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A REVISION OF THE GENUS *TIWARIPOTAMON* BOTT, 1970 (DECAPODA: BRACHYURA: POTAMIDAE), WITH A DESCRIPTION OF A NEW SPECIES

Peter K. L. Ng and Darren C. J. Yeo

Department of Biological Sciences, National University of Singapore, Kent Ridge, Singapore 119260, Republic of Singapore (PKLN e-mail: dbsngkl@nus.edu.sg)

ABSTRACT

The freshwater crabs of the genus *Tiwaripotamon* Bott, 1970 (Potamidae) are revised and the identities of two poorly known species, *T. simulum* (Alcock, 1909) and *T. araneum* (Rathbun, 1905), are clarified after a re-examination of the types. *Tiwaripotamon, sensu stricto,* is restricted to five species, *T. annamense* (Balss, 1914); *T. araneum* (Rathbun, 1905); *T. pingguoense* Dai and Naiyanetr, 1994; *T. xiurenense* Dai and Naiyanetr, 1994; and a new species, *T. edostilus,* from Vietnam. *Tiwaripotamon simulum* is transferred to the genus *Kanpotamon* Ng and Naiyanetr, 1993. Keys to the species of *Tiwaripotamon* and *Kanpotamon* are also provided.

The Asian potamid freshwater crab genus *Tiwaripotamon* was established by Bott (1970), with *Geothelphusa annamensis* Balss, 1914 (Vietnam) as the type species. Bott (1970) included six other species in this genus, viz., *T. austenianum* (Wood-Mason, 1871) (Cherra Punji, India); *T. simulum* (Alcock, 1909) (Burma); *T. araneum* (Rathbun, 1905) (Vietnam); *T. artifrons* (Bürger, 1894) (Philippines); *T. adiatretum* (Alcock, 1909) (Burma); and *T. beusekomae* Bott, 1970 (Thailand). In establishing the genus, Bott noted (incorrectly, see later) that all these species have a relatively flat carapace with shallow grooves, a short frontal margin, relatively long and slender ambulatory legs, and most importantly, a first male pleopod with a distinctly upcurved terminal segment. Three more species were later added from southwestern China: *T. depressum* Dai, Song, Li, and Liang, 1980; *T. glabrum* Dai, Song, Li, and Liang, 1980; and *T. pusillum* Song, 1984.

Türkay and Naiyanetr (1987) and Ng (1992) observed that *Tiwaripotamon, sensu* Bott, 1970, was heterogeneous. Ng (1992) recognized four distinct groups within *Tiwaripotamon:* i) *T. annamense, T. araneum, T. simulum, T. austenianum,* and *Potamon whiteheadi* Parisi, 1916 [synonymised by Bott (1970) with *T. araneum*] in *Tiwaripotamon, sensu stricto;* ii) *T. artifrons* in a separate genus [later described as *Ovitamon* Ng and Takeda, 1992]; iii) *T. adiatretum, Potamon adiatretum lophocarpus* Kemp, 1913, *Potamon superciliosum* Kemp, 1913 [both synonymised by Bott (1970) with *T. adiatretum*], *Potamon loxophrys* Kemp, 1923, and *Potamon dehaani laevior* Kemp, 1923, in a third group; and iv) *T. glabrum* and *T. pusillum* in *Larnaudia* together with *T. beusekomae,* the latter which had already been transferred there by Türkay and Naiyanetr (1987). Dai and Naiyanetr (1994) subsequently reappraised the Chinese species previously referred to *Tiwaripotamon* and established two new genera, *Neotiwaripotamon* Dai and Naiyanetr, 1994, to include *P. whiteheadi;* and *Chinapotamon* Dai and Naiyanetr, 1994, to include *T. glabrum* and *T. pusillum.* In their redefined *Tiwaripotamon,* Dai and Naiyanetr (1994) recognised only three species: *T. annamense, T. pingguoense* Dai and Naiyanetr, 1994, and *T. xiurenense* Dai and Naiyanetr, 1994, commenting that the taxonomy of the other species included by Bott (1970) and Ng (1992) was uncertain.

In recent months, we have examined specimens (including types) of *T. annamense, T. araneum, T. simulum, T. adiatretum adiatretum, P. adiatretum lophocarpus, P. superciliosum, P. loxophrys,* and *P. dehaani laevior,* and our studies confirm Ng's (1992) observation that the latter five taxa are clearly unrelated to *Tiwaripotamon* as presently defined. These species have ambulatory legs of normal length (not elongated), different carapace and male abdomen characters, as well as male first pleopods that are substantially different in structure (see Kemp, 1913, 1923; unpublished data). We have chosen, however, not to treat

the taxonomy of these species in this paper as their generic affinities clearly lie with other Burmese and Indo-Chinese genera that are currently being revised by us, all of which are unrelated to *Tiwaripotamon sensu stricto. Potamon simulum* as well as *Telphusa austeniana,* while superficially similar to *Tiwaripotamon sensu stricto,* nevertheless differ from it in several important generic characters, and as such, must be excluded from *Tiwaripotamon. Potamon simulum* should be referred to the genus *Kanpotamon* Ng and Naiyanetr, 1993, while the generic placement of *T. austeniana* is uncertain and should be regarded as *incerta sedis* for the moment (see later).

The present study reviews the species included in *Tiwaripotamon* as defined here and redescribes *T. annamense* and *T. araneum* on the basis of the type specimens. A new species, *Tiwaripotamon edostilus,* is also described from recently collected specimens from northern Vietnam. A key is provided for the five species now recognised in the genus and for the two species of *Kanpotamon.*

Specimens examined are deposited in the Zoologische Staatsammlung Munich (ZSM), Muséum national d'Histoire naturelle (MNHN), Paris; Senckenberg Museum, Frankfurt am Main (SMF); Zoological Survey of India (ZSI), Calcutta; and Zoological Reference Collection (ZRC) of the Raffles Museum, National University of Singapore. The abbreviations G1 and G2 are used for the male first and second pleopods (gonopods) respectively. All measurements are of the carapace width and length respectively, and are in millimetres. Terminology used essentially follows Ng (1988).

TAXONOMY

Family Potamidae Ortmann, 1896, *sensu* Ng, 1988

Tiwaripotamon Bott, 1970

Tiwaripotamon Bott, 1970: 150 (part); Chuensri, 1974: 19 (part); Ng, 1992: 164 (part); Dai and Naiyanetr, 1994: 48; Dai, 1999: 338.

Type Species.—Geothelphusa annamensis Balss, 1914, by original designation.

