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Penaeid prawns (Crustacea: Decapoda: Penaeoidea: Penaeidae) found in west coast of India



Dr. Angsuman Chanda
Assistant Professor,
PG Dept. of Zoology,
Raja N. L. Khan Women's College,
Midnapore, Paschim Medinipore-721102,
West Bengal, India. e-mail: angsumanchanda@yahoo.in

TABLE OF CONTENTS

	Page No.
Introduction.....	1
Chapter 1	
Materials & methods	4
Morphology and terminology	4
A. Rostrum	5
B. Carapace	6
C. Abdomen	10
D. Telson	10
E. Appendages	10
a. Cephalic	10
b. Thoracic	11
c. Abdominal	13
F. Exoskeletal ring of an abdominal somite	15
G. Eye	15
H. Secondary sexual structure	15
a. Petasma	15
b. Thelycum	17
c. Appendix masculine	18
Chapter 2	
Systematic Account	19
A. Superfamily Penaeoidea Rafinesque-Schmaltz, 1815.....	20
a. Key to the Family <i>under</i> Superfamily Penaeoidea Rafinesque-Schmaltz, 1815	21
b. Key to the Genera	24
Genus <i>Alcockpenaeopsis</i> Chanda,2016.....	27
1. <i>Alcockpenaeopsis uncta</i> (Alcock, 1905)	28
Genus <i>Atypopenaeus</i> Alcock, 1905	30
2. <i>Atypopenaeus compressipes</i> (Henderson, 1893)	33
3. <i>Atypopenaeus stenodactylus</i> (Stimpson, 1860)	35
Genus <i>Batepenaeopsis</i> Chanda,2016	36
4. <i>Batepenaeopsis acclivirostris</i> Alcock, 1905	39
Genus <i>Funchalia</i> Johnson, 1867	40
5. <i>Funchalia woodwardi</i> Johnson, 1867	42
Genus <i>Helleropenaeopsis</i> Chanda,2016	43
6. <i>Helleropenaeopsis hardwickii</i> (Miers, 1878)	45
7. <i>Helleropenaeopsis sculptilis</i> (Heller, 1862)	47
Genus <i>Kishinouyepeneaeopsis</i> Chanda,2016	49
8. <i>Kishinouyepeneaeopsis cornuta</i> (Kishinouye, 1900)	51
9. <i>Kishinouyepeneaeopsis maxillipedo</i> (Alcock, 1906)	53
Genus <i>Megokris</i> Pérez Farfante & Kensley, 1997	54
10. <i>Megokris sedili</i> (Hall, 1961)	57

Genus <i>Metapeneaeopsis</i> Bouvier, 1905	58
11. <i>Metapeneaeopsis andamanensis</i> (Wood-Mason, 1891)	63
12. <i>Metapeneaeopsis commensalis</i> (Borradaile, 1898)	65
13. <i>Metapeneaeopsis coniger</i> (Wood-Mason, 1891)	67
14. <i>Metapeneaeopsis hilarula</i> (De Man, 1911)	68
15. <i>Metapeneaeopsis mogiensis</i> (Rathbun, 1902)	70
16. <i>Metapeneaeopsis philippii</i> (Bate, 1881)	72
17. <i>Metapeneaeopsis stridulans</i> Alcock, 1905	74
Genus <i>Metapeneaeus</i> Wood-mason, 1891.....	75
18. <i>Metapeneaeus affinis</i> (H. Milne Edwards, 1837)	82
19. <i>Metapeneaeus alcocki</i> George and Rao, 1966	84
20. <i>Metapeneaeus brevicornis</i> (Milne Edwards, 1837)	86
21. <i>Metapeneaeus dobsoni</i> (Miers, 1878)	88
22. <i>Metapeneaeus ensis</i> (De Haan, 1850)	91
23. <i>Metapeneaeus kutchensis</i> George, George and Rao, 1963	93
24. <i>Metapeneaeus lysanasa</i> (De Man, 1888)	95
25. <i>Metapeneaeus monoceros</i> (Fabricius, 1798)	97
26. <i>Metapeneaeus moyebi</i> (Kishinouye, 1896)	101
27. <i>Metapeneaeus stebbingi</i> Nobili, 1904	103
Genus <i>Miyadiella</i> Kubo, 1949	105
28. <i>Miyadiella podophthalmus</i> (Stimpsons, 1860)	107
Genus <i>Parapeneaeopsis</i> Alcock,1901	109
29. <i>Parapeneaeopsis stylifera coromandelica</i> Alcock, 1906	111
30. <i>Parapeneaeopsis stylifera stylifera</i> (Milne Edwards, 1837)	114
31. <i>Parapeneaeopsis stylifera cochinchinensis</i> George, 1975	116
Genus <i>Parapeneaeus</i> Smith, 1885	116
32. <i>Parapeneaeus investigatoris</i> Alcock and Anderson, 1899	119
33. <i>Parapeneaeus longipes</i> Alcock, 1905	120
34. <i>Parapeneaeus sextuberculatus</i> Kubo, 1949	122
Genus <i>Penaeopsis</i> Bate, 1881	123
35. <i>Penaeopsis jerryi</i> Pérez Farfante, 1979	126
36. <i>Penaeopsis rectacuta</i> (Bate, 1881)	128
Genus <i>Penaeus</i> Fabricius, 1798	130
37. <i>Penaeus monodon</i> Fabricius, 1798	135
38. <i>Penaeus semisulcatus</i> De Haan, 1844	139
39. <i>Penaeus indicus</i> H. Milne Edwards, 1837	142
40. <i>Penaeus konkani</i> (Chanda & Bhattacharya, 2003)	145
41. <i>Penaeus merguensis</i> De Man, 1888	150
42. <i>Penaeus penicillatus</i> Alcock, 1905	152
43. <i>Penaeus japonicus</i> Bate, 1888	154
44. <i>Penaeus canaliculatus</i> Olivier, 1811	157
45. <i>Penaeus latisulcatus</i> Kishinouye, 1900	160
46. <i>Penaeus marginatus</i> Randall, 1840	162
Genus <i>Trachypeneaeopsis</i> Burkenroad, 1934	164

47. <i>Trachypenaeopsis minicoyensis</i> Thomas, 1972	167
Genus <i>Trachysalambria</i> Burkenroad, 1934	168
48. <i>Trachysalambria curvirostris</i> (Stimpson, 1860)	171
c. Conclusion.....	173
d. Acknowledgements.....	174
Reference.....	174

Resumes

Present work is a comprehensive up to date study on the penaeid prawn found in west coast of India. Family *Penaeidae* comprises 20 genera and 79 species from Indian water and during the present study west coast represents 16 genera and 48 species. The genus *Penaeus*, *Metapenaeus* and *Metapenaeopsis* comprises the most commercially important species among the penaeid prawn found in west coast of Indian water. In the present book all the genus and species are diagnosed and a suitable key is provided for identification of each genus and species under the family *Penaeoidea*. Fishery importance of each species is an added character of this book. Last of all a comprehensive list of reference has been provided for each citation in the text.

*This book is dedicated to my
Departmental
Colleagues*

Penaeid prawns (Crustacea: Decapoda: Penaeoidea: Penaeidae) found in west coast of India

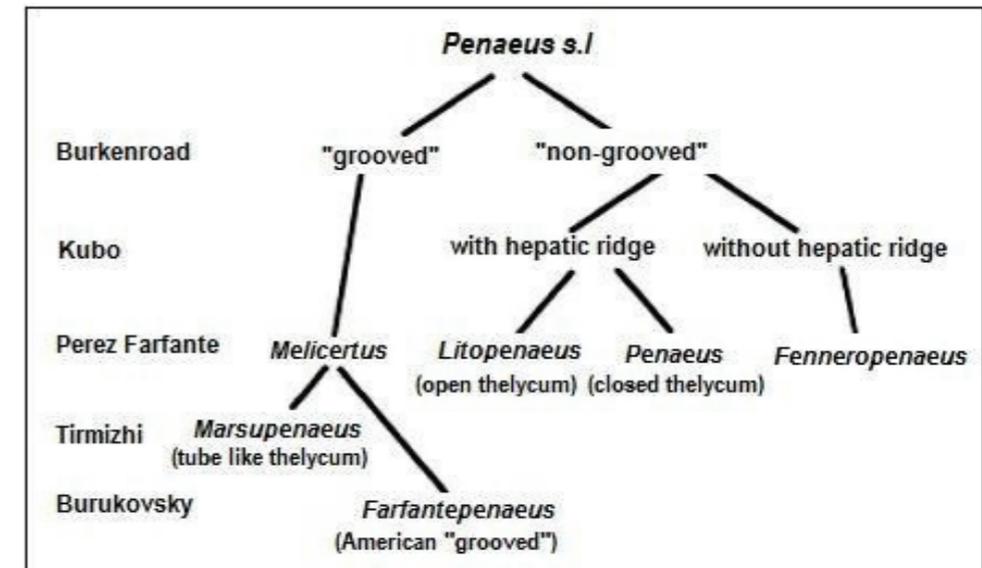
Dr. Angsuman Chanda
Asst. Professor of Zoology, PG Dept. of Zoology, Raja N. L. Khan Women's College,
Midnapore, Paschim Medinipore-721102, West Bengal, India. e-mail:
angsumanchanda@yahoo.in

Introduction

Shrimps and Prawns of various kinds have certainly been a source of protein for human consumptions from very early times. Within historical times reference is made to prawn in ancient Chinese and Japanese literature (Pérez Farfante & Kensley, 1997). Usage of the term 'Prawn' and 'Shrimp' are somewhat confusing. In some western literature the term 'Shrimp' is applied for *Penaeoidea* and *Sergestoidea*, but in the east these are called 'Prawn'. Holthuis (1980) discussed the contradiction but did not arrive at any conclusion. In the Prawn Symposium of the Indo-Pacific Fisheries Council held at Tokyo in 1955 it was decided that the word 'Prawn' should be applied to the Penaeids, Pandalids and Palemonids while 'Shrimp' to the smaller species belonging to the other families (Kurian & Sebastian, 1993). As such in the present study the term 'Prawn' is used for all the species belonging to family Penaeidae. Among a variety of edible decapod crustaceans, prawns contribute largely to the fishery wealth of many nations. Exploitation of prawn resource from the seas around each country is playing increasingly significant role in furthering their national economy. In recent years, in spite of some ecological hazards, the demand for prawns and prawn products has increased so much that every country is making efforts to utilize hitherto unknown but usable stocks and expansion of prawn fisheries and industries near coast line is rightly being given the maximum encouragement in the development programme of each nation.

After the work of Burkenroad (1934) and Kubo (1949), the genus *Penaeus* has been revised in several times by Perez Farfante (1959), Tirmizi (1971), Burukovsky(1972) and Perez

Farfante & Kensley (1997) and classified into six established genera. The chronological history of the development of six genera has been given bellow.



Chronological history of the development of six genera (After Lavery et al., 2004)

Flegel (2007,2008) strongly questioned the six genera classification of the genus *Penaeus* s.l. The taxonomic revision of the prawns formerly classified in *Penaeus* s.l. into six genera is still widely debated. Although these prawns can be easily separated into several groups morphologically, whether these subdivisions are truly monophyletic and warrant a generic rank continues to be hotly debated among taxonomists (Ma et al., 2011). While some taxonomists have accepted the revision, others are questioning the necessity of such a classification. Ma et al. (2011) refuted the six genera classification of *Penaeus* s.l. on the basis of examination of mitochondrial and nuclear genes and advocated the restoration of the old *Penaeus* genus (= *Penaeus* s.l.) as the classification scheme is in agreement with both morphological and the molecular data. Therefore, present study follows the old classification

Features of systematic importance, the rostrum, the carapace with all its characters, the carination, sutures, length of legs, abdominal somites with carination and cicatrix, the telson, antennules, antennae, gills and secondary sexual characters e.g. Male petasma, appendix masculine and female thelycum etc. were diagrammed and defined as follows.

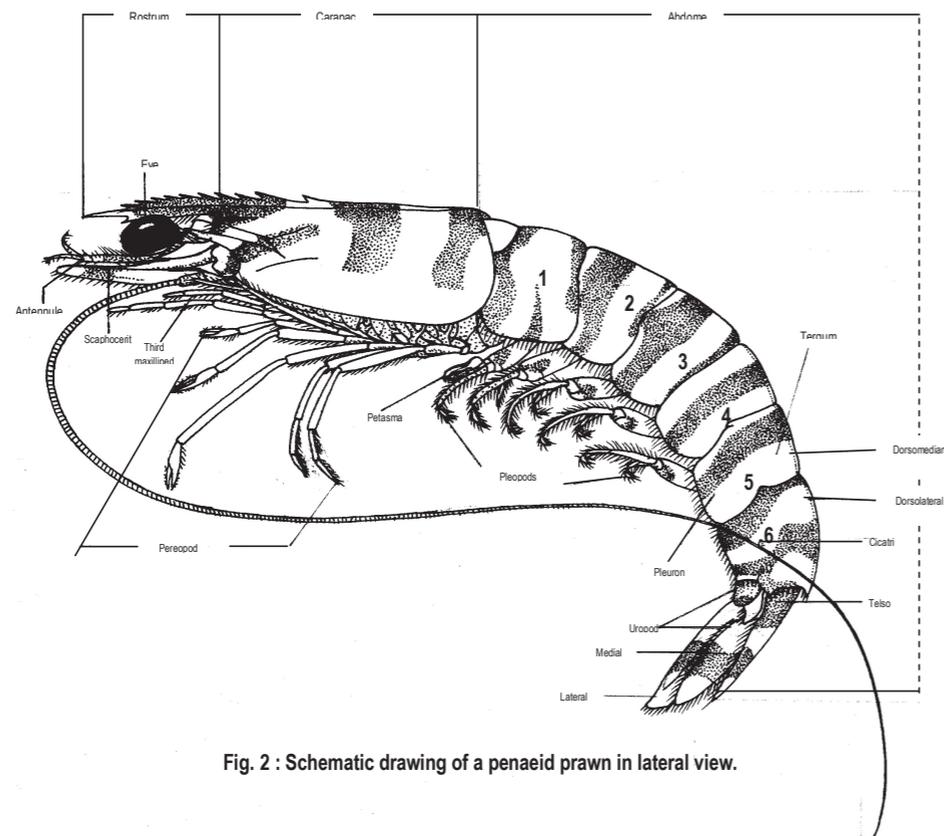


Fig. 2 : Schematic drawing of a penaeid prawn in lateral view.

