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A Systematic Study on Prawns (Crustacea: Decapoda: Caridea: Palaemonidea: Palaemonidae) in Riverine System of Paschim Medinipur, West Bengal

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Abstract:

The source of prawns are marine, fresh & brackish water bodies of tropical countries of the world. Present study deals with the fresh water prawns of rivers traversing through Paschim Medinipur. Family Palaemonidae is represented by 7 genera and 82 species (Holthuis, 1980) of which 4 genera namely *Exopalaemon*, *Leptocarpus*, *Macrobrachium* and *Nematopalaemon* are found in Indian water. Among these *Exopalaemon* and *Macrobrachium* are found in the major riverine system (Kansaboti, Subarnarekha, Silaboti, & Kaliaghai) of Paschim Medinipur district. *Exopalaemon* represents only one species, *E. styliferus* (H. Milne Edwards, 1840) and *Macrobrachium* represents 5 species namely *M. idea* (Heller, 1862), *M. javanicum* (Heller, 1862), *M. malcolmsonii* (H. Milne Edwards, 1844), *M. rosenbergii* (de Man, 1879) & *M. rude* (Heller, 1862).

Keywords: Prawn, Shrimps, Palaemonidae, *Exopalaemon*, *Macrobrachium*

1. Introduction

Shrimps and Prawns of various kinds have certainly been a source of protein for human consumptions from very early time. Within historical times reference is made to prawn in ancient Chinese and Japanese literature (Perez Farfaunte & Kinsley, 1997). Usage of the term 'Prawn' and 'Shrimp' are some what 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 Palaemonids, while 'Shrimp' to the smaller species belonging to the other families (Kurian & Sebastian, 2000). As such in the present study, the term 'Prawn' is used for all the species belonging to family *Palaemonidae*.

The family *Palaemonidae* Rafinesque, 1815 represents one of the few decapod groups that has successfully colonized oceans, estuaries and rivers even upto hill top in the subtropics and tropics. The prawns of the family *Palaemonidae* are highly important on both commercial as well as ecological point of view. Extensive studies on the biodiversity and taxonomy of Indian freshwater prawn have been carried out by De Man, 1908; Kemp, 1917; Chopra, 1939; Kunju, 1956; Panikkar & Menon, 1956; Kurian & Sebastian, 2000; Jayachandran, 2010 and they have recorded 75 species belonging to 8 genera under the family (Jayachandran, 2010). The literature on the group from West Bengal have been found such as Reddy, 1995; Roy and Nandi, 2004 and Roy, 2010. But specific literature on the group from Paschim Medinipur is nil. Present study is the first attempt towards the comprehensive account of the Palaemonid prawns including biodiversity taxonomy and statistical analysis of the group. Present study reveals that the major rivers of the district, like Subarnarekha, Kansaboti, Silaboti and Kaliaghai represents 6 species belonging to 2 genera under family *Palaemonidae*.

2. Materials and Methods

Present study is done on the extensive collection of the materials from different site of different rivers and markets. The specimens are preserved in rectified spirit (90%) and body parts of taxonomic importance have been dissected and studied under stereoscopic binocular microscope. Identification were made on the basis of literature like Holthuis (1980), De Man (1908) and Jayachandran (2010). The detailed synonymies have been furnished to the family, genera and species and also their 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 Reference section. For all citations of taxon author's name and year of publication has been given. A statistical analysis has been made for the species found in different river of the district with reference to the Sorensen's (1948) quotient of similarity (Q.S.) as mentioned below.

$$Q.S. = 2c / a+b$$

Where,

a = Number of species in one river.

b = Number of species in second river.

c = Number of species common to both rivers.

Degree of similarity of otherwise was judged following under mentioned scale :

>0.71 strongly similar.

0.61 – 0.70 moderately similar

0.51 – 0.61 slightly similar

0.41 – 0.50 moderately dissimilar

<0.40 strongly dissimilar.

Collection of samples from different streams in West Midnapore during November, 2009 to October, 2011. All the specimens were identified and studied during the course of study. Distribution of species have been shown in table-1. Statistical analyses of the data found in the study is done using the Sorenson's quotient of similarity which is shown in table –2.

3. Results and Discussion

The family *Palaemonidae* was created by Rafinesque-Schmaltz in 1815 as *Palaemonia*, subsequent history of the family name has been given in detail by Holthuis (1980). J.G. De Man (1908) reported this family from Calcutta for the first time. Some of the important contributions in the Indian context are listed below.

