Fishery Management Report No. 24-31

Management Report for the Southeast Alaska and Yakutat Commercial Groundfish Fisheries, 2021–2023

by

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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)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Mathematics, statistics

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

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ABSTRACT

This report summarizes reported catch and effort information and management actions for Southeast Alaska and Yakutat groundfish fisheries managed by the Alaska Department of Fish and Game (ADF&G or department) in the Eastern Gulf of Alaska Area, with updated information from 2021 through 2023. ADF&G manages groundfish caught in directed and bycatch fisheries, and all references to harvest, landings, or removals are specific to commercial fisheries, unless otherwise noted. The state manages several directed fisheries in Alaska waters: sablefish (*Anoplopoma fimbria*), demersal shelf rockfish (DSR; *Sebastes* spp.), black rockfish (*Sebastes melanops*), lingcod (*Ophiodon elongatus*), and Pacific cod (*Gadus macrocephalus*). The state is also responsible for management of lingcod, DSR, and black, blue (*S. mystinus*), and dark (*S. ciliatus*) rockfish in federal waters; although blue rockfish are not found in Alaska waters, and those rockfish are now known as deacon (*S. diaconus*). The average annual catch of groundfish for this reporting period in Southeast Alaska was 2.8 million round lb, with an annual estimated exvessel value of $6.3 million. Catch includes fish discarded at sea for species with high mortality after capture, i.e., all *Sebastes* and *Sebastolobus* rockfishes (demersal shelf, pelagic shelf, slope, and black rockfishes), and Pacific cod. All other groundfish catch numbers reflect landings only. Sablefish accounted for 81% of the exvessel value of groundfish during this reporting period. In addition to landings in groundfish and halibut fisheries, an annual average of 55,724 round lb of groundfish, primarily lingcod and black rockfish, were landed in salmon troll fisheries, and 170,002 round lb of groundfish, primarily sablefish, were landed in surveys (test fish fisheries) conducted by the department and the International Pacific Halibut Commission during this reporting period.

Keywords: sablefish, rockfish, lingcod, Pacific cod, flatfish, longline, dinglebar, jig, Southeast Alaska, Yakutat, commercial fishing, Board of Fisheries, groundfish, Annual Management Report

INTRODUCTION

The Eastern Gulf of Alaska (EGOA) regulatory area for groundfish management encompasses all waters from Dixon Entrance (54°30′N lat) northwestward along the outer coast to 144°W long. Seven state groundfish management areas have been established in Southeast Alaska and occur within the Southeast District (Figure 1). The Icy Bay Subdistrict (IBS) was added to the Southeast District in 1999 and includes the waters between 140°W long and 144°W long and waters of Yakutat Bay north of a line at 59°30′N lat, extending seaward from Ocean Cape to 140°W long. Four of the management areas—East Yakutat (EYKT) Section, Northern Southeast Outside (NSEO) Section, Central Southeast Outside (CSEO) Section, and Southern Southeast Outside (SSEO) Section—are along the outer coast of Southeast Alaska and make up the Southeast Outside (SEO) Subdistrict. The remaining 2 areas, Northern Southeast Inside (NSEI) Subdistrict and Southern Southeast Inside (SSEI) Subdistrict, are in internal waters. For lingcod (*Ophiodon elongatus*) and black rockfish (*Sebastes melanops*) management, the southern areas are redefined as 2 sectors, Southern Southeast Internal Waters (SSEIW) and Southern Southeast Outer Coast (SSEOC; Figure 2).

The Alaska Department of Fish and Game (ADF&G or department) 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 3 miles of shore along the outer coast. In addition, an amendment to the Gulf of Alaska Federal Groundfish Fisheries Management Plan (FMP) defers management of demersal shelf rockfish (DSR) in both state and federal waters in the SEO district (outer coastal waters east of 140°W long) to the state. Black and blue (deacon) rockfish were removed from the FMP in 1998 and dark rockfish in 2009, transferring management responsibility for these species to the department. Lingcod management is under state jurisdiction in both state and federal waters.

In addition to direct management responsibility for certain groundfish species, the Southeast Alaska and Yakutat (Region I) Groundfish Project provides harvest and other resource information

from the adjacent Exclusive Economic Zone (EEZ) to the National Marine Fisheries Service (NOAA Fisheries) and North Pacific Fishery Management Council (Council) under the terms of a cooperative agreement with NOAA Fisheries. Under this agreement, department staff are responsible for collecting, editing, and verifying all fish tickets from the harvest of groundfish and Pacific halibut (*Hippoglossus stenolepis*) landed in Alaska waters. Since May 2006, fish tickets are entered by processors via eLandings, a web-based reporting system, and are subsequently validated by department staff. The state aids in the management of groundfish in the EEZ through the groundfish project's participation on the Council's Gulf of Alaska Groundfish Plan Team.

This document provides information on reported harvest, effort, and management for the state-managed groundfish fisheries in Southeast Alaska and includes updates from 2021 through 2023. The department does not require at-sea observer coverage in EGOA groundfish fisheries, and as a result, only limited data on at-sea discards are recorded. Catch and effort data contained in this document include black rockfish and lingcod harvest for state and federal waters in the EGOA, DSR harvest for state and federal waters in the SEO, NSEI, and SSEI waters, and all groundfish species harvested in state waters of NSEI and SSEI. The primary state-managed fisheries within the region include sablefish (*Anoplopoma fimbria*), demersal shelf rockfish (*Sebastes* spp.), black rockfish, lingcod, and Pacific cod (*Gadus macrocephalus*).

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 Pacific cod or demersal shelf rockfish almost exclusively use longline gear, and directed lingcod fisheries primarily use 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 authorized by a commissioner's permit.

A no-take groundfish marine reserve (Edgecumbe Pinnacles Marine Reserve) is located in a 3.2 nmi^2 area surrounding the Cape Edgecumbe pinnacles off the southwest coast of Kruzof Island (Figure 3). This area was closed to all removals of groundfish in 1998 by the Alaska Board of Fisheries (board) and to halibut and groundfish in 1999 by the Council. This represents the first no-take groundfish marine reserve in Alaska.

Between 2.7–3.0 million round lb of state-managed groundfish were caught[1] annually in groundfish and halibut fisheries from 2021 to 2023; the annual exvessel value of these fish ranged from $5.7–$7.3 million dollars (Table 1). Groundfish, primarily lingcod and black rockfish, are also landed in commercial salmon troll fisheries (Table 2) and in surveys conducted by the department and the International Pacific Halibut Commission (IPHC; Table 3). A range of 40,021–71,367 round lb of groundfish were landed in salmon troll fisheries annually from 2021 to 2023, and 143,318–191,103 round lb were landed in test fisheries annually for this same time period. The test fishery totals do not include Chatham fishery permit holder personal quota share (PQS) sablefish that were caught in the 2021 and 2023 NSEI sablefish longline surveys because those values are included in the commercial fishery totals.

LINGCOD

Lingcod are the largest member of the greenling family, attaining lengths up to 60 inches (Mecklenburg et al. 2002). This coldwater species occurs inshore to depths of 260 fathoms,

[1] Catch includes fish discarded at sea for species with high mortality after capture, all *Sebastes* spp. and *Sebastolobus* spp. rockfishes (demersal shelf, pelagic shelf, slope, and black rockfishes), and Pacific cod. All other groundfish catch numbers reflect landings only.

ranging from northern Baja California to the Gulf of Alaska (Mecklenburg et al. 2002). Adult lingcod have complex movement patterns that include daily movements within a home range (Tolimieri et al. 2009; Beaudreau and Essington 2011), frequent excursions outside of this home range (Starr et al. 2004), and long-distance migrations (Jagielo 1990; Starr et al. 2004; Stahl et al. 2014b), with some of these movements related to feeding and spawning. Lingcod are sexually dimorphic (Hart 1973; Cass et al. 1990; Love 1996) with females having a larger than average size and greater range of length than males (Stahl et al. 2014b). Lingcod reach maturity between 3 and 5 years (Richards et al. 1990; Silberberg et al. 2001), with the maximum age estimated for Southeast Alaska at 36 years.[2] Lingcod have an unusual reproductive strategy where males move into nearshore rocky areas in the fall to set up territories, and females move into the 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. During the nest-guarding period, males are particularly susceptible to harvest due to their migration and aggregation to the nearshore rocky areas for spawning and nest guarding (Cass et al. 1990).

FISHERIES DEVELOPMENT AND HISTORY

Prior to 1987, lingcod landed in the Southeast District were captured incidentally in fisheries targeting other species (Gordon 1994). Historically, lingcod made up a large amount of the bycatch in the directed DSR longline fishery until 2020, when the directed DSR longline fishery closed. In some areas and seasons, historical bycatch rates of lingcod taken in the DSR fishery exceeded 50%, by weight, of the DSR catch. Lingcod are also taken as bycatch in the salmon troll and halibut longline fisheries.

The directed lingcod fishery has developed steadily since its inception in 1987. A small fishing fleet used dinglebar gear to harvest 163,305 round lb of lingcod from the NSEO and the northern portion of CSEO management areas. By 1991, the directed fishery catch of 490,873 round lb was over half of the total harvest (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 EYKT, primarily the Fairweather Grounds; during that year, peak directed fishery harvest occurred with 665,860 round lb harvested. The largest total harvest of lingcod in commercial groundfish and halibut fisheries occurred in 1991 with 966,842 round lb landed (Table 4). Since 1990, the directed fishery accounted for over half of the exvessel value of commercial lingcod landings, except in 2001 (Table 4). Most of the directed fishery is prosecuted using dinglebar troll gear. Commercial guideline harvest levels (GHLs) are set in regulation by management area and fishery (Table 5).

REGULATION DEVELOPMENT

In 1994, a mandatory logbook program was established for the directed lingcod fishery, and hook and line was designated as legal gear for lingcod fishing. In 1997, the board prohibited the use of longline gear in the directed fishery. In 2000, legal gear for the directed fishery was limited to mechanical jigging machines, dinglebar troll, and hand troll gear. Lingcod bycatch in other fisheries was restricted to hook and line (no pots, trawls, or other net gears).

Regulations, including size limits and seasonal and area closures, have been developed for lingcod to preserve their stock structure. In 1989, the board implemented a minimum size limit for lingcod

[2] Southeast Alaska lingcod maximum age estimate was taken from Mark, Tag and Age Laboratory's Age Determination Unit. Alaska Department of Fish and Game, Juneau. [accessed March 5, 2024] https://mtalab.adfg.alaska.gov/ADU/analysis.aspx#maxage.

to prevent harvest of sexually immature females. Harvested lingcod were required to measure at least 27 in from tip of snout to tip of tail or 20.5 in from the insertion of the dorsal fin to the tip of the tail. In 1991, a seasonal closure from January 1–May 31 was implemented inside the surf line to protect nest-guarding males. In 1994, the seasonal closure changed to December 1–April 30, and the closure line extended out to 3 mi offshore of the outer coast. Beginning in 1997, the seasonal closure extended until May 16 by emergency order to further protect nest-guarding males. Area closures were also implemented that year for lingcod in Sitka Sound (except as bycatch in the halibut longline fishery) and in the defined Cape Edgecumbe Pinnacles Marine Reserve. In 2000, the board set the commercial directed and salmon troll bycatch lingcod season to May 16–November 30 to reduce the number of male lingcod removed from nests, resulting in the loss of the adult fish and the entire clutch of eggs. In 2006, a regulation was adopted that prohibited lingcod from being taken by spear or while using diving gear from December 1–May 15.

Lingcod have been managed using guideline harvest ranges (GHR) and fishery allocations since the early 1990s. In 1991, a GHR of 300,000–500,000 round lb was established for the Southeast District (east of 137°W long) based on historical catch data in the CSEO fishery. In 1994, the department met with industry representatives, including directed commercial fishers, longliners, and trollers, and developed a lingcod management plan to present to the board. Using a habitat-based approach, GHRs were calculated using 0.25 to 0.50 metric tons (mt) of lingcod biomass per square nmi of rocky habitat for each management area. Seasonal and area allocations were also set for the directed and salmon troll commercial fisheries in CSEO and NSEO.

In 2000, the board took significant action regarding lingcod fishery management including GHR reductions, inclusion of the sport fishery harvest in the total GHL, and allocation of lingcod between fishing sectors and areas (Table 5). The board also defined IBS as an additional subdistrict, and 2 sectors in the Southeast District for lingcod management. The western boundary of the Eastern Gulf of Alaska (Southeast District) was extended from 140°W long to 144°W long. The IBS area includes all waters between 140°W long and 144°W long, including Yakutat Bay 3 mi seaward of a line from Ocean Cape at 59°30′W lat. The new sectors redefined 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 lat, and west of Prince of Wales Island, or, if south of 54°43′N lat, that are west of 132°W long; SSEIW Sector includes all waters of the SSEI Subdistrict not included in the SSEOC Sector (Figure 2). Additional regulations adopted by the board that year included a registration requirement for the directed fishery, emergency order authority for the department to set trip limits when necessary to promote orderly fisheries, as well as the aforementioned updates to fishing gear and seasons.

A new superexclusive directed lingcod fishery was established by the board in 2003, with the commercial longline and troll allocations combined into a single allocation to be shared by the 3 commercial user groups until the annual GHL was taken. This commercial all-gear allocation was then allocated by the board to each user group in 2012. In 2006, the upper end of the GHR for EYKT was increased from 200,000 to 225,000 round lb with the increase allocated to the directed fishery. The regulation stipulates that in years when the GHL is 200,000 round lb or less, the GHL will be assigned to gear groups based on user allocations established in 2000.

The department has managed lingcod bycatch through regulations set by the board and through emergency orders. In 1994, the board limited lingcod bycatch in the halibut fishery to 5%. In 1997, the lingcod bycatch allowance in the DSR longline fishery was increased from 20% to 35%. The board later implemented regulations to allow the department to set groundfish bycatch limits by

emergency order in the salmon troll fishery (2003) and in the halibut fishery (2009) to achieve the lingcod harvest allocations in each area.

STOCK ASSESSMENT AND MANAGEMENT

The department does not have a stock assessment for lingcod and is not currently able to 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. Lingcod GHLs were reduced in all areas in 1999 due to continued declines in commercial catch per unit effort (CPUE, fish per hook-hour) with subsequent GHRs being reduced by the board in 2000. After these reductions in the GHRs, CPUE began to increase in CSEO until around 2007. Since then, CPUE gradually decreased until 2020, when CPUE began to increase (Figure 4).

From 2006 to 2023, except for 2021, CSEO had the highest number of permits fishing. In NSEO, participation in the directed fishery has been low with generally stable CPUE, although there has been a slight upward trend beginning in 2020. Participation in the SSEOC fishery has fluctuated over the last decade but has increased since 2016 with the directed fishery GHL met from 2019 to 2023. In EYKT, CPUE and harvest were variable between 1994 and 2000, with CPUE dropping in years following high harvests. After the GHR was reduced in 2000, the CPUE increased slightly from 2000 to 2011 but remained low between 2012 and 2020. Since 2020, CPUE for EYKT has steadily increased and is higher relative to other management areas, most likely because fishing is concentrated in a smaller area where there are typically higher abundances of lingcod (i.e., the Fairweather Grounds). In IBS, the directed fishery was opened in 2003, and data for the 2003 season are confidential. The CPUE in IBS fluctuated from 2004 to 2014, declined from 2015 to 2019 (lowest levels seen in the fishery), and followed that with a steady increase (Figure 4).

The department initiated a tagging study for lingcod in 1996 with the goal of better understanding the movement patterns of local lingcod stocks. Approximately 10,000 lingcod were tagged, and 487 tags have been recovered since 2011 (Stahl et al. 2014b). Movement patterns of lingcod recaptured in this tagging study were similar to results of other studies with the majority of recaptured lingcod recovered close to their release location (55% within 2.7 nmi), and 8% were recovered more than 27 nmi away (Stahl et al. 2014b).

2021–2023 SEASON SUMMARY

Total directed lingcod harvest increased between 2021 and 2023, from 294,684 round lb to 343,509 round lb (Table 6). The number of permits participating in the directed fishery ranged from 29 to 36 (Table 4). Lingcod bycatch in the salmon troll fisheries fluctuated annually, probably caused by closures or reductions of salmon fishing in certain areas. Longline bycatch harvest increased steadily throughout this period, driven by changes in dock prices and in bycatch allowances in longline fisheries. Jig lingcod bycatch was either zero or confidential during this time period.

2024 SEASON OUTLOOK

Lingcod harvests for directed and bycatch fisheries are expected to be similar or slightly increase in 2024. Dock price generally influences the level of interest in the directed fishery, but participation is also tied to the status and future outlook for other fisheries. If lingcod prices are high, it is likely that additional vessels will become more active in the fishery. The amount of

lingcod bycatch taken by the longline fleet can vary and is related to the size of the halibut fishery quota and whether a directed DSR fishery is prosecuted in SEO.

