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COUNTRY AND INTERCOUNTRY PROGRAMMES AND PROJECTS

CONSIDERATION AND APPROVAL OF GLOBAL AND INTERREGIONAL PROGRAMME AND PROJECTS

Project recommendation of the Administrator

Assistance for a global project

Survey and Identification of World Marine Fish Resources
(GLO/82/001)

Estimated UNDP contribution:	US\$1,399,133
Duration:	Two and one-half years
Executing Agency:	The Food and Agriculture Organization of the United Nations (FAO)

I. Background

1. The Governing Council approved the global project, Assessment and Development of World Renewable Marine Resources (GLO/79/011), (DP/PROJECTS/R.13/Add.4), at its twenty-seventh session in June 1980, for a period of 18 months. The project followed earlier work by FAO and UNDP, using the well-equipped research vessel, DR. FRIDTJOF NANSEN, under a separate agreement with the Norwegian Agency for Development (NORAD). The justification for that project and the agreement with NORAD was based on the need to provide developing countries with information on fishery resources available within their coastal waters as a result of the changes in the ocean regime, brought about by the extension of national control over fisheries, through the progressive establishment of Exclusive Economic Zones (EEZs).

2. The fundamental requisite for the formulation and implementation of the fishery policies of coastal countries is the knowledge of the fish resources available in the respective areas of jurisdiction, i.e., the nature of the fish stocks, their distribution and migration patterns, their size and their likely potential yields. A better knowledge of the distribution and migration patterns is also essential for determining which countries are concerned with the exploitation of the same stocks. Such information is of value for negotiations on possible allocation schemes of total allowable harvest among countries sharing the same stocks.

3. Most of the methods available to countries for evaluating their fishery resources have been established in the larger developed countries in temperate waters, having a long history of marine biological research and a good series of fishery statistics. These methods are less useful for developing countries in which statistics are often unavailable and even the identification of the species is often uncertain. There is a need to carry out studies and develop techniques to enable these countries to have better knowledge of their resources. Among these techniques, acoustic surveys have proved particularly useful.

4. Acoustic survey methods, supported by test fishing have developed considerably since 1970 and are most suitable in regions which have large resources of pelagic stocks. These are mainly surface living fish which migrate in the off-shore and coastal waters. Such surveys prove to be of great value for the determination of the total biomass in unexploited areas, as well as for monitoring the state of highly fluctuating stocks, particularly if the surveys are carried out in series over several seasons. The West Coast of Africa is one area already surveyed by the vessel DR. FRIDTJOF NANSEN and which, due to the nature of the stocks, requires to be covered over several seasons.

5. It has already been reported to the Governing Council that the vessel DR. FRIDTJOF NANSEN located important stocks in the Arabian Sea of coastal pelagic and demersal species and dense schools of mesopelagics that have an estimated biomass of several million tons. Large stocks of pelagic species have also been identified off the coast of Somalia which, if exploited, would be a major source of animal protein in that country. Many of the areas surveyed have not been so rich in fish but the results achieved under the current project have provided the coastal states involved, often for the first time, with realistic estimates of the resources available to them. The following are examples of the work carried out and results achieved through the surveys carried out by the DR. FRIDTJOF NANSEN.

6. Surveys off the coast of Burma in the post-monsoon autumn season and pre-monsoon spring season have indicated a predominance of small pelagic fish. Estimates were made of potential yields of 700-900 thousand tons which are considerably above present catches, but would consist mainly of low-value small-sized fish. Off the North and West Coast of Sumatra the findings have indicated a total biomass of well over 350,000 tons, which would leave room for some increase of catches, especially of small pelagic fish. A return to Mozambique waters

confirmed earlier results of good potential in that area and much work was done on the distribution and abundance of small pelagic fish. The survey of the important shrimp grounds provided information for the assessment of stocks, particularly related to the distributional limits outside the areas and depths of main commercial fisheries. Further studies in the Oman and Aden Gulfs were carried out, which confirm the previous high estimate of mesopelagic fish biomass and their seasonal variations in the Aden Gulf area. The survey also demonstrated the need for further gear testing and development as one of the prerequisites to commercial utilization of the mesopelagic fish. Off West Africa, the surveys carried out have covered mainly the northern production system. Important resources of small pelagic fish, sardinella, horse mackerels and anchovies off the coast of Mauritania and Guinea have been described. Surveys of the shelf resources along the coastline of Guinea to Ghana have confirmed the widespread abundance of trigger-fish and similar species, especially off Guinea and Sierra Leone. The surveys carried out under the project (GLO/79/011) have shown how the potential annual yield may be predicted from the biomass, taking account of the longevity and other biological characteristics of the species of fish concerned.

