Annex 2 – August 5th 2025 TSB Agenda Item 5

Cockle Surveys and inspections – Morecambe Bay

Pilling Cockle Survey 24-06-2025

Officers present: AP, JH, GG, LL
Tides: LW 17:34 1.7m (Liverpool Tides)

Survey method - Jumbo and 0.5m^2 quadrat

78 stations were sampled from a 500m grid. There was a wide range of cockle sizes across the bed from <5mm to >35mm. Size cockle has increased in density from April with a max of 258 cockles per m², though it is still relatively low across the bed, with an average of 22 per m². There is evidence of a 2025 settlement with spat seen in some areas across the bed.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size but has been included as a separate figure.

Mean number of size cockle	22 per m²	(min 0, max 258)
Mean number of undersize cockle	14 per m²	(min 0, max 200)
Mean number of 0-5mm cockle	10 per m²	(min 0, max 200)
Mean weight of size cockle kg/m²	0.206 kg/m²	(min 0, max 2.384)
Mean weight of undersize cockle kg/m²	0.055 kg/m²	(min 0, max 0.906)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes (size of pie chart indicating the total density of cockles present), and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes)[1]	Undersize Cockle (tonnes)[2]
Pilling	**1525**	**3143**	**838**

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
27	**30**	**671**	**3150**	**103**

[1]In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.
[2]The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

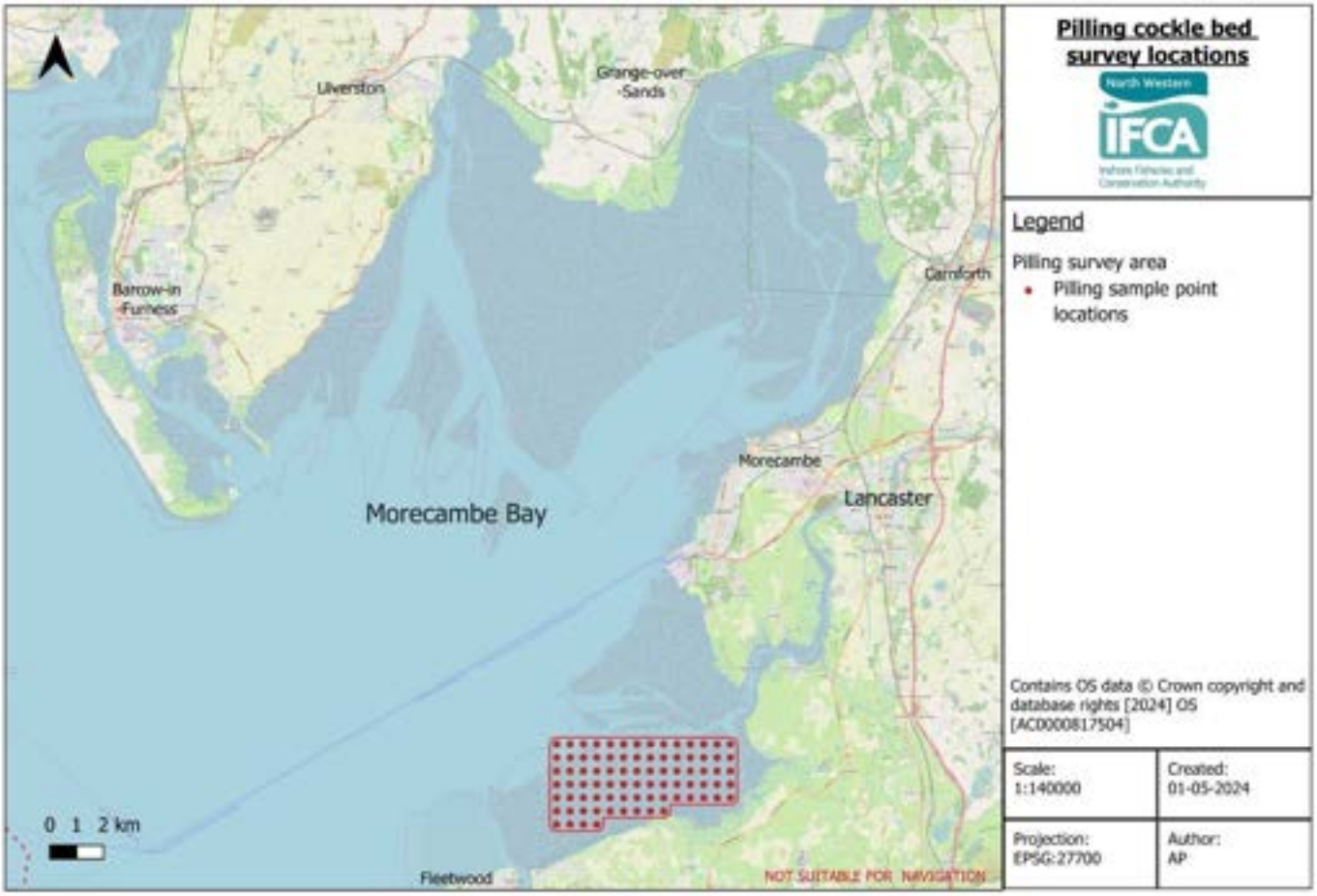


Figure 1. Illustration of position of Pilling Survey Area

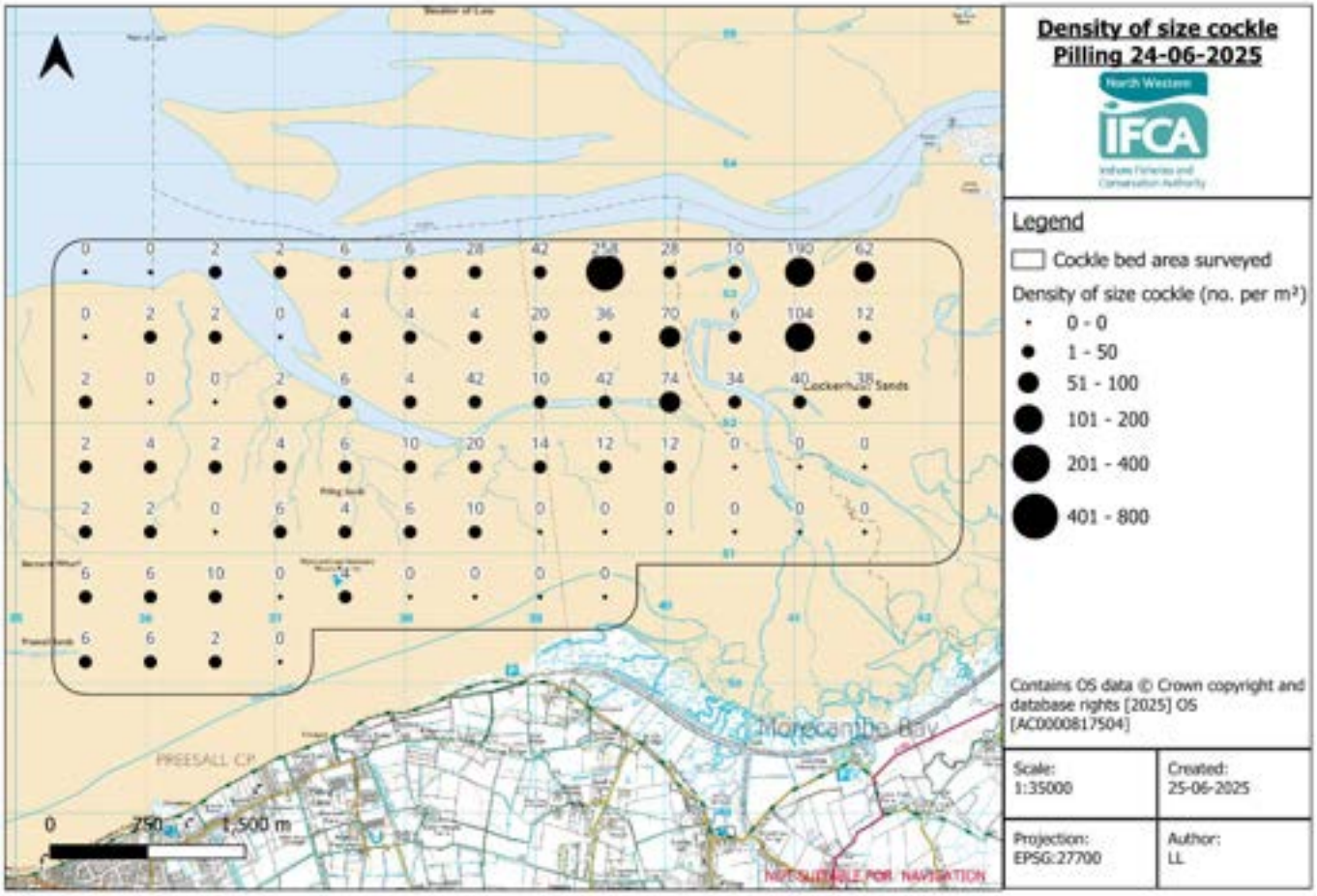


Figure 2. Density of size cockle per m² at Pilling April 2025.

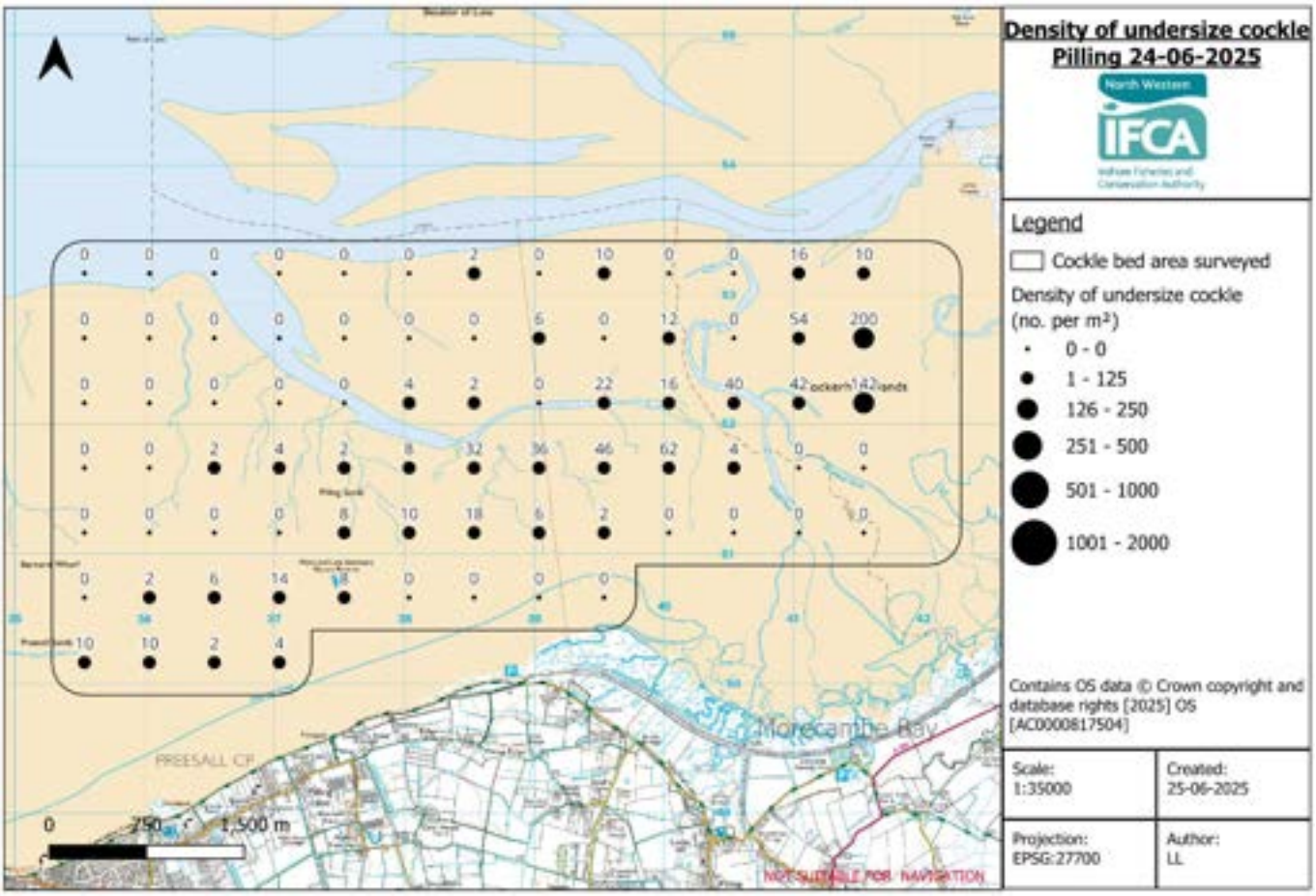


Figure 3. Density of undersize cockle per m² at Pilling June 2025

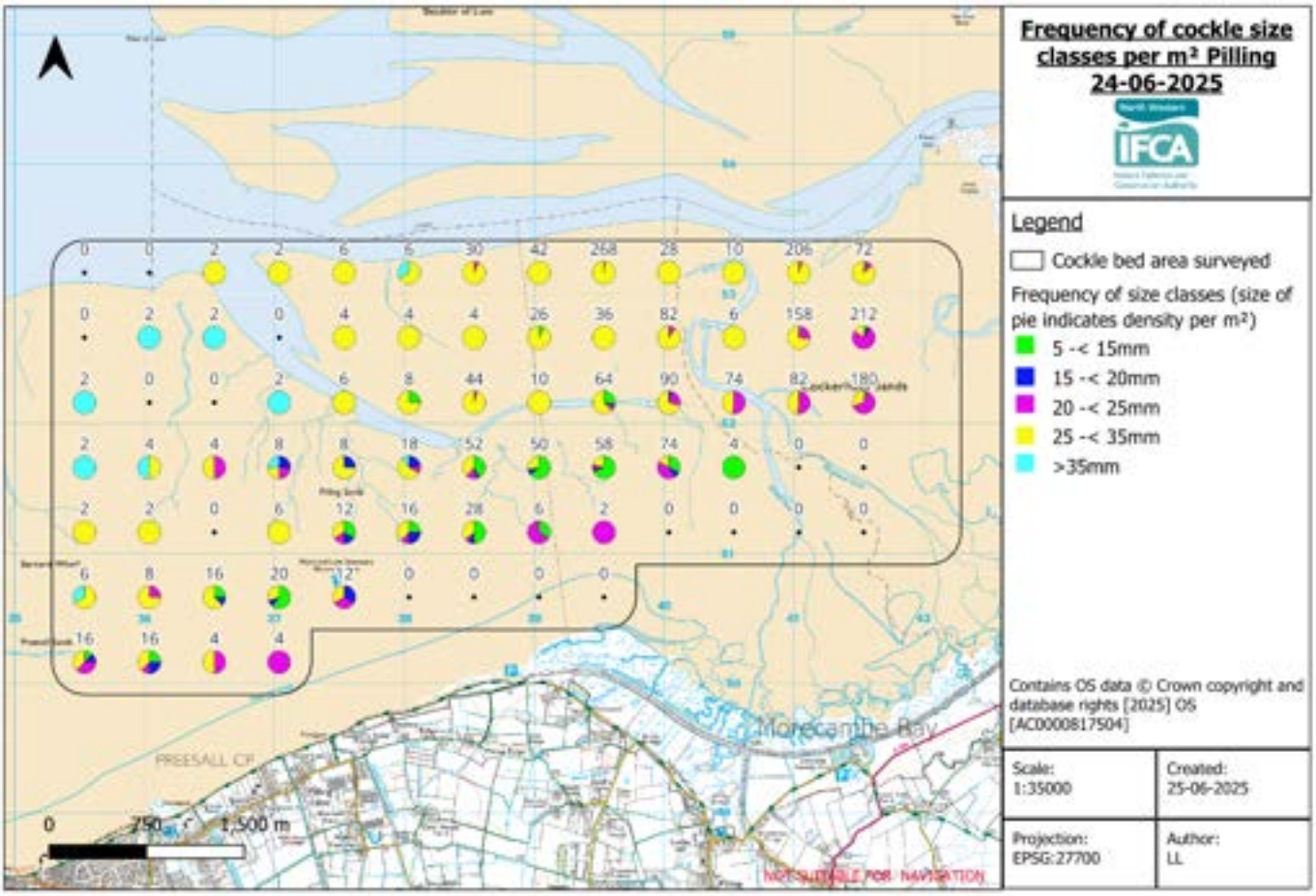


Figure 4. Frequency of size classes of cockle per m² at Pilling June 2025.

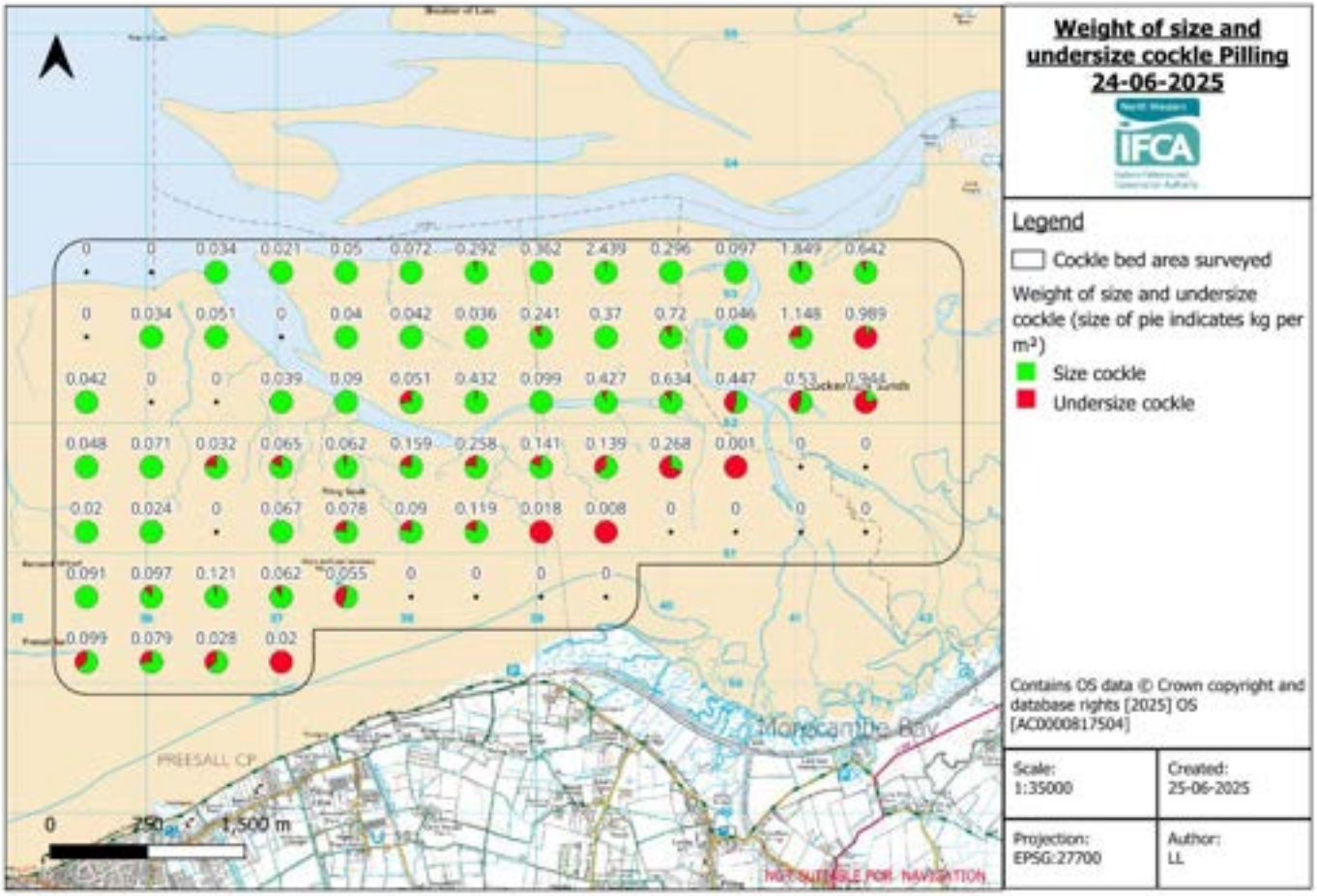


Figure 5. Weight of size and undersize

Flookburgh Cockle Survey 15&17-07-25

Officers present:		ID, CT, AP, JH, GG, LL
Tides:	15-07-25	LW 09:35 1.5m (Liverpool Tides)
	17-07-25	LW 10:56 1.9m (Liverpool Tides)

Survey method - Jumbo and 0.5m^2 quadrat

153 stations were sampled from a 500m grid, for the summer survey the 2023 extension area has become permanent, and the grid was extended North to include are area fished in the later part of the 2024/25 cockle fishery. The channels cutting through the bed has combined into one meaning more of the bed could be sampled compared to the April surveys. The bed area has increased due to the above reasons, and because of a new settlement across a large area of the bed which is 4-12mm in size, and in relatively high densities. The cockle is mixed across the bed and ranged in size from 5mm to 35mm.

