CHAPTER I

INTRODUCTION

"Give a Man a fish,
He will have the food for (he Day,
Teach him to grow fish,
He will have the food for his family,
Train him to catch fish,
He will never go hungry".

- Chinese Proverb.

Fishing is one of the oldest and natural occupation of mankind. Since three fourths of the earth's surface is covered by oceans, people living in the coastal areas went to sea in search of food. As population increased, fishing developed significantly to provide food for the growing population. As the demand for food increased, fishing activity expanded from shallow waters to deep sea. Fishing was considered as a way of life as fishermen had to work with the unpredictable natural conditions of the oceans in earlier times. The construction of fishing crafts for deep sea fishing and the fishermen's knowledge of the oceans was considered as the second line of Naval defence in England by the Mercantalists. As fishing increased the food production in a country, there will be less import of food, making a country's balance of payments favourable. This naturally increased the riches of the country and the strength of the State. Hence the fisherfolk were considered important both from the military and economic point of view.

Exploring ways of food production from natural resources has been the pursuit of man ever since the dawn of civilization. But with the advent of science and technology a rational approach has been adopted to locate new an
better food sources. Fishing, one of the oldest occupations of man, started as mere collection of animal food from the shallow waters by hand picking, later developed into an important industry. The rapid strides made in the development of advanced type of fishing gear, craft and advent of modern electronic fish finding devices have all contributed to the significance of fishing in world trade'. Fisheries have also a pivotal role in the socio-economic development of the poor in the coastal areas.

Fishing development is a part of economic development, as it provides employment, contributes to gross national product and the foreign exchange earnings of a country. In a developing country like India, it assumes an added importance because of the potential social benefits it offers to fishing people.²

Fisherfolk are considered as one of the most backward sections of our society. Information on socio-economic framework of the fishing community forms an effective base for planning and development of this economically backward sector.³

Fish is rich in protein and it also contains fat, inorganic substances and vitamins A and D essential for the growth of cells. The protein content of fish ranges from 12 per cent to as high as 25 per cent, the general average being 17 per cent. Fish protein consists of a considerable proportion of soluble proteins which are easily digestible and is valuable for human consumption, for a population whose staple food is rice. Fish is a renewable resource available at a relatively lower cost⁴. Hence poor people, especially those who live on the coastal line have fish in their normal diet. Malnutrition is a serious problem for which the development of unexploited and underexploited marine fishery resources offers a promising solution⁵.
Salient Features of Fishery Resources

A clear understanding of the fishery resource base is an essential pre-requisite for social science research in fisheries. Oceans have been a good source of food and until recently the supply of fish seemed inexhaustible. Fishery resources are living beings which breed and multiply. Even if certain quantities of fish from the stock in the seas is exploited it is still self-renewing.

The important feature of this resource is that it is a common property that nature permits to be simultaneously used by more than one individual or economic unit. As it is open to all and owned by none; the fishermen have no obligation to conserve the resource. The picture one gets of the life in the sea is one of the constant predation of one species on another.

Marine resources are the raw materials for the production of fish meal, oil and other by-products. The waste coming out during processing is also used in the production of by-products like manure and animal fodder. Marine fish are free resources requiring no inputs for cultivation except investment on modern gear and man-power utilisation.

However the physical nature of the resource has given the industry certain peculiar characteristics. Fish is a wet and highly perishable commodity and consists of discrete units of different size and shapes. It is rarely processed at source, and requires specific technical process of preservation.

The varying fish supply is due to the uncertainty imposed by ocean currents, weather and the occurrence and behaviour of fish. But there are currents in the oceans which are said to increase the productivity and therefore provide more food for fish.
(i) Demand for Sea Food

There are numerous factors that influence increased consumption of seafood and they are:

(i) The growth of seafood consumption depends upon the improvement in science and technology. Recently the increase in the number of cold storages and household refrigerators has enormously facilitated the sale of seafood.

(ii) Eating out plays an important role in seafood consumption trend as ever more refined, ever more subtle and ever more exotic fish recipes are constantly on offer in hotels and restaurants, to add flavour to the different tastes of consumers.

(iii) "Snob appeal" is yet another factor in the increasing demand for seafood. The demand for seafood is income-elastic with an increase in disposable income, which enables the individuals or families to uphold their status distinction in the society\(^9\), and

(iv) The government is also keen on increasing the supply of seafood by means of concentrating on the growth and the development of the fisheries sector.

(ii) The Significance of Marine Fisheries

Marine Fishing is a hazardous occupation which encourages extreme individualism and requires special skill and equipment. Fishing being a hunting activity, comprises a strategy of three phases: (i) search (ii) identification (iii) capture\(^{10}\). Nevertheless, fishery is regarded as a powerful income
employment generator as it stimulates the growth of a number of subsidiary industries”.

Fishery, as an economic activity, as stated earlier stands on par with agriculture and animal husbandry. Land-based food production has its limitations to produce nutritious and adequate food to meet the growing needs of the human population. Developing countries like India are facing the problem of shortage of food to support their people.

Fishing is no longer the traditional occupation of a community of fishermen living along the seacoast. Fishing and its allied activities provide direct employment to millions of people and leads to indirect employment through the allied activities like net making, boat making, boat repairing, fish processing, fish transportation and fish trade. In this context, the fisheries sector is given high priority since it has the potential of employment and income generation.12

Fish and its products have very good export potential which earns considerable amount of foreign exchange for the nation.13

The fishing industry, with its wide geographical coverage spreading over extensive coastalline and interior water bodies, is expected to become the threshold of regional development. Concepts like, 'area development', 'rural development' and 'community development' are as old as Indian Planning, and they have been the base for planning 'Fisheries Development' in India at the national and state levels.14
The fishing industry with ports and associated services scattered around the coast can play an important part in promoting infrastructural facilities like roads, cold storage and ice plants etc. that account for certain specific areas of development.

The government can benefit in many ways. The fishing industry becomes an indispensable asset to a country particularly during periods of unprecedented economic crisis by properly reducing the serious impact to a reasonable extent. If adequate steps are taken to prevent the over-exploitation and for the conservation and management of the fisheries resources, it promises a good base for harvesting in future.

