

D2: GULF OF ALASKA TANNER CRAB PROTECTIONS

FEBRUARY 2024



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ACTION BY COUNCIL

- Review the discussion paper provided by staff
- Recommend action as necessary

[Link](#) to June 2023 motion

Council Motion

Staff Tasking – Kodiak Tanner crab

June 11, 2023

The Council requests the following information to inform potential GOA Tanner crab protections.

- Information by target fishery and gear type (PTR, NPT, POT) in statistical areas 525702 and 525630 from 2019-2023 on:
 - Groundfish harvest
 - Tanner crab bycatch
 - Number and proportion of trips covered by an observer or Electronic Monitoring
- Current Tanner and king crab distribution in the Kodiak District and to the extent practicable, the proportion of the surveyed abundance of Kodiak District Tanner and king crab in:
 - Statistical areas 525702 and 525630
 - The Marmot Bay Tanner Crab Protection Area
 - The Type I Closure Areas: Marmot Flats Area, Alitak Flats and Towers Areas
 - The Type II Closure Areas: Barnabas and Chirikof Island Area
- Options to implement full monitoring requirements in statistical areas 525702 and 525630 through the current partial coverage observer and EM programs or pay as you go for trawl and pot gear.



CHANGES TO THE PAPER

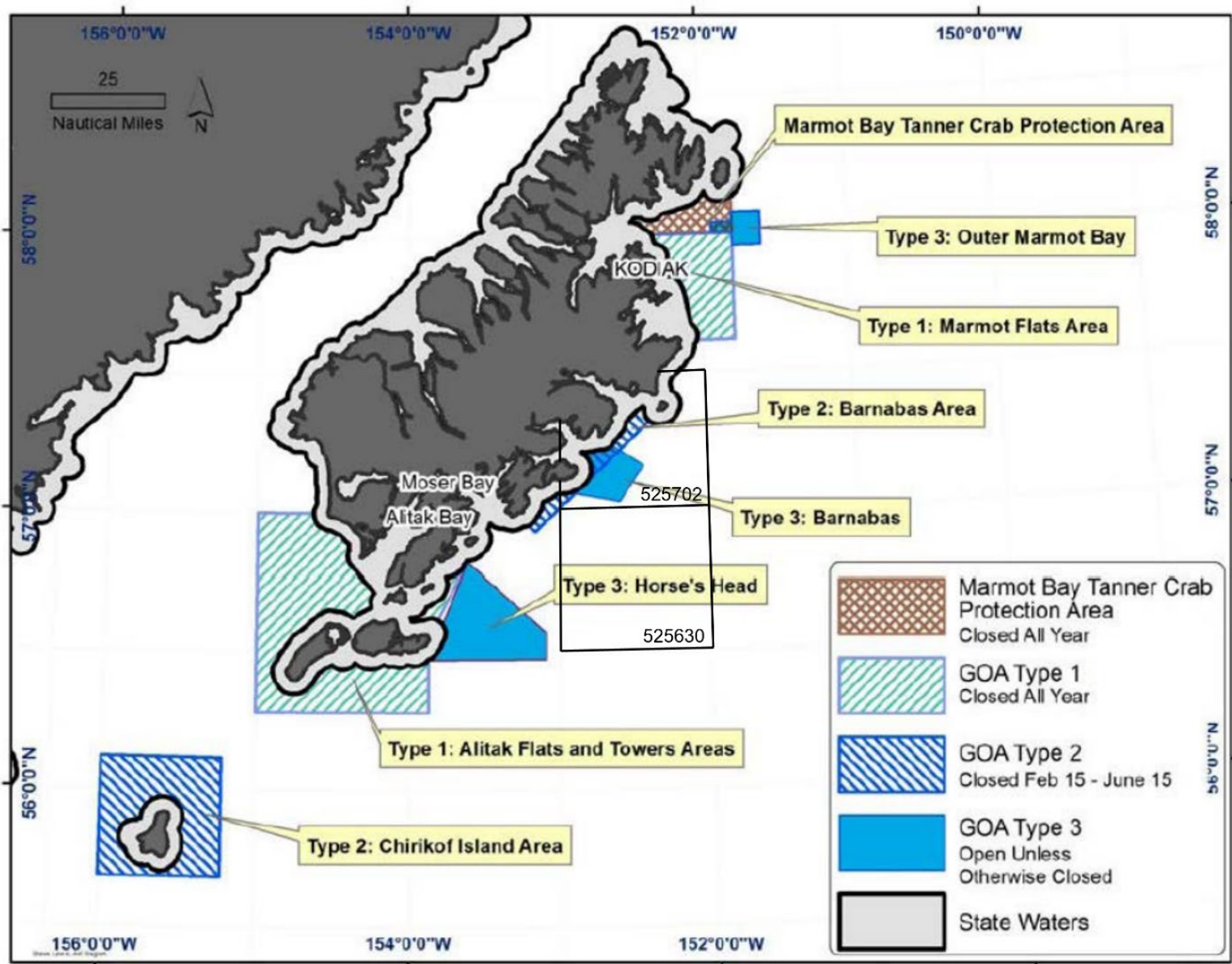
- Updates have been made to this paper, which includes a more robust dataset and data groupings such that the most data can be provided to the Council for decision-making
- There were initial problems with the dataset (from the December iteration) that have since been addressed, providing a robust and statistically sound paper



BACKGROUND: SCOPE, DATA, PROCEDURES

- Geographic scope: statistical areas 525630 and 525702, comparisons with Central Gulf of Alaska (CGOA)
 - CGOA: GOA waters around Kodiak Island ranging from 147°W to 159°W longitude (PWS to Shumagin Islands)
- Gear types: non-pelagic trawl (NPT), pelagic trawl (PTR), pot (POT)
- Temporal scope: 2019 – 2023
- Data:
 - Catch, bycatch and observer data: NMFS Alaska Region Catch Accounting System (CAS)
 - Abundance estimates for Tanner crab were provided by Alaska Department of Fish and Game (ADFG)
 - Inclusive of January 1, 2019 – December 25, 2023
 - Excludes Halibut catch data. Includes the State Pacific cod parallel fishery
- Data analysis performed using R statistical software and the tidyverse package



