

**COOPERATIVE RESEARCH NETWORKING TO FACILITATE
RESEARCH AND DEVELOPMENT
FOR THE REDUCTION OF WASTAGE IN SHRIMP FISHERIES**

by

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Abstract

Because of the importance of shrimp trawling fisheries in a number of countries in Asia and the Indian Ocean region and recommendations for more research work in the field of selectivity, in particular through more cooperation between countries, a **Cooperative research network in the Asia and Indian Ocean region on selective tropical shrimp trawling** was initiated in December 1995 by the Fishing Technology Service of FAO. The overall objective of this on-going networking programme is: in the short term, to gather accurate information on on-going shrimp trawling and catches, data which is necessary for further improvement of the selectivity of these fisheries, and to review recent progress in the region in this field; in the medium term, to facilitate further research on the subject. Details of the activities proposed within the programme are given, as well as the expected participation for its execution. Progress, up to May 1997, is briefly reported. Activities such as field surveys in several countries and a regional workshop soon were not too difficult to arrange. However, cooperation for research work at sea with the participation of experts from several countries is not so easy.

I. COOPERATIVE RESEARCH NETWORK IN THE ASIA AND INDIAN OCEAN REGION ON SELECTIVE TROPICAL SHRIMP TRAWLING. A CRITICAL REVIEW OF AN ON-GOING EXPERIENCE

1. BACKGROUND AND JUSTIFICATION

Tropical shrimp trawling is a major fishery industry in a number of countries in Asia and also an important source of revenue in the Southwest Indian Ocean.

shrimp trawling has the largest impact on non-target species, including in certain cases on endangered species, such as turtles.

Similar types of trawls and/or rigging are used in a number of countries.

During the last ten years, a number of prototypes of selective devices imported from the Gulf of Mexico and, more recently, from Norway have been tested in the

region with varying results. In addition, Australia has done a lot of research on the subject.

Research work on selective shrimp trawling is given a high priority in a number of countries in Asia and a few African countries are also engaged in such research. Staff of different institutions, very often using the same equipment have undertaken similar research programmes, i.e. the same selective devices are tested with the same equipment and methodology.

Therefore it was proposed to initiate a **Co-operative research network in the Asia and Indian Ocean region on selective tropical shrimp trawling** aiming at a number of research institutions co-operating in more research work.

A programme which started in December 1995 was designed for a year, more or less, with a possibility of extension. It was proposed that the programme be evaluated after a certain period in order to ascertain whether it was appropriate to extend it along the same lines or reformulate it.

2. OBJECTIVE OF THE PROGRAMME

The objectives, when proposing to arrange such a network, included:

To gather accurate information regarding shrimp trawling in tropical areas, conditions of operation, catch and by-catch, data which is necessary for further improvement of the selectivity of these fisheries;

To exchange experience and review progress regarding selective shrimp trawling in Asia and the Indian Ocean region;

To facilitate further research on the subject, in particular through a co-operative research network comprised of a number of research institutions with programmes related to selective shrimp trawling.

The first two objectives were immediate ones, for the first few months, while the last one is more a medium-term activity.

A network between independent research units cannot obviously be decreed; the medium term objective of the proposed programme was to facilitate and promote direct contacts and exchanges with the hope that the concerned institutions would be willing to cooperate...

3. ACTIVITIES

The programme initially proposed included:

3.1 **Field survey(s):** Accurate review by national staff of the by-catch problem in the shrimp trawling industry in each country participating in the

network, including observations on by-catch quantities, composition by fish species and sizes, incidental catch of endangered species, fish and shrimp behaviour, in particular according to the conditions of the fishing operations, such as nature of the bottom, depth, time of fishing, etc.

In each participating country, preparation of a detailed report of the field survey carried out on the national shrimp trawling fishery.

3.2 Participation of national experts from several countries in tests at sea (and/or on models in tanks) of selective devices installed on shrimp trawls in the various participating countries, according to the existing research programmes of the institutions.

(The possibilities could be for instance: - test at sea in India, with participation of Indonesia, Mozambique or others; - model testing in Australia with participation of India)

3.3 Workshop on selective shrimp trawling with selective device, up to 10 experts/participants

To exchange experience on research methodology, in particular, for fishing gear experiments at sea with equipment for gear control and observation.