Diagnosis.—Carapace distinctly broader than long; epigastric and postorbital cristae visible but low, rounded, not always distinct. Anterolateral margin convex; epibranchial tooth small, distinctly demarcated from triangular external orbital angle. Posterior margin of epistome with low median tooth, which is partially turned obliquely outwards, lateral margins deeply concave, appearing distinctly crenulated. Third maxilliped with squarish ischium, with shallow to undiscernible submedian longitudinal sulcus; exopod reaching just beyond anterior edge of subquadrate merus, with short flagellum that never reaches inner edge of merus. Ambulatory legs slender, long, especially merus, propodus, and dactylus. Male abdomen broadly triangular in shape. G1 sinuous; terminal segment subconical, distinctly upcurved, with very small or no dorsal flap. G2 as long as G1, distal segment well developed, longer than half length of basal segment.

Remarks.—Tiwaripotamon, sensu stricto, is best defined by a suite of characters, the main ones being the squarish form of the third maxilliped ischium which has either a shallow or no sulcus, a short third maxilliped exopod with a short flagellum, elongate and slender legs, a broadly triangular male abdomen, and an upcurved G1 terminal segment. These characters are shared by *T. annamense* (Balss, 1914), *T. pingguoense* Dai and Naiyanetr, 1994, *T. xiurenense* Dai and Naiyanetr, 1994, and *T. edostilus,* new species. *Tiwaripotamon araneum* (Rathbun, 1905) is known only from a juvenile male, and although its male abdomen and gonopods are immature, the structure of its third maxillipeds and the proportions of its ambulatory legs agree well with the above four species.

The generic affinities of *Telphusa austeniana* Wood-Mason, 1871, and *Potamon simulum* Alcock, 1909, are more problematic. Alcock's (1910) overview of the Indian Potamidae placed *Telphusa austeniana* and *Potamon simulum* in "Group IV: *austenianum* group" of the subgenus *Potamon* (*Potamon*), characterised by extremely ". . . long slender legs, the propodites of the two middle pairs being three to four times as long as broad" (p. 44). These two species are known only from female holotypes, and characters of their carapace, epistome, and third maxilliped differ markedly from the other four species now assigned to *Tiwaripotamon.*

We compared the female holotype of *P. simulum* with species of *Tiwaripotamon, sensu stricto,* and found its postorbital and epigastric cristae to be much stronger and more prominent (*versus* very low and rounded), the

median tooth of the posterior margin of the epistome to be very well developed and directed downwards (*versus* low and partially turned outwards), with the lateral margins of the epistome almost entire and the outer part gently concave (*versus* lateral margins distinctly crenulated and the outer part deeply concave), third maxilliped ischium to be distinctly more elongate with a deep submedian longitudinal sulcus (*versus* more squarish with a very shallow or no sulcus), and its well-developed exopod has a long flagellum that reaches the inner edge of the merus (*versus* the flagellum is very short) (Figs. 2A, C, 5A–C) (see also Alcock, 1910: 44, Fig. 7a). In fact, the carapace, third maxilliped, epistomal and ambulatory leg characters of *P. simulum* closely match those of *Kanpotamon* Ng and Naiyanetr, 1993 (type species: *Kanpotamon duangkhaei* Ng and Naiyanetr, 1993). Interestingly, *Kanpotamon duangkhaei* was described from near the Burmese border in Thailand, while *T. simulum* was described from somewhere in Burma. Therefore, *P. simulum* is hereby transferred to *Kanpotamon*. In addition to the abovementioned differences, *Kanpotamon* can also be distinguished from *Tiwaripotamon* by the following male characters observed in *K. duangkhaei:* male abdomen narrowly triangular (*versus* broadly triangular); G1 terminal segment proximal part slender and subcylindrical (*versus* broad, subconical), strongly curved outwards distally (*versus* distinctly upcurved), with bulbous swelling on outer margin (*versus* outer margins smooth, without swelling); and G1 subterminal segment distinctly narrowed or neck-like distally (*versus* subterminal segment not narrowed or neck-like distally) (Figs. 2D–I) (cf. Ng and Naiyanetr, 1993: Fig. 55B–D).

Telphusa austeniana Wood-Mason, 1871, is more troublesome because the type is no longer extant. Alcock (1910) examined many of Wood-Mason's specimens, but could not find *T. austeniana* in the Indian Museum (now ZSI). The second author and ZSI curators also could not locate the specimen during the former's visit in 1999. Wood-Mason's (1871: 203, pl. 13) good description and figures of *T. austeniana* indicate, however, that this species does not belong in *Kanpotamon* with *P. simulum*. Its generic affinities must be regarded as uncertain until the Indian species of *Potamon, sensu lato,* are revised.

Little is known of the ecology or habits of any species of *Tiwaripotamon*. *Tiwaripotamon edostilus,* new species, was found in caves (but not deep within) and the specimens do not have any adaptations, apart from long legs, typical of troglobitic cavernicoles (see Ng, 1989; Ng and Sket, 1996; Yeo and Ng, 1999b). Like many long-legged species of freshwater crabs in Asia, the species of *Tiwaripotamon* may also have terrestrial habits, probably foraging in closed forests often far from standing water (see Miyake and Minei, 1965; Ng, 1991a, b, 1995, 1996) or are cavernicoles (see Ng, 1989; Ng and Sket, 1996; Yeo and Ng, 1999b).

Tiwaripotamon annamense (Balss, 1914)
Figs. 1, 2A, B, D–G

Geothelphusa annamensis Balss, 1914: 406, Figs. D–F, Pl. 15 Fig. 1; Balss, 1937: 169, Fig. 35.

Tiwaripotamon annamense.—Bott, 1970: 151, Pl. 40 Fig. 58, Pl. 53 Fig. 61 (part); Chuensri, 1974: 22; Dang, 1980: 435, Fig. 248; 1992: 321; Ng, 1992: 164; Yeo and Ng, 1999a: 640.

Material Examined.—Lectotype, ♂ (42.0 × 30.1 mm) (ZSM 1169/1), Annam, Phuc Son, coll. Fruhstorfer. Paralectotypes: 1 ♂ (38.6 × 29.1 mm), 2 ♀♀ (ZSM 1168/1), same data as lectotype. Others: 1 juv. ♂ (SMF 5523), same data as above.

