SOUTHERN IFCA WHELK POPULATION SURVEY 2025

1.0 INTRODUCTION

The 2025 Whelk Population Survey gathered samples of common whelk (*Buccinum undatum*) from four regions within the Southern IFCA District: Lyme Bay, Weymouth Bay, Poole Bay and The Solent and forms part of the Southern IFCA Whelk Monitoring Programme, alongside other whelk focussed workstreams such as the Southern IFCA Pilot Whelk LPUE Project. The data collection is aimed at enhancing our understanding of whelk stocks across Dorset, Hampshire and the Isle of Wight and will provide evidence on the effectiveness of future management, such as the proposed Southern IFCA Pot Fishing Byelaw, currently undergoing QA with the MMO. Data will also help contribute to the national research efforts and support the implementation phase of the Whelk Fisheries Management Plan (FMP).

Whelks are exempt from EU Total Allowable Catch (TAC) limits as they are classified as a non-quota species. Within the Southern IFCA District, current management practices include the national Minimum Conservation Reference Size (MCRS) of 45 mm in shell length, which is applied across the supply chain and to both commercial and recreational fishers under the Southern IFCA MCRS Byelaw[1]. Given the commercial significance of this species, it is important to assess the District's whelk populations to provide data that will inform sustainable management strategies.

2.0 METHODOLOGY

Survey areas were selected to encompass four primary fishing regions within the Southern IFCA District, aiming to identify any variations within the whelk population across the District and as a time series is built, any temporal changes in populations. These fishing areas were chosen in collaboration with local fishers, leveraging their knowledge and experience of commonly utilised fishing grounds (Figure 1). The selected areas for sampling included the Solent, Poole Bay, Weymouth Bay, and Lyme Bay. Samples are collected throughout the main fishing season from March-July 2025.

Fishers were asked to conduct their usual fishing practices, utilising their own site-specific whelk pots, which are typically adjusted in height based on sea conditions, tidal ranges, and water flow. This approach ensured a more representative sample of the typical catch in each area, making the data relevant to local fishing practices. It is acknowledged that data analysis will need to account for variations in pot setup and soak time. Fishers conducted their fishing activities independently under relevant dispensations. Samples were transferred to officers at the conclusion of the fishing trip to be analysed at the lab facilities at Bournemouth University.

2.1 Collection

Date of fishing trip, gear type, bait type, soak time and location (latitude and longitude) were collected on the day of retrieval. Five whelk pots from 3 strings were selected, providing 15 samples from each area. The methodology included:

- Baited whelk pots deployed between 12 and 72 hours before retrieval, dependant on weather windows.
- The GPS position, using the vessel GPS system, was recorded upon retrieval of the first pot and last pot.
- The pots were recovered in-board and all whelks, from each chosen pot, emptied directly into sample bags and labelled according to area, string number and pot number.

[1] SIFCA-MCRS-Byelaw.pdf (toolkitfiles.co.uk)

