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Institute for Marine and Antarctic Studies

# 2024 TASMANIAN SCALLOP FISHERY PRESEASON SURVEY REPORT

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**June 2024**

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# Introduction

The 2024 Tasmanian Scallop Fishery (TSF) pre-season assessment was comprised of targeted and exploratory commercial dredge surveys yielding density and size structure in the TSF areas. In contrast to 2023, targeted surveys were only conducted in the North West (Area 1; Table 1, Appendix 2) in four of the five sub-regions.

# Survey methods

## Dredge Surveys

Dredge surveys consisted of targeted and exploratory tows in the 2024 TSF preseason survey (Table 1, Figure 1).

One targeted survey was conducted in Area 1, the North West, consisting of 28 sites across four sub-areas. IMAS developed a random survey design for the targeted dredge survey to ensure it reflected the variation in density of scallops across the defined area of interest. Fishers participating in targeted dredge surveys were commissioned by NRE to sample in accordance with the IMAS random survey design and did not retain scallops. Tows were ~500 m in length, calculated from the start and finish coordinates. The sites towed were randomly assigned within the boundaries of polygons defined by NRE managers as the regions of commercial interest. An IMAS observer was onboard for targeted surveys and total scallop catch weight (kg) was recorded for each tow. The observer recorded the size structure of each tow by measuring the shell length (width at the widest point of the shell) of up to 50 scallops randomly sampled from the ungraded catch. The weight of the legal-sized scallops (≥ 85 mm in the Northwest) in each tow was calculated by multiplying the total catch weight by the percentage of legal-sized scallops in the catch, as determined from the size structure. The density of legal-sized scallops was reported as the ratio of the landed weight of legal-sized scallops over the product of dredge width and tow length (calculated from start and finish coordinates).

Exploratory tows (502) for 2024 were conducted across Area 1 (West Bass Strait), 2 (East Bass Strait), 3 (East Flinders & Banks Strait), 4 (Central East) and 5 (Lower East). Exploratory survey tows were ~500m in length, calculated from the start and finish coordinates. Exploratory survey sites were not randomised, so population structure (abundance and size frequency) were not calculated for these areas.

**Table 1:** Tasmanian Scallop Fishery pre-season number of survey sites by area, region, vessel, and survey method. Areas refer to Appendix 3.

| | Area | Region | Vessel | N Dredge |
|---|---|---|---|---|
| Targeted | 1 | North West | Del Richey II | 28 |
| | | | **Total Sites** | **28** |
| Exploratory | 1 | West Bass Strait | Odete C & Shandara | 156 |
| | 2 | East Bass Strait | Odete C & Shandara | 34 |
| | 3 | East Flinders & Banks Strait | Odete C & Shandara | 229 |
| | 4 | The Gardens | Odete C | 41 |
| | | Bicheno | Odete C | 16 |
| | **5** | Lower East | Odete C | 26 |
| | | | **Total Sites** | **502** |

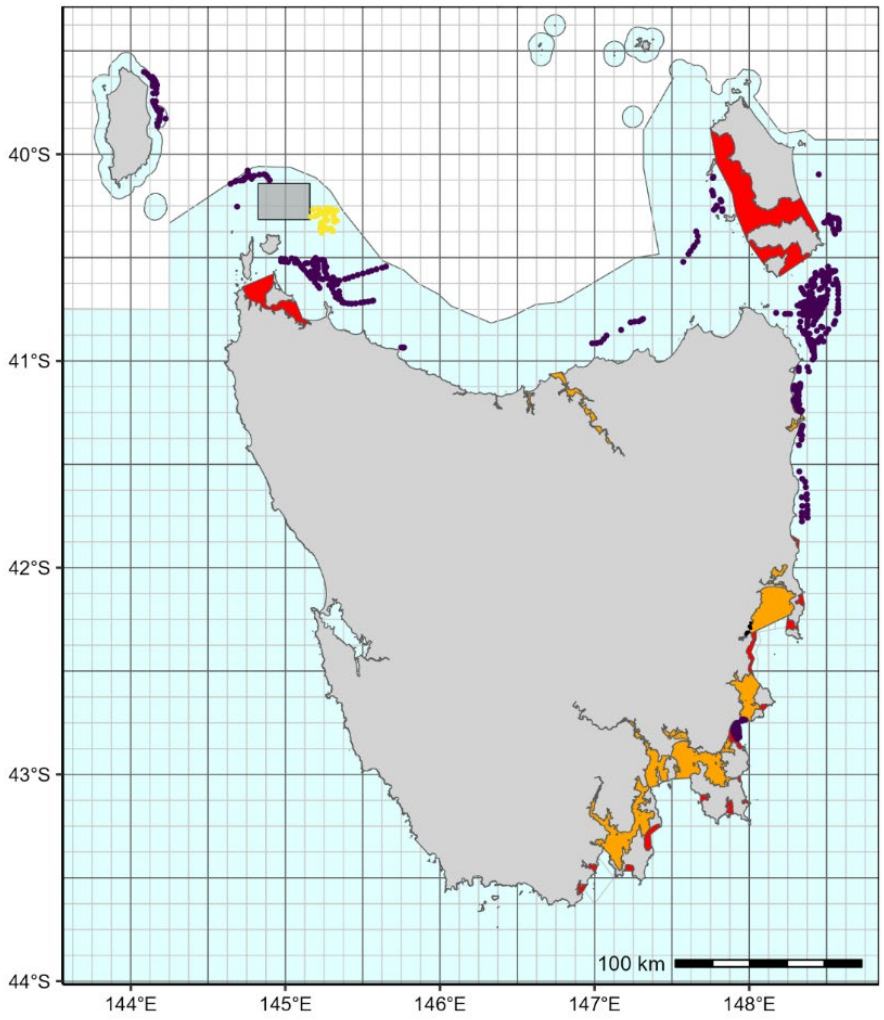



**Figure 1:** Map of the 2024 TSF pre-season dredge survey sites and notifiable areas within the TSF. The yellow dots indicate targeted survey sites and purple dots indicate exploratory survey sites. The pale blue areas indicate the Tasmanian Offshore Constitutional Settlement, the red areas indicate dredge prohibited areas, the dark grey square indicate the Boags Commonwealth Marine reserve, and the orange areas indicate shark nursery areas in which dredging is also prohibited.

# Survey results by area

## Targeted dredge survey

**North West (Area 1)**
N.B. Scallop legal size in Area 1 is 85mm compared to 90mm elsewhere in the fishery to align with the BSCZSF limit.

The North West targeted dredge survey consisted of 28 survey dredge tows in four sub-areas (7 sites in each sub-area) deployed from the FV Dell Richey II at the beginning of June 2024 (Table 1, Figures 1 and 2). A fifth sub-area, previously surveyed in 2023, was not surveyed in 2024.

The North West targeted dredge survey tows yielded an average density of legal-sized (≥ 85 mm) scallops of 44.6 kg/1000 $m^2$ (median 5.28 kg/1000 $m^2$), with a discard rate of 0.4% at the minimum legal size of 85 mm (Figure 3). Sub-area yields are provided in Table 2.

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 45.2 kg/1000 $m^2$ (median 5.3 kg/1000 $m^2$). Sub-area yields are provided in Table A1 in Appendix 1.

The percentage of dead shell was higher (59.4%) compared to live scallops (40.6) for the total area surveyed in the West Bass Strait (Area 1) in 2024. The only sub-area with a higher percentage of live scallops than dead shell was sub-area 1 (Table 3).
In Area 1, the average percentage of old scallop shells was higher (47%) that of new dead shells (23%) or very old shells (30%). Percentages for each sub-areas are provided in Table 4.

Average density of total dead shell scallops from the dredge tows was 66.2 kg/1000 $m^2$ (median 65.2 kg/1000 $m^2$). Average density of new dead shell scallops from the dredge tows was 14.2 kg/1000 $m^2$ (median 10.5 kg/1000 $m^2$). Sub-area dead shell densities are provided in Appendix 1.

The average scallop length for the North West area was 98.7 ± 0.2 mm (standard error). Sub-area scallop length measurements are provided in Table 5.

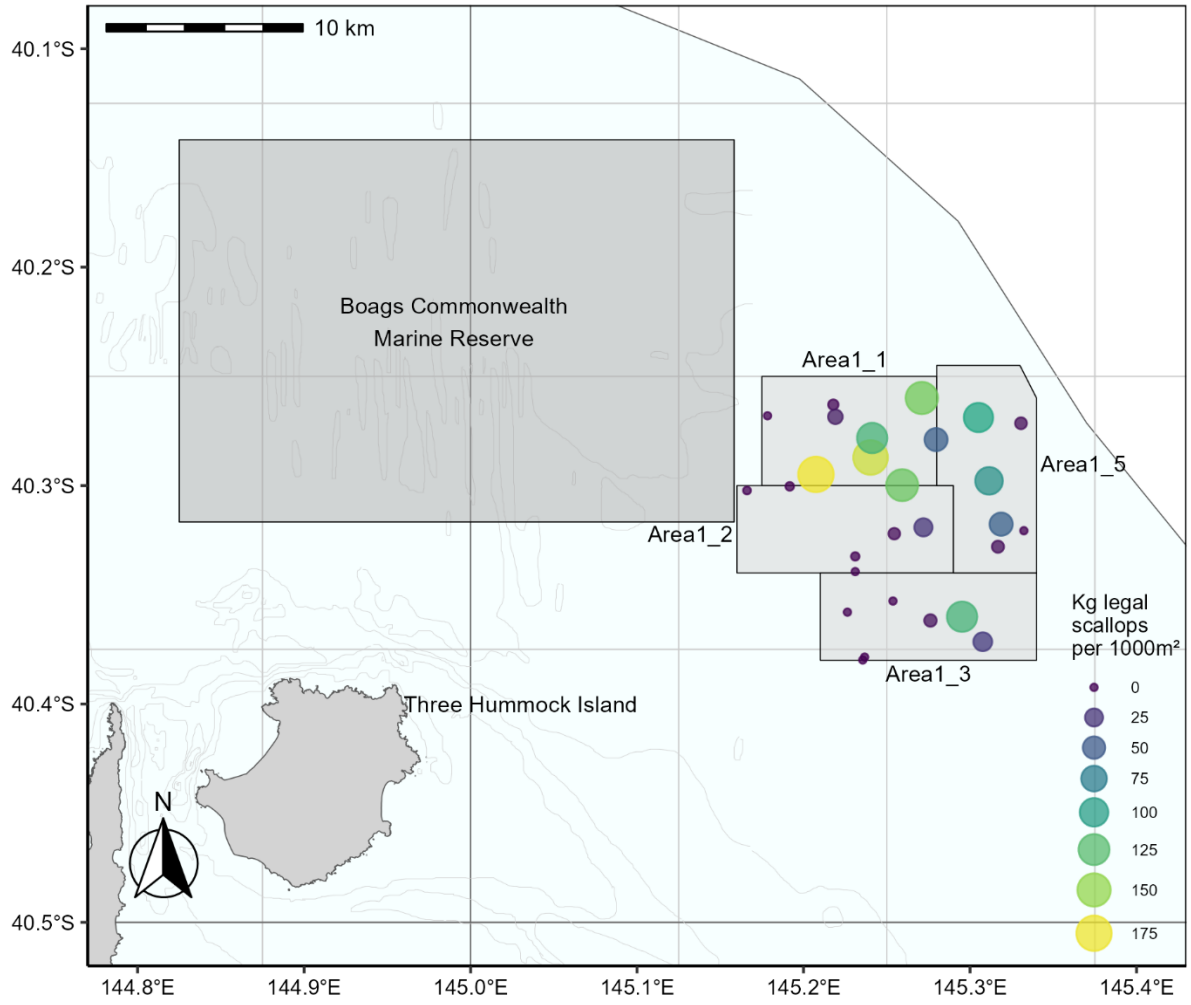



**Figure 2:** Legal-sized scallop density per tow for the North West (Area 1) targeted dredge survey. Density is displayed as kg of legal scallops (≥ 85 mm) per 1000 $m^2$. The pale blue areas indicate the Tasmanian Offshore Constitutional Settlement.

**Table 2:** Estimated of legal density counts and density of legal sized scallops (≥85 mm) for the entire sampled area (All Area 1) and four sub-areas from the 2024 dredge survey, and previous seasons. Avg. indicates mean density of scallops and SD indicates the standard deviation. Dashes indicate values not calculated in previous years.

| Year | Method | N of dredges | Suab-area | Legal density counts (n/m$^2$) | Density of legal scallops (kg/1000 m$^2$) | | |
|---|---|---|---|---|---|---|---|
| | | | | | Avg. | SD | Median |
| **2024** | **Dredge** | **28** | **All Area 1** | **0.64** | **44.6** | **59.6** | **5.3** |
| | | 7 | Sub-area 1 | 1.24 | 87.6 | 80.0 | 117.9 |
| | | 7 | Sub-area 2 | 0.33 | 23.7 | 49.9 | 1.1 |
| | | 7 | Sub-area 3 | 0.31 | 21.8 | 43.7 | |
| | | 7 | Sub-area 5 | 0.64 | 45.5 | 43.9 | 54.5 |
| **2023** | **Dredge** | 63 | **All Area 1** | **0.81** | **51.8** | **67.7** | **19.8** |
| | | 13 | Sub-area 1 | 2.28 | 145.6 | 57.0 | 142.8 |
| | | 13 | Sub-area 2 | 0.63 | 40.5 | 61.6 | 18.1 |
| | | 13 | Sub-area 3 | 0.06 | 3.8 | 5.6 | 0.6 |
| | | 13 | Sub-area 4 | 0.55 | 35.0 | 56.9 | 7.0 |
| | | 11 | Sub-area 5 | 0.50 | 31.7 | 32.2 | 22.1 |
| **2022** | **Dredge** | **52** | **All Area 1** | **-** | **36.6** | **-** | **6.6** |
| | | 13 | Sub-area 1 | - | 65.5 | - | 30.6 |
| | | 13 | Sub-area 2 | - | 52.5 | - | 18.6 |
| | | 13 | Sub-area 3 | - | 5.6 | - | 0 |
| | | 13 | Sub-area 4 | - | 22.7 | - | 5.5 |

