



Sustainable Fisheries in a Changing World

7th - 11th May 2012  Edinburgh, Scotland

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Abstract Title (max 150 chars)

Using management strategy evaluation to design and test model based harvest control rules under decreasing survey effort

Abstract Text (max 2500 chars)

In fisheries management, model based harvest control rules (HCRs) are often used to set future total allowable catches (TAC) based estimated stock status. Information collected by scientific surveys is frequently input into the underlying quantitative stock assessment models. It is assumed that the higher the level of survey effort, the more accurate the estimate of stock status. This then results in more effective management, where good management is defined as that which achieves maximum utility with minimum risk. However, if survey effort were to be reduced there would be an increase in uncertainty of the estimate of stock status with possible implications for stock management. Is it still possible to effectively manage a stock if survey effort is reduced? In this study we demonstrate how management strategy evaluation (MSE) can be used to design and test HCRs that are robust to a reduction in survey effort. An age-structured population model was used as the operating model in the MSE and was parameterised to match a range of different fish species. Observational survey data was generated with increasing levels of uncertainty to represent the reduction in survey effort. The stock biomass was estimated in each year using a simple surplus production model. A biomass based HCR was used to set the TAC in the following year based on this estimate. Iterating this process forward through time and across a range of observational uncertainties, we show that a more conservative control rule can be designed to accommodate a reduction in survey effort whilst still meeting management targets for sustainability. However, there is likely to be a significant trade-off with a reduction of harvest so that rent saved by a reduction of survey effort may be ultimately forfeited by the fishing industry. Thus the net economic benefit as a result of reduced survey effort cannot be assumed.

Topics

A.4 A.4 - Development and use of management strategy evaluation and procedures for robust fisheries management

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