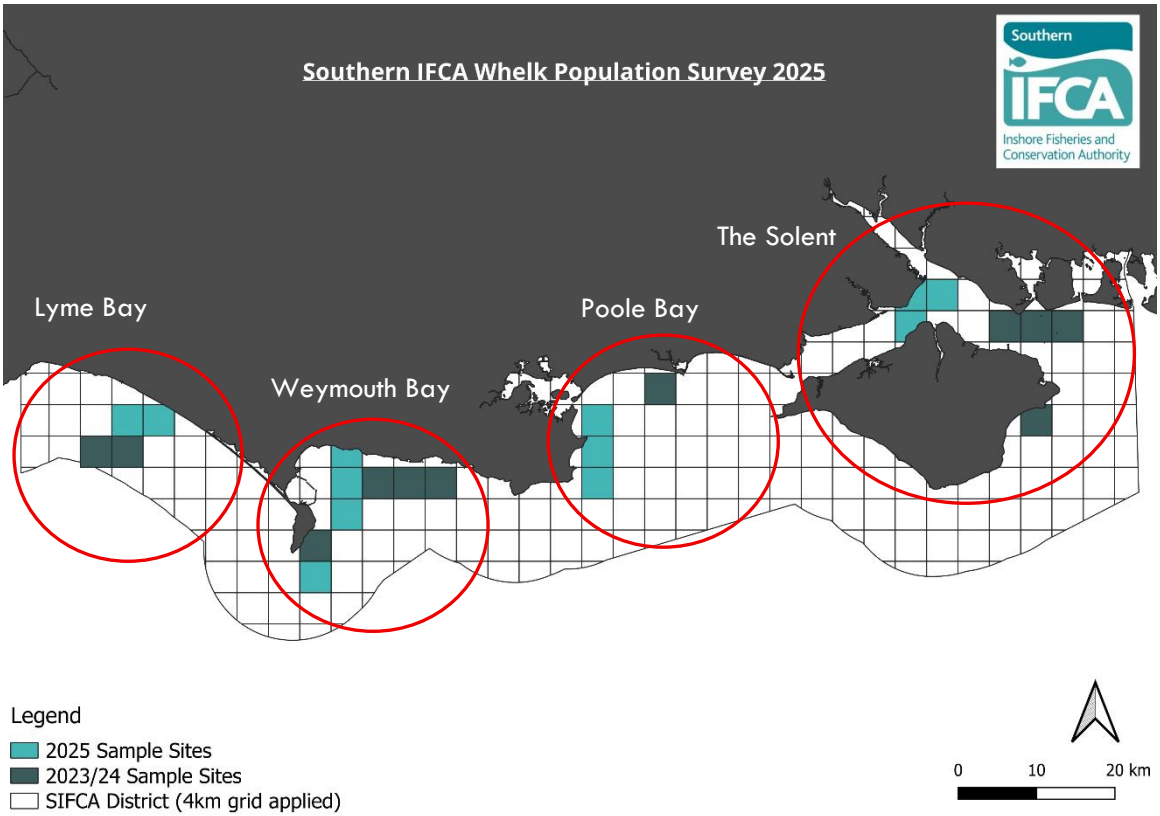

Figure 1. The 4 regions sampled; Lyme Bay, Weymouth Bay, Poole Bay and The Solent, highlighted in red and labelled. Sampled sites within each region are highlighted within a 4km grid system. 2025 survey sample sites are highlighted in light blue, whereas sample sites of the previous 2 surveys (2023 and 2024) are highlighted in dark blue.

2.2 Measurement

- The retained whelks were measured for total shell length (TSL) and widest shell width (WSW) for the first 50 individuals, measurements in mm were made using Vernier callipers (Figure 2). Individuals were categorised into the following size groups and weighed (in kg): <45mm, 45-49mm, 50-54mm, 55-59mm, 60-64mm and 65+mm.

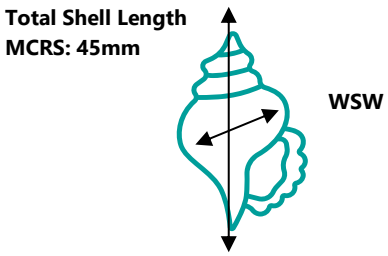

Figure 2. Diagram of the common whelk showing the total shell length (TSL) and widest shell width (WSW).

3.0 RESULTS

The weight data collected was analysed to provide a value for Catch Per Unit Effort (CPUE), defined as kilograms of whelk per pot per day (kg/pot/day). CPUE was calculated for total kg of whelk, kg of whelk over the MCRS and kg of whelk under the MCRS (MCRS = 45mm). Please note that potting methods used to obtain data for this survey are size selective due to the escape holes for drainage, which also minimise catches of whelk under the MCRS. On this basis the data for CPUE under MCRS will not be representative of this size class as it cannot be guaranteed that all whelk under MCRS have been sampled. However, comparisons can be made between sites and over time to look for changes, in the knowledge that the sampling method is consistent.

