Siphonoecetinae (Crustacea, Amphipoda, Ischyroceridae) 8: Two unusual species from Thailand and Japan

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Two siphonoecetine amphipods are described, Siphonoecetes (Orientoceetes) spinipalpus sp. nov. from Phuket, Thailand, and Bubocorophium macropalpus sp. nov. from Sagami Bay, Japan. Both have highly unusual mandibular palps. The diagnosis of Bubocorophium Karaman is emended to read “urosomites 1 and 2 free”.

Keywords. Amphipoda, Siphonoecetinae, Siphonoecetes (Orientoceetes), Bubocorophium, new species, Thailand, Japan.

INTRODUCTION

In my first contribution to the study of Amphipoda Siphonoecetinae (Just 1983) I signaled the presence of one new species from Thailand and one from Japan. These two species are described below. The former species belongs to Siphonoecetes s.l. (uropod 2 with two rami), the latter to the bubocorophiid group (uropod 2 with one ramus); for informal nomenclature and tentative phylogeny, see Just (1988). Both species differ from their congeners by unusually developed mandibular palps.

For practical reasons I maintain the Siphonoecetinae in the family Ischyroceridae in line with the opinion of Barnard & Karaman (1991); but for other emerging views see the brief discussion in Just (1998).

The term “normal” for one or for a group of characters indicates that there is no deviation from the type species of the genus/subgenus. The length of animals was measured along the dorsum from the tip of the rostrum to the distal margin of the telson. All specimens are deposited in the Zoological Museum, University of Copenhagen (ZMUC).

Abbreviations in illustrations

a2 antenna 2
c cephalon
dv dorsal view
f flagellum
l left
ll lower lip
lv lateral view
md mandible
mp maxilliped
mv medial view
mx 1–2 maxilla 1–2
gp1–2 gnathopod 1–2
p3–6 pereopod 3–6
r right
t telson
up1–3 uropod 1–3
us uroscope
vp ventral projection, article 2, antenna 2
vv ventral view

TAXONOMY

Siphonoecetes Krøyer, 1845

Just (1983) divided Siphonoecetes into three
Fig. 1. *Siphonoecetes (Orientoeceetes)* *spinipalpus* n. sp. Holotype, except H, paratype, specimen in house (Stn 4). Scale bars for habitus and house = 1 mm.
subgenera, *Siphonoecetes* s.s. from the NW Atlantic and western Arctic, *Centralocetes* from the NE Atlantic and eastern subarctic, the Mediterranean, and NW Africa, and *Orientoecetes* from the western Indian Ocean. A single species, *S. sabatieri* Rouville, 1894, was considered *incertae sedis*. A tentative phylogeny for the subfamily (Just 1988) indicated that *Orientoecetes* might be considered a separate genus, but a formal change in classification was not made, pending further information. Since the new species from Thailand does not clarify the issue, the classification of Just (1983) is used here.

Subsequently Barnard & Thomas (1984) described *Siphonoecetes arabicus* from the Arabian Gulf, but found it did not easily fit into any of Just’s subgenera. I concur with these authors that *S. arabicus* must for the time being be considered *incertae sedis*.

The new species described below shares the diagnostic characters of the subgenus *Orientoecetes* with the type species *Siphonoecetes orientalis* Walker, 1904, and the only other species in the subgenus, *S. (O.) erythraeus* Ruffo, 1959. It differs from those two species in having strong robust setae on the ventromedial margin of flagellum article 1 of antenna 2 only, rather than on both the medial and lateral margins. Although this difference may eventually be found to be significant, I refer the new species to *Siphonoecetes* (*Orientoecetes*).

*Siphonoecetes (Orientoecetes) spinipalpus* n.sp.

Figs 1–3.

Material examined:

**Holotype**: Ovigerous female, 3.2 mm, Thailand, SW corner Phuket Island, Kata Bay, outside of reef, at base of free-standing coral head, 8 m (HW), sand with a little detritus, 17 February 1982, SCUBA, J. Just, Stn 8 (ZMUC CRU-3938).

**Paratypes** (11 specimens, all from Kata Bay, Phuket Island, Thailand). Outside of reef, 6 m (MW), sand with a little detritus, 15 February 1982, SCUBA, J. Just, Stn 4 (ZMUC CRU-3939, 5 spms, 1 of which in sediment house, Fig. 1H). Outside of reef, at base of corals, 8 m (HW), sand with a little plant debris, 17 February 1982, SCUBA, J. Just, Stn 7 (ZMUC CRU-3940, 1 spm). 50 m outside of reef, 8 m (HW), sand with low scattered seagrass and a little detritus, 17 February 1982, SCUBA, J. Just, Stn 9 (ZMUC CRU-3941, 2 spms with sediment houses). Outside of reef, 8 m (HW), sand with coral debris, 26 February 1982, SCUBA, J. Just, Stn 20 (ZMUC CRU-3942, 1 spm). Outside of reef, 8 m (HW), sand with a little coral debris and detritus, 26 February 1982, SCUBA, J. Just, Stn 21 (ZMUC CRU-3943, 1 ovigerous female, parts illustrated; 1 spm, very poor).

