155	851
2000 ^c	473,385	\$706,842	59	786,706	\$959,146	774
2001 ^c	457,980	\$673,231	55	860,958	\$971,431	774
2002 ^c	413,792	\$666,206	63	1,076,598	\$1,027,351	768
2003 ^c	336,572	\$494,761	60	800,892	\$935,865	819
2004 ^c	437,079	\$660,047	45	874,526	\$1,076,852	740
2005 ^c	108,141	\$184,611	17	608,510	\$599,880	721
2006 ^c	3,078	\$4,349	4	566,784	\$458,240	735
2007 ^c	5,426	\$6,529	4	542,894	\$409,647	734
2008 ^c	105,373	\$174,070	17	491,992	\$466,776	703

Note: Directed fishery permit (Y) was implemented in 1990 in all areas, but EYKT (1992) used M cards with >40% DSR for target prior to Y permits; dinglebar gear card was implemented in 1997.

^a DSR assemblage includes: bocaccio, canary, china, copper, quillback, redstripe, rosethorn, silvergray, tiger, yelloweye, and unspecified DSR.

^b DSR assemblage includes: canary, china, copper, quillback, redbanded, rosethorn, tiger, yelloweye, and unspecified DSR.

^c DSR assemblage includes: canary, china, copper, quillback, rosethorn, tiger, yelloweye, and unspecified DSR.

Table 10.—Directed fishery allocation and catch for DSR by management area and year, 2005 through October 2008.

Management area	2008		2007		2006		2005	
	Allocation	Catch	Allocation	Catch	Allocation	Catch	Allocation	Catch
EYKT	123,480	48,904	0	0	0	0	92,610	93,389
NSEO	0	0	0	0	0	0	0	0
CSEO	0	0	0	0	0	0	0	0
SSEO	68,355	44,368	0	0	0	0	0	0
NSEI	55,125	12,008	55,125	3,684	55,125	2,956	55,125	5,792
SSEI	55,125	93	55,125	1,742	55,125	122	55,125	8,960
Total	302,085	105,373	110,250	5,426	110,250	3,078	202,860	108,141

Table 11.—The pelagic shelf rockfish reported harvest, effort and value landed from NSEI and SSEI for commercial groundfish and halibut fisheries, 1987 through October 2008.

Year	Total harvest		
	round lbs	Total value	Total permits
1987	7,206	\$3,243	36
1988	17,989	\$5,397	44
1989	9,532	\$2,764	57
1990	5,220	\$1,357	67
1991	9,906	\$3,170	58
1992	26,315	\$7,105	83
1993	18,092	\$5,605	57
1994	16,920	\$4,907	53
1995	9,237	\$2,771	46
1996	8,365	\$3,011	57
1997	15,105	\$3,927	61
1998	6,740	\$2,022	58
1999	7,619	\$2,396	66
2000	7,602	\$2,212	70
2001	6,077	\$1,619	56
2002	14,236	\$7,290	44
2003	5,049	\$1,743	42
2004	4,677	\$1,593	38
2005	4,773	\$2,661	33
2006	1,123	\$801	29
2007	1,289	\$491	30
2008	1,541	\$561	29

Table 12.—Black rockfish harvest and ex-vessel value, directed and total commercial landings for the Southeast Outside District, 1999 through October 2008.

Year	Directed harvest round lbs	Directed value	Directed permits	Total harvest round lbs	Total value	Total permits
1999	35,653	\$12,381	10	42,957	14,587	105
2000	31,258	\$12,140	8	36,782	13,898	84
2001	10,439	\$2,228	5	17,288	\$3,716	69
2002	81,771	\$26,073	8	84,754	27,024	67
2003	88,467	\$40,057	9	91,676	41,104	72
2004	45,458	\$16,938	7	45,458	16,938	58
2005	5,478	\$3,097	7	9,715	\$4,365	67
2006	7,009	\$3,785	5	8,816	\$4,317	58
2007	confidential	confidential	2	3,054	\$1,076	61
2008	confidential	confidential	1	1,850	\$425	64

Table 13.—Slope rockfish and shortspine thornyhead reported harvest, ex-vessel value, and effort in NSEI and SSEI groundfish and halibut fisheries, 1985 through October 2008.

Year	Directed harvest round lbs	Directed value	Miscellaneous finfish permits	Total harvest round lbs	Total value	Total permits
1985	13,937	NA	20	24,318	NA	61
1986	30,669	\$13,188	22	56,321	\$21,965	50
1987	16,901	\$7,436	42	52,181	\$25,569	127
1988	15,108	\$6,799	43	77,685	\$35,735	146
1989	18,459	\$7,014	42	102,053	\$37,760	189
1990	11,347	\$3,745	28	91,045	\$39,149	192
1991	40,801	\$16,728	30	147,386	\$66,324	232
1992	35,914	\$11,852	46	153,449	\$56,776	249
1993	52,359	\$19,373	58	175,694	\$66,764	243
1994	73,198	\$46,115	48	331,568	\$192,309	247
1995	150,625	\$88,868	91	426,904	\$273,219	369
1996	271,250	\$160,038	136	510,210	\$321,432	452
1997	369,785	\$218,173	156	622,581	\$379,774	504
1998	531,426	\$292,284	161	905,127	\$534,025	597
1999	365,389	\$219,233	170	654,469	\$412,315	628
2000	494,703	\$285,803	159	733,227	\$445,289	575
2001	268,479	\$140,273	128	487,407	\$264,544	545
2002	150,023	\$66,256	81	349,328	\$191,941	479
2003	91,108	\$36,972	41	306,946	\$161,873	454
2004	NA	NA	NA	222,781	\$149,319	450
2005	NA	NA	NA	264,866	\$159,856	458
2006	NA	NA	NA	290,743	\$183,797	498
2007	NA	NA	NA	265,029	\$144,598	505
2008	NA	NA	NA	244,399	\$141,408	478