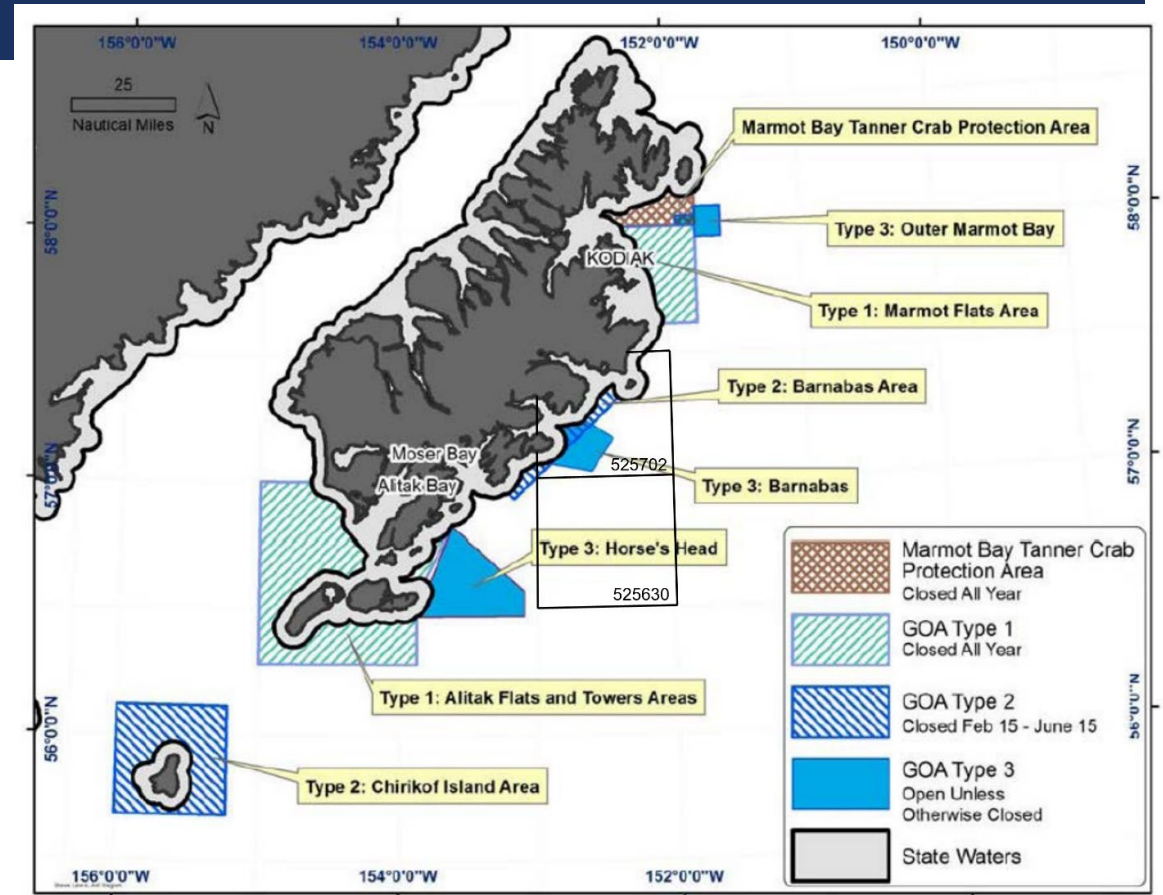


BACKGROUND:
CLOSURE AREAS
Figure 1 (p. 5)

BACKGROUND: CLOSURE AREAS

Table 1 (p. 4)

Area Type, Prohibition, Name	<p>Tanner Crab Trawl Closure Area</p> <p>Prohibition: All fishing with trawl gear, except for pollock fishing with pelagic trawl gear</p> <p>Marmot Bay Tanner Crab Protection Area (112 nm²)</p>
Definition	<p>Tanner crab area of historic 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.</p>
Conservation Value	<p>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.</p>



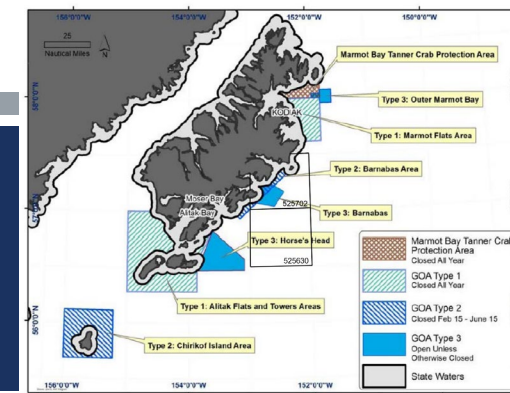
Sources: [GOA Groundfish FMP](#) and the [North Pacific Conservation and Spatial Management Areas in Alaska's Exclusive Economic Zone: Area Summaries](#).

Established by the Council in October 2009 with GOA GF FMP Amendment 89 (79 FR 2794).



BACKGROUND: CLOSURE AREAS

Table 1 (p. 4)



Area Type, Prohibition, and Name	Definition	Conservation Value
Type I Prohibition: Nonpelagic trawl gear Alitak Flats and Towers (879 nm ²) Marmot Flats Area (280 nm ²)	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 extensive 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)	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	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.



Areas established Sept 1986 with GOA GF FMP Amendment 15 (52 FR 1283) in April 1987. Renewed June 1989 (GOA GF FMP Amendment 18, 54 FR 50386) and 1992 (GOA GF FMP Amendment 26, 58 FR 503).

BACKGROUND: SOURCES OF TANNER MORTALITY

(p. 5 - 7)

Other than the directed Tanner crab fishery,

- Discard mortality
 - 2023 Stock Assessment and Fishery Evaluation ([SAFE](#)) report for the Bering Sea Tanner crab fisheries assumes mortality rates of discarded crab are 32% for in both the directed crab fisheries and in the fixed gear groundfish fisheries, and 80% in trawl sector groundfish fisheries. Differences in gear type and handling procedures account for the variation in assumed mortality rates for the fisheries.
- Predation (Pacific cod, Tom cod, skates, Pacific halibut, octopi, sea otter, other Tanner crab)
 - Note: this is not an exhaustive list of Tanner crab predators.
- Bitter Crab Syndrome, Black Mat Syndrome
- Recruitment variation



BACKGROUND: TANNER VULNERABILITY

(p. 6 - 7)

- Increased vulnerability during molting and mating: February – mid-May
- Large-scale molting events around Kodiak are seen from February – early May, mating aggregations often occur towards mid-May.





