

RECOGNITION OF TWO SUBFAMILIES IN THE POTAMIDAE ORTMANN,  
1896 (BRACHYURA, POTAMIDAE) WITH A NOTE  
ON THE GENUS *POTAMON* SAVIGNY, 1816

BY

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ABSTRACT

The freshwater crab family Potamidae is classified into two subfamilies based on differences in the structure of the eighth thoracic sternite; one, the Potaminae, which is distributed in Europe, North Africa, Socotra island (Yemen), the Near East, Middle East, northern India and Myanmar; and the other, the Potamiscinae, which occurs in East and Southeast Asia. Their distributions are quite distinct, overlapping only in northeastern India and Myanmar. The genus *Potamon* s. str. is, therefore, clearly absent from the fauna of East Asia.

RÉSUMÉ

La famille de crabes d'eau douce des Potamidae est classée en deux sous-familles sur la base de différences portant sur la structure du huitième sternite thoracique; l'une, les Potaminae, est répartie en Europe, en Afrique du Nord, dans l'île de Socotra (Yemen), le Proche-Orient, le Moyen-Orient, le nord de l'Inde et le Myanmar; l'autre, les Potamiscinae, se trouvent dans l'est et le sud-est asiatique. Leurs répartitions sont distinctes, ne se recouvrant que dans l'Inde nord-orientale et le Myanmar. Le genre *Potamon* s. str. est donc clairement absent de la faune de l'Asie orientale.

INTRODUCTION

The freshwater crab family Potamidae Ortmann, 1896, is a large, diverse group with some 500 species in 74 genera, with a more or less continuous Afro-Eurasian distribution, ranging from South Europe and North Africa, and across to East and Southeast Asia. They are, however, absent from most of the Indian subcontinent, being present only in the northern part (Bott, 1970b). One family, Potamidae,

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is currently recognized for all Asian potamoid crabs (sensu Ng, 1988; Ng & Naiyanetr, 1993; Dai, 1999; Yeo & Ng, 1999a), with *Isolapotamidae* Bott, 1970, and *Sinopotamidae* Bott, 1970, as junior synonyms. Brandis (2002), however, recently revalidated the *Isolapotamidae* and *Sinopotamidae* for selected Asian potamoid genera, but the arguments presented are not very convincing and too few taxa were treated (see below), with most of the genera unplaced.

Within the *Potamidae*, Bott (1970b) had earlier recognized two subfamilies on the basis of differences in the male first pleopod structure, viz., the *Potamiscinae* [type genus: *Potamiscus* Alcock, 1909] and *Potaminae* [type genus: *Potamon* Savigny, 1816], but this was doubted by Ng (1985, 1987), who consequently synonymized the two names (see Ng, 1988; Ng & Naiyanetr, 1993).

Observations from the present study, however, show that the *Potamidae* (with *Isolapotamidae* and *Sinopotamidae* as junior synonyms) can be divided into two distinct groups (but not in the sense of Bott, 1970b) on the basis of differences in the structure of the eighth thoracic sternite. The subfamily names, *Potamiscinae* and *Potaminae*, which remain available, are here applied to these two groups. The present paper serves to revalidate and redefine the *Potamiscinae* and *Potaminae* based on this key morphological character. The two groups also have relatively distinct distributions. The type genera for *Potamiscinae* and *Potaminae*, namely *Potamiscus* and *Potamon*, respectively, are currently being rediagnosed and redefined; and together with the present study, they are part of an ongoing revision of the taxonomy of the freshwater crabs [*Potamidae* and *Paratelpheusidae*] of Indochina (defined by political boundaries to include Cambodia, Laos, Vietnam, Thailand, and Myanmar) (D. C. J. Yeo, in prep.).

#### MATERIAL AND METHODS

Material examined from Indochina and outside Indochina is listed in appendix I and appendix II, respectively; this consists of nominal species from both *Potamiscinae* and *Potaminae*. Many specimens of undescribed taxa from Indochina and other parts of East and Southeast Asia were also examined, and found to belong in the subfamily *Potamiscinae* as defined in this paper; these will be published in subsequent works. The classification used in the appendices essentially follows Naiyanetr (2001), Ng & Yeo (2001), Yeo & Naiyanetr (1999, 2000), Yeo & Ng (1999a, b), Yeo et al. (1999), and Brandis (2001). One genus, *Paratelpheusula*, had been synonymized with *Parapotamon* by Bott (1970), but is clearly a good genus (D. C. J. Yeo, unpubl. data). Brandis (2000, 2002) synonymized some of the genera and species, but we disagree as this was based almost completely on the form of the male first and second pleopods, and many

other characters were not considered. However, the generic placements of many of the species listed in the appendices remain tentative, pending revision in an upcoming monograph on the Indochinese freshwater crabs (D. C. J. Yeo, in prep.).

Specimens examined for this study consist of large series of historical museum material and recently collected material from Indochina (see appendix I), including types of many nominal as well as undescribed taxa (unpubl. data). Numerous potamid taxa occurring outside Indochina (Mediterranean region, Asia Minor, South Asia, East Asia, and Southeast Asia) were also studied for comparative purposes (see appendix II). For the sake of brevity, however, only the number of specimens and the depository are shown. Moreover, for species dealt with in recent publications by the authors, only the species name is listed, and material examined has been left out (see instead Naiyanetr, 2001; Ng & Yeo, 2001; Yeo & Naiyanetr, 1999, 2000; Yeo & Ng, 1999a, b; Yeo et al., 1999). The full listing of material examined for the study will be included in an upcoming monograph on Indochinese freshwater crabs. The material is deposited in the following institutions: Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A. (BPBM); 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, Cambridge, Massachusetts, U.S.A. (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 (Natural History)], London, U.K. (NHM); Swedish Museum of Natural History, Stockholm, Sweden (NRM); National Science Museum, Tokyo, Japan (NSMT); Nationaal Natuurhistorisch Museum, Leiden, The Netherlands [formerly Rijksmuseum van Natuurlijke Historie (RMNH)]; Senckenbergischen Naturforschenden Gesellschaft, Frankfurt, Germany (SMF); National Museum of Natural History, Smithsonian Institution, Washington, D.C., U.S.A. (USNM); Zoölogisch Museum Amsterdam, Amsterdam, The Netherlands (ZMA); Zoological Museum of Hanoi University, Hanoi, Vietnam (ZMHU); Zoologisk Museum, Copenhagen, Denmark (ZMUC); Zoological Reference Collection of the Raffles Museum of Biodiversity Research, National University of Singapore, Singapore (ZRC); Zoological Survey of India, Calcutta, India (ZSI); and Zoologische Staatssammlung, Munich, Germany (ZSM).

