

Nakhonsimon ramromensis, a new genus and species of freshwater crab (Crustacea: Decapoda: Brachyura: Potamidae) from Nakhon Si Thammarat, Peninsular Thailand

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Abstract. A new genus and species of potamid crab, *Nakhonsimon ramromensis*, is described from Nakhon Si Thammarat, southern Thailand. The new genus resembles *Stoliczia* and *Johora* from Peninsular Thailand and Malaysia in general features, but can be distinguished by the form of the male thoracic sternites 3 and 4, and the structure of the gonopods.

Key words. *Nakhonsimon ramromensis*, new genus, new species, Brachyura, Potamidae, freshwater crab, Peninsular Thailand, taxonomy

INTRODUCTION

Specimens of an unusual potamid crab were recently collected from Khao Ram Rome, Nakhon Si Thammarat, in southern Thailand. Externally, this new species resembles members of *Stoliczia* Bott, 1966, and *Johora* Bott, 1966, but the form of the male anterior thoracic sternites 3 and 4, and the structure of the gonopod are sufficiently different to warrant the establishment of a new genus for it.

The following abbreviations are used: G1, male first gonopod; G2, male second gonopod. Measurements are given in millimeters (mm) as carapace width × length. Terminology used essentially follows Ng (1988). Thai words used in the text are Khao [= Mountain], Amphoe [= District], and Changwat [= Province]. Specimens examined are deposited in the reference collection of Princess Maha Chakri Sirindhorn Natural History Museum, Faculty of Science, Prince of Songkla University, Hat Yai, Thailand (PSUNHM); and the Zoological Reference Collection of the Lee Kong Chian Natural History Museum (ex Raffles Museum of Biodiversity Research), National University of Singapore (ZRC).

TAXONOMY

Family Potamidae Ortmann, 1896

Subfamily Potamiscinae Bott, 1970

Nakhonsimon, new genus

Type species. *Nakhonsimon ramromensis*, new species, designated herein.

Diagnosis. Dorsal carapace regions well demarcated; anterolateral margins convex; epibranchial tooth low. Surfaces of carapace, chelipeds, and ambulatory legs with numerous short stiff setae. Posterior margin of epistome with sharp median triangle, lateral margins sinuous. Exopod of third maxilliped extending beyond distal margin of ischium, reaching lower than half level of merus length, without flagellum. Ambulatory legs relatively long, articles slender. Male thoracic sternites 3, 4 separated by a distinct groove. G1 distinctly curved; curvature mainly in slender, subterminal segment; terminal segment straight, longer than half length of subterminal segment, spatuliform. G2 distal segment longer than half length of basal segment.

Etymology. The name is an arbitrary combination of Changwat (= Province) Nakhon Si Thammarat, the type locality of the type species, in combination with the genus name *Potamon*. Gender of genus neuter.

Remarks. *Nakhonsimon*, new genus, appears to be morphologically closest to *Stoliczia* Bott, 1966 (type species *Telphusa stoliczkana* Wood-Mason, 1871) in the general shape and structure of the carapace, and in having no flagellum on the exopod of the third maxilliped. *Stoliczia* contains 15 species and is distributed across the northern half of Peninsular Malaysia to southern Thailand (Ng 1988, 1992b, 1993, 2004; Ng et al., 2008), *Nakhonsimon*, however, differs

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in several important respects, viz. male thoracic sternites 3 and 4 are separated by a distinct groove (Fig. 1C) (versus not visible in *Stoliczia*, with thoracic sternites 3 and 4 completely fused to each other); the relatively longer ambulatory merus (ratio of length of last ambulatory merus to median length of carapace, 0.60, versus 0.43–0.59 in *Stoliczia* species) (Fig. 1A); and the strongly curved G1 subterminal segment which has the distal portion slender (Fig. 2B, C) (versus straighter subterminal segment of G1 with the distal portion relatively broader, gradually tapering distally in *Stoliczia*) (cf. Ng, 1988: figs. 24–36; Ng, 1992b: figs. 4A–E, pl. 3 fig. A; Ng, 1993: figs. 3A, C–F, 4A–E, 5A, C–F, pl. 3 fig. A, pl. 4 fig. A; 2004: fig. 8J).

