

**NWIFCA Technical, Science and Byelaw  
Committee  
1st November 2016: 10:00 a.m.**

**AGENDA  
ITEM NO.  
6**

**COCKLE AND MUSSEL REPORT**

**Recommendations:**

- a) **Subject to HRA Members approve a derogation against the NWSFC Byelaw 13A (Management of the Fishery) closure and open the cockle beds to Byelaw 3 permit holders on 7<sup>th</sup> November, at:**
  - i) **Pilling Sands (Morecambe Bay);**
  - ii) **Leven Sands (Morecambe Bay).**
- b) **All other cockle beds within the District will remain closed under Byelaw 13A, subject to review in the spring.**

**Background:**

- 1. As previously reported the cockle stocks in Morecambe Bay and Penfold North (Southport) had not grown on as quickly as expected, and therefore repeat surveys were conducted in August and September to make a further assessment to inform decisions over opening beds to hand-gathering.
- 2. The full survey report is provided below.
- 3. This report was sent out to BMWG Members who were asked to discuss the results with their sectors and bring ideas to the BMWG meeting on 10<sup>th</sup> October. Officers had also received phone and email correspondence which was presented at BMWG. There was a majority view to open the beds, with three stakeholders stating that the beds should be left closed until more of the cockles had reached size.
- 4. At BMWG there was lengthy discussion, with a general view that Flookburgh should be left to grow on more and looked at again in the spring. There was agreement to ask TSB for approval to open the cockle beds at Pilling Sands to the south of the Bay, and Leven Sands in the north of the Bay, subject to HRA.
- 5. Large areas of the Bay will not be open and therefore there is plenty of cockle prey available to over-wintering birds in non-disturbed areas. It was confirmed that as long as access was limited there were no bird disturbance issues causing concern over the proposals.
- 6. Further dense stocks at Flookburgh and Penfold North will be re-surveyed at the earliest opportunities in February / March with a view to opening further fisheries should stocks allow and Habitats Regulations requirements can be met.
- 7. Following BMWG an email asking for in principal approval was sent to Members of TSB. Seven of the nine Members (not including Natural England) responded to this email. All those responding were in favour of the proposal.
- 8. Science Officers took a call from one buyer who was strongly opposed to the opening. Officers suggested he put his views in writing and / or request to attend TSB to put them forward to Members.
- 9. Officers posted the proposal (with the stock report) on the website and a text message was sent out to Byelaw 3 permit holders notifying them of this fact, and inviting views on opening each bed to be sent in by email to science inbox. Officers have been collating these responses and will

give a verbal report at the TSB meeting. Generally there is overwhelming support so far to opening both beds.

10. Habitats Regulations Assessments have been carried out on both beds, and discussion is on-going with Natural England to finalise these. There were no objections raised by any of the conservation groups represented at BMWG (Natural England, RSPB, Wildlife Trust). Indeed they are supportive of this approach.
11. The HoE has been liaising with other agencies over the collaborative work needed to open the fisheries.
12. Officers have received complaints from Byelaw 3 permit holders over the length of time taken to open the fisheries. Officers have explained that a process has to be followed: that TSB need to discuss the issues if there are objections, that HRAs have to be completed and that multi-agency preparations have to be made.
13. Requests from industry to be authorised to take small amounts as samples for their buyers have been granted.

**Future Potential:**

14. There are still abundant but undersize stocks at Flookburgh (North Morecambe Bay) and Penfold North (Southport). Officers have been working with Environmental Health Officers to ensure the beds are classified should a fishery be opened next year. Further reports on stock will be reported to members early in 2017.
15. A new settlement has appeared at Leasowe (the Wirral) and officers have inspected it. It is too early to say what will happen to this stock which is concentrated mainly in one muddy area fairly close to shore, with up to 7000 cockles of length ~10mm per square metre. It is possible this stock will wash out or suffer natural mortality over winter, or it could spread out across the beds and grow on to provide a substantial size cockle fishery. Further surveys will be conducted in early 2017 and the results reported back to Members. Local agencies have been made aware.

## **Cockle Survey Report – 26<sup>th</sup> September 2016**

Repeat cockle surveys were targeted on beds that showed potential for commercial fisheries earlier in the year.

Results for the following beds are shown below: Morecambe Bay – Pilling Sands, Warton Sands, Flookburgh, Leven Sands, Aldingham and Newbiggin; and Southport – North Penfold, Flookburgh, Leven Sands, Aldingham and Newbiggin; and Southport – North Penfold.

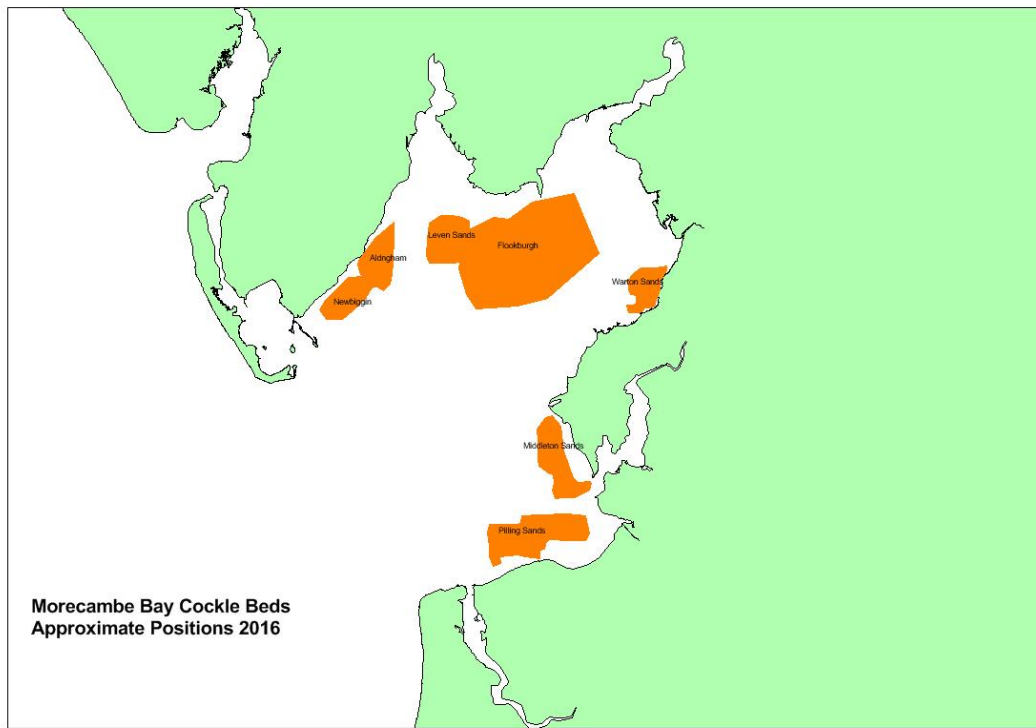


Fig. 1. Morecambe Bay Cockle Beds – Approximate Positions 2016

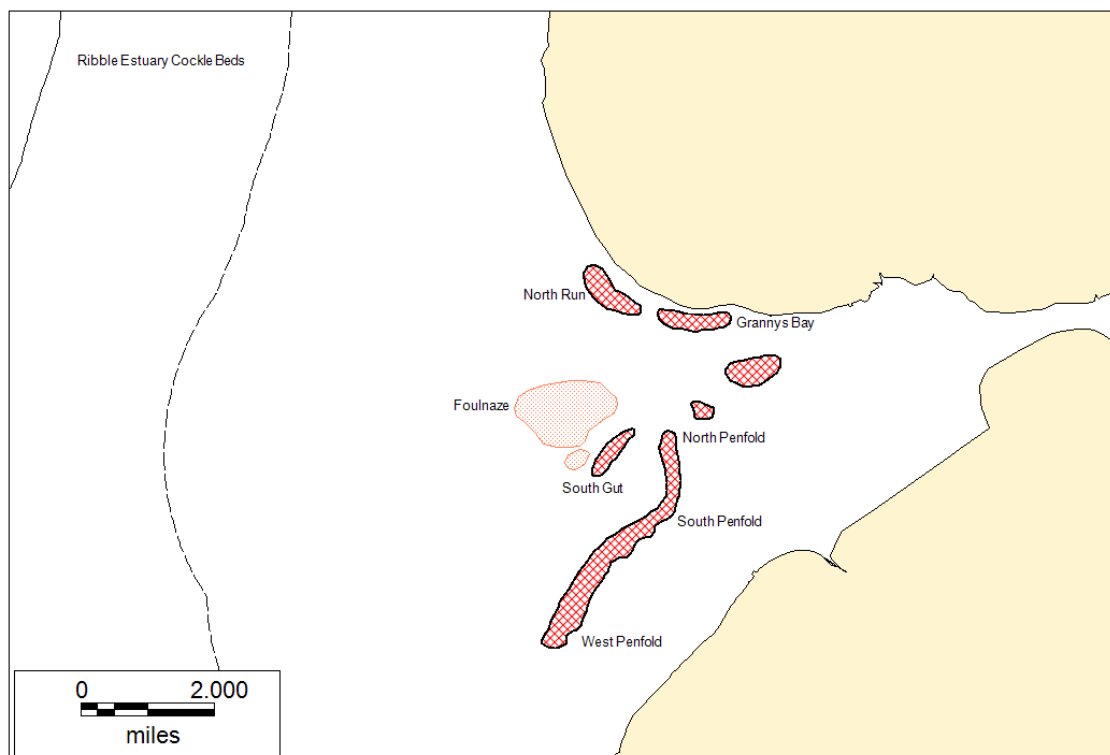


Fig. 2. Southport Cockle Beds – Approximate Positions 2016

**NB.** *The maps are for illustration. Due to highly variable densities over all beds, please ensure when looking at the maps to register the density icons in the legends, as different sizes are used to represent different densities in each map.*

