Fishery Management Report No. 23-18

Cook Inlet Area Groundfish Management Report, 2019–2022

by

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and

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

Symbols and Abbreviations

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

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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COOK INLET AREA GROUNDFISH MANAGEMENT REPORT, 2019–2022

by
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ABSTRACT

The Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries, manages all commercial groundfish fisheries within the Cook Inlet Area (Registration Area H), defined as all waters of Alaska enclosed by a line extending east from Cape Douglas and a line extending south from Cape Fairfield. Additionally, ADF&G has management authority for lingcod *Ophiodon elongatus*, black rockfish *Sebastes melanops*, and dark rockfish *S. ciliatus* in waters of the exclusive economic zone (EEZ). The area is divided into the Cook Inlet and North Gulf districts. This report summarizes commercial groundfish fisheries within the Cook Inlet Area, including annual harvests from 1988–2022, recent 10-year exvessel values, management and regulatory changes, and harvest trends from 2019 through 2022. A sharp decline in catch and exvessel value that began in 2018 stabilized in 2020. Pacific cod *Gadus macrocephalus* has contributed the greatest economic yield since 1990. Between 2018 and 2020, a significant reduction in observed Pacific cod abundance and corresponding guideline harvest levels (GHLs) reduced overall harvests and exvessel values. Historically sablefish *Anoplopoma fimbria* contributed the second-highest annual exvessel value since 2000, but between 2019 and 2022 sablefish exvessel value was only second highest 2 out of the 4 years. Rockfish harvest has continued to be stable but at nearly a third of the static 150,000 lb GHL, partly a result of lower Pacific cod GHLs. Beginning in 2017, lingcod harvest has been within 10% of the lingcod GHL, with the 2021 harvest being a notable exception. Lingcod exvessel value has remained strong accounting for the second-highest annual exvessel value in both 2020 and 2022. Incidental catch of Walleye pollock *Theragra chalcogramma* is small and variable. Skates harvested as bycatch to longline fisheries continue to provide additional harvest and value.

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

INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) Division of Commercial Fisheries manages all commercial groundfish fisheries in all waters of Alaska within the Cook Inlet Area (Registration Area H, defined as those waters from the shoreline to 3 nautical miles [nmi] offshore). The Cook Inlet Area consists of all waters west of Cape Fairfield (148°50.25′ W long) and north of the latitude of Cape Douglas (58°51.10′ N lat; 5 AAC 28.300). The Cook Inlet Area is divided into 2 districts: Cook Inlet and North Gulf (Figure 1). The Cook Inlet District (CID) includes waters of Cook Inlet north of a line from Cape Douglas to Point Adam (59°15.27′ N lat), and the North Gulf District is composed of the remaining waters of the management area, primarily the waters along the outer Kenai Peninsula.

For the waters of Alaska, the Alaska Board of Fisheries (BOF) establishes management regulations and ADF&G uses its emergency order (EO) authority to make adjustments to fishing time and area. The BOF schedules regular meetings for area groundfish on a triennial basis. With a few exceptions, the National Marine Fisheries Service (NMFS) manages groundfish resources in waters of the exclusive economic zone (EEZ), located from 3 to 200 nmi offshore, under Fishery Management Plans (FMPs) developed by the North Pacific Fishery Management Council (NPFMC). Gulf of Alaska (GOA) waters under federal jurisdiction located adjacent to the Cook Inlet Area are within the Central Gulf of Alaska Regulatory Area (CGOA).

Under state regulation 5 AAC 39.975 *Definitions* (21), groundfish are defined as all marine finfish except halibut, osmerids, herring, and salmonids. Within the Cook Inlet Area, directed fisheries occur for several commercially important groundfish, including sablefish *Anoplopoma fimbria*, Pacific cod *Gadus macrocephalus*, walleye pollock *Gadus chalcogrammus* (previously *Theragra chalcogramma*; Page et al. 2013), lingcod, and pelagic shelf rockfish species (primarily black rockfish). Alaska groundfish regulations also accommodate incidental groundfish bycatch from other directed groundfish, halibut, and salmon and herring gillnet fisheries. Some additional

species landed as bycatch to directed groundfish fisheries include Pacific spiny dogfish *Squalus suckleyi* (previously *Squalus acanthias*; Ebert et al. 2010), Pacific sleeper shark *Somniosus pacificus*, salmon shark *Lamna ditropis*, commander squid *Berryteuthis magister*, giant Pacific octopus *Octopus dofleini*, big skate *Raja binoculata*, longnose skate *Raja rhina*, other skates *Bathyraja* spp., shortspine thornyhead *Sebastolobus alascanus*, and numerous rockfishes *Sebastes* spp. Alaska regulations adopted in 1997 prohibited directed commercial fishing for sharks (5 AAC 28.084) and allowed skate fishing of the order *Rajiformes*, only under a commissioner's permit (5 AAC 28.083). However, effective in 2005, the BOF provided for directed spiny dogfish (shark) fishing under the terms of a commissioner's permit (5 AAC 28.379). Few flatfish landings have occurred, but numerous species of flatfish make up a large portion of the groundfish biomass within Cook Inlet Area waters (Bechtol 2001; Gustafson and Bechtol 2001).

Commercial groundfish harvests are primarily monitored inseason through required reporting on ADF&G fish tickets (5 AAC 39.130); additional information was derived from dockside sampling of the commercial catch, interviews with fishers, and logbooks for some fisheries. Fish ticket information is collected both electronically through the eLandings systems, a multi-agency (ADF&G, NMFS, and International Pacific Halibut Commission) harvest accounting program, and through submission of conventional (paper) fish tickets. These records are reviewed and edited as needed by ADF&G staff, entered into the statewide fish ticket database, and archived.

Dockside sampling involves the collection of biological data such as species, size, sex, gonad condition, and groundfish age structures, primarily otoliths. Interviews with fishers are used to verify information about harvest location and effort. This sampling is funded by a grant from the Alaska Fisheries Information Network (AKFIN), resulting in consistent biological sampling of the commercial harvest. Statewide reporting requirements specify that all groundfish retained but not delivered for sale, such as harvest that is retained for personal use or used as bait at sea, must be reported on an ADF&G fish ticket. This process helps fisheries management through complete and accurate documentation of fisheries removals.

Legal gear types for groundfish fishing in the Cook Inlet Area are longline, pelagic trawl, mechanical jig, hand troll, and pot gear. In area fisheries, if more than 1 gear type is legal, only 1 gear type may be aboard a vessel at any time, with the exception of mechanical jig and hand troll gear, which may be fished at the same time as jig gear but under separate Commercial Fisheries Entry Commission (CFEC) permit cards. Fishers operating groundfish gear or groundfish tenders in Cook Inlet Area waters must have an area registration prior to fishing or tendering. Another area regulation establishes a 24-hour delivery requirement following the closure of a directed season. Some open groundfish seasons are established in regulation 5 AAC 28.310. For many species, season openings are specified in regulation as calendar dates whereas season closures and other adjustments are set by EO (Table 1). For Pacific cod, the parallel and state-waters seasons established in regulation 5 AAC 28.367 *Cook Inlet Pacific Cod Management Plan* are opened by EO contingent upon management actions for the Pacific cod fishery in the adjacent federal CGOA (Table 2). For a miscellaneous groundfish species that is not otherwise specified in regulation, the fishing season is established as a provision of the miscellaneous groundfish commissioner's permit (5 AAC 28.379), a regulation first effective in 1999.

Commercial harvests reported here are representative of the current area definition (since being redefined in 1996) and summarize annual harvests (lb) between 1988 and 2022 with recent 10-year exvessel values for commercial groundfish fisheries (Appendix A1). For the most recent

period of 2019 through 2022, the report describes harvest trends and management and regulatory changes based upon BOF actions.

PACIFIC COD

MANAGEMENT AND REGULATIONS

Current elements of the Cook Inlet Area Pacific cod parallel season include the following:

- Seasons inside state waters open and close by EO to coincide with the federal seasons in the adjacent CGOA area;
- Initial seasons for pot, jig, and longline open January 1 and close by gear type to coordinate with federal gear sector closures in CGOA for pot, jig, and hook-and-line (HAL; vessels less than 50 ft, vessels more than or equal to 50 ft) announced by NMFS;
- Parallel seasons may open and close by EO with federal "B" seasons and also unscheduled openings and closures in the CGOA; parallel seasons typically open with regulatory "B" season: June 10 for jig and September 1 for pot and longline;
- Harvest accrues to federal total allowable catch (TAC);
- Nonexclusive groundfish area vessel registration (gear-specific) are required; a vessel may be registered to take Pacific cod in 1 or more nonexclusive registration areas; and
- Federal Vessel Monitoring System (VMS) requirements are adopted inside state waters (jig exempt).

Current elements of the Cook Inlet Area Pacific cod state-waters season include the following:

- Season opens by EO 24 hours following closure of the initial federal season in the CGOA area by NMFS;
- Exclusive area registration: vessel may not register for more than 1 exclusive Pacific cod registration area during a state-waters season;
- Guideline harvest level (GHL) is calculated as 3.75% of the CGOA estimated total allowable harvest;
- GHL allocated 85% to pot gear and 15% to jig gear;
- Harvest cap is of 25% of the GHL on vessels longer than 58 feet fishing with pot gear;
- Legal gear is no more than 60 pots per vessel with a buoy tag requirement, or up to 5 mechanical jigging machines with a maximum of 30 hooks per line;
- If there is any GHL remaining on September 1, the remainder of the allocation may be opened to all legal gear; and
- Gear limits and the exclusive area registration requirement may be relaxed after October 30, if ADF&G considers the action necessary to achieve the GHL.

REGULATION DEVELOPMENT

Historically, the Cook Inlet Area commercial Pacific cod fishery was managed by EO to coincide with seasons in the adjacent federal CGOA. First implemented in 1997, the *Cook Inlet Pacific Cod Management Plan* (5 AAC 28.367) defines 2 seasons, a "parallel" and a "state-waters" season. Similar to historical management, the parallel season was set by EO to coincide with the federal CGOA fishery for Pacific cod with respect to season dates and allowable gear types, provided

those gear types were legal in state waters, and was further guided by statewide regulation 5 AAC 28.087 regarding Steller sea lion (SSL) protection measures and use of VMS. Harvest during the parallel season accounts towards the federal TAC. The state-waters season occurs after the initial parallel season and is managed for a separate GHL, which is a percentage of the estimated total allowable harvest for the federal CGOA by state regulation. Total allowable harvest is equivalent to acceptable biological catch (ABC) in NMFS documents. This management plan originally set the GHL at 2.25% of the ABC, with step-up provisions to 3% and then to a maximum of 3.75%. The plan also initially allocated 50% of the GHL each to pot and jig gear. Jig gear includes mechanical jig and hand troll gear. Statewide regulations for groundfish pots specify tunnel eye openings, perimeters of 36 inches or less (5 AAC 28.050 (e)), and a biodegradable escape mechanism, as described in 5 AAC 39.145.

Area regulations specify localized closures to groundfish pots in portions of Kachemak Bay and Kamishak Bay (5 AAC 28.350) to protect depressed king crab *Paralithodes platypus* stocks and rebuilding Tanner crab *Chionoecetes bairdi* stocks (Bechtol et al. 2002; Figure 2). The Kachemak Bay pot closure regulation, partially defined by a depth contour, was amended in 2002 and defined by latitude and longitude coordinates. In 2016, this area was reduced in size to provide more fishing opportunity for Pacific cod fishers while still protecting crab habitat. Information from ADF&G surveys has better defined the Tanner crab habitat area; this information was used to delineate the updated closure area.

Since adoption in 1997, the state-waters Pacific cod season, which was designed to provide additional Pacific cod fishing opportunities to local vessels using pot and jig gear, has been modified numerous times. The management plan originally specified a state-waters season that opened 7 days following closure of the parallel season and closed each time the federal CGOA directed Pacific cod season, and concurrent parallel season, reopened.

During the state-waters season, there was a pot closure period of April 7 to June 15 that addressed an industry concern of reduced quality for post-spawn Pacific cod product. Although the product quality concerns meant to be addressed by the pot closure period were not realized, the closure period was retained but reduced to May 1 through June 15 by BOF action in 1999. The closure was retained due to user interest in ensuring a fishing season for Pacific cod in the fall, and it provided an additional 3 weeks of pot fishing time in April. In 2000, a 7-day closure between the parallel and state-waters seasons, intended to ensure separation of the fisheries and facilitate accurate seasonal catch accounting, was reduced to 24 hours and the management plan was further modified to enable the state-waters season to remain open despite subsequent federal CGOA openings, which would have normally resulted in additional parallel seasons. However, in the Cook Inlet Area, parallel seasons have typically continued to be coordinated with federal CGOA seasons, but the management plan modifications allow more flexibility, if needed.

In 2001, the BOF recognized NMFS fishing gear closures for Pacific cod in critical habitat around the haulouts and rookeries of endangered SSL by giving the commissioner EO authority to adopt the federal closures surrounding these areas. As a result, fishing with longline or pot gear within 10 nmi of Sugarloaf Island (within the Barren Islands group) and Outer Pye Island has been closed annually since 2001 by EO (Figure 3).

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

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

At a special 2011 Pacific cod BOF meeting, the BOF amended all of the area-specific Pacific cod management plans in order to coordinate with new federal gear sector allocations implemented in 2012. These regulatory changes allowed staggered parallel and state-waters seasons by gear type in order to coordinate with the now staggered federal Pacific cod seasons. The BOF also adopted new allocations for the Cook Inlet Area GHL of 85% for pot gear and 15% for jig gear, with a step-up provision when the jig allocation would increase by 5% the following year, up to a maximum of 25%, if 90% of the jig allocation was achieved in a given year. Additionally, the BOF eliminated the May 1–June 15 pot closure.

Pacific cod abundance in the Gulf of Alaska and surrounding areas experienced a drastic decline in 2018, which resulted in an 82% reduction in GHLs. In the Cook Inlet Area, the state-waters GHL was reduced from over 3.6 million lb in 2017 to 671,141 lb in 2018 (Table 3). This reduction was attributed to an ocean condition called the "warm blob," a marine heat wave that negatively affected some marine species, including Pacific cod. Pacific cod is an ectotherm, meaning that temperature directly affects its metabolism (Barbeaux et al. 2017). These warmer water temperatures occurred between 2014 and 2016; this was an unusual event due to the magnitude of the temperature increase (Bond et al. 2015).

Research has shown that Pacific cod are very sensitive to water temperature, particularly during early stages of their development. Optimal egg development occurs in slim margins of temperature, salinity, and oxygen levels (Barbeaux et al. 2017). Larval production is also driven by water temperature because cold sea surface temperatures produce higher larval abundance and higher temperatures produce less larvae (Doyle and Mier 2016). Higher temperatures increase metabolic demands of Pacific cod, and the "warm blob" also negatively affected primary production and reduced abundance of key zooplankton species, such as copepods and krill, which in turn depleted food sources for higher trophic levels and increased mortality (Barbeaux et al. 2017). In 2020, the decline of Pacific cod abundance and TAC reached its lowest level, which is reflected in the 2020 state-waters harvest of 422,278 lb being the lowest observed since 1990 (Table 3).

FISHERY OVERVIEW: 2019–2022, RECENT YEARS

The parallel Pacific cod fishery in Cook Inlet Area had been dominated by longline harvest following the 2012 federal gear sector splits, with the exception of 2016 and 2017, when pot gear had the highest harvests (Table 4; Figure 4). In 2020, the federal fishery in Gulf of Alaska, and therefore the parallel fishery, was closed because of low Pacific cod abundance. A small state-waters fishery was prosecuted. For the years 2019, 2021, and 2022, longline harvest in the parallel fishery ranged from 313,472 lb to 921,432 lb; this gear type represented 72% to 86% of the harvest. Vessels fishing with pots landed 118,920 lb in 2019 and 254,332 lb in 2022. Pot harvest in 2021 is confidential due to limited participation. Harvest of Pacific cod with jig gear was low, 14,954 lb in 2021 and 52,311 lb in 2022; harvest information for 2019 is confidential because of low

participation. In the parallel fishery regardless of gear type the highest harvest was in 2022, totaling 1,228,075 lb (Table 4).

In the state-waters fishery, pot and jig seasons open 24 hours after the close of the parallel season for each respective gear type (Table 2). The state-waters Pacific cod fishery GHL is calculated as 3.75% of the federal CGOA ABC and ranged between 454,513 lb (2020) and 1,632,964 lb (2022) (Table 3). The GHL is allocated 85% to vessels using pot gear and 15% to jig gear. Recent jig gear harvest has not been significant; the high harvest of 18,169 lb in 2020 represented 27% of the jig gear GHL allocation (Table 3; Figure 5). The overall GHL has not been achieved since 2011 but was within 10% in 2019 and 2020. Vessels using pot gear harvested the pot gear allocation all 4 years (2019–2022).

During the parallel season, Pacific cod harvest is more concentrated in statistical areas close to the ports of Homer and Seward (Figure 6). Longline gear accounted for the majority of harvest delivered into Seward and pot gear dominated the harvest landed in Homer. Vessels that fish using pots dominate the state-waters harvest, and these vessels deliver almost exclusively into Homer (Figure 7). Most of the larger-vessel Pacific cod harvest occurs in the statistical areas around the Chugach Islands in the North Gulf District (NGD).

The initial state-waters pot season openings typically coincide with the parallel pot season closures and recently have opened in late January or early February (Tables 1 and 2). Vessels longer than 58 feet are limited to 25% of the total GHL, and the number of participants has been 3 vessels or less, which resulted in a variety of season lengths for this group of participants (Table 3). For the smaller-vessel participants, which are those vessels less than or equal to 58 feet, between 2019 and 2022, the state-waters season ranged from 1 month (2020, small GHL) to 7 months (2021), and in 2021 and 2022 the seasons were open until September 1 when the parallel "B" season opened.

In recent years jig vessels have been able to fish the entire year. In 2019, the parallel season opened January 1 and closed March 12, which triggered a state-waters opening that lasted until December 31. For 2020, when there was no parallel fishery, vessels using jig gear could fish the entire year in the state-waters season. In 2021 and 2022, vessels fishing with jig gear could fish all year in the parallel season (Table 2).

Longline is a legal gear type for the parallel Pacific cod fishery in the Cook Inlet Area. The average longline harvest between 2019 and 2022 is 527,995 lb from 11 vessels with 30 landings. From 2019 to 2022, a majority of the harvest from the parallel fishery came from NGD (Table 5). During the state-waters season, the district with the highest harvest varied (Table 6). Fewer than 3 vessels fished in the NGD (2022) and CID (2021), so trends are hard to report.

FISHERY OVERVIEW: PRE-2019

The *Cook Inlet Pacific Cod Management Plan*, implemented in 1997, first established the parallel season and the state-waters seasons. Prior to 1997, the Cook Inlet Area commercial Pacific cod fishery was managed via EO to coincide with federal seasons in the adjacent CGOA. Management of the Cook Inlet fishery was similar to the parallel season; however, for reporting purposes, this historical season was considered the parallel season. Parallel season harvests by all gear types were combined and accounted to a single federal CGOA TAC until federal gear sector splits were implemented in 2012. Parallel seasons historically spanned January 1 to approximately mid-March and more recently have ranged between 1 and 2 months (Table 2). The state-waters fishery was apportioned a percentage of the federal CGOA ABC for the GHL when it was established in 1997.

Pooling district information in the parallel season, annual harvest and effort from 1988 to 1996 ranged from 36,846 lb from 21 landings by 9 vessels in 1989 to 5,375,418 lb from 837 landings by 180 vessels in 1992 (Table 5). The parallel season harvest first exceeded 1.0 million lb in 1991 and averaged 3.5 million lb annually between 1991 and 1999 (Table 5; Figure 4). Historically, the majority of the parallel harvest came from longline gear in the NGD. However, the 1990s expansion of the pot fishery shifted the largest component of parallel Pacific cod harvest to the CID in 2001 for the first time since 1990, and it accounted for the larger portion of the harvest from 2003 to 2006 and in 2011 (Table 5; Figure 4). Pot gear took the larger portion of the parallel season harvest in those years and also in 2010, and in 2004 accounted for virtually all of the harvest (Table 4). However, longline gear overtook pot gear as the dominant gear from 2007 through 2009, taking the highest percentage of the parallel harvest, 83%, in 2009, before shifting back to pot gear as the dominant gear type in 2010 and 2011 (Table 4).

After federal gear sector splits were implemented in 2012, harvest shifted back to longline as the dominant gear type through 2015 in the parallel fishery. After 2000, harvests through 2011 totaled less than 1.0 million lb annually, primarily due to a shift to the Kodiak Area by the local longline fleet. However, after sector splits were implemented, parallel fishery harvests increased to an average of 1.6 million lb from 2012 through 2015. Harvest by vessels using jig gear has not played a major role in the parallel fishery, but jig harvest has been high some years in the state-waters fishery (Tables 3).

In 1997, the first year of the state-waters fishery, vessels using jig gear harvested 561,947 lb, the highest harvest to date, and made up 67% of the total harvest and 22% of the GHL (Table 3). In 2003, jig gear harvested 429,684 lb, 30% of both total harvest and the GHL. Although vessels using jig gear have performed well in some years during the state-waters season, harvests have often been relatively low, and jig gear has rarely achieved higher than 10% of the GHL in most years and has never achieved its allocation. However, the highest GHL for the period was over 4.4 million lb in 2011 and vessels using jig gear harvested nearly 0.5 million lb, or 11% of the GHL, which was the largest harvest since 1997 (Table 3).

From 1997 through 2015, annual harvest by vessels using pot gear during the state-waters fishery averaged 2.0 million lb. Vessels using pot gear typically achieved their allocation, and the Cook Inlet Area state-waters Pacific cod fishery GHL has been achieved in 2003, 2009, 2011. The highest pot harvest (4.0 million lb) and the highest GHL up to that point (4.7 million lb) occurred in 2012. However, GHLs remained high after 2012 and peaked in 2015 at 5.1 million lb, but harvest by pot vessels declined, and only 66% of the GHL was harvested in 2015. This poor fishery performance may have been an early indication of the future decline of the Pacific cod fishery that was fully realized in 2018 (Table 3; Figure 5).

RESEARCH

ADF&G has limited data about spring Pacific cod distributions in the Cook Inlet Area (Bechtol 2001), but studies from other areas have suggested that Pacific cod undertake a seasonal migration, beginning in the fall, to aggregate in major spawning areas over winter, and then disperse to summer feeding grounds following spawning (Shimada and Kimura 1994). This was supported by observations during the commercial Pacific cod fishery in the Cook Inlet Area, when catch rates increased over winter and generally peaked during February and March, then tended to slow down by late April.

HARVEST MONITORING

Dockside sampling of Pacific cod and fisher interviews were conducted during the Cook Inlet Area parallel and state-waters seasons. Information collected by dockside samplers included fishing location and effort as well as fish length, weight, sex, maturity stage, and age structures. Biological data have been collected since the state-waters season was implemented in 1997, but only length data was recorded the first year of sampling.

