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ON A NEW SPECIES OF *ELAMENOPSIS* FROM SINGAPORE, WITH NOTES ON *CRUSTAENIA PALAWANENSIS* (SERÈNE, 1971) (CRUSTACEA: DECAPODA: BRACHYURA: HYMENOSOMATIDAE)

Tohru Naruse and **Peter K. L. Ng**
Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543, Republic of Singapore

ABSTRACT. – A new species of *Elamenopsis* A. Milne Edwards, 1873, is described from Singapore. *Elamenopsis rotunda*, new species, can easily be distinguished from the three known congeners by its proportionately narrower carapace and relatively thinner ambulatory legs. *Elamenopsis rotunda* is perhaps most similar to *E. ariakensis* but also differs in the shapes of their rostrums and anterolateral margins of their carapaces. This represents the fifth hymenosomatid species from Singapore. *Crustaenia palawanensis* (Serène, 1971), one of five hymenosomatid species known from Singapore, is also examined. Although it has a posterolateral tooth like some *Neorhynchoplax* species, this tooth is placed on the carapace rim rather than on the lateral wall. This is another character that can be used to separate *Crustaenia* from *Neorhynchoplax* at the genus level.

KEY WORDS. – *Elamenopsis rotunda,* new species, *Crustaenia palawanensis,* taxonomy, Singapore.

INTRODUCTION

The Hymenosomatidae consists of mostly small-sized species, most of which are known from tropical to temperate Indo-West Pacific (Lucas, 1980; Ng & Chuang, 1996). The hymenosomatid fauna of South East Asia had not been well known until Ng & Chuang (1996) recognized 24 species of 10 genera. However, our knowledge of the fauna is still growing (Rahayu & Ng, 2004; unpublished data).

The present study describes a new species of *Elamenopsis* A. Milne Edwards, 1873, from sublittoral mud flat off Tuas, Singapore. *Elamenopsis rotunda*, new species, is only the fourth known species of *Elamenopsis* and expands the range of the genus westwards. This represents the fifth hymenosomatid species reported from Singapore (cf. Ng & Chuang, 1996).

Crustaenia palawanensis (Serène, 1971) is also one of five species recorded from Singapore. A study of recent specimens of this poorly known species reveals the presence of a posterolateral tooth on the carapace rim, which was not mentioned in previous studies. This character is generically important as it is positioned differently when compared to species of *Neorhychoplax* which possess a similar structure.

Specimens examined are deposited in the Queensland Museum, Australia and the Zoological Reference Collection, Raffles Museum of Biodiversity Research, National University of Singapore (ZRC). Measurements provided are of the carapace length (CL: along the median line from the posterior margin to the tip of the rostrum) and carapace width (CW: measured at its widest part).

TAXONOMY

HYMENOSOMATIDAE MacLeay, 1838

Elamenopsis A. Milne Edwards, 1873

Elamenopsis rotunda, new species
(Fig. 1)

Material examined. – Holotype: female, CL 3.7 mm, CW 4.8 mm, ZRC 2006.0147, off Tuas, Singapore, coll. Z. Jaafar, 29 Aug.2000.

Paratype: female, CL 2.8 mm, CW 3.8 mm, ZRC 2006.0148, data same as holotype.

Comparative material. *Elamenopsis lineata* (A. Milne Edwards, 1873): 1 male, CL 2.1 mm, CW 3.1 mm, 1 female, CL 2.4 mm, CW 3.4 mm, Queensland Museum W2341, S. Dunwich, South East Queensland, Australia, coll. F. C. Vohra, 15 Jul. 1962. *Elamenopsis ariakensis* (Sakai, 1969): 1 male, CL 2.7 mm, CW 3.8 mm, ZRC 1999.0019, Mei-Zhou Bay, Fujian Province, China, coll. S.-H. Fang, 4 Sep. 1998. *Elamenopsis comosa* Ng & Chuang, 1996: 1 male, CL 2.8, CW 4.4 mm, ZRC 1994.4244 (holotype), Negeri Lama, Ambon, Indonesia, coll. M. Takeda, 24 Jan. 1993; 1 female, CL 2.6, CW 4.1 mm, ZRC 1994.4245 (paratype), data same as ZRC 1994.4244.

