

Prince William Sound Area Tanner Crab

- Current Harvest Strategy and Historical Assessment
- Recommended Harvest Strategy and New Assessment



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Prince William Sound Area Tanner Crab Current Harvest Strategy

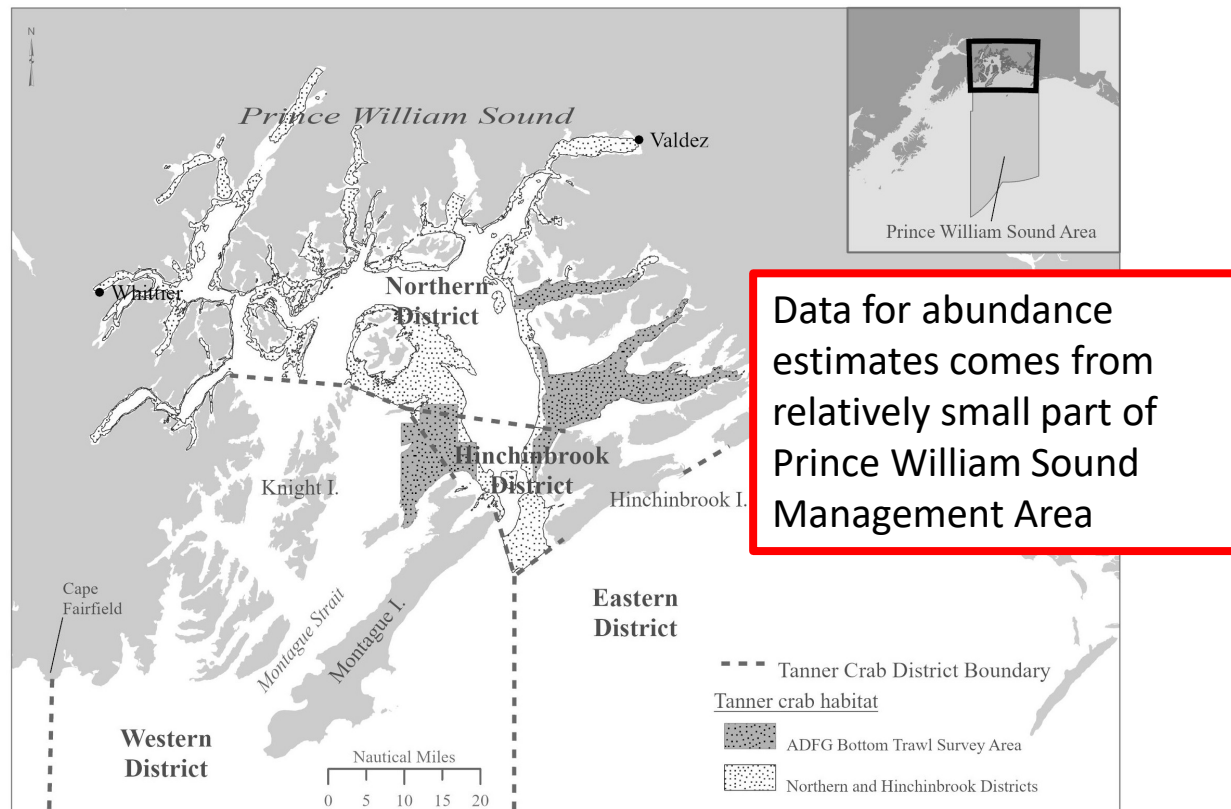
- Registration Area E Tanner Crab Harvest Strategy (5 AAC 35.308) adopted at 2017 BOF.
- Legal size limit reduction.
 - Decreased the male Tanner crab minimum legal size to 5 inches from the historical minimum legal size set at the 1976 BOF of 5.3 inches.
 - Harvest strategies that include a reduced legal size are recommended to use a larger size of crab to set minimum abundance thresholds and harvest levels.

Prince William Sound Area Tanner Crab Current Harvest Strategy

- Threshold Development
 - Minimum abundance threshold to open a commercial fishery set at 50% of the average annual abundance of crab over a defined time period.
 - Time period for annual abundance is 1977–2015.
 - Harvest information to estimate abundance 1977–1988.
 - Bottom trawl survey to estimate abundance 1990–2015.
 - Follows ADF&G approach for Tanner crab fisheries.

Prince William Sound Area Tanner Crab Current Harvest Strategy

- Threshold Development
 - Harvest from Hinchinbrook and Northern districts to estimate abundance 1977–1988.
 - Bottom trawl survey abundance estimates 1990–2015.



Prince William Sound Area Tanner Crab

Current Harvest Strategy

- Threshold in Regulation
 - Bottom trawl survey is used to estimate abundance of Tanner crab in Prince William Sound Area.
 - If abundance estimate meets minimum abundance threshold (200,000 crab), a fishery would open in the entire registration area.

Abundance estimate	Harvest rate	Harvest
200,000 to <300,000	15%	30,000 to 45,000
300,000 to <400,000	20%	60,000 to 80,000
≥400,000	25%	100,000+

Abundance estimates are numbers of historical legal-size crab (≥5.3 inch)

Harvest is numbers of legal-size crab (≥5 inch)

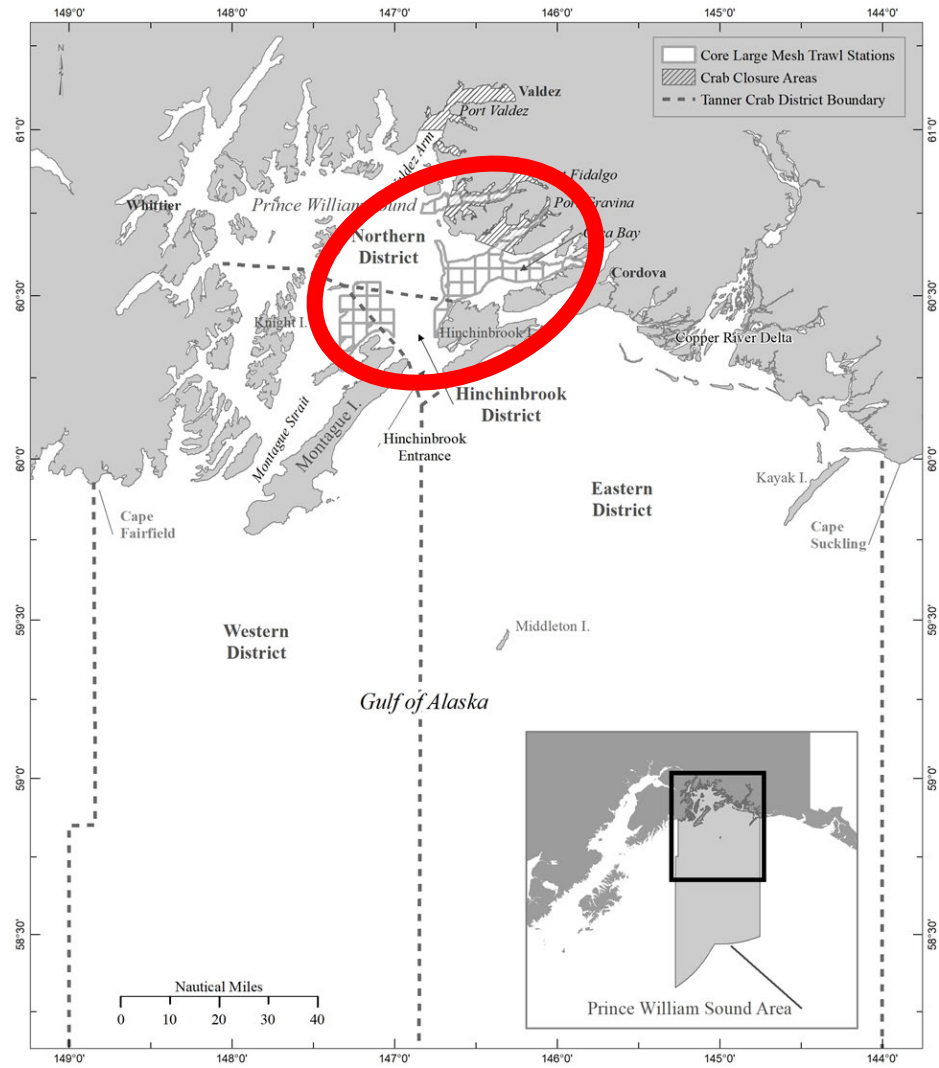
Prince William Sound Area Tanner Crab Current Harvest Strategy