The terminology used is explained in fig. 1, and essentially follows Ng (1988). Measurements given are of carapace width and length, respectively. All measurements are in millimetres (mm). The following abbreviations are used: G1 = gonopod 1 (male first pleopod); G2 = gonopod 2 (male second pleopod).

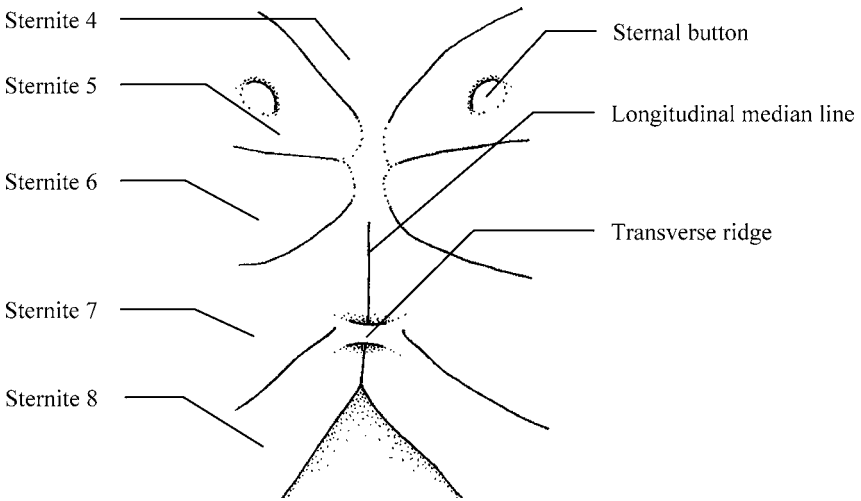


Fig. 1. Terminology used for posterior thoracic sternum.

#### SYSTEMATICS

#### Family POTAMIDAE Ortmann, 1896

Potamonidae Ortmann, 1896: 445 (part.); Rathbun, 1904: 244 (part.); Alcock, 1910: 16 (part.).  
 Potamidae [correction of Potamonidae] – ICZN, 1964: 336.  
 Potamidae – Bott, 1966: 470, 1967: 10, 1970a: 333, 339, 1970b: 134; Chuensri, 1973: 24, 1974a: 26, 1974b: 1; Ng, 1988: 28; Ng & Naiyanetr, 1993: 6; Dai, 1999: 85.  
 Sinopotamidae Bott, 1970a: 333, 1970b: 181; Brandis, 2002: 1300.  
 Isolapotamidae Bott, 1970a: 333, 1970b: 190; Brandis, 2002: 1298.

Remarks. — In the present paper, we recognize only one family, Potamidae, for all European and Asian potamoid crabs (*sensu* Ng, 1988; Ng & Naiyanetr, 1993; Dai, 1999; Yeo & Ng, 1999a). Brandis (2002) discussed the taxonomy of the Potamidae and considered the Isolapotamidae and Sinopotamidae as separate families, on par with the Potamidae. For the Isolapotamidae, he commented that it “. . . can only be characterized consequently by a second gonopod with a very narrow tube and a characteristic contact zone” (Brandis, 2002: 1300). He included in his Isolapotamidae just five redefined genera, *Isolapotamon*, *Nanhaipotamon*, *Dromothelphusa*, *Demanietta*, and *Flabellamon*, and one new genus, *Takpotamon*. For the Sinopotamidae, again, the only character is its detailed G2 morphology, and he noted that its composition differed from Bott’s (1970a, b) concept. However, he did not state which genera other than *Sinopotamon* would belong in the Sinopotamidae. While the general structure of the G2 is a key character, which has been used for several taxa of freshwater crabs at the generic level (Ng & Yeo, 1997), and the detailed structure may be useful for higher classification, Brandis’ (2002) study, unfortunately, treats too few genera, and the degree of variation in

his G2 character is not well known. While we concur that his conclusion may have a key role in the taxonomy and systematics of Asian potamid crabs, most genera were neither examined nor discussed, with their detailed G2 condition (sensu Brandis, 2002) not yet known. The familial affinities of most of the genera were not mentioned either. In addition, apart from citing four morphological characters in structure and anatomy of G2 of the six genera, Brandis (2002) discussed little else that might possibly justify family level separation. Admittedly, Brandis (2002: 1300) notes that these families may eventually be shown to be just subfamilies within the Potamidae, but we feel that an overreliance on G1 and G2 structures alone will not solve the problems per se. On the other hand, the structure of the thoracic sternum has been shown to be very valuable in elucidating brachyuran relationships, especially at the higher level (see Guinot, 1977, 1979), and the observed distributional patterns of the redefined Potaminae and Potamiscinae here also make more biogeographical sense. To this effect, we have examined 53 of the known genera, and utilized excellent drawings of Dai (1999) for another 19. It is possible that Brandis' (2002) "Sinopotamidae" and "Isolapotamidae" are discrete monophyletic taxa, but they would then have to be tribes within the Potamiscinae as defined, at present.

#### POTAMINAE Ortmann, 1896

(figs. 2A-D)

Potamoninae Ortmann, 1896: 445 (part.); Rathbun, 1904: 274 (part.).

Potaminae – Bott, 1970b: 134 (part.); Chuensri, 1973: 25 (part.); 1974a: 26 (part.); 1974b: 19 (part.).

Type genus. — *Potamon* Savigny, 1816, by original designation.

