

## ON THE GENUS “*POTAMON*” AND ALLIES IN INDOCHINA (CRUSTACEA: DECAPODA: BRACHYURA: POTAMIDAE)

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**ABSTRACT.** – The generic placements of species that have been previously classified in the genus *Potamon* sensu lato from Indochina and adjacent areas are revised. The result is that 91 former “*Potamon*” species and their allies are re-assigned to eight known genera (*Acanthopotamon* Kemp, 1918, *Lobothelphusa* Bouvier, 1917, *Paratelphusula* Alcock, 1909 [Potaminae], *Neolamaudia* Türkay & Naiyanetr, 1987, *Pilosamon* Ng, 1996, *Stelomon* Yeo & Naiyanetr, 2000, *Vietopotamon* Dang & Ho, 2002, and *Vilopotamon* Dang & Ho, 2003 [Potamiscinae]) and 18 new genera (*Alcomon* [Potaminae], *Aspermon*, *Badistemon*, *Beccumon*, *Doimon*, *Eosamon*, *Indochinamon*, *Inlethelphusa*, *Iomon*, *Kempamon*, *Kukrimon*, *Megacephalomon*, *Planumon*, *Pupamon*, *Quadramon*, *Setosamon*, *Shanphusa* and *Teretamon* [Potamiscinae]). Diagnoses are provided for these 18 new genera and comparisons with allied taxa made.

**KEY WORDS.** – Freshwater crabs, Crustacea, Brachyura, Potamidae, Potaminae, Potamiscinae, *Potamon*, Indochina, Thailand, Vietnam, Laos, Cambodia, Myanmar, India, China, taxonomy, new genera.

### INTRODUCTION

In a recent revalidation and redefinition of the freshwater potamid crab subfamilies Potaminae and Potamiscinae, the genus *Potamon* sensu stricto (Potaminae) was restricted to species occurring from the Mediterranean in the west, through the Middle East, and reaching only as far east as northwestern India (Yeo & Ng, 2003). As *Potamon* sensu stricto is now regarded as absent from the fauna of East Asia, the generic placements of all Indochinese and Chinese freshwater crab species that have previously been tentatively assigned to *Potamon* sensu lato are in need of reclassification (see Yeo & Ng, 1999, 2003). The term ‘Indochina’ as used in this study refers loosely to the geographic region bordered by China, India and the Malay Peninsula that includes Cambodia, Laos, Myanmar (formerly Burma), Thailand, and Vietnam.

The present study re-appraises the generic placements of Indochinese, Chinese, and Indian “*Potamon*” species as well as those of some allied Indochinese potamid species which have been placed in other genera. The result is that 91 of these species are now re-assigned to 18 new genera (*Alcomon*

[Potaminae], *Aspermon*, *Badistemon*, *Beccumon*, *Doimon*, *Eosamon*, *Indochinamon*, *Inlethelphusa*, *Iomon*, *Kempamon*, *Kukrimon*, *Megacephalomon*, *Planumon*, *Pupamon*, *Quadramon*, *Setosamon*, *Shanphusa* and *Teretamon* [Potamiscinae]) and eight previously described genera (*Acanthopotamon* Kemp, 1918, *Lobothelphusa* Bouvier, 1917, *Paratelphusula* Alcock, 1909 [Potaminae], *Neolamaudia* Türkay & Naiyanetr, 1987, *Pilosamon* Ng, 1996, *Stelomon* Yeo & Naiyanetr, 2000, *Vietopotamon* Dang & Ho, 2002, and *Vilopotamon* Dang & Ho, 2003 [Potamiscinae]). In several cases, species in this study were previously known as subspecies or varieties, but we have recognised them as distinct species based on distinct differences between them and the nominate subspecies that we have observed (unpub. data).

### MATERIAL AND METHODS

The present paper serves to establish new genera for distinct groups of crabs formerly assigned to *Potamon* sensu lato and several other Indochinese potamid genera, thus making

## TAXONOMY

## POTAMIDAE Ortmann, 1896

## Potaminae Ortmann, 1896

**Remarks.** – This subfamily includes *Potamon* sensu stricto and members are recognised by the eighth thoracic sternite being incompletely separated by a longitudinal median line as it is fused anteriorly at the suture between sternites 7 and 8 by a narrow transverse ridge that interrupts the longitudinal line (Fig. 1D) (Yeo & Ng, 2003). This character is absent in all members of the other potamid subfamily, Potamiscinae. In the present study, two species previously placed in *Potamon* sensu lato, are assigned to a new genus, *Alcomon*, while several other potamine species previously under *Lobothelphusa* Bouvier, 1917, are revalidated and/or re-assigned among two other related genera, *Acanthopotamon* Kemp, 1918, and *Paratelphusula* Alcock, 1909.

*Acanthopotamon* Kemp, 1918

*Potamon* (*Acanthopotamon*) Kemp, 1918: 101 (part).

**Type species.** – *Paratelphusa martensi* Wood-Mason, 1875, by original designation.

**Remarks.** – Kemp (1918: 101) established the subgenus *Acanthopotamon* [type species *Paratelphusa martensi* Wood-Mason, 1875], for Indian *Potamon* species that Alcock (1910b) had assigned to the subgenus *Acanthothelphusa* Ortmann, 1897 [type species *Telphusa nilotica* H. Milne-Edwards, 1837]. Kemp (1918) argued that this well-defined group of Asian (Indian) species was distinct from *Acanthothelphusa nilotica*, which was much closer to its African congeners. Unknown to Kemp (1918), however, Alcock (1909b) and Bouvier (1917) had independently reached the same conclusion based on the same arguments, and each had already proposed new names for the group, namely *Paratelphusula* and *Lobothelphusa*, respectively. Kemp (1923: 3) subsequently discovered this and referred the entire group to *Paratelphusula*, the most senior synonym, relegating *Lobothelphusa* and *Acanthopotamon* to its synonymy. Bott (1966), apparently unaware at first of the above actions, created another junior synonym when he gave the name, *Potamon* (*Spinopotamon*) [type species *Paratelphusa martensi* Wood-Mason, 1875], to the above grouping. Bott (1970) subsequently relegated *Paratelphusula* to the synonymy of *Parapotamon* De Man, 1907, and revived both *Acanthopotamon* and *Lobothelphusa* as valid genera, synonymising *Potamon* (*Spinopotamon*) under *Acanthopotamon*. Bott (1970) restricted *Acanthopotamon* to only two species, viz., *A. martensi* and *A. panningi* (Bott, 1966) [both northeastern India], and re-assigned the remaining *Spinopotamon* species to *Lobothelphusa* (see **Remarks** for *Lobothelphusa*).

In the present study, Bott's (1970) concept of *Acanthopotamon* has been expanded and modified to include one more species, *Acanthopotamon fungosum* (Alcock, 1909)

available these generic names, which are urgently needed for several other studies by the authors, collaborators as well as other colleagues that are now underway or starting. The treatments in this paper are preliminary in nature: diagnoses are provided for new genera only, illustrations provided when absent or not easily available in the literature; detailed discussions and synonymies (primary references only where necessary) have been kept to a minimum; and identification keys as well as species accounts omitted for the time being. These, together with supplementary illustrations and more detailed discussions and comparisons, will be included in an upcoming monograph of the Indochinese crabs by the first author. Diagnoses for all previously described genera as well as keys to all taxa will be provided then. Nevertheless, a list of specimens is appended in this paper so the reader knows what material has been examined as part of this study. However, we have not designated lectotypes from syntype series or neotypes when types are lost, even when appropriate or necessary. This will be done in the context of a full revision and treatment of all the species and genera by the first author at a later date.

The following abbreviations are used: G1 for the male first pleopod, G2 for the male second pleopod. Measurements are of carapace width and length respectively. Terminology used essentially follows Ng (1988). All measurements are in millimetres. Specimens examined are listed separately in **Appendix 1**. The material is from the following depositories: Chulalongkorn University Natural History Museum, Bangkok, Thailand (CUMZ); Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZCAS); Naturhistorisches Museum Basel, Basel, Switzerland (MBA); Museum of Comparative Zoology, Harvard University, USA (MCZ); Museo Civico di Storia Naturale “Giacoma Doria”, Genova, Italy (MGE); Muséum national d’Histoire naturelle, Paris, France (MNHN); Natural History Museum [formerly British Museum of Natural History], London, UK (NHM); Nationaal Natuurhistorische Museum, Leiden, The Netherlands [formerly Rijksmuseum van Natuurlijke Historie (RMNH)]; Senckenbergische Naturforschenden Gesellschaft, Frankfurt, Germany (SMF); Swedish Museum of Natural History, Stockholm, Sweden (NRM); Zoologisch Museum Amsterdam, Amsterdam, The Netherlands (ZMA); Zoological Museum, Institute of Ecology and Biological Resources, Hanoi, Vietnam (ZMH); Zoologisk Museum, Copenhagen, Denmark (ZMUC); Zoological Reference Collection of the Raffles Museum of Biodiversity Research National University of Singapore (ZRC); Zoological Survey of India, Kolkata (formerly Calcutta), India (ZSI); and Zoologische Staatssammlung, Munich, Germany (ZSM). While every effort has been made to illustrate the important G1 structures, we were unable to do so for some material in the ZSI in which the G1s were not detached at the time of examination due to their policy of not allowing dissection of pleopod structures for detailed drawings. Photographs were therefore taken and are reproduced here. In the ZMH in Vietnam, only photographs of the G1s were taken as we did not have sufficient time in the collections, but as these had been detached earlier, the quality of these figures are higher.

[India] (see Appendix 1). *Acanthopotamon fungosum* was most recently referred to *Lobothelphusa* by Bott (1970), but its external features as well as G1 structure (unpublished data) are of the *Acanthopotamon* type (fide Bott, 1970). *Acanthopotamon* now consists of three species: *A. fungosum* (Alcock, 1909), *A. martensi* (Wood-Mason, 1875) and *A. panningi* (Bott, 1966). These will be dealt with in detail in a separate study (Yeo, in prep.).

**Distribution.** – Northeastern India.

***Alcomon*, new genus**

(Fig. 2)

**Type species.** – *Potamon (Geothelphusa) superciliosum* Kemp, 1913, by present designation.

**Diagnosis.** – Carapace distinctly broader than long, relatively low; dorsal surface relatively flat, low, smooth; epigastric cristae smooth to weakly rugose, almost level with postorbital cristae, faintly separated by short groove; postorbital cristae not sharp, rounded, smooth to weakly rugose, not confluent with epibranchial tooth; regions behind epigastric and postorbital cristae smooth; frontal and orbital regions relatively broad; antennular fossae subrectangular; external orbital angle low; epibranchial tooth poorly developed as faint notch on anterolateral margin; anterolateral margins cristate, entire, distinctly convex; posterolateral margins gently converging posteriorly; branchial region weakly rugose; epistome posterior margin with distinct median tooth, outer parts convex, sloping downwards. Ischium of third maxilliped broadly rectangular, with longitudinal median sulcus very faintly developed or absent; exopod long, exceeding distal edge of ischium, with well developed flagellum as long as merus width. Carpus of cheliped with low, broad subdistal spine. Ambulatory legs relatively stout, with stout dactyli, sparsely lined with long setae. Suture between thoracic sternites 2 and 3 complete, distinct; thoracic sternite 8 incompletely separated by longitudinal median line that is fused anteriorly by narrow sternal transverse ridge; male abdominal cavity reaching imaginary line joining anterior edge of cheliped bases. Male abdomen triangular; telson with lateral margins almost straight. G1 terminal segment slender, subcylindrical, with tip tapered, without dorsal flap, groove for G2 marginal; subterminal segment slender. G2 distal segment longer than half of basal segment.

**Etymology.** – The genus is named after Alfred Alcock, arbitrarily combined with the genus name *Potamon*, in recognition of his immense contributions to freshwater crab taxonomy. Gender is neuter.

**Remarks.** – *Alcomon*, new genus, is established here for two northeast Indian species, *A. lophocarpus* (Kemp, 1913) and *A. superciliosum* (Kemp, 1913) [type species]. These species are immediately separated from the other potamine genera (*Acanthopotamon*, *Lobothelphusa* and *Paratelphusula*) in this study as they lack multiple epibranchial teeth. They are also easily separated from *Potamon* sensu stricto (Fig. 1) by the following suite of characters: carapace distinctly broader than long, relatively low (versus carapace squarish to slightly broader than long, relatively high); epigastric cristae almost level with postorbital cristae (versus epigastric cristae distinctly anterior to postorbital cristae); epibranchial tooth very poorly developed, demarcated by a faint notch on the anterolateral region (versus epibranchial tooth well developed); ischium of third maxilliped with a faint or absent longitudinal median sulcus (versus ischium of third maxilliped

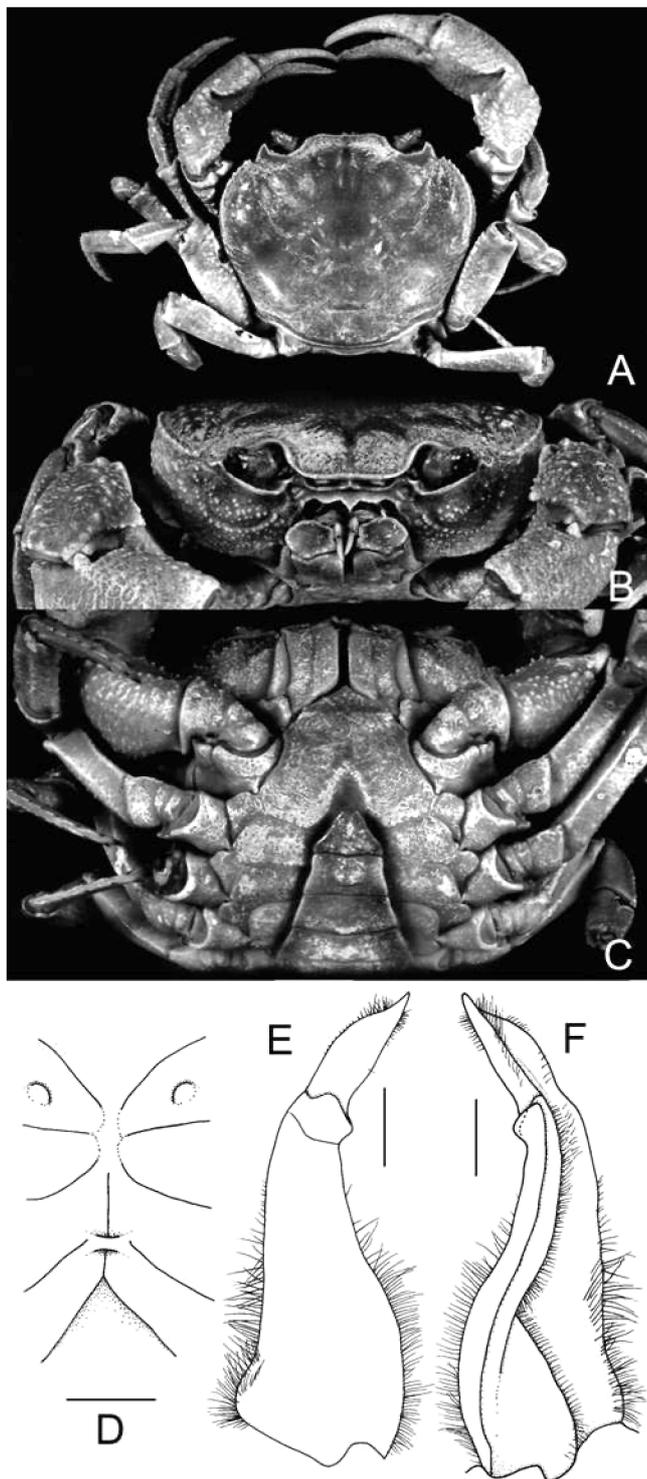


Fig. 1. *Potamon fluviatile* (Herbst, 1785). Male (54.4 × 45.8 mm) (ZRC): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, thoracic sternum showing sutures, with transverse ridge interrupting longitudinal line; E, F, left G1. Scales bars = 2.0 mm.

with distinct longitudinal median sulcus); male abdominal cavity reaching imaginary line joining anterior edge of cheliped bases (versus male abdominal cavity reaching imaginary line joining posterior edge of cheliped bases); and G1 terminal segment subcylindrical, with groove for G2 marginal (versus G1 terminal segment conical, with groove for G2 ventral) (see Fig. 2; cf. Bott, 1970).

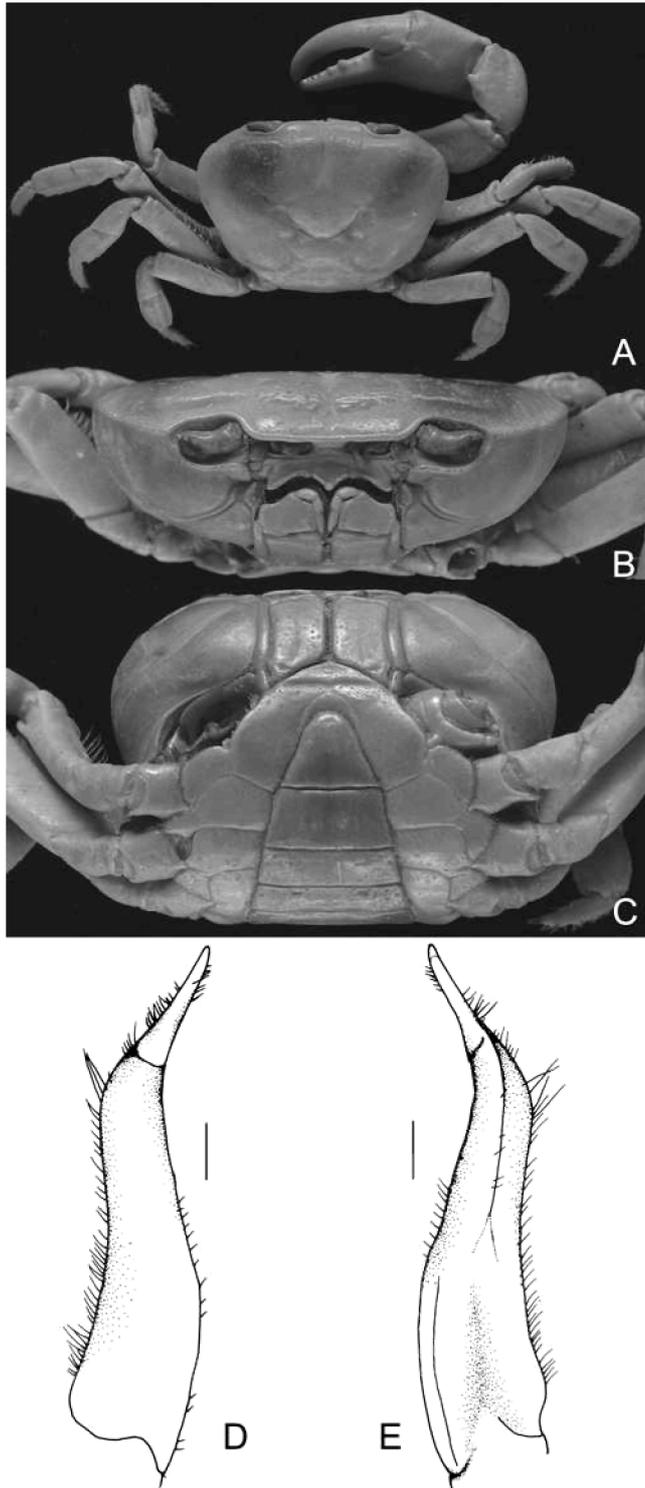


Fig. 2. *Alcomon superciliosum* (Kemp, 1913). Syntype, male (37.7 × 26.9 mm) (ZSI 8017/10): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, E, left G1. Scale bars = 1.0 mm.

*Alcomon* superficially resembles two new potamiscine genera described in the present study, *Kempamon* and *Teretamon*. However, it is immediately separated from these and other potamiscines by the transverse ridge on thoracic sternite 8 interrupting the longitudinal median line that separates the sternite when viewed ventrally (versus absence of transverse ridge on thoracic sternite 8 causing the sternite to appear completely separated by a longitudinal median line when viewed ventrally) (see Yeo & Ng, 2003, for examples). In addition, several other characters further distinguish *Alcomon* from *Kempamon* and *Teretamon* (see later under **Remarks** for these genera).

**Distribution.** – Abor County (present day Abor State, Arunachal Pradesh), northeastern India.

### *Lobothelphusa* Bouvier, 1917

*Hydrothelphusa* (*Lobothelphusa*) Bouvier, 1917: 620 (part).

