

Appendix IV

Report of the IUCN Workshop, Karachi, May 1993

REPORT OF A FISHERIES ASSESSMENT WORKSHOP

Held at

**The Pakistan Marine Fisheries Department Training Centre, Karachi
17th to 20th May 1993**

MRAG/IUCN/PAKISTAN MARINE FISHERIES DEPARTMENT

1. Background

In early 1993 the Coastal Ecosystem Unit of IUCN-Pakistan was involved in the development of a project on fisheries resource management in the Indus delta, with particular emphasis on the fisheries associated with the mangroves. It was hoped that the project would involve a high degree of input from local institutions in Pakistan with interests in fisheries. MRAG were contracted by IUCN in May 1993 to provide expert assistance with the development of the project proposal. This included the running of a 4 day workshop in the use of computers in fisheries stock assessment, which would be attended by participants with relevant experience from local institutions. The main purpose of the workshop was to introduce two stock assessment software packages developed by MRAG (LFDA and CEDA) to stock assessment scientists in Pakistan. It was hoped that these software packages would be useful for stock assessment and the design of management plans during the Mangrove Fisheries Project. The development of local expertise in their use was therefore seen as an important part of the preliminary phase of the project.

2. Planning

The workshop was scheduled for the first 4 days of the MRAG visit to Karachi. The original timetable structure is appended to this report as Annex 1. It was designed for 10 participants working with 5 desktop computers. There was a considerable amount of information to cover in 4 days and it was therefore necessary for the participants to have a reasonable level of prior experience in fish stock assessment and the use of computers. It was also necessary for them to have a good standard of English. All arrangements in Pakistan, including the selection of participants and the provision of the lecture room and computers were undertaken by IUCN-Pakistan.

3. The Workshop

3.1 Facilities

The Workshop was run in a large lecture room at the Pakistan Marine Fisheries Department Training Centre on the edge of the fish harbour in Karachi, about 20 minutes drive from the IUCN offices. Facilities in the lecture room were set up over the weekend of 15th/16th May. The participants were provided with plastic chairs with small supports for note taking. The facilities for the lecturer comprised a free standing white board with dry wipe pens, and a portable overhead projector and screen, provided by IUCN.

Six desk top computers, two dot matrix printers and all necessary cables and switches were hired from a local computer suppliers. The computers were set up at one end of the lecture room, away from the area where the lecture sessions were conducted. The computers were either 286 or 386, running at about 16 or 20 MHz, with Dos version 5, Lotus 123 version 2.3 and Wordperfect version 5.1 loaded. None had maths co-processors, which made some of the estimation procedures in LFDA and CEDA run quite slowly. In future the recommendation that computers for running LFDA and CEDA

during workshops have maths co-processors installed should be made more strongly. Only two computers had colour screens, the remainder being monochrome. Separate colour configuration files are needed for these two types of screen.

There were 3 overhead fans in the lecture room, but no air conditioning. The daytime air temperature was usually about 36-37°C. This resulted in overheating problems in any computers not equipped with internal fans (eg. laptops and small desktops). Fortunately only one of the hired computers was without an internal fan. This machine was subsequently replaced. Intellectual work in this sort of environment is difficult, especially for non-residents. Daily activities usually stopped at about 3:30 in the afternoon. Had the workshop been sited in a building with air conditioning then it is likely that the participants and supervisors would have been able to work later and thus gain more practical experience on the computers in the short time available.

Several of the computers appeared to be infected with viruses and a number of unexplained program crashes during the workshop were attributed to this. One of the lecturers own working diskettes became infected with the Michelangelo virus during the workshop. Up to date virus checking software should be routinely installed on all machines in future.

It was considered necessary to increase the security of the lecture room at night due to the presence of the computers. This was achieved by nailing the windows shut at the end of each of the days sessions. The nails were removed each morning to allow the windows to be opened for ventilation. A guard was routinely on duty each night. A would-be thief was caught trying to break into the lecture room overnight between the second and third days of the workshop. Had the computers been stolen or damaged it would have been a major problem for the successful completion of the workshop.

