



MEMORANDUM

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DATE: November 1, 2022

FROM: Jan Rumble, Area Mgmt. Biologist
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SUBJECT: 2022 PWS Tanner
Crab Commercial and
Test Fishery Summary

This memo summarizes information collected from the 2022 Prince William Sound Area (PWS; Registration Area E) Tanner crab commercial fishery and Test Fishery. The PWS Tanner crab commercial fishery was conducted in the newly designated Northeastern District (Figure 1, new districts were adopted at the Board of Fisheries (BOF) in December 2021) with a guideline harvest level (GHL) of 61,800 lb and season dates March 1-31. A Test Fishery was offered for bid in 6 defined Lots (A-F) in PWS, outside of the Northeastern District, with allowable fishing dates of February 22 through April 9; 5 Lots were fished.

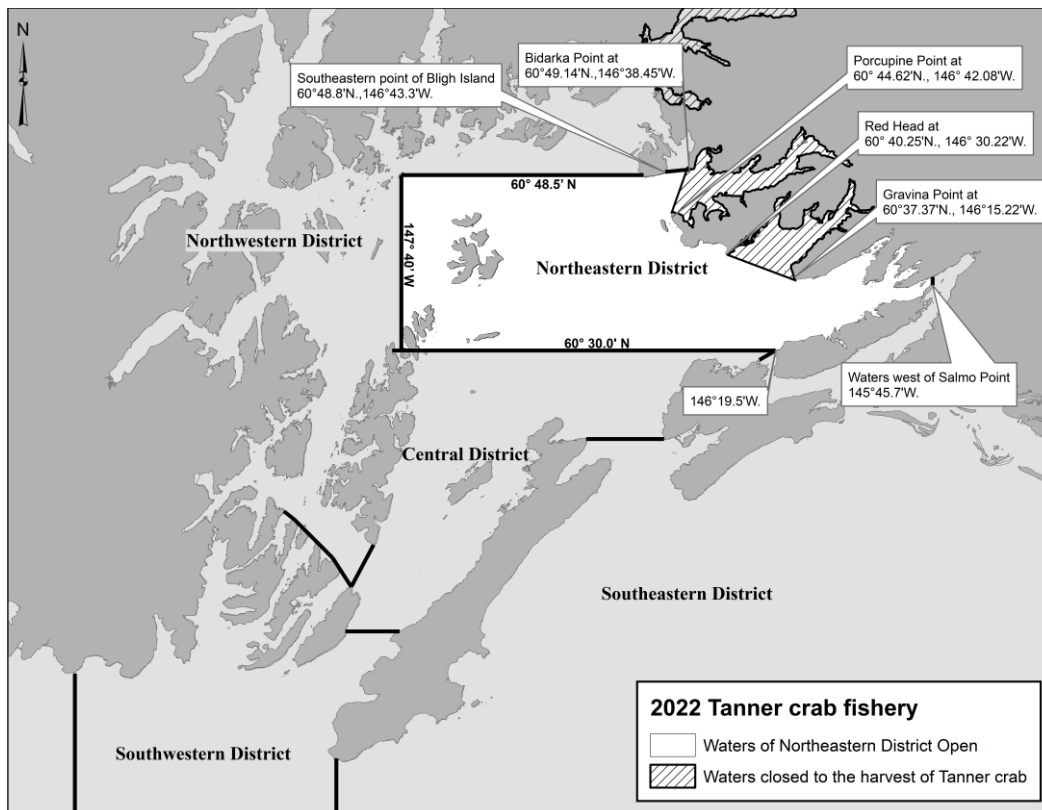


Figure 1. 2022 Prince William Sound Area Tanner crab fishery opened in newly defined Northeastern District; new Southeastern, Central, Southwestern, and Northwestern districts are also shown.

HARVEST AND EFFORT INFORMATION

COMMERCIAL FISHERY

The 2022 PWS Tanner crab commercial season opened in the Northeastern District 12:01 a.m. March 1 (no weather delay) with a pot limit of 25 pots per vessel, pot tags provided by ADF&G at no charge, and a GHL of 61,800 lb of legal male Tanner crab (5.0 inches or greater in carapace width). All other districts remained closed (except in the Test Fishery – see following section). The PWS commercial Tanner crab GHL was not achieved, with less than 40% of the GHL harvested, and therefore the season closed 11:59 p.m. March 31 as announced by emergency order (EO) 2-SF-E-01-22.