- Historical Trawl Survey Assessment
 - ADF&G conducted a bottom trawl survey to assess Tanner crab from 1990–2019 with a consistent survey area.
 - Survey produced an abundance estimate for the survey area only.
 - Survey abundance estimates are not expanded to districts or to entire registration area.

Prince William Sound Area Tanner Crab Current Harvest Strategy

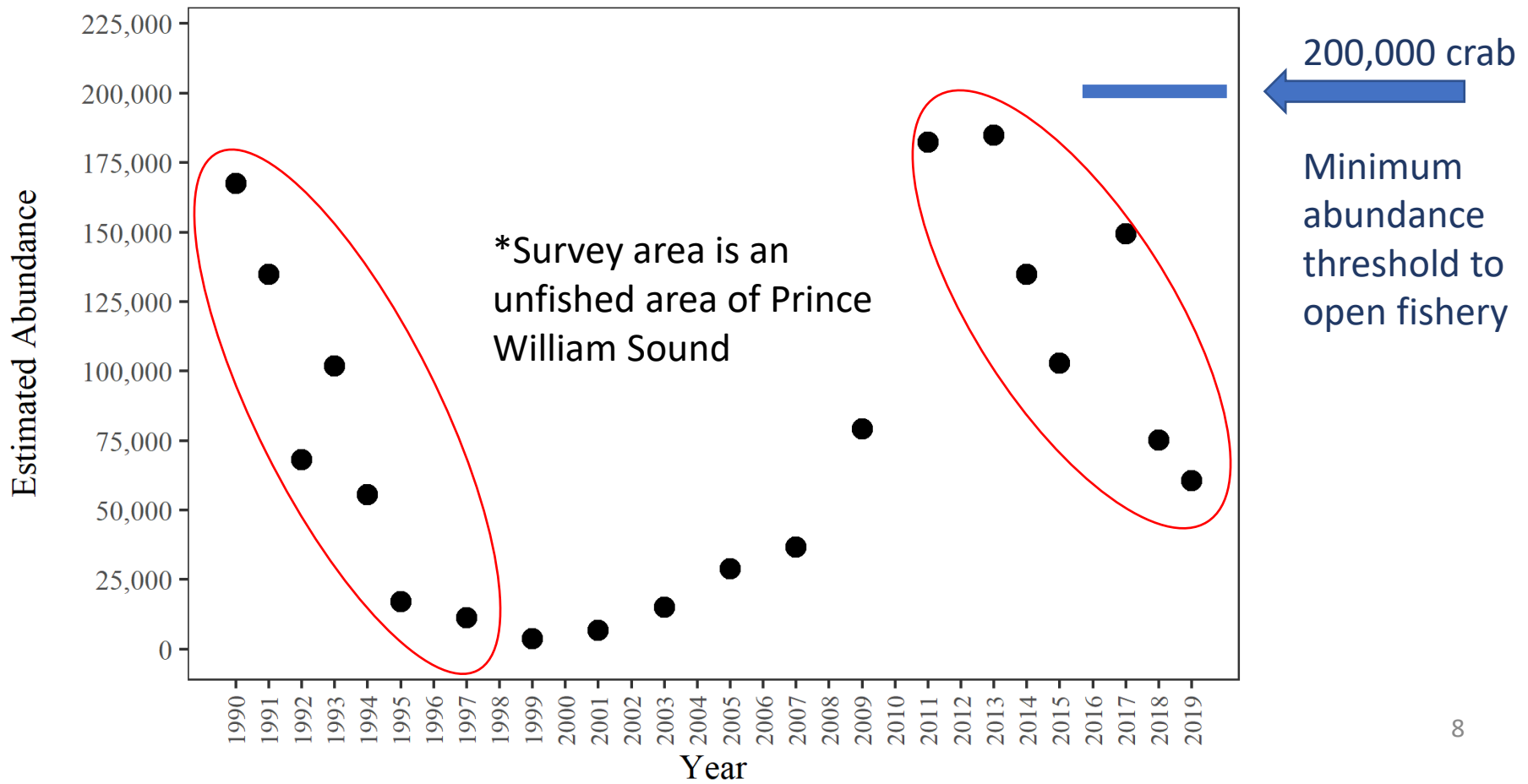
Historical Bottom Trawl Survey Assessment

- Does not assess areas of high harvest during recent Commissioner's Permit fishery.



Prince William Sound Area Tanner Crab Historical Bottom Trawl Assessment

- Survey indicates a recent decrease in abundance similar to the decrease in the 1990s.



