

A Revision to the Diagnostic Characters of *Metapenaeus brevicornis* (Milne Edwards, 1837)

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Abstract

Metapenaeus brevicornis is a common penaeid prawn of Indian water which is pantropical in distribution. The species was first recorded as *Penaeus brevicornis* by Milne Edwards of Ganjam coast of Orissa. Alcock placed the species under *Metapenaeus*. Specimens recorded from different fish landing centres in India have 1 to 2 pairs of lateral movable spines on the telson. Whereas those from Australian water have only one pair of spine but Japanese species does not possess any spine on telson. Since all the specimens agree in other diagnostic features it is suggested that the number of spine on telson in *Metapenaeus brevicornis* is a variable character and should not be regarded as diagnostic feature for the species which is usually used by majority of penaeid taxonomists.

Keywords: Telson; Spine; *Metapenaeus brevicornis*; Diagnosis.

INTRODUCTION:

Shrimps and Prawns of various kinds have certainly been a source of protein for human consumption 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. Present study is mainly based on the specimen collected by the author from commercial trawler catch of different fishlanding centres throughout Indian coast line. Among the collection *Metapenaeus brevicornis* shows almost all

characters similar to the previous Indian as well as world literature but there is confusion in the number of telson spine, which is the prime importance of the present study. Detail study comes to the conclusion that the diagnostic character of the number of spine on telson of the species is a variable character and should not be considered as diagnostic character for the species.

MATERIALS AND METHODS:

Present study is based on the materials collected by the author during the period 1995-1997 and 1999-2000 as well as the study on the prawns preserved in the National collection of Zoological Survey of India, Kolkata, Central Marine Fishery Research Institute, Cochin and its regional station at Mandapam, Tamil Nadu were also studied. The materials preserved in rectified spirit (90%) and body parts of taxonomic importance have been dissected and studied under a stereoscopic binocular microscope. The illustrations have been drawn with the aid of line drawing and by cameralucida. The detailed synonymies of the species have been furnished and also species diagnosis, distribution, taxonomic remarks have also been furnished.

Systematic account:

Perez-farfante and Kensley (1997) divided superfamily *Penaeoidea* into five families: *Aristeidae* Wood-Mason, 1891; *Penaeidae* Rafinesque-Schmaltz, 1815; *Sicyoniidae* Ortmann, 1898; *Solenoceridae* Wood- Mason, 1891 and *Benthesicymidae* Wood-Mason, 1891. Present species is under *Penaeidae*.

The diagnostic features of the family:

- I. Well developed rostrum.
- II. Carapace without post orbital spine.
- III. Cervical sulcus ending before half of distance to postrostral carina (Fig.3).
- IV. Antennular flagella are of equal length.

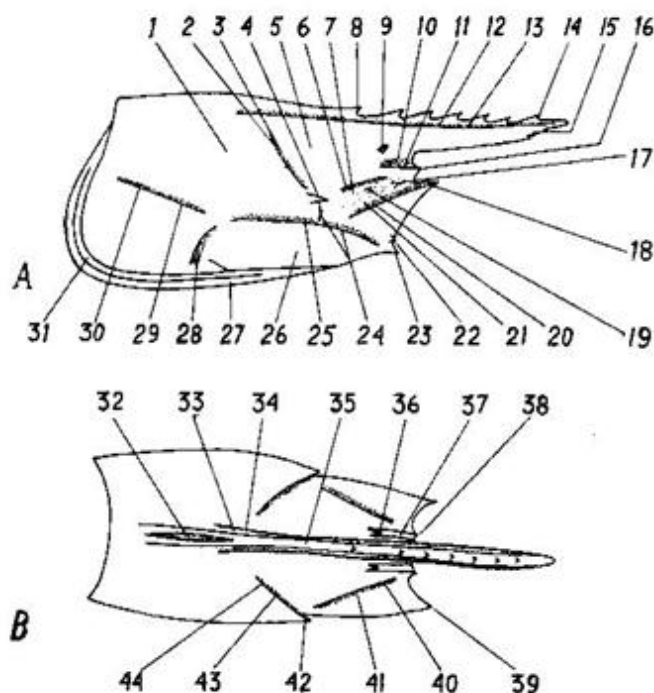


Fig. 3 : Features of Carapace.

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.

Family *Penaeidae* Rafinesque-schmaltz, 1815 is represented by 25 genera of which 17 genera and 78 species are found in Indian water. *Metapenaeus* Wood-Mason, 1891 is the largest genus including 15 species in India.

