Confronting the ghosts of Christmases past: A new context for habitat assessments

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The concept of a habitat assessment workshop is not new. Several similar attempts have been made by NMFS over the past 25 years—all have failed. Reasons for the failures include lack of standardized methods for habitat assessments, an essentially undefined role for habitat assessment in NMFS, and, most importantly, lack of buy-in from NMFS leadership. What is different this time, and how can the problems that plagued past attempts be avoided?

National Stock Assessment Workshop

Theme A: Understanding the Trade Off Between Simple and Complex Models

Simple spreadsheet: Population models and policy simulations

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The simplest way to learn population dynamics is to use spreadsheet models. Spreadsheets allow the user to explicitly control the number and type of input parameters. Model complexity can range from surplus production and delay difference models incorporating recruitment anomalies, to Stock Synthesis and virtual population analysis involving age-specific growth, mortality, fecundity, selectivity and vulnerability vectors. Visually, basic graphics display how manual manipulations of parameters (e.g. exploitation, catchability, stock-recruitment relationship) affect the overall population levels. Alternative policy scenarios involving increased exploitation, closed areas, or changes in minimum size limits can also be simulated. Maximum likelihood parameter estimation and policy optimization can be done simply using the efficient Solver GRG algorithm. These methods are not only a useful tool for beginner assessment scientists but can be implemented by advanced modelers to test the results of more complicated assessment models. Simple spreadsheet stock assessment models can also provide a common platform for fisheries analysts and stakeholders to examine assessment model design, assumptions, uncertainties and outputs, given that spreadsheets are commonly used by citizen stakeholders in their daily lives.

Determining yields for data-poor stocks using a DCAC-based stock reduction analysis of catch history

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We describe a method for determining reasonable yield for data-poor species. Data requirements include estimates of annual catch, approximate natural mortality rate and age at maturity. The method produces management reference points concerning yield (overfishing limit [OFL] and maximum sustainable yield [MSY]) and biomass ($B_{unfished}$, B_{MSY}, and $B_{current}$). The approach merges stochastic stock-reduction analysis (Walters et al., 2009) and depletion-corrected average catch (DCAC; MacCall, 2009), and is useful when only catch and basic life history data are available. Uncertainties in natural mortality, stock dynamics, optimal harvest rates, and stock status are incorporated using Monte Carlo simulation. Comparison of model outputs to data-rich stock assessments suggest that our method is effective, along with DCAC, for estimating sustainable yields for data-poor stocks with variable, but not highly episodic, recruitment.

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Incorporating Habitat Information in Stock Assessments

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