## **Pilling Sands Cockle Survey 22-09-16**

Survey Method: Jumbo and 0.5m<sup>2</sup> quadrat/ 0.1m<sup>2</sup> quadrat and sieve

Forty-six stations were surveyed from a survey grid 500m apart.

Cockle density means were calculated including the zero counts.

Mean density size cockles = 21 per m<sup>2</sup> (min. 0 max. 126)

Mean density undersize cockles = 84 per m<sup>2</sup> (min. 0 max 1440)

### **Size Cockle**

The number of sites that contained densities of 40+ per m<sup>2</sup> was 8 with an average of 74 per m<sup>2</sup> and covering an area of 2 square kilometres. The majority of the size cockle was in the 30-35mm size range.

### **Undersize Cockle**

Twenty sites contained 2016 spat with densities ranging from 2 per m<sup>2</sup> to 28 per m<sup>2</sup>. The map of undersize cockle shows the density of undersize cockle minus the 2016 spat to give an indication of the cockle that is closer to being size. The size class of undersize cockle varied between 12–22mm; the sites with large quantities of undersize cockle were in the 12-15mm size range and the sites with less undersize cockle were in the 18-22mm size range.

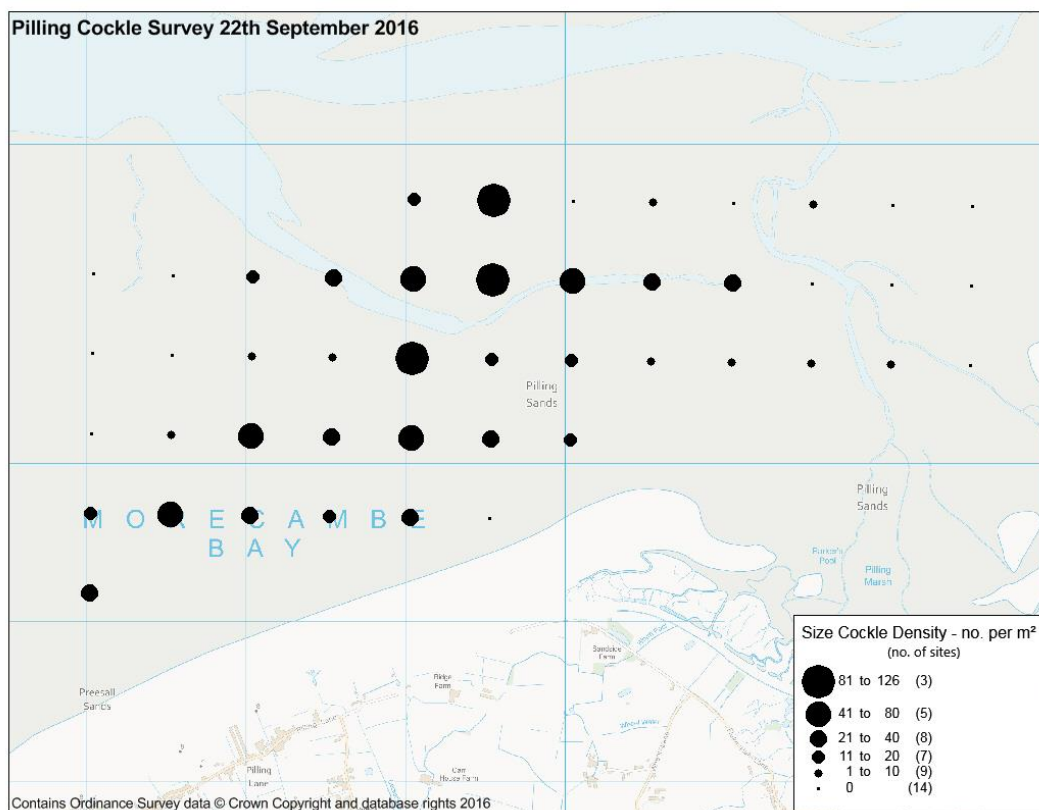


Fig. 3. Pilling Cockle Survey Results – Size Cockle Densities. 22<sup>nd</sup> September 2016

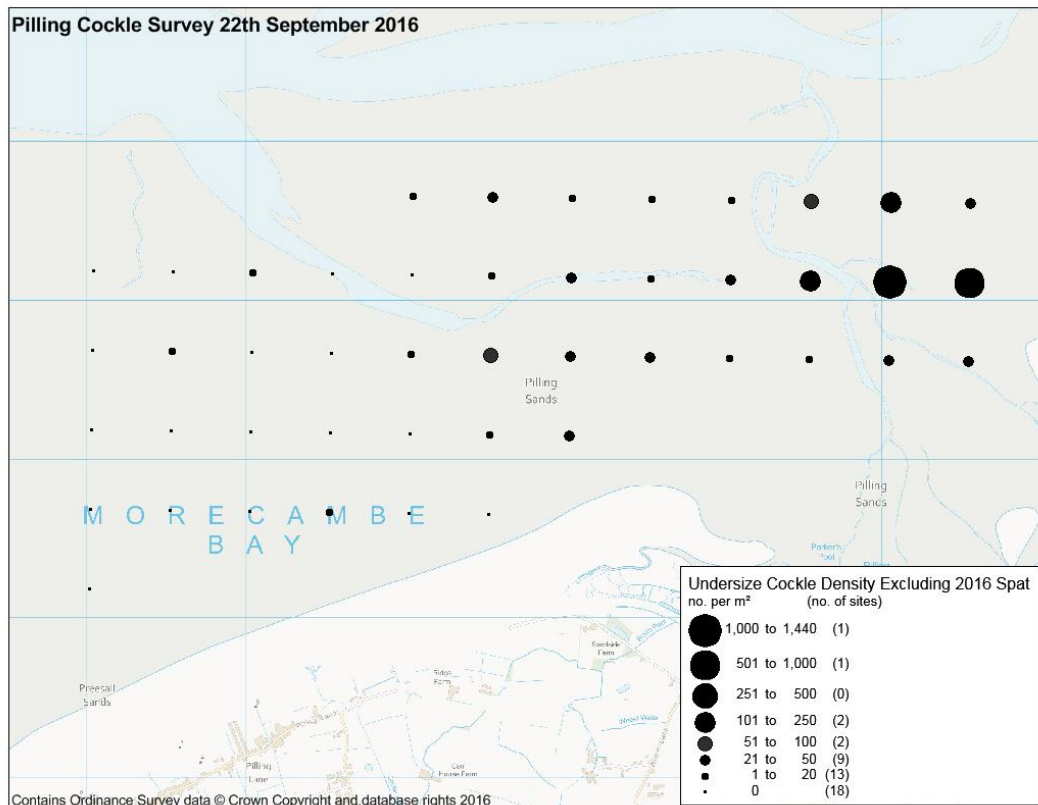


Fig. 4. Pilling Cockle Survey Results – Undersize Cockle Densities excluding 2016 spat. 22<sup>nd</sup> September 2016

The local authority have been contacted and asked to resume sampling to ensure the bed is classified should a fishery go ahead. It had been temporarily de-classified due to lack of stock.

#### **Warton Sands Cockle Survey 06/09/2016**

Survey method: jumbo and 0.5 m² quadrat, some 0.1 m quadrat and sieves were used.

Fifty-seven stations were surveyed, on a 250 m survey grid. Some of the stations were added in amongst the prescribed survey points as it was unsafe to access all the survey points - the sand is very soft.

Mean cockle density was calculated including zero counts

Mean density size cockles = 2.7 per m² (min. 0 max. 30)

Mean density undersize cockles = 14.7 per m² (min. 0 max. 86)

Twenty-five of the 57 stations sampled had no cockle. The dense patches of undersize cockle found in the May survey (08/05/16) have not persisted.

