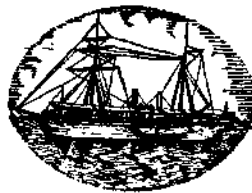


SYMPOSIUM ON CRUSTACEA

PART IV



MARINE BIOLOGICAL ASSOCIATION OF INDIA

MARINE FISHERIES P.O., MANDAPAM CAMP

INDIA

PROCEEDINGS
OF THE
SYMPOSIUM ON CRUSTACEA

HELD AT
ERNAKULAM
FROM JANUARY 12 TO 15, 1965

PART IV



SYMPOSIUM SERIES 2

MARINE BIOLOGICAL ASSOCIATION OF INDIA
MARINE FISHERIES P.O., MANDAPAM CAMP
INDIA

THE CRUSTACEAN FISHERY RESOURCES OF INDIA

S. JONES

Central Marine Fisheries Research Institute, Mandapam Camp, India

ABSTRACT

The crustacean fisheries of India have assumed considerable importance in recent years in the economy of the country. Exports of frozen and canned prawns and frozen lobster tails have been steadily on the increase earning very valuable foreign exchange. The commercially important crustaceans consist of the prawns, lobsters and crabs caught from the sea and brackish waters. Except the giant freshwater prawn, limited quantities of which are exported in frozen condition, the freshwater crustaceans contribute only to a sustenance fishery of minor importance.

The annual marine crustacean landings in India average about 80,000 tonnes of which 97.5% is constituted by prawns. The paper discusses the present condition of the crustacean fisheries of India.

THE estimated average landings of marine crustaceans in India comes to nearly 80,000 metric tons which is about one-tenth of the total marine fish production. If the prawns caught from backwaters, creeks and estuaries which are essentially of marine origin, are excluded, the purely freshwater species are of negligible importance. The freshwater prawns and crabs form merely a sustenance fishery and the only species of some commercial importance is the giant freshwater prawn which is caught in very limited quantities from certain areas. No statistics of freshwater crustacean catches are available and therefore this account deals mainly with the marine forms which are not only of considerable economic importance now but have potentialities for further development also.

The crustacean fisheries could be broadly grouped under prawns, lobsters and crabs and of these, the prawns are the most important accounting for about 98% of the marine crustaceans landed. The growth of the prawn industry during the past one decade has been most phenomenal. While before the Second World War, and immediately after, exports of prawn products consisted only of dried and semi-dried prawns to the neighbouring countries of Ceylon, Burma and Malaya the picture has completely changed with the adoption of freezing and canning methods. A chain of events took place within a short time which helped the industry to the unique position it occupies today. The main factor that contributed to the rapid development of the industry was the ever-increasing demand for prawns in the United States. Some of the West European countries also which had made quick economic recovery after the war began to show interest in the import of prawns. By the early fifties a number of ice factories with cold storage and freezing facilities came into existence which enabled preservation of prawns in good condition for long periods. Use of mechanised fishing craft and nylon nets began to bring in larger catches than ever before. Improvement in road transport facilitated quicker movement of catches from landing centres to processing centres. Availability of fresh prawns in good quantities encouraged the development of an export industry and the increasing demand for prawns and allied products gave additional fillip to the trade. The annual exports now (1964) stands at about 50 million rupees.

The estimated landings of marine crustaceans in India are given in Table I. It could be seen that the west coast accounts for more than 80% of the catches (Fig. 1). The catches are higher in the northern section comprising of the coasts of Maharashtra and Gujarat than in the southern section but are dominated by the smaller sized species (Fig. 2). Bulk of the exports are from the southern section comprising the coasts of Mysore, Kerala and a part of Madras. The exports of prawns and lobsters and of crustacean products are given in Tables II and III.

TABLE I

Estimated landings of prawns and other crustaceans in India during the years 1958-64
(Quantity in metric tons)

Year	West coast				East coast				Combined total
	Penaeid prawns	Non-penaeid prawns	Other Crustaceans	Total	Penaeid prawns	Non-penaeid prawns	Other Crustaceans	Total	
1958	26,293	53,501	256	80,050	2,910	2,486	1,252	6,648	86,698
1959	23,548	36,775	461	60,784	4,084	1,030	1,632	6,746	67,530
1960	27,503	35,004	460	62,967	4,256	1,267	2,111	7,634	70,601
1961	32,864	22,018	297	55,179	6,219	1,667	1,741	9,267	64,806
1962	42,227	34,576	168	76,971	6,023	409	863	7,295	84,266
1963	30,747	39,554	223	70,524	10,323	969	1,838	13,130	83,654
1964	52,018	30,164	235	82,417	11,369	1,342	4,330	17,041	99,458

- N.B.* (i) West coast figures are inclusive of Goa except for the years 1962-64 for which data were not received.
(ii) Landings in Andamans and Laccadives are not included. The same amount to less than 5 m. tons.
(iii) The combined totals are nearly 82,000 tonnes and 95,000 tonnes for 1965 and 1966 as per information available at the time of the printing of this article.