A. ROSTRUM (Fig. 2):

Anteromedian projection of the carapace between two eyes is known as rostrum.

a. Regions of carapace:

1. **Frontal region:** Anterior area of the carapace lying between the orbits and bounded posteriorly by the gastric region.
2. **Orbital region:** Paired areas on the carapace just posterior to the eyes.

3. **Gastric region:** Principal median area of the carapace bounded anteriorly by the frontal and orbital regions and posteriorly by the cardiac region and laterally by the branchial and hepatic region.
4. **Antennal region:** Area on the lateral face of the carapace posterior to and encompassing the antennal spine (fig. 3:5A).
5. **Cardiac region:** Area on the middorsal portion of the carapace posterior to gastric region and superior to hepatic and frontal to branchiocardiac region (Fig. 3:A1)
6. **Hepatic region:** Paired antero lateral areas of the carapace bounded anteriorly by the antennal region, posteriorly by the branchial region and medially by the gastric region.
7. **Pterygostomian region:** Anteroventral area of the carapace. (Fig. 3:A26).
8. **Branchio – cardiac region:** Post dorsal area of carapace bounded anteriorly by cardiac region and ventrally by branchial region.

B. CARAPACE (Fig.2):

a. Spine on Carapace:

1. **Orbital spine:** Spine projecting from the ventral extremity of the orbital margin (Fig. 3:A16).
2. **Post orbital spine:** Spine situated near the orbital margin posterior to the antennal spine (Fig. 3:A17).
3. **Antennal spine:** Spine situated on the anterior margin of the carapace just ventral to the orbital margin (Fig. 3:A18).
4. **Parapenaeid spine:** Spine projecting from the distomedial margin of the first antennular segment (fig. 4:18).
5. **Pterygostomian spine:** Marginal spine arising from the anteroventral angle or border of the carapace (fig. 3A23).

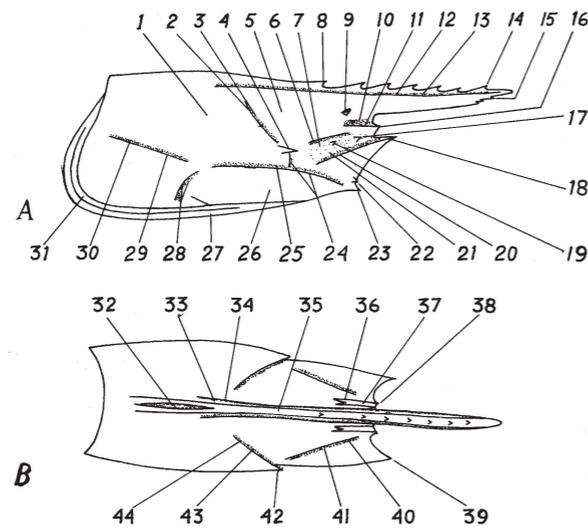


Fig. 3 : Features of Carapace.

A. Lateral View : (1) Cardiac region; (2) Cervical carina; (3) Cervical sulcus; (4) Hepatic spine, (5) Gastric region, (6) Gastroorbital carina; (7) Orbits; (8) Epigastric tooth; (9) Postocular sulcus; (10) Gastrofrontal sulcus; (11) Gastrofrontal tooth; (12) Adrostral carina; (13) Adrostral sulcus; (14) Last rostral tooth; (15) Last ventral rostral tooth; (16) Orbital spine; (17) Postorbital spine; (18) Antennal spine; (19) Postantennal spine; (20) Antennal carina; (21) Orbits; (22) Branchiostegal spine; (23) Pterygostomial spine; (24) Hepatic carina; (25) Hepatic sulcus; (26) Pterygostomial region; (27) Marginal region; (28) Inferior carina and sulcus; (29) Branchiocardiac carina; (30) Branchiocardiac sulcus. (31) Pterygostomial sulcus.

B. Dorsal View : (32) Postrostral or median sulcus; (33) Adrostral sulcus; (34) Adrostral carina; (35) Postrostral carina; (36) Gastrofrontal carina; (37) Gastrofrontal sulcus; (38) Orbital spine; (39) Antennal spine; (40) Gastroorbital carina; (41) Orbits; (42) Hepatic spine; (43) Cervical sulcus; (44) Cervical carina.

6. Branchiostegal spine: Short spine on or near the anterior margin of the carapace ventral to the antennal spine and dorsal to the anteroventral angle of the carapace (Fig.3:A22).

7. Hepatic spine: Lateral spine situated near the anterior margin of the hepatic region of the carapace (Fig. 3:A4).

b. Tubercle:

Any blunt pointed ridge on carapace or on any part of body.

c. Carination on carapace:

Any ridge or keel on the exoskeleton is known as carina.

- 1. Adrostral carina :** Ridge flanking the rostrum, sometimes nearly reaching the posterior margin of carapace (Fig. 3:A12).
- 2. Postrostral carina:** Dorsomedian ridge extending posteriorly from the base of the rostrum, sometimes nearly reaching the posterior margin of the carapace (Fig. 3:B35).
- 3. Gastrofrontal carina:** Short longitudinal ridge extending posteriorly from the ventral extremity of the orbital margin (Fig. 3: B36).
- 4. Antennal carina:** Ridge extending posteriorly along dorsal extremity of antennal region, often continuous with antennal spine (Fig. 3: A20).
Gastroorbital carina: Short longitudinal ridge extending anterodorsally from the cervical sulcus towards the orbital region (fig.3: A20).
- 5. Gastroorbital carina:** Short longitudinal ridge extending anterodorsally from the cervical sulcus towards the orbital region (Fig. 3:B40).
- 6. Hepatic carina:** Longitudinal (often obliquely) disposed ridge of variable length lying ventral to the hepatic region, sometimes extending almost to the anterior margin of the carapace (Fig. 3:A2A).
- 7. Cervical carina:** Medially transverse and laterally oblique ridge extending from the anterior limit of the hepatic region towards mid dorsal line of the carapace (Fig.3:A2).
- 8. Branchiocardiac carina:** Ridge extending along posterodorsal limit of branchiocardiac region (Fig. 3:A29).
- 9. Submarginal carina:** An almost longitudinal ridge extending between ridge and membranous part of the branchiocardiac region.

d. Sulcus on carapace:

Any groove on carapace or any part on exoskeleton is termed sulcus.

1. **Adrostral sulcus:** Groove flanking the rostrum medial to the adrostral carina, sometimes nearly reaching the posterior margin of carapace (Fig. 3:A13).
 2. **Postacular sulcus:** A short oblique groove on frontal region (Fig. 3:A9).
 3. **Gastrofrontal sulcus:** Short longitudinal depression accompanying the gastrofrontal carina dorsally (Fig. 3:B37).
 4. **Orbitoantennal sulcus:** Longitudinal or oblique depression between the orbital margin and the hepatic spine (Fig.3A7).
 5. **Hepatic sulcus:** Groove ventral to the hepatic region extending posteriorly, sometimes from near the anterior margin of the carapace (Fig.3:A25).
 6. **Cervical sulcus:** Medially transverse and laterally oblique groove of the carapace extending from near the anterior limit of the hepatic region towards the midline of the carapace (Fig.3:A3).
 7. **Branchiocardiac sulcus:** Groove extending along dorsal limit of branchiocardiac region, running parallel to branchiocardiac carina (Fig.3:A30).
 8. **Postrostral dorsomedium sulcus:** Dorso-medium groove on the postrostral carina of the carapace (Fig. 3:B32).
- e. **Stridulating organ:** Short transverse ridge lined longitudinally or curved upward at the posterolateral part of the carapace.
- f. **Suture on carapace:** Weakly sclerotized line or seam on the carapace.
1. **Longitudinal sutures:** Fine longitudinal line extending posteriorly just above the base of the antennular spine.
 2. **Transverse suture:** Fine short vertical line extending dorsally from the ventral margin of the carapace.

C. ABDOMEN (Fig.2):

The part of the body posterior to the cephalothorax, consisting of six body segments or somites plus the telson.

1. **Dorsomedium carina:** Ridge extending along the middorsal line of the abdominal somites (Fig. 2).
2. **Dorsomedian sulcus:** Median groove on the dorsomedian carina of the abdominal somites.
3. **Dorsolateral sulcus:** Longitudinal groove sometimes present close to the dorsomedian line of the sixth abdominal somite. (Fig. 2).
4. **Cicatrix:** Longitudinally disposed ridge often present on lateral part of sixth or sometimes on fifth abdominal somite (Fig.2).

D. TELSON (Fig.4:N,O):

Terminal unit of the abdomen bearing the anus is known as telson.

1. **Fixed spine:** Spine fixed on distolateral margin of telson (Fig. 4:N).
2. **Movable spine:** Spine present on distolateral margin of telson capable of movement (Fig.4:O).
3. **Spinules:** Minute setae present on dorsolateral side of telson.

E. APPENDAGES (Fig.4):

There are nineteen pairs of appendages on the entire body of penaeid prawn: five cephalic, eight thoracic and six abdominal.

a. Cephalic:

1. **Antennule:** More medial of the two paired, usually flagellate appendages projecting from the anterior end of the cephalothorax.
2. **Antennular peduncle:** Three basal segments of the antennules, from which the flagella arise distally.

3. **Antennular flagellum:** Multiarticulate paired filaments (sometimes flattened and lamellate) of the antennules.
4. **Prosariema:** Variable in shape, thin, sometimes scalelike process arising from the medial base of the first antennular segment and extending distally.
5. **Distolateral spine:** Lateral spine of first antennular segment at the distal end.
6. **Stylocerite:** Pointed scale arising from the lateral base of the first segment of the antennular peduncle.
7. **Antenna:** More lateral of the two paired, usually flagellate appendages projecting distally from the anterior end of the cephalothorax (Fig. 4:A).
8. **Antennal flagellum:** Multiarticulate, whiplike, terminal part of the antenna (Fig. 4:A 10).
9. **Antennal peduncle:** Five basal segments of the antenna, from which the flagellum arises distally.
10. **Scaphocertie:** Laterally rigid lamellate exopod of the antenna; the antennal scale (Fig. 4A).
11. **Mandible:** One of the heavily calcified jaws lying beneath (in ventral view) the other mouth parts (Fig. 4: C).
12. **Mandibular pulp:** One to three segmented endopod attached laterally to serve masticatory work of the mandible (Fig. 4: D).
13. **Maxilla:** Paired mouth part appendages of the fourth and fifth cephalic somites.

b. Thoracic:

1. **Maxilliped:** One of a pair of three sets of thoracic appendages, arising posterior to the primary mouth parts. The two anterior pairs are often modified

- for feeding, while the third pair is often pediform, resembling the pereopods (Fig. 4: G,H).
2. **Pereopod:** One of the five posterior paired appendages or legs of the cephalothorax (Fig. 2).
3. **Arthrobranchia:** Branchia (gill) attached to the joint area between the body and the first podomere of the leg (Fig. 4:H22).
4. **Podobranchia:** Gill borne on the basal segment (coxa) of a thoracic appendage (Fig. 4: I12).
5. **Pleurobranchia:** Gill attached to the body wall, dorsal to the articulation of the appendage (Fig. 4H21).
6. **Podomere:** Any one of the segments of an appendage.
7. **Epipode:** Lateral exite of the coxa of a thoracic appendage, sometimes branchial in function (Fig. 4: I8).
8. **Exopod:** Lateral ramus of biramus appendages, arising from the basis or from the protopodite is known as exopod (Fig. 4: I9).
9. **Protopodite:** A limb has a basal portion, which is attached to the body, consisting of two segments, the proximal coxa and the distalbasis (Fig. 4: KI5).
10. **Basial spine:** Spine projecting from basis of a thoracic appendage.
11. **Ischium:** Third podomere from the proximal end of a typically 7 – segmented appendage (Fig. 4: J5).
12. **Ischial spine:** Spine projecting from ischium or third segment of thoracic appendage.
13. **Merus:** Fourth segment from the proximal end of a typically 7- segmented appendage (Fig. 4: J4).

14. Carpus: Fifth podomere from the proximal end of a typically 7- segmented appendage (Fig. 4: J3).

15. Palm: Portion of the chela proximal to the propodal finger.

16. Propodus: Sixth or penultimate segment of a typically 7 segmented appendage (Fig. 4: I2).

17. Dactyl: Terminal podomere of a typically 7 – segmented appendage (Fig. 4:I1).

18. Chela: Appendage ending in chela.

c. Abdominal:

1. Pleopod: One of the biramous paired appendages typically arising ventrally from each of the anterior five abdominal somites. In the prawns, they are primarily swimming organs (Fig. 2).

2. Uropod: Paired biramous appendage attached to the sixth abdominal somite, usually combining with the telson to form a tailfan (Fig. 2).