ROCKFISHES AND THORNYHEADS

More than 30 species of rockfishes are landed in Southeast and Yakutat groundfish fisheries from the genera of *Sebastes* and *Sebastolobus*. *Sebastes* rockfishes are divided into 3 assemblages for management purposes because species within an assemblage have similar habitat preferences and behavior. The DSR assemblage is composed of 7 nearshore, bottom-dwelling species and includes: yelloweye (*S. ruberrimus*), quillback (*S. maliger*), tiger (*S. nigrocinctus*), China (*S. nebulosus*), canary (*S. pinniger*), copper (*S. caurinus*), and rosethorn (*S. helvomaculatus*) rockfish. The pelagic shelf rockfish (PSR) assemblage is composed of 6 nearshore schooling species, including: black (*S. melanops*), dark (*S. ciliates*), deacon (*S. diaconus*), dusky (*S. variabilis*), yellowtail (*S. flavidus*), and widow (*S. entomelas*) rockfish. Prior to 2004, the dusky and dark rockfishes were considered one species and known as *S. ciliatus* (Orr and Blackburn 2004). The slope rockfish assemblage is found along the edge of the continental shelf and on the continental slope in deep water. This group is defined by regulation as any species of the genus *Sebastes* not specified in the DSR or PSR assemblage. The predominant commercial species in this assemblage are rougheye (*S. aleutianus*), blackspotted (*S. melanostictus*), shortraker (*S. borealis*), and redbanded rockfish (*S. babcocki*). Some rockfish landed as rougheye rockfish are likely blackspotted due to the morphological similarities between these species (Orr and Hawkins 2008); however, on fish tickets most are recorded as rougheye. The *Sebastolobus* species commonly captured in Southeast, the shortspine thornyhead rockfish (*Sebastolobus alascanus*), is found in similar habitats and depths as the *Sebastes* slope rockfish assemblage; consequently, data on shortspine thornyhead rockfish will be summarized in this report with the slope rockfish assemblage.

In 2017, the department began a statewide effort to develop management strategies for black and yelloweye rockfish in the Gulf of Alaska. The Statewide Rockfish Initiative (SRI) is made up of staff from both Divisions of Commercial Fisheries and Sport Fish, and from regions across the Gulf. Staff efforts are focused on 2 things: the creation of statewide management standards for black and yelloweye rockfish, and development of strategies that will support long-term adaptive management. Participants share data across regions and divisions and support research, which adds to the knowledge of rockfish life history. This information is vital to current and future conservation and management practices of rockfish. The SRI is working to develop stock assessments for black and yelloweye rockfish in parts of Alaska, and is also sharing information with the public about rockfish identification and life history.

DEMERSAL SHELF ROCKFISHES

All DSR exhibit the life history characteristics (e.g., slow growth, late maturity, and longevity) of K-strategist species producing higher quality over a larger quantity of offspring (Adams 1980; Gunderson 1980; Archibald et al. 1981). Fishes with these life history characteristics are highly susceptible to overexploitation and are slow to recover once driven below the level of sustainable yield (Leaman and Beamish 1984; Francis 1985). An acceptable exploitation rate for such species is assumed to be low (Dorn 2000). The department manages the DSR fishery at an exploitation rate (F) equal to natural mortality (2%).

Yelloweye rockfish, the dominant species in the DSR assemblage (in terms of numbers and biomass of catch), occur from northern Baja California to the Aleutian Islands in nearshore waters

to 300 fathoms (Mecklenburg et al. 2002). Yelloweye rockfish have been recorded up to 96 cm in length (Kellii Wood, ADF&G Division of Commercial Fisheries Biologist, Southeast Alaska Groundfish Project, unpublished data, 2020), and to a maximum reported age of at least 121 years (Munk 2001). These fish are generally associated with rock habitat (e.g., rocky reefs, ridges, and pinnacles) and exhibit high site fidelity (O'Connell 1991; Hannah and Rankin 2011). Due to these life history traits, yelloweye rockfish populations are susceptible to overharvest and localized depletion.

FISHERY DEVELOPMENT AND HISTORY

Demersal shelf rockfish have been the target of a directed shore-based longline fishery in Southeast since the late 1970s. The fishery began in the Sitka Sound area as a small, family-run, fresh-fish business, catching primarily black rockfish from skiffs using automatic jigging machines, and by 1982, longline gear had replaced jigging machines. The use of longline gear in the fishery changed the dynamics and target species of the fishery, where the catch became predominately yelloweye and quillback rockfish. Harvest increased six-fold in 5 years with total catch exceeding 1 million round lb in 1986. Prior to 1984, well over half of the total Southeast rockfish landings were reported from CSEO. Because 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 DSR fishery harvest and value have declined since 1987 when 2.7 million round lb was harvested with the directed fishery exvessel value of $1.4 million. Before the regionwide closure beginning in 2020, the lowest directed harvests occurred in 2006 and 2007 when all of SEO was closed to directed fishing, and only a few permits were directed fishing for DSR in inside waters (Table 7). The greatest number of permits for directed DSR fishing occurred in 1992 (147). The total reported harvest of DSR from all groundfish and halibut fisheries was highest in 1987 (3.3 million round lb) and lowest in 2020 (263,952 round lb). The majority of DSR harvest has occurred in EYKT, CSEO, and SSEO, while DSR harvest in internal waters has occurred on a smaller scale (Figure 5).

Area closures have occurred due to stock conservation concerns (Table 8). The department 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. This area was also closed to fishing in 2006, 2007, 2010, and 2011. The EYKT area was open to directed fishing from 2012 to 2017, but was then closed since 2018. The CSEO fishery was not opened from 2005 to 2011, and again from 2014 to 2017. The CSEO area was opened to directed fishing in 2018 but has been closed since 2019. The directed fishery in SSEO was closed from 2005 to 2007 and again from 2014 to 2018. The department's stock assessment survey showed an increase in the estimated biomass in SSEO in 2018, and the area was opened to directed fishing in 2019. The directed fishery has been closed in SSEO since 2020. Fishing was open to directed DSR fisheries in the internal waters of both NSEI and SSEI from 1987 to 2020; stock assessment surveys show an overall decline in estimated yelloweye rockfish biomass and signs of age truncation in biological data. The DSR directed fishery has been closed in both outside and inside waters since 2020.

REGULATION DEVELOPMENT

The state has regulated the harvest of DSR in Southeast since the 1980s; a 1.3 million round lb harvest cap was put in place in 1984. The fishery occurred primarily in CSEO, and in 1986, GHLs for the directed DSR fishery were first set by the management area under a draft management plan. In 1987, directed commercial fishing for DSR was closed in a portion of Sitka Sound after the public voiced their concern about localized stock depletion. In 1989, legal gear for DSR was defined as hook and line only.

Seasons were adjusted to help the development of the directed DSR fishery and improve the fresh market and value for the small-boat commercial fleet. In the 1980s, the fishery opened on October 1, and in 1989, the directed fishery was split into 3 periods (1 for SEO and 2 for inside waters) to facilitate the marketing of fresh products over an extended portion of the year. In addition, a trip limit of 7,500 round lb per 5-day period was implemented to preserve DSR as a fresh product. In 1993, the DSR harvest allocation by season was reapportioned to allow more fish to be landed in the winter season when the price was highest.

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

In 1989, prior to the development of a stock assessment for DSR in SEO, the Council implemented a total allowable catch (TAC)[3] of 1,036,000 round lb for all fishery removals of DSR in the SEO district based on the historical fishery harvest in the area. In 1991, the Council extended the waters of SEO from 137°W long to 140°W long to include the EYKT section, also extending state management authority to this area. To allow the state to manage DSR harvest within the federal TAC, the department lowered GHLs for DSR in all management areas in SEO and implemented a directed fishery harvest limit for DSR in EYKT. In 1994, trip limits were set at 12,000 round lb for EYKT and reduced from 7,500 to 6,000 round lb in the other management areas. In addition, closures to directed commercial fishing were implemented for areas surrounding the ports of Craig and Ketchikan. In 2018, the board reduced the trip limit from 12,000 round lb to 8,000 round lb in EYKT for more effective management of the fishery.

The DSR fishery in SEO has been managed since 1993 using a TAC based on a harvest rate applied to a biomass estimate (O'Connell and Carlile 1993; O'Connell and Brylinsky 2001). The directed DSR fishery has been managed with 2 separate seasons following the implementation of the halibut individual fishing quota (IFQ) fishery. In 1997, regulations were adopted to reflect this management with 67% of the TAC allocated to the winter fishery and 33% to the fall fishery. In 2006, the board split the DSR TAC between commercial and sport sectors, with 84% allocated to commercial and 16% to sport, and in 2009, the board adopted a proposal to deduct the subsistence catch from the DSR TAC prior to the allocation between the commercial and sport sectors. In 2006, regulations were adopted that restricted the SEO DSR fishery to the winter season, preventing the directed fishery from overlapping with the IFQ halibut season.

[3] The federal TAC is set in metric tons (mt); the department sets fishery quotas (GHR, TAC, annual harvest objectives [AHO]) in round lb.

In 1997, an annual GHL for directed DSR fisheries in the internal waters of SSEI and NSEI was established and set at a level not to exceed 110,000 round lb in each area. Generally, the annual GHL is set at 55,125 lb, half of the allowable limit, with 37,485 lb for the winter fishery in each area, and 17,640 lb reserved for the fall fishery with an adjustment for any underage or overage of the winter fishery.

The department monitors the directed DSR fishery through logbooks, fish tickets, and fishery registration. In 1989, the department began requiring logbooks for directed fishing of DSR, and in 1990, Southeast commercial fishers needed a DSR directed fishery Commercial Fisheries Entry Commission (CFEC) interim use permit card (Y card). However, this permit card was not used in EYKT until 1991 when the SEO district was extended to include this area. Since 2003, commercial fishers have been required to register prior to participating in the directed DSR fishery.

Full retention was required of all DSR captured in state waters of Southeast in 2000, and in 2009, was restricted to groundfish and halibut fisheries only to reduce the at-sea discard of DSR. Rockfish discards have high post-release mortality caused by exposure to pressure changes experienced between catch depth and surface waters. In state waters, a CFEC permit holder must retain, weigh, and report all DSR taken, and any excess of the allowable bycatch limits must be reported as bycatch overage on a fish ticket. Proceeds from the sale of excess DSR are forfeited to the State of Alaska. DSR in excess of legal bycatch limits may be retained for personal use or donated. In addition, there are restrictions on the use of yelloweye rockfish for bait where only the head, tail, fins, and viscera from delivered and processed yelloweye rockfish may be used. Full retention of DSR has been required in groundfish and halibut fisheries in federal waters since 2005. DSR bycatch overage taken in federal waters cannot enter commerce.

STOCK ASSESSMENT AND MANAGEMENT

The department conducts a multiyear stock assessment survey for DSR in SEO. Biomass is estimated by management area as the product of yelloweye rockfish density, the area of rocky habitat within the 100-fathom contour, and the yelloweye rockfish average weight (O'Connell and Carlile 1993; Brylinsky et al. 2007). Yelloweye rockfish density for the annual stock assessment is based on the most recent estimate by management area. These densities are multiplied by the average weight of yelloweye rockfish from the commercial directed DSR and halibut longline fisheries for the current year and management area.

Yelloweye rockfish density is estimated using distance sampling methods along line transects (Burnham et al. 1980; Buckland et al. 1993; Thomas et al. 2010). From 1994 to 2009, a human-operated submersible was used to survey yelloweye rockfish; however, due to high costs and lack of submersible availability, the department began conducting line transects with a remote operated vehicle (ROV) in 2012. A comparison of data obtained from ROV and submersible surveys indicates that the ROV is an appropriate survey tool to assess yelloweye rockfish stocks and provides estimates that are comparable to those produced with the submersible (Green et al. 2013). The stock assessment surveys rotated among management areas on a quadrennial basis due to time and budget constraints (Joy et al. 2022).

Beginning in 2022, the allowable biological catch (ABC) for the DSR assemblage in SEO was set using a spatially stratified, two-survey random effects (REMA) model fit to the ADF&G biomass estimates and CPUE estimates of yelloweye rockfish in the IPHC longline survey in SEO. In this assessment, natural mortality is equal to fishing mortality (F), or $F = M$ (0.02). This method is more conservative than using $F_{35\%}$ (0.032) to determine the ABC. The overfishing level is set using

a rate of $F = M$ (0.02). Prior to 2022, the ABC for the DSR assemblage in SEO was set by multiplying the lower bound of the 90% confidence interval of yelloweye rockfish biomass for the region by the natural mortality rate and average estimated harvest from commercial, sport, and subsistence fisheries of other species in the DSR assemblage, which is added to the yelloweye rockfish ABC. There is no stock assessment information available for NSEI and SSEI management areas where the GHL has historically been set annually at 55,125 round lb for each area, or approximately at the midpoint of the GHR (110,000 round lb).

Overall, yelloweye rockfish have been managed using a conservative harvest strategy due to conservation concerns. Management for this species has improved with increased accounting of total DSR removals since 2004 and allocation of the resource between sport and commercial sectors since 2006. Beginning in 2016, the directed fishery was opened in one management area in SEO at a time, alternating with areas that were surveyed in the previous year, and the management area was only opened if the quota was large enough to prosecute an orderly fishery. This allowed for one management area in SEO to have a 2- to 3-year recovery period and be surveyed prior to opening a directed fishery. Additionally, in 2017, the department began the SRI to develop long-term management strategies for yelloweye rockfish and has been working toward establishing life history parameters for yelloweye rockfish, reconstructing all harvest and mortality data, and compiling data for a stock assessment. The stock is not considered overfished, but due to the life history characteristics of this long-lived species and infrequent stock assessment surveys, fluctuations in yelloweye rockfish biomass may not be detected quickly. Due to this, and a general decline in estimated biomass, the directed commercial fisheries have been closed to DSR fishing since 2020.

2021–2023 Season Summary

During the 2021–2023 reporting period, the directed DSR fishery was closed in inside and outside waters. Directed fishing was last open in NSEI, SSEI, and SSEO in 2019 (Table 8). Due to the regionwide closure, the fishery allocation, catch, exvessel value, and number of active directed fishing permits were zero (Tables 7 and 8). The DSR harvest and exvessel value in the Southeast District (excluding IBS) in all groundfish and halibut fisheries was highest in 2023 with 502,629 round lb and $553,238 (Table 7).

2024 Season Outlook

The most recent version of the DSR stock assessment presented to the Council's *Gulf of Alaska Groundfish Plan Team* in November 2023 recommended an ABC of 624,015 lb and a TAC of 608,580 lb for 2023 and 2024. This is a 22% decrease from the TAC established in 2022. The TAC was determined by deducting the estimated subsistence catch (15,432 lb) from the ABC. The TAC is apportioned 84% to commercial fisheries and 16% to sport fish fisheries, which results in a commercial TAC of 511,207 lb and a sport TAC of 97,373 lb (Joy et al. 2023). The directed DSR fishery remains closed for 2024 given concerns for the health of the yelloweye rockfish stock. Stock status will continue to be assessed annually through yelloweye rockfish stock assessment surveys, biological sampling of yelloweye bycatch, and monitoring yelloweye bycatch retained in commercial groundfish and halibut fisheries, as mandated under full-retention requirements.

PELAGIC SHELF, SLOPE ROCKFISHES, AND SHORTSPINE THORNYHEADS

FISHERY DEVELOPMENT AND HISTORY

Black rockfish make up the largest proportion of the landings for the PSR assemblage both in inside and outside waters in Southeast Alaska. They are taken primarily as bycatch in groundfish and salmon troll fisheries; however, there is a directed black rockfish fishery that occurs in the outside waters of the Southeast District. In inside waters, PSR harvest peaked in 1992 and has since generally been declining (Table 9). Harvest has been relatively low in recent years and has ranged from 186 round lb (2012) to 26,347 round lb (1992; Table 9). Since 2007, effort has been low in the directed black rockfish fishery, with harvest peaking in 2003 with 90,321 round lb (Table 10). Harvest in the directed black rockfish fishery was 63% of the total black rockfish commercial harvest in 2021; however, there was no participation in the directed fishery in 2022, and the data for 2023 is confidential.

In 1998, the Council removed black and blue (deacon) rockfish from the FMP, and in 2009, dark rockfish were removed as well. The state has sole management responsibilities for black, blue (deacon), and dark rockfish in state and federal waters.

Slope rockfishes and shortspine thornyheads are captured incidentally in longline fisheries for sablefish, halibut, and DSR with most of the catch associated with the SSEI and NSEI sablefish fisheries. In addition, slope rockfish were targeted by a few fishers prior to 2003 when directed slope fisheries were open (Table 11).

REGULATIONS

Full retention regulations adopted at the 2000 board meeting require that all rockfish (*Sebastes* spp.) caught in internal waters (NSEI and SSEI) be retained, weighed, and documented on fish tickets. In 2003, full retention regulations were adopted that require CFEC permit holders fishing for groundfish or halibut in the EGOA to retain, weigh, and report all black rockfish caught. The board also adopted 5 area closures for the direct taking of black rockfish in the EGOA to prevent the complete removal of older fish, because research indicates the importance of older year classes of black rockfish are necessary to maintain genetic diversity. In addition to these changes, the board prohibited directed fishing for slope and thornyhead rockfish (*Sebastolobus* spp.). These rockfish may only be captured as bycatch or in directed fisheries under the terms of a commissioner's permit.

Directed fishing for black rockfish is open year-round and the fishery is prosecuted only in outside waters of the Southeast District. In 2003, the GHL for the directed fishery was set at a total of 325,000 round lb (25,000 round lb for IBS, 25,000 round lb for EYKT, 50,000 round lb for NSEO, 100,000 round lb for CSEO, and 125,000 round lb for SSEOC; Table 10). Directed fishing is prohibited in NSEI and SSEIW along with the 5 areas along the outer coast. Gear is limited to mechanical jigging machines, dinglebar, and hand troll gear. In 2009, the board adopted a proposal repealing the prohibition on the sale of black rockfish taken as bycatch in waters that are closed to directed black rockfish fishing.

In 2020, federal regulations were adopted that require the operator of a federally permitted catcher vessel using hook-and-line, pot, or jig gear in the exclusive economic zone (EEZ) of the Gulf of Alaska to retain and land all rockfish caught while fishing for groundfish or halibut. In 2022, the

board updated the full retention regulations in state and federal waters of the EGOA, east of 144°W long to include all rockfish and thornyhead rockfish.