Prince William Sound Area Tanner Crab Current Harvest Strategy

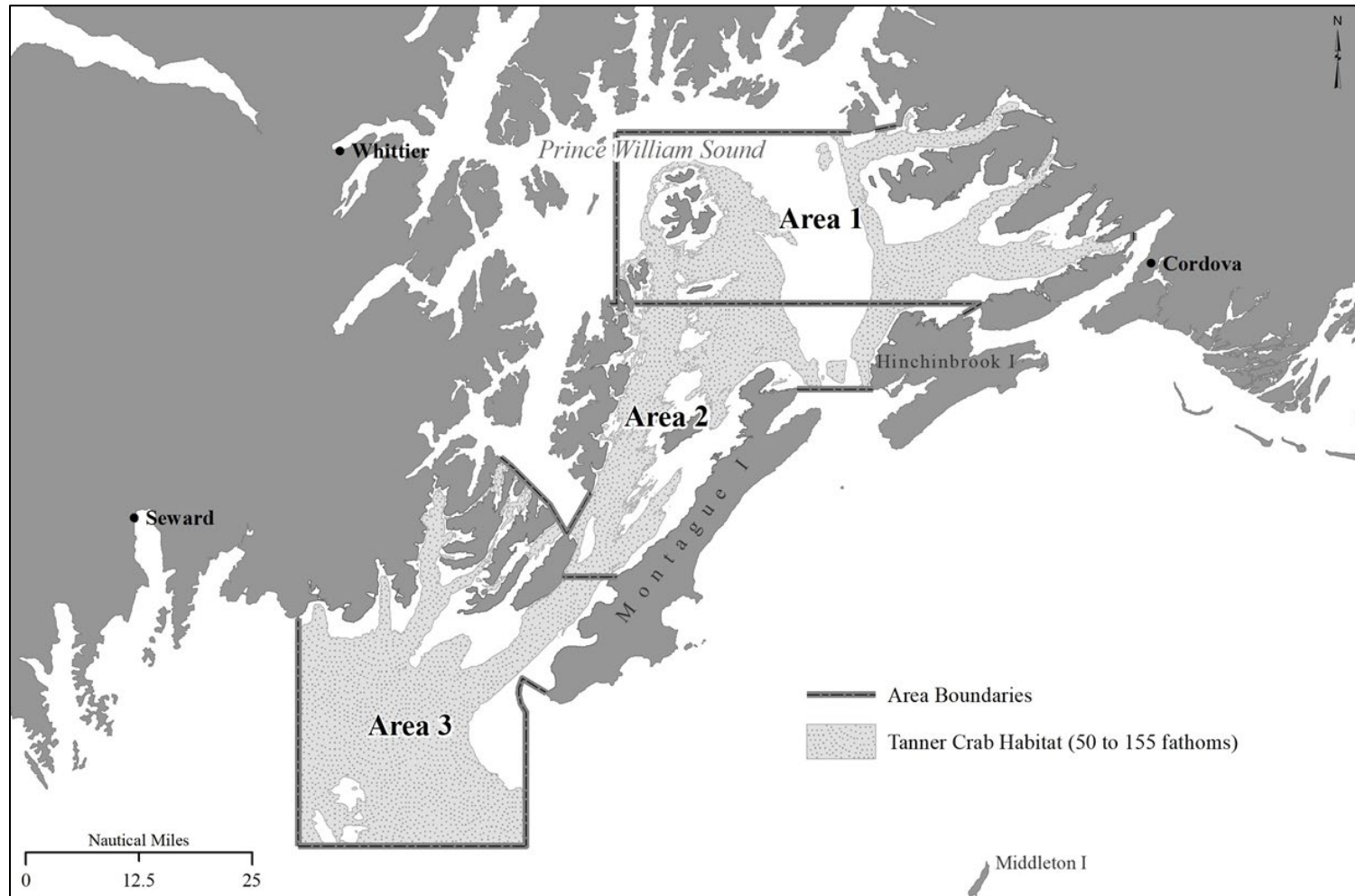
- Issues
 - Data used to develop current harvest strategy thresholds are from a relatively small part of the Prince William Sound Area.
 - Current trawl survey design generates abundance estimate for survey area only.
 - Current trawl survey does not assess areas of recent Commissioner's permit fishery harvest.
 - If threshold is met, entire registration area would be open for fishery.
 - If entire registration area open, current trawl survey design would not provide abundance estimates in other parts of the Prince William Sound Area where harvest occurs.

Prince William Sound Area Tanner Crab Recommended Harvest Strategy

- Threshold Development
 - Follow approach in Registration Area E Tanner Crab Harvest Strategy (5 AAC 35.308).
 - Develop new areas that encompass more of the Registration Area.
 - Develop a time-series of abundance estimates for each area.
 - Harvest information to estimate abundance 1977–1988.
 - Bottom trawl survey to estimate abundance 1990–2015.
 - Harvest rates developed with step-wise approach based on abundance estimates.

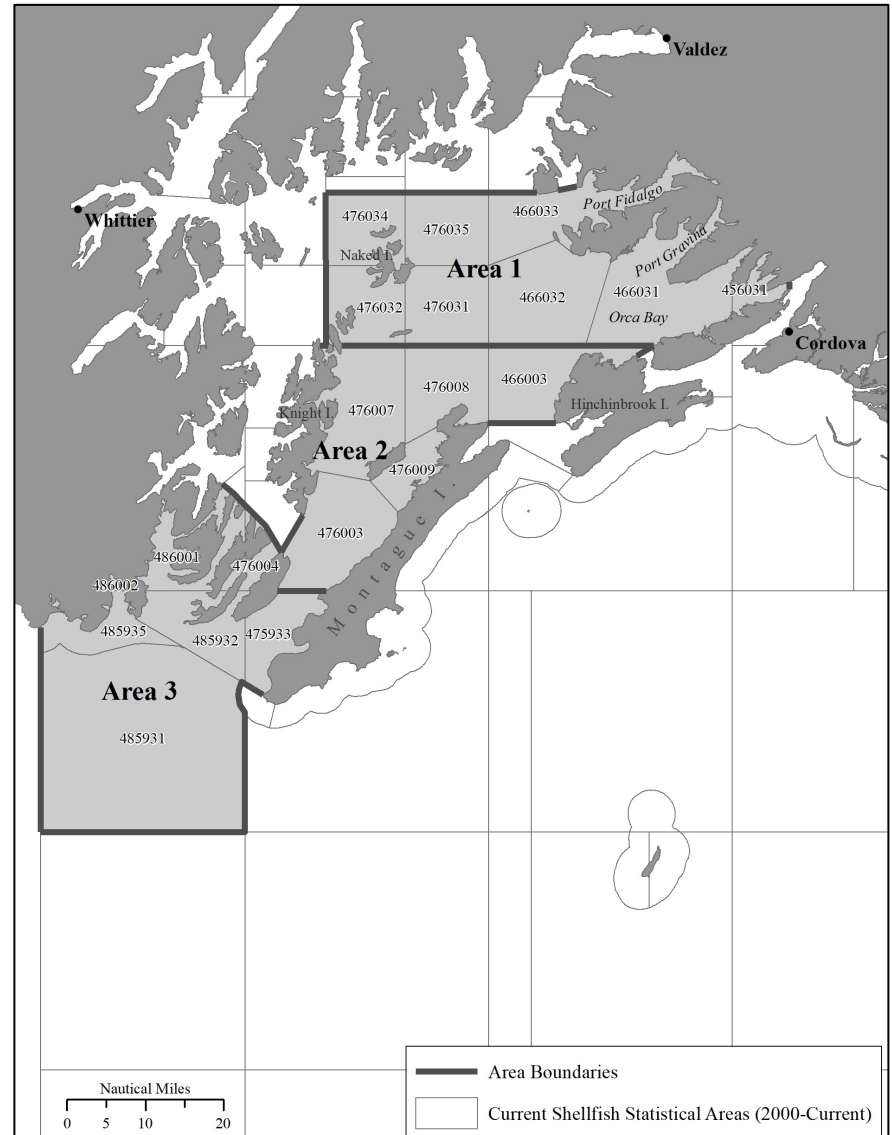
Prince William Sound Area Tanner Crab Recommended Harvest Strategy

- Identify new areas with Tanner crab habitat that are trawlable.