Between 1998 and 2022, average annual weights of Pacific cod have ranged from 2.4 kg (2016) to 3.9 kg (2022), and with an additional year of data (1997), average annual lengths ranged from 57 cm (2016) to 66 cm (1998 and 2022). Sex ratios ranged from 51% to 64% female (Table 7). During the most recent 4 years (2019–2022), Pacific cod average lengths were similar to the average between 1998 through 2022 (Table 7); average weights were a bit heavier, 3.6 kg for 2019–2022 average and 3.3 kg for 1998–2018 average. The average annual number of Pacific cod that were sampled was 1,058 from 2019–2022 compared to the annual average for 1998–2018 of 1,140 fish (Table 7). Length information, by sex, gear type, month, year, and NMFS area, has been provided to NMFS annually since 2014 for the CGOA Pacific cod stock assessment and has included all historical data back to 1997.

Catch per unit effort (CPUE) has been collected from dockside skipper interviews that occur when collecting biological information from landings. The average CPUE between 2019 and 2022 was 18.1 cod per pot. The average number of cod per pot from 2001 (first year it was collected) to 2018 was 13.8 cod per pot. The number of samples collected and interviews conducted is loosely based on availability of opportunities, which can be driven by the guideline harvest level for the fishery; 2020 was the smallest GHL on record and the lowest number of samples and interviews (Table 7).

SABLEFISH

MANAGEMENT AND REGULATIONS

Current elements of the Cook Inlet Area state-waters sablefish fishery include the following:

- Season opens July 15 and closes December 31 unless closed earlier by EO;
- Sablefish may only be retained during an open directed sablefish fishery on board a vessel that is registered to participate in the Cook Inlet Area sablefish fishery;
- Registration is required;
- GHL is annually adjusted by the percentage of change in the CGOA ABC calculated by NOAA/NMFS from stock assessment;
- Legal gear is longline, pot, or jig gear;
- Pot gear may be connected by a line in the sablefish fishery only, with no more than 15 groundfish pots attached to the same line;
- 6-hour prior notice of landing (PNOL) requirement;
- Mandatory log sheets; and
- Trip limit of 3,000 lb (round weight) of sablefish in 2 consecutive days.

Federal regulations allow a federal sablefish Individual Fishing Quota (IFQ) holder to participate in the state-managed sablefish fishery, provided the vessel harvest does not exceed the allotted

IFQ shares (state-managed sablefish harvest is deducted from IFQ) and the permit holders comply with both federal IFQ and state regulations, including registration.

REGULATION DEVELOPMENT

The Cook Inlet Area sablefish fishery historically opened and closed on dates concurrent with the sablefish season in adjacent federal waters (Bechtol 1995). Following implementation of the federal sablefish IFQ program in 1995, the Cook Inlet Area sablefish fishery became one of only 2 open-access sablefish fisheries in the state (Sigler et al. 2003). Beginning in 1995, the Cook Inlet Area fishery opened concurrently with the IFQ sablefish fishery on March 15, and closed by EO based upon harvest and catch rates. In 1997, the GHL was set at the recent 5-year average sablefish harvest of 104,000 lb from the NGD using the pre-1996 district boundaries. The fishery GHL was subsequently adjusted each year in proportion to the percentage annual change in sablefish ABC set by NPFMC for federal waters of the CGOA. The ABC was based on biomass estimates generated from annual surveys conducted by NMFS in the Gulf of Alaska. Because sablefish in the Cook Inlet Area were considered to be part of the Gulf of Alaska stock, adjusting the state GHL proportional to changes in the CGOA ABC was a conservative approach to managing this historical nearshore fishery.

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

Although ADF&G adjusted season duration in response to catch rate increases, managing for the annual harvest targets remained problematic. GHLs were exceeded annually from 2000 to 2003 by 35% to 50% (Table 8; Figure 8). In 2004, ADF&G submitted a proposal for an equal quota share that would divide the GHL equally among all registered participants. However, the proposal was amended to limit harvest per vessel to no more than 3,000 pounds of sablefish within 2 consecutive days. This vessel trip limit approach was adopted by the BOF as part of the *Cook Inlet Sablefish Management Plan* (5 AAC 28.360), which also included sablefish fishery-specific registration and a logbook requirement. First implemented in 2005, the trip limit resulted in increased season duration and improved management precision for harvest targets.

Longline is the primary gear type used in this fishery, although pot gear is also legal. The BOF adopted a regulation in 2016 allowing groundfish pots used in the Cook Inlet Area sablefish fishery to be attached to a line, with the stipulation that there may be no more than 15 pots on each line and a buoy is required to be attached to each end of the line to mark the location of the gear. Statewide in recent years there has been an increase in the use of pots in sablefish fisheries due to whale depredation and the convenience of collapsible pots.

Two other regulations were implemented in 2016: one clarified the requirements of log sheets in the fishery and the other added a 6-hour PNOL for vessels delivering sablefish from Cook Inlet Area. Both of these new regulations aid management of the fishery. Log sheets allow ADF&G to track the effort throughout the fishery, and the PNOL allows ADF&G enough time to deploy staff to collect biological information from sablefish deliveries as well as aid in enforcement.

FISHERY OVERVIEW: THE LAST 4 YEARS

Over the last 4 years (2019–2022), the harvest has been low along with participation. Recent averages are 3 vessels making 9 landings for 9,282 lb. Yearly harvest has varied; in 2020 there was no harvest, whereas in 2019 harvest was 20,561 lb. In 2022, 6 vessels made 7 landings for 4,461 lb; only 1 vessel made a second trip (Table 8).

NMFS Gulf of Alaska sablefish biomass estimates have varied and affected the corresponding Cook Inlet Area sablefish GHLs. In the GOA, the 2016 year class is recruiting to the fishery and is thought to be the largest recruitment on record. Along with that year class, almost all of the year classes between 2014 and 2019 appear to be of a large magnitude (Goethel et al. 2022). For the past 4 seasons, the ABC and corresponding GHL have risen to the highest levels since 1997; in 2021 and 2022, the GHL was 96,000 lb and 118,700 lb, respectively (Table 8; Figure 8).

FISHERY OVERVIEW: PRE-2019

Between 2013 and 2018, there was reduced harvest and participation in the Cook Inlet area sablefish fishery compared to pre-2013 levels. The average annual harvest during this 6-year period was just below 40,000 lb and an average of 6 vessels participated, which was less than half the average of approximately 85,000 lb and 14 vessels from 2000 to 2012 (Table 8 and Figure 8).

The average number of annual landings during this 6-year period was 33, which was similar to the average of 37 landings between 2000 and 2012. This may have been due in part to combined commercial halibut and sablefish fishing trips. However, the low CPUE has also contributed; average pounds per landing over the last 6 years averaged 1,210 lb compared to ~3,000 lb per landing from 2000 to 2012 (Table 8).

Between 2000 and 2007, the harvest and average lb per landing were at high levels. The harvest ranged from 76,889 lb (2007) to 133,435 lb (2001), and average lb per landing ranged from 2,136 lb (2007) to 8,721 lb (2003). Participation during this same period was between 10 and 23 vessels, and landings averaged between 14 and 41. Pre-2000, effort and landings peaked in 1992 at 103 landings by 79 vessels (Table 8).

Cook Inlet Area sablefish harvests since 1988 have ranged from 2,996 lb in 1989 to 136,260 lb in 1988; effort has ranged from 4 vessels in 1989 and 2015 to 79 vessels in 1992 (Table 8). The NGD yielded the majority of sablefish harvested whereas annual harvests from the CID rarely exceeded 2,000 lb. In the NGD, waters of Resurrection Bay, Aialik Bay, and in some years Day Harbor were the primary fishing areas. No sablefish were landed from the CID since 1995.

From 1996 to 2004, as catch rates increased, season duration steadily declined. The 1996 season lasted 169 days and following the season opening date change to July 15 in 2000, season duration declined further from 11 days in 2000 to the fishery low of 1 day in 2004 (Russ et al. 2013a).

Despite declines in NMFS biomass estimates and corresponding decreases in Cook Inlet fishery GHLs from the mid-1990s to early 2000s, catch rates increased from 1995 to 2004, peaking in 2003, until the 3,000 lb trip limit was implemented in 2005 (Table 8).

RESEARCH

Sablefish have traditionally been thought to form 2 populations based on differences in growth rate, size at maturity, and tagging studies (McDevitt 1990; Saunders et al. 1996; Kimura et al. 1998). The northern population inhabits Alaska and northern British Columbia waters, and the

southern population inhabits southern British Columbia, Washington, Oregon, and California waters, with mixing of the 2 populations occurring off southwest Vancouver Island and northwest Washington (Hanselman et al. 2018). Substantial stock structure among the federal Alaska population is unlikely given extremely high movement rates throughout their lives (Hanselman et al. 2015; Heifetz and Fujioka 1991; Maloney and Heifetz 1997; Kimura et al. 1998). Mixing between federal stock and Cook Inlet Area sablefish is assumed, which is why the GHL is adjusted with the ABC in the CGOA.

HARVEST MONITORING

Logbook data has been collected from the sablefish fishery since 2005. Beginning in 2016, comprehensive efforts were made to error-check and standardize this data. Logbook information has been combined with fish ticket harvest data to produce CPUE (lb per hook) from 2005 to 2022. CPUE has ranged from 0.12 lb/hook in 2009 to 0.49 lb/hook in 2022, and there are no obvious continuing trends. The total hooks varied widely from a low of 5,860 hooks in 2022 (which also had highest CPUE) to a high of 429,315 hooks in 2009 (which also had the lowest CPUE). Excluding 2020 where there was no harvest, recent averages (2019–2022) are 47,203 hooks harvesting 11,270 lb of sablefish with an average CPUE of 0.36 lb/hook. Logbook information used for CPUE analysis excludes incomplete or missing data and includes total hooks for all trips combined and corresponding sablefish harvest, excluding unusable trips (Table 9).

Sablefish biological sampling began consistently in 2000. Between 2000 and 2022, dockside sampling yielded average sablefish lengths ranging from 54 cm to 63 cm and average weights ranging from 1.6 kg to 2.7 kg; the largest sablefish documented was in 2005. In the last 2 years, the average size (length and weight) of sablefish were the smallest on record, 1.6 kg and 54 cm. This mirrors the results of the National Marine Fisheries sablefish stock assessment that has shown a couple of strong recruit classes moving through the population. Between 2019 and 2022, the percentage of females in the samples ranged from 51% to 71%, and the lowest percentage of females in the samples was 45% in 2016 (Table 10).

OUTLOOK

As mentioned earlier, NOAA/NMFS research and stock assessment of the sablefish stocks in the CGOA and the GOA shows that 2014 and 2016 produced large year classes, with the largest on record for 2016 (Hanselman et al. 2018 and Goethel et al. 2022). These high estimates also come with concerns and uncertainty, which has caused ABC stock assessment authors to recommend conservative harvest levels. These recommendations were approved by the Groundfish Plan Team and the NPFMC.

ROCKFISH

AGGREGATION DEFINITIONS

There are 3 rockfish assemblages: pelagic shelf rockfish (PSR), demersal shelf rockfish (DSR), and slope rockfish. The pelagic shelf rockfish assemblage includes the following: black rockfish *Sebastes melanops*, dusky rockfish *S. variabilis*, dark rockfish *S. ciliates*, yellowtail rockfish *S. flavidus*, widow rockfish *S. entomelas*, and blue rockfish *S. mystimus*. Demersal rockfish assemblage includes the following: canary rockfish *S. pinniger*, china rockfish *S. nebulosus*, copper rockfish *S. caurinus*, quillback rockfish *S. maliger*, rosethorn rockfish *S. helvomaculatus*, tiger rockfish *S. nigrocinctus*, and yelloweye rockfish *S. ruberrimus*. Slope rockfish describes any

species of the genus *Sebastes* not specified in either demersal shelf rockfish or pelagic shelf rockfish; thornyhead rockfish *Sebastolobus* spp. are included with the slope rockfish aggregate for harvest accounting in Cook Inlet Area.

MANAGEMENT AND REGULATIONS

Current elements of the *Cook Inlet Rockfish Management Plan* (5 AAC 28.365) include the following:

- GHL of 150,000 lb for all rockfish species, bycatch and directed harvest combined;
- Mandatory retention of all rockfish;
- 5-day trip limits of 4,000 lb for the North Gulf District and 1,000 lb for the Cook Inlet Districts; and
- Rockfish bycatch limits established by regulation under 5 AAC 28.365 for other groundfish and halibut fisheries and referenced in annual emergency order.

Cook Inlet Area directed rockfish fishery for PSR includes specific rules:

- Season opens on July 1 and closes December 31 unless closed earlier by emergency order;
- Legal gear is mechanical jigging machines and hand troll;
- Other requirements include the following:
    - Log sheets;
    - Registration; and
    - 6-hour prior notice of landing (PNOL).

REGULATION DEVELOPMENT

The *Cook Inlet Rockfish Management Plan* (5 AAC 28.365) was first implemented in 1993 and established the 150,000 lb GHL. From 1993 to 1996, rockfish opened to directed fishing January 1, closed when the 150,000 lb GHL was attained, and remained open as a bycatch-only fishery for the duration of the year. In 1996, due to bycatch harvest levels that exceeded directed fishery removals in some years, and a lack of stock abundance information, the BOF adopted a more conservative approach by adopting the 150,000 lb GHL as a harvest cap rather than a "trigger" for opening the bycatch fishery. Management under the harvest cap approach, which began in 1997, proved problematic because it required ADF&G to anticipate the amount of rockfish bycatch needed for other directed fisheries, such as halibut and Pacific cod.

In 1998, the NPFMC amended the pelagic rockfish assemblage, as defined in the federal GOA FMP, by removing black and blue rockfishes (DiCosimo et al. 1997). This action, requested by the state to address misreporting problems associated with the fishery, effectively transferred management authority for these species in federal waters to the State of Alaska (5 AAC 28.010). Although blue rockfish has not been reported in the Cook Inlet Area, black rockfish is a pelagic species commonly found in federal waters of the NGD.

In addition, in 1998, the BOF established a July 1 directed rockfish season opening date and restricted gear for targeting rockfish to mechanical jig or hand troll gear (jig gear). These measures were adopted to align the directed rockfish season with the lingcod season due to similarities in gear and habitat requirements and to focus the directed fishery on black rockfish, rather than yelloweye rockfish, which are more susceptible to overfishing. However, once these changes

became effective, individual jig landings were dominated by yelloweye rockfish and harvest increased in the directed rockfish jig fishery.

By 2001, yelloweye rockfish harvest by jig gear surpassed the harvest by longline gear as bycatch to other directed groundfish fisheries. In addition, changes in the species composition of the commercial harvest heightened concern about stock sustainability because DSR, such as yelloweye rockfish, require a much longer rebuilding period than PSR if overfishing occurs. In response to the increased DSR harvest from jig gear, ADF&G submitted a proposal in 2004 that was subsequently adopted by the BOF to restrict the directed fishery to PSR species and require logbooks. The effect of these regulatory changes focused the jig fishery on PSR species and has provided better resolution about harvest location. Also adopted by the BOF in 2004 and effective in 2005 was mandatory retention of rockfish in the Cook Inlet Area. Mandatory retention improved accounting of fishery removals because rockfish caught in deep water suffer barotrauma, which is caused by rapid decompression and expansion of gases in the swim bladder, and therefore experience a high rate of mortality.

Prior to 2004, 2 varieties of dusky rockfish were identified under the name *Sebastes ciliatus*: a dark-colored variety that inhabited inshore, shallow waters, and a lighter-colored variety that inhabited deeper water offshore. In 2004, these 2 varieties of dusky rockfish were designated as distinct species. The dark-colored variety is now recognized as dark rockfish, *Sebastes ciliatus*, and the light-colored variety is now recognized as dusky rockfish, *Sebastes variabilis* (Orr and Blackburn 2004). In 2008, dark rockfish were removed from the GOA FMP and management authority of that species in federal waters was delegated to the State of Alaska.

In 2010, ADF&G submitted a proposal to adjust and standardize rockfish bycatch allowances to halibut and directed groundfish species and also to define DSR bycatch allowances in the directed PSR jig fishery. This proposal was adopted by the BOF and implemented in 2011. The rockfish bycatch allowances for the Cook Inlet Area are 10% to halibut and directed groundfish fisheries, except that the bycatch allowance of DSR is 20% in the directed PSR jig fishery. Prior to 2011, rockfish bycatch allowances in the Cook Inlet Area ranged from 5% to 20% depending on the target species.

In 2017, ADF&G submitted 2 proposals that were adopted to aid in the management of the directed PSR fishery in the Cook Inlet Area. One of the new regulations clarified the procedures for obtaining and submitting log sheets and the other added a 6-hour PNOL requirement for the fishery.

FISHERY OVERVIEW: 2019–2022

For the past 4 years, the harvest of rockfish has changed from being dominated by the PSR assemblage to being dominated by the DSR complex. Harvest has not come close to the guideline harvest level (150,000 lb) and has ranged from 39,458 lb (2020) to 66,156 lb (2019), with an average of 51,569 lb (Table 11 and Figure 9).

Average harvest for recent years (2019–2022) is 27,968 lb of DSR representing 55% of the overall rockfish harvest, compared to 21,630 lb of PSR representing 42% of the overall rockfish harvest. Annual total rockfish harvest is typically composed of a higher proportion of PSR, but there have been exceptions; notably, in 2007–2009, DSR annually made up ~60% of the overall harvest (Table 11).

Black rockfish has dominated the PSR harvest ranging from 76% in 2019 (25,836 lb) to 93% in 2022 (11,056 lb; Table 12). Black rockfish harvest averaged ~18,000 lb between 2019 and 2022. Dusky and dark rockfish together accounted for 24% of the directed harvest in 2019, the highest proportion seen (Table 12). Yelloweye dominates the DSR harvest, with an average harvest of 24,058 lb between 2019 and 2022 (87% of DSR harvest; Table 11). This yelloweye rockfish is harvested as bycatch only, mostly in longline fisheries.

Jig and longline gear harvest the majority of the commercial rockfish in the Cook Inlet Area (Table 13 and Figure 10). From 2013 to 2020, the percentage of the total harvest has been dominated by jig gear, ranging from 56% to 75%. In the past 2 years, the harvest of rockfish has switched and been dominated by longline gear; above 60% of the harvest was taken with longline gear, related to the levels of Pacific cod for harvest. Total participation has averaged 46 vessels during this time period, ranging from 32 (third lowest, historically) to 37 vessels (Table 13).

In the directed PSR fishery, participation averaged 9 vessels for 21 landings from 2019 through 2022 with a harvest ranging from ~12,000 lb to ~33,000 lb, averaging ~20,000 lb. Success has been lower in the last 5 years, measured by average harvest per trip, ranging from 690 lb per trip to 1,200 lb per trip, with an average of 960 lb per trip (Table 12).

The Cook Inlet Area is divided into the Cook Inlet District (more inside, protected area) and the North Gulf Coast (exposed, outer coast). Historically, the majority of all rockfish harvest, including that from the directed PSR jig fishery, has occurred in the NGD (Figure 1 and 11); the last 4 years, an average 96% of the rockfish came from NGD. Since 2018, there has been increased harvest in CID, averaging 2,181 lb from 2019–2022. In federal waters, the state has managed black rockfish since 1998 and dark rockfish since 2008 (Table 14).

FISHERY OVERVIEW: PRE-2019

PSR, particularly black rockfish taken primarily by jig gear, accounted for more than 66% of the total harvest in most years through 2005, and harvest exceeded 200,000 lb in 1995. A decline in PSR harvest began in 2006, with a historical low of 3,154 lb harvested in 2009 due to low jig effort in the directed PSR fishery (Table 11; Figure 9).

DSR, which are predominantly yelloweye rockfish and historically harvested primarily by longline gear, was the second most dominant assemblage and averaged 37% of the annual harvest from 1996 to 2009 (Table 11). From 2001 to 2003, yelloweye rockfish harvest by jig gear exceeded that harvested by longline gear, and 33,063 lb were harvested by jig gear in 2003 (Rumble et al. 2016). However, after 2003, jig harvest of DSR species declined substantially, due primarily to the directed fishery being more restricted since 2005.

Within the Cook Inlet Area, the NGD has historically yielded greater than 95% of the commercial rockfish harvest during any given year (Table 14) and also supports active sport fisheries. The rocky, high-relief habitat typical of the NGD is more suitable to nearshore rockfish than the glacial-mud substrate of the CID (Rumble et al. 2016).

Since 2010, the most prevalent harvested species from the PSR assemblage has been black rockfish, in both the directed fishery and overall (including bycatch), ranging from 78% to 98% of the total PSR harvest (Tables 11 and 12); dusky and dark rockfish levels were far lower but have had some in the directed PSR fishery since 2010 (Table 12). Black rockfish harvest has ranged from 11,498 lb to 70,311 lb in the directed PSR jig fishery between 2010 and 2019 and averaged about 42,000 lb annually (Table 12). Total black rockfish harvest has averaged 43,592 lb for the

same time period in all fisheries and peaked at approximately 75,000 lb in 2015 and 2016, coincident with those years of high harvest in the directed fishery (70,000 lb; Tables 11 and 12).

Between 2010 and 2019, for the DSR assemblage, yelloweye rockfish generally dominated the harvest, but not as consistently, ranging from 48% to 98% of the total DSR harvest since 2010 (Table 11). Higher harvests of DSR retained as bycatch have tracked with large Pacific cod quotas, and this was the trend from 2010 through 2017. The highest DSR harvest of 54,052 lb occurred in 2015, the same year as the highest Pacific cod GHL. This was due to more DSR bycatch harvested during the Pacific cod fishery because bycatch allowances are a percentage of target species (Table 11). Interestingly, 2015 also marked only the second time that yelloweye rockfish did not compose the majority of DSR harvest, when quillback rockfish was the dominant species. Conversely, the 2018 harvest of yelloweye rockfish, as well as all DSR species, was down to its second-lowest level since 2010 at 16,887 lb, which corresponded with the lowest Pacific cod GHL and harvest for the time period (Tables 3 and 11).

In the past 10 years (2013–2022), estimated exvessel value of rockfish harvest have ranged from $19,773 (2020) to $124,554 (2016). The recent average (2019–2022) of $25,062 ranks fourth in contribution to the estimated exvessel value, representing 3% of the total average value over this time period (Appendix A1).

RESEARCH

There has been little directed research to assess black rockfish populations in the Cook Inlet Area (Byerly and Bechtol 2005; Byerly et al. 2015). The most recent research project was a hydroacoustic survey conducted on the North Gulf Coast.

HARVEST MONITORING

Dockside sampling of PSR harvests began consistently in 1998, and in 2015 the largest number of PSR were sampled due to increased commercial fishing effort in the directed jig fishery, which led to more sampling opportunities. Sampling goals were met in both 2017 and 2018 because effort in the fishery remained at consistently high levels (Tables 15 and 16). In 2018, there was still a relatively high number of vessels participating, but the CPUE was 854 lb per trip, which was the lowest on record and similar to the 2007 CPUE when harvest in the PSR fishery was at its lowest point (Table 12).