Mapping basemap used shows saltmarsh on eastern edge of cockle bed – this is no longer present to this extent.



## **Flookburgh Cockle Survey 19/09/2016 and 20/09/2016**

Survey Method: Jumbo and 0.5m<sup>2</sup> quadrat

One hundred and fifty-two stations were surveyed over two days. One hundred and forty-four stations were taken from a survey grid 500m apart and eight stations were added. The main purpose of the survey was to examine growth of the 2015 year class following high densities recorded during surveys on 05/07/2016 and 06/07/2016. The following data was recorded during these surveys.

Number in each year class

Number of size and undersize

Number in each of the following size classes:

<10mm, 10-15mm, 15-20mm, 20-25mm, 25-30mm, >30mm

Shell length (mm) of all the cockles from 14 sites (to obtain length frequency data of a sub-sample).

Cockle density means were calculated including the zero counts.

Mean density size cockles = 8 per m<sup>2</sup> (min. 0 max. 118)

Mean density undersize cockles = 42 per m<sup>2</sup> (min. 0 max. 380)

The additional data collected also allowed an up-to-date assessment of the relationship between shell length and 'passage' through the 20mm gauge, to confirm work carried out in the past by scientists from NW&NWSFC that the 20mm square gauge equates to a minimum legal shell length of 26mm. The variation is due to the thickness/'fatness' at the 'heel' of the shell.

- Cockles shell length 24mm - 91% undersize (will pass through gauge) and 9% oversize (will not pass through gauge)
- Cockles shell length 25mm - 48% undersize and 53% oversize
- Cockles shell length 26mm - 6% undersize and 94% oversize.

Sample size 579 cockles (491 undersize and 88 oversize)

On both days 1000+ oystercatchers were seen on the cockle bed, the highest number observed during surveys and inspections in recent years.

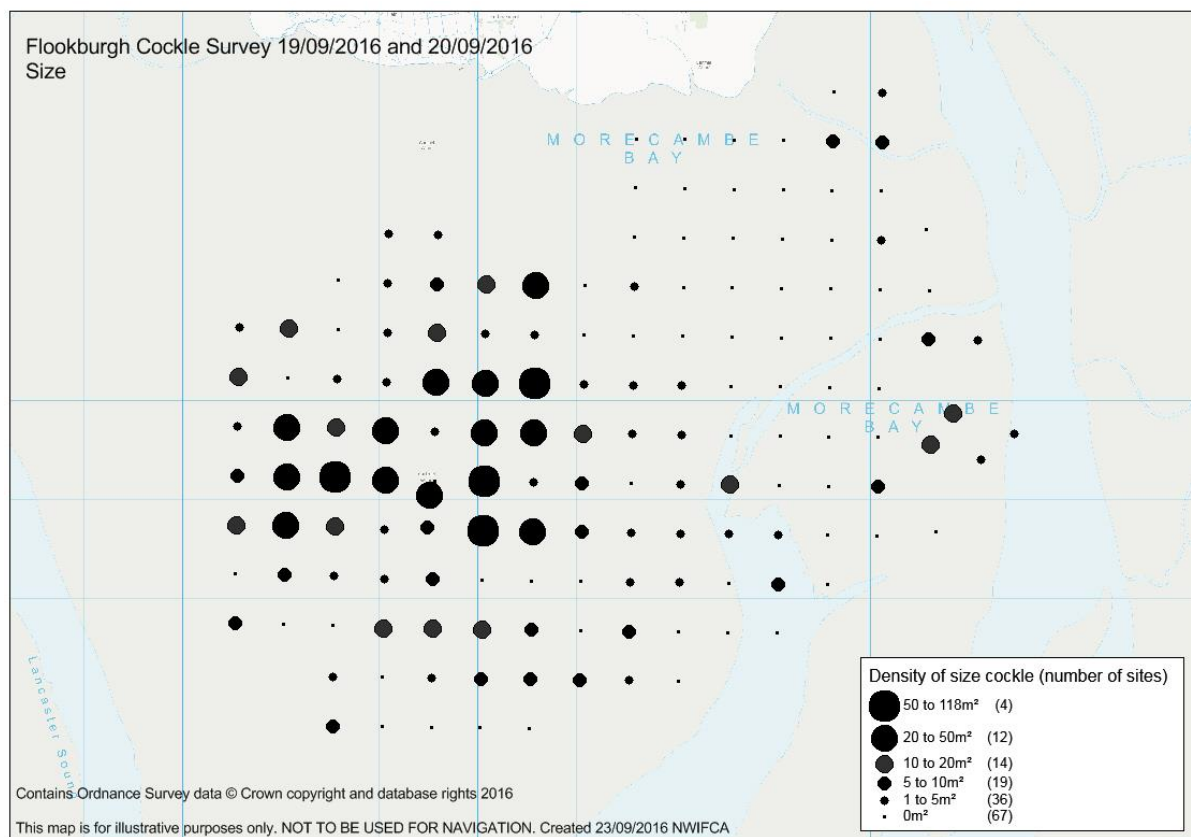


Fig. 7. Flookburgh Cockle Survey Results – Size Cockle Densities 19<sup>th</sup> and 20<sup>th</sup> September 2016



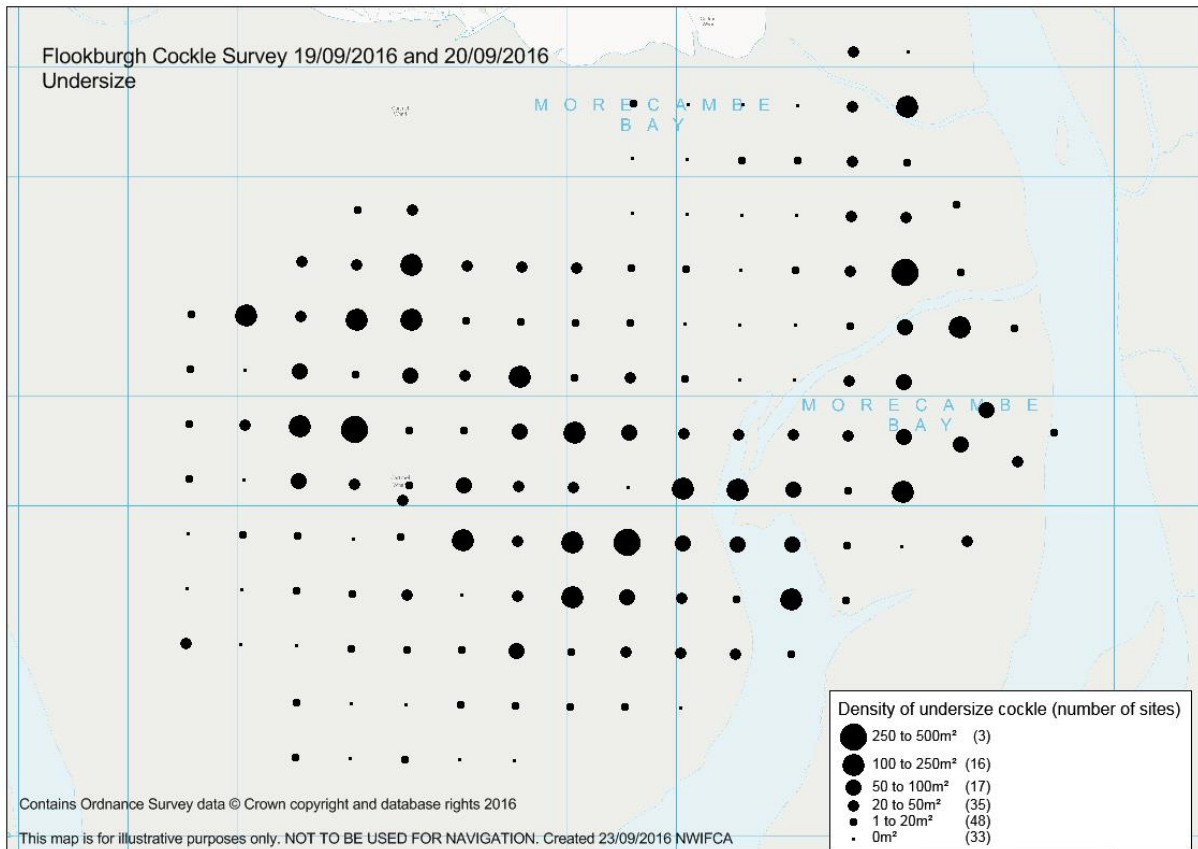


Fig. 8. Flookburgh Cockle Survey Results – Undersize Cockle Densities 19<sup>th</sup> and 20<sup>th</sup> September 2016