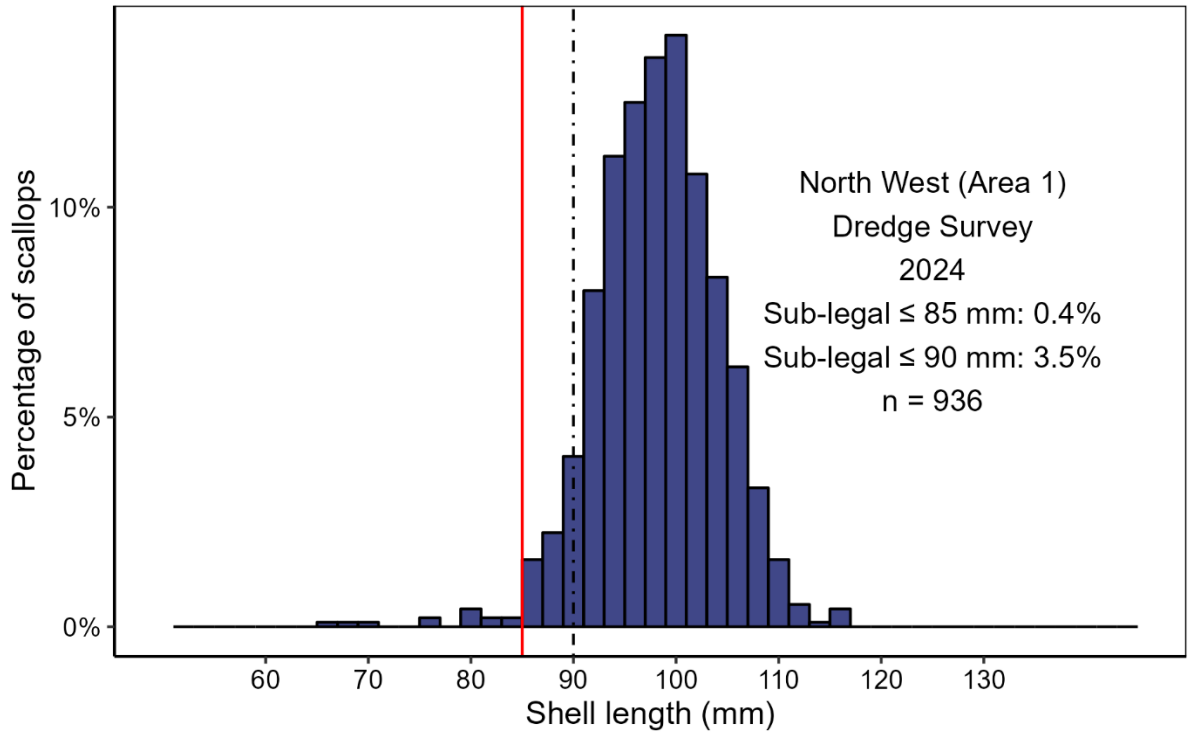



**Figure 3:** Standardised length frequency distribution for the 28 dredge tows in the North West (Area 1) targeted dredge survey. The dredge discard rate was 0.4% from 936 scallops measured at 85 mm minimum legal length with a mean size ± standard error of 98.7 ± 0.19 mm. The red vertical line shows the 85 mm minimum length, and the black dashed vertical line shows the 90 mm length.

**Table 3**: Estimate average (mean) percentage of live and dead shell scallops for the entire sampled area and four sub-areas of the North West (Area 1).

| Year | Method | Sub-area | Average percentage (%) live scallop | Average percentage (%) dead shell |
|---|---|---|---|---|
| **2024** | **Dredge** | **All Area 1** | **40.6** | **59.4** |
| | | Sub-area 1 | 51.0 | 49.0 |
| | | Sub-area 2 | 30.6 | 69.4 |
| | | Sub-area 3 | 24.4 | 75.6 |
| | | Sub-area 5 | 44.7 | 55.2 |

**Table 4:** Average (mean) percentages of the different types of dead shell caught during targeted dredge surveys in North West (Area 1) during 2024.

| Year | Method | Sub-area | Average percentage (%) new dead shell | Average percentage (%) old shell | Average percentage (%) very old shell |
|---|---|---|---|---|---|
| **2024** | **Dredge** | **All Area 1** | **23.0** | **47.0** | **30.0** |
| | | Sub-area 1 | 13.5 | 57.8 | 28.5 |
| | | Sub-area 2 | 18.5 | 58.5 | 22.8 |
| | | Sub-area 3 | 40.0 | 27.2 | 32.8 |
| | | Sub-area 5 | 20.0 | 44.3 | 35.7 |

**Table 5.** Scallop measurements for the whole area (All Area 1) and four sub-areas of Area 1 from the 2024 dredge survey and previous seasons. Average indicates mean and SE indicates standard error. Dashes indicate values not calculated in previous years.

| Year | Method | Sub-area | Minimum scallop length (mm) | Maximum scallop length (mm) | Average scallop length (mm) | Average scallop length SE (mm) | Discard% (<85 mm) |
|---|---|---|---|---|---|---|---|
| **2024** | **Dredge** | **All Area 1** | **67** | **117** | **98.7** | **0.2** | **0.4** |
| | | Sub-area 1 | 68 | 116 | 99.9 | 0.4 | 0.1 |
| | | Sub-area 2 | 70 | 117 | 99.4 | 0.4 | 0.04 |
| | | Sub-area 3 | 86 | 111 | 96.7 | 0.4 | 0.0 |
| | | Sub-area 5 | 67 | 117 | 98.3 | 0.3 | 1.4 |
| **2023** | **Dredge** | **All Area 1** | **69** | **129** | **95.5** | **0.1** | **2.4** |
| | | Sub-area 1 | 72 | 112 | 96.1 | 0.2 | 1.9 |
| | | Sub-area 2 | 80 | 114 | 94.4 | 0.2 | 2.0 |
| | | Sub-area 3 | 83 | 111 | 95.6 | 0.3 | 2.2 |
| | | Sub-area 4 | 69 | 129 | 97.4 | 0.4 | 5.8 |
| | | Sub-area 5 | 74 | 108 | 94.4 | 0.2 | 2.2 |
| **2022** | **Dredge** | **All Area 1** | **-** | **-** | **92.4** | **0.1** | **38.7** |
| | | Sub-area 1 | - | - | 91.8 | 91.8 | 38.7 |
| | | Sub-area 2 | - | - | 91.0 | 91.0 | 38.2 |
| | | Sub-area 3 | - | - | 90.6 | 90.6 | 51.2 |
| | | Sub-area 4 | - | - | 96.0 | 96.0 | 27.3 |
| | | Note: Discard rate for 2022 was calculated at 90mm | | | | | |

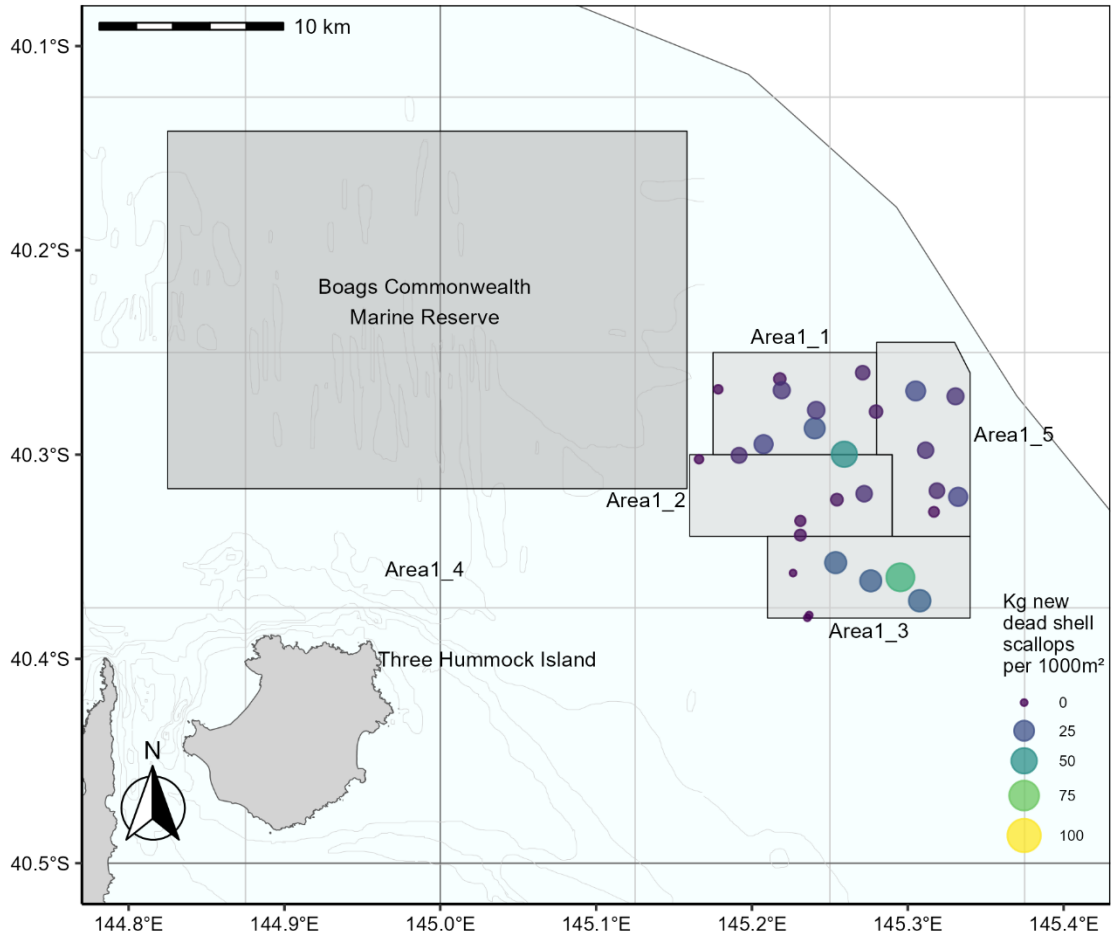



**Figure 4:** Density of new dead shell per tow for the Area 1 targeted dredge survey. Density is reported as kg of dead scallop shell per 1000 $m^2$.

## Exploratory surveys

### West Bass Strait (Area 1)

The West Bass Strait area (Area 1) exploratory survey consisted of 156 dredge survey tows deployed from FV Odete C and FV Shandara during June 2024 (Table 1, Figures 1 & 5).

The West Bass Strait survey tows yielded an average density of legal-sized scallops of 6.2 kg/1000 $m^2$ (median 0.6 kg/1000 $m^2$), with a discard rate of 6.2% at the minimum legal size of 85 mm (Figure 5 & 6).

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 7.6 kg/1000 $m^2$ (median 0.8 kg/1000 $m^2$).

The average scallop length for the West Bass Strait area was 95.1 ± 0.3 mm (standard error).

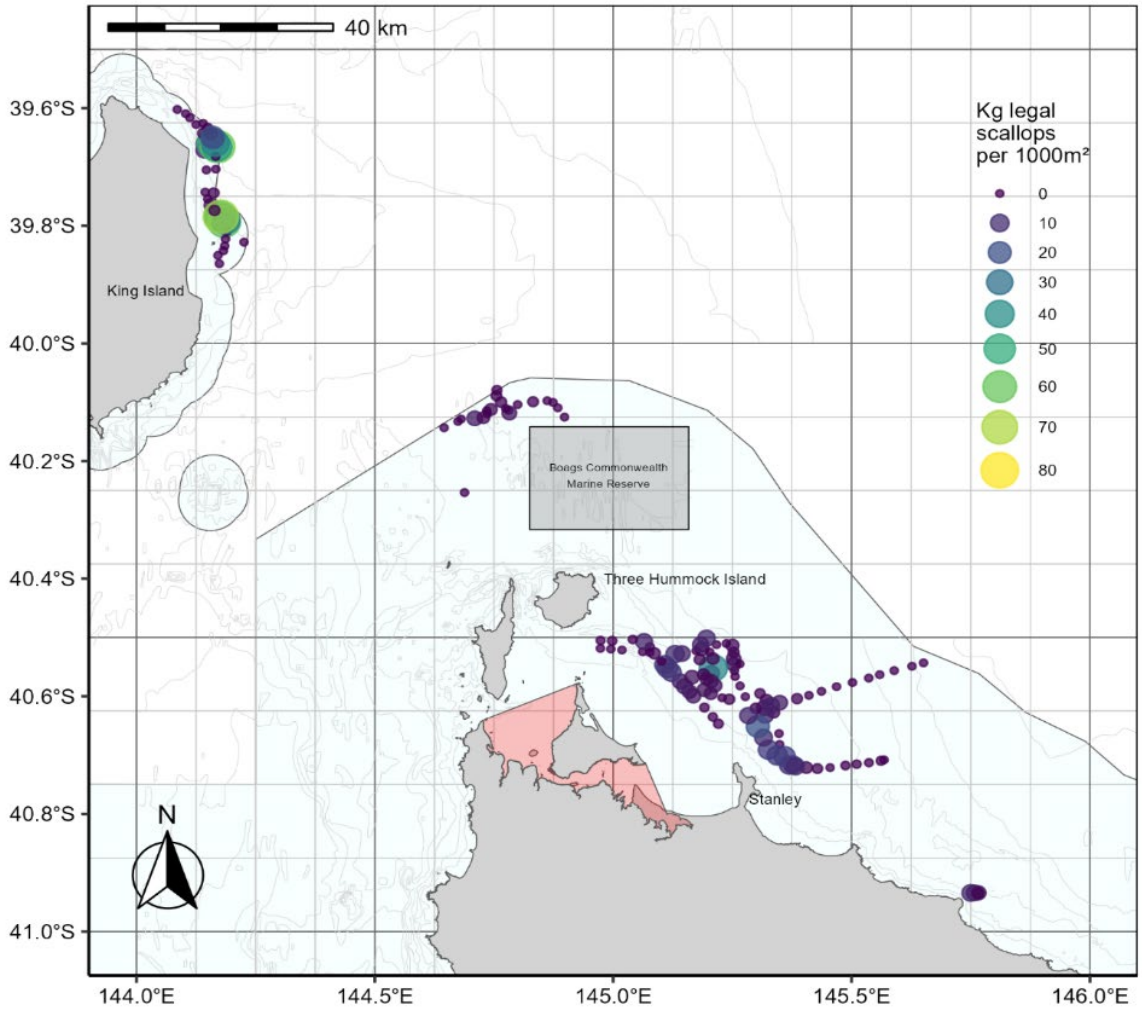



**Figure 5:** Legal-size scallop density per tow for the West Bass Strait (Area 1) exploratory dredge survey. Density is reported as kg of legal scallops (≥ 85 mm) per 1000 $m^2$. The pale blue areas indicate the Tasmanian offshore Constitutional Settlement, and the red areas indicated dredge prohibited areas