3.1 CATCH PER UNIT EFFORT

3.1.1 Analysis of the 2025 dataset

- In the 2025 survey, the area with the largest landed weight was the Solent, at 82.22kg.
- The Solent also displayed the largest average total CPUE across the 15 sampled pots, at 2.74kg/pot/day.
- The largest average CPUE over MCRS was in Weymouth Bay at 1.82kg/pot/day. Weymouth Bay also showed the lowest average CPUE under MCRS at 0.01kg/pot/day (Table 2).
- The Solent displayed the largest CPUE under MCRS at almost 1kg/pot/day.

Table 2. The whelk CPUE values of each region sampled within the 2025 survey.

Site	Total CPUE kg/pot/day	CPUE over MCRS kg/pot/day	CPUE under MCRS kg/pot/day
Lyme Bay	1.49	1.42	0.07
Weymouth Bay	2.00	1.82	0.01
Poole Bay	0.69	0.56	0.13
The Solent	2.74	1.80	0.94

- Statistical analysis of total CPUE using the Kruskal-Wallis test, showed Lyme Bay and Weymouth Bay to be statistically similar ($p>0.05$).
- All other comparisons for total CPUE showed sites to be statistically different (all p values <0.05).
- The total CPUE in the Solent was significantly higher than all other surveyed sites (all p values <0.05).
- Poole Bay displayed significantly lower total CPUE and CPUE over MCRS than all other sample sites ($p<0.05$).
- Total CPUE and CPUE over MCRS was statistically similar between other sites ($p>0.05$).
- The Solent displayed significantly higher CPUE under MCRS than all other sites ($p<0.05$).

3.1.2 Comparison between the last 3 years.

- In 2025, total sampled weight across the four regions was 217.89kg. This was the largest weight harvested since the beginning of the survey in 2023 (Table 2). Please note that in 2024, Lyme Bay was not able to be sampled, and this must be taken into consideration when analysing the total sampled weight for that survey year.

Table 2. The total sampled weights of each survey year of the Whelk Population Survey. Please note that in 2024, Lyme Bay was not sampled and this must be taken into consideration when looking at the total sampled weight.

Survey Year	Total Sampled Weight (kg)
2023	191.52
2024	100.90
2025	217.89

- Looking at all sites combined, total CPUE differences between sites have varied across the last three years (Figure 3).

Poole Bay

- Statistical analysis showed that total CPUE and CPUE over MCRS were significantly lower in 2025 than in 2024 ($P<0.05$ and $p<0.01$ respectively).
- CPUE under MCRS was also significantly lower in 2025 than 2024 ($p<0.01$), although similar to that seen in 2023 ($p>0.05$).

Lyme Bay

- Total CPUE and CPUE over MCRS in 2025, was significantly lower than in 2023 ($p<0.05$).
- CPUE under MCRS was significantly lower in Lyme Bay in 2025 than 2023 ($p<0.05$) (though it should be noted that a different vessel was required to be used in 2025 and may adopt different gear types and fishing methods).

Weymouth Bay

- Total CPUE and CPUE over MCRS were significantly lower in 2025 compared to 2024, although both years were statistically similar to 2023 ($p>0.05$).
- There was significantly lower CPUE over MCRS in 2025 than 2024 ($P<0.05$), whereas 2025 was statistically similar to 2023 ($p>0.05$).

The Solent

- 2025 displayed significantly higher total CPUE, CPUE over MCRS and CPUE under MCRS than 2024 (all p values<0.05), whereas the 2025 dataset was statistically similar to 2023 ($p>0.05$).