World Fisheries

For marine catch, there are major fishing areas covering three oceans viz., the Atlantic, the Indian and the Pacific. Statistics show that the world catch of marine fish which was 23.5 million tonnes in 1951 increased to 96.5 million tonnes in 1988 and further increased to 100 million tonnes in 1989. However, in 1990 it declined to 97 million tonnes. But in 1997 it again increased to 121 million tonnes. The fisheries for small pelagic species of the South Eastern Pacific are the main contributors to the overall increase in the world catch.

Two major countries, China and the USSR maintained their output at 17.9 and 14.7 million tonnes respectively in 1997. About one fourth of the increase witnessed during the nineties was attributed to the remarkable development of China’s fisheries whose production level has increased from 10.36 million tonnes in 1988 to 12.09 million tonnes in 1990 and further went up to 17.9 million tonnes in 1997. Canada and the U.S.A. had achieved new
peaks of output at 4.4 and 9.9 million tonnes respectively during 1997. Since 1992 a steady increase was noted in total fish output by African countries and expansion in production by Asian countries, especially Indonesia (10 per cent), Thailand (8 per cent) and India (4 per cent). The rapid growth in New-Zealand's fish production continued with an increase of 12 per cent. With the exception of Denmark whose output rose by 13 per cent, fish production in the European Community showed little positive change from previous levels.20

The enforcement of the Exclusive Economic Zone (EEZ) drove many fishing firms of developed countries out of some of their conventional fishing grounds at a time when the fishing grounds of many of the developed countries were exploited more or less to the optimum levels, and in several cases overexploited, resulting in imposition of restrictions on fishing. As a result, fish production in several developed countries has either stagnated or declined and some countries like Japan turned into a net importer from a net exporter.21

**Marine Fishery in India**

India is endowed with rich marine fishery resources. Our coastal waters are highly productive and harbour several commercial fish stocks that can be harvested by simple crafts and gear. The marine fishery resources are not only self-renewing but can be constantly harvested year after year.23

A number of marine invertebrates such as prawns, lobsters, crabs, mussels, squids, octopus, cuttle fish and sea cucumbers support viable fisheries along our coast.23 Fish is a cold blooded aquatic animal that swims by means of fins and breathes with gills. In commercial terms, fishes include fin fish (silver bellies) and shell fish (prawns, crabs, lobsters, squids). Fin fishes are called pelagic varieties and shell fishes, the demersal varieties.24
As per the statistics of Food and Agricultural Organisation (FAO) the general oceanic data for India are as follows:

- **Ocean Area**: 32,87,782 Square Kilometres
- **Shelf Area**: 41,15,793 Square Kilometres
- **Length of coastline**: 75,217 Kilometres

(i) Exclusive Economic Zone (EEZ)

It is common knowledge by now that most coastal states assert and exercise jurisdiction over fisheries within a 200-mile exclusive zone. The third UNCLOS (the United Nations Conference on the Law of the Sea) conference in 1974 established broad and exclusive coastal state authority over fisheries within a zone of 200 nautical miles.

In India the 41st amendment to the Constitution enacting "The Territorial Waters", "Continental Shelf, EEZ and other Maritime Zones Act, 1976" came into force on 25th August 1976. The Act defines the various zones and the rights and the jurisdiction in respect of these zones. The "Continental Shelf" extends to the outer edge of the continental margin or to a distance of 200 nautical miles from the appropriate base line. In this area, India has sovereign rights for exploration, exploitation, conservation and management of all resources.

The area under EEZ works out at 2.02 million sq. kms, comprising 0.86 million sq.km. of the west coast, 0.56 million sq.km. of the east coast and 0.60 million sq.km. around the Andaman and Nicobar Islands. In India, EEZ would thus represent about 2.80 per cent of the surface area of the Indian ocear (excluding Antarctic).
The area of the continental shelf\textsuperscript{30} of the coast of India is about 468,000 square kilometres of which 43.50 per cent of the area has a depth of upto 25 fathoms\textsuperscript{31}. There are 2042 landing centres and 2355 fishing villages. The State-wise details of marine resources are given in Annexure I.

The Indian Ocean covers an expanse of 74917 million square kilometres with a potential annual sustainable yield of 14.39 million tonnes of fish. However, at present as little as 2.88 million tonnes, ie., only 20 per cent is being exploited\textsuperscript{32}. The Indian Ocean is the least exploited so far providing only 5.20 per cent of the total marine catch.

There are several reasons for the very poor exploitation of the sea resources. They are: (a) lack of deep sea fishing vessels, (b) dearth of funds, (c) lack of expertise for commercial operations, and (d) market constraints.\textsuperscript{33}

(ii) Government Efforts

The First All India Fisheries Conference was held in 1948 and this could be considered the pioneering effort towards the development of the nation's fishery yield in a big way. Under the Technical Cooperation Mission Agreement signed in 1950 between India and the U.S.A., the country received sophisticated equipments at concessional rates. A Tripartite Agreement relating to Indian Fisheries Development was effected in 1951 among India, Norway and UNO. These two agreements and the Indian entrepreneurship in fisheries laid the foundation for the development of the Indian fisheries industry.

The Five Year Plans earmarked financial outlay for the development of fishing activity. Outlay for fisheries development programmes plan - wise is given in Table 1.1.
It is clear from the above table that the consistent shortfalls in the utilisation of the plan allocations discouraged a significant step up in the plan allocations to the fisheries sector.

During the different plan periods, central and state governments had under taken various production-oriented programmes, input-supply programmes, infrastructure development programmes besides formulating and initiating appropriate policies to increase marine fish production and productivity.