Description of Lectotype.—Carapace transverse, low; dorsal surface relatively flat; glabrous; regions poorly defined, cervical grooves shallow, H-shaped depression shallow but distinct (Fig. 1A, B). Epigastric cristae weak but distinct, not sharp, smooth to very weakly rugose, separated by short, shallow groove that opens up into inverted V-shape posteriorly, in line with postorbital cristae, separated from postorbital cristae by short, shallow groove; postorbital cristae weak, rounded, smooth, relatively straight, not obviously confluent with epibranchial tooth, weakens without breaking up into granules and rugae just before epibranchial tooth; regions behind epigastric and postorbital cristae smooth (Fig. 1A, B). Frontal margin broadly emarginate medially; frontal region deflexed downwards, appearing relatively narrow from dorsal view, smooth; supra- and infraorbital margins distinctly cristate, supraorbital margin sinuous, infraorbital margin straight; orbital region smooth, relatively narrow, slightly expanded laterally; eyes normal; subhepatic and subbranchial regions with very faint short rugae (Fig. 1A, B). External

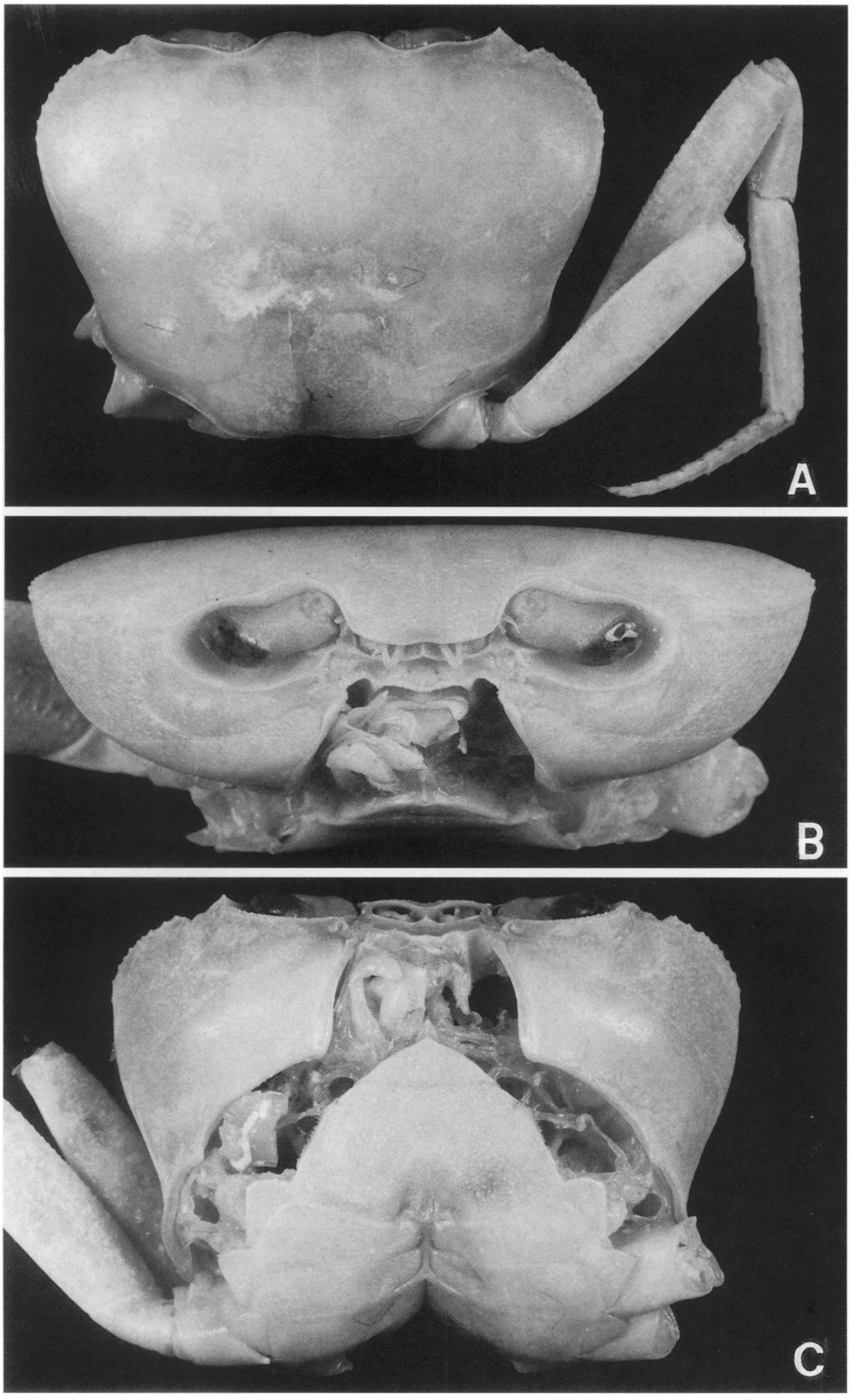

Fig. 1. *Tiwaripotamon annamense* (Balss, 1914). Lectotype ♂ (42.0 × 30.1 mm) (ZSM 1169/1). A, dorsal view; B, frontal view; C, ventral view.

orbital angle triangular, with acute tip, outer margin straight, weakly cristate to smooth; epibranchial tooth low but distinct, broadly triangular, separated from external orbital angle by distinct broadly triangular cleft; anterolateral margin convex, distinctly serrated in upper part, weakly cristate; posterolateral margin entire, almost straight, not strongly convergent posteriorly; branchial region smooth; metabranchial region smooth (Fig. 1A, B). Epistome anterior margin with median triangle; posterior margin with low median triangular tooth, distinctly crenulated laterally, with outer part deeply concave (Fig. 1B, C).

Ischium of third maxilliped squarish, about 1.2 times longer than broad, lacking longitudinal median sulcus; merus squarish, longer than half of ischium length, with concave outer surface; palp normal; exopod relatively short, slightly exceeding upper edge of ischium, blunt tooth on distal part of inner margin weakly developed, with short but distinct flagellum, shorter than half width of merus (Fig. 2A).

Chelipeds missing. Balss (1914: Pl. 15 Fig. 1) and Bott (1970: Pl. 53 Fig. 61) show chelipeds to be subequal; outer surface smooth, fingers gaping, subequal in length to palm, tips not overlapping; carpus with smooth outer surface, with strong, obliquely directed, subdistal spine on inner margin; merus with serrated edges, without subterminal spine.

Ambulatory legs glabrous, long, slender; second ambulatory legs missing; dactylus of fourth ambulatory leg long, slender, about 7.6 times longer than proximal width, with distinct median ridge, propodus long, about 1.1 times length of dactylus, with broad ridge, carpus with sharply defined ridge, merus weakly rugose, with distinctly serrated upper margins, without subdistal spine (Fig. 1A).

