BAY OF BENGAL PROGRAMME

DEVELOPMENT OF SMALL-SCALE FISHERIES

ARTISANAL MARINE FISHERIES IN ORISSA: A TECHNO-DEMOGRAPHIC STUDY

BOBP/WP/29

Mailing Address:
Post Bag No 1054
Madras 600 018
India

Cables: FOODAGRI
Telex : MS-311 FISH
Phone : 71294, 71567, 77760

Street Address:
91 St Mary's Road
Abhiramapuram
Madras 600 018

BAY OF BENGAL PROGRAMME
Development of Small-Scale Fisheries

BO BP/WP/29
G CP/RAS/040/SWE

ARTISANAL MARINE FISHERIES IN ORISSA: A TECHNO-DEMOGRAPHIC STUDY

BOBP/WP/29

By M H Kalavathy
and
U Tietze

with the assistance of Orissa's marine fisheries extension officers

Executing Agency:

Food and Agriculture Organization of the United Nations

Funding Agency:

Swedish International Development Authority

Development of Small-Scale Fisheries in the Bay of Bengal, Madras, India, December 1984.
Mailing Address: Post Bag No 1054, Madras-600 018, India.
Street Address: 91 St Mary's Road, Abhiramapuram, Madras-600 018, India.
Cables: FOODAGRI. Telex: MS-311 FISH. Phones: 71294, 71296, 71587, 77760.

The fisheries census presented in this paper is part of a project for integrated development of marine fishing villages in the four coastal districts of Orissa. In the course of the project an extension service for traditional marine fisherfolk was established by the Department of Fisheries, Orissa; and training was provided to the extension officers in the areas of fishing technology, credit and finance, extension techniques and community development by the small-scale fisheries project of the Bay of Bengal Programme.

In conjunction with the training for extension officers, active extension work was also undertaken with BOBP support. This related to: (a) making institutional finance available for traditional fisherfolk; (b) establishing non-formal primary schools; (c) introducing and trying out motorized beachlanding craft and (d) introducing improved types of fishing gear.

To meet the information requirements of the extension service, a few surveys were conducted. These included a qualitative analysis of Orissa's traditional fishing technology; a socio-cultural study of the major ethnic groups and castes forming the marine fisherfolk; a study of the economics of commonly used fishing methods; and last, but not the least, a fisheries census, which is presented in this paper.

Actual data collection and compilation at the village level were carried out for these studies by the officers of the Marine Fisheries Extension Service of Orissa. In compiling and interpreting the data, valuable advice was provided by Mr. P. Mohapatra, Additional Director of Fisheries; Mr. B. B. Mohapatra and Mr. R. K. Singh, Deputy Directors; and Mr. B. C. Patnaik, Superintendent of Fisheries Statistics.

It is hoped that the census methodology developed for this paper might be useful for other extension services in the Bay of Bengal region.

The small-scale fisheries project of the Bay of Bengal Programme started 1979 from Madras. It is funded by the Swedish International Development Authority (SIDA) and executed by the Food and Agriculture Organization of the United Nations (FAO). Its main goals are to develop, demonstrate and promote appropriate technologies and methodologies to improve the conditions of small-scale fisherfolk and raise the production of fish from the small-scale sector in member countries—Bangladesh, India, Malaysia, Sri Lanka and Thailand.

CONTENTS

1. INFORMATION REQUIREMENTS OF MARINE FISHERIES EXTENSION SERVICES

In order to draw up work plans and measure or evaluate the impact of extension services, a proper data base is required. Without underestimating the value of qualitative information, it is assumed here that reliable quantitative data are indispensable. Extension work becomes more obvious and its achievements can be highlighted more convincingly when measured against quantitative data.

Before determining data requirements, the subjects/goals of an extension service have to be defined first. Without going too much into detail, the following subjects and goals of extension work are assumed:

Subjects	Goals
1. capture technology and methods brackishwater aquaculture techniques	— further disseminate and diversify traditional technology — introduce new appropriate technologies and methods
2. fishing inputs	— supply information to fisherfolk about prices, types and availability of known and new fishing inputs. — organize supply through cooperatives, individuals, fair price shops, etc.
3. handling/processing	— improve existing methods and introduce new methods and technology, such as use of ice on fishing boats, improvement of hygiene and durability of salted, dried and smoked fish products, etc.
4. marketing/distribution	— supply marketing information to fisherfolk about wholesale and retail prices, ultimate market places, etc. — strengthen the position of fisherfolk against middlemen by means of organizational and financial support for marketing through fisherwomen and cooperatives.
5. conservation of stocks	— advise and educate fisherfolk about conservation methods for fish stocks.
6. community development	— facilitate availability and use of institutional credit, education, health care, family planning, drinking water/sanitation, communication, electricity, in cooperation with other government departments.

