

# **NWIFCA Technical, Science and Byelaw Committee**

**29<sup>th</sup> of May 2025: 10:00 a.m.**

## **Agenda Item**

**7**

### **SURVEY AND INSPECTION REPORT** **11<sup>TH</sup> OF FEBRUARY – 29<sup>TH</sup> OF MAY 2025**

#### **Purpose:**

- a) To report on the results of the mussel surveys and inspections in the last quarter.
- b) To report on the results of the April 2025 District cockle surveys and inspections

#### **~Recommendation: Approve the following:**

- a) Receive the report and related survey and inspection notes
- b) The Pilling cockle bed is opened as of July 1<sup>st</sup> 2025 to February 28<sup>th</sup> 2026. One tide a day, Monday to Friday.
- c) The Aldingham and Newbiggin, Leven, Flookburgh and Middleton cockle beds remain closed and reviewed at August TSB.

#### **BACKGROUND**

Every year NWIFCA officers undertake extensive surveys and inspections of the cockle and mussel beds across the NWIFCA District. The aim of the surveys is to conduct stock assessments on each bed. The aim of inspections is to gather information in areas that either; a) do not have enough stock to warrant a survey, and/or b) conditions of the bed preclude surveying – for example, large channels or short exposure times which limit the time officers can safely access. Inspections may also take place to see if a full stock assessment is needed.

#### **Mussel bed surveys and inspections**

Large, accessible mussel beds that are stable (large areas are not frequently washed away) are typically surveyed by the Dutch Wand method. This method allows officers to calculate an overall biomass of stock on the bed, identify the proportion of the population that is size, and map a perimeter. Beds that are typically surveyed by Dutch Wand include: Foulney mussel bed, Low Bottom, and Walney Channel. Mussel beds which are exposed for short amounts of time or are typically fished for seed mussel and are therefore liable to large changes over short periods are inspected visually, with reports presenting pictures and a description of the stock. Beds that are typically inspected using this approach include: Fleetwood, South America, Falklands, and Heysham.

#### **Mussel inspection methodology overview**

Inspections of mussel beds are undertaken by officers who will walk the perimeter of the mussel bed with GPS to map the location and extent. Officers will then access the middle of the bed and as much as can reasonably be accessed, taking notes on this size, coverage, presence of any important features (presence of sabellaria, exposed cobble and boulder substrate, depth of mud, indications of scour, looseness of mussel), and mussel size composition. Full inspection criteria is detailed in the agreed in Agenda Item 10 at the February 6th 2024 TSB meeting (<https://www.nw-ifca.gov.uk/app/uploads/Agenda-Item-10-Seed-mussel-definition-of-ephemerality-TSB-February->

[2024.pdf](#)). Typically these surveys are limited by tides and can only be conducted on spring tides. Inspections are undertaken to assess the suitability of a bed for either a seed or size fishery.

**2025 early cockle bed surveys**

In 2024 Officers conducted a consultation with industry that established an July 1<sup>st</sup> – February 28<sup>th</sup> open season would be preferable to a September 1<sup>st</sup> – April 30<sup>th</sup> open season (as currently stated in Byelaw 3). Given the results of last year’s surveys did not facilitate the trial run of the early season, officers undertook early surveys again this April of Morecambe Bay stocks, to identify if stock condition was suitable for a July 1<sup>st</sup> fishery. The results of these surveys are provided in Section 2 of this report.

No other beds in the District were surveyed on this basis due to the following reasons: Penfold fishery in Southport does not have the historical stock to currently warrant an early opening, Leasowe fishery has additional seasonal restraints in relation to its council and summer tourism. Surveys of Leasowe and Penfold will take place as normal in June/July 2025 for a recommendation on a September 1<sup>st</sup> fishery.

The purpose of cockle surveying is to establish data regarding the abundance, density and location of cockle stocks to inform fisheries management. Most cockle beds in the district are surveyed using the methodology outlined below.

**Cockle survey methodology overview**

Cockle surveys are undertaken by splitting each bed extent into a grid of sample points spaced between 250 to 500 m apart. Typically, each bed has between 40 and 150 sample points depending on its size.

Sample locations are mapped on a GPS to ensure each year the same locations are surveyed. Officers access each sample location by quad, jumbo the sand to fluidise the sediment to cause cockles to rise to the surface and lay down a 0.5 m2 quadrat. Officers pick and rake the cockles within the quadrat and collect them for analysis in the lab. In the lab, cockles are separated into size cohorts (0.1-<5mm, 5-<15mm, 15-<20mm, 20-<25mm, 25-<35mm, +35mm) and record the number in each. A total of 200 cockles (100 undersize, 100 size) are taken from the bed as a whole, for analysis of weight and length. From this data, the overall proportion of size and undersize and total stock biomass is estimated.

**1. MUSSELS**

Between February 11<sup>th</sup> and May 12<sup>th</sup>, NWIFCA science officers carried out three mussel inspections, three mussel Dutch Wand surveys, and two drone flights across NWIFCA District, . Complete inspection reports are provided in Annex 1 of this report. The location and extent of the beds inspected are provided in Figures 1 to 2.

