

NWIFCA Technical, Science and Byelaw Committee Interim Report Provided via Email 10th June 2021

MORECAMBE BAY COCKLE SURVEY REPORT JUNE 2021

Purpose: To report results of the byelaw 3 consultation on delaying the start of the cockle close season and preparation for possible change to the 2021 cockle close season.

To report on cockle survey and inspections to inform a decision on cockle fisheries in Morecambe Bay 2021.

Recommendation: Approve that the cockle beds in Morecambe Bay remain closed for the rest of NWIFCA Byelaw 3 cockle close season and that on the 1st September 2021, implement NWSFC 16 closure on all cockle beds in Morecambe Bay.

1. 2021 Cockle Close Season and Consultation with Byelaw 3 Permit Holders (April)

At the NWIFCA March Authority meeting members discussed the 2021 close season in the context of the EU post Brexit ban on undepurated live bivalve exports from class B shellfish beds to EU countries. As agreed by the Authority a consultation with Byelaw 3 permit holders was carried out asking opinions on a delay to the start of the cockle close season until the end of May.

The consultation from 1st to 9th April 2021 was advertised via the byelaw 3 permit holder's text message service and posted on the website. 13 responses were received with 12 stating the beds should close on 1st May as usual. 1 stating it could be of benefit for the beds to remain open but they would rather see an early opening to the 2021-2 season. After reviewing the responses, the beds closed on 1st May 2021 through the Byelaw 3 close season as usual. Responses also included mixed opinions on opening cockle beds early after the close season.

Any further decisions on the opening of cockle beds in 2021 is dependent on stock surveys of both mussel and cockle, HRA considerations, changes in allowing live bivalve exports to EU countries and changes to bivalve hygiene classifications. The following approach was proposed:

- All Morecambe Bay cockle beds are surveyed in May / early June. Although this is earlier than most years, it will give an indication of adequate stock present to consider an early opening and the potential for fisheries on 1st September should there be insufficient stock to open early.
- All other cockle beds within the district are surveyed in July as normal as there has been no indication of significant cockle stock on these beds to date.
- Any mussel bed data required for the HRA is collected for Morecambe Bay prior to any decision on management.
- Further consultation with byelaw 3 permit holders on any potential changes in management should stocks allow.

- Information on cockle and mussel stocks be provided to TSB with management options, HRA consideration and the current situation with live bivalve exports.

Due to the cancellation of the TSB meeting and therefore no agreement on the recommendation, officers continue to collect the data necessary for a decision to be taken on the potential opening of cockle beds early, with surveys taking place in May and early June.

2. Morecambe Bay Cockle 2021

Full survey results for all surveyed cockle beds within Morecambe Bay are provided in Annex A. A summary of the survey results are provided below in Table 1. There is an estimated 6005-6460 tonnes of size cockle and 710-955 tonnes of undersize cockle over an area of 7089 hectares across the surveyed areas of Morecambe Bay.

Table 2 provided the total estimated biomass of size and undersize cockle within the surveyed areas of Morecambe Bay since 2017. There have been cockle fisheries in Morecambe Bay since 2016. Table 2 indicated which beds were open each year. There is limited data on biomass figures for Morecambe Bay in 2016 when there was a Craam fishery at Leven as the fishery was opened on the likelihood that the cockle was towards the end of its life and would die over the winter.

Table 3 contains mussel data from the two main areas of mussel in Morecambe Bay which has stock present throughout the year and where regular surveys including calculation of biomass have been carried out. Mussel stock on Foulney Skear and the Walney Channel side of Foulney are within the normal variation with mussel beds known to vary in biomass significant throughout the year due to growth, new settlement and wash out.

Tables 1 and 2 show that although the biomass of size cockle is within the range of biomass figures since 2017 there is a distinct lack of juvenile stock. When comparing the total biomass for the surveyed areas of Morecambe Bay the figure is down 10,000 tonnes compared to 2018-2020 and down 4,000 tonnes compared to 2017. This is seen in the densities of undersize across all of the surveyed cockle beds in Morecambe Bay.

As the surveys were completed in May rather than July it is expected that biomass figures would be lower as the cockles are likely to be in poor condition and have yet to grow through the summer months. The early timing of the surveys means it is unlikely that the survey would assess any 2021 cockle spat. Although if present, any 2021 cockle would not change the total biomass figures significantly as less than 5mm cockle are not used in the undersize density or biomass figures due to the highly variable nature of survivability. The concern is that there is no juvenile stock in any density on any of the beds. It would be expected to see cockle in the 10-20mm size class from a 2020 settlement.

NWIFCA does not have figures for minimum thresholds of total cockle biomass for Morecambe Bay to allow fisheries to open, there are outstanding questions on the location of potential sources of cockle brood stock for Morecambe Bay and cockle survivability of juvenile cockle is highly reliant on environmental factors. Even taking into consideration the above it is recommended due to the lack of juvenile stock across Morecambe Bay, the lack of total cockle biomass compared to previous years, and that there are very few areas with high densities of adult cockle stock, that cockle beds remain closed for the remainder of the closed season and that they do not open on 1st September 2021. This would allow adult cockles to spawn in 2022 should it survive the winter and allow officers to assess if any juvenile stock has survived from any new 2021 cockle settlement.

Table 1: summary of Morecambe Bay cockle stocks May 2021

Cockle Bed	Date of Survey	Area (ha)	Size Cockle (tonnes)¹	Undersize Cockle (tonnes)²
Aldingham and Newbiggin	20th May 2021	1305	1800-1900	200-300
Leven	12th May 2021	1319	600-700	125-150
Flookburgh	11th and 12th May 2021	2240	900-1000	175-225
Warton Sands Main Area	1st June 2021	181.8	55	15-20
Dense Area		8.4	50-55	>5
Middleton Sands	21st May 2021	601	400-450	40-55
Pilling Sands	19th June 2021	1434	2200-2300	150-200
Total		7089	6005-6460	710-955

¹ figures are an estimated biomass based on samples collected by officers, size cockle is defined as cockle which will not pass through a square gauge 20 x 20mm in size

² figures are an estimated biomass based on samples collected by officers, undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

Table 2: summary of Morecambe Bay cockle stocks 2017-2021

Year	Beds Opened	All Surveyed Morecambe Bay Cockle Beds			
		Area (ha)	Size Cockle (tonnes)¹	Undersize Cockle (tonnes)²	Total Cockle (tonnes)
2021		7089	6005-6460	710-955	6715-7415
2020	Flookburgh, Leven, Pilling and Newbiggin	8085	12580	3975	16555
2019	Flookburgh, Leven, Pilling and Newbiggin	6705	4435	11690	16125
2018³	Flookburgh, Leven, Pilling and Newbiggin	6088	6800	10260-10790	17060-17590
2017	Flookburgh, Leven and Pilling	5177	4230	6980	11210

¹ size cockle is defined as cockle which will not pass through a square gauge 20 x 20mm in size

² undersize cockle² does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

³ Figure doesn't include stock on Middleton as no biomass figure were produced in 2018 for Middleton

Table 3: summary of Morecambe Bay mussel stocks 2018-2021

Year	Beds Included in Calculations	Month Surveyed	Area (ha)	Size Mussel (tonnes)	Undersize Mussel (tonnes)	Total Mussel (tonnes)
2021	Foulney / Walney Channel	April	75.5	9003	2329	11332
2020	Foulney / Walney Channel	May	72.1	7602	792	8394
2019	Foulney / Walney Channel	March	71	4369	4354	8723
2018	Foulney / Walney Channel	May and September	88.3	1047	12521	13568

* 2017 biomass data incomplete as only the main skear on Foulney was surveyed via this method.

3. Cockle Beds outside of Morecambe Bay

Officer will continue to survey the rest of the district cockle beds but there has been no early indication of significant stock present elsewhere within the district.

NWIFCA
9th June 2021

Annex A – Morecambe Bay Cockle Survey Report 2021

Means were calculated from all stations with zero counts on the edge of the bed removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size.

Maps were created showing the overall survey area, density of size cockle, 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).

Biomass, size cockle¹ defined as cockle which will not pass through a square gauge 20 x 20mm in size. The biomass of undersize cockle² does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

Aldingham and Newbiggin Cockle Survey 20-05-21

LW 12:38 2.9m (Liverpool Tides)

Survey method - Jumbo and 0.5m² quadrat

63 stations were sampled, 56 from a 500m grid and 7 additional stations were added to ensure full coverage of the cockle bed. A number of stations, particularly in the North East section of the bed, could not be accessed due to changes in the Leven channel. There was a wide range of cockle sizes across the bed from less than 5mm to greater than 35mm cockle. Cockle densities were relatively low across the bed with higher densities of size and undersize cockles found on Newbiggin. Cockles from the 0-5mm class were not present across the majority of the bed and only found in very low densities at two stations which is likely due to the timing of the survey.

Mean number of size cockle	10 per m ²	(min 0, max 42)
Mean number of undersize cockle	7 per m ²	(min 0, max 62)
Mean number of 0-5mm cockle	<1 per m ²	(min 0, max 4)

Biomass	Area (ha)	Size Cockle (tonnes)¹	Undersize Cockle (tonnes)²
Aldingham and Newbiggin	1305	~1800-1900	~200-300