To review and discuss the findings of the national field survey on the by-catch problem related to shrimp trawling (Activity 3.1);

To discuss and compare the observations made during recent sea trials or tests of models.

To discuss opportunities for further research work and, if appropriate, elaborate joint research programme(s).

4. EXPECTED OUTPUT

National reports on by-catch problems related to shrimp trawling in the countries of the network

A report on the state of art regarding selective shrimp trawling: actual situation and possible changes/improvements; document to be edited, printed and disseminated by FAO.

Improvement of the quality of research work in the region resulting from the use of the most appropriate methodology and increased exchanges of experience between experts

Joint research activities and/or programmes on selectivity in shrimp fisheries

Obviously, immediate and medium/long-term objectives are associated:

after a few months (according to short term objective), provision of reports on the state of art and development opportunities;

in the near future (according to medium/long term objective), more efficient research.

5. PARTICIPATION

Each institution of the network has been asked to designate a Local Correspondent for the activities of the Network.

- 5.1** In each country of the network, one or two investigators are given the responsibility of carrying out, during the appropriate period and for an established duration, the field survey(s) on shrimp trawling operations, catch and by-catch.
- 5.2** Fishing technologists from several countries are given an opportunity to participate in practical research work at sea with staff of other institutions abroad.
- 5.3** For the workshop on selective shrimp trawling, the participation will be around eight to ten experts in fishing technology, personally involved in research on selectivity in shrimp trawling (preferably, the experts who participate in research activities carried out in cooperation within the networking programme). As resource person, each participant will be asked - to present the result of the field survey(s) on shrimp trawling fisheries in their country; - to present on-going research activities on selective shrimp trawling in the various research institutions of their country; - to report on observations, measurements recorded during the selective trawl device trials at sea and/or model tests.

At the outset of the programme it is expected that direct communication to exchange experience will be established amongst the members of the network. However, to facilitate said communication, a "mail-box" could be established at INFOFISH, Kuala Lumpur.

Many difficulties have been observed regarding the participation of national experts from countries of the network in research work at sea and for arranging involvement of fishing technologists in practical research work carried out by another research institution.

6. PROGRESS to May 1997

6.1 Surveys of national shrimp trawling fisheries (Activity 3.1 of the programme):

From April to June 1996, contracts were given to institutions in the network for carrying out field surveys on their national shrimp trawling fisheries: in India (to Central Institute of Fisheries Technology, CIFT, Cochin), Indonesia (to Research Institute for Marine Fisheries, RIMF, Jakarta), Malaysia (to MFRDMD, Kuala Terengganu), Mozambique (to Instituto de Investigaçao Pesqueira, IIP, Maputo), Tanzania (to Mbegani Fisheries Development Centre, Bagamoyo). All reports of the national surveys are expected this Autumn.

6.2 Participation of national experts from several countries in tests at sea (Activity 3.2 of the programme)

The research institutions forming part of the Research Network are invited to contact directly the other institutions of the network to discuss the possibility of an exchange and to propose that either an expert from another institution in the network come to their country to participate in a research activity related to selective shrimp devices or that one of their staff assist in an experiment of another institution in the network. Once an agreement is reached between two institutions of the network, FAO can make its contribution under the TCDC programme, including payment of travel.

The mechanism exists, the administrative procedures and funding source (the FAO TCDC programme) but, so far, the research institutions of the network have not had the chance to take advantage of it...

6.3 Workshop on selective shrimp trawling (Activity 3.3 of the programme)

The workshop will be organized at Darwin, in Australia, 24 - 26 July 1997. In addition to discussions and exchanges of experience, including with professionals (fishers and researchers) from Australia, it might also include tests/demonstrations of by-catch reduction devices on board Australian commercial trawlers.

II. ANOTHER APPROACH, ANOTHER ON-GOING EXPERIENCE

For some time now, the Global Environment Facility of UNEP and FAO have been discussing the elaboration of a global project aiming to “**reduce the Impact of Tropical Shrimp Trawling Fisheries on Living Marine Resources**”.