Means

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

Mean number of size cockle	8 per m²	(min 0, max 54)
Mean number of undersize cockle	115 per m²	(min 0, max 2158)
Mean number of 0-5mm cockle	60 per m²	(min 0, max 2000)
Mean weight of size cockle kg/m²	0.086 kg/m²	(min 0, max 0.798)
Mean number of undersize cockle kg/m²	0.038 kg/m²	(min 0, max 0.337)

Maps

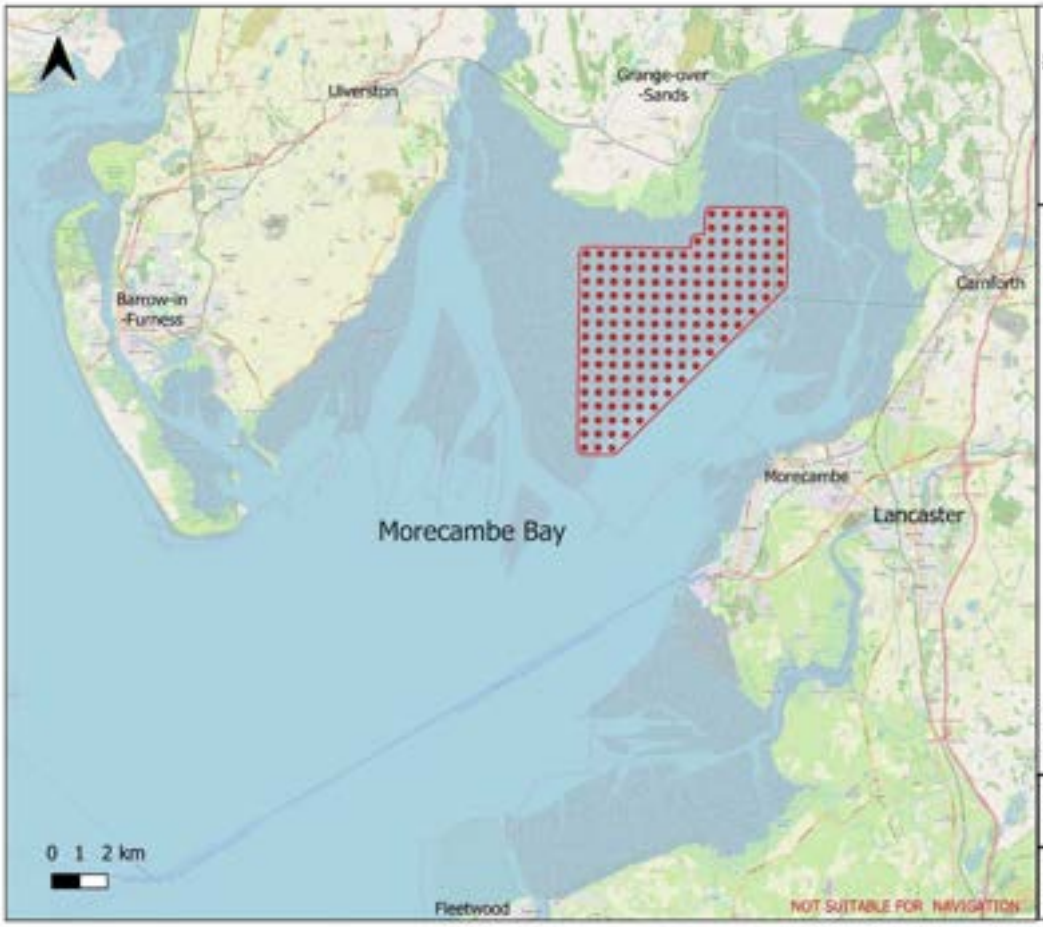
Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes, the size of the pie chart indicates the total density of cockles present, and the weight of undersize and size cockle.

Biomass

	Area (ha)	Size Cockle (tonnes)[1]	Undersize Cockle (tonnes)[2]
Flookburgh	**3050**	**2609**	**1147**

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
573	**170**	**358**	**2477**	**176**

[1]In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.
[2]The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.



Flookburgh cockle bed survey locations July 2025

North Western IFCA Inshore Fisheries and Conservation Authority

Legend

Flookburgh survey area

- Flookburgh sample point locations

Scale: 1:140000	Created: 18-07-25
Projection: EPSG:27700	Author: AP

Figure 1. Illustration of position of Flookburgh Survey Area.

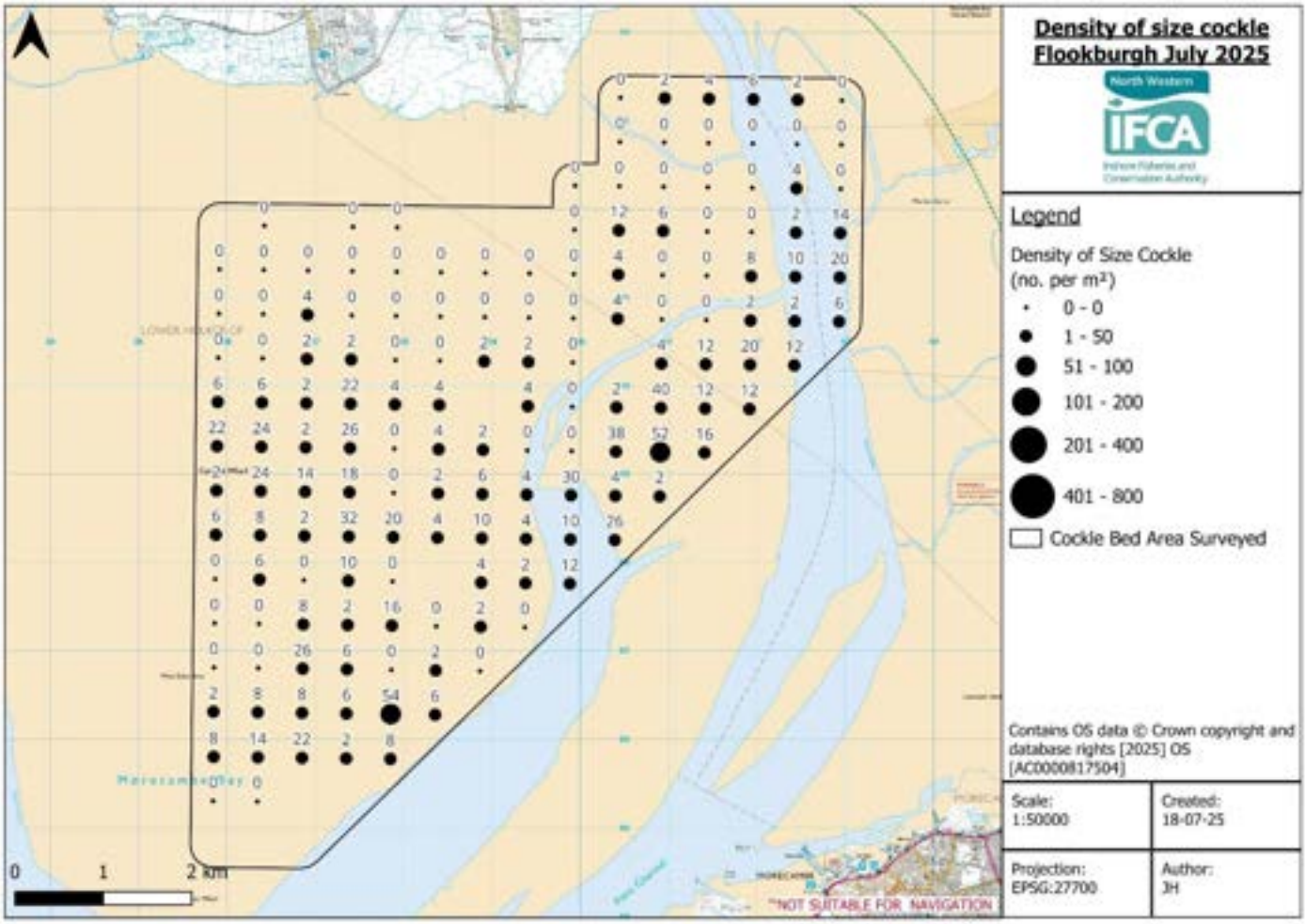


Figure 2. Density of size cockle per m² Flookburgh July 2025.

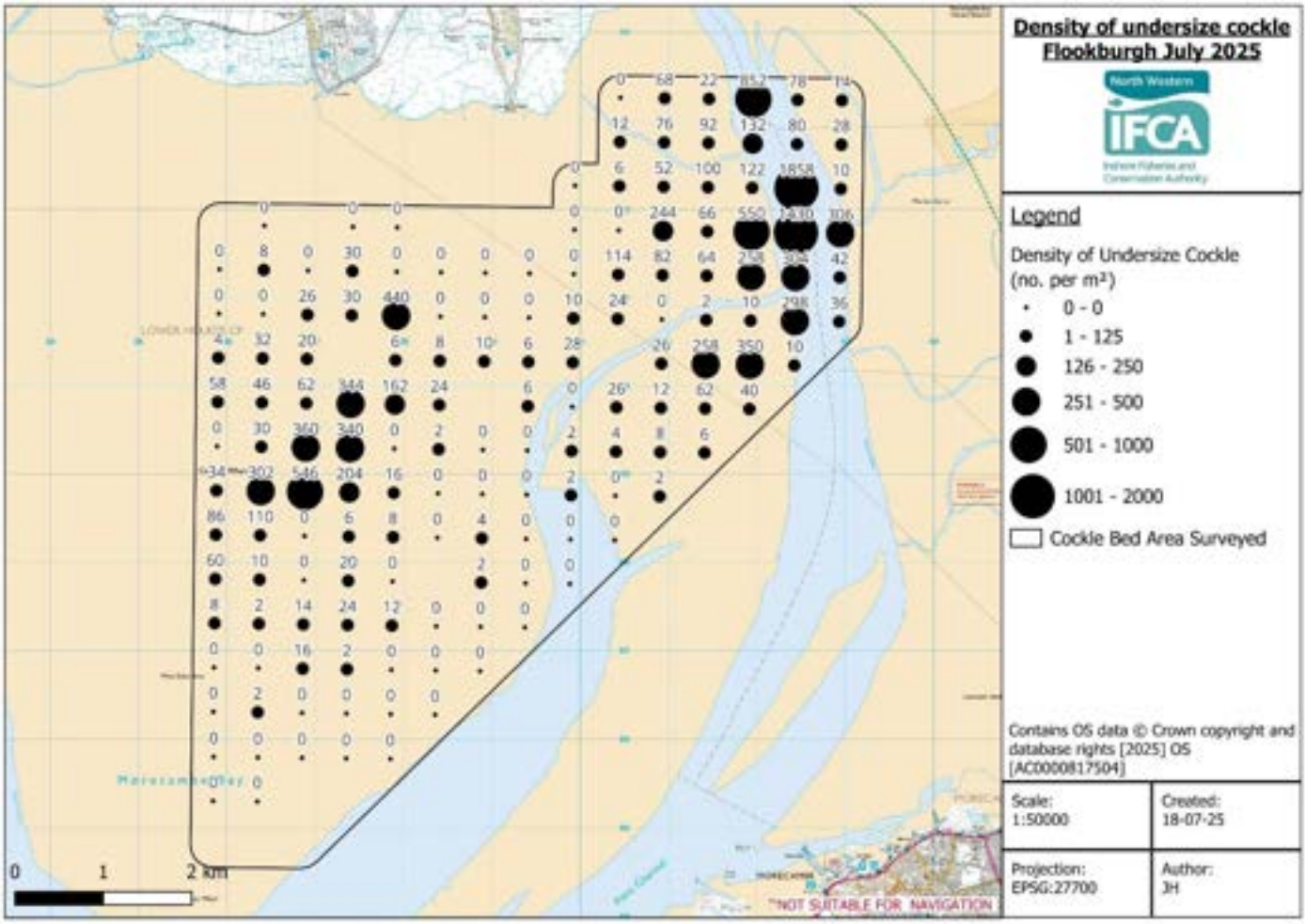


Figure 3. Density of undersize cockle per m² Flookburgh July 2025.

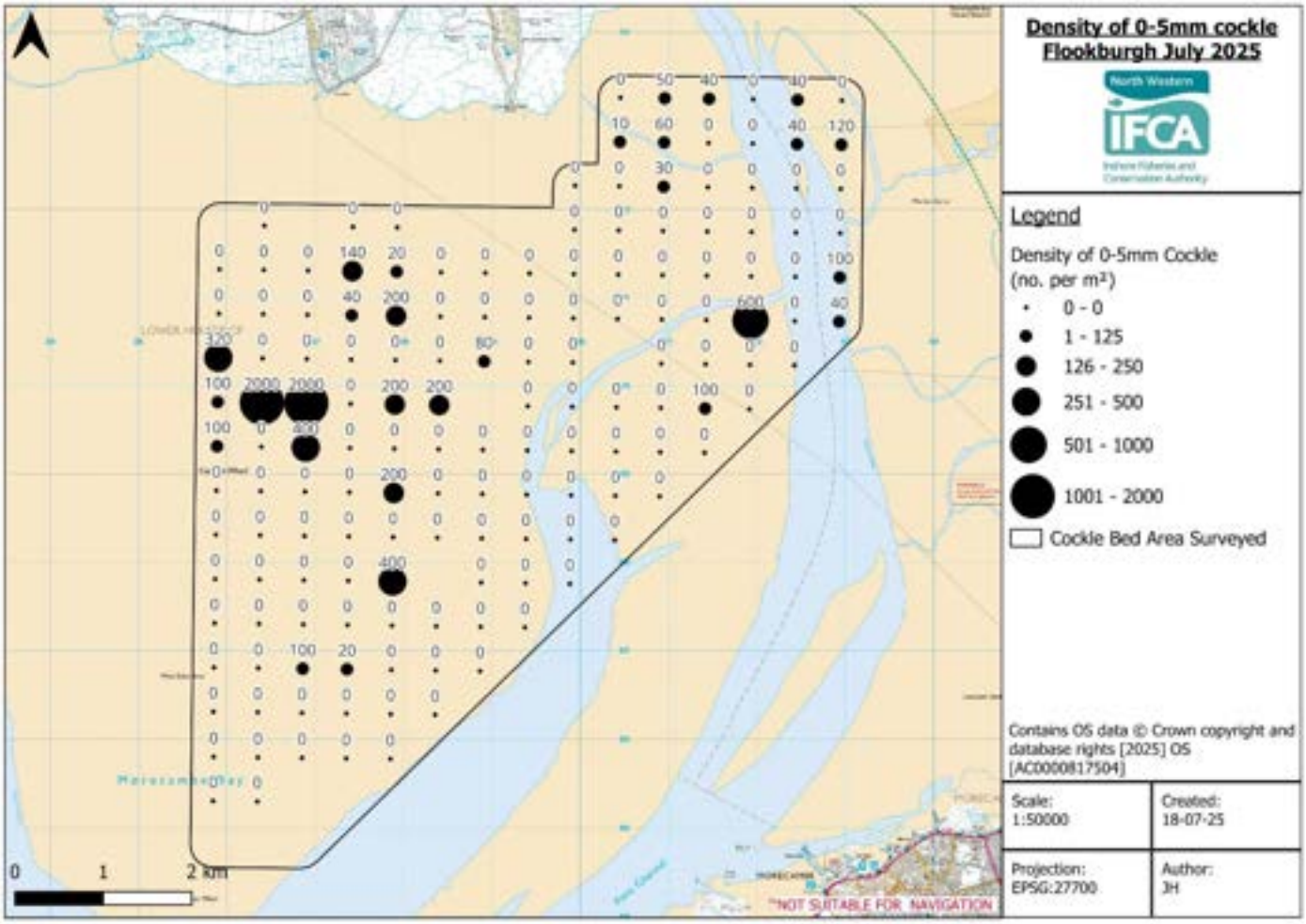


Figure 4. Density of 0-5mm cockle per m² Flookburgh July 2025.

