NWIFCA Technical, Science and Byelaw Committee

10th of May 2022: 10:00 a.m.

Agenda Item 6

SURVEY AND INSPECTION REPORT

Purpose: **To report survey and inspections in the last quarter and update members on the mussel and cockle fisheries in the district.**

Recommendation: **Approve the following:**

a) Receive the report

1. MUSSELS

Inspections and surveys completed since the last report:

1) **Heysham** inspection (01-03-22)
2) **South America** inspection x 2 (19-04-22)
3) **Duddon** inspection (05-03-22)
4) **Walney Channel** Dutch Wand survey (17-03-22)
5) **Foulney** Dutch Wand survey (30-03-22)
6) **Low Bottom** Dutch Wand survey (20-04-22 *note currently being drafted*)

Inspection and survey notes are provided in the Annex to this report. The following sections provide a summary of our findings and details of further relevant work.

A number of mussel surveys/inspections have been done early this year to attain a winter biomass for mussels once the overwintering birds have left and prior to new settlement. This is in order to obtain calculations on possible bird food requirements and survivability of stock through winter.

a) Duddon mussel beds

Hard Acre:

The Duddon mussel bed named Hard Acre was inspected by officers on the 5th of March following reports from industry that there had been significant loss to the mussel bed. From the inspection it is estimated that 70-80% of the mussel bed has been washed away, this is likely due to the significant amount of storm activity that the UK has had in late January and throughout February.

b) Morecambe Bay mussel beds:

Walney Channel:

Dutch wand surveys were conducted on Walney on the 17th of March to gain percentage cover and the extent of the beds. No seed settlement was observed during the survey. Beyond the Southern extent of the mussel bed area there was an area of Sabellaria sp. The Sabellaria was low lying and patchy, with the majority of it old, deteriorated structure and some new live growth. From the estimated transect and sample data, the total mussel bed surveyed was 10.67 hectares. There is an estimated 455 tonnes size mussel and 684 tonnes undersize mussel on the bed.

Foulney:

Dutch wand surveys were conducted on Foulney on the 30th of March to gain percentage cover and the extent of the beds. No seed settlement was observed during the survey. The total mussel bed surveyed was 47.9 hectares. There was no separation made between the main Foulney bed and Foulney Island as the mussel had spread between the two and the channel had filled in. There is an estimated 1055 tonnes size mussel and 4201 tonnes undersize mussel on the bed.

Low Bottom:

On the 20th of April officers surveyed Low Bottom mussel bed to identify possible food source for birds as mitigation against fishing activities. Note is currently in draft.

Heysham:

Officers accessed Heysham Flat mussel bed on the 1st of March. Dallam Dyke was not crossed due to water depth and tide. There is still a significant Sabellaria alveolata reef distributed across much of the skear, with large areas covered by reef. The extensive area of reef was present on the North and South of the Skear and extends across the skear from Conger Rock to Dallam Dyke.

Some mussel had persisted over the winter, with patches of 25-40mm mussel along the Northern edge of the skear and Dallam Dyke. Much of the live mussel was mixed in with the Sabellaria alveloata. The cleaner and more consistent mussel was found along Dallam Dyke, with some areas of 80-90% coverage. There were no signs of a 2022 mussel settlement but this could be due to the early time of year of the survey. Oystercatcher were present in large numbers feeding on the Southern edge of Heysham Flat skear.

South America:

Officers inspected South America on the 19th of April to assess if any mussel had persisted from 2021 and if there were signs of a 2022 settlement.

The area consisted of exposed hard substrate (mix of pebbles and small cobbles), sand and shell debris. There was the very occasional live mussel in the areas of shell debris. The mussel was 30-35mm in length. The area which dried out was walked but no 2022 mussel settlement was observed.

2. COCKLES

Inspections and surveys completed since the last report:

1) **Southport** inspection x 2 (08-04-22 and 23-03-22)
2) **Foulnase** inspection (24-03-22)
3) **Lytham** inspection (08-03-22)

a) Ribble cockle beds:

Southport:

Officers inspected Southport cockle beds on the 23rd of March, and returned on the 8th of April to assess further potential areas and identify the full extent of the bed. Areas where historically

there have been cockle beds were inspected to see if there was significant cockle to require a full survey. North Penfold, South Penfold and South Gut were inspected as well as surrounding areas. A large proportion of the area inspected had high density patches of undersize cockle present, particularly in a band running from the North East of the bed to the area of South Gut on the South West of the bed. Very few size cockle were found.

A survey grid is currently being drawn up, and the local Environmental Health authorities of West lancs and Liverpool have been contacted to inform them of the potential fishery and the need to prepare for bed classification. Surveys will be conducted end of May.

Foulnase:

On the 24th of March officers inspected Foulnase cockle beds after industry reports from autumn 2021 showed it had received a dense cockle settlement. Four byelaw 3 permit holders that had provided information of the settlement were present for the inspection. The inspection aimed to assess what cockle had survived the winter, the extent of the bed and identify whether a future survey was required. It was found that very little cockle had persisted through the winter, with only the occasional cockle being present. Unless there is a significant change, from the area inspected there is no prospect of a commercial fishery on Foulnase in 2022.

Lytham:

On the 8th of March officers inspected historical cockle beds to see if there was significant cockle present to require a full survey. North Run, Mouse Hole and Grannys Bank were inspected as well as the surrounding areas. The majority of the area had no cockle or small numbers present. There was an area on North Run in a muddy gutter that was running parallel to the shore that contained cockle; all the cockle was undersize. Cockle across the surveyed area was patchy, with small patches found on lower areas of Grannys Bank and in gutters.

NWIFCA, 21st of April 2022

Annex 1

Mussel Inspections and surveys:

Heysham Flat Mussel and *Sabellaria alveolata* Inspection 01-03-22

Officers present: MC, MB
Tides LW 17:10 1.2m (Liverpool tides)

Officers accessed the skear on foot to inspect the mussel on Heysham Flat. Dallam Dyke was not crossed due to water depth and tide.

There is still a significant *Sabellaria alveolata* reef distributed across much of the skear, with large areas covered by reef, some living and some deteriorated with thin mud/sand on top (Figure 1). Accessing all areas of the skear was made difficult by the extent of reef. The extensive area of reef was present on the North and South of the Skear as seen it previous years but as in 2021 it now extends across the skear from Conger Rock to Dallam Dyke (Figures 2 and 3). The extent is similar to that observed pre 2016 where much of the end of the skear was covered by *Sabellaria alveolata*.

Some mussel had persisted over the winter, with patches of 25-40mm mussel, particularly along the Northern edge of the skear and Dallam Dyke. Much of the live mussel was mixed in with the *Sabellaria alveloata*. There was the occasional size mussel present across the bed. The cleaner and more consistent mussel was found along Dallam Dyke, with some areas of 80-90% coverage. There were no signs of a 2022 mussel settlement but this could be due to the early time of year of the survey. Some areas of bare cobble and dead shell were also present on the skear.

Knott End Skear appeared similar in colour to the main skear so it is presumed that there is mussel present but this cannot be confirmed as access was not possible by foot. There are a number of skear present beyond Knott End skear.

Oystercatcher in large numbers feeding on the Southern edge of Heysham Flat skear.

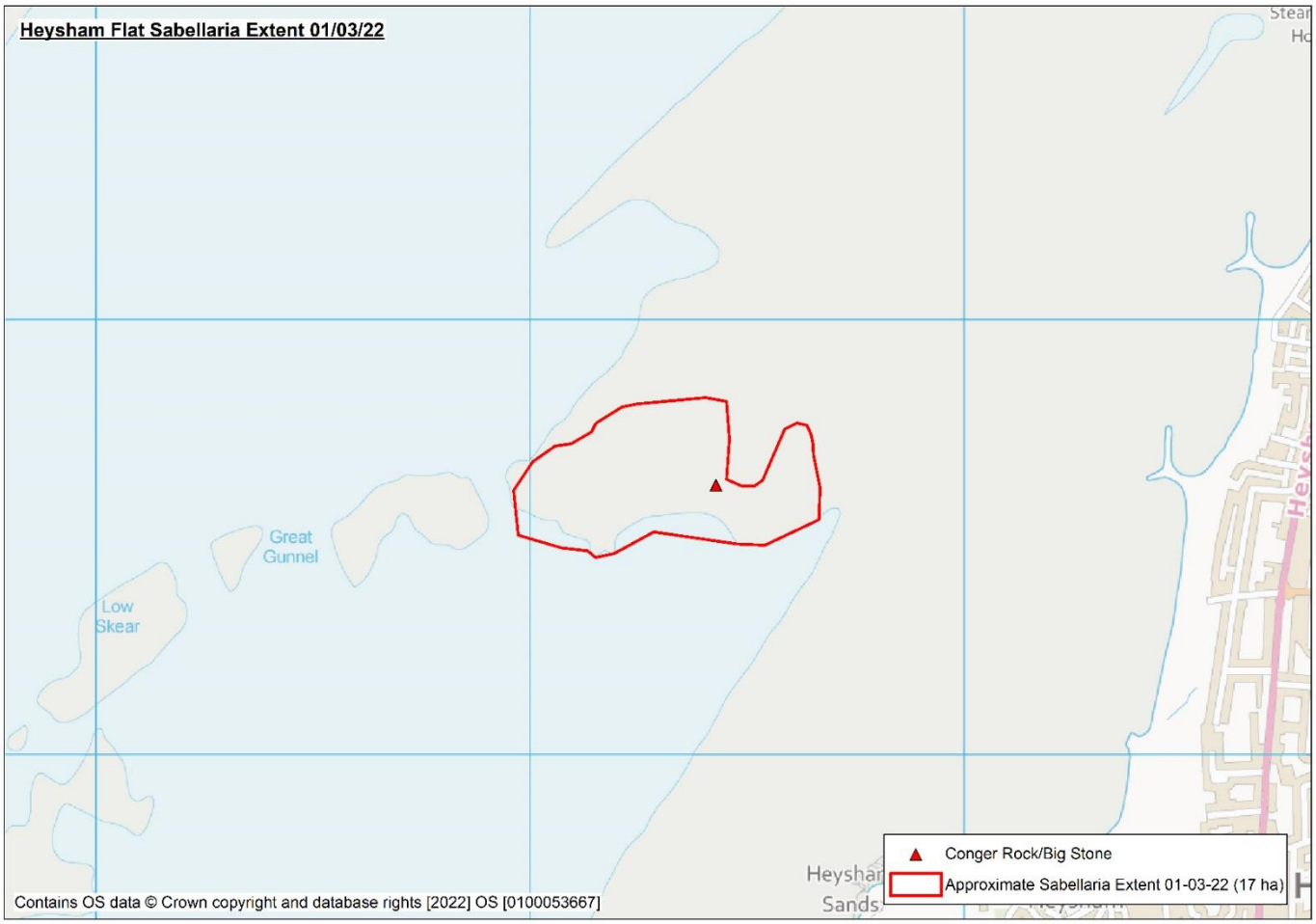

Fig.1 *Sabellaria alveolata* approximate extent 01-03-22.

Fig. 2 Extensive *Sabellaria alveolata* reefs 01-03-22.

Fig. 3 Extensive *Sabellaria alveolata* reefs 01-03-22.

Fig. 4 25-40mm mussel in mud on Heysham Flat 01-03-22.

Fig. 5 Cleaner mussel of 25-40mm along the edge of Dallam dyke 01-03-22.

Fig. 6 Cleaner mussel of 25-40mm along the edge of Dallam dyke 01-03-22.

Duddon Mussel Inspection 05-03-22

Officers: ID, JH

LW: 07:27 1.0m (Liverpool tides)

The Duddon mussel bed named Hard Acre was inspected following reports from industry that there had been significant loss to the mussel bed.

From the inspection it is estimated that 70-80% of the mussel bed has been washed away, this is likely due to the significant amount of storm activity that the UK has had in late January and throughout February. Figure 1 maps the previous bed area from September 2021. The areas of mussel have not been mapped due to the patchy consistency of the mussel and the amount of time available to survey. Instead images have been provided (figures 2 – 13) showing the significant area which has been scoured and the areas which remain. The remaining mussel consists of an area of sparse mussel between figures 2-3, a band running along the channel edge between figure 7 and 9, and patches of mussel in an area on the north western extent of the bed around figure 11.

The mussel which remained was 40-55mm in length with the majority being above the MLS of 45mm. Based on a number of small samples the percentage of 40-45mm mussel ranged from 0-30% depending on the area.

