

## Cockle stock assessment - Friskney

During the 2019 spring cockle surveys, several dense patches of Year-0 juvenile cockles were identified on the Friskney Sand. At the time of the survey, these had a size range predominantly between 5-8mm width (figure 1)

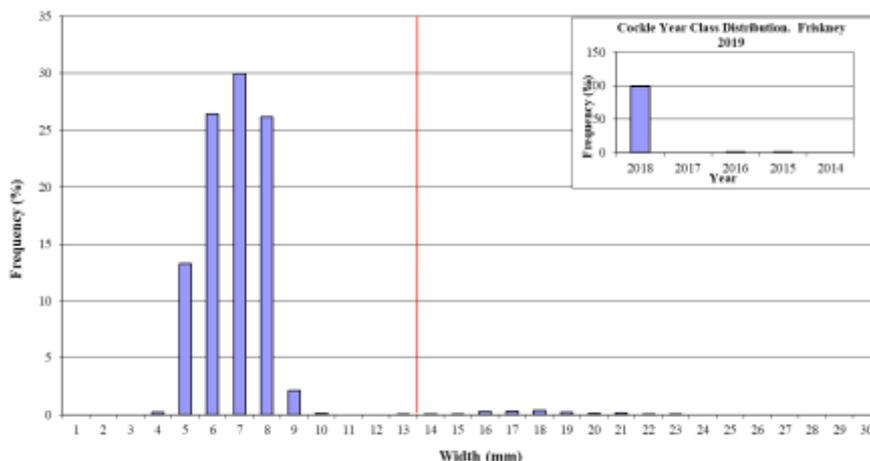


Figure 1 – Cockle size frequency. Friskney. April 2019

To protect these juvenile stocks from the fishery, closed areas were placed around each of the five patches. However, at a pre-fishery meeting with the industry in June 2019, it was suggested that the whole of the Friskney beds should be closed during the early part of the fishery (figure 2).

