Gulf of Alaska Tanner Crab Protections

Discussion Paper

March 17, 2025[1]

This revised version corrects the page numbers. There were no changes made to the content compared to the 3/13/2025 version.

1 Introduction

In February 2024 the Council reviewed a discussion paper to inform potential measures that could be taken to protect Gulf of Alaska (GOA) Tanner crab *Chionoecetes bairdi*. That discussion paper is incorporated into this revised draft as an appendix and data that were included in the 2024 version are not repeated here. At that time the Council requested an expanded discussion paper to include the following[2]:

- Identify the areas of highest Tanner crab abundance inside the Barnabas Gully in statistical areas 525702 and 525630 for consideration of a smaller closure area.
- Consider modifications to existing closures off the east side of Kodiak Island to consider comprehensive impacts of closures on groundfish fleet.
- Tanner crab distribution in the Kodiak District and to the extent practicable, the proportion of annual surveyed abundance of Kodiak District Tanner crab from 2012 to 2023 in statistical areas 525702 and 525630.
- Updated tables for trawl (pelagic trawl, PTR; non-pelagic trawl NPT) and Pacific cod pot (POT) gear groundfish harvests and Tanner crab prohibited species catch (PSC) from 2012 to 2023; with separate tables for catcher vessels and catcher processors as possible given confidentiality rules.
- Value of the NPT, PTR, POT groundfish and directed Tanner crab fisheries in statistical areas 525702 and 525630 and the Central Gulf of Alaska.

[1] Prepared by Diana Stram (NPFMC), Michael Fey (PSFMC), Anita Kroska (NPFMC), Nat Nichols (ADF&G) Kally Spalinger (ADFG), Mark Stichert (ADF&G)

[2] D2 Council motion February 2024

- NPT, PTR, POT groundfish and directed Tanner crab fishery landings by month and the resulting impacts of fishery timing on processing capacity in Kodiak.

This revised paper provides the Council's requested updates with additional discussion and provides additional information on Tanner crab biology, molting, mating and expanded descriptions of the existing closures around Kodiak.

2 Existing Closures to protect crab

The Council has established several static fixed areas around Kodiak Island to protect GOA red king crab (*Paralithodes camtschaticus)* populations which also provide direct and indirect protections to Tanner crab. These areas are designated as Type I, II, or III areas (Table 1, Figure 1). Tanner crab are considered a prohibited species in groundfish fisheries, cannot be retained and should be avoided. Closure area descriptions can be found in the conservation glossy recently compiled by Council staff, and are summarized below (Table 1) (NPFMC 2023). Table 2 shows the relative percentage of Tanner crab located in each of the closures described below by sex and maturity as well as total Tanner crab abundance. In general, the existing closure areas comprise a low percentage of the overall abundance of Tanner crab by sex and maturity.

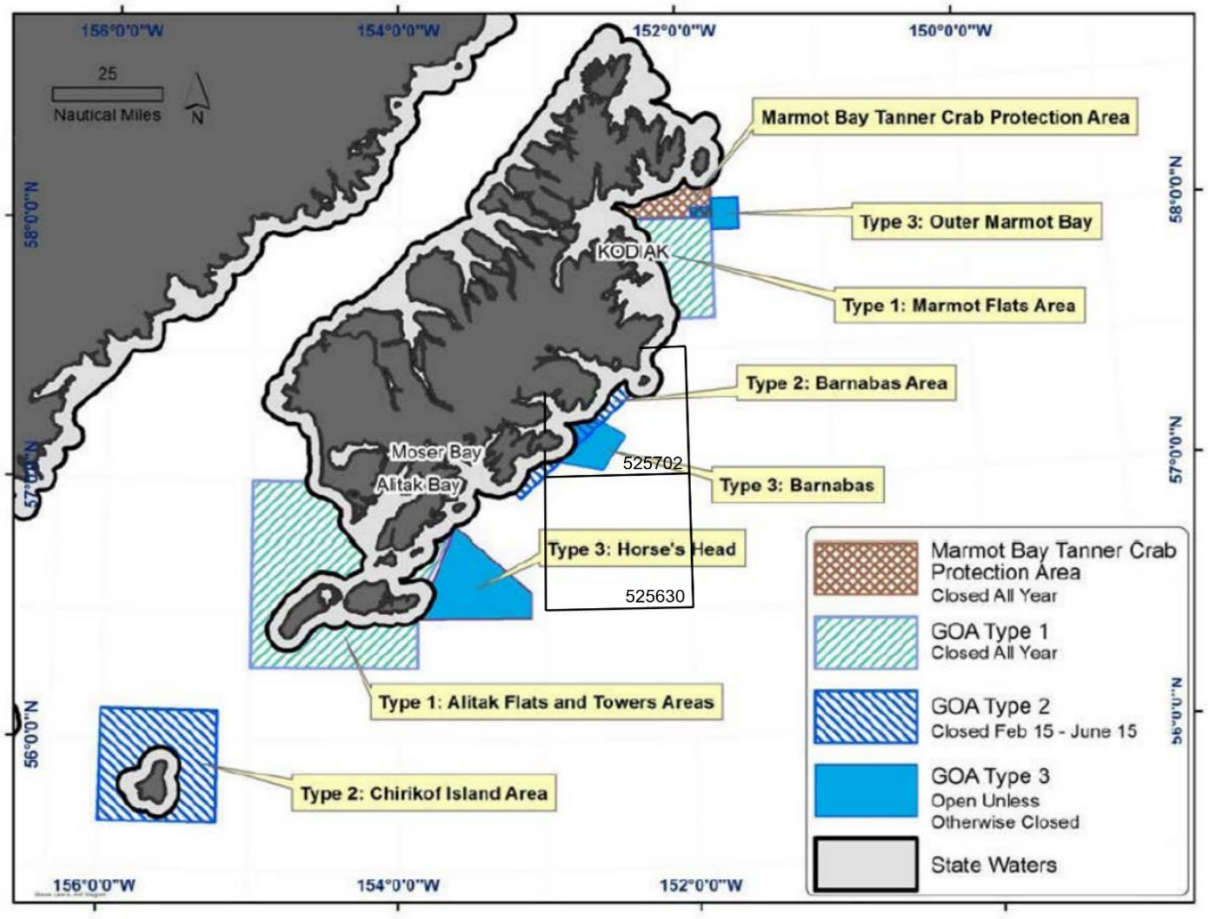


Figure 1: Tanner and King crab closure areas around Kodiak Island and ADF&G statistical areas 525702 and 525630. Sources: GOA Groundfish FMP and ADF&G Statistical Area Chart 8 – Kodiak.

Table 1: Types, gear prohibitions, and names of area closures providing direct (Tanner crab protection area) and indirect (Type I, II, and III) protections for Tanner crab in the Kodiak Island area.

Area Type, Prohibition, and Name [year established]	Definition	Conservation Value
Tanner Crab Trawl Closure Area *Prohibition:* All fishing with trawl gear, except for pollock fishing with pelagic trawl gear Marmot Bay Tanner Crab Protection Area (112 nm^2) [est. 1989]	Tanner crab area of high abundance with a high incidence of bycatch in the groundfish trawl fisheries. Allows for a protected area for Tanner crab by closing to year-round trawling, except for pollock fishing with pelagic trawl gear.	Established protection for vulnerable Tanner crab and their habitat. Closure area reduced the incidental catch of Tanner crab in GOA groundfish fisheries. Reduction of negative impacts of non-pelagic trawl gear on Tanner crab and Tanner crab habitat.
Type I *Prohibition:* Nonpelagic trawl gear Alitak Flats and Towers (879 nm^2) Marmot Flats Area (280 nm^2) [est. 1987]	Areas known to historically have high king crab concentrations. To promote rebuilding of the crab stocks, are closed all year to all trawling, except with pelagic gear.	Established protection for vulnerable crab and their habitats. Closures provide for conservation of habitat biodiversity and ecosystems and minimize bycatch of red king crab.
Type II *Prohibition:* Nonpelagic trawl gear from February 15 – June 15 Chirikof Island Area (528 nm^2) Barnabas Area (82 nm^2) [est. 1987]	Areas known to historically have king crab concentrations, but lower than in Type I areas.	Established seasonal protection for adult female crab during vulnerable molting period and associated habitats.
Type III *Prohibition:* May be closed to trawling by NOAA Regional Administrator, otherwise open Outer Marmot Bay Barnabas Horse's Head Chirikof [est 1987]	Areas adjacent to Type I and II that have been identified as important juvenile king crab rearing or migratory areas. These become operational following determination that a recruitment event has occurred.	Can provide additional protections of up to 1,288 nm^2 area across the four regions. To date, these closures have not been triggered from a lack of recruitment.

Sources: GOA Groundfish FMP and the North Pacific Conservation and Spatial Management Areas in Alaska's Exclusive Economic Zone: Area Summaries.

The Type I closure areas (Marmot Flats, Alitak Flats, and Towers areas, Table 1, Figure 1) were established by the Council in September 1986 to enact trawl restrictions with GOA Groundfish FMP Amendment 15 (52 FR 1283) in April 1987. The area is closed to non-pelagic trawl gear. As shown in Table 2 Marmot flats federal waters comprise ~2% of the overall Tanner crab while Alitak Flats/Towers federal waters contain 4% of the overall Tanner abundance. The closure areas were renewed in June 1989 (GOA GF FMP Amendment 18, 54 FR 50386) and 1992 (GOA GF FMP Amendment 26, 58 FR 503). Historically, these areas have been known to have had high red king crab concentrations and are closed all year to all trawling (except with pelagic gear) to promote rebuilding of the crab stocks. They were established to provide extensive protection for vulnerable crab and their habitats. The Kodiak red king crab stock has not recovered in the over 30 years these closures have been in place, and it is difficult to assess what conservation benefits they provide. However, of all the closure areas surveyed, more than 95% of the red king crab abundance is found within the federal Alitak flats closure area and adjacent state waters (Alitak Bay). The combined Alitak Flats and Towers areas contain 18% of the total abundance of Kodiak red king crab in federal waters (Table 3).

The Type II closure areas (Barnabas and Chirikof Island areas) were established through the same amendments as the Type I areas described above and are closed to NPT gear from February 15 – June 15 (Table 1, Figure 1). These areas were established to provide protections for red king crab and also provide indirect protection for Tanner crab. These areas historically had king crab concentrations, but lower concentrations than in Type I areas. The purpose of the Type II seasonal closures is to provide protection for adult female crab during the vulnerable molting period and associated habitats. As shown in Table 2,

approximately 6% of the overall Tanner crab abundance and only 0.05% of the red king crab in federal waters is in the Barnabas Area in (Table 3).

Type III closure areas are adjacent to Type I and II areas and have been identified as important juvenile red king crab rearing or migratory areas. Type III areas become operational following a determination that a red king crab recruitment event has occurred. A recruitment event is defined as the appearance of female king crab in substantially increased numbers (when the total number of females estimated for a given district equals the number of females established as a threshold criterion for opening that district to commercial crab fishing). When a recruitment event occurs, Type III areas are closed by regulatory amendment in which the Regional Administrator specifies which of the Type III areas will be designated as either Type I or II, depending on information available. If no recruitment even occurs, Type III areas are open. Although this tool has been created for management of these Type III areas, closures have never been triggered because recruitment events have not occurred. Adult and juvenile red king crab populations remain low based on trawl surveys in and around the Kodiak trawl closure areas, despite the implementation of these long-term closure areas.

