

A Sustainable Strategy to Develop Time Series for Ecologically and Commercially Important Fishes in European Waters

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Fishes play critical ecological roles in marine ecosystems, as well as having vital socioeconomic roles in human affairs. Climate change is already influencing the distribution, abundance, diversity and phenology of marine fish communities but understanding these changes depends on the availability of quantitative species-resolved ocean time series, which are currently generally not available for European waters.

Ichthyoplankton surveys are commonly carried out in European waters as an assessment tool for cod, plaice, herring, mackerel and horse mackerel, and eels. At present, these surveys provide data only on the particular focal species. However, many fish taxa (mesopelagic and demersal, as well as epipelagic) reside in the upper water column during their early life history. Because plankton nets predominantly sample fishes very early in their life history, larval abundance in the samples provides quantitative indices of adult spawning stock biomass. These surveys might therefore provide time series for a broad suite of ecologically as well as commercially important taxa at minimal additional cost, if all ichthyoplankton were sorted from the samples, identified and enumerated. This model for analysis of ichthyoplankton surveys is widely adopted in the USA (e.g. CalCOFI) and elsewhere. The broad use of such surveys by the fishery assessment and ocean science/observation communities increases stakeholder support, enhancing the long-term sustainability of these programs. The adoption of this approach would significantly enhance EuroGOOS' marine ecological observation framework.