Johora Bott, 1966, which occurs from southern Thailand to Singapore, is also morphologically similar to *Nakhonsimon* in general shape and structure of the carapace. The G1s of *Johora* species, however, are never as strongly curved (cf. Ng 1987, 1988, 1990). *Johora* also differs from *Nakhonsimon* in possessing a distinct flagellum on the exopod of the third maxilliped, and having no visible groove between the male thoracic sternites 3 and 4 (cf. Ng, 1988: figs. 13–23; 2004: figs. 7G–K; Yeo, 2001: figs. 1A–C, F, 2C–F; Leelawathanagoon et al., 2005: figs. 1, 2A, B, D–F).

Another terrestrial potamid genus known from southern Thailand, *Terrapotamon* Ng, 1986, also lacks a flagellum on the exopod of the third maxilliped, and has relatively long, slender ambulatory legs with slender dactyli. *Nakhonsimon*, however, can be distinguished from *Terrapotamon* by its distinctly lower carapace (ratio of carapace width to height 2.2, versus 1.6 in *Terrapotamon*); the merus of the third maxilliped being more squarish (versus more elongate, i.e., longer than wide); the presence of a groove between the male thoracic sternites 3 and 4 (versus not visible); and the strongly curved G1 with a proportionately long terminal segment, (about half length of subterminal segment) and lacking the large prominent swelling along margins (versus gently curved, with a proportionately short terminal segment (about 0.22–0.37 times length of subterminal segment), and a distinct subdistal swelling on the outer margin between terminal and subterminal segments) (cf. Ng, 1988: fig. 37C; Ng & Naiyanetr, 1998: figs. 1C–F, F–I; Leelawathanagoon et al., 2010: figs. 1C, D, F–I, 2C, 3).

Other Thai potamid genera that have visible sutures or grooves between the male thoracic sternites 3 and 4 are *Beccumon* Yeo & Ng, 2007; *Phaibulamon* Ng, 1992a; *Takpotamon* Brandis, 2002; and *Thaipotamon* Ng & Naiyanetr, 1993. *Nakhonsimon* is readily differentiated from *Beccumon*, *Takpotamon*, and *Thaipotamon* by the complete absence of a flagellum on the exopod of the third maxillipeds. In *Phaibulamon*, the exopod of the third maxilliped is even shorter, just reaching the distal edge of the ischium (versus distinctly beyond the distal edge of the ischium in *Nakhonsimon*). In any case, the G1 structures of these four genera are very different from that of *Nakhonsimon* in that the subterminal segment does not bend outwards (cf. Ng, 1992a: figs. 1, 2A, B; Ng & Naiyanetr, 1993: figs. 4C, 5C, 16C, 17C, 20C, 37A, 38A,

39A, 51A, 52A, 54A; Naiyanetr, 2001: fig. 1D; Brandis, 2002: fig. 16; Yeo & Ng, 2007: 280).

***Nakhonsimon ramromensis*, new species**
(Figs. 1–4)

Material examined. Holotype: male (31.8 × 24.6 mm) (PSUNHM 211514-333-0005), Channel 7 television broadcasting stations, Khao Ram Rome, ca. 996 m asl, Amphoe Ron Phibun, Changwat Nakhon Si Thammarat, Peninsular Thailand, coll. R. Promdam, 2 December 2011.

