

Fishing and Fish Management

There are over 500 species of edible fish in coastal waters of Sri Lanka. Their sizes range from 6 cm long sprats, (Halmessa) Anchoviella spp. to 2 meter long Marlins (Koppara) Histiophoridae spp. Nearly 90% of the coastal fish catch is pelagic and consist of Anchovies (halmessa), Ponyfish (karalla), Sardines (salaya), Herrings (hurulla), Mackerels (kumbalawa), Barracudas (jeelawa), Scombrids (thora) and small Carangids (Parawa). They are caught in the near shore waters with beach seine nets (madels) and in further offshore with gill nets and lines. The gill nets catch contribute about 80% to the landings while beach seines account for most of the remainder. The coastal demersal fish resource is mostly found in coral reefs and among the submerged rocky bottoms. They vary from coloured Parrot fish (girawa) to large Groupers (kossa).

Coastal Fish Resources

The survey carried out by Norwegian Research vessel "Dr. Fridjot Nansen" estimated that the total biomass of Sri Lanka's Continental shelf and the area immediately adjacent to it as 750,000 m tons. From this maximum of 250,000 m tons could be harvested annually. (annual sustainable yield ASY). This yield is said to consist of 175,000 m tons of pelagic and 75,000 m tons of demersal and semi demersal fish. At the time the survey report was submitted coastal fish catch from all coastal districts was closely approaching the annual sustainable yield specially in pelagic fishery.

Coastal Waters

The continental shelf around Sri Lanka is a narrow platform for the greater part of its extent having a mean width of 20 km. This continental shelf narrows to a thin strip off the coast of east to 3 km. wide belt. To the north west and the north of the island the shelf widens to an extensive shal-

low bank and forms the floor of gulf of Mannar, Palk bay and the Pedro bank and merge with the continental shelf of the Indian mainland. The region of the sea within this continental shelf area is the Coastal Waters.

Increased fish production in western sector of the island and its effect on the coastal fish resource

The Table (1) gives the marine sector fish production from all the coastal provinces and in the North and East and also in the West covering Southern, Western and in the North Western provinces during the last 14 years.

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In 1996 total marine fish production was 206,300 m. tons the coastal sector fish production was 149,300 m tons. The balance was from offshore and deep sea regions.

From the total coastal marine fish catch, 84% or 125,600 m tons was harvested from the coastal belt covering South, West and the North Western provinces. The estimated annual sustainable yield that can be taken from this region which covers only 30% of the coastal belt was approximately 75,000 m tons. The harvest from this region was nearly 50,600 m tons over the annual estimated sustainable yield.

Incentives and its effect on the fish resource

In seventies and eighties boats, engines and fishing gear was sold to traditional fishermen at subsidised prices. These subsidies varied from 50%-90% for traditional fishing craft without engines, for non-traditional introduced boats with engines and gear, the amount of subsidy given varied from 30% - 50%. These subsidies were incentives given to the fishermen to harvest more fish specially from the coastal areas which were then lightly fished.

During the following two decades intention of giving subsidies to boat engines and fishing gear had its desired effect on the fish production. In 1963 total fish production from the coastal waters was only 71,000 m. tons. This rose to 184,000 m. tons in 1983. A remarkable increase for a period of two decades.

The continuation of the incentives given to increase the fish catch saw its bad effects in latter part of eighties and in nineties. During that period results of over fishing appeared to emerge from several sectors of the coastal fishery, such as in lobster, small pelagic and trawl fishery.

Lobster fishery

Lobsters are fished using gill-nets, hoop nets or lobster baskets and by

Table 1

Year	Marine Fish Production (m. tons)				
	Coastal & Deep Sea Marine	Deep Sea Marine	Coastal Marine	North & East Coastal Marine	South, West & North West Coastal Marine
1983	184,700	700	184,000	91,000	93,000
1985	142,700	2400	140,300	45,200	95,100
1995	217,000	60,000	157,000	25,700	131,300
1996	206,300	57,000	149,300	23,700	125,600

diving. The boats used are mostly non motorised traditional crafts. Fishing lobster is done mainly during October to April in the Western Coastal region where the sea is clam during North East monsoonal months. Of the six lobster species found in this region five species contribute to the bulk of the lobster landings. Spiny lobsters *P. homarus* being the most abundantly found in the catches contribute 70% to the total landings. The landings from these southern districts have found to be approximately 180 metric tons. In 1995/96, 90% of the catches were exported in live form.

