Indian subcontinent has a long coastline of 4500 km includes nine maritime states along with vast continental shelf and two peninsular zone namely Andaman & Nicober and Lacca & Minicoy, rich in fishery wealth. Present study reveals that a total of 25 species under 9 genera of family Penaeidae Rafinesque – Schmaltz, 1815 have been recorded from Odisha coast, east coast of India. Distributional range of the species found in Odisha coast shows that majority of the species are pan tropical in distribution. Penaeid taxonomy of Odisha region is very scattered, infect there is no comprehensive work on the group for the present study area. So, present work is an attempt to make an up to date comprehensive systematic document on Penaeid prawn of Odisha Coast. This book includes a simplified key for identification of 25 species under 9 genera, their synonyms , type locality, diagnosis and distribution both India and elsewhere. A list of reference is being included in the reference section of the book. The book has been received warmly as an excellent reference book for the students of fisheries and research workers on penaeid prawn taxonomy.

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A Systematic study on Penaeid prawn of Odisha Coast

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2015

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Abstract

Present study reveals that a total of 25 species under 9 genera of family *Penaeidae* Rafinesque – Schmaltz, 1815 have been recorded from Odisha coast. Distributional range of the species found in Odisha coast shows that majority of the species are pantropical in distribution except *Parapenaeopsis cultirostris* Alcock, 1906; *Parapenaeopsis longirostris* Chanda & Bhattacharya, 2004; *Parapenaeopsis nana* Alcock, 1905 and *Penaeopsis eduardoi* Pérez Farfante, 1977, found only in the study area. Analysis of distributional data shows that most of the species found in Odisha coast are available through out east coast, 6 are found in east & west coast but not in Andaman Sea and three are found in east coast & Andaman Sea but not in west coast (Table-1).
Key word: Penaeid, Prawn, Odisha, Coast, Distribution.

Introduction:

Odisha, located in the northeastern coast of India, is a maritime state with immense potential in natural resources. It is locatedbetween17 ^{0} 49$^{'}$ N and 22^{0} 34$^{'}$ N latitudes and 81^{0} 27$^{'}$ E and 87^{0} 29$^{'}$ E longitudes. Orissa State covers an area of 156,000 km^{2} and has a total population of 36.7 million (2001 census). The state has a population density of 236 persons/km^{2} (2001 census) covering 30 districts including six coastal districts,viz.,Balasore, Bhadrak, Kendrapada, Jagatsinghpur, Puri, and Ganjam, spanning a coastline of 480 km (Figure 1). The total population of these six coastal districts is 8,975,581 and is distributed in an area of 21,887 km^{2} with a population density 410 persons/km^{2} (2001 census). The study area enjoys international importance and is one of the sites of world heritage attracting tourists and pilgrims. It is gifted with Asia's largest brackishwater lagoon, theChilika; a 672 km^{2} extensive mangrove forest and wetland, the Bhitarkanika wildlife sanctuary; and the world's largest known nesting beaches of olive Ridley sea turtles, the Gahirmatha and the Rushikulya. Such a large maretime state with 480 km long coast line is certainly rich in marine bioresorcess like fish, prawn, crab, molluscs, turtles etc.

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. In India, with the introduction of mechanization and due to the development of efficient export industries, prawn fishery has substantially improved during last three decades. The foreign exchange earnings by export of prawns and prawn products from the country has grown up considerably. In short, as in every prawn fisheries together with all the segments of the industry concerned with prawn products export are

playing increasingly prominent role in the economy of the country. Given this economic significance and the fact that penaeid prawns occur in a wide variety of shallow – water marine, estuarine and back water habitats, knowledge on the ecology, feeding, reproduction, lifecycle, fecundity, prey predator relationship, behavior, population dynamics and fisheries potentials have vastly increased over the last three decades. The knowledge of the systematics of prawns is an essential prerequisite for their wise management and exploitation. Earliest contribution on the penaeid prawn from Indian water was by Fabricius (1798). Some important contributions on the prawns of this region during nineteenth century were by Milne Edwards (1837), Miers (1878), Bate (1888), Wood-Mason (1891), Wood-Mason and Alcock (1891), Alcock and Anderson (1894, 1899). Alcock (1901,1905,1906) and George (1979) was the taxonomist of twenth century who tried to make a comprehensive study on the penaeid taxonomy of Indian region. Beside these there are so many taxonomic works on the group like by Fisher & Beanchi (1983), Paulinose (1986), Achuthankutty and Parulekar (1986), Reddy (1995), Pathan and Jahlihal (1997), Chanda & Bhattacharya (2002, 2003, 2004, 2009, 2014), Chanda & Roy (2004, 2005), Chanda (2014a, 2014b, 2014c, 2015). In spite of these work, there are some lacuna on the penaeid systematics and distribution of Indian region. Penaeid taxonomy of Odisha region is very scattered, infect there is no comprehensive work on the group for the present study area. So, present work is an attempt to make an up to date comprehensive systematic document on Penaeid prawn of Odisha Coast (here Odisha is the new name of Orissa).

