

## Background

In 2020 officers investigated methods to access populations of large bivalve species *Lutraria lutraria* (Common Otter Shell) and *Mya arenaria* (Sand gaper) to monitor the impact of management measures implemented in 2020, North Wirral Foreshore Bivalve Mollusc Emergency Byelaw 2020 and NWIFCA Byelaw 2 – North Wirral Foreshore Bivalve Molluscs 2021 which is currently in development, and to inform future management.

From the work carried out in 2020 a rapid assessment protocol for large bivalves was established and officers are confident that the shows of large bivalves can be differentiated from other organisms on the beach and that the majority of small bivalves present on the beach at the time of survey have been documented.

Unfortunately the lack of large bivalves present in the 2020 survey left some outstanding questions around the resolution of a systematic survey grid, and the reasons why clearly defined shows of large bivalves did not yield an organism.

In 2021 officers planned to address some of the outstanding question from the 2020 surveys, further refine the methodology and start to develop data on the stock levels of large bivalve on Leasowe beach. It is planned to complete quarterly sampling on the bed.

## Methods

The survey was conducted over 1 day on 29<sup>th</sup> June (LW 10:03, 1.5m Liverpool tides). 34 survey stations were sampled from a 150m grid. Three stations were not surveyed due to being in a channel and not uncovering. The grid spacing for this survey was less than the previous survey (250m) to try and focus the survey around the areas that had previously been found to contain large bivalves. At each station, a 10m by 10m area was marked out using a pre-measured rope and pegs. A methodical search of the plot was undertaken and organism shows that were believed to contain large bivalves were marked with a flag. An example of the variety of shows found can be seen in Figure 1. Inserting a finger into the show and examining the behaviour of the hole as it got deeper enabled differentiation between clams and other organisms with relative certainty. If the hole became larger as it got deeper, then it was very likely to contain a large bivalve. If the hole remained narrow and it took force to continue further, it was not likely to be a clam. On the first station that contained large bivalve shows, officers validated this by digging by hand around the show to reveal the organism present. After this initial validation, officers were confident that they could identify large bivalves solely by inserting a finger into the show which meant digging the shows was not necessary. Smaller shows which did not fit these criteria were not investigated further due to it being found unnecessary from the work carried out in 2020 to develop the survey methodology. For this survey, only large bivalve shows were recorded and plotted.

## Results

Table 1 shows the summary for each station where large bivalve shows were found. In total, 51 shows were identified as large bivalve shows out of the 34 stations. The highest number of shows were most frequently found in muddy sand/ sandy mud with one station (L10) containing 6 shows in wet sand. In all stations that were identified as muddy sand or sandy mud, at least 1 large bivalve show was identified up to a maximum of 6 shows. These results support previous observations that the substrate preference for the large bivalves appears to be muddy sand on Leasowe beach. However, there is insufficient evidence for this to be conclusive. Additional observations were that stations with sand substrate either had no shows or were dominated by worm casts. Due to the low numbers of large bivalves found during the previous survey, and the decision not to dig the shows, none were taken for biometrics in the laboratory. The two species that had previously been identified as present at Leasowe were the Common Otter Shell (*L. lutraria*) and Sand Gaper (*M. arenaria*).

Table 1. Summary of stations where large bivalve shows were found on Leasowe beach 29-06-21.

Station number	Number of large bivalve shows	Substrate
L4	1	Sand
L6	1	Sandy mud
L8	1	Sand
L9	1	Sand
L10	6	Sand
L12	4	Muddy sand
L13	6	Sandy mud
L16	2	Sand
L17	1	Sandy mud
L18	3	Muddy sand
L21	1	Muddy sand
L22	3	Muddy sand
L23	6	Muddy sand
L24	2	Muddy sand
L26	1	Sand
L27	5	Muddy sand
L28	3	Muddy sand
L29	2	Muddy sand
L33	1	Sand
L34	1	Sand

## Discussion

Following on from the previous large bivalve survey from Leasowe on 25<sup>th</sup> February 2021, low bivalve counts suggested that the survey grid should be refined to further concentrate on the central part of the beach with a higher resolution of sampling. This would better reflect previous survey data and fishing activity. As a result, the survey grid spacing was reduced from 250m to 150m and focused around the central part of Leasowe beach.

From the latest survey on 29<sup>th</sup> June 2021, a total of 51 large bivalve shows were found out of 34 stations. This is significantly higher than in the previous survey where only 6 large bivalve shows were found out of 38 stations. This suggests that reducing the grid spacing has successfully increased the resolution enough to better detect the potentially patchy distribution of large bivalves at Leasowe.

