

Fishery Management Report No. 20-22

Annual Management Report for Shellfish Fisheries in the Kodiak, Chignik, and South Peninsula Districts, 2019

by

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H _A
gram	g			base of natural logarithm	e
hectare	ha			catch per unit effort	CPUE
kilogram	kg			coefficient of variation	CV
kilometer	km	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	common test statistics	(F, t, χ^2 , etc.)
liter	L			confidence interval	CI
meter	m	at	@	correlation coefficient	R
milliliter	mL	compass directions:		(multiple)	
millimeter	mm	east	E	correlation coefficient	
		north	N	(simple)	r
		south	S	covariance	cov
		west	W	degree (angular)	°
		copyright	©	degrees of freedom	df
		corporate suffixes:		expected value	E
		Company	Co.	greater than	>
		Corporation	Corp.	greater than or equal to	≥
		Incorporated	Inc.	harvest per unit effort	HPUE
		Limited	Ltd.	less than	<
		District of Columbia	D.C.	less than or equal to	≤
		et alii (and others)	et al.	logarithm (natural)	ln
		et cetera (and so forth)	etc.	logarithm (base 10)	log
		exempli gratia	e.g.	logarithm (specify base)	log ₂ , etc.
		(for example)		minute (angular)	'
		Federal Information Code	FIC	not significant	NS
		id est (that is)	i.e.	null hypothesis	H ₀
		latitude or longitude	lat or long	percent	%
		monetary symbols (U.S.)	\$, ¢	probability	P
		months (tables and figures): first three letters	Jan,...,Dec	probability of a type I error (rejection of the null hypothesis when true)	α
		registered trademark	®	probability of a type II error (acceptance of the null hypothesis when false)	β
		trademark	™	second (angular)	"
		United States		standard deviation	SD
		(adjective)	U.S.	standard error	SE
		United States of America (noun)	USA	variance	
		U.S.C.	United States Code	population	Var
		U.S. state	use two-letter abbreviations (e.g., AK, WA)	sample	var
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				

FISHERY MANAGEMENT REPORT NO. 20-22

**ANNUAL MANAGEMENT REPORT FOR SHELLFISH FISHERIES IN
THE KODIAK, CHIGNIK, AND SOUTH PENINSULA DISTRICTS, 2019**

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ABSTRACT

This management report summarizes 2019 shellfish fisheries in the Kodiak, Chignik, and South Peninsula districts of Registration Area J. During 2019, commercial fisheries occurred for Tanner crab *Chionoecetes bairdi*, Dungeness crab *Metacarcinus magister*, giant Pacific octopus *Octopus dofleini*, red sea cucumber *Parastichopus californicus*, weathervane scallop *Patinopecten caurinus*, and Pandalid shrimp *Pandalus* and *Pandalopsis*. There were no Tanner crab fisheries in the Chignik and South Peninsula districts in 2019 due to low Tanner crab abundance.

Key words: Tanner crab, *Chionoecetes bairdi*, Dungeness crab, *Metacarcinus magister*, red sea cucumber, *Parastichopus californicus*, weathervane scallop, *Patinopecten caurinus*, red king crab, *Paralithodes camtschaticus*, golden king crab, *Lithodes aequispinus*, Pacific octopus, *Octopus dofleini*, Pandalid shrimp, catch per unit effort, CPUE, exclusive economic zone, EEZ, guideline harvest level, GHL, Board of Fisheries, BOF, Kodiak, Chignik, South Peninsula

INTRODUCTION

This management report provides information on Kodiak, Chignik, and South Peninsula commercial shellfish fisheries including fishery-specific harvest, effort, and exvessel value. Kodiak, Chignik, and South Peninsula shellfish fisheries occur in the Gulf of Alaska south of Cape Douglas, west of long 149° W, and east of Scotch Cap Light (Figure 1). Shellfish fisheries are regulated using management areas, districts, and sections that vary by species (Figure 2). For example, Tanner crab *Chionoecetes bairdi* management is defined by district (e.g., Kodiak, Chignik, and South Peninsula districts), whereas weathervane scallop *Patinopecten caurinus* management is defined by area (e.g., Kodiak and Alaska Peninsula areas).

Most shellfish fisheries are managed by the Alaska Department of Fish and Game (ADF&G) in both state waters (0–3 nmi) and the Exclusive Economic Zone (EEZ; 3–200 nmi), except for giant Pacific octopus *Octopus dofleini* which is managed by ADF&G only in state waters.

Historically, Kodiak, Chignik, and South Peninsula waters supported substantial red king crab *Paralithodes camtschaticus*, Tanner crab, and Pandalid shrimp *Pandalus* and *Pandalopsis* fisheries (for more details on historic commercial shellfish fisheries see Spalinger 2017). A climate regime shift in the late 1970s resulted in biological and ecological changes in the Gulf of Alaska, including reductions in shrimp and crab abundances (Anderson and Piatt 1999; Mantua and Hare 2002). Since the early 1980s, red king crab stocks have not supported commercial fisheries, Tanner crab stocks have supported small commercial fisheries, and Pandalid shrimp stocks have supported only negligible harvests. In recent years, commercial shellfish effort has been directed towards Tanner crab, Dungeness crab *Metacarcinus magister*, red sea cucumber *Parastichopus californicus*, weathervane scallops, giant Pacific octopus, and Pandalid shrimp.

ADF&G issues emergency orders to enact regulatory action to open, close, and modify fishing periods, areas, and legal gear. In total, 12 emergency orders were issued during 2019 for Kodiak, Chignik, and South Peninsula shellfish fisheries (Table 1).

TANNER CRAB

BACKGROUND

Tanner crab fisheries developed in the 1970s and were managed by ADF&G until December 1978 when a federal fishery management plan (FMP) was adopted. Under the FMP, ADF&G managed Tanner crab in waters 0–3 nmi offshore and the federal government managed Tanner crab in waters 3–200 nmi offshore. Joint jurisdiction occurred until 1987, when the state again assumed full management authority.

In the early 1980s, Tanner crab abundance and commercial harvests began a decline that continued through the 1990s. In response, ADF&G developed new harvest strategies with conservative management measures aimed at preventing overharvest and localized depletion. In 1999 the Alaska Board of Fisheries (BOF) adopted 5 AAC 35.507 *Kodiak, Chignik, and South Peninsula Districts C. bairdi Tanner crab harvest strategies*, which currently guides the fisheries.

The harvest strategies specify biological and management thresholds. The biological threshold requires mature male abundance within the district, or sections within a district, to meet or exceed 50% of the long-term average abundance of mature male crab. The management threshold requires guideline harvest levels (GHLs) to meet section and/or district minimum GHL thresholds. If mature male abundance and minimum GHL thresholds are met, a commercial fishery may occur in that management unit (Table 2).

Tanner crab stock information is collected annually during an ADF&G bottom trawl survey on the R/V *Resolution*. In addition to providing Tanner crab stock abundance information, trawl survey results and information on other shellfish and groundfish from Kodiak, Chignik, and South Peninsula waters are published annually by ADF&G (Spalinger and Knutson, 2019).

The Kodiak District for Tanner crab is subdivided into eight sections: Northeast, Eastside, Southeast, Southwest, Semidi Island Overlap, Westside, North Mainland, and South Mainland (5 AAC 35.505(a)(1–8); Figure 3). The South Peninsula District is divided into two sections, Eastern and Western, by long 162° W (Figure 4). The Chignik District is managed as a single unit (Figure 4).

Tanner crab seasons in the Kodiak, Chignik, and South Peninsula districts may open by regulation on January 15 unless delayed by weather as specified in regulation (5 AAC 35.510(a)(2), (b)(2), and (c)(2)).

KODIAK DISTRICT 2019 TANNER CRAB FISHERY

The 2018 Kodiak District survey estimate of mature male Tanner crab abundance was above the regulatory threshold in the Eastside and Southeast sections, and calculated section GHLs met the 100,000-pound minimum GHL requirement (Table 2). The 2019 Kodiak District calculated GHL was 615,000 pounds, meeting the 400,000-pound district minimum GHL. The Eastside Section GHL was 500,000 pounds and the Southeast Section GHL was 115,000 pounds. The Kodiak District Tanner crab fishery opened January 16 after a one-day weather delay; the GHL was fully harvested within 14.5 days.

A total of 82 vessels participated in the 2019 Kodiak District commercial Tanner crab fishery. Total harvest, including deadloss and personal use, was 620,726 pounds from 119 landings (Table 3). The estimated exvessel value was approximately \$2.7 million based on an average price of \$4.40 per pound (Table 3).

Biological data from Tanner crab, including carapace width (CW), average weight, and shell condition, were collected through the Kodiak dockside sampling program. Shell condition is a measure of relative age differences among mature crab assessed by evaluating characteristics of shell wear such as scratches, discoloration, and the accumulation of epibionts. New shell crab exhibit little to no wear as they likely molted more recently while very old shell crab exhibit extensive wear and accumulation of epibionts due to a longer period since their last molt. Biological fishery data and confidential skipper interviews are utilized in conjunction with ADF&G trawl survey data when determining fishery openings and GHLs.

In 2019, staff sampled 109 Tanner crab deliveries, conducted 106 confidential skipper interviews, and collected biological data from 10,887 crab.

Eastside Section

Tanner crab were well distributed during the 2018 survey; therefore, the entire Eastside Section was open for fishing with no partial section or inner bay closures; the GHL was 500,000 pounds. The section closed on January 26 at 6:00 p.m., resulting in a 9.5-day fishery. Seventy vessels made 98 landings; the average landing was 5,164 pounds. Total harvest was 506,119 pounds and average harvest was 7,230 pounds per vessel (Table 4). The section catch per unit effort (CPUE) was 17 legal crab per pot which was lower than the 2018 fishery (2018 CPUE = 21). Harvest was concentrated in Ugak Bay and offshore federal waters (Figure 5).

The average CW of Tanner crab sampled from the Eastside Section during the 2019 season was 149 mm, the average weight was 2.38 pounds per crab, and 87% of crab were new shell condition.

Southeast Section

The entire Southeast Section was open for fishing with a GHL of 115,000 pounds. The section closed on January 29 at 6:00 p.m., resulting in a 14.5-day fishery. Fourteen vessels made 21 landings; the average landing was 5,457 pounds. Total harvest was 114,607 pounds with an average harvest of 8,186 pounds per vessel (Table 4). The section CPUE was 19, which was higher than the most recent year when the fishery occurred in the Southeast Section (2013 CPUE = 17) but lower than previous years (2012 CPUE = 39; 2011 CPUE = 62). Harvest in the section was distributed evenly between inside and outside waters (north and south of lat 57° N; Figure 5).

The average CW of sampled Tanner crab harvested the Southeast Section during the 2019 season was 147 mm, the average weight was 2.33 pounds per crab, and 88% of crab were new shell condition.

CHIGNIK DISTRICT 2019 TANNER CRAB FISHERY

The 2018 Chignik District survey estimate of mature male Tanner crab abundance was below the regulatory threshold; therefore, the district did not open for the 2019 season (Table 2). This was the seventh consecutive season without a commercial Tanner crab fishery in the Chignik District (Table 5).

SOUTH PENINSULA DISTRICT 2019 TANNER CRAB FISHERY

The 2018 South Peninsula District Tanner survey estimate of mature male Tanner crab abundance was below the regulatory threshold in both the Eastern and Western sections; therefore, the South Peninsula fishery did not open in 2019 (Table 2). This was the sixth consecutive season without a commercial Tanner crab fishery in the district (Table 6).

DUNGENESS CRAB

BACKGROUND

Dungeness crab fisheries in the Kodiak, Chignik, and Alaska Peninsula districts are part of Registration Area J (Figure 2). Prior to 2002, the Chignik District was part of the Alaska Peninsula District, but in 2002 the BOF created a separate Chignik District (Figure 6). There is no stock assessment for Dungeness crab and GHLs are not established. The commercial fishery is managed by regulating size, sex, and season (“3-S” management). Under 3-S management, only male crab

6.5 inches in carapace width or larger may be retained during the open fishing season. There are no pot limits or vessel size restrictions for Dungeness crab fisheries in the Kodiak, Chignik, or Alaska Peninsula districts. All three districts are open access fisheries but require superexclusive vessel registrations.

KODIAK DISTRICT 2019 DUNGENESS CRAB FISHERY

The Kodiak District for Dungeness crab is divided north and south at lat $59^{\circ} 49.98' N$ on the east side of Kodiak Island (i.e., the southernmost tip of Boot Point) and at lat $57^{\circ} 17.40' N$ on the west side of Kodiak Island (i.e., Cape Ikolik; Figure 7). The fishery opened May 1 in the northern portion of the district and June 15 in the southern portion of the district. The fishery closed by regulation for the entire district on October 31 (Figure 7). Sixteen vessels participated in the fishery and the number of registered pots ranged from 53 to 1,000 pots per vessel, with an average of 447 pots per vessel. Harvest totaled 1,511,864 pounds from 124 landings. Average CPUE was 9 crab per pot (Table 7). Harvest was concentrated in Alitak Bay (statistical area 545632), Ugak Bay (statistical area 525701), and southern Tugidak and Sitkinak Islands (statistical area 545601; Figure 8). The estimated exvessel value was approximately \$4.2 million based on an average price per pound of \$2.75 (Table 7). The 2019 fishery had the largest harvest since 1992 and the highest CPUE since 1981.

Biological data from Dungeness crab, including CW, average weight, and shell condition, was collected through the Kodiak dockside sampling program. In 2019, staff conducted 17 skipper interviews and collected biological data from 24 deliveries, sampling 2,101 crab. The average CW of sampled Dungeness crab harvested during the 2019 fishery was 178 cm, average weight was 2.17 pounds, and 79% of crab were new shell condition.

CHIGNIK DISTRICT 2019 DUNGENESS CRAB FISHERY

The regulatory season for Dungeness crab in the Chignik District is May 1 through October 31. Since inception of the district in 2002, effort and harvest have been sporadic and generally low. Most years, fewer than three vessels have participated in the fishery. In 2019, three vessels participated in the fishery and the number of registered pots ranged from 300 to 750 pots per vessel, with an average of 465 pots per vessel. Harvest totaled 457,695 pounds from 40 landings. Average CPUE was 10 crab per pot. (Table 8). The estimated exvessel value was approximately \$1.2 million based on an average price per pound of \$2.65 (Table 8). There is no dockside sampling program for the Chignik District Dungeness crab fishery; fish ticket data was used to derive the average weight of 2.1 pounds per crab.

ALASKA PENINSULA DISTRICT 2019 DUNGENESS CRAB FISHERY

The regulatory season for Dungeness crab in the Alaska Peninsula District is May 1 through October 31. Six vessels participated in the fishery and the number of registered pots ranged from 300 to 900 pots per vessel, with an average of 500 pots per vessel. Harvest totaled 438,742 pounds from 60 landings. Average CPUE was 8 crab per pot (Table 9). The estimated exvessel value was approximately \$1.2 million based on an average price per pound of \$2.65 (Table 9). The 2019 fishery was similar to 2018 in harvest and value but saw increased participation and number of landings (Table 9). There is no dockside sampling program for the Alaska Peninsula District Dungeness fishery; fish ticket data was used to derive the average weight of 2.0 pounds per crab.