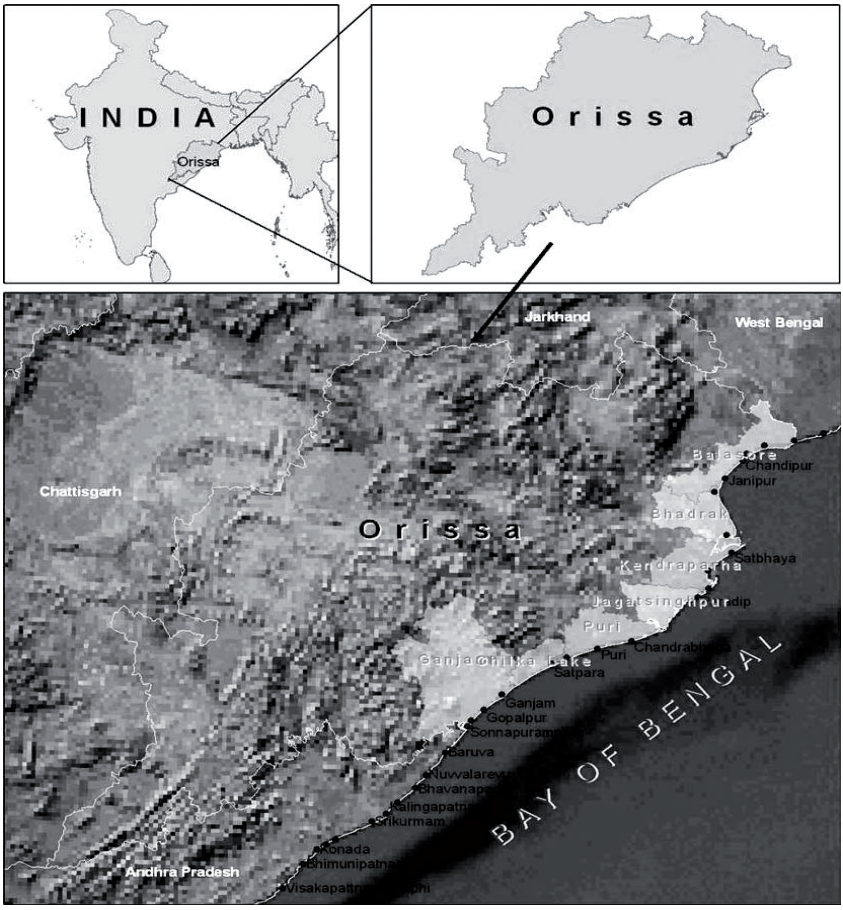

Fig. 1 Coast line of Odisha State

Materials and Methods

The present study is mainly based on the specimens collected by the author from commercial trawler catch of different fish landing centres. Some of the specimens were purchased from fish market from the nearby fish landing centres. In addition to this penaeid prawns preserved in the National Collection of the Zoological Survey of India, Kolkata, India; Central Marine Fishery Research Institute, Cochin, Kerala and its regional stations at Mandapam, Tamil Nadu; National Institute of Oceanography, Goa were also studied. Total materials studies for the species foumd in Odisha coast are included in the present dissertation.

The materials preserved in rectified spirit (90%) and body parts of taxonomic importance have been dissected and studied under a stereoscopic binocular microscope. The detailed synonymies have been furnished to the family, genera and species and also their keys, diagnosis, distribution, taxonomic remarks have been furnished. The genera and species are arranged alphabetically for convenience. In addition an attempt has been made to include a comprehensive coverage of the references in the Reference section. For all citations of taxon author's name and year of publication has been given. Figure of a hole body (lateral view), petasma and thelycum has been drawn for a representative species of each genus available in the study area.

Morphology and terminology

Important morphological feature of Penaeids in taxonomic differentiation has already been – commented on in a number of previous literature e. g. Kubo (1949), Dall (1957) , Perez Fartante (1969). In this contribution a general scheme of terminology used is adopted by the combination of Dall et al. (1990) and Perez Fartante & Kensiey's (1997) works.

Features of systematic importance are the rostrum, the carapace with all its characters, the carination, sutures and 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. are diagrammed (Fig. -8) and defined as follows.

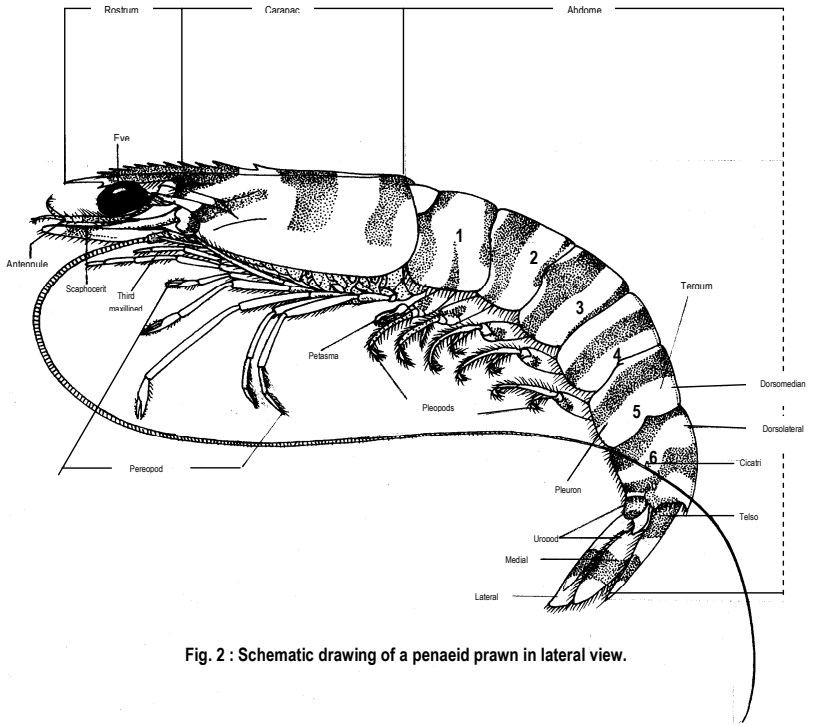

Fig. 2 : Schematic drawing of a penaeid prawn in lateral view.

A. ROSTRUM (Fig. 2):

Anteromedian projection of the carapace between two eyes.

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, posterioly 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 antennual 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).

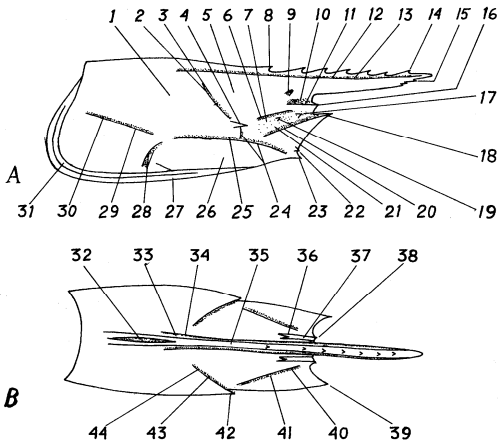

Fig. 3 : Features of Carapace.

A. Lateral View : (1) Cardiac region. (2) Cervical carina; (3) Cervical sulcus; (4) Hepatic spine, (5) Gastric region, (6) Gastroorbital carina; (7) Orbitoantennal sulcus; (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) Orbitoantennal sulcus; (22) Branchiostegal spine; (23) Pterygostomian spine; (24) Hepatic carina; (25) Hepatic sulcus; (26) Pterygostomian region; (27) Marginal region; (28) Inferior carina and sulcus; (29) Branchiocardiac carina; (30) Branchiocardiac sulcus. (31) Pterygostomian 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) Orbitoantennal sulcus; (42) Hepatic spine; (43) Cervical sulcus; (44) Cervical carina.