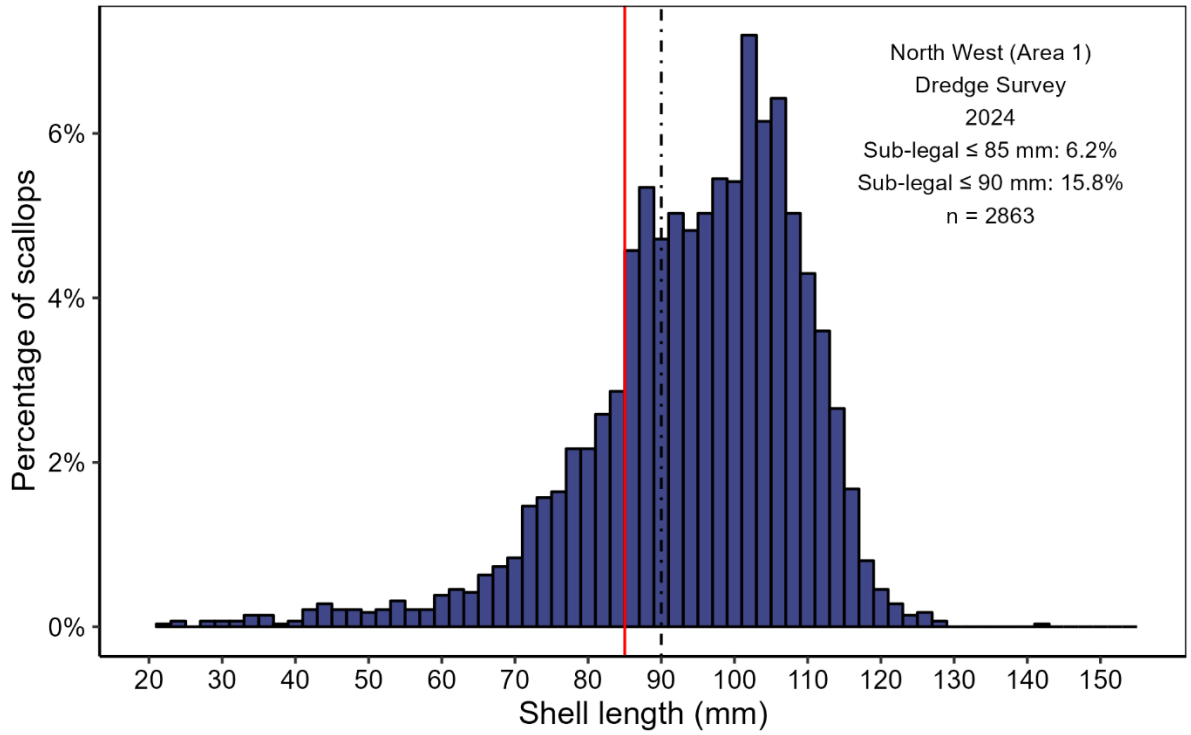



**Figure 6:** Standardised length frequency distribution for the 156 exploratory dredge tows in the North West region. The dredge discard rate was 6.2% from 2863 scallops measured at 85 mm minimum legal with a mean size ± se of 95.1 ± 0.3. The red vertical line shows the 85 mm, the minimum legal length for the area, and the black dashed vertical line shows the 90 mm, the minimum legal length for the TSF.

## East Bass Strait (Area 2)

The East Bass Strait (Area 2) exploratory dredge survey consisted of 34 survey dredge tows deployed by FV Odete C and FV Shandara in June 2024 (Table 1, Figure 1 & 7).

The area 2 exploratory dredge survey tows yielded an average density of legal-sized scallops of 0.6 kg/1000 $m^2$ (median 0.2 kg/1000 $m^2$), with a discard rate of 76% at the minimum legal size of 90 mm (Figures 7 & 8).

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 2.9 kg/1000 $m^2$ (median 1.0 kg/1000 $m^2$).

The average scallop length for the area 2 was 82.6 ± 0.3 mm (standard error).

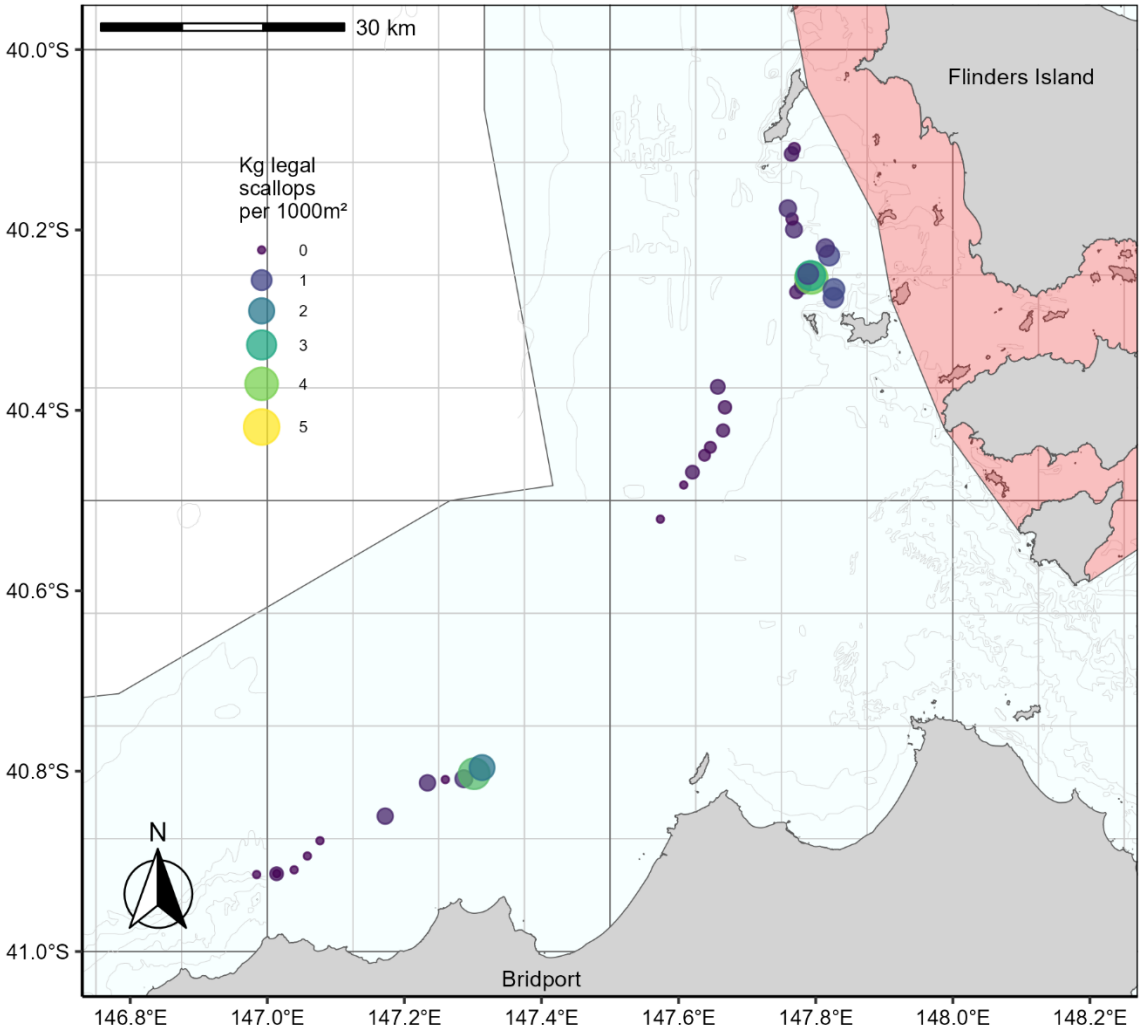



Figure 7: Legal-sized scallop density per dredge for East Bass Strait (Area 2) exploratory survey. Density is reported as kg of legal scallops (≥ 90 mm) per 1000 $m^2$. The pale blue areas indicate the Tasmanian Offshore Constitutional Settlement.

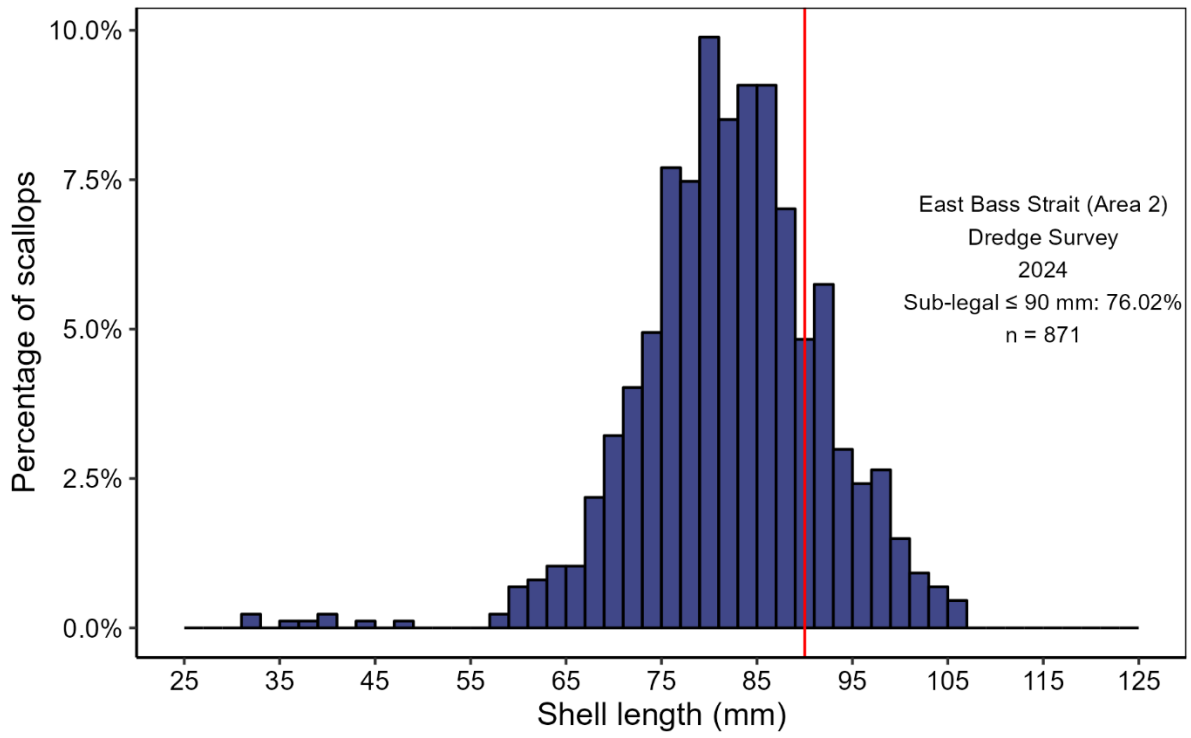



**Figure 8:** Standardised length frequency distribution for the 34 dredge tows in the East Bass Strait (Area 2) exploratory dredge survey. The dredge discard rate was 76.0% from 871 scallops measured at 90 mm minimum legal length an average length size ± standard error of 82.6 ± 0.3 mm. The vertical red line shows the 90 mm minimum legal length for the TSF.

**East Flinders & Banks Strait (Area 3)**

The area 3 exploratory survey consisted of 229 dredges in two zones deployed by FV Odete C and Shandara during May 2024 (Table 1, Figure 1)

Combined, the exploratory dredge survey tows in area 3 yielded an average density of legal-sized scallops of 1.9 kg/1000 $m^2$ (median 0.2 kg/1000 $m^2$), with a discard rate of 24.1% at the minimum legal size of 90 mm.

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 2.9 kg/1000 $m^2$ (median 0.4 kg/1000 $m^2$).

The average scallop length for area 3 was 96.0 ± 0.2 with a minimum size of 36 mm and maximum size of 131 mm.

***Cape Barren Island***

Cape Barren Island exploratory surveys consisted of 44 dredges tows deployed by FV Odete C and Shandara during May 2024 (Figure 9).

The Cape Barren Island exploratory survey tows yielded an average density of legal-size scallops of 2.9 kg/1000 $m^2$ (median 1.3 kg/1000 $m^2$), with a discard rate of 48.2% at the minimum legal size of 90 mm (Figure 9 & 10).

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 4.6 kg/1000 $m^2$ (median 2.0 kg/1000 $m^2$).

The average scallop length for Cape Barren was 94.8 ± 0.3 with a minimum size of 48 mm and a maximum of 131 mm (Figure 10).

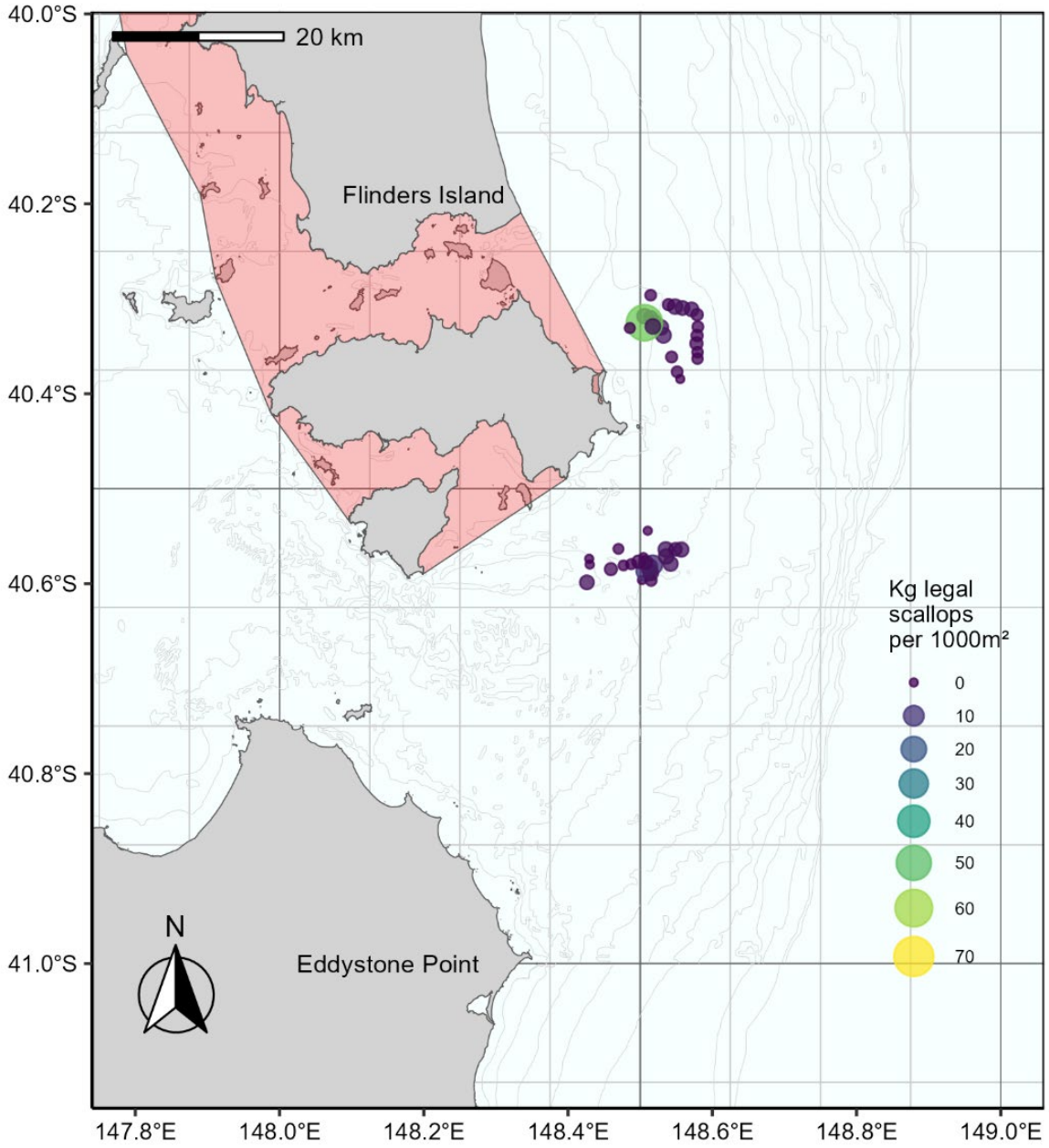



**Figure 9:** Legal-sized scallop density per dredge for Cape Barren Island (Area 3) exploratory survey. Density is reported as kg of legal scallops (≥ 90 mm) per 1000 $m^2$. The pale blue areas indicate the Tasmanian Offshore Constitutional Settlement, and the red areas indicated dredge prohibited areas