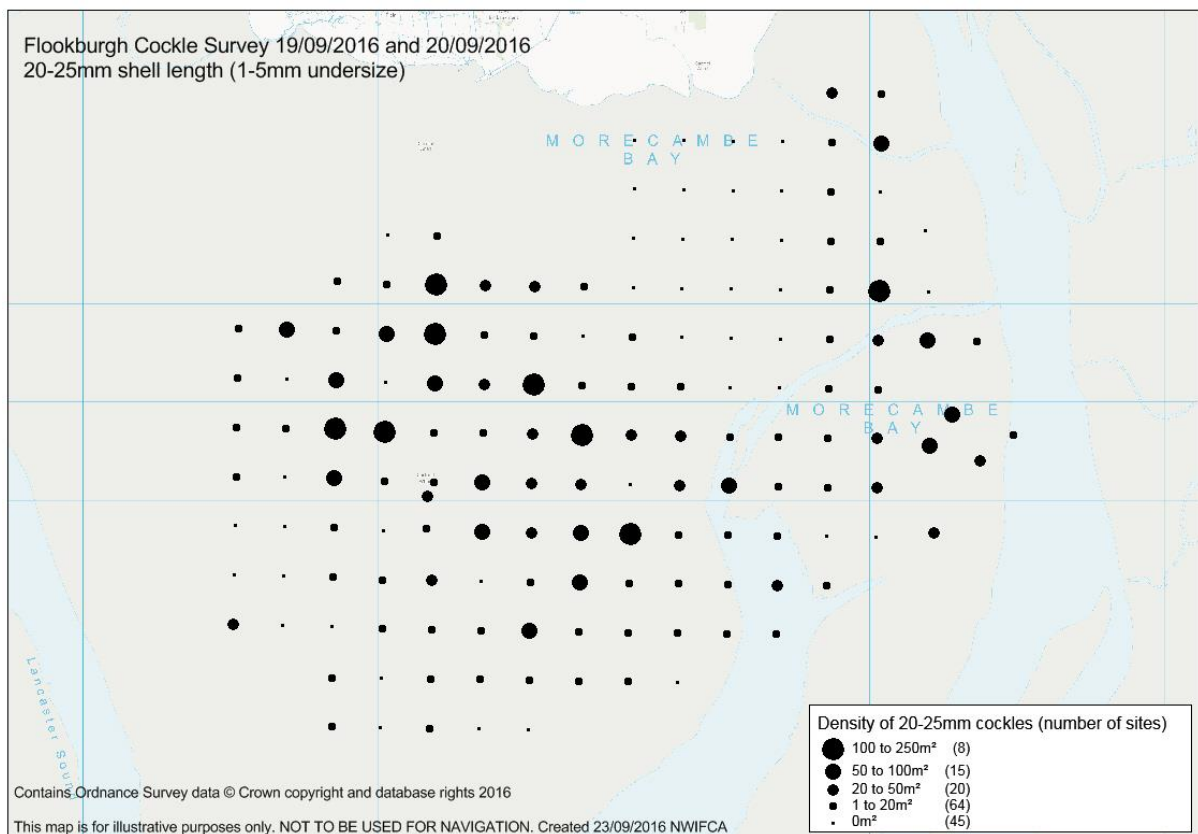


Fig. 9. Flookburgh Cockle Survey Results –20-25mm (ie. just undersize) Cockle Densities 19<sup>th</sup> and 20<sup>th</sup> September 2016



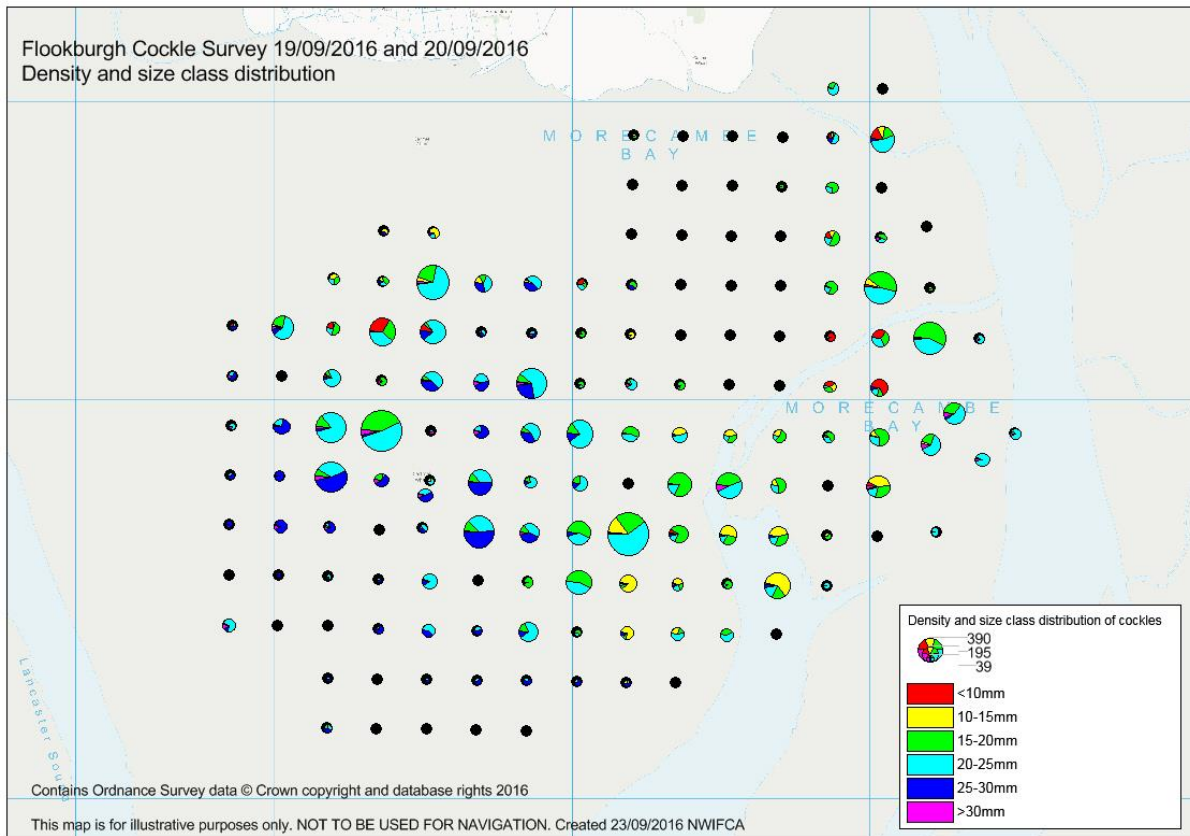


Fig. 10. Flookburgh Cocker Survey Results – Density and Size Class Distribution 19<sup>th</sup> and 20<sup>th</sup> September 2016

### Leven Sands Cocker Survey 18/08/16

Seventy-seven stations were surveyed, 72 in the 250 m survey grid and 5 extra north of the grid. Cocker density per m<sup>2</sup> was calculated including zero counts.

Mean density size cockle = 19 per m<sup>2</sup>

Mean density undersize cockle = 36 per m<sup>2</sup>

There were a handful of very large cockles > 40mm- likely to be the large ones predicted to die off back in April. A small proportion of spat was found at 18 sample points. The majority of the cockles were around 18-22mm.

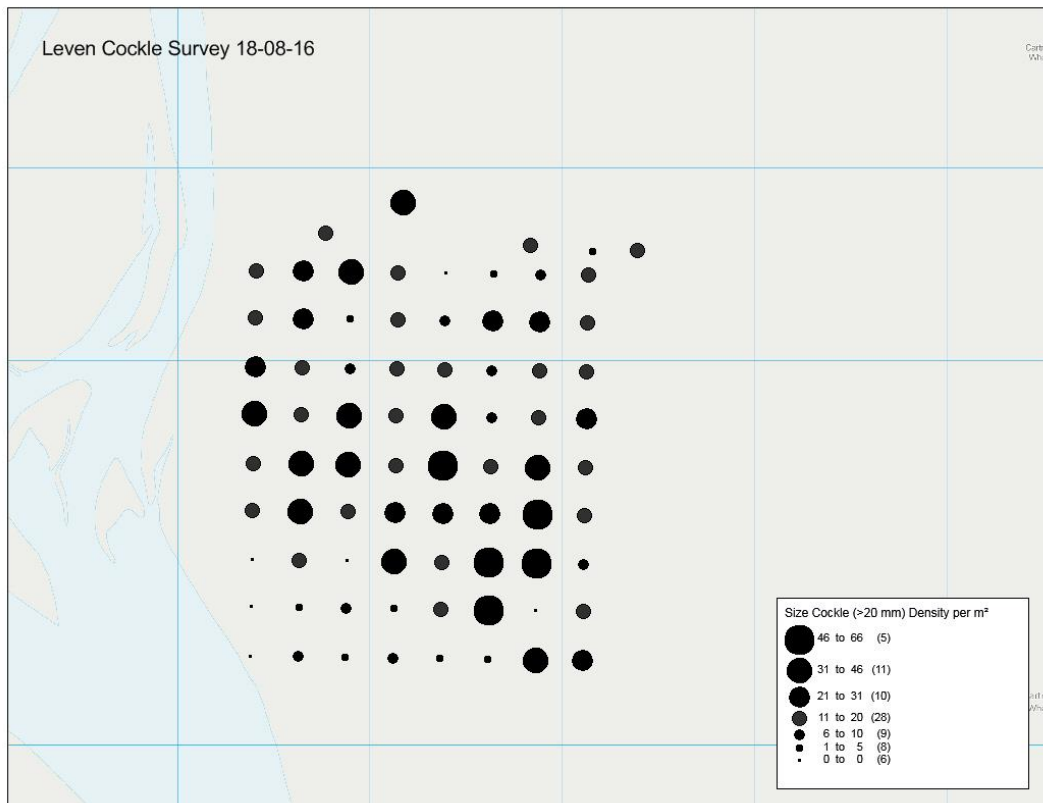


Fig. 11. Leven Sands Cockle Survey Results – Size Cockle Densities 18<sup>th</sup> August 2016