6. **Branchiostegal spine:** Short spine on or near the anterior marginof the carapaceventral 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 posterionmargin of carapace (Fig. 3:A12).
2. **Postrostral carina:** Dorso median 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 thecarapace.

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.

1. **Fixed spine:** Spine fixed on distolaterall margin of telson (Fig.. 4:N).

2. **Movable spine:** Spine present on distolaterall 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 arisedistally.
3. **Antennular flagellum :** Multiarticulate paired filaments (sometimes flattend 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 leteral 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 seve 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 a biramus appendages, arising from the basis or from the protopodite (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 distal basis (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).

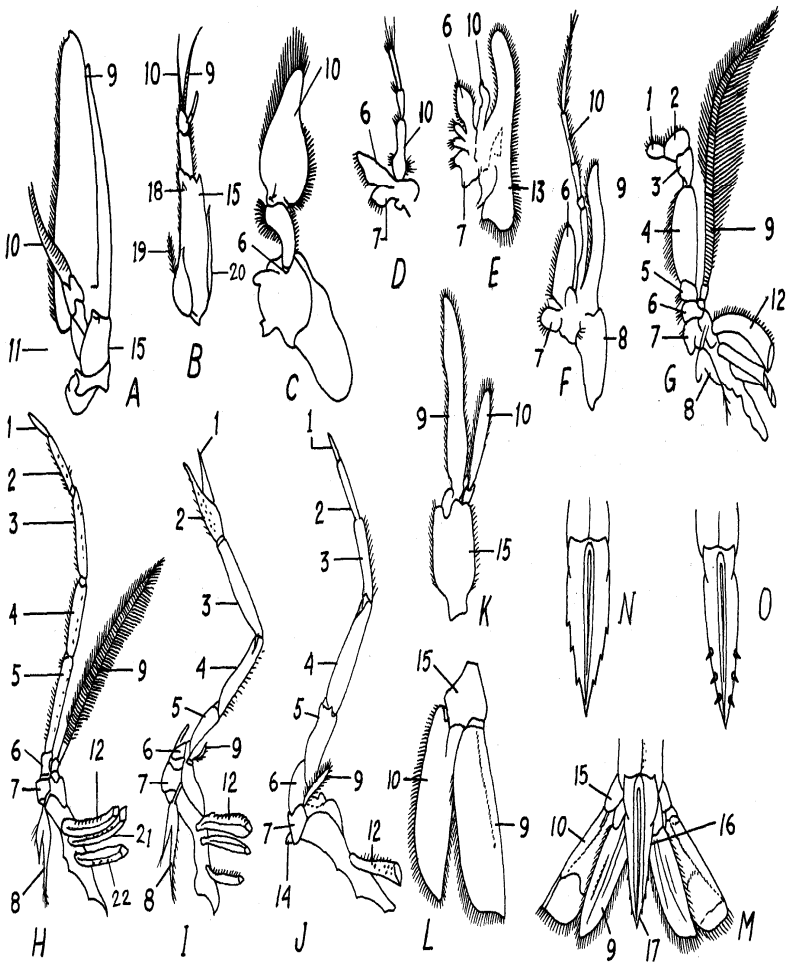

Fig. 4 : Appendages of penaeid prawn

(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) Prosartema;

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 unfaceted 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 sacle:** 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).

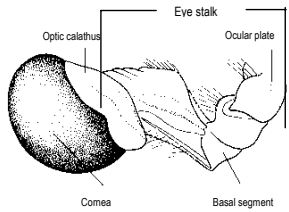

Fig. 5 : Features of Eye (After Pérez Farfante & Kensley, 1997).

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 leteral 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 ventro lateral lobule of the petasma (Fig. 6).
    9. **Distoventral projection:** Outer distal flap articulating with distal extremity of ventrolateral lobule of petasma.

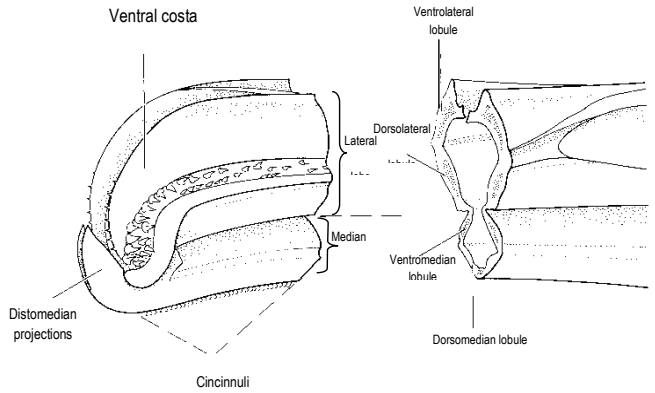

Fig. 6 : Features of patasma (After P érez Farfante &

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:** Latrral 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 spermatc

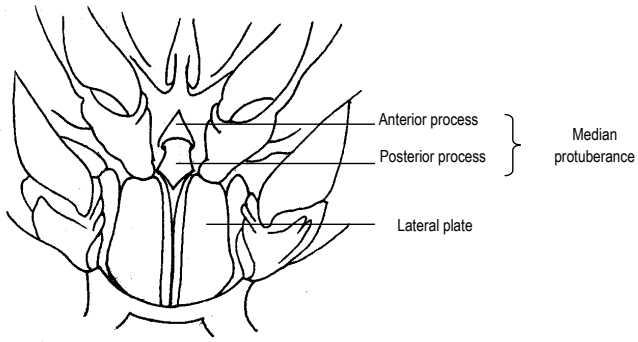

Fig.7: Features of thelycum

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).

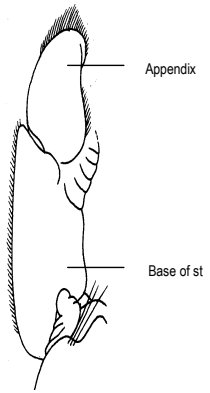

Fig.8: Appendix mascu

Systematics

Penaeid prawn belong to family *Penaeidae*. A brief account of its systematic position is given below:

Superclass : *Crustacea* Pennant, 1777.
Class : *Malcostraca* Latreille, 1806.
Order : *Decapoda* Latreille, 1803.
Suborder : *Dendrobranchiata* Bate, 1888.
Super family: *Penaeiodea* Rafinesque-Schmaltz, 1815.
Family : *Penaeidae* Rafinesque – Schmaltz, 1815.