Paratypes: —1 male (17.8 × 14.4 mm) (PSUNHM 211514-333-0006), stream from Lalana Waterfall, Khao Ram Rome, Amphoe Ron Phibun, Changwat Nakhon Si Thammarat, southern Thailand, coll. R. Promdam, 26 December 2011; 1 female (16.7 × 13.4 mm), 1 juvenile (13.0 × 10.7 mm) (PSUNHM 211514-333-0007), stream from Lalana Waterfall, Khao Ram Rome, Amphoe Ron Phibun, Changwat Nakhon Si Thammarat, Peninsular Thailand, coll. R. Promdam, 10 April 2012; 1 male (20.8 × 16.2 mm) (ZRC 2013.0692),

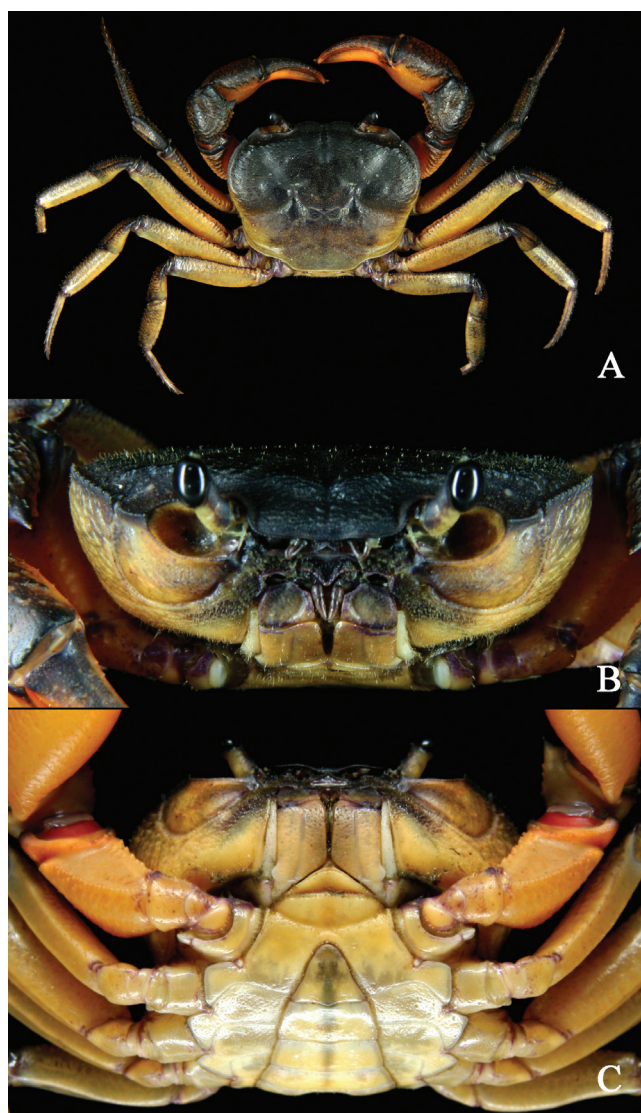


Fig. 1. *Nakhonsimon ramromensis*, new genus and species, holotype, male, 31.8 × 24.6 mm, PSUNHM 211514-333-0005. A, dorsal view; B, frontal view; C, ventral view.

stream from Lalana Waterfall, Khao Ram Rome, Amphoe Ron Phibun, Changwat Nakhon Si Thammarat, Peninsular Thailand, coll. R. Promdam, 10 April 2012.

Description of male holotype. Carapace (Fig. 1A) squarish; dorsal surfaces relatively flat, regions distinct, almost glabrous except for scattered short, stiff setae, lateral regions with distinct oblique striae, cervical grooves distinct, very broad, shallow, reaching deep H-shaped central depression. Anterolateral margins arcuate, crested, lined with blunt granules, appearing gently serrated, clearly separated from distinctly converging posterolateral margins. Frontal margin gently deflexed, straight, not clearly separated from supra-orbital margin; epibranchial tooth low, separated from external orbital angle by distinct cleft; external orbital angle broadly triangular, outer margin straight, gently serrated, twice as long as inner margin. Epigastric cristae distinct, rugose, not sharp, slightly anterior of postorbital cristae, clearly separated by broad groove. Orbits large, eyes well developed, corneal pigmentation well developed, distinct. Sub-orbital, sub-branchial, pterygostomial regions (Fig. 1B) rugose. Outer surfaces of epistome (between anterior, posterior margins), pterygostomial regions hirsute. Anterior margin of epistome (Fig. 1B) almost straight, parallel with frontal margin; posterior margin with one median triangular tooth, lateral margins sinuous.

