



## Redescription of *Asterocheres suberitis* Giesbrecht, 1897 and *A. tenerus* (Hansen, 1923) (Copepoda: Siphonostomatoida), including notes on *A. abyssi* (Hansen, 1923) and *A. intermedius* (Hansen, 1923)

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### Abstract

The present paper reviews the type material of four poorly described species of *Asterocheres* Boeck, 1859 deposited in the Zoologisk Museum of the University of Copenhagen. For *A. abyssi* (Hansen, 1923) and *A. intermedius* (Hansen, 1923), each taxon was represented by only the poorly preserved, dissected holotype. Consequently, neither species could be redescribed in detail. As the original description of *A. abyssi* is not sufficient to differentiate it from its congeners, we propose to regard this species as undetermined. Although only the antennule and antenna of *A. intermedius* were amended, this species is still considered valid based on a combination of characters that include a 21-segmented antennule, oral siphon extending beyond leg 1 insertion, and genital double-somite being longer than wide. The other two species, *A. suberitis* Giesbrecht, 1897 and *A. tenerus* (Hansen, 1923), were redescribed which revealed inaccuracies in the original descriptions. *Asterocheres suberitis* is characterized by having a 21-segmented antennule, oral siphon extending to the maxilliped insertion, 2-segmented mandibular palp, and genital double-somite being wider than long. *Asterocheres tenerus* is distinguished by a combination of characters that include a 21-segmented antennule, oral siphon extending to the intercoxal plate of leg 2, 2-segmented mandibular palp, relatively slimmer and longer claws on the antenna, maxilla and maxilliped, and genital double-somite being about as long as wide.

**Key words:** Siphonostomatoida, *Asterocheres*, Danish Ingolf expedition, Davis Strait, Naples

### Introduction

*Asterocheres* Boeck, 1859 is the most speciose genus of the siphonostomatoid copepod family Asterocheridae Giesbrecht, 1899, containing approximately 70 species, most of which were poorly or incompletely described (Stock 1966; Ho 1984; Humes 1996; Ivanenko & Smurov 1997; Kim 2004, 2005). As such, these descriptions are unreliable for comparative purposes. Nevertheless, the number of new *Asterocheres* species continues to increase at a fairly rapid rate, with 15 new members being described since 2000 (Humes 2000; Johnsson 2001, 2002; Kim 2004, 2005; Bandera *et al.* 2005, 2007; Bispo *et al.* 2006; Conradi *et al.* 2006). In sharp contrast, only one poorly known species has been recently redescribed within the same time period (Ivanenko & Ferarri 2003). This paper provides morphological information on the type material of four *Asterocheres* species as part of the ongoing taxonomical revision of poorly known species within this symbiotic group (Bandera & Huys 2008; Bandera & Conradi in press).

## Material and methods

Type material of *Asterocheres abyssi* (Hansen, 1923), *A. intermedius* (Hansen, 1923), *A. suberitis* Giesbrecht, 1897 and *A. tenerus* (Hansen, 1923) deposited in the Zoologisk Museum of the University of Copenhagen (ZMUC) were examined in this study. Copepod body length was measured from the anterior margin of the rostrum to the posterior margin of the caudal rami. For *A. suberitis* and *A. tenerus*, additional type specimens were cleared in lactic acid, stained with Chlorazol black E (Sigma® C-1144), dissected, and temporarily mounted in lactophenol in order to make detailed observations. All temporary mounts were subsequently sealed with Entellan (Merck® 1.07961-UN 1866) following examinations. Figures were drawn with the aid of a camera lucida attached to a Leica DMLB differential interference microscope. Appendage segmentation and setation were named and numbered using the system established by Huys & Boxshall (1991).

## Results

### Order Siphonostomatida Thorell, 1859

### Family Asterocheridae Giesbrecht, 1899

### *Asterocheres* Boeck, 1859

### *Asterocheres abyssi* (Hansen, 1923)

*Ascomyzon abyssi* Hansen 1923: 8.

*Asterocheres abyssi*: Stock 1966a: 209; Johnsson 1998: 96; Kim 2004: 181.

**Material examined.** Holotype ♂ (ZMUC. CRU-5026) collected during the “Danish Ingolf expedition” in Davis Strait, Station 36 (61°50'N, 56°21'W), at 1,435 fathoms (ca. 2.62 km).