The new harvest strategy for the PWS commercial fishery was adopted by BOF in December 2021 and contains minimum stock thresholds of mature male Tanner crab to open a fishery (Table 1); mature male crab estimates are generated from the ADF&G trawl survey, that is conducted in the Northeastern, Central and the Southwestern districts (Figure 1). The GHL is based on mature male crab (greater than 113 mm carapace width) with stair-step harvest rates and includes a harvest cap of 20% legal male Tanner crab (greater than 127 mm carapace width). The threshold was exceeded only in the Northeastern District; at that time, the most recent PWS Tanner crab trawl survey in the Northeastern District was in 2019 and produced an estimate of 340,778 mature male crab, which is above the minimum abundance threshold of 217,800 mature male crab. The survey also produced an estimate of 164,408 legal male crab and the 20% cap of 32,882 crab was implemented because the 15% harvest rate calculated for the mature male threshold was above the legal male cap.

New harvest strategy thresholds use abundance (number of crab) to calculate GHLS; for management purposes, the GHL was converted to pounds using the most recent fishery Tanner crab average weight (2021; 1.88 lb) for a commercial fishery GHL of 61,800 lb in the Northeastern District for 2022.

The Central District (Figure 1) was surveyed in 2020 and resulted in a mature male abundance estimate of 166,711 crab, well below the minimum threshold of 246,700 crab (Table 1). The Southwestern District was surveyed in 2021 with a mature male abundance estimate of 166,983 crab, about half the minimum threshold of 327,000 crab (Table 1).

For the commercial fishery, prosecuted in the Northeastern District, there were 30 PWS Tanner crab CFEC permit cards purchased, 17 vessels registered, and 18 permit holders that participated on 14 vessels with 38 total landings. The total harvest from the fishery was 24,360 lb from 13,781 crab in 2,767 pot lifts resulting in an overall fishery catch per unit effort (CPUE) of 5.0 crab/pot (Table 2). There was effort and harvest in all 8 statistical areas in the Northeastern District (Figures 2 and 3).

The highest effort and harvest in 2022 occurred in statistical area 466033, west of closed waters of Port Fidalgo. Seven vessels had 925 pot lifts there and harvested 8,613 lb of Tanner crab, 35% of the total harvest, with an average CPUE of 5.3 crab/pot (Table 2; Figures 2 and 3). However, the highest CPUE of 7.3 crab/pot was achieved in statistical area 476035 where 5 vessels had 254 pot lifts and harvested 3,252 lb.

Tanner crab in PWS were commercially harvested under a Commissioner's Permit Fishery (CPF) from 2018 to 2021; 2022 was the first year of the commercial fishery under the new harvest strategy. These two fisheries were conducted in different areas, but metrics can still be compared. For the 2022 commercial fishery, harvest, effort, and CPUE were lower than all years when the CPF was prosecuted (Table 3): overall, CPUE in 2022 was less than half the next lowest year (2020). The average harvest from 2018 through 2022 was 79,555 lb of crab from 4,056 pot lifts and 15 vessels; the average CPUE for these years was 11.0 crab per pot (Table 3).

Table 1. Minimum stock thresholds for mature male Tanner crab, and associated harvest rates, for the 3 districts that are surveyed in Prince William Sound Area.

Northeastern District Harvest Rates

$$MSY_{\text{proxy}} = 435,700$$

$$\text{Minimum Abundance Threshold} = 217,800$$

Abundance Estimate	% MSY_{proxy}	Harvest Rate	Harvest (# crab)
217,800 to <326,700	50% to <75%	10%	21,800 to 32,700
326,700 to <435,700	75% to <100%	15%	49,000 to 65,400
$\geq 435,700$	100%+	20%	87,100+

Central District Harvest Rates

$$MSY_{\text{proxy}} = 493,500$$

$$\text{Minimum Abundance Threshold} = 246,700$$

Abundance Estimate	% MSY_{proxy}	Harvest Rate	Harvest (# crab)
246,700 to <370,100	50% to <75%	10%	24,700 to 37,000
370,100 to <493,500	75% to <100%	15%	55,500 to 74,000
$\geq 493,500$	100%+	20%	98,700+

Southwestern District Harvest Rates

$$MSY_{\text{proxy}} = 653,900$$

$$\text{Minimum Abundance Threshold} = 327,000$$

Abundance Estimate	% MSY_{proxy}	Harvest Rate	Harvest (# crab)
327,000 to <490,400	50% to <75%	10%	32,700 to 49,000
490,400 to <653,900	75% to <100%	15%	73,600 to 98,100
$\geq 653,900$	100%+	20%	130,800+

Table 2. 2022 Prince William Sound Area commercial Tanner crab fishery harvest in number and pounds of crab, including pot lifts, CPUE, and number of vessels by statistical area.