For conservation of stock and due to the potential damage to individuals, officers did not dig up all shows for validation. Officers are confident that they can identify large bivalves by the shows and that there is little to be gained from digging the large bivalves, especially when densities could be low and potential damage to remaining stock could be have an impact on recovery. As the shows for otter clams and sand gaper are not distinctive from each other, the information on the species composition was not collected for this survey.

The 150m grid resolution used in this survey should be taken forward in future surveys. The area that was surveyed appeared to cover the areas of fine to muddy sand which is where previous studies have found the highest abundance of large bivalves. If time allows, additional waypoints should be taken past the edge of the current grid to verify that the grid has covered enough of the bed.



Figure 1. Examples of the variety of shows present on Leasowe beach

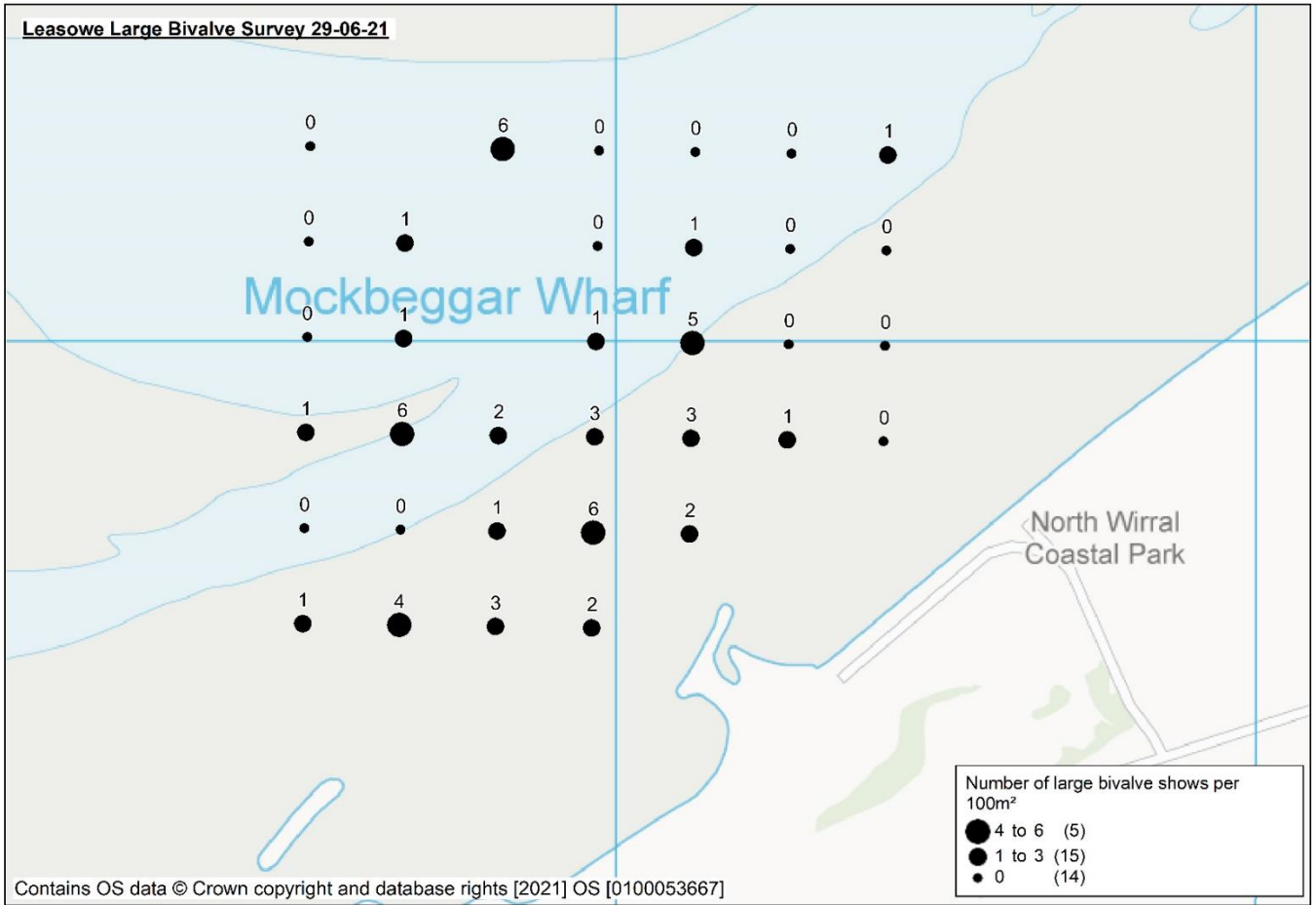


Figure 2. Number of large bivalve shows per 100m<sup>2</sup> on Leasowe beach 29-06-21