Family *Penaeidae* Rafinesque – Schmaltz, 1815.

Rafinesque-Schmaltz (1815) erected *Penedia* as a subfamily of *Plyonuria*.Subsequent history of the family name has been given in detail by Parez Farfante and Kensley (1997). Alcock (1901) reported this family from Indian water for the first time. Some important contributions in the Indian context are listed below.

1888 *Penaeidae* Bate, Rep. scient. Results Voy. Challenger, 24:220.
1901 *Penaeidae* Alcock, Descr. Cat. Indian Deep-Sea Crust., :11.

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

1978 *Penaeidae* Péréz Farfante, FAO Sp. Indent. Sh., 6:1; 1988, NOAA Tech. Rep. NMFS, 64: iii, 8; Perez Farfante & Kensley, 1997, Mem. Mus. nat. Hist. nat. no. 175, 233 pp.

1997 *Penaeidae* Pathan & Jalihal, J. Bombay Nat. Hist. Soc., 94(3): 496-514.

Diagnosis of the family:

Body compressed, well developed rostrum, extending to or beyond the distal margin of first antennular segment [except Genus *Miyadiella* Kubo, 1949 and Trachypenaeopsis Burkenroad, 1934]; armed with dorsal and in some genera with ventral teeth; carapace having no post orbital spine, antennal and hepatic spine usually present; cervical sulcus never extending beyond gastric region; posterior three or four abdominal somites with dorsal carina; telson sharply pointed, with or without lateral spines.

Eye with optic calathus lacking median tubercle; basis of eye stalk with moderately developed distomedian scale; ocular plate lacking styliform projection; antennule with prominent foliaceous prosartema, flagella of about almost equal length; exopod present on second and third maxilliped and first four pereopod; third, fourth and fifth pleopods biramous; pleurobranchia on somite IX to XII and sometimes on XIII and XIV; rudimentary arthrobranchia usually present on somite VII two arthrobranchiae on VIII to XII and posterodorsal one on XIII; podobranchia on second maxilliped only; epipod present on first and second maxilliped, lacking on fourth and fifth pereopods; petasma semi-open or semi-closed; second pair of pleopod of male bearing appendix masculina; thelycum open or close.

Remarks :

Family *Penaeidae* is represented by 26 genera (Péréz Farfante & Kensley, 1997) of which 15 genera are found in Indian water. Among these 15 gemera Odisha Coast represents 9 genera.

Key of the genera found in Odisha Coast

1. Rostrum armed with dorsal and ventral teeth; presence of gastro-orbital carina ……..……..... 2

---- Rostrum armed with dorsal teeth only; absence of gastro-orbital carina ……... 4

2. Orbital spine absent, telson unarmed ……..……..……..……... 3

---- Orbital spine present and sharp; telson armed with movable spine ……..……*Melicertus* Rafinesque- Schmaltz, 1814.

3. Hepatic carina prominent, horizontal and antero-ventral to hepatic spine; cervical sulcus shallow. …….. *Penaeus* Fabricius, 1798.

---- Hepatic carina lacking; cervical sulcus well marked……...*Fenneropenacus* Pérez Farfante, 1969.

4. Longitudinal suture present; transverse suture present ……..……....5

Longitudinal suture absent; transverse suture absent ……..…… 7

5. Body thickset, densely pubescent, integument thick; hepatic carina absent ……..*Trachysalambria* Burkenroad, 1934.

---- Body smooth or very minutely pubescent, integument thin; hepatic carina present ……..……..……..……..…….. 6

6. Postocular sulcus prominent; parapenaeid spine absent ……...……..…..…….……. *Parapenaeopsis* Alcock, 1901.

---- Postocular sulcus absent; parapenaeid spine present …… ……..…..…….. *Parapenaeus* Smith, 1885.

7. 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 ……..……...……...…….. 8

8. Carapace with a small orbital spine; sixth abdominal somite without cicatrix; first and second pereopod and third maxilliped with basial spine; petasma asymmetrical …….. *Metapenaeopsis* Bouvier, 1905.

---- Carapace without orbital spine; sixth abdominal somite bearing long, interrupted cicatrix; only first pereopod with basial spine; petasma symmetrical ……..……..……. *Penaeopsis* Bate, 1881.

Genus: *Fenneropenaeus* Pérez Farfante, 1969

(Fig. 9)

Osbeck (1765) recorded the genus from China as *Cancer* for the first time. H. Milne Edwards (1837) was the first to record the genus as *Penaeus* from India. A brief history of the genus with special reference to Indian contributions are given below.

1765 *Cancer* Osbeck, Reise Ostind. China: 151 [Part].

1837 *Penaeus* H. Milne Edwards, Hist. Nat. Crust., 2: 415; George, 1969, Bull.Cent. Mar. Fish. Res. Inst. No. 14: 5-48; 1979, Con. Mar. Sci., dedicated to Dr. C.V. Kurian: 21-59; Muthu and Motoh, 1979, Res. Crust., Carcino. Soc. Japan, 9: 64-70.

1905 *Peneus* Alcock, Ann. Mag. nat. Hist., 16(7): 1-513; 1906, Cat. Indian Dec. Crust., 3(1) : 7 [Part]

1969 *Penaeus* (*Fenneropenaeus*) Pérez Farfante, Fish. Bull., U.S., 67(3) : 1-466.

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

Type Species: *Penaeus indicus* H. Milne Edwards, 1837, Hist. Nat. Crust., 2:415.

Type Locality: Coast of Coromandal, East coast, India.

Diagnosis of the genus:

Body glabrous, smooth; rostrum armed with both dorsal and ventral teeth; carapace lacking orbital and pterygostomian spine, hepatic and antennal spine very prominent; postocular sulcus absent, antennal carina prominent; gastroorbital carina absent or feeble, gastrofrontal carina absent, orbito-antennal sulcus marked, cervical carina and sulcus prominent, hepatic sulcus absent or feeble, hepatic carina absent, branchiocardiac carina and sulcus absent; suture absent; sixth abdominal somite with lateral cicatrix; telson without spine; antennule without parapenaeid spine, flagella shorter than carapace. Basial spine present on pereopod first and second; petasma symmetrical, semiclosed; appendix masculina subelliptical or subtriangular with

closely set marginal spines; thelycum closed with one anterior process and two lateral plates on sternite XIV.