The short falls in the utilisation of the plan allocations are due following reasons: (i) Non-availability of adequate technical staff

**TABLE 1.1**

Plan Outlay- Fisheries Development Programmes

<table>
<thead>
<tr>
<th>Five year plans</th>
<th>Outlay for fisheries development (Rs.in crore)</th>
<th>Percentage to total plan outlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>First plan</td>
<td>5.13</td>
<td>0.26</td>
</tr>
<tr>
<td>Second plan</td>
<td>12.26</td>
<td>0.27</td>
</tr>
<tr>
<td>Third plan</td>
<td>28.27</td>
<td>0.38</td>
</tr>
<tr>
<td>Annual plans</td>
<td>42.21</td>
<td>N.A.</td>
</tr>
<tr>
<td>Fourth plan</td>
<td>82.68</td>
<td>0.58</td>
</tr>
<tr>
<td>Fifth Plan</td>
<td>151.24</td>
<td>0.38</td>
</tr>
<tr>
<td>Sixth plan</td>
<td>371.14</td>
<td>0.38</td>
</tr>
<tr>
<td>Seventh plan</td>
<td>546.54</td>
<td>0.30</td>
</tr>
<tr>
<td>Eighth plan</td>
<td>873.22</td>
<td>0.31</td>
</tr>
<tr>
<td>Ninth plan</td>
<td>902.16</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Procurement of fishing vessels, (iii) Severe infrastructural constraints, (iv) Inadequate research facilities, (v) Inadequacy of institutional support, restrictive regulations, bureaucratic hurdles and poor marketing capabilities, and (vi) Absence of effective integrated approach to development.

As a result progress has been noticed in marine fish production and exports in recent years. The data given in Table 1.2 highlight marine fish production and exports in India during 1989 - 1998.

**TABLE 1.2**

**Production and Exports of Marine Fish**

<table>
<thead>
<tr>
<th>Year</th>
<th>Marine Fish Production (lakh tonnes)</th>
<th>Exports of Marine Fish (Qtr lakh tonnes)</th>
<th>Export Value (Rs. in crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989-90</td>
<td>22.8</td>
<td>1.0</td>
<td>635</td>
</tr>
<tr>
<td>1990-91</td>
<td>23.0</td>
<td>1.4</td>
<td>873</td>
</tr>
<tr>
<td>1995-96</td>
<td>27.1</td>
<td>3.0</td>
<td>3501</td>
</tr>
<tr>
<td>1996-97</td>
<td>29.7</td>
<td>3.8</td>
<td>4121</td>
</tr>
<tr>
<td>1997-98</td>
<td>29.2</td>
<td>3.4</td>
<td>3940</td>
</tr>
</tbody>
</table>

**Source:** Economic Survey, Government of India, Ministry of Finance-Economic Division, 1997-98.

The production of fish in India was 56.4 million tonnes in 1997-98 comprising 29.2 million tonnes of marine fish and 27.2 million tonnes of inland fish. The table 1.2 shows a steady and slow increase in marine fish production from 23.0 lakh tonnes during 1990-91 to 29.2 lakh tonnes during 1997-98. The available potential is slowly exploited with the use of modern fishing crafts and gear. There is an increase in the exports of marine fish from 1.0 lakh tonnes
during 1989 - 90 to 3.8 lakh tonnes during 1996-97. This is due to and an increase in the prices of fish in the foreign market and the changes in money value.

A significant growth rate of 4.50 per cent per annum was recorded in fisheries sector during the Eighth Five Year Plan period. Unlike during the Seventh Five Year Plan period (1985-90) which had recorded a 3.50 percent growth rate of fish production per year that was less than the expected target of 5.76 per cent in fish production. The plan-wise details of Marine Fish Production is given in Annexure II.

The present status of India's marine fisheries industry: (i) it is mainly confined to the private sector, (ii) it has not kept pace with technological improvements in other fields and lacked the requisite resources for expansion, and (iii) it does not have marine fishing vessels, processing techniques and organised marketing.

Fisheries have, no doubt, received a development impetus under planning. However, the progress made has been unsatisfactory in several aspects (i) Plan allocations for the fisheries development has been inadequate, (ii) Under utilisation of resources, (iii) Production and export of shrimping in fishing has been lost, (iv) Inadequate supply to meet the increased domestic demand for fish, (v) Obsolete processing units, (vi) Poor preservation and poor quality of fish supply, (vii) Lack of innovativeness, and (viii) Increasing number of competitors in fishing.
(iii) Fisheries Research, Development and Training

The aim of R&D, Education and Training is to develop skills and proficiency to increase fish production through resource assessment, improved fishing techniques, handling, preservation, distribution and utilisation by applying modern know-how, greater profitability and social advancement of the fishing community which has been traditionally backward\textsuperscript{38}.

A number of organisations have been established by the Government of India to effectively carry out activities related to fisheries development. Important among them are:

**W** The Central Institute of Fisheries Technology (GIFT) (1957) at Ernakulam, Cochin, concentrates on fishing equipment and processing sea food products. The Central Institute of Fisheries Education at Mumbai (CIFE) (1961) trains personnel for the development of the fishing industry.

**IT** The Central Institute of Fisheries Nautical and Engineering Training (CIFNET) was established in the year 1963 by the Government of India (GOI) at Cochin. The objectives of this institute are: (1) to create technical manpower for the operation of ocean-going fishing vessels and to review infrastructural establishments, (2) to provide technical consultancy service, (3) to provide extensive training on fishing crafts, gear and equipments for accelerating advancement in fishery technology, (4) to conduct ad-hoc training courses for teachers of fishermen training centres of the maritime states, and (5) to update the potentiality of the fishing vessels operators and electronic technicians in handling acoustic fish finding equipment.
The Export Inspection Agency (EIA) was established in 1963 by the GOI for ensuring high quality of marine products exported from the country, through preshipment inspection of export consignments. The preshipment inspection was operated by the Director, OFT, Cochin.

The Central Institute of Coastal Engineering for Fishery at Bangalore (CICEF) (1970) is involved in the development of brackishwater aquaculture to produce fish and prawns.

The Marine Products Export Development Authority (MPEDA) was constituted under an Act of Parliament in 1972. It is entrusted with registration and licencing of fishing equipment, to devise marketing strategy for overseas trade, to augment raw material availability of off-shore and deep-sea shrimp resources, infrastructure and related facilities, to undertake research and development, promotion of manpower and for arranging financial assistance.

The National Bureau of Fish Genetic Research at Barrackpore, (NBFRG) (1985) has the following objectives: (a) collection, classification and evaluation of information on fish genetic resources of the country, (b) cataloguing of genotypes, (c) maintenance and preservation of fish genetic material, (d) introduction of exotic species in Indian waters, and (e) conservation of endangered species.