7. Throughout the cruises made by the DR. FRIDTJOF NANSEN, representatives from local fishery research institutions participated as research assistants and for training purposes. Since 1975, a total of 134 fishery biologists from 31 countries have received some 150 months of field training and experience in advanced, as well as general, methods of fishery science. In addition, under the combined programme, scholarships amounting to a total of 31 months (9 fellows) have been extended to senior scientists to visit the Institute of Marine Research in Bergen for participation in the processing of the data and preparation of the reports.

8. The ability of countries to know what species of fish occur in their waters, and to draw on available information about these species requires standardized identification sheets. These have been prepared for a number of regions (Mediterranean, Western Central Pacific, Eastern Indian Ocean, Western Central Atlantic). These sheets will be extended to cover other developing regions where fisheries development activity require them, and some will be upgraded.

II. The project

9. The long-term objective of the project is to assist developing countries in the development and management of the fish resources available within their newly extended zones of jurisdiction, by means of surveys and improved species identification.

10. The immediate objectives are to:

(a) Conduct extensive acoustic surveys and trial fishing in the EEZs of selected participating countries as a means of providing a rapid assessment of total stocks and approximately composition of these stocks;

(b) Improve acoustic survey techniques for the assessment of small pelagic, mesopelagic and demersal resources and to develop further the methodology for the conversion of biomass estimates into estimates for potential yield;

(c) Provide a sound basis for the current identification of commercial marine fish species;

(d) Provide on-the-job training to biologists and acoustic engineers in the designing, execution and data interpretation of acoustic surveys.

11. Activities of the project will include:

(a) The negotiation of contracts with the Institute of Marine Research, Bergen, for the use of the vessel DR. FRIDTJOF NANSEN, as well as scientific staff;

(b) The preparation of detailed work plans and cruises based on agreements to be negotiated with individual interested countries. Areas of immediate interest are the West Coast of Africa, Cape Verde, Angola and Namibia, and, if and when circumstances permit, East Central Pacific, the Indian Ocean and the Arabian Sea;

(c) The preparation or upgrading of fish identification sheets and catalogues for areas such as Western Indian Ocean, Eastern Atlantic Ocean and Western Central Pacific, as well as world catalogues on various species.

12. The outputs expected from the project, related to the immediate objectives described above are as follows:

(a) Estimates of fish stocks in the EEZs of participating countries;

(b) Improved calibration methods for acoustic equipment and better target strength data, in particular for mesopelagic and small pelagic species;

(c) Maps and descriptions of the distribution and migration patterns of the major small pelagic, mesopelagic and demersal fish stocks in and adjacent to the EEZs of selected developing coastal and island states and estimate of stock biomasses and their potential yields.

(d) Species Identification Sheets for Western Indian Ocean, and additional sheets for Eastern Indian Ocean/Western Central Pacific for eight groups of families;

(e) Trained scientists and technicians from developing countries in resource survey methodology. A total of 40 months of on-the-job training will be given, involving some 20 trainees;

(f) Technical reports on the acoustic surveys carried out and review papers on the development of yield indices, as a basis for development and management of the fisheries resources available within the extended economic zones of interested coastal countries.

13. The Executing Agency for the project will be FAO. The project is designed as an integral component of FAO's comprehensive programme of assistance in the development and management of fisheries in economic zones and will complement numerous ongoing fisheries development programmes assisted by UNDP at the country, regional and interregional levels. Some national and regional groupings of Governments will continue to conduct test fishing, coastal surveys and experimental fisheries development activities using the facilities of the Fisheries Vessels Pool (described in DP/1982/62). However, biomass studies and density distribution surveys, particularly those required to assess small pelagic, mesopelagic and demersal intercountry fish stocks such as those mentioned in paragraphs 4 and 5, need the services of highly sophisticated hydro-acoustical instrumentation and technical skills. These are not normally available from the UNDP pool vessels because of their smaller size, obsolescence and scarcity of qualified technicians to man the instrumentation. Such services are available only from few sources. The DR. FRIDTJOF NANSEN is one of the few such equipped vessels and is backed up by the skilled technical manpower and facilities of the Institute of Marine Research in Bergen, Norway, where the hydro-acoustical field data are integrated and assessed into its biomass and fish yield components.

14. As a special contribution to the project, NORAD has agreed to make the research vessel DR. FRIDTJOF NANSEN available and also to contribute towards the cost of operations. The Institute of Marine Research in Bergen will continue to provide, under a special agreement with FAO, the necessary expertise and data processing facilities for the surveys and other scientific work to be carried out. The vessel remains one of the best equipped vessels available for the work required to achieve the objectives of the project and the Norwegian Government has indicated its agreement for the continued use of the vessel by FAO in projects funded by UNDP or other sources.

15. The expenditure components of the proposed UNDP contribution are as follows:

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Project personnel	244 860
Subcontracts	1 104 273
Training	25 000
Equipment	10 000
Miscellaneous	<u>15 000</u>
Total	<u>1 399 133</u>