WEATHERVANE SCALLOP

BACKGROUND

The weathervane scallop fishery is comanaged by ADF&G and federal government. Most scallop harvest in the Kodiak and Alaska Peninsula areas occurs in federal waters although several commercially important scallop beds extend into state waters.

In federal waters, the federal Fishery Management Plan for the Scallop Fishery off Alaska (FMP) delegates most scallop management to ADF&G including the authority to set GHLs and crab bycatch limits, open and close scallop fishing seasons, and require onboard observer coverage. Federal management includes implementing the Scallop License Limitation Program (LLP), which requires a Scallop LLP license for vessels participating in scallop fisheries in federal waters and establishing overfishing limits.

In state waters, ADF&G previously managed a vessel-based limited entry program that closely mirrored the federal limited access Scallop LLP program; however, the state's limited entry program expired on December 31, 2013, and scallop fisheries in state waters became open access. In response, the BOF adopted 5 AAC 38.078 *State-Waters Weathervane Scallop Management Plan* in January 2014. Under the management plan, ADF&G is authorized to set a separate state-waters GHL within the same scallop bed if a vessel separately registers for the state-waters fishery. Since inception of the state-waters weathervane scallop management plan, no vessels have registered solely for the state-waters fishery and separate GHLs have not been set.

Biological data and fishery information are collected through the weathervane scallop observer program, which requires 100% observer coverage for vessels participating in the fishery. Observer data, including scallop size and age composition, scallop discards, and bycatch, are summarized annually in the Stock Assessment and Fishery Evaluation (SAFE) Report for the Scallop Fishery off Alaska (NPFMC 2020).

The regulatory seasons for commercial weathervane scallop fishing extends across two calendar years, from July 1 through February 15. Harvest information for weathervane scallops is reported by regulatory season as 2019/20.

ADF&G manages the fishery by registration area or district, and GHLs are established annually for each area/district. Areas may close by emergency order prior to the regulatory season closure if GHLs are achieved, fishery performance is low, or crab bycatch is high.

KODIAK AREA 2019/20 WEATHERVANE SCALLOP FISHERY

The Kodiak Area for commercial weathervane scallop fishing is divided into five districts although most effort occurs in the Northeast, Southwest, and Shelikof districts (5 AAC 34.405(a–e); Figure 9).

The total 2019/20 GHL for the Kodiak Area was 85,000 pounds of shucked scallop meat divided among the districts as follows: Northeast (15,000 pounds); Shelikof (20,000 pounds); Southeast (15,000 pounds); and Southwest (35,000 pounds; Table 10). During the 2019/20 season, two vessels participated in the Kodiak Area and signed a confidentiality waiver to release harvest data. Total harvest was 70,205 pounds of shucked scallop meat; GHLs were achieved in all districts except the Southeast District (Tables 10 and 11).

Prior to the 2019/20 season, the Shelikof District was subdivided east and west of long 154° W with separate GHLs established for each area. Since the 2019/20 season, two state-waters statistical areas in the Shelikof District, between Uyak Bay and Cape Ikolik (statistical areas 545701 and 545733), have been managed concurrently with the Southwest District and the remainder of the Shelikof District has been managed as a single unit, without regard to the long 154° W line. Scallop beds in these two statistical areas are probably extensions of the Southwest District scallop beds and this management change was made to reflect that. Effort in the Shelikof District occurred from July 8 through July 23, 2019 (Table 10). Total harvest from the Shelikof District was 20,125 pounds (Table 10).

The 2019/20 season was the second season since the Northeast District GHL was reduced from 55,000 pounds to 15,000 pounds. Effort in the Northeast District occurred during three separate trips in July, October, and January. The Northeast District closed on January 16, 2020, and total harvest was 15,070 pounds (Table 10).

As a result of shifting management of the Shelikof west subsection and associated 5,000-pound GHL to the Southwest District, the Southwest District GHL was increased from 30,000 pounds to 35,000 pounds for the 2019/20 season (Table 10). Effort in the Southwest District occurred from July 3 through August 5, 2019, and total harvest was 35,010 pounds (Table 10).

In March 2018, the BOF opened the Southeast District to commercial weathervane scallop fishing and a 15,000-pound GHL was established for the 2018/19 season. The 2019/20 season was the second year that the Southeast District was open with a 15,000-pound GHL. No fishing effort occurred and the Southeast District closed by regulation on February 15, 2020 (Table 10).

ALASKA PENINSULA AREA 2019/20 WEATHERVANE SCALLOP FISHERY

Weathervane scallop fishing effort in the Alaska Peninsula Area is low relative to other management areas and small GHLs are established for federal waters in the Unimak Bight District and waters between long 160° W and 161° W (Figure 10). The total GHL for the Alaska Peninsula Area was 15,000 pounds of shucked scallop meat, with 7,500 pounds in Unimak Bight and 7,500 pounds in waters between long 160° W and 161° W (Table 10).

Total harvest from the Alaska Peninsula Area was 5,750 pounds, all of which was harvested in federal waters of the Unimak Bight District (Table 12). The Unimak Bight District closed on October 7, 2019, prior to harvesting the full GHL, due to high Tanner crab bycatch. There was no effort in waters between long 160° W and 161° W and areas closed by regulation on February 15, 2020 (Table 10).

RED SEA CUCUMBER

BACKGROUND

Red sea cucumbers were not commercially harvested in the Kodiak or Chignik districts until 1991 when processors recruited divers to gather small numbers of sea cucumbers to test marketability. In the spring of 1993, processors enlisted 50 divers to prosecute a commercial fishery (Table 13). As the fishery developed, ADF&G implemented several management measures intended to prevent overharvest including seasonal closures, setting GHLs, and establishing fishing periods to allow ADF&G opportunity to accurately track harvest and assess inseason fishery performance. Additionally, management sections were established in the Kodiak District to distribute effort and prevent localized depletion (Figure 3).

Kodiak, Chignik, and South Peninsula red sea cucumber fisheries are open access dive gear fisheries. A GHL is established for each district. The Kodiak and South Peninsula districts are further apportioned into section GHLs. Sea cucumbers may only be taken during fishing periods established by emergency order after the regulatory season opening date on October 1, except for the Chignik District, which opens on September 15. Most fishing periods are between 12 and 48 hours in length.

The regulatory seasons for red sea cucumber fishing extend across two calendar years, from either September 15 or October 1 through April 30. Harvest information for red sea cucumber is reported by regulatory season as 2019/20.

KODIAK DISTRICT 2019/20 RED SEA CUCUMBER FISHERY

The Kodiak District for sea cucumbers is subdivided into eight sections: Northeast, Eastside, Southeast, Southwest, Semidi Island, Westside, North Mainland, and South Mainland (5 AAC 35.505(a)(1-8); Figure 3). The total 2019/20 GHL for the Kodiak District was 130,000 pounds of eviscerated sea cucumbers. This was a decrease from the 2018/19 GHL due to a 10,000-pound reduction in the Westside Section due to declining fishery performance (Table 13). The majority of the GHL (110,000 pounds) was apportioned between the Eastside, Southeast, Southwest, and Westside sections. Exploratory 5,000-pound GHLs were assigned to the Northeast, North Mainland, South Mainland, and Semidi Island Overlap sections (Table 14).

All 2019/20 red sea cucumber fishery effort and harvest occurred during four fishing periods, during October and early November. A total of 17 divers on 5 vessels made 45 landings (Table 13). The Eastside, Southeast, Southwest, and Westside sections closed when GHLs were achieved whereas all other sections remained open until the regulatory closure date of April 30, 2019 (Table 14). Most harvest occurred in the Eastside and Southeast sections (Figure 11). Harvest data are confidential due to a limited number of processors purchasing sea cucumbers.

Dockside staff collected average eviscerated weight samples from all 2019/20 vessel deliveries. The average weight was 0.61 pounds per eviscerated cucumber.

CHIGNIK AND SOUTH PENINSULA DISTRICTS 2019/20 RED SEA CUCUMBER FISHERIES

The Chignik District is managed at the district level, whereas the South Peninsula District is subdivided into two sections, East and West of long 162° W (Figure 4). The Chignik District GHL was 15,000 pounds of eviscerated sea cucumbers and the South Peninsula District was 20,000 pounds, with 10,000 pounds in each section (Table 14). Two divers on one vessel fished the Chignik District during one fishing period, from September 15 through September 21, 2019. Harvest data are confidential due to the limited number of permit holders and processors (Table 14). No effort occurred in the South Peninsula District.

SHRIMP

BACKGROUND

The Kodiak, Chignik, and South Peninsula shrimp districts are subdivided into management sections (Figure 12). Most sections have established management thresholds called Minimum Acceptable Biomass Indices (MABI). For a commercial fishery to occur in a section with an established threshold, estimated shrimp biomass must meet or exceed the MABI. However, since

2015, the small-mesh trawl survey conducted by ADF&G in support of shrimp fisheries has not been conducted; therefore, fishery-dependent CPUE combined with historic biomass estimates are used to establish GHLs. Additionally, fishing logbooks and catch sampling are used to inform management.

Kodiak, Chignik, and South Peninsula districts are nonexclusive registration areas and pot and trawl gear are the legal gear types. Commercial fishing seasons for shrimp vary by district, sections, and gear type and are found in 5 AAC 31.510, 5 AAC 31.590(b) and 5 AAC 31.592(b). In general, commercial shrimp fishing occurs in late summer and fall.

The regulatory seasons for shrimp fishing with trawl gear extend across two calendar years, from June 15 through February 28 in the Kodiak District and May 15 through February 14 in Chignik and South Peninsula districts. Harvest for shrimp is reported by regulatory season as 2019/20.

KODIAK, CHIGNIK, AND SOUTH PENINSULA DISTRICTS 2019/20 SHRIMP FISHERIES

During the 2019/20 season, one vessel using trawl gear participated in the Kodiak District; harvest data are confidential due to the limited number of participants and processors. There was no fishing effort for shrimp in the Chignik or South Peninsula districts during the 2019/20 season. Historical shrimp harvest information from the Kodiak, Chignik, and South Peninsula districts can be found in Spalinger (2017).

GIANT PACIFIC OCTOPUS

BACKGROUND

Giant Pacific octopus is considered a groundfish species by National Marine Fisheries Service (NMFS) and a shellfish species by ADF&G. Octopus are managed by ADF&G in state waters (0–3 nmi) and by NMFS in federal waters (3–200 nmi).

The octopus fisheries in the Kodiak, Chignik, and South Peninsula districts are part of Registration Area J (Figure 1). Directed fishing inside state waters may only occur under provisions of a commissioner permit. While targeting octopus, vessel operators may not participate in other directed pot gear fisheries such as the state-waters Pacific cod *Gadus macrocephalus* fishery. However, vessel operators participating in other pot gear fisheries may retain octopus as bycatch up to 20% by weight of the target species onboard.

2019 KODIAK, CHIGNIK, AND ALASKA PENINSULA DISTRICTS OCTOPUS FISHERIES

There were no commissioner permits issued for directed octopus fishing in the Kodiak, Chignik, or South Peninsula districts during 2019; therefore, there was no directed harvest of octopus during 2019.

All octopus harvested during 2019 were taken as bycatch in other commercial fisheries. Most harvest occurred during state and federal Pacific cod pot gear fisheries. In 2019, octopus harvested as bycatch totaled 419,836 pounds from state and federal waters combined. In state waters, 47 vessels harvested 94,490 pounds (Table 15). Fish ticket information reported an average price of \$0.60 per pound for an estimated total exvessel value of \$0.25 million for state and federal waters combined.

KING CRAB

RED KING CRAB

ADF&G closed the Kodiak and Alaska Peninsula commercial red king crab fisheries prior to the start of the 1983/84 season in response to declining fishery CPUE, harvest, and abundance estimates from annual assessment surveys. Red king crab abundance is estimated annually by a trawl survey conducted by ADF&G; however, the red king crab fishery has not reopened since 1982/83. For more information on the history of the Kodiak and Alaska Peninsula red king crab fisheries, regulations, and stock status, see Spalinger 2017 and Spalinger and Knutson 2019.

GOLDEN KING CRAB

Golden king crab have been periodically targeted in the Kodiak and Alaska Peninsula areas since 1983. ADF&G does not assess the golden king crab stock, GHLs are not established, and fishing occurs under provisions of a commissioner permit. No commissioner permits to target golden king crab were issued in the Kodiak or Alaska Peninsula areas during 2019.

OTHER SHELLFISH

Occasionally, ADF&G receives requests to harvest other miscellaneous shellfish such as urchins, snails, squid, clams, and other crab species in the Kodiak, Chignik, and South Peninsula areas. Minor harvests of green sea urchins *Strongylocentrotus droebachiensis*, razor clams *Siliqua patula*, and grooved Tanner crab *Chionoecetes tanneri* have historically occurred.

Generally, fishing for these species occurs conditionally under an ADF&G commissioner permit and by regulations for miscellaneous shellfish found in Chapter 38 of the Alaska Administrative Code. In 2019/20, one commissioner permit was issued to harvest sea urchins in the Kodiak Area. Harvest data are confidential.

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- Spalinger, K., and M. Knutson. 2019. Large-mesh bottom trawl survey of crab and groundfish: Kodiak, Chignik, South Peninsula, and Eastern Aleutian management districts, 2019. Alaska Department of Fish and Game, Fishery Management Report No. 19-16, Anchorage.

TABLES

Table 1.—Kodiak, Chignik, and South Peninsula districts commercial shellfish emergency orders, 2019/20 fisheries.