Note: 1987–1990 the slope complex included: Pacific ocean perch (POP), darkblotched, sharpchin, thornyhead, greenstripe, northern, roughey, shortraker, redbanded and unspecified slope rockfish.

1991–2008 the slope complex includes: POP, darkblotched, sharpchin, thornyhead, greenstripe, northern, roughey, shortraker, silvergray, redstripe, bocaccio and unspecified slope rockfish.

The directed fishery for slope and thornyhead rockfish was closed by the Board of Fisheries in 2003, effective 07-26-03.

Table 14.—The annual harvest objective, equal quota share, reported harvest, ex-vessel value, and effort for the directed commercial NSEI sablefish fishery, 1985 through October 2008.

Year	Annual harvest objective (round lbs)	Equal quota share (round lbs)	Harvest (round lbs)	Ex-vessel value	No. of permits	No. of Days
1985	2,380,952		2,951,056	\$2,005,394	105	3
1986	2,380,952		3,874,269	\$2,866,959	138	2
1987	2,380,952		3,861,546	\$3,514,006	158	1
1988	2,380,952		4,206,509	\$4,543,029	149	1
1989	2,380,952		3,767,518	\$2,900,988	151	1
1990	2,380,952		3,281,393	\$3,543,904	121	1
1991	2,380,952		3,955,189	\$6,882,028	127	1
1992	2,380,952		4,267,781	\$4,907,948	115	1
1993	2,380,952		5,795,974	\$5,622,094	120	1
1994	4,761,905	38,889	4,713,552	\$9,144,290	121	30
1995	4,761,905	38,889	4,542,348	\$7,721,991	121	30
1996	4,761,905	38,889	4,673,701	\$9,908,246	121	61
1997	4,800,000	39,300	4,753,394	\$11,550,747	122	76
1998	4,800,000	41,700	4,688,008	\$7,360,172	116	76
1999	3,120,000	28,000	3,043,273	\$6,634,335	112	76
2000	3,120,000	28,600	3,082,159	\$7,394,890	111	76
2001	2,184,000	19,600	2,142,617	\$4,563,774	111	76
2002	2,005,000	18,400	2,009,380	\$4,814,718	109	76
2003	2,005,000	18,565	2,001,643	\$4,809,492	108	93
2004	2,245,000	20,787	2,229,956	\$4,532,611	108	93
2005	2,053,000	19,400	2,026,131	\$5,027,393	106	93
2006	2,053,000	19,550	2,033,786	\$5,066,320	105	93
2007	1,488,000	14,500	1,501,478	\$3,754,847	103	93
2008	1,508,000	15,710	1,438,286	\$4,511,072	96	93

Table 15.—The annual harvest objective, equal quota share, and reported harvest (in round lbs), along with ex-vessel value and effort for the directed commercial SSEI sablefish fishery, 1985 through October 2008. Number of permits in 1985 represents permits fished; limited entry was implemented in 1986.

Year	Annual harvest objective	Equal share quota	Longline Fishery				Pot Fishery			
			Harvest	Ex-vessel value	No. of permits	No. of days	Harvest	Ex-vessel value	No. of permits	No. of days
1985	790,000		511,617	\$322,319	43	7				
1986	790,000		554,121	\$260,436	22	7	confidential	confidential	2	7
1987	790,000		435,501	\$291,785	22	5	confidential	confidential	1	5
1988	790,000		712,787	\$719,914	26	5	confidential	confidential	1	5
1989	790,000		952,231	\$714,173	31	5	confidential	confidential	1	5
1990	790,000		758,663	\$553,823	30	3			0	3
1991	790,000		679,623	\$625,253	30	2.4	confidential	confidential	1	2.4
1992	790,000		936,811	\$936,811	30	2.4	confidential	confidential	1	2.4
1993	790,000		824,011	\$815,770	30	2.4			0	2.4
1994	790,000		866,788	\$1,066,149	30	2.4			0	2.4
1995	790,000		678,762	\$1,323,585	30	2			0	2
1996	790,000		502,459	\$899,401	30	2			0	2
1997	790,000	23,200	608,786	\$1,345,423	30	45	116,281	\$256,981	5	76
1998	632,000	20,400	496,210	\$699,656	29	45	81,846	\$113,765	4	76
1999	720,000	24,000	565,190	\$1,006,038	26	45	96,234	\$193,430	4	76
2000	696,000	24,000	494,528	\$989,056	25	76	96,287	\$187,760	4	76
2001	696,000	24,000	554,490	\$1,064,621	25	76	96,188	\$184,679	4	76
2002	696,000	24,000	554,074	\$1,074,904	25	76	96,265	\$212,746	4	76
2003	696,000	24,860	557,102	\$1,286,906	24	76	99,834	\$219,635	4	76
2004	696,000	24,860	550,472	\$871,689	24	76	98,373	\$158,986	4	76
2005	696,000	24,860	539,251	\$1,127,483	24	76	100,468	\$223,957	4	76
2006	696,000	21,750	537,812	\$1,224,134	28	76	87,020	\$210,605	4	76
2007	696,000	21,750	533,130	\$1,306,573	28	76	87,038	\$207,780	4	76
2008	696,000	21,750	531,866	\$1,598,097	28	76	86,167	\$256,300	4	76

