NWIFCA Quarterly Meeting
20th March 2025

REPORT NO. 2

SCIENCE REPORT
21ST NOVEMBER 2024 – 6TH MARCH 2025

Purpose: To provide an update on the work of the Science Team in the quarter.

Recommendation: Receive the report

UPDATE FOR THIS QUARTER

This quarter, the main priorities were to complete the whelk size-at-maturity study in the district, undertake the annual autumn mussel surveys, finish the shrimp fishery research study, undertake training in drone survey analysis software, initiate the mobile netting consultation and progress officer sightings data work.

Key achievements since the previous TSB meeting:

1) Completed and presented the whelk size-at-maturity study and proposed a minimum conservation reference size of 65mm.
2) Completed and presented a study looking into the decline of shrimp in the North West
3) Completed training in drone software for survey analysis
4) Developed a project plan for redesigning officer statistics recordings
5) Assisted Natural England and partner organisations to undertake and finalise Marine Natural Capital work in Morecambe Bay.
6) Completed and submitted the fourth Habitats Regulation Assessment for Pilling cockle fishery.
7) Completed the summer side-scan survey report
8) Developed training materials for the new environmental officers training course for national IFCA staff
9) Responded to thirteen consultation requests and one dispensation requests.

ONGOING WORK STREAM UPDATES:

1. POTTING PERMIT BYELAW

a) Permit database

No further update

2. COCKLES AND MUSSELS

a) Survey and inspections

Between November 1st and March 6th, NWIFCA science officers carried out one inspection of Heysham mussel bed and a post-fishery survey of Leasowe cockle bed.

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

Surveys and inspections this quarter	**Date**
Mussels	
Morecambe Bay (Figure 1)**:** Heysham inspection	05-03-2025
Cockles	
Leasowe post-fishery survey	04-02-2025

Mussel surveys overview

Due to the timing of the Heysham inspection, the final report and overview will be provided in the following quarter's papers.

In the late summer of 2024, officers undertook a side-scan survey of the Solway Firth mussel beds. The results of this survey were completed later in the year and presented at the February 11th TSB. The survey did not find mussel present, however it did successfully identify different sediment types.

Side-scan surveys can be difficult to time in the Solway due to the shallowness of the water and the need to have calm conditions. Officers aim to undertake these surveys every quarter when able to do so.

Cockle surveys overview

Officers undertook a post-fishery survey of the Leasowe cockle bed on February 4th. Results will be provided at the next TSB. The bed will be further surveyed in June/July of 2025 for the 2025/26 fishery.

b) Drone survey capabilities

In March, the Senior Scientist, Jon Haines, undertook training on DJI Terra drone software that is used to analyse survey imagery. Original data from one of the districts mussel beds was obtained for the purposes of trialing the software.

The multispectral images taken appear to be identifying mussel well (figure 1). The software allows the mussel to be identified and gives a confidence score (parameters set by officers). For example, in the figure below orange is the highest score and, therefore, likely to be mussel, yellow less so, and green the lowest confidence. These

images can then be processed in our mapping software QGIS, and to a percentage cover for the mussel.

This is in the early stages of us understanding both the drone's and the software's capabilities. The next stages are for us to carry out trials whereby multiple surveys are undertaken, to establish the confidence parameters for what is mussel or not, ground truth our surveys, and begin to determine biomass estimates and percentage cover. Considerations include, weighing up flight time with accuracy of the multispectral images (more detailed and accurate imagery takes more time which may be impractical in some situations). This will form part of the 2025/26 Science Team's survey objectives.

