Short-term prediction and harvest control rules for Baltic cod (Gadus morhua): A generic method to include state of the art knowledge on environmental uncertainty and its consequences –would it make a difference for advice?

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Publication date:
2015

Document Version
Publisher's PDF, also known as Version of record

ICES CM 2015/B:13

Short-term prediction and harvest control rules for Baltic cod (Gadus morhua): A generic method to include state of the art knowledge on environmental uncertainty and its consequences – would it make a difference for advice?

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Vital processes relevant for exploited stocks, for example growth, predation and recruitment are closely related to the environmental conditions. Here, we present a generic method to include state of the art knowledge on environmental impacts and environmental forecasting into short-term predictions and the formulation of environment-based harvest control rules for exploited stocks. The method consists of three elements: First, the linkage between environmental parameters and stock dynamics, second the short-term prediction of both environment and stock dynamics, and third the scaling of otherwise constant reference values for fishing mortality in accordance with the environmental situation. The method is exemplified for Eastern Baltic cod. Recruitment is treated as dependent on oxygen conditions, and the formulation of the proposed fishing intensity is accounting for the actual oxygen conditions and predicted conditions for the year following the assessment year. Finally, the resulting advice is compared to advice that has been given not accounting for the oxygen conditions.