

REDESCRIPTION OF *MACROBRACHIUM LAMARREI*
LAMARROIDES (TIWARI) WITH A NOTE ON
M. LAMARREI LAMARREI (H. MILNE EDWARDS)
(PALAEOMONIDAE)

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ABSTRACT

Macrobrachium lamarrei lamarroides (Tiwari, 1952) is endemic to Logtak Lake, Manipur. Tiwari while describing this subspecies has given only diagnostic characters and, therefore, a detailed illustrative account of this sub-species is given in this paper. The rostral formula of the subspecies is 4-6 + 0-1 + 1-2/4-6, of which two teeth are post-orbital. There is a characteristic edentulous wide gap on the distal half of the upper rostrum. The inner aspect of the exopod of maxilla bears a few spinules and the protopod is '∟' shaped where the horizontal arm alone is cleaved. The second peracopods are slender; the carpus is the longest segment, and palm is longer than the fingers. The inner part of propodus of non-chelate legs bear plumose setae which are maximum on the third pair. The telson bears two pairs of dorsal spines which are placed at the distal half of its length. A brief note on the other subspecies, *M. lamarrei lamarrei* (H. Milne Edwards, 1992) is also given. Table I shows a comparison of principal characters of the two subspecies for field identification.

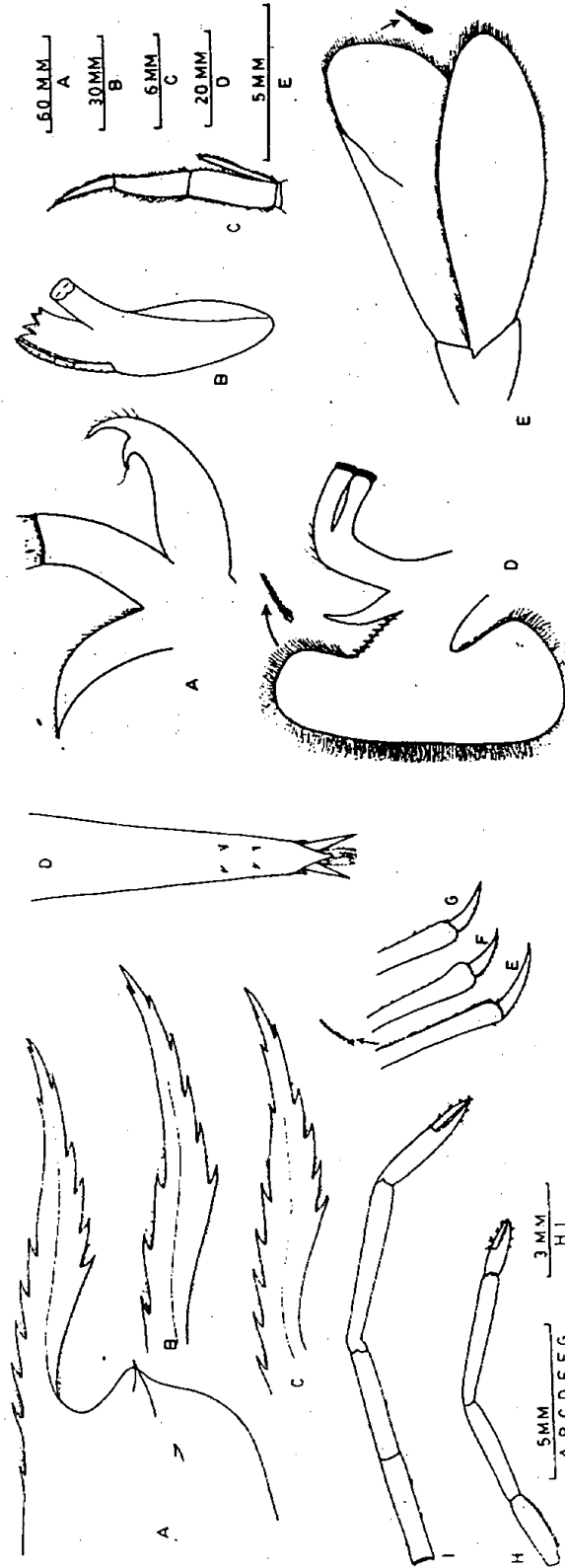
Key-words: *Macrobrachium lamarrei lamarroides*, redescription, Logtak Lake, *M. lamarrei lamarrei*, comparison.

INTRODUCTION

Macrobrachium lamarrei lamarroides (Tiwari, 1952), an endemic subspecies of Logtak Lake, Manipur, has not so far been reported outside the type locality. Tiwari (1952) while describing this new subspecies has given only diagnostic characters. Recently some students of the College of Fisheries, who hail from Manipur, have brought a few specimens of *Macrobrachium* Bate, 1868, which on identification was found to belong to this subspecies. A detailed illustrative account of the subspecies is given in this paper to fill the lacuna. This paper also gives a comparative account of the other subspecies, *M. lamarrei lamarrei* (H. Milne Edwards, 1837).

