

Three new species of freshwater crabs from northern Laos, with a note on *Potamiscus (Ranguna) pealianoides* Bott, 1966 (Crustacea, Decapoda, Brachyura, Potamidae)

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ABSTRACT

Three new species of potamid crabs are described from northern Laos, viz., *Potamon lao* n. sp., *Dromothelphusa prabang* n. sp. and *Thaipotamon kittikooni* n. sp. *Potamon lao* n. sp. is characterized by its squarish carapace, third maxilliped with an elongate rectangular ischium and a short but distinct flagellum on the exopod, and its stout male first pleopod (G1) with a weak dorsal flap on the terminal segment. The key distinguishing features of *Dromothelphusa prabang* n. sp. are its low epibranchial tooth, broadly triangular external orbital angle and stout G1 terminal segment. *Thaipotamon kittikooni* n. sp. is readily distinguished from its congeners by its sharp, distinctly cristate anterolateral carapace margins and by the densely setose outer margin of the third maxilliped exopod. *Potamon lao* n. sp. and *Dromothelphusa prabang* n. sp. are close to *Potamiscus (Ranguna) pealianoides* Bott, 1966, which is here transferred to the genus *Dromothelphusa* Naiyanetr, 1992.

KEY WORDS

Crustacea,
Brachyura,
Potamidae,
systematics,
new species,
Laos.

RÉSUMÉ

Trois nouvelles espèces de crabes d'eau douce du nord Laos, avec une annotation sur *Potamiscus* (*Ranguna*) *pealianoides* Bott, 1966 (Crustacea, Decapoda, Brachyura, Potamidae).

Trois espèces nouvelles de crabes Potamidae sont décrites du nord Laos, *Potamon lao* n. sp., *Dromothelphusa prabang* n. sp. et *Thaipotamon kittikooni* n. sp. *Potamon lao* n. sp. est caractérisée par sa carapace presque carrée, son troisième maxillipède avec un ischion allongé et rectangulaire et un flagelle court mais distinct sur l'exopodite et son premier pléopode mâle trapu (G1) avec un lobe dorsal peu marqué sur le segment terminal. Les caractères distinctifs de *Dromothelphusa prabang* n. sp. sont la dent épibranchiale basse, l'angle orbito-externe largement triangulaire et le segment terminal de G1, fort. *Thaipotamon kittikooni* n. sp. se distingue facilement de ses congénères par les bords antéro-latéraux aigus et distinctement cristiformes de la carapace et par le bord externe de l'exopodite du troisième maxillipède densément sétifère. *Potamon lao* n. sp. et *Dromothelphusa prabang* n. sp. sont proches de *Potamiscus* (*Ranguna*) *pealianoides* Bott, 1966, qui est ici transféré dans le genre *Dromothelphusa* Naiyanetr, 1992.

MOTS CLÉS

Crustacea,
Brachyura,
Potamidae,
systématique,
nouvelles espèces,
Laos.

INTRODUCTION

Specimens of potamid crabs in the second author's collection from the northern Laotian provinces of Xieng Khuang and Luang Prabang, were recently examined as part of an ongoing revision of the Indochinese freshwater crabs. They consist of three undescribed species from three genera, viz., *Potamon*, *Dromothelphusa* and *Thaipotamon*. None of these are conspecific with the 11 species of potamid crabs in four genera which have so far been reported from modern Laos and eastern Thailand (previously Laos, Siam) (Rathbun 1904; Bott 1970; Ng & Naiyanetr 1995; Ng 1996), and can be separated from them by differences in carapaces, male abdomens and gonopods. *Potamon lao* n. sp. and *Dromothelphusa prabang* n. sp. closely resemble *Potamiscus* (*Ranguna*) *pealianoides* Bott, 1966, a species whose generic placement is unclear. The present paper serves to clarify the generic placement of *P. (R.) pealianoides* as well as to describe the three new species.

The following abbreviations are used: G1 for male first pleopod, G2 for male second pleopod. Measurements are of carapace width and length respectively. Terminology used essentially follows

Ng (1988). All measurements are in millimetres. Specimens are deposited in the Zoological Reference Collection (ZRC) of the Raffles Museum, National University of Singapore; the Chulalongkorn University Natural History Museum (CUMZ), Bangkok, Thailand; Nationaal Natuurhistorische Museum [formerly Rijksmuseum van Natuurlijke Historie (RMNH)], Leiden, The Netherlands; Muséum national d'Histoire naturelle (MNHN), Paris, France; Senckenbergischen Naturforschenden Gesellschaft (SMF), Frankfurt, Germany; and Zoologisk Museum (ZMUC), Copenhagen, Denmark.

SYSTEMATICS

Family POTAMIDAE Ortmann, 1896

Potamon lao n. sp.

(Figs 1; 2)

MATERIAL EXAMINED. — **Northern Laos.** Ban Xieng Dad, Muang Phu Kut (Muang Sui), Xieng Khuang Province, V.1995, coll. Viroj Kittikoon, holotype, ♂ 46.4 by 38.3 mm (ZRC 1998.20). — Same data as holotype, 1 ♀ 44.6 by 36.4 mm (paratype ZRC 1998.21).