Description. – Carapace (Fig 1a) not swollen, ovoid, CW 1.30–1.33 times CL, width of dorsal rim 0.81–0.82 times CW, lateral surfaces around bases of second, third legs expanded laterally; complete dorsal rim subcircular, almost flat, regions well defined; cervical groove branching anteriorly near anterolateral angle, connected posteriorly with gastro-cardiac and thoracic grooves, thoracic groove merging with posterior rim, postbranchial region longitudinally divided by transverse groove. Rostrum (Fig. 1b) triangular, strongly deflexed downwards, concave medially, lateral margin not confluent with dorsal rim; dorsal rim fringed with short, curled setae; anterolateral angle very low, rounded, being formed by thickened rim with anterior inner notch; posterolatral border convergent posteriorly, without posterior lateral tooth. Posterior margin of epistome (Fig. 1b) with medial rounded convexity. Eye (Fig. 1b) with short peduncle, cornea small, rounded, visible in dorsal view. Third maxilliped narrow, leaving wide gape when closed, lined with long setae along inner margins of ischium and merus; ischium small, inner margin distinctly shorter than that of merus; exopod thin, distal end not reaching distal outer angle of merus, with distinct flagellum.

Chelipeds (Fig. 1a, c) almost symmetrical, with setose outer surfaces; merus with flat inner surface and gently convex outer surface; carpus rounded, distal part of dorsal margin tooth-like, without inner angle; manus with inflated inner and outer surfaces; fingers as long as manus, with acute tips, with median gape when closed; immovable finger with lower margin slightly convex subproximally, cutting edge sparsely lined with small, triangular, acute teeth, proximal one largest; movable finger with upper margin slightly curved downwards distally, crossing posterior of immovable finger when closed, cutting edge lined with small triangular teeth on distal two-thirds, long rectangular tooth on proximal third; chelae paler in coloration on distal part of manus (around base of immovable finger) and on both fingers, except for proximal dorsal part of movable finger.

Ambulatory legs (Fig. 1d) relatively slender, long, flattened laterally, margins densely fringed with long setae, setae progressively longer and denser from posterior (meri) to inner (carpi to dactyli) margins, second leg longest; merus laterally flattened, dorsal margin with sparse short setae, proximal part of posterior margin somewhat excavated; dactylus not prominently incurving, inner margin straight.

Abdomen (Fig. 1e) subquadrate, proximal part of first segment expanded laterally, backwards, third to fifth segment fused; abdominal cavity distally not reaching imaginary line joining proximal half of first ambulatory coxae.

Etymology. – From the Latin *rotunda* meaning "circular", alluding to circular dorsal rim of the carapace. The name is used as an adjective.

Habitat. – *Elamenopsis rotunda*, new species, was collected from a sublittoral mud flat, off Tuas, Singapore, by using an Eckman grab (Zeehan Jaafar, personal communication).

Distribution. – Known only by type specimens from Singapore.

Remarks. – *Elamenopsis* currently contains three species, viz. *E. lineata* (A. Milne Edwards, 1873), *E. ariakensis* (Sakai, 1969), and *E. comosa* Ng & Chuang, 1996. *Elamenopsis rotunda* differs from all congeners by its proportionately narrower carapace and thinner ambulatory legs. *Elamenopsis rotunda* is most closely allied to *E. ariakensis* by its subcircular dorsal rim of the carapace (length to width ratios 1.19 in *E. rotunda* and 1.20 in *E. ariakensis*). However, *E. rotunda* can easily be differentiated from *E. ariakensis* by the shape of the lateral lobe of the rostrum (very low vs. distinct, triangular, directed perpendicularly upwards), smaller anterior lateral angle which is formed by thickened rim with anterior notch (vs. distinct, triangular, upturned as high as the lateral lobe of the rostrum in *E. ariakensis*), and the absence of a second anterolateral angle (vs. present in *E. ariakensis*) (Sakai, 1969: 250, text-fig. 2; Ng et al., 1999: 85, Fig. 3; Kosuge et al., 2002: 104, Fig. 2; present study).

