Chapter 6

Metapenaeus & Metapenaeopsis

S. Lakshmi Pillai

The genus *Metapenaeus* comprise several species of commercial interest and they form an important fishery along the Indian coast. *Metapenaeus dobsoni* dominates the prawn fishery along the southwest and southeast coasts of India. The adults live in the coastal sea up to 37 m depth while their juveniles inhabit estuaries, backwaters and paddy fields. The sizes of these larvae vary from 1 to 3.5 mm and they are pelagic. Advanced post larvae above 3.5 mm in size are not btained in the surf collections and it would appear that they have by this time settled to the bottom (Mohamed and Rao, 1971). The egg of *M. dobsoni* passes through six naupliar, three protozoea and five mysis stages before it becomes post larva. The post larvae enter the backwaters and estuaries to complete their life cycle. When they reach the juvenile stage they migrate to the sea. Sexual maturity is attained in the sea. It spawns in the coastal waters not far off from the coast. *Metapenaeus monoceros* is a commercially important prawn in the backwaters and estuaries, and up to about 100 m depth in the sea. There is no information on eggs and early larvae from the sea. Late mysis and postlarval stages of the species migrate into backwaters and estuaries all along the coastline of India and the juveniles contribute to a fishery in these waters. *Metapenaeus kutchensis* George, George and Rao, 1963 is a commercially important penaeid prawn, endemic to the Gujarat coast of India (George *et al*., 1963). Very little is known about the larval history of *M. kutchensis*. In the case of *M affinis* there does not seem to be large-scale migration of the postlarval stages into nearby estuaries as in *M. dobsoni* and the species never accounts for more than 20 percent of the catch in the fishery for juvenile prawns in the backwaters of Cochin (George, 1968).

Diagnostic features: Integument variably pubescent, sometimes almost entirely glabrous; rostrum armed with dorsal teeth only; epigastric tooth often conspicuously separated from first rostral tooth; orbital and pterygostomian spines lacking; antennal and hepatic spine pronounced; gastro-orbital carina absent; hepatic sulcus anterior to hepatic spine well-defined and accompanied by ventral carina often descending almost vertically from spine then turning

towards pterygostomian angle; sulcus posterior to hepatic spine ill-defined or absent; telson lacking fixed subapical spines but bearing movable, sometimes minute and very numerous posterolateral ones. antennular flagella shorter than carapace; fifth pereiopod modified in male; Petasma symmetrical, semiclosed, depressed with median lobes usually produced into simply curved, hoodlike or convoluted distal projections; Thelycum closed with paired lateral plates of sternite XIV often continuous across sternite, usually more or less enveloping posterior end of elongate median protuberance of sternite XIII.

Key to *Metapenaeus* spp.

1. Rostrum without ventral teeth and no distal fixed pair of spines on the telson; lateral mobile spines may be present; No exopod on 5th pereiopod; pleurobranch on 7th thoracic somite present 2

2. Distomedian petasmal projection with fully developed or vestigial apical filament; thelycum of impregnated females usually with white conjoined pads 3

Distomedian petasmal projection without apical filament; thelycum of impregnated females usually without white conjoined pads 5

3. Rostrum wide and short, not reaching to distal end of basal antennular segment; thelycum with ovoid anterior and lateral plates of subequal size; conjoined pads usually set askew; apical filaments of petasma vestigial, represented by a pair of rounded bosses ..... ***Metapenaeus lysianassa***

Rostrum projecting beyond basal antennular segments, with a marked edentate distal portion 4

4. Posterior part of rostrum with distinctly elevated crest; basial spine on male 3rd pereiopod simple; apical petasmal filaments slender, slightly converging; thelycum with a large anterior and small lateral plates ..... ***Metapenaeus brevicornis***

Posterior part of rostrum without distinctly elevated crest; basial spine on male 3rd pereiopod long and barbed; apical petasmal filaments not readily visible; anterior thelycal plate tongue-like ..... ***Metapenaeus dobsoni***

5. Branchiocardiac sulcus distinct in at least posterior 1/3 carapace; distomedian petasmal projections flap-like 6

Branchiocardic sulcus almost completely absent; distomedian petasmal projections anteriorly filiform, each with a serrate ventral margin ..... ***Metapenaeus stebbingi***

6. Ischial spine on 1st pereiopod distinct 7

Ischial spine on 1st pereiopod small or absent 11

7. Ischial spine subequal to basial spine; distomedian lobes having bluntly triangular apices with median

margins parallel to each other; anterior thelycal plate tongue-like with raised lateral margins parallel; lateral plates flat ..... ***Metapenaeus krishnatrii***

Ischial spine much smaller than basial spine; anterior thelycal plate tongue-like 8