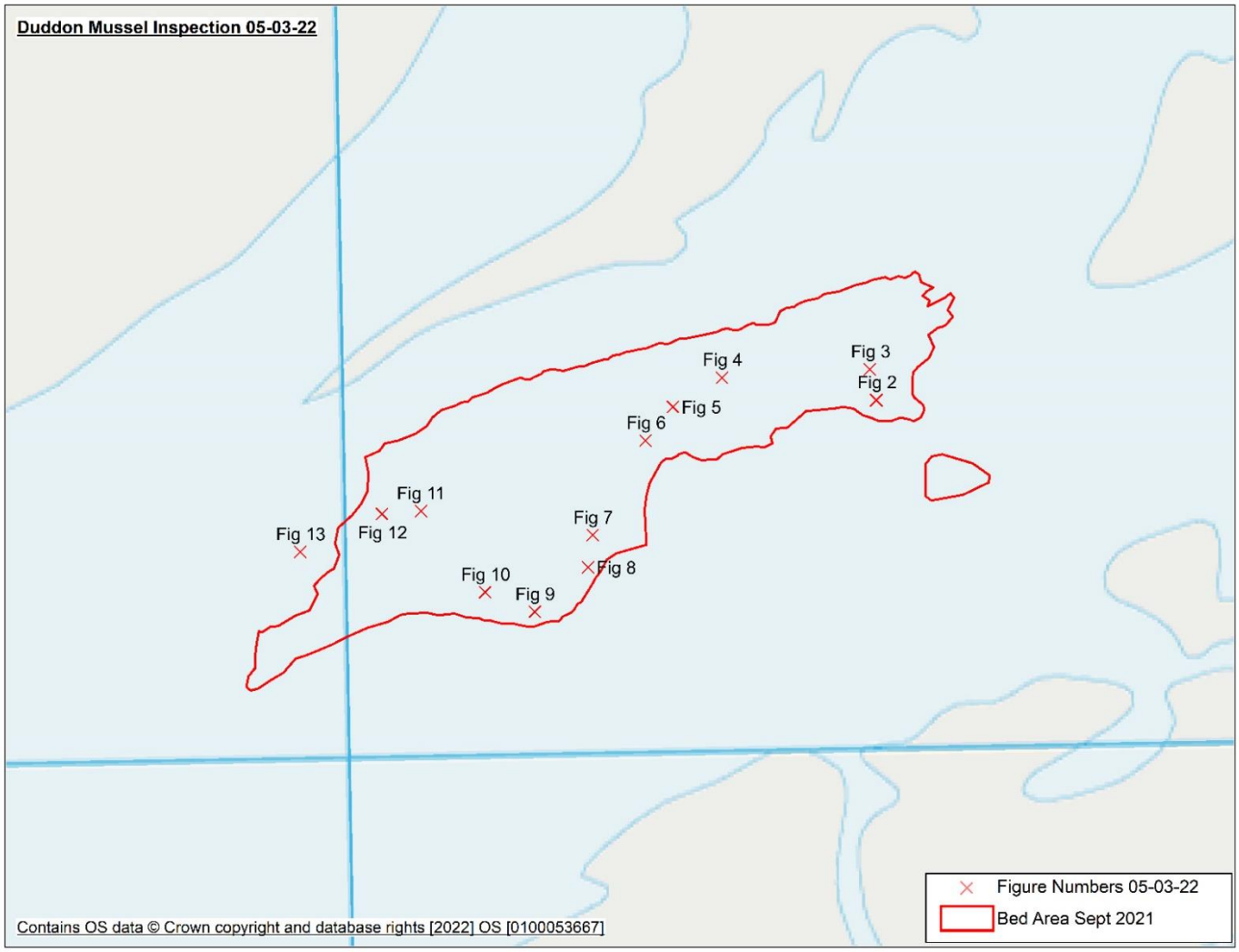

Fig 1 – Figure numbers for images provided against previously mapped bed area

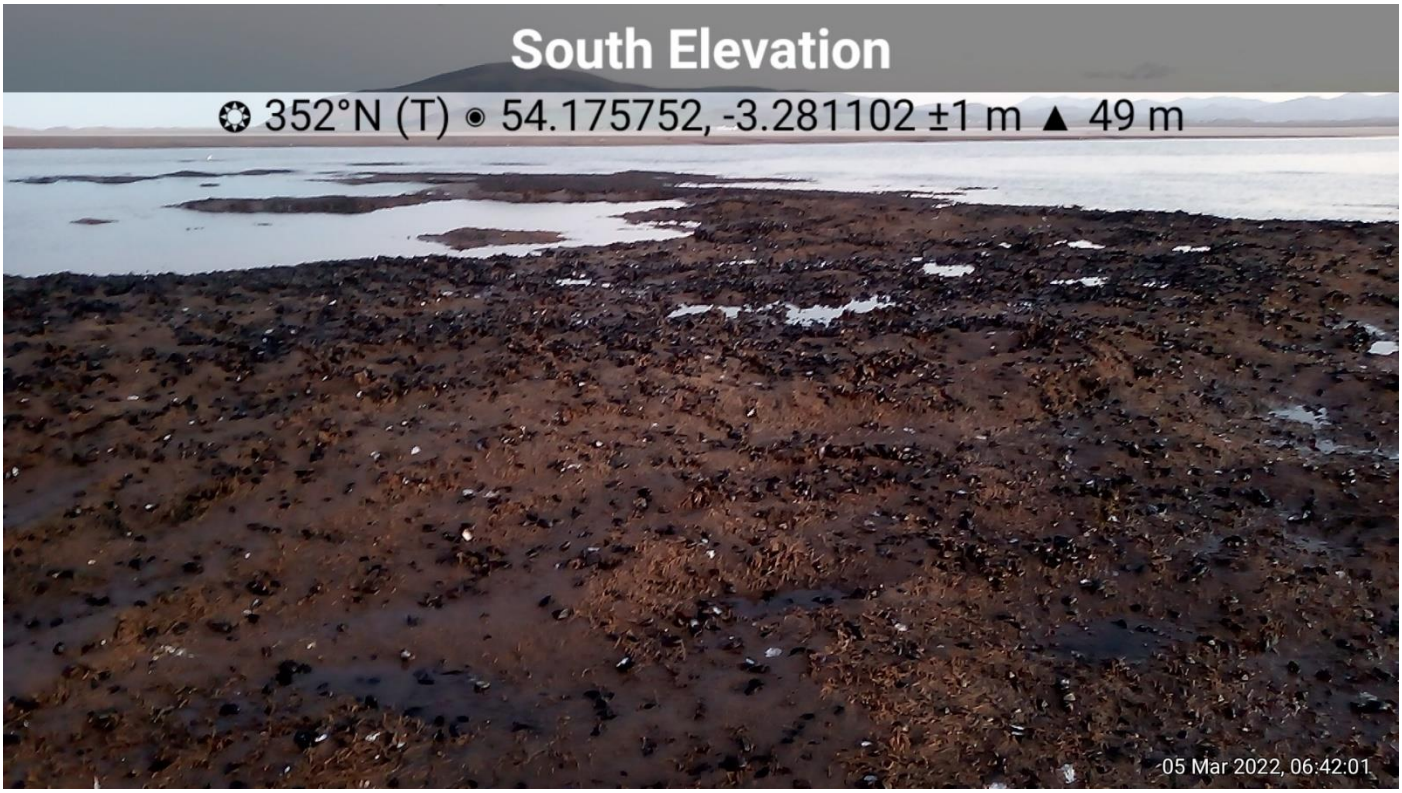

Fig 2 – Sparse density mussel on the Eastern extent of the mussel bed 05-03-22

Fig 3 - Sparse density mussel on the Eastern extent of the mussel bed mixed in with sand mason (*Lanice conchilega*) 05-03-22

Fig 4 – Large scoured area in the centre of the bed 05-03-22

Fig 5 – Large scoured area in the centre of the bed 05-03-22

Fig 6 – Small patch of mussel in the large scoured area in the centre of the bed 05-03-22

Fig 7 – Small patches of mussel on the Southern extent of the scoured area 05-03-22

Fig 8 – Area of 40-55mm mussel

Fig 9 – Band of mussel on the Southern extent of the scoured area 05-03-22

Fig 10 – Large scoured area in the South West extent of the bed 05-03-22

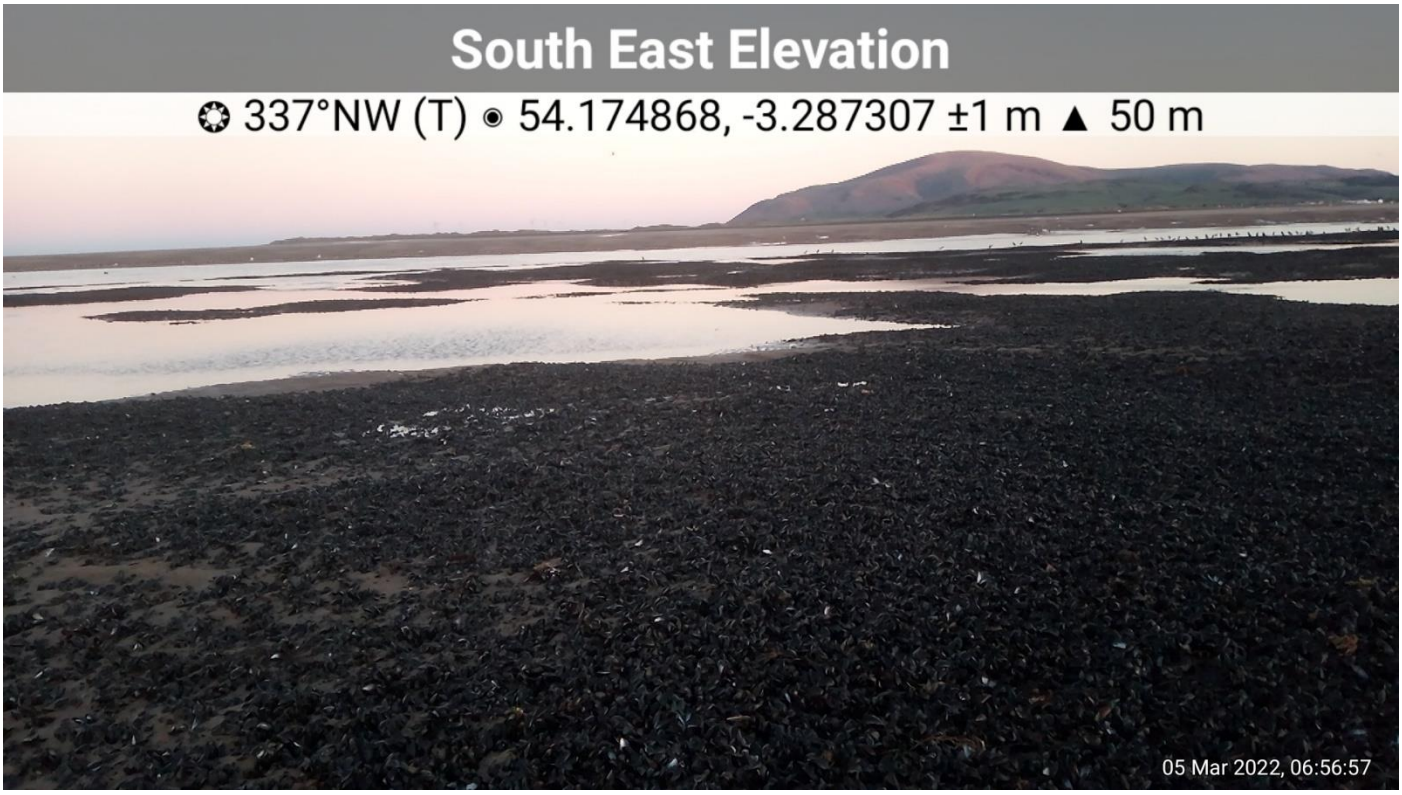

Fig 11 – Patch of larger mussel 45-55mm on the North West extent of the bed 05-03-22

Fig 12 – Small patches of mussel between areas of sand at the Western extent of the bed 05-03-22

Fig 13 – Small patches of mussel between areas of sand at the Western extent of the bed 05-03-22

Walney Channel Dutch Wand Mussel Survey 17-03-22

Officers present: MC, JH

Low water: 17:38 1.3m (Liverpool Tides)

Survey method: Dutch Wand

Line transects were completed across the mussel bed using a Dutch Wand, transects start and finish at the edge of the bed as shown in Figure 2. The number of hits and misses of live mussel were recorded to give percentage cover. The bed area was calculated from the start and end of transects and from observations of officers whilst surveying. It was not possible to walk the perimeter of the bed due to time restraints. A mussel sample was taken every 50 hits using a 10 cm diameter corer. Six transects were completed and 9 samples collected. The total weight of live undersize and size mussel was recorded as well as the size frequency of each sample. No seed settlement was observed during the survey. The survey was completed early in the year to gather information on the biomass remaining after the winter period, after over-wintering birds had left the area but before mussel growth and new settlement.

Beyond the Southern extent of the mussel bed area there was an area of *Sabellaria sp*. The Sabellaria was low lying and patchy, with the majority of it old, deteriorated structure and some new live growth. Due to the size of the tide and water depth, the section of bed further into Walney Channel to the West of the surveyed area could not be accessed. It is thought that the winter storms have scoured the channel between the areas and it was therefore unsafe to cross.

From the estimated transect and sample data, the total mussel bed surveyed was **10.67 hectares**.

Biomass

455 tonnes of size mussel and **684 tonnes of undersize mussel**

Length Frequencies

The total length frequency for the surveyed bed is provided in Figure 3 below. From the length frequency data the mussel present on the Walney Channel bed ranged from 15 – 70mm with the highest frequency of mussel being between 34mm and 45mm.

Maps

The mussel frequency of each size class of mussels per sample has been mapped in Figure 4 with the size of the pie adjusted for sample weight standardised to kg/m². The weight of the size and undersize mussel has been mapped and represented in Figure 5. (NB neither of these maps include spat)

It can be seen from the map that the most abundant size class across the bed is 25-<45mm, with the majority of size mussel over 45mm on the Eastern edge of the bed.