Demand for lobsters started to rise from seventies due to heavy demand from the tourist industry and from the exporters. The price paid to live lobster and lobster meat had risen several folds specially during eighties. These high prices had attracted large number of fishermen to the lobster fishery resulting depletion of lobster resources well below the sustainable limits.

According to bulletin of the fisheries research station, in sixties average catch realised from lobster fishing in South West region of the island by a skin diver fishermen varied from 24 to 32 lobsters per day. (The other methods used to catch lobsters produced almost the same amount as a skin diver)

South and South Western coastal area is the high lobster producing area in the island. It too was the most productive lobster ground. But due to over fishing this once productive lobster ground is at present confined to the district of Hambantota, Galle and Matara districts which once produced the bulk of country's lobsters are producing very small quantities due to heavy fishing in the past.

Similar situation can be seen in the North Western province where areas which gave high catches in seventies are producing no lobsters today. If not for the restrictions imposed by the security forces similar situation would have fallen to the lobster grounds North of Kalpitiya.

In the North moderate quantities of lobsters are found in the sea around the islands of Jaffna peninsula. These are presently harvested in small quantities

due to restrictions imposed on fishing and to transport difficulties to other parts of the island.

In the Eastern sector too, lobsters are harvested mostly for the export market but the amount is not very large. In 1996 UNDP funded Marine Fisheries Management Project prepared a draft management plan for lobster fishery with special reference to Southern province.

Its main features include restricting lobster fishing in the Southern province to those persons who are presently engaged in taking lobsters. Establishment of a licensing committee to advise when issuing licences to persons engaged in lobster fishing. Banning of lobster fishing during breeding season (October-April) in Southern Province. The new regulations will also:

- (i) impose revised minimum catchable sizes to prevent taking under size lobsters.
- (ii) prevent export of spiny and slipper lobsters having eggs.

Small pelagic purse seine fishery

In early 80s fishermen on the South West coast of Sri Lanka, began to use the purse seine nets to collect live bait for the pole and line fishery. This was later developed successfully to catch small pelagic fish such as red bait (Hingura), mackerels, herrings, etc. from the near shore coastal waters. The high income gained led the number



of purse seines to increase from 32 in 1984 to 62 in 1991. This rapid increase in number of purse seines resulted in several conflicts specially with other resource users employing small mesh gill nets and beach seines. In 1994 ministry had to announce a temporary ban on the use of purse seiners.

When the number of purse seiner units were restricted due to conflicts among fishermen, a new fishing gear an encircling net "ring net" was developed by the fishermen to catch small pelagic fish such as small tuna. This new ring net a popular fishing gear used by the South West coast fishermen is called "Alagodu course" among the local fishermen. It targets small pelagic tuna such as "Alagoduwa" frigate mackerel (*Auxis thazard*) and "Ragoduwa" bullet mackerel (*Auxis rocheii*)

The large catches of high quality fish, the ring nets fishermen land had made number of coastal fishermen abandon gill net fishing to ring net fishing. At present there are 300 - 400 units of ring net units in the Southern province where 1500 - 2500 fishermen are employed. During the fishing season (September - October) the catch rates average 200kg/day. On certain days of the fishing season catches of 1000kg/unit/day are not uncommon. When catches go up to about 1000 Kg the price drop to 1/3 the average selling price.

Over exploitation of small tuna fish resource was a charge against the ring net users, by the coastal fishermen specially gill net fishermen in the Southern Province. This had led to number of conflicts between coastal gill net fishermen and ring net fishermen. To solve the above conflict the department is considering:

- (i) limiting the number of ring net units.
- (ii) imposing a maximum size for the length and minimum size for the mesh of the ring net

Trawl (shrimp) fishery

Fishing shrimp on large scale using trawl nets was practised on large scale by small prawn trawlers near the estuaries of Chilaw, Kelaniya and in the Northern coastal areas of Sri Lanka. It

was another coastal sector which had to be restricted temporarily as a result of heavy opposition from the coastal fishermen on charges of over fishing.

In Chilaw trawl nets and trammel nets are the popular gears used to catch shrimps. The landings from trawl nets are mostly small shrimps such as *M. dobsoni* and *P. stylifera* while from trammel nets its mostly the valuable large shrimps such as *P indicus*, *P monodon*, *P semisulcatus* and *P merguensis*.