GROUND FISH FISHERIES

RETAINED HARVEST BY TARGET FISHERY AND GEAR TYPE



GROUND FISH FISHERIES: 2019 – 2023

RETAINED CATCH (p. 8)

Table 3: **Groundfish retained catch** for 2019 – 2023 in metric tons for statistical areas 525630, 525702, and Central Gulf of Alaska (CGOA) and the proportions of catch from statistical areas 525630 and 525702 compared to CGOA by fishery and gear type. Note: deep water flatfish combines arrowtooth flounder, and Rex sole, shallow water flatfish combines flathead sole and shallow water flatfish.

	Stat Area 525630 (mt)	Stat Area 525702 (mt)	All CGOA (mt)	Proportion from 525630	Proportion from 525702	Proportion from 525630 and 525702 combined
By Fishery						
Deep water flatfish	6,518	8,351	75,668	0.09	0.11	0.20
Shallow water flatfish	144	6,606	11,673	0.01	0.57	0.58
Pacific Cod	122	132	22,463	0.01	0.01	0.01
Pollock	4,183	27,237	457,360	0.01	0.06	0.07
Rockfish	1,701	202	142,177	0.01	0.00	0.01
Sablefish	329	365	20,901	0.02	0.02	0.03
By Gear Type						
NPT	10,939	20,595	198,791	0.06	0.10	0.16
POT	33	207	39,812	0.00	0.01	0.01
PTR	2,024	22,092	491,638	0.00	0.04	0.05



GROUND FISH FISHERIES: 2019 – 2023

RETAINED CATCH (p. 8)

Table 4: **Groundfish retained catch** for 2019 – 2023 in metric tons for statistical areas 525630, 525702, and Central Gulf of Alaska (CGOA) and the proportions of catch from statistical areas 525630 and 525702 compared to CGOA for Pollock and non-Pollock targets.

	Stat Area 525630 (mt)	Stat Area 525702 (mt)	All CGOA (mt)	Proportion from 525630	Proportion from 525702	Proportion from 525630 and 525702 combined
Pollock	4,183	27,237	457,360	0.01	0.06	0.07
non-Pollock	8,814	15,656	272,882	0.03	0.06	0.09



GROUND FISH FISHERIES: ANNUALLY 2019 – 2023

RETAINED CATCH (p. 9)

Table 6: **Groundfish retained catch** (in metric tons) caught in target fisheries from 2019 – 2023 in statistical areas 525630 and 525702. Note: deep water flatfish combines Arrowtooth flounder and Rex sole, shallow water flatfish combines flathead sole and shallow water flatfish. Data marked with “*” omitted due to confidentiality.

	2019	2020	2021	2022	2023
Deepwater flatfish	9,028	4,647	165	284	745
Shallow water flatfish	1,496	2,473	*	*	*
Pacific Cod	*	*	*	*	*
Pollock	11,327	5,289	5,481	5,195	4,128
Rockfish	*	*	379	164	213
Sablefish	*	166	220	196	*

Table 7: **Groundfish retained catch** (in metric tons) caught in Pollock and non-Pollock targets from 2019 – 2023 in statistical areas 525630 and 525702.

	2019	2020	2021	2022	2023
Pollock	11,327	5,289	5,481	5,195	4,128
non-Pollock	11,320	7,722	2,477	1,377	1,573



GROUND FISH FISHERIES: SEASONALLY 2019 – 2023

RETAINED CATCH (p. 10)

Table 8: **Groundfish retained catch** from 2019 - 2023 in metric tons for statistical areas 525630 and 525702 (combined), and Central Gulf of Alaska (CGOA) and the proportions of catch from statistical areas 525630 and 525702 compared to all CGOA for Pollock and non-Pollock targets.

	2019	2020	2021	2022	2023
January 01 - May 31					
CGOA: Pollock	58,398	47,225	48,578	59,454	66,899
CGOA: non-Pollock	29,965	29,849	17,014	18,478	19,943
Stat Areas: Pollock	79	470	572	518	747
Stat Areas: non-Pollock	7,040	5,280	231	239	630
<i>Proportion Pollock (from stat areas)</i>	<i>0.00</i>	<i>0.01</i>	<i>0.01</i>	<i>0.01</i>	<i>0.01</i>
<i>Proportion non-Pollock (from stat areas)</i>	<i>0.23</i>	<i>0.18</i>	<i>0.01</i>	<i>0.01</i>	<i>0.03</i>
June 01 - December 31					
CGOA: Pollock	31,544	35,876	29,610	44,403	35,372
CGOA: non-Pollock	28,241	27,196	34,507	37,737	29,952
Stat Areas: Pollock	11,248	4,819	4,909	4,677	3,381
Stat Areas: non-Pollock	4,281	2,442	2,246	1,138	943
<i>Proportion Pollock (from stat areas)</i>	<i>0.36</i>	<i>0.13</i>	<i>0.17</i>	<i>0.11</i>	<i>0.10</i>
<i>Proportion non-Pollock (from stat areas)</i>	<i>0.15</i>	<i>0.09</i>	<i>0.07</i>	<i>0.03</i>	<i>0.03</i>





TANNER CRAB BYCATCH IN GROUND FISH FISHERIES

BYCATCH ESTIMATES, TIMING OF BYCATCH



TANNER BYCATCH: 2019 – 2023

PSC ESTIMATES IN # CAUGHT (p. 11)

Table 9: **Tanner crab PSC estimates** (estimated number of crab caught as bycatch) for 2019 – 2023 in number of crab for statistical areas 525630, 525702, and all of Central Gulf of Alaska (CGOA) and the proportions of catch from statistical areas 525630 and 525702 compared to all CGOA by fishery and gear type. Note: deep water flatfish combines Arrowtooth flounder and Rex sole, shallow water flatfish combines flathead sole and shallow water flatfish.