- *Palaemonidae* De Man, 1908, *Rec. Indian Mus.*, 2: 211-31.
- *Palaemonidae* Kemp, 1917, *Rec. Indian Mus.*, 13 : 203-31.
- *Palaemonidae* Chopra, 1939, *J. Bombay Nat. Hist. Soc.*, 41 : 221-34.
- *Palaemonidae* Kunje, 1955, *Proc. IPFC*, 6 : 404-18.
- *Palaemonidae* Panikkar & Menon, 1956, *Proc. IPFC*, 6 : 328-44.
- *Palaemonidae* Kurian & Sebastian, 2000, Hindustan Publishing Corporation, 280P.
- *Palaemonidae* Holthuis, 1980, *FAO Fish. Synop.*, (125) 1: 261.

4. Diagnosis of the Family

Carapace cylindrical with prominent laterally compressed rostrum carrying dorsal and ventral teeth. Anterior margin of carapace with an antennal and a branchiostegal spine. The branchiostegal spine sometimes replaced by a hepatic spine; in some species neither branchiostegal nor hepatic spines present. Pleura of second abdominal somite wide and covering both those of first and third somites. Telson elongated with 2 pairs of dorsal spines and 2 or 3 pairs of posterior spines. First and second pairs of pereopods with pincers. First pair of pereopod shorter and more slender than second pair. Last 3 pairs of pereopods simple without pincers. No exopod on the legs. Males with an appendix masculine and an appendix interna on the endopods of second pleopods.

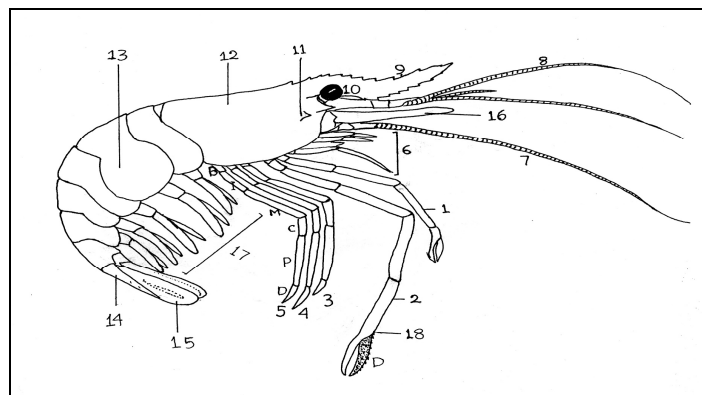


Figure 1: Taxonomically important characters of *Palaemonid* prawn

1-5 pereopods, 6 maxillipeds, 7 antenna, 8 antennule, 9 rostrum, 10 stalk compound eye, 11 hepatic spine, 12 carapace, 13 pleuron, 14 telson, 15 uropod, 16 scaphocerite, 17 pleopod, 18 chela, B - Base, I - Ischium, M - Merus, C - carpus, P - Propodus, D - Dactylus.

5. Remarks

Family *Palaemonidae* is represented by 7 genera and 82 species (Holthuis, 1980) of which 4 genera namely *Exopalaemon*, *Leptocarpus*, *Macrobrachium* and *Nematopalaemon* are found in Indian water. Among these *Exopalaemon* and *Macrobrachium* are found in the riverine system of Paschim Medinipur district. *Exopalaemon* represent only one species and *Macrobrachium* represent 5 species in different riverine system of Paschim Medinipur.

6. Key to the Genera Found in India

1. Branchiostegal spine present below the level of antennal spine on the anterior margin of carapace 2
 — Branchiostegal spine absent..... 3
2. Branchiostegal groove absent on carapace; dactyla of last 3 pairs of pereopods longer than carpus and propodus together *Nematopalaemon*
 — Branchiostegal groove present on carapace; dactyla of last 3 pairs of pereopods always shorter than propodus *Exopalaemon*.
3. Hepatic spine absent *Leptocarpus*.
 — Hepatic spine present *Macrobrachium*.

Note : Key to the genera found in riverine system of Paschim Medinipur is very simply separated only by the key character of branchiostegal spine present in *Exopalaemon* and absent in *Macrobrachium*.