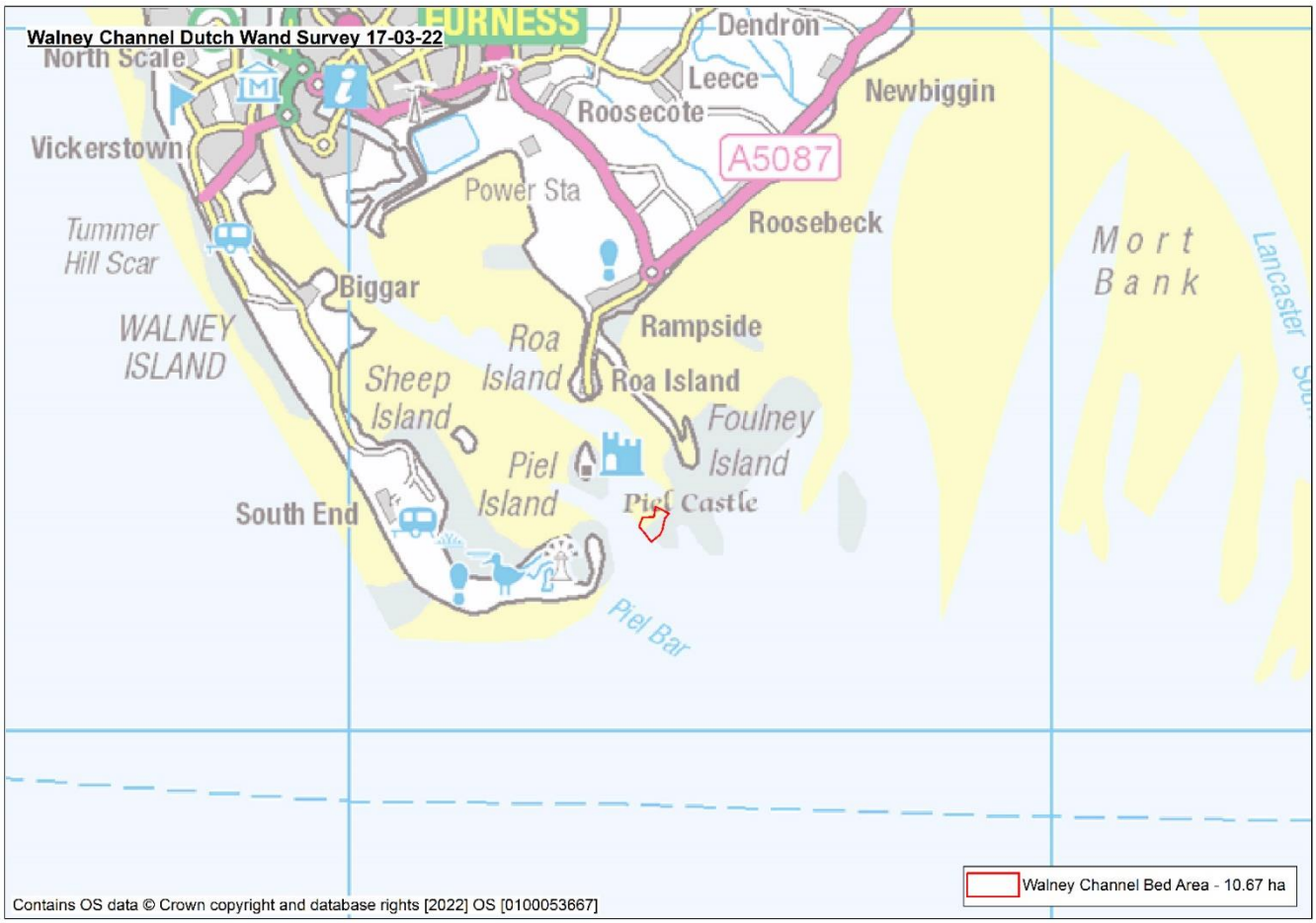

Figure 1 – Location of Walney Channel Mussel Bed 17-03-22.

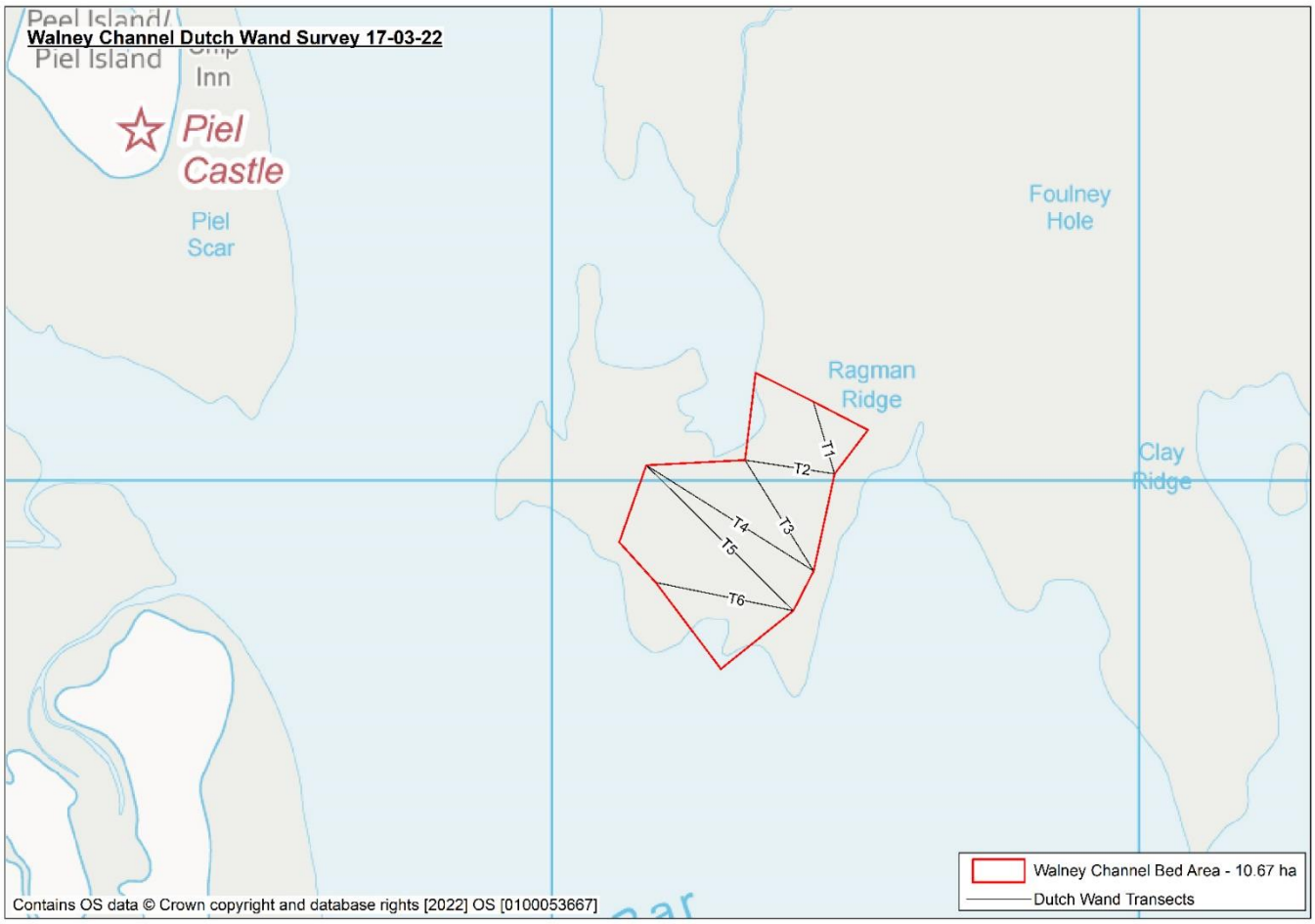

Figure 2 – Walney Channel Dutch Wand survey transects and estimated bed area.

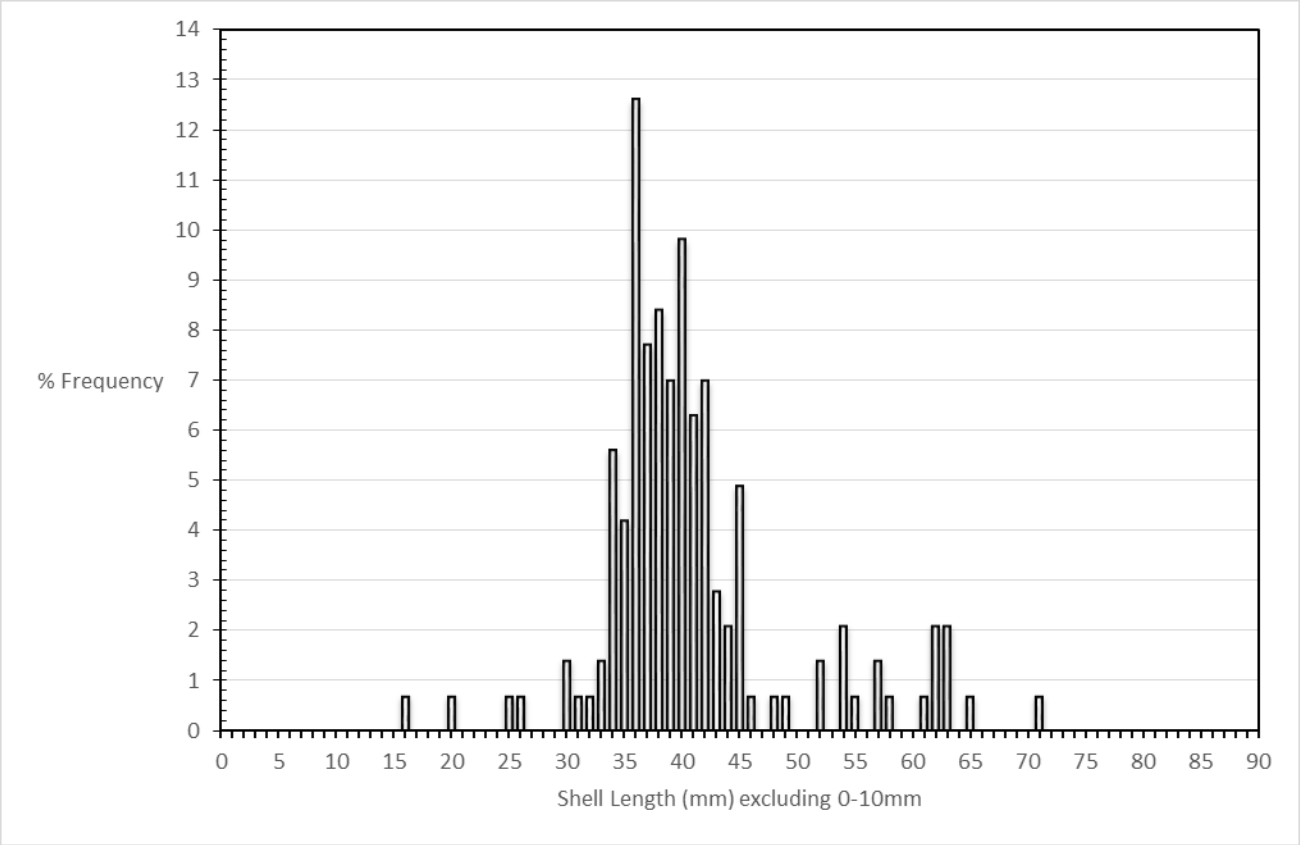

Figure 3 - Histogram showing size frequency of mussels from all samples on Walney Channel mussel bed.