Diagnosis. — Eighth thoracic sternite incompletely separated by a longitudinal median line, fused anteriorly at the suture between sternites 7 and 8 by a narrow transverse ridge interrupting the longitudinal line.

Remarks. — Bott (1970b) recognized two subfamilies within the freshwater crab family, Potamidae Ortmann, 1896, viz., the Potamiscinae [type genus: *Potamiscus* Alcock, 1909] and Potaminae [type genus: *Potamon* Savigny, 1816], distinguished by whether the groove for the G2 on the G1 terminal segment is visible from the ventral side or not. Ng (1985, 1987), however, questioned the value of Bott's (1970b) character in separating Potamiscinae from Potaminae, commenting that it was unreliable, and regarded them as synonyms (see also Ng, 1988; Ng & Naiyanetr, 1993).

However, in the present study, six nominal potamid genera (*Potamon* Savigny, 1816; *Paratelphusula* Alcock, 1909; *Lobothelphusa* Bouvier, 1917; *Acanthopotamon* Kemp, 1918; *Himalayapotamon* Pretzmann, 1966; and *Socotrapotamon* Apel

& Brandis, 2000) (appendices I-B, II-B) were found to share a unique morphological character: the eighth thoracic sternite is incompletely separated by a longitudinal median line, being fused anteriorly at the suture between sternites 7 and 8 by a narrow transverse ridge that interrupts the longitudinal line (e.g., figs. 1, 2A-D). The longitudinal median line is not a suture between the left and right sides of the sternum but rather an invagination of the sternum that corresponds with the position of the vertical median plate of the endophragmal skeleton (Guinot, 1977; D. Guinot, pers. comm.), also known as the median septum (Secretan, 1998); and the description of the longitudinal median line as being “interrupted” by a transverse ridge merely refers to its appearance when viewed ventrally. The longitudinal median line is, in fact, continuous and intact, with the transverse ridge actually spanning over it. One undescribed species from Myanmar and two species from India (*Potamon lophocarpus* Kemp, 1913, and *P. superciliosum* Kemp, 1913) also possess this character.

Conversely, *Potamiscus* Bott, 1970, and all other nominal East and Southeast Asian potamid taxa examined (appendices I-A, II-A), consistently have the eighth thoracic sternite completely separated by the longitudinal median line, with no trace of a transverse ridge (e.g., figs. 2E-H). This is also the case for the rest of the Chinese potamid taxa that were not examined in the present study (see thoracic sternum illustrations in Dai, 1999).

The transverse ridge on the eighth thoracic sternite is a very significant and consistent character (fig. 2), and like other aspects of the thoracic sternum of crabs, is not likely to be influenced by external environmental factors. Such characters have been used to good effect in suprageneric brachyuran taxonomy (Guinot, 1977, 1979). Therefore, on this evidence, two separate groupings are recognized here within the Potamidae: one consisting of *Potamon* and allied genera, which have a transverse ridge on the eighth thoracic sternite, interrupting the longitudinal median line; and the other consisting of *Potamiscus* and allied genera, which lack such a ridge, and have an uninterrupted longitudinal median line. The names used by Bott (1970b), Potaminae Ortmann, 1896, and Potamiscinae Bott, 1970, are available and should now be applied to these two groups. It is important to note that the system used here in reviving these names differs substantially from Bott’s (1970b) system that was based on the G1 terminal segment (see above).

The morphological difference between the two subfamilies seems to be mirrored in their distribution patterns, with Potaminae occurring in North Africa, on Socotra, and in western Eurasia; and Potamiscinae occurring in East and Southeast Asia. The distributions of both groups overlap in Myanmar and northeastern India (Himalayas) (fig. 3).

Distribution. — South Europe, North Africa, Socotra, Near East, Middle East, and western India (Bott, 1970b; Brandis et al., 2000).

