

**THE GENUS *CERAPUS* IN THE ANDAMAN SEA
(CRUSTACEA, AMPHIPODA, ISCHYROCERIDAE)**

Jim Lowry and Penny Berents

Division of Invertebrate Zoology, Australian Museum, 6 College Street, Sydney, NSW 2000, Australia

ABSTRACT

This paper reports on the first records of the ischyrocerid amphipod genus *Cerapus* in the Andaman Sea. Two new species (*Cerapus chaomai* and *C. yuyatalay*) are described from seagrass beds from southern Phuket Island and Had Chao Mai.

INTRODUCTION

The genus *Cerapus* has never had a stable place in corophioid classification. Stebbing (1906) placed *Cerapus* in the Corophiidae as did J.L. Barnard (1969). J.L. Barnard (1973) placed *Cerapus* in the Ischyroceridae. Recently the genus has been placed in the superfamily Corophioidea and its family status has been left unknown (Barnard and Drummond, 1981; Lowry and Berents, 1989; Barnard and Karaman, 1991; Lowry and Thomas, 1991; Lowry and Berents, 1996). Lowry and Berents (1996) indicated a monophyletic origin for *Erichthonius*, the *Cerapus* group and the siphonoecetine group of genera, but failed to link all of these taxa with the Ischyroceridae. Recent unpublished work by Myers and Lowry confirms the status of these taxa within the Ischyroceridae.

When Lowry and Berents (1996) established the genus *Notopoma*, *Cerapus* was restricted to 12 known species from temperate and tropical seas around the world. None of these species is currently known from South-East Asia. To the west *Cerapus calamicola* (Giles, 1885) is known from the Periya Paar Kerrai in the north-western Bay of Bengal, and to the east *Cerapus longirostris* Shen, 1936 from the Shantung Peninsula in the Yellow Sea. Recently Barry Bendell brought two new species of *Cerapus* to the Crustacean Biodiversity Workshop held at the Phuket Biological Center in December 1998. They were living in seagrass beds in estuarine conditions. In this paper

we describe these species, the first records of the genus from the Andaman Sea.

The taxonomic section of this paper was generated from a DELTA (Dallwitz *et al.*, 1993) database of world cerapid species. Material used in this study is lodged in the Reference Collection of the Phuket Marine Biological Center (PMBC), Thailand, the Australian Museum (AM), Sydney and the Zoological Museum, University of Copenhagen (ZMUC), Denmark. The following abbreviations are used on the plates: **A**, antenna; **G**, gnathopod; **P**, pereopod; **U**, uropod; **UR**, urosomite.

Cerapus chaomai sp. nov.
(Figs 1–2)

Material examined

Holotype: ZMUC CRU-3638, male, 2.8 mm, St. 23, 07°45'N, 098°24'E, mangrove area immediately east of the small peninsula on the eastern side of Chalong Bay, Phuket Island, Thailand, sand with terrestrial plant debris, 3 m, coll. J. Just, 05.03.1982.

Paratypes: ZMUC CRU-3639, 1 female, 1.6 mm, same data as holotype.

Additional material: ZMUC CRU-3640, 2 juveniles, 07°54'N, 098°17'E, south-east corner, Patong, Phuket Island, Thailand, Andaman Sea, sand with plant debris, outside reef, 5 m, coll. J. Just, 23.02.1982; PMBC 18760, 3 juveniles, core

sample 10, Khao Bae Na seagrass bed, Had Chao Mai National Park, Sikao district, Trang, Thailand, coll. B. Bendell, 08.03.1996; PMBC 18762, female, 1.6 mm, 2 juveniles, core sample 13, 07°24'N, 099°20'E, Khao Bae Na seagrass bed, Had Chao Mai National Park, Sikao district, Trang, Thailand, coll. B. Bendell, 09.03.1996.

Type locality

Mangrove area immediately east of the small peninsula on the eastern side of Chalong Bay, (07°45'N 098°24'E), Phuket Island, Thailand, sand with terrestrial plant debris, 3 m.

Diagnosis

Head, rostrum short, length about 0.1 x head. *Antenna 1* very long, about 0.8 x body length; peduncular article 1 shorter than article 3, slightly swollen along posterior margin; flagellum article 1 short. *Pereopod 5* coxa (female) very long, length 2.3 x depth. *Pereopod 6* coxa with ventral setal fringe. *Pereopods 5–7* dactylar accessory hook formula, 2,1,1.