The Marmot Bay Tanner Crab Protection Area (Table 1, Figure 1) was established by the Council in October 2009 and implemented by NMFS in January 2014 with GOA Groundfish FMP Amendment 89 (79 FR 2794) and established direct protection for vulnerable Tanner crab and their habitat. The area is closed to all fishing with non-pelagic (NPT) gear. The closure area aimed to reduce the incidental catch of Tanner crab in GOA groundfish fisheries and to reduce negative impacts of non-pelagic trawl gear on Tanner crab and Tanner crab habitat. The Marmot Bay Tanner Crab Protection Area was an area of historically high abundance of Tanner crab but abundance has been declining over the period 2012-2024 and is currently near the trawl survey time series low (since 1988). Currently in federal waters on average (2012-2024) only 1% of all Kodiak District Tanner crab are located within the Marmot Bay Tanner Crab Protection Area (Table 2)

Table 2 Average Tanner crab abundance estimates from the ADF&G trawl surveys (2012-2024) in statistical areas 525630, 525702, the Marmot Bay Tanner crab Protection Area, Type I closure areas and Type II closure areas around Kodiak Island by sex and maturity as compared to the Kodiak District proportion from all other areas. Here percentages represent the proportion of total surveyed Tanner crab (overall and by sex and maturity) comprised from each areas. From ADF&G staff.

	All Tanner crab		Legal males		Mature males		Juvenile males		Mature females		Juvenile females	
	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total
525702 (federal)	14,865,331	13%	1,005,496	28%	3,783,525	28%	4,114,331	8%	4,756,566	31%	2,210,912	6%
525630 (federal)	13,725,775	12%	456,720	13%	2,486,953	19%	5,200,115	11%	2,433,982	16%	3,604,732	10%
Marmot Bay Tanner Crab Protection Area -*Federal waters*	1,046,199	1%	5,298	0.2%	42,762	0.3%	468,982	1%	83,622	1%	450,834	1%
Type I closures												
Marmot Flats -*Federal waters*	1,996,957	2%	14,362	0.4%	80,639	0.6%	847,725	2%	251,729	2%	816,866	2%
Alitak Flats/Towers -*Federal waters*	4,706,258	4%	122,764	3%	366,373	3%	2,133,897	4%	234,742	2%	1,971,245	6%
Type II closure												
Barnabas Area -*Federal waters*	6,626,030	6%	430,757	12%	1,570,355	12%	2,091,373	4%	1,958,318	13%	1,005,985	3%
All other areas	68,735,139	62%	1,494,662	42%	5,028,136	38%	33,850,953	69%	5,401,944	36%	24,446,214	71%
Kodiak District 2012–2024 Average	111,701,688		3,530,058		13,358,742		48,707,375		15,120,905		34,506,789	

In addition to establishing the Marmot Bay Tanner Crab Protection Area, NMFS issued regulations to implement Amendment 89 and revised regulations governing the configuration of modified NPT gear. The rule requires that nonpelagic trawl gear used in the directed flatfish fisheries in the Central Regulatory Area of the GOA be modified to raise portions of the gear off the sea floor (sweeps). The modifications to nonpelagic trawl gear used in these fisheries aimed to reduce the unobserved injury and mortality of Tanner crab, and to reduce the potential adverse impacts of nonpelagic trawl gear on bottom habitat. The rule also made a minor technical revision to the modified nonpelagic trawl gear construction regulations to facilitate gear construction for those vessels required to use modified nonpelagic trawl gear in the GOA and Bering Sea groundfish fisheries.

Table 3 Average Red king crab abundance estimates from the ADF&G trawl surveys (2012-2024) in statistical areas 525630, 525702, the Marmot Bay Tanner crab Protection Area, Type I closure areas and Type II closure areas around Kodiak Island by sex and maturity. From ADF&G staff.

	All red king crab		Legal males		Mature males		Juvenile males		Mature females		Juvenile females	
	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total
525702 (federal)	130	0.05%	130	0.11%	130	0.10%	0	0%	0	0%	0	0%
525630 (federal)	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Marmot Bay Tanner Crab Protection Area												
-Federal waters	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Type I closures												
Marmot Flats												
-Federal waters	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Alitak Flats/Towers												
-Federal waters	50,961	18%	30,542	27%	31,784	24%	1,061	2%	17,152	21%	964	4%
Type II closure												
Barnabas Area												
-Federal waters	130	0.05%	130	0.11%	130	0.10%	0	0%	0	0%	0	0%
Kodiak Area 2012–2024 Average	280,170		113,065		130,911		43,671		81,919		23,668	

3 Tanner crab biology, distribution and survey abundance

The Kodiak District Tanner crab populations have been assessed annually since 1988 using a fixed-grid design trawl survey which provides area-swept abundance estimates of Tanner crab (Spalinger and Knutson 2022). Sampling is concentrated in the area of historical Tanner crab habitat (Figure 2). Mature male, female, and legal male abundance are estimated from the survey and inform management decisions in determining fishery openings and harvest levels.

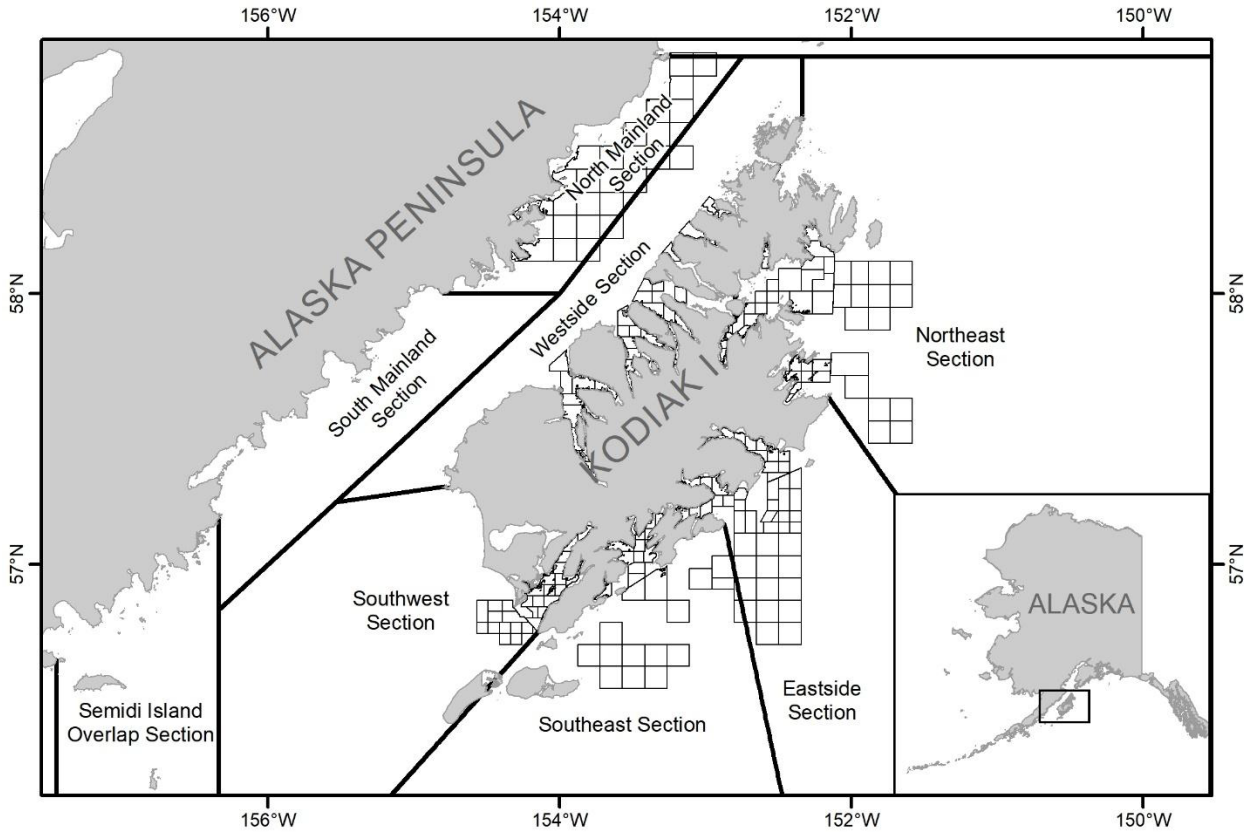


Figure 2: ADF&G trawl survey stations for Tanner crab abundance and fishery management sections around Kodiak Island.

Tanner crab abundance estimates in the Kodiak District for 2021 through 2024 are shown in Figure 3 while overall estimates by sex and maturity from 2012–2024, based on the ADF&G surveys, are provided in Table 4, and illustrated in Figure 4 below. Survey results for the previous 10 years indicate a swing in overall population abundance driven by large juvenile recruitment events in 2013 and 2018 followed by years of high mature crab abundance. Generally, mature female crab abundance peaked two years prior to mature male crab abundance. Across the Kodiak District during the most recent 11 years, the majority of Tanner crab have been found in the Eastside, Southeast, and Southwest Sections. Tanner crab found in the deep, offshore gullies around Kodiak Island, particularly Barnabas Gully located on the eastside of the island within statistical areas 525702 and 525630, tend to remain in those gullies over time. Tanner crab found in shallow, nearshore areas will potentially move to the deeper water of the gullies as they grow and mature [3](Figure 5). Following the recent peak of 121.45 million Tanner crab in 2023, the 2024 Tanner crab abundance estimate was down ~50% to 60.84 million Tanner crab with substantial reductions in all sex and maturity stages with the exception of mature females (Table 4 and Figure 4). The full 2024 survey report is in review at ADF&G and will be available later in 2025.

[3] Unpublished ADF&G tagging data support the observation of onshore to offshore movement within gullies as crab mature.

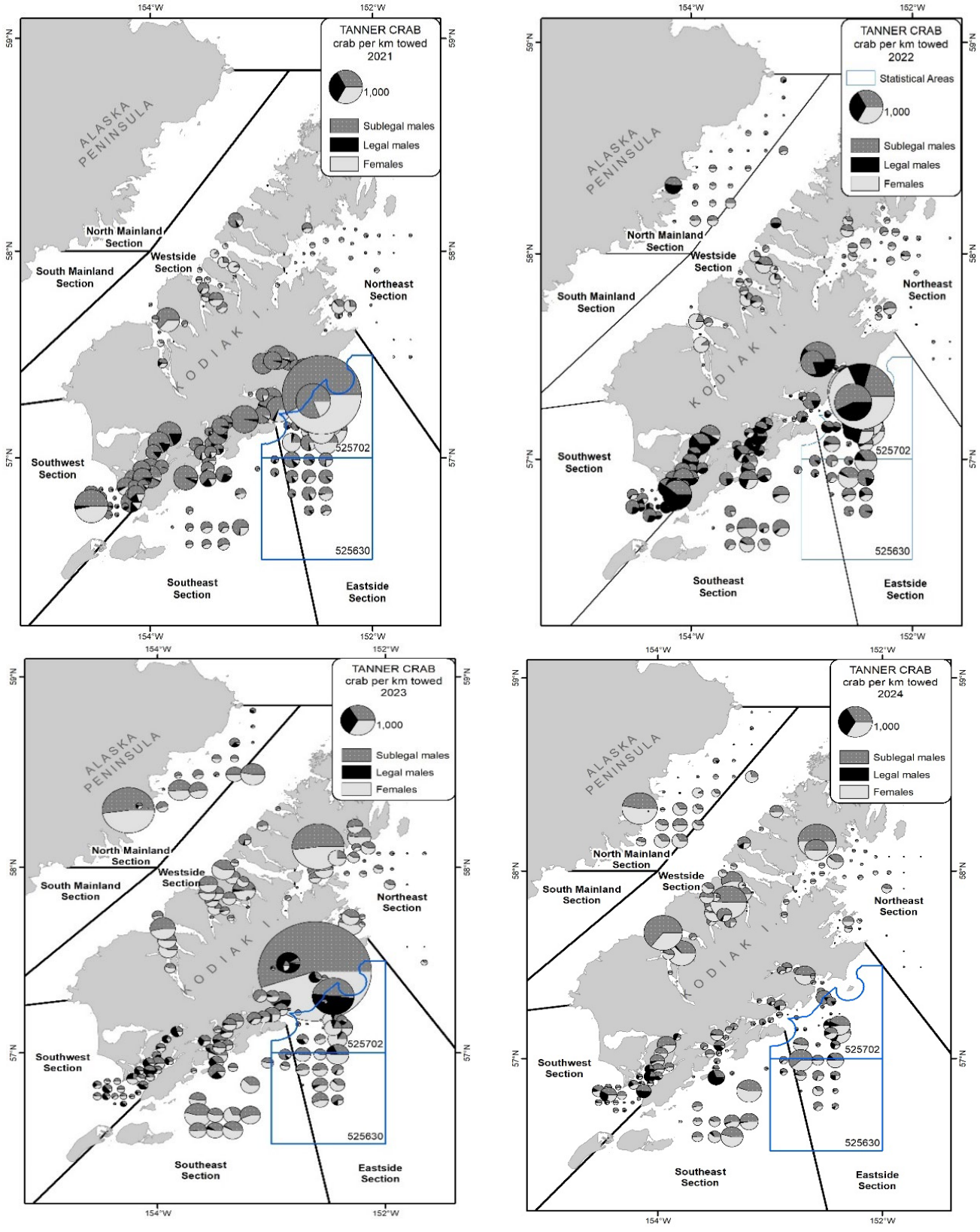


Figure 3 Number of Tanner crab per kilometer towed in the 2021 (top left), 2022 (top right) 2023 (bottom left) and 2024 (bottom right) Kodiak District large-mesh bottom trawl survey. Note: Statistical areas 525630 and 525702 are outlined in blue