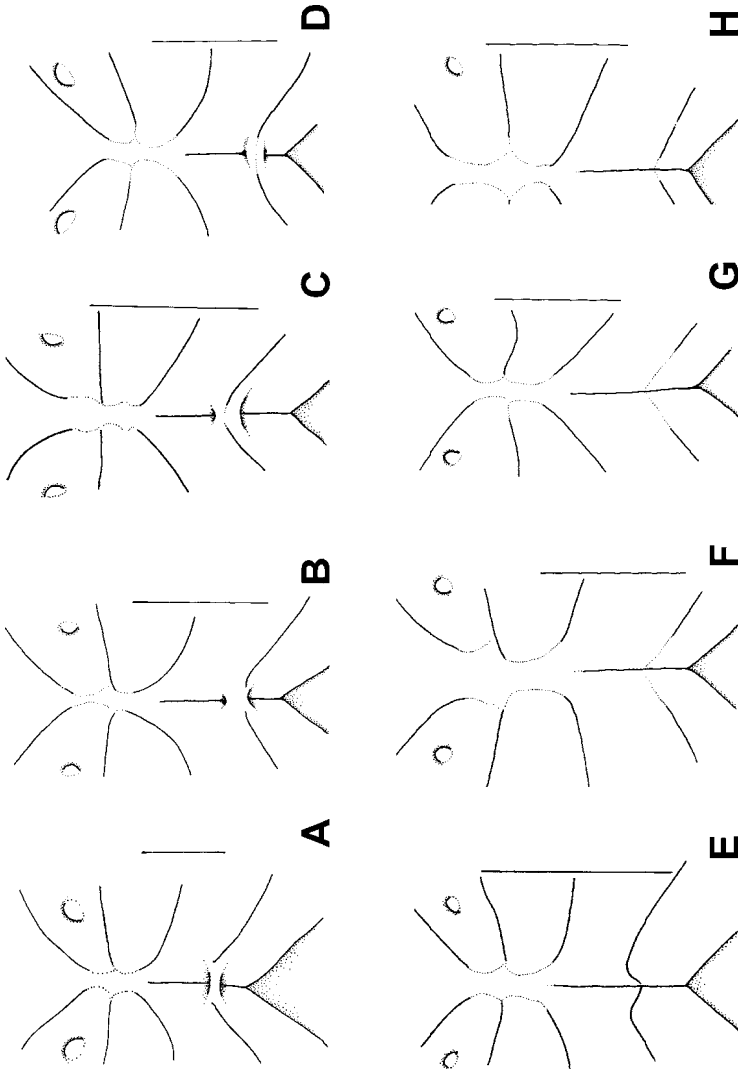


Fig. 2. Examples of posterior thoracic sternum of potamid crabs. A-D, Potaminae; E-H, Potamiscinae. A, *Potamon fluviatile* (Herbst, 1785), male (54.4 by 45.8 mm) (ZRC); B, *Potamon palaestinense* Bott, 1967, male (41.6 by 33.2 mm) (ZRC 1998.66); C, *Himalayapotamon atkinsonianum* (Wood-Mason, 1871), male (45.4 by 33.0 mm) (ZRC); D, *Paratelphusa gibbosa* (Ng & Kosuge, 1997), male (46.1 by 34.9 mm) (ZRC); E, *Potamiscus amandalitii* Alcock, 1909, syntype male (30.2 by 23.8 mm) (NHM 1909.9.2.5); F, *Potamon smithianum* Kemp, 1923, male (49.6 by 39.1 mm) (ZRC 1990.498); G, *Stelomon kanchanaburiense* (Naiyanetr, 1992), male (52.7 by 37.9 mm) (ZRC 1995.437); H, *Pudaeon sakonnakorn* Ng & Naiyanetr, 1995, male (48.7 by 36.8 mm) (ZRC). Scales = 5.0 mm in B-H; 2.0 mm in A.

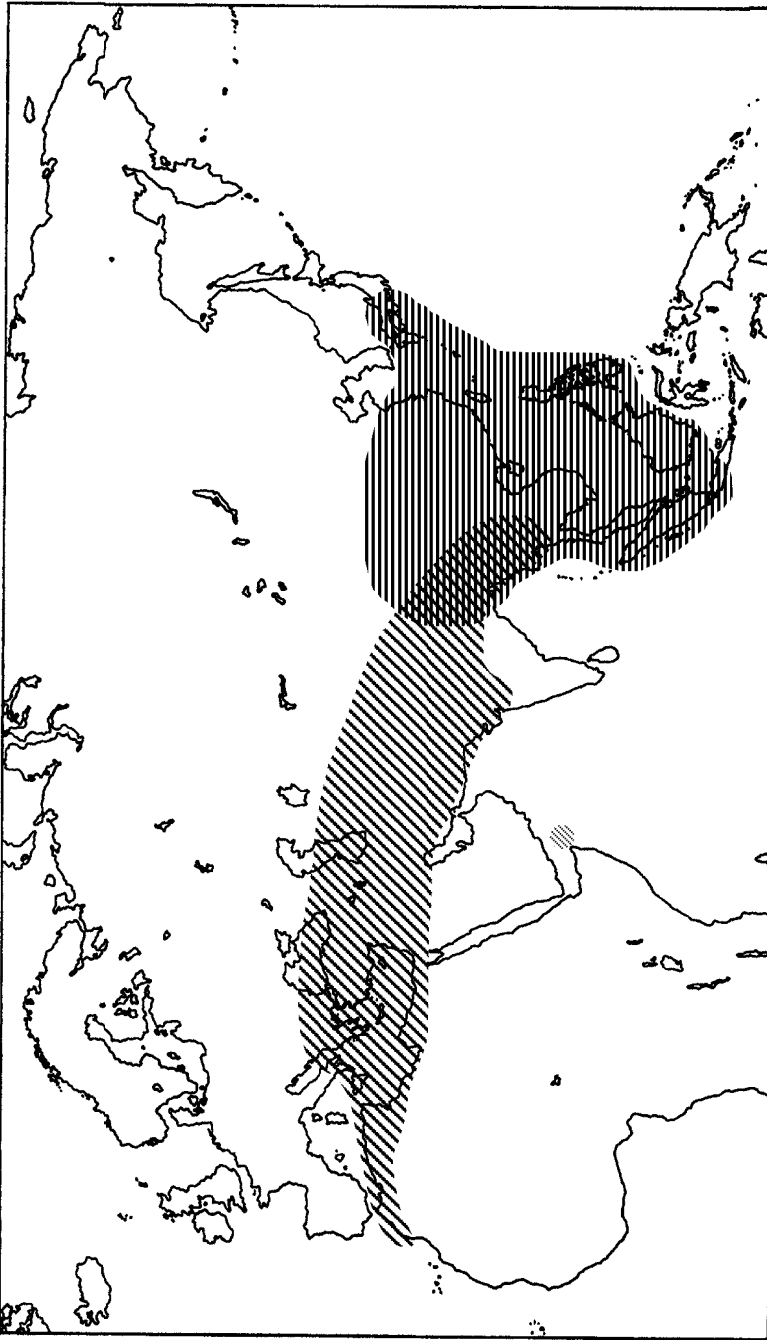


Fig. 3. Map showing relative distributions of the subfamilies Potaminae (diagonal hatching) and Potamiscinae (horizontal hatching).



## POTAMISCINAE Bott, 1970

(figs. 2E-H)

Potamoninae Ortmann, 1896: 445 (part.); Rathbun, 1904: 274 (part.).

Potaminae – Bott, 1970b: 134 (part.); Chuensri, 1973: 25 (part.); 1974a: 26 (part.); 1974b: 19 (part.).

Potamiscinae Bott, 1970b: 157; Chuensri, 1973: 28; 1974a: 28; 1974b: 19.

Sinopotamidae Bott, 1970a: 333; 1970b: 181; Brandis, 2002: 1300.

Isolapotamidae Bott, 1970a: 333; 1970b: 190; Brandis, 2002: 1298.

Type genus. — *Potamiscus* Alcock, 1909, by original designation.

Diagnosis. — Eighth thoracic sternite without trace of transverse ridge at suture between sternites 7 and 8, completely separated by uninterrupted longitudinal median line in posterior sternum.

