



On three new species of *Parathelphusa* (Crustacea: Decapoda: Brachyura: Parathelphusidae) from Borneo

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Abstract

Three new species of the genus *Parathelphusa* (Brachyura: Parathelphusidae) are described from Borneo: *Parathelphusa tera* from Bengalun Basin, East Kalimantan; *P. torta* from Barito Basin, South Kalimantan, and *P. undulata* from Kayan Basin, East Kalimantan. Descriptions, figures and comparisons with congeners in the region are provided.

Introduction

Parathelphusa H. Milne-Edwards, 1853, is a speciose genus of freshwater crabs with members mainly Sundaic in distribution with outliers in the Philippines, Sulawesi, Bali and Lombok. A total of 35 species are currently recognised (see Bott, 1970; Ng, 1988, 1990, 1992, 1993, 1994, 1997; Ng & Goh, 1987; Ng & Takeda, 1992, 1993).

Recent collections of freshwater crabs have turned up three previously undescribed species of *Parathelphusa*, namely *Parathelphusa tera* from Bengalun Basin, East Kalimantan; *P. torta* from Barito Basin, South Kalimantan and *P. undulata* from Kayan Basin, East Kalimantan. A brief account of these species, including descriptions and comparisons is presented in this paper.

Measurements given for the crabs are listed as carapace width by carapace length. The terminology used essentially follows that used by Ng (1988). Specimens are deposited in Museum Zoologicum Bogoriense (MZB), Bogor, Java, Indonesia, Queensland Museum (QM), Brisbane, Australia and the Zoological Reference Collection (ZRC), Department of Biological Sciences, National University of Singapore.

Systematic Account

Family Parathelphusidae Alcock, 1910

Genus *Parathelphusa* H. Milne Edwards, 1853

Type species: *Parathelphusa tridentata* H. Milne Edwards, 1853

Parathelphusa tera sp. nov.

Plate 1; Figure 1.

Material examined: – Holotype – 1 male (24.4 by 19.0 mm) (MZB, ex. QM W21395); Rawa Swamp, South of Bengalong, East Kalimantan, Borneo; coll. R. Powell, 19 Mar. 1996.

Diagnosis: Carapace transverse, branchial regions inflated; external orbital angle broadly triangular, truncate, outer margin convex; anterolateral margin with two weak epibranchial teeth; first three ambulatory merus with small sharp subterminal spine each; G1 slender, curving outwards, outer margin of proximal part of subterminal segment concave, not clefted at proximal part, tip tapered.

Description (male holotype): Carapace transverse, branchial regions inflated, surfaces smooth, evenly convex. Frontal margin slightly concave medially, frontal median triangle well defined; external orbital