Table 4 Overall Tanner crab abundance estimates (all areas) from the ADF&G trawl survey 2012-2024

Survey Year	Tanner crab abundance estimates					
	All Tanner crab	Legal males	Mature males	Juvenile males	Mature females	Juvenile females
2012	44,070,810	4,658,089	11,078,150	16,703,467	2,590,145	13,699,048
2013	199,834,105	1,762,392	4,284,265	97,640,751	3,226,323	94,682,764
2014	109,807,432	1,696,385	4,534,297	53,304,531	10,420,523	41,548,081
2015	39,395,457	820,462	3,130,801	20,628,831	7,736,283	7,899,544
2016	57,658,158	970,224	8,967,968	22,715,001	14,337,234	11,535,836
2017	71,713,764	2,207,736	8,876,472	30,886,828	7,867,215	24,083,248
2018	260,183,362	3,209,010	10,570,870	128,133,951	15,691,768	105,786,769
2019	222,491,454	1,110,332	9,372,079	112,187,955	38,362,810	62,568,613
2020	107,745,804	1,075,020	14,232,254	47,631,769	38,900,023	6,981,761
2021	77,369,068	3,215,352	33,211,357	21,367,749	19,487,168	3,302,792
2022	79,566,221	15,151,357	40,168,982	11,055,950	21,305,408	7,035,878
2023	121,445,868	6,974,429	16,142,454	48,390,584	8,393,956	48,518,873
2024	60,840,445	3,039,963	9,093,702	22,548,513	8,252,905	20,945,045

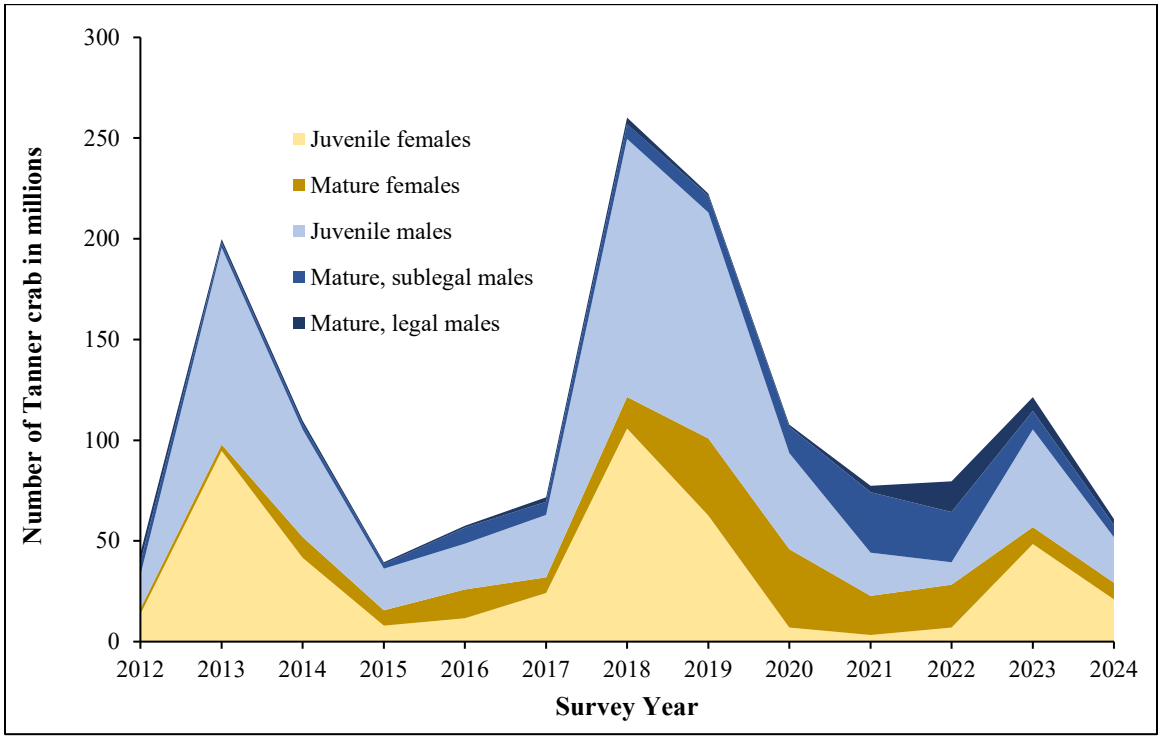


Figure 4 Tanner crab abundance estimates from the ADF&G trawl survey 2012-2024

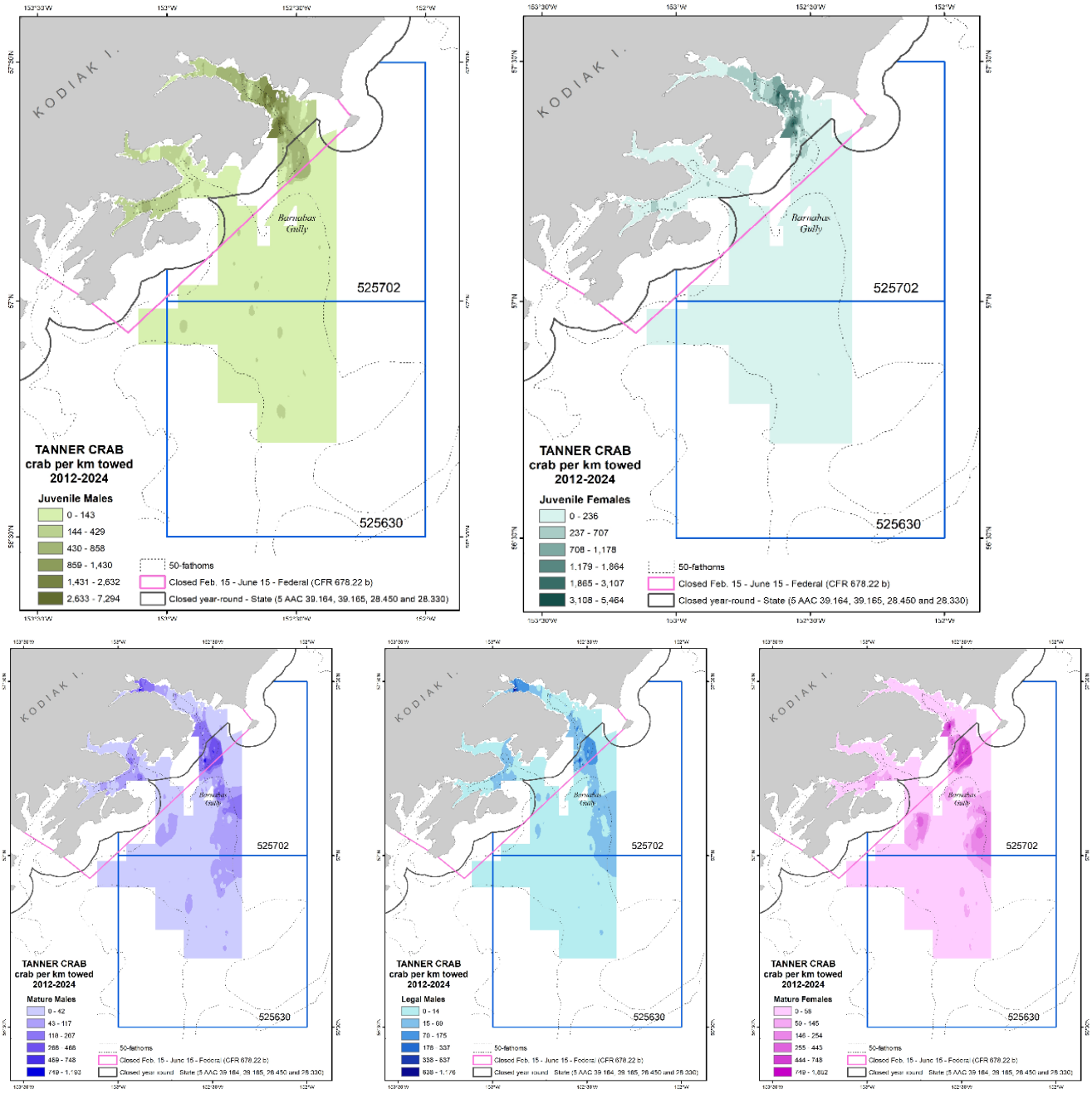


Figure 5 Tanner crab juvenile males (top left panel) and females (top right panel); Tanner crab mature males (bottom left panel), legal males (bottom middle) and mature females (bottom right panel) in crab per km towed from 2012-2024. The dotted line shows the 50 fathom bathymetric contour. These figures are also appended (Appendix 1) to the document in a larger format.

Tanner crab are more vulnerable to mortality during molting and mating, which occurs between February through mid-May each year. The time frame of vulnerability differs depending on temperature and location as well as the size and maturity of the crab as the molt timing for small juveniles molting to larger juveniles may occur earlier than the molt timing for large juveniles molting to maturity. It is common for ADF&G to see large-scale Tanner crab molting events around Kodiak anytime between February and early May, while mating aggregations often occur towards the end of that time frame in mid-May. The regulatory closure date for the ADF&G Tanner crab pot fishery is in the middle of that time of vulnerability, on March 31.

The estimated size at 50% maturity for male Tanner crab is 114 mm carapace width (CW) (Knutson, 2022). Tanner crab growth occurs through molting until a final terminal molt when a crab reaches maturity (Hilsinger 1976; Donaldson et al. 1981; Tamone et al. 2007). This terminal molt occurs around five years of age for females and around six years of age for males (Donaldson and Adams 1989), although there is currently no widely accepted method for age determination. Mating of Tanner crab occurs during two overlapping periods in winter and early spring (Donaldson and Adams 1989; Stevens et al. 1993, 1994). Observations of Tanner crab in situ show pubescent females mate in shallower waters with primarily smaller males, whereas multiparous females mate in deeper waters with larger males (Stevens et al. 1993, 1994). If the female has recently molted and remains in a soft-shell state, it is possible for her to mate with males up to 30 mm smaller in carapace width (CW); however, if the female is not in a soft-shell state, the male must be of equivalent size or greater to successfully mate (Donaldson and Adams 1989).