**Type species.** – *Paratelphusa crenulifera* Wood-Mason, 1875, by subsequent designation (Bott, 1970).

**Remarks.** – Bouvier (1917) established the genus *Lobothelphusa* (as a subgenus of *Hydrothelphusa*), without designating a type species, for a distinct group of Indian species which Alcock (1910b) had placed in *Acanthothelphusa* but differed significantly from the African members of that genus. The Indian taxa listed by Alcock (1910b) were *Potamon* (*Paratelphusula*) *calva* Alcock, 1909, *Paratelphusa crenulifera* Wood-Mason, 1875, *Potamon* (*Acanthothelphusa*) *crenuliferum floccosum* Alcock, 1910, *Telphusa* (*Paratelphusa*) *dayana* Wood-Mason, 1871, *Parathelphusa feae* De Man, 1898, *Potamon* (*Paratelphusa*) *fungosum* Alcock, 1909, *Paratelphusa martensi* Wood-Mason, 1875, and *Potamon* (*Parathelphusa*) *woodmasoni* Rathbun, 1905. However, Kemp (1923: 3) later synonymised *Lobothelphusa* under *Potamon* (*Paratelphusula*) Alcock, 1909 (see **Remarks** for *Acanthopotamon*). Bott (1970) revived *Lobothelphusa* as a valid genus, designating *Paratelphusa crenulifera* Wood-Mason, 1875, as type species, and transferred most of the species he had earlier placed in *Spinopotamon* Bott, 1966, to it. Since the type species for both *Spinopotamon* Bott, 1966, and *Acanthopotamon* Kemp, 1918, is *Paratelphusa martensi* Wood-Mason, 1875, the two names are objective synonyms. The other species Bott (1970) referred to *Acanthopotamon* was *Potamon* (*Spinopotamon*) *panningi* Bott, 1966 (see **Remarks** for *Acanthopotamon*). The genus *Paratelphusula* is regarded as a valid genus in the present study, distinct from *Lobothelphusa* (see **Remarks** for *Paratelphusula*). Bott (1970) included five species in *Lobothelphusa*: *L. calva* (Alcock, 1909), *L. fungosa* (Alcock, 1909), *L. woodmasoni* (Rathbun, 1905), *L. acanthica* (Kemp, 1918) [incorrectly spelt as “*acanthia*”] and *L. burmensis* (Bott, 1966). Bott (1970: 146), however, excluded *Lobothelphusa acanthica* from his key to the genus as he felt that it was not a valid taxon, being only a variant of *L. woodmasoni* (see Bott, 1970: 150). Ng & Kosuge (1997) recently described one more species, *Lobothelphusa gibbosa*, from Myanmar.

*Lobothelphusa* sensu Bott, 1970, however, is heterogeneous, and is here restricted to five species: three mentioned by Bott (1970), viz., *L. crenulifera*, *L. calva*, and *L. woodmasoni*; and two other species, namely *L. floccosa* (Alcock, 1910) and *L. barbouri* (Rathbun, 1910) (present study). *Lobothelphusa floccosa* was regarded by Bott (1970) as a synonym of *L. crenulifera*, but is resurrected in the present study as a distinct species; while *L. barbouri*, a poorly known species described by Rathbun (1910), supposedly from Java, is clearly a *Lobothelphusa* species. The label for this species is certainly wrong (unpublished data). As for the other species assigned to *Lobothelphusa* by Bott (1970), *L. acanthica* only superficially resembles *Lobothelphusa* species; it is actually not even a potamine but a potamiscine. It is here assigned to a genus of its own, *Inlethelphusa*, new genus, and it is more similar to Chinese taxa such as *Parapotamon* De Man, 1907, and some members of *Sinopotamon* Bott, 1967 (see **Remarks** for *Inlethelphusa*, new genus). The remaining species are transferred to separate closely related genera (present study): *Lobothelphusa fungosa* to *Acanthopotamon* Kemp, 1918; and *Lobothelphusa burmensis* and *Lobothelphusa gibbosa* to *Paratelphusula* Alcock, 1909 (see **Remarks** for these genera).

**Distribution.** – Myanmar.

#### ***Paratelphusula* Alcock, 1909**

*Potamon* (*Paratelphusula*) Alcock, 1909a: 249.

**Type species.** – *Telphusa* (*Paratelphusa*) *dayana* Wood-Mason, 1871, by original designation.

**Remarks.** – Alcock (1909a: 249) established *Paratelphusula* (as a subgenus of *Potamon*) for *Potamon* (*Paratelphusula*) *dayanum* (Wood-Mason, 1871) [type species], *Potamon* (*Paratelphusula*) *fungosum* Alcock, 1909, and *Potamon* (*Paratelphusula*) *calvum* Alcock, 1909; but soon after synonymised it under *Potamon* (*Acanthothelphusa*) Ortmann, 1897, adding several other Asian species to that originally African grouping (see earlier; Alcock, 1909b, 1910a, b). Kemp (1923) subsequently revived *Paratelphusula* as a senior synonym of *Lobothelphusa* Bouvier, 1917, and *Acanthopotamon* Kemp, 1918 (see **Remarks** for *Acanthopotamon* and *Lobothelphusa*). Bott (1970) later relegated *Paratelphusula* to the synonymy of *Parapotamon* De Man, 1907 [southern China], when he transferred *Paratelphusula dayanum* to the latter genus.

The present study, however, recognises *Paratelphusula* as a valid genus, differing from potamiscine *Parapotamon* in the following characters: carapace high and strongly convex longitudinally (versus carapace low and relatively flat); epigastric and postorbital cristae distinct, relatively more strongly developed (versus epigastric and postorbital cristae poorly developed, indistinct); antennular fossae slit-like (versus antennular fossae subrectangular); anterolateral margins with four well developed, relatively broadly triangular teeth (versus anterolateral margins with more than four sharp, spiniform teeth); ambulatory dactyli elongate,

slender (versus ambulatory dactyli relatively short, stout); longitudinal median line separating thoracic sternite 8 interrupted by narrow sternal transverse ridge (versus longitudinal median line uninterrupted, complete); male abdomen broadly triangular (versus male abdomen very narrowly triangular); G1 terminal segment with distinct, long setae on the ventral side, sometimes obscuring upper margin (versus G1 terminal segment relatively glabrous); and G1 terminal segment relatively shorter, about 0.3–0.4 times length of subterminal segment in ventral view (versus G1 terminal segment relatively longer, about 0.5–0.6 times length of subterminal segment in ventral view) (see Ng & Kosuge, 1997: Figs. 1–3; Dai, 1999: Figs. 182, 183, Pl. 22 Figs. 5, 6).

Four species are included here in *Paratelphusula*, viz., *P. dayana* (Alcock, 1909) [type species], *P. peguensis* (Rathbun, 1905), *P. burmensis* (Bott, 1966), and *P. gibbosa* (Ng & Kosuge, 1997). The latter three species are transferred from *Lobothelphusa* sensu Bott (1970) and Ng & Kosuge (1997); with *Paratelphusula peguensis* removed from the synonymy of *Lobothelphusa crenulifera* and recognised as a valid species.

**Distribution.** – Mandalay, Prome, Pegu, Bhamo, and Yangon, Myanmar.

#### **Potamiscinae Bott, 1970**

**Remarks.** – In the Potamiscinae, the eighth thoracic sternite lacks any trace of a transverse ridge at the suture between sternites 7 and 8; and is completely separated by an uninterrupted longitudinal median line in posterior sternum (Yeo & Ng, 2003). This differentiates all potamiscine genera from *Potamon* sensu stricto (see earlier) and as such no further comparisons will be made against the genus.

#### ***Aspermon*, new genus**

(Fig. 3)

**Type species.** – *Parathelphusa feae* De Man, 1898, by present designation.

**Diagnosis.** – Carapace squarish, relatively low; dorsal surface relatively flat, distinctly uneven, especially in branchial and metabranchial regions, regions indistinct, covered with very short, velvety setae; epigastric cristae low, distinctly anterior to postorbital cristae, separated from postorbital cristae by distinct groove; postorbital cristae low, weak, not confluent with first epibranchial tooth; antennular fossae broadly subtriangular; external orbital angle broadly triangular; anterolateral margin very gently convex, with three irregular epibranchial teeth; epistome posterior margin median tooth well developed, outer parts not concave, sinuous, lateral parts gently convex and sloping downwards; median endostomial ridge hardly visible. Third maxilliped ischium elongate rectangular, with distinct longitudinal median sulcus; exopod not distally tapered, with well developed flagellum, longer than merus width. Cheliped carpus lacking subdistal spine

on inner margin; merus with distinct subterminal spine. Ambulatory legs setose, covered with very short, velvety setae; dactylus elongated, slender. Suture between thoracic sternites 2 and 3 complete, distinct; thoracic sternites 7 and 8 completely separated by longitudinal median line, lacking transverse ridge; male abdominal cavity reaching imaginary line joining anterior edge of cheliped bases. Male abdomen broadly triangular. G1 terminal segment slender, relatively short, conical, gradually tapered towards tip, tip tapered,

without dorsal flap, groove for G2 marginal; subterminal segment broad, distinctly broader in proximal half than distal half. G2 distal segment longer than half of basal segment.

**Etymology.** – The genus name is a combination of *asper*, Latin for uneven, with the genus name *Potamon*, alluding to the uneven carapace dorsal surface of the type species. Gender is neuter.

**Remarks.** – *Aspermon* is established here as a monotypic genus for *Parathelphusa feae* De Man, 1898. *Aspermon* most closely resembles the potamine genus, *Acanthopotamon* [type species *Parathelphusa martensi* Wood-Mason, 1875], in various aspects of carapace and G1 morphology, including the squarish, low carapace, with uneven, velvety dorsal surface; presence of two or more distinct epibranchial teeth; male abdominal cavity reaching imaginary line joining anterior edge of cheliped bases; and a slender, tapered G1 terminal segment, lacking a dorsal flap (see earlier). Alcock (1910b: 66) had also highlighted the similarity between *A. feae* and one of the present *Acanthopotamon* species, *Ac. fungosum* (Alcock, 1909) [referring to them as *Potamon* species], when he commented that he was “... inclined to regard this *Potamon* [*fungosum*] as only a variety of de Man’s *P. feae*.” However, *Acanthopotamon* species possess the diagnostic potamine character of a narrow transverse ridge interrupting the longitudinal median line of the sternum at the anterior part of sternite 8, near the level of the suture between sternites 7 and 8 (Yeo & Ng, 2003) while in *A. feae*, the longitudinal median line is uninterrupted as it lacks a transverse ridge at sternite 8. Therefore, despite its close general resemblance to *Acanthopotamon* (and similar-looking allies like *Lobothelphusa*), *Aspermon* is actually allied to the East Asian potamiscines (see **Remarks** for Potamidae and Potamiscinae).

*Aspermon* can be further differentiated from *Acanthopotamon* by the following significant characters: strongly uneven carapace dorsal surface (versus carapace dorsal surface relatively gently uneven); uneven protuberance on the posterolateral margin (versus posterolateral margin smooth); well developed epistome posterior margin median tooth (epistome posterior margin median tooth poorly developed); median endostomial ridge hardly visible (median endostomial ridge clearly visible); cheliped carpus inner margin lacking a subdistal spine (versus cheliped carpus inner margin with distinct subdistal spine); and much broader male abdomen (versus male abdomen relatively less broad) (see Fig. 3; Bott, 1970: Pl. 45 figs. 19, 20, Pl. 46 Fig. 23).

**Distribution.** – Myanmar.

***Badistemon*, new genus**  
(Fig. 4)

**Type species.** – *Potamon* (*Potamon*) *turgidulum* Alcock, 1909, by present designation and monotypy.

**Diagnosis.** – Carapace slightly broader than long, relatively

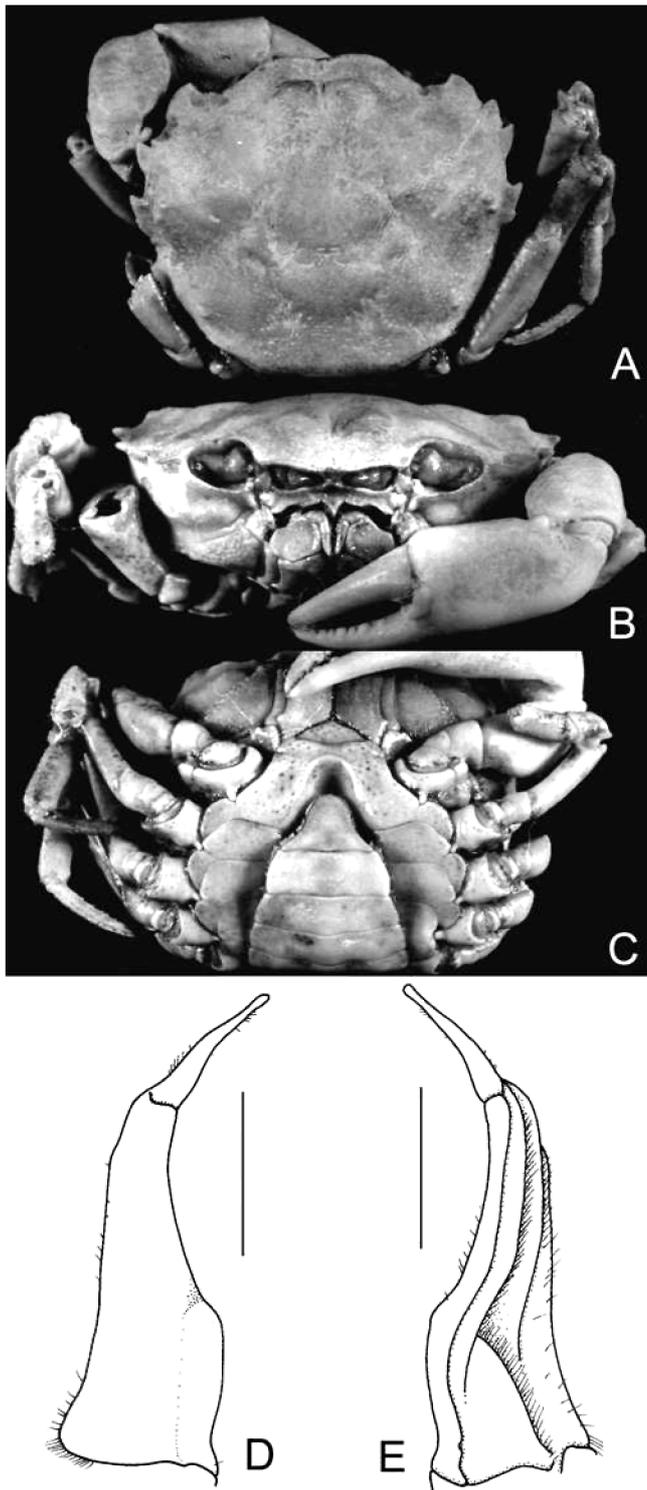


Fig. 3. *Aspermon feae* (De Man, 1898). Syntype, male (23.9 × 20.3 mm) (MGE III 255): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, E, left G1. Scale bars = 2.0 mm.

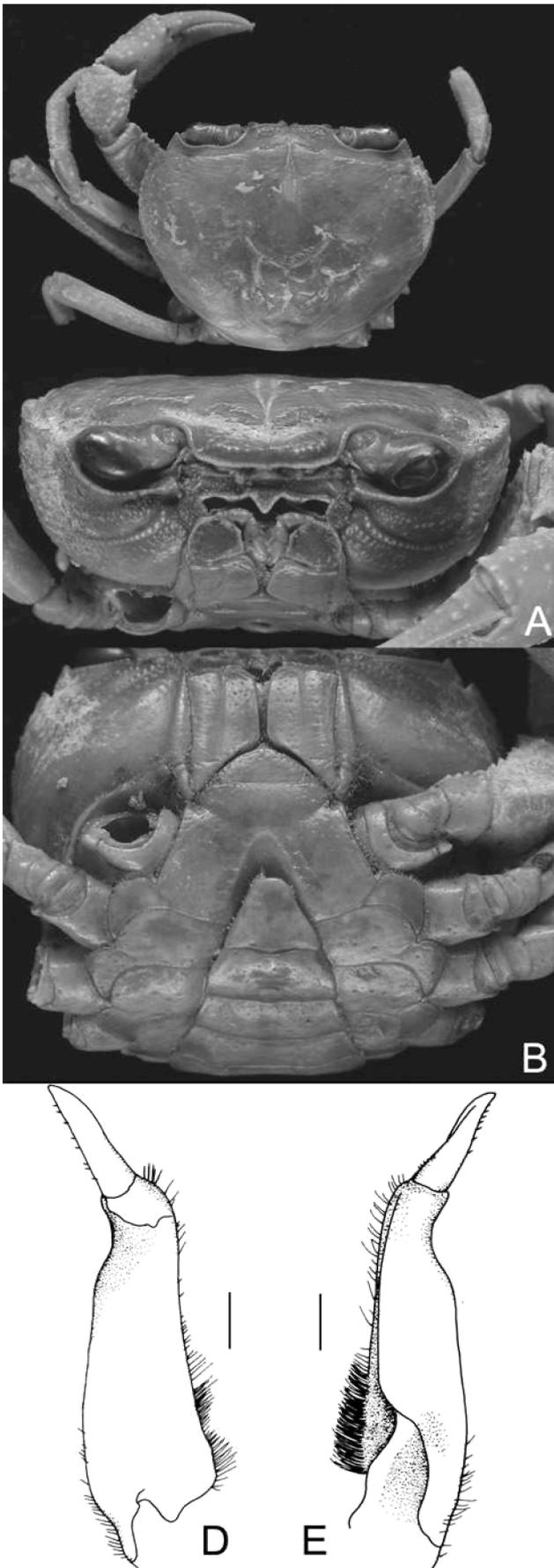


Fig. 4. *Badistemon turgidulum* (Alcock, 1909). Syntype, male (28.8 × 23.4 mm) (ZSI 6952/3): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, E, left G1. Scale bars: 1.0 mm.

high; epigastric cristae well developed, separated from postorbital cristae by distinct groove; postorbital cristae sharp, confluent with epibranchial tooth; regions behind epigastric and postorbital cristae smooth; frontal and orbital regions narrow; antennular fossae slit-like; external orbital angle well developed; epibranchial tooth well developed, distinct; anterolateral margins cristate, serrated, gently convex; posterolateral margins gently converging posteriorly; branchial region weakly rugose to granulose; epistome posterior margin with well developed median tooth, outer part gently concave. Ischium of third maxilliped broadly rectangular, with distinct longitudinal median sulcus; exopod long, exceeding distal edge of ischium, with well developed flagellum not exceeding merus width. Ambulatory legs relatively long, slender, with long, slender dactyli. Suture between anterior thoracic sternites 2 and 3 distinct, complete; suture between anterior thoracic sternites 3 and 4 not discernible; thoracic sternite 8 completely separated by longitudinal median line, lacking midline transverse ridge; male abdominal cavity barely exceeding imaginary line joining posterior edges of cheliped bases. Male abdomen narrowly triangular. G1 terminal segment short, slender, straight to very gently curved outwards distally, subconical, dorsal flap absent or very poorly developed, barely visible in proximal portion, groove for G2 marginal; subterminal segment distinctly slender or neck-like distally. G2 distal segment longer than half length of basal segment; basal segment outer margin expanded.

**Etymology.** – The genus name is derived from *badistes*, Greek for “walker”, in arbitrary combination with the genus name *Potamon*, alluding to the terrestrial habits implied by the general appearance of the genus. Gender is neuter.

**Remarks.** – For now, *Badistemon*, new genus, includes a single described species, *B. turgidulum* (Alcock, 1909). There are, however, at least two more species in the process of being described (Yeo & P. Naiyanetr, in prep.). All three species are defined by a relatively high, squarish-looking carapace, third maxilliped with a well-developed flagellum, narrowly triangular male abdomen and G1 terminal segment that lacks a prominent dorsal flap.

*Badistemon* is most likely to be confused with *Takpotamon* Brandis, 2002 [type species *Potamon maesotense* Naiyanetr, 1992], as they have very similar carapace physiognomy. *Badistemon* is, however, immediately distinguished from *Takpotamon* by the relatively longer ambulatory legs (versus ambulatory legs relatively shorter); male abdominal cavity barely exceeding imaginary line joining posterior edges of cheliped bases (versus male abdominal cavity reaching imaginary line joining median point of bases of chelipeds); narrowly triangular male abdomen (versus broadly triangular male abdomen); and G1 terminal segment lacking a dorsal flap or with a very low indistinct dorsal flap (versus terminal segment with a well developed, broad dorsal flap) (see Fig. 4; cf. Ng & Naiyanetr, 1993: Fig. 2).

broader, with confluent epigastric and postorbital cristae, and relatively more distinctly cristate anterolateral margins in *Takpotamon*) (see Fig. 4; cf. Ng & Naiyanetr, 1993: Fig. 2).