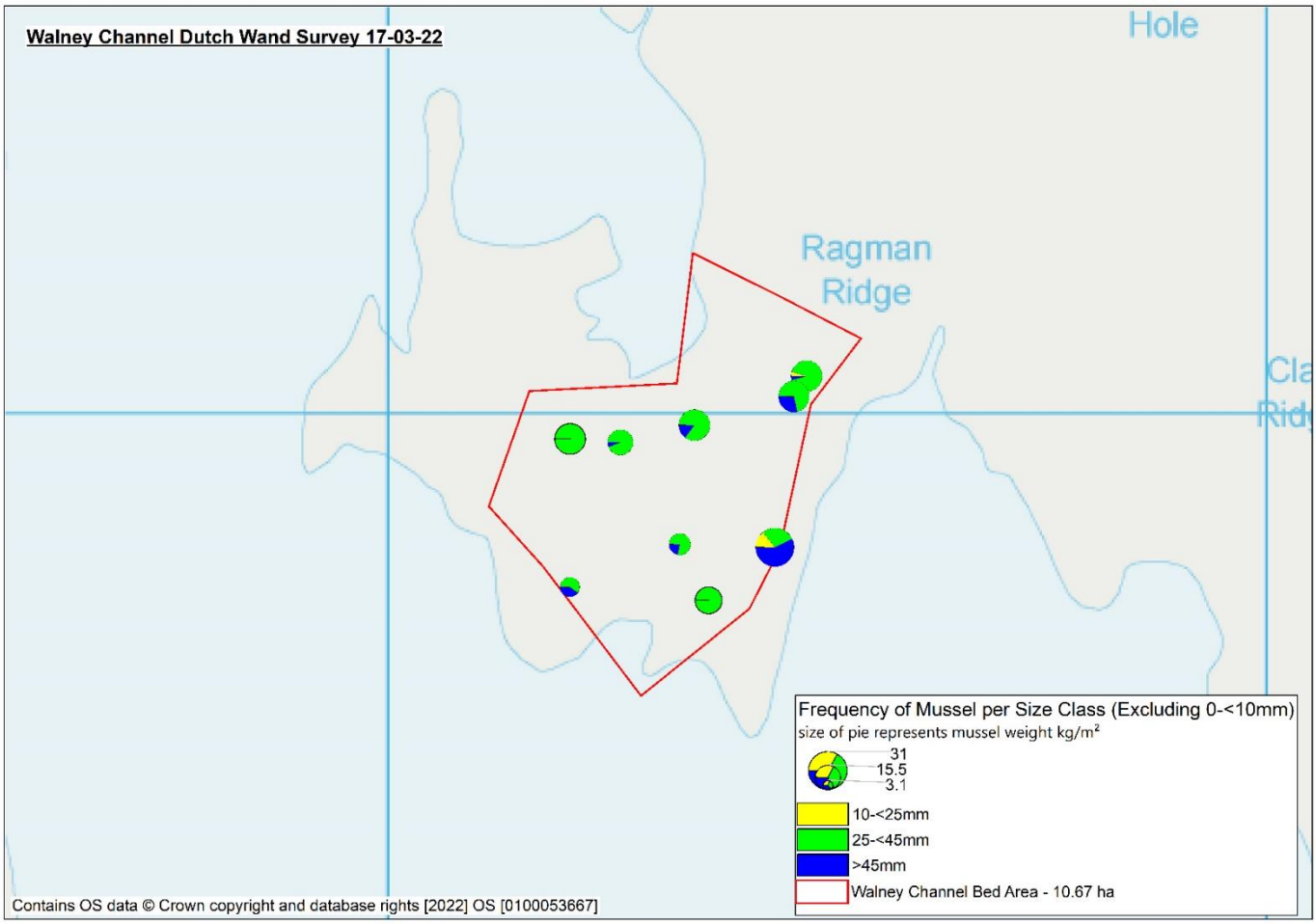

Figure 4 - Frequency of mussel by size class.

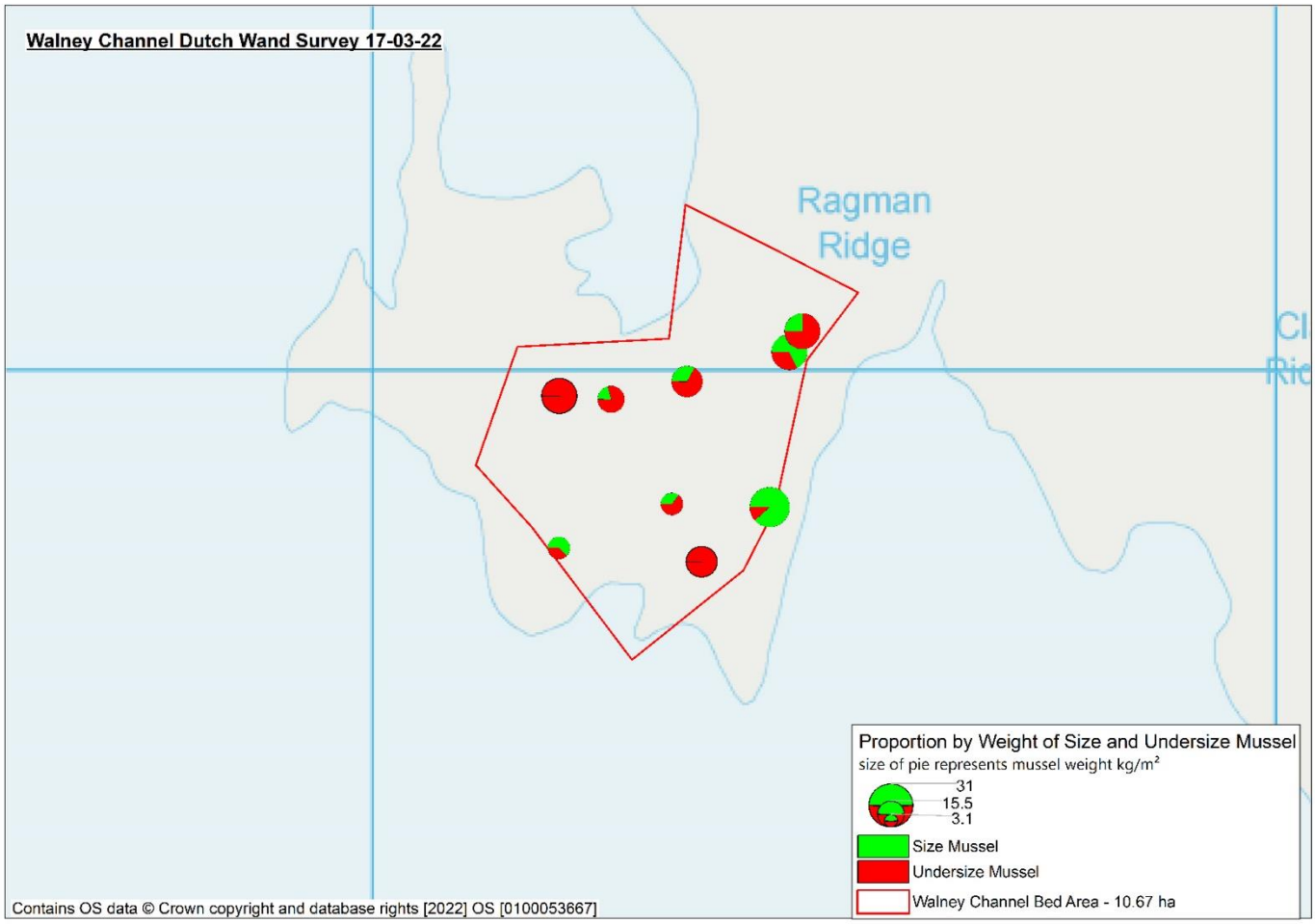

Figure 5 - Proportion of size and undersize mussel by weight represented as kg/m^2.

Figure 6 – Mussel on Walney Channel 17-03-22.

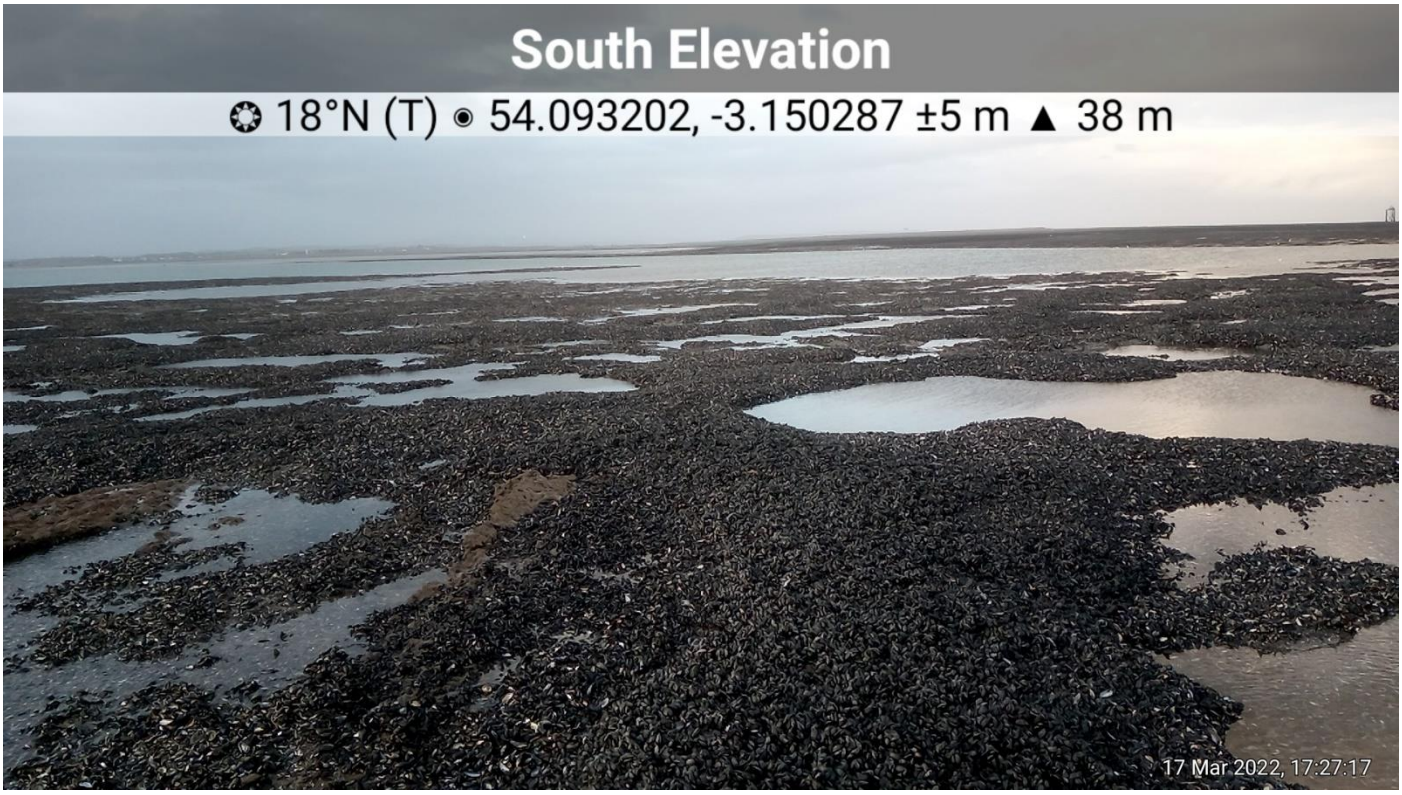

Figure 7 – Mussel Bed at Walney Channel 17-03-22.

Figure 8 – Mussel bed at Walney Channel – 17-03-22.

Foulney Dutch Wand Mussel Survey 30-03-22

Officers present: MC, AP, ID

Low water: 17:54 1.2m (Liverpool Tides)

Survey method: Dutch Wand

Line transects were completed across the mussel bed using a Dutch Wand, transects start and finish at the edge of the bed as shown in Figure 2. The number of hits and misses of live mussel were recorded to give percentage cover. The bed area was calculated from the start and end of transects and from observations of officers whilst surveying. It was not possible to walk the perimeter of the bed due to time and tide restraints. A mussel sample was taken every 50 hits using a 10 cm diameter corer. 12 transects were completed and 22 samples collected. The total weight of live undersize and size mussel was recorded as well as the size frequency of each sample. No seed settlement was observed during the survey. Note, not all size mussel is fishable due to the presence of fouling species on slower growing individuals or the mixing of undersize and size in close proximity that prevents the removal of sizeable mussel without removing undersize.

From the transect and sample data the total mussel bed surveyed was **47.9 hectares**. There was no separation made between the main Foulney bed and Foulney Island as the mussel had spread between the two and the channel had filled in (Fig. 1). There were large starfish observed at the far low water line of the South-Eastern area of the island (Fig. 8).

Biomass

1055 tonnes size mussel and **4201 tonnes undersize mussel**

Biomass is down from 2021, this may be due to the survey being both a month earlier, and the greater patchiness of mussels on the central part of the beds. Suitable tides this year were 1.2m in comparison to 0.6m in 2021, which may also have caused the slight decrease in bed area seen in the results.

Length Frequencies

The total length frequency for the surveyed bed is provided in Figure 3. From the length frequency data the majority of mussel present on Foulney Skear is currently undersize with a wide spread of mussel from 6mm to 68mm but mainly between 25mm and 45mm.

Maps

The frequency of each size class of mussels per sample has been mapped in Figure 4 with the size of the pie adjusted for sample weight standardised to kg/m². The weight of the size and undersize mussel has been mapped and represented in Figure 5.

It can be seen in Figure 4 that the size class is varied across the bed, with the size mussel >45 mm predominantly on the main skear before the island and 25-45mm mussels spread across the entire survey area.

