

Freshwater Decapod Crustaceans (Potamidae, Palaemonidae) of Temengor Forest Reserve, Hulu Perak, Malaysia

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Abstract: Three species of freshwater decapod crustaceans are reported from the Temengor rainforests in the northwestern Malaysian state of Perak, Peninsular Malaysia. The presence of the potamid crab, *Johora tahanensis* (Bott, 1966) in Temengor represents a substantial northerly range extension for the species (previously known from Pahang). The species is also reported for the first time from the states of Selangor and Kelantan. Two species of palaemonid prawns are present, *M. lanchesteri* (De Man, 1911), and a new taxon, *Macrobrachium forcipatum* sp. nov.

INTRODUCTION

During the biological survey of the Malaysian Heritage and Scientific Expedition to Belum, 1993-94 by the Malaysian Nature Society (Davison *et al.*, 1995), a number of prawns and crabs were collected from around the edge of Temengor lake and its tributaries. These crustaceans were passed to me for study, the results of which are reported here. Although the collection was only represented by three species, it is worth a short paper as the crab (*Johora tahanensis*, Potamidae) has not been recorded so far north before, whilst one of the prawns, a member of the *Macrobrachium pilimanus* complex (Palaemonidae) is a new species.

Specimens are deposited in the Zoological Reference Collection (ZRC), Department of Zoology, National University of Singapore. The following abbreviations are used: G1 = male first pleopod, G2 = male second pleopod, and cl = carapace length (measured from behind orbit to posterior margin of the carapace). The rostral formula and characters used follow those used by Holthuis (1950) and Chace & Bruce (1993). The measurements of the crabs are of the carapace width and length respectively.

TAXONOMY

Family Potamidae

Johora tahanensis (Bott, 1966)

(Fig. 1)

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MATERIAL EXAMINED: PERAK: 2 males (larger 38.3 by 32.0 mm), 3 females (largest 32.8 by 26.9 mm) (ZRC), Tasek Temgnor, south of Banding, Sungai Halong, coll. K.K.R. Lim & H.H. Tan, 1-4 November 1993. —Kelantan: male (41.2 by 33.8 mm), (ZRC), Hutan Simpanan, Gunung Basor, Sungai Long, off Sungai Pergau, Jeli, in logged forest, 1500 feet above sea level, coll. G. Davison, August 1986. —Selangor: female (40.4 by 34.4 mm) (ZRC), Fraser's Hill, The Gap, ca. 2800 feet above sea level, in leaf littered shallow stream, coll. K. Lim, 1 June 1990.

REMARKS: This Malayan species was previously known only from central Pahang in Taman Negara National Park. The present specimens from the Temengor area, as well as those from northern Kelantan and Selangor, extend the range of the species substantially.

The largest male of *J. tahanensis* from Temengor (38.3 by 32.0 mm) is significantly larger than the largest known male reported (30.0 by 24.0 mm, holotype male, see Ng, 1988: 42). The north Kelantan specimen (41.2 by 33.8 mm) is even larger, as is the Selangor specimen (40.0 by 34.4 mm). The G1 of the largest Temengor male agrees well with that described and figured for *J. tahanensis* s. str. (see Ng, 1988) but the terminal segment seems to be somewhat longer and more slender. The G1s of the large Temengor and Kelantan specimens agree very well. The differences between the Pahang and Kelantan/Perak specimens however, seem minor and are probably associated with the size of the specimens.

Ng & Takeda (1992) showed that specimens from eastern Kelantan (part of Taman Negara National park) previously referred to *J. tahanensis* by Bott (1966, 1970) and Ng (1987, 1988) belong to a new species, *J. hoiseni*, instead.