4 Tanner crab PSC in Groundfish fisheries in Areas 525630 and 525702 with ex-vessel value by gear and area

Federal groundfish fishery Tanner crab PSC by year and gear type are shown in Table 5. Tanner crab PSC from these stat areas tends to be highest when the abundance of Tanner crab is high. Estimated Tanner crab PSC in NPT fisheries peaked in 2013 and 2020 at 154,197 and 280,205 crab, respectively, declined substantively from 2021-2023, and increased in 2024 to 15,686 crab. Ex-vessel value by area of landing is shown in Table 6. Overall percentage of total ex-vessel value for all gear types (2012-2023) was 2.8% and 4.4% in stat areas 525630 and 525702 respectively with the remaining 92.8% from the other GOA region. Similar ex-vessel value data by gear type, area and target is found in Appendix 2. All prices and values reported in this document and the attached appendices are in nominal dollars unless otherwise noted.

Table 5 GOA Tanner Crab PSC in numbers of crab from 525630 and 525702 by gear type. Note NPT = non-pelagic trawl, CP = catcher processor, CV= catcher vessel, POT = pot gear and PTR = pelagic trawl gear. Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Gear	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
NPT	49,855	154,197	40,380	52,396	40,010	38,705	86,556	133,743	280,205	8,850	3,317	4,377	15,686
CP	7,306	130,631	34,047	28,873	10,511	20,266	11,174	53,737	31,554	6,557	2,398	0*	386*
CV	42,550	23,566	6,333	23,522	29,498	18,439	75,382	80,006	248,652	2,293	919	4,377	15,300
POT	14,364	8,545	383	5,156	5,182	120			0	65	0	0	371
PTR	310	1,350	0	62	0	0	248	55	74	260	106	267	992

*1 Catcher Processor accounted for 99% of PSC from 2012-2022

Table 6. Ex-Vessel Value from Groundfish by Gear and Area of Landing, 2012-2023 (in Millions of nominal dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average Annual	Percent of Total
525630 - Total	5.2	7.8	8.5	6.2	7.0	5.2	3.6	2.6	1.6	1.9	1.2	1.0	4.3	2.8%
Hook and Line	.2	1.4	1.2	.6	.6	.8	.1	.5	.2	.9	.7	.5	.6	0.4%
Non-Pelagic Trawl	3.1	3.5	3.6	1.9	2.1	2.3	1.7	2.0	1.2	.8	.4	.4	1.9	1.2%
Pot	1.7	1.1	.6	.4	.4	.1	.0	.0	.0	.0	.0	.1	.4	0.2%
Pelagic Trawl	.2	1.7	3.0	3.4	3.9	2.0	1.8	.2	.2	.2	.1	.1	1.4	0.9%
525702 - Total	10.7	7.8	11.4	11.2	10.4	5.2	5.7	6.4	3.4	2.7	3.3	2.2	6.7	4.4%
Hook and Line	1.0	.9	1.3	.8	.3	.5	.2	.3	.2	.5	.6	.6	.6	0.4%
Non-Pelagic Trawl	4.0	3.0	4.3	4.2	4.1	2.0	2.0	3.2	2.3	1.1	.9	.4	2.6	1.7%
Pot	1.4	.7	.9	1.3	.5	.4	.0	.0		.1	.1	.3	.5	0.3%
Pelagic Trawl	4.2	3.2	4.8	5.0	5.6	2.2	3.5	2.9	1.0	1.0	1.7	.9	3.0	1.9%
Other GOA - Total	155.1	178.7	187.1	175.7	151.0	163.0	133.6	107.0	84.4	115.2	159.6	103.2	142.8	92.8%
Hook and Line	63.3	105.6	96.1	94.4	90.7	91.9	67.5	48.2	31.9	48.3	56.8	36.5	69.3	45.0%
Jig	4.5	.4	1.7	2.1	1.8	.1	.0	.4	.4	.7	.8	1.2	1.2	0.8%
Non-Pelagic Trawl	33.9	30.6	35.9	27.1	25.8	28.1	21.5	16.8	12.5	8.9	16.5	10.8	22.4	14.5%
Pot	21.2	10.3	17.8	19.3	17.2	16.5	8.7	10.7	13.2	33.4	44.7	23.4	19.7	12.8%
Pelagic Trawl	32.1	31.8	35.6	32.9	15.6	26.3	35.8	31.0	26.3	23.8	40.6	31.3	30.3	19.7%
Grand Total	171.1	194.3	206.9	193.1	168.5	173.4	142.9	116.0	89.4	119.8	164.1	106.4	153.8	100.0%

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

5 Value of directed Tanner crab fisheries in State areas 525702, 525630 and the Central Gulf of Alaska

Overall Kodiak Tanner crab landings and values (2012-2024) as compared to Tanner crab from stat areas 525702 and 525630 are shown in Table 7. Between 2012 and 2024, a total of 13.4 million Tanner crab were harvested in the directed fishery with approximately 20.4% of the harvest reported from stat area 525702 and 2.5 % of the harvest reported from stat area 525630. Additional information on the GOA Tanner crab fishery and participation in 2022 are contained in Appendix 3.

Table 7 Overall directed fishery Tanner crab landings, number of participating vessels as compared with the sum of the landings from stat areas 525630 and 525702 (2012-2024). Note there was no commercial fishery between 2014-2017 and 2021.

Year	Vessels	Lbs	Value ($)
2012	61	1,072,211	3,166,158
2013	59	658,196	1,740,029
2018	56	431,993	1,931,375
2019	82	620,729	2,685,374
2020	49	400,994	1,673,710
2022	86	1,250,702	10,227,794
2023	131	5,843,504	18,991,284
2024	134	3,135,122	10,659,415
Total	**212**	**13,413,451**	**51,075,138**

Stat areas	Vessels	Lbs	Value ($)
525702	86	2,735,229	9,718,259
525630	23	333,076	1,321,559
Total	**91**	**3,068,305**	**11,039,819**

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Due to confidentiality harvest by year for stat area 525630 cannot be broken out separately but a comparison of harvests by year and a recent three year average can be shown for stat area 525702 as compared with harvests for all other areas combined (Table 8).

Table 8 Overall directed fishery Tanner crab landings for stat area 525702 and all other areas combined (2012-2024). The recent three-year average (2022-2024) is also shown for comparative purposes. Note there was no commercial fishery between 2014-2017 and 2021.

Stat areas	2012	2013	2018	2019	2020	2022	2023	2024	Average (2022-2024)
525702	161,362	169,678	49,694	179,993	71,441	105,738	1,214,904	782,419	701,020
Remaining	910,849	488,518	382,299	440,736	329,553	1,144,964	4,628,600	2,352,703	1,144,964
Total	**1,072,211**	**658,196**	**431,993**	**620,729**	**400,994**	**1,250,702**	**5,843,504**	**3,135,122**	**1,845,984**

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

For comparison with similar information contained in Table 2 and in order to indicate the relative importance of availability of legal males in each region, the average survey abundance of legal males in stat area 525702, and Types I and II closure areas (here shown only for 2022-2024 to compare with the landings information shown in Table 8) are shown with the average landings for stat area 525702, the remaining areas and the percentage of the total average represented by both (Table 9). Stat area 525702 represents 37% of the most recent three-year average survey abundance of legal males in the Kodiak district while representing 38% of the average landings.

Table 9 Average Tanner crab abundance estimates from the ADF&G trawl surveys (2022-2024) in statistical area 525702, the Marmot Bay Tanner crab Protection Area, Type I closure areas and Type II closure areas around Kodiak Island by sex and maturity as compared to the Kodiak District proportion from all other areas. Here percentages represent the proportion of total surveyed Tanner crab (overall and by sex and maturity) comprised from each area. Note the estimated 12% average legal males from 525630 is not shown hence percentages of all legal males do not add to 100%. (From ADF&G staff). Average Tanner crab landings by area (from Table *8*) from 2022-2024 are shown for comparison. (Source ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT)

	Survey Legal males		Tanner crab landings by Area	
	Number	% of total	average landings	% of total
525702 (federal)	3,116,650	37%	701,020	38%
all other stat areas			1,144,964	62%
Total			1,845,984	100%
Marmot Bay Tanner Crab Protection Area				
-Federal waters	9,102	0.1%		
Type I closures				
Marmot Flats				
-Federal waters	15,949	0.2%		
Alitak Flats/Towers				
-Federal waters	262,579	3%		
Type II closure				
Barnabas Area				
-Federal waters	1,498,641	18%		
All other areas	2,443,559	29%		

6 Landings and timing and processing capacity

Average tons of groundfish processed in Kodiak by gear and month are shown in Table 10 while the associated average groundfish ex-vessel value processed in Kodiak by gear and month (through 2023 as values for 2024 are not yet available) are shown in Table 11.

Table 10 Average Tons of Groundfish Processed in Kodiak by Gear and Month, 2012-2024

Month	Non-Pelagic Trawl	Pot	Pelagic Trawl	Total
January	959	2,312	4,995	8,265
February	2,357	2,018	21,610	25,985
March	3,327	1,697	30,793	35,817
April	4,883	471	3,792	9,146
May	5,058	268	3,078	8,404
June	2,504	48	1,277	3,830
July	670	34	215	920
August	613	78	2,509	3,200
September	3,659	804	16,376	20,839
October	3,573	683	17,602	21,859
November	1,115	506	595	2,216
December	56	327	3	386
Total	28,775	9,247	102,846	140,868

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

Table 11 Average Groundfish Ex-Vessel Value Processed in Kodiak by Gear and Month, 2012-2023 (real 2023 dollars)

Month	Non-Pelagic Trawl	Pot	Pelagic Trawl	Total
January	607,581	2,267,912	1,740,836	4,616,329
February	1,223,317	1,943,665	7,248,243	10,415,224
March	2,105,020	1,822,149	9,698,259	13,625,428
April	1,982,516	922,900	1,099,291	4,004,706
May	3,255,703	849,366	1,162,731	5,267,800
June	1,566,328	188,913	490,963	2,246,204
July	583,898	202,801	101,040	887,739
August	390,945	304,732	929,626	1,625,303
September	2,134,198	1,073,097	5,407,267	8,614,561
October	1,739,151	1,152,011	6,147,613	9,038,776
November	781,560	945,949	245,700	1,973,209
December	29,902	352,279	1,624	383,805
Total	16,400,119	12,025,773	34,273,194	62,699,086

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

Total revenue by month and species for Kodiak are shown in Figure 6. Unlike Table 10 and Table 11 the date range here is 2018-2023 to better reflect processing changes that have occurred as a result of the 2017 Pacific cod crash.

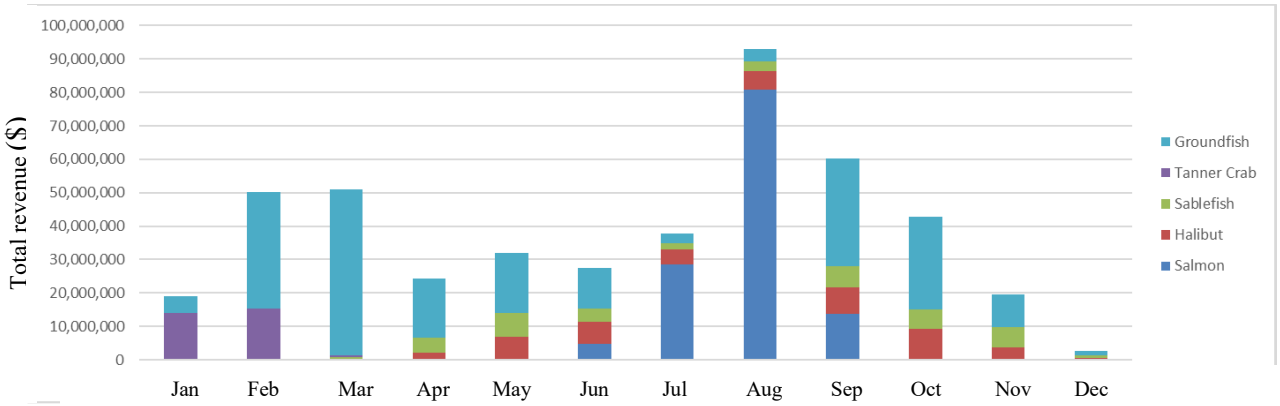


Figure 6 Total revenue ($) by month and species processed 2018-2023 in Kodiak. Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

General timing of processing at Kodiak shorebased plants by month is shown in Table 12. Additional information on the relative timing of various groundfish fisheries in the GOA is contained in Appendix 4. As shown in Figure 6, the Tanner crab fishery and associated processing are generally limited to January and February; however, based on landings (screened for confidentiality) from 2009 through 2024 by month, harvests can occasionally occur into March (Table 13).

