

Cockle Survey Report – 26th 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, South Penfold, West Penfold, South Gut, Foulnaze, North Penfold, North Run, Grannys Bay.

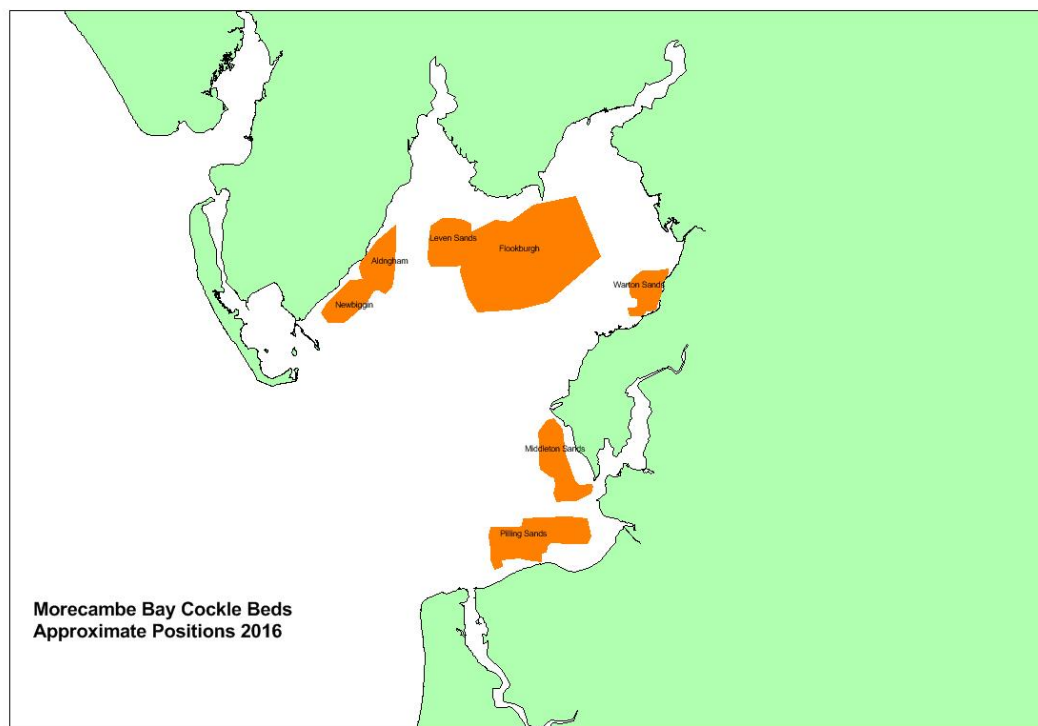


Fig. 1. Morecambe Bay Cockle Beds – Approximate Positions 2016

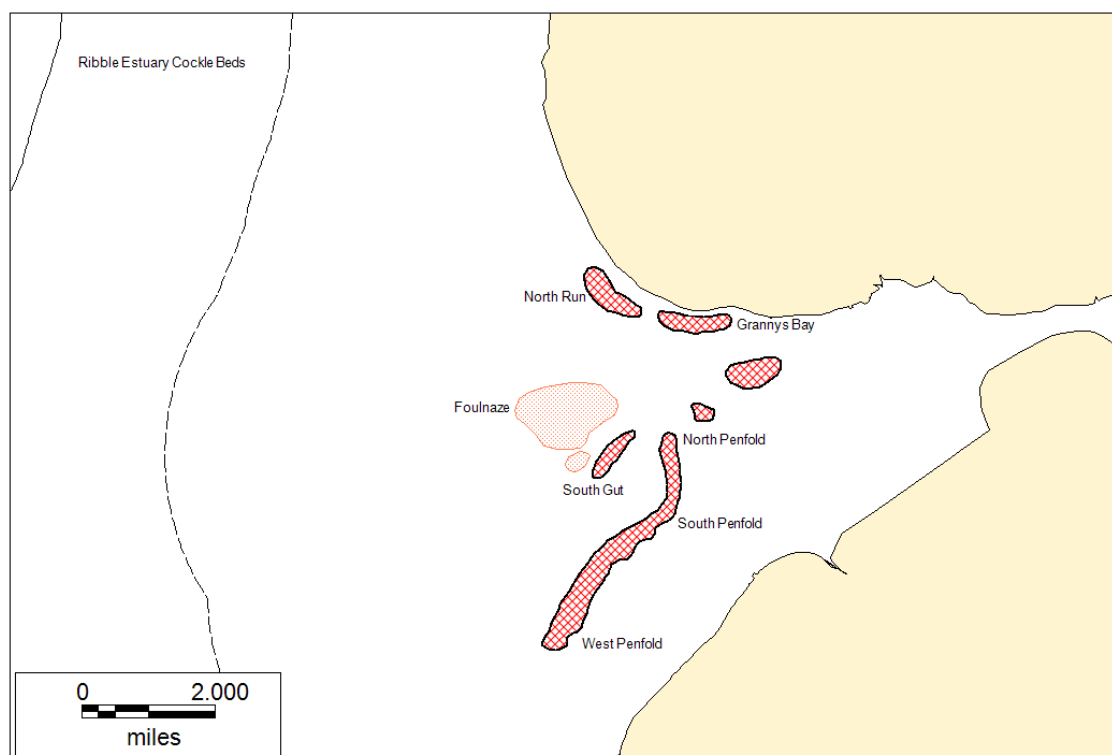


Fig. 2. Southport Cockle Beds – Approximate Positions 2016

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 0.5m² quadrat/ 0.1m² 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 m² (min. 0 max. 126)

Mean density undersize cockles = 84 per m² (min. 0 max 1440)

Size Cockle

The number of sites that contained densities of 40+ per m² was 8 with an average of 74 per m² 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 m² to 28 per m². 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.