8. Distomedian petasmal projections directed anteriorly; lateral thelycal plates with raised lateral ridges, each with a posterior inwardly curved triangular plate ..... ***Metapenaeus ensis***

Distomedian petasmal projections directed anterolaterally; anterior thelycal plate tongue-like 9

9. Lateral thelycal plates with salient and parallel ear-shaped lateral ridges; distomedian petasmal projections hood-like ..... ***Metapenaeus monoceros***

Lateral thelycal plates without lateral raised ridges; distomedian petasmal projections not hood-like 10

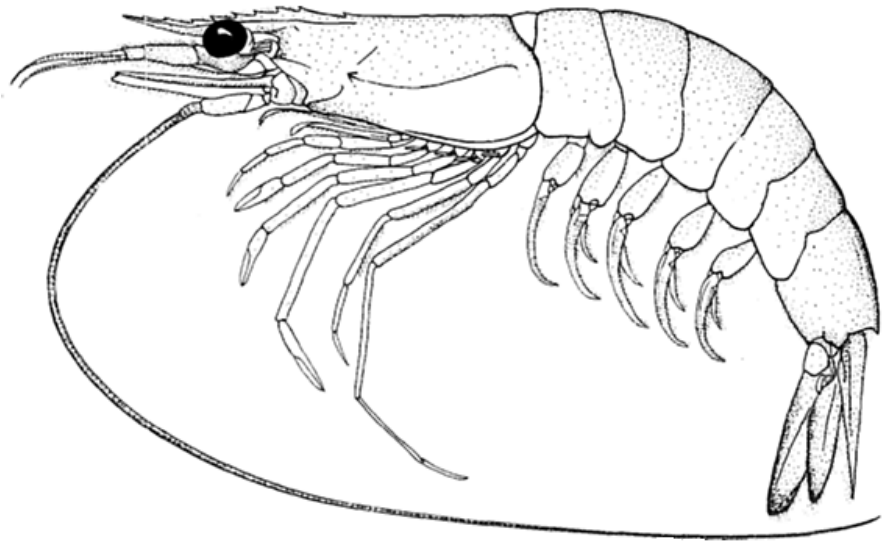
10. Posterior extension of the anterior median thelycal plate bound laterally by an oval flat plate on each side; distomedian petasmal projections overlying lateral projections and distally trilobed ..... ***Metapenaeus alcocki***

Posterior extension of the anterior median thelycal plate not bound laterally by oval plate on either side; distomedian petasmal projections not overlying lateral projection ..... ***Metapenaeus kutchensis***

11. Branchiocardiac carina feeble or ill-defined, anterior end not exceeding posterior 1/3 of carapace; distal margin of anterior thelycal plate convex to indistinctly triangular; petasma with laminose and strongly diverging distomedian projections ..... ***Metapenaeus moyebi***

Branchiocardiac carina distinct, extending from posterior margin of carapace almost to hepatic spine; anterior thelycal plate longitudinally grooved, wider posteriorly than anteriorly; distomedian petasmal projections crescent-shaped ..... ***Metapenaeus affinis***

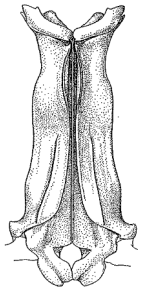
Metapenaeus affinis (H. Milne Edwards, 1837)
(Jinga Shrimp)



Diagnostic features: Almost entire body pubescent, rarely partly or completely hairless; rostrum straight; in adult males, merus of fifth pereiopod bears a proximal notch, followed by a twisted, keeled tubercle; distomedian projection of petasma crescent shaped; anterior plate of thelycum long and deeply grooved; lateral plates with strongly raised lateral margins forming 2 longitudinal crests

Colour: body pale greenish to pale pinkish or pink-brownish with green or red-brown specks.

Distribution and fishery: Throughout west and east coasts of India and Andaman waters; major landing from Maharashtra and Kerala; depth 5-90 m; maximum size (TL) in females, 18.6 cm; males, 14.6 cm.

