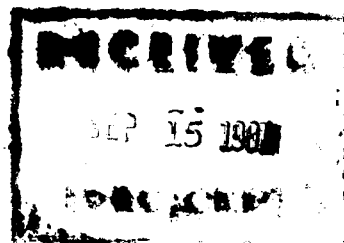




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SOCIO-ECONOMIC
CONDITIONS OF
SMALL - SCALE
FISHERMEN IN
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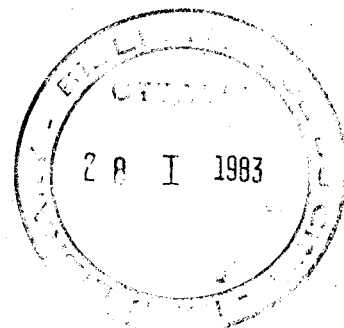
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M A R G A I N S T I T U T E
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SOCIO-ECONOMIC
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FISHERMEN IN
SRI LANKA

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ABSTRACT.

The disintegration of the politico-economic control over the Small-Scale Fishery held by the traditional coastal elites of Madel (Beach-Seine) owners, and the technological development (including motorisation) of the Small-Scale Fishery, were processes which accompanied as well as followed the radical politico-social changes of 1956. These processes paved the way for the subsequent course of development along which the Small-Scale Fishery has continued to move. As a result of this course of development, the Small-Scale Fishery has emerged today as one of the biggest income-generating sectors within the rural economy. The social and economic conditions in which the Sri Lankan fishermen find themselves today are discussed against the background of the production system and the infrastructure as pertaining to the fishery industry. Among the socio-economic aspects of the Small-Scale Fishery discussed are:- the demographic structure, the income structure, standards of living, patterns of expenditure and savings, investment patterns, assets and liabilities. A comparison is made, wherever possible, with relevant aspects of the socio-economic life of agricultural peasants in Sri Lanka.

C O N T E N T S

	<u>Page</u>
The Background ..	1
Introduction ..	1
Production ..	3
The Concept of Seasons ..	4
Mechanisation ..	6
Beach-Seine Production ..	9
Composition of the Catch ..	12
Dry Fish Production ..	14
Ice Production ..	16
Harbour Facilities ..	16
Inland Fishery ..	17
Brackish-Water Fishery ..	21
Aquaculture ..	22
Socio-Economic Conditions of Small-Scale Fisheries ..	24
Demographic Data ..	24
Racial and Religious Representation in the Industry ..	25
Caste representation in the Industry ..	28
Age Structure ..	29
Standards of living ..	30
Income Structure of the Fishing Community ..	41
Other Sources of Income ..	54
Expenditure and Savings, Assets and Liabilities ..	58
A Note on the Government Patronage to the Industry ..	64
A Note on the Fishery Resource and its Management ..	68
A Note on Policy Implications ..	73

(Maps and Appendices are issued separately)

PART I

T H E B A C K G R O U N D

Introduction

Sri Lanka, an island of about 65,600 square kilometres, lies at the tip of the Indian sub-continent about $6 - 10^{\circ}$ south of the equator. Longitudinally it is located between the 80th and 82nd degree lines. Its close proximity to the southern tip of India would suggest, that it may have been a part of India at some stage, although at present it is separated by a strip of water known as the Palk Strait which at its narrowest point is not more than 20 kilometres in width. The continental shelf of the island is about 32 kilometres wide at its broadest point around the North Western and Western coast whilst on the Southern coast this shelf narrows down to a mere 8 kilometres in width. The island margined by a coast-line of about 1200 km tapers from its widest point in the South to virtually a point, in the North at the tip of the Indian sub-continent.

Being a tropical island it is endowed with plenty of vegetation and forests concentrated mainly on the lower two thirds of the country.

At the centre of the island is a mountain range which at its highest point is about 2133 metres above sea level. This mountain range slopes more sharply to the South and West of the country than to the Northern and Eastern parts. It is no surprise, therefore that a greater part of the rivers originating from these mountains flow towards the Southern and Western coasts - rendering the Northern and Eastern sectors of the island virtually a "dry-zone".

The Northern and Eastern sectors however, are not without their rivers and streams, the waters of which have been harnessed for irrigation through numerous artificial lakes and reservoirs constructed along their lengths. The rest of the island too is not without artificial reservoirs, although not in such great numbers as in the Northern and Eastern sectors.

These rivers, artificial lakes, reservoirs and numerous lagoons and estuaries and bays along the coast line of the island provide ample potential for a flourishing fishery industry in the country. This potential however has not been left unexploited throughout the ages, although not in the form of an industry. However it is not incorrect to presume that three types of fisheries exist in the country - viz : the marine fishery, the lagoon (or brackish water fishery) and the inland fresh water fishery. Although exploitation of the inland waters for fish as a source of food had continued through history, organized fishing as an industry, did not materialize till a few decades ago. Until then, fishing was a type of "village" industry.

During the last two decades the fishery industry has been considerably developed, although it is still entirely a small scale industry catering to the needs of the population. Its contribution to the Gross National Product in 1979 was only 2.8% compared to 22.39% contributed by the agricultural sector.

With a population of nearly 15 million and a growth rate of about 1.6% per year this contribution of 2.8% is far from adequate to a GNP of 48885 million rupees calculated at current factor cost prices.¹.

1. Source - Annual Report of the Central Bank of Ceylon - for the year 1979.

Production

Recent surveys revealed that there had been a production of 165720 tons of fish in 1979. Of this 88.4% came from the inshore or coastal (0 - 40 km range) fishery; inclusive of the lagoon fishery; whilst 10.3% was from inland fresh water fishery and 1.3% from the off shore (40 - 80 km range) fishery.²

In addition to the above production, a wet weight equivalent of 25410 tons were imported. Of the local production 6230 tons were exported and the total supply of fish for 1979 was therefore 184900 tons.

On calculations made by Marga Institute based on average production for each type of fishing craft employed, a production of 189370 tons is indicated for 1979.³

The level of production for 1979 would be greater if not for the damage caused to two important fishing districts (Batticaloa and Amparai on the Eastern coast) by a cyclone in November 1978. The production had dropped by nearly 50% in the Batticaloa district and recovery has been slow, although in the neighbouring district of Amparai it had been quicker and production had reached near pre-cyclone level by the end of 1979.

The recovery of the industry in these two districts was aided by government subsidies, and assistance provided by State Banks and the Cey-Nor Foundation (a Norwegian Aid Agency) which financed the replacement of fishing boats lost during the cyclone.

2. Based on data available at Ministry of Fisheries - Sri Lanka.

3. Marga Institute Small Scale Fishery Survey 1980.

According to Trade Statistics, Sri Lanka has imported 25140 tons of fish in 1979 at a cost of 12.3 million U.S. dollars, whilst exporting 6,230 tons to the value of 19.8 million U.S. dollars.

Equivalent figures for 1978 are 11763 tons (2.2 million U.S.\$) of imports and 4542 tons (15.0 million U.S.\$) of exports. There has been a 116% increase in the quantity of fish imported in 1979 whilst the increase in exports was only 37%. This abnormal increase in imports could be attributed to the liberalization of imports by the government rather than to an increase in demand or a decrease in production.

The fish exported is mainly the crustacea variety - (prawns and lobsters) and foreign exchange earnings in 1979 by these exports was nearly 32% more than in 1978. Between 1975 and 1978, however, fish exports from Sri Lanka increased by 225% and foreign exchange earnings by 910%. Some of these earnings have been lost since September 1979 as a result of a government ban, meant to preserve a fast depleting stock of lobsters, effective from September 1979.

Per capita fish consumption for Sri Lanka in 1972 was reduced to 24.98 lbs in 1978 despite the increase in production. This could be attributed to the increase of 10% in the population as well as the severe curtailing of imports during the period. Since 1978 the imports as well as the increase in production has led to an increase in per capita consumption by 15% amounting to 28.62 lbs. in 1979.

The concept of Seasons

Weather conditions along Sri Lanka's coast have been a controlling factor in the production of fish in the country. Seasonal monsoon winds and rough seas prevent fishermen pursuing their vocation without fear or loss.

Based on data provided by the Ministry of Fisheries.

These monsoons occur twice a year - each monsoon affecting a particular part of the coast. Between April and September the South West Monsoon affects the Southern and Western coasts, whilst the Eastern and Northern coasts are affected by the monsoons between October and March.

With their traditional light craft and sail-boats the fishermen would not brave the seas during the stormy periods with the result each region had its particular "season" during which the fishermen were able to go out to sea regularly. The period when they were unable to do fishing was known as the "off-season". With the introduction of mechanized craft, in 1959 the concepts of "fishing season" and "off-season" have changed radically.

The fishermen believe that the seas within 16 - 40 km are more productive during the monsoon season. Since the mechanized craft has made it possible to go out during this period they are able to get a bigger catch during the Monsoon Season than during the calm season and hence the more productive monsoon season is now called the fishing season by the fishermen operating mechanized craft, in some centres (Pitipana, Aluthwatta in the Western Coast).

It can be observed from the table (1) that the percentage production during the monsoon period has increased since mechanization of craft in 1959

Table (1)

Percentage production of the coastal provinces of the country in 1959 & 1978 according to seasons

Year & Period	April to September			October to March	
	South	West	North West	North ⁵	East
1959 Monsoon	17.45	19.8	20.15	45.53	49.49
1959 Non Monsoon	82.55	80.2	79.85	54.47	50.51
1978 Monsoon	54.55	51.61	47.77	53.18	35.29 ⁴
1978 Non Monsoon	44.55	48.39	52.23	46.82	64.71

Source - Ministry of Fisheries

4. ~~Due to~~ a recent cyclone the mechanized fleet was destroyed in this area.
5. Northern Province is somewhat sheltered from both monsoons.

Mechanization

Until the introduction of mechanized boats in 1959 the fishermen went out to sea in traditional craft with or without a sail. On a coastline of not more than 1200 kilometres, it is surprising to note the various types of craft used. A careful study of the craft and the groups of fishermen that use particular types of craft reveals that race and creed have had an influence on the choice of design of craft. It also appears that differences of ethnic and religious groups have contributed to the choice of a particular type of craft in particular regions.

On the Southern and lower Western coasts where the majority of the fishermen were Sinhala Buddhists, the outrigger canoe or "oru" was preferred, whilst Sinhala Roman Catholics in the upper Western and North Western coast favoured the small log craft or "Teppam".

The Tamils on the Northern coast and the Muslims in the Eastern coast used the large log raft or "Kattamaran" and the dugout canoe "vallam"⁷.

The government introduced a few mechanized 3½ ton type boats at subsidised prices in 1959. The **receptients** of these boats were skilled deep sea fishermen who were able to provide an initial deposit of 1000/-. In addition to this restriction there were several factors which contributed to the reluctance of the fishermen to change over from their traditional craft and equipment to more modern methods and craft.

Of the factors contributing to the reluctance to accept the newer craft and equipment the chief were

- (a) lack of experience and the fear of going out to sea without sail or outrigger.
- (b) the seemingly heavy capital outlay.
- (c) the intolerable recurrent expenses incurred in the cost of fuel and in the maintenance and repair of the new equipment.
- (d) the extra effort and expenses that would have to be incurred in providing sufficient security and suitable facilities for anchorage etc.

The 1959 experiment of introducing mechanized craft to the fishing industry was not accepted with much eagerness or enthusiasm by the fishermen. However, when, in 1965, this same innovation was further encouraged with added incentives such as the offer of new gear (such as the nylon net) and more powerful engines the reception to it was more enthusiastic - and today the 3½ ton type boat is a favoured craft in Sri Lanka.

7. For detailed description of numerous craft and gear used in Sri Lanka see Marga Institute Publication - S. Fernando 1980.

Despite the new enthusiasm shown to the new craft and fishing gear the fishermen still had the problem of capital outlay. When the lighter, and above all, cheaper 17½ foot fibre glass boat (with outboard motor) was introduced by the government, it proved to be popular chiefly among the Western and North Western coastal fishing population. This new craft had the added advantage of cheaper running costs, and the fact that no special anchorage was needed.