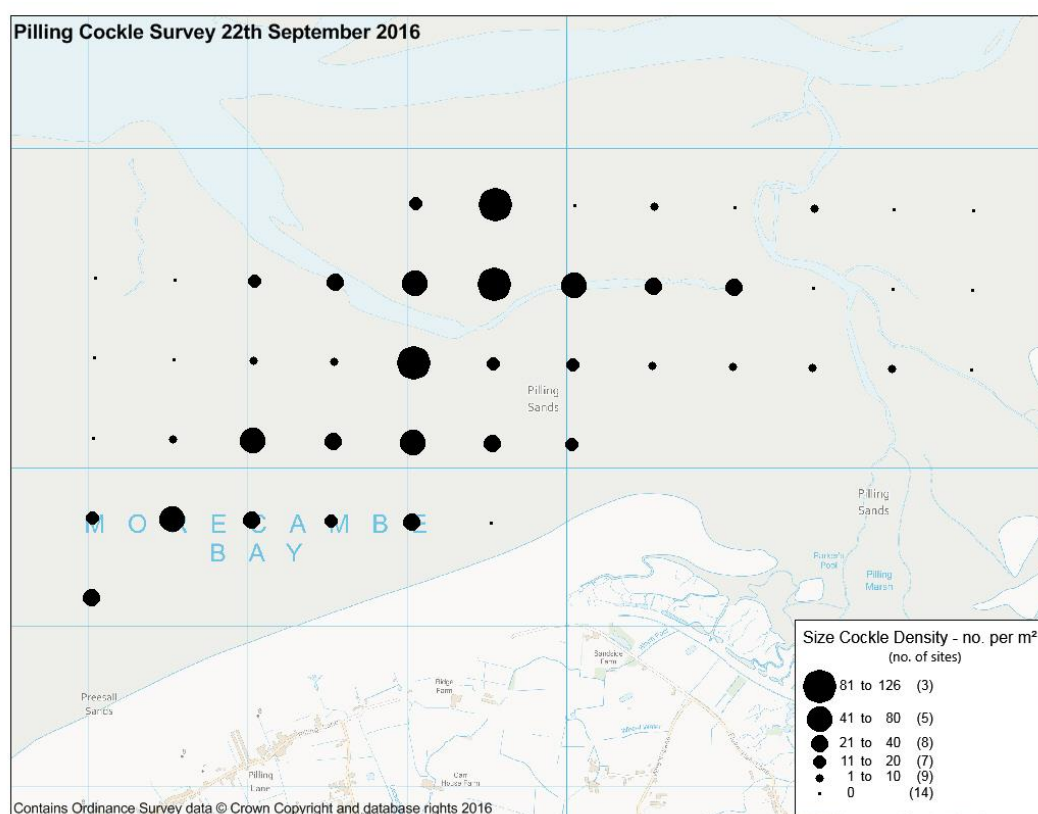


Fig. 3. Pilling Cockle Survey Results – Size Cockle Densities. 22nd September 2016

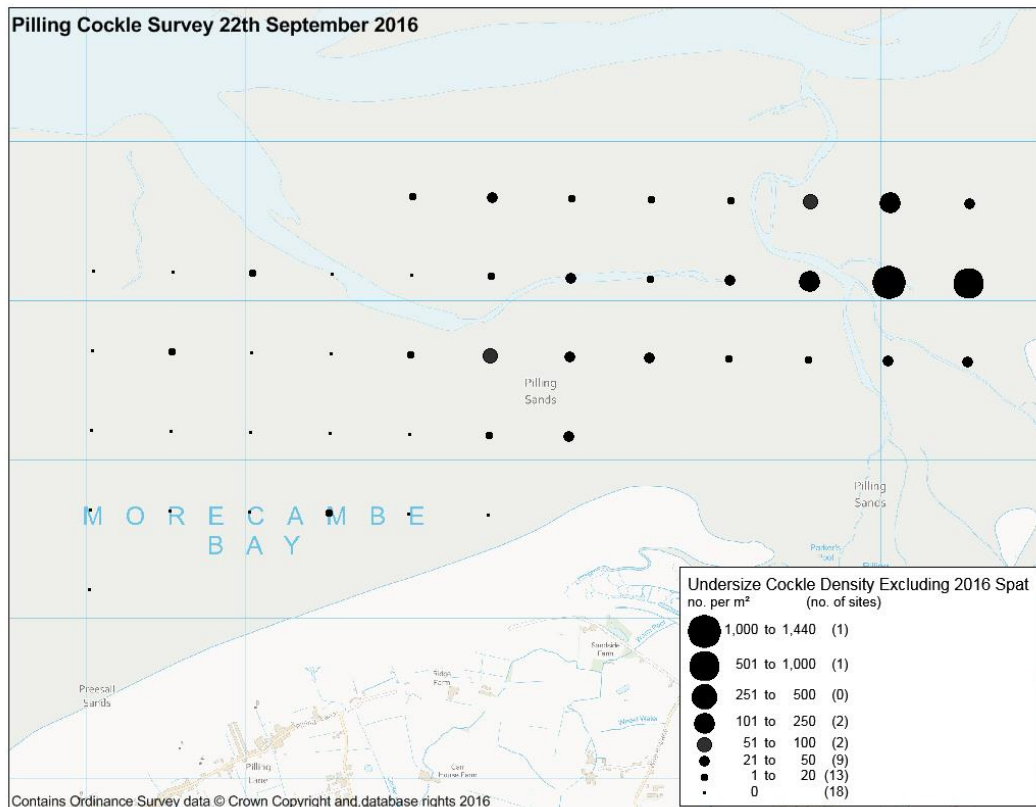


Fig. 4. Pilling Cockle Survey Results – Undersize Cockle Densities excluding 2016 spat. 22nd September 2016

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.

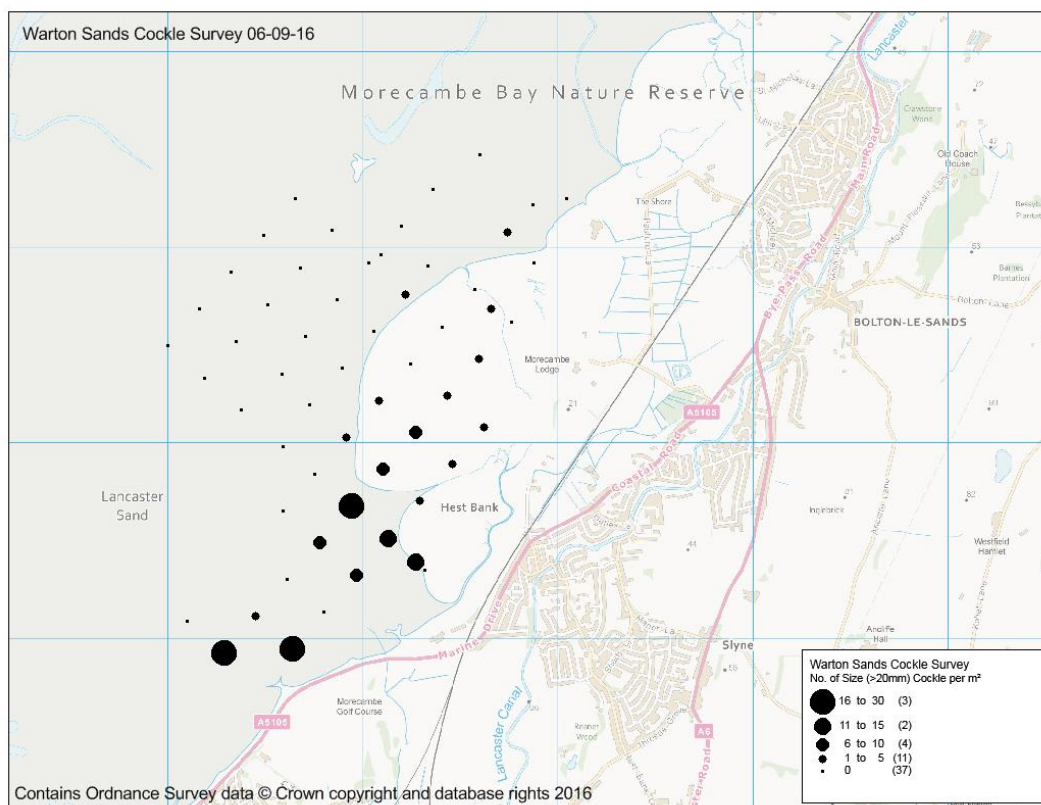


Fig. 5. Warton Sands Cockle Survey Results – Size Cockle Densities 6th September 2016