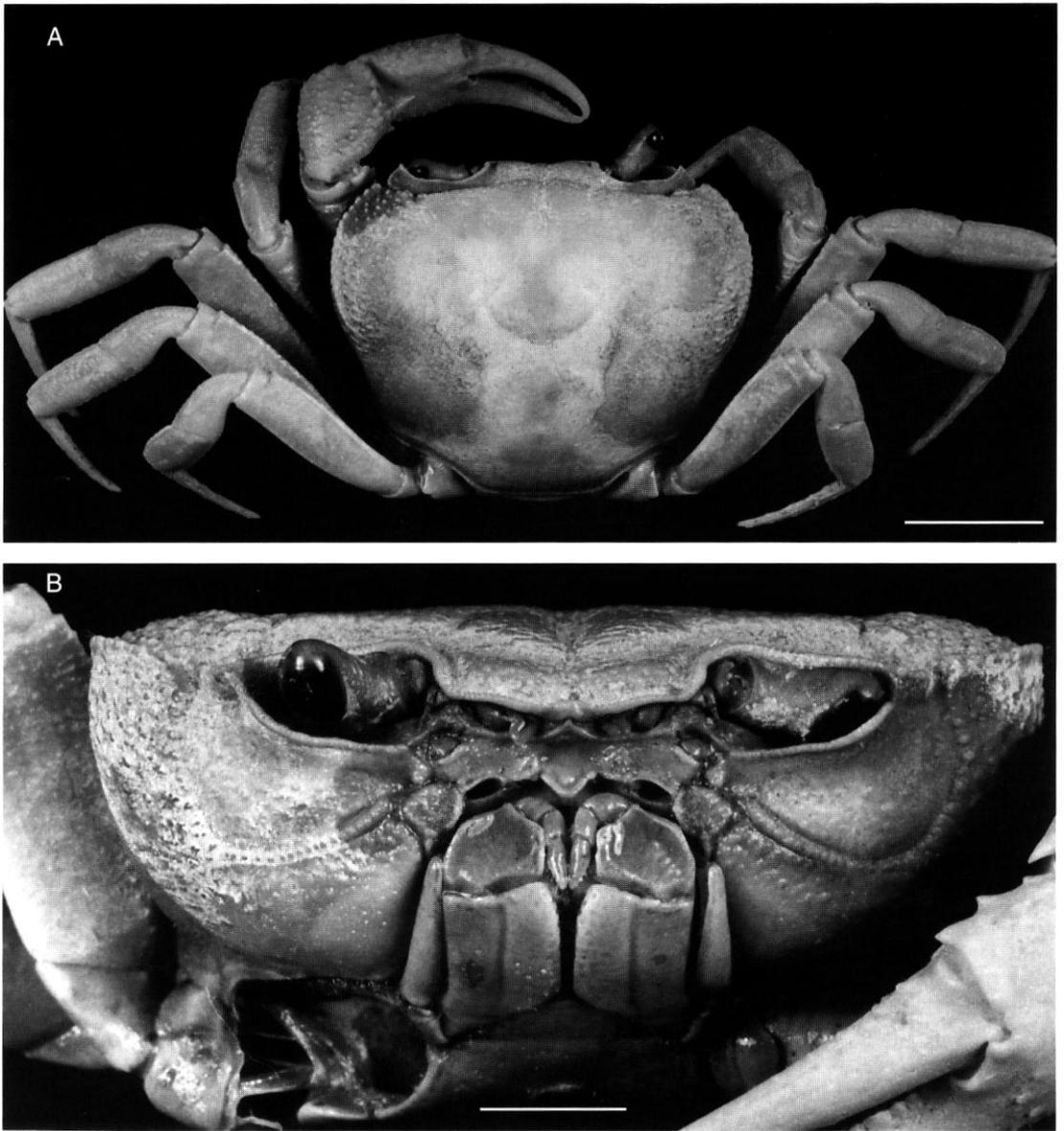


FIG. 1. — *Potamon lao* n. sp. Holotype, ♂ 46.4 by 38.3 mm (ZRC 1998.20), Ban Xieng Dad, Muang Phu Kut (Muang Sui), Xieng Khuang Province, northern Laos; **A**, dorsal view; **B**, frontal view. Scale bars: A, 15.0 mm; B, 7.0 mm.

ETYMOLOGY. — The species is named after the people of Laos, known as “Lao”. Used as a noun in apposition.

DIAGNOSIS

Carapace broader than long, high, dorsal surface relatively flat, glabrous. Epigastric cristae distinct,

not sharp, rugose; postorbital cristae not sharp, weakly rugose, breaking up into strong granules just before epibranchial tooth; regions behind epigastric and postorbital cristae faintly rugose. External orbital angle acutely triangular, outer margin slightly convex; epibranchial tooth trian-

gular, low; anterolateral margin convex, distinctly serrated, strongly cristate; posterolateral margins not strongly convergent posteriorly; branchial region distinctly rugose. Ischium of third maxilliped elongate rectangular; exopod extending beyond distal margin of ischium and with very short but distinct flagellum, less than half merus width. Ambulatory legs long, with long, very slender dactyli. Suture between thoracic sternites three and four not visible. Male abdomen narrowly triangular; telson triangular, with slightly concave lateral margins. G1 terminal segment obliquely bent about 45 degrees, about 0.3 time length of subterminal segment, broad, about 3.1 times longer than broad, with low, weak but distinct dorsal flap, slightly curved at tip, with ventral distal opening; subterminal segment gently sinuous, without neck-like distal part, inner margin gently concave, outer margin without sub-distal cleft. G2 with distal segment greater than half length of basal segment.

