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TERRATHELPHUSA ADIPIS, NEW SPECIES (CRUSTACEA: DECAPODA: BRACHYURA: SUNDATHELPHUSIDAE) FROM KALIMANTAN, BORNEO

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ABSTRACT. - A new species of freshwater crab, *Terrathelphusa adipis* (Gecarcinucoidea, Sundathelphusidae), is described from Kalimantan, Borneo. The species is easily recognised by its quadrate and highly swollen carapace, and long ambulatory legs, of which the meri have distinct dorsal subterminal spines. Its relationships with congeners and the genera *Thelphusula, Balssiathelphusa, Adeleana, Stygothelphusa* and *Sundathelphusa* are also discussed.

INTRODUCTION

In a recent revision of the genus *Terrathelphusa*, Ng (1989b) recognised four species from Southeast Asia, two each from Borneo and Java. One of the specimens in the Bogor Museum from "Longlanuk" was briefly examined during the course of that study but could not be identified conclusively as it was a female and the locality could not be ascertained. It was tentatively referred to *T. modesta* by Ng (1989b).

A detailed re-examination of the specimen in question shows that it was not conspecific with *T. modesta* and should be referred to an undescribed species instead. In this paper, the Longlanuk specimen is described as a new species, *Terrathelphusa adipis*.

The abbreviations G1 and G2 are used for the male first and second pleopods respectively. Terminology essentially follows that used by Ng (1988). Measurements (in millimetres) are of the carapace width, length and height respectively. The carapace height is measured from the highest point of the gastric region to the beginning of the sternum. Measurements of the leg segments are of the longer margin. All measurements are made with vernier callipers. The type specimen is deposited in the Museum Zoologicum Bogoriense (MZB), Bogor, Java, Indonesia.

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DESCRIPTION

Terrathelphusa Ng, 1989

***Terrathelphusa adipis*, new species**

(Pl. 1, Fig. 1)

Material. - Holotype - 1♀ (25.2 x 19.7 x 11.7 mm) (MZB 1286), Longlanuk, east Borneo, 1° 58'S, 117° 50'E, leg. S. S. Liem, 14.x.1963.

Diagnosis: Carapace quadrate, highly inflated, relatively smooth, cervical grooves deep, epigastric cristae low but distinct, edges not sharp, postorbital cristae indistinct. Frontal median triangle well developed, lateral margins almost completely confluent. Exopod of third maxilliped with long flagellum. Ambulatory legs long, meri with distinct dorsal subterminal spines.

Description of holotype female: Carapace broader than long, surfaces convex longitudinally and laterally, branchial regions appearing very inflated, all surfaces quite smooth. Epigastric cristae very low but distinct, rugose, separated from each other by very deep groove which does not extend beyond cristae. Postorbital cristae very weak, indistinct. Frontal region deflexed, frontal margin very short, gently sinuous, appearing bilobed, sloping gradually to join supraorbital margin. Frontal median triangle complete, strongly deflexed, not clearly visible from direct frontal view, all three margins distinctly ridged, ventral edge of upper margin completely confluent with lateral margins, but dorsal edge still separate. Cervical groove deep, straight but short, ending rather abruptly before