### ***Beccumon*, new genus**

**Type species.** – *Potamon jarujini* Ng & Naiyanetr, 1993, by present designation.

**Diagnosis.** – Carapace slightly to distinctly broader than long, relatively low; dorsal surface relatively flat; epigastric cristae strong, well developed, slightly anterior to postorbital cristae, separated from postorbital cristae by short, distinct groove; postorbital cristae not confluent with epibranchial tooth, breaking up into granules before reaching epibranchial tooth; regions behind epigastric and postorbital cristae granulose to rugose to smooth; antennular fossae subrectangular to slit-like; external orbital angle well developed; anterolateral margins distinctly cristate, gently to distinctly serrated, gently convex; posterolateral margins gently converging posteriorly; branchial region granulose; epistome posterior margin with distinct, well developed median tooth. Ischium of third maxilliped broadly rectangular, with distinct longitudinal median sulcus; exopod long, exceeding distal edge of ischium, with well developed flagellum not exceeding merus width. Cheliped merus without subterminal spine. Ambulatory legs relatively short, stout, with long, slender dactyli. Suture between anterior thoracic sternites 2 and 3 distinct, complete; suture between anterior thoracic sternites 3 and 4 faintly discernible, especially laterally; thoracic sternite 8 completely separated by longitudinal median line, lacking transverse ridge; male abdominal cavity reaching imaginary line joining median part of cheliped bases. Male abdomen narrowly triangular. G1 terminal segment relatively short, almost straight, subcylindrical, tip truncate, rounded or bifurcated in appearance, lacking dorsal flap, groove for G2 running obliquely along ventral side. G2 distal segment distinctly longer than half length of basal segment; basal segment outer margin expanded.

**Etymology.** – The genus name is derived from *beccus*, Latin for “beak” or “bill”, in arbitrary combination with the genus name *Potamon*, alluding to the appearance of the G1 terminal segment. Gender is neuter.

**Remarks.** – *Beccumon*, new genus, is diagnosed mainly by its very distinctive G1 structure, in which the terminal segment is almost straight and subcylindrical, has an oblique groove for the G2 on the ventral side, and lacks a dorsal flap. *Beccumon* most closely resembles *Indochinamon*, new genus, in external morphology and in the G1 structure. In the G1 terminal segment of *Beccumon*, however, almost the entire groove for the G2 is clearly visible from the ventral view, whereas in *Indochinamon*, the groove is marginal in position, being either not visible or just barely visible near the tip from the ventral view.

Other Indochinese genera that have the entire groove for the G2 visible on the ventral side of the G1 terminal segment

include *Larnaudia* Bott, 1966, and *Stelomon* Yeo & Naiyanetr, 2000. *Beccumon* is differentiated from *Larnaudia* by its glabrous ambulatory legs (versus ambulatory legs lined with short, coarse setae); and G1 terminal segment being subcylindrical in shape (versus subconical), and almost straight (versus distinctly to very gently upcurved) (see Ng & Naiyanetr, 1993: Figs. 4A, 15A, 38B–F, 50B–E). *Beccumon* is immediately separated from *Stelomon* by its male abdominal cavity not exceeding the imaginary line joining the median part of the cheliped bases (versus male abdominal cavity reaching imaginary line joining anterior edge of cheliped bases) and G1 terminal segment being proportionately shorter and more slender (versus proportionately longer and stouter), and having relatively straight margins, lacking any swelling (versus inner and outer margins with varying degrees of swellings) (see Ng & Naiyanetr, 1993: Figs. 34B–E, 38B–F; Yeo & Naiyanetr, 2000: Figs. 2B–G).

Four species are presently assigned to *Beccumon*, viz., *B. alcockianum* (Kemp, 1923), *B. jarujini* (Ng & Naiyanetr, 1993) [type species], *B. maesariang* (Ng & Naiyanetr, 1993), and *B. namlang* (Ng & Naiyanetr, 1993). The placement of *Beccumon alcockianum* in this genus is tentative, as its types possess only a vestigial flagellum on the third maxilliped exopod. Currently, at least two new species from this genus are known and are being described (Yeo, in prep.).

**Distribution.** – Northern Thailand.

### ***Doimon*, new genus**

**Type species.** – *Potamon doisutep* Naiyanetr & Ng, 1990, by present designation.

**Diagnosis.** – Carapace slightly broader than long to distinctly transverse, relatively low; dorsal surface relatively flat; epigastric cristae strong, well developed, slightly anterior to postorbital cristae, separated from postorbital cristae by short, distinct groove; postorbital cristae not confluent with epibranchial tooth, breaking up into granules before reaching epibranchial tooth; frontal and orbital regions broad; antennular fossae subrectangular; external orbital angle well developed; epibranchial tooth poorly developed, low but distinct; anterolateral margins gently convex, cristate; posterolateral margins gently converging posteriorly; branchial region granular to rugose, never smooth; epistome posterior margin with distinct median tooth, outer part not concave, straight to sloping downwards laterally. Ischium of third maxilliped rectangular, with distinct longitudinal median sulcus; exopod long, exceeding distal edge of ischium, with well-developed flagellum not exceeding merus width. Cheliped carpus with robust, obliquely directed subdistal spine on inner margin; merus without subterminal spine. Ambulatory legs relatively short, stout, with short, stout dactyli. Suture between anterior thoracic sternites 2 and 3 distinct, complete; suture between anterior thoracic sternites 3 and 4 not discernible except sometimes for small marginal clefts at lateral edges of sternum; thoracic sternite 8

completely separated by longitudinal median line, lacking transverse ridge; male abdominal cavity reaching imaginary line joining median part of cheliped bases. Male abdomen narrowly triangular. G1 terminal segment relatively short, slender, distinctly curved outwards, conical, tip blunt to sharp, possessing distinct, low, broad dorsal flap in proximal half, groove for G2 marginal; subterminal segment broad. G2 distal segment distinctly longer than half length of basal segment; basal segment outer margin expanded.

**Etymology.** – The genus name is derived from “Doi”, the northern Thai word for mountain, in combination with the genus name, *Potamon*, alluding to the mountainous region of northern Thailand where the genus occurs. Gender is neuter.

**Remarks.** – *Doimon*, new genus, is localized in the northern part of Thailand, and consists of three species, *D. doichiangdao* (Naiyanetr & Ng, 1990), *D. doisutep* (Naiyanetr & Ng, 1990) [type species], and *D. maehongsonense* (Naiyanetr, 1992). The genus is morphologically very close to *Indochinamon*, new genus, possessing the same suite of diagnostic external features. These include the low, flat carapace, with the epigastric cristae and postorbital cristae being distinctly separated from postorbital cristae and epibranchial tooth, respectively; the well developed flagellum on the exopod of the third maxilliped; the relatively stout ambulatory legs; and the narrowly triangular male abdomen that reaches the imaginary line joining median part of cheliped bases. The G1 terminal segment of both groups is also subconical in shape, tapering to a relatively sharp tip. In *Doimon*, however, the G1 terminal segment is relatively longer, more slender, distinctly curving outwards, and has a low but distinct dorsal flap in the proximal half (versus G1 terminal segment is relatively shorter, stouter, almost straight, and lacking a distinct dorsal flap). The G1 of *Doimon* also resembles that of *Pupamon*, new genus, but the two genera are clearly and consistently distinct in external morphology (see **Remarks** for *Pupamon*, new genus).

**Distribution.** – Chiang Mai and Mae Hong Son Provinces, northern Thailand.

***Eosamon*, new genus**  
(Fig. 5)

**Type species.** – *Potamon (Potamon) smithianum* Kemp, 1923, by present designation.

**Diagnosis.** – Carapace slightly to distinctly broader than long, dorsal surface relatively flat; epigastric cristae rugose, slightly anterior to postorbital cristae, confluent or almost confluent with postorbital cristae, sometimes separated from postorbital cristae by short, faint groove; postorbital cristae sharp; regions behind epigastric and postorbital cristae smooth to weakly rugose or granular; frontal and orbital regions relatively broad; antennular fossae subrectangular; external orbital angle well developed; epibranchial tooth distinct; anterolateral margins distinctly cristate, serrated to entire; branchial region sparsely

granular to rugose. Ischium of third maxilliped broadly rectangular, with distinct longitudinal median sulcus; exopod long, exceeding distal edge of ischium, with well developed flagellum, subequal to or greater than merus width. Ambulatory legs relatively short, stout, with long, slender dactyli. Suture between anterior thoracic sternites 2 and 3 distinct, complete; suture between anterior thoracic sternites

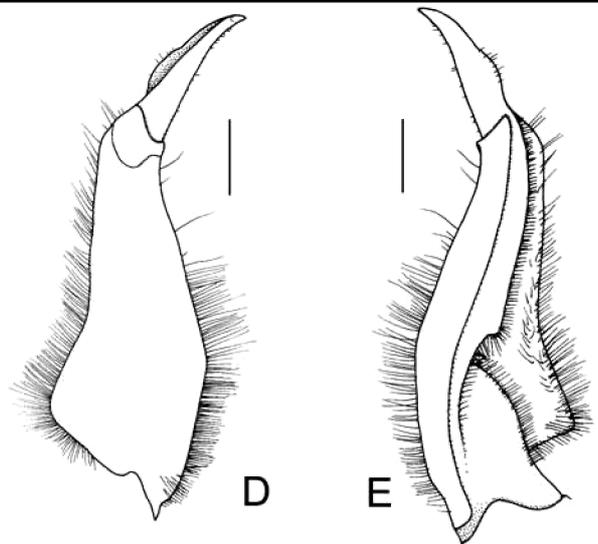
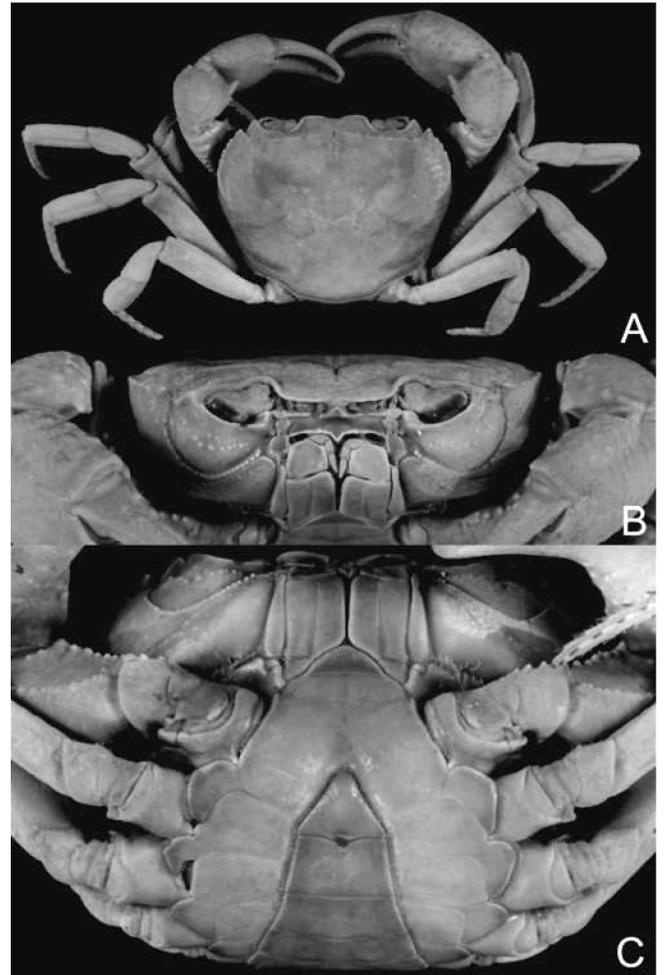


Fig. 5. *Eosamon smithianum* (Kemp, 1923). Male (53.3 × 42.6 mm) (CUMZ): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, E, left G1. Scale bars: 2.0 mm.

3 and 4 not discernible; thoracic sternite 8 completely separated by longitudinal median line, lacking midline transverse ridge; male abdominal cavity reaching imaginary line joining posterior edges of cheliped bases. Male abdomen usually with concave lateral margins. G1 terminal segment relatively short, almost straight to gently sinuous, subconical, groove for G2 marginal, with low, broad dorsal flap. G2 distal segment distinctly longer than half length basal segment; basal segment outer margin gently convex.

**Etymology.** – The genus name is derived from the Greek word, *eos*, for east, in arbitrary combination with the genus name *Potamon*, alluding to the easterly distribution of the majority of the genus within Indochina (eastern half of Thailand to southern Vietnam). Gender is neuter.

**Remarks.** – *Eosamon*, new genus, is diagnosed by its relatively squarish looking carapace, which is usually low, dorsally flat, and has confluent or almost confluent epigastric and postorbital cristae; third maxilliped with a broadly rectangular ischium, and long exopod with long, well developed flagellum; short or low male abdominal cavity (reaching imaginary line joining posterior edges of cheliped bases); male abdomen with distinctly concave lateral margins; and G1 terminal segment almost straight to gently sinuous, with low, broad dorsal flap.

*Eosamon* currently contains 10 species, viz., *E. boonyaratae* (Naiyanetr, 1987), *E. brousmichei* (Rathbun, 1904), *E. hafniense* (Bott, 1966), *E. lushuiense* (Dai & Chen, 1985), *E. paludosum* (Rathbun, 1904), *E. phuphanense* (Naiyanetr, 1992), *E. smithianum* (Kemp, 1923) [type species], *E. tengchongense* (Dai & Chen, 1985), *E. tumidum* (Wood-Mason, 1871) and *E. yotdomense* (Naiyanetr, 1984). Three closely related species reported from China (*Eosamon lushuiense*, *E. tengchongense* and *E. tumidum*) are included in this genus tentatively on the basis of Dai’s (1999) illustrations and pending re-examination of the types of all three species. We have on hand at least five more new species from this genus from various parts of Indochina but these will be described in a separate study (Yeo & P. Naiyanetr, in prep.)

*Eosamon* superficially resembles *Indochinamon*, new genus, and *Doimon*, new genus, but can be externally separated from these genera by its almost confluent epigastric and postorbital cristae (versus epigastric cristae distinctly separated from postorbital cristae); and male abdominal cavity reaching imaginary line joining posterior edge of cheliped bases (versus male abdominal cavity reaching imaginary line joining median part of cheliped bases) (see Fig. 5A–C; cf. Naiyanetr & Ng, 1990: Fig. 4; Yeo & Ng, 1998: Fig. 7D). *Eosamon* also differs in G1 structure from *Indochinamon* by the presence of a well developed dorsal flap on the terminal segment (Fig. 5D, E) (versus dorsal flap absent, see Yeo & Ng, 1998: Fig. 5M, N) and from *Doimon* by the gently curved terminal segment, with the dorsal flap apex proximal in position (Fig. 5D, E) (versus terminal segment distinctly outwardly curved, with the dorsal flap apex median in position, see Naiyanetr & Ng, 1990: Fig. 5A–D).

Some of the larger *Eosamon* species (e.g., *E. smithianum*) might be confused with *Dromothelphusa* Naiyanetr, 1992 [type species *Thelphusa longipes* A. Milne-Edwards, 1869], especially in external carapace morphology. The following external and G1 characters, however, easily separate *Eosamon smithianum* from *Dromothelphusa longipes*: i) epigastric cristae slightly anterior to, and faintly separated from postorbital cristae by short, indistinct groove (versus epigastric cristae more or less in line with, and confluent with postorbital cristae); ii) postorbital cristae cristate, not confluent with epibranchial tooth, breaking up into granules before reaching epibranchial tooth (versus postorbital cristae smooth, confluent with epibranchial tooth); iii) antennular fossae subrectangular (versus antennular fossae slit-like); iv) exopod flagellum well developed, exceeding merus width (versus exopod flagellum vestigial or absent); v) male abdominal cavity reaching imaginary line joining posterior edges of cheliped bases (versus male abdominal cavity reaching imaginary line joining median part of cheliped bases); vi) male abdomen lateral margins concave (versus male abdomen lateral margins almost straight); vii) G1 terminal segment gently curved outwards distally (versus G1 terminal segment straight); and viii) dorsal flap relatively broad (versus dorsal flap present in proximal half, relatively narrow) (unpub. data).

Another group that is recognized by its relatively squarish carapace is *Quadramon* [type species *Potamon (Potamiscus) aborensis* Kemp, 1913, by present designation], new genus. *Eosamon* is, however, easily distinguished from *Quadramon* by its sharp postorbital cristae that is confluent or almost with the epibranchial cristae (versus postorbital cristae very low, rugose, separated from epigastric cristae by very shallow groove); subrectangular antennular fossae (versus antennular fossae subtriangular); and long third maxilliped exopod flagellum, subequal to or exceeding the merus width (versus flagellum absent or short, not exceeding half of merus width).

Ng & Naiyanetr (1993) have remarked, with respect to *Eosamon phuphanense* [as *Potamon sensu lato*], that, “...in general, [it] is very similar to the genus *Johora* Bott, 1966 ... particularly with species like *J. tahanensis* Bott, 1966, and the affinities of *P. phuphanense* may be there instead.” *Johora tahanensis*, however, differs from *Eosamon phuphanense* in some very significant aspects, most noticeably, in the distinctly separated epigastric and postorbital cristae; setose mouthparts, anterior sternum and limbs; and very different G1 structure (see Ng, 1988: Fig. 18; Ng & Naiyanetr, 1993: Figs. 8, 43).

**Distribution.** – Eastern and northeastern Thailand; southern Vietnam.

#### *Indochinamon*, new genus

**Type species.** – *Potamon villosum* Yeo & Ng, 1998, by present designation.

**Diagnosis.** – Carapace slightly broader than long to distinctly transverse, relatively low; dorsal surface relatively flat; epigastric cristae strong, well developed, slightly anterior to postorbital cristae, separated from postorbital cristae by short, distinct groove; postorbital cristae not confluent with epibranchial tooth, breaking up into granules before reaching epibranchial tooth; frontal and orbital regions broad; antennular fossae subrectangular; external orbital angle well developed; epibranchial tooth poorly developed, low but distinct; anterolateral margins gently convex, cristate; posterolateral margins gently converging posteriorly; branchial region granular to rugose, never smooth; epistome posterior margin with distinct median tooth, outer part not concave, straight to sloping downwards laterally. Ischium of third maxilliped rectangular, with distinct longitudinal median sulcus; exopod long, exceeding distal edge of ischium, with well developed flagellum not exceeding merus width. Cheliped carpus with robust, obliquely directed subdistal spine on inner margin; merus without subterminal spine. Ambulatory legs relatively short, stout, with short, stout dactyli. Suture between anterior thoracic sternites 2 and 3 distinct, complete; suture between anterior thoracic sternites 3 and 4 not discernible except sometimes for small marginal clefts at lateral edges of sternum; thoracic sternite 8 completely separated by longitudinal median line, lacking transverse ridge; male abdominal cavity reaching imaginary line joining median part of cheliped bases. Male abdomen narrowly triangular. G1 terminal segment usually relatively short, straight, conical, tip sharp to blunt, ranging from lacking dorsal flap, groove for G2 marginal; subterminal segment broad. G2 distal segment distinctly longer than half length of basal segment; basal segment outer margin expanded.

**Etymology.** – This genus, which is found throughout much of Indochina, is named after the region, in arbitrary combination with the genus name *Potamon*. Gender is neuter.

**Remarks.** – *Indochinamon* is characterized by the following combination of diagnostic morphological characters: i) carapace low, with relatively flat dorsal surface; ii) epigastric cristae separated from postorbital cristae by distinct groove; iii) postorbital cristae not confluent with epibranchial tooth; iv) third maxilliped with well developed flagellum; v) ambulatory legs relatively stout; vi) male abdomen narrowly triangular; vii) male abdominal cavity reaching imaginary line joining median part of cheliped bases; and viii) G1 terminal segment relatively short and stout, with the groove for the G2 marginal in position, and lacking a dorsal flap.