Table 16.—Pacific cod reported harvest, ex-vessel value, and effort, NSEI and SSEI groundfish and halibut fisheries, 1985 through October 2008.

Year	Directed harvest (round lbs)	Directed value	Directed permits	Total harvest (round lbs)	Total value	Total permits
1985	132,915	\$31,001	42	142,405	\$35,601	61
1986	318,312	\$79,578	99	338,145	\$84,536	123
1987	724,781	\$231,930	179	781,487	\$250,076	259
1988	474,359	\$166,026	156	522,964	\$177,808	278
1989	311,255	\$124,502	102	380,070	\$140,626	318
1990	218,120	\$80,704	74	309,919	\$102,273	338
1991	504,036	\$191,534	88	589,376	\$212,175	322
1992	780,265	\$335,514	141	886,243	\$354,497	377
1993	889,676	\$382,561	133	962,434	\$394,598	319
1994	346,663	\$138,665	77	402,475	\$148,916	220
1995	285,363	\$105,584	92	339,312	\$115,366	237
1996	592,090	\$313,808	129	639,343	\$326,065	281
1997	722,814	\$310,810	138	778,413	\$326,933	298
1998	585,573	\$216,662	106	647,940	\$233,258	301
1999	724,089	\$260,672	132	823,342	\$279,936	356
2000	529,267	\$219,583	107	593,104	\$231,311	304
2001	312,714	\$109,450	78	356,790	\$121,309	237
2002	211,109	\$90,777	48	251,751	\$100,700	193
2003	328,253	\$134,584	50	386,548	\$150,754	211
2004	408,995	\$176,708	41	451,446	\$186,483	166
2005	424,054	\$204,303	26	469,215	\$208,396	172
2006	307,138	\$159,263	21	363,659	\$165,453	191
2007	509,463	\$264,422	33	581,314	\$269,965	215
2008	460,993	\$276,669	35	505,742	\$285,072	195

Table 17.—Flatfish reported harvest, ex-vessel value, and effort, NSEI and SSEI. Fishing seasons are split across years, 1987–2008.

Season	Trawl harvest (round lbs)	Directed value	Directed permits	Total harvest (rounds lbs)	Total Value	Total Permits
1987–1988	861,349	\$215,337	7	863,679	\$215,920	15
1988–1989	532,918	\$138,559	4	533,333	\$138,667	11
1989–1990	278,671	\$66,881	2	283,006	\$67,921	6
1990–1991	340,633	\$78,346	7	341,061	\$78,444	11
1991–1992	58,854	\$8,240	5	59,118	\$8,277	6
1992–1993	confidential	confidential	2	23,259	\$4,652	8
1993–1994	confidential	confidential	1	11,375	\$2,389	3
1994–1995	confidential	confidential	2	22,016	\$4,403	14
1995–1996	0	0	0	1,185	\$273	10
1996–1997	0	0	0	5,614	\$1,067	14
1997–1998	confidential	confidential	1	14,631	\$2,634	17
1998–1999	confidential	confidential	1	12,968	\$2,464	12
1999–2000	0	0	0	4,418	\$499	11
2000–2001	0	0	0	1,392	\$0	13
2001–2002	0	0	0	2371	\$237	7
2002–2003	0	0	0	1124	\$112	5
2003–2004	0	0	0	802	0	4
2004–2005	0	0	0	1779	0	6
2005–2006	0	0	0	confidential	0	confidential
2006–2007	0	0	0	confidential	0	confidential
2007–2008	0	0	0	20,346	\$7,552	50