Emergency order	Effective date	Explanation
4-S-01-19	January 26, 2019	Closes the fishing season for Tanner crab in the Eastside Section of the Kodiak District for the remainder of the 2019 season.
4-S-03-19	January 29, 2019	Closes the fishing season for Tanner crab in the Southeast Section of the Kodiak District for the remainder of the 2019 season.
4-S-06-19	July 23, 2019	Closes the fishing season for weathervane scallops in waters of the Shelikof District of the Kodiak Registration Area for the remainder of the 2019/20 season.
4-S-07-19	August 5, 2019	Closes the fishing season for weathervane scallops in waters of the Southwest District of the Kodiak Registration Area for the remainder of the 2019/20 season.
4-S-08-19	September 15, 2019	Establishes the first fishing period for the 2019/20 red sea cucumber season in the Chignik District of Registration Area J.
4-S-09-19	October 1, 2019	Establishes the first fishing period for the 2019/20 red sea cucumber season for all sections in the Kodiak District of Registration Area J.
4-S-10-19	October 13, 2019	Re-establishes the first fishing period for the 2019/20 red sea cucumber season for all sections in the Kodiak District of Registration Area J which was delayed by weather.
4-S-11-19	October 7, 2019	Closes the fishing season for weathervane scallops in waters of the Unimak Bight of the Alaska Peninsula Registration Area for the remainder of the 2019/20 season.
4-S-12-19	October 10, 2019	Establishes the second fishing period for the 2019/20 red sea cucumber season in the Northeast, Southwest, Westside, Mainland and Semidi Island Overlap sections in the Kodiak District of Registration Area J.
4-S-13-19	October 19, 2019	Establishes the third fishing period for the 2019/20 red sea cucumber season in the Northeast, Southwest, Westside, Mainland and Semidi Island Overlap sections in the Kodiak District of Registration Area J.
4-S-14-19	October 28, 2019	Establishes the fourth fishing period for the 2019/20 red sea cucumber season in the Northeast, Mainland and Semidi Island Overlap sections of the Kodiak District of Registration Area J.
4-S-01-20	January 16, 2020	Closes the fishing season for weathervane scallops in waters of the Northeast District of the Kodiak Registration Area for the remainder of the 2019/20 season.

Notes: Omitted emergency orders (e.g., 4-S-5-19) enacted for management areas outside of Kodiak, Chignik, and South Peninsula districts.

Table 2.—Tanner crab regulatory harvest strategies mature male abundance threshold levels in number of crab, estimates of number of mature male crab by survey year from bottom trawl surveys, 2014–2018, and respective fishery guideline harvest levels (GHLs), 2015–2019.

	Abundance threshold (number of mature males CW >114 mm)	Number of mature males (CW > 114 mm)				
		2014	2015	2016	2017	2018
Kodiak District						
Northeast Section	1,123,000	486,625	245,327	285,473	411,803	530,533
Eastside Section	1,552,000	879,619	795,901	5,779,765 ^a	5,164,475 ^a	6,207,284
Southeast Section	733,000	2,048,688 ^a	770,595 ^a	1,258,528 ^a	667,890	1,945,812
Southwest Section	1,236,000	582,977	581,810	1,021,219	1,581,401 ^a	829,358
Westside Section	764,000	654,991	231,583	224,050	308,643	637,127
North Mainland Section	1,469,000	201,926	561,951	447,094	313,323	613,235
Chignik District	973,000	1,803,796 ^a	1,043,633 ^a	610,875	319,501	777,204
South Peninsula District						
Eastern Section	2,015,000	799,794	1,194,423	1,370,094	436,361	421,580
Western Section	1,250,000	2,299,520 ^a	1,733,879 ^a	3,420,640 ^a	733,065	899,185
		Minimum GHL (pounds)	GHL for following Tanner season (pounds)			
			2015	2016	2017	2018
Kodiak District						
Northeast Section	100,000	below threshold	below threshold	below threshold	below threshold	below threshold
Eastside Section	100,000	— ^b	below threshold	below threshold	260,000	500,000
Southeast Section	100,000	— ^b	— ^b	— ^b	below threshold	115,000
Southwest Section	100,000	below threshold	below threshold	below threshold	140,000	below threshold
Westside Section	100,000	below threshold	below threshold	below threshold	below threshold	below threshold
North Mainland Section	100,000	below threshold	below threshold	below threshold	below threshold	below threshold
Chignik District	200,000	— ^b	— ^b	— ^b	below threshold	below threshold
South Peninsula District						
Eastern Section	200,000	below threshold	below threshold	below threshold	below threshold	below threshold
Western Section	200,000	below threshold	— ^c	— ^c	below threshold	below threshold

Notes: At least two sections within the Kodiak District must meet mature male abundance and minimum GHL thresholds and provide a district total GHL of at least 400,000 pounds before the fishery can open; CW = carapace width.

^a Above mature male harvest strategy threshold

^b The calculated fishery GHL did not meet minimum GHL requirements

^c GHL requirements were met but, due to uncertainty in survey estimates and conservation concerns, the fishery was not opened.

Table 3.—Kodiak District commercial Tanner crab guideline harvest level (GHL), effort, harvest, average weight and value, 1967–2019.

Year	GHL	Number			Crab ^a	Pounds ^a	Pots lifted	Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
		Vessels	Landings									
1967	NA	NA	83	NA	110,961	NA	1,337	NA	NA	\$0.07	NA	NA
1968	NA	NA	817	NA	2,560,687	NA	3,134	NA	NA	\$0.10	NA	NA
1969	NA	85	955	NA	6,827,312	72,748	7,149	43	NA	\$0.11	NA	NA
1969/70	NA	67	833	3,237,244	8,416,782	78,266	10,104	42	2.6	\$0.11	NA	NA
1970/71	NA	82	453	2,686,067	6,744,163	60,967	14,888	44	2.5	\$0.11	NA	NA
1971/72	NA	46	505	3,878,618	9,475,902	65,907	18,764	59	2.4	\$0.13	NA	NA
1972/73	NA	105	1,466	13,609,688	30,699,777	188,158	20,941	72	2.3	\$0.17	NA	NA
1973/74	NA	123	1,741	11,857,573	29,820,899	217,523	17,129	55	2.5	\$0.20	NA	NA
1974/75	NA	74	471	5,459,940	13,649,966	73,826	28,981	74	2.5	\$0.17	NA	NA
1975/76	NA	104	1,168	10,748,958	27,336,909	199,304	23,405	54	2.5	\$0.20	NA	NA
1976/77	NA	102	998	7,830,727	20,720,079	164,213	20,762	48	2.6	\$0.33	NA	NA
1977	NA	148	1,483	12,401,243	33,281,472	251,621	22,442	49	2.6	\$0.43	NA	NA
1978	NA	218	1,225	10,702,829	29,173,807	275,455	23,815	38	2.7	\$0.55	NA	NA
1979	NA	211	1,385	6,813,128	18,623,875	282,946	13,447	24	2.7	\$0.55	NA	NA
1980	NA	188	771	4,398,631	11,748,629	174,351	15,238	25	2.7	\$0.65	NA	NA
1982	NA	221	950	5,413,467	13,756,159	230,403	14,480	24	2.5	\$1.65	NA	NA
1983	NA	348	1,439	7,744,812	18,927,061	377,562	13,153	21	2.4	\$1.25	NA	NA
1984	NA	303	1,229	5,891,968	14,478,066	303,764	11,780	19	2.5	\$1.21	NA	NA
1985	NA	216	710	4,540,114	11,947,696	176,215	16,828	26	2.6	\$1.54	\$18,399,452	NA
1986	NA	233	602	3,451,322	8,981,761	159,973	14,920	22	2.6	\$1.84	\$16,526,440	NA
1987	NA	190	506	1,832,962	4,839,446	111,198	9,564	16	2.6	\$2.46	\$11,905,037	NA
1988	NA	178	560	1,648,064	3,959,504	103,391	7,071	16	2.4	\$2.41	\$9,542,405	NA
1989	NA	171	566	2,096,540	5,185,563	86,056	9,162	24	2.5	\$3.06	\$15,867,823	NA
1990	NA	232	547	1,437,935	3,446,937	96,956	6,302	15	2.4	\$2.38	\$8,203,710	NA
1991	NA	135	445	764,357	1,917,713	54,110	4,309	14	2.5	\$1.67	\$3,202,581	NA
1992	NA	143	434	982,391	2,400,213	47,384	5,530	21	2.4	\$2.27	\$5,448,484	NA
1993	NA	140	353	518,982	1,318,446	43,528	3,735	12	2.5	\$2.09	\$2,755,552	NA
1994	NA	130	379	511,131	1,253,462	41,587	3,307	12	2.5	\$2.55	\$3,196,328	NA

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Table 3.—Page 2 of 2.

Year	GHL	Vessels	Landings	Crab ^a	Pounds ^a	Pots lifted	Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
1995–2000											
2001	500,000	145	192	193,138	510,407	7,233	2,658	27	2.6	\$2.30	\$1,173,936
2002	500,000	181	279	146,655	361,166	10,446	1,294	14	2.5	\$2.20	\$794,565
2003	510,000	72	276	215,924	511,324	11,108	1,853	19	2.4	\$2.48	\$1,268,084
2004	795,000	66	252	254,960	566,218	15,550	2,247	16	2.2	\$2.45	\$1,387,234
2005	1,750,000	76	291	779,041	1,806,416	21,429	6,338	36	2.3	\$1.73	\$3,125,100
2006	2,100,000	68	249	890,925	2,123,931	21,962	8,530	41	2.4	\$1.53	\$3,249,614
2007	800,000	50	96	318,815	765,092	7,834	7,970	41	2.4	\$1.84	\$1,407,769
2008	500,000	33	64	172,230	425,353	5,490	6,646	31	2.5	\$1.98	\$842,199
2009	400,000	31	48	148,882	359,056	5,835	7,480	26	2.4	\$1.80	\$646,301
2010	700,000	52	84	294,569	650,315	8,417	7,742	35	2.2	\$1.58	\$1,027,498
2011	1,490,000	80	131	638,959	1,537,384	11,213	11,736	57	2.4	\$3.04	\$4,673,647
2012	950,000	64	93	436,133	1,078,106	10,460	11,593	42	2.5	\$3.00	\$3,234,318
2013	660,000	59	115	263,213	658,194	13,084	5,723	20	2.5	\$2.70	\$1,777,124
2014–2017											
2018	400,000	56	65	186,647	431,991	8,120	6,646	23	2.3	\$4.52	\$1,952,599
2019	615,000	82	119	262,412	620,726	15,035	5,216	17	2.4	\$4.52	\$2,731,194

Notes: NA = not available; GHL = guideline harvest level (pounds); CPUE = legal crab per pot lift

^a Includes deadloss and personal use

^b Pounds per crab

Table 4.—Kodiak District commercial Tanner crab guideline harvest levels (GHLs), effort, and harvest by section, 2007–2019.

Season	Section ^a	GHL	Vessels ^b	Landings ^c	Pounds	Pots lifted	CPUE
2007	Northeast	100,000	21	44	88,584	1,651	24
	Eastside	700,000	40	53	676,508	6,181	45
	Total	800,000	50	96	765,092	7,832	41
2008	Northeast	100,000	9	21	88,514	1,707	24
	Eastside	400,000	30	43	336,839	3,783	33
	Total	500,000	33	64	425,353	5,490	31
2009	Northeast	100,000	11	19	60,370	1,467	18
	Eastside	300,000	24	31	298,686	4,368	28
	Total	400,000	31	48	359,056	5,835	26
2010	Northeast	100,000	23	37	80,133	1,192	31
	Eastside	500,000	30	37	469,807	6,287	34
	Southeast	100,000	7	10	100,375	938	48
	Total	700,000	52	84	650,315	8,417	35
2011	Northeast	100,000	16	33	130,317	985	55
	Eastside	1,000,000	52	67	983,028	6,976	58
	Southeast	240,000	16	15	229,781	1,501	62
	Southwest	150,000	10	13	179,680	1,264	64
	Semidi	NA	6	6	14,578	487	13
	Total	1,490,000	80	131	1,537,384	11,213	57
2012	Eastside	550,000	39	50	618,543	5,159	48
	Southeast	300,000	23	29	321,031	3,337	39
	Southwest	100,000	5	8	110,336	934	50
	Semidi	NA	5	6	28,195	1,030	12
	Total	950,000	64	93	1,078,106	10,460	42
2013	Eastside	520,000	47	94	535,653	10,150	21
	Southeast	140,000	18	21	122,541	2,934	17
	Total	660,000	59	115	658,194	13,084	20
2014–2017		No Commercial Fishery					
2018	Eastside	260,000	43	48	272,288	5,382	21
	Southwest	140,000	12	12	150,516	1,921	35
	Semidi	NA	3	5	9,186	4,400	5
	Total	400,000	56	65	431,991	8,120	23
2019	Eastside	500,000	70	98	506,119	12,414	17
	Southeast	115,000	14	21	114,607	2,621	19
	Total	615,000	82	119	620,726	15,035	17

Notes: NA = not applicable; GHL = guideline harvest level (pounds); CPUE = legal crab per pot lift.

^a The Semidi Island Overlap Section (abbreviated Semidi) does not have a GHL.

^b Totals unique vessels; several vessels participated in multiple sections.

^c Some landings include multiple sections.

Table 5.—Chignik District commercial Tanner crab guideline harvest level (GHL), effort, harvest, average weight, and value, 1968–2019.

Year	GHL	Number				Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
		Vessels	Landings	Crab ^a	Pounds ^a					
1968	NA	NA	NA	NA	21,100	NA	NA	NA	NA	NA
1969	NA	NA	NA	NA	38,100	NA	NA	NA	NA	NA
1969/70	NA	NA	NA	NA	2,800	NA	NA	NA	NA	NA
1970/71	NA	NA	NA	NA	152,300	NA	NA	NA	NA	NA
1971/72	NA	NA	NA	NA	26,500	NA	NA	NA	NA	NA
1972/73	NA	15	56	297,363	747,788	8,080	13,353	51	2.5	\$0.16
1973/74	NA	25	115	1,585,560	4,054,873	28,083	35,260	57	2.6	\$0.20
1974/75	NA	25	91	1,438,508	3,649,444	22,675	40,104	63	2.5	\$0.14
1975/76	NA	35	217	4,434,381	11,201,941	59,377	51,622	75	2.5	\$0.19
1976/77	NA	21	141	2,098,226	5,672,919	40,604	40,233	52	2.7	\$0.33
1977/78	NA	32	140	1,725,042	4,693,830	38,414	33,527	45	2.8	\$0.42
1978/79	NA	39	126	926,253	2,536,105	28,378	20,128	33	2.7	\$0.55
1979/80	NA	42	155	2,340,004	3,517,920	54,627	22,696	25	2.6	\$0.54
1980/81	NA	24	112	1,534,847	3,653,723	44,022	32,623	35	2.4	\$0.64
1981/82	NA	45	174	1,343,500	3,240,476	47,830	18,623	28	2.4	\$1.21
1983	NA	48	136	1,432,029	3,497,370	60,210	25,716	24	2.4	\$1.12
1984	NA	17	41	269,724	659,043	14,665	16,074	18	2.4	\$1.09
1985	NA	15	30	148,232	343,579	14,162	11,453	10	2.3	\$1.66
1986	NA	7	14	91,008	199,452	8,246	14,247	11	2.2	\$2.10
1987	NA	9	18	86,732	189,087	6,819	10,505	13	2.2	\$2.30
1988	NA	5	10	53,958	112,513	4,641	11,251	12	2.1	\$2.22
1989	NA	6	35	152,250	346,556	10,345	9,902	15	2.3	NA
1990–2004						No Commercial Fishery				
2005	400,000	22	59	184,706	410,741	7,456	6,962	25	2.2	\$681,830
2006	200,000	4	7	57,547	143,164	2,037	20,452	28	2.5	\$171,797
2007–2010						No Commercial Fishery				
2011	600,000	13	35	276,691	646,531	5,516	18,472	50	2.3	\$2.58
2012	700,000	28	43	296,310	698,043	8,141	16,234	36	2.4	\$1,542,675

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Table 5.—Page 2 of 2.