6.1. Genus *Exopalaemon* Holthuis 1950

Holthuis (1950) created *Exopalaemon* as a subgenus of *Palaemon* based on *Palaemon styliferus* H. Milne Edwards, 1840 as the type species and recognized seven species in the genus. Holthuis (1980) subsequently promoted *Exopalaemon* into generic rank and listed six species of interest to fisheries in the Indo-West Pacific region. Some of the important synonyms of the genus with special reference to Indian context are given below.

Palaemon H. Milne Edwards, 1837.

Palaemon H. Milne Edwards, 1840.

Leander Kemp, 1917.

Leander Chopra, 1939.

Palaemon (Exopalaemon) Holthuis, 1950.

Exopalaemon Holthuis, 1980.

Exopalaemon Chace & Bruce, 1993.

6.1.1. Diagnosis of the Genus

Rostrum with elevated dentate basal crest, carapace with branchiostegal spine and branchiostegal suture, without hepatic spine; 4th thoracic sternite without slender median process; mandible with palp; 3 posterior pair of pereopods with dactyl simple, not biunguiculate, shorter than propodus; second pereopod with carpus considerably shorter than chela.

6.1.2. Remark

Only type species *E. styliferus*, has been recorded from the study area.

6.2. *Exopalaemon styliferus* (H. Milne Edwards, 1840)

E. styliferus was originally described as *Palaemon styliferus* by H. Milne Edward (1840) from mouth of the Ganges. A brief history of the species with special reference to Indian contributions is given below.

Palaemon longirostris H. Milne Edwards, 1837.

Palaemon styliferus H. Milne Edwards, 1840.

Leander longirostris H. enderson, 1893; Nobili, 1901; 1903.

Leander styliferus Kemp, 1915; 1917; 1925; Balss, 1930; Rai, 1933; Panikkar, 1937; Chopra, 1939, 1943; Ahmed, 1957; Kunju, 1956; Rajyalkshmi, 1962.

Palaemon (Exopalaemon) Styliferus Holthuis, 1950a; Kunju, 1967.

Exopalaemon styliferus Holthuis, 1980.

6.2.1. Materials Examined

3 males (95 – 98 mm) and 5 females (90 – 93 mm), Kaliaghi river, Sabang, Paschim Medinipur, West Bengal, 7.2.2013, A. Chanda; 5 males (71 – 80mm) and 7 females (68 – 76 mm), Kaliaghi river, Gopinathpur, Sabang, Paschim Medinipur, West Bengal, 21.03.2013, A. Chanda.

6.2.2. Diagnosis of the species

Rostrum armed with 5-7 teeth on basal crest, 1 – 3 dorsal subterminal teeth and 6 – 10 ventral teeth; 4 posterior abdominal somites not sharply carinate in dorsal mid-line, anteunular peduncle with distolateral spine on basal segment barely over reaching adjacent distal margin of segment, free part of shorter branch of dorsolateral flagellum several times as long as fused part; 2nd pereopod with carpus considerably shorter than chela; 3rd pereopod with dactyl on more than ½ as long as propodus; dactylus of 5th pereopod about 1/3 as long as propodus.

6.2.3. Distribution

It is distributed in shallow coastal water and brackish water areas. In some areas it has even been recorded from fresh water. During the present study it was recorded only from Kaliaghi River at sabang. General distribution is apparently restricted to West Pakistan and Indian water to Malay Archipelago. Along the Indian coast it is more common in northern regions of both the coasts. In the Gangetic delta area this is one of the most important commercial species.

6.3. Genus *Macrobrachium* Bate, 1968

Bate (1868) created the genus based on the *Macrobrachium americanum* as type species for the genus from specific slope of America between Baja California and N. Peru. A brief history of the genus is given below.

Macrobrachium Bate 1868.

Macrobrachium Holthuis 1952; Chace & Hobbs, 1969; Rodrigue 1982.

Eupalaemon Ortman, 1891.

Maerotercheir Stebbing 1908.

6.3.1. Diagnosis of the Genus

Rostrum well developed, compressed with teeth on upper and lower margin; carapace with antennal and hepatic spines; branchiostegal spine absent but groove present; telson with two pairs of spinules dorsally, and two pairs of spines on posterior margin; mandible with three-joint palp; doctylus of the last three pairs of pereopods simple, shorter than propodus.

6.3.2. Remarks

Five species of *Macrobrachium* is being recorded from the study area namely *M. idea* (Heller, 1862). *M. javanicum* (Heller, 1862), *M. malcolmsonii* H. Milne Edwards, 1844), *M. rosenbergii* (de Man, 1879) & *M. rude* (Heller, 1862).