Statistical Area	Pot lifts	Harvest (# of crab)	Harvest (lb)	CPUE (crab/pot)	Vessels	% of harvest
456031	361	776	1,323	2.1	4	5.4%
466031	337	1,482	2,858	4.4	6	11.7%
466033	925	4,860	8,613	5.3	7	35.4%
476031	358	1,846	3,170	5.2	6	13.0%
476032	403	2,573	4,449	6.4	5	18.3%
476035	254	1,855	3,252	7.3	5	13.3%
466032/476034*	129	389	695	3.0	6	2.9%
Total	2,767	13,781	24,360	5.0	14	

*Combined for confidentiality.

Table 3. PWS Tanner crab commercial fishery harvest, pot lifts, CPUE, and number of vessels for 2018-2022 (CPF 2018-2021, new commercial fishery 2022).

Year	Pot lifts	Harvest (# of crab)	Harvest (lb)	CPUE (crab/pot)	Vessels
2018	3,788	47,397	83,338	12.5	14
2019	4,853	74,405	124,707	15.2	14
2020	5,948	64,652	109,020	10.9	22
2021	2,923	33,803	56,352	11.6	10
2022	2,767	13,781	24,360	5.0	14
Average	4,056	46,808	79,555	11.0	15

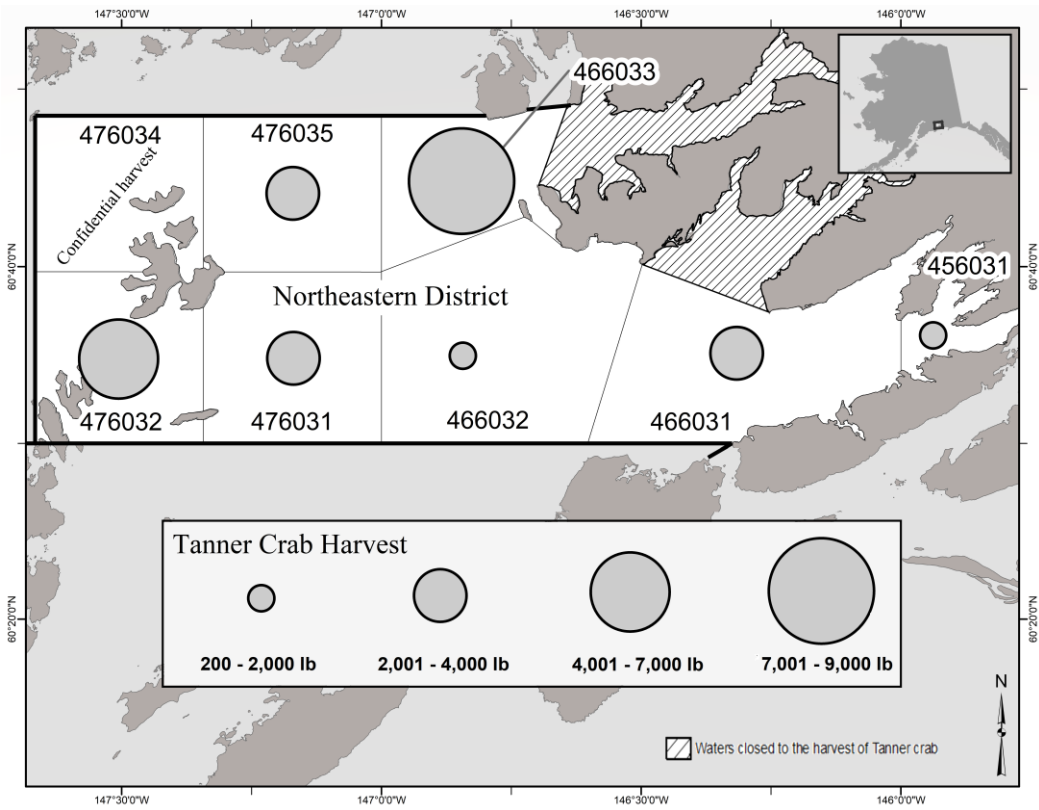


Figure 2. 2022 PWS commercial fishery Tanner crab harvest pounds by statistical area.