Exopod of third maxilliped (Fig. 2A) extending beyond distal margin of ischium, reaching lower than half level of merus length, without trace of flagellum. Ischium with deep median groove. Merus squarish, cristate along margins.

Chelipeds (Fig. 1A) unequal, right larger, fingers of both chelae distinctly longer than palm. Outer surfaces of all articles rugose. Carpus with robust, obliquely directed

subdistal spine on inner angle. Merus without subterminal spine.

Ambulatory legs relatively long, slender, second leg longest, last leg shortest; surfaces of all articles rugose, dorsal margin gently serrated. Dactylus of first leg about 8 times as long as high. Dactylus length about 1.4 times that of propodus when measured dorsally. Propodus slightly longer than carpus. Merus without distinct subdistal spine. Lower margin of ambulatory merus, propodus, dactylus with scattered short stiff setae.

Suture between thoracic sternites 2, 3 (Fig. 1C) distinct, very gently convex (towards buccal field). Thoracic sternites 3, 4 separated by a distinct groove, extending from base of chelipeds to tip of margin of sternoabdominal cavity. Thoracic sternite 8 completely separated by longitudinal median line, lacking transverse ridge. Press button abdominal locking mechanism on sternite 5, knob-like, small. Abdomen triangular; telson subequal in length to somite 6, lateral margins weakly concave, tip rounded; somite 1 reaches base of last pair of legs; somites 2–6 progressively broader, longer anteriorly.

Male gonopores coxal. G1 (Fig. 2B, C) terminal segment clearly separated from subterminal segment about 0.5 times length, straight, long, without dorsal flap, tip rounded; distal portion of subterminal segment bent, slender. G2 (Fig. 2D) long, slender; flagellum long, forming circular curve, as long as basal segment.

Female characters. The paratype female (16.7 × 13.4 mm) is still immature, with the abdomen not completely covering the anterior thoracic sternum. The non-sexual characters are similar to the male holotype in nearly all respects. The vulvae,