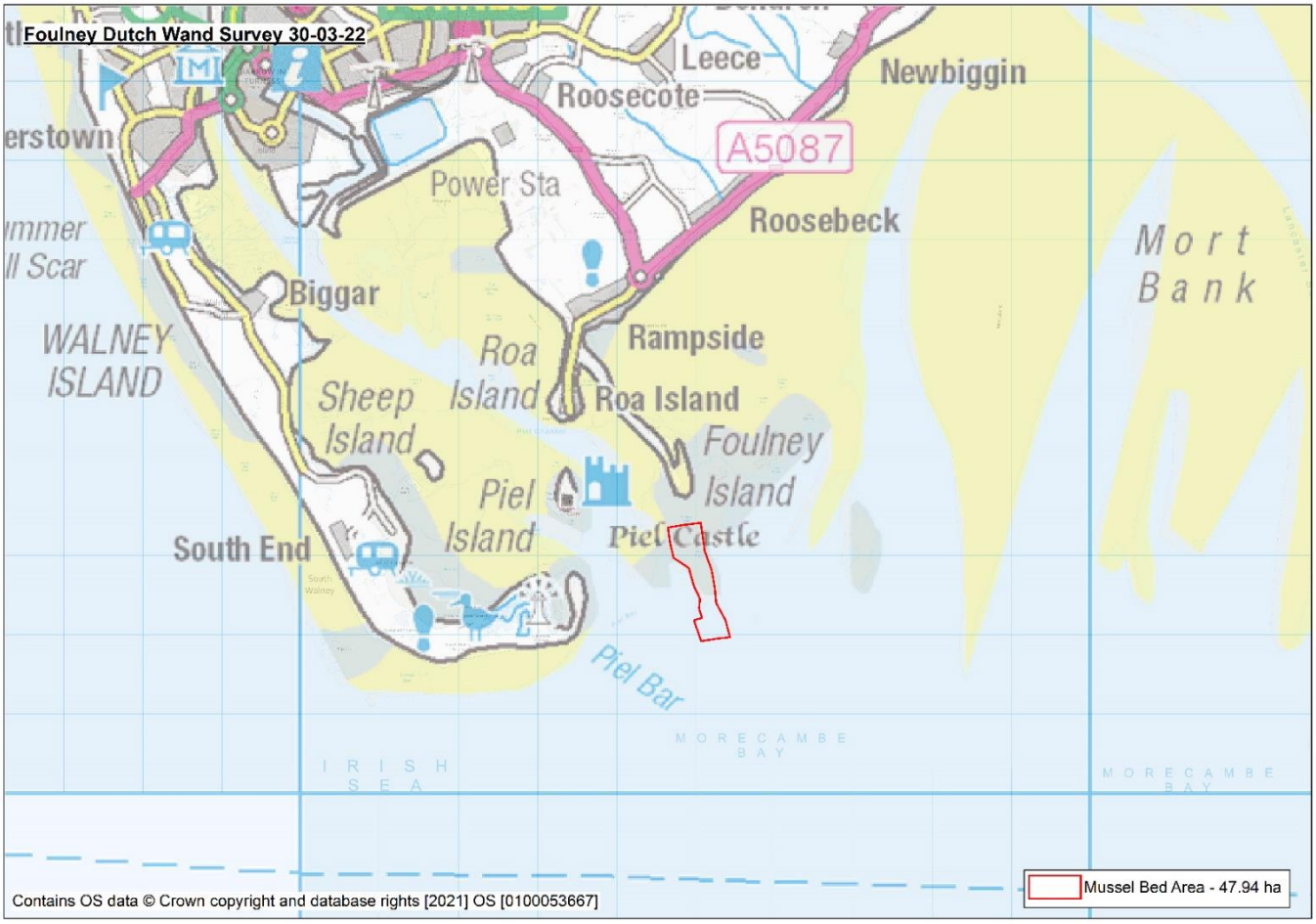

Figure 1 - Location of Foulney Mussel Bed surveyed 30-03-22.

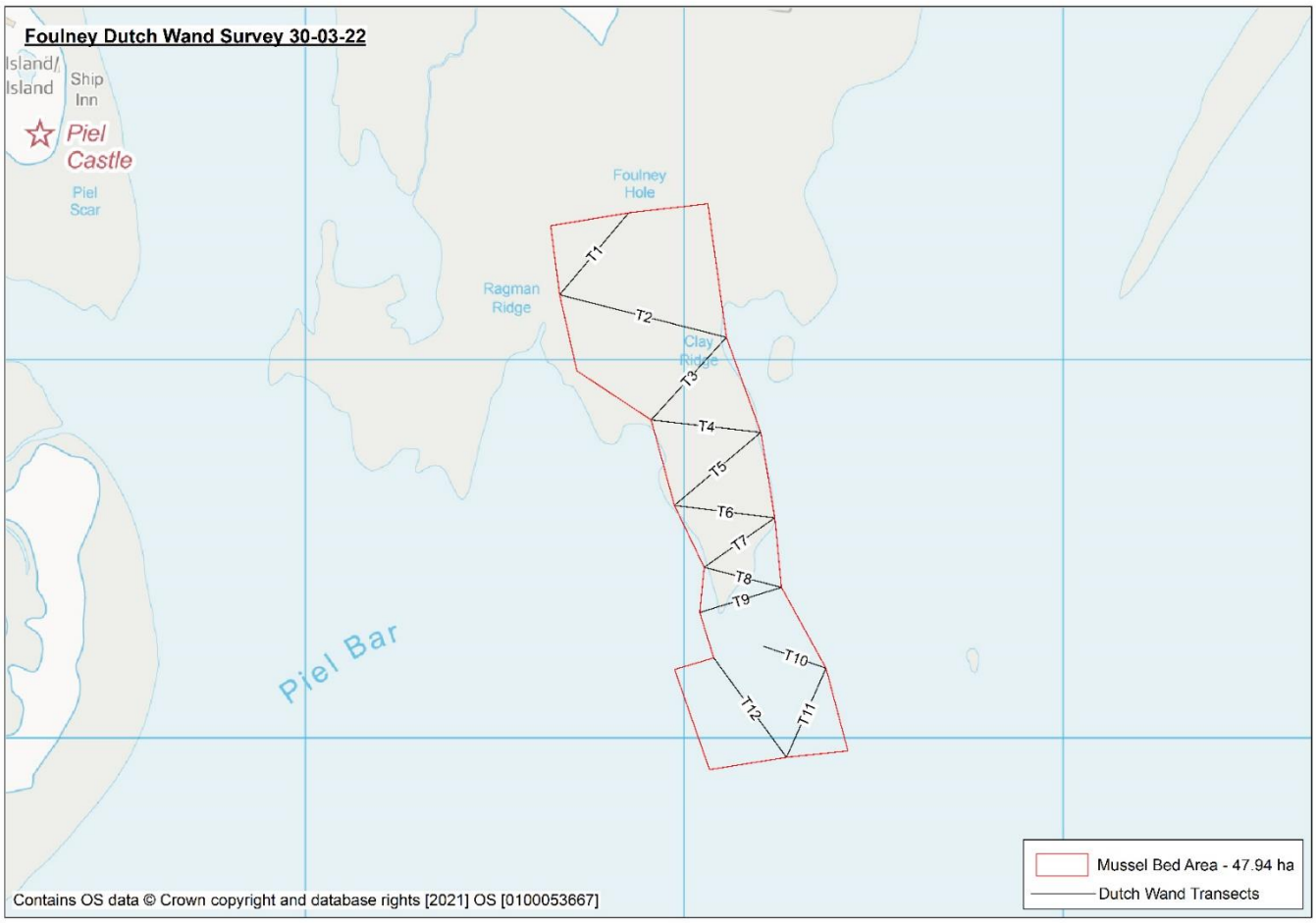

Figure 2 - Foulney Dutch Wand survey transects and estimated bed area.

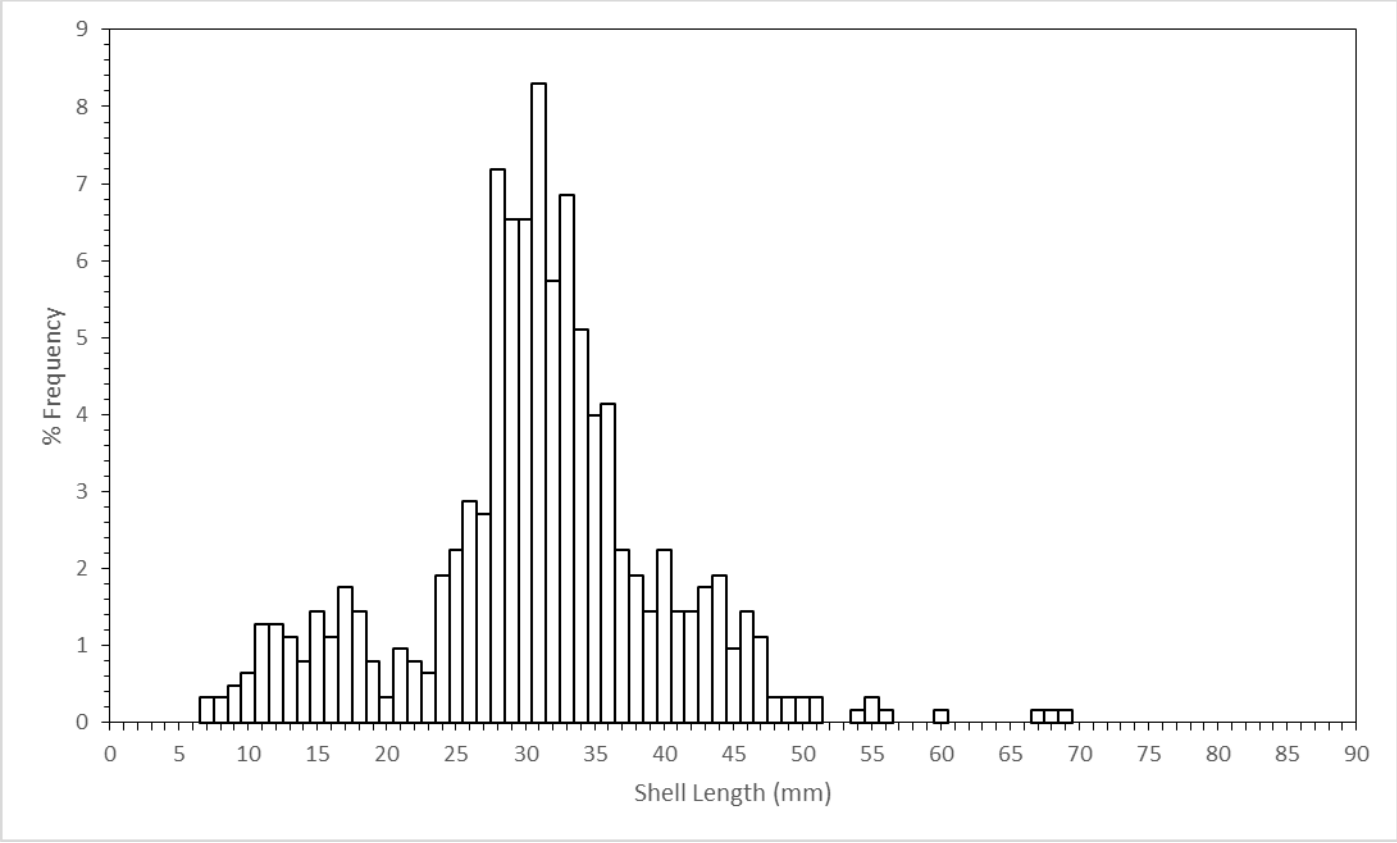

Figure 3 - Histogram showing size frequency of mussels from all samples on Foulney.

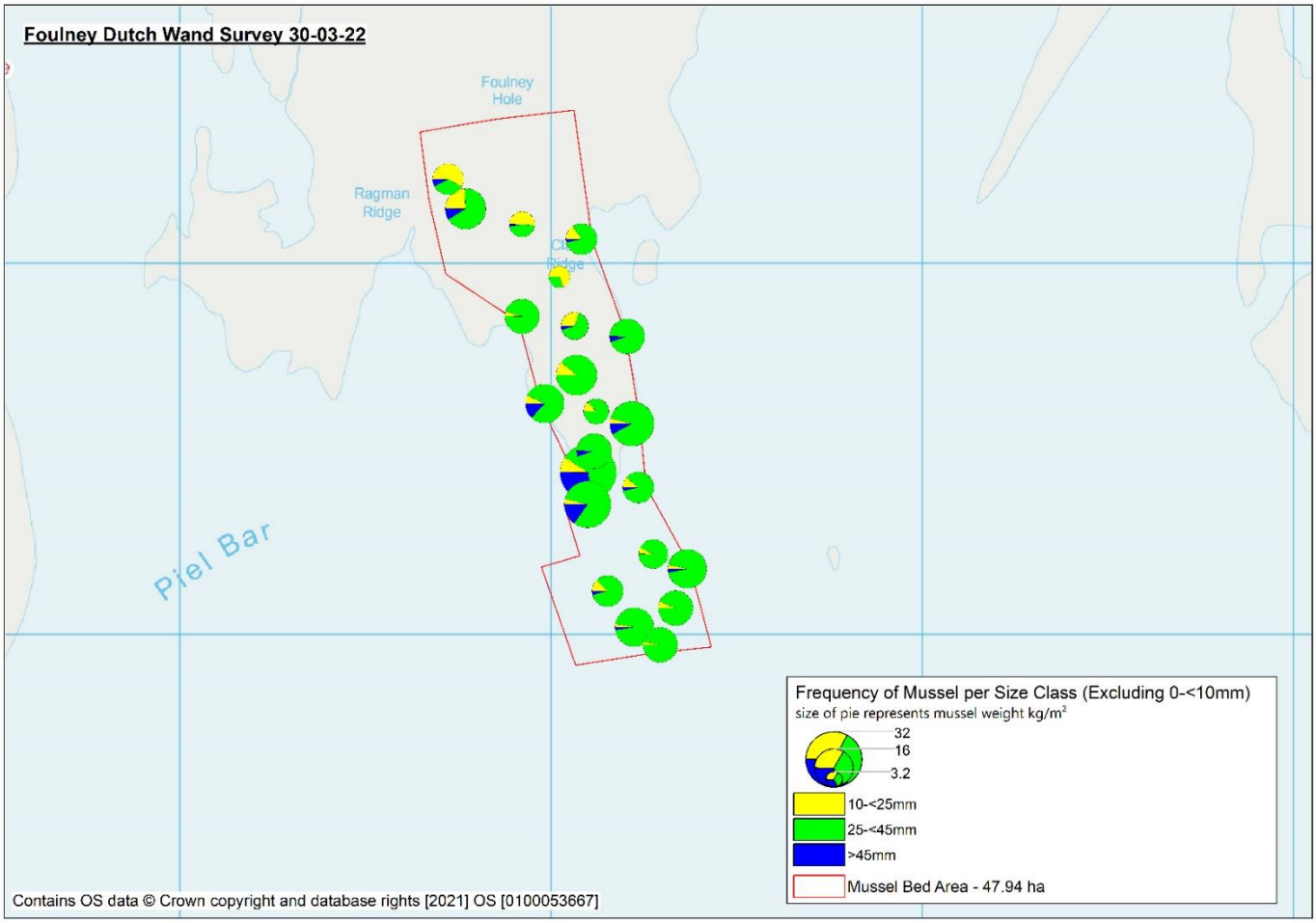

Figure 4 - Frequency of mussel by size class.