3. Medial ramus of uropod: Inner branch of uropod (fig. 2).

4. Lateral ramus of uropod: Outer branch of uropod (fig. 2).

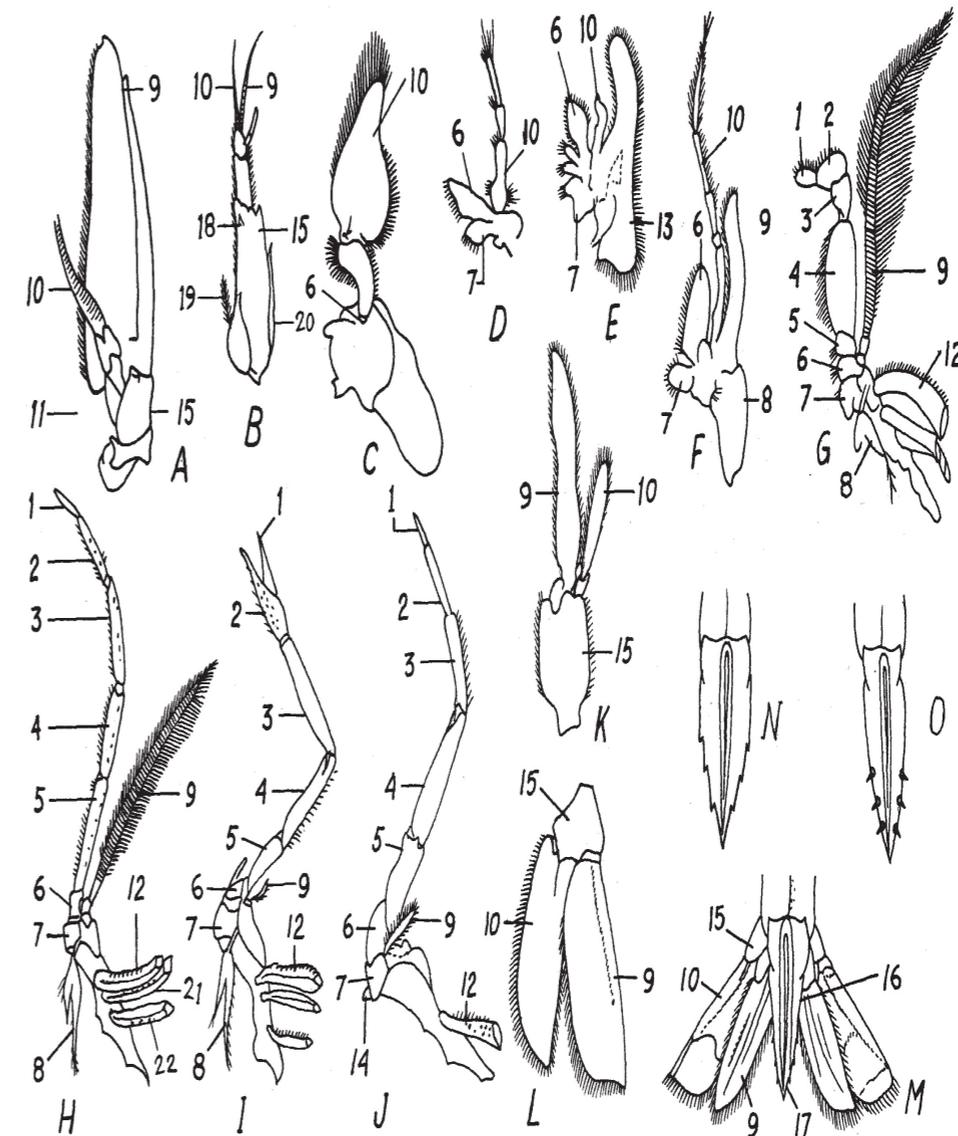


Fig. 4 : Appendages of penaeid prawn

(A) Antenna (Second antenna); (B) Antennule (First antenna); (C) Mandible; (D) First maxilla; (E) Second maxilla; (F) First maxilliped; (G) Second maxilliped; (H) Thirds maxilliped; (I) First pereopod (J) Fifth pereopod; (K) Third pleopod; (L) Uropod; (M) Telson with Uropod; (N) Telson with fixed spine; (O) Telson with movable spine.

(1) Dactyl; (2) Propodus; (3) Carpus; (4) Merus; (5) Ischium; (6) Basis; (7) Coxa; (8) Epipod; (9) Exopod; (10) Endopod; (11) Opening of the antennal gland; (12) Branchia, Gill; (13) Scaphognathite; (14) Male genital aperture; (15) Protopodite; (16) Telson; (17) Spinules; (18) Parapenaeid spine; (19) Prostartema; (20)

F. EXOSKELETAL RING OF AN ABDOMINAL SOMITE:

1. **Tergum:** Arched dorsal part of each of the anterior five abdominal somites (Fig. 2).
2. **Sternum:** Ventral surface of the cephalothorax or abdomen.
3. **Pleuron:** One of the lateral flaps on each of the anterior five abdominal somites (fig. 2).

G. EYE (Fig. 5):

1. **Eyestalk:** Peduncle or un-faceted part of the eye supporting the cornea (Fig. 5).
2. **Cornea:** Faceted, usually pigmented portion of the eye (Fig. 5).
3. **Ocular plate:** Median cephalic plate bearing the eyestalks laterally (Fig. 5).
4. **Ocular sac:** Scale like structure located on basal segment of eyestalk.
5. **Optic calathus:** Terminal article of the eyestalk supporting, often embracing the cornea of the eye (Fig. 5).

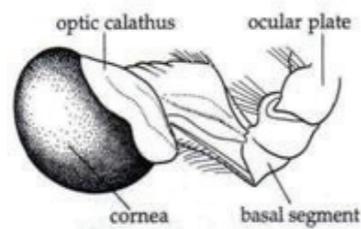


Fig. 5 : Features of Eye (After Pérez Farfante & Kensley, 1997).

H. SECONDARY SEXUAL STRUCTURE:

- a. **Petasma:** The male genital structure consisting of the much enlarged and coupled endopods of the first pair of pleopods (Fig. 6).
 1. **Median lobe:** One of the paired dorsal parts often folded of the petasma (Fig. 6).

2. **Dorsomedian lobule:** Dorsal part of the median lobe of the petasma (Fig. 6).
3. **Ventromedian lobule:** Lateral part of the median lobe of the petasma (Fig. 6).
4. **Distomedian projection:** Distal, relatively narrow extension of the dorsomedian lobule of the petasma (Fig. 6).
5. **Lateral lobe:** One of the paired lateral parts often folded of the petasma (Fig. 6).
6. **Dorsolateral lobule:** Dorsal part of the lateral lobe of the petasma (Fig. 6).
7. **Ventrolateral lobule:** Ventral part of the lateral lobe of the petasma (Fig. 6).
8. **Ventral costa:** Ridge extending along the ventromedian margin of the ventrolateral lobule of the petasma (Fig. 6).
9. **Distoventral projection:** Outer distal flap articulating with distal extremity of ventrolateral lobule of petasma.

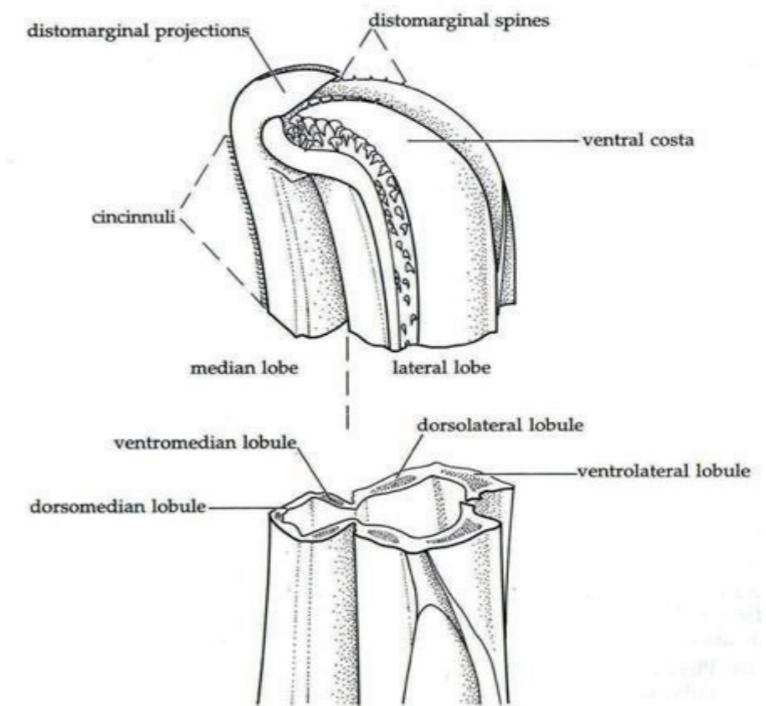


Fig. 6 : Features of petasma (After Pérez Farfante & Kensley, 1997)

Type of Petasma:

- I. Open:** Lateral lobes flexible, partially or entirely extended laterally, with the ventral costae not or barely turned ventrally.
 - II. Semi – open:** Lateral lobes flexible but folded, with the ventral costae distinctly turned ventro-medially, delimiting relatively ample space extending from proximal to distal ends.
 - III. Closed:** Lateral lobes heavily sclerotized, sometimes making structure virtually rigid, with the ventral costae situated ventromedially, almost abutting and delimiting a small, sometimes extremely so, space; lateral lobe usually produced distally into lateral spouts or horns.
 - IV. Semi – closed:** Lateral lobes rather flexible, markedly folded, supported by strong ribs, with the ventral costae approaching rather closely, delimiting moderately large space, narrowly open distally where usually overlapped by well developed distomedian projection.
- b. Thelycum:** The female genitalia consisting of modifications of the posterior two or sometimes three thoracic sternites serving for the storage or transfer of the sperms to spermatophores (fig. 7).

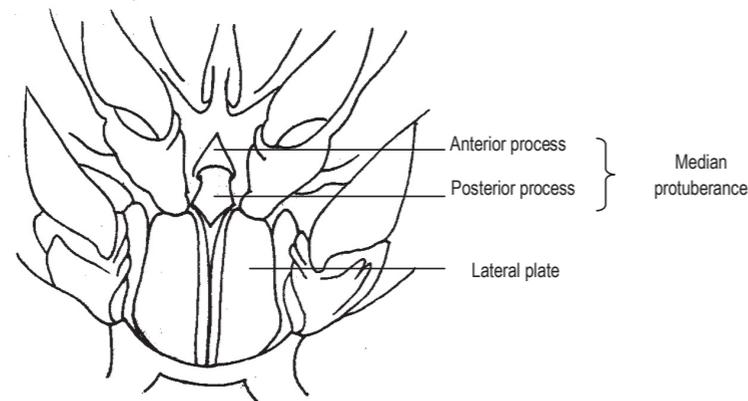


Fig.7: Features of thelycum

- 1. Lateral plate:** One of the paired, adjacent flaps sometimes present on sternite XIV in female thelycum (Fig. 7).
- 2. Median protuberance:** Conspicuous elevation, sometimes plate like (termed anterior plate), arising from the posteromedian part of the sternite XIII (Fig. 7).
 - i. Anterior process:** Anterior part of an elongate median protuberance lying on XIII thoracic sternite.
 - ii. Posterior process:** Posterior part of an elongate median protuberance lying on XIII thoracic sternite.
- 3. Seminal receptacle:** Paired or unpaired bulbous or tubular sacs associated with the thelycum for the storage of sperm, situated immediately dorsal to plates of sternite XIV, sometimes XIII and XII.

Types of thelycum:

- I. Open:** One in which the seminal receptacles are absent.
 - II. Closed:** One in which the seminal receptacles are present.
- c. Appendix masculine:** Lappet, sometimes scalelike, at the medial base of the endopod of the second pleopod in males (Fig. 8).

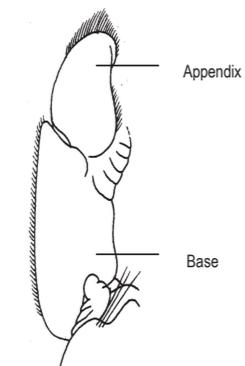


Fig. 8 Appendix masculine

Chapter 2

Systematic Account

Penaeoid prawn belongs to the largest phylum in the Animal Kingdom, the Arthropoda, characterized by jointed appendages and an exoskeleton or cuticle which is periodically molted. There are thousands of terrestrial species in this phylum, and large, predominately aquatic subphylum, the Crustacea. The more highly evolved crustaceans (Class Malacostraca) include the penaeid prawns (Order Decapoda). The class Malacostraca contains about three-fourths of the known species and includes crayfish, lobsters, shrimps and crabs (Bailey-Brock & Moss, 1992). Prawns are included in the decapod suborder Dendrobranchiata, which are distinguished from other prawn-like Crustacea (the Caridea) and the remainder of the Decapoda by their gill structure and by not carrying the developing eggs on the pleopods of the abdomen. Decapods can be distinguished from other higher crustaceans by examining differences in the thoracic appendages. The first three pairs of thoracic appendages, the maxillipeds, are modified for feeding and the remaining five pairs are the walking legs, hence the name Decapoda or “ten-legs”. Penaeid appendages typically consist of two branches (biramous), the exopodite and endopodite. These structures are variously developed for feeding, locomotion or burrowing; or they bear feathery gills (modified epipodites) contained beneath the lateral side of carapace, or sensory structures on the antennae and antennules (Bailey-Brock & Moss, 1992). To study the different genera and species of the prawns, one must have sufficient knowledge on fundamentals of morphology, based on these characters, species are identified.

Prawns of the genus *Penaeus* belong to family *Penaeidae* under super family *Penaeioidea*. A brief account of its systematic position is given below:

Superclass : *Crustacea* Pennant, 1777.

Class : *Malacostraca* Latreille, 1806.

Order : *Decapoda* Latreille, 1803.

Suborder : *Dendrobranchiata* Bate, 1888.

Super family : *Penaeioidea* Rafinesque-Schmaltz, 1815.

Family : *Penaeidae* Rafinesque – Schmaltz, 1815.

Genus : *Penaeus* Fabricius, 1798

Superfamily PENAEOIDEA

Diagnostic characters: Small to large sized, with a body length from 2.5 to about 35 cm. All 5 pairs of legs well developed, with first 3 pairs of legs forming a pincer, none of the pincers particularly large. Abdomen with posterior part of pleura (lateral plates) covering anterior part of succeeding pleura. With large copulatory organ, on first pair of pleopods in males (petasma), and on posterior thoracic sternites in females (thelycum). Eggs are released directly into the water and not retained by the females on the abdomen.