**Description**

**Head** as long as pereonites 1–2 combined along dorsal midline; rostrum slender, acutely pointed in dorsal view, reaching beyond eyelobes. Anterior margin of head with concave notch each side at base of rostrum followed laterally by short convex projection. Subrostral surface of head with cover of fine setules. Eyelobes strong, apex bluntly rounded in lateral view. Dorsal surface of head and most pereonites with a few scattered setules.

**Antenna 1** approximately as long as head and pereonites 1–4 combined; peduncle article 1 with 1 proximomedial and 1 distoventral short robust setae in addition to simple setae; flagellum with 6 articles, as long as peduncle articles 1–2 combined. – **Antenna 2** approximately as long as head, pereonites 1–5 and half of 6 combined; ventral projection of article 2 of peduncle approximately 1/3 longer than wide at base, apex rounded, scalloped margin carrying long simple setae, article 3 with 1 distomedial robust seta, article 4 with medial row of short robust setae; flagellum with 4 articles, article 4 minute, article 1 with 3 long ventromedial robust setae, 2 and 3 with 2 ventrodistal robust setae; peduncle and flagellum otherwise with tufts of simple setae of varying length and a few pappose setae.

**Mouthparts** normal, except mandibular palp broad, club shaped with 5 strong spine-like robust setae.

**Gnathopod 1** propodus slender, simple with posterodistal tooth and 2–3 midposterior slender robust setae. – **Gnathopod 2** propodus ovoid, simple with posterodistal tooth and 2 midposterior strong robust setae. Pereopods 3–7 normal.

**Urosomites** free, but dorsoproximal margin of 3 and insertion of telson tucked under posterior margin of 2. – **Uropod 1** with dorsolateral row of a few simple setae; outer ramus approximately 3/5 length of peduncle, lateral margin microserate, with a few simple setae, apex with one long and 1–2 short robust setae in weakly developed hollow; inner ramus 5/6 length outer ramus, more slender, without setae except 1 long and 1 short robust setae in weakly developed apical hollow. – **Uropod 2** peduncle half length peduncle of uro-
Fig. 2. *Siphonoecetes (Orientoecetes) spinipalpus* n. sp. Holotype, except A, paratype, ovigerous female (Stn 21). up1 and up2 at bottom, ventral view of apex of peduncle.

*Fig. 2. Siphonoecetes (Orientoecetes) spinipalpus* n. sp. Holotype, except A, paratype, ovigerous female (Stn 21). up1 and up2 at bottom, ventral view of apex of peduncle.
Fig. 3. *Siphonoecetes (Orientoeetes) spinipalpus* n. sp. Ovigerous female, paratype (Stn 21), except a2 and vp, holotype.
pod 1, with single dorsal simple seta; outer ramus approximately 3/5 length of peduncle, without setae except 1 long and 1 short robust setae in weakly developed apical hollow, lateral margin microserrate; inner ramus approximately 55 percent length outer ramus, distally tapering without setae except 1 robust seta in weakly developed apical hollow. Ventrodistal margins of peduncles uropods 1 and 2 with corona of fine setules. – Uropod 3 set at approximately 45 degrees angle with ramus pointing upwards; peduncle with rounded median projection carrying 2 simple setae apically; ramus well articulated, round, with 3 simple setae. – Telson as long as wide, distolateral corners rounded, dorsolateral surface with 2 groups of 2 pappose setae each side, distal spine patches small, oval.

Size. Largest specimen (ovigerous female) 3.4 mm.

Colour
(From J. Just field diary.) Body light sandy mottled, eyes white with black ocelles. Antennae milky white semitransparent. Antenna 2 with dark brown ring in middle of peduncle article 4 and distal third of 5 (Fig.1H).

Etymology
The species is named for its uniquely “spinose” mandibular palp.

Biology
Of the 12 specimens found, three were still in their house (Fig. 1H). These are long tubes, loosely constructed from coarse shell and coral rubble; none of them had an initiating abode (prosobranch or similar) attached.

Distribution
The species is known only from the type locality.

Bubocorophiids
Just (1988) referred Bubocorophium Karaman, 1981 and Rhinoecetes Just, 1983 to an informally named bubocorophiid group within the Siphonoecetinae, and transferred Siphonoecetes conchicola Gurjanova, 1938 to Bubocorophium after examination of the type material. Bubocorophiids differ from Siphonoecetes by uropod 2 having a single ramus only. Barnard & Thomas (1984) added a new genus, Borneocetes, which differs from the two first-mentioned bubocorophiid genera primarily by lacking a rostrum and by having the palp of maxilla 1 uniarticulate.