However, the Southern coastal fishermen who bear the brunt of seasonal heavy seas during the monsoon period, preferred the heavier 3½ tonner to this lighter craft, which is impossible to manage because of the "rolling effect" in the sea during the monsoon. Today with more powerful engines in their 3½ ton boats, these fishermen could exploit even the monsoon seas and thus provide themselves with employment and income all the year round from their "own seas" - without the need to migrate to safer seas during the monsoon.

Of the fibre glass boat and outboard motor combination, the power unit was soon found to be adaptable to even traditional craft and its popularity continued to grow. Statistics collected revealed that there was a greater number of traditional craft operating with outboard motors than fibre glass boats. That mechanization has become more broad based is also evident by the fact that 63% of the inshore marine fishery production is through mechanized craft. Figures for 1979 showed that from among the country's fishery fleet of 25540 units operating in the inshore belt (16-40 kilometres range) there were

2,870	3½ ton - 28' - 32' ft. boats
3,970	Fibre glass 17½ ft. boats with OBM
4,580	Indigenous craft with outboard motor
14,190	Non mechanised indigenous craft.

It was found in 1978 that there had been a 36% increase in 17½ ft. fibre glass boats with OBM over the previous year (1977) while the increase in 3½ tonners was only 4% over the figure for 1979.⁹

Most recent surveys reveal that between 1978 and 1979 there is a trend towards the 3½ tonners, whilst there has been only 18% increase in 17½ F.B. boats with OBM, the increase in 3½ tonners has risen to 13% over 1978.¹⁰ This recent trend towards the 3½ tonners may be due to the possibility of enhanced production by these vessels.

Whilst it is accepted that there has been considerable progress in the mechanization of the fishing fleet, 66% of it is still traditional and non-mechanised craft bringing in 37% of the total catch. A part (5%) of this 37% is derived from the Beach Seine technology.¹¹

Beach Seine Production

The craft used in this type of production are not actively engaged in catching the fish - rather, they take a large net several hundred metres out to sea leaving the ends of the net on the beach - also several hundreds metres apart - and encircle shoals of small varieties of fish.

The net is made of local coir rope and the technology adopted is quite primitive in that a large area of the sea is encircled by this net and the net is drawn, gathering the entrapped fish into a closely woven pocket attached to the end of the net.

9 & 10 Based on the data available at Ministry of Fisheries, Sri Lanka.

11 Based on the data available at the Ministry of Fisheries.

In 1975 this method of production was responsible for 30% of the total catch. With the popularity of new technologies and mechanized craft, this system receded, resulting in the reduction of its share of production to 9% in 1978 and 5% in 1979.

This system, however, continues to function in the Northern and North Western coasts of the island where it was predominant 2 decades ago at Sinnapadu to the Northern tip of the Kālpitiya tip and the Gulf of Mannar. A survey of the sample centres revealed the existence of 320 of these units of which only about 42% was actively functioning.¹²

The slow decay of the Beach Seine System has resulted in a proportionate reduction in the share of fish produced in the Northern and North Western coasts, whilst the more modern technologies adopted have compensated for this loss by increasing their proportionate level of production.

The following table gives the percentage production of each of the coastal provinces for the years 1959 and 1978 :-

Province	Percentage of total island production	
	1959	1978
Northern	43.88	31.90
North Western	21.62	12.96
Eastern	18.68	21.85
Southern	8.03	15.44
Western	7.79	17.85
Total	100.00	100.00

Source - Ministry of Fisheries

12. Marga Small Scale Fishery Survey 1980

It will be observed that the Northern Province continues to contribute a major share of the production. This could be due to the fact that the Northern Province is more or less "sheltered" from the two monsoons that affect the production by non-mechanized craft, in other parts of the coastal belt in the country. Production could therefore, continue throughout the year without much interruption. Although this explanation is sufficiently plausible, it would be interesting to investigate whether there are other factors contributing to this continued predominance in the field of fish **production**. Factors such as resource allocation, political influence, industriousness of the local population etc. do have an effect on production - whether it is of fish or any other commodity.

Other types of technologies in the pre-mechanization period were mainly hand lines, troll lines, hand nets, castnets, traps and nets made with cotton thread.¹³ Whilst these technologies still continue to be operative to some degree, a new type of technology has become very popular among the fishermen. This is known as the drift net made of nylon thread in various mesh size, which was introduced around 1962.

The nylon net gave a boost not only to the mechanized craft, but even contributed to increased production by non-mechanized craft by yielding a higher rate of return than for the "long lines" given with the 3½ ton boat at the first phase of mechanization. This technology yielded a higher rate of return, whilst requiring only a limited knowledge of the sea and the resource unlike for longlines or handlines for which an assessment of the location of demersed fish was necessary.

13. A detailed description of these technologies are provided in S.Fernando 1980 - Marga Institute Publication.

The inability to find suitable bait and the extra expenses involved in doing so resulted in adopting driftnets instead of the long lines. This technological change resulted in increasing production throughout the island and especially in the areas benefited by mechanization (viz - Southern and Western Provinces).

Composition of the catch

Fish caught around the coast of Sri Lanka could be broadly grouped into 7 groups. They are

- (1) Seer (Spanish Mackerel)
- (2) Paraw (Horse Mackerel)
- (3) Blood Fish (Tuna)
- (4) Rock Fish (Mullet etc)
- (5) Shark and Skate
- (6) Small Fish
- (7) Others (including prawns, crabs & lobsters).

Although there has been little change in the actual composition of the catch with the introduction of mechanization to fishing craft, and modern technologies, there has been a minor change in the proportion of each variety, and a marked change in two varieties - viz : the blood fish group and the rock fish group.

Variety	Table (3) Percentage of total production	
	1959	1978
Seer	2.98	2.71
Paraw	6.10	7.41
Blood fish	4.69	17.37
Shark	9.00	8.93
Rock fish	21.82	11.86
Small fish	47.36	45.36
Others	8.05	6.38
Total	100.00	100.00

Source - Ministry of Fisheries

It would be observed that the increase in the proportion of blood fish in the output is nearly four-fold, whilst the proportion of rock fish has dropped by almost half.

The blood fish variety is found mainly around the continental shelf. The continental shelf around the Southern coast is comparatively narrower (8 kilometres) than on the North-Western coast (30 kilometres).

Whilst blood fish was easily accessible even with the traditional sail craft to the fishermen on the South coast, the blood fish resource around Kandakuliya on the North Western coast was accessible only after the introduction of mechanized craft. Kandakuliya in the North West is now considered one of the major centres of blood fish production. There is little doubt that this is a direct result of mechanization of fishing craft.

As for the reduction of the quantity of rock fish (a demereal type) production a plausible explanation would be that there has been a reduction in the exploitation of demersal fish - also a result of the use of drift nets and mechanised craft.

With the increase in the use of mechanized craft and drift nets and the gradual demise of the beach seine technology, one would expect a reduction in the percentage of small fish caught. That the proportion of small fish caught remains unchanged through two decades may be due to the fact that the drift nets used at present also exploit these small fish resources greatly.

Dry Fish Production

Any survey of fish production would not be complete without reference to the production of dry fish - a not insignificant satellite of the fishery industry.

This industry, which prospered before the introduction of refrigeration and deep freezing techniques for the preservation of fish, and the development of fish transport, has come down to a very low level during the last two decades. Whilst 29.1% of the fish produced was converted to dry fish in 1959, only 9% of the production is diverted for conversion to dry fish, in 1978 (S. Fernando 1979).

Quicker modes of transport and the consumers' preference for fresh fish which is easily available may also be responsible for the decay of the industry.

An analysis of the quantities of dried fish produced in each of the coastal provinces in 1959 and 1978 are given in the following table :-

Table (4)

Percentage of total production of Dry Fish
in the Coastal Provinces

Province	1959	1978
Northern	42.88	70.63
Eastern	16.97	9.97
North Western	39.90	19.40
Southern	0.26	-
Western	-	-

Source - Ministry of Fisheries

It would be observed that the industry has been confined mainly to the Eastern, Northern and North-Western Provinces both in 1959 and in 1978. The other two provinces obviously dispose of their production mostly in its fresh and/or wet state. Moreover, these two provinces being in the wet zone of the island do not have sufficient dry weather and sunshine for the drying of fish, whilst the provinces producing dry fish have an abundance of dry weather and sun for the purpose. Due to the proximity of the fishing centres in the Southern and Western provinces to Colombo, which is the main distribution centre for fish, wet fish could be transported within a matter of hours through a very efficient transport system.

As stated earlier, the Northern, North Western and Eastern provinces account for nearly 67% of the total dry fish production in the island. Of these, the Northern and Eastern provinces are sparsely populated resulting in their having a supply of fish very much greater than the demand. The local fishermen, therefore, are compelled to either dry the fish or to transport the fish to Colombo in its wet state. The larger varieties of fish are transported, whilst the smaller and less-popular varieties (such as "Karalla" or silver belly and "Sudaya" or sardine) are dried, as it is uneconomical to transport these on ice to distant market centres in their fresh form.

The process of drying does not entail much expenditure, as only labour, salt and solar energy are needed for the purpose, and these are available in abundance in those areas. Another significant factor is that drying of fish does not reduce its nutritional value but rather enhances its food value. Storage of dry fish is also more convenient and shelf life is rather long.

The transport of **wet-fish** from distant places to distribution centres such as Colombo and consumer areas inland necessarily involves preservation of the fish - and the most convenient and short term method is preservation by means of ice.

Ice Production

The demand for fish in its fresh state has created a demand for ice for temporary preservation during transport. The manufacture of ice for this purpose is a minor industry by itself. According to statistics prepared by the Ministry of Fisheries the demand for ice was 78200 tons in 1978 and the estimated supply was only 62,100 tons. This figure has been calculated on the basis of the capacity of the ice producing plants as actual production of the commodity. Plans to increase production by another 28,000 tons in 1979 had been formulated by the Ministry of Fisheries, but no information is available as to whether this target has been reached.

Harbour Facilities

With the increased use of mechanized and larger boats, facilities for harbouring these vessels had to be provided, whilst the increased production of fish needed storage and refrigeration facilities for the fish in transit from the producers boats to the consumer via distribution centres.

A Fisheries Harbour Corporation was set up in 1974 to take over the tasks from the Ceylon Fisheries Corporation to provide these facilities for the fishing industry. The Corporation by virtue of its function is more of a service industry rather than a profit making organization. By 1979 the Corporation had constructed or developed harbours at Beruwela, Galle, Mirissa and Tangalle on the South coast, at Mutwal in the Western coast, and Trincomalee on the North Eastern coast of the country.

Two others are under construction at Myliddy in the North and Mannar on the North Western coast, whilst plans have been drawn up for the construction of one at Puranawella in Dewundara on the South coast, one at Vellamankara in Wennappuwa on the West coast and another at Valachchena on the East coast.

These harbours are provided with storage facilities, cold rooms, ice producing plants and a small workshop to undertake maintenance and repair of fishery craft.

Despite the scarcity of ice, fishermen do not appear to avail themselves of readily available cold-room storage facilities in these harbours, leaving these shore facilities under-utilised, although they are unable to provide for themselves such amenities from other sources. Occasionally these facilities are made use of by wholesale purchasers. To the average fisherman the harbour is a place where they could have their vessels serviced and repaired and as a haven of protection for their craft.

Inland Fishery

Fresh water fishery in Sri Lanka, confined to 340,000 acres - mainly in the form of irrigation reservoirs is still a relatively insignificant industry in the island. A rudimentary inland capture fishery marginal to agriculture has continued to exist in an undeveloped form in these perennial as well as seasonal inland reservoirs. Little progress has been made in the development of this fishery since activities commenced with stocking of these major irrigation reservoirs with fingerlings of *Tilapia Mosambica* in 1952. Recently other species such as Gourami, Grass Carp and Big Head Carp have been introduced¹⁴.