**Table 1.** Mussel survey and inspections this quarter.

Surveys and inspections this quarter	Date
<b>Mussels</b>	
<b>Morecambe Bay (Figure 1):</b>	
Heysham inspection	05-03-25
Bare Ayre inspection	27-03-25

Low Bottom DW	02-04-25
South America inspection	29-04-25
Foulney DW	01-05-25
Walney channel DW	01-05-25
Drone	
Foulney	19-03-25
South America inspection	30-04-25

**a) Morecambe Bay Seed mussel fishery**

Mussel beds are assessed each year to see if they can be opened as hand gathered or seed dredge fisheries. Typically these beds are located within Morecambe Bay. The conditions which we look for to allow a seed fishery to take place are:

- loose mussel,
- a single size class of seed (<1yr old) of dense settlement, (not mixed)
- a large amount of mussel mud underneath with little exposed cobble/boulder substrate, and
- a high probability of washing away (evidence of scour or loose mussel and historical trends).

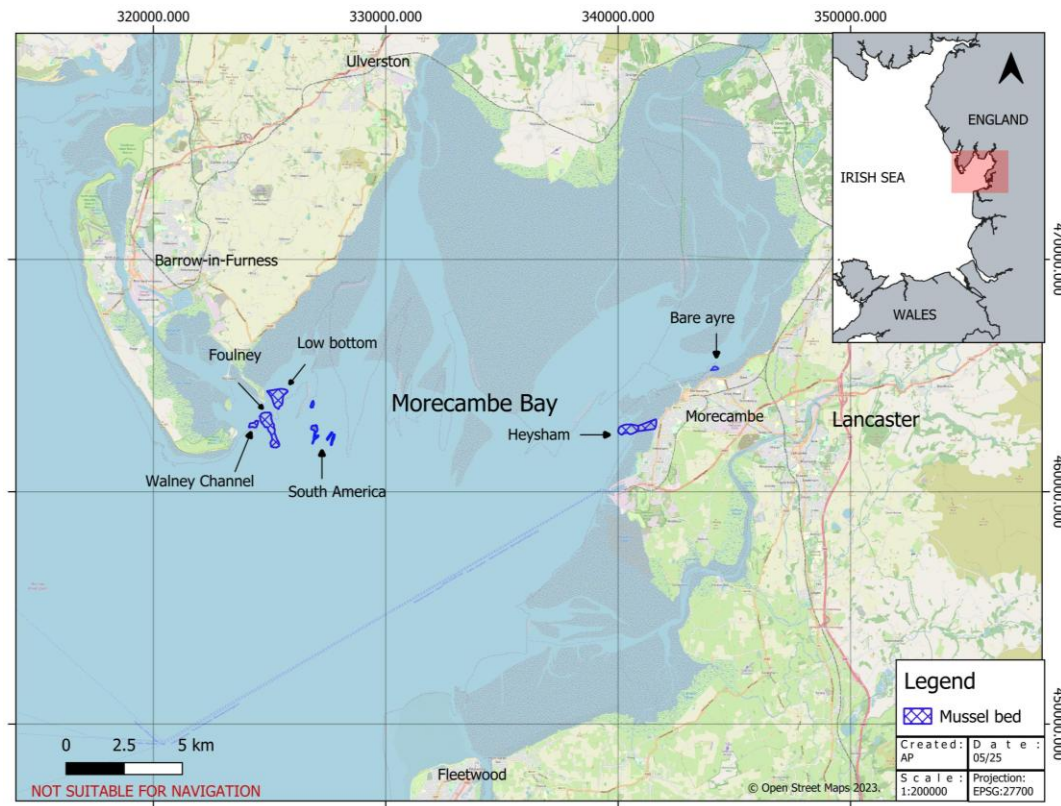
The criteria that should be met in order for a fishery to be considered for opening is detailed in the definition of 'ephemerality' and the 'process for determining ephemerality' agreed at the February 6<sup>th</sup> 2024 TSB meeting ( <https://www.nw-ifca.gov.uk/app/uploads/Agenda-Item-10-Seed-mussel-definition-of-ephemerality-TSB-February-2024.pdf>). This information is gathered through inspections and presented to the Authority.

During March and April inspections this year, there has been very little seed mussel settlement identified.

However, this year access to South America by quad has again become available, due to further changes in the Leven channel.

**b) Morecambe Bay mussel beds overview:**

The location and extent of mussel beds surveyed in Morecambe Bay from February 11<sup>th</sup> and May 12<sup>th</sup> 2025 is provided in Figure 1.1. An overview of the status of the bed is provided in the following section. Full inspection reports with images are provided in Annex 1.



**Figure 1.1** Surveyed and inspected mussel beds in Morecambe Bay from February 11<sup>th</sup> and May 12<sup>th</sup> 2025.