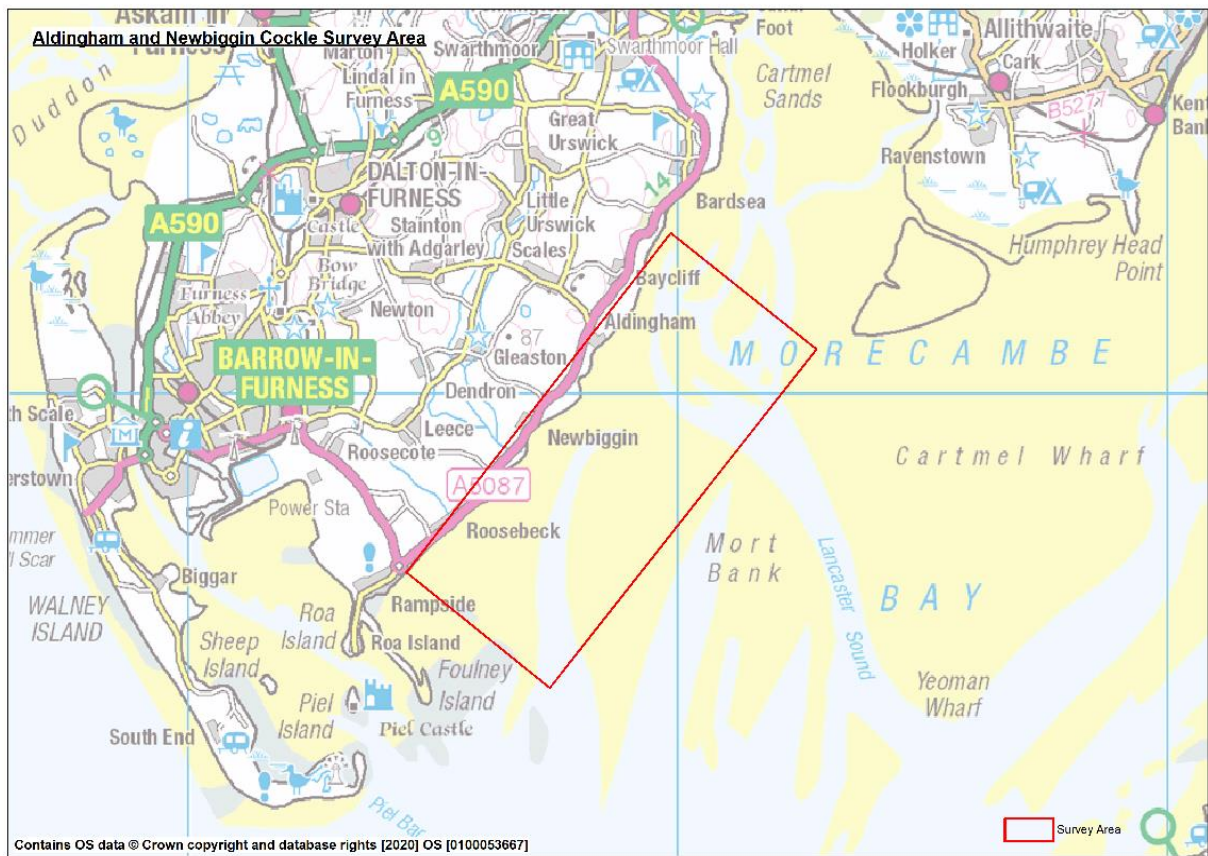
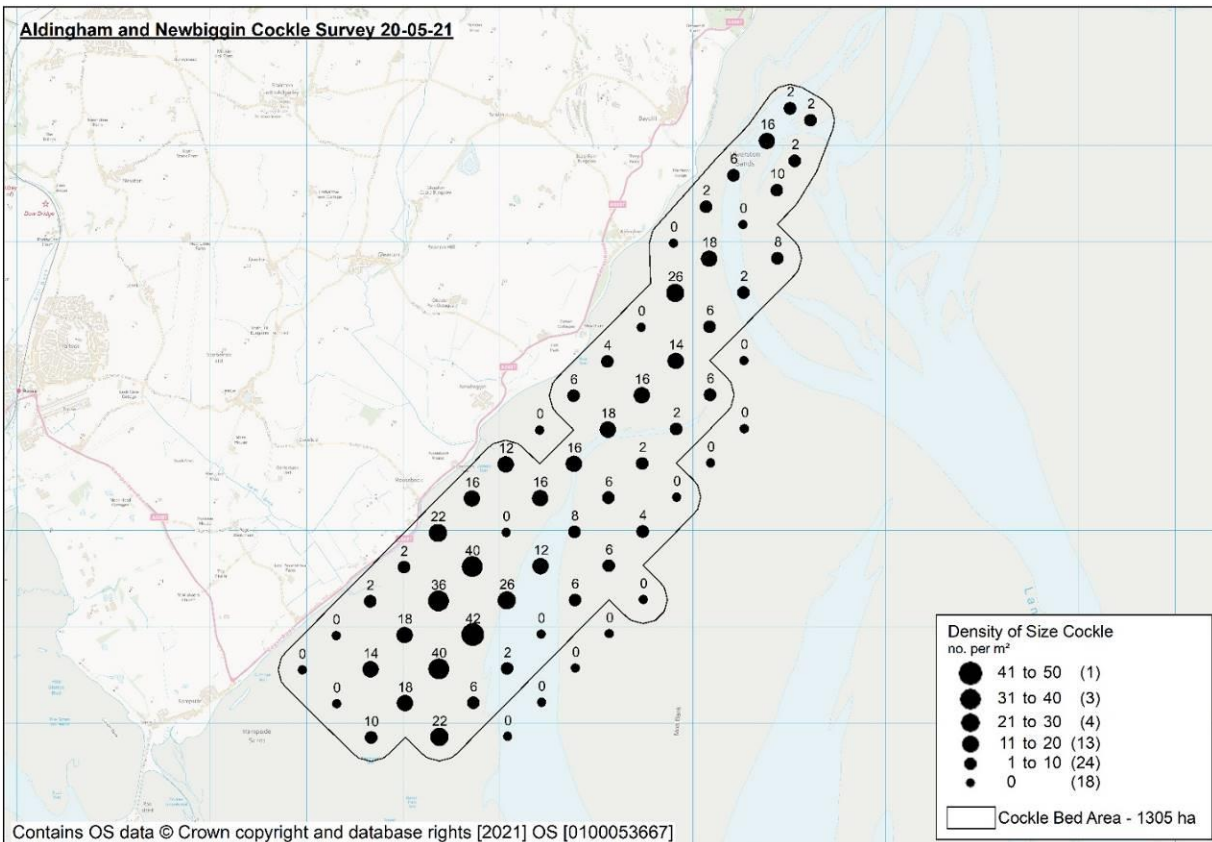
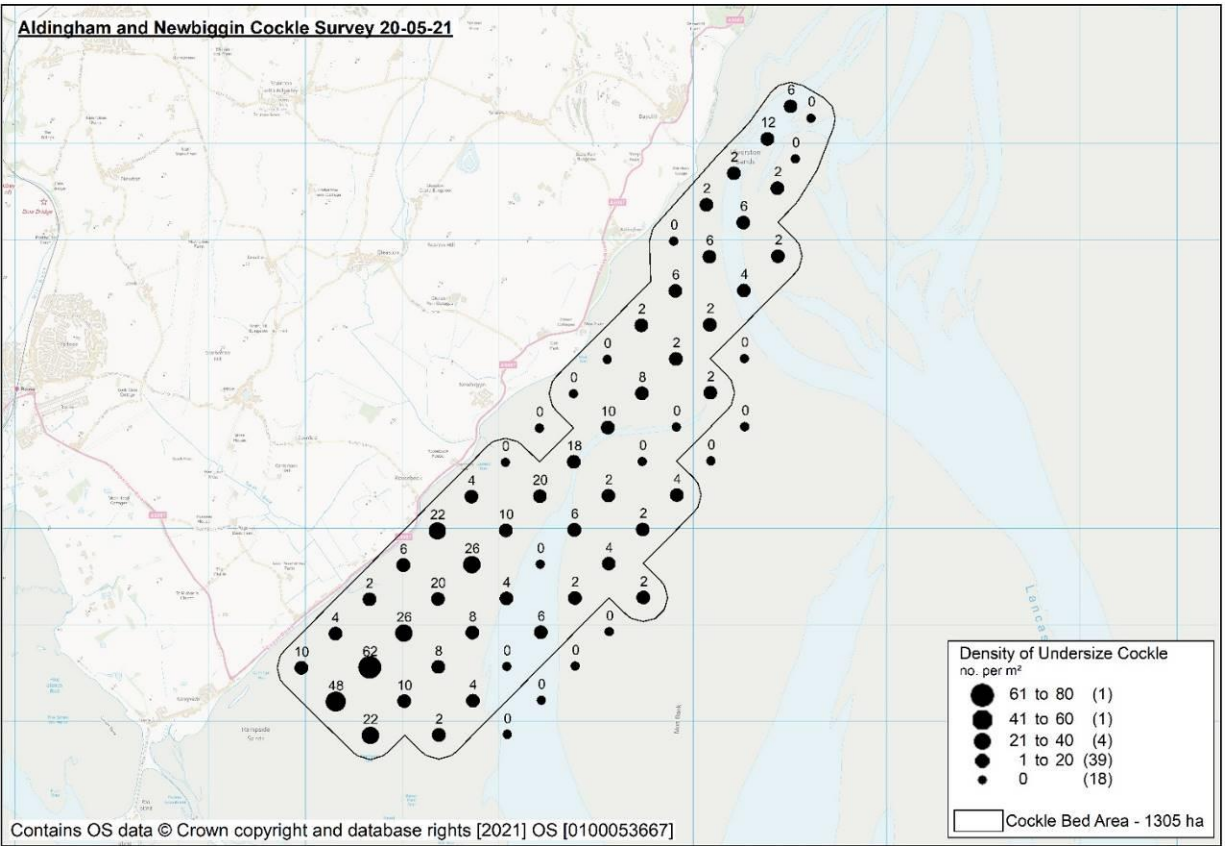


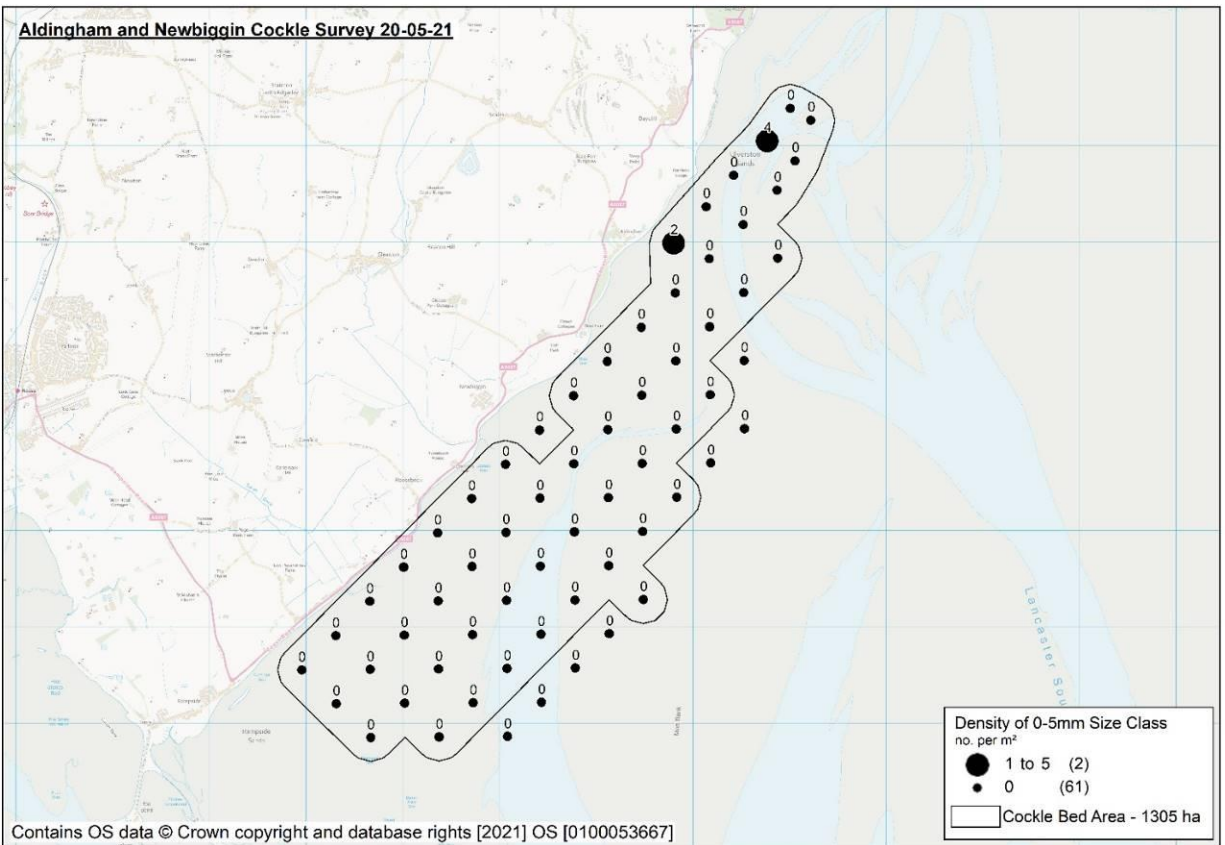
Illustration of position of Aldingham and Newbiggin Survey Area



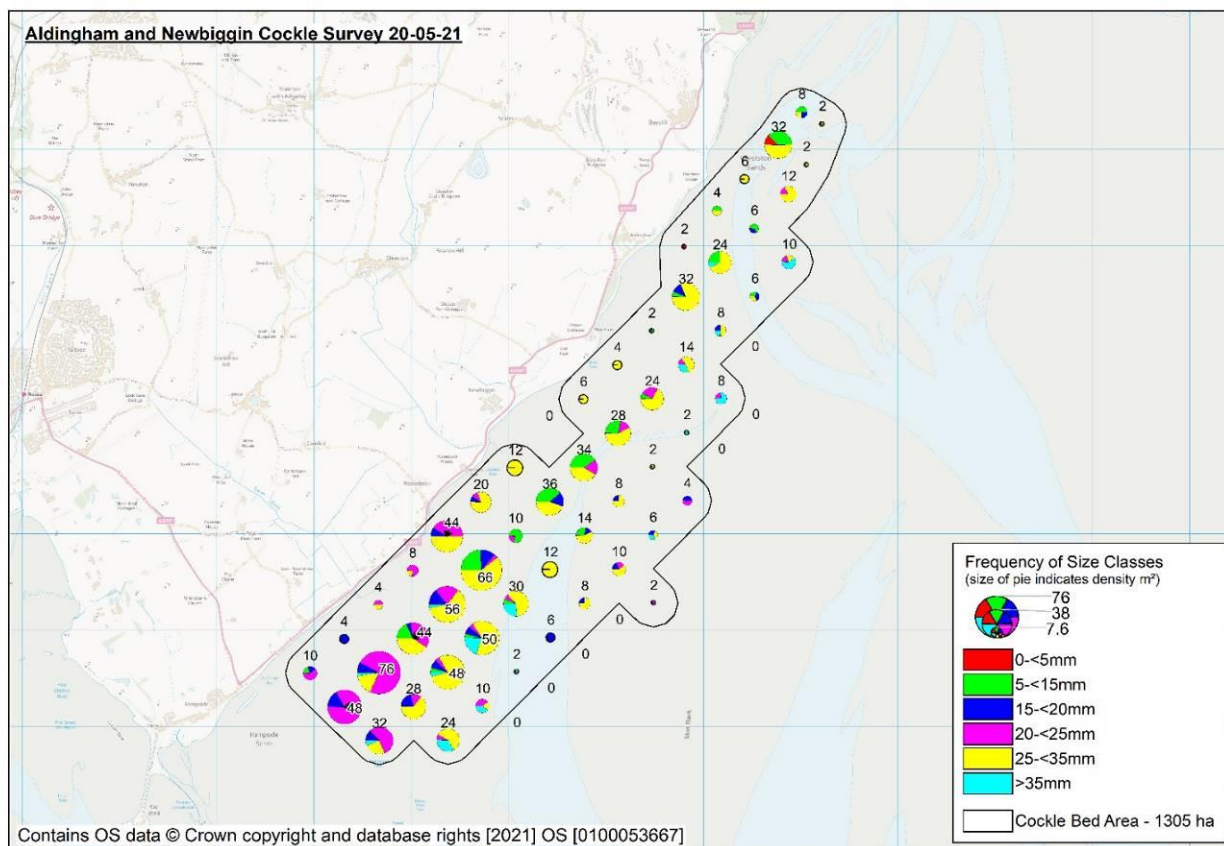
Density of size cockle per m² Aldingham and Newbiggin May 2021



Density of undersize cockle per m² Aldingham and Newbiggin May 2021



Density of 0-5mm cockle per m² Aldingham and Newbiggin May 2021



Frequency of size classes of cockle per m² Aldingham and Newbiggin May 2021

Leven Cockle Survey 12-05-21

LW 19:07 1.6m (Liverpool Tides)

74 stations were sampled from a 500m grid. There was a wide range of cockle sizes across the bed from less than 5mm to greater than 35mm cockle. The densities of both size and undersize cockle across the bed were relatively low. Size cockle were present across the surveyed area. Undersize cockle was present in higher densities with higher numbers found towards the south western part of the bed. Low densities of 2021 spat were found across the centre of the bed area but this was not consistent across the bed.

