

**PUDAENGON, A NEW GENUS OF TERRESTRIAL CRABS
(CRUSTACEA: DECAPODA: BRACHYURA: POTAMIDAE)
FROM THAILAND AND LAOS, WITH
DESCRIPTIONS OF SEVEN NEW SPECIES**

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ABSTRACT. - The taxonomic status of the poorly known terrestrial potamid crab *Potamon inornatus* Rathbun, 1904, from Indo-China is clarified, and a new genus, *Pudaengon*, is established for it. Seven new species of *Pudaengon* from Thailand and Laos, viz. *P. mukdahan*, *P. wanonniwat*, *P. sakonnakorn*, *P. thatphanom*, *P. khammouan*, *P. hinpoon* and *P. arnamicai* are also described.

INTRODUCTION

Five genera of terrestrial and semiterrestrial potamid crabs, with 13 species, are known at present from Thailand, viz. *Dromothelphusa* Naiyanetr, 1992, *Kanpotamon* Ng & Naiyanetr, 1993, *Phaibulamon* Ng, 1992, *Thaiphusa* Ng & Naiyanetr, 1993, and *Thaipotamon* Ng & Naiyanetr, 1993 (see Ng, 1992; Ng & Naiyanetr, 1993; Naiyanetr, 1992, 1993, 1994). Because of their similar habitat requirements, their external appearances are superficially similar, with high and/or inflated carapaces and relatively long ambulatory dactyli.

The authors, while revising the species described by Rathbun (1904, 1905, 1906) from Indo-China, checked many of the types now in the Muséum national d'Histoire naturelle (MP) in Paris. One of the specimens examined was the poorly known *Potamon (Potamon) inornatus* Rathbun, 1904. A study of this species showed that it was closely related to a number of related taxa in the second author's collection which had been obtained from various parts of Thailand and Laos, all of which are undescribed. While these taxa were most closely resembled species of *Thaipotamon*, they differed in several key characters which we felt justified generic distinction.

The present paper redescribes *Potamon inornatus*, as well as describes the new genus, *Pudaengon*, and seven new species.

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MATERIALS AND METHODS

The abbreviations G1 and G2 are for the male first and second pleopods respectively. Measurements are of the carapace width and length respectively. The measurements of the G1 terminal and subterminal segments, as well as the G2 basal segment are made along the longest straight line. The terminology used here essentially follows that of Ng (1988). The Thai terms Changwat and Amphoe refer to the province and district respectively.

Specimens examined are deposited in the Nationaal Naturhistorisch Museum [previously the Rijksmuseum van Natuurlijke Historie (RMNH)], Leiden; Chulalongkorn University Natural History Museum (CUMZ), Bangkok; Muséum national d'Histoire naturelle (MP), Paris; Senckenbergischen Forschung Institut (SMF), Frankfurt am Main; and the Zoological Reference Collection (ZRC), Department of Zoology, National University of Singapore.

DESCRIPTIVE PART

FAMILY POTAMIDAE

Pudaengon, new genus

Type species. - *Pudaengon mukdahan*, new species, by present designation.

Diagnosis. - Carapace appears rounded, inflated, dorsal surfaces distinctly convex transversely and longitudinally, anterolateral regions mildly or distinctly rugose, or covered with flattened granules, epigastric and postorbital cristae distinct, rounded, rugose, not sharp, close to frontal and supraorbital margins; postorbital regions narrow; frontal margin distinctly deflexed downwards, appears narrow from dorsal view; anterolateral margin with distinct crest which is lined by very small, rounded granules; epibranchial tooth very small but discernible, not clearly visible from dorsal view; external orbital angle acutely triangular. Ischium of third maxilliped appears swollen; exopod distinctly curved, outer margin distinctly convex; short, distal part not reaching, sub-equal to or slightly over-reaching distal inner edge of merus; without trace of a flagellum. Ambulatory dactyli very long. Male abdomen broadly triangular. G1 with distal part of subterminal segment narrow, neck-like; terminal segment with well developed dorsal fold which is longer than half length of segment (from ventral view). G2 with well developed distal segment, longer than half length of basal segment.

