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***Siamopsis* gen. nov. and five new species of the subfamily Cypridopsinae Kaufmann, 1900 (Crustacea: Ostracoda) from Thailand**

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Abstract. *Siamopsis* gen. nov., described here, belongs to a group of genera with the right valve overlapping the left valve in the subfamily Cypridopsinae Kaufmann, 1900 of the family Cyprididae Baird, 1845. The distinguishing characters of the new genus are in the morphology of its valves and soft parts. The postero-dorsal margin of the internal left valve is plate-like protruded. The morphology of this plate varies in different species, e.g., some species bear a tooth-like tubercle on the plate. The posterior margin of the right valve is recurved inwardly at ca mid-height, resulting in the occurrence of a lobe-like expansion that can clearly be seen in the dorsal and caudal views of the carapace. In addition, the other diagnostic soft part features of the new genus are the cylindrical caudal ramus, the presence of two t-setae on the female A2 penultimate segment, the very elongated terminal segment of the Mx1 palp, the morphology of the two large bristles (tooth bristles) of the Mx1 third endite (one smooth, one serrated) and the absence of d-seta on T1. In the present paper, five new species are described under this new genus: *Siamopsis renateae* gen. et sp. nov., *S. sutajiti* gen. et sp. nov., *S. conspecta* gen. et sp. nov., *S. khoratensis* gen. et sp. nov. and *Siamopsis planitia* gen. et sp. nov. A key to the species of *Siamopsis* gen. nov. is also provided.

Keywords. Cypridopsinae, biodiversity, taxonomy, new species, Thailand.

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Introduction

The subfamily Cypridopsinae Kaufmann, 1900, with *Cypridopsis* Brady, 1867 as type genus, is characterized by a reduced caudal ramus that forms flagellum-like structures. About 204 species in 17 genera of subfamily Cypridopsinae have so far been recognized worldwide (Martens & Savatnalinton 2011; Higuti & Martens 2012). The subfamily contains six monospecific genera: *Austrocypridopsis* McKenzie, 1982, *Bryocypris* Røen, 1956, *Cabelocypridopsis* Higuti & Martens, 2012, *Klieopsis* Martens *et al.*, 1991, *Thermopsis* Kulköylüoğlu *et al.*, 2003 and *Tungocypridopsis* Victor & Fernando, 1983. Four of those genera, together with three multispecific others (*Martenscypridopsis* Karanovic,

2000, *Pseudocypridopsis* Karanovic, 1999 and *Tanganyikacypridopsis* Martens, 1985), are endemic to specific zoogeographical regions. The most diverse and widely distributed genus is *Cypridopsis*, which contains 77 species occurring in all eight zoogeographical regions, namely the Antarctic, Afrotropical, Australasian, Nearctic, Neotropical, Oriental, Palaearctic and Pacific regions and the Oceanic Islands (Martens & Savatnalinton 2011). In Southeast Asia, only six species of this subfamily, belonging to two genera, have been reported: *Cypridopsis exigua* G.O. Sars, 1903, *C. adusta* G.O. Sars, 1903, *C. dubia* G.O. Sars, 1903, *Plesiocypridopsis albida* (Vávra, 1897), *P. arsenia* (Tressler, 1937) and *P. cf. newtoni* (Brady & Robertson, 1870) (Sars 1903; Tressler 1937; Hartmann 1964; Victor & Fernando 1981). There is only one identified cypridopsine species, *Cypridopsis vidua* (Müller, 1776), known from Thailand (Savatnalinton *et al.* 2008; Savatnalinton & Martens 2009, 2010; Savatnalinton & Suttajit 2016). However, recently published studies of non-marine ostracods in Thailand have increased the number of new species and genera in the area (Savatnalinton 2015, 2017, Savatnalinton & Suttajit 2016). In the present contribution, one new genus and five new species of this subfamily are described from Thailand. The remaining cypridopsine taxa will be presented elsewhere.

Material and methods

Samples were collected with a hand net (mesh size 150 µm), preserved in 70% ethanol and sorted using an Olympus SZ-PT stereo-microscope. Soft parts were dissected in glycerine and sealed on glass slides. Valves were stored dry in micropalaeontological slides. Drawings of soft parts were made with the aid of a *camera lucida*. Carapaces and valves were observed and illustrated using a scanning electron microscopy (JEOL JSM6460LV at the Faculty of Science, MSU and Philips XL30 SEM at RBINS). The chaetotaxy of the limbs follows the model proposed by Broodbakker & Danielopol (1982), revised for the A2 by Martens (1987) and for the thoracopods by Meisch (2000). Type material of all species is deposited in the Natural History Museum, MSU (Maha Sarakham, Thailand).

Abbreviation used in text and figures

Institutional acronyms:

- MSU = Mahasarakham University, Maha Sarakham, Thailand
 MSU-ZOC = Ostracod Collection of the Natural History Museum, Mahasarakham University, Maha Sarakham, Thailand
 RBINS = Royal Belgian Institute of Natural Sciences, Brussels

The following abbreviations are used for valves and carapace:

- CpC = carapace in caudal view
 CpD = carapace in dorsal view
 CpL = carapace in left lateral view
 CpR = carapace in right lateral view
 H = height of valves
 L = length of valves
 LV = left valve
 LVe = left valve external view
 LVi = left valve internal view
 RV = right valve
 RVe = right valve external view
 RVi = right valve internal view
 W = width of carapace

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The following abbreviations are used for limbs:

- A1 = first antenna
- A2 = second antenna
- CR = caudal ramus
- Md = mandibula
- Mx1 = maxillula
- T1 = first thoracopod (maxilliped)
- T2 = second thoracopod (walking leg)
- T3 = third thoracopod (cleaning leg)

Results

Taxonomic descriptions

Class Ostracoda Latreille, 1802
Subclass Podocopa G.O. Sars, 1866
Order Podocopida G.O. Sars, 1866
Suborder Cypridocopina Jones, 1901
Superfamily Cypridoidea Baird, 1845
Family Cyprididae Baird, 1845
Subfamily Cypridopsinae Kaufmann, 1900

Siamopsis gen. nov.

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Type species

Siamopsis renateae gen. et sp. nov. (here designated)

Diagnosis

RV overlapping LV anteriorly, ventrally and posteriorly. LV in internal view with postero-dorsal plate. Posterior margin of RV recurved inwardly. Wouters organ on A1 present, aesthetasc ya long. Terminal segment of Mx1 palp cylindrical, very elongated (length > 2 × width). A2 with well developed claws, long natatory setae, with two t-setae in females. T1 with a-setae (b, c and d setae absent). T2 with d2 seta (d1 seta absent). CR reduced, flagellum-like, cylindrical in shape.

Etymology

The genus is named after the country “Siam”, the former name of Thailand, where the new taxa were discovered. The name is combined with the suffix of the existing generic name Cypridopsis.

Differential diagnosis

Siamopsis gen. nov. can be distinguished from other genera of the subfamily Cypridopsinae by the presence of a postero-dorsal internal plate of the LV and the morphology of the posterior inner valve margin of the RV, which is recurved inwardly. Additionally, it differs from its closest genus, *Plesiocypridopsis* Rome, 1965, by the presence of the A1 Wouters organ, the two t-setae of the female A2 (there are four t-setae in *Plesiocypridopsis*) and the morphology of the two large bristles (teeth bristles) on the Mx1 third endite, of which one bristle is smooth while the other one is serrated (both setae are serrated in *Plesiocypridopsis*).

Species included

Siamopsis renateae gen. et sp. nov., *S. suttajiti* gen. et sp. nov., *S. conspecta* gen. et sp. nov., *S. khoratensis* gen. et sp. nov., *S. planitia* gen. et sp. nov.

Distribution

Thailand (present study).

Remarks

The postero-dorsal plate of the internal LV bears tooth- or teeth-like tubercle(s) in several species of *Siamopsis* gen. nov. The position of these tubercles can vary from species to species, being on, for example, the margin or in the middle of the plate. The degree of the inward curve on the RV posterior margin is different among species. Therefore, these aspects are used as taxonomic characters for identification.

Siamopsis renateae gen. et sp. nov.

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Figs 1–4, 19A, 20

Diagnosis

Carapace in lateral view subtriangular, dorsal margin strongly arched, slightly angulated at postero-dorsal part, greatest height situated in front of mid-length, RV overlapping LV anteriorly, ventrally, posteriorly. Valve surface set with long (rim-pore) setae and shallow pits dispersedly. Carapace in dorsal view tumid with even lateral margins. LV in internal view, with large marginal zone anteriorly, both anterior and posterior valve margins subequally rounded, postero-dorsal plate broad with two small marginal teeth-like tubercles, inner lamella calcified, with inner lists anteriorly and posteriorly. RV in internal view with large marginal zone anteriorly, inner lamella with inner lists anteriorly and posteriorly, without small tubercle-like structures under posterior inner list. Mx1 third endite with two (one smooth, one serrated) large bristles, terminal segment of Mx1 palp cylindrical, very elongated. CR of cylindrical shape, with flagellum-like seta.

Etymology

This species is named after Dr. Renate Matzke-Karasz (Munich University, Germany) in appreciation of her outstanding work on ostracods and also for a long friendship.

Material examined

Holotype

THAILAND: ♀, with soft parts dissected in glycerine on a sealed glass slide and valves stored dry in a micropalaeontological slide (MSU-ZOC.190).

Paratypes

THAILAND: 1 ♀, same data as for holotype (MSU-ZOC.191–192); 2 ♀♀ carapaces, stored dry in micropalaeontological slides (MSU-ZOC.193–194); ca 5 ♀♀ in 70% EtOH.

Other material

THAILAND: **Nakhon Ratchasima Province**: Sikhiu District, Sub Pradu Reservoir (locality 2 in Fig. 20), 14°57'57" N, 102°05'03" E, 6 Feb. 2006. Accompanying ostracod fauna: *Potamocypris* sp., *Physocypria* sp. 2, *Physocypria* sp. 3, *Limnocythere stationis* Vavra, 1891, *Strandesia* (juveniles). – **Phayao Province**: Mae Jai District, Mae Peum Reservoir (locality 3 in Fig. 20), 19°21'29" N, 99°51'45" E, 7 Oct. 2007.

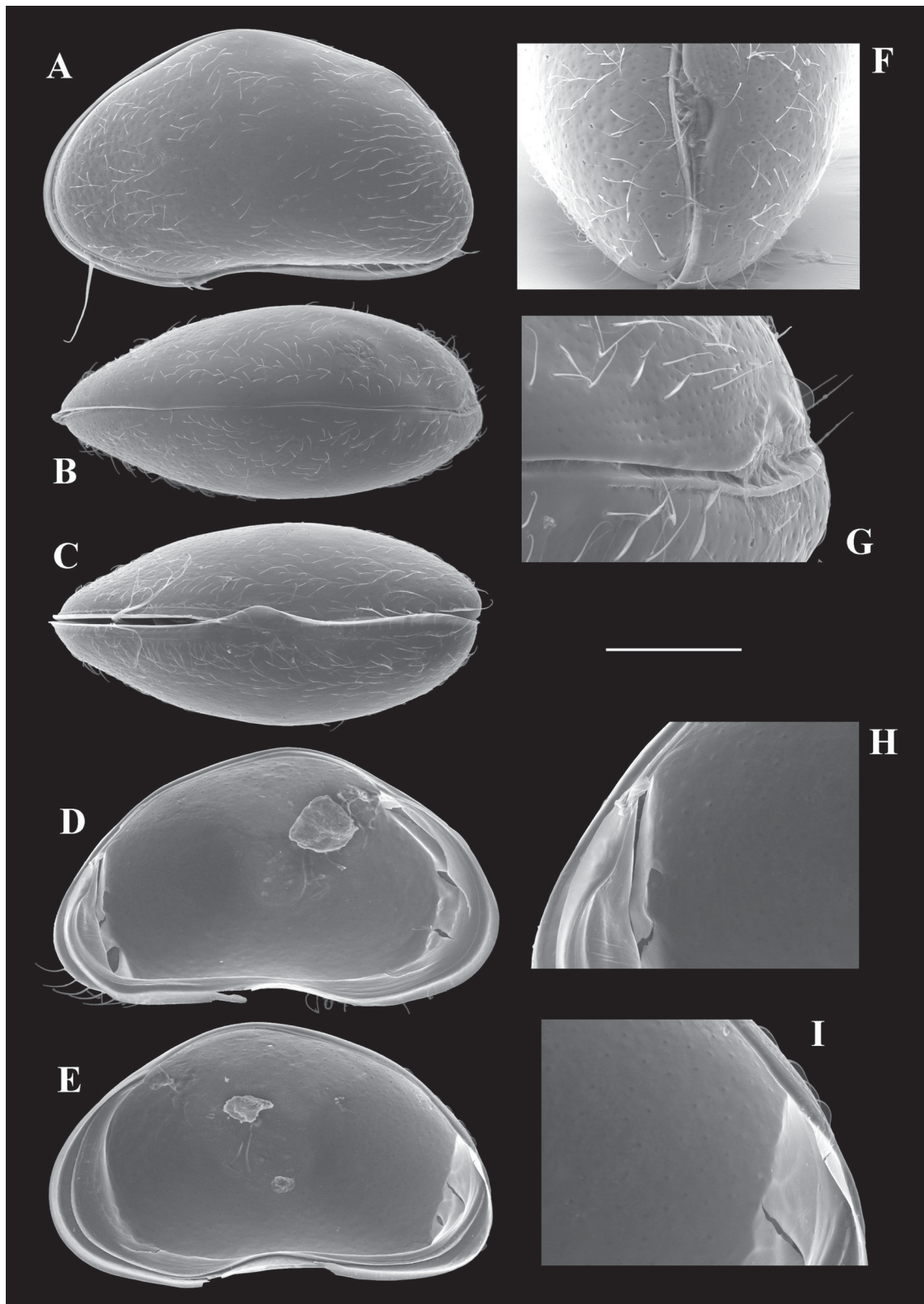


Fig. 1. *Siamopsis renateae* gen. et sp. nov., ♀. **A.** CpL (MSU-ZOC.193). **B.** CpD (MSU-ZOC.194). **C.** CpV (idem). **D.** LVi (MSU-ZOC.190). **E.** RVi (idem). **F.** CpC (MSU-ZOC.194). **G.** Posterior end of CpD (idem). **H.** Postero-dorsal part of LVi (MSU-ZOC.190). **I.** Postero-dorsal part of RVi (idem). Scale bar: A–E = 200 µm; F = 43 µm; G = 135 µm; H–I = 84 µm.

Accompanying ostracod fauna: *Hemicypris exigua* Broodbakker, 1983, *Stenocypris malayica* Victor & Fernando, 1981, *Bradleystrandesia weberi* (Moniez, 1892), *Bradleytriebella lineata* (Victor & Fernando, 1981), *Pseudostrandesia mamarilorum* (Victor & Fernando, 1981), *Strandesia kraepelini* (Müller, 1906), *S. perakensis* Victor & Fernando, 1981, *Tanycypris siamensis* Savatnalinton & Martens, 2009, *Cyprretta* sp. and *Physocypris* sp. 3. – **Chiang Rai Province**: Chiang Saen District, rice field (locality 4 in Fig. 20), 20°16'10" N, 100°03'09" E, 25 Sep. 2005. Accompanying ostracod fauna: *Vestalenula boteai* (Danielopol, 1970) and *Strandesia* (juveniles). – **Phitsanulok Province**: Wat Boht District, roadside canal (locality 5 in Fig. 20), 16°09'52" N, 100°19'47" E, 12 Feb. 2006. Accompanying ostracod fauna: *Chrissia humilis* (Klie, 1932), *Hemicypris exigua*, *Pseudostrandesia mamarilorum*, *Pseudocyprretta maculata* Klie, 1932, *Physocypris* sp. 1, *Physocypris* sp. 2, *Ilyocypris* sp. and *Limnocythere stationis* Vavra, 1891. – **Phetchabun Province**: Muang District, Nong Naree (swamp) (locality 6 in Fig. 20), 16°26'24" N, 101°08'29" E, 9 Oct. 2007. Accompanying ostracod fauna: *Bradleycypris vittata* (Sars, 1903), *Bradleystrandesia weberi*, *Strandesia kraepelini*, *Cyprretta* sp. 3, *Potamocypris* sp., *Siamopsis planitia* gen. et sp. nov., *Physocypris* sp. 2 and *Physocypris* sp. 3. – **Chaiyaphum Province**: Konsarn District, rice field (locality 7 in Fig. 20), 16°23'3" N, 101°58'47" E, 9 Oct. 2007. Accompanying ostracod fauna: *Pseudostrandesia calapanensis* (Tressler, 1937), *P. mamarilorum*, *Strandesia sexpunctata* Klie, 1932, *Cyprretta* sp. 3 and *Physocypris* sp. 1. – **Chaiyaphum Province**: pond (locality 8 in Fig. 20), 16°23'3" N, 101°58'47" E, 9 Oct. 2007. Accompanying ostracod fauna: *Cypris subglobosa* Sowerby, 1840, *Strandesia sexpunctata*, *Cyprretta* sp. 3 and *Physocypris* sp. 1.

Type locality

THAILAND: Nakhon Ratchasima Province, Muang District, irrigation ditch (locality 1 in Fig. 20), 14°43'46" N, 104°33'56" E, 5 Oct. 2010. Accompanying ostracod fauna: *Cypris subglobosa* Sowerby, 1840, *Cyprinotus uenoi* Brehm, 1936, *Stenocypris* cf. *orientalis* Victor & Fernando, 1981, *Siamopsis khoratensis* gen. et sp. nov., *S. conspecta* gen. et sp. nov. and *S. planitia* gen. et sp. nov.

Differential diagnosis

Siamopsis renateae gen. et sp. nov. differs from the other species of the new genus by the presence of a strongly arched dorsal margin, resulting in the subtriangular carapace in lateral view (elongated shape in other species), the postero-dorsal plate on LV having two small, teeth-like tubercles on the inner border and the absence of tiny tubercle-like structures under the RV posterior inner list. Additionally, the ya and accompanying seta on A1 are subequal in length in *S. renateae* gen. et sp. nov. while the length of the accompanying seta is ca 2/3 that of ya in other species of *Siamopsis* gen. nov. Compared to the g-seta on T2, the length of the seta located next to the g-seta is short (ca 1/3 of g-seta) in *S. renateae* gen. et sp. nov. The length of this seta is ca half of that of the g-seta in other species of *Siamopsis* gen. nov.