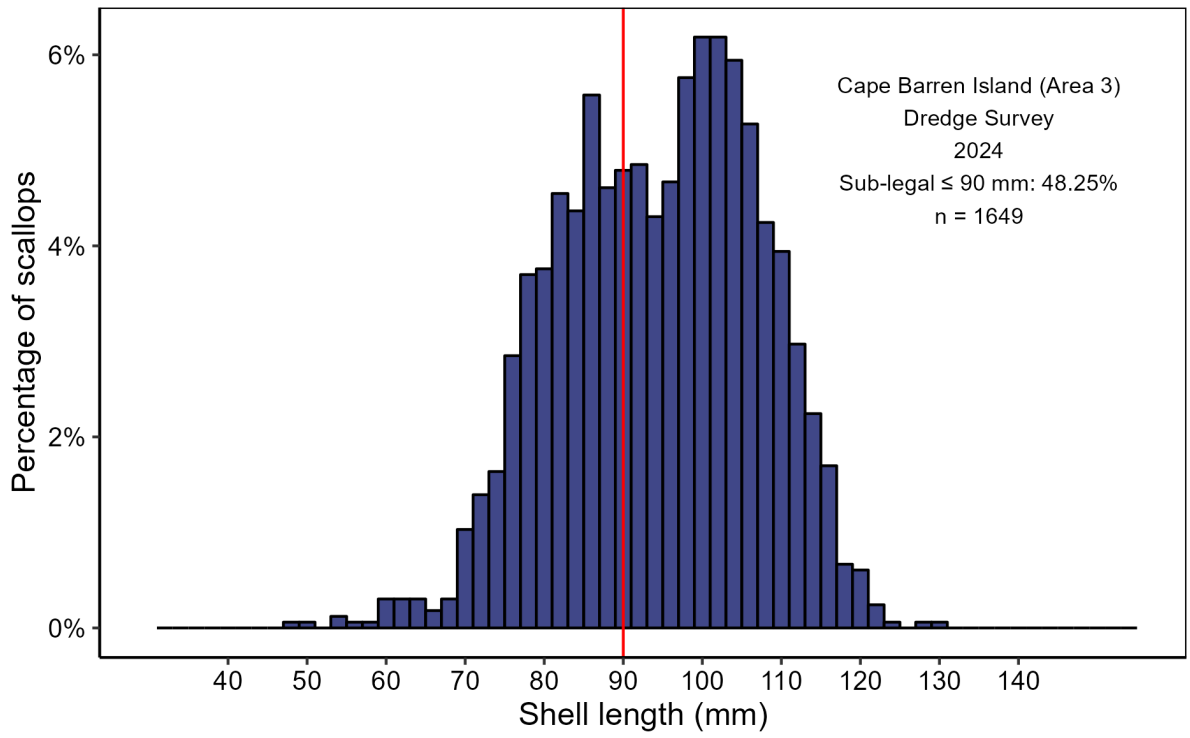



**Figure 10:** Standardised length frequency distribution for the 34 dredge tows in Cape Barren Island (Area 3) exploratory dredge survey. The dredge discard rate was 76.0% from 871 scallops measured at 90 mm minimum legal length an average length size ± standard error of 82.6 ± 0.3 mm. The vertical red line shows the 90 mm minimum legal length for the TSF.

***Eddystone Point***

Eddystone Point exploratory survey consisted of 185 dredges tows deployed by FV Odete C during May 2024 (Figure 11).

Eddystone point exploratory survey tows yielded an average density of legal-size scallops of 1.8 kg/1000 $m^2$ (median 0 kg/1000 $m^2$), with a discard rate of 20.4% at the minimum legal size of 90 mm (Figure 11 &12).

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 2.4 kg/1000 $m^{2.}$

The average scallop length for Cape Barren was 96.3 ± 0.3 with a minimum size of 36 mm and a maximum of 127 mm.

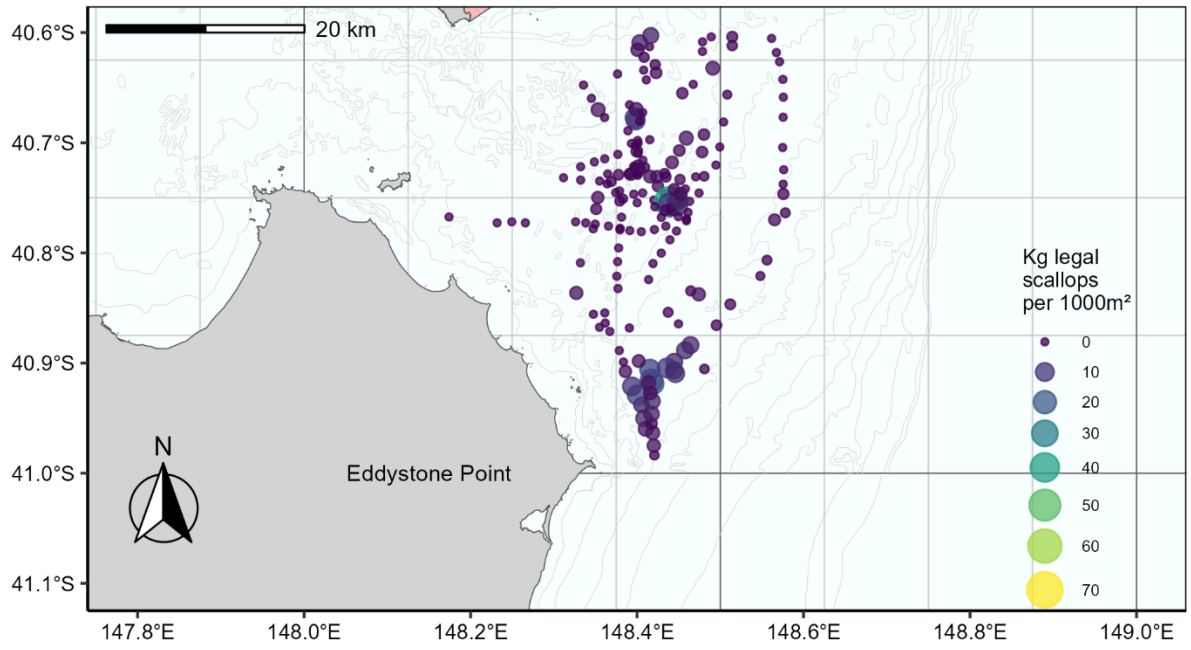



**Figure 11:** Legal-sized scallop density per dredge for Eddystone Point (Area 3) exploratory survey. Density is reported as kg of legal scallops (≥ 90 mm) per 1000 $m^2$. The pale blue areas indicate the Tasmanian Offshore Constitutional Settlement.

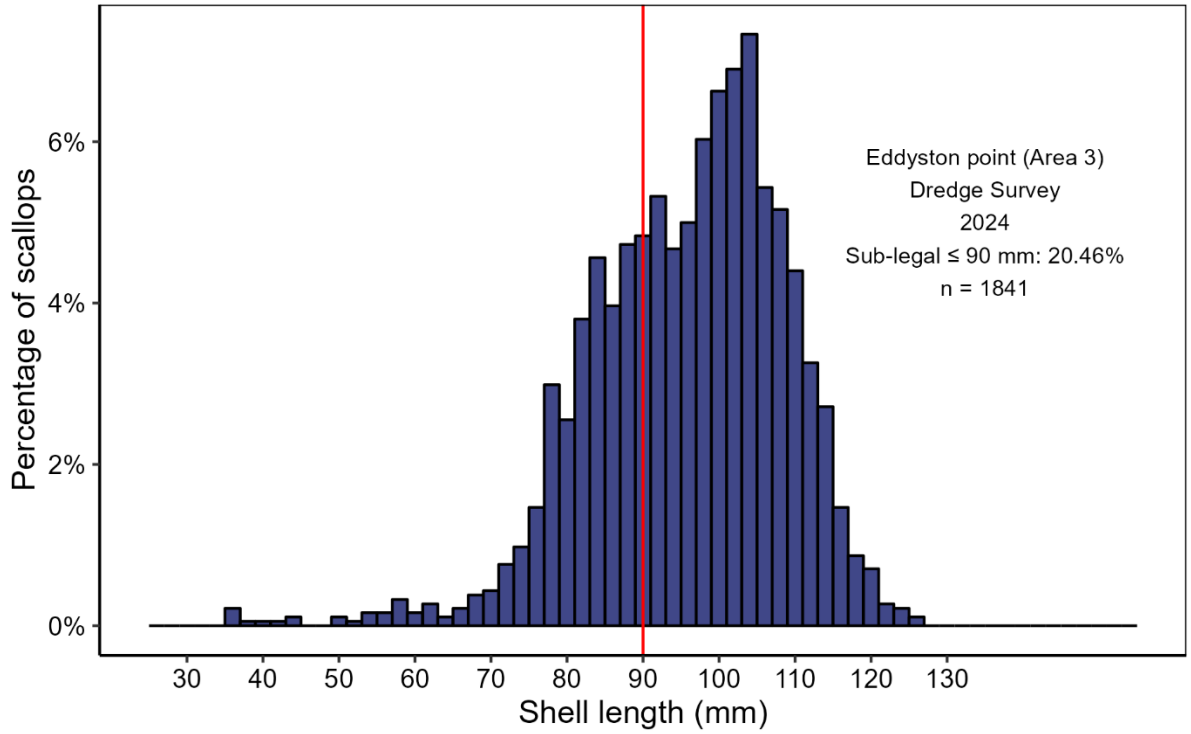



**Figure 12:** Standardised length frequency distribution for the 34 dredge tows in Eddystone Point (Area 3) exploratory dredge survey. The dredge discard rate was 20.5% from 1841 scallops measured at 90 mm minimum legal length an average length size ± standard error of 96.3 ± 0.3 mm. The vertical red line shows the 90 mm minimum legal length for the TSF.

## Central East (Area 4)

The Centra East (Area 4) exploratory survey is divided into two zones, The Gardens and Bicheno.

Combined, the exploratory dredge survey tows in area 4 yielded an average density of legal-sized scallops of 2.2 kg/1000 $m^2$ (median 1.8 kg/1000 $m^2$), with a discard rate 30% at the minimum legal size of 90 mm.

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 3.3 kg/1000 $m^2$ (median 2.7 kg/1000 $m^2$).

The average scallop length for area 3 was 95 ± 0.4 with a minimum size of 33 mm and maximum size of 145 mm.

### *The Gardens*

The gardens dredge exploratory survey consisted of 41 dredges tows deployed by FV Odete C during May 2024 (Table 1, Figure 13).

The gardens exploratory dredge survey tows yielded an average density of legal-sized scallops of 2.5 kg/1000 $m^2$ (median 2.4 kg/1000 $m^2$), with a discard rate of 32.4% at the minimum legal size of 90 mm (Figures 13 &14).

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 3.8 kg/1000 $m^2$ (median 3.7 kg/1000 $m^2$).

The average scallop length for the Gardens was 94.0 ± 0.5 mm (standard error) with a minimum size of 33 mm and a maximum size of 145 mm.