Most of the commercial species of prawn in India belongs to the family *Penaeidae* and *Palaemonidae*. *Penaeidae* belongs to superfamily *Penaeioidea* under suborder *Dendrobranchiata* and *Palaemonidae* belongs to infra- order *Caridea* under suborder *Pleocyemata*. These two commercial group of prawns may be distinguished by the following table:

Table-1:Distinguishing features of *Penaeidae* and *Palaemonidae*.

Features	<i>Penaeidae</i>	<i>Palaemonidae</i>
First three pairs of pereopods	Chelate and similar in size	First two pairs chelate, 3 rd

		never chelate, first pair larger than others.
Pleuron of 2 nd abdominal somite	Only overlapping 3 rd somite	Overlapping both 1 st and 3 rd somite.
Dorsal abdominal carina	Present	Absent
Shape of the body	Laterally compressed	Cylindrical
Position of egg	Eggs are released directly into the water and not retained by the females on the abdomen.	Females carry the eggs on the abdomen until hatching.

Key to the families of Penaeoidea occurring in the area

1. Either rostrum very short and armed with 1 or 2 upper teeth only, or upper antennular flagellum very short and attached to the base of distal antennular segment..... *Aristeidae*

___ Rostrum always armed with more than 3 upper teeth, and both upper and lower antennular flagella of similar length and attached to the tip of antennular peduncle.....2

2. Pleopods (abdominal appendages) with 1 branch only; abdomen often with many distinct furrows and grooves..... *Sicyoniidae*

___ Pleopods (abdominal appendages) with 2 branches; abdomen without or with

very few distinct

grooves..... 3

3. Cervical groove prominent and extending to about dorsal carapace; either postorbital or postantennal spine present.....*Solenoceridae*

___ Distinct part of cervical groove far from dorsal carapace; postorbital and postantennal

spine absent.....*Penaeidae*

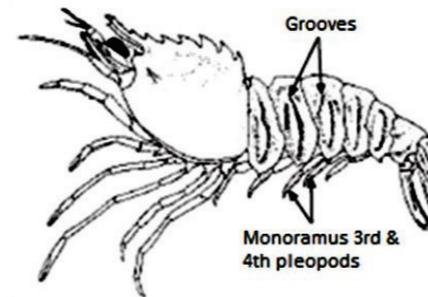


Fig. 9: Sicyoniidae

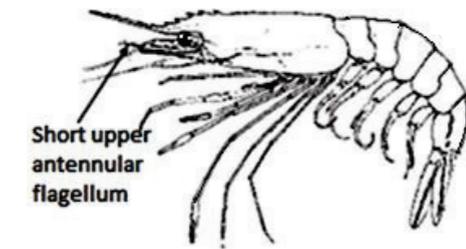


Fig. 10: Aristeidae

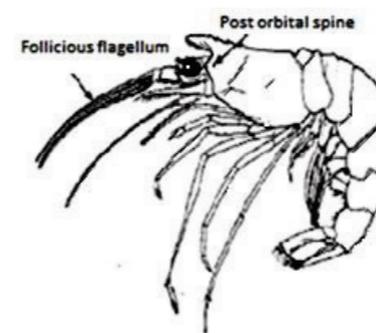


Fig. 11: Solenoceridae

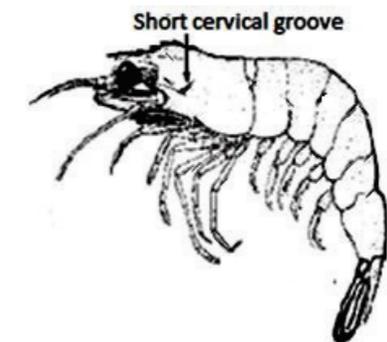


Fig. 12: Penaeidae

List of penaeid prawn found in West Coast of India

Genus *Atypopenaeus* Alock, 1905

1. *A. compressipes* (Henderson, 1893)
2. *A. stenodactylus* (Stimpson, 1860)

Genus *Funchalia* Johnson, 1867

3. *F. Woodwardi* Johnson, 1867

Genus *Megokris* Pérez Farfante and Kensley, 1997

4. *M. sedili* (Hall, 1961)*

Genus *Metapenaeopsis* Bouvier, 1905

5. *M. andamanensis* (Wood-Mason, 1891)
6. *M. commensalis* Borradaile, 1898
7. *M. coniger* (Wood-Mason, 1891)
8. *M. hilarula* (De Man, 1911)
9. *M. mogiensis* (Rothbun, 1902)
10. *M. philippii* (Bate, 1881)
11. *M. stridulans* (Alcock, 1905)

Genus *Metapenseus* Wood-Mason, 1891

12. *M. affinis* (H. Milne Edwards, 1837)
13. *M. alcocki* George and Rao, 1968
14. *M. brevicornis* (H. Milne Edwards, 1837)
15. *M. dobsoni* (Miers, 1878)
16. *M. ensis* (De Haan, 1844)
17. *M. kutchensis* George, George and Rao, 1963
18. *M. lysianassa* (De Man, 1888)
19. *M. monoceros* (Fabricius, 1798)
20. *M. moyebi* (Kishinouye, 1896)
21. *M. stebbingi* Nobili, 1904

Genus *Miyadiella* Kubo, 1949

22. *M. podophthalmus* (Stimpson, 1860)

Genus *Batepenaeopsis* Chanda, 2016

23. *B. acclivirostris* (Alcock, 1905)

Genus *Alcockpenaeopsis* Chanda, 2016

24. *A. uncta* (Alcock, 1905)

Genus *Helleropenaeopsis* Chanda, 2016

25. *H. hardwickii* (Miers, 1878)

26. *H. sculptilis* (Heller, 1862)

Genus *Kishinouyepenaeopsis* Chanda, 2016

27. *K. cornuta* (Kishinouye, 1900)

28. *K. maxillipedo* (Alcock, 1906)

Genus *Parapenaeopsis* Alcock, 1901

29. *P. stylifera cochinensis* George, 1975

30. *P. stylifera coromandelica* Alcock, 1906

31. *P. stylifera stylifera* (H. Milne Edwards, 1837)

Genus *Parapenaeus* Smith, 1885

32. *P. investigatoris* Alcock and Anderson, 1899

33. *P. longipes* Alcock, 1905

34. *P. sextuberculatus* Kubo, 1949

Genus *Penaeopsis* Bate, 1881

35. *P. jerryi* Perez Farfante, 1979

36. *P. rectacuta* (Bate, 1881)

Genus *Penaeus* Fabricius, 1798

37. *P. monodon* Fabricius, 1798

38. *P. semisulcatus* De Haan, 1844

39. *P. indicus* H. Milne Edwards, 1837

40. *P. konkoni* (Chanda & Bhattacharya, 2003.)

41. *P. merguensis* De Man, 1888

42. *P. penicillatus* Alcock, 1905

43. *P. japonicus* Bate, 1888

44. *P. canaliculatus* Oliver, 1811

45. *P. latisulcatus* Kishinouye, 1896

46. *P. marginatus* Randall, 184

Genus *Trachypenaeopsis* Burkenroad, 1934

47. *T. minicoyensis* Thomas, 1972

Genus *Trachysalambria* Burkenroad, 1934

48. *T. curvirostris* (Stimpson, 1860)

Key to the genera found in India

- 1. Rostrum not reaching distal end of first antennular segment 2
- Rostrum extend up to or beyond distal end of first antennular segment 3
- 2. Eye stalk longer than rostrum and extend beyond first antennular segment; eye ball small*Miyadiella* Kubo, 1949.
- Eye stalk smaller than rostrum and not extend beyond first antennular segment; eye ball large*Trachypenaeopsis* Burkenroad, 1934.
- 3. Rostrum armed with dorsal and ventral teeth; 4
- Rostrum armed with dorsal teeth only; absence of gastro-orbital carina 5
- 4. Presence of gastro-orbital carina; sixth abdominal somite with three interrupted cicatrix *Penaeus* Fabricius, 1798.
- Absence of gastro-orbital carina; sixth abdominal somite with single long cicatrix*Pelagopenaeus* Perez Farfante and Kensley, 1997.
- 5. Antennal spine very small; hepatic spine reduced or absent
.....*Atypopenaeus* Alcock, 1905.
- Antennal spine prominent; hepatic spine always present and prominent 6
- 6. Longitudinal suture present; transverse suture present7
- Longitudinal suture absent; transverse suture absent 10
- 7. Body thickset, densely pubescent, integument thick; hepatic carina absent8

- Body smooth or very minutely pubescent, integument thin; hepatic carina present 9
- 8. Anterior thelycal plate on sternite XIII with a tongue-like caudal extension; distolateral projection of petasma with laterally directed broad base and tip directed forward like a hook *Megokris* Perez Farfante and Kensley, 1997.
- Anterior thelycal plate on sternite XIII without caudal extension, distolateral projection of petasma directed laterally like a wing
.....*Trachysalambria* Burkenroad, 1934.
- 9. Postocular sulcus prominent; parapenaeid spine absent..... 13
- Postocular sulcus absent; parapenaeid spine present*Parapenaeus* Smith, 1885.
- 10. Petasma semiopen; thelycum open*Funchalia* Johnson, 1867.
- Petasma closed or semiclosed; thelycum close 11
- 11. Pterygostomian spine absent; postocular sulcus prominent, exopod absent on fifth pereopod*Metapenaeus* Wood-Mason, 1891.
- Pterygostomian spine present; postocular sulcus absent; exopod present on all maxillipeds and pereopods 12
- 12. Carapace with a small orbital spine; sixth abdominal somite without cicatrix; first and second pereopod and third maxilliped with basal spine; petasma asymmetrical
.....*Metapenaeopsis* Bouvier, 1905.
- Carapace without orbital spine; sixth abdominal somite bearing long, interrupted cicatrix; only first pereopod with basal spine; petasma symmetrical.....*Penaeopsis* Bate, 1881.
- 13. Epigetric tooth ptesent; epipod absent on third pereopod.....14
- Epigetric toot absent; epipod absent on all pereopods.... *Batepenaeopsis* Chanda,2016.

14. Orbital spine absent; antennular flagella equal to antennular peduncle; width of anterior thelycal plate is greater than its length.*Alcockpenaeopsis* Chanda,2016.
 ---- Orbital spine present; antennular flagella not equal to antennular peduncle; width of anterior thelycal plate not grater than its length.....15
15. Longitudinal suture short, not reaching cardiac region; a median tuft of long hairs present behind thelycum.....*Kishinouyepenaeopsusis* Chanda,2016.
 ---- Longitudinal suture long, extending upto or beyond cardiac region; a median tuft of hairs absent behind thelycum.....16
16. Longitudinal suture extending upto cardiac region; orbital spine prominent*Parapenaeopsis* Alcock, 1901.
 ---- Longitudinal suture extending beyond cardiac region; orbital spine reduced like an angle.....*Helleropenaeopsis* Chanda,2016.

Genus *Alcockpenaeopsis* Chanda,2016.

A. Chanda (2016) created the genus *Alcockpenaeopsis* by splitting *Parapenaeopsis* Alcock(1901).

Diagnosis of the genus:

Genus *Alcockpenaeopsis* can be distinguished from others congenera by the following characters: distolateral projections of petasma longer than distomedian projections, tapering distally with a long distomedian spine; anterior thelycal plate wider than length, rounded anterior margin with two ventromedian parallel ridges, medially fused with quadrate posterior plate. This genus has only one species viz. *Alcockpenaeopsis uncta* (Alcock, 1905), found in the ocean adjacent to Indian subcontinent.

Type Species: By present designation, *Parapenaeopsis uncta* Alcock, 1905, Ann. Mag. nat. Hist., 16(7) : 508-532.

Type Locality: Ganjam, Orissa coat, East coast of India.

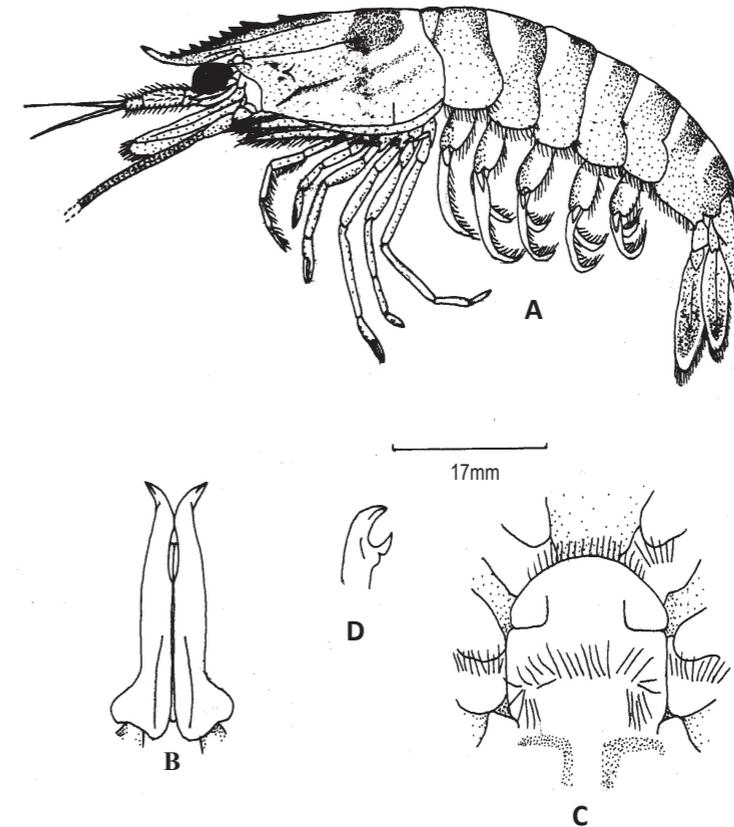


Fig. 13: *Alcockpenaeopsis uncta* (Alcock, 1905)

(A) Lateral view of the species. (B) Petasma. (C) Thelycum. (D) Lateral view of distolateral

List of species under the genus

1. *Alcockpenaeopsis uncta* (Alcock, 1905).