14. S. Fernando 1980 - Marga Institute Publication

15. R. M. Jayasena 1980 - Marga Institute Publication

The inland capture fishery is wholly non-mechanized. Gill nets and cast nets are operated from indigenous craft. Production however has doubled during the last 8 years amounting to 17,150 tons ¹⁵ in 1979 valued at 38.296 million rupees. This accounted for 10.3% of the island's total fish production and consisted of mainly Tilapia Mossambica (90%). This recent increase in the production of fresh water fish may be attributed to the increase in productivity in these tanks following a systematic stocking of inland water bodies with Tilapia fingerlings. Another reason may be the increased preference for fresh water fish in the wake of the prices of marine fish going up. There was an added incentive during the period in which dry fish imports were restricted. This affected the fresh water fishery indirectly as 25 - 40% of the production in this fishery is dried especially in the Northern region, whilst only 9% of the "coastal" production is converted to this form.

Conversion of dry fish in the inland fishery industry is confined mainly to the Northern tanks and reservoirs, whilst production in the Southern tanks are marked in its wet state. A somewhat plausible reason for this difference in the form of disposal may be that, in the South the assemblers or wholesale traders take over the wet fish and transport the stocks in their own vehicles to the distribution centres, whilst in the North there are no such assemblers to collect the wet fish. This apparent concern for the marketing of fresh water fish in the South may be due to the fact that most fishermen in this region are indebted to these traders or assemblies and some of them even operate craft and gear owned by traders themselves.

Hence it is no surprise that he is concerned that the 'catch' is marketed quickly and his debts and dues paid promptly.

Whilst in the North fishermen in the inland reservoirs are mostly migrants who have migrated on their own and are not compelled or able to sell their catch in its wet state. The lack of economical transport facilities, and the insufficient local demand are also factors which contribute to the conversion of about 80% of the catch to dry fish in the Northern inland fisheries. Whilst dry fish is disposed of wholesale to visiting dry fish dealers the wet fish is distributed in three different ways.

It is either sold cheaply in the vicinity of the tank to the villagers, or given out free to the locals or else sold at reasonable prices in the nearby villages. The first two forms of disposal could be regarded as an implicit form of rent derived by the local residents who regard the reservoir as their property. The reservoirs built mainly for irrigation purposes are considered to be the property of the locals who seem to extract a rent from the migrants by apparent leasing out of these property rights. This form of rent is however not extracted by all the locals but especially by those who are able to exert social and/or political pressure in the area.

The migration to these reservoirs has reduced during the past few years as a result of clashes between **migrants** the locals who have acquired the skill and art of fishing and who have had experience in operating craft and gear and have begun to resent the migrants exploiting what they consider is their property. These conflicts have become rather serious and have gone up to the ministerial level seeking permission to continue or discontinue fishing by the migrants.

Public sector investment in Inland Fisheries started in 1972. Whilst this investment was for surveys and research (Rs. 130,043) investments in development of Inland Fisheries started in 1974 (Rs. 105,814). The fisheries Master Plan for the period 1979 - 1983 envisages an increase of production in this sector to 50,000 tons by 1983 (a 200% increase). In view of that a new Inland Fisheries Division was established in the Ministry of Fisheries in July 1979. This new division is responsible for providing fingerlings, stocking of fresh water bodies and for encouraging people to adopt greater harvesting efforts in the inland fishery. There are 9 Inland Fish breeding and Experimental Stations in operation at present, whilst three more are nearing completion.¹⁶

Among the Ministry plans for the development of the Inland Fishery are the following :-

1. The introduction of subsidy of the cost of construction of Ponds for Fish culture and 35% of the cost of boats and gear for use in the fresh water Capture Fishery.
2. Intensified stocking programmes for the major tanks.
3. Removal of obstacles from inland waters where these constrain harvesting capacity.
4. A programme for stocking, fertilizing and harvesting small village (seasonal) tanks and estate tanks, starting with pilot projects in 3 tanks in 1980.
5. Provision of welfare facilities for localised inland fishermen as well as for migrant inland fishermen.

¹⁶ R.M. Jayasena. 1980. Marga Institute Publication.

6. Introduction of Chanos Chanos (Milk Fish) fingerlings, collected from Manner in the North Western coast and stocked at fish breeding centres - into the major reservoirs of the North.
7. Research to be conducted on experimental culture of multiple species so as to arrive at a suitable combination of species.
8. Development of new fish products such as fish cakes, fish sausages, fish paste and fish powder from low value species.¹⁷

Brackish Water Fishery

Sri Lanka also has 300,000 acres of brackish water bodies such as lagoons and estuaries. This fishery has always been assessed and administered as a part of the inshore fishery. Though there is vast potential for fish farming in the tidal flats, saline marshes and mangrove swamps, the brackish water fishery of Sri Lanka remains almost entirely a capture fishery. The fishing techniques used are rod and line, fish traps, cast nets and nylon drift nets. The crustacea particularly prawns and lobsters and crabs form an important part of this resource.¹⁸ These types were exploited heavily until 1979 for export purposes, and resulted in the near extinction of some species such as lobsters. Therefore a ban was enforced on the exports of lobsters effective from 1978. This ban is to be lifted when stocks are biologically replenished.

Stocking of brackish water bodies with suitable species of fish and rational management of brackish water resources with a view to stepping up production have not yet been seriously contemplated.

16. R. M. Jayasena 1980 - Marga Institute Publication

17. S. Fernando 1980 - Marga Institute Publication

Aquaculture

The cultivation of aquatic organisms, under controlled conditions by feeding them, protecting them from predators and other outside organisms keeping away parasites and harvesting them, when they have reached optimum size for use as food is still practised at a purely experimental stage. The number of pond culture units in the country is very small. There are a few brackish as well as fresh water fish ponds scattered here and there in different parts of the island. Their sizes generally range from 1/8 to 2 acres each. Cage culture was first introduced in 1979. Today there are known to be six experimental cage culture projects in the island all of which are run by the Ministry of Fisheries.¹⁹

Two private sector firms one foreign based and the other local are experimenting with eel and *microbrachium rosenbergii* (fresh water prawn) respectively, while the other pond and cage culture projects are culturing *Tilapia Mossambica*, *Tilapia nilotica*, *Tilapia melano-pleura*, *Chanos chanos*, Grey mullet, Big head carp, Grass carp and Common carp.²⁰

In September 1980 the Ministry of Fisheries introduced a subsidy scheme for pond culture. Subsidies range from Rs 5000/- depending on the size of the pond. Fingerlings are also issued free of charge. The main constraints to the development of fresh and brackish water aquaculture is the lack of knowledge and experience in aquaculture; the absence of a sufficient number of trained personnel to manage cage and pond culture projects, the restricted supply of fish fry and the marked consumer preference for marine fish.

18 S. Fernando 1980 - Marga Institute Publication

19 &

20 Ibid

So far this discussion has centered around types of fisheries, fishing craft, gear, facilities and conveniences needed and provided for the fishing industry. This discussion would most certainly be incomplete without reference to the human element involved.

PART II

SOCIO ECONOMIC CONDITIONS OF SMALL SCALE FISHERMEN

Demographic Data

Of a population of around 14.8 million in Sri Lanka it is estimated that about 580,000 are dependent on the fishery industry. This number includes an estimated 68,000 who are actively engaged in the production of fish whilst an additional 14,500 are employed in the secondary sector of the industry, which would include such vocations as distribution, marketing and production of fishing gear, assembly of engines, their maintenance and repairs etc. The balance constitute the families and dependants of the 82,500 participants. (Source - Ministry of Finance).

As would be expected, this population lives along the coast in an estimated 400 fishing villages. Each fishing centre would be formed by a complex of a few villages, the numbers of which varied between 2 and 20.

In this study of small scale fisheries, a survey of 16 such fishing centres was carried out. These 16 centres had to be carefully selected in order to obtain a representative cross section which would reveal the numerous factors considered essential in providing a true picture of the participants of the industry in the island as a whole.

The choice of these 16 centres was by no means an easy task and the methodology employed is given in fair detail in Appendix I.

These 16 centres consisted of about 10,080 households with a population of approximately 70,560. A sample survey was carried out on these sites, based on several criteria such as geographical and technological representation, as well as the religious and ethnic group

representation, whilst being mindful of the cost involved in such a study.

Racial and Religious Representation in the Industry

Sri Lanka is both a multi-racial and multi-religious country, and a casual glance at a census statistics would reveal that an analysis in terms of race is virtually an analysis of religious groups. For example a large majority of Sinhalese are Buddhists while moors and malays profess Islam.

The following table gives the percentage distribution of the population in terms of religion and ethnic groups :-

Table (5)		Table (6)	
Percentage Distribution of Religion - 1971 Census of Population		Percentage Distribution of Race - 1971 Census of Population	
	%		%
Buddhist	67.3	Sinhala	72
Hindus	17.6	Tamil	20.5
Islam	7.1	Moors	6.9
Roman Catholic	7.1	Malays	0.3
Christians	0.8	Others	0.4
Others	0.1		

(Source - Census of Population Report 1971)

The distribution of the fishing population of the country in terms of religion and race are given in the following table :-

Table (7)

Marine & Lagoon Fisheries of Sri Lanka according to Ethnic Religious Groups

Race / Religion	% of Marine & Lagoon Fishermen
Sinhala { Buddhists	22.84
{ Roman Catholics	30.98
{ Christians	0.20
Tamil { Hindus	21.00
{ Roman Catholics	14.47
{ Christians	0.60
Muslims	9.91

(Source - Marga Fishery Survey 1980)

It would be observed that the distribution of the fishing population is neither in keeping with the racial distribution nor with the religious distribution of the country's population as a whole.

It is therefore not difficult to conclude that a particular religion or race has influenced the choice of fishing as a vocation. Table (7) indicates that more Catholics and Hindus are engaged in fishing than the Buddhists. Whilst there are 67% Buddhists in the island only 23% of the fishing population belong to this religion. The 17.6% Hindus and 8% Catholics account for 21% and 46% of the fishing population. The Buddhist religious concept on taking of life may have acted as a barrier to the Buddhists entering the fishing industry.

These ethnic-religious groups can be identified in specific areas of the country. Whilst the Tamil population of the country is concentrated mainly in the Northern and Eastern provinces, the Sinhala people are predominant in most of the other Southern and Central provinces. This distribution in terms of religion, too, indicates the same trend - most Hindus live in the

nothern provinces. Roman Catholics and Christians are concentrated in the coastal regions of the Western Province while a majority of Muslims inhabit the Eastern coast, and the upper Western Coastal Areas such as Puttalam.

Perhaps it would not be incorrect to presume that the trend towards fishing as a vocation was greatly influenced by their residence in close proximity to the sea and the lagoon, rather than its choice through race or creed.

The percentage distribution of the ethnic religious groups in the sample villages selected and studied are given in the following table :-

Table (8)

Percentage distribution of Ethnic Religious Groups in the Sample Centres

Race/Religion	Sinhala	Tamil	Muslim	Malay	Total
Buddhist	42.0	-	-	-	42.0
Hindu	-	14.5	-	-	14.5
Catholic/ Christian	31.0	3.0	-	-	34.0
Islam	-	-	9	0.5	9.5
Total	73.0	17.5	9.0	0.5	100.00

(Source - Marga Fishery Survey 1980)

Although all religious and ethnic groups are represented in the survey, the proportional representation of each religious and ethnic group as given in Table (8) does not corroborate with the distribution in the country's fishing population as a whole (Table (7)). It would be observed that whilst 42% of the fishermen sampled were Buddhists, the representation of Buddhists in the entire fishing population is only

23%. This disparity is not accidental. On the selection of fishing centres for sampling, more Buddhist Centres were included to verify a hypothesis on religious constraints to the entry into the fishing industry. On the other hand Hindus and Tamils were under-sampled in that only 14.5% Hindus and 17.5% Tamils were included in the survey. In the case of Catholics/Christians only 32% were included in the survey, although 34% of the fishing population are Catholics/Christians. The under-sampling of both Hindus and Catholics was resorted to as no harsh constraints to the taking of life is evident in their religions.