Suture between anterior thoracic sternites 2 and 3 complete, distinct; groove or suture between sternites 3 and 4 absent (Fig. 1C); thoracic sternites 5 and 6 medially interrupted; sternites 7 and 8 medially separated by distinct longitudinal median suture. Male abdominal cavity reaching imaginary line joining posterior points of cheliped bases (Fig. 1C). Abdomen broadly triangular; telson broadly triangular, broader than long, lateral margins very gently concave, tip rounded, subequal in length to sixth segment; segment 6 with median length subequal to half of proximal margin length, lateral margins straight; lateral margins of segments 4 to 5 straight; lateral margins of segment 3 gently convex (Fig. 2B).

G1 sinuous; terminal segment clearly separated from subterminal segment, distinctly upcurved, about 0.4 times length of subterminal segment, about 2.3 times longer than proximal width, without dorsal flap, subconical, opening on tip visible from dorsal and ventral views, distal part of groove for G2 visible on ventral side; subterminal segment relatively slender, sinuous, without neck-like distal part, without subdistal cleft or shelf on outer margin (Fig. 2D–I). G2 with distal segment greater than half length of basal segment (Fig. 2J).

Remarks.—*Tiwaripotamon annamense* was first described by Balss (1914) on the basis of an unspecified number of specimens from Phuc-Son, Annam (now in northern Vietnam). He provided carapace measurements of a juvenile specimen but did not indicate the size of the adult specimen he figured. Balss (1937) subsequently figured the G1 of the male specimen, but although useful, this figure is rather too schematic for modern use. The species was redescribed by Bott (1970), who figured the G1 and selected a lectotype. Specimens from China referred to this species by Dai *et al.* (1980) have been referred to a new species, *T. pingguoense,* by Dai and Naiyanetr (1994).

Tiwaripotamon araneum (Rathbun, 1905)
Figs. 2C, 3

Potamon araneum Rathbun, 1905: 214.

Tiwaripotamon araneum.—Bott, 1970: 152 (part); Chuensri, 1974: 22; Ng, 1992: 164; Yeo and Ng, 1999a: 640.

Material Examined.—Holotype, ♂ (13.0 × 10.5 mm) (MNHN-B 5039), Bánhán, "massif mont de Táikinh, near Hanoi", Vietnam, coll. "mission permanante", 1904.

Diagnosis.—Carapace slightly broader than long. Epigastric and postorbital cristae weakly rugose, not sharp; regions behind epigastric and postorbital cristae weakly rugose. External orbital angle very acutely triangular, outer margin straight; epibranchial tooth indistinct; anterolateral margin gently convex, serrated in upper part; branchial and metabranchial regions weakly rugose. Epistome posterior margin with low median tri-

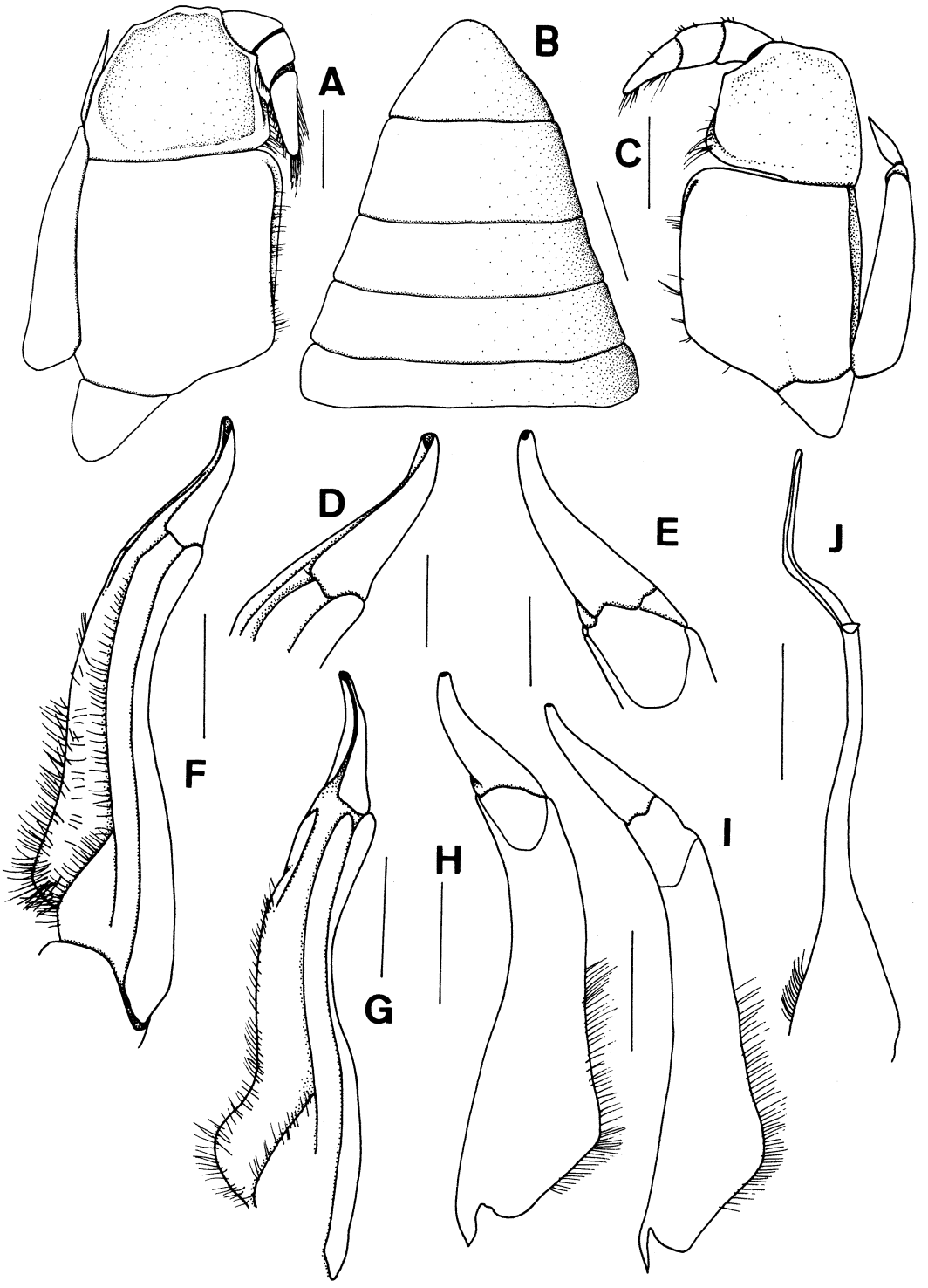

Fig. 2. *Tiwaripotamon annamense* (Balss, 1914). A, B, D–J, lectotype ♂ (42.0 × 30.1 mm) (ZSM 1169/1). *Tiwaripotamon araneum* (Rathbun, 1905). C, holotype ♂ (13.0 × 10.5 mm) (MNHN-B 5039). A, right third maxilliped; B, abdomen; C, left third maxilliped; D–I, left G1: D, ventral view of terminal segment; E, dorsal view of terminal segment; F, ventral view; G, ventromedial view; H, dorsal view; I, dorsomedial view; J, left G2. Scales: 2.0 mm in A, F–J; 5.0 mm in B; 1.0 mm in C–E.