REMARKS

Potamon lao n. sp. fits into Alcock's (1910) definition of the genus *Potamon* by virtue of its very short but distinct flagellum on the third maxilliped exopod. The emphasis of a single character in this case to assign a species to a genus is purely a stop-gap measure as the genus *Potamon* is known to be heterogeneous but has yet to be revised (see Naiyanetr & Ng 1990; Ng & Naiyanetr 1993).

Potamon lao might be confused with *Dromothelphusa* species [Thailand, Vietnam] or crabs of the genus *Terrapotamon* Ng, 1986 [Thailand], due to their similar carapace physiognomy and long, slender dactyli of the walking (ambulatory) legs. However, *P. lao* is excluded from both genera because its third maxilliped ischium is elongate rectangular in shape (versus ischium broadly rectangular to squarish) (Fig. 2A; cf. Ng 1988: fig. 37C; Ng & Naiyanetr 1993: fig. 49A, 1998: fig. 1C; Naiyanetr 1997: fig. 1D). In addition, *P. lao* does not have the diagnostic characters of the genus *Dromothelphusa* in that its G1 has a stout terminal segment that is straight for most of its length but very gently curved outwards distally (versus slender terminal segment that is distinctly curved outwards); the dorsal flap on the

terminal segment is very low and hardly visible (versus dorsal flap on terminal segment distinct); and the subterminal segment is not distinctly narrowed distally (versus subterminal segment distinctly narrowed distally) (Fig. 2B-C, E-F; cf. Bott & Türkay 1977: fig. 1; Ng & Naiyanetr 1993: fig. 49; Naiyanetr 1994: figs 1D-E, 2D-E, 1997: fig. 1E). *Potamon lao* also differs further from *Terrapotamon* species in its third maxilliped exopod possessing a short but distinct flagellum (versus third maxilliped exopod lacking a flagellum); its G1 lacking any swelling on the outer margin at the terminal-subterminal segment junction; and the G1 terminal segment possessing a very low dorsal fold (versus G1 terminal segment completely lacking a dorsal fold) (Fig. 2A; cf. Ng 1986: fig. 2A-C, 1988: fig. 37C-F; Ng & Naiyanetr 1998: fig. 1C, F-I).

Potamon lao most closely resembles *Dromothelphusa pealianoides* (Bott, 1966). In addition to having similar carapace physiognomy, rugosity, forms of the external orbital angle, epibranchial tooth, anterolateral margin, and also walking legs long with very slender dactyli, the form of the terminal segment of the G1 is similar in both species (Fig. 2C-D; cf. Bott 1966: fig. 16, pl. 17 fig. 3). Despite these similarities, *P. lao* can be differentiated from *D. pealianoides* by the following features: 1) carapace relatively more squarish, about 1.2 time broader than long (versus distinctly more transverse, about 1.4 times broader than long); 2) third maxilliped ischium elongate rectangular in shape (versus broadly rectangular); 3) G1 terminal segment relatively more stout (versus distinctly more slender); and 4) G1 terminal segment with low, very weak dorsal flap (versus distinct, well-developed dorsal flap).

Dromothelphusa pealianoides (Bott, 1966)

Potamiscus (Ranguna) pealianoides Bott, 1966: 482, fig. 16, pl. 17 fig. 3.

Ranguna (Ranguna) pealianoides. – Bott 1970: 165, fig. 5, pl. 47 fig. 32.

MATERIAL EXAMINED. — Laos. coll. Neis, no date, holotype, ♂ c. 49 by 36 mm (MNHN-B 5268).

