

Fishery Management Report No. 21-34

**Prince William Sound Commissioner's Permit Tanner
Crab Fishery, 2018–2021**

by

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and

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November 2021

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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| | | | | | |
|---|--------------------|--|---|---|-------------------------|
| Weights and measures (metric) | | General | | Mathematics, statistics | |
| centimeter | cm | Alaska Administrative Code | AAC | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| deciliter | dL | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | alternate hypothesis | H_A |
| gram | g | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | base of natural logarithm | e |
| hectare | ha | at | @ | catch per unit effort | CPUE |
| kilogram | kg | compass directions: | | coefficient of variation | CV |
| kilometer | km | east | E | common test statistics | (F, t, χ^2 , etc.) |
| liter | L | north | N | confidence interval | CI |
| meter | m | south | S | correlation coefficient (multiple) | R |
| milliliter | mL | west | W | correlation coefficient (simple) | r |
| millimeter | mm | copyright | © | covariance | cov |
| | | corporate suffixes: | | degree (angular) | $^\circ$ |
| Weights and measures (English) | | Company | Co. | degrees of freedom | df |
| cubic feet per second | ft ³ /s | Corporation | Corp. | expected value | E |
| foot | ft | Incorporated | Inc. | greater than | > |
| gallon | gal | Limited | Ltd. | greater than or equal to | \geq |
| inch | in | District of Columbia | D.C. | harvest per unit effort | HPUE |
| mile | mi | et alii (and others) | et al. | less than | < |
| nautical mile | nmi | et cetera (and so forth) | etc. | less than or equal to | \leq |
| ounce | oz | exempli gratia (for example) | e.g. | logarithm (natural) | ln |
| pound | lb | Federal Information Code | FIC | logarithm (base 10) | log |
| quart | qt | id est (that is) | i.e. | logarithm (specify base) | log ₂ , etc. |
| yard | yd | latitude or longitude | lat or long | minute (angular) | ' |
| | | monetary symbols (U.S.) | \$, ¢ | not significant | NS |
| Time and temperature | | months (tables and figures): first three letters | Jan, ..., Dec | null hypothesis | H_0 |
| day | d | registered trademark | ® | percent | % |
| degrees Celsius | °C | trademark | ™ | probability | P |
| degrees Fahrenheit | °F | United States (adjective) | U.S. | probability of a type I error (rejection of the null hypothesis when true) | α |
| degrees kelvin | K | United States of America (noun) | USA | probability of a type II error (acceptance of the null hypothesis when false) | β |
| hour | h | U.S.C. | United States Code | second (angular) | " |
| minute | min | U.S. state | use two-letter abbreviations (e.g., AK, WA) | standard deviation | SD |
| second | s | | | standard error | SE |
| Physics and chemistry | | | | variance | |
| all atomic symbols | | | | population sample | Var var |
| alternating current | AC | | | | |
| ampere | A | | | | |
| calorie | cal | | | | |
| direct current | DC | | | | |
| hertz | Hz | | | | |
| horsepower | hp | | | | |
| hydrogen ion activity (negative log of) | pH | | | | |
| parts per million | ppm | | | | |
| parts per thousand | ppt, ‰ | | | | |
| volts | V | | | | |
| watts | W | | | | |

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CRAB FISHERY, 2018–2021**

by

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TABLE OF CONTENTS

| | Page |
|--|------|
| LIST OF TABLES..... | ii |
| LIST OF FIGURES..... | ii |
| ABSTRACT..... | 1 |
| INTRODUCTION..... | 1 |
| COMMISSIONER’S PERMIT FISHERY SUMMARY..... | 2 |
| Commissioner’s Permit Provisions..... | 2 |
| Permit Requirements..... | 2 |
| Harvest and Effort..... | 3 |
| Permits, participation, pot limit, and start date..... | 3 |
| General harvest and effort..... | 3 |
| Statistical areas harvest and effort..... | 3 |
| Inseason actions..... | 4 |
| Biological Sampling..... | 4 |
| 2018..... | 5 |
| 2019..... | 5 |
| 2020..... | 5 |
| 2021..... | 6 |
| TANNER CRAB TEST FISHERY..... | 6 |
| Objectives..... | 6 |
| Design and Participation..... | 7 |
| 2020..... | 7 |
| 2021..... | 7 |
| Harvest and Effort..... | 7 |
| 2020..... | 7 |
| 2021..... | 8 |
| Biological Sampling..... | 8 |
| 2020..... | 8 |
| 2021..... | 8 |
| Future..... | 9 |
| ACKNOWLEDGEMENTS..... | 9 |
| REFERENCES CITED..... | 10 |
| TABLES AND FIGURES..... | 11 |

LIST OF TABLES

| Table | Page |
|---|-------------|
| 1. Prince William Sound Commissioner’s Permit Tanner crab fishery harvest and effort information, 2018–2021..... | 12 |
| 2. Prince William Sound Commissioner’s Permit Tanner crab fishery registration, participation, pot limit, and start date, 2018–2021..... | 12 |
| 3. Prince William Sound Commissioner’s Permit Tanner crab fishery harvest and effort information by statistical area, 2018–2021..... | 13 |
| 4. Prince William Sound Commissioner’s Permit Tanner crab fishery number of landings sampled by port, 2018–2021..... | 14 |
| 5. Prince William Sound Commissioner’s Permit Tanner crab fishery average weight and percentage of each shell condition category, from port sampling, 2018–2021..... | 14 |
| 6. Prince William Sound Area Commissioner’s Permit Tanner crab fishery carapace width size categories, corresponding percentages of the total, and average carapace width, from port sampling, 2018–2021..... | 14 |
| 7. Prince William Sound Area Commissioner’s Permit Tanner crab fishery sampled by sex, and percentage of each shell condition category for sublegal male crab sampled, from onboard observers, 2019–2020..... | 14 |
| 8. Prince William Sound Tanner crab test fishery harvest and effort information, 2020..... | 15 |
| 9. Prince William Sound Tanner crab test fishery harvest and effort information, 2021..... | 15 |
| 10. Prince William Sound Tanner crab test fishery, number of harvested crab sampled, average weight, and percentage of each shell condition category, 2020–2021..... | 15 |
| 11. Prince William Sound Tanner crab test fishery sampled by sex, and percentage of each shell condition category for sublegal male crab sampled, from onboard observers, 2020–2021..... | 15 |
| 12. Prince William Sound Tanner crab test fishery, harvested crab carapace width size categories, corresponding percentages of the total, and average carapace width, 2020–2021..... | 16 |

LIST OF FIGURES

| Figure | Page |
|--|-------------|
| 1. Prince William Sound Tanner crab fishery districts..... | 17 |
| 2. Prince William Sound Commissioner’s Permit Tanner crab fishery harvest by statistical area, shown by graduated symbols, 2018..... | 18 |
| 3. Prince William Sound Commissioner’s Permit Tanner crab fishery harvest by statistical area, shown by graduated symbols, 2019..... | 19 |
| 4. Prince William Sound Commissioner’s Permit Tanner crab fishery harvest by statistical area, shown by graduated symbols, 2020..... | 20 |
| 5. Prince William Sound Commissioner’s Permit Tanner crab fishery harvest by statistical area, shown by graduated symbols, 2021..... | 21 |
| 6. Prince William Sound Tanner crab test fishery pot locations, statistical areas, and closed waters, 2020..... | 22 |
| 7. Prince William Sound Tanner crab test fishery, Lots A–E, mandatory pot locations, statistical areas, and closed waters, 2021..... | 23 |
| 8. Prince William Sound Tanner crab test fishery harvest by statistical area, shown by graduated symbols, 2020..... | 24 |
| 9. Prince William Sound Tanner crab test fishery harvest by statistical area, shown by graduated symbols, 2021..... | 25 |

ABSTRACT

This management report summarizes Tanner crab *Chionoecetes bairdi* harvest, effort, and location information from the Prince William Sound (Registration Area E) Commissioner's Permit Tanner crab fishery (CPF) 2018–2021 prosecuted in the Eastern and Western Districts. In 2018, the first year of the CPF, harvest was 83,338 pounds and 47,394 crab by 14 vessels and 3,736 pot lifts; the overall fishery catch per unit effort (CPUE) was 12.7 crab per pot. In 2019, CPF harvest peaked at 124,707 pounds and 74,407 crab by 14 vessels and 4,841 pot lifts; the fishery CPUE was 15.4 crab per pot. The overall CPF effort represented by the number of vessels and pot lifts was highest in 2020 at 22 vessels and 5,885 pot lifts. However, CPF harvest in 2020 decreased to 108,859 pounds, 64,557 crab, and a fishery CPUE of 11.0 crab per pot, which was the lowest CPUE for the fishery. In 2021, the CPF harvest and effort dropped to the lowest levels at 56,351 pounds, 33,803 crab by 10 vessels, and 2,923 pot lifts, but the fishery CPUE of 11.6 crab per pot was higher than in 2020. A Tanner crab test fishery was conducted in the Northern and Hinchinbrook Districts in 2020 and 2021 with defined fishing areas (lots) and a maximum of 5,000 pounds available per lot. In 2020, there were 6 lots available, and in 2021 there were 5 lots available for bid. In 2020, 5 vessels participated and harvested 23,771 pounds and 12,917 crab in 796 pot lifts for an overall CPUE of 16.2 crab per pot. In 2021, 2 vessels participated in the test fishery and harvested 15,910 pounds and 8,368 crab in 552 pot lifts for an overall CPUE of 15.2 crab per pot.

Keywords: Tanner crab *Chionoecetes bairdi*, commissioner's permit, commercial fishery, catch per unit effort, Alaska Board of Fisheries, Prince William Sound.

INTRODUCTION

This management report provides information about the Prince William Sound (PWS) Commissioner's Permit Tanner crab fishery (hereafter referred to as CPF) managed by the Alaska Department of Fish and Game (ADF&G) in the Eastern and Western Districts of the PWS Registration Area E (Figure 1).