STOCK ASSESSMENT AND MANAGEMENT

The directed black rockfish fishery is managed using area GHLs, vessel registrations, gear restrictions, and small area closures. This fishery focuses on fishing in nearshore, shallow water rock "reef" habitat, these areas are traditionally difficult to assess. There have been no stock assessment surveys to assess black rockfish since 2002. Surveys were conducted to tag black rockfish from 1999 to 2002, with 4,659 black rockfish tagged and released with 58 tags recovered (Tydingco and Brylinsky 1999). No surveys are performed to assess slope and thornyhead rockfish stocks; however, these species are captured incidentally on annual sablefish longline surveys. The SRI has identified black rockfish as one of the priorities to assess statewide and is working on a stock assessment plan for Southeast Alaska, as well as improving life history estimates and reconstructing all harvest and mortality for black rockfish.

2021–2023 SEASON SUMMARY

The PSR harvest has been variable in both outside and inside waters between 2021 and 2023. Harvest levels for PSR in NSEI and SSEI waters ranged from 299 round lb in 2021 to 1,681 round lb in 2023 (Table 9). Black rockfish harvests in outside waters ranged from zero to 10,577 round lb the directed fishery and 5,300 to 16,769 round lb in all groundfish, halibut, and salmon troll fisheries from 2021 to 2023 (Table 10). The number of permits fished in the directed black rockfish fishery ranged from 0 to 3 from 2021 to 2023 (Table 10).

The total catch of slope and thornyhead rockfishes in NSEI and SSEI has remained low during this period. The highest annual harvest during this time was in 2021 with 114,060 round lb (Table 11).

2024 SEASON OUTLOOK

Slope rockfish, thornyhead, and PSR bycatch landings in 2024 are expected to be similar to recent annual landings. Effort is expected to continue to be low in the directed black rockfish fishery in 2024 due to several economic factors, including the market value for black rockfish, fuel prices, and dynamics in other fisheries.

SABLEFISH

Sablefish occur in the northeastern Pacific Ocean from Baja California to the Aleutian Islands and into the Bering Sea (Mecklenburg et al. 2002). Adult sablefish inhabit the deep-water continental shelf, slope, and coastal fjords. Most adults live in depths of 200–500 fathoms but have been captured in depths as great as 1,000 fathoms (Allen and Smith 1988). Sablefish are long-lived and have been aged to at least 94 years in Alaska waters (Munk 2001); however, few fish greater than 20 years of age are captured in Southeast Alaska commercial fisheries (Mueter 2010). Sablefish are the most valuable groundfish in Southeast Alaska; the annual exvessel value of sablefish ranged from $4,349,672 to $6,118,363 from 2021 to 2023 (Table 1).

FISHERY DEVELOPMENT AND HISTORY

State managed fisheries currently occur in NSEI (Chatham Strait) and SSEI (Clarence Strait and adjacent waters of Dixon Entrance). Sablefish have been harvested in the internal waters of Southeast Alaska since the early 1900s. Prior to the 1940s, sablefish were primarily landed as

bycatch in the halibut fishery (Bracken 1983). 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 Clarence Strait and Dixon Entrance areas, and the pot fishery accounted for 33% of the total harvest in the early 1970s. In 1981, the NSEI fishery was restricted to longline gear only, but pot gear was still allowed in the SSEI Subdistrict (Figure 1).

Sablefish have been historically managed with limitations on fishing seasons and harvest levels. Season limitations were first imposed in 1945 for the NSEI management area, and in 1982 for the SSEI management area (Bracken 1983). Fishing seasons continued to be shortened in both areas as effort escalated in the 1970s and 1980s. GHRs based on historic catches were established for both areas in 1980, and in 1985, a limited entry program was implemented for both the NSEI and SSEI sablefish fisheries. 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 the NSEI area, the number of fishing days fell from 76 days in 1980 to 1 day in 1987 (Table 12). One-day openings continued in the NSEI area through 1993. In 1993, the NSEI fleet harvested 5,795,974 round lb, more than double the upper bound of the GHR (2,380,952 round lb). To improve management and stay within the GHR, the board adopted an equal quota share (EQS) system for the NSEI area in 1994.

Similarly, in SSEI, fishing days declined from 200 days in 1980 to 2 days in 1995 and 1996 (Table 13). In 1997, at the request of industry, the board adopted a similar EQS system for the SSEI fishery and established separate seasons for the longline and pot fisheries to reduce gear conflicts and enable pot fishers to utilize their gear more effectively.

REGULATIONS

Management regulations, including annual harvest objectives (AHOs), fishing seasons, and gear specifications, are defined separately for the NSEI and SSEI sablefish fisheries. No sablefish fishery occurs in the state-managed 0–3 mile zone in outside coastal waters of Southeast Alaska. The EQS system requires the department to divide the AHO equally among the CFEC permits eligible for each fishery. In 2003, the board adopted regulations allowing fishers to apply a 5% overage or a 5% underage from the previous year to the current year's EQS to reduce discard mortality and to acknowledge the difficulties in landing exact amounts of fish. In addition, regulations do not allow sablefish to be used as bait.

The NSEI longline fishery is open annually between August 15 and November 15. In 2003, new regulations allowed for an off-season fishery in the NSEI area to collect biological data on sablefish in NSEI during the winter and spring months. The department chartered longline vessels to conduct a survey in January and February of 2004 and 2005 as part of a research project to observe CPUE rates and collect biological data during the winter. However, winter fishing has not occurred since 2005 because the AHO must be announced prior to off-season fishing, and typically, the NSEI stock assessment is not completed until April or May. In 2010, under the same regulation, the department implemented a program to allow NSEI permit holders to retain their personal quota share (PQS) during the department's sablefish survey conducted in the weeks prior to the start of the NSEI season to reduce department testfish removals as testfish revenue funding allows. This reduces the testfish decrement to the ABC, and thus increases the AHO for permit holders.

Starting in 2000, the SSEI sablefish commercial fishery season was open from June 1 to August 15 for longline gear only, and from September 1 to November 15 for pot gear only. At the 2018 board meeting, regulations were passed: the longline and pot fishery seasons were combined from June 1 to November 15, a requirement for at least 2 circular escape rings with a minimum inside diameter of 4 inches to be installed on opposing vertical or sloping walls of pot gear, and an allowance for a CFEC permit holder or interim use permit holder for sablefish to possess live sablefish for delivery as a live product. In 2017, the CFEC approved a petition from the industry to allow SSEI sablefish C61C permits to be changed to longline/pot gear permits due to whale depredation issues and concerns in the longline fishery. In 2022, CFEC approved a similar petition to allow NSEI sablefish C61A permits to be changed to longline/pot permits. The C61C and C61A permit holders can fish both gear types, whereas SSEI C91C permits remain pot permits only. At the 2022 board meeting, the minimum escape ring size was reduced to 3.75 inches.

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 using fixed survey stations. Research at the time indicated some movement of sablefish into and out of NSEI, and substantial movement into and out of SSEI. Consequently, the department has conducted surveys a few weeks prior to the start of each fishery to examine relative abundance and sablefish population composition near the time of these fisheries. During the annual longline surveys, biological data are collected on sablefish and 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.

The longline surveys were designed as random stratified surveys; fixed stations were placed in sablefish habitat (based on depth) in Clarence and Chatham Straits where the majority of the commercial SSEI and NSEI fishery harvest occurred. For the SSEI survey, stations were added in Dixon Entrance in 1996 to reflect changes in the fishery distribution. In 2013, the SSEI longline survey was redesigned to improve the spatial coverage of the survey relative to the fishery; the fishery had further shifted into Dixon Entrance, and few survey stations were in this area. Survey stations were reallocated in proportion to sablefish habitat by strata. Statistical areas were included in the survey design if a minimum average of 3% (or greater) commercial harvest occurred in the area from 2003 to 2012 (Stahl et al. 2014a).

Since 2000, the longline survey hook spacing, gear soak time, and bait type and size have been standardized to the specifications used in the federal longline survey to allow for comparisons of stocks in federal and state waters. The hook spacing was 1.6 to 1.8 m from 1997 to 1999; in 2000 spacing was standardized to 2 m. Prior to 1997, survey gear was retrieved 1 hour after deployment. A 3- to 11-hour soak time was implemented in 1997 to match the minimum 3-hour soak time on the federal longline survey and to address concerns that the 1-hour soak time was not sufficient for gear to reach the bottom and be available for fish at certain depths and tidal/current conditions (Cartwright 2000). In addition, herring was replaced with squid as bait in 1997 partially due to the concern that herring disintegrates with longer soak times (Cartwright 2000).

Since 1997, mark–recapture activities have occurred to estimate absolute abundance of sablefish in NSEI. From 1997 to 1999, sablefish were marked during the annual NSEI longline survey; however, tag-recovery data indicated tagged fish released using longline gear were avoiding subsequent capture with longline gear (Carlile et al. 2002). In 2000, to avoid this potential bias and more accurately assess abundance, the department began using longlined pots to capture and mark

sablefish. Marking surveys also provide release and recapture locations for tagged sablefish. These data allowed for estimation of migration rates and analysis of movement patterns between internal waters and the Gulf of Alaska, Bering Sea, Aleutian Islands, and British Columbia. After 1 year of occupancy, the probability of sablefish in Chatham Strait moving to any other area is 10–14%, and 30% for Clarence Strait (Hanselman et al. 2014).

Prior to 1997, the department set the AHOs for the sablefish fisheries after the longline surveys were completed and just before the opening of the fisheries. Since then, the department has set the AHO in NSEI for a given year using the survey and fishery data from previous years because mark–recapture and fishery age structure data cannot be analyzed until after the NSEI fishery has been prosecuted. From 2003 to 2019, AHOs were set in NSEI by applying a harvest rate to an estimate of biomass that is calculated from mark–recapture and weight-at-age data using Chapman's modification of the Peterson estimator (Chapman 1951; Seber 1982; Dressel 2009).

Beginning in 2020, a new statistical catch-at-age model replaced past methodology that partitioned a mark–recapture abundance estimate to numbers-at-age using fishery age compositions. This reduced the department's reliance on an annual mark–recapture project by integrating multiple indices of abundance and biological data, including catch, mark–recapture abundance estimates, longline survey and fishery catch-per-unit-effort, and longline survey length and age compositions to estimate recruitment, abundance, and spawning stock biomass of NSEI sablefish since 1975.

The maximum ABC is defined by F_{50}, the fishing mortality rate that reduces spawning biomass to 50% of equilibrium unfished levels. A new management procedure was also implemented that constrained the recommended ABC to a 15% annual maximum change to increase fishing stability and maximize catch. The ABC is decremented to account for the longline survey removals, estimated mortality in the halibut fishery, and sablefish mortality in subsistence, personal use, and sport fish fisheries, resulting in the AHO and EQS for the 73 permit holders (Table 12). The increase in AHO since 2016 is attributed to the continued growth and maturation of the strong recruitment events since 2015, highlighted by recruitment in 2018 (the 2016-year class), the highest recruitment since 1979.

Unlike NSEI, the department does not currently estimate the absolute abundance of the SSEI sablefish stock. There appears to be substantial movement of sablefish in and out of the SSEI area, violating the assumption of a closed population; consequently, mark–recapture estimates of abundance or exploitation rates are not possible for this fishery. Instead, the SSEI sablefish population is managed based on relative abundance trends from survey and fishery CPUE data, as well as with survey and fishery biological data that are used to inform the age and size structure of the population and detect recruitment events.

2021–2023 SEASON SUMMARY

For this reporting period, there was an increase in the AHO for NSEI from 2021 to 2023 (Table 12), and an increase in the AHO for SSEI from 2021 to 2022, whereas the 2023 AHO was the same as 2022 (Table 13). From 2021 to 2023, a total of 5.0 million round lb of sablefish were harvested in both areas (Table 1). The highest harvest in this reporting period occurred in 2022 with 1.8 million round lb, and the lowest in 2021 with 1.6 million round lb harvested. The combined exvessel price ranged from $4.3 million in 2023 to $6.1 million in 2022.

NSEI

The 2023 NSEI AHO was 1,393,659 round lb, the highest NSEI fishery quota since 2008 (Table 12) due to an increase in the exploitable biomass (Figure 6) and recent strong recruitment trends in NSEI and surrounding areas. The fishery and survey CPUE values have fluctuated annually. The annual AHO and EQS values were higher in this reporting period than the previous reporting period, and total permit holders in the 2021 to 2023 fishery was at a new low of 73 permits due to nontransferable permits being removed from the limited entry fishery (Table 12).

SSEI

The 2023 SSEI AHO was 643,360 round lb, resulting in an EQS of 29,244 round lb, which was the highest EQS in the history SSEI sablefish fishery (Table 13). The total number of permit holders during this reporting period was 22 permits. Overall, the annual AHO and EQS values were higher compared to the previous reporting period (Table 13). Both the longline survey and longline fishery CPUEs have fluctuated annually (Figure 7).

Survey CPUEs in NSEI and SSEI have historically been higher than fishery CPUEs. Unlike the fishery, longline surveys account for sablefish releases, discards, and fish lost at the roller, resulting in higher CPUE estimates. In addition, commercial CPUE estimates may be lower because some fishers target both halibut and sablefish in the same trip.

2024 Season Outlook

NSEI

The 2024 AHO was announced in June after finalizing the stock assessment based on the evaluation of NSEI fishery and survey CPUE, previous NSEI biomass estimates and age, length, sex, and maturity data. The 2024 AHO is 1,542,444 round lb. The department conducted the annual longline survey in 2024, collecting CPUE data and sablefish biological information (age, weight, length, sex, and maturity). The department also conducted a special longline and pot comparison study in 2024. The department collects sablefish biological data through port sampling of commercial fishery landings. The department did not conduct a tagging survey in 2024 due to budget constraints.

SSEI

The 2024 AHO was announced in May after analyses of fishery and survey CPUE and biological data were completed. The 2024 AHO is 643,360 round lb, the same as the 2022 and 2023 AHOs. The department conducted the annual longline survey in 2024, collecting CPUE data and sablefish biological information (age, weight, length, sex, and maturity). The department also conducted a special longline and pot comparison study in 2024. The department will continue to closely monitor sablefish recruitment trends, age, length, weight, and maturity information, as well as survey and fishery performance in SSEI.

PACIFIC COD

Pacific cod are found from the Yellow Sea in China through the Bering Sea as far north as the Chukchi Sea, and south to Santa Monica Bay, California (Love 1996; Westrheim 1996; Mecklenburg et al. 2002). Pacific cod inhabit the waters of the continental shelf and upper continental slope (Bakkala et al. 1984; Westrheim 1996). Pacific cod are an oviparous fish with eggs fertilized externally (Hart 1988). A single female typically releases 1 to 3 million eggs at a

time, although larger fish can release up to 8 million (Jung et al. 2009). Pacific cod spawn once each year, releasing all ripe eggs within a few minutes time rather than in multiple spawning events (Sakurai 1989). Spawning of demersal, adhesive eggs (Barbeaux et al. 2016) occurs near the bottom in depths of 40–290 m in the preferred substrate of sediment and cobble (Palsson 1990). Hatching occurs in 8 to 28 days, depending on water temperature and salinity (Hart 1988).

Larvae are approximately 3–4 mm in length at the time of hatching and are born with a yolk sack, which is absorbed within 10 days (Palsson 1990). Larvae and juveniles are pelagic, and there is some evidence that they are transported to nearshore nursery habitats by the current (Garrison and Miller 1982). Nursery habitats are associated with shallow water intertidal areas, with a sandy bottom and kelp or eel grass vegetation (Miller et al. 1976). It has been theorized that with increasing size and age, juveniles move into deeper water (Brodeur et al. 1995).

Adults and large juveniles seem to prefer soft bottom habitats associated with clay, sand, or mud (Garison and Miller 1982). Adults inhabit depths ranging from 10 m to 875 m, although most occur from 50 m to 300 m (Allen and Smith 1988; Mecklenberg et al. 2002).

Pacific cod are physoclistous fish—they have an enclosed swim bladder which cannot readily expel air when brought to the surface from depth. An expanded swim bladder may tear or crush internal organs causing death. Even less severe cases of barotrauma can lead to mortality because the weakened fish may be unable to descend back to depth. As a consequence, most Pacific cod caught are often fatally injured.

FISHERY DEVELOPMENT AND HISTORY

The catch history of the directed Pacific cod fishery in internal waters of Southeast Alaska is incomplete due to some limitations with landing records for this fishery. Under regulation, Pacific cod harvested for bait in other fisheries must be reported on the fish ticket for the directed fishery and cannot be sold or transported outside the Eastern Gulf of Alaska Area. However, the amount of Pacific cod retained for bait use in other fisheries is unknown and compliance with this reporting requirement is assumed to be low due to the small number of vessels that report the use of Pacific cod for bait. Since 1997, fishing trips targeting Pacific cod have required logbooks with the target species recorded, which has allowed for more accurate tracking. Prior to this time, it was difficult to differentiate Pacific cod harvested on a directed fishery trip from those landed as incidental catch because all Pacific cod landings could be reported on the same CFEC miscellaneous finfish interim use permit card (M card).

A GHR was implemented in 1994 to establish state management authority of Pacific cod in internal waters. In the absence of state regulations, management of Pacific cod in state waters would be subsumed to the federal government. The GHR was set at 750,000–1,250,000 round lb to accommodate traditional harvest patterns and allow potential expansion of the fishery if additional harvest was deemed sustainable. The directed fishery for Pacific cod has remained open year-round in state waters since the adoption of the GHR in 1994; however, area closures have been implemented during this time due to concerns of localized depletion.