REMARKS

There is no need for a redescription of this spe-

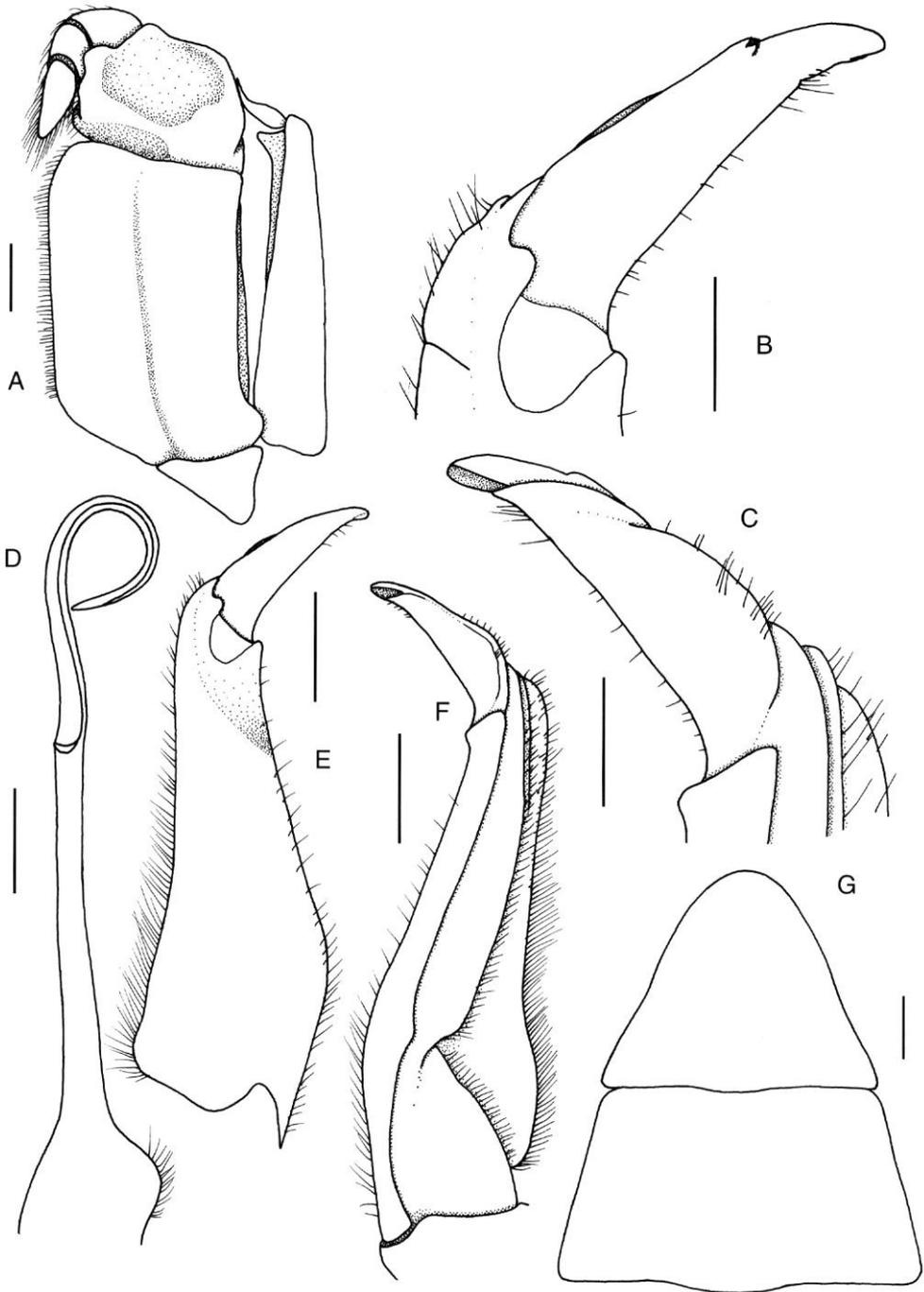


FIG. 2. — *Potamon lao* n. sp. Holotype, ♂ 46.4 by 38.3 mm (ZRC 1998.20), Ban Xieng Dad, Muang Phu Kut (Muang Sui), Xieng Khuang Province, northern Laos; **A**, left third maxilliped; **B**, dorsal view of terminal segment of right G1; **C**, ventral view of terminal segment of right G1; **D**, right G2; **E**, dorsal view of right G1; **F**, ventral view of right G1; **G**, telson and sixth segment of male abdomen. Scale bars: A, D-G, 2.0 mm; B, C, 1.0 mm.

cies as which was described relatively recently by Bott (1966). Bott (1966) had described *Potamiscus (Ranguna) pealianoides* from a male specimen collected by Neis from Laos and identified as "*Potamon pealianum*" [not Wood-Mason, 1871] by Rathbun (1904). This specimen is quoted by Bott (1966) in his publication as MPa 1895-84 which corresponds to the date of the entry (1895) in the Reference Collection of the Museum. It is now catalogued as MNHN-B 5268 (Danièle Guinot, *in litt.*) and represents the holotype of *Potamiscus (Ranguna) pealianoides*. We have examined this holotype (c. 49 by 36 mm) and determined that the species must now be transferred to the genus *Dromothelphusa* Naiyanetr, 1992.

Dromothelphusa is a newer name for part of the species formerly placed under *Ranguna* and was redefined by Ng & Naiyanetr (1993). One point bears mention. Although Ng & Naiyanetr (1993: 21) wrote that members of the genus had "...relatively short ambulatory dactyli", this is a typographical error and it should have read "relatively long ambulatory dactyli" instead (P. Ng, pers. comm.). We have examined specimens of the known *Dromothelphusa* species and can confirm that relatively long dactyli of the walking legs are present in all of them. *Potamiscus (Ranguna) pealianoides* possesses the typical diagnostic characters of *Dromothelphusa* mentioned by Ng & Naiyanetr (1993), including a high, relatively domed carapace, almost confluent epigastric and postorbital cristae, a triangular external orbital angle, walking legs with relatively long dactyli, a telson with slightly concave lateral margins and a dorsal fold on the G1. The species also has other features characteristic of most or all *Dromothelphusa* members, such as the third maxilliped having a broadly rectangular ischium, an exopod with a very short, almost vestigial flagellum, and a G1 with distally slender subterminal segment and slender, tapering terminal segment, curving outwards.