Measurements (mean, in µm)

LV (n = 2), L = 653, H = 393; RV (n = 2), L = 649, H = 401; carapace (n = 2), L = 631, W = 302.

Description

Female

CARAPACE. In lateral view (Fig. 1A) subtriangular, anterior margin rounded, posterior margin narrower rounded, dorsal margin strongly arched and slightly angulated at postero-dorsal part, greatest height situated in front of mid-length, RV overlapping LV anteriorly, ventrally and posteriorly, valve surface set with long setae, long rim-pore setae and shallow pits dispersedly. Carapace in dorsal view (Fig. 1B, G) tumid, with evenly curved lateral margins, greatest width situated at mid-length, posterior extremity round, anterior extremity more pointed.

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VALVES. LV in internal view (Fig. 1D, H) with large marginal zone anteriorly, both valve margins subequally rounded, ventral margin sinuous at mid-length, postero-dorsal plate broad, with two small marginal teeth-like tubercles, calcified inner lamella with inner lists anteriorly and posteriorly. RV in internal view (Fig. 1E, I) with large marginal zone anteriorly, ventral margin sinuous at mid-length, inner lamella calcified with inner lists anteriorly and posteriorly.

A1 (Fig. 2A). Seven-segmented, first segment with large proximal Wouters organ, one long dorso-subapical seta (reaching beyond tip of next segment) and two long ventro-apical setae. Second segment slightly wider than long, with one long dorso-apical seta (reaching tip of next segment) and Rome organ. Third segment bearing two setae: one long dorso-apical (reaching tip of penultimate segment) and one short ventro-apical. Fourth segment with two long dorsal setae and two short ventral setae (both reaching beyond half of fifth segment). Fifth segment dorsally with two long setae, ventrally with two (one long, one short) setae, short one reaching beyond end of next segment. Penultimate segment with four long apical setae. Terminal segment with three (two long, one short) apical setae and long aesthetasc ya, length of short seta ca $\frac{1}{3}$ of aesthetasc ya.

A2 (Fig. 2B). Exopodite with three (one long, two short) setae, long one reaching beyond tip of first endopodal segment. First endopodal segment with five long (reaching far beyond tips of terminal claws) and one short natatory seta, length of shortest seta ca half that of penultimate segment, aesthetasc Y long, ventro-apical seta long, extending beyond tip of terminal segment. Penultimate segment undivided, distally with three serrated claws (G1, G2, G3), G2 shorter (length of G2 ca $\frac{3}{4}$ that of G1), aesthetasc y2 long (ca half of terminal segment), z1–z3 setae long; this segment medially with two subequally long dorsal setae, two ventral setae of unequal length (t1–t2). Terminal segment distally with two serrated claws (GM and Gm), length of Gm ca $\frac{2}{3}$ that of GM; medially with short g-seta and ventral aesthetasc y3, length of aesthetasc y3 and accompanying seta subequal.

MD PALP (Fig. 3A). First segment with two large setae, one long and slender seta, and a short, smooth α -seta. Second segment dorsally with three unequal long apical setae; ventrally with group of three long hirsute setae, one shorter hirsute seta and plumose, cone-shaped β -seta with pointed tip. Penultimate segment with three groups of setae: dorsally with group of four unequal, long, subapical setae; laterally with apical γ -seta and three further apical setae (two smooth, one hirsute), the former thin and long (length ca 2.2 times that of terminal segment); ventrally with two subapical setae, one very long (reaching beyond tip of terminal segment), one short (ca half length of terminal segment). Terminal segment elongated, bearing three claws and two shorter setae.

Mx1 (Fig. 3B). With two-segmented palp, basal segment of palp dorsally with group of five long, unequal apical setae; ventrally with one short subapical seta. Terminal segment very elongated (length ca 2.8 times width), apically with three claws and two setae. Third endite with two (one smooth, one serrated) large bristles. Sideways-directed bristles on first endite unequally long, length of short one ca half that of long one.

T1 (Fig. 3C–D). Protopodite with two unequally short a-setae, b- and d-setae absent, distally with ca 12 hirsute apical setae of unequal length. Endopodite with weakly built palp, with one very long, hirsute and two unequally short apical setae.

T2 (Fig. 4A). With d2 seta (d1 absent). Second segment with long e-seta (reaching tip of penultimate segment). Penultimate segment divided, proximal segment bearing long f-seta (reaching beyond tip of terminal segment), distal segment with pair of apical setae (g-seta, one short), g-seta very long (with almost the same length as h1 seta). Terminal segment with two (one dorsal, one ventral) apical h1 and h3 setae (length of former ca half that of claw, latter short) and serrated claw (h2), length of h2 longer than that of penultimate segment.

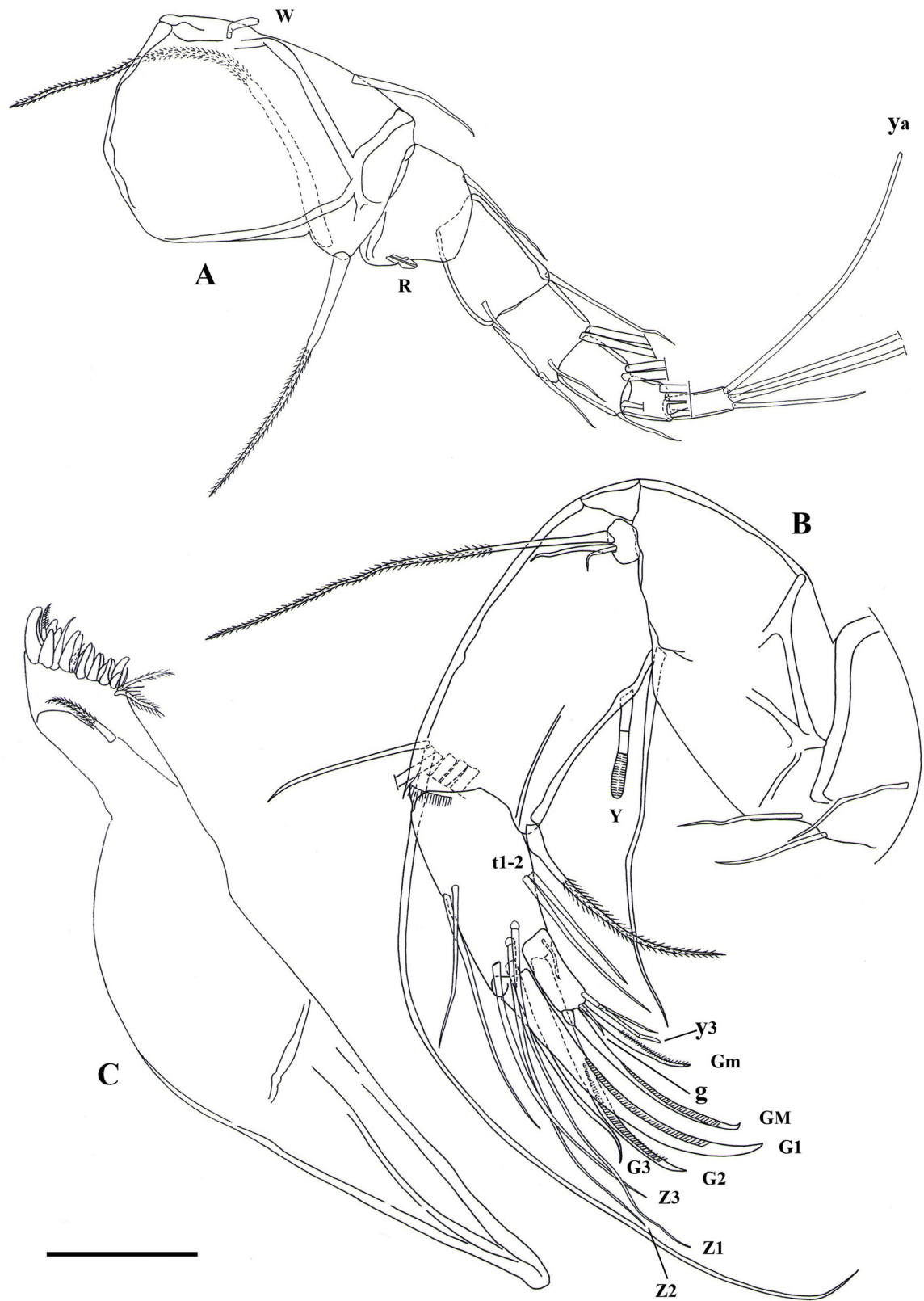


Fig. 2. *Siamopsis renateae* gen. et sp. nov., ♀ (MSU-ZOC.190). A. A1. B. A2. C. Md coxa. Scale bar: 50 µm.

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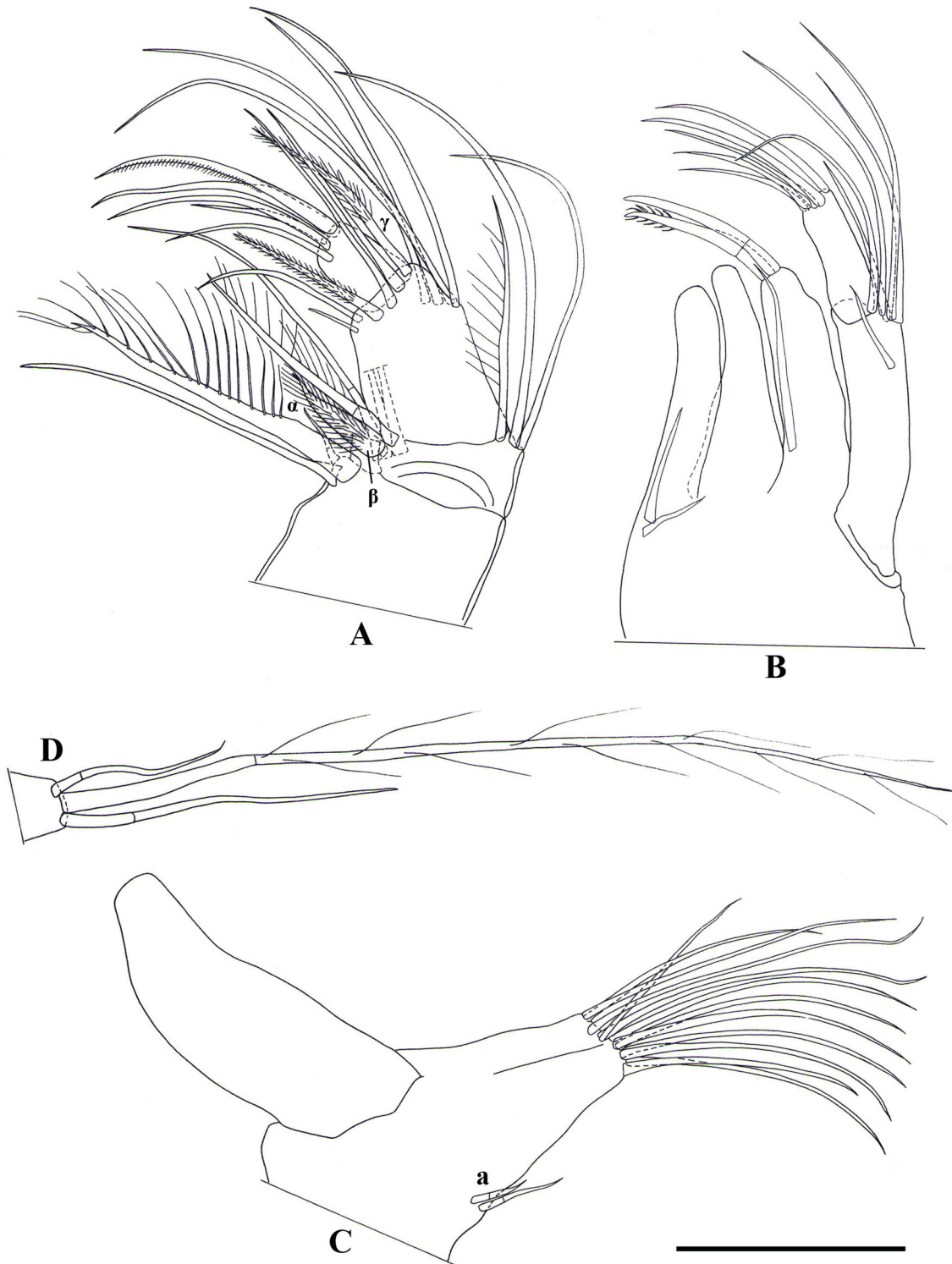


Fig. 3. *Siamopsis renateae* gen. et sp. nov., ♀ (MSU-ZOC.190). A. Md palp. B. Mx1. C. T1. D. T1, terminal part of endopodite. Scale bar: 50 μ m.

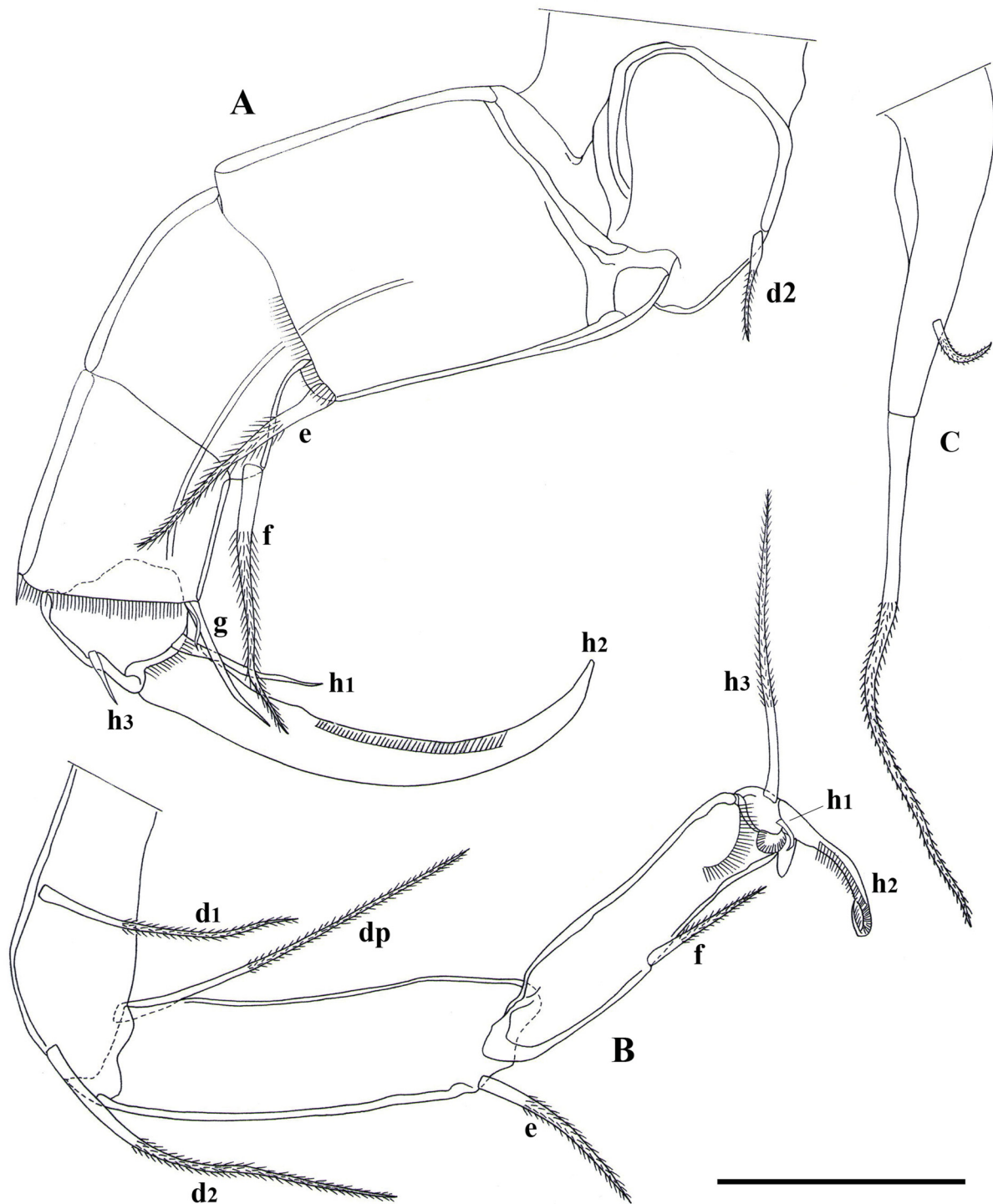


Fig. 4. *Siamopsis renateae* gen. et sp. nov., ♀ (MSU-ZOC.190). **A.** T2. **B.** T3. **C.** CR. Scale bar: 50 µm.

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T3 (Fig. 4B). A cleaning limb. First segment with long d1, d2 and dp setae, d1 and d2 setae subequal in length. Second segment with long apical e-seta (reaching half of next segment). Third segment with medially long f-seta (reaching tip of segment). Terminal segment with an apical pincer and one reflexed subapical seta, length of latter equal to that of third segment.

CR (Fig. 4C). Reduced, flagellum-like, of cylindrical shape, with a small lateral seta and long apical seta, length of latter ca 1.7 times that of ramus.

Male

Unknown.

Ecology

The new species has thus far been recorded from eight localities in the Northern and Northeastern provinces: Nakhon Ratchasima, Chaiyaphum, Phayao, Chiang Rai, Phitsanulok and Phetchabun. It occurs at a pH range of 6.5–7.2, a temperature range of 26.1–29.5°C and a dissolved oxygen (DO) range of 3.20–7.80 mg/l.

Siamopsis suttajiti gen. et sp. nov.