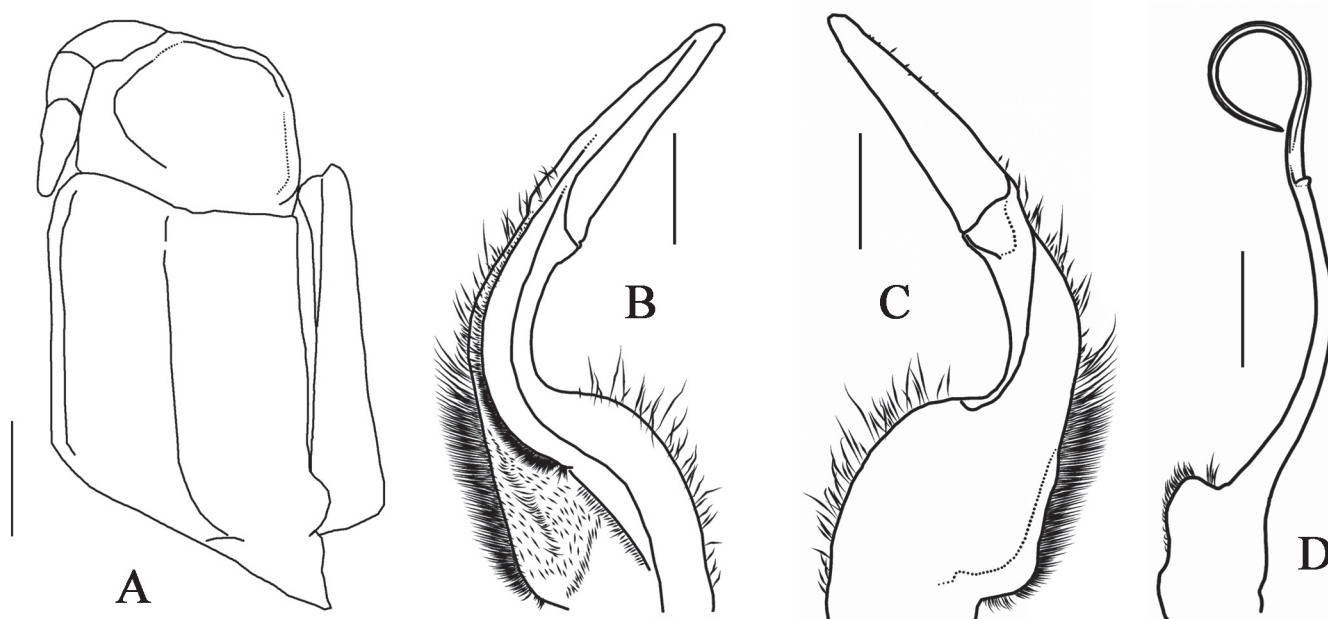


Fig. 2. *Nakhonsimon ramromensis*, new genus and species, holotype, male, 31.8 × 24.6 mm, PSUNHM 211514-333-0005. A, left third maxilliped; B, ventral view of left G1; C, dorsal view of left G1; D, left G2. Scale bars = 2.0 mm.

however, are relatively large, elliptical in shape, without operculums; positioned on anterior half of sternite 6 (Fig. 3).

Etymology. The species is named after the type locality, Khao Ram Rome.

Remarks. The characters that distinguish *Nakhonsimon ramromensis* from the superficially similar species of *Stoliczia* and *Johora* have already been discussed (see earlier).

Some characters of *Nakhonsimon ramromensis* vary with increasing size. In a relatively smaller specimen (20.8 × 16.2 mm, ZRC 2013.0692), the epibranchial tooth is indistinct and not clearly separated from the external orbital angle; and the G1 subterminal segment is slightly straighter.

Colour. Dirty brown to dark gray on all dorsal aspects (Fig. 1). Ventral surfaces of carapace are pale orange. Proximal lateral of ambulatory legs are light orange. Lower oblique two thirds of the dactylus of chelipeds, lower oblique half of the palm, and the entire pollex are orange. The tips of fingers are beige-coloured. The integument at the articulations between the carpus and merus of the chelipeds is bright red (Figs. 1C, 4).

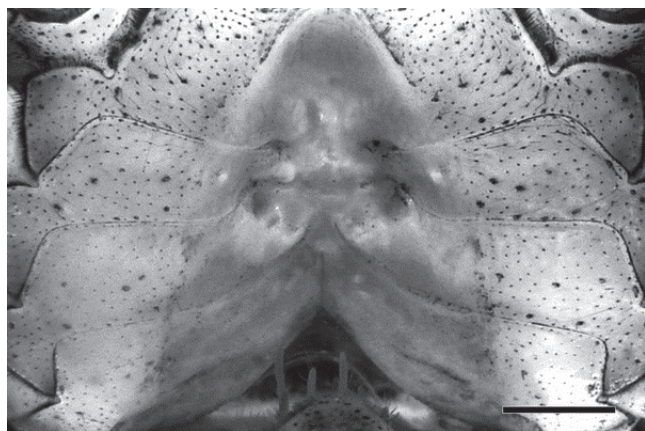


Fig. 3. Vulvae position of *Nakhonsimon ramromensis*, new genus and species, paratype, female, 17.8 × 14.4 mm, PSUNHM 211514-333-0006. Scale bar = 2.0 mm



Fig. 4. Live coloration of *Nakhonsimon ramromensis*, new genus and new species, holotype, male, 31.8 × 24.6 mm, PSUNHM 211514-333-0005.

Habitat. Adults of this species appear to be completely terrestrial, as they were found far away from any permanent water sources; the holotype male was found in a temporary pool on the highest point of the mountain ridge (about 996 m above sea level). Smaller crabs were observed in a phytelm on a tree trunk that grows near the stream. Most juveniles were found beneath rocks in the main stream.

The gecarcinucid *Phricotelphusa aedes* (Kemp, 1923) was collected in the same vicinity as *Nakhonsimon ramromensis*.

Distribution. So far only known from the type locality on Khao Ram Rome, Changwat Nakhon Si Thammarat, Peninsular Thailand, but can probably be found in adjacent areas as well.

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