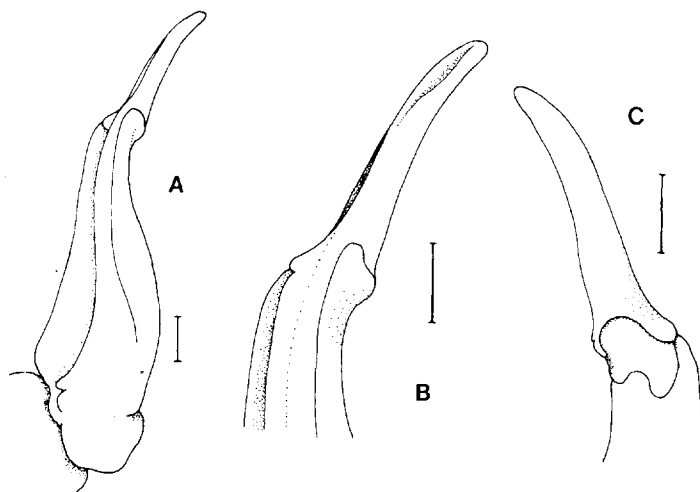


Figure 1. *Johora tahanensis* (Bott, 1966). Left gonopods (setae omitted). Male, 38.3 by 32.0 mm (ZRC). A, B, ventral view; C, dorsal view. Scales = 1.0 mm.

Family Palaemonidae

Macrobrachium forcipatum sp. nov.

(Figs. 2-4)

DIAGNOSIS: Rostrum relatively short, blade-like, not reaching edge of scaphocerite; rostral formula 4+6-7/1-2 (mode 4+7/2), carapace not inflated laterally, surfaces smooth. Second pereopods distinctly unequal in adult males, larger chela not strongly inflated; carpus short, about half length of merus, outer surface with numerous very short spines; merus cylindrical, distal half more inflated than proximal half, outer surface with numerous very short spines; chela covered with dense, long pubescence which obscures all margins and cutting edges, outer surface appears rugose, with broad pits (setal attachment points) when denuded; fingers elongate, slender, longer than palm, almost straight except for recurved tips, cutting edges with widely spaced teeth and denticles. Eggs (eyed) ca. 1.7 by 1.1 mm in size.

ETYMOLOGY: The name is derived from the Latin for forceps, alluding to the distinctive long fingers of the second pereopod of the species.

MATERIAL EXAMINED: Holotype — Male (cl 14.1 mm) (ZRC), Tasik Temengor, south of Banding, Sungai Halong, coll. K.K.P. Lim & H.H. Tan, 1-4 November 1993.

Paratypes — 12 males, 3 females (2 ovigerous, cls 8.6 mm, 10.4 mm) (ZRC), same data as holotype.

Others — 1 juvenile specimen (ARC), Tasik Temengor, south of Banding, mouth of Sungai Halong, coll. H.H. Tan *et al.*, 1 November, 1993. — 1 ovigerous female (ZRC), Tasik Temengor, south of Banding, Sungai Bekek, coll. H.H. Tan *et al.*, 4 November 1993.

REMARKS: This species belongs to the *Macrobrachium pilimanus* De Man, 1879, group of species in usually having a short rostrum which does not extend beyond the scaphocerite, a short cup-shaped carpus of the second pereopod, long dense pubescence on the chela of the second pereopod, and few but large eggs (see Holthuis, 1950). Four species are now recognised as belonging to this group: *M. pilimanus* [Sumatra, Malaysia, Borneo, Java, Thailand], *M. leptodactylus* (De Man, 1892) [Java], *M. ahkowi* Chong & Khoo, 1987 [Peninsular Malaysia], and *M. gua* Chong, 1989 [Borneo] (see Chong, 1989; Chong & Khoo, 1987a, b).

Macrobrachium forcipatum sp. nov. can be easily distinguished from *M. pilimanus* (*fide* De Man, 1879; Chong & Khoo, 1987a, Ng & Choy, 1987a, b) in having the lateral parts of the carapace not inflated (slightly inflated in *M. pilimanus*), proportionately larger eyes in adults (maximum width to cl ratio ca. 0.2 against ca. 0.15), fewer teeth on the dorsal margin of the rostrum (mode 4+7/2 against 6+7/2), fingers of the major chela elongate, slender, and longer than the palm (stocky fingers, subequal to

shorter than the palm in *M. pilimanus*), and fewer teeth on the cutting edges (mode 7-8 against 10-11). It is important to note however, that *M. pilimanus* as currently understood, is still a very heterogeneous taxon, and there are at least two other undescribed taxa currently ascribed to this species from Peninsular Malaysia and Singapore (unpublished data).

