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Prospects of Fishery, Utilisation and Culture of Crabs in India

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Investigations on the fishery, utilization and development of the crabs in Indian waters have been reviewed. Various factors relating to the improvement of fishery, keeping quality of the crab meat and possibilities for an integrated farming of commercially important crabs are discussed.

Though crab fishery in India is not recognised as a major one, the abundant occurrence of food crabs in the coastal and inland waters truly envisages the prospects of an export oriented fishery. The reason for the backwardness of this fishery may be attributed to the seasonal occurrence and low meat content of crabs. Crabs are confined to the narrow coastal belt and generally considered to be a cheap food.

The family portunidae includes the edible crabs such as *Scylla serrata* (Forskal), *Portunus pelagicus* (Linnaeus), *Portunus sanguinolentus* (Herbst) and *Charybdis crusiata* (Herbst). *S. serrata* is a typical estuarine form and grows to 150 to 300 mm carapace width and is the most preferred food crab. They are distributed largely in lakes, backwaters and mangrove swamps and breeds all round the year particularly in the inshore region.

P. pelagicus and *P. sanguinolentus* and *C. crusiata* are marine, breed throughout the year and fished extensively from the inshore waters by commercial trawlers. They grow very fast and attain 100 to 140 mm in carapace width.

Fishery

Important works on crab fishery are those of Rai (1933) on the shell fisheries of Bombay presidency, Hora (1935) on the bionomics and fishing methods of the edible crabs of lower Bengal, Chopra (1936, '39) on the biology of the food crabs of the Indian coast, Chidambaram & Raman (1944), and Prasad & Tampi (1951) on the fishery and fishing methods of crabs from the south east coast. Chacko & Palani (1952) studied the crab fishery of Ennur backwaters, Jones & Sujansingani (1952) included crabs in their study on the fishery of Chilka lake, Menon (1952) studied the fishery of *P. sanguinolentus* from Malabar coast, George & Nayak (1961) worked on the fishery of *P. sanguinolentus* from Mangalore coast, Rao *et al.* (1973) on the bionomics and fishery of the commercially important species of Indian coast, Mohanty (1973) on the landings of *S. serrata* from Chilka lake, Datta (1973) on the edible crabs of Deltaic West Bengal, Ansari & Harkantra (1975) on the crab fishery from Goa, Patel & Trivedi (1975) from Gujarat, Manohara Rao & Chandramohan (1978) from Mangalore and Radhakrishnan (1979) from Porto Novo coast.

The total crab landings (along with some other minor crustaceans) in 10 states for 6 years are presented in the Table 1. Crabs are exploited in appreciable quantities along the coasts of Gujarat, Maharashtra, Karnataka, Kerala, Tamil Nadu and Andhra Pradesh. Crabs are also available from the Gangetic delta, Chilka lake and the Ennur backwaters. The peak fishing season in Gujarat is from July to September, Maharashtra from August to October, Karnataka from December to January, Kerala from July to September, Tamil Nadu from March to June and October to December and in Andhra from April to September. A variety of fishing implements such as scoop nets, long line, cast nets and stake nets are used. *S. serrata* is caught chiefly by hook and line and other marine crabs are mainly collected by commercial

Table 1. *Annual landings of crabs and other crustaceans in tonnes from* 1973 *to* 1978*

Year	Kerala	Karnataka	Tamil Nadu	Andhra Pradesh	Orissa	Pondicherry	West Bengal	Maharashtra	Gujarat	Goa
1973	1,781	934	7,719	364	—	194	60	687	749	20
1974	2,886	1,742	9,752	934	—	201	45	973	5	86
1975	1,797	2,540	13,896	605	—	260	8	550	10	227
1976	1,316	156	16,413	329	23	516	—	51	224	971
1977	4,621	207	11,018	719	6	296	—	93	2,471	637
1978	2,176	741	9,290	477	4	251	—	148	584	531

*From Central Marine Fisheries Information Service

trawls operated in inshore and offshore regions.

There exists no well organised programme for the commercial exploitation of crabs in India and the fishery itself is seasonal and scattered. Fluctuations in the catch can be attributed to the mass movement of crabs to different biotopes, the extent and the cause of such movements and the dominance of one sex resulting in abnormal differences of sex ratio in certain periods need further studies.

Nutritive value and utilization

In India only scant information is available on the nutritive value of crabs. The investigations by Chinnamma *et.al.* (1970), Chinnamma & Arul James (1971) and Chinnamma (1973) on the common edible crab *S. serrata,* reveal that the maximum nutritive value is from October to March with a maximum meat content (30 to 35%) from September to December. The meat content varies with lunar phases. A mixture of ascorbic and citric acids is the best glaze to extend the shelf life of processed crab meat. Fresh frozen crab meat remained in good organoleptic condition for about 51 weeks at-23° C while iced and frozen ones only 21 weeks. Radhakrishnan & Natarajan (1979) observed more protein, less fat and carbohydrate in younger ones and *vice versa* in older ones of *Podophthalmus vigil.*

The nutritional value of the crab meat is not inferior to that of any other sea foods. From Table 2 it is evident that the demand for canned crab meat is on the increase, and an integrated research is particularly required on the utilization of crab meat, the seasonal variation of meat content, susceptibility to rapid spoilage and the observed colour change during processing.

Development and culture

There are no integrated and systematic studies on the development and culture of the edible species of crabs in India, except some fragmentary ones by Prasad & Tampi (1953) on the early zoea stages of *P. pelagicus* and *Thalamita crenata,* Naidu (1955) on the first zoea of *S. serrata,* Srinivasagom & Natarajan (1976) on the first zoea of *P. vigil.* There is an admissible dearth of information with regard to the complete life history of food crabs and the methods of culture in the confined areas of the estuaries.

Farming of the edible crab *S. serrata* has been undertaken on a large scale in Philippines

Table 2. *Annual export of canned crab meat**

Year	Quantity Kg	Value Rs
1973	18,712	3,84,339
1974	13,679	5,09,534
1975	2,763	1,05,545
1976	25,672	14,50,122
1977	50,118	31,43,914
1978	41,653	19,40,684

*From Marine Products Export Development Authority of India

by local fishermen. This species is cultured in ponds along with the milkfish *Chanos chanos* and harvested in the sixth month (Pagcatipunan, 1972). India with a network of highly productive inland water systems, has possibilities of commercial farming of *S. serrata*. The seeds of this species are available from the surface backwaters at night, especially during full moon. They are found to be actively feeding on bits of intestine and other soft parts of fishes, molluscs and crustaceans. In the natural environs adequate feeding may not be possible due to the competition for food, resulting in slow growth.

Crabs are pugnacious and cannibalistic. After moulting, the sponge crabs are prone to the attack of predators. The frequent loss of chelate legs and their repeated regenerations may retard the overall growth of the animal to some extent. Similarly the association of certain cirripeds such as *Octolasmis sp.* is very often observable in the gills of crabs. This association may not be pathogenic, but thick population of cirripeds may obstruct the function of gills. Also in the natural environment the crabs are frequently parasitised by *Saculina sp.*

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