Bubocorophium Karaman, 1981, emended diagnosis
Karaman (1981), when creating Bubocorophium with Siphonoecetes tanabensis Harada, 1971 as type species, stated in the generic diagnosis that urosomites 1 and 2 are fused, whereas Harada wrote that pleon segments V and VI [urosomites 2 and 3] are fused. Just (1983), Barnard & Thomas (1984) and Barnard & Karaman (1991) followed Karaman (1981). This is not correct: B. tanabensis (Harada, 1971, figs. 8, 6) and B. conchicola (personal observation) have the same uosome configuration as Rhinoecetes and Siphonoecetes, viz., urosomites 1 and 2 are free, and the posterior margin of urosomite 3 and the insertion of the telson are tucked under the posterior margin of urosomite 2. The diagnosis of Bubocorophium is emended to read “Urosomites 1 and 2 free”.

Bubocorophium macropalpus n. sp.
Figs. 4–6.

Material examined:
Holotype. Male, 6.6 mm, Unisalsi [Unisaki?], Sagami Bay, Japan, c. 20 fv [ca. 38 m], sand, dredge, 25 May 1914, Dr Th. Mortensen (ZMUC CRU-3937). – Unique.

Description
Head as long as pereonites 1–2 combined along dorsal midline, without midanterior depression; rostrum slender, acutely pointed, reaching to apices of eyelowes in dorsal view. Eyelowes strong, apex bluntly pointed in lateral view, apex and lower margin with small simple setae.

Antenna 1 approximately as long as head and pereonites 1–3 and half of 4 combined; peduncle article 1 with simple setae only; flagellum with 8 articles, as long as peduncle articles 2 and half of 3 combined. – Antenna 2 approximately as long
Fig. 4. *Bubocorophium macropalpus* n. sp. Holotype. Habitus scale bar = 1 mm.
Fig. 5. *Bubocorophium macropalpus* n. sp. Holotype.
as head, pereonites 1–6 and half of 7 combined; ventral projection of article 2 nearly twice as wide as long, apex evenly rounded, with fringe of long simple setae; article 3 with 1 distomedial robust seta, articles 3–5 with dense groups of simple setae; flagellum with 4 articles, article 4 minute, article 1 with 5 ventromedial and 2 ventrolateral long robust setae, article 2 with 3 ventromedial and 2 ventrolateral long robust setae, article 3 with 2 ventrodistal robust setae.

Mouthparts normal, except mandibular palp as single, greatly enlarged, nearly rectangular article with simple setae on margins and surfaces, palps set at 45–degree angle forming a roof over entrance to mouthparts (Fig. 4, c lv).

Gnathopod 1 propodus slender, simple with posterodistal tooth, with 2–3 midposterior slender robust setae. – Gnathopod 2 propodus broad, distinctly subchelate with concave grasping margin posteriorly defined by 2 robust setae. Pereopods 3–7 normal.

Urosomites free, but dorsoproximal margin of 3 and insertion of telson tucked under posterior margin of 2. – Uropod 1 peduncle with dorsolateral row of small robust setae, distolateral tuft of long simple setae and 1 mediiodistal robust seta;

Fig. 6. *Bubocorophium macropalpus* n. sp. Holotype.
outer ramus approximately 2/3 length of peduncle, lateral margin microserrate, with row of robust setae, apex with one long and 2 short robust setae; inner ramus approximately 3/5 length outer ramus, tapering, microserrate along lateral margin, without setae except 1 long and 1 short apical robust setae. – Uropod 2 peduncle approximately half length peduncle of uropod 1, with distolateral simple setae and 2 distomedial robust setae; single ramus approximately 2/3 length of peduncle, microserrate along lateral margin, without setae except 1 long and 1 short robust apical setae. Ventrodorsal margin of peduncles of uropods 1 and 2 set at normal horizontal angle; peduncle with rounded median projection carrying several simple, stiff setae apically; ramus well articulated, round, with a single stout robust seta and 5-6 simple, pectinate setae increasing in length towards the middle. – Telson approximately 20 percent wider than long, distolateral corners rounded, distal margin nearly straight, dorsolateral surface with single group of 2 pappose setae on each side, distal spine patches large, oval.

Etymology

The species is named for its massively enlarged mandibular palps.

Colour and biology

Not known.

Distribution

The species is known only from the type locality.

Remarks

Bubocorophium macropalpus differs from its two congeners, B. tanabensis and B. conchicola, primarily in its unusual mandibular palp.

ACKNOWLEDGMENTS

I thank the Zoological Museum, University of Copenhagen for funding my research in 1982 at Phuket, Thailand, and the staff at the Phuket Marine Biological Center for hospitality and work facilities.

REFERENCES


Submitted 26.x.2003, accepted 12.i.2004

Note added in proof: In a recent paper (Myers, A.A. & J.K. Lowry. 2003. A phylogeny and new classification of the Corophiidea Leach, 1814 (Amphipoda). – Journal of Crustacean Biology 23: 443–485), which came to my attention after the reviewing and correction process, the authors propose the following new classification leading to siphonoecetids (alternatives in parentheses): Ischyroceridae (other corophioid families), Ischyrocerinae (Bonniereillinae), Siphonoecetini (Ischyrocerini), Siphonoecetes-group (Cerapus-group, Erichthonius-group).