Etymology. - The name is derived from the Thai name for these crabs, "Pu Daeng", in arbitrary combination with a common ending for Asiatic potamids (from the genus name *Potamon*). Gender neuter.

Remarks. - Superficially, *Pudaengon*, new genus, bears a close resemblance to *Thaipotamon* Ng & Naiyanetr, 1993 (type species *Thaipotamon lomkao* Ng & Naiyanetr, 1993), both in the general shape of the carapace and physiognomy as well as in the structure of the G1. *Pudaengon* however, differs from *Thaipotamon* in having the carapace more rounded (vs. distinctly transverse and egg-shaped); the anterolateral regions mildly to distinctly rugose (vs. smooth); anterolateral margin distinctly cristate (vs. rounded, smooth); a proportionately shorter exopod of the third maxilliped, with the tip not reaching, subequal or slightly over-reaching the inner distal edge of the merus (vs. extending upwards to one-

quarter to one-third the length of the merus); and the exopod of the third maxilliped completely lacks a flagellum (vs. presence of a short but distinct flagellum). Also distinct (but perhaps less significant when more species of both genera are known) is that although thoracic sternites 3 and 4 are completely fused in both genera, a broad but distinct groove on each side demarcates these two segments in *Thaipotamon*. In *Pudaengon*, no such grooves are visible at all. Also, the postorbital cristae are not as swollen as those in *Thaipotamon*, and as a result the postorbital regions are more distinct. The differences observed between *Thaipotamon* and *Pudaengon* are quite distinct, and easily allow members of the two genera to be separated.

The short third maxilliped exopod which lacks a flagellum allies *Pudaengon* with the monotypic genus *Phaibulamon*. *Phaibulamon* however, differs from *Pudaengon* in having a flatter and more strongly rugose carapace, a strongly cristate anterolateral margin, a well developed epibranchial tooth, proportionately much longer ambulatory legs and chelipeds, and a very different G1 (see Ng, 1992).

Pudaengon inornatum (Rathbun, 1904)

(Figs. 1, 16A, 17A)

Potamon (*Potamon*) *inornatus* Rathbun, 1904: 311, pl. 14 fig. 6.
Ranguna (*Ranguna*) *inornatus* ? - Bott, 1970: 170.

Material examined. - Lectotype: male (48.7 by 38.8 mm) (MP-BP 192), Cochinchine (?), coll. Harmand, 1878.

Diagnosis. - Anterolateral regions rugose, covered with flattened granules. Exopod of third maxilliped does not reach distal edge of merus. Proximal lateral margins of male telson distinctly convex, broadly triangular in shape. G1 terminal segment 0.42 times length of subterminal segment, dorsal fold 0.32 times length of terminal segment (from ventral view). G2 not known.

Taxonomic remarks. - As the gender of *Pudaengon* is neuter, the specific name of the species should be amended to "inornatum".

Bott (1970) in his treatment of Potamidae, was uncertain about the validity of *Potamon inornatus*, tentatively synonymising it under *Potamon laosensis* Rathbun, 1904, and transferring the species to the genus *Ranguna* Bott, 1966. *Ranguna* is now regarded as a junior synonym of *Potamiscus* Alcock, 1909, and many of its species (including *R. laosensis*) have been referred to *Dromothelphusa* Naiyanetr, 1992 (see Naiyanetr, 1992; Ng & Naiyanetr, 1993).

We have not been able to examine fresh specimens of *P. inornatum*, and we are uncertain as to where the precise type locality is. There is also some uncertainty as to where the specimens had been collected from. Rathbun (1904: 342) listed the type locality as "Siam; aux environs de La-Khon, près de la rivière Mékong", but the label in the jar of the holotype only named "Cochinchine (?)" as the locality. As all the known *Pudaengon* species are found in northeastern and eastern Thailand, and Laos, the type locality of *P. inornatum* is probably somewhere in this region. It is important to note that the name "La-Khon" refers to what is now Nakhon Phanom province in northeastern Thailand, but the species which has been collected there is *P. thatphanom*, which is quite different from *P. inornatum* (see Table 1). In old Thai maps, there is also a place named "La-Khon" in northern Thailand, in Lampang