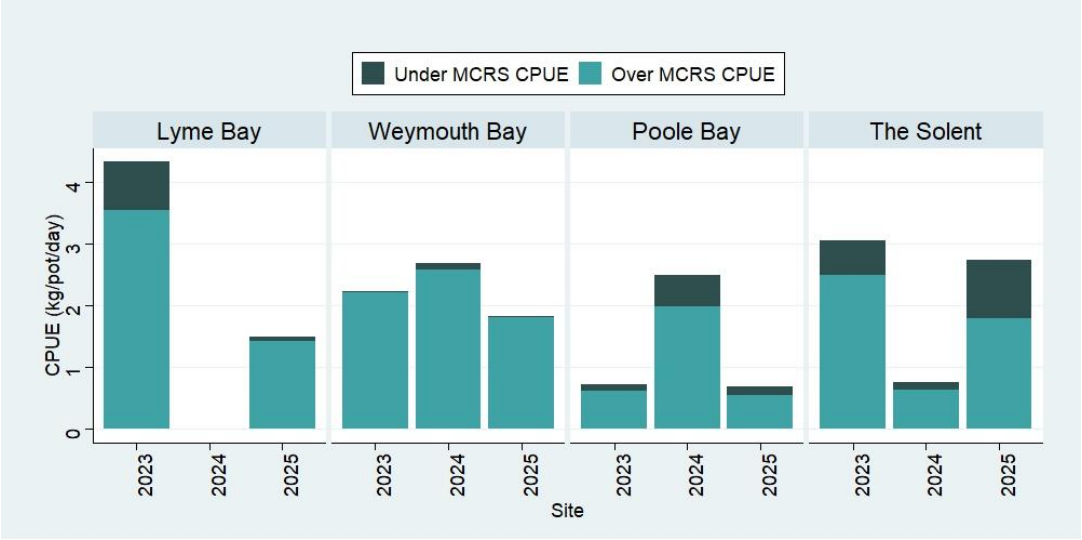

Figure 3. A comparison of Catch Per Unit Effort (CPUE) (kg/pot/day) of sites surveyed within the whelk survey between 2023-25. Please note Lyme Bay was not surveyed in 2024. Above MCRS CPUE (above 45mm) is represented by light blue and under MCRS CPUE is represented by dark blue.

3.2 LENGTH DISTRIBUTION PROFILE

3.2.1 Analysis of 2025 dataset

- The length frequency distributions for all sampled sites were skewed towards being above the MCRS (Figure 4).
- Weymouth Bay displayed the largest sampled whelks, with a maximum size of 89mm in length and a mean length of 61.2mm (Table 3).

- Weymouth Bay displayed the largest width compared to other surveyed sites in 2025, averaging at 40.05mm (Table 3).
- Poole Bay displayed the smallest mean length, at 50.44mm, while the Solent displayed the smallest mean width at 28.09mm.

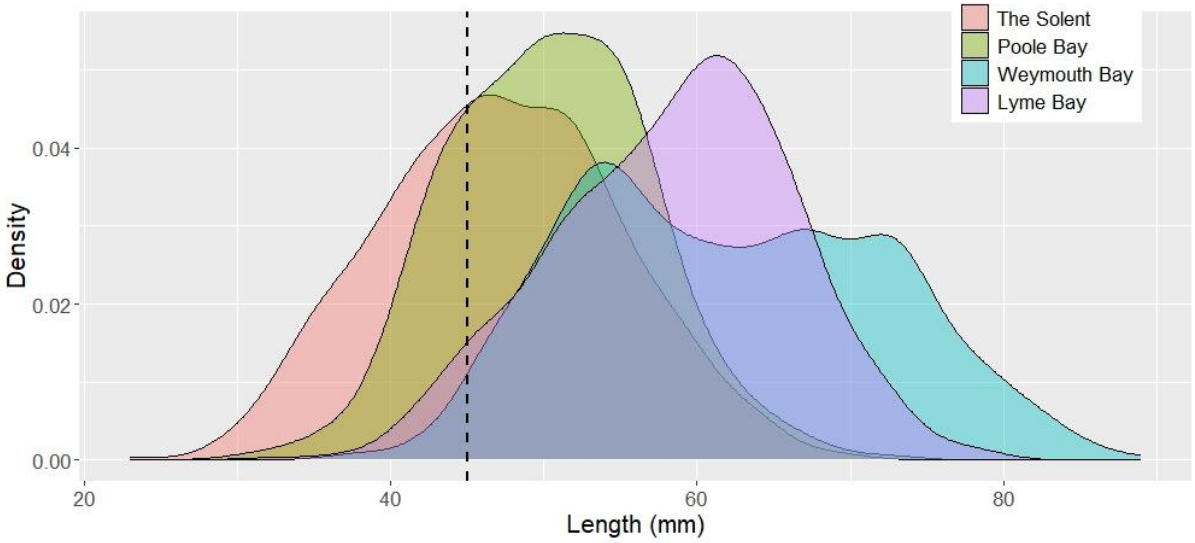

Figure 4. The length distribution of the 2025 dataset. Weymouth Bay is represented in blue, Poole Bay in green, the Solent in red and Lyme Bay in purple. The minimum conservation reference size of 45mm is represent by a vertical dashed black line.

