

Chhapgar, B. 1969

[Reprint, from *Journal of the Bombay Natural History Society*, 65, No. 3]

MORE ADDITIONS TO THE CRAB FAUNA OF BOMBAY STATE. BY B. F. CHHAPGAR. (*With two plates*)

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INVERTEBRATE
ZOOLOGY
Crustacea

[Reprint, from *J. Bombay nat. Hist. Soc.* **65** (3): 608-617. 28-5-1969]

**MORE ADDITIONS TO THE CRAB FAUNA OF
BOMBAY STATE**

More additions to the crab fauna of Bombay State

BY

B. F. CHHAPGAR

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(With two plates)

Taxonomic accounts of the Brachyuran fauna of the Bombay coast have been given in previous issues of this *Journal* (Chhapgar 1957, **54** : 399-439, 503-549 ; 1958, **55** : 582-585 ; 1961, **58** : 529-531). Collections of crabs made subsequent to these publications have revealed the occurrence of several new distributional records. A taxonomic description of eleven such forms is given below.

Tribe **DROMIACEA**

Subtribe **DROMIIDEA**

Family **DROMIIDAE**

Genus **Conchoecetes** Stimpson

Conchoecetes artificiosus (Fabricius)

(Plate I)

Dromia artificiosa, Fabricius, *Ent. Syst. Suppl.* : 360 (1798).

Conchoecetes artificiosus, Henderson, *Trans. Linn. Soc. London (Zool.)* (2)**5** : 407 (1893) ; Alcock, *Journ. As. Soc. Bengal* **65** : 151 (1896) ; Alcock, *Catal. Ind. Deca. Crust.* **1** : 41 (1901) ; Chopra, *Rec. Ind. Mus.* **35** : 28 (1933) ; Barnard, *Ann. S. Afr. Mus.* **38** : 308 (1950).

A female from Bombay represents the present collection.

length of carapace	..	..	15 mm.
breadth of carapace	..	..	16 mm.

The carapace is flat and pentagonal. The front is cut into three teeth, the middle being smaller and on a lower plane. There are two teeth on the lateral borders of the carapace—one immediately behind the cervical groove, the other behind the branchial groove.

The claws are massive, with two tubercles at the distal end of the outer surface of the wrist, and two on the palm near the fingers.

The third pair of legs are shorter than the first two pairs, but are as stout. They end in huge, talon-like dactyli. The last pair ends in tiny, claw-like dactyli. The sternal grooves of the female reach the level of the bases of the first pair of legs.

The crab protects itself by holding a valve of a bivalve mollusc over it.

Distribution: East coast of Africa to Japan and Australia.

Tribe OXYSTOMATA

Family LEUCOSIIDAE

Subfamily LEUCOSIINAE

Genus *Leucosia* Fabricius

Leucosia pallida Bell

Leucosia pallida, Bell, *Trans. Linn. Soc. London (Zool.)* 21 : 285 (1885); Alcock, *Journ. As. Soc. Bengal* 65 : 222 (1896); Sankarankutty, *J. Mar. biol. Assoc. India* 4(1) : 154 (1962).

A female from Bombay represents the present collection.

The carapace is roundish. The true postero-lateral margins of the carapace are beaded up to the level of the second pair of walking legs. The posterior border is straight, and has toothed outer angles. The thoracic sinus is Y-shaped, there being six to seven granules in a row in the tail of the Y; three to four of these granules are large and pearl-like. The front is tridentate and anteriorly distinctly concave in the midline.

The arms of the claws have 7 to 9 pearly tubercles arranged in two rows. The hand is more than $\frac{3}{4}$ as broad as long and has its outer border strongly keeled. The abdomen is four-segmented.

Colour greyish. There are two pairs of pale spots in the gastric region, and two brown spots in the posterior part of the carapace.

This species has been previously recorded from the Andaman Islands as well as the Persian Gulf.