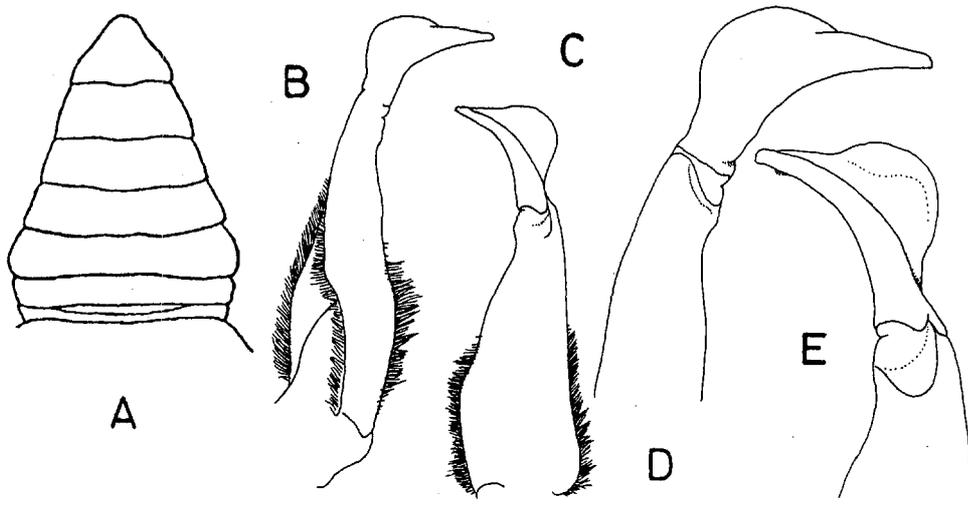


Fig. 1. *Pudaengon inornatum* (Rathbun, 1904). Lectotype male (48.7 by 38.8 mm) (MP-BP 192). A, male abdomen; B, C, left G1; D, E, G1 terminal segment; F, male abdomen. B, D, ventral view; C, E, dorsal view. A after Rathbun (1904).

Province in Amphoe Chiangmai, but no members of *Pudaengon* are known from this locality. It is also unlikely that the specimens of *P. inornatum* collected by Harmand came from the Chiangmai area because (as far as is known), he obtained his specimens only from the northeastern and eastern parts of Thailand.

Rathbun (1904) examined three male specimens and one brooding female but did not clearly indicate which was to be the holotype. In the caption to her figure of the third maxilliped and abdomen, she noted that it was from the male type, but from the scales given, one cannot be sure that the specimen for which dimensions are given (48.5 by 39.0 mm) is the holotype. We have been able to find only one specimen in the Paris Museum, and the its dimensions agree very well with that of the specimen she measured. It is here designated as the lectotype.

***Pudaengon mukdahan*, new species**
(Figs. 2, 3, 16B, 17B)

Material examined. - Holotype: male (44.1 by 35.0 mm) (ZRC 1995. 288), Ban Na Sinuan, Amphoe Muang, Changwat Mukdahan, northeastern Thailand, coll. P. Naiyanetr, 29 Oct.1991.

Paratypes: male (43.5 by 35.0 mm), female (42.2 by 33.6 mm) (ZRC 1995. 289), 1 male, 1 female (RMNH), 1 male, 1 female (SMF), 16 males (CUMZ), same data as holotype.

Diagnosis. - Anterolateral regions rugose, covered with flattened granules. Exopod of third maxilliped slightly over-reaches distal edge of merus. Proximal lateral margins of male telson gently convex, triangular in shape. G1 terminal segment 0.46 times length of subterminal segment, dorsal fold 0.29 times length of terminal segment (from ventral view). G2 with distal segment 0.60 times length of basal segment.

Etymology. - The name is derived from the type locality. It is used as a noun in apposition.