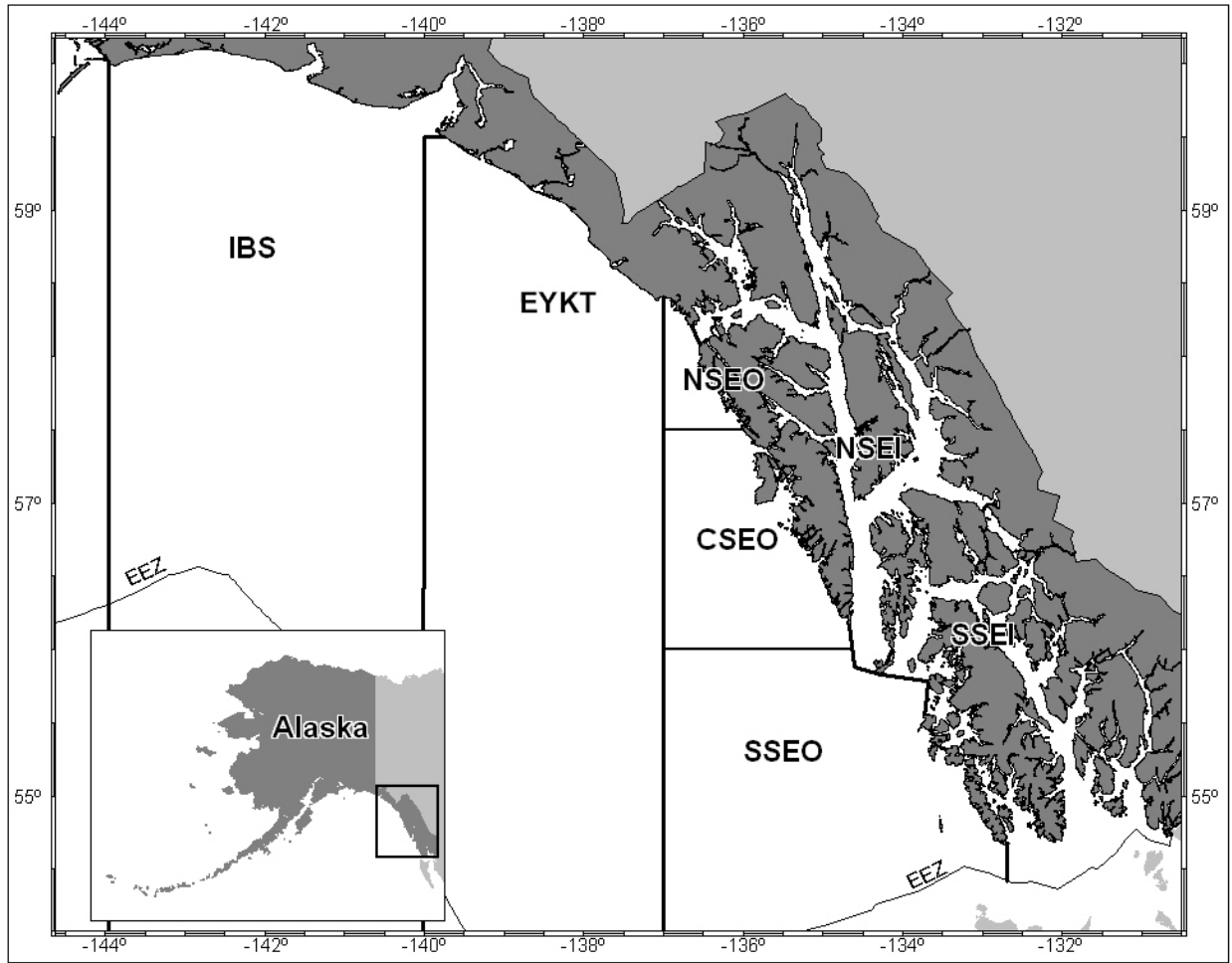


Figure 1.—Southeast District groundfish management areas.