Year	GHL	Number			Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
		Vessels	Landings	Crab ^a					
2013–2019		No Commercial Fishery							

Notes: NA = not available; GHL = guideline harvest level (pounds); CPUE = legal crab per pot lift

^a Includes deadloss and personal use

^b Pounds per crab

Table 6.—South Peninsula District commercial Tanner crab guideline harvest level (GHL), effort, harvest, average weight, and value, 1967–2019.

Year	GHL	Number				Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
		Vessels	Landings	Crab ^a	Pounds ^a					
1967	NA	NA	NA	NA	3,100	NA	NA	NA	NA	NA
1968	NA	NA	155	36,835	110,610	NA	714	NA	3.0	NA
1969	NA	NA	173	221,946	606,178	NA	3,504	NA	2.7	NA
1969/70	NA	NA	NA	NA	2,093,600	NA	NA	NA	NA	NA
1970/71	NA	17	242	813,610	2,140,585	NA	8,845	NA	2.6	\$0.10
1971/72	NA	NA	NA	NA	3,618,900	NA	NA	NA	NA	NA
1972/73	NA	36	390	2,213,006	5,615,563	53,573	14,399	41	2.5	NA
1973/74	NA	44	386	3,504,668	8,300,578	58,444	21,504	60	2.4	NA
1974/75	NA	44	131	2,053,530	5,195,800	38,153	39,663	54	2.5	\$0.14
1975/76	NA	36	288	2,724,509	6,926,161	52,381	24,049	52	2.5	\$0.20
1976/77	NA	28	289	2,524,565	6,773,838	63,143	23,439	40	2.7	\$0.32
1977/78	NA	36	374	2,847,948	7,446,270	70,587	19,910	40	2.6	\$0.40
1978/79	NA	48	332	3,267,122	8,684,408	82,374	26,158	40	2.7	\$0.51
1979/80	NA	61	363	2,581,544	6,961,251	96,989	19,177	27	2.7	\$0.54
1980/81	6,000,000	43	268	1,274,539	3,294,106	59,560	12,291	21	2.6	\$0.58
1981/82	4,500,000	72	365	1,815,060	4,589,042	81,008	12,573	22	2.5	\$1.05
1983	3,000,000	82	230	1,144,096	2,863,798	70,524	12,451	16	2.5	\$1.20
1984	2,750,000	61	207	775,472	1,789,883	50,726	8,647	15	2.3	\$1.08
1985	1,930,000	52	187	1,085,864	2,514,843	48,416	13,448	22	2.3	\$1.36
1986	3,900,000	75	187	1,589,757	3,781,950	65,078	20,224	24	2.4	\$1.72
1987	2,000,000	55	106	950,300	2,400,784	37,506	22,649	25	2.5	\$1.98
1988	3,431,000	73	148	1,360,367	3,328,799	52,516	22,492	26	2.4	\$2.19
1989	700,000	65	87	433,112	1,055,082	27,958	12,127	15	2.4	\$2.66
1990–2000						No Commercial Fishery				
2001	375,000	56	69	108,613	260,982	4,510	3,782	24	2.4	\$1.46
2002–2004						No Commercial Fishery				
2005	300,000	42	68	134,019	295,741	5,655	4,349	24	2.2	\$1.66
2006	290,000	15	47	127,061	287,749	3,703	6,122	34	2.3	\$1.20
										\$345,299

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Table 6.—Page 2 of 2.

Year	GHL	Number			Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value		
		Vessels	Landings	Crab ^a	Pounds ^a	Pots lifted					
2007	200,000	6	15	74,187	165,811	1,959	11,054	38	2.2	\$0.79	\$130,991
2008	250,000	9	42	102,290	236,241	3,368	5,625	30	2.3	\$1.50	\$354,362
2009	275,000	12	66	122,441	265,560	5,311	4,024	23	2.2	\$1.50	\$398,340
2010	500,000	41	72	261,170	583,202	5,779	8,100	45	2.2	\$1.39	\$810,651
2011	2,300,000	51	134	1,135,050	2,866,041	15,816	21,388	72	2.5	\$2.47	\$7,079,121
2012	1,620,000	56	117	723,578	1,875,277	10,524	16,028	69	2.6	\$2.24	\$4,200,620
2013	230,000	24	44	141,912	343,293	3,596	7,802	39	2.4	\$2.29	\$786,141
2014–2019							No Commercial Fishery				

Notes: NA = not available; GHL = guideline harvest level (pounds); CPUE = legal crab per pot lift.

^a Includes deadloss and personal use

^b Pounds per crab

Table 7.—Kodiak District commercial Dungeness crab effort, harvest, average weight, and value, 1962–2019.

Year	Number			Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
	Vessels	Landings	Crab ^a					
1962	NA	149	NA	1,904,567	NA	12,782	NA	\$0.09
1963	NA	354	NA	2,487,512	NA	7,026	NA	\$0.09
1964	29	395	NA	4,254,565	NA	10,537	NA	\$0.09
1965	25	351	NA	3,311,571	NA	9,434	NA	\$0.12
1966	12	144	NA	1,416,174	NA	7,976	NA	\$0.13
1967	18	439	NA	6,663,668	NA	15,179	NA	\$0.13
1968	43	536	NA	6,829,061	NA	12,741	NA	\$0.14
1969	29	455	NA	5,834,628	190,967	12,823	NA	\$0.16
1970	33	318	NA	5,741,438	249,800	18,005	NA	\$0.14
1971	24	173	515,653	1,445,864	90,913	8,358	6	\$0.18
1972	34	316	766,960	2,059,536	140,921	6,517	5	\$0.40
1973	42	487	879,484	2,000,526	251,467	4,108	3	\$0.50
1974	23	172	337,839	750,057	104,062	4,361	3	\$0.47
1975	15	154	307,272	639,813	76,411	4,154	4	\$0.61
1976	4	6	38,072	87,110	4,410	14,518	9	\$0.15
1977	2	16	46,333	113,026	3,805	7,875	12	\$0.30
1978	20	173	618,357	1,362,306	93,633	7,875	7	\$0.75
1979	28	237	595,850	1,311,275	137,951	5,543	4	\$0.75
1980	21	197	968,829	2,011,736	107,261	10,212	9	\$0.45
1981	50	466	2,614,545	5,566,463	295,138	11,945	9	\$0.70
1982	111	991	2,004,075	4,546,311	481,542	4,588	4	\$0.75
1983	103	1,079	2,044,505	4,752,148	503,464	4,408	4	\$1.05
1984	106	1,163	2,393,974	5,303,052	627,441	4,564	4	\$1.45
1985	126	1,240	1,786,305	4,146,897	598,027	3,344	3	\$1.48
1986	82	577	441,007	967,423	199,356	1,667	2	\$1.21
1987	45	379	747,193	1,450,983	150,067	3,828	5	\$1.26
1988	50	364	1,064,427	2,125,114	203,237	5,838	5	\$1.06
1989	47	359	1,428,973	3,077,937	185,242	8,574	8	\$1.10

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Year	Vessels	Landings	Number	Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
			Crab ^a	Pounds ^a	Pots lifted			
1990	62	519	1,301,465	2,937,168	296,168	5,659	4	\$1.60
1991	62	732	695,470	1,414,499	279,872	1,932	2	\$1.38
1992	46	501	805,215	1,656,793	218,602	3,306	4	\$0.87
1993	42	263	647,736	1,369,889	180,534	5,209	4	\$0.95
1994	31	162	426,848	948,461	151,888	5,855	3	\$1.25
1995	24	106	257,677	527,434	107,506	4,976	2	\$1.74
1996	21	113	334,237	668,772	88,682	5,918	4	\$1.05
1997	21	123	257,697	529,550	95,066	4,305	3	\$2.11
1998	12	60	185,249	371,241	63,926	6,187	3	\$1.46
1999	13	72	269,277	551,183	65,721	7,655	4	\$1.58
2000	12	69	114,038	238,955	57,037	3,463	2	\$1.65
2001	21	57	101,371	208,265	41,760	3,654	2	\$1.80
2002	18	74	181,698	355,943	71,096	4,810	3	\$1.45
2003	17	89	228,309	467,623	48,715	5,254	5	\$1.50
2004	11	57	169,899	352,216	42,990	6,179	4	\$1.50
2005	14	75	185,358	390,995	38,422	5,213	5	\$1.23
2006	12	62	74,044	148,583	31,670	2,397	2	\$1.45
2007	12	86	323,489	663,077	65,071	7,710	5	\$2.08
2008	15	86	517,567	1,030,498	93,414	11,983	6	\$2.19
2009	17	108	614,793	1,335,503	129,003	12,366	5	\$1.59
2010	19	100	473,708	1,002,576	101,341	10,026	5	\$1.90
2011	11	57	181,754	389,270	64,157	6,829	3	\$2.39
2012	7	23	45,996	97,000	27,061	4,217	2	\$2.65
2013	3	17	33,226	69,001	19,597	4,059	2	\$2.68
2014	6	34	108,406	223,773	35,960	6,582	3	\$2.95
2015	7	40	93,674	193,223	35,041	4,830	3	\$3.00
2016	8	63	133,142	273,617	46,466	4,343	3	\$3.19

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Table 7.—Page 3 of 3.

Year	Number				Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
	Vessels	Landings	Crab ^a	Pounds ^a					
2017	5	41	93,916	183,769	28,296	4,482	3	2.0	\$2.70
2018	7	59	330,096	647,396	52,253	10,973	6	2.0	\$3.12
2019	16	124	689,314	1,511,864	76,807	12,192	9	2.2	\$2.75

Notes: NA = not available; CPUE = legal crab per pot lift.

^a Includes deadloss and personal use

^b Pounds per crab

Table 8.—Chignik District commercial Dungeness crab effort, harvest, and value, 2002–2019.

Year	Number					Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
	Vessels	Landings	Crab ^a	Pounds ^a	Pots lifted					
2002	2	7	CF	CF	CF	CF	CF	2.0	CF	CF
2003	1	3	CF	CF	CF	CF	CF	2.0	CF	CF
2004	2	9	CF	CF	CF	CF	CF	2.0	CF	CF
2005	1	4	CF	CF	CF	CF	CF	2.0	CF	CF
2006	2	8	CF	CF	CF	CF	CF	1.9	CF	CF
2007	2	19	CF	CF	CF	CF	CF	2.0	CF	CF
2008	3	8	26,751	54,152	3,882	6,769	7	2.0	\$2.11	\$114,261
2009	1	9	CF	CF	CF	CF	CF	2.0	CF	CF
2010	2	10	CF	CF	CF	CF	CF	2.1	CF	CF
2011	2	14	CF	CF	CF	CF	CF	2.1	CF	CF
2012	1	5	CF	CF	CF	CF	CF	2.3	CF	CF
2013			No Commercial Fishing Effort							
2014	1	4	CF	CF	CF	CF	CF	1.8	CF	CF
2015	1	4	CF	CF	CF	CF	CF	2.1	CF	CF
2016	1	2	CF	CF	CF	CF	CF	2.2	CF	CF
2017	1	8	CF	CF	CF	CF	CF	2.2	CF	CF
2018	1	22	CF	CF	CF	CF	CF	2.0	CF	CF
2019	3	40	218,364	457,695	22,023	11,442	10	2.1	\$2.65	\$1,212,892

Notes: CF = confidential; CPUE = legal crab per pot lift.

^a Includes deadloss and personal use crab

^b Pounds per crab

Table 9.—Alaska Peninsula District commercial Dungeness crab effort, harvest, and value, 2002–2019.

Year	Number					Avg. pounds per landing	Avg. CPUE	Avg. weight ^b	Avg. price per pound	Exvessel value
	Vessels	Landings	Crab ^a	Pounds ^a	Pots lifted					
2002	2	23	CF	CF	CF	CF	CF	2.4	CF	CF
2003	4	39	134,572	269,107	12,037	6,900	11	2.0	\$1.45	\$390,205
2004	4	44	107,632	215,632	17,896	4,901	6	2.0	\$1.38	\$297,572
2005	5	31	135,590	274,879	13,605	8,867	10	2.0	\$1.25	\$343,599
2006	2	18	CF	CF	CF	CF	CF	2.1	CF	CF
2007	2	17	CF	CF	CF	CF	CF	1.9	CF	CF
2008	4	31	234,930	462,989	23,965	14,935	10	2.0	\$2.11	\$976,907
2009	6	47	244,837	500,514	40,938	10,649	6	2.0	\$1.49	\$745,766
2010	4	27	117,844	247,221	27,497	9,156	4	2.1	\$1.79	\$442,526
2011	5	26	80,214	174,940	17,609	6,728	5	2.2	\$2.25	\$393,615
2012	5	26	57,766	126,630	18,405	4,870	3	2.2	\$2.25	\$284,918
2013	3	15	32,967	75,679	6,947	5,045	5	2.3	\$2.41	\$182,386
2014	3	18	37,896	76,813	10,936	4,267	3	2.0	\$2.70	\$207,395
2015	4	16	48,770	98,373	6,175	6,148	8	2.0	\$2.90	\$285,282
2016	4	24	52,635	118,107	10,241	4,921	5	2.2	\$3.00	\$354,321
2017	2	8	CF	CF	CF	CF	CF	2.0	CF	CF
2018	4	42	228,263	440,576	18,509	10,490	12	1.9	\$3.00	\$1,321,728
2019	6	60	217,319	438,742	25,650	7,312	8	2.0	\$2.65	\$1,162,666

Notes: CF = confidential; CPUE = legal crab per pot lift.

^a Includes deadloss and personal use crab

^b Pounds per crab

Table 10.—Kodiak and Alaska Peninsula areas commercial weathervane scallop guideline harvest level (GHL), harvest, and fishery closure date, by district, 2019/20.

Area/District	GHL ^a	Pounds ^a	Fishery Closure Date
Kodiak Area			
Northeast	15,000	15,070	January 16, 2020
Shelikof	20,000	20,125	July 23, 2019
Southeast	15,000	0	February 15, 2020
Southwest	35,000	35,010	August 5, 2019
Semidi Island	exploratory	0	February 15, 2020
Total	85,000	70,205	
Alaska Peninsula Area			
Waters between 160°W and 161°W	7,500	0	February 15, 2020
Unimak Bight	7,500	5,750	October 7, 2019
Total	15,000	5,750	

Notes: Harvest excludes discards at sea; GHL = guideline harvest level (pounds).

^a Pounds of shucked scallop meat

Table 11.—Kodiak Area commercial weathervane scallop guideline harvest level (GHL), effort, and federal and state water harvest, 1996/97–2019/20.