To conduct investigations on coldwater fisheries of the rivers and lakes, a National Research Centre on Coldwater Fisheries (NRCCF) was established in 1985 at Haldwani (U.P).
Besides the exclusive organisations for the fisheries development, there are several other institutions which, inter-alia, assist the development of the fisheries industry and they are:

(i) The Indian Institute of Packaging (IIP) (1965) has been concentrating on the packaging of marine products for domestic and export markets.

(ii) The Indian Institute of Foreign Trade (IIFT) (1965) has been engaged in market surveys, trade and tariff, export costs, export benefits, shipping and transport, financing and periodic surveys.

(iii) The Fishery Survey of India with its headquarters at Mumbai (1975) has at present 10 operational bases, established at Porbandar, Mumbai, Goa, Mangalore, Cochin, Tuticorin, Chennai, Vishakapatnam, Roychowk and Port Blair, for survey, assessment and monitoring of the marine fishery resources in the Indian Exclusive Economic Zone.

The benefits resulting from these institutions should reach the fisherfolk and make a definite improvement in their lives.

(iv) Source of Finance for Fisheries Development

The fishery sector requires finance from various sources to undertake significant investment outlay that would lead to rapid development of marine as well as inland fisheries. In India the major sources of long-term finance for capital investment are:
(i) Shipping Credit and Investment Corporation of India (SCICI);
(ii) Industrial Development Bank of India (IDBI)
(iii) National Bank for Agriculture and Rural Development (NABARD)
(iv) National Co-operative Development Corporation (NCDC).

The growth of modern fisheries requires a high degree of capital intensity, significant upgradation of technology and large scale development of infrastructure. Developing countries like India would, therefore, have to depend on external assistance on a significant scale in order to embark upon an ambitious programme of fisheries development. External assistance for fisheries development is available to the country either in the form of direct aid or soft loans from international institutions like the World Bank, UNDP, FAO, etc., or it can also be obtained through bilateral arrangements with specific countries. The overall structure of the financial institutions engaged in providing direct or indirect finance for the fisheries sector is shown in Chart I.
Chart 1
Internal Financial Institutions for Fisheries

Fisheries Financing Institutions

Medium and Long-term Loans

Large Projects

Other Developmental Banks
Specialised Institutions
Co-op. Institutions
Refinancing Institutions
Apex Development Banks

IDBI

Medium and Small Scale Projects

Development banks

Refinancing Institutions

Co-operative Institutions

Industrial Promotion cum Financial Institutions

SFC  SSIC

NABARD

NCDC

Source: Central Marine Fisheries Research Institute, Indian Fisheries, 1995.
Thus, the financial assistance given by the internal and external organisations aims at augmenting the development of fisheries sector in India\(^4\).

**Fisheries Development in Tamilnadu**

Tamilnadu had a hoary past in maritime trade. During the Sangam Period (ie. the first 3 centuries A.D.), precious pearls and chanks were exported from the famous port of Kaveri Poompattinam on the Coramandal coast, to countries like Rome, Greece and Egypt. The socio-economic and cultural life of the fishermen of Sangam age had been vividly portrayed in Tamil literary works.
Sir Fredrick Nicholson started the pioneering fisheries development work in the then Madras Presidency in 1898. The Revenue Department of Madras Government Published Nicholson’s report in 1906 and it paved the way for the creation of the fisheries department in this state in 1907\textsuperscript{41}.

The fisheries department had two objectives of developing and conserving inland and marine fishery resources and ameliorating the socio-economic conditions of large sections of the population who depended upon fisheries as their means of livelihood.

(i) Coastal line

Tamilnadu has the second longest coastal line in India after Gujarat. The coastal line runs to 1000 km, the continental shelf comprises an area of 41412 sq. km. and the Exclusive Economic Zone (EEZ) extends over 1.97 lakh sq. km. The coastal line of Tamilnadu can be demarcated into four regions as indicated in Table 1.3.

\begin{table}[h!]
\centering
\caption{Coastal Line of Tamilnadu}
\begin{tabular}{|c|c|c|c|}
\hline
\textbf{I. Coromandel Coast} & \textbf{II. Palk Bay} & \textbf{III. Gulf of Manna} & \textbf{IV. West Coast} \\
\hline
i. Chennai & i. Quaid-e-Milleth & i. Ramanathapuram & i. Kanyakumari \\
ii. Chengalpet & ii. Thanjavur & ii. Chidambaram & - \\
iii. South Arcot & iii. Pudukkottai & iii. Nellai - Kattabomman & - \\
\hline
\end{tabular}
\end{table}

No comprehensive survey had been undertaken to make an adequate estimate of the marine resources potential of the continental shelf of Tamilnadu. According to a conservative estimate, the fisheries potential from the EEZ is about 5.3 lakh tonnes. However, the present level of exploitation is only 2.90 lakh tonnes\(^4\).

(ii) Fishing Crafts

The fishing units under operation along the Tamilnadu Coast can be widely classified into three categories, (i) Mechanised (ii) Motorised and (iii) Traditional. Details on fishing crafts in Tamilnadu are given in Table 1.4.

### TABLE 1.4

**Fishing Crafts in Tamilnadu**

<table>
<thead>
<tr>
<th>Category</th>
<th>Type of Crafts</th>
<th>Number of Crafts</th>
<th>Percentage to Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanised</td>
<td>Wooden boats</td>
<td>4508</td>
<td>8.30 [8.60]</td>
</tr>
<tr>
<td></td>
<td>FRP boats</td>
<td>192</td>
<td>0.30</td>
</tr>
<tr>
<td>Motorised</td>
<td>Plank-built boats</td>
<td>1458</td>
<td>2.70 [6.40]</td>
</tr>
<tr>
<td></td>
<td>Catamarans</td>
<td>2040</td>
<td>3.70</td>
</tr>
<tr>
<td>Traditional</td>
<td>Masula Boats</td>
<td>216</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>Plank-built boats</td>
<td>6593</td>
<td>12.20</td>
</tr>
<tr>
<td></td>
<td>Dugout canoes</td>
<td>1340</td>
<td>2.50 [85.00]</td>
</tr>
<tr>
<td></td>
<td>Catamarans</td>
<td>37965</td>
<td>69.90</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>54312</td>
<td>100.00</td>
</tr>
</tbody>
</table>

**Source:** Director of Fisheries, 1998, Chennai.
The fishing operations in Tamilnadu are undertaken far from the shore where many of the factors are beyond the control of fishermen. Inadequate financial assistance does not allow the fishermen to venture mechanised crafts. Depending on the availability of natural resources, exploitation of the resources in the vast sea is usually carried out with traditional non-mechanised vessels (85.0 per cent) operated by the fishermen.

