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# ON A NEW SPECIES OF *PARATYMOLUS* FROM TAIWAN (CRUSTACEA: DECAPODA: BRACHYURA: MAJIDAE)

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***ABSTRACT.*** - A new species of Taiwanese spider crab from the inachine genus *Paratymolus* is described. The new species differs from its nearest congener, *P. latipes* Haswell, 1880, in its carapace spinulation, cheliped features as well as the structure of its male first gonopod.

***KEYWORDS.*** - *Paratymolus*, new species, Majidae, Taiwan.

## INTRODUCTION

The majid genus *Paratymolus* was established by Miers (1879) for a single new species *P. pubescens* Miers, 1879. Subsequent workers added four species and two subspecies to the genus. Of these, *P. bituberculatus* Haswell, 1880, *P. bituberculatus* var. *gracilis* Miers, 1884, and *P. hastatus* Alcock, 1895, at one time or other, were synonymised under *P. pubescens* (see Ortmann, 1893; 1894; Barnard, 1955; Griffin & Tranter, 1986). The identities of *P. latipes* Haswell, 1880 and *P. sexspinosus* Miers, 1884, in contrast have never been in doubt although *P. latipes* var. *quadridentata* Baker, 1906, was synonymised under *P. latipes* by Griffin (1966). According to Griffin & Tranter (1986), the genus is defined by a pentagonal carapace, short, emarginate rostrum, carpal chelipedal spine and a triangular abdomen with segments three to five fused (see also Miers, 1879; Haswell, 1880, 1882; Alcock, 1895).

During a recent diving trip to Lan Yu (= Orchid) Island in southeastern Taiwan, a specimen of *Paratymolus* was collected from an algal bed. The present specimen resembles *P. latipes* from Australia, but can be distinguished by the spinulation of the rostrum, form of the orbital region, spination on anterolateral margin of the carapace and structures of the cheliped and male first gonopod. It is here described as new.

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All measurements are in millimetres. The following abbreviations are used: G1 for the male first gonopod, cl for the post rostral carapace length, taken as the distance from the line joining the preorbital angle of the supraorbital eave of both sides to the centre of the posterior margin of the carapace. The holotype of the new species is deposited in the Zoological Reference Collection (ZRC) of the Raffles Museum, National University of Singapore. Comparisons of this specimen were made with the type material of *P. latipes* from the Australian Museum (AM), Sydney, and additional material from the Western Australian Museum (WAM), Perth.

## *Paratymolus taiwanicus*, new species

(Figs. 1, 2)

***Material examined.*** - Holotype - male (cl 7.4 mm) (ZRC), Two Lion Rock, Lan Yu (= Orchid) Island, Taiwan; coll. S.-H. Wu, 29 Mar.1998.

***Description of male holotype.*** - Carapace broadly pentagonal, dorsal surface smooth, devoid of tubercles, covered with thick layer of fine pubescence; gently sloped anteriorly from foremost spine towards rostrum. Rostrum bilobed, each lobe broadly triangular with two spinules, inner one markedly smaller than outer; base of emargination of two lobes with one straight, minute spinule; lateral spinules moderately long. Anterolateral region with three large spines, including post-orbital spine, anterior-most smallest, posterior-most largest.

Eyestalks short, non-retractile, base almost visible from ventral view, with long sensory setae near cornea. Antenna short, basal antennal article moderately short, broad, not fused anteriorly with carapace, movable, second segment short, rounded, similar in length to basal segment, third segment longest. Subhepatic region finely spinulate with one moderately long spinule directly below orbit. Orbital region finely toothed. Supraorbital eave slightly developed with a blunt preorbital angle, followed posteriorly by broad toothed process and slightly cupped postorbital spine. Third maxilliped ischium longer than broad, ischium rectangular (length ca. 1.6 times width), inner margin gently convex, exopodite usually exceeding border of merus.

Cheliped and ambulatory legs covered with thick pubescence, distal tip of dactylus glabrous. Cheliped robust, with conical granulations along entire outer surface, extending slightly into inner surface. Ischium with three prominent spinules, anterior and posterior borders of merus each with a row of spinules, third spinule on ischium enlarged along anterior row. Carpus with short, robust spine, palm rounded but not bulbous, fingers possessing ridge with, sharp, triangular teeth, tips curved, often pectinated, crossing over each other when chelae closed.

Ambulatory legs stout, segments broad, dorso-ventrally flattened, inner surface flattened. First ambulatory leg ca. 1.5 times cl, slightly longer than chelipeds. Dactyli of ambulatory legs slightly granulated, obscured by dense, long setae.

Abdomen elongated, triangular, segments 3-5 fused, proximal margin of fusion slightly angular, sixth segment rectangular, telson moderately long. G1 elongated, slender, constricted medially, broadening distally; apical tip flared, margins serrated.