***Alcockpenaeopsis uncta* (Alcock, 1905)**

A. uncta was described by Alcock (1905) from Orissa coast, East coast of India. A brief history of the species with special reference to Indian contributions was given below.

1905 *Parapeneopsis uncta* Alcock, Ann. Mag. net. Hist., 16(7): 508-532; 1906, Cat. Indian Dec. Crust. Part-III. Mac. Fas. I : 1-55;

1942 *Parapeneopsis uncta* Nataraj, Curr. Sci., 11(12): 468-469; Menon, 1956, Proc. Indo-Pacif. Fish. Counc., 6(3): 345-347; George, 1969, Bull. Cent. Mar. Fish. Res. Inst. No. 14 : 5-48; 1979, Cont. Mar. Sci., dedicated to Dr. C.V. Kurian, 21-59.

Type Species: *Parapeneopsis uncta* Alcock, 1905, Ann. Mag. nat. Hist., 16(7): 508-532.

Type Locality: Ganjam, Orissa Coast, East coast of India.

Material Examined: Menon (1965) & George (1969) collected the specimens from west coast. Present author collected the specimens only from Pulicot Lake during the study.

2 males (70-71 mm.), ZSI. Reg. No. C4794/2, Pulicot Lake, Andhra Pradesh, 26.8.1995, A. Chanda.

Diagnosis of the species:

Integument thick, punctate; rostrum, short stout, extending upto middle of second segment of antennular peduncle, armed with 7-9+1 dorsal teeth, distal toothless portion short, styleform; postrostral carina extending upto posterior margin of carapace, sulcate dorsally; epigastric tooth conspicuously separated from penultimate tooth; adrostral carina and sulcus not extending behind epigastric tooth; orbital spine absent; antennal and hepatic spine prominent; longitudinal suture long extending posteriorly to cardiac region, cervical sulcus long, hepatic sulcus horizontal behind hepatic spine, slopes anteriorly towards sharp pterygostomial angle; transverse suture prominent, located on branchial region at the level of third pereopod; antennular flagella equal in length, shorter than carapace, equal to antennular peduncle; dorsal carination on abdomen starting from third segment, ending at midposterior border of sixth somite in a short sharp spine curving downwards; epipod and basal spine present on first and second pereopod, in males basal spine very small on second pereopod; distomedian projection of median lobe of petasma very small; distolateral projection of lateral lobe of petasma tapering at tip, each with a long dorsomedian spine-like process; anterior plate of thelycum wide and short, with curved anterior margin, and two longitudinal ridges, medially fused with the quadrate posterior plate; posterior plate medially possess a row of long hair.

Distribution:

India: Ganjam, Orissa, Pulicot Lake, Andhra Pradesh, East coast and Cochin, Kerala, West coast.

Elsewhere: Sri Lanka; Bangladesh; Malaysia; Indonesia.

Contribution to Fishery:

In India:

Rai (1933) reported it among the species caught near Mumbai. Kurian & Sebastian (1993) recorded "stray catches only" from India. Jones (1967) and Thams (1968) did not mentioned the species among the commercial prawn catch of India. During the present work the species has been collected from the commercial catch of Pulicot Lake, east coast of India.

Elsewhere:

Qureshi (1956) and Qureshi & Hashmi (1965) mentioned the species as occurring in commercial catches in Pakistan. Ahmad (1957) listed it among the prawns fished for in Bangladesh.

Genus *Atypopenaeus* Alcock, 1905

The genus *Atypopenaeus* was erected by Alcock (1905) giving separate generic status to Henderson's (1893) species *Penaeus compressipes* and he also proposed that two of Stimpson's species from Hong Kong, viz., *Penaeus podophthalmus* and *P. stenodactylus* be assigned to this genus. Hall (1961) transferred *P. stenodactylus* from *Penaeus* to *Atypopenaeus*. Alcock (1906) reported this genus from Indian water for the first time. A brief history with special reference to Indian contributions has been given below.

1893 *Penaeus* Henderson, Trans. Linn. Soc. Lond., (2), Zool., 5:450.

1905 *Atypopenaeus* Alcock, Ann. Mag. Nat. Hist., (7) 16:524; 1906, Cat. Indian Dec. Crust., 3(1): 45.

Atypopenaeus [amendment of *Atypopenaeus* Alcock, 1905, under the plenary powers by the International Commission of Zoological Nomenclature, 1969, Op. 864, Name No. 1807, Bull. Zool. Nom., 25(4/5): 138]. Placed on the Official List of Generic Names in Zoology, International Commission on Zoological Nomenclature, 1969. Op. 864, Name No. 1807, Bull. Zool. Nom., 25(4/5): 138. Op. 864, Name No. 1807, Bull. Zool. Nom., 25(4/5): 138.

1969 *Atypopenaeus* George, Bull. Cent. Mar. Fish. Res. Inst., 14: 5-48; 1979. In 'Contribution to Marine Science', dedicated to Dr. C.V. Kurian, 21-59.

1997 *Atypopenaeus* Pérez Farfante and Kensley, Mem. Mus. nat. Hist. nat., 175:1- 233.

Type Species: *Penaeus compressipes* Henderson, 1893, Trans. Linn. Soc. Lond., (2), Zool. 5:450.

Type Locality: Gulf of Martaban, Myanmar.

Diagnosis of the Genus:

Body glabrous; rostrum armed only dorsally; epigastric tooth widely separated from first rostral tooth; carapace with minute orbital spine; antennal spine reduced, pterygostomian spine absent, hepatic spine small; pterygostomian, antennal and gastroorbital carina absent; postocular sulcus prominent, orbitoantennal sulcus absent, cervical sulcus short, hepatic sulcus reduced, hepatic carina and sulcus placed anterior to hepatic spine; branchiocardiac carina indistinct, sulcus very feeble; longitudinal structure absent; transverse suture distinct; sixth abdominal somite without cicatrices; telson unarmed; antennule without parapenaeid spine, flagella shorter than carapace; basal spine present on second and third pereopod; petasma symmetrical and semiclosed; appendix masculina small, jointed, a strong dorsomedian rib of endopod of second pleopod present; thelycum closed and two lateral plate placed on sternite XIV.

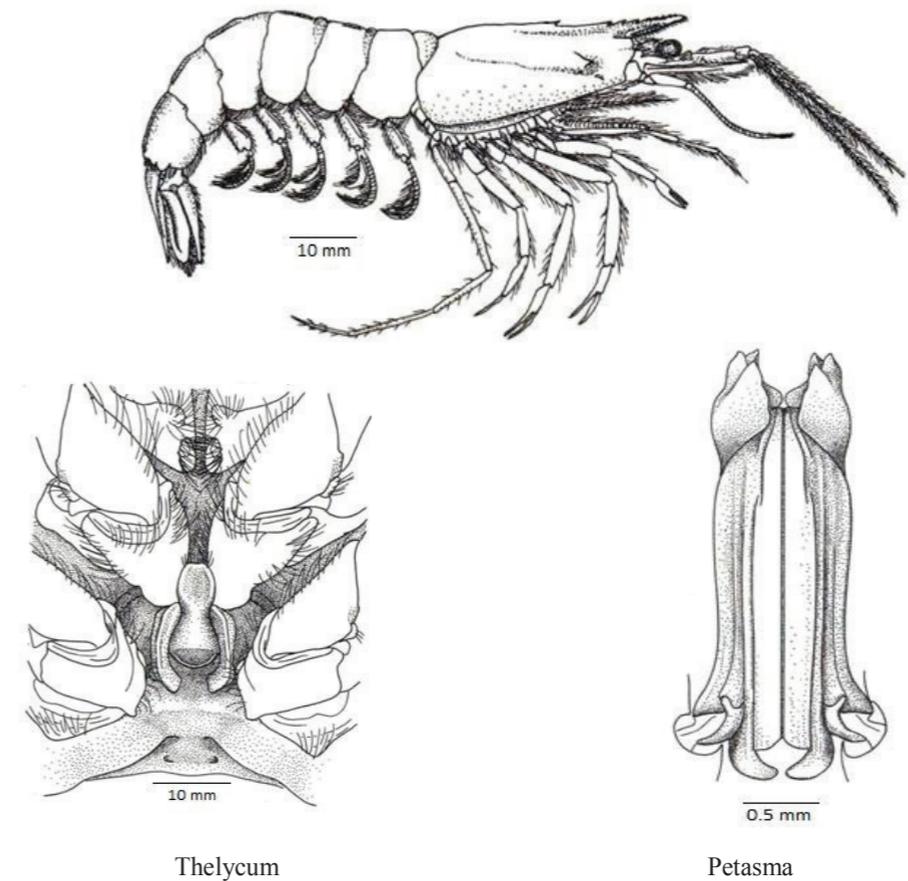


Fig. 14: *Atypopenaeus compressipes* (Henderson, 1893)

Remarks:

The genus *Atypopenaeus* is represented by only two closely related species, namely *A. compressipes* and *A. stenodactylus* in Indian coastal water. A key to separate these two species and their taxonomic accounts are given below.

Key to the species found in India

1. Post rostral carina short; distolateral lobule short, inwardly curved horn-like structure; median thelycal plate rounded both anteriorly and posteriorly *A. compressipes* (Henderson, 1893)

---- Post rostral carina long, ending near posterior margin of carapace; distolateral lobule swollen, anteriorly divided into three processes, directed forward; median plate of thelycum long, constricted medially; anterior portion concave, posteriorly rounded.
..... *A. stenodactylus* (Stimpson, 1860).

***Atypopenaeus compressipes* (Henderson, 1893)**

Alcock (1906) was the first who recorded the species from Madras (now Chennai), East Coast of India. A brief history with special reference to Indian contributions has been given below.

1893 *Penaeus compressipes* Henderson, Trans. Linn. Soc. Zool., 5(2) : 450.

1905 *Atypopenaeus compressipes* Alcock, Ann. Mag. Nat. Hist. 4(7): 524; 1906, Cat. Indian Dec. Crust. Part-III, Macru. Fas I : 1-55.

1960 *Atypopenaeus compressipes* Kunju, J. mar. biol. Ass. India, 2(1): 82-84; Pérez-Farfante & Kensley, 1997, Mem. Mus. nat. d'Hist. nat. Paris, 175: 77.

Type Species: *Penaeus compressipes* Henderson, 1893, Trans. Linn. Soc. Zool., 5(2): 450.

Type Locality: Gulf of Martaban, Myanmar.

Material Examined:

No example of this species were collected during the present study. Following account is based on the existing literature. Alcock's (1906) collection from Madras (now Chennai), Tamil Nadu, India, consisting of only one male (ZSI. Reg. No. 5090/10), was examined for following diagnosis.

Diagnosis of the species:

Body minutely setose; rostrum short armed dorsally with 8+1 teeth, post rostral carina ending near posterior margin of carapace, epigastric tooth placed far back; post antennular

spine short, post ocular spine absent; cervical sulcus short, hepatic spine small, hepatic sulcus distinct, horizontal; abdominal carina starting from third somite, ending posteriorly at midposterior end of sixth somite with a short spine; telson short lateral spine absent; antennular flagellum cylindrical, smooth longer than carapace, subequal; external maxillipeds much longer, extended upto the tip of antennular scale; fifth pair of pereopod longer than others and all pleopods are slender; petasma symmetrical, distomedian projection end as a pair of short slightly incurved horns; median plate of thelycum on sternite XIII and XIV with rounded ends, narrow in middle, longer than two lateral parallel plates.

Remarks:

Atypopenaeus compressipes (Henderson, 1893) was established as type of *Atypopenaeus* by Alcock in 1905. Hall (1962) considered *A. compressipes* as a synonym of *A. stenodactylus* (Stimpson, 1860). George (1967 & 1969) and Grey, Dall and Baker (1983) also regarded these two as same species. Racek and Dall (1965) opined that *A. compressipes* and *A. stenodactylus* are two separate species and suggested that *A. stenodactylus* can be distinguished from *A. compressipes* by the shorter postrostral carina, finely granulated dorsum of the carapace and greater length of the outer maxillipeds, which extend beyond the antennal scales. Pérez-Farfante and Kensley (1997) also listed these as separate species, as such these two are regarded as separate species in the present study.

Distribution:

India: Chennai, Tamil Nadu, East Coast of India; Mumbai, Maharashtra, West Coast of India. Elsewhere: Myanmar; Indonesia; Hong Kong; Philippines; Japan; New Guinea; Northern Territory, Australia.

Contribution to Fishery:

In India:

There is no significant fishery contribution for this species in India.

Elsewhere:

***Atypopenaeus stenodactylus* (Stimpson, 1860)**

George (1969) first recorded the species from Maharashtra, West Coast of India. A brief history of records with special reference to Indian contributions has been given below.

1860 *Penaeus stenodactylus* Stimpson, Proc. Acad. Nat. Sci. Philad., 12:22-47; George, 1969, Bull. Cent. Mar. Fish. Res. Inst.; No. 14:5-48; 1979, Cont. Mar. Sci, dedicated to Dr. C.V. Kurian, 21-59; Kurian and Sebastean, 1993, In prawn Fisheries of India, Hindustan Publication, Delhi.

Type Species: *Penaeus stenodactylus* Stimpson, 1860 Proc. Acad. Nat. Sci. Philad., 12:22-47.

Type Locality: Hong Kong, West Pacific.

Material Examined:

1 female (75 mm) ZSI. Reg. No. C4913/2, Subhas port, Porbandar, Gujarat, India. Stn. No. 5, 10.12.1992, H.C. Ghosh; 1 male (60 mm) and 3 females (45-72 mm), Reg. No. AR. 267, Mumbai, Maharashtra India, CMFRI, Mandapam, Tamil Nadu.

Diagnosis of the species:

Carapace minutely pubescent; rostrum straight, extend upto distal end of first antennular segment, armed with 9+1 dorsal teeth, placed throughout entire length of rostrum; post rostral carina extend upto middle of carapace, post orbital sulcus marked; hepatic spine reduced, dorsal abdominal carina start from fourth somite, antennular flagella longer than carapace, hepatic sulcus indistinct; petasma with distolateral projection divided into three denticular processes projected anteriorly; median plate of thelycum on sternite XIII to XIV elongate with a median constriction, anteriorly convex, tongue-like posteriorly rounded; a pair of distinctly separate, long, flaplike lateral plate flanking posteriorly upto concavity of median plate.