Leucosia vittata Stimpson

Leucosia vittata, Stimpson, *Proc. Acad. Nat. Sci. Philad.* 159 (1858); Alcock, *Journ. As. Soc. Bengal* 65 : 232 (1896).

A female from Bombay is in the present collection.

The carapace is hexagonal, and is conspicuously longer than broad. The front ends in three horizontal prongs. The thoracic sinus has no

granules. Its outer branch encroaches into the antero-lateral borders of the carapace, causing a sharp emargination.

The body is blackish, with flame-coloured stripes.

It has been previously recorded from the Andaman Islands.

Leucosia longifrons de Haan

(Plate I)

Leucosia neocaledonica, A. Milne-Edwards, *Nouv. Archiv. du Mus.* 10 : 40 (1874).

Leucosia longifrons var. *neocaledonica*, Alcock, *Journ. As. Soc. Bengal* 65 : 218 (1896).

A male from Bombay is in the present collection. It measures :—

length of carapace	23 mm.
breadth of carapace	20 mm.

The true postero-lateral borders are beaded only as far as the level of the first pair of walking legs. The tail of the Y-shaped thoracic sinus bears a row of six to seven large pearly granules, in line with the milled epimeral edge of the carapace. The front is triangular.

Both the borders of the upper surface of the arm in the chelipeds bear a row of tubercles. Proximally there is also a patch of 6-8 coalescent granules, and five isolated ones. On the inner border of the wrist is a row of four granules. The inner edge of the hand bears several such rows.

The meropodites of the legs have three rows of granules. The propodites are keeled.

The anterior male abdominal appendages are bent at right angles at the tip to form a spirally twisted, spooned hook, bearing hairs. Just below the hook is a knob.

Colour greyish. On the gastric region are two large ocelli with small white centres and very broad red outer rings. Around the posterior half of the circumference of the carapace are six reddish spots. The legs are banded red. The fingers of the claw have their basal halves red, and the distal halves white.

Alcock records this species from the Persian Gulf, Karachi, and Palk Straits.

Genus **Nursia** Leach

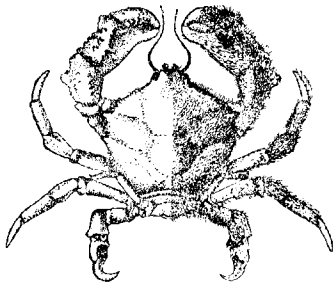
Nursia abbreviata Bell

(Plate I)

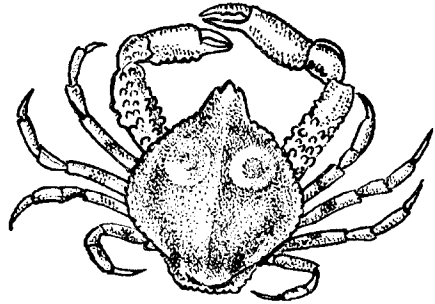
Nursia abbreviata, Bell, *Trans. Linn. Soc. London (Zool.)* 21 : 308 (1855); Alcock, *Journ. As. Soc. Bengal* 65 : 184 (1896).

Numerous specimens, of both sexes, were collected from Worli and Mahim (Bombay). A large male measures :—

length of carapace	10 mm.
breadth of carapace	12 mm.

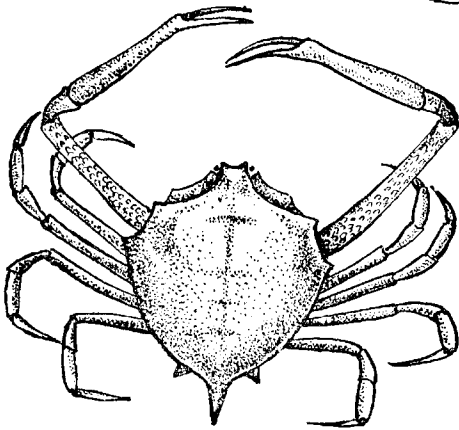


a
5 MM.