Reported landings of Pacific cod from NSEI and SSEI have varied widely over the past 30 years (Table 14). The increase in catch in the 1990s was due to the development of a food market for Pacific cod. Total annual reported landings of Pacific cod from NSEI and SSEI have ranged from 121,330 round lb in 2023 to 963,077 round lb in 2015, with most of this harvest landed on miscellaneous finfish interim use permits (Table 14). The majority of the Pacific cod harvested

have come from the directed fishery with a range of 3 to 141 miscellaneous finfish interim use permits landing Pacific cod in the directed fishery from 1989 to 2023, annually (Table 14).

REGULATIONS

In 2000, the board limited gear for the harvest of Pacific cod to longline, dinglebar troll, hand troll, mechanical jigs, and pot gear. Longline gear is the primary gear used in the directed Pacific cod fishery in Southeast Alaska. In 2012, the board defined the open fishing period for the Pacific cod fishery as January 1–December 31, preventing opening and closing the fishery by emergency order. In 2022, the board required that vessels participating in the directed Pacific cod fishery in Southeast Alaska register prior to fishing.

STOCK ASSESSMENT AND MANAGEMENT

There are no department stock assessment surveys for Pacific cod in internal state waters in Southeast Alaska. Pacific cod are sampled at the dock from landings made during the NSEI directed fishery. Biological data are collected for length, sex, maturity, and otoliths. Aging of Pacific cod is difficult, and estimated ages are not yet used for assessing stock condition.

The Pacific cod GHR is managed on the calendar year cycle and applies to directed fishery harvest as well as Pacific cod taken incidentally in the commercial halibut, sablefish, and demersal shelf rockfish fisheries. Management actions (e.g., inseason closures) are structured to coincide with the seasonality of the fishery using a time frame of July 1 to June 30 rather than the calendar year because spawning aggregations are targeted primarily from October to April. Closures are implemented in some areas when harvests have reached target levels to distribute directed fishery harvest throughout the management area and reduce fishing pressure on potential spawning aggregations. Seasonal closures remain in effect through June 30.

2021–2023 SEASON SUMMARY

Total Pacific cod landings have decreased overall from prior years. The highest harvest in the directed fishery during this period occurred in 2021 (248,026 round lb by 6 permit holders) and the lowest was in 2023 (83,659 round lb by 3 permit holders; Table 14). Harvest levels have fluctuated with the market value for Pacific cod; the price per pound can be quite variable even within a given year depending on when and what product is sold. As in the past, most of the harvest during this reporting period was taken in NSEI.

During the 2020/21, 2021/22, and 2022/23 fishing seasons, directed fishing for Pacific cod began in the fall and proceeded through winter and spring. Closures were only implemented in the winter of 2021 in the northern NSEI area including Lynn Canal, Berners Bay, Stephens Passage/Gastineau Channel, and northern Chatham Strait. The inseason closure was implemented because of a decline in Southeast Alaska harvest, suggesting that the area was experiencing a period of reduced biomass, and the area closure distributed effort and harvest throughout the remaining open areas.

2024 SEASON OUTLOOK

Pacific cod remains an important food and bait fish in the EGOA, and the open access fishery provides an opportunity for entry-level participants. If the market value of Pacific cod remains high, this fishery may continue to be important in Southeast Alaska.

HAGFISH

Hagfish (Order Myxiniformes) are primitive jawless fishes distantly related to lampreys (Order Petromyzontiformes). Hagfish are almost universally deep-water, benthic scavengers and predators. There are 2 species known from the Northeastern Pacific, the black hagfish (*Eptatretus deani*) and Pacific hagfish (*E. stoutii*; Mecklenburg et al. 2002). Only black hagfish are targeted in the Southeast Alaska commercial fishery, and a small number of Pacific hagfish are captured incidentally. Hagfish are captured using baited pots that are longlined.

FISHERY DEVELOPMENT AND HISTORY

Interest in developing a hagfish fishery in Southeast Alaska began in 1989 with the expansion of the hagfish market in North America. Despite several attempts between 1989 and 1991, the fishery was mostly unsuccessful with less than 15,000 round lb being landed in total during those years. In 2016, there was renewed interest in this fishery. Harvest increased substantially every season between 2016 and 2021, peaking in the 2020–2021 season with 116,803 round lb of hagfish landed. Landings dropped to 53,884 and 71,285 round lb the next 2 seasons (Table 15). There was no effort in 2023.

REGULATIONS

Since 2016, the commercial hagfish fishery has been managed under a commissioner's permit. The fishery season begins on July 1 and continues until June 30 of the following year. The SSEI management area was divided into 6 hagfish management areas. A gear limit was set at 3,000 gallons total pot volume per vessel. During the initial seasons (2016, 2017), the GHL was set at 60,000 round lb. The GHL was increased to 120,000 round lb for the next 2 seasons. In 2020, the Clarence Strait hagfish management area was divided into Upper and Lower Clarence Strait and the GHL was increased to 170,000 round lb.

STOCK ASSESSMENT AND MANAGEMENT

There is no stock assessment for hagfish in the SSEI management area. Fluctuations in seasonal catch appear to be related to factors unrelated to stock health but are due to participant activity/non-activity in the fishery. The department continues to manage this fishery conservatively.

2021–2023 SEASON SUMMARY

There was limited participation in the hagfish fishery during this reporting period. Harvest peaked in the 2020–2021 season with 116,803 round lb of hagfish landed. Landings dropped to 53,884 and 71,285 round lb the next 2 seasons, and there has been no effort in the 2023–2024 season (Table 15).

2024 SEASON OUTLOOK

The department will evaluate requests for commissioner's permits for hagfish harvest and will continue inseason monitoring of catch as well as biological sampling of catch during landings.

OTHER SPECIES

Landings of other groundfish species in NSEI and SSEI continue to be low. Starry flounder (*Platichthys stellatus*) were the primary species targeted in a beam trawl fishery for flatfish in Southeast Alaska. Starry flounder dwell in soft-bottom, shallow water estuaries, generally

shallower than 55 fathoms, in the North Pacific (Mecklenburg et al. 2002). There is relatively limited estuarine habitat in Southeast Alaska where trawl fisheries are likely to target flatfish. A trawl fishery for flatfish was already established in the internal waters of Southeast Alaska by 1960 when landings of flatfish were first documented. Between 1960 and 1980, department reporting records show a substantial increase in annual harvest from low levels in the early 1960s to approximately 1 million round lb by 1973, with the harvest dropping substantially by 1980. The harvest in these early years came primarily from Port Camden, Level Island, and Stikine Flats. These fish were primarily delivered out of state, 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 lb in the late 1980s, consisting primarily of starry flounder and some rock sole (*Lepidopsetta* spp.). Harvests remained high from 1987 to 1991, and then decreased to less than 20,000 round lb by 1995, and since that time have remained low (Table 16). Current GHRs are based on the limited amount of flatfish habitat available, lack of flatfish stock status information, and concerns for potentially high bycatch of crab, shrimp, and halibut (Bracken et al. 1991). Department-issued commissioner's permits are required to participate in the directed beam trawl flatfish fishery.

Most other species not noted previously are discarded at sea and not reported on fish tickets. Primary discards include Pacific sleeper sharks (*Somniosus pacificus*), spiny dogfish (*Squalus suckleyi*),[4] spotted ratfish (*Hydrolagus colliei*), skates (Family Rajidae), arrowtooth flounder (*Atheresthes stomias*), and grenadiers (Family Macrouridae). Skate landings in internal waters of NSEI and SSEI during this reporting period (2021–2023) totaled 32,948 round lb. Landings fluctuated annually with a low harvest in 2023 of 5,615 round lb and a high in 2021 of 16,282 round lb. Skates harvest fluctuates with current market value.

[4] Since 2010, spiny dogfish have been identified as *Squalus suckleyi* and separated from the Atlantic species of dogfish *S. acanthias* based on morphology and genetics; however, in regulation they are still identified as *S. acanthias*.

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TABLES AND FIGURES

Table 1.–Southeast Alaska and Yakutat reported catch (round lb) and exvessel value for state-managed groundfish taken in commercial groundfish and halibut fisheries from 1996 to 2023.

Year	Lingcod Southeast	Flatfish NSEI/SSEI	DSR[a] Southeast	PSR[a] NSEI/SSEI	Black rockfish[a] Southeast	Slope[a] NSEI/SSEI	Pacific cod[a] NSEI/SSEI	Sablefish NSEI/SSEI	Total
1996	772,488	1,278	1,078,941	8,368	67,166	510,210	639,343	5,176,160	8,253,955
	$381,077	$302	$894,545	$2,954	$19,560	$321,432	$326,065	$10,807,647	$12,753,582
1997	642,385	4,158	913,678	15,251	127,445	622,581	778,413	5,478,461	8,582,372
	$342,928	$1,096	$905,259	$3,851	$40,945	$379,774	$326,933	$13,153,151	$15,153,937
1998	564,222	13,214	936,483	7,570	60,434	905,127	647,940	5,266,064	8,401,054
	$316,355	$2,127	$835,945	$2,178	$20,001	$534,025	$233,258	$8,173,593	$10,117,482
1999	495,652	17,557	944,643	7,788	43,157	654,469	823,342	3,704,697	6,691,305
	$330,393	$3,101	$972,487	$2,349	$13,810	$412,315	$279,936	$7,833,803	$9,848,193
2000	481,115	1,156	770,604	7,594	38,231	733,227	593,104	3,672,974	6,298,005
	$324,451	$203	$944,825	$2,409	$14,321	$445,289	$231,311	$8,571,706	$10,534,515
2001	328,918	4,857	841,424	6,072	16,496	487,407	356,790	2,793,295	4,835,259
	$159,685	$381	$945,323	$1,584	$4,362	$264,544	$121,309	$5,813,074	$7,310,262
2002	351,387	1391	799,811	14,233	88,492	349,328	251,751	2,659,719	4,516,113
	$204,583	$20	$993,670	$6,332	$31,316	$191,941	$100,700	$6,102,368	$7,630,930
2003	394,913	947	773,482	4,942	93,559	306,946	386,548	2,658,579	4,619,915
	$257,197	$41	$894,881	$1,818	$42,213	$161,873	$150,754	$6,316,033	$7,824,810
2004	359,510	992	852,571	4,334	46,840	222,781	451,446	2,878,801	4,817,274
	$230,258	$24	$1,037,082	$1,562	$18,169	$149,319	$186,483	$5,563,286	$7,186,184
2005	323,629	660	609,443	4,496	12,281	264,866	469,215	2,665,850	4,350,440
	$223,911	$10	$601,930	$2,669	$6,876	$159,856	$208,396	$6,378,833	$7,582,482
2006	302,120	1265	565,950	1,123	9,130	290,743	363,659	2,658,618	4,192,609
	$304,164	$22	$526,103	$782	$4,543	$183,797	$165,453	$6,501,059	$7,685,922
2007	341,145	353	542,453	1,289	2,818	265,029	581,314	2,121,646	3,856,048
	$301,903	$0	$481,109	$331	$1,213	$144,598	$269,965	$5,269,200	$6,468,319
2008	405,813	*	517,167	1,939	1,879	261,963	696,372	2,131,073	4,016,206
	$362,736	*	$565,111	$700	$498	$147,049	$400,676	$6,727,573	$8,204,343
2009	435,876	180	543,864	972	2,090	212,781	679,931	1,667,302	3,542,996
	$327,348	$0	$523,625	$224	$897	$122,669	$307,766	$5,317,529	$6,600,058
2010	402,200	0	467,326	792	2,212	216,129	927,681	1,612,908	3,629,249
	$324,219	$0	$433,965	$215	$712	$131,991	$403,123	$5,877,801	$7,172,026

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Table 1.–Page 2 of 2.

Year	Lingcod Southeast	Flatfish NSEI/SSEI	DSR[a] Southeast	PSR[a] NSEI/SSEI	Black rockfish[a] Southeast	Slope[a] NSEI/SSEI	Pacific cod[a] NSEI/SSEI	Sablefish NSEI/SSEI	Total
2011	431,655	862	321,495	868	1,574	134,876	602,152	1,423,710	2,917,191
	$521,947	$0	$378,400	$258	$579	$82,348	$340,196	$7,084,188	$8,407,916
2012	401,578	0	440,134	186	11,206	150,678	456,078	1,491,361	2,951,221
	$552,323	$0	$677,161	$78	$6,976	$98,224	$267,822	$5,777,722	$7,380,305
2013	415,771	0	541,617	5,346	8,360	149,384	792,783	1,477,098	3,390,357
	$345,376	$0	$739,045	$2,301	$3,664	$92,391	$471,186	$4,039,551	$5,693,515
2014	324,156	*	315,295	2,852	846	149,311	774,040	1,267,017	2,833,517
	$322,688	*	$469,950	$1,203	$465	$89,491	$426,761	$4,415,126	$5,725,684
2015	358,096	0	306,311	5,879	11,939	150,115	963,077	1,293,195	3,088,613
	$343,659	$0	$436,097	$4,140	$11,940	$93,149	$533,731	$4,925,913	$6,348,630
2016	362,776	0	317,849	1,023	9,686	140,809	639,771	1,121,794	2,593,707
	$450,492	$0	$439,407	$476	$11,666	$88,717	$354,627	$4,664,725	$6,010,109
2017	383,057	562	337,976	469	14,144	140,678	282,500	1,228,605	2,387,992
	$555,505	$0	$535,488	$292	$17,745	$90,955	$140,337	$6,025,081	$7,365,405
2018	381,197	0	395,593	3,109	9,108	120,803	263,799	1,430,862	2,604,471
	$559,273	$0	$664,905	$1,734	$6,136	$73,532	$158,365	$6,545,527	$8,009,472
2019	404,867	*	387,789	1,188	8,661	134,887	245,690	1,496,507	2,679,589
	$586,687	*	$543,957	$471	$7,691	$91,385	$138,057	$5,667,305	$7,035,553
2020	388,706	*	263,952	200	15,703	112,596	427,776	1,625,655	2,834,588
	$439,434	*	$345,385	$98	$11,646	$70,935	$268,685	$4,506,401	$5,642,584
2021	397,478	0	276,020	299	11,445	114,060	280,942	1,599,524	2,679,768
	$596,735	$0	$209,533	$127	$14,360	$60,199	$174,171	$4,907,004	$5,962,128
2022	455,953	*	398,519	385	1,001	103,351	219,210	1,777,676	2,956,096
	$580,569	*	$407,657	$236	$368	$59,074	$117,655	$6,118,363	$7,283,921
2023	477,476	0	502,629	1,681	2,535	108,286	121,330	1,651,753	2,865,690
	$623,895	$0	$553,238	$372	$754	$57,012	$71,885	$4,349,672	$5,656,828

Note: * = Confidential data. Exvessel values for 1996–2023 were calculated from Commercial Fisheries Entry Commission (CFEC) gross earnings data. Data excludes testfish harvest. Lingcod and black rockfish catches are from the entire Southeast District, demersal shelf rockfish (DSR) are from the Southeast District (excluding Icy Bay Subdistrict), and all other species are from the Northern Southeast Inside (NSEI) and Southern Southeast Inside (SSEI) Subdistricts. Slope rockfish include all rockfish (*Sebastes* and *Sebastolobus* spp.) not included in DSR and pelagic shelf rockfish (PSR) assemblages.

[a] For species with high mortality after capture, fish discarded at-sea were included in the catch estimates when possible. All other catch numbers reflect landings only.

Table 2.–Groundfish bycatch (round lb) landed in the Southeast Alaska commercial salmon troll fisheries from 1990 to 2023.

Year	DSR	PSR	Slope	Pacific cod	Lingcod[a]	Total bycatch	Total value[b]	Total permits
1990	2,284	1,059	222	0	110,992	114,557	$25,749	519
1991	1,524	4,834	562	*	92,914	99,834	$26,434	493
1992	1,099	5,368	629	28	60,525	67,649	$16,266	430
1993	3,425	4,636	709	0	70,181	78,951	$18,524	391
1994	2,641	3,356	1,283	0	61,986	69,266	$25,476	317
1995	2,006	14,836	2,755	33	88,754	108,384	$44,150	422
1996	1,162	9,205	1,232	0	50,833	62,432	$18,376	280
1997	1,864	13,573	1,261	*	42,508	59,206	$19,157	314
1998	2,314	15,445	1,929	274	39,365	59,327	$17,465	309
1999	971	13,297	1,078	523	30,239	46,108	$17,168	276
2000	1,481	13,846	2,294	164	45,201	62,986	$23,241	319
2001	1,484	13,011	6,296	0	27,592	48,383	$16,236	226
2002	2,285	20,406	3,534	66	57,274	83,564	$27,806	242
2003	3,714	19,801	3,358	*	33,349	60,223	$22,342	230
2004	3,753	19,791	2,926	20	34,622	61,111	$25,694	230
2005	2,659	20,914	1,889	*	25,400	50,862	$21,675	210
2006	2,033	18,092	1,711	0	34,937	56,774	$28,965	237
2007	2,211	18,673	1,777	0	41,231	63,893	$27,958	250
2008	1,699	22,516	2,012	*	31,862	58,088	$26,484	246
2009	1,749	12,804	1,807	0	29,709	46,069	$19,105	210
2010	3,058	13,610	3,274	*	19,246	39,188	$15,640	185
2011	2,616	10,048	2,743	42	22,541	37,991	$25,084	182
2012	3,184	28,977	4,499	*	34,692	71,353	$67,502	244
2013	1,856	12,366	3,208	*	18,815	36,245	$19,020	202
2014	1,756	15,304	2,395	77	14,004	33,536	$22,096	210
2015	3,591	15,788	2,820	95	23,920	46,214	$37,306	208
2016	6,951	30,804	5,652	32	32,730	76,168	$66,283	244
2017	4,124	17,137	3,678	*	20,047	44,985	$50,358	226
2018	4,886	25,259	4,784	369	38,007	73,305	$78,868	233
2019	3,620	16,863	2,158	109	13,526	36,276	$33,175	205
2020	3,484	13,133	1,707	197	20,265	38,787	$38,440	191
2021	1,866	8,982	2,351	334	42,252	55,784	$61,030	197
2022	3,222	12,301	3,089	26	52,729	71,367	$72,584	219
2023	1,099	3,822	549	61	34,489	40,021	$44,940	167

Note: * = Confidential data. Slope rockfish include rockfish (*Sebastes* and *Sebastolobus* spp.) not included in the demersal shelf rockfish (DSR) and pelagic shelf rockfish (PSR) assemblages.