Remarks. — Bott (1970b) originally defined the Potamiscinae based on a G1 character (the groove for the G2 on the G1 terminal segment being visible from the ventral side) and limited it to Indochinese and Malayan species; however, these G1 characters have been found to be untenable (see earlier remarks for the Potaminae, herein; Ng, 1985, 1987). Instead, the present definition of the Potamiscinae is based on the structure of the eighth thoracic sternite (see above), and is now expanded to include all East Asian and Southeast Asian potamid species. This system differs from Bott's (1970a, b) substantially, and all species previously classified in the Isolapotamidae and Sinopotamidae (sensu Bott, 1970a, b; Brandis, 2002) are here classified in the subfamily Potamiscinae (see above). The differences between the Potamiscinae and the nominal potamid subfamily, the Potaminae Ortmann, 1896, have been discussed above in the remarks for Potaminae, herein.

Distribution. — East and Southeast Asia.

NOTE ON *POTAMON* SAVIGNY, 1816

The present revalidation and redefinition of the subfamilies Potaminae and Potamiscinae has implications for the taxonomy of Indochinese and Chinese potamid crabs that need to be mentioned here.

Bott (1970b) cited the distribution of *Potamon* (*Potamon*) as ranging from southern Europe, over the Himalayas, to Burma (= Myanmar), and included northeastern Indian (Himalayas), southern Chinese, and Indochinese species. In recent years, numerous species from Indochina and China that superficially resemble *Potamon* s. str. have been assigned to *Potamon* s. lato on a tentative basis, with the genus being used as a “catch-all” group, defined simply by the presence of a distinct third maxilliped exopod flagellum (see also Naiyanetr & Ng, 1990; Ng & Naiyanetr, 1993; Ng, 1996; Yeo & Ng, 1997, 1998, 1999a; Dai, 1999). Many of Wood-Mason's (1871), Alcock's (1909, 1910), and Kemp's (1913, 1918b,

1923a, b) species have also been tentatively retained in *Potamon* s. lato (see Yeo & Ng, 1999a). The present study, however, shows that *Potamon* s. str. does not reach as far eastwards as the Himalayas, and is clearly absent from the fauna of Indochina and China (present study; unpubl. data).

Comparisons of Indochinese as well as other East Asian (Himalayas and eastwards) taxa that resemble *Potamon* against members of *Potamon* s. str. (= *Potamon* (*Potamon*) sensu Bott, 1967, 1970b; Brandis et al., 2000) from the Mediterranean and Middle East, show that the latter group differs from all East Asian potamids most significantly by the potamine character of the eighth thoracic sternite being incompletely separated by a longitudinal median line, which is anteriorly interrupted, just below the suture between sternites 7 and 8, by a narrow transverse sternal ridge (figs. 1, 2A-D). East Asian potamids, on the other hand, belong to the subfamily Potamiscinae (see Remarks for Potaminae and Potamiscinae) and have a thoracic sternite 8 that is completely separated by an uninterrupted longitudinal median line, and lacks a transverse ridge (figs. 2E-H).

*Potamon* s. str., as defined above, occurs only as far east as the northwestern part of India, corresponding with Alcock's (1910: 9) "Western Frontier Territory", from which he reported only two *Potamon* species, *P. (P.) fluviatile ibericum* (Bieberstein, 1809), and *P. (P.) fluviatile gedrosianum* Alcock, 1910, both of which fall into the present strict definition of the genus (see Alcock, 1910: 21, 23, figs. 1, 37; Bott, 1970b: 138-139, pl. 37 figs. 7-10, pl. 43 figs. 8-9). No species of *Potamon* s. str. occur in northeastern India [Alcock's (1910: 9) "Western Himalayan Territory"]. Alcock (1910: 23) did report *P. (P.) fluviatile monticola* Alcock, 1910, from the "Western Himalayan Territory"; however, this species more closely resembles members of *Himalayapotamon* Pretzmann, 1966 (see Annandale & Kemp, 1913: pl. 14 fig. 5, 6); and Alcock (1910: 23) had also likened it to *Himalayapotamon koolooense* (Rathbun, 1904) (unpubl. data). Therefore, all Indochinese and Chinese species currently assigned to *Potamon* actually do not belong to the genus. A similar conclusion was independently reached by Brandis et al. (2000) based largely on G1 and G2 morphology and anatomy. The generic placements of the Indochinese species are being revised accordingly in an upcoming monograph on the Indochinese freshwater crabs, while the Chinese species will have to be reappraised in a separate study.