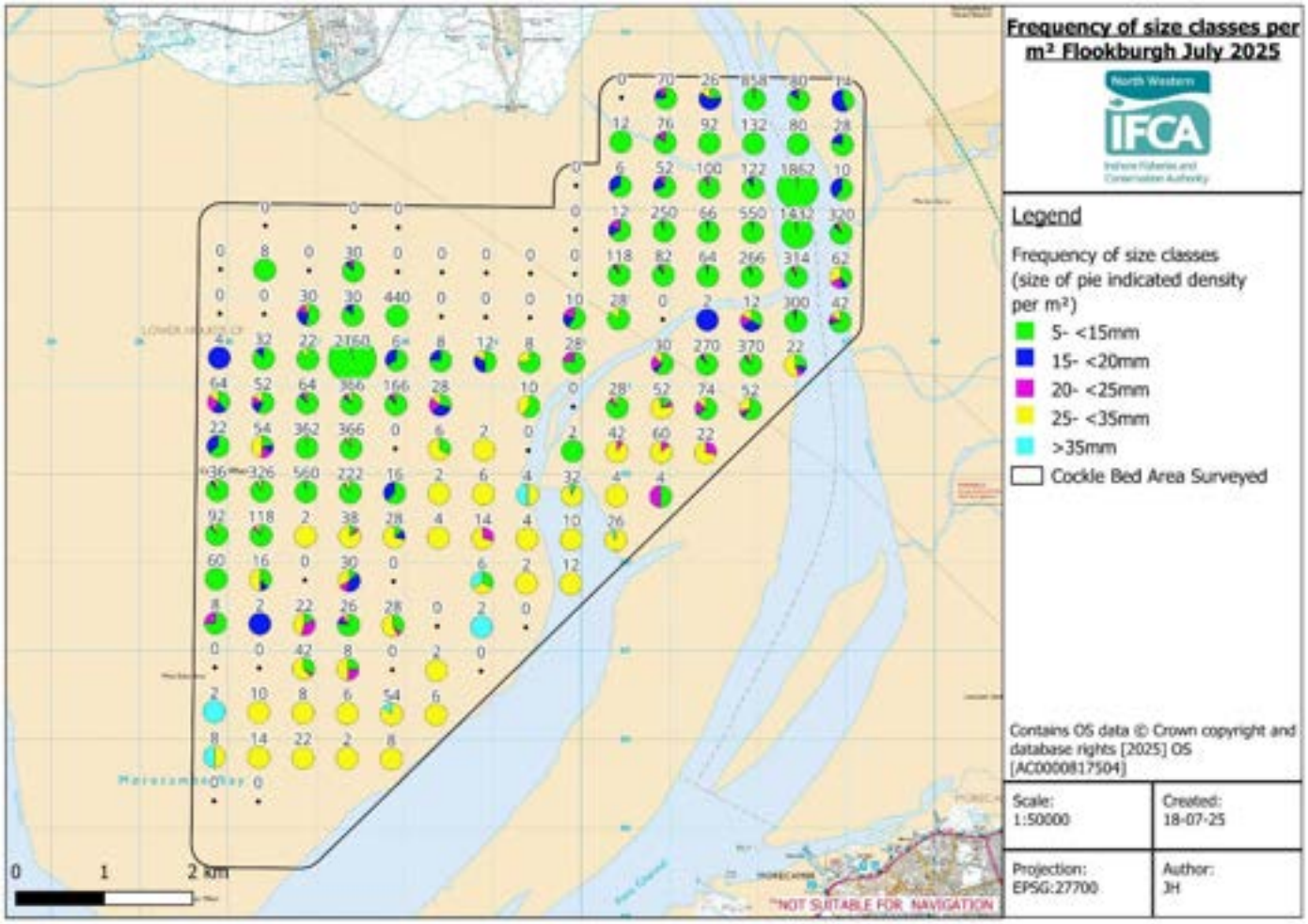


Figure 4 Frequency of size classes of cockle per m² Flookburgh July 2025.

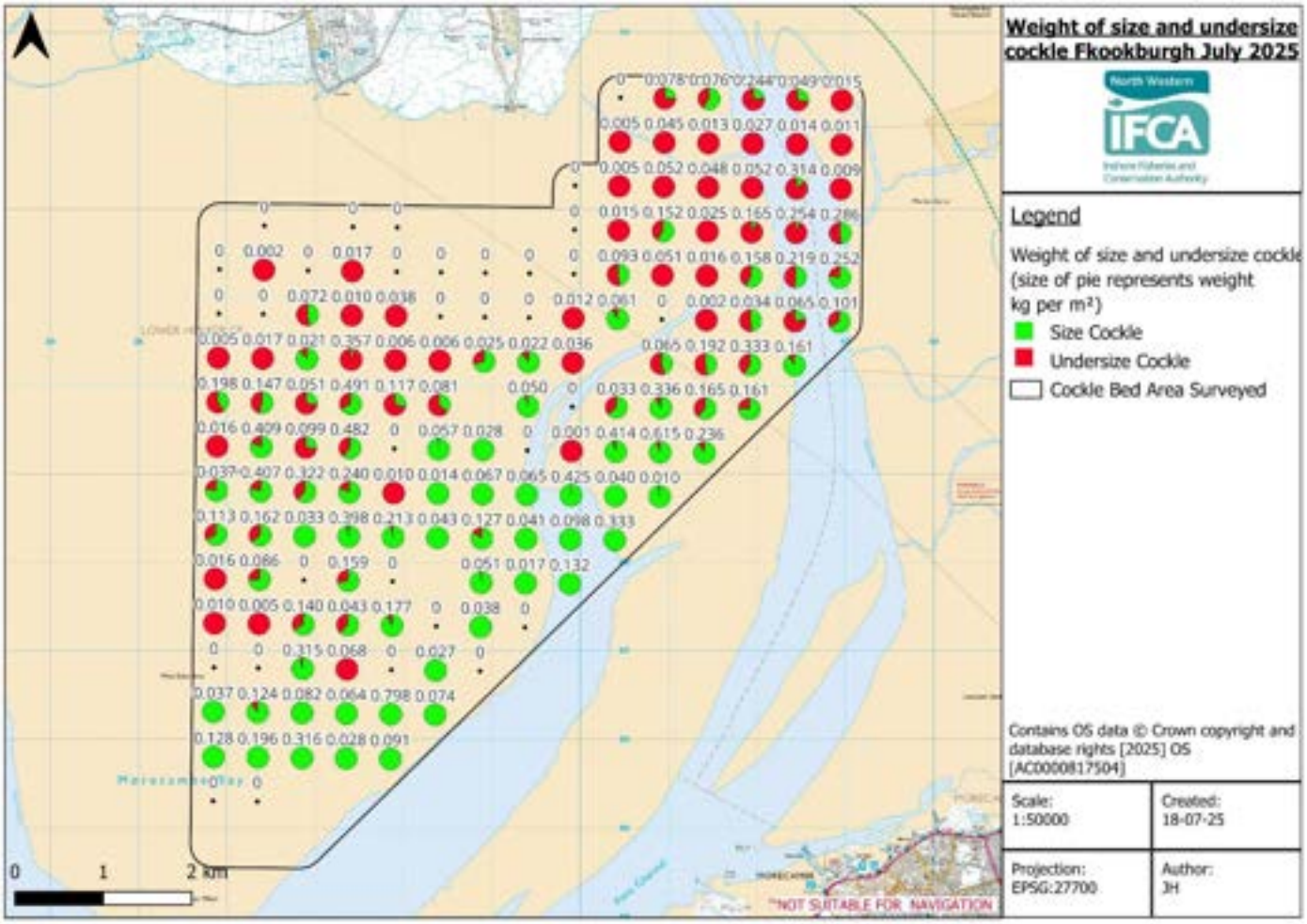


Figure 5 Weight of size and undersize cockle kg/m² at Flookburgh July 2025.

Middleton Cockle Survey 08-07-25

Officers present: JH, GG, AG, GE
Tides: LW 16:55 2.7m (Liverpool tides)

Survey method - Jumbo and 0.5m^2 quadrat

74 stations were sampled from a 350m grid. There was a wide range of cockle sizes across the bed from 5mm to >35mm. Size cockle is relatively low in density but present across most of the bed. The population was dominated by the 25–35 mm size class, which accounted for approximately 78% of the total biomass. Smaller contributions came from the 20–25 mm class (11%), the >35 mm class (5%) and the 15-20 mm class (3%). There is an increase in smaller size classes of cockle in the 0-5mm and 5-15mm range since the April 2025 survey.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size but has been included as a separate figure.

Mean number of size cockle	8 per m²	(min 0, max 44)
Mean number of undersize cockle	9 per m²	(min 0, max 40)
Mean number of 0-5mm cockle	21 per m²	(min 0, max 200)
Mean weight of size cockle kg/m²	0.084 kg/m²	(min 0, max 0.519)
Mean number of undersize cockle kg/m²	0.016 kg/m²	(min 0, max 0.072)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes, the size of the pie chart indicates the total density of cockles present, and the weight of undersize and size cockle.

Biomass

	Area (ha)	Size Cockle (tonnes)[1]	Undersize Cockle (tonnes)[2]
Middleton Sands	**698**	**589**	**115**

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
15	**24**	**76**	**551**	**38**

[1]In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.
[2]The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

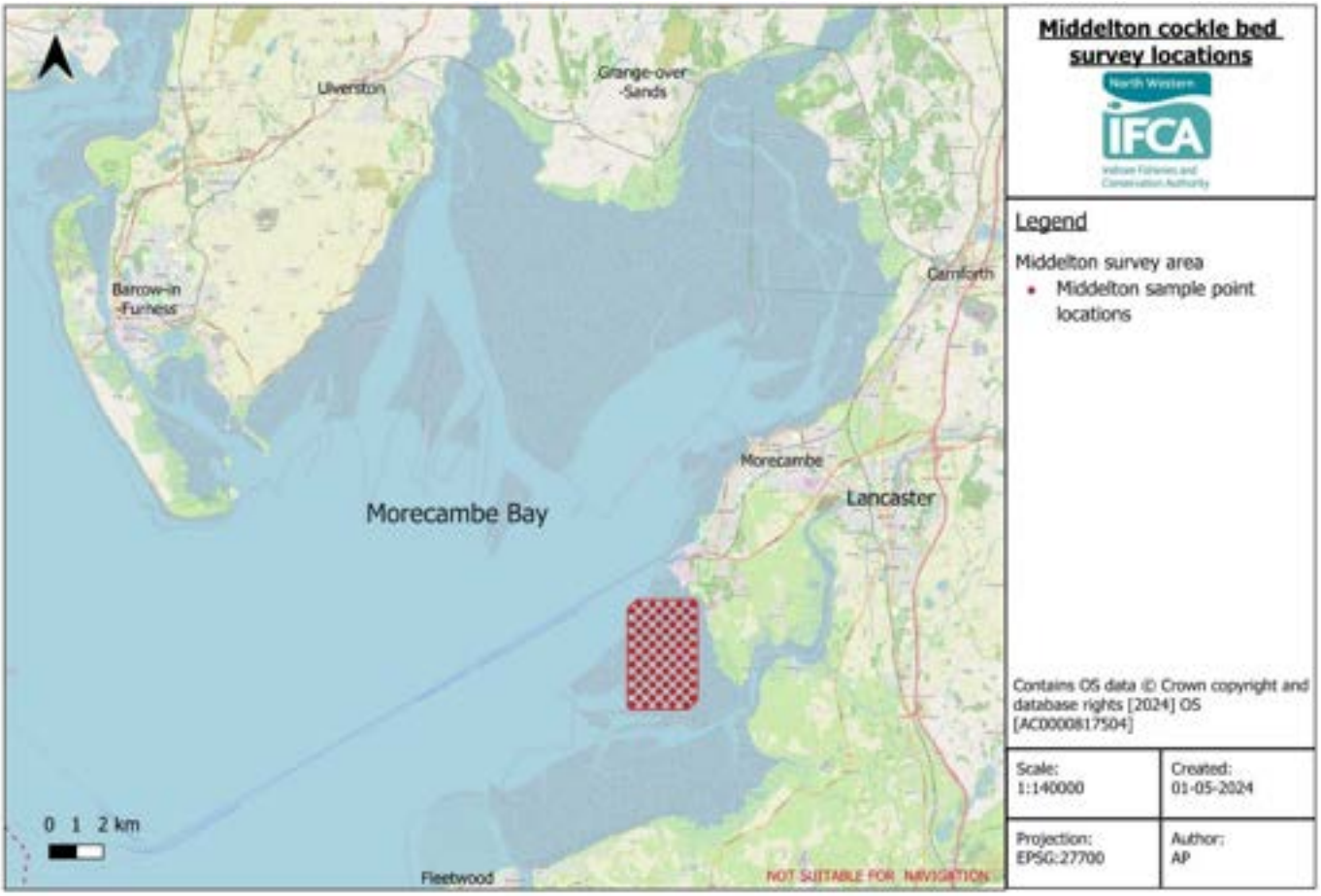


Figure 1. Illustration of position of Middleton Survey Area.

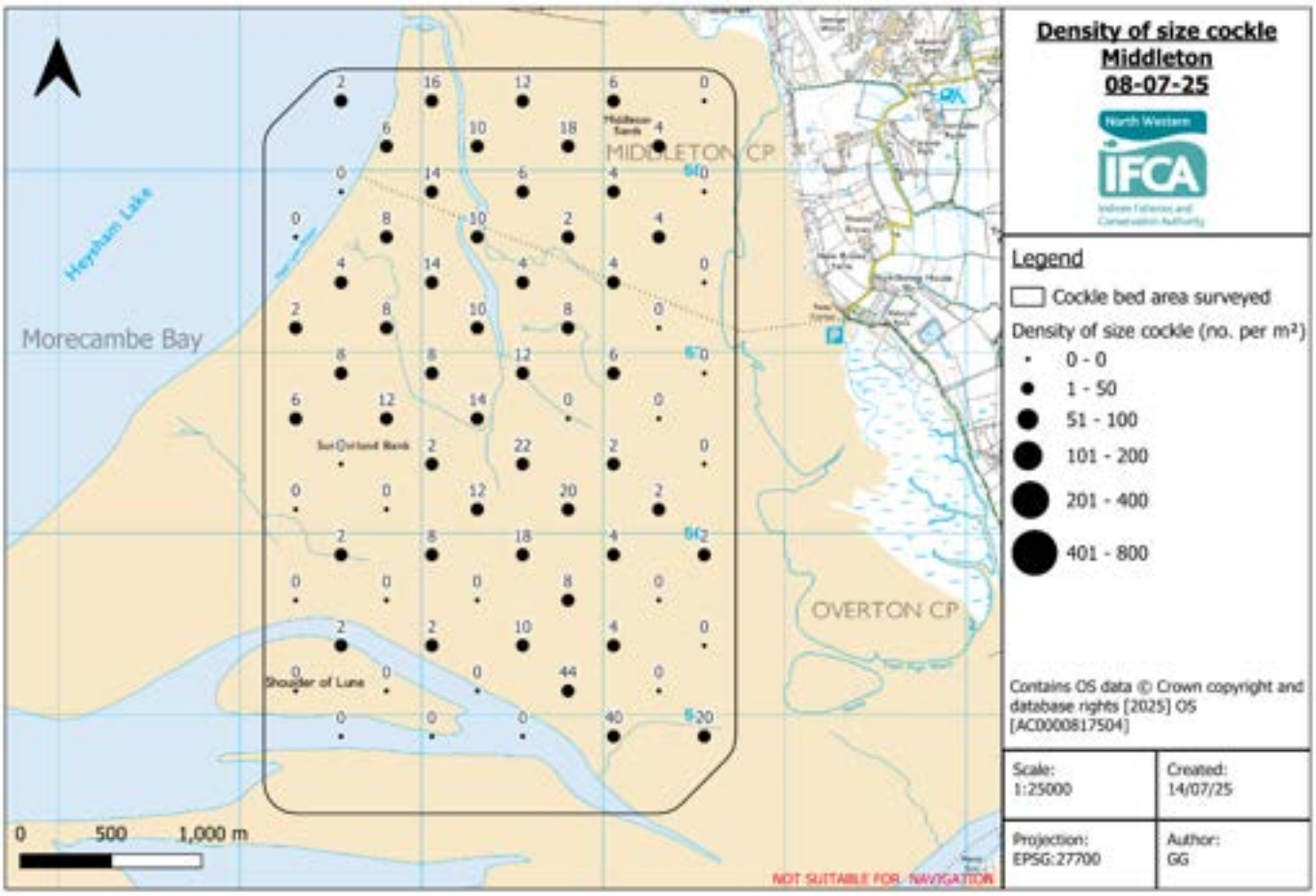


Figure 2. Density of size cockle per m² at Middleton July 2025.

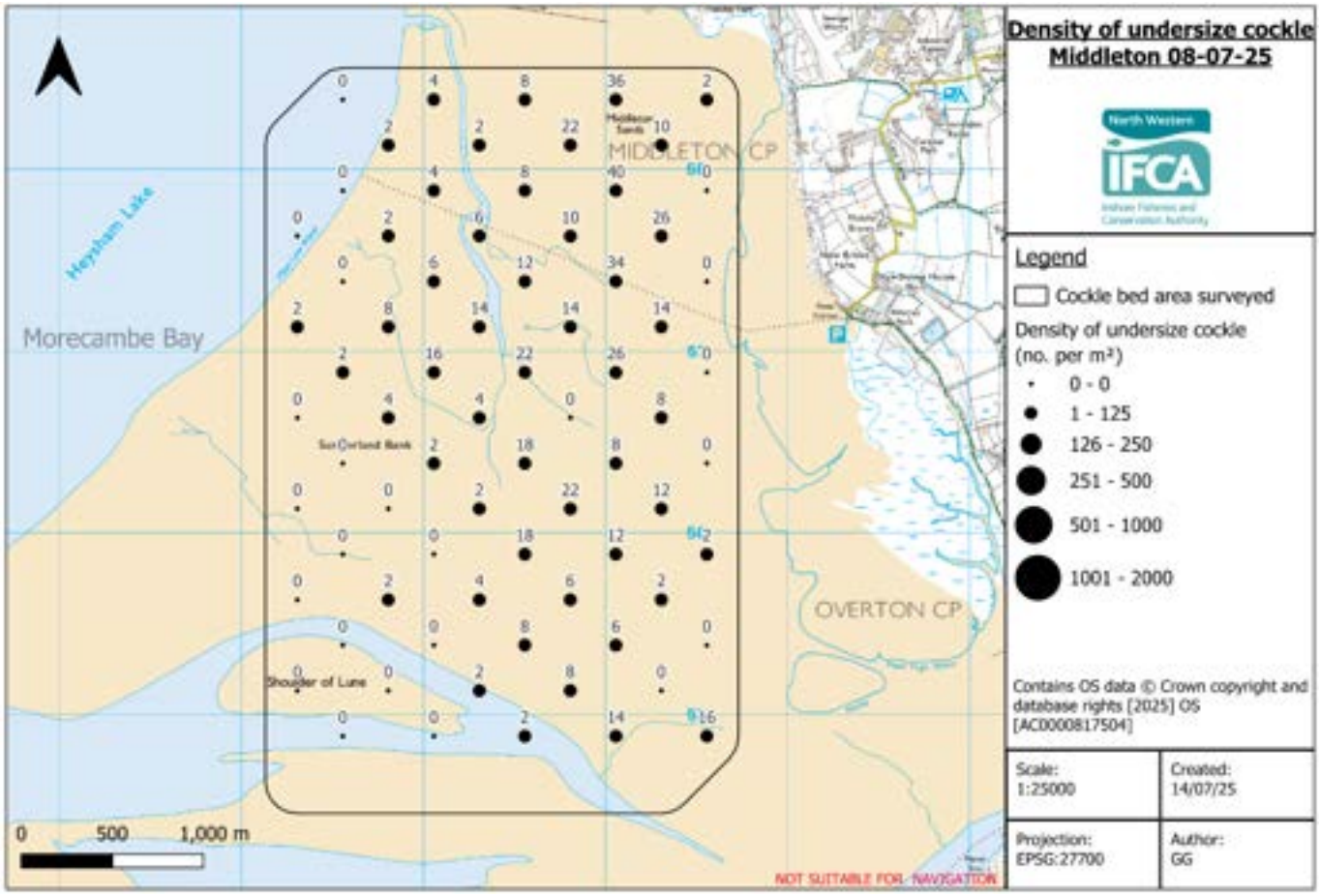


Figure 3. Density of undersize cockle per m² at Middleton July 2025.