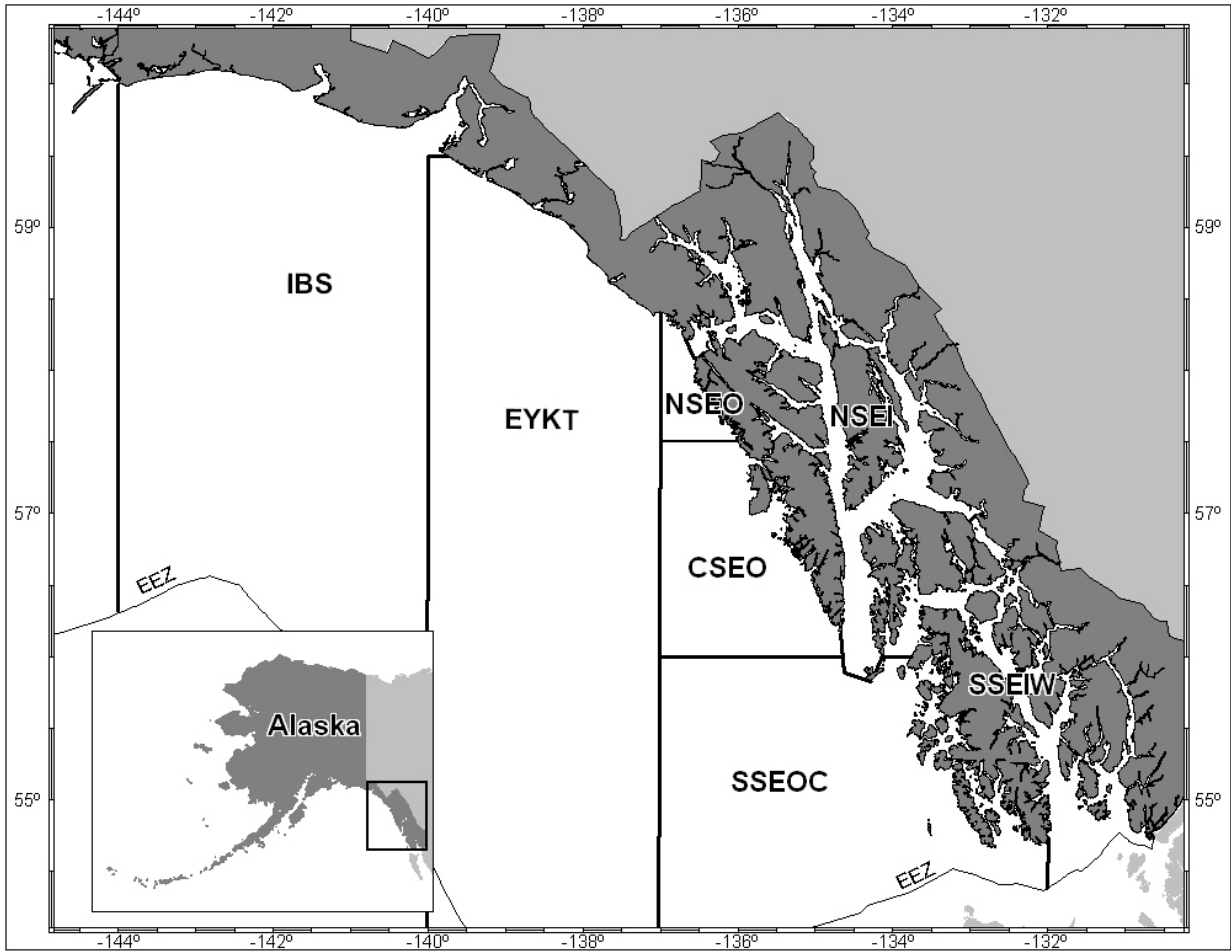


Figure 2.—Southeast District lingcod and black rockfish management areas.

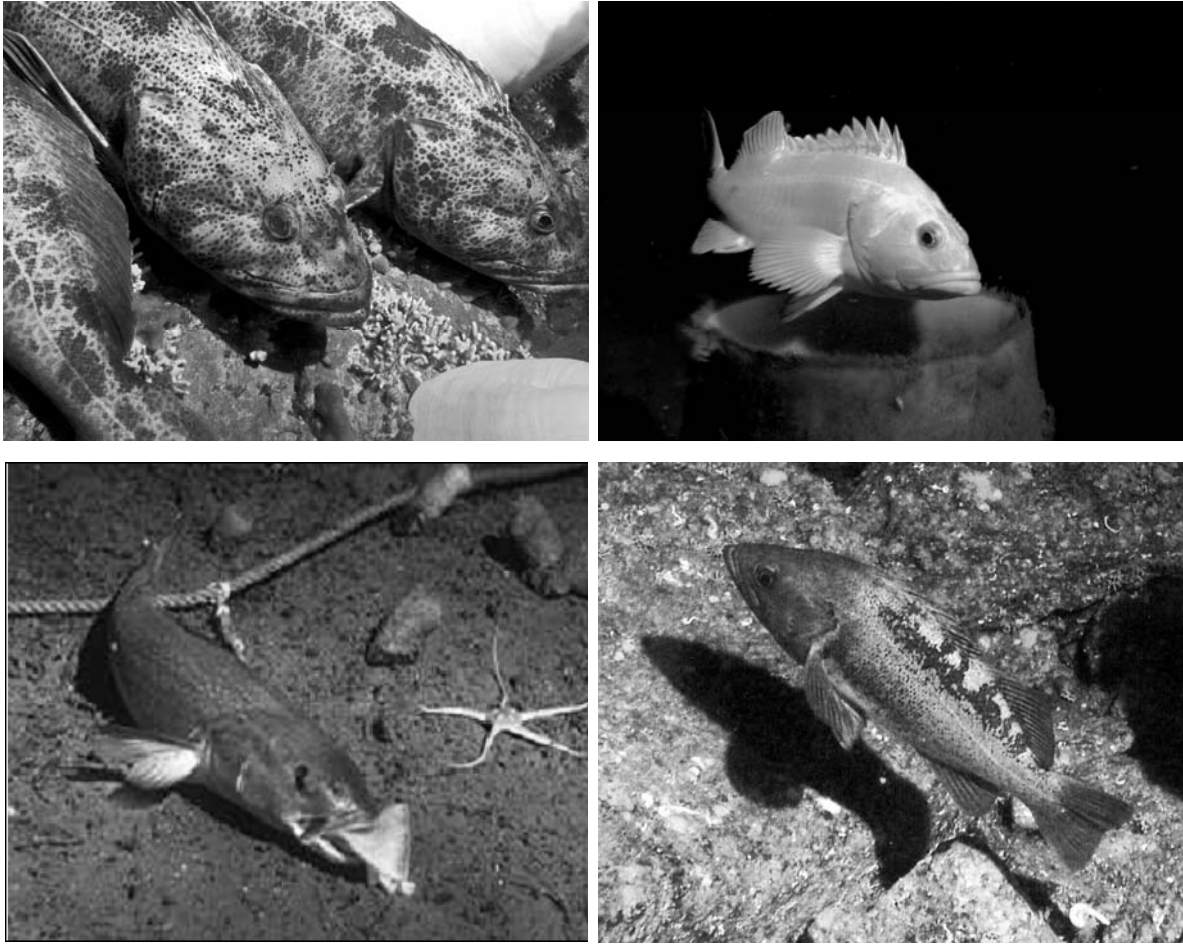


Figure 3.—Photographs of select groundfish species: lingcod (upper left, photo by J.J. Bizzarro, Pacific Shark Research Center), yelloweye rockfish (upper right, photo by M. Vaughn, ADF&G), sablefish (lower left, photo by P. Malecha, NMFS), and black rockfish (lower right, photo by C. K. Brylinsky, ADF&G).