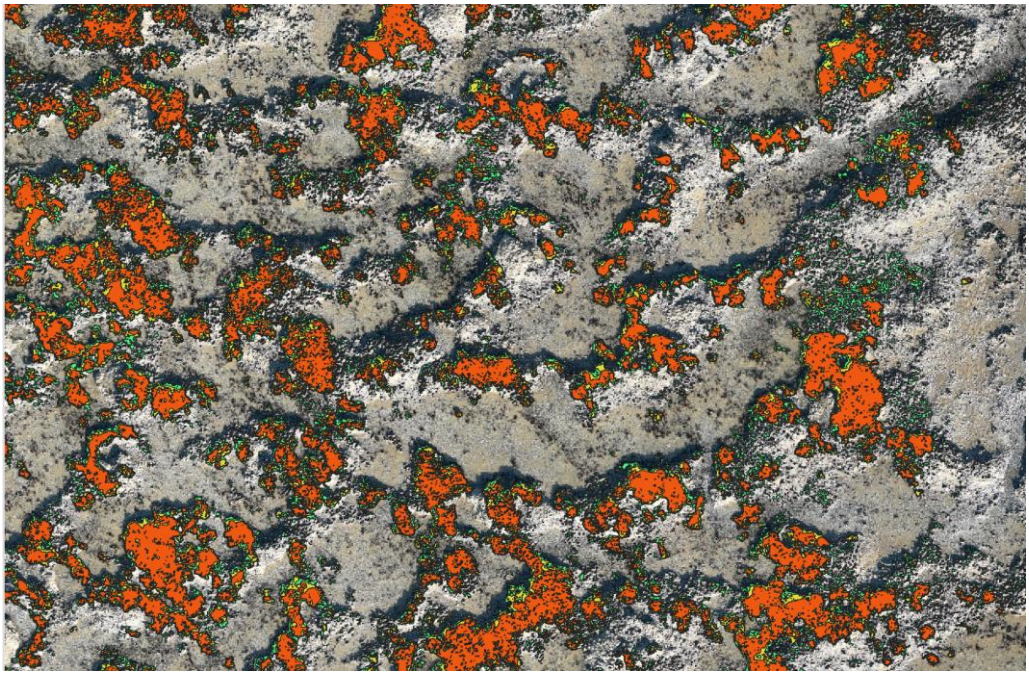

Figure 1. Preliminary images of the trial DJI Terra software analysis on mussels in the NWIFCA District.

3. NWIFCA RESEARCH PROJECTS

a) Whelk Fisheries in the North West

The Byelaw 4 – Potting Permit Byelaw (2019) came into force on the 6th of June 2022. The main purpose of the byelaw was to bring in unified management to the entirety of the NWIFCA District, in particular with regards to whelk, as the legacy CSFC Byelaw had unintentionally precluded whelk fishing in the northern half of the District's waters which NWIFCA wanted to rectify. This preclusion was due to the byelaw requiring all pots to have escape gaps for crabs, preventing the use of whelk pots within that portion of the District.

As part of the new byelaw, NWIFCA also sought to introduce an appropriate minimum conservation reference size (MCRS) for whelks. There was significant research evidence across the UK that the national MCRS of 45 mm was not providing enough protection to juvenile stocks, and therefore, required increasing. As a result, the Flexible permit Conditions of Byelaw 4 stipulated an annual increase in the whelk MCRS from 55 mm to 65 mm to 75 mm each year from its inception.

Previous sampling was undertaken by officers in 2019, 2020 and 2023 in attempts to determine whelk SOM in the District, however, the data from these studies was insufficient to provide an MCRS recommendation, and suffered from limited confidence.

Due to the limited confidence in the previous research results, and concerns raised by industry that an increase to from 65mm to 75mm would negatively impact their activities and potentially make it uneconomical, at the TSB meeting on the 6th February 2024 the current MCRS for whelk was frozen at 65mm until the 6th June 2025. The intention was to allow more time for further evidence to demonstrate if an increase to 75mm was necessary.

Since then, Science Officer Gemma Grose, has been undertaking a research project collecting samples from the main areas of the district. At the TSB on the 11th of February she presented a report the 2024 whelk size-at-maturity study. The full report can be found here: https://www.nw-ifca.gov.uk/app/uploads/Agenda-Item-6-Whelk-MLS-2024-Study-Report.pdf.
The report provided extensive analysis on the size-at-maturity estimates for whelk throughout the district, and presented an options analysis for management. Officers proposed the MCRS be set at 65 mm, with a review period of 3 years. This was approved by the committee.

Figure 2. Images taken by the Whelk MCRS project lead Gemma Grose, demonstrating the process of dissection and analysis of whelks.

b) Shrimp research in the North West

NWIFCA's current understanding of the shrimp population in the district is limited; with much of the research surrounding the district's fisheries having been conducted pre-millennia. In response to the growing concerns from industry regarding a decline in the landings and size of shrimp, and the impact this is having on their livelihoods, a review of the current state of the fishery and the potential reasons for its continued decline was undertaken by Science Officer Lucy Loud.

This work stream involved extensive literature review, and developing two research questionnaires that went live on our website in November 2024, and were disseminated to fishers and members. The questionnaires aimed to collect information on the practices, and historical changes fishers and processors have seen in the shrimp industry over time.

The overall aim of the project, was to develop our baseline understanding of the shrimp fishery in the Northwest district as it is both now, and historically, and from this, design useful, targeted research projects.

The final report was completed and presented to the TSB on February 11th, and can be found here:

https://www.nw-ifca.gov.uk/app/uploads/Annex-to-The-status-of-the-brown-shrimp-fishery-1.pdf

The work highlighted further research needs to be conducted on, how temperature, nutrients, habitat change and water quality and impact shrimp. There is also a large knowledge gap in landings data due to many of the fishers prosecuting the fishery by tractor and therefore not required to provide returns under the current system. In addition, there is the need to look at population and demographics of the shrimp in the district. These are all possibilities for further research being explored for 2025/26, and we have begun discussions with Salford University regarding potential projects.

