Antarctic caprellids (Crustacea: Amphipoda) collected during the “Polarstern” cruise 42 ANT XIV/2

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Abstract

A collection of caprellids from the “Polarstern” cruise 42 ANT XIV/2 contained five species in four genera: Caprellinoides mayeri (Pfeffer, 1888); C. tristanensis Stebbing, 1888; Aeginoides gaussi Schellenberg, 1926; Pseudododecas bowmani McCain & Gray, 1971; and Paraproto condylata (Haswell, 1885). Although all were previously recorded from the Antarctic region, Pseudododecas bowmani and Paraproto condylata, poorly known from previous studies, are redescribed and illustrated in detail.

Key words: Crustacea, Amphipoda, Caprellidea, Antarctic Ocean, taxonomy

Introduction

The recent “Polarstern” surveys, carried out within the framework of the international EASIZ (Ecology of the Antarctic Shelf Ice Zone) Programme, has been representing a significant effort to improve the understanding of certain as yet poorly known animal groups in the southern ocean.

As Takeuchi & Takeda (1992) pointed out, the caprellidean amphipods of the Antarctic and Subantarctic were primarily studied by Stebbing (1883, 1888), Pfeffer (1888), Mayer (1903), Schellenberg (1926, 1931), K. H. Barnard (1930, 1931, 1932), and Arimoto (1970). McCain & Gray (1971) reviewed the taxonomy of the Antarctic and Subantarctic Caprellidea, listing 21 species in 11 genera, including 6 new species. Subsequent papers by McCain (1972), Vassilenko (1972), Thurston (1972, 1974), Laubitz (1991) and Takeuchi & Takeda (1992) have recorded caprellids from this region.

McCain & Gray (1971) synonymized the four species of the genus Caprellinoides. Vassilenko (1972) resurrected two species, i.e. C. antarcticus Schellenberg, 1926 and C. spinosus Barnard, 1930, which had been considered junior synonyms of C. mayeri (Pfeffer, 1888) by McCain & Gray (1971). Laubitz (1991) also reinstated C. tristanensis as a valid species. Recently, Guerra-García (2001) maintained C. tristanensis as a valid species but considered C. antarcticus and C. spinosus junior synonyms of C. mayeri, respectively. This author describes in his paper the new species Caprellinoides singularis mainly based on the presence of bilobed gills. Therefore, 23 caprellid species are recorded, so far, from Antarctic waters. Nevertheless, most of them are only scarcely described and figured. As Takeuchi (1993) pointed out, it is necessary to redescribe carefully the mouthparts, gnathopods, pereopods, and abdomen in order to find further generic characters to improve the present phylogeny of the Caprellidea. For example, the presence of tiny pleopods in Dodecasella was only found by close observation of newly collected material and later reconfirmed in the type material (Takeuchi & Takeda 1992).

In the present paper we redescribe in detail Paraproto condylata (Haswell, 1885) and Pseudododecas...
bowmani McCain & Gray, 1971, including lateral habitus drawings of Caprellinoides mayeri (Pfeffer, 1888), C. tristanensis Stebbing, 1888, and Aeginoides gaussi Schellenberg, 1926 collected during the “Polarstern” cruise 42 ANT XIV/2.

All examined specimens are deposited in the Museum für Naturkunde, Institut für Systematische Zoologie, Invalidenstraße 43, Berlin, Germany.

Results

Aeginoides gaussi Schellenberg, 1926 (Fig. 1)

Aeginoides gaussi Schellenberg, 1926: 465-467, fig. 1; McCain & Steinberg, 1970: 7-8; McCain & Gray, 1971: 112-113, figs 1-2; Laubitz, 1991: 30-31, fig. 1.

Material examined. 5 males, 1 female, 2 immature females collected from Station 130 (61º13.70’S 55º 58.10’W), 146 m depth, 17.12.1996, leg. Ch. O. Coleman. ZMB 27391.

Remarks. This species has been redescribed and illustrated by McCain & Gray (1971), Vassilenko (1972), Laubitz (1991) and Takeuchi & Takeda (1992). McCain & Gray (1971) indicated that the body spination of this species is quite variable and that there seemed to be no clear spine pattern. Since these authors and Takeuchi & Takeda (1992) figured the most spinose type, we have illustrated the less spiny variation.