For commercial fisheries, PWS Registration Area E includes waters of Prince William Sound and the Gulf of Alaska bounded by 144°00'W longitude near Cape Suckling on the east and Cape Fairfield (long 148°50.25'W) on the west. For management of commercial crab fisheries, PWS is further divided into the Northern, Hinchinbrook, Eastern, and Western Districts (Figure 1; 5 AAC 35.305). ADF&G manages all commercial shellfish fisheries, including Tanner crab, within the territorial waters of PWS, or those waters from the shoreline to 3 nautical miles offshore, and in adjacent waters of the federal exclusive economic zone (EEZ), which are those waters beyond 3 nautical miles offshore.

Tanner crab abundance in PWS had been at low levels since the mid-1980s, resulting in the closure of the commercial fishery in 1989 and the subsistence fishery in 1999 (Rumble et al. 2020). The PWS subsistence Tanner crab fishery reopened in 2008 following an increase in legal male Tanner crab abundance, estimated from the PWS trawl survey (Rumble et al. 2014).

After a Tanner crab test fishery was conducted in PWS in 2016, regulatory changes were adopted by the Alaska Board of Fisheries (BOF) in 2017, allowing ADF&G to open a Tanner crab CPF in PWS Western and Eastern Districts (Rumble et al. 2020). The PWS Tanner crab CPF has opened annually from 2018 through 2021.

Harvest and effort data for the CPF were compiled from ADF&G's fish ticket database (Table 1).

COMMISSIONER'S PERMIT FISHERY SUMMARY

COMMISSIONER'S PERMIT PROVISIONS

In addition to allowing for a CPF, the BOF also adopted the *Registration Area E Tanner crab harvest strategy* (5 AAC 35.308) in 2017. The harvest strategy regulates the prosecution of the Tanner crab commercial fishery in all PWS districts based on defined stock thresholds. The historical PWS trawl survey occurs in eastern PWS within the Northern and Hinchinbrook Districts. The CPF is a limited fishery in only the Eastern and Western Districts if thresholds to open all districts are not met. Also, based on a new analysis, the BOF reduced the legal size of Tanner crab from 5.3 inches (135 mm) to 5.0 inches (127 mm); the harvest strategy thresholds are still based on the historical legal size.

Permit Requirements

1. The PWS commissioner's permit was valid for a Tanner crab season from March 1 to March 31 unless closed earlier or extended by emergency order (EO).
2. Fishing is allowed within the Eastern and Western Districts of PWS.
3. A valid commercial fishery entry commission (CFEC) interim-use permit card for PWS Tanner crab (T09E or T91E) was required. The permit's pot limits are defined on the card (50 pots in 2018 and 25 pots in 2019–2021). Emergency orders may define additional gear restrictions or allowances.
4. The daily call-in was required by 3:00 PM. The following information should be included in the report: statistical area fished, number of pots pulled, number of legal Tanner crab harvested, and number of sublegal male and female Tanner crab released. Texting could be used to communicate if previously arranged.
5. A registration deadline was set as a condition necessary for conservation and management purposes under 5 AAC 35.311 (c)(5): February 15 in 2019 and February 18 in 2020–2021 at 5:00 PM. Permits were not issued after that date (added in 2019).
6. Log sheets were required and needed to be submitted with each corresponding fish ticket at the time of landing. Failure to complete all fields requested on log sheets, or comply with the other conditions specified herein, would result in revocation of the commissioner's permit.
7. Vessel operator CFEC permit holder was required to have an established market for all Tanner crab harvested.
8. A pre-trip check-in was required for vessels to allow adequate time for deployment of ADF&G personnel acting as onboard observers when required. Each vessel was required to have a current United States Coast Guard safety decal and inspected life raft that can accommodate all persons on board the vessel. Costs associated with accommodating an observer were the responsibility of the vessel.
9. Unless otherwise specified, all provisions of Tanner crab regulations in 5 AAC Chapter 35 were required to be adhered to, including size limits for Registration Area E (5 AAC 35.320), lawful gear specifications (5 AAC 35.325 (a) and (c)), and pot marking requirements (5 AAC 35.326). Only male Tanner crab 5 inches or greater in width of shell could be taken or possessed.

10. An exception to 5 AAC 35.033 (a) under the authority of the commissioner's permit allowed a vessel participating in this fishery to act as a tender vessel. Other provisions of 5 AAC 35.033 were in effect, including registration and reporting requirements. The tender operator was required to complete fish tickets and include the number and weight of Tanner crab (only applied in 2018, rescinded in 2019).

HARVEST AND EFFORT

Permits, participation, pot limit, and start date

Between 2018 and 2021, vessel participation in the CPF ranged from 10 vessels in 2021 to a high of 22 vessels in 2020 (Table 1). A valid CFEC interim-use permit card for PWS Tanner crab was required (T09E or T91E). There were more CFEC permits purchased than participants in the fishery (Table 2). The second requirement was to obtain a commissioner's permit from ADF&G, and even after this step was completed, some permit holders did not participate in the fishery. The percent of participants with a commissioner's permit varied from a low of 56% in 2019 to 85% in 2020 (Table 2). In 2018, the pot limit was set at 50 pots per vessel; input from interested participants influenced establishing this limit, and it was the regulatory maximum for the CPF. Although there was limited information, ADF&G wanted to encourage participation in a fishery that had been closed for more than 30 years. The pot limit per vessel was 25 from 2019 through 2021 (Table 2). The opening date of the fishery, as defined in the permit, was March 1. In 2019, a weather provision was added. In 2020 and 2021, the fishery began on March 2 because of weather delays (Table 2).

General harvest and effort

Harvest, effort, and the resulting catch per unit effort (CPUE) varied all 4 years that the CPF has been prosecuted (Table 1). Tanner crab harvest ranged from a low of 56,351 pounds in 2021 to a high of 124,707 pounds in 2019 (Table 1). In 2020, the highest number of pot lifts, about 6,000, resulted in the lowest CPUE of 11.0 crab per pot. The highest CPUE of 15.4 crab per pot and about 5,000 pot lifts was in 2019. The lowest pot lifts, lowest harvest, and second-lowest CPUE occurred in 2021.

Statistical areas harvest and effort

In 2018, the CPF opened areas to commercial Tanner crab fishing that had been closed for more than 30 years. There was a lot of prospecting the first season the CPF was open. There was a low effort in outside waters of PWS because some participating vessels were smaller with gear that could not safely fish in outside weather conditions.

During the 4 years that the CPF was open, vessels migrated from fishing inside PWS to outside PWS. In 2018, 11 vessels fished in Statistical Area 486005, the Icy and Whale Bay area, harvesting almost 30,000 pounds of crab, which was 36% of the total harvest (Tables 1 and 3; Figure 2). During that first year of the fishery, the second-largest harvest came from Statistical Area 485931, in the outside waters of PWS. Only 3 of the 14 participating vessels fished that statistical area and harvested about 26,000 pounds, which was 31% of the total harvest. For the next 3 seasons, the CPF was focused in this outside Statistical Area 485931, harvesting between 61% (2020) to 80% (2021) of the total Tanner crab (pounds) landed. In Statistical Area 486005, harvest decreased to 10,254 pounds (8%) in 2019, to 7,088 pounds (7%) in 2020, and was closed during the 2021 season due to conservation concerns (Table 3; Figures 2–5).

Statistical Areas 476007 and 476003 are both on the east side of Knight Island and had notable harvests (Table 3; Figures 2–5). Statistical Area 476007 had a high harvest in 2018 of 10,873 pounds by 6 vessels and 7.9 crab per pot and 13% of the total harvest (Table 3; Figure 2). Following 2018, harvest in Statistical Area 476007 ranged between a low of 3,862 pounds in 2021 and 6,174 pounds in 2019 from 4 vessels and 7.3 crab per pot (Table 3). In Statistical Area 476003, which is directly south of Statistical Area 476007, 5 vessels harvested a high of 17,522 pounds and 12.6 crab per pot in 2019 (Figure 3). In subsequent years, the harvest, effort, and CPUE decreased to 273 pounds by 3 vessels and 1.1 crab per pot (Table 3).

Inseason actions

In 2018, daily reports of harvest and effort information in Statistical Area 486005 indicated a significant decrease in CPUE through the first week of the fishery resulting in the closure of that statistical area on March 13 for the remainder of the season by EO. All other statistical areas remained open for the duration of the fishery.

In 2019, adverse weather conditions in the middle of the season limited participation for approximately a week in duration, prompting ADF&G to extend the season by EO until April 7. In addition, to provide the opportunity for prospecting in areas that had not been explored during the regular season, the Eastern District and the area of the Western District east of 148°W longitude and south of Montague Island, and not including Statistical Area 475934, opened by EO from 12:01 AM April 8 through 11:59 PM April 17, with an increased pot limit of 40 pots per vessel.

In 2020, in Statistical Area 486005, CPUE decreased to low levels during the first 10 days of the season. Therefore, to avoid local depletion, Statistical Area 486005 was closed by EO on March 13 at 4:00 PM. In addition, performance in Statistical Area 485931 was lower than the previous 2 seasons, and CPUE steadily declined during the first 3 weeks of the 2020 season. Therefore, to avoid localized depletion, Statistical Area 485931 was closed by EO on March 20 at 10:00 PM.

Statistical area 486005 was closed by EO for the entirety of the 2021 season; harvest and CPUE declined in this statistical area between the 2018 and 2020 seasons to very low levels, and conservation reasons prompted the closure. In 2021, 3 additional areas were closed by EO due to declining CPUE as the season progressed: Statistical Areas 485931 and 485935 closed March 20 at 11:59 PM, and Statistical Area 486001 closed at 11:59 PM March 27. These closures were implemented to avoid localized depletion; all other statistical areas remained open until 11:59 PM March 31.