Important Diagnostic Characters of the genus *Metapenaeus*:

- I. Postocular sulcus prominent (Fig.3).
- II. Exopod absent on fifth pereopod.
- III. Pterygostomian spine absent on carapace (Fig.3).

Metapenaeus brevicornis (Milne Edwards, 1837) is a very common species, found in both coasts of India.

Metapenaeus brevicornis (Milne Edwards, 1837)

M. brevicornis was originally described as *Penaeus brevicornis* by Milne Edwards (1837) from Ganjam, Orissa, east coast of India. A brief history of the species with special reference to Indian contributions has been given below.

1837 *Penaeus brevicornis* H. Milne Edwards, Hist. Nat. Crust. T. II., Paris: 417.

1906 *Metapeneus brevicornis* Alcock, Cat. Indian Deca. Crust. Fas.I: 1-55.

1934 *Metapenaeus brevicornis* Burkenroad, Bull. Bingham. Oceanogr. Coll., 4(7): 1-109; Menon, 1956, Proc. Indo-Pacif. Fish. Council. 6(3) : 345-347; George, 1969, Bull. Cent. Mar. Fish. Res. Int. No. 14: 5-48; 1979, contribution to Marine Science, dedicated to Dr. C.V. Kurian: 21-59; 1970, FAO Fish. Rep., (57) 4 : 1559-1573; Muthu, 1971. Indian J. Fish., 15:145-154; Silas & Muthu, 1976, J. mar. biol. Ass. India, 18(1) : 78-90; Paulinose and Vengayil, 1987, J. Indian Soc. Coastal Agric. Res., 5(2) : 431-436.

Type Species: *Penaeus brevicornis* Milne Edwards, 1837, Hist. Nat. Crust, comp. L'Anatomic, physio. Class. Animaux, Paris, 2 : 532.

Type Locality: Ganjam, Orissa Coast, India.

MATERIAL EXAMINED:

3 males (50-70 mm), ZSI, Reg. No. C4912/2, Subhas Port, Porbandar, Gujarat, 10.12.1992, H.C. Ghosh and Party; 6 males (76-80 mm), ZSI, Reg. No. C4836/2, Lawsom's Bay Vishakapatnam, Andhra Pradesh, 14.9.1995, A. Chanda; 1 male (50 mm) and 2 females (60-70 mm), ZSI, Reg. No. C4866/2, Narsapur, West Godavari, 20.3.1997, Andhra Pradesh; 1 male (75 mm) and 1 female (78 mm), ZSI, Reg. No. C4876/2, New Digha, West Bengal, 23.2.1995. A. Chanda; 5 females (80-120 mm) and 1 male (92 mm), ZSI, Reg. No. C4766/2, Mungergudi, Machlipattanam, Andhra Pradesh, 7.9.1995, A. Chanda; 2 females (70-75 mm), ZSI, Reg. No. C4778/2, Freserganj, Bakkhali, 24 Pargana South, West Bengal, 14.11.1990, N.C. Nandi and Party; 32 males (55-70 mm) and 1 female (72 mm), ZSI, Reg. No. C4784/2, Kakdwip Central Fisheries, 24 Pargana(s), 16.2.1989, N.C. Nandi and Party; 3 males (75-120 mm), ZSI, Reg. No. C4787/2, Girgano, Choprti, Maharastra, 29.8.1996, A. Chanda; 1 male (75 mm), ZSI, Reg. No. C4830/2, Ramakrishna Beach, Visakhapatnam, Andhra Pradesh, 15.9.1995, A. Chanda; 2 males (63-70 mm) and 2 females (72-86 mm), ZSI, Reg. No. C4933/2, F.C.L. Mumbai, Maharastra, 1.9.1996, A. Chanda; 5 females (80-120 mm) and 1 male (85 mm), ZSI, Reg. No. C4766/2, Mechlipattanam Andhra Pradesh, 7.9.1995, A. Chanda.

Key characters to diagnosis the species:

- I. Rostrum extending beyond first segment of antennular peduncle but not the second.
- II. Distomedian projection of petasma with a long, slender apical filament on either side (Fig.1).