Prince William Sound Area Tanner Crab Recommended Harvest Strategy

- Identify new areas:
 - Align with latitude and longitude.
 - Align with current statistical areas.

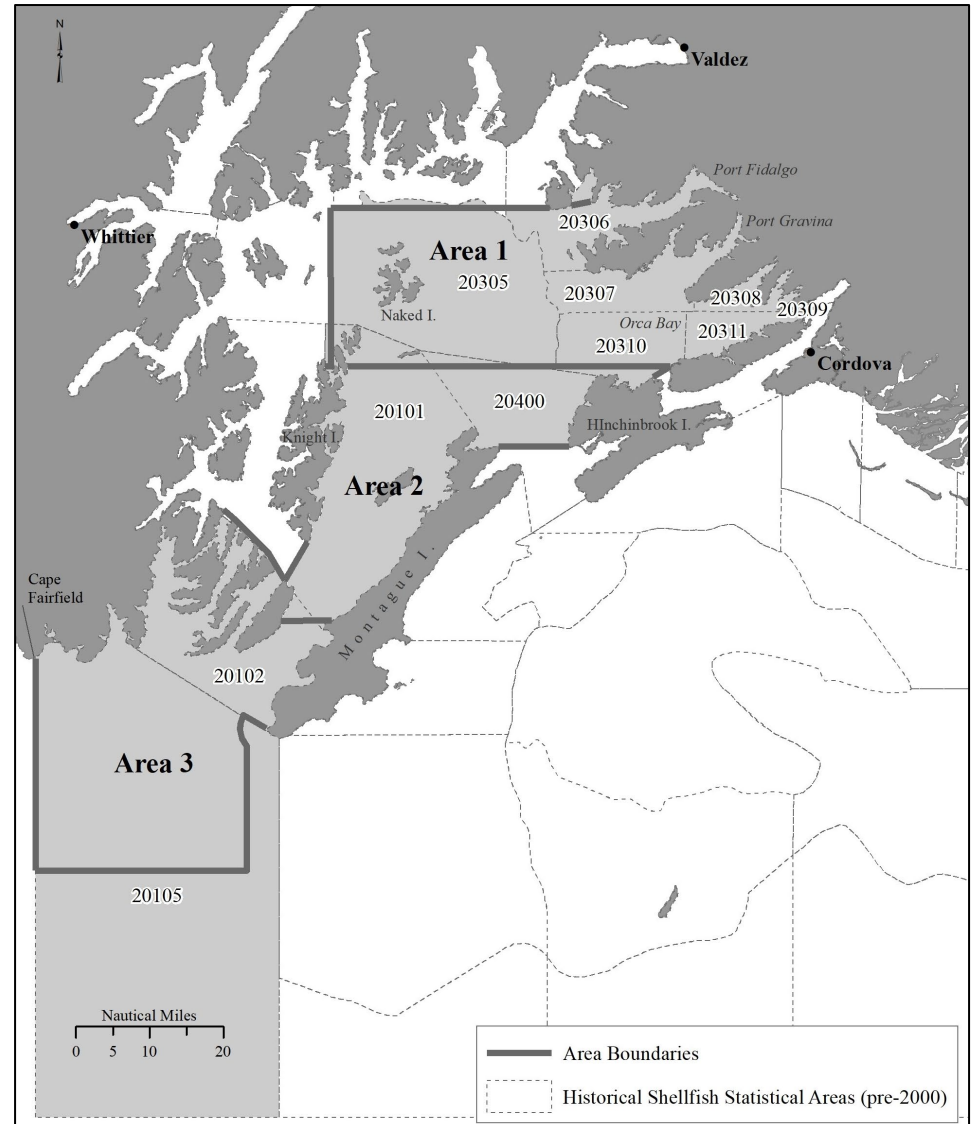


Prince William Sound Area Tanner Crab Recommended Harvest Strategy

- Threshold Development
 - Harvest information to estimate abundance 1977–1988.
 - Since the 2017 BOF, the ADF&G Fish Ticket database has been updated to estimate historical statistical area specific harvest.
 - Historical harvest specific to historical statistical areas in each of the 3 new areas.

Prince William Sound Area Tanner Crab Recommended Harvest Strategy

- Identify new areas:
 - Align as closely as possible with historical statistical areas



Prince William Sound Area Tanner Crab Recommended Harvest Strategy

- Threshold Development
 - Bottom trawl survey to estimate abundance for each area 1990–2015.
 - The annual average CPUE (crab per nmi²) from the historical trawl survey multiplied by the Tanner crab habitat in each of the proposed areas.
 - Assumes density of crab was similar between the historical trawl survey area and new proposed areas during a period when harvest was not occurring.

Prince William Sound Area Tanner Crab Recommended Harvest Strategy

- Minimum abundance threshold to open fishery is 50% of average annual abundance estimates from 1977–2015.

Proposed area	Average abundance	Threshold
1	186,600	93,300
2	210,000	105,000
3	221,000	110,500

- Abundance and thresholds are numbers of historical legal-size (≥ 5.3 inch) male Tanner crab

Prince William Sound Area Tanner Crab Recommended Harvest Strategy

Area 1

Abundance Estimate	Harvest Rate	Harvest
93,300 to <139,900	15%	14,000 to 21,000
139,900 to <186,600	20%	28,000 to 37,300
≥186,600	25%	46,700+

Area 2

Abundance Estimate	Harvest Rate	Harvest
105,000 to <157,500	15%	15,800 to 23,600
157,500 to <210,000	20%	31,500 to 42,000
≥210,000	25%	52,500+