	Stat Area 525630	Stat Area 525702	All CGOA	Proportion from 525630	Proportion from 525702	Proportion from 525630 and 525702 combined
By Fishery						
Deepwater flatfish	118,301	174,887	725,083	0.16	0.24	0.40
Shallow water flatfish	2,638	84,778	103,566	0.03	0.82	0.84
Pacific Cod	144	65	34,261	0.00	0.00	0.01
Pollock	4,708	21,514	64,680	0.07	0.33	0.41
Rockfish	448	922	4,310	0.10	0.21	0.32
Sablefish	2,137	1,524	5,782	0.37	0.26	0.63
By Gear Type						
NPT	128,342	282,970	899,607	0.14	0.31	0.46
POT	0	65	34,554	0.00	0.00	0.00
PTR	107	655	3,520	0.03	0.19	0.22



TANNER BYCATCH: 2019 – 2023

PSC ESTIMATES IN # CAUGHT (p. 11)

Table 10: **Tanner crab PSC estimates** (estimated **number caught**) for 2019 – 2023 in number of crab for statistical areas 525630, 525702, and all of Central Gulf of Alaska (CGOA) and the proportions of catch from statistical areas 525630 and 525702 compared to all CGOA by fishery and gear type.

	Stat Area 525630	Stat Area 525702	All CGOA	Proportion from 525630	Proportion from 525702	Proportion from 525630 and 525702 combined
Pollock	4,780	21,514	64,680	0.07	0.33	0.41
non-Pollock	123,669	262,177	873,001	0.14	0.30	0.44



TANNER BYCATCH: ANNUALLY 2019 – 2023

PSC ESTIMATES IN # CAUGHT (p. 11 – 12)

Table 12: **Tanner crab bycatch estimates** (estimated **number caught**) in the Groundfish harvest by Pollock and non-Pollock targets in statistical areas 525625 and 525702, from 2019 – 2023.

	2019	2020	2021	2022	2023
Pollock	16,905	7,715	1,051	155	468
non-Pollock	116,893	253,369	8,121	3,267	4,195

Table 11: **Tanner crab bycatch estimates** (estimated **number caught**) in the Groundfish harvest by target fishery in statistical areas 525625 and 525702, from 2019 – 2023. Note that data is inclusive of Jan. 1, 2019 – Sep. 30, 2023. Omitted data due to confidentiality is indicated with “*”. Blanks are representative of no data points for that fishery/year combination.

	2019	2020	2021	2022	2023
Deepwater flatfish	71,535	215,794	1,962	312	3,585
Shallow water flatfish	*	35,365	*	*	*
Pacific Cod		*	*	*	*
Pollock	16,905	7,715	1,050	155	468
Rockfish	*	*	372	*	*
Sablefish	*	1,622	1,114	*	*



TANNER BYCATCH: 2019 – 2023

ESTIMATED PSC RATE IN # CRAB/MT CATCH (p. 12)

Table 14: Average **Tanner crab bycatch rate** (estimated number of crab per metric ton of catch) by Pollock and non-Pollock targets in the groundfish fishery in statistical areas 525630 and 525702 from 2019 – 2023.

	2019	2020	2021	2022	2023
Pollock	1.76	1.28	0.23	0.14	0.32
non-Pollock	7.01	23.04	1.33	5.77	3.01

Table 15: Average **Tanner crab bycatch rate** (estimated number of crab per metric ton of groundfish) in groundfish catch by gear type in statistical areas 525630 and 5235702 from 2019 – 2023. Omitted data due to confidentiality indicated with “*”. Blanks indicate no data for that combination.

	2019	2020	2021	2022	2023
NPT	6.84	19.32	0.81	3.69	1.74
POT		*	*	*	*
PTR	0.01	0.82	0.06	0.23	0.30

Table 17: Seasonal average **Tanner crab estimated bycatch rate** (estimated number of crab per metric ton of groundfish catch) in the groundfish fisheries in statistical areas 525630 and 525702 from 2019 – 2023.

	2019	2020	2021	2022	2023
January 01 - May 31	4.45	28.91	0.06	0.80	0.57
June 01 - December 31	4.76	2.34	0.94	3.56	1.70



TANNER BYCATCH: SEASONALLY 2019 – 2023

ESTIMATED PSC RATE IN # (p. 13)

Table 16: Seasonal **Tanner crab estimated bycatch** (in **number of crab**) in the groundfish fisheries by Pollock and non-Pollock targets in statistical areas 525630 and 525702 and CGOA, from 2019 – 2023.

	2019	2020	2021	2022	2023
January 01 - May 31					
Statistical Areas: Pollock	0	828	6	116	334
Statistical Areas: non-Pollock	39,936	233,753	65	632	290
CGOA: Pollock	23	1,552	76	503	936
CGOA: non-Pollock	99,844	576,237	8,222	6,586	7,410
June 01 - December 31					
Statistical Areas: Pollock	16,905	6,887	1,044	39	134
Statistical Areas: non-Pollock	76,957	19,615	8,056	2,635	3,905
CGOA: Pollock	41,864	17,452	1,715	241	318
CGOA: non-Pollock	114,869	27,816	16,195	4,904	10,919



RETAINED CATCH & BYCATCH (p. 14)