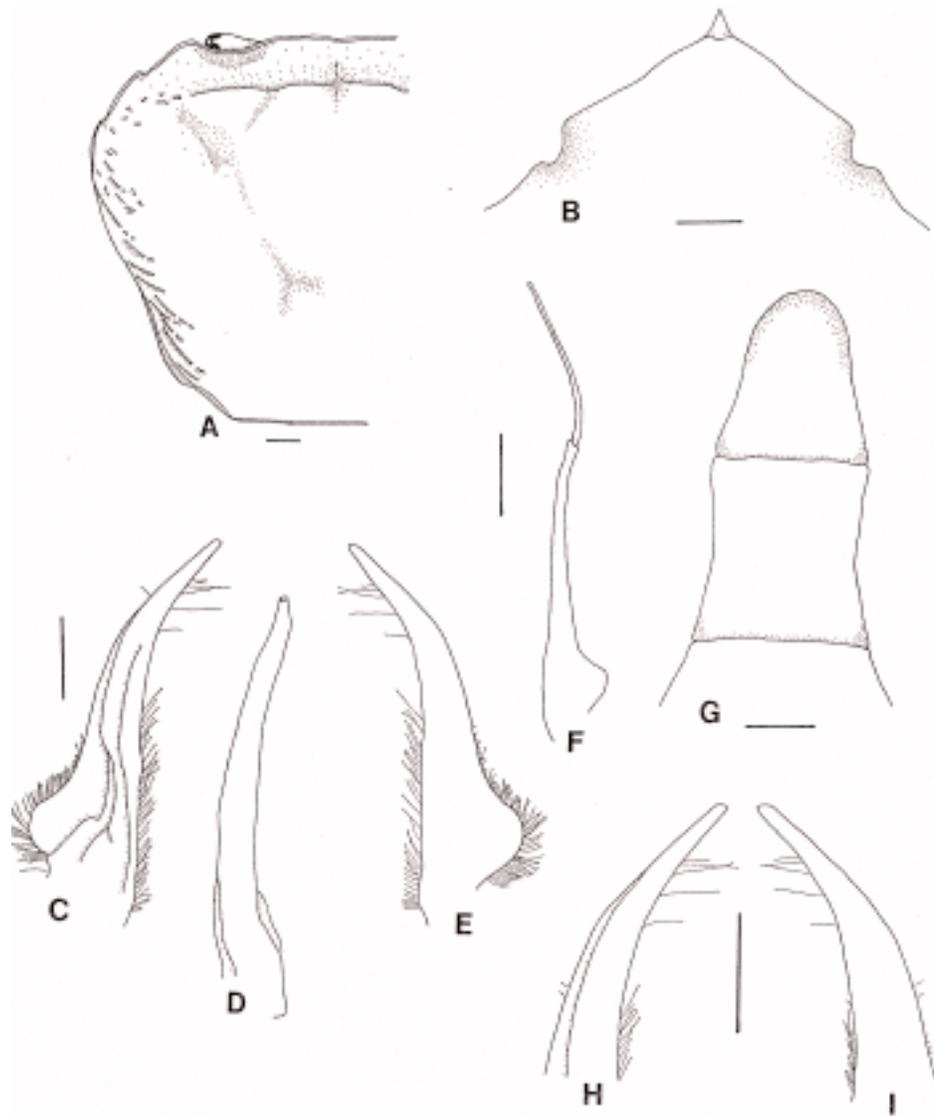


Figure 1. *Parathelphusa tera*. Holotype male (24.3 by 19.1mm) (MZB ex. QM W21395). A, carapace (dorsal view); B, thoracic segments 1-4; C, left G1 (ventral view); D, left G1 (lateral view); E, left G1 (dorsal view); F, left G2 (ventral view); G, abdominal segments 5-7; H, distal part of left G1 (ventral view); I, distal part of left G1 (dorsal view). Scales: A, B, G=2.0 mm; C-F, H-I=1.0 mm.

angle broadly triangular, truncate, outer margin convex; anterolateral margin with two weak epibranchial teeth, teeth directed anteriorly, posterolateral regions with oblique striae. Epigastric and postorbital crista raised, prominent, confluent, subparallel to frontal margin, external edges stop at beginning of cervical groove; epigastric crista separated by shallow groove. Cervical grooves indistinct; H-shaped central depression shallow.

Chelipeds subequal, outer surfaces smooth; fingers longer than palm; Carpus with prominent spine and

basal denticle on inner distal margin; merus with blunt subterminal spine on upper margin.

Second ambulatory leg longest, with small sharp subterminal spine on each of the dorsal meral margins of first three pairs, merus of last pair with indistinct subterminal dorsal knob, width of the fourth ambulatory merus is about 0.3 times length.

Suture between sternal segments two and three incomplete, indistinct, with weak marginal notch between segments three and four. Male abdomen T-shaped, lower margin of segment four convex towards



Plate 1. *Parathelphusa tera* sp. nov. Holotype male (24.3 × 19.1 mm) (MZB ex. QM W21395). Carapace, dorsal view.

buccal cavity in adult male holotype; telson 0.8 times length of segment six.

G1 slender, curving outwards, outer margin of proximal part of subterminal segment concave, without cleft at proximal part, tip tapered. G2 with long distal segment, about 0.6 times the length of basal segment.

Colour in preservative (in male holotype): Carapace dark brown to brown with few black spots. Black spots present on dorsal surface of palm; fingers and palm beige-coloured, except for left dactylus which is pigmented black with the tip beige-coloured.

Etymology: 'Tera' is Latin for 'rounded, rubbed off'. This name alludes to the low epibranchial teeth in the species. The name is used as a noun in apposition.