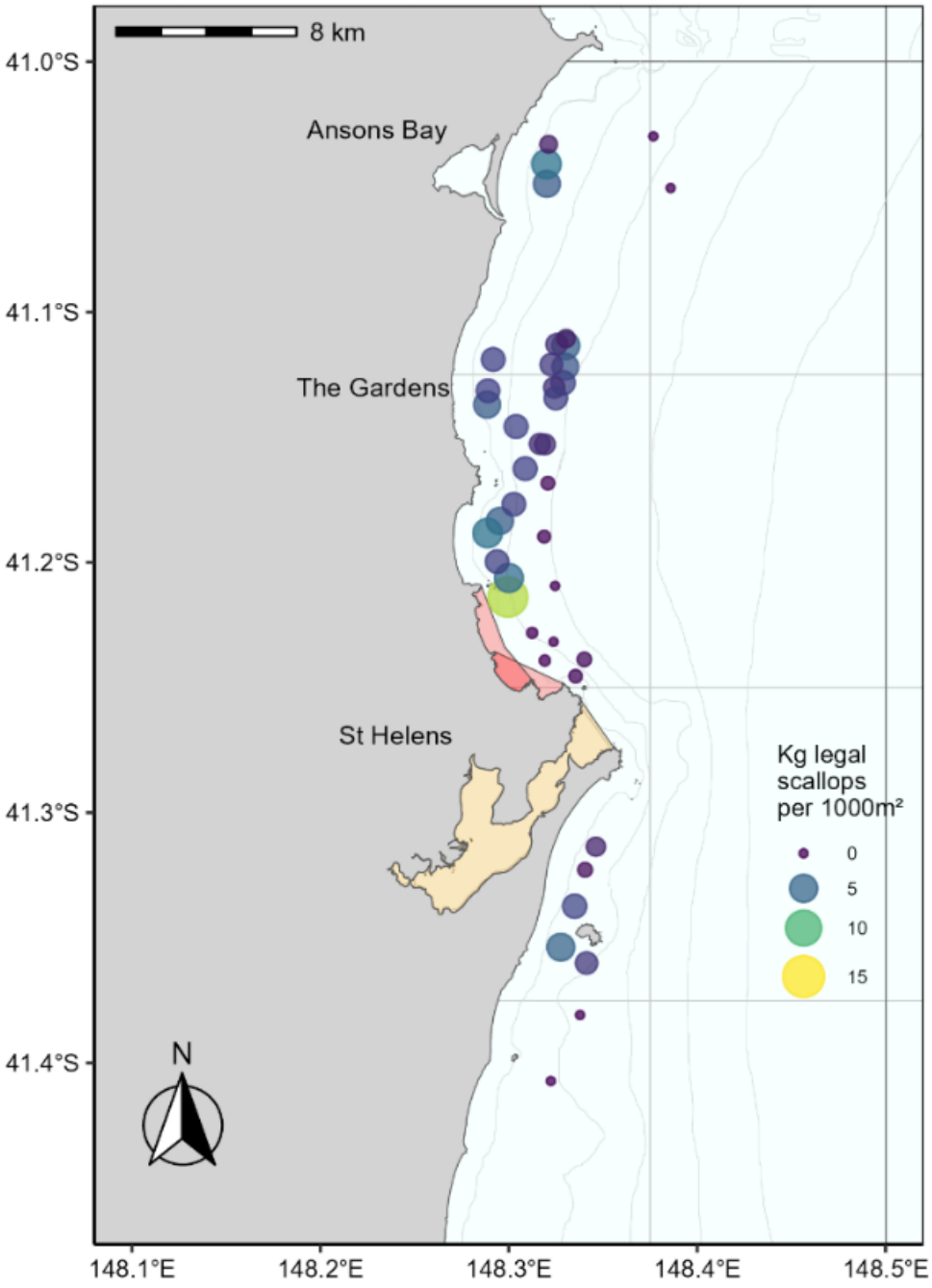



**Figure 13:** Legal-sized scallop density per tow for the Gardens (area 4) exploratory dredge survey. Density is reported as kg of legal scallops (≥ 90 mm) per 1000 $m^2$. The pale blue areas indicate the Tasmanian Offshore Constitutional Settlement, and the pale red areas indicated dredge prohibited areas.

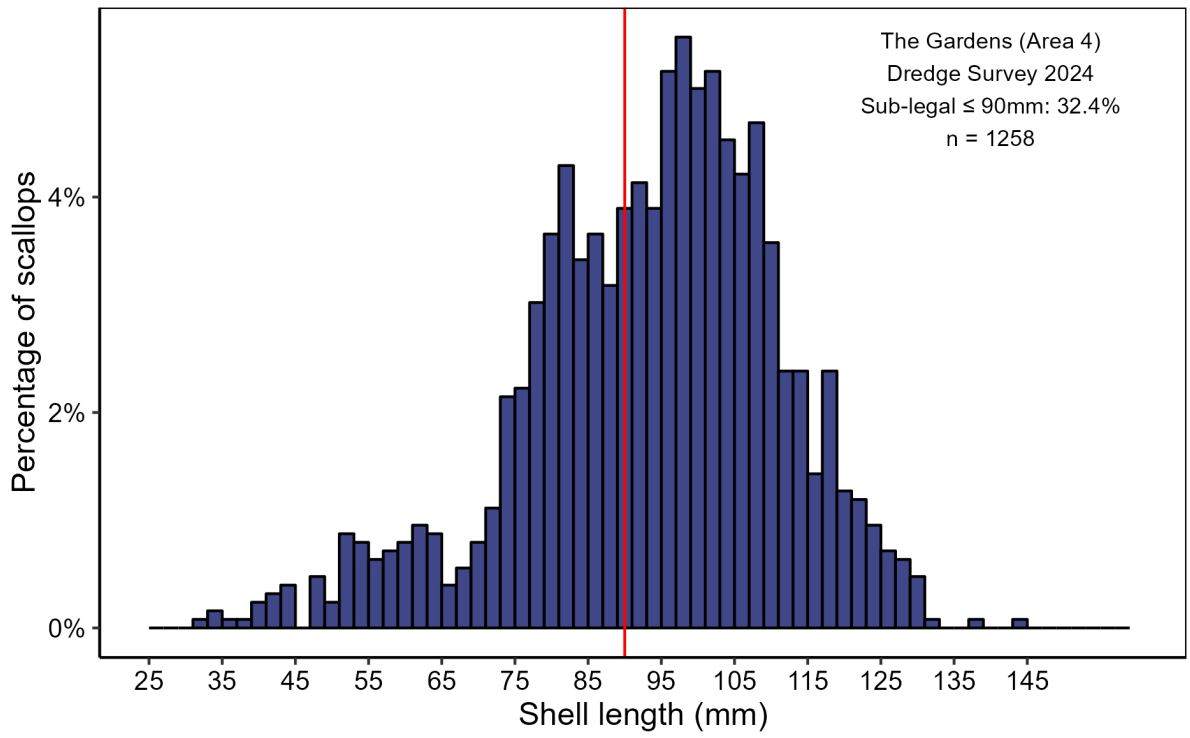



**Figure 14:** Standardised length frequency distribution for the 41 dredge tows in the gardens (Area 4) exploratory dredge survey. The dredge discard rate was 32.4% from 1258 scallops measured at 90 with a mean size ± standard error of 94 ± 0.5 mm. The vertical red line shows the 90 mm minimum legal length for the TSF.

***Bicheno***

The central area exploratory survey around Bicheno consisted of 16 dredges tows deployed by FV Odete C during May 2024 (Table 1, Figure 15).

The gardens exploratory dredge survey tows yielded an average density of legal-sized scallops of 1.5 kg/1000 $m^2$ (median 1.3 kg/1000 $m^2$), with a discard rate of 17.8% at the minimum legal size of 90 mm (Figures 15 & 16).

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 1.9 kg/1000 $m^2$ (median 1.7 kg/1000 $m^2$).

The average scallop length for Bicheno (Area 4) was 98.3 ± 0.6 mm (standard error) with a minimum size of 50 and a maximum size of 131 mm.

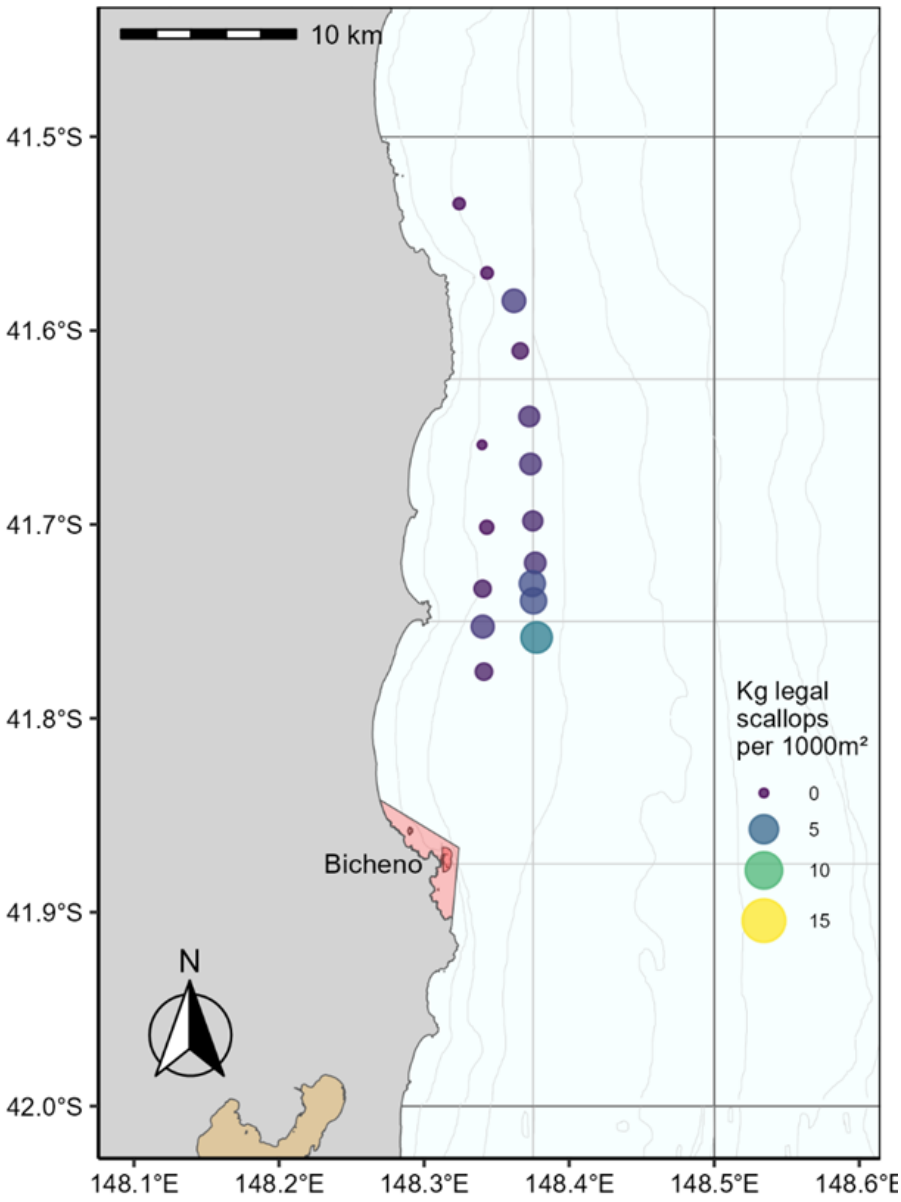



**Figure 15:** Legal-sized scallop density per tow for Bicheno (Area 4) exploratory dredge survey. Density is displayed as kg of legal scallops (> 90 mm) per 1000 $m^2$. The pale blue areas indicate the Tasmanian Offshore Constitutional Settlement, and the pale red areas indicated dredge prohibited areas.

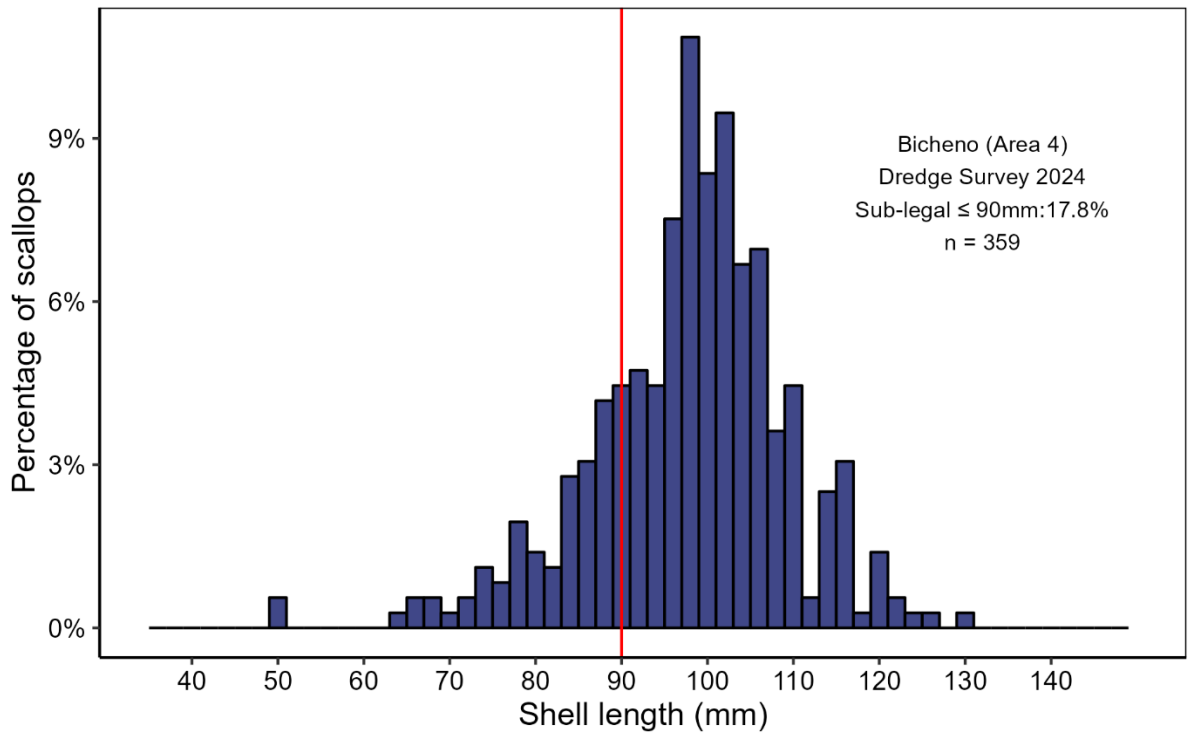



**Figure 16:** Standardised length frequency distribution for 16 dredge tows in the Bicheno (Area 4) exploratory dredge survey. The red vertical line shows the 90 mm minimum legal length for the TSF.

## Lower East (Area 5)

The Marion Bay area (Area 5) exploratory survey consisted of 26 dredge survey tows deployed from FV Odete C during May 2024 (Table 1, Figures 1 & 17)

The Marion Bay survey tows yielded an average density of legal-sized scallops of 19.4 kg/1000 $m^2$ (median 19.2 kg/1000 $m^2$), with a discard rate of 17.1% at the minimum legal size of 90 mm (Table 6, Figures 17 & 18).

Average density of total scallops (legal and sub-legal catch) from the dredge tows was 23.8 kg/1000 $m^2$ (median 23.5kg/1000 $m^2$).

The average scallop length for the Marion Bay area was 102.2 ± 0.4 mm (standard error) with a minimum size of 36 mm and a maximum of 139 mm in length.

