Sri Lankan Marine Living Resources Management

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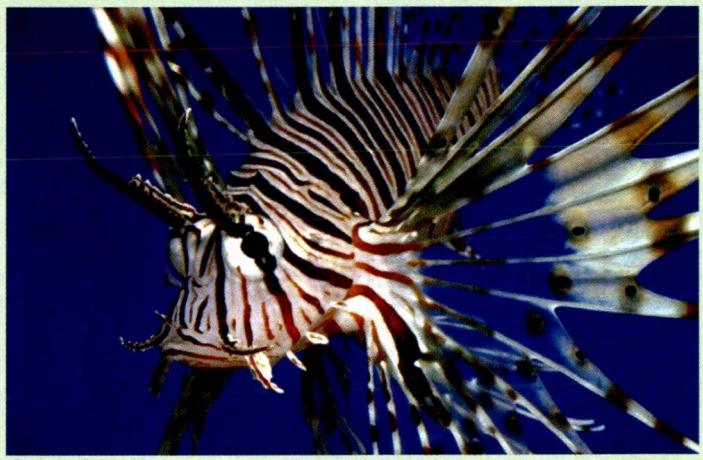
Sri Lanka is situated in the Indian Ocean, SE of India, between 6- 10degrees North latitudes, and 80-82 East longitudes. Its area is approximately 65,610 sq. km.; with a coast line of about 1620 km. Fishing takes place all round the coast. Sri Lanka and the southern tip of India stand on the same continental shelf and are separated by a shallow sea area having a depth ranging from 10 to 30 meters. The shelf around northern and north-western is broad, forming the Palk- strait, Gulf of Mannar and the Pedro bank. However, the shelf around many other parts of the island is narrow averaging about 20 km. The shelf covers an area about 30,000sq. km. The mean water depth is about 75 meters, but the submarine elevations drop abruptly to 900 meters within 3 km. and 1800 meters within about 15 km. Beyond this, there is a steep descent of over 5500 meters reaching to the general bottom level of the Indian Ocean (Madduma Bandara, 1989). The location of Sri Lanka in the Indian Ocean has influenced on its bio diversity and



also on the management of living resources.

In Sri Lanka, marine fisheries are generated from three principle sources – coastal, off shore and deep sea. Marine fish production trend of Sri Lanka for the last ten years indicates the following ;

a) A slow increase in coastal fish production
b) A rapid increase in off-shore fish production
c) A moderate increase in deep water fish production

Coastal fisheries component consists of shallow water resources of which the bulk of the fish production comes from small pelagics. According to Fernando (1997), there are over 500 species of edible fishes in coastal waters of Sri Lanka. As common to all tropical countries, the multi species nature of coastal fish resources is always make the issue of fisheries management more complicate.

Issues applicable to Sri Lanka's coastal fisheries management are identified as follows:

open access; conflicts among coastal fishers; low catch and low income; declining trend (size and CPUE) of certain species; more juveniles in catches; rapid increases in the coastal fleet; destructive fishing practices etc.

Shore seine verities such as sardines, herrings, mackerels, anchovies are mostly harvested in coastal fisheries by gill nets and beach seines. Total fish production of this category is of the order of 150000 to 185,000 mt/year and are mostly used for local consumption. With the increasing effort through gill nets, the contribution of the beach seine fishery once dominated has declined in recent years. Gill net fishing dominates coastal fisheries taking place within the continental shelf. A survey conducted during 1978-1980 estimated the total biomass Sri Lankan continental shelf and immediately adjacent to it as 750,000 metric tones. When the total biomass value is considered, it is assumed that, around 250,000 metric tones of fish , could be harvested annually. This yield is said to consist of 175,000 metric tones of pelagic fishes and 75,000 metric tones of demersal and semi-demersal types. Sri Lanka's marine fish production of 385000 metric tons(of this ,around 140000 mt offshore) in the year 2011 indicate that Sri Lankan fishers are harvesting the full quota of our coastal fish resources .This indicate that following has to be implemented;

1) Management of coastal resources (to maintain resource harvesting at MSY level).
2) Encourage coastal fishers to engage in off shore fishing (to reduce pressure on coastal resources).
3) Promote aquaculture (to supplement protein requirements)

Brackish water resources are also considered under the coastal fisheries sector. Shrimp species of the group Penaeus are the target species in many of the lagoon fisheries. The total extent of the brackish water lagoons and estuaries in Sri Lanka is estimated at 128000 ha. Area covered by mud flats, mangrove swamps and salt marshes is around 71,000. Pillai (1965) has recorded a total of 112 edible species from brackish waters from Sri Lanka of which 65 % are migrants between brackish water and sea indicating the importance of brackish water habitats for marine fish production. Many of the brackish water habitats are already threatened and the Department of Fisheries has already taken steps to ban certain harmful fishing gear types such as push nets and drag nets in shallow coastal water bodies. Considering the importance of the contribution of the coastal fisheries and their declining situation, the Government has seriously thought about their management rather than development .

Coastal fisheries of Sri Lanka suffer increasingly from over use of resources and overuse of the aquatic environment indicating responsible fisheries are not taking place. Per capita fish consumption is also increasing. Coastal habitats essential for coastal fish production - coral reefs, tidal mud flats, lagoons,

estuaries, sea grass beds, mangrove areas and salt marshes are reported as threatened. Sedimentation, siltation, release of effluents to coastal water bodies, coastal aquaculture and destructive fishing practices are taking place threatening the coastal fish production. Although coastal fish and crustacean stocks are subjected to heavy exploitation, some of the coastal short lived stocks like shrimps are not in danger of being fished out, since their biological characteristics make them very resilient in the face of heavy exploitation.