### **1) Heysham inspection:**

Heysham mussel bed was inspected on the March 5<sup>th</sup>.

This year there is still a significant historic *Sabellaria alveolata* reef extending across the skewer. The edge of the South reef was mapped by officers. Smaller patches of live and dead *Sabellaria alveolata* were found throughout the area, some of which was covered by mussel.

There was very little mussel persisting from last year as most of the mussel had been washed away leaving areas of bare cobble and dead shell present on the skewer (Figure 4). Live mussel was patchy and sparse with most mussel between 25-35mm, occasional size mussel was present.

Oystercatchers, gulls, knots and eiders were all present in the area

### **2) Bare Ayre inspection**

Officers identified and inspected a small area of mussel close to Bare Ayre on 27<sup>th</sup> March. This area had previously been known but had not been present for a few years, therefore, this was this first time officers had inspected it since 2014. The new area of mussel runs along the edge of the channel; the main strip was approximately 200m by 50m. At low water, an outer skewer was visible; however, access to the outer skewers was not possible due to the depth of the channel.

Live mussel was patchy with approximately 20-30% coverage across the area, with some small areas of dense mussel interspersed. Throughout the areas, there were patches of cobble and dead shells mixed in with live mussels. *Sabellaria alveolata* was present in small patches along the north edge of the bed.

### **3) South America inspection**

An inspection of South America was completed to assess if the mussel inspected in July 2024 was still present, if there were signs of a 2025 settlement, and if access was possible by quad bike. Access was possible by crossing the channel closer to Newbiggin than in previous years.

Bed area one has reduced in size considerably from the last time it was inspected, from 15.8 hectares to 5.4 hectares, with much of the area sanding over, leaving two strips of mussel. There has been a significant change in the channel that used to run along the Northern and Eastern edge of the mussel, with no channel being present. The mussel was patchy and ranged from 50-60mm in size, likely from the 2024 and 2023 mussel settlements, on a thin layer of sand over a hard substrate. There was a small patch of 2025 settlement.

Officers returned the following day (30<sup>th</sup> April 2025) to trial more automated flights using the multispectral camera that had to be cancelled due to bird activity, due to Oystercatchers taking a disliking to the drone. As such only a couple of aerial photos could be taken which have been included in the report (Annex 1).

### **4) Foulney Dutch Wand survey**

The total mussel bed surveyed was 39 hectares. A large area between the island and the main bed was now bare of mussel.

The biomass of size mussel was 1961 tonnes, and biomass of undersize was 924 tonnes. The majority of mussel present on Foulney Skear is currently a mix of size and undersize with a wide spread of mussel from 5mm to 73mm but mainly between 19mm and 27mm.

A large area of undersize seed was identified in the upper to mid portion of the bed.

### **5) Low Bottom Dutch Wand survey**

The total mussel bed surveyed was 35 hectares.

The biomass of size mussel was 1657 tonnes, and biomass of undersize was 397 tonnes.

The majority of mussel present on Low Bottom bed is currently a mix of size and undersize mussel ranging from 13mm to 68mm with the majority size between 45mm and 54mm.

### **6) Walney Channel Dutch Wand survey**

The total mussel bed surveyed was 9.25 hectares.

The biomass of size mussel was 445 tonnes, and biomass of undersize was 2 tonnes.

The majority of mussel present on Walney Channel bed is currently size mussel ranging from 46mm to 75mm with the majority size between 53mm and 62mm. The smallest mussels sampled were 32mm.

## 2. COCKLES

Between April 9<sup>th</sup> and April 24<sup>th</sup>, NWIFCA science officers carried out five cockle surveys across Morecambe Bay. Full survey reports are provided in Annex 2 of this report. Please note, as of April 2024, officers have standardised the survey note figures. The size of the pie charts corresponds to set values, making them comparable between beds and future surveys.

The location and extent of the beds inspected are provided in Figure 2.1.1.