MATERIAL AND METHODS

Twenty eight specimens, ranging in size from 50 to 60 mm (all females, both berried and nonberried) were collected by the students of the College of Fisheries, from Logtak Lake,



Figs. 1 & 2. *Macrobrachium lamarroi lamarroi* (Tiwari) female, 66mm total length; Fig. 1 - A, B, C - anterior carapace showing various shapes of rostra; D - telson; E, F, G - distal propodus and dactylus of third, fourth, fifth pereopods respectively showing plumose setae along the inner aspect of propodus; H, I - first and second pereopods. Fig. 2. A - maxillula; B - mandible; C - third maxilliped; D - maxilla (showing characteristic shape of propodus and spinules on the inner aspect of exopod); E - uropod.

Manipur during November, 1991 and preserved in formalin. The subspecies was identified with the help of diagnostic characters given by Tiwari, (1952).

OBSERVATIONS AND DISCUSSION

1. *Macrobrachium lamarrei lamarroides* (Tiwari, 1952)

Measurements (mm): Total length - 66; carapace length - 30; length of rostrum - 14.5; length of telson - 9.5.

1st chelate leg: Ischium (I) - 4.5; merus (M) - 6.5; carpus (C) - 8.5; propodus (P) - 3.5; dactylus (D) - 1.5.

2nd chelate leg: I - 6.5; M-7.0; C-11.0; P-7.0; D-3.15

1st non-chelate leg : I - 3.5; M-8.0; C-4.0; P-7.0; D-3.5

2nd non-chelate leg : I - 5.0; M-9.0; C-4.75; P-8.5; D-3.5

3rd non-chelate leg : I - 4.5; M-8.5; C-5.0; P-10.5; D-3.5

Description: Rostrum long, extending just beyond the tip of the antennal scale, proximal half convex, distal half slightly curved upwards; dorsal margin bears 6-8 teeth, of which 4-6 teeth are seen on the proximal convex part, followed by an edentulous wide gap and 1-2 small subdistal teeth (sometimes the edentulous part interrupted by one tooth); two proximal teeth post-orbital; first tooth separated from the second by a wide gap. Ventral margin with 5-6 teeth; the first tooth (where maximum depth of rostrum is seen) at the level of the apex of second segment of antennular peduncle, the distal tooth widely separated from the preceding ones and at the level of the tip of antennal scale. The rostral formula is $\frac{4-6+0-1+1-2}{4-6}$. Small setae present in between the teeth of both dorsal and ventral margins (Fig. 1- A,B,C).

Carapace smooth, provided with antennal and hepatic spines, the latter is situated below and behind the level of the former.

Abdomen is glabrous; pleurae of 1st to 3rd segments broadly rounded, those of 4th and 5th directed backwards, 6th ending in a spine; sixth segment 1.5 times as long as fifth.

Telson slender, apex reaches beyond the level of the outer spine of uropodal exopod; dorsal surface bears two pairs of spines, both situated on posterior half of telson, more towards the apex. The distal end bears two pairs of spines and a few plumose setae (Fig. 1-D).

Antennular peduncle three segmented, in the ratio 5.5 : 1.5 : 2.5; the shorter ramus of the outer antennular flagellum very small. The antennal scale normal in structure. The mandibular palp three segmented, the middle segment shortest, the distal segment longest (Fig. 2-B).

The inner margin of coxa and the distal end of basis of maxillula setose; the basis bears one small spine at the outermost margin; the palp distally bifid, the inner lobe bears a curved seta and the outer margin of the outer lobe bears a few setae (Fig.2-A). Protopod of maxilla attains typical shape, the basal part undivided and oblique in position while the distal part fully cleaved and right angles to the basal part in position, tip bears short, strong setae. The exopod

very broad, fringed with very long plumose setae, the inner border bears short spinules (Fig. 2-D).

First and second maxillipeds typical in structure, provided with exceptionally long setae. The caridean lobe of first maxilliped is also setose. The ultimate segment of the endopod of third maxilliped sharply spinous (Fig. 2-C).

First chelate leg reaches beyond the apex of the antennal scale with the chela; ischium slightly swollen, inner margin bears very short spinous setae; merus subequal to carpus; palm slightly shorter than fingers; fingers bear groups of setae (Fig. 1-H).

Second chelate legs slender, equal sized, reaches beyond the antennal scale with half carpus, and entire chela; ischium slightly shorter than merus; carpus longest; palm longer than fingers; fingers slender with one or two denticles on the cutting edges (Fig. 1-I).

