Fisheries & Conservation Science

SCIENCE UPDATE

Juvenile crustacean survey: Dec 13

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Sustainable Use of Fisheries Resources in Welsh Waters.
JUVENILE CRUSTACEAN SURVEY

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AIMS

The aim of this survey is to identify any preferred habitat type and environmental variables for juvenile crabs and lobsters. In the long term we hope to start a recruitment index that will be implemented Wales wide. The first step is to decide whether juveniles are caught in pots in adequate numbers and if they are where to place the pots and to estimate how many pots will be needed at each location.

METHODS

Throughout summer 2013 we carried out a pilot study to test methods and try to eliminate habitat types where we do not catch juvenile crabs and lobsters. This was carried out on the Llyn Peninsula where we had access to a variety of habitat types. Initially camera work was undertaken to map the area of interest. Brett Garner, Andy Woolmer and Sea Fish carried out some survey work in the area using a towed video sledge. In addition we used the flying array to video rocky and boulder areas which was difficult for the sledge to be towed over.

Figure 1a-c. Images from the flying array.

Three locations were chosen with differing exposure, tides etc. These were; Hells mouth, Maen Gwenonwy and Ynys Gwylan. Within these locations four stations, one of each of the following habitat types were identified; sand, gravel, cobbles, boulders. In addition the mussel bed was used as a station at Ynys Gwylan and an additional sand station was used in Maen Gwenonwy, giving a total of 14 stations. We tried to keep the depth of the stations to less than 20m.

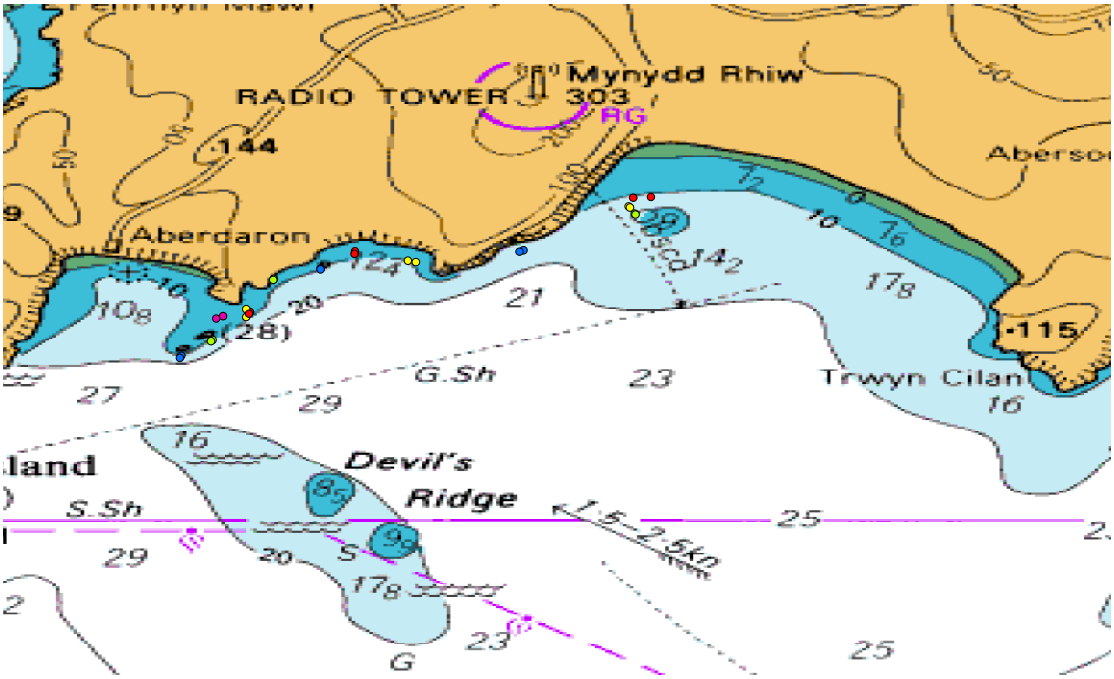

Figure 2. Map showing location of the survey stations.

Strings of 2 prawn pots with 8mm mesh and 45mm opening were placed at each station. We attempted to set the pots at exactly the same GPS co-ordinates each time, however to ensure we knew exactly the habitat type on which the pots were set a drop down camera was used to check the habitat each time. These pots were then hauled, the soak time, the by catch and the abundance, size and sex of any crabs and lobsters were recorded. In addition the water temperature was recorded along with visibility and salinity. The pots were hauled a total of 11 times.