(iii) Fishermen Population

Table 1.5 shows the growth of fishermen population in Tamilnadu since 1985. Marine fishing is one of the ancient but important occupations of the coastal people of Tamilnadu.

<table>
<thead>
<tr>
<th>Year</th>
<th>Active Fishermen (In number)</th>
<th>Total Fishermen</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>1,01,869</td>
<td>4,63,800</td>
</tr>
<tr>
<td>1988</td>
<td>1,05,466</td>
<td>4,80,177</td>
</tr>
<tr>
<td>1991</td>
<td>1,09,094</td>
<td>4,99,690</td>
</tr>
<tr>
<td>1994</td>
<td>2,25,722</td>
<td>5,22,220</td>
</tr>
<tr>
<td>1997</td>
<td>2,62,501</td>
<td>5,74,000</td>
</tr>
<tr>
<td>1998</td>
<td>2,67,727</td>
<td>5,94,450</td>
</tr>
</tbody>
</table>


At present the fishermen population of Tamilnadu stands at 5.94 lakh, out of which about 2.67 lakh fishermen are actively engaged in fishing. The fishermen population has been increasing gradually since 1985.
(iv) Marine Fish Production in Tamilnadu

The data regarding marine fish production in Tamilnadu during the period 1980 - 1998 are presented in Table 1.6. The total marine fish production had increased from 2,30,531 tonnes in 1980-81 to 3,56,547 tonnes in 1997-98. This increase was mainly due to: (a) a variety of artisanal gears and recent large strides in the progressive expansion of the fleet of mechanised vessels mostly trawlers, and (b) the introduction of motorised boats. The annual growth rate of marine fish production has been declining despite the increasing fishing efforts. This is due to unpredictable behaviour of the monsoons which had its adverse effect on fish catch.

<table>
<thead>
<tr>
<th>Year</th>
<th>Marine fish production (qty. in tonnes)</th>
<th>Annual growth rate (in percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>2,30,531</td>
<td>2.29</td>
</tr>
<tr>
<td>1983-84</td>
<td>2,46,204</td>
<td>0.95</td>
</tr>
<tr>
<td>1986-87</td>
<td>2,49,576</td>
<td>2.90</td>
</tr>
<tr>
<td>1990-91</td>
<td>2,91,661</td>
<td>0.99</td>
</tr>
<tr>
<td>1997-98</td>
<td>3,56,547</td>
<td>3.74</td>
</tr>
</tbody>
</table>

Source: Directorate of Fisheries, 1997, Chennai.

(v) Measures to Promote Fish Farming

In order to augment fish production in Tamilnadu, the Tamilnadu Fisheries Development Corporation (TFDC) was established in 1974 as a State-owned undertaking with the following objectives: (i) to promote, establish, organise, administer, maintain and improve deep sea fishing operations by
trawlers and large size fishing boats, (ii) to undertake fish seed production and reservoir stocking with a view to developing fisheries in fresh water resources, and (iii) to provide service and assistance of all kinds with regard to any form of fishing, fish and prawn culture\textsuperscript{44}.

For the development of marine fisheries, various schemes have been implemented under the successive five year plans and the objectives set forth during the plan periods were: (i) to improve the operational efficiency of the crafts and gear operated by the small fishermen and to enable them to increase their landing as well as their earnings, (ii) to expand the fleet strength of fishing trawlers with a view to fully exploiting the fishery resources of the sea, (iii) to create the required infrastructure facilities, such as landing, berthing and fishing harbour facilities in the marine sector in order to help the rapid development of fisheries activities\textsuperscript{45}, (iv) to revitalize the fishermen's cooperatives by providing financial aid which would enable them to take up fishing and marketing, and (v) to expand the marketing of fish in an organised way and to ensure the availability of fish to the public at reasonable price\textsuperscript{46}.

(vi) Exports of Marine Fish

Tamilnadu accounts for a significant percentage (135.60 per cent) of total export of marine fish in India during 1983-84. Marine Fish exported from Tamilnadu have steadily increased. In terms of value, it has registered 55 times increase and in terms of quantity the increase was found to be 6 times during the period 1980-1998. Data regarding the exports of marine fish from Tamilnadu are given in Table 1.7.
The importance accorded to the development of fisheries could also be studied with reference to the budgetary expenditure of Tamilnadu Government on fisheries. It is observed that the relative share of total expenditure on fisheries had gradually declined to 0.15 per cent in 1997-98 from 0.35 per cent in 1980-81. The details are shown in Table 1.8.

TABLE 1.7

Exports of Marine Fish from Tamilnadu

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantity (in tonnes)</th>
<th>Value (Rs. in lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>6751</td>
<td>2212.06</td>
</tr>
<tr>
<td>1984-85</td>
<td>18792</td>
<td>5128.00</td>
</tr>
<tr>
<td>1988-89</td>
<td>15331</td>
<td>10320.44</td>
</tr>
<tr>
<td>1990-91</td>
<td>27340</td>
<td>16588.23</td>
</tr>
<tr>
<td>1994-95</td>
<td>28831</td>
<td>78010.00</td>
</tr>
<tr>
<td>1997-98</td>
<td>41052</td>
<td>122005.00</td>
</tr>
</tbody>
</table>


(vii) Budgetary Expenditure on Fisheries
It is observed that the per capita consumption of fish in TamilNadu has come down over the years as could be seen from the figures shown in Table 1.9. It is due to an increase in the exports of fish from Tamilnadu, an increase in the price of fish in the local market, negative publicity regarding seafood-borne diseases and marine pollution

\[\text{(viii) Per Capita Consumption of Fish}\]

