Fisheries modelling in R: the FLR (Fisheries Library in R) project

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An intiative aimed at providing fisheries science with a comprehensive, open source and flexible toolbox based on R is presented here. The FLR project is organised around a core package (FLCore) that provides the basic S4 classes for many common fisheries data types and modelling tasks. The fundamental building block is a 5-dimensional array (an FLQuant) designed to accomodate the multiple spatio-temporal dimensions of fisheries data, either biological, technological or economic.

The FLCore package makes extensive use of S4 classes, representing in some cases very complex data structures, and provides a number of extensible modelling mechanisms for other packages to build on. Example classes are presented and the advantages and possible limitations of the current S4 system are analysed from our experience.

Packages have been developed that extend the basic classes and provide functions and methods useful in fisheries stock assessment, catch and abundance forecast, evaluation of fisheries management strategies, and stochastic simulation of fisheries systems. Use has been made in many cases of legacy code, and the mechanisms developed to simplify this task, i.e. C++ headers, are presented and tested.

Finally a number of suggestions for collaboration and linkage with other R packages, some of them actively ongoing, are presented.

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