Remarks:

All the materials examined are morphologically similar to the illustration and description of Hall (1961) and illustration of Perez-Farfante and Kensley (1997). George (1969) mentioned that the distribution of the species is restricted northward up to Mumbai coast in west coast of India and contribute a considerable amount to the fishery. During the course of study first author have observed a lot of collection from Gujarat coast remain unidentified within the general collection of ZSI . So, author took an opportunity to study the hitherto unidentified lot and found one female specimen of the species. Author also visited CMFRI and studied their registered identified specimens (Reg. No. AR. 267), which is identical to the present material. So, this is the first record of the species from Gujarat Coast of India indicating northward extension of distribution of the species .

Distribution:

India: Porbandar, Gujarat, Mumbai, Maharashtra, West Coast of India.

Elsewhere: Sri Lanka, Malaysia; Indonesia; Gulf of Tonkin; South China Sea; Philippines; Hong Kong; Taiwan; Japan; New Guinea; Northern Territory, Australia.

Contribution to Fishery:

In India:

The species is caught in large numbers throughout the year on the westcoast of India specially in Maharashtra and Kerala coast. Kunju (1967) and Kurian & Sebastian (1993) mentioned that the species were caught in small numbers on the east coast of India. During the present study author also found same observation.

Elsewhere:

The species have minor economic importance in the Inland Sea of Japan (Yasuda, 1956).

Genus *Batepenaeopsis* Chanda,2016.

A. Chanda (2016) created the genus *Batepenaeopsis* by splitting *Parapenaeopsis* Alcock(1901).

Diagnosis of the genus:

Body slender; integument thin, minutely setose; rostrum straight, variable in length, toothed throughout the dorsal margin; epigastric tooth absent; orbital spine distinct, well developed antennal spine with prominent posterior antennal carina occupying two-third distance between antennal and hepatic spine; hepatic spine prominent; pterygostomian angle blunt; hepatic sulcus convex, accompanied with prominent carina, starting behind hepatic spine, extending anteroventrally below pterygostomian angle; longitudinal suture long extending upto cardiac region; transverse suture prominent; antennular flagella shorter than its peduncle; cicatrix absent on sixth abdominal somite; telson unarmed; epipod absent on all pereopod; petasma symmetrical, semiclosed, distomedian projections of median lobe short, lateral lobe slender, distolateral projections directed proximolaterally; appendix masculina with two parts, proximal stalk, distal part horse shoe shaped; anterior plate of thelycum semicircular, concave in ventral view with rounded anterior margin; posterior margin with a short median notch; posterior plate trapezoidal, anterior margin slightly concave, posterior margin straight with two posterolateral horns.

Type Species: By present designation, *Parapenaeopsis acclivirostris* Alcock, 1905, Ann. Mag. nat. Hist., 16(7): 508-532.

Type Locality: Persian Gulf.

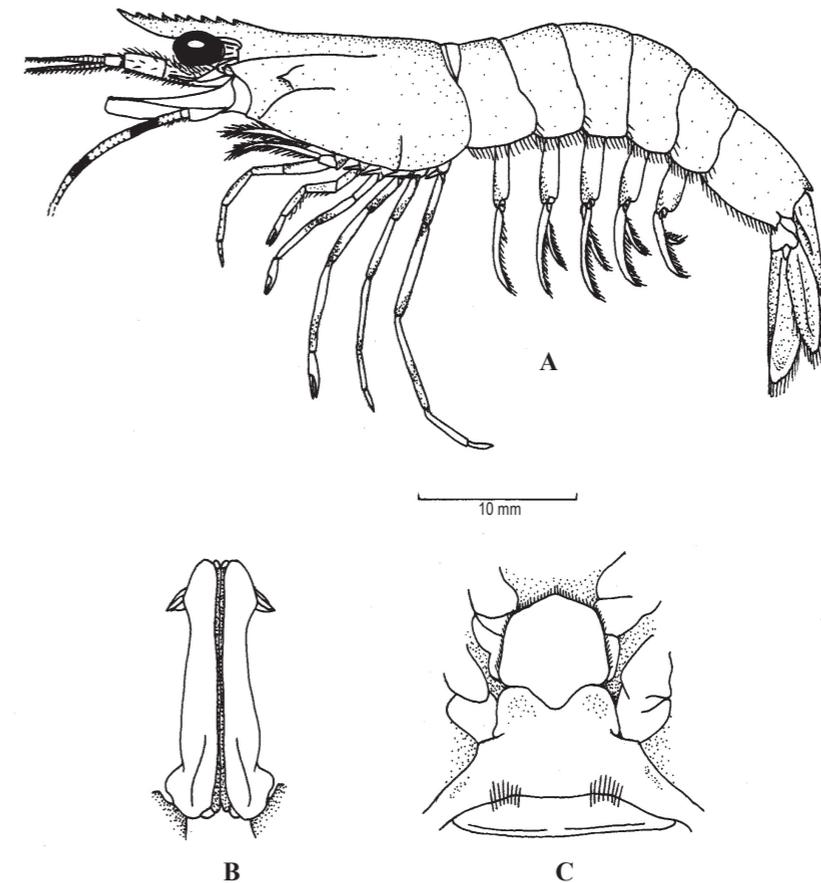


Fig. 15 : *Batepenaeopsis acclivirostris* (Alcock, 1905)

A. Lateral view of the species. B. Petasma. C. Thelycum.

List of species under the genus:

1. *Batepenaeopsis acclivirostris* (Alcock, 1905).

Key to the species under genus *Batepenaeopsis* Chanda, 2016 found in India

1. Dorsal carination on abdominal somite starts from third somite, anterior plate of thelycum with a posterior extension *B. acclivirostris* (Alcock, 1905).
- Dorsal carination on abdominal somite starts from fourth somite, anterior plate of thelycum without posterior extension *B. tennella* (Bate, 1888).

***Batepenaeopsis acclivirostris* Alcock, 1905**

B. acclivirostris was described by Alcock (1905) from Persian Gulf as *Parapeneopsis acclivirostris*. Alcock (1906) recorded the species for the first time from east coast (Ganjam, Visakhapatnam, Chennai, Palk Strait) of India. A brief history of the species with special reference to Indian contributions has been given below.

1905 *Parapeneopsis acclivirostris* Alcock, Ann. Mag. nat. Hist., 16(7): 508-532; 1906, Cat. Indian Dec. Crust. Part-III. Mac. Fasl : 1-55.

1960 *Parapeneopsis acclivirostris* (amendment of *Parapeneopsis acclivirostris* Alcock, 1905) Kunju, J. mar. biol. Ass. India, 2 (1) : 127-129; George, 1969, Bull. Cent. Mar. Fish. Res. Inst. No. 14 : 5-48; 1979, Contribution to Marine Sciences, dedicated to Dr. C.V. Kurian, 21-59; Muthu, 1971, Indian J. Fish., 15 : 145-154.

Type Species: *Parapeneopsis acclivirostris* Alcock, 1905, Ann. Mag. nat. Hist., 16 (7): 508-532.

Type Locality: Persian Gulf.

Material Examined:

2 males (38-48 mm.) and 1 female (48 mm.), ZSI. Reg. No. C4931/2, F.L.C. Mumbai, Maharashtra. 1.9.1996, A. Chanda.

Diagnosis of the species:

Body slender, minutely setose; rostrum straight with slightly uptilted tip, armed with 6-9 teeth along entire margin of rostrum, reaching distal end of antennular peduncle in females, shorter in males; epigastric tooth absent; postrostral carina not reaching posterior margin of carapace; carapace with short orbital spine, antennal and hepatic spine prominent; cervical sulcus short, hepatic sulcus distinct and convex, gradually descending below pterygostomial angle, longitudinal suture long and extend upto cardiac region; branchiocardiac sulcus absent; transverse suture prominent, located on branchial region at the level of third pereopod; epipod absent on all pereopods; basal spine present on first and second pereopods but absent on third; antennular flagella equal in length, shorter than carapace; dorsal carination on abdomen starts from third somite, ends at mid posterior margin of sixth somite with a sharp spine; telson unarmed; distomedian projection of median lobe of petasma very small, curving dorsally; distolateral projection of lateral lobe with slender distal part, in dorsal view and directed proximolaterally; anterior plate of thelycum on sternite XIII

semicircular, convex with row of hair on anterior margin; posterior plate on sternite XIV broad and trapezoidal.

Remarks:

Previously *B. acclivirostris* was known only from east coast of India. The species is being reported here for the first time from west coast of India. As such Racek and Dall's view (1965), that Palk strait is the limit of distribution for *B. acclivirostris*, is no more tenable.

Distribution:

India: Maharashtra, Kerala west coast and Ganjam, Visakhapatnam, Chennai, Palk strait east coast.

Elsewhere: East coast of South Africa; Mozambique, Madagascar, Persian Gulf, Red Sea, Gulf of Aden, Persian Gulf, Pakistan; Sri Lanka.

Contribution to Fishery:

In India:

Kunju (1967) listed the species as "occurring in the fishery" off the Maharashtra coast of India. Kurian & Sebastian (1976) mentioned that the species is found in India "in small numbers with other commercial species". During the present study the species has been collected from the commercial catch of Maharashtra coast but in small number.

Elsewhere:

There were no report for the species.

Genus *Funchalia* Johnson, 1867

The genus *Funchalia* was described by Johnson in 1867 from Atlantic Ocean, but it was first recorded from Indian water by Paulinose (1974). A brief history with special reference to Indian contributions has been given below.

1867 *Funchalia* Johnson, Proc. Zool. Soc. London, 1867:895; Paulinose, 1974, J. nat. Hist., 8:433-443.

Type Species: *Funchalia woodwardi* Johnson, 1867. Proc. Zool. Soc. Lond., 1867:895.

Type Locality: Off Madeira, North East Atlantic Ocean.

Diagnosis of the genus:

Body pubescent; rostrum short, reaching as far as middle of second antennular segment, armed only dorsally; carapace without orbital spine, antennal and pterygostomial

spine prominent, hepatic spine present; postocular sulcus absent; gastroorbital carina absent; postrostral carina feeble; antennal, pterygostomian and brachyocardiac carina well marked; hepatic carina present; longitudinal and transverse suture absent. Fourth, fifth and sixth abdominal somite bearing continuous, prominent cicatrix; telson armed with three pairs of prominent fixed lateral spines, preceded by a pair of small spine; antennules without parapenaeid spine, flagella filiform, subequal, dorsal one longer; basal and ischial spines on first and second pereopods; epipod forked; petasma semi-open and asymmetrical, appendix masculina subrectangular; thelycum open, anterior depression on sternite XIV flanked by a pair of large broad flaps or narrow ones bearing strong ridges; median protuberance on sternite XIII deeply excavate, delimiting depression on sternite XIV.

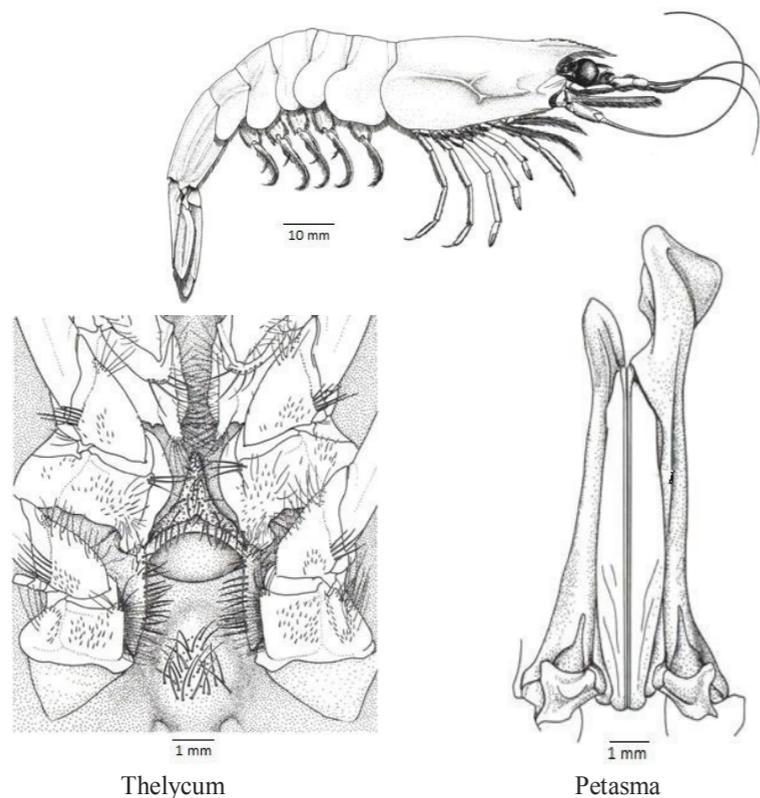


Fig. 16: *Funchalia woodwardi* Johnson, 1867

Remarks:

Paulinose (1974) and Paulinose and George (1976) recorded only larvae of *F. woodwardi* Johnson, 1867 during the International Indian Ocean Expedition (1960-65). No specimen was collected during the present investigation. The species inhabits deep water (more than 200m). As such diagnosis is based on literature.

***Funchalia woodwardi* Johnson, 1867**

The species was described by Johnson (1867) from Madeira, north-east Atlantic. Paulinose (1974) recorded the species for the first time from Andaman Sea, India. A brief history of the species with special reference to Indian contributions has been given below.

1867 *Funchalia woodwardi* Johnson, Proc. Zool. Soc. London: 895-901; Paulinose 1974, J. nat. Hist., 8: 433-443; Paulinose and George, 1976, Indian J. Fish., 23(1 & 2):127 –133.

Type species: *Funchalia woodwardi* Johnson 1867, Proc. Zool. Soc., London, 1867: 895-901.