Area 3

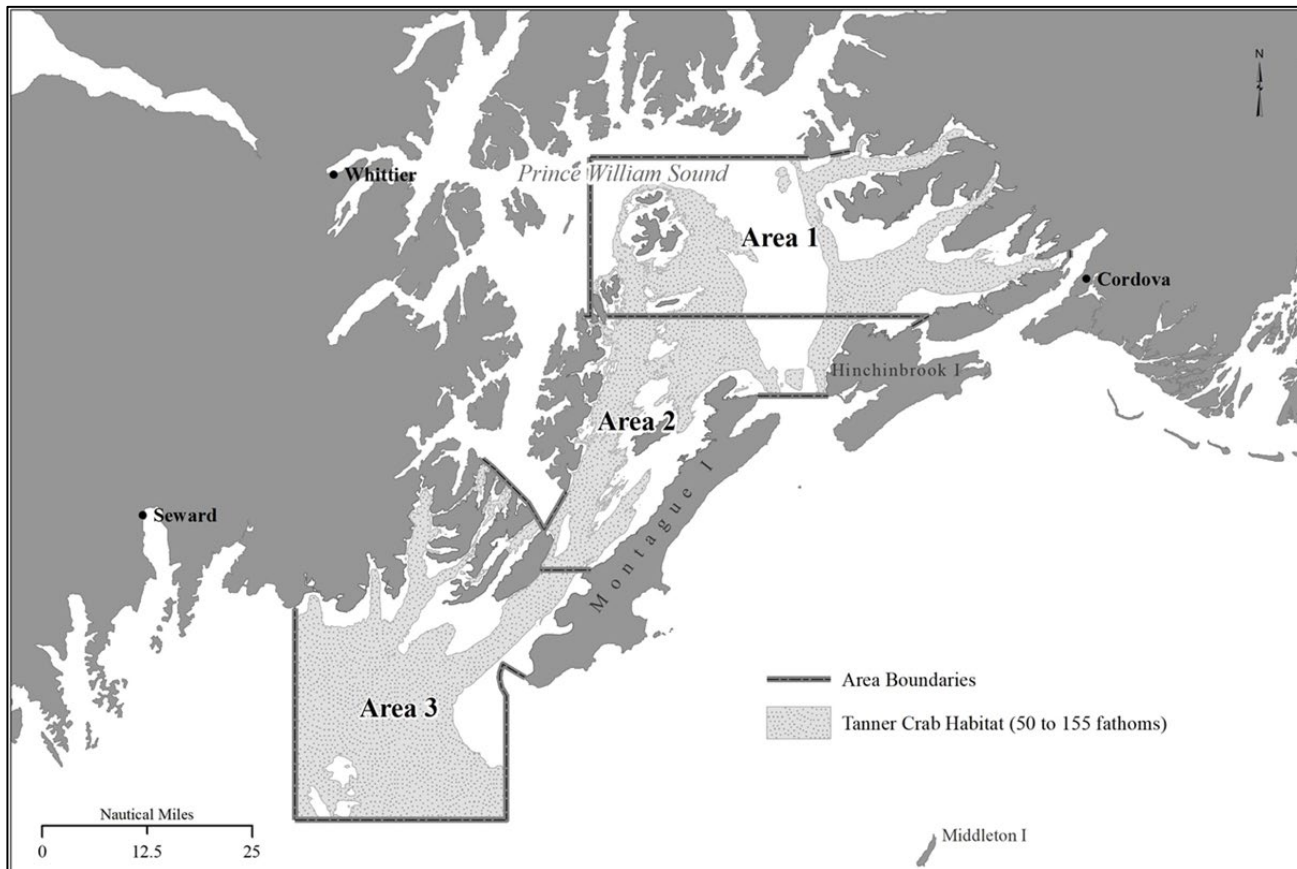
Abundance Estimate	Harvest Rate	Harvest
110,500 to <165,800	15%	16,600 to 24,900
165,800 to <221,000	20%	33,200 to 44,200
≥221,000	25%	55,300+

Abundance estimates are numbers of historical
legal-size crab (≥5.3 inch)

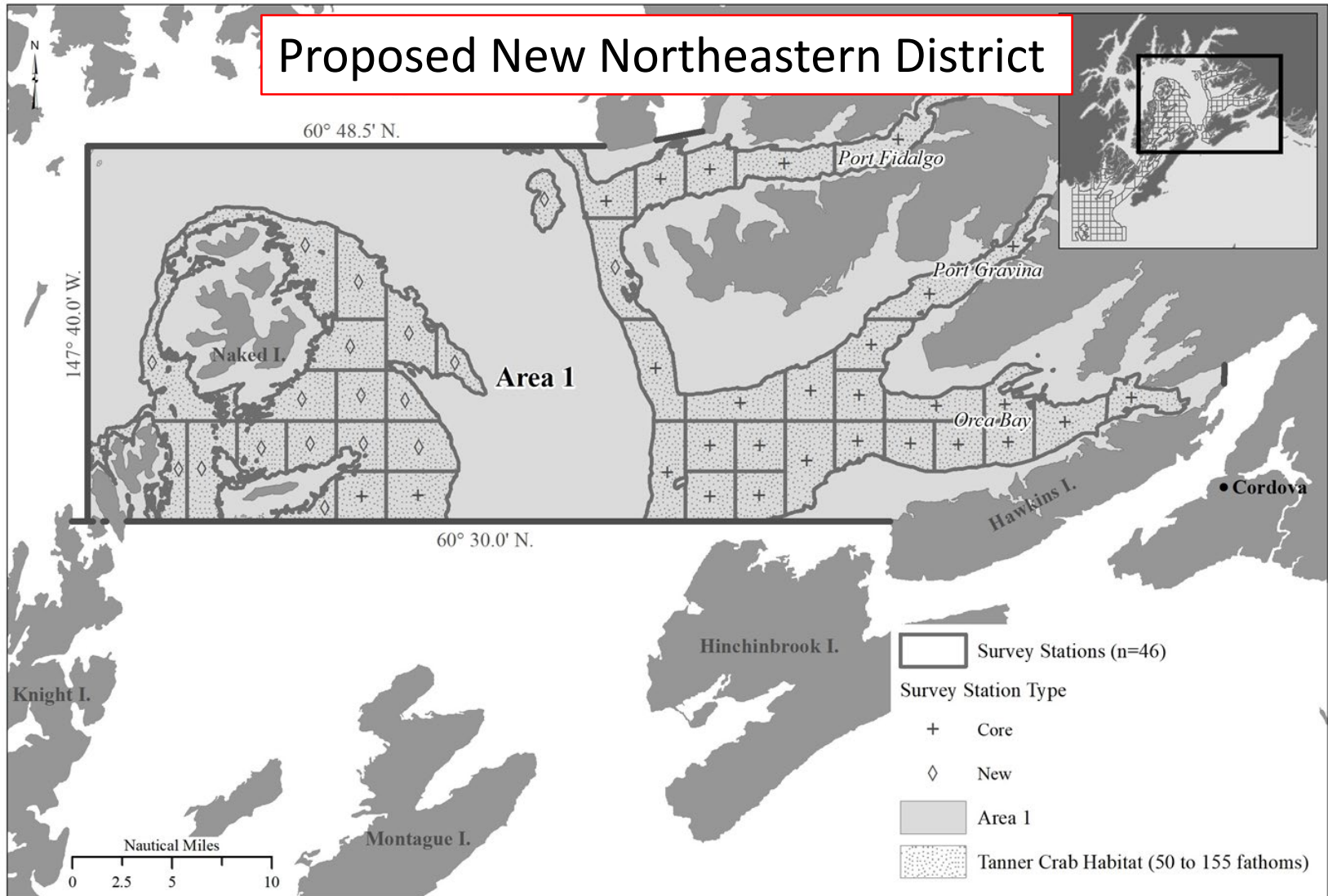
Harvest is numbers of legal-size crab (≥5 inch)