BIOLOGICAL SAMPLING

AD&G staff sampled Tanner crab in the ports of Whittier, Cordova, Seward, and Homer. Average Tanner crab weight was calculated by counting crab in weighed brailer bags. Carapace width, sex, and shell condition were also collected. The legal size of Tanner crab in PWS was reduced in 2017 to 5 inches or 126 mm. The biological measurement of carapace width collected by ADF&G sampling staff does not include spines and therefore may be smaller than the legal measurement, which includes spines. Chelae height (CH), the height of the right claw at its widest point, was also collected during port sampling beginning in 2019 to assess the amount of terminally molted crab in the harvest. Evidence of a terminal or final molt in Tanner crab, when crab cease to molt at morphological maturity in the genus *Chionoecetes*, is generally accepted as indicated by low levels of circulating molting hormones (Tamone et al. 2007). Maturity in crab of the genus *Chionoecetes* often refers to crab in the “large-clawed” (LC) morphotype stage in contrast to crab

in the “small-clawed” (SC) stage (Rhea-Fournier et al. 2020). The distinction between the LC and SC stage is based on the ratio of CH to carapace width (Somerton 1980; Conan and Comeau 1986).

2018

In 2018, 13 landings were sampled in Whittier, 11 in Cordova, and 9 in Seward, for a total of 33 deliveries sampled (Table 4).

The average weight ranged from 1.58 to 2.54 pounds for individual landings, and the average weight for all trips sampled was 1.87 pounds. There were 3,055 crab sampled for carapace width and shell condition: new-shell made up 34%, old-shell 44%, and 22% of the crab sampled were very old-shell (Table 5). The crab with old and very old shells were probably in terminally molted condition.

Sampling showed an average carapace width of 139 mm (5.5 inches); 40% of crab were within the greater than 130–140 mm size category, 30% of crab were less than 130 mm, 20% were greater than 140–150 mm, and 10% were greater than 150 mm (Table 6).

2019

In 2019, 30 landings were sampled in Seward, 15 in Cordova, and 2 in Whittier, for a total of 47 deliveries sampled (Table 4). An onboard observer monitored the fishery and collected additional samples on the discarded crab catch during 2 CPF trips.

For individual landings, the average weight of Tanner crab ranged from 1.38 to 1.92 pounds, with an average from all trips sampled of 1.63 pounds or 0.24 pounds (12.8%) less than the average weight of 1.87 pounds in 2018 (Table 5). There were 4,420 crab sampled for carapace width and shell condition during port sampling operations. Of those sampled, Tanner crab with new-shell condition made up 63% and old-shell crab made up 36%; there were few crab with very old-shell condition observed in the harvest (<0.5%).

Biological information was collected from an additional 6,280 Tanner crab during onboard observer trips: 5,891 males and 389 females. Of the males, 69% were sublegal, and 81% of those sublegal males were old-shell (76%) or very old-shell (5%) condition (Table 7). The crab with old and very old shells were probably in terminally molted condition. For observed trips, there were more old-shell crab caught inside PWS waters than in outside waters.

More sublegal crab were encountered during port sampling in 2019 than in 2018, resulting in ADF&G staff conducting more extensive sampling. All enforcement issues regarding harvested sublegal crab were reported to the Department of Public Safety. Port sampling showed an average carapace width of 132 mm (5.2 inches) for harvested Tanner crab, which was smaller than the average in 2018 of 139 mm (5.5 inches; Table 6). The range of carapace width was 116 mm (due to sublegal crab in harvest) to 168 mm.

2020

In 2020, 30 landings were sampled in Seward, 12 in Whittier, and 4 in Homer, for a total of 46 landings sampled (Table 4). An onboard observer monitored the fishery and collected additional samples on the discarded crab catch during 1 of those trips.

Tanner crab average weight from individual landings ranged from 1.58 to 2.13 pounds, with an average from all trips sampled of 1.69 pounds, which was corroborated by fish ticket data and slightly larger than the average weight of 1.63 pounds in 2019 (Table 5). There were 4,498 crab

sampled for carapace width and shell condition during port sampling operations. Of those sampled, Tanner crab with new-shell condition made up 67%, up 4% from 2019; old-shell crab made up 29%, and very old-shell condition crab made up about 3% of the harvest.

Biological information was collected from an additional 1,509 Tanner crab (1,486 males and 23 females) during an onboard observer trip in Statistical Area 485931. Of the males, 78% were sublegal, and 70% of those sublegal males were old-shell (68%) or very old-shell (2%) condition (Table 7). The crab with old and very old shells were probably in terminally molted condition.

Sublegal crab were observed in the harvest this year, but less than in 2019; this reduction was probably due to enforcement activity. When sublegal crab are encountered by a sampler, more extensive sampling is conducted; all enforcement issues regarding sublegal crab were reported to the Department of Public Safety. Alaska Wildlife Troopers were present at several landings and assisted directly. Port sampling showed an average carapace width of 133 mm (5.2 inches) for harvested Tanner crab, which was similar to the average of 132 mm in 2019 (5.2 inches) but smaller than the average in 2018 of 139 mm (5.5 inches; Table 6). The range of carapace width was 111 mm (due to sublegal crab) to 162 mm (smaller than the 2019 maximum of 168 mm).

2021

In 2021, 18 landings were sampled in Seward, 2 in Whittier, and 1 in Homer, for a total of 21 landings sampled (Table 4). No onboard observers were deployed during the 2021 PWS Tanner crab CPF; 6 vessels operated as catcher–sellers for all or a portion of their CPF trips, and 4 of those landings were sampled.

Tanner crab average weight from individual landings in 2021 ranged from 1.43 to 2.00 pounds, with an average from all trips sampled of 1.70 pounds, corroborated by fish ticket data, and similar to the average weight of 1.69 pounds in 2020 (Table 5). There were 2,100 Tanner crab sampled for carapace width, chelae height, and shell condition during port sampling operations. Of those harvested Tanner crab sampled, crab with new-shell condition made up 80%, up 13% from 2020; old-shell crab made up 20% of crab sampled, and only 2 individual crab were encountered with very old-shell condition.

Sublegal crab were observed in the harvest again in 2021. Sublegal male and female crab thresholds exist that trigger a “legal tally” when reached, requiring additional sampling of the landing. All enforcement issues regarding sublegal and female crab are reported to the Department of Public Safety, although Alaska Wildlife Troopers were present at most landings in Seward and assisted directly.

Port sampling in 2021 showed an average carapace width of 133 mm (5.2 inches) for harvested Tanner crab, the same as 2020, and similar to the average of 132 mm in 2019 (5.2 inches) but smaller than the average in 2018 of 139 mm (5.5 inches; Table 6). The range of carapace width was 123 mm (due to sublegal crab) to 165 mm, which was larger than the 2020 maximum of 162 mm but smaller than in 2019 when it was 168 mm.

TANNER CRAB TEST FISHERY

OBJECTIVES

ADF&G conducted a test fishery in 2020 and 2021 to gather information about the PWS Tanner crab stock’s current health in locations outside and inside the ADF&G trawl survey areas and

outside the CPF. The objectives of the test fishery were to collect information on legal male catch rate, male size composition, and distribution of Tanner crab in areas of the Northern and Hinchinbrook Districts.

DESIGN AND PARTICIPATION

ADF&G solicited bids to contract vessels to conduct a Tanner crab test fishery in PWS using pot gear to harvest up to 5,000 pounds each within defined lots of the Northern and Hinchinbrook Districts.

Contracts were awarded to the highest bidder for each lot, and vessel owners could bid on more than 1 lot. Vessel operators were required to have prior commercial Tanner crab fishing experience. Fishing was limited to the Northern and Hinchinbrook Districts (Registration Area E), with a maximum gear limit of 25 Tanner crab pots per vessel. Within each lot, 25 mandatory pot locations were defined, and pots were required to be set within 0.5 nautical miles of these specific locations. Additional pot locations fished within lot boundaries were up to the vessel operator. Log sheets and daily call-ins were required, and vessels were required to accommodate observers upon request. In addition to bid price per pound, all proceeds from overages above 5,000 pounds per lot were paid to the State of Alaska.

2020

In 2020, 6 lots were available for the PWS test fishery for a maximum harvest of 30,000 pounds of Tanner crab. The minimum bid price was \$0.35 per pound of Tanner crab harvested.

Bids were submitted for Tanner crab test fishery Lots A–F; 4 vessels were awarded 1 lot each, and 1 vessel was awarded 2 (Lots A and B; Figure 6). The test fishery was conducted between February 22 and April 7, 2020. Proceeds from the 2020 PWS Tanner crab test fishery totaled \$18,260.52.

2021

In 2021, 5 lots were available for the PWS test fishery for a maximum 25,000 pounds of Tanner crab harvest. The minimum bid price was \$0.42 per pound of Tanner crab harvested. The 2021 PWS Tanner crab test fishery was conducted similarly to 2020. However, the available fishery area was reduced from 6 lots to 5 lots; the boundaries of the lots were adjusted to distribute the harvest more evenly in 2021, and Port Nellie Juan was removed from the open test fishery area (Figure 7). Due to the COVID-19 pandemic, it was written into the 2021 contract that all crew from PWS test fishery vessels and observers were required to be tested and receive negative results for COVID-19 before deployment.

Bids were submitted for Tanner crab test fishery Lots A–E: 1 vessel was awarded 4 lots, and 1 vessel was awarded 1 (Lot B; Figure 7). The test fishery was conducted between February 22 and April 7, 2021. Proceeds from the 2021 PWS Tanner crab test fishery totaled \$16,018.91.

HARVEST AND EFFORT

2020

In 2020, Tanner crab harvest was 23,771 pounds and 12,917 crab from 796 pot lifts for an overall test fishery CPUE of 16.2 crab per pot (Table 8 and Figure 8). In Lots A, C, D, and F, Tanner crab harvest was near or above the 5,000 pound limit, and the CPUE ranged from 16.5 to 22.9 crab per

pot. Lots B and E produced between 1,000 and 1,600 pounds and had a corresponding CPUE ranging between 10.2 crab per pot and 5.9 crab per pot.

2021

In 2021, Tanner crab harvest was 15,910 pounds and 8,368 crab from 552 pot lifts for an overall test fishery CPUE of 15.2 crab per pot, a reduction of 1 crab per pot from 2020 (Table 9 and Figure 9). In Lots B and D, vessels harvested just over the 5,000-pound limit, and the CPUE ranged between 20.6 crab per pot and 17.8 crab per pot. In Lot A, over 4,000 pounds were harvested, and the CPUE was 16.1 crab per pot. Lots C and E produced less than 1,000 pounds each, and the CPUE ranged between 6.5 crab per pot and 3.6 crab per pot.