Table 3. Mean and mode (most common) length and width, expressed as mm of each sampled site in 2025

Site	Year	Mode Length	Mean Length	Mode Width	Mean Width
Weymouth Bay	2025	53mm	61.2mm	33mm	40.05mm
Lyme Bay	2025	60mm	58.46mm	33mm	35.16mm
Poole Bay	2025	50mm	50.44mm	32mm	30.19mm
The Solent	2025	52mm	47.19mm	25mm	28.09mm

3.2.2 Comparison within the last 3 years

Table 3 shows the mean and mode (most common) length and widths, expressed as mm, seen in each sample site in the 2024 and 2023 surveys.

Table 3. Mean and mode (most common) whelk length and width, seen at each surveyed sight in 2024 and 2023.

Site	Year	Mode Length	Mean Length	Mode Width	Mean Width
Weymouth Bay	2024	69mm	63mm	35mm	38mm
Weymouth Bay	2023	72mm	61.14mm	40mm	33.68mm
Poole Bay	2024	50mm	50.4mm	31mm	30.38mm
Poole Bay	2023	52mm	50.96mm	28mm	29.03mm
The Solent	2024	49mm	48.89mm	31mm	28.57mm
The Solent	2023	54mm	51.87mm	29mm	30.4mm
Lyme Bay	2023	52mm	54.3mm	30.01mm	24mm

Weymouth Bay

- Average length of whelk in Weymouth Bay was significantly larger in 2024 than in 2023 and 2025 ($p<0.05$).
- Average width in 2025 was similar to that seen in 2024, but was significantly smaller than 2023 ($p<0.05$).

Poole Bay

- Average length sampled in Poole Bay was statistically similar between 2024 and 2025 ($p>0.05$), although the size in 2023 was significantly larger than in 2024 and 2025 (both p values $p<0.05$).
- The average width seen in 2025 was statistically similar to that of 2023 and 2024. ($p>0.05$).

The Solent

- Average length of whelk was statistically different between all survey years ($p<0.05$), suggesting that the size of whelk in the Solent has progressively become smaller each year.
- Similarly, the average width was significantly larger in 2023 than both other years ($p<0.05$).

Lyme Bay

- Average length of whelk was significantly larger in 2025 than 2023 ($p<0.05$).
- Average width was significantly larger in 2025 than 2023 ($p<0.05$).

4.0 DISCUSSION

- The survey contributes to the development of a comprehensive data series for whelk populations within the Southern IFCA District as part of the Whelk Monitoring Programme. The aim is to conduct annual surveys to build a robust dataset that establishes characteristics of the whelk populations along the Hampshire, Dorset, and Isle of Wight coastlines. This dataset will help identify trends and patterns in whelk stock abundance across different sampled areas and over multiple years. The ongoing survey efforts will enable the analysis of long-term trends to inform an evidence base for this species.
- It is recognised that the method of sampling is inherently size selective due to methods employed by fishers to reduce the quantity of whelk below MCRS which is retained in pots and thus the level of post-capture sorting required. There is likely to be an element of variation introduced by using subtly different pots in each location. However, this risk was weighed up against the need to use pots which are adapted to the conditions of each site and have been optimised by the fisher in each case to maximise capture potential in line with specific environmental considerations.
- The analysis revealed variations in whelk populations across the district, indicating that there is the potential for subpopulations with differing characteristics. Areas to the west show larger samples predominantly consisting of over MCRS, whereas east of district shows average of smaller sized whelks. The percentage of population in the size class 45-49 displayed in Poole Bay and the Solent in the 2025 dataset was 29% and 43%, respectively, whereas this was 7% and 4% when looking at Lyme Bay and Weymouth Bay in the west of the District (Figure 5). Over 50% of the sample population in Weymouth Bay was over 65mm in length.