Ecology: The label states that the specimen was collected from 'Rawa Swamp, South of Bengalong'. It is likely that 'Bengalong' refers to the Bengalong river in East Kalimantan. The specimen was collected from a freshwater swamp, among detritus.

Distribution: Bengalong Basin, East Borneo.

Parathelphusa torta sp. nov.

Plate 2; Figure 2.

Material examined: – Holotype – 1 male (20.4 by 18.3 mm (MZB ex. ZRC 1996.1843); Sg. Kalangan, ca. 62 km from Martapura on Rantau-Martapura road, South Kalimantan, Borneo; coll. H.H. Ng & O.K.S. Chia, 6 Jun. 1996. – Paratypes – 4 males, 5 females (ZRC 1996.1844–1852); same data as holotype.

Diagnosis: Carapace transverse, cardiac and branchial regions slightly inflated, surface smooth, evenly convex; external orbital angle broadly triangular, truncate, outer margin straight to slightly convex, anterolateral margin with distinct striae, two distinct sharp epibranchial teeth directed anteriorly; subterminal spine present on all four dorsal meral margins. G1 narrow, prominently curving outwards and ventrally, outer margin of proximal part of subterminal segment prominently concave, not clefted at proximal part, tip rounded.

Description: Carapace transverse, cardiac and branchial regions slightly inflated, surface smooth, convex. Frontal margin straight, frontal median triangle distinct; external orbital angle broadly triangular, truncate, outer margin straight to slightly convex, anterolateral margin with distinct striae, two distinct

