

**Description of a New Species of the Amphipod
Genus *Corophium* with a Taxonomic Key to Known
Species from the Suez Canal (Egypt)**

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ABSTRACT. Five species of amphipods belonging to the genus *Corophium* are known from the Suez Canal (Egypt). Among these a new species (*Corophium bidentatum* n.sp.) is described and illustrated. Two species namely: *C. sextonae* Crawford and *C. insidiosum* Crawford are recorded for the first time in the Suez Canal. A key is provided for the identification of the known species of *Corophium* in the Suez Canal.

The genus *Corophium* was established by Latreille in 1806 for *Corophium longicorne*, now *C. volutator* (Pallas). A full definition of the genus was given by Stebbing (1906), who also gave a taxonomic key to separate the 12 species known at that time (the genus presently comprises 60 species).

Several faunal lists of *Corophium* species have published for various parts of the world, e.g. Naples (Della Valle 1893), Norway (Sars 1894), the Caspian Sea (Sars 1895 & 1896). Algeria (Chevreux 1908), France (Chevreux and Fage 1925), eastern coast of North America (Shoemaker 1934a), western coast of North America (Shoemaker 1934b), England (Crawford 1937), South Africa (Barnard 1940), San Francisco (Shoemaker 1949), Coast of Oregon (Barnard 1954), Indopacific (Barnard 1969), South Australia (Barnard 1974) and the Mediterranean Sea (Ruffo 1982).

Relatively few taxonomic studies have been undertaken on the genus *Corophium* in Egyptian waters. Schellenberg (1928), reported 3 species from the Suez Canal, namely *Corophium acherusicum* Costa, *C. acutum* Chevreux and *C. volutator* (Pallas) *F. orientalis*, F.n. The latter new forma has since been raised to

full species status as *Corophium orientale* Schellenberg, 1928 (see Ruffo 1982). Schellenberg (1936) also recorded the first two species in addition to *C. bonnellii* Sars from the Alexandria region. Ezzat (1959) studied the ecology of benthic amphipods including *Corophium* sp. in Nozha hydrodrome beside Lake Mariut. El-Nassry (1973) reported the existence of 4 species of the genus *Corophium*; namely, *C. sextonae* Crawford, *C. acherusicum*, *C. bonnellii* and *C. acutum* from the eastern harbour of Alexandria. The most recently published work on *Corophium* spp. in Egyptian waters is that of Atta (1985) for Alexandria. Her publication dealt with the taxonomy of 5 species; namely, *C. acutum*; *C. acherusicum*; *C. insidiosum*; *C. orientale* and *C. sextonae*. Among these, 2 species (*C. orientale* and *C. insidiosum*) were indicated as new for the locality.

The present contribution expands our knowledge of the genus *Corophium* from the Suez Canal. In addition, a key is provided to aid the identification of males of local species.

Materials and Methods

This work was carried out between April 1985 and May 1986. Samples were obtained from fouling communities attached to submerged surfaces in Port-Saied, Lake Timsah (Ismailia region) and Port-Taufic. Fouling communities were usually collected by scraping with a broad bladed knife. The constituents of the community were then transferred to a large container filled with clean fresh sea water. Freshly collected amphipods were later sorted and fixed in 10% formalin after washing several times through a 0.1 mm mesh sieve. The total length of the amphipod specimen was measured according to Fincham (1971) from the tip of the head (base of the antennae) to the posterior end of the uropod excluding the telson.

The authors have followed the terminology of Chevreux and Fage (1925), Schellenberg (1928, 1936), Crawford (1937), Barnard (1965, 1969) and Ruffo (1982).

Genus: *Corophium* Latreille, 1806

Latreille 1806, Stebbing 1906, Barnard 1969

Diagnosis: Accessory flagellum absent. Antenna 1, peduncular article 1 longer than other articles. Antenna 2 equal to or longer than antenna 1, stout (especially in male), flagellum much shorter than article 5, in male article 4 usually with a distal tooth. Mandibular palp 2-articulate. Coxae short. Gnathopods small. Gnathopod 1, normal, subchelate. Gnathopod 2, simple, weakly enlarged, extremely setose, merus fused with carpus, heavily setose. Uropods 1 and 2

biramous. Uropod 3, short, flattened, its single ramus equal to peduncle. Urosomites coalesced or free.