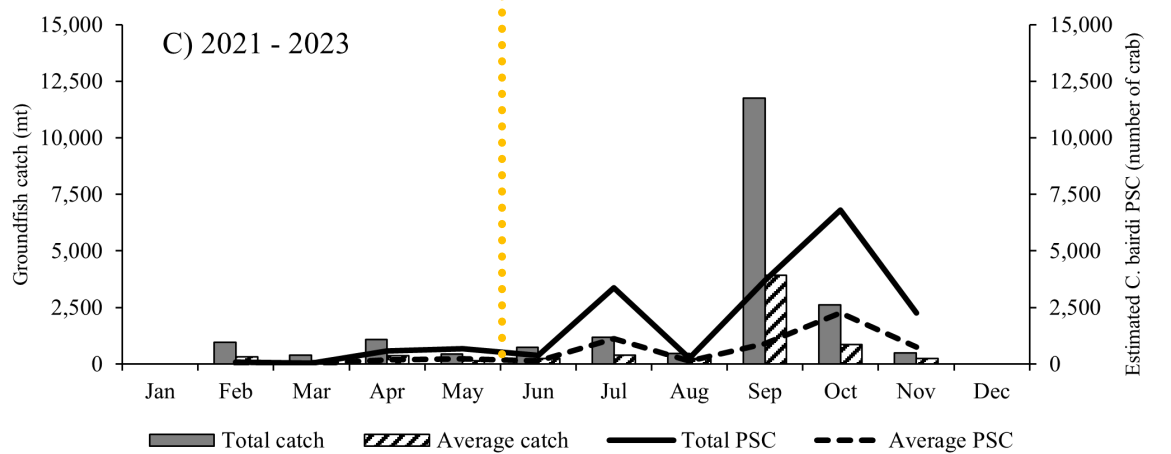
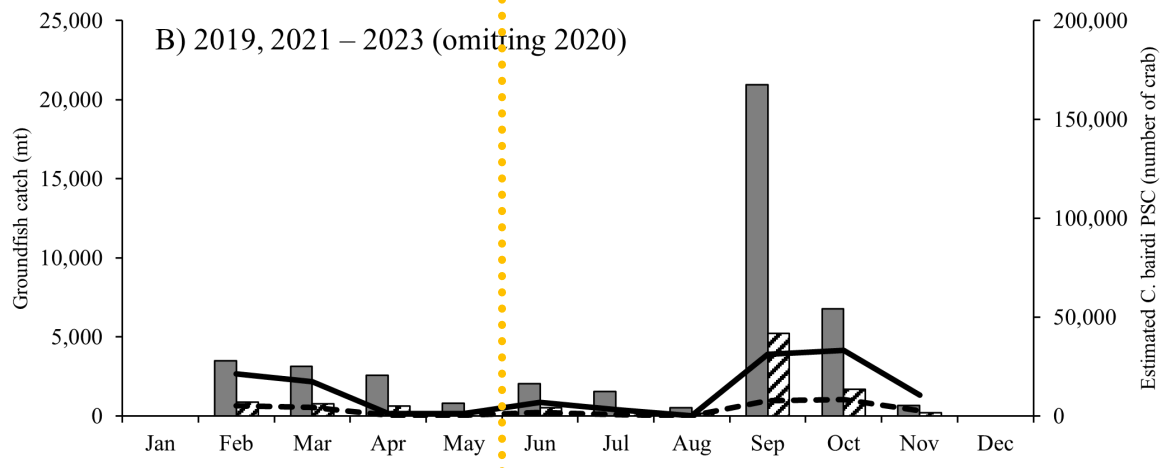
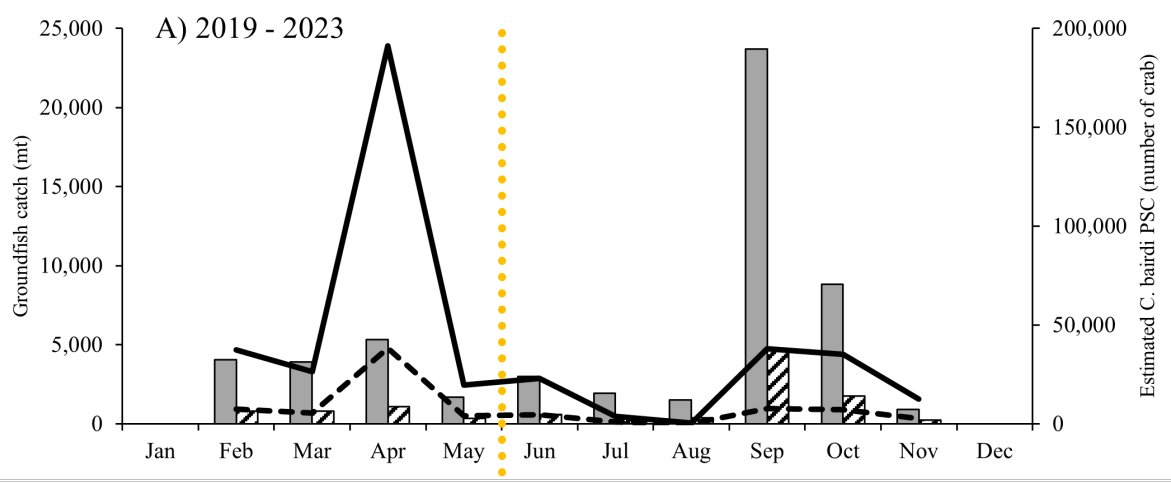
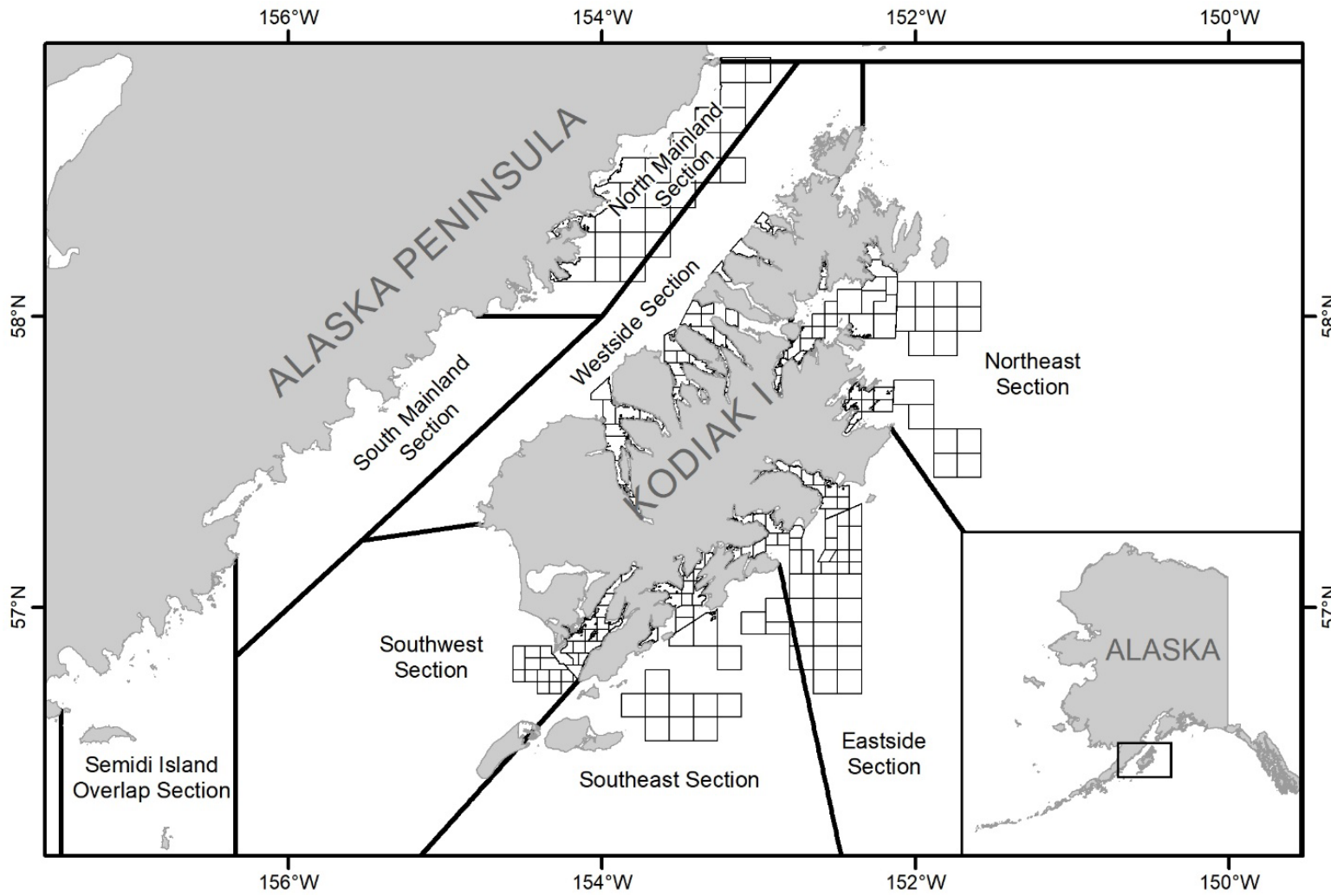