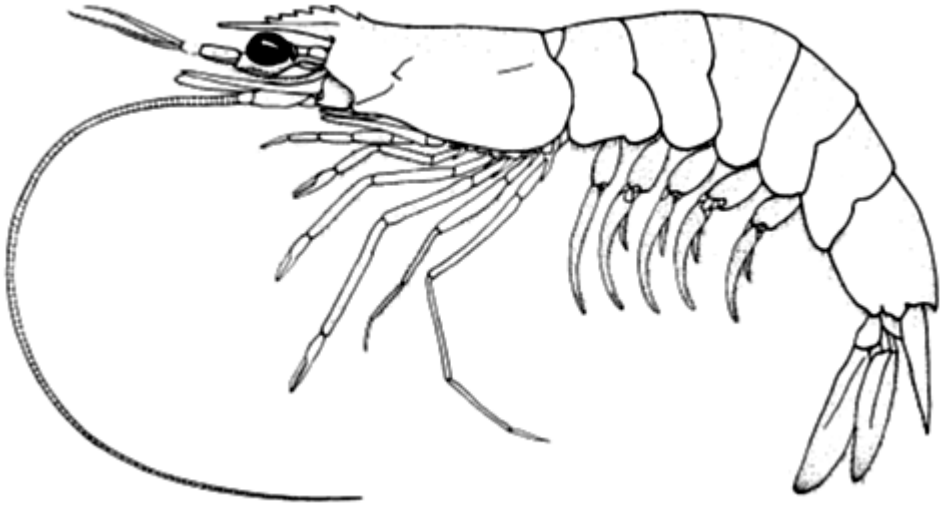


Petasma

Thelycum

Merus of fifth walking leg

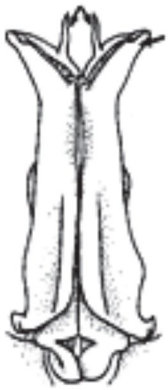
Metapenaeus brevicornis (H. Milne Edwards, 1837)
(Yellow Shrimp)



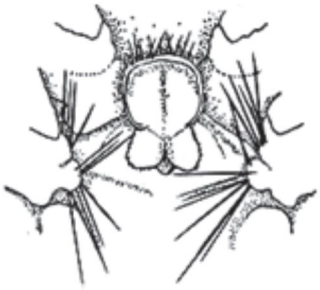
Diagnostic features: rostral crest high; in adult males, merus of fifth pereiopod with a proximal notch, followed by a keel-shaped tubercle; disto-median projection of petasma with a long and slender apical filament; anterior plate of thelycum large square and grooved; lateral plates boomerang shaped (often continuous to posterior sternite) and enclosing 2 pear-shaped plates.

Colour: body yellow to white, sometimes greyish, with distinct dark green to bluish-brown specks; pleopods yellowish to pinkish; distal part of uropods brown to rusty red sometimes only the tips are coloured.

Distribution and fishery: Northwest and Northeast coasts of India & Andaman waters; supports fishery in the "bheries"of West Bengal; depth 4-90 m; maximum size (TL) in females, 13.5 cm; males, 10.3 cm.



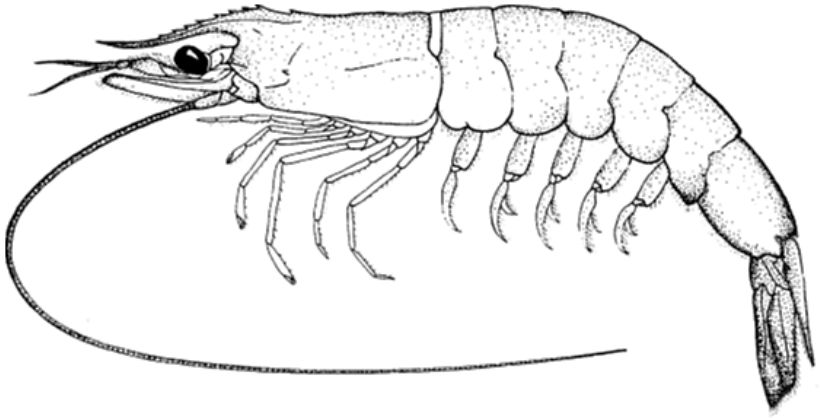
Petasma



Thelycum

Merus of fifth walking leg

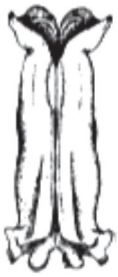
Metapenaeus dobsoni (Miers, 1878)
(Kadal Shrimp)



Diagnostic features: almost entire body pubescent, rostrum long;in adult males, basial spine of third pereiopod is extremely long and barbed, and merus of fifth pereiopod with 1 or 2 large, triangular teeth; each distomedian projection of petasma with a short filament on ventral surface and another on dorsal surface; thelycum with a long grooved tongue-like anterior plate partially en-sheathed in a horse-shoe-like process formed by the lateral plates.

Colour: body pale yellow to brownish with red, brownish or greenish specks; antennae red; pereiopods and pleopods white to pinkish; uropods grey-brownish, darker distally.

Distribution and fishery: South of Goa on the west coast through southeast coast to south of Visakhapatnam on the east coast; depth 1-40 m; maximum size (TL) in females, 13 cm; males, 12.5 cm.