Description Based on holotype male, 2.8 mm.

Head with rostrum present, short, apically acute, length 0.1 x head; lateral cephalic lobe with ventral corner rounded, subocular margin deeply recessed, anteroventral corner subquadrate, ventral margin sloping, posterior margin vertical. *Antenna 1* very long, length 0.8 x body length; peduncular article 1 shorter than (0.8 x) peduncular article 3, slightly swollen along posterior margin, posterodistal corner not produced; flagellum 5-articulate; article 1 short (less than 2 x article 2). *Antenna 2* length 1.2 x antenna 1; flagellum 4-articulate; article 1 short (less than 2 x article 2).

Pereon. *Pereonite 1* without lateral or sternal keels. *Pereonites 2 and 3* without sternal keels. *Gnathopod 1* subchelate; coxa not fused to pereonite 1, length 1.6 x depth, without anteroventral lobe; basis length 2.3 x depth; carpus length 1.5 x depth with setose posterior lobe, broad; palm extremely acute, with barbed robust setae. *Gnathopod 2* carpochelate; coxa not fused to pereonite 2, without anteroventral lobe or cusp; basis short, broad, length 1.6 x breadth; carpus massive, long, broad, length 1.4 x breadth, posterior

margin without tooth; palm shallowly excavate, anterodistal tooth large, located near articulation with propodus, posterodistal tooth well defined, medium, length 1.1 x width, without apical robust setae; propodus broad, slightly curved, length 3.6 x width, with proximal tooth on posterior margin, posterodistal corner rugose, without tooth; dactylus, length 0.6 x propodus.

Pereopod 3 coxa not fused to pereonite 3, with broad anteroventral lobe; basis length 1.7 x breadth, with subproximal, subquadrate anterodorsal corner, with simple setae along anteroproximal margin, without denticles along anterior margin; ischium long, length 1.8 x breadth; merus short; length 1.1 x breadth; merus with ridges. *Pereopod 4* coxa not fused to pereonite 4, length 1.3 x depth, with anterior lobe; basis length 1.4 x breadth, with simple setal group midway along anterior margin, without patches of denticles; ischium long, length 2.1 x breadth; merus short, length 1.2 x breadth. *Pereopod 5* coxa length 2.3 x depth, without patches of small setae, without setae along ventral margin; merus with anterior lobe not extending beyond anterior margin of carpus, posterior lobe with 1 plumose setae; propodus with 1 seta along posterior margin; dactylus short, uncinete with two accessory hooks. *Pereopod 6* coxa with setal fringe ventrally, without patch of small setae near anterior margin; basis without patch of small setae near anterior margin; merus, length 2.1 x breadth; dactylus short, uncinete, with one accessory hook. *Pereopod 7* coxa without posterodorsal lobe, without patch of small setae; basis without patch of small setae near posterior margin; merus, length 2.4 x breadth; dactylus, short, uncinete, with one accessory hook.

Pleon. *Pleopods 1 to 3* decreasing in size. *Uropod 1* biramous, peduncle with distoventral corona of cuticular teeth, length 1.2 x outer ramus; inner ramus with distoventral corona of cuticular teeth; outer ramus with lateral row of denticles, with 3 lateral setae, with large apical robust seta without smaller slender setae; inner ramus, length 0.6 x outer ramus, without medial and lateral setae, with large apical robust seta without smaller slender setae. *Uropod 2* uniramous, length of peduncle 2.8 x breadth, 4.6 x length of ramus; ramus small, with 1 denticle and 1 apical seta. *Uropod 3*

uniramous, peduncle length 1.5 x breadth; ramus with 2 curved hooks. *Telson* length 1.1 x breadth, moderately cleft, 0.6 x length, each lobe with 6–7 anteriorly directed hooks in 2 rows.

Female. Based on paratype female, 1.6 mm. *Gnathopod 1* coxa length 1.3 x depth; basis length 2.8 x depth. *Gnathopod 2* subchelate; coxa length 1.8 x depth; basis long, slender, length 2.4 x breadth; carpus small, short, compressed, length 0.7 x breadth; propodus palm extremely acute;

dactylus, length 0.8 x propodus. *Pereopod 5* coxa length 3.7 x depth, with setae along ventral margin. Oostegites not known.

Tube. Granular, long, slender, slightly flared at one end, with brown bands of darker detritus along tube.