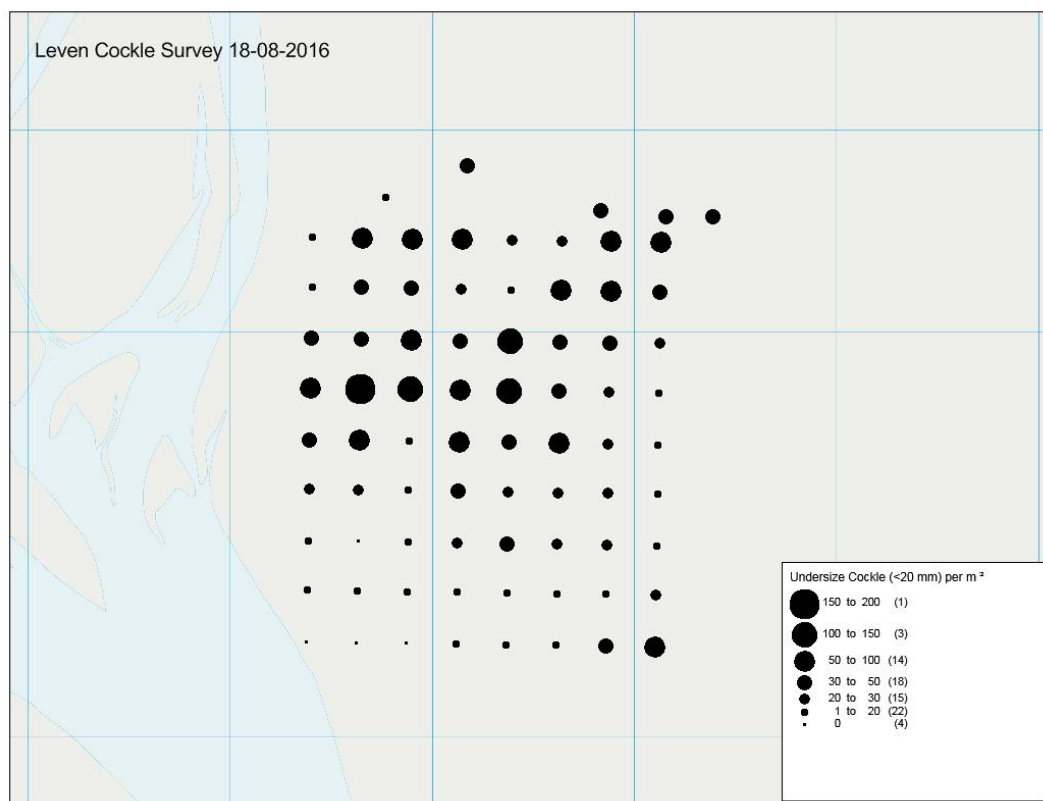


Fig. 12. Leven Sands Cockle Survey Results – Undersize Cockle Densities 18<sup>th</sup> August 2016

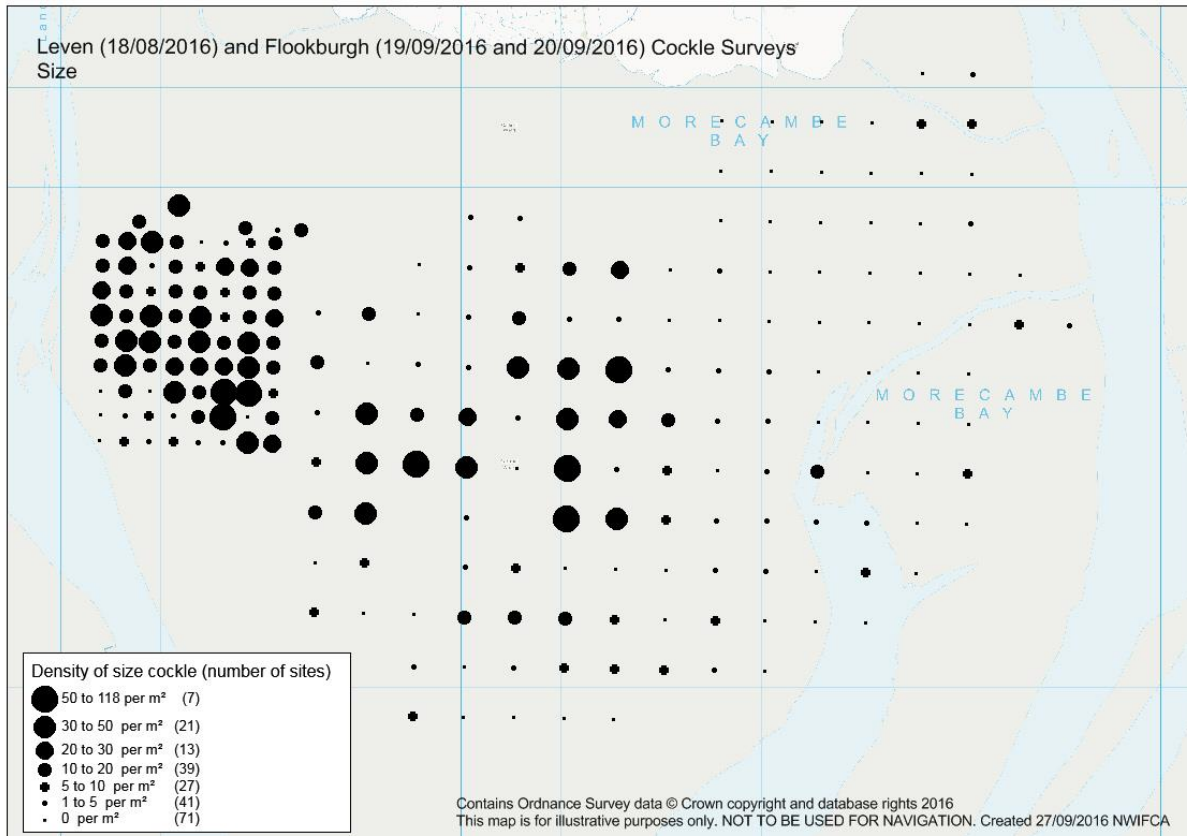


Fig. 13. Illustration of size cockle densities of Flookburgh and Leven Sands – neighbouring beds

### **Aldingham Cockle Survey 03-09-16**

Survey Method: Jumbo and 0.5m<sup>2</sup> Quadrat

A grid of 40 survey points 500m apart was generated from previous surveys of the site. Thirty-five of these points were surveyed. Five survey points were not reached due to a deep channel. The previous problem of not being able to get to a further 15 points was rectified by going further up the first channel until the water was shallow enough to cross.

The ground was soft going on the inner survey area near to this first channel so care was needed, but firm over the majority of it.

Cockle density means were calculated including the zero counts (only 3 sites with zero counts of undersize).

Mean density size cockles = 4 per m<sup>2</sup> (min. 0 max. 40)

Mean density undersize cockles = 7 per m<sup>2</sup> (min. 0 max 68)

Much of the undersize from the spring has gone. Cefas have been notified of the results and it is anticipated that hygiene sampling will cease on this bed for the time being as there is no commercial stock.