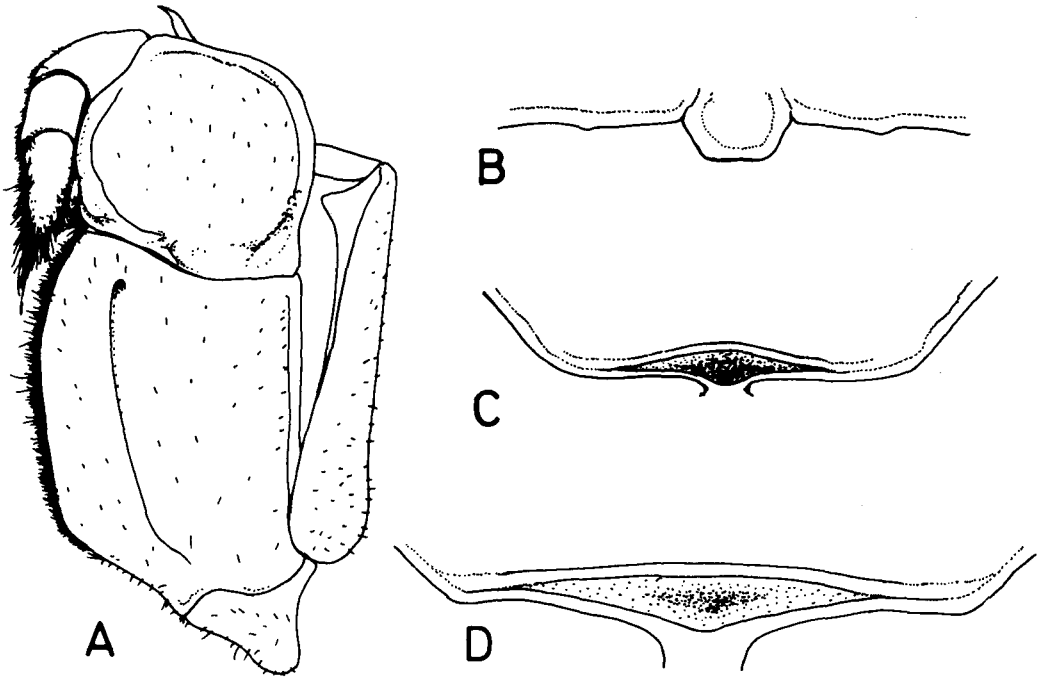
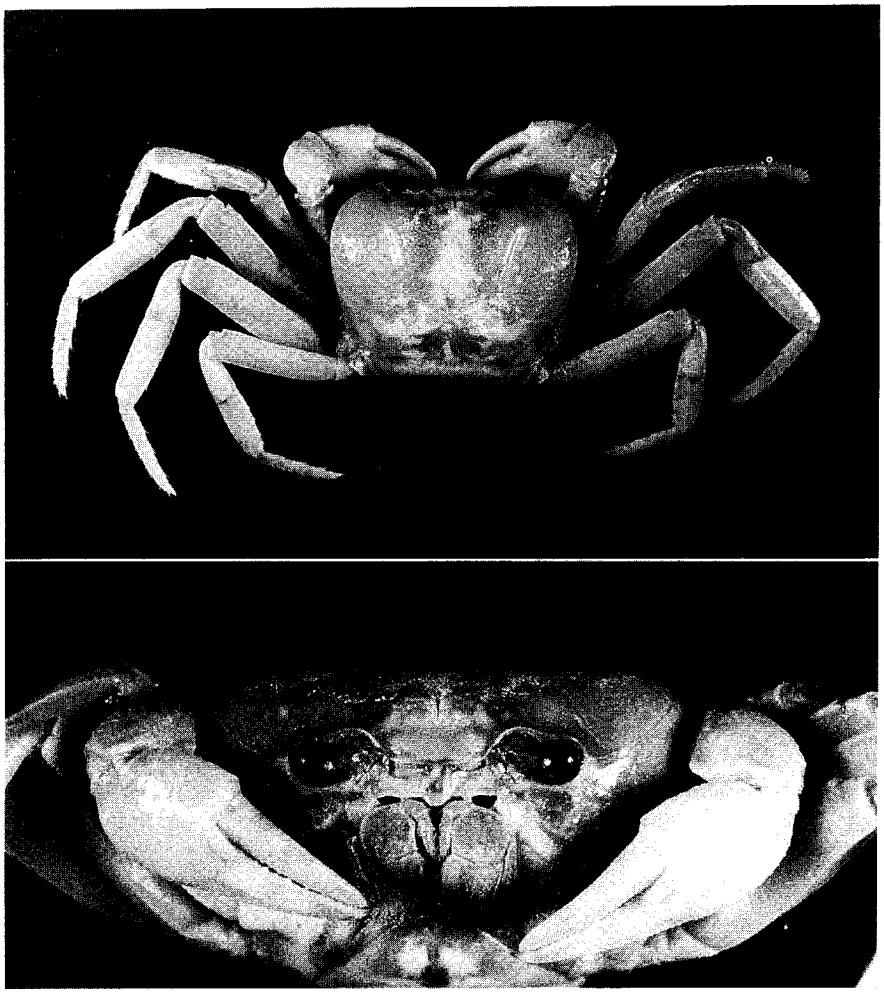


Fig. 1. *Terrathelphusa adipis*, new species. Holotype female (MZB 1286). A, left third maxilliped; B, posterior margin of epistome; C, frontal median angle (frontal view); D, frontal median triangle (plane view).



Pl. 1. *Terrathelphusa adipis*, new species. Holotype female (MZB 1286). A, dorsal view; B, frontal view.

joining deep H-shaped depression. Anterolateral margin short, strongly convex, external orbital angle very short, outer margin straight, twice length of inner, separated from anterolateral margin by small but distinct V-shaped notch. Posterolateral margins distinctly separated from anterolateral margins, slightly concave, broadly converging towards posterior margin of carapace. Anterolateral and posterolateral regions covered with distinct oblique striae. Posterior margin of carapace straight. Pterygostomial and sub-branchial regions slightly rugose. Orbits sloping gradually from frontal view. Eyes filling orbits almost entirely, cornea well pigmented. Supra- and infra-orbital margins smooth.

Posterior margin of epistome with well developed triangular median lobe, tip of lobe truncated. Exopod of third maxilliped longer than merus, reaching half length of ischium, inner distal margin with well developed triangular process, with distinct flagellum, slightly longer than width of merus. Ischial groove deep, closer to inner margin.

Chelipeds almost symmetrical, left slightly larger. Surfaces of meri, carpi, palm and fingers slightly rugose. Merus with small sharp dorsal subterminal spine. Right carpus with strong sharp spine on inner angle, with small sharp tubercle at the base of the inner margin of spine; left carpus with blunt tubercle. Fingers slightly longer than palm, with numerous small teeth along cutting edges, not forming any distinct gap when closed. Tips of fingers strongly curved, hook-like, beige-coloured.