Caprellinoides mayeri (Pfeffer, 1888) (Fig. 2)

Caprellinoides mayeri Pfeffer, 1888: 137-139, pl. 3, fig. 4. Piperella grata Mayer, 1903: 59, pl. 2, fig. 29; pl. 7, figs 40-45; pl. 9, figs 24-25, 62. Caprellinoides mayeri Mayer, 1890: 88, pl. 5, figs 57-58; pl. 6, figs 15, 26; pl. 7, fig. 48; McCain & Steinberg, 1970: 47; McCain & Gray, 1971: 116-119, figs 4-5; Laubitz, 1991: 36-38, fig. 6. Caprellinoides spinosus Barnard, 1930: 441, fig. 62.

Material examined. 1 male, 1 female collected from Station 004 (61º8.80’S 56º 3.70’W), 161 m depth, 16.11.1996, leg. Ch. O. Coleman; 1 female from Station 130 (61º13.70’S; 55º 58.10’W), 146 m depth, 17.12.1996, leg. Ch. O. Coleman. ZMB 27393, Präp. 4723-4724.

Description. Male body length 21.1 mm. Lateral view (Fig. 4). Head round dorsally, completely fused with pereonite 1. Pereonites 1 and 2 the longest; pereonite 2 1.5 times as long as pereonite 3; pereonites 3, 4, 5 and 6 subequal; pereonite 7 shortest; pereonites 2, 3 and 4 each carrying a pair of acute projections laterally. Gills elongate, length about 4 times width.

Paraproto condylata (Haswell, 1885) (Figs 4-8)

Proto condylata Haswell, 1885: 993-995, pl. 48, figs 1-4. Paraproto condylata Mayer, 1903: 25, pl. 1, fig. 10; pl. 6, fig. 20; McCain & Steinberg, 1970: 61; McCain & Gray, 1971: 127-128, fig. 11.

Material examined. 1 male (dissected), 1 female collected from Station 004 (61º8.80’S 56º 3.70’W), 161 m depth, 16.11.1996, leg. Ch. O. Coleman; 1 male from Station 130 (61º13.70’S 55º58.10’W), 146 m depth, 17.12.1996, leg. Ch. O. Coleman. ZMB 27393, Präp. 4723-4724.

Description. Male body length 21.1 mm. Lateral view (Fig. 4). Head round dorsally, completely fused with pereonite 1. Pereonites 1 and 2 the longest; pereonite 2 1.5 times as long as pereonite 3; pereonites 3, 4, 5 and 6 subequal; pereonite 7 shortest; pereonites 2, 3 and 4 each carrying a pair of acute projections laterally. Gills elongate, length about 4 times width.
Mouthparts. Upper lip (Fig. 5A) symmetrically bilobed, smooth. Mandibles (Fig. 5D, E) with 3-articulate palp; mandibular molar absent; setal formula for distal article 1-15-1; penultimate article of the palp carrying 3 setae on right mandible, and 1 seta on left mandible. Right mandibular incisor divided into 6 teeth, lacinia mobilis serrate, followed by 2 accessory plates and a row of fine setae. Left mandible with incisor divided into 6 teeth, lacinia mobilis with 7 teeth, followed by 2 accessory plates and a row of fine setae. Lower lip (Fig. 5B) with inner lobes slightly demarcated; outer lobes with small setulae apically. Maxilla 1 (Fig. 5F) outer lobe with 5 robust setae; distal article of palp with 10-11 spine-like setae on apex and 5 setae medially. Maxilla 2 (Fig. 5G) outer lobe about 2 times as long as inner lobe, with 10 setae distally; inner lobe with 8 setae. Maxilliped (Fig. 5C) inner plate small and rounded, carrying 5 spine-like setae; outer plate provided with a row of 8 setae; palp densely setose.

Antenna 1 (Fig. 6A) about 2/3 of body length; flagellum 17-articulate.

Antenna 2 (Fig. 6B) about 1/6 of antenna 1 length; swimming setae absent; flagellum 8-articulate.

Gnathopod 1 (Fig. 6C) basis as long as ischium to carpus combined; propodus triangular with a row of grasping spines; palm of propodus and dactylus not serrate.

Gnathopod 2 (Fig. 6D) inserted on the posterior half of pereonite 2; basis scarcely longer than pereonite 2; ischium short, rectangular; merus slender, about 3 times as long as ischiium; carpus combined, palm with a medial bilobed projection with 2 grasping spines followed by 6-8 pairs of grasping spines and an acute projection distally; dactylus short and curved, reaching midlength of propodus.