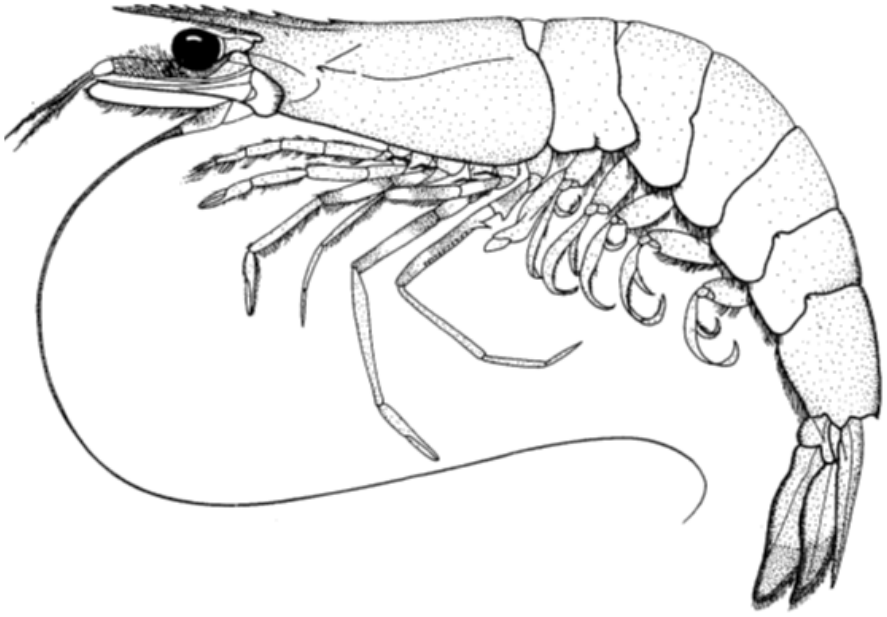


Petasma

Thelycum

Merus of fifth walking leg

Metapenaeus ensis (De Haan, 1844)
(Greasy Back Shrimp)

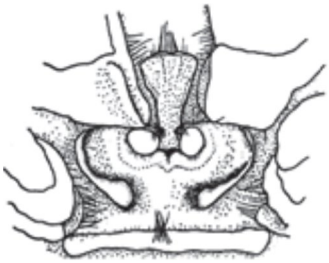


Diagnostic features: rostrum reaches, or nearly to tip of antennular peduncle; in adult males, merus of fifth pereiopod with a proximal notch; distomedian projections of petasma convoluted, greatly swollen and directed forward, triangular in shape, concealing almost entirely distolateral projections in ventral view; anterior plate of thelycum lone and deeply grooved.

Colour: body pink to greenish-grey.

Distribution and fishery: Andhra Pradesh, Orissa, West Bengal and Andaman & Nicobar islands; minor fishery at upper east coast and Paradeep; depth 18-64 m; maximum size (TL) in females, 18.9 cm; males, 15.4 cm.

Petasma



Thelycum

Merus of fifth walking leg

Metapenaeus kutchensis (George, George and Rao,1963)
(Ginger Shrimp)

Diagnostic features: rostrum slightly curved with upturned tip, extends beyond the antennular peduncle in females, slightly falling short of in males; the disto-median lobes of the petasma bifid and transversely placed; the thelycum with an anterior median plate extending beyond and lying in level with the coxal projections; the posterior lateral plates larger, rounded and swollen.

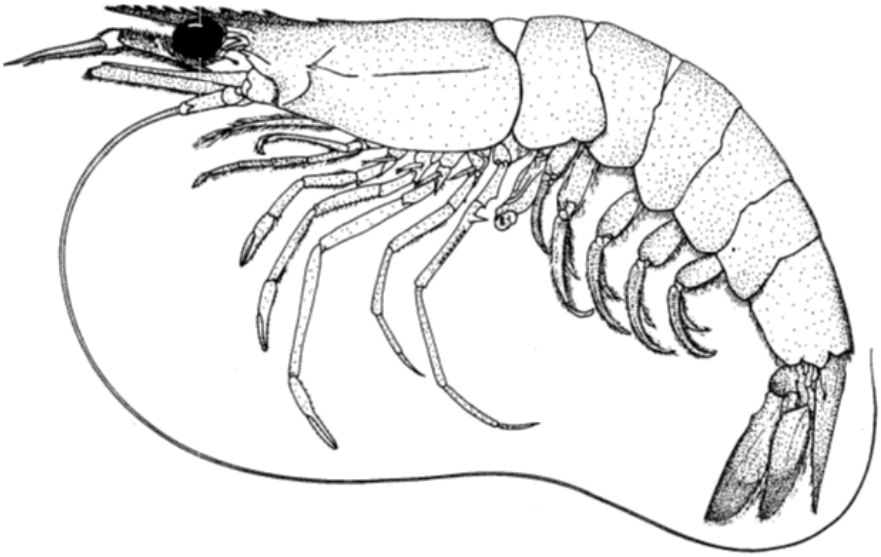
Colour: body reddish orange in the shade of carrot in fresh condition; pubescence present in shallow grooves and in irregular patches on the carapace and abdomen.