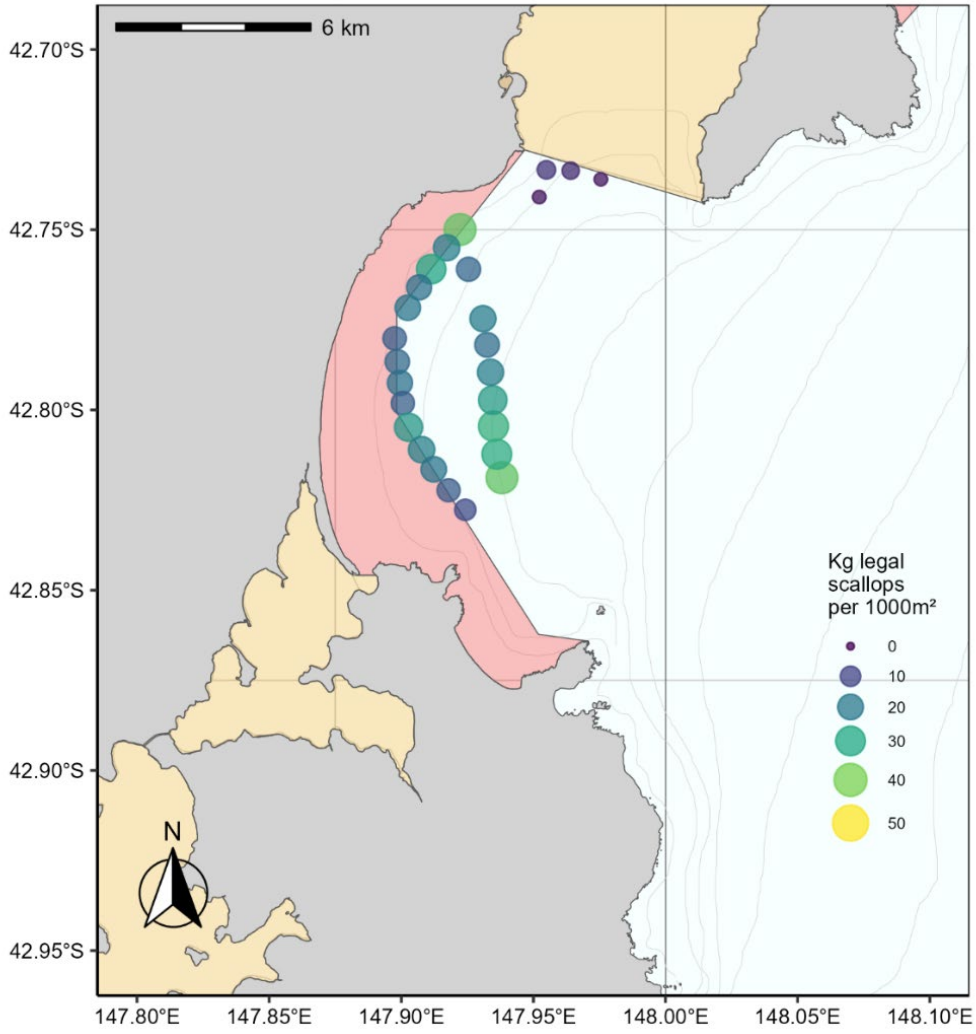



**Figure 17:** Legal-sized scallop density per tow for Lower East (Area 5) exploratory dredge survey. Density is displayed as kg of legal scallops (> 90 mm) per 1000 $m^2$. The pale blue areas indicate the Tasmania Offshore Constitutional Settlement, and the pale red areas indicate dredge prohibited areas.

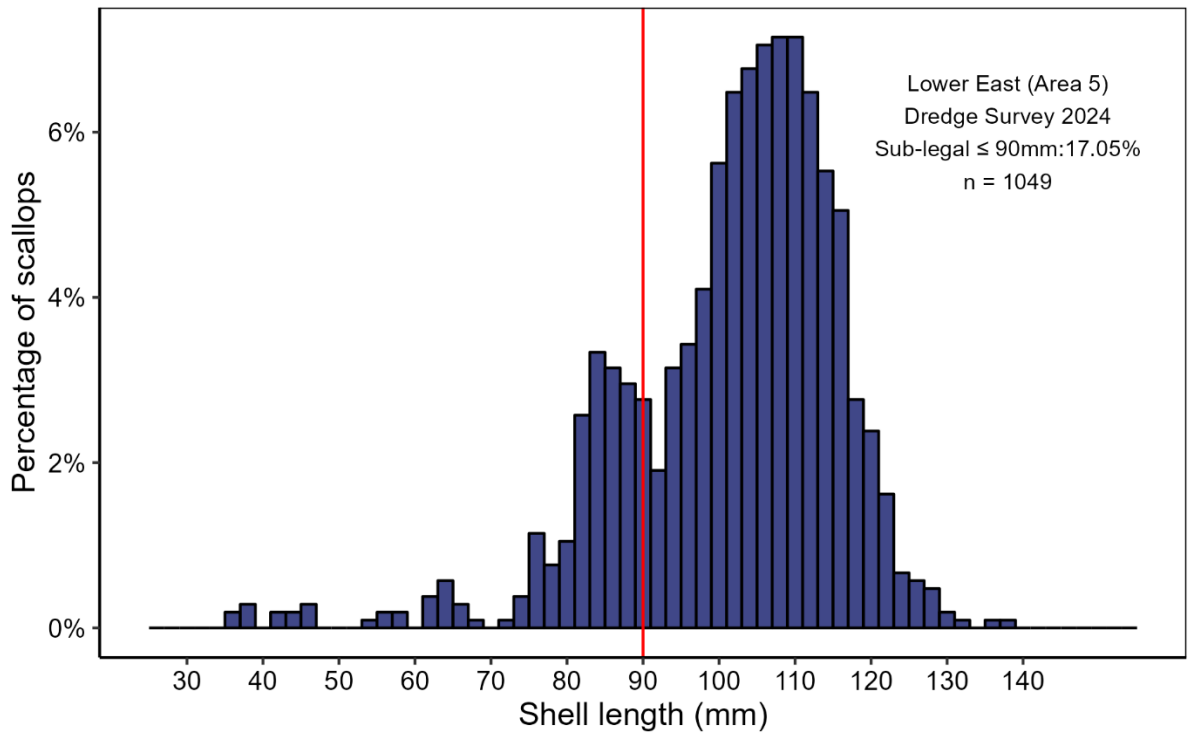



**Figure 18:** Standardised length frequency distribution for 26 dredge tows in Marion Bay (Area 5) exploratory dredge survey. The red vertical line shows the 90 mm minimum legal length for the TSF.

**Table 6:** Summary of the exploratory surveys conducted during 2024 pre-season survey including legal density by count and weight, average (mean) size, and discard rate.

| Area | Zones | Legal density counts (n/m$^2$) | Density of legal scallops (kg/1000 m$^2$) | | | Avg. size (mm ± se) | Discard rate (%) |
|---|---|---|---|---|---|---|---|
| | | | Avg. | SD | Median | | |
| Area 1 | | 0.08 | 6.2 | 12.7 | 0.6 | 95.1 ± 0.3 | 6.2 |
| Area 2 | | 0.01 | 0.6 | 1.0 | 0.2 | 82.6 ± 0.3 | 76.0 |
| Area 3 | **Total area** | 0.02 | 1.9 | 5.3 | 0.2 | 96.0 ± 0.2 | 24.1 |
| | Cape Barren | 0.03 | 2.9 | 8.1 | 1.3 | 94.8 ± 0.3 | 48.2 |
| | Eddystone | 0.02 | 1.8 | 4.3 | 0 | 96.3 ± 0.3 | 20.4 |
| Area 4 | **Total area** | 0.03 | 2.2 | 2.4 | 1.8 | 95.0 ± 0.4 | 30.0 |
| | The Gardens | 0.03 | 2.5 | 2.5 | 2.4 | 94 ± 0.5 | 32.4 |
| | Bicheno | 0.02 | 1.5 | 1.5 | 1.3 | 98.3 ± 0.6 | 17.8 |
| Area 5 | Marion Bay | 0.21 | 19.4 | 9.3 | 19.1 | 102.2 ± 0.44 | 17.1 |

## Biomass estimates

An estimated biomass of scallops within each of the polygons defined by NRE managers as the regions of commercial interest was calculated using the standard method of scaling-up the mean density across the targeted survey area in the North West (Area 1).

An adjustment for dredge efficiency of 33% (Harrington et al. 2009) has been applied to the dredge biomass estimates and is also presented in Table 7. It should, however, be noted that the comparison between the dredge and video biomass estimates at the White Rock region in the 2020, 2021, and 2022 surveys raises questions around the validity of the adjustment applied for dredge efficiency. Consequently, dredge biomass values should be used as a relative value for comparison between the regions surveyed.

The total mean estimated legal biomass for 2024 from the targeted surveys in the North West (Area 1) is 8,787 t. The dredge efficiency adjusted biomass is 26,361 t.

## References

Harrington, J.J., Semmens, J.M., Haddon, M., 2008. 2008 Commonwealth Bass Strait Central Zone Scallop Fishery Survey. Survey Final Report. Tasmanian Aquaculture and Fisheries Institute. University of Tasmania.

**Table 7:** Estimated biomass of legal-sized (≥85 mm) commercial scallops (*Pecten fumatus*) within the North West (Area 1) sampling area defined by NRE managers as the regions of commercial interest, based on dredge survey methods for 2024 and previous seasons. Dredge-derived biomass estimates adjusted for dredge efficiency should be interpreted with caution as recent White Rock video surveys raise questions about their validity. Biomass confidence intervals (CI) are 95%.

| Year | Method | Sub-areas | Area (km²) | Sites sampled (n) | Biomass (t) | | | Adjusted biomass (t) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lower CI | Mean | Higher CI | Lower CI | Mean | Higher CI |
| **2024** | **Dredge** | **All Area 1** | 196 | **28** | **4234** | **8787** | **13339** | **12704** | **26361** | **40017** |
| | | Sub-area 1 | 49.5 | **7** | 670 | 4336 | 8002 | 2012 | 13010 | 24008 |
| | | Sub-area 2 | 49.5 | **7** | -1100 | 1162 | 3424 | -3300 | 3486 | 10273 |
| | | Sub-area 3 | 49.5 | **7** | -914 | 1068 | 3050 | -2742 | 3205 | 9152 |
| | | Sub-area 5 | 49.5 | **7** | 239 | 2242 | 4244 | 719 | 6726 | 12734 |
| **2023** | **Dredge** | **All Area 1** | **246** | **63** | **8569** | **12769** | **16969** | **25707** | **38307** | **50908** |
| | | Sub-area 1 | 50 | 13 | 5506 | 7212 | 8919 | 16517 | 21636 | 26756 |
| | | Sub-area 2 | 50 | 13 | 161 | 1987 | 3813 | 484 | 5961 | 11438 |
| | | Sub-area 3 | 50 | 13 | 21 | 186 | 352 | 62 | 559 | 1056 |
| | | Sub-area 4 | 50 | 11 | -163 | 1729 | 3622 | -490 | 5188 | 10866 |
| | | Sub-area 5 | 50 | 13 | 602 | 1562 | 2522 | 1807 | 4687 | 7567 |
| **2022** | **Dredge** | **All Area 1** | **200** | **52** | **4089** | **7208** | **10327** | **12267** | **21624** | **30981** |
| | | Sub-area 1 | **50** | 13 | 1064 | 3243 | 5422 | 3192 | 9729 | 16266 |
| | | Sub-area 2 | **50** | 13 | 462 | 2573 | 4684 | 1386 | 7719 | 14052 |
| | | Sub-area 3 | **50** | 13 | -21 | 276 | 573 | -7 | 828 | 1719 |
| | | Sub-area 4 | **50** | 13 | 258 | 1125 | 1993 | 774 | 3375 | 5979 |

# Appendix 1

## Total scallop estimates (legal + sub-legal)

**Table A1:** Estimated number and density of total scallops (total = legal + sub legal) for the entire sampled area (All Area 1) and four North West sub-areas from the 2024 dredge survey. Avg. indicates average density of scallops and SD indicates the standard deviation.

| Year | Method | Sub-area | Total density counts (n/m$^2$) | Density of total scallops (kg/1000 m$^2$) | | |
|---|---|---|---|---|---|---|
| | | | | Avg. | SD | Median |
| **2024** | **Dredge** | **All Area 1** | **0.6** | **45.1** | **60.3** | **5.3** |
| | | Sub-area 1 | 1.3 | 88.6 | 80.9 | 119.3 |
| | | Sub-area 2 | 0.3 | 24.0 | 50.5 | 1.1 |
| | | Sub-area 3 | 0.3 | 22.1 | 44.3 | |
| | | Sub-area 5 | 0.7 | 46.0 | 44.4 | 55.1 |

**Table A2.** Estimated average percentage (of total dead shell) and density of new dead shell scallops for the entire sampled area (All Area 1) and four North West sub-areas from the 2024 targeted dredge survey. Avg. indicates average density of scallops and SD indicates the standard deviation.

| Year | Method | Sub-area | Average percentage (%) new dead shell | Density of new dead scallops (kg/1000 m$^2$) | | |
|---|---|---|---|---|---|---|
| | | | | Avg. | SD | Median |
| **2024** | **Dredge** | **All Area 1** | **23.0** | **14.2** | **15.6** | **10.5** |
| | | Sub-area 1 | 13.5 | 11.9 | 8.9 | 13.1 |
| | | Sub-area 2 | 18.5 | 11.4 | 17.4 | 3.7 |
| | | Sub-area 3 | 40.0 | 22.2 | 23.9 | 29.7 |
| | | Sub-area 5 | 20.0 | 11.5 | 7.2 | 11.1 |

**Table A3:** Estimated of legal density counts and density of legal sized scallops (≥ 85 mm) for area 1 and ( ≥ 90 mm) for the rest of the areas from the 2024 exploratory dredge survey, and previous seasons. Avg. indicates average density of scallops. Dashes indicate values not calculated in previous years.

| Year | Method | N of dredges | Area | Sub area | Legal density counts ($n/m^2$) | Density of legal scallops ($kg/1000\ m^2$) | | Discard rate |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Avg. | Median | |
| 2024 | | | | | | | | |
| | Dredge | 156 | Area 1 | | 0.08 | 6.19 | 0.6 | 6.2 |
| | | 34 | Area 2 | | 0.01 | 0.6 | 0.2 | 76.0 |
| | | 229 | Area 3 | **Total** | 0.03 | 1.9 | 0.2 | 24.1 |
| | | 44 | | Cape Barren | 0.04 | 2.9 | 1.3 | 48.2 |
| | | 185 | | Eddystone | 0.02 | 1.8 | | 20.4 |
| | | | Area 4 | **Total** | 0.03 | 1.9 | 0.2 | 24.1 |
| | | 41 | | The Gardens | 0.03 | 2.5 | 2.4 | 32.4 |
| | | 16 | | Bicheno | 0.02 | 1.5 | 1.3 | 17.8 |
| | | 26 | Area 5 | Marion Bay | 0.20 | 19.4 | | 17.1 |
| 2023 | | | | | | | | |
| | Dredge | 231 | Area 1 | | | 5.2 | 0.3 | 2.4 |
| | | 16 | Area 2 | | 0.02 | 1.2 | 0.3 | 94.7 |
| | | 229 | Area 3 | | 0.05 | 4.1 | 1.2 | 10.1 |
| | | 143 | Area 4 | The Gardens | 0.07 | 6.0 | 0.5 | 6.7 |
| | | | | Bicheno | 0.01 | 0.9 | 0.2 | 11.4 |
| | | | Area 5 | | - | | | |
| 2022 | | | | | | | | |
| | Dredge | 150 | Area 1 | | | 22.2 | 0.3 | 29.1 |
| | | | Area 2 | | | - | - | - |
| | | 35 | | Cape Barren | | 15.1 | 8.8 | 33.9 |
| | | 30 | Area 3 | Babel Island | | 12.5 | 9.3 | 9.3 |
| | | 15 | | Eddystone | | 8.1 | 4.8 | 32.4 |
| | | 82 | Area 4 | The Gardens | | 10.0 | 1.9 | 11.1 |
| | | 13 | | Bicheno | | 0.7 | 0.4 | - |
| | | 30 | Area 5 | Marion Bay | | 10.1 | 5.6 | 4.5 |

# Appendix 2

## Targeted Survey Sites 2024

### North West (Area 1) preseason targeted dredge survey 2024

In 2022, a targeted dredge survey was designed following exploratory dredge surveys in the North West (Area 1). The area contains five sub-area sample sites of approximately the same size. For 2024, four of the five subareas will be sampled. Twenty random sites have been selected per sub-area, of which seven are to be sampled (blue), with 13 alternate sites (grey) in case of unsuitable sampling conditions (Figure 1, Table 1). To qualify as a valid survey tow, the dredge must pass within 100 m of the site mark at some point during the tow. Survey tows must be 500 m in length.