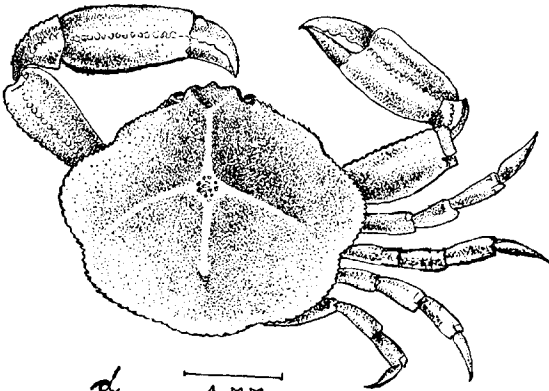
b

10 MM.



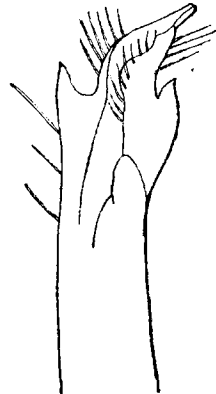
c

25 MM.



d

4 MM.

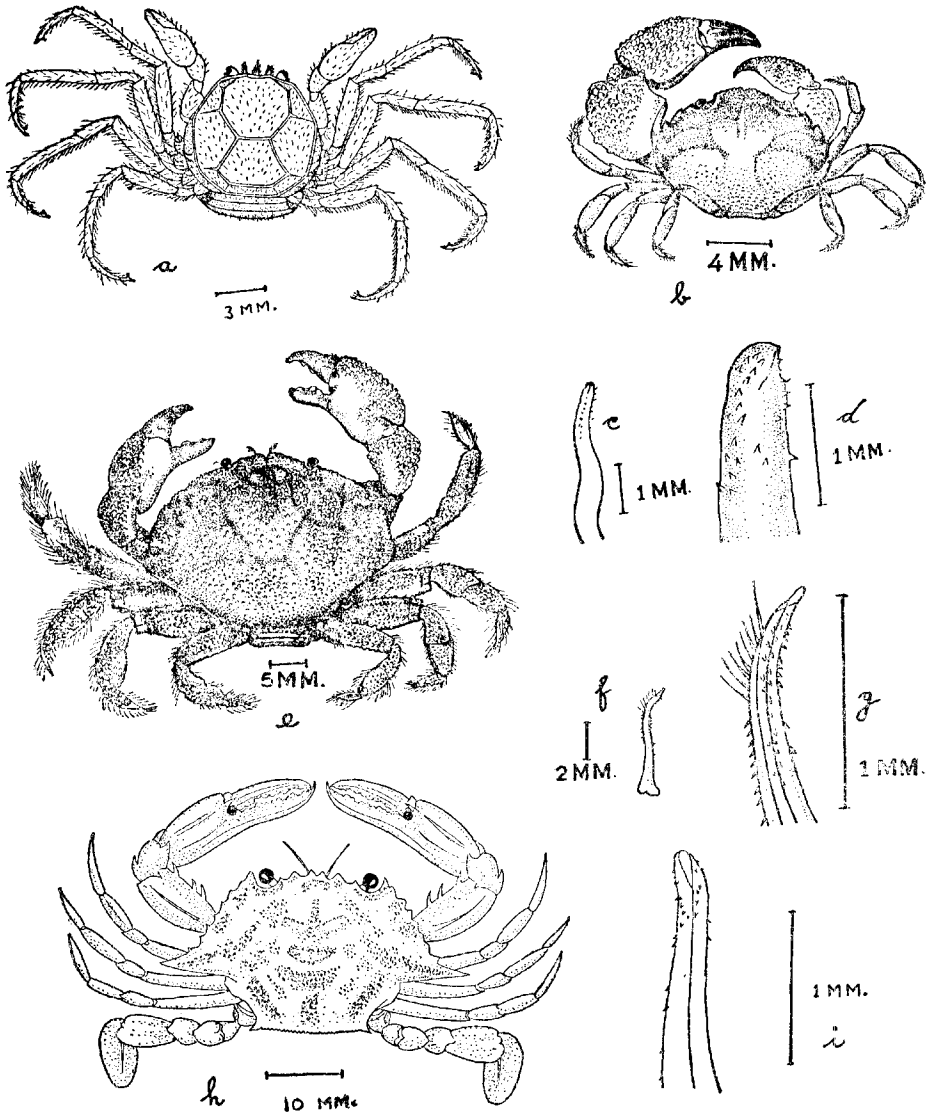


0.5 MM

e

a. *Conchoecetes artificiosus*, dorsal view. b. *Leucosia longifrons*, dorsal view. c. *Myra fugax*, dorsal view. *Nursia abbreviata*. d. Dorsal view of crab. e. Tip of 1st left abdominal appendage of male.

Chhapgar: Crab Fauna



a. *Rhynchoplax prox. octagonalis*, dorsal view. *Sphaerozius nudus*. b. Dorsal view of crab. c. 1st left abdominal appendage of male. d. Tip of same, enlarged. *Actaea obesa*. e. Dorsal view of crab. f. 1st left abdominal appendage of male. g. Tip of same, enlarged. *Portunus hastatoides*. h. Dorsal view of crab. i. Tip of 1st left abdominal appendage of male.

The carapace is depressed, with thin borders cut into seven lobes. It has only two ridges across it—one running laterally from border to border, and a longitudinal one from the front. The front is indistinctly tridentate.

The arm of the claws is trigonal, with granular edges. The wrist and hand have a dorsal beaded ridge.

The tip of the anterior male abdominal appendages is shaped like a trident.

This species has been previously recorded from Karachi, the Coromandel Coast, Gulf of Mannar, and Gulf of Martaban.

Genus **Myra** Leach

Myra fugax (Fabricius)

(Plate I)

Leucosia fugax, Fabricius, *Ent. Syst. Suppl.* : 351 (1798).