Subjects	Goals
	— create awareness and participation among fisherfolk concerning all the subjects and goals mentioned above, by means of individual contacts and group meetings. — strengthen the role of women by introducing earning activities such as net-making, fish marketing, finance management (in credit and saving schemes, etc.). — train link workers from fishing villages! leadership training — participate in development and conduct of non-formal education programmes for children and adults with emphasis on vocational and environmental aspects.
7. credit and finance	— facilitate direct contacts between banks and fisherfolk. — facilitate indirect institutional finance through cooperatives, credit societies, etc. — implement government schemes for the development of the poorer sections of fisherfolk. — promote institutional savings.

Attaining the extension goals listed above requires the following information inputs:

1. Technical and operational details of existing technologies with regard to catching, handling, processing.
2. Economics of commonly used craft/gear combinations.
3. Sociological and cultural profiles of the major ethnic groups and castes who constitute the marine fisherfolk.
4. Monthly information about fish prices at various stages of processing and marketing.
5. Monthly information about catch and fishing effort with regard to major species and craft/gear combinations.
6. Availability of infrastructure facilities at village level.
7. Areawise distribution of fisherfolk population.
8. Areawise distribution of fishing craft and gear.
9. Areawise distribution of assets/ownership patterns.

While the first three information requirements are to be met by qualitative and quantitative studies[1] and the fourth and fifth by sample surveys the last four requirements are the ones which are attempted to be covered by the census presented here.

The information inputs listed above can be used in the following ways:

— Infrastructure facilities such as roads, electricity, safe drinking water, educational facilities, health centres, etc., are a pre-condition if the process of catching, handling, processing and marketing of fish has to function well—particularly under the conditions prevailing in tradi-

[1] A detailed description of the traditional marine fishing technology in Orissa as well as sociological and cultural profiles of the major ethnic groups and castes among the fisherfolk are at present under print. Other relevant information about Orissa's fisheries is given in "Marine Small-Scale Fisheries of Orissa: A General Description" BOBP/INF/7, Madras, India, December 1984.

tional fishing communities. Detailed information about the availability or absence of these facilities at the village and district levels facilitates concentration of effort to provide these facilities in cooperation with other government agencies.

- Areawise information about the distribution of assets makes it possible to assess prevailing ownership patterns, to learn how technologies operate at present, how systems work, whether they promote or hamper a desirable distribution of income. This information helps to identify target groups for credit programmes or other governmental support.

- Information about areawise distribution and concentration of fisherfolk, plus information about fishing grounds and marine resources, can be used to guide population policy. It can help promote alternative employment opportunities in cooperation with other government agencies (in case of overpopulation) or migration of fisherfolk (in case of under-population). It can also promote marine fishing for occupational groups like riverine and estuarine fisherfolk or agricultural labourers by various measures such as providing infrastructural facilities, extending assistance in the form of training, demonstrations, credit, etc.

- Information about areawise distribution of fishing technologies can be used—again, together with information about fishing grounds and marine resources—to evaluate whether the appropriate fishing methods are used along a given stretch of coastline. Or, whether because of constraints such as lack of familiarity, tradition, superstition, etc., fishing technologies which could be gainfully employed are not employed. This information can guide work to diversify fishing effort and promote an optimum allocation of fishing techniques—again, by means of training, demonstration, provision of credit facilities, etc.

- The inforniation mentioned above can also be used to assess the economic balance between craft, gear, labour and marine resources. They can help to identify inadequacies which hamper the optimum utilization of the four components mentioned above and can guide decisions like, for example, which type of new net could still be introduced, taking into account the type and degree of utilization of the present craft and labour capacity.

To utilize census data along the lines described above, data have to be analysed at the district, jurisdiction and village levels to guide practical extension work.