BIOLOGICAL SAMPLING

2020

Of the 9 landings from the 2020 PWS Tanner crab test fishery, 5 were sampled during dockside operations and 3 were sampled by onboard observers. The average weight of Tanner crab for individual landings ranged between 1.72 and 2.02 pounds, and the average weight from all trips sampled was 1.84 pounds, which was corroborated by fish ticket data (Table 10). The average crab weight from the 2020 PWS Tanner crab test fishery was 9% larger than the average weight of crab from the CPF. There were 500 crab sampled for carapace width, chelae height, and shell condition during port sampling operations. Of those sampled, 45% of Tanner crab were in new-shell condition; old-shell crab made up 54%, and very old-shell condition crab made up 1% of the harvest (Table 10).

Biological information was collected from an additional 1,937 Tanner crab during 3 onboard observer trips: 1 trip in Lot A and 2 trips in Lot D conducted before the CPF. Test fishery trips in late March and early April were not observed due to health concerns resulting from the COVID-19 pandemic. During observed trips, a total of 1,931 male and 6 female Tanner crab were sampled (Table 11). Of males, 35% were sublegal, less than the percentage observed during the Tanner crab CPF. Of the sublegal males, 20% were old-shell, and 3% were very old-shell; these were probably in terminally molted conditions (Table 11).

Tanner crab from the PWS test fishery were larger than in the CPF. Port sampling showed an average carapace width of 137 mm (5.4 inches) for harvested Tanner crab, compared to 133 mm in the CPF (Tables 6 and 12). The range of carapace width was 124 mm to 163 mm for port sampling. However, a maximum of 168 mm was measured by onboard observers in Lot D. In comparison to the CPF, the PWS Tanner crab test fishery had higher percentages of larger crab, perhaps because those areas were not commercially fished in 2019 (when the CPF opened). The highest percentage of crab fell in the greater than 130–140 mm category at 43%, 22% were equal to or less than 130 mm, 27% were greater than 140–150 mm, and 7% were greater than 150 mm (Table 12).

2021

Onboard observers sampled all 5 trips from the 2021 PWS Tanner crab test fishery; average weights were collected in port when crab were delivered. The average weight of Tanner crab for individual PWS test fishery landings in 2021 ranged between 1.86 and 1.99 pounds, and the average weight from all trips sampled was 1.90 pounds, which was corroborated by fish ticket information (Table 10). The average weight of Tanner crab in 2021 from the test fishery was 12%

larger than the average weight of crab from the CPF (1.70 pounds) and also larger than the 2020 test fishery (1.84 pounds; Tables 5 and 10).

There were 3,255 legal crab sampled for carapace width, chelae height, and shell condition during onboard observing operations. Of those sampled, 55% of legal Tanner crab were in new-shell condition, 44% were in old-shell condition, and 1% had very old-shell condition (Table 10).

Biological information was collected from 3,852 Tanner crab by onboard observers during test fishery trips, and all lots were sampled. Observers sampled 3,843 male and 9 female Tanner crab (Table 11). For male Tanner crab, 15% were sublegal, and of those sublegal males, 20% were old-shell and 1% were very old-shell, which was similar to the 2020 test fishery; these crab were probably in terminally molted condition (Table 11).

Similar to 2020, crab harvested in the PWS Tanner crab test fishery were larger than the CPF harvest in 2021. Sampling for both years showed an average carapace width of 137 mm (5.4 inches) for harvested Tanner crab, compared to 133 mm in the CPF for both years. The range of carapace width in 2021 was 124 mm to 167 mm, and the largest crab measured was in Lot A. Compared to the CPF, the test fishery had higher percentages of larger crab (Tables 6 and 12).

Future

A PWS Tanner Crab Harvest Strategy is being presented to the BOF in November 2021. The strategy encompasses all parts of the Prince William Sound was developed using all of the information available from the trawl survey, Tanner crab test fishery, port sampling, and the Tanner crab CPF fishery.

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REFERENCES CITED

- Conan, G. Y., M. Comeau, M. Moriyasu, and R. Cormier. 1988. Reply to Donaldson and Johnson. *Canadian Journal of Fisheries and Aquatic Sciences* 45(8): 1501-1503.
- Rhea-Fournier, W. J., M. Byerly, and C. Kerkvliet. 2020. A bottom trawl survey for Tanner crab in Kachemak Bay, 2017. Alaska Department of Fish and Game, Fishery Data Series No. 20-09, Anchorage.
- Rumble, J., E. Russ, M. Byerly, and C. Russ. 2020. Cook Inlet and Prince William Sound area management report for Tanner and king crab fisheries through 2019. Alaska Department of Fish and Game, Fishery Management Report No. 20-10, Anchorage.
- Rumble, J., M. Wessel, E. Russ, K. J. Goldman, R. L. Gustafson, and C. Russ. 2014. Cook Inlet and Prince William Sound Area Management Report for Tanner and king crab fisheries through 2013. Alaska Department of Fish and Game, Fishery Management Report No. 14-08, Anchorage.
- Somerton, D. A. 1980. A computer technique for estimating the size of sexual maturity in crab. *Canadian Journal of Fisheries and Aquatic Sciences* 37(10): 1488-1494.
- Tamone, S. L., S. J. Taggart, A. G. Andrews, J. Mondragon, and J. K. Nielsen. 2007. The relationship between circulating ecdysteroids and chela allometry in male Tanner crab: Evidence for a terminal molt in the Genus *Chionoecetes*. *Journal of Crustacean Biology* 27(4): 635–642.

TABLES AND FIGURES

Table 1.–Prince William Sound Commissioner’s Permit Tanner crab fishery harvest and effort information, 2018–2021.

| Year | Pot lifts | Harvest (No. of crab) | Harvest (lb) | CPUE (crab per pot) | Vessels |
|---------|-----------|--------------------------|--------------|------------------------|---------|
| 2018 | 3,736 | 47,394 | 83,338 | 12.7 | 14 |
| 2019 | 4,841 | 74,407 | 124,707 | 15.4 | 14 |
| 2020 | 5,885 | 64,557 | 108,859 | 11.0 | 22 |
| 2021 | 2,923 | 33,803 | 56,351 | 11.6 | 10 |
| Average | 4,346 | 55,040 | 93,314 | 13.0 | 15 |

Note: CPUE is catch per unit effort.

Table 2.–Prince William Sound Commissioner’s Permit Tanner crab fishery registration, participation, pot limit, and start date, 2018–2021.

| Year | No. of CFEC permits purchased | No. of Commissioner’s permits issued | No. of permit holders that participated | Pot limit | Percent of participation (participants/ CP issued) | Start date |
|------|-------------------------------------|--|---|-----------|---|------------|
| 2018 | 21 | 18 | 15 | 50 | 83% | Mar 1 |
| 2019 | 28 | 25 | 14 | 25 | 56% | Mar 1 |
| 2020 | 27 | 26 | 22 | 25 | 85% | Mar 2 |
| 2021 | 17 | 13 | 10 | 25 | 77% | Mar 2 |

Note: CFEC is Commercial Fishery Entry Commission and CP is commissioner’s permit.

Table 3.–Prince William Sound Commissioner’s Permit Tanner crab fishery harvest and effort information by statistical area, 2018–2021.

| Statistical Area 486005 | | | | | | |
|-------------------------|-----------|-----------------------|--------------|------------------------|---------|--------------------------------|
| Year | Pot lifts | Harvest (No. of crab) | Harvest (lb) | CPUE (crab per pot) | Vessels | Percent of total harvest |
| 2018 | 1,071 | 14,868 | 29,853 | 13.9 | 11 | 36% |
| 2019 | 551 | 5,324 | 10,254 | 9.7 | 9 | 8% |
| 2020 | 588 | 3,560 | 7,088 | 6.1 | 10 | 7% |
| 2021 | | | Closed | | | |
| Average | 737 | 7,917 | 15,732 | 9.9 | 10 | 17% |
| Statistical Area 485931 | | | | | | |
| 2018 | 732 | 16,036 | 25,813 | 21.9 | 3 | 31% |
| 2019 | 2,635 | 51,994 | 83,837 | 19.7 | 9 | 67% |
| 2020 | 2,873 | 39,436 | 65,948 | 13.7 | 15 | 61% |
| 2021 | 1,862 | 27,099 | 45,111 | 14.6 | 8 | 80% |
| Average | 2,026 | 33,642 | 55,177 | 17.5 | 9 | 59% |
| Statistical Area 476007 | | | | | | |
| 2018 | 895 | 7,028 | 10,873 | 7.9 | 6 | 13% |
| 2019 | 472 | 3,436 | 6,174 | 7.3 | 4 | 5% |
| 2020 | 568 | 3,246 | 5,514 | 5.7 | 9 | 5% |
| 2021 | 424 | 2,357 | 3,862 | 5.9 | 5 | 7% |
| Average | 581 | 4,000 | 6,576 | 6.7 | 6 | 7% |
| Statistical Area 476003 | | | | | | |
| 2018 | 128 | 1,534 | 2,643 | 12.0 | 5 | 3% |
| 2019 | 793 | 9,962 | 17,522 | 12.6 | 5 | 14% |
| 2020 | 590 | 5,725 | 9,397 | 9.5 | 6 | 9% |
| 2021 | 132 | 150 | 273 | 1.1 | 3 | 0.5% |
| Average | 413 | 4,344 | 7,459 | 8.8 | 5 | 8% |

Note: CPUE is catch per unit effort.