Mean number of size cockle	5 per m²	(min 0, max 22)
Mean number of undersize cockle	11 per m²	(min 0, max 58)
Mean number of 0-5mm cockle	3 per m²	(min 0, max 30)

Biomass	Area (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Leven	1319	~600-700	~125-150

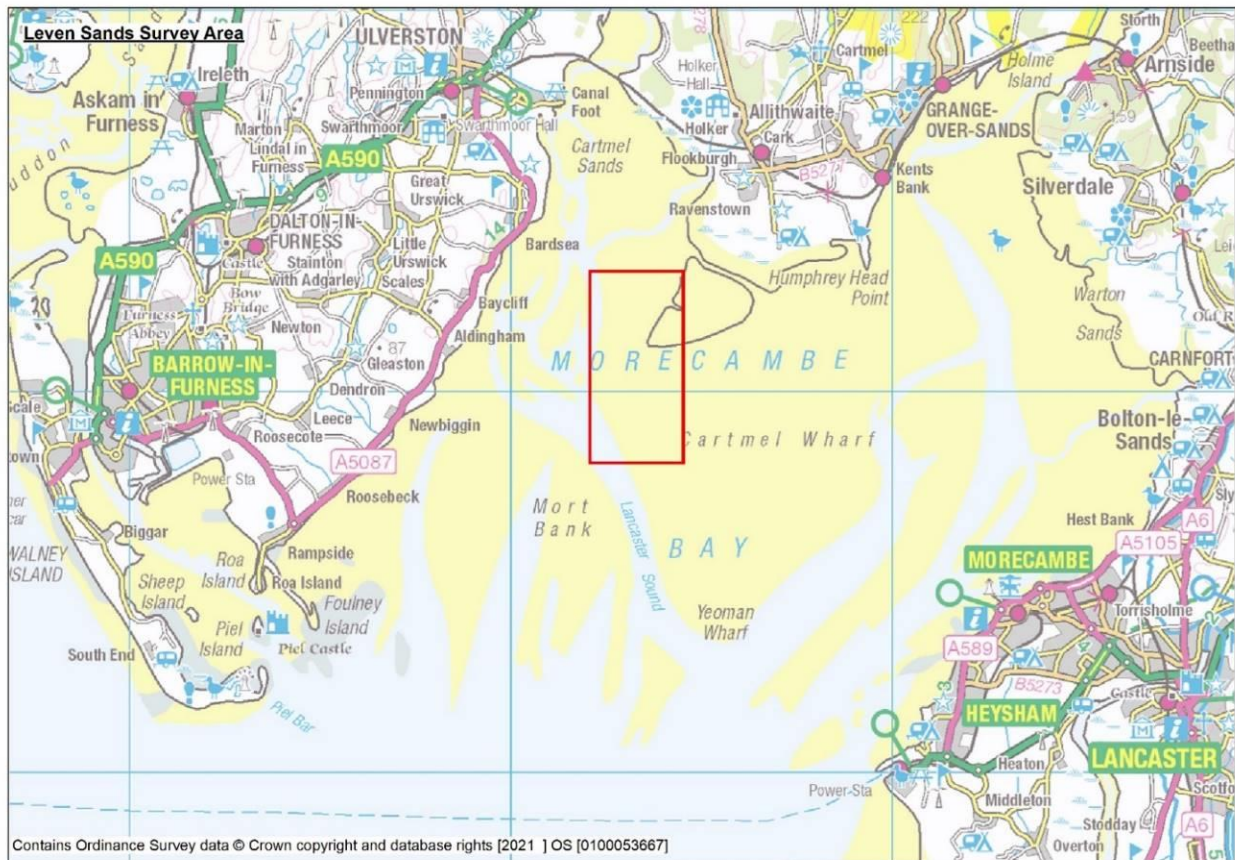
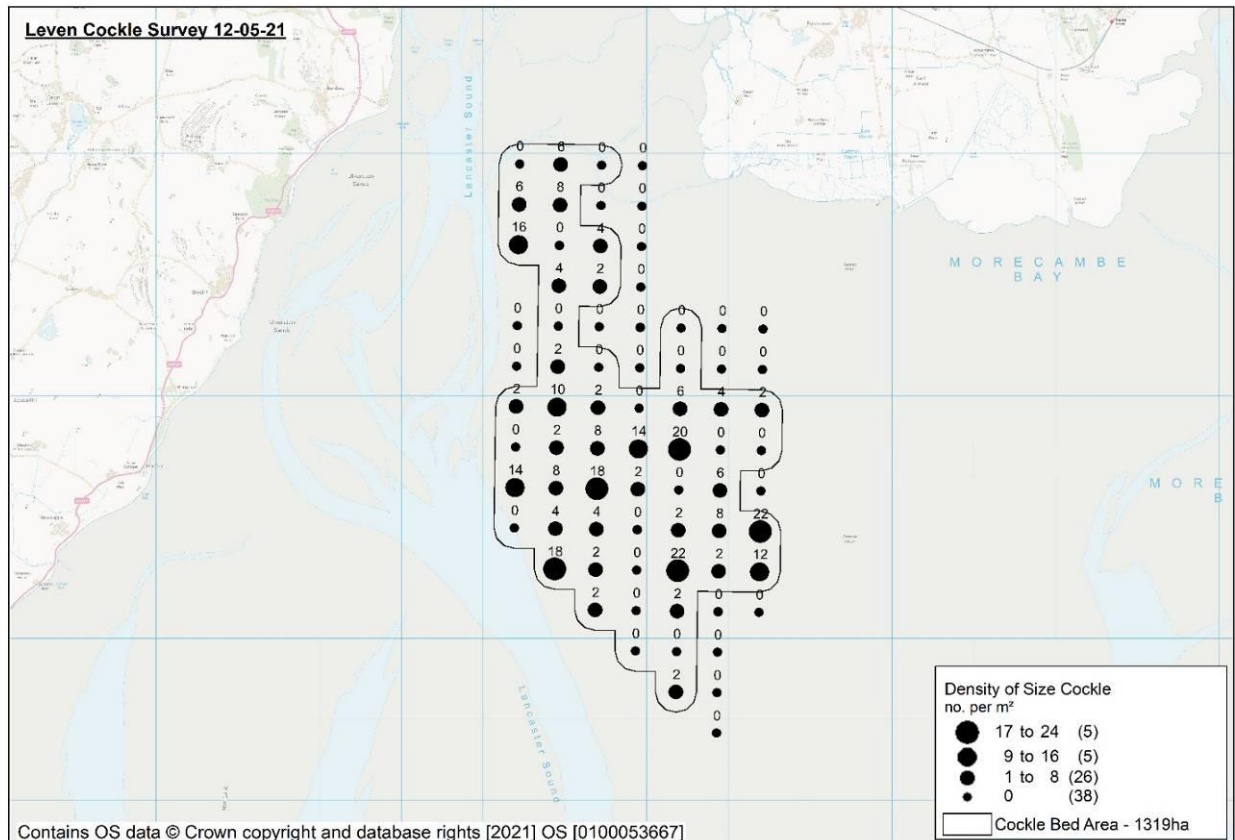
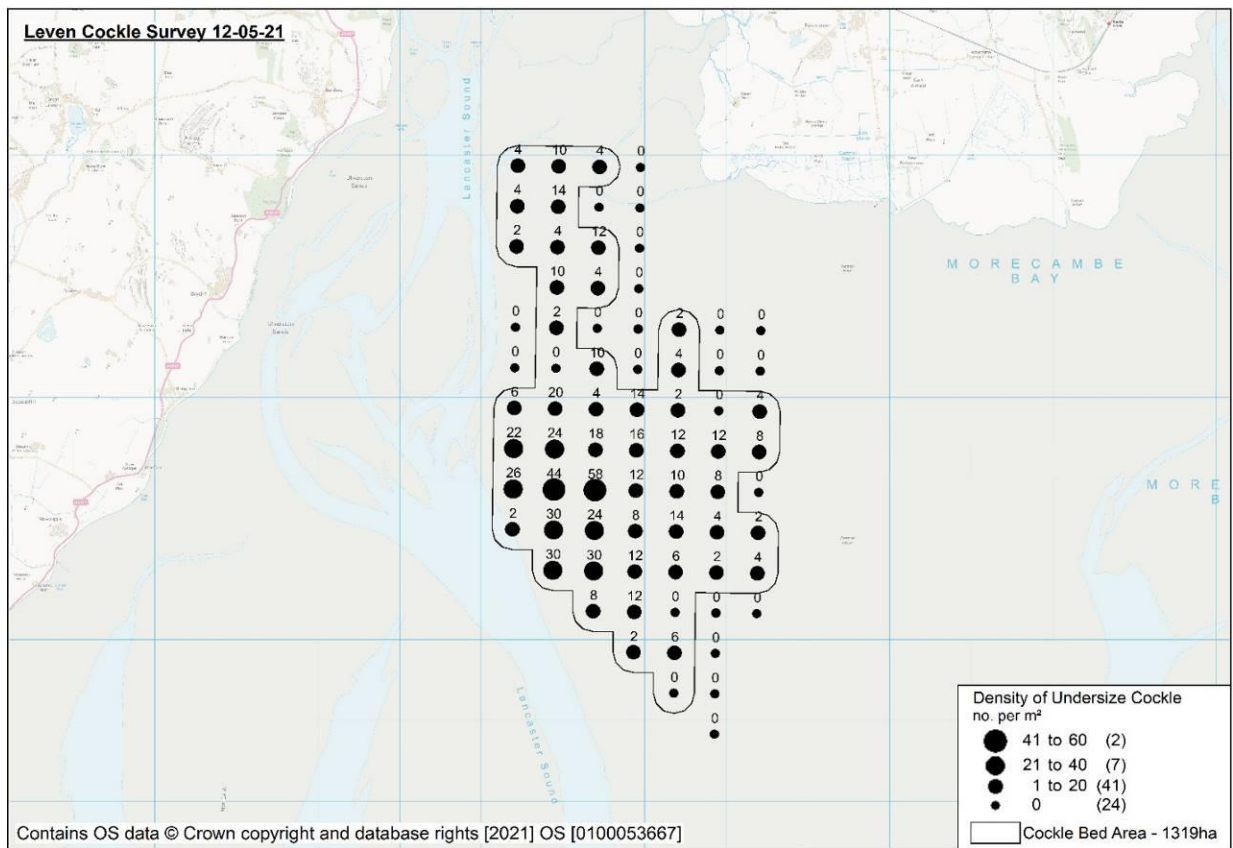


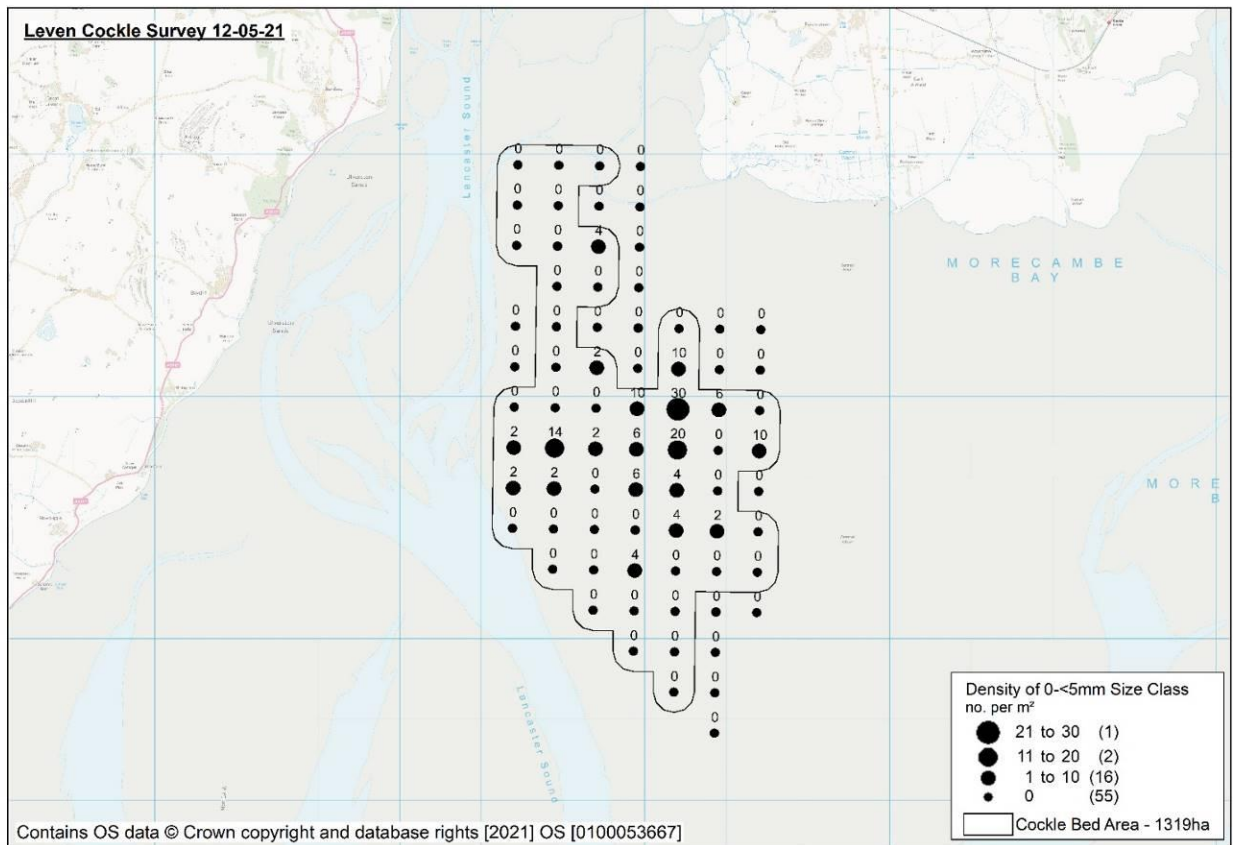
Illustration of position of Leven Survey Area