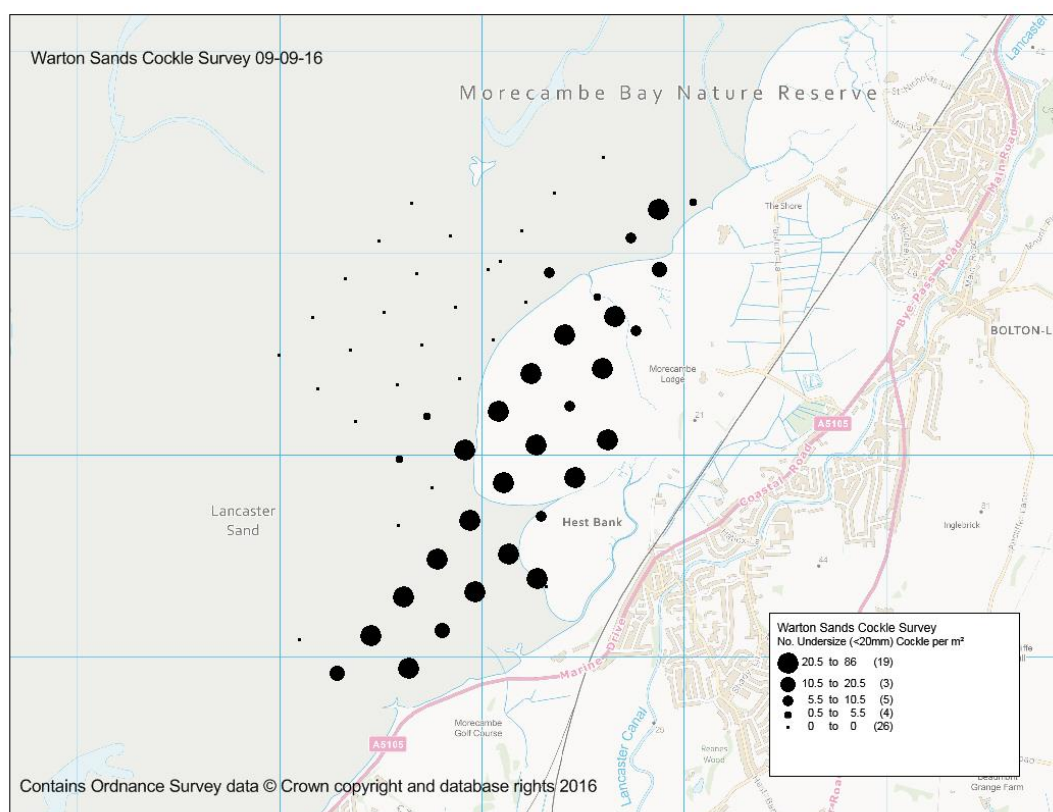


Fig. 6. Warton Sands Cockle Survey Results – Undersize Cockle Densities 6th September 2016

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

Survey Method: Jumbo and 0.5m² 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 m² (min. 0 max. 118)

Mean density undersize cockles = 42 per m² (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.

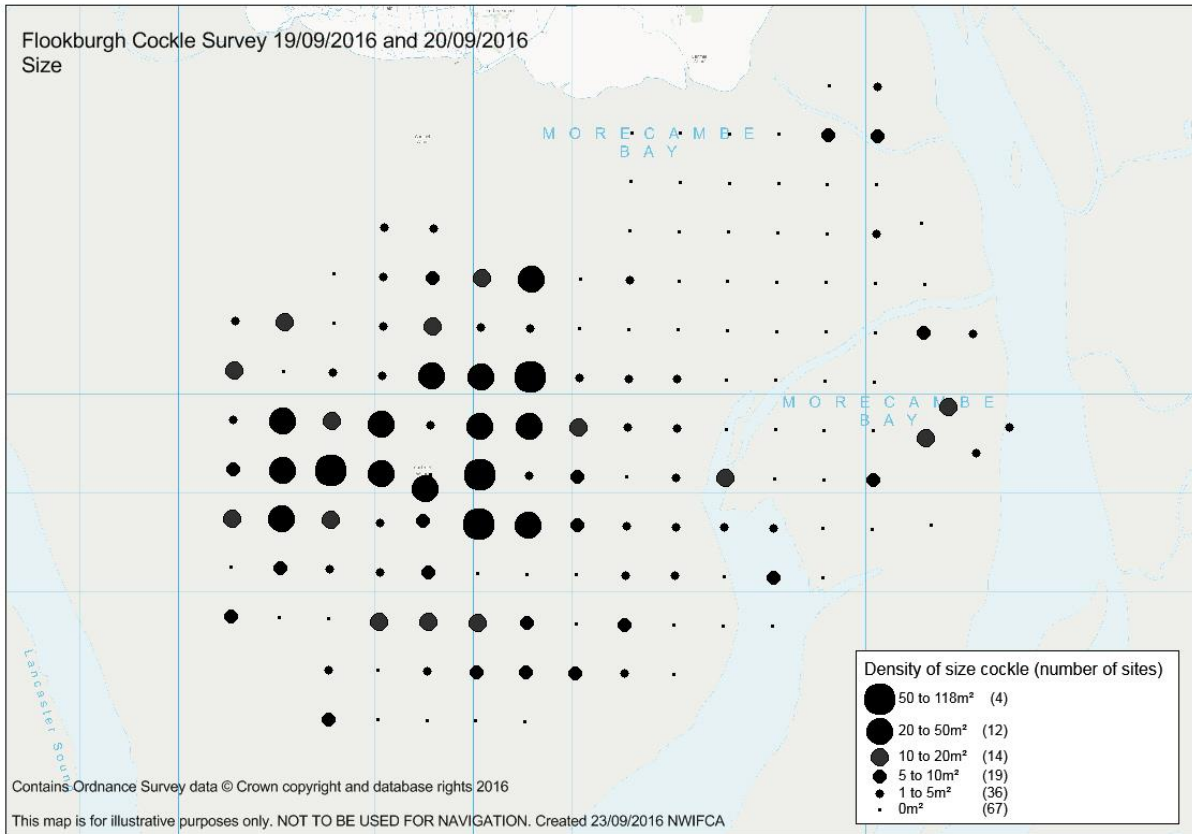


Fig. 7. Flookburgh Cockle Survey Results – Size Cockle Densities 19th and 20th September 2016