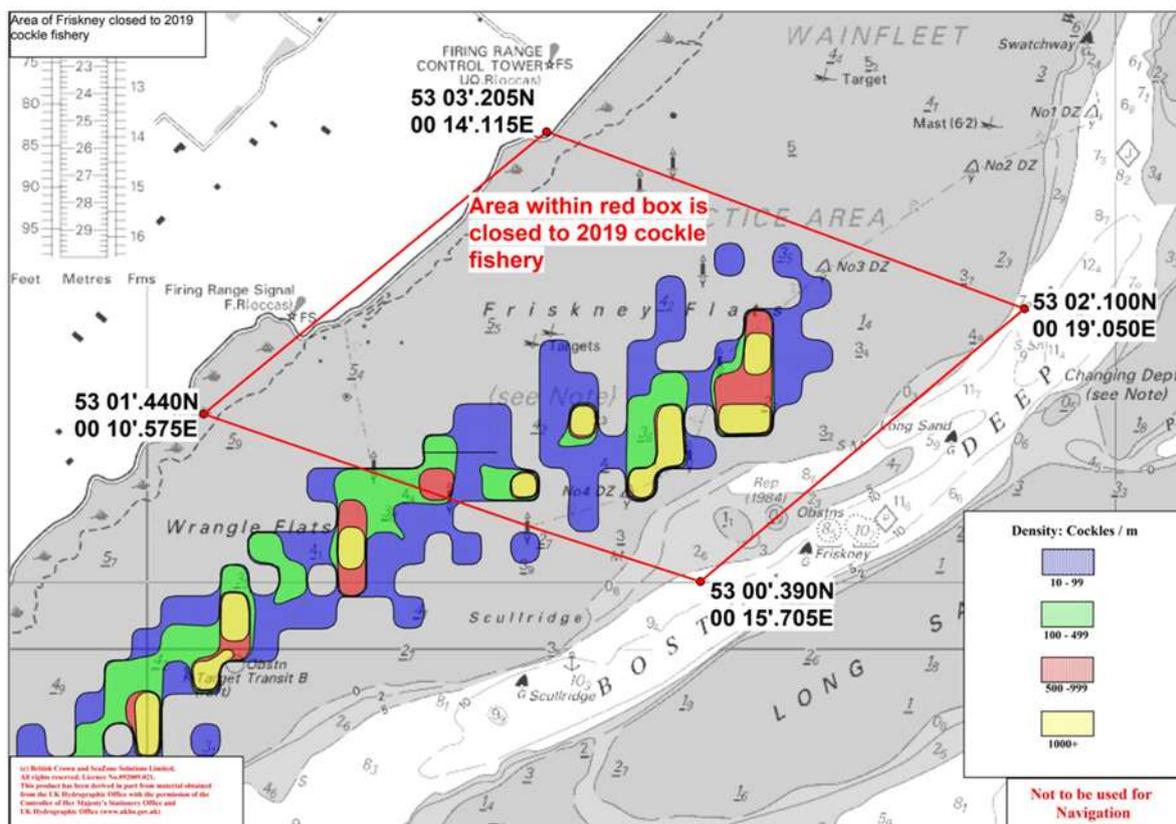
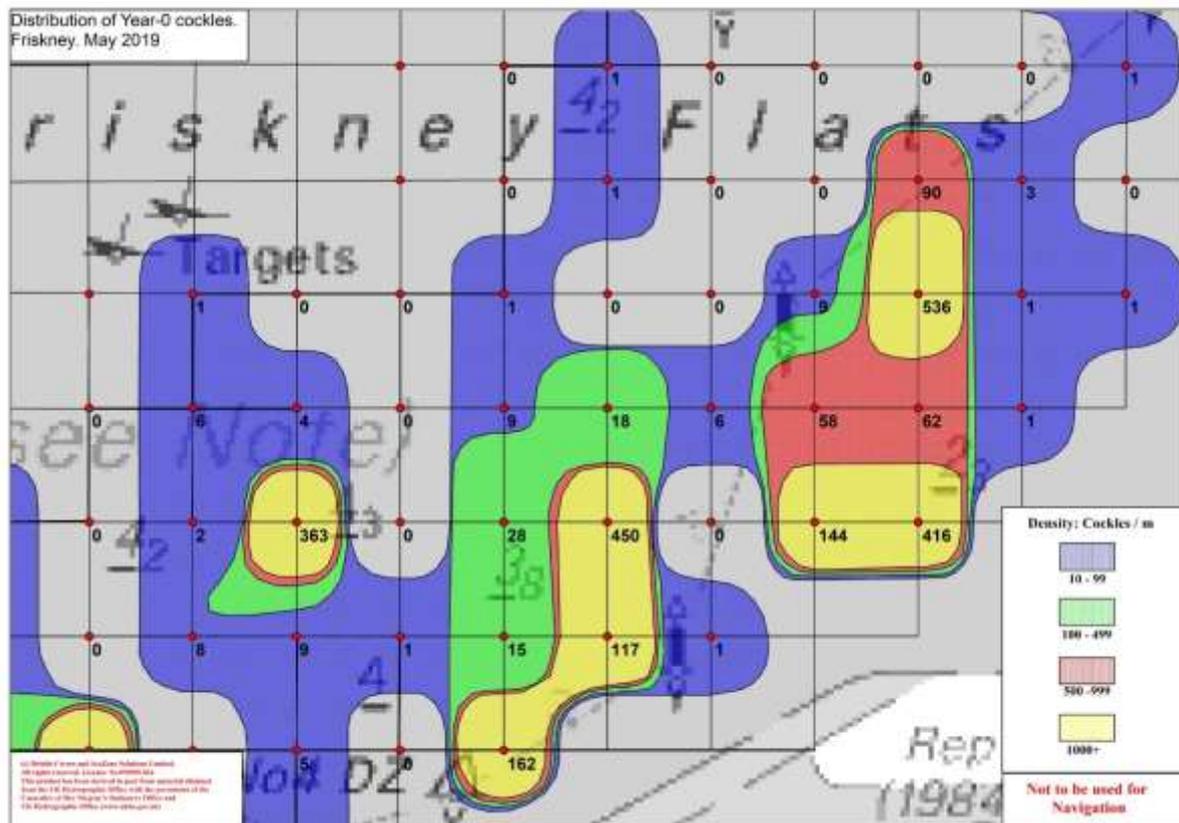


Figure 2 – Chart showing closed area protecting Year-0 juvenile cockle stocks in Friskney

Because cockles on Friskney have a tendency to grow rapidly, it was agreed that officers would conduct a further stock assessment during August to determine whether these cockles had grown sufficiently at that stage to be opened for the duration of the fishery. This assessment was conducted on August 16<sup>th</sup>. A chart showing the high-density juvenile cockle patches identified during the April survey was used to inform where this assessment would focus (figure 3).