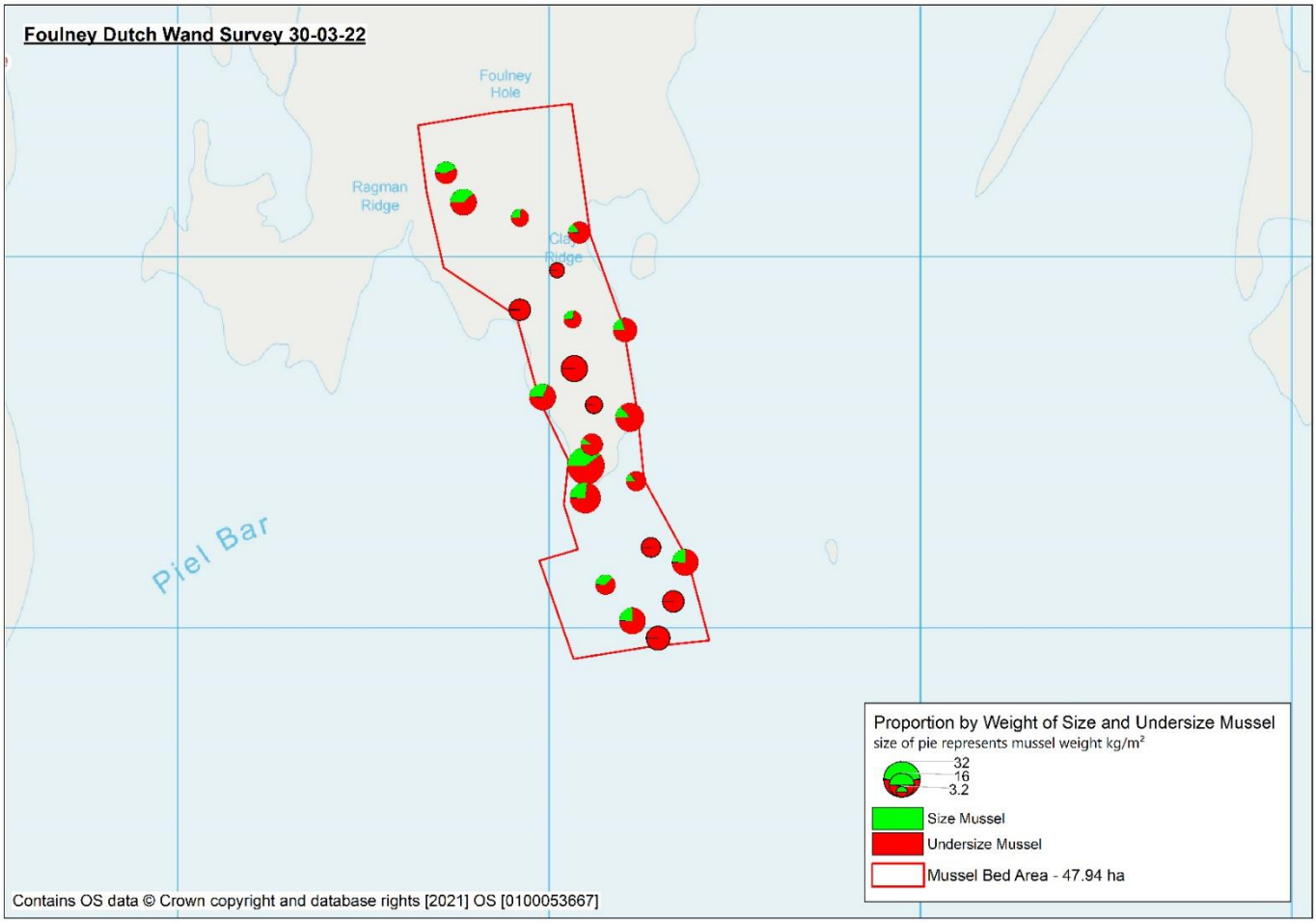

Figure 5 - Proportion of size and undersize mussel by weight represented as kg/m^2.

Figure 6 – Mussel and shell present on Foulney Skear 30-03-22.

Figure 7 – Mussel Bed on Foulney Skear 30-03-22.

Figure 8 – Starfish present on the South Eastern section of Foulney Island 30-03-22.

South America Mussel Inspection (Quad) 19-04-22
LW: 08:13 0.9m (Liverpool tides)

An inspection of South America was completed to assess if any mussel persisted from 2021 and if there were signs of a 2022 settlement. There has been changes to the channels meaning that access was reduced to half an hour before low water.

NWIFCA track data has been provided in Figure 1 with the bed area mapped for reference from 2021. The area consisted of exposed hard substrate (mix of pebbles and small cobbles), sand and shell debris. There was the very occasional live mussel in the areas of shell debris. The mussel was 30-35mm in length. The area which dried out was walked but no 2022 mussel settlement was observed.

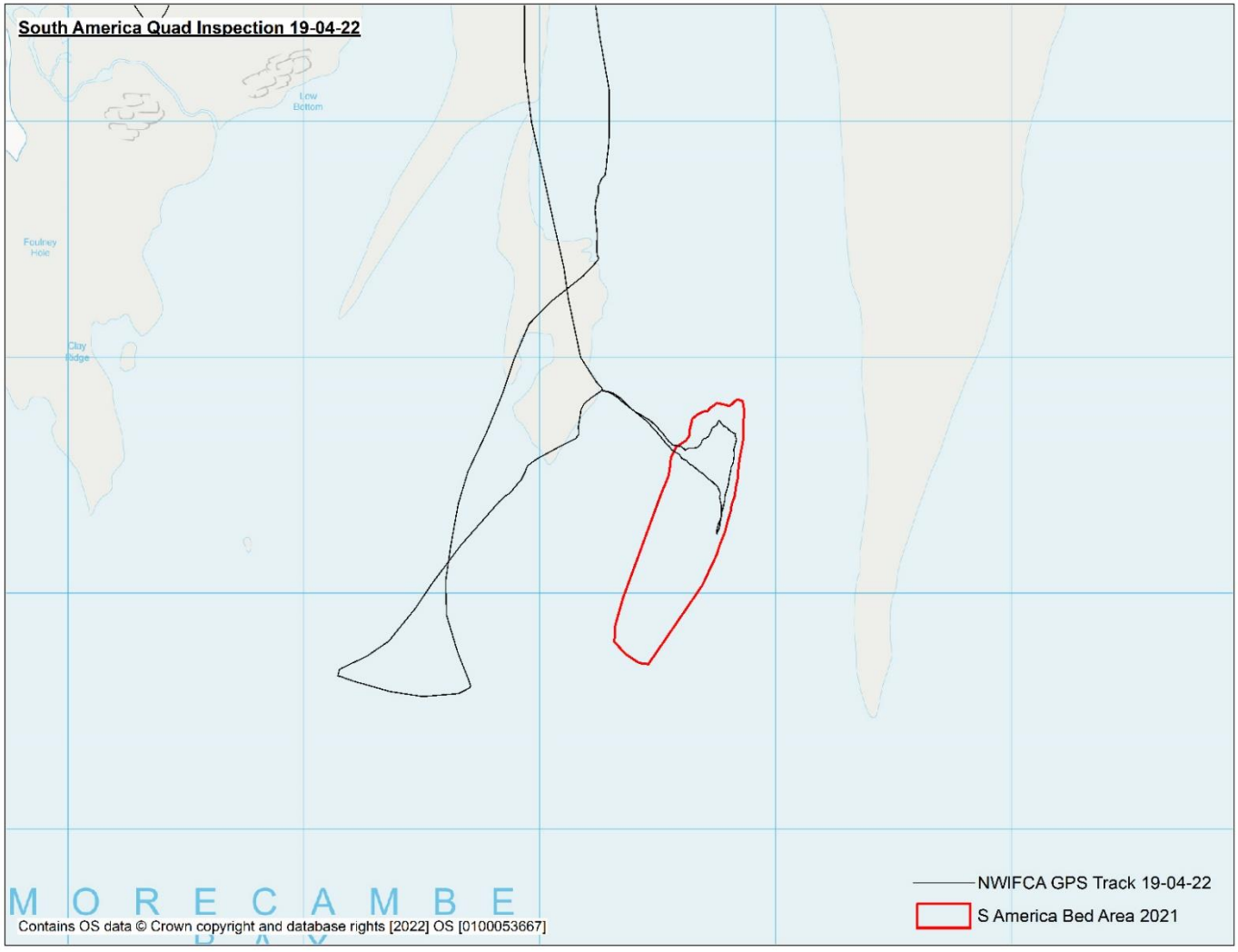

Fig 1. NWIFCA Track Data with 2021 Bed Area for Reference 19-04-22

Fig 2. Shell Debris with Occasional Live Mussel 19-04-22

Fig 3. Exposed Hard Ground 19-04-22

Fig 4. Overview of South America 19-04-22

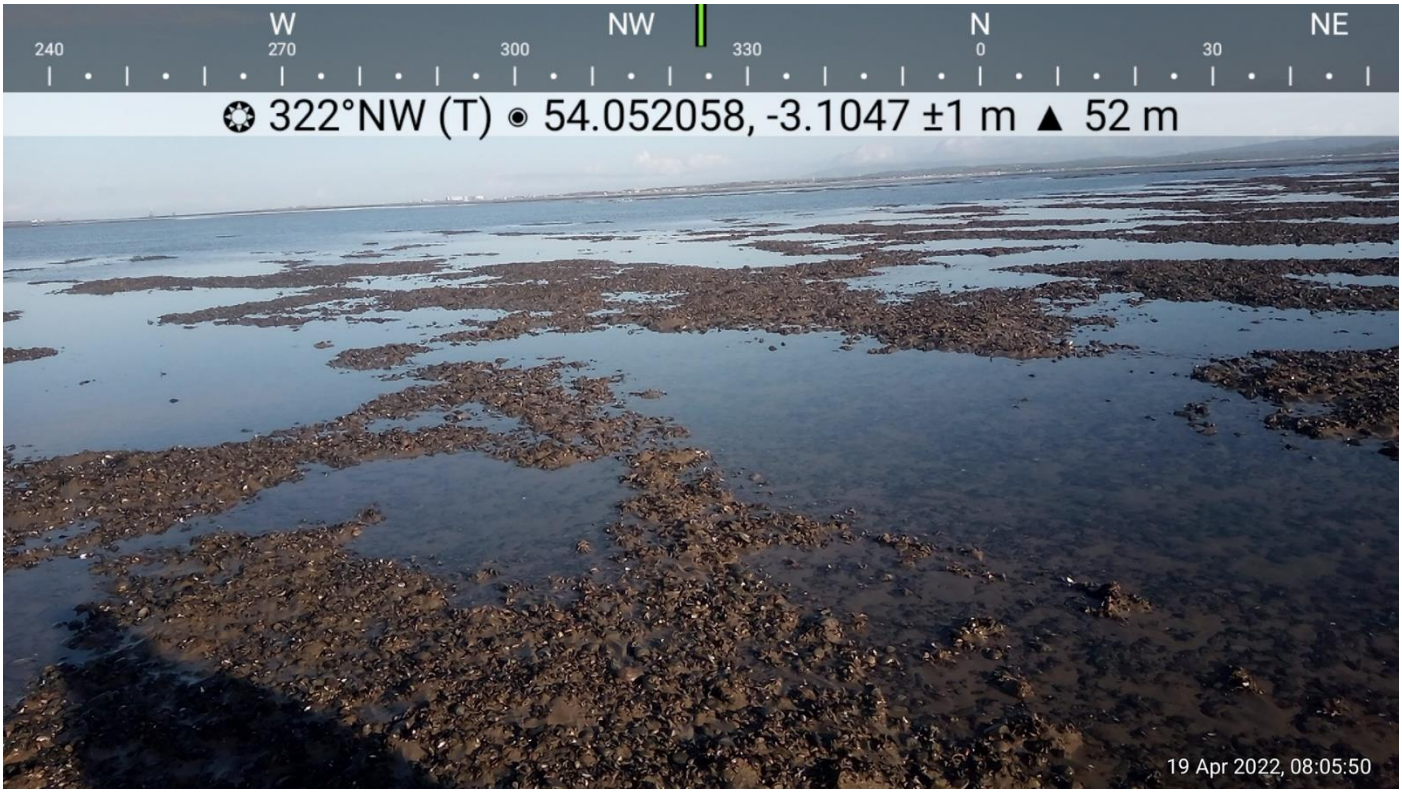

Fig 5. Overview of South America 19-04-22

Cockle Inspections and surveys:

Southport Cockle Inspection 23-03-22 and 08-04-22

Officers present: MC, JH, AP, AB
Tides: 23-03-22 - LW 08:42 1.6m (Liverpool tides)
08-04-22 – LW 10:33 3.0m (Liverpool tides)

Areas where historically there have been cockle beds were inspected using a jumbo and rake to see if there was significant cockle present to require a full survey. North Penfold, South Penfold and South Gut were inspected as well as surrounding areas. Due to time constraints the inspection was undertaken over two days. A large proportion of the area inspected had high density patches of undersize cockle present, particularly in a band running from the North East of the bed to the area of South Gut on the South West of the bed. The highest density of cockle found was 418 per m². Very few size cockle were found and no 0-5mm cockle were found at the sites surveyed.