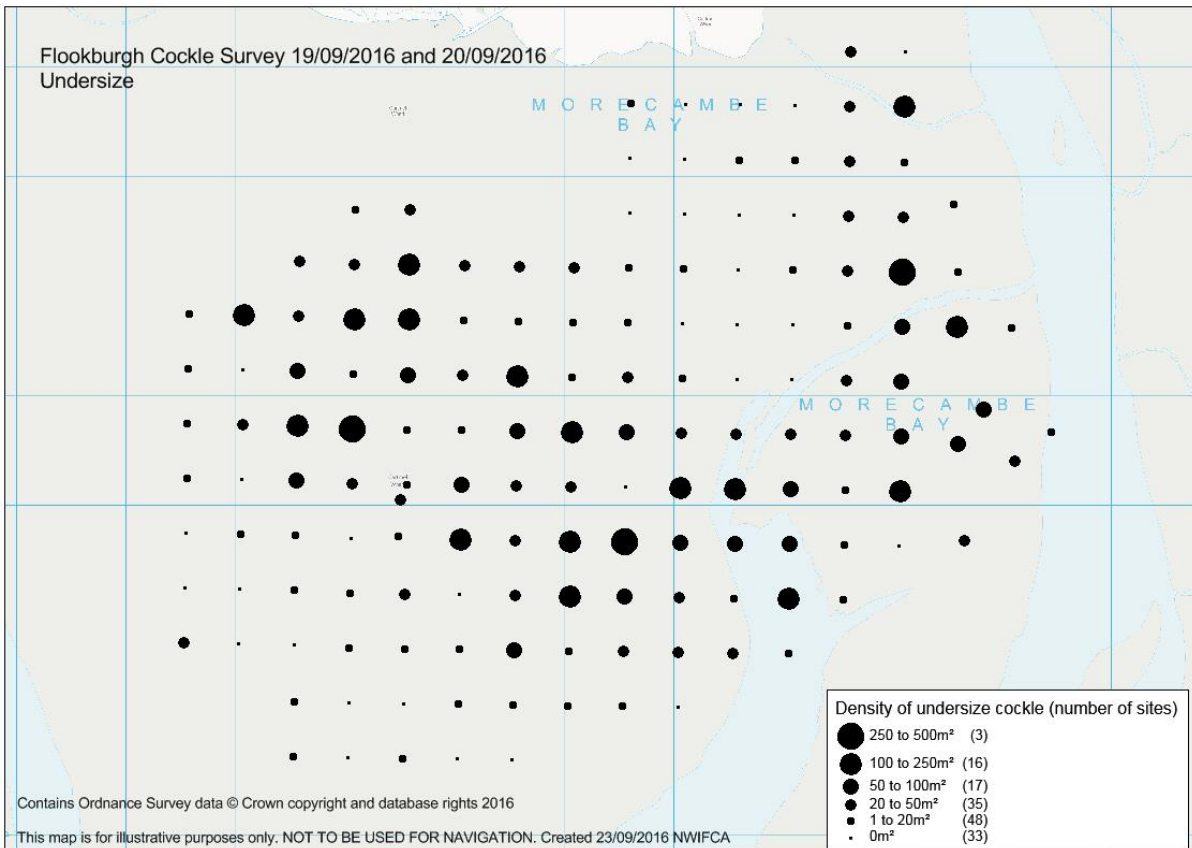


Fig. 8. Flookburgh Cockle Survey Results – Undersize Cockle Densities 19th and 20th September 2016

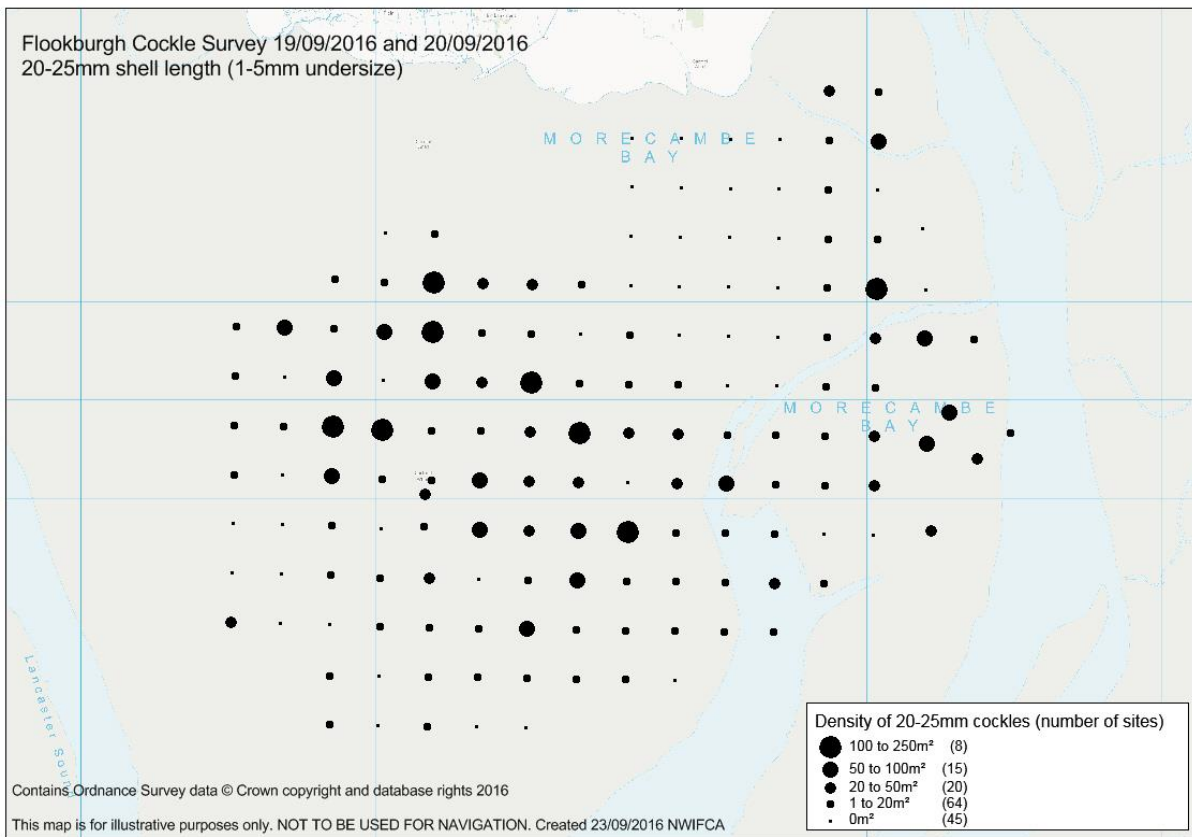


Fig. 9. Flookburgh Cockle Survey Results –20-25mm (ie. just undersize) Cockle Densities

