

a4a report on 2012 activities and 2013 planning

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1 Introduction

The 2009 revision of the DCF introduced the concept of "concurrent sampling" for metier related variables and required sampling to be carried out in a quarterly basis. In addition biological parameters (growth & reproduction) are being collected for 250+ stocks in waters where European fleets operate. Data are increasingly piling up and by 2020 for most of them we will have a time series of 10 years, or longer. However, current fisheries data analysis methods are not designed for such a large number of stocks and as such will not be suitable for providing timely advice to fisheries managers. Not being able to assess these additional stocks is also a bottleneck for advancing ecosystem services modeling and complex ecological modeling, which are both necessary to implement a holistic approach to fisheries management.

The JRC is engaged in the a4a initiative, a project aimed at providing a comprehensive and versatile tool to assess all fish stocks harvested in European waters under the remit of the Common Fisheries Policy. The a4a initiative aims to:

1. develop an stock assessment method targeting stocks that have a reduced knowledge base on biology and a moderately long time series on exploitation and abundance;
2. trigger the discussion about the problem of massive (dozens of stocks) stock assessment and
3. promote capacity building for stock assessment.

The initiative is coordinated by JRC, and includes a large network of scientists from distinct regions: South Africa, USA, Canada, Australia, New Zealand and Europe.

2 Activities in 2012

2.1 Meetings

In March, the kick-off meeting discussed several issues and proposed a definition of "moderate data stock" which helped to constrain the scope of the initiative. Additionally the general terms of the stock assessment model to be developed were also defined. The initiative should aim for a model to be applied rapidly to a wide range of situations, and is able to provide results to be used for advice on a quantitative basis. The assessment model should be embedded on a Management Strategies Evaluation (MSE) algorithm to properly quantify uncertainties related to management options.

2.2 Visits

In May Prof. Henrik Gislason (DTU-AQUA) and Dr. Richard Hillary (CSIRO) visited JRC to discuss progress on modelling and implementation issues as well as discuss the design of the generic framework being implemented.

In June Dr. Sidney Holt and Dr. Raul Prellezo (AZTI) visited JRC to discuss the MSY approach and bioeconomic modelling.

In November Prof. Steve Cadrin visited the JRC to review the progress made so far and discuss the coordination of a4a and SISAM¹.

For each visit a report was produced. All reports can be downloaded from the a4a website.

¹ICES Strategic Initiative on Stock Assessment Methods

2.3 Dissemination

The a4a initiative was presented at the FAO "Fisheries Working Group on exploitation status and ecosystem productivity" held in Washington DC, June 5-7, 2012. In September a paper on the impact of not taking into account the effect of sub-populations in stock management, was presented to the ICES Annual Science Conference in Bergen.

The stock assessment model was presented at the STECF EWG 12-19 (Ancona, December 2012) dealing with Mediterranean stocks.

2.4 Modelling

In October 2012 the a4a stock assessment model draft was finalized. At the moment the model deals with age information and includes the stock-recruitment relationship estimations². It's written in FLR linked with ADMB for the fitting. A set of tests with simulated stocks were already carried out and will continue during 2013. So far the tests were very promising.

There are a number of stocks (100+) being simulated for testing, using life history parameters and methodologies developed by Prof. Gislason, with a trawl-like selection pattern and exploitation history based on a "development-high exploitation-recovery" pattern.

The MSE structure and a first implementation have been completed.

3 Plan for 2013

3.1 Meetings

One meeting is foreseen to discuss achievements and future of the initiative. It may be organized in JRC or during WCSAM in Boston, to take advantage of the fact that some of the members will be there.

3.2 Visits

Four visits from scientists involved in the a4a initiative will be organized. Some of these will be longer than last year, between 2 and 3 weeks, to allow a more in depth contribution.

3.3 Dissemination

During the first quarter a paper with the stock assessment model specifications and characteristics will be submitted to a peer reviewed journal.

During the first and second quarter a4a will be involved in the testing carried out by WCSAM³ and will submit a communication to the conference.

During the second quarter a paper about the a4a initiative and ideas will be submitted to a peer reviewed journal.

In late August (??) a stakeholder seminar will be organized (August ??) to present the a4a initiative in the context of fisheries management in Europe. The seminar will have two parts.

²Future developments will include approaches for length based information, not based on the assumption of age data

³World Conference on Stock Assessment Methods for Sustainable Fisheries, Boston USA, July 2013

One presenting the a4a methods on the context of fisheries advice in Europe, targeting RFMOs' scientific coordinators and/or policy advisers, DGMARE, RACs (?). The second part will target more technical participants, like expert groups chairs or stock coordinators, where the a4a methods' details will be described and discussed, and a course on how to use the methods will be carried out.

A paper will be submitted to the ICES ASC 2013 to be held during September in Reykjavik, Iceland.

The methods will be presented to STECF EWG.

3.4 Modelling

With regards to model development the activities foreseen are:

1. finalize the FLR data package, which requires:
 - including the gadget simulations,
 - including oids stocks,
2. finalize the stock assessment model, which requires:
 - testing,
 - length-age conversion,
 - work on diagnostics,
 - more documentation
3. finalize the MSE algorithm with full feedback based on 5 models, mean catches, survey trends, biomass dynamic, VPA and statistical catch-at-age, which requires:
 - work on the implementation error model,
 - wrap and pack in FLR,
 - work on results presentation,
 - more documentation
4. develop a GUI for the a4a assessment model and MSE (external contract).

4 Networking

The methods and ideas will be channeled to STECF, through EWG or presentations to the plenary meetings.

Linking with ICES will continue by presenting papers to the Annual Science Conference and by coordinating with the Strategic Initiative for Stock Assessment Methods (SISAM).

GFCM, CECAF and ICCAT should also be approached to promote the methods and tools developed by a4a.

A strong effort must be made to promote and discuss the a4a ideas, methods and tools with our partners. For the moment the interaction has been very limited.

5 Conclusion

The ideas of assessment for all stocks and for all scientists will be consolidated and a clearer view on the advantages and disadvantages of this approach will be set.

The first version of the methods will be consolidated and tested in simulated stocks, as well as in some real examples.

Both MSE and stock assessment model will be distributed as FLR packages.

The dissemination of the initiative achievements and ideas will be promoted.

A stronger effort will be made on engaging our partners and networking with other Institutions.