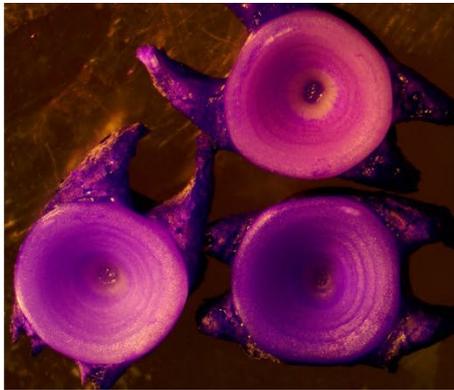




Pysgodfeydd
Cynaliadwy Cymru
Sustainable
Fisheries Wales

EMFF Fisher – Science Partnership for Sustainable Fisheries



Newsletter 3 December 2019

Merry Christmas

The fisheries team would like to thank all the fishermen who have helped us collect data this year. We have got off to a great start with a lot of data collected for all target species. We really couldn't do this work without the support from industry, so thank you and have a very merry Christmas!

Save the Date

We already have a few dates for your diaries in 2020. We will be kicking off the New Year by attending the Seafood Cluster meeting in Caernarfon at 7pm on January 7TH. We will be giving a couple of talks on some of the upcoming work and also a demonstration of the video and deck logger equipment that will be rolled out in early 2020.

We will be travelling across Wales in February to give an update on the work carried out so far, collect industry feedback and plan future work. The dates are as follows:

Tuesday 11TH February, Royal Welsh Yacht Club, Caernarfon. Evening, time to be confirmed.

Wednesday 12TH February, The Boat House, Aberystwyth. Evening, time to be confirmed.

Thursday 13TH February, Swansea Yacht and Sub Aqua Club, Swansea, 19.00-21.00

There will be a finger buffet at each event.

Ymddiheuriadau nad yw'r cylchlythyr hwn wedi'i ysgrifennu yn Gymraeg ar y funud, nid oedd cyfrieithu ar gael tan y Flwyddyn Newydd ac roeddem am ichi gael y wybodaeth yn gynt. Byddwn yn gwneud hyn ar gael yn y Flwyddyn Newydd. Rydym yn dymuno Nadolig Llawen iawn a Blwyddyn Newydd Dda i chi gyd!

Crab Tagging

Although the poor weather in recent months has hampered progress, we have now deployed around 250 tags onto mostly female crabs around North Wales to help better understand their movement patterns. We were excited to receive our first tag returns from the public - although unfortunately these were from processors who couldn't be certain of the exact capture location. We have also recorded a handful of recaptures whilst on board a commercial vessel just a few weeks after they were tagged. Please keep your eyes peeled for the coloured plastic tags and let us know if you find one! A reminder that the key information we need is the unique tag number, and the exact location and date of capture. We will be having a prize draw towards the end of the project for all those who report tags.



For more information please contact Alec: a.moore@bangor.ac.uk

Link to the poster advertising the crab tagging reward:

<http://sustainable-fisheries-wales.bangor.ac.uk/newsletters.php.en>

Lobster size at maturity

170 lobsters were collected from the commercial fisheries in both North and South Wales and dissected in the laboratory to examine ovary maturation. This was combined with other biological data to estimate size at maturity. There is still some work to be carried out to accurately categorise some lobsters as mature or immature before an accurate size at maturity can be estimated. However preliminary results suggest that a large proportion of the female stock should be able to reproduce at least once before reaching the 90 mm CL landing size. Thank you to all the fishers who helped with this study. We will be working on a report into these findings which should be released in spring 2020 with preliminary results presented at the February meetings.



Dissected lobster showing mature green ovaries.

Lobster Fecundity

We are validating a non-invasive method of estimating fecundity in lobsters. This method takes measurements of the egg mass to estimate the egg mass volume and then uses an egg density (number of eggs per mm³) to convert this volume into number of eggs. This has been used on the American lobster and on European lobsters in the Orkney Isles. We are currently validating the egg density for Welsh lobsters before using it to monitor fecundity with lobster size, egg loss over the winter and fecundity variation between years. These data will be used in future stock assessments.