This is the most speciose and widely distributed of the new genera being described in the present study, and corresponds to Yeo & Ng's (1998) "*Potamon tannanti* species group" in having a G1 terminal segment that is usually relatively short and stout, straight to very gently curved outwards, subconical in shape, being tapered to a relatively sharp tip, and lacking a dorsal flap. Most of the species in this genus had previously been identified as "*Potamon*". This group includes the following 30 species: *I. andersonianum* (Wood-Mason, 1871), *I. asperatum* (Alcock, 1909), *I. beieri* (Pretzmann, 1966), *I. bhumibol* (Naiyanetr, 2001), *I. boshanense* (Dai &

Chen, 1985), *I. changpoense* (Dai, 1995), *I. chinghungense* (Dai, Song, He, Cao, Xu & Zhong, 1975), *I. cua* (Yeo & Ng, 1998), *I. daweshanense* (Dai, 1995), *I. edwardsi* (Wood-Mason, 1871), *I. flexum* (Dai, Song, Li & Liang, 1980), *I. gengmaense* (Dai, 1995), *I. guttum* (Yeo & Ng, 1998), *I. hirtum* (Alcock, 1909), *I. hispidum* (Wood-Mason, 1871), *I. jianchuanense* (Dai & Chen, 1985), *I. jinpingense* (Dai, 1995), *I. kimboiense* (Dang, 1975), *I. lipkei* (Ng & Naiyanetr, 1993), *I. manipureense* (Alcock, 1909), *I. menglaense* (Dai & Cai, 1998), *I. mieni* (Dang, 1967), *I. orleansi* (Rathbun, 1904), *I. ou* (Yeo & Ng, 1998), *I. prolatum* (Brandis, 2000), *I. tannanti* (Rathbun, 1904) (*Potamon hokuoense* Tai, Song, He, Cao, Xu & Zhong, 1975), *I. tritum* (Alcock, 1909), *I. villosum* (Yeo & Ng, 1998) [type species], *I. xinpingense* (Dai & Bo, 1994) and *I. yunlongense* (Dai, 1995). *Potamon hispidum jianchuanense* Dai & Chen, 1985, was originally established as a subspecies, but we prefer to regard it as a separate species of *Indochinamon* here since the differences between this and the nominate subspecies seem distinct.

*Indochinamon* most closely resembles *Doimon*, new genus, in overall carapace physiognomy. Most species of *Indochinamon* though can be immediately distinguished from *Doimon* species by the G1 terminal segment that is relatively short and stout, almost straight, and lacking a dorsal flap (versus G1 terminal segment relatively longer, more slender, distinctly curved outwards, and with a distinct dorsal flap). Three *Indochinamon* species (*I. cua*, *I. tannanti* and *I. kimboiense*) are distinct in that the G1 terminal segment are relatively longer and more slender and beginning to curve very slightly outwards distally; *Indochinamon kimboiense* also possesses barely discernible proximal dorsal flap on the terminal segment. In spite of these differences, the three species are placed in *Indochinamon* primarily on the basis of the lack of a distinct dorsal flap as seen in *Doimon* species. *Indochinamon* is also morphologically similar to *Beccumon*, new genus [type species *Potamon jarujini* Ng & Naiyanetr, 1993] and *Iomon*, new genus [type species *Potamon nan* Ng & Naiyanetr, 1993] in both external and G1 overall morphology, but is separated from these by clear differences in the structure of the G1 terminal segment (see **Remarks** for *Beccumon*, new genus, and *Iomon*, new genus).

**Distribution.** – Myanmar; Thailand; Laos; Vietnam; southern China; northeastern India.

### *Inlethelphusa*, new genus

(Fig. 6)

**Type species.** – *Potamon (Potamon) acanthicum* Kemp, 1918, by present designation and monotypy.

**Diagnosis.** – Carapace slightly broader than long, relatively low; dorsal surface slightly convex; epigastric cristae low but distinct, slightly anterior to postorbital cristae, distinctly separated from postorbital cristae; postorbital cristae poorly developed, blunt, not confluent with epibranchial teeth; external orbital angle well developed; epibranchial tooth well developed, spiniform; anterolateral margins very strongly and

unevenly serrated, with anterior serrations becoming larger, forming one to three isolated spines behind the epibranchial tooth; branchial regions sparsely granulose; antennular fossae subrectangular, broad; epistome posterior margin with low but distinct median tooth; median endostomial ridge absent. Third maxilliped ischium with distinct longitudinal median sulcus; exopod long, distally tapered, with well developed flagellum longer than or subequal to merus width. Cheliped outer margins relatively smooth; carpus with well developed, oblique, subdistal spine. Ambulatory legs glabrous; merus lacking subdistal spine on upper margin. Suture between thoracic sternites 2 and 3 complete, distinct; thoracic sternite 8 completely separated by a longitudinal median line; male abdominal cavity reaching imaginary line joining median part of cheliped bases. Male abdomen narrowly triangular. G1 terminal segment gently upcurved, proportionately long, almost half length of subterminal segment, dorsal flap absent; distal half of subterminal segment distinctly narrowed, neck-like. G2 distal segment distinctly less than half length of basal segment.

**Etymology.** – The genus is named after Inle Lake in northern Myanmar, the type locality of its sole species, in combination with the genus name *Thelphusa*. Gender is feminine.

**Remarks.** – *Potamon (Potamon) acanthicum* Kemp, 1918, has a unique suite of morphological characters that excludes it from related genera, and necessitates the establishment of a separate genus for it, here named *Inlethelphusa*, new genus. *Inlethelphusa* is defined by the very strongly and unevenly serrated carapace anterolateral margins, with the anterior serrations becoming larger, forming isolated spines behind the epibranchial tooth; poorly developed, blunt postorbital cristae, which are not confluent with the epibranchial teeth; relatively broadly subrectangular antennular fossae; absence of a median endostomial ridge; third maxilliped with a distinct longitudinal median sulcus on the ischium, and long, distally tapered exopod, with a well developed flagellum; glabrous ambulatory legs; eighth thoracic sternite being completely separated by a longitudinal median line; narrowly triangular male abdomen; long, gently upcurved G1 terminal segment, lacking a dorsal flap; distinctly narrowed neck-like distal half of the subterminal segment; and proportionately short G2 distal segment, distinctly less than half the length of the basal segment.

*Inlethelphusa* superficially resembles *Paratelphusula* Alcock, 1909, *Lobothelphusa* Bouvier, 1917, and *Acanthopotamon* Kemp, 1918 [Potaminae] and *Aspermon*, new genus [Potamiscinae], in its anterolateral margin appearing to possess more than one epibranchial tooth. However, *Inlethelphusa* is not closely related to these genera, with its subsequent “epibranchial teeth” being not homologous to those of the other genera mentioned here, as noted by Kemp (1918: 87) “...the sharp isolated spines with which the anterior part of this border is provided appear to be an extreme modification of the serrate or crenulated margin... they differ widely in character from the large flat teeth found in Indian species of the subgenus *Acanthotelphusa* [referring to the abovementioned genera].” This extreme modification of the

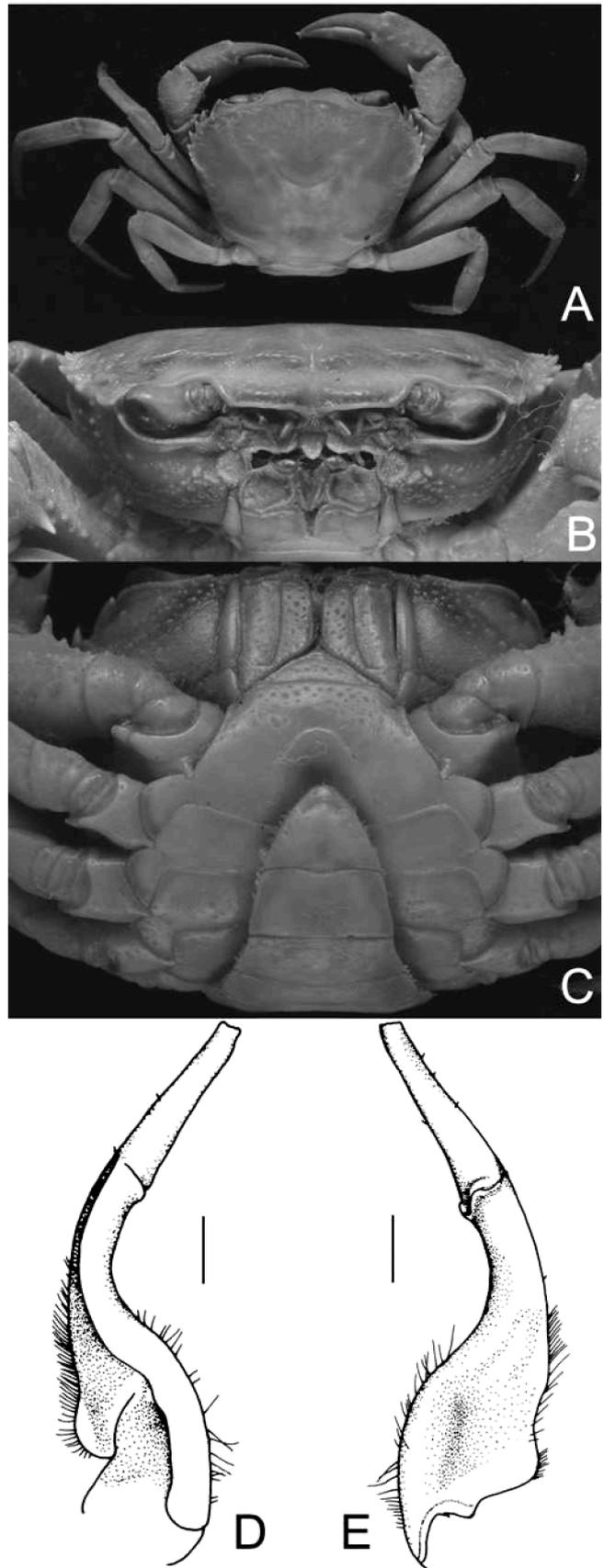


Fig. 6. *Inlethelphusa acanthica* (Kemp, 1918). Syntype, male (26.3 × 19.8 mm) (ZSI 9771-2/10): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, E, left G1. Scale bars: 1.0 mm.

anterolateral margin serrations occurs independently in several other taxa, e.g., *Liberonautes chaperi* (A. Milne-Edwards, 1887), *Sudanautes faradjensis* (Rathbun, 1921), *Gecarcinautes antongilensis* (Rathbun, 1905), *Madagapotamon humberti* Bott, 1965, *Sinopotamon shaoyangense* Dai, 1999, *Parapotamon spinescens* (Calman, 1905), and *Parapotamonoides endymion* (De Man, 1906) (see Bott, 1965: Figs. 1, 7b, Pl. 1 Fig. 1, Pl. 4 Fig. 14; Cumberlandidge, 1999: 67, Figs. 20F, 30E; Dai, 1999: Pl. 15 Fig. 4, Pl. 12 Fig. 5, Pl. 19 Fig. 1).

*Inlethelphusa* is further distinguished from *Paratethelphusa* and its allies by the lack of a visible endostomial median ridge (versus endostomial median ridge clearly visible); and thoracic sternite 8 being completely separated by a longitudinal median line (versus thoracic sternite 8 incompletely separated by a longitudinal median line, with line itself being interrupted by a median transverse ridge). *Aspermon* is immediately differentiated from *Inlethelphusa* by their noticeably different G1 and G2 morphologies (see Figs. 3, 6).

Some species of *Sinopotamon* Bott, 1967 [type species *Potamon (Potamon) davidi* Rathbun, 1904] also resemble *Inlethelphusa* in possessing several spiniform anterolateral margin serrations, especially *Sinopotamon yueyangense* Dai, 1995, which has a similarly upcurved G1 terminal segment, lacking a dorsal flap (see Dai, 1999: 231, Pl. 14 Fig. 7, Fig. 120). The similarity, however, is superficial, as *Inlethelphusa* has fewer, more prominent and better-defined serrations (versus epibranchial teeth more numerous, lower and less well defined); a proportionately longer G1 terminal segment, about 0.44 times length of subterminal segment (versus G1 terminal segment proportionately shorter, about 0.33 times length of subterminal segment); and a proportionately shorter G2 distal segment, distinctly shorter than half of basal segment length (versus G2 distal segment proportionately shorter, subequal to half of basal segment length) (see Fig. 6; Dai, 1999: 231, Pl. 14 Fig. 7, Fig. 120).

*Shanphusa browneana* (Kemp, 1918), which was reported by Kemp (1918) to be "... not uncommon in the vicinity of the Inle Lake, but was not found in the lake itself", approaches *Inlethelphusa* in that the anterolateral margin serrations become larger and more distinct anteriorly. However, *Inlethelphusa* can be differentiated from *Shanphusa browneana* by the weak, blunt postorbital cristae (versus postorbital cristae sharp, well developed); broad, subrectangular antennular fossae (versus antennular fossae slit-like); and gently upcurved G1 terminal segment, lacking a dorsal flap (versus gently curved outwards, with low but distinct proximal dorsal flap) (see Figs. 6, 12).

**Distribution.** – Yawnghwe State and, Shan State, Myanmar.

#### *Iomon*, new genus

**Type species.** – *Potamon nan* Ng & Naiyanetr, 1993, by present designation.

**Diagnosis.** – Carapace distinctly broader than long, relatively low; dorsal surface relatively flat, with well defined regions; epigastric cristae well developed, low, slightly anterior to postorbital cristae, separated from postorbital cristae by short, distinct groove; postorbital cristae well developed, not sharp, rugose, almost confluent with epibranchial tooth; regions behind epigastric and postorbital cristae distinctly rugose; frontal and orbital regions broad; antennular fossae subrectangular; external orbital angle well developed; epibranchial tooth poorly developed, low but distinct; anterolateral margins cristate, weakly serrated, gently convex; posterolateral margins gently converging posteriorly; branchial region rugose, never smooth; epistome posterior margin with distinct, well developed median tooth, outer part sloping downwards laterally. Ischium of third maxilliped elongate rectangular, about 1.6 times longer than broad, with distinct longitudinal median sulcus; exopod long, exceeding distal edge of ischium, with well developed flagellum longer than or subequal to merus width. Ambulatory legs relatively short, stout, with stout dactyli. Suture between anterior thoracic sternites 2 and 3 distinct, complete; suture between anterior thoracic sternites 3 and 4 not discernible; thoracic sternite 8 completely separated by longitudinal median line, lacking transverse ridge; male abdominal cavity reaching imaginary line joining median part of cheliped bases. Male abdomen broadly triangular. G1 terminal segment relatively short, distinctly curved outwards, subconical, lacking dorsal flap or with very low, broad, indistinct one, tip distinctly narrowed, rounded, groove for G2 marginal; subterminal segment with distinct concave subdistal cleft on upper part of outer margin. G2 distal segment distinctly longer than half length of basal segment; basal segment outer margin expanded.

**Etymology.** – The genus is named after *Io*, the daughter of a stream god in Greek mythology, in arbitrary combination with the genus name *Potamon*. Gender is neuter.

**Remarks.** – *Iomon*, new genus, is erected here for two species from northeastern Thailand and northern Laos, respectively, viz., *I. nan* (Ng & Naiyanetr, 1993), and *I. luangprabangense* (Rathbun, 1904). *Iomon* might be confused with *Doimon*, new genus [type species *Potamon doisutep* Naiyanetr & Ng, 1990], *Indochinamon*, new genus [type species *Potamon villosum* Yeo & Ng, 1998] and *Vietopotamon* Dang & Ho, 2002 [type species *Vietopotamon aluoiense* Dang & Ho, 2002] due to superficial similarities in carapace physiognomy or G1 structure or both. *Iomon* is, however, distinguishable from these genera by a unique combination of differences in carapace, ambulatory leg, male abdomen and G1 characters.

*Iomon* is externally differentiated from *Doimon*, *Indochinamon* and *Vietopotamon* by the postorbital crista being almost confluent with epibranchial tooth (versus postorbital crista not confluent with the anterolateral margin, breaking up into granules or rugae laterally just before the epibranchial tooth); relatively stouter ambulatory dactyli (versus relatively slenderer ambulatory dactyli); and broadly triangular male abdomen (versus male abdomen narrowly triangular) (see Ng & Naiyanetr, 1993: Fig. 13; cf. Naiyanetr

& Ng, 1990: Fig. 4; Yeo & Ng, 1998: Fig. 7D). Furthermore, the G1 terminal segment of *Iomon* differs from that of *Doimon* by lacking a dorsal flap or having a very low, indistinct one (versus dorsal flap low but distinct) (see Ng & Naiyanetr, 1993: Fig. 48B–E; cf. Naiyanetr & Ng, 1990: Fig. 5A–D); from that of *Indochinamon* by being distinctly curved outwards (versus straight) (see Ng & Naiyanetr, 1993: Fig. 48B–E; cf. Yeo & Ng, 1998: Fig. 5H–O); and from that of *Vietopotamon* by being comparatively shorter and subconical in shape with a distinctly narrowed tip (versus comparatively longer and subcylindrical in shape with the margins hardly tapered to a relatively broadly rounded tip) (see Fig. 14; Ng & Naiyanetr, 1993: Fig. 48B–E; Dang & Ho, 2002: Fig. 1E).

**Distribution.** – Nan Province, northeastern Thailand; Luang Prabang Province, northern Laos.

***Kempamon*, new genus**  
(Fig. 7)

**Type species.** – *Potamon* (*Geotelphusa*) *loxophrys* Kemp, 1923, by present designation.

**Diagnosis.** – Carapace slightly to distinctly broader than long, relatively low; dorsal surface relatively flat, with regions indistinct; epigastric cristae well developed, smooth, slightly anterior to postorbital cristae, faintly separated from postorbital cristae by short, indistinct groove; postorbital cristae not sharp, rounded, smooth, not confluent with epibranchial tooth; regions behind epigastric and postorbital cristae smooth; frontal and orbital regions relatively narrow; antennular fossae subtriangular; external orbital angle low; epibranchial tooth poorly developed as low but distinct cleft; anterolateral margins cristate, entire, gently convex; posterolateral margins gently converging posteriorly; branchial region smooth to very weakly rugose; epistome posterior margin with low median tooth, outer part straight. Ischium of third maxilliped broadly rectangular, with distinct longitudinal median sulcus; exopod long, exceeding distal edge of ischium, with well developed flagellum not exceeding merus width. Ambulatory legs relatively short, slender, with long, slender dactyli. Suture between anterior thoracic sternites 2 and 3 distinct, complete; suture between anterior thoracic sternites 3 and 4 not discernible; thoracic sternite 8 completely separated by longitudinal median line, lacking transverse ridge; male abdominal cavity reaching imaginary line joining anterior edges of cheliped bases. Male abdomen broadly triangular. G1 terminal segment relatively short, stout, subcylindrical, gently curved outwards, tip broadly truncate or flared in appearance, with proximal dorsal flap, groove for G2 marginal; distal half to two-thirds of subterminal segment distinctly slender, proximal half to one-third expanded. G2 distal segment distinctly longer than half length of basal segment; basal segment outer margin expanded.

**Etymology.** – The genus is named after Stanley Kemp, arbitrarily combined with the genus name *Potamon*, in recognition of his contributions to Indochinese freshwater crab taxonomy. Gender is neuter.

**Remarks.** – *Kempamon*, new genus, is established here for *K. laevior* (Kemp, 1923) and *K. loxophrys* (Kemp, 1923) [type species]. *Kempamon* is externally distinguished from all other Indochinese genera by the combination of its smooth, low and flat carapace; rounded and smooth but distinct postorbital cristae instead of sharp and cristate or rugose; subtriangular antennular fossae; very poorly developed and cleft-like epibranchial tooth; straight epistome posterior margin outer parts; broadly triangular male abdomen; and male abdominal cavity reaching the level of the anterior edge of the cheliped bases. *Kempamon* also has a unique G1 terminal segment structure, being stout and subcylindrical, with a marginal groove for the G2, a broadly truncate or flared tip, and a proximal dorsal flap.

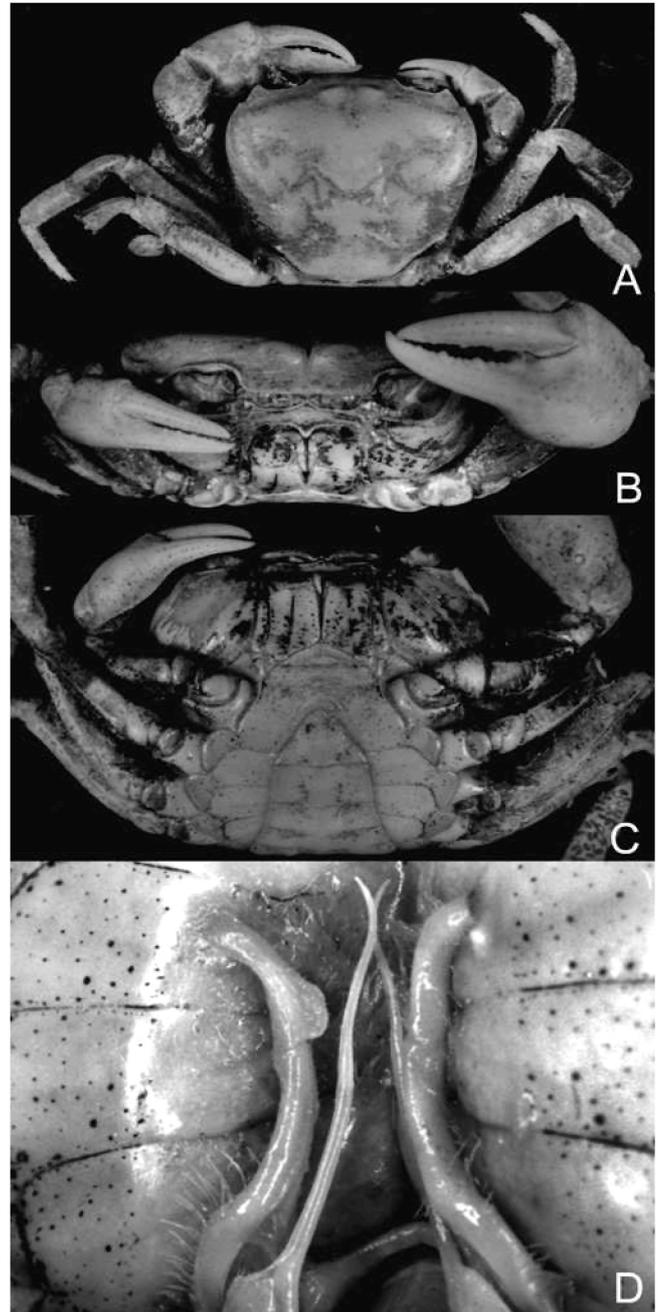


Fig. 7. *Kempamon loxophrys* (Kemp, 1923). Syntype, male (24.8 × 20.1 mm) (ZSIC 609/1): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, sternoabdominal cavity showing G1s and G2s.