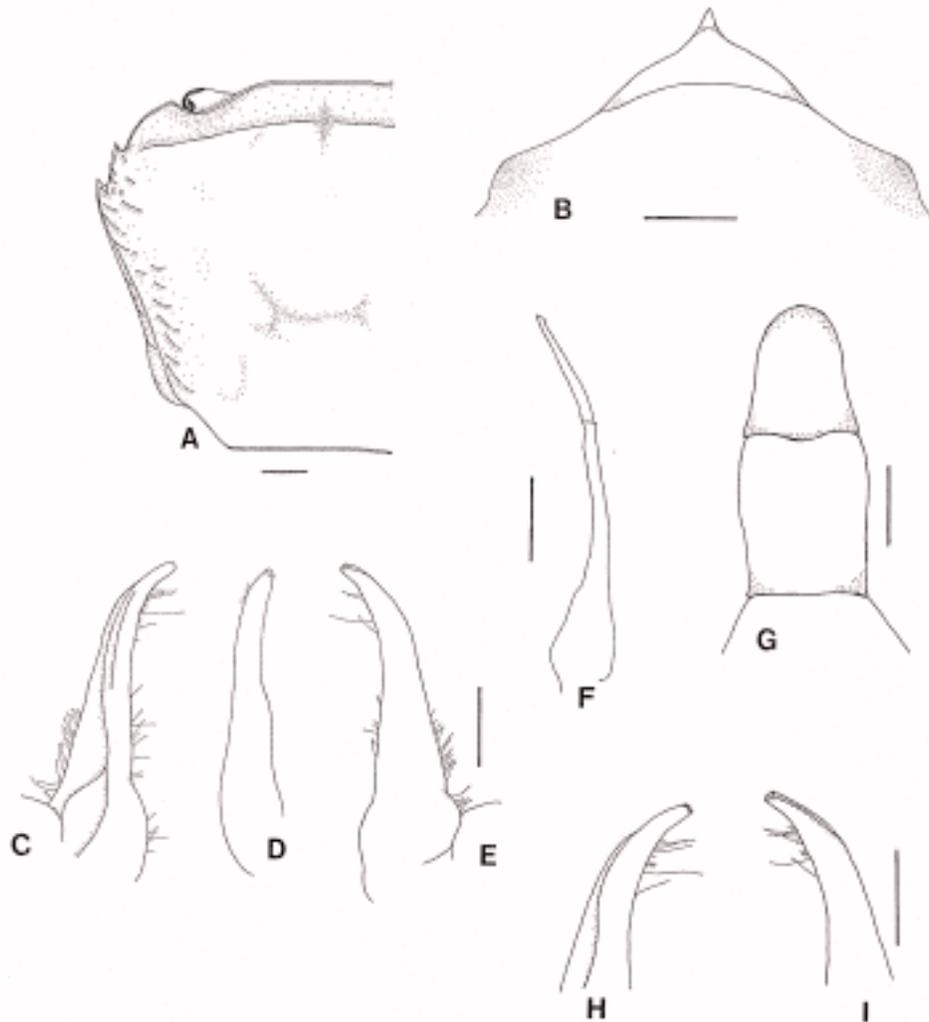


Figure 2. *Parathelphusa torta*. A, paratype female (23.2 × 19.2 mm) (ZRC 1996.1844–1852); B–I, holotype male (20.4 × 18.3 mm) (MZB ex. ZRC 1996.1843). A, carapace (dorsal view); B, thoracic segments 1–4; C, left G1 (ventral view); D, left G1 (lateral view); E, left G1 (dorsal view); F, left G2 (ventral view); G, abdominal segments 5–7; H, distal part of left G1 (ventral view); I, distal part of left G1 (dorsal view). Scales: A, B, G = 2.0 mm; C–F, H–I = 1.0 mm.

sharp epibranchial teeth, teeth directed anteriorly, posterolateral regions with strong oblique striae. Epigastric and postorbital crista confluent, prominent, subparallel to frontal margin, external edges stopping just before base of first epibranchial tooth, epigastric crista separated by groove. Cervical grooves shallow; H-shaped central depression prominent.

Chelipeds outer surfaces smooth; fingers longer than palm in both sexes. Carpus with distinct sharp spine and basal denticle on inner distal margin; merus with sharp subterminal spine on upper margin.

Second ambulatory leg longest, with subterminal spine on all four of dorsal meral margins, width of fourth ambulatory merus 0.3 times length.

Suture between sternal segments two and three convex towards buccal cavity. Male abdomen T-shaped, lower margin of segment four concave in adults; telson ca. 0.9 times length of segment six in male adults.

G1 narrow, prominently curving outwards and curving ventrally, outer margin of proximal part of subterminal segment prominently concave, not clefted at proximal part, tip rounded. G2 with short distal segment, about 0.4 times the length of basal segment.

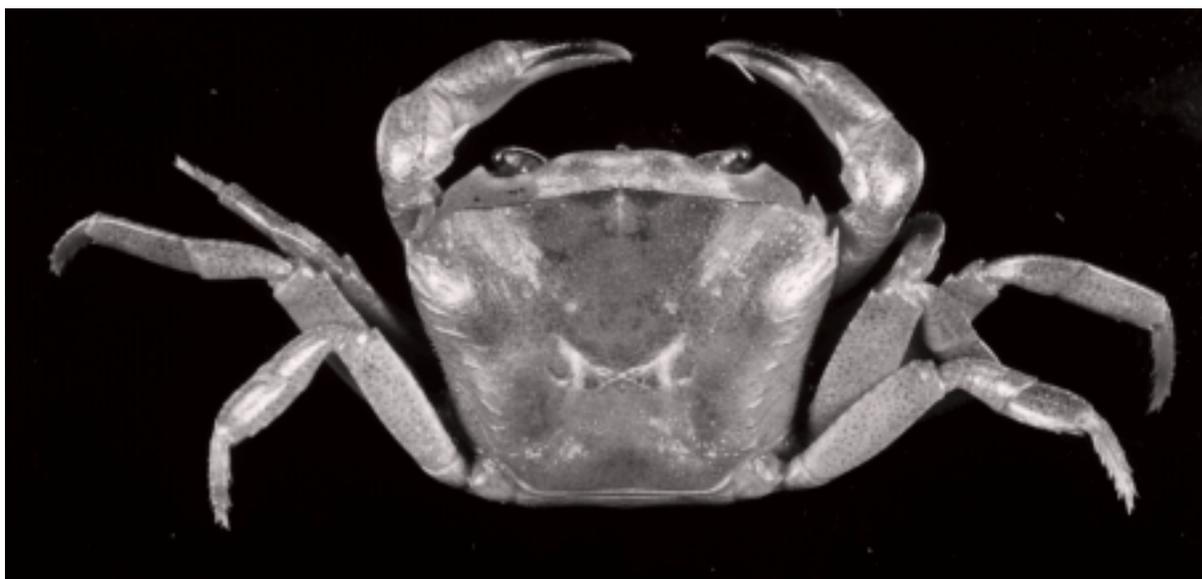


Plate 2. *Parathelphusa torta* sp. nov. Paratype female (27.5 × 21.9 mm) (MZB ex. ZRC1996.1844–1852). Carapace, dorsal view.