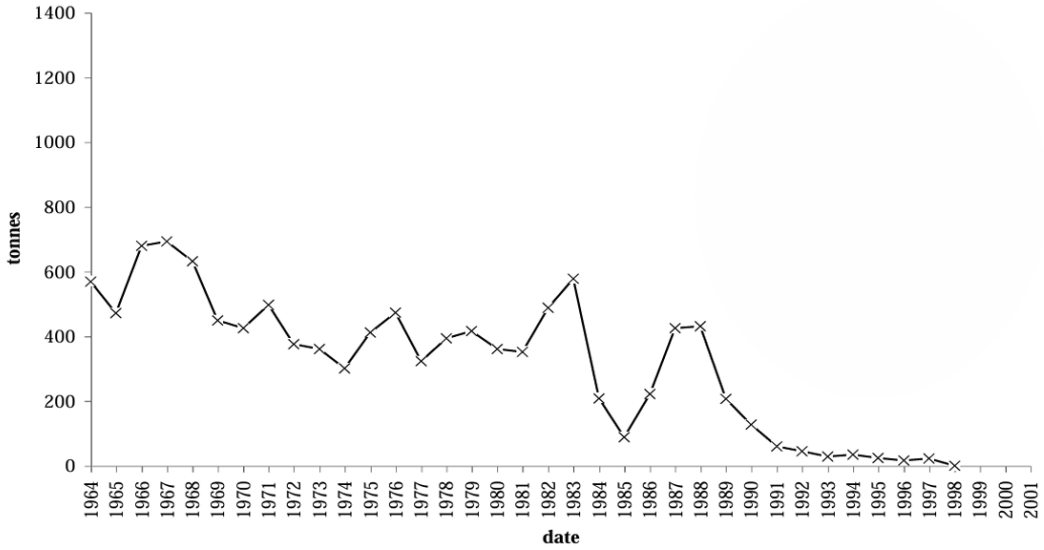

Figure 3. Graph from a 2001 report by NWNWSFC on the landings of shrimp from 1964-2001.

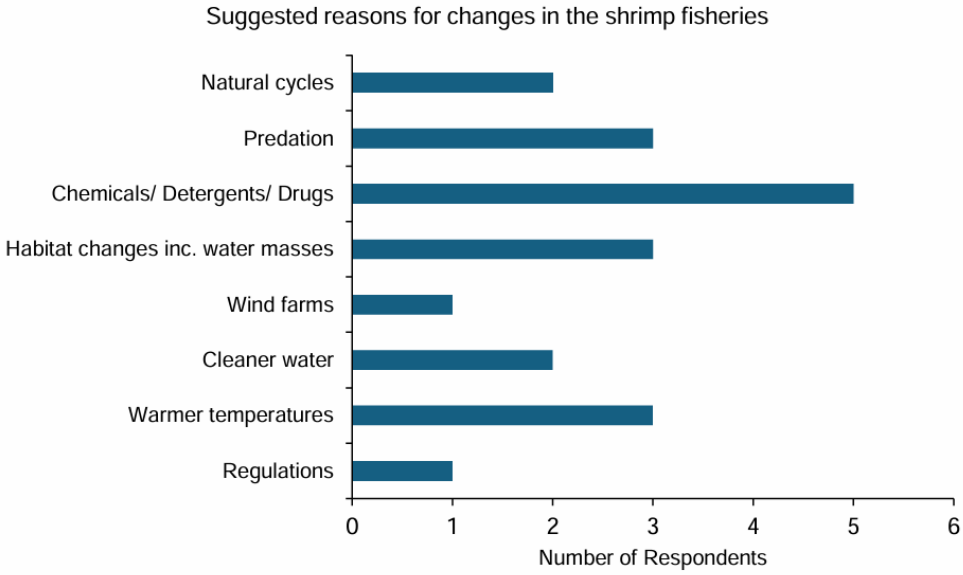

Figure 4. The suggested reasons for decline provided by stakeholder respondents.

c) Officer sightings data

Shore and vessel sightings data is collected by NWIFCA enforcement officers while on patrol or at sea. This data is essential for helping build a picture of the type and location of activities taking place in our district, particularly for activities which other organisations such as the MMO do not require or obtain. This information helps us asses what occurs in protected sites and how to manage them, target research work, or provide useful data to defra or MMO during consultation. It is therefore, important that we continue to collate and utilise this data.

The current method for both obtaining and analysing shore and vessel sightings data has become outdated. Science Officer Robin Love is leading the development of a new way of recording and analysing this data. The need for this project arose due to inefficiencies in the current method of data collection, which requires enforcement officers to manually record fishing sightings in notebooks before transcribing the information into an Excel database. This process is time-consuming and prone to transcription errors. Additionally, location data is currently recorded based on bearing and cardinal direction, which introduces inaccuracies.