***Coloration in life.*** - Carapace mottled with bright reddish orange and white, appendages similarly striped (Fig. 2).

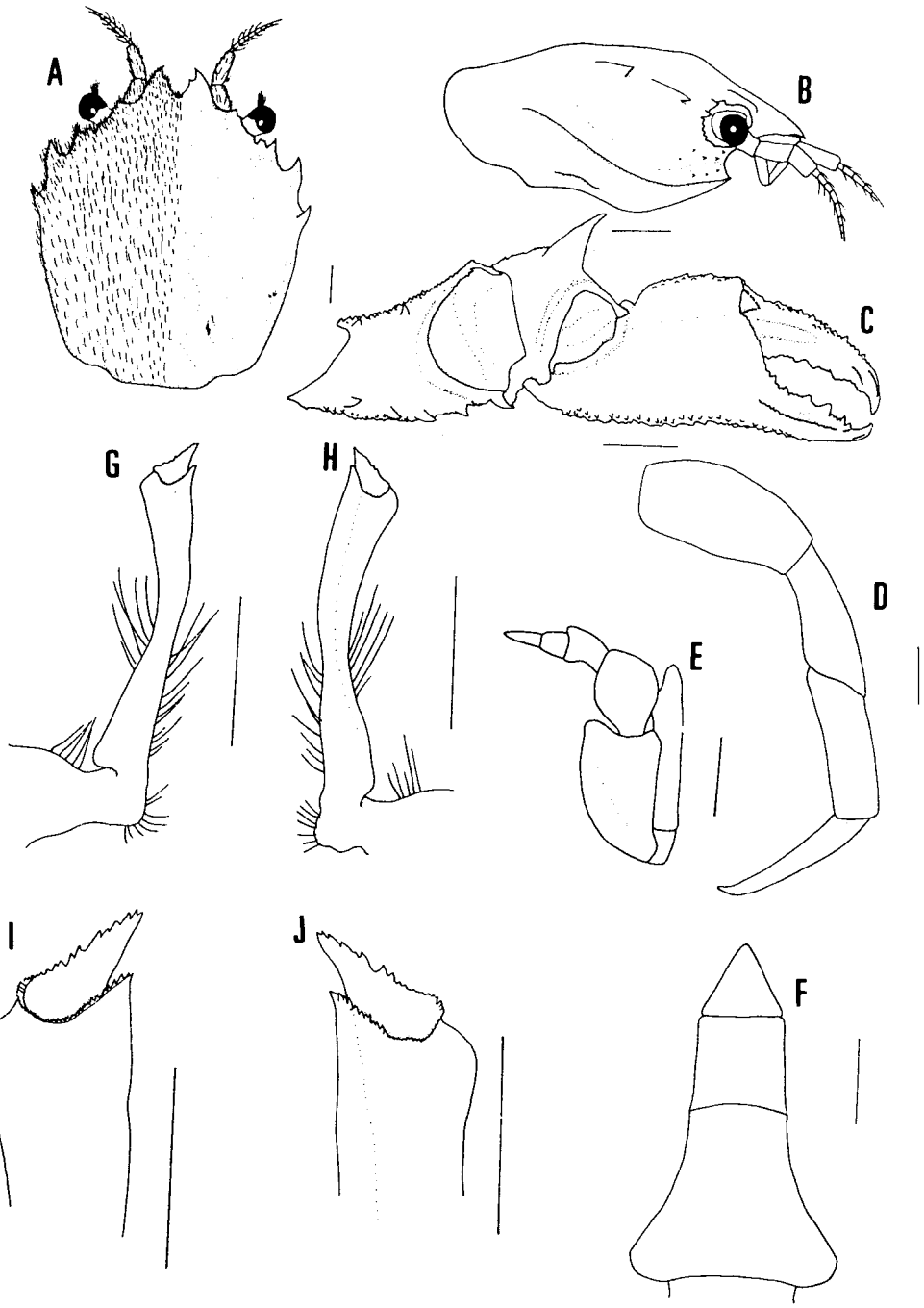


Fig. 1. *Paratymbolus taiwanicus*, new species. Holotype male (cl 7.4 mm) (ZRC). A. Carapace, dorsal view; B. Carapace, lateral view; C. Left cheliped, inner aspect; D. Left first ambulatory leg; E. Left third maxilliped; F. Abdomen; G. Left G1, abdominal view; H. Left G1, sternal view; I. Apical tip of left G1, abdominal view; J. Apical tip of left G1, sternal view. Scales = 1.0 mm in A-H; 0.5 mm in I,J.

***Ecology.*** - The species was collected at night from shallow reef waters by diving at about 0.5 m depth. It was obtained from brown algae (*Turbinaria*) on rocks.