TABLE II

Export of crustacean products from India 1960-64

	1960	1961	1962	1963	1964
1. Frozen prawns					
Quantity	.. 12,11,165	14,62,656	22,38,190	39,66,899	58,70,031
Value in Rupees	.. 58,66,123	73,66,872	1,08,20,276	2,12,03,766	3,15,18,242
2. Canned prawns					
Quantity	.. 3,19,510	6,21,773	9,69,928	12,31,274	10,73,927
Value in Rupees	.. 17,84,047	42,22,907	65,58,924	75,75,594	69,91,927
3. Frozen lobster-tails					
Quantity	.. ..	..	39,763	53,304	41,304
Value in Rupees	.. ..	..	2,26,364	3,12,721	3,71,021
4. Dried prawns					
Quantity	.. ..	..	..	28,08,675	30,08,650
Value in Rupees	.. ..	..	..	93,24,698	89,96,764
5. Prawn powder					
Quantity	.. ..	..	..	2,55,015	5,11,187
Value in Rupees	.. ..	..	..	84,363	1,25,768
6. Prawn pickles					
Quantity	.. ..	..	..	..	683
Value in Rupees	.. ..	..	..	..	2,805

TABLE III

Export of prawns and lobsters from India 1953-64

Year	Frozen prawns		Canned prawns		Frozen lobster-tails	
	Quantity (Kg.)	Value (Rupees)	Quantity (Kg.)	Value (Rupees)	Quantity (Kg.)	Value (Rupees)
1953	13,268	57,740	..	..	..	..
1954	60,600	2,72,893	..	..	..	..
1955	48,145	2,94,002	..	..	..	..
1956	1,90,186	10,96,716	..	..	..	..
1957	4,96,410	21,33,546	..	..	..	..
1958	7,79,526	37,90,200	..	..	..	..
1959	10,49,527	49,23,203	3,72,850	23,23,667	..	..
1960	12,11,165	58,66,123	3,19,510	17,84,047	..	..
1961	14,62,656	73,66,782	6,21,773	42,22,907	..	..
1962	22,38,190	1,08,20,176	9,69,923	65,59,924	39,763	2,26,364
1963	39,66,899	2,12,03,766	12,31,274	75,75,594	53,304	3,12,721
1964	58,70,031	3,15,17,242	10,73,927	69,91,927	41,304	3,71,021

West Coast—Northern Section

The average annual production is about 47,000 tonnes, bulk of which comes from Maharashtra alone. In Maharashtra the fishery is dominated by small non-penaeid species like *Palaemon tenuipes*, *Hippolytina ensirostris* and *Acetes indicus* which are caught in enormous quantities in the periods April-May and November-December. *Metapenaeus affinis*, *Parapenaeopsis hardwickii*, *P. stylifera* and *Solenocera indicus* are the main medium to large-sized prawns found in this region. The main species of commercial value in the Gujarat region are *M. kutchensis* and *Penaeus indicus*. Fixed bag nets and stake nets are the main gear types used in this region. Detailed accounts of the prawn fisheries of the Maharashtra and Gujarat coasts are presented by others in this symposium.

West Coast—Southern Section

The average annual production of the marine prawn fishery of this area is about 14,000 tonnes. An equally good quantity of prawns are landed from the backwaters also. The same species of penaeids contribute to both fishery, the important species being *Penaeus indicus*, *Metapenaeus dobsoni*, *M. affinis*, *M. monoceros* and *Parapenaeopsis stylifera*, the last one contributing to only marine fishery. The giant freshwater prawn *Macrobrachium rosenbergii* is also caught in good quantities from the backwaters of Kerala. Trawl nets and boat seines are the main gear employed in the fishing from sea, while stake nets, fixed dip nets and cast nets are used in the backwaters. The paddy field prawn fishing is also practiced to a great extent in Kerala backwaters, the season being from November to April. The total catches from this area are estimated at over 10,000 tonnes.

East Coast

The marine landings along the east coast comes to about 9,000 tonnes annually. The commercially important species are *Penaeus indicus*, *P. monodon*, *P. semisulcatus*, *Metapenaeus dobsoni*,