A VHS video player and television was provided by the Marine Fisheries Department for the presentation of the two South Georgia bottom trawl survey videos, which were shown on the third day of the workshop.

Lunchtime refreshments were provided in the form of 'lunch boxes' purchased from one of the larger hotels in Karachi, and were eaten in the lecture room.

3.2 Participants

The workshop was oversubscribed and it proved impossible to limit the number of participants to 10. The final number was 15 (see list in Annex 2). This was not a problem during the lecture sessions, however, with only six computers available, at least one of which was non-functional for much of the time, this was too many for the practical sessions. Frequently there were three or more people sitting at one computer, which was unsatisfactory considering the purpose of the exercise was for the students to gain as much hands-on experience with the software as possible. It is recommended that the ratio of students to computers is strictly limited to no more than 2:1, although it is recognised that in the prevailing circumstances in developing countries this may be difficult to achieve.

The background of the participants was varied. Appropriate experience for the workshop was specified at the planning stage as the possession of a Bachelor degree (BSc.) in Marine Biology and/or Fisheries, with some training in the use of computers. A few (about 4) had no experience of computers at all and a number of others had very little experience. A disproportionate amount of time, therefore, had to be spent by the workshop lecturer and supervisors in providing these individuals with sufficient background knowledge to enable them to begin using the software packages. Due to the short duration of the workshop this reduced the level to which the work in general could be taken. Although those with little computer experience undoubtedly benefitted from the workshop, ideally they should have previously attended a basic course in computing (eg. use of Dos, spreadsheets etc.). In developing countries workshops such as this are likely to be rare and will therefore be attended by people from a wide range of backgrounds, however, it is recommended that every attempt is made to screen applicants as much as possible. Wherever appropriate those with insufficient experience should be encouraged to attend basic courses prior to enrolling for more advanced workshops.

3.3 Content

The basic plan of the workshop (Annex 1) worked well. The first day was spent revising basic concepts in fisheries assessment and management and discussing the various sources of data required for different types of work. It was a useful exercise to gauge the level of experience of the participants and to put the remainder of the workshop into perspective. In addition to the MRAG software packages there was clearly much to be gained by teaching the use of commercial software such as the spreadsheet package Lotus 123, which is extremely useful for the preparation of data files for analysis (especially length frequencies) and the comparison and presentation of results.

The LFDA package was of great interest to many of the participants, due to the emphasis placed on this type of analysis in tropical fisheries. Some of them had used Elefan before and were interested to see how LFDA compared. The introduction to the software was relatively brief and the practical session started early. The main difficulty most people had was understanding how to produce data files which could be read by LFDA, arising mainly from their lack of general experience with computers. Observations of the students working with LFDA and suggestions for improvements to the software arising from this will be presented elsewhere.

The introduction to CEDA the following day was more lengthy, with emphasis being placed on methods of parameter estimation and examination of residuals. The CEDA practical session progressed more slowly than with LFDA, reflecting the greater number of options and procedures for the students to try out. However, the students benefitted from their increasing familiarity with the computers arising from the work on the first two days. For this reason, working with LFDA on day two and CEDA on day three is probably the best approach. Observations of the students working with CEDA and suggestions for improvements to the software arising from this will again be presented elsewhere.

The fourth and last day of the workshop had deliberately been left open for the

discussion of particular topics arising during the practical sessions of the previous days. In the event the main activity was the creation of length frequencies from individual fish lengths in Lotus 123 and the transfer of this data to LFDA for analysis. The lack of familiarity with data handling and the low level of understanding of the relationship between DOS and the software packages were the major obstacles for many of the students. A significant amount of time had to be spent helping them with these problems. Had they been more familiar with computers before the workshop, this would probably not have been necessary and more progress could have been made with the use of LFDA and CEDA. The other main activity on day four was the use of growth parameters estimated by LFDA in the development of a simple yield per recruit model in Lotus 123.