**Hosts.** Unknown.

**Distribution.** Atlantic Ocean (Hansen 1923).

**Remarks.** This species was described by Hansen (1923) based on a damaged male and has not been subsequently recorded. Re-examination of the material deposited in the ZMUC did not yield any useful taxonomic information due to the poor condition of the type specimen. Therefore, the only morphological information regarding this species is that provided by Hansen (1923), who described *A. abyssi* as possessing: 1) a 5-segmented urosome, with the anal somite nearly as long as wide and slightly longer than the two preceding somites combined; 2) a genital somite as long as broad; 3) caudal rami shorter than anal somite; 4) a presumably 17-segmented antennule (however, Hansen could only observe 15 segments in the type specimen); 5) the terminal claw of the antenna as long as the first endopodal segment; 6) a siphon that extends beyond the insertion of the maxillipeds; 7) a maxillulary palp (outer lobe) about one-third as long as the praecoxal endite (inner lobe) and armed with two terminal setae; and 8) a 2-segmented mandibular palp (see Hansen 1923: Plate I, fig. 4b).

Descriptions of *Asterocheres* species are, with the exception of *A. abyssi*, *A. ovalis* Sewell, 1949 and *A. alter* Eiselt, 1965, based on females. Indeed, the male is unknown in more than one-third of these descriptions. Among the known males, *A. jeanyeatmanae* Yeatman, 1970 and *A. major* (Thompson & Scott, 1903) share the eight aforementioned characteristics with *A. abyssi*. As there are no known features to distinguish *A. abyssi* from these congeners, we consider it as an undetermined taxon.

## *Asterocheres intermedius* (Hansen, 1923)

*Ascomyzon intermedium* Hansen 1923: 6.

*Asterocheres intermedius*: Stock 1966b: 152; Johnsson 1998: 91.

**Material examined.** Holotype ♀ (ZMUC. CRU-6873/8357) collected during the “Danish Ingolf Expedition” in Davis Strait, Station 25 (63°30'N, 54°25'W), at 582 fathoms (ca. 1.06 km).

**Hosts.** Unknown.

**Distribution.** Atlantic Ocean (Hansen 1923).

**Remarks.** Hansen (1923) omitted some taxonomically important appendages, such as the mandible and fifth legs (the latter lost in the type specimen), in his description of *A. intermedius*. Unfortunately, this species has not been recorded again, and only the antennule and antenna could be observed in the damaged, dissected holotype. Our observations of the pre-oral appendages differed from the original description as follows: 1) the antennule, despite being cleanly broken in half in the holotype, consists of 21 rather than 20 free segments; and 2) the endopod of the antenna is comprised of 3 instead of 2 segments. Despite these amendments, a detailed redescription of this species is still badly needed.

Contrary to the above species, *A. intermedius* can be easily differentiated from its congeners. For instance, *A. intermedius*, along with the following 19 congeners, possess a 21-segmented antennule in females: *A. astroidicola* Conradi, Bandera & López-González, 2006; *A. bacescui* (Marcus, 1965); *A. echinicola* (Norman, 1868); *A. ellisi* Hamond, 1968; *A. flustrae* Ivanenko & Smurov, 1997; *A. hirsutus* Bandera, Conradi & López-González, 2005; *A. jeanyeatmanae* Yeatman, 1970; *A. lilljeborgi* (Boeck, 1859); *A. lunatus* Johnsson, 1998; *A. madeirensis* Bandera, Conradi & López-González, 2007; *A. minutus* (Claus, 1889); *A. reginae* Boxshall & Huys, 1994; *A. simulans* (T. Scott, 1898); *A. suberitis* Giesbrecht, 1897; *A. tenerus* (Hansen, 1923) (re-described below as possessing a 21-segmented antennule in female); *A. tenuicornis* Brady, 1910; *A. uncinatus* (Kritchagin, 1873); *A. urabensis* Kim, 2004; and *A. violaceus* (Claus, 1889). Among these species, only *A. ellisi*, *A. urabensis*, *A. hirsutus*, *A. tenerus* and *A. astroidicola* have a siphon extending beyond the insertion of leg 1 as in *A. intermedius*. However, these four species do not have a genital double-somite that is longer than wide as in *A. intermedius*.