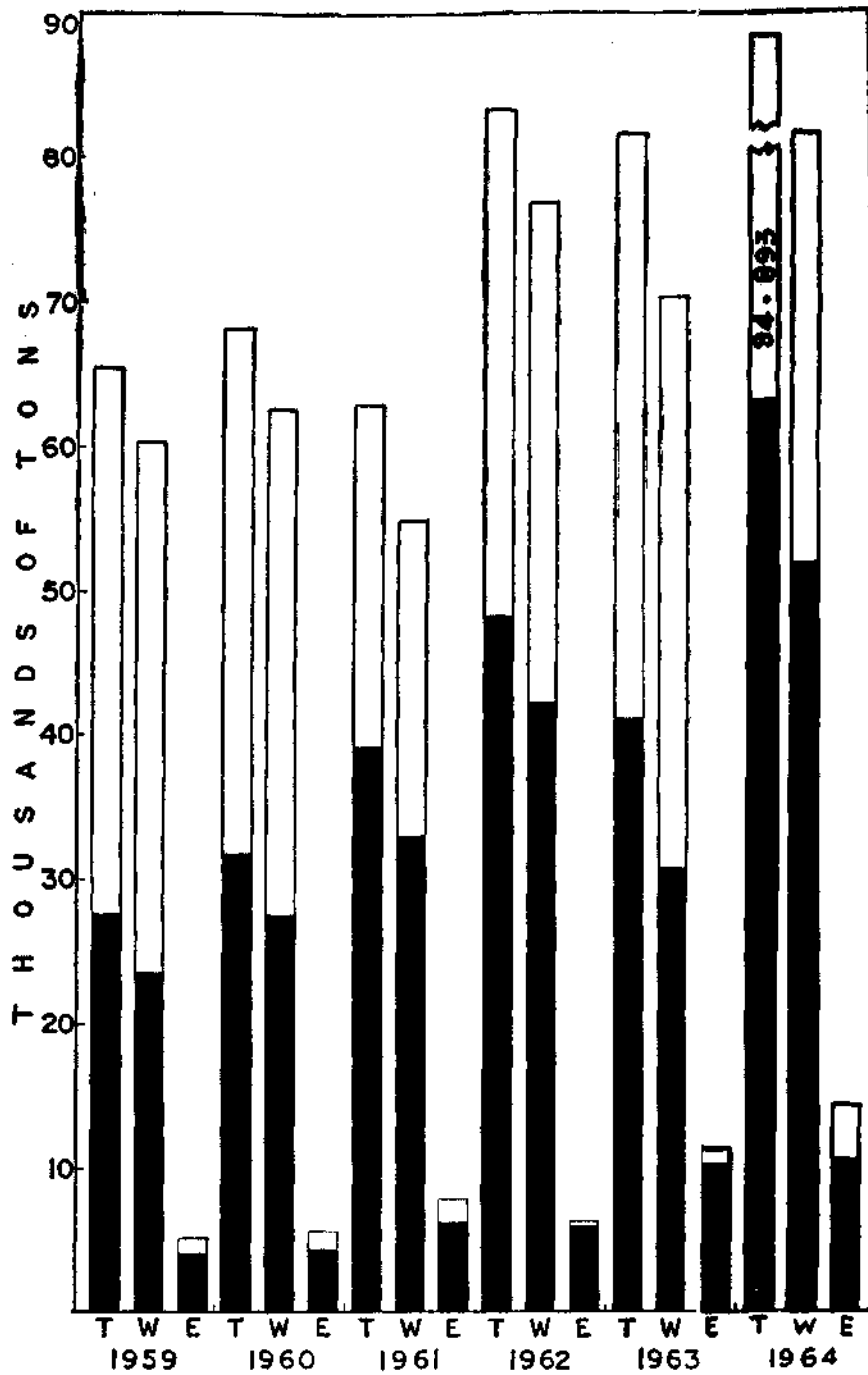


FIG. 1. Estimated annual landings of prawns in India during 1959-64. T—Total landings for west and east coasts; W—west coast; E—east coast; ■ penaeid prawns; □ non-penaeid prawns,

M. affinis, *Palaemon styliferus*, *Metapenaeus brevicornis*. Good quantities of prawns of marine origin are caught from estuarine and other brackishwater areas along the coast of which the most important are the Chilka, Kolleru (Collair) and Pulicat Lakes and the deltaic areas of the Ganges (Sundarbans), Mahanadi and Godavari.

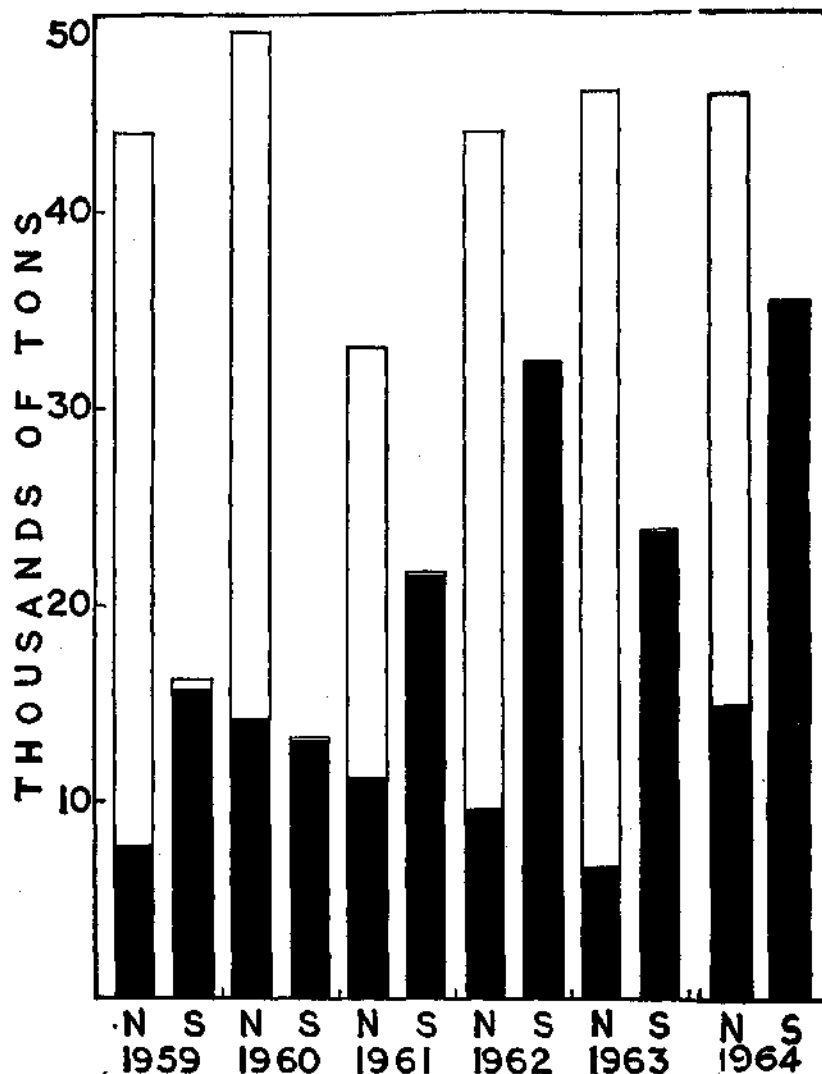


FIG. 2. Estimated annual landings of prawns along the west coast of India. N—northern sector (Maharashtra and Gujarat); S—southern sector (up to Mysore). ■ penaeid prawns; □ non-penaeid prawns.

Chilka Lake. The average annual production is around 1,000 tonnes. *Panaeus indicus* is by far the dominant species which accounts for about 75% of the total fishery. Vast majority of the catches are taken in the monsoon months of June–September, though fishing is carried on in a restricted scale in the other months also. Traps, locally known as “daudi” and “thatta” set along the shore in suitable localities are the main device with which the prawns are caught. Almost the entire quantity is sent to the city markets of Calcutta and Howrah.

