

# The Key Fisher Project

## A citizen science programme to monitor Danish coastal fishes

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The Key Fisher Project is a citizen science programme, comprising a collaboration between Danish recreational fishers and DTU Aqua. The project has been monitoring the Danish coastal zone for 20 years, using standardised fishing gear on fixed positions to register the catches. This works as a proxy for fish assemblages in the area, where no other official monitoring programme is in place.

### The Key Fisher Project and trends from 2020-2022

As the coastal fish stocks decline, the long-term aim of the project is to describe the current state of the fish assemblages in the coastal area by (I) investigating the relative composition, abundance, location and seasonality of the species caught and (II) examining the sizes and numbers of the species caught in relation to the fishing effort.

Ninety-nine fishers measured and reported their catches across Denmark from 2020-2022, resulting in 37 and 64 marine species recorded in gillnets and fyke nets, respectively (Fig. 1). Detailed data and trends about the most commercially important species were highlighted in the report, (i.e. flounder (*Platichthys flesus*), cod (*Gadus morhua*), plaice (*Pleuronectes platessa*), European eel (*Anguilla anguilla*)) as well as the viviparous eelpout (*Zoarces viviparus*) due to its role as an environmental indicator for biochemical pollution (Fig. 4).

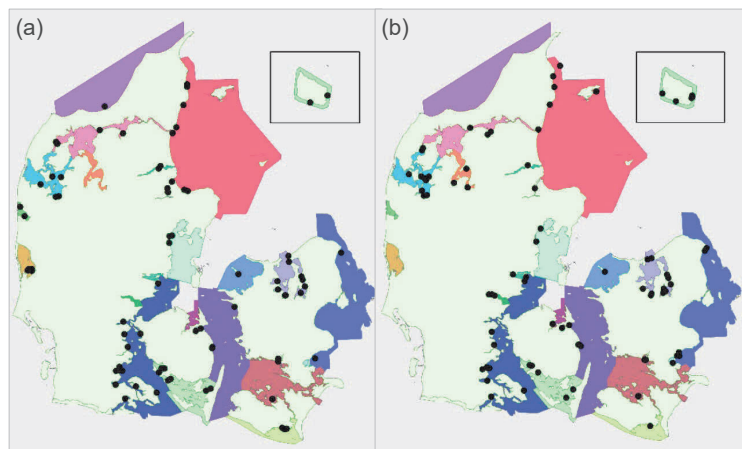


Fig. 1: The maps show active positions (black dots) of gillnet (a) and fyke net (b) fishing in the period 2020-2022, which are divided into 21 overall fishing zones represented by the different colours. The fishing gear is deployed thrice on the 1st-10<sup>th</sup> of each month, soaking for 12 hours (gillnets) and 48 hours (fyke nets).

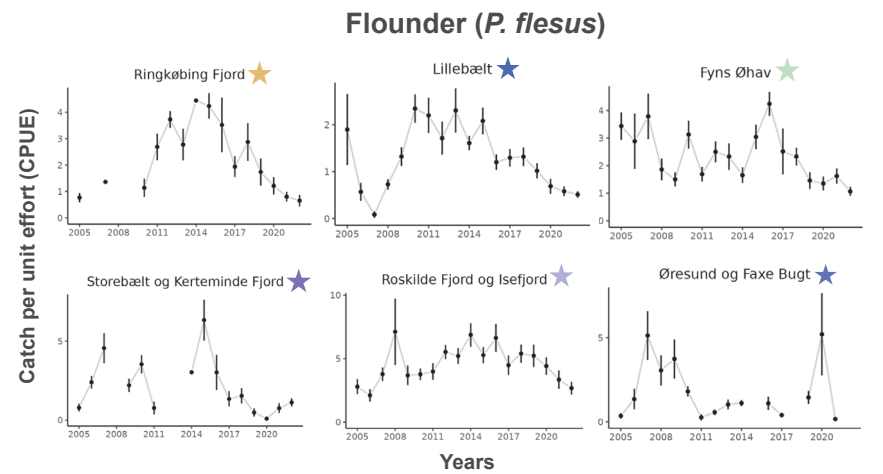


Fig. 2: Selected graphs (6 out of 21) with the total number of *P. flesus* caught per unit effort (12 hours) in gillnets from May to August 2005-2022. Data is presented in years and with standard errors. The colour of the stars represent the fishing zone (Fig. 1a). Flounder is still the most frequently caught fish, however, in all the surveyed areas there were either no trend or a downward trend, probably because coastal areas are no longer favourable for this species.

### Citizen science can provide important time-series data on coastal fish assemblages

The Key Fisher Project has been able to provide valid results about the catch, spatial and temporal trends of the marine species in the areas surveyed due to its long existence, where no other official monitoring programme is established.