19th and 20th September 2016

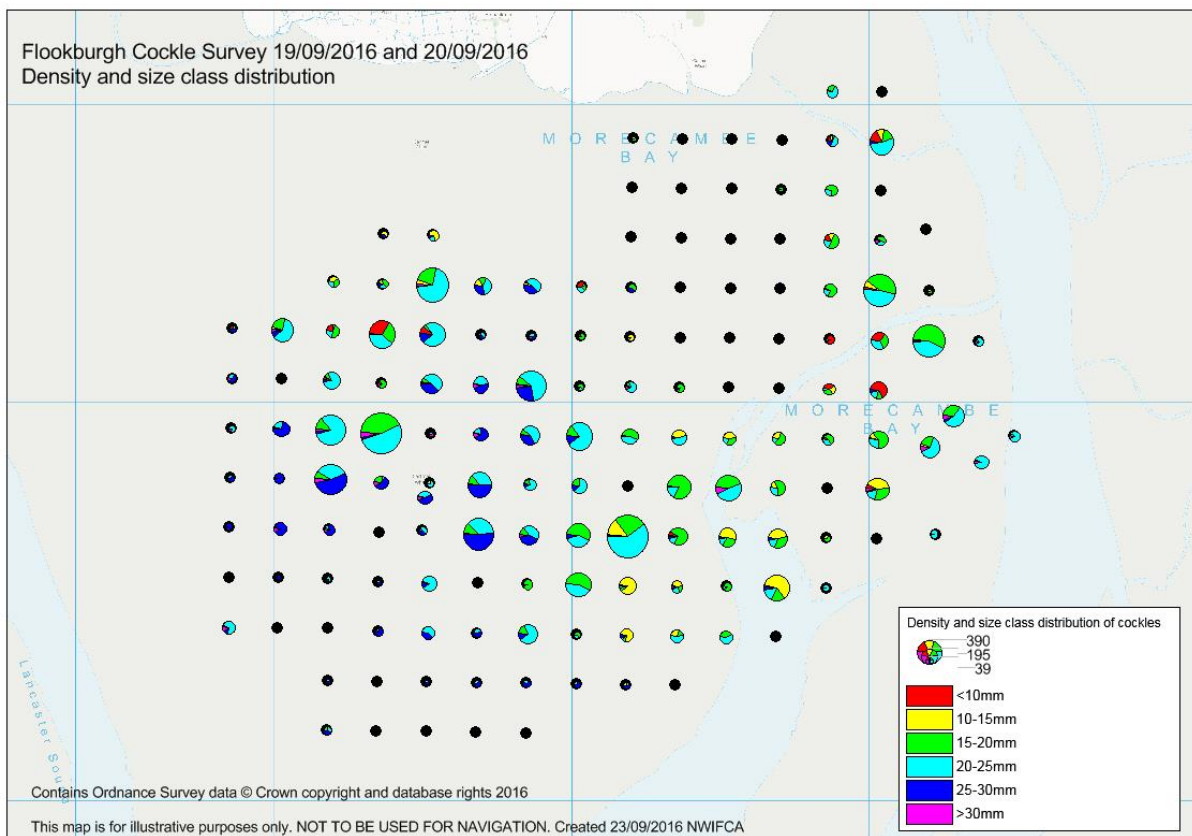


Fig. 10. Flookburgh Cockle Survey Results – Density and Size Class Distribution 19th and 20th September 2016

Leven Sands Cockle Survey 18/08/16

Seventy-seven stations were surveyed, 72 in the 250 m survey grid and 5 extra north of the grid.

Cockle density per m² was calculated including zero counts.

Mean density size cockle = 19 per m²

Mean density undersize cockle = 36 per m²

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.

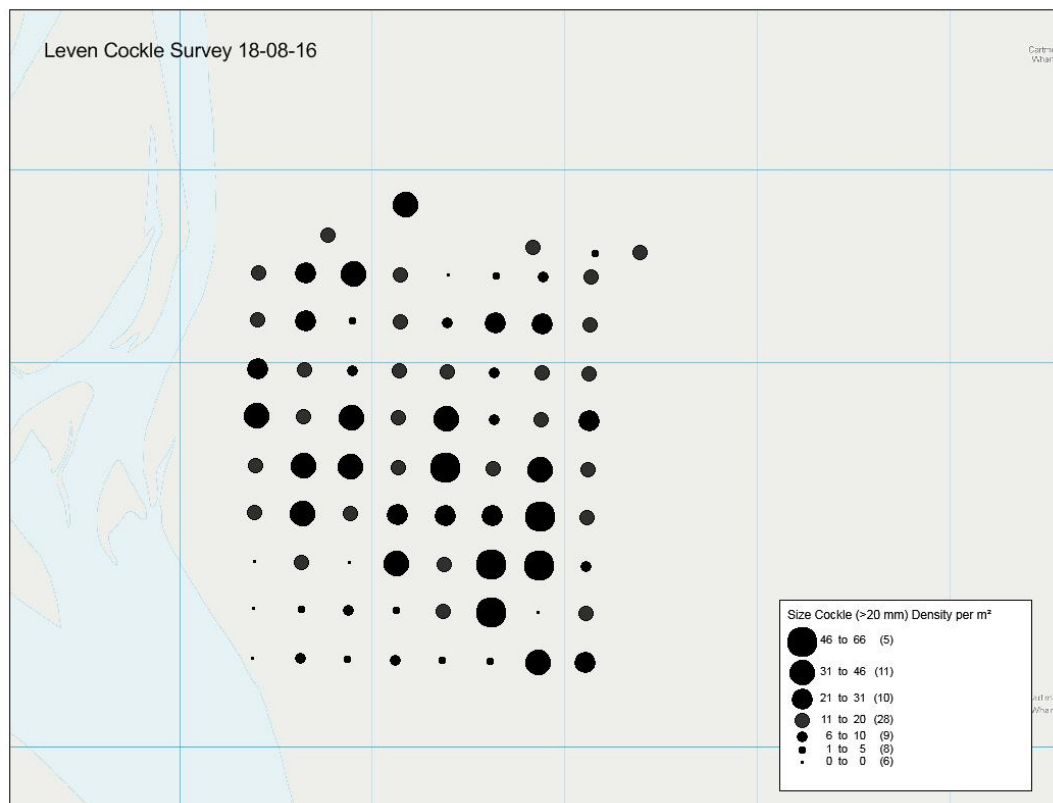


Fig. 11. Leven Sands Cocker Survey Results – Size Cockle Densities 18th August 2016

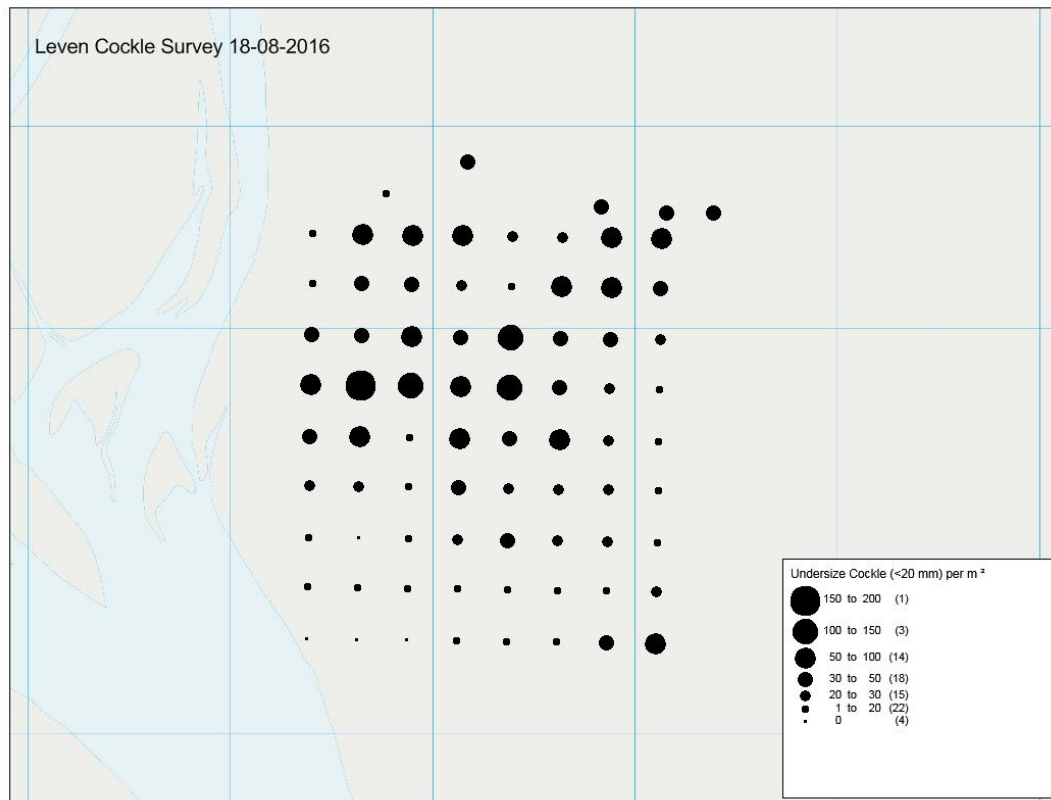


Fig. 12. Leven Sands Cockle Survey Results – Undersize Cockle Densities 18th August 2016