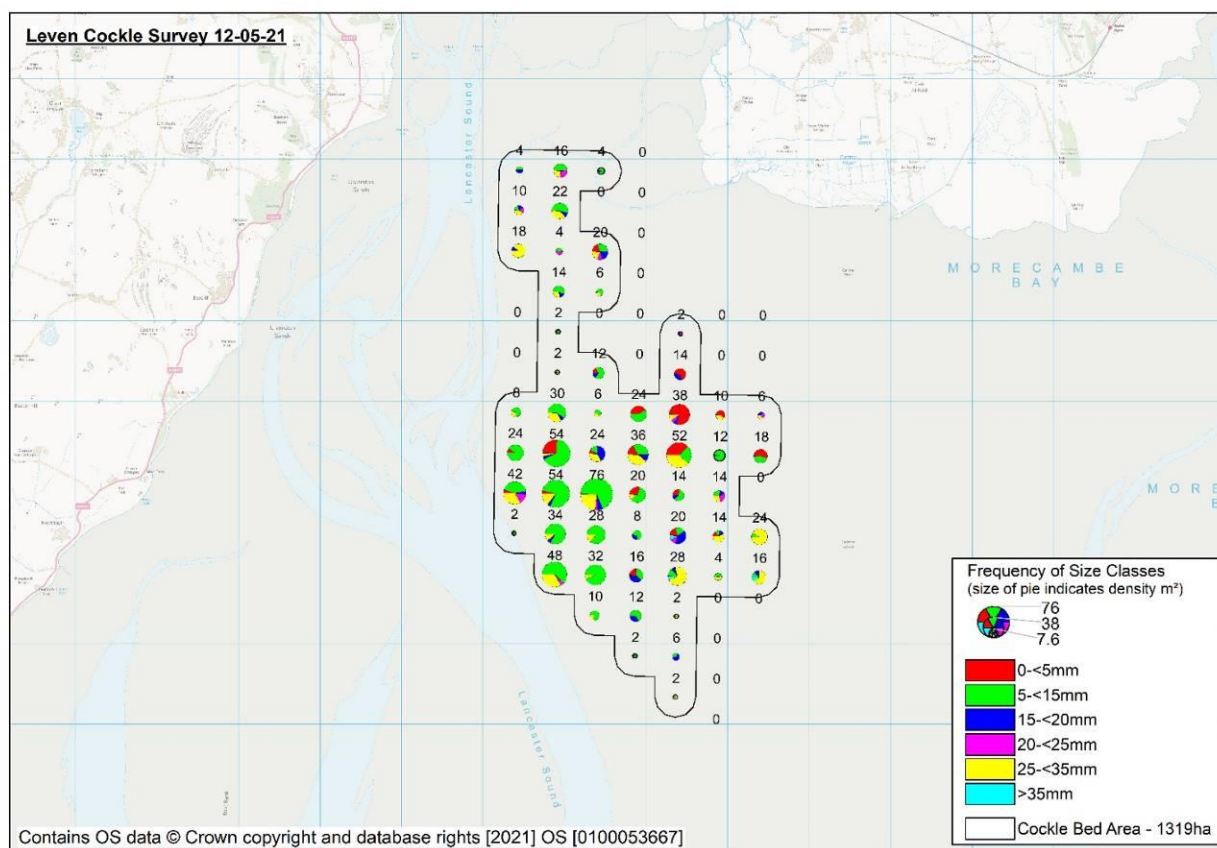
Density of size cockle per m² Leven May 2021



Density of undersize cockle per m² Leven May 2021



Density of 0-5mm cockle per m² Leven May 2021



Frequency of size classes of cockle per m² Leven May 2021

Flookburgh Cocker Survey 11/12-05-21

11-05-21 LW 18:39 1.6m (Liverpool Tides) and 12-05-21 LW 19:07 1.6m (Liverpool Tides)

Survey method - Jumbo and 0.5m² quadrat

123 stations were sampled from a 500m grid. A number of sample points within the grid were unable to be sampled due to changes in the channels on the bed. There was a wide range of cockle sizes across the bed from < 5mm to > 35mm. Cockle density was inconsistent across the bed and relatively low in comparison with recent years. There was little evidence of any 2021 settlement which is to be expected due to the timing of the survey. A denser area with a variety of size classes was evident in the North West of the survey grid.

Mean number of size cockle	4 per m²	(min 0, max 28)
Mean number of undersize cockle	7 per m²	(min 0, max 36)
Mean number of 0-5mm cockle	2 per m²	(min 0, max 40)

Biomass	Area (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Flookburgh	2240	~900-1000	~175-225

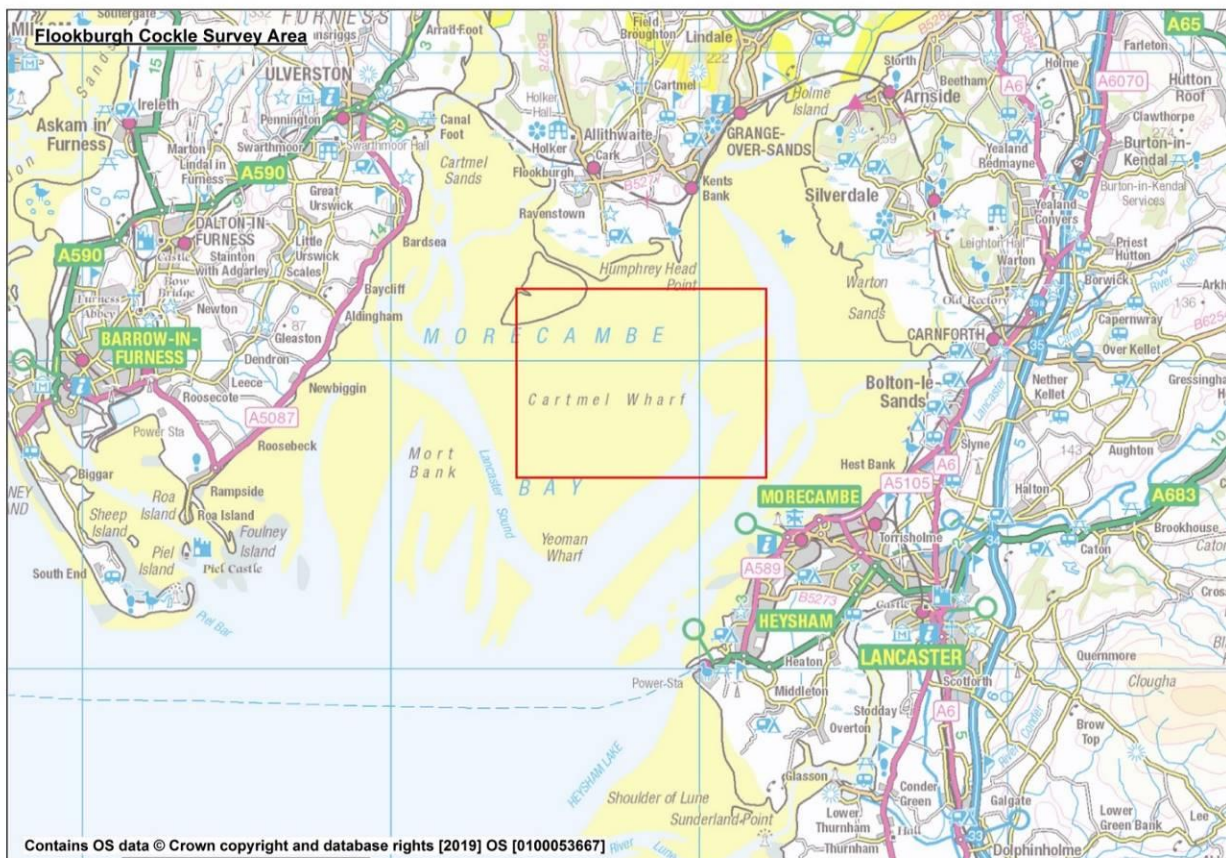
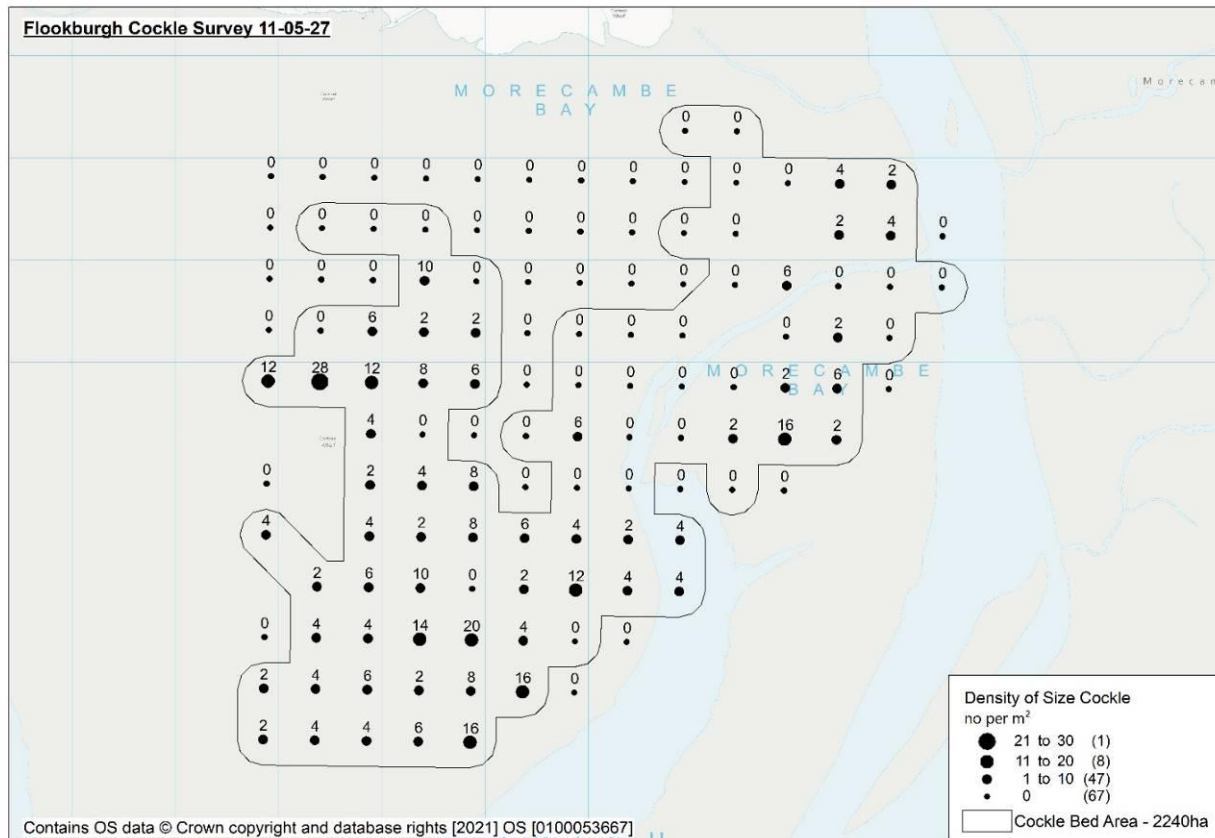
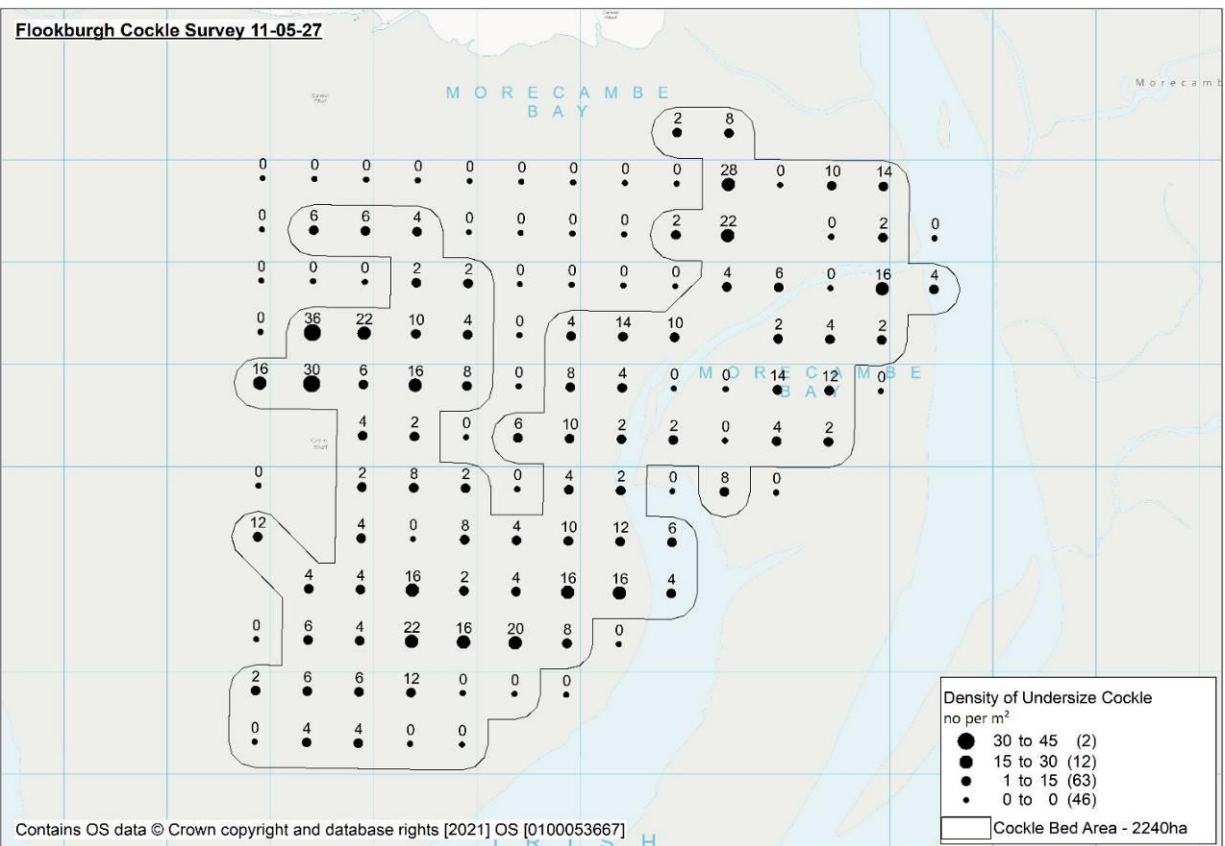