Habitat

Seagrass dwellers. Just (personal communication) observed *Cerapus chaomai* swim

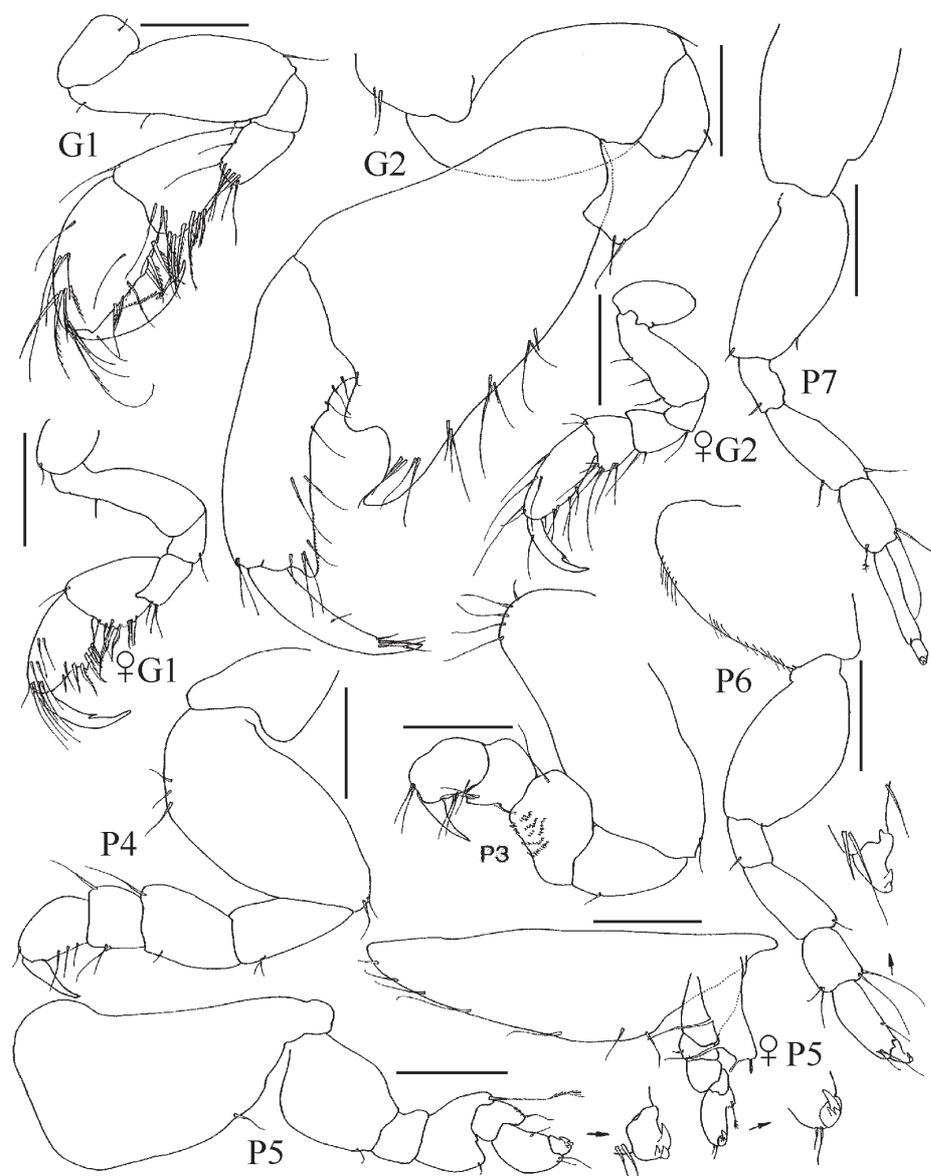


Figure 1 *Cerapus chaomai* sp. nov. Male, 2.8 mm, ZMUC CRU-3638, female, 1.6 mm, ZMUC CRU-3639; Phuket Island, Thailand, Andaman Sea. Scales represent 0.1 mm.