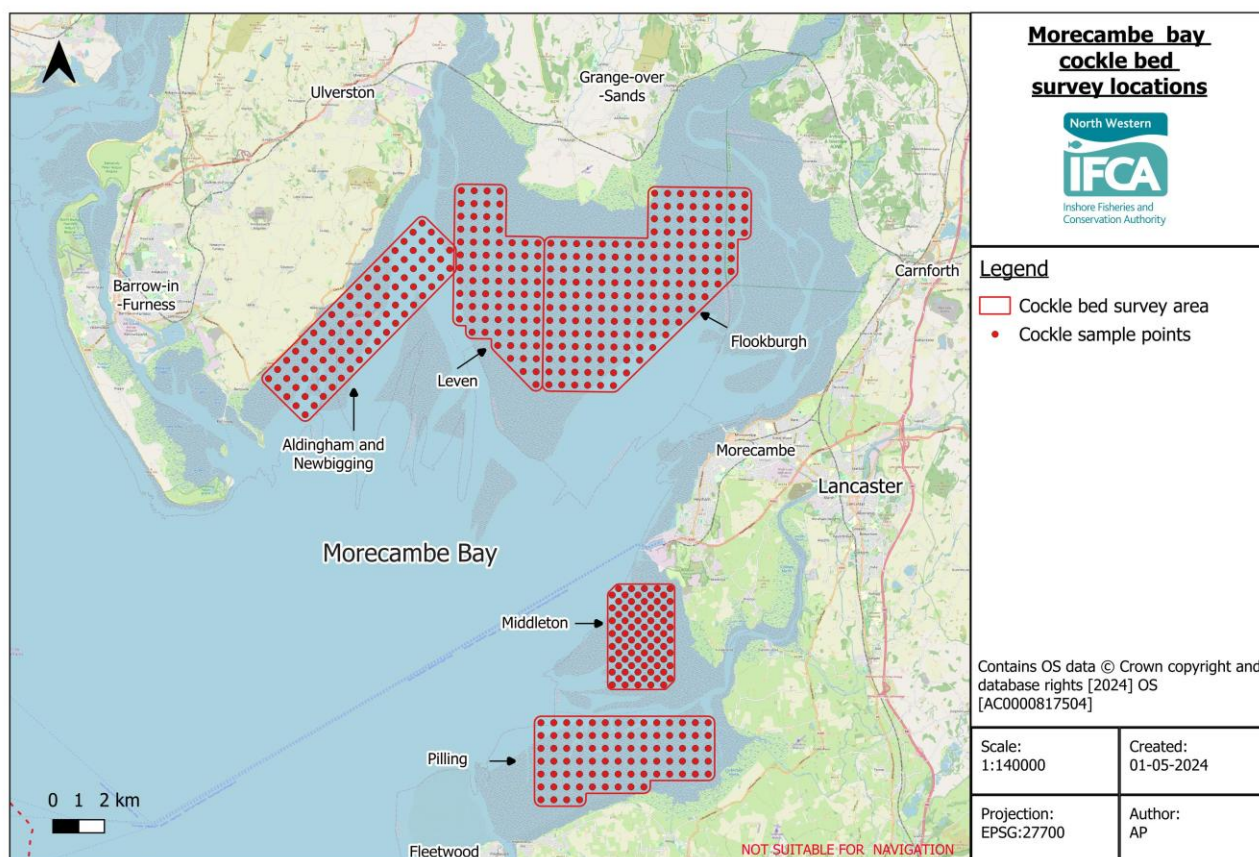
**Table 2.1** Cockle survey and inspections this quarter.

Surveys and inspections this quarter	Date
<b>Cockles</b>	
<b>Morecambe Bay</b> (Figure 1):	
Flookburgh	23-04-25
Pilling	16-04-25
Newbiggin and Aldingham	22-04-25
Leven	24-04-25
Middleton	09-04-25

### **2.1 Morecambe Bay April 2025 Cockle Results**

Officers collected and analysed 5674 cockles (down from 11,862 cockles surveyed in 2024) from 414 sample points, across 6441 ha of Morecambe Bay. Figure 2.1.1 shows the location and extent of sample points for the respective beds.





**Figure 2.1.1** The location of sample points across Morecambe Bay cockle beds

A summary of the April survey results is provided in table 2.1.1.

**Table 2.1.1.** Biomass calculations of size, undersize and combined biomass of cockles on Morecambe Bay cockle beds April 2025. \*figures represent the max cockle biomass

Cockle bed	Date surveyed	Area of cockle present (ha)	Size cockle (tonnes)	Undersize cockle (tonnes)	Total cockle biomass (tonnes)
<b>Aldingham and Newbiggin</b>	April 22 <sup>nd</sup> 2025	900	865	371	1236
<b>Leven</b>	April 24 <sup>th</sup> 2025	1175	411	126	536
<b>Flookburgh</b>	April 23 <sup>rd</sup> 2025	2325	1815	410	2225
<b>Warton Sands</b>	na	na	na	na	Na
<b>Middleton</b>	April 9 <sup>th</sup> 2025	643	463	105	568
<b>Pilling</b>	April 16 <sup>th</sup> 2025	1400	2447	1003	3450

When analysing results, NWIFCA look to answer the following questions which may assist in determining the stock levels, stock trends and HRA requirements.

- 1) What is the **biomass of size and undersize cockle** on individual beds and across the Bay as a whole,
- 2) What is the **density of size and undersize cockle** on individual beds and across the Bay, and
- 3) What is the **composition of size classes** on individual beds and across the Bay as a whole,

**a. Biomass of size and undersize cockle across Morecambe Bay**

Table 2.1.2 provides yearly maximum cockle biomass figures from 2017 to 2025. Please note the month the surveys were undertaken, as data for both April and July surveys are presented here.