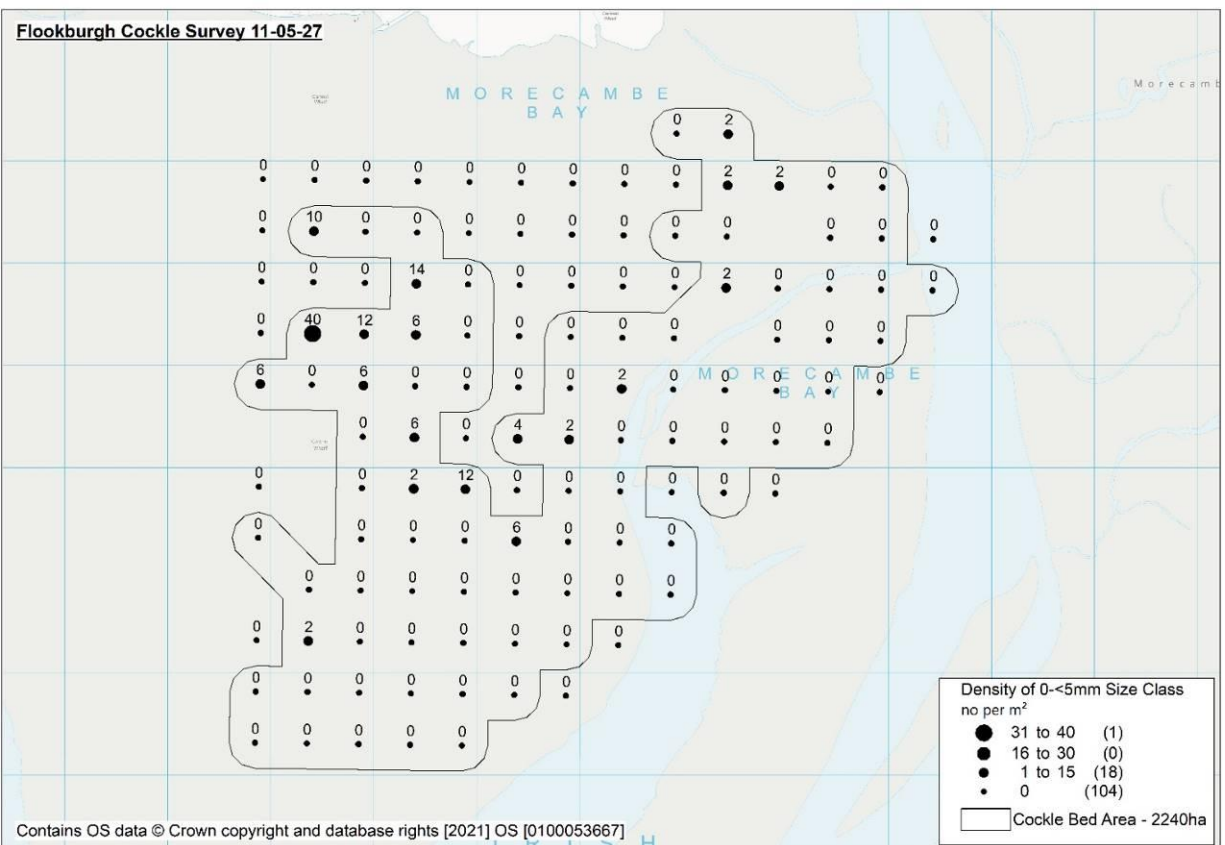
Illustration of position of Flookburgh Survey Area



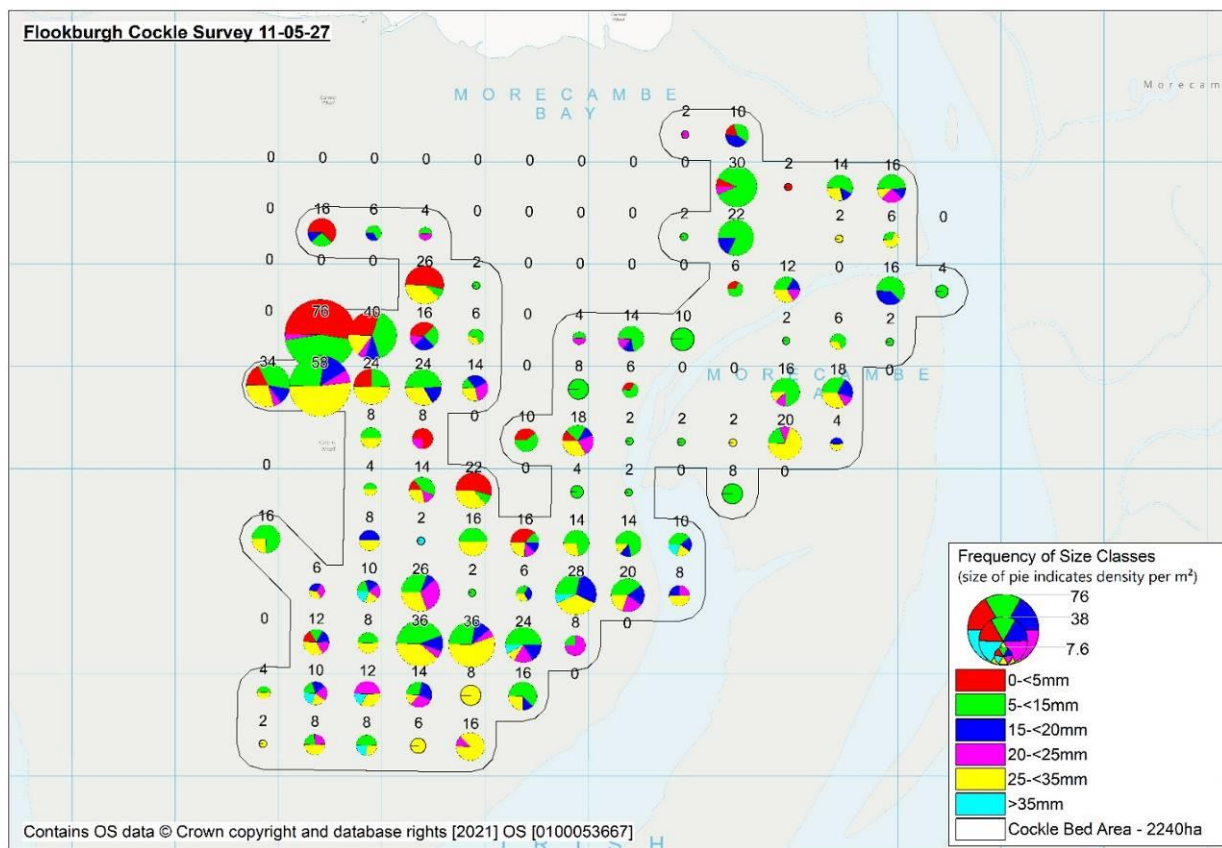
Density of size cockle per m² Flookburgh May 2021.



Density of undersize cockle per m² Flookburgh May 2021.



Density of 0-5mm cockle per m² Flookburgh May 2021.



Frequency of size classes of cockle per m² Flookburgh May 2021.

Warton Sands Cockle Survey 01-06-21

LW 11:10 2.1m (Liverpool tides)

Survey method - Jumbo and 0.5m² quadrat.

49 survey stations were sampled from a 250m grid. Sample density was increased to include an additional 6 stations where there was a previously known area of dense cockle. The majority of the survey area was accessible with some survey stations being cut by channels and soft areas. The high density area that was surveyed in 2019 and 2020 was present over a slightly smaller area with lower densities of size and undersize cockle. Size cockle was in low density across the main surveyed bed area and the majority of the dense area had grown to size. 2021 spat was not present across the bed which is likely due to the timing of the survey. No cockles larger than 35mm were found.

Main Area:

Mean number of size cockle	3 per m ²	(min 0, max 34)
Mean number of undersize cockle	5 per m ²	(min 0, max 14)

Dense Area:

Mean number of size cockle	73 per m ²	(min 0, max 230)
Mean number of undersize cockle	17 per m ²	(min 6, max 38)

Biomaas	Area (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Warton Sands Main Area	181.8	~55	~15-20
Warton Sands Dense Area	8.4	~50-55	>5

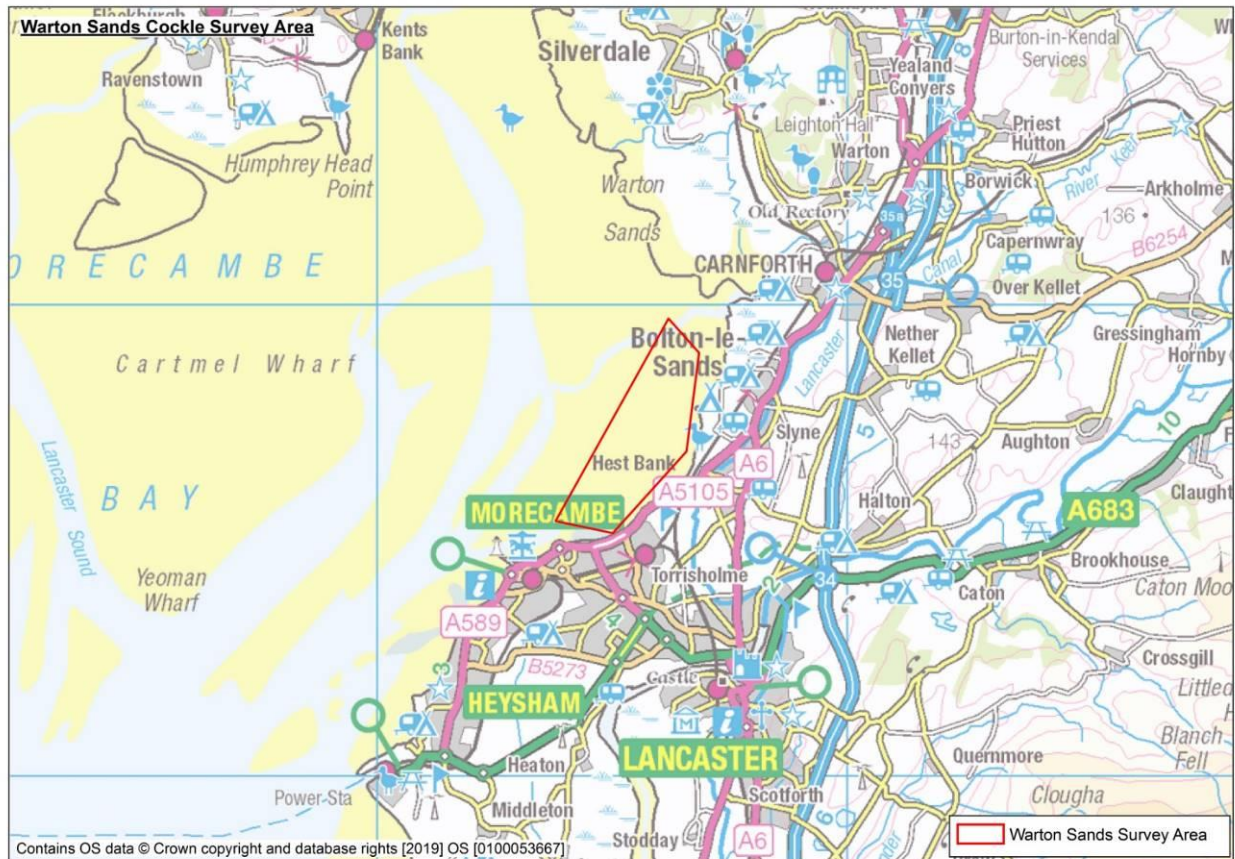
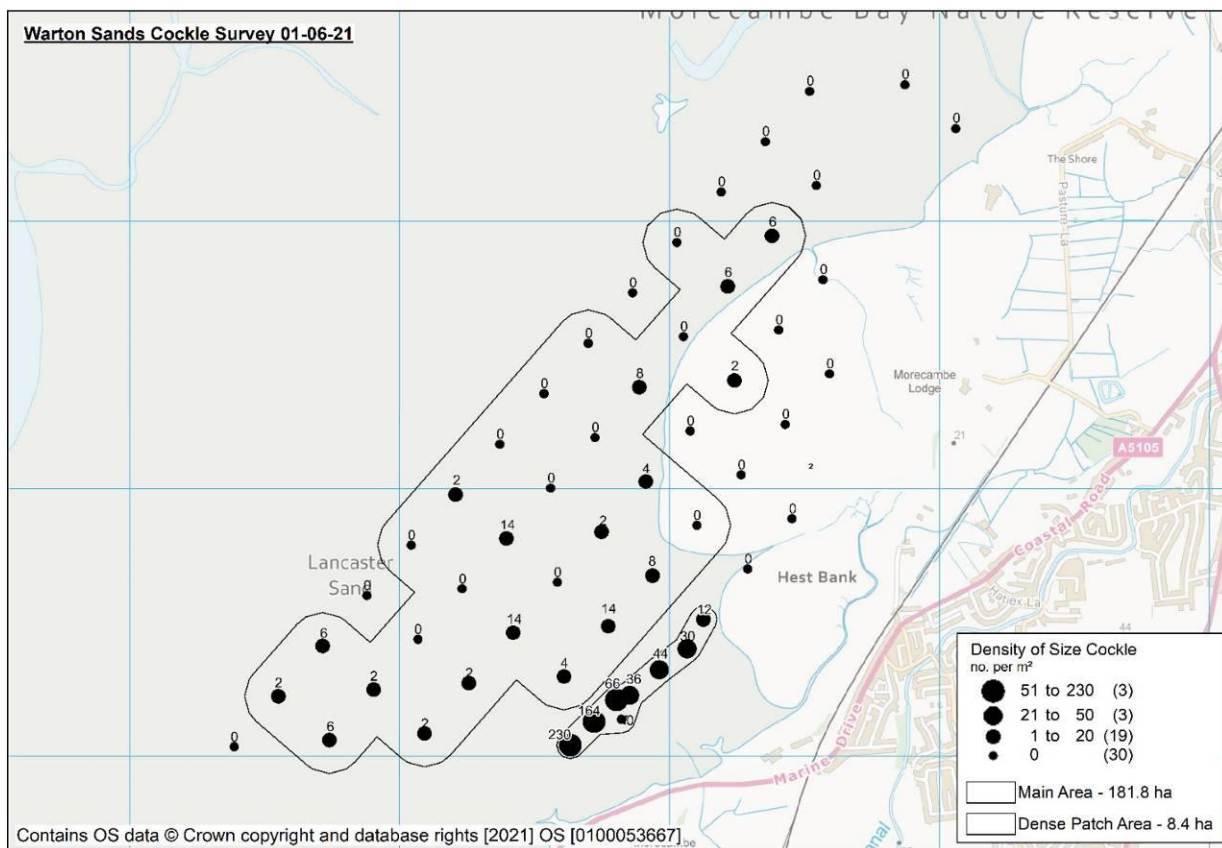
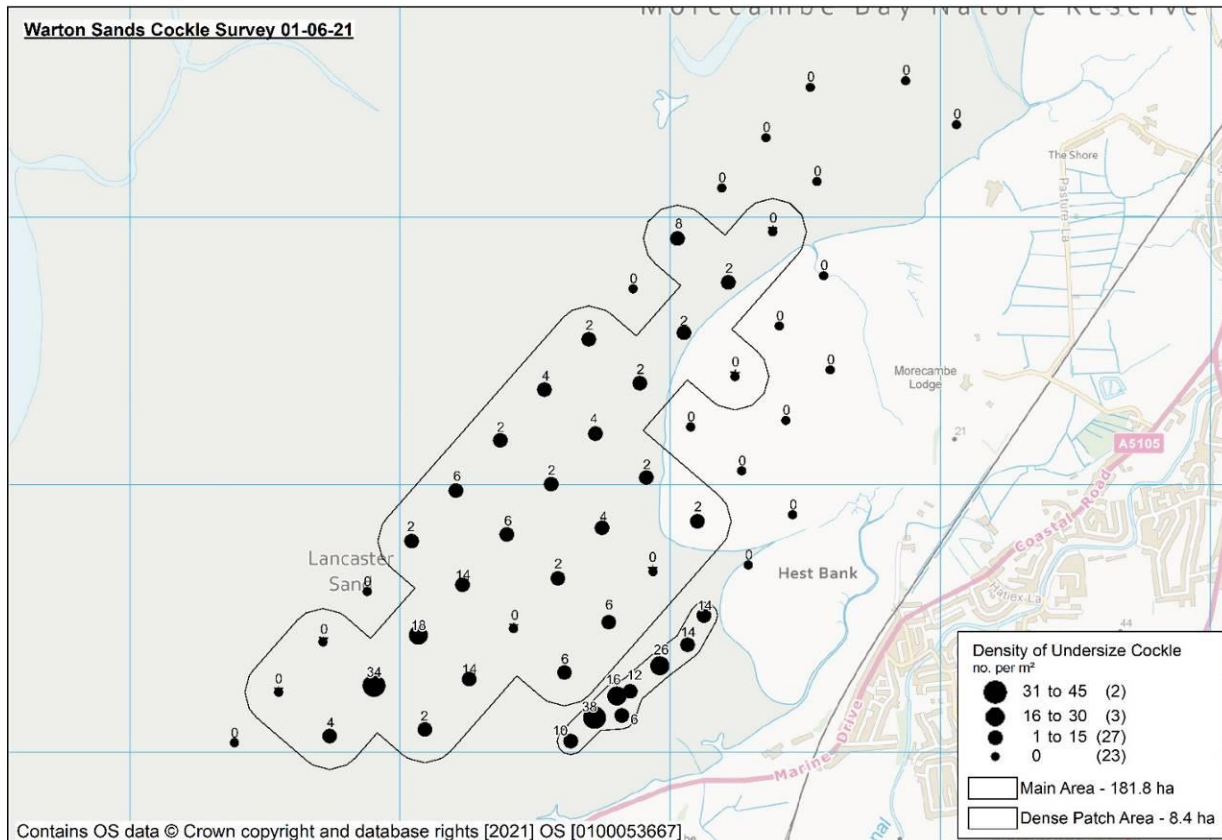