Pelagic rockfish were actively sampled from the directed fishery (Table 15). From 2019 through 2022, an average of 574 black rockfish were sampled out of a total of 703 (all PSR), which was 80% of the samples. Dusky rockfish had the second-highest number of samples for this time period, with an average of 92 samples per year; samplers collected dark and yellowtail rockfish samples, less than 20 each year for each species, which is <5% (Table 15).

Nonpelagic rockfish species were sampled also, harvested mostly as bycatch in longline fisheries such as halibut and Pacific cod. From 2019 to 2022, yelloweye rockfish dominated the samples with 612 samples collected (70% of total), and quillback rockfish were the second-highest species sampled (170 samples, 17% of total), followed by rougheye rockfish (95 samples, 10% of total; Table 16).

From 1998 to 2018, average weights of black rockfish ranged from 2.0 to 2.6 kg, average length ranged from 46 to 53 cm, and average age ranged from 12 to 21 years. Beginning in 2019, the weight dipped below 2.0, with an average weight of 1.8. From 1998 to 2018, the average weight

was 2.3 kg. The average age has decreased as well; in 1998, the average age was 16, but in the last 4 years, it has decreased to 12 years. The percentage of females observed in the samples has fluctuated from 1998 to 2022, but the for the past 4 years, the average percentage of females was 46% (Table 16).

Comparing the most recent years, 2019–2022, and 1998–2018, yelloweye rockfish had the same average length of 59 cm and the same average weight of 4 kg. The average age was 33 years between 2019 and 2022 and was 32 years from 1998 to 2018. The average percentage of females was 55% from 2019–2022 and 51% from 1998–2018 (Table 18).

LINGCOD

MANAGEMENT AND REGULATIONS

Current regulations for commercial lingcod in the Cook Inlet Area include the following:

- Lingcod may only be retained July 1 through December 31;
- Registration is required for directed lingcod fishery;
- GHL is 52,500 lb;
- Directed fishing for lingcod is restricted to jig gear (mechanical or hand troll); a mechanical jigging machine may have no more than 5 lines and 30 hooks per line;
- Lingcod may be retained as bycatch during other directed fisheries at a 20% level;
- The minimum size limit is 35 inches from the tip of the snout to the tip of the tail; and
- ADF&G uses EO authority to close and immediately reopen the fishery with a requirement that all lingcod be delivered with head on and with the vent and external area 1 inch forward of the vent unmutilated so that gender may be determined during dockside sampling.

REGULATION DEVELOPMENT

In the Central Region, the State of Alaska first exercised its management authority for lingcod in the EEZ in 1995. It is unknown whether subsequent changes in harvest distribution indicated shifts in relative abundance, harvest areas, or harvest reporting.

In 1993, the BOF adopted regulatory lingcod season dates of July 1 to December 31 and a minimum size requirement of 35 inches overall or 28 inches measured from the front of the dorsal fin to the tip of the tail. The season dates closed lingcod fishing during the first half of the year to protect spawning and nest-guarding lingcod at a time when they are particularly vulnerable to capture (Vincent-Lang and Bechtol 1992). The minimum legal size was intended to allow sexually mature lingcod to spawn in at least 2 successive years prior to being subjected to harvest removal. From 1997 until 2002, the commercial lingcod fishery was managed for a 35,000 lb GHL that was established in 1997 as 50% of the recent 5-year harvest. ADF&G adopted this conservative approach due to a lack of lingcod abundance and biomass information, and evidence of localized recruitment failures, particularly in Resurrection Bay, during the early 1990s (Vincent-Lang and Bechtol 1992). Since 1993, Resurrection Bay has been closed to lingcod fishing, initially by EO and later by regulation (5 AAC 28.50 (c)), to protect depressed lingcod stocks. The most recent surveys indicated little recruitment had occurred in this area (Bethe and Meyer 2002). Directed fishing for lingcod was restricted to jig gear (mechanical or hand troll) beginning in 1999. Lingcod may be retained as bycatch to other directed fisheries at a 20% level during the open season.

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

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

FISHERY OVERVIEW: 2019–2022

In the Cook Inlet Area, lingcod may be retained in a commercial fishery after July 1 as bycatch to other groundfish fisheries or in a directed jig fishery. Harvest levels are closely monitored to stay within the 52,500 lb GHL (Table 19 and Figure 12). Since 2017, there has been the highest lingcod harvest, all years above 40,000 lb, with the exception of 2021 (18,200 lb). For the past 4 years, the lingcod effort was between 20 (2019) and 29 (2022) vessels, with landings ranging from 37 (2019) to 50 (2022). Lingcod harvest has typically been taken in state waters with most harvest occurring on the North Gulf Coast, which supports active commercial and recreational lingcod fisheries.

In the past 10 years (2013–2022), estimated exvessel value of lingcod harvest has ranged from $3,676 (2015) to $49,395 (2022). The recent average (2019–2022) of $45,967 ranks second in contribution to the estimated exvessel value, representing 6% of the total average value over this time period (Appendix A1).

FISHERY OVERVIEW: PRE-2019

Since 1988, the commercial harvest of lingcod has ranged from 2,894 lb in 1989 by 10 vessels with 20 landings to a high of 87,370 lb in 1993 by 18 vessels with 64 landings (Table 19 and Figure 12). Between 1988 and 2005, there were only 5 years when the majority of the fish were not harvested with jig gear. The highest percentages of jig harvest occurred in 1993 and 1994, when 99% of the lingcod harvested each year were taken with jig gear. Historically, effort has been sporadic, and, in some years, prior to adoption of the July 1 season opening date, the fishery was open the entire year.

Jig gear has persisted as the dominant gear type since 1988, accounting for more than 60% of the total harvest, with the combined longline, pot, and trawl gears accounting for the remainder (Table 19). Due to confidentiality requirements, these data cannot be presented separately. However, the differences in gear types were attributable to greatly increased harvest by pot gear in certain years, but the majority of historical harvest other than jig gear has been by longline gear.

RESEARCH

Lingcod research has occurred but not in recent years (Byerly et al. 2015).

HARVEST MONITORING

Dockside sampling of lingcod began in 1998, although no samples were collected in 1999. Information collected by dockside samplers included fishing location and effort as well as fish

length, sex, maturity stage, and otoliths or fin rays for age determination. Sampling information indicated some variability in weight, length, age, and sex ratio.

The average weight of sampled lingcod for the past 4 years (12.5 kg), 2019–2022, was lower than the average weight between 1998 and 2022 (14.1 kg), but the length was not very different (104 cm for 2019–2022 and 110 cm for 1998–2018). The average age for these 2 time periods was similar: for 2019–2022 the average age was 16 years old, and for 1998–2018 the average age was 17 years old. There were more females in the samples from 1998 to 2018 (64%) than 2019–2022 (46%; Table 20).

POLLOCK

MANAGEMENT AND REGULATIONS

Walleye pollock may be retained as bycatch under 5 AAC 28.070 *Groundfish Possession and Landing Requirements*. In Cook Inlet Area, an EO is issued annually to set groundfish bycatch limits. Since 2014, this EO allowed permit holders participating in a halibut or directed groundfish fishery, or taken incidentally by drift or set gillnet gear fishing for salmon or herring, to retain 20% pollock round weight as a percentage of the target species harvested, which is the maximum bycatch level allowed under 5 AAC 28.070. Since mid-1999, directed fishing for pollock has required a commissioner's permit under 5 AAC 28.379 *Permit for Miscellaneous Groundfish*.

REGULATION DEVELOPMENT

Temporal and geographical fishing restrictions associated with SSL protective measures complicated pollock harvesting opportunities beginning in 2000 and effectively closed all of the NGD to pollock trawl fishing. Due to lack of interest, no commissioner's permits were issued through 2003. A single commissioner's permit was issued in 2004 to allow the pelagic trawl harvest of pollock in state waters for 24 hours between 149° and 150° longitude, except within 3 nmi of SSL haulouts, while the season was open in the federal CGOA area. That vessel, in combination with deliveries of incidentally caught pollock by other vessels, resulted in a total 2004 pollock harvest of 342,305 lb. The BOF generated a proposal in 2004 to consider reestablishing the Cook Inlet pollock trawl fishery in the Resurrection Bay area, which was tabled until October 2006 pending comment from NMFS in regard to SSL protections. The proposal ultimately failed.

Limited deliveries of pollock also occurred under 5 AAC 28.070(e), requiring vessels fishing groundfish to retain all pollock when a pollock fishery was open, and up to the maximum retainable bycatch levels when closed. Under 5 AAC 28.075, processors are required to accept and utilize at least 15% of fish retained under 5 AAC 28.070(e). These regulations were intended to encourage improved retention and utilization of pollock and Pacific cod, although regulatory compliance was believed to be poor. A proposal to clarify 5 AAC 28.070(e), because the language was confusing and often misinterpreted to allow retention of pollock during an open Pacific cod fishery, was adopted during the 2015/16 BOF cycle.

FISHERY OVERVIEW: 2014–2022

There has been no directed walleye pollock fishing since the commissioner's permit fishery was last prosecuted in 2016. Total harvest from 2019 to 2022 from bycatch ranged from 1,358 lb to 6,870 lb, with information from 2020 confidential (Table 21).

There was a Commissioner's Permit Experimental Fishery from 2014 to 2016 that had limited success (Rumble et al. 2019).

FISHERY OVERVIEW: PRE-2014

Walleye pollock seasons in the Cook Inlet Area were historically managed via EO as parallel fisheries with state seasons set to coincide with NMFS actions in the adjacent waters of the federal EEZ. The cumulative reported pollock harvest from area state waters between 1988 and 1995 was 473,201 lb (Table 21; 1989 confidential data omitted). Directed pollock fishing with pelagic trawls occurred in the NGD between 1996 and 1999. Annual pollock harvest during these years ranged from approximately 1.9 million lb in 1996 to 9.7 million lb in 1998, with pelagic trawls yielding over 99% of the harvest.

There was minimal harvest after 1999 until a commissioner's permit was issued in 2004 to allow pelagic trawl harvest (Table 21). Since 2004, there has been very low harvest, except for some increased jig effort as part of the Pacific cod fishery in 2013, until the commissioner's permit seine fishery was implemented in 2014.

HARVEST MONITORING

Because there is no directed fishery, there is little biological sampling of pollock.

OTHER GROUNDFISH

HISTORICAL BACKGROUND

Assorted species of skates, flatfish, sharks, and other groundfish have been harvested in both directed and bycatch fisheries in the Cook Inlet Area (Table 22). Historically, for any groundfish species that lacked specific regulatory management measures, state waters fishing seasons were set by EO to coincide with NMFS fishing seasons in adjacent federal waters. However, due to the potential for rapidly expanding and uncontrolled fisheries on species for which there were little biological data, the BOF adopted a variety of regulatory measures allowing ADF&G and the BOF to take a precautionary approach toward new or rapidly developing fisheries.

In the Cook Inlet Area, an EO has been issued annually since 2014 to set groundfish bycatch limits to other directed groundfish fisheries per 5 AAC 28.070, which provides for a maximum bycatch level of up to 20% by weight of the directed groundfish species onboard the vessel.

Among the more pertinent measures adopted by the BOF were the following:

- 5 AAC 28.070 – *Groundfish Possession and Landing Requirements*
- 5 AAC 28.089 – *Guiding Principles for Groundfish Fishery Regulations*
- 5 AAC 39.210 – *Management Plan for High Impact Emerging Fisheries*
- 5 AAC 28.083 – *Permit Requirements for Skates and Rays*
- 5 AAC 28.084 – *Fishing Seasons, Landing Requirements, and Utilization for Sharks*
- 5 AAC 28.379 – *Permit for Miscellaneous Groundfish*

SKATES

Currently, skates in Alaska are managed as bycatch and there is no directed fishery. Most harvest comes from longline gear, much of it as bycatch to other directed groundfish and halibut fisheries

and primarily during the months of February to April. For the past 4 years, the harvest of skates has ranged from 13,265 lb (2021) to 26,361 lb (2022) with 13 to 14 vessels landing skates (Table 22).

Between 2012 and 2016, the harvest of skates was historically high because of a developing market (Table 22). A peak harvest of 164,085 lb occurred in 2015 but has decreased steadily to 11,742 lb in 2018 and remained low for the last 4 years, less than ~27,000 lb (Appendix A1). Price per pound for skates has exceeded some of the target harvest and the 2015 exvessel value was the highest on record. Federal Pacific cod gear sector splits implemented in 2012 were a substantial factor in the increased harvest of skates because more longline vessels participated in the parallel fishery, and the highest bycatch harvest of skates occurred during that fishery.

Historically, skates were open to directed fishing with little regulatory oversight beyond general reporting requirements. Effective in May 1998, statewide regulation 5 AAC 28.083 established a commissioner's permit requirement for directed skate fishing, which may restrict or specify conditions such as depth of fishing, season dates, fishing areas, minimum size limits, gear, and logbooks, as well as other conditions the commissioner finds "necessary for conservation and management purposes."

The first applications for permits to target skates in the Cook Inlet Area were received in 2004. ADF&G issued 9 permits and the harvest totaled 18,728 lb. Permits were valid for 90 days; restricted gear to longline or jig; and required logbooks, 2-hour PNOL, and agreement to carry an ADF&G observer upon request. Catch reporting by species was required and in 2004 ADF&G's fish ticket reporting system was amended to provide species codes to facilitate reporting of the 2 most commonly harvested skate species, longnose *Raja rhina* and big *Raja binoculata*. Big skates made up approximately 97% of the total harvest (Rumble et al. 2016).

Due to concern of overfishing and lack of adequate stock assessment, NMFS moved skates to bycatch-only status in federal fisheries. Because of this action, no commissioner's permits for skates have been issued since 2004. In addition, in recent years, there has been concern over skate abundance levels derived from NMFS stock assessment surveys. This resulted in a reduction of the maximum retainable amounts (MRA) from 20% to 5% for skates in federal directed groundfish fisheries in 2016. There were concerns about the skate population stock assessment information and of vessels "topping off" their harvest with maximum allowed bycatch. Additionally, the TAC was achieved for big skate in 2013 through 2015, and big skate was closed to retention in federal waters of the adjacent CGOA. ADF&G closed big skate in state waters of the Cook Inlet Area to mirror this action because there was no GHL set for skate species. The Cook Inlet Area allowable bycatch level of skate species in aggregate had already been reduced from 20% to 15% in 2014 due to conservation concerns. Following suit after the recent federal action, ADF&G reduced bycatch levels in the Cook Inlet Area from 15% to 5% in 2016, and bycatch allowances remain at this level.

Stock assessment is conducted by NOAA/NMFS each year and separate ABCs are generated for big skate, longnose skate, and "other" skates. All GOA skates are managed under Tier 5, which base ABC and overfishing levels (OFL) on survey biomass estimates and mortality rate.

2019–2022 Season Summary

Between 2019 and 2022, the majority of other groundfish harvested as bycatch was made up almost entirely of skates, and since 2004, more than 90% of the total harvest was composed of skates.

Skate harvest has been trending downward since the 2015 record-high harvest of 164,085 lb (Table 22), which can be attributed to the decrease in directed groundfish abundance, the reduction in the bycatch limit from 15% to 5% of the directed harvest, and less market demand.

SHARKS

Annual shark harvests from the Cook Inlet Area have ranged from no reported landings to 6,594 lb in 1999 (Table 22). In 1997, the BOF closed directed shark fishing and permitted retention of shark bycatch. Little new biological information has become available since the 1997 BOF actions. Data that might be used to develop a state management plan, such as stock structure, biomass and abundance levels, existing fishing mortality, and ecological linkages, are still lacking. High annual variability of sharks in ADF&G surveys is consistent with current literature, which confirms most shark species are highly migratory (Weng et al. 2008; McFarlane and King 2003). Effective in 2005, after adoption by the BOF in 2004, a new regulation allowed a directed spiny dogfish fishery via commissioner's permit. Since the regulation took effect, only 1 commissioner's permit has been issued, which happened in 2006. There has been no reported harvest of sharks in 10 of the last 12 years, but the reported harvest in 2006 was close to harvest levels that occurred in 1999. Because retention of sharks has been minimal, as allowed under current commercial regulations, interest in shark fisheries in 2006 does not appear to be related to increased market demand but instead to reducing hook competition with other, more valuable target species.

There has been no harvest of sharks reported since 2006; however, incidental captures of shark species may approach nuisance levels, particularly spiny dogfish. Discarded catch rates are poorly documented, but anecdotal information suggests rates may be high, at least in some areas and at some times. Cook Inlet Area shark bycatch, composed primarily of spiny dogfish, as evidenced by reported at-sea discards on fish tickets, was comparatively high between 2000 and 2010, averaging about 21,000 lb annually (Table 23). In contrast, shark bycatch levels reported between 2011 and 2014 averaged about 3,500 lb per year. However, there was a large increase in reported at-sea discards of sharks in 2015 of 32,393 lb, the highest level since 2004. In the past 4 years, the reported at-sea discards of sharks has varied from 4,869 lb to 23,471 lb (Table 23).

Similar to skates, allowable bycatch level of shark species in aggregate was reduced from 20% to 15% by EO in 2014 due to lack of stock assessment information.

HARVEST MONITORING

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

Samples of spiny dogfish were collected in 2005 and 2006, in response to BOF actions to allow a commissioner's permit fishery. Length, weight, sex, and age structures were collected from spiny dogfish in those years. Spiny dogfish averaged 4.3 kg (n = 65) with an average age of 22 years

(n = 41) in 2005 (sampled fish caught as bycatch in salmon set gillnets), and in 2006 had an average weight of 4.1 kg (n = 247) and average age of 25 years (n = 243; Rumble et al. 2016).

AT-SEA DISCARDS

At-sea discards reported by vessels fishing in Cook Inlet Area waters ranged from 18 lb in 1989 to 138,793 lb in 1996 (Table 23). Between 1988 and 2022, sharks made up 34% of the at-sea discards and skates 24%. Most reported discards come from NMFS and International Pacific Halibut Commission survey cruises, with a smaller proportion coming from vessels carrying observers. Reporting of at-sea discards is somewhat dependent upon factors such as location and timing of fishery, changes to fishing technology, market conditions, and requirements of vessel operators.

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TABLES AND FIGURES

Table 1.–Emergency orders issued for commercial groundfish fisheries in the Cook Inlet Area, 2019–2022.

Year	Emergency order	Effective date	Explanation
2022	2-GF-H-01-22	01/01/2022	Set Cook Inlet Area groundfish bycatch limits
	2-GF-H-02-22	01/01/2022	Opened parallel Pacific cod season to pot, jig, and longline gear.
	2-GF-H-03-22	02/16/2022	Closed parallel Pacific cod season and opened state-waters season (24 hours after parallel closure) to pot gear.
	2-GF-H-04-22	03/03/2022	Closed state-waters Pacific cod season to pot gear for vessels greater than 58 feet.
	2-GF-H-05-22	03/15/2022	Closed parallel Pacific cod season to longline gear for vessels less than 50 feet.
	2-GF-H-06-22	03/30/2022	Closed parallel Pacific cod season to longline gear for vessels greater than or equal to 50 feet.
	2-GF-H-07-22	07/01/2022	Required lingcod to be delivered with the head on and evidence of gender intact.
	2-GF-H-08-22	09/01/2022	Closes state-waters Pacific cod season to vessels fishing with pots that are less than or equal to 58 feet and opened the parallel Pacific cod season to vessels less than 50 feet fishing with pots.
2021	2-GF-H-01-21	01/01/2021	Set Cook Inlet Area groundfish bycatch limits.
	2-GF-H-02-21	01/01/2021	Opened parallel Pacific cod season to pot, longline, and jig gear.
	2-GF-H-03-21	01/23/2021	Closed parallel Pacific cod season and opened state-waters season (24 hours after parallel closure) to pot gear.
	2-GF-H-04-21	02/05/2021	Closed parallel Pacific cod season to longline gear for vessels less than 50 feet.
	2-GF-H-05-21	03/09/2021	Closed parallel Pacific cod season to longline gear for vessels greater than or equal to 50 feet.
	2-GF-H-06-21	07/01/2021	Required lingcod to be delivered with the head on and evidence of gender intact.
	2-GF-H-07-21	09/01/2021	Opened parallel Pacific cod season to vessels fishing with pot gear and vessels fishing with longline gear that are less than 50 feet.
2020	2-GF-H-01-20	01/01/2020	Opened state-waters Pacific cod season to vessels fishing with jig gear 1/1; vessels fishing with pot gear on 2/1.
	2-GF-H-02-20	01/01/2020	Set Cook Inlet Area groundfish bycatch limits.
	2-GF-H-03-20	02/28/2020	Closed state-waters Pacific cod season to pot gear.
	2-GF-H-04-20	07/01/2020	Required lingcod to be delivered with the head on and evidence of gender intact.
	2-GF-H-05-20	11/13/2020	Closed lingcod season.
	2-GF-H-01-19	01/01/2019	Set Cook Inlet Area groundfish bycatch limits
	2-GF-H-02-19	01/01/2019	Opened parallel Pacific cod season to pot, jig, and longline gear.
	2-GF-H-03-19	01/25/2019	Closed parallel Pacific cod season and opened state-waters season (24 hours after parallel closure) to pot gear.
	2-GF-H-04-19	02/07/2019	Closed parallel Pacific cod season to longline gear for vessels less than 50 feet.
	2-GF-H-05-19	02/08/2019	Closed state-waters Pacific cod season to pot gear for vessels greater than 58 feet.
	2-GF-H-06-19	02/27/2019	Closed parallel Pacific cod season to longline gear for vessels greater than or equal to 50 feet.
	2-GF-H-07-19	03/09/2019	Closed state-waters Pacific cod season to pot gear.

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Table 1.–Page 2 of 2.

Year	Emergency order	Effective Date	Explanation
2019	2-GF-H-01-19	01/01/2019	Set Cook Inlet Area groundfish bycatch limits
	2-GF-H-02-19	01/01/2019	Opened parallel Pacific cod season to pot, jig, and longline gear.
	2-GF-H-03-19	01/25/2019	Closed parallel Pacific cod season and opened state-waters season (24 hours after parallel closure) to pot gear.
	2-GF-H-04-19	02/07/2019	Closed parallel Pacific cod season to longline gear for vessels less than 50 feet.
	2-GF-H-05-19	02/08/2019	Closed state-waters Pacific cod season to pot gear for vessels greater than 58 feet.
	2-GF-H-06-19	02/27/2019	Closed parallel Pacific cod season to longline gear for vessels greater than or equal to 50 feet.
	2-GF-H-07-19	03/09/2019	Closed state-waters Pacific cod season to pot gear.
	2-GF-H-08-19	03/12/2019	Closed parallel Pacific cod season and opened state-waters season to jig gear.
	2-GF-H-09-19	07/01/2019	Required lingcod to be delivered with the head on and evidence of gender intact.
	2-GF-H-10-19	07/15/2019	Opened parallel Pacific cod season to pot and longline gear.
	2-GF-H-11-19	10/03/2019	Closed parallel Pacific cod season to longline gear for vessels less than 50 feet.
	2-GF-H-12-19	10/12/2019	Closed parallel Pacific cod season and immediately opened state-waters season to pot gear.
	2-GF-H-13-19	11/16/2019	Closed parallel Pacific cod season to longline gear for vessels greater than or equal to 50 feet.
	2-GF-H-14-19	12/09/2019	Closed lingcod season.