Figure 2: Total and average monthly **retained Groundfish catch** and **estimated Tanner crab bycatch** (PSC, in number of crab) in statistical areas 525630 and 525702 from A) 2019 – 2023; B) 2019, 2021 – 2023 (omitting 2020); C) 2021 – 2023.

Note: data for January and December has been omitted for confidentiality compliance.





TANNER CRAB DISTRIBUTIONS

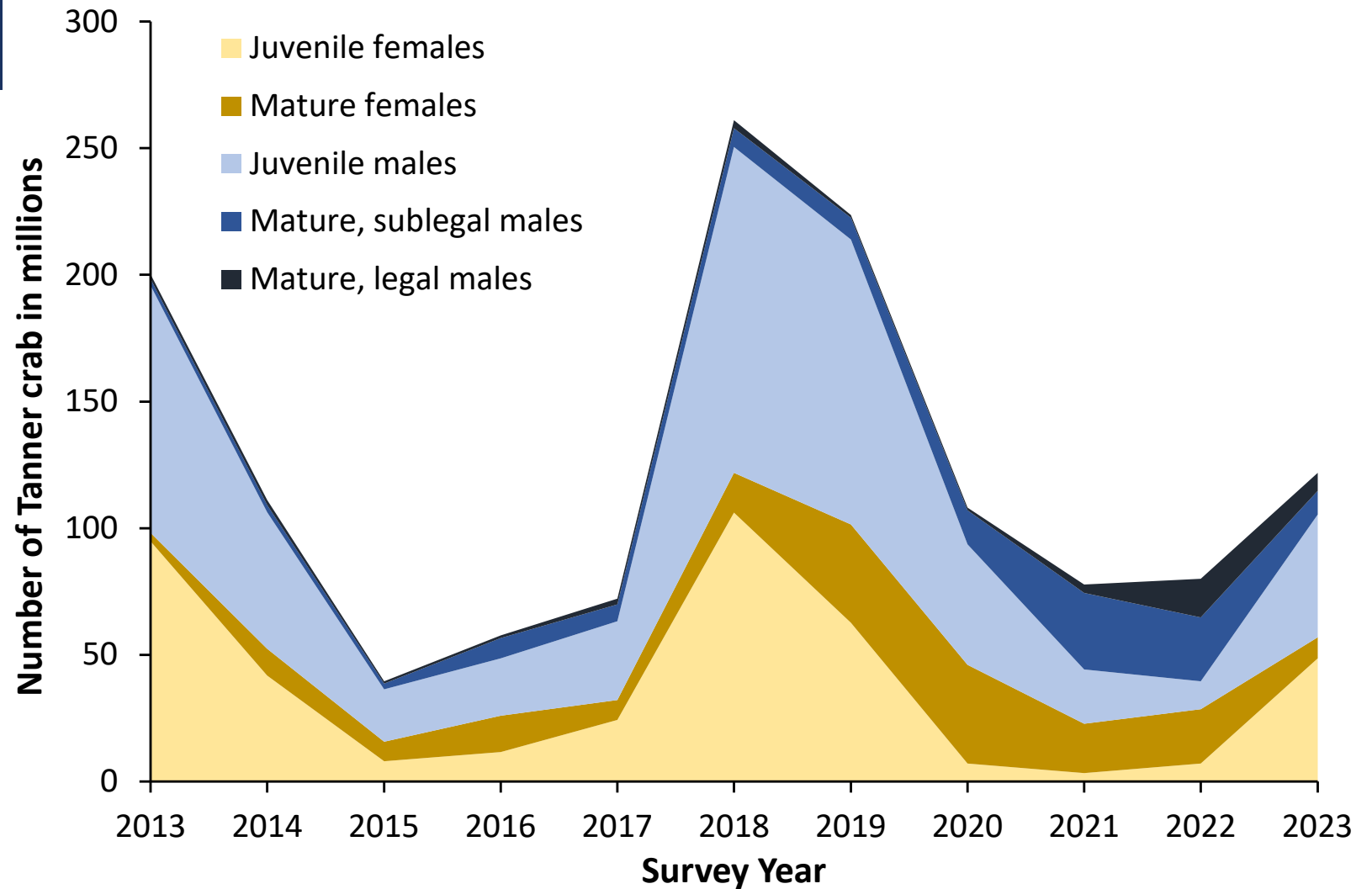
Figure 3: ADF&G trawl survey stations for Tanner crab abundance and fishery management sections around Kodiak Island.

