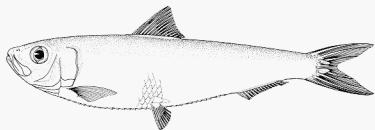


FLR in 10 slides or less



Whitehead, P.J.P., 1985. FAO Species Catalogue.

FAO

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Finlay Scott**
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(JRC)

Outline

FLR ??

FLQuant

FLStock

FLIndex

FLSR

OOP

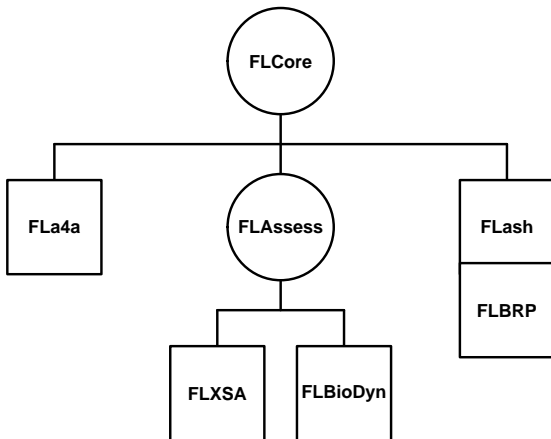
What is FLR ?

- FLR = Fisheries Libraries in R
- FLR is a set of R packages
- FLR is developed and maintained by a group of fisheries scientists
- FLR is an opensource initiative

A brief history.

- 2005 - 1.0 no one wants to remember this one ...
- 2007 - 1.4 "The golden jackal"
- 2009 - 2.2 "Swordfish Polka"
- 2011 - 2.4 "The Duke of Prawns"
- 2014? - 2.6 ??

Packages



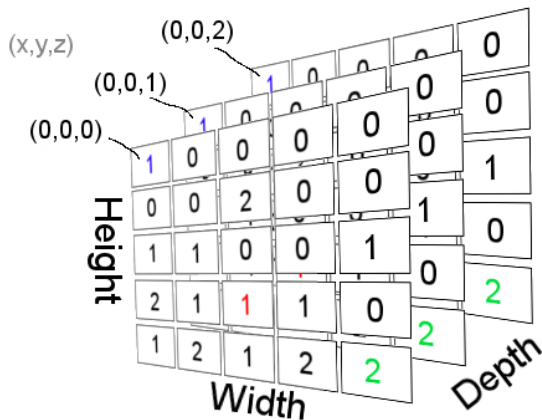
FLQuant

Stands for "FL quantity" and it's the smallest component of FLR classes.

Six dimensional array used to store data of a particular type (e.g. catch numbers), with the following dimensions:

```
[1] "quant"  "year"    "unit"    "season"  "area"    "iter"
```

FLQuant visualization



FLStock

Represents a fish stock and comprises a number of slots.

Class "FLStock" [package "FLCore"]

Slots:

Name:	catch	catch.n	catch.wt	discards	discards.n
Class:	FLQuant	FLQuant	FLQuant	FLQuant	FLQuant

Name:	discards.wt	landings	landings.n	landings.wt	stock
Class:	FLQuant	FLQuant	FLQuant	FLQuant	FLQuant

Name:	stock.n	stock.wt	m	mat	harvest
Class:	FLQuant	FLQuant	FLQuant	FLQuant	FLQuant

Name:	harvest.spwn	m.spwn	name	desc	range
Class:	FLQuant	FLQuant	character	character	numeric

Extends:

Class "FLS", directly

Class "FLComp", by class "FLS", dis

FLIndex

Represents a index (e.g. index of abundance from a survey)

Class "FLIndex" [package "FLCore"]

Slots:

Name:	type	distribution	index	index.var	catch.n
Class:	character	character	FLQuant	FLQuant	FLQuant

Name:	catch.wt	effort	sel.pattern	index.q	name
Class:	FLQuant	FLQuant	FLQuant	FLQuant	character

Name:	desc	range
Class:	character	numeric

Extends: "FLComp"

FLSR

Represents a stock-recruitment relationship and allows the estimation of its parameters.

Class "FLSR" [package "FLCore"]

Slots:

Name:	rec	ssb	covar	logerror	model
Class:	FLQuant	FLQuant	FLQuants	logical	formula

Name:	logl	gr	distribution	initial	params
Class:	function	function	factor	function	FLPar

Name:	logLik	vcov	hessian	details	residuals
Class:	logLik	array	array	list	FLArray

Name:	fitted	name	desc	range
Class:	FLArray	character	character	numeric

Extends:

Class "FLModel", directly

Class "FLComp", by class "FLModel",

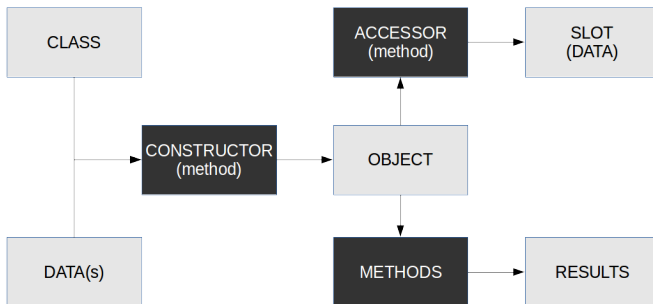
OOP

- OOP = Object Oriented Programming
- A programming language model organized around "objects" rather than "actions"
- R implementation is called "S4"

S4 (OOP in R)

S4	Spreadsheet	Database
class	template	template/class
object	file	instance
slot	sheet	table
method	(macro)	SQL string/ method

FLR & S4



FLR & S4 tips

- Constructors have the same name as the class.
 - `FLStock()` creates an object of the class "FLStock"
 - `FLIndex()` creates an object of the class "FLIndex"
- Accessors have the same name as the slot.
 - `catch.n()` extracts the slot "catch.n" from an object "FLStock"
 - `index()` extracts the slot "index" from an object "FLIndex"
- Most classes have a set of basic methods
 - `plot()`, `summary()`, `[`, `<-`