Prince William Sound Area Tanner Crab New Bottom Trawl Assessment

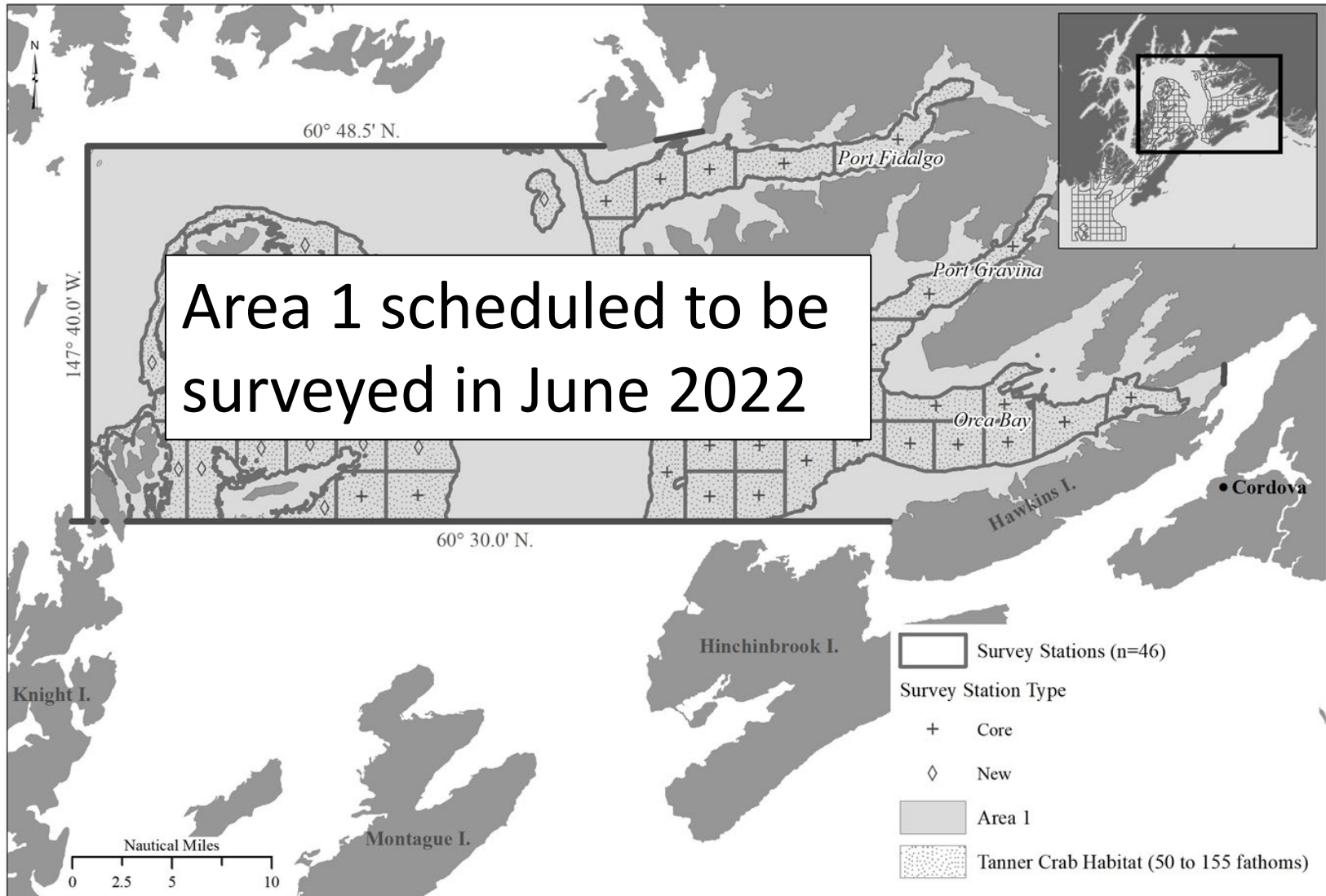
- Design
 - Follow methods of historical ADF&G bottom trawl survey to develop a fixed station design within Tanner crab habitat.



Prince William Sound Area Tanner Crab New Bottom Trawl Assessment Area 1



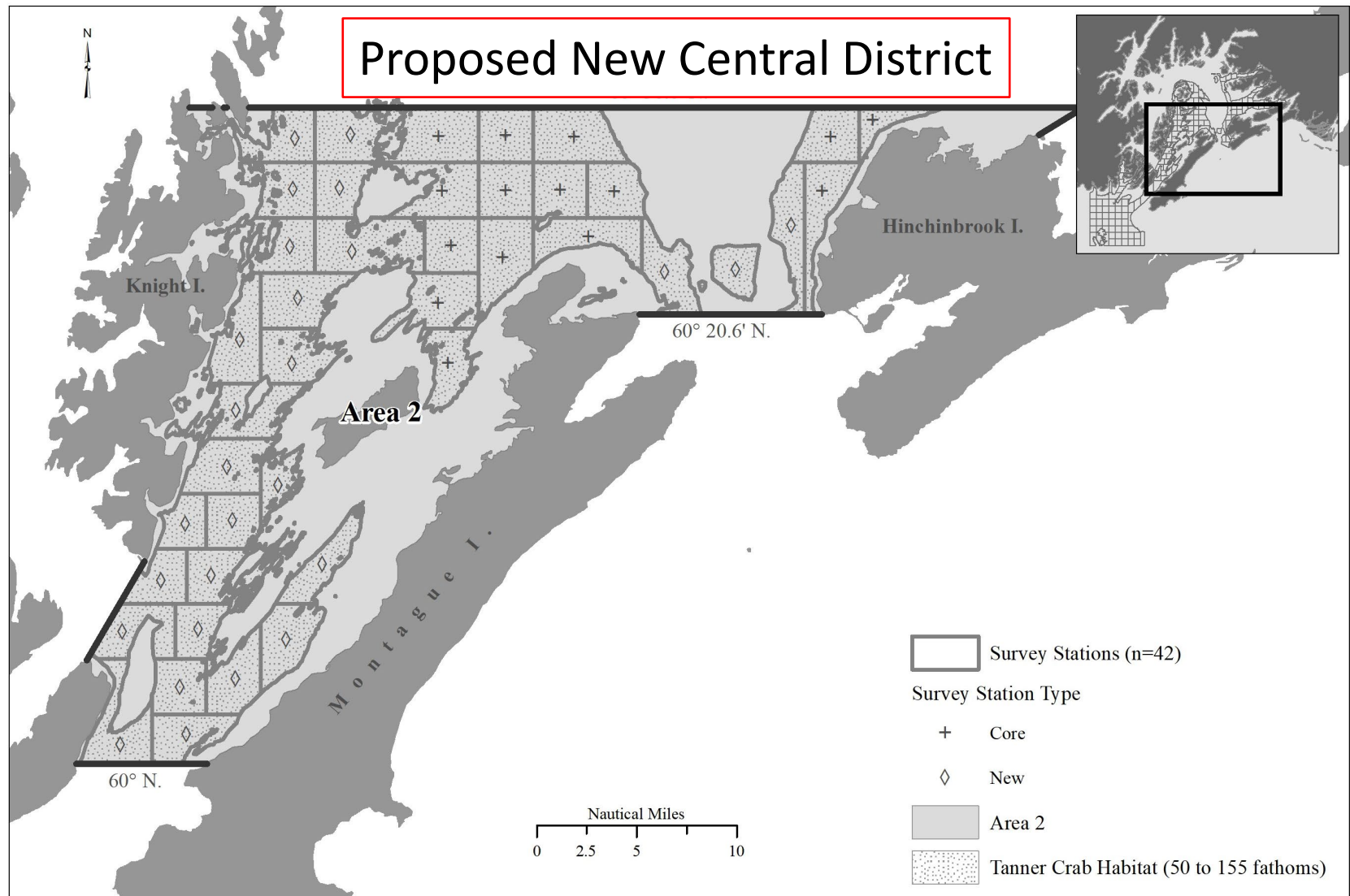
Prince William Sound Area Tanner Crab New Bottom Trawl Assessment Area 1