4. Conclusion and Recommendations

Despite the difficulties encountered with the hardware and the number and range of experience of the participants, the workshop was considered to have been a successful and worthwhile undertaking by all involved. IUCN will be soliciting comments and recommendations from the participants for consideration in future courses.

There are a number of aspects which would require attention in the planning of future workshops:

1. The number of participants should be limited so as to maintain a ratio of students to computers of 2:1. The limit on overall numbers depends partly on the number of qualified supervisors available for the practical sessions. In Karachi the limit should probably have been 12.
2. The organisers should be provided with a detailed resume of the background and experience of all participants well in advance to allow the course to be tailored appropriately. In some cases it may be necessary to run a longer course (eg. 7 or 8 days) to allow for time to work on basic computer orientation prior to the introduction of the software. Ideally, however, this would be covered by a separate course.
3. If working in a tropical environment the room housing the computers should be air conditioned.
4. The computers should be carefully screened for viruses and other potential problems before the start of the course.

Annex 1:
IUCN - MRAG Ltd. Training Course on Fisheries Stock Assessment
Using the LFDA and CEDA Software

For presentation to about 10 participants, each with a Bachelor degree (BSc.) in Marine Biology and/or Fisheries, with some training in the use of computers.

Day 1: Basic Concepts and Data Sources

- Morning session:** Fisheries assessment and its place in management
Sources of data
- Commercial (large scale and artisanal) fishery
 - fishing effort
 - total catch
 - CPUE
 - biological characteristics (length, weight, age etc)
 - Surveys
 - Abundance
 - biological characteristics (length, weight, age etc)
- Afternoon session:** Principles of data analysis
- General considerations
 - Sensitivity analysis
 - Standardisation of fishing effort (method, gear etc.)

Day 2: Length-frequency Data Analysis

- Morning session:** Aims and data requirements
- When, why, and what will it tell you?
 - Methods:
 - ELEFAN
 - SLCA
 - Projection matrix
 - Practical Guidelines
- Afternoon session:** Computing workshop using LFDA

Day 3: Catch and effort data analysis

- Morning session:** Aims and data requirements
- When, why, and what will it tell you?
 - Methods:
 - General principles
 - Models available in CEDA
 - Practical Guidelines
 - Choice of model and timescale
 - Guidelines for fitting models
- Afternoon session:** Computing workshop using CEDA

Day 4: Applying the results of the assessment

- Morning session:** Basic techniques
- Yield per recruit
 - Spawning stock biomass
- Afternoon session:** Computing workshop
- Spreadsheet examples
 - Analysis of local data sets

Annex 2

FISHERIES ASSESSMENT WORKSHOP

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List of Participants

Ms. Ishrat Ara Huda	Zoological Survey Department
Arshad Munir	Zoological Survey Department
Shamsuddin Quershi	Marine Fisheries Department, Karachi
Anis Imad	Marine Fisheries Department, Karachi
Mohammed Wasim Kahn	Marine Fisheries Department, Karachi
Mohammed Miftahul Haq	Marine Fisheries Department, Karachi
Saeed R Abassi	Directorate of Fisheries, NWFP
N U Hosain Naseeri	Directorate of Fisheries, Sindh
Waheed Ahmed	Directorate of Fisheries, Sindh
Dr. S Makhdoom Hussain	Centre of Excellence Marine Biology, Karachi University
Syed Ajazuddin	Centre of Excellence Marine Biology, Karachi University
Abdul Hameed	Directorate of Fisheries, Balouchistan
Mohammed Akbar	Directorate of Fisheries, Balouchistan
Muhammad Iqbal	Fisheries Department, Punjab
Dr. M. Ashraf	Fisheries Department, Punjab

Organisers

Graeme Parkes	MRAG Ltd.	Lecturer
Dr. Geoff Kirkwood	MRAG Ltd.	Supervisor
Trevor Porter	IUCN	Supervisor