Dromothelphusa prabang n. sp.

(Figs 3; 4)

MATERIAL EXAMINED. — **Northern Laos.** Local market, Luang Prabang Province, coll. P. Naiyanetr,

XII.1995, holotype, ♂ 41.4 by 32.9 mm (ZRC 1998.795). — Same data as holotype, 2 ♂ larger 50.3 by 38.2 mm (paratypes ZRC 1998.796-797). — Same data as holotype, 17 ♂, 19 ♀ largest 48.3 by 37.3 mm (paratypes CUMZ). — Same data as holotype, 1 ♂ 42.1 by 32.7 mm, 1 ♀ (paratypes RMNH). — Same data as holotype, 1 ♂ 44.2 by 34.0 mm, 1 ♀ (paratypes MNHN). — Same data as holotype, 1 ♂, 1 ♀ 43.1 by 32.6 mm (paratypes SMF). — Same data as holotype, 1 ♂ 36.2 by 28.0 mm, 1 ♀ (paratypes ZMUC).

ETYMOLOGY. — The species is named after the city and province of Luang Prabang, "Prabang" being the actual name of the city, while "Luang" alludes to capital. Used as noun in apposition.

DIAGNOSIS

Carapace broader than long, high, dorsal surface distinctly convex longitudinally, gently convex laterally, glabrous. Epigastric cristae distinct, not sharp, rugose, slightly anterior to postorbital cristae, separated from postorbital cristae by short, weak groove; postorbital cristae not sharp, weakly rugose, breaking up into granules just before epibranchial tooth; regions behind epigastric and postorbital cristae very faintly rugose. External orbital angle triangular, outer margin straight to gently convex; epibranchial tooth acute, low; anterolateral margin convex, serrated, distinctly cristate; posterolateral margins convergent posteriorly; branchial region distinctly granulose. Ischium of third maxilliped broadly rectangular; exopod extending beyond distal margin of ischium, with very short but well-developed flagellum, less than half merus width. Ambulatory legs long, with long, very slender dactyli. Suture between thoracic sternites 3 and 4 barely discernible. Male abdomen triangular; telson triangular, with distinctly concave lateral margins, tip rounded. G1 terminal segment about 0.4 time length of subterminal segment, about 3.3 times longer than broad, bent slightly outwards, curved medially with distal part almost perpendicular to longitudinal axis, with very low, broad dorsal fold in proximal half, tip straight, with ventral distal opening; subterminal segment broad, narrowing distally into neck-like portion, outer margin with shallow, broad subdistal cleft. G2 with distal segment greater than half length of basal segment.



FIG. 3. — *Dromothelphusa prabang* n. sp. Holotype, ♂ 41.4 by 32.9 mm (ZRC 1998.795), local market, Luang Prabang Province, northern Laos; **A**, dorsal view; **B**, frontal view. Scale bars: A, 20.0 mm; B, 7.0 mm.

REMARKS

In the majority of the specimens of *Dromothelphusa prabang*, the third maxilliped exopod has a very short but distinct flagellum (Fig. 4B, C, E). However, in the holotype (ZRC 1998.795), as well as in a few other specimens, the third maxilliped flagellum appears to be even

shorter to almost vestigial, due to breakage (Fig. 4A, D).

Dromothelphusa prabang n. sp. appears morphologically closest to *D. pealianoides* (Bott, 1966) [Laos]. *Dromothelphusa prabang*, however, can be differentiated from *D. pealianoides* by the following characters: 1) low, small epibranchial tooth