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Figs 5–7, 19C, 20

Diagnosis

Carapace in lateral view elongated, dorsal margin arched, greatest height situated in front of mid-length. Carapace in dorsal view elliptical, with unevenly curved lateral margins (posterior half of carapace), anterior extremity pointed, RV overlapping LV anteriorly, ventrally and posteriorly. Valve surface set with long (rim-pore) setae and shallow pits dispersedly. LV in internal view with large selvage anteriorly, valve margins rounded, broader anteriorly, postero-dorsal plate of LV in internal view elongated, with posterior marginal tooth-like tubercle. RV in internal view with large selvage anteriorly, posterior margin slightly curved inwardly at postero-dorsal part, few small tubercle-like structures set beneath the posterior inner list along postero-ventral corner. Third endite of Mx1 with two large bristles, one distally serrated, the other one smooth. CR cylindrical in shape, with long flagellum-like seta (ca 2.4 times as long as ramus).

Etymology

This species is named after Prof. Dr. Maitree Suttajit (University of Phayao, Thailand) in appreciation of his encouragement and moral support over the years, especially during my research project on non-marine ostracods in the southern part of Northeast Thailand.

Material examined

Holotype

THAILAND: ♀, with soft parts dissected in glycerine on a sealed glass slide and valves stored dry in a micropalaeontological slide (MSU-ZOC.195).

Paratypes

THAILAND: 2 ♀♀, stored as the holotype (MSU-ZOC.196–197); 3 ♀♀, carapaces stored dry in micropalaeontological slides (MSU-ZOC.198–200); 4 ♀♀ in 70% EtOH.

Type locality

THAILAND: Phayao Province, Muang District, Kwan Phayao (lake) (locality 9 in Fig. 20), 19°09'28" N, 90°54'39" E, 6 Oct. 2007. Accompanying ostracod fauna: *Cypris subglobosa* Sowerby, 1840, *Stenocypris malayica* Victor & Fernando, 1981, *Astenocypris papyracea* (Sars, 1903), *Bradleystrandesia weberi*, *Bradleytriebella lineata* (Victor & Fernando, 1981), *Pseudostrandesia calapanensis* (Tressler, 1937), *P. mamarilorum*, *Strandesia kraepelini*, *Tanycypris siamensis* Savatnalinton & Martens, 2009, *Cypretta* sp. 3, *Cypridopsis vidua* (O.F. Müller, 1906), *Siamopsis conspecta* gen. et sp. nov. and *Physocypris* sp. 2.

Differential diagnosis

Siamopsis suttajiti gen. et sp. nov. can be distinguished by the morphology of the carapace in dorsal view and the postero-dorsal plate of the LV in internal view. The carapace in dorsal view is elongated, with unevenly curved lateral margins (the posterior half of carapace narrower) and the LV postero-dorsal plate contains a tooth-like tubercle on the posterior marginal. *Siamopsis suttajiti* gen. et sp. nov. is similar to *S. conspecta* gen. et sp. nov. and *S. khoratensis* gen. et sp. nov. as they share a few small septa-like structures under the posterior inner list along the postero-ventral corner. The distinguishing features of *S. suttajiti* gen. et sp. nov. also appear in the soft parts morphology. For example, the length of the shortest seta on A1 terminal segment is markedly short, when compared to ya (ca ¼ length of ya). In other species of *Siamopsis* gen. nov., this seta is about half as long as ya. Additionally, the apical flagellum-like seta of CR is very long (more than two times that of the ramus) in *S. suttajiti* gen. et sp. nov. while it is less than two times that of the ramus in other species of *Siamopsis* gen. nov.

Measurements (mean, in µm)

LV (n = 2), L = 577, H = 335; RV (n = 2), L = 584, H = 344; carapace (n = 2), L = 593, W = 258.

Description**Female**

CARAPACE. In lateral view (Fig. 5A) elongated, dorsal margin arched, greatest height situated in front of mid-length, anterior margin rounded, posterior margin narrower rounded, ventral margin sinuous at ca mid-length, RV overlapping LV anteriorly, ventrally and posteriorly, valve surface set with long setae, long rim-pore setae and shallow pits dispersedly. Carapace in dorsal view (Fig. 5B, D) elliptical, with unevenly curved lateral margins (posterior half of carapace narrower), greatest width situated at mid-length, anterior extremity pointed, posterior extremity rounded.

VALVES. LV in internal view (Fig. 5F, H) with large selvage anteriorly, valve margins rounded, broader anteriorly, ventral margin sinuous at mid-length, postero-dorsal plate elongated, with posterior marginal tooth-like tubercle, inner lamella anteriorly broader than posteriorly, without inner list. RV in internal view (Fig. 5G, I) with large selvage anteriorly, ventral margin sinuous at mid-length, posterior margin slightly curved inwardly at postero-dorsal part, inner lamella calcified with inner lists anteriorly and posteriorly, with few tiny tubercle-like structures under posterior inner list along postero-ventral corner.

A1 (Fig. 6A). Seven-segmented, first segment with large proximal Wouters organ, one long dorso-subapical seta (reaching mid-length of next segment) and two long ventro-apical setae. Second segment slightly wider than long, with one long dorso-apical seta (reaching tip of next segment) and Rome organ. Third segment bearing two setae: one long dorso-apical (reaching beyond tip of terminal segment) and one short ventro-apical. Fourth segment with two long dorsal setae and two short ventral setae (both reaching end of next segment). Fifth segment dorsally with two long setae, ventrally with two (one long, one short) setae, short one reaching mid-length of terminal segment. Penultimate segment with four long apical setae. Terminal segment with three (two long, one short) apical setae and very long aesthetasc ya, length of short seta ca ¼ that of aesthetasc ya.

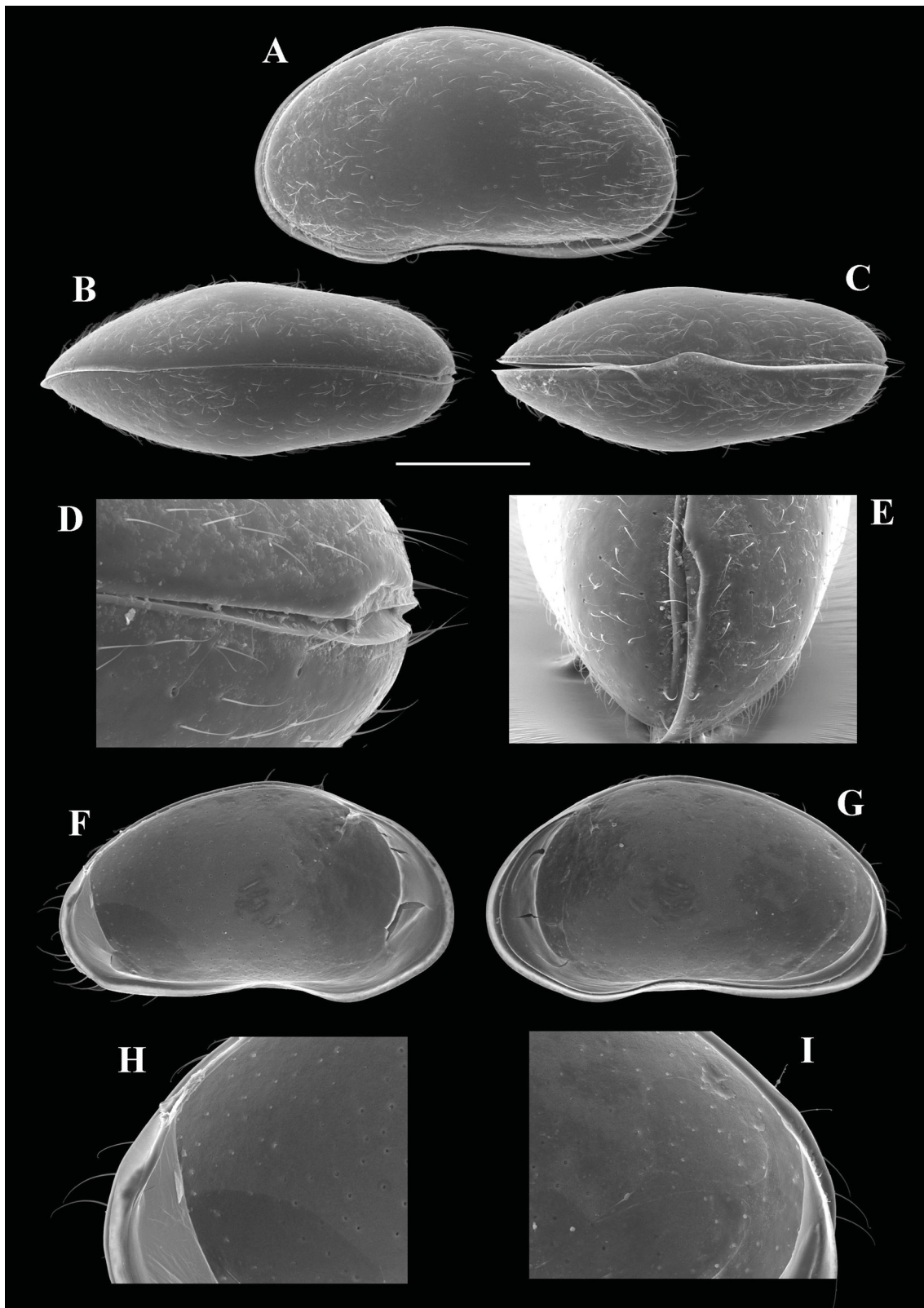


Fig. 5. *Siamopsis suttajiti* gen. et sp. nov., ♀. **A.** CpL (MSU-ZOC.198). **B.** CpD (MSU-ZOC.199). **C.** CpV (MSU-ZOC.200). **D.** Posterior end of CpD (MSU-ZOC.199). **E.** CpC (idem). **F.** LVi (MSU-ZOC.196). **G.** RVi (idem). **H.** Postero-dorsal part of LVi (idem). **I.** Postero-dorsal part of RVi (idem). Scale bar: A–C, F–G = 200 µm; D = 56 µm; E = 104 µm; H–I = 87 µm.

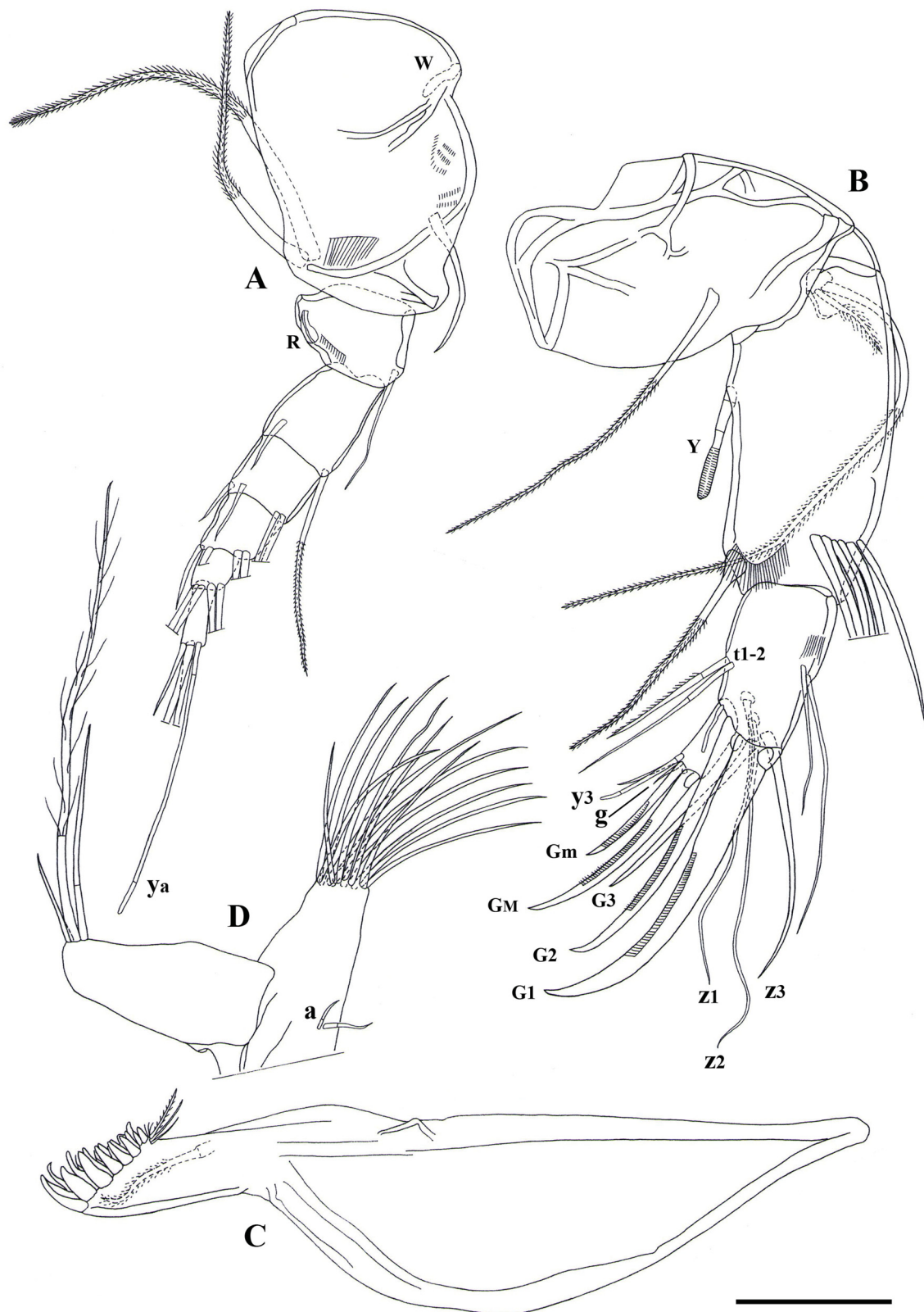


Fig. 6. *Siamopsis suttajiti* gen. et sp. nov., ♀ (MSU-ZOC.195). A. A1. B. A2. C. Md coxa. D. T1. Scale bar: 50 µm.

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A2 (Fig. 6B). Exopodite with three (one long, two short) setae, long one reaching beyond tip of first endopodal segment. First endopodal segment with five long (reaching far beyond tip of terminal claws) and one short natatory setae, shortest seta reaching end of penultimate segment, aesthetasc Y long, ventro-apical seta long, extending beyond tip of terminal segment. Penultimate segment undivided, distally with three serrated claws (G1, G2, G3), G2 shorter (length of G2 ca $\frac{6}{7}$ that of G1), aesthetasc y2 long (ca half length of terminal segment), z1–z3 setae long; this segment medially with two subequally long dorsal setae, two ventral setae of unequal length (t1–t2). Terminal segment distally with two serrated claws (GM and Gm), length of Gm ca $\frac{2}{3}$ that of GM; medially with short g-seta and ventral aesthetasc y3, length of accompanying seta ca $\frac{3}{4}$ that of aesthetasc y3.

MD PALP (Fig. 7A). First segment with two large setae, one long and slender seta, and a short, smooth α -seta. Second segment dorsally with three unequally long apical setae; ventrally with group of three long hirsute setae, one shorter hirsute seta and plumose, cone-shaped β -seta with pointed tip. Penultimate segment with three groups of setae: dorsally with group of four unequal, long, subapical setae; laterally with apical γ -seta and three further apical setae (two smooth, one hirsute), the former thin and long (length ca 2.2 times that of terminal segment); ventrally with two subapical setae, one very long (reaching beyond tip of terminal segment), one short (ca half length of terminal segment). Terminal segment elongated, bearing three claws and two short setae.

Mx1 (Fig. 7B). With two-segmented palp, basal segment of palp dorsally with group of six long, unequal apical setae; ventrally with one short subapical seta. Terminal segment very elongated (length ca 2.7 times width), apically with three claws and two setae. Third endite with two (one smooth, one serrated) large bristles. Lateral bristles on first endite unequally long, length of long one ca 2.2 times that of short one.

T1 (Fig. 6D). Protopodite with two unequally short a-setae, b- and d-setae absent, distally with ca 14 hirsute apical setae of unequal length. Endopodite weakly built palp with one very long, hirsute and two unequally short apical setae.

T2 (Fig. 7C). With d2 seta (d1 absent). Second segment with short e-seta (reaching middle of penultimate segment). Penultimate segment divided, proximal segment bearing long f-seta (reaching tip of terminal segment), distal segment with pair of apical setae (very long g-seta, one short), the long one reaching beyond tip of terminal segment. Terminal segment with two (one dorsally, one ventrally) apical h1 and h3 setae (length of former ca $\frac{1}{3}$ that of claw, latter spine-like) and serrated claw (h2), length of h2 longer than that of penultimate segment.

T3 (Fig. 7D). A cleaning limb. First segment with long d1, d2 and dp setae, d1 and d2 setae subequal in length. Second segment with long apical e-seta (reaching half of next segment). Third segment with medially long f-seta (reaching tip of segment). Terminal segment with an apical pincer and one reflexed subapical seta, length of latter equal that of third segment.

CR (Fig. 7E). Reduced, flagellum-like, of cylindrical shape, with a small lateral seta and very long apical seta, length of latter ca 2.4 times that of ramus.

Male

Unknown.

Ecology

The new species has thus far been collected from only one locality in Phayao Province. It occurs at a pH of 7.1, a temperature of 26.8°C and a DO of 7.16 mg/l.

