Octopus Fishery

...... Off Indian NW(Maharashtra) Coast

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Octopuses, popularly known as 'Devil fishes' are marine benthic animals found to live from the sea coastal water down to 1000 m of its depth. The major species of octopuses, which contribute to their global fishery, come under the genera Octopus, Cistopus and Eledone. As many as 200 species of Octopodidae are known to occur in the world Oceans (Worms, 1983) and of these, about 60 species are known to occur in the Indian Ocean (Roper et al., 1984). Octopuses are exploited from the sea for over 2,000 years (Roper et al., 1984). The world octopod production was 14.6% of the total cephalopod production in 1981 (FAO 1983) with Tapan as the foremost producer. Over all, the world landings of cephalopods increased substantially from 35,800 tonnes in 1950 to 3,17,200 tonnes in 2001 (Jereb et al., 2005). Among cephalopod resources, octopods are the least exploited in India, though they occur in fair quantities in different parts of the Indian marine waters.

Sundaram and Dias (2008) gave an account on the traditional methods of capturing octopuses. Octopuses in the continental shelf and oceanic region are caught mainly as a by-catch of the bottom trawl. The most important octopus fisheries and markets are located in Asia (particularly Japan) and in the Mediterranean countries. In India, octopuses constitute incidental catch in shrimp trawlers. The octopuses, considered as a delicacy, are also caught during low tide from oceanic regions by adopting simple fishing methods like trap setting, harpooning or poisoning of the coral rock pools, which they inhabit. In shallow areas they are caught by setting traps and also by using longline, handline and spears. Once caught, octopuses are killed by fishermen and their bodies are turned inside out, thereby forcing gills, heart and viscera out through the wide opening of the branchial chamber. This is known as 'turning its cap' (Hornell, 1917, Sarvesan 1974 and Silas et al., 1985).


Even though thirty-eight commercial species of octopus have been reported from the Indian seas (Silas et al., 1985), a directed effort at fishing for octopus is lacking. However, in recent years, the possibility of export of cephalopods was tried. This paved way for the emergence of an octopus fishery in some parts of Kerala. Further, it has also picked up in Mumbai waters of Maharashtra. While Octopus products exported are meagre, from 1994 onwards, there has been a rising trend in its exports. According to Kripa and Joseph (1994), Octopus membranaceus, Octopus dolphini, Octopus lobensis and Cistopus indicus were the main species that contributed to the octopus fishery in Kerala. Apart from these species Octopus globosus, Octopus cyaneus and Octopus aegina are the main species contributing to the fishery along Indian coasts (Kripa et al., 2000).

There seems to be not much of information on octopus fishery from Indian waters, especially from the northwest coast. In this background, the present paper deals with the increasing trend in octopus fishing by trawlers from Mumbai waters. This trend is dominated by a single species Cistopus indicus (Sundaram and Sarang, 2004). There are a few other octopus species also, but their identity needs to be ascertained. Octopus landings by trawlers were observed throughout the year in Mumbai. However, the catches of Octopus by dol nets were very less. The landing data were obtained from the commercial catch landings at three major fish landing centers in Mumbai such as New Ferry Wharf, Sasoon docks and Versova for the period 2001-2006. As the mechanised fishing operations i.e., trawling, were suspended from 10 June to 15 August, due to southwest monsoon and restrictions imposed by the government of Maharashtra, there were no trawl landings during the period.

Catch and effort data for Octopus from trawlers and dol netters were collected by randomly observing 10-20% of the boats. The total number of boats and the total quantity of fish landings were obtained from the data files maintained by the Fishery Resources Assessment Division of Mumbai Research Centre of Central Marine Fisheries Research Institute. The catch recorded from the observed number of boats was raised to the total number of boats that landed the catches, which in turn was proportionately raised as for a month, by taking into consideration number of fishing days in a month and subsequently the monthly estimated number of boats, as per Alagaraja (1984).

New Ferry Wharf, Sasoon docks and Versova, as already mentioned, are the major fish landing centres in Mumbai (Singh, 1998). Since Mumbai accounts for 60% of the total fish landings in Maharashtra (Annam and Sindhu, 2005), the catch statistics from Mumbai can be considered as representative of Maharashta landings.