Colour in preservative: Carapace cream-brown to light-brown in colour. Pollex and dactylus pigmented black in some of the individuals examined, distal part of cheliped olive-brown coloured.

Etymology: In Latin, ‘torta’ means ‘twisted or turned’. This describes the twist of the terminal portion of the G1 which is distinctive for this species.

Ecology: This species was collected in vegetation along the banks of a flowing freshwater stream of pH 7.4.

Distribution: Barito Basin, South Borneo.

Parathelphusa undulata sp. nov.

Plate 3; Figure 3.

Material examined: – Holotype – 1 male (31.3 by 26.5 mm) (MZB ex. ZRC 1996.1853); Small tributary of Sungai Magang, Bekeleau, East Kalimantan, Borneo, 3°20′29.0″ N 116°59′12.5″ E; coll. R. Diesel, 6 Sep. 1995. – Paratypes – 4 males, 2 females (ZRC 1996.1854–1859), same data as Holotype.

Diagnosis: Carapace transverse, cardiac, gastric and branchial regions slightly inflated, surface smooth, evenly convex; external orbital angle subtruncate,

broadly triangular, outer margin straight to slightly convex, anterolateral margin with two sharp distinct epibranchial teeth directed obliquely outwards; sharp subterminal spine present on all four dorsal meral margins; G1 narrow, curving outwards, outer margin of proximal part of subterminal part concave, not clefted at proximal part, tip rounded with dorsal half of tip extending beyond ventral margin to form flap.

Description: Carapace transverse, cardiac, gastric and branchial regions slightly inflated, surface smooth, evenly convex. Frontal margin straight, frontal median triangle distinct; external orbital angle broadly triangular, subtruncate, outer margin straight to slightly convex, anterolateral margin with two distinct sharp epibranchial teeth, teeth directed obliquely outwards, posterolateral regions with oblique striae. Epigastric and postorbital crista confluent, prominent, subparallel to frontal margin, external edges stopping between bases of first and second epibranchial teeth, epigastric crista separated by groove. Cervical grooves shallow; H-shaped central depression prominent.

Chelipeds subequal in adult males; outer surfaces smooth; fingers longer than palm in both sexes. Carpus with distinct sharp spine and basal denticle on inner distal margin; merus with sharp subterminal spine on upper margin.

Second ambulatory leg longest, sharp subterminal spine on all four of the dorsal meral margins, width of fourth ambulatory merus ca. 0.3 times length.