Table 12 General timing of processing by fishery and months occurring in processors in Kodiak.

January-March	**April-May**	**June-August**	**September-November**
Tanner Crab, Pollock, Pacific cod, flatfish	Rockfish, flatfish, halibut, sablefish	Salmon, halibut, sablefish, rockfish*, flatfish*	Pollock, Pacific cod, flatfish, rockfish**

*end of August only
**closes November 15, some activity into early November

Groundfish processing employment by monthly groupings from 2015-2021 is shown in Figure 7. The information in these graphs is reported by processor in the GOA Economic Data Reports and does not include processing from salmon or crab fisheries and as such is likely a substantial underestimate. As shown in Table 8, additional processing for crab occurs in the January-March stanza while there is a higher amount of processing during June to August than is shown due to salmon fisheries. Tanner crab processing in the early part of the year has been sporadic based on harvest limits and fishery openings. In addition, crab processing requires less labor than groundfish so while the Tanner crab fishery does boost processing in the early part of the year it requires different processing lines and fewer crew than for groundfish (J Bonney, Pers. Comm).

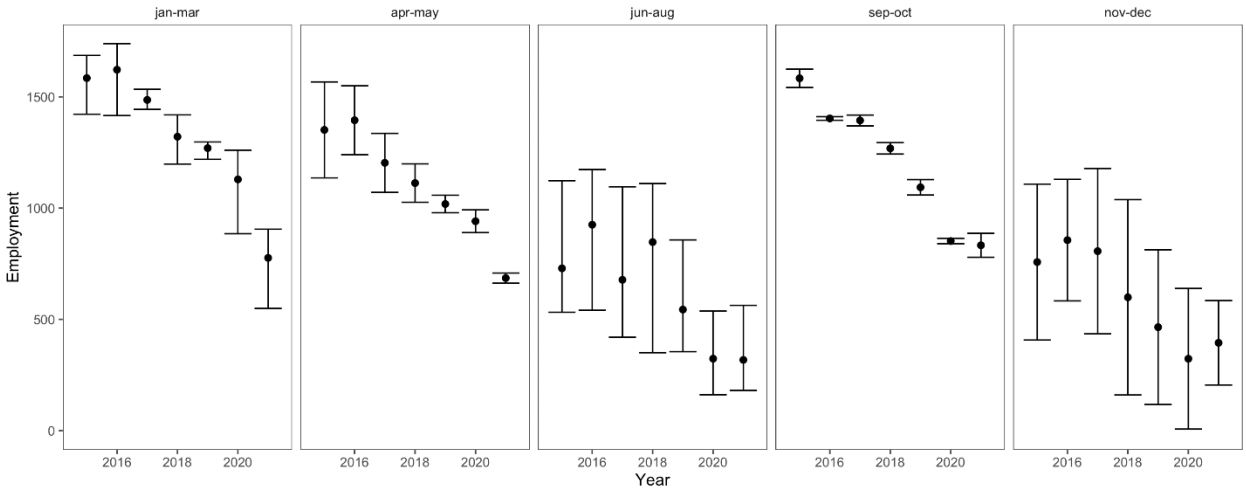


Figure 7 Processor employment by 2 month stanzas (with the exception of January to March) for groundfish fisheries in Kodiak where the dots and blue line indicate the average number of employees while the error bars show the minimum and maximum number over those time frames (2015-2021). Source Economic Data Reports, data compiled by AKFIN

Table 13 Harvests of Tanner crab by month (2011-2024) Note that data omitted due to confidentiality are indicated with "*". Source ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT and Shellfish eLandings data Note there was no commercial fishery between 2014-2017 and 2021. Price for 2024 is preliminary

Month	Number of Vessels	Harvest in Lbs	Value ($)
January			
2012	61	1,023,742	3,026,886
2013	59	509,380	1,357,818
2018	55	422,807	1,892,202
2019	82	620,729	2,685,374
2020	49	188,708	790,300
2022	86	1,155,550	9,499,820
2023	12	138,899	461,775
2024	134	3,113,469	10,585,795
February			
2012	4	48,469	139,272
2013	*	*	*
2018	*	*	*
2020	24	179,277	745,705
2022	5	66,723	514,059
2023	131	5,704,605	18,529,509
2024	6	21,653	73,620
March			
2013	*	*	*
2018	*	*	*
2020	6	33,009	137,704
2022	4	28,429	213,915

Changes in the Kodiak-based shoreside processing ownership were described in the 2017 Rockfish Program Review and are summarized here to provide additional information on processing in Kodiak. That information was based on a report developed for the GOA Trawl Bycatch Management Program (Northern Economics, 2016). A major change before 2016 was Trident Seafoods' construction of the new

Kodiak Near Island (KNI) plant that became operational in the summer of 2015 and the acquisition of the former Alaska Fresh Seafoods and Western Alaska Fisheries plants in 2014 and 2015, respectively. That paper also noted that Silver Bay Seafoods had purchased some International Seafoods of Alaska (ISA) assets, but none were directly related to the Rockfish Program. Since the last Rockfish Program review Kodiak-based shoreplant ownership has continued to be relatively unstable. Trident Seafoods, a long-time processor in the community, issued a statement on October 14, 2024, that Trident Seafoods and Pacific Seafood jointly announced they reached an agreement in principle for Pacific Seafoods to acquire Trident's Kodiak processing operations. That transaction was finalized in December 2024. Both parties stated they are committed to providing job security and ensuring continuity of Kodiak operations. Prior to the sale of its Kodiak assets, Trident was not buying rockfish from its cooperative members in early 2024 but was reported to take some deliveries later in the year. Silver Bay Seafoods is now operating the Global Seafoods plant. Instability in the processing sector could lead to continued changes in the future.

7 Closure considerations

The Council may wish to consider a range of closure options to protect Tanner crab; with closures being either regulatory or voluntary pending discussions. Voluntary or regulatory closures could be either area or time/area based. Depending upon the objectives for considering closures, the Council may wish to consider issues with static versus dynamic closures as well as additional tools for more dynamic fisheries management (e.g. such as tools available in the EBS pollock fishery for salmon bycatch, e.g., hot spots, move-on rules and other incentive-based bycatch management). The Council may also wish to consider the Enforcement Precepts for closure areas including enforcement recommendations to use "exact latitude/longitude, straight lines and rectangular shaped areas or center point and radius lines for most effective enforcement. Avoid simply stating distance offshore or using depth contours." [4]

Some specific staff considerations for Tanner crab protections include the following options (note that industry may propose alternative closure ideas as well):

Area based:

- At a broad area level – Data shown here indicates area 525702 is likely more important to Tanner crab than area 525630. This may indicate that consideration should be on 525702 for a full or seasonal closure than continuing to include 525630 in discussions.
- At a more spatially explicit area level- A habitat-type approach could be used to identify specific areas smaller than a full stat area. This could involve identifying areas where depth and slope (ie greater than 50 fathoms and less than 25% slope) are consistent with high Tanner abundance such as in Barnabas Gully to eliminate areas that may not be that important to Tanner crab (see 50 fathom contours on Figure 5 panels). Survey tow location data can also be summarized in areas of high abundance as a proxy for 'productive crab habitat'.
- Potentially characterize areas that are most productive to groundfish fishing compared to Tanner survey abundance to try to identify areas with greatest intersection as possible closure areas. Some criteria for survey abundance as compared to groundfish fishing would need to be developed to identify candidate areas for this approach.

Time based:

- Close full or partial stat areas during Tanner mate/molt cycle: either during the full time period (February-June) or paired to close when the directed Tanner season closes (April-June).

[4] North Pacific Enforcement Precepts December 2015

Tanner crab recruitment is highly cyclical and decision making tends to focus on large-bodied animals because mature males are most important to the crab industry and predominantly bigger crab show up as bycatch in groundfish gear. Due to the cyclical nature of the stock, when mature crab abundance is low, juvenile abundance tends to be at its maximum (see Figure 8).

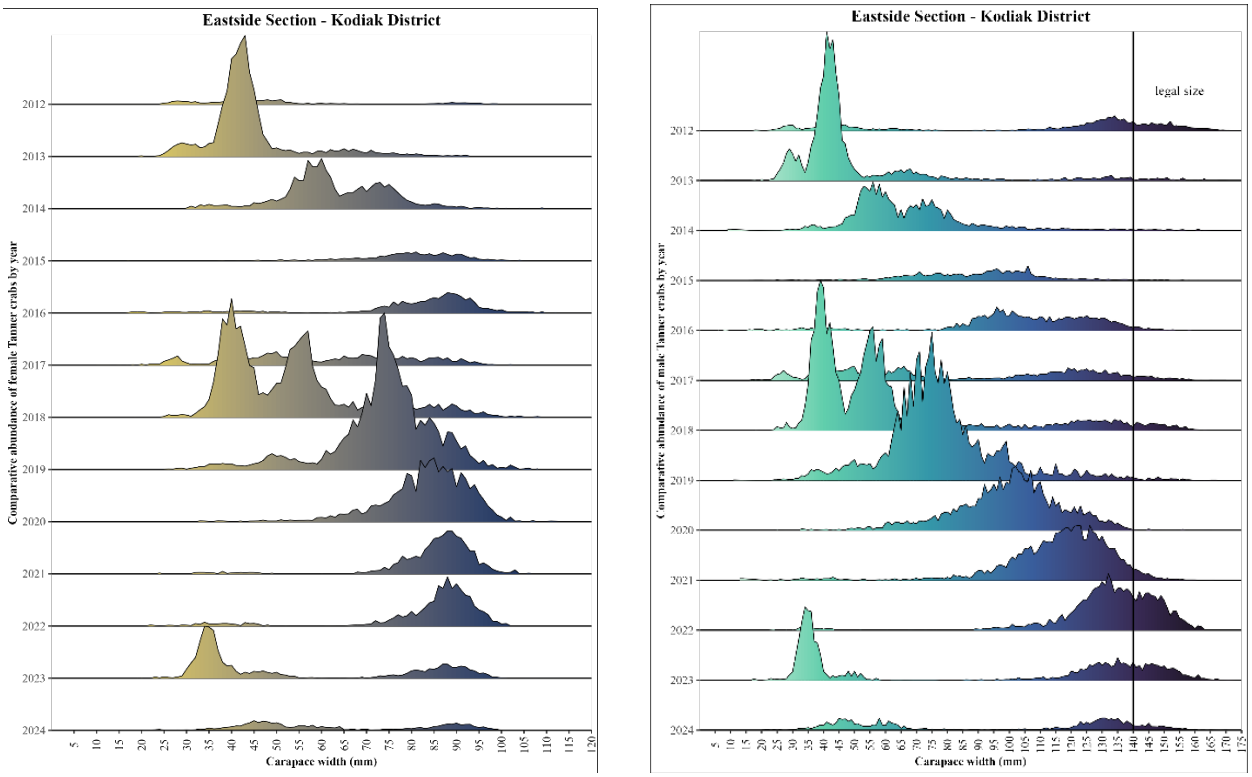


Figure 8 East side Kodiak size composition (carapace width in mm on the X-axis and years on the Y axis) for females (left panel 2015-2024) and males (right panel 2012-2024) with a line representing the legal male size. Source ADF&G

In considering modifications to the existing closures, the Barnabus Type II seasonal closure that overlaps stat area 525702, could be modified. While most of the closure covers state-waters, which are already closed to NPT gear, the Federal portion is open after June 15 and ADF&G surveys in June show high crab abundance inside portions of the area (M. Stichert, Pers. Comm). However, the survey does not cover the entire closure area so it is difficult to determine impacts on Tanner crab that are not in the survey area. Changing Barnabus to a Type I closure may provide additional conservation benefits for Tanner crab but survey data shows there are areas of high abundance in other portions of statistical area 525702, such as Barnabas Gully. Eliminating or reducing some of the other existing closure areas and moving the equivalent amount of area to portions of stat areas 525702 and 525630 with high crab abundance for a net neutral change in total closed area might be a potential compromise option for consideration.

