Formal statistical stock assessments in dynamic bulk production model

fish5108statass Statistical stock assessment methods

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Aggregate data

Have only total catch and abundance data, Y_y and I_y.
No error in catches:

$$B_{y+1} = B_y + rB_y(1 - B_y/K) - Y_y$$

Errors in indices:

$$I_y = qB_y e^{\epsilon_y}$$

or:

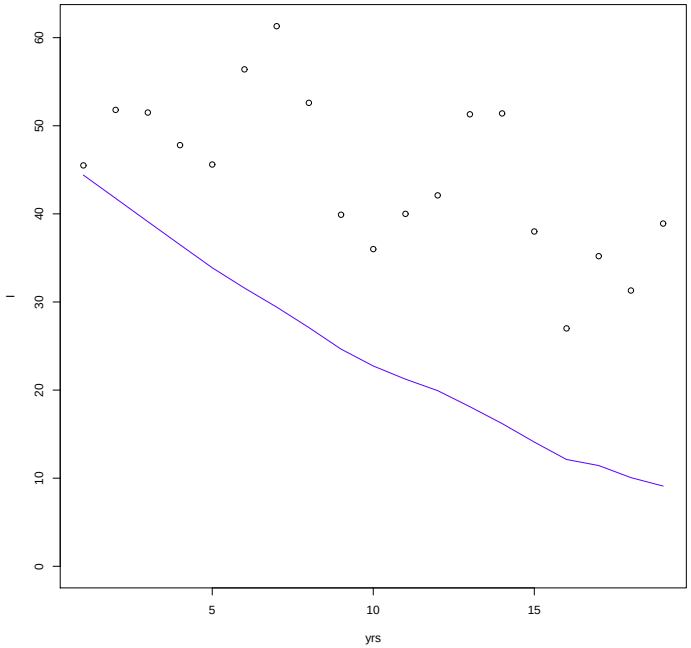
$$\hat{I}_y = qB_y$$

and

$$\ln I_y = \ln \hat{I}_y + \epsilon_y$$

Initial values for bulk production models

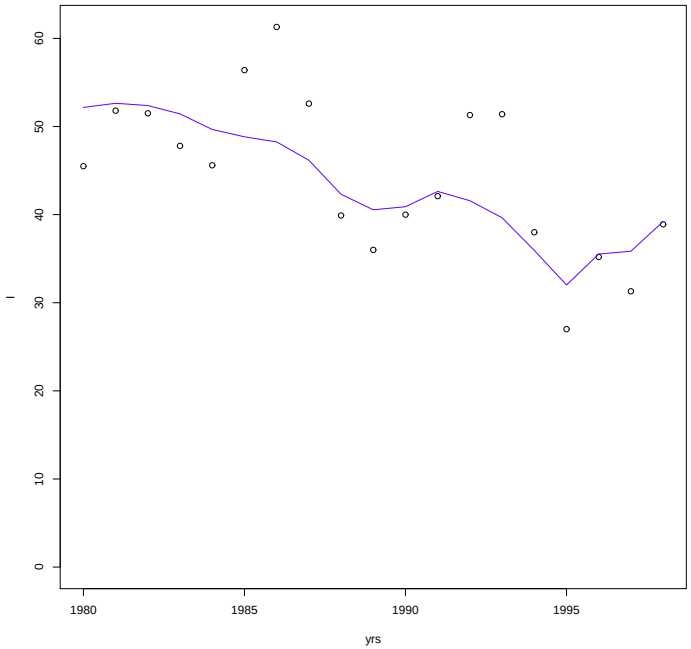
1. Define the model and parameters to be estimated.
2. Initialize parameters.
3. Evaluate the model fit.
4. Optimize the model fit.



http://tutor-web.net/fish/fish5108statass/lecture40/nephronsse.r

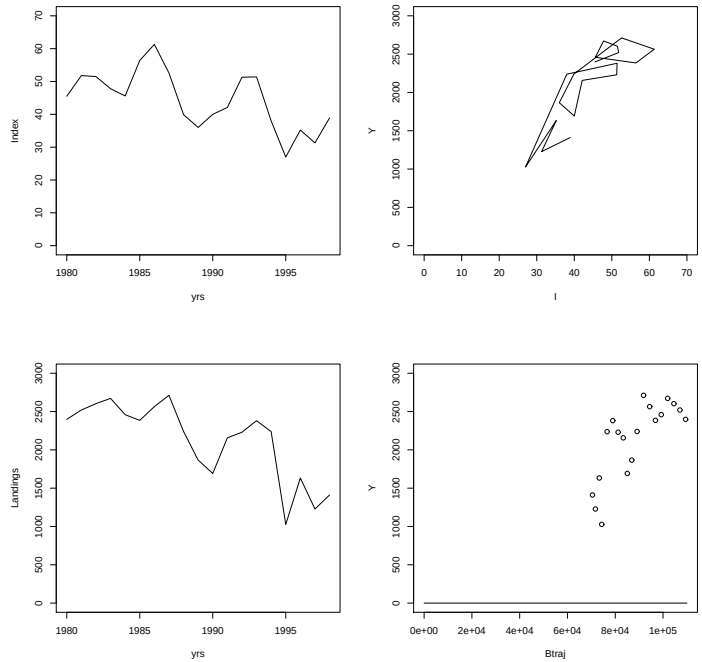
Estimation in bulk production models

1. Define the model and parameters to be estimated
2. Initialize parameters
3. Evaluate the model fit
4. Optimize the model fit



Revising the model

Need to verify output



Nephrops model: K was unrealistic

More nephrops case studies

Longer time series are available

Series can be spatially disaggregated

See file nephrops.dat

Caveat: Fleet changes may have occurred during the time period - invalidates the analysis.