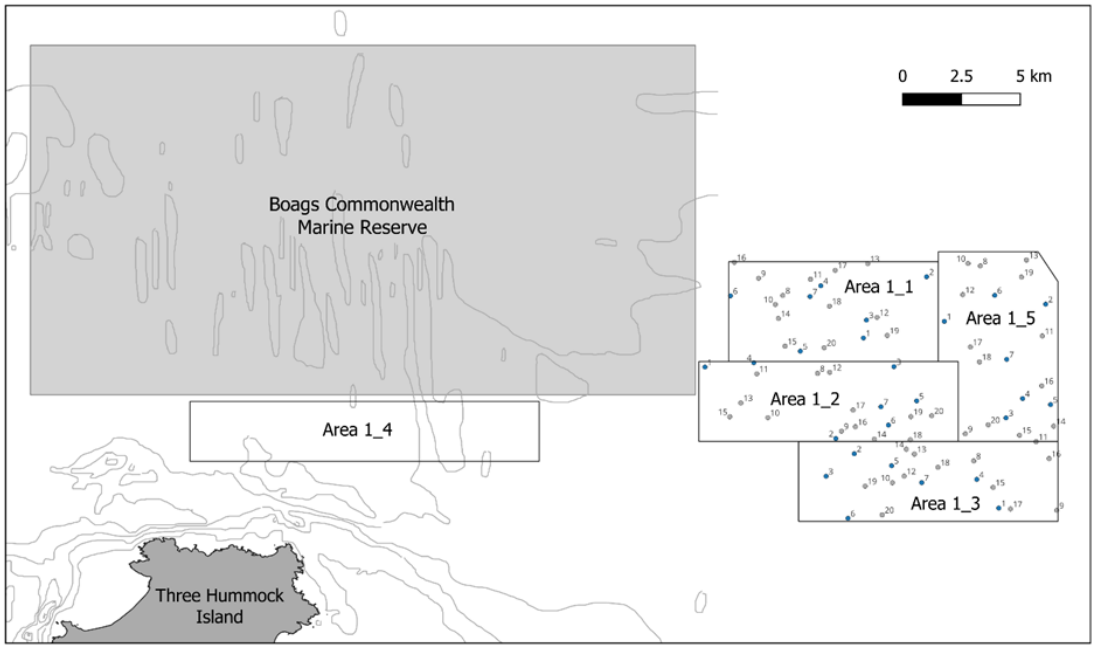



**Figure A1:** Commercial Scallop (*Pecten fumatus*) survey sites (with site numbers) for the four sub-areas to be sampled of Area 1, North West Tasmania during 2024. Blue sites indicate the primary sampling sites and grey sites indicate the alternate sites in case of unsuitable sampling conditions. See Figures 2-6 for each sub-area in closer detail.

**Table A4:** Dredge survey sites listed in randomised order per sub-area for Area 1 (North West). Primary tow sites are shaded in blue (random order numbers 1-7) and alternate tow sites are shaded in grey (random order numbers 8-20).

| Sub-area | Random order | Decimal Degrees Latitude | Decimal Degrees Longitude | Degrees Latitude | Decimal Minutes Latitude | Degrees Longitude | Decimal Minutes Longitude |
|---|---|---|---|---|---|---|---|
| 1 | 1 | -40.28821508 | 145.2424837 | -40 | 17.293 | 145 | 14.549 |
| 1 | 2 | -40.25756431 | 145.2741507 | -40 | 15.454 | 145 | 16.449 |
| 1 | 3 | -40.27925073 | 145.2440124 | -40 | 16.755 | 145 | 14.641 |
| 1 | 4 | -40.26208603 | 145.2211348 | -40 | 15.725 | 145 | 13.268 |
| 1 | 5 | -40.29481732 | 145.2108841 | -40 | 17.689 | 145 | 12.653 |
| 1 | 6 | -40.26711296 | 145.1758611 | -40 | 16.027 | 145 | 10.552 |
| 1 | 7 | -40.2674386 | 145.2157287 | -40 | 16.046 | 145 | 12.944 |
| 1 | 8 | -40.26692644 | 145.2020961 | -40 | 16.016 | 145 | 12.126 |
| 1 | 9 | -40.25829167 | 145.189948 | -40 | 15.498 | 145 | 11.397 |
| 1 | 10 | -40.27141714 | 145.1983586 | -40 | 16.285 | 145 | 11.902 |
| 1 | 11 | -40.25883062 | 145.2159532 | -40 | 15.530 | 145 | 12.957 |
| 1 | 12 | -40.27789505 | 145.2493307 | -40 | 16.674 | 145 | 14.960 |
| 1 | 13 | -40.25097775 | 145.2446218 | -40 | 15.059 | 145 | 14.677 |
| 1 | 14 | -40.27843571 | 145.199878 | -40 | 16.706 | 145 | 11.993 |
| 1 | 15 | -40.2923259 | 145.2032115 | -40 | 17.540 | 145 | 12.193 |
| 1 | 16 | -40.25033775 | 145.1778051 | -40 | 15.020 | 145 | 10.668 |
| 1 | 17 | -40.25430243 | 145.2283521 | -40 | 15.258 | 145 | 13.701 |
| 1 | 18 | -40.27226464 | 145.2254877 | -40 | 16.336 | 145 | 13.529 |
| 1 | 19 | -40.28693561 | 145.2544394 | -40 | 17.216 | 145 | 15.266 |
| 1 | 20 | -40.29305944 | 145.2228417 | -40 | 17.584 | 145 | 13.371 |
| 2 | 1 | -40.30277154 | 145.1630712 | -40 | 18.166 | 145 | 9.784 |
| 2 | 2 | -40.33854949 | 145.2286394 | -40 | 20.313 | 145 | 13.718 |
| 2 | 3 | -40.30256063 | 145.2577874 | -40 | 18.154 | 145 | 15.467 |
| 2 | 4 | -40.30056477 | 145.1875627 | -40 | 18.034 | 145 | 11.254 |
| 2 | 5 | -40.31970912 | 145.2691701 | -40 | 19.183 | 145 | 16.150 |
| 2 | 6 | -40.33183206 | 145.2550181 | -40 | 19.910 | 145 | 15.301 |
| 2 | 7 | -40.32267841 | 145.2512642 | -40 | 19.361 | 145 | 15.076 |
| 2 | 8 | -40.30591983 | 145.2195055 | -40 | 18.355 | 145 | 13.170 |
| 2 | 9 | -40.33483036 | 145.2314875 | -40 | 20.090 | 145 | 13.889 |
| 2 | 10 | -40.32808031 | 145.1945948 | -40 | 19.685 | 145 | 11.676 |
| 2 | 11 | -40.30614563 | 145.1890439 | -40 | 18.369 | 145 | 11.343 |
| 2 | 12 | -40.30537629 | 145.2256161 | -40 | 18.323 | 145 | 13.537 |
| 2 | 13 | -40.32075614 | 145.181038 | -40 | 19.245 | 145 | 10.862 |
| 2 | 14 | -40.33887234 | 145.2480297 | -40 | 20.332 | 145 | 14.882 |
| 2 | 15 | -40.32765317 | 145.1754921 | -40 | 19.659 | 145 | 10.530 |
| 2 | 16 | -40.3326502 | 145.2384634 | -40 | 19.959 | 145 | 14.308 |
| 2 | 17 | -40.32428342 | 145.2372992 | -40 | 19.457 | 145 | 14.238 |
| 2 | 18 | -40.33916269 | 145.2660314 | -40 | 20.350 | 145 | 15.962 |
| 2 | 19 | -40.32757779 | 145.2663026 | -40 | 19.655 | 145 | 15.978 |
| 2 | 20 | -40.32712315 | 145.2767167 | -40 | 19.627 | 145 | 16.603 |
| 3 | 1 | -40.37336736 | 145.3103258 | -40 | 22.402 | 145 | 18.620 |
| 3 | 2 | -40.34617542 | 145.2379091 | -40 | 20.771 | 145 | 14.275 |
| 3 | 3 | -40.35742555 | 145.2237753 | -40 | 21.446 | 145 | 13.427 |
| 3 | 4 | -40.35901573 | 145.2992926 | -40 | 21.541 | 145 | 17.958 |
| 3 | 5 | -40.35217656 | 145.2566026 | -40 | 21.131 | 145 | 15.396 |
| 3 | 6 | -40.37849301 | 145.2347653 | -40 | 22.710 | 145 | 14.086 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 7 | -40.36062954 | 145.2717002 | -40 | 21.638 | 145 | 16.302 |
| 3 | 8 | -40.34974738 | 145.2977382 | -40 | 20.985 | 145 | 17.864 |
| 3 | 9 | -40.37451089 | 145.3393708 | -40 | 22.471 | 145 | 20.362 |
| 3 | 10 | -40.360667 | 145.2570015 | -40 | 21.640 | 145 | 15.420 |
| 3 | 11 | -40.34012782 | 145.3290035 | -40 | 20.408 | 145 | 19.740 |
| 3 | 12 | -40.35737265 | 145.2628984 | -40 | 21.442 | 145 | 15.774 |
| 3 | 13 | -40.34633273 | 145.2680419 | -40 | 20.780 | 145 | 16.083 |
| 3 | 14 | -40.34389877 | 145.2639947 | -40 | 20.634 | 145 | 15.840 |
| 3 | 15 | -40.36300626 | 145.3074906 | -40 | 21.780 | 145 | 18.449 |
| 3 | 16 | -40.34860137 | 145.3355324 | -40 | 20.916 | 145 | 20.132 |
| 3 | 17 | -40.37378447 | 145.3161939 | -40 | 22.427 | 145 | 18.972 |
| 3 | 18 | -40.35297527 | 145.2798478 | -40 | 21.179 | 145 | 16.791 |
| 3 | 19 | -40.36236061 | 145.2433438 | -40 | 21.742 | 145 | 14.601 |
| 3 | 20 | -40.37676385 | 145.2519135 | -40 | 22.606 | 145 | 15.115 |
| 5 | 1 | -40.27988596 | 145.2830394 | -40 | 16.793 | 145 | 16.982 |
| 5 | 2 | -40.27128695 | 145.3338207 | -40 | 16.277 | 145 | 20.029 |
| 5 | 3 | -40.32821726 | 145.3139363 | -40 | 19.693 | 145 | 18.836 |
| 5 | 4 | -40.3185368 | 145.3222676 | -40 | 19.112 | 145 | 19.336 |
| 5 | 5 | -40.32155554 | 145.3362715 | -40 | 19.293 | 145 | 20.176 |
| 5 | 6 | -40.2668649 | 145.3083034 | -40 | 16.012 | 145 | 18.498 |
| 5 | 7 | -40.29890224 | 145.3143034 | -40 | 17.934 | 145 | 18.858 |
| 5 | 8 | -40.25214035 | 145.3010941 | -40 | 15.128 | 145 | 18.066 |
| 5 | 9 | -40.33619052 | 145.2935588 | -40 | 20.171 | 145 | 17.614 |
| 5 | 10 | -40.25088284 | 145.2948846 | -40 | 15.053 | 145 | 17.693 |
| 5 | 11 | -40.28722645 | 145.3321164 | -40 | 17.234 | 145 | 19.927 |
| 5 | 12 | -40.26653114 | 145.2922943 | -40 | 15.992 | 145 | 17.538 |
| 5 | 13 | -40.24917924 | 145.3241917 | -40 | 14.951 | 145 | 19.452 |
| 5 | 14 | -40.33234656 | 145.3378372 | -40 | 19.941 | 145 | 20.270 |
| 5 | 15 | -40.33688929 | 145.3206933 | -40 | 20.213 | 145 | 19.242 |
| 5 | 16 | -40.31217152 | 145.3318461 | -40 | 18.730 | 145 | 19.911 |
| 5 | 17 | -40.29271204 | 145.2960934 | -40 | 17.563 | 145 | 17.766 |
| 5 | 18 | -40.30020525 | 145.3006652 | -40 | 18.012 | 145 | 18.040 |
| 5 | 19 | -40.25771359 | 145.3216824 | -40 | 15.463 | 145 | 19.301 |
| 5 | 20 | -40.33164988 | 145.3050443 | -40 | 19.899 | 145 | 18.303 |

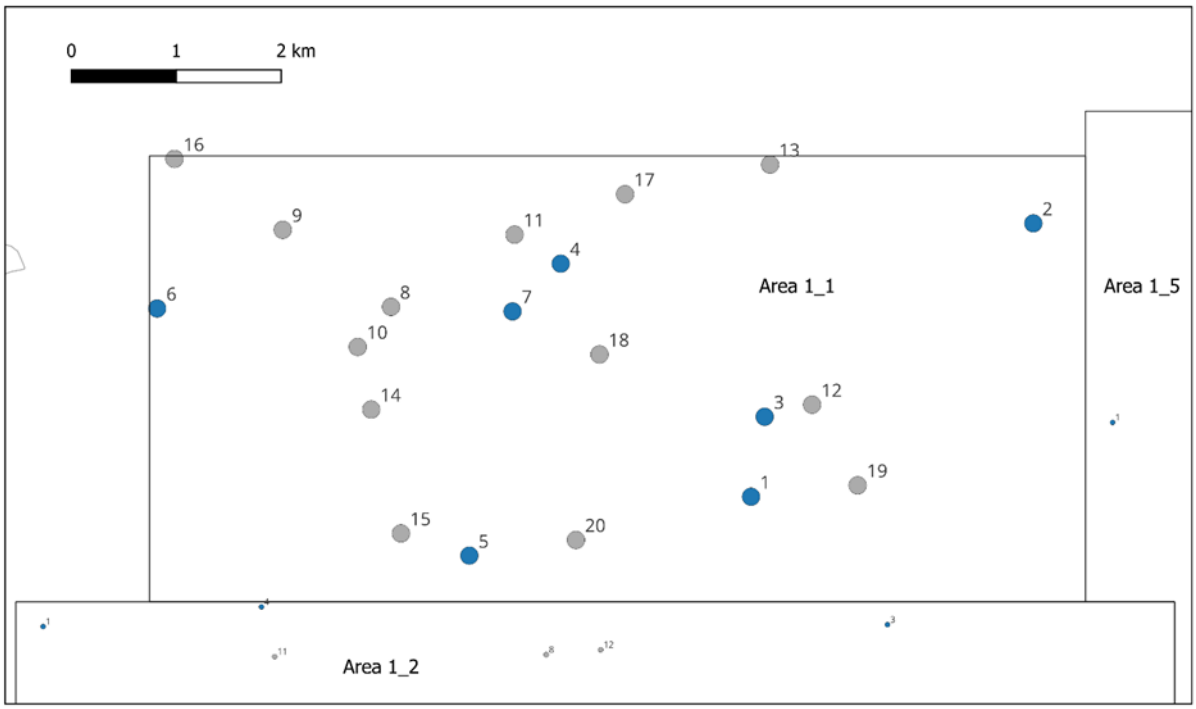



**Figure A2:** Commercial Scallop (*Pecten fumatus*) survey sites (with site numbers) for sub-area 1 of Area 1 (Area1_1), North West Tasmania. Blue sites indicate the primary sampling sites and grey sites indicate the alternate sites in case of unsuitable sampling conditions.