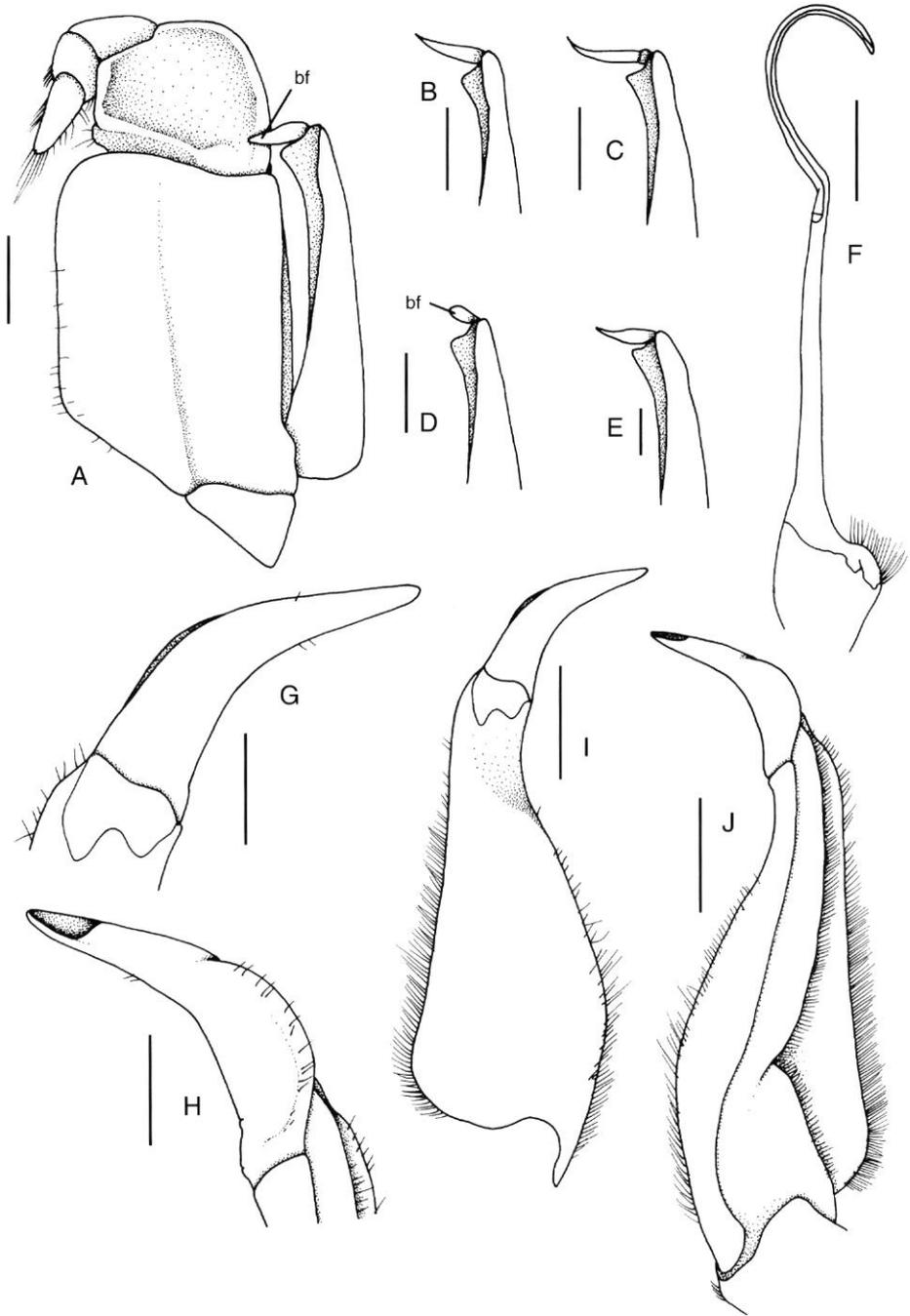


FIG. 4. — *Dromothelphusa prabang* n. sp; **A, F-J**, holotype, ♂ 41.4 by 32.9 mm (ZRC 1998.795); **B**, paratype, ♂ 42.1 by 32.7 mm (RMNH); **C**, paratype, ♂ 43.1 by 32.6 mm (SMF); **D**, paratype, ♀ 37.8 by 29.3 mm (RMNH); **E**, paratype, ♂ 50.3 by 38.2 mm (ZRC 1998.796); all from local market, Luang Prabang Province, northern Laos; **A**, left third maxilliped; **B-E**, exopod flagellum of left third maxilliped; **F**, right G2; **G**, dorsal view of terminal segment of right G1; **H**, ventral view of terminal segment of right G1; **I**, dorsal view of right G1; **J**, ventral view of right G1; **bf**, broken flagellum. Scale bars: A-F, I, J 2.0 mm; G, H, 1.0 mm.

separated from external orbital angle by weak cleft (versus well-developed epibranchial tooth separated from external orbital angle by strong cleft); 2) anterolateral margins very weakly serrated (versus distinctly serrated); 3) external orbital angle comparatively more broadly triangular (versus acutely triangular); 4) G1 subterminal segment broad (versus relatively slender); and 5) G1 terminal segment relatively stout, with very low, weak, barely visible dorsal fold (versus relatively more slender, with high, well-developed, distinct dorsal fold) (Figs 3; 4; cf. Bott 1966: fig. 16, pl. 17; fig. 3). *Dromothelphusa prabang* might also be confused with the *Dromothelphusa* species from Thailand, viz., *D. phrae* (Naiyanetr, 1984), *D. namuan* Naiyanetr, 1994, *D. nayung* Naiyanetr, 1994, and *D. sangwan* Naiyanetr, 1997. Externally, however, the low epibranchial tooth of *D. prabang* immediately distinguishes it from the Thai species which have relatively higher, better developed epibranchial teeth that, like in *D. pealianoides*, are also separated from the external orbital angles by strong clefts. In the G1, the low, barely visible dorsal flap of the terminal segment of *D. prabang* separates it from *D. phrae*, *D. namuan* and *D. nayung*, all of which have relatively higher, more distinct dorsal flaps. *Dromothelphusa sangwan* is the only other member of the genus which has a relatively low dorsal flap of the G1 terminal segment. However, the dorsal flap of *D. sangwan* is still distinctly higher than that of *D. prabang*. In addition, the terminal segment of *D. sangwan* is also less strongly bent than that of *D. prabang*.

Thaipotamon kittikooni n. sp.