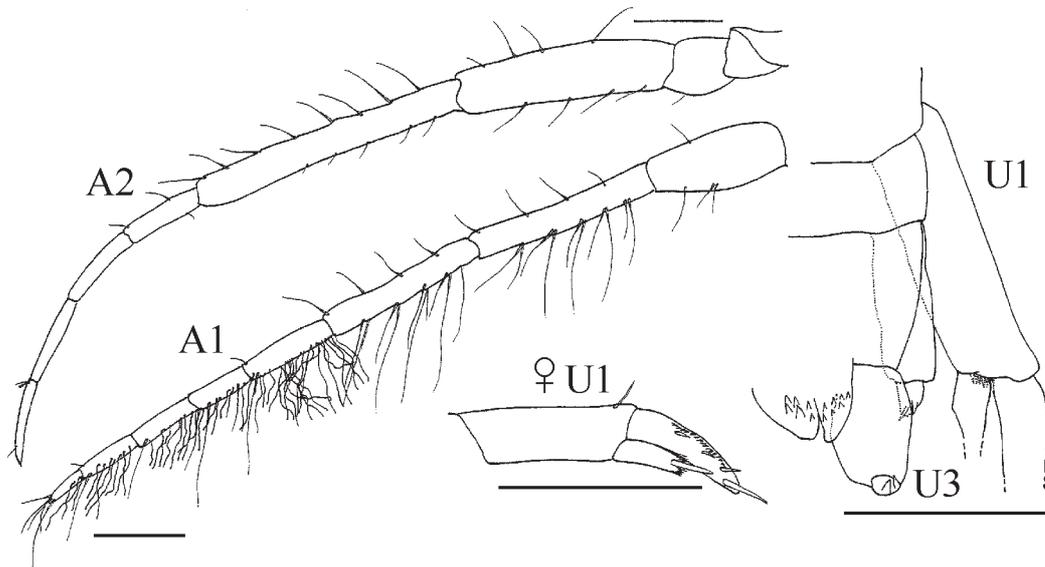


Figure 2 *Cerapus chaomai* sp. nov. Male, 2.8 mm, ZMUC CRU-3638, female, 1.6 mm, ZMUC CRU-3639; Phuket Island, Thailand, Andaman Sea. Scales represent A1, A2 = 0.2 mm, all others = 0.1 mm.

through the water with their tubes using all four antennae for propulsion.

Etymology

The name *chaomai* refers to the village, cave and beach at one of the collecting sites.

Remarks

Cerapus chaomai has an extremely long, slender coxa 5 similar to *C. erae* Bulycheva, 1952 and *C. alquirtus* (Barnard and Drummond, 1981). Barnard and Drummond (1981) made a genus based on this character, but Lowry and Berents (1989) argued that the elongation of pereonite 5 is gradational and should not be used as a generic indicator. Neither *C. alquirtus* or *C. erae* has a setal fringe on coxa 6, a character which may associate several species including *C. chaomai*. *Cerapus chaomai* has very long, slender antennae and the flagellum of antenna 2 lacks setae. The only other known *Cerapus* with similar antennae is *C. abditus*, which is poorly described and from an unknown place. So for the moment the relationship of *C. chaomai* to other cerapid species must remain a mystery.

Distribution

Eastern Andaman Sea, Thailand.

Cerapus yuyatalay sp. nov.

(Figs 3–5)

Material examined

Holotype: AM P51215, male, 4.1 mm, coll. B. Bendell, 05.10.1998.

Paratypes: AM P51216, 2 males, 2 females, 05.10.1998; AM P 51217, female, 3.9mm, 19.11.1996, All material was collected from type locality.

Addition material: PMBC 18762, male, 3.8 mm, coll. B. Bendell, 05.10.1998; PMBC 18763, 33 paratypes, 05.10.1998; PMBC 18764, 2 females, 3 juveniles, 11.03.1996; PMBC 18765, 1 male, 1 female, 12 juveniles, 19.09.1996; PMBC 18766, 8 specimens, 19.11.1996; PMBC 18767, 12 specimens, 1996.

Type locality

Khao Bae Na seagrass bed, Had Chao Mai National Park (07°24'N 099°20'E), Sikao district, Trang, Thailand.

Diagnosis

Head, rostrum long, length about 0.35 x head. *Antenna 1* long, about 0.5 x body length; peduncular article 1 longer than article 3, swollen along posterior margin; flagellum article 1 short.

Pereopod 5 coxa (female) length 1.3 x depth. *Pereopod 6* coxa without ventral setal fringe. *Pereopods 5–7* dactylar accessory hook formula, 1,1,2.

Description Based on holotype male, 3.8 mm.

