Rural Affairs and Islands Committee - evidence session on Sea Fish (Prohibition on Fishing) (Firth of Clyde) Order 2026

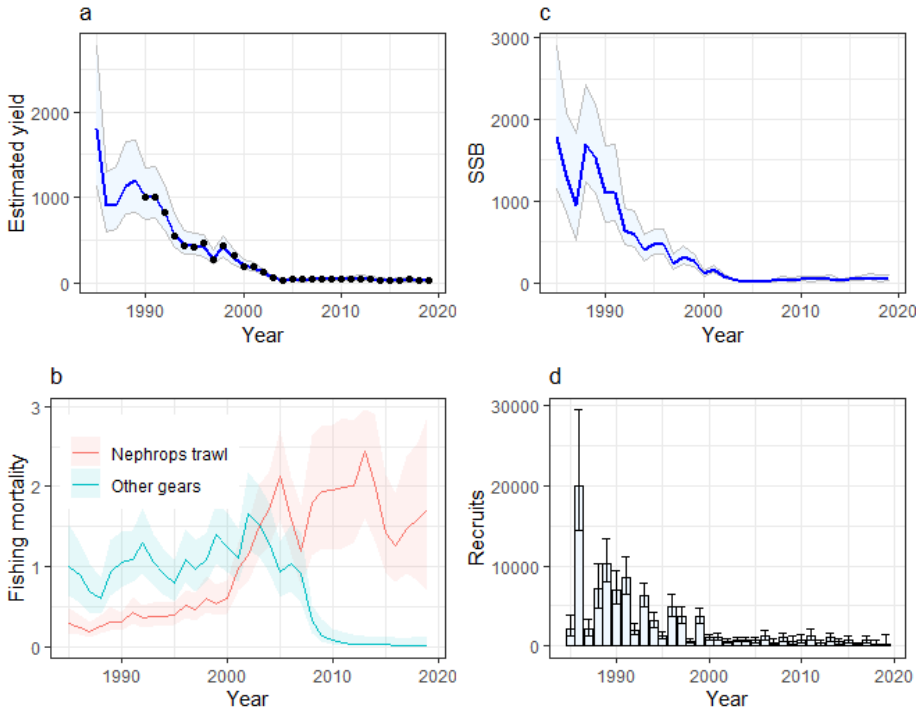
Key outputs from the Clyde cod stock assessment conducted by the University of Strathclyde

Full documentation at:

An assessment of cod in the Firth of Clyde (2025). Robin M. Cook, Ana C. V. Adão and Michael, R. Heath

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5435777

Summary of the assessment outputs based on annual survey data by Marine Directorate vessels since 1985, and monitoring data on landings and discards from towed-gear fishing vessels. Top-left a) landings of cod (tonnes), 1985 -2019. Black symbols are the observed data, blue shading represents the uncertainty around the assessment estimate of landings. Bottom left b) Mortality rate of cod due to Nephrops trawls (red) and other towed gears (mainly light trawlers; green). Top-right c) Spawning stock biomass (SSB; tonnes) of cod, 1985-2019. Bottom-right d) annual recruitment to the stock 1985-2019 (young-of-the-year entering the population).



Take-home messages:

- Landings in the 1980s and 1990s were mainly from the area which is now covered by the spawning closure during quarters 1 and 2. Annual landings declined from around 1000 tonnes to near-zero by 2004.

- The spawning stock biomass has declined from around 1000 tonnes to only 20 tonnes in 2019.