Type Locality: Off Madeira, north-east Atlantic Ocean.

Diagnosis of the species:

Body pubescent Rostrum with 10-12+1 dorsal teeth; compressed, reaching upto middle of second segment of antennular peduncle. Carapace without orbital spine, with antennal, pterygostomian, hepatic spine; post-rostral carina pronounced, pterygostomian carina marked; hepatic carina present, cervical carina absent; fourth, fifth, sixth abdominal somite bearing a prominent cicatrix; telson with three pairs of prominent fixed subapical spine, preceded by a pair of small ones; antennule lacking parapenaeid spine filiform, flagella subequal, dorsal one slightly longer than ventral; petasma asymmetrical, dorsally, left half shorter right one longer, shorter one with a simple distal lobe rounded, broad apically, longer one with blunt broad triangular apical knob; thelycum with anterior plate on sternite XIII, grooved, with median protuberance, delimiting depression on sternite XIV; posterior plate on sternite XIV with long setae, anteriorly excavated, lateral edges curved ventrally, anteriorly acute; posterior sternal plate roughly quadrangular, with anterolateral extensions fused with anterior plate to form walls of seminal receptacle.

Distribution:

India: Arabian Sea and Andaman sea, Bay of Bengal.

Elsewhere: North-eastern Atlantic, Mediterranean sea, South-eastern South Africa.

Contribution to Fishery:

No commercial significance of this species.

Genus *Helleropenaeopsis* Chanda,2016.

A. Chanda (2016) created the genus *Helleropenaeopsis* by splitting *Parapenaeopsis* Alcock(1901).

Diagnosis of the genus:

This new genus can be distinguished from the other congeners by the following characters: distolateral projections shorter than distomedian projections, directed anterolaterally; anterior plate of thelycum semicircular with a posteromedian cleft, posterior plate trapezoidal. This genus includes four species viz. *Helleropenaeopsis sculptilis* (Heller, 1862); *Helleropenaeopsis hardwickii* (Miers, 1878); *Helleropenaeopsis indica* (Muthu, 1972) and *Helleropenaeopsis cultirostris* (Alcock, 1906), found in the ocean around Indian subcontinent.

Type Species: By present designation *Penaeus sculptilis* Heller, 1862a, Verh. Zool. Bot. Ges. Wien., 12 : 519-528.

Type Locality: Java Sea, Indonesia.

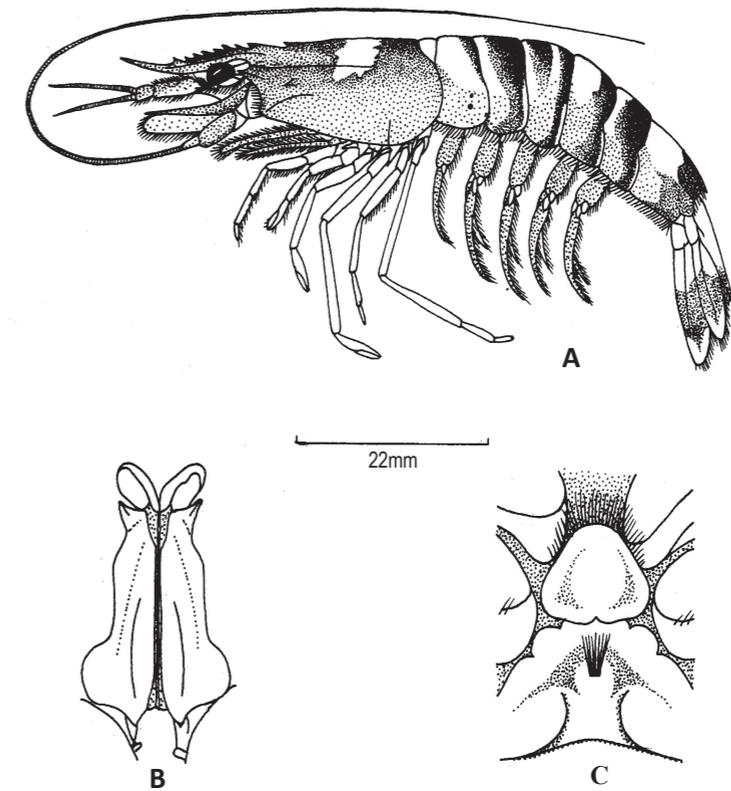


Fig. 17 : *Helleropenaeopsis sculptilis* (Heller, 1862); A-lateral view, B-petasma,C-thelycum

List of species under the genus:

1. *Helleropenaeopsis hardwickii* (Miers, 1878).
2. *Helleropenaeopsis sculptilis* (Heller, 1862).

Key to the species under genus *Helleropenaeopsis* Chanda,2016 found in India

1. Orbital spine present; telson armed with 3-5 pairs of lateral movable spine *Helleropenaeopsis hardwickii* (Miers, 1878).
- Orbital spine absent; telson unarmed 2
2. Adrostral carina and sulcus extending behind epigastric tooth; dorsal abdominal carina starting from fourth somite; distal margin of distomedian projections of petasma wavy *Helleropenaeopsis cultirostris* (Alcock, 1906).

- Adrostral carina and sulcus not extending behind epigastric tooth; dorsal abdominal carina starting from second somite; distal margin of distomedian projections of petasma semicircular.....3
3. Basal spine present on second pereopod of male; bluntly angular anterolateral corners of posterior thelycal plate separated from the anterior thelycal plate by a short intervening space..... *Helleropenaeopsis sculptilis* (Heller, 1862).
- Basal spine absent on second pereopod of male; rounded anterolateral corners of posterior thelycal plate overlap the anterior thelycal plate.....*Helleropenaeopsis indica* (Muthu, 1972).

***Helleropenaeopsis hardwickii* (Miers, 1878)**

H. hardwickii was originally described as *Penaeus hardwickii* by Miers (1878) from Maharashtra coast, Arabian sea. A brief history of the species with special reference to Indian contributions has been given below.

- 1878 *Penaeus hardwickii* Miers, Proc. Zool. Soc. London, 1878: 298-310.
- 1906 *Parapeneopsis sculptilis hardwickii* Alcock Cat. Indian Deca. Crust. Part III Mac. Fas. I: 1-55.
- 1934 *Parapeneopsis hardwickii* Burkenroad, Bull. Bingham. Oceanogr. Coll., 4(7): 1-109; Hall, 1961, Bull. Raffles Mus. No. 26: 76-119; 1962, Fish. Publ. Colonial Off. London, 17: 1-229.
- 1949 *Parapeneopsis hardwickii* Kubo, J. Tokyo Coll. Fish., 36(1): 1-467; Cheung, 1960, Hong Kong Univ. Fish. J., 3 : 61-69; Kunju, 1960, J. mar. biol. Ass. India, 2 (1): 127-129; George, 1969, Bull. Cent. Mar. Fish. Res. Inst., 14: 5-48; 1979, Contribution to marine science dedicated to Dr. C.V. Kurian, 21-59, Muthu, 1971, Indian J. Fish., 15 : 145-154; Johnson, 1967, J. mar. biol. Ass. India, 18(1): 1-54; George & Suseelan, 1982, Proc. Symp. Coast. Aquacul., 1 : 273-284.

Type species: *Penaeus hardwickii* Miers, 1878. Proc. Zool. Soc. London, 1878: 298-310.

Type Locality: Maharashtra coast, Arabian sea, India.

Material Examined:

1 male (78 mm.), ZSI. Reg. No. C4775/2, Ratnagiri, Maharashtra, 23.4.1983, H.C. Ghosh and Party; 3 males (60-95 mm.) and 3 females (62-101 mm.), ZSI. Reg. No. C4938/2, Dwarka F.L.C. Gujarat, 14.3.1994, P.K. Moorthy.

Diagnosis of the species:

Body minutely setose; rostrum sexually dimorphic, with 8-9+1 dorsal teeth, sigmoidal in female, distal half toothless, upcurved, extending beyond antennular peduncle, in male rostrum slightly down curved, not extending beyond antennular peduncle; adrostral carina ending between epigastric and penultimate rostral tooth, sulcus below epigastric tooth; epigastric tooth conspicuously separated from penultimate tooth; postrostral carina extending up to posterior border of carapace; orbital spine very minute, hepatic and antennal spine prominent, antennal carina very short, cervical sulcus distinct, ending below longitudinal suture, hepatic sulcus slopes anteroventrally towards pterygostomian angle, carina accompanied with sulcus below the level of hepatic spine, pterygostomian angle rounded, longitudinal suture extend up to gastric region posteriorly, transverse suture at the level of third pereopod, branchiocardiac carina indistinguishable; dorsal carina on abdominal somite starts from third somite, ends at posterior margin of sixth somite with a sharp spine; three cicatrices present on sixth somite; telson armed with 3-5 pairs of lateral movable spine; antennular flagella equal in length in both sexes; epipod and basal spine present on first and second pereopod, basis of third pereopod unarmed; distomedian projections of median lobe of petasma wing like, as long as broad, just above lateral lobe, anterior margin crenulated, distolateral projection of lateral lobe of petasma with tapering tip below distomedian projection; anterior plate of thelycum concave ventrally, anterior margin rounded, broader than long; posterior plate flat, with a pair of anterolateral tooth like projection, anteromedian margin convex, bearing a transverse row of long hairs.

Remarks:

This species is being recorded for the first time from Gujarat coast and thus extends the distribution northwards in the Western coast.

Distribution:

India: Gujarat, Maharashtra, Goa, West coast and Ganjam, Orissa; Andhra Pradesh; Chennai, Pondicherry, East coast.

Elsewhere: Bangladesh; Pakistan; Malaysia; Singapore; Borneo, Gulf of Tonkin; South China sea; Taiwan; Japan.

Contribution to fishery:

In India:

This species grows to about 13 cm, is also present in Mumbai waters, and is caught in small quantities along with other prawns. Kurian & Sebastian (1993) reported "good fishery for the species near Bombay, and less so on the east coast of India in the Godavery estuary". During

the present study the species has been observed among the commercial catch along the west coast.

Elsewhere:

Along the west coast of Malaya and probably also that of Thailand, the species dominates in the inshore fishery (Longhurst, 1970). Near Singapore it is found in the offshore catches made by trawlers (Longhurst, 1970).

***Helleropenaeosis sculptilis* (Heller, 1862)**

H. sculptilis was originally described by Heller (1862) as *Penaeus sculptilis* from Java sea, Indonesia. It was first recorded from India by Alcock (1906) from both coasts. A brief history of the species with special reference to Indian contributions has been given below.

1862 *Penaeus sculptilis* Heller, Verh. Zool. Bot. Ges. Wien., 12: 519-528; 1865, Zool., 2(3): 1-280.

1903 *Parapeneopsis sculptilis* Nobili, Boll. Mus. Zool. Anat. Comp., 18(452) : 5P; Balss, 1914, Abh. Bayer, Akad. Wiss. Suppl., 2(10): 1-101; Menon, 1956, Proc. Indo-Pacif. Fish. Counc., 6(3): 345-347; George, 1969, Bull. Cent. Mar. Fish. Res. Inst. No. 14 : 5-48; 1972, J.mar. Sc., 1(1): 89-92; 1979, Contribution to Marine Sciences, dedicated to Dr. C.V. Kurian, 21-59; Muthu, 1971, Indian J. Fish., 15: 145-154; George and Suseelan, 1982, Proc. Symp. Coastal Aquaculture, 1 : 273-284.

1906 *Parapeneopsis sculptilis* Alcock, Cat. Indian Dec. Crust. Part-III. Mac. Fas. I: 1-55.

Type Species: *Penaeus sculptilis* Haller, 1862a, Verh. Zool. Bot. Ges. Wien., 12: 519-528.

Type Locality: Java Sea, Indonesia.

Material Examined:

1 female (120 mm.), ZSI. Reg. No. C4903/2, Veraval Sea, Gujarat, 16.12.1992, H.C. Ghosh and Party; 2 females (89-92 mm.), ZSI. Reg. No. C4940/2, Mahad beach, Maharashtra, 31.8.1996, A. Chanda.

Diagnosis of the species:

Body slender; integument thin, minutely setose rostrum sigmoidal, armed with 7-9+1 dorsal teeth, more than half distal portion toothless, in female exceeding antennular peduncle; epigastric tooth conspicuously separated from penultimate tooth; in large male rostrum down curving, toothless portion absent, not exceeding third segment of antennular peduncle; postrostral carina reaching posterior border of carapace; feebly sulcate or flat, adrostral carina and sulcus not exceeding epigastric tooth posteriorly; orbital spine absent, hepatic and antennal spine prominent, hepatic antennal carina extending half distance between hepatic

and antennal spine, cervical sulcus indistinguishable, hepatic sulcus prominent, carina distinguishable at anterior portion and slopes anteroventrally towards pterygostomial angle but not reaching it; longitudinal suture long reaching behind gastric region, transverse suture prominent, placed at the level of third pereopod; median carina on second and third abdominal terga low, prominent from fourth to sixth; antennular flagella subequal, upper one slightly longer than lower, shorter than carapace; epipod and basal spines present on first and second pereopods; basis of third pereopod and telson unarmed; distomedian projection of median lobe of petasma long, rabbit ear-shaped, deeply concave ventrally, diverted anterolaterally; distolateral projection of lateral lobe short, directed laterally with a short tapering tip; anterior plate of thelycum distally rounded, broadly articulating with posterior plate, anterior plate roughly triangular with rounded corners, posterior plate broad, with a median tubercle bearing a tuft of long hairs.

Distribution:

India: Entire East coast & West coast of India and Andaman Islands.

Elsewhere: Pakistan; Myanmar; Malaysia; Indonesia; South China Sea; Hong Kong; Philippines; Taiwan; New Guinea; North Australia.

Contribution to fishery:

In India:

This species occurs in the marine fishery of the Hooghly, W. Bengal in certain months, especially during winter, and in Mumbai waters throughout the year, although it accounts for only about 4 percent of the catch in the latter area. It grows to a maximum length of about 15 cm, but the sizes obtained at Mumbai are generally small. The larger specimens are generally caught in the inshore waters. Kurian & Sebastian (1976) mentioned that there is "a small fishery in the northern east and west coasts" of India. During the present study the species has been observed among the commercial catch along the west coast.