***Etymology.*** - The species is named after Taiwan. Gender masculine.

***Remarks.*** - *Paratymolus taiwanicus*, new species, appears to be most closely related to *P. latipes* Haswell, 1880, with both species possessing a dorsally smooth, broadly pentagonal carapace with three prominent lateral spines on the anterolateral margin. This is unlike the species belonging to the *P. pubescens* group (see Griffin & Tranter, 1986), all of which possess dorsally tuberculated carapaces. The anterolateral armature of *P. taiwanicus* also differs from that of *P. sexspinosus* which has a large broad tubercle followed by a slender, forward-directed spine instead. Like *P. latipes*, and unlike both the members of the *P. pubescens* group and *P. sexspinosus*, *P. taiwanicus* has a spinulated subhepatic region and chelipeds that are covered with dense conical to spinular protruberances along their entire length.

*Paratymolus taiwanicus* can easily be distinguished from *P. latipes* in several key features. In *P. taiwanicus*, the inner spinule of each rostral lobe is considerably smaller than the outer one, unlike in *P. latipes* where the inner spinule is only subequal to the outer one. Also, *P. taiwanicus* possesses an additional spinule at the base of the emargination of the rostrum, a character that is not known in any other known specimen of *Paratymolus*. In addition, the orbital region of *P. taiwanicus* differs from *P. latipes* in that it is more distinctly toothed. There is also no preorbital spine on the supraorbital eave while to the posterior of this eave, there is an additional process. The postorbital spine is also slightly cupped in *P. taiwanicus* whereas in *P. latipes*, it is not.

In the specimens of *P. latipes* examined, numerous tubular sensory setae were present on the anterior region of the carapace, orbital region, rostrum and in a straight row along the most

Fig. 2. *Paratymolus taiwanicus*, new species. Holotype male (cl 7.4 mm) (ZRC) Dorsal view. Life colour.

convex part of the carapace. Compared to *P. latipes*, the sensory setae on *P. taiwanicus* are relatively smaller, less tubular in appearance and also less prominent in their placement on the carapace. There is also no obvious row of sensory setae along the most convex part of the carapace in *P. taiwanicus*. On the other hand, the sensory setae on the eyestalk of *P. taiwanicus* are considerably longer than those at the same position on specimens of *P. latipes* examined.

In terms of the carapace morphology, the subhepatic region of *P. taiwanicus* is less strongly spinulate compared to the same region on *P. latipes* specimens. In the anterolateral portion of the carapace, *P. taiwanicus* lacks the two additional spinules (sometimes more in the form of tubercles) found between the first and second, and the second and third lateral spines respectively in *P. latipes*.

The chelipeds of *P. taiwanicus* and male *P. latipes* are quite different despite their general similarity in form. In the former species, the inner surface of the hand is generally smooth, without the coarser or even pitted appearance of the latter species. The granulations of the palm also seem to continue further into the inner surface in *P. latipes*. On the ventral surface of the ischium of the cheliped, *P. taiwanicus* has three clearly visible spinules whereas there are only two prominent spinules on *P. latipes*. The second spinule on anterior margin of the ischium is enlarged in *P. taiwanicus* whereas in all the *P. latipes* specimens examined, it is the third spinule which is the largest. The carpal spines in specimens of *P. latipes* is also relatively longer and the length of the palm is greater than that of *P. taiwanicus*.

The male abdomen of *P. taiwanicus* is different from that of *P. latipes*. In *P. taiwanicus*, the proximal margin of the fused portion which comprises segments 3-5, is rounded instead of angular, as in *P. latipes*. The telson in *P. latipes* is also proportionately longer and narrower than that of *P. taiwanicus*.

Finally, the G1 structure of *P. taiwanicus* is very different from that of *P. latipes*. While the G1 of *P. latipes* is short and stout, that of *P. taiwanicus* is elongate and relatively slender. Moreover, there is a small hood-like structure on the apex of the G1 of *P. latipes* which is absent in *P. taiwanicus*, which instead, possesses a flared and serrated apical tip (see also Griffin & Tranter, 1986).

***Comparative material.*** - *Paratymolus latipes* Haswell, 1880. - Lectotype male (6.0 mm) (AM P 91), Port Jackson, New South Wales, Australia, 33°51'S, 151°16' E, coll W. A. Haswell. Paralectotypes - 1 male, 2 females (AM), Port Denison, New South Wales, Australia, 33°51'S, 151°16' E, coll W. A. Haswell. Others. - 4 males, 4 ovigerous females (WAM 23223), Port Denison (Dongara), crawling on weeds at night (9.30pm) as tide began flowing, coll. B. R. Wilson, 24 Aug.1958.

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