(Figs 5; 6)

MATERIAL EXAMINED. — **Northern Laos.** Ban Xieng Dad, Muang Phu Kur (Muang Sui), Xieng Khuang Province, coll. Viroj Kittikoon, V.1995, holotype, ♀ 25.9 by 20.8 mm (ZRC 1998.22).

ETYMOLOGY. — This species is named after its collector, Associate Professor Dr Viroj Kittikoon.

DIAGNOSIS

Carapace slightly broader than long, very high, dorsal surface strongly convex longitudinally,

gently convex laterally, glabrous. Epigastric and postorbital cristae weak but distinct, not sharp, rounded, former very weakly rugose; regions behind epigastric and postorbital cristae smooth. External orbital angle acutely triangular, outer margin straight; epibranchial tooth rounded, low; anterolateral margin gently convex, sharp, distinctly cristate; posterolateral margins gently converging posteriorly; branchial region with few very faint rugae. Ischium of third maxilliped broadly rectangular; exopod extending to about one third of merus length, densely setose on outer margin, with short but well-developed flagellum, subequal to or less than half merus width. Ambulatory legs slender; meri slender, with lateral margins straight, almost parallel; dactyli long, very slender.

REMARKS

Thaipotamon kittikooni n. sp. differs from all other members of the genus *Thaipotamon* Ng & Naiyanetr, 1993, in the following external asexual characters: 1) carapace slightly swollen laterally (versus strongly swollen laterally); 2) subbranchial regions of carapace almost straight (versus convex); 3) anterolateral margins gently convex, sharp, distinctly cristate (versus convex to strongly convex, rounded, neither sharp nor cristate); 4) posterolateral margins gently converging posteriorly (versus strongly converging); 5) third maxilliped exopod densely setose on outer margin (versus glabrous); and 6) walking legs with meri very slender, with straight, almost parallel lateral margins (versus relatively broader, with gently convex lateral margins). These differences clearly distinguish *T. kittikooni* as a distinct species and, in fact, may warrant the establishment of a separate genus for it, especially in the cristate anterolateral margin and densely setose third maxilliped exopod. However, no male specimens are available and we have, therefore, been unable to characterize the taxonomically important G1s, which is likely to be significantly different from the *Thaipotamon* G1. As such, until a male specimen is obtained and the G1 examined, we prefer to tentatively refer this species to *Thaipotamon* since it does closely resemble the other *Thaipotamon* species in its distinctly curved third maxilliped exopod bearing