**Figure 3 – Chart showing numbers of Year-0 cockles present at each survey station in April 2019 and their modelled distribution**

### August Assessment

Two teams conducted a foot survey by walking to the beds from shore. During this assessment, cockles were sampled at 20 stations spread over three patches of high-density cockles. The numbers of cockles present in each sample were counted and a representative sub-sample were measured.

Figure 4 shows the positions of these stations compared to the cockle distribution charts produced following the April survey (note – due to their age, the 2018 year-class of cockles that were Year-0 in April are now classed as being Year-1). These stations sampled the respective patches in slightly higher resolution than those used in the April survey, but in most cases the cockle numbers correlated well with the modelled distributions. The extent of the patches in which cockle numbers exceed 1,000/m<sup>2</sup> (Yellow layer in charts) was found to be slightly larger than previously estimated and extended further towards the sand edge. These new data have been used to update the original charts (figure 5).

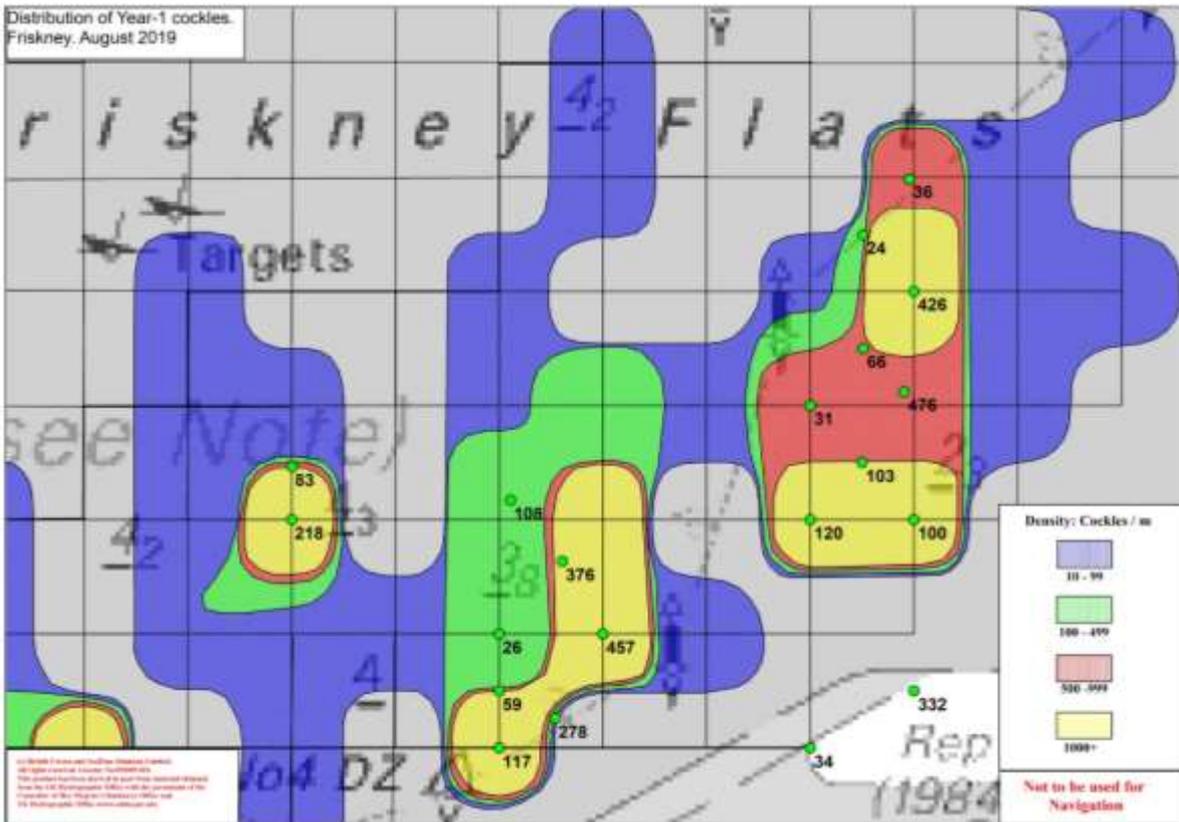


Figure 4 – Chart showing numbers of Year-1 cockles present at survey sites in August and their modelled distribution based on April surveys