On the basis of some of the above characters and other aspects of external morphology, *Kempamon* bears a remarkable resemblance to *Geothelphusa dehaani* (White, 1847) and some other species of *Geothelphusa* Stimpson, 1858 (see Bott, 1970; Shy et al., 1994). This led Kemp (1923) to originally describe *Kempamon laevior* and *Kempamon loxophrys* as *Potamon* (*Geothelphusa*) species, and closely associate them with *Geothelphusa dehaani* in particular. The resemblance, however, is superficial, as *Kempamon* is still clearly distinguishable from *Geothelphusa* by its well developed and distinct epigastric and postorbital cristae (versus epigastric and postorbital cristae absent or very low), and more significantly, by its very different G1 structure as follows: G1 with distal part distinctly bent outwards (versus G1 straight or gently curved); terminal segment very stout and subcylindrical in shape, with tip being broadly truncate or flared in appearance (versus terminal segment slender and conical in shape, with tip tapered); groove for G2 on marginal side of terminal segment (versus groove for G2 on ventral side of terminal segment); dorsal flap present on terminal segment (versus dorsal flap absent); and subterminal segment with proximal half or one-third distinctly broader than distal half to two-thirds, which is narrowed and neck-like (versus subterminal segment very gradually tapering from relatively broad base) (see Fig. 7; Bott, 1970; Shy et al., 1994).

The general carapace physiognomy of *Kempamon* also superficially resembles that of *Alcomon*, new genus [type species *Potamon* (*Geothelphusa*) *superciliosum* Kemp, 1913], which belongs to a different subfamily (Potaminae). Besides the subfamilial difference in the eighth thoracic sternum structure (see **Remarks** for *Alcomon*), a number of other generically significant external as well as G1 characters also separate *Kempamon* from *Alcomon*, including a less broad carapace, not exceeding 1.30 times broader than long (versus carapace relatively more transverse, about 1.37–1.39 times broader than long); antennular fossae subtriangular (versus antennular fossae subrectangular); ischium of third maxilliped with distinct, well developed longitudinal median sulcus (versus ischium of third maxilliped with longitudinal median sulcus very faintly developed or absent); ambulatory legs relatively more slender, with proportionately longer and more slender dactyli (versus ambulatory legs relatively stouter, with proportionately shorter and stouter dactyli), and sparsely lined with short setae (versus sparsely lined with long setae); and G1 terminal segment stout, with truncate broad tip (versus terminal segment relatively slender, with tip tapered), and distinct dorsal flap (versus dorsal flap absent) (Figs. 2, 7; Kemp, 1913: Pl. 18 figs. 13–18). *Kempamon* also bears a resemblance to *Kukrimon*, new genus [type species *Potamiscus cucphuongensis* Dang, 1975] and *Teretamon*, new genus [type species *Potamon* (*Geothelphusa*) *adiatretum* Alcock, 1909], and the differences between them are covered in the **Remarks** for *Kukrimon* and *Teretamon* (see later).

**Distribution.** – Langbian Province, south Annam (= south-central Vietnam).

### *Kukrimon*, new genus

(Fig. 8)

**Type species.** – *Potamiscus cucphuongensis* Dang, 1975, by present designation and monotypy.

**Diagnosis.** – Carapace squarish, low, dorsal surface relatively flat, with regions poorly defined; epigastric cristae weak, not sharp, rugose, slightly anterior to postorbital cristae, almost confluent with postorbital cristae; postorbital cristae rugose, not sharp, breaking up into flattened rugae just before epibranchial tooth; regions behind epigastric and postorbital cristae weakly rugose; antennular fossae subrectangular; external orbital angle low, weakly developed; epibranchial tooth poorly developed, very low but distinct; anterolateral margin very gently convex, very weakly cristate; posterolateral margins barely convergent posteriorly, almost parallel; branchial region rugose; metabranchial region with distinct oblique striae; epistome posterior margin with distinct, well developed median tooth, outer part straight. Ischium of third maxilliped broadly rectangular, with distinct longitudinal median sulcus; exopod relatively long, exceeding distal edge of ischium, with well developed flagellum, longer than width of merus. Ambulatory legs short, stout, with long, slender dactyli. Suture between thoracic sternites 2 and 3 distinct, suture behind thoracic sternites 3 and 4 not discernible, thoracic sternite 8 completely separated by longitudinal median line, lacking transverse ridge; male abdominal cavity marginally reaching imaginary line joining posterior edge of cheliped bases. Male abdomen broadly triangular; telson broadly triangular, with distinctly convex lateral margins. G1 terminal segment relatively short, stout, subcylindrical, broadest subdistally, without dorsal flap, groove for G2 dorsal. G2 with distal segment less than half length of basal segment; basal segment outer margin expanded.

**Etymology.** – The genus name alludes to the shape of the G1 terminal segment resembling the kukri, the traditional knife of the Nepalese Gurkhas, arbitrarily combined with the genus name *Potamon*. Gender is neuter.

**Remarks.** – *Kukrimon*, new genus, is established here for *Potamiscus cucphuongensis* Dang, 1975, which is excluded from *Potamiscus* due to its well developed third maxilliped flagellum (longer than or subequal to the merus width) (versus third maxilliped flagellum vestigial or absent).

*Kukrimon* most closely resembles *Kempamon*, new genus [type species *Potamon* (*Geothelphusa*) *dehaani laevior* Kemp, 1923], in its weakly developed external orbital angle, very low epibranchial tooth, broadly triangular male abdomen and overall G1 shape. However, *Kukrimon* can still be differentiated from *Kempamon* by the following characters: i) carapace distinctly squarish (versus carapace relatively more transverse); ii) anterior part of dorsal carapace including epigastric and postorbital cristae, and frontal and branchial regions, distinctly rugose (versus anterior part of dorsal carapace smooth); iii) antennular fossae subrectangular (versus antennular fossae subtriangular); iv) posterolateral margins hardly converging posteriorly, almost subparallel

(versus posterolateral margins relatively more strongly converging posteriorly); v) male abdominal cavity reaching imaginary line joining posterior edges of cheliped bases (versus male abdominal cavity reaching imaginary line joining anterior edges of cheliped bases); and vi) G1 terminal segment lacking a dorsal flap (versus proximal dorsal flap present), with groove for G2 dorsal (versus groove for G2 marginal) (see Figs. 7, 8).

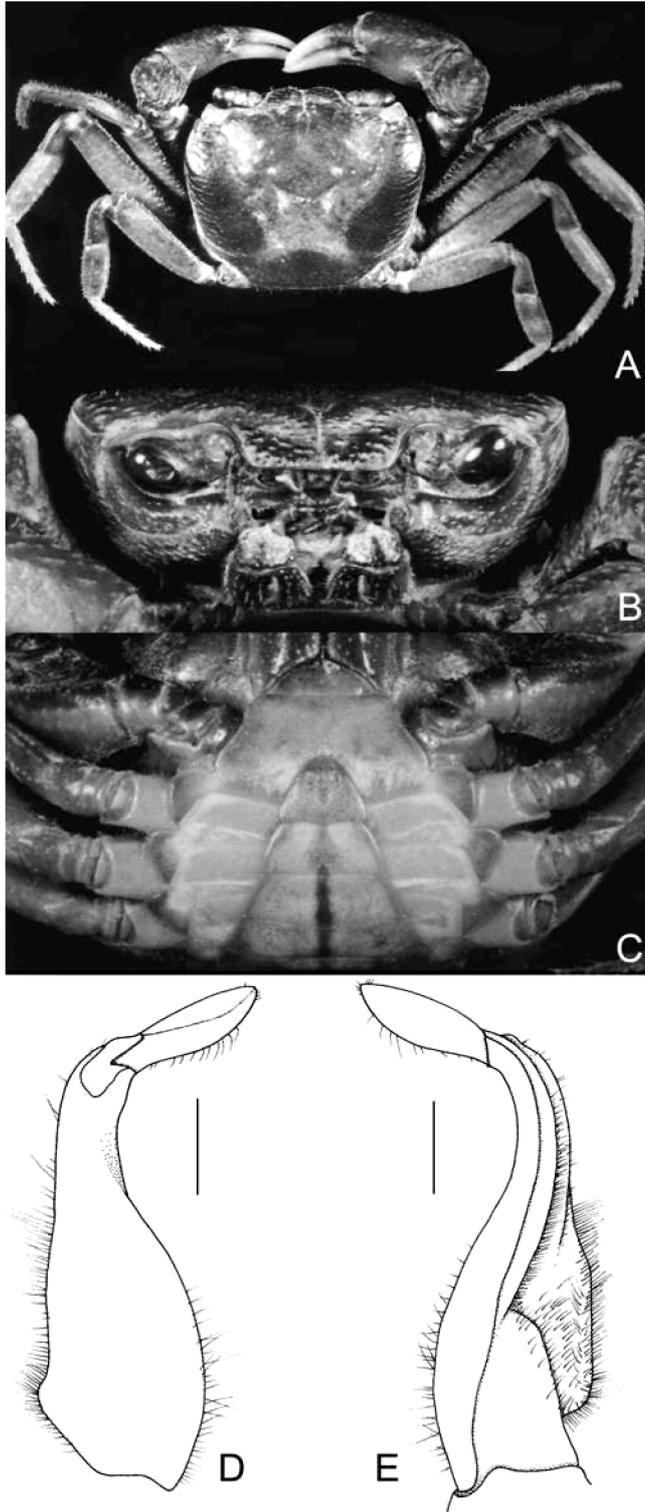


Fig. 8. *Kukrimon cucphuongense* (Dang, 1975). Male (22.1 × 19.0 mm) (ZRC): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, E, right G1. Scale bars: 1.0 mm.

*Kukrimon cucphuongense* is also superficially similar to members of the genus *Pilosamon* Ng, 1996 [type species *Potamon (Potamon) laosense* Rathbun, 1904], in its third maxillipeds and ambulatory legs being sparsely setose, as well as in the overall shape of the G1 (present study; Ng, 1996b). The setae of *Kukrimon cucphuongense*, however, are relatively shorter and less dense than in *Pilosamon* species (see Fig. 8; Rathbun, 1904: Pl. 11 Fig. 3). In addition, *Kukrimon cucphuongense* is separated from all known *Pilosamon* species by its squarish carapace (versus carapace broader than long); blunt, rugose postorbital cristae (versus postorbital cristae sharp, smooth); lack of a dorsal flap on the G1 terminal segment (versus terminal segment of G1 with well developed dorsal flap); and vi) long, slender, neck-like distal part of the G1 subterminal segment (versus subterminal segment of G1 distal part not neck-like, relatively broader, gradually tapering distally) (see Fig. 8; cf. Ng, 1996b: Fig. 2; Ng & Naiyanetr, 1993: Fig. 42).

**Distribution.** – Ninh Binh Province, northern Vietnam.

#### *Megacephalomon*, new genus

**Type species.** – *Thaipotamon kittikooni* Yeo & Naiyanetr, 1999, by present designation and monotypy.

**Diagnosis.** – Carapace slightly broader than long, inflated and swollen vertically and transversely, dorsal surface strongly convex longitudinally, gently convex transversely, smooth, epigastric and postorbital cristae distinct, weak, rounded, not sharp, very close to frontal and supraorbital margins, orbital regions very narrow, frontal region strongly deflexed downwards, appears very narrow from dorsal view; anterolateral margin gently convex, sharp, distinctly cristate; epibranchial tooth low, rounded; external orbital angle very small, acutely triangular, inner margins sloping gradually to meet supraorbital margin; epistome posterior margin median tooth broadly triangular, with lateral parts straight, outer parts distinctly concave. Exopod of third maxilliped strongly curved, outer margin distinctly convex, densely lined with setae, with short flagellum, subequal to half width of merus. Ambulatory meri very slender, dactyli long, slender. (After Yeo & Naiyanetr, 1999: Figs. 5, 6)

**Etymology.** – The genus name is derived from *megakephalos*, Greek for large-headed, in arbitrary combination with the genus name *Potamon*, alluding to the disproportionately large appearance of the carapace in comparison to the spindly legs. Gender is neuter.

**Remarks.** – *Megacephalomon*, new genus, is morphologically closest to *Thaipotamon* Ng & Naiyanetr, 1993, as both genera have smooth, high carapaces and third maxillipeds with broadly rectangular ischia and relatively long, curved exopods bearing relatively short but distinct flagella. Although male characters are not known for the sole species, *Megacephalomon kittikooni*, the unique combination of asexual characters that it possesses is not seen in females of

any known *Thaipotamon* species, and as such that it cannot be satisfactorily retained in *Thaipotamon*.

Yeo & Naiyanetr (1999) cited the following differences in asexual characters between *Megacephalomon kittikooni* [as a *Thaipotamon*] and all other *Thaipotamon* species: i) carapace slightly swollen transversely (versus strongly swollen transversely); ii) sub-branchial regions of carapace almost straight (versus distinctly convex); iii) anterolateral margins gently convex, sharp, distinctly cristate (versus strongly convex, rounded, neither sharp nor cristate); iv) posterolateral margins gently converging posteriorly (versus strongly converging); v) third maxilliped exopod densely setose on outer margin (versus glabrous); and vi) walking legs with meri very slender, with straight, almost parallel lateral margins (versus relatively broader, with gently convex lateral margins) (see Yeo & Naiyanetr, 1999: Fig. 5, 6; cf. Ng & Naiyanetr, 1993: Figs. 16, 51A). In addition to these, the following characters further distinguish *Megacephalomon* from *Thaipotamon*: carapace less transverse, about 1.25 times broader than long carapace (versus carapace distinctly more transverse, more than 1.30 times broader than long); dorsal surface of carapace, especially branchial regions, slightly convex or inflated laterally and anteriorly (versus dorsal surface, especially branchial regions, strongly inflated laterally and anteriorly); postorbital cristae very weakly rugose (versus postorbital cristae smooth); pterygostomial region granulose (versus pterygostomial region smooth); and epistome posterior margin outer parts distinctly concave (versus outer parts gently concave) (see Yeo & Naiyanetr, 1999: Fig. 5, 6; cf. Ng & Naiyanetr, 1993: Figs. 16, 51A).

Yeo & Naiyanetr (1999) compared *Megacephalomon kittikooni* with *Pudaengon* Ng & Naiyanetr, 1995, and noted the following differences: anterolateral margin cristae more prominent (versus minute cristae); third maxilliped exopod strongly curved and proportionately longer, extending to about one-third the length of the merus (versus gently curved and proportionately shorter, subequal to or slightly exceeding distal margin of ischium); third maxilliped exopod with distinct flagellum (versus flagellum absent); and posterolateral margins gently converging posteriorly (versus distinctly converging posteriorly). All these differences indicate that *Megacephalomon kittikooni* belongs to a separate genus.

**Distribution.** – Xieng Khuang Province, northern Laos.

#### *Neolarnaudia* Türkay & Naiyanetr, 1987

*Neolarnaudia* Türkay & Naiyanetr, 1987: 392.

**Type species.** – *Neolarnaudia botti* Türkay & Naiyanetr, 1987, by monotypy.

**Remarks.** – Türkay & Naiyanetr (1987) showed that Bott's (1966, 1970) and Chuensri's (1973, 1974a, b) definition of the genus *Larnaudia* Bott, 1966 [type species *Thelphusa larnaudii* A. Milne-Edwards, 1869] was based on mis-identified non-type material. Türkay & Naiyanetr (1987) later

showed that this mis-identified material represented a new genus and species, which they described as *Neolarnaudia botti*. The diagnoses and figures in Bott (1966, 1970) and Chuensri (1973, 1974a, b) meant for the genus *Larnaudia* and *Larnaudia larnaudii* should be applied to *Neolarnaudia* and *Neolarnaudia botti* instead. The poorly known species, *Potamon phymatodes* Kemp, 1923, was re-examined in the present study and also found to belong to this genus. *Neolarnaudia*, therefore, currently consists of two species, viz., *N. botti* Türkay & Naiyanetr, 1987, and *N. phymatodes* (Kemp, 1923).

*Neolarnaudia* superficially resembles *Planumon*, new genus, in carapace morphology and *Shanphusa*, new genus, in G1 morphology, but can nevertheless be separated from these by various specific carapace and G1 characters (see **Remarks** for *Planumon*, new genus, and *Shanphusa*, new genus).

**Distribution.** – Southern to central Vietnam.

#### *Pilosamon* Ng, 1996

*Pilosamon* Ng, 1996b: 903.

**Type species.** – *Potamon (Potamon) laosense* Rathbun, 1904, by monotypy.

**Remarks.** – Ng (1996b) established *Pilosamon* for *Potamon (Potamon) laosense* Rathbun, 1904, arguing that it did not belong to any known potamid genus and that its continued placement in *Potamon* sensu lato was unsatisfactory due to its unusual third maxilliped proportions, broad male abdomen and very setose ambulatory legs. One more species, *Potamon (Potamon) palustre* Rathbun, 1904, is here assigned to this genus. In addition, at least one new species is currently being described (Yeo & P. Naiyanetr, in prep.).

Like the type species, *Pilosamon palustre* also has the diagnostic coarse setae on the margins of the ambulatory legs and have very similar G1 form. Ng (1996b) noted that *Pilosamon laosense* had unusual third maxilliped exopod proportions; specifically, he was referring to the merus being less broad than the ischium, a feature which we now find to have interspecific significance as *Pilosamon palustre* has meri which are subequal in width to the ischia.

Ng & Naiyanetr (1993: 14) commented that the affinities of *Potamon ubon* Ng & Naiyanetr, 1993, and *Potamon somchai* Ng & Naiyanetr, 1993, were with *Pilosamon palustre*, and regarded the three as belonging to a distinct group. However, a reappraisal of the G1 structure in the present study revealed that *Potamon ubon* and *Potamon somchai* have an essentially different G1 terminal segment structure from other *Pilosamon* species, and they have therefore been assigned to a separate new genus, *Setosamon* (see later). *Pilosamon* and *Setosamon* share very similar external morphologies, including the distinctive coarse setae on the third maxillipeds and ambulatory legs, and low, broadly triangular male abdomen, but can be clearly separated by the following differences in

the G1 terminal segment structure: i) subconical shape (versus subcylindrical, sausage-like shape); ii) tapered distal part, with sharp tip (versus non tapered distal part, with truncate or rounded tip); iii) relatively high and flat dorsal flap (versus relatively low and swollen dorsal flap); and iv) groove for G1 marginal in position (versus groove for G1 dorsal in position) (see Ng & Naiyanetr, 1993: Fig. 40B–E; Ng, 1996b: Fig. 2B–E).

**Distribution.** – Northeastern to eastern Thailand; Laos.

***Planumon*, new genus**

(Fig. 9)

**Type species.** – *Potamon (Potamon) cochinchinense* De Man, 1898, by present designation and monotypy.

**Diagnosis.** – Carapace slightly broader than long, appearing squarish, low; dorsal surface very flat, glabrous; regions distinct; epigastric and postorbital cristae well developed, almost confluent; postorbital cristae sharp, rugose, not confluent with epibranchial teeth; regions behind epigastric and postorbital cristae rugose. Frontal and orbital regions relatively broad; antennular fossae broad, subrectangular; external orbital angle acutely triangular, with outer margin subequal to inner margin; epibranchial tooth distinct, well developed, triangular; anterolateral margin gently convex, flattened; posterolateral margin barely converging posteriorly; branchial region rugose; epistome posterior margin outer parts not concave, sloping downwards, lateral parts sloping downwards. Third maxilliped elongate rectangular, with distinct longitudinal median sulcus; exopod with distinct flagellum subequal to or less than merus width. Chela with molariform teeth. Ambulatory dactyli short, stout.