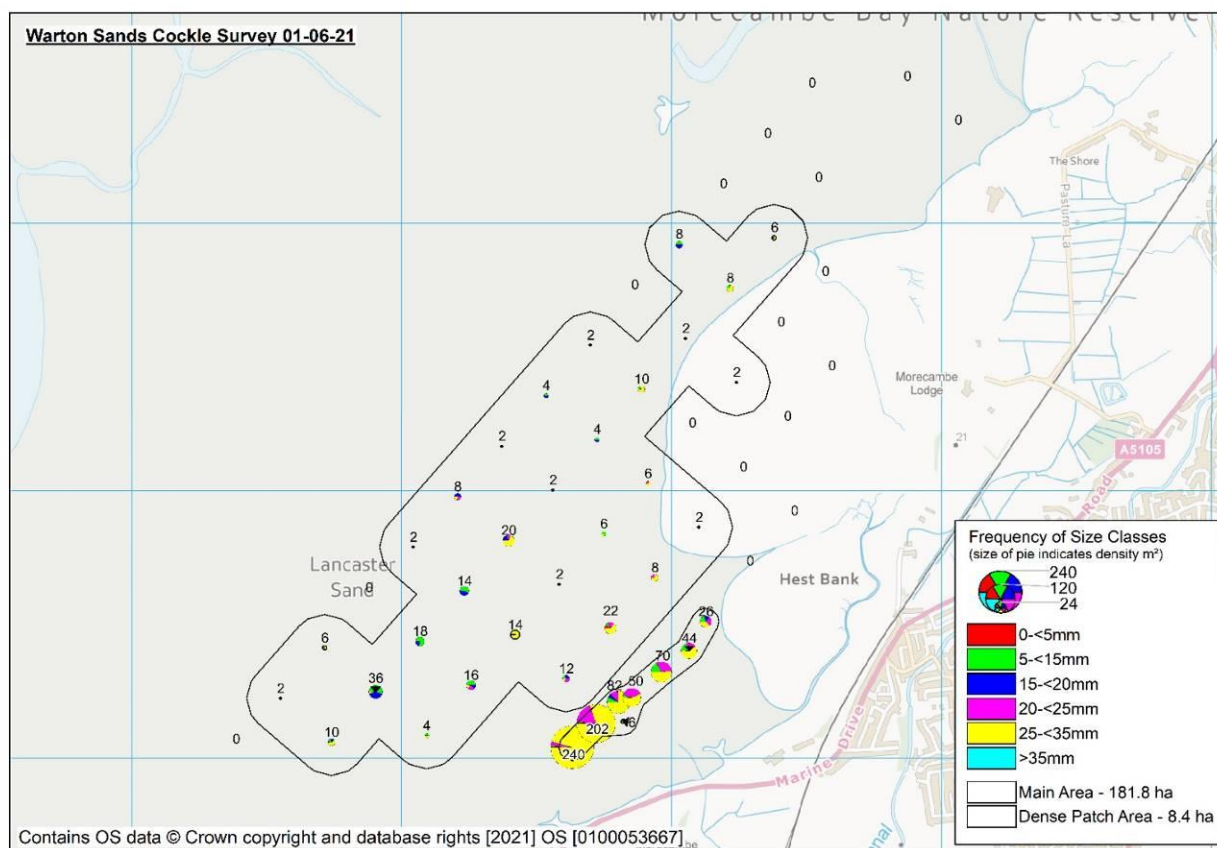
Illustration of position of Warton Sands cockle bed



Density of size cockle per m² Warton Sands June 2021



Density of undersize cockle per m² Warton Sands June 2021



Frequency of size classes of cockle per m² Warton Sands June 2021

Pilling Sands Cockle Survey 19-05-21

LW 11:25 2.9m (Liverpool tides)

Survey method - Jumbo and 0.5m² quadrat

69 stations were sampled from a 500m grid. Three additional stations were added to ensure full coverage of the cockle bed. There was a relatively low density of size cockle across much of the bed with an areas of higher density size cockle in the centre of the bed. There were low densities of undersize cockle across the majority of the bed. There were no signs of a 2021 cockle spat which is likely due to the timing of the survey.

Mean number of size cockle	17 per m ²	(min 0, max 120)
Mean number of undersize cockle	5 per m ²	(min 0, max 44)
Mean number of 0-5mm cockle	0 per m ²	(min 0, max 0)

Biomass	Area (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Pilling Sands	1434	~2200-2300	~150-200