6.3.3. Key to the species of the Genus *Macrobrachium* found in Paschim Medinipur

1. Carpus of 2nd pereopod longer than merus.....2
----- Carpus of 2nd pereopod about as long as or shorter than merus.....*Macrobrachium javanicum*.
2. Rostrum with a distinct elevated basal crest, generally long and with a distinct naked portion in the distal half of the upper margin3
----- Rostrum without a distinct elevated basal crest, generally short and without naked portion, teeth are equally placed.....4.
3. Tip of telson reaching beyond the tip of the longer posterior spine carpus of 2nd pereopod in adult male slightly longer half as long as chela*Macrobrachium rosenbergii*
----- Tip of telson overreached by the longer posterior spines, carpus of 2nd pereopod in adult male shorter than chela. *Macrobrachium malcolmsonii*.
4. Large Chela of 2nd pereopod of adult male with tubeucles at both side of the cutting edges, carpus of 2nd pereopid in adult male shorter than Chela *Macrobrachium rude*.
----- Large chela of 2nd pereopod of adult male without tubeucles at both sides of the cutting edges, carpus of 2nd pereopod in adult male larger than Chela..... *Macrobrachium idea*

6.4. *Macrobrachium idea* (Heller, 1862)

Macrobrachium idea was originally described as *Palaemon idea* by Heller (1862) from Borneo. Latter on Holthuis included the species under *Macrobrachium*. A brief history of the species has been given below.

Palaemon idea Heller, 1862; Chopra, 1943; Tiwari, 1955

Palaemon (Eupalaemon) ritsemae DeMan, 1879

Palaemon (Eupalaemon) idea var. *subinermis* Nobili, 1899

Palaemon (Eupalaemon) robustus De Man, 1902.

Macrobrachium idea Holthuis, 1950, 1980; Kunju, 1967; Jones, 1967.

6.4.1. Materials Examined

1 male (17 mm) & 2 females (42 – 45 mm), Shilai river, Sarberia, Daspur, Paschim Medinipur, West Bengal, A. Chanda, 14.3.2013; 40 males (48 – 50 mm) & 4 females (40 -42 mm), Kaliaghi river, Gopinathpur, Sabang, Paschim Medinipur, West Bengal, 13.3.2014, A. Chanda.

6.4.2. Diagnosis of the Species

Rostrum reaching nearly as long as or slightly beyond level of distal end of antennal scale, dorsal margin straight, rostrum with 9 to 11 dorsal teeth, 3 of which generally placed behind the orbital margin, ventral surface with 3-4 teetch; branchiostegal suture not extending posteriorly beyond hepatic spine; telson with posterior apex not overreaching posterolateral spine; 1st pereopod with chela less than 3 times as long as carpus; 2nd pereopods similar in form but not equal in length, palm subcylindrical, fingers pubescent, especially either side of proximal part of opposable margins, latter dentate proximally, fingers not noticeably gaping ½ as long as palm, latter naked, chela shorter than carpus, palm more than ½ as long as carpus, carpus longer than chela, more than twice as long as merus; 3rd pereopod overreaching antennal scale by more than length of dactyl, propodus not covered with spine or scale.

6.4.3. Distribution

This is a fresh water species but occurs also in brackish water during breeding season. It has a general distribution from East Africa and Madagascar through India to Java, Sumatra and Malayan Archipelago. In India it is more common along the east coast. During the present study the species was found in Shilai and Kaliaghi river in Paschim Medinipur District.

6.5. *Macrobrachium javanicum* (Heller, 1862)

Macrobrachium javanicum was originally described as *Palaemon javanicus* by Heller (1862) from Java. Latter on Holthuis (1950) synonymised the species under *Macrobrachium*. A brief history of the species with special reference to the Indian contribution are given below.

Palaemon javanicus Heller, 1862; Ortmann, 1891; Tiwari, 1955.

Palaemon (Parapalaemon) javanicus deMan, 1892; Nobili, 1900; Roux, 1932

Palaemon neglectus Kemp, 1918.

Macrobrachium javanicum Holthuis, 1950, Raddy, 1995.