Season	GHL ^a	Vessels	Federal Waters		State Waters		Total Pounds ^a
			Pounds ^a	% of Total	Pounds ^a	% of Total	
1996/97	NA	4	157,029	58.5	111,516	41.5	268,545
1997/98	NA	5	282,305	78.3	78,034	21.7	360,339
1998/99	NA	8	245,462	81.4	56,138	18.6	301,600
1999/00	255,000	6	216,661	81.4	49,531	18.6	266,012
2000/01	260,000	5	205,383	79.0	54,669	21.0	260,052
2001/02	260,000	4	170,293	66.1	87,289	33.9	257,582
2002/03	260,000	3	189,960	72.9	70,620	27.1	260,580
2003/04	260,000	2	205,786	79.2	54,190	20.8	259,976
2004/05	260,000	2	177,643	69.7	77,084	30.3	254,727
2005/06	240,000	3	187,389	78.1	52,542	21.9	239,931
2006/07	250,000	3	175,382	73.8	62,315	26.2	237,697
2007/08	260,000	3	193,080	78.8	51,993	21.2	245,073
2008/09	260,000	4	84,834	95.7	3,790	4.3	88,624
2009/10	270,000	3	223,724	92.6	17,761	7.4	241,485
2010/11	260,000	4	186,988	79.2	48,981	20.8	235,969
2011/12	230,000	4	183,282	83.0	37,541	17.0	220,823
2012/13	190,000	4	154,536	80.1	38,344	19.9	192,880
2013/14	185,000	5	160,655	88.8	20,227	11.2	180,882
2014/15	185,000	4	106,882	73.2	39,181	26.8	146,063
2015/16	155,000	3	87,702	82.2	18,976	17.8	106,678
2016/17	105,000	2	59,930	80.3	14,720	19.7	74,650
2017/18	105,000	1	56,662	88.1	7,650	11.9	64,312
2018/19	85,000	1	36,770	52.1	33,870	47.9	70,640
2019/20	85,000	2	52,370	74.6	17,835	25.4	70,205

Notes: Harvest excludes discards at sea; GHL = Guideline Harvest Level (pounds); NA = Not Applicable.

^a Pounds of scallop meat

Table 12.—Alaska Peninsula Area commercial weathervane scallop guideline harvest level (GHL), effort, and federal and state water harvest, 1996/97–2019/20.

Year	GHL ^a	Vessels	Federal Waters		State Waters		Total Pounds
			Pounds	% of Total	Pounds	% of Total	
1996/97	200,000	2	12,560	100.0	0	0.0	12,560
1997/98	200,000	4	51,616	100.0	0	0.0	51,616
1998/99	200,000	4	63,290	100.0	0	0.0	63,290
1999/00	200,000	5	75,590	100.0	20	< 1	75,610
2000/01	33,000	3	7,660	100.0	0	0.0	7,660
2001/02–2004/05	NA			No Commercial Fishery			
2005/06	20,000			No Commercial Fishing Effort			
2006/07	25,000	2	155	100.0	0	0.0	155
2007/08	10,000			No Commercial Fishing Effort			
2008/09	10,000	1	2,460	100.0	0	0.0	2,460
2009/10–2011/12	NA			No Commercial Fishery			
2012/13	15,000	1	15,040	100.0	0	0.0	15,040
2013/14	15,000	1	15,155	100.0	0	0.0	15,155
2014/15	15,000	3	15,020	100.0	0	0.0	15,020
2015/16	15,000	1	15,000	100.0	0	0.0	15,000
2016/17	15,000	1	14,996	100.0	0	0.0	14,996
2017/18	15,000	1	15,250	100.0	0	0.0	15,250
2018/19	15,000	1	8,905	100.0	0	0.0	8,905
2019/20	15,000	1	5,750	100.0	0	0.0	5,750

Notes: Harvest excludes discards at sea; NA = not applicable.

^a Pounds of shucked scallop meat

Table 13.—Kodiak District commercial red sea cucumber effort, harvest, and value, 1991–2019/20.

Season	GHL ^a	Number			Pounds ^a	Avg. pounds per landing	CPUE ^c	Avg. Weight ^d	Avg. price per pound	Exvessel value
		Permits	Vessels	Landings						
1991	NA	2	1	2	CF	CF	ND	ND	CF	CF
1992	NA	1	1	2	CF	CF	ND	ND	CF	CF
1993	NA	50	37	487	564,516	1,159	ND	ND	\$0.91	\$513,710
1994 ^b	NA	69	30	164	256,659	1,565	2.4	ND	\$1.08	\$277,192
1994/95	135,000	42	19	106	CF	CF	CF	ND	CF	CF
1995/96	135,000	18	8	52	CF	CF	CF	0.55	CF	CF
1996/97	135,000	31	16	85	147,843	1,739	2.7	0.52	\$0.82	\$121,863
1997/98	125,000	26	14	61	118,910	1,949	3.1	0.55	\$0.66	\$98,309
1998/99	125,000	16	7	44	CF	CF	CF	0.54	CF	CF
1999/00	125,000	18	7	56	CF	CF	CF	ND	CF	CF
2000/01	135,000	19	7	50	CF	CF	CF	ND	CF	CF
2001/02	140,000	18	7	51	CF	CF	CF	0.66	CF	CF
2002/03	140,000	24	8	62	CF	CF	CF	0.57	CF	CF
2003/04	150,000	21	7	80	CF	CF	CF	0.62	CF	CF
2004/05	150,000	12	4	47	CF	CF	CF	0.58	CF	CF
2005/06	145,000	17	5	61	CF	CF	CF	0.63	CF	CF
2006/07	145,000	19	6	58	CF	CF	CF	0.68	CF	CF
2007/08	140,000	16	5	46	CF	CF	CF	0.66	CF	CF
2008/09	140,000	16	5	51	CF	CF	CF	0.61	CF	CF
2009/10	140,000	16	6	45	CF	CF	CF	0.63	CF	CF
2010/11	140,000	21	6	64	CF	CF	CF	0.59	CF	CF
2011/12	140,000	20	6	59	121,274	2,055	4.0	0.68	\$4.97	\$602,789
2012/13	140,000	23	8	85	121,364	1,428	3.3	0.59	\$4.66	\$565,811
2013/14	140,000	22	8	61	107,320	1,759	4.1	0.65	\$3.39	\$364,040
2014/15	140,000	20	8	57	130,532	2,290	4.7	0.66	\$4.01	\$522,900
2015/16	140,000	28	11	69	134,370	1,947	4.0	0.71	\$3.62	\$486,534
2016/17	140,000	24	9	66	CF	CF	CF	0.70	CF	CF

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Table 13.–Page 2 of 2.

Season	GHL ^a	Number			Pounds ^a	Avg. pounds per landing	CPUE ^c	Avg. Weight ^d	Avg. price per pound	Exvessel value
		Permits	Vessels	Landings						
2017/18	140,000	19	9	51	CF	CF	CF	0.71	CF	CF
2018/19	140,000	17	7	46	CF	CF	CF	0.73	CF	CF
2019/20	130,000	17	5	45	CF	CF	CF	0.61	CF	CF

Notes: CF = confidential; ND = no data

^a Pounds of eviscerated cucumber

^b Covers the period from Jan 1, 1994 to Sep 30, 1994

^c Pounds of eviscerated cucumber per minute

^d Pounds per eviscerated cucumber

Table 14.—Kodiak, Chignik, and South Peninsula districts commercial red sea cucumber guideline harvest level (GHL) and harvest, by district and section, 2019/20.

District/Section	GHL ^a	Pounds ^a	Fishery Closure Date
Kodiak			
Northeast Section	5,000	0	April 30, 2020
Eastside Section	40,000	CF	October 10, 2019
Southeast Section	30,000	CF	October 11, 2019
Southwest Section	20,000	CF	October 23, 2019
Westside Section	20,000	CF	October 23, 2019
North Mainland Section	5,000	0	April 30, 2019
South Mainland Section	5,000	0	April 30, 2019
Semidi Island Section	5,000	0	April 30, 2019
Total Kodiak	130,000	CF	
Chignik	15,000	CF	April 30, 2019
South Peninsula			
Eastern Section	10,000	0	April 30, 2019
Western Section	10,000	0	April 30, 2019
Total South Peninsula	20,000	0	
Grand total	165,000	CF	

Notes: CF = confidential

^a Pounds of eviscerated cucumber

Table 15.—Kodiak, Chignik, and South Peninsula districts commercial Pacific octopus effort and harvest, by state and federal waters, and combined value, 1990–2019.

Year	State waters			Federal waters			Combined					
	Vessels	Landings	Pounds ^a	Vessels	Landings	Pounds ^a	Vessels ^b	Landings	Pounds ^a	Avg. pounds per landing	Avg. price per pound	Exvessel value ^c
1990	32	140	62,798	29	84	22,520	50	218	85,318	391	\$1.04	\$88,731
1991	73	331	121,851	40	118	26,874	95	447	148,725	333	\$1.02	\$151,700
1992	94	401	146,192	70	255	59,234	134	647	205,426	318	\$0.91	\$186,938
1993	31	112	116,445	41	73	11,231	64	183	127,676	698	\$0.70	\$89,373
1994	22	48	23,422	8	14	1,666	29	61	25,088	411	\$0.97	\$24,335
1995	45	309	70,218	25	94	4,858	58	349	75,076	215	\$0.40	\$30,030
1996	50	240	78,357	32	151	21,227	66	312	99,584	319	\$0.54	\$53,775
1997	84	666	280,647	59	280	46,371	111	801	327,018	408	\$0.55	\$179,860
1998	61	419	263,337	58	294	118,707	86	687	382,044	556	\$0.59	\$225,406
1999	50	311	198,685	29	147	54,676	67	443	253,361	572	\$0.33	\$83,609
2000	57	301	99,256	51	253	62,460	82	506	161,716	320	\$0.45	\$72,772
2001	30	209	100,051	36	89	14,832	53	266	114,882	432	\$0.34	\$39,060
2002	32	215	209,798	31	112	28,364	50	297	238,162	802	\$0.58	\$138,134
2003	57	143	57,091	27	67	30,687	74	204	87,778	430	\$0.44	\$38,622
2004	74	361	136,115	45	168	159,544	91	511	295,659	579	\$0.30	\$88,698
2005	72	202	63,536	47	255	159,662	99	433	223,198	515	\$0.63	\$140,615
2006	78	339	112,194	54	267	180,357	106	560	292,551	522	\$0.63	\$184,307
2007	91	486	208,263	75	356	208,310	128	782	417,573	534	\$0.63	\$263,071
2008	91	546	353,634	91	358	224,166	135	831	577,800	695	\$0.65	\$375,570
2009	84	407	334,222	81	246	209,424	129	604	543,645	900	\$0.47	\$255,513
2010	98	370	226,806	95	305	338,708	155	641	565,514	882	\$0.40	\$226,206
2011	93	430	338,856	90	424	473,416	147	801	812,272	1,014	\$0.56	\$454,872
2012	77	362	181,216	89	478	382,193	128	768	563,409	734	\$0.59	\$332,411
2013	64	263	113,579	63	294	317,532	100	516	431,111	835	\$0.49	\$211,244

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Table 15.–Page 2 of 2.

Year	State waters			Federal waters			Combined					
	Vessels	Landings	Pounds ^a	Vessels	Landings	Pounds ^a	Vessels ^b	Landings	Pounds ^a	Avg. pounds per landing	Avg. price per pound	Exvessel value ^c
2014	79	395	324,307	94	534	823,760	140	900	1,148,067	1,276	\$0.62	\$711,801
2015	91	552	357,622	100	597	463,439	153	1086	821,061	756	\$0.64	\$525,479
2016	89	482	200,889	73	290	185,114	129	734	386,003	526	\$0.60	\$231,602
2017	78	386	180,141	58	267	201,368	99	614	381,509	621	\$0.61	\$232,720
2018	24	85	27,778	40	196	127,780	55	274	155,557	568	\$0.51	\$79,334
2019	47	126	94,490	56	285	325,347	89	403	419,836	1,042	\$0.60	\$251,902

^a Landed primarily as bycatch; does not include discards.

^b Some vessels made landings from both state and federal waters.

^c Includes personal use and product used for bait

FIGURES

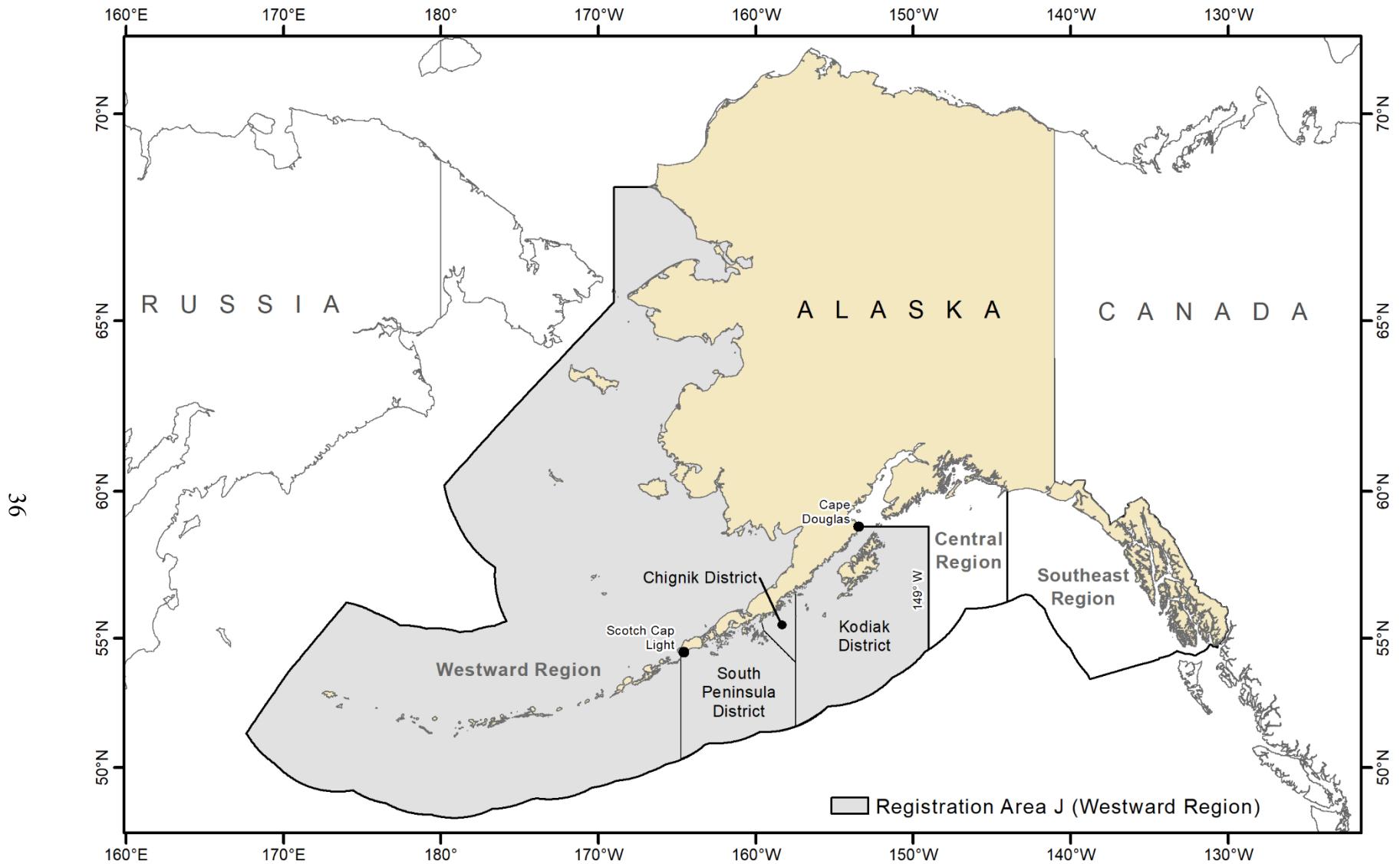


Figure 1.—Regions used by Alaska Department of Fish and Game for shellfish fisheries management in Alaska with Registration Area J (Westward Region) defined and showing Kodiak, Chignik, and South Peninsula Tanner crab and miscellaneous shellfish districts, 2019.

