

Statistical catch-at-age

ADMB and stock assessment


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Main features of SCA

- Based on likelihood \Rightarrow evaluate uncertainty
- Project forward from top-left, opposite of VPA
- Future projections are just a continuation of the model
- Allow observation error in catch at age
- General framework, incorporate diverse data (e.g. length distributions)
- Easy to change assumptions (e.g. parameters fixed, estimated, prior, time-varying, ...)

Coleraine demo



Coleraine

Coleraine is a user-friendly, generalized age-structured model for fisheries stock assessment. It combines a familiar Excel environment with a general and powerful AD Model Builder application. The generalized structure allows for several fishing gears, sex-specific catch-at-age and catch-at-length data, and several indices of abundance from surveys and commercial fisheries. The parameter estimation can be performed using maximum likelihood theory or Bayesian inference.

In a Bayesian framework, prior information about parameters can be supplied. To assess uncertainty around parameter estimates, posterior probability distributions are computed using a Markov-chain Monte Carlo (MCMC) algorithm. Once the model is fitted, the user can evaluate the consequences of different harvest strategies with respect to statistics of interest, such as predicted vulnerable biomass.

Software and documentation

The Coleraine package consists of two parts:

1. A powerful estimation program, colera20.exe, implemented with [AD Model Builder](#), that does all the model parameter estimation and policy evaluation.
2. A user-friendly Excel interface for entering data and viewing the model outputs, 4 workbooks in all.

The Excel user interface is based on macros written in Visual Basic for Applications. These macros take care of setting up a correctly dimensioned input file for the estimation program and graphing output data. Therefore, the user interacts only with regular Excel files, while the estimation program in the background does not change. After downloading the software, unzip and store all files in the same folder.

Download Coleraine 2.0:
[Program \(coleraine.zip\)](#)
[Documentation \(coleraine.pdf\)](#)