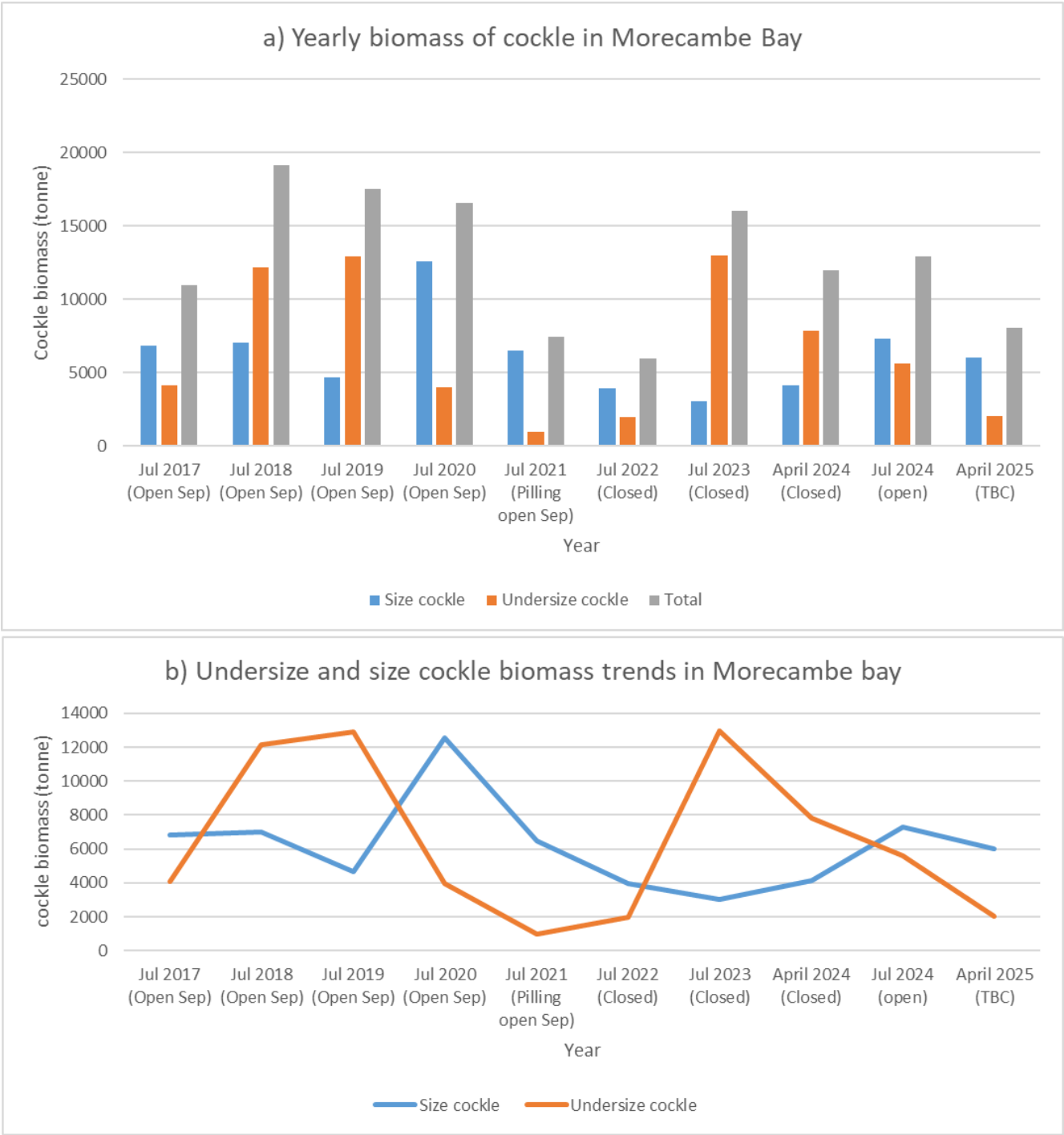
As of April this year, there is an estimated and 8,016 tonnes of cockle across 6,443 hectares of Morecambe Bay. This can be broken down into 6,001 tonnes of size cockle and 2,015 tonnes of undersize cockle. This has decreased from July 2024, where total size cockle biomass was 7,308 tonnes, and total cockle biomass was 12,894, and is below the minimum threshold a fishery in Morecambe Bay has previously been recommended open.

**Table 2.1.2.** The yearly biomass of figures for size, undersize and total biomass of cockles on Morecambe Bay cockle beds from 2017 to 2025. \*figures represent the max cockle biomass

Year	All surveyed Morecambe Bay cockle beds				Beds opened
	Area (ha)	Size cockle (tonne)	Undersize cockle (tonne)	Total cockle (tonne)	
<b>2017</b>	5177	6980	4230	11210	Flookburgh Leven Pilling
<b>2018</b>	6088	7000	12140	19140	Flookburgh Leven Pilling Newbiggin
<b>2019</b>	6705	4635	12900	17535	Flookburgh Leven Pilling Newbiggin
<b>2020</b>	8085	12580	3975	16555	Flookburgh Leven Pilling Newbiggin
<b>2021</b>	7089	6450	955	7415	Pilling
<b>2022</b>	6582	3950	1990	5940	None
<b>2023</b>	7730	3035	12975	16010	None
<b>2024</b>	7247	7308	5586	12894	Flookburgh Pilling
<b>2025 (April)</b>	6443	6001	2015	8016	TBC



Figure 2.1.2 shows the data from table 2.1.2 in graphical form to demonstrate the trends in cockle biomass across Morecambe Bay since 2017 (a and b), and the composition of this year's size and undersize cockle (c).