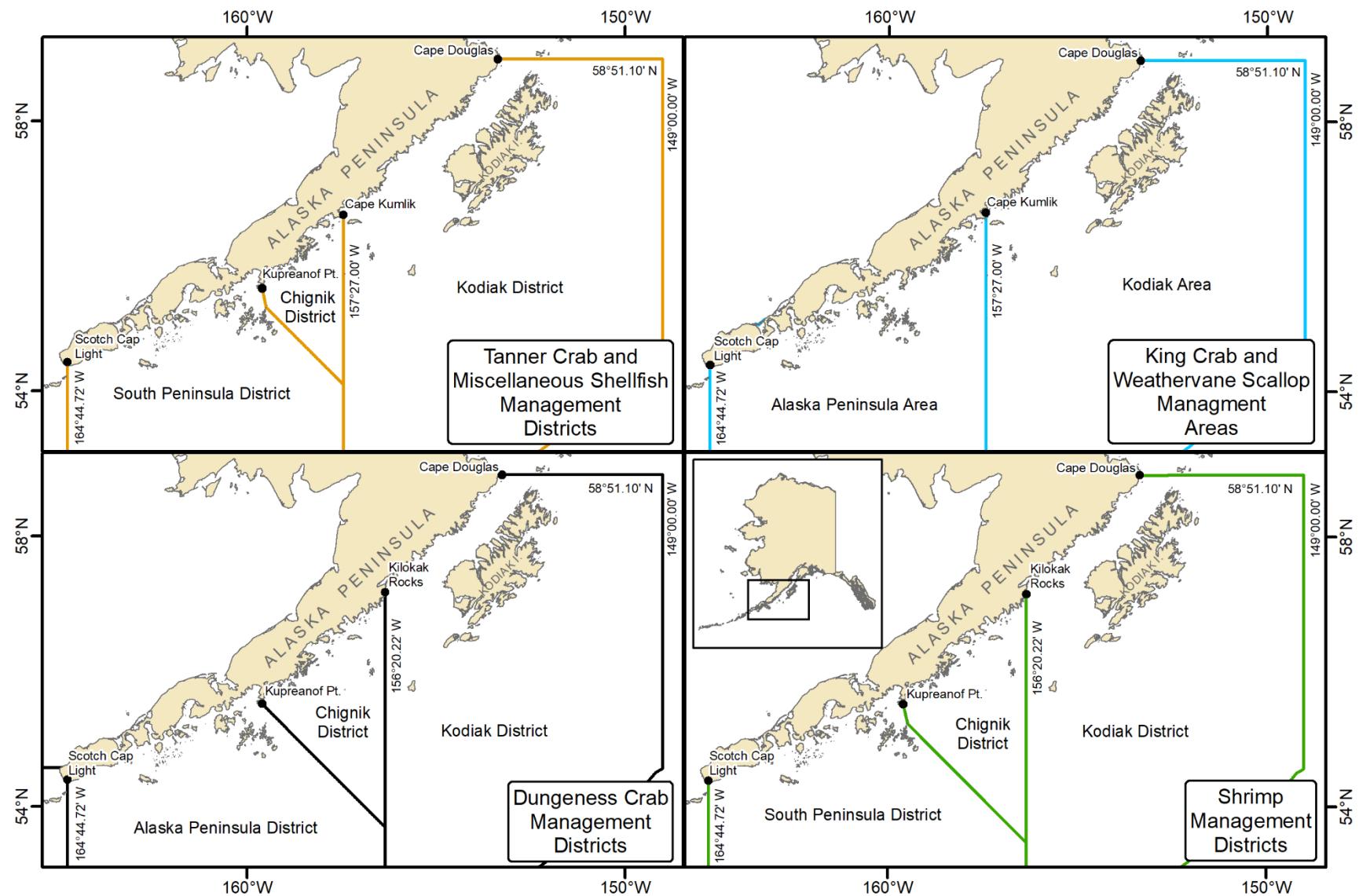


Figure 2.—Tanner crab, miscellaneous shellfish, king crab, weathervane scallop, Dungeness crab, and shrimp management units used by ADF&G, 2019.

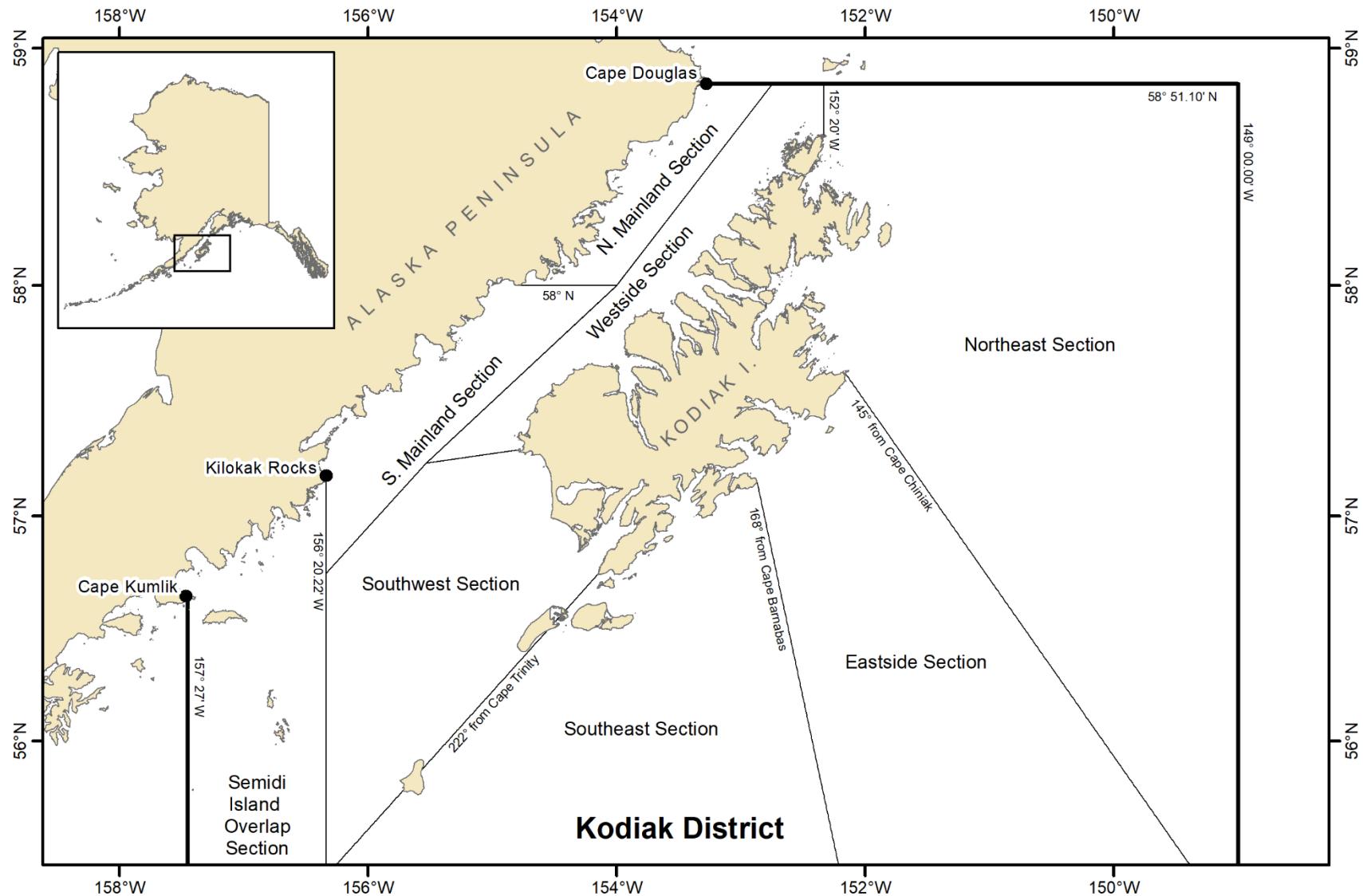


Figure 3.—Kodiak District and sections for Tanner crab and red sea cucumber fishery management, 2019.

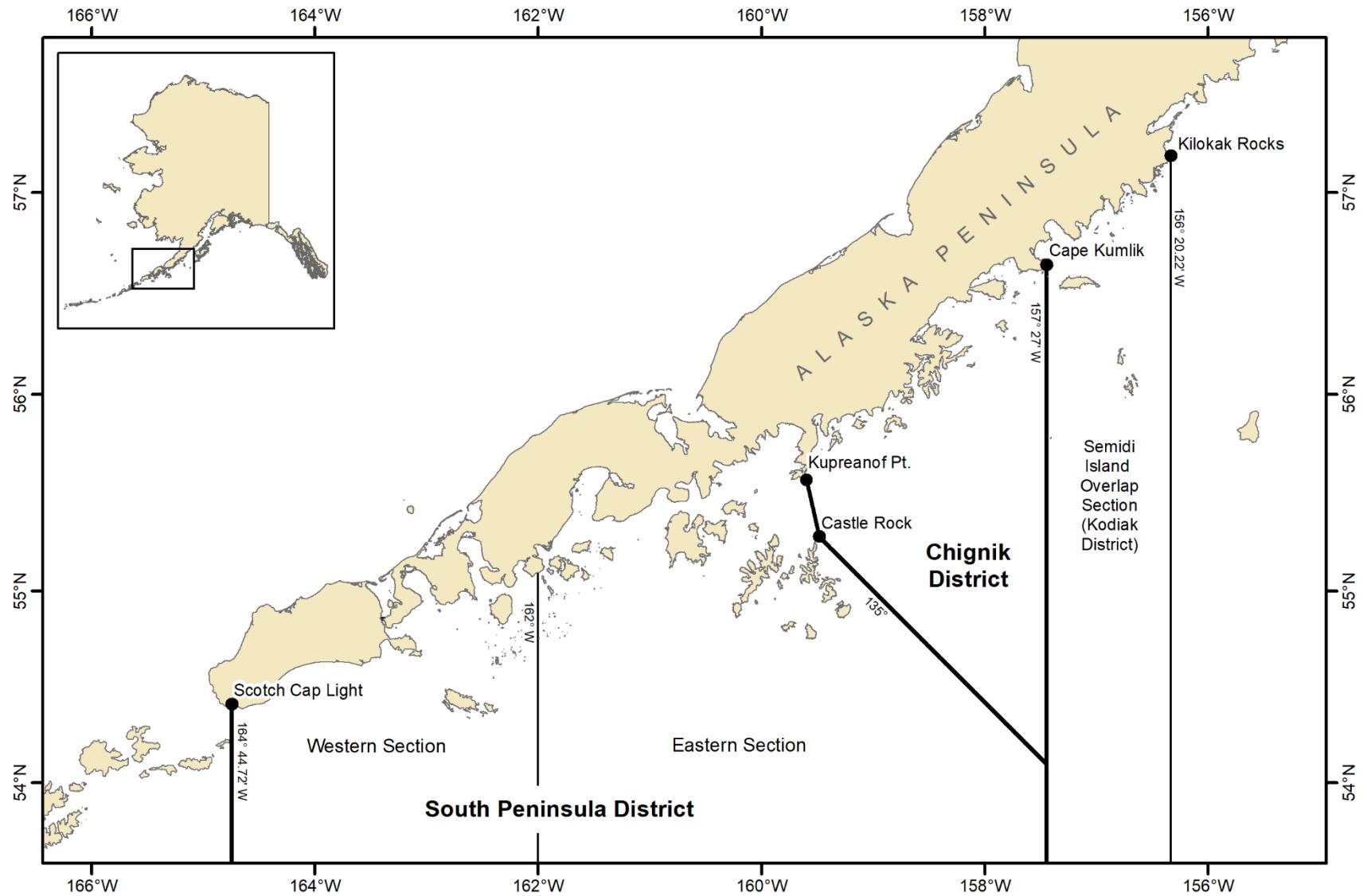


Figure 4.—Chignik and South Peninsula districts for Tanner crab and red sea cucumber fishery management, 2019.

