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REDESCRIPTION OF *MACROBRACHIUM PEGUENSE* (TIWARI, 1952) (DECAPODA : CARIDEA : PALAEMONIDAE)

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INTRODUCTION

While examining the collection of Decapoda from Bilgiri Rangasamy temple Wildlife Sanctuary deposited in the Southern Regional Station of Zoological Survey of India, Chennai, the authors came across the Palaemonid prawn *Macrobrachium peguense*, which is a new record to India. *Macrobrachium peguense* was earlier described from Myanmar by Tiwari (1952). Since the original description of the species is inadequate, the species is redescribed.

MATERIAL EXAMINED

(Plate : *Macrobrachium peguense* (Tiwari) – Female, Male)

The details of the material examined are given in the following table :

Locality	Collector	Date	Total No. of Exs.	No. of Males	No. of Females		Total length of Males (mm)	Total length of Females (mm)	
					Berried	Non berried		Berried	Non berried
Budipadaka	S. Krishnan	18.ii.1999	65	21	14	30	23.2 to 46.2	38.5 to 50.6	23.2 to 0.8
Bhanuwadi	S. Krishnan	19.ii.1999	16	5	Nil	11	29 to 33	Nil	30 to 42
Harangi Damsite	G. Thirumalai	9.iv.1999	24	16	Nil	8	24 to 40.5	Nil	30 to 40.5
Seebinaekare	S. Krishnan	7.iv.2000	3	2	1	Nil	36.5 to 37.2	Nil	49.3

DIAGNOSTIC FEATURES

Rostrum always longer than the antennular peduncle and slightly shorter than or rarely equal to the antennal scale. Rostral formula 6–10/3–5 usually with 7–9/3–4, with one or two post orbital teeth, in the lower margin the teeth are equidistant, in the upper margin though the teeth are equidistant slight variations in distance are also observed. The upper margin is with or without sub apical teeth, when present also it is not widely separated from the remaining teeth. The rostral formula of the specimens examined is given in the following table.

Rostral formua	Budipadaka	Bhanuwadi	Harangi Damsite	Seebinaekare	Total
6/3.....	2	Nil	Nil	Nil	2
6/4.....	6	3	Nil	1	10
6/5.....	1	Nil	Nil	Nil	1
7/3.....	1	Nil	2	1	4
7/4.....	30	9	Nil	1	40
7/5.....	3	Nil	Nil	Nil	3
8/3.....	Nil	Nil	4	Nil	4
8/4.....	12	1	3	Nil	16
8/5.....	3	Nil	Nil	Nil	3
9/3.....	Nil	Nil	1	Nil	1
9/4.....	2	3	7	Nil	12
9/5.....	3	Nil	Nil	Nil	3
10/4.....	1	Nil	1	Nil	2
Total	64	16	18	3	101

Eyes are well developed, cornea broad and well pigmented.

Stylocerite small and reaching only proximal 1/4th of antennular segment of antennular peduncle.

Antennular peduncle is shorter and about 0.6 times of the carapace.

Antennal scale is about 3.5 times as long as its breadth.

I. Cheliped : It is slightly shorter than or equal to the antennal scale. Finger equal to or slightly shorter than palm (F/P = 0.8 – 1). Chela 3.7 to 5 times of its breadth. Chela is sub equal to the half of the length of the carpus, i.e., it may be equal to the half of the length of the carpus or 0.1–0.2 mm longer or shorter than the half of the length of carpus. Carpus is distinctly longer than the merus.

II. Cheliped : Equal on both the sides and similar in both sexes. It is sub equal to the half of the total body length. It over reaches the antennal scale by the entire chela and 1/5th of the carpus. In males the length of the cheliped is 1 or 2 mm shorter than the half of the total body length, but in females it is 0.3 to 3.6 mm longer than the half of the total body length. Carpus is distinctly longer than the merus. Chela is sub equal to the carpus. Mostly carpus is slightly longer (0.1–1.1 mm) than the chela, occasionally it is equal to or slightly (0.1–1.1 mm) shorter than the chela. Finger is always shorter than the palm (0.6–0.8 mm). Fingers are with delicate hairs, cutting edges of both movable and immovable fingers of males are smooth without any tubercles. But in the case of females cutting edge of the movable finger usually armed with 2 minute tubercle like teeth, while that of the fixed finger with a smaller tooth fitting in the gap between those of the movable finger when closed, rest of the cutting edge smooth. Palm is mostly longer than the half of the carpus but in rare cases it is slightly (0.05–0.2 mm) shorter than the half of the carpus, irrespective of size and gender. Carpus is always longer than the merus, cylindrical and is 6.8 to 11.6 (average = 9.35) times as long as its distal diameter.