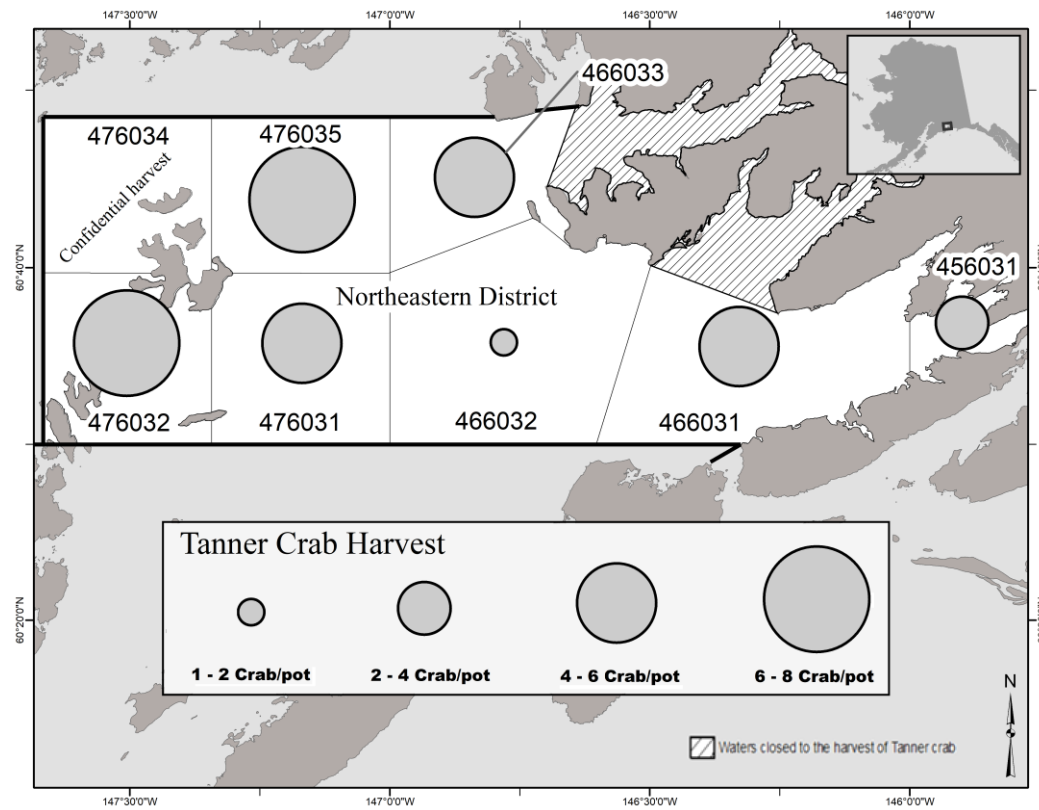


Figure 3. 2022 PWS commercial fishery Tanner crab harvest per pot lift by statistical area.

TEST FISHERY

In 2022, a PWS Test Fishery was conducted between February 22 and April 9 in areas that were not open for the regular commercial fishery. This is the third year in a row for the test fishery with the goal of gathering information on the current health of the PWS Tanner crab stock in areas outside and within the ADF&G trawl survey areas, and outside the commercial fishery area. The primary objectives of the test fishery were to collect information on legal male catch rate, male size composition, and distribution of Tanner crab in those areas. Onboard observers also collected biological information on discarded sublegal male Tanner crab, female Tanner crab, golden king crab, Dungeness crab, and other bycatch species.

ADF&G solicited bids to contract vessels to conduct the test fishery and harvest up to 30,000 lb of Tanner crab in PWS using pot gear. Six Lots (A, B, C, D, E, and F) of up to 5,000 lb each were available in defined areas of PWS outside of the Northeastern District (Figure 4). The minimum bid price was \$0.80 per lb of Tanner crab harvested. Contracts were awarded to the highest bidder for each Lot and vessel owners were allowed to bid on more than one Lot. The vessel operators were required to have prior commercial Tanner crab fishing experience. Fishing during a test fishery trip was limited to a single Lot, with a maximum gear limit of 25 Tanner crab pots per vessel. Within each Lot, 25 mandatory pot locations were defined, except there were 10 mandatory pot locations for Lot F; pots were required to be set within 0.5 nautical miles of these specific locations with additional pot locations fished within each Lot up to the vessel operator. The 2022 PWS Test Fishery was similar in 2020 and 2021, however, the boundaries of the Lots were adjusted to account for the different commercial fishery area and to distribute the harvest more evenly, except that statistical area 486005 (Icy Bay/Whale Bay) in Lot E was limited to 500 lb of harvest due to concerns of low population levels from prior year's performance.

There were bids submitted for all 6 PWS Test Fishery Lots (A-F; Figure 4), however, there were changes from the original bids. Originally, 7 different bidders submitted bids for multiple Lots, and results were 4 winning bidders – 2 bidders won 2 Lots each (B/F and C/D) and 2 bidders won 1 Lot each (A and E). However, the winner of Lot E forfeited that bid and it was offered to the other 2 bidders but both declined; then Lot E was offered at the minimum bid price to one of the winners of 2 Lots (B and F) who accepted, although that vessel declined to fish Lot F in outside waters area due to weather and time constraints; therefore, only 5 total Lots were fished. In Lots A and D, vessels harvested the 5,000 lb limit; in Lot E, nearly 4,500 lb was harvested while Lot B produced just over 2,000 lb and Lot C just over 1,000 lb (Table 4 and Figure 5). In addition to bid price per sold pound, all proceeds from overages above 5,000 lb were paid to the State of Alaska. Proceeds from the 2022 PWS Test Fishery totaled \$46,986.56.