From *M. leptodactylus*, *M. forcipatum* can be separated by having fewer teeth on the dorsal margin of the rostrum (mode 4+7/2 against 7+7/2) and a proportionately shorter carpus of the major second pereiopod (width to length ratio ca. 0.5 against ca. 0.4). *Macrobrachium leptodactylus* is poorly known, and it is known for certain only from Java. Hólthuis (1950) synonymised it with *M. pilimanus*, but Chong (1989) re-examined the types and recognised them as distinct.

Macrobrachium forcipatum can be separated from *M. ahkowi* (*fide* Chong & Khoo, 1987c, d; Ng & Choy, 1990a, b) in having a shorter rostrum which does not reach the edge of scaphocerite), the lateral parts of the carapace not inflated (slightly inflated in *M. ahkowi*), fewer teeth on the dorsal margin of the rostrum (mode 4+7/2 against 4+11/2), and the fingers of the major chela are elongate, slender, and longer than the palm (stocky fingers subequal to shorter than the palm in *M. ahkowi*).

From *M. gua* (*fide* Chong, 1989), *M. forcipatum* can be distinguished in having the lateral parts of the carapace not inflated (slightly inflated in *M. gua*), proportionately larger eyes in adults (maximum width to cl ratio ca. 0.2 against ca. 0.15), fewer teeth on the dorsal margin of the rostrum (mode 4+7/2 against 4+11/2), and the fingers of the major chela are longer than the palm (shorter than the palm in *M. gua*). *Macrobrachium gua* also seems to grow to a much larger male adult size, reaching a cl of about 18.0 mm (against cl 14.0 mm for *M. forcipatum*).

De Man (1892: pl. 28 fig. 44 g, h) figured the major second pereiopods of what he identified as *M. pilimanus* from Java which closely resembles that of *M. forcipatum* in having elongate fingers which are longer than the palm. The rostra of these specimens were not figured. A re-examination of these specimens is needed to ascertain if they might also belong to *M. forcipatum*.

The shape of the rostrum is very consistent among all the specimens of *M. forcipatum* examined. The number of teeth varies only slightly. Most of the specimens had a rostral formula of 4+7/2, with only a few specimens having formulae of 4+7/1 or 4+6/2. The structure of the major second pereiopod is very constant among the several adult males in which the chela is well developed. With regards to the major chela of the second pereiopod, adult males are both left- and right-handed. Two females were ovigerous, the smaller measuring cl 8.6 mm.

Macrobrachium lanchesteri (De Man, 1911)

MATERIAL EXAMINED: 2 specimens (1 ovigerous female) (ZRC), Tasik Temengor, south of Banding, mouth of Sungai Halong, coll. H.H. Tan