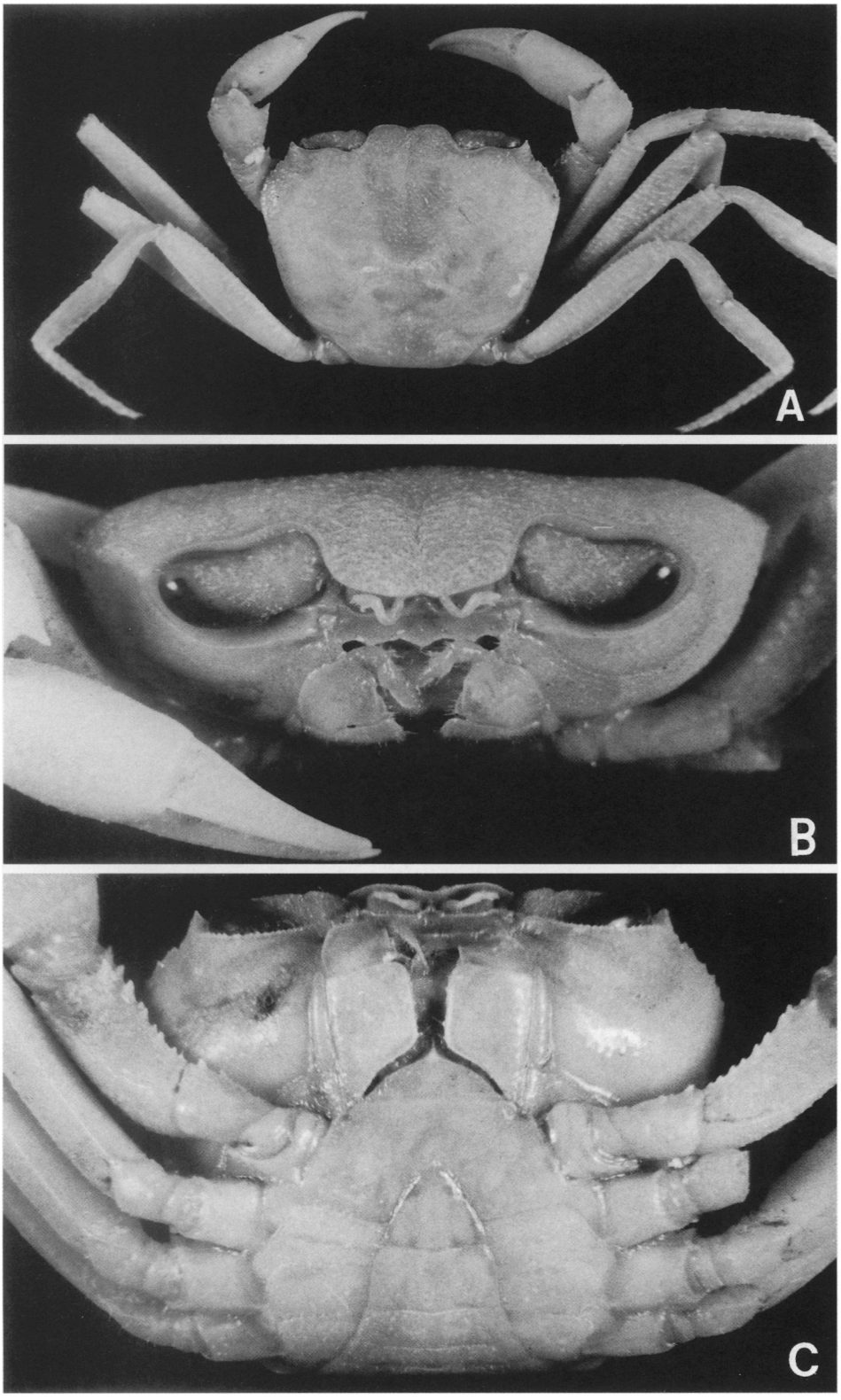

Fig. 3. *Tiwaripotamon araneum* (Rathbun, 1905). Holotype ♂ (13.0 × 10.5 mm) (MNHN-B 5039). A, dorsal view; B, frontal view; C, ventral view.

angular tooth, with outer part gently concave. Ischium of third maxilliped squarish, about 1.2 times longer than broad, lacking longitudinal median sulcus; exopod with short but distinct flagellum, shorter than half width of merus. Ambulatory legs glabrous, very long, very slender; second pair longest.

Remarks.—This species is known only from the holotype male, which is unfortunately a juvenile. The juvenile male abdomen is immature, and the gonopods, although present, are not sufficiently developed to be of taxonomic use and are not included in the diagnosis. In lieu of the G1, the most distinctive feature of this species seems to be the form of the anterolateral margin, which is comparatively less arcuate compared to other species; the form of the external orbital angle, which is very acutely triangular and not separated from the rest of the anterolateral margin by a distinct cleft; and weakly rugose carapace dorsal surface (smooth in other *Tiwaripotamon* species). The former two characters, however, are sometimes associated with juveniles, and as such, cannot be used as diagnostic characters for a species known only from an immature male. We compared the type of *T. araneum* with specimens of *T. edostilus,* which are similar or slightly smaller in size, and while the acuity of the external orbital angle cannot be used as a species character for *T. araneum,* the others seem to be useful (see *Remarks* for *T. edostilus*). These characters also separate *T. araneum* from the other species of *Tiwaripotamon.*

Tiwaripotamon pingguoense Dai and Naiyanetr, 1994

Ranguna annamense.—Dai *et al.,* 1980: 370, Fig. 2, Pl. 1 Fig. 2; Ng, 1992: 164 (not *Geothelphusa annamensis* Balss, 1914).

Tiwaripotamon pingguoense Dai and Naiyanetr, 1994: 48, 64, Fig. 1; Dai, 1999: 339, Fig. 184, Pl. 22 Fig. 7.

Material Examined.—None.