According to the fish production statistics of the Ministry of Fisheries, contribution of the off shore resources to the total fish production of the country is increasing significantly during the last few years.

Sri Lankan off shore fisheries mostly target large pelagic fishes such as large tunas, pelagic sharks and bill fishes predominate beyond the continental shelf. This is a fast developing sector of the country and its current production is around 140,000 mt/ year. Fishing is mostly done by large meshed drift gill nets. Lack of access to information on distribution and abundance of high sea fish stocks, excessive reliance on gill net fishing which land poor quality fish with no export potential and under utilization of some commercially valuable tuna resources were some of the constraints faced in the recent past. Government has taken steps to popularize an environmentally more friendly fishing fear – the long line fishing among off shore fishers and as at today, significant part of the large pelagic catch comes from pelagic long lining. This is an area where the Government has taken steps to develop during the next few years mainly to reduce the pressure on coastal resources. The large-scale, trance boundary nature of the fish stocks exploited by the off shore fisheries mean that any management efforts taken by Sri Lanka alone will have little or no impact on the stocks unless accompanied by parallel measures by other countries harvesting the same stocks. Hence, with regard to off shore fishery resources, Sri Lanka is presently working closely with regional and international bodies such as IOTC for resource harvesting and management.

Demersal resources are mostly harvested by bottom trawling, bottom long lining and

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bottom set gill netting. Fishing is mostly done on the bottom of the continental shelf and mostly on the continental slope and the production range from 30,000 to 40,000 mt/ year. Catch consists of emperors, travellies, grunts, sweet lips, snappers, groupers, sharks and rays. This is a slow developing area of the country mainly due to the lack of technology and facilities to harvest deep sea resources and management actions are not strongly implemented. There is little published information available relating to management of demersal fishes in Sri Lanka. The general impression is that many deep water demersal recourses are under exploited.

Sufficient published information is available to prove that shallow water demersal resourses such as lobsters are overfished. In contrary to locally consumed fish types, when exportable high priced commodities like lobsters are concerned, Sri Lanka has a very good set of regulations for their management. These regulations were framed in 1973 and are constantly updated considering the recent trends of the industry.

There are three main methods used worldwide for fisheries management and they are – (A) Law enforcement , (B) Community based management and (C) Co-management or participatory

management. In Sri Lanka the first two methods are well practiced and known to fishers for a long time but the third method which is known as the best out of all is now introducing to appropriate fisheries. Restrictions to fishing or input controls come under above (A) is well implemented in several coastal fisheries – Eg. Push nets, harpooning for marine mammals, moxi net operations and setting bottom set gill nets on coral reef and rocky bottom areas are banned. In attempting to resolve some of the problems in the coastal fisheries sector, actions have been taken but have not been successful due to various social, legal and economic concerns. Certain fisheries such as stake seine net operations, beach seine operations, stilt fishing, kraal fishing and brush pile fishing having traditional user rights are well controlled by the respective fishing communities are good examples for community based fisheries management. The Government is planning to introduce participatory management to appropriate fisheries and steps have already been taken to introduce special management areas (eg. Bar reef, Madu Ganga, Negombo lagoon. Rekawa lagoon etc.) considering the uniqueness of the fisheries of these special areas. Under the Negombo lagoon management plan, ten management areas have already declared. Licensing of all fishing gear and crafts, declaration of special management areas, Gaze ting the banned fishing methods, Gaze ting the approved fishing practices, development of a good surveillance system, popularizing environment friendly fishing gear types like long lining etc. are some of the activities now implemented targeting marine resources management. In the year 1996, the Government has taken steps to declare "Off Yala fisheries management area" to ensure the sustainability of our coastal waters.

When marine living resources degradation is considered, - overexploitation, lack of knowledge on stock sizes, land based pollution, habitat degradation are some of the root causes already identified. During the past , many of the actions or concepts aimed at deciding optimum fishing capacity was not successful in the absence of accurate information on fish resources, fishing effort etc. The Government is now taking steps to develop a comprehensive off shore development / management plan – a participatory off shore fishery management plan bringing together all stake holders of the industry including the Government, private sector and fishers. Despite the biological robustness of resources, it seems that some sort of management will be required if the fisheries are to continue with delivering benefits in line with Sri Lanka' s overall development goals. In fisheries management we have to keep in our minds that even if all information is perfect, the problem of effective management in fisheries resources would remain. Successful management of widely distributed capture fisheries resources will depend also on the use of appropriate technology, coordination of technology and policy of the government on fisheries and for this the government is well addressing. When addressing issues of the fisheries sector , the research support is immense. The National Aquatic Resources Research and Development Agency (NARA), the research arm of the Ministry of Fisheries is mandated to provide technical information to find solutions with regard to preservation, rehabilitation and management of coastal and marine resources.

Sri Lanka is committed to develop a comprehensive marine fishery development plan considering the biological, environmental and socio-economic issues in order to obtain maximum sustainable production and at the same time to help to maintain the health of our large marine ecosystem - the Bay of Bengal.