Caste representation in the Industry

It is difficult to ascertain whether a vocation was a prelude to segregation to a caste or vice-versa. Be that as it may, but a survey of the distribution of the fishing population in terms of caste is most revealing. Both in the Sinhalese and Tamil community, the caste system is very much alive as yet and one particular caste in each community appears to dominate the fishing industry - probably not through choice but apparently as an economic heritage.

Fishing as a vocation is practised by the Karawa caste in the Sinhala community and the Karayar in the Tamil. Of the country's fishing population, 47% are from the Sinhala Karawa Caste and 32% from the Tamil Karayar Caste. With the Muslims forming nearly 10% only 11% of the fishing population belong to the other castes.

The following table gives the distribution of the Marine & Lagoon Fishery Population in the island in terms of caste :-

Table (9)

Distribution of Fishing Population in terms of Caste

Race	Caste	% of Marine & Lagoon Fishermen
Sinhala	Karayar	46.54
	Govigama	1.52
	Salagama	3.10
	Durawa	5.60
Tamil	Kaiyar	31.74
	Other Castes	1.60
Moors	..	9.17
Malays	..	.73

(Source - Marga Fishery Survey 1980)

Age Structure

It was revealed from the survey that a large majority of the fishermen belong to the 15 - 55 age group. These fishermen are either owners of craft and gear or crewmen and the following table shows the distribution of the two groups according to age :-

Table (10)

	Age in Years				
	15-25	26-35	26-45	46-55	Over 55
Craft-owners	13%	33%	26%	15%	13%
Crewmen	44%	31%	14%	8%	3%

(Source - Marga Fishery Survey 1980)

It will be observed that 75% of the crewmen are under 35 years, whilst 44% are below 25 years of age. This would suggest that the young men of the fishing village take to their traditional vocation as crewmen in the first instance - either to gather experience in the industry or more often than not, due to lack of capital of their own. Whereas considerable skill

was needed in handling insecure fishing craft and braving the seas in the pre-mechanization period, experience needed to handle mechanized craft is minimal and younger men could therefore enter the industry if sufficient capital is available to them early in life.

With advancing age the percentage engaged as crewmen gradually declines and there is only 3% of crewmen in the over 55 group.

In the case of craft owners, the greater percentage is in the 26 - 35 age group, whilst with advancing age the reduction is not marked as in the case of crewmen - and 13% of the over 55 group retain ownership of craft.

The decline in the percentage of crewmen has a corresponding increase in the percentage of craft owners, suggesting that with experience and gathering of capital during the early years crewmen move over to being owners of craft. It will be noted that 59% of owners of craft are between the ages 26 & 45 years.

Standards of Living

The ancient practice of communities living in close proximity to the areas in which their vocation or trade is practised appears to have continued with the fishing community, who even in the modern period, prefer to live on the sea coast and lagoon shore despite the vast advances in transport and housing today which would enable them to live further inland and travel to the coast for their vocation.

This is most unfortunate in that essential amenities such as sanitation facilities, supply of pure water and housing conditions had been provided limitedly in comparison to the conditions under which the rest of the rural population lived. On the other hand it was beneficial to the fishermen of a particular area to live

in the vicinity of the resource they exploited. By doing so they were able to protect their resource by means of restricting other fishermen or outsiders from entering the fishery they regarded as their own. By living on the coast itself, those engaged in the fishery were able to prevent the unrestricted entry of persons into an industry which exploited an open-access resource base.

By virtue of their enforced separation, apparently sought by themselves the fishing community appears to have developed a culture of their own, not particularly refined or attractive.

There are other reasons for their life away from the general population. As statistics reveal, fishing is practised by a particular caste, the people of which have been historically 'marginal' socio-structurally as well as culturally and politically to the old Feudal System of the island. Quite a few people of this caste however, who have had the enterprise and courage to break away from their traditional and inherited vocation have moved into the life of the rest of the population with distinction and success. The rest continued to live the life their forefathers lived - though in relatively better conditions.

Another reason for this separation of the community is that this community is engaged in taking of life in the practice of their vocation - a practice which is considered one of the five basic wrongful acts or sins in Buddhism.

The conditions under which this community continues to live have not in any material way contributed to infuse any courtesy and manners either among themselves, or in their relation with the rest of the rural population. For example, they have been compelled to speak to each other in loud voices to overcome the noise of

the breaking of waves and the din of the winds. They are also reputed to be short in temper and are generally considered to be rather crude in their behaviour. Their language includes quite an array of unpleasant and caustic words which has by no means attracted more community living further away from the coast.

It could be observed by the table given below that there is hardly any difference in the opinion regarding the fisherman's behaviour among the fishing households as well as among the non-fishing households :-

Table (11)
Opinions about fishermen in fishing & non-fishing households

Opinion	% of Fishing Households answering 'yes'	% of Non-Fishing Households answering 'yes'
Fishermen take alcohol more than other people	76%	80%
Fishermen use obscene or bad language more than other people	75%	80%
Fishermen get involved in fights or brawls more than other people	73%	81%

(Source - S. Fernando 1975)

It is therefore apparent that fishermen being aware of the opinion he creates does not believe in changing it but would rather regard it as a necessary and vital part of his way of life:- vital for constraining entry into the sub-culture.

Fishermen's communication with his brethren further inland is minimal and association with them much less with the result that the possibility of inter-marriages between the two communities is practically non-existent

and there is hardly any prospect of improving the prevailing pattern of interaction. Of late however it has been observed that youngsters from inland move over to the coastal areas in search of employment in the fishing industry and, finally settle down in particular fishing communities where a labour shortage prevails, when they become aware that fishing is a more lucrative vocation than it had been a few decades earlier.

During the recent past, the Central Government has taken note of the unpleasant conditions under which the fishing community had lived whilst providing an essential commodity of food. A vast programme of upliftment has been taken in hand by the Government. The per capita income of the fishing community in comparison with the national average would give an idea of the standards of living in the fishing community at present. While the per capita of the fishermen was found to be Rs. 5498²¹ (353 U.S. \$)²² and that the per capita income of an average Sri Lankan in 1979 was only Rs 3378 (217 US\$). Even considering the expected increase in per capita income of 1980 for the average Sri Lankan, the Sri Lankan fishermen appears to be better off than the average Sri Lankan.

On an average, there were 7 members in a family within the marine lagoon fishing community whilst the average family within the inland fishery consisted of 6 members.

A survey carried out to ascertain the average size of the family within the various communities revealed the following figures :-

²¹Based on data collected for the first half of 1980 - Marga Fishery Survey, 1980.

²²Rate of exchange US\$ 1 = 15.56 Rupees - the rate of exchange prevailing in 1979.

Table (12)
Percentage of Marine Lagoon & Inland of fishermen
according to size of family

Fishery	Family Size					Total	Average Size
	1-3	4-6	7-10	11-15	Over 15		
Marine	9	38	35	16	2	100	7
Lagoon	12	36	40	8	4	100	7
Inland	9	48	40	-	-	100	6

(Source - Marga Fishery Survey 1980)

On investigating into the relationship between the size of the family and the income level it was observed that, unlike the general trend of larger families with lower income levels, that families were large among those with higher income levels. Probing into this a little further, it was found that the families were not larger as a result of higher income, but that the income was higher as a sequel to a larger family.

The larger the family, the higher the income among fishermen. This appeared to be the result of having more than one member of the family contributing his share to the family budget. Data collected on the income levels of families in relation to the number of members in the family gave the following figures :-

Table (13)

Average Annual Family Income - according to the size
of family

Average family income per year in rupees	Average size of family
12,000 - 18,000	7.45
18,001 - 25,000	6.84
25,001 - 50,000	7.22
50,001 - 60,000	7.90
Over 60,000	8.11

(Source - Marga Fishery Survey 1980)

Although no definite relationship could be established between the size of the family and the religion they profess - the size of the family seems to differ with each religious group. The survey revealed that -

- 37% of Buddhist fishermen had 7 members in the family
- 50.5% of Muslim fishermen has the same number
- 42.5% Catholics and
- 43.5% Hindus also had 7 members in the family

Data collected to investigate the quantum of families having more than one contributor to the family income are tabled below :-

Table (14)

Percentage distribution of families according to the
number of fishermen in the family

No. of active fishermen in one family	Percentage of families having corresponding number of fishermen
1	61.25
2	27.25
3	6.75
4	3.25
5	1.5

(Source - Marga Fishery Survey 1980)

The average number of members employed as fishermen in a family was found to be 1.56 (— 2). This may be a result of only 11.5% of the family having more than 3 members of the family employed as fishermen.

An interesting observation for which no plausible reason could be adduced was that womenfolk in the Christian/Catholic Hindu and Muslim families engaged in the fishing industry, contributed their share to the workpool, whilst the Buddhist women did not partake in any activity concerned with the industry. The Catholic women were observed to undertake tasks such as distribution and marketing of fish, and also partaking in the processing and salting of surplus fish.

Although the women did not play a significant role in the industry itself, the wives and mothers of fishermen were observed to play a dominant role in the running of the household. This is not surprising as the adult male was either out at sea or on the lagoon, or if he was on land, was too tired to be involved in the affairs of the home.

From among the fishermen who were interviewed 65% were found to be married, and of these 90% were the chief of the household, in that they were the chief income earners, but as far as the running of the household was concerned the female (usually the mother or wife) was the "chief". 77% of the households were found to be "run" by the female who was also responsible for the general decision making. Perhaps the wife or the mother, aware of the arduous nature of the work that the husband or son was called upon to perform, did not wish to burden him with additional responsibilities. They went so far as to even permit him to indulge in a little liquor or gambling.

Control of the family purse was also usually in the hands of the female in so far as the daily expenses were concerned, but when major decisions had to be taken with regard to investments or re-investments in the fishing industry, the male usually takes over from the wife or mother. This is quite unlike the farmer, who takes sole charge of all decision-making with or without the advice of the wife or mother.

Until recently the education level of the fishing community was comparatively low, but with the general increase of literacy in Sri Lanka during the last two decades or so the educational level of the fishing community has also risen.

Only 9% of the over 15 age group of fishermen were found to be illiterate. An interesting observation made during the investigation was that there appears to be link between the education level and different fishing techniques.

58% of those using mechanized craft were found to have had at least primary education, whilst 41% of those employing traditional craft for their trade were totally illiterate. Illiteracy and traditional craft, it was also observed, were more often than not centred around the older generation.

An analysis of the data collected in this connection along with data collected with regard to other occupations in the rural community are given in table (15).

Table (15)

Level of Education pertaining to different occupations in the rural community

Occupation	Illiterate	Grade 1-4	Grade 5-8	Grade 9-12	Technical Education
Fishermen using traditional craft	41%	19%	33%	7%	-
Fishermen using mechanised craft	3%	22%	58%	16%	1%
Agricultural & General Labour & Minor Employee	5%	21%	54%	20%	-
Manual Workers such as Drivers, Carpenters, Masons etc	2%	5%	57%	36%	-

(Source - Marga Institute Village Study)

It would be noted that the percentage of fishermen who had had their secondary education (viz : grades 9-12) is less than those employed in other trades, and significantly less than the drivers, mechanics etc.

That the general level of education of the fishing community is moving up was observed during the survey carried out among the children of the community as Table (16) shows :-

Table (16)

Level of Education according to age in a Fishing community

Age	Education Level			
	Illiterate	Grade 1 - 4	Grade 5 - 8	Grade 9-12
5-10	6%	89%	5%	-
10-15	5%	20%	66%	9%
15-20	3%	20%	9%	41%

(Source - Marga Institute Village Study 1980)

It could be observed that of the age group 15 - 20 years only 3% are illiterate whilst 41% have had ^{that} secondary education. This also brings out the general level of education in the fishing community has reached a fairly good standard. This upward trend of the level of education among the fishing community could be attributed to many factors chief of which is that the education level of the entire country has been boosted through provision of more schools, teachers and other amenities.