Head with rostrum present, long, apically acute, length 0.35 x head; lateral cephalic lobe with ventral corner rounded, subocular margin deeply recessed, anteroventral corner subquadrate, ventral margin horizontal, posterior margin sloping. *Antenna 1* long, length 0.5 x body length; peduncular article 1 longer than (1.2 x) peduncular article 3, swollen along posterior margin, posterodistal corner not produced; flagellum 5-articulate; article 1 short (less than 2 x article 2). *Antenna 2* length 0.9 x antenna 1; flagellum 5-articulate; article 1 long (more than 2 x article 2).

Pereon. *Pereonite 1* without lateral keel; with sternal keel. *Pereonites 2 and 3* without sternal keels. *Gnathopod 1* subchelate; coxa not fused to pereonite 1, length 1.2 x depth, without anteroventral lobe; basis length 1.8 x depth; carpus, length 1.3 x depth with setose posterior lobe, broad; palm extremely acute, with barbed robust setae. *Gnathopod 2* carpochele; coxa not fused to pereonite 2, length 2.3 x depth, without anteroventral lobe or cusp; basis short, broad, length 1.6 x breadth; carpus massive, short, broad,

length 1.2 x breadth, posterior margin without tooth; palm shallowly excavate, anterodistal tooth large, located near articulation with propodus, posterodistal tooth well defined, medium, length 1.2 x width, without apical robust setae; propodus very broad, slightly curved, length 2.3 x width, without tooth on posterior margin, posterodistal corner smooth, without tooth; dactylus, length 0.8 x propodus.

Pereopod 3 coxa not fused to pereonite 3, length 3.2 x depth, with broad anteroventral lobe; basis, length 1.3 x breadth, with subproximal, subquadrate anterodorsal corner, with simple setae along anteroximal margin, without denticles along anterior margin; ischium short, length 1.5 x breadth; merus short; length 1 x breadth; merus without ridges. *Pereopod 4* coxa not fused to pereonite 4, length 3.3 x depth, with anterior lobe separated from an anteroventral lobe; basis length 1.6 x breadth, with simple setal group midway along anterior margin, without patches of denticles; ischium long, length 1.7 x breadth; merus short, length 1 x breadth. *Pereopod 5* coxa length 0.8 x depth, without patches of small setae, without setae along ventral margin; merus with anterior lobe extending beyond anterior margin of carpus, posterior lobe with 4, plumose setae; propodus with 2 setae along posterior margin; dactylus short, unciniate with one accessory hook. *Pereopod 6* coxa

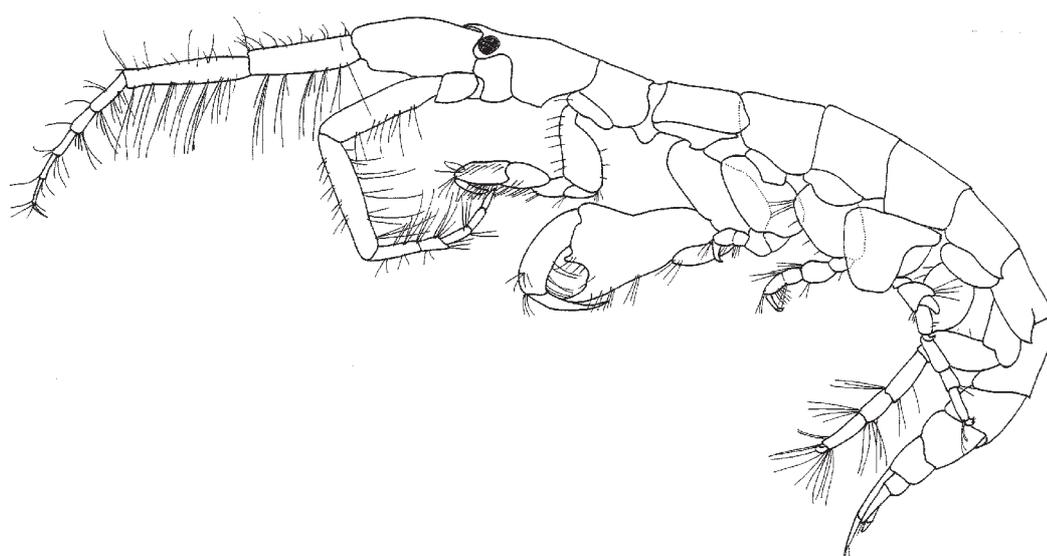


Figure 3 *Cerapus yuyatalay* sp. nov. Male, 4.1 mm, AM P51215; Trang, Thailand, Andaman Sea.

without setal fringe ventrally; basis without patch of small setae near anterior margin; merus, length 1.9 x breadth; dactylus short, uncinete, with one accessory hook. *Pereopod 7* coxa with posterodorsal lobe, with patch of small setae; basis with patch of small setae near posterior margin; merus, length 2.5 x breadth; dactylus, short, uncinete, with two accessory hooks.