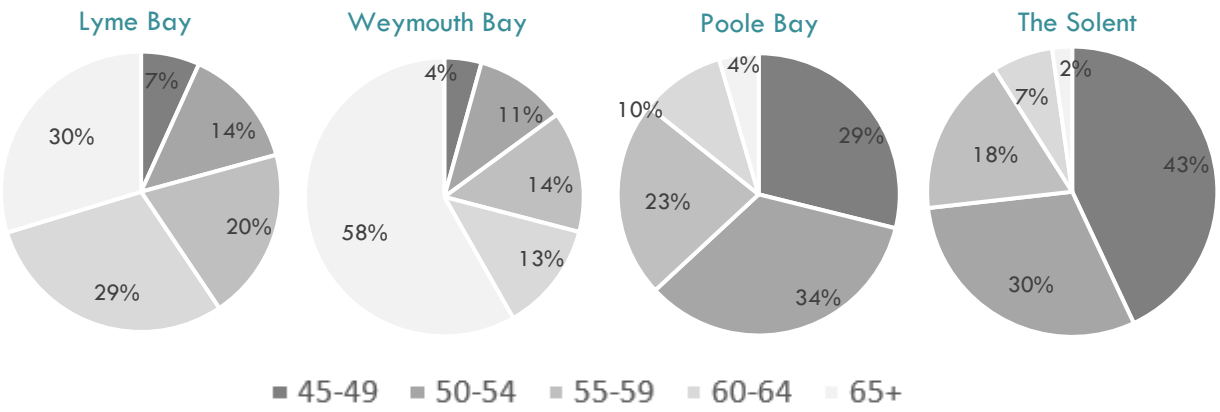

Figure 5. Pie charts representing the length distribution of whelks at each location surveyed in 2025, categorised by size above MCRS: 46-50mm, 51-55m, 56-6mm. 61-65mm >65mm. The colour varies through a gradient from dark grey to represent the smaller whelks to light grey, the larger sized whelks.

- CPUE of whelk appears to fluctuate within the sampled areas throughout years. For example, the Solent displays similar CPUE levels in 2023 and 2025, however 2024 showed a significant decrease in CPUE levels.
- While Solent CPUE has increased, statistical analysis of the length and width distribution profiles suggest smaller individuals were present in the 2025. This could suggest an increase in spawning in this region within the last year, leading to smaller size proportions yet increased CPUE. In contradiction, although CPUE has decrease in Lyme Bay in 2025 compared to 2023, analysis of the length distribution has shown an increase in size. This could suggest that the population in Lyme Bay may be more mature in the 2025 sample compared to the 2023 sample. While there was significant less total CPUE in Lyme Bay in 2025 compared to 2023, recognising that a different vessel was required to be used, there was no significant difference in the over MCRS CPUE in Lyme Bay between 2023-25, however levels of over MCRS CPUE were identified to be lower in 2025 than in 2023. Whilst there have been fluctuations and noted statistically significant differences, samples from Weymouth Bay show the most consistency in total, over MCRS and under MCRS CPUE between the three sampling years.
- The results may be explained, in part, by the different fishing locations in each survey (shown in Figure 1) and emphasises the point of potentially multiple stocks of whelks within localised areas of the District. The notable differences observed between areas highlights the complexity of whelk populations over small spatial scales and supports continued evidence gathering over a time series to effectively understand whelk populations and support a robust evidence base to inform appropriate management strategies which support the sustainability of whelk stocks and fisheries.

5.0 CONCLUSIONS

The survey findings continue to identify and highlight that features of whelk populations vary across different geographical regions and can exhibit small subpopulation variations over short distances. This evidence, combined with data from the Whelk LPUE Pilot Project, will contribute to the Southern IFCA Whelk Monitoring Programme. This programme seeks to establish a robust evidence base to evaluate the effectiveness of future management strategies within the Southern IFCA District and contribute to national data collection program. The identified variation in populations over the current 3 year dataset, both within sites and between sites emphasises the need to continue building a timeseries of data to establish any patterns or trends.