Myra fugax, Leach, *Zool. Miscell.* 3 : 24; Alcock, *Journ. As. Soc. Bengal* 65 : 202 (1896); Ihle, *Siboga Exped. Rep.* 39 : 256 (1918); Chopra, *Rec. Ind. Mus.* 35 : 39 (1933); Barnard, *Ann. S. Afr. Mus.* 38 : 373 (1950); Sankaran-kutty, *J. Mar. biol. Ass. India* 4(1) : 154 (1962).

Numerous specimens, of both sexes, were obtained from trawl catches off Bombay in 25 fathoms. A large male measures :—

length of carapace (without posterior spine)	..	21 mm.
length of posterior spine	.. ..	.. 8 mm.
breadth of carapace	.. ..	.. 19 mm.
length of cheliped	.. ..	.. 57 mm.

The carapace is broadly oval, with three sharp spines—one at each end of the posterior border, and a long one in the middle line above the posterior border. The front is broadly bidentate. The carapace has a broad notch in the antero-lateral borders between the hepatic and branchial regions. The side-walls of the hepatic region form a facet, behind which the lateral borders are marked by a beaded line.

The anterior abdominal appendages are straight and end in a claw-like tip almost hidden in a brush of setae.

The chelipeds are long and slender. The hand is much longer than the fingers.

Colour pinkish.

Distribution : Indo-Pacific, from East Africa to Japan, Australia.

Tribe BRACHYGNATHA

Subtribe OXYRHYNCHA

Family HYMENOSOMIDAE

Genus *Rhynchoplax* Stimpson*Rhynchoplax* prox. *octagonalis* Kemp

(Plate II)

Rhynchoplax octagonalis, Kemp, *Rec. Ind. Mus.* 13 : 256 (1917).

Two females from the crevices of a sponge were collected at Cuffe Parade, Bombay. The length of carapace of the larger one is 2.5 mm.

