

# The issue of harvest control laws

fish5107stockpred Prediction of stock and catch

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# Introduction

Any prediction needs to take into account future catches.

How these are set defines a catch control law.

This applies to short, medium, and long-term predictions.

# Implementable control rules

Some rules are easy to state but impossible to implement. The effects, for example of decreasing fishing mortality on a given species to  $F_{MSY}$  over a period of about 5 years, is easy to test out. This is an example of a simple harvest control rule that lends itself perfectly to statistical testing but is, unfortunately, impossible to put into practice since all of the quantities involved are only known with considerable uncertainty.

A corresponding rule, which can be implemented is: First estimate both  $F_{MSY}$  and current fishing mortality,  $F$  and set the quota in the coming years to that predicted by  $0.8F + 0.2F_{MSY}$ , followed by  $0.6F + 0.4F_{MSY}$ ,  $0.4F + 0.6F_{MSY}$ ,  $0.2F + 0.8F_{MSY}$  and finally to  $0F + 1.0F_{MSY}$ . Testing this rule needs to take into account the uncertainty in the estimate of current fishing mortality.

Similarly, can do nonparametric rule: Reduce  $Q$  by 15% if CPUE is high and increase if CPUE is low. Maintain catch if CPUE is within some range.

Must take into account excess catches!

# Implementation