Fishery at New Ferry Wharf: The landings of Octopus by trawlers in this center ranged between 18.8 t (2001) to 324.5 t (2006). The percentage of Octopus in cephalopods ranged between 0.3% (2001) to 6.3% (2006), with the catch rate ranging between 0.01 kg/hr (2001) to 0.18 kg/hr (2006) and the CPUE ranged from 0.7 kg/unit (2001) to 15.26 kg/unit (2006). The peak period of abundance was during March-April.
Fishery at Sasoon Dooks: The landings of Octopus by trawlers ranged between 18.9 t (2001) to 199.2 t (2006). The percentage in cephalopods ranged between 0.2% (2001) to 2.7% (2006) with the catch rate ranging between 0.02 kg/hr (2001) to 0.20 kg/hr (2006) and the CPUE ranged from 1.13 kg/unit (2001) to 17.49 kg/unit (2006). The peak period of abundance was during March-May.

Fishery at Versova: The landings of Octopus by trawlers ranged between 0.1 t (2001) to 39.9 t (2006). The percentages among cephalopods ranged between 0.01% (2001) to 13.1% (2006) and the catch rate was very less in 2001 which increased to 0.07 kg/hr in 2006 and the CPUE ranged from 0.01 kg/unit (2001) to 4.68 kg/unit (2006). The peak period of abundance was in March.

From the above observations, it will be very clear that the Octopus landings have been on the rise, contributing substantially to the fishery of Maharashtra. The Octopuses landed are taken to the processing units within 4-6 hours. At these units they are degutted, processed and most of them are exported. The catch of Octopus is often containing seawater resulting in a better state of preservation. Recently, due to the opening of many Chinese restaurants in Mumbai, local demand for Octopus has emerged, having the effect of increase in the price from Rs.13/kg in 2001 (Sundaram and Sarang, 2004) to Rs.80/kg in 2008, at the landing center.

Octopus fishery has a long history in Japan and in some European countries. In contrast, in India, exploitation has just been initiated (from 2000, in Mumbai). They are landed as by-catch in shrimp trawlers. The sudden growth of Octopus fishery indicates the availability of this resource in the fishing grounds off the northwest coast of India. Europe and Japan are the main markets for Indian cephalopods. In Europe, Spain, Italy and France are the main markets. Since there is no local demand for Octopuses, they are sold mainly for export and Greece is one of the major markets, apart from the eastern countries. Frozen, de-headed and whole cleaned Octopuses are the two major items of export. Export was initiated in 1988 when about 72 kg of frozen Octopus was exported to Japan and 19,480 kg of whole cleaned Octopus worth Rs.1.6 lakhs was exported to Greece. In the subsequent years, only frozen Octopus was exported. In 1989 a total of 43,520 kg was exported to Japan, Cyprus and Belgium. The export of Octopus showed an eight-fold increase, when 329 t of the product worth Rs 48 lakh was exported from India. Greece (40%), Spain (31%), Italy (7%) and Canary Island (6%), France (4%), Federal Republic of Germany (4%), Sri Lanka (3.5%), Cyprus (2.5%), Belgium (1%) and Portugal (1%) were the importers of Octopus in 1990 with Japan being the main importer of frozen Octopus for the years 1988 and 1989 (Kripa and Joseph, 1994). During the period 1990-96 about 7,797 t of Octopus worth Rs.3,147 lakh was exported from India (Kripa et al., 2000).

According to Nair et al. (1992), the seasons recognised for the cephalopod fishery are the premonsoon (February-May), the monsoon (June-August) and the post monsoon (September-January). The monthly abundance suggests that Octopus fishery is very high during premonsoon seasons in Maharashtra i.e., during February-April. C. indicus was the dominant species in Mumbai contributing 80-90% of the total Octopus catch. The dorsal mantle length of C. indicus in Mumbai waters during 2001-2006 ranged between 50-140 mm (in trawl catches) and from 15-40 mm (in dol catches). According to Kripa and Joseph (1994), O. membranaceus was the dominant species (82%) in Kochi waters, followed by C. indicus and O. dolphinsi (6% each). Octopus catches along Chennai coast consisted of O. dolphinsi and C. indicus, whereas along Cochin coast O. vulgaris was also observed (Meiyappan and Mohammed, 2003). Sivasubramaniam (1991) has reported the occurrence of O. vulgaris and C. indicus from the Bay of Bengal.