Sundarbans. In the winter months of November–February there is a good prawn fishery in the foreshore marine region outlying the Sunderbans, as also in the numerous creeks and “bheris” where fishing is carried out throughout the year except during the monsoon months of June–August. The main gear used in the estuaries is a type of fixed bag net (“Behundijal”) worked by the force of tidal current. Dip nets, cast nets and traps are also employed in the estuary to a limited extent. The average annual production is estimated at nearly 1,000 tonnes.

The bulk of the fishery is composed of four prawn species, viz., *Metapenaeus brevicornis*, *Palaemon styliferus*, *Acetes indicus* and *Parapenaeopsis sculptilis*. A number of other penaeid and palaemonid prawns also occur in the fishery, some of them in appreciable numbers. The entire quantity is disposed off in the city markets of Calcutta and Howrah.

PRAWNS

Penaeids

Though marine, most of the species are able to live in brackishwaters of very low salinity.

Penaeus indicus Milne-Edwards (Fig. 3).—Taking into consideration the availability in the commercial catches throughout the coastal waters, estuaries and backwaters of India, and maximum size attained this is the most important species. It attains a maximum size of 20–23 cm. The young ones come to the backwaters and estuaries where they grow to about 12–13 cm. The breeding takes place in the sea. It contributes to a good percentage in the backwater fisheries and also paddy field prawn fishery of Kerala.

P. indicus is caught in different types of boat seines in the inshore waters by the indigenous craft and in shrimp trawls in deeper areas by mechanised boats. Occasionally it is caught in shore seines also. In the backwaters and estuaries stake nets and cast nets are the most important gear employed in the fishery of this species. In the Chilka Lake good quantities are caught by traps. In the Kerala backwaters the picturesque fixed dip nets (“Cheena-vala”) catch appreciable quantities of these prawns along with the other species. The same fishing methods apply for all the other species of penaeid prawns. In the estuaries and backwaters the species is available almost all through the year though in different sizes. In the sea it is commonly fished during the post-monsoon months.

Penaeus monodon Fabricius.—More common on the east coast especially along the northern parts (Bengal and Orissa). On the west coast it is frequently caught in stray numbers in the northern section and in less numbers along the south-west coast. But in size this is perhaps the largest, attaining a maximum length of about 30 cm. In habits it is similar to the previous species. It breeds in the sea and the juveniles enter estuaries and brackishwater lakes.

Penaeus semisulcatus de Haan.—This species also is more common on the east coast although not as important as *P. monodon* nearly to which size it grows. It contributes very little to the fishery on the west coast.

Penaeus merguensis de Man.—Till recently this was considered as a variety of *P. indicus* and in view of the similarity of the two species this would have been confused with the above in several localities. Quite recently this is found to contribute to the commercial fishery along the Karwar coast along with the other species. Attains a maximum of about 20 cm.

Penaeus canaliculatus Olivier.—Contributes to a very small percentage in the fishery along the Madras coast especially in Pulicat lake and in small numbers in Bombay and other places. Attains a maximum of 12–15 cm.

P. monodon, *P. semisulcatus* and *P. canaliculatus* are caught in the east coast mainly during the post-monsoon months.

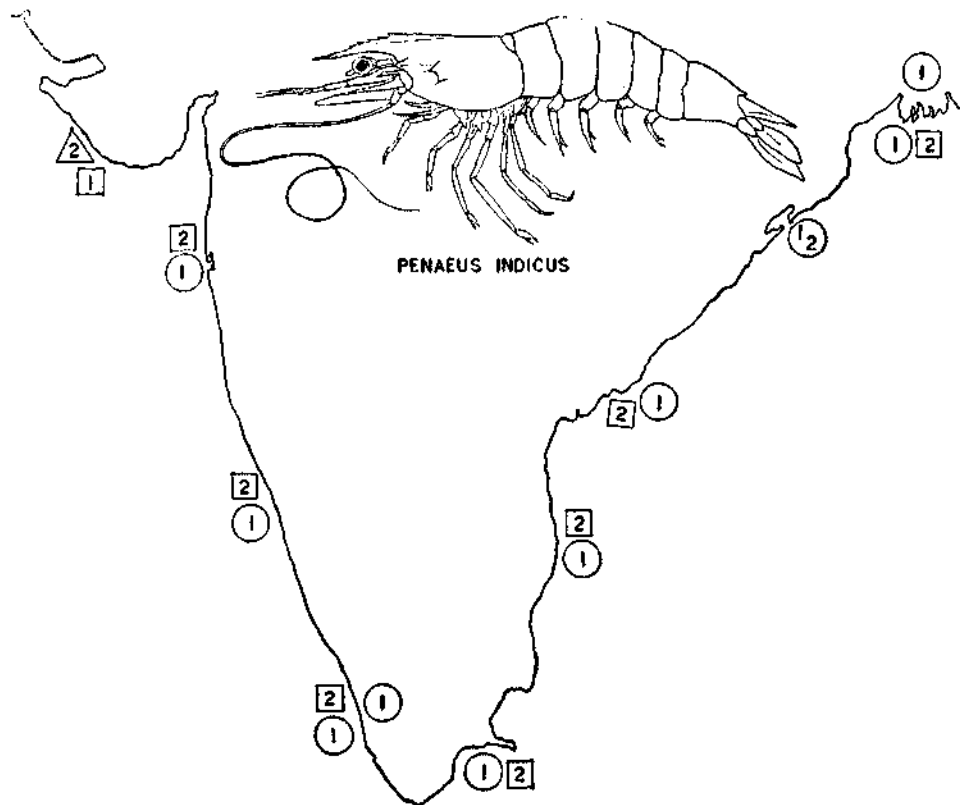


FIG. 3. Fishery of *Penaeus indicus* and *P. monodon*. ○ regular; □ occasional; △ stray.
1. *Penaeus indicus*. 2. *P. monodon*.