Table 2.–Cook Inlet Area Pacific cod parallel and state-waters season dates by gear type, 2019–2022.

Year	Season and gear	Dates and times[a]
2022	Parallel season, longline <50′	1/1/22–3/15/22; 9/1/22–12/31/22
	Parallel season, longline ≥50′	1/1/22–3/30/22
	Parallel season, pots	1/1/22–2/16/22; 9/1/22–12/31/22
	Parallel season, jig	1/1/22–12/31/22
	State-waters season pot vessels ≤58′	2/17/22–9/1/22
	State-waters season pot vessels >58′	2/17/22–3/3/22
	State-waters season jig	Closed
2021	Parallel season, longline <50′	1/1/21–2/5/21; 9/1/21–12/31/21
	Parallel season, longline ≥50′	1/1/21–3/9/21
	Parallel season, pots	1/1/21–1/22/21; 9/1/21–12/31/21
	Parallel season, jig	1/1/21–12/31/21
	State-waters season pot vessels ≤58′	1/23/21–9/1/21
	State-waters season pot vessels >58′	1/23/21–9/1/21
	State-waters season jig	Closed
2020	Parallel season, longline	no parallel season
	Parallel season, pots	no parallel season
	Parallel season, jig	no parallel season
	State-waters season pot vessels ≤58′	2/1/20–2/28/20
	State-waters season pot vessels >58′	2/1/20–2/28/20
	State-waters season jig	1/1/20–12/31/20
2019	Parallel season, longline <50′	1/1/19–2/7/19; 9/1/19–10/3/19
	Parallel season, longline ≥50′	1/1/19–2/27/19; 9/1/19–11/16/19
	Parallel season, pots	1/1/19–1/27/19; 9/1/19–10/12/19
	Parallel season, jig	1/1/19–3/12/19
	State-waters season pot vessels ≤58′	1/28/19–3/9/19; 10/12/19–12/31/19
	State-waters season pot vessels >58′	1/28/19–2/8/19
	State-waters season jig	3/13/19–12/31/19

[a] Opening and closure times occurred at 12:00 PM, except openings on January 1 occurred at 12:01 AM and closures on December 31 occurred at 11:59 PM.

Table 3.–Annual harvest and effort by gear type from the commercial Pacific cod state-waters season in the Cook Inlet Area, 1997–2022.

	Jig gear[a]			Pot gear			Harvest (lb)[b,c]		
Year	Vessels	Landings	Harvest (lb)[b]	Vessels	Landings	Harvest (lb)[b]	Total	% of GHL	GHL (lb)
1997	46	233	561,947	10	136	276,966	838,913	33	2,549,646
1998	29	123	188,209	13	183	542,260	730,469	30	2,434,565
1999	14	51	127,229	24	278	1,390,678	1,517,907	58	2,637,445
2000	5	12	13,885	17	319	1,135,903	1,149,788	53	2,160,255
2001	5	13	19,428	9	196	875,923	895,351	47	1,917,195
2002	6	15	18,163	9	306	1,310,684	1,328,847	85	1,571,455
2003	15	160	429,684	10	140	1,023,854	1,453,538	101	1,438,516
2004	18	120	326,298	12	170	1,785,386	2,111,684	89	2,367,765
2005	8	28	90,734	10	205	2,227,417	2,318,151	85	2,737,893
2006	[d]	[d]	[d]	11	148	1,476,115	1,476,115	47	3,131,088
2007	4	7	5,545	13	145	1,436,804	1,442,349	46	3,131,088
2008	3	7	14,456	13	227	2,379,085	2,393,541	76	3,133,403
2009	9	41	138,960	13	181	2,393,574	2,532,535	97	2,606,393
2010	6	20	48,754	9	128	3,074,871	3,123,626	77	4,054,466
2011	31	203	498,185	10	156	3,902,154	4,400,339	99	4,449,911
2012	27	137	192,847	13	155	4,043,548	4,236,395	90	4,707,420
2013	0	0	0	13	154	2,754,265	2,754,265	68	4,074,804
2014	0	0	0	9	121	3,018,318	3,018,318	69	4,389,955
2015	7	31	70,639	11	134	3,256,063	3,326,701	66	5,069,530
2016	7	19	55,673	14	126	2,869,970	2,925,643	72	4,076,788
2017	0	0	0	13	96	1,636,864	1,636,864	45	3,652,504
2018	[d]	[d]	[d]	8	46	558,828	558,828	83	671,141
2019	3	4	2,868	7	55	570,706	573,575	90	633,857
2020	3	11	18,169	5	25	404,109	422,279	93	454,513
2021	0	0	0	5	40	943,839	943,839	84	1,128,987
2022	0	0	0	7	40	1,377,474	1,377,474	84	1,632,964

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Table 3.–Page 2 of 2.

	Jig gear[a]			Pot gear			Harvest (lb)[b,c]		
Year	Vessels	Landings	Harvest (lb)[b]	Vessels	Landings	Harvest (lb)[b]	Total	% of GHL	% of GHL
Averages:									
2019–2022[e]	2	4	5,259	6	40	824,032	829,292	88	962,580
2013–2022[e]	2	7	16,372	9	84	1,739,044	1,753,779	75	2,578,504
1988–2022[e]	10	51	117,570	11	150	1,794,833	1,903,359	72	2,723,598

[a] Includes mechanical jig and hand troll gear.

[b] Harvest is reported in round pounds and includes discards at sea.

[c] Total Harvest does not include confidential data.

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

[e] Confidential data not included in averages.

Table 4.–Annual harvest and effort by gear type of commercial Pacific cod parallel fisheries in the Cook Inlet Area from 1988–2022.

	Longline gear			Pot gear			Jig gear[a]			Trawl harvest	Total harvest
Year	Vessels	Landings	Harvest (lb)[b]	Vessels	Landings	Harvest (lb)[b]	Vessels	Landings	Harvest (lb)[b]	(lb)[b]	(lb)[b,c]
1988	54	192	481,508	[d]	[d]	[d]	[d]	[d]	[d]	[d]	481,508
1989	8	19	35,978	[d]	[d]	[d]	[d]	[d]	[d]	0	35,978
1990	39	112	249,064	3	3	20,244	[d]	[d]	[d]	107,505	376,813
1991	89	346	1,340,001	21	100	525,774	5	17	17,284	25,819	1,908,878
1992	140	521	3,487,707	46	303	1,873,717	6	16	13,995	0	5,375,418
1993	82	267	2,305,649	22	148	1,336,799	0	0	0	8,454	3,650,902
1994	57	182	1,386,623	10	189	1,290,860	8	11	5,487	[d]	2,682,970
1995	63	199	2,210,049	19	373	1,721,079	6	7	3,572	433,528	4,368,229
1996	74	271	2,207,442	12	233	987,626	6	11	25,645	1,411,726	4,632,439
1997	73	216	2,006,694	10	232	1,114,131	4	11	39,940	72,354	3,233,119
1998	52	153	1,557,821	6	175	423,498	3	8	41,857	211,406	2,234,582
1999	57	207	2,137,527	7	139	981,674	3	10	21,331	8,296	3,148,828
2000	41	121	777,492	15	184	769,478	[d]	[d]	[d]	0	1,546,970
2001	23	51	268,206	6	90	310,583	0	0	0	0	578,789
2002	13	47	551,793	7	108	310,718	[d]	[d]	[d]	0	862,511
2003	5	11	96,888	7	89	294,630	0	0	0	0	391,518
2004	0	0	0	7	43	360,637	[d]	[d]	[d]	0	360,637
2005	[d]	[d]	[d]	6	38	167,320	0	0	0	0	167,320
2006	[d]	[d]	[d]	7	80	516,544	0	0	0	0	516,544
2007	10	35	338,150	9	80	328,878	0	0	0	0	667,028
2008	12	27	247,088	7	48	145,473	0	0	0	0	392,561
2009	16	46	428,111	6	24	88,657	0	0	0	0	516,768
2010	4	10	178,035	6	32	228,429	0	0	0	0	406,464
2011	5	10	180,804	9	58	579,007	[d]	[d]	[d]	0	759,810
2012	13	41	1,003,537	9	90	957,217	[d]	[d]	[d]	0	1,960,754
2013	21	72	1,025,889	8	77	367,635	6	13	4,817	0	1,398,341
2014	14	39	669,159	7	47	348,900	6	21	32,255	0	1,050,314
2015	24	109	1,709,094	7	53	407,494	0	0	0	0	2,116,589
2016	23	75	981,080	13	101	1,123,120	8	26	48,367	0	2,152,567
2017	20	66	659,640	15	125	1,034,704	4	5	5,807	0	1,700,151
2018	11	24	480,076	6	46	259,669	0	0	0	0	739,745

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Table 4.–Page 2 of 2.

Year	Longline gear			Pot gear			Jig gear[a]			Trawl harvest (lb)[b]	Total harvest (lb)[b,c]
	Vessels	Landings	Harvest (lb)[b]	Vessels	Landings	Harvest (lb)[b]	Vessels	Landings	Harvest (lb)[b]		
2019	9	22	313,472	4	22	118,920	0	0	0	0	432,392
2020	0	0	0	0	0	0	0	0	0	0	0
2021	11	23	349,082	[d]	[d]	[d]	3	12	14,954	0	364,036
2022	13	46	921,432	4	17	254,332	4	14	52,311	0	1,228,075
Average											
2019–2022[e,f]	11	30	527,995	4	20	186,626	2	9	22,422	0	674,834
2013–2022[e,f]	16	53	789,881	8	61	489,347	3	10	17,612	0	1,242,468
1988–2022[e,f]	34	111	955,784	10	108	620,895	3	7	12,601	227,909	1,542,340

[a] Includes mechanical jig and hand troll gear.

[b] Harvest is reported in round pounds.

[c] Total harvest does not include confidential data.

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

[e] Confidential data not included in averages.

[f] 2020 excluded from average.

[g] Trawl average only 1988–1999

Table 5.–Annual harvest and effort by district in the commercial Pacific cod parallel season in the North Gulf and Cook Inlet districts, 1988–2022.

	North Gulf District			Cook Inlet District			Pooled districts		
Year	Vessels	Landings	Harvest (lb)[a]	Vessels	Landings	Harvest (lb)[a]	Vessels[b]	Landings[c]	Harvest (lb)[a]
1988	28	79	303,778	36	133	212,862	57	211	516,639
1989	7	18	29,256	4	4	7,590	9	21	36,846
1990	14	21	157,642	33	100	219,333	46	121	376,975
1991	70	135	970,312	77	331	936,458	115	466	1,906,769
1992	147	583	4,590,463	48	254	784,955	180	837	5,375,418
1993	83	256	2,741,608	29	162	909,294	103	418	3,650,902
1994	50	158	1,482,466	30	226	1,202,944	72	384	2,685,410
1995	77	202	2,982,138	30	386	1,386,091	89	587	4,368,229
1996	82	277	3,795,543	22	266	836,896	93	539	4,632,439
1997	76	214	2,018,073	25	264	1,215,046	85	459	3,233,119
1998	66	201	1,782,803	13	184	451,779	61	336	2,234,582
1999	61	198	2,075,547	18	177	1073281	65	356	3,148,828
2000	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2001	18	38	239,747	14	103	339,042	29	141	578,789
2002	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2003	4	12	136,429	8	88	255,089	12	100	391,518
2004	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2005	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2006	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2007	10	36	370,833	9	79	296,195	19	115	667,028
2008	13	28	248,333	6	47	144,228	19	75	392,561
2009	15	43	418,844	9	27	97,924	22	70	516,768
2010	5	14	206,699	5	28	199,765	10	42	406,464
2011	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2012	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2013	22	76	1,027,588	14	86	370,754	35	162	1,398,341
2014	16	47	764,397	11	60	285,917	27	107	1,050,314
2015	25	115	1,748,318	6	47	368,270	31	162	2,116,589
2016	28	87	1,192,178	16	115	960,389	44	202	2,152,567
2017	26	89	1,139,004	13	107	561,147	38	196	1,700,151
2018	12	31	533,925	7	40	205,820	17	70	739,745
2019	10	26	326,590	3	18	105,802	13	44	432,392

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Table 5.–Page 2 of 2.

	North Gulf District			Cook Inlet District			Pooled Districts		
Year	Vessels	Landings	Harvest (lb)[a]	Vessels	Landings	Harvest (lb)[a]	Vessels[b]	Landings[c]	Harvest (lb)[a]
2020	0	0	0	0	0	0	0	0	0
2021	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2022	16	65	1,091,680	7	13	136,395	21	77	1,228,075
Average									
2019–2022[e,f]	13	46	709,135	5	16	121,098	17	61	830,233
2013–2022[e,f]	19	67	977,960	10	61	374,312	28	128	1,352,272
1988–2022[e,f]	38	117	1,245,161	19	129	521,664	50	242	1,766,825

[a] Harvest is reported in round pounds and includes discards at sea.

[b] Pooled vessel count is discrete vessels.

[c] Pooled landing count is discrete landings.

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

[e] Confidential data not included in averages.

[f] 2020 excluded from average.

Table 6.–Annual harvest and effort by gear type from the commercial Pacific cod state-waters season in the North Gulf and Cook Inlet districts, 1997–2022.

	North Gulf District			Cook Inlet District			Pooled districts		
Year	Vessels	Landings	Harvest (lb)[a]	Vessels	Landings	Harvest (lb)[a]	Vessels[b]	Landings[c]	Harvest (lb)[a]
1997	29	81	291,565	35	288	547,349	55	367	838,914
1998	28	92	164,540	20	214	565,929	42	306	730,469
1999	20	56	359,511	23	274	1,158,396	38	329	1,517,907
2000	7	11	19,817	19	320	1,129,971	21	331	1,149,788
2001	5	15	60,310	9	194	835,042	14	209	895,352
2002	5	7	170,239	12	315	1,158,608	15	321	1,328,847
2003	15	41	616,306	14	260	837,232	19	300	1,453,538
2004	15	63	938,541	19	228	1,173,144	25	290	2,111,685
2005	7	25	798,623	15	208	1,519,528	17	233	2,318,151
2006	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2007	8	31	809,949	11	122	632,399	17	152	1,442,349
2008	4	28	1,088,694	13	206	1,304,847	16	234	2,393,541
2009	9	35	1,142,965	15	189	1,389,570	18	222	2,532,535
2010	4	23	1,701,278	13	125	1,422,348	15	148	3,123,626
2011	16	90	2,126,614	29	271	2,273,725	39	359	4,400,339
2012	16	59	2,119,552	32	243	2,116,843	39	292	4,236,395
2013	6	36	1,473,670	9	122	1,280,595	13	154	2,754,265
2014	4	22	1,690,431	5	99	1,327,887	9	121	3,018,318
2015	5	42	1,866,104	14	125	1,460,598	18	165	3,326,701
2016	11	38	1,074,315	11	108	1,851,328	21	145	2,925,643
2017	4	21	987,363	10	82	649,501	13	96	1,636,864
2018	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2019	3	11	313,267	7	48	260,308	10	59	573,575
2020	3	17	243,728	4	19	178,551	7	36	422,279
2021	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
2022	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]	[d]
Average									
2019–2022[e]	3	14	278,497	6	34	219,429	9	48	497,927
2013–2022[e]	5	27	1,092,697	9	86	1,001,253	13	111	2,093,949
1997–2022[e]	10	38	911,699	15	185	1,139,714	22	221	2,051,413

[a] Harvest is reported in round pounds and includes discards at sea.

[b] Pooled vessel count is discrete vessels.

[c] Pooled landing count is discrete landings.

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

[e] Confidential data not included in averages.

Table 7.–Average weight, average length, and percent female, and catch per unit effort (CPUE) of commercially harvested Pacific cod in the Cook Inlet Area, 1997–2022.

	Weight (kg)		Length (cm)		Female		CPUE	
Year	Average	Sampled	Average	Sampled	Percent (%)	Sampled	(cod/pot)	Landings
1997	n/a	n/a	61	2,480	n/a	n/a	n/a	n/a
1998	3.3	92	66	1,186	n/a	n/a	n/a	n/a
1999	2.9	519	64	3,522	53	2,261	n/a	n/a
2000	3.5	1,957	65	2,825	56	2,403	n/a	n/a
2001	3.1	716	61	1,318	58	817	8.91	81
2002	3.1	1,024	62	2,939	57	1,397	9.13	92
2003	3.4	590	64	1,714	51	624	11.51	25
2004	3.2	745	61	2,772	59	766	16.2	29
2005	3.3	545	61	1,642	57	650	14	48
2006	3.3	535	62	1,143	59	540	11	37
2007	3.7	632	65	2,833	59	623	8.2	55
2008	3.8	648	65	2,237	58	649	6.6	68
2009	3.3	776	63	1,595	60	776	10.6	53
2010	3.4	872	63	1,800	60	873	18.2	58
2011	3.0	2,812	63	2,811	56	1,419	23	44
2012	3.1	1,436	63	2,819	53	1,446	16.9	46
2013	3.3	1,033	63	2,032	55	1,032	12.1	52
2014	3.2	1,223	63	2,399	52	1,223	14.64	43
2015	2.9	2,320	61	4,466	51	2,269	12.64	44
2016	2.4	1,713	57	3,276	51	1,641	18.67	31
2017	2.9	3,040	60	3,099	59	1,562	9.21	24
2018	3.0	1,052	60	2,101	59	1,050	10.63	37
2019	3.1	1,045	61	2,095	56	1,048	15.3	17
2020	3.7	358	65	683	61	355	15.4	9
2021	3.7	1,246	65	2,460	61	1,217	17.18	18
2022	3.9	1,582	66	2,977	64	1,583	24.6	38
Average								
2019–2022	3.6	1,058	64	2,054	61	1,051	18.1	21
2013–2022	3.2	1,461	62	2,559	57	1,298	15.0	31
1997–2022	3.3	1,140	63	2,350	57	1,176	13.8	43

Table 8.–Annual harvest and effort, guideline harvest level, and average lb per landing from the Cook Inlet sablefish fishery, 1988–2022.

Year	Vessels	Landings	Harvest (lb)[a]		GHL (lb)[b]	Average (lb/landing)
			Commercial	Total		
1988	37	86	136,260	136,260	–	1,566
1989	4	5	2,996	2,996	–	599
1990	22	24	8,480	8,480	–	339
1991	25	33	103,597	103,597	–	3,139
1992	79	103	126,852	126,852	–	1,208
1993	36	52	95,016	95,016	–	1,827
1994	39	56	45,008	45,008	–	790
1995	33	45	22,551	22,551	–	501
1996	25	79	81,067	81,067	–	1,013
1997	39	97	125,349	125,349	72,000	1,279
1998	29	57	69,689	69,689	72,000	1,223
1999[c]	23	40	73,695	76,741	63,400	1,842
2000[c]	16	31	102,639	103,662	67,000	3,207
2001	21	32	133,435	133,435	67,000	4,170
2002c	23	26	108,117	108,966	67,000	4,158
2003	14	14	122,098	122,098	75,000	8,721
2004	17	17	82,836	82,836	87,000	4,873
2005d	10	37	84,023	84,023	86,000	2,271
2006	16	41	88,695	88,695	76,000	2,163
2007	10	36	76,889	76,889	74,000	2,136
2008	12	43	68,852	68,852	66,000	1,636
2009	13	66	55,263	55,263	59,880	837
2010	9	44	55,899	55,899	53,733	1,270
2011	10	39	57,350	57,350	56,473	1,471
2012	12	49	67,452	67,452	69,000	1,377
2013	8	44	42,287	42,287	66,000	961
2014	5	28	50,703	50,703	56,000	1,748
2015	4	34	31,780	31,780	55,500	935
2016	6	35	47,241	47,241	48,000	1,350
2017	7	36	37,068	37,068	54,000	1,030
2018	7	20	24,779	24,779	62,000	1,239
2019	3	13	20,561	20,561	62,000	1,582
2020	0	0	0	0	76,800	0
2021	3	14	12,106	12,106	96,000	865
2022	6	7	4,461	4,461	118,700	637
Average						
2019–2022	3	9	9,282	9,282	88,375	771
2013–2022	5	23	27,099	27,099	69,500	1,035
1988–2022	18	40	64,717	64,857	69,480	1,827

[a] Does not include reported at-sea discards.

[b] Prior to implementation of the federal Individual Fishing Quota program, sablefish seasons were set to coincide with federal sablefish seasons and an annual state-water GHL was not established. En dashes indicate no data for this reason.

[c] Sablefish caught during the longline assessment survey and sold to defray survey costs.

[d] Vessel trip limits implemented, 3,000 lb within 2 days.

Table 9.–Average catch per unit effort (CPUE) in pounds per hook for sablefish harvest using longline gear, from analysis of logbook and fish ticket data, 2005–2022.

Year	Total hooks	Sablefish harvest (lb)	CPUE (lb/hook)
2005	179,800	83,035	0.46
2006	220,417	71,675	0.33
2007	289,738	76,379	0.26
2008	232,174	60,546	0.26
2009	429,315	51,323	0.12
2010	224,191	50,462	0.23
2011	304,218	57,350	0.19
2012	261,963	52,675	0.20
2013	202,092	37,349	0.18
2014	199,125	49,061	0.25
2015	165,365	28,416	0.17
2016	96,276	46,673	0.48
2017	129,600	31,409	0.24
2018	166,680	24,749	0.15
2019	40,350	18,875	0.47
2020	0	0	0
2021	95,400	12,036	0.13
2022	5,860	2,900	0.49
Average			
2019–2022[a]	47,203	11,270	0.36
2013–2022[a]	122,305	27,941	0.28
2005–2022[a]	190,739	44,407	0.27

Note: Harvest and hook data for incomplete logbook data is omitted.

[a] 2020 excluded from average.

Table 10.–Average weight, average length, and sex ratio of commercially harvested sablefish in the Cook Inlet Area, 1999–2022.

	Weight (kg)		Length (cm)		Age (years)		Female	
Year	Average	Sampled	Average	Sampled	Average	Sampled	Percent (%)	Sampled
1999	[a]	9	[a]	9	–	0	[a]	9
2000	2.7	199	62	199	[b]	199	[c]	–
2001	2.3	100	57	180	[b]	178	[c]	–
2002	2.6	47	60	398	[b]	397	68	397
2003	2.1	367	58	439	4	388	62	439
2004	2.3	460	60	500	6	496	63	498
2005	2.7	400	63	400	10	393	66	400
2006	2.6	358	62	360	8	359	64	360
2007	2.2	560	60	560	7	530	67	540
2008	2.4	441	60	441	9	437	66	441
2009	2.5	511	61	511	8	510	58	511
2010	2.5	409	61	409	9	408	54	408
2011	2.1	614	58	613	7	596	66	613
2012	2.0	561	58	561	6	561	58	559
2013	2.4	590	60	590	6	588	54	587
2014	2.6	534	61	534	6	532	56	531
2015	2.0	550	57	550	5	550	59	543
2016	1.9	599	55	600	7	599	45	599
2017	1.9	551	56	551	5	551	62	546
2018	2.4	419	60	419	5	411	69	416
2019	2.6	350	61	350	5	347	71	350
2020[d]	–	–	–	–	–	–	–	–
2021	1.6	487	54	487	[b]	487	57	487
2022	1.6	200	54	200	[b]	200	51	200
Average								
2019–2022	1.9	346	56	346	5	345	60	346
2013–2022	2.1	476	58	476	6	474	58	473
1999–2022	2.3	405	59	429	7	422	61	449

Note: En dash indicates no data.

