Introduction

The information used by fishery scientists for the assessment of commercial fish stocks originates both from the fishing industry itself (catch and effort data) and from fishery-independent research vessel surveys. Over the last decades these surveys have become an integral part of routine fish stock assessment, particularly for forecasting recruitment.

At present, several surveys are conducted in the North Sea aimed at different species, sometimes by individual countries, but often internationally coordinated under the supervision of the International Council for the Exploration of the Sea (ICES), the world's oldest intergovernmental organisation concerned with marine and fishery science. Typically, survey data are routinely analysed to provide data on distribution, abundance, maturity, etc. for only a small group of commercially exploited fish species. The general procedure, however, is to sample at least the size distribution of all species present in the catches. This has resulted in the accumulation of a large body of data.

Apart from the now somewhat outdated *Atlas* published in 1993 [1], a comprehensive analysis of the distribution of North Sea fishes is largely lacking. The few published data available refer mainly to commercial species or selected groups and periods and, quite often, only refer to part of the North Sea [e.g. 2,3,4]. However, the enormous amount of information collected during surveys is of great value and should be of considerable interest, not only to fisheries scientists but also to a wider public.

The main objective of the *Atlas of North Sea Fishes* [1] was to provide an overview of the data available and to fill important gaps in our knowledge of the spatial distribution of North Sea fishes. In addition, it was hoped that the information presented would provide a baseline that in time might serve to reveal secondary effects of fishing or changes in the fauna caused by changes in the environment.

The 1993 *Atlas* was based on a series of bottom-trawl surveys carried out in the years 1985 – 1987 and presented the distribution of 98 species or species groups, together with a brief description of their biology. *ICES-FishMap* provides access to the data for 15 species, collected during two surveys. The data from both surveys are stored in the DATRAS database kept at the ICES Secretariat in Copenhagen. These surveys are the International Bottom Trawl Survey IBTS (data from 1965 to 2004), and the Beam Trawl Survey (data from 1985 to 2004). In a second phase we plan to increase the coverage and ultimately provide similar information on all (± 150) fish species caught during research surveys in the North Sea, Skagerrak and Kattegat.

The distribution maps provide information on the average catch rate by grid cell (1 ICES rectangle or $1/9^{th}$ of a rectangle). The unit used to illustrate the distribution of the different species (number caught per hour fishing) must not be interpreted as an absolute index of abundance but only of relative abundance in relation to the specific gear used (see also the text on the limitations of the data used). A bottom trawl will never catch all the fish in its path and the efficiency of the gear varies both between and within species. Within these limitations, the data provided through *ICES-FishMap* reveal within-species concentrations and should lead to a better understanding of the geographical factors constraining the distribution of fishes of the North Sea.

References

1. Knijn, R.J., Boon, T.W., Heessen, H.J.L. and Hislop, J.R.G. 1993. Atlas of North Sea Fishes. ICES Cooperative Research Report. No. 194. (http://www.ices.dk/pubs/crr/crr194/CRR194.PDF)
2. Rae, B.B. 1970. The distribution of flatfishes in Scottish and adjacent waters. Marine Research 2: 1–39.
3. Sahrhage, D. 1964. Über der Verbreitung der Fischarten in der Nordsee. I. Juni-Juli 1959 und Juli 1960. Berichte der Deutschen Kommission für Meeresforschung 17(3): 165–278.
4. Bergstad, O.A. 1991. Distribution and trophic ecology of some gadoid fish of the Norwegian Deep. 1. Accounts of individual species. Sarsia 75: 269–313.