Metapenaeus dobsoni (Miers) (Fig. 4).—This is one of the major species contributing to the inshore fishery as well as trawl fishery of the south-west coast of India as far as Goa. On the east coast also it is common in the southern region only mostly in Pulicat and Ennore lakes. Grows to a maximum of 12–13 cm. The paddy field prawn fishery in the backwaters of Kerala is mostly dependent on the habit of the species breeding in the sea almost throughout the year and the post-larvae entering the backwaters to use these extensively as nursery grounds where it grows to about 6–7 cm.

In the backwaters, estuaries and sea this species is caught throughout the year though the intensity of abundance varies from month to month. In the monsoon period this species supports the mud bank fishery constituting the chief component of the catch of the area.

Metapenaeus affinis (Milne-Edwards).—This is the most important species of *Metapenaeus* on account of its occurrence in the commercial fishery, along the entire west coast and southern region of the east coast and because of the comparatively larger size of 16–18 cm. it attains. Juveniles are caught in small numbers from backwaters, creeks and estuaries. Caught mainly during the post-monsoon months, the peak season is October to December in the south-west coast of India. The immature prawns are fished almost throughout the year.

Metapenaeus monoceros (Fabricius).—Grows to a maximum of about 16–18 cm. Although the percentage contribution of this to the fishery of each locality is comparatively less this is perhaps the only species of *Metapenaeus* occurring in the commercial fishery along the entire coastline of India. It contributes to the estuarine and backwater fishery also, attaining a length of about 10–11 cm. in these environments. Breeding takes place in the offshore waters. As in *M. affinis*, post-monsoon period is the good fishing season for this species. The immature prawns occur in varying quantities in all the months of the year in the backwaters and estuaries.

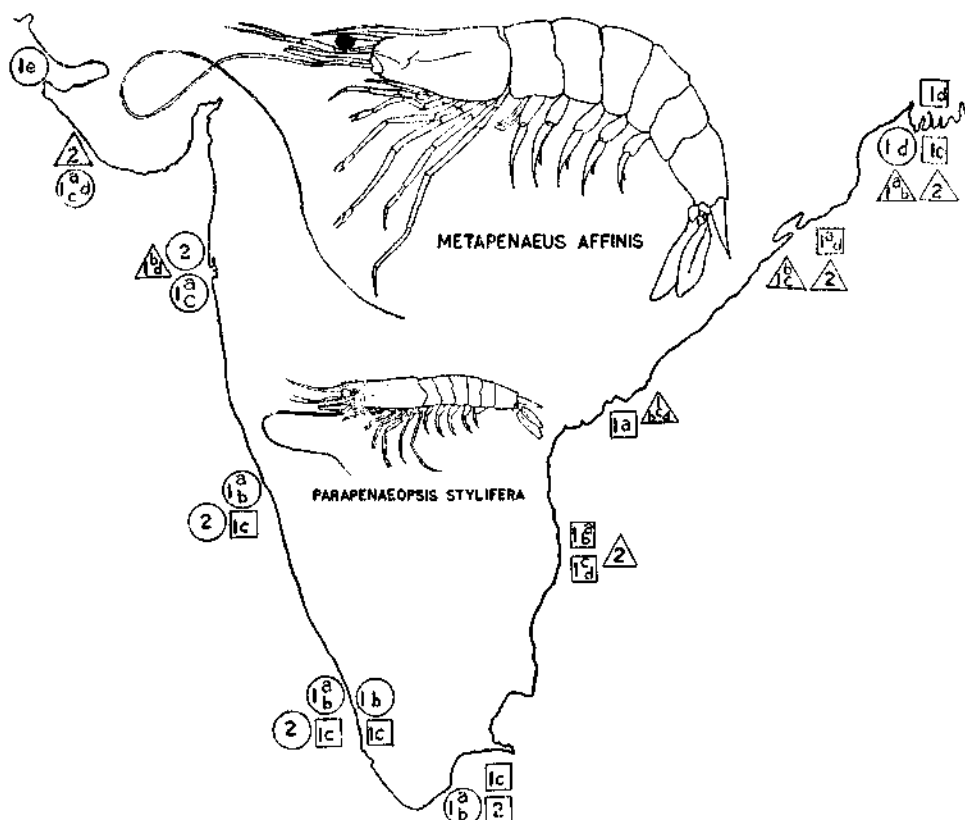


FIG. 4. Fishery of *Metapenaeus* and *Parapenaeopsis*. ○ regular; □ occasional; △ stray.
1. (a) *Metapenaeus affinis*, (b) *M. dobsoni*, (c) *M. monoceros*, (d) *M. brevicornis*,
(e) *M. kutchensis*. 2. *Parapenaeopsis stylifera*.

Metapenaeus brevicornis (Milne-Edwards).—This is one of the commonest penaeids of Bengal inhabiting marine to almost freshwater zones throughout the year and is common in the northern region of the west coast also but does not occur in the southern region of both west and east coasts. It attains a maximum of about 13 cm. and spawning takes place in inshore waters. It occurs throughout the year, the large-sized individuals being taken from the inshore waters during the winter months.

Metapenaeus kutchensis George *et al.*—This attains a maximum of about 14–15 cm. and contributes to a good percentage of the fishery in the Gulf of Kutch area.

Incidentally it may be stated here that *Metapenaeus lysianassa* has been reported by some to be an important prawn in some parts of the west coast, but this remains to be confirmed.

Parapenaopsis stylifera (Milne-Edwards).—Unlike other species it is confined to the sea, not migrating to estuaries and backwaters. Most common on the west coast and comparatively more abundant in the Bombay waters than in the southern region. Along the east coast the species is present in the southern region. It grows to about 14 cm. and is caught throughout the year and forms one of the main species in the inshore waters.