Remarks.—Dai *et al.* (1980) first reported this species from China as *Ranguna annamense.* Because this is also the type species of *Tiwaripotamon,* the authors unknowingly synonymised *Tiwaripotamon* Bott, 1970, with *Ranguna* Bott, 1966. Ng (1992) commented that the specimens of "*R.*" *annamense* of Dai *et al.* (1980) differed from the types (*fide* Balss, 1914; Bott, 1970) in the proportions of the third maxilliped segments and structure of the G1 and suggested that their specimens probably represented an undescribed species. Dai and Naiyanetr (1994) subsequently described these same specimens as belonging to a new species, *T. pingguoense.* Their descriptions and figures are excellent (see also Dai, 1999), and there is no need to add more here.

Tiwaripotamon xiurenense Dai and Naiyanetr, 1994

Tiwaripotamon xiurenense Dai and Naiyanetr, 1994: 49, 64, Fig. 2; Dai, 1999: 340, Fig. 185, Pl. 22 Fig. 8.

Material Examined.—None.

Remarks.—This distinct species was well described and figured by Dai and Naiyanetr (1994), and Dai (1999) provided a photograph of the whole animal. There is no need to append on their description.

Tiwaripotamon edostilus, new species
Figs. 4, 5

Material Examined.—Holotype, ♂ (36.4 × 28.3 mm) (ZRC 2000.0096), cave at Gia Luang, Cat Ba Island, Ha Long Bay, Vietnam, coll. L. Deharveng, 28 September 1998. Paratypes: 1 ♂ (40.5 × 31.1 mm) (ZRC 2000.0097), same data as holotype; 1 ♂, 1 juv. ♂ (30.9 × 24.3 mm) (MNHN), same data as holotype; 1 ♂ (34.6 × 26.5 mm), 1 juvenile (ZRC 2000.0098–0099), cave at Thien Long, Cat Ba Island, Ha Long Bay, Vietnam, coll. L. Deharveng, 29 September 1998; 1 ♂ (34.3 × 25.6 mm) (ZRC 2000.0100), Hoa Cuong Cave in Gia Luan, 20°50′20″N 106°58′57″E, Cat Ba Island, Vietnam, coll. M. Kottelat, 25 September 1998; 1 juv. (ZRC 2000.0101), Sung Sot Cave, Cat Ba Island, Ha Long Bay, Vietnam, coll. L. Deharveng, 2 October 1998.

Diagnosis.—Carapace slightly broader than long. Epigastric and postorbital cristae smooth, not sharp; regions behind epigastric and postorbital cristae smooth. External orbital angle triangular, outer margin gently convex; epibranchial tooth broadly triangular, separated from external orbital angle by distinct narrowly triangular cleft; anterolateral margin convex, serrated in upper part; branchial and metabranchial regions smooth. Epistome posterior margin with low median triangular tooth, distinctly crenulated laterally, with outer part gently concave. Ischium of third maxilliped squarish, about 1.2 times longer than broad, lacking longitudinal median sulcus; exopod with short but distinct flagellum, shorter than half width of merus. Ambulatory legs glabrous, very long, very slender; second pair longest, dactylus about 9.5 times longer than proximal width, propodus

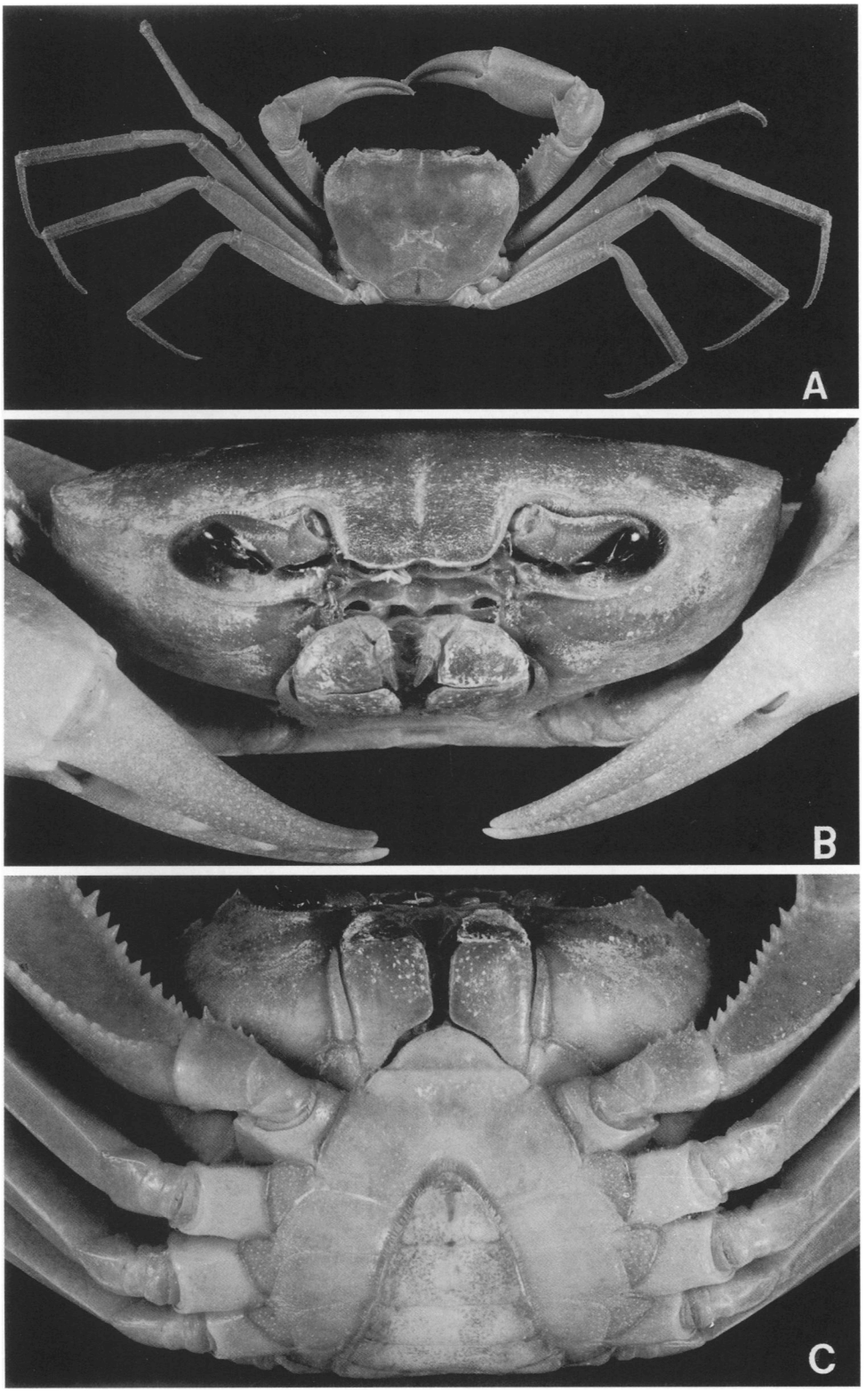

Fig. 4. *Tiwaripotamon edostilus*, new species. Holotype ♂ (36.4 × 28.3 mm) (ZRC 2000.0096). A, dorsal view; B, frontal view; C, ventral view.