The specimens agree with Kemp's (1917) description of *R. octagonalis*, collected from Marmagoa, in the shape of the carapace and other general characters, but differ in the following characters :—

The long, sharp procurved tooth is situated between the bases of the first and second pairs of walking legs, rather than above the bases of the first leg. The walking legs are slenderer and less hirsute. The anterior border of their meri has no tooth. There is a stout recurved tooth close to the tip of the dactylus in the first pair of legs. Four minute denticles are present on the dactyli of the second and third pairs of legs.

***Elamena sindensis* Alcock**

C. Sankarankutty, on page 347 of his paper 'On Decapoda Brachyura from the Gulf of Mannar and Palk Bay', published along with the other papers read at the Symposium on Crustacea held by the Marine Biological Association of India in 1966, states *Elamena sindensis* to be a new record for the Indian region. It appears that he has not seen my paper published in this *Journal*, volume 55 (3), 1958, where I have described *E. sindensis* on page 582.

Subtribe BRACHYRHYNCHA

Family PORTUNIDAE

Subfamily LUPINAE

Genus *Portunus**Portunus hastatoides* Fabricius

(Plate II)

Portunus hastatoides, Fabricius, *Ent. Syst. Suppl.* 368 (1798).*Neptunus (Hellenus) hastatoides*, Alcock, *Journ. As. Soc. Bengal* 68 : 38 (1899).*Neptunus hastooides*, Chopra, *Rec. Ind. Mus.* 37 : 477 (1935).*Hellenus hastatooides*, Barnard, *Ann. S. Afr. Mus.* 38 : 158 (1950).

Numerous specimens, of both sexes, were collected from trawl catches off Bombay in 25 fathoms. A large male measures :—

length of carapace	..	..	..	21 mm.
breadth of carapace (excluding lateral spines)				33 mm.

The carapace is flat, the front being cut into four teeth. The antero-lateral borders are cut into nine teeth, the last being much longer than the others. The postero-lateral angles of the carapace are spiniform.

The hands of the chelipeds are almost as massive as the arms. There are two spines near the distal end of the posterior border of the arms. The distal half of the borders of the meropodites of the last pair of legs is finely serrulate.

The anterior abdominal appendage is abruptly bent in its distal half, with a few hairs near the tip.

Colour fleshy brown. There is a brownish black patch on the tips of the dactyli of the swimming legs.

This species occurs from Zanzibar to Japan, having also been recorded from the east coast of India and the Andaman Islands.

Family *XANTHIDAE*

Subfamily *MENIPPINAE*

Genus *Sphaerozius*

Sphaerozius nudus (Milne-Edwards)

(Plate II)

Actumnus nudus, Milne-Edwards, *Ann. Soc. Entomol. France* 7 : 265 (1867) ; de Man, *Journ. Linn. Soc. London (Zool.)* 22 : 49 (1887-88) ; Alcock, *Journ. As. Soc. Bengal* 67 : 207 (1898).

Sphaerozius nudus, Balss, *Rec. Ind. Mus.* 37 : 46 (1935).

Numerous specimens, of both sexes, were collected from the wreck of the S.S. *RAMDAS*, (which sank on the 17th July, 1947, with a loss of more than 700 lives) when it was salvaged on 1st April, 1957, and re-sunk off Butcher Island (Bombay harbour). A large male measures :—

length of carapace	9 mm.
breadth of carapace	12 mm.

This species is distinguished by the bare, convex carapace with four broadly triangular teeth on the antero-lateral borders, not including the outer angle of the orbit. There are two arched rows of pearly granules on either side of the gastric region.

The chelipeds are unequal, with the upper and outer surfaces of the wrist and hand studded with tubercles. The thumb has a broad tooth proximally.

Colour yellowish grey, fingers of chelipeds dark brown with white tips.

The anterior abdominal appendages are sinuous, with the truncate tip bearing numerous spinules.

Balss has discussed the systematic position of this crab.

This species has been previously recorded from Pondicherry, the Gulf of Mannar, and Mergui.