[a] Select samples and small sample sizes in 1999 provided insufficient data to evaluate biological variables.

[b] Age structures were submitted to Age Determination Unit laboratory in Juneau, AK; data have not been analyzed.

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

[d] No harvest in 2020.

Table 11.–Commercial harvest of rockfish in Cook Inlet Area, by assemblage with percent total harvest, and harvest of yelloweye and black rockfish, 1988–2022.

	Demersal shelf rockfish (DSR)			Pelagic shelf rockfish (PSR)[a]			Slope[b]		
Year	Yelloweye (lb)	DSR (lb)	% of Total (lb)	Black (lb)	PSR (lb)	% of Total (lb)	Slope (lb)	% of Total (lb)	Total (lb)
1988	5,536	5,536	4	86,113	86,113	57	59,436	39	151,086
1989	9,582	10,376	46	10,406	10,747	47	1,639	7	22,762
1990	1,124	1,252	4	217	21,379	71	7,577	25	30,209
1991	4,170	7,217	3	120,956	189,656	85	26,392	12	223,265
1992	52,921	126,726	38	55,904	193,680	58	14,772	4	335,178
1993	22,969	27,802	39	30,207	37,201	53	5,814	8	70,817
1994	28,733	35,074	17	137,881	157,783	77	12,704	6	205,561
1995	35,337	37,812	14	202,124	226,737	83	9,992	4	274,541
1996	29,090	38,999	32	71,251	75,100	62	7,376	6	121,476
1997	45,347	49,809	27	115,509	118,806	65	14,417	8	183,032
1998	22,828	24,268	30	44,095	45,361	56	10,692	13	80,321
1999	40,238	46,129	53	31,229	32,298	37	9,225	11	87,652
2000	22,526	24,229	15	126,440	127,021	80	8,159	5	159,409
2001	25,760	26,894	23	82,467	83,608	72	5,821	5	116,323
2002	35,252	36,140	32	71,832	72,439	65	2,929	3	111,508
2003	44,434	44,808	31	95,194	96,367	68	1,554	1	142,729
2004	32,494	32,817	28	84,663	84,883	72	389	0	118,089
2005	16,237	16,454	25	46,522	46,741	72	1,950	3	65,145
2006	13,143	13,298	48	12,950	12,972	46	1,664	6	27,935
2007	14,872	15,264	60	5,573	5,695	22	4,434	17	25,394
2008	17,378	17,817	59	6,135	6,209	21	5,943	20	29,968
2009	17,272	18,607	60	3,064	3,154	10	9,434	30	31,195
2010	23,937	24,406	46	22,367	22,843	43	5,365	10	52,615
2011	19,388	20,164	29	43,890	45,366	66	3,000	4	68,530
2012	21,154	29,585	63	12,190	12,788	27	4,414	9	46,787

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Year	Demersal Shelf Rockfish (DSR)			Pelagic Shelf Rockfish (PSR)[a]			Slope[b]		
	Yelloweye (lb)	DSR (lb)	% of Total (lb)	Black (lb)	PSR (lb)	% of Total (lb)	Slope (lb)	% of Total (lb)	Total (lb)
2013	20,733	25,472	36	36,463	38,875	55	6,413	9	70,759
2014	15,381	18,730	31	36,725	39,254	65	2,854	5	60,839
2015	25,678	54,052	38	75,089	82,401	59	4,366	3	140,819
2016	31,964	48,367	34	75,083	89,913	62	6,088	4	144,368
2017	35,057	46,645	40	58,505	64,319	55	5,786	5	116,750
2018	16,887	20,114	34	32,017	35,589	60	3,394	6	59,097
2019	26,112	29,770	45	26,254	34,705	52	1,682	3	66,156
2020	17,574	18,259	46	18,657	20,270	51	929	2	39,458
2021	23,729	30,123	58	14,413	18,528	36	3,443	7	52,094
2022	28,816	33,719	69	12,044	13,017	27	1,833	4	48,569
Average									
2019–2022	24,058	27,968	55	17,842	21,630	42	1,972	4	51,569
2013–2022	24,193	32,525	43	38,525	43,687	52	3,679	5	79,891
1988–2022	24,104	30,192	36	54,412	64,338	55	7,768	9	102,298

Note: Harvest is reported in round pounds and includes discards at sea.

[a] Beginning in 1998 includes black rockfish from federal waters, beginning in 2008 includes dark rockfish from federal waters.

[b] Includes thornyhead rockfish.

Table 12.–Annual harvest (lb) and effort by species in the Cook Inlet Area directed pelagic shelf rockfish (PSR) fishery, including black and dark rockfish from federal waters, 2005–2022.

			Rockfish harvest (lb)						Average	Percent (%)
Year	Vessels	Landings	Black[a]	Yellowtail	Dusky	Dark[b]	Dusky/Dark[c]	Total	(lb/trip)	black rockfish
2005	4	14	44,327	133	–	–	0	44,460	3,176	100
2006	3	7	12,136	0	–	–	10	12,146	1,735	100
2007	3	6	5,090	0	–	–	37	5,127	855	99
2008	3	6	5,909	0	0	0	–	5,909	985	100
2009	[d]	[d]	[d]	0[d]	[d]	[d]	–	[d]	[d]	[d]
2010	10	16	21,712	14	141	262	–	22,129	1,383	98
2011	11	25	43,148	42	100	876	–	44,166	1,767	98
2012	5	11	11,498	19	85	75	–	11,677	1,062	98
2013	7	20	34,976	195	505	1,242	–	36,918	1,846	95
2014	12	22	36,349	152	310	1,817	–	38,628	1,756	94
2015	13	40	70,311	421	2,004	3,826	–	76,562	1,914	92
2016	19	54	69,881	146	4,855	8,265	–	83,147	1,540	84
2017	9	41	55,231	164	918	3,349	–	59,662	1,455	93
2018	13	39	31,178	19	789	1,317	–	33,303	854	94
2019	10	27	25,836	141	3,173	3,241	–	32,391	1,200	80
2020	10	29	18,460	248	1,004	290	–	20,002	690	92
2021	7	14	13,546	287	1,991	552	–	16,375	1,170	83
2022	7	15	11,056	6	562	63	–	11,688	779	95
Average										
2019–2022	9	21	17,225	170	1,683	1,036	–	20,114	960	87
2013–2022	11	30	36,682	178	1,611	2,396	–	40,868	1,320	90
2005–2022	9	23	30,038	117	1,174	1,798	16	32,605	1,421	94

[a] Harvest includes black rockfish from federal waters.

[b] Dark rockfish from federal waters included in harvest beginning in 2008.

[c] In 2004, light dusky and dark dusky rockfish were split into dusky rockfish *Sebastes variabilis* (name resurrected) and dark rockfish *Sebastes ciliates*. However, the new nomenclature was not adopted by the Alaska Board of Fisheries until 2007. En dashes indicate that a data value is not possible, in this case because dark and dusky rockfish were either combined or separated depending on the year.

[d] Confidential data.

Table 13.–Annual harvest (lb) and effort of commercial rockfish by jig and longline gear in the Cook Inlet Area, 1988–2022.

Year	Vessels	Landings	Harvest (lb)			Percent jig (lb)
			Jig[a]	Longline[a]	Total	
1988	42	95	54,845	96,241	151,086	36
1989	11	29	4,870	17,891	22,762	21
1990	29	37	18,605	11,452	30,057	62
1991	59	154	206,695	16,154	222,849	93
1992	117	368	101,558	232,975	334,534	30
1993	74	198	36,164	34,420	70,584	51
1994	69	199	134,055	71,506	205,561	65
1995	106	292	225,032	48,465	273,497	82
1996	114	291	61,804	47,644	109,447	56
1997	120	336	112,730	69,953	182,682	62
1998[b]	105	302	41,756	34,012	75,768	55
1999	91	278	30,321	57,097	87,418	35
2000	94	243	130,150	29,259	159,409	82
2001	76	166	98,469	17,854	116,323	85
2002	67	161	93,471	18,031	111,501	84
2003	63	136	128,744	13,954	142,699	90
2004	59	13	99,236	18,813	118,049	84
2005	50	125	47,012	18,133	65,145	72
2006	56	112	13,268	14,666	27,935	47
2007	45	119	7,029	18,365	25,394	28
2008[c]	49	114	9,667	20,302	29,968	32
2009	57	136	4,471	26,723	31,195	14
2010	52	112	23,889	28,725	52,615	45
2011	48	119	46,793	21,687	68,480	68
2012	51	144	13,076	33,711	46,787	28
2013	57	171	39,479	31,280	70,759	56
2014	55	127	42,104	18,709	60,813	69
2015	54	208	81,337	59,265	140,602	58
2016	74	225	98,590	45,751	144,341	68
2017	54	176	75,144	41,590	116,734	64
2018	48	105	44,346	14,746	59,093	75
2019	37	94	45,605	20,552	66,157	69
2020	32	73	28,737	10,716	39,453	73
2021	57	114	19,792	32,130	51,922	38
2022	59	134	17,148	31,417	48,565	35
Average						
2019–2022	46	104	27,821	23,704	51,524	54
2013–2022	53	143	49,228	30,616	79,844	61
1988–2022	64	163	63,886	37,834	101,720	58

Note: Discards at sea and test fish included in harvest. Other gear not included due to confidential harvest in some years.

[a] Rockfish from state waters 1998–1997.

[b] Beginning in 1998 includes black rockfish from federal waters.

[c] Dark rockfish from federal waters included in harvest beginning in 2008.

Table 14.–Annual harvest (lb) and effort by district of Cook Inlet Area commercial rockfish, including black and dark rockfish from federal waters, 1988–2022.

	Cook Inlet District				North Gulf District				
Year	Vessels	Landings	Harvest (lb)[a]	% of Total (lb)	Vessels	Landings	Harvest (lb)[a]	% of Total (lb)	Total (lb)[a]
1988	6	7	2,859	2	38	89	148,227	98	151,086
1989	0	0	0	0	11	29	22,762	100	22,762
1990	6	8	401	1	26	32	29,807	99	30,209
1991	6	7	272	0	58	151	222,993	100	223,265
1992	3	4	1,029	0	118	370	334,149	100	335,178
1993	3	8	2,641	4	74	192	68,177	96	70,817
1994	4	4	110	0	67	192	205,451	100	205,561
1995	10	11	4,190	2	107	290	270,351	98	274,541
1996	6	6	700	1	115	297	120,777	99	121,476
1997	14	23	3,269	2	117	314	179,763	98	183,032
1998	[b]	[b]	[b]	0	109	312	80,311	100	80,311
1999	[b]	[b]	[b]	0	95	284	87,617	100	87,617
2000	0	0	0	0	94	243	159,409	100	159,409
2001	[b]	[b]	[b]	0	76	166	116,285	100	116,285
2002	[b]	[b]	[b]	0	66	156	111,414	100	111,414
2003	[b]	[b]	[b]	0	63	135	142,611	100	142,611
2004	4	4	246	0	57	110	117,843	100	118,089
2005	[b]	[b]	[b]	0	50	120	65,066	100	65,066
2006	5	5	556	2	54	106	27,379	98	27,935
2007	3	3	105	0	44	116	25,289	100	25,394
2008	[b]	[b]	[b]	0	47	112	29,882	100	29,882
2009	6	6	317	1	53	132	30,878	99	31,195
2010	4	4	52	0	50	109	52,563	100	52,615
2011	9	11	1,148	2	45	113	67,382	98	68,530
2012	8	11	169	0	47	133	46,618	100	46,787
2013	4	6	200	0	54	165	70,559	100	70,759
2014	11	13	286	0	49	121	60,553	100	60,839
2015	3	7	239	0	53	206	140,580	100	140,819

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	Cook Inlet District				North Gulf District				
Year	Vessels	Landings	Harvest (lb)[a]	% of Total (lb)	Vessels	Landings	Harvest (lb)[a]	% of Total (lb)	Total (lb)[a]
2016	8	12	436	0	70	219	143,932	100	144,368
2017	11	15	988	1	52	167	115,763	99	116,750
2018	8	14	2,225	4	43	95	56,872	96	59,097
2019	4	10	2,197	3	36	85	63,959	97	66,156
2020	5	12	2,236	6	30	63	37,222	94	39,458
2021	16	22	3,137	6	51	98	48,957	94	52,094
2022	15	20	1,155	2	54	120	47,414	98	48,569
Average									
2019–2022[c]	10	16	2,181	4	43	92	49,388	96	51,569
2013–2022[c]	9	13	1,310	2	49	134	78,581	98	79,891
1988–2022[c]	7	9	1,113	1	62	161	101,395	99	102,285

[a] Harvest is reported in round pounds and includes discards at sea.

[b] Confidential data due to the limited number of participants.

[c] Confidential data not included in averages.

Table 15.–Species composition of pelagic shelf rockfish sampled in the Cook Inlet Area, 1998–2022.

	Black		Dusky[a]		Dark[a]		Yellowtail/Widow[b]		
Year	Sampled	% of Total	Sampled	% of Total	Sampled	% of Total	Sampled	% of Total	Total sampled
1998	361	92	32	8	–	–	1	0	394
1999	311	93	25	7	–	–	0	0	336
2000	723	96	30	4	–	–	0	0	753
2001	440	92	35	7	–	–	1	0	476
2002	441	95	25	5	–	–	0	0	466
2003	481	94	28	5	–	–	4	1	513
2004	532	92	48	8	–	–	0	0	580
2005	259	100	1	0	–	–	0	0	260
2006	248	100	1	0	–	–	0	0	249
2007[c]	73	91	4	5	3	4	0	0	80
2008[d]	0	ND	0	ND	0	ND	0	ND	0
2009	62	94	3	5	1	2	0	0	66
2010	320	88	11	3	34	9	0	0	365
2011	351	67	25	5	132	25	14	3	522
2012	227	92	11	4	6	2	2	1	246
2013	274	94	15	5	4	1	0	0	293
2014	513	78	44	7	103	16	1	0	661
2015	799	70	163	14	142	12	40	3	1,144
2016	641	94	37	5	1	0	2	0	681
2017	555	79	33	5	117	17	1	0	706
2018	434	87	39	8	27	5	0	0	500
2019	799	82	154	16	26	3	1	0	980
2020	726	90	5	1	35	4	38	5	804
2021	449	77	100	17	5	1	27	5	581
2022	321	72	108	24	15	3	1	0	445

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	Black		Dusky[a]		Dark		Yellowtail/Widow[b]		
Year	Sampled	% of Total	Sampled	% of Total	Sampled	% of Total	Sampled	% of Total	Total sampled
Average									
2019–2022	574	80	92	14	20	3	17	2	703
2013–2022	551	82	70	10	48	6	11	1	680
1998–2022	414	88	39	7	41	7	5	1	484

Note: ND = no data.

[a] Dusky rockfish includes light dusky and dark dusky specimens 1998–2006, *Sebastes ciliatus*; during these years, no rockfish were identified as dark rockfish (indicated by en dashes).

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

[c] In 2004, light dusky and dark dusky rockfish were split into dusky rockfish *Sebastes variabilis* (name resurrected) and dark rockfish S*ebastes ciliates*. However, the new nomenclature was not adopted by Alaska Board of Fisheries until 2007.

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

Table 16.–Average length, average weight, average age, sex ratio, and corresponding sample sizes of commercially harvested black rockfish in the Cook Inlet Area, 1998–2022.

	Weight (kg)		Length (cm)		Age (years)		Female	
Year	Average	Sampled	Average	Sampled	Average	Sampled	Percent	Sampled
1998	2.3	111	52	361	21	113	n/a	0
1999	2.3	67	48	311	18	58	49	59
2000	2.0	510	47	723	12	157	53	590
2001	2.1	229	49	440	13	429	47	390
2002	2.4	180	50	441	14	347	60	331
2003	2.3	369	49	481	13	387	62	447
2004	2.5	468	50	532	14	531	66	469
2005	2.5	130	51	259	15	184	62	236
2006	2.6	60	51	248	16	248	61	99
2007	2.6	73	52	73	14	70	59	61
2008[a]	n/a	0	n/a	0	n/a	0	n/a	0
2009	2.6	1	53	62	19	62	47	62
2010	2.4	320	50	320	15	296	47	318
2011	2.1	351	49	351	16	351	40	351
2012	2.4	227	51	227	17	267	40	226
2013	2.3	274	49	274	15	274	45	274
2014	2.2	513	49	513	15	513	48	513
2015	2.2	799	50	799	18	799	32	798
2016	2.1	641	49	541	18	641	34	640
2017	2.3	555	50	555	17	555	39	553
2018	2.0	434	46	434	12	433	63	424
2019	1.8	799	45	799	12	790	52	799
2020	1.9	723	46	725	12	718	44	724
2021	1.8	449	46	449	12	436	43	449
2022	1.8	321	47	321	13	321	44	321
Average								
2019–2022	1.8	573	46	574	12	566	46	573
2013–2022	2.0	551	48	541	14	548	44	550
1998–2022	2.2	344	49	410	15	359	49	365

Note: n/a = not applicable.

[a] Reduced effort in directed jig fishery resulted in lower incidence of rockfish sampling opportunities.

Table 17.–Species composition of commercially harvested non-pelagic rockfish, including number sampled and proportion, in the Cook Inlet Area, 1998–2022.

	Yelloweye		Quillback		Rougheye		Shortraker		Silvergray		Thornyhead		Other[a]		
Year	Sampled	% Total	Sampled	% Total	Sampled	% Total	Sampled	% Total	Sampled	% Total	Sampled	% Total	Sampled	% Total	Total sampled
1998	0	0	1	6	13	72	0	0	0	0	0	0	4	22	18
1999	77	22	58	16	86	24	32	9	16	4	23	6	65	18	357
2000	49	56	21	24	7	8	2	2	4	5	0	0	4	5	87
2001	80	38	6	3	95	45	6	3	8	4	17	8	0	0	212
2002	136	74	0	0	15	8	0	0	1	1	0	0	32	17	184
2003	204	88	0	0	15	6	0	0	12	5	0	0	1	0	232
2004	141	95	7	5	0	0	0	0	0	0	0	0	0	0	148
2005	81	86	12	13	0	0	0	0	0	0	0	0	1	1	94
2006	306	82	15	4	46	12	1	0	2	1	0	0	5	1	375
2007	417	93	14	3	5	1	0	0	10	2	0	0	2	0	448
2008	322	97	0	0	0	0	0	0	0	0	0	0	11	3	333
2009	523	71	53	7	135	18	10	1	0	0	3	0	8	1	732
2010	492	81	30	5	29	5	10	2	2	0	1	0	44	7	605
2011	356	58	6	1	211	34	2	0	27	4	5	1	13	2	616
2012	706	59	314	26	81	7	7	1	34	3	14	1	48	2	1,204
2013	364	55	214	32	59	9	3	0	10	2	1	0	11	2	662
2014	390	51	221	29	82	11	2	0	20	3	1	0	51	7	767
2015	372	34	469	42	164	15	8	1	34	3	13	1	46	4	1,106
2016	561	50	346	31	110	10	33	3	24	2	9	1	28	3	1,111
2017	579	55	305	29	134	13	6	1	3	0	1	0	17	2	1,045
2018	426	64	97	15	98	15	19	3	3	0	0	0	24	4	667
2019	688	73	106	11	130	14	4	0	10	1	0	0	13	1	948
2020	569	88	22	3	32	5	1	0	9	1	0	0	13	2	646
2021	603	54	315	28	186	17	5	0	7	1	2	0	7	1	1,125
2022	587	66	237	27	32	4	3	0	15	2	0	0	13	1	887
Average															
2019–2022	612	70	170	17	95	10	3	0	10	1	1	0	12	1	902
2013–2022	514	59	233	25	103	11	8	1	14	1	3	0	22	3	896
1998–2022	361	64	115	14	71	14	6	1	10	2	4	1	18	4	584

[a] Other non-pelagic rockfish: redstripe, Pacific ocean perch, northern, bocaccio, canary, copper, tiger, China, rosethorn, redbanded, and unspecified *Sebastes* species.

Table 18.–Average length, average weight, average age, sex ratio, and corresponding sample sizes of commercially harvested yelloweye rockfish in the Cook Inlet Area, 1998–2022.

	Weight (kg)		Length (cm)		Age (years)		Female	
Year	Average	Sampled	Average	Sampled	Average	Sampled	Percent	Sampled
1998	4.0	6	65	13	n/a	6	n/a	n/a
1999	2.6	67	52	76	6	9	56	34
2000	3.4	49	56	49	38	36	57	37
2001	5.0	78	62	80	33	80	52	77
2002	4.5	98	60	136	33	121	52	114
2003	4.6	204	60	204	33	152	51	49
2004	4.2	70	60	141	32	141	29	35
2005	4.4	80	59	81	30	79	43	81
2006	4.7	211	61	306	34	306	38	214
2007	4.6	416	61	417	35	417	55	416
2008	4.6	298	62	322	37	322	54	322
2009	4.2	523	60	523	32	520	47	523
2010	5.0	467	62	492	33	492	43	486
2011	4.5	283	61	356	36	353	47	350
2012	3.8	697	56	706	32	706	60	703
2013	4.2	365	58	364	34	365	52	361
2014	4.3	351	58	390	33	388	54	388
2015	3.5	371	54	371	29	371	58	371
2016	4.2	545	58	561	36	488	56	547
2017	4.5	578	60	579	36	558	56	579
2018	4.3	426	59	426	33	422	53	424
2019	4.0	687	58	688	33	685	55	688
2020	5.3	569	63	569	[a]	569	54	569
2021	4.0	603	57	601	[a]	603	55	603
2022	4.4	585	58	585	[a]	585	54	585
Average								
2019–2022	4.4	611	59	611	33	611	55	611
2013–2022	4.3	508	58	513	33	503	55	512
1998–2022	4.3	345	59	361	32	351	51	357

Note: n/a = not applicable.

[a] Age determination not yet complete.

Table 19.–Commercial lingcod harvest (lb) and effort by gear type from the combined Cook Inlet Area, with harvest from state and federal waters, 1988–2022.