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## APPENDIX I

## Indochinese material examined

**A. POTAMISCINAE (Thoracic sternite 8 with complete longitudinal median line, lacking transverse ridge).** — *Potamiscus rangoonensis* (Rathbun, 1904): 2 males (MBA 952a). *Potamiscus obliteratum* Kemp, 1913 (ZSI 8147/10). *Larnaudia larnaudii* (A. Milne-Edwards, 1869): lectotype, male (MNHN-B 4357S); paralectotype: 1 female (MNHN-B 4357S). *Larnaudia adiaretum* (Alcock, 1909): 1 male, 1 female (ZSI 6943/3); 1 female (ZRC). *Larnaudia beusekoma* (Bott, 1970): holotype, male (RMNH D 29312); paratypes: 2 females (RMNH D 29313); others: 2 males (ZRC 1985.4416-4417). *Neolarnaudia botti* Türkay & Naiyanetr, 1987: holotype, male (MNHN-B 16933). *Dromothelphusa longipes* (A. Milne-Edwards, 1869): paralectotype, female (MNHN-B 4037S); others: 2 females (MNHN-B 3827S), 1 male, 1 female (MNHN-B 3828S); 2 males, 1 juvenile female (MNHN-B 17703), 1 male, 2 females (MNHN-B 17705); 1 female (ZRC 1984.7034); 1 female (MBA 908a); 1 female (ZRC). *Dromothelphusa nanuan* (Naiyanetr, 1993): holotype, male (ZRC 1995.556). *Dromothelphusa nayung* (Naiyanetr, 1993): holotype, male (ZRC 1995.557); paratypes: 1 female (ZRC 1996.558), 3 males, 1 female (ZRC). *Dromothelphusa sangwan* Naiyanetr, 1997: holotype, male (RMNH D 46774); paratypes: 1 female (RMNH D 46774), 2 males, 1 female (ZRC). *Thaipotamon sphaeridium* (Kemp, 1923): holotype, juvenile female (ZSI C 5901/1). *Thaipotamon chulabhorn* Naiyanetr, 1993: holotype, male (RMNH D 41613); paratypes: 1 female (RMNH D 41614), 1 male, 1 female (ZRC 1995.559). *Thaiphusa tenasserimensis* (De Man, 1898): syntypes: 2 males (MGE III 272), 1 female (MGE III 271), 1 female (MGE III 270), 1 male, 1 female (ZMA De 102.873.BR); others: 1 male, 1 female (ZRC 1965.12.7.99-100). *Hainanpotamon tankiense* (Dang & Tran, 1992): holotype, male (ZMHU); paratype: 1 female (ZMHU). *Hainanpotamon rubrum* (Dang & Tran, 1992): paratype, female (ZMHU). *Potamon andersonianum* (Wood-Mason, 1871): topotype, male (SMF 2805); others: 1 female (ZSI 6916/3); 11 juveniles (ZSI 6932/3, 6936/3); 1 juvenile male, 3 females (ZSI 6906/3); Holotype of *Potamon andersonianum tritum* Alcock, 1909, female (ZSI 4075/4). *Potamon edwardsi* (Wood-Mason, 1871): 1 male, 1 female (MGE III 228 bis); 1 male, 2 females (MBA 51a); 1 male (ZRC 1984.7036). *Potamon hispidum* (Wood-Mason, 1871): 1 juvenile female (ZSI 4007/4); 1 female, 1 juvenile male (ZSI 7089-90/9). *Potamon cochinchinense* De Man, 1898: lectotype, female (ZMA De 102.867.BR); other: 1 female (MNHN-B 5084). *Potamon mooleyitense* Rathbun, 1904: holotype, juvenile female (MGE III 188). *Potamon paludosus* Rathbun, 1904: holotype, female juvenile (MNHN-B 5264). *Potamon brousmichei* Rathbun, 1904: lectotype, male

(MNHN-B 5074); paralectotype: 1 female (MNHN-B 5074); other: 1 female juvenile (MNHN-B 5076). *Potamon luangprabangense* Rathbun, 1904: syntypes: 1 male, 1 female (MNHN-B 5225), 1 female (MNHN-B 5224); others: 3 males, 1 female (ZRC). *Potamon palustre* Rathbun, 1904: holotype, male (MNHN-B 5265); others: 1 male (NRM). *Potamon edwardsi hirtum* Alcock, 1909: holotype, female (ZSI 6961/3); others: 5 males, 2 females (ZSI 6961/3). *Potamon turgidulum* Alcock, 1909: syntype, female (NHM 1909.5.1.8). *Potamon turgidulimanum* Alcock, 1910: syntype, juvenile male (NHM 1909.9.2.2). *Potamon (Potamiscus) aborense* Kemp, 1913: syntypes: 1 male (ZSI 8011/10), 1 male, 1 female (ZSI 8012-8013/10). *Potamon fruhstorferi* Balss, 1914: holotype, juvenile female (ZSM 1172/1). *Potamon browneanum* Kemp, 1918: topotype, male (NHM 1934.1.15.9) (formerly ZSI 9765/10); others: 2 males (ZSI 9764/10), 1 juvenile male, 3 juvenile females (ZSI 9765/10); 2 juvenile males (ZSI 9766/10); 1 female (ZSI 9767/10). *Potamon curtobates* Kemp, 1918: topotype, male (ZSI 9776/10); other: 1 male (NRM 13920). *Potamon phymatodes* Kemp, 1923: syntypes: 1 male, 1 female (ZSI 592/1). *Potamon klossianum* Kemp, 1923: syntypes: 2 males (ZSI C 589/1); other: 1 female (ZRC 1989.2796). *Potamon alcockianum* Kemp, 1923: syntypes: 3 juvenile males (ZSI C 597/1). *Potamon smithianum* Kemp, 1923: holotype, female (ZSI 9627/10); others: 1 male (CUMZ); 10 males, 7 females (ZRC 1990.498-514); 5 males (RMNH D 29316); 5 males, 8 females, 27 juveniles (ZRC); 1 female (ZRC); 1 juvenile female (ZRC); 1 male, 1 female (ZRC); 1 female, 3 subadult males, 1 subadult female, 5 juveniles (ZRC); 2 males, 1 female (ZRC). *Potamon hafniense* Bott, 1966: holotype, male (ZMUC Cru 2532); paratypes: 5 juveniles (ZMUC Cru 2533), 2 males (SMF 2813); 2 juveniles (ZMUC Cru 2534); 1 juvenile (ZMUC Cru 6651); others: 2 males, 2 females (ZRC), 11 males, 3 females (CUMZ). *Potamon phuluangense* (Bott, 1970): holotype, male (RMNH D 25141); paratypes: 2 males, 1 female (SMF 4427), 5 females (RMNH D 25141A). *Potamon cucphuongense* (Dang, 1975): 4 males, 1 female, 6 juveniles (ZRC). *Potamon kimboiense* (Dang, 1975): 1 male, 2 females (ZRC). *Potamon galyaniae* Naiyanetr, 2001: holotype, male (CUMZ); paratypes: 1 male, 1 female (ZRC), 1 female (CUMZ); 2 females (CUMZ). *Demanietta manii* (Rathbun, 1904)\*. *Demanietta renongensis* (Rathbun, 1905)\*. *Demanietta thagatensis* (Rathbun, 1904)\*. *Demanietta tritrungensis* (Naiyanetr, 1986)\*. *Demanietta huahin* Yeo, Naiyanetr & Ng, 1999\*. *Demanietta khirikhan* Yeo, Naiyanetr & Ng, 1999\*. *Demanietta lansak* Yeo, Naiyanetr & Ng, 1999\*. *Demanietta nakhonsi* Yeo, Naiyanetr & Ng, 1999\*. *Demanietta suanphung* Yeo, Naiyanetr & Ng, 1999\*. *Larnaudia chaiyaphumi* Naiyanetr, 1982\*. *Tiwaripotamon araneum* (Rathbun, 1905)\*. *Tiwaripotamon simulum* (Alcock, 1909)\*. *Tiwaripotamon annamense* (Balss, 1914)\*. *Tiwaripotamon edostilus* Ng & Yeo, 2001\*. *Terrapotamon abbotti* (Rathbun, 1898)\*. *Terrapotamon palian* Ng & Naiyanetr, 1998\*. *Phaibulamon stilipes* Ng, 1992\*. *Thaipotamon siamense* (A. Milne-Edwards, 1869)\*. *Thaipotamon lomkao* Ng & Naiyanetr, 1993\*. *Thaipotamon dansai* Ng & Naiyanetr, 1993\*. *Thaipotamon varoonphorae* Ng & Naiyanetr, 1993\*. *Thaipotamon kittikooni* Yeo & Naiyanetr, 1999\*. *Kanpotamon duangkhaei* Ng & Naiyanetr, 1993\*. *Thaiphusa sirikit* (Naiyanetr, 1992)\*. *Pudaengon inornatum* (Rathbun, 1904)\*. *Pudaengon hinpoon* Ng & Naiyanetr, 1995\*. *Pudaengon khammouan* Ng & Naiyanetr, 1995\*. *Pudaengon mukdahan* Ng & Naiyanetr, 1995\*. *Pudaengon sakonnakorn* Ng & Naiyanetr, 1995\*. *Pudaengon thatphanom* Ng & Naiyanetr, 1995\*. *Pudaengon wanonnitwat* Ng & Naiyanetr, 1995\*. *Nemoron nomas* Ng, 1996\*. *Rathbunamon lacunifer* (Rathbun, 1904)\*. *Pilosamon laosense* (Rathbun, 1904)\*. *Flabellamon kuehnelti* (Pretzmann, 1963)\*. *Flabellamon pretzmanni* Ng, 1996\*. *Esanpotamon namsom* Naiyanetr & Ng, 1997\*. *Tomaculamon stenixys* Yeo & Ng, 1997\*. *Tomaculamon pygmaeus* Yeo & Ng, 1997\*. *Erebusa calobates* Yeo & Ng, 1999\*. *Stelomon pruinosum* (Alcock, 1909)\*. *Stelomon kanchanaburiense* (Naiyanetr, 1992)\*. *Stelomon tharnlod* Yeo & Naiyanetr, 2000\*. *Dromothelphusa pealianoides* (Bott, 1966)\*. *Dromothelphusa phrae* (Naiyanetr, 1984)\*. *Dromothelphusa prabang* Yeo & Naiyanetr, 1999\*. *Potamon orleansi* Rathbun, 1904\*. *Potamon tannanti* Rathbun, 1904\*. *Potamon loxophrys* Kemp, 1923\*. *Potamon laevior* Kemp, 1923\*. *Potamon mieni* Dang, 1967\*. *Potamon yotdomense* (Naiyanetr, 1984)\*. *Potamon boonyaratae* (Naiyanetr, 1987)\*. *Potamon doichiangdao* Naiyanetr