**Figure 2.1.2.** Summary of Morecambe Bay cockle survey results from 2017-2025. a) shows the yearly biomass of size, undersize and total cockle in Morecambe Bay from 2017 to April 2025, and b) the relational trend in size and undersize cockle from 2017 to April 2025.

Figure 2.1.2.b indicates the trend in the biomass of size (blue) and undersize (orange) cockle for Morecambe Bay as a whole since 2017. High levels of undersize cockle in 2018 and 2019 preceded an increase in the biomass of size cockle, one to two years later. In 2023, there was a significant increase in the biomass of undersize cockle, which again grew on to support an increased biomass of size cockle in July 2024. However, this peak in undersize cockle seen in July 2023, has not sustained a significant increase in size cockle for the 2025 season.

There has also been a significant decrease in the proportion of undersize cockle across the Bay, possibly due to the 2023 size cohort growing on to size during the previous summer, and also natural mortality. There has been very little spat seen during the 2024 (both April and July) survey, and the April 2025 survey.

The proportion of size to undersize is greater this April than last year's July surveys. This is likely due three factors: 1) undersize from last year growing to size, 2) undersize mortality over the winter, 3) lack of new recruits from 2023 onwards contributing to the undersize biomass.

### **b. Individual beds**

An analysis of survey data for each of the main cockle beds in Morecambe Bay is presented below.

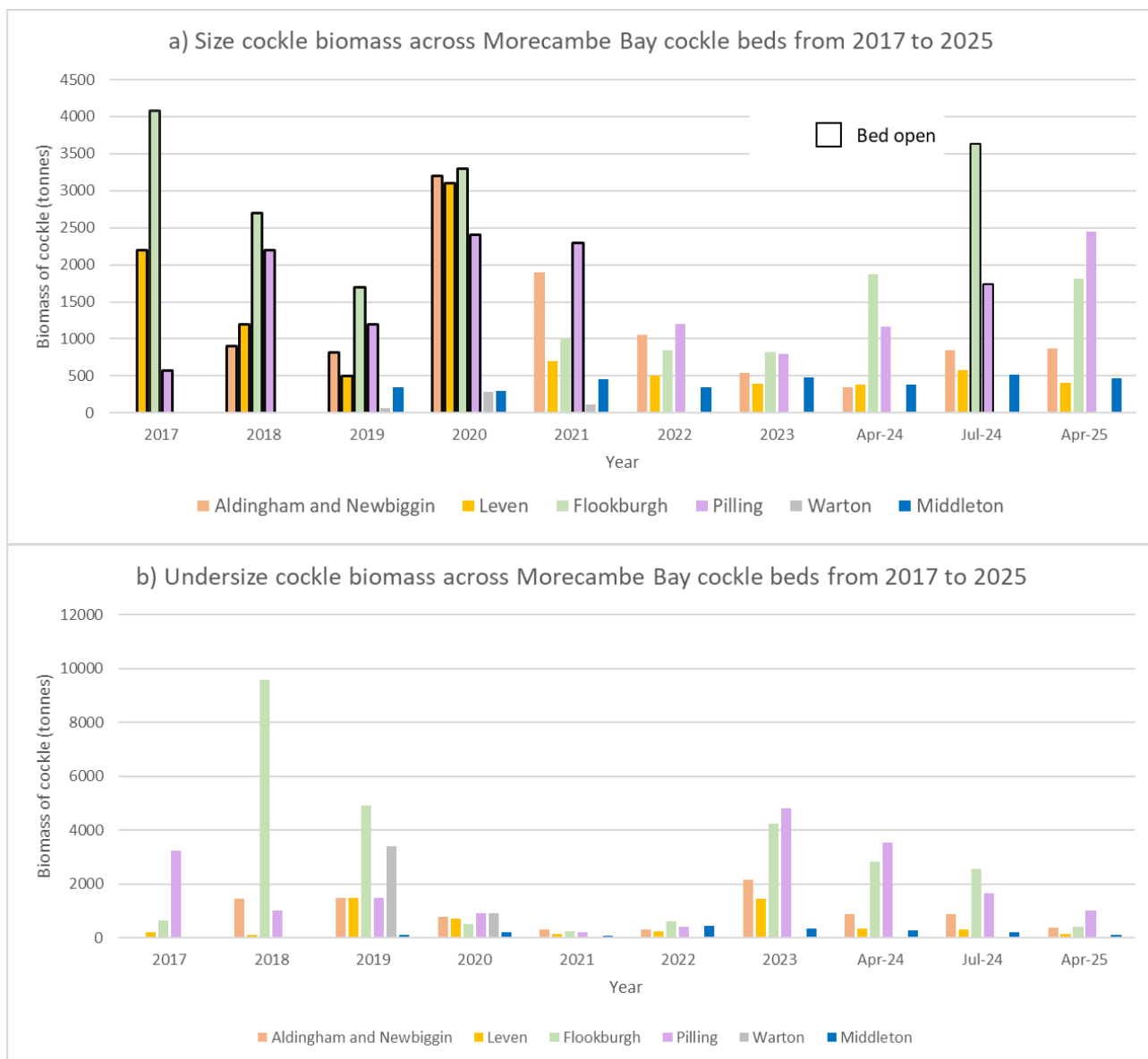
Morecambe Bay is considered in its entirety due to the overarching SPA and SAC designation of the site, however, individual beds may be **opened if they meet the HRA requirements for the site as a whole**. Survey results for each cockle bed are provided in Annex 2. It is also important to consider all information provided when building a recommendation for a fishery, and not any one piece in isolation. For example, understanding the composition of size and undersize on a bed, the distribution of cockle, and the total overall biomass can help determine an appropriate recommendation.