Elamenopsis rotunda, new species, is also superficially similar to species of *Neorhynchoplax* in its relatively narrower dorsal rim of the carapace and more slender ambulatory legs. *Elamenopsis rotunda*, however, possesses a deflexed rostrum and acicular ambulatory dactyli with no dentition, and we have no doubt that it is a member of *Elamenopsis*.

Key to the species of *Elamenopsis* A. Milne Edwards, 1873

1. Dorsal rim of carapace subrectangular, width to length ratio more than 1.36; anterior lateral margin without tooth or angle 2
– Dorsal rim of carapace subcircular, width to length ratio 1.19–1.20; anterior lateral margin with 2 teeth or one angle 3
2. Rostrum slightly bilobed to subtruncate in dorsal view, appears broadly triangular shape in frontal view; merus of third maxilliped as long as ischium; male fourth and fifth abdominal segments completely fused; G1 slender, distal parts gently tapering from stouter proximal part ..... *Elamenopsis lineata* A. Milne Edwards, 1873
– Rostrum distinctly triangular in dorsal view, appears relatively narrow between eyes in frontal view; merus of third maxilliped distinctly longer than ischium; all male abdominal segments freely articulating; G1 stout, distal part distinctly stouter than more slender proximal part ..... *Elamenopsis comosa* Ng & Chuang, 1996
3. Anterolateral margin with 2 teeth, former tooth directed perpendicularly upwards; lateral lobes of rostrum distinct, similar to former anterolateral tooth; first to third ambulatory legs stout ..... *Elamenopsis ariakensis* (Sakai, 1969)
– Anterolateral margin with 1 angle which is formed by thickened rim with anterior notch; lateral lobes of rostrum present but very low; first to third ambulatory legs slender ..... *Elamenopsis rotunda*, new species

