

Success Criteria: 2, 3, 4, 5 & 6

By: Chief IFCO and Lead Scientific and Conservation Officer

To: Kent and Essex Inshore Fisheries and Conservation Authority –  
22<sup>nd</sup> January 2015

Subject: **An update on the KEIFCA whelk fishery and an initial  
assessment of its current management measures.**

Classification Unrestricted

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Summary: To report on the current harvesting levels of whelk stocks in the district and review the current scientific research and views of permit holders in determining future Technical Permit Requirements for the KEIFCA whelk permit byelaw.

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## **1. Background**

Historically whelks have not been regarded as high a priority species as some shellfish such as lobsters and cockles, although they do experience surges in popularity as temporary markets open up globally (China and Korea), and certain ports around the coast tend to rely on them more heavily than others. Whelks are sometimes seen as a target species that is fished when other fisheries are closed or out of season.

Within the district of Kent and Essex there has historically been a moderate scale whelk fishery supporting 10 to 20 boats. The number of boats and the effort targeting whelks has varied over the years depending on stock on the ground, the market value of whelks and the availability of other higher value fish & shellfish stocks to target (the relatively low value of whelks tends to mean that, apart from a few vessels that specialise in whelks, other boats either target whelks on a part-time basis or when there is no quota left for other 'prime' fish). These factors have meant that over the years the whelk fishing in the district has waxed and waned.

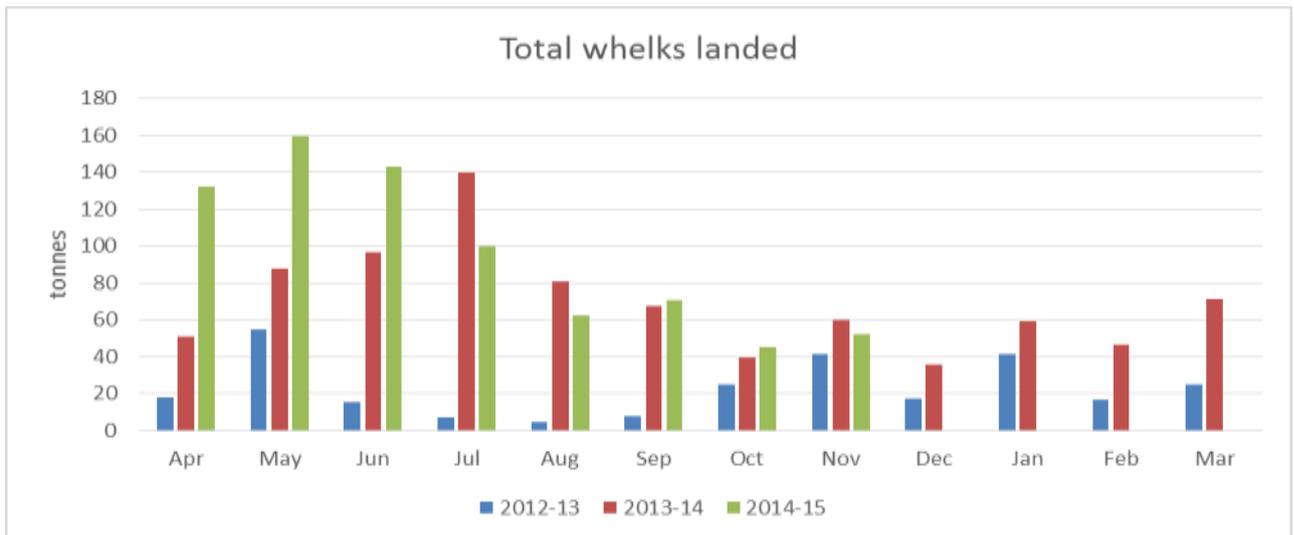
In November 2011 KEIFCA introduced an emergency byelaw limiting the number of whelk pots that can be used in the district to 300. At the 18<sup>th</sup> January 2013 Authority meeting a decision was made to develop a flexible byelaw to help sustainably manage the whelk stocks in the long-term and it was agreed to design a byelaw that allowed the number of whelk pots, the riddle gap size and the number and size of escape holes to be periodically reviewed. In April 2013 the byelaw was signed by the Secretary of State and permits were issued under the new legislation.

## 2. Summary of harvesting of whelk stocks in the district

From November 2011 to March 2013 (17 months), 34 whelk permits were issued under the emergency byelaw legislation. Just under 648 tonnes of whelks were landed during this period with an approximate first sale value of between £250,000 and £390,000.