The highest CPUE in the 2022 PWS Test Fishery was 30.6 crab/pot in Lot A (Table 4; Figure 6), primarily in statistical area 485931, which was the area of highest harvest during the CPF in 2020 and 2021 and corresponds to the trawlable Southwestern District that was last surveyed in 2021 (Figure 1). The next highest CPUE occurred in Lot D at 19.1 crab/pot; then, Lot B produced a CPUE of 10.9 crab/pot and Lot E resulted in 10.4 crab/pot (Table 4 and Figure 6). Lots B, D, and E correspond to the untrawlable Northwestern District (Figure 1). Lot C had the lowest CPUE (and lowest harvest) at 6.5 crab/pot and corresponds to the trawlable Central District that was last surveyed in 2020 (Table 4; Figures 1 and 6). Considering fishery CPUE (crab harvested per pot lift) at a district level, all test fishing resulted in better performance than the commercial fishery (Table 5).

Logsheets and daily call-in reports were required, and vessels were required to accommodate observers. Due to the COVID-19 pandemic, the 2022 contract required all crew from PWS Test Fishery vessels and ADF&G observers to be tested and receive negative results for COVID-19 prior to deployment.

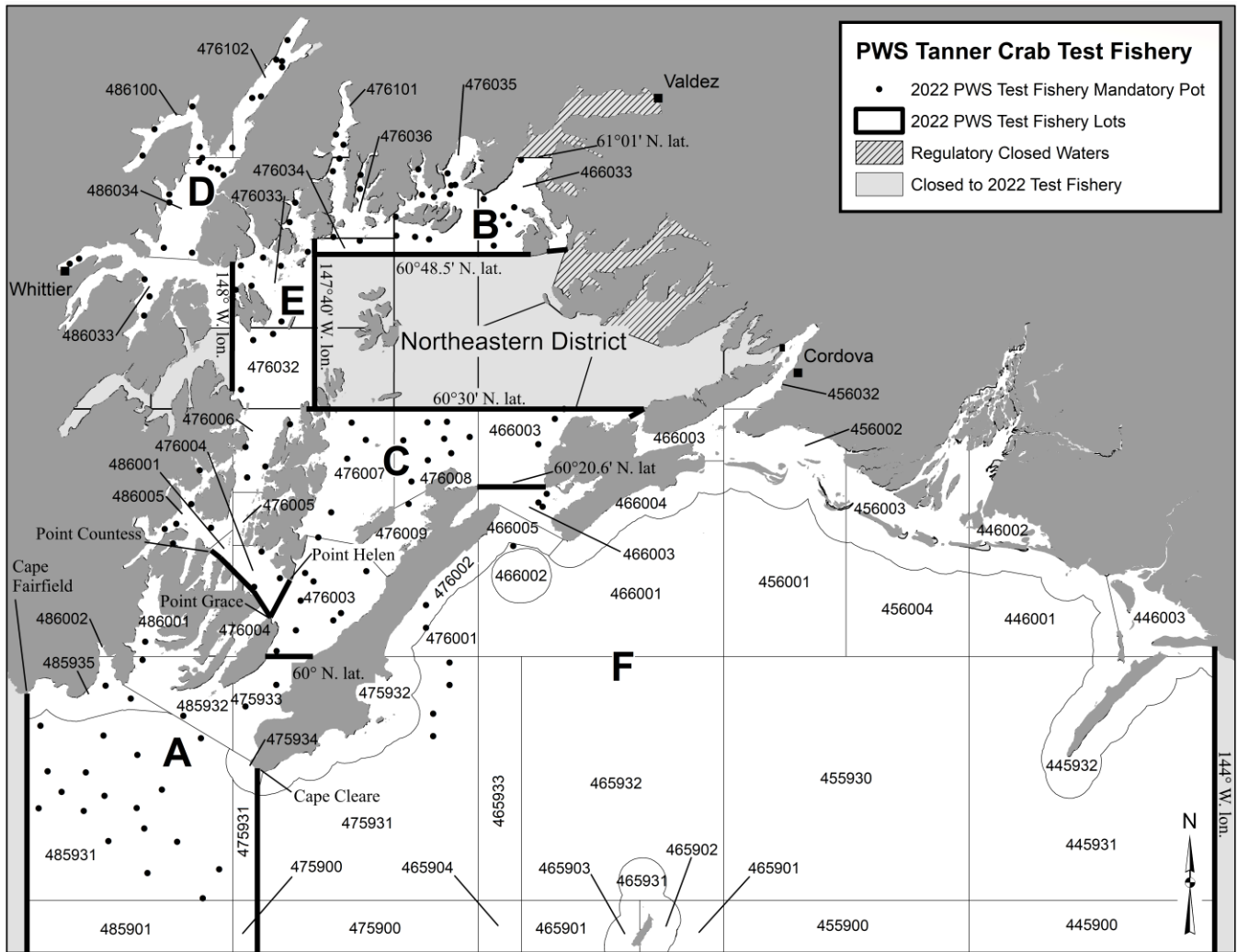


Figure 4. 2022 PWS Tanner crab Test Fishery Lots A-F with mandatory pot locations.