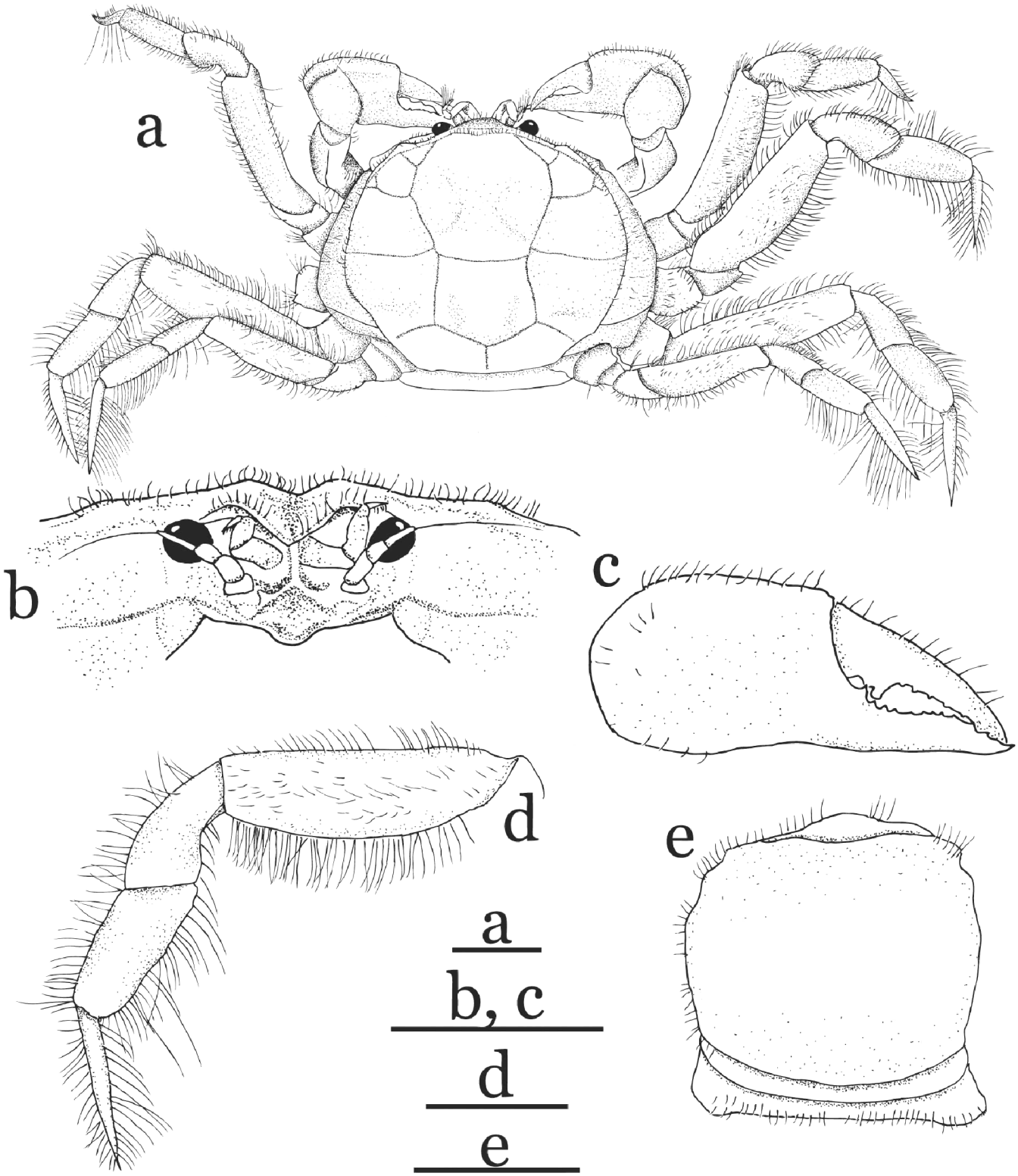

Fig. 1. *Elamenopsis rotunda*, new species, female paratype (ZRC 2006.0148): a, dorsal view; b, frontal view; c, right chela; d, left second ambulatory leg; e, abdomen and telson (abdomen and telson are soft and most probably damaged). Scale bars = 1.0 mm.

Crustaenia Ng & Chuang, 1996

Crustaenia palawanensis (Serène, 1971)
(Fig. 2a)

Neorhynchoplax palawanensis Serène, 1971: 904, Pl. I(B); Yang, 1979: 12.
Elamenopsis palawanensis – Lucas, 1980: 191; Chuang & Ng, 1994: 87.
Crustaenia palawanensis – Ng & Chuang, 1996: 19, Fig. 6; Guinot & Richer de Forges, 1997: 465.

Material examined. – One male, CL 3.2 mm, CW 2.5 mm, ZRC 1969.12.11.1 (holotype), Quezon, Palawan, Philippines, coll. R. Serène, 21 Jun.1963; 1 female, CL 3.1 mm, CW 2.7 mm, ZRC 1969.12.11.2 (paratype), data same as holotype; 1 female, CL 2.9 mm, CW 2.6 mm, ZRC 1965.10.19.94, off Raffles Lighthouse, Singapore, coll. Jul.1937; 1 female, CL 3.0 mm, CW 2.5 mm, ZRC 1992.5946, Pulau Semakau, Singapore, coll. Reef Ecology Survey Team, 27 Jan.1992; 2 females, CL 3.6, 3.9 mm, CW 3.0, 3.4 mm, ZRC 1993.6495–6496, Siloso beach, Sentosa, Singapore, coll. P. K. L. Ng, 1985; 2 females, CL 3.3, 4.1 mm, CW 2.8, 3.6 mm, ZRC 2006.0149, Terumbu Bayan, Pulau Ubin, Singapore, coll. Z. Jaafar et al., Apr.2006.