Pleon. *Pleopods 1 to 3* decreasing in size. *Pleopod 1* 8-articulate; outer ramus, article 1 evenly swollen, 5-articulate. *Pleopod 2* biramous; inner ramus reduced, 2-articulate; outer ramus, broad, 2-articulate. *Pleopod 3* biramous; inner ramus reduced; 1-articulate. *Uropod 1* biramous, peduncle with distoventral corona of cuticular teeth, length 1.6 x outer ramus; rami with distoventral

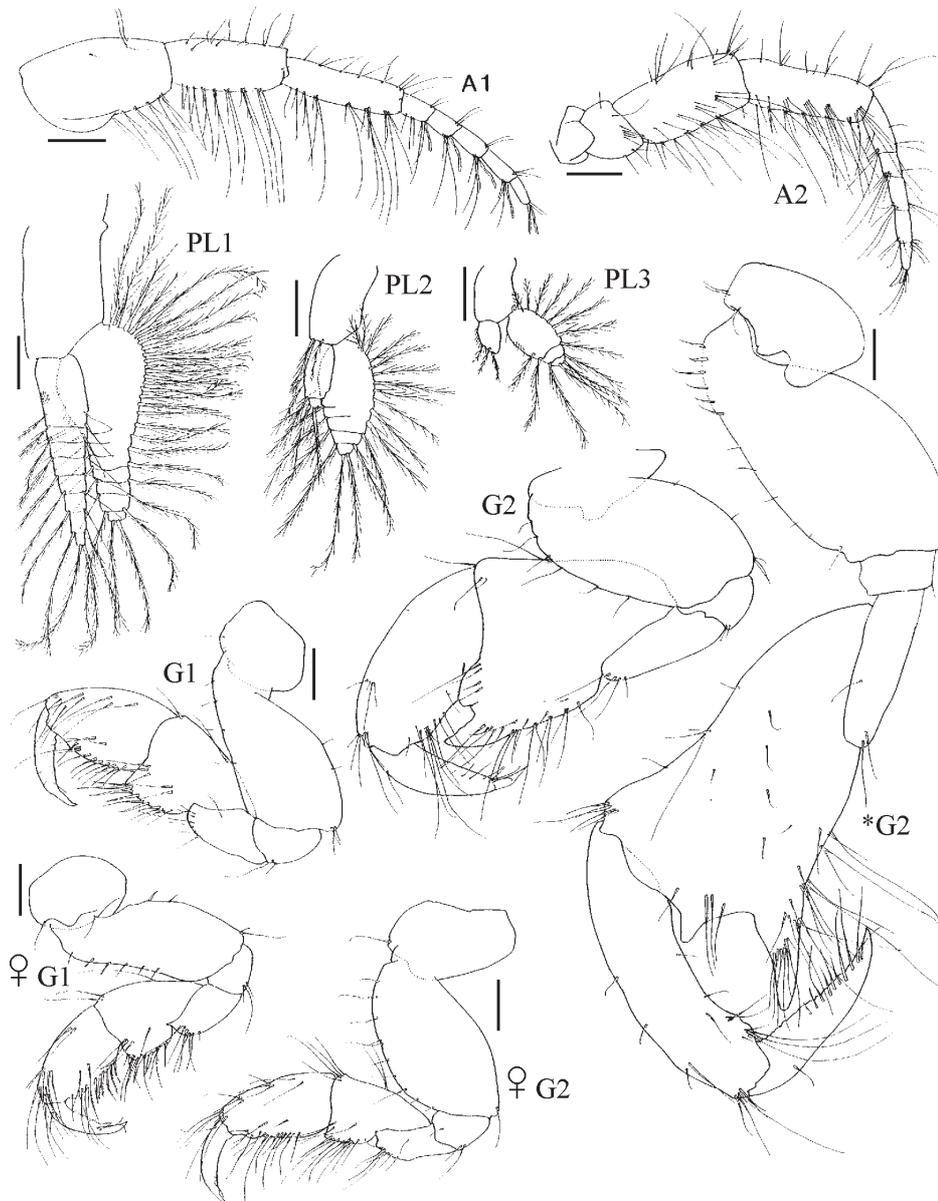


Figure 4 *Cerapus yuyatalay* sp. nov. Male, 4.1 mm, AM P51215, female, 3.9 mm, AM P51217, male, 3.8 mm, PMBC 18762; Trang, Thailand, Andaman Sea. Scales represent A1, A2 = 0.2 mm, all others = 0.1 mm.