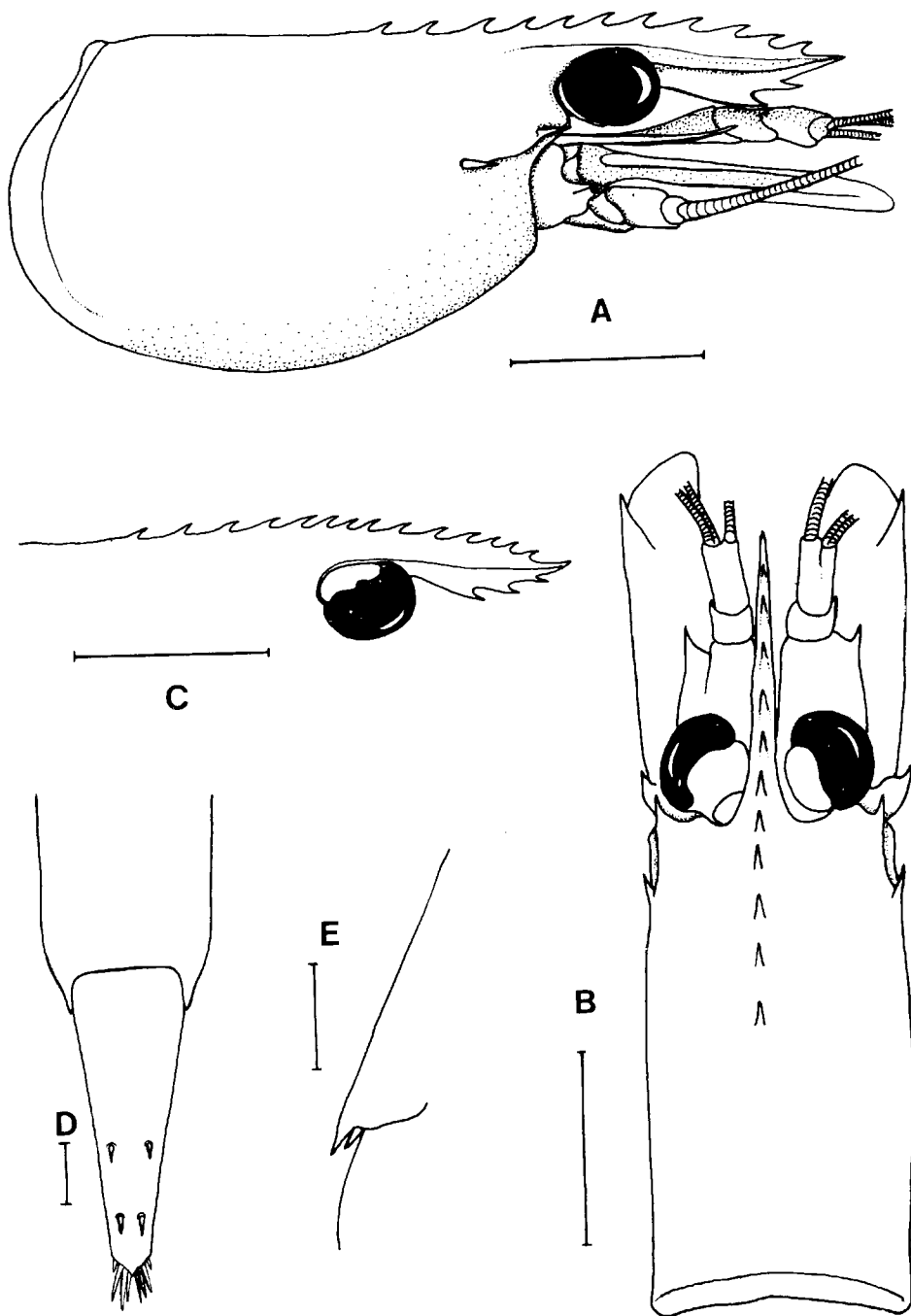


Figure 2. *Macrobrachium forcipatum* sp. nov. A, B, holotype male, cl 14.1 mm; C, D, paratype male, cl 13.2 mm (ZRC). A, carapace (lateral view); B, carapace (dorsal view); C, telson; D, spine on exopod of uropod. Setae on all structures omitted. Scales: A-C = 1.0 mm; D, E = 5.0 mm.