Subfamily ACTAEINAE

Genus *Actaea*

Actaea obesa Milne-Edwards

(Plate II)

Actaea obesa, Milne-Edwards, *Nouv. Archiv. du Mus.* 1 : 272 (1865); Alcock, *Journ. As. Soc. Bengal* 67 : 145 (1898).

Numerous specimens, of both sexes, were collected from the wreck of the S.S. *RAMDAS*.

This species can be distinguished by the convex carapace being covered with granules, and not with tubercles. The areolation of the carapace is extremely faint anteriorly, due to the fineness of the grooves ; it is absent from the posterior third of the carapace. The lobulation of the antero-lateral borders is also indistinct, especially in the first lobe. The length of the carapace is slightly more than two-thirds its breadth. There are a few hairs on the carapace and legs.

length of carapace .. .. .	.. .. .	12.5 mm.
breadth of carapace .. .. .	.. .. .	19.0 mm.

The anterior abdominal appendages are arched, with a transparent horny tip. There are many recurved spinules and a few long hairs near the tip.

This species has been previously recorded from Bombay.

Family PINNOTHERIDAE

Subfamily XENOPHTHALMINAE

Genus *Xenophthalmus* White

Xenophthalmus pinnotheroides White

Xenophthalmus pinnotheroides, White, *Ann. Mag. nat. Hist.* 18 : 178 (1846); Henderson, *Trans. Linn. Soc. London (Zool.)* 5 : 394 (1893); Rathbun, *K. Dansk. Vid. Selsk. Skr.* 7(5) : 338 (1910); Tesch, *Siboga Exped. Rep.* 39 : 272 (1918). *Xenophthalmus pinnoteroides*, Alcock, *Journ. As. Soc. Bengal* 69 : 332 (1900).

Numerous specimens, of both sexes, were collected from Chowpatty, Bombay.

Anterior part of carapace and legs hairy. Carapace $1\frac{1}{2}$ times as broad as long. Epistome absent. Orbits are longitudinal slits, parallel to each other, in the carapace. Palp of external maxillipeds spirally twisted, rod-like, the propodite being at right angles to the carpopodite, and the dactylus being again perpendicular to the propodus.

Propodite of first pair of walking legs as broad as long, distorted—the originally ventral side being turned dorsally. Third pair of legs as long as, or longer than, twice the carapace length.

Anterior abdominal appendages long, obtuse at the tip, the latter with a group of slender spines.

Distribution : Hong Kong, Indonesia, Thailand.

I had given a key for the identification of the marine crabs of the (then) Bombay State, on pages 524-530 of volume 54, no. 3, of this *Journal*. Additional records of crabs from Bombay, published by me since then, have necessitated modifications and/or additions to this key at various places. A revision is, therefore, attempted here. The numbers referred to in it are those found in the original key—new insertions being indicated by letters, so as to avoid confusion.

- | | | |
|----|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| 6. | Merus of external maxillipeds more than half the length of the ischium measured along the inner border (Leucosiinae) | A |
| | Merus of external maxillipeds half or less than half the length of the ischium measured along the inner border (Iliinae) | |
| | | <i>Arcania septemspinosa</i> |
| A. | Carapace convex, subcircular or oval | B |
| | Carapace broad and polygonal | <i>Nursia abbreviata</i> |
| B. | Chelipeds massive, posterior border of carapace smooth | C |
| | Chelipeds slender, posterior border of carapace with three petaloid spines | <i>Myra fugax</i> |
| C. | Front narrow. Exopodites of external maxillipeds narrow, with the outer margins straight (<i>Leucosia</i>) | D |
| | Front broad. Exopodites of external maxillipeds broad, their outer borders forming a semicircle (<i>Philyra</i>) | 9 |
| D. | Carapace much longer than broad | E |
| | Carapace as broad as long | <i>Leucosia sima</i> |
| E. | Thickened epimeral edge of carapace not visible in all its extent when viewed dorsally | F |
| | Thickened epimeral edge of carapace completely visible when viewed dorsally | G |
| F. | Outer edge of hand keeled | <i>Leucosia pallida</i> |
| | Outer edge of hand not keeled | <i>Leucosia longifrons neocaledonica</i> |