corona of cuticular teeth; outer ramus with lateral row of denticles, without medial, and 4 lateral setae, with large apical robust seta and smaller slender setae; inner ramus, length 0.5 x outer ramus, without medial, and without lateral setae, with large apical robust seta without smaller slender setae. *Uropod 2* uniramous, length of peduncle 2.9 x breadth, 7.6 x ramus; ramus small, with 1 denticle and 1 apical seta. *Uropod 3* uniramous, peduncle length 2.2 x breadth; ramus with 2 curved hooks. *Telson* length 0.4 x breadth, moderately cleft, 0.5 x length, each lobe with 9 to 10 anteriorly-directed hooks in 2 rows.

Male. 4.1 mm (paratype AM P 51215). *Gnathopod 2* carpochele; carpus massive, very long, slender, length 1.5 x breadth, posterior margin without tooth; palm deeply excavate, anterodistal tooth large, located near articulation with propodus, posterodistal tooth well defined, long, length 2 x width, without apical robust setae; propodus slender, slightly curved, length 4.5 x width, without

tooth on posterior margin, posterodistal corner smooth, without tooth; dactylus, length 0.7 x propodus.

Female. Based on paratype female 3.9 mm, AM P51217. *Pereonite 1* without sternal keel. *Gnathopod 1* coxa length 1.4 x depth; basis length 2.5 x depth; carpus length 1.4 x depth with setose posterior lobe. *Gnathopod 2* subchelate; coxa length 1.6 x depth; basis length 1.8 x breadth; carpus small, compressed, length 1.5 x breadth. *Pereopod 5* coxa length 1.3 x depth. *Oostegites* from gnathopod 2 to pereopod 5.

Tube. Parchment-like with pieces of wood and fibrous matter, coarse construction.

Habitat

Seagrass dwellers.

Etymology

The name *yuyatalay* is the Thai word for 'living in seagrass'.

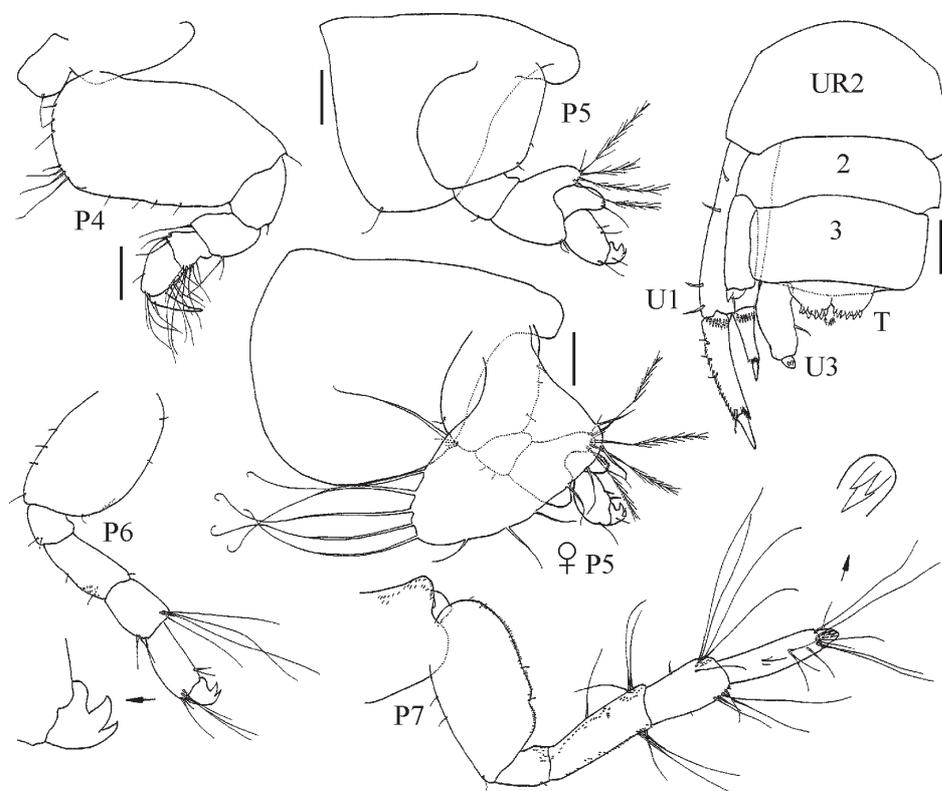


Figure 5 *Cerapus yuyatalay* sp. nov. Female, 3.9 mm, AM P51217, Male, 3.8 mm, PMBC 18762; Trang, Thailand, Andaman Sea. Scales represent 0.1 mm.