Elsewhere:

In Bangladesh it has been found in abundance in the estuaries and provides a lucrative fishery (Ahmad, 1957). Tham (1968) reported the species among the commercial catch of Malaya. Kubo, 1949 mentioned a specimen from the Singapore fish market. Racek (1959) reported the species as commercially important in Australia specially in North of Cape Moreton, Queensland. Grant (1965) remarked that "it is a popular bait species on the Central Queensland coast".

Genus *Kishinouyepenaeopsis* Chanda,2016.

A. Chanda (2016) created the genus *Kishinouyepenaeopsis* by splitting *Parapenaeopsis* Alcock(1901).

Diagnosis of the genus:

This new genus can be distinguished from other congeners by the following characters: distolateral projections of petasma longer than distomedian projections, slender, horn-like, diverging proximally, curving inward distally; anterior plate of thelycum rectangular with rounded corners, fused with posterior plate by a posteromedian broad process, posterior plate with a pair of lateral depressed region; a median tuft of long hairs presents behind thelycum. This genus includes two species viz. *Kishinouyepenaeopsis cornuta* (Kishinouye, 1900) and *Kishinouyepenaeopsis maxillipedo* (Alcock, 1906), found in the ocean around Indian subcontinent.

Type Species: *Penaeus cornutus* Kishinouye, 1900, J. Fish. Bureau Tokyo, 8 : 1-29.

Type Locality: Ariake-Wan, Japan.

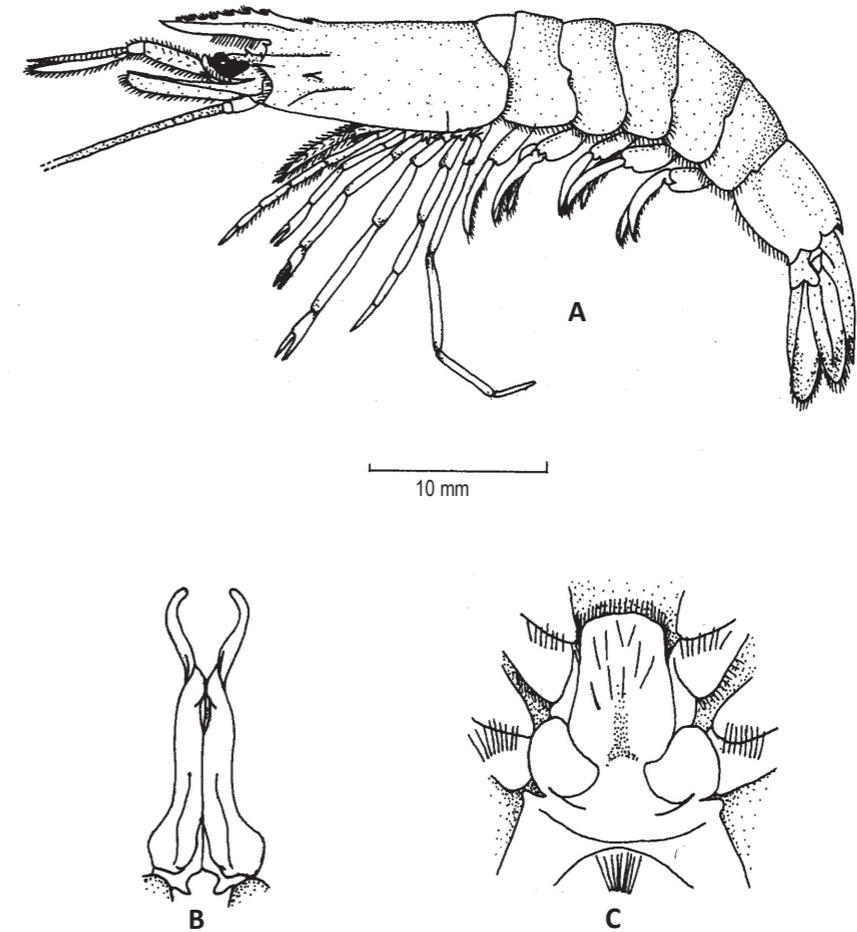


Fig. 18: *Kishinouyepenaeopsis cornuta* (Kishinouye, 1900); A-lateral view,B-petasma,C-thelycum

(A) Lateral view of the species. (B) Petasma. (C) Thelycum.

List of species under the genus:

1. *Kishinouyepenaeopsis cornuta* (Kishinouye, 1900).
2. *Kishinouyepenaeopsis maxillipedo* (Alcock, 1906).

Key to the species under genus *Kishinouyepenaeopsis* Chanda, 2016 found in India

1. Basal spine present on 3rd pereopod; telson unarmed; distolateral projections of petasma lacking dorsal spiniform processes.....*Kishinouyepenaeopsis maxillipedo* (Alcock, 1905).
- Basal spine absent on 3rd pereopod; telson armed with 2-4 pairs of distolateral spine; distolateral projections of petasma with dorsal spiniform processes.....
.....*Kishinouyepenaeopsis cornuta* (Kishinouye, 1900).

***Kishinouyepenaeopsis cornuta* (Kishinouye, 1900)**

K. cornuta was originally described by Kishinouye (1900) from Ariake-Wan, Japan as *Penaeus cornutus*. It was first recorded by Muthu (1971) from Andhra Pradesh coast, East coast of India. A brief history of the species with special reference to Indian contributions has been given below.

1900 *Penaeus cornutus* Kishinouye, J. Fish. Bureau Tokyo, 8: 1-29.

1911 *Parapenaeopsis cornuta* De Man, Siboga Exped. Monogr., 29a: 1-131; De Bruin, 1965, Zool. Meded., 41 (A) : 95; Muthu, 1971, Indian J. Fish., 15 : 145-154; Silas and Muthu, 1976, J. mar. biol. Ass. India, 18 (1): 78-90; George, 1979, Cont. Mar. Sci. dedicated to Dr. C.V. Kurian, 21-59; 1980, J. Bombay Nat. Hist. Soc., 76: 297-304.

Type Species: *Penaeus cornutus* Kishinouye, 1900, J. Fish. Bureau Tokyo, 8 : 1-29.

Type Locality: Ariake-Wan, Japan.

Material Examined: Muthu (1971) & George (1979) collected the specimens from west coast. Present author studied the specimens collected from Andhra Pradesh as bellow.

6 males (50-57 mm.), ZSI. Reg. No. C4843/2, Muthukuru F.L.C., Nellore Andhra Pradesh, 1.9.1995, A. Chanda, 1 male (72 mm.), ZSI. Reg. No. C4854/2, Lowsom's Bay Visakhapatnam, Andhra Pradesh, 26.3.1997. T. Roy & Party.

Diagnosis of the species:

Body slender and setose; rostrum more or less straight, tip slightly upward, armed with 7-8+1 dorsal teeth located through entire dorsal margin except a short distal toothless portion, not extending beyond third antennular segment of peduncle; epigastric tooth conspicuously separated from penultimate tooth; adrostral carina and sulcus ending between epigastric and penultimate tooth, postrostral carina extending upto the posterior border of carapace, carapace with a sharp minute orbital spine; hepatic and antennal spine prominent;

cervical carina and sulcus not distinct; hepatic sulcus long starting posterior to hepatic spine and gradually slopping anteroventrally towards pterygostomial angle, ending before pterygostomial angle, a carina accompanied at anterior half of the hepatic sulcus; longitudinal suture short not reaching cardiac region; transverse suture also short and prominent, located on branchial region at the level of third pereopod; antennular flagella equal, shorter than carapace; dorsal carination on abdomen prominent from fourth terga ending at midposterior margin of sixth somite with a sharp spine; epipod and basal spine present on first and second pereopods, basis of third pereopod without spine; telson armed with two to four pairs of very short distolateral fixed spine; distomedian projection of median lobe of petasma very short; distolateral projection of lateral lobe horn-like, diverging proximally, curving inward distally, with a small dorsal spine like process; anterior plate of thelycum oblong, concave ventrally with scattered median hairs, fused posteromedially with posterior plate, posterior plate with a pair of lateral depression.

Remarks:

Present observation extends the distribution of the species to the north of Chennai. George (1969) collected the species from Chennai, East coast of India, present observation is the first record of the species from Andhra Pradesh.

K. cornuta is quite similar to the *K. maxillipedo* in general structure of their petasma and thelycum but former can be separated from later by comparatively slender body, a dorsal spine like process present on distal horny projection of lateral lobe of petasma, posterior process of anterior plate of thelycum fused with posterior plate by overlapping with two lateral ridge, a close tuft of hairs behind thelycum. Therefore, these are two distinct species.

Distribution:

India: Goa, Maharastra, Kerala, West coast and Chennai; Andhra Pradesh East coast and also from Andaman Islands.

Elsewhere: Sri Lanka; Singapore; Malaysia; Myanmar; Indonesia; South China sea; Philippines; Hong Kong; Taiwan; Japan; New Guinea; Australia.

Contribution to Fishery:

In India:

Muthu (1971) reported the species from commercial catches landed at the east coast of India (Visakhapatnam and Kakinada). Kunju (1967) listed it as occurring in the fishery of the Maharashtra coast of India. During the present study the species has not been observed among the commercial catch along the west coast. Therefore, the species has been regarded as minor commercial group of prawn.

Elsewhere:

There is no report for this species.

***Kishinouyepeneopsis maxillipedo* (Alcock, 1906)**

The species *K. maxillipedo* was described by Alcock (1906) from Chennai coast, East coast of India as *Parapeneopsis maxillipedo* Alcock, 1906. A brief history of the species with special reference to Indian contributions has been given below.

1906 *Parapeneopsis maxillipedo* Alcock, Cat. Indian Dec. Crust. Part-III. Mac. Fas-I: 1-55.

1942 *Parapeneopsis maxillipedo* Nataraj, Curr. Sci., 11 (12): 468-469; Menon, 1956, Proc. Indo-Pacific Fish. Counc., 6 (3): 345-347; Muthu, 1971, Indian J. Fish., 15: 145-154; George, 1979, Cont. Marine Science, 21-59; Fischer & Bianche, 1983, FAO Identification Sheet, Area 51: PEN Para 8.

1960 *Parapeneopsis cornutus* Cheung, Hong Kong Univ. Fish. J., 3 : 61-69.

1969 *Parapeneopsis cornuta maxillipedo* George, Bull. Cent. Mar. Fish. Res. Inst. No. 14 : 5-48.

1997 *Parapeneopsis maxillipedo* Perez Farfante and Kensley, Mem. Mus. nat. d' Hist. nat., 175: 1-233.

Type Species: *Parapeneopsis maxillipedo* Alcock, 1906, Cat. Indian Dec. Crust. Part-III Mac. Fas-I : 1-55.

Type Locality: Chennai coast, East coast of India.

Material Examined: Muthu (1971) & George (1969) reported the species from west coast. Present author studied the specimens collected from Andhra & Tamilnadu as bellow.

1 male (70 mm.) ZSI. Reg. No. C4886/2, F.L.C. Chennai, 27.8.1995, T. Roy and Party; 4 males (70-95 mm.) and 3 females (72-120 mm.), ZSI. Reg. No. C4859/2, Ramachandrapuram, E. Godavari, Andhra Pradesh, 22.3.1997, T. Roy and Party; 6 males (40-65 mm.) and 2 females (56-71 mm.), ZSI, Reg. No. C4793/2, Pulicot Lake, Andhra Pradesh, 26.8.1995, A Chanda; 1 male (78 mm.), ZSI. Reg. No. C4811/2, F.L.C. Chennai, 26.8.1995, A. Chanda.

Diagnosis of the species:

Body minutely setose; rostrum straight, tip uptilted, distal ¼ toothless, strong, armed with 9-10+1 dorsal teeth only; epigastric tooth close to penultimate tooth, post rostral carina

reaching posterior border of carapace; adrostral carina and sulcus not extending beyond epigastric tooth; orbital tubercle present antennal and hepatic spine prominent, antennal carina long and extending below the level of hepatic spine; cervical sulcus short, hepatic sulcus indistinguishable, slopes transversely, pterygostomial angle blunt; longitudinal suture short not extending upto gastric region, transverse suture at the level of second pereopod, dorsal carination starts from fourth somite, ends at posterior border of sixth somite with a sharp spine; antennular flagella equal, epipod present on first and second pereopods; basal spine present on first, second and third pereopod; telson unarmed; distomedian projection of median lobe of petasma very small; distolateral projection of lateral lobe of petasma long, slender, horn-like, diverging proximally and curving inward distally, without dorsal spiniform process; anterior plate of thelycum subquadrate, posteriorly depressed, medially fused to posterior plate; posterior plate with a pair of lateral depressions and a median boss; a median tuft of long hair behind thelycum.

Distribution:

India: Gujarat, Maharastra, Kerala, West coast and Tamil Nadu & Andhra Pradesh, East coast.

Elsewhere: Sri Lanka; Malaysia; Borneo; Philippines; New Guinea; North Australia.

Contribution to Fishery:**In India:**

The species has been reported to be of commercial value in Bombay waters Kunju (1967). During the present study the species has not been observed among the commercial catch along the west coast.

Elsewhere:

According to Tham (1968) it has been commonly found in commercial catches of Malayasian water.

Genus *Megokris* Pérez Farfante & Kensley, 1997

The genus *Megokris* was established by Perez-Farfante and Kensley (1997) by breaking *Trachypeneus* Alcock, 1901. Alcock (1901) reported the genus for the first time from India as a subgenus of genus *Peneus*. A brief history with special reference to Indian contributions has been given below.

1901 *Peneus (Trachypeneus)* Alcock, *Descr. Cat. Indian Deep. Sea Crust.*, : 15.

1905 *Trachypeneus* Alcock, *Ann. Mag. nat. Hist.*, 16(7): 522.