The fishing village is a closely-knit unit in that the community has common interests, and each other's co-operation is essential in the pursuit of their occupation. The houses in which the fishing families live are huddled together and often share a common compound. They are built in close proximity to the sea or lagoon to enable them to protect their craft and fishing gear which are either berthed or anchored along the coast.

The fishermen do not own any great extent of land and, often, all that a fisherman owns is the house he lives in. The pattern of the houses has changed recently from the thatched roofs and mud walls of two decades ago to tiled roof and brick walls. It

was observed that about 52% of the households had tile roofs. The Improvement in their housing conditions may be a result of bigger incomes derived after mechanized fishing and modern technologies were introduced to the industry.

Village feuds are not uncommon as a result of minor differences amongst families, but these are quickly resolved to permit the all-essential co-operation vital to their industry. They also do not hesitate to co-operate against any interference from outside - and this unity has extended beyond the village to embrace other fishing villages to protect the interests common to the fishing community of the country as a whole.

Politicians have not hesitated to exploit this unity and successive governments have extended their patronage to the fishing community, which has acquired many gains, in the form of subsidy schemes, shore facilities etc. Also as a result facilities such as roads, landing centres, and quick transport facilities have been provided by the Government and all in all the fishing community has also received a substantial amount of infrastructural facilities. The State has also taken meaningful steps to provide pure water, schools, dispensaries, telecommunication facilities etc. to quite a number of fishing villages and centres.

Steps have also been taken by the State to improve their industry by the provision of ice-plants or freezing facilities and facilities for the quick dispatch of their produce to distant markets.

Organization of Fishery Co-operatives have also been initiated by the Government whilst State Banks have been persuaded to provide credit facilities on easy terms or even interest free loans for the purchase of essential fishing gear and craft.

All these schemes and assistance programmes have necessarily to be processed through its administrative machinery and it is essential that red bureaucracy would not hamper the successful implementation of these programmes.

Income Structure of the Fishing Community

The fishing industry would normally include all processes that occur or are caused to occur between the setting out to sea by fishermen for the purpose of catching fish, and the stage at which the fish finally reaches the actual consumer.

From among these processes, the acts of setting out to sea, catching of the fish, and the return to shore with the 'catch' could be considered the primary sector of the industry.

The people involved in this primary sector are the fishermen - or crew, that mans the fishing vessel. In the main, the crew - or all but one of the crew - are composed of hired labourers who are paid in cash as well as in kind (fish), for their effort at sea in catching fish. The one who isn't "hired" but is a member of the crew is usually the owner of the vessel or fishing gear or both.

Sometimes the entire crew is "hired" when the owner does not go out to sea, for other reasons, or when the owner is not a sea-faring man. This crew that goes out to sea are not only subject to the hazards inherent in their occupation, but also subject to the risk of returning to shore without a "catch". Payment for services of the crew is usually in the form of a share of the catch after the operational costs of the journey and the share of the owner has been deducted.

The income of the fishermen, be it the owner or a member of the crew is a variable and is also not regular for the crew works on a contract basis of sharing the value of the catch.

There are several other factors which determine the level of the income of the fishermen. As mentioned earlier his income is primarily based on the value of the catch and in turn the size and type of the catch, which is dependent on the type of craft, and gear used, the **technology** adopted and other factors beyond the control of the fishermen, such as weather conditions, availability of resources and not least the element of luck.

During the survey of the sample centres both the owners and crewmen were interviewed for the purpose of assessing the effect of the several variable factors referred to earlier including factors such as religion, location etc. Investigations included the determination of their total family income and the income derived from fishing.

Table (17) given below indicates the income from fishing as a percentage of the total family income and the percentage of owners and crew who derive these respective incomes.

Table (17)
Fishing Income as a percentage of Total Income

	0-50%	51-75%	76-99%	100%
Owners	0.2 %	3.2 %	2.8 %	93.8%
Crewmen	2.4 %	3.2 %	2.4 %	92 %

(Source - Marga Institute Fishery Study 1980)

From the figures given above it will be noted that 93.8% of owners and 92% of crewmen derive their total family income from fishing only, whilst a

further 2.8% of owners and 2.4% of crew receive 76 - 99% of their total income from fishing. That the fishermen depended heavily on the fisheries industry is indicated by these data collected at the interviews conducted at the sample centres. Only 0.2% of owners and 2.4% of crewmen derived 0.50% of their family income from other sources.

It was also noted that incomes derived from each type of craft used varied as the figures given in the table below indicate :-

Table (18)

Annual Net Income according to type of Craft

Type of Craft used	Annual Net Income in Rupees	
	Owner	Crewman
3½ ton mechan- ized Boat	68,182	21,876
17½ ft. Fibre Glass Boat with O.B.M.	43,260	15,380
Traditional Craft with Outboard Motor	32,640	16,650
Traditional Craft	20,107	8,850

(Source - Marga Institute Fishery Study 1980)

There is no doubt that the net income derived from the mechanized craft is greater than that derived from traditional craft - and from among the mechanized craft, the 3½ ton boat provides, by far, the greatest net income. Small wonder, then that the 3½ tonner has gained popularity during the last year.

The ratio of income from a $3\frac{1}{2}$ tonner to the income from a $17\frac{1}{2}$ foot boat is 1.6:1 in the case of owners and 1.4:1 in the case of crew-men. The ratio of income from the traditional craft with motor to the traditional craft without motor is 1.6:1 for the owner of craft, while in the case of crewmen it is 1.9:1. The crewmen of the mechanized traditional craft were observed to be better off the crew of the mechanized Fibre Glass Boat.

There was also evidence that the income of the fishermen depended on the type of fishery resource that was exploited by him (viz : marine, lagoon and inland).

The average annual net income for each type of fishery, with regard to the fleet structure of each, showed that the marine fishery provides more income (Rs 31,124 for an average fisherman per year) than that provided from the brackish water fishery (Rs 18,896 per year) and that inland fisheries provided the lowest income (Rs 17,206 per year).

It was also noted that within the same fishery and employing the same type of craft, the income varies with the geographic location of the area fished.

This may be attributed to the variation in the fishery resource, or the type of technology adopted or even the extent of the efforts put in by the fisherman.

A study of the income derived by the use of $3\frac{1}{2}$ tonners in the sample centres indicated that there was a significant difference of income between the various centres.

The following table gives the figures collected at six different centres :-

Table 19 - Net income per year of the owner of a 3½ tonner in some of the centres sampled in Rupees 1,000/-

Centre	Net income in rupees '000								
	3 - 5	5 - 7.5	7.5 - 10	10-25	25-50	50-100	100-200	200-300	300-500
Mirissa	-	-	-	40%	40%	10%	10%	-	-
Kudawella		5%	15%	8%	32%	18%	18%	4%	-
Mattakotuwella			13%	33%	13%	20%	14%	7%	
Aluthwatte	-	-	-	29%	-	71%	-	-	-
Pitipana	-	12%	-	-	-	25%	38%	12%	13%
Myliiddy	17%	-	-	33%	50%	-	-	-	-

(Source - Marga Institute Fishery Study 1980)

63% of the fishermen in Pitipana (on the Western Coast) derived an ^{annual} income between 100-500 thousand rupees. This may be explained by the fact (as the investigations revealed) that dual technology (viz : The drift net and the long line) had been used and that fishermen of this centre stay out at sea for about 28-30 hours per trip. This type of dual technology certainly appears more profitable and little wonder that this system is gaining popularity among the fishermen in this centre.

The figures also indicate (see Table 19) that 41% of the fishermen in the Mattakotuwella fishery and 71% of those in the Aluthwatte fishery derive more than 50,000 rupees per annum. Both these fisheries are on the Western Coast. On the other hand, 80% of the fishermen in Mirissa (South Coast) and 100% of the fishermen in Myliddy derive less than 50,000 rupees per year.

This difference of income between the fishermen on the Western Coast on the one hand and those on the Southern and Northern Coast on the other may be attributed to the better "quality" of the catch on the Western Coast. This catch on the Western Coast includes a good percentage of prawns in addition to the standard varieties and quantities of fish - and prawns are certainly good income generators today because of the flourishing export market. 60% of the Mirissa 3½ ton owners however have provided themselves with incomes over 25,000 rupees whilst the other 40% derive little below 25,000 rupees per annum. This apparent balance of distribution in income at Mirissa may be due to the fact that most boat owners in Mirissa have not committed themselves financially to assemblers, and are therefore able to auction their catch and obtain better prices for their produce.

The situation in Kudawella is rather peculiar in that the disparity in incomes is rather wide. Inquiries made during the survey revealed that some of the craft owners have committed themselves financially to other craft owners in the same area who act as creditors/fish assemblers, with the result they are unable to offer their catch to the highest bidder or at ruling market prices - but are morally obliged to hand over the catch to their creditors at prices often dictated by the creditors themselves. This may be the reason why 22% of the owners earn more than 100 thousand rupees per year whilst 20% ~~earn~~ less than 10,000 per year.

This fact that there is a difference between the incomes derived from the fisheries in different parts of the country is not unknown to fishermen and as such one would expect those from low income fisheries to migrate to fisheries from which larger incomes could be derived:- This reaction though quite natural, has not been quite evident amongst the fishing population of less affluent areas. The reasons for this reluctance may be due to their unwillingness to be separated from their near and dear ones, or probably because of the difficulties of fitting into the social and economic conditions of a new community; or else due to the power structures of more affluent areas preventing such migration of fishermen to their villages.

After having conducted a survey of the income levels of fishermen within the fishing industry and having studied the reasons that could be adduced for such differences, a comparative study between the income level of the fishing community with those of communities engaged in parallel trades and vocations should be interesting.

For the purpose of this study the following areas were selected to provide a cross-section of the rest of the population in the country :-

1. Walgampaya - An upcountry agricultural village
2. Keladiwul Wewa - A small Dry Zone village with local, seasonal irrigation.
3. Palamunai - A Muslim coastal village in the Eastern Province.
4. Udayagiri - A new Settlement Scheme village in the South East region with good irrigation facilities.
5. Paranagama - A semi-urbanised village in the North West Coconut Belt.

The income figures given in the following table were obtained direct from the respondents, whilst the incomes of the fishing community were calculated on information and details supplied by respondents.

Table (20)

Annual income in rupees for different occupations

	Walagam- paya	Keladiwul Wewa	Udaya- giri	Pala- munai	Parana- gama	Average
Owner culti- vator and Share Crop- pers	1512	4248	8688	5640	2184	4452
Office Workers	4776	6000	4356	5400	6856	5480
State Employ- ees	5880	8064	5328	8028	5880	6636
Minor Grades such as Drivers	4728	5784	7200	4596	-	5580

Source (Marga Institute Village Study 1980)

From the above figures there is no doubt that the income levels of the fishermen are far above those of other members of the rural community. Even after leaving room for discrepancies due to different methods of computation it is clearly shown that the income level of crewmen is much greater than the incomes of owner cultivators and state employees.

However the conditions under which the fishermen derive their incomes are quite different from those of cultivators and state employees. Whilst the working hours of other workers are regular and they are occupied throughout the year, the hours per day of work done by the fishermen are very much more and the number of days of work per year is less.

Therefore, for purposes of comparison, it would be more accurate to assess each group in terms of average income per hour. Such a computation in respect of different grades of crewmen gave the following figures:-

	Crewmen of 3½ tonners	.. Rs 6.10 per hour
	Crewmen of 17½ boat with O.B.M.	.. Rs 5.10 " "
	Crewmen of indigenous motorized craft	.. Rs 8.40 " "
	Crewmen of indigenous craft	.. Rs 6.13 " "
23	Agricultural labourer	.. Rs 2.75 " "
	Labour in building sector	.. Rs 3.80 " "
24	Skilled labour (carpenters etc.)	.. Rs 5.60 " "

Once again the conclusion arrived at is the same - viz: the income of fishermen is higher than that of the other rural workers. However the conditions under which this income is earned are very trying and risky. Moreover there are no regular hours of work for fishermen,

23. Agricultural labourers are paid Rs 17.50 per ten hour day together with meals for which 10/- were accounted

24. Scarcity of skilled labour has arisen in the island due to the labour drain to Middle East since the end of 1970.

who are at sea during the night as often as they are during the day time. The non working hours of the Fishermen are non productive and generates no income. At the same time they do not have a satisfactory social life, and contact with people beyond the village is virtually non existent.