### **Newbiggin Cockle Survey 03-08- 2016**

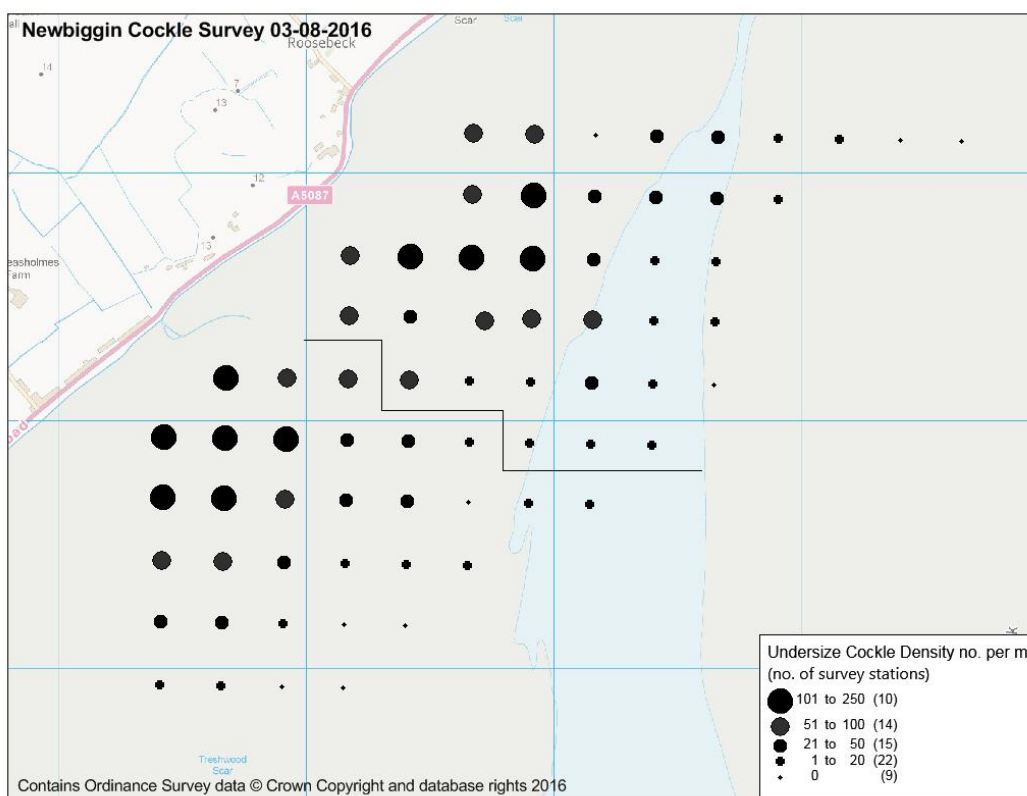
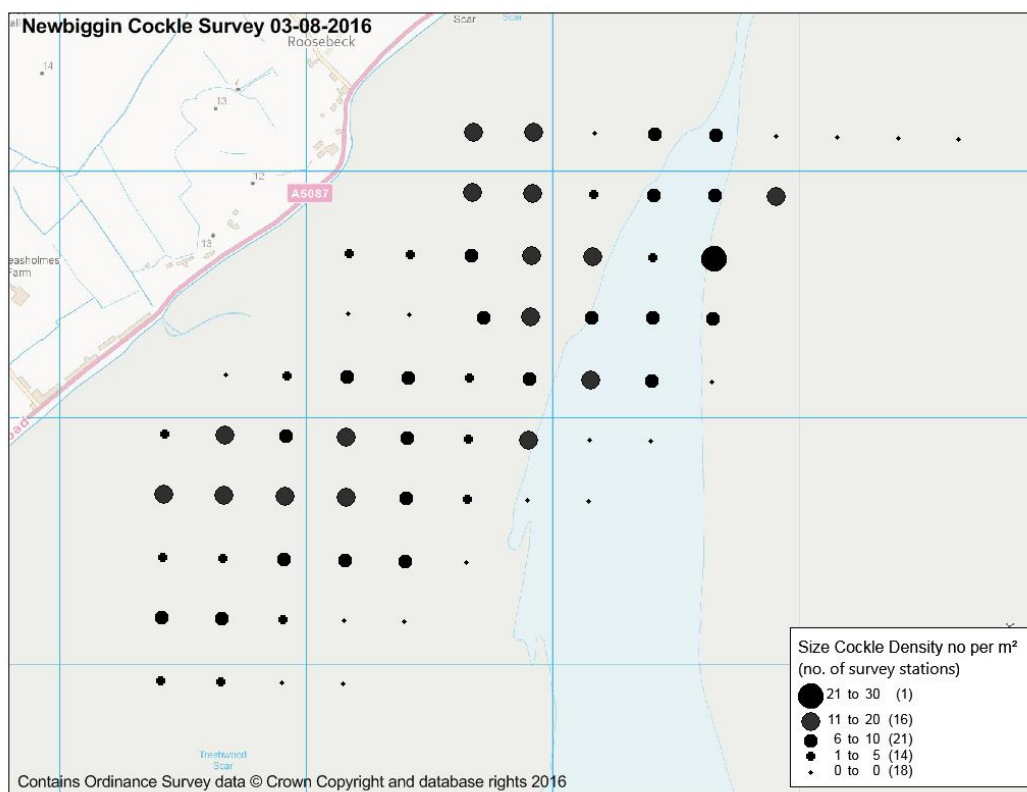
Survey Method: 0.5m<sup>2</sup> quadrat and jumbo. 70 stations were surveyed, survey stations 250m apart.

Cockle density means were calculated including the zero counts.

Mean density size cockles = 6.6 per m<sup>2</sup> (min. 0 max. 28)

Mean density undersize cockles = 60.8 per m<sup>2</sup> (min. 0 max. 238)

The size of the undersize cockle varied between 8-20mm. The sites north of the line indicated on the map in Figure 14 had 80 – 90% of cockles that were just passing through a cockle gauge and were thus 18-20mm shell length. Sites to the south of the line indicated on the map had a variety of sizes of cockle (8-20mm) with areas of small cockle (8-10mm) found higher up on the shore. Many of the size cockles were very large (Year Class - 2013+. Length – 35-50mm).



## Penfold North Cackle Survey 21-09-16

Survey Method: Jumbo and 0.5m<sup>2</sup> quadrat / 0.1m<sup>2</sup> quadrat and sieve

Twenty-five stations were surveyed from a survey grid 500m apart to update the progress of the dense area of cockle last surveyed on the 23<sup>rd</sup> August 2016. The area of dense cockle still persists but has not grown much and is still undersize.

Areas around the dense cockle area were surveyed to see if cockle had spread out and to ensure full coverage of the area. A further twenty-one sites were surveyed in the Penfold area.

Cockle density means for the different areas were calculated including the zero counts.

#### Overall – total area surveyed

Mean density size cockles = 6 per m<sup>2</sup> (min. 0 max. 70)  
Mean density undersize cockles = 340 per m<sup>2</sup> (min. 0 max 1800)

#### Dense Area Only

Mean density size cockles = 17 per m<sup>2</sup> (min. 0 max. 70)  
Mean density undersize cockles = 1101 per m<sup>2</sup> (min. 540 max 1800)  
Mean density 2015 cockle = 583 per m<sup>2</sup> (min. 100 max 1410) – Estimated 90% of cockle in 18 – 24mm  
Mean density 2016 cockle = 533 per m<sup>2</sup> (min. 210 max 790) – All cockle 4-8mm

#### Surrounding Areas

Mean density size cockles = 3 per m<sup>2</sup> (min. 0 max. 20)  
Mean density undersize cockles = 134 per m<sup>2</sup> (min. 0 max 1440)  
Mean density 2015 cockle = 12 per m<sup>2</sup> (min. 6 max 90)  
Mean density 2016 cockle = 123 per m<sup>2</sup> (min.0 max 1440)

