

How do surveys' variances affect the assessment and management of the Bay of Biscay anchovy?

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Abstract:

Research surveys provide an important source of data for the assessment and management of fish populations. This is especially relevant for short-lived pelagic species, whose management requires a real time monitoring independent from the fisheries. An example is the Bay of Biscay anchovy. ICES assesses this stock yearly using a Bayesian two-stage biomass model based on data from the fisheries and from three research surveys (Daily Egg Production Method survey BIOMAN, acoustic spring survey PELGAS and acoustic autumn survey on juveniles JUVENA). The estimates of the variance of the spawning stock biomass (SSB) from the spring surveys are used in the assessment. This work shows how the uncertainty of the survey data propagates through the assessment and management based on two simulation studies. First, a simulation illustrates how different levels of surveys' variances affect the uncertainty of the SSB estimates from the assessment. The extreme case of having an imprecise survey is compared with the case in which the survey is fully removed from the assessment. Using various data sources reduces the random year effects of each surveys series. Second, a simulation based on Management Strategy Evaluation is used to assess the impact of the survey precisions on the performance of the current harvest control rule. The parameters of the harvest control rule could be modified to fulfil the objectives of maximising catches without exceeding the maximum allowable biological risk depending on the uncertainty of the surveys.

Keywords: research survey, observation error, assessment error, simulation study, MSE, anchovy.

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