

Cephalopod fishery of Maharashtra State

Sujith Sundaram

Mumbai Research Centre of CMFRI, Mumbai

Cephalopods comprising of squids, cutlefishes and octopuses form the most valuable fishery

resource in the world second to the prawns. The production of cephalopods was less in the traditional

fisheries but after the introduction of trawling in the inshore waters, cephalopod exploitation experiences new strides and the export market for cephalopods tremendously increased ever since (Silas *et al.*, 1985). In India, the commercial exploitation of cephalopods started about 35 years ago. In Maharashtra, cephalopods are mainly exploited by shrimp trawlers and the landings stand second in all India production. With increased mechanisation and expansion of fishing grounds, trawl nets have become the principle gear used for exploiting them. More than 95% of the cephalopod production in the state is caught by the multi-day fleet (MDF). Almost all the cephalopod catch is exported and only a very small percentage is marketed in fresh condition for domestic consumption.

Since cephalopods are an exportable commodity fetching high price, it has become the second most important revenue earner after shrimps for the trawl fishermen of the state. Because of the economic importance of cephalopods and as they form one of the important marine fishery resources, the various aspects of cephalopod fishery in the state is presented. Maharashtra is also one of the leading maritime states in cephalopod production in India. From 1960 (12 t) onwards, the cephalopod production from the coastal waters of Maharashtra state showed a rising trend with a peak landing of 31,353 t in 2003 but after 2004, a steep declining trend was observed and presently the catch stands at 14,014 t in 2009 (Fig.1). The percentage of cephalopods in all fish landings in the state ranged from 0.1% in 1968 to 9.7% in 2009. The present paper deals with the cephalopod fishery of Maharashtra State during the period 2000-2009. Catch data was not available between 1st June to 15th August since the mechanised fishing operations were suspended in the state due to southwest

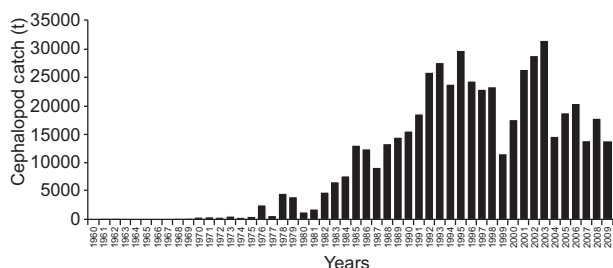


Fig. 1. Annual cephalopod catch in Maharashtra from 1960 to 2009

monsoon and the trawling ban imposed by the government.

Maharashtra has a total 720 km of coastline with 0.89 lakh sq.km of continental shelf and the major gears being operated from the state are trawl nets, purse seines, gillnets, *dol* nets and hook and lines (Singh and Kuber, 1998).

The dominant species occurring in commercial catches in Maharashtra are squid - *Loligo duvauceli* (Indian squid) (Fig. 2), cuttlefish (Fig. 3), *Sepiella inermis* (spineless cuttlefish) (Fig. 4) and octopus - *Cistopus indicus* (old woman octopus) (Fig. 5). Apart from these commercial species, sporadic occurrence of *Sepia prashadi*, *Loliolus investgatoris*, *Onychoteuthis banski*, *Sthenoteuthis oualaniensis*, *Thysanoteuthis rhombus*, *Octopus membranceus*, *Euprymna berryi* etc. were also observed. However, these cephalopod species did not form sizable seasonal fishery during September-December (Sundaram *et al.*, 2006). The major cephalopod



Fig. 2. Heap of Indian squid, *Loligo duvauceli* at NFW, Maharashtra



Fig. 3. Bumper landings of Pharaoh cuttlefish, *Sepia pharaonis*



Fig. 4. Sorting of *Sepiella inermis* at the landing centre for marketing

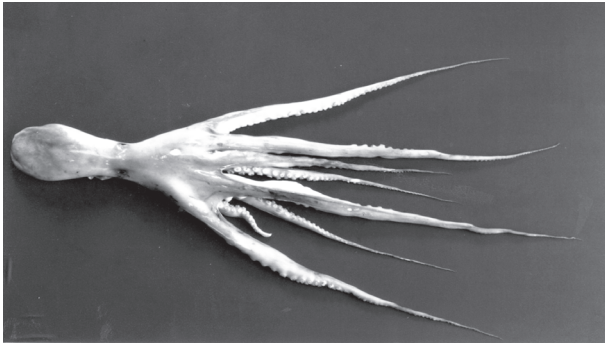


Fig. 5. Dominant species of octopus, *Cistopus indicus*

landing centres of Maharashtra, New Ferry Wharf (Fig. 6), Sasoon Docks and Versova, which accounts for nearly 60% of Maharashtra landings (Annam and Sindhu, 2005) is situated in Mumbai. The trawlers operating from these landing centres use 22-25 m otter trawl, with 25 mm cod end mesh size. The fishing grounds extend from Ratnagiri in south to Dahanu in north (17° to 20° N and 72° to 73° E) with in a depth range of 40-80 m (Kuber and Deshmukh, 1992).