Pot sector technology

Aberystwyth have started work on the Artificial Intelligence software to automate data extraction from on-board videos. We are also perusing a collaboration with CEFAS as they have a similar project about to get underway. The two projects working together will hopefully be able to achieve a lot more than working independently and avoid duplication. We also have a new camera system being developed which will hopefully be ready for trials in January. This is being developed by a specialist from Aberystwyth who makes bespoke technology for research. This camera system will have an inbuilt computer to allow processing of the video on the boat resulting in a datasheet and a subset of a few images to be stored and transferred to a cloud based database. This avoids the need for large video files to be transferred via 4g or internet. We have also sourced rugged tablets to work as an interface with the camera system, these tablets can also run any catch apps, weather apps and will also receive the environmental data from pot tags. Pot tags are on order and should arrive in January. Please contact Natalie for more information or to become involved (n.hold@bangor.ac.uk).

Scallops

A report is now available which details the findings of the EMFF scallop research cruise conducted at the beginning of the project in April 2019 in line with all previous scallop research cruises conducted in Welsh waters by Bangor University. The report makes temporal and spatial comparisons between various aspects of the king scallop populations in Wales including differences in survey indices, population age, size and weight structure, individual growth rates and bycatch. In addition, the report provides initial results from stock assessment of the Cardigan Bay stock using three different stock assessment models. The full report can be found here:

<http://sustainable-fisheries-wales.bangor.ac.uk/documents/Welsh%20waters%20scallop%20surveys%20and%20stock%20assessment.pdf>

Other ongoing work includes further development of the stock assessment models to improve their performance, and this also involves testing them with data from the Isle of Man king scallop fishery to help validate and verify their performance. Scallops gathered during the April 2019 research cruise are still being processed to identify patterns in maturity and spawning timing, and further research is planned on this aspect. Work is also continuing to estimate the absolute catch efficiency of five commercial vessels from a historical study, which is important to quantify if conducting stock assessments by scaling commercial catch rates to stock size. Lastly, a review of estimates of absolute catch efficiency in global scallop fisheries is also being conducted to enable greater understanding of this important component of scallop fishing.



Bass and ray stable isotope analysis

Stable isotopes work on the premise of “you are what you eat”. Stable isotopes in the tissues of the skate or seabass reflect the foraging location and their position in the food chain. Team fish have been processing the samples collected over the summer. We are prepping our skate and seabass samples for stable isotope analysis. We are preparing muscle tissue, bass scales and eye lenses for this analysis and we hope to have some results in mid-January.

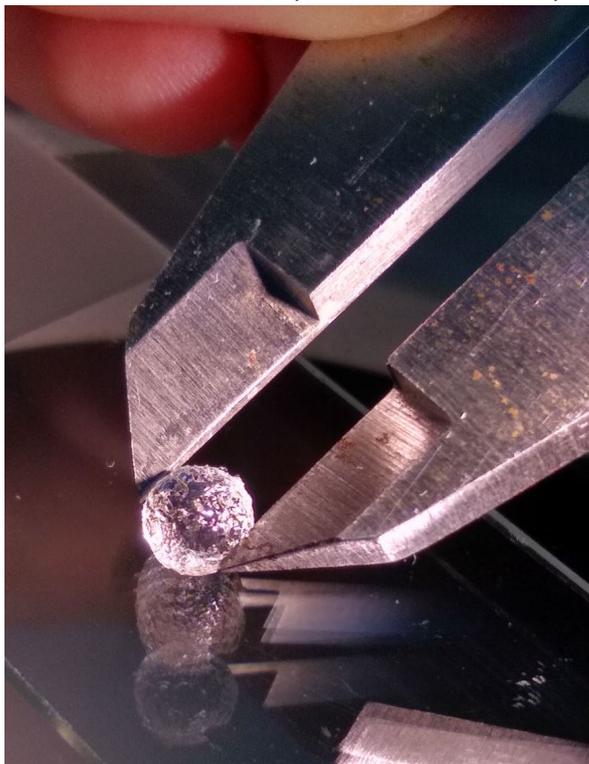
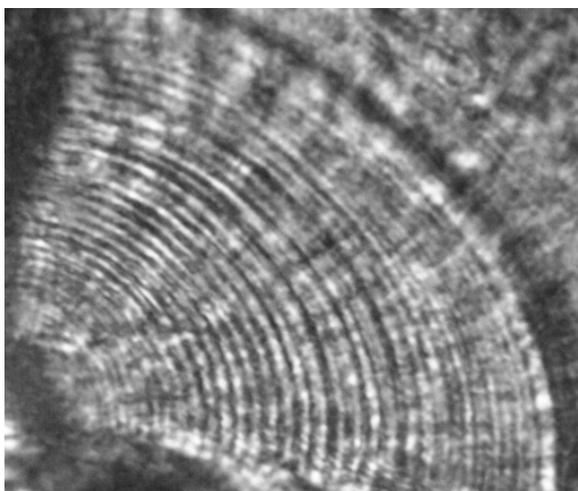