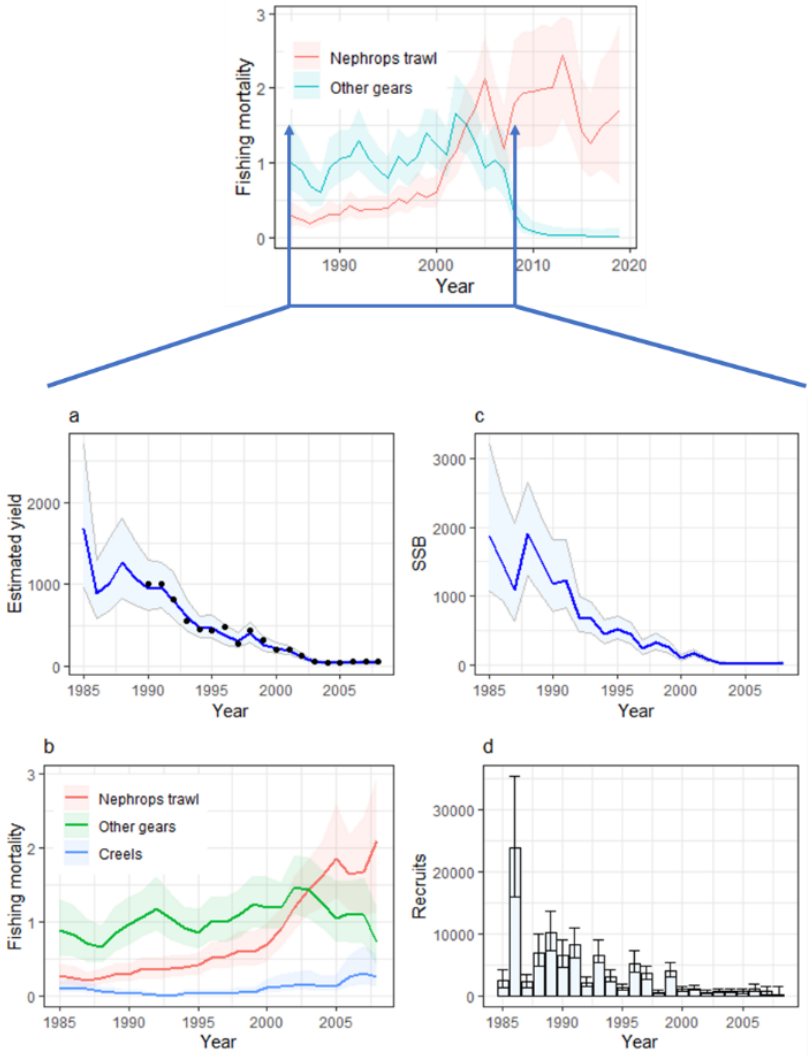
- The fishing mortality is a measure of the proportion of the stock which is caught each year. Mortality due to “other gears” which were targeting cod (mainly light trawlers) increased slowly until around 2005 and then fell sharply to zero as the targeted fishery collapsed. At the same time, fishing mortality due to Nephrops trawlers (for which cod has been mainly and now exclusively a bycatch) rose sharply and now exceeds that which was occurring during the targeted fishery in the 1980s

- Recruitment to the stock (the number of young-of-the-year fish arriving in the population) has declined over time and has been low since 2000. There is no evidence that the spawning closure has led to any increase in recruitment.

Including creels in the assessment. There is only a small dataset on creel bycatch which we can use as a basis for including creels in the cod assessment, collected in 2005.

The upper panel in the picture below shows the fishing mortality record from the main assessment not-including creels as in the previous page. The vertical arrows show the period for which creels were included in an additional assessment– shown in the lower set of 4 graphs.

Layout of results with creels, is as for the main assessment. The blue line in the bottom-left panel shows the fishing mortality due to creels.