The wages earned by non fishing workers in the community, though constant, do not fluctuate very much with the variations of prices of essential commodities. The fisherman once again seems to be at an advantage in this respect as he is able to adjust the prices of his product with every change in the Consumer Price Index.

The prices of the more common commodities in 1974, 1979 and 1980 are given in Table (21) - alongside the price of fish for the same three years.

Despite the fact that fishermen get only about 50% of the prices prevalent at the chief distribution centre (Colombo), their incomes from the sale of fish have more than kept pace with the general increase in prices of commodities. The price of fish had kept pace with the upward trend of the prices of other commodities, permitting the fishermen to keep his purchasing power (real income) more or less unchanged.

Table (21)

Prices of common commodities and the percentage increase based on 1974 prices

Item	Unit	1974	1979	% increase	1980	% increase
Flour	1 lb.	0.86	1.21	41	1.74	102
Raw Rice	1 mes.	4.55	3.49	-23	3.95	-13
Dhal ²⁵	-	1.04	8.48	715	10.37	897
Beans	1 lb.	1.09	1.50	38	2.53	132
Beef	1 lb.	2.90	5.50	90	5.84	107
<u>Fish</u> ²⁶						
Seer	1 lb.	4.64	11.36	145	12.75	174
Paraw	1 lb.	3.88	8.93	130	10.00	158
Rock fish	1 lb.	3.13	6.76	110	7.99	155
<hr/>						
<u>Fish</u> ²⁷ (Producer's prices)						
Seer	1 lb.	2.39	5.23	118	12.75	174
Paraw	1 lb.	1.75	3.78	66	-	-
Rock fish	1 lb.	1.07	2.76	158	-	-

(Source : Department of Census and Statistics)

25. Dhal was heavily subsidized in 1974 whilst the subsidy has been almost taken off in 1979/80
26. Consumer's prices of fish prevalent in the Colombo Market based on data by the Department of Census and Statistics.
27. Producer's prices for fish were obtained by the Ministry of Fisheries.

at the question,
In whatever way one looks /the fishermen have been and are better off than the general labourer, peasant or or even the middle grade state employee.

It would be quite natural, therefore to expect the farmer and others employed in less lucrative vocations to take to fishing. This has, however, not happened despite the fact that there are no legal barriers or limitations of entry to the fishing industry. It has been observed that despite the attraction, hardly anyone outside the fishing community takes to fishing as a vocation.

Various explanations could be adduced for this reluctance to enter the fishing industry. A few have been suggested earlier but the main snags have been the institutional barriers such as caste and religion, the inherent occupational hazards linked with the industry and, of course, the irregularity and the inconsistent nature of the income derived therefrom.

Yet another may be the fact that the fishermen themselves discourage or even prevent individuals outside their caste and creed or village **from sharing** a profession, which they jealously guard as their own preserve, and the sea their communal and traditional "hunting ground".

In as much as they prevent outsiders entering their industry they are reluctant to leave their industry for even more attractive and remunerative vocations. An analysis of the replies received to some questions presented to them show definite evidence of their desire to "stick" to their industry and profession.

The following table shows this quite clearly.

Table (22)

Preference to do an alternative employment
according to different age groups

	Age 15-20	26-35	36-50	Over 50
Would you forego your activities for another providing higher income but without the extite-ment involved in fishing {	Yes 39%	53%	55%	58%
{ No	61%	47%	45%	42%
Would you forego your activities for another providing more regular income equal to present income {	Yes 24%	58%	55%	44%
{ No	76%	42%	45%	56%
Would you forego your activities for another providing equal income from land based activi-ties alone {	Yes 29%	39%	39%	37%
{ No	71%	61%	61%	63%
Would you forego your activities for another providing one half of your present income from a relatively safe invest-ment. {	Yes 17%	16%	17%	19%
{ No	83%	84%	83%	81%

(Source : Marga Institute Fishery Study - 1980)

It would be observed from the analysis of the replies received that the younger generation is quite defin te about their desire to remain in the industry. A greater percentage of the middle age group however, do not appear to mind changing their occupation to one with a higher and more regular income. This is probably motivated by the fact that at his age the middle aged fisherman is burdened with the demands and requirements of a large family, members of which are yet not old enough to contri-bute to the family income.

The general concensus of opinion however is that they would prefer to remain in the fishing industry.

Other sources of income.

Of the total fishing population surveyed it was found that 94% of the households did not have other sources of income at all. The 6% who had other means of income or employment seem to being in, only a small portion to augment the family income.

Table (23)

Income contributed by other sources

Households not having other sour- ces of income	Households having other sources of Income			
	Percentage contributed to the family Income			
	1 - 5	6 - 10	11 - 25	25 - 50
94	1	1	-	4

(Source : Marga Institute Fishery Study - 1980)

As indicated in the above table the 'other sources' contributed less than 50% to the family budget of a fishing household. Of the 6% households who had these other sources of income, 2% brought in less that 10% to the family income. It is evident therefore that most fishermen do not have other means of supporting **their families**. The reasons or factors affecting this situation may be many and varied.

One most important factor contributing to this situation is that fishing occupation is a full time occupation - in that the fisherman has to be alert and ready to go out to sea, during most hours of the day and for most days of the month.

The prevailing weather conditions, the colour of the sea or its tidal activity, behaviour of the birds indicate the appropriate time and the suitable day to seek their opportunities. This unpredictable nature of their employment leaves them hardly any chance to engage in anyother type of occupation.

If at all the supplementary means of employment to a fisherman must fulfil certain specific conditions. It must be available without the need for continuous engagement by the fisherman (which he is unable to do) and should also be located in the vicinity of their community, and above all must fit the educational level and the 'skilled nature' of their labour.

Moreover with mechanization most fishermen are employed throughout the year, whilst others who are unable to brave the sea during the monsoon normally tend to migrate to other parts of the coast or to the inland tanks. Hence there may be little need for the fishermen to seek other sources of income.

The fishermen's concept about the beach and the coastal border too would be another factor which contributes to his reluctance to seek other employment in the coastal belt. The beach is considered to be an unproductive, infertile area and throughout the ages left idle and unutilized. Research in this field may lead to new types of crop which could be cultivated on or near the beach. Such new avenues of investment and employment would be a means to create other sources of income for the fishing community, and could be undertaken by the other members of the family.

However, of the few members of fishing households who are engaged in exploiting other sources of income about 50% are government servants who are mainly employed as labourers, clerks or teachers; whilst 28% are traders

and 15% are general labourers who work as casual employees. The percentage involved in agriculture is only 7% indicating the fishing communities meagre links with the agricultural sector. It is observed that marine fishermen hardly ever engage in agricultural activities whilst some resident inland fishermen do engage in agricultural work at least during one season.

The survey revealed that a few fishermen of the western and north western coast have yet another source of income which is illegal. It was observed that a few fishermen of these areas take to smuggling contrabands such as "beedi leaves" (a type of leaf used for smoking) from the neighbouring Indian sub-continent in return for nets and fishing gear smuggled out of Sri Lanka and sold in South India by them. Those who are willing to engage in such illegal activities have found it a very profitable source of income and this may be the reason for some fishermen in these areas to have very high standards of living. There are air-conditioned houses and several other valuable assets belonging to some affluent fishermen of this region. However the extent to which this new source of income has spread could not be ascertained in the fisheries sample survey carried out in the relevant areas. The Tourist Industry is also said to provide an additional source of income for fishing households in and near tourist resorts such as Negombo where fishermen hire out rooms to tourists and where certain other members of the households also earn by working as Tourist Guides.

Most female members of the fishing community too are not involved in any sort of productive activity other than giving a helping hand in the salting and processing of the surplus fish. Prior to mechanization there was a great need to supplement the family budget during the off season and this initiated them to do cottage industries such as lace making or producing coir rope. With

the introduction of new nylon nets and the gradual deterioration of the beach seine industry (for which a great deal of local coir rope was demanded) the cottage level coir industry too was seen to deteriorate. The pillow lace industry which was at one time a highly developed cottage industry - especially in the Southern coast-~~too~~ was abandoned with the introduction of artificial lace into the local market. However this cottage industry is reviving in some fishing villages such as Mirissa as a result of the Tourist Industry. There has been no attempt by the government or the private sector to revive these traditional cottage industries. The production and the earning capacity of the females in most fishing communities, is therefore under utilized. Introduction of a means of employment suitable to the life style of these women would in the long run be most welcome and useful.

It is necessary to mention that the few pounds of fish which the fisherman carries home for his daily consumption is another source of income to the fishery household which was not accounted for in the earlier income calculations. The extent of this non cash income varies according to the type of fish, the quantity and the quality of fish brought home, which in turn would depend on the type of craft and gear used. However this non cash income is purely for home consumption and cannot be given a predominant place in the family budget.

Yet another source of non cash income, is the occasional help received ^{from} the fish traders or assemblers during periods of stress and strain. It is very often the trader who gives the fishermen a helping hand in times at need (such as death or sickness) in the household. This help is not expected to be returned in terms of money for the trader regards it as a goodwill expense to ensure his future supplies of fish.

Expenditure and savings, assets and liabilities

The fisherman's total income derived from his occupation and other sources is mainly spent and rarely saved in the form of cash, whilst accruing assets and/or liabilities in the process. The expenditure pattern of the fishery household is rather peculiar in that there is a high expenditure on consumption. But unlike in most under developed sectors of an economy, the consumption expenditure is not mainly for essential items such as food and drink. The fisherman's consumption expenses also includes heavy expenditure on less mandatory items such as clothing, transportation education etc. The Engel's coefficient (The ratio of expenditure on food to total household expenditure) is comparatively low as indicated by the table given below.

Table (24)

The Patterns of Expenditure(Percentages indicate the percentages of the total Sample of fishermen)

Items for which income is utilised	Percentage spent on each item				
	1 - 10	11-25	26-50	51-75	76-100
Consumption ..	-	5%	32%	26%	37%
Investments in Fishing Industry ..	16%	67%	14%	3%	-
Investments on Fixed Assets(land and buildings etc.).	50%	50%	-	-	-
Savings and Insurance Schemes ..	60%	40%	-	-	-

(Source : Marga Institute Fishery Study - 1980)

The expenditure on food therefore will be very much less than 50% of the total expenses by 37% of the fishermen and less than 75% of the total expenses in the case of 63% of the fishermen.

The fishermen as indicated by the table do not seem to have the habit of saving in cash. All fishermen interviewed seemed to save only less than 25% of their earnings and most (60%) less than 10% of the income. This may be due to the fact that the fisherman's income is very irregular and uneven. He cannot plan either his savings or investments unlike the farmer who could estimate his harvest derived from his own farm. The fishermen who has no claim to the resource he exploits cannot guess the extent of his income before hand. As a result he would tend to spend his sudden fortunes on household semi-essential items such as radios, sewing machines etc. By virtue of his occupation he does not believe in planning for the future, but spends extravagantly on clothes and recreation and even on alcohol and gambling.

It would therefore be worthwhile to gear these sudden fortunes into more productive and efficient avenues of investments by establishing savings schemes and investment facilities within easy reach of the fishermen. The capital thus accumulated could even be fed back to the industry itself by means of carefully planned development programmes and related fiscal policies.