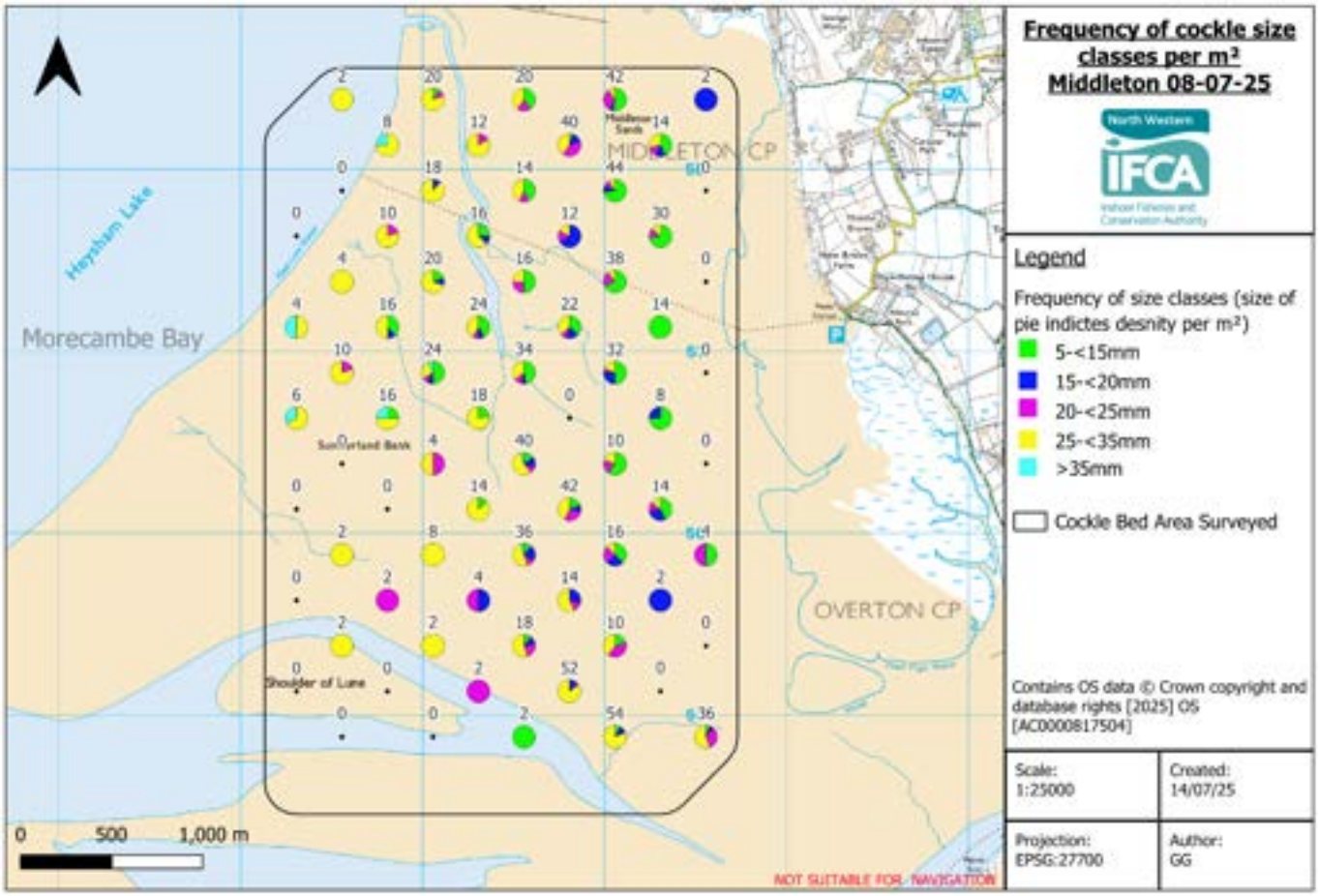


Figure 4. Frequency of size classes of cockle per m² at Middleton July 2025.

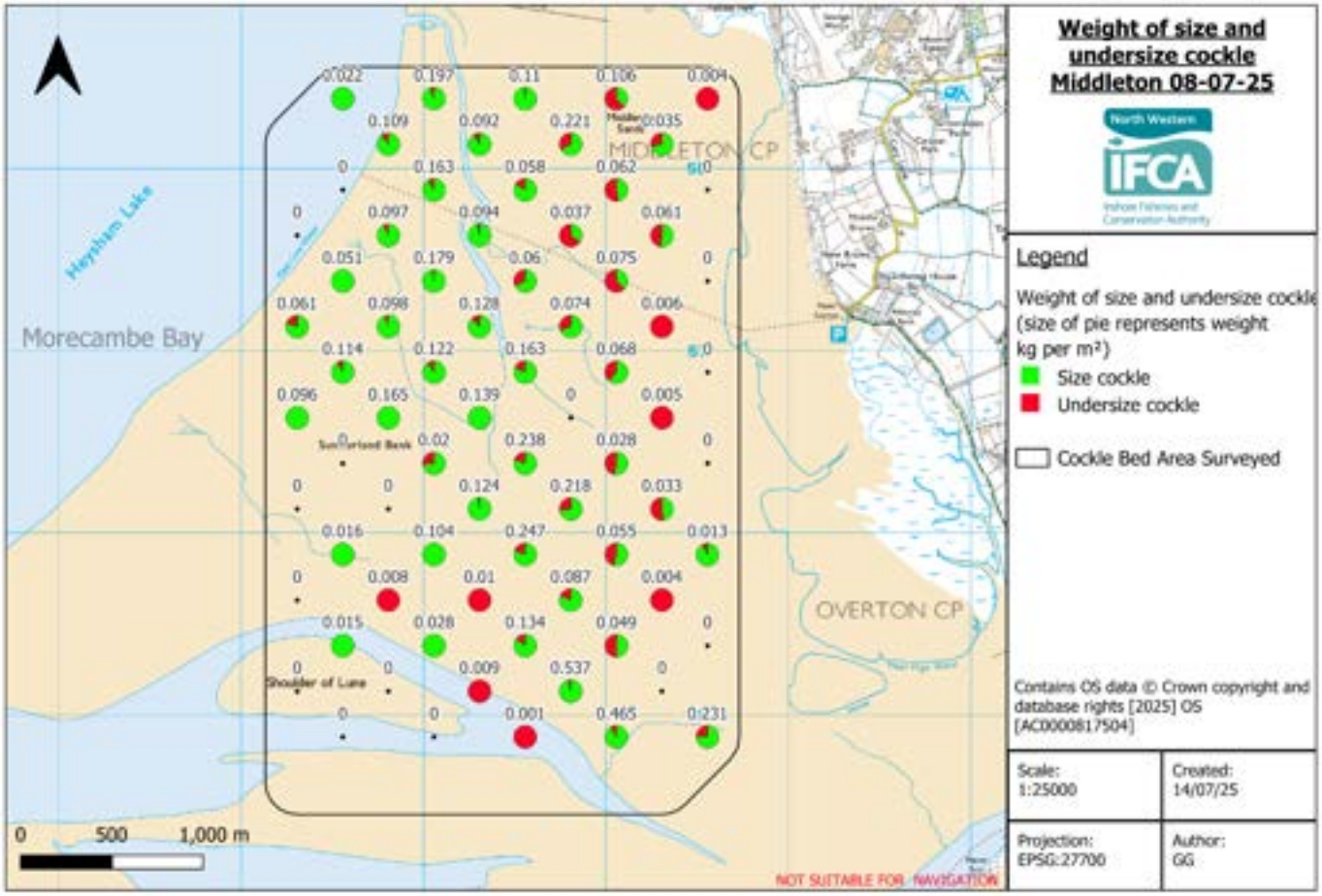


Figure 5. Weight of size and undersize cockle kg/m² at Middleton July 2025.

Leven Cockle Survey 09-07-25

Officers present: ID, CT, GG, JH

Tides: LW 17:39 2.5m (Liverpool Tides)

Survey method - Jumbo and 0.5m^2 quadrat

66 stations were sampled from a 500m grid. There was an area to the Southwest of the survey grid that could not be survey due to a deep channel. There was a range of cockle sizes across the bed from < 5mm to 25 - 35mm. Size cockle is relatively low in density across the bed. There is an increase in smaller size classes of cockle in the 0-5mm and 5-15mm range.

Means

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

Mean number of size cockle	5 per m²	(min 0, max 36)
Mean number of undersize cockle	30 per m²	(min 0, max 354)
Mean number of 0-5mm cockle	28 per m²	(min 0, max 400)
Mean weight of size cockle kg/m²	0.045 kg/m²	(min 0, max 0.312)
Mean weight of undersize cockle kg/m²	0.027 kg/m²	(min 0, max 0.089)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes, the size of the pie chart indicates the total density of cockles present, and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes)[1]	Undersize Cockle (tonnes)[2]
Leven	**1050**	**470**	**287**

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
66	**84**	**132**	**408**	**68**

[1]In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.