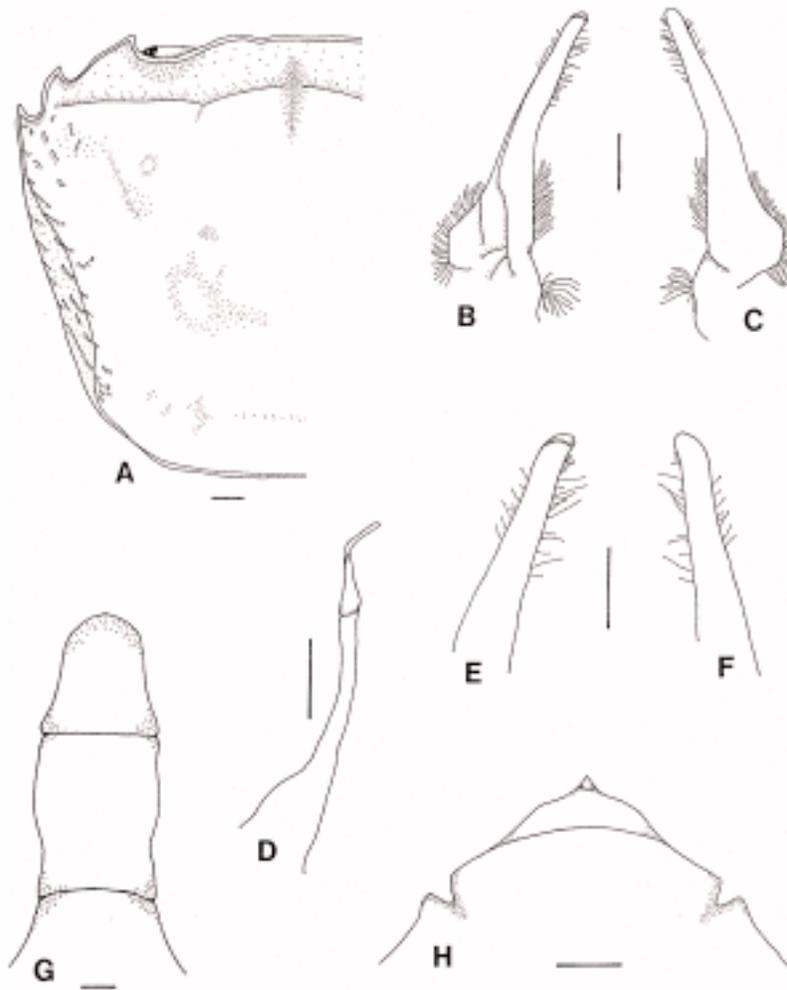


Figure 3. *Parathelphusa undulata*. Holotype male (31.3 × 26.5 mm) (MZB ex. ZRC 1996.1853). A, carapace (dorsal view); B, left G1 (ventral view); C, left G1 (dorsal view); D, left G2 (ventral view); E, distal part of left G1 (ventral view); F, distal part of left G1 (dorsal view); G, abdominal segments 5–7; H, thoracic segments 1–4. Scales: A, G, H = 2.0 mm; B–F = 1.0 mm.

Suture between sternal segments two and three convex towards buccal cavity, with prominent marginal notch between segments three and four. Male abdomen T-shaped, lower margin of segment four concave in adults; telson ca. 0.8 times length of segment six in male adults.

G1 slender, curving outwards, outer margin of proximal part of subterminal segment concave, not clefted at proximal part, tip rounded with dorsal half of tip extending beyond ventral margin to produce a prominent flap. G2 with short distal segment, about 0.3 times the length of basal segment.

Colour in preservative: Carapace rusty brown to olive

brown. Pollex and dactylus pigmented black, distal part of cheliped beige-coloured.

Etymology: ‘Undulata’ is Latin for ‘wave’. This describes the sinuous outer margin of the the G1. It is used as an adjective.

Distribution: Kayan Basin, East Borneo.

Discussion

The eight described species of *Parathelphusa* from Borneo can be divided into two groups: those with smooth ambulatory merus without a sub-terminal dor-



Plate 3. *Parathelphusa undulata* sp. nov. Holotype male (31.3 × 26.5 mm) (MZB ex. ZRC 1996.1853). Carapace, dorsal view.

sal spine, and those with a sub-terminal dorsal spine on the ambulatory merus. This applies only to the first three pairs of legs. The former group contains of *Parathelphusa nitida* Ng, 1986, and *P. sarawakensis* Ng, 1986. The latter group comprises *Parathelphusa oxygona* Nobili, 1901, *P. sabari* Ng, 1986, *P. shelfordi* Nobili, 1901, *P. valida* Ng & Goh, 1987, *P. ovum* Ng, 1994, and *P. pulcherrima* De Man, 1902. Both Bott (1970) and Ng & Goh (1987) suggested that *P. pulcherrima* is a junior synonym of *P. shelfordi*, but it was not synonymised and is still considered a valid species here.

Parathelphusa tera has armed ambulatory meri which places it in the group of Bornean *Parathelphusa* with sub-terminal spine on the ambulatory meri. However, it differs from all described Bornean congeners in having low indistinct epibranchial teeth. In terms of carapace physiognomy and anterolateral armature, it shares affinity to *P. celebensis* de Man, 1892, *P. pallida* Schenkel, 1902, and *P. ceophallus* Ng, 1993, from Sulawesi, and *P. obtusa* Bott, 1969, *P. nana* Ng & Takeda, 1993, *P. balabac* Ng & Takeda, 1993, and *P. parma* Ng & Takeda, 1993, from Palawan, Phillipines. Despite Bott's (1970) statements that both *P. celebensis* and *P. pallida* are distinct separate species, Ng (1993) considered the taxonomy of the two species to be unresolved, and referred to the two species and

possibly yet undescribed species as the *P. celebensis* complex.