**Etymology.** – The genus name is derived from *planus*, Latin for flat, in arbitrary combination with the genus name *Potamon*, in allusion to the distinctly flattened carapace. Gender is feminine.

**Remarks.** – *Planumon*, new genus, is probably most similar to *Neolarnaudia* Türkay & Naiyanetr, 1987 [type species *Neolarnaudia botti* Türkay & Naiyanetr, 1987], especially in the low, flattened carapace, with well-developed epigastric and postorbital cristae, and in their overlapping distributions. Although no males have been collected for this monotypic genus and the form of the G1 not known, *Planumon* remains clearly distinguishable from *Neolarnaudia* by a unique suite of external characters: i) carapace slightly broader than long, appearing squarish, about 1.28 times broader than long (versus carapace distinctly broader than long to transverse, about 1.31–1.37 times broader than long); ii) epibranchial cristae almost confluent with postorbital cristae (versus epibranchial and postorbital cristae separated by distinct groove); iii) postorbital cristae rugose (versus postorbital cristae cristate); iv) regions behind epigastric and postorbital cristae rugose (versus regions behind epigastric and postorbital cristae smooth); v) antennular fossae distinctly broader (versus antennular fossae relatively narrower); vi) external orbital

angle acutely triangular, with outer margin distinctly longer than inner margin (versus external orbital angle broadly triangular, with outer margin subequal to inner margin); vii) cleft separating external orbital angle from epibranchial tooth very deep (versus cleft shallower); viii) epibranchial tooth more strongly developed (versus epibranchial tooth relatively lower); ix) anterolateral margins very gently convex and distinctly flattened (versus anterolateral margins strongly convex and cristate); x) posterolateral margins barely converging posteriorly, almost parallel (versus posterolateral margins strongly converging posteriorly); xi) presence of molariform teeth on chela fingers (versus chela fingers lacking molariform teeth); xii) ambulatory dactyli relatively short, stout (versus ambulatory dactyli relatively elongate, slender); xiii) antennular fossae much broader (versus antennular fossae relatively narrower); and xiv) epistome posterior margin lateral parts sloping downwards laterally (versus lateral parts straight) (see Fig. 9; Türkay & Naiyanetr, 1987: Figs. 4–6).

Two other Vietnamese genera, *Nemoron* Ng, 1996, and *Tiwaripotamon* Bott, 1970, have relatively low, flattened carapaces; however, these are easily differentiated from

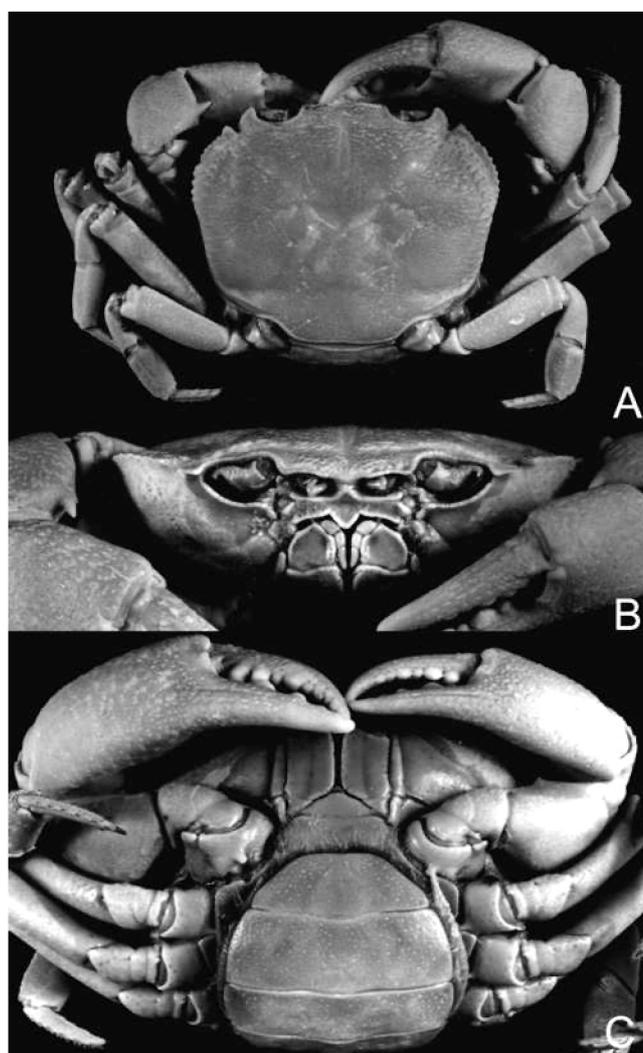


Fig. 9. *Planumon cochinchinense* (De Man, 1898). Lectotype, female (50.4 × 39.4 mm) (ZMA De 102.867.BR): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace.

*Planumon* by their much longer and more slender ambulatory legs and different third maxilliped structures.

**Distribution.** – Southern Vietnam.

### *Pupamon*, new genus

**Type species.** – *Dromothelphusa namuan* Naiyanetr, 1993, by present designation.

**Diagnosis.** – Carapace slightly broader than long to distinctly transverse, relatively high; dorsal surface almost flat to gently convex transversely, more strongly convex longitudinally; epigastric cristae well developed, slightly anterior to postorbital cristae, not confluent with postorbital cristae, separated by faint to distinct short groove; postorbital cristae sharp, rugose, not confluent with epibranchial tooth, breaking up into granules or rugae laterally just before epibranchial tooth; regions behind epigastric and postorbital cristae weakly rugose to almost smooth; frontal and orbital regions relatively narrow; antennular fossae slit-like; external orbital angle well developed, relatively acutely triangular; epibranchial tooth well developed, triangular; anterolateral margins cristate, gently serrated, gently convex; posterolateral margins gently converging posteriorly; branchial region granulose; epistome posterior margin with low median tooth, outer parts gently to distinctly concave. Third maxilliped exopod long, exceeding distal edge of ischium, flagellum vestigial to very short, distinctly less than half merus width. Ambulatory legs relatively short, stout, with long, slender dactyli. Suture between anterior thoracic sternites 2 and 3 distinct, complete; suture between anterior thoracic sternites 3 and 4 not discernible; thoracic sternite 8 completely separated by longitudinal median line, lacking transverse ridge; male abdominal cavity reaching imaginary line joining median part of cheliped bases. Male abdomen narrowly triangular. G1 terminal segment slightly to distinctly curved outwards, conical to subconical, with distinct dorsal flap, appearing rounded, with broadly convex apex, groove for G2 marginal.

**Etymology.** – *Pupamon* is derived from the Thai word for land crab, “Pu Pa”, in arbitrary combination with the genus name *Potamon*, alluding to the likely terrestrial habits of this group. Gender is neuter.

**Remarks.** – Apart from *Dromothelphusa longipes* (A. Milne-Edwards, 1869) [Condore Island, south Vietnam], the remaining species previously referred to the genus *Dromothelphusa* Naiyanetr, 1992 sensu Ng & Naiyanetr, 1993, all occur in northern Thailand and Laos (see Ng & Naiyanetr, 1993; Naiyanetr, 1994, 1997; Yeo & Naiyanetr, 1999). This considerably disjunct distribution as well as some noticeable generic differences in morphology indicates that the other species are not congeneric with *Dromothelphusa longipes*, and they are here referred to a new genus, *Pupamon*, together with another recently described species, *Potamon lao* Yeo & Naiyanetr, 1999. *Pupamon* therefore presently contains seven species, viz., *P. lao* (Yeo & Naiyanetr, 1999),

*P. namuan* (Naiyanetr, 1993) [type species], *P. nayung* (Naiyanetr, 1993), *P. pealianoides* (Bott, 1966), *P. phrae* (Naiyanetr, 1984), *P. prabang* (Yeo & Naiyanetr, 1999), and *P. sangwan* (Naiyanetr, 1997) (see Naiyanetr, 1994, 1997; Yeo & Naiyanetr, 1999).

*Pupamon* superficially resembles *Dromothelphusa* in carapace and ambulatory leg morphology, but they can still be distinguished by the following characters: i) carapace relatively high (versus carapace relatively low); ii) epigastric cristae slightly anterior to postorbital cristae, not confluent with postorbital cristae but separated by faint to distinct short groove (versus epigastric cristae more or less in line with postorbital cristae, confluent with postorbital cristae); iii) postorbital cristae rugose, not confluent with epibranchial tooth, breaking up into granules or rugae laterally just before epibranchial tooth (versus postorbital cristae smooth, confluent with epibranchial tooth); frontal and orbital regions relatively narrow (versus frontal and orbital regions relatively broader); iv) external orbital angle acutely triangular (versus external orbital angle broadly triangular); v) epibranchial tooth relatively more strongly developed (versus epibranchial tooth relatively low); vi) epistome posterior margin outer parts gently to distinctly concave (versus epistome posterior margin with outer parts almost straight); vii) G1 terminal segment slightly to distinctly curved outwards (versus G1 terminal segment straight); and viii) G1 terminal segment with dorsal flap appearing rounded, with broadly convex apex (versus dorsal flap appearing triangular, with bluntly angular apex) (see Ng & Naiyanetr, 1993: Figs. 14A, B, 49B–E; Naiyanetr, 1994: Figs. 1A, B, D, E, 2A, B, D, E, 1997: Figs. 1A, B, E; Yeo & Naiyanetr, 1999: Figs. 1, 2B–F, 3, 4G–J; cf. Bott & Türkay, 1977: Figs. 1, 2). *Pupamon* is probably closest in terms of carapace physiognomy to *Badistemon*, new genus, but can nevertheless be distinguished by several significant external and G1 characters (see **Remarks** for *Badistemon*, new genus).

The general form of the G1 of *Pupamon* species appears similar to that of *Doimon*, new genus [type species *Potamon doisutep* Naiyanetr & Ng, 1990] (see earlier). *Pupamon* can, however, be easily separated from these *Doimon* species by its distinctly higher and longitudinally more convex carapace (versus carapace relatively low and flat); slit-like antennular fossae (versus antennular fossae subrectangular); acutely triangular external orbital angle (versus external orbital angle broadly triangular); concave epistome posterior margin outer parts (versus epistome posterior margin outer parts not concave but straight to gently sloping downwards instead); vestigial flagellum on the third maxilliped exopod (versus third maxilliped exopod flagellum short but well developed, subequal to or longer than half merus width); and relatively longer and more slender ambulatory legs, with much more elongate and slender dactyli (versus ambulatory legs relatively shorter and stouter, with dactyli relatively less elongate and slender) (Ng & Naiyanetr, 1993: Figs. 14A, B, 49A; Naiyanetr, 1994: Figs. 1A, B, 2A, B, 1997: Figs. 1A, B, D; Yeo & Naiyanetr, 1999: Figs. 1, 2A, 3, 4A–E; cf. Naiyanetr & Ng, 1990: Figs. 1, 2, 3F, 4, 5F).

**Distribution.** – Chiang Rai, Nan and Phrae Provinces, northern Thailand; Udon Thani Province, northeastern Thailand; Luang Prabang and Xieng Khuang Provinces, northern Laos.

***Quadramon*, new genus**

(Fig. 10)

**Type species.** – *Potamon (Potamiscus) aborensis* Kemp, 1913, by present designation.

**Diagnosis.** – Carapace slightly broader than long, relatively high; epigastric cristae low, very rugose; postorbital cristae very low, rugose, separated from epigastric cristae by very shallow groove; antennular fossae subtriangular; external orbital angle acutely triangular, outer margin straight, about twice length of inner margin; epibranchial tooth poorly developed, low; posterolateral margins hardly converging posteriorly, appearing subparallel; epistome posterior margin with weak, low, broadly triangular median tooth, outer parts almost straight. Third maxilliped exopod long, exceeding upper edge of ischium, with weak distal inner margin tooth, without flagellum or with short but distinct flagellum, distinctly shorter than half of merus width. Cheliped with relatively elongate merus. Ambulatory legs relatively long; dactylus very elongated, slender; merus elongated but shorter than carapace length, not exceeding carapace frontal margin, with short stiff setae along ventral margin of merus and both margins of propodus. Sutures between sternites 2 and 3, and 3 and 4 not discernible; male abdominal cavity reaching imaginary line joining median part of cheliped bases; male abdomen relatively broadly triangular. G1 short, relatively stout, gently bent outwards; terminal segment relatively short. G2 distal segment longer than half length of basal segment.

**Etymology.** – The genus name is derived from an arbitrary combination of *quadratus*, Latin for square, and the genus *Potamon*, alluding to the squarish appearance of the carapace of members of this genus. Gender is neuter.

**Remarks.** – *Quadramon*, new genus, presently consists of three species, *Q. mooleyitense* (Rathbun, 1904), *Q. aborensis* (Kemp, 1913) [type species] and *Q. obliteratum* (Kemp, 1913). A fourth species is currently in the process of being described (Yeo, in prep.). These species are morphologically closest to *Phaibulamon stilipes* Ng, 1992, in that they share a relatively squarish carapace, with low, rugose to granulate epigastric and postorbital cristae; small, sharp epibranchial tooth; subtriangular antennular fossae; and relatively long ambulatory legs lined with scattered short, coarse setae, with long, slender dactyli (see Ng, 1992). They are also distributed geographically close to *Phaibulamon* [Kanchanaburi Province, Thailand], with the southern part of the distribution of *Quadramon* in the Upper Tenasserim and Dawna Hills region of Myanmar, adjacently north of Kanchanaburi. This new genus is needed for these species because they possess a unique combination of carapace, mouthpart, leg and G1 characters, which cannot satisfactorily place them in *Phaibulamon* or any other known potamid genus.

*Quadramon* species differ from *Phaibulamon stilipes* in the following characters: i) carapace relatively more squarish in appearance, with hardly converging posterolateral margins (versus carapace slightly more transverse, with gently converging posterolateral margins); ii) carapace relatively higher (versus carapace relatively lower); iii) less granulate, more rugose appearance of dorsal surfaces and frontal region (versus more granulate, less rugose appearance of dorsal surfaces and frontal region); iv) median tooth on posterior

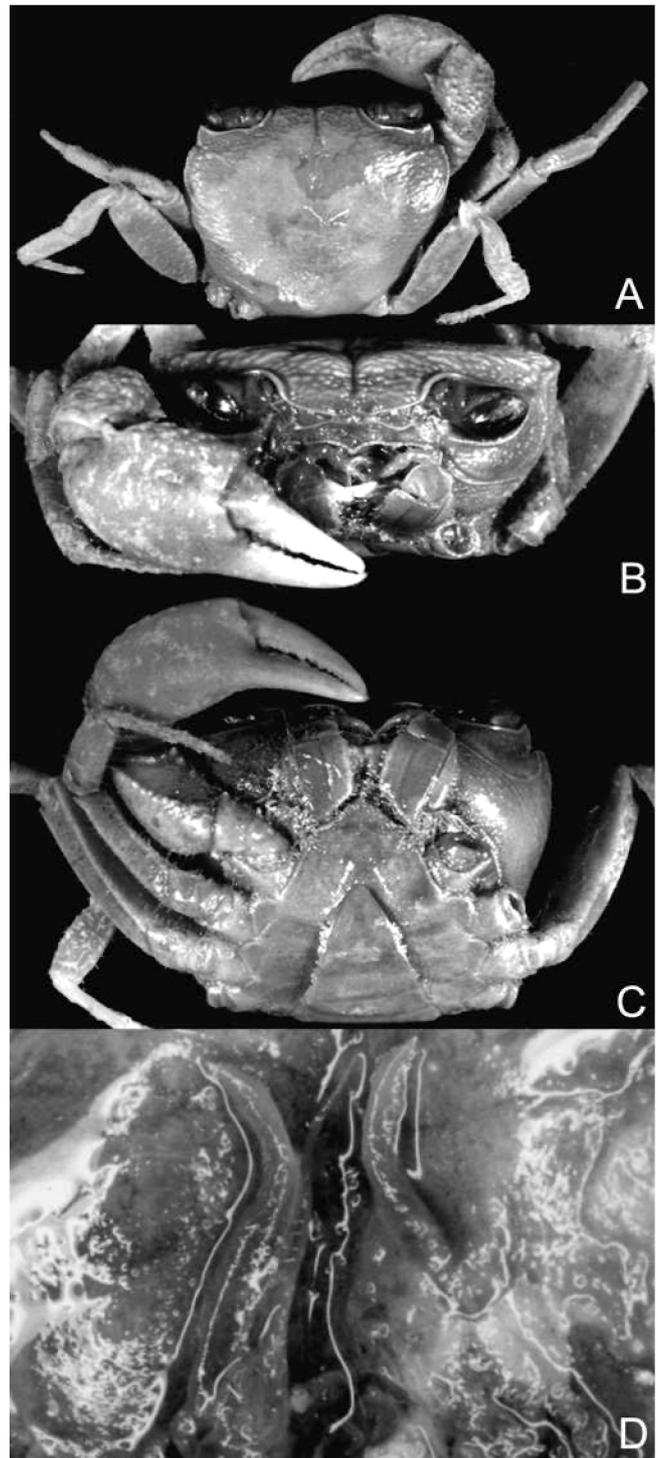


Fig. 10. *Quadramon aborensis* (Kemp, 1913). Syntype, male (18.2 × 14.8 mm) (ZSI 8011/10): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, sternoabdominal cavity showing G1s.

margin of epistome weak, low, broadly triangular (versus epistome posterior margin median tooth well developed, acutely triangular); v) epistome posterior margin outer parts almost straight (versus epistome posterior margin outer parts gently concave); vi) third maxilliped exopod long, extending beyond the distal edge of the ischium (versus exopod short, just reaching distal edge of the ischium); vii) third maxilliped exopod inner margin with distal part very weakly produced as a low, blunt tooth (versus no trace of tooth on inner margin of distal part of exopod); viii) chelipeds and ambulatory legs relatively shorter, with meri of cheliped and second ambulatory leg not exceeding carapace frontal margin (versus chelipeds and ambulatory legs much longer, with meri of cheliped and second ambulatory leg well exceeding carapace frontal margin); ix) suture between thoracic sternites 2 and 3, and 3 and 4 indistinct or not discernible (versus suture between thoracic sternites 2 and 3, and 3 and 4 distinct); and x) G1 gently bent outwards, with straight terminal segment (versus G1 strongly bent outwards; terminal segment gently upcurved) (see Fig. 10; Ng, 1992: 162, Figs. 1–3).

*Quadramon aborensis* and *Q. oblitteratum* were originally described as *Potamiscus* species because of the flagellum of the third maxilliped exopod being absent and very short, respectively. *Quadramon*, however, is easily distinguished from *Potamiscus* [type species *Potamon (Potamiscus) annandalii* Alcock, 1909] (Fig. 11) by its more squarish carapace with very gently convex anterolateral margins and almost parallel posterolateral margins (versus relatively broader carapace with very gently convex anterolateral margins and almost parallel posterolateral margins); weakly developed and distinctly rugose postorbital cristae (versus

well developed and distinctly non-rugose, cristate postorbital cristae); broad, subtriangular antennular fossae (versus narrow, slit-like antennular fossae); and relatively longer, more slender ambulatory legs, lined with short, stiff setae (versus relatively shorter, stouter, glabrous ambulatory legs) (see Figs. 10, 11).

**Distribution.** – Monte Mooleyit, Dawna Hills, and Upper Tenasserim, Myanmar.

### *Setosamon*, new genus

**Type species.** – *Potamon ubon* Ng & Naiyanetr, 1993, by present designation.

**Diagnosis.** – Carapace slightly broader than long, relatively low, dorsal surface relatively flat; epigastric cristae and postorbital cristae almost confluent, separated by very short, indistinct groove; epigastric cristae distinct, slightly anterior of postorbital cristae; postorbital cristae sharp; regions behind the epigastric and postorbital cristae smooth; frontal margin sinuous; antennular fossae subrectangular; external orbital angle well developed; epibranchial tooth distinct; anterolateral margin cristate; branchial region sparsely covered with rugae or granules. Third maxilliped highly setose; exopod long, slender, extending well beyond distal margin of ischium, with flagellum longer than width of merus. Dactyli of ambulatory legs relatively elongate; margins of carpus, propodus and dactylus of at least one pair of ambulatory legs with coarse setae. Suture between anterior thoracic sternites 2 and 3 complete, distinct, straight, groove or suture between sternites 3 and 4 not discernible; thoracic sternite 8 completely separated by longitudinal median line, lacking midline transverse ridge; male abdominal cavity barely reaching imaginary line joining posterior edge of cheliped bases. Male abdomen broadly triangular. G1 terminal segment relatively short, stout, subcylindrical, with groove for G2 dorsal, with distal part not tapered, tip truncate or rounded, with dorsal flap swollen, relatively low, broad, extending for most of length of terminal segment. G2 distal segment longer than half length of basal segment.