Pereopods 3 and 4 (Fig. 7A, B) subequal, 6-articulate, propodus bearing 1 spine. Pereopod 5 (Fig. 7C) slender, about 2/3 as long as pereopods 3 and 4; palm of propodus without grasping spines. Pereopod 6 and 7 (Fig. 7D, E) increasing in robustness respectively; palm of propodus provided with a pair of proximal grasping spines and a row of grasping spines.

Abdomen (Fig. 8) with 2 pairs of tiny pleopods. Pleopod 1 cone-shaped with an apical seta. Pleopod 2 rounded, carrying several short setae. Uropod 1 cylindrical and curved inwards, ramius about ¾ of peduncular length. Uropod 2 weakly curved, a little shorter than uropod 1. Penes short and rounded.


Remarks. The illustrations of Paraproto kondylata in Mayer (1903) and McCain & Gray (1971) were incomplete. Detailed descriptions and drawings of mouthparts, gnathopods, pereopods and abdomen were lacking, and the presence of 2 pairs of pleopods in the male had not been reported so far. The genus Paraproto is presently composed of 3 species: P. kondylata (Haswell, 1885), P. gabrieli Stebbing, 1914, and P. spinosa (Haswell, 1885). The first species lacks the body spination characteristic for the last 2 species.

Pseudododecas bowmani McCain & Gray, 1971 (Figs 9-13)


Material examined. 1 male (dissected), 1 immature female collected from Station 164 (62°8.30'S 57°59.70°W), 467 m depth, 22.12.1996, leg. Ch. O. Coleman; 1 male from Station 176 (65°54.50°S 67°48.10°W), 445 m depth, 26.12.1996, leg. Ch. O. Coleman. ZMB 27395, Präp. 4725-4729.

Description. Male body (Fig. 9A) length 18.2 mm. Head fused with pereonite 1; pereonite 5 the longest; pereonites 3, 4 and 6 subequal; pereonites 2, 3 and 4 each carrying 2 pairs of dorsal acute projections; pereonite 5 with only 1 pair at midlength. Gills elongate, length about 4 times width.

Mouthparts. Upper lip (Fig. 10A) symmetrically bilobed, with scarce setulae on apical margin. Mandibles (Fig. 10D, E); mandibular molar absent, palps 3-articulate; setal formula for distal article on left mandible 1-12-1, on right mandible 1-11-1; penultimate article of palp with 5 setae; right mandible with incisor divided into 6 teeth, lacinia mobilis minutely serrate, followed by 2 accessory plates and setal row of 8 setae; left mandible with incisor divided into 5 teeth, lacinia mobilis with 7 teeth, followed by 2 accessory plates and setal row of 5 setae. Inner lobes of lower lip (Fig. 10B) well demarcated; inner and outer lobes with short setae apically. Maxilla 1 (Fig. 10F) outer lobe with 5 robust setae; distal article of palp with 6 spine-like setae apically and 5 plumose setae medially. Maxilla 2 (Fig. 10G) outer lobe about 2 times as long as inner lobe, with 8 setae distally; inner lobe with 7 setae. Maxilliped (Fig. 10C) inner plate with 3 plumose setae and 3 robust setae, apically serrate; outer plate smaller than inner plate; palp setose.
Antenna 1 (Fig. 11A) about 1/2 of body length; flagellum 13-articulate.

Antenna 2 (Fig. 11B) about 1/3 of antenna 1 length; swimming setae absent; proximal article of peduncle with a distal projection; flagellum 6-articulate.

Gnathopod 1 (Fig. 11C) basis as long as ischium to carpus combined; propodus triangular, with 2 rows of grasping spines, the two proximal pairs larger; grasping margin of propodus serrate proximally.

Gnathopod 2 (Fig. 11D) inserted on the anterior half of pereonite 2; basis of the same length as pereonite 2; propodus as long as basis; palm with 3 grasping spines proximally and a row of smaller spines along the edge; a little projection distally; dactylus slender, not serrate.