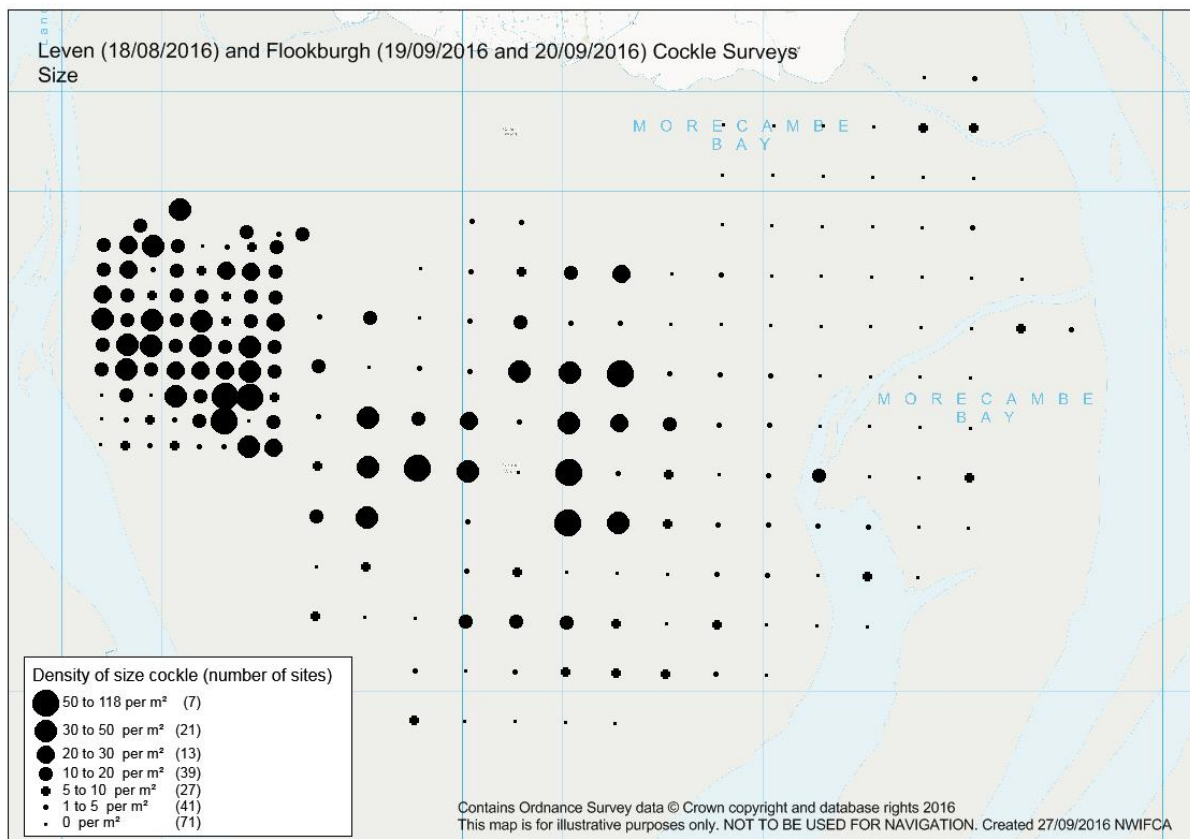


Fig. 13. Illustration of size cockle densities of Flookburgh and Leven Sands – neighbouring beds

Aldingham Cockle Survey 03-09-16

Survey Method: Jumbo and 0.5m² 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 m² (min. 0 max. 40)

Mean density undersize cockles = 7 per m² (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: 0.5m² 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 m² (min. 0 max. 28)

Mean density undersize cockles = 60.8 per m² (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).