### **c. Biomass of size and undersize cockle for individual beds**

Figure 2.1.3 shows the biomass of size cockle for each surveyed Morecambe Bay cockle bed from 2017 to July 2024, and which beds were opened for fishing that same year.

The majority of beds have decreased in all aspects of biomass (size, undersize, and total biomass). Flookburgh has seen the greatest decrease from 3,629 tonnes of size down to 1,815 tonnes, and has minimal undersize stock waiting to come through to size (only 410 tonnes). Pilling is the only bed that has seen a notable increase in size cockle (note the total biomass has remained roughly stable from 2024 to present) from 1,742 tonnes of size to 2447 tonnes of size. This is likely the result of the undersize cockle from the eastern portion of the bed growing on to reach size.

Undersize cockle has decreased across all beds – leaving minimal stock to contribute to next year's cohort.



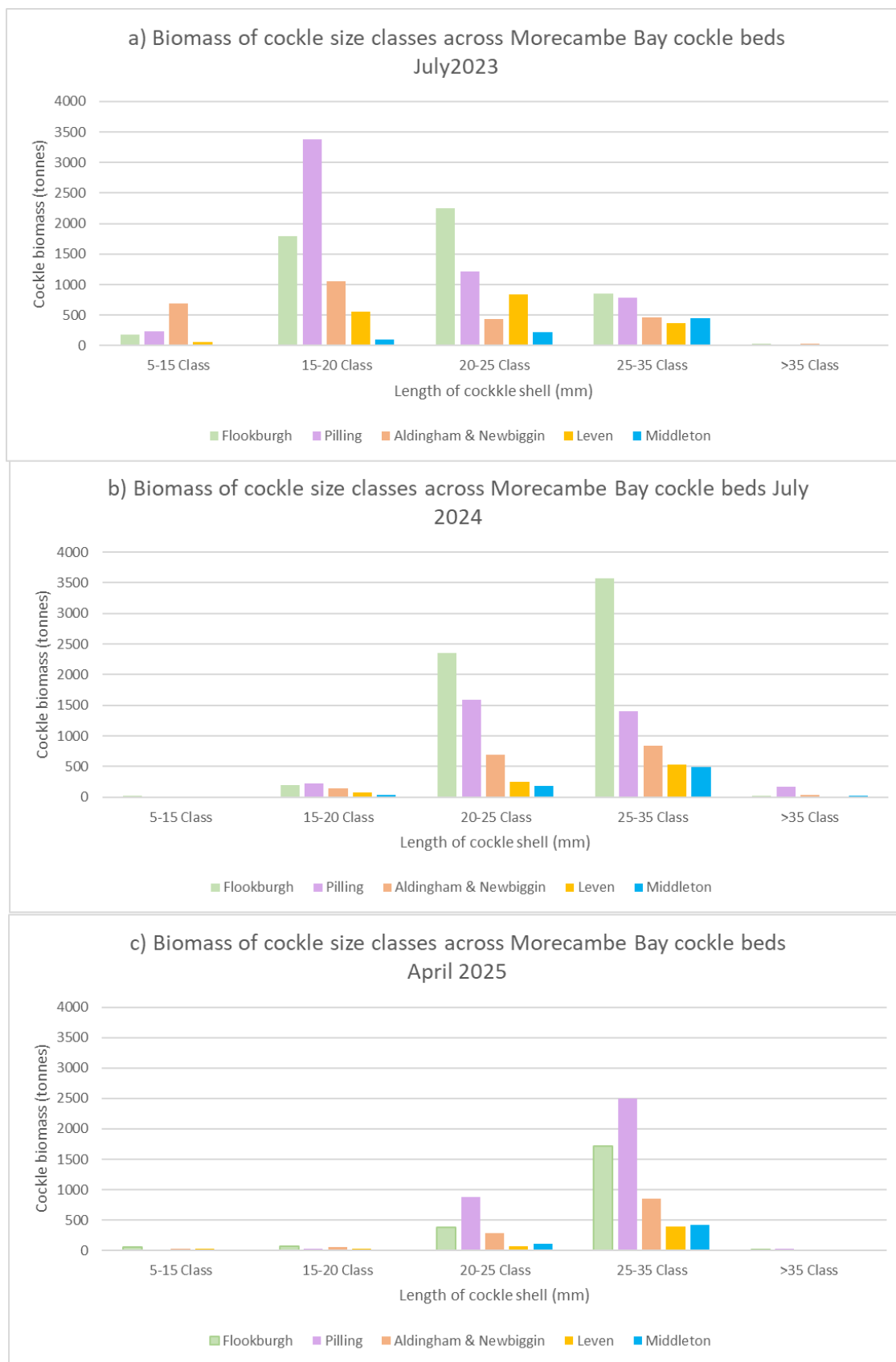
**Figure 2.3** Biomass of size cockles on the individual Morecambe Bay cockle beds from 2017 to April 2025, 2.a) the biomass of size cockle from 2017 to April 2025 for all surveyed beds with the corresponding open beds, and 2.b) the biomass of undersize cockle on all surveyed beds from 2017 to April 2025.

