

FISHERIES OF THE WEST COAST OF INDIA

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MOLLUSCAN FISHERIES

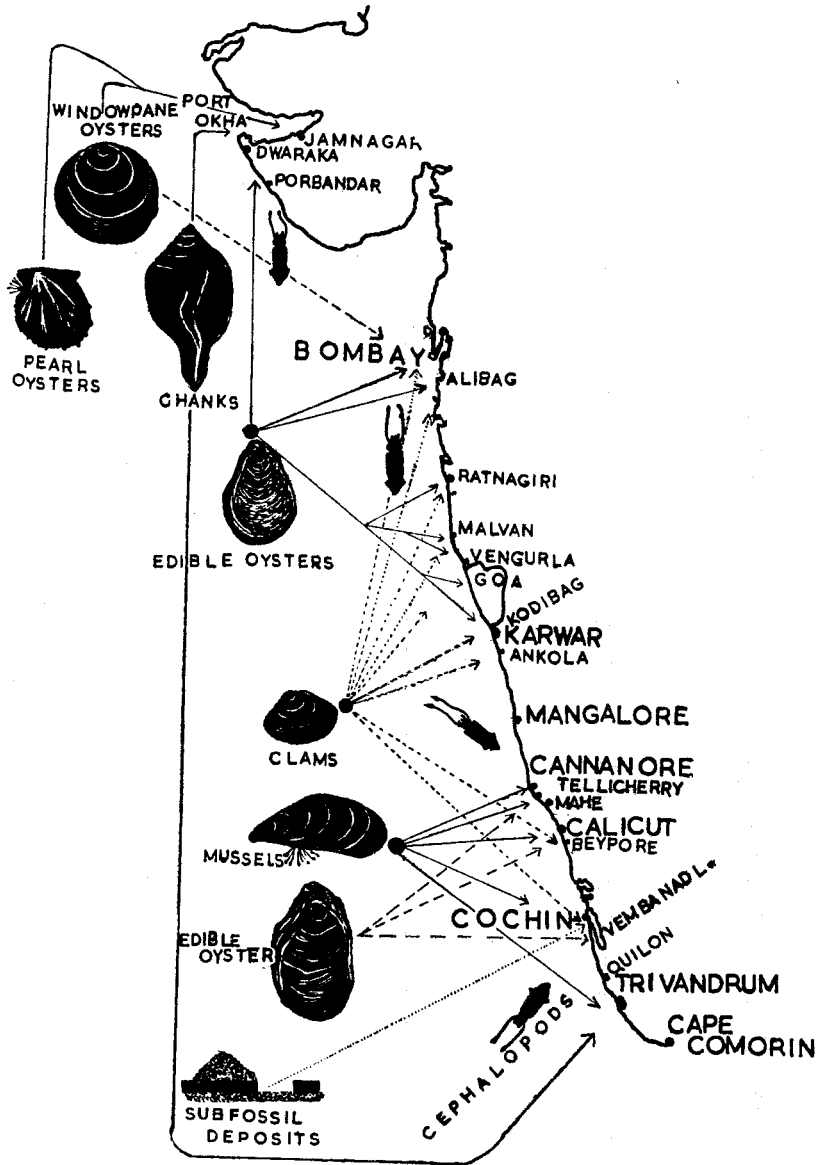
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ALTHOUGH the molluscan shell-fish are not comparable with the true fish which support the major fishing industries of India as those of sardines and mackerel, still, they perform a significant role in the economy of the fishermen and other coastal people, who depend upon them for food when fish is not within their reach to buy or when it is scarce as during the monsoon. Shell-fish resources are tapped not only for food but also for valuable pearls as gems and different shells utilised in the handicrafts or for burning them into lime used in the construction and white-washing of the buildings. Excepting the chank and the pearl oyster beds, the most productive of which are concentrated on the south-eastern region of the country, in general the shell-fish resources of other commercial species are more plentiful on the west coast than on the east coast because of the existence of vast areas of creeks, muddy bays, rocky inshore regions, estuaries and backwaters suitable for them to thrive well. In all countries abroad shell-fish are considered only second in importance to true fish, but wherever they occur the natural resources are fully exploited and certain species are cultured on scientific lines to ensure a steady supply of good quality of clean shell-fish to the consumer.