Table 4.–Prince William Sound Commissioner’s Permit Tanner crab fishery number of landings sampled by port, 2018–2021.

| Year | Total landings sampled | No. in Cordova | No. in Homer | No. in Seward | No. in Whittier |
|------|------------------------|----------------|--------------|---------------|-----------------|
| 2018 | 33 | 11 | 0 | 9 | 13 |
| 2019 | 47 | 15 | 0 | 30 | 2 |
| 2020 | 46 | 0 | 4 | 30 | 12 |
| 2021 | 21 | 0 | 1 | 18 | 2 |

Table 5.–Prince William Sound Commissioner’s Permit Tanner crab fishery average weight and percentage of each shell condition category, from port sampling, 2018–2021.

| Year | No. crab sampled | Average weight (lb) | Percent new shell | Percent old shell | Percent very old shell |
|------|------------------|---------------------|-------------------|-------------------|------------------------|
| 2018 | 3,055 | 1.87 | 34% | 44% | 22% |
| 2019 | 4,420 | 1.63 | 63% | 36% | <0.5% |
| 2020 | 4,498 | 1.69 | 67% | 29% | 3% |
| 2021 | 2,100 | 1.70 | 80% | 20% | <0.1% |

Table 6.–Prince William Sound Area Commissioner’s Permit Tanner crab fishery carapace width size categories, corresponding percentages of the total, and average carapace width, from port sampling, 2018–2021.

| Carapace width | 2018 | 2019 | 2020 | 2021 |
|-----------------------------|------|------|------|------|
| ≤130 mm | 30% | 46% | 40% | 41% |
| >130-140 mm | 40% | 44% | 45% | 46% |
| >140-150 mm | 20% | 9% | 12% | 13% |
| >150 mm | 10% | 1% | 2% | 1% |
| Average carapace width (mm) | 139 | 132 | 133 | 133 |

Table 7.–Prince William Sound Area Commissioner’s Permit Tanner crab fishery sampled by sex, and percentage of each shell condition category for sublegal male crab sampled, from onboard observers, 2019–2020.

| Year | Total crab sampled | No. female crab sampled | No. male crab sampled | Percent sublegal male crab | Percent sublegal male new shell | Percent sublegal male old shell | Percent sublegal male very old shell |
|------|--------------------|-------------------------|-----------------------|----------------------------|---------------------------------|---------------------------------|--------------------------------------|
| 2019 | 6,280 | 389 | 5,891 | 69% | 19% | 76% | 5% |
| 2020 | 1,509 | 23 | 1,486 | 78% | 30% | 68% | 2% |

Note: All catch sampled included discarded female and sublegal male crab.

Table 8.—Prince William Sound Tanner crab test fishery harvest and effort information, 2020.

| Lot | Pot lifts | Harvest (No. of crab) | Harvest (lb) | CPUE (crab per pot) |
|--------|-----------|--------------------------|--------------|------------------------|
| A | 114 | 2,616 | 5,120 | 22.9 |
| B | 58 | 593 | 1,029 | 10.2 |
| C | 135 | 2,711 | 4,762 | 20.1 |
| D | 188 | 3,103 | 5,827 | 16.5 |
| E | 144 | 848 | 1,590 | 5.9 |
| F | 157 | 3,046 | 5,443 | 19.4 |
| Totals | 796 | 12,917 | 23,771 | 16.2 |

Note: CPUE is catch per unit effort.

Table 9.—Prince William Sound Tanner crab test fishery harvest and effort information, 2021.

| Lot | Pot lifts | Harvest (No. of crab) | Harvest (lb) | CPUE (crab per pot) |
|--------|-----------|--------------------------|--------------|------------------------|
| A | 135 | 2,167 | 4,139 | 16.1 |
| B | 136 | 2,808 | 5,216 | 20.6 |
| C | 82 | 536 | 977 | 6.5 |
| D | 151 | 2,684 | 5,218 | 17.8 |
| E | 48 | 173 | 360 | 3.6 |
| Totals | 552 | 8,368 | 15,910 | 15.2 |

Note: CPUE is catch per unit effort.

Table 10.—Prince William Sound Tanner crab test fishery, number of harvested crab sampled, average weight, and percentage of each shell condition category, 2020–2021.

| Year | No. crab sampled | Average weight (lb) | Percent new shell | Percent old shell | Percent very old shell |
|------|---------------------|------------------------|----------------------|-------------------|---------------------------|
| 2020 | 500 | 1.84 | 45% | 54% | 1% |
| 2021 | 3,255 | 1.90 | 55% | 44% | 1% |

Table 11.—Prince William Sound Tanner crab test fishery sampled by sex, and percentage of each shell condition category for sublegal male crab sampled, from onboard observers, 2020–2021.

| Year | Total crab sampled | No. female crab sampled | No. male crab sampled | Percent sublegal male crab | Percent sublegal male new shell | Percent sublegal male old shell | Percent sublegal male very old shell |
|------|-----------------------|----------------------------|--------------------------|----------------------------------|---------------------------------------|---------------------------------------|--|
| 2020 | 1,937 | 6 | 1,931 | 35% | 77% | 20% | 3% |
| 2021 | 3,852 | 9 | 3,843 | 15% | 79% | 20% | 1% |

Note: All of the catch was sampled, including discarded female and sublegal male crab.

Table 12.—Prince William Sound Tanner crab test fishery, harvested crab carapace width size categories, corresponding percentages of the total, and average carapace width, 2020–2021.

| Carapace width | 2020 | 2021 |
|-----------------------------|------|------|
| ≤130 mm | 22% | 19% |
| >130-140 mm | 43% | 48% |
| >140-150 mm | 27% | 27% |
| >150 mm | 7% | 6% |
| Average carapace width (mm) | 137 | 137 |

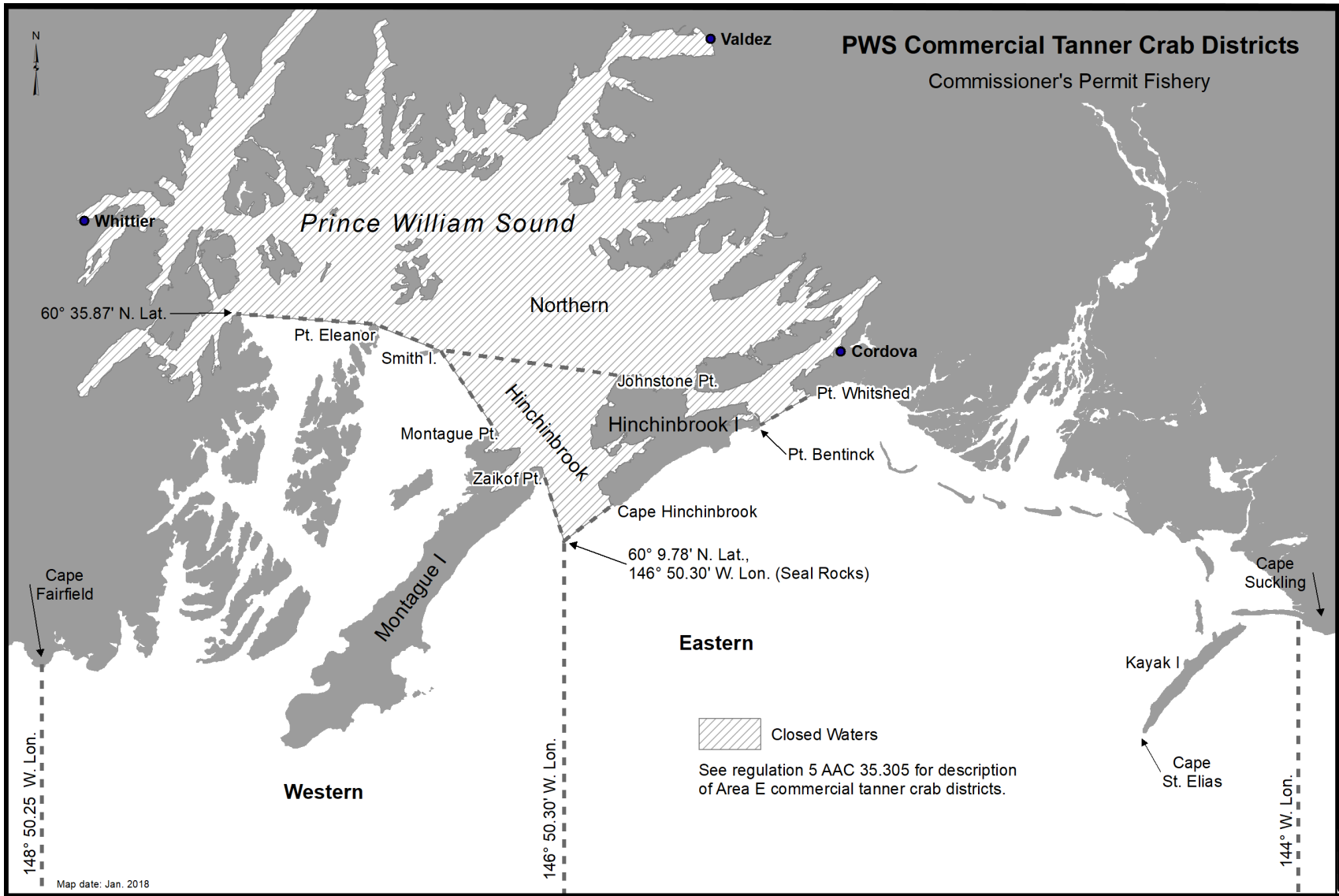


Figure 1.—Prince William Sound Tanner crab fishery districts.

Note: Commissioner's permit fishery was only open in Eastern and Western Districts.