Unlike squids and cuttlefishes, Octopuses lead a solitary life and do not form schools. Some Octopuses are known to make seasonal migrations, which are influenced by breeding activity. Octopuses are exclusively carnivorous and they feed on crustaceans, fishes and molluscs (Sarvesan, 1974 and Silas et al., 1985).

Due to the lack of good local market as well as poor export demand, earlier, this resource was underutilised and those caught in the trawl were thrown overboard without being brought to the landing center. But, given the present scenario, due to the increasing export market and the high price they fetch, they are now sought after. This fact makes it highly essential for exploring export possibilities further. As the demand is increasing, over-exploitation due to increased fishing pressure in this area is possible, which may ultimately lead to stock depletion. It is suggested that measures should be taken at this stage itself for rational exploitation of this important resource. Detailed studies on the distribution, population dynamics and especially biology are essential to evolve effective fishery management measures for judicious exploitation of this resource from the northwest coast.

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References


Initiation Workshop on Turtle Conservation Visakhapatnam, A.P.: 17 Nov 2010

An Initiation Workshop was held at Visakhapatnam on 17 Nov 2010 by Tree Foundation of Chennai, Visaka Society for Protection and Care of Animals (VSPCA) and the Forest Department of A.P.

Chief Conservator of Forests, Visakhapatnam Circle, N. Prateep Kumar said conservation was important in view of some species facing extinction. If one element was removed from the food chain it would have disastrous consequences, he added. However, any conservation effort should take the community into confidence and be supportive to the needs of people.

Chairperson of Tree Foundation, Suprada Dharan, said that the organisation aimed at the conservation by involving local communities and educating them. Sea Turtle Protection Force comprising fishermen was formed in Chennai where the organisation had been working since 2002 and in Nellore in A.P. where it began work two years ago.

Turtle conservation had importance because it was indicative of the health and wealth of ocean, it was explained.

She said that India had managed to exclude itself from implementing of system of incorporation of Turtle Exclusion Device (TED) in trawl nets operated by trawlers and mechanised boats and this was leading to turtle deaths.

A comprehensive three-year study on TED impact was going on. TED would be useful in reducing fishing effort. Her organisation was tagging turtles in Chennai and would do it in Visakhapatnam also.

President of Association of Indian Fishing Industries, Y.G.K. Murthy stoutly denied the charge at the fishing industry that 90 per cent of turtle mortality was due to lack of TED. TEO would reduce catch and it was a matter of livelihood for fishermen who could not now go out fishing for months together. Other vessels moving in the sea and more importantly pollution, were the cause for turtle population dwindling and not fishing.

VSPCA Director Pradeep Kumar Nath detailed the work done by his organisation in turtle conservation, because of which the number of nests had gone up from 24 to 325 in Visakhapatnam Zone. Two touching documentaries on the work of Tree Foundation and the conservation effort were screened.

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snakeheads fetch relatively low price in comparison to other part of the country because of the social taboo. In this context, imparting value addition to this fish can play an important role in employment generation and income enhancement in rural area. The entrepreneurs and SHGs, especially women SHGs, can take up the processing of murrals to prepare several value added products and supply them to the growing numbers of supermarkets and malls in the cities for gainful earning. The training was attended by fifteen rural farmers (women & men) from Balugon and Balipatna blocks in the district Khurda, Odisha. They were trained for preparation of several products like murrel pickle, soup, cutlet and ball. The products were well appreciated by all the trainees. Many of the farmers have shown interest to take up this technology and enhance their income generation and livelihood. The NAP team of CIFA has promised all the technical support to promote this technology. Some entrepreneurs from Gujarat, who were there as part of the training programme on prawn in CIFA also tasted the products and showed their keen interest to establish cottage industry for value addition of fish as an industry in their State. Dr A.E. Eknath, Director CIFA, in his concluding remarks appreciated the enthusiasm of the participants and expressed that this institute will always be with the farmers in the upgradation of their livelihood base, nutritional security and income generation.