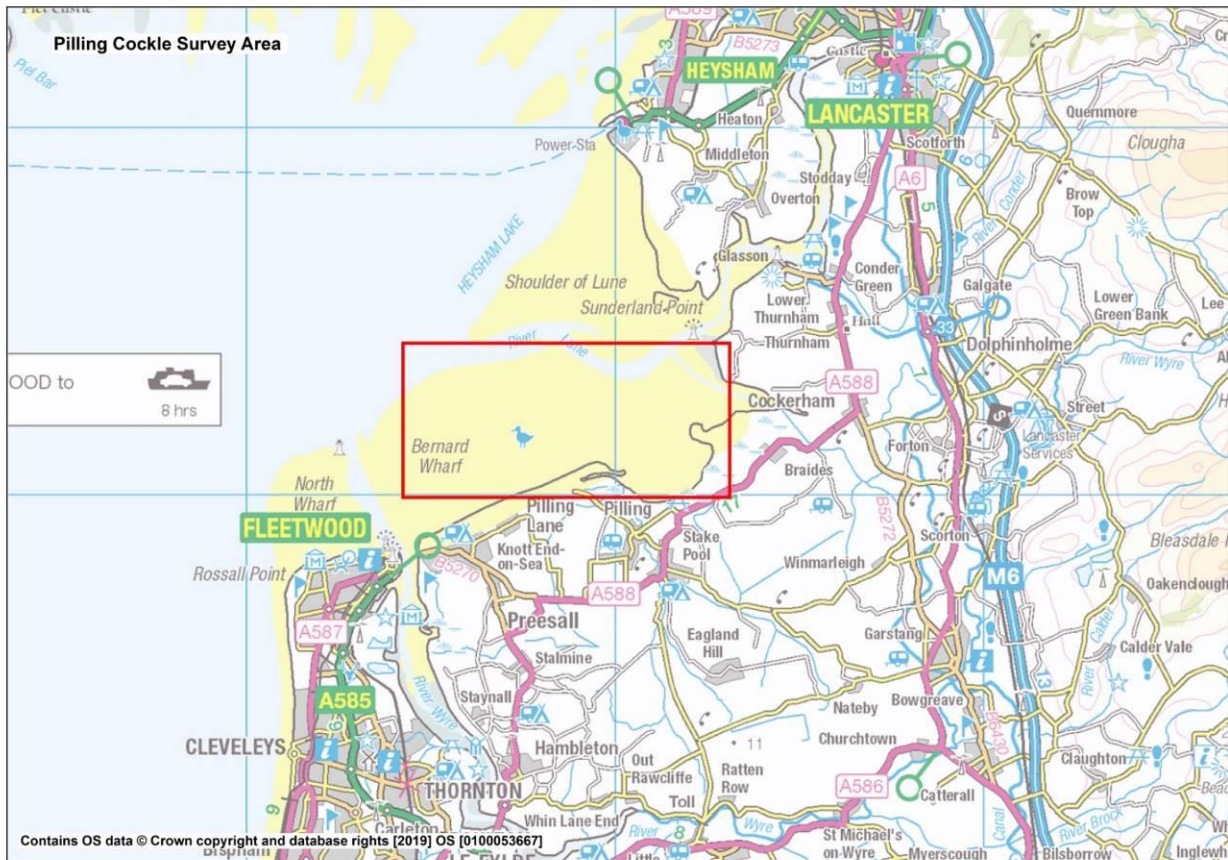
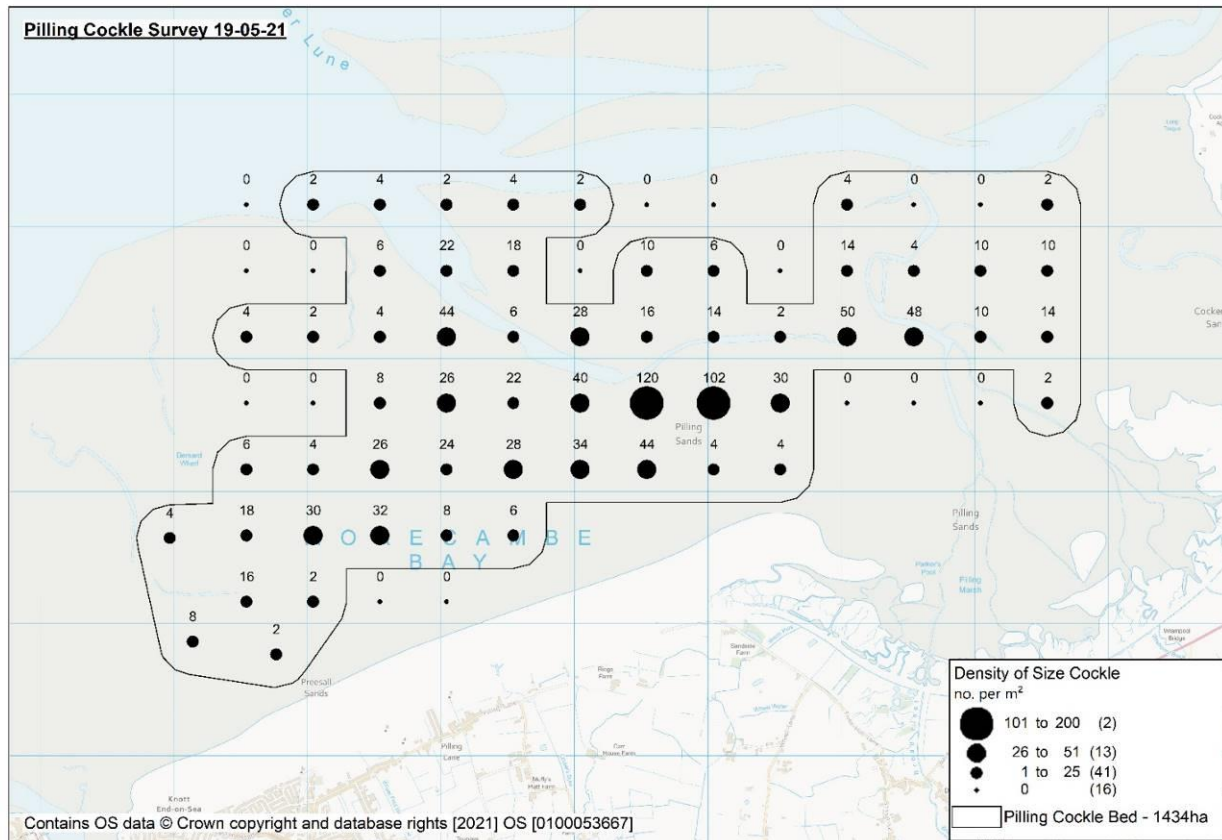
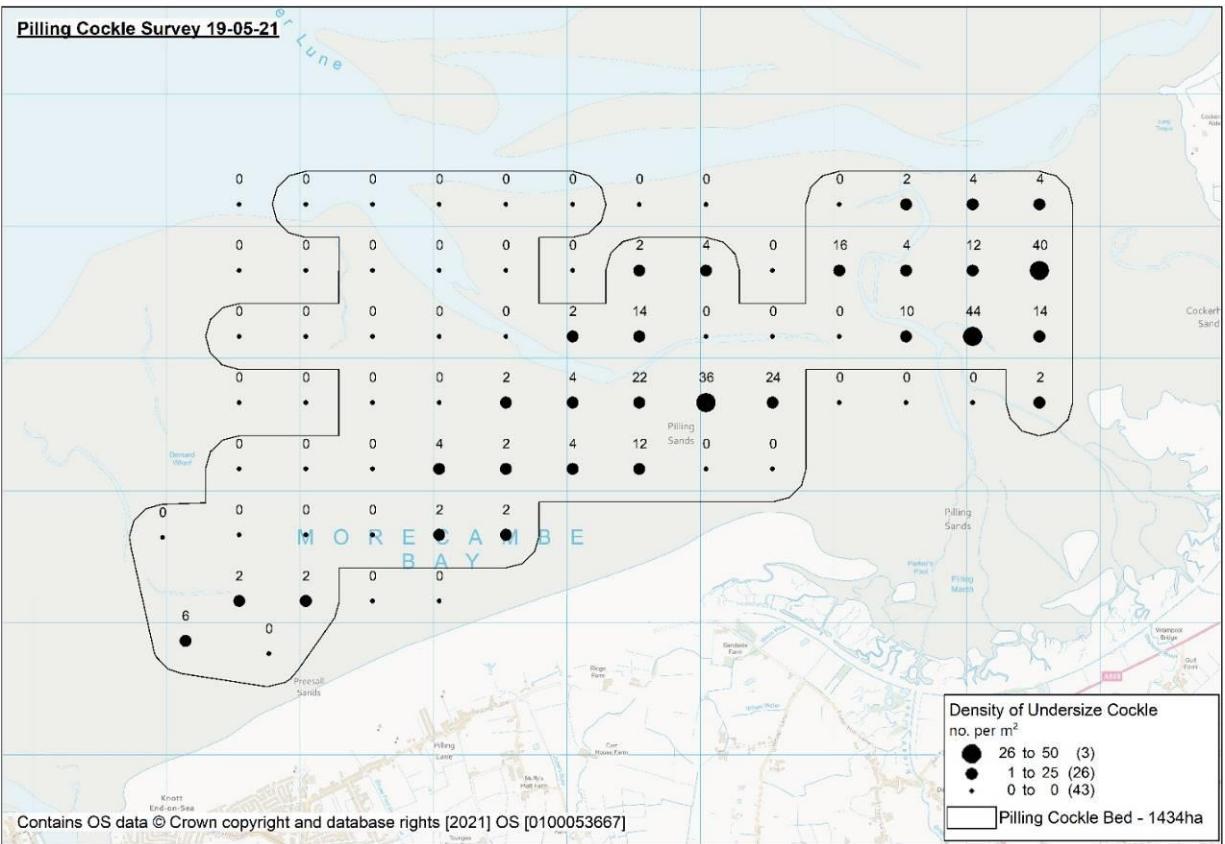


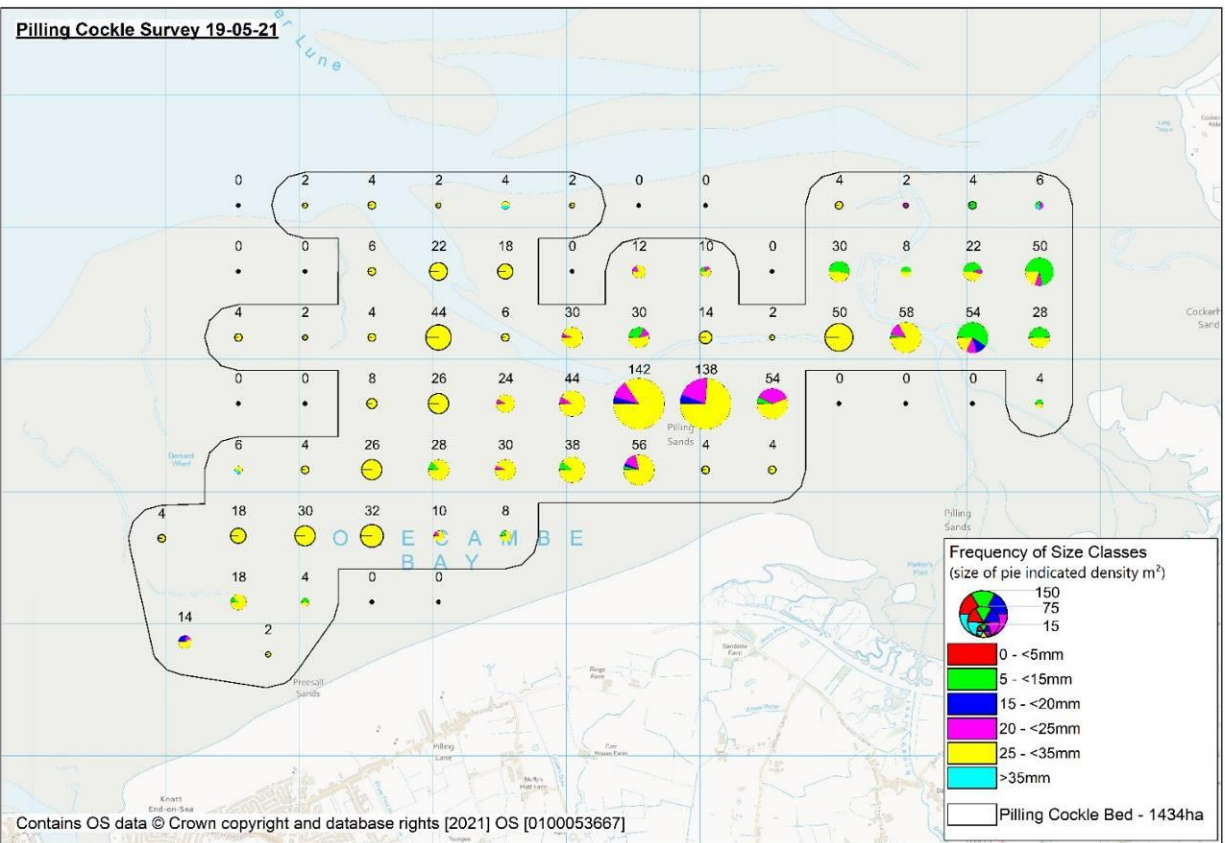
Illustration of position of Pilling Sands Survey Area



Density of size cockle per m² at Pilling Sands July 2021



Density of undersize cockle per m² at Pilling Sands July 2021



Frequency of size classes of cockle per m² at Pilling Sands July 2021

Middleton Cockle Survey 21-05-21

LW 13:54 2.6m (Liverpool tides)

Survey method - Jumbo and 0.5m² quadrat

78 stations were sampled from a 350m grid. The densities of both size and undersize cockle across the bed were relatively low. Cockle from the 0-5mm size class was only found at 3 stations which is likely due to the timing of the survey.

Mean number of size cockle	7 per m ²	(min 0, max 44)
Mean number of undersize cockle	4 per m ²	(min 0, max 22)
Mean number of 0-5mm cockle	<1 per m ²	(min 0, max 4)

Biomass	Area (ha)	Size Cockle (tonnes) ¹	Undersize Cockle (tonnes) ²
Middleton Sands	601	~400-450	~40-55