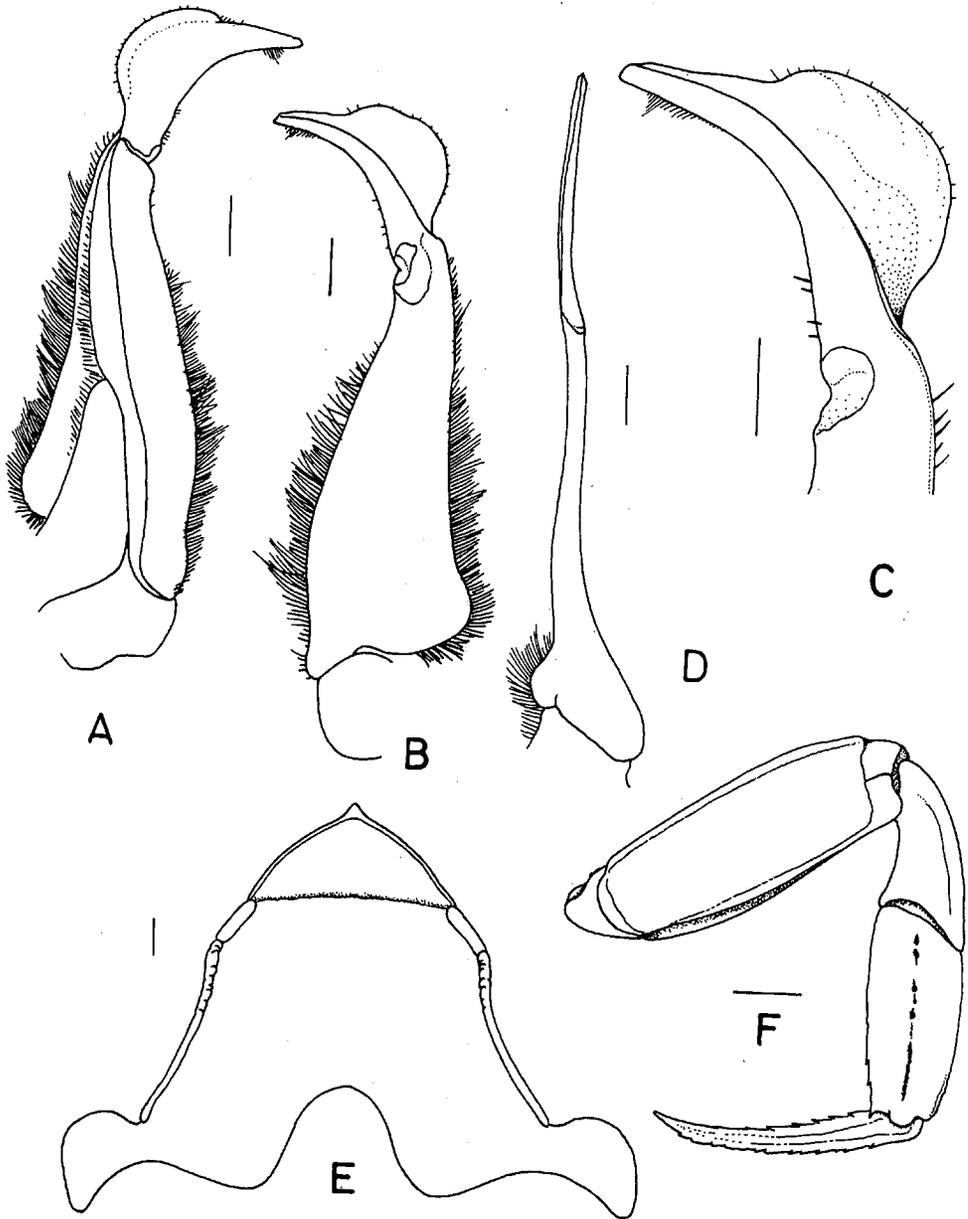
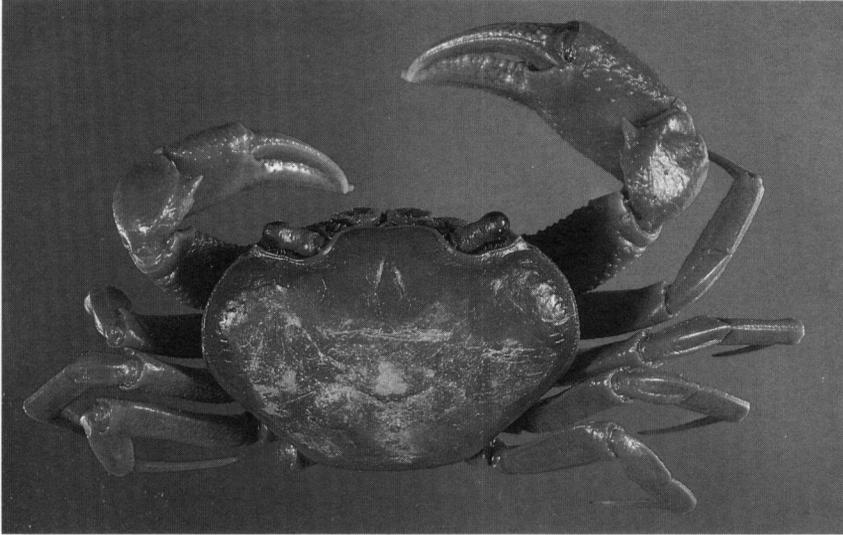
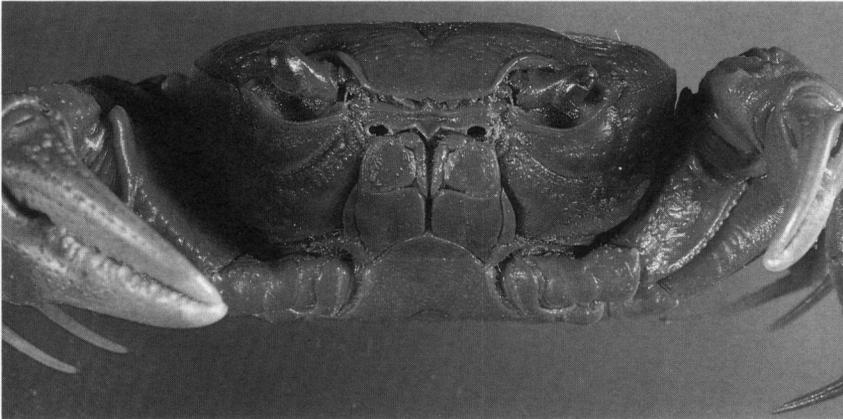