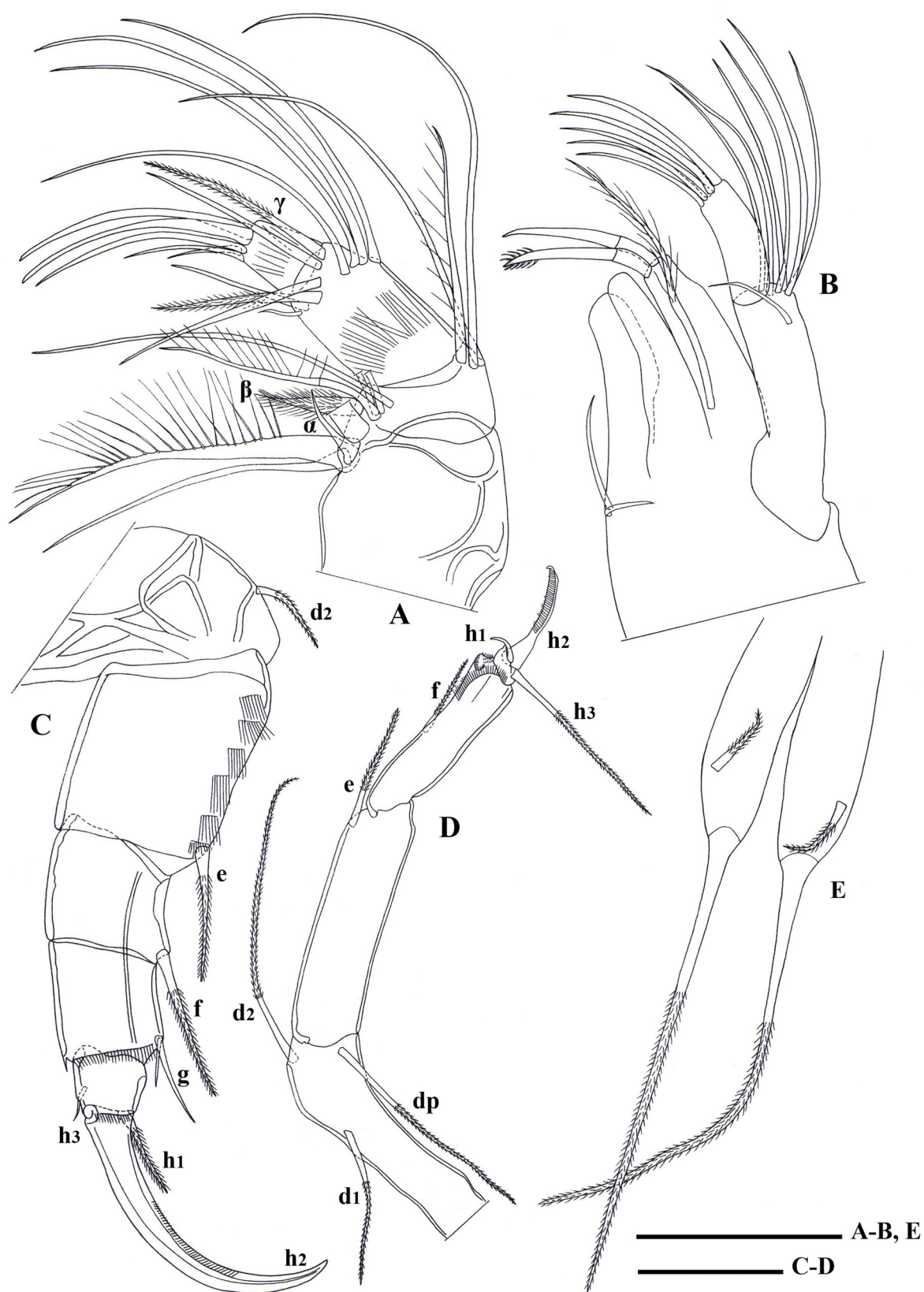


Fig. 7. *Siamopsis suttajiti* gen. et sp. nov., ♀ (MSU-ZOC.195). **A.** Md palp. **B.** Mx1. **C.** T2. **D.** T3. **E.** CR. Scale bars: 50 μ m.

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Siamopsis conspecta gen. et sp. nov.

urn:lsid:zoobank.org:act:AF502FC5-AE39-4017-8E88-7518CCCC8AC5

Figs 8–10, 19B, 20

Diagnosis

Carapace in lateral view elongated, dorsal margin arched, greatest height situated in front of mid-length, RV overlapping LV anteriorly, ventrally and posteriorly. Valve surface set with long (rim-pore) setae and shallow pits dispersedly. LV in internal view with large selvage anteriorly, valve margins rounded, broader anteriorly, postero-dorsal plate of LV in internal view broad, with large tooth-like tubercle at the centre. RV in internal view with large selvage anteriorly, posterior margin curved inwardly at postero-dorsal part, outer margin of posterior inner list set with a series of small tubercle-like structures at postero-ventral corner. Third endite of Mx1 with two large bristles, one distally serrated, other one smooth. CR cylindrical in shape, with flagellum-like seta.

Etymology

The Latin word ‘*conspecta*’, meaning conspicuous, refers to the markedly well-developed tooth-like tubercle on the postero-dorsal plate of internal LV. This is the most prominent character of the new species.

Material examined

Holotype

THAILAND: ♀, with soft parts dissected in glycerine on a sealed glass slide and valves stored dry in a micropalaeontological slide (MSU-ZOC.201).

Paratypes

THAILAND: 1 ♀, stored as the holotype (MSU-ZOC.202); 1 ♀, carapace stored dry in a micropalaeontological slide (MSU-ZOC.203).

Other material

THAILAND: Phayao Province, Muang District, Kwan Phayao (lake) (locality 9 in Fig. 20), 19°09'28" N, 90°54'39" E, 6 Oct. 2007. Accompanying ostracod fauna: *Cypris subglobosa* Sowerby, 1840, *Stenocypris malayica*, *Astenocypris papyracea*, *Bradleystrandesia weberi*, *Bradleytriebella lineata*, *Pseudostrandesia calapanensis*, *P. mamarilorum*, *Strandesia kraepelini*, *Tanycypris siamensis*, *Cypretta* sp. 3, *Cypridopsis vidua*, *Siamopsis suttajiti* gen. et sp. nov. and *Physocypris* sp. 2.

Type locality

THAILAND: Nakhon Ratchasima Province, Muang District, irrigation ditch (locality 1 in Fig. 20), 14°43'46" N, 104°33'56" E, 5 Oct. 2010. Accompanying ostracod fauna: *Cypris subglobosa*, *Cyprinotus uenoi*, *Stenocypris* cf. *orientalis*, *Siamopsis khoratensis* gen. et sp. nov., *S. renateae* gen. et sp. nov. and *S. planitia* gen. et sp. nov.

Differential diagnosis

Siamopsis conspecta gen. et sp. nov. is similar to *S. suttajiti* gen. et sp. nov. in terms of the carapace shape in lateral view and the presence of tiny tubercle-like structures along the posterior inner list at the postero-ventral corner of the RV. It can be distinguished by the morphology of the postero-dorsal plate of the LV. The plate is broad and contains a large tooth-like tubercle at the middle in *Siamopsis conspecta* gen. et sp. nov., whereas it is elongated and has a marginal tooth-like tubercle at the posterior part in *S. suttajiti* gen. et sp. nov. In addition, compared to the CR length, the apical flagellum-like seta is shorter in *Siamopsis conspecta* gen. et sp. nov. (very long in *S. suttajiti* gen. et sp. nov.).

Measurements (mean, in μm)

LV ($n = 2$), $L = 627$, $H = 352$; RV ($n = 2$), $L = 631$, $H = 362$.

Description

Female

CARAPACE. In lateral view elongated, dorsal margin arched, greatest height situated in front of mid-length, anterior margin rounded, posterior margin narrower rounded, RV overlapping LV anteriorly, ventrally and posteriorly, valve surface set with long setae, long rim-pore setae and shallow pits dispersedly. Carapace in dorsal view elliptical, with greatest width situated at mid-length.

VALVES. LV in interior view (Fig. 8C) with large selvage anteriorly, valve margins rounded, broader anteriorly, ventral margin sinuous at ca mid-length, postero-dorsal plate of LV in internal view broad, with large tooth-like tubercle at centre, inner lamella calcified, anteriorly broader than posteriorly. RV in interior view (Fig. 8D) with large selvage anteriorly, ventral margin sinuous at mid-length, posterior margin curved inwardly at postero-dorsal part, inner lamella calcified with inner lists anteriorly and posteriorly, outer margin of lamella set with a series of small tubercles at postero-ventral corner.

A1 (Fig. 9A). Seven-segmented, first segment with large proximal Wouters organ, one long dorso-subapical seta (reaching mid-length of next segment) and two long ventro-apical setae. Second segment slightly wider than long, with one long dorso-apical seta (reaching tip of next segment) and Rome organ. Third segment bearing two setae: one long dorso-apical and one short ventro-apical. Fourth segment with two long dorsal setae and two short ventral setae (one reaching tip of fifth segment, another one spine-like). Fifth segment dorsally with two long setae, ventrally with two (one long, one short) setae, short one reaching beyond tip of next segment. Penultimate segment with four long apical setae. Terminal segment with three (two long, one short) apical setae and very long aesthetasc ya, length of short seta more than half that of aesthetasc ya.

A2 (Fig. 9B). Exopodite with three (one long, two short) setae, long one reaching beyond tip of first endopodal segment. First endopodal segment with five long (reaching far beyond tip of terminal claws) and one short natatory setae, shortest seta reaching tip of penultimate segment, aesthetasc Y long, ventro-apical seta long, extending beyond tip of terminal segment. Penultimate segment undivided, distally with three serrated claws (G1, G2, G3), G2 shorter (length of G2 ca $\frac{2}{3}$ that of G1), aesthetasc y2 long (ca half that of terminal segment), z1–z3 setae long; this segment medially with two subequally long dorsal setae and two ventral setae of unequal length (t1–t2). Terminal segment distally with two serrated claws (GM and Gm), length of Gm ca $\frac{2}{3}$ that of GM; medially with short g-seta and ventral aesthetasc y3, length of accompanying seta ca $\frac{2}{3}$ that of aesthetasc y3.

MD PALP (Fig. 10A). First segment with two large setae, one long and slender seta, and a short, smooth α -seta. Second segment dorsally with three unequal long apical setae; ventrally with group of three long hirsute setae, one shorter hirsute seta and plumose, cone-shaped β -seta with pointed tip. Penultimate segment consisting of three groups of setae: dorsally with group of four unequal, long, subapical setae; laterally with apical γ -seta and three further apical setae (two smooth, one hirsute), the former thin and long (length ca 2.2 times of terminal segment); ventrally with two subapical setae, one very long (reaching beyond tip of terminal segment), one short (ca half of terminal segment). Terminal segment elongated bearing three claws and two shorter seta.

Mx1 (Fig. 10B). With two-segmented palp, basal segment of palp dorsally with group of five long, unequal apical setae; ventrally with one short subapical seta. Terminal segment very elongated (length ca 3 times of width), apically with three claws and two setae. Third endite with two (one smooth, one

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serrated) large bristles. Sideways-directed bristles on first endite unequally long, length of short one ca half that of long one.

T1 (Fig. 9D). Protopodite with two unequally short a-setae, b- and d-setae absent, distally with ca 12 hirsute apical setae of unequal length. Endopodite with weakly built palp, with one very long, hirsute and two unequally short apical setae.

T2 (Fig. 10C). With d2 seta (d1 absent). Second segment with short e-seta (reaching beyond mid-length of penultimate segment). Penultimate segment divided, proximal segment bearing long f-seta (reaching beyond tip of terminal segment), distal segment with pair of apical setae (long g-seta, one short), length of g-seta almost the same length as that of h1 seta. Terminal segment with two (one dorsally, one ventrally) apical h1 and h3 setae (length of former ca $\frac{1}{3}$ that of claw, latter spine-like) and serrated claw (h2), length of h2 longer than that of penultimate segment.

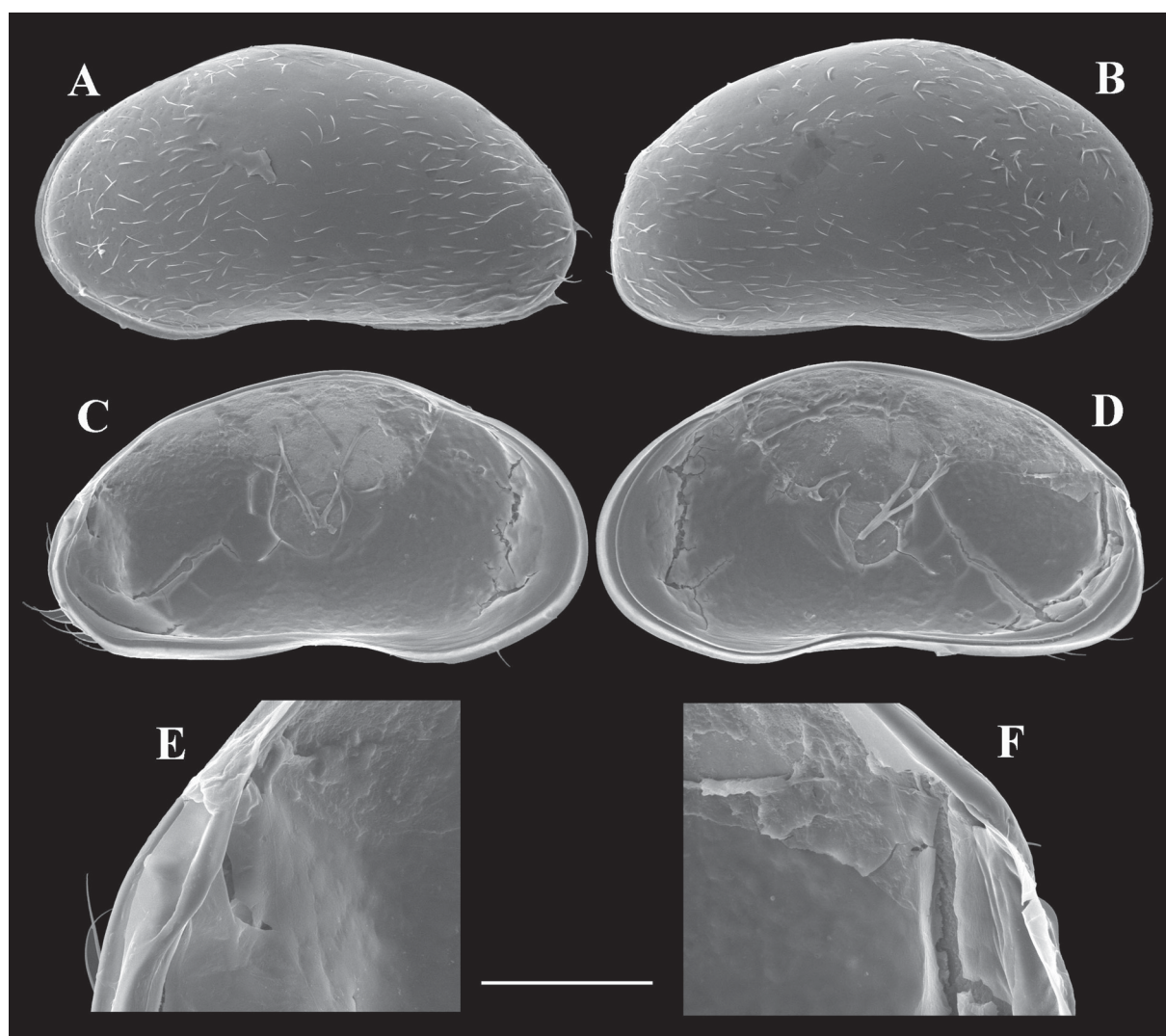


Fig. 8. *Siamopsis conspecta* gen. et sp. nov., ♀ (MSU-ZOC.201). **A.** LVe. **B.** RVe (idem). **C.** LVi (idem). **D.** RVi (idem). **E.** Postero-dorsal part of LVi (idem). **F.** Postero-dorsal part of RVi (idem). Scale bar: A–D = 200 µm; E–F = 56 µm.

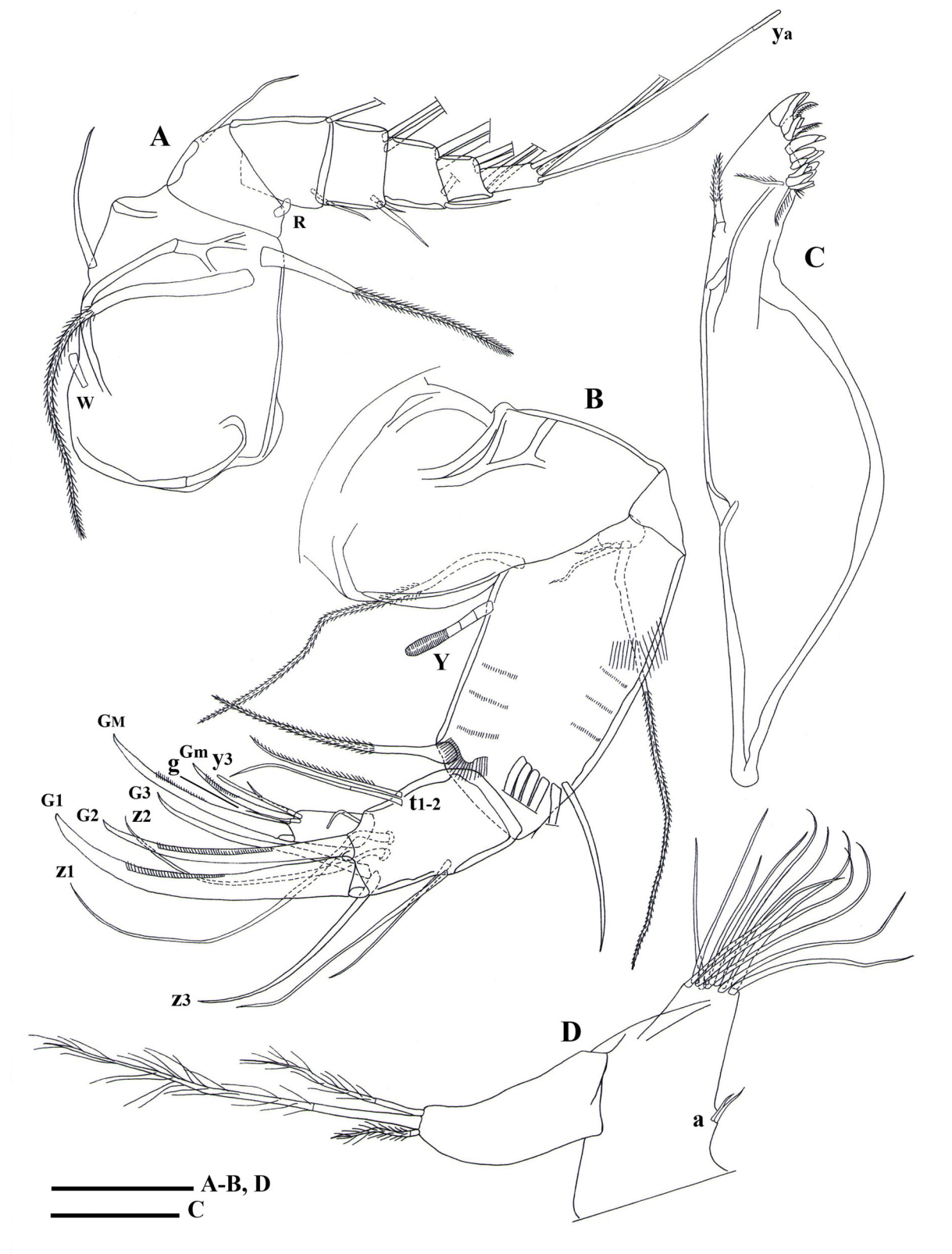


Fig. 9. *Siamopsis conspecta* gen. et sp. nov., ♀ (MSU-ZOC.201). **A.** A1. **B.** A2. **C.** Md coxa. **D.** T1. Scale bars: 50 µm.