Maps

Maps were created showing the density of undersize cockle (excluding cockles in the 0-5mm size range), density of size cockle and the frequency of size classes (pie charts show the frequency of different size classes, the size of the pie chart indicates the total density of cockles present). No maps were created for density of spat (0-5mm size range) as none were found during the survey.

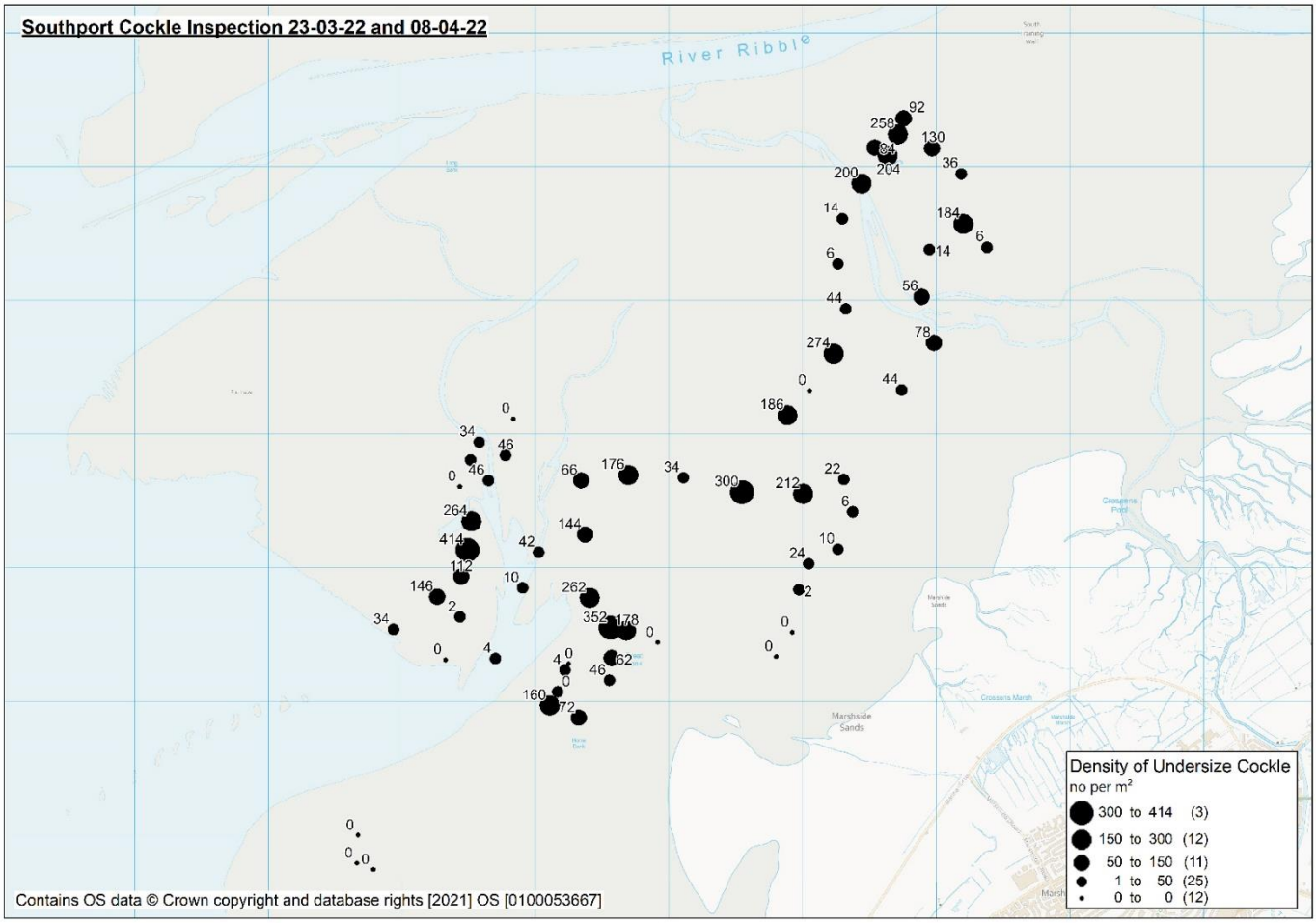

Figure 1: Density of undersize cockle per m² Southport 23rd March and 4th April 2022.

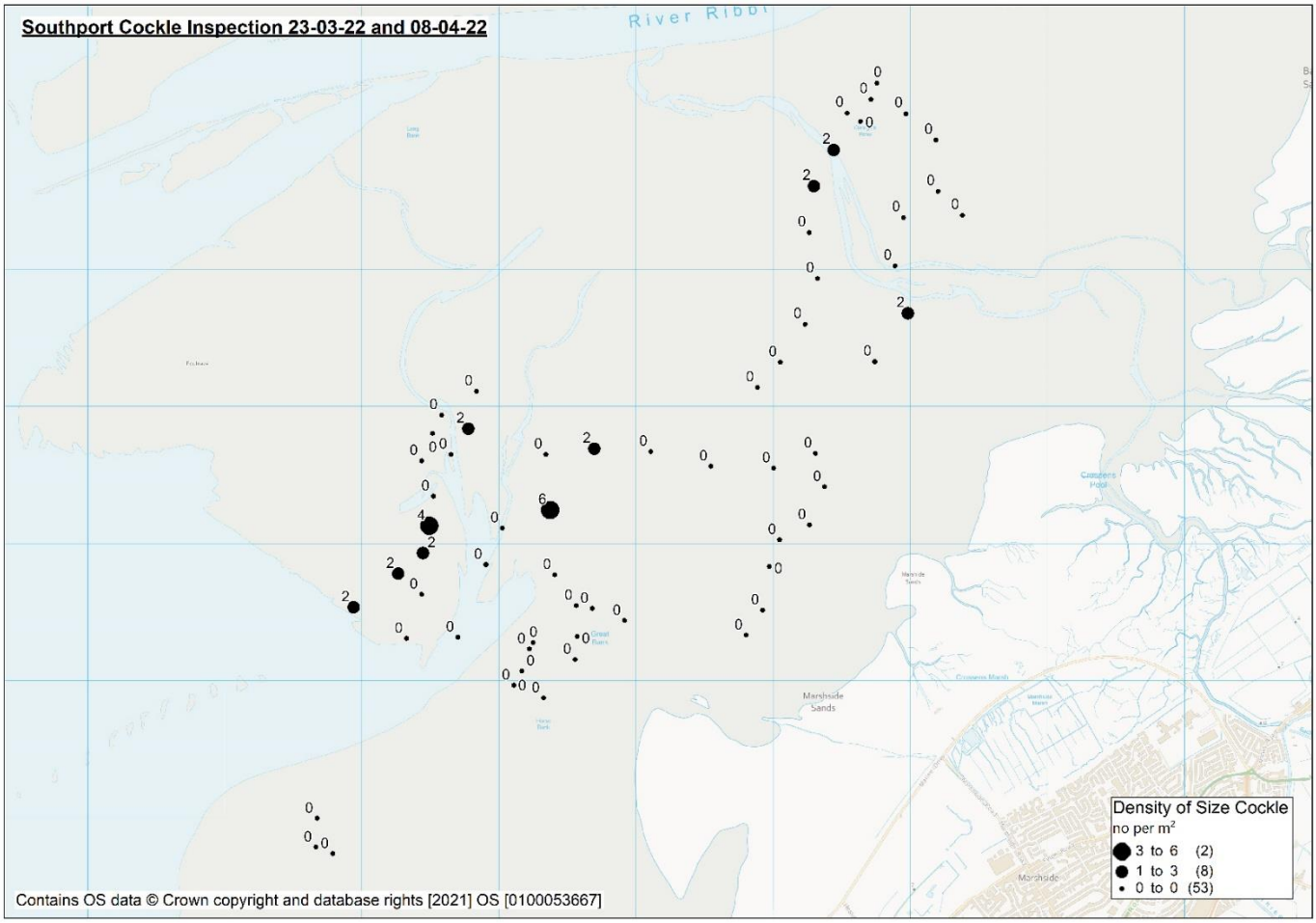

Figure 2: Density of size cockle per m² Southport 23rd March and 4th April 2022.

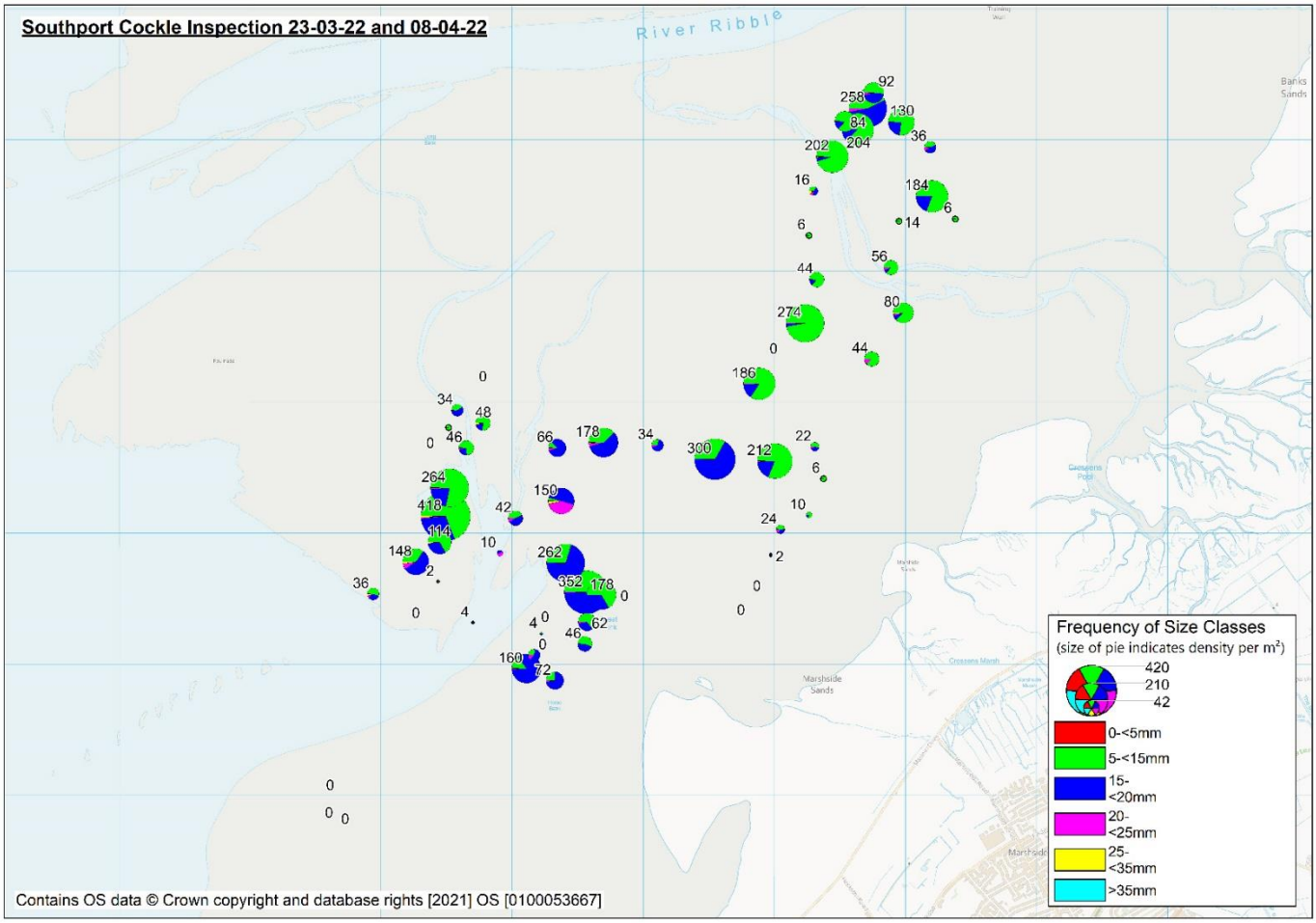

Figure 3: Frequency of size classes of cockle per m² Southport 23rd March and 4th April 2022.

