

Definition of sampling priorities using Global Sensitivity Analysis and Management Strategy Evaluation

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Global sensitivity analysis (GSA) of simulation models consists in describing the uncertainty in the output of a model through the uncertainty in the model input parameters. Two of the purposes of GSA are factor prioritization and factor fixing. Factor prioritization identifies the parameters that contribute more to the uncertainty of the output. Factor fixing identifies the parameters which have a low impact on the output and can be fixed without impacting on the results. GSA in fisheries management simulation models can be used to define priorities in the sampling programs. Sampling intensity should be decreased for those parameters which can be fixed and increased for those with high impact on the output. Management strategy evaluation (MSE) approach is widely used to evaluate the performance of management strategies by means of simulation. In this approach the fishery system is simulated along with the whole management process, from data collection to management advice through stock assessment models and harvest control rules. Hence, GSA of MSE implementations can be used to assess how the uncertainty in the data used along the management procedure impacts on the performance statistics of the model output. In this study we present an introduction of GSA oriented to its application to MSE simulation models. We focus on how to combine these two approaches in order to optimize sampling programs. In particular, we illustrate the methodology using FLBEIA simulation model applied to the Spanish demersal fishery operating in Iberian waters.

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