In the present collections, the genus *Corophium* was represented by five species, namely *Corophium sextonae* Crawford, *C. insidiosum* Crawford, *C. acutum* Chevreux, *C. acherusicum* Costa and *C. bidentatum* n. sp. *Corophium bidentatum* is described in detail below. Both *C. sextonae* and *C. insidiosum* were recorded locally for the first time. Although *C. orientale* had been collected previously by Schellenberg (1928) from the same locality, it was not encountered during the present study. It is, however, included in the identification key for completeness.

Corophium bidentatum n. sp.

Figs. (1-20)

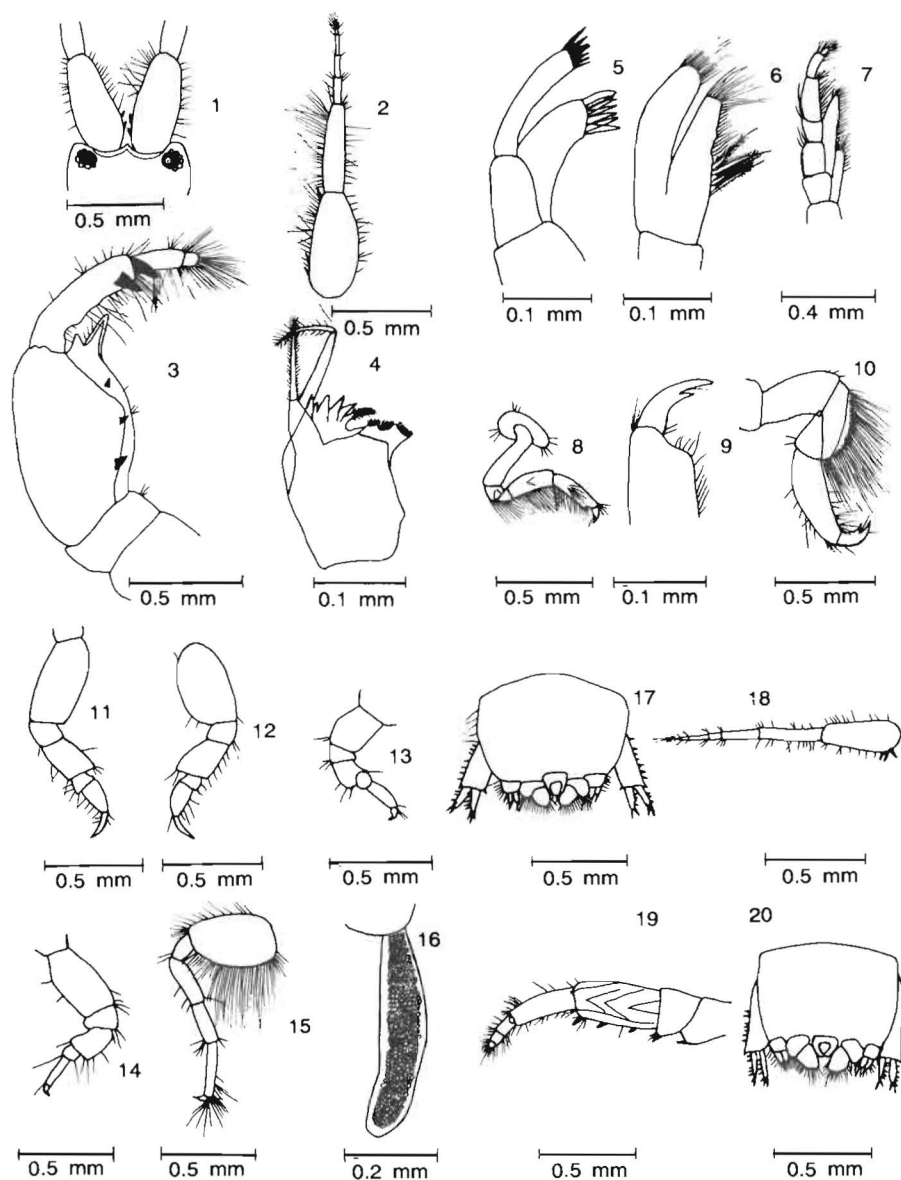
Material examined: Male holotype: length 3.2 mm, collected from Lake Timsah, Ismailia region, 25/4/1986. Female allotype length 3.8 mm; paratypes, 319 males (2.2-3.3 mm in length) and 490 females (2.4-4 mm in length). These specimens are deposited in the Zoology Department, Faculty of Science, Tanta University, Egypt.

Description:

Male holotype: Body cylindrical, all urosome segments coalesced. Coxae short, not touching one another. Head (Fig. 1) cuboid in shape, without lateral lobes, equal in length to the first two pereonites. Rostrum short, triangular in shape. Eye large, brown, eye lobes long and rounded.