Fig. 6. New Ferry Wharf Fish Landing Centre, Mumbai, Maharashtra

The annual cephalopod production in the state during 2000 to 2009 ranged between 17,390 and 14,014 t (Fig. 7). From 2000 to 2003 there was a steady increase, in fact in 2003, the landings of cephalopods in Maharashtra was the highest ever (31,3553 t). From then on there was a gradual decline but the catch rate seems to be increasing. The CPUH of cephalopods ranged from 2.37 kg/h (2000) to 3.49 kg/h (2009) (Fig. 7). The total efforts ranged from 24,4473 (2000) to 15,0215 (2009). The landing data from New Ferry Wharf for the period 2000-2009 were pooled to arrive at the species composition (Fig. 8). The important species of cephalopods, which contributed to the trawl catches, were *L. duvauceli* (52.3%) among squids, *S. aculeata* (Fig. 9) (18.5%), *S. pharonis* (16.4%), and *S. inermis* (10%) among cuttlefishes. Octopus (dominated by *C. indicus*) contributed 2.7% during this period and the landings of octopus have been rising steadily over the years due to its recent economic and export importance (Sundraram and Sarang, 2004). Currently the price structure at the landing centre (BFW) for *L. duvauceli* is Rs. 100-120/kg, *S. aculeata* 60-80/kg, *S. pharonis* Rs. 130-160/kg, *S. inermis* 30-40/kg and *C. indicus* 50-70/kg.

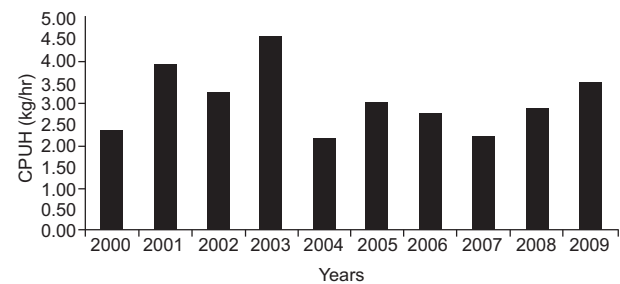


Fig. 7. Catch rate of cephalopods in Maharashtra (2000-2009)

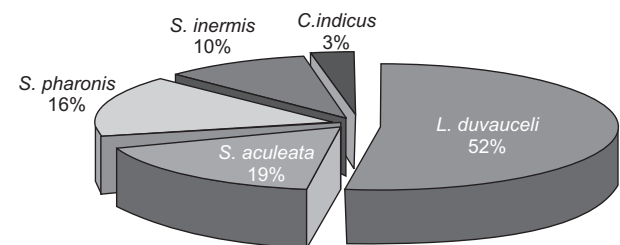


Fig. 8. Species composition of cephalopods in Maharashtra (2000-2009)



Fig. 9. Catch of *Sepia aculeata* by trawlers at NFW

According to Nair *et al.* (1992), the seasons for cephalopod fishery are the pre-monsoon (February-May), the monsoon (June-August) and the post-monsoon (September-January). As per the CPUH estimated for all the commercially important species (2000-2009), it was observed that the peak period for squids is pre-monsoon, cuttlefish is post-monsoon and Octopus almost throughout the year. A major peak period of abundance for *L. duvauceli* was observed during March-April and a minor peak in October, while for all the three cuttlefish species namely *S. aculeata*, *S. pharaonis* and *S. inermis*, the peak period of abundance was in the month of October. Octopus species showed period of abundance in April (Fig.10) Silas *et al.*, 1985) presented a detailed account of fishery of

cephalopods at Mumbai and a very interesting seasonal pattern in cephalopods was observed wherein squids dominated the cephalopod catch during the period January to May and cuttlefishes were abundant during the period September to December. A similar trend was observed by Kuber (1987) from Mumbai waters and the present studies also revealed a similar pattern.

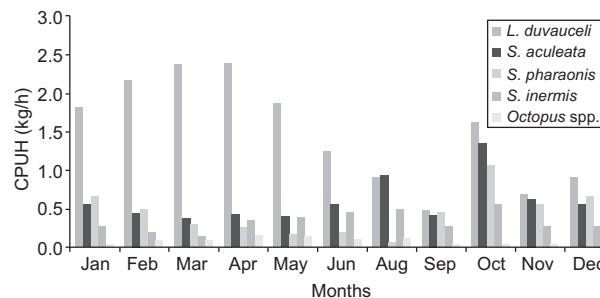


Fig. 10. Period of abundance of cephalopods as per CPUH from Maharashtra (2000-2009)

From above mentioned observations on cephalopod fishery of Maharashtra State, it can be inferred that as the demand is increasing, over-exploitation due to increased fishing pressure is possible, which may ultimately lead to stock depletion. It is suggested that measures should be taken at this stage for rational exploitation of this important resource and therefore it is imperative to evolve effective fishery management measures for judicious exploitation.