			Gear harvest (lb)[a]		Waters harvest (lb)[a]		Total harvest	Percent (%)
Year	Vessels	Landings	Jig/troll	Other gear[b]	State	Federal	(lb)[a]	state-waters
1988	16	37	6,512	18,436	18,362	6,586	24,948	74
1989	10	20	399	2,495	1,833	1,060	2,894	63
1990	22	22	1,306	5,463	2,496	4,272	6,769	37
1991	31	96	57,691	4,492	59,196	2,987	62,183	95
1992	84	192	6,998	35,220	24,660	17,558	42,218	58
1993	18	64	86,724	646	7,627	79,743	87,370	9
1994	14	30	56,505	331	21,782	35,054	56,836	38
1995	43	72	72,489	4,687	44,314	32,862	77,176	57
1996	39	58	47,986	11,310	29,461	29,835	59,296	50
1997	34	49	17,572	14,575	30,948	1,199	32,147	96
1998	23	41	27,284	13,955	39,781	1,458	41,239	96
1999	41	66	10,741	17,421	19,841	8,320	28,162	70
2000	41	72	29,488	4,029	26,524	6,992	33,517	79
2001	33	73	29,472	11,321	30,184	10,609	40,793	74
2002[c]	33	64	16,383	3,794	18,664	1,513	20,177	93
2003	29	64	23,124	4,030	24,864	2,290	27,154	92
2004	30	63	31,009	5,635	35,632	1,012	36,644	97
2005	28	55	13,328	7,465	18,075	2,718	20,793	87
2006	28	55	11,679	45,899	19,495	38,083	57,578	34
2007	50	90	22,536	24,556	32,695	14,385	47,080	69
2008	33	66	26,966	17,066	36,781	7,251	44,032	84
2009	37	70	5,571	13,609	13,116	6,064	19,180	68
2010	31	53	13,298	8,669	17,312	4,655	21,966	79
2011	30	46	2,283	6,912	7,306	3,136	9,195	79
2012	31	44	1,609	7,886	5,617	3,878	9,494	59
2013	37	22	8,790	3,220	9,868	2,142	12,010	82
2014	27	37	7,535	2,686	8,833	1,388	10,221	86
2015	26	51	2,747	3,995	3,494	3,248	6,742	52
2016	31	63	19,605	3,787	20,776	2,616	23,393	89
2017	24	55	44,933	3,808	46,381	2,359	48,740	95
2018	27	59	43,326	6,153	37,724	11,755	49,479	76
2019	20	37	44,444	7,982	48,701	3,725	52,426	93
2020	24	40	48,351	4,077	50,780	1,648	52,428	97

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Table 19.–Page 2 of 2.

Year	Vessels	Landings	Gear harvest (lb)[a]		Waters harvest (lb)[a]		Total harvest (lb)[a]	Percent (%) state-waters
			Jig/troll	Other gear[b]	State	Federal		
2021	24	42	10,568	7,632	15,372	2,828	18,200	84
2022	29	50	40,173	7,075	42,326	4,922	47,248	90
Average								
2019–2022	24	42	35,884	6,692	39,295	3,281	42,576	91
2013–2022	27	46	27,047	5,042	28,426	3,663	32,089	84
1988–2022	31	58	25,412	9,723	24,881	10,290	35,135	74

[a] Harvest is reported in round pounds and does not include discards at sea (lingcod are believed to have a high survival chance if released with minimal harm).

[b] Other gear includes longline, pot, trawl, or salmon gillnet.

[c] In 2002, ADF&G increased the allowable harvest to 52,500 lb, or 75% of the average harvest during the period 1992 through 1996.

Table 20.–Average weight, average length, average age, sex ratio, and corresponding sample sizes of commercially harvested lingcod in the Cook Inlet Area, 1998–2022.

	Weight (kg)		Length (cm)		Age (years)		Female	
Year	Average	Sampled	Average	Sampled	Average	Sampled	Percent	Sampled
1998	14.1	304	110	304	13	80	66	157
1999[a]	n/a	2	n/a	2	n/a	2	n/a	2
2000	13.2	26	108	26	15	26	n/a	0
2001	13.5	179	109	179	14	113	52	67
2002	14.3	152	111	152	16	149	50	28
2003	14.8	83	113	83	17	69	66	56
2004	15.5	155	115	155	18	143	77	108
2005	17.3	108	119	108	20	12	79	108
2006	15.5	139	115	139	18	129	79	134
2007	13.6	275	110	275	15	157	81	274
2008	16.2	103	117	103	18	80	87	103
2009	14.1	177	111	177	15	127	88	176
2010	13.8	194	110	194	16	191	71	163
2011	15.0	95	114	95	18	95	72	39
2012	14.1	87	111	87	16	87	84	74
2013	14.0	84	111	84	16	84	80	82
2014	15.3	93	114	93	18	93	77	91
2015	13.9	41	110	41	17	41	68	31
2016	13.1	257	104	258	18	248	39	208
2017	15.2	542	112	543	17	536	54	515
2018	11.8	343	101	343	16	336	28	331
2019	11.6	428	105	453	16	434	46	453
2020	13.0	605	103	605	16	767	43	605
2021	12.7	274	104	274	[b]	274	50	274
2022	12.5	562	103	562	[b]	562	45	562
Average								
2019–2022	12.5	467	104	474	16	509	46	474
2013–2022	13.3	323	107	326	17	338	53	315
1998–2022	14.1	212	110	213	17	193	64	186

Note: n/a = not applicable.

[a] Sample size of 2 in 1999 insufficient for biological data analysis.

[b] Age analysis not yet completed.

Table 21.–Commercial pollock fishing harvest and effort in the Cook Inlet Area, 1988–2022.

Year	Vessels	Landings	Harvest (lb)[a]	CPUE[b]
1988	6	14	2,380	170
1989	[c]	[c]	[c]	[c]
1990	18	35	61,817	1,766
1991	3	3	9,528	3,176
1992	34	43	3,875	90
1993	33	47	154,345	3,284
1994	24	39	238,261	6,109
1995	22	33	2,995	91
1996	16	33	1,943,659	58,899
1997	25	59	3,895,099	66,019
1998	18	74	9,693,429	130,992
1999	12	24	2,983,371	124,307
2000	4	4	615	154
2001	7	12	3,129	261
2002	7	9	1,381	153
2003	[c]	[c]	[c]	[c]
2004	4	7	342,305	48,901
2005	[c]	[c]	[c]	[c]
2006	[c]	[c]	[c]	[c]
2007	4	6	1,694	282
2008	[c]	[c]	[c]	[c]
2009	16	26	5,269	203
2010	[c]	[c]	[c]	[c]
2011	10	32	5,751	180
2012	13	18	4,301	239
2013	20	59	47,315	802
2014	13	24	12,931	539
2015	21	59	42,094	713
2016	29	72	39,169	544
2017	12	36	8,227	229
2018	10	15	1,771	118
2019	7	10	2,610	261
2020	[c]	[c]	[c]	[c]
2021	13	23	1,358	59
2022	15	53	6,870	130
Average				
2019–2022	12	29	3,613	150
2013–2022	16	39	18,038	377
1988–2022	15	31	696,984	16,024

[a] Includes reported at-sea discards and test fish.

[b] CPUE is catch per unit effort in pounds per landing.

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

Table 22.–Commercial harvest (in lb) and effort of other groundfish species, from the Cook Inlet Area, 1988–2022.

Year	Vessels	Landings	Flatfish[a]	Sharks[b]	Skates	Other[c]	Total
1988	6	6	2,418	101	275	24	2,819
1989	3	3	0	234	0	0	234
1990	15	23	1,353	20	0	936	2,309
1991	10	12	31,866	0	2,321	40	34,227
1992	26	37	1,056	1,009	6,004	30	8,099
1993	21	57	4,560	0	2,967	501	8,028
1994	19	80	4,471	112	68	0	4,651
1995	14	47	283	100	180	6	569
1996	48	129	149,926	408	48,405	31	198,770
1997	42	190	51,929	394	22,006	715	75,044
1998	46	187	47,874	268	62,381	48	110,571
1999	22	129	86,410	6,594	2,679	532	96,215
2000	16	138	274	0	66	14	354
2001	10	106	31	0	0	193	224
2002	11	166	416	0	0	0	416
2003	13	138	333	0	270	3	606
2004	20	143	248	110	18,728	0	19,086
2005	11	108	0	25	3,951	0	3,976
2006	9	109	88	6,214	0	0	6,302
2007	14	84	0	0	252	0	252
2008	15	141	0	0	11,177	0	11,177
2009	18	113	50	0	2,442	147	2,639
2010	16	113	0	0	7,044	4	7,048
2011	30	145	207	0	12,241	8	12,456
2012	18	48	8	0	126,576	154	126,738
2013	27	77	263	0	113,288	14	113,565
2014	18	45	55	0	53,742	191	53,988
2015	29	121	11	0	164,085	715	164,811
2016	44	236	0	0	46,607	649	47,256
2017	22	137	249	0	27,628	583	28,460
2018	20	106	156	10	11,742	23	11,931
2019	13	23	104	0	13,567	0	13,671
2020	[c]	[c]	[c]	[c]	[c]	[c]	[c]
2021	14	27	31	0	13,265	36	13,332
2022	13	46	157	0	26,361	93	26,611
Average							
2019–2022	13	32	97	0	17,731	43	17,871
2013–2022	22	91	114	1	52,254	256	52,625
1988–2022	20	96	11,318	459	23,539	167	35,483

[a] Flatfish include general flatfish, flounders, sole, and turbot.

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

[c] Other includes general groundfish, miscellaneous finfish, and unidentified fish.

Table 23.–Cook Inlet Area groundfish fisheries reported at-sea discards in whole pounds, 1989–2022.

Year	Sablefish	Rockfish	Lingcod	Pacific cod	Pollock	Flatfish	Sharks	Skates	Other	Octopus	Squid	Total
1989	0	18	0	0	0	0	0	0	0	0	0	18
1990	10	0	1,500	0	0	2,899	0	0	0	0	0	4,409
1991	0	27	1,528	200	3,830	60	0	400	1,610	0	0	7,655
1992	57	1,251	4,235	5,489	2,926	19,125	7,948	64,997	570	27	0	106,625
1993	13	0	1,180	6,906	4,470	13,396	10,704	43,607	1,900	329	2	82,507
1994	54	76	1,835	173	832	4,284	1,825	34,850	205	0	0	44,134
1995	1,000	356	2,950	5,007	1,550	4,387	19,531	34,486	0	0	0	69,267
1996	8,010	5,490	1	14,203	3,153	88,357	0	12,369	4,316	2,894	0	138,793
1997	0	0	0	0	25,000	0	500	300	0	10	0	25,810
1998	4,895	3,672	0	396	10,451	89,224	4,994	6,090	4,374	0	1,828	125,924
1999	0	0	68	0	137	241	864	959	1,188	0	690	4,147
2000	2,448	836	4,746	17,194	167	1,701	17,700	5,453	90	0	0	50,335
2001	1,510	0	7,549	1,253	1	734	23,651	2,709	111	113	0	37,631
2002	2,147	5	5,688	457	4	428	9,095	1,875	12	4	0	19,715
2003	3,445	30	3,277	645	0	206	23,206	2,892	47	1,400	0	35,148
2004	1,674	60	434	1,008	3	439	49,568	1,898	26	0	0	55,110
2005	833	9	1,643	1,002	0	620	14,915	3,862	37	0	0	22,920
2006	1,060	0	1,954	1,526	14	90	14,747	980	110	2	0	20,484
2007	1,139	0	2,086	742	9	192	27,707	4,730	373	15	0	36,994
2008	262	0	4,780	809	22	449	13,823	1,717	27	7	0	21,896
2009	1,183	0	1,531	1,332	16	767	20,895	6,401	30	407	0	32,563
2010	560	0	803	770	6	705	18,356	7,233	48	48	0	28,528
2011	853	0	453	1,175	10	259	3,147	1,977	13	42	0	7,929
2012	551	3	842	495	0	170	3,672	4,937	27	17	0	10,713
2013	763	11	117	1,585	22	218	4,754	3,834	115	132	0	11,549
2014	1,383	95	2,077	1,477	1	147	2,447	3,014	80	31	0	10,752
2015	171	0	589	314	0	112	32,393	5,987	160	0	0	39,727
2016	59	0	662	190	0	31	9,175	1,423	28	0	0	11,568
2017	40	105	1,395	43	0	46	5,046	1,202	28	2000	0	9,905
2018	301	173	262	417	0	53	10,179	2,253	257	21	0	13,916

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Table 23.–Page 2 of 2.

Year	Sablefish	Rockfish	Lingcod	Pacific cod	Pollock	Flatfish	Sharks	Skates	Other	Octopus	Squid	Total
2019	1,027	121	499	2,076	0	154	23,471	5,356	520	128	0	33,352
2020	1,349	228	1,697	1,461	3	210	4,869	8,761	58	0	0	18,636
2021	1,761	11	1,854	3,474	14	540	18,155	10,807	139	6	0	36,761
2022	88	65	506	681	2	113	8,417	2,527	65	101	0	12,565
Average												
2019–2022	1,056	106	1,139	1,923	5	254	13,728	6,863	196	59	0	25,329
2013–2022	694	81	966	1,172	4	162	11,891	4,516	145	242	0	19,873
1989–2022	1,137	372	1,728	2,132	1,548	6,775	11,934	8,526	487	227	74	34,941
Total	38,646	12,642	58,741	72,500	52,643	230,357	405,754	289,886	16,564	7,734	2,520	1,187,986
% of Total	3	1	5	6	4	19	34	24	1	1	0	100

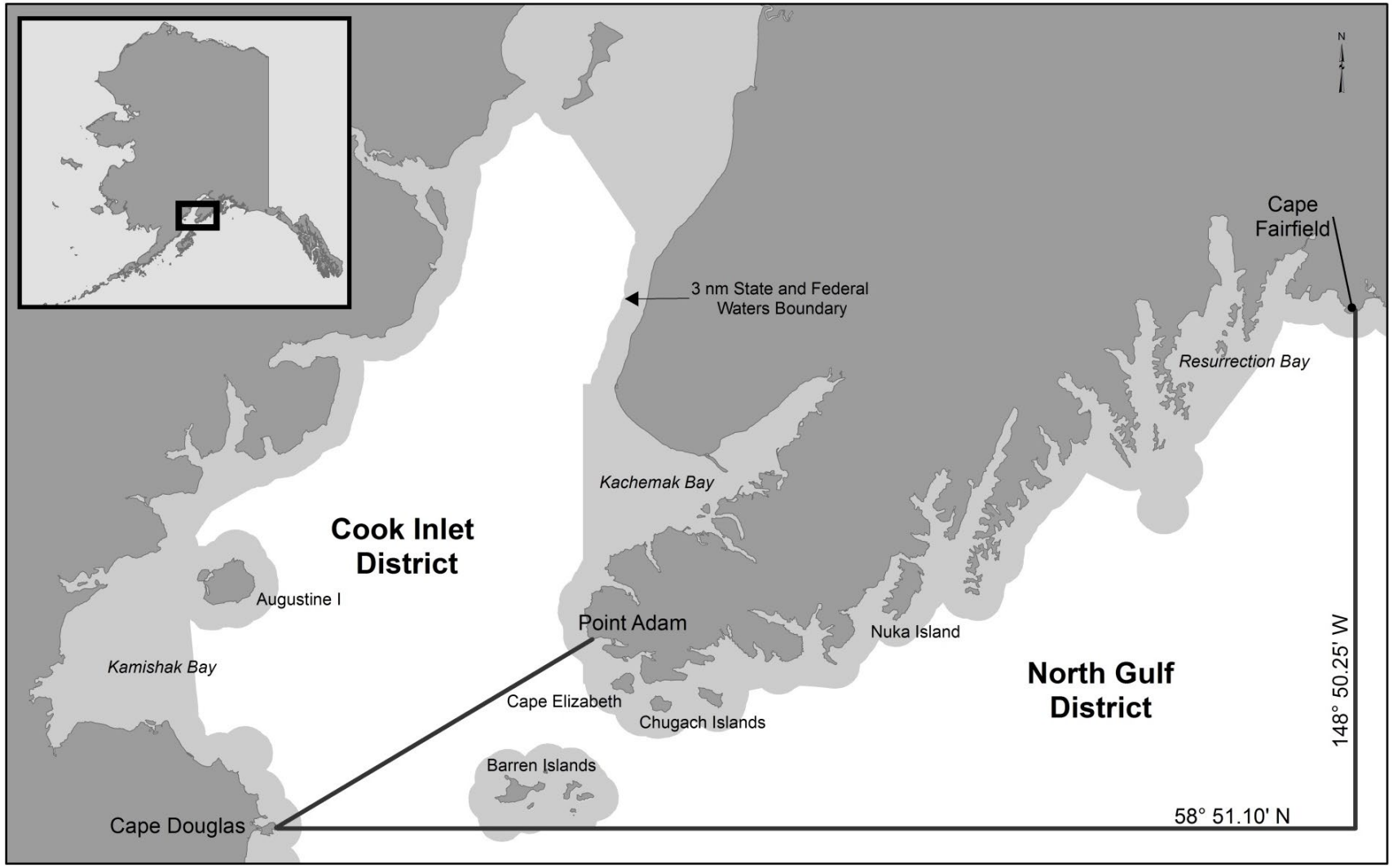

Figure 1.–Cook Inlet Area commercial groundfish area and district boundaries, 1997 to present.

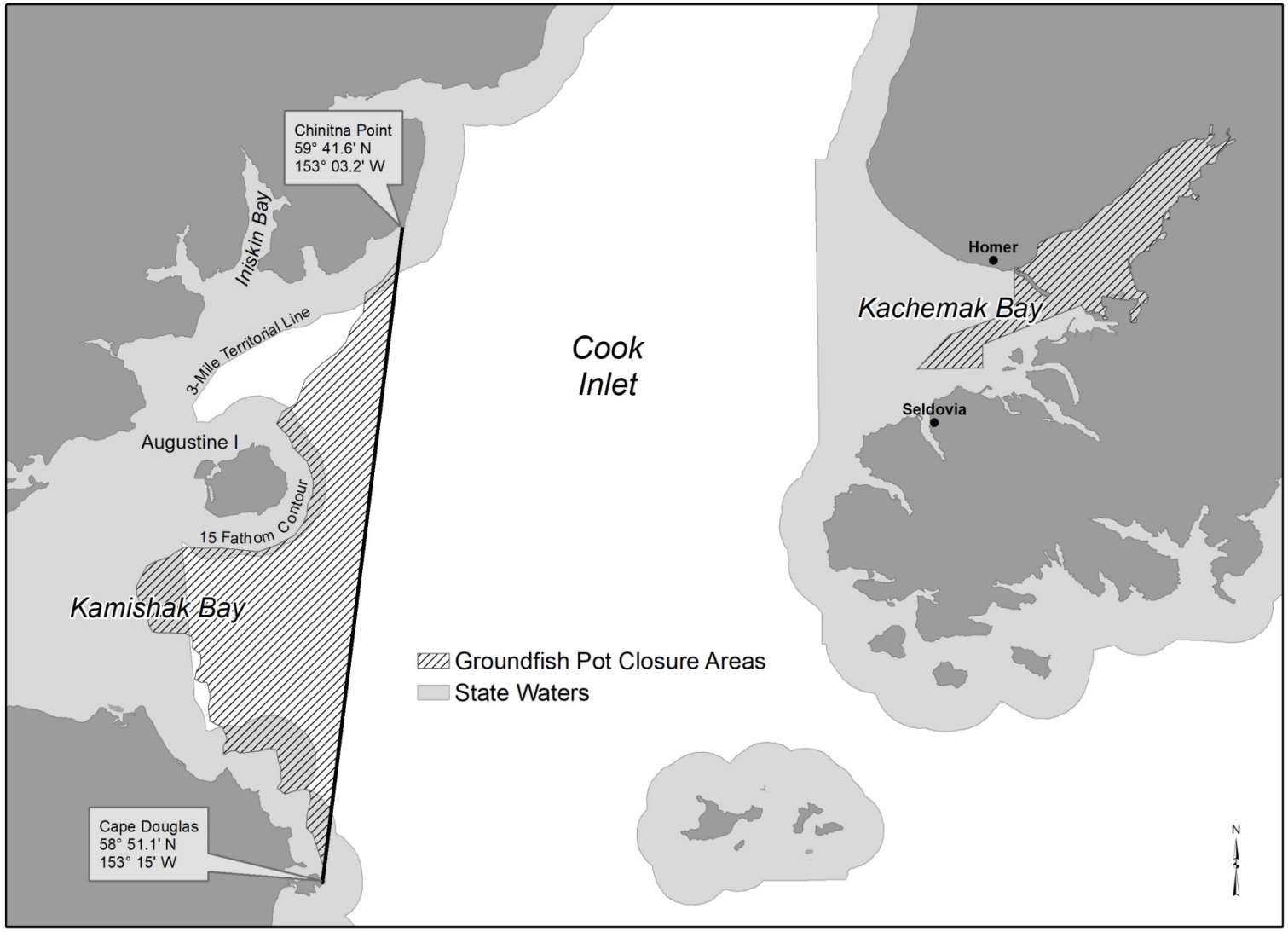

Figure 2.–Kachemak Bay and Kamishak Bay groundfish pot closure areas.

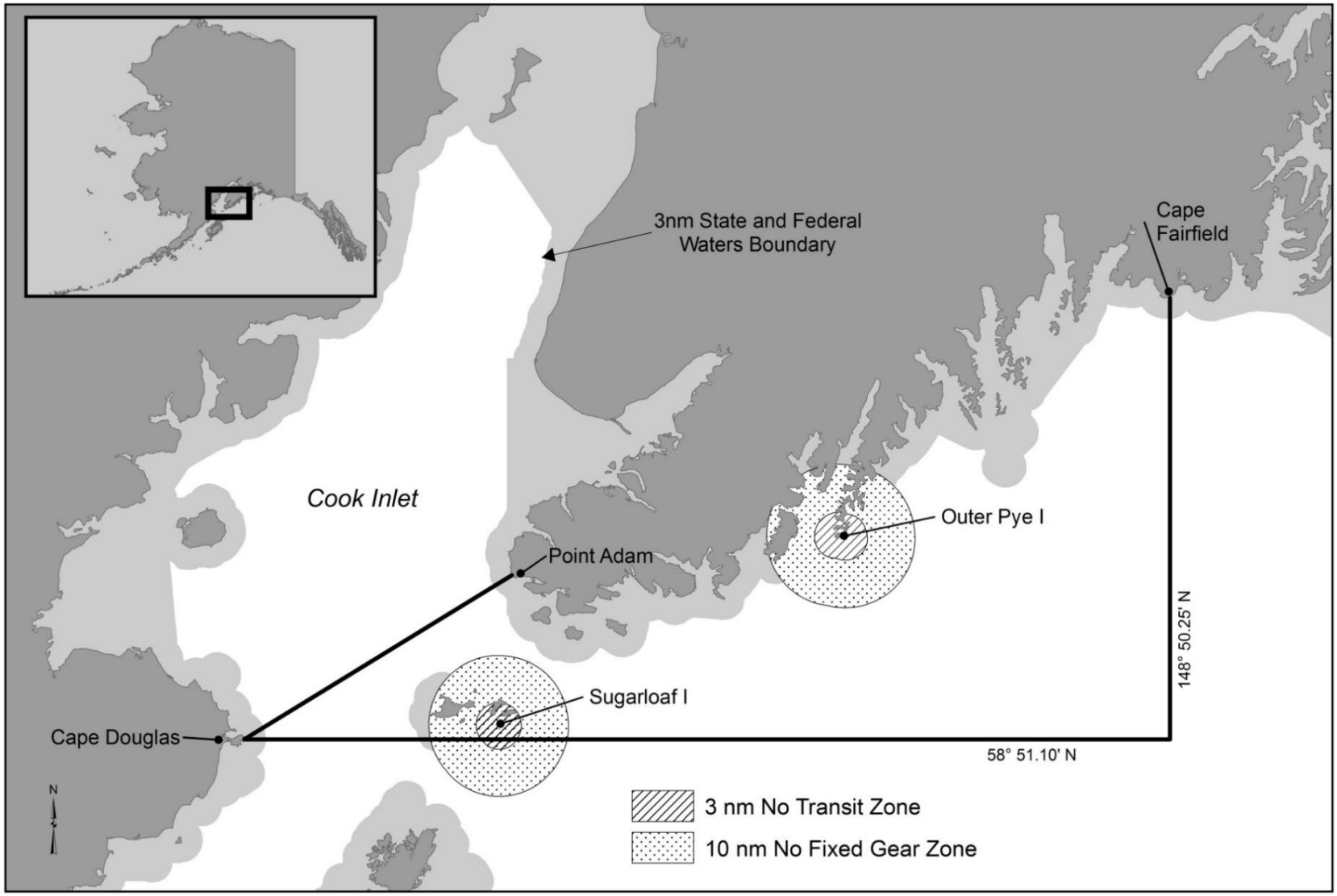

Figure 3.–Vessel no-transit and fixed gear Pacific cod fishing closure zones around Steller sea lion rookeries within the Cook Inlet Area.