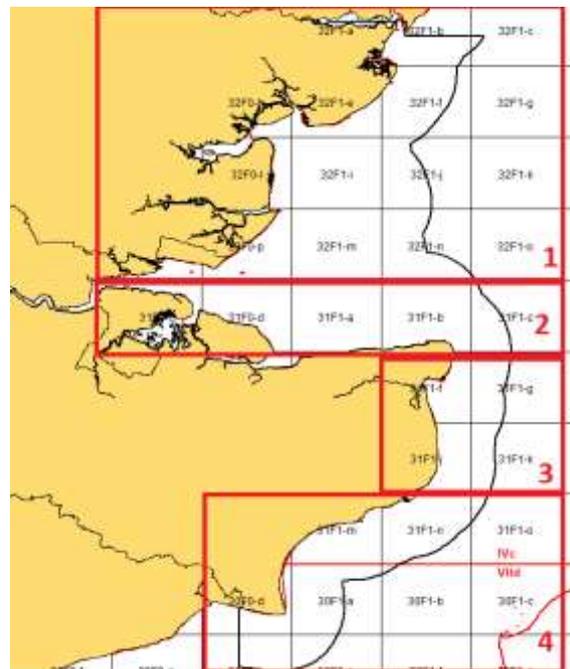
Between April 2013 and March 2013 (12 months), 27 whelk permits were issued under the flexible whelk byelaw legislation. Almost 835 tonnes of whelks were landed during this period with an approximate first sale value of between £330,000 and £500,000.

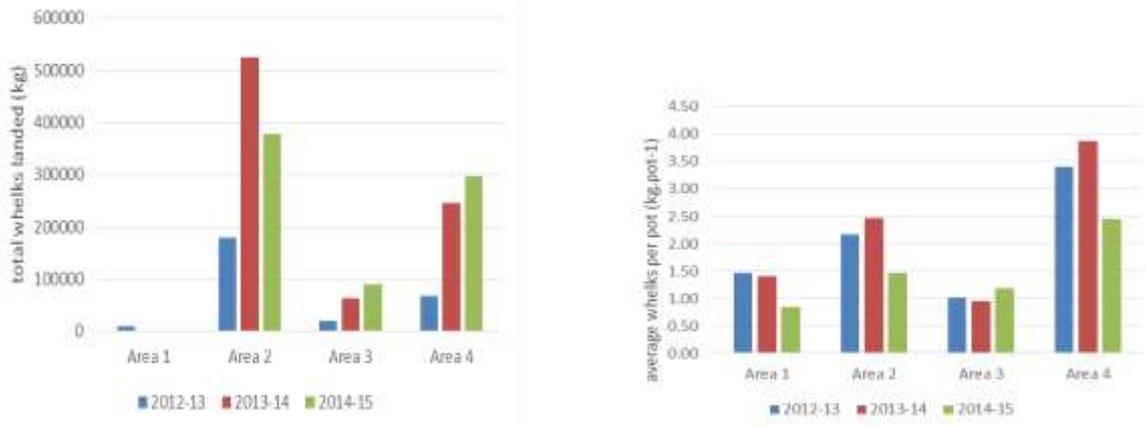
Between April 2014 and November 2014 (8 months), 36 whelk permits were issued under the flexible whelk byelaw legislation. Just over 760 tonnes of whelks were landed during this period with an approximate first sale value of between £530,000 and £640,000.



Using historic CEFAS data as well as local knowledge we have decided to sub-divide the whelk fishery into 4 sub-areas. As whelks are quite location specific, dividing the fishery into these areas helps identify if fishing effort is evenly spread out or concentrated in one area. We have started to collect samples for genetic research to help us identify if the whelk stocks in our district are one inter-breeding stock or several smaller distinct stocks.

Landings data from the permit catch returns (Fig.2) shows that area 2 (Kentish Flats) and area 4 (Dover-Rye Bay) are by far the most significant whelk fishing grounds, and that over the 3 years relatively few whelks have been caught off the Essex coast (area 1).