In late eighties small scale fishermen from neighbouring village of Chilaw levelled charges on the prawn trawler fishermen for over exploitation of the shrimp resource. Clashes between the two groups was so frequent that the trawler fishery in Chilaw had to be suspended in 1993 and their gear had to be removed. Their loss was compensated by the fisheries department by providing deep sea fishing boats under a special scheme.

Other measures for mangement of Coastal Fishery

Restrictions to fishing and to the methods of fishing

In 1996 the old Fisheries Ordinance which was in effect from 1941 was repealed and the new Act with wide powers for Management, Regulation, Conservation and Development of the fisheries resources was substituted in its place. The first regulation under this Act to control the fishing operation was introduced from 1st of December 1996. According to the Fishing Operations Regulations no person can catch marine mammals or turtles. In drafting the new regulation the committee appointed to draft the regulation identified 24 fishing methods being in use all over the island. Four of these:

- (i) Push net fishery operations
- (ii) Harpooning for marine mammals
- (iii) Moxi net fishing operation
- (iv) Gill net or trammel net fishing operations on coral reefs and rocks were completely banned and the rest were reduced to 17 operations. These 17 operations are given licenses through the village based fisheries inspectors. It is hoped to control the dwindling fish resources through the

controls that will be implemented using the above licensing system.

Incentives given to fish in the deep sea

The subsidised boat engines and fishing gear which was given to increase the fish production in sixties and seventies were pruned down gradually in eighties and nineties to move the fishermen away from the coastal waters. During the mentioned decades subsidised deep sea fishing boats were given instead of coastal fishing boats to attract fishermen to fish in the offshore and deep sea areas. These incentives although had an effect at the beginning got neutralised by the entry of large number of displaced fishermen with boats from the North and the East of the country due to insecurity.

Management of Negombo Lagoon

There are number of water bodies which once produced considerable amount of fish for the sustenance of large number of families. Today most of these are producing hardly any fish. Ex. Lunawa lagoon, others are producing very low catches Ex. Mundel, Rekawa, Koggala lagoons. While few others are about to collapse Ex. Negombo. The causes may be man made such as discharge of pollutants, land reclamation, destruction to vegetation, over fishing or may be natural causes such as sand bar formations.

Under protection of fish and other aquatic resources given in the new fisheries act Negombo Lagoon which showed declining catch rates will be declared a fisheries management area.

Negombo is an important fishing centre. Its lagoon is surrounded by 26 fishing villages having 6000 fishermen. Partly due to influx of fishermen from the North and the East catch rates show a gradual decrease.

The yearly fish production from the lagoon is approximately 1300 tons. Just outside the lagoon mouth fishermen take another 400 tons of shrimps. The estimated value of the catch from the lagoon proper is Rs. 150 million while the shrimp caught outside is estimated to cost Rs. 60 million, 50% of the catch from the lagoon consist of shrimps and the balance consist of fish

and crabs. The fishermen use multitude of gears varying from stake nets to brush piles.

In 1996 Director of Fisheries and Aquatic Resources established a multi agency advisory committee to examine and formulate a draft plan for the management of Negombo Lagoon. This committee in collaboration with the fishing communities living in the above mentioned villages around the lagoon prepared the Negombo Lagoon Management Plan. Their report was submitted to the Director of Fisheries in August 1997 and is currently examined for implementation.

Management of Ornamental Fishery

The ornamental fish sector has a history of half a century or more. From late 1940s it has grown steadily to a important sector in fisheries industry. The annual export earnings from this sector of the industry is Rs. 300 million and provide jobs to few thousands in capture, breeding and in export sectors.

The ornamental fish are either cultured or taken from most vulnerable environments such as swamps, streams, rivers, estuaries, mangroves, seagrass beds, coral reefs and lagoons. The cultured are mostly fresh water non indogenous. Few cultured species are indogenous. All marine species are captured from coastal waters but rare marine species are imported for the purpose of re-export from Maldives, Gulf and from states around Red sea. Ornamental fish are exported mainly to countries of the European Economic Community, U. S. A. and Singapore.

To manage ornamental fish resources the Department with the help of BOBP (Bay of Bengal Programme) had undertaken the following.

- (i) preperation of a resource profile
- (ii) identification of species of fish that should be restricted or banned from export
- (iii) awareness building among the public
- (iv) organizing collectors, exporters and breeders to help in resource management.