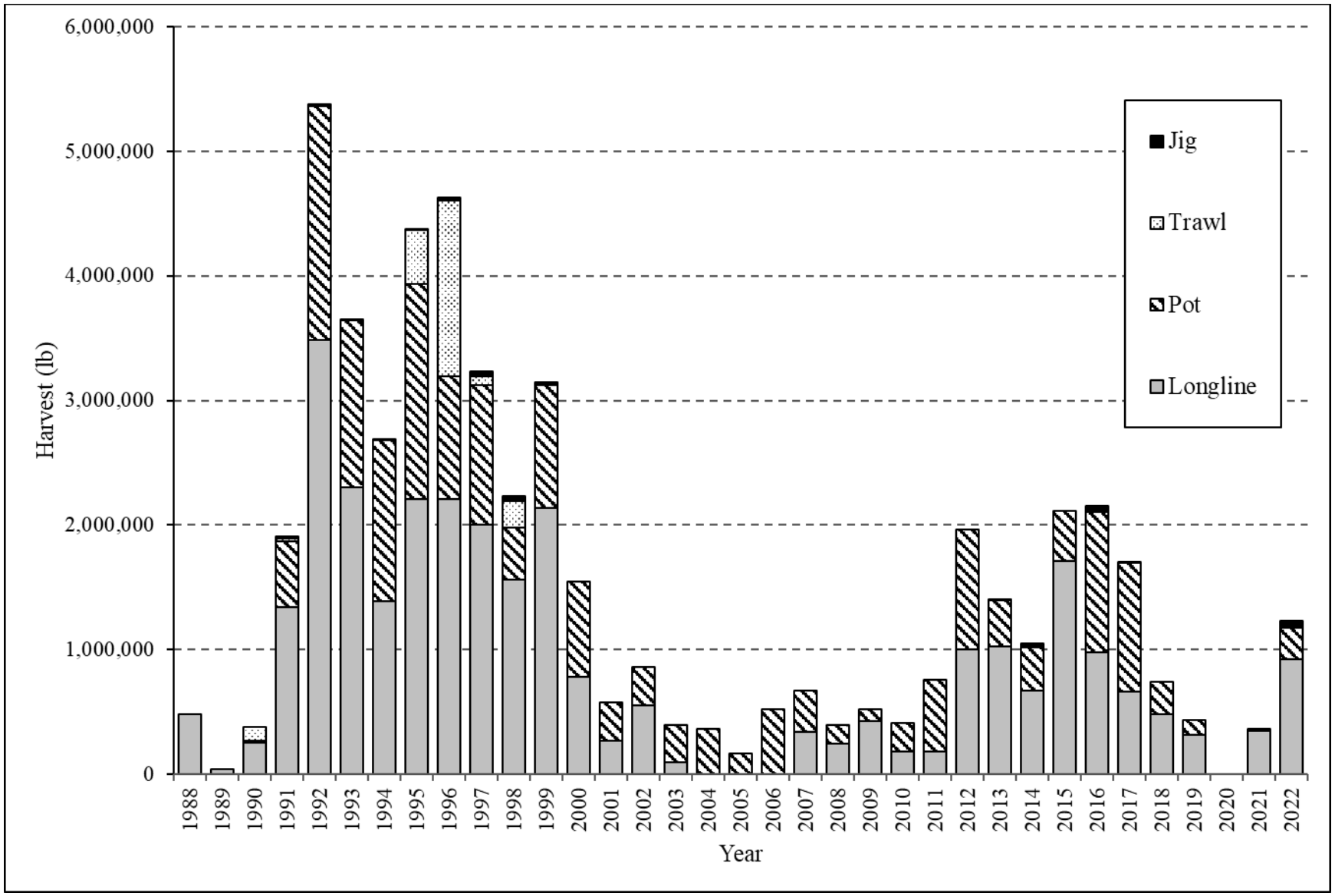

Figure 4.–Annual harvest (lb) by gear type in the commercial parallel Pacific cod fishery from the Cook Inlet Area, 1988–2022.

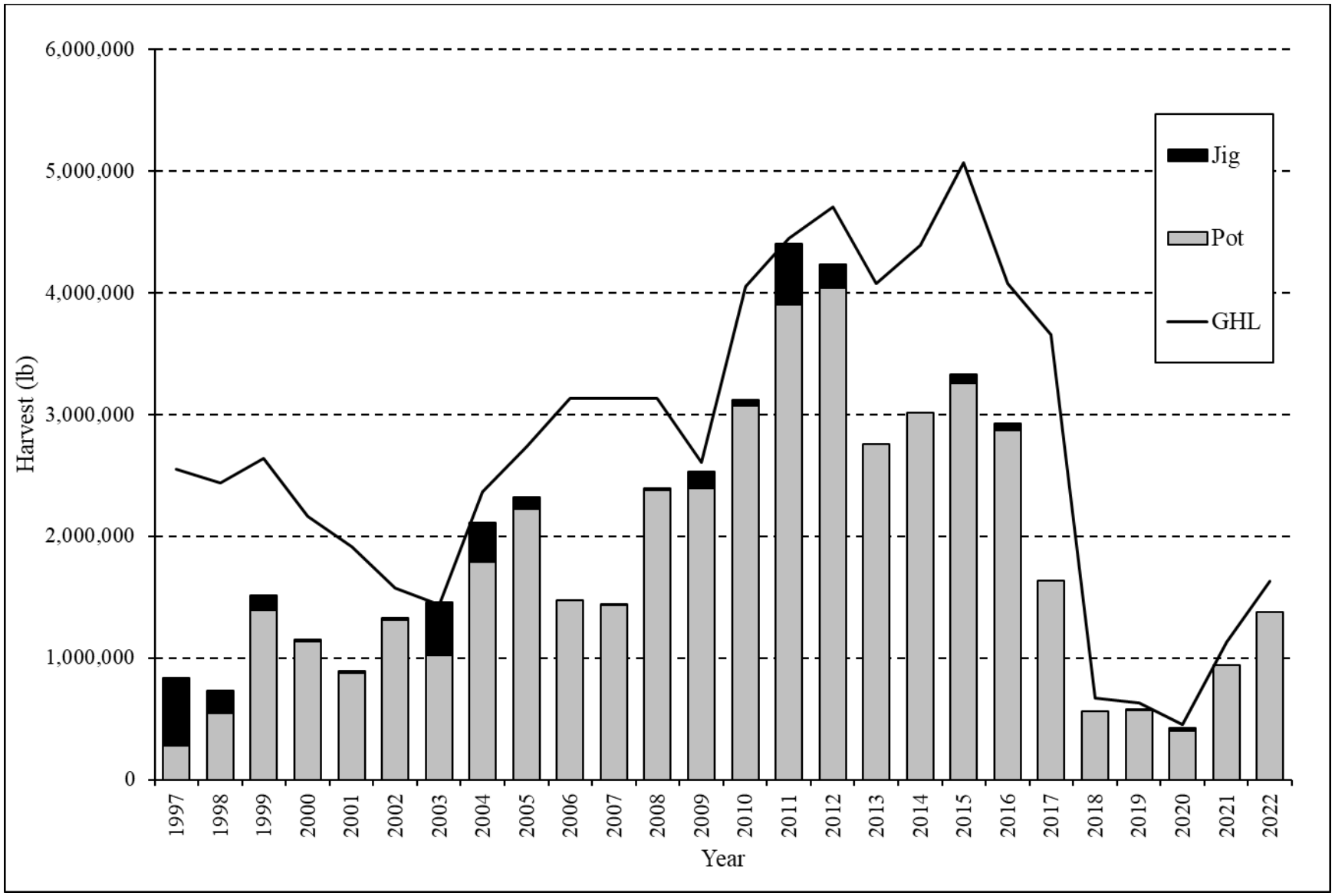

Figure 5.–Annual harvest (lb) by gear type in the commercial state-waters Pacific cod fishery from the Cook Inlet Area, 1997–2022.

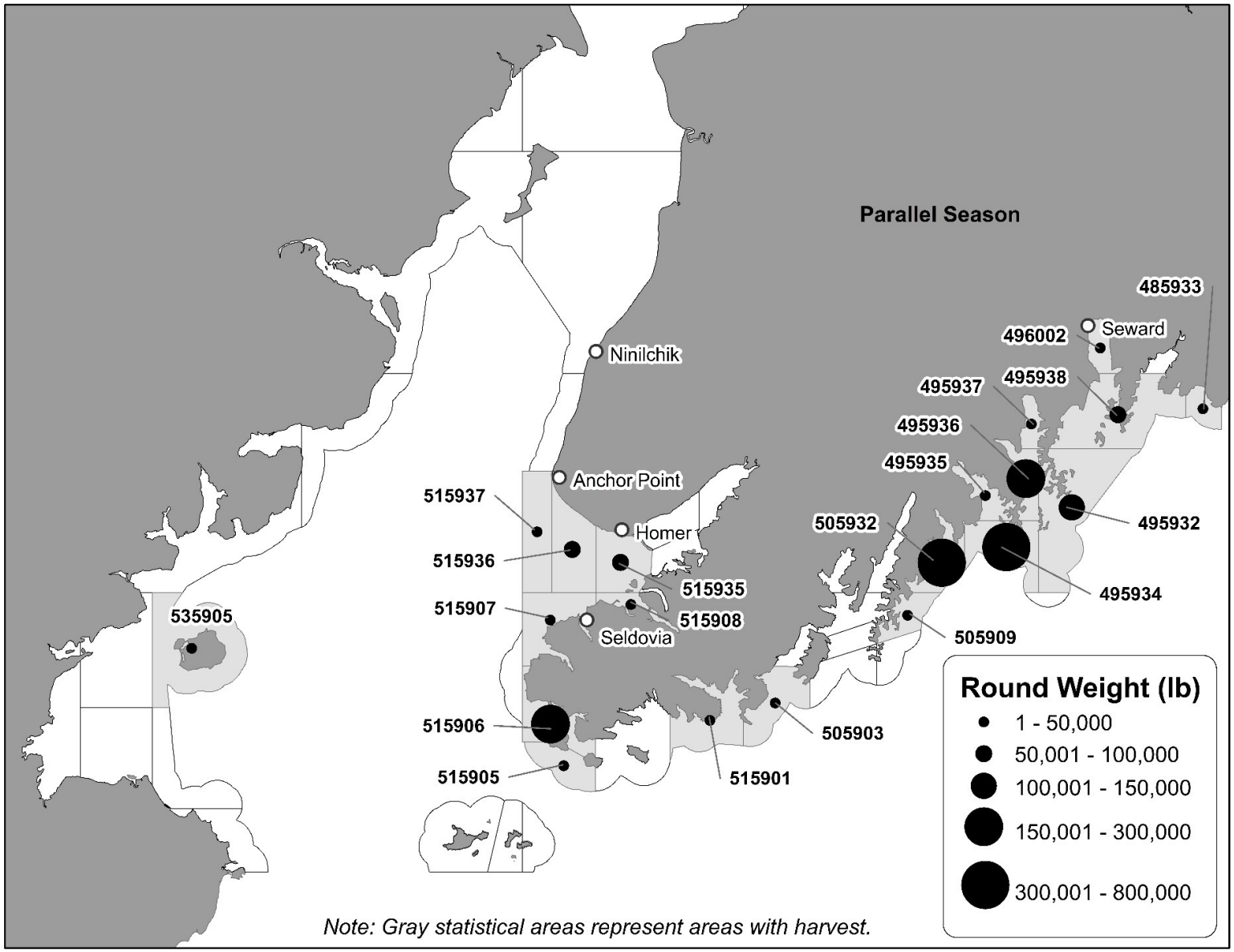

Figure 6.–Cook Inlet Area commercial Pacific cod harvest (lb) from the parallel season by statistical area, 2019–2022 combined.

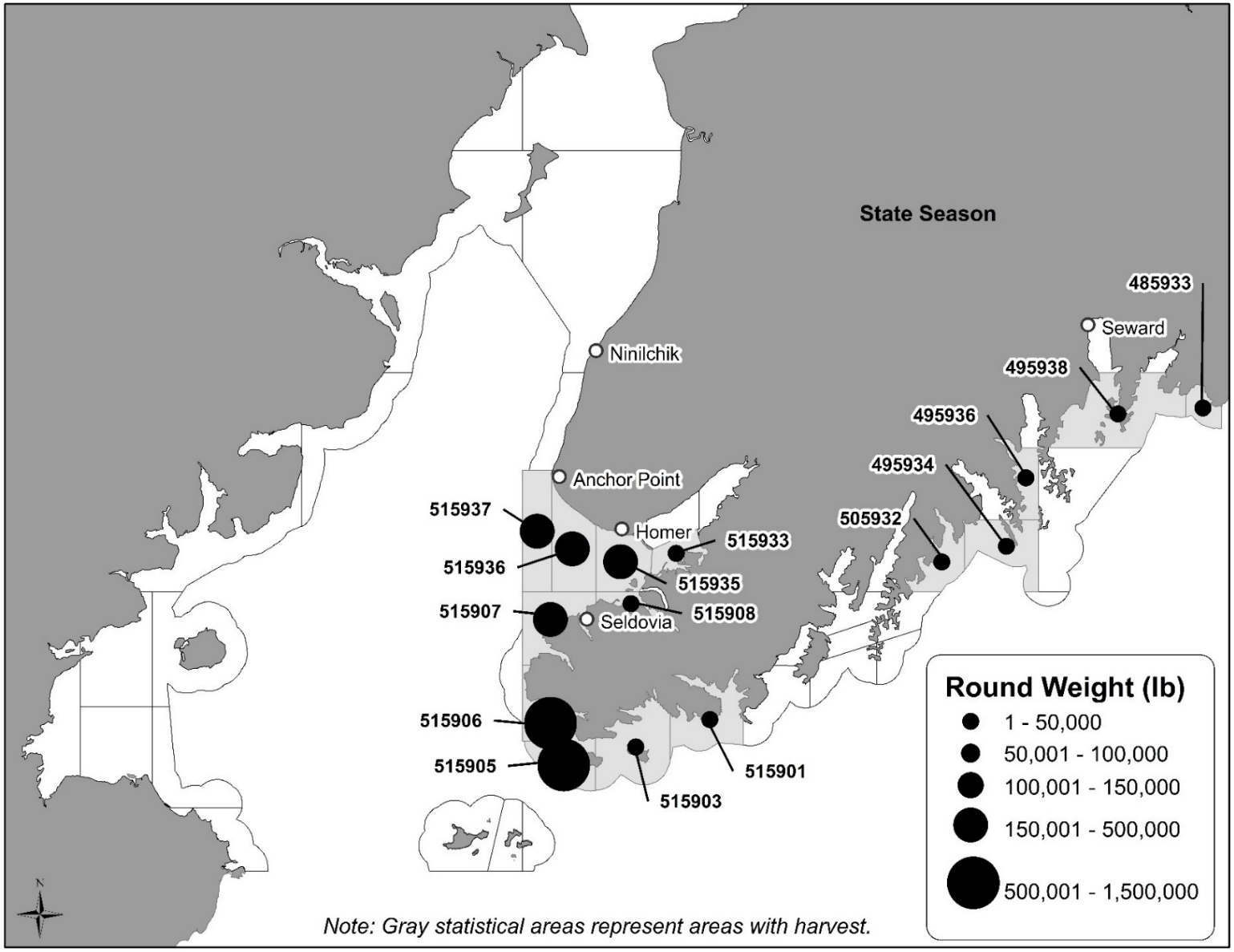

Figure 7.–Cook Inlet Area commercial Pacific cod harvest (lb) from the state-waters season by statistical area, 2019–2022 combined.

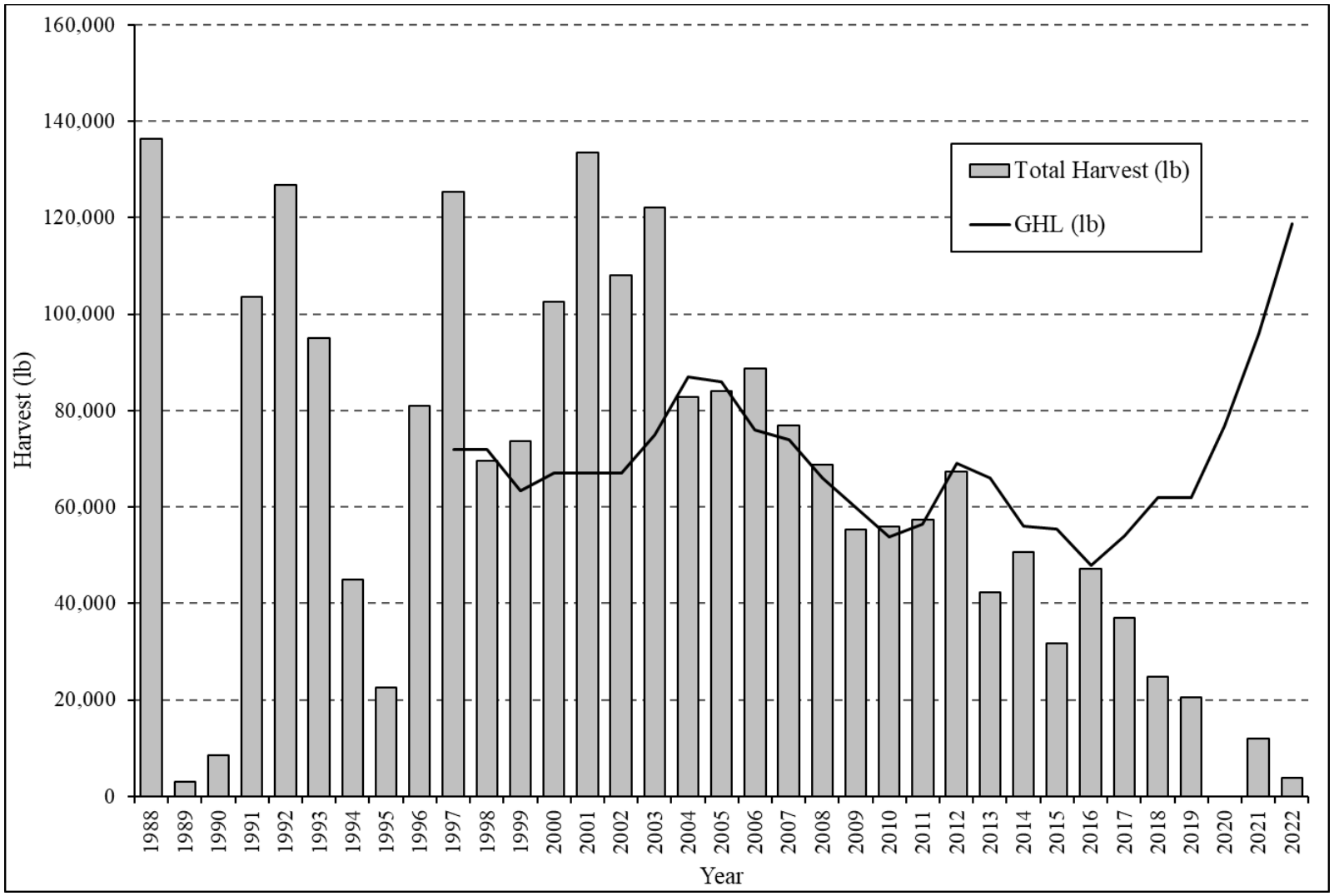

Figure 8.–Cook Inlet Area commercial sablefish harvest (lb) and guideline harvest level (GHL), 1988–2022.