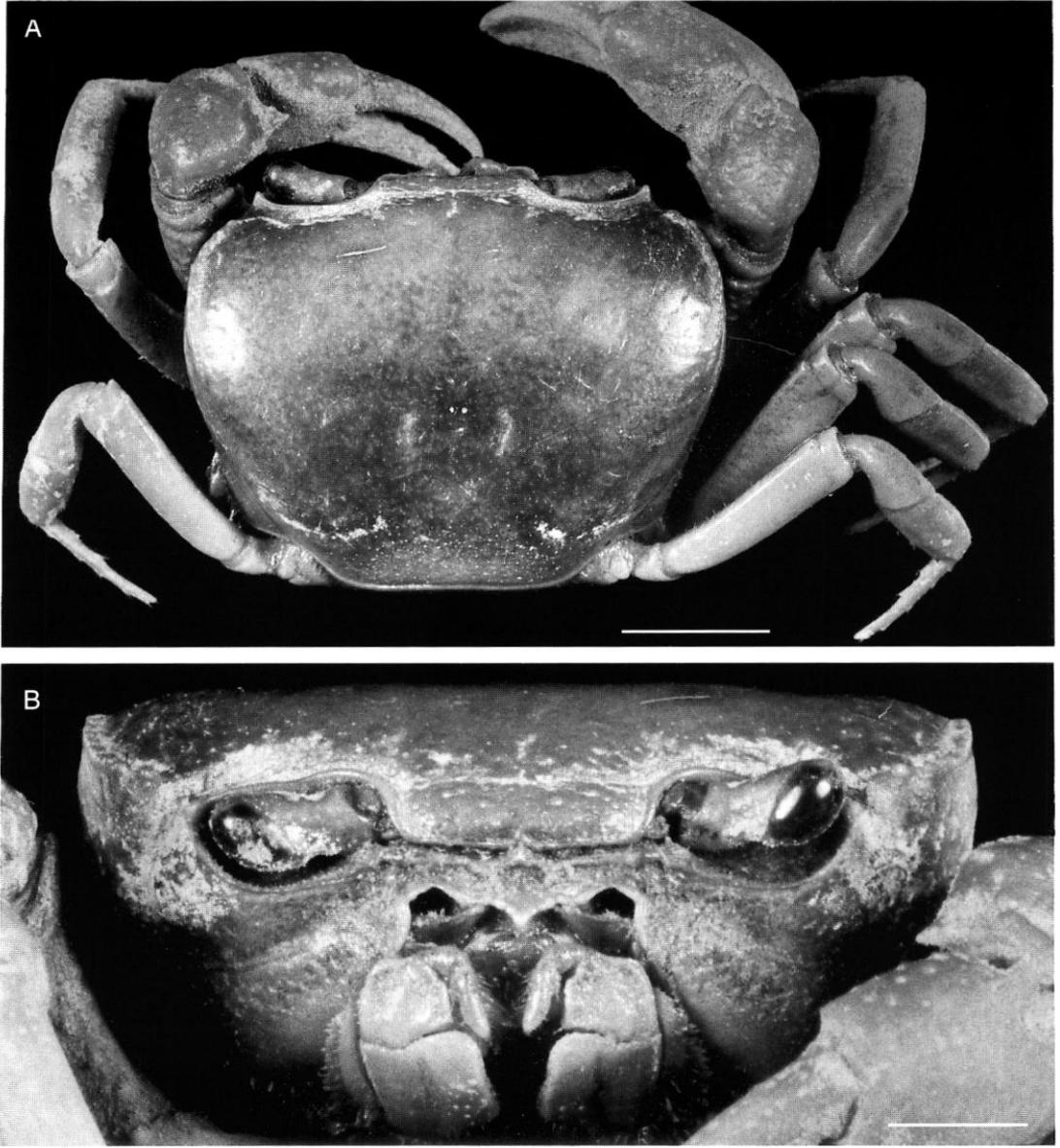


FIG. 5. — *Thaiopotamon kittikooni* n. sp. Holotype, ♀ 25.9 by 20.8 mm (ZRC 1998.22), Ban Xieng Dad, Muang Phu Kut (Muang Sui), Xieng Khuang Province, northern Laos; **A**, dorsal view; **B**, frontal view. Scale bars: A, 7.0 mm; B, 4.0 mm.

a short but distinct flagellum, about subequal to half the width of the merus; high, swollen, generally smooth carapace; and walking legs with long dactyli (see Ng & Naiyanetr 1993).

Thaiopotamon kittikooni may also be confused

with crabs from the terrestrial genus, *Pudaengon* Ng & Naiyanetr, 1995 (type species *Pudaengon mukdahan* Ng & Naiyanetr, 1995). *Thaiopotamon kittikooni*, however, can be distinguished from members of the latter by more prominent antero-

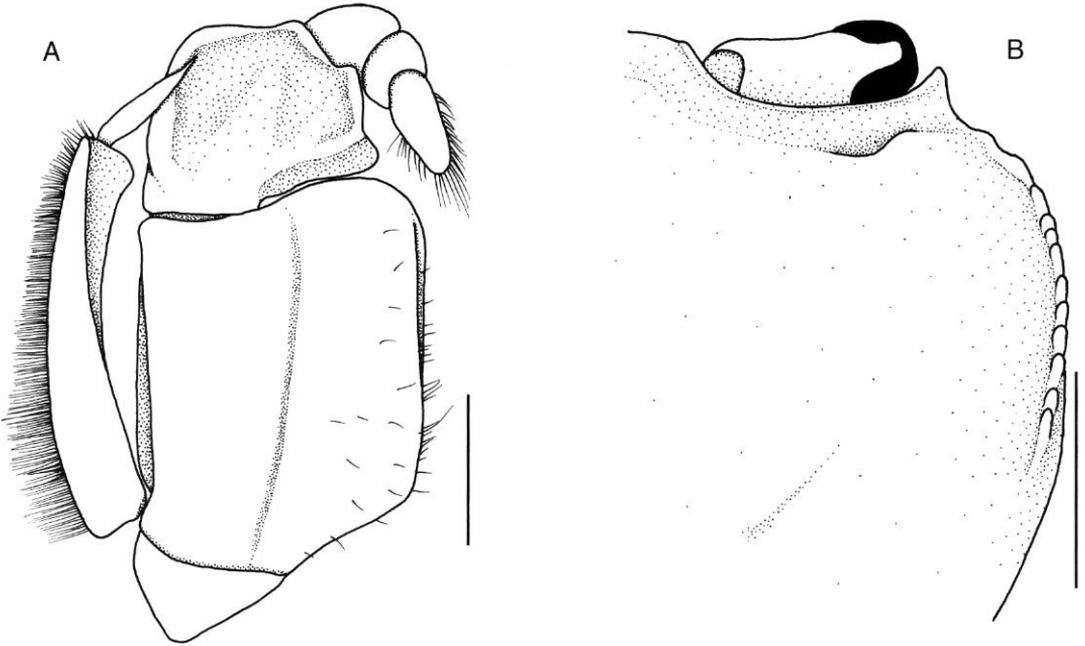


FIG. 6. — *Thaipotamon kittikooni* n. sp. Holotype, ♀ 25.9 by 20.8 mm (ZRC 1998.22), Ban Xieng Dad, Muang Phu Kut (Muang Sui), Xieng Khuang Province, northern Laos; **A**, right third maxilliped; **B**, anterolateral margin of carapace. Scale bars: A, 2.0 mm; B, 5.0 mm.

lateral margin cristae (versus minute cristae); strongly curved and proportionately longer third maxilliped exopod, 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); presence of a flagellum on the third maxilliped exopod (versus flagellum absent); and the posterolateral margins gently converging posteriorly (versus distinctly converging posteriorly).

Acknowledgments

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