The average percentage length of the various segments of the II cheliped are as follows.

Ischium	Merus	Carpus	Palm	Fingers
17.88%	21.26%	28.57%	15.06%	10.55%

Sixth abdominal segment about 1.7 times as 5th adbominal segment in length. Appendix masculina 1.4–1.5 times as long as appendix interna and 0.69–0.9 times as long as the endopod.

The relative lengths of appendix masculina, appendix interna and endopod second pleopod male is shown in the table.

Locality	Length of Endopod (mm)	Length of Appendix masculina (mm)	Length of Appendix interna (mm)	Appendix masculina Endopod (mm)	Appendix masculina Appendix interna (mm)
Budipadaka	3.3	2.7	1.9	0.82	1.42
"	3.2	2.6	1.8	0.8	1.4
"	3.3	3	1.9	0.9	1.59
Bhanuwadi	3	2.5	1.8	0.8	1.4
Harangi Damsite	3.5	2.4	1.6	0.69	1.5
Seebinaekare	2.9	2.5	1.7	0.86	1.47

Telson 1.36 times as long as 6th abdominal segment. Dorsal spines 2 pairs, posterior margin ending in a triangular median point, and also provided with two pairs of spines of which inner pair is longer and stouter than the outer one. Between inner pairs 2–3 pairs of plumose setae are present.

Uropod is without accessory sub apical spine on outer margin of exopod.

Eggs : Number and size of eggs were examined in 11 berried females collected from Budipadaka. The number of eggs varies from 67–122 and size of the eggs ranges from 1.2–1.8 × 0.9–1.5 mm.

The following table shows the comparison of *Macrobrachium peguense* described by Tiwari from Myanmar and the present species from B.R.T. Hills.

Myanmar	B.R.T. Hills
1. Rostrum exceeding antennular peduncle slightly behind the antennal scale.	1. Rostrum like the Myanmar specimen, occationally equal to the antennal scale.
2. Rostral formula 6–9/2–4.	2. Rostral formula 6–10/3–4.
3. Chela of the first pair of pereiopods shorter than half the length of carpus.	3. Chela of the first pair of pereiopods usually shorter than half the length of the carpus but in some cases it is equal to or longer than half of the carpus.
4. The total length of the second pereiopods is slightly shorter than the half of the total body length.	4. It is usually like the Myanmar specimen, occasionally it is equal to or longer than half of the total body length.
5. Carpus about eight times as long as its distal diameter.	5. Carpus is 7–11.6 times as long as its distal diameter.
6. Palm slightly longer than half the length of carpus and about a fourth longer than finger.	6. Like Myanmar species but very rarely palm is slightly (0.1 mm) shorter than half of the carpus and 1.2 to 1.5 times longer than the finger.
7. Entire chela a shade longer than carpus.	7. Entire chela a shade longer than or shorter than or equal to the carpus irrespective of size and gender.
8. Eggs large, egg bearing females 42 to 46 mm in body length.	8. Egg bearing female 38.5–50.6 mm and the number of eggs varies from 67–122, the size of the egg ranges from 1.2–1.8 × 0.9–1.5 mm.