Ambulatory legs long, second pair longest. Merus with distinct sharp subterminal dorsal spine. Proportions of left legs as follows:

Leg	merus	carpus	propodus	dactylus
1	14.5	6.9	9.2	9.9
2	17.9	9.2	11.8	12.3
3	17.0	8.4	10.7	12.2
4	14.0	7.3	8.7	10.1

Abdomen broad, covering entire sternum. Seventh segment distinctly triangular, lateral margins convex. Pleopods highly setose, with one brooding juvenile still attached. Sternal surface between third maxillipeds and chelipeds pubescent.

Etymology: The species name is derived from the Latin for "lard", alluding to the distinctive "fat" and swollen carapace of the species.

Remarks: This species is very distinctive in its suite of characters, and despite it being a female and the absence of the G1, is easily recognisable. The generic classification of *adipis* is somewhat difficult. The general facies of the species allies it to several Southeast Asian genera - *Terrathelphusa, Thelphusula, Adeleana* and *Balssiathelphusa*. According to Bott's (1969, 1970) system, these genera are distributed among three families - *Terrathelphusa* in the Sundathelphusidae, *Thelphusula* and *Adeleana* in the Gecarcinucidae, and *Balssiathelphusa* in the Parathelphusidae. The problem with gecarcinucoid classification will be discussed later on.

The present placement in *Terrathelphusa* is based mainly on the form of the carapace (swollen, smooth, postorbital indistinct), and to a lesser extent on the form of the third maxilliped exopod and the frontal median triangle. The key character of the G1, very effective in delineating the above-mentioned genera, is not available as the single type specimen of *T. adipis* is a female. None of the other genera mentioned have carapaces as swollen or as smooth as in *Terrathelphusa*, although in the four known *Terrathelphusa* species, their carapaces are more ovate in shape. The well developed triangular tooth on the inner distal margin of the third maxilliped exopod also allies *adipis* with *Terrathelphusa*. In the other genera, the tooth is much lower and not as strong (Ng, unpublished data). The form of the frontal median triangle is also very similar to that of *T. loxophthalma* (De Man, 1892), except that the upper margin of the triangle in *T. adipis* is stronger and more completely confluent. In *Balssiathelphusa*, the triangle is complete, and the upper margin is completely confluent with the lateral margins (see Ng, 1986b). In *T. adipis*, only the lower edge of the upper margin fuses with the lateral margins, with the dorsal edge still separate. Although the condition of the frontal median triangle of some *Thelphusula* species (particularly *T. buergeri*) approaches that of *T. adipis*, none are as well developed as that of *T. adipis*.

It is hoped that when males become available and the G1 structures are examined, they will vindicate the present classification. Within *Terrathelphusa*, *T. adipis* is a very distinctive taxon. The quadrate carapace, armed ambulatory merus (no other *Terrathelphusa* species has dorsal subterminal spines on the merus) and highly deflexed front are distinguishing characters.

The difficulty in assigning a definite genus (and family) to *adipis* also highlights the problem with Bott's (1970) classification of the gecarcinucoid families. Holthuis (1979) had first commented that the usefulness of the form of the triangle, used by Bott (1970) to delineate his three families of Parathelphusoidea (present Gecarcinucoidea) was doubtful. Bott had indicated that three forms of frontal median triangles can be distinguished complete (all the three margins well developed and confluent) (Parathelphusidae), incomplete (the upper margin generally weaker and not confluent with the lateral margins) (Sundathelphusisdae), and absent (the upper margin not discernable) (Gecarcinucidae). The family Sundathelphusidae, to which *Terrathelphusa* belongs, was characterised primarily on this structure (see Ng, 1989b).

Holthuis (1979) noted that *T. buergeri* also had a well developed frontal median triangle and the character had many intermediate forms in other species. Ng (1986a) noted the same trend in *Phricotelphusa hockpingi* (Gecarcinucidae), and discussed the problem further for the gecarcinucoid families, as well as the genera *Thelphusula*, *Stygothelphusa*, *Terrathelphusa* and *Sundathelphusa* (Ng, 1988, 1989a, b, c; Ng & Goh, 1987; Ng & Stuebing, 1989, 1990). With *T. adipis*, the problems with Bott's system become even more apparent. The degree of development of the frontal median triangle of *T. adipis* is such that if one was to follow Bott's family criteria strictly, it should be included in the family Parathelphusidae sensu Bott. Yet, it is obvious that many other related species in the "sundathelphusid" genera *Terrathelphusa* and *Sundathelphusa*; and the "gecarcinucid" genus *Thelphusula* have intermediate conditions. The use of the frontal median triangle as a family character as envisaged by Bott thus, should eventually be discontinued. The validity of the gecarcinucoid families recognised by Bott (1970) will need to be reappraised and more definitive characters (if any) found. The familial classification used in this paper is thus, merely a "stop-gap" measure.

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