Remarks

Based on the length of antenna 1 and the length of the rostrum *Cerapus yuyatalay* appears to be most similar to *C. micronesicus* Myers, 1995 from Kosrae, Micronesia, *C. erae* Bulycheva, 1952 from Vityaz Bay, western Sea of Japan and *C. longirostris* Shen, 1936 from the Shantung Peninsula, western Yellow Sea. It differs mainly from *C. micronesicus* in the shape of the lateral cephalic margin and in the shape of the carpus of male gnathopod 2. It differs from *C. erae* in the shape of peduncular article 1, in the length of article

1 of the flagellum of antenna 1, the palm of the male gnathopod 2 is shallower in *C. erae* and the dactyli of pereopods 5 and 6 each have 2 accessory spines. It differs from *C. longirostris* in the dactyli of pereopods 5 and 6 which each have 2 accessory spines and the number of anteriorly directed hooks on the telson. Among these taxa *C. yuyatalay* and *C. longirostris* have tubes constructed from fibrous material instead of sediment.

Distribution

Eastern Andaman Sea, Thailand.

REFERENCES

- Barnard J.L. 1969. The families and genera of marine gammaridean Amphipoda. United States National Museum Bulletin **271**: 1–535.
- 1973. Revision of Corophiidae and related families (Amphipoda). Smithsonian Contributions to Zoology **151**: 1–27.
- Barnard, J.L. and M.M. Drummond. 1981. Three corophioids (Crustacea: Amphipoda) from Western Port, Victoria. Proceedings of the Royal Society of Victoria **93**(1): 31–41.
- Barnard, J.L. and G.S. Karaman. 1991. The families and genera of marine gammaridean Amphipoda (except marine gammaroids). Records of the Australian Museum, Supplement **13**(2): 419–866.
- Bulycheva, A.I. 1952. Novye vidy bokophavov (Amphipoda: Gammaridea) iz Japanskogo Moja. Akademiya Nauk SSSR, Trudy Zoologicheskii Institut **12**: 195–250.
- Dallwitz, M. J., T.A. Paine and E.J. Zurcher. 1993 onwards. 'User's Guide to the DELTA System: a General System for Processing Taxonomic Descriptions.' 4th edition. <http://biodiversity.uno.edu/delta/>
- Lowry, J.K. and P.B. Berents. 1989. A redescription of *Cerapus tubularis* Say, 1818, based on material of the first reviewer, S.I. Smith, 1880, (Crustacea: Amphipoda: Corophioidea). Journal of Natural History **23**: 1341–135.
- 1996. The *Erichthonius* group, a new perspective on an old problem (Crustacea: Amphipoda: Corophioidea). Records of the Australian Museum **48**(1): 75–109.
- Lowry, J.K. and J.D. Thomas. 1991. A new species of *Cerapus* from Cudjoe Channel, Lower Florida Keys, USA, with notes on male behaviour (Crustacea: Amphipoda: Corophioidea). Journal of Natural History **25**: 1461–1467.
- Myers, A.A. 1995. Marine Amphipoda of Micronesia: Kosrae. Records of the Australian Museum **47**(1): 27–38.
- Giles, G.M. 1885. V. Natural history notes from H.M.'s Indian Marine Survey Steamer 'Investigator', Commander Alfred Carpenter, R.N. commanding. No. 1. On the structure and habits of *Cyrtophium calamicola*, a new tubicolous amphipod from the Bay of Bengal. Journal of the Asiatic Society of Bengal **54**: 54–59.
- Shen, C.J. 1936. Description of a new tube-dwelling amphipod collected on the coast of Shantung Peninsula. Bulletin of the Fan Memorial Institute of Biology (Zoology) **6**(6): 265–273.
- Stebbing, T.R.R. 1906. Amphipoda. I. Gammaridea. Das Tierreich **21**: 1–806.