Further challenges include the extensive data manipulation required before the information becomes readily accessible for analysis. The project aims to reduce the duplication of effort by enforcement officers, improve data accuracy and accessibility, and enhance the ability to analyse fishing activities. Additionally, it will streamline the reporting of enforcement activities, patrol statistics, and fishing data within the district, ultimately leading to more effective fisheries management. Currently, Robin is looking into tailoring Mergin Maps software alongside enforcement officers and science staff.

4. MARINE PROTECTED AREAS IN THE NWIFCA DISTRICT:

a) **Highly Protected Marine Areas (HPMAs)**

No further update

b) **Marine Natural Capital**

Morecambe Bay is the focus of marine Natural Capital study through the Association of IFCA's and Natural England. NWIFCA has provided information and historical data on the Bay to provide to the Association. The evidence collated will be combined with additional evidence on associated socio-economic value data to develop local placed-based natural capital assessments of fisheries and Morecambe Bay.

NWIFCA have been working with the Association of IFCA and Natural England to develop a two projects that will assist in our understanding and management of the Morecambe Bay cockle fishery.

1. **Bird food model** - The first project relates to bird food requirements and developing a model to predict bird food requirements for oyster catcher in Morecambe Bay. This will assist with developing a minimum total allowable catch for the fishery.

2. **Using social/cultural values in decision making** - The second project looked into the social values of stakeholders, and how this can be used in management decision making. Often IFCAs have a clear framework for the consideration of scientific data, but it is less clear for the inclusion and consideration of cultural or values based information. Given our responsibilities under MaCAA to consider both socio and economic concerns, it is important we find a useful way to incorporate this into our decision making processes.

   This project has been developed and lead by NE in partnership with researchers from Exeter and Southampton universities. Pam Buchan and Sien Van Der Plank have extensive experience in analysing and interpretting social values of coastal communities. The work involved setting up interviews with local stakeholders, and analyzing the interviews to identify social values.

   The output of this work was presented at the TSB meeting on February 11th for discussion with TSB members. There will be further engagement with the Authority as this project progresses, to see how this type of data could be used to assist with cockle fishery management decision making. A final report and the associated film will be brought to the Authority in 2025.

5. FISHERIES MANAGEMENT PLANS

a) National (excl. cockle)

No further update

b) NWIFCA Cockle fisheries management plan

NWIFCA is currently developing a cockle fisheries management plan applicable to the District. The management plan aims to provide a framework for future decision making, highlight knowledge gaps and develop a 5-year research plan and management review. In time the Districts cockle management plan will be presented to the TSB for review.

6. MMO MARINE LICENCE AND OTHER CONSULTATIONS FOR THE QUARTER

a) Morecambe Bay Offshore Wind

No further update

b) Mersey Tidal Power Project

No further update

Consultations this quarter:

- Replacement of winter storm sediment back onto beaches across Anglesey
- Protection measures associated with the Inland Sea tern colony

- Proposed Dee Estuary Special Area of Conservation Boundary Extension
- Water Injection Dredging of the Wet Basin, Birkenhead
- Rhuddlan Marsh Embankment Staircase Replacement
- Removal of up to 20 Groyne posts at Penmaenmawr Beach, Conwy
- Reinforcements + minor repairs to a section of sea wall at Penmaenmawr, Conwy
- Lynster Farmers Group R.Winster Rehabilitation Project
- Mersey Tidal Power Project - Baseline surveys - Updated Biosecurity Plan
- HyNet carbon dioxide transportation and storage project (realignment cable route)
- Transmission Assets of Mona Offshore Windfarm Further Information
- Offshore Landing Platform Replacement
- Anchorsholme Coastal Protection Scheme 2025 (Rock Overlays/ Groynes)

Dispensations this quarter:

- CEFAS Nephrops Cath Sampling 2025

7. WORKING GROUPS AND EXTERNAL PARTNERSHIP WORK

a) **Technical Advisory Group**

The recent meeting of TAG was on the 28th of November. At the meeting, the new environmental officer training course was discussed and training materials developed. The outputs of the Morecambe bay oral histories project was also discussed, and work surrounding potting for scallops and the use of light technology was also presented.

b) Whelk Working Group

No Further update

c) Academic partnerships

Lancaster University

NWIFCA hosted two Lancaster University Ecology MSc student placements (Will Harris and Luke Misra) for two months, from September to November. The students participated in all aspects of the organisation's work, including visiting Leasowe and Flookburgh cockle fisheries, undertaking mussel inspections, and attending TSB committee meetings.

The students have developed research projects based on their time with us, which will go on to contribute to their final year dissertations and assist in developing our knowledge gaps in key areas. The projects developed look at:

1) The reliability and accuracy of our mussel survey methodology
2) The size-at-maturity of brown crab in the district

Annabel Plumeridge, North Western IFCA Head of Science, 6th March 2025