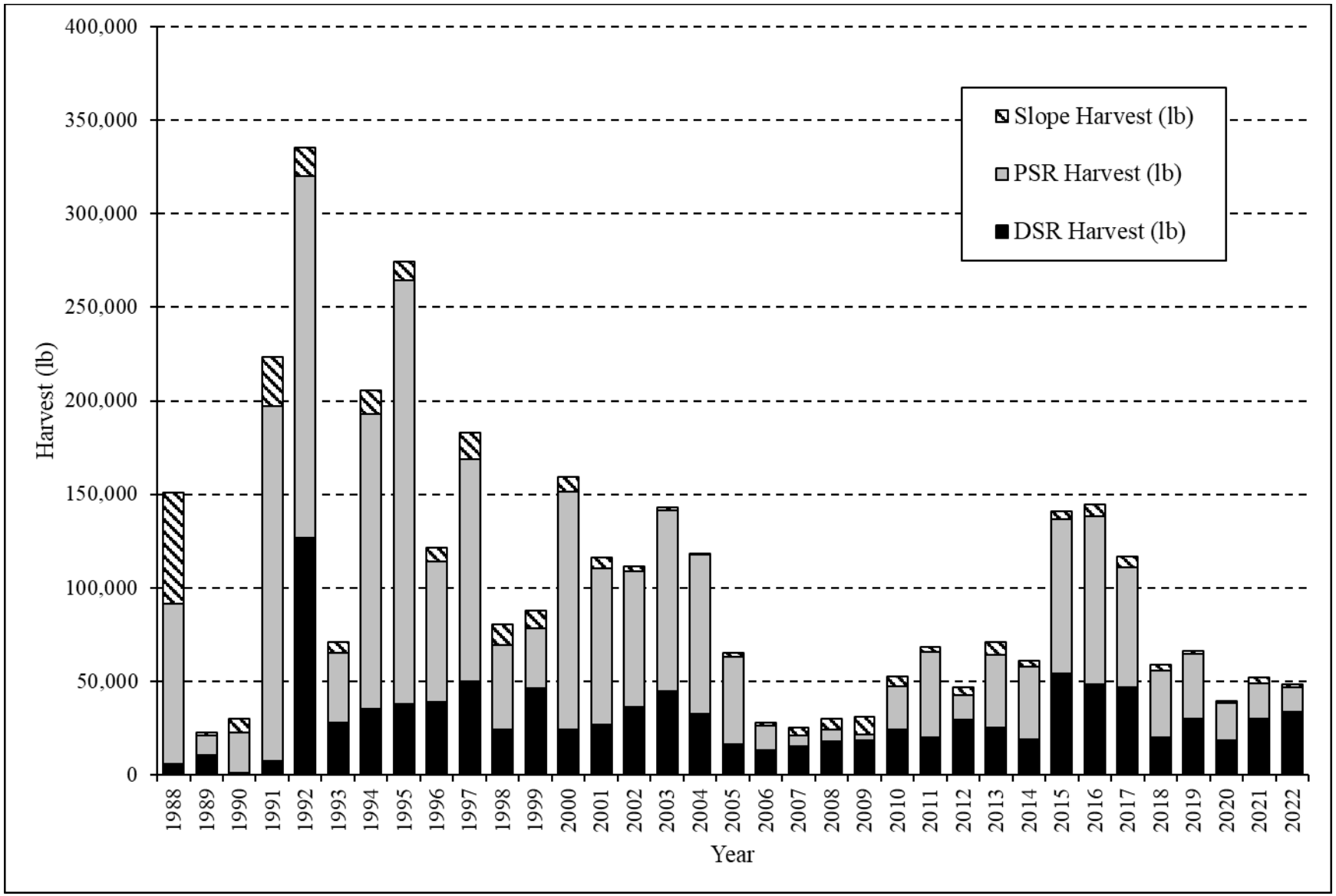

Figure 9.–Cook Inlet Area commercial rockfish harvest (lb) contribution by rockfish species assemblage, 1988–2022.

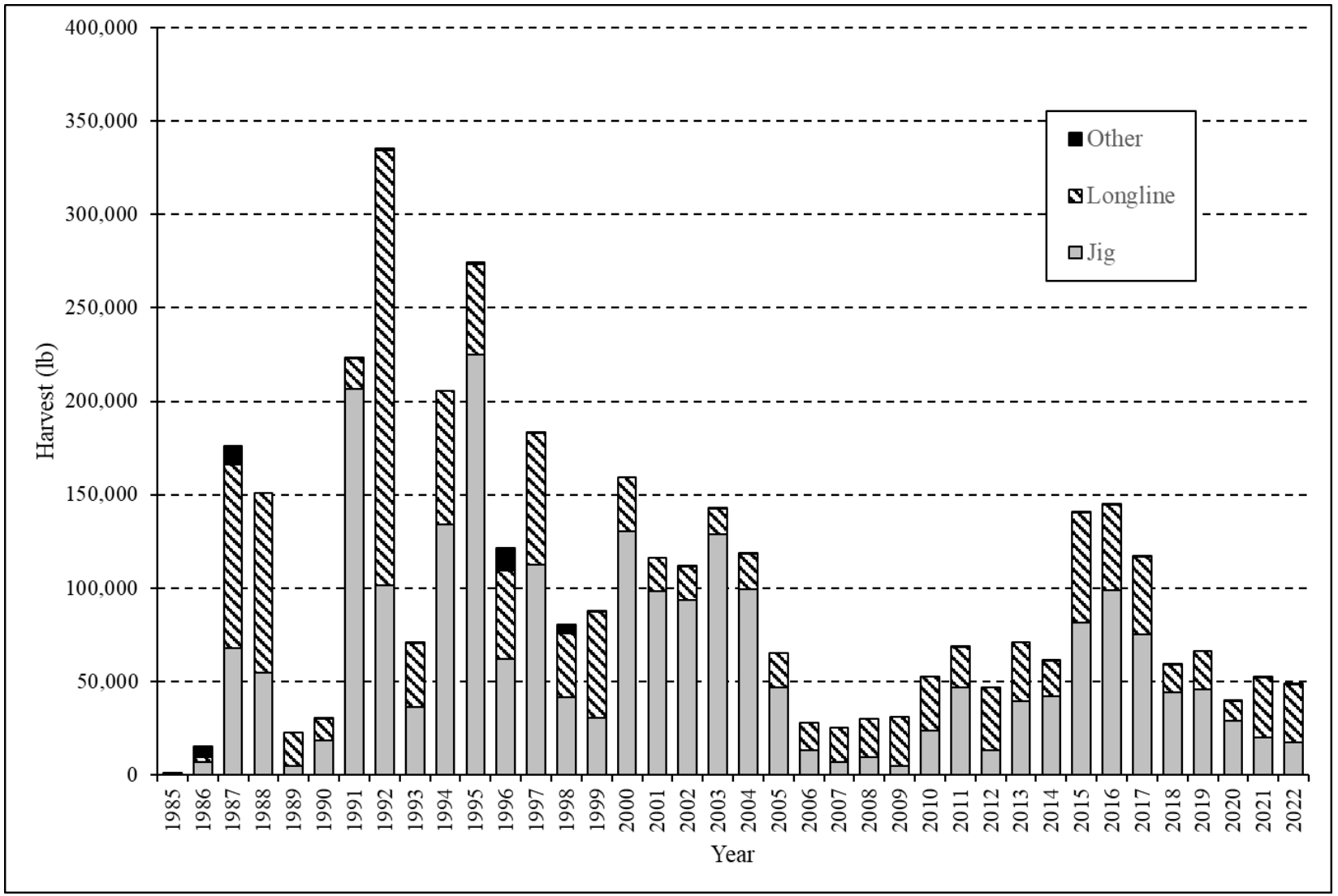

Figure 10.–Cook Inlet Area commercial rockfish harvest (lb) contribution by gear type, 1988–2022.

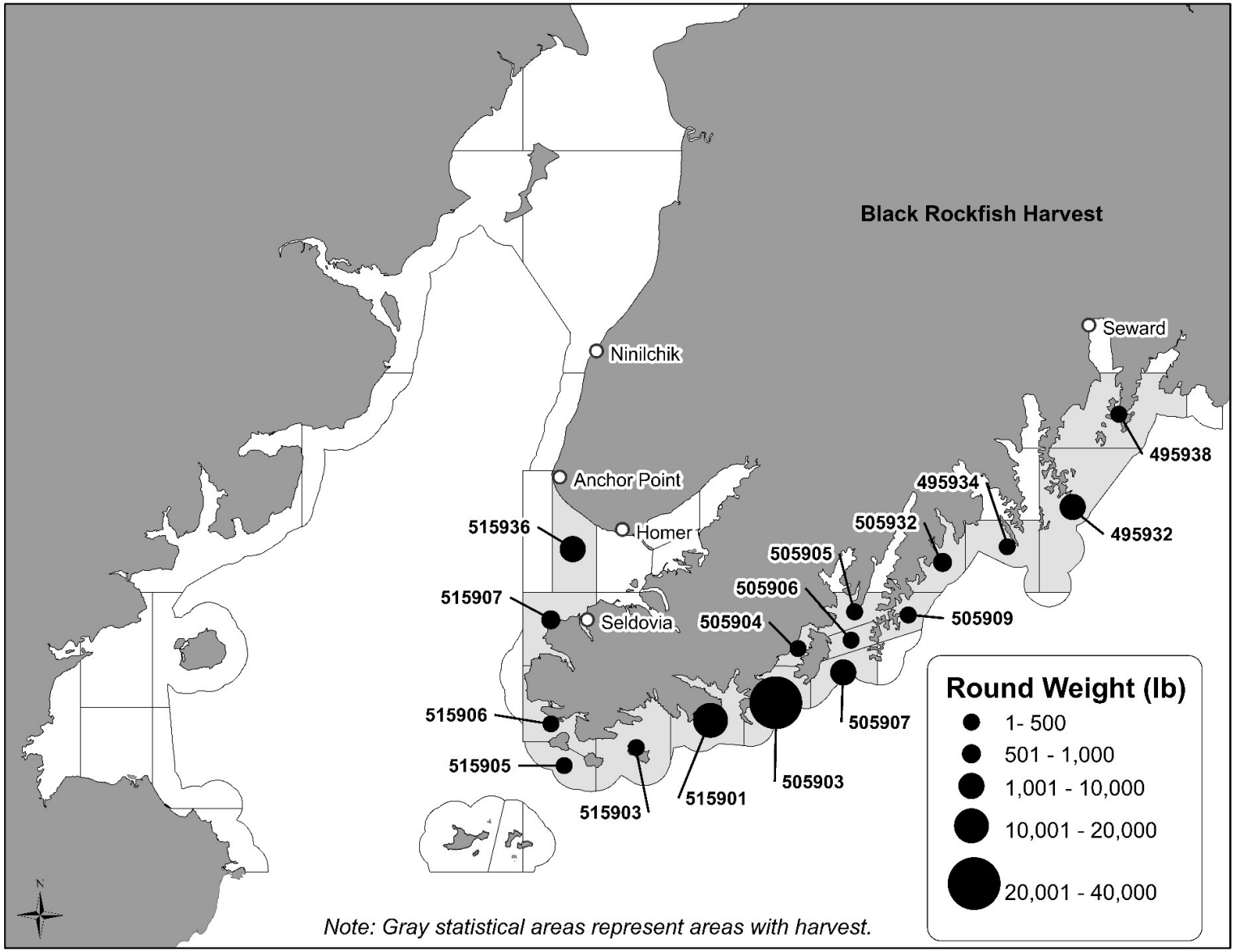

Figure 11.–Cook Inlet Area commercial directed black rockfish harvest (lb) by statistical area, 2019–2022 combined.

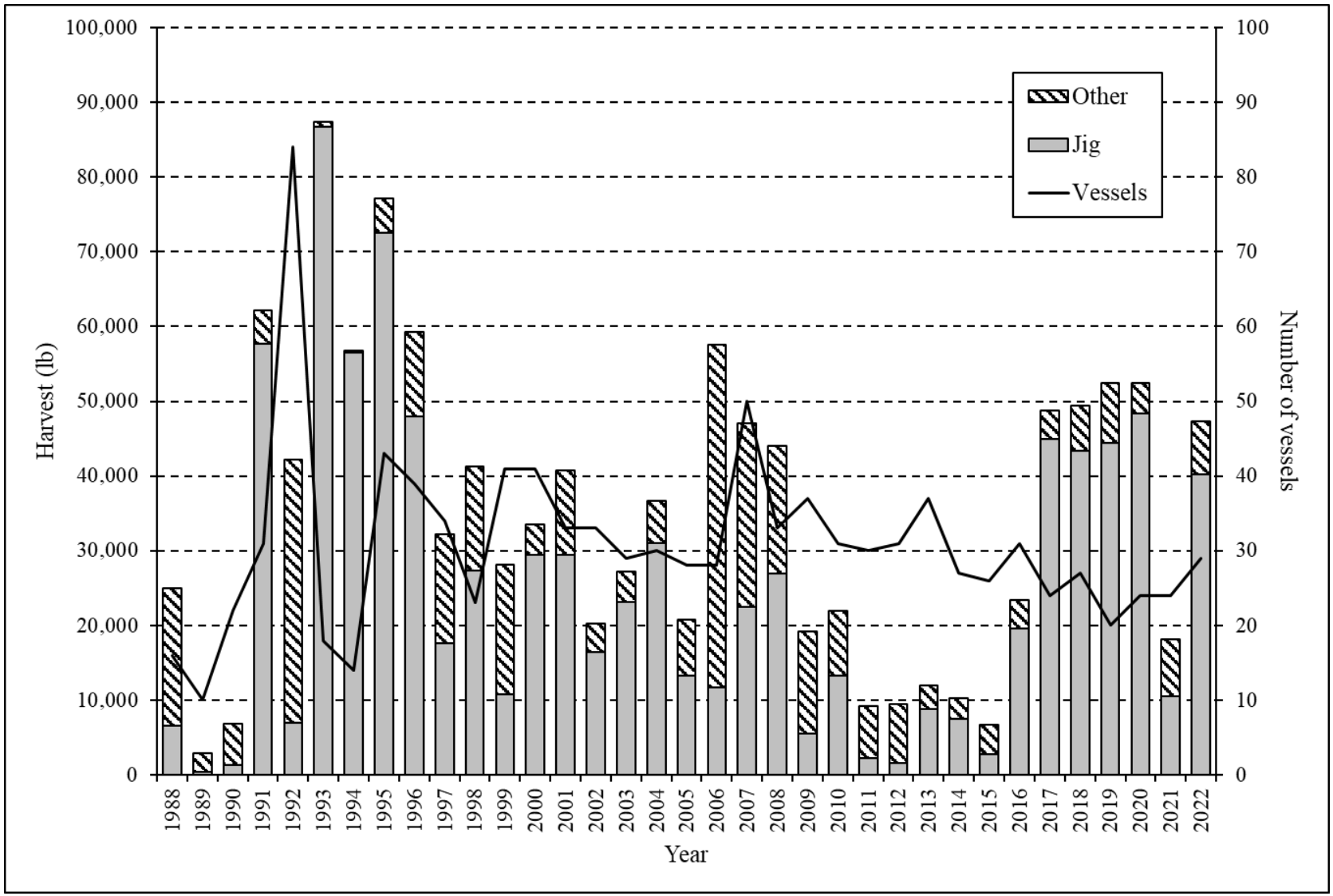

Figure 12.–Harvest (lb) by gear type and effort for the commercial lingcod fishery in Cook Inlet Area state and federal waters, 1988–2022.

APPENDIX A: LANDINGS AND ESTIMATED EXVESSEL VALUES

Appendix A1.–Landings and estimated exvessel values of Cook Inlet Area state managed groundfish harvests, 2013–2022.

2013 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	12,127	4,166,538	47,315	70,759	43,049	117,122	5,364	4,462,274
Discard at sea (whole lb)	117	1,585	22	11	762	3,834	5,087	11,418
Personal use (landed lb)	1,060	2,901	0	5,421	153	231	14	9,780
Overage (landed lb)	0	62	421	1,947	0	2,098	0	4,528
Other (landed lb)	0	3,889	69	0	0	912	262	5,132
Sold (landed lb)	9,484	4,078,990	46,388	62,011	41,627	110,047	0	4,348,547
Price ($/lb)	$0.85	$0.30	**$0.18**	$0.80	$4.47	**$0.37**	**$0.14**	
Value	$8,061	$1,223,697	$8,350	$49,609	$186,073	$40,717	$0	$1,516,507

2014 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	12,298	4,078,396	12,931	60,839	52,087	56,756	2,904	4,276,210
Discard at sea (lb)	2,077	1,477	1	95	1,383	3,014	2,672	10,719
Personal use (landed lb)	1,139	3,240	3	5,195	90	0	5	9,672
Overage (landed lb)	0	158	0	5,729	0	1,992	0	7,879
Other (landed lb)	0	1,431	844	0	0	0	51	2,326
Sold (landed lb)	7,879	3,982,104	12,058	48,260	50,155	51,743	157	4,152,356
Price ($/lb)	$1.18	$0.35	**$0.33**	$0.66	$5.52	**$0.38**	$0.14	
Value	$9,297	$1,393,736	$3,979	$31,852	$276,856	$19,662	$22	$1,735,404

2015 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	7,331	5,451,109	42,094	140,819	31,951	170,072	33,391	5,876,767
Discard at sea (lb)	589	314	0	0	171	5,987	32,665	39,726
Personal use (landed lb)	1,564	5,426	3	5,971	82	0	49	13,095
Overage (landed lb)	0	85	0	1,925	0	5,439	0	7,449
Other (landed lb)	0	6,599	263	0	0	760	65	7,687
Sold (landed lb)	4,483	5,329,498	41,597	129,970	31,563	157,862	611	5,695,584
Price ($/lb)	$0.82	$0.36	**$0.13**	$0.64	**$5.99**	**$0.36**	**$0.61**	
Value	$3,676	$1,918,619	$5,408	$83,181	$189,062	$56,830	$373	$2,257,149

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2016 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	24,055	5,087,673	39,169	144,368	47,300	48,030	9,887	5,400,482
Discard at sea (lb)	662	190	0	0	59	1,423	9,234	11,568
Personal use (landed lb)	1,728	4,064	4	5,907	52	0	30	11,785
Overage (landed lb)	0	751	497	5,847	0	3,591	0	10,686
Other (landed lb)	0	1,845	9,290	3	0	0	8	11,146
Sold (landed lb)	18,389	4,979,162	28,835	129,744	46,905	43,016	600	5,246,651
Price ($/lb)	$1.02	$0.38	$0.03	$0.96	$6.83	**$0.39**	**$0.12**	
Value	$18,757	$1,892,082	$865	$124,554	$320,361	$16,776	$72	$2,373,467

2017 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	47,418	3,345,419	8,227	111,963	37,107	28,830	5,964	3,584,928
Discard at sea (lb)	1,395	43	0	105	40	1,202	5,132	7,917
Personal use (landed lb)	1,078	3,341	0	10,981	173	0	10	15,583
Overage (landed lb)	0	374	0	4,178	0	1,954	0	6,506
Other (landed lb)	30	2,550	607	3	0	0	162	3,352
Sold (landed lb)	40,152	3,271,828	7,478	99,015	36,847	25,674	512	3,481,506
Price ($/lb)	$0.85	$0.43	$0.05	$0.67	$6.71	$0.40	**$0.12**	
Value	$34,129	$1,406,886	$374	$66,340	$247,243	$10,270	$61	$1,765,304

2018 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	52,458	1,303,005	1,771	63,885	25,080	13,995	10,688	1,470,882
Discard at sea (lb)	262	417	0	173	301	2,253	10,489	13,895
Personal use (landed lb)	2,900	1,279	0	5,221	6	0	4	9,410
Overage (landed lb)	230	0	0	2,924	0	648	0	3,802
Other (landed lb)	163	907	944	0	0	0	20	2,034
Sold (landed lb)	38,590	1,262,752	813	49,715	24,578	11,079	171	1,387,698
Price ($/lb)	$1.28	$0.53	$0.00	$0.82	$4.60	$0.38	**$0.13**	
Value	$49,395	$669,259	$0	$40,766	$113,059	$4,210	$22	$876,711

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2019 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	52,924	1,015,295	2,610	66,156	21,588	18,924	24,253	1,201,750
Discard at sea (lb)	499	2,076	0	121	1,027	5,356	24,145	33,224
Personal use (landed lb)	2,067	718	0	7,551	0	0	47	10,383
Overage (landed lb)	0	981	0	5,414	0	2,139	0	8,534
Other (landed lb)	28	1,410	99	0	2	0	61	1,600
Sold (landed lb)	42,588	989,866	2,485	51,347	20,559	11,428	0	1,118,273
Price ($/lb)	$1.10	$0.64	$0.00	$0.78	$3.43	$0.45	**$0.10**	
Value	$46,847	$633,514	$0	$40,051	$70,517	$5,143	$0	$796,072

2020 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	54,126	430,961	54	39,458	1,349	8,761	5,312	540,021
Discard at sea (lb)	1,697	1,461	3	228	1,349	8,761	5,136	18,635
Personal use (landed lb)	1,585	491	50	6,826	0	0	0	8,952
Overage (landed lb)	0	0	0	2,957	0	0	0	2,957
Other (landed lb)	0	759	0	0	0	0	0	759
Sold (landed lb)	43,054	419,644	0	28,656	0	0	172	491,526
Price ($/lb)	$1.21	$0.54	$0.12	$0.69	$2.01	$0.44	$0.09	
Value	$52,095	$226,608	$0	$19,773	$0	$0	$15	$298,491

2021 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	20,054	1,375,827	1,358	52,094	13,867	24,071	18,900	1,506,172
Discard at sea (lb)	1,854	3,474	14	11	1,761	10,807	18,834	36,755
Personal use (landed lb)	1,354	1,913	28	8,987	537	65	24	12,908
Overage (landed lb)	100	5,136	0	9,330	0	1,383	0	15,949
Other (landed lb)	136	4,988	243	0	102	0	24	5,493
Sold (landed lb)	14,431	1,332,960	1,054	32,547	10,965	11,788	18	1,403,763
Price ($/lb)	$1.26	$0.46	$0.12	$0.65	$3.10	$0.38	**$0.07**	
Value	$18,183	$613,162	$126	$21,156	$33,992	$4,479	$1	$691,099

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2022 Catch	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	47,755	2,619,397	6,870	48,569	4,549	28,889	8,846	2,764,876
Discard at sea (lb)	506	681	2	65	88	2,527	8,595	12,464
Personal use (landed lb)	1,349	2,017	51	10,984	136	0	102	14,639
Overage (landed lb)	9	929	0	9,486	0	931	0	11,355
Other (landed lb)	99	7,921	1,323	99	70	0	2	9,514
Sold (landed lb)	39,030	2,555,518	5,379	26,763	3,924	25,421	91	2,656,126
Price ($/lb)	$1.71	$0.54	**$0.16**	$0.72	$3.21	$0.46	**$0.11**	
Value	$66,741	$1,379,980	$861	$19,269	$12,596	$11,694	$10	$1,491,151

Recent average 2019–2022	Lingcod	Pacific cod	Pollock	Rockfish	Sablefish	Skates	Other[a]	Total
Whole (lb)	43,715	1,360,370	2,723	51,569	10,338	20,161	14,328	1,503,205
Discard at sea (lb)	1,139	1,923	5	106	1,056	6,863	14,177	25,269
Personal use (landed lb)	1,589	1,285	32	8,587	168	16	43	11,721
Overage (landed lb)	27	1,762	0	6,797	0	1,113	0	9,699
Other (landed lb)	66	3,770	416	25	44	0	22	4,342
Sold (landed lb)	34,776	1,324,497	2,230	34,828	8,862	12,159	70	1,417,422
Value	$45,967	$713,316	$247	$25,062	$29,276	$5,329	$7	$819,203

Notes:

Whole (lb) converted from landed pounds as reported from fish tickets without regard to disposition (e.g., sold, personal use, overage, discard).

Discards at sea as reported from fish tickets (estimated whole pounds).

Landed (lb) as reported from fish tickets without regard to condition (e.g., whole, bled, gutted, dressed).

Price ($/lb) calculated average as reported from Cook Inlet Area Commercial Operator's Annual Report (COAR). COAR prices represent a weighted average price per pound by species. Prices may reflect a mixture of gear types and delivery conditions. *Rockfish*, *Skate*, and *Other* prices are the average of the COAR price for all species within that category.

Value calculated as (Sold x Price).

$/lb in bold font are from the combined Cook Inlet, Prince William Sound, and Kodiak Management Areas.

[a] *Other* includes flatfish, sharks, and other fish landed on a groundfish fish ticket.