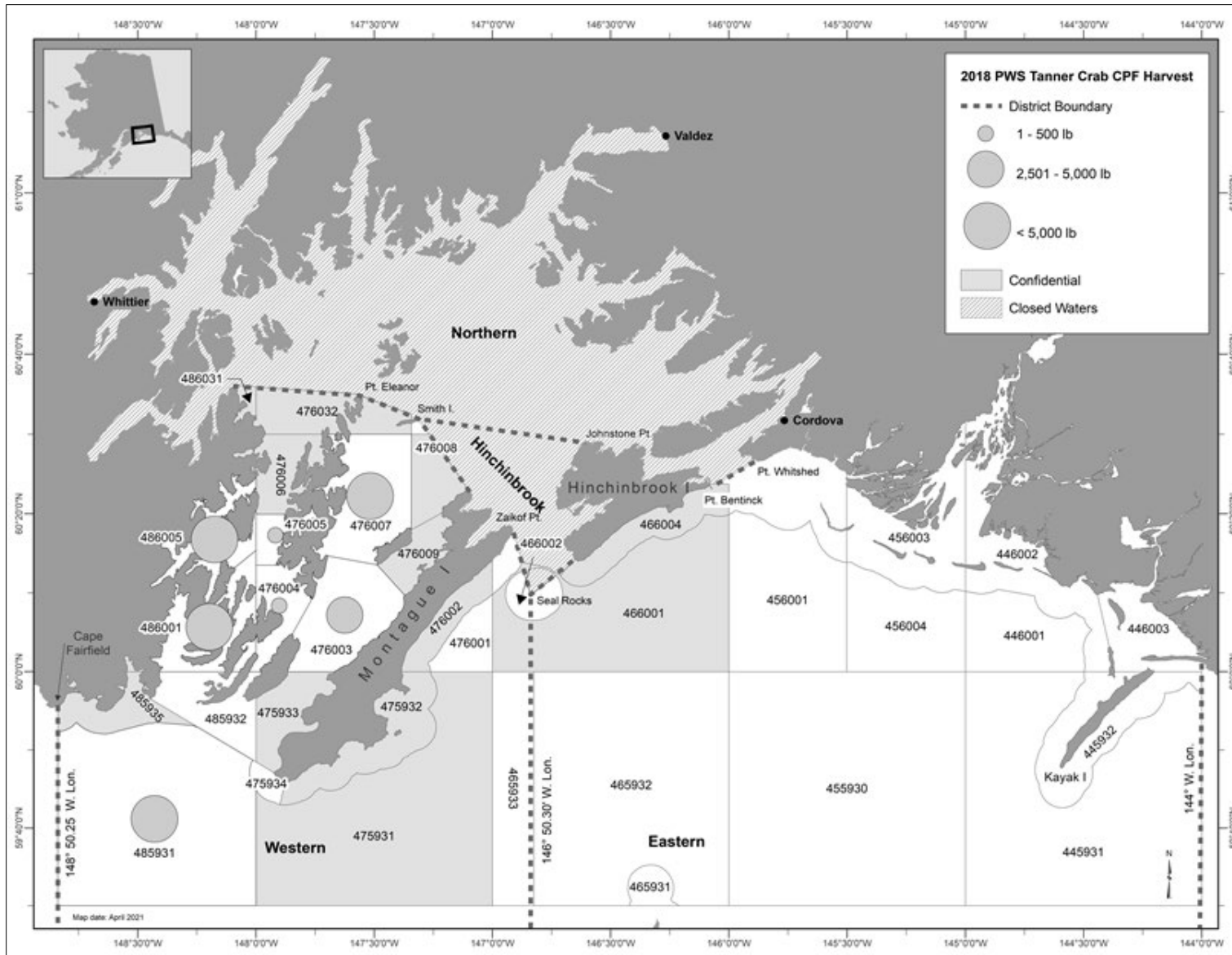


Figure 2.—Prince William Sound Commissioner’s Permit Tanner crab fishery harvest by statistical area, shown by graduated symbols, 2018.

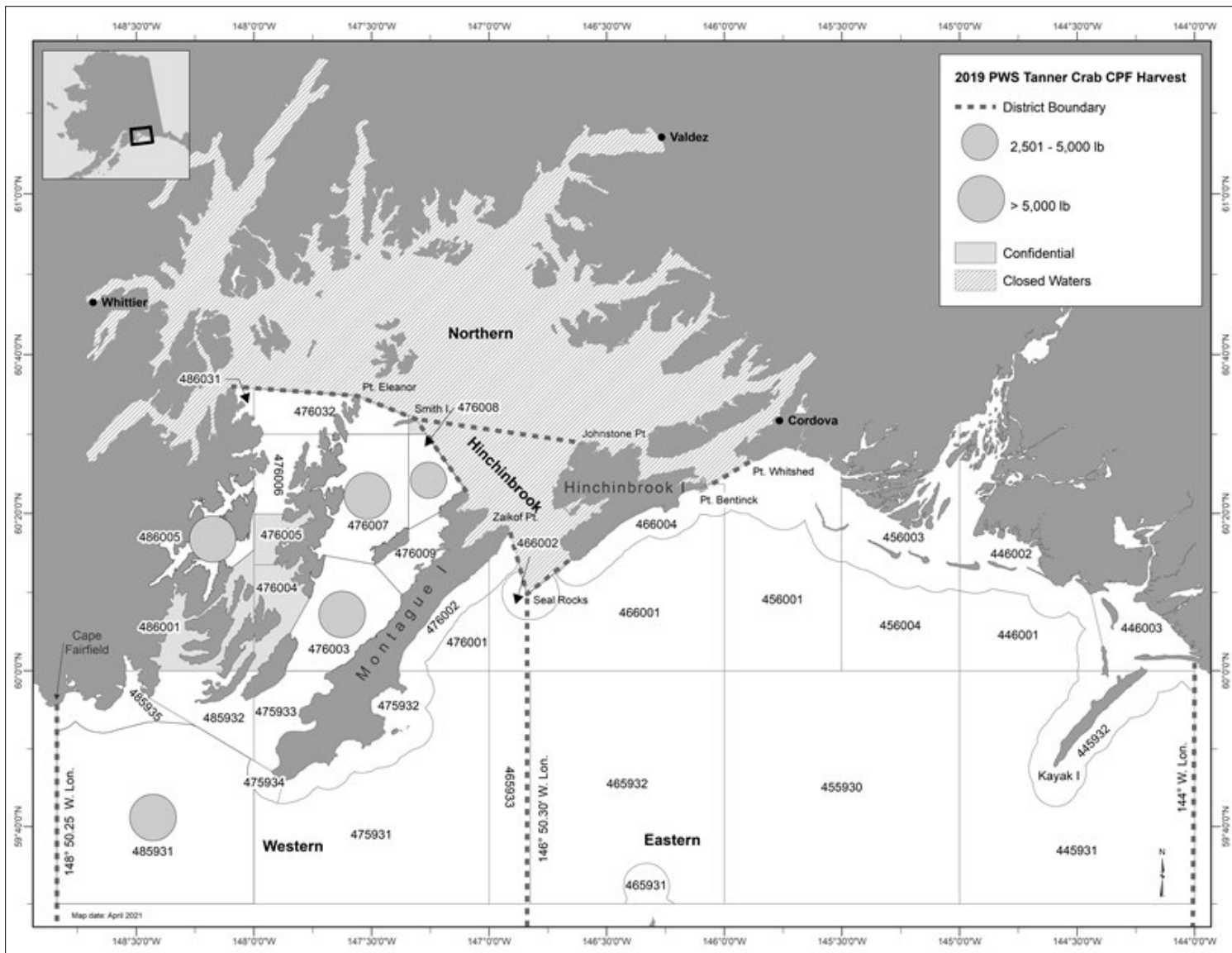


Figure 3.—Prince William Sound Commissioner’s Permit Tanner crab fishery harvest by statistical area, shown by graduated symbols, 2019.

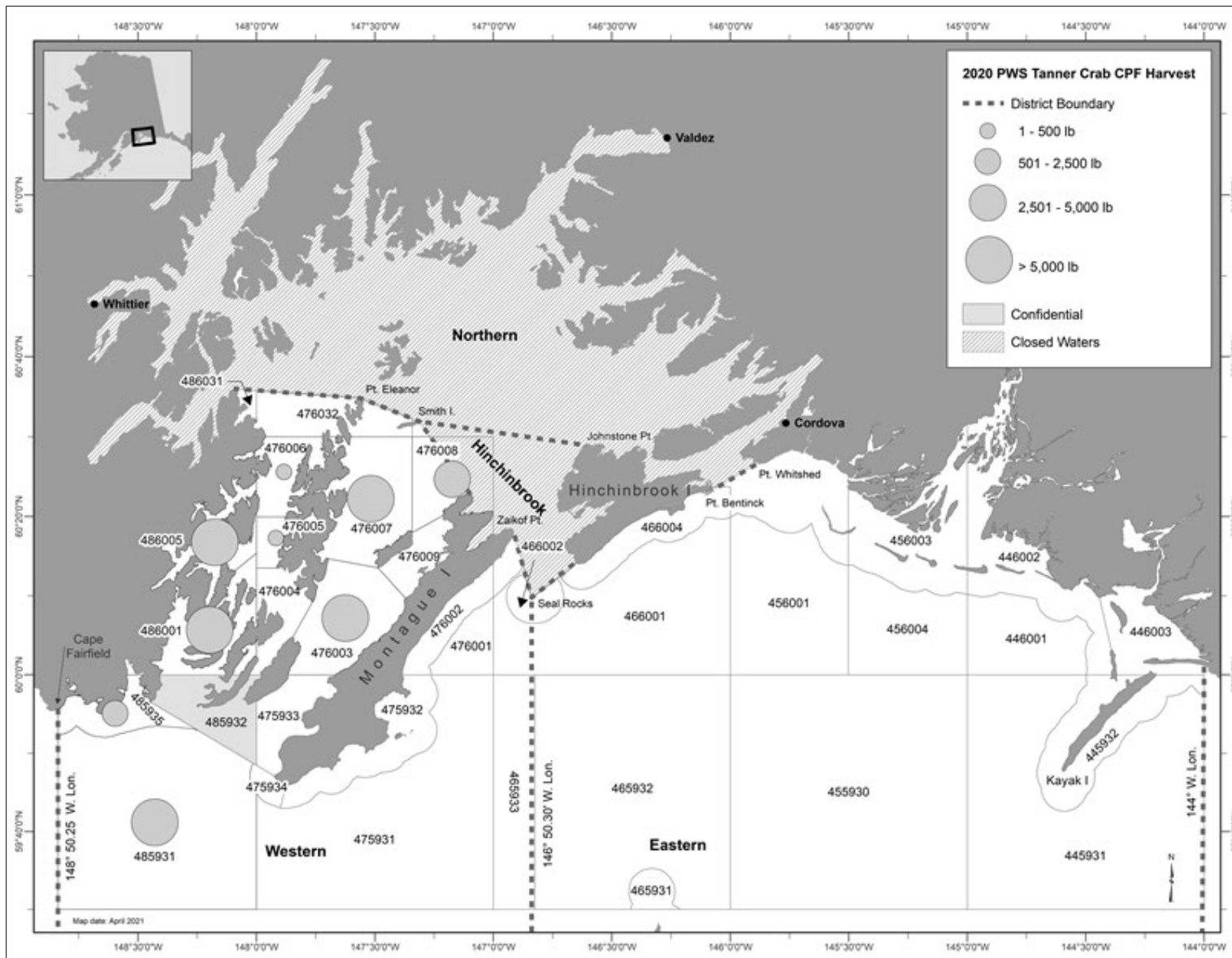


Figure 4.—Prince William Sound Commissioner’s Permit Tanner crab fishery harvest by statistical area, shown by graduated symbols, 2020.