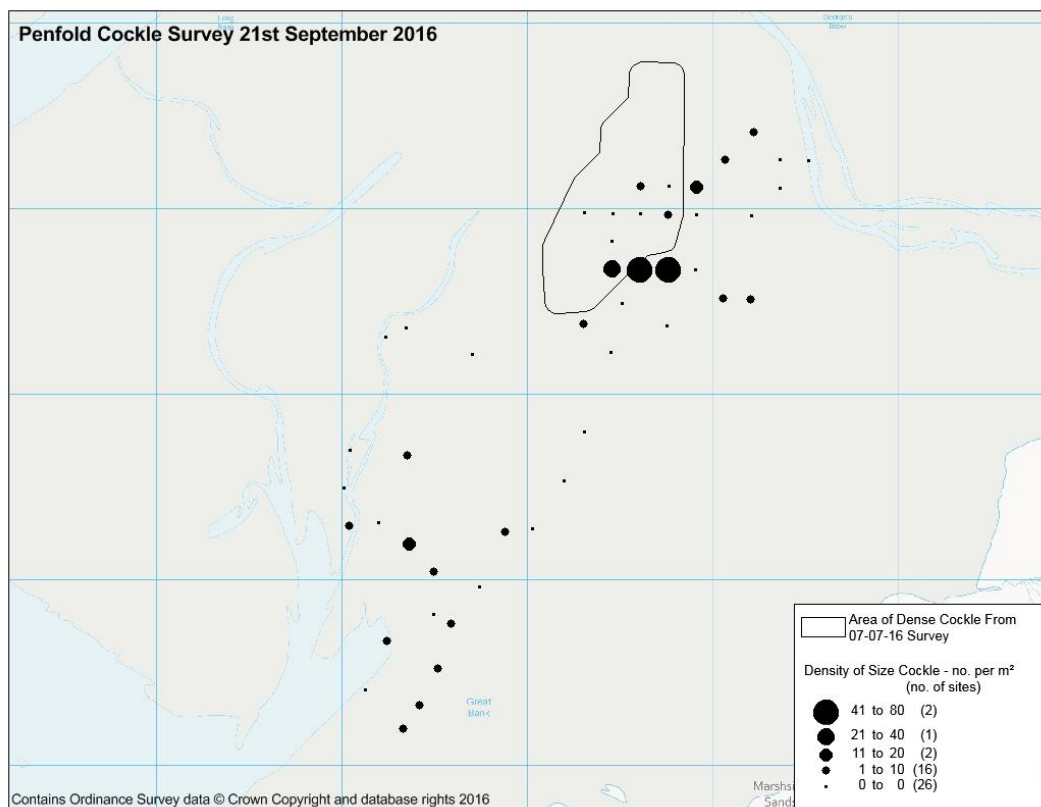


Fig. 16. Penfold Cockle Survey Results – Size Cockle Densities 21<sup>st</sup> September 2016

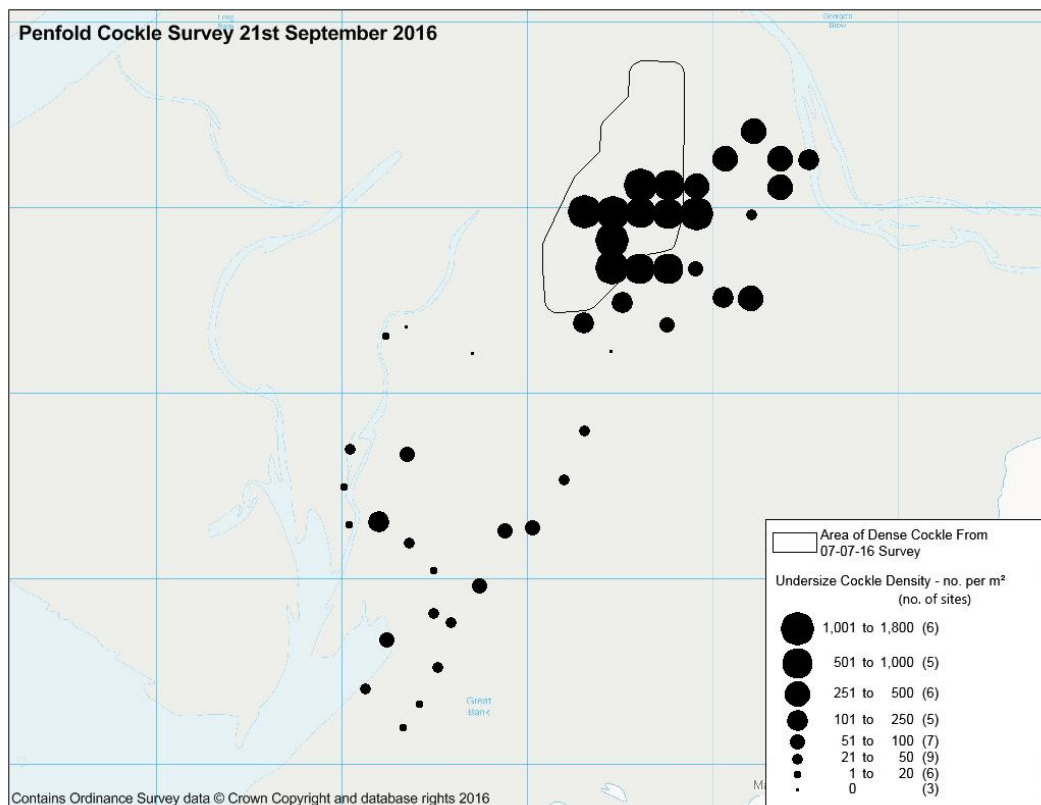


Fig. 17. Penfold Cockle Survey Results – Undersize Cockle Densities 21<sup>st</sup> September 2016

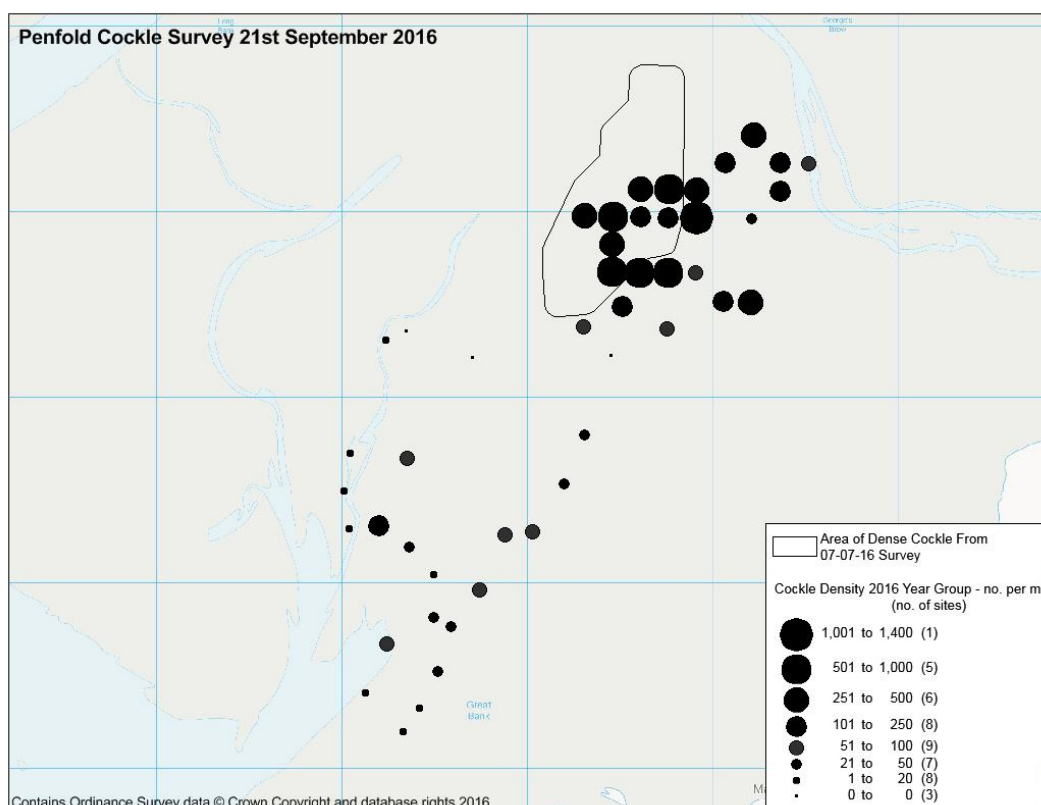


Fig. 18. Penfold Cockle Survey Results – 2016 Year Class Cockle Densities 21<sup>st</sup> September 2016



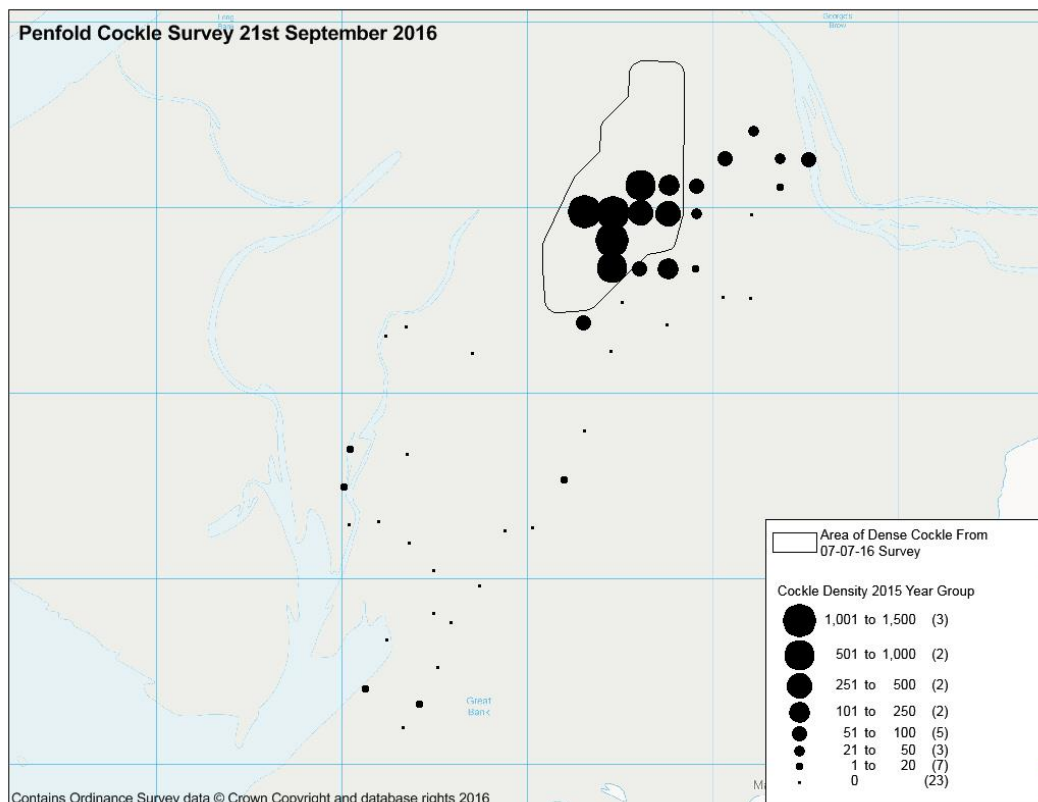


Fig. 19. Penfold Cockle Survey Results – 2015 Year Class Cockle Densities 21<sup>st</sup> September 2016