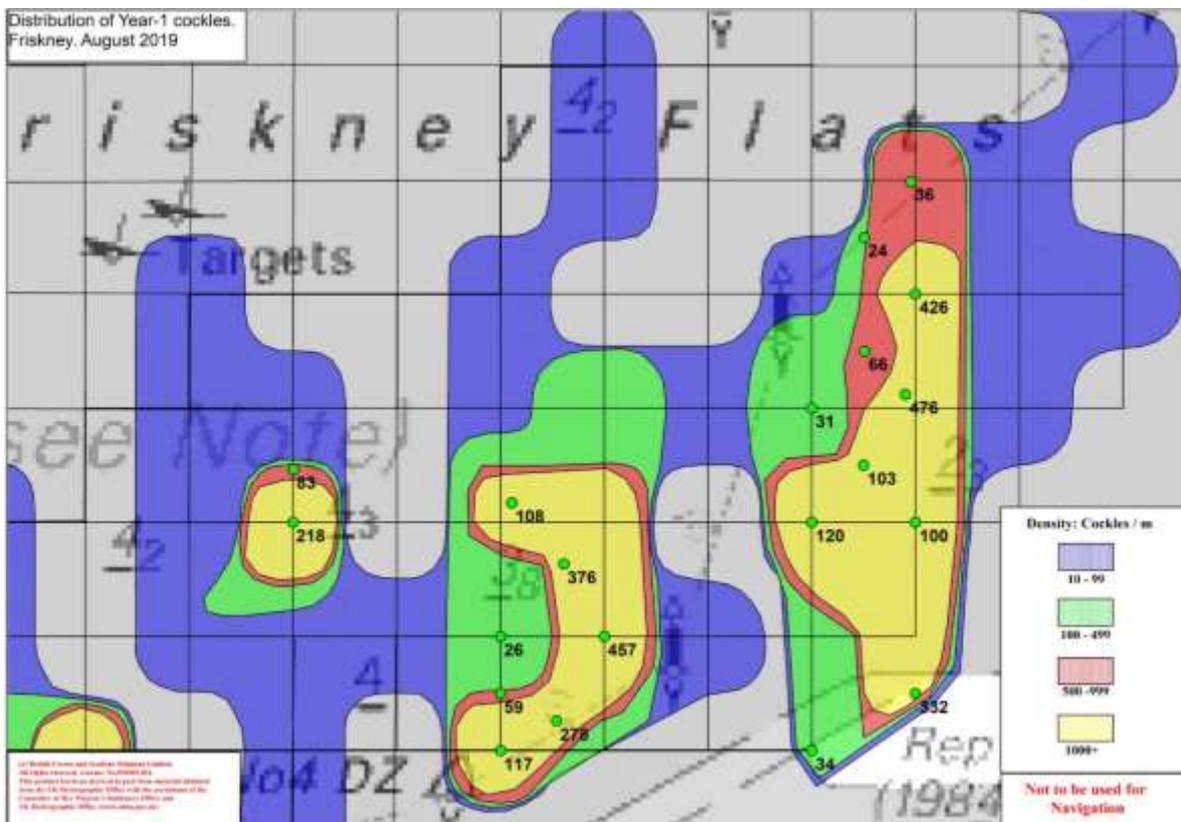
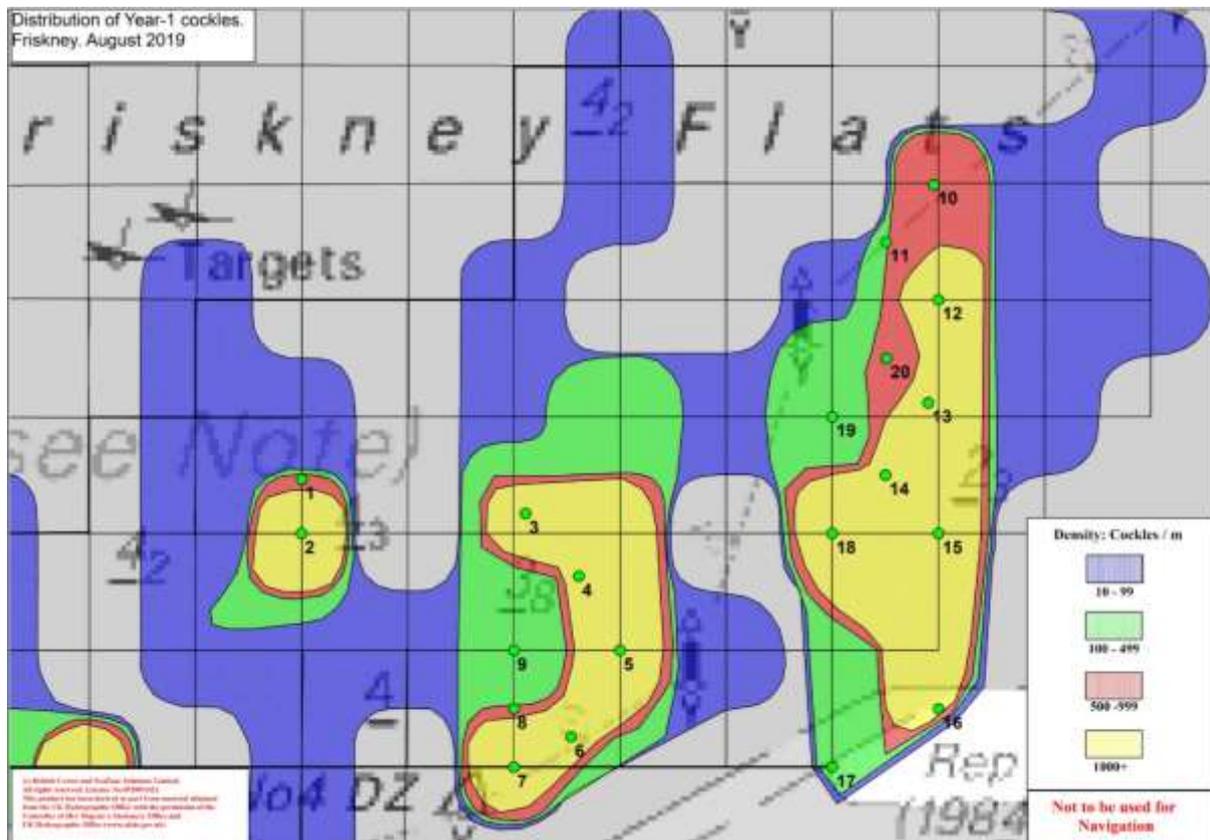