Diagnosis. – Carapace oval, longer than broad, dorsal surface surrounded by rim, posterolateral tooth placed on rim. Rostrum separated from carapace by shallow groove, trilobate; each lobe elliptical, lined with dense, hook-shaped setae. Ambulatory legs strongly flattened laterally, ribbon-like. A distinct pair of lobes on segment one of both male and female abdomens; segment 3–5 and telson of male abdomen fused, with remnants of suture between 5 and telson visible; segment 2–5 of female abdomen fused with no distinct sutures. Females with brood cavity.

Remarks. – *Crustaenia palawanensis* has thus far, only been reported from Palawan (Philippines) and Singapore. Serène (1971) and Ng & Chuang (1996) described the species, but they did not mention the presence of a posterolateral tooth on the carapace (Fig. 2a). This spiniform tooth is anteriorly directed and upturned, and is positioned on the dorsal rim above the base of the first ambulatory leg. Ng & Chuang (1996) regards *Neorhynchoplax* as the genus closest to *Crustaenia* in morphology and 14 of the 28 known *Neorhynchoplax* species also possess a similar posterolateral tooth. The posterolateral tooth of *Neorhychoplax* species, however, grows not from the dorsal rim of the carapace but from the side wall (see Alcock & McArdle, 1902; Kemp, 1917; Chopra & Das, 1930; Shen, 1932; Pretzmann, 1975; Lucas & Davie, 1982; Nakasone & Takeda, 1994; Davie & Richer de Forges, 1996; present study: Fig. 2b, c). The form and position of the posterolateral tooth is thus another character that can be used to separate *Crustaenia* from *Neorhynchoplax* at the generic level.

Comparative material. – *Neorynchoplax euryrostris* Davie & Richer de Forges, 1996: 1 female, CL 2.8 mm, CW 3.0 mm, ZRC 2006.0082, Dumbéa Estuary, New Caledonia, coll. Thollot, 24 Aug.1993; 1 male, CL 2.7 mm, CW 2.8 mm, ZRC 2006.0083, brackish water in Canara River, New Caledonia, coll. B. Richer de Forges, 12 Nov.1992.