Among shell-fish utilised for food, mussels, oysters, clams and cephalopods are the most important. Mussels form thick carpet-like growths over submerged rocks to which they secure anchorage by means of byssus threads. Two species are represented, *i.e.*, the brown mussel, *Mytilus* sp. and the green mussel, *Mytilus viridis* Linne. The brown mussel which is considered as one of the greatest delicacies by the coastal people has a characteristic distribution, being confined to south of Quilon up to Cape Comorin along the west coast and from there up to Tinnevely District on the east coast. The green mussel has a much wider distribution all along both the coasts, but is found in abundance off Cochin, Malabar and north of Kerala. In Calicut, Beypore, Cannanore, Tellicherry and Mahe quantities of it are regularly sold. In Bombay, Ratnagiri and Karwar the green mussel is reported to be rare although a much relished food.

Demand for edible oysters in and around the Bombay City is much greater than in most other places in India, where despite the fact that the resources are plentiful their utilisation is very much limited. The species of commercial importance are *Crassostrea gryphoides* (Newton and Smith) inhabiting the muddy creeks, *Crassostrea cucullata* (Born) on the intertidal rocky coasts, *Crassostrea discoidea* (Gould) in the littoral zone of the coastal



Commercial Molluscs of the West Coast of India.

areas and *Crassostrea madrasensis* (Preston) in the estuaries and backwaters. *Crassostrea gryphoides*, and *Crassostrea discoidea* occur in Kutch creeks, Okha port, Dwaraka and Porbandar to north of Bombay, in Malad, Boisar, Satpati, Palghar, Sanjim Kalve, Navapur and Mahim around Bombay and in Alibag, Ratnagiri, Jaytapur, Malwan, Vengurla, Goa and Karwar to south of Bombay. The rock oyster, *Cr. cucullata*, is found all along the coasts while the backwater oyster, *Cr. madrasensis*, is confined to the southern regions on the west coast but widely distributed in all the estuaries and backwaters of the east coast.

Of all the molluscan shell-fish clams which occur in great abundance are the best utilised for human food, they being considered nutritious and delicious. The common backwater clams, *Meretrix casta* (Chem.) and *Katelysia opima* (Gmelin), the bay clam, *Meretrix meretrix* (Linne) and the black clam, *Vellorita cyprinoides* (Grey) are the principal species supporting clam fisheries on the west coast. *M. casta*, although widely distributed is particularly abundant in the south-western coastal backwaters and estuaries. *M. meretrix* occurs in large beds along Bombay, Alibag, Ratnagiri, Jaytapur, Karwar, Kodibag, Ankola, Moorbad, Wadvoni, Mirgan, Harwada, Mudgian and Sanikatta. In the southern regions it is comparatively rare, its place having been taken up by *M. casta*. The black clam *Vellorita cyprinoides* has a peculiar distribution, the living ones at present being confined only to west coast backwaters and estuaries although its dead shells occur in sub-fossil deposits on the east coast as well. Other bivalve shell-fish used for food are *Arca granosa* Linne, *Cardium* sp., *Paphia malabarica* (Chem.) and *Sanguinolaria diphos* (Gmelin). Among some of the gastropods gathered here and there occasionally for food purposes are *Thais* spp., *Umbonium vestiarium* (Linne) and *Natica* sp.

Nowhere on the west coast do the edible cephalopods, viz., cuttlefish, squids and octopi constitute a regular fishery, they being obtained only incidentally in nets all through the year in the normal fishing operations. *Sepia rouxii* Ferussac et d'Orbigny, *Sepia aculeata* F. et d'Orb., *Sepia rostrata* and *Sepiella inermis* (F. et d'Orb.) among the cuttlefish, *Sepioteuthis arctipinnis* Gould, *Loligo indica* Pfeffer, *L. hardwickii* and *L. affinis* among squids and *Octopus rugosus* (Bosc.), *O. octopodia*, *O. favonia*, *O. incertus*, *O. herdmanii* and *O. hongkongensis* Hoyle among the octopi are some of the common species. When the squids and cuttlefish occur in large quantities, they are sun-dried for export. Cephalopods are commonly used in hook and line fishing as bait. It may be of interest to note that on the southern coasts of Palk Bay and the Gulf of Mannar there is a seasonal fishery for squids

lasting from February to June, the chief commercial species being *Sepio-teuthis arctipinnis* Gould.