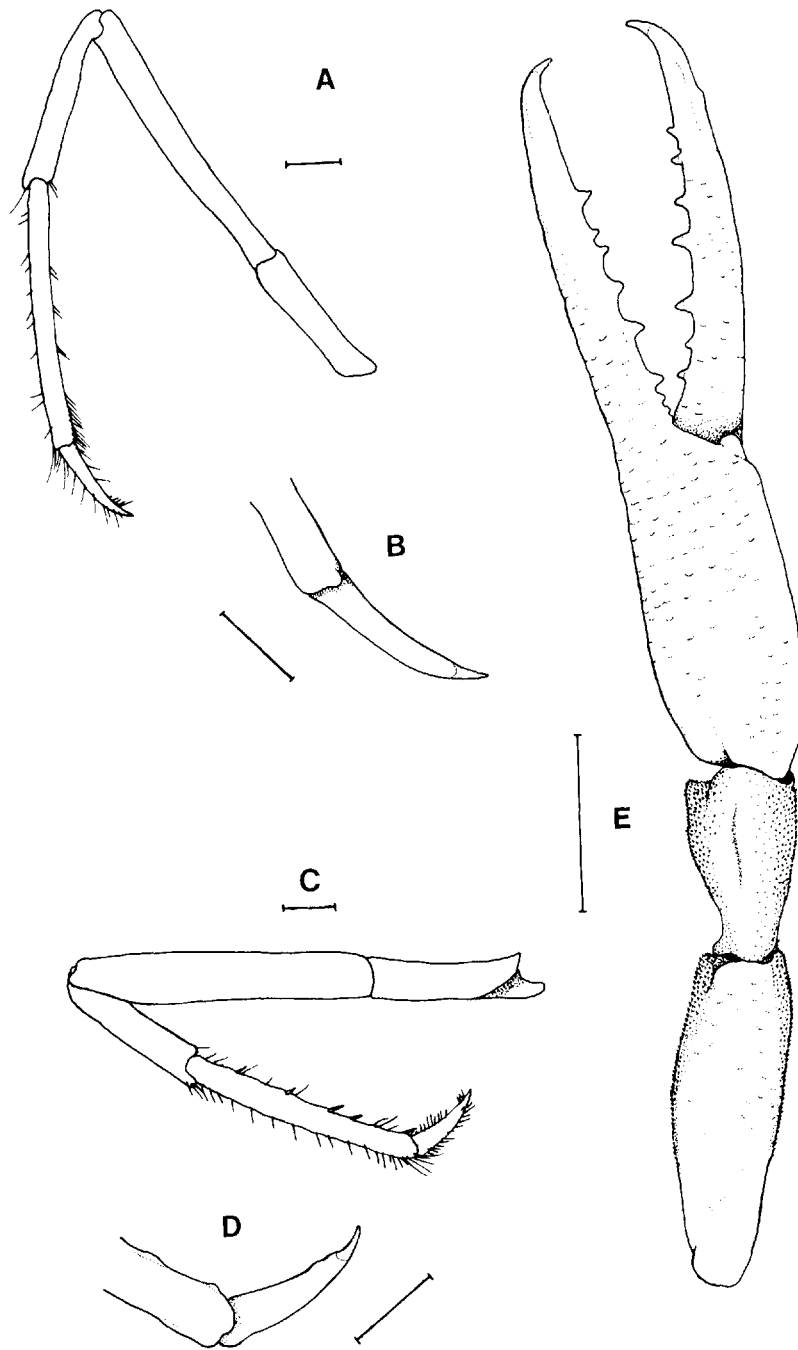


Figure 3. *Macrobrachium forcipatum* sp. nov Paratype male, cl 13.2 mm (ZRC). A, left fifth pereiopod; B, dactylus and propodus of left fifth pereiopod; C, left third pereiopod; D, dactylus and propodus of left third pereiopod; E, cheliped of major right second pereiopod (setae omitted). Scales: A-D = 1.0 mm; E = 5.0 mm.