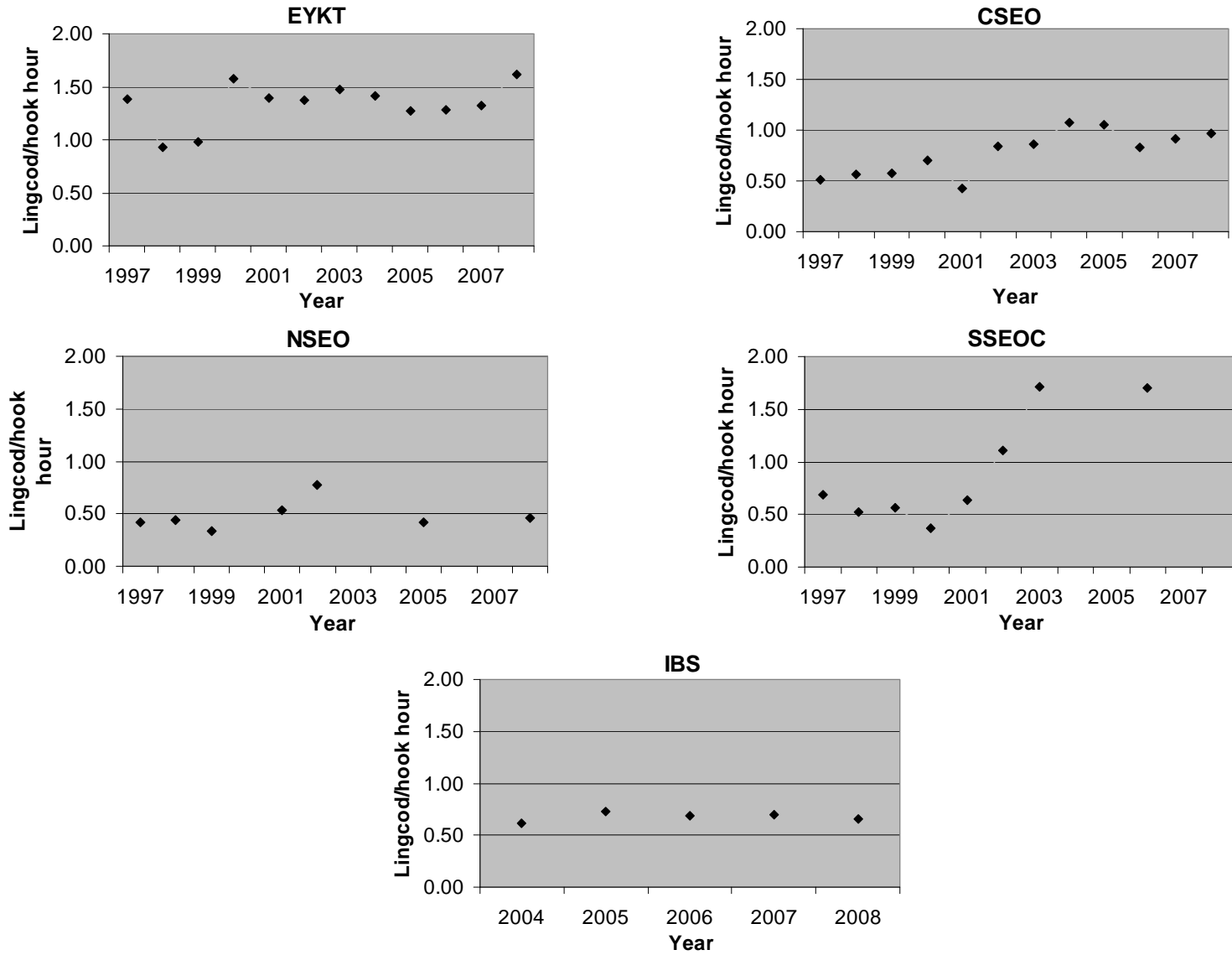


Figure 4.-Lingcod directed commercial fishery catch per unit effort (retained lingcod/hook hours) by management area and year.