[a] Delivery code for lingcod was not documented in the troll fishery prior to 2001; consequently, round weights prior to this time should be considered estimates. These weights were calculated by converting landed weights with the standard western cut delivery conversion rate.

[b] Total exvessel values for 1990–2023 were calculated from Commercial Fisheries Entry Commission (CFEC) gross earnings data. Data excludes testfish harvest.

Table 3.–Southeast Alaska and Yakutat survey landings (round lb) and exvessel values for Alaska Department of Fish and Game and International Pacific Halibut Commission, by group and year for state-managed species from 1999 to 2023.

Year	PSR	DSR	Lingcod	Pacific cod	Sablefish	Slope rockfish	Total
1999	26	5,813	0	1,028	93,044	6,205	106,116
	$9	$6,009	$0	$285	$167,226	$2,757	$176,286
2000	0	18,379	1,622	413	128,421	4,967	153,802
	$0	$19,035	$1,343	$83	$287,345	$2,424	$310,230
2001	826	16,944	1,038	514	145,966	6,692	171,980
	$202	$17,422	$448	$90	$285,952	$1,981	$306,095
2002	2,104	6,438	0	214	137,654	5,528	151,938
	$561	$8,314	$0	$21	$284,358	$2,618	$295,872
2003	62	18,076	1,739	2,125	151,755	9,958	183,715
	$23	$23,917	$1,127	$84	$321,984	$3,854	$350,989
2004	4	6,956	0	1,232	139,976	4,900	153,068
	$1	$6,680	$0	$20	$264,182	$1,744	$272,627
2005	18	12,613	0	709	128,042	4,018	145,400
	$5	$9,970	$0	$177	$317,005	$1,474	$328,631
2006	3	6,757	0	487	146,855	8,332	162,434
	$1	$7,460	$0	$78	$388,036	$2,819	$398,394
2007	142	10,846	0	851	148,305	10,963	171,107
	$33	$9,303	$0	$158	$384,080	$3,764	$397,336
2008	106	5,502	1,360	3,309	154,907	11,417	176,602
	$24	$6,410	$0	$1,318	$475,956	$3,517	$487,225
2009	93	8,226	1,320	1,626	142,617	14,059	167,941
	$24	$8,403	$0	$354	$459,388	$5,536	$473,705
2010	158	19,877	0	4,047	93,735	14,739	132,556
	$61	$32,697	$0	$984	$366,915	$6,117	$406,774
2011	96	15,352	421	5,632	91,064	17,431	129,997
	$21	$24,342	$0	$1,442	$442,412	$5,255	$473,470
2012	60	12,695	0	3,957	122,664	16,066	155,442
	$22	$21,153	$0	$1,149	$440,490	$11,405	$474,219
2013	52	11,104	0	2,565	84,168	15,618	113,507
	$17	$12,969	$0	$648	$209,251	$6,485	$229,370
2014	53	14,174	0	2,531	95,529	14,060	126,346
	$24	$18,431	$0	$736	$399,774	$8,458	$427,424
2015	108	12,204	0	3,413	82,366	13,144	111,235
	$48	$13,980	$0	$1,173	$339,919	$6,331	$361,450
2016	82	11,434	0	2,462	72,104	12,065	98,147
	$31	$16,027	$0	$823	$314,690	$4,755	$336,326
2017	77	10,178	0	576	49,745	7,270	67,847
	$42	$17,312	$0	$187	$219,776	$3,247	$240,565
2018	90	16,494	0	862	39,964	10,283	67,694
	$40	$24,872	$0	$276	$89,432	$4,655	$119,276
2019	1,604	23,760	0	945	31,904	17,742	75,954
	$3,228	$30,558	$0	$325	$52,863	$7,545	$94,519
2020	42	17,139	0	974	107,164	16,177	141,495
	$14	$14,403	$0	$140	$122,691	$5,990	$143,238

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Table 3.–Page 2 of 2.

Year	PSR	DSR	Lingcod	Pacific cod	Sablefish	Slope rockfish	Total
2021	56	20,825	0	2,893	102,937	16,607	143,318
	$18	$18,987	$0	$680	$169,389	$4,650	$193,724
2022	63	22,657	0	6,415	142,194	19,774	191,103
	$25	$20,914	$0	$2,383	$304,058	$9,154	$336,534
2023	51	7,504	0	3,605	145,086	19,339	175,585
	$20	$12,440	$0	$1,243	$169,193	$8,592	$191,488

Note: The 2007–2023 landings include fish captured in state waters during the International Pacific Halibut Commission (IPHC) surveys but landed outside of Alaska. Exvessel values for 1999–2023 were calculated from fish ticket data. Slope rockfish include rockfish (*Sebastes* and *Sebastolobus* spp.) not included in the demersal shelf rockfish (DSR) and pelagic shelf rockfish (PSR) assemblages. Excludes discards at sea.

Table 4.–Southeast District harvest (round lb), effort, and exvessel value for lingcod taken in the directed commercial fishery and as bycatch in the groundfish and halibut fisheries from 1987 to 2023.

Year	Directed harvest	Directed value[b]	Directed permits	Total harvest	Total exvessel value[b]	Total permits landing lingcod
1987	163,305	$70,493	35	463,932	$189,886	435
1988	249,295	$118,849	59	589,930	$251,845	562
1989	180,516	$94,094	40	543,725	$116,985	602
1990	312,820	$157,298	46	688,723	$293,725	635
1991	490,873	$231,589	57	966,842	$413,233	646
1992	457,801	$194,380	61	929,640	$332,511	680
1993	496,771	$248,730	64	964,671	$412,435	577
1994	419,291	$216,110	72	796,774	$364,099	603
1995	665,860	$405,392	83	856,641	$490,962	474
1996	525,510	$262,068	101	772,488	$381,077	462
1997	421,262	$274,509	60	642,385	$342,928	442
1998	370,739	$219,888	52	564,222	$316,355	429
1999	276,707	$198,908	39	495,652	$330,393	478
2000	306,658	$230,212	35	481,115	$324,451	427
2001	137,290	$76,013	25	328,918	$159,685	421
2002	178,892	$125,784	28	351,387	$204,583	397
2003[a]	240,326	$178,328	33	394,913	$257,197	377
2004[a]	155,454	$124,800	28	359,510	$230,258	329
2005	177,525	$146,883	27	323,629	$223,911	298
2006[a]	235,644	$250,504	28	302,120	$304,164	220
2007[a]	235,649	$253,744	30	341,145	$301,903	329
2008[a]	268,919	$273,974	38	405,813	$362,736	309
2009[a]	259,163	$235,414	52	435,876	$327,348	314
2010	239,349	$241,719	44	402,200	$324,219	335
2011[a]	290,956	$445,157	44	431,655	$521,947	292
2012	248,068	$361,055	50	401,578	$552,323	300
2013	254,665	$234,079	44	415,771	$345,376	309
2014	208,715	$228,796	30	324,156	$322,688	254
2015	228,408	$227,763	28	358,096	$343,659	244
2016[a]	223,815	$328,509	36	362,776	$450,492	285
2017	237,792	$395,548	40	383,057	$555,505	278
2018	248,512	$413,503	48	381,197	$559,273	298
2019	284,914	$477,271	46	404,867	$586,687	292
2020	302,298	$363,639	43	388,706	$439,434	231
2021	294,684	$487,633	36	397,478	$596,735	221
2022	331,910	$466,819	29	455,953	$580,569	235
2023	343,509	$489,634	33	477,476	$623,895	255

[a] Total directed harvest does not include confidential directed fishery harvest.

[b] Exvessel values for 1987–2023 were calculated from Commercial Fisheries Entry Commission (CFEC) gross earnings data. Data excludes testfish harvest.

Table 5.–Commercial lingcod guideline harvest level (GHL; round lb) by fishery and area for 2023.

	2023 Annual GHL (round lb)				
Management area	Directed	Salmon troll	Longline	Groundfish jig	Total
IBS	46,000	8,000	12,670	0	66,670
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	11,690	28,390	3,340	93,520
NSEI	0	6,400	9,600	0	16,000
SSEIW	0	2,080	2,080	0	4,160
Total					600,550

Note: Management area definitions: The Icy Bay Subdistrict (IBS), East Yakutat (EYKT) Section, Northern Southeast Outside (NSEO) Section, Central Southeast Outside (CSEO) Section, Southern Southeast Outer Coast (SSEOC), Northern Southeast Inside (NSEI) Subdistrict, and Southern Southeast Internal Waters (SSEIW).

Table 6.–Southeast District lingcod reported harvest (round lb) by management area for commercial directed and salmon troll and longline bycatch fisheries from 2016 to 2023.

Year	Fishery	CSEO	EYKT	IBS	NSEI	NSEO	SSEIW	SSEOC	Grand total
2016	directed	67,787	112,247	41,033	no allocation	2,749	no allocation	*	223,816
	salmon	10,593	11,135	154	2,038	2,833	923	5,054	32,730
	longline	17,631	69,921	11,864	7,463	9,835	3,279	13,085	133,078
Total		96,011	193,303	53,051	9,501	15,417	4,202	18,139	389,624
2017	directed	85,543	104,524	9,261	no allocation	15,863	no allocation	22,602	237,793
	salmon	3,281	7,663	544	1,526	3,286	300	3,447	20,047
	longline	30,103	67,037	11,570	7,748	9,755	3,676	15,099	144,988
Total		118,927	179,224	21,375	9,274	28,904	3,976	41,148	402,828
2018	directed	86,796	92,251	21,606	no allocation	16,693	no allocation	31,167	248,513
	salmon	5,997	24,165	124	828	3,805	151	2,937	38,007
	longline	33,565	38,499	12,545	8,771	9,296	3,432	25,820	131,928
Total		126,358	154,915	34,275	9,599	29,794	3,583	59,924	418,448
2019	directed	79,753	110,784	22,754	no allocation	18,133	no allocation	53,490	284,914
	salmon	5,046	2,228	0	1,529	1,756	201	2,766	13,526
	longline	15,449	42,437	16,236	5,453	11,297	3,229	25,707	119,808
Total		100,248	155,449	38,990	6,982	31,186	3,430	81,963	418,248
2020	directed	85,860	99,681	44,439	no allocation	18,752	no allocation	53,566	302,298
	salmon	7,427	5,975	*	1,754	2,510	171	2,342	20,179
	longline	15,312	31,342	12,074	5,530	9,242	1,427	10,411	85,338
Total		108,599	136,998	56,513	7,284	30,504	1,598	66,319	407,815
2021	directed	85,015	101,665	34,544	no allocation	11,649	no allocation	61,811	294,684
	salmon	12,831	16,370	*	2,728	6,375	776	3,158	42,238
	longline	17,245	42,077	10,062	5,127	12,051	1,008	13,148	100,718
Total		115,091	160,112	44,606	7,855	30,075	1,784	78,117	437,640
2022	directed	77,806	128,844	52,446	no allocation	19,916	no allocation	52,898	331,910
	salmon	17,021	17,157	0	5,879	4,618	983	7,069	52,727
	longline	18,367	57,426	13,624	9,449	12,130	1,985	11,044	124,025
Total		113,194	203,427	66,070	15,328	36,664	2,968	71,011	508,662
2023	directed	116,394	112,904	44,858	no allocation	19,241	no allocation	50,112	343,509
	salmon	14,242	6,965	0	2,962	4,099	672	5,548	34,488
	longline	18,609	65,766	13,870	8,395	11,651	3,478	11,121	132,890
Total		149,245	185,635	58,728	11,357	34,991	4,150	66,781	510,887

Note: * = Confidential data. Management area definitions: Central Southeast Outside (CSEO) Section, East Yakutat (EYKT) Section, The Icy Bay Subdistrict (IBS), Northern Southeast Inside (NSEI) Subdistrict, Northern Southeast Outside (NSEO) Section, Southern Southeast Internal Waters (SSEIW), and Southern Southeast Outer Coast (SSEOC).

Table 7.–Southeast Alaska and Yakutat demersal shelf rockfish (DSR) directed fishery allocation (round lb), reported harvest (round lb), effort, and value for taken in the directed commercial fishery and as bycatch in groundfish and halibut fisheries from 1993 to 2023.

Year	Allocation	Directed harvest	Directed value[d]	Directed permits	Total harvest	Total exvessel value[d]	Total permits
1993[a]	1,069,425	952,475	$540,639	119	1,538,416	$782,224	827
1994[a]	996,660	963,352	$581,218	132	1,599,035	$872,261	843
1995[a]	441,000	398,452	$365,365	66	755,526	$565,771	813
1996[a]	926,100	785,970	$712,920	125	1,078,941	$894,545	912
1997[b]	705,600	651,412	$690,289	105	913,678	$905,259	720
1998[b]	738,675	622,226	$594,490	88	936,483	$835,945	708
1999[b]	705,600	594,134	$657,326	83	944,643	$972,487	820
2000[b]	584,325	473,389	$609,367	59	770,604	$944,825	747
2001[b]	712,215	457,951	$551,029	55	841,424	$945,323	754
2002[b]	396,750	412,802	$540,652	63	799,811	$993,670	739
2003[b]	352,800	336,572	$407,366	60	773,482	$894,881	795
2004[b]	452,025	437,079	$593,381	45	852,571	$1,037,082	712
2005[b]	202,860	108,088	$129,205	16	609,443	$601,930	721
2006[b]	110,250	3,078	$2,722	4	565,950	$526,103	733
2007[b]	110,250	5,426	$4,590	4	542,453	$481,109	733
2008[b]	302,085	106,169	$128,074	18	517,167	$565,111	690
2009[b]	281,832	181,023	$186,398	21	543,864	$523,625	634
2010[b]	177,062	110,719	$117,559	17	467,326	$433,965	638
2011[b]	165,375	96,088	$130,699	15	321,495	$378,400	566
2012[b]	392,711	240,922	$412,889	25	440,134	$677,161	532
2013[b]	416,745	318,612	$466,969	22	541,617	$739,045	522
2014[b]	180,605	132,088	$229,035	12	315,295	$469,950	512
2015[b]	181,875	103,132	$180,245	10	306,311	$436,097	520
2016[b]	174,214	99,590	$169,823	15	317,849	$439,407	518
2017[b]	169,478	83,387	$161,364	10	337,976	$535,488	538
2018[b]	231,606	175,049	$334,948	15	395,593	$664,905	543
2019[b]	222,115	145,551	$235,708	17	387,789	$543,957	533
2020[b,c]	0	0	$0	0	263,952	$345,385	438
2021[b,c]	0	0	$0	0	276,020	$209,533	429
2022[b,c]	0	0	$0	0	398,519	$407,657	457
2023[b,c]	0	0	$0	0	502,629	$553,238	481

[a] DSR assemblage includes: canary, China, copper, quillback, redbanded, rosethorn, tiger, yelloweye, and unspecified DSR.

[b] DSR assemblage includes: canary, China, copper, quillback, rosethorn, tiger, yelloweye, and unspecified DSR.

[c] The directed commercial DSR fishery was closed in all management areas.

[d] Directed values and total exvessel values for 1993–2023 were calculated from Commercial Fisheries Entry Commission (CFEC) gross earnings data.

Table 8.–Demersal shelf rockfish (DSR) allowable biological catch (ABC) and total allowable catch (TAC) in round lb for Southeast Outside (SEO) Subdistrict. Directed fishery guideline harvest level (GHL) or allocation (round lb) and catch (round lb) for DSR by management area and year, 2000–2023. Due to the regionwide closure of the directed commercial fishery, the fishery allocation and catch are zero from 2020 to 2023.