Pereopod 3 (Fig. 12A) with 4 articles; distal article minute. Pereopod 4 absent. Pereopod 5 (Fig. 12B) 4-articulate. Pereopods 6 and 7 (Fig. 12C, D) subequal, increasing slightly in length respectively; carpus with a row of spines: 3 in pereopod 6, and 5 in pereopod 7; propodus palm with 3 pairs of grasping spines proximally and a row of shorter spines distally.

Pleon (Fig. 13A, B) with 2 pairs of pleopods. Pleopod 1 almost fused, without setae. Pleopod 2 short and wide, with 4 setae. Uropod 1 cylindrical and curved inwards; ramus about 1/5 of peduncle length; inner margins of peduncle and ramus serrate. Uropod 2 weakly curved, about 2/3 of uropod 1 length.

Female body length 16.4 mm. Flagellum of antenna 2 with 5 articles. Pleopods 2 absent.

**Remarks.** The genus *Pseudododecas* was established by McCain & Gray (1971) based on a single female 25 mm specimen of *P. bowmani* collected near South Shetland Islands at 769 m depth. Laubitz (1991) studied 2 more immature specimens, 1 male and 1 female collected also close to South Shetland Islands at 325 m. She partially illustrated the male, but the pereopods 6 and 7 were also missing as in the holotype female. The present specimens are in good agreement with the descriptions of McCain & Gray (1971) and Laubitz (1991), except for the outer lobe of maxilla 1, which has 5 teeth instead of 6. McCains & Gray reported a setal formula 1-25-1 for the terminal article of the mandibular palp. However, Laubitz’s specimen has the same setal formula as the specimens of the present study. The pereopod 3 is only 4-articulate in the specimens examined. The fifth article is not indicated by an incomplete suture as reported by Laubitz (1991). These and other minor differences are probably due to differences of developmental stage, or to intraspecific variation.

**References**


**Fig. 1.** *Aeginoides gaussi* Schellenberg, 1926, lateral view. A. male; B. female. Scale bar: 1mm.
Fig. 2. *Caprellinoides mayeri* (Pfeffer, 1888), lateral view. A. male; B. female. Scale bar: 1mm.
Fig. 3. Caprellinoides tristanensis Stebbing, 1888, lateral view. A. male; B. female. Scale bar: 1mm.
Fig. 4. *Paraproto condylata* (Haswell, 1885), lateral view. A. male; B. female. Scale bar: 1 mm.
Fig. 5. *Paraproto condylata* (Haswell, 1885), male. A. upper lip; B. lower lip; C. maxilliped; D. right mandible; E. left mandible; F. maxilla 1; G. maxilla 2. Scale bars: 0.1 mm.
Fig. 6. *Paraproto condylata* (Haswell, 1885). A-D: male. A. antenna 1; B. antenna 2; C. gnathopod 1; D. gnathopod 2. E: female gnathopod 2. Scale bars: 1 mm (A, B, E), 0.5 mm (C), 2 mm (D).
Fig. 7. Paraproto condylata (Haswell, 1885), male. A. pereopod 3; B. pereopod 4; C. pereopod 5; D. pereopod 6; E. pereopod 7. Scale bar: 1 mm.
Fig. 8. Paraproto condylata (Haswell, 1885), abdomen, ventral view. A. male; B. female. Scale bar: 0.3 mm.
Fig. 9. *Pseudododecas bowmani* McCain & Gray, 1971, lateral view. A. male; B. premature female. Scale bar: 1mm.
Fig. 10. *Pseudododecas bowmani* McCain & Gray, 1971, male. A. upper lip; B. lower lip; C. maxilliped; D. right mandible; E. left mandible; F. maxilla 1; G. maxilla 2. Scale bars: 0.2 mm (A-E), 0.1 (F,G).
Fig. 11. *Pseudododecas bowmani* McCain & Gray, 1971. A-D: male. A. antenna 1; B. antenna 2; C. gnathopod 1; D. gnathopod 2. E: female gnathopod 2. Scale bars: 1 mm.
Fig. 12. *Pseudododecas bowmani* McCain & Gray, 1971, male. A. pereopod 3; B. pereopod 5; C. pereopod 6; D. pereopod 7. Scale bars: 0.2 mm (A), 0.3 mm (B), 1 mm (C,D).
Fig. 13. *Pseudododecas bowmani* McCain & Gray, 1971. A, B: male abdomen. A. ventral view; B. lateral view. C, D: female abdomen. C. ventral view; D. lateral view. Scale bar: 0.2 mm.