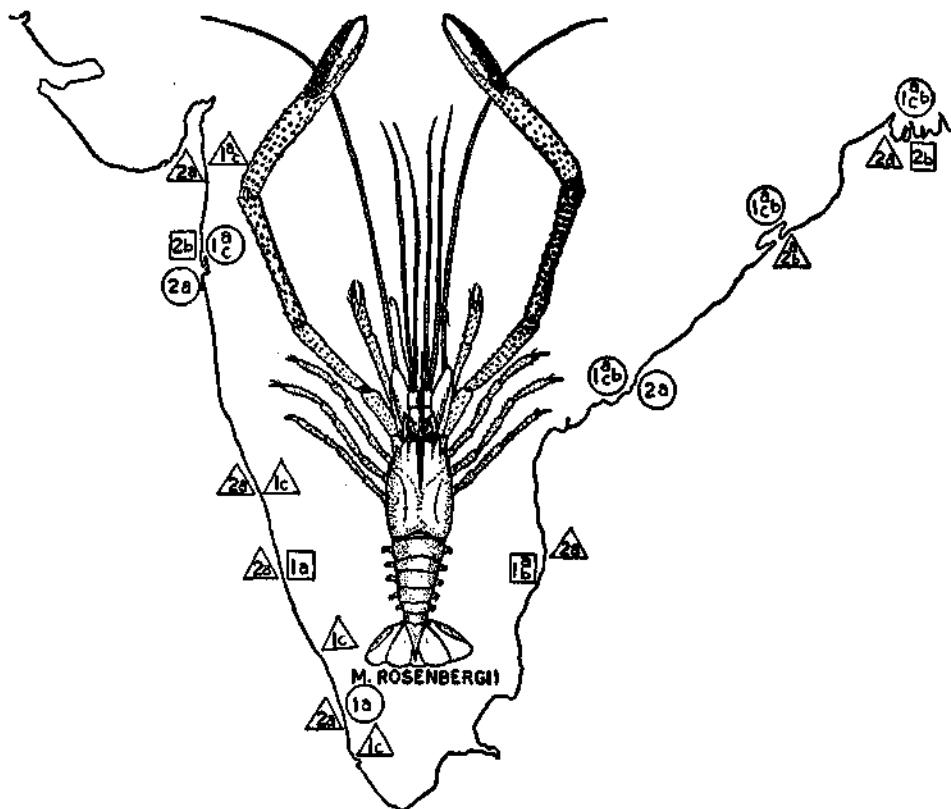


FIG. 5. Fishery of palaemonid prawns. ○ regular; □ occasional; △ stray. 1. (a) *Macrobrachium rosenbergii*, (b) *M. malcomsonii*; (c) *M. rudis*; 2. (a) *Palaemon styliferus*; (b) *P. tenuipes*.

Parapenaopsis sculptilis (Heller).—This species is available in the commercial fishery of the marine zone of the Hooghly in certain months especially during winter and in Bombay waters throughout the year although in small quantities averaging about 4% of the catches. It grows to a maximum of about 15 cm. But the sizes obtained in Bombay are small. In the commercial fishery the species is available during the monsoon and winter months. The larger specimens are generally caught in the inshore waters.

Parapenaopsis hardwickii (Miers).—This species, slightly smaller in size than the above and growing to about 13 cm. is also present in Bombay waters and is caught in small quantities along with the other species.

Solenocera indicus Nataraj.—This is of commercial importance only in the inshore waters of Bombay where it forms about 10% of the catches. It grows to about 14 cm.

Trachypenaeus curvirostris (Stimpson).—This also is caught in small numbers from Bombay waters. Small numbers of this species were caught from further south also during the exploratory and research cruises of R. V. *Varuna*. Maximum size is about 10–12 cm.

Penaeopsis rectacuta (Bate) and *Aristeus semidentatus* (Bate) are penaeids of potential commercial importance in view of the fact that they were obtained in fairly large numbers from the deep-waters ranging from 100–200 fathoms during the recent exploratory cruises of *M. V. Kalava*.

Palaemonids

Excepting a few species most of the members inhabit freshwater but are capable of tolerating brackish waters and some even marine environments.

Macrobrachium rosenbergii (de Man) (Fig. 5).—This is the giant freshwater prawn growing to a maximum of about 30–32 cm. in length, common in most of the lakes and estuaries in India. Spawning takes place in the gradient zones of the estuaries. The young ones ascend the rivers and the juveniles are caught mostly in the freshwater zones. It contributes to a fairly good freezing industry in the Kerala backwaters during the monsoon and post-monsoon periods. In the east coast the species is fished from December to July in the gradient zone, while the immature prawns are caught during other months from the freshwater.

Macrobrachium malcolmsonii (Milne-Edwards).—This is a comparatively smaller species attaining a maximum of 20–22 cm. (males). Growth is much different in males and females, the former attaining a larger size. It is most common in the estuaries and lakes of Madras and Andhra and also in Chilka Lake. Habits are similar to those of the previous species. The fishery, although limited, is during the monsoon months.

Macrobrachium rudis (Heller).—Though caught in small numbers in most of the lakes and estuaries this species is of commercial importance mostly in Bengal, Orissa and Andhra. Fishery season is from August to November. It attains a maximum length of about 12–13 cm. males being larger than females. In Bengal, the species is available during August–October, and in Chilka Lake it is fairly common from September to November. Young individuals are generally found during February–March.

Macrobrachium idae (Heller).—This species attains a maximum size of about 10–11 cm. and is represented in the catches during September to December period in Kerala backwaters area and other regions.

Macrobrachium scabriculum (Heller), *Macrobrachium mirabilis* and *Macrobrachium lamarrei* (Milne-Edwards) are other species of this genus caught in small numbers in various estuaries and freshwater areas.