A proper balance of craft, gear and labour ata higher organizationallevel (e.g. district) is a necessary but not a sufficient precondition for a balance at a lower organizational (e.g. village) level, while a balance at a lower level is a sufficient precondition for a balance at a higher level.

For example, if we find a balance of craft, gear and labour in all villages of an extension jurisdiction, the jurisdiction as a whole will also necessarily be balanced. On the other hand, a well balanced jurisdiction may very well consist of totally unbalanced villages.

However, the scope of this paper makes it impossible to analyse the census results for all 236 villages—and for all jurisdictions—separately. While data concerning infrastructure facilities, distribution of fisherfolk households, craft, gear, and distribution of assets have been presented at the jurisdiction and district levels, analysis of the craft-gear-labour balance had to be limited to the district level. The analysis intends merely to demonstrate the method of assessment and to highlight major trends, rather than arrive at detailed conclusions which can guide practical extension work. It is strongly recommended, however, that further assessment at village and jurisdiction levels be carried out by all extension officers along the lines demonstrated in this paper.

2. METHODOLOGY OF CENSUS

2.1 Population

The census has been limited to artisanal, non-harbour based small-scale marine fisherfolk because they form a homogeneous group in terms of skills, technology, developmental needs, lifestyle, etc., and because they constitute the target group of the marine fisheries extension service. Further, this group accounts for the major share of exploitation of marine resources. Excluded are riverine and estuarine fisherfolk and technologies, harbour-based mechanized trawlers and gillnetters operating from Paradeep, Chandipur, etc., mechanized gillnetters operated by cooperative societies from river mouths, as well as traditional craft owned by non-fisherfolk and rented out to marine fisherfolk.

Though estuarine and riverine fisherfolk might partly exploit the same resources as marine fisherfolk while fishing in the mouth or delta of a river, they have been excluded from this census because their skills and technology and often even their caste/social group, clearly distinguish them from their marine counterparts. They represent development requirements that are better catered to by an inland fisheries extension service.

Harbour-based' mechanized trawlers and gillnetters are omitted because their requirements are altogether different from beach-based artisanal fisheries.

Traditional fishing boats owned by non-fisherfolk (a phenomenon limited to Balasore district) have been omitted because the existence of this phenomenon was not known while planning the census.

2.2 Data collection

The data on size of household, occupation (major or minor time fishing households), number of active fishermen per household, and on ownership of craft and gear have been obtained by interviews with the head of the household. Data on craft and gear are based on physical observations. All information with regard to infrastructure facilities has also been obtained by observation. The raw data for each household and village have been recorded according to a census schedule given in Appendix 3.

Categories and classifications, as well as details of data compilation and aggregation, are found in Appendices 6 and 7.

'Harbour means landing site at the bank of a river with some shore facilities such as workshop, fuel station, packing shed, ice plant, and eventually a jetty. A table showing landing sites, as well as numbers and types of mechanized fishing boats is found in Appendix 8.

3. MARINE RESOURCES AND PRESENT LEVEL OF EXPLOITATION

The total marine fish catch for Orissa for 1981 as given by the CMFRI (Central Marine Fisheries Research Institute) was 35,655 tonnes.

With a coastline of 480 km which constitutes 16% of the east coast, Orissa produces only 7% of the catch. Per capita production per annum was 1.3 tonne against 2.5 tonne in Andhra Pradesh and 5.4 tonne in Tamil Nadu in 1980.

The catch per hour record provided by the Exploratory Fisheries Project (EFP) of the Government of India, using 17.5 metre vessels of the same horse power and gear from different bases, gives a good indication of fish abundance in the demersal coastal areas of various zones up to a depth of 58 metres. While Andhra Pradesh records 76.6 kg/hr and Tamil Nadu 97.5 kg/hr. the catch per hour in the Orissa coast has been 153.1 kg/hr. The figures are based on average values for five years between 1976—77 and 1980—81 and the differences are significant.

The demersal fisheries potential in the continental shelf of Orissa (20160 km^2) has been estimated at 100,000 to 120,000 tonne of fish. This is a very approximate figure. However, this indicates that the demersal resources are probably largely under-exploited. Pelagic resources are not yet quantified; so also the deeper zones of the shelf. It is only in 1981 that the EFP used larger vessels to fish in depths beyond 70 m. The catch in some areas has been as high as 399654 kg/hr—indicating a high potential.