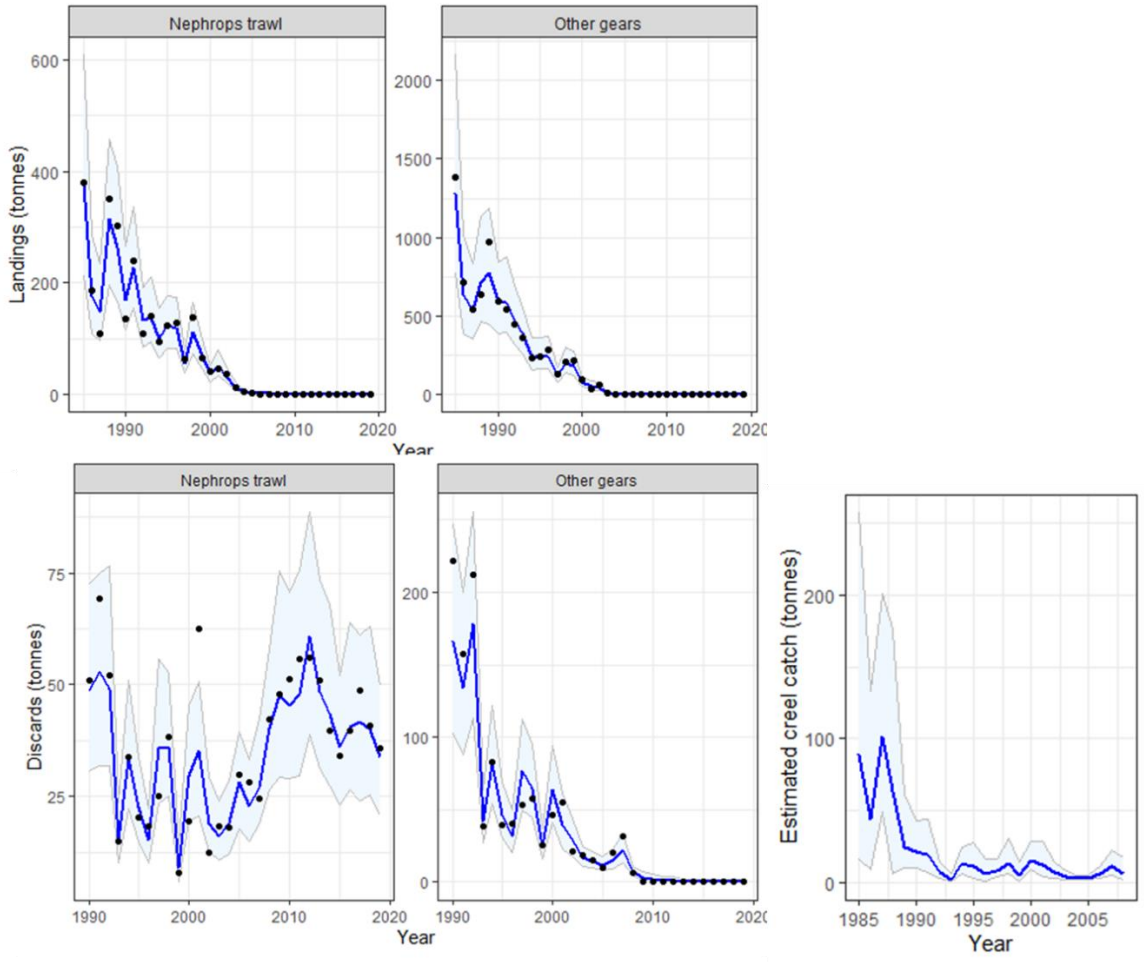


Take-home messages:

- Although there is only a small amount of data on creel bycatch of cod from one year (2005) on which to base the inclusion of creels in the assessment, the results show that this does not affect the headline story of declining spawning stock and increasing overall fishing mortality.

- The fishing mortality due to creels is estimated to be substantially smaller then that due to Nephrops Trawlers.

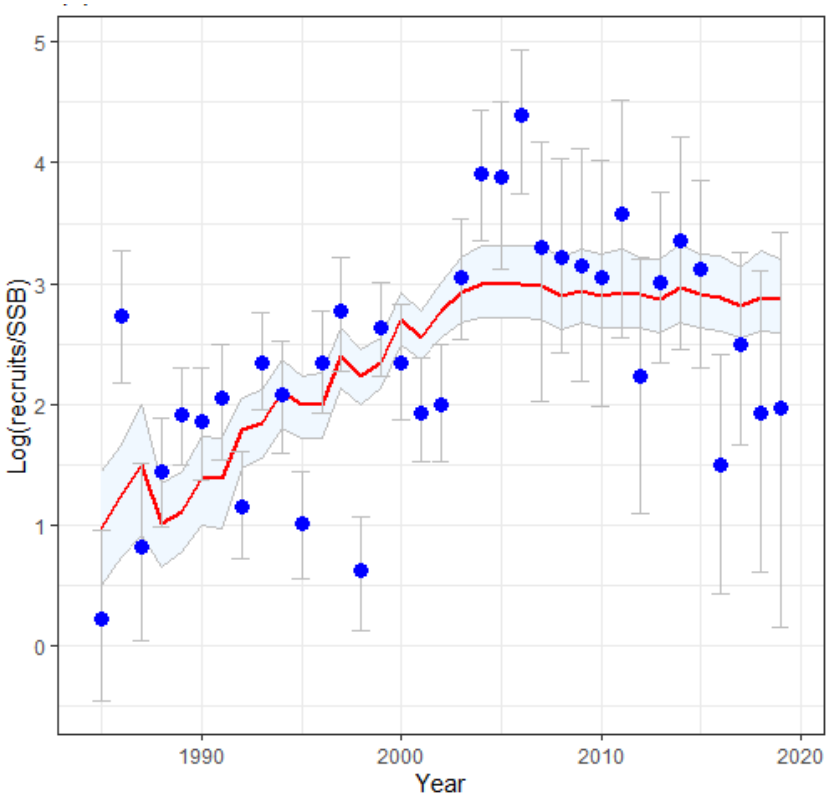
Landings and discards estimated and observed for the different fishing methods. Left column, Nophrops trawlers; centre column, other towed gears (light trawlers); right column, Nephrops creels. Blue line and shaded area is the assessment model output. Black symbols are the measured data. For creels there is only one data observation in 2005. Note that the creels time series only covers the period 1985-2008.