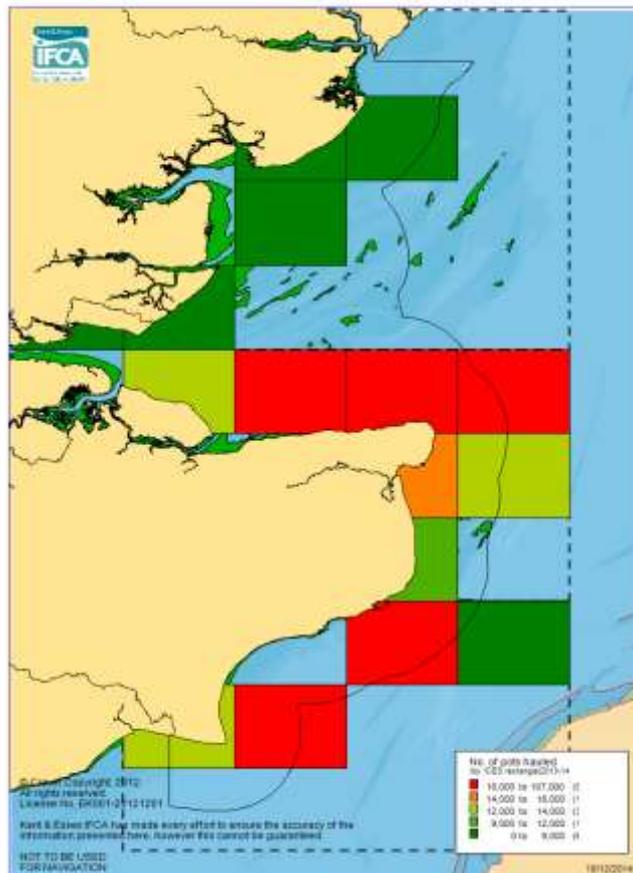


**Fig.2 Comparison of the whelk fishery in different areas and between years.**

**Total weight of whelks (kg) landed in each fishing area (left) and average weight of whelks (kg) landed per pot in each fishing area (right).**

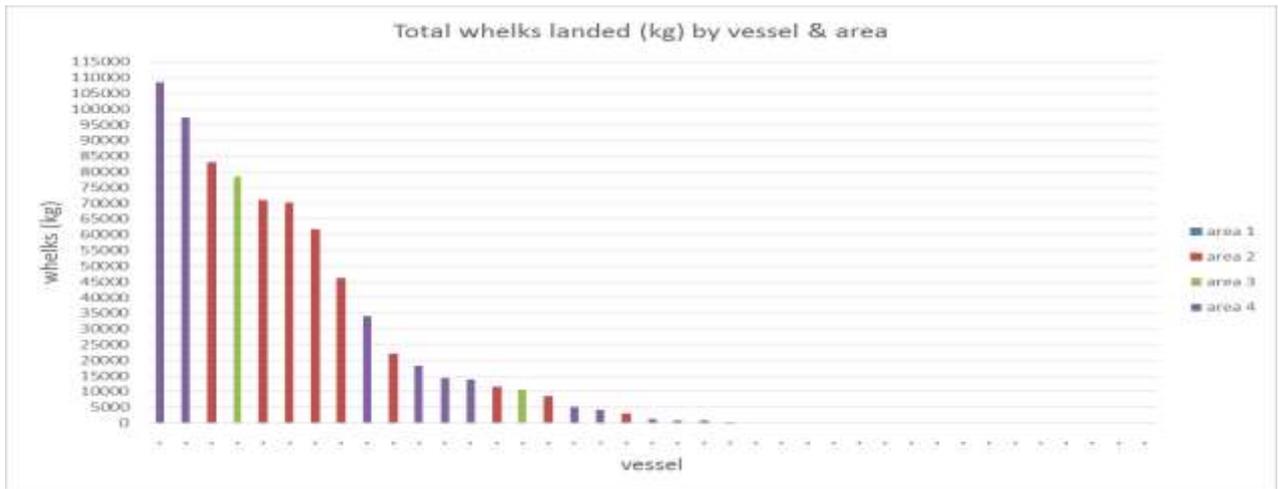
NB 2014-15 data in Fig.2 is not for a complete year but April to November only.

As well as analysing the catch returns to determine that areas 2 and 4 are the most significant whelk fishery areas, we have used this data along with GIS mapping software to clearly identify which specific ICES sub-rectangles within our district have the highest whelk fishing effort (Fig.3).