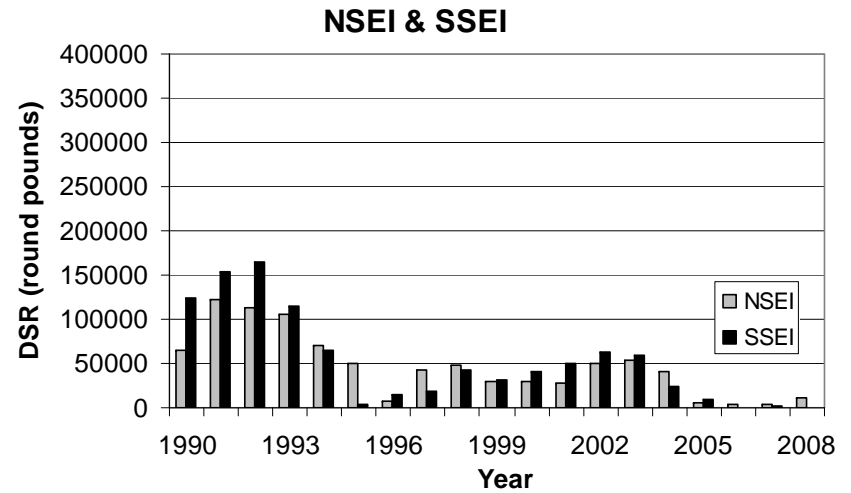
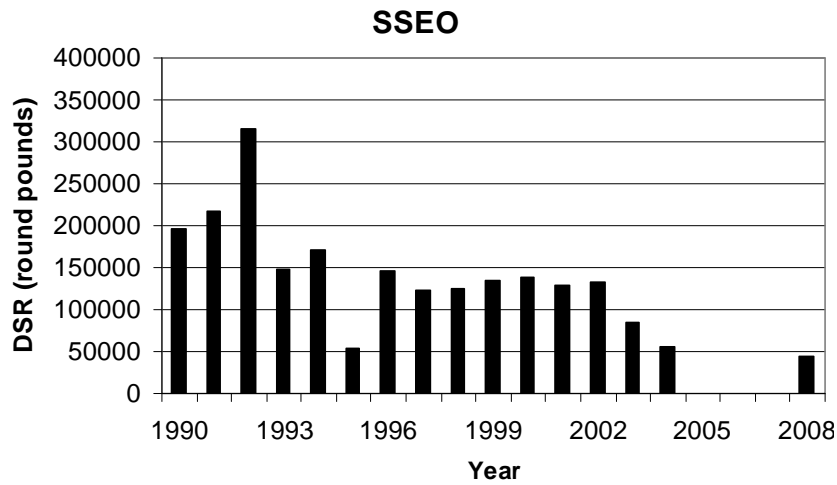
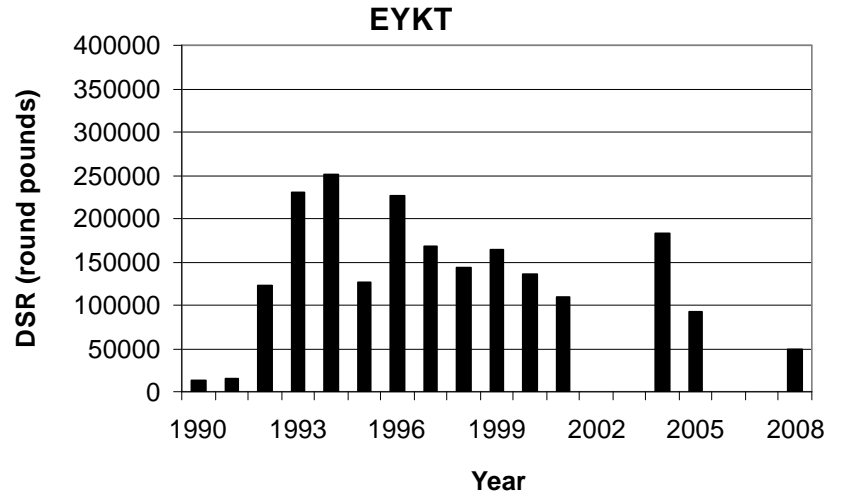
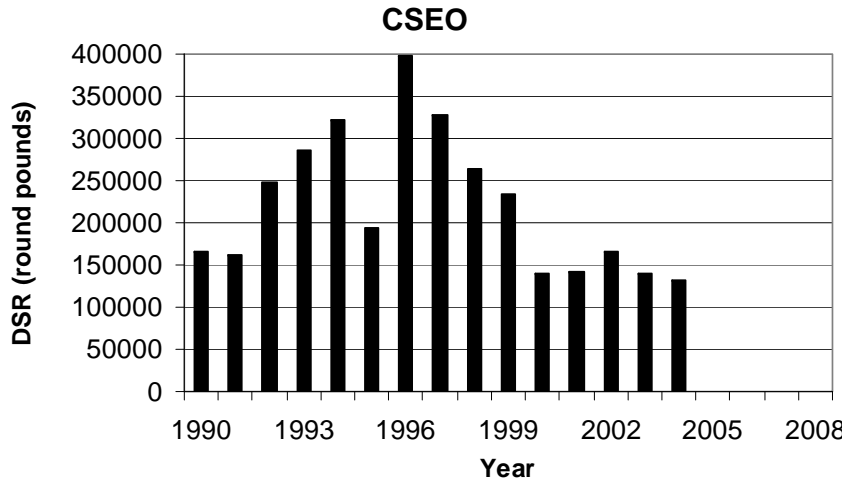


Figure 5.—Directed demersal shelf rockfish (DSR) landings (round lbs) by management area and year, 1990–October 2008.