Having spent most of his total income on consumption, semi-durable luxury goods, clothes and enjoyment, the fishermen often have to seek credit facilities when he has to undertake major repairs to his craft or replacements to his gear. As such the fisherman is quite often in debt to his fellow villagers, money lenders or to traders to whom he sells his fish- these debts are normally settled at the end of a profitable 'season'.

The quantum of credit the fishermen is able to obtain may of course depend on the craft and technology he uses and the income he normally earns. However the ability to secure a loan does not seem to depend on the fisherman's experience.

Table (25)

The loans obtained per season according to the fishing experience

Loan in Rs.	Fishing Experience in Years				
	1 - 5	6 - 15	16 - 25	Over 26	All groups
below 2000	17%	45%	10%	6%	78%
2000 -4000	2%	7%	-	2%	-
4000 -10000	-	7%	-	4%	11%

(Source : Marga Institute Fishery Study - 1980)

The Table (25) shows that of the 78% of crewmen who are able to borrow rupees 2,000/- for a season 45% have 6-15 years experience whilst only 6% have over 26 years experience. Even with the 11% of crewmen being able to secure only 2000-4000 rupees loan, 7% are in the 6-15 year experienced group whilst 2% are from those who have 26 years experience. This table therefore would imply that beyond a certain level of experience the ability to obtain a loan diminishes or the necessity to obtain a loan is reduced beyond that level of experience. This may be due to the fact that those who have 26 years fishing experience no longer need a loan or that there is a general reluctance to give credit to them whilst there is a preference to give loans to the experienced middle aged crewmen.

It is evident from the Table (24) that all fishermen spend only 25% or less of their income to buy Fixed Assets outside the Fisheries Industry. These assets are usually known to be the house and property the fisherman lives in. There is hardly any evidence that the average fisherman invests in agriculture or other industries. The Tourist Industry however is known to attract investment for fishermen in Fishing Centres such as Negombo, Hikkaduwa etc. which were not studied by the research team. The distribution of ownership of movable and immovable assets according to the value of these are given in Table (26) below. It could be observed that 92% of the total assets belonging to fishermen are immovable assets such as land and buildings whilst 8% are movables such as bicycles, vans etc.

Table (26)

Assets owned by fishermen according
to income groups

Value Rs.	Movable	Immovable
Below 5000	-	15%
5000 - 12500	46%	18%
12500 - 17500	15%	6%
17500 - 25000	8%	12%
25000 - 50000	8%	16%
50000 - 100000	15%	8%
Over 100000	8%	25%
All Assets	8%	92%

(Source : Marga Institute Fishery Study - 1980)

These immovable assets belonging to the fishermen vary in value as seen by the above table. 25% of the total immovable assets are over 100,000 rupees in value whilst 15% of these assets are below rupees 5,000/-.

This may indicate that the assets of varying value are distributed among fishermen with varying income groups or that all fishermen possess some sort of immovable asset which could well be their house and property.

The Table also indicates that the 8% movable assets belonging to the fishermen are either very low in value being bicycles carts etc. or higher in value being vans or lorries. As observed 46% of the movable assets are below 12,500/- whilst 31% are above rupees 50,000/-.

However the fisherman's investment in the industry is mostly financed by his earnings from the industry itself as shown by the Table (27).

Table (27)

Investments in the Fishing Industry according to the sources it is financed by.

From earnings in fishing activities	..	37%
From earnings in other activities	..	10%
From the government	..	4%
From a Bank	..	11%
From a Co-operative Society	..	2%
From a fish trader	..	17%
From a money lender	..	11%
From other sources	..	8%

(Source : Marga Institute Fishery Study - 1980)

The investments in the fisheries industry seemed to have been favoured by those in the younger age groups as seen by the next table.

Table (28)

Investors in the industry according to age

Age in years	Percentage investing in the fishing industry
15 - 25	73%
26 - 35	68%
36 - 45	73%
45 - 55	66%
Over 55	40%

(Source: Marga Institute Fishery Study - 1980)

73% of the fishermen in the age group 15 - 25 years show preference to invest in the industry whilst 60% of those above 55 years would prefer to invest outside the industry. This may be a result of the older generation being unable to brave the seas beyond a certain age - wanting to seek other avenues of investment, and there may also be a tendency for more and more younger fishermen to invest in the industry due to the high returns that could be earned.

A NOTE ON THE GOVERNMENT PATRONAGE TO THE INDUSTRY

During the last three decades, successive governments in Sri Lanka have extended their patronage to the fishing industry in spasms more or less although a separate Ministry in charge of Fisheries was set up only in 1970, while a Department of Fisheries has existed since 1941. (From 1921-1941, the subject of Fisheries came under the purview of the Director of National Museums).

Programmes formulated to improve the state of the industry appear to have not been optimally successful due to the different policies adopted by different governments.

In 1970, the government re-structured and expanded the role of co-operative societies for the fisheries industry. In this system the ownership of resources such as craft and gear was broad-based. Assistance and credit facilities provided by the government were to the society - and individual ownership of craft and gear was neither generated nor encouraged. This co-operative system of ownership was encouraged during the 1970-77 period due to the severe constraints imposed by the shortage of foreign exchange to service the requirements of the industry.

The co-operative system, laudable in theory and on paper, did not succeed in actual practice and the industry was in a state of disarray and uncertainty. The individual fisherman was reluctant to invest his personal earnings in the industry as the incentives provided by the government were minimal and insignificant, when they reached the individual fishermen.

A reversal of this policy occurred in 1977, when the new government introduced a new outlook. The private sector and the individual were reckoned as the critical units for purposes of investment and development and the new incentives to them were attractive. The co-operative societies were re-organized and ownership of craft and gear transferred to individuals who were willing to accept them on the condition of paying off the balance loan in stages to the State banks which had provided credit for each boat originally to the Co-operative Society.

The society itself did not cease to function, but its functions were severely pruned. Fishery co-operatives were re-structured as organizations to provide services such as -

- (1) Sale of fuel and spare parts for engines.
- (2) Agencies of the Insurance Corporation.
- (3) Collection of fish on behalf of the Fisheries Corporation.
- (4) Provision of items such as ice and salt.

A major step was taken by the new government through its policy of liberalization of imports. This enabled the private sector and the individuals to complete their requirements of inputs. The fishing industry was now able to equip itself and steer itself away from the earlier gloom to a brighter future.

In addition to the pruned Fishery Co-operative Societies the government introduced a system of 'Extension Societies' which was to bring the problems and requirements of the fishermen to the notice of the Ministry and the plans and facilities of the Ministry to the notice of the fishermen. The Extension Society was in charge of the Local Inspector of Fisheries, who was the co-ordinator between the fishermen and the

authorities. This society which was introduced as late as 1980 had expanded to over 200 units by the middle of the year. All fishermen belonging to a fishing centre are entitled to be members of the local 'Extension Society' whose office-bearers are annually elected by the members.

Another scheme initiated by the new government was to provide facilities to individual fishermen to purchase their own craft and gear. They were provided with loans on easy payment terms by State Banks on recommendations made by the Ministry of Fisheries. Groups of 5 Fishermen could sign for one another as collaterals. The recipients of these loans were carefully 'screened' before a recommendation was given by the government to the Bank. This had been necessitated in view of the very bad history and reputation that fishermen had gathered in the re-payment of loans given earlier. Defaulters in the re-payment of loans were as high as 80% in the case of loans given earlier by the Department of Fisheries and 72% in the case of loans taken by Fishery Co-operatives. (S.Fernando 1980).

The Fisheries Corporation, formed in 1957, as a semi-government institution was to enter the fishing industry with the intention of providing the consumer with his requirement of fish at a reasonable price. This purpose does not appear to have been achieved with any great success, according to the statistics gathered.

In 1979 the Corporation had been capable of producing only 0.33% of the total production of fish in the country, although it appears to have marketed a slightly higher percentage - 2.08% of total quantity of fish marketed - whilst the total loss incurred during the year was estimated to have been nearly 15 million rupees. A further loss in the first half of 1980 amounted to a figure as high as 12 million Rupees.²⁸

²⁸ S.Fernando - 1980

Despite the 106.4 million rupees investment on the Fisheries Industry by the Public Sector in 1978 - of which 74.9 million was in respect of capital expenditure production of fish has been mostly handled by the private sector. Realizing this the government has decided to assist the private sector in a large measure to develop the industry by offering tax incentives and bank credit facilities.²⁹

The establishment of Fishery Banks in 1978 enabled Fishermen to obtain small loans (ranging from Rs.500 to Rs.7500) on comparatively easy terms. At present, there are 19 such banks operating in the country.³⁰

An insurance scheme was also initiated by the State in 1979 to enable the fishermen to insure their fishing crafts for a premium of 1% of the sum insured. The total amount for which the craft was insured was to be payable in the case of loss or damage to these vessels. A Life Insurance Scheme too was introduced at a low premium rate of 22.50 per month by which 15,000/- rupees were to be paid to the dependents in the event of death to fishermen.

The Government has already taken upon itself the important task of conducting research into the development of fisheries and fishery resources, and also the task of developing technologies suitable for adoption in Sri Lanka. It is heartening to note that recently it has started experimenting with the design of a beach landing craft, with the introduction of which problems of vessel anchorage could be considerably eased. Since 1977, the government has expressed its intention of teaching the subject of Fisheries extensively in the Universities and the Secondary Schools as well as encouraging the tertiary sector of education (viz. the Universities) to engage itself in more substantial Fishery Research.

²⁹ S.Fernando - 1980

³⁰ Ibid.

A NOTE ON THE FISHERY RESOURCE AND ITS MANAGEMENT

The government patronage as well as the profitability of the industry resulted in increasing the coastal fishery production by 8.78% during 1978-79. This was also a result of the increased number of mechanized craft operating with the availability of fishing vessels and gear in the local market, after the change in the import policy towards more liberalized trade. The exploitation of the inshore waters has thus increased whilst some productive trawling grounds have been lost to the country's fishery. The declaration of the exclusive economic zone in 1977 and the Indo-Sri Lanka maritime boundary agreement have resulted in the loss of Wadge Bank and one third of Pedro Bank (trawling grounds) which lie in the Indian waters. India permitted Sri Lanka on this agreement to fish in these areas only upto the end of 1979. The continental shelf of the island being comparatively narrow (8' - 40 kilometres) also limits the inshore fishery resource base in the country.

This limited resource, therefore, should be managed optimally to derive the maximum benefit to society. However this optimum management is not possible and may even be disastrous in the absence of appropriate oceanographic knowledge and proper economic evaluation of the resource.

Unfortunately relatively little is known about the physical and biological oceanography of the Indian Ocean when compared with the oceans in temperate regions which have been studied by scientists over long periods of time.³¹

³¹ S.Fernando - 1979

The Indian ocean is said to be one of the least studied of the major oceans. Little is known about the physical and biological factors in the Indian ocean which relate to the presence or absence, stocking or thinning of schools of fish. Equally little is known about the distribution, drifting and flowering of plankton in the waters of the Indian ocean. With such a paucity of scientific knowledge relating to the distribution and behaviour of fish in the sea around Sri Lanka it cannot be maintained with any degree of certainty, that craft and gear presently used in our coastal fishery is the most appropriate for the purpose of exploiting our fishery.³²

The senior experienced fishermen in different villages were however found to possess substantial amount of traditional knowledge about the physical and biological oceanography of Sri Lanka's coastal waters. This knowledge gained through generations of experience and used by our fishermen through the generations for purposes of fishery resource exploitation and management has been tested and experimented through the generations. This knowledge, however little, should be systematically collected and articulated before it is lost in the process of modernization.³³

However a study of coastal Fish Resources in Sri Lanka was conducted in 1978, 1979 and 1980 by the Fisheries Research Station, Colombo, and the Institute of Marine Research Bergen (Holland). Their report (Fridtjof Nansen Report) estimates that the biologically maximum sustainable yield in the Sri Lanka's inshore fishery is 250,000 tons of which 170,000 tons are pelagic fish whilst 80,000 are of the demersal variety.

³² S.Fernando - 1980

³³ Ibid.