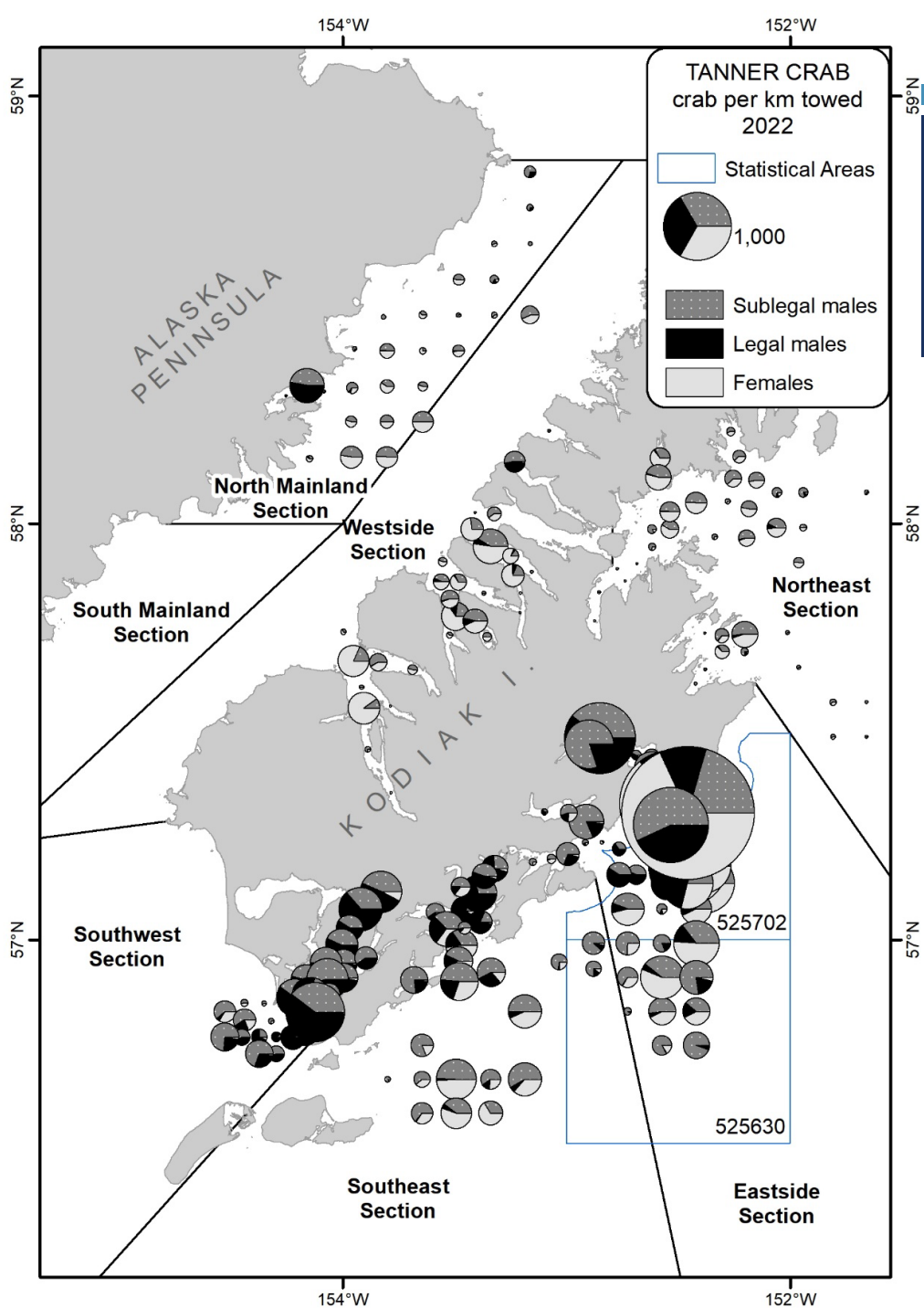


TANNER CRAB DISTRIBUTIONS

(p. 17)

Figure 4: Tanner crab abundance estimates for **Kodiak District**, from the ADF&G trawl survey.





TANNER CRAB DISTRIBUTIONS

(p. 18)

Figure 5: **Number of Tanner crab per kilometer towed** in the **2022 Kodiak District** large-mesh bottom trawl survey. Note: Statistical areas 525630 and 525702 are outlined in blue. Detailed information can be found in the Large-mesh bottom trawl survey of crab and groundfish [report](https://www.adfg.alaska.gov/FedAidPDFs/FMR23-07.pdf) (Spalinger and Silva 2023, <https://www.adfg.alaska.gov/FedAidPDFs/FMR23-07.pdf>).



TANNER CRAB ABUNDANCE ESTIMATES (p. 19)

Table 20: **Average Tanner crab abundance estimates** from the ADF&G trawl surveys (2013 – 2023) 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.

	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)	16,712,638	14%	1,033,856	29%	4,006,701	28%	4,732,394	9%	5,493,650	32%	2,479,897	7%
525630 (federal)	14,900,597	12%	416,664	12%	2,561,926	18%	5,699,205	11%	2,754,495	16%	3,884,976	10%
<u>Marmot Bay Tanner Crab Protection Area</u>	5,423,733	4%	9,771	0.3%	127,000	1%	2,446,057	5%	796,073	5%	2,054,604	5%
<i>-Federal waters portion</i>	1,146,607	1%	5,562	0.2%	41,585	0.3%	518,335	1%	91,753	1%	494,934	1%
<u>Type I closures</u>												
Marmot Flats	3,562,302	3%	15,153	0.4%	123,937	1%	1,663,109	3%	456,394	3%	1,318,863	3%
<i>-Federal waters portion</i>	1,949,593	2%	9,504	0.3%	61,464	0.4%	838,448	2%	268,827	2%	780,855	2%
Alitak Flats/Towers	15,671,030	13%	560,694	16%	1,642,776	12%	7,551,616	14%	920,455	5%	5,556,183	15%
<i>-Federal waters portion</i>	4,701,544	4%	90,770	3%	329,191	2%	2,140,838	4%	217,518	1%	2,013,998	5%
<u>Type II closure</u>												
Barnabas Area	36,289,210	30%	1,146,124	32%	4,071,648	29%	16,882,831	31%	4,285,222	25%	11,049,509	29%
<i>-Federal waters portion</i>	7,737,696	6%	479,950	14%	1,768,563	13%	2,466,515	5%	2,314,160	14%	1,188,459	3%
Kodiak District 2013–2023 Average	123,008,891		3,526,632		14,117,843		54,174,559		16,967,841		37,739,364	