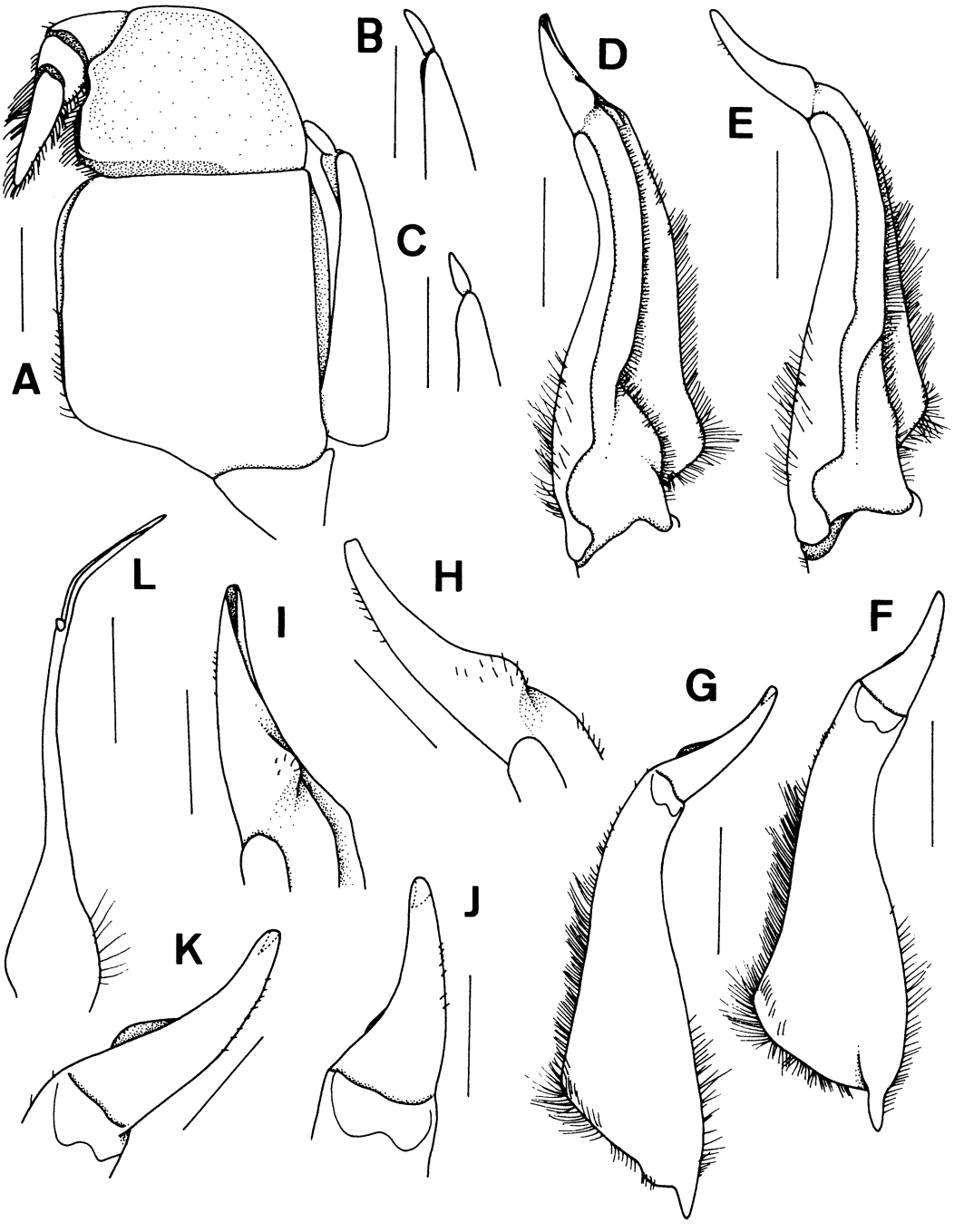

Fig. 5. *Tiwaripotamon edostilus*, new species. A, D–L, Holotype ♂ (36.4 × 28.3 mm) (ZRC 2000.0096); B, paratype ♂ (34.3 × 25.6 mm) (ZRC 2000.0100); C, paratype ♂ (34.6 × 26.5 mm) (ZRC 2000.0098). A, left third maxilliped; B, C, exopod flagellum of left third maxilliped; D–K, right G1: D, ventral view; E, ventrolateral view; F, dorsal view; G, dorsomedial view; H, ventrolateral view of terminal segment; I, ventral view of terminal segment; J, dorsal view of terminal segment; K, dorsomedial view of terminal segment; L, right G2. Scales: 2.0 mm in A–G, L; 1.0 mm in H–K.

about 6.8 times longer than broad, about 1.3 times longer than dactylus, carpus about 0.6 times length of dactylus, merus about 1.9 times longer than dactylus; fourth pair with similar dimensions. Male abdomen broadly triangular; telson broadly triangular, tip rounded. G1 terminal segment distinctly upcurved, about 0.3 times length of subterminal segment, about 2.0 times longer than proximal width, with very small dorsal flap in posterior part, with distal opening subventral in position.

Etymology.—The specific epithet means "editor's pen", from the combination of the Latin words *edo*, for "prepare for publication", and *stilus*, for "pen" or "pointed instrument used for writing." While it alludes to the very long and slender dactyli of the species, it is also an indirect tribute to Arthur G. Humes, who served with distinction as the editor of the *Journal of Crustacean Biology* for so many years. The name is to be used as a noun in apposition.

Remarks.—*Tiwaripotamon edostilus* appears closest to *T. pingguoense* by virtue of its squarish carapace outline, with gently convex anterolateral margins, and the presence of a small dorsal flap on the G1 terminal segment. It can be differentiated from *T. pingguoense* and from *T. annamense* and *T. xiurenense* by its proportionately much longer, more slender ambulatory legs; and by its relatively less broadly triangular external orbital angle, with a narrower cleft separating it from the epibranchial tooth (*versus* relatively broader triangular external orbital angle with a broader cleft separating it from the epibranchial tooth). In addition, the carapace of *T. edostilus* is more squarish, with less convex anterolateral margins than *T. annamense* or *T. xiurenense,* and its male abdomen is also less broadly triangular than those of *T. pingguoense* and *T. xiurenense*. The terminal segment of the G1 of *T. edostilus* is distinctly stouter than that of *T. xiurenense,* and more strongly upcurved than *T. pingguoense*. The G1 of *T. edostilus* differs from that of *T. annamense* in possessing a small, low dorsal flap (*versus* dorsal flap absent).