Fig. 2. *Pudaengon mukdahan*, new species. Holotype male (44.1 by 35.0 mm) (ZRC 1995.288). A, B, left G1; C, left G1 terminal segment; D, left G2; E, anterior thoracic sternum; F, right fourth ambulatory leg. A, ventral view; B, C, dorsal view. Scales = 1.0 mm.

A



B



C

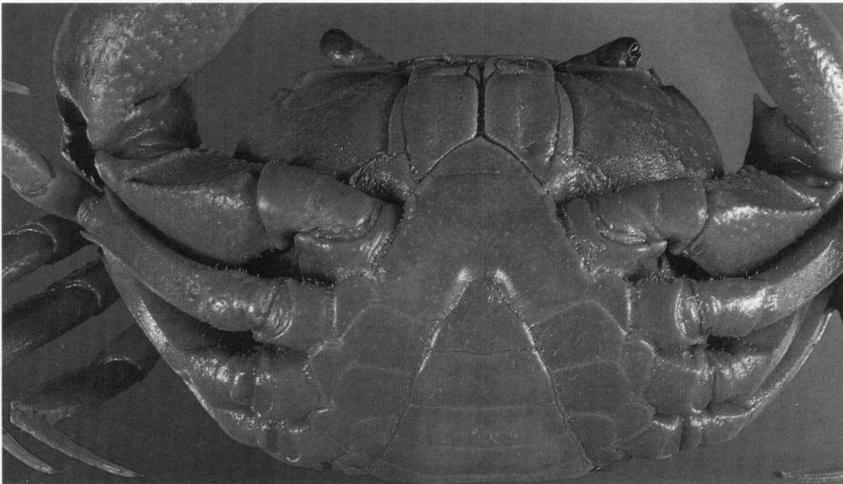


Fig. 3. *Pudaengon mukdahan*, new species. Holotype male (44.1 by 35.0 mm) (ZRC 1995.288). A, dorsal view; B, frontal view; C, ventral view.

Pudaengon wanonniwat, new species

(Figs. 4, 5, 16C, 17C)

Material examined. - Holotype: male (44.8 by 36.7 mm) (ZRC 1995.290), Amphoe Wanon Niwat, Changwat Sakon Nakhon, northeastern Thailand, coll. P. Naiyanetr, 19 Oct.1984.