RESULTS

The size of lobsters caught ranged from 40mm to 75mm in carapace length with an average size of 57mm. The sex ratio of the lobster was 58% male and 42% female.

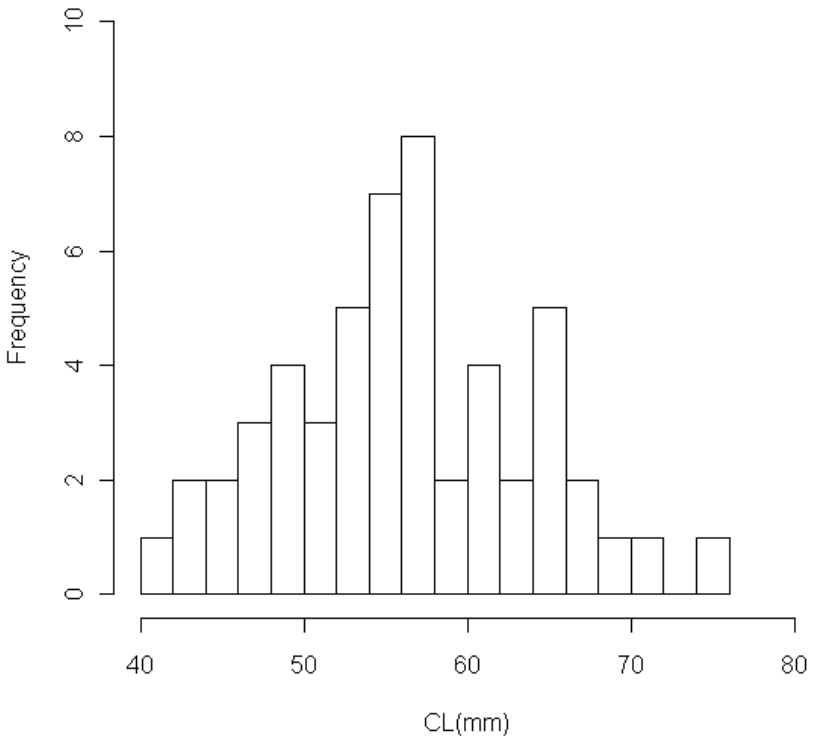

Figure 3. Size frequency of juvenile lobsters.

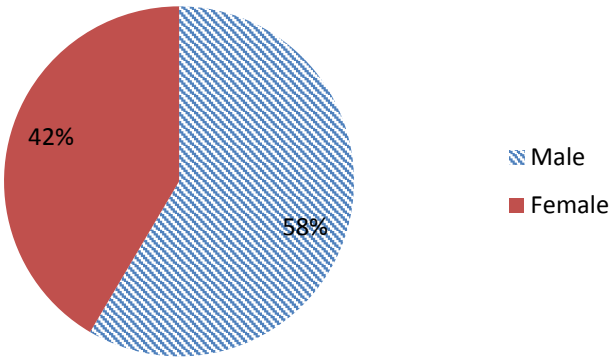

Figure 4. Sex ratio of Juvenile lobsters

The size of crabs caught ranged from 32mm to 114mm carapace width with an average of 88mm. The larger crabs were more common than the very small ones. The sex ratio of the crab was 58% male and 42% female.