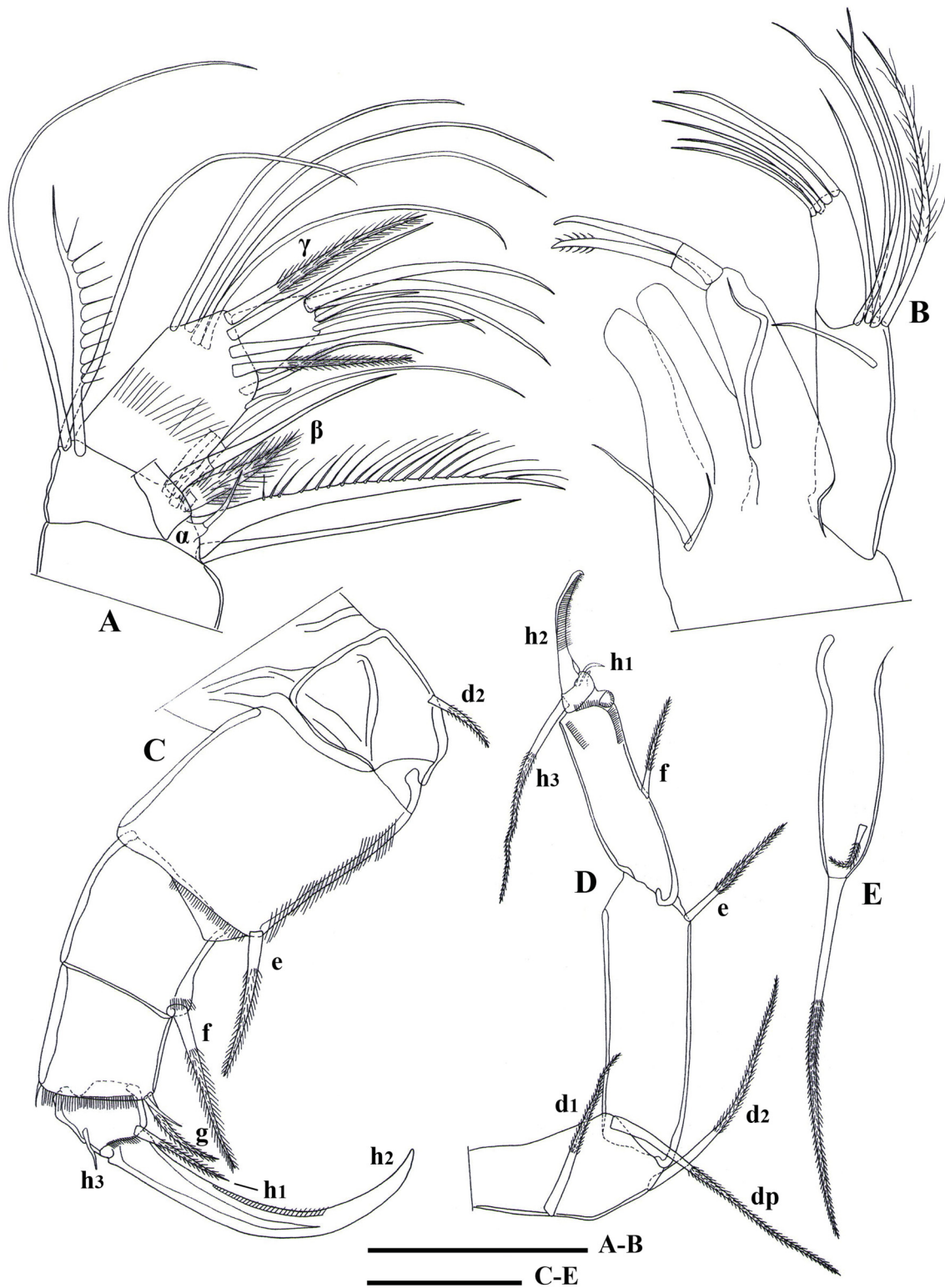


Fig. 10. *Siamopsis conspecta* gen. et sp. nov., ♀ (MSU-ZOC.201). A. Md palp. B. Mx1. C. T2. D. T3. E. CR. Scale bars: 50 μ m.

T3 (Fig. 10D). A cleaning limb. First segment with long d1, d2 and dp setae, d1 and d2 setae subequal in length. Second segment with long apical e-seta (reaching half of next segment). Third segment with medially long f-seta (reaching tip of segment). Terminal segment with an apical pincer and one reflexed subapical seta, length of latter equal to that of third segment.

CR (Fig. 10E). Reduced, flagellum-like, cylindrical in shape, with a small lateral seta and long apical seta, length of latter ca 1.5 times that of ramus.

Male

Unknown.

Ecology

The new species has so far been collected from two bodies of water only in the Nakhon Ratchasima and Phayao Provinces. It occurs at a pH range of 7.0–7.1, a temperature range of 26.8–28.5°C and a DO of 7.16 mg/l.

***Siamopsis khoratensis* gen. et sp. nov.**

urn:lsid:zoobank.org:act:3DCD40C9-3A9B-4E3A-AAAC-BDD6AEA1BD4C

Figs 11–14, 19D, 20

Diagnosis

Carapace in lateral view elongated, dorsal margin flat at middle part of carapace, RV overlapping LV anteriorly, ventrally and posteriorly. Valve surface set with long (rim-pore) setae and shallow pits dispersedly. LV in internal view with large selvage anteriorly, valve margins subequally rounded anteriorly and posteriorly, postero-dorsal plate broad, with a small anterior tooth-like tubercle. RV in internal view with large selvage anteriorly, posterior margin curved inwardly at slightly above mid height, posterior inner list internally set with small tubercle-like structures at postero-ventral part. Third endite of Mx1 with two large bristles, one distally serrated, one smooth. CR cylindrical in shape, with flagellum-like seta.

Etymology

The species is named after Nakhon Ratchasima Province, also called “Khorat”, where the new species was discovered.

Material examined

Holotype

THAILAND: ♀, with soft parts dissected in glycerine on a sealed glass slide and valves stored dry in a micropalaeontological slide (MSU-ZOC.204).

Paratypes

THAILAND: 1 ♀, stored as the holotype (MSU-ZOC.205); 1 ♀, carapace stored dry in a micropalaeontological slide (MSU-ZOC.206).

Type locality

THAILAND: Nakhon Ratchasima Province, Muang District, irrigation ditch (locality 1 in Fig. 20), 14°43'46" N, 104°33'56" E, 5 Oct. 2010. Accompanying ostracod fauna: *Cypris subglobosa*, *Cyprinotus uenoi*, *Stenocypris* cf. *orientalis*, *Siamopsis suttajiti* gen. et sp. nov., *S. renateae* gen. et sp. nov. and *S. planitia* gen. et sp. nov.

Differential diagnosis

Siamopsis khoratensis gen. et sp. nov. has *S. planitia* gen. et sp. nov. as its closest congener. The obvious diagnostic characters are the morphology of the postero-dorsal plate of the LV in internal view and of the RV posterior inner list. The plate is broad and has a small tooth-like tubercle at the anterior part in *S. khoratensis* gen. et sp. nov., while it is elongated and has no tooth-like tubercle in *S. planitia* gen. et sp. nov. The RV posterior inner list is set with small tubercle-like structures at the postero-ventral part in *S. khoratensis* gen. et sp. nov., whereas it is smooth in *S. planitia* gen. et sp. nov.

Measurements (mean, in μm)

LV (n = 2), L = 616, H = 371; RV (n = 2), L = 626, H = 373.

Description

Female

CARAPACE. In lateral view elongated, dorsal margin flat at middle part of carapace, both margins subequally rounded anteriorly and posteriorly, RV overlapping LV anteriorly, ventrally and posteriorly, valve surface set with long setae, long rim-pore setae and shallow pits dispersedly (Fig. 11A–B). Carapace in dorsal view elliptical, with greatest width situated at mid-length.

VALVES. LV in interior view (Fig. 11C) with large selvage anteriorly, valve margins subequally rounded anteriorly and posteriorly, ventral margin sinuous at ca mid-length, postero-dorsal plate broad, set with a small anterior tooth-like tubercle, inner lamella anteriorly broader than posteriorly. RV in interior view (Fig. 11D) with large selvage anteriorly, valve margins subequally rounded anteriorly and posteriorly, ventral margin sinuous at ca mid-length, posterior margin recurved inwardly slightly above mid height, calcified inner lamella with inner lists anteriorly and posteriorly, postero-ventral inner-list internally set with small tubercle-like structures.

A1 (Fig. 12A). Seven-segmented, first segment with large proximal Wouters organ, one long dorso-subapical seta (reaching beyond tip of next segment) and two long ventro-apical setae. Second segment slightly wider than long, with one long dorso-apical seta (reaching tip of next segment) and Rome organ. Third segment bearing two setae: one long dorso-apical (reaching tip of penultimate segment) and one short ventro-apical setae. Fourth segment with two long dorsal setae and two short ventral setae (both reaching beyond half of fifth segment). Fifth segment dorsally with two long setae, ventrally with two (one long, one short) setae, short one reaching mid-length of terminal segment. Penultimate segment with four long apical setae. Terminal segment with three (two long, one short) apical setae and very long aesthetasc ya, length of short seta ca half that of aesthetasc ya.

A2 (Fig. 12B). Exopodite with three (one long, two short) setae, long one reaching beyond tip of first endopodal segment. First endopodal segment with five long (reaching far beyond tip of terminal claws) and one short natatory setae, length of shortest seta ca half that of penultimate segment, aesthetasc Y long, ventro-apical seta long, extending beyond tip of terminal segment. Penultimate segment undivided, distally with three serrated claws (G1, G2, G3), G2 shorter (length of G2 ca $\frac{2}{3}$ that of G1), aesthetasc y2 long (ca half that of terminal segment), z1–z3 setae long; this segment medially with two subequally long dorsal setae and two ventral setae of unequal length (t1–t2). Terminal segment distally with two serrated claws (GM and Gm), length of Gm slightly more than half that of GM; medially with short g-seta and ventral aesthetasc y3, length of accompanying seta ca $\frac{2}{3}$ that of aesthetasc y3.

MD PALP (Fig. 13A). First segment with two large setae, one long and slender seta, and a short, smooth α -seta. Second segment dorsally with three unequally long apical setae; ventrally with group of three long hirsute setae, one shorter hirsute seta and plumose, cone-shaped β -seta with pointed tip. Penultimate segment consisting of three groups of setae: dorsally with group of four unequal, long, subapical setae;

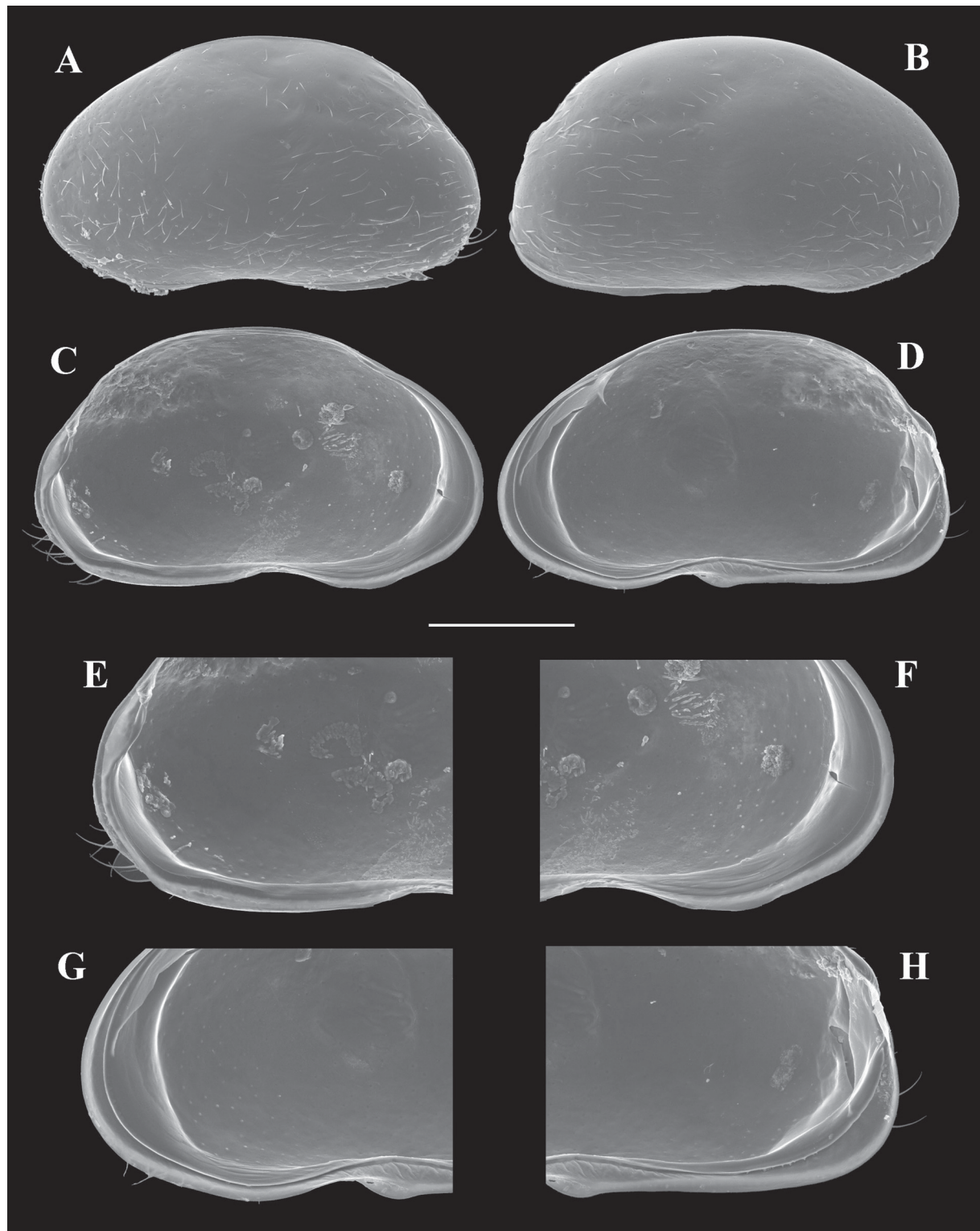


Fig. 11. *Siamopsis khoratensis* gen. et sp. nov., ♀ (MSU-ZOC.204). **A.** LVe. **B.** RVe (idem). **C.** LVi (idem). **D.** RVi (idem). **E.** Posterior part of LVi (idem). **F.** Anterior part of LVi (idem). **G.** Anterior part of RVi (idem). **H.** Posterior part of RVi (idem). Scale bar: A–D = 200 µm; E–H = 140 µm.

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laterally with apical γ -seta and three further apical setae (two smooth, one hirsute), the former thin and long (length ca 2.2 times that of terminal segment); ventrally with two subapical setae, one very long (reaching beyond tip of terminal segment), one short (ca half that of terminal segment). Terminal segment elongated, bearing three claws and two shorter setae.