Table 4. 2022 PWS Test Fishery pot lifts, harvest in number and pounds of Tanner crab, and catch per unit effort (CPUE) for Lots A through E (Lot F was not completed).

Lot	Pot Lifts	Harvest (# crab)	Harvest (lb)	CPUE (crab/pot)
A	98	2,999	5,273	30.6
B	105	1,145	2,042	10.9
C	101	653	1,066	6.5
D	124	2,366	5,038	19.1
E	252	2,622	4,495	10.4
Total	680	9,785	17,914	14.4

Table 5. 2022 PWS area wide Tanner crab fishery harvest and effort by district.

District	Fishery	Pot lifts	Harvest (# of crab)	Harvest (lb)	CPUE (crab/pot)
Northeastern	Commercial	2,767	13,781	24,360	5.0
Central	Test	101	653	1,066	6.5
Northwestern	Test	481	6,133	11,575	12.8
Southwestern	Test	98	2,999	5,273	30.6
	Total	3,447	23,566	42,274	6.8

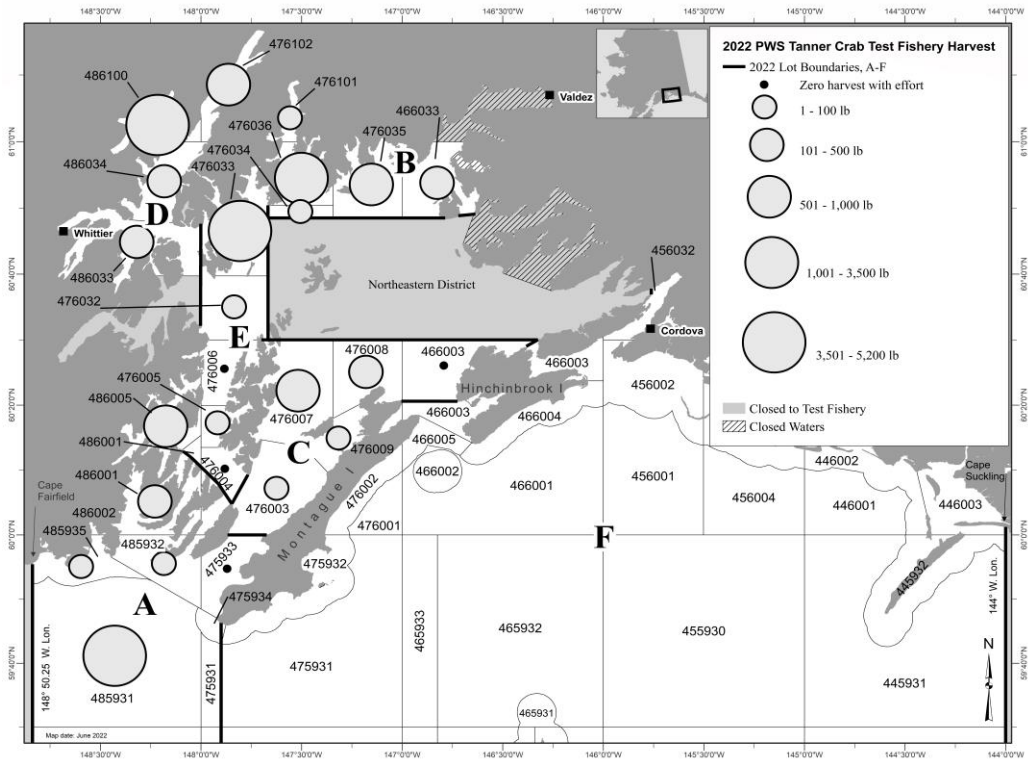


Figure 5. 2022 PWS test fishery Tanner crab harvest pounds by statistical area, Lots A-F.