	Overall SEO		EYKT		NSEO		CSEO		SSEO		NSEI		SSEI	
Year	ABC	TAC	Allocation	Catch	Allocation	Catch	Allocation	Catch	Allocation	Catch	GHL	Catch	GHL	Catch
2000	749,700	749,700	167,580	124,881	Closed	0	156,555	139,168	149,940	138,868	55,125	29,945	55,125	40,507
2001	727,650	727,650	242,550	109,238	Closed	0	183,015	141,572	176,400	129,651	55,125	27,791	55,125	49,699
2002	771,750	771,750	Closed	0	Closed	0	154,300	166,667	132,200	133,003	55,125	50,456	55,125	62,676
2003	859,950	859,950	Closed	0	Closed	0	154,350	140,232	88,200	85,078	55,125	51,679	55,125	59,583
2004	992,250	992,250	176,400	194,892	Closed	0	99,225	132,969	66,150	54,681	55,125	40,480	55,125	14,058
2005	904,050	904,050	92,610	93,389	Closed	0	Closed	0	Closed	0	55,125	5,792	55,125	8,907
2006	904,050	904,050	Closed	0	Closed	0	Closed	0	Closed	0	55,125	2,956	55,125	*
2007	904,050	904,050	Closed	0	Closed	0	Closed	0	Closed	0	55,125	3,684	55,125	*
2008	842,310	842,310	123,480	48,904	Closed	0	Closed	0	68,355	44,368	55,125	12,422	55,125	475
2009	798,210	798,210	106,502	99,177	Closed	0	Closed	0	65,080	67,647	55,125	7,395	55,125	6,804
2010	650,475	632,835	Closed	0	Closed	0	Closed	0	66,812	65,080	55,125	7,294	55,125	38,346
2011	661,500	648,270	Closed	0	Closed	0	Closed	0	55,125	47,848	55,125	7,467	55,125	40,773
2012	646,065	630,630	81,144	79,864	Closed	0	86,436	75,697	114,881	73,158	55,125	*	55,125	8,422
2013	668,115	652,680	88,200	81,305	Closed	0	86,877	85,702	131,418	118,488	55,125	8,369	55,125	24,748
2014	604,170	588,735	70,355	72,719	Closed	0	Closed	0	Closed	0	55,125	21,541	55,125	37,829
2015	496,125	478,485	71,625	73,261	Closed	0	Closed	0	Closed	0	55,125	20,121	55,125	9,750
2016	509,355	493,920	63,964	75,568	Closed	0	Closed	0	Closed	0	55,125	*	55,125	19,560
2017	500,535	485,100	59,228	71,005	Closed	0	Closed	0	Closed	0	55,125	*	55,125	12,382
2018	551,250	535,815	Closed	0	Closed	0	121,356	112,665	Closed	0	55,125	17,076	55,125	45,308
2019	575,505	560,070	Closed	0	Closed	0	Closed	0	111,865	100,226	55,125	5,298	55,125	40,027
2020	524,790	509,355	Closed	0	Closed	0	Closed	0	Closed	0	Closed	0	Closed	0
2021	566,685	551,250	Closed	0	Closed	0	Closed	0	Closed	0	Closed	0	Closed	0
2022	804,825	789,390	Closed	0	Closed	0	Closed	0	Closed	0	Closed	0	Closed	0
2023	624,015	608,580	Closed	0	Closed	0	Closed	0	Closed	0	Closed	0	Closed	0

Note: * = Confidential data. Management area definitions: East Yakutat (EYKT) Section, Northern Southeast Outside (NSEO), Central Southeast Outside (CSEO) Section, Southern Southeast Outside (SSEO) Section, Northern Southeast Inside (NSEI) Subdistrict, and Southern Southeast Inside (SSEI) Subdistrict.

Table 9.–Pelagic shelf rockfish (PSR) reported harvest (round lb), effort, and exvessel value landed from the Northern Southeast Inside (NSEI) and Southern Southeast Inside (SSEI) Subdistricts for commercial groundfish and halibut fisheries from 1987 to 2023.

Year	Total PSR harvest	Total exvessel value	Total permits
1987	7,273	$3,100	35
1988	18,025	$5,400	44
1989	8,872	$2,263	46
1990	5,545	$1,414	69
1991	10,017	$2,923	55
1992	26,347	$7,359	80
1993	16,104	$5,096	53
1994	16,741	$4,795	53
1995	8,964	$2,715	49
1996	8,368	$2,954	57
1997	15,251	$3,851	62
1998	7,570	$2,178	57
1999	7,788	$2,349	67
2000	7,594	$2,409	70
2001	6,072	$1,584	56
2002	14,233	$6,332	44
2003	4,942	$1,818	40
2004	4,334	$1,562	38
2005	4,496	$2,669	32
2006	1,123	$782	29
2007	1,289	$331	30
2008	1,939	$700	36
2009	972	$224	27
2010	792	$215	27
2011	868	$258	14
2012	186	$78	12
2013	5,346	$2,301	25
2014	2,852	$1,203	17
2015	5,879	$4,140	34
2016	1,023	$476	22
2017	469	$292	15
2018	3,109	$1,734	27
2019	1,188	$471	27
2020	200	$98	14
2021	299	$127	22
2022	385	$236	21
2023	1,681	$372	29

Note: Total exvessel values for 1987–2023 were calculated from CFEC gross earnings data.

Table 10.–Southeast District black rockfish allocation, landings (round lb) and exvessel value in directed and all commercial fisheries, including bycatch in groundfish, halibut, and salmon troll fisheries, for outside waters from 1999 to 2023.

Year	Allocation	Directed harvest	Directed value	Directed permits	Total harvest	Total exvessel value	Total permits
1999	N/A	35,653	$11,455	10	51,893	$16,211	169
2000	N/A	31,321	$12,125	9	46,404	$16,013	164
2001	N/A	10,441	$2,932	5	26,273	$6,388	140
2002	N/A	84,973	$30,129	7	102,993	$34,541	166
2003	325,000	90,321	$41,059	10	105,905	$45,313	150
2004	325,000	38,822	$15,258	8	62,402	$23,654	158
2005	325,000	9,532	$6,089	8	26,729	$11,921	136
2006	325,000	7,647	$4,066	6	21,894	$8,772	136
2007	325,000	1,447	$706	4	17,113	$5,935	128
2008	325,000	*	*	*	18,846	$4,916	139
2009	325,000	1,113	$614	3	9,348	$2,946	112
2010	325,000	*	*	*	8,540	$2,479	120
2011	325,000	439.796	$48	3	6,571	$2,687	111
2012	325,000	9,303	$6,007	6	28,994	$15,888	150
2013	325,000	5,750	$2,478	3	15,892	$6,610	126
2014	325,000	*	*	*	9,251	$4,618	122
2015	325,000	10,478	$11,144	5	19,724	$16,613	143
2016	325,000	8,238	$10,866	10	23,782	$19,223	155
2017	325,000	11,434	$15,910	7	22,703	$22,919	151
2018	325,000	4,239	$3,840	10	19,206	$12,413	171
2019	325,000	4,840	$5,963	6	16,145	$13,189	167
2020	325,000	13,624	$11,100	3	22,344	$16,210	128
2021	325,000	10,577	$13,952	3	16,769	$16,934	103
2022	325,000	0	$0	0	8,949	$5,051	127
2023	325,000	*	*	*	5,300	$2,247	115

Note: * = Confidential data. N/A = information not applicable for the given year as the guideline harvest level for the directed fishery was set in 2003. Total exvessel values for 1999–2023 were calculated from CFEC gross earnings data.

Table 11.–Slope rockfish and shortspine thornyhead reported harvest (round lb), effort, and exvessel value landed from the Northern Southeast Inside (NSEI) and Southern Southeast Inside (SSEI) Subdistricts for commercial groundfish and halibut fisheries from 1985 to 2023.

Year	Directed harvest	Directed value	Miscellaneous finfish permits	Total harvest	Total exvessel value	Total permits
1985	13,937	N/A	20	24,318	N/A	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	N/A	N/A	N/A	222,781	$149,319	450
2005	N/A	N/A	N/A	264,866	$159,856	458
2006	N/A	N/A	N/A	290,743	$183,797	498
2007	N/A	N/A	N/A	265,029	$144,598	505
2008	N/A	N/A	N/A	261,963	$147,049	505
2009	N/A	N/A	N/A	212,781	$122,669	432
2010	N/A	N/A	N/A	216,129	$131,991	429
2011	N/A	N/A	N/A	134,876	$82,348	354
2012	N/A	N/A	N/A	150,678	$98,224	344
2013	N/A	N/A	N/A	149,384	$92,391	328
2014	N/A	N/A	N/A	149,311	$89,491	361
2015	N/A	N/A	N/A	150,115	$93,149	352
2016	N/A	N/A	N/A	140,809	$88,717	327
2017	N/A	N/A	N/A	140,678	$90,955	361
2018	N/A	N/A	N/A	120,803	$73,532	335
2019	N/A	N/A	N/A	134,887	$91,385	366

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Year	Directed harvest	Directed value	Miscellaneous finfish permits	Total harvest	Total exvessel value	Total permits
2020	N/A	N/A	N/A	112,596	$70,935	296
2021	N/A	N/A	N/A	114,060	$60,199	280
2022	N/A	N/A	N/A	103,351	$59,074	291
2023	N/A	N/A	N/A	108,286	$57,012	303

Note: N/A = information not applicable for the given year. The Alaska Board of Fisheries closed the directed fishery for slope and thornyhead rockfish in 2003 (effective July 26, 2003). Directed values and total exvessel values for 1985–2016 were calculated from fish ticket data, and 2017–2023 were calculated from Commercial Fisheries Entry Commission (CFEC) gross earnings data. The slope rockfish complex from 1987 to 1990 included: Pacific ocean perch (POP), darkblotched, sharpchin, greenstripe, northern, rougheye, shortraker, redbanded and unspecified slope rockfish. From 1991–present it includes: POP, thornyhead, darkblotched, sharpchin, thornyhead, greenstripe, northern, rougheye, shortraker, silvergray, redstripe, bocaccio, and unspecified slope rockfish. Slope rockfish assemblage includes all deep-water species of rockfish not in the demersal shelf rockfish (DSR) and pelagic shelf rockfish (PSR) assemblages.

Table 12.–Northern Southeast Inside (NSEI) Subdistrict sablefish fishery annual harvest objective (AHO), equal quota share (EQS), harvest (round lb), exvessel value, and effort from 1985 to 2023.

Year	AHO	EQS	Harvest	Exvessel value	Number permits	Number of days	Season dates
1985	2,380,952	N/A	2,951,056	$2,005,394	105	3	10/04–10/06
1986	2,380,952	N/A	3,874,269	$2,866,959	138	2	9/09–9/11
1987	2,380,952	N/A	3,861,546	$3,514,006	158	1	9/15–9/16
1988	2,380,952	N/A	4,206,509	$4,543,029	149	1	9/19–9/20
1989	2,380,952	N/A	3,767,518	$2,900,988	151	1	9/22–9/23
1990	2,380,952	N/A	3,281,393	$3,543,904	121	1	9/12–9/13
1991	2,380,952	N/A	3,955,189	$6,882,028	127	1	9/16–9/17
1992	2,380,952	N/A	4,267,781	$4,907,948	115	1	9/17–9/18
1993	2,380,952	N/A	5,795,974	$5,622,094	120	1	9/25–9/26
1994	4,761,905	38,889	4,713,552	$9,144,290	121	30	9/22–10/22
1995	4,761,905	38,889	4,542,348	$7,721,991	121	30	9/13–10/13
1996	4,761,905	38,889	4,673,701	$9,908,246	121	61	9/08–11/08
1997	4,800,000	39,300	4,753,394	$11,550,747	122	76	9/01–11/15
1998	4,800,000	41,700	4,688,008	$7,360,172	116	76	9/01–11/15
1999	3,120,000	28,000	3,043,273	$6,634,335	112	76	9/01–11/15
2000	3,120,000	28,600	3,082,159	$7,394,890	111	76	9/01–11/15
2001	2,184,000	19,600	2,142,617	$4,563,774	111	76	9/01–11/15
2002	2,005,000	18,400	2,009,380	$4,814,718	109	76	9/01–11/15
2003	2,005,000	18,565	2,001,643	$4,809,492	108	93	8/15–11/15
2004	2,245,000	20,787	2,229,956	$4,532,611	108	93	8/15–11/15
2005	2,053,000	19,400	2,026,131	$5,027,393	106	93	8/15–11/15
2006	2,053,000	19,550	2,033,786	$5,066,320	105	93	8/15–11/15
2007	1,488,000	14,500	1,501,478	$3,754,847	103	93	8/15–11/15
2008	1,508,000	15,710	1,513,040	$4,873,176	96	93	8/15–11/15
2009	1,071,000	12,170	1,071,554	$3,550,253	88	93	8/15–11/15
2010	1,063,000	12,218	1,054,275	$3,808,392	87	93	8/15–11/15
2011	880,000	10,602	882,779	$4,363,255	83	93	8/15–11/15
2012	975,000	12,342	969,535	$3,871,100	79	93	8/15–11/15
2013	1,002,162	12,848	971,499	$2,644,856	78	93	8/15–11/15
2014	745,774	9,561	772,258	$2,695,661	78	93	8/15–11/15
2015	786,748	10,087	780,615	$3,074,607	78	93	8/15–11/15
2016	650,754	8,343	646,328	$2,770,998	78	93	8/15–11/15
2017	720,250	9,234	714,400	$3,633,326	78	93	8/15–11/15
2018	855,416	10,967	855,598	$4,163,237	78	93	8/15–11/15
2019	920,094	11,796	909,341	$3,950,856	78	93	8/15–11/15
2020	1,108,003	14,773	1,101,094	$3,259,190	75	93	8/15–11/15
2021	1,137,867	15,587	1,083,363	$3,557,446	73	93	8/15–11/15
2022	1,233,633	16,899	1,184,115	$4,274,896	73	93	8/15–11/15
2023	1,393,659	19,091	1,277,328	$3,448,683	73	93	8/15–11/15

Note: N/A = information not applicable for the given year, as the equal quota share was implemented in 1994. Offseason trips occurred in 2003 (January–April) and 2004 (February–May) to obtain biological data during the winter through spring spawning periods. Exvessel values for 1985–2016 were calculated from fish ticket data and 2017–2023 were calculated from Commercial Fisheries Entry Commission (CFEC) gross earnings data. Limited entry was implemented in 1985 and equal quota share in 1994. Data excludes testfish harvest and discards at sea.

Table 13.–Southern Southeast Inside (SSEI) Subdistrict sablefish fishery annual harvest objective (AHO), equal quota share (EQS), harvest (round lb), exvessel value, and effort from 1985 to 2023.

			Longline and pot fisheries combined		Longline fishery			Pot fishery		
Year	AHO	EQS	Harvest	Exvessel value	No. of permits	No. days	Season dates	Permits	Days	Season dates
1985	790,000	N/A	511,617	$322,319	43	7	6/15–6/22	0	7	6/15–06/22
1986	790,000	N/A	597,503	$283,496	22	7	6/15–6/22	2	7	6/15–06/22
1987	790,000	N/A	435,501	$291,785	22	5	6/18–6/23	0	5	6/18–06/23
1988	790,000	N/A	731,584	$738,070	26	5	6/05–6/10	1	5	6/05–06/10
1989	790,000	N/A	963,088	$721,653	31	5	6/22–6/27	1	5	6/22–06/27
1990	790,000	N/A	758,663	$553,823	30	3	6/15–6/18	0	3	6/15–06/18
1991	790,000	N/A	680,688	$626,362	30	2.4	6/21–6/23	1	2.4	6/21–06/23
1992	790,000	N/A	941,182	$941,505	30	2.4	6/21–6/23	1	2.4	6/21–06/23
1993	790,000	N/A	824,011	$815,770	30	2.4	6/21–6/23	0	2.4	6/21–06/23
1994	790,000	N/A	866,788	$1,066,149	30	2.4	6/15–6/17	0	2.4	6/15–06/17
1995	790,000	N/A	678,762	$1,323,585	30	2	6/08–6/10	0	2	6/08–06/10
1996	790,000	N/A	502,459	$899,401	30	2	6/08–6/10	0	2	6/08–06/10
1997	790,000	23,200	725,067	$1,602,404	30	45	6/15–7/30	5	76	9/01–11/15
1998	632,000	20,400	578,056	$813,421	29	45	6/01–7/15	4	76	9/01–11/15
1999	720,000	24,000	661,424	$1,199,468	26	45	6/01–7/15	4	76	9/01–11/15
2000	696,000	24,000	590,815	$1,176,816	25	76	6/01–8/15	4	76	9/01–11/15
2001	696,000	24,000	650,678	$1,249,300	25	76	6/01–8/15	4	76	9/01–11/15
2002	696,000	24,000	650,339	$1,287,650	25	76	6/01–8/15	4	76	9/01–11/15
2003	696,000	24,860	656,936	$1,506,541	24	76	6/01–8/15	4	76	9/01–11/15
2004	696,000	24,860	648,845	$1,030,675	24	76	6/01–8/15	4	76	9/01–11/15
2005	696,000	24,860	639,719	$1,351,440	24	76	6/01–8/15	4	76	9/01–11/15
2006	696,000	21,750	624,832	$1,434,739	28	76	6/01–8/15	4	76	9/01–11/15
2007	696,000	21,750	620,168	$1,514,353	28	76	6/01–8/15	4	76	9/01–11/15
2008	696,000	21,750	618,033	$1,854,397	28	76	6/01–8/15	4	76	9/01–11/15
2009	634,000	22,650	595,748	$1,767,276	25	76	6/01–8/15	3	76	9/01–11/15
2010	634,000	23,400	558,633	$2,069,409	24	76	6/01–8/15	3	76	9/01–11/15
2011	583,280	23,300	540,931	$2,720,933	22	76	6/01–8/15	3	76	9/01–11/15
2012	583,280	25,360	521,825	$1,906,621	20	76	6/01–8/15	3	76	9/01–11/15
2013	583,280	25,360	505,599	$1,394,696	19	76	6/01–8/15	3	76	9/01–11/15
2014	536,618	23,331	494,760	$1,719,466	19	76	6/01–8/15	3	76	9/01–11/15
2015	536,618	23,331	512,580	$1,851,307	19	76	6/01–8/15	3	76	9/01–11/15
2016	482,956	20,998	475,466	$1,893,727	20	76	6/01–8/15	3	76	9/01–11/15
2017	516,763	22,468	514,205	$2,391,756	20	76	6/01–8/15	3	76	9/01–11/15
2018	578,774	25,164	575,264	$2,382,290	20	168	6/01–11/15	3	152	6/17–11/15
2019	590,349	26,834	587,166	$1,716,450	19	168	6/01–11/15	3	168	6/01–11/15
2020	572,639	26,029	524,561	$1,247,211	19	168	6/01–11/15	3	168	6/01–11/15
2021	601,271	27,330	516,161	$1,349,558	19	168	6/01–11/16	3	168	6/01–11/16
2022	643,360	29,244	593,561	$1,843,468	19	168	6/01–11/17	3	168	6/01–11/17
2023	643,360	29,244	374,425	$900,989	19	168	6/01–11/18	3	168	6/01–11/18

Note: N/A = information not applicable for the given year as the equal quota share was implemented in 1997. Exvessel values for 1985–2016 were calculated from fish ticket data and 2017–2023 were calculated from Commercial Fisheries Entry Commission (CFEC) gross earnings data. Limited entry was implemented in 1985 and equal quota share in 1997. Data excludes testfish harvest and discards at sea.