Lytham Cockle Inspection 08-03-22

Officers present: MC, MB, AG
Tides: LW 08:57 2.1m (Liverpool tides)

Areas where historically there have been cockle beds were inspected using a jumbo and rake to see if there was significant cockle present to require a full survey. North Run, Mouse Hole and Grannys Bank were inspected as well as the surrounding areas. The majority of the area had no cockle or small numbers present. There was an area on North Run in a muddy gutter that was running parallel to the shore that contained cockle. All of the cockle was undersize and the density ranged from 14 per m² to 340 per m² in this area. Cockle across the surveyed area was patchy, with small patches found on lower areas of Grannys Bank and in gutters. No size cockle or 0-5mm cockle were found at the sites surveyed.

Maps

Maps were created showing the overall survey area, density of undersize cockle (excluding cockles in the 0-5mm size range) and the frequency of size classes (pie charts show the frequency of different size classes, the size of the pie chart indicates the total density of cockles present). No maps were created for density of size cockle or spat (0-5mm size range) as none were found during the survey.

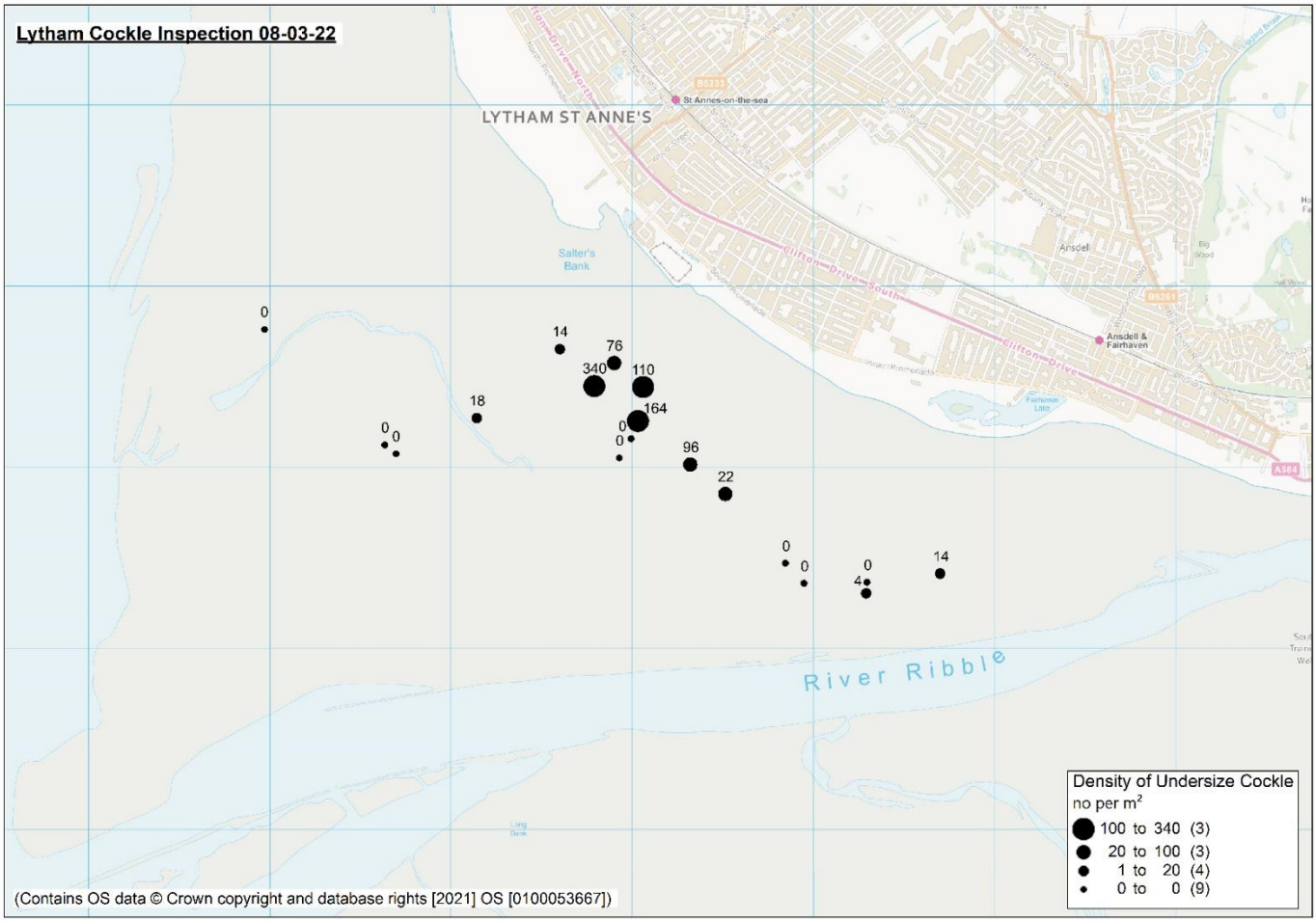

Figure 1: Density of undersize cockle per m² Lytham March 2022.

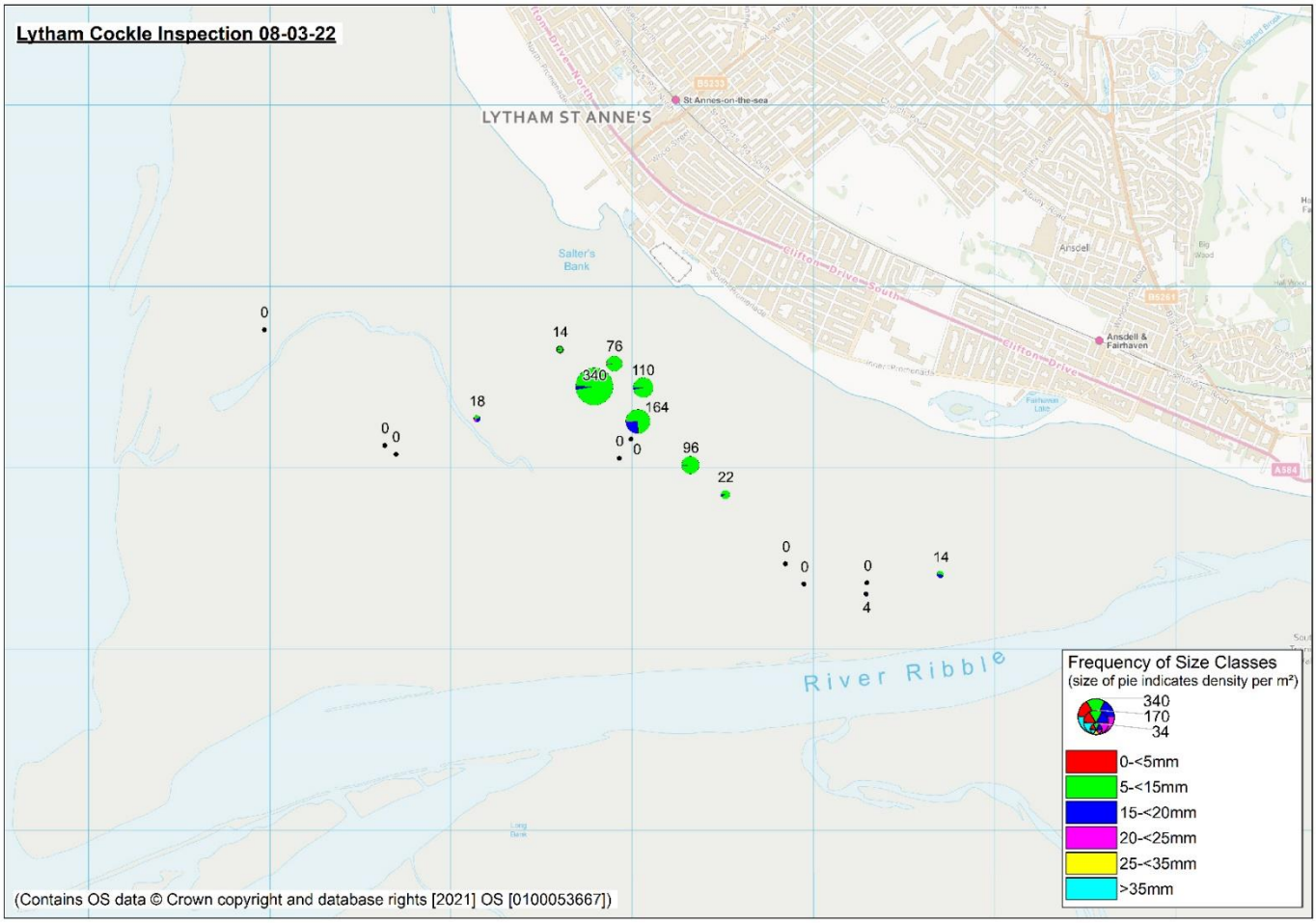

Figure 2: Frequency of size classes of cockle per m² Lytham March 2022.

Figure 3: Example of density of cockle found in North Run 08-03-2022.

Foulnase Cockle Inspection 24-03-22

Officers present: JH, MC, MB, AG (4 Byelaw 3 Permit Holders Present)
Tides: LW 09:25 2.0m (Liverpool tides)

Industry reports from autumn 2021 showed that Foulnase had received a dense cockle settlement, an inspection was carried out to assess what cockle had survived the winter, the extent of the cockle bed and gather information for planning future surveys.

Industry had provided georeferenced images prior to the inspection for positional information and were present on the inspection. Areas which previously held cockle were inspected but very little cockle had persisted through the winter, with only the occasional cockle being present.

Unless there is a significant change, from the area inspected there is no prospect of a commercial fishery on Foulnase in 2022.

The vessel track and access location has been recorded for future reference.

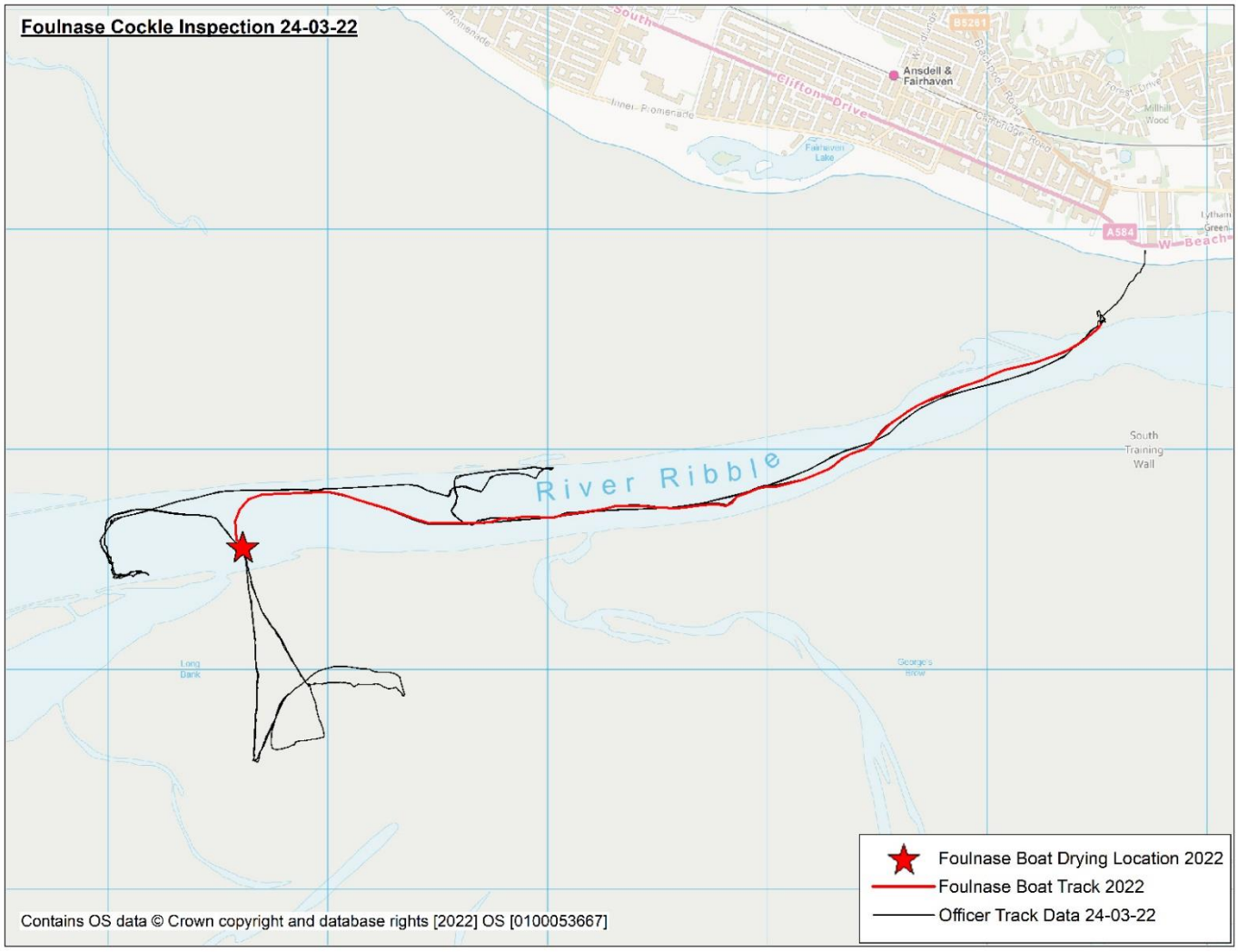

Figure 1: Boat access route and officer tracks on Foulnase 24-03-22