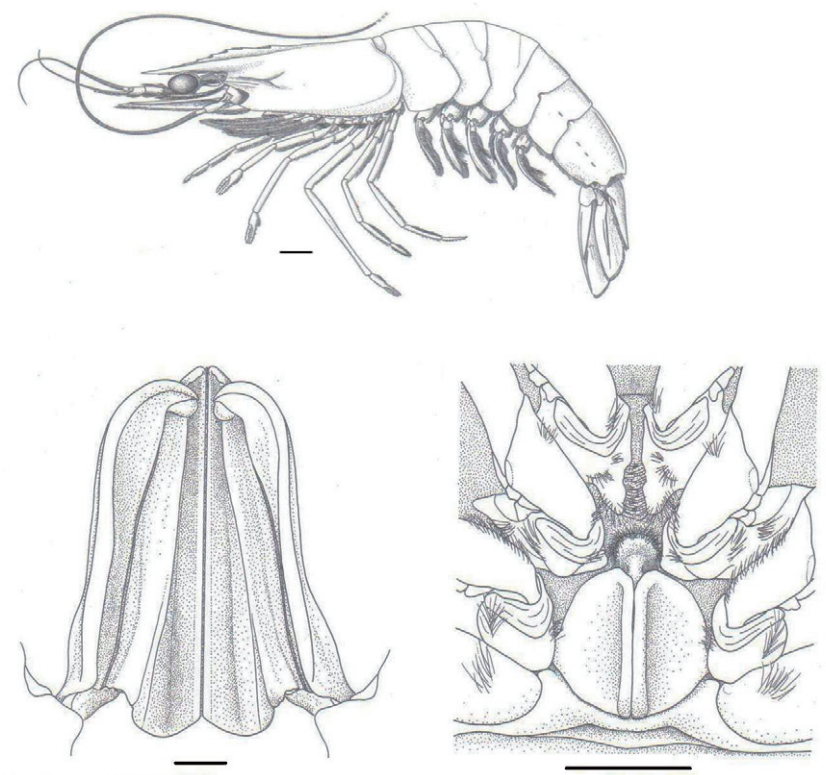

Fig.9: *Fenneropenaeus indicus*, scale lateral view =2mm, thelycum = 6 mm, petasma = 2mm.

Remarks:

Three species are found in Odisha Coast.

Key to the species found in Odisha Coast

1. Blade of rostrum high; adrostral carina and sulcus ending between epigastric tooth and penultimate rostral tooth; prominent ischial spine present on first pereopod ……..……..……..……..……...….*F. marguiensis* (De Man, 1888)

---- Blade of rostrum low; adrostral carina and sulcus ending just below the level of epigastric tooth or little beyond it; ischial spine absent on first pereopod . …… 2

2. Gastroorbital carina located close to hepatic spine; distomedian projections of petasma overhanging distal margin of costae; tubercles present on the outer surface of lateral lobe of petasma ……. *F. indicus* (H. Milne Edwards, 1837).

---- Gastroorbital carina not close to hepatic spine, occupy a middle position between hepatic spine and orbital margin; distomedian projections of petasma not overhanging but slightly extend over distal margin of costae; tubercle absent on the outer surface of lateral lobe of petasma……..……..…….... *F. penicillatus* (Alcock, 1905)

***Fenneropenaeus indicus* (H. Milne Edwards, 1837)**

F.indicus was first recorded by H. Milne Edwards (1837) from Coromandal coast, East coast of India as a new species *Penaeus indicus.* A brief history of the species status and records are listed below.

1837 *Penaeus indicus* H. Milne Edwards, Hist. Nat. Crust., 2:415; Miers, 1878, Proct. Zool. Soc. London, 1878: 298-310; Nataraj, 1942, Curr. Sci., 11(12) 468-469; Menon, 1956, Proc. Indo-pacific Fish.Counc., 6(3):345-347; George, 1969, Bull. Cent. Mar. Fish. Res. Inst. No. 14:5-48; 1979, Con. Mar. Sci. dedicated to Dr. C.V. Kurian : 21-55.

1892 *Penaeus indicus longirostris* De Man, Zool. Ergeb. Einer Reise in Neider.Ost., 2:265-527.

1906 *Peneus indicus* Alcock. Cat. Indian Dec. Crust. Part III. Mac.Fas. I: 1-55.

1969 *Panaeus* (*Fenneropenaeus*) *indicus* Pérez Farfante Fish. Bull. U.S. 67(3): 1-466.

1997 *Fenneropenaeus indicus* Perez Farfante and Kensley, Mem. Mus. nat. D'Hist. nat., 175: 1-233.

Type Species: By original designation *Penaeus indicus* H. Milne Edwards, 1837, Hist. Nat. Crust., 2 : 415.

Type Locality: Coromandal coast, east coast of India.

Material Examined:

12 females (65-93 mm); ZSI. Reg. No. 4042-4053/9; off Chilka Lake; 17.01.1889; Alcock. 1 male (140 mm); ZSI.Reg. No. 4231/9; Kakinada, Andhra Pradesh; 26.03.1889; Alcock.12 males (65-109 mm); ZSI Reg. No. 4343-4354 / 9; Chennai Coast, Tamil Nadu; 22.07.1889; Wood-Mason.2 females (95-130 mm); ZSI.Reg. No.C3745/2; 3 females (45 – 120 mm); ZSI.Reg. No.C3746/2 and 10 females (62-126 mm); ZSI.Reg. No.C3747/2; Satpara, Chilka Lake, Orissa; 17.09.1973; B.S. Lamba.1 female (76 mm); Reg. NO.C4805/2; Chennai F.L.C., Tamil Nadu; 26.08.1995; A. Chanda.1 female (75 mm) and 2 males (66-68 mm); ZSI.Reg. No.C4926/2; Gelanchundi, Machlipattnam, Andhra Pradesh; 8.09.1995; A.Chanda.1 female (63 mm) and 2 males (27-60 mm); ZSI.Reg. No.C4768/2; Mungergudi, Machlipattnam, Andhra Pradesh; 07.09.1995; A. Chanda.48 males (22-55mm.) and 30 males (27-60 mm.); ZSI.Reg. NO.C4773/2; Andaman & Nicobar Island; 14.01.1959; K.K. Tiwari.1 female (65 mm); ZSI.Reg. No.C4774/2; Ratnagiri, Maharastra; 23.04.1983; H.C. Ghosh.2 females (72-77mm); ZSI.Reg. No. C4780/2; Kakadwip, Central Fisheries, Kakdwip, 24 Pargana(s), West Bengal; 16.02.1989; N.C. Nandi & Party; 5 males (35-67 mm) and 18 females (32-75mm); ZSI. Reg. No.C4898/2; Pulicat Lake(s), Andhra Pradesh; 26.08.1995; T. Roy and Party.1 female (65 mm); ZSI.Reg. No.C4883/2; F.L.C. Chennai, Tamil Nadu; 27.08.1995; T.Roy and Party.2 males (45-47 mm) and 2 females (43-65 mm); ZSI.Reg. No.C4887/2; Dona Paula, Goa; 31.07.1997; A.Chanda.1 female (120 mm); Reg. No. CMFRI-AR. 249; Cochin, Arabian Sea (date and collector is not known).