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

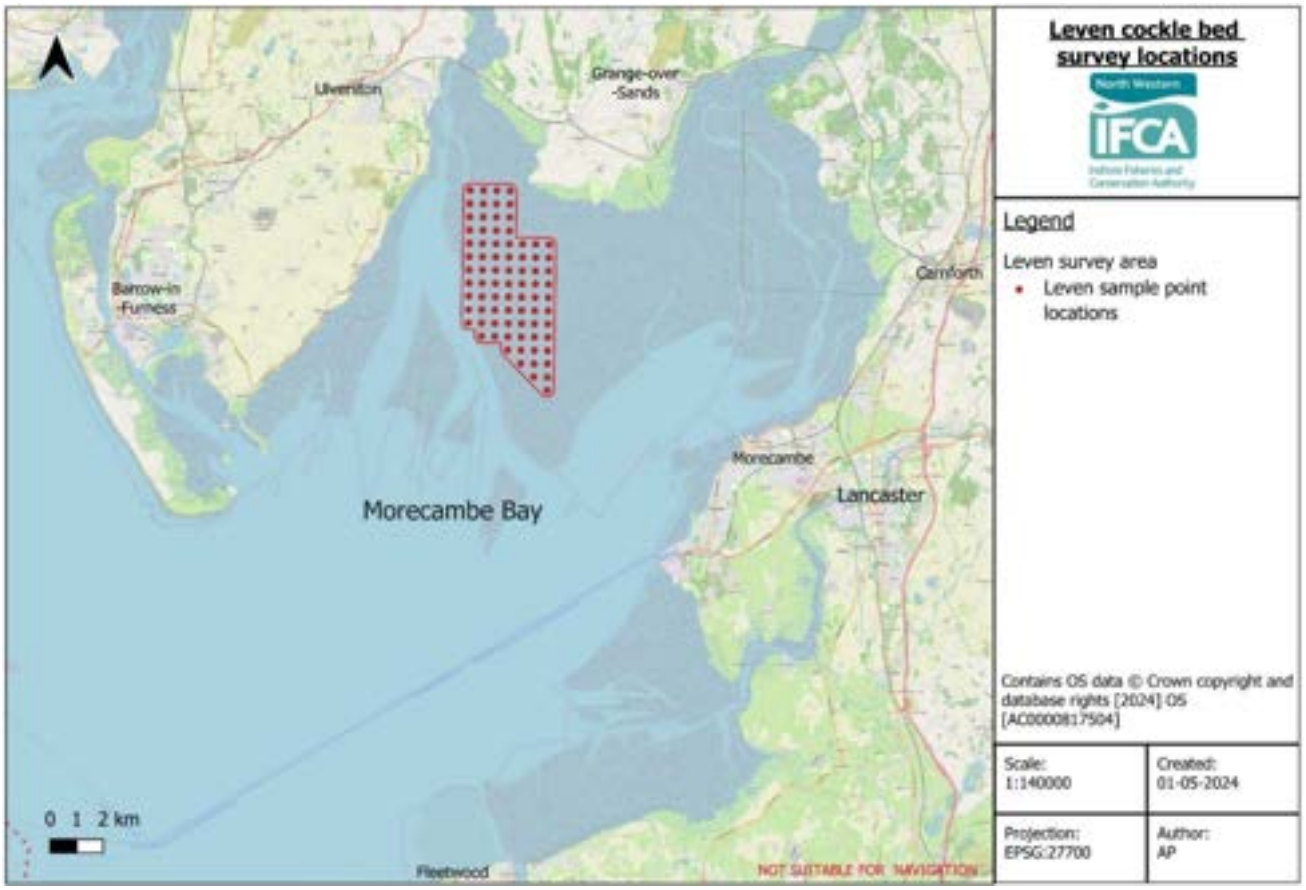


Figure 1. Illustration of position of Leven Survey Area

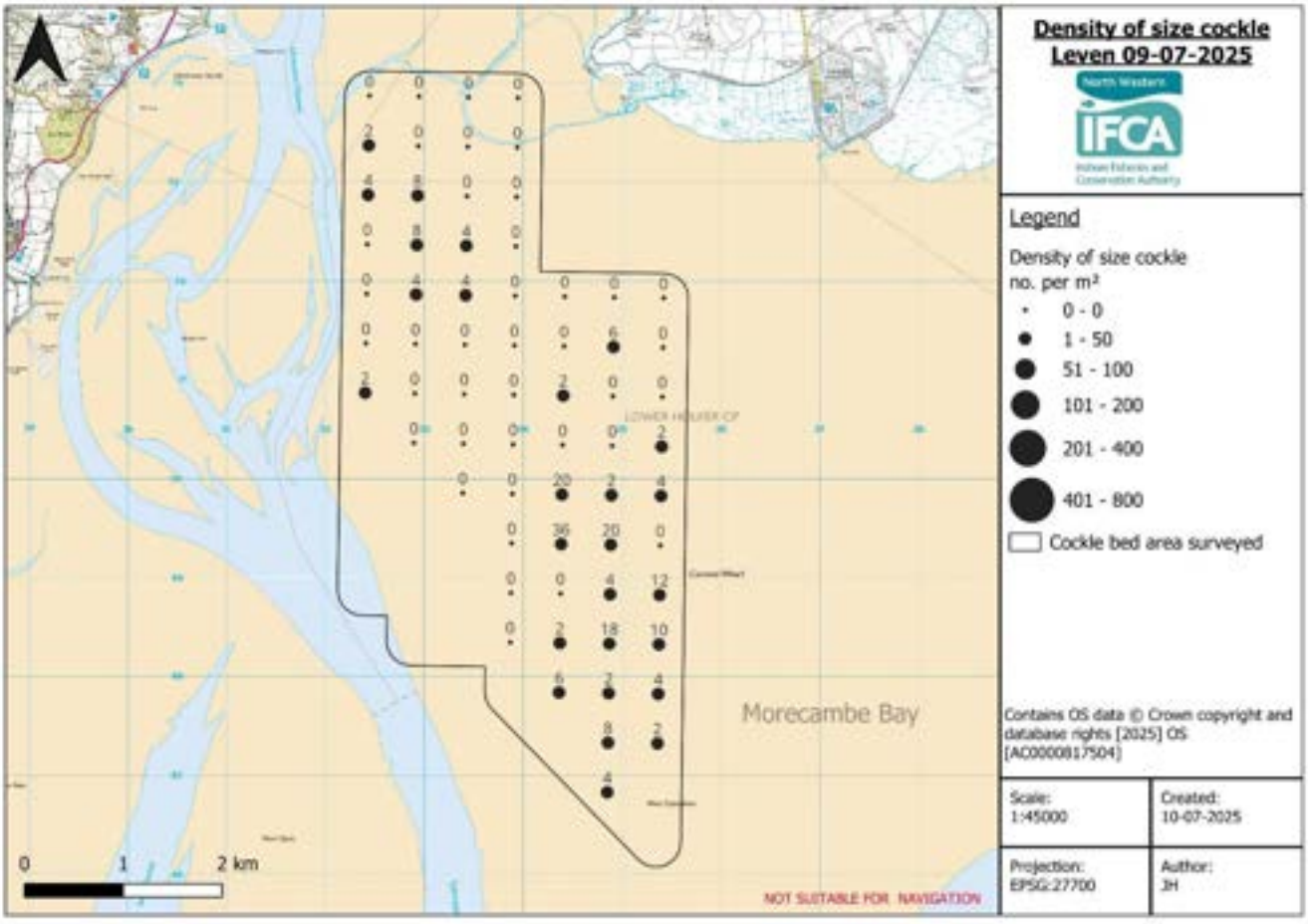


Figure 2. Density of size cockle per m² Leven July 2025

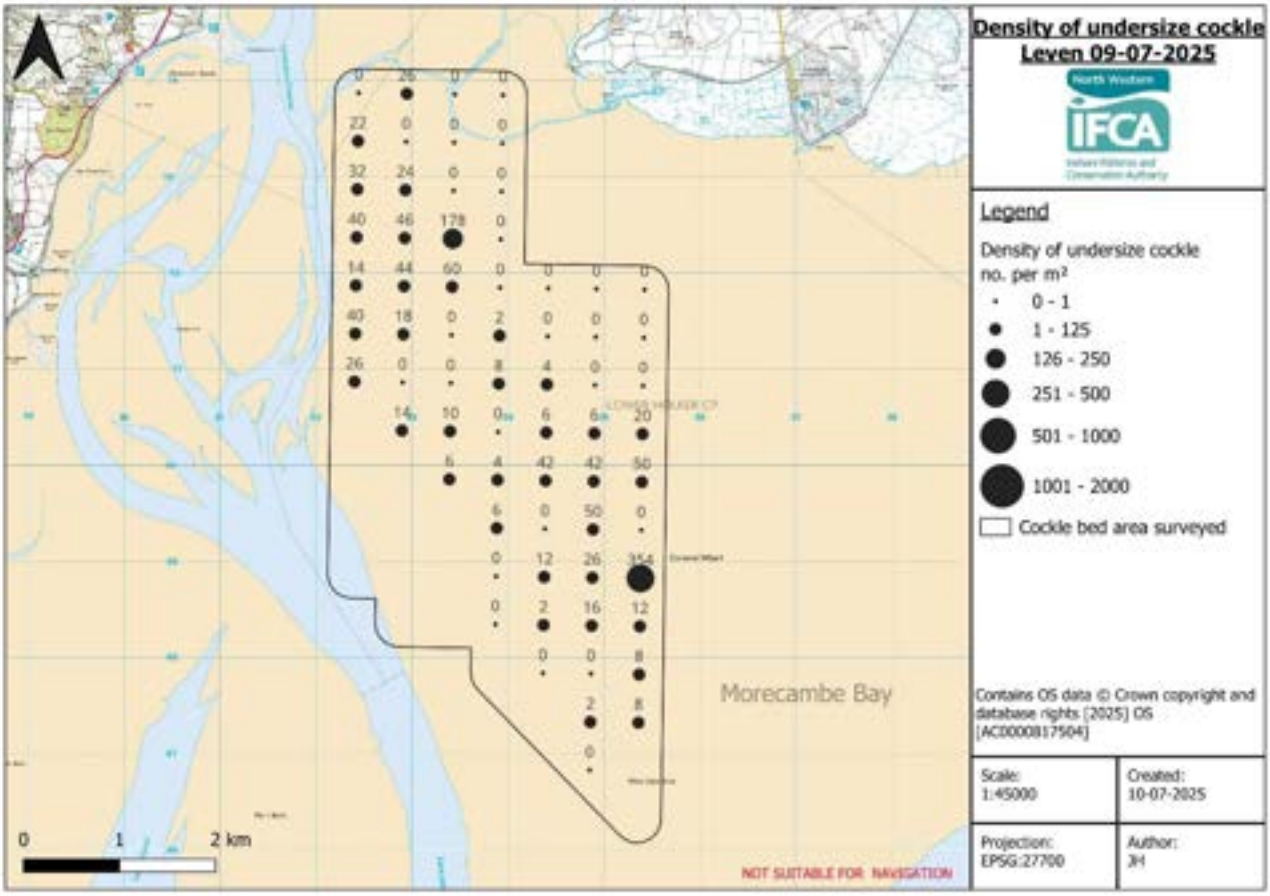


Figure 3. Density of undersize cockle per m² Leven July 2025

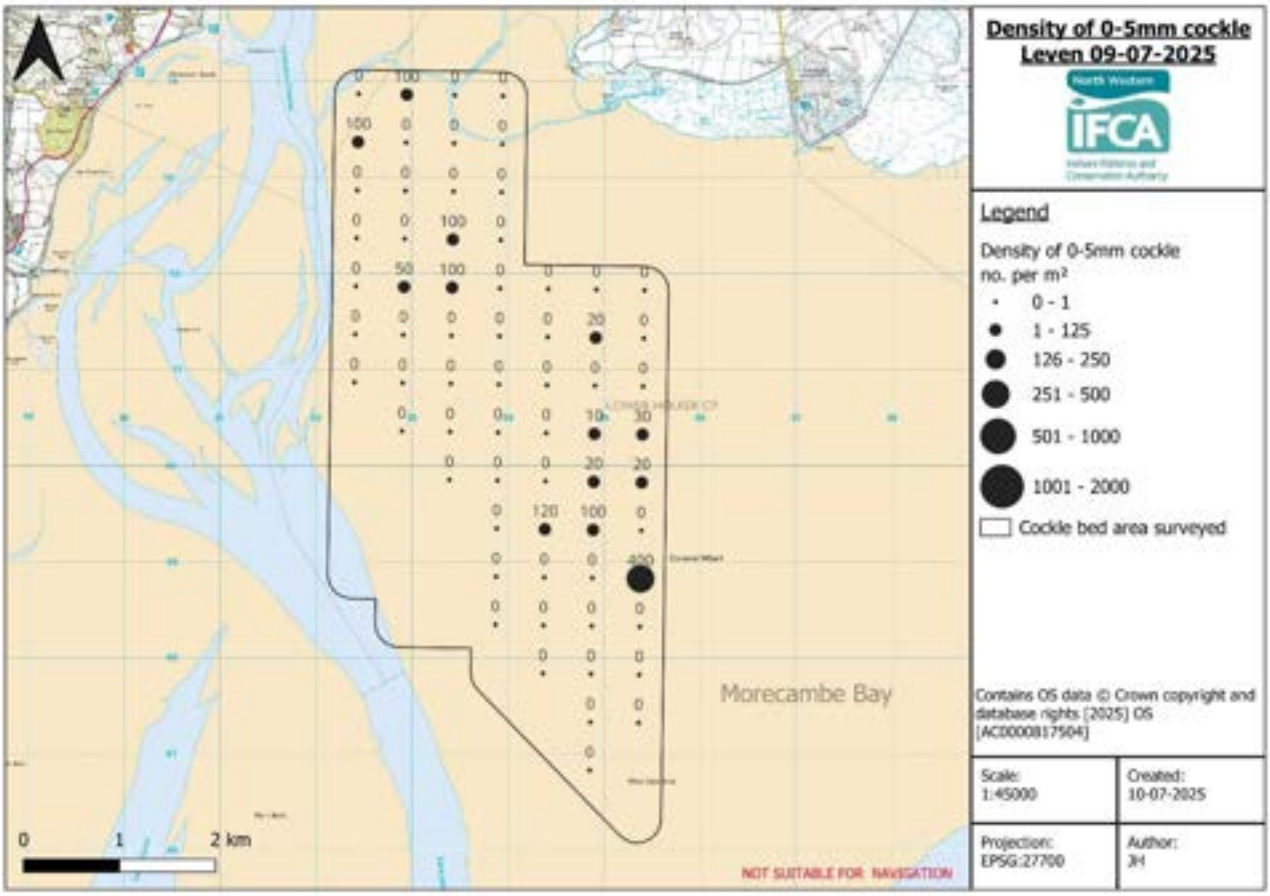


Figure 4. Frequency of 0-5mm cockle per m² Leven July 2025

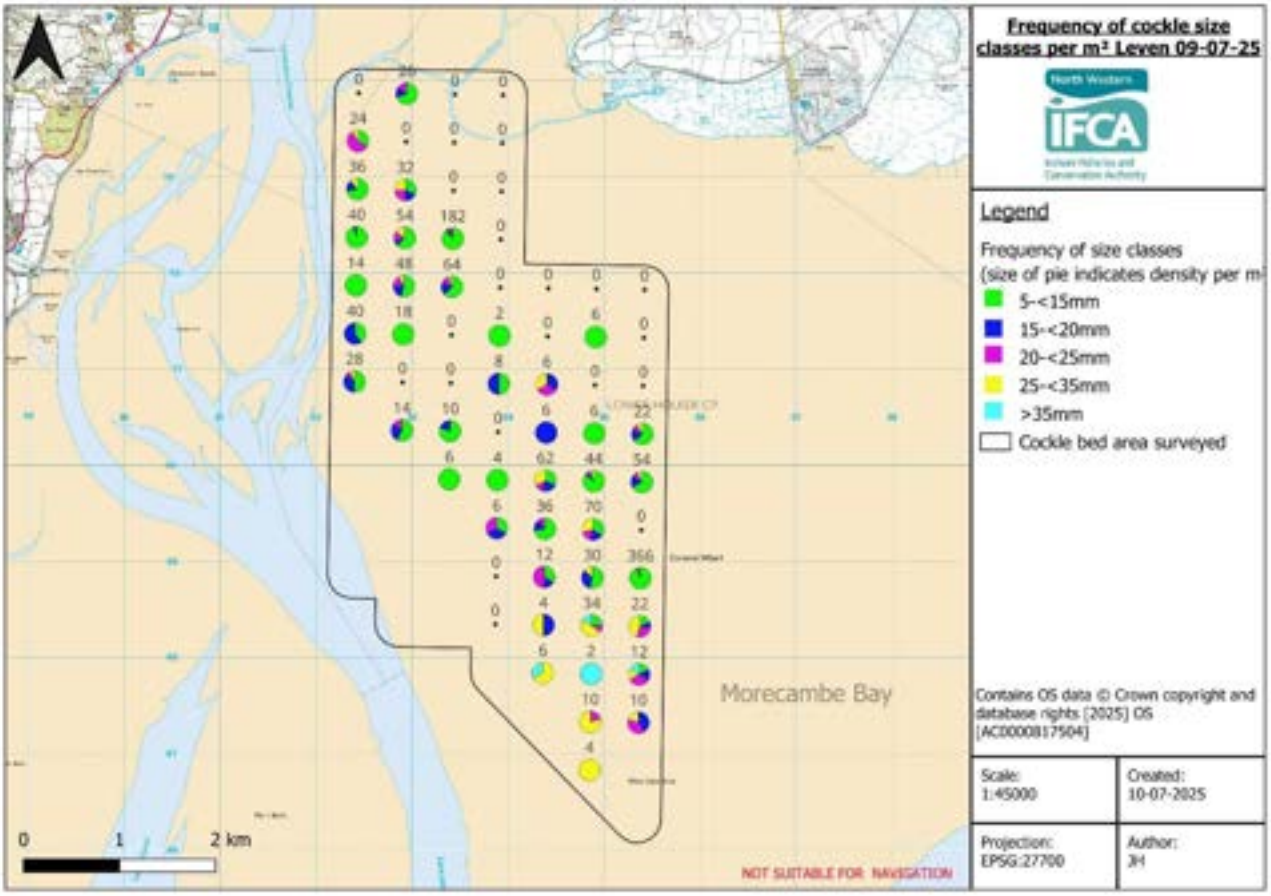


Figure 5. Frequency of size classes of cockle per m² Leven July 2025

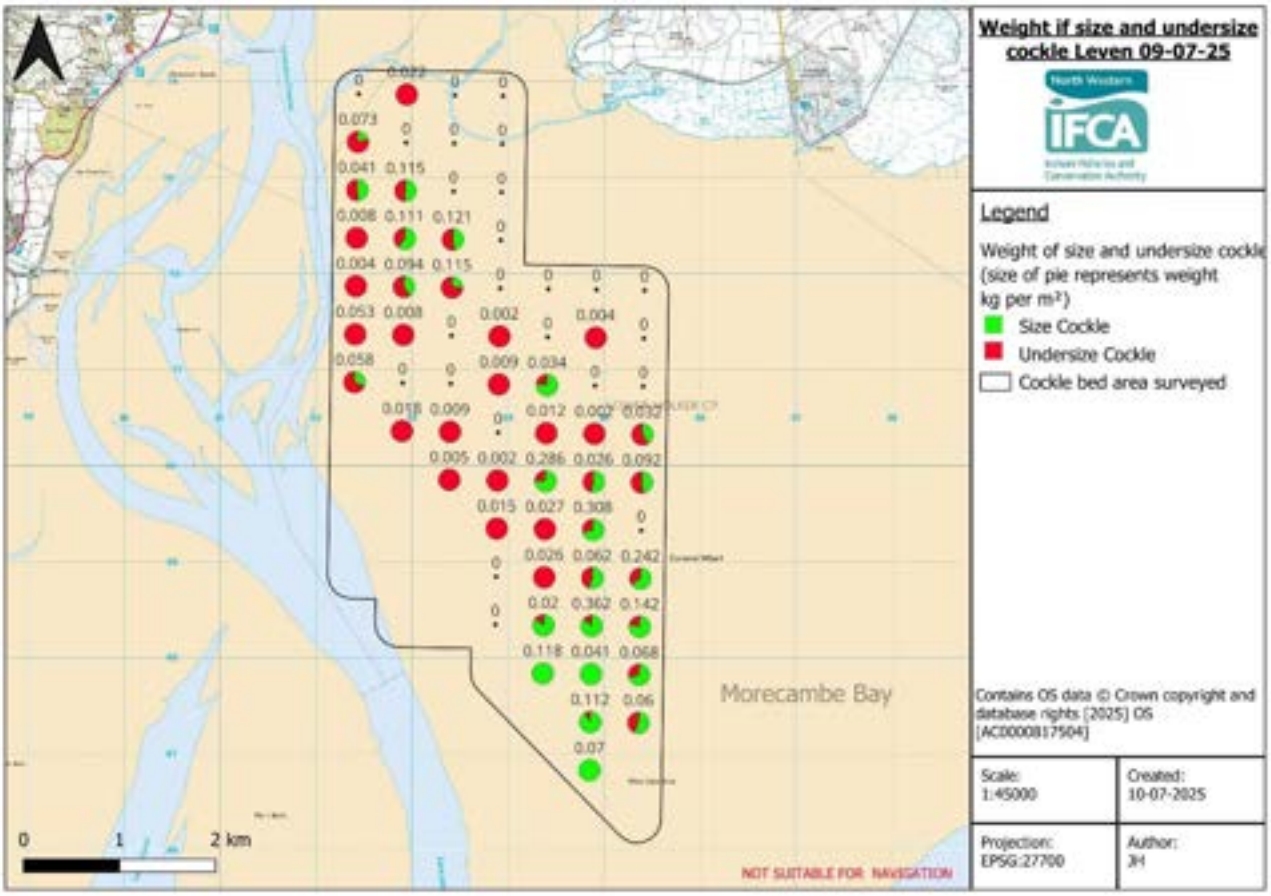


Figure 6. Weight of size and undersize cockle kg/m² at Leven July 2025.

Aldingham and Newbiggin Cockle Survey 02-07-2025 & 22-07-2025

Officers present: AP, GG, LL, ID
Tides: 02-07-2025 LW 11:36 2.5m (Liverpool Tides)

22-07-2025 LW 16:22 2.5m (Liverpool Tides)

Survey method - Jumbo and 0.5m^2 quadrat

An initial survey was undertaken on the 2nd of July, where 50 stations were sampled from a 500m grid. An additional 15 sample stations were added to the west of the bed, and surveyed on the 22nd of July to ensure the full extent of the cockle bed was captured. The survey grid has been changed since the survey in April to also include additional points closest to the shore at Aldingham and to remove some points to the east of the Aldingham bed that are no longer accessible due to the position of the river channel.

There was a wide range of cockle sizes across the bed from <5mm to >35mm. The density of size cockle is relatively low across the bed and similar to the April survey. There is evidence of a 2025 settlement with spat seen in some areas across the bed.

Means

Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size but has been included as a separate figure.

Mean number of size cockle	11 per m²	(min 0, max 98)
Mean number of undersize cockle	24 per m²	(min 0, max 130)
Mean number of 0-5mm cockle	17 per m²	(min 0, max 400)
Mean weight of size cockle kg/m²	0.112 kg/m²	(min 0, max 0.975)
Mean weight of undersize cockle kg/m²	0.053 kg/m²	(min 0, max 0.328)

Maps

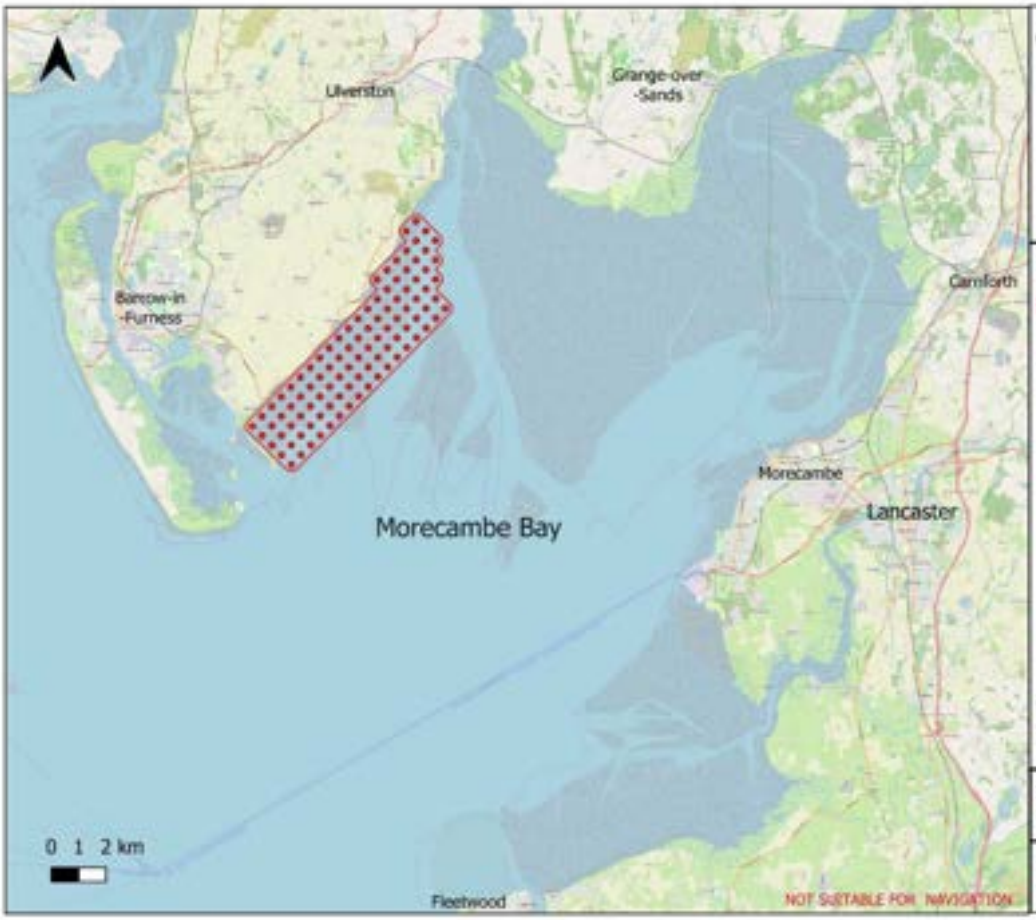
Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes (size of pie chart indicating the total density of cockles present), and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes)[1]	Undersize Cockle (tonnes)[2]
Aldingham and Newbiggin	**1275**	**1432**	**670**

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
58	**116**	**506**	**1356**	**66**

[1]In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.
[2]The biomass of undersize cockle 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 bed survey locations 2025

North Western IFCA

Inshore Fisheries and Conservation Authority

Legend

- Aldingham and Newbiggin survey area
- Aldingham and newbiggin sample point locations

Scale: 1:140000	Created: 22-07-25
Projection: EPSG:27700	Author: AP

Figure 1. Illustration of position of Aldingham and Newbiggin Survey Area.