Table 14.–Pacific cod reported harvest (round lb), exvessel value, and effort from the Northern Southeast Inside (NSEI) and Southern Southeast Inside (SSEI) Subdistricts for the directed commercial fishery and bycatch in the groundfish and halibut fisheries from 1989 to 2023.

Year	Directed harvest	Directed value	Directed permits	Total harvest	Total exvessel value	Total permits
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	646,807	$391,618	40	696,372	$400,676	209
2009	643,875	$301,538	30	679,931	$307,766	160
2010	869,828	$392,347	25	927,681	$403,123	187
2011	412,634	$246,725	23	602,152	$340,196	181
2012	396,616	$253,897	24	456,078	$267,822	198
2013	737,708	$463,339	18	792,783	$471,186	174
2014	699,502	$413,711	20	774,040	$426,761	198
2015	882,521	$511,676	14	963,077	$533,731	212
2016	567,500	$334,675	16	639,771	$354,627	210
2017	226,787	$134,373	9	282,500	$140,337	176
2018	204,649	$146,110	11	263,799	$158,365	192
2019	191,400	$125,374	11	245,690	$138,057	220
2020	393,549	$257,623	11	427,776	$268,685	167
2021	248,026	$164,979	6	280,942	$174,171	138
2022	178,307	$108,907	5	219,210	$117,655	149
2023	83,659	$62,928	3	121,330	$71,885	141

Note: Directed values and total exvessel values for 1989–2016 were calculated from fish ticket data, and 2017–2023 were calculated from Commercial Fisheries Entry Commission (CFEC) gross earnings data. GHL has been 750,000–1,250,000 round lb since 1994.

Table 15.–Hagfish reported harvest and number of permits from 1989 to 2023. Nearly all harvest in the region is black hagfish (*Eptatretus deani*) with small numbers of Pacific hagfish (*E. stoutii*) present but not separated during landings.

Season	Number of permits	Total harvest	GHL
1989	1	*	N/A
1990	1	*	N/A
1991	1	*	N/A
2016	1	5,312	60,000
2017–2018	2	39,817	60,000
2018–2019	1	83,704	120,000
2019–2020	1	113,944	120,000
2020–2021	1	116,803	170,000
2021–2022	1	53,884	170,000
2022–2023	1	71,285	170,000

Note: GHL= guideline harvest level. * = Confidential data. N/A = information not applicable for the given year. Prior to the 2017–2018 season hagfish were managed by calendar year. From 2016 to present, participants in fishery waived confidentiality to allow reporting of harvest.

Table 16.–Flatfish reported harvest (round lb), exvessel value, and effort, from the directed commercial fishery and bycatch in groundfish fisheries in the Northern Southeast Inside (NSEI) and Southern Southeast Inside (SSEI) Subdistricts, 1987 to 2023.

Season	Trawl harvest	Directed value	Directed permits	Total harvest	Total exvessel value	Total permits
1987–1988	861,348	$194,919	7	863,638	$214,417	13
1988–1989	*	*	3	*	*	10
1989–1990	*	*	2	313,670	$76,443	5
1990–1991	340,633	$67,893	7	341,324	$68,010	11
1991–1992	56,904	$6,801	4	57,255	$8,016	9
1992–1993	*	*	2	23,200	$4,657	7
1993–1994	*	*	1	11,376	$2,371	4
1994–1995	*	*	2	19,805	$3,975	10
1995–1996	0	0	0	1,278	$302	7
1996–1997	0	0	0	4,158	$1,096	11
1997–1998	*	*	1	13,214	$2,127	12
1998–1999	*	*	1	17,557	$3,101	23
1999–2000	0	0	0	1,156	$203	7
2000–2001	0	0	0	4,857	$381	14
2001–2002	0	0	0	1,391	$20	7
2002–2003	0	0	0	947	$41	4
2003–2004	0	0	0	992	$24	5
2004–2005	0	0	0	660	$10	7
2005–2006	0	0	0	1,265	$22	3
2006–2007	0	0	0	353	$0	3
2007–2008	0	0	0	*	*	2
2008–2009	0	0	0	180	$0	4
2009–2010	0	0	0	0	$0	0
2010–2011	0	0	0	862	$0	3
2011–2012	0	0	0	0	$0	0
2012–2013	0	0	0	0	$0	0
2013–2014	*	*	1	*	*	1
2014–2015	0	0	0	0	$0	0
2015–2016	0	0	0	0	$0	0
2016–2017	0	0	0	562	$0	3
2017–2018	0	0	0	0	$0	0
2018–2019	0	0	0	*	*	2
2019–2020	0	0	0	*	*	1
2020–2021	0	0	0	0	$0	0
2021–2022	0	0	0	*	*	1
2022–2023	0	0	0	0	$0	0

Note: *= Confidential data. Directed values and total exvessel values for 1987–2016 were calculated from fish ticket data and 2017–2023 were calculated from Commercial Fisheries Entry Commission (CFEC) gross earnings data.

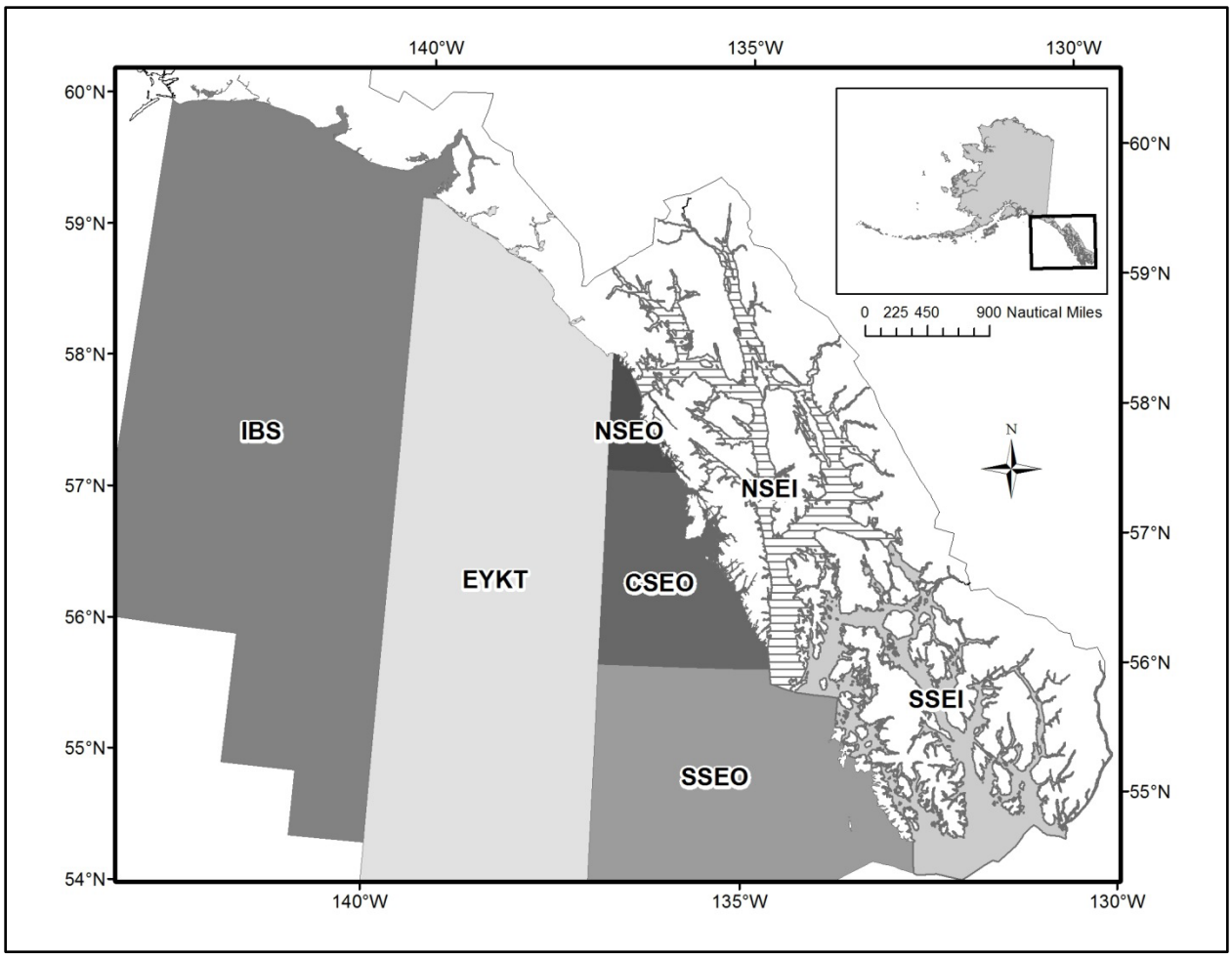

Figure 1.–Southeast District groundfish management area boundaries in Southeast Alaska waters excluding lingcod and black rockfish: Icy Bay Subdistrict (IBS), East Yakutat (EYKT) Section, Northern Southeast Outside (NSEO) Section, Central Southeast Outside (CSEO) Section, Southern Southeast Outside (SSEO) Section, Northern Southeast Inside (NSEI) Subdistrict, and Southern Southeast Inside (SSEI) Subdistrict.

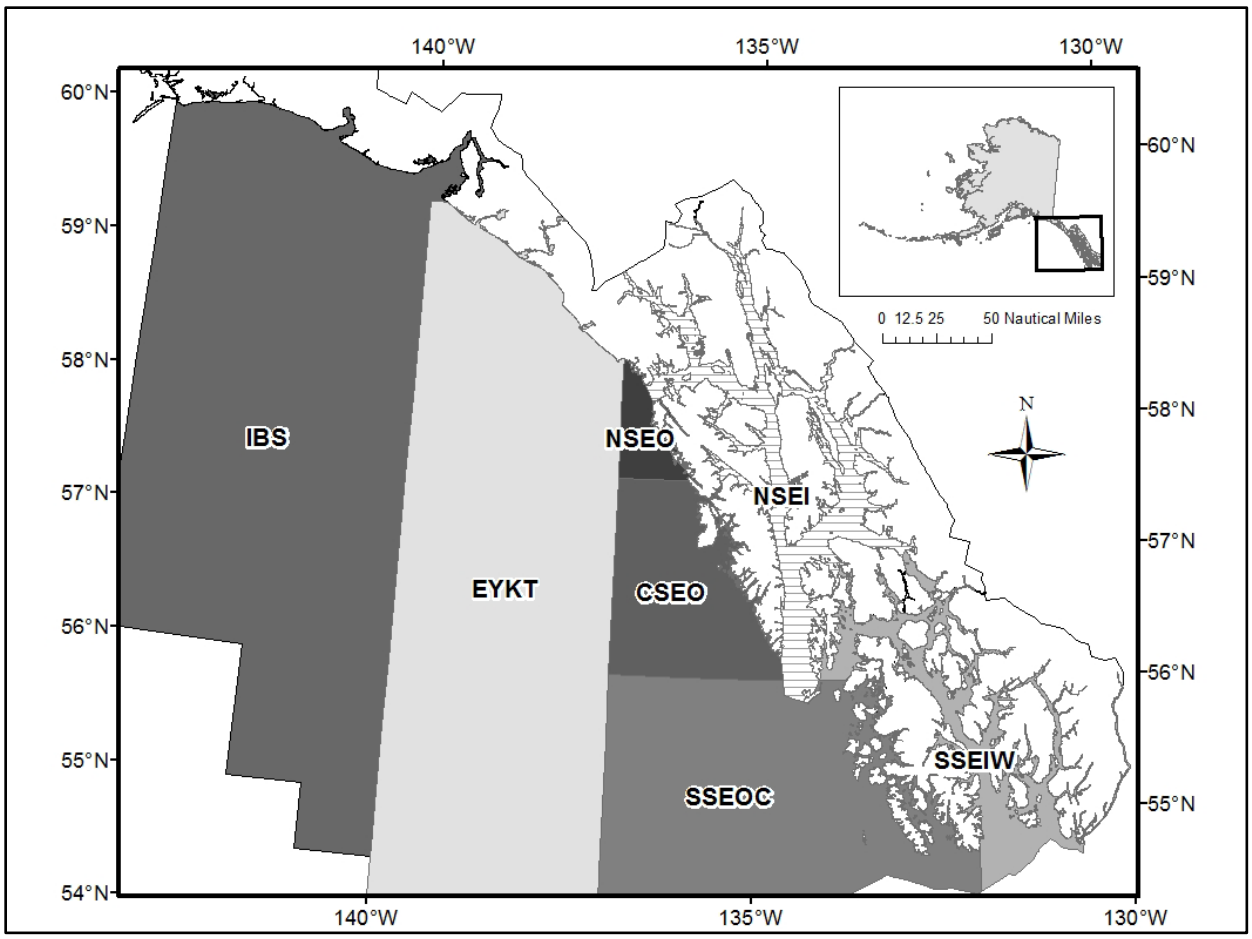

Figure 2.–Lingcod and black rockfish management area boundaries in Southeast Alaska waters: Icy Bay Subdistrict (IBS), East Yakutat (EYKT) Section, Northern Southeast Outside (NSEO) Section, Central Southeast Outside (CSEO) Section, Southern Southeast Outer Coast (SSEOC) Sector, Northern Southeast Inside (NSEI) Subdistrict, and Southern Southeast Internal Waters (SSEIW) Sector.

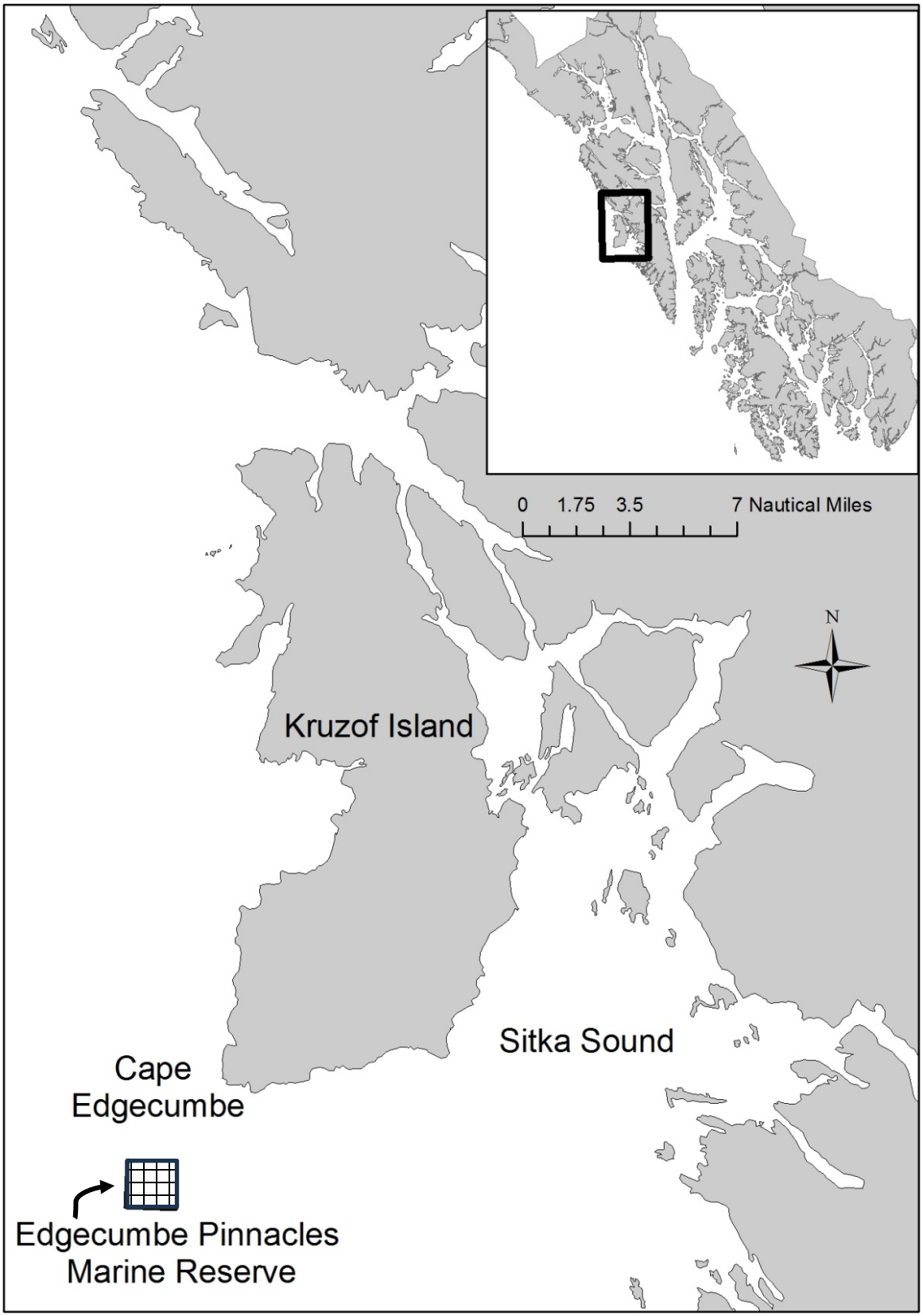

Figure 3.–Edgecumbe Pinnacles Marine Reserve no-take groundfish area.