Paratypes: 1 female (46.8 by 37.3 mm), 1 male (ZRC 1995.291), 1 male, 1 female (RMNH), 1 male, 1 female (SMF), 4 males, 6 females (CUMZ), same data as holotype.

Diagnosis. - Anterolateral regions rugose, covered with flattened granules. Exopod of third maxilliped slightly over-reaches distal edge of merus. Proximal lateral margins of male telson distinctly convex, broadly triangular in shape. G1 terminal segment 0.47 times length of subterminal segment, dorsal fold 0.28 times length of terminal segment (from ventral view). G2 with distal segment 0.61 times length of basal segment.

Etymology. - The name is derived from the type locality. It is used as a noun in apposition.

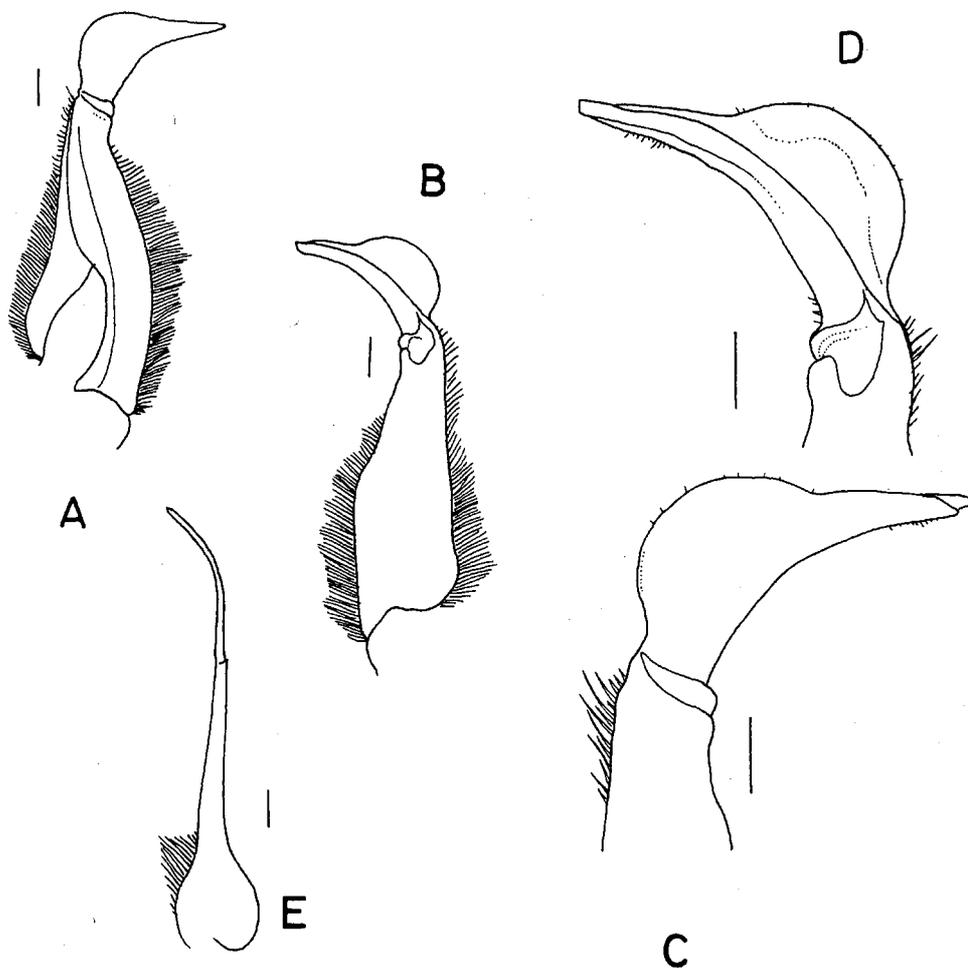
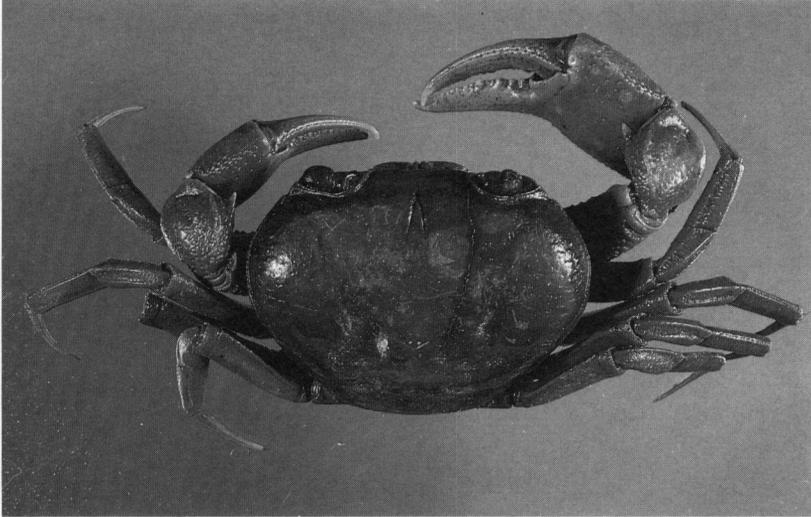
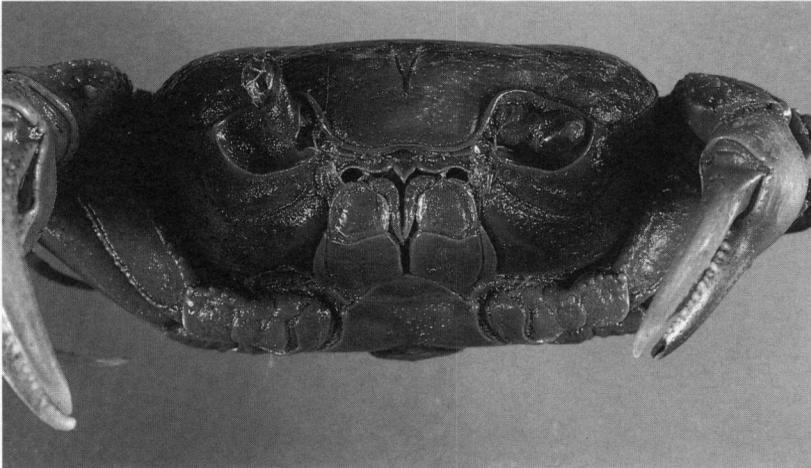