6.5.1. Materials Examined

18 males (70 – 78 mm) and 12 females (60 – 67 mm), Subarnarekha river, Rohini, Paschim Medinipur, West Bengal, 6.2.2014, A. Chanda; 13 males (60 – 62 mm) and 6 female (50 – 52 mm), Kaliagahi river, Gopinathpur, Sabang, Paschim Medinipur, West Bengal, 21.3.2013 & 13.3.2014, A. Chanda.

6.5.2. Diagnosis of the species

Rostrum not reaching level of distal end of antennal scale, dorsal margin somewhat sinuous, dorsal margin armed with 8 – 10 subequally spaced teeth, 3 are situated behind the orbital margin, ventral side armed with 3 – 5 teeth; branchiostegal suture not extending posteriorly beyond hepatic spine; telson with posterior apex not overreaching posterolateral spines; 1st pereopod with chela ½ long as carpus; 2nd pereopods subequal in length and rather similar in form, palm somewhat compressed, fingers without dense pubescence, dentate on opposable margins, males with 1 or 2 fairly large teeth, smaller teeth present between the first tooth and the base of the fingers; anterior tooth of the dactylus placed in or slightly before the middle of the finger; chela twice as long as carpus, palm 1 – 1½ times as long as carpus, carpus longer than merus; 3rd pereopod overreaching antennal scale by less than length of dactyl, propodus not covered with spines or scales.

6.5.3. Distribution

This is a freshwater species found in estuaries also. The general distribution of this species is extending from India through Burma to Malayan Archipelago and Borneo. In India the species is restricted to deltaic Bengal. During the present study the species is recorded from Subarnarekha and Kaliaghai river in the district Paschim Medinipur.

6.6. *Macrobrachium malcolmsonii* (H. Milne Edwards 1844)

Macrobrachium malcolmsonii was originally described as *Palaemon malcolmsonii* by H. Milne Edwards (1844). Latter on Holthuis (1950) synonymised the species under *Macrobrachium*. A brief history of the species with special reference to the Indian literature has been given below.

Palaemon malcolmsonii H. Milne Edwards, 1844.

Palaemon spinipes birmandicus Schenkel, 1902.

Palaemon malcolmsonii Henderson & Mathai, 1910; Kemp, 1915; Balss, 1930; Patwardhan, 1937; Chopra, 1939; 1943; Chopra and Tiwari, 1949; Tiwari, 1955; Ahmad, 1957; Rajyalakshmi, 1962.

Macrobrachium malcolmsonii Holthuis, 1950; 1980; Ibrahim, 1962; Bhimachar, 1965; Ganapati & Subrahmanyam, 1966; Jones, 1967; Reddy, 1995.

6.6.1. Materials Examined

7 males (120 – 180 mm) and 2 females (100 – 110 mm), Subarnarekha river, Gopiballavpur, Paschim Medinipur, West Bengal, 27.02.2013, A. Chanda; 2 males (118 – 150 mm) Subarnarekha river, Rameswar via Gopiballavpur, Paschim Medinipur, 11.04.2013, A. Chanda. 3 females (90 – 100 mm), Subarnarekha river, Rameswar via Gopiballavpur, Paschim Medinipur, West Bengal, 20.02.2014, A. Chanda. 45 males (30 – 39 mm) Silaboti river, Ghantal, Paschim Medinipur, West Bengal, 14.03.2013, A. Chanda. 4 males (50 – 70 mm) Konsaboti river, Gandhighat, Midnapur, Paschim Medinipur, West Bengal, 11.09.2013, A. Chanda. 54 males (33 – 90 mm), Konsaboti river, Mohonpur, Paschim Medinipur, West Bengal, 07.11.2013, A. Chanda. 32 males (30 – 85 mm), Konsaboti river, Rail Bridge, Paschim Medinipur, West Bengal, 28.02.2014, A. Chanda. 47 male (40 – 100 mm) and 20 females (100 – 105 mm), Kaliaghai river, Sabang, Paschim Medinipur, West Bengal, 9.10.2013, A. Chanda. 3 males (100 – 112 mm) and 5 females (29 – 80 mm), Subarnarekha river, Rohini, Paschim Medinipur, West Bengal. 6.02.2014, A. Chanda. 3 males (100 – 120 mm) and 2 females (102 – 120 mm) Subarnarekha river, Rohini, Paschim Medinipur, West Bengal 18.04.2013, A. Chanda.