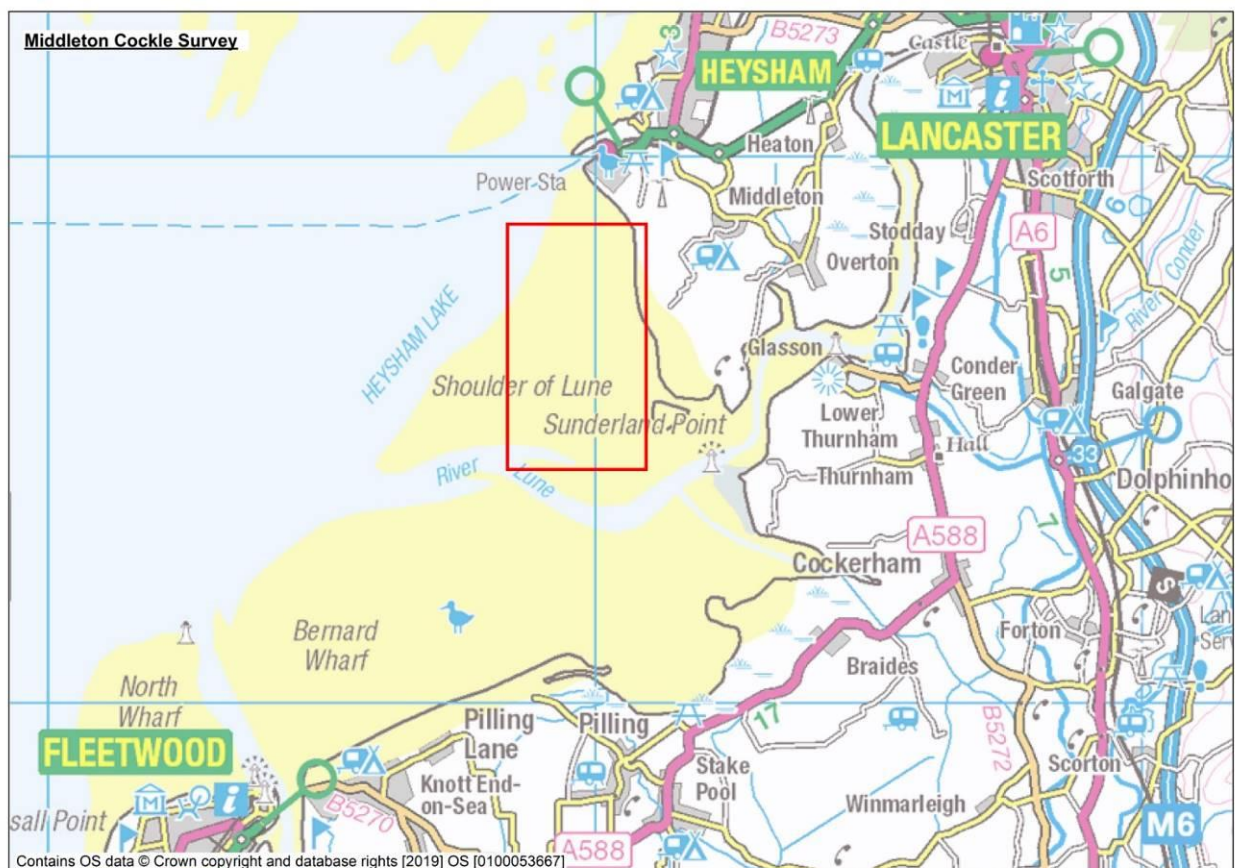
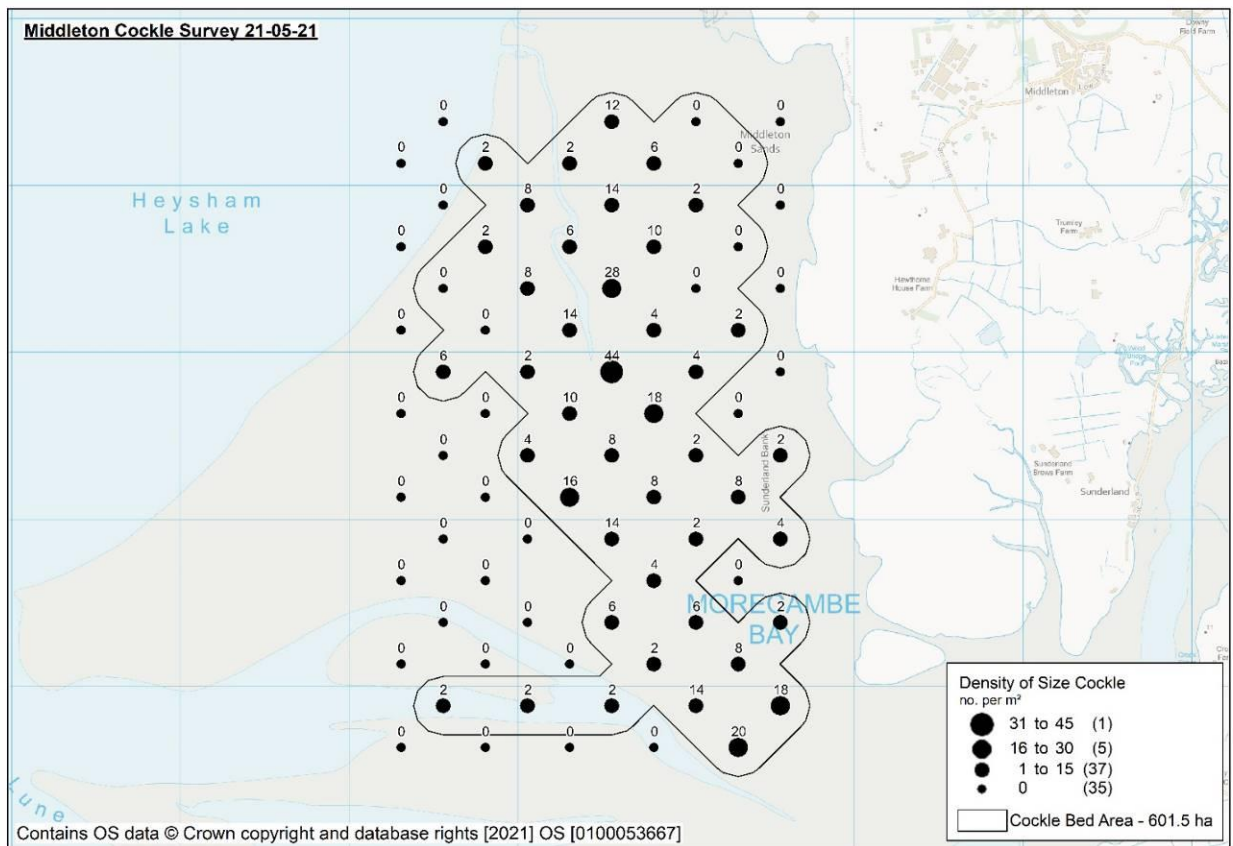
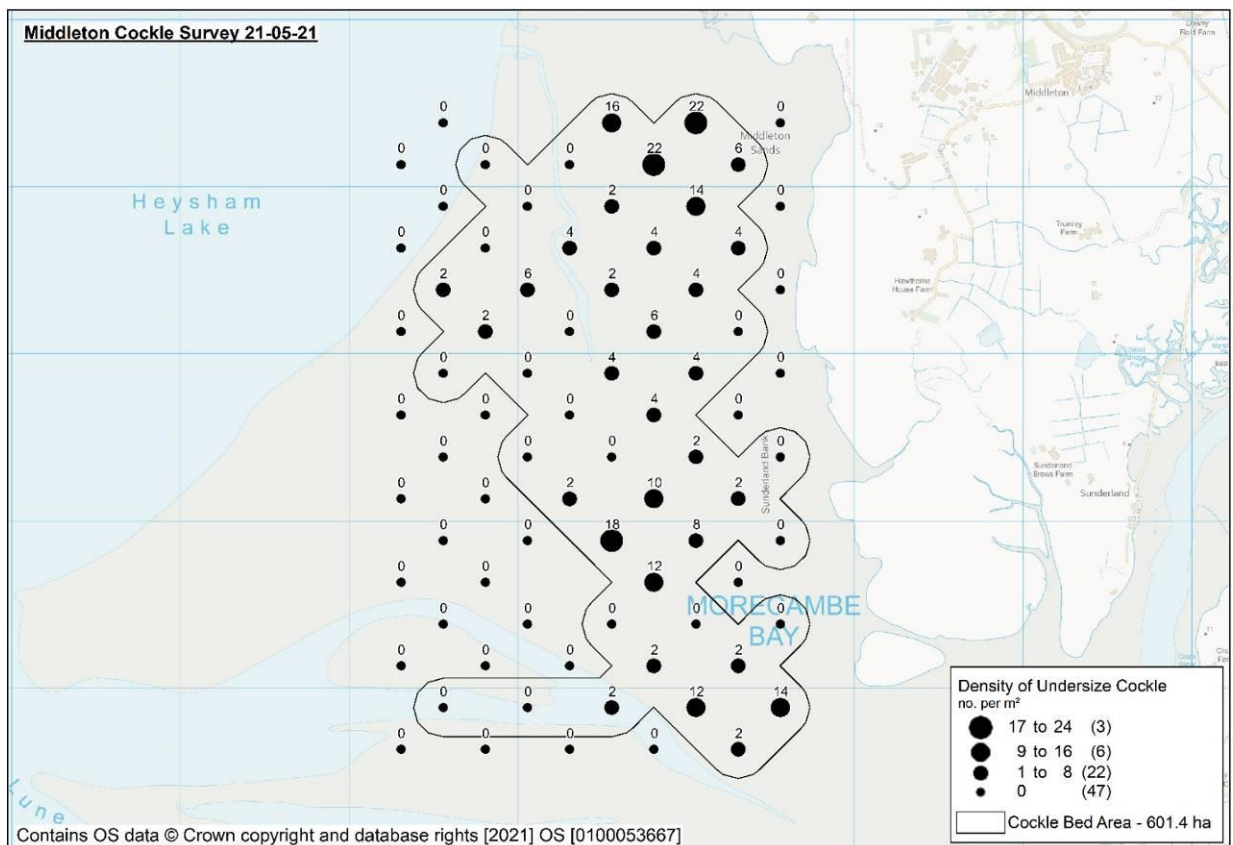


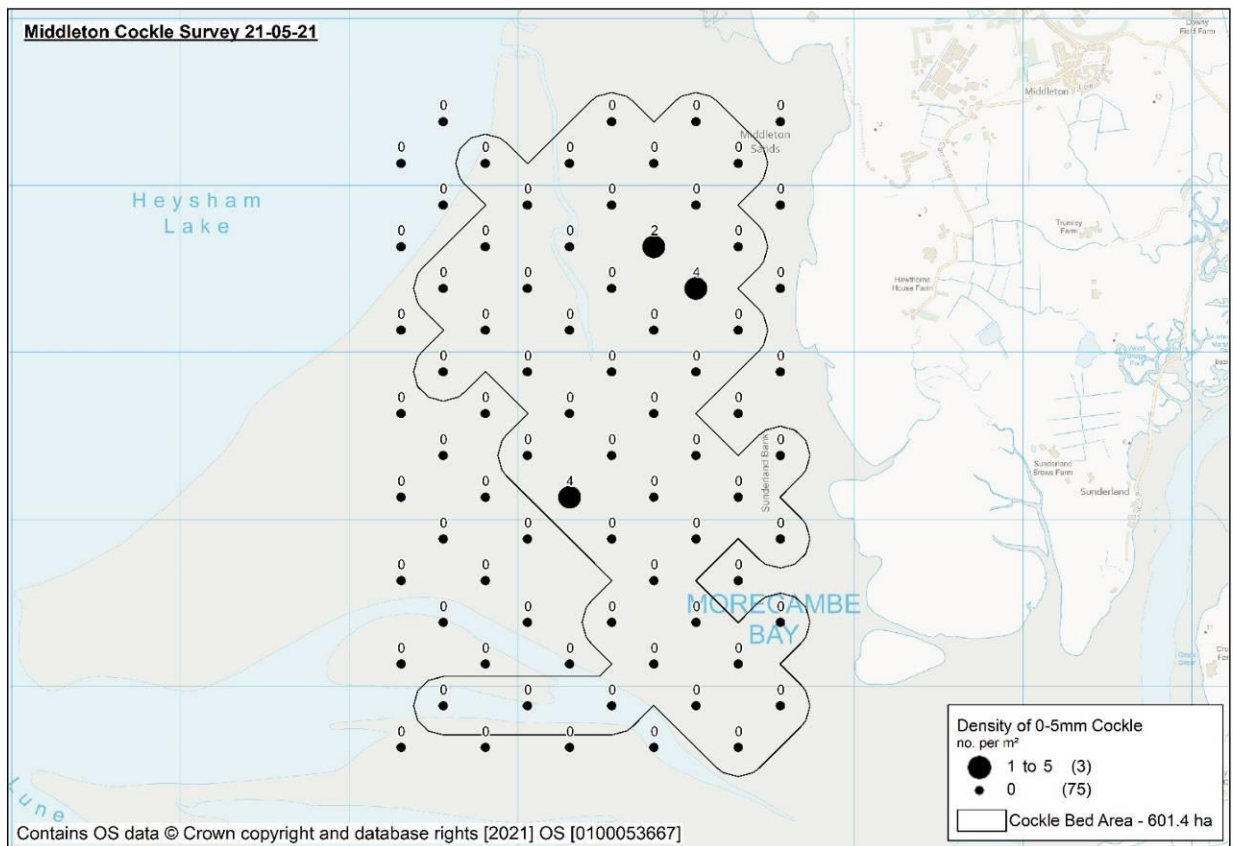
Illustration of position of Middleton Sands cockle bed



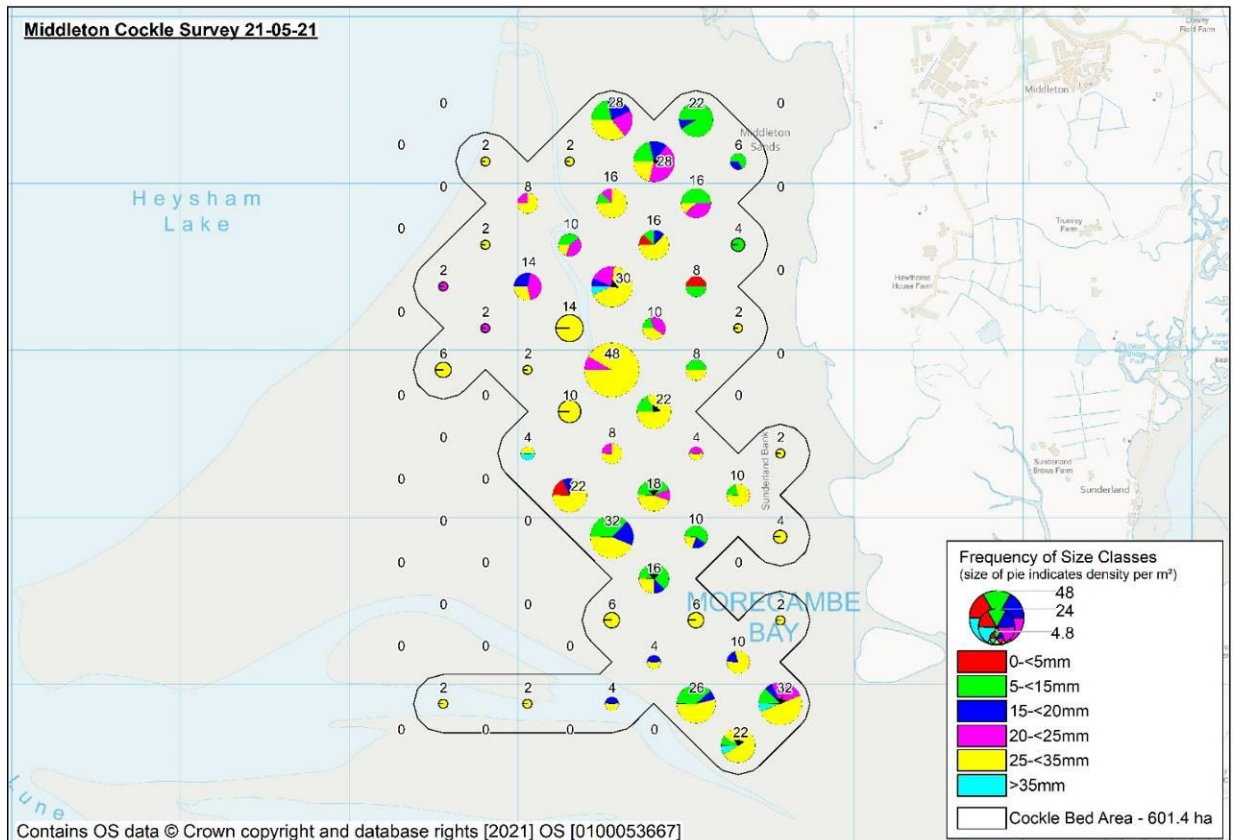
Density of size cockle per m² Middleton Sands May 2021



Density of undersize cockle per m² Middleton Sands May 2021



Density of 0-5mm cockle per m² on Middleton Sands May 2021



Frequency of size classes of cockle per m² Middleton Sands May 2021