Diagnosis of the Species:

Body glabrous; blade of rostrum comparatively low; rostrum armed with 7-9+1 dorsal and 4-5 ventral teeth, epigastric tooth conspicuously separated from penultimate tooth; adrostral carina and sulcus extend just below the level of epigastric tooth; gastroorbital carina well defined, occupies posterior two-third distance between hepatic spine and orbital margin of carapace; third maxilliped extend upto the tip of antennular peduncle; basial spine present on first and second pereopod; ischial spine absent on first pereopod; fifth abdominal somite with two and sixth with three cicatrices; distomedian projections of petasma overhanging distal margin of costae; a line of tubercles present on outer surface of lateral lobe of petasma; lateral plate of thelycum form tumid lips baset with papillae on inner surface.

Distribution:

India: Entire coastal region, estuaries and backwaters from West Bengal to Maharastra.

Elsewhere: South-east and east Africa to Red Sea; Madagascar, Sri Lanka; Yemen to southern China; Philippines; Japan; New Guinea; Northern Australia.

***Fenneropenaeus merguiensis* (De Man, 1888)**

Alcock (1906) recorded *F. merguiensis* from India for the first time as *Peneus indicus merguiensis*, sensu De Man (1892). A brief history of the species with special reference to Indian contributions are given below.

1888 *Penaeus merguiensis* De Man, J.Linn. Soc. London (Zool.), 22(140) : 1-312; George, 1969, Bull. Cent. Mar. Fish. Res. Inst. No. 14: 5-48; 1979, Cont. Mar. Sci. dedicated to Dr. C.V. Kurian: 21-55.

1888 *Penaeus indicus* Bate, Rep. Sci. Res. "Challenger", 24:1-924.

1892 *Penaeus indicus merguiensis* De Man, Zoologiche Ergebnisse einer Reise in Niederlandisch Ostindied, 2 : 265-527 (Edd. Max Webers); Menon, 1956, Proc. Indo-Pacific Fish.Counc., 6(3) ;345-347.

1906 *Peneus indicus merguiensis* Alcock, Cat. Indian Dec. Crust.Part-III.Mac. Fas.I: 1-55.

Type Species: *Penaeus merguiensis* De Man, 1888, J. Linn. Soc. London (Zool.), 22(140):1-312.

Type Locality: Mergui Archipelago, Myanmar, east of Andaman Island.

Material Examined:

1 female (210 mm) and 2 males (180-190mm); ZSI.Reg. No.C4831/2; Ramakrishna beach, Visakhapattnam, Andhra Pradesh; 15.09.1995; A. Chanda. 36 males (130-195mm), SZI Reg. No. 3933/9 to 3968/9; 10 miles N.E. of Devi River, Orissa Coast; 24-12-1888; Alcock; 2 females (182-210 mm); ZSI. Reg. No. 3969/9 & 3970/9; Orissa Coast; 24-12-1888; Alcock; 2 females (140-165 mm), ZSI.Reg. No. 4716/2 and 4717/6; Port Blair, Andaman; 12-08-1889; W.G. Booley; 5 males (120-125 mm); ZSI. Reg. No. 4672/9 to 4676/9; Mumbai (from market) (date of collection and name of collector is not found); 4 females (180-220 mm), ZSI. Reg. No. 4678/9 to 4681/9 (date and collector is not known).

Diagnosis of the species:

Body glabrous and smooth; rostral blade strong and high; adrostral carina and sulcus ending in between epigastric tooth and first rostral tooth; gastroorbital carina extending over middle third to half of distances between hepatic spine and orbital margin of the carapace; third maxilliped extending upto tip of antennular peduncle and dactyl half as long as propodus; basial spine on first and second pereopod absent; a prominent ischial spine present on first pereopod; fifth abdominal somite without any cicatrices; petasma with distomedian projections but projections not overhang distal margin of costae, minute tubercles on outer surface of lateral lobe; thelycum with lateral plates, their median margins forming tumid lips beset with papillae on their inner surface.

Distribution:

India: From Orissa to Andhra Pradesh in east coast, Maharastra in West coast and Andaman Island.Elsewhere: Persian Gulf; Pakistan; Sri Lanka; Malaysia; Singapore, Thailand; Indonesia; Gulf of Tonkin; South China Sea; Philippines; Hong Kong; New Guinea; North Australia; Fiji; New Caledonia.

***Fenneropenaeus penicillatus* (Alcock, 1905)**

F. penicillatus was described from Indian water by Alcock in 1905 as *Peneus indicus penicillatus*. From then onwards a chronological history of the species with special reference to Indian contributions are given below.

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

1969 *Penaeus penicillatus* George, Bull. Cent. Mar. Fish. Res. Inst. No. 14:5-48; 1979, Cont. Mar. Sci., dedicated to Dr. C.V. Kurian:21-55; Deshmukh and Ramamurthy, 1985, Indian J. Fish., 32(4) : 484-487.

1956 *Penaeus indicus penicillatus* Menon, Proc. Indo-Pacif. Fish. Counc., 6(3):345-347.

Type Species:*Peneus indicus penicillatus* Alcock, 1905, Ann. Mag. nat. Hist., 16(7):525.