Mx1 (Fig. 13B). With two-segmented palp, basal segment of palp dorsally with group of five long, unequal apical setae; ventrally with one short subapical seta. Terminal segment very elongated (length ca 3.3 times width), apically with three claws and two setae. Third endite with two (one smooth, one

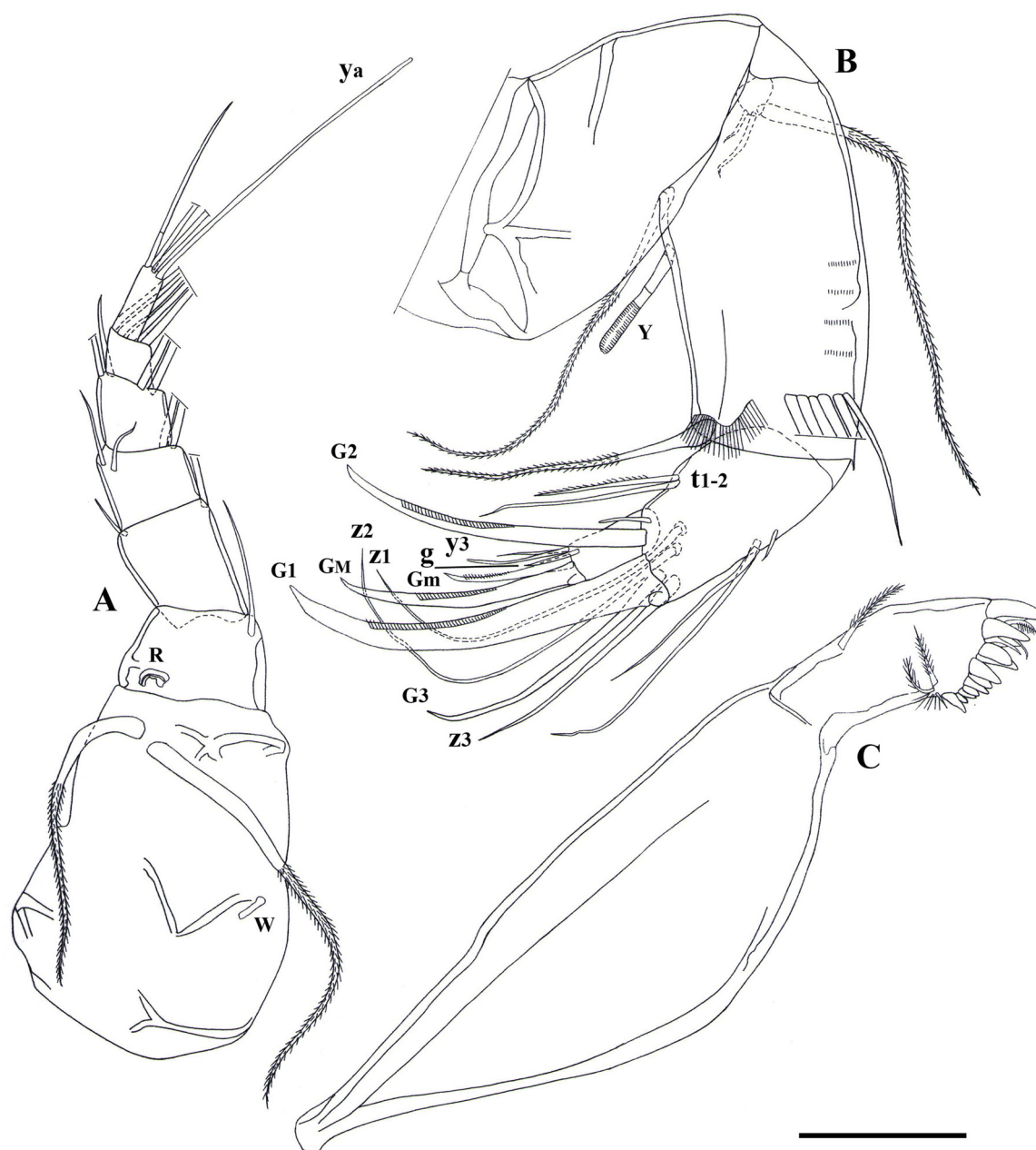


Fig. 12. *Siamopsis khoratensis* gen. et sp. nov., ♀ (MSU-ZOC.204). A. A1. B. A2. C. Md coxa. Scale bar: 50 μ m.

serrated) large bristles. Sideways-directed bristles on first endite unequally long, length of short one ca half that of long one.

T1 (Fig. 13C–D). Protopodite with two unequally short a-setae, b- and d-setae absent, distally with ca 11 hirsute apical setae of unequal length. Endopodite a weakly built palp, with one very long, hirsute and two unequally short apical setae.

T2 (Fig. 14A). With d2 seta (d1 absent). Second segment with short e-seta (reaching mid-length of penultimate segment). Penultimate segment divided, proximal segment bearing long f-seta (reaching beyond tip of terminal segment), distal segment with pair of apical setae (long g-seta, one short), length of g-seta almost the same as that of h1 seta. Terminal segment with two (one dorsally, one ventrally) apical h1 and h3 setae (length of former ca $\frac{1}{3}$ that of claw, latter short) and serrated claw (h2), length of h2 longer than that of penultimate segment.

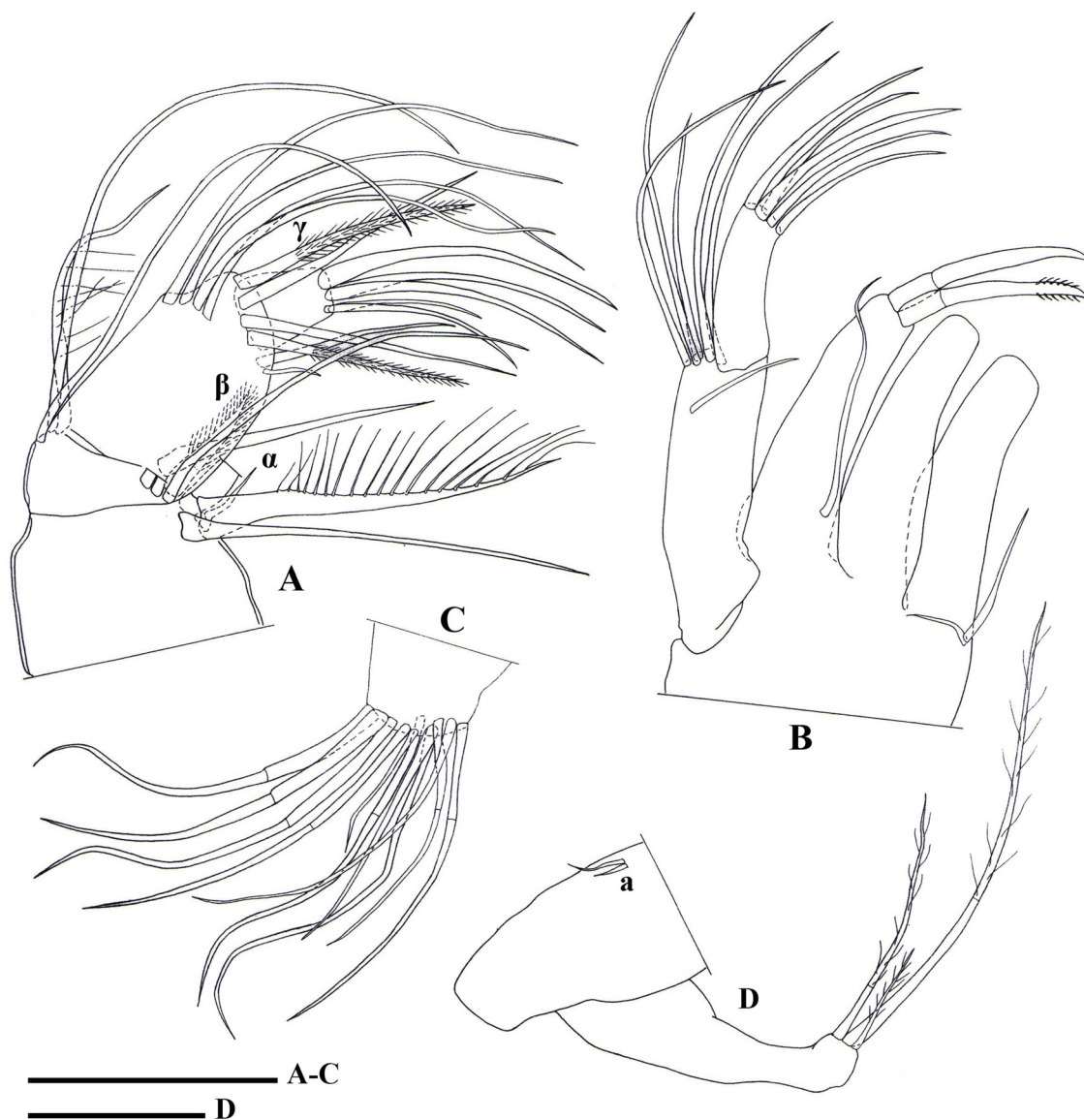


Fig. 13. *Siamopsis khoratensis* gen. et sp. nov., ♀ (MSU-ZOC.204). A. Md palp. B. Mx1. C. T1, apical setae on protopodite. D. T1. Scale bars: 50 µm.

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T3 (Fig. 14B). A cleaning limb. First segment with long d1, d2 and dp setae, d1 and d2 setae subequal in length. Second segment with long apical e-seta (reaching half of next segment). Third segment with medially long f-seta (reaching tip of segment). Terminal segment with an apical pincer and one reflexed subapical seta, length of latter equal to that of third segment.

CR (Fig. 14C). Reduced, flagellum-like, cylindrical in shape, with a small lateral seta and long apical seta, length of latter ca 1.8 times that of ramus.

Male

Unknown.

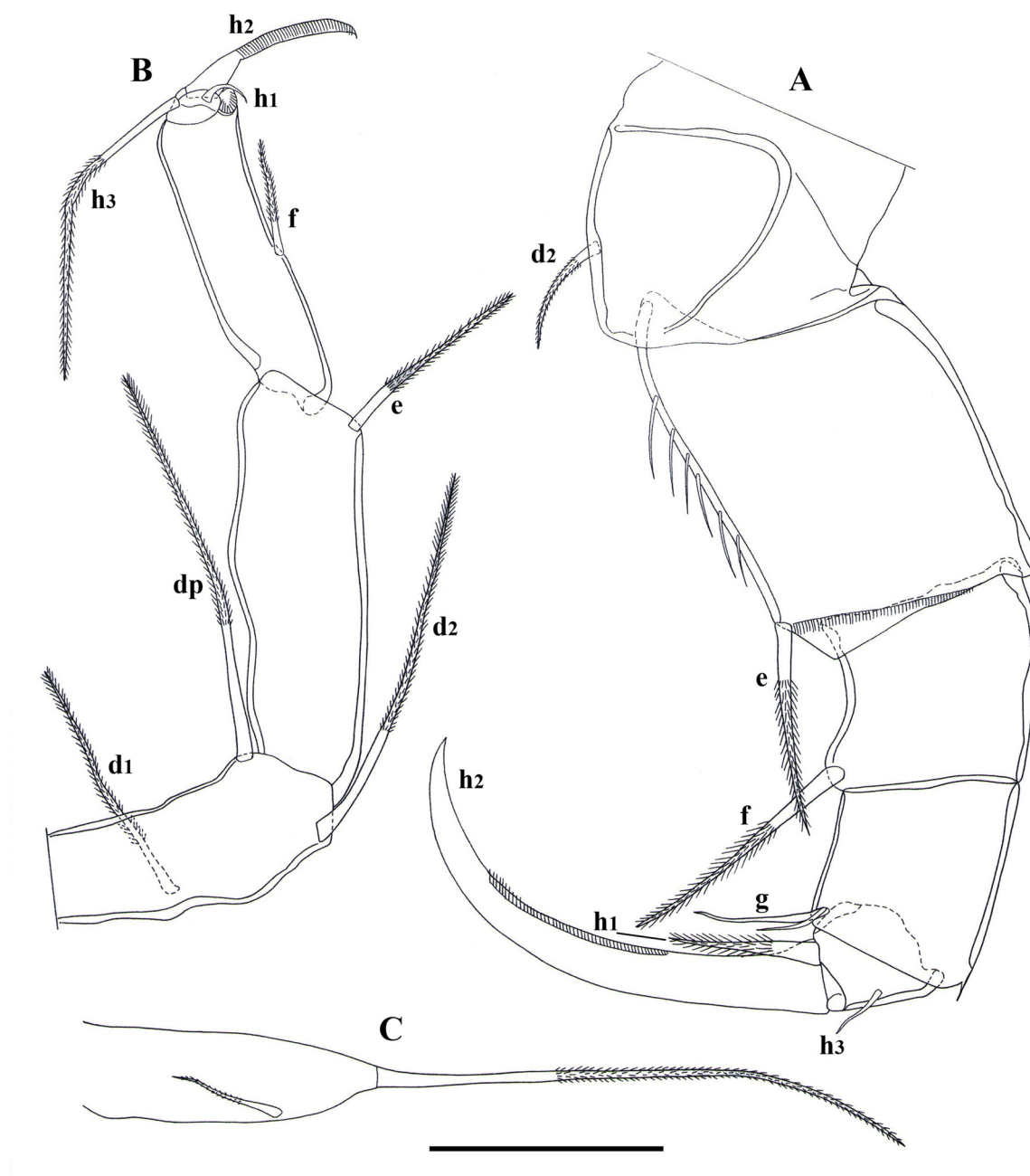


Fig. 14. *Siamopsis khoratensis* gen. et sp. nov., ♀ (MSU-ZOC.204). A. T2. B. T3. C. CR. Scale bar: 50 µm.

Ecology

The new species has been encountered at only one locality, in Nakhon Ratchasima Province. It occurs at a pH of 7.0 and a temperature of 28.5°C.

Siamopsis planitia gen. et sp. nov.

urn:lsid:zoobank.org:act:BFF56BA9-BBB4-4B5D-8B3F-221F29768F07

Figs 15–18, 19E, 20

Diagnosis

Carapace in lateral view elongated, dorsal margin flat at middle part of carapace, RV overlapping LV anteriorly, ventrally and posteriorly, valve surface set with long (rim-pore) setae and shallow pits dispersedly. LV in internal view with large selvage anteriorly, valve margins subequally rounded anteriorly and posteriorly, postero-dorsal plate elongated, without tooth-like tubercle. RV in internal view with large selvage anteriorly, posterior margin curved inwardly at postero-dorsal part, postero-ventral part slightly angulate, without small tubercle-like structures under inner list. Mx1 third endite with two (one smooth, one serrated) large bristles. CR cylindrical shape, with flagellum-like seta.

Etymology

The specific epithet “planitia” refers to the appearance of a dorsal margin at the middle part of the carapace in lateral view, which is similar to the summit of a plateau. This is the most prominent character of the new species.

Material examined

Holotype

THAILAND: ♀, with soft parts dissected in glycerine on a sealed glass slide and valves stored dry in a micropalaeontological slide (MSU-ZOC.208).

Paratypes

THAILAND: 1 ♀, stored as the holotype (MSU-ZOC.208); 1 ♀, carapace stored dry in a micropalaeontological slide (MSU-ZOC.209); 2 ♀♀ in 70% EtOH.

Other material

THAILAND: **Nakhon Ratchasima Province**: Sikhiu District, Sub Pradu Reservoir (locality 2 in Fig. 20), 14°57'57" N, 102°05'03" E, 5 Oct. 2007. Accompanying ostracod fauna: *Hemicypris ovata* (Sars, 1903), *Chrissia humilis*, *Potamocypris* sp. and *Physocypria* sp. 3. – **Nakhon Ratchasima Province**: Sikhiu District, Lam Taklong Dam (locality 10 in Fig. 20), 14°51'49" N, 101°33'43" E, 20 Sep. 2005. Accompanying ostracod fauna: *Hemicypris exiqua*, *Physocypria* sp. 3 and *Strandesia* (juveniles); collected on 6 February 2006, accompanying ostracod fauna: *Cypridopsis vidua*, *Cypridopsine* sp. and *Physocypria* sp. 3. – **Chiang Mai Province**: Mae Kuang Dam (locality 11 in Fig. 20), 18°55'17" N, 99°07'26" E, 10 Feb. 2006. Accompanying ostracod fauna: *Alicenula serricaudata* (Klie, 1935), *Cypridopsine* sp. and *Chrissia* (juveniles). – **Phetchabun Province**: Muang District, Nong Naree (swamp) (locality 6 in Fig. 20), 16°26'24" N, 101°08'29" E, 9 Oct. 2007. Accompanying ostracod fauna: *Bradleycypris vittata*, *Bradleystrandesia weberi*, *Strandesia kraepelini*, *Cypretta* sp. 3, *Potamocypris* sp., *Siamopsis renateae* gen. et sp. nov., *Physocypria* sp. 2 and *Physocypria* sp. 3.

Type locality

THAILAND: Nakhon Ratchasima Province, Muang District, irrigation ditch (locality 1 in Fig. 20), 14°43'46" N, 104°33'56" E, 5 Oct. 2010. Accompanying ostracod fauna: *Cypris subglobosa*, *Cyprinotus*

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uenoi, *Stenocypris* cf. *orientalis*, *Siamopsis conspecta* gen. et sp. nov., *S. khoratensis* gen. et sp. nov. and *S. renateae* gen. et sp. nov.

Differential diagnosis

Siamopsis planitia gen. et sp. nov. is closely related to *S. khoratensis* gen. et sp. nov. The species is characterized by the presence of a flat, slightly concave dorsal margin at the middle part of the carapace in lateral view, the naked (without tooth-like tubercle) elongated postero-dorsal plate of the LV and the absence of small tubercle-like structures under the inner list at the postero-ventral part of the RV.

Measurements (mean, in μm)

LV (n = 2), L = 667, H = 373; RV (n = 2), L = 599, H = 378.

Description

Female

CARAPACE. In lateral view (Fig. 15A) elongated, dorsal margin flat at the middle part of carapace, both margins subequally rounded anteriorly and posteriorly, RV overlapping LV anteriorly, ventrally and posteriorly, valve surface set with long (rim-pore) setae and shallow pits dispersedly (Fig. 15D). Carapace in dorsal view elliptical, with greatest width situated at mid-length.

VALVES. LV in internal view (Fig. 15B) with large selvage anteriorly, valve margins subequally rounded anteriorly and posteriorly, postero-dorsal plate elongated, without tooth-like tubercle, calcified inner lamella anteriorly broader than posteriorly, with inner lists. RV in internal view (Fig. 15C) with large selvage anteriorly, posterior margin curved inwardly situated at postero-dorsal part, postero-ventral part slightly angulate, without small tubercle-like structures under inner list.

A1 (Fig. 16A). Seven-segmented, first segment with large proximal Wouters organ, one long dorso-subapical seta (reaching mid-length of next segment) and two long ventro-apical setae. Second segment slightly wider than long, with one long dorso-apical seta (reaching mid-length of next segment) and Rome organ. Third segment bearing two setae: one long dorso-apical (reaching tip of penultimate segment) and one ventro-apical spine-like setae. Fourth segment with two long dorsal setae and two short ventral setae (both reaching beyond half of fifth segment). Fifth segment dorsally with two long setae, ventrally with two (one long, one short) setae, short one reaching beyond tip of next segment. Penultimate segment with four long apical setae. Terminal segment with three (two long, one short) apical setae and very long aesthetasc ya, length of short seta more than half that of aesthetasc ya.

A2 (Fig. 16B). Exopodite with three (one long, two short) setae, long one reaching beyond tip of first endopodal segment. First endopodal segment with five long (reaching far beyond tip of terminal claws) and one short natatory setae, length of the shortest seta ca half that of penultimate segment, aesthetasc Y long, ventro-apical seta long, extending beyond tip of terminal segment. Penultimate segment undivided, distally with three serrated claws (G1, G2, G3), G2 shorter (length of G2 ca $\frac{1}{2}$ that of G1), aesthetasc y2 long (ca half of terminal segment), z1–z3 setae long; this segment medially with two subequally long dorsal setae, two ventral setae of unequal length (t1–t2). Terminal segment distally with two serrated claws (GM and Gm), length of Gm ca $\frac{2}{3}$ that of GM; medially with short g-seta and ventral aesthetasc y3, length of accompanying seta ca $\frac{3}{4}$ that of aesthetasc y3.