## Solway Mussels

Science Officer Haines boarded Solway Protector to carry out a survey of sub-tidal mussel in the Solway with the SP crew using a small dredge. It is five years since the Authority was able to carry out this survey due to equipment issues and the team are delighted to have been able to resume the work. The results are given below.

Survey dredge: converted dredge with no tooth bar. 16mm mesh inner liner.  
Tows: 2 minute tows at each survey location

65 stations were surveyed from a survey grid 500m apart. The tow length varied depending on tide flow between 82m and 375m. Many of the stations could not be surveyed as the water at high water was too shallow for the vessel.

The quantity and percentage of the types of mussel was recorded. Category of mussel type below:-

### Mussel classification table

Code	Mussel Type	Size	Extra info
SP	Spat	1 – 10mm	
S	Seed	10 – 25mm	
SMC	Small mature clean	25 – 45mm	
MC	Mature clean	45mm +	No barnacles, or only one or two
MSB	Mature, some barnacles	45mm +	Majority of shell can be seen
MB	Mature barnacled	45mm +	Most of shell covered in barnacles
OB	Old barnacled	45mm +	Almost none of shell can be seen, round with barnacles

The survey stations where the dredge was full or half full the majority of the mussel was Small Mature Clean and varied in size between 25-45mm with the majority being in the 30-35mm range.

Officers will contact industry in the Solway area and discuss results with them and report back to Members if further action is needed.

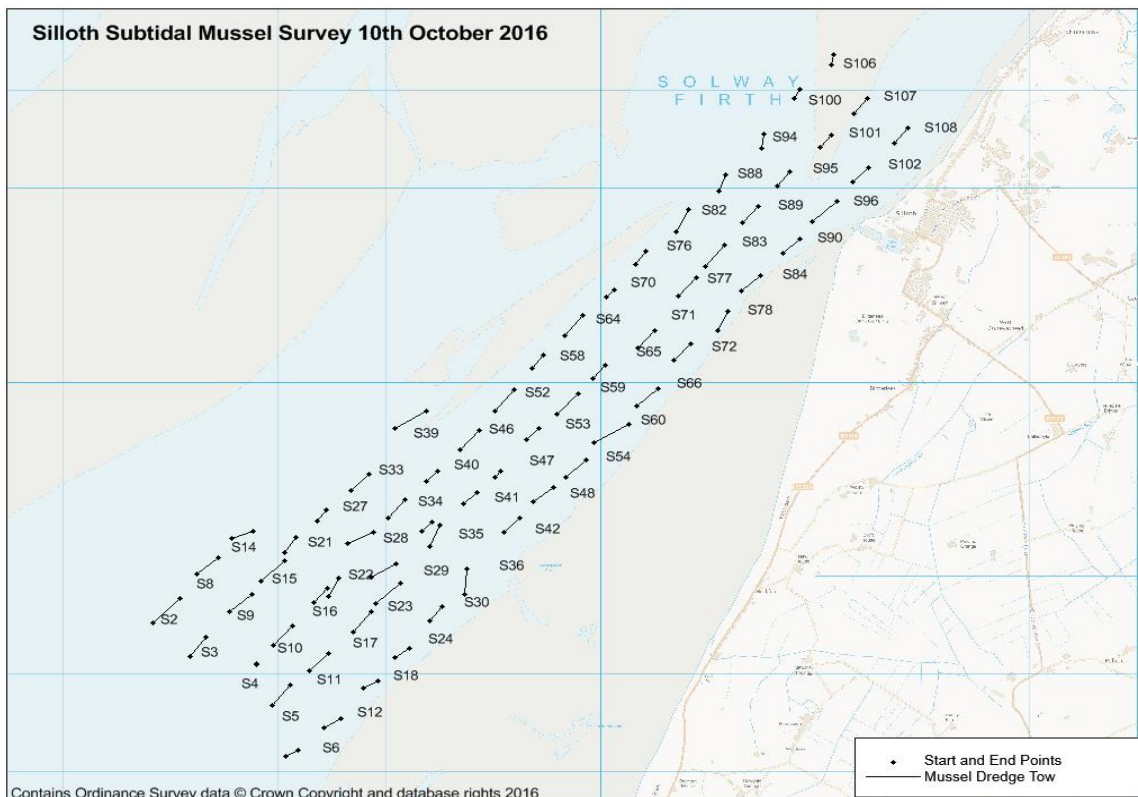


Fig. 20. Solway sub-tidal mussel survey – start and end points of dredge tows.

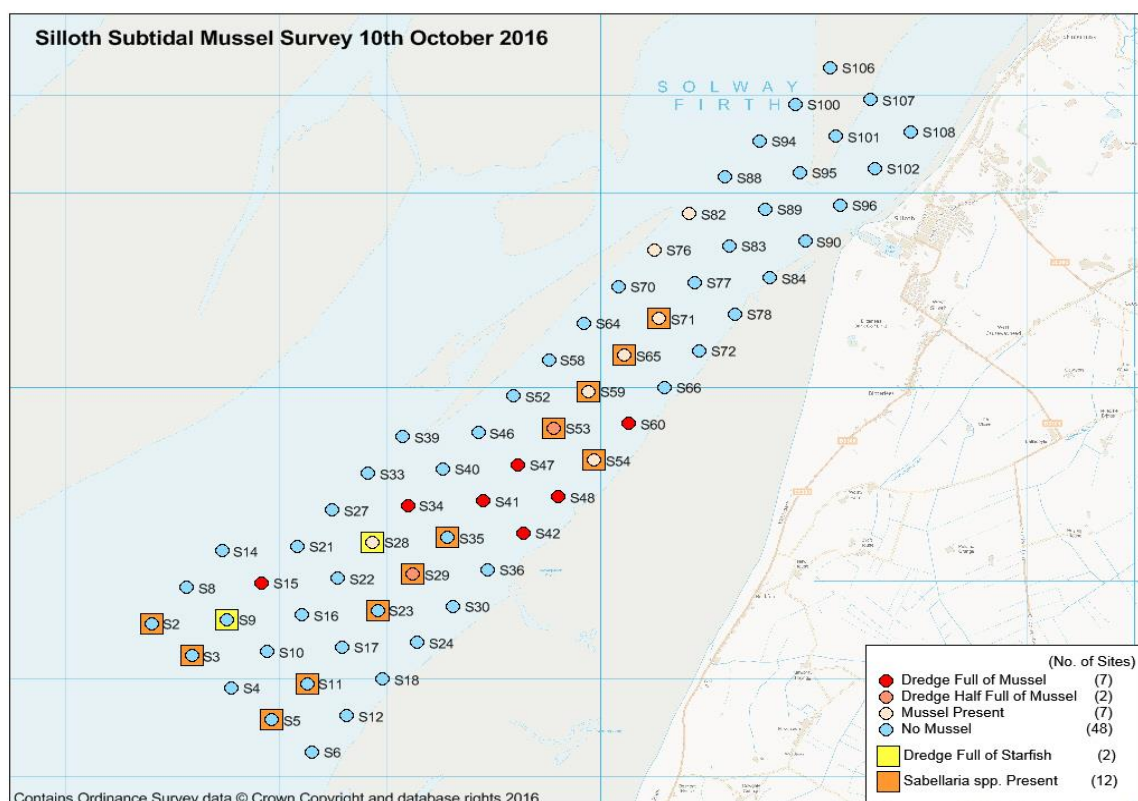


Fig. 21. Solway Sub-tidal Mussel Survey results.

Science Officers  
 21<sup>st</sup> October 2016