Take-home messages:

- Creel bycatch as been very low (less than 10 tonnes per year) since the 1990s
- Bycatch of cod by Nephrops trawlers (assumed to be 100% discarded) peaked at around 50-60 tonne in 2001/2002 and has since declined as the cod stock has decreased.

Productivity of the cod stock 1985-2019. The ratio of the number of recruits to the spawning stock biomass is a measure of the productivity of the stock. It should reflect the proportion of eggs that survive to become new young-of-the-year. This ratio is shown in the graph below. The blue symbols are the median value and the vertical “whiskers” indicate the confidence intervals. The red line is the trend in the results.

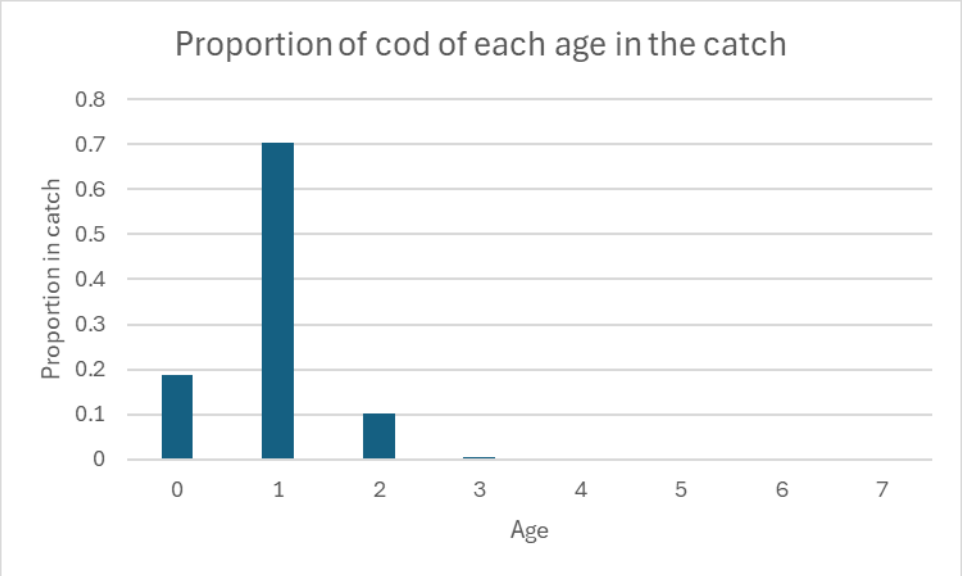


Take home messages:

- Productivity increased as the spawning stock declined – this is expected, and shows that a greater proportion of eggs survive to become recruits when the stock is low.

- There is no evidence that the spawning closure has benefited the productivity.

This figure shows the average proportion of cod at each age that are caught by Nephrops trawlers. The profile for creels is likely to be similar but with a stronger representation of younger fish



Take home message:

1. Since cod start to mature at age 2, nearly all the fish in the bycatch are immature. The fisheries do not catch spawning fish in any quantity.
2. A spawning closure does not protect juvenile fish since they may be caught outside the closed area and at any time of year.