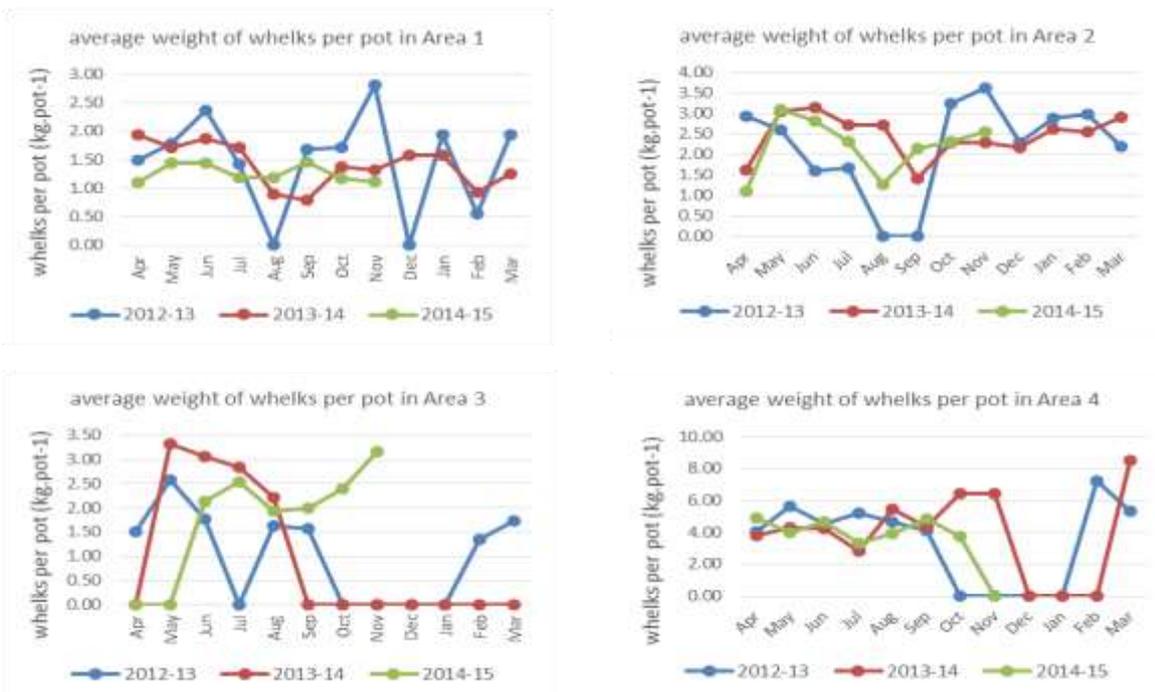


**Fig. 3 GIS map produced from catch return data showing total number of pots hauled in 2013-14 within each ICES sub-rectangle in the KEIFCA district**

Since April 2014 35 Category One and 1 Category Two whelk permits have been issued, however, of these only 22 permit holders have fished for whelks so far this year.



Although landing figures can be useful, this value does not indicate how many vessels were working the area or how frequently they were fishing. Calculating the catch per unit effort (CPUE) helps standardise these factors and can be a key indicator in identifying the health of the stock. As you can imagine CPUE is rarely constant and can fluctuate significantly with key variables (e.g. time of year). Traditionally area 2 was fished predominately in the Winter and area 4 was fished in the Summer. As Fig.5 shows, the whelk fishing season in both these areas has increased significantly and is moving to an all year round fishery. Furthermore, the data shows that consistently over the 3 years area 1 has the lowest CPUE and area 4 has the highest.



**Fig. 5 Catch per Unit Effort (CPUE) for the four whelk fishing areas in the KEIFCA district**

### **3. Summary of new whelk research**

Cefas has carried out previous whelk surveys in collaboration with KEIFCA and SxIFCA to examine the optimum size of escape hole in whelk pots to restrict the catch of undersize whelks whilst maximising catch of legal sized whelks. The current minimum landing size (MLS) for whelks is 45 mm shell length and is set by the EU. Further research by Cefas and SxIFCA examined the size of whelks at maturity from different sites and revealed geographically distinct size at maturity variations. Current opinion amongst scientists is that the EU MLS is set too high and that many of the whelks 45 mm and over that are landed are in fact immature and have not had chance to breed and contribute to future generations. If this is true, the current whelk fishing effort and management methods may not be sustainable for a viable stock and fishery to continue.

Information regarding the size at maturity, population density and connectivity of whelk populations is required to understand the biology of stocks, create an effective stock model and to inform successful management decisions. In 2014, KEIFCA started a collaboration with Queen Mary, University of London looking at the size at maturity of whelks from 4 areas in the Kent and Essex IFCA district. This research aims to work with the academic community through a Master's student project which will enable research and laboratory analyses to be carried out which otherwise would not be possible by KEIFCA alone. The student has also benefitted from fieldwork training, research guidance and experience of working with KEIFCA.