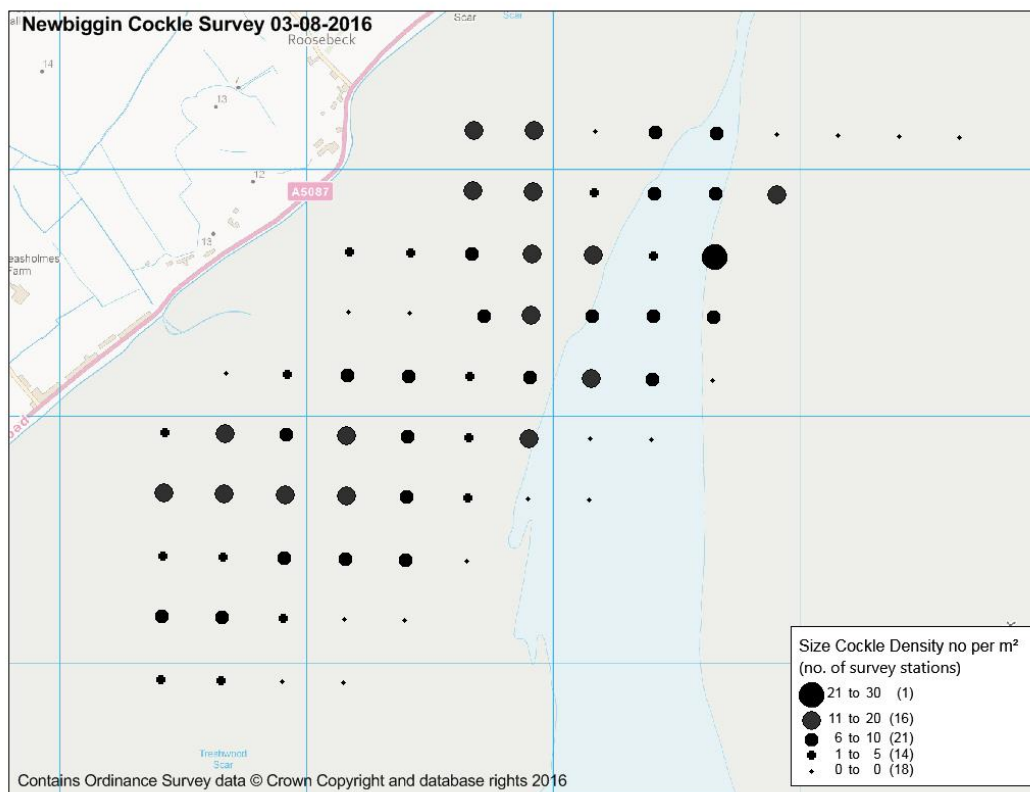


Fig. 14. Newbiggin Cockle Survey Results – Size Cockle Densities 3rd August 2016

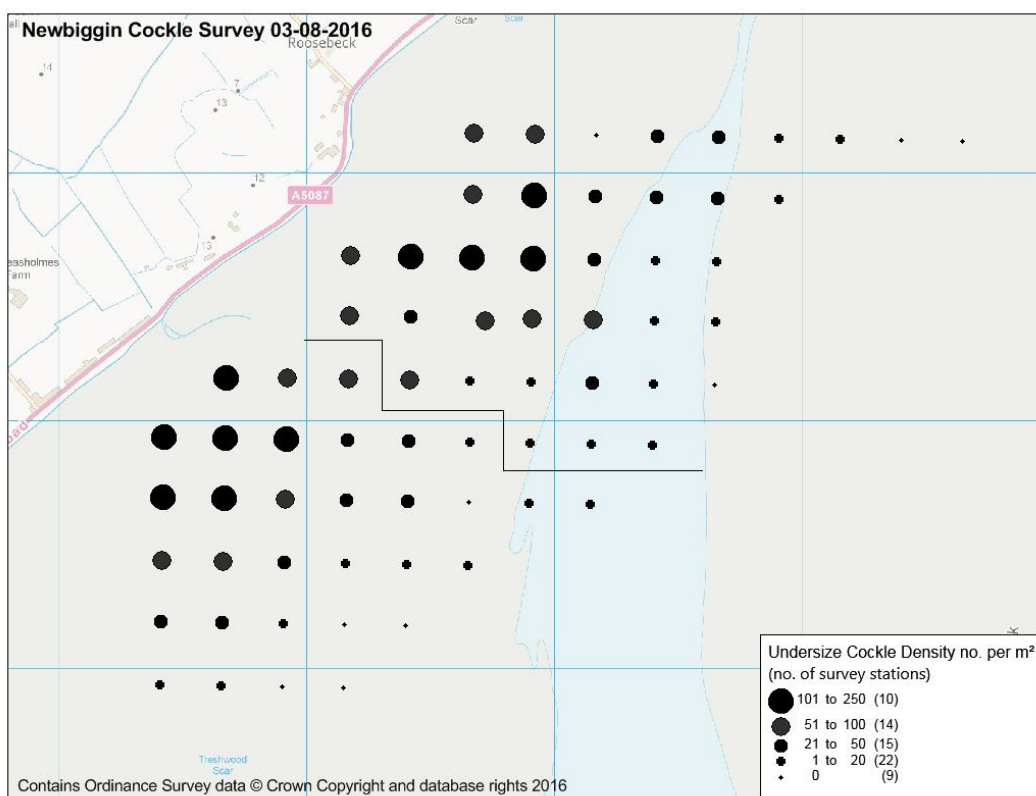


Fig. 15. Newbiggin Cockle Survey Results – Undersize Cockle Densities 3rd August 2016

Penfold North Cockle Survey 21-09-16

Survey Method: Jumbo and 0.5m² quadrat / 0.1m² 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 23rd 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 ² (min. 0 max. 70)
Mean density undersize cockles	= 340 per m ² (min. 0 max 1800)

Dense Area Only

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

Surrounding Areas

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

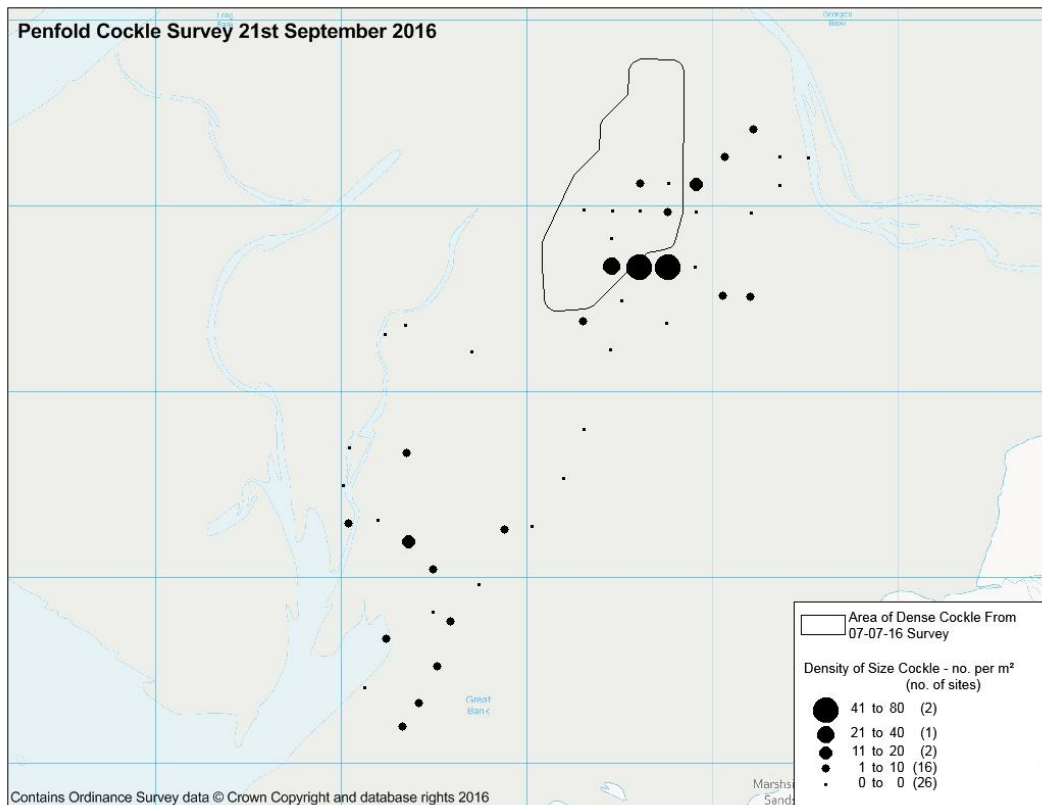


Fig. 16. Penfold Cockle Survey Results – Size Cockle Densities 21st September 2016