Non-chelate legs slender, reach beyond the antennal scale with the dactylus; ischium almost equal to carpus; merus sub-equal to propodus; dactylus simple; inner margin of the propodus bears plumose setae which are maximum in the fifth peracopod and least in the third (Fig. 1 - E,F,G).

Pleopods normal; endopod of fifth pleopod smaller. Uropod without accessory spine on exopod; rami fringed with long plumose setae.

Distribution: India (Logtak Lake, Manipur).

2. *Macrobrachium lamarrei lamarrei* (H. Milne Edwards, 1837)

Diagnosis: Rostrum long extending beyond the apex of antennal scale by 1/4 to 1/3 length (sometimes more or less straight); rostral formula: $\frac{5-8+0-1+1-2}{6-9}$ with two post-orbital teeth. Telson slender; dorsal surface bears two pairs of spines, situated on the posterior half, away from the apex; distal end also bears two pairs of spines.

First chelate legs slender; carpus longer than merus (1.25 times) and chela (2.0 times); fingers 1/5 longer than palm. The second chelate legs also slender; carpus longer than merus (1.5 times) and chela (2.0 times); fingers a little shorter than palm (Source : De Man, 1908).

Distribution: India (Lahore, Patna State, Bengal coasts, Chilka Lake, Madras, Karnataka).

A comparison of principal characters of *M. lamarrei lamarroides* and *M. lamarrei lamarrei* is given in Table I.

Remarks: The distribution of both the subspecies are confined to India. The former subspecies possesses certain characteristic features, which are : (1) shorter rostrum with fewer number of dorsal and ventral teeth, (2) specific shape of protopod and spines on the inner aspect of exopod of second maxilla, (3) spinous nature of the ultimate segment of the endopod of third maxilliped, (4) nature of second chelate leg and (5) position of dorsal spines of telson. The setae present in all the appendages are long and plumose. Since Logtak Lake in Manipur

is not affected by tidal influence, this subspecies may be completing its life cycle in freshwater itself. It contributes to a minor fishery in this lake.

Table I – A comparison of principal characters of *M. lamarrei lamarrei* and *M. lamarrei lamarroides*.

Characters	<i>M. lamarrei lamarrei</i>	<i>M. lamarrei lamarroides</i>
Nature of rostrum	Long, extends much beyond the apex of the antennal scale; distal half with a wide edentulous part and tip upturned	Long, extent a little beyond the apex of the antennal scale; distal half with a wide edentulous part and tip slightly upturned.
Rostral formula	$\frac{5.8 + 0.1 + 1.2}{6 - 9}$, two teeth post-orbital	$\frac{4.6 + 0.1 + 1.2}{4-6}$, two teeth post-orbital
Nature of telson	Slender, dorsal spines more closely placed, situated on the distal half away from the apex.	Slender, dorsal spines more closely placed, situated on the distal half towards the apex.
Mandibular palp	Three segmented; distal segment longest	Three segmented; distal segment longest, middle segment shortest.
Ist chelate leg		
Relations between: carpus and merus	Carpus clearly longer than merus (1.5 times)	Carpus as long as or slightly longer than merus.
carpus and chela	Carpus two times longer than chela	Carpus two times longer than chela
palm and fingers	Palm slightly shorter than fingers	Palm slightly shorter than fingers
IInd chelate leg		
Relations between :		
Ischium and merus	Ischium clearly shorter than merus	Ischium slightly shorter than merus
Merus and carpus	Carpus longer than merus	Carpus longer than merus
Carpus and chela	Carpus 2 times longer than chela	Carpus 1.5 times longer than chela
Palm and fingers	Palm a little longer than fingers	Palm longer than fingers
Percentage lengths of Ischium, Merus, Carpus, Palm and Fingers	20.14, 24.53, 33.58, 11.65 and 10.07 (Jalihal <i>et al.</i> , 1988)	20.6, 22.2, 34.9, 12.2 and 10.0

The latter subspecies is recently recorded from the impounded tanks near fort area, Gulberga, Karnataka State (Jalihal, Shenoy and Sankolli, 1988). These authors have pointed out that this subspecies "does not have to necessarily depend on salinity for metamorphosis". It is found almost all over India in both fresh (northern and peninsular regions) and brackish waters, but not from hill streams (Tiwari, 1955). It is also reported to occur in subterranean environment (Holthuis, 1950).

M. canarae and *M. sankollii* are also small sized species similar to these subspecies. In all these forms the rostra are longer with an edentulous wide gap at their distal halves. The nature and position of dorsal spines of the telson are also more or less similar. There are no accessory spines on the exopods of uropods in these species except in *M. sankollii*, where there is an accessory spine. The most striking character which serves to separate the present two subspecies from *M. sankollii* and *M. canarae* is the presence of a long, slender, almost

non-hairly appendix masculine that extends atleast upto the tip of endopod or beyond. This character is unique among the species of the genus (Tiwari, 1956).

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