

Spotlight on science for integrated marine management

Managing mixed fisheries ([MF1208](#))

The demersal fishery in the North Sea is a mixed fishery, with species such as cod, plaice, whiting, haddock and Norway lobster being caught together. Mixed fisheries can be difficult to manage through setting Total Allowable Catches (TACs), because vessels will often continue fishing after the TAC, for example for cod, is exhausted. This means that they will still be catching cod, which are then discarded because they cannot be landed legally. The TAC therefore does not limit the catch of cod as intended.

To address this problem, other possible management measures include closed areas, more selective gears, or setting TACs to take into account the extent to which the different species are caught together. Data collected by scientific observers are most suitable for investigating area/seasonal closures and restrictions on catches/effort.

Between 1994 and 2005 Cefas scientists carried out on-board sampling of discards by trawlers operating out of ports in the North-East of England (see Figure 1). They sampled 2228 hauls: 1385 using nets with less than 100mm mesh size and 843 with 70-99mm mesh size. This provided detailed information on the extent to which the different target species are caught together, and also a useful sample of the stock abundance as experienced by the fishing industry in one area of the North Sea. This project used these data to investigate possible approaches to managing mixed fisheries.

Previous scientific work identified the possibility of implementing sets of 'mixed fishery' TACs for a consistent amount of fishing effort for each fleet to avoid the problem of vessels catching over-quota fish by continuing to fish for other species after exhausting their quota for one or more species. Such TACs would need a close linkage between overall stock abundances estimated by scientific stock assessments, and local abundances experienced by the fishing industry. Using the observer data the annual local abundance for cod, haddock and whiting were estimated, then compared with estimates of total abundance from stock assessments. For cod the local abundance was more linked to the local distribution of individual year-classes than to overall stock abundance. Haddock showed much larger changes in local abundance than expected because the stock increased following recruitment of a very strong year class. For whiting there was no clear link between local and stock abundance. The contrasts found between the local and stock abundances would cause problems in implementing sets of 'mixed fishery' TACs.

Local area/seasonal closures might help to manage mixed fisheries if there are areas/seasons where catch rates of one or more species are consistently higher or lower than other species. This was investigated using the ratio of cod to whiting catches observed during scientific sampling. This identified one possible area and a short seasonal period where catches of cod have been consistently high compared to whiting. These could be considered for closures to help to protect cod while having only a minimal effect on fishing opportunities for whiting, but more detailed work would be desirable before implementing closures.

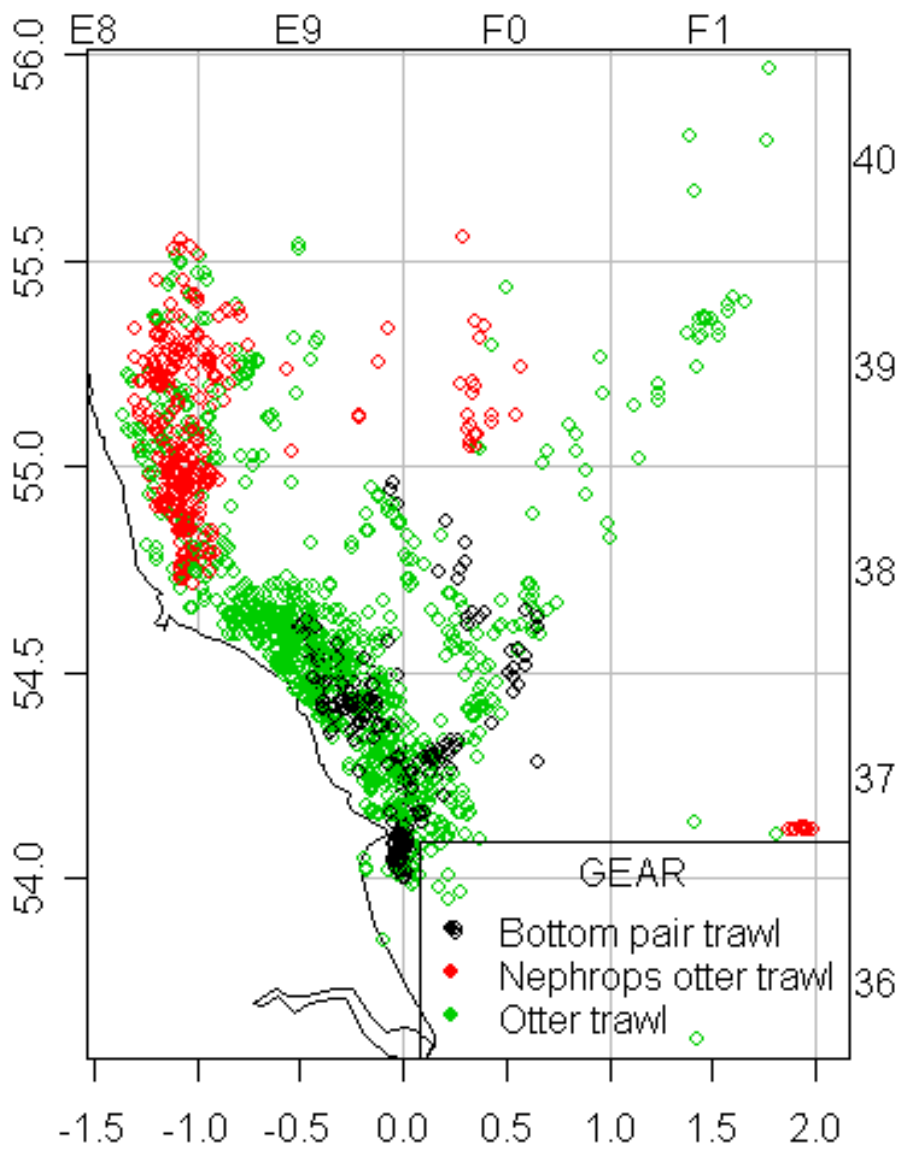


Figure 1: Study area showing locations of hauls sampled over 1994 – 2005 (Source: Cefas)