

ICES TCSAI REPORT 2013

Report of the ICES Training Course: Stock Assessment (Introduction) (TCSAI)

27–31 May 2013



ICES

International Council for
the Exploration of the Sea

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Conseil International pour
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Participants at the course “Stock Assessment (Introduction)”, 27-31 May 2013, Centro Oceanográfico de Vigo, Vigo, Spain. The course was given by Steve Cadrin, University of Massachusetts (UMASS), USA (far right of picture) and Iago Mosqueira, European Commission – Joint Research Center, Italy (fourth from right, standing).

**Report of the ICES Training Course Stock Assessment (Introduction),
27–31 May, 2013**

by

Steven Cadrin and Iago Mosqueira

1 Summary

This was the sixth offering of the training course “Stock Assessment (Introduction)” under the ICES Training Programme. 27 students from 13 countries participated in the course (Annex 1). From the perspective of the instructors, the course was a success although some adjustments can improve the knowledge and skill transfer to the trainees (see 2 Recommendations).

The course was offered at the Centro Oceanográfico de Vigo, Vigo, Spain. The hosts were generous in their support of meeting facilities, classroom, laptop, projector, flipchart, internet, etc. as well as hospitality for coffee breaks and a social ‘ice-breaker’ on the first evening of the course. The warm reception from the institute created a collegial atmosphere for learning. This was the first time the course was taught outside Copenhagen. For future courses outside of ICES headquarters, it would help to have a dedicated laptop with updated software, configured in English to facilitate use by instructors.

Despite the instructions on the ICES website, many students arrived at the course with little instruction on R or Excel Solver. Some time was lost on the first day to install solver and bring students ‘up-to-speed’ with R. Therefore, the instructors should ensure that the information is clearly communicated to students. Despite the slow start, the instructors were able to cover some advanced topics, such as likelihood methods.

Feedback from students was solicited using a course evaluation questionnaire (Annex 3). Results indicate that the amount of material covered and degree of difficulty was “average” to “too much”, course outline and organization (i.e. document detailing course aims, content, organization of teaching, assignments, reading, assessment, etc.) usefulness of information and clarity of presentation were “average” to “very good,” helpfulness of teaching staff, usefulness of course materials and clarity of presentation was “high.” Overall, the course content, organization and quality of teaching were “average” to “very good.” Individual feedback from trainees to the question “Good features of this course/suggestions for improvement” were:

- I suggest not including R in this course and limit it to stock assessment theory and excel exercises to have more time for lectures and do more exercises to understand better the theoretical concepts
- My suggestion is to provide a bit more useful literature (i.e. papers with real world data)
- In general a very good introduction about how stock assessment works and the way of thinking linked with this. One could make basic knowledge of R a prerequisite for the course, which would allow a more detailed discussion about the scripts and a more hands on approach for people who will be involved in stock assessment in the future.
- We covered a lot of information in a short period of time. I think it was well presented and I enjoyed both teachers style, and both were very helpful. The only struggle I found was understanding which model is used for what and when you would use them in a real world situation. Given an assignment in class and steps for completing the assignment, I was able to do it. However, if someone just handed me a data set and said "do a stock assessment" I am not sure I could! That may be my own shortcoming though!

- In the R introduction it would be helpful to have a little more detail on what the various functions/parameters are particularly helpful for people that have never used R before. Also tell students to install Rstudio before coming to the training - possibly more focus on when to use what stock assessment methods and some more real examples of what kind of data is used in real stock assessments.
- It was a very skilled course, with well-organized session topics and a great teaching staff willing to transfer their knowledge and assist us in solving doubts. I strongly appreciate the R lessons, although I felt they ran fast...no time to go through the whole script...I guess it's a task to be done by myself afterwards.
- Really interesting. Very good practical exercises. Lessons were too fast for me (or to short time available) to follow and fix concepts. Once you are lost it is very difficult to follow what is next, you can ask (nicely the teacher ask about that with good frequency) but still, sometimes I felt very lost mainly due to too fast teaching.
- The programme was excellent because it covers every thing that needed for stock assessment of Fish. and also the organisation of course and quality of course was also very good.

2 Recommendations

- 1) Pre-course notices to students should include instructions to install Excel Solver and R before the course.
- 2) Required skills could also be added to the pre-course notices, with a set of materials to help students in achieving these skills, including suggested readings and tutorials on R.
- 3) The questions in the generic course evaluation should be reviewed by the Training Group.

3 Course description

Contexts and level

This course provides instruction, demonstration, and exercises in population modelling as applied to fishery resources. Stock assessment synthesizes information on life history, fishery monitoring, and resource surveys, using mathematical models of population dynamics. Results from stock assessments are used to determine stock size and sustainability of the fishery, and evaluate the consequences of alternative fishery management actions. First principles of population dynamics are reviewed from the perspective of modelling biological production, and several dimensions of complexity are explored. A wide range of conventional stock assessment methods are introduced.