Figure 5 – Chart showing numbers of Year-1 cockles present at survey sites in August and their adjusted modelled distribution taking into account these data

The majority of the cockles found during the assessment were from the 2018 year-class cohort (total 3,470), although most sites also contained low numbers of older cockles from the 2016 year-class cohort (total 26). In addition to these, one station (site 1) supported 30 newly settled 2019 year-class juveniles.

The size frequency of the cockles measured at each station were plotted (see figures in appendix 1). The site numbers refer to the station numbers displayed in figure 6.



**Figure 6 – Chart showing the site numbers of the survey stations sampled in August.**

Overall, the Year-1 cockles were found to have a mean size of 11.4mm width, while the older cockles had a mean size of 18.96mm width. The figures in appendix 1, however, show there is variation in size distribution between sites, with the lower density cockles tending to support slightly larger cockles. Within these lower-density areas (sites 9, 10, 11, 17, 19 and 20) the Year-1 cockles had a mean size of 12.0 mm width, compared to 11.2 mm within the higher-density patches. In the high-density patches where the cockle densities did not exceed 1,200/m<sup>2</sup>, their mean size was found to be 12.2mm, while those sites exceeding this density had a mean size of 10.9mm.

At the time of the assessment the cockles appeared to be well established in the ground and showed no signs of ridging out. Offside the stations at 5, 6 and 7, a low sandy bar close to the water's edge offers some protection from wave disturbance.

## Appendix 1 – Size frequency of cockles at sample stations