6.6.2. Diagnosis of the species

Rostrum reaching to about end of antennal scale, tip slightly upcurved, basal part of dorsal margin high, armed with 7 to 11 dorsal teeth of which posterior 2 or 3 are placed behind the level of orbital margin, distal part of dorsal margin toothless, except for 1 or 2 (sometimes upto 4) subdistal teeth; ventral margin with 4 to 7 usually 6 teeth, second pair of pereopods robust, carpus slightly longer than merus, Telson gradually tapering to a sharp point, tip of telson overreaching posterolateral spines, carapace with spinules anteriorly; second pair of pereopod with a very short pubescence which is especially distinct on the movable finger, except at its tip, carpus shorter than propodus.

6.6.3. Remarks

One of male specimens from Subarnarekha river shows the subequal second pair of pereopods.



Figure 2: *Macrobrachium malcolmsonii* (male) from Subarnarekha river, Gopiballavpur

6.6.4. Distribution

This species inhabits fresh and brackish water. Having a general distribution in India and Burma. It is common in the rivers which drains into Bay of Bengal. In Paschim Medinipur it is found in Subarnarekha, Kansaboti, Kaliaghai, & Silaboti rivers.

6.7. *Macrobrachium rosenbergii* (De Man, 1879)

Macrobrachium rosenbergii was originally described as *Palaemon rosenbergii* by De Man (1879) from Andi, northwestern Irian Jaya. A brief history of the species has been given below with special reference to Indian contributions.

Palaemon rosenbergii De Man, 1879.

Palaemon carcinus Fabricius, 1798; De Man, 1879; Rai, 1933; Panikkar, 1937; Patwardhan, 1937; Menon, 1938; Chopra, 1939; Nataraj, 1942, Tiwari, 1955; Ahmed, 1957; John, 1957; Rajyalakshmi, 1961.

Macrobrachium rosenbergii Holthuis, 1950; Raman, 1964; 1967, Bhimachar, 1965; Rao, 1965; 1967; Ganapati & Subrahmanyam, 1966; Kunju, 1967; Jones, 1967; 1967; Reddy, 1995.

6.7.1. Materials Examined

2 males (118 – 130 mm), Silabati river, Ghantal, Paschim Medinipur, West Bengal, 25.02.2013, A. Chanda. 22 males (53 – 128 mm) & 1 female (52 mm), Kansaboti river, Rail Bridge, Paschim Medinipur, West Bengal, 28.02.2014, A. Chanda. 25 males (112 – 120 mm) and 12 females (100 – 110 mm), Konsaboti river, Mohonpur, Paschim Medinipur, West Bengal, 21.08.2013, A. Chanda. 2 males (110 – 120 mm) and 2 females (100 – 120 mm) Kaliaghi river, Sabang, Paschim Medinipur, West Bengal, 9.10.2013, A. Chanda. 2 males (109 – 110 mm) and 3 females (90 – 110 mm), Subarnarekha river, Gopiballavpur, Paschim Medinipur, West Bengal, 27.02.2013, A. Chanda. 1 male (95 mm) and 5 females (90 – 110 mm), Silabati river, Sarberia, Ghantal, Paschim Medinipur, West Bengal, 15.08.2013, A. Chanda. 3 males (90 – 95 mm) Kaliaghai river, Gopinathpur, Sabang, Paschim Medinipur, West Bengal, 13.03.2014, A. Chanda. 3 males (100 – 110 mm) and 8 females (90 – 110 mm), Subarnarekha river, Rameswar via Gopiballavpur, Paschim Medinipur, West Bengal, 20.02.2013, A. Chanda. 12 males (70 – 95 mm) and 17 females (75 – 80 mm), Subarnarekha river, Rohini, Paschim Medinipur, West Bengal, 6.2.2013, A. Chanda.

6.7.2. Diagnosis of the species

Rostrum long and slender, usually extending distinctly beyond the antennal scale; dorsal margin armed with 11 – 14 teeth, of which the posterior 2 or 3 are placed behind the orbital margin, 9 or 10 forming an elevated basal crest; most of distal part of dorsal margin toothless or with only a few subdistal teeth (generally 2); ventral margin armed with 8 to 14 teeth. Hepatic spine situated distinctly below antennal spine, Branchiostegal suture not extending posteriorly beyond hepatic spine; telson with posterior apex overreaching posterolateral spines; 1st pereopod with chela less than ½ as long as carpus; 2nd pereopods subequal in length and similar in forms, movable finger clothed in dense pubescence on proximal ¾ of length in adults, fixed finger without pubescence fingers dentate on proximal ½ of opposable margins, ¾ to quite as long as palm, chela slightly to 1¾ times as long as carpus, palm ½ to quite as long as carpus, carpus slightly to nearly 1½ times as long as merus.