& Ng, 1990\*. *Potamon doisutep* Naiyanetr & Ng, 1990\*. *Takpotamon maesotense* Naiyanetr, 1992\*. *Potamon phuphanense* Naiyanetr, 1992\*. *Potamon erawanense* Naiyanetr, 1992\*. *Potamon maehongsonense* Naiyanetr, 1992\*. *Potamon namlang* Ng & Naiyanetr, 1993\*. *Potamon jarujini* Ng & Naiyanetr, 1993\*. *Potamon maesariang* Ng & Naiyanetr, 1993\*. *Potamon lipkei* Ng & Naiyanetr, 1993\*. *Potamon nan* Ng & Naiyanetr, 1993\*. *Potamon ubon* Ng & Naiyanetr, 1993\*. *Potamon somchai* Ng & Naiyanetr, 1993\*. *Potamon jinpingense* Dai, 1995\*. *Potamon cua* Yeo & Ng, 1998\*. *Potamon guttus* Yeo & Ng, 1998\*. *Potamon ou* Yeo & Ng, 1998\*. *Potamon villosum* Yeo & Ng, 1998\*. *Potamon lao* Yeo & Naiyanetr, 1999\*.

\* See Naiyanetr & Ng, 1990, 1997; Ng, 1992a, b, 1995, 1996a, b, c; Ng & Naiyanetr, 1993, 1998; Ng & Yeo, 2001; Yeo & Naiyanetr, 1999, 2000; Yeo & Ng, 1997, 1998, 1999b; Yeo et al., 1999.

**B. POTAMINAE (Thoracic sternite 8 with incomplete longitudinal median line).** — *Paratelpusula dayanum* (Wood-Mason, 1871): 1 male (NRM 14091); 2 males, 2 females (ZSI 4070/4); 1 female (NRM 13895). *Paratelpusula burmensis* (Bott, 1966): holotype, male (MBA 58b); paratype: 1 female (MBA 58b); others: 1 male, 1 female (MGE III 195); 4 juveniles (MGE III 196); 3 males, 4 females (ZSI 4047/1). *Paratelpusula gibbosa* Ng & Kosuge, 1997: holotype, male (ZRC 1996.1557); paratypes: 3 males, 4 females (ZRC 1996.1558-1564); others: 2 males (ZRC). *Lobothelphusa crenulifera* (Wood-Mason, 1875): topotype, male (NHM 1909.9.2.9) (formerly ZSI 4073/4); others: 3 males, 1 female (ZSI 4073/4); 1 male (NHM 1908.12.8.7); syntypes of *Potamon (Acanthotelpusula) crenuliferum floccosum* Alcock, 1910: 1 male, 12 juveniles (ZSI 6905/3). *Lobothelphusa calva* (Alcock, 1909): syntype, female (NHM 1909.9.2.10); others: 4 males, 6 females, 5 juveniles (ZSI 5538/10); 1 male (MGE III 190); 1 male, 1 female (MGE III 191); 1 juvenile male (MBA 60a). *Lobothelphusa barbouri* (Rathbun, 1910): holotype, juvenile male (MCZ 7242). *Lobothelphusa feae* (De Man, 1898): syntypes: 1 male (MGE III 255), 1 male, 1 female (MGE III 189), 1 juvenile male (ZMA De.102.877.BR). *Lobothelphusa acanthica* (Kemp, 1918): 3 juvenile males (NRM 13917).