The course has two general goals. The first is to provide a sound foundation in the fundamentals of stock assessment. Stock assessment modelling is advancing at a rapid pace. However, understanding the basics of population dynamics is necessary to develop an intuition for fishery models, for accurate interpretation and appropriate model development. Therefore, we will emphasize a conceptual understanding, supported by quantitative applications that are designed to illustrate model properties.

The second goal of the course is to prepare students to take the next steps in a stock assessment career: learning the advanced aspects needed for their particular applications. The ICES Training Program also includes courses in advanced stock assessment, Bayesian techniques for stock assessment, Management Strategy Evaluation, and Ecosystem Modelling for Fisheries Management. Therefore, advanced topics and programming skills will be introduced in preparation for more advanced ICES courses or to approach the same topics through self-learning.

Objectives

The general objective of the course is to train stock-assessment scientists and advisors in basic population dynamics and stock assessment. The course is intended not only to present the theoretical elements but also to guide participants in putting theory into practice through case studies and hands-on exercises on the computer. Specific objectives are:

- 1) understanding the role of stock assessment in fishery science;
- 2) familiarity with conventional stock assessment models;
- 3) experience in basic model building and parameter estimation.

By the end of the course, the participants will:

- be aware of single species assessment methods as applied to North Atlantic fisheries;
- understand the data-collection needs for different assessment methods;
- be familiar with indicators and reference points, both biological and economic, as tools in fishery management;
- develop knowledge of population and fishery processes by using simulation models to improve scientific advice for managers.

4 Course programme and instructors

The programme was circulated to all participants prior to the course, and is available for download from the ICES Share Point Site.

The programme was designed with an about even split between lectures/discussions and tutorials.

Day	Lecture	Topic
Monday	1	Introduction & objectives
	2	Model fitting
Assignment: Stock–recruit		
Tuesday	3	Biological production
	4	Biomass dynamics
Assignment: Production		
Wednesday	5	Demographics
	6	Virtual population analysis
Assignment: VPA		
Thursday	7	Statistical catch-at-age
	8	Projection & Reference Points
Assignment: MSY		
Friday	9	Simulation
	10	Management Strategy Evaluation
Assignment: MSE		

Instructors:

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Annex 1: List of participants

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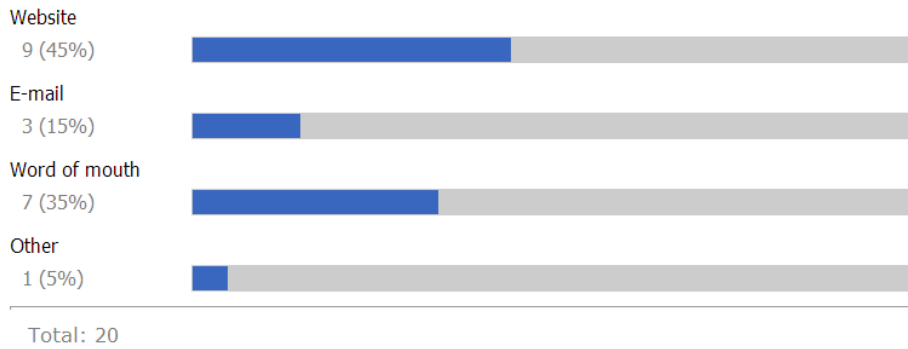
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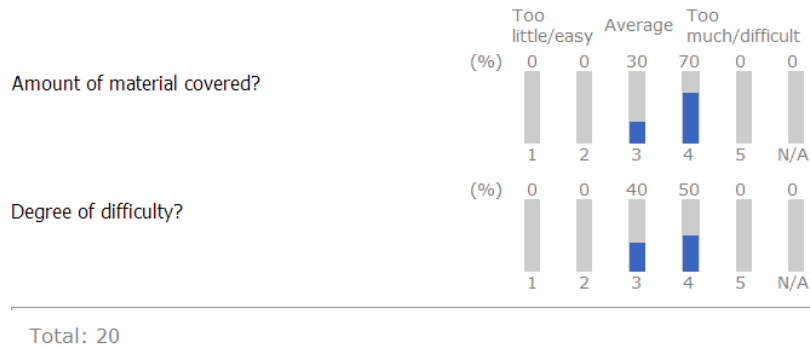
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Annex 2: Course Evaluation

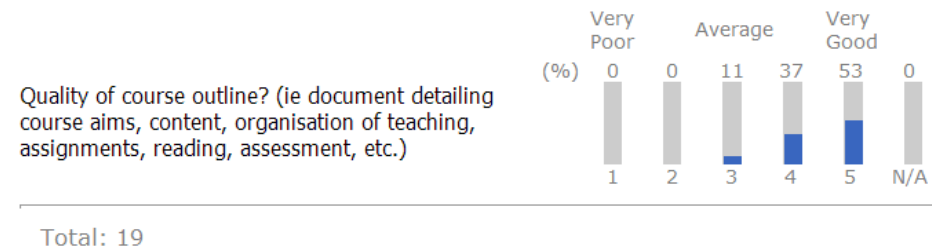
1. How did you hear about this course? (website, word of mouth, other?)