MD PALP (Fig. 17A). First segment with two large setae, one long and slender seta, and a short, smooth α -seta. Second segment dorsally with three unequally long apical setae; ventrally with group of three long hirsute setae, one shorter hirsute seta and plumose, cone-shaped β -seta with pointed tip. Penultimate segment consisting of three groups of setae: dorsally with group of four unequal, long, subapical setae; laterally with apical γ -seta and three further apical setae (two smooth, one hirsute), the former thin and

long (length ca 2 times that of terminal segment); ventrally with two subapical setae, one very long (reaching beyond tip of terminal segment), one short (ca half length of terminal segment). Terminal segment elongated, bearing three claws and two shorter setae.

Mx1 (Fig. 17B). With two-segmented palp, basal segment of palp dorsally with group of five long, unequal apical setae; ventrally with one short subapical seta. Terminal segment very elongated (length ca 3 times that of width), apically with three claws and two setae. Third endite with two (one smooth, one serrated) large bristles. Sideways-directed bristles on first endite unequally long, length of short one ca half that of long one.

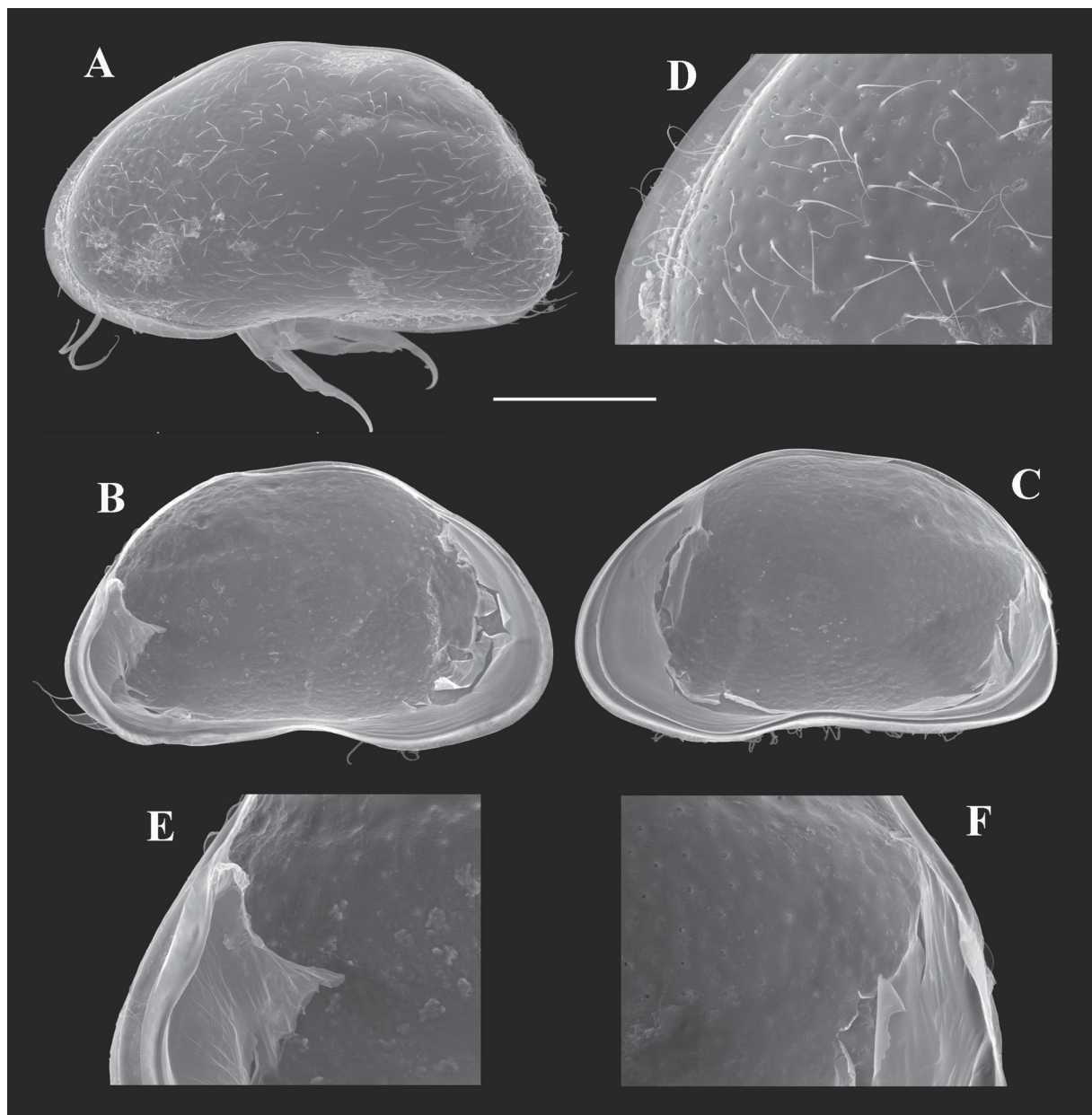


Fig. 15. *Siamopsis planitia* gen. et sp. nov., ♀. **A.** CpL (MSU-ZOC.209). **B.** LVi (MSU-ZOC.207). **C.** RVi (idem). **D.** Valve surface of CpL (MSU-ZOC.209). **E.** Postero-dorsal part of LVi (MSU-ZOC.207). **F.** Postero-dorsal part of RVi (idem). Scale bar: A–C = 200 µm; D = 64 µm; E–F = 85 µm.

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T1 (Fig. 17C–D). Protopodite with two unequally short a-setae, b- and d-setae absent, distally with ca 10 hirsute apical setae of unequal length. Endopodite a weakly built palp, with one very long, hirsute and two unequally short apical setae.

T2 (Fig. 18A). With d2 seta (d1 absent). Second segment with short e-seta (reaching mid-length of penultimate segment). Penultimate segment divided, proximal segment bearing long f-seta (reaching

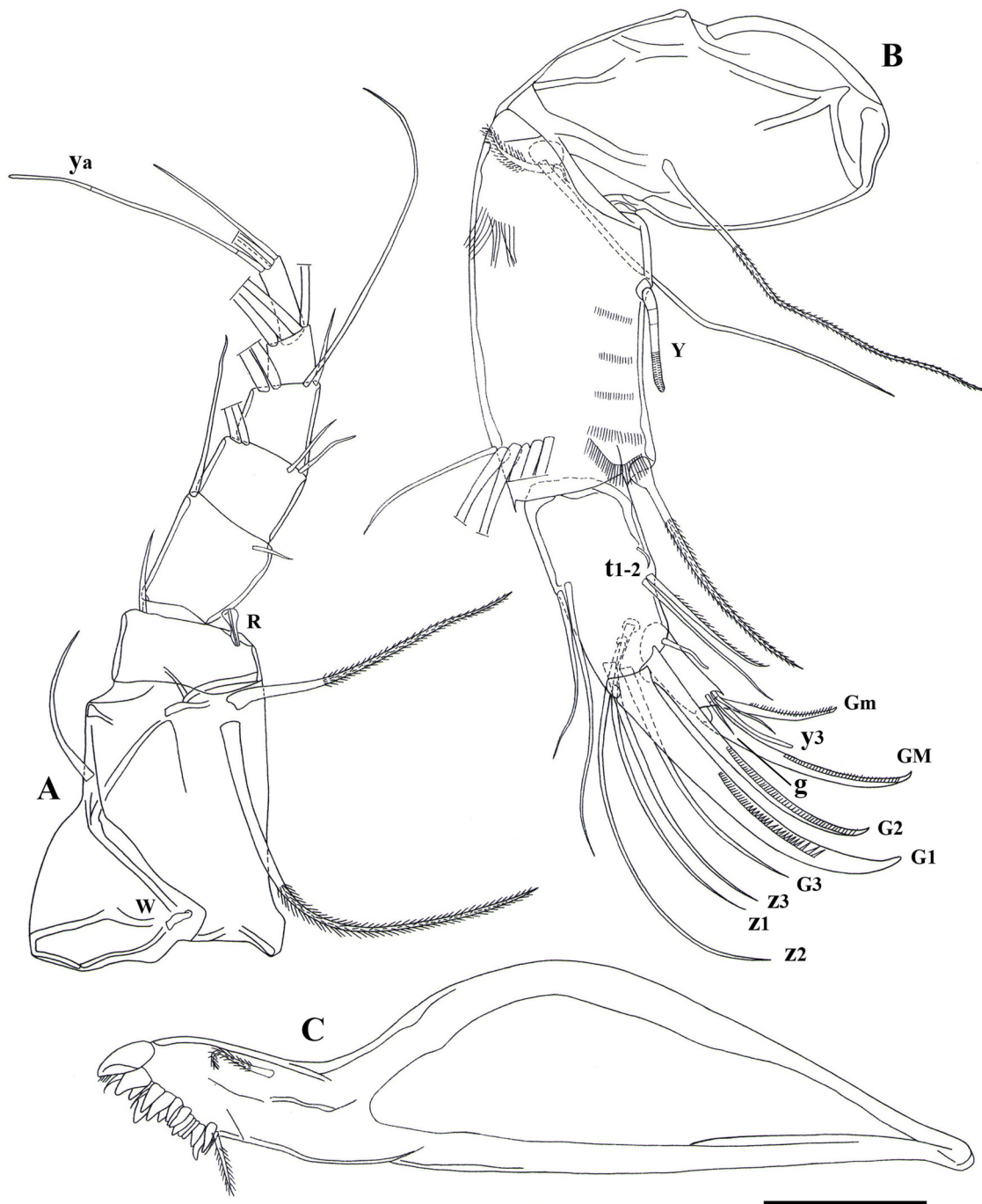


Fig. 16. *Siamopsis planitia* gen. et sp. nov., ♀ (MSU-ZOC.207). A. A1. B. A2. C. Md coxa. Scale bar: 50 µm.

beyond tip of terminal segment), distal segment with pair of apical setae (long g-seta, one short), g-seta reaching tip of terminal segment. Terminal segment with two (one dorsally, one ventrally) apical h1 and h3 setae (length of former ca $\frac{1}{3}$ that of claw, latter short) and serrated claw (h2), length of h2 longer than that of penultimate segment.

T3 (Fig. 18B). A cleaning limb. First segment with long d1, d2 and dp setae, d1 and d2 setae subequal in length. Second segment with long apical e-seta (reaching half length of next segment). Third segment

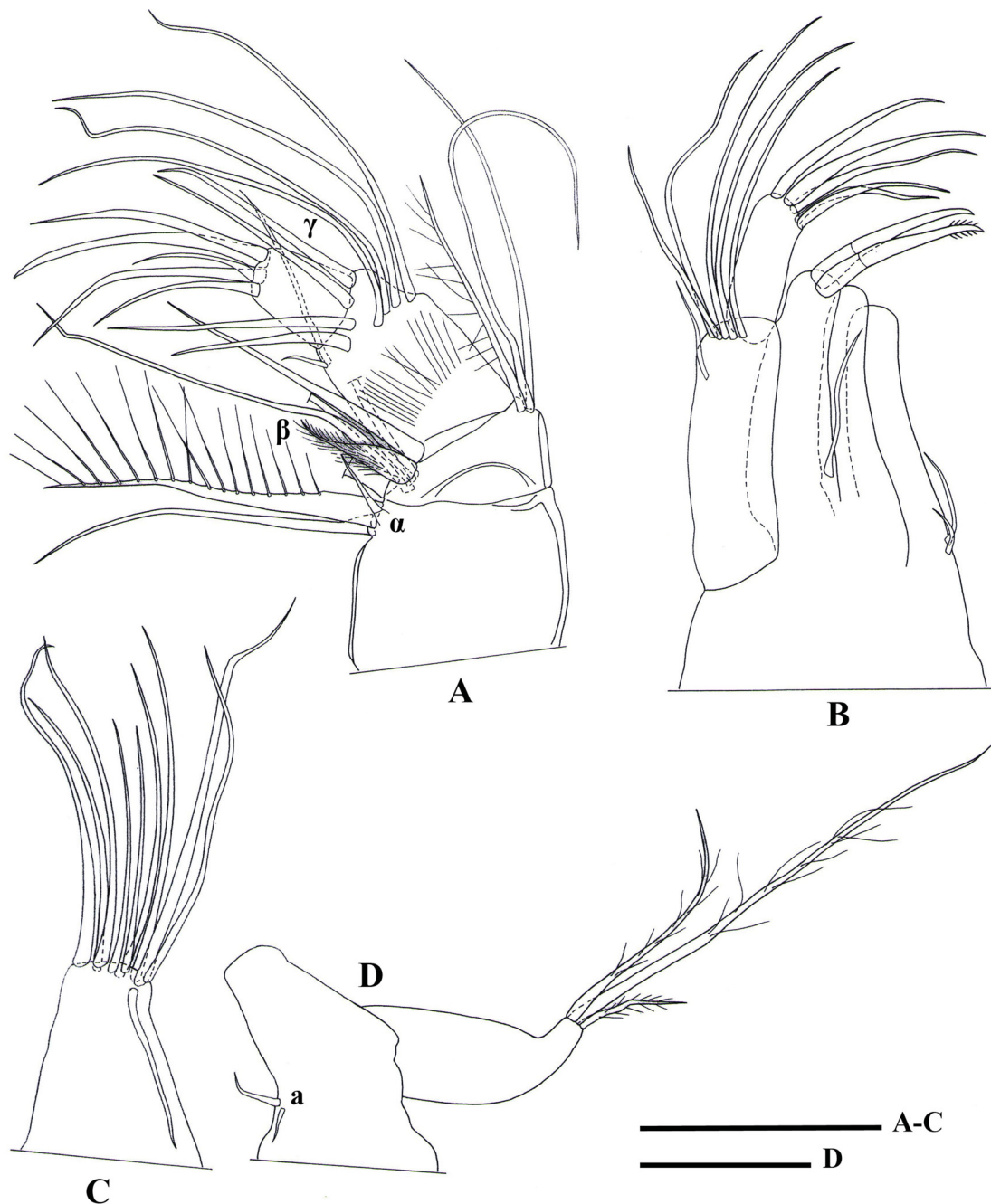


Fig. 17. *Siamopsis planitia* gen. et sp. nov., ♀ (MSU-ZOC.207). A. Md palp. B. Mx1. C. T1, apical setae on protopodite. D. T2. Scale bars: 50 μ m.

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with medially long f-seta (reaching tip of segment). Terminal segment with an apical pincer and one reflexed subapical seta, length of latter equal to that of third segment.

CR (Fig. 18C). Reduced, flagellum-like, cylindrical in shape, with a small lateral seta and long apical seta, length of latter ca 1.8 times that of ramus.

Male

Unknown.

Ecology

The new species has so far been recorded from five localities in Nakhon Ratchasima, Phetchabun and Chiang Mai Provinces. It occurs at a pH range of 6.50–7.38, a temperature range of 24.2–29.3°C and a DO range of 3.20–8.14 mg/l.

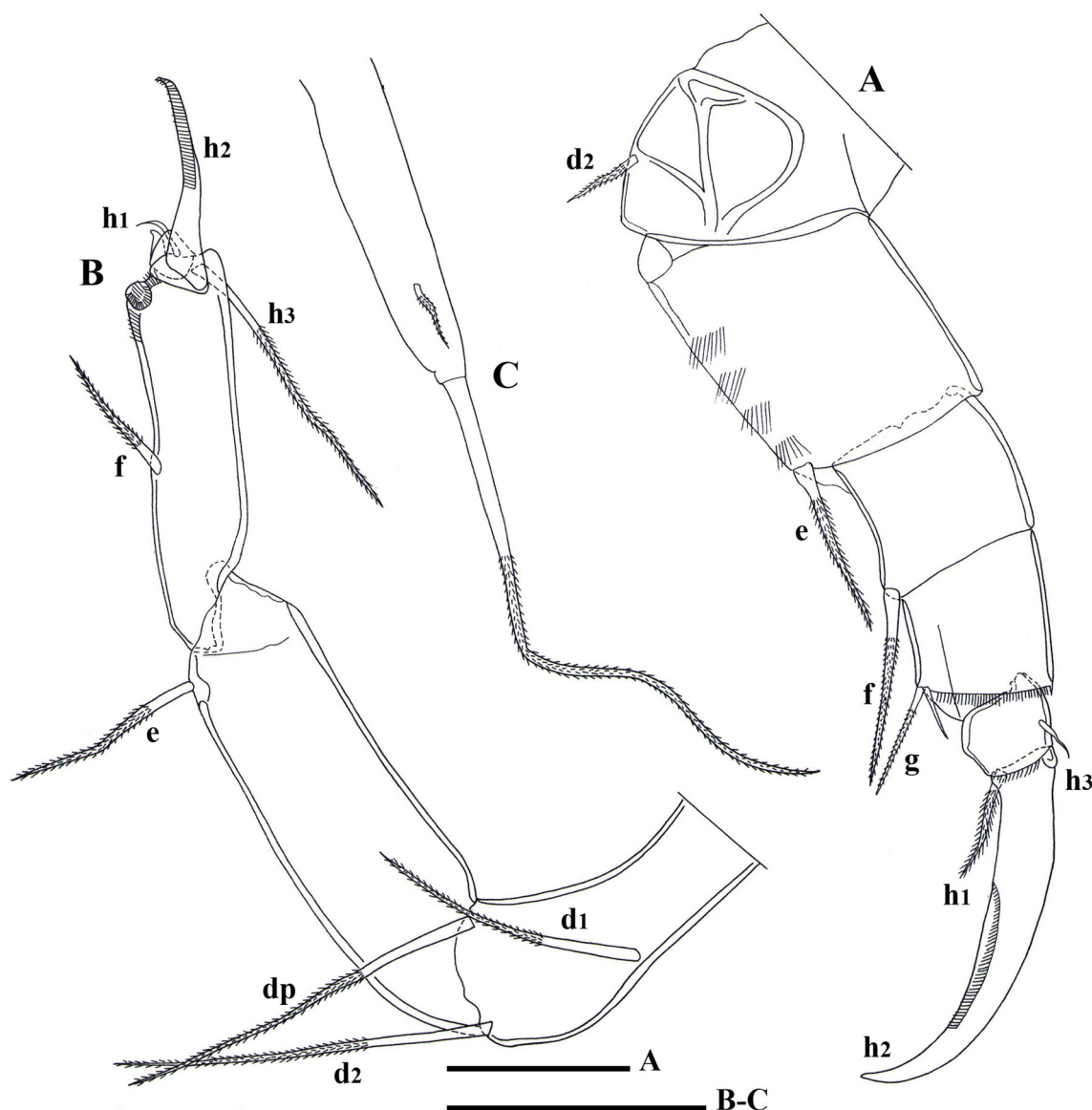


Fig. 18. *Siamopsis planitia* gen. et sp. nov., ♀ (MSU-ZOC.207). A. T2. B. T3. C. CR. Scale bars: 50 µm.