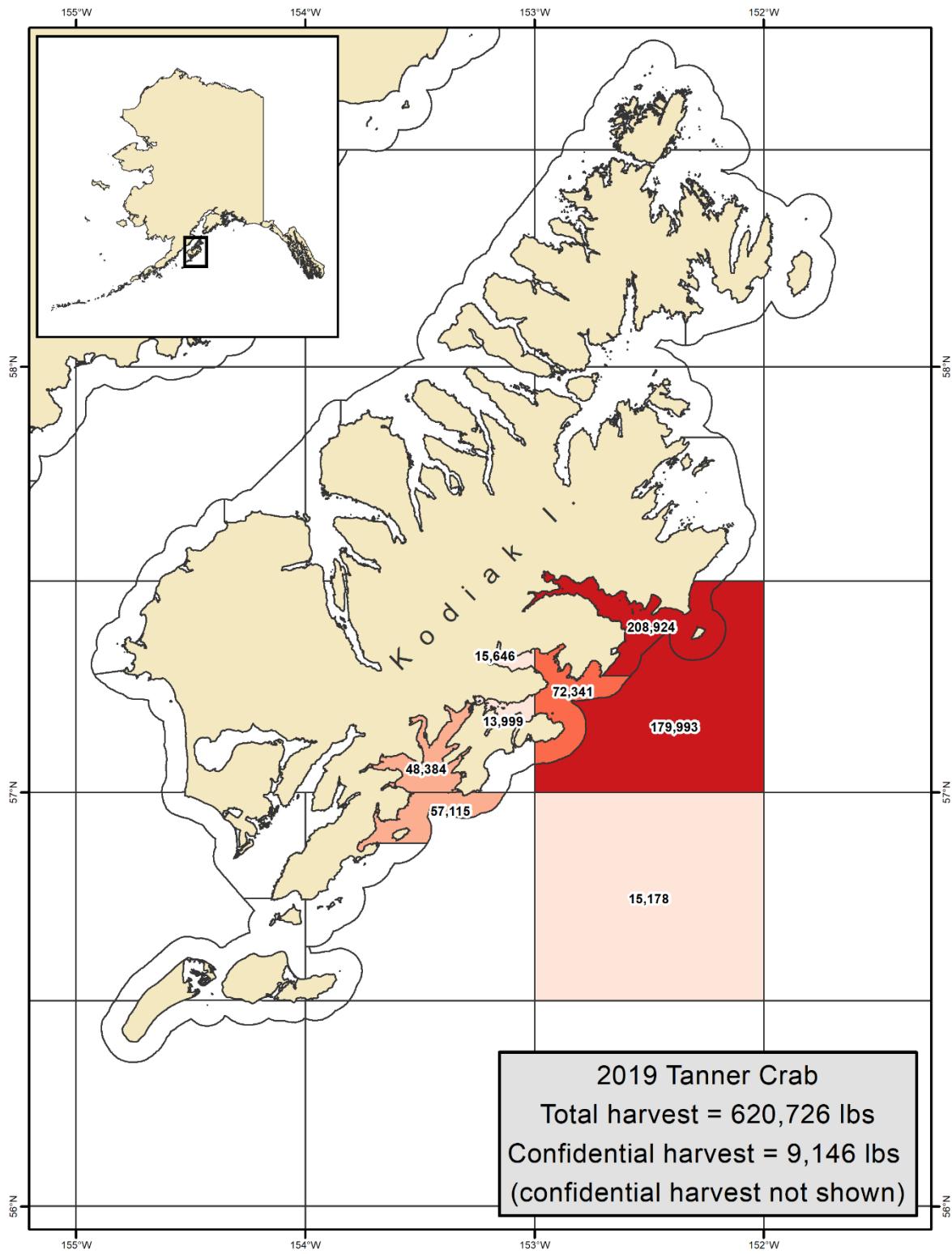


Figure 5.—Kodiak District Tanner crab harvest, in pounds, by statistical area, 2019.

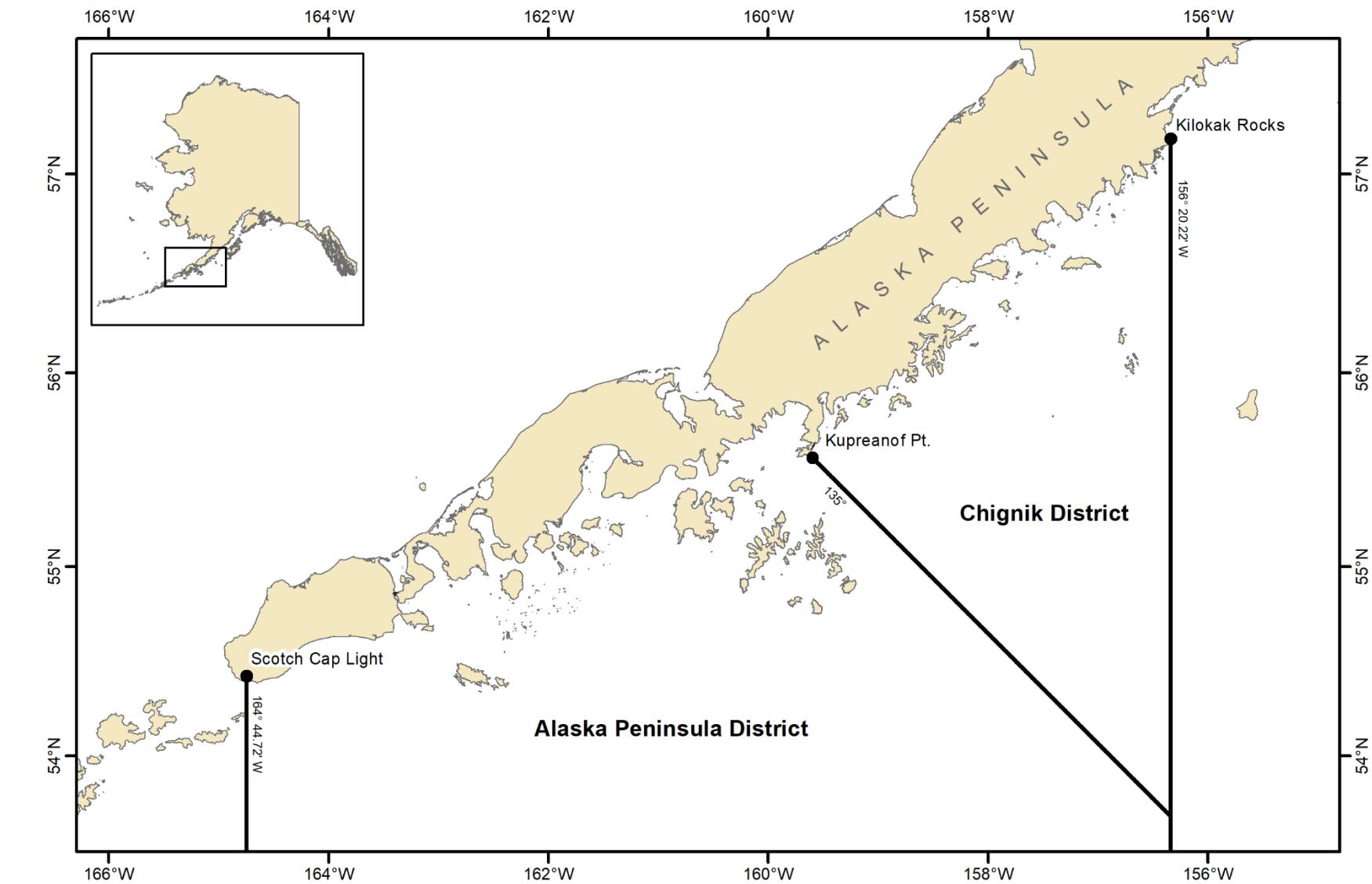


Figure 6.—Chignik and Alaska Peninsula districts for Dungeness crab fishery management, 2019.

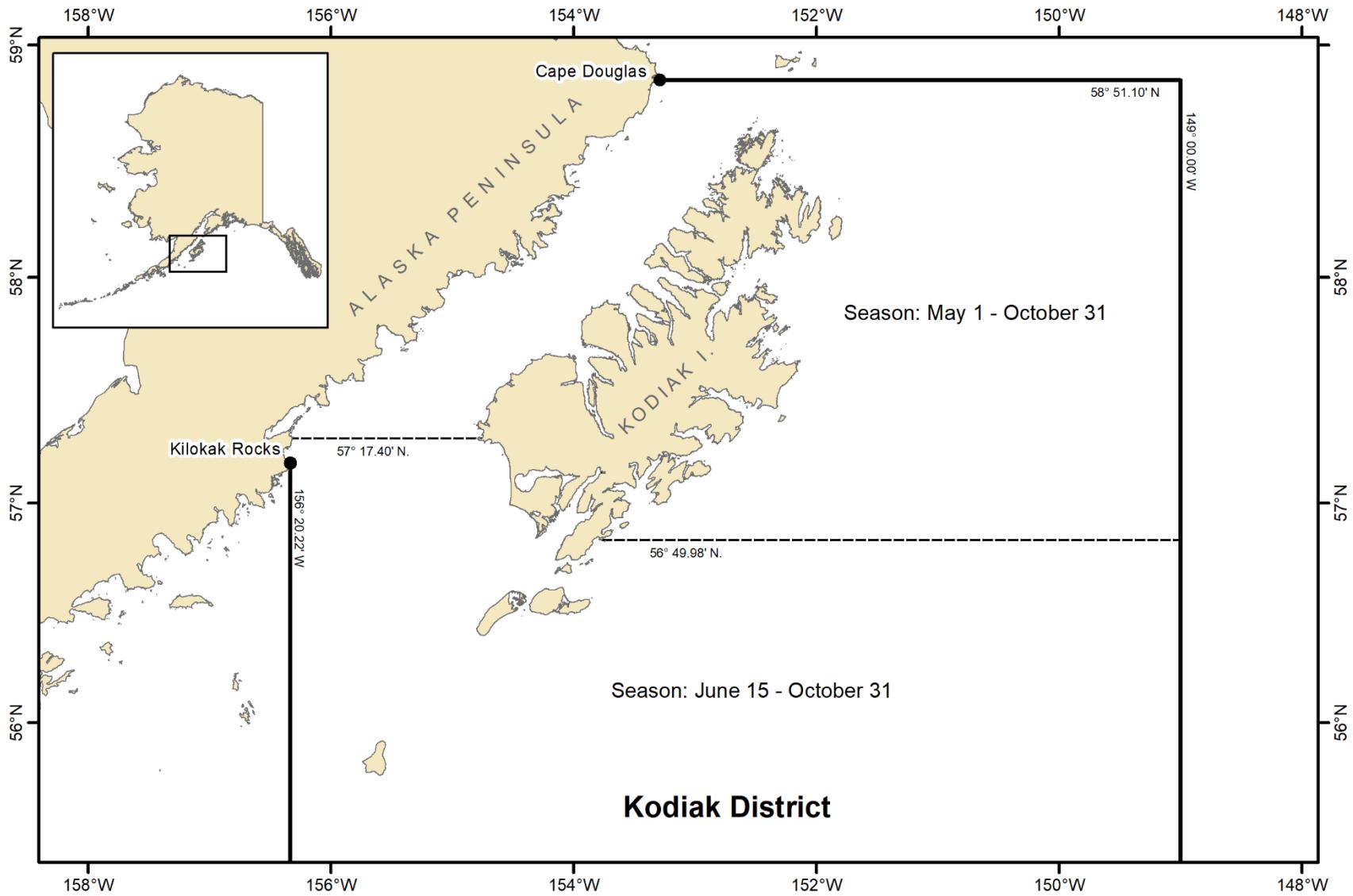


Figure 7.—Kodiak District for Dungeness crab fishery management and boundaries for fishing season dates, 2019.

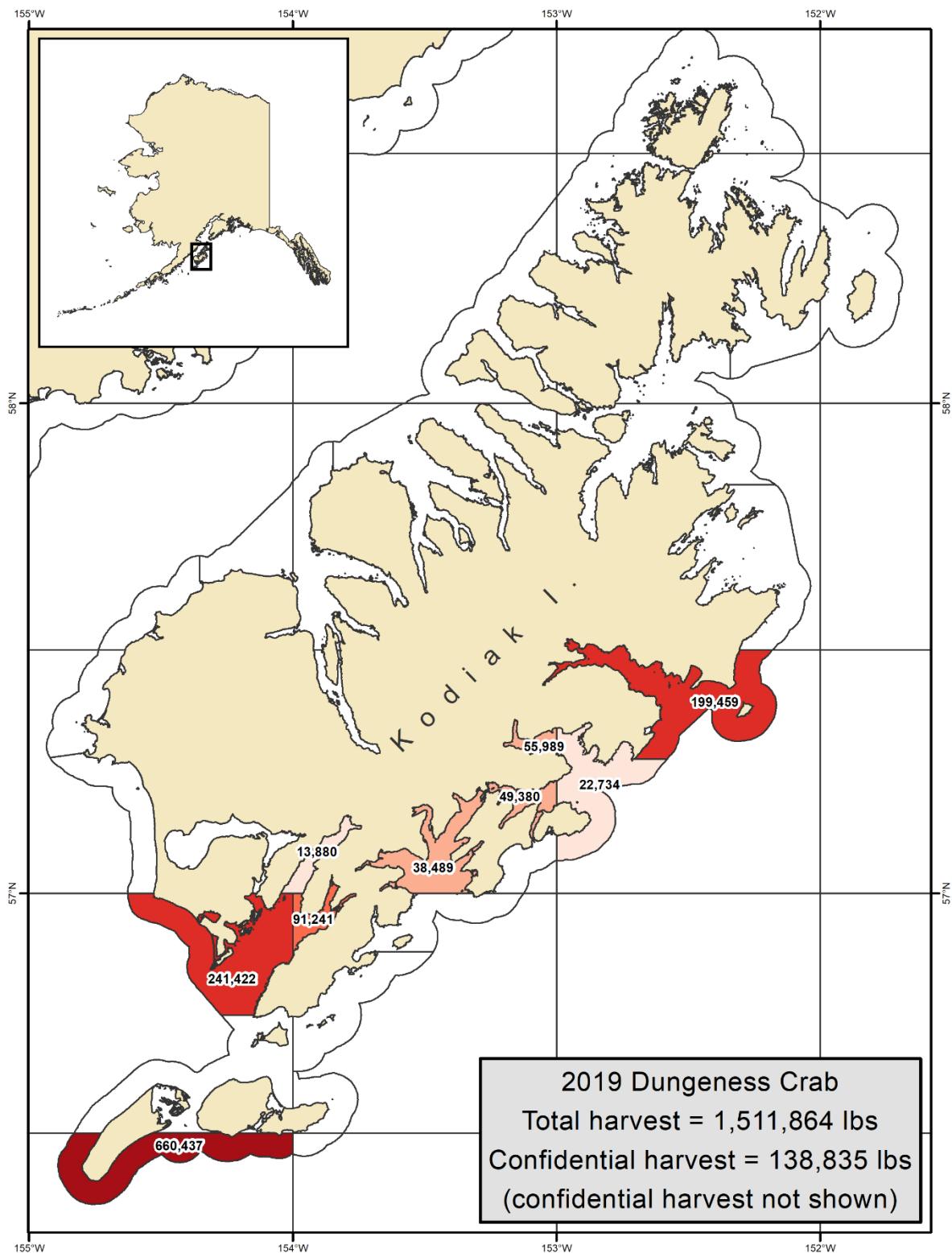


Figure 8.—Kodiak District Dungeness crab harvest, in pounds, by statistical area, 2019.