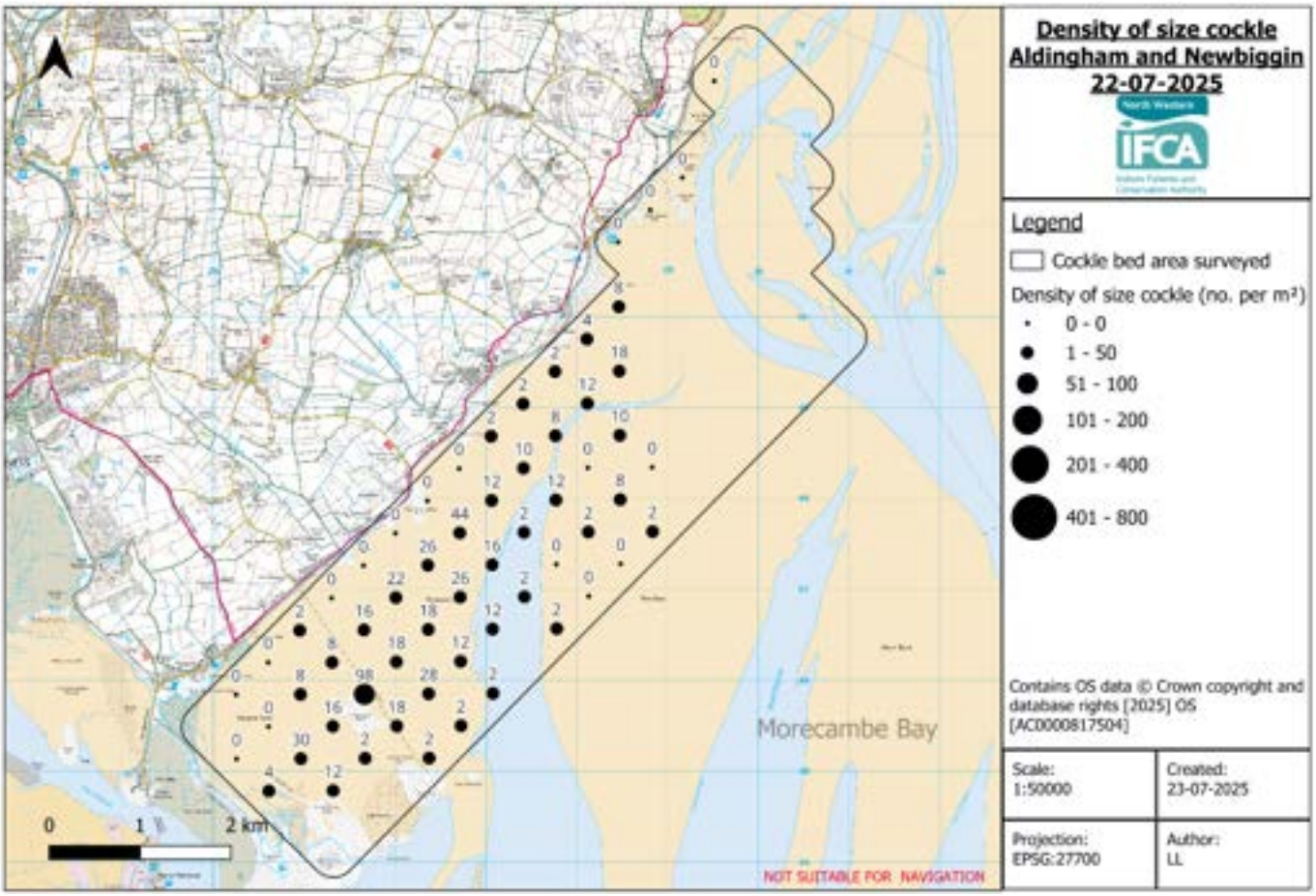


Figure 2. Density of size cockle per m² at Aldingham and Newbiggin July 2025.

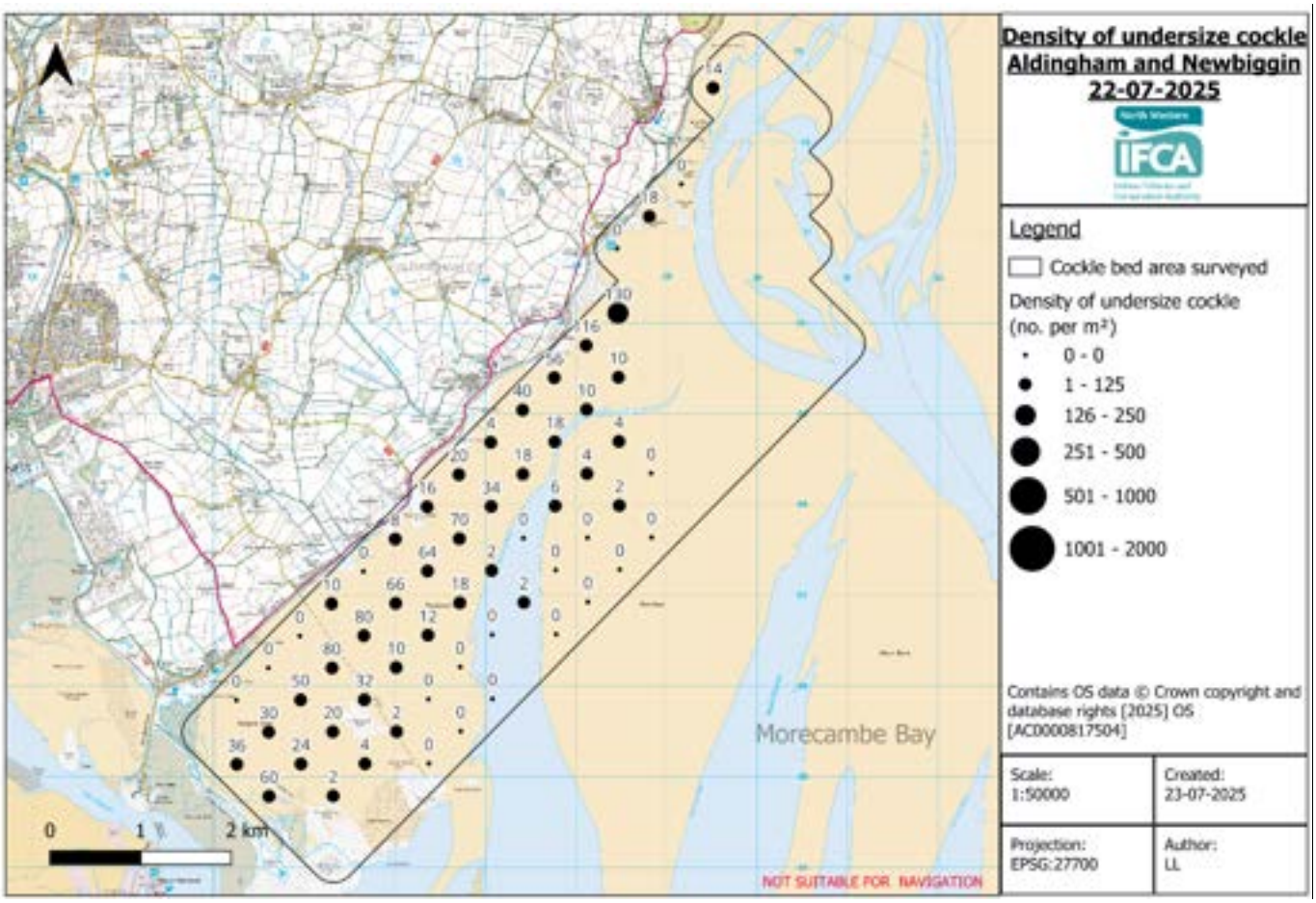


Figure 3. Density of undersize cockle per m² at Aldingham and Newbiggin July 2025.

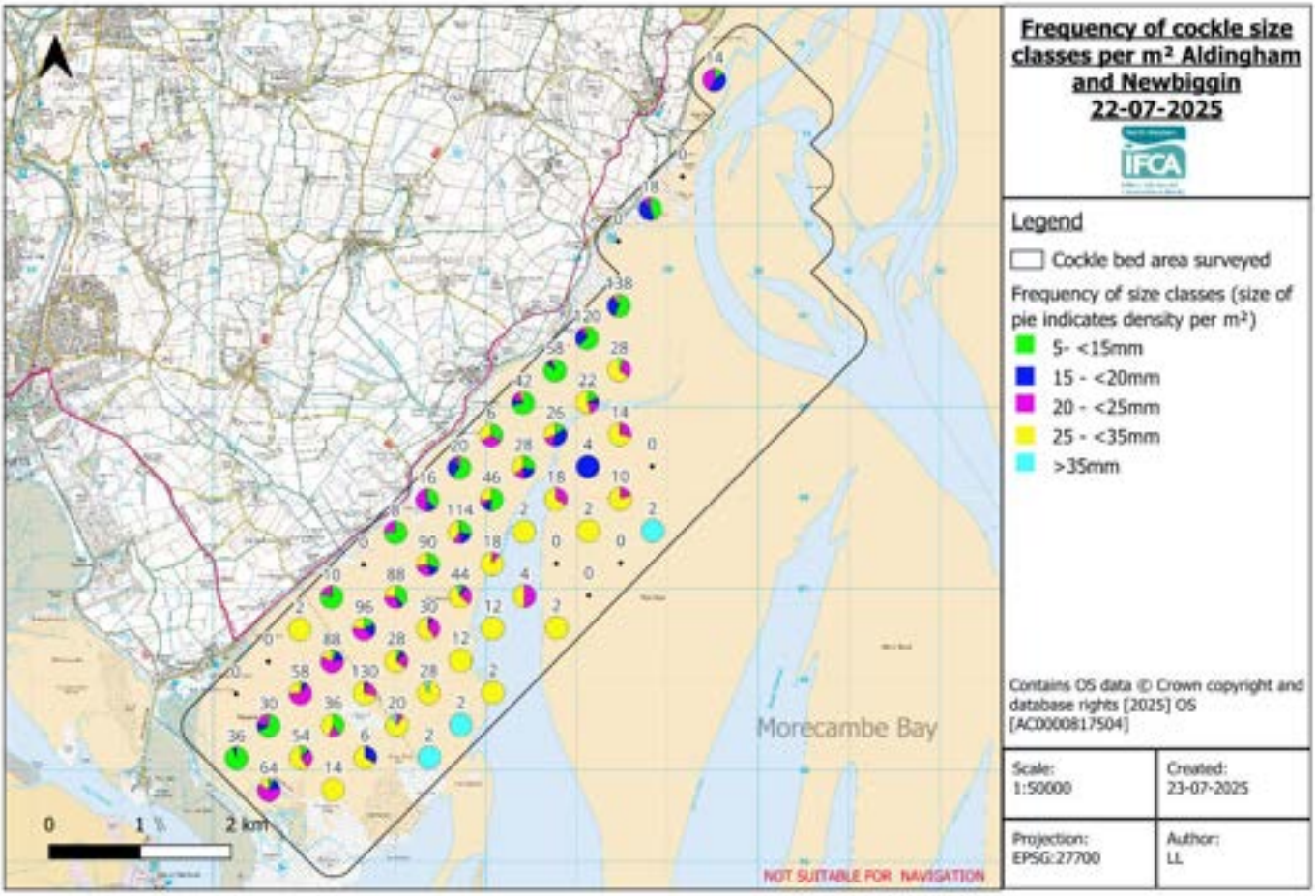


Figure 4. Frequency of size classes of cockle per m² at Aldingham and Newbiggin July 2025.

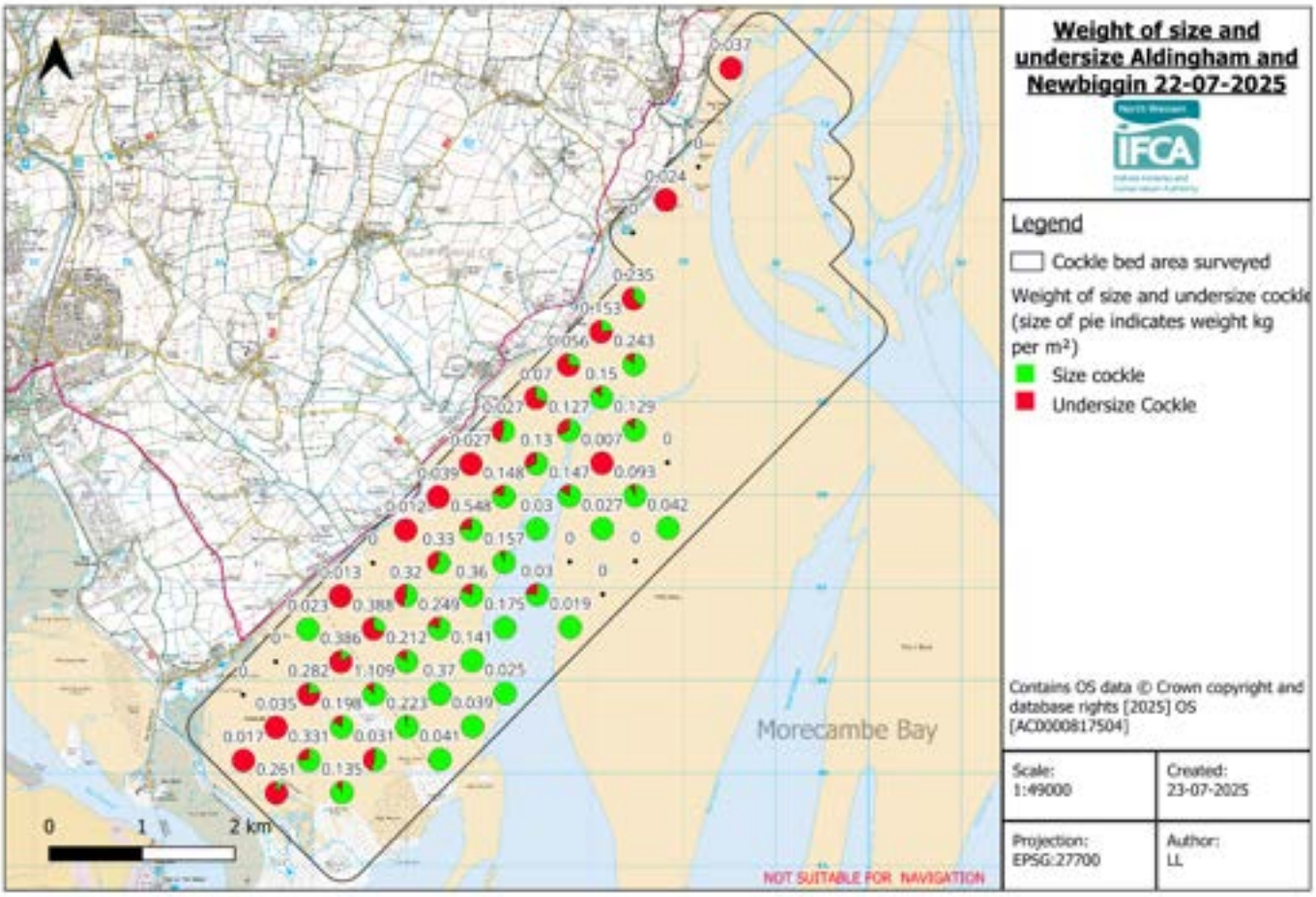


Figure 5. Weight of size and undersize cockle kg/m² at Aldingham and Newbiggin July 2025.

Southport Cockle Survey 23-06-2025

Officers present: AB, RL, MT, AP
Tides: LW 16:47 1.9m (Liverpool Tides)

Survey method - Jumbo and 0.5m^2 quadrat

63 stations were sampled from a 350m grid. The survey grid location was based on the 2024 cockle surveys. There has been a significant decrease in density of size cockle across the bed since the previous June survey in 2024. There was a large proportion of cockles in the 25-35mm size class. There was evidence of a 2025 settlement with a patchy distribution of 0-5mm cockle present in localised areas of the bed.

Means

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

Mean number of size cockle	3 per m²	(min 0, max 14)
Mean number of undersize cockle	7 per m²	(min 0, max 50)
Mean number of 0-5mm cockle	180 per m²	(min 0, max 2000)

Mean weight of size cockle kg/m²	0.032 kg/m²	(min 0, max 0.181)
Mean weight of undersize cockle kg/m²	0.007 kg/m²	(min 0, max 0.019)

Maps

Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding 0-5mm cockle), 0-5mm cockle density and the frequency of size classes, the size of the pie chart indicates the total density of cockles present, and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes)[1]	Undersize Cockle (tonnes)[2]
Southport	**355**	**113**	**24**

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
4	**9**	**16**	**85**	**23**

[1]In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.
[2]The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

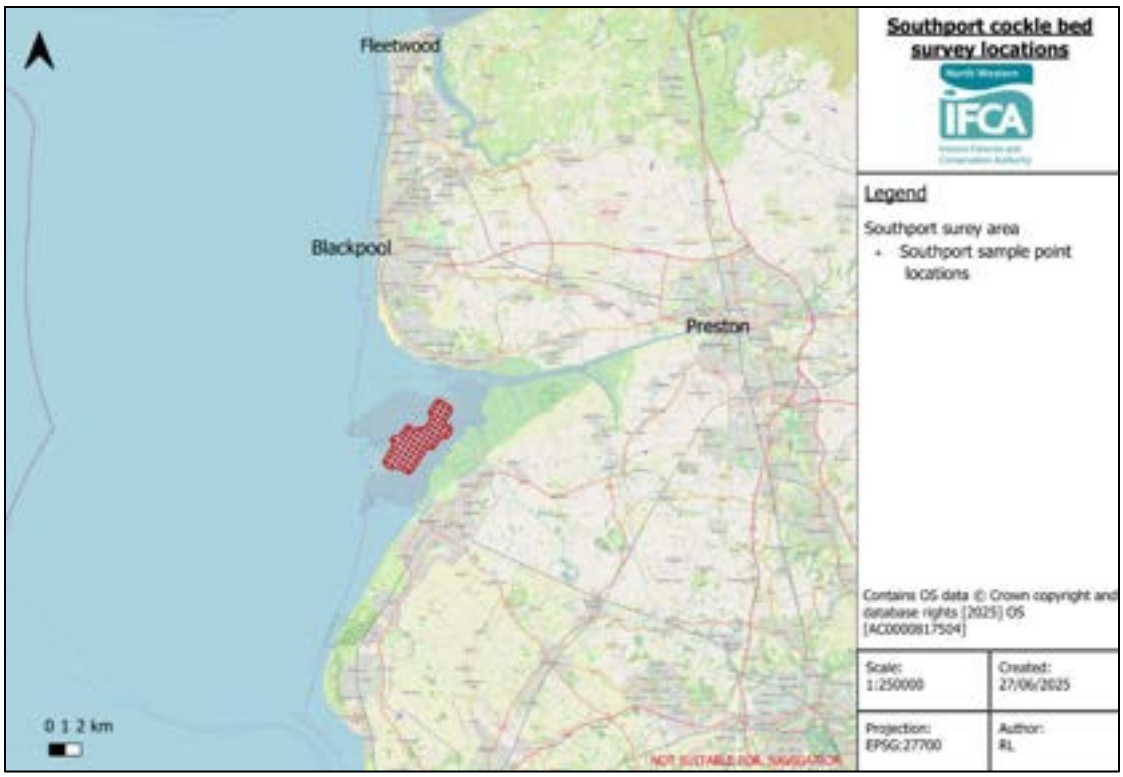


Figure 1 Illustration of Southport survey bed area with sample locations 23/06/25

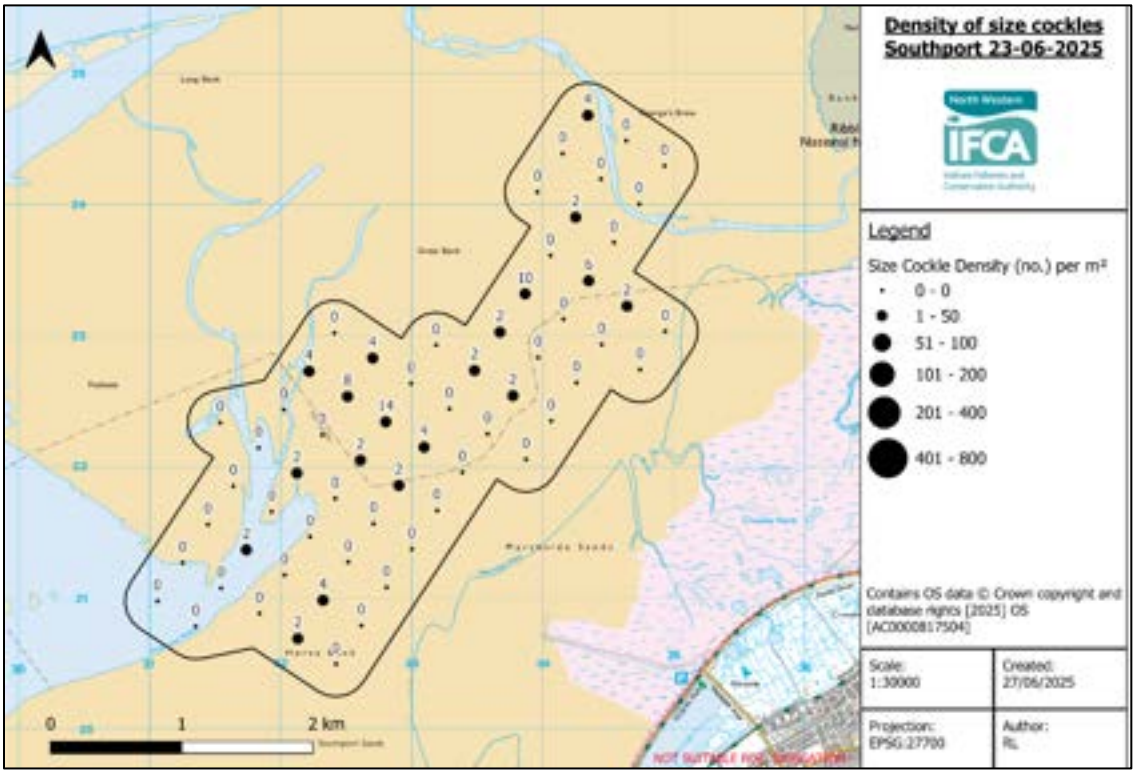


Figure 2: Density of size cockle per m^2 at Southport June 2025.