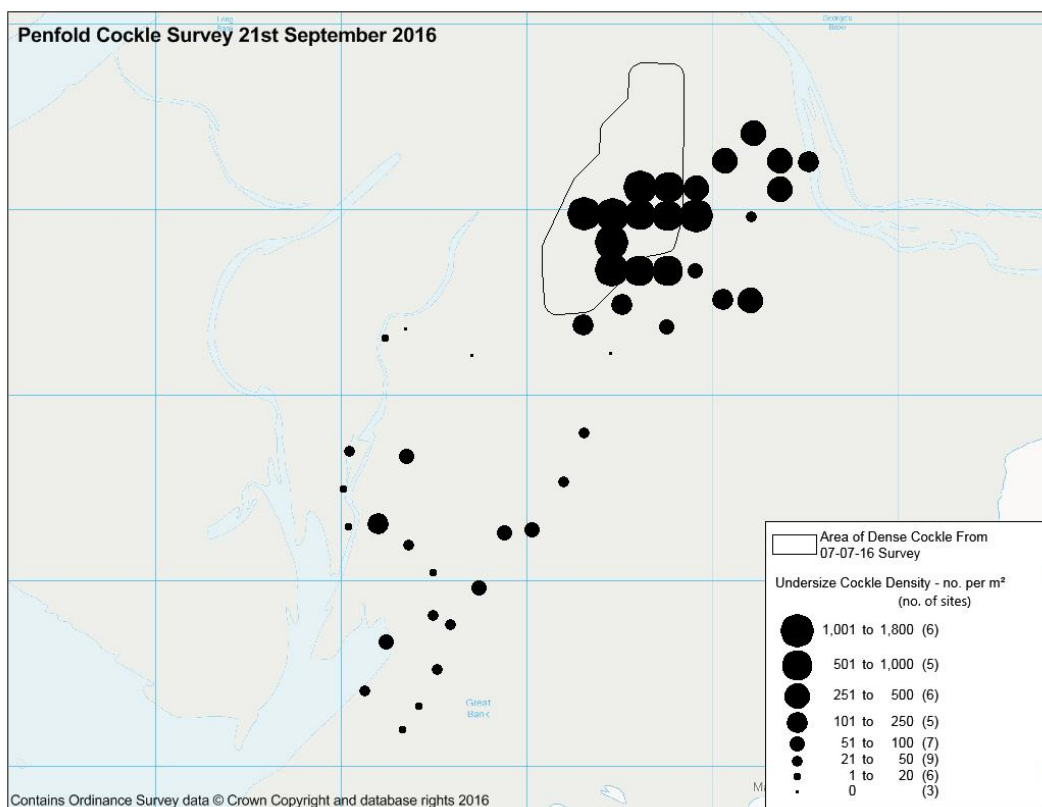


Fig. 17. Penfold Cockle Survey Results – Undersize Cockle Densities 21st September 2016

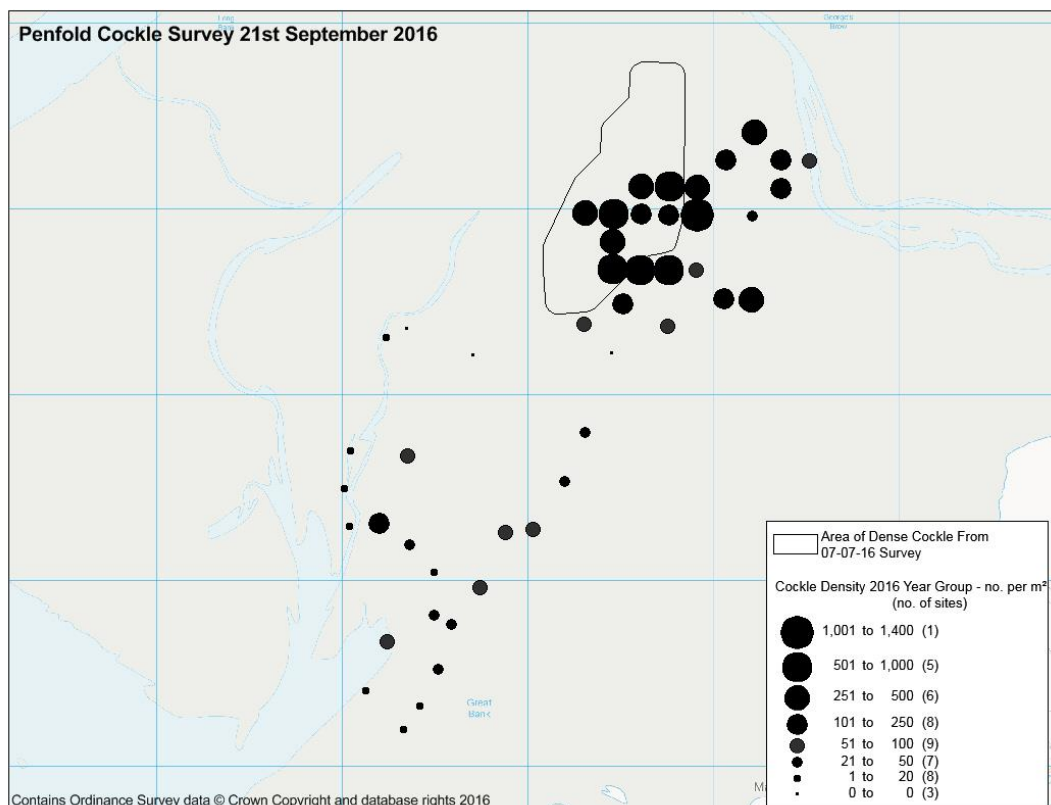


Fig. 18. Penfold Cockle Survey Results – 2016 Year Class Cockle Densities 21st September 2016

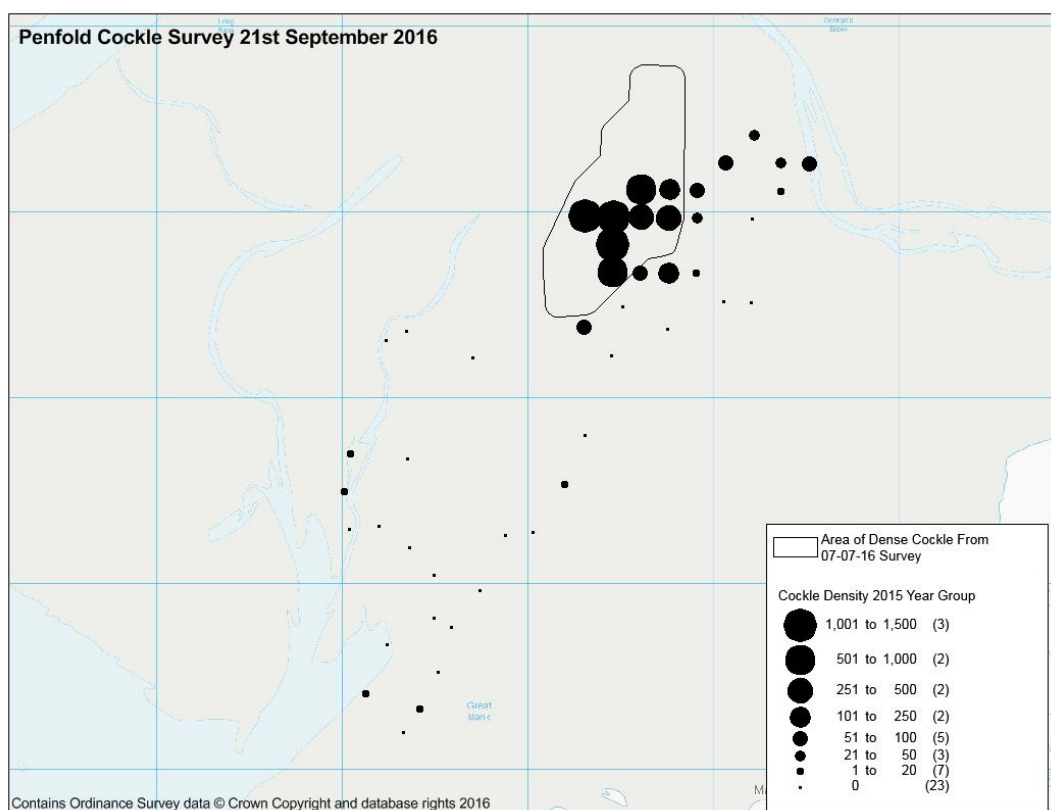


Fig. 19. Penfold Cockle Survey Results – 2015 Year Class Cockle Densities 21st September 2016