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Custom-tailored or fit for multi-purpose? Options for (re)designing North Sea fisheries surveys

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Random-stratified design has in various case studies of marine surveys been shown to represent a powerful approach to optimize survey efficiency. Vice versa, the continuation of time series has been a reason for reluctance to change the design of existing surveys, particularly when they are used to inform stock assessment where methods rely on long-term data.

The design of the North Sea International Bottom trawl Survey (IBTS) has been developed many decades ago, and in recent years it has increasingly been questioned as to whether it is the most efficient one to assess the abundance of North Sea fish.

In order to explore the potential of improving survey efficiency through changes in stratification and allocation of fishing hauls, we used a pool of historic IBTS data and compared several types of stratification, including the current IBTS design, a simple depth-stratified design, and a stratification based on a suite of ecosystem characteristics. Reduction of uncertainty in the estimated parameters was taken as a measure of survey quality. We present examples for possible improvements through a change in survey design when pursuing either single target parameters, or alternatively multiple simultaneously existing survey goals.

With this presentation, we do not intend to go as far as proposing a new design for the IBTS, but hope to contribute to the discussion about how to best (re-)design a survey for which the expectations, objectives and methods have evolved over time.

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