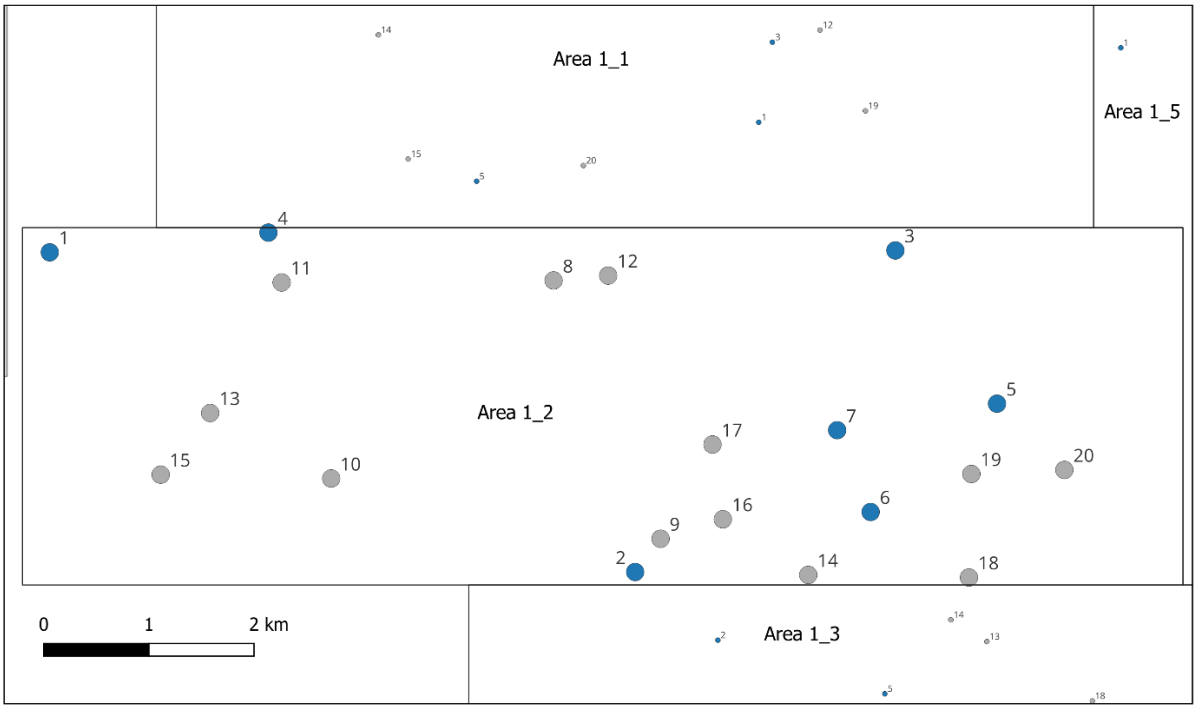



**Figure A3**: Commercial Scallop (*Pecten fumatus*) survey sites (with site numbers) for sub-area 2 of Area 1 (Area1_2), North West Tasmania. Blue sites indicate the primary sampling sites and grey sites indicate the alternate sites in case of unsuitable sampling conditions.

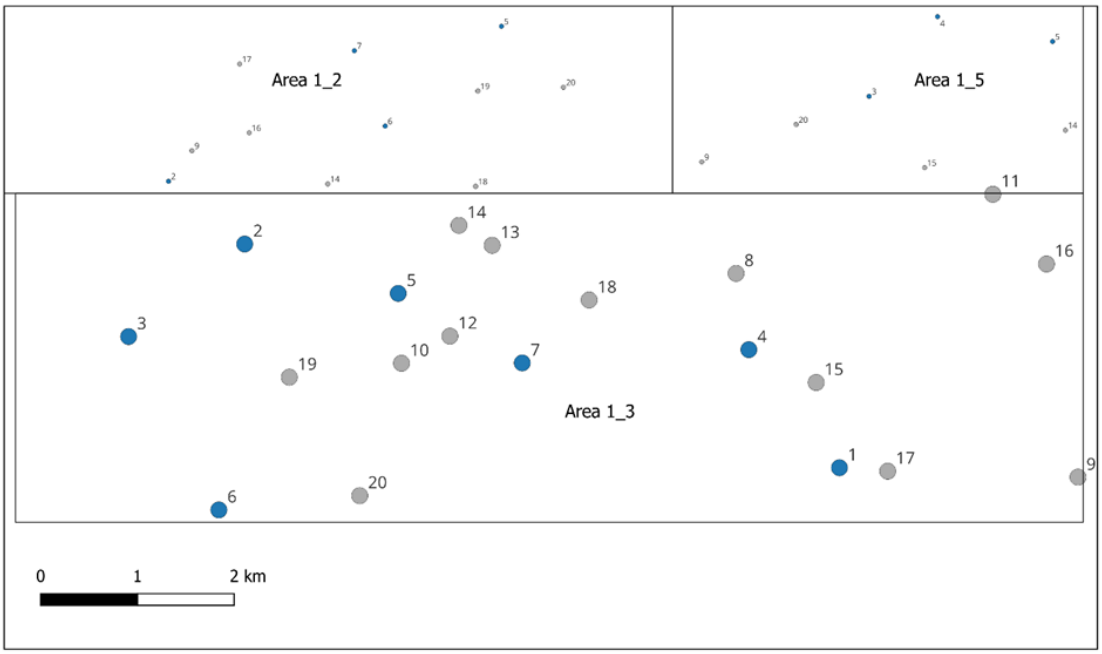



**Figure A4**: Commercial Scallop (*Pecten fumatus*) survey sites (with site numbers) for sub-area 3 of Area 1 (Area1_3), North West Tasmania. Blue sites indicate the primary sampling sites and grey sites indicate the alternate sites in case of unsuitable sampling conditions.

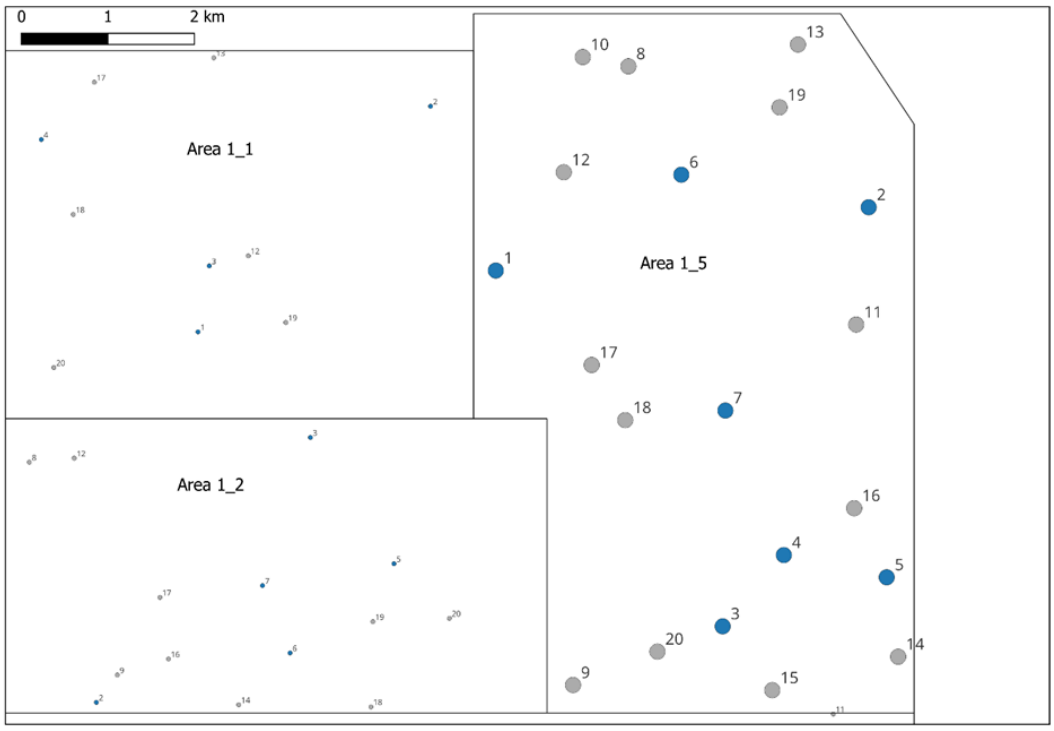
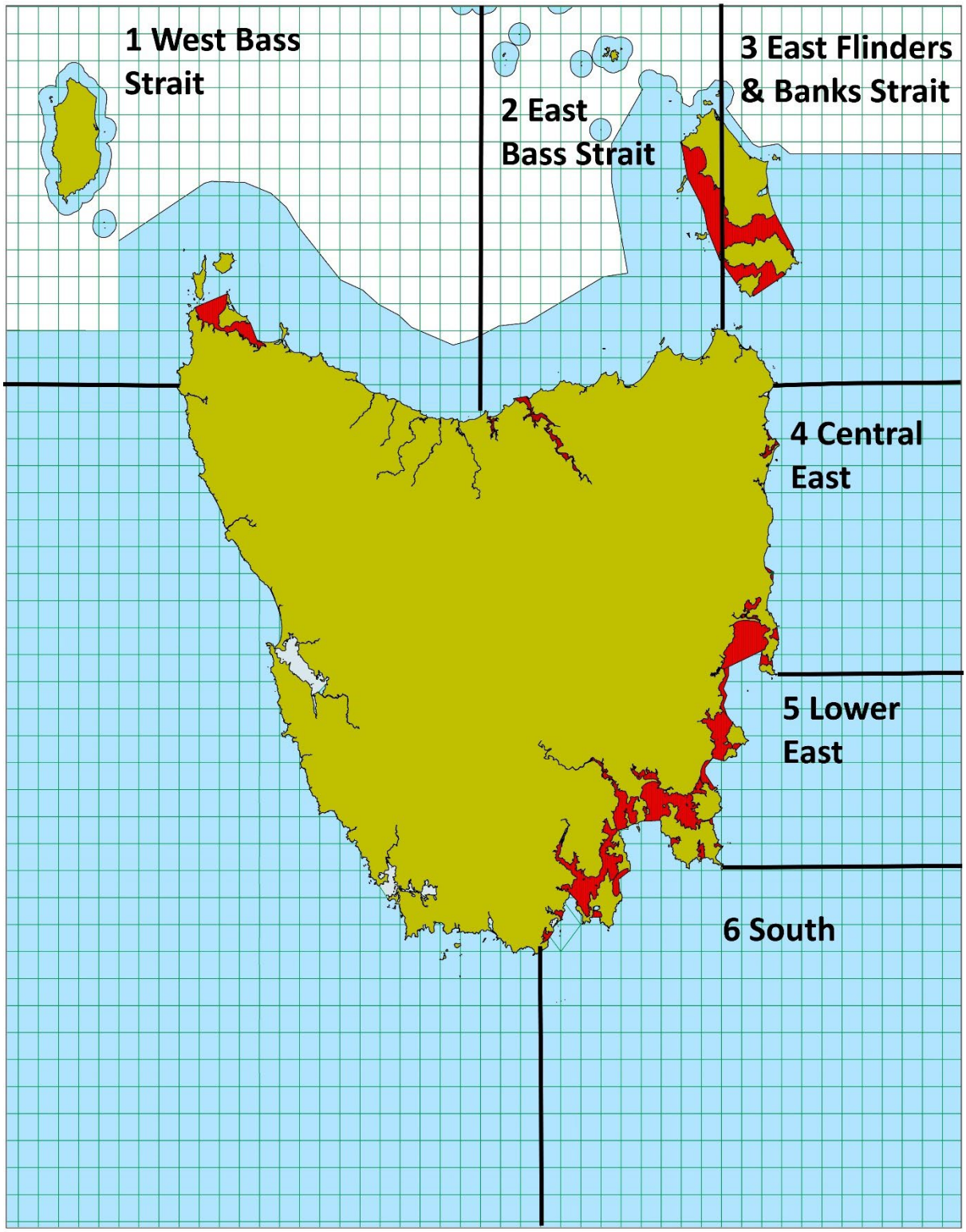



**Figure A5**: Commercial Scallop (*Pecten fumatus*) survey sites (with site numbers) for sub-area 5 of Area 1 (Area1_5), North West Tasmania. Blue sites indicate the primary sampling sites and grey sites indicate the alternate sites in case of unsuitable sampling conditions.

# Appendix 3

## Tasmanian Scallop Fishery Survey Areas




Pale blue areas indicate the Tasmanian Offshore Constitutional Settlement, red areas indicate dredge prohibited areas.