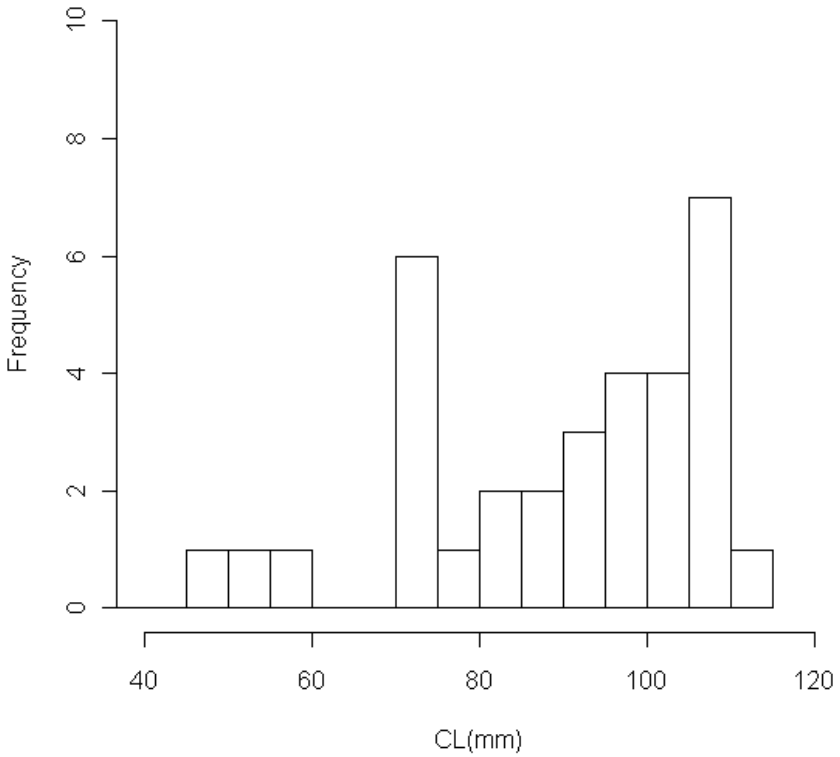

Figure 5. Size frequency of juvenile crabs

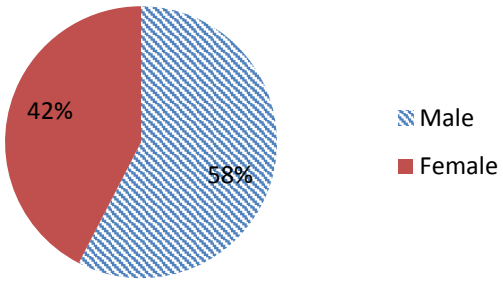

Figure 6. Sex ratio of juvenile crabs

There was a significant difference in the catch per unit effort (CPUE) on different habitat types (p= 0.01) with crabs preferring different habitats to lobsters (p=0.0006). Lobsters were primarily caught when pots were set on boulder grounds whilst crabs preferred the mussel bed. Catch per unit effort was calculated per pot days to standardise for soak time.

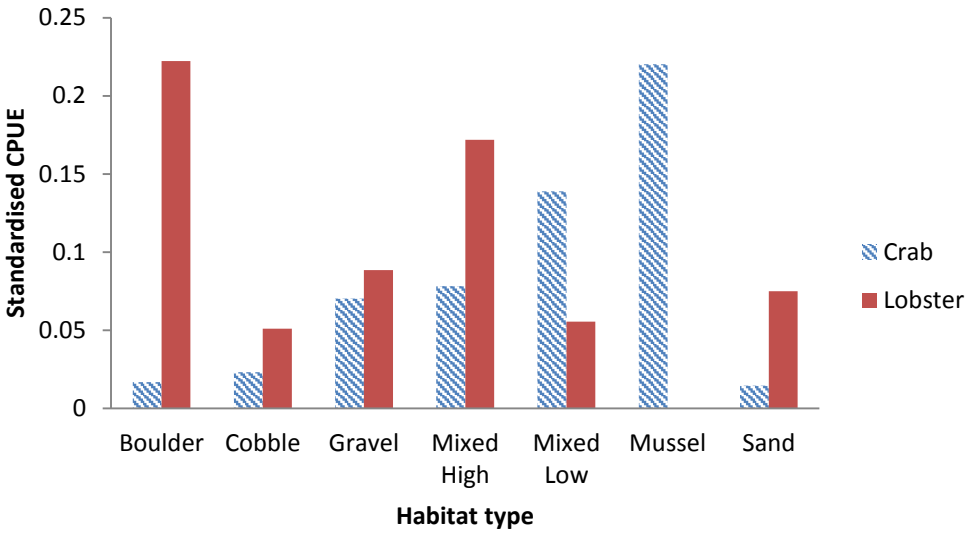

Figure 7. CPUE standardised to pot days for juvenile crabs and lobsters on different habitat types. Mixed high = mixed ground with high habitat complexity, mixed low = mixed ground with low habitat complexity.

FUTURE

This study will be continued in summer 2014 to increase the data to improve our confidence in the results. In addition we will be setting pots in the very shallow sub tidal, up close to rocky cliffs and other interesting habitats. We will attempt to locate another mussel bed that is easily accessible so that we have a repeat of this habitat type. We will devise an exposure index as from preliminary results it looks as though crabs prefer the more exposed locations, whereas the lobsters prefer more sheltered sites. This should allow us to characterise the sites where we would expect to find greatest numbers of juvenile crabs and lobsters for the start of a recruitment index.