## APPENDIX II

### Non-Indochinese comparative material examined

**A. POTAMISCINAE (Thoracic sternite 8 with complete longitudinal median line, lacking transverse ridge) (East and Southeast Asia, excluding Indochina).** — *Potamon tumidum* (Wood-Mason, 1871): syntypes: 1 male (NHM 1909.5.1.6), 7 males (ZSI 6954/3). *Potamon pealianum* (Wood-Mason, 1871): 4 males, 2 juvenile females (ZSI 5511/10), 1 male, 4 female (ZSI 6963/3, 5509/10), 1 male (ZSI 6413/3, 6960/3); 1 male, 1 female (ZSI 6915/3). *Potamon chinghungense* Dai, Song, He, He, Cao, Xu & Zhong, 1975: 1 male (ZRC 1997.749). *Potamon flexum* Dai, Song, Li & Liang, 1980: 1 male (ZRC 1997.750). *Potamon boshanense* Dai & Chen, 1985: 1 male (ZRC 1998.811). *Potamon menglaense* Dai & Cai, 1998: 1 male, 1 female (ZRC). *Potamiscus annandalii* Alcock, 1909: syntypes: 1 male, 1 female (NHM 1909.9.2.5). *Potamiscus decourcyi* (Kemp, 1913): holotype, male (ZSI 8006/10). *Potamiscus yunnanense* (Kemp, 1923): holotype, male (ZSI 792/1). *Potamiscus yiwuensis* Dai & Cai, 1998: 1 male (ZRC). *Sinopotamon planum* (Dai, 1992): 1 male, 1 female (ZRC 1998.1178). *Tenuilapotamon latilum* (Chen, 1980): 1 male, 1 female (ZRC 1998.355). *Pararanguna semilunatum* Dai & Chen, 1985: 1 male, 1 female (IZCAS). *Parapotamon spinescens* (Calman, 1905): 1 male (IZCAS). *Aparapotamon grahami* (Rathbun, 1929): 5 males, 3 females (ZRC). *Yarepotamon gracilipa* (Dai, Song, Li & Liang, 1980): 1 male, 1 female (IZCAS). *Huananpotamon angulatum* (Dai & Lin, 1979): 1 male, 1 female (IZCAS). *Apotamonautes hainanensis* (Parisi, 1916): 1 male (IZCAS). *Hainanpotamon orientale* (Parisi, 1916): syntypes: 1 male (NHM 1934.2.5.3), 1 male

(MNH-B 5261). *Nanhaipotamon hongkongense* (Shen, 1940): 3 males, 2 females, 1 juvenile (ZRC 1991.1778-1783). *Cryptopotamon anacoluthon* (Kemp, 1918): 2 males, 6 females (ZRC 1998.355). *Ryukyum yaeyamense* (Minei, 1973): 1 male (ZRC 1994.4452); 2 females (ZRC 1994.4451). *Candidopotamon rathbunae* (De Man, 1914): 1 male, 1 female (ZRC 1984.7560-7561). *Geothelphusa albogilva* Shy, Ng & Yu, 1994: 1 male, 2 female (ZRC 1998.212). *Stoliczia stoliczkana* (Wood-Mason, 1871): 1 male (ZRC 1989.2013). *Johora tiomanensis* (Ng & Tan, 1984): 2 males (ZRC 1996.1742). *Malayopotamon brevimarginatum* (De Man, 1892): 2 males (ZRC 1998.1154). *Isolapotamon kinabaluense* (Rathbun, 1904): 1 male, 1 female (ZRC 1990.465-466). *Ibanum aethes* Ng 1995: holotype, male (ZRC 1995.271); paratype: 1 female (ZRC 1995.272). *Cerberusa tipula* Holthuis, 1979: holotype, male (RMNH D 31968); paratype, male (RMNH D 31983). *Ovitamon artifrons* (Bürger, 1894): 1 male, 1 female (ZRC 1992.8361-8362). *Insulamom unicorn* Ng & Takeda, 1992: paratype, male (ZRC 1992.8360). *Daipotamon minos* Ng & Trontlejš, 1996: holotype, male (ZRC 1996.1044); paratypes: 2 females (ZRC 1996.1045, 1046), 1 female (IZCAS). *Allopotamon tambelanense* (Rathbun, 1905): holotype, male (USNM 23369); paratype: female (USNM 23369). *Mindoron pala* Ng & Takeda, 1992: holotype, male (NSMT-Cr 11224). *Carpomom pomulum* Tan & Ng, 1998: holotype, male (BPBM 5575).

**B. POTAMINAE (Thoracic sternite 8 with incomplete longitudinal median line) (Mediterranean and Asia Minor).** — *Acanthopotamon fungosum* (Alcock, 1909): syntypes: 1 male, 1 female (NHM 1909.9.2.7-8). *Himalayapotamon atkinsonianum* (Wood-Mason, 1871): 1 male, 1 female, 1 juvenile (ZSI 6415/3); 1 male (ZRC); 1 male (MBA 865a). *Potamon (Potamon) bifarium* Alcock, 1909: syntype, male (NHM 1909.9.2.3). *Potamon fluviatile* (Herbst, 1785): 1 male, 1 female (ZRC). *Potamon potamios* (Olivier, 1804): 1 male (ZRC). *Potamon palaestinense* Bott, 1967: 2 males, 4 females (ZRC 1998.66). *Potamon algeriense* Bott, 1967: 1 male (ZRC). *Socotrapotamon nojidense* Apel & Brandis, 2000: 1 male, 1 female (ZRC 2000.2232). *Socotrapotamon socotrense* (Hilgendorf, 1883): 1 male, 1 female (ZRC 2000.2233).

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