Parathelphusa tera clearly differs from the *P. celebensis* complex in having post-orbital crista which stop on meeting the cervical grooves, more inflated branchial regions and indistinct cervical grooves. Members of the *P. celebensis* complex have post-orbital crista which meet the antero-lateral margin and possess distinct cervical grooves. *Parathelphusa tera* is distinctly different from *P. ceophallus* by the absence of the suture between sternal segments two and three. The G1 of *Parathelphusa tera* curves sharply outwards as opposed to the relatively straight G1 of *P. ceophallus*. *Parathelphusa obtusa* and congeners from Palawan also clearly differ from *Parathelphusa tera* in having a flared G1 as well as G1 being less sharply curving outwards.

Parathelphusa torta belongs to the group of Bornean congeners with a sub-terminal dorsal spine on the ambulatory merus. The G1 of *P. torta* curves outwards and the subterminal portion is twisted and directed ventrally. This configuration of the subterminal portion of the G1 differentiates it from all Borneo congeners. There are other combinations of characters that further differentiate it from its congeners in the group with the subterminal spine on ambulatory merus. The post-orbital crista of *P. torta*, similar to *P. oxygona*, ends approximately at the base of the exter-

nal orbital angle. This differs from *P. shelfordi* and *P. pulcherrima* in which the postorbital crista ends approximately at the base of the first epibranchial tooth, while for *P. sabari* and *P. ovum*, the postorbital crista ends approximately between the base of the external orbital angle and the base of the first epibranchial tooth. In *P. valida*, there is variation in where the postorbital crista meets the anterolateral margin. The postorbital crista ends at approximately the base of the second epibranchial tooth or approximately between the base of the postorbital angle to the base of the first epibranchial tooth. This clearly differentiates it from *P. torta* in that the crista ends at the base of the external orbital angle.

The outer margin of the external orbital angle for *P. torta* is convex to straight while for *P. oxygona*, the outer margin varies from deeply concave to sinuous. This character clearly differentiates *P. torta* from *P. oxygona*. *Parathelphusa torta* was syntopic with *Parathelphusa nitida* (unpublished data).

Of the five male and five female specimens of *P. torta* collected, the largest male had a damaged carapace. This was chosen as the holotype, as the other four male are young adult specimens with carapaces not fully developed but possessing G1 virtually similar to the holotype. The remaining five females resemble the holotype in all key external characters.

Parathelphusa undulata has a G1 with a sinuous outer margin and a rounded tip with the dorsal half of the tip extending beyond the ventral margin to produce a prominent flap. It differs from its closest bornean congener *Parathelphusa pulcherrima* by having a G1 with a sinuous outer margin, postorbital crista that ends between the base of the external orbital angle and the base of the first epibranchial tooth compared to *P. pulcherrima* whose postorbital crista ends at the base of the first epibranchial tooth. *P. undulata* also has a slightly more inflated carapace as compared to *P. pulcherrima*. In addition, *Parathelphusa undulata* has a sharp, prominent, subterminal spine on its ambulatory merus and postorbital crista that ends approximately between the base of the external orbital angle and the base of the first epibranchial tooth. These two characters ally *P. undulata* with *P. sabari* (East Kalimantan), *P. valida* (Sabah), *P. quadrata* Ng, 1997 (Lombok) and *P. ovum* (Sabah).

Parathelphusa ovum has a general physiognomy similar to *P. convexa* De Man, 1879, with an inflated carapace and smaller epibranchial teeth compared to *P. undulata*. *Parathelphusa undulata* also clearly differs from the recently described *P. quadrata* Ng, 1997, in

having a more slender G1 with a relatively rounded flared tip and a less inflated branchial region. *P. valida* has a more rugose anterolateral region with stronger oblique striae than *P. undulata*. The G1 of *P. valida* differs from that of *P. undulata* in being relatively straighter, stouter, with the terminal segment tapered. *Parathelphusa sabari* can be differentiated from *P. undulata* in having a broader external orbital angle, forward directed epibranchial teeth and a relatively stouter G1 with a conical terminal segment.

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