OBSERVER COVERAGE

COVERAGE AND OPTIONS FOR IMPLEMENTATION OF FULL MONITORING



OBSERVER COVERAGE

(p. 15, 21 - 24)

Table 18: Sum of trips, observed trips, trips with EM, and the proportion of trips observed (with either an observer on board or through EM) as compared to the total trips in statistical areas 525630 and 525702, by sector, from 2019 – 2023.

	2019	2020	2021	2022	2023	Average 2019 - 2023
Trawl CV (NPT & PTR)						
Total trips	291	197	126	102	92	162
Total observed trips	86	39	32	29	30	43
Total trips with EM	0	0	0	0	0	0
Total trips with TEM	0	0	12	27	2	8
Proportion observed	0.30	0.20	0.35	0.55	0.35	0.35
Trawl CP (NPT & PTR)						
Total trips	16	16	17	9	4	12
Total observed trips	16	16	17	9	4	12
Total trips with EM	0	0	0	0	0	0
Total trips with TEM	0	0	0	0	0	0
Proportion observed	1.00	1.00	1.00	1.00	1.00	1.00
POT CV						
Total trips	34	20	49	45	56	41
Total observed trips	1	2	3	2	4	2
Total trips with EM	11	6	19	14	16	13
Total trips with TEM	0	0	0	0	0	0
Proportion observed	0.35	0.40	0.45	0.36	0.36	0.38

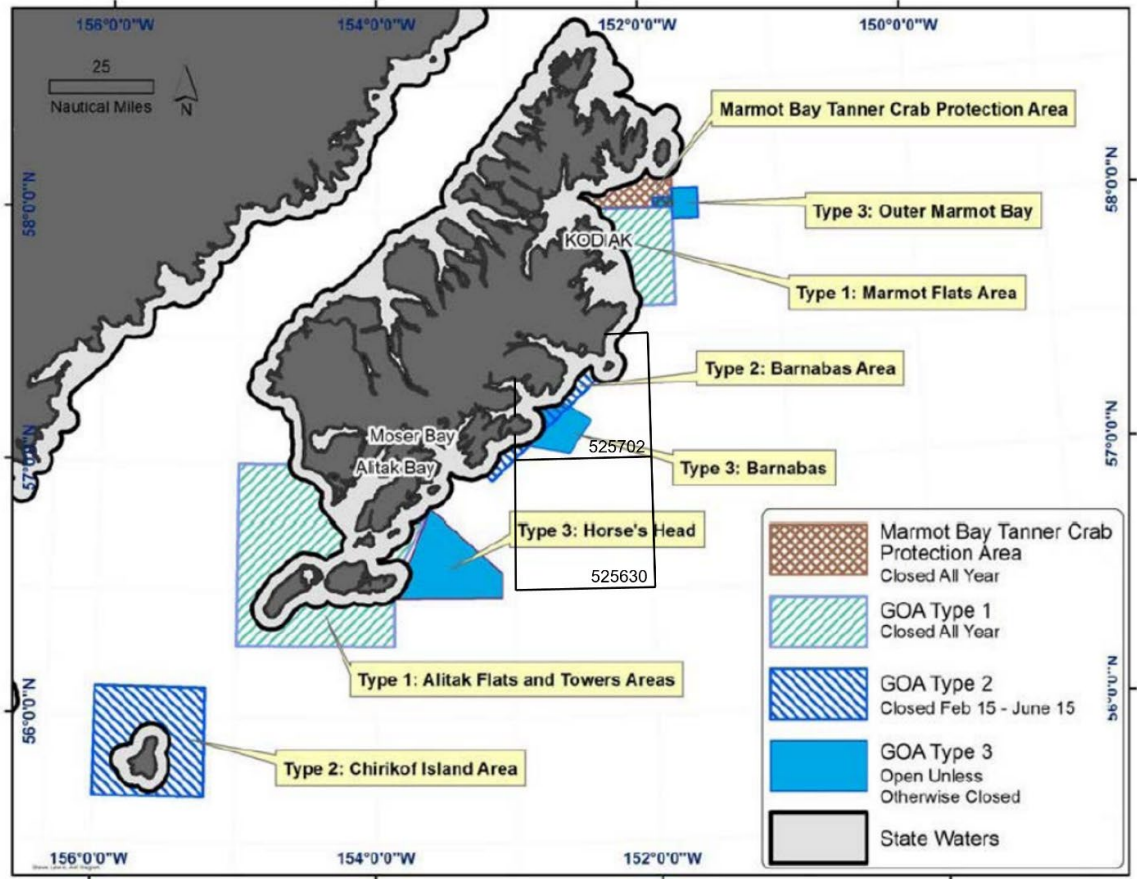
- Background
- Full Coverage
- Partial Coverage
- Cost of coverage
- Options for implementation



ACTION BY COUNCIL

- This discussion paper provides a summary of information about groundfish fishery harvests and Tanner and crab distribution in the Kodiak District, as requested by the Council in June 2023.
- The Council's interest was to review data in order to inform potential GOA Tanner crab protections.
- Upon review of this discussion paper, the Council may choose to take no further action, to request more information from staff, or to initiate an analysis.
- If the Council chooses to move forward with an analysis, the Council should articulate a purpose and need for this action, and a set of alternatives to analyze. Considerations for a future analysis could include a detailed evaluation of the potential effects of any protection measures such as additional closures, gear restrictions, or required observer coverage on the fisheries and bycatch, effectiveness of such changes, and impacts to fishing behavior (namely, if fishing were to occur in other regions, what impacts may occur).





QUESTIONS?