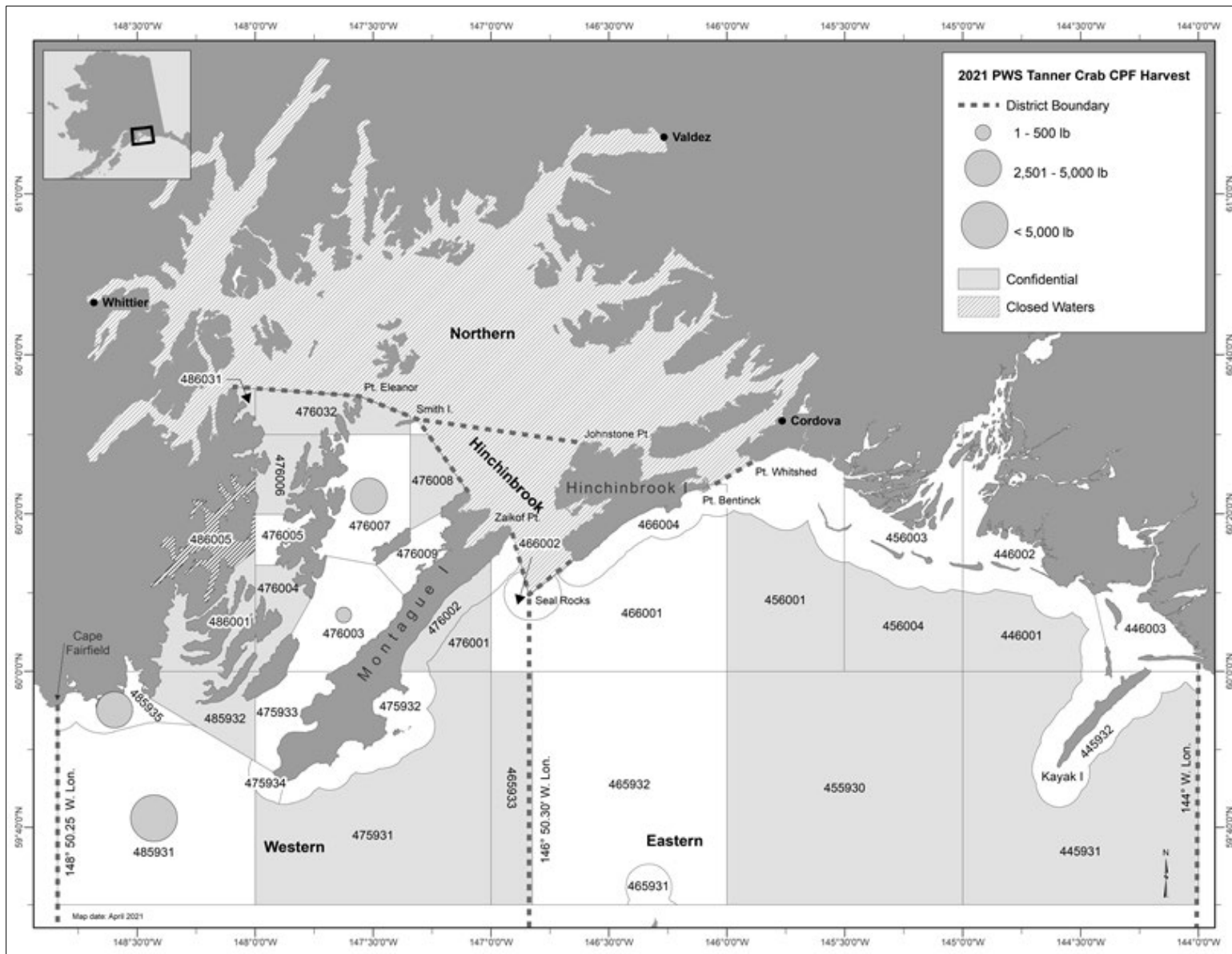


Figure 5.–Prince William Sound Commissioner’s Permit Tanner crab fishery harvest by statistical area, shown by graduated symbols, 2021.

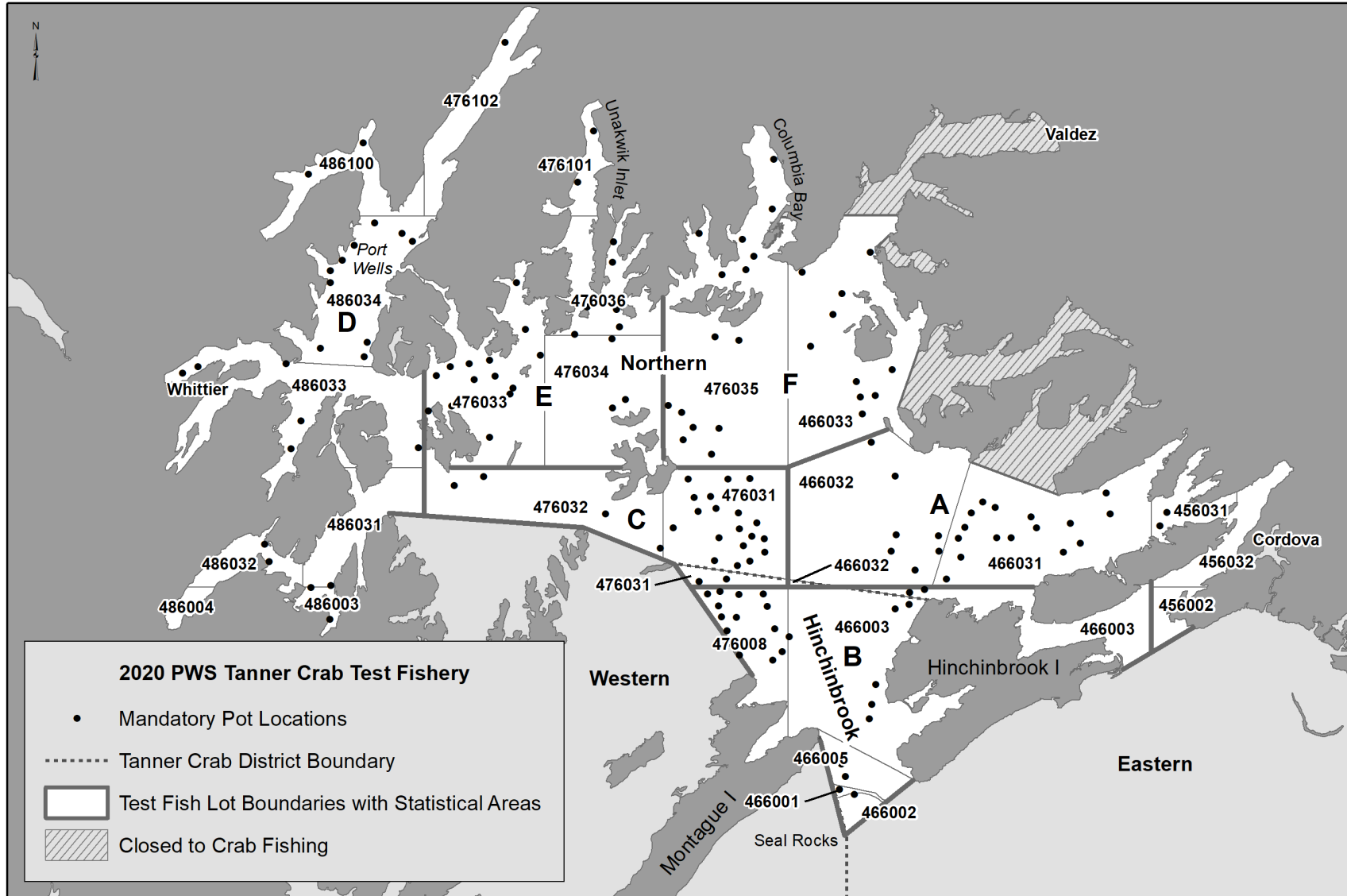


Figure 6.—Prince William Sound Tanner crab test fishery pot locations, statistical areas, and closed waters, 2020.