As a result, this project proves that systematic citizen science monitoring programmes have a large potential and can provide long-term time series of fish assemblages, for example useful for national advice and international commissions (e.g. HELCOM).

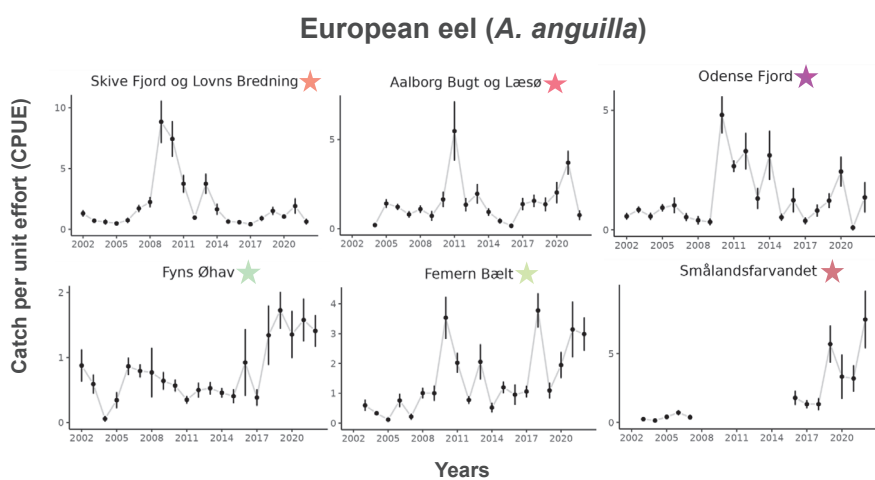


Fig. 3: Selected graphs (6 out of 19) with the total number of *A. anguilla* caught per unit effort (48 hours) in fyke nets from May to August 2002-2022. Data is presented in years and with standard errors. The colour of the stars represent the fishing zone (Fig. 1b). Eels were caught with fyke nets in all survey areas and showed an increase in at least three areas (i.e. Fyns øhav, Femern Bælt and Smålandsfarvandet).

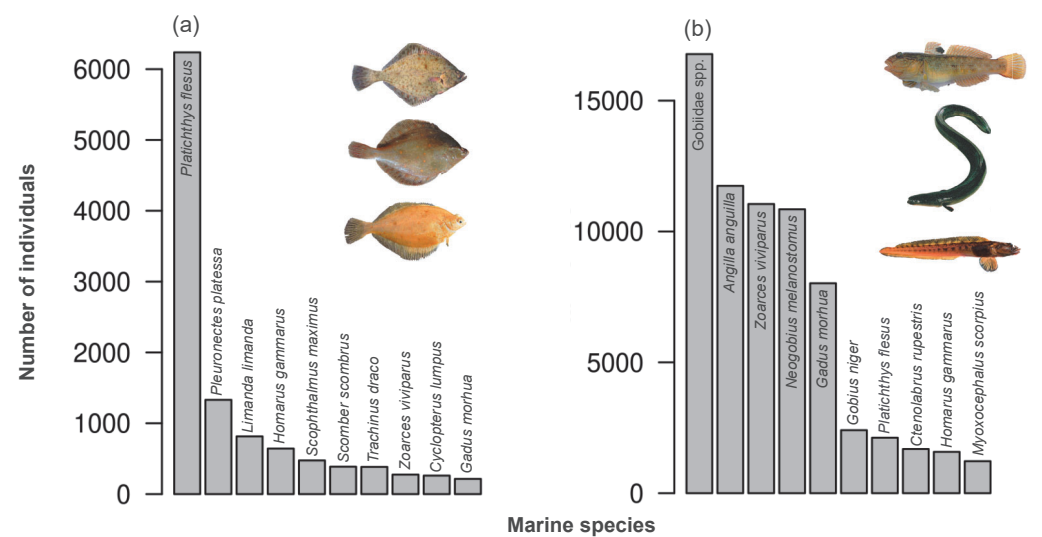


Fig. 4: The most frequently caught marine species in gillnets (a) and fyke nets (b) during 2020-2022. The data showed that the top most frequently caught species in the gillnets were the flounder (*P. flesus*), plaice (*P. platessa*) and common dab (*L. limanda*) and in the fyke nets they were goby spp. (probably comprising a lot of unidentified *N. melanostomus*), European eel (*A. anguilla*) and viviparous eelpout (*Z. viviparus*). Photo copyrights: © Hans Hillewaert; © Peter van der Sluijs; © Skagenguide & © Fjord&Bælt.



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