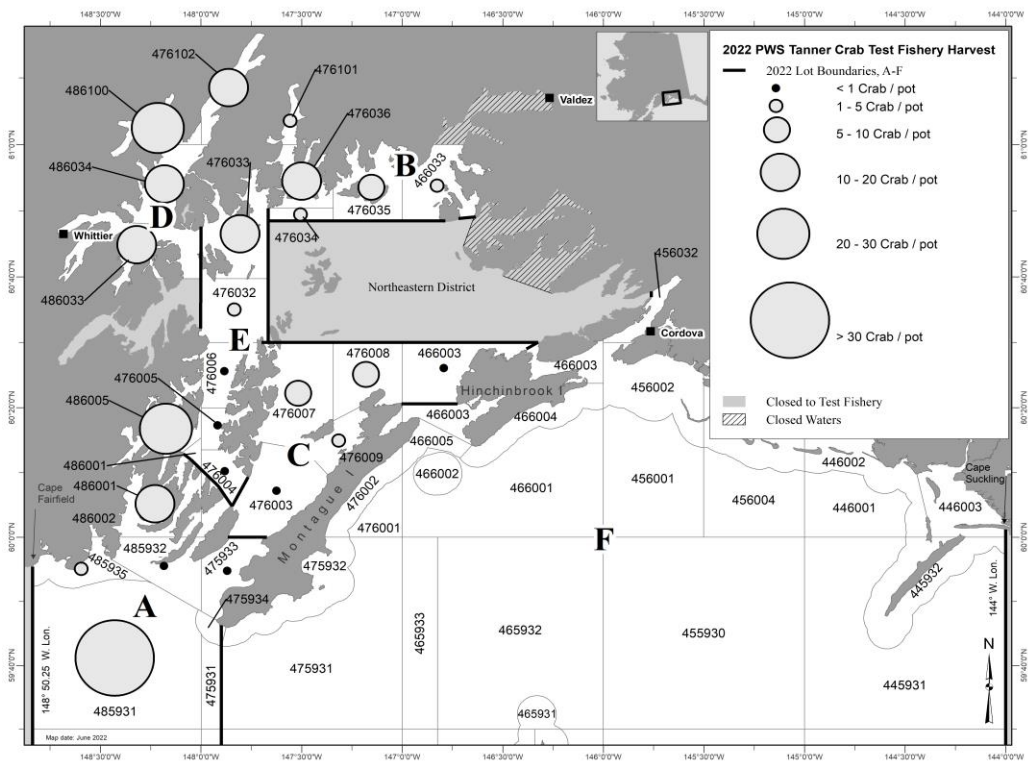


Figure 6. 2022 PWS test fishery Tanner crab harvest per pot lift by statistical area, Lots A-F.

BIOLOGICAL SAMPLING

Commercial Fishery

Sampling of Tanner crab from the commercial fishery was conducted by ADF&G staff in 3 ports: 9 landings were sampled in Cordova, 9 in Whittier, and 3 in Seward, for a total of 21 landings sampled. No onboard observers were deployed during the 2022 commercial fishery, although all Test Fishery Lots were observed (see next section). Unlike 2020 and 2021, Tanner crab were delivered in Cordova in 2022 to a new processor 60° North Seafoods. The only other buyer was Pacific Star Seafoods (also known as E&E Foods), based in Kenai, who has bought Tanner crab from the PWS fishery since the Commissioner’s Permit Fishery was first prosecuted in 2018. Pacific Star offloaded Tanner crab from vessels that delivered in Seward and Whittier, then transported the crab by truck back to their Kenai processing plant in dry totes.

Since 2017, the legal size of Tanner crab in PWS has been 5 inches (127 mm). Sublegal crab, that are illegal to retain, were observed in the harvest this year by port samplers and in some cases enforcement officers. Sublegal male and female crab thresholds exist that triggers a “legal tally” when reached, requiring additional sampling of the landing. All enforcement issues regarding the retention of sublegal and female crab were reported to the Department of Public Safety, although Alaska Wildlife Troopers were present at most landings in Cordova and assisted directly.

The average Tanner crab weight was estimated by counting crab in weighed brailers. Tanner crab average weight from individual landings in 2022 ranged from 1.47 lb to 1.95 lb, with an average from all trips sampled of 1.76 lb, which was corroborated by fish ticket information (1.79 lb). The 2022 average weight increased from 2021 (1.70 lb) and 2020 (1.69 lb); however, it should be noted that the location of the commercial fishery was different in 2022 occurring in northeastern PWS compared to the southwestern portion during the past two years. The 2022 fishery was prosecuted in an area that had not been commercially fished in 30 years.

There were 1,894 harvested Tanner crab measured for carapace width and shell condition from the 2022 commercial fishery. Chelae height, which is the height of the right claw at its widest point, was also collected to assess the amount of terminally molted crab in the harvest. Of those harvested Tanner crab sampled, crab with new shell condition comprised 47%, considerably lower than 2021 and 2020, which were 80% and 67% new shell, respectively. Old shell crab in 2022 also comprised 47% of crab sampled, which was higher than the previous two years and 6% of crab encountered were very old shell condition.