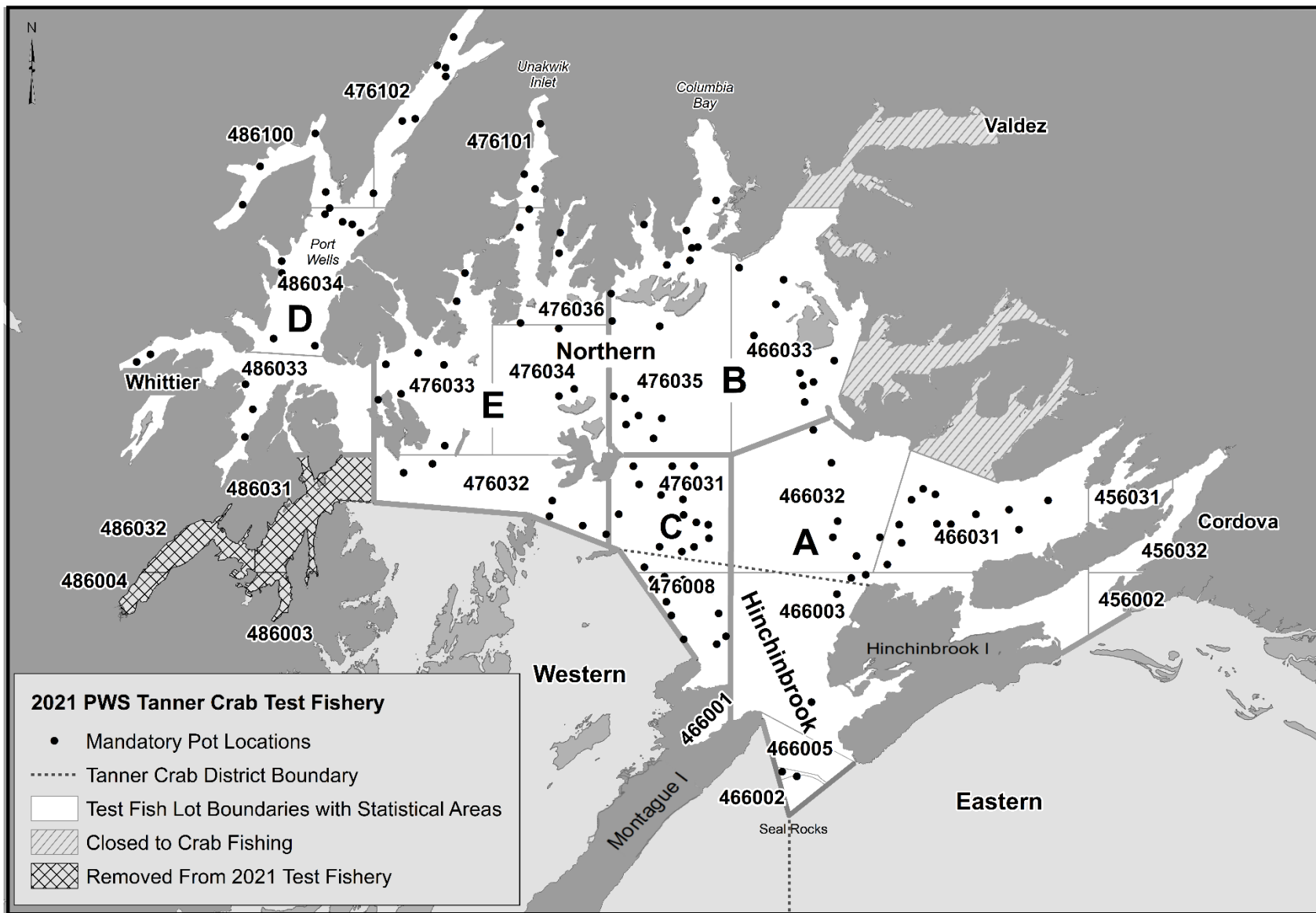


Figure 7.—Prince William Sound Tanner crab test fishery, Lots A–E, mandatory pot locations, statistical areas, and closed waters, 2021.

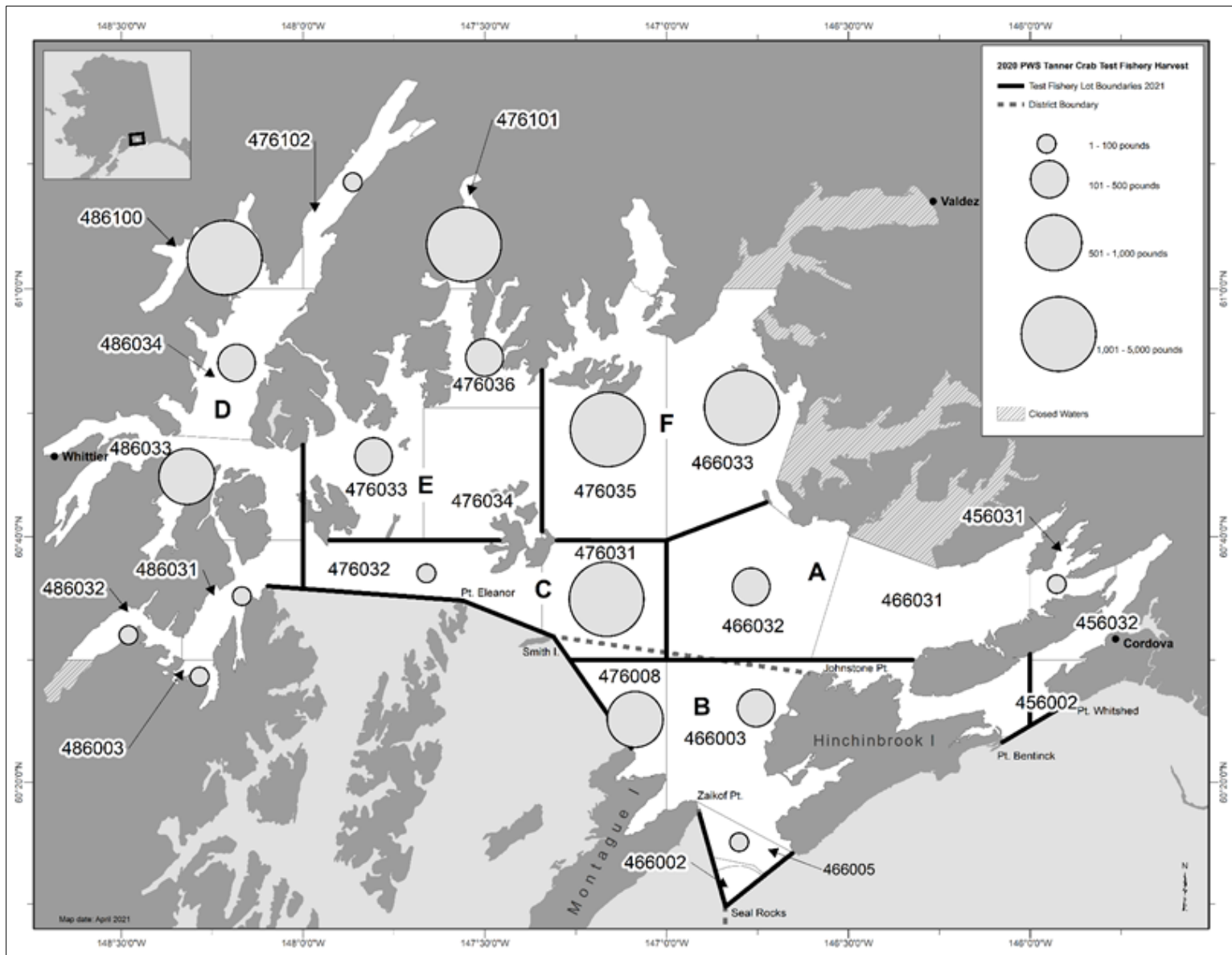


Figure 8.—Prince William Sound Tanner crab test fishery harvest by statistical area, shown by graduated symbols, 2020.

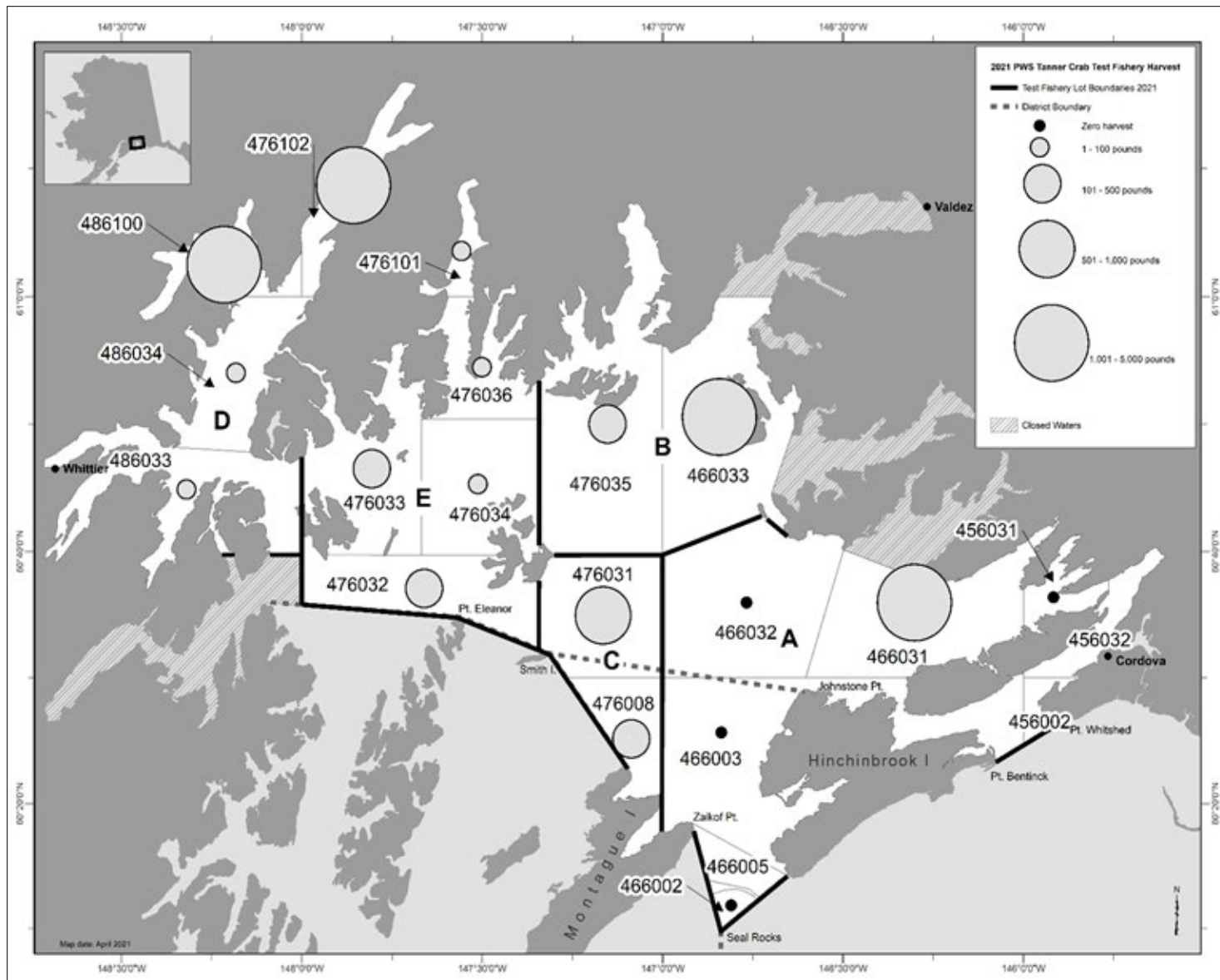


Figure 9.—Prince William Sound Tanner crab test fishery harvest by statistical area, shown by graduated symbols, 2021.