8 Council action at this meeting

The Council will review the expanded discussion paper and may choose to take further action on this issue. Further action on this issue could be accomplished by establishing a Purpose and Need statement for this action and a suite of alternatives for analysis. The Council could ask for another expanded discussion paper on this issue with a list of the requests. The Council could also decline to take further action on this issue.

9 References

Bevaart, K. (2022) Annual management report for shellfish fisheries in the Kodiak, Chignik, and South Peninsula Districts, 2021. Alaska Department of Fish and Game, Fishery Management Report No. 22-18, Anchorage.

Bevaart, K., Phillips K. (2021) Annual management report for shellfish fisheries in the Kodiak, Chignik, and South Peninsula Districts, 2020. Alaska Department of Fish and Game, Fishery Management Report No. 21-29, Anchorage.

Donaldson, W. E., and A. E. Adams. 1989. Ethogram of behavior with emphasis on mating for the Tanner Crab Chionoecetes bairdi Rathbun. Journal of Crustacean Biology 9(1):37–53.

Donaldson, W. E., R. T. Cooney, and J. R. Hilsinger. 1981. Growth, age and size at maturity of Tanner Crab, Chionoecetes bairdi M. J. Rathbun, in the Northern Gulf of Alaska (Decapoda, Brachyura). Crustaceana 40(3):286–302. Hilsinger, J. R. 1976. Aspects of the reproductive biology of female snow crabs, Chionoecetes bairdi, from Prince William Sound and the adjacent Gulf of Alaska. Marine Science Communications 2(3 and 4):201–225.

Knutson, M. (2022). Evaluation of Mature Size for Tanner Crab *Chionocetes Bairdi* from the Kodiak District Large-mesh Trawl Survey 1996-2019. Alaska Department of Fish and Game, Fishery Data Series No. 22-09, Anchorage.

Nichols, N. (2022) Fishery management plan for the Kodiak District commercial Tanner crab fishery, 2023. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K22- 12, Kodiak.

NPFMC. (2023) North Pacific Conservation and Spatial Management Areas in Alaska's Exclusive Economic Zone: Area Summaries. https://meetings.npfmc.org/CommentReview/DownloadFile?p=e20a0f9e-14cd-42c5-aed3-e4ae51beec79.pdf&fileName=B1%20Conservation%20Area%20Summaries.pdf

Poltev, Y.N., Stominok, D.Y. (2008) Feeding habits of the Pacific cod *Gadus macrocephalus* in oceanic waters of the northern Kuril Islands and southeast Kamchatka. Russian Journal of Marine Biology 34:316-324.

Richardson, N. (2019) Fishery management plan for the Kodiak District commercial Tanner crab fishery, 2020. Alaska Department of Fish and Game, Fishery Management Report No. 19-26, Anchorage.

Richardson, N., Bevaart, K., Phillips, K. (2020) Annual management report for shellfish fisheries in the Kodiak, Chignik, and South Peninsula Districts, 2019. Alaska Department of Fish and Game, Fishery Management Report No. 20-22, Anchorage.

Richardson, N., Nichols, N. (2018) Fishery management plan for the Kodiak District commercial Tanner crab fishery, 2019. Alaska Department of Fish and Game, Fishery Management Report No. 18-31, Anchorage.

Rosenkranz, G.E., Tyler, A.V., Kruse, G.H., Niebauer, H.J. (1998) Relationship between winds and year-class strength of Tanner crabs in the Southeastern Bering Sea. Alaska Fishery Research Bulletin 5(1):18-24.

Rosenkranz, G.E., Tyler, A.V., Kruse, G.H. (2001) Effects of water temperature and wind on recruitment of Tanner crabs in Bristol Bay, Alaska. Fisheries Oceanography 10:1-12.

Siddeek, M.S.M., Zheng, J., Morado, J.F., Kruse, G.H., Bechtol, W.R. (2010). Effect of bitter crab disease on rebuilding in Alaska Tanner crab stocks. ICES Journal of Marine Science 67: 2027–2032.

Somerton, D.A. (1981a) Life history and population dynamics of two species of Tanner crab, *Chionoecetes bairdi* and *C. opilio*, in the eastern Bering Sea with implications for the management of the commercial harvest. PhD thesis, University of Washington, Seattle, WA.

Somerton, D.A. (1981b) Regional variation in the size of maturity of two species of Tanner crab (*Chionoecetes bairdi and C. opilio*) in the eastern Bering Sea, and its use in defining management subareas. Canadian Journal of Fisheries and Aquatic Sciences 38(2): 163–174.

Spalinger, K., Knutson, M. (2022) Historical abundances of Tanner crab *Chionoecetes bairdi* for Kodiak, Chignik, South Peninsula, and eastern Aleutian districts from standardized large-mesh trawl surveys, 1988–2021. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K22-08, Kodiak.

Spalinger, K., Nichols, N., Knutson, M. (2021) Updated Tanner crab harvest strategies for Kodiak, Chignik, and South Peninsula Districts: A report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K21-13, Kodiak.

Spalinger, K., Silva, J. (2023) Large-mesh bottom trawl survey of crab and groundfish: Kodiak, Chignik, South Peninsula, and Eastern Aleutian Management Districts, 2022. Alaska Department of Fish and Game, Fishery Management Report No. 23-07, Anchorage.

Sparks, A. K. 1982. The Histopathology and Possible Role in the Population Dynamics of Tanner crab, *Chionoecetes bairdi*, of the Fungal Disease (Black Mat Syndrome) caused by *Trichomaris invadens*. In Proceedings of the International Symposium on the Genus *Chionoecetes*, University of Alaska, Fairbanks, Alaska Sea Grant Report 82-10. pp. 539– 545.

Stevens, B.G. (2000) Moonlight madness and larval launch pads: Tidal synchronization of mound formation and hatching by Tanner crabs, *Chionoecetes bairdi*. Journal of Shellfish Research 19(1): 640–641.

Stevens, B. G., W. E. Donaldson, J. A. Haaga, and J. E. Munk. 1993. Morphometry and maturity of paired Tanner crabs, Chionoecetes bairdi, from shallow and deepwater environments. Canadian Journal of Fisheries and Aquatic Sciences 50(7):1504–1516.

Stevens, B. G., J. A. Haaga, and W. E. Donaldson. 1994. Aggregative mating of Tanner crabs, Chionoecetes bairdi. Canadian Journal of Fisheries and Aquatic Sciences 51(6):1273–1280.

Tamone, S. L., S. J. Taggart, A. G. Andrews, J. Mondragon, and J. K. Nielsen. 2007. Ecdysteroid levels in Glacier Bay Tanner crabs: evidence for a terminal molt. Journal of Crustacean Biology 27(4):635–642

Urban, D., Hart, D. (1999) Biology of the Tanner crab *Chionoecetes bairdi* in Alaska: A Report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K99-22.

Whiteside, C. (2023) Fishery management plan for the Kodiak District commercial Tanner crab fishery, 2024. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K23- 09, Kodiak.

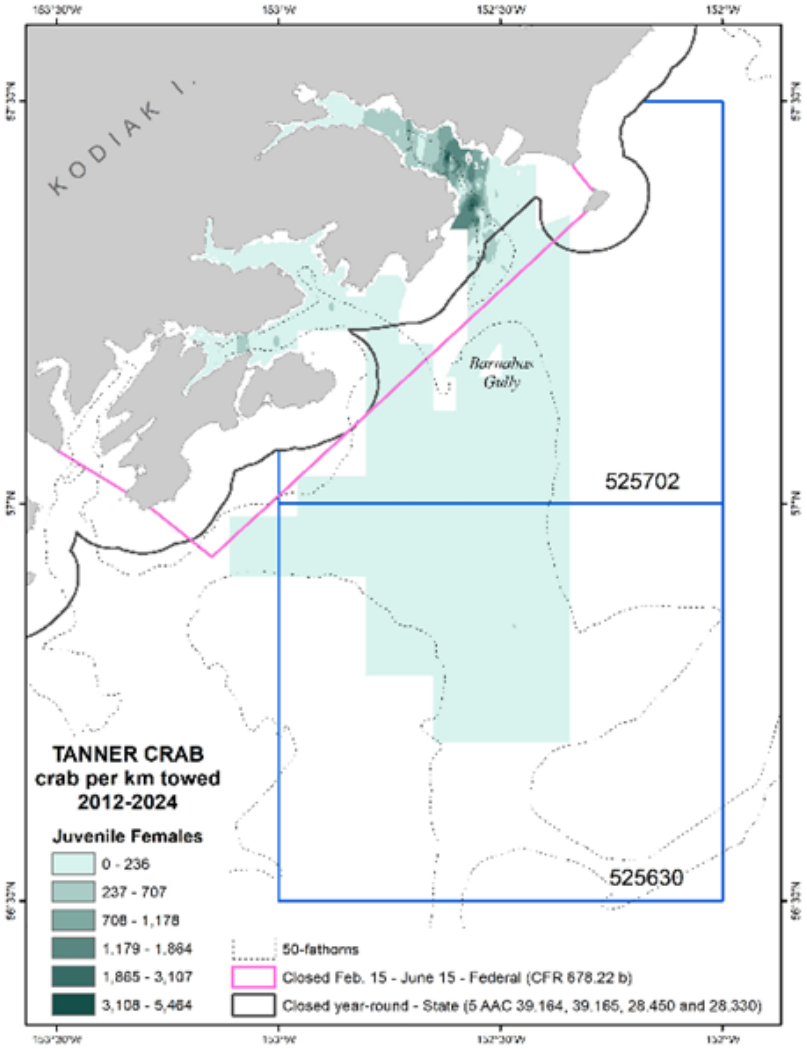
Whiteside, C., Bevaart, K. (2021) Fishery management plan for the Kodiak District commercial Tanner crab fishery, 2022. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K21-11, Kodiak.

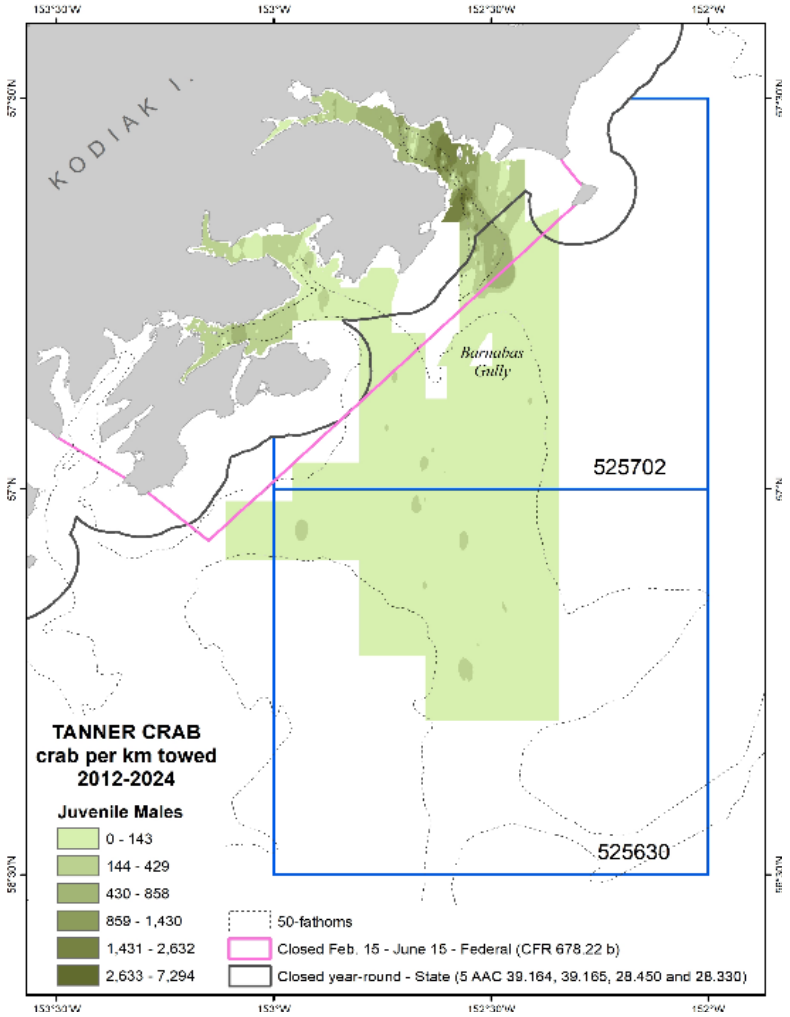
Whiteside, C., Looman, A. (2023) Annual management report for shellfish fisheries in the Kodiak, Chignik, and South Peninsula Districts, 2022. Alaska Department of Fish and Game, Fishery Management Report No. 23-17, Anchorage.