The chank and the pearl fisheries are the most important of the molluscan fisheries of India. The chank beds of *Xancus pyrum* (Lamarck) occur on the west coast in the Gulf of Kutch near Port Okha and in the Arabian Sea off Trivandrum. On the east coast the most productive beds are chiefly in the Gulf of Mannar near Tuticorin and Kilakarai, and in the Palk Bay near Devipatnam and Rameswaram. Chanks are also found in fair numbers from Point Calimere to the Madras City. The chank beds along the east coast are far more extensive and productive than those on the west coast. However, chank shells fished from the Gulf of Kutch are of good quality and they fetch a very high price. Unlike on the east coast where divers are employed for the collection of shells from the beds in waters up to ten fathoms of depth, those in the Gulf of Kutch are exposed at low water spring tides and the chanks are hand-picked by the fishers. The beds are often leased by the Government for a few thousand rupees annually. The chank beds off Trivandrum coast are the poorest and the revenue is collected by levy of export duty on the chanks fished. Annually many lakhs of chanks are required by the shell bangle manufacturers who receive the raw product from the wholesale suppliers in Bengal. Chanks with the sinistral twist of the spire are extremely rare and considered very valuable, owing to the belief that such shells bring fortune to the possessor. Often such chanks are mounted in gold and silver and dedicated to the temples.

As in the case of the chank beds, the pearl oyster beds on the west coast are much limited in their extent and also less productive than those on the east coast. The latter extending from Cape Comorin to Kilakarai with the most productive central zone off Tuticorin coast are world famous from time immemorial for the excellent quality of the oriental pearls which the oysters yield. The species of commercial importance is *Pinctata vulgaris*, along with which *P. chemnitzii*, *P. margaretifera*, *P. anomioides* and *P. atropurpurea* also are known to occur from the Indian waters. On the west coast of India from the Gulf of Kutch pearl oysters are fished in some several thousands annually from the reefs to the north of Halar District in Saurashtra and those near Jamnagar. On the east coast during productive years the beds yield several millions of oysters worth two to three lakhs of rupees. Like the chanks the oysters are collected by hand when the reefs in the Gulf are exposed at low tides.

Small seed pearls of inferior quality used in medicine are procured from windowpane oyster, occurring in the bottom of bays and harbours, in Balapur area and the Rann Bay in the Gulf of Kutch. Fair numbers

are found along the Bombay coast, but further south they being so sparse are of little value. The seed pearls can be procured not only from the living oysters, but also from the dead ones. The Gulf of Kutch fisheries of the windowpane oyster about 1914 have fetched very high rentals, but in recent years they have deteriorated and the prices offered for the seed pearls have also fallen considerably. The shell of the windowpane oyster being thin, flat, translucent, and iridescent is often used in the Far East in glazing the doors and windows.

Molluscan shells for lime are gathered from the estuaries and backwaters in considerable quantities. During monsoon when large amounts of dead shell are drifted ashore by the currents, they are collected and made use of for the purpose. The bulk of the shells comes from the sub-fossil deposits which occur in thick layers beneath the surface soil and consist of a variety of bivalve and gastropod species. On the west coast, the sub-fossil deposits of *Meretrix*, *Arca* and *Vellorita* are extensive in the Vembanad Lake in Kerala.

The chank and the pearl oyster beds are under the ownership, control and supervision of the State Governments, who conduct their fisheries in a well organised manner, but shell-fish resources in respect of other utilisable species in general are largely neglected. Proper legislative measures to prevent depletion are lacking. Many of the clam and oyster beds as those near Ratnagiri and Karwar which were once productive have in recent years undergone much denudation. Repopulation of the depleted beds with the seed clams or spat oysters from other productive beds would go a long way in re-establishing the beds. Culture of shell-fish is not practised in India, but it is worthwhile trying as the results are expected to be fruitful. Clams for which there is good demand can be cultured in tidal flats employing simple and inexpensive methods. Though the demand for oysters is from the cultured few, by adopting simple methods of collection of spat when they set in the natural habitats, preparation of suitable beds for the young oysters to grow to marketable size and periodical examination of the growing oysters to prevent their destruction from enemies and pests, there could be built up a small industry to meet the existing demand. Except in the case of pearl oysters and chanks no estimates are available regarding the total production of the various species of shell-fish. Intensive surveys of the exploitable resources, accurate estimation of the annual production, detailed biological investigations on species of commercial value and strict measures of state control over the natural beds of the molluscan shell-fish are essential for the proper upkeep and management of their fisheries.