#### d. Biomass of cockle size classes on each bed

Figure 3.a and 3.b shows the biomass of cockles in each size class (0-5 mm, 15-20mm, 20-25mm 25-35mm and 35+mm) for the main Morecambe Bay cockle beds in July 2023, July 2024, and April 2025 respectively. The three years are been provided for comparative purposes.

The graphs show that the younger (smaller) present in 2023, has predominantly grown to size (25-35+ category). The biomass of the 25-35+ size category has also decreased for the majority of beds, besides Pilling – and reflected in the reduced size biomass estimates.

The biomass of all size categories remains low across Aldingham & Newbiggin, Leven and Middleton.



**Figure 2.4.** The biomass of different size classes of cockle for each of the Morecambe Bay cockle beds. 3.a demonstrates this for 2023, and figure 3.b for 2024 and 3.b for 2025 for comparison.

#### e. Composition of size classes on individual beds

The composition of size classes across a bed is important to consider as it has implications for fisheries management, and fishing highly mixed stock may have an impact on juvenile cockles survivability.

This year, there is a more uniform composition of size cockle on the bed, with size and undersize located in more discrete patches than previous years. This means, undersize cockle is less likely to be disturbed when size cockle is fished as they are present in areas less desirable for commercial fishing. For example, the area to the east of Pilling which originally had a 30:70 ratio of size:undersize, is now roughly 80:20 size:undersize.

### **Summary:**

The results of the April 2025 Morecambe Bay cockle survey show:

1. Most of the beds have decreased in total, size, and undersize cockle biomass. The exception to this being Pilling, with the area to the east of the bed closed in 2024, growing on to size.
2. The total biomass of cockle across the Bay has decreased since 2024, and is now lower than any previous estimates used to base a recommendation.
3. There is minimal undersize stock available to grow on to size for both this summer, and next years 2026 season.

## **Morecambe Bay cockle fishery recommendations:**

**Recommendation 1: The Pilling cockle bed is opened as of July 1<sup>st</sup> 2025 to February 28<sup>th</sup> 2026. One tide a day, Monday to Friday.**

This recommendation is based on the following factors:

1. Total biomass of size cockle on Pilling is sufficient to support a cockle fishery (noting the overall Morecambe Bay size biomass is low).

**Recommendation 2: The Aldingham and Newbiggin, Leven, Flookburgh and Middleton cockle beds remain closed and reviewed at August TSB.**

This recommendation is based on the following factors:

1. The total biomass of size cockle across Morecambe Bay is lower than the minimum biomass of size cockle for which a fishery has previously been recommended to be opened.

### **Additional considerations:**

**Early open season: an early open season for Morecambe Bay of July 1<sup>st</sup> means all beds in Morecambe Bay will be closed as of February 28<sup>th</sup> 2026, even if opened later in the season.**

As has been previously discussed, there are several additional considerations when proposing the opening or closing of a fishery, which as yet do not have established parameters:

- 1) Bird food requirements for SPA designated species
- 2) Minimum cockle density spawning requirements
- 3) Location of cockle brood stock for re-seeding
- 4) An agreed threshold limit beyond which the fishery will remain closed
- 5) Criteria for selecting which beds should open in the event of low stock numbers.

NWIFCA does not have an agreed minimum total cockle biomass for Morecambe Bay from which to recommend the opening or closing of a fishery. There are outstanding questions on the requirements of birds for food, location of potential sources of cockle brood stock for Morecambe Bay and cockle survivability of juvenile cockle is highly reliant on environmental factors.

**NWIFCA, 12<sup>th</sup> of May 2025**