**Etymology.** – The genus name is derived from *setosus*, Latin for hairy or setose, in arbitrary combination with the genus name, *Potamon*. Alludes to its highly setose third maxillipeds and ambulatory legs. Gender is neuter.

**Remarks.** – *Setosamon*, new genus, is established for two species: *Setosamon somchai* (Ng & Naiyanetr, 1993) and *S. ubon* (Ng & Naiyanetr, 1993) [type species]. A third species is currently being described (Yeo & P. Naiyanetr, in prep.). These species share a number of superficial similarities in carapace and G1 structure with *Pilosamon* species [type species *Potamon (Potamon) laosense* Rathbun, 1904], including almost confluent epigastric and postorbital cristae, low male abdominal cavity, broadly triangular male abdomen, and coarse setae on the third maxillipeds and ambulatory legs, and well developed, broad dorsal flap on the G1 terminal segment. However, the structure of the G1 terminal segment



Fig 11. *Potamiscus annandalii* Alcock, 1909. Syntype, male (33.0 × 25.0 mm) (ZSI 6602-3/9): A, dorsal view; B, frontal view of carapace.

of *Setosamon* is essentially different from that of *Pilosamon*, most significantly in the dorsal flap being swollen (versus flat) (see Ng & Naiyanetr, 1993: Figs. 40B–E, 41B–E; Ng, 1996b: Fig. 2). Further differences between the two genera are listed under the **Remarks** for *Pilosamon* (see earlier).

**Distribution.** – Nakhon Phanom, Udon Ratchathani and Sakon Nakhon Provinces, northeastern Thailand.

***Shanphusa*, new genus**  
(Fig. 12)

**Type species.** – *Potamon (Potamon) browneanum* Kemp, 1918, by present designation.

**Diagnosis.** – Carapace transverse to slightly broader than long; dorsal surface slightly to strongly convex longitudinally, with poorly-defined regions; epigastric cristae well developed, confluent with or faintly separated from postorbital cristae by very short, indistinct groove; postorbital cristae sharp, not confluent with epibranchial tooth; regions behind epigastric and postorbital cristae almost smooth; orbital regions narrow; antennular fossae slit-like; external orbital angle well developed, separated from epibranchial tooth by distinct, broad triangular cleft; epibranchial tooth well developed; anterolateral margins cristate, slightly to distinctly flattened, anteriorly serrated; branchial region distinctly granulose to rugose; epistome posterior margin with well developed median tooth, outer part sloping downwards laterally. Ischium of third maxilliped broadly rectangular, with distinct longitudinal median sulcus; exopod long, exceeding distal edge of ischium, with well developed flagellum, not exceeding merus width. Ambulatory legs relatively short, stout, with long, slender dactyli. Suture between anterior thoracic sternites 2 and 3 distinct, complete; suture between anterior thoracic sternites 3 and 4 not discernible; thoracic sternite 8 completely separated by longitudinal median line, lacking transverse ridge; male abdominal cavity barely reaching imaginary line joining anterior edge of cheliped bases. Male abdomen narrowly triangular. G1 terminal segment relatively short, stout, gently curved outwards, subconical, with low but distinct dorsal flap in proximal part, groove for G2 marginal; subterminal segment sinuous, slender, especially in distal two-thirds. G2 distal segment longer than half length of basal segment; basal segment outer margin expanded.

**Etymology.** – The genus is named after the type locality of its two species, Shan State, Myanmar, in arbitrary combination with the genus name *Thelphusa*. Gender is feminine.

**Remarks.** – *Shanphusa*, new genus, is established here for *Potamon (Potamon) browneanum* Kemp, 1918 [type species], and *Potamon (Potamon) curtobates* Kemp, 1918. *Shanphusa* superficially resembles certain members of *Indochinamon*, new genus [type species *Potamon villosum* Yeo & Ng, 1998] in general carapace physiognomy and G1 morphology. *Shanphusa* can, however, be distinguished from

*Indochinamon* by the following unique suite of characters: i) carapace dorsal surface regions weakly demarcated (versus regions well defined); ii) epigastric cristae confluent to faintly separated from postorbital cristae by very short, indistinct groove (versus epigastric and postorbital cristae clearly separated by distinct groove); iii) orbital region relatively

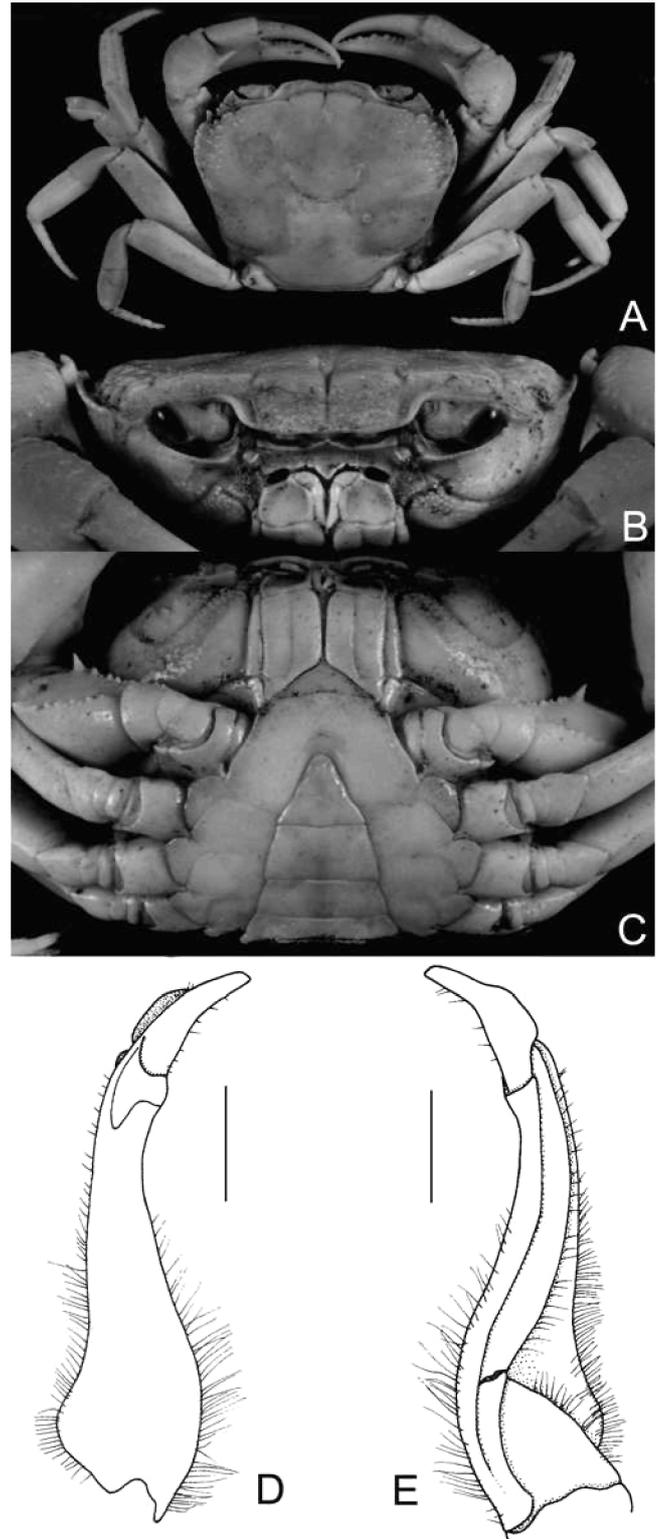


Fig. 12. *Shanphusa browneana* (Kemp, 1918). Male (38.2 × 30.3 mm) (NHM 1934.1.15.9) (formerly ZSI 9765/10): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, E, right G1. Scale bars: 2.0 mm.

narrow (versus orbital region relatively broad; iv) antennular fossae slit-like (versus antennular fossae subrectangular); v) epibranchial tooth well developed (versus epibranchial tooth poorly developed, low); vi) cleft between external orbital angle and epibranchial tooth broad and distinct (versus cleft weak to indistinct); vii) anterolateral margin slightly to distinctly flattened, anteriorly serrated (versus anterolateral margin not flattened, evenly serrated, if at all); viii) male abdominal cavity barely reaching imaginary line joining anterior edge of cheliped bases (versus male abdominal cavity reaching imaginary line joining median part of cheliped bases); and ix) G1 subterminal segment slender, especially in distal two-thirds (versus G1 subterminal segment broad) (see Fig. 12; Yeo & Ng, 1998: Figs. 1, 5I–K, M, N, 6, 7).

*Shanphusa* also superficially resembles *Neolarnaudia* Türkay & Naiyanetr, 1987, in its overall G1 structure, especially in the short terminal segment and long, slender subterminal segment, which is expanded proximally (see Türkay & Naiyanetr, 1987). *Shanphusa* is, however, easily distinguished from *Neolarnaudia* by the following characters: carapace dorsal surface with poorly-defined regions (versus carapace dorsal surface regions distinct); epigastric cristae confluent with to faintly separated from postorbital cristae by very short, indistinct groove (versus epigastric and postorbital cristae clearly not confluent); orbital regions relatively narrow (versus orbital regions relatively broad); antennular fossae slit-like (versus antennular fossae subrectangular); external orbital angle acutely triangular (versus external orbital angle broadly triangular); ischium of third maxilliped broadly rectangular (versus ischium of third maxilliped elongate rectangular); G1 terminal segment gently curved outwards (versus terminal segment almost straight to upcurved); and G1 terminal segment with dorsal flap (versus terminal segment lacking dorsal flap) (see Fig. 12; cf. Türkay & Naiyanetr, 1987: Figs. 4–6).

*Shanphusa* is similar to *Flabellamon* Ng, 1996, in having a relatively well developed epibranchial tooth being separated from the external orbital angle by a distinct, broad triangular cleft (see Ng, 1996c). The two genera are differentiated by various other characters in the carapace and G1: carapace relatively higher in *Shanphusa* (versus carapace relatively lower in *Flabellamon*); carapace dorsal surface slightly to distinctly convex longitudinally (versus dorsal surface flat); epigastric cristae confluent to faintly separated from postorbital cristae by very short, indistinct groove (versus epigastric cristae separated from postorbital cristae by distinct groove); postorbital cristae not confluent with epibranchial teeth (versus postorbital cristae confluent with epibranchial teeth); antennular fossae slit-like (versus antennular fossae subtriangular); and G1 terminal segment dorsal flap relatively low and narrow (versus dorsal flap relatively high and broad) (see Fig. 12; cf. Pretzmann, 1963: 363, Pl. 2; Ng, 1996c: Figs. 1–3).

**Distribution.** – Southern Shan State, Myanmar.

### *Stelomon* Yeo & Naiyanetr, 2000

*Stelomon* Yeo & Naiyanetr, 2000: 1626.

**Type species.** – *Potamon kanchanaburiense* Naiyanetr, 1992, by original designation.

**Remarks.** – Yeo & Naiyanetr (2000) established the genus *Stelomon* for three species of potamid crabs from southern to central Thailand and Myanmar, viz., *S. kanchanaburiense* (Naiyanetr, 1992) [type species], *S. pruinatum* (Alcock, 1909), and *S. tharnlod* Yeo & Naiyanetr, 2000, based primarily on the highly diagnostic G1 structure.

Two additional species of *Potamon* sensu lato are here recognised as belonging to *Stelomon*, viz., *Stelomon turgidulimanus* (Alcock, 1910) and *Stelomon erawanense* (Naiyanetr, 1992). Yeo & Naiyanetr (2000) had commented that *Potamon (Potamon) turgidulimanus* Alcock, 1910, reported by Bott (1970: Pl. 39 Fig. 38, Pl. 48 Fig. 38) [as a species of *Ranguna*] might be a species of *Stelomon* by virtue of the G1 figured by Bott (1970: Pl. 39 Fig. 38), which appears to be of the *Stelomon* type. This is confirmed in the present study following re-examination of a type specimen. *Potamon turgidulimanus* is therefore included here in *Stelomon*. *Stelomon erawanense* (Naiyanetr, 1992) also possesses the characteristic longitudinal torque and inner margin swelling on the G1 terminal segment, although it is less obvious compared to congeners (see Ng & Naiyanetr, 1993; Yeo & Naiyanetr, 2000). Like in other *Stelomon* species, however, the G1 terminal segment of *Stelomon erawanense* is relatively long and stout, with the groove for the G2 clearly visible along the entire ventral side; and it has the combination of a distinctly rugose carapace, proportionately long male abdominal cavity, and narrowly triangular male abdomen.

An undescribed sixth species in the genus from Thailand is currently being described by Yeo & Naiyanetr (in prep.). The affinities of *Stelomon* with the closely allied *Kanpotamon* Ng & Naiyanetr, 1993 [type species *Kanpotamon duangkhaei* Ng & Naiyanetr, 1993] will also need to be re-examined. Although their carapace and pereopodal features are rather different, they share many key characters.

**Distribution.** – Tavoy, Myanmar (= Burma), “hills between Burma and Siam” (Alcock, 1909a, 1910b); Kanchanaburi and Phetchaburi provinces, western-central Thailand.

### *Teretamon*, new genus

(Fig. 13)

**Type species.** – *Potamon (Geotelphusa) adiatretum* Alcock, 1909, by present designation and monotypy.

**Diagnosis.** – Carapace distinctly broader than long, high; longitudinally convex, glabrous; regions indistinct; epigastric cristae poorly developed, almost smooth, slightly anterior to postorbital cristae, weakly separated from postorbital cristae; postorbital cristae poorly developed, not sharp, not confluent with epibranchial teeth; regions behind epigastric and

postorbital cristae smooth; frontal and orbital regions very narrow, strongly deflexed downwards, almost smooth; antennular fossae slit-like; eyestalks with reduced cornea; external orbital angle and epibranchial tooth indistinct; anterolateral margin gently convex; branchial region almost smooth; metabranchial region with distinct short oblique striae; epistome posterior margin median tooth well developed, outer parts not concave, very gently sloping downwards. Third maxilliped ischium with distinct longitudinal median sulcus; long exopod with flagellum longer than or subequal to merus width. Chelipeds outer surfaces almost smooth; carpus with low, broad subdistal spine on inner margin; merus without subterminal spine. Ambulatory legs sparsely lined with long, coarse setae, relatively short, relatively slender; dactyli elongated, slender; merus subdistal spine absent. Suture between anterior thoracic sternites 2 and 3 indistinct; groove or suture between anterior thoracic sternites 3 and 4 not discernible; male abdominal cavity reaching or exceeding imaginary line joining anterior edge of cheliped bases. Male abdomen narrowly triangular. G1 terminal segment relatively short, relatively slender, subconical, groove for G2 marginal, with triangular dorsal flap. G2 distal segment distinctly longer than half of basal segment, slender, tapering, without distal projection; basal segment outer margin gently convex.

**Etymology.** – The genus name is derived from *teres*, Latin for smooth, in arbitrary combination with the genus name *Potamon*, in allusion to the smooth carapace of the type species. Gender is neuter.

**Remarks.** – *Teretamon*, new genus, is established here as a monotypic genus for *Potamon (Geotelphusa) adiatretum* Alcock, 1909, and is diagnosed by the indistinct or absent external orbital angle and epibranchial tooth giving the anterolateral margin a smooth, rounded appearance; epigastric cristae being slightly anterior to the postorbital cristae; proportionately small cornea of the eyes; male abdominal cavity reaching the imaginary line joining the anterior edge of the cheliped bases; and the G1 terminal segment having a distinct triangular dorsal flap.

*Teretamon* is superficially very similar to *Alcomon*, new genus [type species *Potamon (Geotelphusa) superciliosum* Kemp, 1913], in the relatively smooth dorsal carapace, with low, almost smooth, and almost level epigastric and postorbital cristae; low and broad subdistal spine on the cheliped carpus; sparsely setose ambulatory legs; and male abdominal cavity reaching the imaginary line joining the anterior edge of the cheliped bases. *Teretamon* is, however, distinguished from *Alcomon* by the relatively higher (versus relatively lower), and less transverse carapace, about 1.34 times broader than long (versus carapace relatively more transverse, about 1.37–1.39 times broader than long); longitudinally convex carapace dorsal surface (versus carapace dorsal surface relatively flat); anterolateral margin having no trace of the epibranchial tooth (versus anterolateral margin with weak trace of the epibranchial tooth in the form of a faint notch); straight epistome posterior margin outer parts (versus epistome posterior margin outer parts convex

and sloping downwards); distinct longitudinal median sulcus on the third maxilliped ischium (versus third maxilliped with longitudinal median sulcus faint or absent); relatively narrower frontal and orbital regions (versus relatively broader frontal and orbital regions); relatively slenderer ambulatory legs, especially dactyli (versus ambulatory legs, especially dactyli, relatively stouter); and the presence of a distinct dorsal flap on the G1 terminal segment (versus G1 terminal segment lacking a dorsal flap) (see Figs. 2, 13).

*Teretamon* also superficially resembles *Kempamon*, new genus [type species *Potamon (Geotelphusa) dehaani laevior*

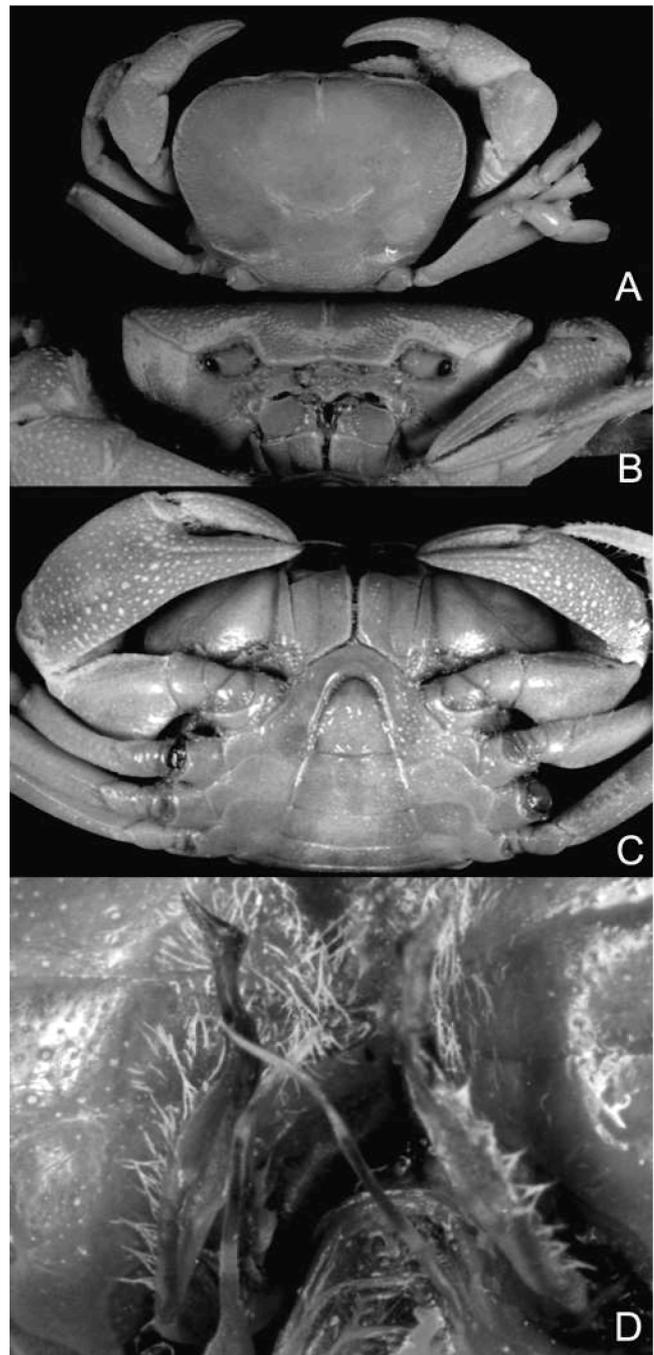


Fig. 13. *Teretamon adiatretum* (Alcock, 1909). Male (16.8 × 12.5 mm) (ZSI 6943/3): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, sternoabdominal cavity showing G1s and G2s.