Distribution and fishery: North-west coast of India and minor fishery at Mumbai, Veraval and Kandla; depth 3-12 m; maximum size (TL) in females, 17.5 cm; males 15 cm.

Petasma

Thelycum

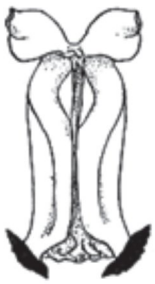
Metapenaeus monoceros (Fabricius, 1798)
(Speckled Shrimp)



Diagnostic features: Body covered with stiff, very short tomentum; rostrum nearly straight, uptilted; 5th pereiopod of adult male with proximal end of merus notched on outer side, notch deepened anteriorly by a large hood-like spine, and posteriorly by subterminal lobule; distomedian petasmal projections hood-like, lateral thelycal plates with salient end parallel ear-shaped lateral ridges.

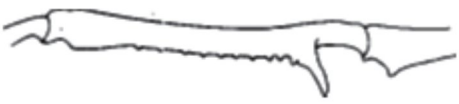
Colour: body pink, green-greyish or whitish with brown specks; distal parts of uropods purple blue.

Distribution and fishery: All along the west and east coasts of India; depth upto 60 m; maximum size (TL) in females 22 cm; males, 19.5 cm.



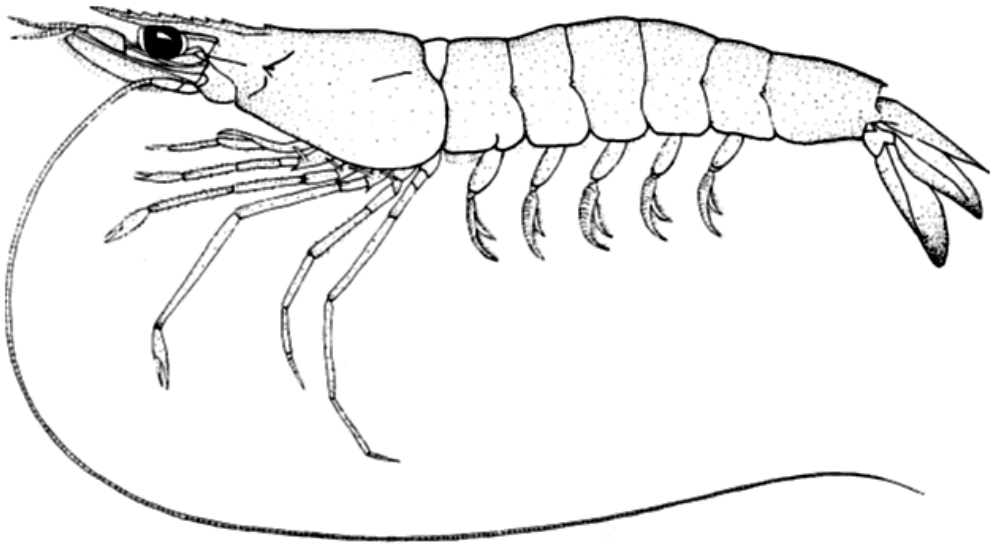
Petasma

Thelycum



Merus of fifth walking leg

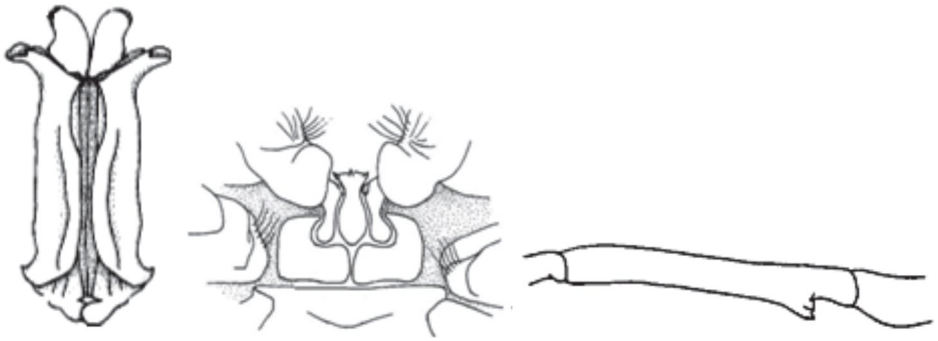
Metapenaeus moyebi (Kishinouye, 1896)
(Moyebi Shrimp)



Diagnostic features: pubescence covers almost entire body or confined to dorsal carapace and a few abdominal patches; rostrum nearly straight, slightly uptilted; in adult males, merus of fifth pereiopod with a proximal notch followed by a twisted keeled tubercle; anterior plate of thelycum flask-shaped and lateral plates kidney-shaped.