Key to species of *Siamopsis* gen. nov.

1. Dorsal margin of Cp in lateral view flat at mid length2
 - Dorsal margin of Cp in lateral view arched at mid length3
2. Postero-dorsal plate of LV in internal view broad, with a small tooth-like tubercle on anterior part, RV in internal view with tubercle-like structures under postero-ventral inner list
 - *S. khoratensis* gen. et sp. nov.
 - Postero-dorsal plate of LV in internal view elongated, without tooth-like tubercle, RV in internal view without tubercle-like structures under postero-ventral inner list ...*S. planitia* gen. et sp. nov.
3. Cp in lateral view subtriangular, postero-dorsal plate of LV in internal view broad, with two small teeth-like tubercles on margin, RV in internal view without tubercle-like structures under postero-ventral inner list*S. renateae* gen. et sp. nov.
 - Cp in lateral view elongated, postero-dorsal plate of LV broad or elongated, RV in internal view with tubercle-like structures under postero-ventral inner list4
4. Postero-dorsal plate of LV in internal view broad, with tooth-like tubercle in the middle*S. conspecta* gen. et sp. nov.
 - Postero-dorsal plate of LV in internal view elongated, with tooth-like tubercle on posterior margin*S. suttajiti* gen. et sp. nov.

Key to genera with RV overlapping LV in the subfamily Cypridopsinae

1. CR absent in both male and female*Martenscypridopsis* Karanovic, 2000
 - CR present in female2
2. CR of cylindrical shape3
 - CR of triangular shape5
3. RV with well developed septa beneath posterior inner list*Klieopsis* Martens *et al.*, 1991
 - RV without well developed septa beneath posterior inner list4
4. Internal LV with a plate-like protrusion on the postero-dorsal part, two t-setae on female A2
 -*Siamopsis* gen. nov.
 - Internal LV without a plate-like protrusion on the postero-dorsal part, four t-setae on female A2 ...
 -*Plesiocypridopsis* Rome, 1965
5. Valves very elongated ($L/H > 2$), posterior selvage of internal LV displaced substantially to the front ...
 -*Tanganyikacypridopsis* (Martens, 1985)
 - Valves not very elongated ($L/H < 2$), posterior selvage of internal LV not displaced substantially to the front6
6. A2 natatory setae long, carapace subtriangular*Sarscypridopsis* McKenzie, 1977
 - A2 natatory setae short, carapace not subtriangular (mostly more subovate)7
7. RV without inner list, left prehensile palp with slender finger-like terminal segment, terminal segment of Mx1 palp with (slightly) enlarged tip*Thermopsis* Kulköylüoğlu *et al.*, 2003
 - RV with inner list, left prehensile palp without slender finger-like terminal segment, terminal segment of Mx1 palp without enlarged tip8

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8. Left prehensile palp with terminal segment enlarged distally, terminal segment of Mx1 palp very elongated ($L/W > 2$) *Bryocypris* Røen, 1956
 – Left prehensile palp without terminal segment enlarged distally, terminal segment of Mx1 palp not very elongated ($L/W < 2$) *Kapcypridopsis* McKenzie, 1977

Discussion

The new genus is the sixth and third cypridopsine genus reported from the Oriental and Southeast Asian regions, respectively. The present study increases the total number of Southeast Asian cypridopsine species from six (Sars 1903; Victor & Fernando 1981; Savatnalinton *et al.* 2008; Savatnalinton 2009, 2010; Tressler 1937) to 11. In the following, the affinities among genera of the subfamily Cypridopsinae and the morphological characters of the new genus are discussed.

Siamopsis gen. nov., described here, belongs to the group where the RV overlaps the LV. A key to genera with RV overlapping LV of the subfamily Cypridopsinae is given above. This group comprises nine genera: *Martenscypridopsis* Karanovic, 2000, *Klieopsis* Martens *et al.*, 1991, *Plesiocypridopsis* Rome, 1965, *Tanganyikacypridopsis* Martens, 1985, *Sarscypridopsis* McKenzie, 1977, *Kapcypridopsis* McKenzie, 1977, *Thermopsis* Külköylüoğlu *et al.*, 2003, *Bryocypris* Røen, 1956 and *Siamopsis* gen. nov. Among these genera, the occurrence of a cylindrical CR has been recognized in three genera, *Klieopsis*, *Plesiocypridopsis* and *Siamopsis* gen. nov. These three genera also share other features, e.g., the absence of the ventral apical seta on the Mx1 palp and of the d-seta on T1. The new genus can be distinguished from *Plesiocypridopsis* and *Klieopsis* by the presence of a plate-like protrusion on the postero-dorsal part of the internal LV, the morphology of the two large bristles on the Mx1 third endite, one being smooth and the other serrated (both bristles are serrated in *Klieopsis* and *Plesiocypridopsis*) and the presence of the Wouters organ on A1. Additionally, *Siamopsis* gen. nov. can be distinguished from *Plesiocypridopsis* by the number of t-setae on the female A2 penultimate segment (two in the new genus and four in *Plesiocypridopsis*) and the five apical setae on the terminal segment of the Mx1 palp (four in *Plesiocypridopsis*). *Siamopsis* gen. nov. differs from *Klieopsis* mainly in the presence of long natatory setae and the absence of a robust internal septa of the RV posterior inner list. The conspicuous morphology of the RV postero-ventral inner list of *Klieopsis* is the outstanding character that, so far, has not been observed in any other cypridopsine genera (Martens *et al.* 1991). However, a similar structure appears in three species of *Siamopsis* gen. nov. (*S. suttajit* gen. et sp. nov., *S. conspecta* gen. et sp. nov. and *S. khoratensis* gen. et sp. nov.). These species have a few tiny tubercle-like structures beneath the postero-ventral inner list of the RV (Fig. 19B–D). Due to their identical positions, this feature in the new genus could be the initiating form of the septa (it is in a well developed form in *Klieopsis*) and therefore shows the similarity between these two genera.

The Wouters organ on the first segment of the A1 appears in all five species of *Siamopsis* gen. nov. This is the first report of this organ in the subfamily Cypridopsinae. The length of the ya on the A1 terminal segment varies in different species. However, it was found that the ya was longer, but to different degrees, than the shortest seta of the terminal segment in *Siamopsis* gen. nov.

It is obvious that the natatory setae on A2 can be either longer or reduced to short setae (as in, e.g., *Klieopsis*, *Thermopsis*, *Bryocypris* and *Cavernocypris* Hartmann, 1964) in Cypridopsinae (see Meisch 2000; Karanovic 2012). The t-setae on the A2 penultimate segment are different in number between genders and between genera. Based on the occurrence of t-setae in females, there are two groups of genera: with four setae and with two setae. The former group comprises, e.g., *Plesiocypridopsis* (see Meisch 2000), *Thermopsis* (see Külköylüoğlu *et al.* 2003), *Bryocypris* (see Martens 1989), *Tanganyikacypridopsis* (see Martens 1985), *Cypridopsis* (see Meisch 2000), *Potamocypris* Brady, 1870 (see Meisch 2000; Horne & Smith 2004) and *Cabelodopsis* (see Higuti & Martens 2012), whereas the latter group, with two t-setae in the females, is represented by, for example, *Sarscypridopsis* (De Deckker 1981; Meisch

2000; Dumont & Martens 1996), *Klieopsis* (Martens *et al.* 1991) and *Siamopsis* gen. nov. In males, only one pattern (two t-setae) has so far been recognized (De Deckker 1981; Martens & Meisch 1985; Martens 1989; Martens *et al.* 1991; Dumont & Martens 1996; Meisch 2000; Kulköylüoğlu *et al.* 2003). Thus, the number of t-setae is a sexual feature in some cypridopsine genera, such as *Thermopsis* and *Bryocypris*, in which it is reduced in males.

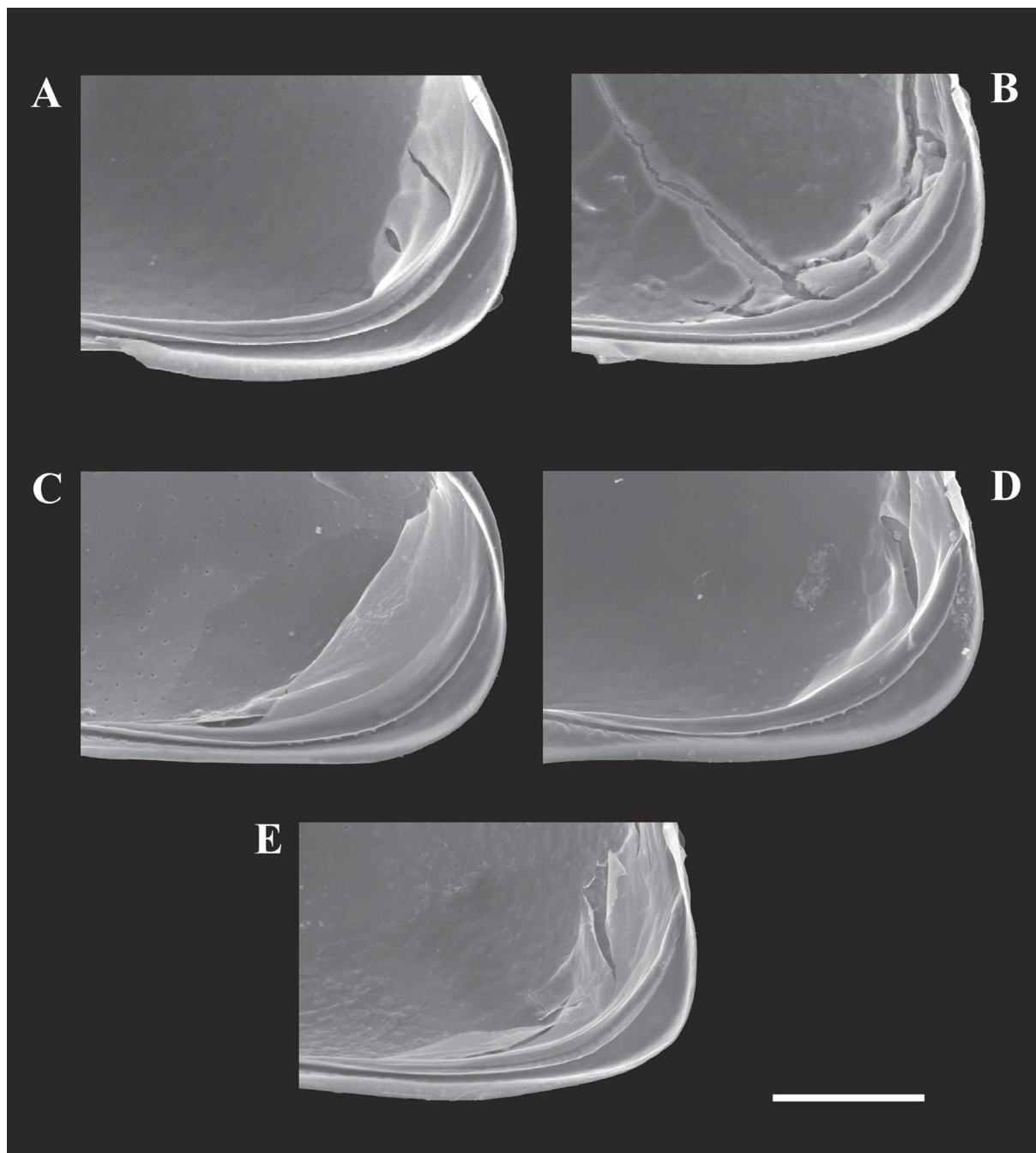


Fig. 19. Postero-ventral part of internal RV in *Siamopsis* spp., showing a smooth inner list and a few tiny tubercle-like structures beneath the inner list. **A.** *S. renateae* gen. et sp. nov. **B.** *S. conspecta* gen. et sp. nov. **C.** *S. suttajit* gen. et sp. nov. **D.** *S. khoratensis* gen. et sp. nov. **E.** *S. planitia* gen. et sp. nov. Scale bar: 100 µm. Arrows indicate tiny tubercle-like structures under postero-ventral inner list.

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The Md palp is normally developed in the subfamily Cypridopsinae. However, in the new genus, the morphology of the ventro-apical seta on the penultimate segment is similar to that of the γ -seta, showing a plumose and long seta.

The shape of the terminal segment of the Mx1 palp can be divided into two groups: spatulate and cylindrical shapes. While most of the cypridopsine genera have cylindrical terminal segments, the spatula shape occurs in *Potamocypris* only (see Meisch 2000; Karanovic 2012). Other features of this limb can also be used as generic characters of the subfamily, for example, the occurrence of a ventro-subapical seta on the basal segment of the palp. This seta is absent in, e.g., *Siamopsis* gen. nov., *Plesiocypridopsis* and *Klieopsis*.

The occurrence of a, b, c and d setae on the T1 has been used as a diagnostic feature in several subfamilies. For example, the presence of the c-seta is a distinguishing aspect of the subfamily Eucypridinae (Meisch 2000) and the presence of the d-seta distinguishes *Strandesia* Stuhlmann, 1888 from *Pseudostrandesia* SavatenaInton & Martens, 2008 in subfamily Cypricerinae (see SavatenaInton 2009). In the subfamily Cypridopsinae, the presence of only two a-setae is a fundamental pattern in all genera, including *Siamopsis* gen. nov., while the d-seta has only been seen in *Cabelodopsis* (Higuti & Martens 2012).

The occurrence of the T2 d-setae is one of the generic characters of several subfamilies. Both setae appear in almost all subfamilies of the Cyprididae and Candonidae, except for, e.g., subfamily Cyclocypridinae, in which d1 is present in, e.g., *Allocypris* Rome, 1962, *Cyclocypris* Brady & Norman, 1889 and *Kempfcyclocypris* Karanovic, 2011, but absent in, e.g., *Cypris* Zenker, 1854, *Keysercypris* Karanovic, 2011 and *Dentocypris* SavatenaInton, 2017 (see Meisch 2000; Karanovic 2012; SavatenaInton 2017). In Cypridopsinae, only the d2 seta is present (d1 absent) in all genera. Thus, this character should be mentioned in the diagnosis of the subfamily.

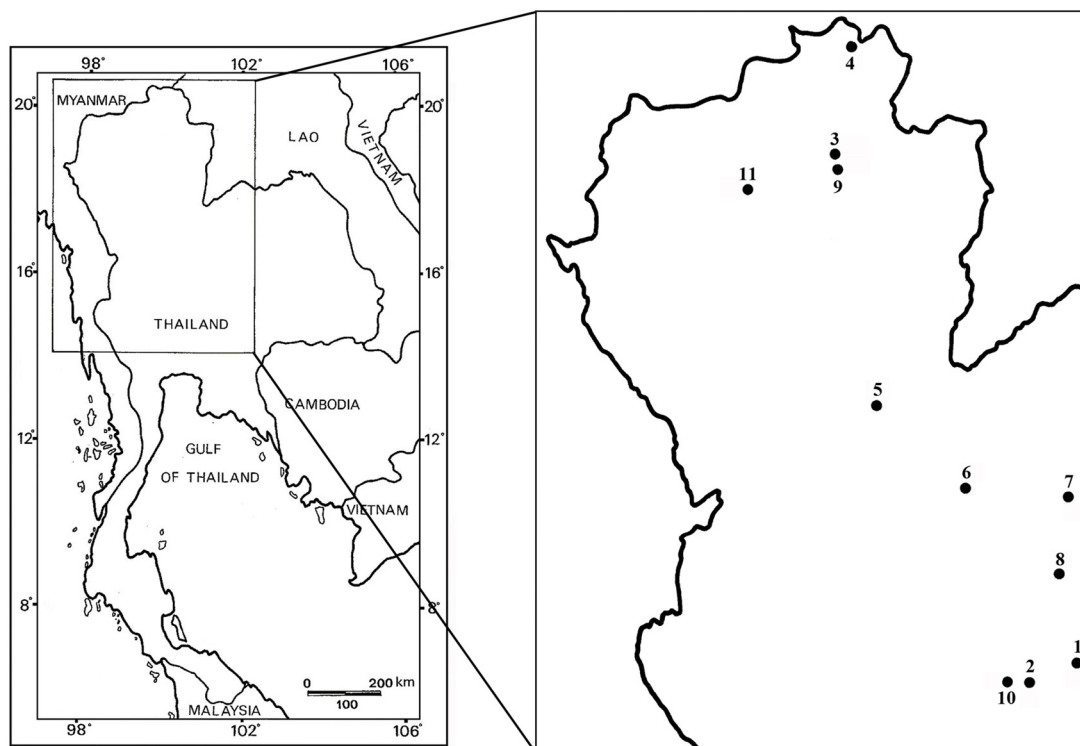


Fig. 20. Sampling localities of species of *Siamopsis* gen. nov. (for information on locality numbers, see the text).

Although the valve overlap and the shapes of the CR and the terminal segment of the Mx1 palp are the most important diagnostic features (Meisch 2000; Karanovic 2012), there are still many distinguishing characters between the genera of the subfamily Cypridopsinae. The phylogeny of the subfamily, based on morphological characters, including a discussion of generic characters, will be presented elsewhere.

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