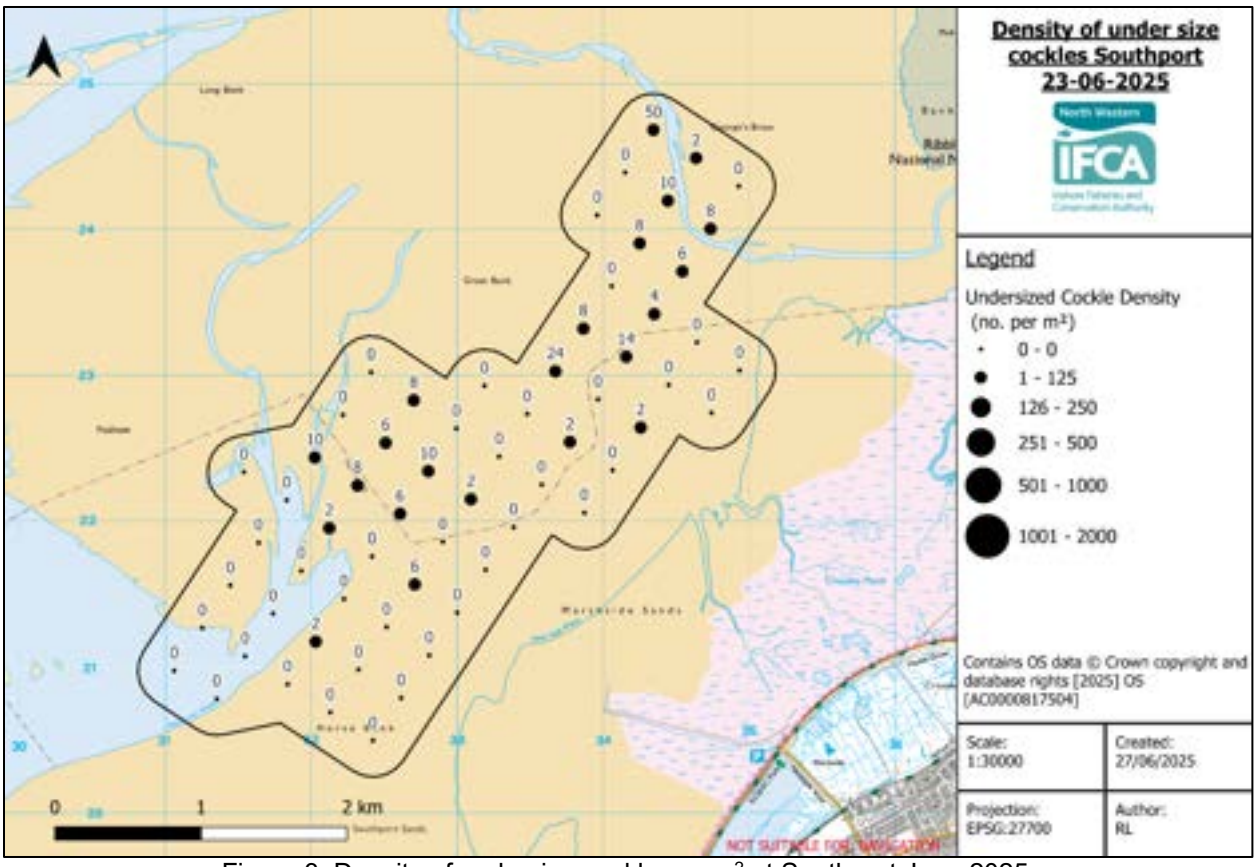


Figure 3: Density of undersize cockle per m^2 at Southport June 2025.

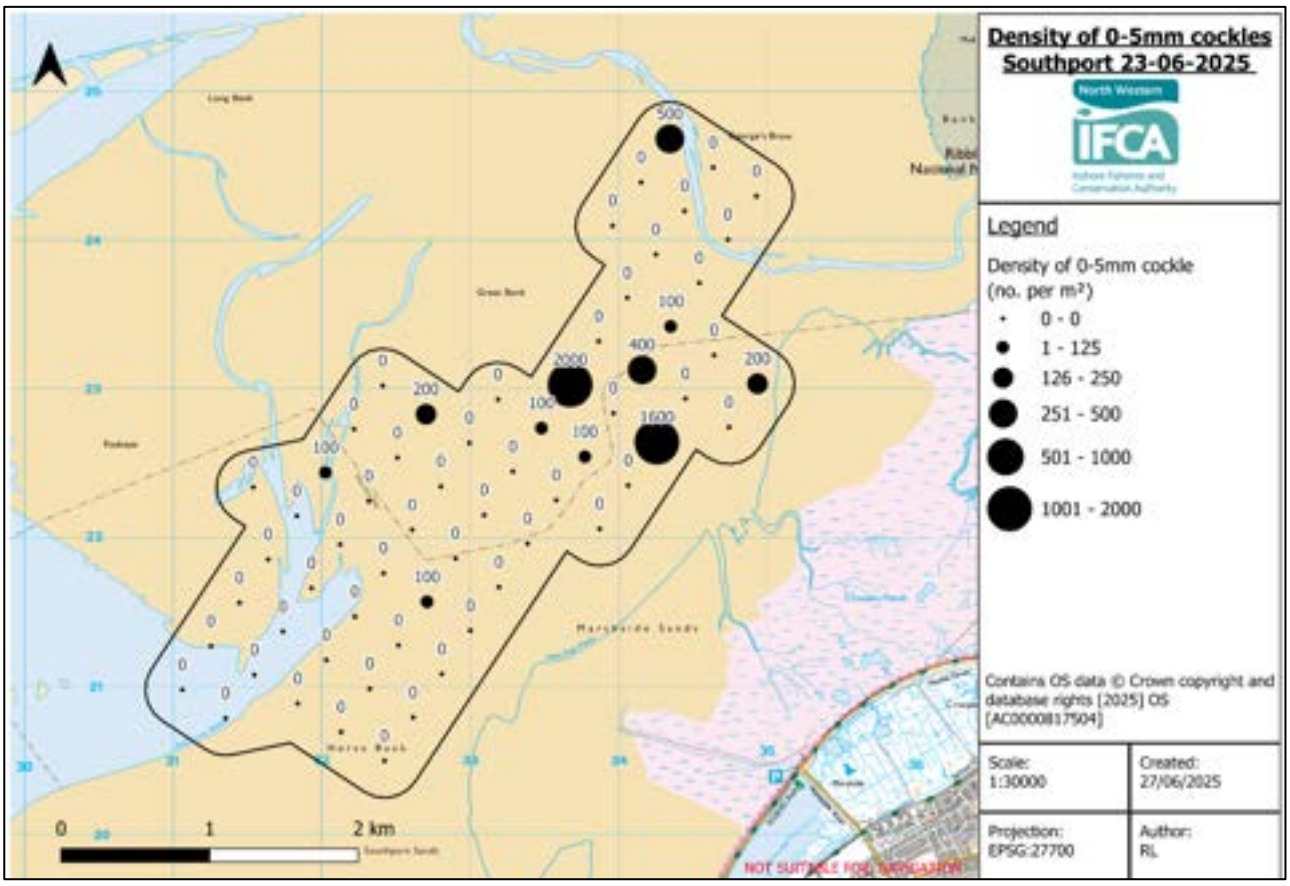


Figure 4 Density of 0-<5mm cockle per m^2 at Southport June 2025

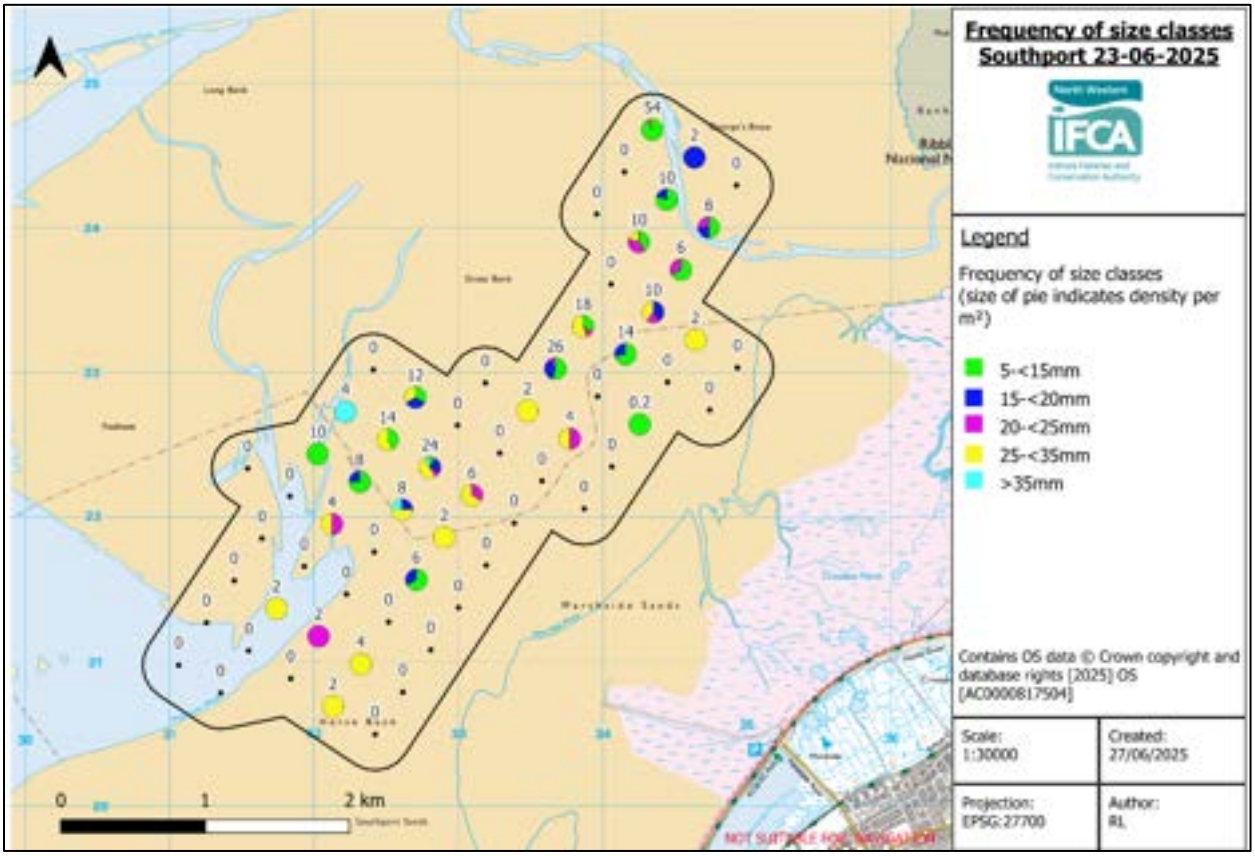


Figure 5: Frequency of size classes of cockle per m^2 at Southport June 2025.

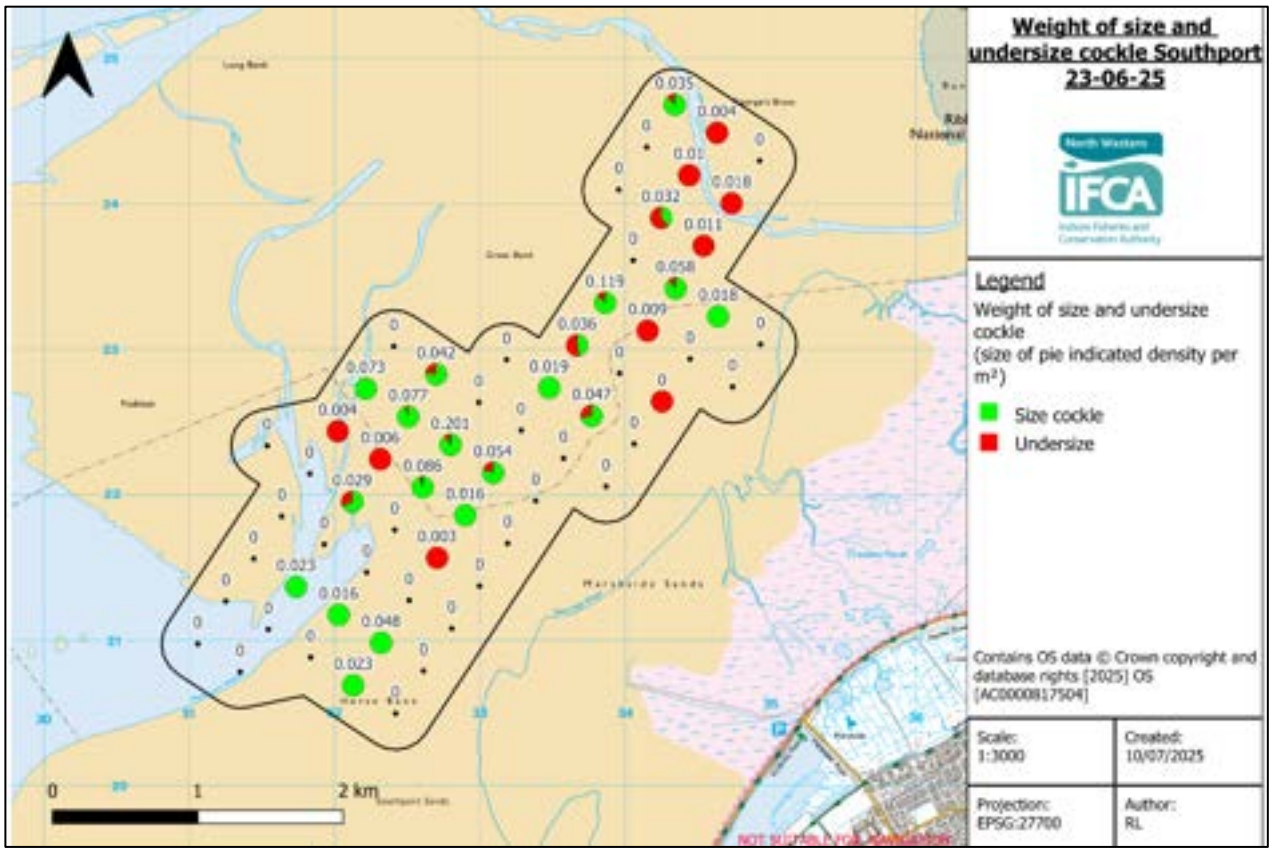


Figure 6: Weight of size and undersize cockle kg/m^2 at Southport 23/06/25.

Leasowe Cockle Survey 30-06-2025

Officers present: GG, LL, MT, GE
Tides: LW 10:12 1.8m (Liverpool Tides)

Survey method - Jumbo and 0.5m^2 quadrat

72 stations were sampled from a 250m grid. Cockle size ranged across the bed from < 5mm to > 35mm with the main biomass of cockles in the 25-35mm size class. Sized cockle makes up 98.9% of the total biomass with undersized cockle comprising the remaining 1.1%. Since the survey in February 2025 the biomass of sized cockle has decreased by 19.4% and undersized cockle has decreased by 93.9%. There is evidence of a 2025 settlement with spat seen in some areas across the bed.

Means
Means were calculated from all stations with zero counts removed. Less than 5mm cockle was not used in the undersize figures due to the high variable survivability of cockle at this small size but has been included as a separate figure.

Mean number of size cockle	40.2 per m²	(min 0, max 290)
Mean number of undersize cockle	19.4 per m²	(min 0, max 128)
Mean number of 0-5mm cockle	42.4 per m²	(min 0, max 600)
Mean weight of size cockle kg/m²	0.43 kg/m²	(min 0, max 1.609)
Mean weight of undersize cockle kg/m²	0.005 kg/m²	(min 0, max 0.034)

Maps
Maps were created showing the overall survey area, density of size cockle, density of undersize cockle (excluding cockles in the 0-5mm size range), the frequency of size classes (the size of the pie chart indicating the total density of cockles present), and the weight of undersize and size cockle.

Biomass

	Area of cockle present (ha)	Size Cockle (tonnes)[1]	Undersize Cockle (tonnes)[2]
Leasowe	**162.5**	**705**	**8**

5-15 Class (tonnes)	15-20 Class (tonnes)	20-25 Class (tonnes)	25-35 Class (tonnes)	>35 Class (tonnes)
4	**0.2**	**7**	**676**	**25**

[1]In regards to biomass size cockle defined as cockle which will not pass through a square gauge 20 x 20mm in size.
[2]The biomass of undersize cockle does not include any estimates of cockle less than 5mm due to the high variability of survival of this size class.