Colour: body semi-translucent pale green with brownish-green specks; pereiopods and pleopods of same colour as body; distal part of uropods green.

Distribution and fishery: South and middle west coast, southeast coast and Andaman Islands; depth 5.5-45 m; maximum size, (TL) in females, 12.6 cm; males, 10 cm.



Petasma **Thelycum** **Merus of fifth walking leg**

Metapenaeopsis Bouvier, 1905

Species under the genera *Metapenaeopsis* form minor fishery along the southeast and Northwest coast of India. *Metapenaeopsis barbata* is a small penaeid species with a hard integument. It can be found at 20-70 m in depth on rocky, sandy, and muddy bottoms (Holthuis 1980). The shrimp has an offshore planktonic larval phase, estuarine post-larval and juvenile phases, and offshore adult and spawning phases (Dall et al., 1990). *M. stridulans* forms a minor fishery along the Northwest and Southeast coasts and *M. toloensis* along the Southeast coast.

Diagnostic features: Rostrum with teeth only on the dorsal side; carapace without longitudinal or transverse sutures; antennal, pterygostomian and hepatic spine well developed; orbital spine small; telson with a pair of fixed lateral sub-apical spines and with several pairs of movable lateral relatively large spines anterior to fixed pair; antennular flagella variable in length usually shorter and sometimes longer than carapace; basial spines on third maxilliped and first and second pereiopod present, lacking on third; petasma asymmetrical, divided transversely at about mid length, distal half complex and divided into various elements and projections; proximal half with dorso-lateral lobules produced proximally into spur-like projections, left one oblique directed medially and longer than right; thelycum consist of well developed median plate on the 13$_{th}$ sternite.

Key to *Metapenaeopsis* spp.

1. A distal fixed pair of spines on the telson and 1-3 pairs of mobile spines 1
Third maxilliped and second pereiopod with basial spine; petasma asymmetrical 2
2. Stridulating organ present on posterior branchiostegite 3
Stridulating organ absent from posterior branchiostegite 7
3. Stridulating ridges usually 4-6 and stridulating organ almost straight 4
Dorsal carina of 3rd pleonic somite sulcate; anterior edge of thelycal plate entire, left petasmal lobe sharply pointed and triangular ..... ***Metapenaeopsis stridulans***
Stridulating ridges more than 7 and stridulating ridges arranged on a curve 5
5 Pterygostomian spine moderately to well developed 6
Pterygostomian spine reduced or small ..... *Metapenaeopsis palmensis*
6. Dorsal carina of 3rd pleonic somite flat or hardly sulcate; thelycal plate about as wide as long; left petasmal lobe with 7-12 sharp projections at tip, arranged in a semicircular manner; inner intermediate strip much longer than outer; stridulating ridges usually 16-27 ..... ***Metapenaeopsis barbata***

Dorsal carina of 3rd pleonic somite with deep median groove; left petasmal distoventral projection broadly swollen and with distomedian and distolateral processes; stridulating organ with 14-22 small ridges in a curved band ..... ***Metapenaeopsis toloensis***

7. Hepatic sulcus descending almost vertically to ventral edge of branchiostegite ..... *Metapenaeopsis commensais*

Hepatic sulcus absent or not reaching to ventral edge of branchiostegite 8

8. A pair of tooth-like platelets immediately posterior to thelycal plate 9

No tooth-like platelets immediately posterior to thelycal plate 10

9. A distinct groove present on 3rd abdominal carina 10

3rd abdominal carina without groove ..... *Metapenaeopsis hilarula*

10. Anterior edge of anterior sternal plate between 5th pair of legs in female almost straight with flat triangular spine at anterolateral corners; distomedian lobule of petasma distally broad ..... *Metapenaeopsis gallensis*

Anterior edge of anterior sternal plate between 5th pair of legs in female with 4 rounded teeth, 2 median ones being incurved; distomedian lobule of petasma small ..... *Metapenaeopsis mogiensis*

