Development of computer aids for fish stock assessment and management policy

General Details

RNumber	R4517
Title	Development of computer aids for fish stock assessment and management policy
Start Date	1989-04-01
End Date	1992-03-31
Budget	105070
Production Type	Capture
Fishery Type	Both

Related Projects

Project Title
R5050CB
R4778G (PD001)
R8468

Staff

Staff Name	Role
Geoff Kirkwood	Leader
Mark Bravington	Collaborator

Organisations

Organisation Name	Role
Marine Resources Assessment Group (MRAG)	Lead

Countries

Country
Global

Purpose:
To develop a Fisheries Management Expert System and new tools for stock assessment that will address the gap between stock assessment and fisheries management policy.

Background: The need and demand for the research

Fishery managers and those charged with policy development and implementation are often not aware of all available management options and their information requirements. Furthermore, whilst data collection may have occurred for a particular fishery, simple tools to analyse that data in order to provide information to managers were lacking in the early 1990s when this project was undertaken. There was a need for simple stock assessment tools that would provide relevant outputs that could link to management policy decisions. (79)

Approach: How the project addressed this need

This project aimed to develop a fisheries management expert system (FMES) that would guide stock assessment scientists and managers to appropriate assessment approaches in different circumstances. The FMES also aimed to provide computer based tools for stock assessment and fisheries management policy. The assessment tools would be linked to the management policy decisions through the 'expert system' computer programme. A two level approach was adopted: development of expert systems as an aid to management decision making and advice on suitable assessment methods; and, new fish stock assessment software based on length frequency distribution analysis and production modelling. Length frequency analysis was considered most appropriate to tropical fisheries due to perceived problems of ageing tropical fish. (115)

Outputs and findings: What the project achieved

Two proto-type expert systems were developed: ProTuna aimed specifically at management of tuna fisheries, and ProFish aimed at providing a broader range of advice for more generalised fisheries. Two software packages for fisheries stock assessment were also produced: CEDA (Catch and Effort Data Analysis); and, LFDA (Length Frequency Data Analysis). CEDA analyses catch and effort data to provide estimates of current and unexploited stock biomass, and other population dynamics parameters. LFDA analyses length-frequency data to provide estimates of growth and mortality.

Whilst this project generated useful outputs, it was found that an expert systems approach could not easily be applied to typical developing country tropical fisheries due to their complexity. ProTuna and ProFish have thus not been further developed, but they usefully informed future FMSP activities culminating in project R8464 that addresses the linkages between stock assessment and management advice.

The stock assessment software developed under this project, however, proved to be particularly successful and further developed in a number of related projects (see related projects tab on this project page).

Note: CEDA and LFDA were subsequently revised for Windows. The latest versions of these software package available for download from the project database