Fig. 4. *Pudaengon wanonniwat*, new species. Holotype male (44.8 by 36.7 mm) (ZRC 1995.290). A, B, left G1; C, D, left G1 terminal segment; E, right G2. A, C, ventral view; B, D, dorsal view. Scales = 1.0 mm.

A



B



C

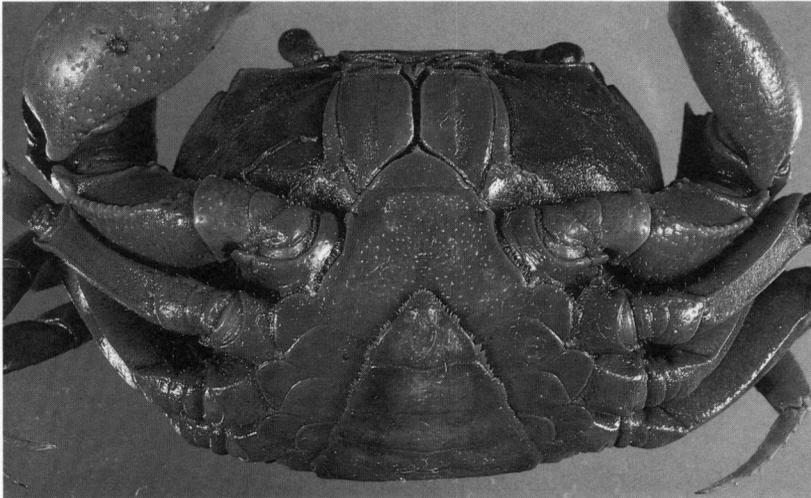


Fig. 5. *Pudaengon wanonniwat*, new species. Holotype male (44.8 by 36.7 mm) (ZRC 1995.290). A, dorsal view; B, frontal view; C, ventral view.