It is observed that the per capita consumption of fish in TamilNadu has come down over the years as could be seen from the figures shown in Table 1.9. It is due to an increase in the exports of fish from Tamilnadu, an increase in the price of fish in the local market, negative publicity regarding seafood-borne diseases and marine pollution.

\[\text{TABLE 1.8}\]

\text{Expenditure on Fisheries by Tamilnadu Government (Rs. crores)}

<table>
<thead>
<tr>
<th>Year</th>
<th>Expenditure on Fisheries *</th>
<th>State budgetary expenditure</th>
<th>Col. (2) as percent to Col. (3) (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>426.92</td>
<td>123730.25</td>
<td>0.35</td>
</tr>
<tr>
<td>1985-86</td>
<td>663.65</td>
<td>260223.04</td>
<td>0.26</td>
</tr>
<tr>
<td>1989-90</td>
<td>873.00</td>
<td>476538.49</td>
<td>0.18</td>
</tr>
<tr>
<td>1994-95</td>
<td>892.00</td>
<td>493456.04</td>
<td>0.16</td>
</tr>
<tr>
<td>1997-98</td>
<td>902.00</td>
<td>524732.02</td>
<td>0.15</td>
</tr>
</tbody>
</table>

\text{NOTE: * excluding loans and advances}

\text{Source: Budget Document, (Tamilnadu Government), 1998.}

\[\text{TABLE 1.9}\]

\text{Fish Consumption in Tamilnadu (Kg/Year)}

<table>
<thead>
<tr>
<th>Year</th>
<th>Per capita consumption of fish (kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>8.90</td>
</tr>
<tr>
<td>1984-85</td>
<td>8.09</td>
</tr>
<tr>
<td>1989-90</td>
<td>6.54</td>
</tr>
<tr>
<td>1992-98</td>
<td>5.00</td>
</tr>
</tbody>
</table>

\text{Source: Director of Fisheries, 1998, Chennai.}
Statement of the Problem

The majority of fishermen possess only country crafts with one or two cheap varieties of nets which help them in catching ordinary types of fish. The earnings of the fishermen is meagre because of the low market price offered for the ordinary catch.

The pressing problem of the fisherfolk is the lack of finance to acquire proper fishing implements. The fishermen are unable to get financial assistance from the commercial banks without collateral security. Unlike the farmers who can offer their land as security, the fishermen cannot pledge their fishing crafts and gear as security.

The fishermen's dependence on traders and money-lenders for meeting their working capital needs forces them to commit in advance the fish catches and thereby their freedom of sale of catch at the best available price is lost.

Marine fish marketing system in Tamilnadu is still at a primitive stage. The involvement of a number of middlemen in the marketing affects the interests of the fisherfolk. Even minimum facilities are not found in the landing centres to carry out the marketing activities. Proper grading and weighing is not done for fresh fish and no facility is available for preservation.

There are no icing plants, freezing plants and other storage facilities in the fish landing centres. As a result about 9 per cent of the exportable and 30 per cent of the non-exportable fish catch are spoiled at the time of landing itself\(^4\).
The profitability of mechanised fishing has been affected due to high fuel cost without corresponding increase in fish 'catch'.

The fisherwomen engaged in the marketing of fish also face various problems. They are: (i) inadequate transportation to the market centres, (ii) inadequate supply of icing facilities, (iii) inadequate facility at the marketing place, (iv) lack of financial assistance to procure fish, (v) lack of refrigeration and storage facilities, and (vi) the non-availability of alternate employment in the off-season.

Significance of the Study Area

This study is confined to South Arcot district, Tamilnadu State (South India). The following are some of the salient features of this district for fishery development, relating to the study area,

The total fisherfolk in Tamilnadu stands at about 5.94 lakh in 1998 out of which 55,000 (9.30 per cent) are engaged in fishing in South Arcot district.

Among the coastal districts, South Arcot contributes 13.70 per cent of total marine fish production during 1997 - 1998 in the State per annum\(^49\).

\(^5\) In the oil sardine landings, South Arcot district contributes a maximum of 43.40 per cent of the total oil sardine production of the State of Tamilnadu\(^50\) during 1994-1995.

The sea around South Arcot district has rich potential in marine fisheries resources. Besides, the mangrove forests increase the yield of prawns and also control floods\(^51\).
There are two functional fisheries harbours in this district, viz. Cuddalore and Pazhayar. There is a facility for berthing 60 mechanised fishing vessels in three rows in Cuddalore. The Pazhayar fisheries harbour has berthing facility for 75 mechanised vessels\textsuperscript{52}.

Out of 6 Fishermen's Training Centres in the State of Tamilnadu one is located in Cuddalore Old Town. It has been functioning since 1964\textsuperscript{53}.

South Arcot district has other sources of employment such as Neyveli Lignite Corporation (NLC) and the Small Industries Promotion Corporation of Tamilnadu (SIPCOT) which mainly concentrate on the production of coal, organic chemicals fertilizers, dyes, oil paints, insecticides, pesticides and detergent powders\textsuperscript{54}.

The production of coal and chemicals provides alternative employment opportunities to those fishermen who own plank built canoes to load and unload the bags of chemicals in the harbours\textsuperscript{55}.

Another important feature of South Arcot district is that India's first Marine Biological Research Centre is located in Parangippettai under the auspices of Annamalai University, Chidambaram\textsuperscript{56}.

Killai is a coastal village famous for its marine fauna, rich in-shrimp, estuarine fishes and clams. The project site for pen culture of shrimp has been chosen by the Marine Biological Research Centre.

Fish Farmers' Development Agency (FFDA) is also functioning in Cuddalore New Town at Devanampattinam coastal village. FFDA in this District plays a significant role in increasing the inland fish production since 1974\textsuperscript{57}.
The above mentioned features have influenced the choice of South Arcot district as the area of this study. Further, South Arcot district is poised for a major break-through in marine fisheries development.

Scope of the Study

This study is focused on the fishermen families' status and their living conditions in South Arcot district. It takes into account the economic and routine activities of fishermen and fisherwomen in the sample households in order to analyse the pattern of their income and expenditure. It provides insights into assessing the ways and means of procuring fishing crafts and gears by fishermen with financial assistance from the Fisheries Department. The study objectively highlights the advantages enjoyed by fishermen as members of the Co-operative Society. This study also investigates the time spent by the sample fishermen / women on fishing related work and their participation in family activities. An analysis of the welfare measures and the various schemes of the Fisheries Department in helping to improve the living conditions and status of the fishing households "constitutes a special focus of the study".

Many decisions which a family makes have an important bearing on the standard of living of the fisherfolk. For instance, decisions like those concerning the maintenance of the family, purchase of household articles, purchase of immovable properties, the type of education given to the children and savings, investments affect the standard of living of households etc. The present study makes an attempt to analyse the role of decision making by the fisherwomen.
The focus of the study is also on identifying the problems of the fishermen and the fisherwomen of the sample fishing households. It aims at helping the authorities to design and implement new policies towards fulfilling the needs of the fisherfolk which will have an impact on the entire economy.

Objectives of the Study

The study has been taken up with the following specific objectives. They are:
1. To study the socio-economic conditions of the selected fisherfolk;
2. To examine the living conditions of the various categories of fishermen; comprising Mechanised Craft Owners (MCO); Non-Mechanised Craft Owners (NMCO); No Craft Owners (NCO) (or) Labour Class (LC);
3. To analyse the role of fisherwomen in generating income;
4. To study the awareness of the fisherwomen on various social issues; and
5. To suggest policy measures based on the findings of the study.

Hypotheses

Keeping in view the objectives of the study, the following hypotheses have been formulated. They are:
1. There are no significant differences in the distribution of income among the various categories of the fisherfolk families.
2. There is no marked change in the consumption pattern of various categories of the fisherfolk families.
3. The nature and magnitude of indebtedness vary significantly among the fisherfolk families.
4. There is no difference between the working fisherwomen and housewives with regard to their social awareness.
Methodology

This is an empirical study based on survey method. Data required for this study have been gathered both from primary and secondary sources.

Sampling

The multi-stage random sampling method has been used to draw the sample for collecting the primary data required for this study.

(i) Selection of the District

No major studies have so far been undertaken with reference to the development of fisheries and fisherfolk in this South Arcot district. Even the major organisations like, (i) Bay of Bengal Programme, (ii) Central Marine Fisheries Research Institute, (iii) State Department of Fisheries and, (iv) Tamilnadu Fisheries Development Corporation Limited, have not undertaken any study on fisherfolk of this district.

The state government has implemented a number of welfare measures for the upliftment of the fishermen community and no serious evaluation studies have been carried out to assess the impact of these welfare measures.

The coastal line of South Arcot district is located on the Coromandal coast. With two important places for mechanised fishing vessels viz. Cuddalore and Pazhayar fisheries harbours, the Coromandal coast plays an important role in having a 31 per cent share in the marine fish production of the state and also landing a large variety of finfishes and shellfishes. Viewed from this angle, a study on the fisheries sector in South Arcot district merits consideration.
(ii) Selection of Panchayat Unions and the Villages

South Arcot district consists of 18 panchayat unions, including only 3 coastal Panchayat Unions, viz. Cuddalore, Kurinjippadi and Parangippettai. All the 3 coastal panchayat unions have been taken up for this study. Out of 44 fishing villages in the three Panchayat Unions, 50 per cent (22) are chosen as sample on a random basis by applying the lottery method. The number of villages in the Panchayat Unions and the sample villages chosen are given in Table 1.10.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Panchayat Union</th>
<th>Number of villages</th>
<th>Number of villages selected</th>
<th>Percentage to total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Parangippettai</td>
<td>20</td>
<td>10</td>
<td>50.00</td>
</tr>
<tr>
<td>2.</td>
<td>Cuddalore</td>
<td>17</td>
<td>8</td>
<td>47.10</td>
</tr>
<tr>
<td>3.</td>
<td>Kurinjippadi</td>
<td>7</td>
<td>4</td>
<td>57.10</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>44</td>
<td>22</td>
<td>50.00</td>
</tr>
</tbody>
</table>

Source: Compiled from Primary Data.

(iii) Selection of the Households

In the second stage of sampling, 14,750 active fishing households have been identified in the 22 sample villages. Out of this a manageable sample size of 738 households (5.00 per cent) have been chosen randomly by using Tippet's Random Number Table.
For the purpose of analysis and discussions, the selected 738 households are classified on the basis of ownership of crafts and categorised as follows, 226 households belong to the first category of Mechanised Craft Owners (MCO), 110 households belong to the second category of Non-Mechanised Craft Owners (NMCO), and the rest 402 households belong to the third category of No Craft Owners or Labour Class only (NCO/LC).

Primary Data Collection

The investigator has travelled by canoes to reach the sample fishing households in the coastal villages to collect the required data and information.

A structured, pretested interview schedule was used to collect the required data and information regarding the following aspects: (i) demographic and social characteristics of the sample households, (ii) gross income of the households, (iii) gross expenditure of the households, (iv) household assets, (v) household liabilities (vi) total costs of fishing, (vii) modes and costs of marketing of fish, (viii) welfare schemes of the fisherfolk population, (ix) time allotment by fishermen and fisherwomen for undertaking various activities, (x) benefits from the co-operative societies etc.

Both wives and husbands of the sample fishing households responded to the questions.

Sources of Secondary Data

The required secondary data and information were collected for this study from the following sources: (i) Souvenirs, Reports, Handbooks of Statistics of the Department of Fisheries, Cuddalore. (ii) Directorate of Fisheries, Chennai. (iii) Government of India, Ministry of Agriculture,
Reference Period

The study relates to the period from April 1998 to May 1999. The income, expenditure, prices, interest rate, wages and indebtedness are expressed in the current prices for the year 1998-1999.

Tools Used for Analysis and Discussions

Simple percentages and averages have been used for analysis of classified data. Simple correlation, ANOVA, Probit, Gini ratio and Multiple Regression have been used to study the relationship between the income, expenditure, assets, liabilities / indebtedness of the sample fisherfolk families. The Likert scale has been used to analyse the role of women fisherfolk.