Palaemon styliferus (Milne-Edwards).—This is one of the smaller species of palaemonids of commercial importance. It attains a maximum size of about 10 cm. and is very common in the Gangetic delta and also in Bombay waters, occurring in the tidal and gradient zones. Spawning occurs in the more saline areas and juveniles migrate to the estuary. There is no difference in growth rate of sexes.

Palaemon tenuipes (Henderson).—This is fished along with the previous species in more or less the same areas. It grows to a maximum of about 7–8 cm. and is similar in habitat.

Leptocarpus fluminicola (Kemp).—This is an endemic species inhabiting the brackishwater areas of the Gangetic delta. It grows to about 4–5 cm. and is caught in very large numbers.

Hippolytids

Hippolysmata ensirostris Kemp.—This is a very small species of caridean prawn growing upto a maximum of about 3 cm. in length, common in Gangetic delta and some other parts of peninsular India.

Sergestids

Acetes indicus Milne-Edwards (Fig. 6) is the largest among the commercially important sergestids and attain a maximum size of 3-4 cm. The species occur in vast shoals in midwater or near the surface in the inshore waters near estuaries and backwaters. It contributes to a good percentage of the fishery in the inshore waters of Bombay in certain months and also along the Bengal and Madras coasts.

Acetes erythraeus Nobili and *A. serrulatus* (Kroyer) are two other species of commercial importance especially along Madras and Kerala coasts. Besides providing an important fishery, shoals of these *Acetes* spp. form an important food item of the larger fishes.

Mysids

Species of Mysids, *Macropsis orientalis* and *Potamomysis assimilis* popularly known as the 'mud shrimps' and 'opposum shrimps' which are barely 1 cm. in length and frequently caught mixed with are other shrimps in small quantities.

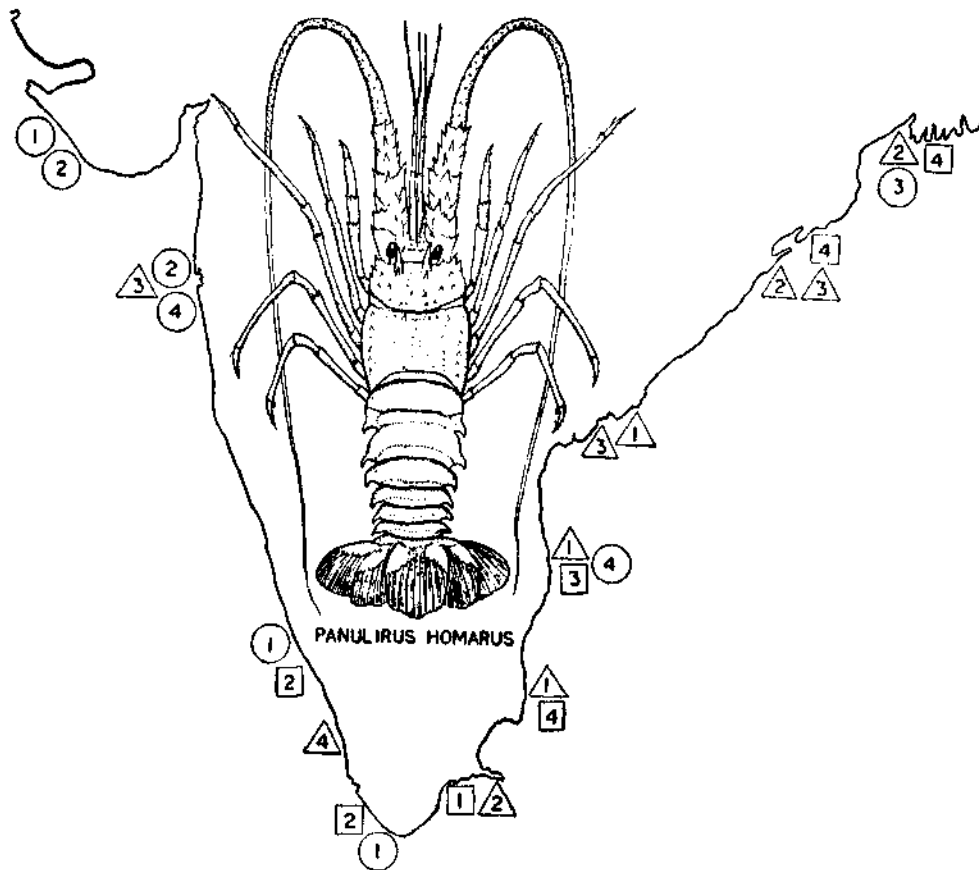


FIG. 6. Fishery of lobster and *Acetes*. ○ regular; □ occasional; △ stray.
1. *Panulirus homarus*. 2. *P. ornatus*. 3. *P. polyphagus*. 4. *Acetes indicus*.

SPINY LOBSTERS

Palinurids

Panulirus polyphagus (Herbst.) (Fig. 6).—This species occurs in several localities with rocky bottom along both the coasts of India, though more common along the east coast. It grows to about 35–37 cm. in length. In Bombay waters, lobsters are chiefly caught in bully nets locally called 'Gadas', in wall seine nets and in lobster pots. The main fishing season is from November to March.

Panulirus ornatus (Fabricius).—This attains a slightly smaller size of about 30–32 cm. and is commoner along the Bombay coast. It occurs generally in shallow waters.

Panulirus homarus (Linn.).—This species grows to about 30–31 cm. and occurs mostly in the rocky areas of the southern coasts. It contributes to a fairly good fishery supporting a lucrative freezing industry on the south-west coast of India mostly in the area south of Trivandrum during the months of December to April. It is caught in anchor hooks, lobster traps and gill nets.

Puerulus sewelli Ramadan is another species of potential commercial importance along the south-west coast.