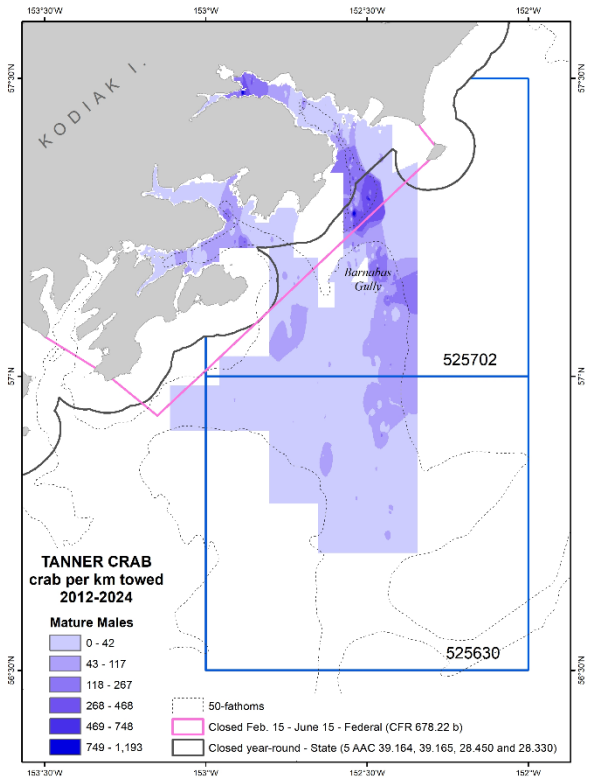
Wickham H., Averick, M., Bryan, J., Chang, W., McGowan, L.D., François, R., Grolemund, G., Hayes, A., Henry, L., Hester, .J, Kuhn, M., Pedersen, T.L., Miller, E., Bache, S.M., Müller, K., Ooms, J., Robinson, D., Seidel, D.P., Spinu, V., Takahashi, K., Vaughan, D., Wilke, C., Woo, K., Yutani, H. (2019) "Welcome to the tidyverse." _Journal of Open Source Software_, *4*(43), 1686. doi:10.21105/joss.01686 https://doi.org/10.21105/joss.01686.

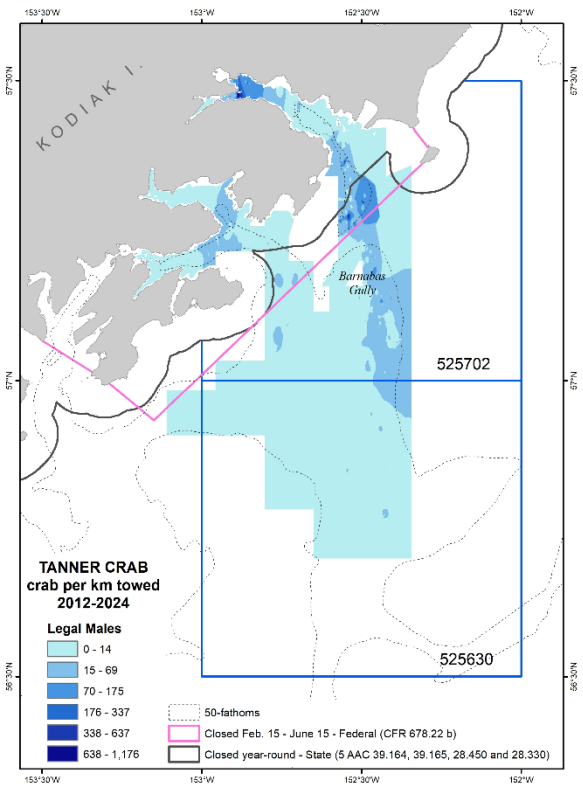
10 Appendices

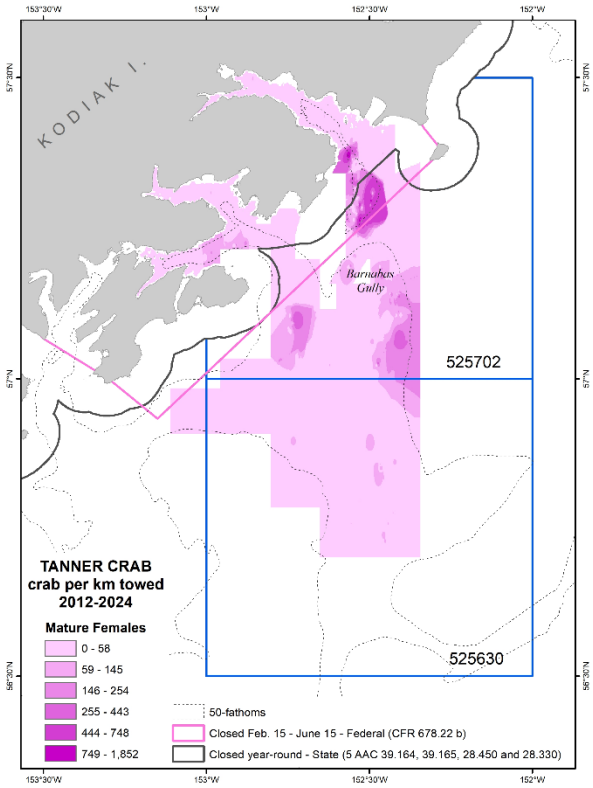
Appendix 1. Tanner crab distribution by sex and maturity in crab per km towed 2012-2024 (from Figure 5 in document)






KODIAK I.
Barnabas Gully
525702
525630
TANNER CRAB
crab per km towed
2012-2024
Mature Males
0 - 42
43 - 117
118 - 267
268 - 468
469 - 748
749 - 1,193
50-fathoms
Closed Feb. 15 - June 15 - Federal (CFR 678.22 b)
Closed year-round - State (5 AAC 39.164, 39.165, 28.450 and 28.330)


KODIAK I.
Barnabas Gully
525702
525630
TANNER CRAB
crab per km towed
2012-2024
Legal Males
0 - 14
15 - 69
70 - 175
176 - 337
338 - 637
638 - 1,176
50-fathoms
Closed Feb. 15 - June 15 - Federal (CFR 678.22 b)
Closed year-round - State (5 AAC 39.164, 39.165, 28.450 and 28.330)


KODIAK I.
Barnabas Gully
525702
525630
TANNER CRAB
crab per km towed
2012-2024
Mature Females
0 - 58
59 - 145
146 - 254
255 - 443
444 - 748
749 - 1,852
50-fathoms
Closed Feb. 15 - June 15 - Federal (CFR 678.22 b)
Closed year-round - State (5 AAC 39.164, 39.165, 28.450 and 28.330)

Appendix 2. Ex-vessel value by gear, target and area 2012-2023. Note that data omitted due to confidentiality are indicated with "*".

Table A-14 Non-Pelagic Trawl Ex-Vessel Value from Groundfish by Area of Landing or Target, 2012-2023 (in Millions of nominal dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average Annual	Percent of Total
525630 - Total	3.1	3.5	3.6	1.9	2.1	2.3	1.7	2.0	1.2	.8	.4	.4	1.9	7.1%
Arrowtooth Flounder	1.4	1.9	1.9	.4	.6	1.7	1.1	1.3	.5	.0	.0	.1	.9	3.3%
Flathead Sole	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.1%
Pacific Cod	.5	1.0	1.1	1.1	.1	.0	.0	.0	.1	.1	.0	.0	.3	1.3%
Pollock - bottom	.3	.2	.2	.3	.3	.1	.4	.2	.3	.3	.1	.2	.2	0.9%
Pollock - midwater	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Rex Sole - GOA	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Rockfish	.3	.4	.3	.1	1.0	.5	.3	.4	.2	.1	.1	.1	.3	1.1%
Sablefish	.3	.0	.0	.0	.0	.1	.0	.1	.2	.2	.2	.0	.1	0.3%
Shallow Water Flatfish - GOA	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.1%
525702 - Total	4.0	3.0	4.3	4.2	4.1	2.0	2.0	3.2	2.3	1.1	.9	.4	2.6	9.8%
Arrowtooth Flounder	.8	.6	1.0	.4	1.5	1.2	.9	1.6	.8	.0	.1	.1	.7	2.8%
Atka Mackerel	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Flathead Sole	.3	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.1%
Other Species	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Pacific Cod	1.0	.6	1.6	1.3	.6	.0	.0	.0	.0	.0	.0	.0	.4	1.6%
Pollock - bottom	.6	.2	.6	.9	.8	.2	.3	1.0	.4	.4	.3	.2	.5	1.9%
Pollock - midwater	.1	.1	.1	.1	.0	.1	.0	.0	.0	.0	.0	.0	.0	0.1%
Rex Sole - GOA	.2	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.1%
Rockfish	.0	.0	.0	.1	.1	.0	.1	.0	.0	.1	.1	.0	.0	0.2%
Sablefish	.0	.0	.0	.0	.0	.0	.0		.0	.3	.3	.0	.1	0.2%
Shallow Water Flatfish - GOA	1.2	1.4	1.0	1.3	1.0	.5	.6	.6	1.0	.2	.1	.2	.8	2.8%
Other GOA - Total	33.9	30.6	35.9	27.1	25.8	28.1	21.5	16.8	12.5	8.9	16.5	10.8	22.4	83.1%
Arrowtooth Flounder	4.7	3.9	8.5	5.3	5.4	9.0	5.1	6.0	4.4	.9	1.8	1.3	4.7	17.4%
Atka Mackerel	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Deep Water Flatfish - GOA	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Flathead Sole	.3	.0	.3	.1	.2	.0	.0	.2	.0	.0	.0	.0	.1	0.3%
Other Species	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Pacific Cod	9.1	6.6	6.9	5.9	4.3	3.5	.0	.2	.0	.2	1.4	.1	3.2	11.9%
Pollock - bottom	1.0	2.8	4.1	1.6	.9	2.5	2.5	1.0	1.6	1.8	3.1	2.5	2.1	7.9%
Pollock - midwater	.3	1.0	.2	.3	.2	.1	.1	.0	.0	.0	.0	.0	.2	0.7%
Rex Sole - GOA	1.0	2.1	1.5	.8	.3	.3	.6	.8	.2	.0	.2	.0	.6	2.4%
Rockfish	14.5	10.5	12.0	11.4	12.8	11.5	11.7	7.7	5.0	5.2	9.3	6.3	9.8	36.6%
Sablefish	1.5	1.4	.9	1.3	1.1	.9	.9	.3	.2	.6	.5	.5	.9	3.2%
Shallow Water Flatfish - GOA	1.6	2.1	1.5	.3	.6	.4	.4	.5	1.0	.0	.1	.1	.7	2.7%
Grand Total	41.1	37.1	43.7	33.1	32.0	32.5	25.2	21.9	16.0	10.8	17.8	11.7	26.9	100.0%