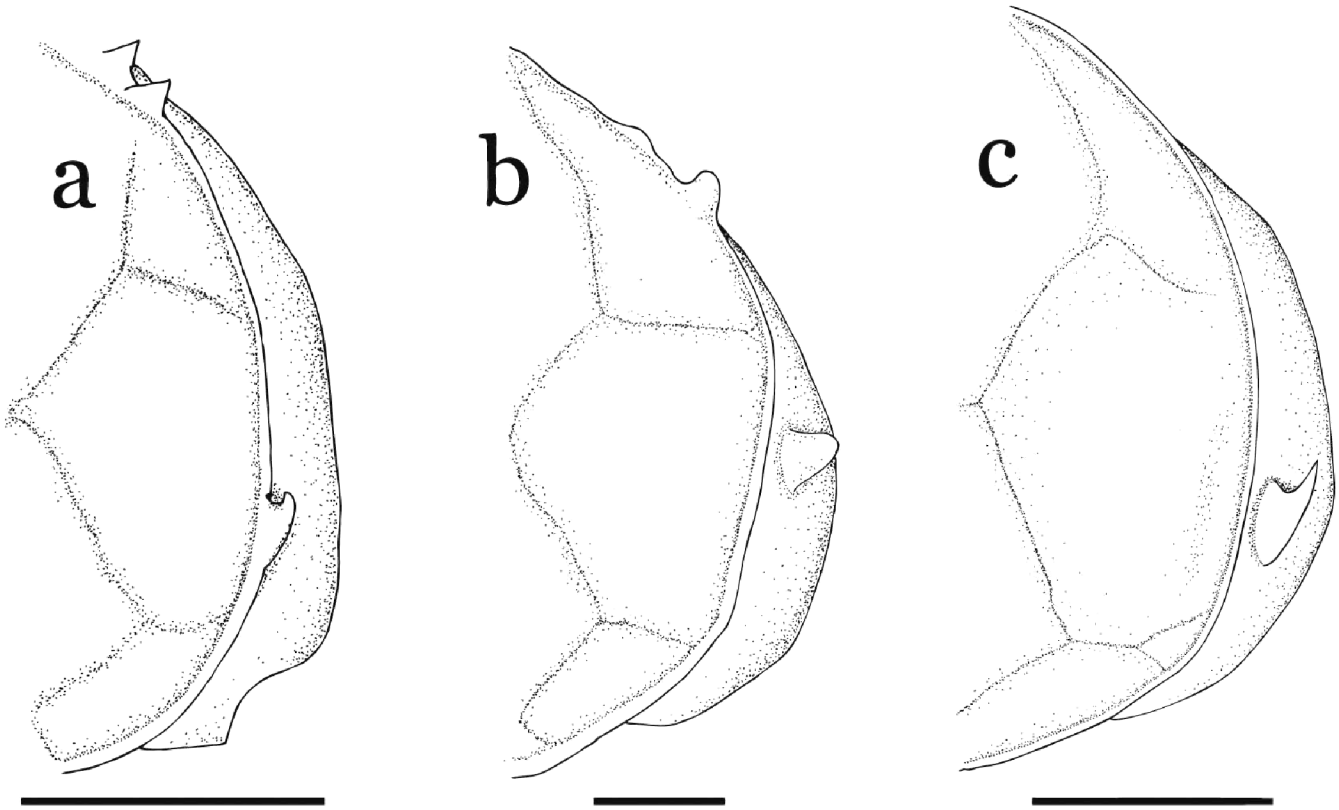

Fig. 2. Posterolateral tooth of *Crustaenia* Ng & Chuang, 1996, and *Neorhynchoplax* Sakai, 1938: a, *Crustaenia palawanensis* (Serène, 1971) (paratype, ZRC 1969.12.11.2); b, *Neorhynchoplax mangalis* (Ng, 1988) (holotype, ZRC 1993.6556); c, *Neorhynchoplax prima* Ng & Chuang, 1996 (holotype, ZRC 1994.4233). Scale bars = 1.0 mm.

Neorynchoplax dentata Ng & Chuang, 1996: 1 male, CL 5.6 mm, CW 5.8 mm, ZRC 1994.4284 (holotype), Sungai Pahlawan, tidal freshwater stream in sago plantation, on road from Mukoh to Dalat, Sarawak, Malaysia, Borneo, coll. T. H. T. Tan & M. Kottelat, 15 Jun.1994.
Neorynchoplax mangalis (Ng, 1988): 1 male, CL 3.9 mm, CW 3.9 mm, ZRC 1993.6556 (holotype), Mandai mangrove swamp, Singapore, coll. H. K. Tan, 1 Dec.1983.
Neorynchoplax okinawaensis (Nakasone & Takeda, 1994): 3 females, CL 2.7–2.8 mm, CW 2.7–2.8 mm, ZRC 2006.0152, Ibaruma, Ishigaki Island, Ryukyu Islands, Japan, coll. T. Kurihara, 9 Jun.1998.
Neorynchoplax prima Ng & Chuang, 1996: 1 male, CL 6.7 mm, CW 5.9 mm, ZRC 1994.4233 (holotype), Pengudong, Pulau Bintan, Riau Archipelago, Indonesia, coll. T. Tan, N. Sivasothi, et al., 13 May.1993.
Neorynchoplax sinensis (Shen, 1932): 1 male, CL 2.6 mm, CW 2.6 mm, ZRC 1999.0017, Gu-Lang-Yu, Xiamen, Fujian, China, coll. S.-H. Fang, 13 Dec.1984; 1 male, CL 2.6 mm, CW 2.6 mm, 1 female, CL 2.1 mm, CW 2.2 mm, ZRC 1999.0018, Gu-Lang-Yu, Xiamen, Fujian, China, coll. S.-H. Fang, 10 Sep. 1984.

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