

# Training Courses in Fish Stock Assessment: *the Past and the Future*

**SIEBREN VENEMA**  
Fishery Resources Division, FAO  
Via delle Terme di Caracalla  
00100 Rome, Italy

and

**DANIEL PAULY**  
ICLARM

Ideally, all countries with major marine and/or inland capture fisheries should have a few scientists specialized in stock assessment techniques to lead research programs and to analyze the results for management and development purposes. An aim of both FAO and ICLARM is to establish such a well-trained core of staff in each country, who can then teach others in their neighborhood, through national courses or by participating in working parties for the assessment of specific stocks.

Fish stock assessment is a relatively young science developed for stocks in cold and temperate waters. The techniques developed over a number of years in those areas have been disseminated to tropical areas through on-the-job training by field experts, usually followed up by one or more fellowships in Europe or North America, and through a number of training courses.

Despite the fairly large numbers of trainees, the application of stock assessment techniques in the tropics has been slow. The main reason is that what was learned was based on conditions in temperate waters and the techniques were often inappropriate for tropical areas. This is reflected in the contents of some of the manuals specially prepared for these courses. However, the recent development of new methods applicable to tropical stocks makes it possible to meet the demand for training more adequately.

The first FAO courses were organized in the sixties in England, Denmark and Chile and in the meantime, a number of important manuals were written, translated and distributed. The courses organized since 1975, given in Table 1, include some regional stock assessment courses in French and courses at a lower level for junior biologists in basic fisheries biology.

FAO, being an executing and not a funding agency, has depended on various

donors to pay for training activities. The Danish International Development Agency (DANIDA) has been a major donor for these courses.

In 1980, DANIDA expressed interest in funding a series of training courses in stock assessment, as a follow-up and expansion of the courses in biology, under the condition that a proper training strategy should be developed and that emphasis should be given to teaching methods suitable for tropical areas. A first step in the introduction of such methods was made in 1980 during the FAO/DANIDA course held in Mombasa, by publication of lecture notes based on tropical stocks prepared by one of the authors (D.P.) [FAO Fish. Circ. (729)].

A project proposal was prepared for regional training courses, and lecturers and lecture material for at least six national courses. In addition, the project provided funds for fellowships, giving outstanding participants a chance for additional training, and for follow-up action such as exchange of information between participants and lecturers, and continued assistance in stock assessment problems arising during the application of methods learned during the courses. In December 1981, DANIDA agreed to supply FAO with funds in trust for a total of US\$1,426,000 to execute a five-year project entitled: Training in Fish Stock Assessment.

Regional courses are necessary where many countries can each supply only a limited number of trainees. Organization, if not through an established regional project, is usually cumbersome and the system of nomination of trainees does not guarantee the participation of the most suitable candidates. The language for FAO courses has to be one of the official FAO languages, which not all participants master equally well. In practice, use of more than one language in a regional

training course is a serious handicap due to translation requirements. A definite advantage is that scientists from the region can get to know each other better and contacts for future exchange of knowledge are easily established.

National courses have a number of advantages over regional courses which deserve mention:

- they are much less expensive, mainly because the cost of bringing participants from remote places is greatly reduced,
- there is no language problem,
- they can be organized more easily because fewer agencies are involved and obviously,
- the content of the course can be much better focused to relate to the specific resources, social problems or management objective of a given country or part thereof.

Two national courses have recently been held in the Philippines which confirmed these advantages. The first of these, organized jointly by the South China Sea Fisheries Development and Coordinating Programme (SCSP) and ICLARM for the Philippine Council for Agriculture Resources Research and Development (PCARRD) was held for the purpose of enabling the participants (fishery officers from various parts of the Philippines) to conduct independent studies in stock assessment. It soon appeared, however, that students lacked the required background in basic sciences, and the course content was modified to provide basic skills.

The other course, which was given by one of the authors (D.P.) to graduates in biology at Silliman University (central Philippines), allowed for concentration on the types of resources (hard bottom and coral reef fishes) that are predominant in the central Philippines. Also, specific problems to which the participants had been exposed prior to the course were



discussed in great detail. As a result the participants were able to integrate the theoretical knowledge acquired in the course with their previous knowledge of the resources and the fisheries.

The experience gained through these and previous courses (Table 1) is the basis for the series of new courses which FAO has initiated. Three courses which are funded by the DANIDA have the following features:

- detailed advance planning of the

course contents, with concentration on case studies relevant to the participants' experience,

- use of material and lecture notes that emphasize methods applicable to the tropics,
- selection of participants who can assume the role of multipliers upon return to their home institution, and
- explicit arrangements for continued support of the research of the participants following the courses.

These features offer a broad scope for cooperation between ICLARM and FAO. Thus, both groups have been involved, together with Danish scientists, in planning the content of the first of these training courses, to be held in early 1983 in a country in the western Indian Ocean area. Also, arrangements will be made for participants of the training course to become members of ICLARM's Network of Tropical Fisheries Scientists (see p. 5) which FAO will support. ●

Table 1. Summary of information on recently-held training courses in fish stock assessment (1976-1982).

Title	Location	Duration	Language	Number of participants	Countries/ areas	Funding
Second stage de formation FAO/CNEXO sur les méthodes d'évaluation des stocks halieutiques	Brest (France)	5 weeks Aug 1976	French	32	15 countries from Mediterranean and West Africa	French trust fund
Seminar on fishery development, planning and management	Lomé (Togo)	3 weeks Feb 1978	French and English	28	West African countries	Canadian trust fund
Seminar on fishery resources evaluation	Casablanca (Morocco)	3 weeks March 1978	English and French	28	13 West African countries	Canadian trust fund
Training course on the methodology of fishery science (Biology)	Tegal (Indonesia)	4 weeks Oct/Nov 1978	English	33	Mainly South China Sea area	DANIDA
Training course on stock assessment	Havana (Cuba)	4 weeks April 1979	Spanish	20	Cuba	UNDP
Seminar on the management of tropical fisheries	Bangkok (Thailand)	2 weeks Oct/Nov 1979	English	30	Mainly South China Sea area	DANIDA
Training course on the methods of stock assessment	Shanghai (China)	4 weeks 1980	Chinese (transl. from English)	30	China	UNDP
Training course on the methodology of fishery science (Biology)	Mombasa (Kenya)	4 weeks May/June 1980	English	26	Northern and western Indian Ocean	DANIDA
Training course on stock assessment and fish popula- tion dynamics	Montevideo (Uruguay)	1 week May 1981	Spanish	25	Latin America	Norway/UNDP
Workshop and training course on resource evaluation	Recife (Brazil)	4 weeks June/July 1981	Portuguese	46	Brazil	Norway
Training course on the methods of stock assessment	Samutprakarn (Thailand)	5 weeks Sept/Oct 1981	English	30	South China Sea area, South Asia	Asian Develop- ment Bank/ SEAFDEC
Fishery resource assessment training course	Manila (Philippines)	2 weeks May 1982	English	30	Philippines	Philippine Government/ SCSP/ICLARM
Fish stock assessment course	Dumaguete (Philippines)	2 weeks June 1982	English	15	Philippines	Silliman University/ ICLARM
Biology/stock assessment training course	Aqaba (Jordan)	2 weeks Oct 1982	English	n.a.	Red Sea area	UNDP