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table A-1(continued). Non-Pelagic Trawl Ex-Vessel Value from Groundfish by Area of Landing or Target, 2012-2023
(in Millions of nominal dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average Annual	Percent of Total
525630 - Total	3.1	3.5	3.6	1.9	2.1	2.3	1.7	2.0	1.2	.8	.4	.4	1.9	7.1%
Arrowtooth Flounder	1.4	1.9	1.9	.4	.6	1.7	1.1	1.3	.5	.0	.0	.1	.9	3.3%
Flathead Sole	*	*	.0	.0	*	.0	.0	.0	.0	*	.0	.0	.0	0.1%
Pacific Cod	.5	1.0	1.1	1.1	.1	.0	.0	.0	.1	.1	.0	.0	.3	1.3%
Pollock - bottom	.3	.2	.2	.3	.3	.1	.4	.2	.3	.3	.1	.2	.2	0.9%
Rockfish	.3	.4	.3	.1	1.0	.5	.3	.4	.2	.1	.1	.1	.3	1.1%
Sablefish	.3	.0	.0	.0	.0	.1	.0	.1	.2	*	.2	.0	.1	0.3%
Shallow Water Flatfish - GOA	*	*	.0	.0	*	.0	.0	.0	.0	.0	.0	.0	.0	0.1%
525702 - Total	4.0	3.0	4.3	4.2	4.1	2.0	2.0	3.2	2.3	1.1	.9	.4	2.6	9.8%
Arrowtooth Flounder	.8	.6	1.0	.4	1.5	1.2	.9	1.6	.8	.0	.1	.1	.7	2.8%
Flathead Sole	.3	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.1%
Pacific Cod	1.0	.6	1.6	1.3	.6	.0	.0	.0	.0	.0	.0	.0	.4	1.6%
Pollock - bottom	.6	.2	.6	.9	.8	.2	.3	1.0	.4	.4	.3	.2	.5	1.9%
Pollock - midwater	*	*	*	*	*	*	*	*	.0	.0	*	.0	.0	0.1%
Rex Sole - GOA	*	*	*	*	*	*	.0	*	*	.0	*	.0	.0	0.1%
Rockfish	*	*	*	*	*	*	*	.0	*	*	*	*	.0	0.2%
Sablefish	.0	*	.0	.0	.0	.0	.0		*	*	*	*	.1	0.2%
Shallow Water Flatfish - GOA	1.2	1.4	1.0	1.3	1.0	.5	.6	.6	1.0	.2	.1	.2	.8	2.8%
Other GOA - Total	33.9	30.6	35.9	27.1	25.8	28.1	21.5	16.8	12.5	8.9	16.5	10.8	22.4	83.1%
Arrowtooth Flounder	4.7	3.9	8.5	5.3	5.4	9.0	5.1	6.0	4.4	.9	1.8	1.3	4.7	17.4%
Flathead Sole	.3	.0	.3	.1	.2	.0	*	*	.0	*	.0	.0	.1	0.3%
Pacific Cod	9.1	6.6	6.9	5.9	4.3	3.5	*	*	*	*	1.4	*	3.2	11.9%
Pollock - bottom	1.0	2.8	4.1	1.6	.9	2.5	2.5	1.0	1.6	1.8	3.1	2.5	2.1	7.9%
Pollock - midwater	.3	1.0	.2	.3	.2	.1	.1	.0	.0	.0	.0	.0	.2	0.7%
Rex Sole - GOA	1.0	2.1	1.5	.8	.3	.3	.6	.8	*	.0	*	.0	.6	2.4%
Rockfish	14.5	10.5	12.0	11.4	12.8	11.5	11.7	7.7	5.0	5.2	9.3	6.3	9.8	36.6%
Sablefish	1.5	1.4	.9	1.3	1.1	.9	.9	.3	.2	.6	.5	.5	.9	3.2%
Shallow Water Flatfish - GOA	1.6	2.1	1.5	.3	.6	.4	.4	.5	1.0	*	.1	*	.7	2.7%
Grand Total	41.1	37.1	43.7	33.1	32.0	32.5	25.2	21.9	16.0	10.8	17.8	11.7	26.9	100.0%

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table A-15 Pelagic Trawl Ex-Vessel Value from Groundfish by Area of Landing or Target, 2012-2023 (in Millions of nominal dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average Annual	Percent of Total
525630 - Total	.2	1.7	3.0	3.4	3.9	2.0	1.8	.2	.2	.2	.1	.1	1.4	4.0%
Pacific Cod	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Pollock - bottom	.0	.0	.4	.4	.6	.1	.5	.1	.1	.1	.0	.1	.2	0.6%
Pollock - midwater	.2	1.7	2.5	3.0	3.2	1.9	1.1	.1	.1	.1	.0	.0	1.2	3.4%
Rockfish	.0	.0	.0	.0	.0	.1	.1	.0	.0	.0	.0	.0	.0	0.0%
Sablefish	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Shallow Water Flatfish - GOA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
525702 - Total	4.2	3.2	4.8	5.0	5.6	2.2	3.5	2.9	1.0	1.0	1.7	.9	3.0	8.6%
Pacific Cod	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Pollock - bottom	.2	.5	.6	.8	.7	.1	.8	.6	.1	.5	.5	.6	.5	1.4%
Pollock - midwater	4.0	2.7	4.2	4.1	4.9	2.1	2.7	2.3	.8	.5	1.2	.3	2.5	7.2%
Rockfish	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Shallow Water Flatfish - GOA	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Other GOA - Total	32.1	31.8	35.6	32.9	15.6	26.3	35.8	31.0	26.3	23.8	40.6	31.3	30.3	87.4%
Arrowtooth Flounder	.0		.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Pacific Cod	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.1%
Pollock - bottom	.9	1.9	1.2	1.8	.9	.9	2.3	1.6	1.8	5.8	11.0	7.7	3.1	9.1%
Pollock - midwater	28.9	28.7	33.2	29.7	13.9	23.7	30.6	25.7	20.9	14.1	25.0	19.2	24.5	70.6%
Rockfish	2.3	1.1	1.2	1.4	.7	1.7	2.8	3.7	3.7	3.9	4.6	4.3	2.6	7.6%
Sablefish	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Shallow Water Flatfish - GOA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Grand Total	36.5	36.7	43.5	41.2	25.0	30.6	41.1	34.1	27.5	25.0	42.4	32.3	34.7	100.0%

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table A-2(cont) Pelagic Trawl Ex-Vessel Value from Groundfish by Area of Landing or Target, 2012-2023 (in Millions of nominal dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average Annual	Percent of Total
525630 - Total	.2	1.7	3.0	3.4	3.9	2.0	1.8	.2	.2	.2	.1	*	1.4	4.0%
Pacific Cod	.0	.0	*	*	*	.0	.0	.0	*	.0	.0	.0	.0	0.0%
Pollock - bottom	.0	.0	*	*	*	*	.5	.1	*	*	*	*	.2	0.6%
Pollock - midwater	.2	1.7	2.5	3.0	3.2	*	1.1	.1	*	*	*	.0	1.2	3.4%
Shallow Water Flatfish - GOA	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
525702 - Total	4.2	3.2	4.8	5.0	5.6	2.2	3.5	2.9	1.0	1.0	1.7	*	3.0	8.6%
Pollock - bottom	.2	.5	.6	.8	.7	.1	.8	.6	.1	.5	.5	.6	.5	1.4%
Pollock - midwater	4.0	2.7	4.2	4.1	4.9	2.1	2.7	2.3	.8	.5	1.2	.3	2.5	7.2%
Other GOA - Total	32.1	31.8	35.6	32.9	15.6	26.3	35.8	31.0	26.3	23.8	40.6	31.3	30.3	87.4%
Pollock - bottom	.9	1.9	1.2	1.8	.9	.9	2.3	1.6	1.8	5.8	11.0	7.7	3.1	9.1%
Pollock - midwater	28.9	28.7	33.2	29.7	13.9	23.7	30.6	25.7	20.9	14.1	25.0	19.2	24.5	70.6%
Rockfish	2.3	1.1	1.2	1.4	.7	1.7	2.8	3.7	3.7	3.9	4.6	4.3	2.6	7.6%
Grand Total	36.5	36.7	43.5	41.2	25.0	30.6	41.1	34.1	27.5	25.0	42.4	32.3	34.7	100.0%

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table A-16 Pot Ex-Vessel Value from Groundfish by Area of Landing or Target, 2012-2023 (in Millions of nominal dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average Annual	Percent of Total
525630 - Total	1.7	1.1	.6	.4	.4	.1	.0	.0	.0	.0	.0	.1	.4	1.8%
Pacific Cod	1.7	1.1	.6	.4	.4	.1	.0	.0	.0	.0	.0	.0	.4	1.8%
Sablefish	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	0.1%
525702 - Total	1.4	.7	.9	1.3	.5	.4	.0	.0	.0	.1	.1	.3	.5	2.3%
Pacific Cod	1.4	.7	.9	1.3	.5	.4	.0	.0	.0	.0	.1	.0	.4	2.2%
Sablefish	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.2	.0	0.1%
Other GOA - Total	21.2	10.3	17.8	19.3	17.2	16.5	8.7	10.7	13.2	33.4	44.7	23.4	19.7	95.9%
Halibut	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.0	.0	0.1%
Other Species	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Pacific Cod	21.2	10.3	17.8	19.3	17.2	11.2	4.3	4.6	1.1	3.9	7.1	4.1	10.2	49.5%
Sablefish	.0	.0	.0	.0	.0	5.2	4.5	6.1	12.0	29.5	37.5	19.2	9.5	46.2%
Grand Total	24.4	12.1	19.3	20.9	18.1	16.9	8.7	10.7	13.2	33.6	44.8	23.7	20.5	100.0%

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table A-17 Hook and Line Ex-Vessel Value from Groundfish by Area of Landing or Target, 2012-2023 (in Millions of nominal dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average Annual	Percent of Total
525630 - Total	.2	1.4	1.2	.6	.6	.8	.1	.5	.2	.9	.7	.5	.6	0.9%
Halibut	.0	.6	.7	.4	.5	.7	.1	.4	.2	.8	.7	.5	.5	0.7%
Pacific Cod	.1	.5	.5	.2	.0	.1	.0	.0	.0	.0	.0	.0	.1	0.2%
Sablefish	.0	.2	.0	.1	.0	.0	.0	.0	.0	.1	.1	.0	.0	0.1%
525702 - Total	1.0	.9	1.3	.8	.3	.5	.2	.3	.2	.5	.6	.6	.6	0.9%
Halibut	.0	.5	.5	.4	.2	.4	.2	.1	.2	.3	.5	.5	.3	0.4%
Pacific Cod	1.0	.4	.8	.4	.1	.1	.0	.2	.0	.2	.1	.1	.3	0.4%
Sablefish	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Other GOA - Total	63.3	105.6	96.1	94.4	90.7	91.9	67.5	48.2	31.9	48.3	56.8	36.5	69.3	98.2%
Halibut	5.2	61.5	48.6	47.4	47.7	45.1	36.7	30.4	25.0	41.9	48.7	31.7	39.2	55.5%
Other Species	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Pacific Cod	10.6	6.0	7.2	7.3	3.4	4.0	2.1	1.6	.0	2.3	3.2	2.1	4.2	5.9%
Pollock - bottom	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Rockfish	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0%
Sablefish	47.5	38.1	40.3	39.6	39.6	42.8	28.7	16.2	6.9	4.1	5.0	2.7	26.0	36.8%
Grand Total	64.5	107.9	98.7	95.8	91.6	93.1	67.8	48.9	32.3	49.7	58.2	37.6	70.5	100.0%

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT