STUDIES ON SOCIOECONOMICS OF CORAL REEF RESOURCE USERS IN THE GULF OF MANNAR COAST, SOUTH INDIA

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Final Report

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1. INTRODUCTION:

India has a long coastline of 7,000 kms and many parts of it have coral reef rich environments. One such distinct area is the Gulf of Mannar where rich coral reef ecosystems are present. Coral reefs are considered as one of the most productive resources of the ecosystems on earth. The rich variety of resources of these ecosystems is found threatened in recent years due to human intervention and other factors. This precarious condition can mainly be attributed to man's greed and at times due to natural forces. Gulf of Mannar with all 21 islands along the 140 Km stretch between Tuticorin and Rameswaram (Lat. 8° 55" – 9° 15" N and Long. 78° 0" – 79° 16" E) has been rightly considered for a Marine Biosphere Reserve (**Figure-1**). Gulf of Mannar coast covers Tuticorin, Tirunelveli, and a portion of Kanyakumari and Ramanathapuram Districts stretching from Kanyakumari in the southern end of the Indian Peninsula to Pamban in the north. Gulf of Mannar is a zone of abundant marine fish resources.

The residents of coastal villages in the Gulf of Mannar pursue fishing as a primary occupation since agricultural activities have proved to be unproductive. Most of them are using traditional methods of fishing and are living in huts. Their economic condition is below poverty line and the neglected aspect is education. Inadequate supply of water, lack of proper medical and health care facilities, dissatisfactory power supply, etc., keep the fishermen in a permanently disadvantageous position both socially and economically. Their income is very low and is attributed to low productivity and improper marketing system and lack of additional vocations. Therefore, they have low standard of living. Majority of fishermen are in debt due to inadequate income from fishing.

Gulf of Mannar is known for its rich variety of marine life. However, the illiterate fishermen have been doing extensive damage to coral reefs in the past and to a certain extent even now, without realising the ecological implications (MBAI, 1985). They have been removing corals to meet the demands for lime in various industries such as cement, sugar, and construction (Mahadevan and Nagappan Nayar, 1972; Venkataramanujam *et al.*, 1981; and Kumaraguru, 1989; 1991).

It has been found out that data on socioeconomic aspects of coral reef resources users in the Gulf of Mannar are scarce (Kannan, 2001). The only information which is available from the Fisheries Departments, both State and Central, also happens to be insufficient. As there is a lack of information on the socioeconomic position of fishermen communities of the Gulf of Mannar Coast, it was proposed to study the same through this project. Therefore, this study was attempted to identify the coral reef resource users as well as to monitor the socioeconomic status of reef resource users in the Gulf of Mannar, India, essentially to help develop plans for the benefit of the ultimate resource users.

Figure –1 Islands in the Gulf of Mannar	
No.	**Name of the island**
	Tuticorin group
01.	Vaan
02.	Kasuwar
03.	Velanguchalli
04.	Karaichalli
	Vembar group
05.	Upputhanni
06.	Pulivini challi
07.	Nallathanni
	Keezhakkarai group
08.	Yaanaipar
09.	Pallimunai
10.	Poovarasanputti
11.	Appa
12.	Thalaiyari
13.	Vaalai
14.	Mullai
	Mandapam group
15.	Musal
16.	Manoli
17.	Manoliputti
18.	Poomarichan
19.	Pullivasal
20.	Kurusadai
21.	Shingle

1.1. AIM OF THE STUDY:

The aim of the study was to make an in-depth study in the chosen marine fishing villages in the Gulf of Mannar region for assessing the socioeconomic status of the fishermen and coral reef related resource usage by people. The purpose of this study was to generate baseline data on socioeconomic status of the reef related resource utilization in the Gulf of Mannar region. This would, in turn, contribute to the long term planning of socioeconomic monitoring of coral reef resource users in the Gulf of Mannar region in India.

1.2. OBJECTIVES OF THE STUDY:

Following were the major objectives of the study:

1.2.1. Baseline data on socioeconomics of the Gulf of Mannar region.

a. Reef resource use, levels of exploitation, numbers of fishers and kinds of fishing crafts and gears, and marketing patterns.
b. Demographic details.
c. Occupation and types of activities generating income, structure/ type of employment, duration and frequency of livelihood activities, utilization of different resources, and strengths and weaknesses of the fishing communities.
d. Causes and consequences of inter-group rivalry among fishermen communities, which has emerged in the form of a class conflict.
e. Study how ecodegradation is caused in the pursuit of their occupation.
f. Environmental awareness, knowledge of reef environment and its importance to productivity and stability, attitudes and outlook of fishers towards conservation habits and customs.

The objective was to use participatory approach during socioeconomic data collection. Community members and representatives of local administration were to be encouraged to take the initiative in generating information. This was to be done through **Participatory Rural Appraisal (PRA) techniques**, public fora, etc. The idea was to identify the interests of the community in terms of participatory information generation and the subsequent use of the collected information.

1.2.2. To develop/recommend protocols for future socioeconomic data collection in the Gulf of Mannar. This would be relevant to the development of a guidance manual and data base for coral reef-related socioeconomic monitoring.

2.0 METHODOLOGY ADOPTED:

Participatory Rural Appraisal (PRA) technique was used for socioeconomic data collection. The primary data were gathered using standard field techniques such as semi-structured interviews and group discussions. The socioeconomic team incorporated aspects of the Rapid Appraisal of Management Parameters (RAMP) methodology devised by Pollnac (1996) as well as the Rapid Appraisal of Fisheries Management Systems (RAFMS) approach designed by Pido *et al*., (1996). Secondary data were collected from local government records, Official Census (1991) and Surveys, Fisheries Department, Forest Department, Department of Economics and Statistics, and Fisheries Co-operative Societies. Data pertaining to socioeconomic details were obtained using Participatory Rural Appraisal. The techniques used were:

1) Focussed Group Discussion
2) Semi-structured Interviews
3) Venn and Linkage Diagrams
4) Web Charts
5) Time Line and Trend Change
6) Resource Mapping
7) Seasonal Diagram
8) Stake Holder Interview.

3.0 Marine Resources in the Gulf of Mannar.

3.1 Coral Reefs of India:

The reefs of Indian Ocean consist of atolls, fringing reefs, barrier reefs, patch reefs, elevated banks and submerged banks. Coral reefs in India occur principally in the Lakshadweep, Andaman and Nicobar Islands, Gulf of Mannar and Palk Bay. The major coastal coral reefs occur between southeast India and Sri Lanka (Gulf of Mannar and Palk Bay) and the major oceanic reefs are found in the Lakshadweep islands, and Andaman and Nicobar Islands. The atoll formed coral reefs occur only in the Lakshadweep islands. The other minor coastal reefs are in the Gulf of Kutch of Bombay, Central West Coast and Vishakapatnam. The reef flat areas of India have been recently estimated by Baldev Shai (1994) by remote sensing technology (1994, Report to Ministry of Environment & Forests, Government of India). The extent of reef flat in Gujarat coast is 148.4 sq.km, that of Tamilnadu coasts is 94.3 sq.km, Lakshadweep 140.1 sq.km and that of Andaman & Nicobar Islands is 813.2 sq.km.

In Indian waters, coral reef formations have been recorded in the Gulf of Kutch (20 genera), Patchy coral growth along Ratnagiri and Malvan areas, Gaveshani bank in the Arabian sea (9 genera), Lakshadweep islands (28 genera), Gulf of Mannar (26 genera) and Palk Bay (22 genera) in the Bay of Bengal and around Andaman (25 genera) and Nicobar islands (42 genera). Of all these, coral diversity is the greatest in the Nicobar Islands.

Diversity of hermatypic corals in the Indian Ocean*

Locality	No. Species	No. Genera & Subgenera	Source
Gulf of Kutch	~33	21	Patel (1978); Pillai (1983c)
Lakshadweep islands	103	37	Pillai & Jasmine (1989)
Maldive islands	197	64	Wells & Davies (1976); Pillai & Scheer (1976)
Palk Bay and Gulf of Mannar	96	36	Pillai (1983c)
Tuticorin	21	19	Pillai (1977)
Sri Lanka	90	39	Mergner & Scheer (1974)
Mergui Archipelago, off Burma	77	36	Duncan (1889), Harrison & Poole (1909)
Phuket, Thailand	173	66	Ditlev (1976)
Andaman islands	82	>31	Mukherjee (1985a)
Nicobar islands	103	43	Scheer & Pillai (1974)

Source: Dr. C.S.G. Pillai, 1983c

* The number of species of stony corals is low in some regions (for example, Andaman and Nicobar islands) because surveys did not include extensive collection by SCUBA Diving.

3.2. Reef Resources of Gulf of Mannar:

India has a long coastline of nearly 7000 km and many parts of it have coral reef rich environment. One such distinct area is the Gulf of Mannar and Palk Bay where rich coral reef ecosystems are present. Gulf of Mannar, which has a chain of 21 islands along a stretch of 140 km between Tuticorin and Rameswaram (Lat. 8° 55' – 9° 15'N and Long. 78° 0' and 79° 16' E), is located along the southeast coast of India. It has been rightly considered as a Marine Biosphere Reserve. The Reserve has been selected as a priority site based on the criteria such as bio-physical and ecological uniqueness, economic, social, cultural, scientific importance, national and global significance and management compatibility at the local and national level. Of these 21 islands, Musal Island in the Mandapam group is the biggest island i.e., 129 hectares and the second largest island is Nallathanni Island (110 hectares) in the Vembar group. In the Gulf of Mannar, Manoliputti Island in the Mandapam group is the smallest island (0.34 hectares). There is no human settlement in these islands.

The importance of the Gulf of Mannar as a study area lies in the fact that the islands have fringing coral reefs and patch reefs rising from shallow seas. The fringing reefs around the islands have lagoons of 100 to 150 m width and 1 to 2 m depth. The reef area of the Gulf of Mannar accounts for 94.3 sq.km, based on the estimates of data derived from IRS LISS II 1989 & SPOT 1989 satellite information. Corals shelter a variety of fauna and flora of economic value including cowries, cones, volutes, murices, whelks, strombids, chanks, tonnids, oysters, holothurians, starfishes and sponges. The shoreward side has massive, encrusting, large polyped coral fauna and the seaward side has small polyped ramose type coral fauna. The reef has a variety of associated flora and fauna of economic importance.

It has been estimated that some 117 species of stony corals inhabit the Gulf of Mannar. They belong to 16 families consists of 26 genera. The dominant coral genera in this region are *Acropora*, *Montipora* and *Pocillopora* (Ramose forms). The massive forms of corals found to occur in this region are *Porites*, *Favia, Favites*, *Goniastrea*, *Platygyra* and rarely *Symphyllia*. *Fungiids* are poorly represented. The dominant reef building coral species belong to the family Poritidae and Faviidae (Gopinatha pillai 1971).

Krusadai Island in the Mandapam group is of biological significance in the Gulf of Mannar Marine National Park. The island harbours a unique, endemic organism called "**balanoglosus**" (*Ptychdera fluva*), a taxonomically unique "**living fossil**" which links vertebrates and invertebrates. The island is referred to as "**biologist's paradise**". This island harbours three species of sea grasses endemic to Gulf of Mannar.

Coral reefs serve as spawning grounds for fishes, seagrass beds serve as nursery grounds and mangroves give shelters and thus form a unique component of life-support system for coastal biodiversity that relates to global benefits and local needs. Seventeen different mangrove species occur within the Biosphere reserve area. The coastal mangrove *Pemphis acidula*, is endemic to Gulf of Mannar. Coastal mangroves are important nursery habitats and biodiversity reservoirs in coastal areas.

3.3. Seaweed Resources:

Marine algae or seaweeds form one of the important marine living resources in the Gulf of Mannar region and they occur in the intertidal and subtidal regions of the sea, and also in the brackish backwater environment. They grow on dead coral reefs, rocks, stones, pebbles, other substrates and also as epiphytes on sea grasses. They contain many nutrients such as protein, carbohydrate, vitamins, iodine, bromine, mannitol, minerals, trace elements and bioactive substances. The total biomass of seaweeds in the Gulf of Mannar region constitute about 53% of Tamilnadu Coast. The Gulf of Mannar region finds a total number of 147 species of marine algae such as green algae (42 species), brown algae (31 specie), red algae (69 species) and blue-green algae (5 species). This reveals the richness and varied species composition in the Gulf of Mannar Marine Biosphere Reserve. The economically important marine algae or seaweeds in this region are *Gelidiella acerosa*, *Gracilaria edulis*, *G. follifera*, *crassa*, *Gracilaria* spp.; *Hvpnea* spp., *Acanthophora* spp.; *Turbinaria* spp., *Sarqassum* spp.; *Cystoseira trinodis* and *Hormophvsa triquetra*; species of *Ulva*, *Entermorpha*, *Caulerpa*, *Codium*, *Hvdroclathrus* and *Lauerncia*.

3.4. Seagrass Resources:

Seagrasses are marine flowering plants which inhabit shallow coastal waters in tropical and temperate zones. They are highly productive and form a dynamic ecosystem. Supporting the Gulf's extensive biodiversity is its widespread and diverse assemblage of seagrasses. Six of the world's twelve seagrass genera and eleven of the world's fifty species, occur in the Gulf. Except the genus *Thallassodendron* all the six genera (*Enhalus*, *Thalassia*, *Halophila*, *Halodule*, *Cymodocea*, *Syringodium*) occur in India. They are restricted to the southern part of India. The Gulf of Mannar contains the maximum concentration of seagrass species along India's coastline. The seagrass beds are some of the largest remaining feeding grounds for the globally endangered dugong (*Dugong dugong*) and form the important habitats for Holothurians. Occurrence of seagrasses is responsible for making Gulf of Mannar the most important area in the region for Dugongs.

Apart from being an important nursery ground for commercially important fishes, the beds of seagrass harbour many species of crustaceans, molluscs, gastropods, worms and echinoderms. They provide rich habitat for the macro and micro algae as epiphytes. The Gulf's seagrass communities are valuable habitats for commercially harvested species, particularly the green tiger prawn *Penaeus semisulcatus*, which is extensively harvested for the export market. Holothurians, an endemic echinoderm found in abundance in the Gulf of Mannar, is extensively exploited for export to Japan and other Southeast Asian countries as a costly food item for human consumption. In addition, ornamental shells, chanks, and pearl oysters are exploited in the Gulf. Sea fans and seaweeds are exported for industrial and decorative purposes.

The seagrass beds also provide feeding ground for all five species of marine turtles viz., the Green (*Chelonia hyeas*), the Loggerhead (*Caretta caretta*). Olive Ridleys (*Lepidochelys olivacea*), Hawksbills and Leather backs (*Dermochelys coriacea*). Many species of crustaceans, mollusks, gastropods and fishes have been observed as inhabitants of sea grass beds.

3.5. Echinoderm Resources:

Echinoderms are fascinating and enigmatic marine creatures and they include spiny skinned animals like starfishes, sea urchins and seacucumbers. They live among corals and occur from supra-littoral to the hadal zone. They inhabit the rocky, sandy, muddy and mangrove areas. The Gulf of Mannar is a favourable and suitable habitat for echinoderms. In the Gulf of Mannar, there are about 100 species of echinoderms. Most of them are living inside the crevices of coral reefs to hide and protect themselves from predators. The crown of thorns *Acanthaster planci* is known to feed on the polyps of the live corals and destroy the live corals. Echinoderms are used in medicine for wounds, high blood pressure, muscular disorders, and also recommended for cholesterol problems. The *beeche-de-mer* soup is believed to possess curative properties for whooping cough, bronchial inflammation, and respiratory disorders. At present among echinoderms, only seacucumbers are exploited from the Gulf of Mannar. This resource is vulnerable for over-exploitation because they are harmless and defenceless animals.

3.6. Fin and Shell Fish Resources:

The Gulf of Mannar coast is the major food resources with fin and shell fishes. There are about 450 species of fishes belonging to 107 families inhabiting the coasts of Gulf of Mannar and Palk Bay. Of these, about 122 species of fishes inhabit the reef area and about 32 species in the sea grass beds and about 40 species in the nearshore as well as mangrove areas. The common fin and shell fish resource of Tamilnadu is given in Annexure-1 and most of the fin and shell fishes are found in the coastal regions of Gulf of Mannar and Palk Bay.

3.7. Other Marine Resources:

The Gulf of Mannar is one of the most important beds for chank and pearl fisheries. There are about ten pearl banks in the Gulf of Mannar region. The chank beds are very productive in this area. *Xancus pyrum* is found on fine or soft sandy substrates in Gulf of Mannar waters. There are plenty of gastropods in the Gulf of Mannar area, associated with seaweeds, algae, etc. The chanks are collected by the local chank diving fishers during certain season. Recently, they catch chanks using chanku madi valai. They also get by-catches in bottom set gill nets and trawl nets. Gulf of Mannar used to have more chank beds. For the past five years, chank resources in this region have declined due to trawl net operation.

3.8. Disturbances to coral reefs and their status in the Gulf of Mannar:

Coral reefs have always been subjected to some sort of disturbance operating at different levels. A single or several factors are responsible for the extensive coral mortality on reefs. They include low tide, volcanic eruptions, low/high temperature and red tides. During the last decade, scientists working on coral reefs have focused on five major causes of natural disturbances to corals such as 1) storms and hurricanes, 2) coral bleaching, 3) diseases of reef organisms, 4) out-breaks of coral predators and 5) mass mortalities of reef herbivores.

Factors causing damage to corals may include physical destruction of reef organisms by wave action and subsequent movement of coral rubbles, increased sedimentation and turbidity, increased runoff after heavy rain, and release of nutrients from breakdown of moribund tissues following the storm. The branching Staghorn and Elkhorn corals are most prone to damage by storm. The regeneration of corals is possible when the tissue damage is not excessive and the disturbances to the reefs are minimal further. In general, the reef recovery times are becoming more difficult to estimate. This is due to the incidence of other factors such as disease, coral bleaching, competition from algae and human influences.

Bleaching is a generalized response shown by corals to stress, since corals bleach upon exposure to a wide variety of pollutants, as well as to extremes of temperature, salinity, and light irradiance. Bleaching responses in corals and other symbiotic organisms have been reported in the 1980s. In 1982-1983, during a remarkably strong El Nino-Southern-Oscillation event (ENSO), severe bleaching resulted in mass mortalities of corals around Costa Rica, Panama, Colombia, and Ecuador. Many of the bleaching events since the mid-1980s have been associated with elevated seawater temperatures, though in some instances exposure to harmful ultraviolet and human-induced disturbance have also been cited as possible causes. The UNESCO (1997) estimate has indicated that nearly 10% of the world reefs have been already degraded and another 30% may attain the same fate in the next 2 decades. A recent estimate by the World Resources Institute in Washington suggested that as much as 56% of the world's reefs are threatened and approximately 10 % of the world's reefs are severely damaged or destroyed (Wilkinson, 1998). Unprecedented bleaching of coral reefs throughout the Indian Ocean, Southeast Asia, the Caribbean, and part of the far eastern and western Pacific Ocean has been reported by observers. Coral bleaching in mid-1998 has seriously damaged almost all reefs in South Asia, with losses of nearly 60-80% of live coral cover (Rajasuriya and White, 1998). During this period, corals of Gulf of Mannar were also affected. The Mandapam and Keezhakkarai groups of Islands were found to have less bleaching than the other two groups of islands i.e., Vembar and Tuticorin groups. Generally, these two groups of islands were found to be most diverse in nature of corals, seaweeds, seagrasses, and other coral associated fauna and flora. Apart from the economically important marine resources, pharmacologically important natural products from sponges, soft corals, etc., are also extracted in the coral rich Gulf of Mannar coast.

Coral reefs are increasingly threatened by a range of human activities, including destructive fishing practices, illegal fishing, coral mining, tourism, sedimentation and pollution from land based activities and global warming. Destructive fishing methods have seriously spoiled many of the coral reefs of the world. The destructive methods of fishing are anchoring, poor gears (Irataimadi valai, thallumadi valai, karai valai, etc), trawlers fishing close to the coast and the reef area, dynamite fishing, cage fishing, etc. These destructive fishing practices were common around the 21 islands in the Gulf of Mannar and in the reef area of Palk Bay regions. Recently the trawl operators have used roller madi valai in the coral reef rich area of Gulf of Mannar for fishing. This type of fishing gears damage the coral reefs in the Gulf of Mannar and Palk Bay regions. Use of such gears causes a reduction in diversity of reefs and their associated resources in this region.

Possibly maximum damage to the reefs of Gulf of Mannar have been done by extensive mining for the formation of road, building construction, and lime making for cement manufacture. Vaan and Kasuar islands in the Gulf of Mannar coast are damaged by this illegal mining activity. The removal of corals is done by economically backward fishermen. This is said to be due to the influence and power wielded by politicians and businessmen who are behind the coral mining.

Coral reefs are a vital part of the economy of many, often poor, coastal fisherfolk. Over 1,00,000 fishers live along the coastline of Gulf of Mannar and Palk Bay and the majority of them are directly depending on the coral reef associated fauna and flora for their livelihood. Research and monitoring are essential to understand the nature of cause-effect relationship and assessing the extent of reef degradation. There is a need for scientists to offer solutions through alternative form of production and harvest, to promote resource enhancement and habitat restoration.

4. RESULTS:

The research team was concerned with the collection and monitoring of the socioeconomic data from Periapattinam, Ramakrishnapuram and Natarajapuram of Rameswaram, Erwadi, and Kalimangundu fishing villages at the reef site of the Gulf of Mannar region, Ramanathapuram District, Tamilnadu. These villages were identified for research purpose because these settings met both substantive and theoretical interests of the research project.

4.1. PERIAPATTINAM

4.1.1. Historical Importance of Periapattinam:

Periapattinam in Ramanathapuram district is one of the oldest ports in the southeast coast of Tamilnadu. During the ancient period, this village was named as *Fakkthan* or *Pathhan* by Marco Polo and Ibin Padukkoo. During the 10 century A.D., this village was called as *Parakkirama Pattinam* by the King Pandia and then in the 12 century A.D., as *Pavithra Manikka Pattinam*. In the 14 century A.D. in the Chinese book (Tai-I-chih-luch), this village was written as "*Thaa Pathhan*" and this means Periapattinam. Since ancient period, this village is one of the important pearl and chank collection places in Tamilnadu. One of the villages near Periapattinam is called as "Muthupettai" and the pearls collected in the Gulf of Mannar regions were marketed by pearl traders centered in this village. The related evidences were reported by Marco Polo. According to Marco Polo, pearl and chank collection were the major activities in Periapattinam, one of the important ancient cities at the time of Pandiya ruling (Edwar Sachaw). Hence, the old people in these villages are called as "*Muthuvaappa*" and the majority of them are belonging to Islam.

4.1.2. Periapattinam Fishing Village:

Periapattinam is one of the fishing villages as well as fish landing centres in Ramanathapuram district, Tamilnadu. Hence, this village has been chosen for our present investigation. This village is also a major chank collecting center in Tamilnadu. Apart from these, fishers in this village collect seaweeds and seacucumber also. This village includes the following hamlets i.e., Periapattinam, Vadakku Puthukkudi Iruppu (North New Colony), Chaalai Thottam, Karicchaan Gundu, Therkku Puthukkudi Iruppu (South New Colony), Mangundu, and Illangamani. All seven hamlets are occupied by fishing communities. Periapattinam panchayat includes both Periapattinam and Muthuppettai fishing villages. The total area of these villages is 931.75 hectares.

The southeastern side of Periapattinam has a group of three islands i.e., Mulli, Vaalai and Appa islands. Of these three, the Vaalai island is further subdivided into three regions i.e., the eastern side has Murukuthaalai, the western side has a Thalaiyari island. Vaalai island or Needuntheevu is located in between these two islands. The fishers of Therkku Puthukkudi Iruppu dwell closer to the sea. However, the habitation of other fishers is located a little away from the shore (**Chart**-1).

4.1.3. Population:

The total population of Periyapattanam fishing village is numbering 14,000. Of these, male population consists of 6,500 individuals and female population comprises 7,500 individuals (**Figure-2a**). Of this total population, the children constitute 2,000. In the total population, seventy nine (79%) percent of them are belonging to fishermen category (**Figure-2b**). The fishers of this village belong to Islam and Hinduism. No one follows Christianity in this village. Periapattinam is predominantly inhabited by Muslims and they constitute 70%. The remaining 30% belong to Hinduism and this population includes Valaiyar (10%), Paravar (5%), and Padaiyaacchi (5%). Others (10%) include Nadar, Thevar, Yadava, Vellalar, Vannan, Aasaaree and still others are belonging to Scheduled Caste (**Figure-3a)**.

4.1.4. Literacy:

The literacy level of this village is approximately 50%. Among the literates, 70% of them are men and 30% of them are women (**Figure-3b)**. Among the literates, majority of people have acquired primary school level education and a few of them have acquired middle school level education. In this village, 10% of them have acquired college level education especially in professional colleges i.e., Engineering, Medicine, etc. Majority of Hindu fishers are illiterate when compared to Muslims. Boys are engaged in fishing at the age of 10 and girls are engaged in household activities at the age of 12-14. The literacy level is higher for women among Hindu families. This is because of low income through fishing. Another important reason is that the assistance of boys is needed for their fishing activities. If the labourers are engaged, the fishers have to lose their income. This is the reason that boys and girls drop out and they do not even complete their middle school education.

4.1.5. Facilities Available:

Table-1 describes the facilities available in the Periapattinam fishing village in Ramanathapuram District. This village has Schools, PHC, Post Office, Telephone Exchange, Ration and Kerosene Shops, Backward class student hostel, etc. However, this village has no Banking facility and other facilities that are not available are Auction Hall, Net Making Shed, Fish Drying Platform, Light House, Cyclone Shelter, Diesel Bunk, Electricity Office, Police Station, and Ice Plant. Recently, the seashore light facility in some villages in the Gulf of Mannar coast have been arranged by State Fisheries Department funds. However, this village has no such facility.

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Table-1 Facilities available in the Periapattinam fishing village, Ramanathapuram District

S.No.	Facility available	Nos.
1.	a) Primary School – No. of students - 1000	1
	b) Govt. Higher Secondary Schools –No. of students each 1000.	1
2.	Public Health Centre (PHC)	1
3.	Telephone Exchange	1
4.	Ration and Kerosene shops	2
5.	Maternity & Child Health Care Centre	1
6.	Backward Class student Hostel	1
7.	Paalvaadi & Oottachathhu Maiyam	1
8.	Post Office	1
9.	Water Tank	2
10.	Fish Market	1
11.	Burial Ground (Common)	1
12.	Temple	2
13.	Mosque	1
14.	Theatre	1

4.1.6. Housing Pattern:

The total number of households is 2,500. Of these, approximately 2000 houses are located in Periapattinam fishing village and others belong to Muthuppettai fishing village. At least 60% of them are living in huts, another 25% are dwelling in Tiled houses and the remaining 15% of them dwell only in pucca houses (**Figure-4)**. At least 5% of the fishers are living in coconut farms closer to sea. Fifty-five free houses have been constructed under the 'Jawahar Rojhar Yojana' through Panchayat. Fifteen free tiled houses have also been constructed in this village by the State Fisheries Department through Fisheries Co-operative Society. These houses have no electric power supply. There is no water scarcity in this village because of abundant ground water storage. Drinking water is distributed from two wells and water tanks. Many houses have small wells inside their premises. Three small water tanks available in this village are used for bathing, and cattle cleaning purposes.

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4.1.7. **Employment Status**:

The main occupation of this village is fishing, chank and seaweed collections. All of them are fishing only in the lagoon area i.e., region between the main land and the islands in the Gulf of Mannar. However, majority of vallam fishers are fishing 20 kms away from main land. In this village, majority of the fishermen are engaged in fishing and allied activities (**Table-2 & Figure-5**). At least twenty persons are employed in government services and approximately 500 persons are employed in private sectors and in private companies.

The young fishermen have migrated to the Arabian countries such as Dubai, Bahrain, Muscat, etc., for the purpose of employment. At least 500 persons are engaged in fishing and fishing related activities. Majority of them belong to the faith of Islam and others follow Hinduism. However, a few persons have migrated to foreign countries for higher studies i.e., engineering, medical and computer science courses. This village has four registered fish and crab traders and other four are seaweed traders.

Table-2 Status of employment in Periapattinam fishing village.

S. No.	Employment status	Number
1.	Fishermen	5,000
2.	Fresh fish traders	50
3.	Dry fish traders	100
4.	Net Making	500
5.	Diving	500
6.	Other allied activities	1,500
7.	Government employee	20
8.	Employed in Private Sector/company	100
9.	Employed in Foreign Country	500
	Total	8,270

4.1.8. **Fishing Crafts and Gears**:

Fishers in Periapattinam have only a restricted zone of fishing because fishers in this village have only non-mechanized boats. The non-mechanized boats used in Periapattinam fishing village are *vatthai*, and *vallam*. *Vallam* is fixed with motors and vatthai is a non-motorized vessel. However, only one fisher has a *launch* in this village. Other fishing related activities are fresh fish and dry fish selling (**Chart-2).**

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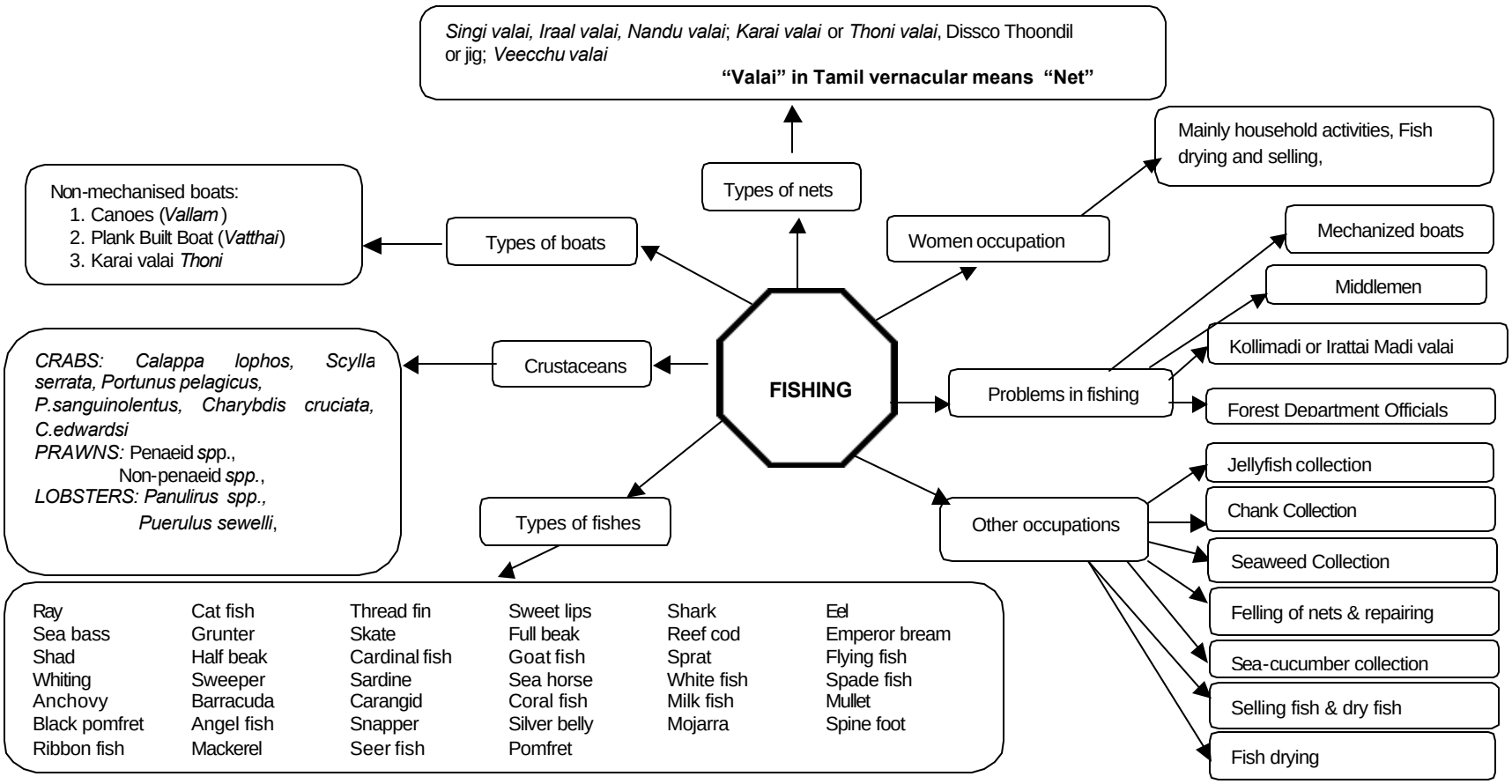
CHART – 2

FISHING OCCUPATION – WEB CHART

District: Ramanathapuram | **Village: Periapattinam** | Date: 11-07-2001



Periapattinam fishing region has 194 fishing vessels. Of these, vessels numbering 82 are vallam, and 112 are vatthai (**Table-3 & Figure-6**). At least, 25 vallam are exclusively used for chank collection. Every day after fishing, the family members help in repairing the nets. Each vallam is fixed with 10 HP in-board engine. Vatthai are operated by sail only.

Table-3 Fishing crafts used in Periapattinam fishing village, Ramanathapuram District.

S. No.	Name of the Hamlet	Vallam	Vatthai
1.	Periyapattinam	25	15
2.	Sudukattanpatti	5	5
3.	South New Colony	12	30
4.	Indiranagar	15	25
5.	Mutharaiyarnagar	5	15
6.	Kollan Thoppu	-	2
7.	Karicchan kundu	-	-
8.	Ilangamani	-	-
9.	Krishnapuram	5	-
10.	Muthuppettai	3	20
11.	Sethunagar	10	-
12.	Thalai Thoppu	2	-
	Total	82	112

Fishermen in this village use different types of nets or "valai" depending upon the types or species of fish caught. These are nandu valai, singi valai, disco valai, veecchu valai, and thoondil (**Table-4**). Apart from these nets, fishers of this village are known to make use of Oohalai valai, madi valai and resort to illuvalai fishing. This village is geographically so arranged with bed of seagrasses and seaweed cover with shallow water bodies. Hence, varieties of marine organisms are found in this region. By virtue of these conducive environmental conditions, it has become a breeding ground for protected marine organisms such as Dugongs, turtles, etc.

Table-4 Gears or 'valai' used in South New Colony fishing hamlet in Periapattinam

Types of Net	Type of fish caught	Length & Breadth; Hole size	Cost of the net (Rs)	Nets owned per head	Durability
Singi valai (Lobster net)	Lobster	450 to 600' & 3-4'; HS: 7-8"	1,500/net	3-4	2 years (only 4 months/Year)
Nandu Valai (Crab net)	Crabs	200' & 2-3'; HS: 5-6"	1,500 to 2,000	2-3	Only 10 fishing-Discarded
Disco Valai (Fishes)	All types of fishes	50' & 3'; HS: 1.5"	1,000	>10	2 years only – Not discarded.
Disco Thoondil (Cuttlefish)	Kanavaai fishing	---	100 - 250	3-5	2years

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4.1.9. Fishermen Cooperative Society:

Periapattinam fishing village has two Fishermen Cooperative Societies (F.C.S.); these are 1) Muthuppettai FCS and 2) Periapattinam Chank Diver FCS (Men). The details of FCS members are given in **Table-5 & Figure-7**. If the fishermen register themselves as members of FCS, they get benefits like loan and welfare schemes through FCS only. Puthunagar fishing hamlet in Periapattinam village got separated from the Muthupettai FCS and formed a new FCS. This is ready for registration in the name of Periapattinam –Puthunagar Fishermen Cooperative Society.

Table-5 Registered Fishermen Cooperative Society (FCS) members

S. No.	Name of the Hamlet	Registered FCS Members
1.	Periapattinam	800
2.	Sudukattanpatti	25
3.	North New Colony	25
4.	South New Colony (Puthukkudi Muthunagar)	80
5.	Indiranagar	55
6.	Mutharaiyarnagar	50
7.	Kollanthoppu	15
8.	Karicchan kundu	25
9.	Ilangamani	25
10.	Krishnapuram	40
11.	Muthuppettai	500
12.	Sethunagar	40
13.	Thalaithoppu	60
14.	Periyapattinam Chank Diver	500
	Total	2,240

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4.1.10. Chank Diving (Chank Collection):

Traditionally, the chank divers have been residing only in Periapattinam and Keezhakkarai fishing villages. However, the fishers of nearby villages are engaged as labourers during chank collection. Nowadays, others also have learnt chank diving and pursue their occupation as chank divers. Chank collection is also one of the important occupations among the fishers living in this village. Nearly, 500 registered chank divers are engaged in this task. They are exclusively chank divers. However, during offseason, they are doing seaweed and seacucumber collections. The chank divers are belonging to Muslim community comprising of 750 families. The total chank diver population in Periapattinam is 3,500. Of these, 59% are males and others (41%) are females (**Figure-8**). The village has at least 700 children. Fishers are living in joint family system. Each house comprises of at least 3 to 4 families as a group.

They are living just 2 km away from the seashore. The total number of households is 300. At least, 92% of chank divers live in their own houses and others (8%) are in rented houses (**Figure-9**). Nearly thirty percent of these houses have enough electric power supply and another fifty percent houses have electric supply with only two bulbs in each house. Other twenty percent houses have no electric power supply. At least 85% of them are living in huts, another 10% are dwelling in tiled houses and the remaining 5% of them are dwelling in pucca houses (**Figure-10**). Nearly fifty percent of these houses are provided with wells that are used for drinking, bathing, and washing purposes. The peak season for chank collection is 4 months in a year i.e., November, December, January and February and the remaining eight months are off-season.

The major chank bed is located in Periapattinam, Rameswaram, Devipattinam, Kannirajapuram (Rojmanagar), Kadaloor, Pondicherry, Tuticorin, and Tiruchendoor. However, Chank divers of Periapattinam fishing village are going to collect chanks only from Kannirajapuram, Periapattinam, Rameswaram, and Devipattinam areas.

In this village, 25 canoes (vallam) are used for chank collection that is mostly fixed with 10 HP in-board engine. In each vallam, the owner engaged at least 10 to 15 chank divers at a time. Hired boats/vallam are also used. For this purpose, 10 to 15 boats are also operated in hired basis for chank collection and the hire charge for each boat is around Rs.600/- to Rs.750/- per month. Divers will collect the chanks at a depth of 10 to 25 meters. They collect different types of chanks such as *Kuli chanku*, *Oothu chanku*, *Yaanai mulli*, *Ayarn mulli*, *Kuthirai mulli*, etc. The first two types of chanks are used for ornamental purposes. *Kuthirai mulli* and *Yaanai mulli* chanks are used for exquisite ornamental designs. The chank fishers sell their catch to Keezhakkarai and Rameswaram chank traders. Chanks are directly exported to Ahemadabad.

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Animal husbandry and Fisheries Department, Government of Tamilnadu had introduced the license system to chank divers and the prescribed fees are as follows: the registration fee for each chank collecting vallam is Rs: 500 per year and each chank diver remit Rs: 250 per year. During chank collection, a few accidental deaths also occurred. The other problems encountered were pain in the ears and hearing impairment. If the fishers go to Tuticorin region, both chank diver and boat used for chank collection, once again, has to remit Rs: 500 per year. During off-season, chank divers are involved in seaweed collection or sea cucumber collection. They are engaged in these activities during the months from May to August.

Twenty years ago, they collected chanks without any diving equipment such as mask and fins. The chank vallam owners are not giving wages to divers on daily basis. However, they deduct the cost of diesel from the total earnings and the remaining amount is divided among the number of fishers engaged. If one diver earns rupees 100 per day, he has to give 10% to vallam owner as vallam charge. The "naaganam" or operculum of chank is also sold for Rs: 500 to 1500/- per kg depending upon the size. The biggest one fetches more price than smaller ones. It is known to be exported for medicinal uses.

One of the old chank divers in this fishing village remembered his diving experience. According to Thiru Sahithaan Sammatty (65), before motorization, they used small vallam with sail for diving. Only 8 to 15 persons were engaged. Chank collection was seasonal. They were engaged in chank collection only during peak season. If the depth was very low, they used only rope for chank collection. However, the depth was more than 10 meters, they used stone weight for sinking purpose. They were diving upto 25 meters for this purpose. In those days, there were some incidences which the old-chank diver quoted that Periapattinam chank divers were migrated to Ceylon for chank collection. The chank diving places were Yalpanam, Kottai Mannar, etc., in Ceylon. They were stayed in the shore region and the collected chanks were sold to Keezhakkarai and Rameswaram chank traders. The traders were frequently come to Ceylon to purchase chank. Before 1980, the chank resources were more in all the coastal regions. Recently, the chank collection comes to drastic end and this is due to the operation of trawl net in the chank bed regions. They are damaging the eggs and young ones of chank during the operation of trawl net. The trawl net drag whatever in the bottom. This is the main reason for low chank availability in the Gulf of Mannar region. The fishers, who use launch, drag their nets for prawn catching where seagrasses, coral reefs, etc., are grown. Many marine organisms lay their eggs on the seagrasses. This type of vulnerable gears can damage and kill egg masses and also young ones of marine organisms. Chank collection is one of the important fishing related activities in the Gulf of Mannar region. Once, the fishermen from Sri Lanka came to our region for fishing and chank collection. According to Keezhakkarai chank divers and chank traders, in earlier periods, fishers and divers from Arabian countries had also come to Keezhakkarai and Periapattinam for chank collection.

4.1.11.South New Colony:

South New Colony or Puthukkudi Muthu Nagar is one of the hamlets in Periapattinam fishing village which is located in southern end. This is a sea shore hamlet. The research team assessed that the people of this colony are living closer to sea. This colony has 150 fisherfolk families. All are exclusively members of Mutharaiyar community. Of these, 72% families are in this colony. Another 20% families are living closer to coconut farm and the remaining families are residing interior of the village.

In this colony, seven percent houses are tiled and remaining houses (93%) are huts (**Figure-11)**. Only forty two houses have electric power supply. Ten years before, all of them were living only in the coconut farm closer to sea. During the year 1990, they have purchased five acres of private land. However, the local persons created problems during the construction of houses (**Chart-3**). In the meantime, Thiru S.K.S.Muthu Thamby Sammaty, resided at Muthupettai, one of the fishermen family belonged to Muslim community, had donated two and half acres of land nearer to the coast. Then the fishers belonging to Mutharaiyar community have constructed their houses in this land. Hence, the fishers dwelling in this hamlet have named this area as "Puthukkudi Muthunagar" for the perpetuate memory of Thiru S.K.S.Muthu Thamby Sammaty. Majority of them are living in huts. Apart from these, they have only five pucca houses. The total population of the South New Colony is around 1,200. Of these, male members constitute 700 and female members comprise 500 **(Figure-12)**. There are only 300 children in this hamlet. The primary occupation of fishers living in this colony has only fishing and seaweed collection.

The literacy level is only 25% and the remaining 75% are illiterates (**Figure-13**). Among the literates, majority of them (16.5%) have acquired only primary school level education, eight percent of them have acquired upto high school level education and the remaining 0.5% have only acquired higher secondary level education. In the mutharaiyar community, no one can acquire upto college level education. The literacy level is higher among girls than among boys. Even at the age between 9-12, the fisher boys are also required to help in fishing activity. This is because of low income through the fishing occupation. Normally more than three persons are needed per vatthai for fishing activity. If other labourers are engaged, the fisherman has to loss his income. Hence, during formative years, the boys are engaged in fishing, net making, etc.

The fishing communities in this hamlet are found to thrive on subsistence fishing, using boats of different sizes; some are using vallam and others are using vatthai. Fifty eight percent of the total families are found to possess boats fixed with engines (In-board). The total numbers of fishing vessels in this colony are 42. Of these, twelve has vallam fixed with 10 HP engines and remaining boats are vatthai with sail. Vallam are 30 to 35 feet in length and 6 feet in breadth. Vatthai is 15 feet in length and 3 feet in breadth.

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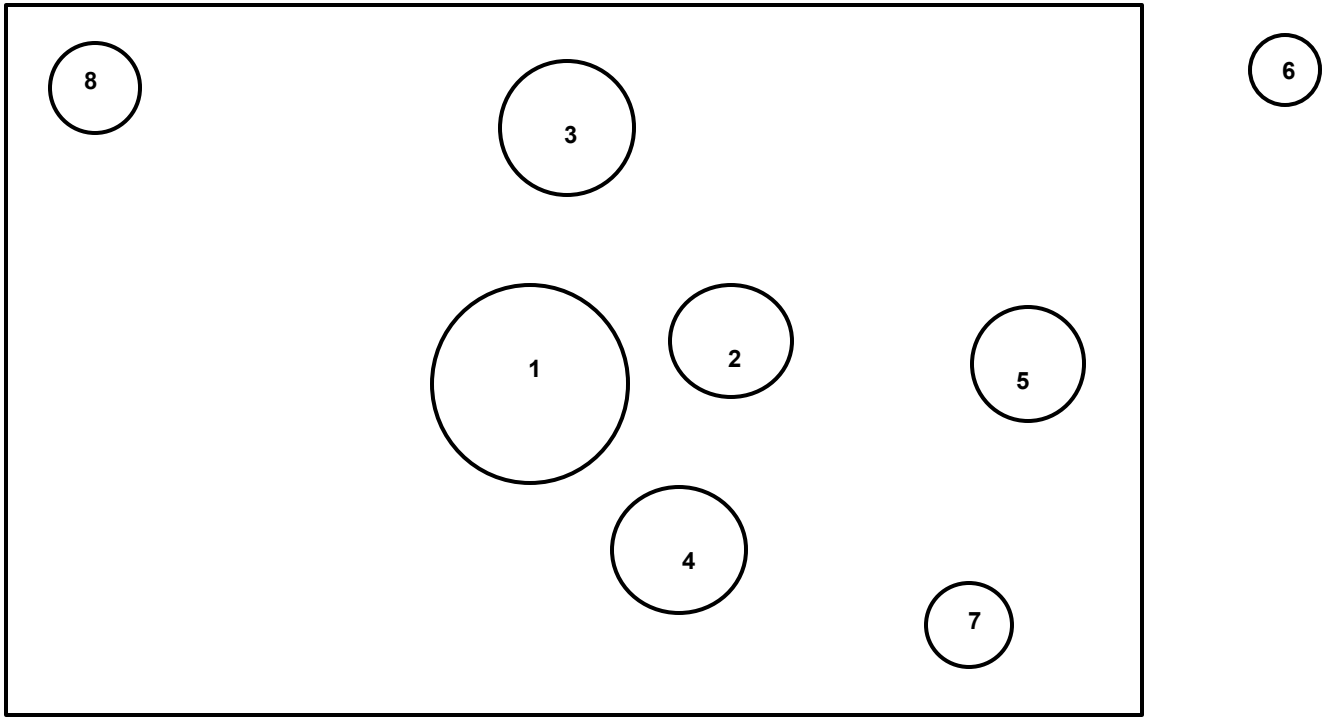
Chart - 3
VENN DIAGRAM (Socioeconomic linkage of fisherfolk)
District: Ramanathapuram **Village: South New Colony (Pudukkudi Muthunagar), Periapattinam** Date: 18-05-2001



1. Mutharaiyar Sangam	2. Collector	3. Taluk Office	4. Fisheries Cooperative Society
5. Fisheries Department	6. Forest Department	7. Police station	8. Local President

Fishers belong to South New Colony use different types of nets or 'valai' for fishing. These are nandu valai, singi valai, disco valai, and thoondil (**Table-4**). Majority of fishers own 2 to 3 numbers of nandu valai (crab nets), 34 numbers of singi valai (Lobster nets) and a few other nets depending upon their personal economic status. Some fishers use disco thoondil or jigs for kanavaai meen fishing (cuttlefish). Once, the Periapattinam fishers are used Hooks and Lines (Aairam Kaal thoondil).

4.1.12.Fishing Activity:

Normally each vallam fisher is engaging 5 to 8 local fishers for fishing. The fishers engaged are using their own nets for fishing activity. The boat owner gets ten percent of their fish caught as commission. The total diesel consumed per trip can be divided equally with boat owners and the fishers engaging in this task. At least 10 to 25 litres of diesel is used per trip. The fishermen go to sea at 5.00 A.M. and return back to shore at 11.00 A.M. They go to sea for fishing upto 20 to 25 kms away from the shore and they catch fish only upto a depth of 100 feet. However, the kanavaai meen (cuttlefish) fishing fishers return back to shore at 2.00 to 3.00 P.M. and the nandu fishing fishers at 8.00 A.M. The peak fishing season is only four months in a year i.e., Kaarthigai, Maargali, Thaai and Maasi. The peak lobster (singi) fishing period in this region is Iypasi, Kaarthigai, Maargali, and Thaai and the crab-fishing period is Maasi to Vaigaasi only.

4.1.13.Timeline and Trend Change:

The residents of Periapattinam village in 1964 had a terrible experience like those of the Pamban residents (Kannan, 2001). During this year, heavy cyclonic wind had ruined Dhanushkodi, a small fishing village located at the eastern tip of the Rameswaram island.

During the year 1965, the fisher population constitutes approximately 95% (Time Line and Trend Change in relation to social activities: **Table-6**). Now this level decreased to 79%. Since 1965, only the Muslims and Hindus did fishing as occupation. Of these, majority of them were belonged to Muslim community. Now they are no change in fishing activities. However, the percentage of Hindu families is increased to 30%.

Before 10^{th} century onwards, this village is an important chank and pearl collection centres in India. Even today, exclusively the followers of Islam are the major chank divers in this region. Thirty five years ago, chank divers were never used the diving equipment such as fins and mask for diving.

Prior to 1965, country boats with sails were used. Even today, this arrangement was resorted to, by some fishers to reduce expenditure and to save fuel. Now they are going to fishing only 4 days in a week for vallam operators. The traditional fishers' earnings have been reduced due to the introduction of mechanized boats and they operate their crafts in the zone earmarked for the traditional fishers.

TABLE – 6

TIME LINE & TREND CHANGE (LIFE PATTERN OF FISHERMEN)

DISTRICT: RAMANATHAP URAM **VILLAGE: PERIAPATTINAM** DATE: 17-05-2001

YEAR	**1965**	**1980**	**2001**
Fishers	Approx; 95% Muslims & Hindus 90% & 10%	Approx: 86% Muslims, and Hindus 85% & 15%	Approx: 79% Muslims, and Hindus 70% & 30%
Types of Houses	Huts Tiled Pucca 94% 5% 1%	Huts Tiled Pucca 80% 15% 5%	Huts Tiled Pucca 60% 25% 15%
Literacy	Approx: 10% Male: 100%	Approx: 30% Male: 90% Female:10%	Approx 50% Literate Male: 70% & Female: 30%
Food	Fish, Raagi, Millets, Sorghum	Rice, Fish, etc.	Rice, Fish, etc.
Equipment Vatthai –Plank Built Boat Vallam – Canoes Launch – Trawl boat	 Vatthai - 100 Vallam - NIL Launch - NIL	 Vatthai – 60 Vallam – 50 Launches – NIL	 Vatthai - 45 Vallam - 42 Launches - NIL
Types of Nets Used	Karaivalai, Veecchu Valai, Choodai valai	Using different types of nets according to types of Fish catch. All types of nets used.	Using different types of nets according to types of Fish catch. All types of nets used.
Types of Materials used for net making	Cotton twine	Cotton twine and Nylon/plastic twines	Only nylon and plastic twines
Fishing Area Fishing Problem	Gulf of Mannar Seasonal; All 7 days in a week Natural disturbances	Gulf of Mannar Seasonal All seven days in a week Natural Disturbances & Trawl boat operation	Gulf of Mannar Seasonal Only 4 days in a week for Vallam operators. Trawl Boat operation - a major resource depleting activity in this region.
Fish Catch (size of fish)	Large size fish	Medium size fish	Medium size fish.
Types of fishes obtained Fishery Resources	Fishes and crabs only More but not exploited	Including singi, prawns and all types of fishes caught. Medium and limited-exploitation	All types of fishes caught. Less and over-exploitation
Price	Prices were less	Sheela: Rs: 25/kg Paarai: Rs: 20/kg Kanavai: Rs: 30/kg Iraal ; Rs: 30/kg Depending upon the count) Singi: Rs: 80/kg	Sheela: Rs: 100/kg Paarai: Rs: 70/kg Kanavai: Rs: 70/kg Iraal ; Rs: 400/kg (Depending upon the count). Singi: Rs: 1000-1500/kg
Sales Mode of Transport	Directly by fishers and fisherwomen. Head load & Cycles.	Small fish companies, direct sales by fishers and fisherwomen. Middlemen and Agents. Van, Lorry, Cycles, Head Load, Tricycles,	Fish companies, Direct sales by fishers and fisherwomen. Middlemen and Agents. Van, Lorry, Cycles, Head Load, Tricycles.

Seaweed collection Status	Few fishers No importance Nil	Chank divers and fishers Earn additional income during off-season Earn more additional income	Chank divers and Fishers: Earn Income livelihood during all seasons Dye and other related industries are closed; seaweed collection decreased
Chank Collection Mode of collection: Problem:	Divers got all types of chank in more numbers and collection was good. Diving; without mask and fins; used rope and stone during diving. Natural	Divers got different types of chank and collection was slightly reduced Diving; without mask and fins; Used rope and stone during diving Due to introduction of mechanised boats, the chank beds were destroyed by using the pair trawling.	The types of chank are depleted; collection is going to critical condition. Diving; use mask and fins during diving; using aluminium plate instead of high priced rubber or plastic fins. Due to the operation of pair trawling, thallumadi valai, etc. The egg masses are destroyed by this improper fishing method. Migrated fishers use chanku madi valai for chank collection
Coral Mining	Low rate of coral mining was done.	Government stopped the coral mining.	Completely stopped coral mining.

Since 1965, fishers constituting 94% had been living only in huts (**Table-1**). Only 6% of tiled and pucca houses were constructed in 1965. Now, 15% of them have owned pucca houses and 25% of them have tiled houses.

The literacy level in Periapattinam village was only 10% during the year 1965 and all of them were men only. This rate is increased to 50% during 2001. The fishers of Periapattinam pointed out that, at present, fishers have realized the importance of education for female children also. Now the literacy rate is improved and increased to 30%. Since 1985, chank divers and fishers engage seaweed collection during the offseason period and earn money for their livelihood. Recently the seaweed collection is stopped due to shutting down of seaweed related industries. Hence, the seaweed traders are not ready to purchase seaweeds. Now the additional income generation through seaweed collection is almost stopped. Normally they are in poverty line. This can create migration of poor fishers to some other places to seek their employment.

4.1.14. Fishermen Problems (Fishery Problem Tree – Chart-4):

1. Vallam and vatthai fishers catch fishes in the lagoon region of the Gulf of Mannar. This zone is earmarked only for non-mechanized vessels. However, launches from Mandapam and Keezhakkarai regularly catch fish and prawn between the islands and the mainland. They use pair trawling i.e., irrattai madi valai for fishing on coral reefs, seagrass beds, etc. They damaged the nets spread out by fishermen using vallam and vatthai. Such incidents have happened regularly. Sometimes, clashes between owners of vallam and boat are unavoidable. Normally, fishers who use non-mechanized vessels are living in a poverty stricken condition. Frequent damage of nets by launches has created a kind of class conflict.
2. Another important problem arising out of the use of launches is over-exploitation of marine resources due to pair trawling or irratai madi valai fishing. Pair trawling in this region causes severe damage to coral reefs and some times the corals are uprooted. They use very fine mesh sized nets for prawn and fish catching. Due to this type of gears usage, brooders are caught. Small sized fishes and other marine organisms obtained in huge quantities resulted in depletion of many marine fishery resources.
3. One of the major and important issues of chank divers in Periapattinam fishing village is the operation of trawlers in the chank bed. They use “irrattai madi valai” for fishing. According to chank divers, chank collection is affected very much because of trawl net operation and at least seventy five percent of chank resources are depleted due to the operation of irrattai madi valai. Because chanks are laying their eggs once in a year in seagrass beds, coral reef area, etc. Chank fishery season lasts only for four months in a year. Due to illegal fishing and inappropriate gear usage in this zone, the launch operators dragged their nets at the time of chank breeding season. Each egg case has more than 200 numbers of eggs. The dragging of this trawl net or ‘irrattai madi valai’ damaged the egg case of chank. According to chank divers, the State Fisheries Department and Forest Department Officials are not paying their attention to control the operation of “irrattai madi valai” as well as the protection of chank beds, coral reefs and other marine resources in this zone.
4. Traditionally, chank divers have been residing only in Keezhakkarai and Periapattinam fishing village. The generation of income through chank collection has come down considerably. Now a days, majority of them are living below the poverty line. This is due to the operation of trawl nets in the Gulf of Mannar region.

5. During off-season, chank divers are engaged in seaweed collection and earn at least Rs: 40 to Rs: 70 per day. Recently the dye factories and other related industries are closed. This is because of the absence of treatment plant in these industries.
6. Recently fishers from Keezhakkarai, Tuticorin, Vembar, Vaipaar, Pamban, Mookaiyoor, etc., have been using a special net for chank fishing named as “chanku madi or chanku

valai". They simply spread their nets in chank beds, the operculum of the chank tied in this nets. This is another major problem for chank divers. Hence, they are collecting chank only by underwater diving. According to chank divers, about 75% of the chank resources are already depleted. Due to the introduction of the chanku valai, this resource is further depleting considerably. If this trend continues, majority of the chank divers in the Gulf of Mannar will have to face severe economic problems. Normally, fishermen using vallam are living in a poor condition. Frequent damaging of nets by mechanized boats pushed them to critical living conditions.

7. According to chank divers, they are neglected by the Fisheries Department. There is no special assistance or loans from fisheries department to chank divers.
8. The Forest Department Officials are not allowing the fisherfolk to stay in the islands in the Gulf of Mannar. Fishers go for fishing at night and they spread their nets on the sea. Due to some unavoidable circumstances such as wind, rain, etc., they are staying in the island for shelter. However, the Forest Department Officials have not allowed them to stay in the islands. If fishers are staying in these islands, the Forest Department Officials penalize them upto Rs: 500 or more. However, they are not issued any receipt for this fine amount to fishers. If anybody asks for such receipts, fisher is treated very rudely by the Forest Department officials, according to the fishermen.
9. The fishermen in the majority of fishing villages in the Gulf of Mannar are found to be exploited by the middlemen. The fisherfolk are required to pay exorbitant rates of interest for the loans, they receive. It is indeed strange that the people of this locality themselves support the existing credit supply sources like fish-traders or moneylenders instead of formal or the Government lending institutions. The reasons are as follows:
   a. Fish-traders or moneylenders give loans in time of their need.
   b. There are no procedural formalities and cumbersome processes as in the case of formal institutions such as banks.
   c. More over, if the loan is obtained from a seafood company, the fishers need not pay the interest; they may compensate such interest amount through catches (of course this is yet another kind of exploitation).

   Inspite of these risks, fisherfolk obtain loan from these non-institutionalized sources because their immediate credit requirements are met only by these agencies. One of the interesting habits of fishers in Periapattinam village is that they are not interested to get loan from bank or even from the Fisheries Department. For the past 15 years, they were not getting any loan from the Government sources. They are interested to obtain money from fish-traders only. Traders are treating fishers of this village in a very good manner. The local fish traders give money to fishers at any time and deduct this loan amount with interest from their catch. They collect 15 to 20% as interest from their catch.
10. According to traditional fishers in this village, the major reason for the depletion of marine resources is the operation of "kollimadi valai" or "irrattai madi valai" for fishing. The mechanized vessel operators are using different types of nets as mentioned above for

fishing. According to them, trawlers use “roller madi valai” in the coral reef rich areas for fishing. This roller helps to prevent the damage of their nets from coral reefs; but these rollers damage coral reefs. Some fishers use tires instead of roller. This type of nets used in the madi valai, pose a serious threat to bottom living organisms, and their eggs resulting in the depletion of marine organisms. This is the main reason for the depletion of coral reef associated organisms in the Gulf of Mannar region. According to fishers, the marine organisms are obtained only in low quantities after the introduction of launches.

11. In Kerala, for example, fishermen never caught fish for a period of two months and this convention promoted the growth of marine animals. Like Kerala and some other coastal states, the Tamilnadu Government also announced that the fishing operation must be stopped from April 15, 2001 to May 31, 2001 to allow breeding of marine organisms. During this period, trawlers were not allowed for fishing and authorities banned the operation of “thallumadi valai”, “irrattai madi valai”, “surrukku madi valai”, etc. Only traditional fishers were allowed for fishing during this period. During this period, they got big sized fishes, more prawns, and other fishes. Normally, fishers of this village have no chance of getting the following types of fishes such as choorai meen, neimeen, valuvaadi (thirukkai) meen, oola meen, paarai meen, vaalai meen, etc. The traditional fishers of this region got fishes of the above varieties at the time when launch operation stopped. However, after the launch operation started, once again such types of fishes were not caught in this region. This indicated that regular operation of launches between the mainland and islands affect the growth and breeding of marine organisms. This has resulted in the depletion of marine resources in the Gulf of Mannar.
12. Another reason for the depletion of marine resources is the operation of "karai valai net". The mesh size of the gear is very fine. The "karai valai" using fishermen caught small and young marine animals as well as big ones and even the brood stock. Continuous use of "karai valai" also caused serious depletion of marine resources.

13. Another important type of fishing activity causing the depletion of coral reef associated fishes is “koodumeen pidiththal” or cage fishing. Cage fishing is a regular activity in Keezhakkarai and Mandapam based fishers. In this region, at least 150 to 200 fishers catch fishes by using cages. In this process, the following fishes are caught i.e., Oraameen, Kilemeen, Rabbit fish, *Signaus* spp., *Epinephelus* spp., *Leethrinus* spp., etc. During this process, they use small iron stick to search fishes inside the coral reef area. This can cause damage to coral reefs and disturb other associated organisms living in the reef areas. This is also one of the major causes for the destruction of corals.
14. Recently, seaweed collection is stopped in this village as well as other seaweed collecting areas in the Gulf of Mannar coast. Many seaweed factories in Pondicherry, Hyderabad, Cochin, Madurai, and Ranipettai are closed recently due to order issued by the Supreme Court. Already procured seaweeds are stored in their goodown. Hence, the local traders are not interested to purchase seaweeds. If fishers collect seaweeds, the local traders buy

it very low cost only. During off-season period, chank divers are engaged in seaweed collection. This is the main source of income during the off-season. Due to the closure of these industries, the generation of income is affected and they have bought money from moneylenders for their livelihood activities.

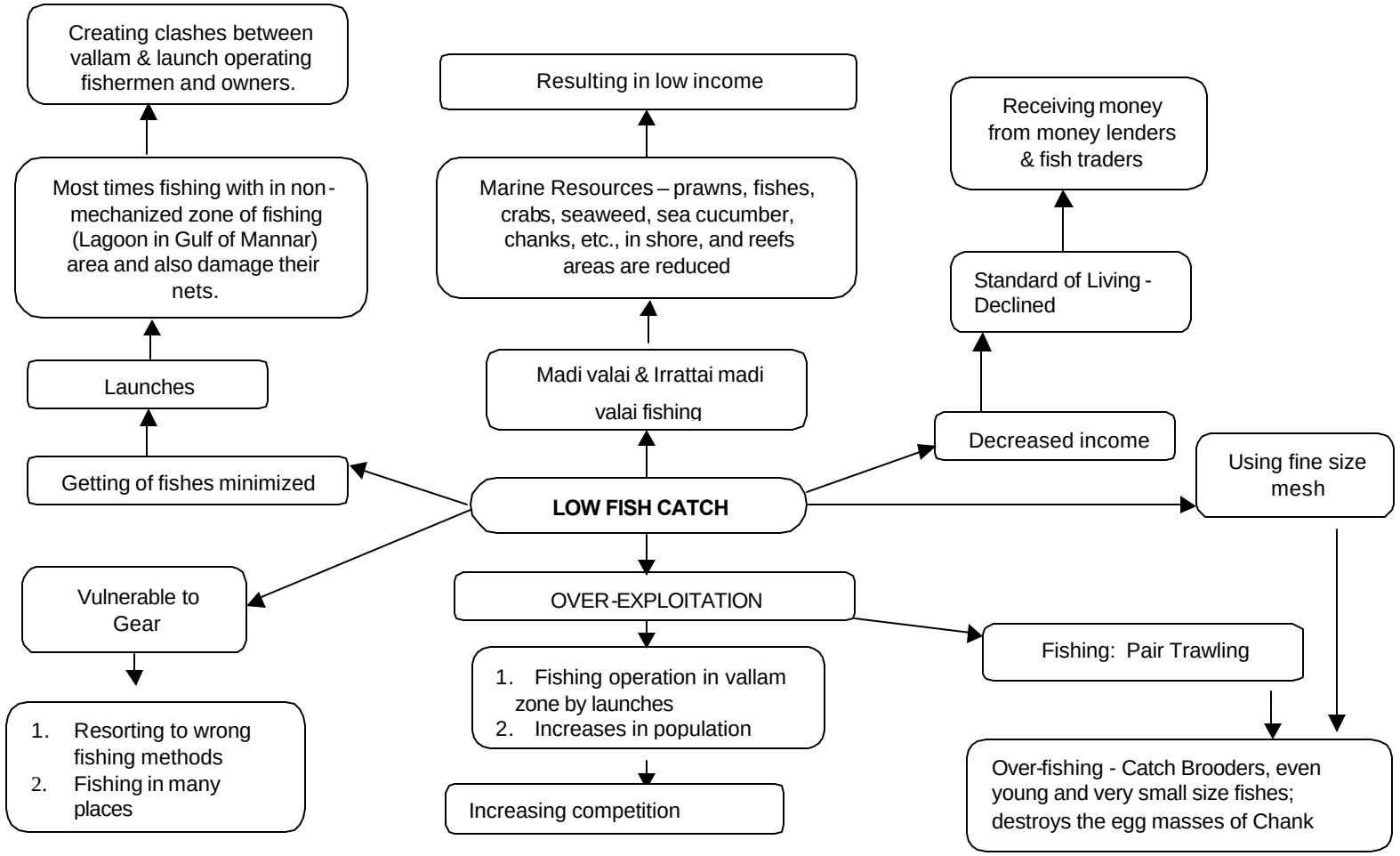
15. Recently, the state government stopped the off-season loan giving to Fishermen registered as members in the Fishermen Cooperative Society (FCS) during the lean months of fishing. According to fishers statement, the central government stopped their funds. Hence, the state government has ordered to stop this scheme temporarily.
16. Local PHC needs more doctors and necessary medicines. Otherwise, the Periapattinam people go to Ramanathapuram (22 Kms away from this village) for treatments. Now only one lady doctor is available in the PHC. Hence, the PHC immediately needs both doctors (both male and female).
17. The strength of teachers in the school is less in number when compared to students strength. Some teachers are transferred to other places. Hence, the appointment of teachers is also very urgent to maintain the student teacher ratio. The people of this village, especially fishers, know the importance of education. Majority of forefathers are illiterate. Now they are sending their children to schools.
18. Both fishers and chank divers have requested the central and state governments for the early implementation of "Old Age Fishers Pension" scheme. This type of scheme is in operation in our neighbouring State of Kerala. Normally when the chank divers attain the age of 50, the possibility of chank diving recedes. Because the energy and strength of chank divers are less due to aging. This is same in the case of fishers also. Hence, they requested "Old Age Fishers Pension" for all fishers in our state.
19. Some fishers have not received the Fishers Identification card for the past two years. The officials concerned need money to issue the I.D. cards. Fishers are not in a position to give money for receiving of I.D. cards. Normally fishers are living below the poverty line. There is no regular income from fishing. Because the traditional fishers go to sea for fishing only 4 days in a week. Hence, their earnings through fishing is low i.e., Rs: 25 to Rs: 100 per trip. Most of the times, they get very less catch and earn very low income i.e., Rs: 25 to Rs: 50 per trip. This is the reason why some fishers cannot get their I.D. cards.

CHART - 4

FISHERY PROBLEM TREE

District: Ram anathapuram | **Village: Periapattinam** | Date: 18-05-2001

Causes of depletion of Marine Resources and Social conditions of Primary Stakeholders (Fishermen)



4.2. RAMAKRISHNAPURAM & NATARAJAPURAM OF RAMESWARAM:

4.2.1. Historical Importance of Rameswaram island:

The entire region of Gulf of Mannar has been an important location since, prehistoric periods. This region has been highly productive of priceless pearls, chank, fishes, prawns, etc. This region was engaged in pearl trade with the Greek and the Roman Empire from the days prior to Augustus Caesar (63 B.C.–14 A.D.). Rameswaram, the famous pilgrim centre and much remembered and quoted in the cultural heritage and history of India, is situated in the southeast coast i.e., Palk Bay in the northern side and Gulf of Mannar on the southern side of Rameswaram island. This is connected with Ramayana and it is believed that Rama worshipped Shiva here and after his victory over Raavana, and on his way to Ayodhya. Every year, lakhs and lakhs of devotees from all over India especially from north India throng Rameswaram to worship Lord Shiva. Rameswaram is known as "Sethu". The proverb, "from the Himalayas to Sethu" speaks of the oneness of India since prehistoric periods. This island was once ruled by the Raja of Ramnad from the mediaeval times (title of Sethupathi) and all the islands were under his control. Then these islands were given to some persons as gifts or for use in trade to the businessmen. Now all these islands are under the control of the Forest Department. However, only one island is under the control of the Fisheries Department (Kurusadai Island). Rameswaram is an important municipality in Ramanathapuram District and has the following facilities (**Table-7**).

4.2.2. Ramakrishnapuram and Natarajapuram:

Rameswaram is well-known fishing town as well as main fish landing centre in Ramanathapuram district, Tamilnadu which is located in the eastern tip of Rameswaram island. This island is geographically formed in such a way as to have a "Hammer" like appearance. The northern side of this island has the Palk Bay coast and the southern side is covered by the Gulf of Mannar coast. Due to this geographical formation, the fishermen of Rameswaram island have received different types of benefits through fishery resources available in the Gulf of Mannar and Palk Bay coasts.

Rameswaram island includes thirty-three major fishing villages and thirteen minor fishing hamlets. The list of major and minor fishing villages is shown in the **Table-8**. Of these, Rameswaram and Pamban are the important fish landing centres in this island. In Rameswaram region, the major fishing villages are Rameswaram, Ramakrishnapuram, Natarajapuram, Moondraiyar Chadram, Dhanuskodi, Sankumaal, Oolaikudah, etc. The total area of the Rameswaram island is 52 sq. km. The Rameswaram municipal area alone has a total area of 30.184 sq. km.

TABLE-7 FACILITIES AVAILABLE IN RAMESWARAM FISHING VILLAGE, RAMANATHAPURAM DISTRICT

S.No.	Facility available	Nos.
1.	a) Panchayat Primary School	16
	b) Government Higher Secondary School	1
	c) Girls High School	1
	d) Private Schools	5
2.	a) Government Hospital	1
	b) Private Hospital	5
	c) Veterinary Hospital	1
3.	Public Library	1
4.	T.V. Relay Centre	1
5.	Telephone Exchange	1
6.	Railway station	1
7.	Micro-wave station	1
8.	Customs Office	1
9.	Coast Guard Office	1
10.	CBI Office	1
11.	Nationalized Bank	2
12.	Ramnad District Central Cooperative Society	1
13.	Ration and Kerosene shops	12
14.	Ice Factory	8
15.	Post Office	3
16.	Water Tank	3
17.	Fish Market	1
18.	Temple	5
19.	Mosque	1
20.	Theatre	1
21.	Lodge	25
22.	Fish Company	10
23.	Medical Shop	6
24.	Petrol Bunk	2
25.	Diesel Bunk	10
26.	Chank Sales Shop	29
27.	Chank Trader	8
28.	Desalination plant (3,00,000 litre per day)	1
29.	Cyclone Shelter	3

TABLE-8 LIST OF HAMLETS IN RAMESWARAM ISLAND, RAMANATHAPURAM DISTRICT

1. Pamban	2. Therkkuvaadi
3. Thoppukkaadu	4. Chinnappalam
5. Gundugal	6. Naduthurai
7. Natarajapuram*	**8. Ramakrishnapuram***
9. Rettaithalai	10. Kothandaramar Koil
11. Oothathalai	12. Thaavukkadu
13. Othathathalai	**14. Moondraiyar Chadram***
15. Dhanushkodi*	16. Aricchal Munai
17. Cheran Kottai	18. Karaiyoor
19. Verkkodu	20. Rameswaram (Port)
21. Akkinitheertham	22. Sankumaal
23. Oolaikudah	24. Narikkuli
25. Thalaithu Pallivasal	26. Vadakaadu
27. Pillaikulam	28. Ariyankundu
29. Thanneer Oortru	30. Thankachimadam
31. Maanthoppu	32. Sussaiapparpattinam
33. Anthoniyarpuram	34. Yagappaapuram
35. Naalupanai	36. Akkaalmadam
37. Francis Nagar	38. Pamban light house
39. Valanagar	40. Vivekananda nagar
41. Akkaalmadam colony	42. Tharavaithoppu
43. Rajakoil	44. Victoriya nagar
45. Meeiyampuzhi	46. Kudiiruppu
47. Erranadu	48. Chemmadam
49. Kattuppillaiyar Koil	50. Theechithar Kollai
51. Champai	52. Henthamanaparvatham

*

***** Present Study Sites

Rameswaram is one of the important fish landing centres in this island, Ramanathapuram District, Tamilnadu. Rameswaram island has thirty nine major fishing hamlets and also more than 15 minor hamlets around this island. Of these, the major fish landing centres and fishing villages are Rameswaram, Pamban, Thankachimadam Moondraiyar Chadram, Chankumaal, and Dhanushkodi.

The southeast of this island has two important fishing villages. They are Moondraiyar Chadram and Dhanushkodi. After 1964 cyclone, majority of the fishermen in these fishing villages are living nearer to Rameswaram. These areas are called as Ramakrishnapuram and Natarajapuram, respectively. In the 1964 cyclone, most of the fishers in Moondraiyar Chadram and Dhanushkodi regions had lost their fishing crafts, gears, and all other household materials.

Once, the fishers of Ramakrishnapuram were living in the Moondaraiyar Chadram and the fishers of Natarajarpuram were in Dhanushkodi (**Chart-5**). The forefathers of these fishers had belonged to Narippaiyur, Mookaiyoor, Mundal, Erwadi, and other adjacent fishing villages. Even before fifty years, they had migrated to Rameswaram island and settled at Moondraiyar Chadram and Dhanushkodi regions, respectively. During the 1964 cyclone, they were settled just 4 km from Rameswaram on the way to Dhanushkodi. Fishers living in the eastern side named as "Ramakrishnapuram" and in the western side called as "Natarajapuram". In 1964, Ramakrishnapuram was formed by the Ramakrishna Mission after the devastation of cyclone. During this time, the mission undertook relief and rehabilitation work and handed over this village to the local fishermen. Hence, this village is named as "Ramakrishnapuram".

Like Ramakrishnapuram, the fishers of Dhanushkodi area are settled in the western side of Ramakrishnapuram hamlet and this area is named as "Natarajapuram" (**Chart-5**). During this period, the sub-collector of Ramanathapuram district Mr. U.S. Natarajan had extended his help to Dhanushkodi fishers. He had arranged this area for their settlement. Hence, this area was named as "Natarajapuram fisherfolk colony". The state government had allotted three cents for each fisherfolk family of this colony. Fishers of this region get income through fishing activity only. There is no seaweed and chank collection in these hamlets. They depend on the marine resources in the Gulf of Mannar and Palk Bay coasts for their livelihood.

4.2.3. Housing Pattern:

Details pertaining to the life patterns of fishermen are shown in **Table-9**. In this village, fishers belong exclusively to Mutharaiyar community and they are mostly traditional craft users. They use only vallam and vatthai for their fishing activities. Ramakrishnapuram FCS has included two hamlets i.e., Ramakrishnapuram (RKP) and Fishermen colony. Ramakrishnapuram-RKP-FC is just **500** meters north of Ramakrishnapuram.

Ramakrishnapuram (RKP) and Fishermen Colony (RKPFC) comprise of **200** and **100** houses respectively (**Figure-14**). In Ramakrishnapuram, around **79%** of them are living in thatched houses and **13%** are in tiled houses. The remaining **8%** of the fishermen are residing in pucca houses. In Fishermen Colony, all of them are living in pucca houses and these are constructed by the State Fisheries Department in Free Housing Scheme through the Fisheries Cooperative Society. Of these, the construction work of 40 houses is not yet completed due to financial shortage. The total number of houses in Natarajapuram is **400**. Of these, five percent are tiled, another **45**% are huts and the remaining **50**% have pucca structure. Atleast **47**% of pucca houses are constructed in the Fishermen Free Housing Scheme sanctioned by the State Fisheries Department through their FCS. Other houses are built by the fishers from their savings.

TABLE – 9
TIM E LINE (LIFE PATTERN OF FISHERMEN)

District: Ramanathapuram **Village: Ramakrishnapuram** Date: 28-08-2001

YEARS **1**	**1964** **2**	**1975** **3**	**2001** **4**
Fishers – Religion Population	Hindus – Mutharaiyar 200	Hindus – Mutharaiyar 450	Hindus – Mutharaiyar 1170
Types of Houses Ramakrishnapuram RKPFC	Huts - 100% (Moondraiyar Chadram) Not formed	Huts – 100% (Moondraiyar Chadram) Not formed	Huts Tiled Pucca 79% 13% 8% -- -- 100%
Employment Fishers: Government Office	 100% Nil	 100% Nil	 99.5% 0.5%
Literacy	100% Illiterate	97% illiterate 3% Literate	Literate: 12.75% Illiterate: 87.75% Upto 5th Std: 8.75% 10th Std: 2.5%; Plus Two: 1.25% College: 0.25%
Food	Fish, Raagi, Millets, Sorghum	Sorghum, Rice, Fish, etc.	Rice, Fish, etc.
Equipment Vatthai –Plank Built Boat Vallam – Canoes Launch – Trawl boat	 Vatthai - 50 Vallam - 5 Karai valai thoni - 10	 Vatthai – 40 Vallam – 50 Karai valai thoni - 15	 Vatthai - 25 Vallam - 45 Karai Valai Thoni - 20
Types of Nets Used	Karai valai, Veecchu Valai, Aammai valai, Katta valai,	Karai valai, Veecchu valai, Choodai valai, Thirukkai valai, etc	Choodai valai, Iraal valai, Kumula valai, Singi valai, Thirukkai valai, Karai valai, Nandu valai, Thallumadi valai
Types of Materials used for net making	Cotton twine	Cotton twine and Nylon/plastic twines	Only nylon and plastic twines
Fishing Area Fishing period Problem in fishing	Gulf of Mannar & Palk Bay Seasonal All 7 days in a week Natural disturbances	Gulf of Mannar & Palk Bay Seasonal All seven days in a week Natural Disturbances & Trawl boat operation as well as LTTE and Sri Lankan Navy Problems	Gulf of Mannar & Palk Bay Seasonal Only 4 days in a week for Vallam operators. However, vatthai users go to sea for all seven days in a week Trawl Boat operation - a major resource depleting activity in this region and LTTE problem disturbing the fishing activities
Fish Catch (Size of Fish)	Large size fish	Medium size fish	Medium size fish.

1	2	3	4
Types of fishes obtained	Fishes, and crabs only	Including singi, prawns and all types of fishes caught.	All types of fishes caught.
Fishery Resources & their status	More but not exploited	Medium and limited-exploitation	Less and over-exploitation
Price	Prices were less		
Sales	Directly by fishers and fisherwomen. Pandamattru business	Small fish companies, direct sales by fishers and fisherwomen. Middlemen and Agents.	Fish companies, Direct sales by fishers and fisherwomen. Middlemen and Agents.
Mode of Transport	Head load, Train & Cycles.	Train, Van, Lorry, Cycles, Head Load, Tricycles,	Train, Van, Lorry, Cycles, Head Load, Tricycles.
Coral Mining	High rate of coral mining was done nearby islands	Stopped the mining of coral. But mining of dead coral rocks in the tharuvai near by Ramarpaatham	In the islands, completely stopped coral mining. But mining of dead coral rocks in the tharuvai near by Ramarpaatham

{ EMBED Excel.Chart.8 \s **}**

During the year 1992-93, a total of **190** houses was sanctioned from Fishermen Free Housing Scheme for Natarajapuram fishers. The construction works of only fifty houses has been completed and another **140** houses has not yet completed. According to the fishers, the state government has delayed the release of money needed for construction of the remaining houses. However, the amount was released only during the year 1995. Due to this, the construction of these houses are not so far completed. The state government has issued patta for **150** houses only during the year 2001.

4.2.4. **Population**:

Details of male and female population in the present study areas are shown in **Figure-15**. Total population of Ramakrishnapuram (RKP) is **800** and in Fishermen Colony (RKP-FC), there are only **370**. Both hamlets are exclusively belonging to Mutharaiyar community.

Natarajapuram (NJP) has more population (population-**2000**) than other two hamlets. Fishers of Natarajapuram belong to all three religions such as Hinduism, Islam and Christianity. About **99.4%** of the fishers belong to Hinduism, and the followers of Christianity and Islam constitute **0.3%** each**.** Almost **97.5**% of houses are owned by Mutharaiyar and the fishers belonging to other communities have fewer houses. Hindu population includes Thevar, Servai, Pandaram, and Naidu (**Table-10**).

{ EMBED Excel.Chart.8 \s }

TABLE-10 COMMUNITY-WISE POPULATION IN RAMAKRISHNAPURAM (RKP), RKP-FISHERMEN COLONY & NATARAJAPURAM (NJP)

	RKP	RKP-FC	NJP
Mutharaiyar	100%	100%	97.5%
Thevar	-	-	0.8%
Servai	-	-	0.8%
Pandaram	-	-	0.3%
Naidu	-	-	0.3%
Muslim	-	-	0.3%
Christian	-	-	0.3%
Total	**100%**	**100%**	**100.0%**

In RKP-Fishermen Colony, all of them are in fishing activity. However, in Ramakrishnapuram and Natarajapuram, 97.5 percent and 96.0% of them are engaged as full time fishing activities and 0.5 percent and 1.0 percent fisherfolk are working in the Government Offices. Both Ramakrishnapuram and Natarajapuram fishers have migrated to the Arabian countries for fishing occupation i.e., 2 % & 4%, respectively (**Figure-16**).

Majority of the fishers of these hamlets have owned thatched houses in Moondraiyar Chadram and Kothandaramarkoil and Dhanushkodi. Most of the times, they are living here only. Children are going to school from here itself. Only at the time of rainy season and heavy wind periods, they come to stay at Ramakrishnapuram. Most of the fishers' families are living in huts in these areas. For important festivals like marriages or other social activities, they go to

Ramakrishnapuram. Some of them are going to Ramakrishnapuram twice a week to buy goods and other materials, then return immediately. Thus, all fishing gears are stocked here only. Like them, Natarajapuram fishers are staying at Dhanushkodi and Kothandaramarkoil areas for fishing activity.

There is no electric power to houses in Fishermen Colony (RKP-FC). This colony has a few streetlights. There is no separate water tank in this area. A common well is available for drinking, bathing and washing purposes. However, in Ramakrishnapuram (RKP), atleast 50 houses have electricity facility. Others have no such facility. Each street has only two streetlights and one public tap connected by the Panchayat. Fishers of this hamlet use this tap water for drinking purpose and some time, bathing and washing. Atleast 20 houses have own wells inside their premises. There is no water shortage in this region because the ground water storage is more in these regions. In Natarajapuram, around 150 houses have the facility of electricity supply. Three hundred houses have own wells inside and there is one public tap water connection in each street.

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4.2.5. Education:

One Primary school located in this region, is run by the Vivekananda Kendra. Fifteen years back, they started a primary school named as Vivekananda Vidyalaya. Now this school has more than 100 students. They give meals for more than 50 fisher students daily. Another primary school under the control of Mandapam Panchayat Union is functioning in Natarajapuram fishing hamlet. This school has only three teachers and it needs another two teachers to carry out teaching for all classes. In this school, four hundred students are studying. Of these, seventy percent are drawn from Natarajapuram and 20 percent from Ramakrishnapuram region and remaining children are from nearby areas for their education. Around 20 excellent students from Ramakrishnapuram and adjacent villages have been selected and admitted in the Ramakrishna Mission authority located in Chennai, Coimbatore, Madurai and Tuticorin for their higher studies i.e., higher secondary education. According to the Swami Pranavananda, all of them were illiterate when the school was opened. Now atleast 70 percent of the fisherfolk children have attained primary school level education. From this mission, ten boys are sent to Diploma in Mechanical Engineering course and five students to colleges at Chennai, Madurai and Coimbatore.

4.2.6. Literacy:

The level of literacy in these villages is very less when compared to Periapattinam. The level of literacy in RKP, RKP-FC and NJP is about 32%, 10% and 32% respectively (**Table-11 and Figures-17a & b**). Majority of them are educated only up to elementary school level. In Ramakrishnapuram village, a few persons have attained college level education. The fishers of these villages have more awareness regarding the importance of education. Majority of educated fisherwomen are working in the Vivekananda Vidhyalaya School. According to them, no one was educated before 1982, then after the formation of this school, Swami Pranavananda created awareness campaign in the fishermen villages regarding the importance of education, social activity, etc. According to the local fishers, Swami Pranavananda is a dynamic person who works for the uplift of fisherfolk communities in these regions. At present, the literacy rate of fisherwomen has reached 35-40 percent in this village. The literacy rate among girls in comparison to the adjacent fishing villages is also high. This is due to the fisherwomen social services and awareness regarding the education. The teachers working in this school are former students of this school. They are involved in regular awareness campaigns in and around the Rameswaram island. They get training in Tailoring, Typewriting, and other related programmes through the Ramakrishna Mission. Now most of the young women are standing on their own legs by means of economy, social condition, etc. They stated that this is mainly due to education.

Table-11 Education and literacy levels in Ramakrishnapuram (RKP), RKP-Fishermen Colony & Natarajapuram (NJP)			
	RKP	**RKP-FC**	**NJP**
Elementary School (Nos.)	200	30	560
High School (Nos.)	35	5	60
Higher Secondary (Nos.)	20	0	20
College (Nos.)	3	0	0
Total Educated (Nos.)	**258**	**35**	**640**
Total Population (Nos.)	**800**	**370**	**2000**
Literate (%)	**32**	**10**	**32**
Illiterate (%)	**68**	**90**	**68**

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4.2.7. Fishermen Cooperative Society:

Ramakrishnapuram and Natarajapuram have the Fishermen Cooperative Society (FMCS), and Fisherwomen Cooperative Society (FWCS). Rameswaram island has one traditional fishermen association i.e., Rameswaram Island Karaivalai and Oolai Valai Naattuppadaku Meenavar Sangam (Rameswaram Island Shore Seine and Traditional Crafts Fishermen Association). This association includes fishers of Rameswaram, Pamban, Thangachimadam and all other fisherfolk villages in this island. The total registered members in this association are 1100. Of these, 500 fishers belong to Rameswaram, 150 fishers to Thangachimadam and remaining 450 fishers to Pamban. The total registered members in Ramakrishnapuram and Natarajapuram are 880 and 550 respectively (**Figure-18**). Of these, male members are 300, and female members constitute 250 in Ramakrishnapuram. In Natarajapuram, male and female members comprise of 550 and 330, respectively.

{ EMBED Excel.Chart.8 \s }

4.2.8. Fishing Crafts:

Fishers of Rameswaram region use both mechanized and non-mechanized (Motorized and Without Motorized) boats for fishing activity. The total numbers of fishing boats are 3560. Of these, 1,481 are motorized vessels, and Vallam and Catamaran comprise of 1,879 and 200, respectively (**Figure-19**). Vallam is fixed with inboard oil engine of 8 to 14 HP.

Fishers of Ramakrishnapuram village (both RKP & RKPFC) use "vatthai" (Plank Built Boat), and "vallam" (Canoes). They have only a restricted zone of fishing because fishermen in this village are using exclusively non-mechanized means of fishing. The non-mechanized boats used in Ramakrishnapuram and Natarajapuram fishing villages are vatthai, vallam and Karai valai thoni.

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Ramakrishnapuram has a total of 90 fishing vessels. Of these, vessels 45 are vallam, 25 are vatthai and 20 are Karai valai thoni (RKP-18 & RKPFC-2)(**Figure-20**). Majority of fishers in RKP-FC are engaged as fishing labourers in launch, vallam and/or Karai valai thoni. Fishers of this region said that Karai valai fishing (Shore Seine) is our mother occupation. Since, they have been using karai valai for fishing activity. Natarajapuram fishers are exclusively non-mechanized boat users like Ramakrishnapuram. They use vallam, vatthai, and karai valai thoni. They have a total of 450 fishing boats. Of these boats, vallam comprises of 50, vatthai comprises of 300 and the remaining 100 vessels are karai valai thoni (**Figure-20**).

{ EMBED Excel.Chart.8 \s }

4.2.9. Fishing Gears:

Fishermen use a variety of nets or "valai" depending upon the types or species of fish caught. The nets are named after the fishes, which they are intended to catch. The types of valai are 1) Vazhi valai, 2) Paaicchu valai, 3) Illu valai, 4) Illuppu valai, and 5) Thoondil. These are choodai valai, kumula valai, iraal valai, seela valai, katta valai, singi valai, aamai valai, thirukkai valai, nandu valai, karaivalai, thallumadi valai or madi valai, veecchu valai, and thoondils (**Table-9**). Of these nets, seela valai, katta valai, aamai valai were used twenty years ago.

At present, Ramakrishnapuram fishers are using choodai valai, kumula valai, and iraal valai (Vazhi valai type-Gill Net); singi valai, thirukkai valai, and nandu valai (Paaicchu valai type-Gill Net); Karai valai (Illu valai type-Shore Seine or Inshore Drag Net); thallu valai (Illuppu valai-Bag Net); and Thoondil (Hooks and Line) (**Table-12**). In Natarajapuram, fishers use choodai valai, ozhai valai, iraal valai, singi valai, nandu valai, karai valai, and disco thoondil (**Table-13**). Of these fishing gears used in these fishermen colonies, the Karai valai fishing is the mother occupation. In earlier period, the fishers of Moondraiyar Chadram and Dhanushkodi regions resort to karai valai fishing alone. Depending upon the economic position fishers use all types of nets. Twenty five percent of them have all types of nets eventhough they are living in poor conditions. They have obtained money from moneylenders and fish traders for purchasing nets. If fishers owned different types of nets, it means that they earn more income through fishing; hence, they get money from moneylenders to buy their gears. According to fishers, the

availability of several marine resources is seasonal and the method of fishing varies with the types of fishes. For example, iraal valai is used only for catching iraal meen (Prawns) and thirrukkai valai (Rays) is only for thirrukai meen. Most of the fishers use disco thoondil or jigs (4-6 nos. per fisher) for kanavai meen fishing (cuttlefish).

TABLE - 12
MATRIX FOR NETS USED

District: Ramanathapuram **Village: Ramakrishnapuram, Rameswaram** Date: 15-07-2001

1	2	3	4	5	6	7	8	9
No.	Type of Gear	Material & Durability	Dimensions		Approximate cost of net (Rs.)	No. of nets required per vallam	No. of fishers per boat	Species Caught
			Mesh Size	Length/ breadth				
1.	Choodai Valai (Drift Gill net)	Nylon Twine 5 years	10 mm	50 – 60 m/ 3.0 m	700	30	4 – 6	Choodai meen: *Sardinella* spp. and other small sized fishes.
2.	Kumala Valai (Drift Gill Net)	Nylon Twine 4 years	50-55 mm	70 - 75 m/ 3.5 – 4.0 m	2,000	30	4 – 6	Kumula -Mackerels Paarai: *Carangoides* spp., *Caranx* spp. Ooli: *Sphyraena* spp. Choorai:*Auxis* spp., *Euthynnus affinis, Katsuwonus pelamis,* Seela: (small size): *Cybium* spp.
3.	Prawn net – Iraal valai (Bottom Set Gill Net)	Nylon Twine 6 months	20-30 & 100-130 mm	70 – 90 m/ 3.0 m	1,000-1,500	30	5 – 7	Prawns:
4.	Lobster net – Singi valai (Bottom Set Gill Net)	Nylon 6 months	40 – 60 mm	70-80 m / 3 m	1,800 – 2,000	40	5 – 6	Lobsters, Chanks, Paarai, Kuruvaalai, Seppili, Vilaimeen, Thirukkai, Shark
5.	Thirukkai Valai (Bottom Set Gill Net)	Nylon 4 years	60–75 mm	80-100 mm 3 m	600	4	5 – 7	Exclusively Rays: Thirukkai - *Dasyatis* spp., *Himantura* spp., *Dasyatis* spp., *Aetobatus* spp., *Aetomylaeus* spp.

1	2	3	4	5	6	7	8	9
6.	Crab net – Nandu valai (Bottom Set Gill Net)	Nylon 1 month	40– 50 mm	80–100 m 1.0-1.5m	250	10	5 – 7	Crabs, *Sepia* spp & Chanks
7.	Karai madi valai (Inshore Drag Net or Shore Seine)	Nylon with coir	Bag length –1 m Net 15 m, Wing 400 – 500 m	10 m	1,00,000	1	20 – 30	All types of fishes – Small to large size.
8.	Veecchu valai (Cast net)	Cotton twine	1.0 inches	–	750 – 900	1	1	Small sized fishes – Shallow water bodies
9.	Disco thoondil or Jigs	–	–	–	200-250	5	–	Kanavai meen (Cuttlefish)
10.	Odu kayaru thoondil (Trolling Lines)	–	Length of the main line – 1000m Hooks at regular intervals	–	800-1000	1	–	Seer fishes, carangids, sharks and other big sized fishes
11.	Ayiramkaal thoondil	–	Line is set as usual with several snoods containing hooked bait.	–	1200-1500	–	–	Large and small fishes are caught; sharks, perches, catfishes, seela, etc.
12.	Madi valai or Illuppu valai (Bag Net)	Nylon Twine 4 –5 years	25 – 30 m 10 – 12 m		4,000 – 5,000	2	8 – 10	Sardines, Carangids, Mullets, Silver bellies, etc.

TABLE - 13
MATRIX FOR NETS USED

District: Ramanathapuram **Village: Natarajapuram, Rameswaram** Date: 30-08-2001

No.	Type of Gear	Material & Durability	Dimensions		Approximate cost of net (Rs.)	No. of nets required per vallam	No. of fishers per boat	Species Caught
			Mesh Size	Length/ breadth				
1.	Choodai Valai (Drift Gill net)	Nylon Twine 5 years	10 mm	50 – 60 m/ 3.0 m	700	30	4 – 7	Choodai meen: *Sardinella* spp. and other small sized fishes.
2.	Oozhai valai (Drift Gill Net)	Nylon Twine 1 year	25-30 mm	60-70 m 3-3.5 m	1,000 -1,500	10	4 – 6	Barracudas
3.	Iraal valai (Bottom Set Gill Net)	Nylon Twine 6 months	20-30 & 100-130 mm	70 – 90 m/ 3.0 m	1,000-1,500	30	5 – 6	Prawns:
4.	Singi valai (Bottom Set Gill Net)	Nylon 6 months	40 – 60 mm	70-80 m / 3 m	1,800 – 2,000	40	5 – 7	Lobsters, Chanks, Paarai, Kuruvaalai, Seppili, Vilaimeen, Thirukkai, Shark
5.	Paru Valai (Drift Gill Net)	Nylon 3 years	120- 140 mm	60 – 75 m 3 – 3.5 m	2,000	10	5 – 6	Big sized fishes of Seerfishes, Barracudas, sharks, etc.
6.	Nandu valai (Bottom Set Gill Net)	Nylon 1 month	40– 50 mm	80–100 m 1.0-1.5m	250	10	4 – 6	Crabs, *Sepia* spp & Chanks
7.	Karai madi valai (Inshore Drag Net or Shore Seine)	Nylon with coir 4-5 years	Bag length –1 m Net 15 m, Wing 400 – 500 m	10 m	1,00,000	1	20 – 30	All types of fishes – Small to large size.
8.	Disco thoondil or Jigs	– 3-4 years	–	–	200-250	5	–	Kanavai meen (Cuttlefish)
9.	Veecchu valai (Cast net)	Cotton twine 2 years	1.0 inches	–	750 – 900	1	–	Small sized fishes – Shallow water bodies

4.2.10. Marine Resources:

In the Gulf of Mannar and Palk bay regions, the following marine resources are obtained and the names of these varieties are given in the local expressions. i.e., Sharks (Suraa meen), Skates & Rays (Uluvai meen and Thirukkai meen), Eels, Cat fishes (Keluthi meen), Saurids & Saurus, Perches, Mullets (Madavai), Sciganids (Ooraa), Leiognathus (Kaarai or Kaaral), Lactarius (Kuthippu), Pomfrets, Soles, Cod (Kalavaai), Mackeral (Paarai), Seer fish (Seelaa), Penaeid prawns (iraal), Non-penaeid prawns, Lobsters (Singi), crabs (Nandu), Cephalopods, etc. In both the Palk Bay and in the Gulf of Mannar coasts, availability of sea cucumber and chank are more. The exploitation of this type of marine resources is in dangerous level. Rameswaram has more than six (6) sea cucumber traders and twelve (12) chank traders. Of these, three national level chank traders are here. In Chinnapalam and Thoppukkadu of Pamban region, seaweed collection is one of the important sources of income generating employment activity (Kannan, 2001). However, both in Ramakrishnapuram and in Natarajapuram fishing villages, seaweed collection is completely absent. Gulf of Mannar coast has an extensive distribution of marine resources such as fishes, crabs, prawns, lobsters, and other marine invertebrates of export value i.e., sea cucumber, sea fans, pipefish, etc. Almost all varieties of marine organisms are available in Rameswaram coastal region. In the Palk Bay region, various types of prawns, fishes, sea cucumber are found. In the eastern side of the Rameswaram i.e., in the Palk Bay coast one finds an enormous growth of seagrasses. This provides shelter for fishes, cuttlefishes, seahorses, chank, sea cucumber, seaweeds , etc.

Most of the marine animals lay their eggs in the seagrasses area. Incidentally, this happens to be an ideal nursery for juveniles of many marine organisms. For this reason, the richness of marine fauna is more in this region too. However, the Gulf of Mannar has a luxurious growth and diversity of all types of marine fauna and flora. This diversity is because of the abundance of coral reefs, seagrass, and seaweed beds in the Gulf of Mannar coast. In the Gulf of Mannar, seven stretches of islands are present in Mandapam Group. Kurusadai island is known to all scientific communities as well as public because this island is called as “Biological Paradise”. The other islands are Shingle island, Poomarichan island, Manoli island, Manoliputti island, Musal island and Mulli island. Of these Shingle, Kurusadai, Poomarichan and Manoli islands are closer to Rameswaram island. Between October and mid April, fishers choose to fish in the Gulf of Mannar due to favourable climatic conditions and particularly, due to northeast monsoon season (wind blowing from north direction to south direction). During this rainy cum winter season, there is abundant marine resources availability. From the months of mid April to September, all traditional fishers in these villages shift their attention to Palk Bay coast, when southwest monsoon sets in (wind blowing from south to north direction i.e., Southwest monsoon). The marine organisms are replenished in the Palk Bay during this season. Due to heavy wind, the traditional craft users are not able to operate their crafts. This is the main reason for the seasonal fishing of traditional fishers while there is a vast diversity of marine resources found in the Gulf of Mannar coast.

4.2.11. Fishing Pattern:

Vallam and vatthai using fishers have a restricted zone of fishing. Vallam operating fishers go for fishing upto 10 km from the shore. However, fishers owned by vatthai are exploited marine resources available in between the islands and mainland in the Gulf of Mannar and a few kilometers away from mainland in the Palk Bay coast. They are called as lagoon fishers. They use non-motorized fishing vessels and use sail only. Operation of this kind of vessels is never possible during heavy tides. The fishermen use their own local terms for demarcation of oceanic zones. In these zones, they have claimed to get specific marine organisms.

The fishers of Rameswaram especially Ramakrishnapuram and Natarajapuram fishing colonies go for fishing around six months in the Palk Bay coast and another six months in the Gulf of Mannar coast. The fishermen of these villages use their own local terms for demarcation of oceanic zones and area of fishing. In these zones, they have claimed to get specific marine organisms. During the months of October to March, they go to sea in the Gulf of Mannar coast for fishing. This is called as “Thenkadal Meen Pidippu”. In this period, they catch more fishes and earn enough money to maintain their livelihood. Generally, Gulf of Mannar contains vast marine fishery resources. Fishers have never gone for fishing during the months of April to October. Because heavy winds blow from south to north direction, this wind is named as “Katcchaan Katru”. Hence, vallam and vatthai operation is not possible in this area during these months.

During the months from April to October, they go for fishing in the Palk Bay region. They catch mainly Iraal, Nandu and small fishes in the Palk Bay coast. According to the fishers of Moondraiyar Chadram and Dhanushkodi, the marine resources are getting depleted in our maritime zone. The vast marine resources i.e., prawn, lobster, chank, sea cucumber, export oriented fishes exist only in and around the Kachchatheevu. However, Indian Government had handed over this island to Sri Lanka. The Government of Sri Lanka has never permitted our fishers for fishing. This is the main reason why fishers in this island have got less income and have been pushed below the poverty line. Prawn fishery resources are more only in this region. During the months of November to March, heavy winds blow from North to South direction. Hence, the traditional crafts are not operating during these periods in the Palk Bay coast.

Other types of winds blowing in this region are Kondal, Vaadai-Kondal, Vaadai-Kachaan, Katchaan-Kodai, etc. Of these winds, the fish catch is less during the Katchaan-Kodai kattru blowing period and the fishers catch more prawns during the Kondal kattru blowing period. During the heavy wind period, water flow between the Gulf of Mannar to Palk Bay side. Normally this area is low lying and water easily crossed from south to north and north to south direction. During this time, the heavy water flows damage their huts adjacent to the shore (**Chart-5**).

Once, Kothandaramarkoil and Moondraiyar Chadram areas were covered by huge sand mound. Now there is no such sand mound. Vallam operators go for fishing on Monday, Wednesday, Friday and Saturday, and other three days are intended for launch fishing. On the other hand, vatthai users are allowed to catch fishes all the seven days in a week because they are using sail type only and the area of fishing is also very much restricted i.e., three to four kilometers away from mainland. They have only limited numbers of valai and they get around only Rs: 20 to Rs:100 daily. Most of the time, they return to shore without fish catch. Nearly every one is in debt. This is due to unstable income through their occupation. Due to this, more than 80 percent of traditional vessel operators are living below the poverty line.

At the time of nandu season, fishers go to sea at 7.00 PM, spread their nets and come back to mainland within an hour. Once again, they go to sea very next day at 5.00 AM, collect their catch, and return back to shore at 9.00 to 10.00 AM. For prawn fishing, they go to sea at 4.00 AM and spread their nets. After some times, they collect their nets and come to shore at 4.00 PM. However, for lobster fishing, they go to sea at 4.00 PM and return back very next day at 4.00 AM to 12 Noon. The traditional fishers go to Palk Bay for Nandu and other small fish catching. However, they go to Gulf of Mannar for catching big sized fishes, prawns, lobsters, etc. Along with their nets, they use Kanavaai thoondil. If spare time is available, they put this thoondil and catch kanavai meen (cuttlefish). However, in Keezhakkarai, fishermen use crude method of Kanavai fishing i.e., using fine tipped iron rod and they damage the coral reefs in these areas (Kannan *et al.*, 2001).

Another interesting fishing activity in this area is the collection of attai or sea cucumber. During the Vadakadal meen pidippu time, around 20 to 25 chank divers from Periapattinam fishing village come regularly this area for the collection of attai. All of them are aged between 20 to 35. In the early morning, they come to Rameswaram and engage two or three boats. If the seawater is clear, they go to sea for collection. They collect it by diving. If the water clarity is very low or more turbid, they return to their residents. Normally, each diver can get at least Rs: 25 to Rs: 200 per day. If any one gets catch worth of Rs: 50/-, they give Rs: 5/- as boat hiring charge to vallam owner and get a worth of more than Rs:100/-, they provide Rs.15/-. All of them belong to Islam. Friday is a holiday for their fishing activity. Between the months of April and September, sea is more rough and turbid in the Gulf of Mannar region. Chank divers have no activity during this period. During offseason or less season, they are ready to manage their livelihood activity through alternative means of occupation.

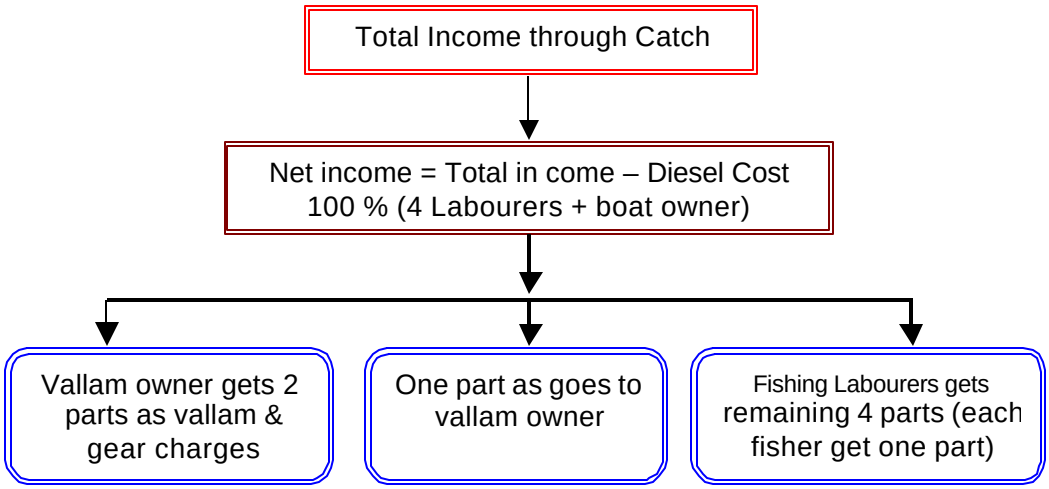
An interesting observation in these fishing villages is that women are involved only in fish drying, dry fish sales, and selling fresh catches. They also assisted men in cleaning and mending nets. However, fisherwomen in Chinnapalam and Thooppukkadu of Pamban and Keezhakkarai are involved in seaweed collection and even chank collection also.

The important feature of the Rameswaram island is that the migratory fishers come for fishing, chank diving and sea cucumber collection from various parts of Tamilnadu, like Kanyakumari, Tuticorin, Kolachal, Vembar, etc. Every year, fishers from Tuticorin and Kanyakumari come to Rameswaram and are staying in the shore region between Kothandaramarkoil and Dhanushkodi. They are using three different types of nets viz. madi valai, paru valai, singi valai and thoondil. They use fibreglass boats fixed with 20 HP inboard motors. Fishers engage at least 4 to 6 persons only from their own village. They use around 30 to 50 fibreglass boats for fishing activity. They go to sea far away for fishing due to the use of lightweight boat and powerful motor for fishing activity. The main aim of these migratory fishers is to catch big sized fishes such as seelaa, vaaval, parai, etc. Majority of them are engaged by the local fish traders. The migrated fishermen sell their catches only to the local traders. They have more income when compared to the local fishermen. The local fish traders get their catches for lower prices i.e., the traders buy fishes worth of Rs:60/- per kg instead of Rs:100/-. Due to this reason, the local fishers have less value for their catch.

Fishing is the main occupation in both Ramakrishnapuram and Natarajapuram fishing villages. There is no seaweed and chank collection in these regions. Daily income to the fishers of vallam owners and vallam fishing labourers is presented in **Chart-6.** Total income per day catch is deducted from daily diesel expenses. This is the net total income. If five persons are engaged (including owners), net income will be divided into seven equal shares. The boat owner gets three shares i.e., two shares as vallam and gear charges, and another share for boat owner. The remaining four shares are given to four labourers engaged during fishing.

CHART – 6

INCOME OF FISHING LABOURERS ENGAGED BY VALLAM OWNERS:



Usually, income through fishing activities is very less i.e., some times Rs:50/- per month or even Rs:3,000/- per month. Life period of some nets such as crab net, lobster net, etc., is around one to 4 months. Fishers spend atleast Rs: 20,000/- per year as a repairing cost for karai valai. However, the income through their fishing activity is not stable i.e., fisher gets Rs:500 to Rs:5,000 per month. From this amount, they meet their livelihood activities, repair their nets, and repay their loans received from moneylenders at exorbitant rates of interest. Each labourer engaged in fishing can earn Rs:50/- to Rs:150/- per day. However, this income lasts for four days in a week. This income is not enough to meet his day-to-day activities. Hence, they get money from moneylenders. Like Chinnapalam, Keezhakkarai, Vedaalai and Periapattinam, fishers of Ramakrishnapuram and Natarajapuram are never engaged seaweed and chank collections.

4.2.12. Time Line and Trend Change (Table-9 & Table -14):

For the residents of Ramakrishnapuram and Natarajapuram fishing villages, the year 1964 marked an eventful year. Because during this period, the fishers of Ramakrishnapuram and Natarajapuram villages lived in Moondraiyar Chadram and Dhanushkodi area respectively. It was during this year, Dhanushkodi, a small fishing village in Rameswaram island was reduced to nothing due to nature's fury. All of them have remembered this incident distinctly. During this time, they were lived in huts only and used Karai valai thoni or vatthai for fishing. All crafts were only sail. Then they had shifted to Ramakrishnapuram and Natarajapuram, and formed the new fishermen colonies. But the occupation of fishing flourished after 1964, when different types of vessels were put to use. Fishermen said that income had been considerably reduced inspite of remarkable improvement by means of fishing.

While pointing out the changes over time, the fisherfolk conveyed that it was only in the last 25 years that boats fixed with motors were used. It was only in the year 1980, the idea of fixing engine in vallam (country boat) had come into practice. Prior to 1964, country boats with sails were used. Even today, this arrangement is resorted to, by some fishers. Fishermen stated that modernization in fishing in this region is undoubtedly due to INP (Indo-Norway Project). There are some other incidents, which according to the fishermen have affected their occupation. Fishers from Tuticorin, Kanyakumari, and Muttam regions settle here for at least 4-6 months for fishing. They use fibreglass boats with high power engine and catch prawns and other high valued fishes in this region. The migration of fishers from Mookaiyoor (near Sayalkudi, Ramanathapuram District) to Rameswaram region had resulted the increase in population and intensified competition in the occupation. The second incident was the handing over of Kachchatheevu to Sri Lanka which had deprived fisherfolk of their fishing rights.

Another incident remembered by them dates back to 1991 when the state government had ordered to collect tax for fish catch in the Rameswaram island. Every kilogram of prawn and fish caught, they had provided Rs: 20 per kg of prawn and Rs: 5 per kg of fish to the

Rameswaram Municipality. Then the state government had cancelled this stipulation immediately after the fishers' dharna.

Table – 14 TREND CHANGE

District: Ramanathapuram **Village: Ramakrishnapuram, Rameswaram** Date: 29-08-2001

	Trend existed 1975 years before	**2001**	**REASON**
Education	95% were illiterate	College – 0.25% Plus 2 – 1.25% High school – 2.50% Primary school– 8.75% Illiterate – 87.75% More literate in girls	Atleast 3 persons needed per vallam or Vatthai operation. Therefore, the boys go to sea for fishing. Girls are stopped if they attained maturity.
Crafts and Gears	Only vatthai and karaivalai thoni; Karaivalai and few types of nets were used	Both vallam and vatthai are using; all types of nets are using;	Now they are using more than 12 types of nets which depending upon the types of fish caught. Eg. Thirukkai valai for thirukkai meen, iraal valai for iraal meen, etc.
Rainfall	High	Not in season	Forests being destroyed. Due to low rainfall, the breeding of marine animals affected and leading to less catch
Marine resources	More diverse and high catch rate	Less availability and low catch rate	About 80% resource reduction is due to trawl boat operation – using fine sized nets and also competition between traditional fishers – increase in population
Fishing Problems	Only natural	Trawl boat, LTTE, migratory fishers from Tuticorin, Muttam, Kanyakumari, etc.,	As above, and the migratory fishers caught export valued fishes and sell their catch in low price – income of local fishers reduced.
Income	Very less	More	Decrease in production due to less marine resources availability and competition.
Additional Occupation	Nil	Collect sea cucumber only.	No additional occupation in these fishers due to unavailability of seaweed in this region.
Standard of living	Cost of living – less	Declining standard of living	Competition – Increase in number of Vessels, Middlemen problem.
Opportunities	Less	More	Construction of Pamban Road bridge, More export companies emerged.
Transport facilities	Train only	Train, Truck, Lorry, Bus, Van, etc.	Construction of Pamban Road bridge – Increase in road transport facilities.

Fisherwomen are involved only in fresh and dry fish selling. The residents of both Ramakrishnapuram and Natarajapuram pointed out that at present, people become conscious of the importance of education for female children also. The income through fishing is very much reduced due to trawl boat operation, competition between traditional fishers. Before 1975, they earned enough money through fishing. Eventhough the modern techniques are applied in the form of fishing crafts and gears, they are living in poor condition. The depletion of marine resources is the main reason for less catch. The depletion is due to operation of trawl

boats in the zone earmarked for vallam and vatthai. Absence of seasonal rain in this region affects the breeding behavior of marine animals hence reduced availability.

Considering the seriousness of the situation, the Swami Vivekananda Kudil purchased Jeep worth of Rs:2,00,000/- for the benefit of the fishers. This is a nice gesture by a kind hearted devotee. The local fishermen are using this jeep for their coastal transport services and other purposes. In this Kudil, they give free coaching classes to local children. They run a Tailoring training centre for local fisherwomen. They have planned to start the following training programme such as Typewriting Institute, and Computer Centre. The fisherwomen who were already trained in this Kudil became self employed. The Kudil helps the trainees to get bank loans so that they may own their tailoring machines. Every year, they distribute free books, uniforms, and other necessary items to the very poor children. They give free food for children who attend the morning prayers. The children showing extraordinary talents from this community have selected and send to various places by conducting bhajans and cultural programme. The Kudil gives training to students and the inmates in the aspects of recitation, painting, drawing, singing and elocution.

4.2.13. Coral Mining Activity:

Mining of coral reefs in this area is completely nil. Dead coral rock bed is found in the northern part of Rameswaram (near Ramarpaatham). This region has a big tharuvai (water storage tank) and a total area of this tharuvai is about 10 hectares (**Chart-5**). This is covered with huge amount of dead coral rocks. The local people regularly mine this dead coral rock for construction activities. Before 1975, coral mining was done by the adjacent islands in the Gulf of Mannar and the reefs of Palk Bay regions. A greater extent of coral reefs were mined and used for construction instead of bricks. The damaged old houses in Rameswaram island had indicated that house walls in most part of the island were constructed using coral blocks. According to fishers, the illegal mining of corals in a few places in the coast is also reported. Another unfortunate occurrence in this island is mining of coral rocks in the tharuvai by the local persons. Each lorry load of is approximately Rs: 500 and one tractor load costs around Rs:200-250/-. If any one needs this rock, he informs the local lorry or tractor owner and they arrange for labourers for mining.

The Ramco Cement Factory has once purchased nearly 300 acres of land in the northern side of Rameswaram island for the setting up of a big cement factory here. The raw materials can be obtained from the dead coral rock in this tharuvai near Ramarpaatham. However, the state government has not issued the licence for this industry. Other wise, this island would be completely destroyed by the smoke discharged from the cement factory. Due to this smoke, there is a possibility of atmospheric air as well as seawater getting polluted in this island. The dust particles released from this industry will settle on the seawater and affect

the growth of coral reefs through sedimentation. All such pollution problems have been eliminated by the action taken by the state government in right time.

In this present research survey, the following are the major man-made threats leading to coral reef destruction and over-exploitation of marine resources in the Gulf of Mannar coast i.e., 1) over-fishing, 2) anchoring, 3) mining activity, 4) blast or dynamite fishing, 5) using improper gears such as irrattai madi valai (roller madi valai used in the coral reef rich area), thallumadi valai, surukkumadi valai, etc., and 6) fine size meshes (Table-14). **Chart-7** has presented the details of fishing occupation, fishers problems, marine resources, crafts and gears used, and other information. The sewage and related pollutions are the major stress to coastal waters and coral reefs in this area. In Rameswaram region, there is no proper drainage facility for sewer. Recently, the Rameswaram Township has planned to set-up and construct a proper drainage system and the government has also sanctioned the required money. Initially, the township authority had selected a place near Natarajapuram area for the construction of treatment plant. Later they changed the site for plant construction due to pollution problem, because, this area is an important ground water source for drinking use. At present, the authority has decided to set-up treatment plant in Narikkuli.

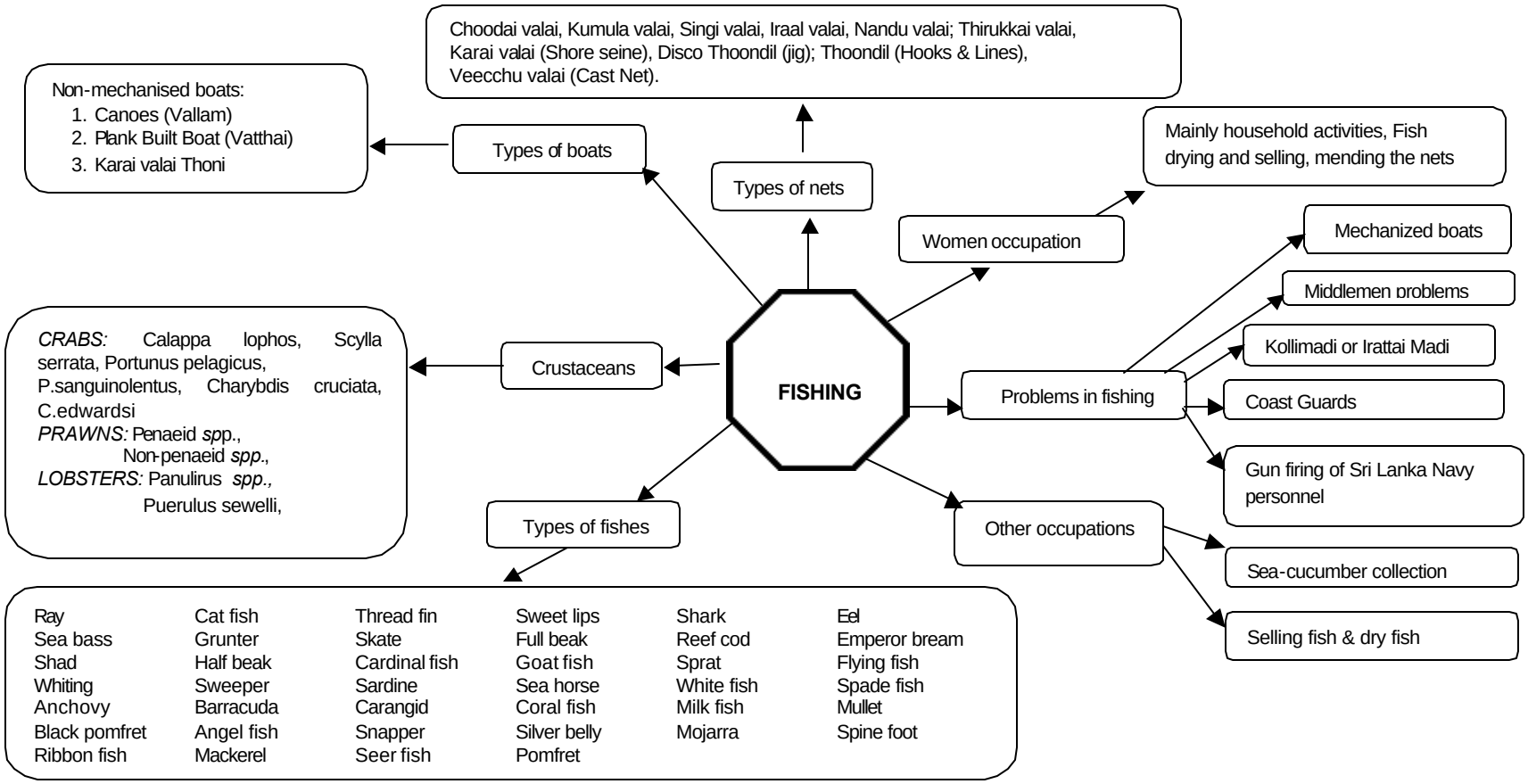
4.2.14. Problems Identified:

1. The traditional fishers have a restricted zone of fishing activity. Every six months, they are catching fishes in the Gulf of Mannar and Palk Bay coasts. Between Kothandaramarkoil and Arichamunai i.e., the eastern tip of this island, the breadth of land area is around 100 meter to 200 meters only. During heavy wind and rainy periods, seawater is entering to the wind direction in these regions. Both fishers are staying very closer to sea. Heavy water flow damaged the fishers huts and washed their gears and other household belongings. Some times, the cyclonic impact damages their crafts also. During 1998, atleast vallams numbering five have been damaged in Moondraiyar Chadram area due to cyclonic effect. That time, three boats were saved from damage and two vallam were completely sunk in the sand. There is no jetty for traditional crafts users in this region. Existing jetty is used for berthing launches. Traditional fishers have requested to construct two jetties i.e., one between the Kothandaramarkoil and Moondraiyar Chadram of Palk Bay coast and another one is just opposite to Natarajapuram of Gulf of Mannar Coast. If jetty is constructed in this part of the Gulf of Mannar coast, fishers of these regions can berth their crafts.

CHART - 7

FISHING OCCUPATION – WEB CHART

District: Ramanathapuram **Village: Ramakrishnapuram** Date: 31-08-2001



2. There is no principal investment as well as savings for purchase of crafts and gears. According to the fishers of Ramakrishnapuram, the state government should sanction funds for the purchase of the crafts and gears with subsidy. This statement differs from the problems pointed out by Periapattinam fishers i.e., Periapattinam fishers are not interested to get loan from the government agencies.
3. Another important problem is the transport facility. From Rameswaram to Dhanushkodi, the state transport corporation operates buses every one hour from morning 5.30 AM to 7.00 PM in the evening. While these services are available upto Moondraiyar Chadram only for 6 km beyond this stretch, a few private van services are also available. The State Fisheries Department should grant one or two vans for their local transport through FCS on 100% subsidiary. If own transport facility is available, they can easily transport their catches immediately to the market and or fish traders for selling, if not, most of the catches would be spoiled due to inadequate processing facility in the shore. Fishers income is getting reduced due to inadequate storage facility. Hence, they need one ice plant and storage facility unit in Rameswaram island for traditional fishers alone.
4. The prices of the fishes are not fixed. Fluctuation of price is common in all the places. If the fish catch is abundant, the prices are lowered immediately. However, less quantity of fish is caught, the traditional fishers are not getting fair price for their fishes. Therefore, the fishers have requested the state government to standardize the rate of fishes as in the case of agricultural products. Otherwise, the fishers cannot come out from the clutches of middlemen.
5. The research team interviewing at Periapattinam during April 2001 has come to know that the off-season loan is stopped. In fact, the funds have not received from the Central Government. Fishers are upset over the stoppage of off-season loan and collected amount is returned to some fishers. Now the State Fisheries Department has sent the message to all FCS to issue the off-season loan to fishers. The above recent order has stated that the fishers are requested to pay Rs:50 instead of Rs: 45 per month for a total period of 9 months. If any one does not pay the full amount within September 10th, 2001, the off-season loan would not be given to them, according to fishers.
6. During off-season, Periapattinam fishers are engaged in seaweed collection. However, fishers of Ramakrishnapuram and Natarajapuram depend on their fishing only. There is no other source for the generation of additional income in these fishing villages such as handicrafts, seaweed collection, chank collection, etc. Fishers of these villages are exploited by middlemen also. They give loan to fishers without interest, but they recovered their loan more than 200% of what they have given. The recipients of loans sell their catches only to the moneylenders or fish traders.

7. As per the Treaty of 1974 (Lal Bahadur Shastri–Srimavo Bandranaike Indo-Sri Lanka Agreement of 1974), the Indo-Sri Lanka maritime boundary was demarcated. As per this Treaty, our fishermen could sample and catch fish only to a distance of six miles from Dhanushkodi and 11 miles from Rameswaram. The island of Kachchatheevu had been handed over to Sri Lanka and on this land, the fishers were allowed to dry their nets, attend the annual festival as pilgrims. Around 30 miles radius of Rameswaram, prawn beds are abundant including the island of Kachchatheevu (This island is in the Revenue Record Rameswaram island, Ramanathapuram District). From the year 1983 onwards, our (Indian) fishers had never been allowed to catch fish in this region due to LTTE problem. After that, the fishing operations were restricted by the Government of Sri Lanka. Trans-border fishing and subsequent disciplinary actions by Sri Lanka Navy personnel are regular and our fishers are gunned down frequently. According to Swami Pranavananda, more than 500 fishermen had been killed in firing by Sri Lankan Navy personnel. Now our fishermen request both the central and state governments that the island of Kachchatheevu should be returned back to our state for the benefit of our fishers.
8. Due to the introduction of trawl boats in this area, prawn as well as fishery resources in the Palk Bay and Gulf of Mannar coasts are in a declining trend. Now the traditional craft users are affected severely. The fishery resources in the maritime zone of Sri Lanka have never been fully exploited by the Sri Lankan fishers. This is because the LTTE has occupied the western coast for their activity. According to our respondents, abundant prawn resources are available in the Sri Lankan sea and on account of this, our (Indian) fishers using trawl boats at times have crossed the Maritime Borders for prawn fishing.
9. During the year 1970, Rameswaram island had only three numbers of trawl boat. At present, in Rameswaram island, there are around 2000 trawl boats. The distance between India and Sri Lanka is very much limited in the Rameswaram island region. Thus, the area of fishing operation is also restricted. This creates more problems between these two societies and some times clashes become unavoidable. According to the traditional fishers, the mechanized boat fishers are fishing in the zone earmarked for traditional fishers. Most of the time, the mechanised boat operators drag their nets in close proximity to mainland i.e., 200 meters from mainland. Not much of resources are available beyond the non-mechanized fishing zone, the income generation is also declined due to launch operation in this zone. The operation of trawl boats in the Palk Bay region of Rameswaram island is stopped most of the time. Around 95% of trawl boats are resting on the Rameswaram jetty for more than 15 days without fishing operation during the month of August 2001. This is due to very lesser amount of prawn catching in the Palk Bay region. Already trawl boats had been stopped for fishing operation in Tamilnadu state for a period of 45 days from April 15, 2001 to May 31, 2001. During the 45 days, the government

banned the operation of Thallumadi valai, irrattai madi valai, and surrukku madi valai. The owners of trawl boats have welcomed this ban. They have never operated their crafts for a period of 10 days due to the low price for prawn (Thinaththanthi, September 18,2001; page no. 9). This can mostly affect the livelihood activity of labourers engaged in trawl fishing. Normally, they earn Rs: 500 a week. If they obtain high quantity of prawns, the fishing labourers receive an additional money as incentives. Some times, trawlers get catch worth of Rs:1000 per trip and the diesel cost is around Rs:2000. The owner of this trawl boat has no profit in this trip. Eventhough there is no income through fishing, that times, they provide some money to labourers engaged for fishing activity.

10. The trawlers use irrattai madi valai, thallumadi valai, etc., for fishing. At the time of dragging their nets, marine animals in the bottom, eggs of many species and even young ones are destroyed. This is another way of marine resources depletion. Like Periapattinam, they destroy the reefs of Gulf of Mannar coast by using wrong method of fishing. According to the traditional fishers, the marine resource depletion is mainly due to the introduction of mechanized boats and other causes are population density of fishers. This population is greater than the population that existed twenty years before. Coral reef destruction, low rainfall during season, etc., are other causes.
11. According to the President of Natarajapuram Fishermen Cooperative Society, Rameswaram island is one of the important fishing as well as fish landing centres in India. India get lakhs and lakhs of dollars as foreign exchange through the export of prawns, fishes and other marine resources. The Assistant Director of Fisheries, Rameswaram said that the monthly marine fisheries production in Rameswaram alone is about 120 tonnes of prawn, 1240 tonnes of fish, 160 tonnes of crab and 72 tonnes of cuttlefish from all the 53 fishing villages. Therefore, fishers have requested the state government to establish one Fishermen Cooperative Bank at Rameswaram like Agriculture Cooperative Bank. Like that, Fishermen Cooperative Banks should be formed in other important fishing villages all over Tamilnadu.
12. Illegal fishing operation in the zone earmarked for traditional fishing crafts is known to both the Fisheries Department and the Forest Department Officials, but no action is initiated against the launch owners according to traditional fishers. Every month, the fishers of this region had conducted a Dharna against the governments regarding the intrusion of launch in their fishing zone and other related problems. According to the fisher, they are not happy with the Coast Guard also. They claimed that their catches are compulsorily taken away by the Coast Guard, if the fishermen put out to sea without identity cards. This is because the District Collector had insisted on the identity cards to be possessed by the fisherfolk during fishing in this region.
13. Similar to Periapattinam fishers, they had also requested both the central and state governments for the early implementation of Old Fishers Pension Scheme through FCS.

14. Indebtedness is widespread among all fishing communities. This is mainly due to absence of savings habit and unplanned life among fisherfolk. According to the Swami Pranavananda of Vivekananda Mission, Ramakrishnapuram, the most important cause for their indebtedness is due to unsteady income through fishing and the absence of supplementary employment opportunity to get additional income. Fifteen years back, most of fishers were exploited by the local people for smuggling and other illegal activities. Now they are in right direction. All projects implemented by the government are superficial and there is no will on the part of the government to execute the fishermen welfare schemes or any other schemes, according to Swami Pranavananda.
15. Rameswaram island has one Government Hospital but doctors are less in number and the important medicines are not available at times of need. Recently Sun-TV has telecast the state of affairs of this hospital. The fishers of this region reported that the required medicines are not available here even for emergencies.
16. The Fishermen Cooperative Society President of Ramakrishnapuram stated that the state government has ordered to construct 100 houses from Fishermen Free Housing Scheme through FCS during the year 1992-93. Nobody is interested to take tender for the construction. Later on, the government has sanctioned Rs:26,000 for each house with a condition that the money would be given in four installments for construction. The construction work had started only during July 1994. Then the Forest Department Officials had ordered to stop this construction work immediately because this land is under the Forest Department. They asked the fishers to pay Rs:2,00,000 for land cost, otherwise, they would not permit to construct the houses. Further, they put a false case against the poor fishers also. After 3 years, the fishers requested the Fisheries Department to sanction additional funds of Rs:14,000 per house for construction because the rate of construction materials had gone up. Already, the government has not given the installment amount of Rs:1,00,000. Then, during the year 1996-97, the government sanctioned Rs:32,000 per house and recently, it was increased to Rs:37,000 per house. The fishermen say that more than nine years have gone since the construction work started. However, the state government has not issued the instalment amount of Rs:1,00,000. The Ramakrishnapuram FCS president is affected much by means of money, mind and in other ways due to this problem. The president says that he has lost his own money of Rs:60,000 and more. Yet, the state government has not sanctioned this money. Hence, the construction of remaining 40 houses has not been yet completed.

4.3. ERWADI:

4.3.1. Importance of Erwadi fishing Village:

The entire Gulf of Mannar region has been valuable since, prehistoric periods. This region has been highly productive with priceless pearls, chank, fishes, etc. In the cultural heritage and history of India, Erwadi, the famous pilgrim centre for Muslims, is situated in the Gulf of Mannar nearer to Keezhakkarai. Every year, devotees from all over Tamilnadu and especially from Kerala come to worship Syadu Mohmad Oliyulla Dargah. Erwadi is an important town in Ramanathapuram District.

Erwadi is one of the fishing towns as well as main fish landing centres in Ramanathapuram district, Tamilnadu which is located 25 kms south of Ramanathapuram town. The eastern side of this fishing village is covered by the Gulf of Mannar coast. The eastern side of this village has a group of four islands i.e., Yaanaipar island, Pallimunai island, Poovarasanputti island, and Appa Island.

Erwadi Town Panchayat includes seven fishing hamlets. They are Chinna Erwadi, Sadaimuniyan Valasai, Kalpaar, Mottaikkilavan Valasai, Meiyappan Valasai and Aathamcheri. Of these, Chinna Erwadi, Sadaimuniyan Valasai and Mottaikkilavan Valasai hamlets are the important fish landing centres and others are only fishing hamlets. Chinna Erwadi is also the oldest Marine Berthing Shelters in the Gulf of Mannar. The total area of this town panchayat is about 2300.95 hectares. The coastal area of this region has a rocky cover. Adjacent to Erwadi, paddy fields and coconut farms are located. Only during rainy season, they cultivate paddy. Near Erwadi, an important fish landing as well as fishing village, Keezhakkarai is located at a distance of 8 kms.

4.3.2. Population:

According to 1991 census report, the total population was 7,334. Of these, male members were 3,494 (47.6%) and female members were 3,841 (52.4%). Both male and female members in this category constitute 375 and 400 respectively. During 2002, the total population of this panchayat is increased to 10,000. Of these, male members include 4,800, and female members constitute 5,200. The SC/ST population is inclusive of approximately 1000 persons (**Figure-21; Table-15**). Fishers of this region get income through fishing, agriculture, and other fishing related activities. There is no seaweed collection in these hamlets. They depend only on the marine resources in the Gulf of Mannar coast for their livelihood.

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Table–15 Primary Census Report of Erwadi Panchayat, Ramanathapuram District

Area in Hectares	**2300.95**		
No. of Occupied Residential houses	**1,590**		
No. of House holds	**1,644**		
	Male	**Female**	**Total**
Population	3,494	3,841	7,334
SC population	375	400	775
Population Below 7 years	738	716	1,454
Literates	1,710	1,428	3,138
Main Workers	1,709	496	2,205
Cultivators	140	63	203
Agricultural Labourers	263	268	531
Livestock, Forestry, fishing, etc.	590	18	608
Manufacturing & Processing in house hold industry	5	9	14
The above other than HHI	156	21	177
Construction workers	15	7	22
Trade & Commerce workers	232	57	289
Transport, storage, & Communication workers	37	0	37
Workers in other services	271	53	324
Marginal workers	35	136	171
Non-workers	1,749	3,209	4,958

In this fishing village, fishers belong to all religions. Majority of the boat owners i.e., 80% follow Christianity, 10% belong to Ambalagar community, and the remaining people are Nadars and Muslims with each segment constituting 5%. Majority of fisherfolk are living nearer to seashore. Traditionally Mutharaiyar community has been pursuing the occupation of fishing. Later on, Muslims and other communities belonging to the Hindu religion are also involved in fishing activities. Nowadays, some Scheduled Caste families are also engaged in fishing. In Erwadi, two types of activities are found among fishers viz., fishing, and chank collection, and these are the main occupations among fishers of this region. In Chinna Erwadi, majority of them are migrated fishers from Narippaiyur, Thangacchimadam, Pamban, Keezhakkarai, Mandapam, etc. During fishing season i.e., May to September, every year, they come to Erwadi for fishing activity. They have own houses, boats, and other facilities in this village. They obtain boat anchoring permission from Ramanathapuram Fisheries Department for berthing of boat. All of them belong to the category of mechanized boat owners. The main fishing activity of these migrated fishers is prawn fishing. Other marine resources exploited by them are nagarai, valai meen, paarai meen, ooli meen, etc. In Chinna Erwadi, migrated fishers constitute approximately 25% of the total fisher population. Majority of the fishers own thatched houses nearer to shore which are used for storing the gears, fishes, etc. They have rented rooms for staying in Erwadi Dhargah. Children and family members are living only in their native villages. Frequently they go to their native villages.

Majority of the chank divers (90%) are migrants from Narippaiyur, Mookaiyoor, etc. During chank season, they come and stay near the shore in Chinna Erwadi village. They stay here for four days in a week for chank fishing. Every Thursday, they go to their native place and return back to Chinna Erwadi on Sunday. They have registered chank collecting vallams and all of them are registered divers. Every year, 70 to 120 chank diving boats are engaged chank collection activities. Each vallam owner engages 5 to 7 chank divers only from their village.

4.3.3. Housing Pattern:

Erwadi has a total houses of 2000. Of these, Chinna Erwadi comprises of 500 houses, Sadaimuniyan Valasai and Mottaikkilavan Valasai comprise of 100 and 90 houses respectively (**Table- 16 & Figure-22**). In Chinna Erwadi, around **75%** of them are living in thatched houses and **15%** are in tiled houses. The remaining **10%** of the fishermen are residing in pucca houses. However, in other two hamlets, most of the fishers **(95%)** are living only in thatched huts. They belong to Mutharaiyar community, Nadar, and Scheduled Castes. Of these fishing hamlets, Chinna Erwadi has electric power supply for more houses. However, the other fishing villages have a few streetlights. This colony has a few streetlights. There is no separate water tank in this area. A common well is utilized for drinking, bathing and washing purposes. Fishers use this water for drinking purpose and some times, bathing and washing.

Primary and high schools are run in Erwadi Town. However, just 8 kms away from Erwadi, well-developed educational institutions i.e., both school and college as well as professional engineering colleges and polytechnics are run in Keezhakkarai fishing town in Ramanathapuram District. In and around the Erwadi panchayat, children from Erwadi and other surrounding villages come to Erwadi for their primary and higher secondary education. For the purpose of higher education i.e., college level education, students go to Keezhakkarai, and Ramanathapuram. In Erwadi, the level of literacy is very less i.e., 25%. However, the level of literacy in the fishing communities is very poor when compared to Erwadi Town.

TABLE – 16 TIME LINE (LIFE PATTERN OF FISHERMEN)

DISTRICT: RAMANATHAP URAM **VILLAGE: CHINNA ERWADI** DATE: 31-11-2001

YEAR	**1970**	**1980**	**2001**
Fishers – Religion	Hindus (Mutharaiyar & Nadar), Muslims, & Christian	Hindus (Mutharaiyar, Nadar & SC), Muslims, & Christian	Hindus (Mutharaiyar, Nadar & SC), Muslims, & Christian
Fisher Population	400	900	1,200
Types of Houses	Huts - 100%	Huts – 100%	Huts Tiled Pucca 79% 13% 8%
Literacy	95% Illiterate 5% Literate	90% illiterate 10% Literate	Literate: 25% Illiterate: 75%
Food	Rice, Fish, Raagi, Millets, Sorghum	Sorghum, Rice, Fish, etc.	Rice, Fish, etc.
Equipment: Vatthai –Plank Built	Vatthai - 25	Vatthai – 25	Vatthai - 20

Boat Vallam – Canoes Launch – Trawl boat Remarks:	Vallam - 10 Launch - 100 Majority of the launches were owned by migrated fishers – Only Berthing Licence available	Vallam – 30 Launch – 180 Majority of the launches were owned by migrated fishers – Only Berthing Licence available	Vallam - 50-60 Launch - 200-250 Majority of the launches were owned by migrated fishers – Only Berthing Licence available
Types of Nets Used	Veecchu Valai, Madi valai etc.,	Veecchu valai, Choodai valai, nandu valai, etc	Choodai valai, Iraal valai, Paru valai, Singi valai, Nandu valai, Thallumadi valai, Disco thoondil, etc.
Types of Materials used for net making	Cotton twine	Cotton twine and Nylon/plastic twines	Mostly nylon and plastic twines
Fishing Area Fishing period Problem in fishing	Gulf of Mannar Seasonal All 7 days in a week Natural disturbances	Gulf of Mannar Seasonal All seven days in a week Natural Disturbances & Trawl boat operation	Gulf of Mannar Seasonal All 7 days in a week Trawl Boat operation - a major resource depleting activity in this region
Fish Catch (Size)	Large size fish	Medium size fish	Medium size fish.
Types of fishes obtained	Fishes, crabs & prawns	Including singi, prawns and all types of fishes caught.	All types of fishes caught.
Fishery Resources & their status	More but not exploited	Medium and limited-exploitation	Less and over-exploitation
Price	Prices were less	Prices were more	Prices were more but exploited by traders
Sales	Directly by fishers and fisherwomen.	Small fish companies, direct sales by fishers and fisherwomen. Middlemen and Agents.	Fish companies, Direct sales by fishers and fisherwomen. Middlemen and Agents.
Mode of Transport Coral Mining	Head load & Cycles. High rate of coral mining was done nearby islands	Train, Van, Lorry, Cycles, Head Load, Tricycles, Stopped mining of coral	Train, Van, Lorry, Cycles, Head Load, Tricycles. Stopped coral mining

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In Chinna Erwadi region, this was only 15% and nearby fishing hamlet, Sadaimuniyan valasai and Pitchaimoopan valasai have only 10% and 11% respectively. Of these, majority of them are educated only up to elementary school level. Only the fishers of Chinna Erwadi have more awareness regarding the importance of education and they know the importance of marine resources. When compared to female, the literacy level was more among male members.

4.3.4. Fishermen Cooperative Society:

Erwadi has three Fishermen Cooperative Societies and one Fisherwomen Cooperative Society. These are 1) Chinna Erwadi Meenavar Cooperative Society, 2) Pitchaimoopan Valasai FCS, 3) Sadaimuniyan Valasai FCS, and 4) Chinna Erwadi Mahalir Cooperative Society. A Fisherwomen Cooperative Society is also run in this fishing village and this society includes the members from nearby fishing hamlets. Chinna Erwadi has one fishermen association i.e., Chinna Erwadi Visaipadaku Meenavar Munnetrasangam (Launch owners association). This association includes fishers of all migrated fishermen i.e., Narippaiyur, Mandapam, Pamban, Thangachimadam, Keezhakkarai, etc. The total registered members of this association comprises of 55. The total registered members in Sadaimuniyan Valasai FCS are 120. The registered female members in the Chinna Erwadi Fisherwomen Cooperative Society are around 75. Majority of them are illiterate.

4.3.5. Fishing Crafts:

Fishers of Chinna Erwadi use both mechanized and non-mechanized (Motorized and Without Motorized) boats for fishing activity. The total numbers of fishing boats are around 275. Of these, 265 are motorized vessels, and vatthai comprises of 10 (**Figure-23**). During fishing season, around hundred additional launches from various fishing villages are berthing in this village with permission to anchor their vessels. In this hamlet, only 25 launches are owned by native fishers i.e., Ambalagarar. Launches are fixed with inboard oil engine of 68 HP to 110 HP- Leyland 102 or 104 Model with a length of 40 feet. Fishers in Sadaimuniyan valasai and Pitchaimoopan valasai FCS use only traditional crafts i.e., vallam and vatthai. Vallams are fixed with inboard motor of 8 HP.

They have only a restricted zone of fishing because fishermen in this village are using exclusively non-mechanized means of fishing. Sadaimuniyan valasai has a total of 40 fishing vessels. Of these, vessels 25 are vallam, and 20 are vatthai.

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4.3.6. Fishing Gears:

Fishermen use a variety of nets or "valai" depending upon the types or species of fish caught. The nets are named after the fishes, which they are intended to catch. They are using choodai valai, paru valai, iraal valai, singi valai, thirukkai valai, and nandu valai, thallu valai, and Thoondil (Hooks and Line) (**Table-17**). Depending upon the economic position, fishers use all types of nets. Twenty five percent of them have all types of nets eventhough they are living in economically poor conditions. They have obtained money from moneylenders and fish traders for purchasing of nets. Some fishers have owned all types of nets, it means that they earn more income from fishing. According to fishers, the availability of several marine resources is seasonal and the method of fishing varies with the types of fishes. For example, iraal valai is used only for catching iraal meen and thirrukai valai is only for thirrukai meen. Most of the fishers use disco thoondil or jigs (4-6 nos. per fisher) for Kanavai meen fishing (Cuttlefish). Mechanized boat fishers use only trawl net or madi valai. This is because launches have no facility to operate other types of nets.

4.3.7. Marine Resources:

In the Gulf of Mannar coast, the following fishery resources are obtained and the names of these varieties are given in the local expressions. i.e., sharks (suraa meen), skates & rays (uluvai meen and thirukkai meen), eels , cat fishes (keluthi meen), saurids & saurus, perches, mullets (madavai), sciganids (ooraa), Leiognathus (kaarai or kaaral), Lactarius (kuthippu), pomfrets, soles, cod (kalavaai), mackeral (paarai), seer fish (seelaa), Penaeid prawns (iraal), Non-penaeid prawns, lobsters (singi), crabs (nandu), cephalopods, etc. Seacucumber, chank, and cuttlefish resources are also more in the Gulf of Mannar coastal region (Flow-Chart-1). The exploitation ofthis type of marine resources is in dangerous level.

Gulf of Mannar coast has an extensive distribution of marine resources such as fishes, crabs, prawns, lobsters, and other marine invertebrates of export value i.e., sea-cucumber, sea-fans, pipefish, etc. Almost all varieties of marine organisms are caught in the coral reef rich islands in the Gulf of Mannar coast. This is because of coral reefs and seagrass ecosystems. This provides shelter, food, and breeding ground for fishes, cuttlefishes, seahorses, chank, seacucumber, seaweeds, etc. Most of the marine animals lay their eggs in the seagrasses area. Incidentally, this happens to be an ideal nursery for juveniles of many marine organisms. For this reason, the richness of marine fauna is more in this region too. However, the Gulf of Mannar has a luxurious growth and diversity of all types of marine fauna and flora. This diversity is because of the abundance of coral reefs, seagrass and seaweed beds in the Gulf of Mannar coast. In the Gulf of Mannar region, four stretches of islands are present.

TABLE - 17
MATRIX FOR NETS USED

District: Ramanathapuram **Village: Chinna Erwadi** **D**ate: 20-12-2001

No.	Type of Gear	Material & Durability	Dimensions		Approximate cost of net (Rs.)	No. of nets required per vallam	No. of fishers per boat	Species Caught
			Mesh Size	Length/ breadth				
1.	Choodai Valai (Drift Gill net)	Nylon Twine 4-5 years	10 mm	50 – 60 m/ 3.0 m	750	30	4 – 7	Choodai meen: *Sardinella* spp. and other small sized fishes.
2.	Iraal valai (Bottom Set Gill Net)	Nylon Twine 6-8 months	20-30 & 100-130 mm	70 – 90 m/ 3.0 m	1,250 -1,500	30	5 – 6	Prawns: Peaneous & Non-peaneous prawns
4.	Nandu valai (Bottom Set Gill Net)	Nylon 6-9 months	40– 50 mm	80–100 m 1.0-1.5m	300	10	4 – 6	Crabs, *Sepia* spp., Chanks, etc
5.	Paru Valai (Drift Gill Net)	Nylon 2-3 years	120- 140 mm	60 – 75 m 3 – 3.5 m	1,800 – 2,500	10	5 – 6	Big sized fishes of Seerfishes, Barracudas, sharks, etc.
6.	Singi valai (Bottom Set Gill Net)	Nylon 6-8 months	40 – 60 mm	70-80 m / 3 m	1,600 – 2,000	40	5 – 7	Lobsters, Chanks, and other fishes i.e., Paarai, Kuruvaalai, Seppili, Vilaimeen, Thirukkai, Shark
7.	Disco thoondil or Jigs	– 3-4 years	–	–	200-250	5	–	Cuttlefish (Kanavai meen)
8.	Veecchu valai (Cast net)	Cotton twine 2-3 years	1.0 inches	–	700 – 800	1	–	Small sized fishes– Shallow water bodies

4.3.8. Fishing Pattern:

Vallam and vatthai using fishers have a restricted zone of fishing. Vallam operating fishers go for fishing upto 10 km from the shore. However, fishers owned by vatthai are exploited marine resources available in between the islands and mainland in the Gulf of Mannar coast. They are called as lagoon fishers, because they use non-motorized fishing vessels and use sail only. Operation of this kind of vessels is never possible in more wavy regions in the sea. Fishermen use their own local terms for demarcation of oceanic zones. In these zones, they have claimed to get specific marine organisms.

Two types of fishing activities are followed by the Erwadi launch fishers i.e., Day fishing and Night Fishing. During day-fishing, they go to sea in the early morning at 5.00 AM and return back to shore at 9.00 AM but for nigh-fishing, they do fishing between 10.00 PM and 4.00 PM. They go to a distance of 30 kms away from mainland for fishing and they put their nets at a depth of 150 to 180 feet. They use only trawl net for prawn fishing. Launch fishers take at least 4 to 6 trawl nets per boat. If net is damaged, they use another net for fishing. For a single fishing trip, launch consumes about 200 to 300 litres of diesel which costs around Rs:5,000 to Rs:6,000. During normal days, they get Rs:1,000 to Rs:3,000 worth of catch, but only during full season, they catch the fish which cost Rs:10,000 to Rs:15,000. For the past 10 to 12 years, the fishery resources in the Gulf of Mannar have been exploited more and more due to increased numbers of launches. The low income may be due to less catch, sudden increase of diesel price, increase of labour cost, etc. Another major problem is that they give incentives to labourers and drivers regularly. Due to less income generation through fishing, fishing labourers expect these incentives. These are the main reasons why launch fishers have lost their income considerably.

The main season for prawn fishing is between May and August. In these months, they get more prawn catches. During fishing season, approximately 300 launches are berthed in Chinna Erwadi. During off-season, only 10 to 30 boats are landed. Normally, during full season, more boats are in fishing activities. However, during the fishing season of 2001, more than 150 boats are anchored in the shores. This is due to less catch during the season. Launch owners and fishers stated that the less catch of fishes in this area is due to competition i.e., more number of Tuticorin launches have encroached this area for fishing and chank collection. Hence, they have got less income through fishing. At the time of fishing operation, launch owner engage at least 5-6 fishing labourers, one driver and one assistant. Due to over exploitation or wrong methods of fishing, the availability of fish population is declining (**Table-18**). During off-season, they migrated to some other places or native for fishing activities. Launch fishing labourer gets a weekly salary of Rs:300 to 400 during fishing days. Boat crew gets a salary of Rs:800 to Rs:1,000 per week. Fishing labourers receives the incentives of Rs: 6 to Rs:7 per kg catch and driver gets the incentives of Rs:15-20 per kg catch.

TABLE – 18
TREND CHANGE

District: Ramanathapuram **Village: Erwadi** Date: 20-12-2001

	Trend existed 1970 years before	**2001**	**REASON**
Education	95% were illiterate	Literate – 25% Illiterate – 75% More literate in girls	Atleast 3 persons needed per vallam or Vatthai operation. Therefore, the boys go to sea for fishing. Girls are stopped if they attained maturity.
Crafts and Gears	Only vatthai and few types of nets were used	Both vallam and vatthai are using; all types of nets are using Launches more	Now they are using more than 7 types of nets which depending upon the types of fish caught.
Rainfall	High	Not in season	No idea about rainfall
Marine resources	More diverse and high catch rate	Less availability and low catch rate	About 80% resource reduction is due to trawl boat operation, dynamite fishing, etc., – using fine sized nets and also competition between fishers – increase in population
Fishing Problems	Only natural	Trawl boat, migratory fishers from Tuticorin	As above, and the migratory fishers caught export valued fishes and sell their catch in low price – income of local fishers reduced.
Income	Very less	More	Decrease in production due to less marine resources availability and competition.
Additional Occupation	Nil	Collect seacucumber only.	No additional occupation in these fishers.
Standard of living	Cost of living – less	Declining standard of living	Competition – Increase in number of Vessels, Middlemen problem.
Opportunities	Less	More	Construction of Pamban Road bridge, More export companies emerged.
Transport facilities	Bus & Cycle	Train, Truck, Lorry, Bus, Van, etc.	Increase in road transport facilities.

Fishing operation of traditional fishers is found mainly around the islands where the availability of marine resources is more. This is because of the growth of coral reefs in and around the islands as well as the rich availability of seagrass beds. This region has more numbers of sea cow populations. This is because of enormous growth of seagrasses in this area. Seagrass is the major source of food for Dugongs. Each vallam engages three to five fishers. They reach to 68 kms from the mainland for fishing. The fishermen of these villages use their own local terms for demarcation of oceanic zones and area of fishing. In these zones, they have claimed to get specific marine organisms.

According to fishers, there are different types of winds blowing in these areas. These are kondal, katchaan, vaadai, kodai, chola katru, chola kodai, aadikattru, etc. Of these winds, fish availability is more during the katchaan and kondal katru periods. However, during other periods, there will be less catch. Prawn catches are more during the months of May to August. During the heavy wind period, water flows from the Gulf of Mannar to Palk Bay side. Fishers go for fishing operations on all six days except Sunday. Like Periyapattinam and Rameswaram, there is no time restriction for fishing in these areas. This time restriction of fishing is pursued only in between Keezhakkarai and Rameswaram island areas only. Eventhough, the country craft users are fishing on all days in a week, they are economically poor. They use a few numbers of nets for fishing activity because of their poverty condition. Country craft fishers get around Rs:40 to Rs:100 per day. Indebtedness is common among fishers. This is due to inadequate income through fishing activity. Majority of traditional craft fishers are living below the poverty line. Fisherwomen in these villages are involved in fresh and dry fish selling and they also assisted fishermen in cleaning and mending the nets. Mostly fishers of these villages are living in a joint family system. Because the earnings through fishing in the individual family system are not enough to maintain their families. There is no seaweed collection in this region.

Launch owners stated that the local fishers i.e., both traditional as well as launch fishers have no knowledge about driving signals and other regulations. The government of Kerala gives training to their fishers in the area of boat operation methods and signals. Like that, the Tamilnadu government also arranges to give training to the fishers in the state. Fishers of Gujarat receive Rs:2 per litre as subsidy and this subsidy is given on the spot, immediately, at the time of diesel filling. Hence, the Tamilnadu government can also follow such arrangements to minimize the corruption. Another interesting information about the Gujarat fisheries department is the arrangement of all India Tour for their local fishers. Hence, the local fishers also requested the state government to initiate such type of tour and other regulation activities in Tamilnadu for the welfare of local fishers.

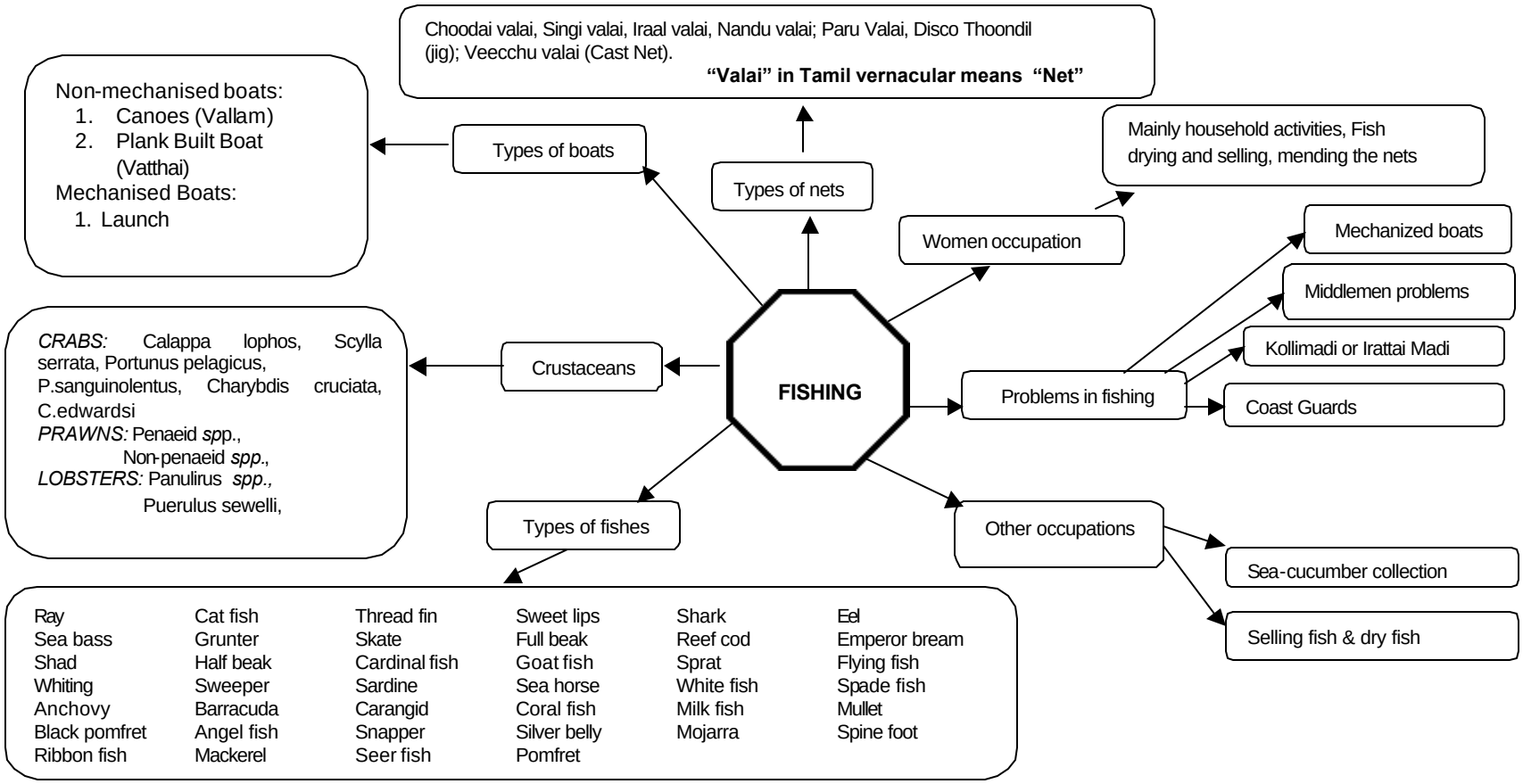
4.3.9. Coral Mining and Resource utilization:

Coral mining around the islands located near Erwadi is completely stopped. Before 1975, dead coral rocks and live Porites were mined by the adjacent islands such as Yaanaipar, Pallimunai, Poovarasanputti, and Appa for extraction of lime, which was used for construction activities, etc. Eventhough the mining activity has been controlled because of severe enforcement activities taken by the Forest Department and Fisheries Department, the destruction of coral reefs are continuing by the other anthropogenic activities such as domestic and sewage effluents mixing in the reef waters, over-fishing, anchoring of boats, blast or dynamite fishing and using improper fishing gears in the coral reef rich islands. Details of fishing occupation, fishers problems, marine resources, crafts and gears used and other activities were given in **Chart-8**.

CHART - 8

FISHING OCCUPATION – WEB CHART

District: Ramanathapuram **Village: Erwadi** Date: 15-12-2001



These areas have no major river tributaries, hence there is no sedimentation. However, sewage and related pollutions are the major stress to coastal waters and coral reefs in these areas. Local people discharge the sewage effluents directly to the coastal waters without pretreatment. This effluent has more amount of organic matter, which alters the quality of coastal marine waters and enhances the growth of unwanted algae, sponges and other marine plants leading to eutrophication. Unwanted algae grow over substratum and affect the settlement of coral larvae. Nowadays, the dynamite fishing in the Gulf of Mannar region is common, because these areas have rich coral reef fishes. Fishers throw the dynamite over the crowd of fishes. Such blasting not only kills fishes but also damages coral reefs found in these areas.

4.3.10.Migratory Fishers:

Every year, chank divers from Vaippar, Tharuvaikulam, and Tuticorin come to Erwadi for Chank diving and they are staying very near to shore. Migrated chank divers belong to Christianity, and Hinduism. Chank collection is one of the most important fishing related activities. Fifty years ago, divers from Sri Lanka came to the Gulf of Mannar region i.e., Keezhakkarai and Periyapattinam to collect chank and chank divers of these regions went to Sri Lanka for fishing as well as for chank collection.

Divers start the diving activity at the age of 15 and stop it at the age of 40-45. Generally, above 45, health of the divers never helps them for diving. Hence majority of divers stop diving before the age of 45. At least vallams numbering 50 to 70 are coming every year for chank collection. Chank divers can collect chank at a depth of 10 to 20 meters. Twenty years ago, they collected chank without any mask and fins. In each vallam, 7-12 divers are engaged. They go to sea daily in the early morning i.e., 5 AM and return to mainland at 1 to 2 PM. Nowadays, during chank collection, they use mask and aluminium plates. Divers use locally made masks and aluminium plates as fins because their poor economic condition. The masks help the divers to avoid eye irritation from seawater during diving. The visibility of the eyes is quite good in underwater during diving. The aluminium plates (used instead of fins) help to move freely inside the sea water.

Chank vallam owners are not giving wages to diving labourers on a daily basis. However, they deduct the cost of diesel from the total earnings and the remaining amount is divided among the number of fishers engaged. If one diver earns Rs:100 per day, he will give Rs:15 to vallam owner as vallam charge. Migrated chank divers are staying in Erwadi only during the chank season. They come to Erwadi every Sunday for chank collection and return back to their native on every Thursday. They collect different types of chanks such as Kuli chanku, Oothu chanku, Yaanai mulli, Ayarn mulli, Kuthirai mulli, etc. The first two types of chank are used for ornamental purposes. Different types of kuthirai mulli and yaanai mulli chank are used for exquisite ornamental designs.

4.3.11. Problems Identified:

Causes of depletion of marine resources and social conditions of primary stakeholders are given in **Chart: 9** (**Fishery Problem Tree**).

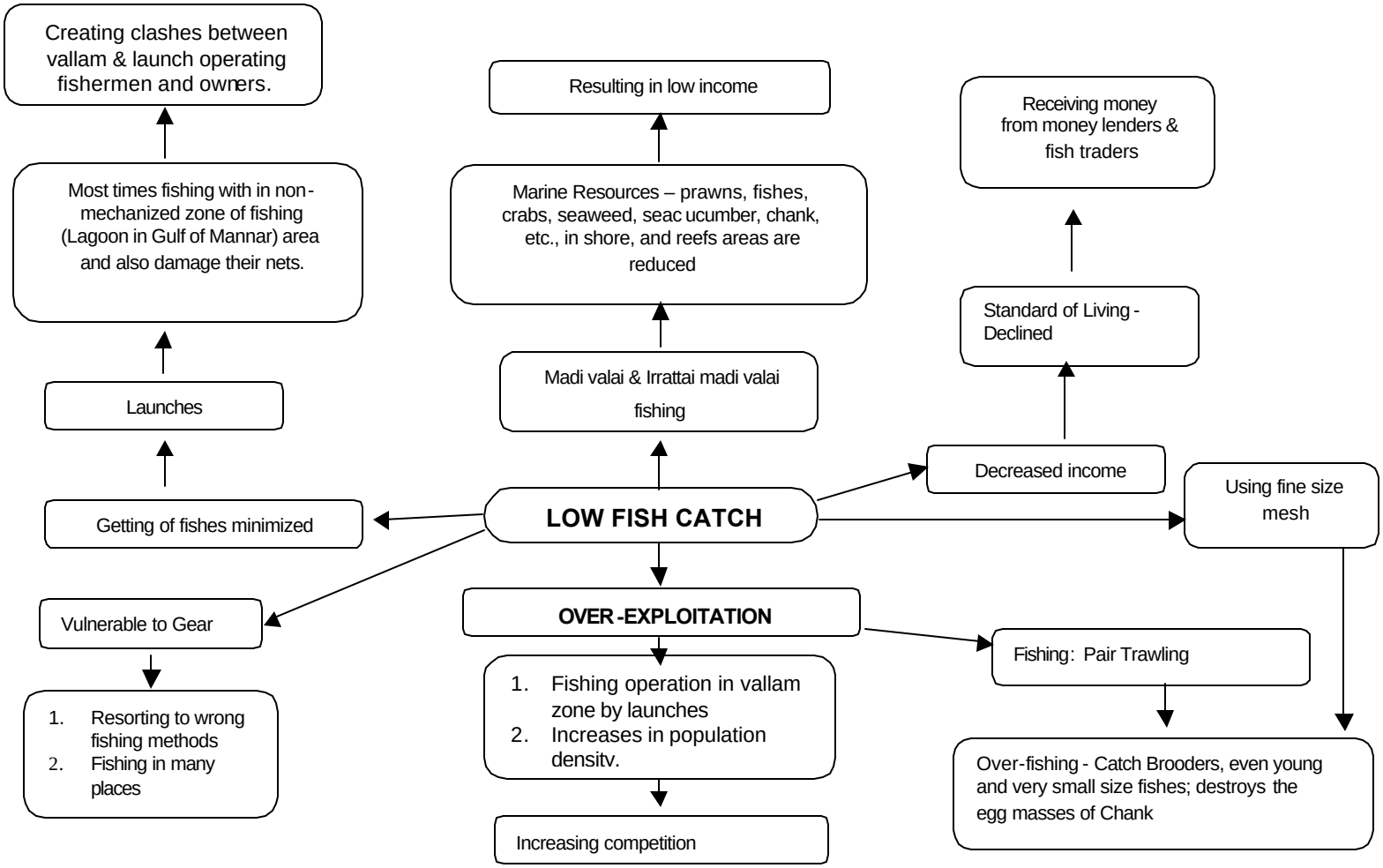
1. According to Launch owners, for the past two years, the diesel price was increased suddenly. Twenty five years ago, one litre diesel was only Rs:0.50 but it is raised to Rs:18.50 in the year 2001. Generally, for the past 10 years, the marine resources availability in the Gulf of Mannar has declined. Hence, income through fishing is also reduced for not only traditional craft users but also the launch owners. Traditional fishers have a restricted zone of fishing activity hence they use only 5-15 litres of diesel per trip. However, launch consumes around 100 to 200 litres per trip. According to the fishers, the State Government gives only Rs:0.45 per litre as subsidy. Chinna Erwadi has three diesel bunks. Of these, two are run by the private companies and one by the Fisheries Department. At the time of filling, the Government Bunk labourers give only 9.5 litres instead of 10 litres. Each launch need at least 200 to 250 litres of diesel per trip, but at the time of filling, the fisher get a reduced amount of diesel i.e., if one boat needs 200 liters of diesel, they give only 185-190 litres and this costs around Rs:180 to Rs:250. Every year, the Government gives diesel subsidy to the launch owners. According to the local fishers, the Government bunks take 6 to 8% commission from this diesel subsidy and in addition to the commission, and shortage of diesel, they collect Rs: 250 to Rs:300 for the purpose of note book. According to them, this is one of the major problems for launch owners. The launch owners stated that they are in worse condition than that of traditional fishers, because, they give salary for the drivers and other labourers engaged for fishing even if there is no fishing. They also say that the government bunk person and other officials get commissions for giving diesel. For repairs and maintenance of their boats, they spend around Rs:60,000 to Rs:70,000 per boat. Depletion of marine resources is also one of the causes for low income. These are the reasons why launch owners are in worse conditions.

2. Traditional fishers are affected by the intrusion of trawl boats from Tuticorin. Not only local trawl boats from various places stay here for prawn fishing, Tuticorin based launch owners also add problems to traditional fishers. They catch fishes in an area earmarked for country crafts and also inside the islands. These are the coral reef rich areas. Dragging of trawl nets in these regions damages the coral reefs. This is one of the important reasons for the declining of marine as well as coral reef resources in the Gulf of Mannar.

CHART – 9 FISHERY PROBLEM TREE

District: Ramanathapuram **Village: Chinna Erwadi** **Date: 10-01-2002**

Causes of depletion of Marine Resources and Social conditions of Primary Stakeholders (Fishermen)



3. Erwadi is one of the most important fish landing and fishing villages in Tamilnadu. In this fishing town, around 400 launches are berthed every year during fishing season. The berthing of big launches is not possible in Erwadi because there is no jetty. Vallinokkam has a jetty but they are not permitted to berth launches. Launches from Narippaiyur are also landed at Erwadi during heavy wind period. Hence, they requested to construct a jetty for the purpose of boat berthing. Jetty is constructed in this fishing village, the launch owners extend their business links with traders of Kerala. If jetty is constructed in this region, the traditional fishers of these regions also can berth their crafts.

4. Another problem is the transport facility. They requested the State Government to complete the East Coast Road development within a short period. The completion of the East Coast Road can help the speedy transport of fishes to Kerala and Chennai for export.

5. The trawlers use trawl nets i.e., irrattai madi valai, and thallumadi valai for fishing. Bottom living marine animals, eggs of many species and even young ones are destroyed due to dragging of trawl nets. This is the major problem for destruction of coral reefs and also the marine resources depletion. According to fishers using country crafts, the marine resources are depleted due to introduction of mechanized boats. The second cause is competition between fishers i.e., population density of fishers increased for the past twenty years dramatically. Changes in seasonality also affect the fish reproduction. The absence of seasonal rain for the past three decades affects breeding of marine animals.

6. Illegal fishing operation in the coral reef areas and in zones earmarked for traditional fishing crafts is common in the Gulf of Mannar coast. The action against illegal operation of vessels is not properly executed.

7. Similar to Periapattinam and Rameswaram fishers, they have also requested both the central and state governments for the early implementation of Old Fishers Pension Scheme through FCS.

8. Generally, the traditional fishers income is very less when compared to the earnings before 20 years. Most of them are living in poor condition because of less income through fishing, resource depletion, low prices for fishes, competition, absence of alternative employment opportunities, etc. This is mainly due to absence of savings habit and unplanned life among the fisherfolk.

4.4. Kalimankundu

4.4.1. Importance of Kalimankundu fishing Hamlet:

Kalimankundu is one of the fish landing centres in Ramanathapuram district, Tamilnadu has been chosen for our present study. Kalimankundu, a small marine fishing village, which is located 20 Km south of Ramanathapuram or just 4 km south of Periyapattinam fishing village, Ramanathapuram district. The primary occupation of fishers of this village is fishing, selling of fresh and dry fish. This village includes the following hamlets i.e., Vellaiyan valasai, Mottaiyan valasai, Kuthukkal valasai, Kuppa valasai, Kattaiyaperan valasai, Shanmugavelpattinam, Mari valasai, Kattaiyan valasai, Kalimankundu, Velauthapuram, Kuppachivalasai, and Anjaneyarpuram. In all 13 hamlets, majority of them are fishing communities. The southeastern side of this village has a group of three islands i.e., Mulli, Vaalai and Appa islands. The fishers of this village live closer to the sea (**Chart-1**).

The forefathers of these fishers had belonged to Narippaiyur, and other adjacent fishing villages. Fifty years back, they had migrated to Keezhakkarai and Sethukkarai regions. However, the local people created problems for staying in these areas and hence, they migrated to Kalimankundu region during 1972. At that time, one of the fishers, Thiru Veluchamy had arranged for their inhabitation in this area, which is located nearer to seashore. Hence, this area was named as "Kadarkkarai Velauthapuram" fisherfolk colony. During the first settlement, only sixty-four families were settled here. All of them were belonging to Mutharaiyar community and their main occupation was only fishing (**Table-19**). The total area of this panchayat is about 1190 hectares.

4.4.2. Population:

According to 1991 census report, the total household and occupied residential houses were 1254. The total population was numbering 5,746. Of these, male members consists of 2,588 individuals (47%) and female population comprises of 2,888 (53%) (**Figure-24**). Of this total population, SC/ST people constituted only 2% and children comprised 15%. During 2002, the total population of Kalimankundu fishing village is numbering approximately 6,500. Of these, male population consists of 2,990 individuals and female population comprises 3,510 individuals (**Figure-24**). Of this population, the children constitute 1,500. Now, ninety percent of them are belonging to fishermen category and the remaining 10% are farmers, construction workers, etc. Fishers of this village are following Hinduism. In this village, no one follows Christianity.

TABLE – 19

TIME LINE (LIFE PATTERN OF FISHERMEN)

DISTRICT: RAMANATHAPURAM **VILLAGE: KALIMANKUNDU** **DATE: 25-03-2002**

YEAR	**1975**	**1985**	**2002**
Fishers	Hindus - Mutharaiyar	Hindus - Mutharaiyar	Hindus - Mutharaiyar, Nadar, SC
Types of Houses	Huts - 100%	Huts – 100%	Huts Tiled Pucca 65% 25% 15%
Literacy	100% Illiterate	65% illiterate 35% Literate	Approx: Literate: 55% Illiterate: 45%
Food	Fish, Raagi, Millets, Sorghum	Rice, Fish, etc.	Rice, Fish, etc.
Equipment Vatthai –Plank Built Boat Vallam – Canoes	 Vatthai - 10 Vallam - 5	 Vatthai – 40 Vallam – 50	 Vatthai - 58 Vallam - 76
Types of Nets Used	Veecchu Valai, Mural valai	Mural Valai, nandu valai, Veecchu valai, & Choodai valai	Mural valai, Choodai valai, Nandu valai, & Disco thoondil
Types of Materials used for net making	Cotton twine	Cotton twine and Nylon/plastic twines	Only nylon and plastic twines
Fishing Area	Gulf of Mannar	Gulf of Mannar & Palk Bay	Gulf of Mannar & Palk Bay
Fishing	Seasonal All 7 days in a week	Seasonal All seven days in a week	Seasonal Only 4 days in a week for Vallam & vatthai operators. How ever, vatthai users go to sea for all seven days in a week
Problem	Natural disturbances	Natural Disturbances & Trawl boat operation	Trawl Boat operation - a major resource depleting activity in this region
Fish Catch (Size of Fish)	Large size fish	Medium size fish	Medium size fish.
Types of fishes obtained	Fishes	Fishes and crabs	All types of fishes caught, crabs, & cuttlefish.
Fishery Resources	More but not exploited	Medium and limited-exploitation	Less and over-exploitation
Price	Prices were less	Sheela: Rs: 45kg Paarai: Rs: 32/kg Kanavai: Rs: 47/kg Mural: Rs. 20/kg	Sheela: Rs: 90/kg Paarai: Rs: 50/kg Kanavai: Rs: 90/kg Mural: Rs. 30-35/kg
Sales	Directly by fishers and fisherwomen.	Small fish companies, direct sales by fishers and fisherwomen. Middlemen and Agents.	Fish companies, Direct sales by fishers and fisherwomen. Middlemen and Agents.
Mode of Transport	Head load & Cycles.	Van, Lorry, Cycles, Head Load, Tricycles,	Van, Lorry, Cycles, Head Load, Tricycles.
Coral Mining	Low rate of coral mining was done.	Government stopped the coral mining.	Completely stopped coral mining.

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4.4.3. Literacy:

According to 1991 census report, total literates in this panchayat were 41% (**Figure-25a**). Of this, literacy rate among male and female members were 23% and 18% respectively. The interesting observation noticed in this village is that the literacy rate is increased to approximately 55% during 2002 (**Figure-25b**). Of these 25% of them are men and 30% of them are women. Among the literates, majority of the people have acquired only primary school level education and a few of them have acquired middle school level education. In this village, only a few of them have acquired college level education. Boys are engaged in fishing at the age of 10-12 and girls are engaged in household activities at the age of 14. The literacy level among them is higher for girls. This is because of low income through fishing. Another important reason is that the assistance of boys is needed for their fishing activities. If the labourers are engaged in places of boys, the fishers have to lose their income. This is the reason that boys and girls do not even complete their middle school education.

This panchayat has only three primary schools and these schools are located in Kalimankundu, Kuthukkalvalasai and Shanmugavelpattinam. In Kalimankundu, the primary school has only two teachers and they are handling classes for all the five classes. The boys and girls get their high school and higher secondary school level education in Periyapattinam and Ramanathapuram only. Another important problem is the transport facility. From Ramanathapuram, the state transport corporation operates buses every four hours i.e., there are only three trips for the whole day. This is also one of the reasons for low level of literacy in this fishing village. Alternatively, children are going to Periyapattinam for school education by walk. There is no PHC in this panchayat. Periya pattinam has only one PHC, hence the fishers of this panchayat go to Periapattinam for treatment of fever, illness, etc. If anyone has to get treatment for dysentery like diseases or pregnancy, he or she has to go to Ramanathapuram. There is no proper electricity facility in these villages. Only one water tank is available for drinking water provision; however, this well has insufficient water sources. Hence, they have to go 3 to 4 kms for getting drinking water.

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4.4.4. Housing Pattern:

The total number of households is 1,500. Of these, approximately 1000 houses are belonging to fisherfolk community. In this village, at least 65% of them are living in huts.

Another 25% are dwelling in tiled houses and the remaining 15% of them dwell only in pucca houses (**Figure-26**). Of these, Kalimankundu and Velauthapuram regions have a total of 75 and 70 houses respectively. In this village, two houses belong to Nadar community, five houses belong to SC community, and the remaining houses are acquired by the people of Mutharaiyar community. Three hundred free houses have been constructed by the State Fisheries Department through Fishermen Cooperative Society during the years spanning from 1999 to 2001. Of these, 50 houses have electric power supply and other houses have no electric power supply.

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4.4.5. Fishermen Co-operative Society:

Kalimankundu fishing village has three Fishermen Co-operative Societies (F.C.S.); these are 1) Kalimankundu FCS, 2) Athiyachapparam FCS and 3) Kalimankundu Fisherwomen Cooperative Society. First FCS is the parent society of the next one. Athiyachapparam FCS is formed just four months back. The total registered members in the fishermen cooperative societies consist of 300 and the Fisherwomen FCS has 1250 registered members who belong to adjacent small fishing hamlets in the Kalimankundu Panchayat. Kalimankundu FCS includes Kalkadu, Anjaneyarpuram, etc. The registered fisherfolk can get benefits like loan and welfare schemes through FCS.

4.4.6. Fishing Crafts:

Fishers in Kalimankundu fishing village have a restricted zone of fishing because fishers in this village have only non-mechanized boats. The non-mechanized boats used are vatthai, and vallam. Vatthai is non-motorized vessel and vallam is fixed with motor. This panchayat has 134 fishing vessels. Of these, vessels numbering 58 are vallam, and 76 are vatthai (**Figure-27**). Each vallam is fixed with 10 HP in-board engine.

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4.4.7. Fishing Gears:

Fishermen in this village use only three types of nets or "Valai" for fishing (**Table-20**). These are nandu valai, choodai valai, mural valai and veecchu valai. Number-2 valai is used to catch mural and number ½ No. Valai to catch choodai meen. The length and breadth of mural valai are approximately 180 feet and 30 feet respectively and the mesh size is approximately 25-35 mm. However, choodai valai has a length and breadth of 100 to 120 feet and 30-32 feet respectively and the mesh size is 20-30 mm. One of the interesting observations found in this region is the use of Jig for kanavaai (cuttlefish) fishing. Some fishers use disco thoondil or jigs for kanavaai meen fishing (cuttlefish). Nandu valai is used only for 2 to 3 months because the durability is very less. The length and the breadth of this valai are approximately 75-80 metres and 1.0 metre respectively and mesh size is approximately 5 to 6 inches. Majority of fishers own all the three types of valai. Normally a vallam requires 10-15 numbers of choodai valai, 5-7 numbers of mural valai and 5-10 numbers of nandu valai. However, the number of nets owned is depending upon their economic status. The approximate cost of each mural valai is Rs:3000, choodai valai and nandu valai cost approximately Rs:2250-3000 and Rs:1700 respectively.

Fishers in Kalimankundu panchayat have migrated to Mandapam (Palk Bay area) between the month of April and September every year for fishing; because sea becomes rough during these periods. Eventhough seaweeds are available in these regions, fishers are not

engaged in seaweed collection. However, fishers from Keezhakkarai are visiting this region regularly for seaweed collection. Fishers are not involved in chank collection.

4.4.8. Fishing Activity:

Kalimankundu fishers use vallam and vatthai for fishing. Each vallam fisher is engaging 4 to 6 fishers as labourers for fishing. One of the interesting observations is that Kalimankundu fishers migrate to Mandapam i.e., Palk Bay coast for a period of 6 months every year for fishing i.e., during April to September, and they create huts near shore where the places owned by local fish traders for their settlement. Most of them are migrated to Mandapam, because, operation of boats in the Gulf of Mannar coast is not possible due to heavy winds. In the Palk Bay coast, they use mural valai for fishing. Fishers get money from fish traders and they sell their catch only to the local fish traders. From October to March, they return back to native and engage in fishing in the Gulf of Mannar coastal region and catch crabs and fishes. Occasionally they catch kanavaai meen (cuttlefish) in this region. Most of the time, fishers go for fishing inside the lagoon i.e., between mainland and islands. Some times, they catch fishes i.e., mural, vaalai, parai, kumula, choodai, vilaimeen, etc., in the seaward side of the islands. Local fishers use No.2 valai for fishing in this region (**Chart-11**).

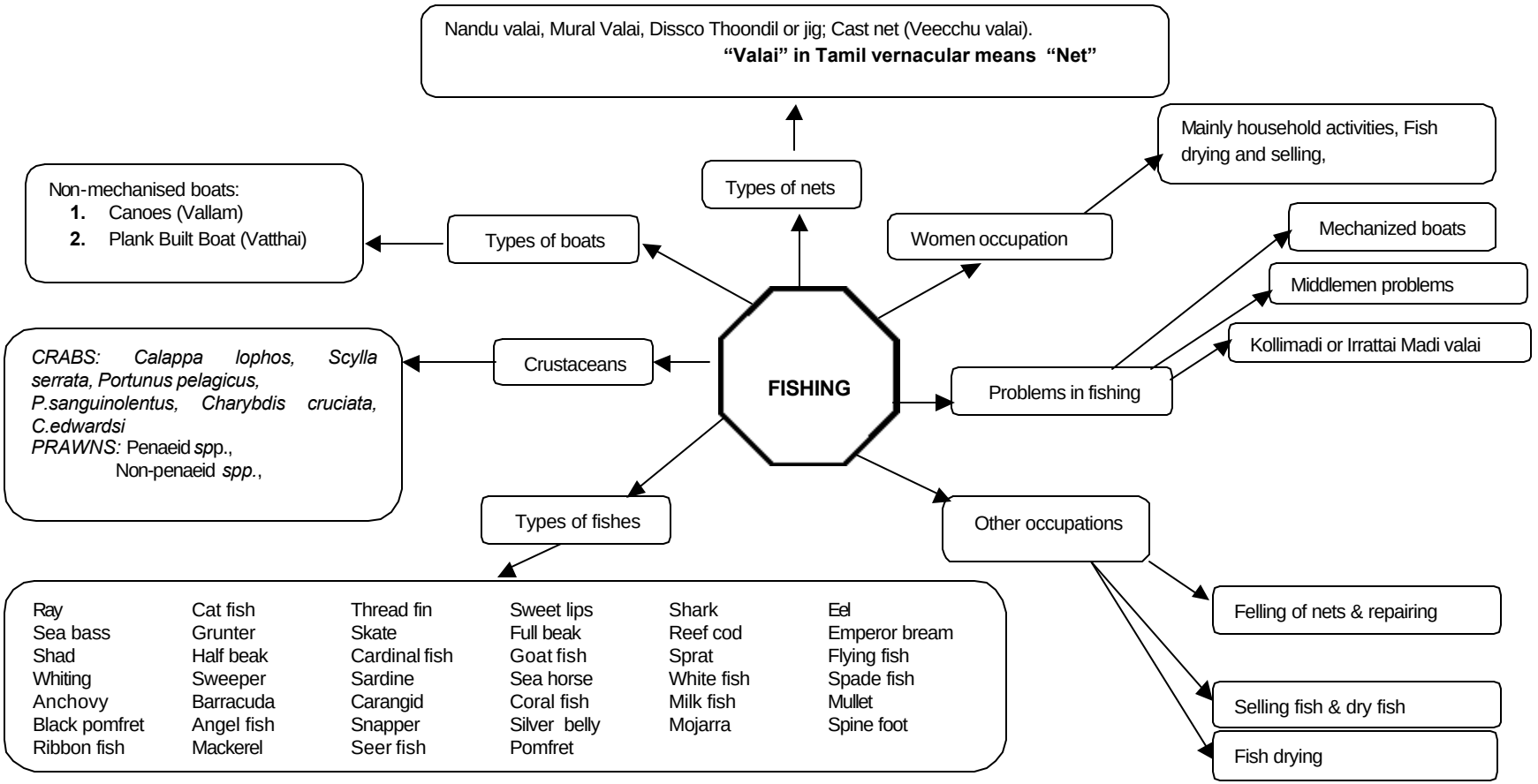
Table-20 Details of valai used in Kalimankundu fishing hamlets, Ramanathapuram district

Types of Net	Type of fish caught	Length & Breadth; Hole size	Cost of the net (Rs) (each)	Nets owned per head	Durability
Mural Valai (2 No. Valai)	Mural, with all other small fishes	150 to 180' & 3-5'; HS: 1.5-2.0"	3,000/net	5-7	1 to 1½ years
Choodai Valai (½ No. Valai)	Choodai	100' & 3-4'	900/net	10-15	2 years
Disco Thoondil (Cuttlefish)	Kanavaai fishing	---	125 - 250	3	2 years
Nandu Valai (Crab net)	Crabs	170-200' & 3'; HS: 5-6"	1,700 - 2,000	5-10	3- 4 months

CHART - 10

FISHING OCCUPATION – WEB CHART

District: Ramanathapuram **Village: Kalimankundu** Date: 15-05-2002



The fishermen go to sea at 4.00 to 5.00 AM and return back to shore at 11.00 A.M. They go to sea for fishing upto 20 to 25 kms away from the shore and they catch fish from a depth of 150 to 170 feet. They get more income through fishing only in the Gulf of Mannar region. According to fishermen, marine resources availability is more in the Gulf of Mannar coast than in the Palk Bay coast. This is mainly because of coral reefs, seaweeds, and seagrasses enrichment. The peak fishing season is only four months in a year i.e., Kaarthigai, Maargali, Thaai and Maasi and the crab fishing period is only from Maasi to Vaigaasi only.

Due to conflict arising between the traditional and launch operators, the fisheries department has allotted the correct days within a week for fishing for both of these two categories of fishers i.e., the traditional boat fishers are permitted to go to sea on Monday, Wednesday, Friday, and Saturday and launch operators are permitted to go for fishing on Sunday, Tuesday and Thursday (**Table-19**). This type of fishing had followed for the past 12 years. The important reasons for this type of fishing arrangements are due to the depletion of marine resources in the Gulf of Mannar and Palk Bay coasts year after year. This might be due to wrong method of fishing and improper operation of gears usage, competition between fishing communities i.e., for the past 15 years, the fisher population have increased manifolds.

The local fishers are not interested to collect seaweeds and chank. There is no chank diver in these villages. Keezhakkarai based fishers regularly come to this region for the collection of seaweeds. They are interested in catching fishes, crabs, and cuttlefish for their earnings. The fishers of Kalimankundu welcome the recent ban to catch marine animals for a period of 3 months in a year. This ban has helped in the breeding of marine animals and flourishing of these resources. Recently, the government had ordered to ban fishing activity second time in the whole Tamilnadu coastal region i.e., April 15th to May 31st 2002. Already the state government had banned the operation of launches for a period of 45 days from April 15, 2001 to May 31, 2001. During the 45 days, the government banned the operation of Thallumadi valai, irrattai madi valai, and surrukku madi valai.

4.4.9. Fishermen Problems:

1. The drinking water problem is one of the most severe problems in Kalimankundu Panchayat. Three wells are available to pump water for drinking purposes. However, all wells get dried up during most part of the year. Hence, the fisherfolk get drinking water just 3 to 4 km away from this village. In each street, only two water taps are available in these villages. They requested the government to dig new wells in the region where more ground water is available.

2. Another important problem in this panchayat is the limited public transport facility. From Ramanathapuram, the State Transport Corporation operates buses for three trips every day in the morning, afternoon and night. Due to limited bus trips, children are not attending the school in the proper timings and marketing of fishes is also

affected. If there are proper bus timings and the operation of more number of buses, they can transport their catches immediately to the market and or fish traders for selling because delay in transport will spoil their catches. Hence, they requested the government to operate more buses at appropriate timings. Fishers income is being reduced due to inadequate storage facility. Hence, they need one Ice-plant and storage facility unit in Rameswaram island for traditional fishers alone.

3. Traditional fishers i.e., vallam and vatthai users catch marine resources in the lagoon region of the Gulf of Mannar and in the Palk Bay regions. The zone earmarked for non-mechanized boat operators has interfered by the launch operators. They use irrattai madi valai on coral reefs, seagrass beds, etc. They damaged the nets spread out by fishermen using vallam and vatthai. These events have occurred regularly in the Gulf of Mannar coastal region. Sometimes, clashes between traditional boat operators and launch operators are unavoidable. Usually, the traditional fishers are living below poverty line. Frequent damages of their nets by launches have created a kind of class conflict.

4. The most important problem pointed out by the traditional fishers is over-exploitation of marine resources due to irrattai madi valai fishing in the coral reef rich areas of Gulf of Mannar. This causes severe damage to coral reefs. They use very fine mesh sized nets for prawn fishing. Due to this type of improper gears, brooders are caught. Small sized fishes and other marine organisms obtained in huge quantities resulted in depletion of many marine fishery resources.

5. Kalimankundu fishing village has a primary school and it needs five teachers for each class. Only two teachers are managing all five classes. Shortage of teachers affects the education of children. The people of this village, especially fishers know the importance of education. Majority of forefathers are illiterate. Now they are sending their children to schools.

6. Another reason for causing depletion of reef fisheries in this region is “Koodu Meen Piditthal” or Cage Fishing. Keezhakkarai and Mandapam fishers put their cages in the coral reef areas. In this method, they catch Oraameen, Kilemeen, Rabbit fish, *Signaus* spp., *Epinephelus* spp., *Leethrinus* spp., etc. They use iron rods to search fishes inside the coral reef area. This can disturb reef organisms and damage coral reefs. This is also one of the major causes for coral destruction and depletion of coral reef fishes.

7. This village has no private hospitals, if any one affected by severe diseases, they have to go for treatment to Periapattinam or Ramanathapuram. However, Periyapattinam PHC needs more doctors and necessary medicines. Otherwise, they have to go to Ramanathapuram (22 Kms away from this village) for treatment. Now only one lady doctor is working in the PHC. Hence, the PHC immediately needs more number of both doctors (both male and female). This can help all adjacent villages in this area.

8. Similar to all other fishing villages investigated, they have also requested both the central and state governments for the early implementation of Old Fishers Pension Scheme through FCS.

9. The majority of the fishermen are found to be exploited by the middlemen. They are required to pay exorbitant rates of interest for the loans they receive. The migrated fishermen from Kalimankundu fishing village sell their catch to Mandapam fish traders only who give loans and/or land for staying. Hence, they sell their catch for a lower price when compared to other local fishers.

5.0. Summary:

Socioeconomic aspects of marine fishing communities in the Gulf of Mannar have been studied by the research team in four locations viz. 1) Periyapattinam, 2) Ramakrishnapuram and Natarajapuram of Rameswaram, 3) Erwadi and 4) Kalimankundu in Ramanathapuram district, Tamilnadu. Of these, Rameswaram and Erwadi fishing villages are the most important religious centres in Tamilnadu for the followers of Hinduism and Islam, respectively. Periyapattinam is one of the ancient old ports in the southeast of Tamilnadu and also an important Pearl and Chank collecting regions in Tamilnadu. Generally, all three fishing villages are an important fishing as well as landing centres in Tamilnadu. However, Kalimankundu fishing village is very small fishing village when compared to other three areas.

In Periyapattinam, approximately 79% of the population constitutes fishermen and they belong to Islam and Hinduism. Majority of the Muslim fishermen collect only chank. However, the remaining fishers belonging to Hinduism pursue fishing as the primary occupation. In Ramakrishnapuram and Natarajapuram of Rameswaram fishing villages, people are exclusively fishermen and followers of Hinduism. In Chinna Erwadi, approximately 20% belong to fishing communities respecting Hinduism, Islam and Christianity. In Kalimankundu, all of them are belonging to Hinduism. However, the majority of fishermen i.e., 97% of the people represent Mutharaiyar community. One of the interesting observations found by the research team is the fishermen inhabited in Ramakrishnapuram, Erwadi, and Kalimankundu villages are belonging to Narippaiyur and adjacent villages. The forefathers of them had migrated and settled in these villages for their occupation.

Literacy rate is more among men in Periyapattinam fishing village. Most of fishers have had only primary level education however a very few of them have acquired education upto middle school. However, awareness in education is much less among Hindu fishers dwelling in Muthunagar fishers' colony of Periyapattinam. Like Muthunagar fishers' colony, Ramakrishnapuram and Natarajapuram of Rameswaram, and Erwadi fishing villages also give less importance to education. In the four villages studied, among the fishers of Ramakrishnapuram of Rameswaram, there is 97% illiteracy. This may be due to lack of knowledge in education and less income through their primary occupation i.e., fishing. Hence, fisher boys are engaged in fishing activity and girls are engaged for their household activities.

In all the four fishing villages, majority of them are living only in huts. Free houses are constructed in these villages by the State Fisheries Department through FCS. Generally, most of the houses have no electric power supply, limited drinking water facility, and lack of other essential amenities.

Chinna Erwadi has only fishers operating mechanized boats. However, other fishing villages are occupied only by traditional boat users. They use vallam, vatthai and karai valai thoni. Fishing is the only main occupation in Chinna Erwadi, Kalimankundu, and Ramakrishnapuram and Natarajapuram of Rameswaram fishing villages. In Periyapattinam, fishers are engaged in fishing, chank diving, and seaweed collection. Chank divers are exclusively Muslim community. One of the interesting observations in Chinna Erwadi village is that migration of chank divers from Tuticorin, Vaippaar, etc. Another interesting observation is that during offseason, the chank divers from Periyapattinam fishing village migrate to Rameswaram area to collect chank.

Fisherfolk use a variety of nets or 'valai' depending upon the types or species of fish caught. Nets are named after the fishes, which they are intended to catch i.e., mural valai, iraal valai, singi valai, nandu valai, paru valai, madi valai, illuvalai, thirukkai valai, choodai valai, ozhalai valai, veecchu valai, thoondils, etc., for catching fishes, crabs, etc., according to the type of fishes. They use karai valai for catching fish in the shore region. The Karai valai fishers operate separate vallam for fishing i.e., Karai valai thoni.

Gulf of Mannar coast has an extensive distribution of marine resources. Almost all varieties of marine organisms are caught in the coral reef rich islands in the Gulf of Mannar coast. Both fishers and chank divers in these villages are subsistence fisherfolk with low income from fishing and fishing related activities. Over exploitation affects the availability of marine organisms in the Gulf of Mannar. The reason for the low resource availability may be due to trawl net operation in the zone specified for non-mechanized boats. For the past 10 years, chank collection is also depleted due to the same reason.

The trawlers use madi or irattai madi valai for prawn fishing. During the dragging of these nets, they damage the fish breeding grounds, chank beds and their egg masses. This is the major reason for the depletion of marine resources in the Gulf of Mannar coast. Recently, the trawl operators have used roller madi valai in the area of coral reefs. At the time of dragging, the coral reefs are broken and damaged. There is no proper protection and management of these resources in the Gulf of Mannar coast by the officials concerned. Hence, they need proper environmental education–resource education through awareness programme.

In recent years, chank divers use locally made masks and aluminium plates as fins during the collection of chank. The use of masks and fins reduce the risks at the time of diving. By and large, savings habit is conspicuous by its absence among fishers due to two main reasons. The first and main problem is inadequate income through fishing. The second one is rampant alcoholism and other unwanted habits among fisherfolk.

Generally, mining of corals in these areas is controlled after the strict order implemented by the central and state governments. However, destruction of coral reef is done by the following anthropogenic impact such as anchoring, dynamite and blast fishing, resorting to wrong fishing methods i.e., use of trawl nets. According to traditional fishers, the mechanized boat fishers use very fine sized nets for fishing. Using this type of net, they dragged even young ones and brooders. However, illegal mining of corals in the Palk Bay and also in the Gulf of Mannar regions is very little. This is the main reason for depletion of marine resources in these areas.

Recently, the state government has banned fishing activity using trawl nets in the seas of Tamilnadu for a period of 45 days. Both traditional and mechanized boat operators have accepted the banning, but they have suggested the ban of fishing may be enforced during rainy seasons and/or depending upon the area. Hence, this is a favourable breeding season for marine animals. Traditional fishers request the central and state governments to regularize strictly the areas of fishing for both traditional and mechanized craft users. Other wise, the traditional fishers cannot get adequate income through fishing. Fishers in Chinna Erwadi region have no restriction for fishing. The mass mining activity of dead coral rock is resorted to the local people for the purpose of construction activity. They unearth dead coral rocks in the Tharuvai area, which is located 4 km north of Rameswaram i.e., near Ramarpaatham area.

In the Gulf of Mannar regions, the traditional fishers such as vallam and vatthai operators are seriously affected by the operation of launches. The launches are operated regularly in the zone earmarked for non-mechanized boats. This leads to over-exploitation of marine resources in this zone. Hence, the subsistence fishers in the region of Gulf of Mannar coast are severely affected in many ways. These are the following:

1) Over exploitation, leads to low fish catch resulting in less income.
2) Trawl operation is the major cause of marine resource depletion.
3) Improper operations of trawl nets in coral reefs, seagrass bed, etc. damage the coral reefs, fishes, chank, seacucumber, cuttlefish, etc.
4) Trawlers damage the fishing vessels of traditional fishers and destroy their nets,
5) The cumulative effect of all these drives fishers to moneylenders. The loans are obtained to meet their family expenses, purchase of new gears and repair the boats.
6) Some times, clashes between owners of trawlers and traditional fishers are common. This happened regularly in the Gulf of Mannar coast.

6.0 Recommendations:

1. Centre for Marine and Coastal Studies, one of the centres in Madurai Kamaraj University should be entrusted with the task of periodical monitoring of the Bio-physical status of corals of Gulf of Mannar and socioeconomic conditions of the fisherfolk of this region and report to the National Agency which may be responsible for funding the monitoring work.

2. Law should be enacted to regulate and stop trawl boat operation in the zone earmarked for non-mechanized boats.

3. A mechanized boat fixed with modern equipment should be in operation in the Gulf of Mannar region to know the areas of fish abundance.

4. A strict vigil/rigorous patrolling is required on the part of the Forest Department officials to stop coral mining in the Gulf of Mannar region.

5. The Department of Forests and the Department of Fisheries may take steps to stop anchoring of vessels on coral reefs, pair trawling, and dynamite fishing. Steps may also be initiated to stop using nets with small mesh size to spare the juveniles.

6. The Tamilnadu Government may advise the Forest Department officials to shed their stiff posture towards fishermen of Gulf of Mannar region. Fisherfolk may be permitted to stay in the adjoining islands during fishing operations without spoiling the vegetation of this region.

7. The Department of Education and the Department of Fisheries (Government of Tamilnadu) may impress upon the fishermen of this region, the need for education upto, at least, high school level.

8. One Jetty is required to be constructed in Periapattinam fishing village, one in Natarajapuram area and another one in Kothandaramarkoil region, in the Rameswaram island and one in Chinna Erwadi region of Ramanathapuram District, to facilitate landing of fishermen operating non-mechanized boats.

9. The Tamilnadu Government should establish the new method of marketing system named as "**Meenavar Angadi**" (Fishermen Market) like as "**Uzhavar Santhai**" already introduced in various parts of Tamilnadu.

10. The Tamil Nadu Government is requested to encourage the establishment of Fishermen co-operative Societies to help fisherfolk escape from the clutches of middlemen.

11. The Fisheries Department must take initiative to impart training among fishermen of these regions for alternative means of livelihood. The training may be given in the following areas:
    A) Mechanised Boat operation.
    B) Pearl Culture.
    C) Seaweed Culture.
    D) Extraction and Processing of seaweed.
    E) Post Harvesting Technology.
    F) Sea-cucumber culture.
    G) Conservation of Natural Resources including Coral Reefs.

12. Both the state and central governments should implement the Old Age Pension Scheme for fisherfolk who have attained the age of 60 and above.

13. The Tamilnadu Government should construct ice plant and building for storage in Periapattinam, Ramakrishnapuram of Rameswaram and Chinna Erwadi fishing villages exclusively for Traditional fishers.

14. Awareness campaigns should be organized through the efforts and involvement of educational institutions and NGOs in this region in order to protect and conserve the coral reef resources.

15. The State Fisheries Department should establish the Fisheries Cooperative Banks exclusively for fisherfolk like Agriculture Cooperative Bank.

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8. APPENDIX

Appendix- 1 Marine Fisheries: General Information

S. No.	Coastal Information	Tamilnadu			India
		East Coast	West Coast	Total	
1.	Coast Length (in Km)	940	60	1,000	8,085
2.	Continental Shelf (in Sq. Km)			41,412	About 4.5 lakhs
	Upto 50 m depth	22,411	844	23,255	
	51 m to 200 m depth	11,205	6,952	18,157	
3.	Exclusive Economic Zone (EEZ) (in million sq.km) Extends to 200 nautical miles from shore			0.19	2.02
4.	Territorial Waters (in sq. km) (Approx)			19,000	
5.	Tamilnadu Geographical Position				
	N. Latitude	8° 5' – 13° 35'			
	E. Longitude	76° 15' – 80° 20'			

Appendix- 2 District Wise Coastal Length in Tamilnadu

Name of the District	Coast (in km)				
	Coramandel Coast	Palk Bay	Gulf of Mannar	West Coast	Total
Madras	22				22
Chengalpattu MGR	137				137
Villupuram R.P District & South Arcot Vallalar	89				89
Nagapattinam QM & Provisional	102	63			165
Thanjavur (Provisional)		35			35
Pudukottai		42			42
Ramanathapuram		130	141		271
V.O.Chidamparanar			121		121
Tirunelveli Kattabomman			50		50
Kanyuakumari			8	60	68
Total	**350**	**270**	**320**	**60**	**1,000**

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix – 3 Marine Fishing Villages and Fish Landing Centres in Tamilnadu.

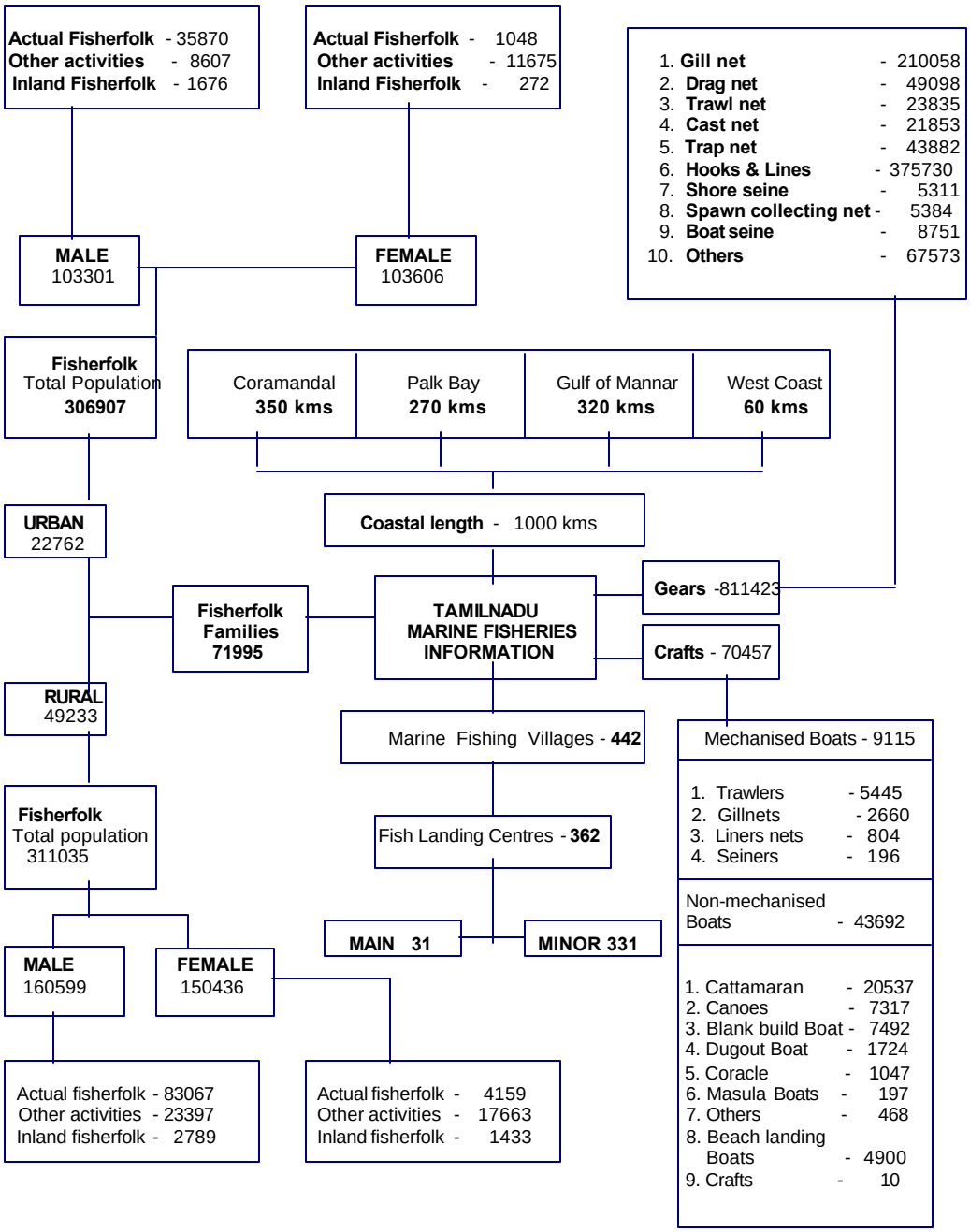
District	No. of Fishing Villages	No. of Fish Landing Centres		
		Main	Minor	Total
Madras	40	2	9	11
Chengalpattu MGR	64	3	61	64
Villupuram R.P District	19	1	18	19
South Arcot Vallalar	37	2	26	28
Nagapattinam QM	60	4	42	46
Thanjavur	24	2	19	21
Pudukottai	29	2	17	20
Ramanathapuram	99	8	70	78
V.O.Chidamparanar	19	2	20	22
Tirunelveli Kattabomman	7	1	7	8
Kanyuakumari	44	2	42	45
Total	**442**	**31**	**331**	**362**

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

{ EMBED Excel.Chart.8 \s } Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix- 5

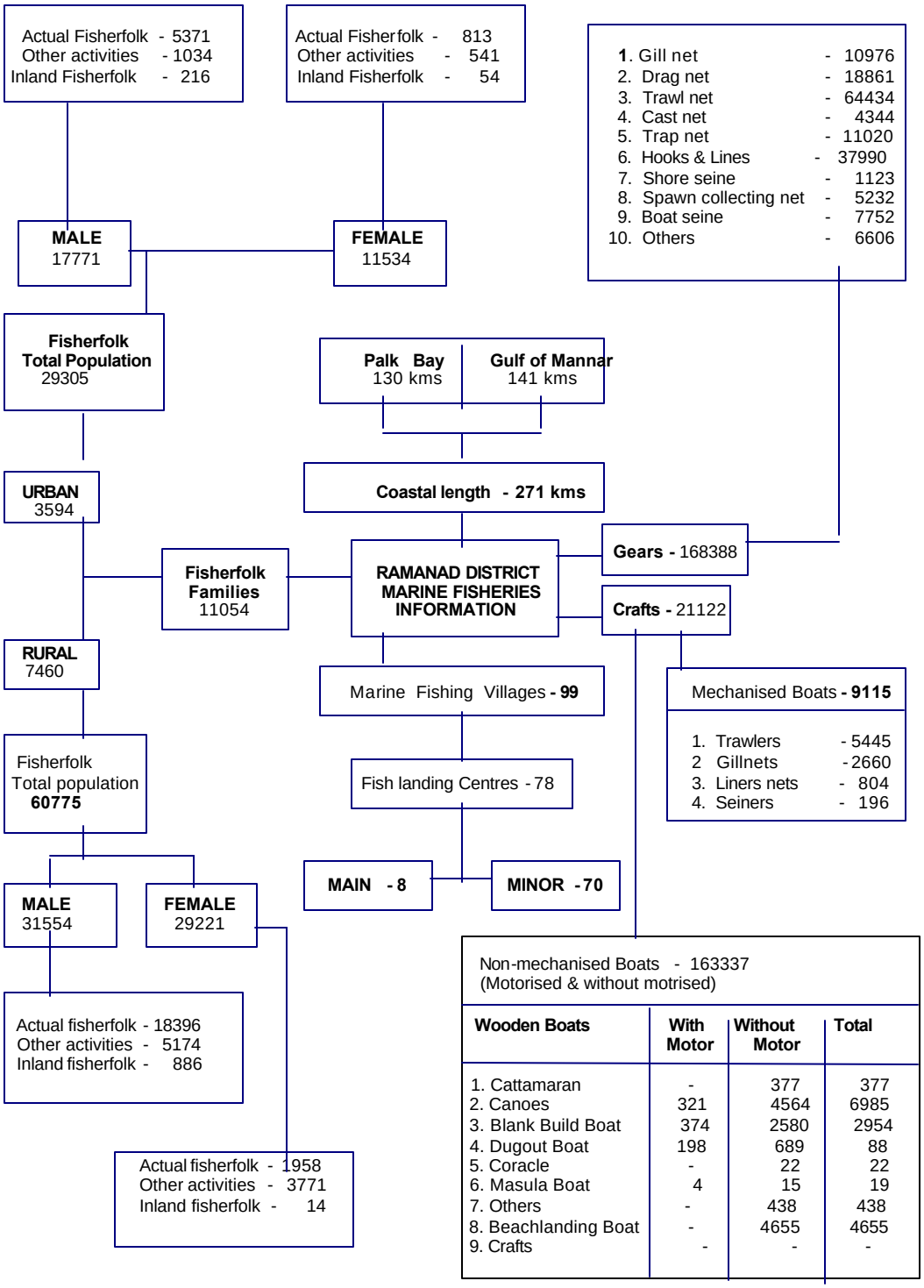
TAMILNADU STATE MARINE FISHERIES INFORMATION



Source: Tamil Nadu State Fishing Census Report: 15 .10.1994

Appendix- 6

RAMANATHAPURAM DISTRICT MARINE FISHERIES INFORMATION



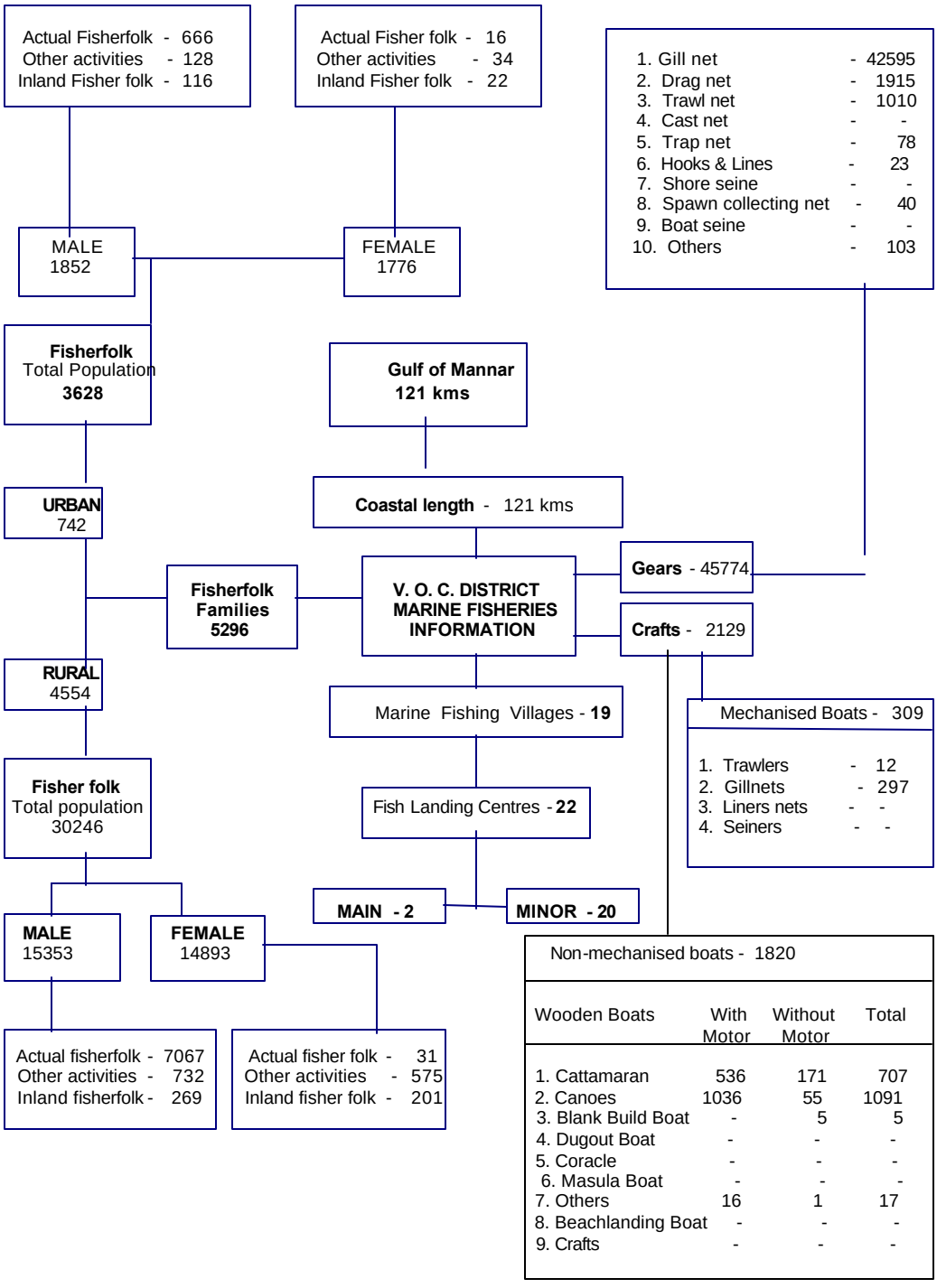
Non-mechanised Boats - 163337
(Motorised & without motrised)

Wooden Boats	With Motor	Without Motor	Total
1. Cattamaran	-	377	377
2. Canoes	321	4564	6985
3. Blank Build Boat	374	2580	2954
4. Dugout Boat	198	689	88
5. Coracle	-	22	22
6. Masula Boat	4	15	19
7. Others	-	438	438
8. Beachlanding Boat	-	4655	4655
9. Crafts	-	-	-

Source: Tamil Nadu State Fishing Census Report: 15.10.1994

Appendix- 7

TUTICORIN (V. O. C.) DISTRICT MARINE FISHERIES INFORMATION



Source: Tamil Nadu State Fishing Census Report: 15.10.1994

Appendix – 8 Number of families engaged in fishing in Ramanathapuram and Tuticorin Districts, and in Tamilnadu State and details of their land holdings as on 15-10-1994.

Sector	SC	ST	Others	Total	Holding Land (Hectare)	No. of families having cultivated land				
						Landless	Below 1 hectare	1 to 2 hectares	2 to 5 hectares	Above 5 hectares
Ramanathapuram District										
Rural	1001	0	6459	7460	0	4454	0	0	0	0
Urban	0	0	3594	3594	0	2314	0	0	0	0
Total	**1001**	**0**	**10053**	**11054**	**0**	**6768**	**0**	**0**	**0**	**0**
Tuticorin District										
Rural	0	0	4554	4554	0	3777	0	0	0	0
Urban	0	0	742	742	0	0	0	0	0	0
Total	**0**	**0**	**5296**	**5296**	**0**	**3777**	**0**	**0**	**0**	**0**
Tamilnadu State										
Rural	1617	46	47570	49233	288.119	37068	2323	216	88	17
Urban	21	0	22741	22762	0.388	17925	1700	203	135	59
Total	**1638**	**46**	**70311**	**71995**	**288.507**	**54993**	**4023**	**419**	**223**	**76**

Source: Live-Stock Census Report, Department of Statistics, Madras, 1994

Appendix-9 Details of age and number of persons engaged in fishing in Ramanathapuram and Tuticorin distrists and in Tamilnadu State as on 15-10-1994

Sector	FAMILY MEMBER						
	Attained Age 21		Not Attained Age 21				Total
			Below 12		12 to 21		
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
Ramanathapuram District							
Rural	17267	15417	7763	7579	6524	6225	60775
Urban	10951	5375	3315	3062	3505	3097	29305
Total	**28218**	**20792**	**11078**	**10641**	**10029**	**9322**	**90080**
Tuticorin District							
Rural	8090	7757	4019	4067	3244	3069	30246
Urban	1013	934	462	430	377	412	3628
Total	**9103**	**8691**	**4481**	**4497**	**3621**	**3481**	**33874**
Tamilnadu State							
Rural	87161	81553	43295	40719	30143	28164	311035
Urban	57359	59978	23415	22580	22527	21048	206907
Total	**144520**	**141531**	**66710**	**63299**	**52670**	**49212**	**517942**

Source: Live-Stock Census Report, Department of Statistics, Madras, 1994

Appendix – 10 Coastal District-wise Fisher-folk Population in Tamilnadu

S. No.	Name of the District	Fisher-folk Population			
		1986 (Actual Figure)		1996 (Based on the rate of increase of population @ 1.494%)	
		Total	Active	Total	Active #
1.	Madras	46,232	7,758	53,622	46,128
2.	Chengalpattu MGR	38,723	9,081	44,913	22,613
3.	Villupuram R.P District	10,865	2,653	12,602	6,662
4.	South Arcot Vallalar	31,175	6,906	36,158	20,768
5.	Nagapattinam QM	70,521	17,301	81,794	36,898*
6.	Thanjavur	16,607	3,475	19,262	
7.	Pudukottai	10,157	2,492	11,781	8,223
8.	Ramanathapuram	65,244	15,471	76,369	42,840
9.	V.O.Chidambaranar	40,171	8,292	46,593	30,990**
10.	Tirunelveli Kattabomman	18,608	4,117	21,583	
11.	Kanyuakumari	1,14,897	24,323	1,33,264	48,306
	Total	**4,63,800**	**1,01,869**	**5,37,941**	**2,63,428**

*: Includes Thanjavur district also.
**: Includes Tirunelveli district also.
#: Derived from membership of Marine Fishermen's and Fisherwomen's Cooperative Societies

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

{ EMBED Excel.Chart.8 \s }{ EMBED Excel.Chart.8 \s } Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

{ EMBED Excel.Chart.8 \s }

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix – 14 Number of mechanised, non-mechanised and motorised craft in India

State	Mechanised craft			Non-mechnaised craft			Motorised craft			Total		
	1980	1990	1994	1980	1990	1994	1980	1990	1994	1980	1990	1994
West Bengal	1,054	1,880	1,880	4,061	4,361	4,091	0	270	270	5,115	6,511	6,241
Orissa	469	1,796	2,453	9,728	13,791	7,796	0	529	529	10,197	16,116	12,702
Andhra Pradesh	580	4,082	8,911	36,013	50,333	54,000	0	1,688	3,269	36,593	56,103	66,180
Tamilnadu	2,627	4,500	8,230	43,343	39,969	26,737	0	3,298	5,340	45,970	47,767	40,307
Pondicherry	176	561	553	1,750	5,293	5,900	0	332	365	1,926	6,186	6,818
Kerala	3,038	5,026	4,206	26,271	27,104	27,873	0	7,934	12,913	29,309	40,064	44,992
Karnataka	2,004	3,730	3,655	6,942	11,860	11,952	0	190	1,189	8,946	15,780	16,796
Goa	908	736	850	2,513	2,445	1,100	0	675	900	3,241	3,856	2,850
Maharashtra	4,718	6,451	7,930	7,928	17,441	9,888	0	286	4,701	12,646	24,178	22,519
Gujarat	3,413	5,215	8,365	4,120	7,795	8,370	0	1,154	4,283	7,533	14,164	21,018
Andaman & Nicobar Islands	10	184	230	N.A.	964	1,180	0	124	160	10	1,272	1,570
Lakshadweep	213	410	443	N.A.	740	780	0	225	298	213	1,375	1,521
Total	**19,210**	**34,571**	**47,706**	**1,42,669**	**1,82,096**	**1,59,667**	**0**	**26,171**	**36,141**	**1,61,879**	**2,33,372**	**2,43,514**

N.A.: Not Available

Source: Rajagopalan, M., *et al*., 1996. Marine Fisheries Information Service, Technical and Extension Service, ICAR, CMFRI, Cochin No.143 p: 8-16

{ EMBED Excel.Chart.8 \s }

Source: Rajagopalan, M., *et al*., 1996. Marine Fisheries Information Service, Technical and Extension Service, ICAR, CMFRI, Cochin No.143 p: 8-16

APPENDIX – 16 DETAILS OF MECHANISED BOATS -TRAWLERS IN RAMANATHAPURAM AND TUTICORIN DISTRICTS AND IN TAMILNADU STATE AS ON 15-10-1994

Sectors	LENGTH BELOW 7.5 MET ERS (H.P.)					LENGTH 7.6 TO 10.0 M ETERS (H.P.)					LENGTH 10.1 TO 17.5 METERS (H.P.)					LENGTH 17.6 METERS & ABOVE (H.P.)				
	0-25	26-75	76-100	100 & above	Total	0-25	26-75	76-100	100 & above	Total	0-25	36-76	76-100	100 & above	Total	0-25	36-76	76-100	100 & above	Total
Ramanathapuram District																				
Rural	531	126	119	0	776	158	142	2	0	302	0	60	10	0	70	0	0	0	0	0
Urban	507	54	0	0	561	0	415	0	0	415	0	615	0	0	615	0	0	0	0	0
Total	**1038**	**180**	**119**	**0**	**1337**	**158**	**557**	**2**	**0**	**717**	**0**	**675**	**10**	**0**	**685**	**0**	**0**	**0**	**0**	**0**
Tuticorin District																				
Rural	0	6	3	0	9	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0
Urban	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**6**	**3**	**0**	**9**	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Tamilnadu State																				
Rural	573	136	190	1	900	167	421	243	41	872	17	171	773	287	1248	0	0	4	0	4
Urban	599	54	0	6	659	4	590	5	19	618	1	840	306	5	1152	0	0	0	52	52
Total	**1172**	**190**	**190**	**7**	**1559**	**171**	**1011**	**248**	**60**	**1490**	**18**	**1011**	**1079**	**292**	**2400**	**0**	**0**	**4**	**52**	**56**

Source: Live-Stock Census Report, Department of Statistics, Madras, 1994

APPENDIX – 17 DETAILS OF MECHANISED BOATS – LINERS IN RAMANATHAPURAM AND TUTICORN DISTRI CTS AND IN TAMILNADU STATE AS ON 15-10-1994

Sectors	Length below 7.5 meters (H.P.)					Length 7.6 to 10.0 meters (H.P.)					Length 10.1 to 17.5 meters (H.P.)					Length 17.6 meters & above (H.P.)				
	0-25	26-75	76-100	100 & above	Total	0-25	26-75	76-100	100 & above	Total	0-25	36-76	76-100	100 & above	Total	0-25	36-76	76-100	100 & above	Total
Ramanathapuram District																				
Rural	0	0	0	0	0	0	0	0	0	0	87	43	0	0	130	47	36	0	0	83
Urban	0	0	0	0	0	0	0	0	0	0	97	43	0	0	140	172	34	0	0	206
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**184**	**86**	**0**	**0**	**270**	**219**	**70**	**0**	**0**	**289**
Tuticorin District																				
Rural	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urban	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Tamilnadu State																				
Rural	0	0	0	0	0	0	0	0	0	0	87	43	0	0	130	47	36	0	0	83
Urban	0	0	0	0	0	0	0	0	0	0	97	43	0	0	140	172	122	0	0	294
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**184**	**86**	**0**	**0**	**270**	**219**	**158**	**0**	**0**	**377**

Source: Live-Stock Census Report, Department of Statistics, Madras, 1994

APPENDIX – 18 DETAILS OF MECHANISED BOATS – GILL NETTERS IN RAMANATHAPURAM AND TUTICORIN DISTRICTS AND IN TAMILNADU STATE AS ON 15-10-1994

Sectors	Length below 7.5 meters (H.P.)					Length 7.6 to 10.0 meters (H.P.)					Length 10.1 to 17.5 meters (H.P.)					Length 17.6 meters & above (H.P.)				
	0-25	26-75	76-100	100 & above	Total	0-25	26-75	76-100	100 & above	Total	0-25	36-76	76-100	100 & above	Total	0-25	36-76	76-100	100 & above	Total
Ramanathapuram District																				
Rural	523	65	38	8	634	39	23	39	24	125	0	0	0	0	0	0	0	0	0	0
Urban	186	44	4	0	234	295	24	0	0	319	56	9	0	0	65	0	0	0	0	0
Total	**709**	**109**	**42**	**8**	**868**	**334**	**47**	**39**	**24**	**444**	**56**	**9**	**0**	**0**	**65**	**0**	**0**	**0**	**0**	**0**
Tuticorin District																				
Rural	297	0	0	0	297	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urban	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**297**	**0**	**0**	**0**	**297**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Tamilnadu State																				
Rural	889	67	38	8	1002	42	83	73	229	427	3	3	0	1	7	1	0	132	0	133
Urban	236	44	4	0	284	295	196	2	31	524	56	258	0	5	319	0	0	0	0	0
Total	**1125**	**111**	**42**	**8**	**1286**	**337**	**279**	**75**	**260**	**951**	**59**	**261**	**0**	**6**	**326**	**1**	**0**	**132**	**0**	**133**

Source: Live-Stock Census Report, Department of Statistics, Madras, 1994

APPENDIX – 19 DETAILS OF MECHANISED BOATS – SEINERS IN RAMANATHAPURAM AND TUTICORIN DISTRICTS AND IN TAMILNADU STATE AS ON 15-10-1994

Sectors	Length below 7.5 meters (H.P.)					Length 7.6 to 10.0 meters (H.P.)					Length 10.1 to 17.5 meters (H.P.)					Length 17.6 meters & above (H.P)				
	0-25	26-75	76-100	100 & above	Total	0-25	26-75	76-100	100 & above	Total	0-25	36-76	76-100	100 & above	Total	0-25	36-76	76-100	100 & above	Total
Ramanathapuram District																				
Rural	55	5	29	6	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urban	15	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**70**	**5**	**29**	**6**	**110**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Tuticorin District																				
Rural	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urban	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Tamilnadu State																				
Rural	56	55	29	6	146	0	1	0	0	1	0	0	0	1	1	0	33	0	0	33
Urban	15	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**71**	**55**	**29**	**6**	**161**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**33**	**0**	**0**	**33**

Source: Live-Stock Census Report, Department of Statistics, Madras, 1994

{ EMBED Excel.Chart.8 \s }

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996

APPENDIX – 21 DETAILS OF NON-MECHANISED BOATS IN RAMANATHAPURAM AND TUTICORIN DISTRICTS AND IN TAMILNADU STATE AS ON 15-10-1994

Sector	Canoes			Catamarans			Plank Built Boat			Dugout			Beach Landing Boat	Mausla Boat			Crafts			Coracles			Others		
	A	B	C	A	B	C	A	B	C	A	B	C		A	B	C	A	B	C	A	B	C	A	B	C
Ramanathapuram																									
Rural	202	3949	4151	0	313	313	92	1821	1913	0	689	689	4136	0	0	0	0	0	0	0	9	9	0	438	438
Urban	119	715	834	0	64	64	282	759	1041	198	0	198	519	0	0	0	0	0	0	0	13	13	0	0	0
Total	**321**	**4664**	**4985**	**0**	**377**	**377**	**374**	**2580**	**2954**	**198**	**689**	**887**	**4655**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**22**	**0**	**438**	**438**
Tuticorin																									
Rural	910	18	928	500	168	668	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	16	1	17
Urban	126	37	163	36	3	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**1036**	**55**	**1091**	**536**	**171**	**707**	**0**	**5**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**1**	**17**
Tamilnadu State																									
Rural	1367	4682	6049	5125	7698	12823	525	5241	5766	0	1476	1476	4359	9	88	97	0	1	1	0	863	863	24	444	468
Urban	377	891	1268	1973	5741	7714	308	1418	1726	198	50	248	541	28	72	100	0	9	9	0	184	184	0	0	0
Total	**1744**	**5573**	**7317**	**7098**	**13439**	**20537**	**833**	**6659**	**7492**	**198**	**1526**	**1724**	**4900**	**37**	**160**	**197**	**0**	**10**	**10**	**0**	**1047**	**1047**	**24**	**444**	**468**

Source: Live-Stock Census Report, Department of Statistics, Madras, 1994

{ EMBED Excel.Chart.8 \s }

Source: Tamilnadu State Fisheries Stati stics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix-23 Details of fishing gears by types and materials in Ramanathapuram and Tuticorin Districts, and in Tamil Nadu State as on 15-10-1994

	Trawl net			Gill net			Drag net			Cast net		
Sector	A	B	C	A	B	C	A	B	C	A	B	C
Ramanathapuram												
Rural	40	6759	6799	22	50695	50717	130	8002	8132	3	3988	3991
Urban	9	4168	4177	0	13717	13747	0	10729	10729	0	353	353
Total	**49**	**10927**	**10976**	**22**	**64412**	**64464**	**130**	**18731**	**18861**	**3**	**4341**	**4344**
Tuticorin												
Rural	267	743	1010	3379	29586	32965	0	1915	1915	0	0	0
Urban	0	0	0	246	9384	9630	0	0	0	0	0	0
Total	**267**	**743**	**1010**	**3625**	**38970**	**42595**	**0**	**1915**	**1915**	**0**	**0**	**0**
Tamilnadu State												
Rural	845	14718	15563	4786	154590	159376	297	34057	34354	947	16164	17111
Urban	298	7974	8272	599	50083	50682	294	14450	14744	338	4404	4742
Total	**1143**	**22692**	**23835**	**5385**	**204673**	**210058**	**591**	**48507**	**49098**	**1285**	**20568**	**21853**

A: Cotton-twine B: Nylon-twine C: Total

Source: Live-Stock Census Report, Department of Statistics, Madras, 1994

Appendix-24 Details of fishing gears by types used in Ramanathapuram and Tuticorin Districts, and in Tamil Nadu State as on 15-10-1994

Sector	Shore seine	Boat seine	Hooks & Lines	Trap net	Spawn collecting net	Others	Total
Ramanathapuram District							
Rural	539	7717	22011	9040	2113	6422	47942
Urban	584	35	15979	1980	3169	184	21831
Total	**1123**	**7752**	**37990**	**11020**	**5282**	**6606**	**69773**
Tuticorin District							
Rural	0	0	3	0	0	73	76
Urban	0	0	20	78	40	30	168
Total	**0**	**0**	**23**	**78**	**40**	**103**	**244**
Tamilnadu State							
Rural	3131	8523	344917	39710	2115	62419	460818
Urban	2180	223	30821	4172	3211	5164	45761
Total	**5311**	**8746**	**375738**	**43882**	**5326**	**67583**	**506579**

Source: Live-Stock Census Report, Department of Statistics, Madras, 1994

{ EMBED Excel.Chart.8 \s }

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

{ EMBED Excel.Chart.8 \s }

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix-27 Estimation of Marine Fish Production (Coastal District-Wise) in Tamil Nadu State during 1984-85 to 1995-96

Year	Madras	Chengai	Villupuram R.P.	S. Arcot	Nagai	Thanjavur	Pudukkottai	Ramnad	Chidam - baranar	Tirunelveli	Kanyakumari	Total
1984-85	7,061	6,860	-	6,933	-	49,057	17,629	33,989	-	30,874	96,130	**2,48,553**
1986-86	8,477	7,700	-	10,603	-	55,171	26,107	30,588	-	35,704	70,574	**2,44,924**
1986-87	9,450	13,758	-	14,908	-	44,321	27,403	28,517	-	40,042	71,177	**2,49,576**
1987-88	9,224	9,318	-	14,815	-	36,513	30,613	51,014	52,024	7,696	45,608	**2,56,825**
1988-89	12,999	8,362	-	18,043	-	48,696	44,548	52,899	48,442	4,640	40,380	**2,79,009**
1989-90	15,096	8,448	-	20,954	-	38,289	49,584	61,669	49,979	5,612	39,182	**2,88,813**
1990-91	18,818	9,023	-	22,634	-	44,828	49,886	60,270	43,835	5,286	37,081	**2,91,661**
1991-92	15,812	9,556	-	21,709	-	54,392	53,913	59,921	46,308	4,322	34,009	**2,99,942**
1992-93	14,868	9,926	-	24,471	52,569	8,691	52,589	64,866	39,575	4,527	35,267	**3,07,349**
1993-94	16,525	9,895	-	24,819	59,337	8,565	51,340	74,351	39,137	4,512	29,235	**3,17.716**
1994-95	16,988	10,037	4,493	25,110	67,537	8,993	47,145	76,969	37,201	4,078	32,178	**3,30,729**
1995-96	15,686	12,096	4,618	25,910	72,384	10,203	48,871	81,943	33,658	3,657	32,291	**3,41,317**

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix-28 Estimation of Marine Fish Production (Gear-Wise) in Tamilnadu State during 1990-91 to 1995-96 (Qty in tones)

No.	Name of the District	1990-91				1991-92				1992-93			
		MECH	NMECH	MOTOR	TOTAL	MECH	NMECH	MOTOR	TOTAL	MECH	NMECH	MOTOR	TOTAL
1	Madras	18,343	275	0	18,618	14,574	1,238	0	15,812	13,395	1,345	128	14,868
2	Chengalpat MGR	599	8,424	0	9,023	0	9,251	305	9,556	0	8,636	1,290	9,926
3	Villupuram R.P.*												
4	South Arcot Vallalar	5,349	17,214	71	22,634	3,740	15,540	2,429	21,709	4,470	17,778	2,223	24,471
5	Nagapattinam QM**									32,147	17,838	2,584	52,569
6	Thanjavur	32,625	11,770	433	44,828	33,700	16,738	3,954	54,392	3,782	4,909	0	8,691
7	Pudukkottai	46,439	3,447	0	49,886	44,068	9,845	0	53,913	42,226	10,363	0	52,569
8	Ramanathapuram	33,280	24,705	2,285	60,270	28,103	27,928	3,890	59,921	34,998	26,119	3,749	64,886
9	Chidambaranar	25,520	18,121	194	43,835	25,119	10,926	10,263	46,308	23,914	7,348	8,313	39,575
10	Tirunelveli Kattabomman	0	5,110	176	5,286	0	2,466	1,856	4,322	0	892	3,635	4,527
11	Kanyakumari	3,529	33,542	210	37,281	4,965	28,426	618	34,009	3,956	30,677	634	35,267
	Total	**165684**	**122608**	**3369**	**291661**	**154269**	**122358**	**23315**	**299942**	**158888**	**125905**	**22556**	**307349**
	Percentage	**56.8**	**42.04**	**1.16**	**100.00**	**51.43**	**40.79**	**7.77**	**100.00**	**51.7**	**40.96**	**7.34**	**100.00**

* : Estimation for this district was included in South Arcot till 1993-94; **: Estimation for this district was included in Thanjavur till 1991-92.
MECCH: Mechanised; NMECH: Non-Mechanised; MOTOR: Motorised

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix- 28 contd... (Qty in tones)

No.	Name of the District	1993-94				1994-95				1995-96			
		MECH	NMECH	MOTOR	TOTAL	MECH	NMECH	MOTOR	TOTAL	MECH	NMECH	MOTOR	TOTAL
1	Madras	12,502	3,345	678	16,525	14,673	1,769	546	16,988	14,749	515	422	15,686
2	Chengalpat MGR	0	9,174	721	9,895	85	8,462	1,490	10,037	194	9,084	2,818	12,096
3	Villupuram R.P.*					0	3,235	1,258	4,493	8	2,355	2,255	4,618
4	South Arcot Vallalar	6,355	14,570	3,894	24,819	12,411	8,767	3,932	25,110	14,441	7,609	3,860	25,910
5	Nagapattinam QM	33,123	22,174	4,040	59,337	37,408	25,210	4,919	67,537	38,545	27,410	6,429	72,384
6	Thanjavur	4,099	4,466	0	8,565	6,013	2,980	0	8,993	7,344	2,859	0	10,203
7	Pudukkottai	40,935	10,405	0	51,340	37,319	9,826	0	47,145	38,189	10,682	0	48,871
8	Ramanathapuram	39,670	29,666	5,015	74,351	42,759	28,438	5,772	76,969	46,017	30,259	5,667	81,943
9	Chidambaranar	24,638	3,849	10,650	39,137	22,515	2,768	11,918	37,201	19,478	1,335	12,845	33,658
10	Tirunelveli Kattabomman	0	962	3,550	4,512	0	562	4,216	4,078	0	518	3,139	3,657
11	Kanyakumari	4,445	23,525	1,265	29,235	4,278	27,065	835	32,178	3,744	27,863	684	32,291
	Total	**165767**	**122136**	**29813**	**317716**	**177461**	**119,082**	**34886**	**330729**	**182709**	**120489**	**38119**	**341317**
	Percentage	**52.17**	**38.44**	**9.38**	**100.00**	**53.66**	**36.01**	**10.34**	**100.00**	**53.53**	**35.3**	**11.17**	**100.00**

* : Estimation for this district was included in South Arcot till 1993-94
MECCH: Mechanised; NMECH: Non-Mechanised; MOTOR: Motorised

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix-29 Species-wise estimation of Marine Fish Production in Tamil Nadu State (Qty in tonnes)												
S.No.	**Name of the Fish**	**1985-86**	**1986-87**	**1987-88**	**1988-89**	**1989-90**	**1990-91**	**1991-92**	**1992-93**	**1993-94**	**1994-95**	**1995-96**
1	Sharks	2,330	2,750	4,907	5,331	4,470	2,304	2,959	2,753	2,694	3,695	3,335
2	Skates & Rays	8,261	6,940	10,841	13,960	11,787	8,526	10,307	12,074	12,352	13,768	12,416
3	Eels	24	390	9	288	384	181	193	350	114	84	320
4	Cat fishes	3,544	7,259	3,327	1,847	3,271	993	3,761	1,932	2,941	1,673	1,716
5	Saurids & Saurus	588	593	993	1,793	1,538	538	935	766	1,161	1,688	1,863
6	Perches	12,593	15,015	19,374	20,169	20,742	22,755	22,717	22,957	13,224	12,446	13,071
7	Red mullets	2,262	5,072	3,718	7,831	8,503	11,741	7,074	6,456	6,172	5,569	4,658
8	Polynemids	872	2,024	1,892	1,224	789	316	336	442	663	1,296	1,214
9	Seiganids	3,585	5,642	6,510	6,792	5,587	8,490	10,795	10,430	10,993	11,011	13,316
10	Leiognathus	21,739	16,985	22,646	31,569	36,988	34,420	33,110	34,671	36,316	40,863	49,405
11	Gazza	0	0	0	0	0	41	0	0	0	0	0
12	Lactarius	883	1,735	2,063	1,879	1,589	1,137	1,179	1,956	931	379	697
13	Pomfrets	1,371	3,533	2,239	4,032	3,325	4,825	2,921	3,284	3,316	3,860	2,787
14	Bregmaceros	0	0	41	0	0	0	23	0	0	0	0
15	Soles	1,488	951	2,422	4,664	4,949	1,588	2,746	2,821	1,915	2,421	3,521
16	Penaeid prawns	6,221	7,129	5,660	6,979	9,585	12,378	11,404	12,147	12,253	14,674	13,417
17	Non-Penaeid prawns	2,015	1,325	3,018	2,723	4,684	7,228	4,855	4,164	5,946	8,651	6,858
18	Lobsters	156	1,071	1,339	349	703	819	1,160	2,077	2,015	1,242	1,053
19	Crabs	12,756	9,770	14,107	9,536	8,403	9,326	10,513	11,666	15,833	13,225	9,787
20	Cephalopods	2,456	4,639	3,748	6,719	6,119	4,427	4,525	6,978	6,124	9,863	9,809
21	Miscellaneous	50,701	22,069	31,401	38,966	49,863	57,031	47,408	55,631	65,849	69,889	70,993
	Total	**133,845**	**114,892**	**140,255**	**166,651**	**183,279**	**189,064**	**178,921**	**193,555**	**200,812**	**216,297**	**220,236**
Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.												

Appendix-30 Marine Fish Landings in Tamilnadu during the period 1980-89 compared to all India catch (in tones).

Year	*All India*	*Tamilnadu*			*Percentage*
		Mechanised	*Non-Mechanised*	*Total*	
1980	12,49,837	94,131	1,23,263	2,17,394	17.4
1981	13,78,457	1,06,664	1,14,632	2,21,296	16
1982	14,20,624	1,27,542	1,18,419	2,45,961	17.3
1983	15,48,475	1,46,225	1,34,514	2,80,739	18.1
1984	16,30,678	1,16,190	1,35,930	2,52,120	15.5
1985	15,34,726	95,549	1,05,002	2,20,521	14.4
1986	16,93,377	1,17,898	1,24,143	2,42,041	14.3
1987	16,62,550	1,73,747	1,29,886	3,03,633	18.3
1988	18,30,817	1,68,564	1,27,100	2,95,664	16.4
1989	22,30,225	1,64,481	1,16,819	2,81,300	12.6

Source: Makadevan Pillai, P.K., G. Balakrishnan and K. Alagaraja. 1994. Present status of Marine Fisheries of Tamilnadu and Pondicherry. Marine Fisheries Information Service No. 129: p: 1-12.

Appendix-31 Estimated landings of sea cucumbers in tones by Chanku madi during 1994 and 1995 at Rameswaram

Year	Months	*Holothuria spinifera*	*Holothuria scabra*
1994	June-September	200	100
1995	July-September	260	50
Total		460	150

Source: James, D.B. & M. Badrudeen, 1997. Marine Fisheries Information Service, No.149:6-8.

Appendix-32 State-wise landing of lobsters

Year	Tamilnadu	Kerala	Maharashtra	Gujarat	Others	Total
1996	252	112	1132	1130	5	2631
1997	375	265	818	1405	54	2917
1998	998	64	442	1054	101	2659
1999	254	513	291	975	60	2093
2000	142	535	611	1036	63	2387

Source: : Radhakrishnan E.V. & K. Mary, 2001. Status and management of lobsters fishery resources in India. Marine Fisheries Information Service, T & E Ser. No. 169: p: 1-3.

Appendix- 33 Details of Marine Fish Production (Qty in tones) for the year 1995-96 – Craft-wise

No.	Name of District	Mechanised	Non-Mechanised	Motorised	Shore seine	Total	Percentage
1	Madras	14749	515	422	0	15686	4.60
2	Chengalpat MGR	194	9084	2818	0	12096	3.54
3	Villupuram R.P.	8	2350	2255	5	4618	1.35
4	South Arcot Vallalar	14441	7609	3860	0	25910	7.59
5	Nagapattinam QM	38545	27137	6429	273	72384	21.21
6	Thanjavur	7344	2859	0	0	10203	2.99
7	Pudukkottai	38189	10682	0	0	48871	14.32
8	Ramanathapuram	46017	30115	5667	144	81943	24.01
9	Chidambaranar	19478	1314	12845	21	33658	9.86
10	Tirunelveli Kattabomman	0	518	3139	0	3657	1.07
11	Kanyakumari	3744	27461	684	402	32291	9.46
	Total	182709	119644	38119	845	341317	100
	Percentage	53.53	35.05	11.17	0.25	100	

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix – 34 Details of Marine Fish Production for the year 1995-96 – Gear-wise (Qty in tones)

No.	Name of District	Dragged gear (Trawl net)	Surrounding nets	Gill nets	Seine nets	Tangle nets	Lift nets	Line Fishing	Bag nets	Falling gears	Others	Total	Percentage
1	**Madras**	12154	0	2188	0	225	1104	15	0	0	0	15686	4.60
2	**Chengalpat MGR**	121	0	9960	0	1250	76	683	0	6	0	12096	3.54
3	**Villupuram R.P.**	0	5	3717	0	652	98	146	0	0	0	4618	1.35
4	**South Arcot Vallar**	7707	0	7388	0	5122	5656	37	0	0	0	25910	7.59
5	**Nagapattinam QM**	39933	979	17636	0	13079	325	432	0	0	0	72384	21.21
6	**Thanjavur**	6676	0	3527	0	0	0	0	0	0	0	10203	2.99
7	**Pudukkottai**	30024	0	3741	0	0	9335	5771	0	0	0	48871	14.32
8	**Ramanathapuram**	13685	145	62421	4016	0	249	1427	0	0	0	81943	24.01
9	**Chidamba ranar**	18862	21	13387	114	0	88	886	0	0	0	33658	9.86
10	**Tirunelveli Kattabomman**	0	0	3218	0	439	0	0	0	0	0	3657	1.07
11	**Kanyakumari**	0	1484	19126	11	723	385	10562	0	0	0	32291	9.46
	Total	**129162**	**2634**	**146309**	**4141**	**21490**	**17316**	**19959**	**0**	**6**	**0**	**341317**	**100**
	Percentage	**37.8**	**0.798**	**42.9**	**1.2**	**6.3**	**5.1**	**5.9**	**0**	**0.002**	**0**	**100**	

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix- 35 Details of item wise export from Tamilnadu State for the year 1995-96

No.	Name of the Fish	Madras Port	Tuticorin Port	Total
		Qty. in Tonnes	Qty. in Tonnes	Qty. in Tonnes
1	**Frozen Shrimp**	13158.500	3742.184	16900.684
2	**Frozen Lobster tails**	90.375	205.750	296.125
3	**Frozen cuttle fish**	703.154	1669.688	2372.842
4	**Fresh/Frozen fish**	1743.298	584.354	2327.652
5	**Frozen squid**	331.148	2175.117	2506.265
6	**Dried shrimp**	8.096	2.200	10.296
7	**Dried fish**	534.216	3426.903	3961.119
8	**Dried Beche-de-mer**	122.668	0.000	122.668
9	**Dried shark fins**	217.169	0.000	217.169
10	**Dried fish maws**	60.075	0.000	60.075
11	**Agar Agar**	1.231	0.000	1.231
12	**Others**	1332.450	1221.597	2554.047
	Total	**18302.380**	**13027.793**	**31330.173**

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

{ EMBED Excel.Chart.8 \s }

Appendix-37 Supply of Crafts under 20% subsidy scheme

YEAR	CATAMARAN		WOODEN BOATS		LARGER BOATS		VALLAM		MARINE PLYWOOD	
	Sanctioned	Distributed	Sanctioned	Distributed	Sanctioned	Distributed	Sanctioned	Distributed	Sanctioned	Distributed
1987-88	170	111	50	54	0	0	0	0	0	0
1988-89	200	11	30	31	4	3	0	0	0	0
1989-90	200	210	5	3	5	5	0	0	0	0
1990-91	0	0	0	0	0	0	10	0	18	0
1991-92	0	228	0	0	0	12	0	5	10	10
1992-93	0	34	50	50	0	6	0	2	0	7
1993-94	0	0	0	5	0	0	0	15	0	11
1994-95	0	1	0	0	0	0	0	0	0	0
1995-96	0	2	0	0	0	0	0	0	0	0
Total	570	597	135	143	9	26	10	22	28	28

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix - 38 Fishermen Welfare Schemes: Supply of Out-Board Motors and In-Board Engine.

YEAR	Under Centrally Sponsored Scheme shared equally between State & Centre					With Assistance from MPEDA
	Sanctioned		No. Distributed*		Amount Disbursed (Rs.)	No. of Engines Distributed
	No.	Amount (Rs.)	OBM	IBE		
1985-86	0	0	0	0	0	35
1986-87	0	0	0	0	0	194
1987-88	587	44,12,500	458	157	44,01,226	169
1988-89	600	45,00,000	241	29	45,00,000	23
1989-90	713	53,47,500	338	34	53,42,355	16
1990-91	267	20,00,000	594	81		7
1991-92	400	30,00,000	249	10	17,23,500	0
1992-93	1226	1,14,37,500	940	135	85,33,620	0
1993-94	500	50,00,000	564	53	60,71,150	0
1994-95	3000	2,50,00,000	932	85	1,00,93,560	0
1995-96		1,10,00,000	1823	122	1,96,20,250	0
Total	7293	7,16,87,500	6139	706	6,02,86,461	444

* : Figures of the OBM actually purchased with subsidy in that year.

Source:Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix – 39 Supply of Gear to Traditional craft Fishermen (Tamilnadu).

YEAR	Amount Sanctioned Loan & Subsidy	Amount Realised		Quantity of Webbings in Kgs.	No. of Beneficiaries
		Loan at 80% (Rs.)	Subsidy at 20% (Rs.)		
1981-82	8,00,000	5,05,332	1,26,333	5346.100	526
1982-83	8,00,000	5,62,976	1,40,744	4651.175	447
1983-84	8,00,000	5,96,719	1,49,180	5169.705	765
1984-85	8,00,000	5,60,393	1,71,458	4095.000	430
1985-86	8,00,000	6,03,452	1,67,454	4542.530	512
1986-87	8,00,000	6,28,000	1,24,512	4690.620	438
1987-88	6,60,000	6,25,915	1,73,801	3430.650	496
1988-89	6,60,000	0	500		1
1989-90	2,50,000	0	1,24,500		540
1990-91	0	0	21,500		43
1991-92	0	0	61,000		122
1992-93	0	0	25,500		51
1993-94	0	0	10,500		21
1994-95	0	0	0		0
1995-96	0	0	0		0

(Government subsidy: 20%; Contribution by the Fishermen: 20% & Bank Loan: 60%)

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix – 40 District-Wise Free Housing Scheme for Fishe rmen during the year 1975-76 to 1995-96

S. No.	District	No. Sanctioned	No. Constructed	Balance
1.	Chengalpattu MGR	6574	4027	2547
2.	South Arcot Vallalar	3859	2475	1384
3.	Villupuram R.P District	437	0	437
4.	Thanjavur	4931	4199	732
5.	Pudukottai	1547	1415	132
6.	Ramanathapuram	2658	2092	566
7.	V.O.Chidamparanar	3157	2862	295
8.	Tirunelveli Kattabomman	352	67	285
9.	Kanyakumari	4331	3636	695
	Total	27,846	20,773	7073

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix-41 Revenue through Licence fee collected from vallam owners and divers.

Year	Chidambaranar District			Ramanathapuram District		
	Vallams Regd.	Divers Engaged	Amount (Rs.)	Vallams Regd.	Divers Engaged	Amount (Rs.)
1993-94	137	609	4,41,500	21	180	5,55,500
1994-95	156	560	4,36,000	22	257	7,22,500
1995-96	42	147	1,15,500	34	414	1,20,500

Source:Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix-42 Details of Chank collected and revenue realized in Tamilnadu State.

Year	No. of Chanks collected	No. of Chanks sold	Revenue Realised (Rs.)
1980-81	12,08,498	...	
1981-82	12,34,564	11,69,936	39,00,000
1982-83	16,76,194	...	...
1983-84	10,99,739	9,44,264	34,30,173
1984-85	4,77,463	...	...
1986-86	1,96,472	19,59,000	1,03,09,238
1986-87	5,40,101	...	...
1987-88	7,05,825	9,54,384	60,26,935
1988-89	5,33,358	...	...
1989-90	1,75,201	...	...
1990-91	2,10,208	16,04,000	1,01,70,200
1991-92	32,467	17,81,965	95,98,753
1992-93	NIL	NIL	NIL

Source: Tamilnadu State Fisheries Statistics, 1995-96: Endeavour and Achievements, Department of Fisheries, Madras 1996.

Appendix-43 Price structure for *Xancus pyrum* shells (1996).

Size as MSD (mm)	Price at landing centre (Rs.)	Price at private godown (Rs.)	Price of polished product (Rs.)
100 to 120	150 to 180	150 to 250	500.00
80 to 100	80 to 100	100 to 150	200.00
70 to 80	60 to 75	50 to 100	150 to 200
60 to 70	25 to 30	35 to 40	50 to 75
60 and below	5.00	10.00	20.00
Wormed	5.00	10.00	

Source: Lipton *et al.*, 1996. Large scale exploitation of sacred chank xancus pyrum using modified trawl net along Rameswaram coast, Tamil Nadu. Marine Fisheries Information Service, T & E Ser. No. 143: p: 17-19.

Appendix - 44 Details of Fishermen Free Housing Progress in Ramanathapuram District for the month of 31-05-2003

S.No.	Name of the Village	No. of House Sanctioned	No. of House completed
1.	Pudukadu	33	33
2.	Manakudi	48	48
3.	Muthu vaduganathan pattinam	24	24
4.	Thondi Pudukadu	57	57
5.	Dhargavalasai	50	49
6.	Mandapam –Valayarvadi	70	70
	Total	282	281
	1994-95		
7.	Narippaiyur	25	23

Source: Department of Fisheries, Ramanathapuram District, Tamilnadu

Appendix- 45 Details of Fishermen Free Housing Scheme in Ramanathapuram District – 2001 - 2002

S. No.	Name of the Village	No. of House Sanctioned
1.	Devipattinam	14
2.	Mullimunai	32
3.	Kankollan pattinam	100
4.	Kannirajapuram	40
5.	North Narippaiyur	25
6.	Narippaiyur	15
7.	Mandapam	85
8.	Mandapam South	10
9.	Vethalai – Valayarvadi	20
10.	Vattanvalasai	20
11.	Valinokkam	20
12.	Rochmanagar	30
13.	Kalkinattruvalasai	10
14.	Thamodharanpattinam	50
	Total	471

Source: Department of Fisheries, Ramanathapuram District, Tamilnadu

Appendix-46 Details of Model Village Scheme in Ramanathapuram District: 2001 - 2002

S. No.	Name of the Village	No. of Tube Well Sanctioned	No. of Community Hall Sanctioned
1.	Devipattinam	1	-
2.	Mullimunai	1	1
3.	Kankollan pattinam	5	-
4.	Kannirajapuram	2	-
5.	North Narippaiyur	1	-
6.	Narippaiyur	1	-
7.	Mandapam	4	-
8.	Mandapam South	1	-
9.	Vethalai – Valayarvadi	1	-
10.	Vattanvalasai	1	-
11.	Valinokkam	1	-
12.	Rochmanagar	1	-
13.	Kalkinattruvalasai	1	-
14.	Thamodharanpattinam	-	-
	Total	21	1

Source: Department of Fisheries, Ramanathapuram District, Tamilnadu

Appendix-47 Details of distribution of Out Board Motors/ In-Board Motors in Ramanathapuram District

S. No.	Year	No. of OBM/IBM Sanctioned and Disbursed
1.	1998-99	20
2.	1999-00	65
3.	2000-01	8
4.	2001-02	8
5.	2002-03	12
6.	2003-04	6
	Total	119

Source: Department of Fisheries, Ramanathapuram District, Tamilnadu

Appendix-48 Details of Registration of crafts upto 31-05-2003 in Ramanathapuram.

S. No.	Type of craft	Nos.
1.	Mechanised Boat	852
2.	Country Craft	6264
3.	With Engine	1160
4.	Without Engine	5104

Source: Department of Fisheri es, Ramanathapuram District, Tamilnadu

Appendix-49 Details of no. of registered FCS society and Members in Ramanathapuram upto 31-05-2003

S. No.	*Type of Society*	*No. of FCS*	Members
1.	Men Society	62	34,206
2.	Women Society	18	1,941
3.	Federation	1	208
4.	Prawn Farm Society	1	Dormant
	Total	82	36,355

Source: Department of Fisheries, Ramanathapuram District, Tamilnadu

Appendix-50 Details of Savings cum Relief Scheme to Fishermen progress upto 31-05 –2003 in Ramanathapuram, Tamilnadu.

Year	Amount of subsidy Sanctioned	Amount Disbursed	No. of Beneficiaries
1997-98	81,74,700	81,74,700	10,547
1998-99	1,11,29,240	1,11,29,240	15,735
1999-00	1,30,19,400	1,30,19,400	18,157
2000-01	1,35,19,530	1,35,19,530	18,873
2001-02	1,58,57,700	1,58,57,700	19,919
2002-03	2,16,79,950	1,82,90,700	18,904

Appendix-51 Details of Coastal District-wise Male and Female population in Tamilnadu State – Year 2000

S. No.	District	Male	Female	Total
1.	Chennai	36552	34505	71057
2.	Thiruvallur	20845	20958	41803
3.	Kancheepuram	13179	12630	25809
4.	Villupuram	7542	7381	14923
5.	Cuddalore	20856	19726	40582
6.	Nagapattinam	40796	38972	79768
7.	Thiruvarur	5291	5074	10365
8.	Thanjavur	12952	12426	25378
9.	Pudukkottai	12944	12083	25027
10.	Ramanathapuram	60234	57057	117291
11.	Thoothukudi	35828	33730	69558
12.	Thirunelveli	10275	9935	20210
13.	Kanniyakumari	71018	66922	137940
	Total	**348312**	**331399**	**679711**

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000, Dept. of Fisheries, Tamilnadu, Chennai.

Appendix-52 Details of coastal district-wise crafts and gears in Tamilnadu State during the year 2000

S. No.	District	Mechanised crafts	Non-mechanised crafts	Gears
1.	Chennai	908	1662	9418
2.	Thiruvallur	98	5101	36629
3.	Kancheepuram	7	3250	10291
4.	Villupuram	17	1804	11477
5.	Cuddalore	640	5000	55987
6.	Nagapattinam	1465	4129	32652
7.	Thiruvarur	--	47	19589
8.	Thanjavur	469	1031	33032
9.	Pudukkottai	866	1710	32129
10.	Ramanathapuram	1804	5078	88847
11.	Thoothukudi	352	2197	42193
12.	Thirunelveli	--	1395	28653
13.	Kanniyakumari	1383	9366	24735
	Total	**8009**	**41770**	**425632**

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000; Dept. of Fisheries, Tamilnadu, Chennai.

Appendix- 53 Details of coastal district-wise Literates and Employed Fisherfolk in Tamilnadu State during the year 2000

S. No.	District	Literates	Employed Men	Employed Women
1.	Chennai	43205	19511	5449
2.	Thiruvallur	16653	12064	2914
3.	Kancheepuram	12775	7815	1361
4.	Villupuram	6855	4225	1790
5.	Cuddalore	21163	11910	2454
6.	Nagapattinam	39144	23753	5416
7.	Thiruvarur	6739	3150	1646
8.	Thanjavur	12115	5990	839
9.	Pudukkottai	13126	6813	504
10.	Ramanathapuram	65545	34574	8441
11.	Thoothukudi	50122	19158	2022
12.	Thirunelveli	16047	5339	815
13.	Kanniyakumari	95578	40168	3692
	Total	**399067**	**194470**	**37343**

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000; Dept. of Fisheries, Tamilnadu, Chennai.

Appendix-54 Details of Fishermen Population – Year 2002

No.	Name of the villages	Children			Adults			Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Population
1a.	Ramakrishnapuram	108	100	208	118	106	224	226	206	432
1b.	Natarajapuram	283	290	573	381	348	729	664	638	1,302
2.	Periyapattinam	595	612	1,207	1,079	972	2,051	1,674	1,584	3,258
3.	Kalimangundu	56	56	112	116	113	229	172	169	341
4.	Chinna Ervadi	366	364	730	537	538	1,075	903,	902	1,805

Sources: Tamilnadu Marine Fisherfolk Census– Year 2000; Dept. of Fisheries, Tamilnadu, Chennai.

Appendix-55 Census of Marine Fisherfolk by age group – Year 2002

S. No.	Name of the Village	0-5	6-17	18-40	41-65	Above 65	Total
1a.	Ramakrishnapuram	79	129	170	48	6	432
1b.	Natarajapuram	159	414	547	174	8	1,302
2.	Periyapattinam	247	960	1,584	422	45	3,258
3.	Kalimangundu	30	82	167	58	4	341
4.	Chinna Ervadi	170	560	718	303	54	1,805

Sources: Tamilnadu Marine Fisherfolk Census– Year 2000; Dept. of Fisheries, Tamilnadu, Chennai.

Appendix-56 Details of Religion and Community – Year 2002

No.	Name of the villages	Religion					Community					
		H	C	M	O	T	F	BC	MBC	SC	ST	T
1a.	Ramakrishnapuram	396	36	0	0	432	0	0	432	0	0	432
1b.	Natarajapuram	1,262	5	35	0	1,302	0	1,297	5	0	0	1,302
2.	Periyapattinam	199	11	3,048	0	3,258	0	3,234	0	24	3,258	
3.	Kalimangundu	341	0	0	0	341	0	317	0	24	0	341
4.	Chinna Ervadi	1,775	15	15	0	1,805	0	55	1,740	10	0	1,805

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000; Dept. of Fisheries, Tamilnadu, Chennai.

H: Hindu; C: Christian; M: Muslim; O: Others; T: Total; F: Forward, BC: Backward, MBC: Most Backward, SC: Scheduled Cast: ST: Tribes

Appendix-57 Details of Housing Facilities – Year 2002

No.	Name of the villages	A	B	C	D	E	F	G	H	I	J	K	L
1a.	Ramakrishnapuram	0	5	57	50	112	108	4	112	112	432	3.86	3.86
1b.	Natarajapuram	20	8	170	39	237	230	7	237	237	1,302	5.49	5.49
2.	Periyapattinam	83	83	339	19	524	473	51	524	524	3,258	6.22	6.22
3.	Kalimangundu	3	7	32	35	77	69	8	77	77	341	4.43	4.43
4.	Chinna Ervadi	8	34	253	61	356	193	163	356	356	1,805	5.07	5.07

A: Terraced, B: Tiled, C: Thatched, D: Free House, E: Total, F: Owned, G: Rented, H: Total, I: Families, J: Total Population, K: Family Size, L: Persons /House

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000; Dept. of Fisheries, Tamilnadu, Chennai.

Appendix- 58 Details of Educational Status – Year 2002

S. No.	Name of the Village	Primary School	High School	Hr. Sec. School	College	Technical	Total Literates	Total Illiterates
1a.	**Ramakrishnapuram**	220	80	1	0	0	301	52
1b.	**Natarajapuram**	357	284	14	2	1	658	485
2.	**Periyapattinam**	1,280	1,021	68	20	9	2,398	613
3.	**Kalimangundu**	107	65	1	0	0	173	138
4.	**Chinna Ervadi**	384	261	25	7	2	679	956

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000; Dept. of Fisheries, Tamilnadu, Chennai.

Appendix - 59 Details of Employment Status of Fishermen – Year 2002

No.	Name of the villages						Employed in			
		Fishing	Fresh Fish Trading	Dried Fish Trade	Net Making	Diving	Allied Activities	Govern-ment	Private	Others	Total
1a.	**Ramakrishnapuram**	118	0	0	0	0	0	0	0	0	118
1b.	**Natarajapuram**	119	80	0	50	0	0	2	0	80	331
2.	**Periyapattinam**	641	0	0	0	0	0	0	0	438	1,079
3.	**Kalimangundu**	104	0	0	0	0	0	0	0	0	104
4.	**Chinna Ervadi**	409	6	0	2	0	15	0	3	15	450

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000; Dept. of Fisheries, Tamilnadu, Chennai.

Appendix- 60 Details of Employment Status of Fisherwomen– Year 2002

No.	Name of the villages							Employed in			
		Fishing	Fresh Fish Trading	Dried Fish Trade	Net Making	Diving	Allied Activities	Govern-ment	Private	Others	Total
1a.	**Ramakrishnapuram**	0	0	10	0	0	70	0	0	0	80
1b.	**Natarajapuram**	0	44	40	64	0	0	0	0	100	248
2.	**Periyapattinam**	0	0	0	0	0	0	0	0	0	0
3.	**Kalimangundu**	0	0	0	0	0	0	0	0	0	0
4.	**Chinna Ervadi**	26	68	21	8	0	56	0	3	57	239

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000, Dept. of Fisheries, Tamilnadu, Chennai.

Appendix-61 Details of Income Status of Fisherfolk – Year 2002

S. No.	Name of the Village	Less than Rs.3000	Rs.3001 to Rs.6000	Rs.6001 to Rs.12000	Rs.12001 to Rs. 15000	Above Rs.150000	Total
1a.	**Ramakrishnapuram**	88	72	24	14	0	198
1b.	**Natarajapuram**	134	325	120	0	0	579
2.	**Periyapattinam**	0	219	851	3	6	1,079
3.	**Kalimangundu**	0	4	67	30	3	104
4.	**Chinna Ervadi**	38	209	427	6	9	689

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000, Dept. of Fisheries, Tamilnadu, Chennai.

Appendix-62 Details of Fishing Grafts – Year 2002

		Mechanised Boats							Non-mechnaised Boats									
		Make			Type				Make		Type							
No.	Name of the villages	W	F	S	T	GN	L	TO	W	F	PW	M	V	DC	C	T	IBE	OBM
1a.	Ramakrishnapuram	0	0	0	0	0	0	0	20	0	0	0	20	0	0	20	18	0
1b.	Natarajapuram	0	0	0	0	0	0	0	86	0	0	0	86	0	0	86	25	0
2.	Periyapattinam	1	0	0	1	0	0	1	28	0	0	0	28	0	0	28	11	0
3.	Kalimangundu	0	0	0	0	0	0	0	24	0	0	0	24	0	0	24	4	0
4.	Chinna Ervadi	85	0	0	85	0	0	85	53	0	0	0	53	0	0	53	15	0

W: Wood F: FRP S: Steel T: Trawler GN: Gill Netter L: Liner T: Total PW: Plywood M: Masula V: Vallam DC: Dugout Canoe C: Catamaran IBE: In-board Engine OBM: Out-Board Motor

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000, Dept. of Fisheries, Tamilnadu, Chennai.

Appendix-63 Details of Fishing Gears – Year 2002

S. No.	Name of the Village	Gillnet	Trawl net	Shore seine	Boat seine	Long line	Trap	Others	Total
1a.	Ramakrishnapuram	57	18	24	0	0	0	101	200
1b.	Natarajapuram	186	0	0	0	135	0	167	488
2.	Periyapattinam	880	2	0	5	0	98	0	985
3.	Kalimangundu	217	0	0	0	0	0	0	217
4.	Chinna Ervadi	516	160	4	0	62	6	160	832

Sources: Tamilnadu Marine Fisherfolk Census – Year 2000, Dept. of Fisheries, Tamilnadu, Chennai.

APPENDIX- 64. FISHERMEN WELFARE SCHEMES:

- Fishermen – free housing scheme: Government constructed houses at a cost of Rs: 33,000/- and an amount of Rs: 5,000/- is given to fishermen for the purpose of repairing the houses. Older houses are given first priority for repairs.
- Fishermen Accident Insurance Scheme: Under fishermen group insurance scheme, if a fisherman dies while fishing/totally disabled, Rs: 1.0 lakh (Rs: 1,00,000/-) compensation is paid to his family. For this, each fisherman has to pay Rs: 60/- as annual premium at the rate of Rs: 5/- per month.
- Fishermen Savings-Cum-Relief Scheme: Under this scheme, each fisherman has to pay Rs: 45/- per month for 8 months from March to June (Rs: 45 x 8 = Rs: 360/-). The State and Central Governments provide Rs: 360/- each. The total amount of Rs: 1,080/- is paid to each fisherman as relief grant from March to June in Tirunelveli and Tuticorin Districts; December to March in Kanyakumari District and September to December in Ramanathapuram and other Districts.
- 50% subsidy for In-board and Out-board Engine: Fifty percent of the cost of engine is given as subsidy to fishermen.
- Supply of Aluminium vessels for fisher-women with 50% subsidy.
- Link roads for fishermen villages.
- Street lights for fishermen villages.
- Diesel Subsidy: Under this scheme, Rupees 0.35 per litre of diesel is given as subsidy to boat owners who purchase diesel from approved retail outlets.
- Chank Fishing: Under this scheme, chank divers are permitted to collect chanks after getting licence (Diver Licence) on payment of Rs.: 250/- per annum and they can sell their catch to any merchant.
- Supply of Gear to Traditional Craft Fishermen: Under this scheme, only twenty percent subsidy is given to traditional fishermen, 20% comes from fishermen contribution and 60% as Bank loan.

Exclusively for Rameswaram island fishermen:

- Chief Minister's Relief Fund: From Chief Minister's Relief fund, Rupees one lakh (Rs:1,00,000/-) is given to each fisherman family who is shot dead by Sri Lankan Navy.
- Relief Schemes for Families of Fishermen Imprisoned in Sri Lanka: Under this scheme, the family of a fisherman who is imprisoned in Sri Lanka, Rs: 50/- per day is given for a maximum period of 45 days. An interim advance of Rs.: 10,000/- is provided to the district administration for this purpose.

Eligibility conditions:

- An individual is required to be an active fisherman (between the age of 18 and 60 years) and is required to be a member of a Fishermen Co-operative Society.

9. Annexure –1

SCIENTIFIC, COMMON AND VERNACULAR NAMES OF COMMERCIALLY IMPORTANT FIN AND SHELL FIHSES – TAMILNADU

Groups/Scientific Name	**Common Name**	**Vernacular Name**
Fishes:		
ELASMOBRANCHS		
Sharks:		
Chiloscyllium indicum	Ridge-back cat-shark	Korangan sorrah
C. griseum	Ridge-back cat-shark	Korangan sorrah
Rhiniodon typus	Whale shark	Panaimeen
Stegostoma fasciatum	Zebra shark	
Carcharhinus brevipinna	Spinner shark	
C. dussumieri	White-cheeked shark	Kondaiyan sorrah
C. limbatus C. macloti C. melanopterus	Grey shark Hard-nose shark Black shark	 Muthra sorrah Perunthalai sorrah
C. sorrah	Sorrah	
Galeocerdo cuvieri	Tiger shark	Puli sorrah
Laxodon macrorhinus	Slit-eye shark	Cosorrah
Rhizoprinodon acutus	Grey dog-shark	Pal sorrah
Scoliodon laticaudus	Yellow dog-shark	Pillai sorrah
Sphyrna blochii	Arrow-headed hammer-head shark	Komban sorrah
S. zygaena	Round-headed hammer-head shark	Komban sorrah
Centrophorus moluccensis	Spiny shark	
Skates:		
Rhina ancylostoma	Bow-mouthed angel fish	Pulaman uluvai
Rhinobatus granulatus	Granulated shovel-nose ray	Kal uluvai
Rhynchobatus dijiddensis	White-spotted shovel-nose ray	Pal uluvai
Pristis microdon	Small-toothed saw fish	Vezha
P. pectinata		Vezha
P. zijsron	Green saw-fish	Vezha
Rays:		
Dasyatis microps		
D. zygei	Pale-edged sting-ray	Sen thirukkai
D. kuhli		Katti thirukkai
Gymnura micrura	Short-tailed butterfly ray	
G. poecilura	Long-tailed butterfly ray	
Himantura bleekeri	Whip-tail sting-ray	Savukku thirukkai
H. imbricata	Scaly sting-ray	Savukku thirukkai
H. uarnak	Banded whip-tail sting-ray	Manal thirukkai
Hypolophus sephen	Cow-tail ray	Aadaa thirukkai
Urogynus africanus	Thorny ray	Kallu thirukkai
Aetobatus flagellum		Vauval thirukkai
A. narinari		Vaval thirukkai
Aetomylaeus maculatus A. nichrofii Rhinoptera adspersa	Mottled eagle-ray Nieuhof's eagle-ray Rough cow-ray	Panchadi thirukkai Vari vavval thirukkai Muthra thirukkai
R. javanica	Javanese cow-ray	Valvadi thirukkai
Manta briostis	Giant devil-ray	
Mobula diabolus	Lesser devil-ray	Kombu thirukkai
Narcine brunnea	Brown electric-ray	
N. timlei	Spotted electric-ray	Thimli

TELEOSTS		
Ten pounders:		
Elops machnata	Ten pounder	Valaya kulanchan
Tarpons: *Megalops cyprinoides* **Bone fish**:	Indo-pacific tarpon	Menna
Albula vulpes	Bone fish	Poomeen
Shads, Sprats & Sardines:		
Anadontostoma chacunda	Chacunda gizzard-shad	
Dussumeieria acuta	Rainbow sardine	Thondon or Motha kendai
Escualosa thoracata	White sardine	Velli kasu or Matta konthan
Hilsa ilisha		
H. keele	Five-spot herring	Koimeen or colour or nunalai
H. toli	Chinese herring	Ullam
Ilisha elongata	Elongata ilisha	Poovali
I. megaloptera	Big-eye ilisha	
I. melanostoma	Indian ilisha	Venkanai
Nematolosa nasus	Block's gizzard-shad	
Opisthopterus tardoore	Tardoore	Thotta
Pellona ditchela	Indian pellona	Venkanai
Raconda russeliana	Russell's smooth-back herring	
Sardinella albella	Short-body sardine	Choodai
S. dayi	Day's sardine	Choodai
S. fimbriata	Fringe-scale sardine	Chalai or kavalai
S. gibbosa	Gold-striped sardine	Chalai or kavalai
S. longiceps	Indian oil-sardine	Pei chalai
S. sirm	Spotted sardine	Keerimeen chalai or Koda kavalai
S. clupeoides	Round sardine	Keerimeen chalai
Anchovies:		
Coila dussemieri	Golden anchovy	
Setipinna taty	Hair-fin anchovy	
Stolephorus bataviensis S. commersonii S. devisi	Batavian anchovy Commerson's anchovy Devisi anchovy	Nethili Nethili Nethili
S. indicus	Indian anchovy	Nethili
S. macrops	Estuarine anchovy	Nethili
S. waitei	Waite's anchovy	Nethili
Thryssa dussumieri	Dussumieri's anchovy	Kola or poruva
T. malabarica	Malabar anchovy	Kola or poruva
T. mystax	Moustached anchovy	Kola or poruva
T. setirostris	Long-jaw anchovy	Kola or poruva
OTHER CLUPEOIDS:		
Wolf herrings:		
Chirocentrus dorab	Wolf-herring	Mullu valai
C. nudus	White-fin wolf-herring	Karu valai
Milk Fish:		
Chanos chanos	Milk fish	Palmeen
Lizard fishes:		
Saurida tumbil	Greater lizard-fish	Thumbili
Synodus indicus	Indian lizard-fish	Thumbili
Cat fishes:		
Arius caelatus	Engraved car-fish	Manja keliru
A. dussumieri	Dussumieri's car-fish	Poth keliru
A. maculatus	Spotted car-fish	Keliru
A. thalassinus	Giant car-fish	Mondai keliru or Venkeliru

Cat fish eel:		
Plotosus anguillaris	Striped cat-fish eel	Schungan keliru
Eels, Morays & Congers:		
Gymnothoras undulatus	Leopard moray	Anjalai
Uroconger lepturus	Conger eel	Vilangu
Full beaks (Gar fishes):		
Albennes hians	Barred long-tom	Mural
Strongylura crocodilus	Fork-tail alligator gar	Kozhya mural
S. leiura	Square-tail alligator gar	Valaya mural
Half beaks:		
Hemirhamphus far	Needle fish	Kattayan mural
H. marginatus	Barred half-beak	Mural
Rhynchorhampus georgii	Long-billed half -beak	Mural
Flying fishes:		
Cypselurus spilopterus	Spotted flying-fish	Paravakola
Exocoetus volitans	Two-winged flying-fish	Paravakola
Unicorn cod:		
Bregmaceros macclellandi	Unicorn cod	
Flute mouths:		
Fistularia villosa	Rough flute-mouth	
Sea horse:		
Hippocampus kuda	Sea horse	Kadal kuthirai
Razor fish:		
Centriscus scuttatus	Razor fish	Ambattan kathi
Squirrel fishes:		
Holocentrus rubrum	Red squirrel-fish	Chemmeen
Myripristis murdjan	Black-tipped squirrel-fish	Puna kanni
Barrcudas		
Sphyraena barracuda	Great barracuda	Ooli
S. forsteri	Foster's barracuda	Ooli
S. jello	Banded barracuda	Kara ooli
S. obtusata	Obtuse barracuda	Kara ooli
Mullets		
Liza macrolepis	Borneo mullet	Manali or madavai
L. vaigiensis	Diamond scale mullet	Manali or madavai
Mugil cephalus	Flat-head grey-mullet	Mulanai or madavai
Thread fins		
Eleutheronema tertradactylum	Four-finger thread -fin	Kaala
Polynemus heptadactylus	Seven-finger thread-fin	Kaala
P. indicus	Indian thread-fin	Kaala
P. plebetus	Common thread-fin	Kaala
P. Sexfilis	Golden six-thread-fin	Kaala
P. sextarius	Blackspot thread-fin	Kaala
Sea perches		
Ambasis commersoni	Commerson's glassy-perchlet	
A. gymnocephalus	Naked-head glassy-perchlet	
Lates calcarifer	Giant sea-perch	Koduva
Psammoperca waigiensis	Waigen sea-perch	Chenganni
Sea basses & Reef cods		
Cephalopholis boenack	Blue-lined sea bass	
Epinephelus quoyanus		Kalava
E. areolatus	Aerolated reef-cod	Kalava
E. bleekeri	Bleeker's reef-cod	Kalava
E. diacanthus	Six-barred reef-cod	Kalava
E. malabaricus	Malabar reef-cod	Kalava
E. merra	Wire-netting reef-cod	Pulli kalava
E.morrhua	Banded-chak reef-cod	Kollu kalava
E. tauvina	Greasy reef-cod	Thala kalava

E. undulosus	Brown-lined reef-cod	Panju kalava
Tiger perches		
Therapon jarbua	Crescent tiger-perch	Keeli
T. theraps	Large-scaled tiger-perch	Keeli
T. puta	Small-scaled tiger-perch	Keeli
Bull's eye		
Priacanthus cruentatus	Blood-coloured bull's-eye	
P. hamrur	Dusky-finned bull's-eye	
Cardinal fish		
Apogan leptacanthus	Filamented cardinal-fish	Paar musiru
Whiting		
Sillago sihama	Silver whiting	Kilangan
White fish		
Lactarius lactarius	White fish	Kuthippu or Suthumbu
Cobia		
Rachycentron canadus	Cobia	Kadalviral
Carangids		
Alectis ciliaris	Thread-fin trevally	Perum parai
A.indicus	Indian threadin-trevally	Sukkan kanni parai
Alepes djeddaba	Djeddaba trevally	Parai
A. mate	One-finlet scad	Parai
Atropus atropus	Kuweh trevally	Parai
Carangoides armatus	Armed trevally	Parai
C. chrysophyrs	Long nose trevally	Parai
C.ferdau	Ferfanus trevally	Parai
C.malabaricus	Malabar trevally	Parai
Caranx carangus	Black-tailed trevally	Karunkanni paarai
C.ignobilis	Yellow-fin trevally	Vaththava paarai
C.melampygus	Black-tipped trevally	Parai
C. sexfaciatus	Dusky trevally	Parai
C. stellatus Decapterus dayi D. russelli	 Day's scad Russell's scad	 Parai Parai
Elagatis bipinnulatus	Rainbow runner	
Gnanthanodon speciosus	Golden toothless-trevally	
Megalapsis cordyla	Hard-tail scad	Vengadai paarai
Scomberoides lysan	Tallang leather-skin	Thol paarai
S. tala	Deep queen-fished	Katta
Seriola nigrofasciata	Black-banded kingfish	Keeri paarai
Trachinotus bailloni	Baillon's pompano	Thol paarai
T. blochii	Snule nose-pompano	Kutili or Thol paarai
T. botla	Russel's pompano	Mulaali or Thol paarai
Black pomfrets		
Formio niger	Black pomfret	Karu vaval
Moon fish		
Mene maculate	Moon fish	Kannadi karak
Dolphin fish		
Coryphaena hippurus	Common dolphin fish	Ayilis
Red baits		
Dipterygnonotus leucogrammicus	Red bait	
Jobfishes, Fusiliers & Snappers		
Aprion pristipoma	Sharp-toothed bats	Lomia
Caesio caerulaureus	Blue and gold fusilier	
Lutjanus rivulatus	Blue-lined snapper	Kuruvilai
L. bohar	Two-spot snapper	Paruthi manni
L. fulviflamma	Black snapper	
L.lineolatus	Big-eye snapper	
L.malabaricus	Malabar red-snapper	Seppili
L. russelli	Russel's snapper	Seppili

L. sebae	Emperor red-snapper	Seppili
L. vaigiensis	Waigue snapper	
Threadfin breams		
Nemipterus delagoae	Delogan threadfin-bream	Lomia or kandal
N. japonicus	Japanese threadfin-bream	Lomia or kandal
N. tolu	Notched threadfin	Lomia or kandal
N. mesoprion	Red-filament threadfin	Lomia or kandal
Scolopsis bimaculatus	Two-spot monacle -bream	Pompton
S. vosmeni	White-cheeked monacle-bream	Pompton
Triple tails		
Labotes surinamensis	Brown triple-tail	Sadaiyan
Silverbellis (Pony fishes)		
Gazza minuta	Toothed pony -fish	Kuthippu karal
Leiognathus berbis	Undulated pony-fish	Karal
L.bindus	Orange-fin pony-fish	Karal
L.brevirostris	Short-nose pony -fish	Karal
L. daura	Golden-striped pony-fish	Karal
L. dussumieri	Dussumier's pony -fish	Karal
L. equulus	Common pony-fish	Karal
L. jonesi	Jone's pony-fish	Karal
L. lineolatus	Lined pony -fish	Karal
L. splendens	Splendid pony -fish	Karal
Mojarras		
Gerres abbreviatus	Deep-body mojarra	Udagam
G. filamentosus	Whip-fin mojarra	Udagam
G. oyena	Lined mojarra	Udagam
G. setifer	Black-tipped mojarra	Udagam
Pentaprion logimanus	Long-fin mojarra	Velli udagam
Sweetlips & Grunters		
Gaterin diagrammus	Silver-banded sweet-lip	Mathanam
G. lineatus	Yellow-banded sweet-lip	Mathanam
Pomadasys hasta	Lined silver-grunter	Korkai or Seraiah
P. maculates	Blotched grunter	Korkai or Seraiah
Johnieops aneus	Grey-fin croaker	
J. sina	Sin croaker	
Johnius dussumieri	Bearded croaker	
Kathala axillaries	Kathala croaker	Kathalai
Nibea maculata	Blotched croaker	
Otolithus cuvieri	Lesser tiger-toothed croaker	Panna
O. rubber	Tiger-toothed croaker	Panna
Pennahia macrophthalmus	Big croaker	
Protonibea diacanthus	Spotted croaker	Kooral kathalai
Emperor breams		
Lethrinus miniatus	Long-face emperior-bream	Vilaimeen
L. nebulosus	Starry emperor-bream	Vilaimeen
L. ornatus	Ornate emperor-bream	Vilaimeen
L. ramak	Yellow-banded emperor-bream	Vilaimeen
Large-eyed breams		
Monotaxis grandoculis	Round-toothed large-eyed bream	
Gnathodentex aurolineatus	Gold-lined large-eyed bream	
Gymnocranius griseus	Naked-heated large-eyed bream	
Silver breams'		
Argyrops spinifer	Long-spine silver-bream	
Mylio latus	Yellow-fin silver-bream	
Goat fishes		
Parupeneus indicus	Indian goat-fish	Sen navarai
Upeneus sulphureus	Yellow goat-fish	Navarao
U. vittatus	Yellowostriped goat-fish	Navarai

Silver bat-fish		
Monodactylus argenteus	Silver bat-fish	Moolen
Sweeper		
Pempheris moluca	Moluccan sweeper	Thotti or Mundai kannee
Seachubb		
Kyphosus cinerascens	Ashen sea-chubb	
Spade fishes		
Tripterodon orbits	Common spad-efish	
Platax orbicularis	Round spade-fish	Vannathi meen
P. teira	Long finned spade-fish	Vannathi meen
Sickle Fish		
Drepane punctata	Spotted Sickle-fish	Painthee
Butter fish		
Scatophagus argus	Spotted butter-fish	
Coral fishes & Angel fishes		
Chaetodon auriga	Filamented coral-fish	
C. collare	White-collared coral-fish	
C. trifasciatus	Three-banded coral-fish	
C. vagabundus	Vaganbond coral-fish	
C. zanthocephalus	Yellow-headed coral-fish	
Pomacanthodes annularis	Ringed angel-fish	Vannathi meen
P. semicirculatus	Blue angel-fish	Vannathi meen
Etroplus suratensis	Pearlspot banded-etroplus	Sethel or Karimeen
Demoiselles & Pullers		
Abudefduf biocellatus	Two-spot demoiselle	
A. septemfasciatus	Seven-band demoiselle	
A. uniocellatus	One-spot demoiselle	
Amphiprion sebae	Yellow-tailed anemone fish	
Chromis caeruleus	Blue puller	
Dascyllus aruanus	Banded puller	
D. trimaculatus	White-spotted puller	
Pomacentrus nigricans	Dusky demoiselle	Par musiru
P. tripunctatus	Three-spot demoiselle	Par musiru
Parrot fishes		
Callyodon bataviensis	Batavian parrot-fish	Kizhi meen
C. ghobban	Flame parrot-fish	Kizhi meen
C. janthochir	Green-jaw parrot-fish	Kizhi meen
C. dussumiere	Dussumier's parrot-fish	Kizhi meen
C. fasciatus	Rivulated parrot-fish	Kizhi meen
Wrasses		
Cheilinus chlorurus	Red-spotted green-wrasse	
C. diagramma	Scribbled wrasse	
C. undulatus	Wavylined wrasse	
Cheilio inermis	Slender wrasse	
Coris gaimardi	Gaimard's wrasse	
Gomphosus coeruleus	Blue club-nosed wrasse	
Hemigymnus faciatus	Five-band wrasse	
Stethojulis axillaries	Red-spot wrasse	
Thalassoma hardwicki	Hardwick's wrasse	
T. lunare	Green wrasse	
T. purpurea	Rainbow wrasse	
Blenny		
Entomacrodus striatus	Streaked blenny	
Dragonet		
Callionymus japonicus	Japanese dragonet	
C.sagita	Arrow-headed dragonet	

Spine foots		
Siganus oramin	White-spotted spine-food	Ora meen
S.javus	Streaked spine-foot	Ora meen
S. Vermiculatus	Vermiculated spine-foot	Ora meen
Mookis idol		
Zanclus cornutus	Noorish idol	
Surgeon fishes & Unicorn fishes		
Acanthurus bleekeri	Bleeker's lined surgeon-fish	Orandai
A. leucosternon	White-breasted surgeon	Orandai
A. lineatus	Blue-line surgeon-fish	Orandai
A. matoides	White-tail surgeon-fish	Orandai
Naso brevirostris	Short-nosed unicorn-fish	Thol kilathi
N. tuberosus	Hump-nosed unicorn-fish	Thol kilathi
N.unicornis	Long-snouted unicorn-fish	Thol kilathi
Snake mackerels		
Epinulla orientalis	Oriental snake-mackerel	
Ribbon fishes (Hair tails)		
Lepturacanthus savala	Small-headed ribbon-fish	Savalai
Trchiurus lepturus	:arge-headed hair-tail	Savalai
Tunas, Mackerels & Seer fishes		
Auxis rochei	Bullet tuna	Elichoorai
A. thazard	Frigate tuna	Elichorai
Euthynnus affinis	Little tuna	Choorai
Katsuwonus pelamis	Skipjack tuna	Choorai
Sarda orientails	Oriental bonito	Seela choorai
Thunnus albacares	Yellow-fin tuna	Kila valai
T. tonggol	Long-tail tuna	Kila valai
Rastrelliger kanagurta	Indian mackerel	Ayilai or Asalai
Acanthocybium solandri	Wachoo	Savaran
Scomberomorus commerson	Narow-barred seer-fish	Nettaiyan seela or Vanchiram
S. guttatus	Indo-Pacific seer-fish	Kattayan seela
S. lineolatus	Streaked seer-fish	Nona seela
Sail fishes (Marlins)		
Istiophorus platypterus	Sail fish	Thalapaththu
Makaira indica	Black marlin	Kopparai kuzha
M. nigricans	Blue marlin	Kopparai kuzha
Sword fish		
Xiphias gladius	Sword fish	Thalapaththu or Myil meen
Pomfrets		
Pampus argenteus	Silver pomfret	Vella vaval
P. chinensis	Chinese pomfret	Vella vaval
Hump heads		
Kurtis indicus	Indian hump-head	Nenji adaichan
Scorpion fishes (Sting fishes & Fire fishes)		
Scorpaenopsis cirrhosa	Hairy sting-fish	Samy meen
Sebastapistes strongi	Brown-hand sting-fish	Samy meen
Sea robins		
Peristedion adeni	Sea robin	
Flat heads		
Platycephalus indicus	Indian flat-head	Nilanthatti
P. scaber	Round flat-head	Nilanthatti
P.tuberculatus	Knobby flat-head	Nilanthatti
Flat fishes		
Psettodes erumei	Indian halibut	Erumai nakku
Bothus ovalis	Oval flounder	Naakku meen
Engyprosopon grandisquamis	Large-scale flounder	Naakku meen

Pseudorhombus arsius	Large-toothed flounder	Naakku meen
P.triocellatus	Three-spot flounder	Naakku meen
Zebrias quagga	Zebra sole	Naakku meen
Cynoglossus lingua	Long tongue-sole	Naakku meen
Sucker fishes		
Echeneis naucrates	Slender sucker-fish	Pilal otti
Tripod fishes		
Pseudotriacanthus strigilifer	Long-spined tripod-fish	Kilathi
Triacanthoides athiops	Leather-jacket tripod-fish	Kilathi
Triacanthus brevirostris	Short-nosed tripod-fish	Kilathi
File fishes & Leather jackets		
Abalistes stellatus	Starry file -fish	
Canthidermis rotundatus	Round file -fish	
Balistapus undulatus	Undulated file -fish	
Rhinecanthus aculeatus	Prickly file-fish	
Paramonacanthus choirocephalus	Pig-faced leather -jacket	
Amanses sandwichiensis	Spotted leather-jacket	
Puffer fishes (Blow fishes)		
Lagocephalus inermis	Smooth-backed blow-fish	Pethai
Tetradon hispidus	White-spotted blow-fish	Pethai
T. immaculatus	Immaculate blow -fish	Pethai
T. leopardus	Banded-leopard blow-fish	Pethai
T. nigropunctatus	Black-spotted blow-fish	Pethai
T. stellatus	Starry blow-fish	Pethai
T. oblongus	Oblong blow-fish	Pethai
Porcupine fishes		
Diodon hystrix	Spotted porcupine-fish	Mullu Pethai
D. maculifer	Blotched porcupine-fish	Mullu Pethai
Frog fishes		
Anternnarius leprosus	Ocellated frog-fish	
A. hispidus	Shaggy fishing-fish	
Bat fishes		
Halicutea stellata	Red bat-fish	
Dragon fish		
Pegasus draconis	Short dragon-fish	
CRUSTACEANS		
Penaeid prawns		
Solenocera crassicornis	Coastal mud-prawn	Rani karikadi
S. hextii	Deep-sea mud-shrimp	Rani karikadi
S. indica	Indian mud-prawn	Rani karikadi
Metapenaeopsis stridulans	Fidder shrimp	
Metapenaeus affinis	Jinga prawn	Kal eral
M. brevicornis	Yellow prawn	
M. dobsoni	Flower-tail prawn	Poovalan
Parapenaeopsis acclivirostris	Hawknose shrimp	
P. hardwickii	Spear prawn	
P. maxillipedo	Torpedo shrimp	
P.stylifera	Kiddi prawn	Karikadi
P. Uncta	Uncta shrimp	
Penaeus canaliculatus	Witch prawn	
P.indicus	Indian white-prawn	Naaran
P. japonicus	Kuruma prawn	Vari eral
P. latisulcatus	King prawn	
P. merguiensis	Banana prawn	
P. monodon	Giant tiger-prawn	
P. semisulcatus	Green tiger-prawn	
Non-penaeid prawn		
Acetes indicus	Paste shrimp	Channa kunni

Lobsters		
Panulirus homarus	Green spiny-lobster	Thala eral
P. ornatus	Ornate spiny -lobster	Mani eral
P. versicolor	Pointed spiny -lobster	Ponvandu eral or Singi eral or Rama eral
P. longipes		
Puerulus sewelli	Deep-sea yellow -lobster	Singi eral
Thenus orientalis	Mud lobster	Matta singi eral
Crabs		
Calappa lophos		
Scylla serrata	Green mud crab	Kazhi nandu
Portunus pelagicus	Reticulate crab	Olakkal nandu
P. sanguinolentus	Spotted crab	
Chrybdis cruciata	Cross crab	Siluvai nandu
C. edwardsi		
Stomatopod		
Oratosquilla nepa	Mantis shrimp	
MOLLUSCS		
Cephalopods		
Sepia elliptica	Cuttle fish	Ottukanava
S. pharaonis	Cuttle fish	Ottukanava
Sepiella inermis		
Loligo duvaucelii	Squid	Oosi kanava
Sepioteuthis lessoniana		
Octopus dollfusi	Octopus	Peikanava
REPTILES		
Turtles		
Eretmochelys imbricata	Hawksbill turtle	Aamai
Chelonia mydas	Green turtle	Paar aamai
Lepidochelys olivacea	Olive ridley	Aamai
Dermochelys coriacena	Leather-back turtle	Alukku aamai
MAMMALS		
Whales, Dolphins & Porpoises		
Physeter macrocephalus	Great sperm-whale	Thimingalam
Sousa chinensis	Indo-Pacific humback-dolphin	Thimingalam
Pseudocra crassidens	False killer-whale	Thimingalam
Globicephala macrorhynchus	Short fin pilot-whale	Thimingalam
Tursiops truncatus		
T. adoruncus	Bottle-nose dolphin	Ongole or odan
Stenella longirostris	Spinner dolphin	
Balaenoptera acutorostrata	Minke whale	Thimingalam
B. borealis	Sei whale	Thimingalam
B. musculus	Blue whale	Thimingalam
Sea cow		
Dugong dugong	Sea cow	Kadal pasu

Sources: R. Gurusamy, 1994. Marine Fisheries Information Service, Technical & Extension Series No. 134: pp:17-27.