Antenna 1 (Fig. 2), nearly equal to half of the body length and smaller than the second antenna. Peduncle article 1 longer than the last two articles. Article 1 of peduncle with 3 straight spines. Peduncle with long setae. Flagellum equal to half of the peduncular article 1, with 4 articles and few short setae.

Antenna 2 (Fig. 3), strongly developed. Peduncle articles 1 and 2 equal in length, article 4 swollen, its breadth equal to $\frac{2}{3}$ the length, longer than the first three articles together, posterodistal angle bearing a large curved lateral tooth and a smaller straight tooth above it, with three lateral spines along posterior margin. Article 5, with two long spines distally, one ventrolateral and the other at the joint between article 5 with the flagellum. Flagellum half length of peduncular article 5, with 3 articles, article 3 rudimentary. Article 5 and flagellum with long setae.



Figs. 1-20. *Corophium bidentatum* n.sp., Suez Canal Egypt.

1. Head of male (Dorsal view).
2. Antenna 1 of male.
3. Antenna 2 of male.
4. Mandible.
5. Maxilla 1.
6. Maxilla 2.
7. Maxilliped.
8. Gnathopod 1.
9. Palm of gnathopod 1.
10. Gnathopod 2.
11. Pereopod 3.
12. Pereopod 4.
13. Pereopod 5.
14. Pereopod 6.
15. Pereopod 7.
16. Isolated gill.
17. Uropods and telson of male (Dorsal view).
18. Antenna 1 of female.
19. Antenna 2 of female.
20. Uropods and telson of female (Dorsal view).

Mandibular palp (Fig. 4) with two articles, but basal segment not prolonged beyond base of second segment. Incisor with long tapering teeth. Maxilla 1 (Fig. 5), outer lobe shorter than palp, with seven spines distally, inner lobe not obvious, palp with two articles bearing eight spines on the apex. Maxilla 2 (Fig. 6) outer lobe longer than the inner, bearing long setae distally, the inner lobe with long setae distally and medially. Maxilliped, palp (Fig. 7) with 5 articles, article 5 claw-shaped, outer lobe longer than inner.

Gnathopod 1 (Fig. 8) subchelate, article 2 elongate asetose. Articles 3 and 4 equal in length and with long setae posteriorly. Article 5 densely setose with long plumose setae. Article 6 equal in length to article 5 with convex palm, dactyl claw-like, with small accessory tooth (Fig. 9).

Gnathopod 2 (Fig. 10), article 6 longest, articles without any denticulation, article 3 fused with article 4 which characterized by long setae on the ventral edge, dactyl with accessory tooth.

Pereopods, resembling in general those of *Corophium acutum* described by Chevreux (1908). Pereopod 3 and pereopod 4 (Figs. 11 & 12) similar, dactyl long. Pereopod 5 and pereopod 6 (Figs. 13 & 14) similar to each other with thin and long article 6. Pereopod 7 (Fig. 15), very long, article 2 wider than the others and with long setae along anterior and posterior margins. Article 6 longer than the others and with long setae distally. Elongated gills attached to second gnathopods and to each of the first four of pereopods (Fig. 16). Urosome segments fused. Uropods 1 and 2 (Fig. 17) attached ventrally, lateral margins of urosome without notches. Uropod 1, peduncle with 8 spines along lateral margin and one at midiodistal angle. Rami subequal with 6-7 spines along lateral margins. Uropod 2 smaller than 1, peduncle short without spines but with few setae, rami subequal with one terminal spine. Uropod 3 short, flattened, its single ramus equal to peduncle, bearing short setae. Telson triangular without setae or spines.

Female: Body elongate. Rostrum short and triangular. Eye lobes small and the rounded eyes large and dark in colour. Antenna 1 (Fig. 18) weakly setiferous, shorter than antenna 2, peduncle article 1 with 3 spines at proximomedial angle, the first spine recurved. Flagellum 5-articulate, shorter than peduncle. Antenna 2 (Fig. 19) longer than 1, peduncle article 2 with distal ventral spine. Article 3, short and with 2 ventral spines. Article 4 as long as broad, with 3 articles. Article 5 and flagellum moderately setose. Mouth parts, appendages, urosome and telson as for male. Uropod 1 (Fig. 20) peduncle has 6-7 spines on the lateral margin and one spine at the distomedial angle. Rami subequal, with 4 spines along the lateral margin, one spine on medial margin and 3 distally. Uropod 2, peduncle without spines, rami subequal with 2 distal spines. Uropod 3 flattened, its single ramus with long setae.