Type Locality: Orissa coast, East coast of India.

Material Examined:

2 males (70-80 mm), ZSI.Reg. No. C4908/2; Subhas port, Porbandar, Gujarat; 10.12.1992; H.C. Ghosh and Party; 2 males and 1 female (60-70 mm); ZSI. Reg. No.C4891/2; Mypadu, Nellore, Andhra Pradesh 31.08.1995; A. Chanda.1 male (135 mm), ZSI.Reg. No.C4801/2; Palk Bay, Mandapam, Tamil Nadu; 08.08.1997; A. Chanda.

Diagnosis of the species:

Body glabrous; blade of rostrum low; adrostral carina and sulcus extending beyond epigastric tooth; gastroorbital carina extending over middle third of distance between hepatic spine and orbital margin of carapace, third maxilliped extending upto middle of second segment of antennular peduncle, dactyl of third maxilliped much longer than propodus; basial spine present on first and second pereopod, ischial spine absent on first pereopod; fifth abdominal

somite with two cicatrices; petasma with very short distomedian projections, not reaching distal margin of costae, no tubercles on outer surface of lateral lobe; thelycum with lateral plates forming tumid lips beset with papillae on inner surface.

Distribution:

India: This species is recorded from Gujarat to Maharastra, West Coast and Orissa to Mandapam, Kanyakumari, Tamil Nadu, East Coast of India.

Kagwade (1967) listed it among the less common forms in the catches off Mumbai and Kunju (1967) remarked that it is the main species obtained off the Maharastra coast, West coast of India. Kurian and Sebastian (1993) reported "small records from Mumbai and Orissa." Present study suggests that this species has a broad range of distribution in both the coast from Orissa in East coast to Gujarat in West coast but in infrequent number.

Elsewhere: Pakistan; Indonesia; China; Taiwan.

Genus *Melicertus* Refinesque-Schmaltz, 1814(Fig. 2)

(Fig. 2)

Genus *Melicertus* was established by Rafinesque-Schmaltz (1814), but carcinologist of nineteenth century and first half of twentieth century followed Fabricius' (1798) genus *Penaeus* for the species of the said genus. It was Pérez Farfante (1969) who established subgenus *Penaeus* (*Melicertus*). In 1997, Pérez Farfante and Kensley elevated the subgenus to the generic status. Alcock (1901) recorded the genus for the first time from India as *Peneus*. A brief history of the genus with special reference to Indian contributions are given below.

1798 *Penaeus* Fabricius, Supp. Ent. Sysl. Hafniae, Copenhagen, pp. 408.

1814 *Melicertus* Rafinesque-Schmaltz, Préc. Découv. Trav. Somiol., :22

1837 *Penaeus* H. Milne Edwards, Hist. Nat. Crust., 2: 414; De Man, 1911, Siboga Exped., 39a:95; George, 1969, Bull. Cent. Mar. Fish. Res. Inst. No. 14:5-48; Suseelan et al., 1982 Mar. Fish.Infor. Serv. T & E Ser., 35: 15-17; Fischer and Bianchi, 1983, FAO

Identification Sheets for Fishing Purposes. Western Indian Ocean Fishing Area 51, Vol. 5, FAO, Rome; Nandakumar, 1984, Mar. Fish.Infor.Seri. T & E Ser., 60: 14-15; Kathirvel and Selvaraj, 1988, J. mar. biol. Ass. India, 30: 1-7; Kurian & Sebastian, 1993, Prawn and Prawn Fisheries of India. Hindustan Publishing Corporation, New Delhi : 280pp; Achuthankutty and Nair, 1993, J. Indian Fish. Ass., 23: 109-111.

1901 *Peneus*Alcock, Descr. Cat. Indian Deep Sea Crust., : 13; 1905, Ann. Mag. nat. Hist., 16(7):513; 1906, Cat. Indian Dec. Crust.Part-III, Mac. Fas.I, 3(1):7.

1969 *Penaeus (Melicertus*) Pérez Farfante, Fish. Bull., U.S. 67(3) : 466.

1997 *Melicertus* Pérez Farfante & Kensley, Mem. Mus. nat. d'Hist. nat., 175:1-233.

Type Species:*Melicertus tigrinus* Rafinesque Schmaltz, 1814, Proc. Découv. Trav. Somiol., :22.

Type Locality: Sicily.

Diagnosis of the genus:

Body glabrous; rostrum with dorsal and ventral teeth; orbital tubercle prominent; hepatic and antennal spine strong, pterygostomian spine absent; postocular sulcus absent; post-rostral and adrostral carina and adrostral sulcus extending beyond epigastric tooth, almost always upto the posterior margin of carapace; gastrofrontal carina turning anterodorsally at posterior end; gastroorbital carina long, atleast three quarters of distance between orbital margin and hepatic spine; orbitoantennal sulcus deep; cervical carina and sulcus well marked; hepatic carina and sulcus prominent; branchiocardiac carina absent; sutures absent; sixth pleuron bearing three lateral cicatrices; parapenaeid spine absent in antennules; antennular flagella shorter than carapace; basial spine reduced on first and second pereopod, ischial spine occasionally present on first pereopod; petasma symmetrical and semiclosed; thelycum closed type, with paired lateral plate on sternite XIV.

Remarks:

One species under genus *Melicertus* is known from Odisha Coast.

***Melicertus canaliculatus* (Olivier, 1811)**

(Fig. 2)

The species was described by Olivier (1811) from "mer des Indes" as *Palaemon canaliculatus*. Later on Latreille (1825) placed the species under *Penaeus.* Pérez Farfante (1969) divided *Penaeus* into four subgenera and placed the species under subgenus *Melicertus.* She redescribed *Penaeus* (*Melicertus*) *canaliculatus* in 1976. In 1997 Pérez Fartante and Kensley elevated the subgenus to the generic status. A brief history of the species with special reference to Indian contributions are given below.

1811 *Palaemon canaliculatus* Olivier, Encycl. Méth. Hist. Natur. Insectes, 8:652-667.