Limitations of the Study

The limitations of the study are:

(i) The study is based on primary data. Therefore, memory lapse and recall bias cannot be ruled out despite all efforts to get as near the truth as possible.

(ii) The scope is limited to marine fisheries and not to inland and brackishwater fisheries.
(iii) The results of the study hold good only with reference to the coastal areas which have homogeneous group of fisherfolk.

(iv) The researcher "could not get full cooperation" from the sample of fishing households because of the local conflicts among the villages.

Lay-Out of the Study

The outcome of the study has been presented in Seven Chapters.

The First Chapter encompasses the introduction and design of the present study.

The Second Chapter deals with a comprehensive review of literature on fisheries and conceptual framework.

The profile of the study area is presented in the Third Chapter. It provides information about South Arcot district, its constituent Panchayat Unions and the sample villages.

The Fourth Chapter deals with the analysis of the socio-economic characteristics and living conditions of the fisherfolk.

The Fifth Chapter consists of an analysis of income, expenditure, assets and liabilities of the fisherfolk.

The Sixth Chapter contains the fisheries co-operatives and the role of women fisherfolk.

The summary of the findings, conclusion, suggestions and policy measures are presented in the Last Chapter.
Notes and References


18. Pelagic species are surface dwelling and are normally taken by fish gears without contacting the bottom of the sea. These species include fisheries like sardines, anchoview and mackorel.


30. Continental shelf: Fishing grounds of the seas are referred to as continental shelf.

31. Fathom refers to a unit of length equal to 6 feet (about 1.83 m) used especially for measuring the depth of water.


ANNEXURE I

STATE-WISE DETAILS OF MARINE RESOURCES AND FISHING IN INDIA

<table>
<thead>
<tr>
<th>State/Union territories</th>
<th>Continental shelf (in 000 kms)</th>
<th>Landing centres (Nos)</th>
<th>Fishing villages (Nos.)</th>
<th>Approximate length of coast line (Kms.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>31 (6.62)</td>
<td>379 (18.56)</td>
<td>409 (12.10)</td>
<td>974 (12.96)</td>
</tr>
<tr>
<td>Goa</td>
<td>10 (02.14)</td>
<td>87 (04.26)</td>
<td>91 (02.71)</td>
<td>160 (02.13)</td>
</tr>
<tr>
<td>Gujarat</td>
<td>164 (35.04)</td>
<td>599 (29.33)</td>
<td>590 (17.59)</td>
<td>1215 (16.16)</td>
</tr>
<tr>
<td>Karnataka</td>
<td>25 (05.34)</td>
<td>28 (01.37)</td>
<td>147 (04.38)</td>
<td>280 (03.72)</td>
</tr>
<tr>
<td>Kerala</td>
<td>40 (08.55)</td>
<td>218 (10.58)</td>
<td>222 (06.62)</td>
<td>570 (07.58)</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>87 (18.59)</td>
<td>186 (09.11)</td>
<td>375 (11.18)</td>
<td>653 (08.69)</td>
</tr>
<tr>
<td>Orissa</td>
<td>32 (918.59)</td>
<td>62 (03.04)</td>
<td>329 (09.81)</td>
<td>476 (06.33)</td>
</tr>
<tr>
<td>Tamilnadu</td>
<td>41 (08.76)</td>
<td>352 (17.25)</td>
<td>442 (13.17)</td>
<td>907 (12.07)</td>
</tr>
<tr>
<td>West Bengal</td>
<td>17 (03.63)</td>
<td>47 (02.30)</td>
<td>652 (19.43)</td>
<td>157 (02.68)</td>
</tr>
<tr>
<td>Andamans</td>
<td>16 (03.42)</td>
<td>54 (02.64)</td>
<td>43 (01.28)</td>
<td>1962 (26.10)</td>
</tr>
<tr>
<td>Pondicherry</td>
<td>1 (00.21)</td>
<td>28 (01.37)</td>
<td>45 (01.34)</td>
<td>31 (00.41)</td>
</tr>
<tr>
<td>Lakshadweep</td>
<td>4 (00.86)</td>
<td>11 (0.54)</td>
<td>10 (0.30)</td>
<td>132 (01.76)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>468 (100)</td>
<td>2042 (100)</td>
<td>2355 (100)</td>
<td>7517 (100)</td>
</tr>
</tbody>
</table>


Figures in ( ) indicates percentage to total
### ANNEXURE II

**PLAN-WISE DETAILS OF FISH PRODUCTION IN INDIA**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Plan Period</th>
<th>Fish Production (in lakh tonnes)</th>
<th>Average Annual Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Marine</td>
<td>Inland</td>
</tr>
<tr>
<td>1.</td>
<td>1950-1951</td>
<td>5.34</td>
<td>2.18</td>
</tr>
<tr>
<td>2.</td>
<td>End Year of I Plan</td>
<td>5.96</td>
<td>3.43</td>
</tr>
<tr>
<td></td>
<td>(1955-56)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>End Year of II Plan</td>
<td>8.80</td>
<td>2.80</td>
</tr>
<tr>
<td></td>
<td>(1960-61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>End Year of III Plan</td>
<td>8.24</td>
<td>5.07</td>
</tr>
<tr>
<td></td>
<td>(1965-66)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>End Annual Plans</td>
<td>9.04</td>
<td>6.22</td>
</tr>
<tr>
<td></td>
<td>(1968-69)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>End Year of IV Plan</td>
<td>12.10</td>
<td>7.48</td>
</tr>
<tr>
<td></td>
<td>(1973-74)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>End Year of V Plan</td>
<td>14.00</td>
<td>8.16</td>
</tr>
<tr>
<td></td>
<td>(1978-79)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Annual Plan (1979-80)</td>
<td>14.92</td>
<td>8.48</td>
</tr>
<tr>
<td>9.</td>
<td>End Year of VI Plan</td>
<td>16.98</td>
<td>11.03</td>
</tr>
<tr>
<td></td>
<td>(1984-85)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Government of India, Handbook of Fisheries Statistics, 1997.