Etymology:

The specific name *bidentatum*, is derived from the Latin: bi (two) + dens (tooth), and alludes to the condition of male antenna 2 peduncle article 5.

Remarks:

The species under consideration is related closely to *Corophium acutum* (Chevreux 1908), since in both these species the segments of the urosome are fused, uropods 1 and 2 are attached ventrally, lateral margins of urosome are without notches, rostrum is short and triangular, antenna 2 article 4 has 2-3 ventral spines, etc. However, males of the new species can be immediately separated from *C. acutum* on several characters, the most notable of which is antenna 2 article 5, which in *C. bidentatum* is large and carries two stout long spines distally. In addition, antenna 2 article 4 carrying a long curved tooth and smaller straight tooth posterodistally is distinctive. Also, antenna 1 peduncle and flagellum with long setae and uropod 1 peduncle with one spine at the mediodistal angle serve to separate these species.

Key to males of *Corophium* spp. from the Suez Canal

- | | |
|---|---|
| 1) – Urosome segments fused | 2 |
| – Urosome segments free | |
| <i>C. orientale</i> Schellenberg. | |
| 2) – Uropods 1 and 2 inserted in notches in lateral margins of the urosome | 3 |
| – Uropods 1 and 2 attached ventrally, lateral margins of urosome without notches | 5 |
| 3) – Rostrum elongate, <i>i.e.</i> one third the length of antenna 1 peduncular article 1 | |
| <i>C. insidiosum</i> Crawford. | |
| – Rostrum short, <i>i.e.</i> less than one third the length of antenna 1 peduncular article 1 | 4 |
| 4) – Antenna 2 article 4 without spines | |
| <i>C. acherusicum</i> Costa. | |
| – Antenna 2 article 4 with 2-3 spines | |
| <i>C. sextonae</i> Crawford. | |
| 5) – Antenna 2 segment 5 with sharp and long spines distally | |
| <i>C. bidentatum</i> n. sp. | |
| – Antenna 2 segment 5 with well developed posterolateral spine and distal flange | |
| <i>C. acutum</i> Chevreux. | |

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وصف نوع جديد من جنس الامفيبودا كوروفيوم مع مفتاح تصنيفي للأنواع المعروفة الأخرى في قناة السويس (مصر)

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تم في هذا البحث تعريف خمسة أنواع من القشريات التابعة لجنس كوروفيوم (رتبة الامفيبودا) في المياه البحرية المصرية بقناة السويس، وبين هذه الأنواع تم وصف نوع جديد وهو كوروفيوم بادينتاتوم. وقد أجريت الدراسة في هذا البحث على مدار عام كامل من أبريل ١٩٨٥ إلى مايو ١٩٨٦ وتم تجميع العينات من المجتمع الحشفي اللاصق بالأسطح المغمورة بميناء بورسعيد وبحيرة التمساح بالإسمايلية وميناء بور توفيق، وحفظت العينات في محلول ١٠٪ فورمالين وتمت الدراسة على عدد ٨١١ حيواناً من النوع الجديد كوروفيوم بادينتاتوم منها ٣٢٠ عينة ذكر و ٤٩١ عينة أنثى.

تميز النوع الجديد كوروفيوم بادينتاتوم بوجود شوكتين على العقلة رقم ٥ من قرن الاستشعار الثاني (كما دعى إلى تسميته بهذا الاسم) وبوجود سنين أحداها كبيرة منحنية للخارج والأخرى صغيرة ومستقيمة في نهاية العقلة الرابعة وبالإضافة إلى ذلك يوجد على قرن الاستشعار الأول شوبيكات طويلة وشوكة على الناحية الداخلية لعنق الرجل الخلفية الأولى.

وقد تم تسجيل النوعين كوروفيوم سيكستوني وكوروفيوم أنسيديوزوم لأول مرة في قناة السويس بالإضافة إلى إعادة تسجيل نوعين آخرين هما كوروفيوم أكيوتوم وكوروفيوم أشيرزيكوم والتي سجلت سابقاً في مياه الإسكندرية. وقد أدرج بالبحث رسومات توضيحية للنوع الجديد الذي تم جمعه لتسهيل التعرف عليه وكذلك تم عمل مفتاح تصنيفي لفصل الأنواع المعروفة حتى الآن من جنس الكوروفيوم في قناة السويس وقد أدرج به كوروفيوم أورينتالي الذي جمعه شلينبرج سنة ١٩٢٨.