11. Rostrum as long as or longer than antennular peduncle 12

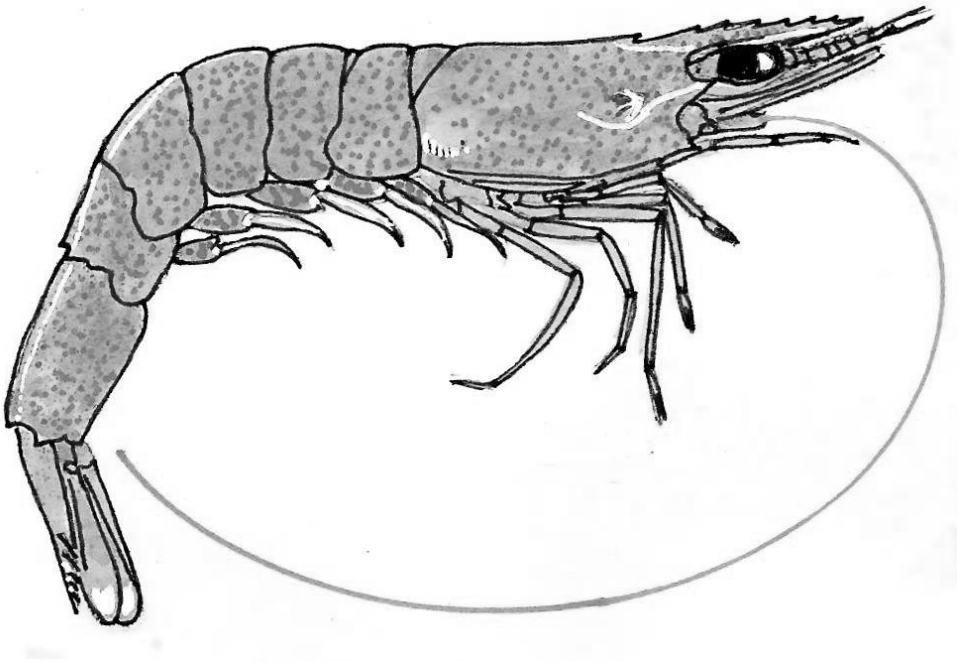
Rostrum not reaching tip of antennular peduncle; centre of the thelycal plate non-sulcate ..... *Metapenaeopsis coniger*

12. Posterior extension of thelycal plate with indistinct median sulcus and angular posterolateral corners ..... ***Metapenaeopsis andamanensis***

Posterior extension of thelycal plate with distinct medium sulcus and evenly rounded posterolateral corners ..... *Metapenaeopsis philippii*

13. Rostrum forming a crest and epigastric tooth situated a little posterior to the middle of carapace; scaphocerite twice as long as wide ..... *Metapenaeopsis lamellate*

Metapenaeopsis barbata (De Haan, 1844)
(Whiskered Velvet Shrimp)

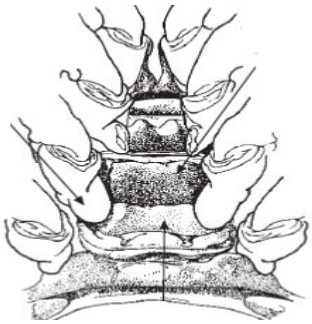


Diagnostic features: Rostrum directed slightly upward, almost straight reaches tip of antennular peduncle; 16-27 stridulating organ present on postero-lateral carapace; dorsal crest of third abdominal segment flat or very slightly concave; left distoventral projection of petasma long; thelycal plate broadly subquadrate.

Colour: body whitish, mottled with irregular red blotches, antennal flagella indistinctly crossed with red and white bands; uropods reddish with distal and basal parts pale yellowish.

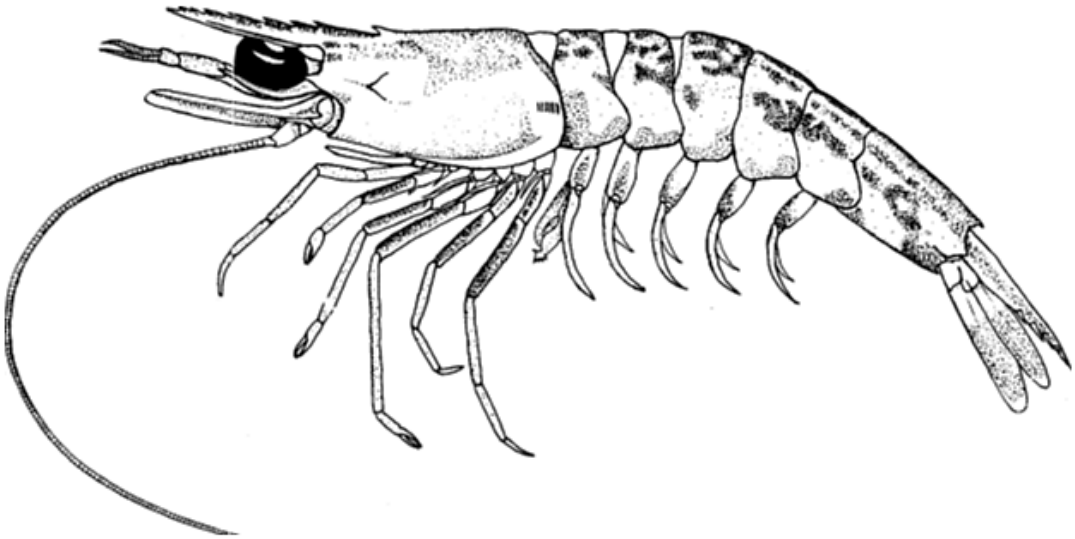
Distribution and fishery: Chennai, Visakhapatnam and Kakinada; depth 20-70 m; maximum size (TL) in females, 10.5 cm; males, 9.5 cm.