Photo of Bass eye lens. Layers of the eye lens are being sent for stable isotope analysis.

Bass seine netting

The juvenile bass we collected over the summer are currently being analysed. We have removed their ear bones or otoliths, which we are preparing for age readings. This involves removing the otoliths, setting them onto a microscope slide and then micro sanding and polishing them to view the age lines inside. We will then count the lines to find the daily age of the fish. We will use the ages in our oceanographic model to predict possible spawning locations. We also have a survey planned in the spring aiming to catch spawning bass in North and South Wales. This is joint project between EMFF sustainable fisheries Wales and BlueFish.



Juvenile sea bass otolith prepared for age readings



English EMFF work

Since our last newsletter we have collected a total of 130 bass from Morecambe Bay. Most of these were sized fish purchased directly from fishers, but we have also collected undersized fish either seized and donated by the NWIFCA, or by targeted fishing (under special dispensation from the MMO and the NWIFCA) to gain insights into the biology of fish below the current minimum landing size. Laboratory dissections record important information such as length, weight, sex, maturity and spawning status, while samples taken (e.g. scales, otoliths, eye lenses, muscle) are subject to more detailed preparation and analysis that will provide data on the age of fish and their relationship to populations in Wales and the wider Irish Sea. Also in the lab, we will shortly be commencing the extraction and preparation of tiny otoliths from the 0-group bass fry caught in the Wyre estuary in the summer for detailed age analysis. Combined with oceanographic data and computer modelling, this will help identify possible spawning areas in the region.

Alongside ongoing work on rays in Welsh waters, we have also been working with fishers to collect thornback ray from the border (Dee Estuary) to further north (Morecambe Bay), and dissected around 60 individuals. We have also started collecting data to help identify any external characters in females of this species that may be useful in assessing sexual maturity without killing the animal.



Undersized bass collected during a fishing charter in Liverpool Bay



The Fisher Science Partnership for Sustainable Fisheries is funded through the European Maritime and Fisheries Fund (EMFF) under European Structural and Investment

Upcoming work this winter

Sea trials of pot sector technology. To be involved please contact Natalie: n.hold@bangor.ac.uk

Ongoing crab tagging: a.moore@bangor.ac.uk

Bass spawning survey. We will be fishing for bass at locations identified as possible Welsh bass spawning grounds from our modelling work. h.lincoln@bangor.ac.uk

Lobster fecundity survey. If anyone is still catching berried females we would like to come out and measure them. n.hold@bangor.ac.uk

Planning is also underway to conduct a comparative fishing efficiency trial of commercial scallop dredgers and Bangor University's RV Prince Madog, as it is important to understand the catch efficiency of different vessels relative to each other if their catches are to be compared.

Fisher knowledge gathering. We will be starting to plan fisher interviews/questionnaires across the species of interest. This information is vital to understanding the context for the science evidence as well as guiding our future work.

We have been approached to be involved in other areas of work including sustainability of potential Spider crab fishery, Pot sector ropeless fishing/decreasing pot loss. We are looking into ways to fund this work.

We are also looking at a fund that provides funding for research looking at climate change resilience. The fund aims to look at how communities are living with and adapting to climate change to allow us to use this information to build resilience to future climate change. We are interested in looking at how climate change may already be affecting Welsh fishing communities (for example spread of spider crabs north, increase in storm events), how individuals and communities are adapting to this and how we can build resilience to further climate change. If you are interested in this theme then please contact Natalie or Alec as we would value industry input at the project development stage. The closing date for the funding call is the end of February.

Contact Us

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