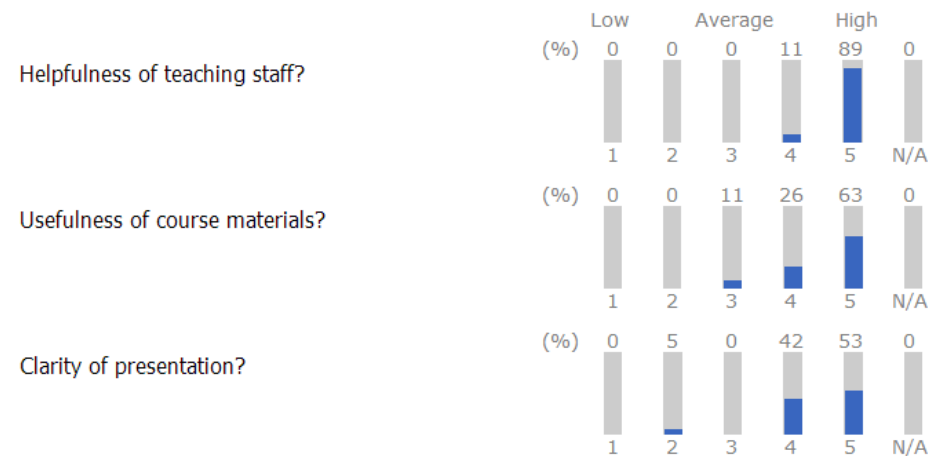
2. Course Content



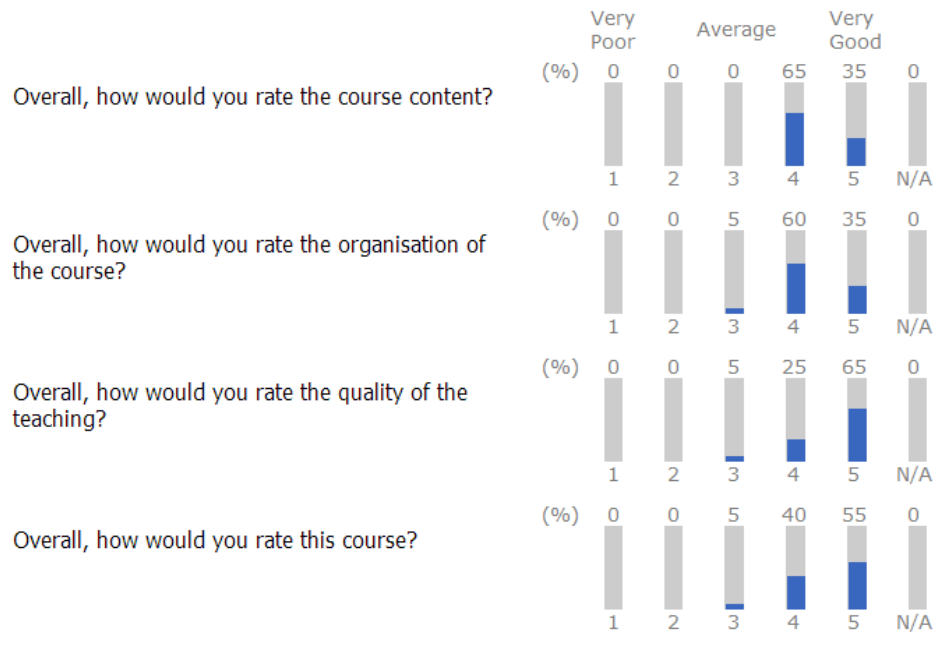
3. Course Organization



4. Teaching and Learning Support



5. Overall Evaluation

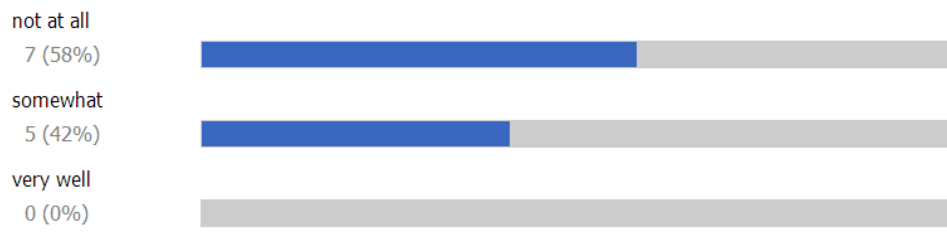


Total: 20

6. Good features of this course/suggestions for improvement:

(see main text)

7. Have you taken any other ICES training courses? If so, how well did they prepare you for this course?



Total: 12