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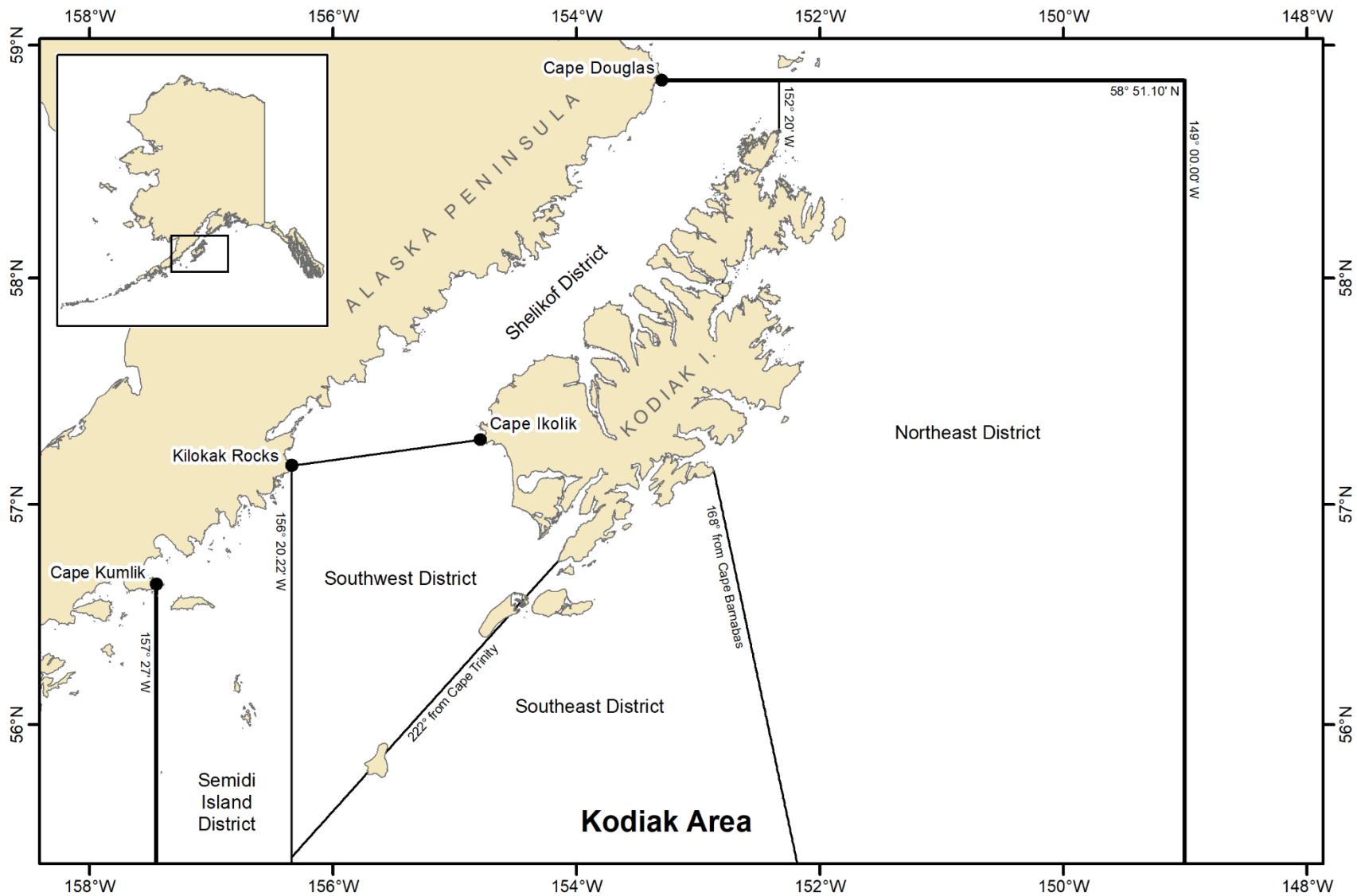


Figure 9.—Kodiak Area and districts for king crab and weathervane scallop fishery management, 2019.

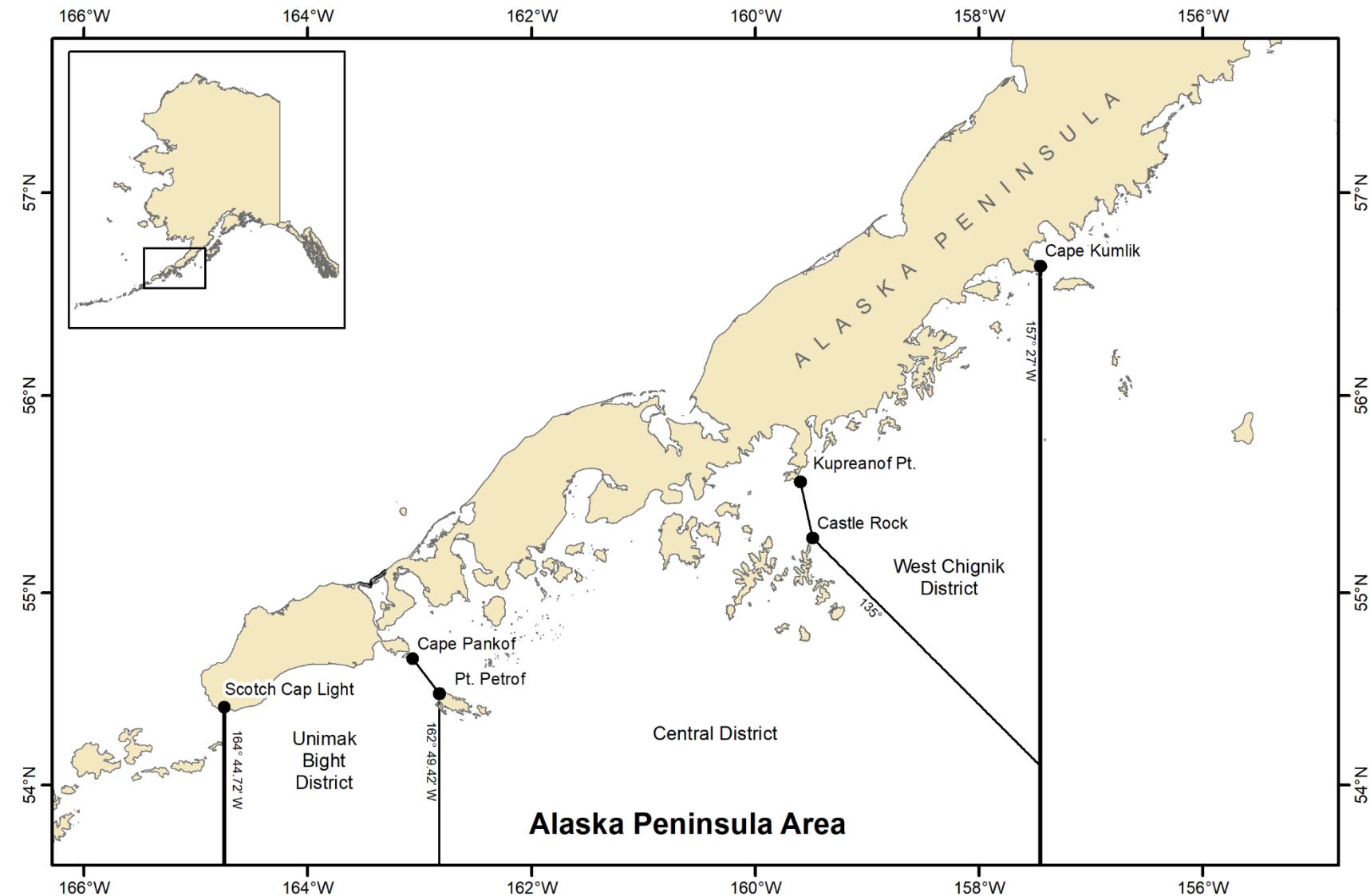


Figure 10.—Alaska Peninsula Area and districts for king crab and weathervane scallop fishery management, 2019.

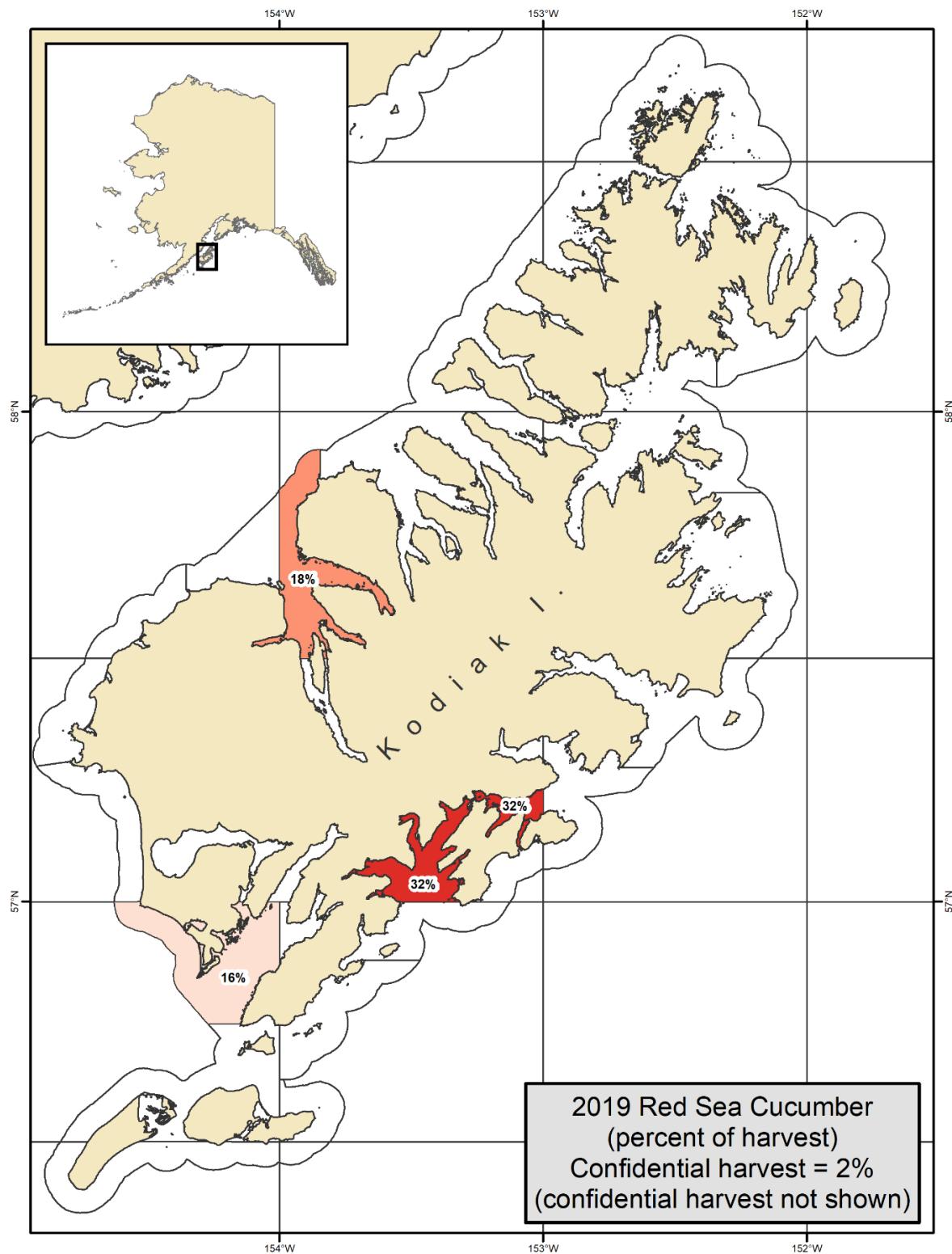


Figure 11.—Kodiak District red sea cucumber harvest, as a percent of total harvest, by statistical area, 2019.

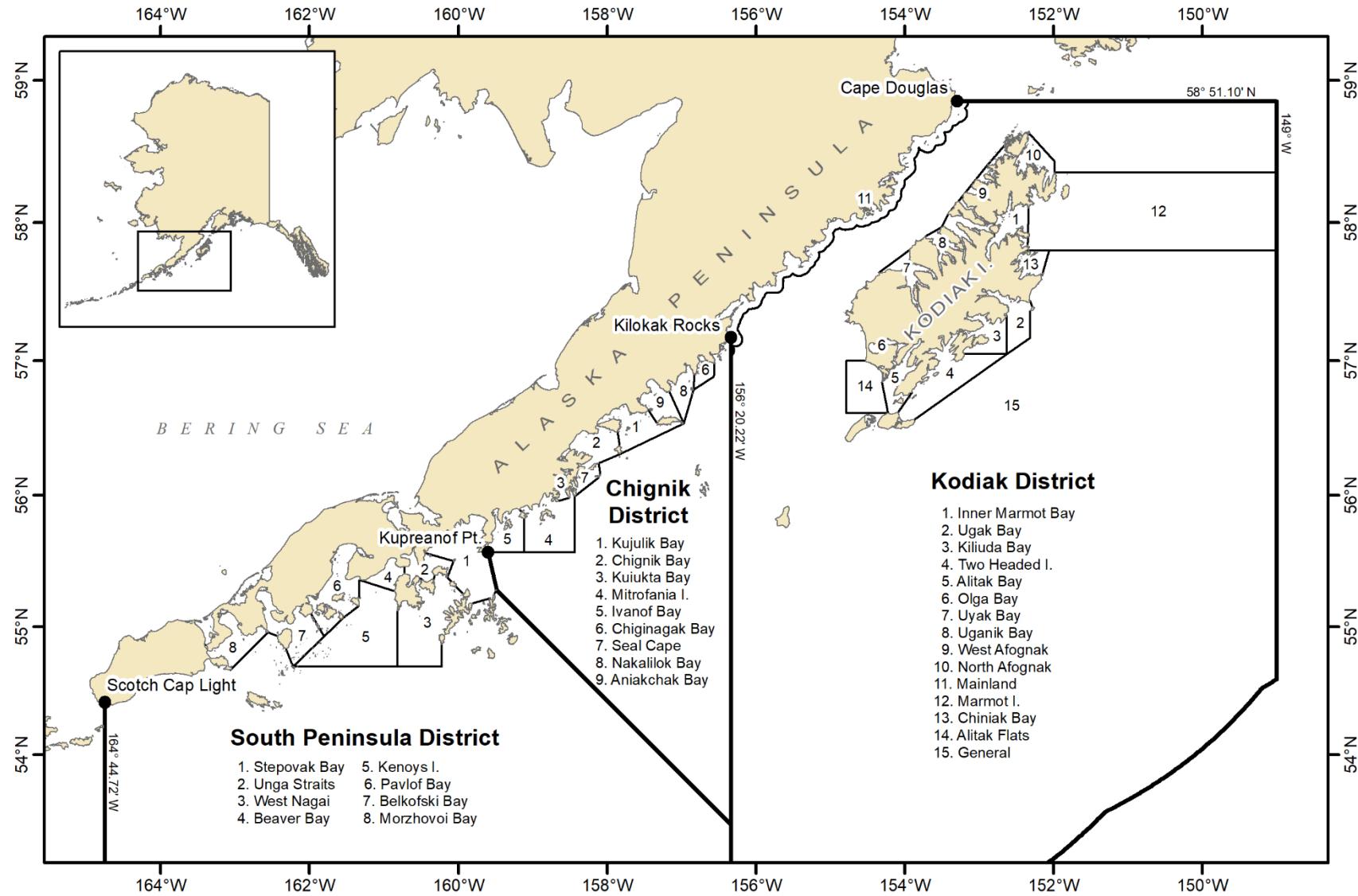


Figure 12.—Kodiak, Chignik, and South Peninsula districts and sections for shrimp fishery management, 2019.