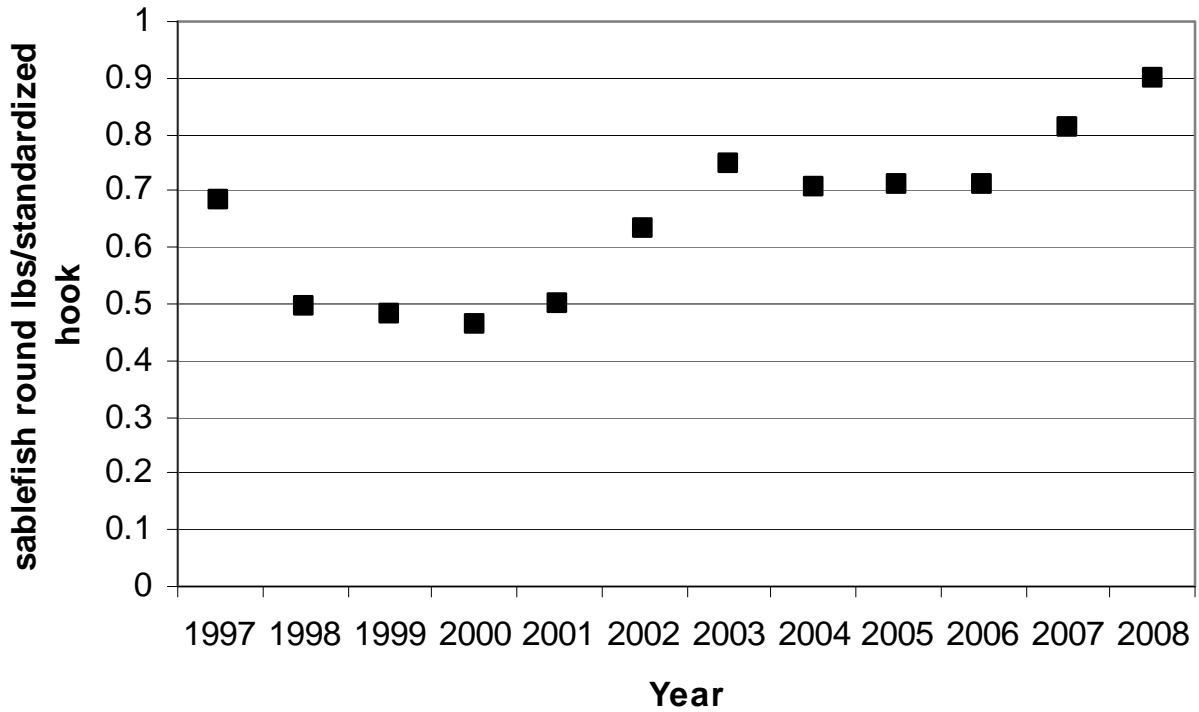


Figure 6.—NSEI longline fishery catch per unit effort (sablefish round lbs/standardized hook) by year.

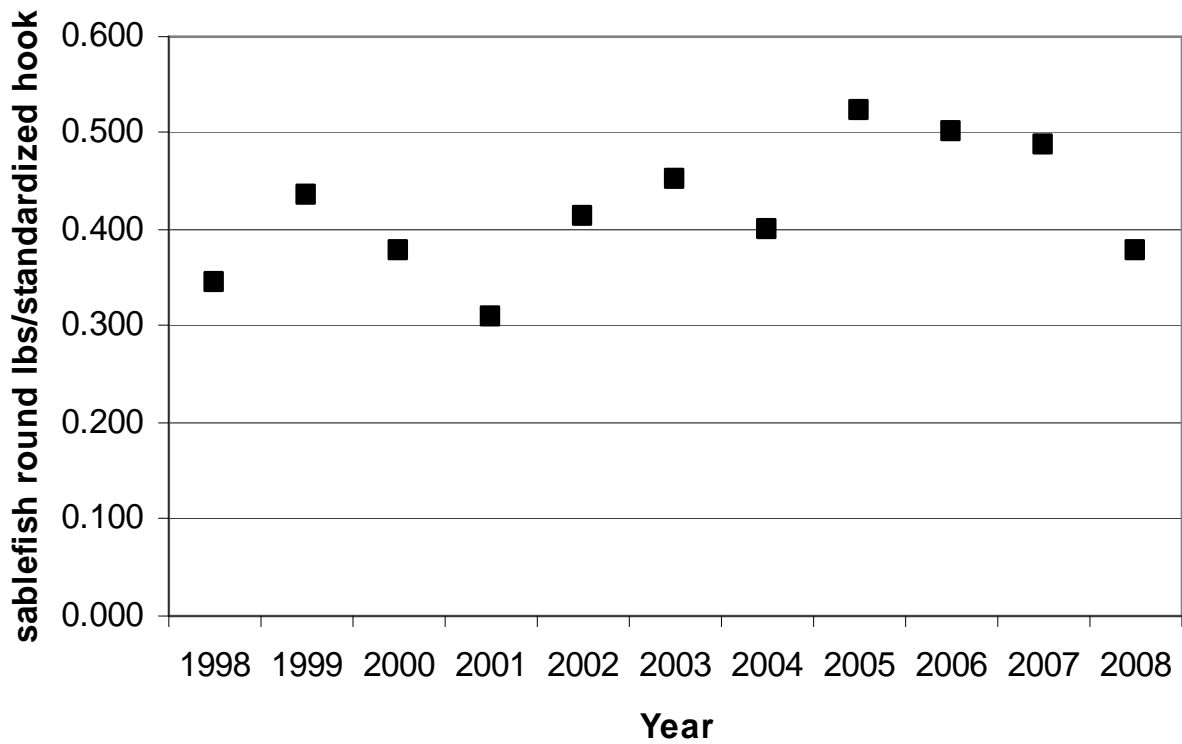


Figure 7.—SSEI longline fishery catch per unit effort (sablefish round lbs/standardized hook) by year.