Kemp, 1923] and *Thaiphusa* Ng & Naiyanetr, 1993 [type species *Demanietta sirikit* Naiyanetr, 1992]. However, it is separated from both groups by indistinct external orbital angle and epibranchial tooth (versus external orbital angle and epibranchial tooth poorly developed but distinct); proportionately smaller cornea (versus cornea normal sized); and triangular G1 terminal segment dorsal flap (versus G1 terminal segment dorsal flap broadly convex or semicircular) (see Figs. 7, 13; Ng & Naiyanetr, 1993: Figs. 22A, B, 56B–E). In addition, *Teretamon adiatretum* is further differentiated from *Kempamon* species by its high and longitudinally convex carapace (versus carapace low and relatively flat dorsally); slit-like antennular fossae (versus antennular fossae subtriangular); narrowly triangular male abdomen (versus male abdomen broadly triangular); and slender, subconical G1 terminal segment, with a tapered tip (versus G1 terminal segment stout, subcylindrical, with tip truncate or flared); and from *Thaiphusa* species by its relatively less transverse carapace (versus carapace distinctly transverse); carapace dorsal surface being relatively flat laterally, with flat branchial regions (versus carapace dorsal surface distinctly swollen transversely, with inflated branchial regions); and shorter and stouter ambulatory dactyli (versus ambulatory dactyli relatively more elongated and slenderer) (see Figs. 7, 13; Ng & Naiyanetr, 1993: Figs. 22A, B, 56B–E).

**Distribution.** – Dafla Hills, Kakhyen Hills, Moulmein, and Rakhine, Myanmar.

#### *Vietopotamon* Dang & Ho, 2002

(Fig. 14)

*Vietopotamon* Dang & Ho, 2002: 1.

**Type species.** – *Vietopotamon aluoiense* Dang & Ho, 2002, by monotypy.

**Remarks.** – Dang & Ho (2002) erected the genus *Vietopotamon* for a new species of Vietnamese crab, *V. aluoiense* Dang & Ho, 2002. *Potamon phuluangense* (Bott, 1970) is here included in *Vietopotamon* as it closely resembles *V. aluoiense* in the following characters diagnostic of the genus: a low, relatively flat carapace, with distinctly separated epigastric and postorbital cristae (that are not confluent with the epibranchial teeth), a third maxilliped with a well developed flagellum; relatively stout ambulatory legs; a narrowly triangular male abdomen covering an male abdominal cavity that extends to the level of an imaginary line joining the median part of the cheliped bases, and a slender, distinctly outwardly curved, subcylindrical G1 terminal segment with relatively broadly rounded tip and no dorsal flap (Fig. 14). The description of a third new species is currently being prepared (Yeo & P. Naiyanetr, in prep.).

**Distribution.** – Udon Thani Province, northeastern Thailand.

#### *Villopotamon* Dang & Ho, 2003

(Figs. 15–19)

*Villopotamon* Dang & Ho, 2003: 7.

**Type species.** – *Villopotamon thaili* Dang & Ho, 2003, by monotypy.

**Remarks.** – The genus *Villopotamon* Dang & Ho, 2003, was established for a new species from southern Vietnam, *Villopotamon thaili* Dang & Ho, 2003. Dang & Ho (2003: 12) provided a brief genus diagnosis and cited two characters of the species as being generically diagnostic: “the pubescent latero-posterior region of the carapace surface and the long

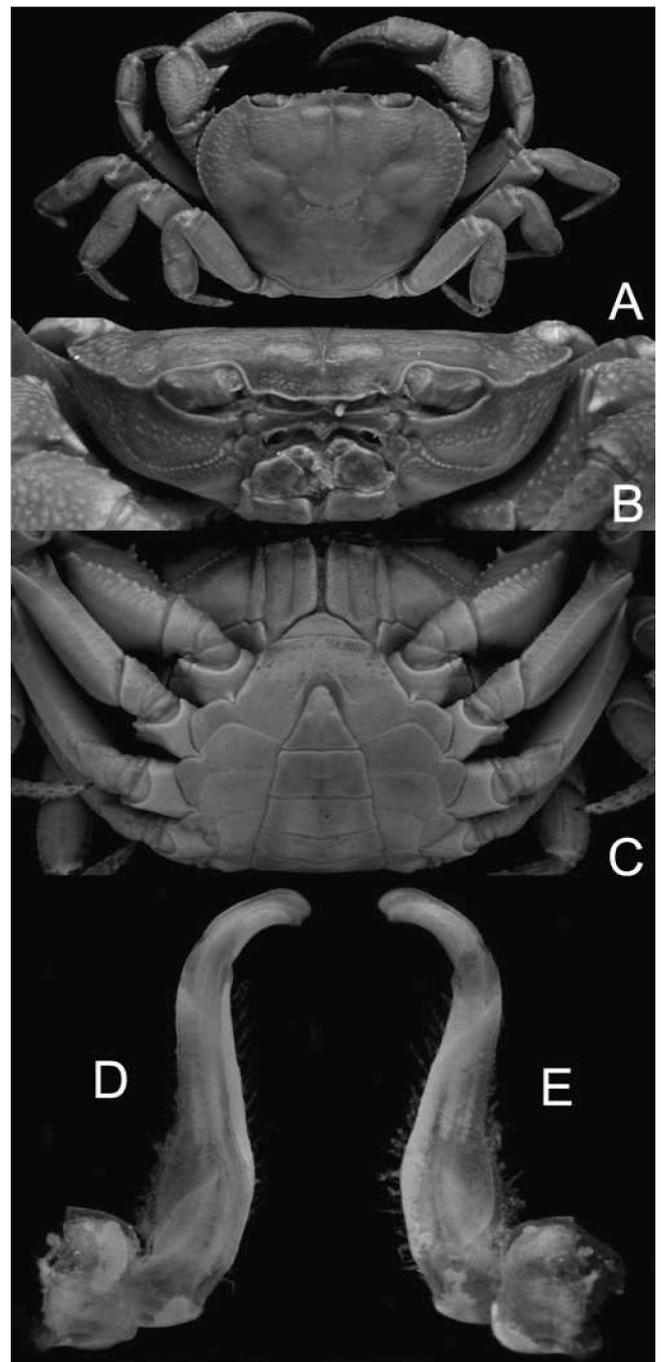


Fig. 14. *Vietopotamon aluoiense* Dang & Ho, 2002. Holotype, male (43.8 × 33.4 mm) (ZMH): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, E, left G1.

distal filiform part of the GO1 [G1] terminal segment” (Fig. 18). In the present study, four more species, all formerly in *Potamon* sensu lato (see Dang & Ho, 2003; Yeo & Ng, 1999), are provisionally assigned to *Villopotamon*, viz., *V. fruhstorferi* (Balss, 1914), *V. klossianum* (Kemp, 1923), *V. sphaeridium* (Kemp, 1923) and *V. ungulatum* (Dang & Ho, 2003).

The G1 terminal segment of *Villopotamon ungulatum* (Fig. 19D, E) while comparatively shorter than that of *Villopotamon thaii*, possesses a similarly slender, tapered and sinuous structure (although much more gently). The inclusion of *Potamon fruhstorferi*, *Potamon klossianum* and *Potamon sphaeridium* (Figs. 15–17) in *Villopotamon* may be regarded as very tentative as the G1 structures of all three species are not known - the only material of these species available for study were female holotypes of *Villopotamon fruhstorferi* and *Villopotamon sphaeridium* and male syntypes of *Villopotamon klossianum* which are in very poor condition, with the G1s missing) (see **Appendix 1**). The three species do share a unique carapace morphology with *Villopotamon thaii* and *Villopotamon ungulatum*, including low epigastric

cristae in line with and confluent with the postorbital cristae; sharp and smooth postorbital cristae that are confluent with the epibranchial tooth, forming a distinct, sharp, continuous, unbroken ridge from the anterolateral margin to the epigastric cristae; very low, poorly developed epibranchial tooth; and epistome posterior margin with very gently concave outer parts (see Figs. 15–19; see also Dang & Ho, 2003: Figs. 1–4). The pubescence seen in *Villopotamon thaii* is absent in the other species but is regarded here as a species-diagnostic character. It is clear, however, that despite these similarities, there are differences in other features, and when a better series of specimens become available and the gonopods are known, some may need to be referred to their own genera. We prefer not to do this here. Leaving them in *Potamon* is also unwarranted in view of what we now know about this genus, so the best compromise in our opinion, at least for the moment, seems to leave them in *Villopotamon*.

The diagnostic characters of *Villopotamon* separate it from *Neolarnaudia* Türkay & Naiyanetr, 1987, which also occurs in south-central Vietnam and bears a remote resemblance to the *Villopotamon* species with low, flat carapaces. *Villopotamon sphaeridium*, which has a relatively high,

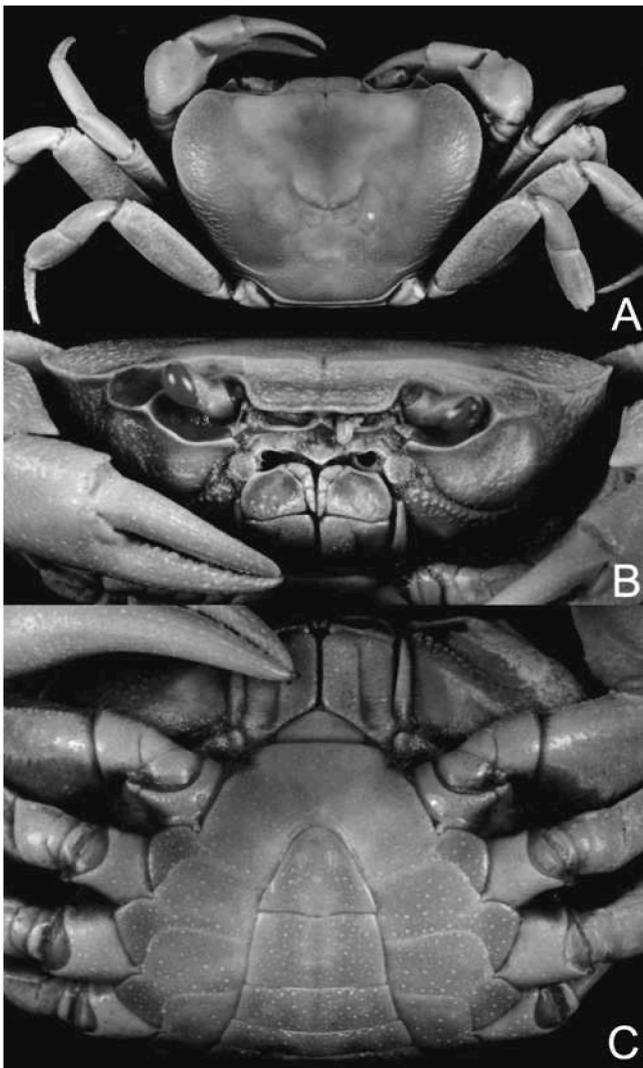


Fig. 15. *Villopotamon fruhstorferi* (Balss, 1914). Holotype, juvenile female (33.4 × 25.4 mm) (ZSM 1172/1): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace.

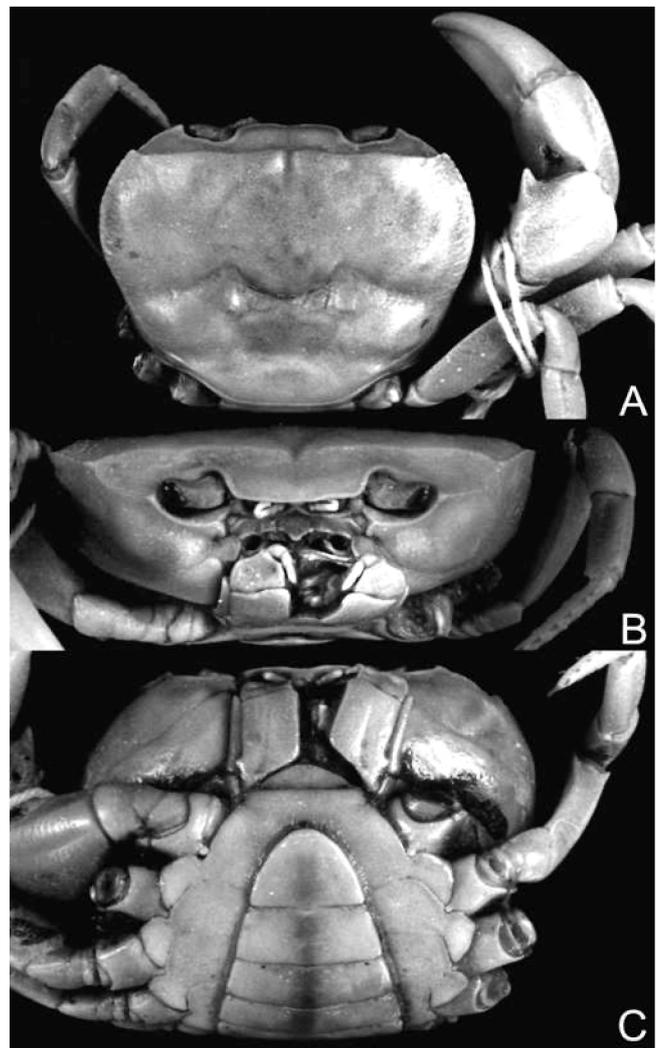


Fig. 16. *Villopotamon klossianum* (Kemp, 1923). Female (33.2 × 25.4 mm) (ZRC 1989.2796): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace.

inflated carapace, might be confused with members of two other Vietnamese genera, *Hainanpotamon* Dai, 1995, and *Laevimon* Yeo & Ng, 2005. However, *Villopotamon sphaeridium* can still be distinguished from members of these genera by its sharp, smooth, and confluent epigastric and postorbital cristae, forming a continuous ridge with the anterolateral margin (versus epigastric and postorbital cristae not sharp, smooth, and confluent); and deep, concave cleft between the external orbital angle and cleft-like epibranchial tooth (versus cleft between external orbital angle and epibranchial tooth not deeply concave and broad (cf. Dai, 1999; Yeo & Ng, 2005: Figs. 2, 4, Yeo & Naruse, 2007).

*Villopotamon* superficially resembles *Apotamonautes* Dai & Xing, 1993 [type species *Potamon (Potamonautes) hainanense* Parisi, 1916], from Hainan Island, China, in the form of the chelipeds and ambulatory legs, and carapace physiognomy, with the postorbital cristae being confluent with both the epigastric cristae as well as epibranchial teeth; orbital region appearing concave; and cleft separating the external orbital angle and epibranchial tooth being relatively deep, concave and broad (see Dai, 1999: 101–108, Pl. 5 Figs. 3–6, Figs. 48–51). *Villopotamon* is, however, immediately

distinguished from *Apotamonautes* by its sharp epigastric cristae, which is in line with the postorbital cristae, forming a sharp, continuous ridge (versus epigastric cristae rugose and slightly anterior to postorbital cristae, not forming a continuous ridge); very narrow orbital region (versus orbital region relatively much broader); weakly cristate anterolateral margin (versus anterolateral margin distinctly cristate); low, broadly triangular epistome posterior margin median tooth (versus epistome posterior margin median tooth well developed, acutely triangular); and longer third maxilliped flagellum, which is longer than or subequal to the merus width (versus third maxilliped flagellum shorter, subequal to half of merus width) (see Figs. 15–19; see also Dang & Ho, 2003: Figs. 1–4; cf. Dai, 1999: 101–108, Pl. 5 figs. 3–6, Figs. 48–51).

**Distribution.** – Southern and Central Vietnam.

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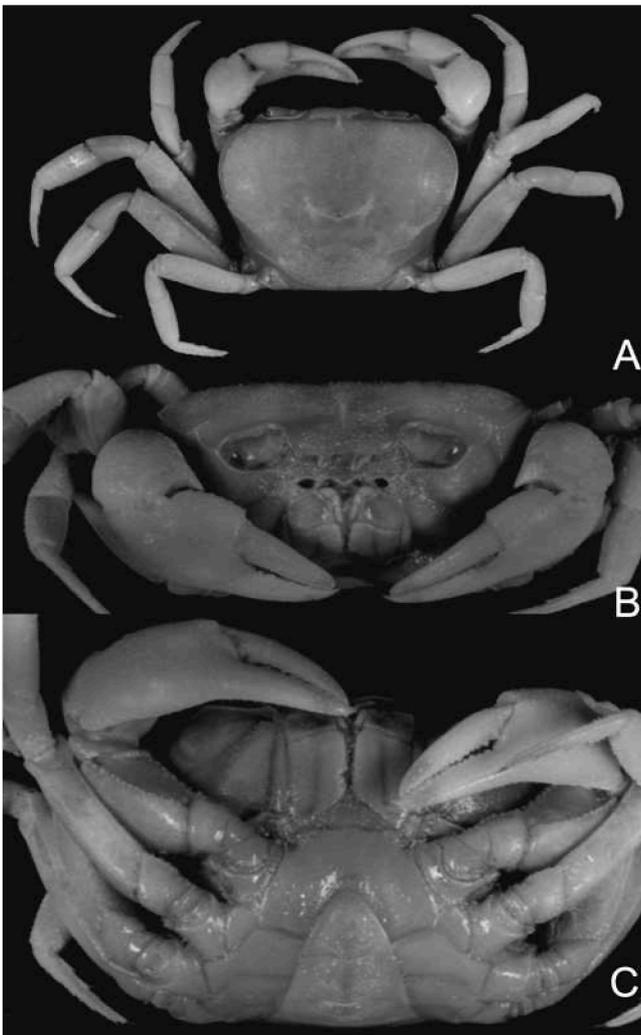


Fig. 17. *Villopotamon sphaeridium* (Kemp, 1923). Holotype, juvenile female (21.9 × 16.4 mm) (ZSI C 5901/1): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace.



Fig. 18. *Villopotamon thalii* Dang & Ho, 2003. Holotype, male (54.5 × 40.2 mm) (ZMH): A, dorsal view; B, C, left G1.

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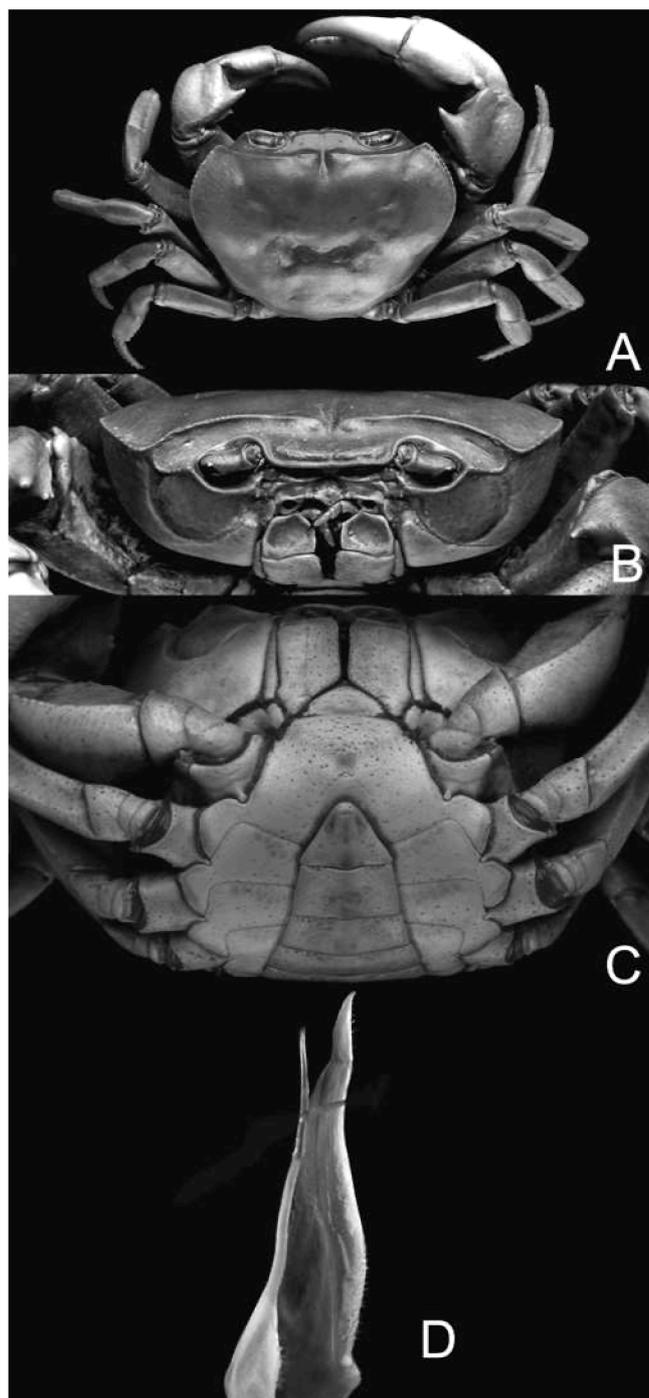


Fig. 19. *Villopotamon ungulatum* (Dang & Ho, 2003). Holotype, male (57.9 × 44.8 mm) (ZMH): A, dorsal view; B, frontal view of carapace; C, ventral view of carapace; D, left G1 and G2.