6.7.3. Distribution

This is the giant freshwater prawn often occurring in brackish water like lake and estuaries. In general distribution it is most widely distributed in the Indo-Pacific zone, extending only upto Indo-China in the Asian main land. It is common in most of the lakes and estuaries along the coast line of India. During the present study it is found almost all the river system of Paschim Medinipur District.

6.8. *Macrobrachium rude* (Heller, 1862)

Macrobrachium rude was originally described as *Palaemon rudis* by Heller (1862) from Sri Lankan water. Latter on Holthuis (1950) synonymised the species under *Macrobrachium*. A brief history of the species with special reference to Indian contributions are given below.

Palaemon rudis Heller, 1862; Henderson & Mathai, 1910, Kemp, 1915; Balss, 1930; Sewell, 1934; Menon, 1938; Chopra, 1939, 1943; Tiwari, 1955; Ahmed, 1957.

Palaemon (Eupalaemon) rudis Nobili, 1903; Barnard, 1950.

Macrobrachium rude Holthuis, 1950; Ganapati & Subrahmanyam, 1966; Jones 1967; Reddy, 1995.

6.8.1. Materials Examined

2 males (39 – 41 mm) and 1 female (40 mm), Subarnarekha river, Gopiballavpur, Paschim Medinipur, West Bengal, 27.02.2013, A. Chanda. 1 male (60 mm), Kansaboti river, Gandhi Ghat, Paschim Medinipur, West Bengal, 11.09.2013, A. Chanda. 1 male (51 mm), Kansaboti river, Rail bridge, Paschim Medinipur, West Bengal, 28.02.2014, A. Chanda.

6.8.2. Diagnosis of the species

Rostrum straight, reaching upto the tip of antennal scale, tapering distally, dorsal margin armed with 10 to 15 teeth, placed at almost regular intervals, the posterior 2 behind the orbital margin, ventral margin with 3 to 8 (usually 3 to 6) teeth. Hepatic spine situated at lower level than antennal spine. Posterior margin of telson distinct, with 2 pairs of spines, anterior one is longer the tip of telson. Second pair of pereopods very long and heavy, all segments covered with a short and dense pubescence; cutting edges of fingers with 1 or 2 large proximal teeth, rest of the edges entire, but with a row of granules at each side, carpus shorter than propodus and much longer than merus.

6.8.3. Distribution

General distribution is East Africa and Madagascar, Indian coast and Ceylon. In India on the west coast the species is found only in the south west region. On the east coast although found throughout the regions, it is most common along the deltaic Bengal, Orissa, Andhra Coast. This species is also found in the fresh water like river and coastal ponds. During the present study the species is only found in Subarnarekha and Kansaboti river in a very small amount.

7. Zoogeography and Statistical Analysis

	E. styliferus	M. idae	M. javanicus	M. malcolmsonii	M. rosenburgii	M. rude	Total
Kansaboti				+	+	+	3
Subarnarekha			+	+	+	+	4
Silaboti		+		+	+		3
Kaliaghai	+	+	+	+	+		5

Table 1: Distribution of species in different riverine system

Above table shows that *Macrobrachium malcolmsonii* and *M. rosenburgii* are the more common species in almost all riverine system of Paschim Medinipur and the river, Kaliaghai is the more diversified river in respect to palaemonid prawn composition. Sorensen's quotient of similarity between the rivers has been studied below.

Similarity between	S.Q.	Inference
Kansaboti & Subarnarekha	0.86	Strongly similar
Kansaboti & Silaboti	0.67	Moderately similar
Kansaboti & Kaliaghai	0.50	Slightly similar
Subarnarekha & Silaboti	0.57	Slightly similar
Subarnarekha & Kaliaghai	0.67	Moderately similar
Silaboti & Kaliaghai	0.75	Strongly similar

Table 2: Sorensen's quotient of similarity

Present study reveals that similarity between (i) Kansaboti & Subarnarekha and Silaboti & Kaliaghai are strong; (ii) similarity between Kansaboti & Silaboti and Subarnarekha & Kaliaghai are moderate and (iii) similarity between Kansaboti & Kaliaghai and Subarnarekha & Silaboti are slight.

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