CRABS

Scylla serrata (Forsk.) (Fig. 7).—This is a very widely distributed brackishwater species well adapted to live in freshwaters for fairly long periods, usually growing to about 15–20 cm. across the carapace. It is available almost throughout the year and is the largest and commonest food crab. Generally it is trapped in 'dip nets' using baits. In shallow waters and creeks, 'seine nets' are employed. Hooked iron rod is also used for extracting the crabs from crevices. An indigenous method of operation of a line stretched across a suitable creek, one end tied to a pole fixed in the bank, and the other to a post in a boat which is rowed to the opposite bank is found in the Gangetic delta. The line is weighted and pieces of dead fish are suspended as baits.

Portunus pelagicus (Linn.).—This is another swimming crab widely fished in several areas along the coastline. It inhabits the inshore waters but is capable of tolerating brackishwaters. In the Chilka Lake it is sometimes found almost under freshwater conditions. It attains a maximum size of about 15 cm. across the carapace.

Portunus sanguinolentus (Herbst).—This is common in all the areas in which its congener is fished and is similar in habits, distribution and size.

Both *P. pelagicus* and *P. sanguinolentus* are caught in shore seines, cast nets and appreciable numbers are found in the trawl nets also. The indigenous gear used for crab fishing are the modified *kanthabale* and *aliburle* (crab net), gill nets, *nandu valai* in the Gulf of Mannar and Palk Bay and *nolijal* in the Chilka Lake. The main season is from January to March. In the monsoon months crabs are fished from river mouths and estuaries.

Varuna litterata (Fabricius).—This is not a swimming crab as the previous ones. It attains a maximum size of only about 5 cm. across the carapace and is common in the Gangetic delta area.

Paratelphusa spinigera (Wood-Mason).—This is the common freshwater crab growing to about 7–8 cm. across the carapace. It is most common in the freshwaters of Bengal.

Paratelphusa jacquemontii and *P. hydrodromus* are two other freshwater crabs common in the freshwater areas of Bombay and southern regions of the east coast respectively. These are available almost throughout the year.

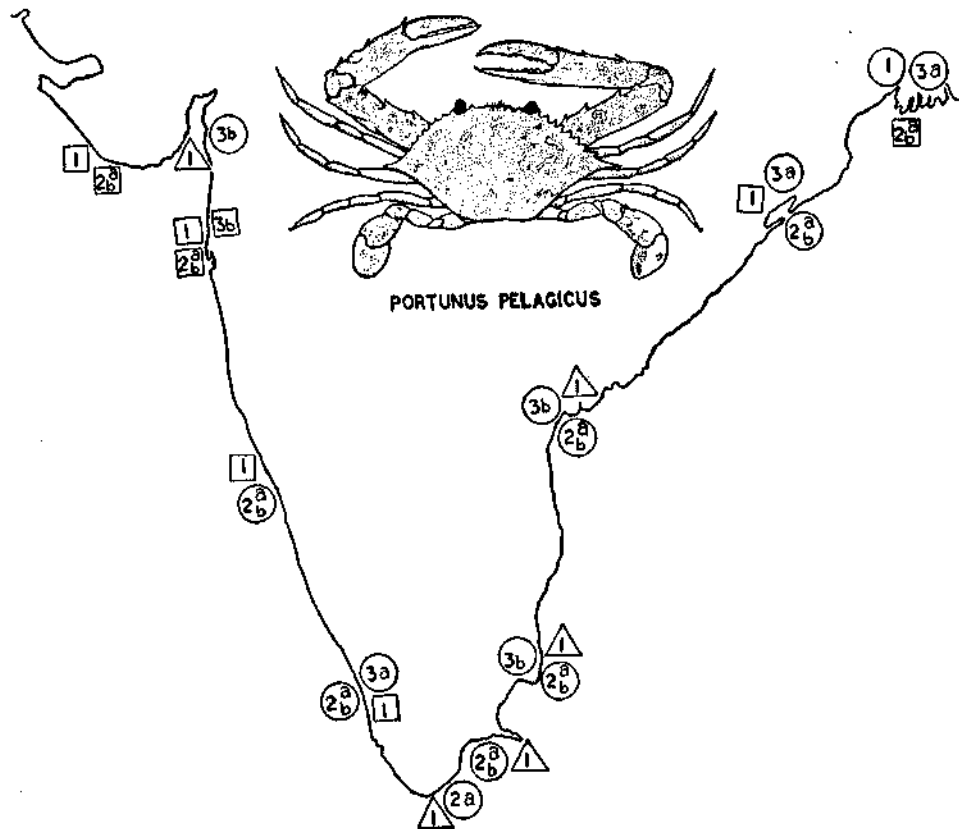


FIG. 7. Crab Fishery. O regular; □ occasional; △ stray. 1. *Scylla serrata*, 2. (a) *Portunus pelagicus*. (b) *P. sanguinolentus*; 3. (a) *Paratelphusa spinigera*; (b) *P. hydrodromus*.

GENERAL REMARKS

In spite of the appreciable expansion in the use of mechanised fishing craft in recent years the greater part of the crustacean landings are made with indigenous craft and gear. Provision of in-board engines in indigenous craft especially in the Bombay areas has helped a great deal in shortening the journey time, from the base to the fishing grounds and back. The power boats which operate shrimp trawls are comparatively small-sized, not more than about 10 m. in length. Most of the fishing is done within the 20 fathoms line but there seems to be scope for extending the fishing range beyond this depth.

Exploratory fishing has shown the presence of some species of deepwater prawns between 100 and 200 fathoms along the west coast. Further survey is necessary to estimate the extent of the resources. Sections of the east coast especially off the larger river deltas also remain to be surveyed. On the whole the future of the crustacean fisheries of India appears to be bright.