G.	Thoracic sinus deep	<i>Leucosia vittata</i>	
	Thoracic sinus shallow	<i>Leucosia pubescens</i>	
11.	Last pair of legs shorter than the first two pairs		H
	Last pair of legs longer than the first two pairs	<i>Pseudodromia integrifrons</i>	
H.	Carapace convex	<i>Dromia dormia</i>	
	Carapace flat and pentagonal	<i>Conchoecetes artificiosus</i>	
13.	Carapace flat, weakly calcified. Male genital openings on last thoracic sternite (Hymenosomidae)		J
	Carapace not flat, strongly calcified. Male genital openings on fifth coxopodites		14
J.	Carapace with a honeycomb pattern	<i>Rhynchoplax octagonalis</i>	
	Carapace without a honeycomb pattern (<i>Elamena</i>)		K
K.	Tips of dactyli of legs biunguiculate	<i>Elamena cristatipes</i>	
	Tips of dactyli of legs triunguiculate	<i>Elamena sindensis</i>	
15.	Eyes without true orbits. Eystalks very short or obsolescent, concealed beneath a supra-ocular spine or sunk in the sides of a large rostrum		L
	Orbits partly defined. Postocular process present, hollowed for the partial retraction of the short eystalks (<i>Pisinae</i>)		16
	Orbits complete enough to entirely conceal the cornea dorsally		17
L.	Eystalks long	<i>Achaeus lacertosus</i>	
	Eystalks short (<i>Acanthonychinae</i>)		M
M.	Rostrum simple	<i>Menaethius monoceros</i>	
	Rostrum bifid	<i>Acanthonyx limbatus</i>	
22.	Teeth on antero-lateral borders equal in size	<i>Scylla serrata</i>	
	Last tooth on antero-lateral borders enlarged in the form of a large spine (<i>Portunus</i>)		N
N.	Posterior angles of carapace rounded		23
	Posterior angles of carapace spiniform	<i>Portunus hastatoides</i>	
36.	Fingers of chelipeds with broad, hoof-like extremities	<i>Etisus laevimanus</i>	
	Fingers of chelipeds pointed		P
P.	Carapace granulate	<i>Actaea obesa</i>	
	Carapace tuberculate	<i>Actaea savignyi</i>	
42.	Basal antennal joint not reaching the front (<i>Menippinae</i>)		Q
	Basal antennal joint broadly in contact with front		43
Q.	All the antero-lateral teeth broad, triangular	<i>Sphaerozius nudus</i>	
	Anterior antero-lateral teeth broad, anteriorly acuminate, last one narrow and carinated	<i>Myomenippe hardwickii</i>	

47. Small crabs living as commensals, mostly in bivalve molluscs (Pinnotherinae)	48
Free living crabs	R
R. The orbits are narrow chinks situated dorsally with their long axes at right angles to the anterior border of the carapace	
	<i>Xenophthalmus pinnotheroides</i>
Orbits normal, transverse	49
54. Front 1/5th to 1/6th the greatest breadth of the carapace .. .	S
Front less than 1/15th the greatest breadth of the carapace .. .	55
S. Two oblique granular ridges on the inner surface of the palm of the larger male cheliped	<i>Gelasimus annulipes</i>
Only one oblique ridge on the inner surface of the palm of the larger male cheliped	<i>Gelasimus inversus sindensis</i>

ACKNOWLEDGEMENTS

The author is thankful to Dr. K. K. Tiwari, of the Zoological Survey of India, for confirmation of identification of some of the crabs, and to Dr. C. V. Kulkarni, Director, and Dr. H. G. Kewalramani, Senior Scientific Officer, Department of Fisheries, Maharashtra State, for critically going through the manuscript.

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