III. Telson with two pairs of lateral movable spine (Fig.2C).

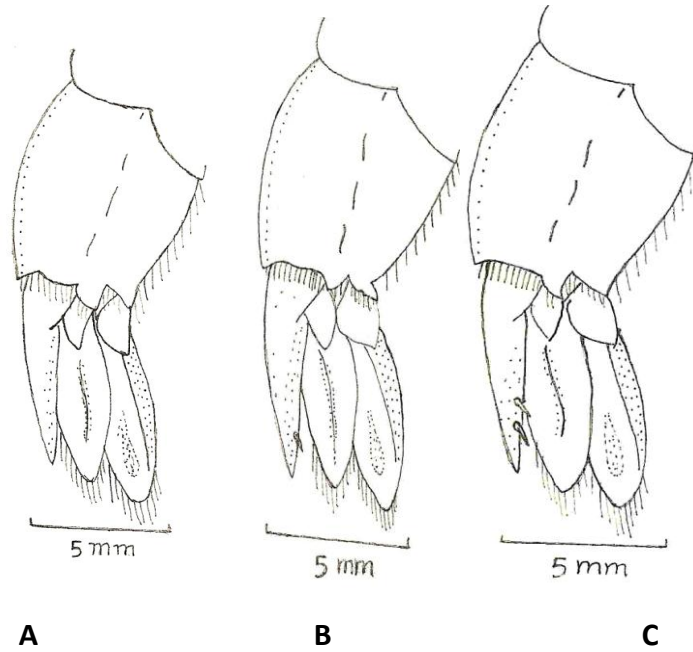


Fig. 2: Variation of telson spine, A: Japanese water; B: Australian water; C: Indian water

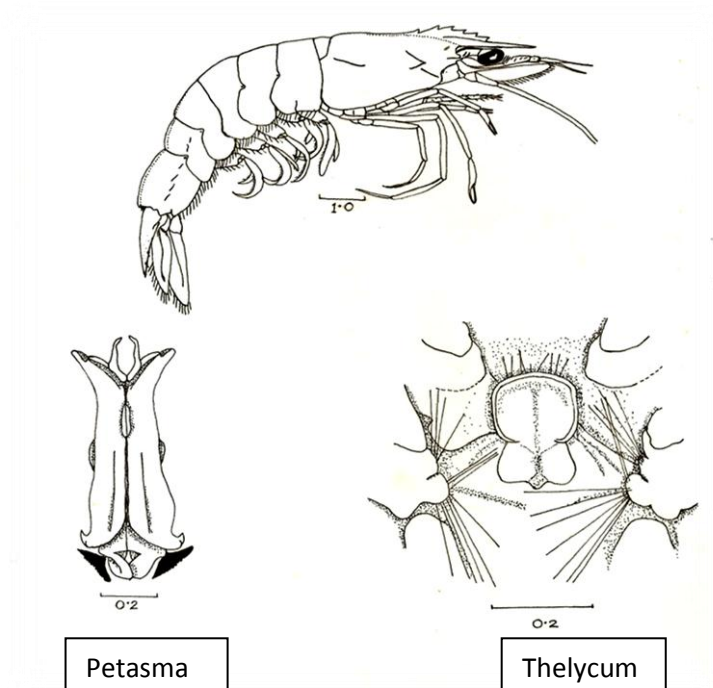


Figure 1: *Metapenaeus brevicornis* (Milne Edwards, 1837)

REMARKS:

Present observation mainly highlights the third diagnostic character. There is some confusion regarding the number of spine on telson.

1. Kubo (1949) did not observe any spine on telson in his collection from Japanese water.
2. Dall (1957) opined that telson not conspicuously armed in his collection from Australian water.
3. Racek and Dall (1965), observed a single pair of clearly perceptible distal spine in addition to minute spinules in most of specimens (except 5 specimens) in their collection from Australian water.
4. George (1979) observed two pairs of marginal spines in his collection from Indian water.
5. Paulinose and Vengayil (1987) observed a single pair of posterolateral spines in his collection from Indian water.

CONCLUSION:

Present study based on the collection of 69 specimens from different places of both west and East coast of India shows that all the specimens have the two pairs of lateral movable spine and several minute spinules on telson. Since all these specimens agree in other diagnostic features it is suggested that the number of spine on telson in *M. brevicornis* is a variable character and should not be regarded as diagnostic character for *Metapenaeus brevicornis* (Milney Edwards, 1837).

DISTRIBUTION:

India: Gujarat, Maharashtra, Goa, Karnataka, Kerala, West Coast and Andhra Pradesh, Orissa, West Bengal, East coast and Andaman sea.

Elsewhere: Pakistan; Malaysia; Singapore; Indonesia; Borneo; Thailand; Vietnam.

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