Obviously the emphasis is on reducing the impact of such fisheries on the environment and living resources in general.

Without going into the details of the programme, it is worth drawing attention to the following approach (which was initiated by GEF):

It consists of two phases:

- a preliminary phase recognized as **PROJECT DEVELOPMENT AND PREPARATION FACILITY (PDF)**.
- then,
- the **PROJECT** itself

Thus, the primary objective of the preliminary phase (PDF) is to prepare a coasted project consisting, in this case, as a global project, of relevant regional and national activities.

1. INTRODUCTION TO THE GLOBAL PROJECT

The expected global project would be aimed at reducing the effects of tropical shrimp trawling operations on habitats and species by:

- promoting the use of the best practices and technologies, including bycatch exclusion technology;
- through the development of strategies and revision of national policies designed to minimize impact on non-target species and habitats.

The components of the project are expected to consist of activities for the development and adoption of best practices through extension, technical education and training activities and removal of economic barriers. The goal is to facilitate the use of environmentally sound and economically viable technologies by the fishery industry concerned, in conformity with national and regional agreements and conventions.

Potential elements that might be included in the main-phase of the project include, among others:

Establishment of a networked system of data and information at national and regional centres holding information on technical, biological, environmental and economic aspects of tropical shrimp trawling operations, and best practices for reducing environmental damage and bycatch. Such data and information might include: characteristics of operational area; type of seabed; types of trawls and mesh sizes; fishing strategies and tactics; catch data for shrimp, food fish and bycatch including turtles, and marine mammals; species and size composition of the catch; effect of trawling operations on substrate and benthic fauna; behaviour of shrimp and bycatch species (migration, diurnal, feeding, fleeing reaction, tactile stimulation, etc.); interaction with other fishing operations.

In close co-operation with the fishing industry develop and test gear, technologies, and strategies designed to: - reduce or prevent the capture of non-target species in tropical shrimp trawling operations, - improve the survival rate of escaping

fish and undersized shrimp; and, - develop methods for the utilization and marketing of unavoidable by-catch.

Promote and establish agreements for co-operation in the execution of research and development activities between institutions in developing countries (TCDC) and North-South twinning co-operative arrangements.

Foster partnerships with the trawl fishing industry through provision of up-to-date information on the progress of the research and development activities, and analytical studies carried out by participating national and regional institutions in the framework of the project.

As a matter of fact, it is expected that the PDF phase will identify the potential roles of different stakeholders at a national level through a process of wide consultation, that will be focused in particular on enlisting the participation of the shrimp trawl industry.

2. STRATEGY, PLAN OF ACTION OF THE PDF

A **National Committee** should be established in each participating country to ensure the broadest possible involvement in the activity. The Committee should include representatives from relevant ministries and government structures, the fishing industry, regional fishery organizations, the private sector and non-governmental organizations as appropriate.

National Co-ordinators will be designated by participating governments and will be responsible for co-ordinating national inputs to the formulation of the main-phase project. The co-ordinators, with the assistance of national experts or consultants and in consultation with the National Committee, will be responsible for ensuring proper national input, including, among others:

- identification of potential inputs to the project phase from Government and public institutions; the fishing industry; fishing communities and other organizations and NGOs;
- evaluation of on-going and/or planned research and present knowledge
- analysis of the constraints (technical, economic, policy related or other) preventing more widespread adoption of appropriate trawling technology designed to reduce unwanted bycatch.

It is also worth mentioning that in order to evaluate properly the perception of technological changes and the aptitude to modify fishing practices, KAP studies (Knowledge Attitude Perception) will be carried out at the national level with the participation of a few selected groups of operators in shrimp trawl fisheries.

By the end of the PDF phase, it has been proposed to hold several **regional workshops to elaborate the programme** of the main-phase project itself on the basis of various national inputs, including development priorities and activities; strategy for participating institutions and industry, and networking requirements during the project.

Finally, it is worth mentioning that the proposal is now being circulated to a number of potentially interested countries get their confirmation. As a matter of fact, the preparatory phase, PDR, cannot be executed in countries which do not endorse the proposal.