Prince William Sound Area Tanner Crab

New Bottom Trawl Assessment

Area 2



Prince William Sound Area Tanner Crab

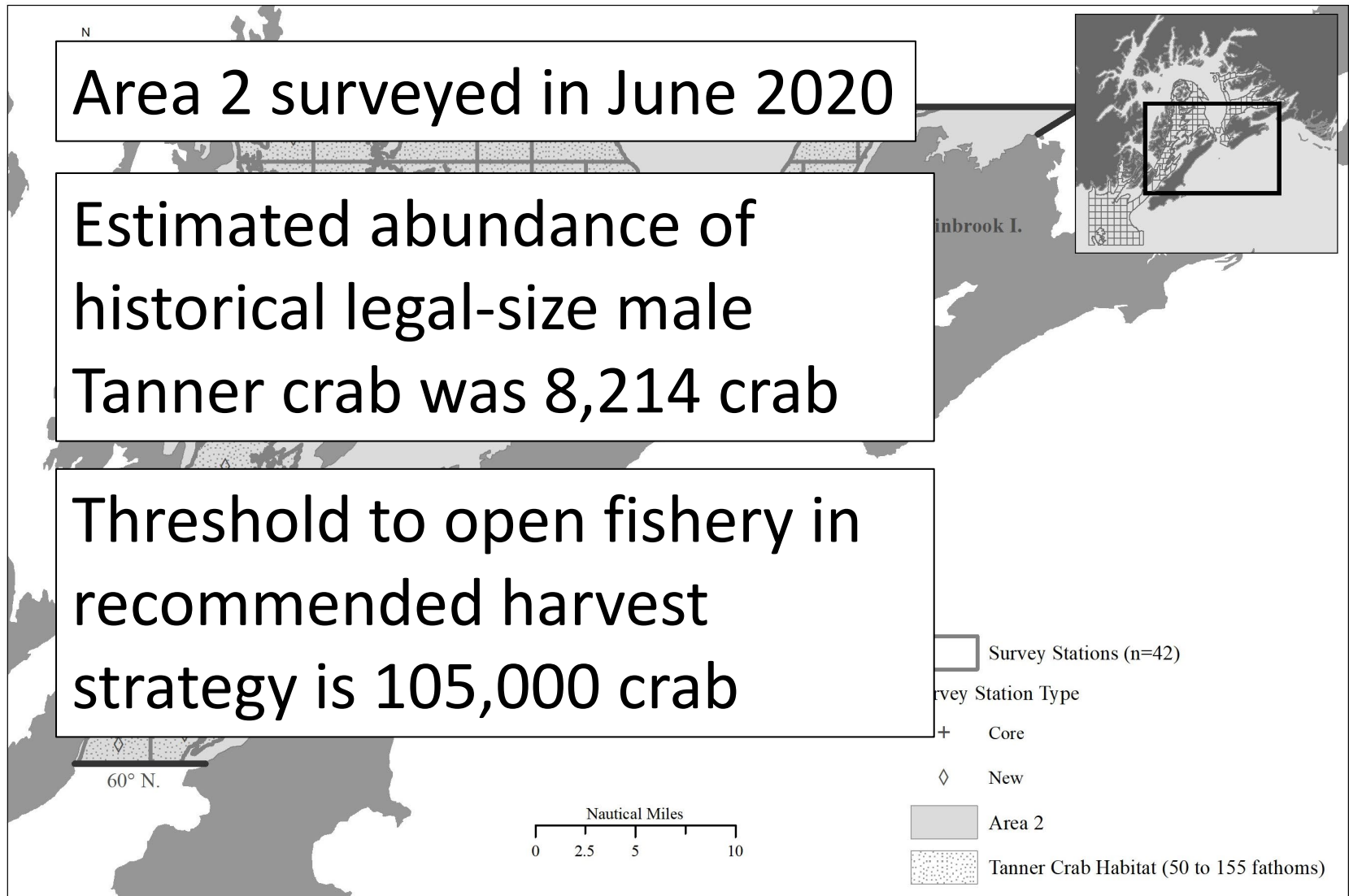
New Bottom Trawl Assessment

Area 2

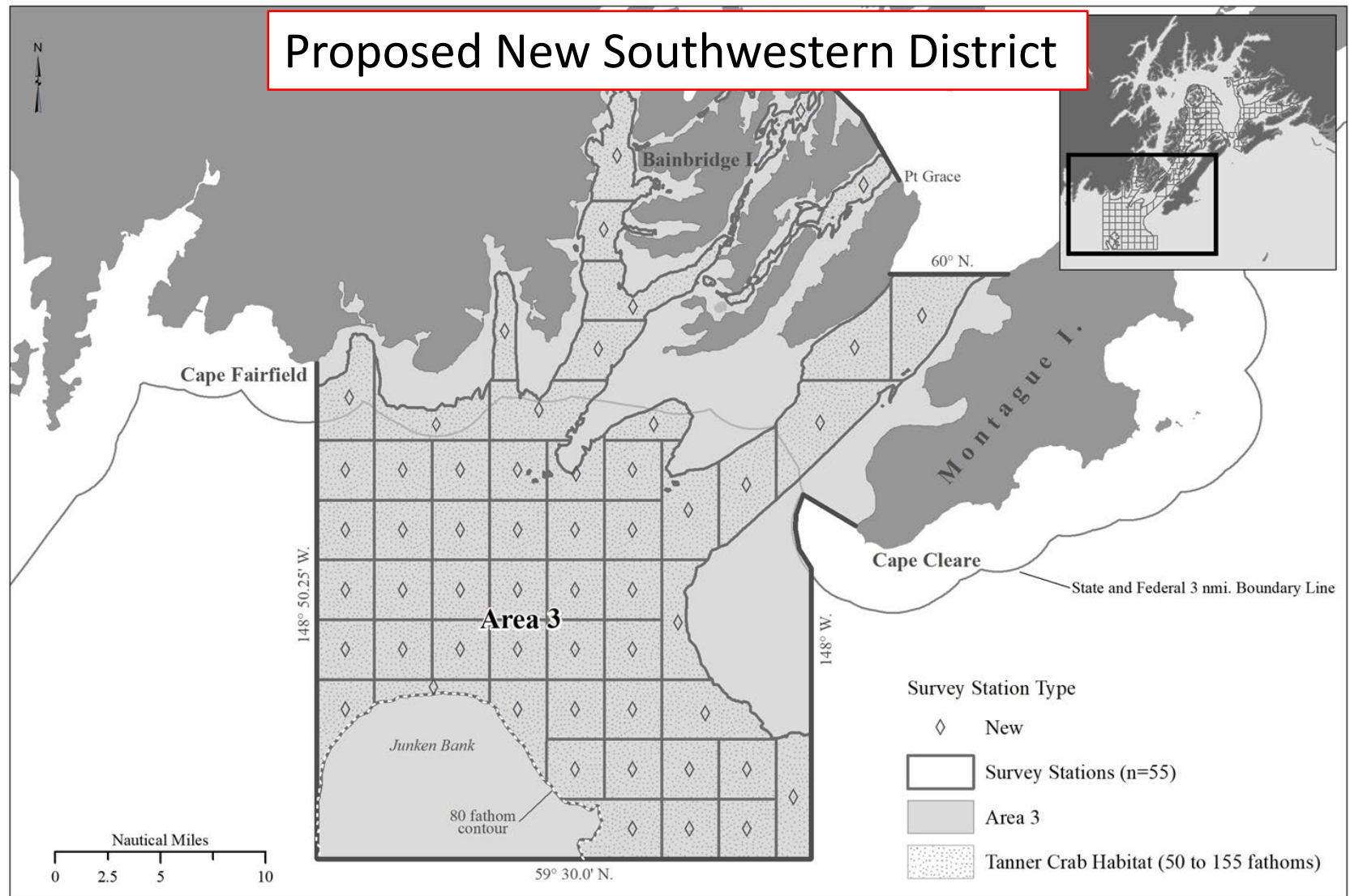
Area 2 surveyed in June 2020

Estimated abundance of historical legal-size male Tanner crab was 8,214 crab

Threshold to open fishery in recommended harvest strategy is 105,000 crab



Prince William Sound Area Tanner Crab New Bottom Trawl Assessment Area 3

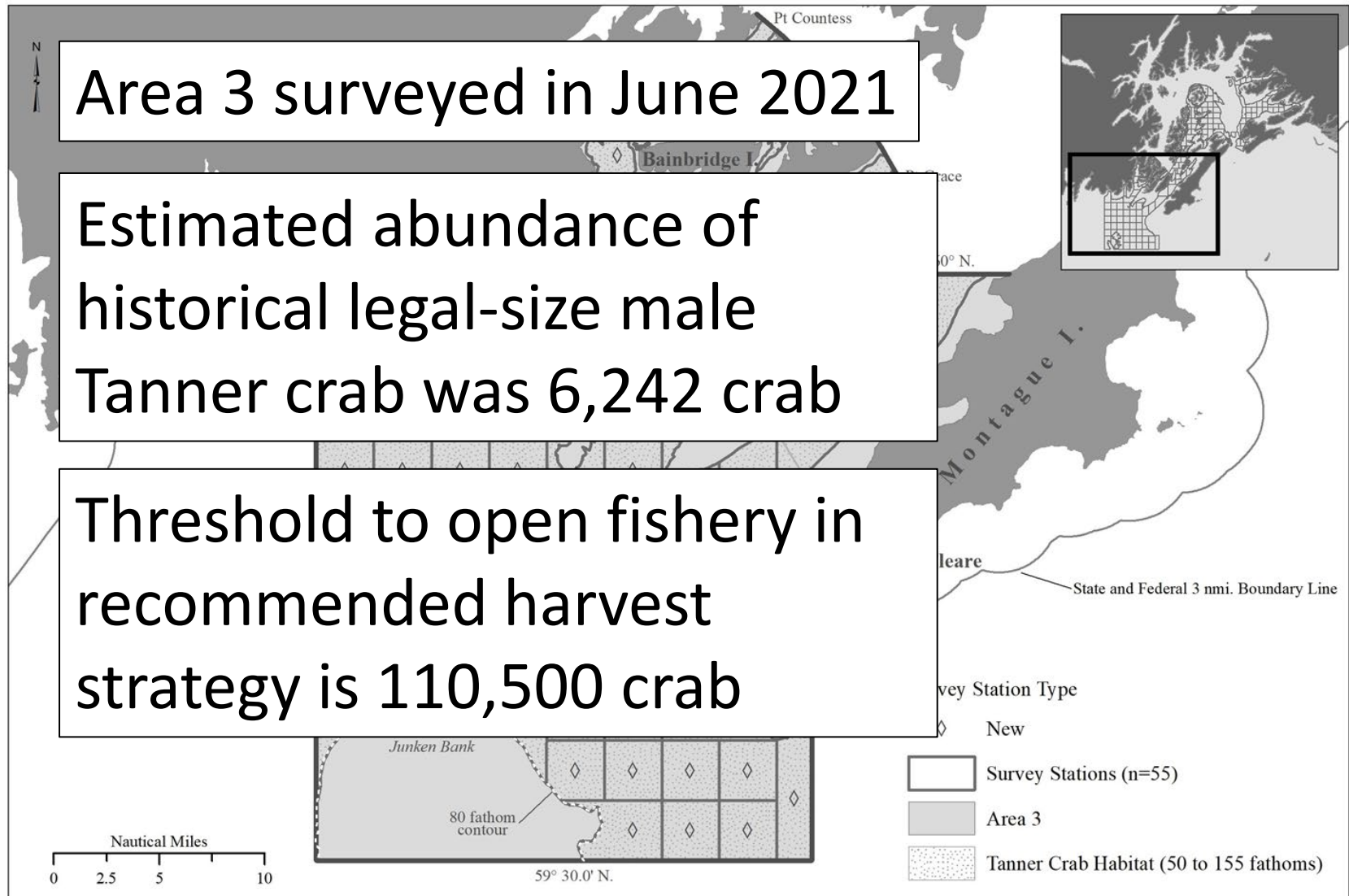


Prince William Sound Area Tanner Crab New Bottom Trawl Assessment Area 3

Area 3 surveyed in June 2021

Estimated abundance of historical legal-size male Tanner crab was 6,242 crab

Threshold to open fishery in recommended harvest strategy is 110,500 crab



Prince William Sound Area Recommendations

- Abundance estimate for Area 2 (proposed new Central District) was well below the minimum abundance threshold to open a fishery and thus should not open.
- Abundance estimate for Area 3 (proposed new Southwestern District) was well below the minimum abundance threshold to open a fishery and thus should not open.
- There is not an abundance estimate for Area 1 (proposed new Northeastern District) and thus should not open for commercial fishery.

Prince William Sound Area Tanner Crab References

- Prince William Sound Tanner Crab Commercial Fishery Harvest Strategy Recommendations and Proposed Assessment, 2021
Rhea-Fournier, W., C. Russ, and M. Byerly. 2021
- Operational Plan: Bottom trawl survey for Tanner crab in Prince William Sound, 2020.
Rhea-Fournier, W. J., M. Byerly, and C. Russ. 2020.
- Operational Plan: Bottom trawl survey for Tanner crab in Prince William Sound, 2021.
Rhea-Fournier, W. J., M. Byerly, and C. Russ. 2021.
- Bottom trawl survey for Tanner crab in Prince William Sound, 2017–2019.
Rhea-Fournier, W. J., M. Byerly, and C. Russ. *In prep.*
- Bottom trawl survey for Tanner crab in Prince William Sound, 2020.
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