JRC FLR Course for Quantitative Fisheries Science
18-22 MARCH 2013 @ Barza, Ispra, Italy
Activity report

April 18, 2013

1 Introduction

The Maritime Affairs Unit - FISHREG of the European Commission Joint Research Centre (JRC Ispra), Institute for the Protection and Security of the Citizen (IPSC) organized a training course on using FLR FOR QUANTITATIVE FISHERIES ADVICE, which will cover the use and application of the tools developed by the FLR project (http://flr-project.org) to the quantitative analysis of fisheries data and the provision of advice on stock status and forecast.

The FLR library is a collection of tools in the R statistical language that facilitates the construction of bio-economic simulation models of fisheries and ecological sytems. It is a generic toolbox, but is specifically suited for the construction of simulation models for evaluations of fisheries management strategies. The FLR library is under development by researchers across a number of laboratories and universities.

The course will introduce the basic structure of FLR, familiarize users with the available procedures and methods, cover the most important steps of interest to participants in stock assessment working groups, and present the ways in which FLR code can be adapted and extended to your needs.

2 Programme and Instructors

Instructors

- Ernesto Jardim, EC JRC - Maritime Affairs Unit FISHREG (IPSC)
- Colin P. Milar, EC JRC - Maritime Affairs Unit FISHREG (IPSC)
- Iago Mosqueira, EC JRC - Maritime Affairs Unit FISHREG (IPSC)
- Giacomo Chato Osio, EC JRC - Maritime Affairs Unit FISHREG (IPSC)
- Finlay Scott, EC JRC - Maritime Affairs Unit FISHREG (IPSC)

Programme

1. Introduction to R and FLR
    - Setting up FLR

- Design, classes and methods
- Basic and complex classes for fisheries data

2. Using FLR
    - Creating and combining FLR objects
    - Loading and manipulating your own data
    - Plotting
3. Fitting models
    - Non-linear fitting of stock-recruitment model
    - Tools for exploring likelihood space
    - Forecasting recruitment
    - Introducing uncertainty in recruitment
4. Stock assessment using biomass dynamics models
5. Stock assessment with age-structured models
    - Statistical catch-at-age
    - Virtual Population Analysis
6. Forecasting stock status
    - Short and medium term forecasts
    - Introducing uncertainty
7. Example case studies

3 Participants and Feedback

The list of participants is presented on the table below.

Name	Institution
Esther ABAD	Instituto Espaol de Oceanografa
Isabella BITETTO	COISPA Tecnologia e Ricerca
Igor CELI	ISPRA - STSChioggia - Higher Institute for the Environment
Aymen CHAREF	Joint Research Centre
Francesco COLLOCA	University of Rome "la Sapienza2
Dimitrios DAMALAS	Joint Research Centre
Marianna GIANNOULAKI	Hellenic Centre for Marine Research
Beatriz GUIJARRO	Instituto Espaol de Oceanografa
Steven HOLMES	fisheries research services
Anglique JADAUD	IFREMER
Marios JOSEPHIDES	Department of Fisheries and Marine Research
Konstandina KOUTSOUBA	Agricultural University of athens
Mathieu LUNDY	Agri-food and Biosciences Institute
Arina MOTOVA	Joint Research Centre
Matteo MURENU	Universit di Cagliari - DBAE
Clare MURRAY	
Claudia MUSUMECI	CIBM
Nikolaos NIKOLIOUDAKIS	Hellenic Centre for Marine Research
Sofie NIMMEGEERS	Institute for Agricultural and Fisheries Research
Alessandro ORIO	Joint Research Centre
Andreas PALIALEXIS	HCMR
Apostolos SIAPATIS	Hellenic Centre for Matine Research
Pedro TORRES	Instituto Espaol de Oceanografia
Ozge TUTAR	METU Institute of Marine Sciences
Sofie VANDEMAELE	Institute for agricultural and fisheries research
Willy VANHEE	ILVO
Esin YALCIN	Mersin University
Maria YANKOVA	Institute of Oceanology "Fridtjof Nansen" - BAS

Table 1: Participants

An on-line survey was conducted after the course to evaluate the degree of satisfaction of the students. The results are presented in the table below. The results show a very high degree of satisfaction, which is consistent with the perception we had on the last day.

Question	No	Partially	Yes
The course was relevant for my work			14
The instructors were clear on their explanations		1	9
The time allocated to each lecture was adequate		1	10
The material covered in the lectures was sufficient and relevant			12
The material was presented in the right order			10
I would recommend this course to others			10

Table 2: On-line survey results

4 Final notes

The R training initiatives being promoted by the FishReg resulted in a series of 3 courses about introduction to R and this final course about FLR training for Fisheries Science.

The relevance of these courses is paramount. There is a increasing requirement for stock assessment experts with the increase demanding of science based advice for fisheries management, and FLR is a major tool on the area. JRC since 2010 has on its FishReg action 3 members of the core development team and 2 experienced users/developers of FLR. As such being a major player in the area development of methods and implementation for further usage in advisory processes.

The promotion of training sessions is extremely important for leveling up the pool of scientists available and at the same time promoting FLR and the open science principles.

All teaching materials are available on the JRC website [TODO].