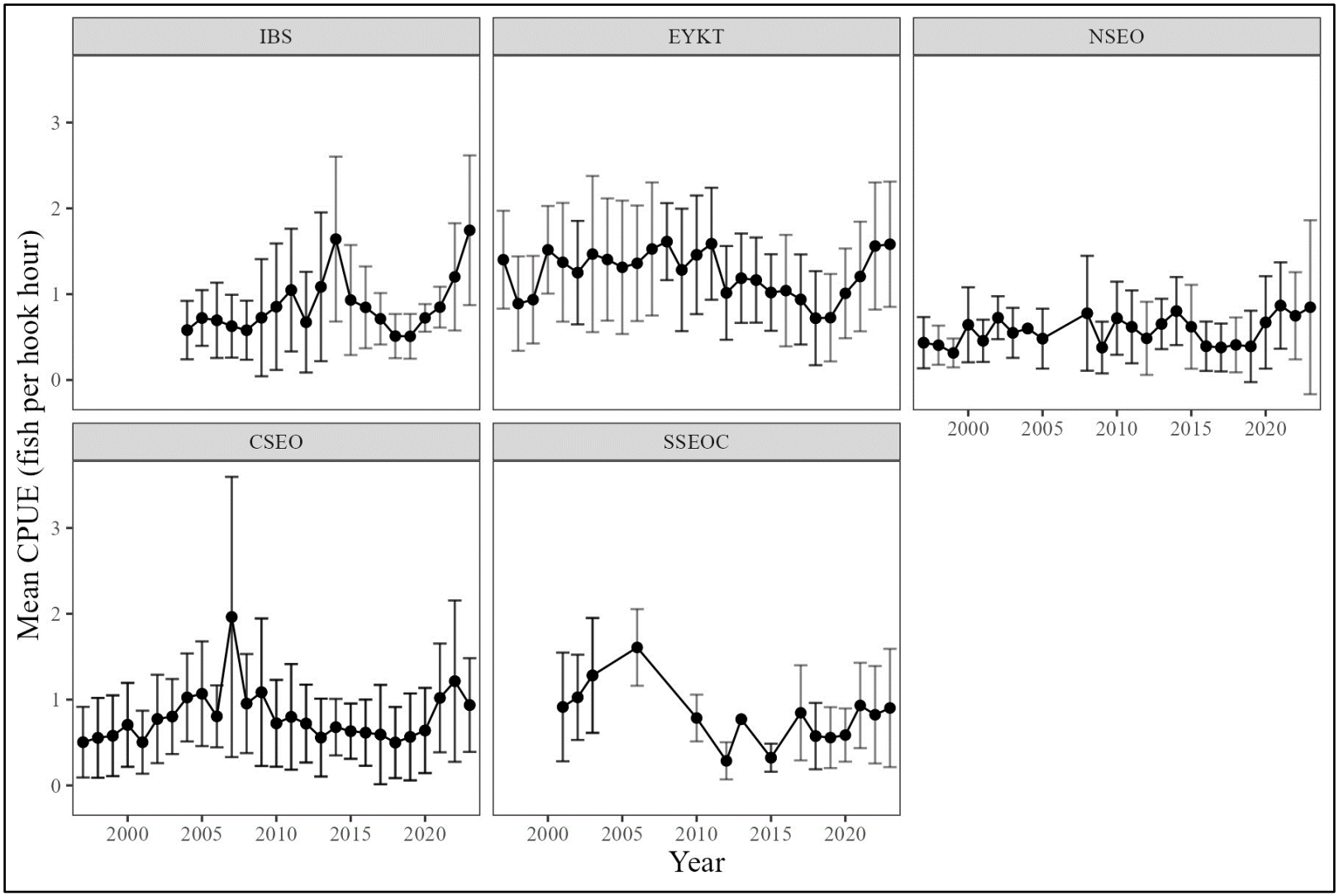

Figure 4.–Lingcod directed commercial fishery catch per unit effort (retained lingcod per hook-hour) with error bars (+/- 1 standard deviation) by management area: Icy Bay Subdistrict (IBS), East Yakutat (EYKT) Section, Northern Southeast Outside (NSEO) Section, Central Southeast Outside (CSEO) Section, and Southern Southeast Outer Coast (SSEOC) Sector from 1994 to 2023. Confidential harvest information has been excluded if fewer than 3 permit holders participated in the fishery.

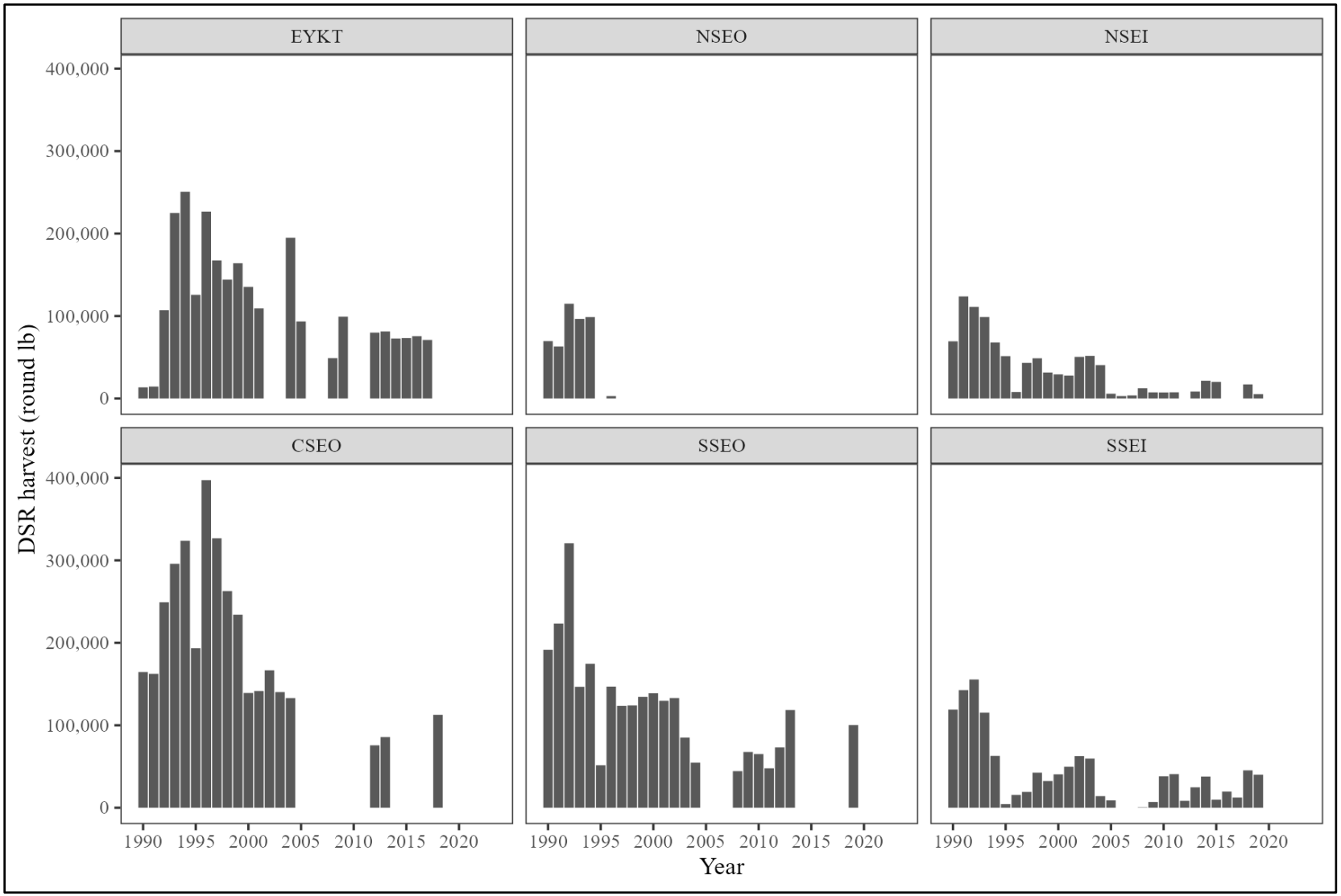

Figure 5.–Directed demersal shelf rockfish (DSR) landings (round lb) by management area: East Yakutat (EYKT) Section, Central Southeast Outside (CSEO) Section, Northern Southeast Outside (NSEO) Section, Southern Southeast Outside (SSEO) Section, Northern Southeast Inside (NSEI) Subdistrict, and Southern Southeast Inside (SSEI) Subdistrict, 1990 to 2019.

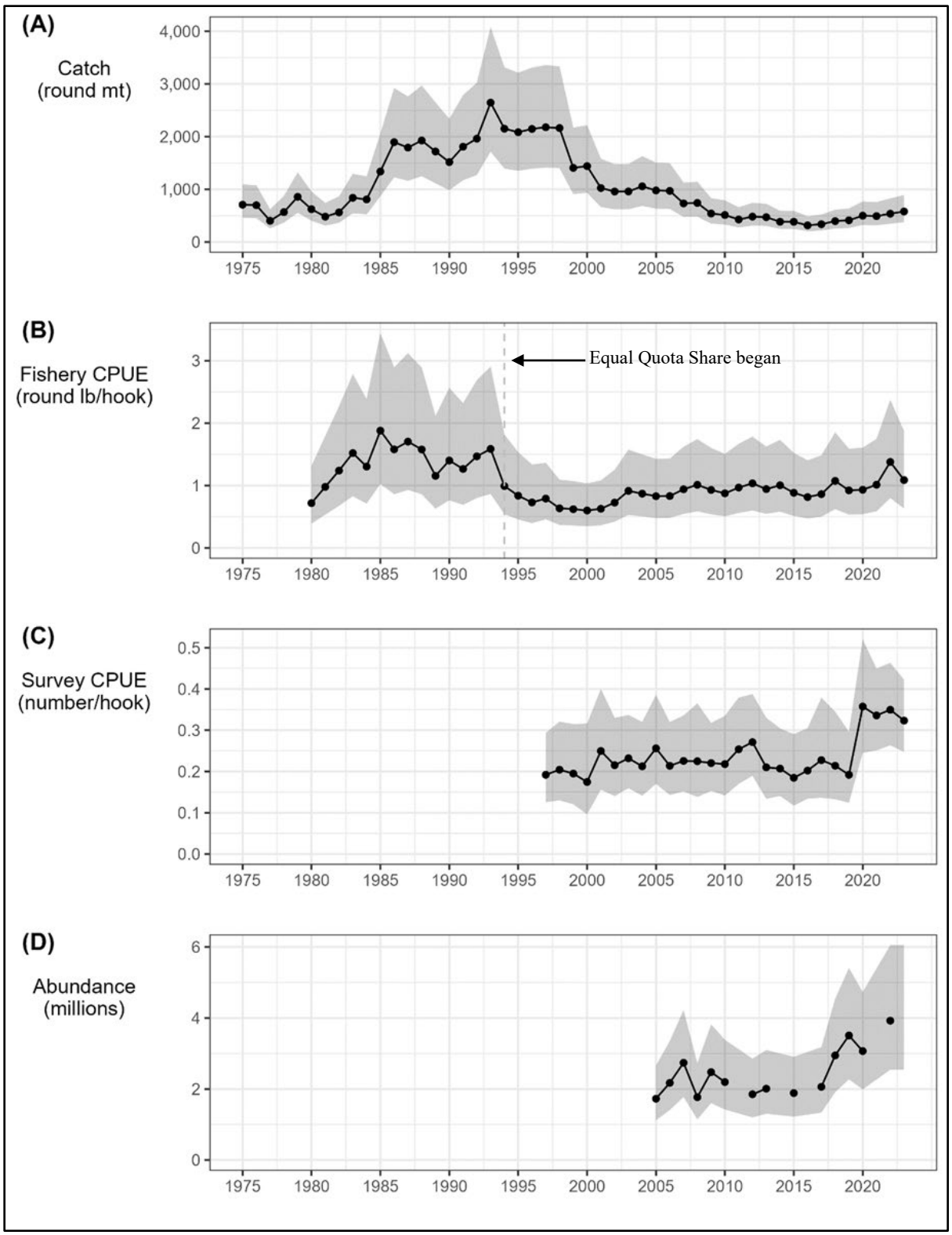

Figure 6.–Northern Southeast Inside (NSEI) Subdistrict Indices of sablefish catch and abundance with the assumed error distribution, 1975 to 2023, including: (A) harvest (round mt), (B) fishery catch per unit effort in round lb per hook, (C) survey catch per unit effort in number of fish per hook, and (D) mark–recapture abundance estimates in millions.

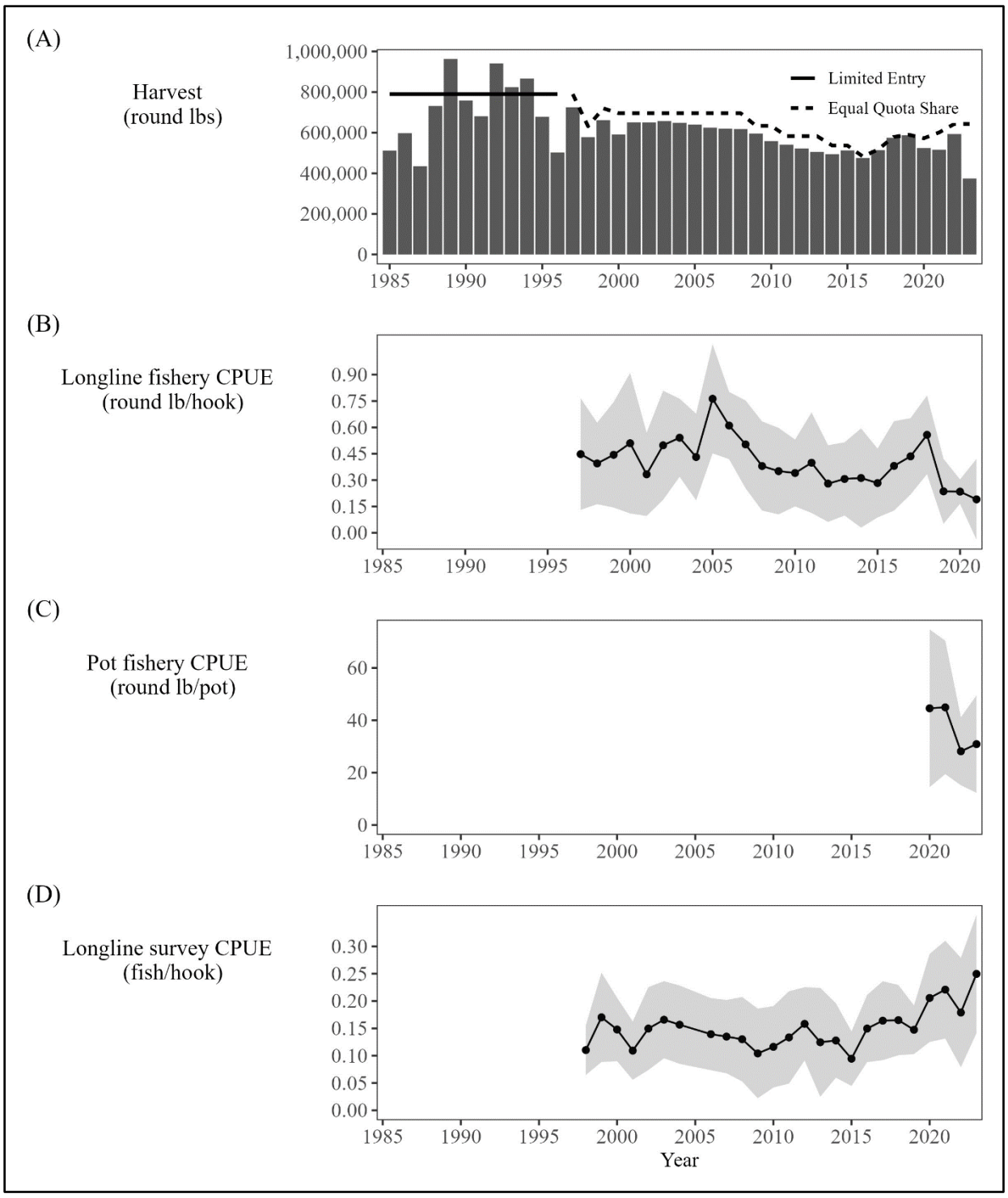

Figure 7.–Southern Southeast Inside (SSEI) Subdistrict (A) sablefish commercial fishery harvest (round lb) from 1985 to 2023 with the annual harvest objective line shown in solid for limited entry and dashed for equal quota share; (B) catch per unit effort (CPUE) from 1997 to 2021 logbook data are shown for the sablefish longline fishery in round lb per hook; (C) pot fishery in round lb per pot; and (D) sablefish longline survey CPUE in numbers of fish per hook shown from 1998 to 2023 for years after survey gear, bait, and soak type were standardized. Error distribution (+/- 1 standard deviation) for CPUE values are shown as shaded grey polygons.