Juvenile specimens of *T. edostilus* were compared with the poorly known *T. araneum,* which is represented by a single juvenile specimen (13.0 × 10.5 mm) (MNHN-B 5039). The two taxa can be distinguished by the following characters: i) chelipeds and ambulatory legs, especially in the meri, distinctly longer and more slender in the former species (*versus* chelipeds and ambulatory legs shorter and less slender in the latter species); ii) anterolateral margins of carapace less convex (*versus* anterolateral margins distinctly more convex); iii) anterolateral margins of carapace with very weak serrations (*versus* anterolateral margins distinctly serrated); iv) external orbital angle clearly separated from epibranchial tooth by shallow but distinct notch (*versus* notch between external orbital angle and epibranchial tooth not discernible); v) epibranchial tooth distinct, triangular (*versus* epibranchial tooth indistinct); and vi) carapace dorsal surface smooth (*versus* carapace dorsal surface weakly rugose). Of the three juvenile specimens of *T. edostilus* available for study, the largest individual (13.2 × 10.9 mm) (MNHN) is comparable in size to the holotype of *T. araneum.*

Key to the Genus *Tiwaripotamon*

1. External orbital angle with gently convex outer margin. Epibranchial tooth distinct, triangular, separated from external orbital angle by narrowly triangular cleft. Ambulatory legs very long, slender, length of fourth ambulatory merus about 6.4 times width. G1 structure as in Fig. 5D–K [Cat Ba Island, northern Vietnam] . . . . . *T. edostilus*
   – External orbital angle with straight outer margin. Epibranchial tooth broadly triangular, separated from external orbital angle either by broadly triangular cleft, or cleft indiscernible. Ambulatory legs relatively shorter, stouter, length of fourth ambulatory merus about 4.8–6.2 times width 2
2. External orbital angle acutely triangular. Epibranchial tooth indiscernible from anterolateral margin of carapace ["near Hanoi", northern Vietnam] . . . . . *T. araneum*
   – External orbital angle broadly triangular. Epibranchial tooth distinct, clearly separated from external orbital angle by prominent notch 3
3. Carapace less transverse, about 1.29 times broader than long, with gently convex anterolateral margins. Ambulatory legs relatively short and stout, length of fourth ambulatory merus about 4.8 times width. G1 structure as in Dai (1999: Fig. 184) [Guangxi, southern China] . . . . . *T. pingguoense*
   – Carapace more transverse, 1.39–1.41 times broader than long, with distinctly convex anterolateral margins. Ambulatory legs relatively longer, more slender, length of fourth ambulatory merus about 5.5–6.2 times width 4
4. Male abdomen broadly triangular, with combined median length of distal five segments, 1.2 times longer than proximal width of segment 3, with segment 6 about 0.38 times longer than proximal width. Ambulatory legs relatively longer and more

slender, length of fourth ambulatory merus about 6.2 times width. G1 structure as in Dai (1999: Fig. 185) [Guangxi, southern China] . . . . *T. xiurenense*

– Male abdomen relatively more broadly triangular, with combined median length of distal five segments, 1.13 times longer than proximal width of segment 3, with segment 6 about 0.45 times longer than proximal width. Ambulatory legs relatively shorter and stouter, length of fourth ambulatory merus about 5.5 times width. G1 structure as in Fig. 2D–I [Phuc Son, central Vietnam] . . . . . *T. annamense*

Key to the Genus *Kanpotamon*

1. Carapace relatively more transverse, about 1.47 times broader than long, with relatively more strongly convex anterolateral margins. Dorsal surface rugose, with well-developed and more distinct grooves; branchial and gastric regions relatively flat. Epigastric cristae strongly developed. External orbital angle relatively more acute. Epistome posterior margin median tooth more broadly triangular. Subhepatic rugae distinct [Burma] . . . . *K. simulum*

– Carapace relatively less transverse, about 1.40 times broader than long, with relatively less strongly convex anterolateral margins. Dorsal surface smooth, with shallower and less distinct grooves; branchial and gastric regions gently but distinctly swollen. Epigastric cristae low. External orbital angle relatively broader. Epistome posterior margin median tooth more acutely triangular. Subhepatic rugae weak, indistinct [Kanchanaburi, Thailand] . . . . . *K. duangkhaei*

Comparative Material.—Potamon simulum Alcock, 1909: Holotype, ♀ (47.9 × 32.6 mm) (ZSI 6914/3), Burma, coll. W. Theobald. *Potamon adiatretum* Alcock, 1909: 1 ♂ (16.8 × 12.5 mm), 1 ♀ (ZSI 6943/3), Dafla Hills, coll. H. H. Goodwin-Austen. *Potamon superciliosum* Kemp, 1913: Syntypes, 2 ♂♂ (larger with broken carapace, about 39.0 × 27.9 mm) (ZSI 8017/10), stream near Balak, coll. S. Kemp, 26 March 1912. *Potamon lophocarpus* Kemp, 1913: 2 ♂♂ (larger 18.3 × 13.3 mm) (MNHN B 5003), Renging, Abor County, Indian northeastern frontier, coll. S. Kemp (donated ZSI, original catalogue no. 41/1921). *Potamon loxophrys* Kemp, 1923: syntypes, 1 ♂ (24.8 × 20.1 mm), 1 ovig. ♀ (ZSI C 609/1), Dran, Langbian Province, south Annam, 3,000 ft, coll. C. Boden Kloss. *Potamon laevior* Kemp, 1923: syntypes, 3 ♂♂, 2 ♀♀ (largest ♂ 19.5 × 14.8 mm) (ZSI C 613/1), Langbian Peaks, south Annam, 6,000 ft, coll. Malcolm Smith; 1 small ♂, same catalogue number and data as syntypes; 2 ♀♀ (larger 24.8 × 19.1 mm) (ZSI C 614/1), Dalat, Langbian Province, south Annam, 5,000 ft, coll. C. Boden Kloss, March to May 1918; 2 ♂♂, 4 ♀♀ (largest ♂ 14.1 × 11.0 mm) (ZSI C615/1), Langbian Peaks, south Annam, coll. C. Boden Kloss, March to May 1918.

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Darren C. J. Yeo; Peter K. L. Ng

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