1825 *Penaeus canaliculatus* Latreille, Encycl. Méth. Hist. Natur., 10:1-832; H. Milne Edwards, 1837, Hist. Nat. Crust. Compr. I'cmat. Physo.Classif. Animaux, 2:1-532; Nataraj, 1942, Curr. Sci., 11:468-469; Menon, 1956, Proc. Indo-Pacific Fish. Coun., 6:345-346; Ramamurthy, 1963, J. mar. biol. Ass. India, 5(1): 146-148; Jones, 1967, Proc. Symp. Crust., Mar. Bio. Ass.India, 4:1328-1340; Kunju, 1967, Proc. Symp.Crust., Mar Biol. Ass. India, 4:1382-1397; Nair et al., 1967, J. mar. biol. Ass. India, 7: 420-439; George, 1969, Bull. Cent. Mar. Fish. Res. Inst. No. 14:5-48; Silas and Muthu, 1976, J. mar. biol. Ass. India, 18(1): 78-90.

1976 *Penaeus (Melicertus) canaliculatus* Pérez Farfante, Zool. Meded., 50(2):23-37.

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

Type Species:*Palaemon canaliculatus* Olivier, 1811, Encycl. Méth. Hist. Natur. Insectes, 8:652-667.

Type Locality: "Mer des Indes."

Material Examined: 2 females (58-102 mm); ZSI.Reg. No.C4870/2; New Digha, Bay of Bengal; 23.02.1995; A. Chanda.1 male (52 mm) and 1 female (95 mm); ZSI. Reg. No. 3923/2; 10 miles N.E. of Devi River, Orissa, east coast of India; 24.12.1888; A. Alcock.

Diagnosis of the species:

Body smooth; rostrum slightly arched basally, extending to distal margin of third segment of antennular peduncle, dorsal teeth 8-10+epigastric and a single ventral tooth; adrostral carina and sulcus extending upto posterior margin of carapace; gastrofrontal sulcus bifurcate posteriorly, accompanied by a strong carina originating anteriorly in acute orbital angle; orbitoantennal sulcus broad anteriorly and narrow posteriorly; gastroorbital carina strong occupying more than posterior 4/5 distance between hepatic spine and orbital margin; antennal carina prominent, spine sharp; cervical sulcus well defined, hepatic carina extending upto the level of the posterior end of cervical sulcus, horizontal upto the base of antennal carina, then sloping anteroventrally; antennal flagellum short; abdomen with middorsal carina beginning from middle of fourth somite, extending upto dorsomedian end of sixth somite with a small spine, sixth somite bearing three cicatrices laterally on each side; telson sharply pointed without lateral spine; petasma semiopen type with ventral costa strongly curved distally. Distomedian projection very short; thelycum closed type, anterior plate of thelycum is an indistinct median protuberance without apical tuft of setae. Lateral plates on sternite XIV with anteriorly diverging projections.

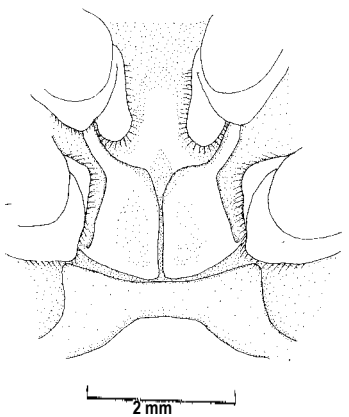

Fig. 10 :*Melicertus canaliculatus* Female thelycum

Remarks:

Material examined agree with the description of Perez Farfante (1976) except absence of epical tuft of setae in the anterior plate (Fig.10)

Distribution:

India**:** Digha, West Bengal; Odisha coast; Kakinada, Andhra Pradesh; Travancore, Cochin; Kerala; Mumbai, Maharastra; Goa & Andaman sea.

Elsewhere**:** East coast of South Africa to Red Sea; Madagascar; Mauritius; Réunion Island; Gulf of Oman; Sri Lanka; Bangladesh; Malyasia; Indonesia; Tailand; South China; Philippines; Taiwan; Japan; New Guinea; Northern Queensland, Australia; Loyalty Island; Fiji.

Genus *Metapenaeopsis* Bouvier, 1905

(Fig. 11)

Genus *Metapenaeopsis* was created by Bouvier (1905) with *M. pubescens* as type. Burkenroad (1934) redefined the genus and relegated this genus as a subgenus of *Penaeopsis* Bate, 1881, on the basis of the shape of petasma Kubo (1949), however, re-elevated it to the generic status.

Metapenaeopsis has been placed on the official list of Generic Names in Zoology, International Commission of Zoological Nomenclature, 1969, Opinion 864, Name No. 1819, Bull. Zool. Nom., 25 (4/5): 139.

Wood-Mason (1891) was the first to record this genus from Indian water as *Metapenaeus.* A chronological history of the genus with speical reference to Indian contributions are given below.

1891 *Metapenaeus* Wood-Mason, Ann. Mag. Nat. Hist., 8(6): 271.

1905a *Metapenaeopsis* Bouvier, C.r.hebd. Séanc.Acad. Sci., Paris, 140: 381; Nataraj, 1942, Curr. Sc., 11(12): 468; Kunju, 1960, J. mar. biol. Ass. India, 2(1): 82-84;George, 1967, Proc Symp. Crustacea.Mar. biol. Ass. India, Pt. I: 337-346.

1906 *Metapeneus* Alcock, Cat. Indian Dec. Crust., 3(1): 16.

1954 *Penaeopsis* Kurian, Bull. Cent. Res. Univ. Travancore, Ser. C., Nat. Sci., 3 (1): 69-91.

Type Species: *Metapenaeopsis pubescens* Bouvier. 1905, Comples Rendus de L'Academie des Sciences, Paris. 140: 980-988.

Type Locality: Cape Verde Islands.

Diagnosis of the Genus:

Body pubescent; rostrum with dorsal teeth only, variable in length; carapace without suture; hepatic, cervical and orbitoantennal sulci indistinct, post ocular sulcus absent; antennal, hepatic and pterygostomian spine well developed; orbital spine very short; mid-dorsal carina on abdomen well developed, variable in length; antennule with parapenaeid spine on first segment of antennular peduncle at distoventral half; antennular flagella variable in length; basial spine present on third maxilliped and on first and second pereopod, absent on third; exopod present on all maxilliped and pereopod; telson with a pair of well developed sub-apical fixed spine, variable number of movable lateral spine present anterior to fixed pair; petasma asymmetrical, divided into proximal and distal complex half; distal half with several projections and proximal half with dorsolateral lobules produced proximally into spurlike projections;