In 2022, harvested Tanner crab measured during port sampling of the Northeastern District commercial fishery had an average carapace width of 135 mm (5.3 in), slightly larger than the 133 mm and 132 mm average carapace width in 2021 and 2020, respectively, although smaller than the average in 2018 of 139 mm (5.5 in). The range of carapace width was 113 mm (due to sublegal crab) to 163 mm, which is smaller than the 2021 maximum of 165 mm and 2019 maximum of 168 mm, although just above the 162 mm maximum carapace width in 2020. Distribution of carapace width in 2022 was similar to 2018 when comparing all years since the CPF was prosecuted from 2018-2021 (Table 6).

Table 6. Tanner crab carapace width size categories from the commercial fishery (CPF 2018-2021), with corresponding percentages of the total, observed during port sampling in 2022 and back to 2018.

Carapace Width	2022	2021	2020	2019	2018
≤130 mm	30%	41%	40%	46%	30%
>130-140 mm	44%	46%	45%	44%	40%
>140-150 mm	23%	13%	12%	9%	20%
>150 mm	4%	1%	2%	1%	10%

Test Fishery

All 5 trips from the 2022 PWS Test Fishery were sampled by onboard observers; average weights were collected in port when Tanner crab were delivered.

In 2022, Tanner crab harvested from the PWS Test Fishery were larger than in the commercial fishery (including CPF) for 2020, 2021, and 2022, although the size distribution was similar between fisheries in 2022 compared to the previous two years (Tables 6 and 7). Although the average carapace width from the 2022 PWS Test Fishery was slightly smaller (136 mm) compared to 137 mm during the 2020 and 2021 test fisheries, it was still slightly larger than the 135 mm average carapace width in the 2022 commercial fishery. The range of carapace width was 125 mm to 175 mm, with that largest crab measured in Lot D.

In 2022, the average weight of Tanner crab for individual PWS Test Fishery landings ranged from 1.71 to 2.13 lb, with an average weight from all trips of 1.83 lb, corroborated by fish tickets, and less than the average weight of 1.90 lb during the 2021 PWS Test Fishery. The Tanner crab average weight in the 2022 PWS Test Fishery was larger than the average weight from the commercial fishery (1.76 lb). There were 3,402 legal Tanner crab sampled for carapace width, chelae height, and shell condition during onboard observing operations. Of those sampled, 59% of legal Tanner crab were in new shell condition, 24% were in old shell condition, and 17% had very old shell condition; percentage of new shell Tanner crab was slightly higher than 2021 (55%).

During onboard observing, an additional 3,569 sublegal male Tanner crab, 359 female Tanner crab, 11 golden king crab, and 45 Dungeness crab were sampled for biological data.

Table 7. Tanner crab carapace width size categories from harvested (legal) crab in the PWS Test Fishery, with corresponding percentages of the total, observed in 2022, 2021, and 2020.

Carapace Width	2022	2021	2020
≤130 mm	30%	19%	22%
>130-140 mm	44%	48%	43%
>140-150 mm	22%	27%	27%
>150 mm	5%	6%	7%

CALL-IN REPORT COMPLIANCE

Vessels participating in the PWS Tanner crab fishery were required to call-in daily. Because there is a 7-day potential lag between the time crab are landed and fish tickets are received by ADF&G, call-in reports were relied upon as a real-time management tool used to track the harvest and CPUE throughout the fishery. With the exception of one vessel's challenges with communication, which were worked out after the first week, compliance was above 90% for the fishery. The call-in reports were generally complete, reporting all categories and following the harvest reporting form.

FUTURE PLANS

With the adoption of the new PWS Tanner crab harvest strategy at the December 2021 BOF meeting, ADF&G has plans to conduct future trawl surveys to estimate abundance of mature male Tanner crab to determine if thresholds are met to open trawlable districts (Northeastern, Central, and Southwestern districts, Figure 1; Table 1). A survey was conducted in September 2022 in the Northeastern District. Estimates from the survey did not exceed mature male Tanner crab thresholds, therefore there will be no

2023 commercial Tanner crab fishery in that district. Surveys for the Central and Southwestern districts must also occur prior to those districts opening since they were both below threshold from most recent abundance estimates; surveys in those areas are planned for 2023 and 2024. ADF&G plans include conducting a trawl survey in the Southwestern District in June 2023. There will be no Test Fishery conducted in PWS for Tanner crab in 2023.

In addition, test fishery and logbook information will help guide future management of a PWS-wide plan to include districts outside of trawlable areas (Northwestern and Southeastern districts; Figure 1).