Pudaengon sakonnakorn, new species

(Figs. 6, 7, 16D, 17D)

Material examined. - Holotype: male (48.2 by 37.5 mm) (ZRC 1995.292), Ban Chiang Khua, Amphoe Muang, Changwat Sakon Nakhon, northeastern Thailand, coll. P. Naiyanetr, 21 Oct.1983.

Paratypes: 1 female (48.4 by 37.3 mm), 2 males (ZRC 1995.293), 1 male, 1 female (RMNH), 1 male, 1 female (SMF), 19 males, 27 females (CUMZ), same data as holotype.

Diagnosis. - Anterolateral regions strongly rugose, flattened granules prominent. Exopod of third maxilliped just reaches distal edge of merus. Proximal lateral margins of male telson gently convex, triangular in shape. G1 terminal segment 0.44 times length of subterminal segment, dorsal fold 0.30 times length of terminal segment (from ventral view). G2 with distal segment 0.52 times length of basal segment.

Etymology. - The name is derived from the type locality. It is used as a noun in apposition.

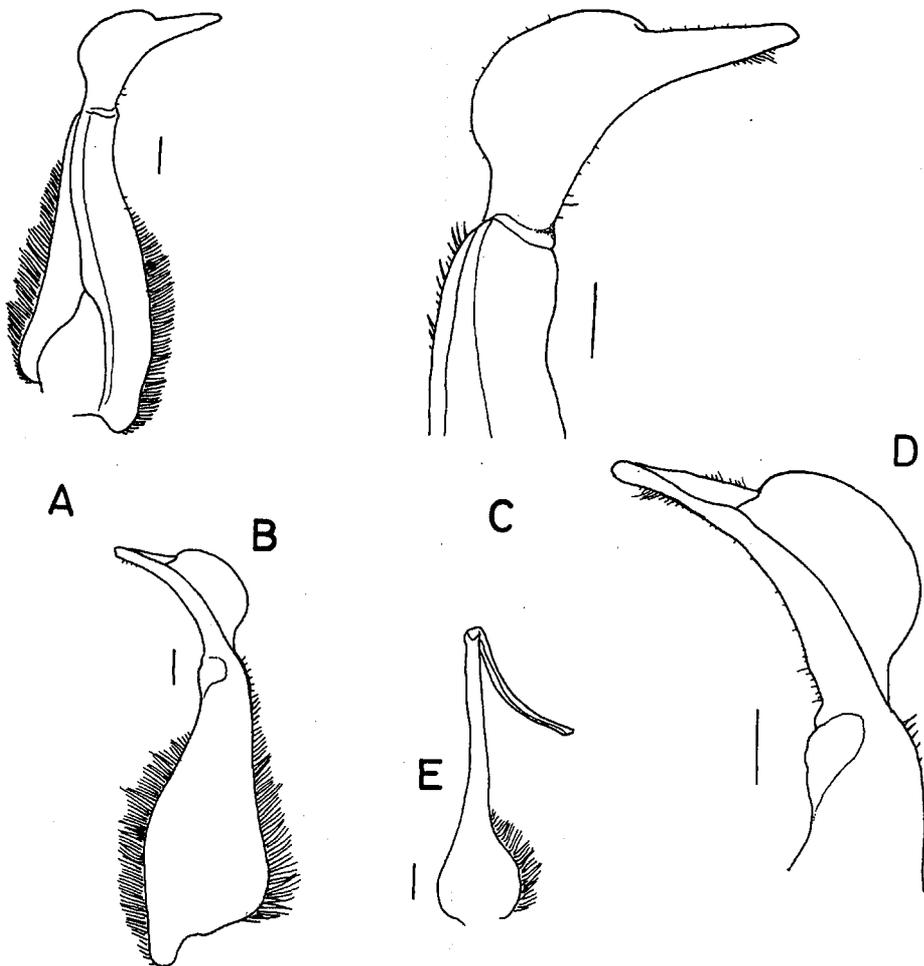


Fig. 6. *Pudaengon sakonnakorn*, new species. Holotype male (48.2 by 37.5 mm) (ZRC 1995.292). A, B, left G1; C, D, left G1 terminal segment; E, left G2. A, C, ventral view; B, D, dorsal view. Scales = 1.0 mm.