They presume that the coastal fishery production could be increased by 70-80% and that this production would be achieved by the end of 1983. With the popular use of technologies like drift nets and trolling lines it is possible that the maximum sustainable yield of the pelagic fish may be reached in or even before 1983.

The biologically maximum sustainable yield for the off shore and deep sea fishery was estimated to be 29,000 of which only 7% is being exploited today. It is our view that by 1983 Sri Lanka's new fishery development strategies should be geared either to the deep sea fishery or to the inland capture fishery and to inland aquaculture.

This survey also reveals that with relatively low exploitation of the demersal stocks in the coastal waters, there remains a very large bottom fish resource, which could be fished with such technologies as multiple hand line, bottom hand line, bottom long line, traps etc. Any future design of fishing vessels should therefore give due consideration to the availability of this particular resource especially when considering the equipment to be fixed on board.

The government too should take into account the existing types and volumes of stocks of these fishes when formulating subsidy and incentive schemes. The Fisheries Ministry could give a higher subsidy for bottom long lines, multiple hand lines etc., whilst withdrawing the subsidies for technologies such as drift nets and floating long lines. Some of the most important varieties of demersal fish in Sri Lanka are Pig Faced Bream, Starry Eyed Bream, Groupers and Shappers who prefer the hard bottom of coral and sandstone.

However deep sea fishing is capital intensive and requires great skill in operating gear and also demands research on oceanography. In these circumstances it might be easier and economical for the government to direct policies towards developing the inland fisheries. It may be in this view that the government has initiated several development programmes in inland fisheries and cage culture development as detailed out in Part I of this study.

Another segment of the fishery resource in Sri Lanka which needs to receive careful consideration by the government consists of the varieties of fish exploited mainly for export purposes. These are types of crustacea such as prawns(shrimp) and lobster, yielding high economic returns. The increased exploitation of lobsters in the past few years has led to the depletion of its stocks and a ban was imposed on exports of lobsters since September 1979 so that these stocks may be replenished.

The **prices** of prawn too as a result of it being exported seem to have risen more rapidly than the **prices** of other varieties of fish. Hence the relevant inshore vessels in areas where prawn fishery is possible will be more active in their hunt for prawns than for other varieties of fish.

Prawns are caught in two ways - with the trawl in areas where mud bottomed trawling grounds are found and with drift net of small mesh size in areas where trawling is not possible. The marine ecological system is very complex, involving many linkages so that if one species is heavily fished there could be significant repercussions on other species. The prawn is a "primary" fish in that it feeds on vegetable matter in the water rather than on other fish. The prawn however is preyed upon by other fish. When trawling takes place the trawl net works as

an all encompassing type of gear, capturing every thing in its path. It is possible therefore that the trawl net will reduce the stock of prawn predators in the trawling grounds: - A situation which would stimulate and increase the prawn population, and bring about a concomitant decrease in the stocks of varieties of small fish captured by other types of fishery.³⁴

At present this hypothesis can only be stated. It needs to be tested by substantive biological research. Hence the trawl may in the long run increase catches of prawns and reduce catches of other fish.

The increase in effort in the prawn fishery (both trawl and drift net) will have an adverse impact on the composition of inshore prawn catches. As a consequence of increased fishing effort (particularly in the case of demersal fish) it has been found that the average weight of the fish is lowered with the increased fishing effort. The commercial value of prawns varies with "the grade" which in turn is based on the criterion of 'weight'. Hence lowering the average weight of the prawn caught, lowers the unit value of the prawn catch. In the medium and long run therefore the proportion of the Grade I and Grade II prawns in the total prawn catch can be expected to decline; while the proportion of Grade III prawns can be expected to increase. This hypothesis too can only be stated. It can be tested with empirical data on the composition of the catches over a period of years.³⁵

³⁴ S. Fernando - 1980

³⁵ Ibid.

A NOTE ON POLICY IMPLICATIONS

The profit margin available to the fishermen from their industry (as pointed out earlier) is greater than that available to the rural peasant and farmer, despite the need to set apart a portion of the income to service loans and other liabilities to assemblers and lending institutions.

With various subsidy schemes, readily available credit facilities, self employment projects, and aid programmes organized by the State through the Ministry of Fisheries - not forgetting the large profit margin obtainable in the industry itself the fishing industry should necessarily attract more "outsiders" from the large force of unemployed persons in the country.

Unfortunately, this has not been the case and the reasons for this are certainly not the more or less artificial barriers such as caste and religion. It could well be due to the apparent purposeful obstructions presented by power structures within the industry.

This power group within the fishing industry is, however, not adopting a "dog in the manger" policy. They are investing more and more in the industry, taking advantage of the credit facilities made available to them by the State and State Banks. There is definite evidence of this enthusiasm in many parts of the country.

These new investments of capital on more and better craft and gear would create a demand for crew and labour and the only source from which this extra labour could be attracted or extracted is the rural community of peasants and farmers, once the labour potential of the coastal fishery belt itself is exhausted.

This, then would be the opportunity for the "outsider" to enter the industry. This outsider however, would be no immediate threat to the power structures within the industry. These outsiders will eventually be "absorbed" into the fishing community and the process of investment; influx of outside labour, absorption of this labour force into the community will continue until such time as investment reaches a point of saturation. At this stage, the returns on the investments will begin to diminish.

There is no evidence, as yet that this situation has presented itself, but when it does, employment will have to be diversified and directed towards fresh avenues, if returns to capital and labour are to remain high.

These new avenues should necessarily be those that do not demand heavy investments on expensive machinery and equipment or those that involve sophisticated technology and expertise. These ventures should preferably be satellites of the Fishing Industry, so that the parent industry could supply the raw material for use in the new venture. For example, prior to the despatch of the larger varieties of fish to distribution centres and markets, the fish could be "cleaned up" by the extraction and separation of the offal (gill, gut and fin) which could be used in the preparation of such useful material as fish meal and fish food for potential aqua-cultural Fish Farmers.

This industry, which could be undertaken at a "cottage" level should be carefully planned and developed after reasoning out the relevant consequences. There would also be other benefits that would accrue from the processing of the fish for this purpose. For example it would be possible to preserve and pack the fish better for transport, whilst the consumer would receive more fish to the pound and less waste.

Research into the possibility of creating more such satellite industries within the fishing industry should be undertaken so as to generate more avenues of alternative employment.

However, higher incomes and more employment have been generated with the introduction of mechanization to the fishing industry. Investments in the industry are increasing and the industry appears to be well on its way to a state of flourish.

There is, however like all good things the gloomier side of the picture that of the over exploitation of both the source of income viz: the fishery resource and the resources employed in the exploitation of the fishery.

With the possibility of continued and increased production throughout the year through mechanization of craft, the stock in the fishery would be in danger of being depleted beyond the maximum biologically sustainable yield.

The engines, out board motors and fishing gear, all of which are imported with valuable foreign exchange should not be subject to over exploitation, as replacement of these resources would involve the expenditure of foreign exchange; with the resultant ill effects on the economy of the fishing community. The increased costs of inputs will also add its burden to the consumer by means of increased prices of fish.

With the maximum biologically sustainable annual yield of 250,000 tons from the Inshore marine fishery likely to be achieved by 1983 and with an adverse relationship developing between the price of inputs to the marine fishery (e.g. engines, fuel, nets and boats) on the one side, and the domestic price of fish on the other, and as deep sea fishing is both capital

intensive and technologically sophisticated, it seems that the major scope for the expansion of the domestic fish supply would have to come from the inland fisheries³⁶.

However the strategies for developing the inland capture fishery should not lose sight of the twin social objectives that have guided the modern (post-1952) phase of inland fishery development. The social objectives have been:

1. Providing the low income groups in the rural sector with a low priced fish which is not beyond their means.
2. Increasing the income levels of fresh water tank fishermen.

The above two social objectives are not necessarily contradictory. But in order to achieve both objectives simultaneously, a determined effort must be directed by researchers towards identifying and structuring, for the inland waters a "Multiple Fishery" which is ecologically acceptable. The aim should be to identify a number of species, which, feeding on different types of plankton, do not compete with each other for food, and then to stock the inland reservoirs with these multiple non competing species and thereby increase the productivity of the inland waters. Such a multiple fishery would, because of its expected high levels of productivity, be commercially rewarding to the fishermen. At the same time, such a multiple fishery could be expected to provide fish for the low income groups in the rural sector at prices that are not beyond their means.³⁷

A development strategy for inland fisheries should also work out the Resource-Management Practices that should be introduced in the reservoirs, taking into

³⁶ S.Fernando - 1980

³⁷ Ibid.

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There is marked improvement in the standard of living in the marine fishery sector whilst progressive steps are being taken to raise the standard of living in the fresh water fisheries sector, too.

The numerous subsidy and insurance schemes, along with the credit facilities, which include even low interest loans, that the government has provided have had their impact on the industry - in that some of those who have achieved success in the industry have begun to re-invest their profits back into the industry.

The pattern of investments, however by these successful craft owner or fisherman, presents a rather interesting picture as shown in the following analysis:-

Table (29)

Distribution of re-investors - according to income groups

<u>Income level in Units of Rs. 1000/-</u>								
	2-5	5-7.5	7.5-10	10-25	25-50	50-100	100-200	200-300
Percentage of re-investors within each income group		100%	65%	37%	35%	50%	22%	17%

(Source : Marga Institute Fishery Study - 1980)

It was observed that all those within the income group of 5 - 7.5 thousand rupees do re-invest in the fishing industry whilst only 65% of those within the 7.5 - 10 thousand rupees income group re-invest their earnings in the industry. Of those in the higher income groups there is a decreasing preference for re-investment. Only 22% of those in the 100-200 thousand rupee income range and a 17% in the 200-300 thousand rupee income range were ready to re-invest

their capital in the industry. This would suggest that whilst the low level income groups who had little to re-invest were ~~prone~~ to do so, the high level income group appears to have moved away from the industry and invested their earnings in other ventures.

This reluctance of the more affluent class of fishermen to remain in the industry may be motivated by their desire to "drift away" from an apparently "sinful" and culturally "not-respectable" vocation and elevate themselves in the social ladder. In a country where Buddhists are in a majority, there is a tendency for the minority groups such as Catholics, Hindus and Muslims to adjust their way of thinking according to the majority's concepts and value judgements. This may result in those investors of other religious groups too drifting away from an industry which is considered "sinful" and "not-respectable".

This pattern of economic behaviour is certainly not going to help the industry to develop beyond a certain level of investment and technology. No industry could prosper or develop unless new methods and technologies are adopted, better systems of management introduced and optimum utilization of its resources is undertaken. All these processes need capital - and what better sources of capital could the fisheries industry have, than the capital generated by the small-scale fishery itself.

The tendency for the highest income earners in the small-scale fishery to move away from re-investing their savings in the fishery itself would suggest that in the longer run, the Sri Lanka fishery would always remain confined to a relatively small-scale of operations instead of graduating into an industry having a larger scale of individual investments and operations.

REFERENCES

- Fernando (Sunimal) 1975: Sociological Study of the Small-Scale Fishery in Tangalla (Manuscript - with the Author)
- Fernando (Sunimal) 1979: Fishery Country Profile - Sri Lanka (Marga Institute Mimeograph)
- Fernando (Sunimal) 1980: The Fishing Industry of Sri Lanka - 1980 (Marga Institute Mimeograph not yet released)
- Jayasena (R.M.) 1980 : A Factual Note on the Inland Capture Fishery in Five Selected Centres (Marga Institute Working Paper)
- Munasinghe(Hemamala)1980:A Noteon some economic aspects of Fishery Resource Management (Marga Institute Mimeograph)
- Senanayake (F.R.) 1980 : The Enhancement of the Fisheries Potential in Sri Lanka's Inland Water bodies by the addition of trophic diversity. (Marga Institute Mimeograph).
- Gamage (Willie 1980: A Note on the progress of mechanisation in the Marine Fishery (Marga Institute Working Paper)
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