DISCUSSION

In his report on the diagnosis of some new species and sub species of the genus *Palaemon* Fabricius, Tiwari (1952) has given the description of *Macrobrachium peguense* and has mentioned that this species closely resembles *Macrobrachium lanchesteri* (De man), *Macrobrachium naso* (Kemp) and *Macrobrachium lamarrei* (H. Milne Edwards) and he also has stated that *Macrobrachium peguense* can be easily distinguished from their congeners species by the shape and dentition of the rostrum and the individual joints of the II cheliped. While studying the freshwater prawns of the genus *Macrobrachium Bate*, 1868 from Karnataka Jalihal *et al.*, (1988) have compared the second cheliped of *Macrobrachium peguense* with *Macrobrachium tiwarii* Jalihal *et al.*, and *Macrobrachium kistnense* Tiwari and have concluded that the chela is subequal or longer irrespective

of size in *Macrobrachium peguense* but in the remaining species the chela is longer only in larger individuals. Jayachandran (2001) in his account on biodiversity, taxonomy, biology and management of the Palaemonid prawns, has stated that *Macrobrachium peguense* resembles *Macrobrachium sankollii* Jalihal *et al.*, but the former can be easily differentiated from the latter by the absence of the accessory sub-apical spine in the exopod of the uropod.

It is not always easy to decide whether a given genus or species is of Indo-Chinese or of Malayan origin. These two faunas have intermingled in a most complex manner in Assam and Burma and are also often ecologically isovalent. It was this complex of the fauna that spread westwards along the Himalayan forest and southwards to the Peninsula and it is the impoverished relicts of this complex that we find today in the Southern Block, in discontinuous distribution, (Mani, 1974). Further examples of aquatic animals from the Westernghats having east Himalayan, Indochinese or Malayan affinities have been provided by Banarescu and Nalbant (1982). During the study besides fishes (Noema cheilinae), Margaritiferid mussels and ampullarid snails, freshwater crab, stone flies and Caddis flies also exhibited similar distribution. Thirumalai (1996, 2000) also reported about a similar type of distribution (for aquatic Heteroptera). For the first time a freshwater prawn species reported from Myanmar is also found to exhibit a similar type of distribution from the Westernghats, namely Bilgiri Rangaswamy Temple Wildlife Sanctuary.

From the above study it is observed that the specimens from Bilgiri Rangasamy Temple Wild Life Sanctuary bear very close resemblance to *Macrobrachium peguense* and the occurrence of the Myanmar species in Western Ghats is of great Zoogeographical significance. Since Bilgiri Rangasamy Temple Wild Life Sanctuary is a chip of Western Ghats the recording of this species gain further importance in the Zoogeographical studies.

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REFERENCES

Banarescu, P.M. and Nalbant, T.T. 1982. New data about the Malayan Indo Chinese affinities of the aquatic fauna of the Western Ghats, South India. *RTV. Rout. Biol-Anim. Tome* 27 No. **1** : 23-27.

Jalihal, D.R. and Shakuntala Shenoy. 1988. Freshwater prawns of the genus *Macrobrachium* Bate, 1868 (Crustacea, Decapoda, Palaemonidae) from Karnataka, India. *Rec. zool. Surv. India, Occ. Pap.* No. **112** : 1-74.

Jayachandran, K.V. 2001. Palaemonid prawns Biodiversity, Taxonomy, Biology and Management, Oxford & IBH publishing Co. Pvt. Ltd., pp. 624.

Mani, M.S. 1974. Ecology and Biogeography in India, Dr. K. Junk B. V. publishers, The Hague, pp. 771.

Praveen Karanth, K. 2003. Evolution of disjunct distributions among Wet-Zone species of the Indian Sub Continent Testing Various hypothesis using a phylogenetic approach. *Current Science*, **85**(9) : 1276-1283.

Thimumalai, G. 1996. A new record of the genus *Ventidioides* Hungerford and Mastuda of the genus *Ventidius* Distant from India (Halobatinae : Gerridae : Heteroptera). *Arunachal forest news.* **14**(2) : 14-16.

Thirumalai, G. 2000. Fauna of Nilgiri Biosphere Reserve : Insecta : Aquatic and Semi-aquatic Heteroptera. *Zool. Surv. India, Fauna of Conservation Area. Ser.*, **11** : 112-127.

Tiwari, K.K. 1952. Diagnosis of new species and subspecies of the genus *Palaemon* Fabricious (Decapoda : Crustacea). *Ann. Mag. Nat. Hist.*, (12)**5** : 27-32.