This current research falls under 3 main aims:

1. Quantify connectivity between populations of whelks from 4 areas (analysed by population genetics)
2. Examine the size of maturity of whelks from 4 different areas (analysed by measuring shell length and dissection and analysis of reproductive organs)
3. Examine population density and abundance in the 4 areas (analysed by counting and weighing whelks caught in pots and retained during an oyster dredge survey)

So far, samples have been collected using KEIFCA experimental whelk pots deployed from the FPV Tamesis. Some whelks have been dissected and analysed for size at maturity. This project is ongoing throughout 2015.

### **4. Results from consulting with the industry**

Many of the principles of the whelk byelaw replicate some of the best practice that has been developed in the Thames cockle fishery, by trying to engage with fishermen and involve them as much as possible in the management process. This not only helps fishermen understand how their views and knowledge can be used in managing the fishery but helps everyone identify and agree the next steps we need to take to better understand and run the fishery.

On 20 November 2014 KEIFCA sent out a questionnaire (Appendix 1) to each permit holder to help gather key data about the fishery and future management measures. Fourteen out of thirty six permit holders sent the questionnaire back providing valuable feedback which is summarised below:

- 43% of fishermen viewed whelk fishing this year as 'average' and 50% reported it has been 'good' or 'very good'. Only 1 fisherman viewed whelk fishing as 'very poor' and attributed this to the vessel being in refit and his own health problems. All the whelks caught in the district were sold within the UK with over one third of

the fishermen selling within the district and prices have generally been reported as good over the year.

- There are a range of different business models that permit holders use within the district. This makes direct comparisons difficult as some boats employ more people but fish for less time and vice versa. The figures do however show that the whelk fishery contributes 50% or more as a total income to 10 of the 14 vessels returning surveys.
- All of the fishermen thought that whelk fishing would be similar or better next year to this although reports on the number of juveniles varied as many fishermen tried to avoid areas with high densities of juveniles. Some fishermen were worried about the large increase in fishing effort on whelks, whilst others felt that reports of large numbers of small whelks and whelks in deep water channels could support the population.
- Of the 14 permit holders that replied 5 indicated that they felt that the number of pots used per vessel should be greater than 300, but 4 fishermen thought there should be fewer than 300. The majority of the permit holders that felt the number of pots should be increased suggested that this should be based on the number of people manning the fishing vessel. The majority of the permit holders suggesting an increase in the number of pots ran larger whelk fishing operations.
- All but two of the fishermen that replied to the survey agreed that the riddle size should stay at 22mm and all agreed that the escape holes should stay at 22mm, with just over a quarter of fishermen suggesting that the number of escape holes should increase from a minimum of 2.
- 3 fishermen suggested that possible future research could be carried out on how far whelks travel, how long it takes for whelks to grow from spawning to 45mm in size and breeding sizes of whelks.

Given the good response to the questionnaire and the detailed information gained from the responses (see Appendix 1), a whelk stakeholder meeting has not been arranged this year. However, if the Authority is minded to review and alter the current permit technical requirements (shown below in section 5) a separate meeting will be arranged and 8 whelk permit holders have indicated that they would be likely to attend such a meeting.

## **5. Reviewing Technical Permit Requirements**

It is a requirement of the flexible whelk byelaw that key elements be reviewed on an annual basis whilst others shall be reviewed at least every 3 years and reported to the Authority for consideration to review the permit technical requirements. This year key elements including stock data, including catch return data and scientific & survey data, and the results of the whelk permit questionnaire have been reviewed by KEIFCA.

Technical Permit Requirements are set out in paragraph 28 of the byelaw and can be changed by the Authority:

- The maximum number of whelk pots that may be set by the holder of a Category One Permit (*full time fishermen*) **CURRENTLY 300**
- The maximum number of tags to be issued to the holder of a Category One Permit (*full time fishermen*) **CURRENTLY 300**
- The maximum number of whelk pots that may be set by the holder of a Category Two Permit (*hobby fishermen*) **CURRENTLY 10**
- The maximum number of tags to be issued to the holder of a Category Two Permit (*hobby fishermen*) **CURRENTLY 10**

- The size of the riddle (*the size of the gauge used to measure the riddle*)  
**CURRENTLY 22mm**
- The minimum number of escape holes **CURRENTLY 2**
- The diameter the escape holes (*the size of the gauge used to measure the hole*)  
**CURRENTLY 22mm**

It is **RECOMMEDED** that the Authority agrees to keep the current Technical Permit Requirements.