Petasma



Thelycum

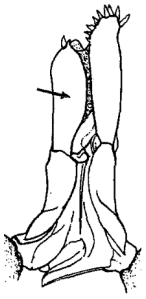
Metapenaeopsis stridulans (Alcock, 1905)
(Fiddler Shrimp)



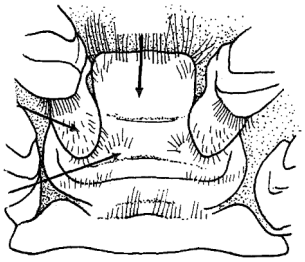
Diagnostic features: rostrum straight; 5-7 strong stridulating ridges in a wide straight band on the posterior part of carapace; mid-dorsal crest on the third abdominal segment with a broad groove; left lobe of petasma sharply pointed and triangular; the intermediate plate of the thelycum with more prominent lateral elevations, posterior transverse groove also deeper and well marked compared to *M. barbata.*

Colour: carapace, abdomen and telson with red to dark brown mottling; pereiopods pinkish to dark red with white except on their proximal parts.

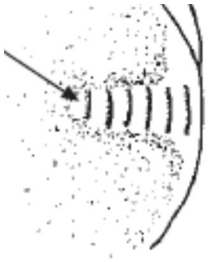
Distribution and fishery: Maharashtra, Andhra Pradesh, Tamil Nadu and Andamans; depth 90 m; maximum size (TL) in females, 12 cm; males, 11.5cm.



Petasma

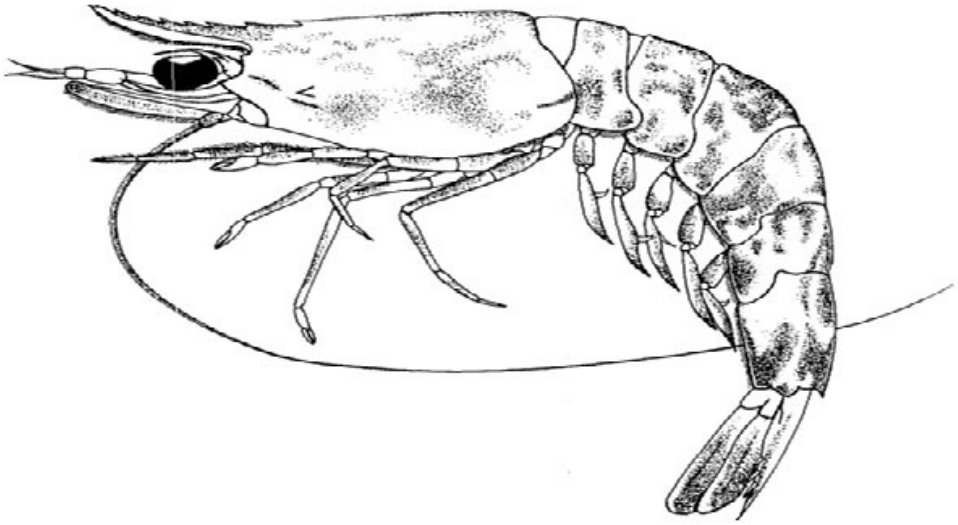


Thelycum



Stridulating organ

Metapenaeopsis toloensis (Hall, 1962)
(Tolo Velvet Shrimp)



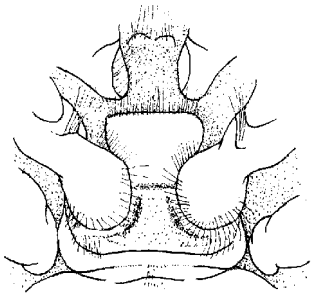
Diagnostic features: rostrum moderately upcurved reaching end of second antennular segment or little beyond; stridulating ridges consists of 14-22 small ridges in a curved band; dorsal crest of third abdominal segment with a deep median groove; right disto-ventral projection of petasma short and left distoventral projection broadly swollen;thelycal plate subquadrate with rounded corners;

Colour: body brownish with dark red to dark brown mottling; pereiopods pinkish to redbrown; uropods dark red to brown except for their proximal

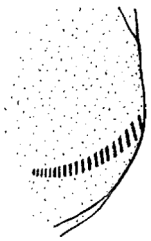
parts.

Distribution and fishery: few locations along east coast (Chennai, Kakinada); depth 60-70 m; maximum size (TL) recorded is 10 cm.

Petasma



Thelycum



Stridulating organ

References

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