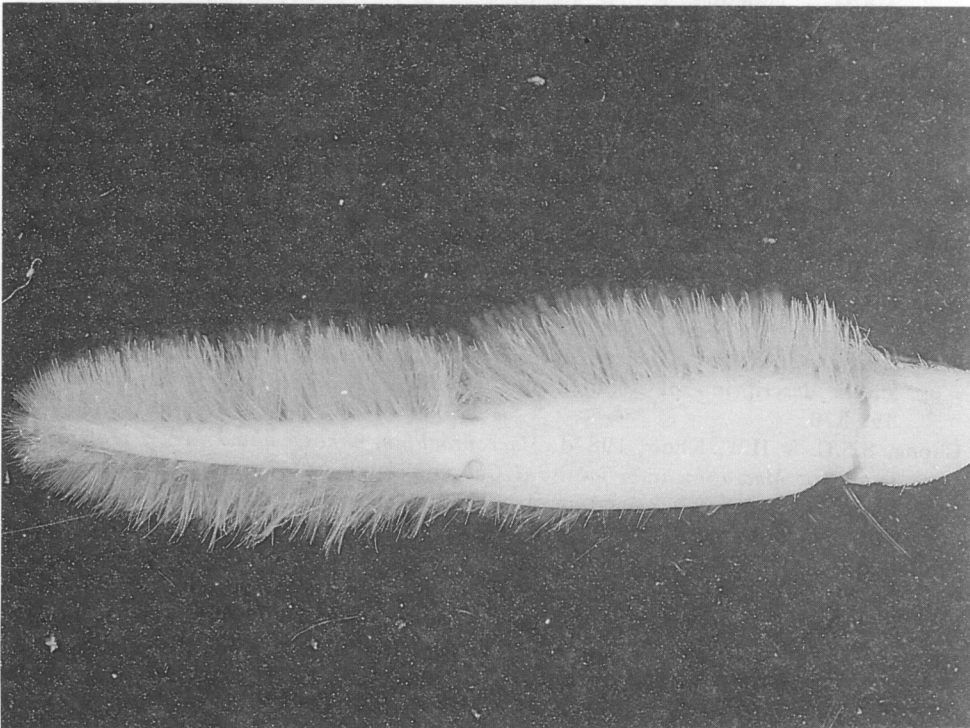
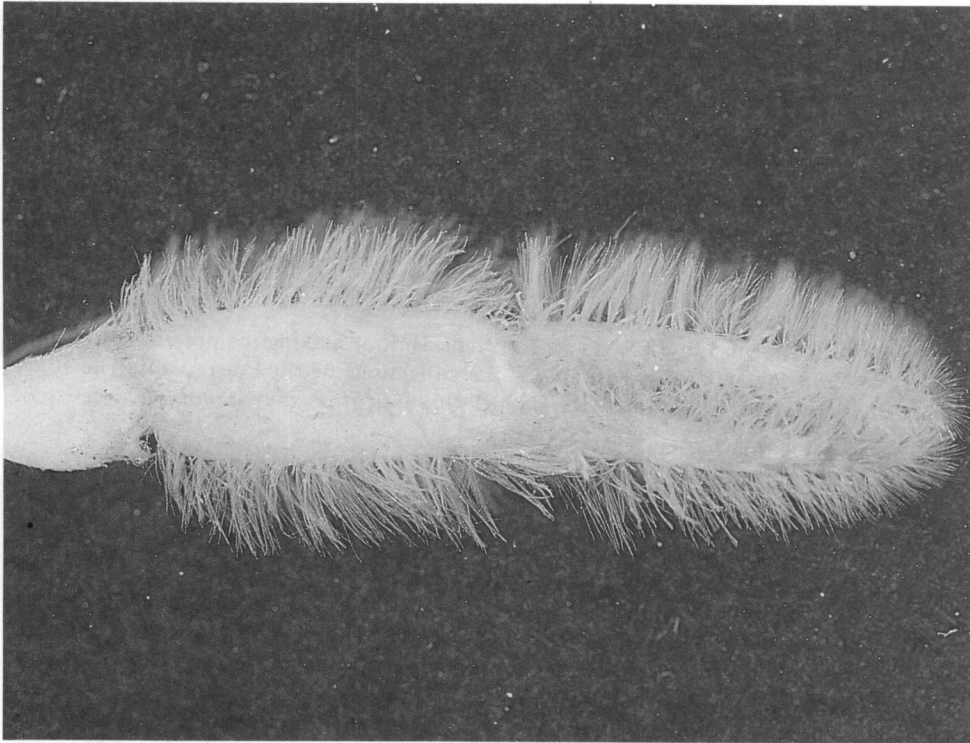


Figure 4. *Macrobrachium forcipatum* sp. nov. Chela of major right second pereiopod, showing pubescence. Paratype male, cl 12.0 mm (ZRC). A, outer view; B, upper marginal view.

et al., 1 November, 1993. —6 specimens (ZRC), Tasik Temengor, south of Banding, Sungai Bekek, coll. H.H. Tan *et al.*, 4 November 1993.

REMARKS: This species is a well known open water species in Malaysia and Singapore, and is present only in or near Tasik Temengor in the Belum area (see Chong & Khoo, 1988; Ng, 1990). The species is able to complete its larval development completely in freshwater (see Chong & Khoo, 1988; Wong, 1994).

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