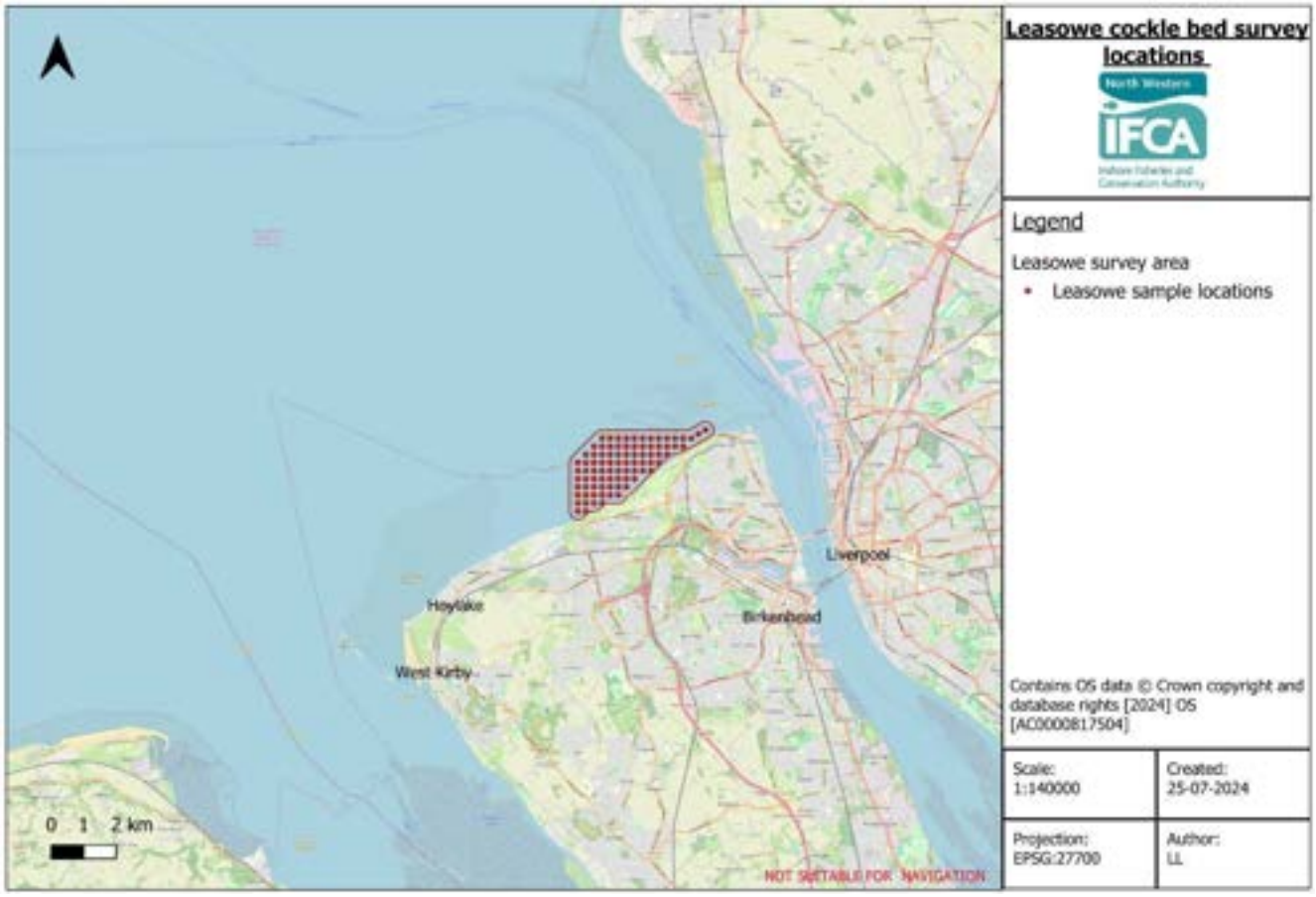


Figure 1: Illustration of position of Leasowe Survey Area.

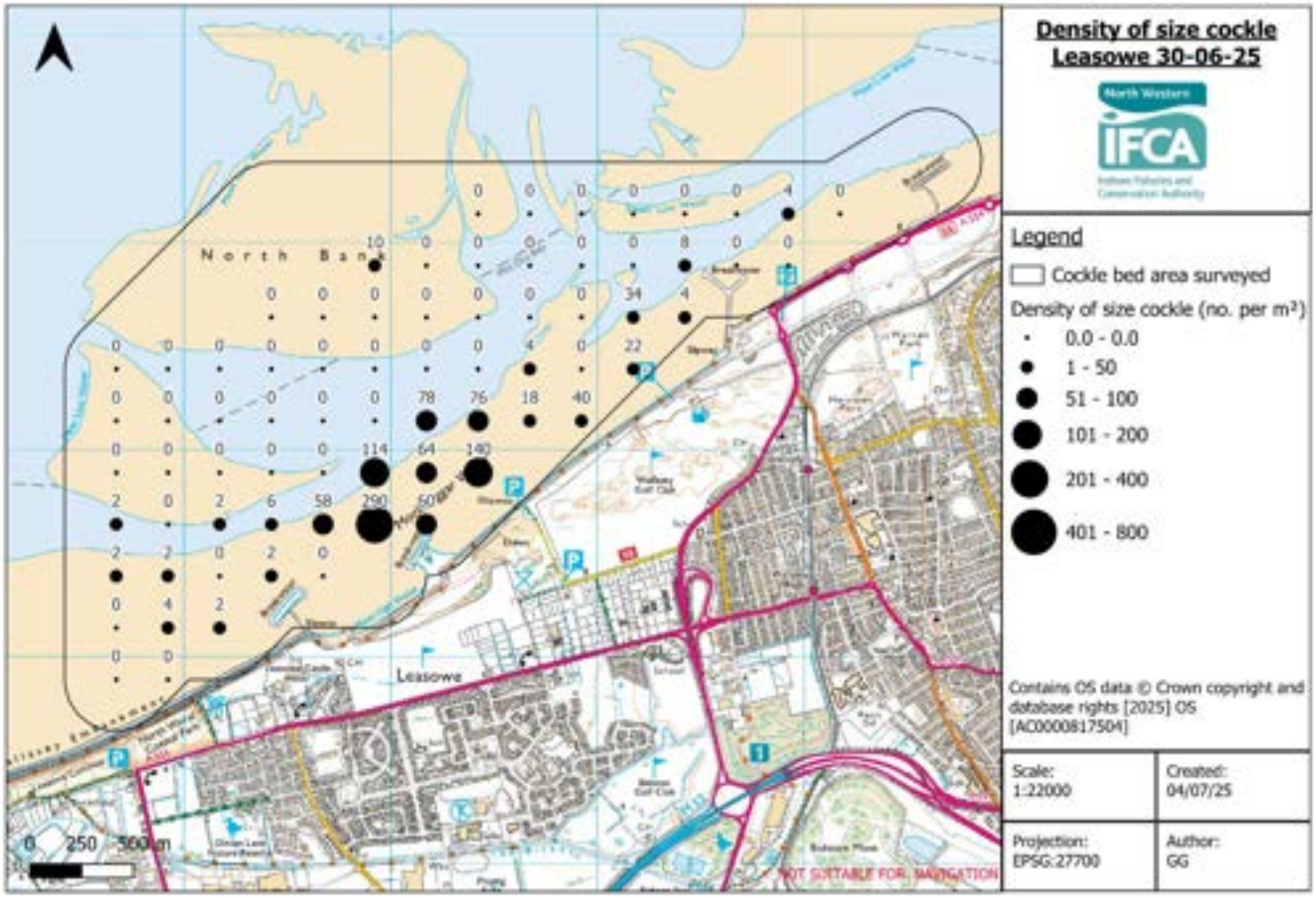


Figure 2: Density of size cockle per m^2 at Leasowe June 2025.

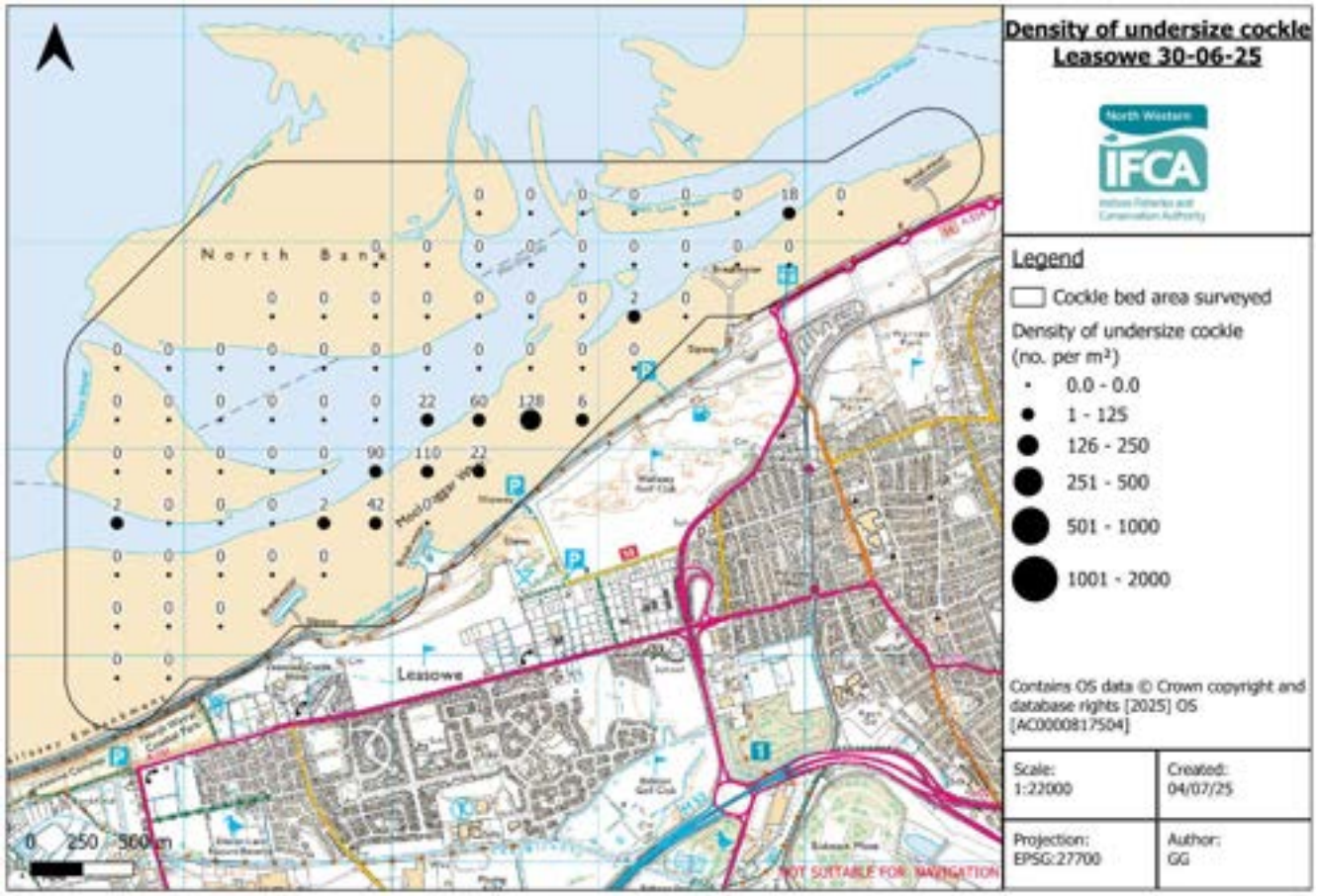


Figure 3: Density of undersize cockle per m² at Leasowe June 2025.

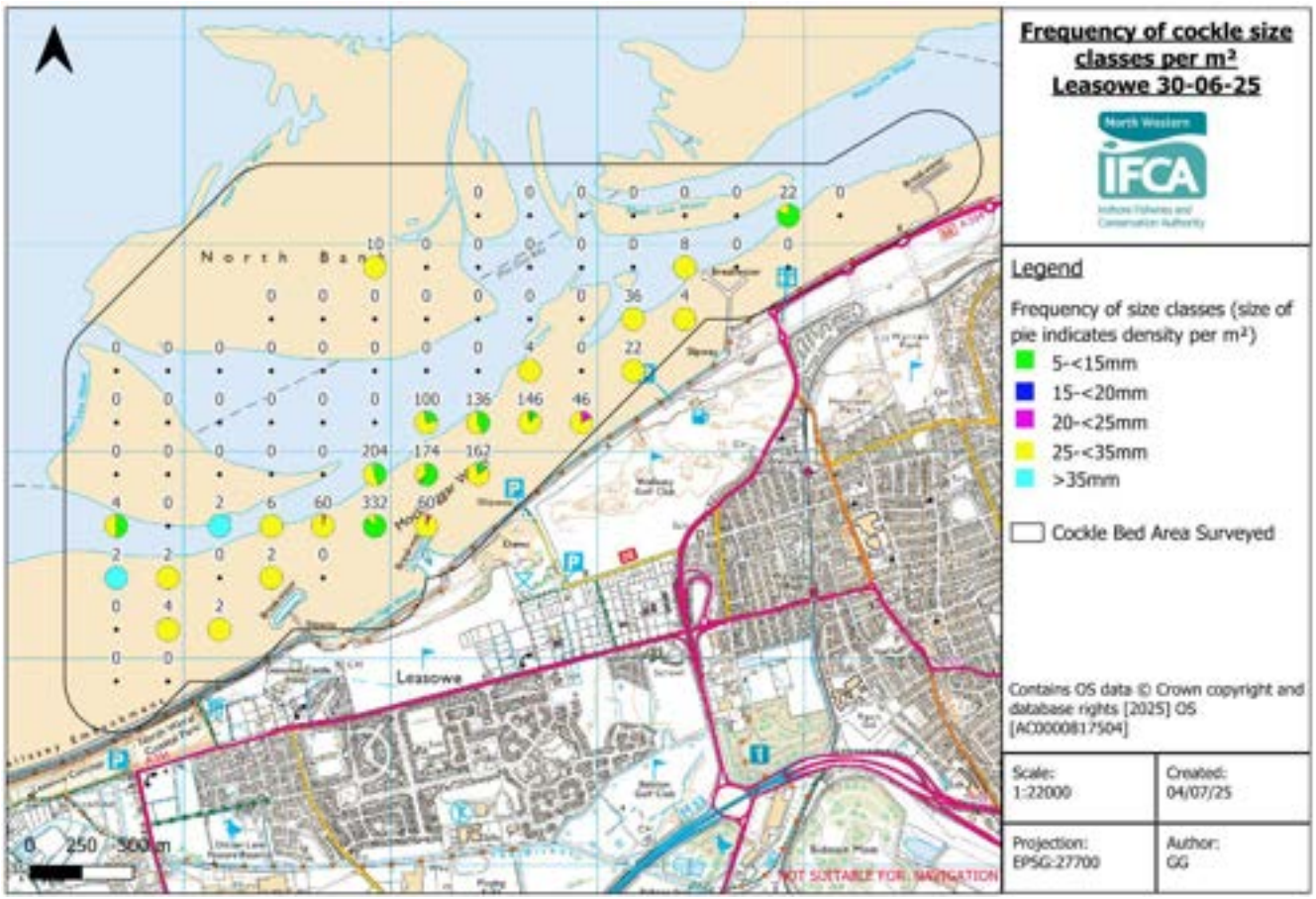


Figure 4: Frequency of size classes of cockle per m² at Leasowe June 2025.

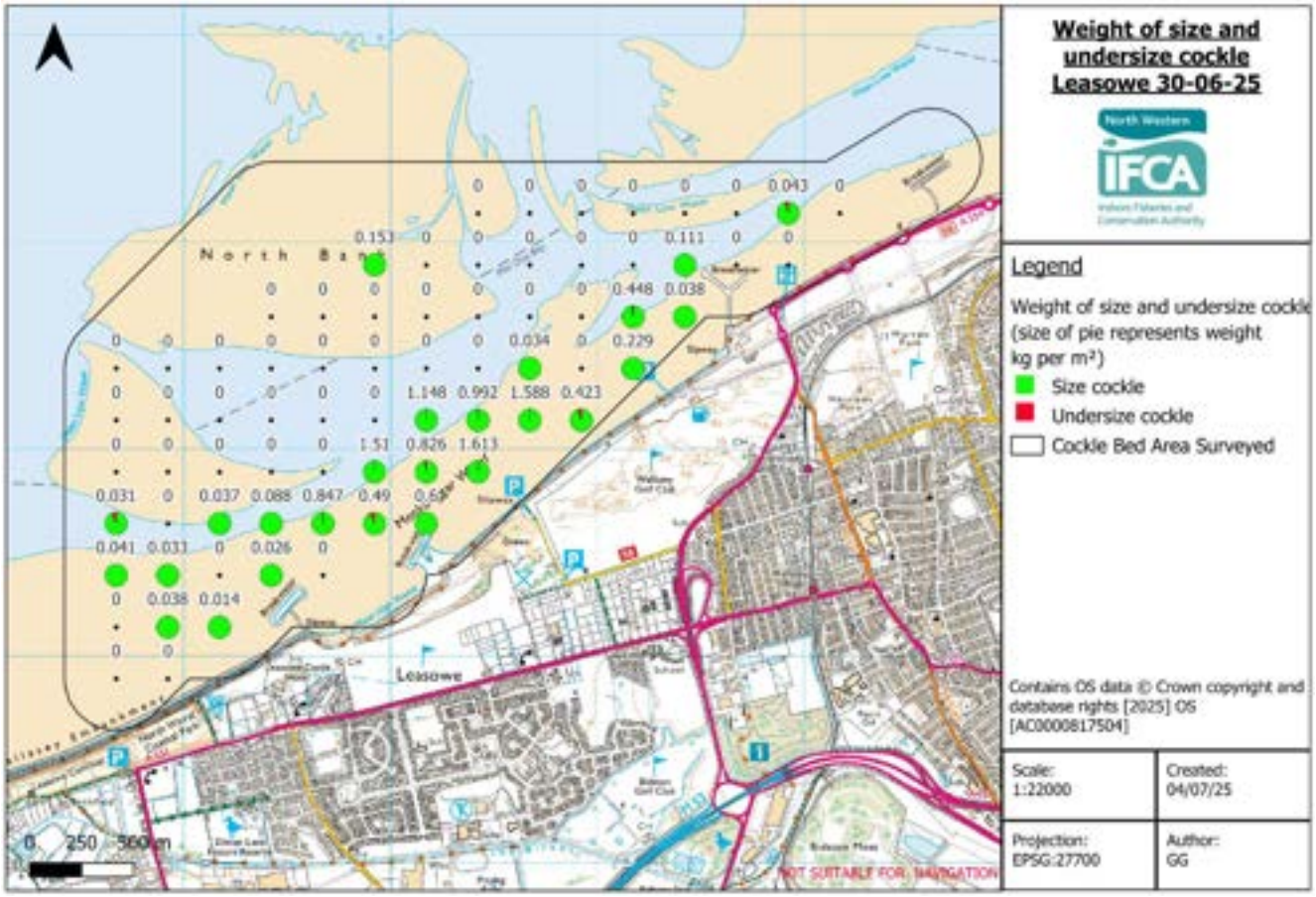


Figure 5: Weight of size and undersize cockle kg/m² at Leasowe