## *Asterocheres suberitis* Giesbrecht, 1897

(Fig. 1)

*Cycloplicera echinicola* (nec Norman, 1868): Giesbrecht 1895: 175.

*Asterocheres suberitis* Giesbrecht 1897: 254; Giesbrecht 1899: 70.

*Asterocheres echinicola* (nec Norman, 1868): T. Scott 1898: 270; T. Scott 1900: 389; Norman & T. Scott 1906: 192.

*Asterocheres suberitis antarctica* T. Scott 1903: 573.

**Material examined.** 7 ♀ and 4 ♂ (ZMUC. CRU-8298) cotypes, ex *Suberites domuncula* (Olivi), Gulf of Naples, leg. W. Giesbrecht in 1895.

**Redescription of adult female:** Body (see Giesbrecht 1899: fig. 1, Taf. 2) cyclopiform, with oval prosome and cylindrical urosome. Total length 840 µm (n = 1); maximum width 420 µm. Ratio of length to width of prosome 1.1:1. Ratio of length of prosome to urosome 1.6:1. Prosome comprising cephalothorax fully incorporating first pedigerous somite and 3 free pedigerous somites. Pedigerous somite 4 much smaller and narrower than preceding somites. Dorsal cephalothoracic shield and free pedigerous somites ornamented with integumental pores and sensillae. Urosome 4-segmented, comprising pedigerous somite 5, genital double-somite and 2 free abdominal somites. Genital double-somite about as long as wide; genital apertures separate, each comprising ventrolateral copulatory pore and dorsolateral gonopore (oviduct opening). Lateral

margin of genital double-somite ornamented with setular rows posterior to genital apertures. Each genital area armed with seta. Caudal rami (see Giesbrecht 1899: fig. 7, Taf. 2) slightly more than 1.5 times longer than wide, armed with 6 setae (seta I absent); setae II–VII arranged along posterior margin.

Antennule (see Giesbrecht 1899: fig. 2, Taf. 2) 21-segmented, 360 µm long, with an aesthetasc on segment 18. Antenna (Fig. 1A) biramous, 234 µm long (including claw); coxa and basis unarmed. Exopod 1-segmented, slightly longer than wide, with small medial seta and 2 unequal terminal setae. Endopod 3-segmented; first segment elongated, ornamented with lateral row of fine spinules; second segment asymmetric, distomedially produced, and armed with simple seta; third segment with distal naked claw and two unequal, pinnate setae.

Siphon (see Giesbrecht 1899: fig. 13, Taf. 2) pyriform, about 130 µm long, reaching maxilliped insertions. Mandible (Fig. 1B) comprising stylet-like gnathobase and slender 2-segmented palp. Stylet with denticulate margin subapically. First segment of palp ornamented with lateral row of spinules; second segment ornamented with spinules apically and armed with 2 spinulate setae. Maxillule (Fig. 1C) bilobed. Praecoxal endite (inner lobe) 2.5 times longer than palp (outer lobe), ornamented with small spinules proximally and long setules apically, and armed with 4 distal setae (1 smooth, 2 spinulate, and 1 with apical spinules and spoon-shaped tip). Palp armed with 4 pinnate setae. Maxilla (see Giesbrecht 1899: fig. 14, Taf. 2) 2-segmented, with curved claw-like basis. Maxilliped (see Giesbrecht 1899: fig. 16, Taf. 2) 5-segmented.

Swimming legs 1 and 4 as in original description (see Giesbrecht 1899: figs. 4 and 6, Taf. 2). Legs 2 and 3 (Figs 1D–E) biramous and trimerous, with armature formula as follows:

	Coxa	Basis	Exopod	Endopod
Leg 2	0-1	1-0	I-1; I-1; III,I+1,3	0-1; 0-2; 1,2,3
Leg 3	0-1	1-0	I-1; I-1; III,I+1,3	0-1; 0-2; 1,1+I,3

Legs 2 and 3 outer exopodal spines bilaterally serrated. Intercoxal sclerites present in both legs. Leg 3 coxa ornamented with spinules along lateral margin (Fig. 1E).

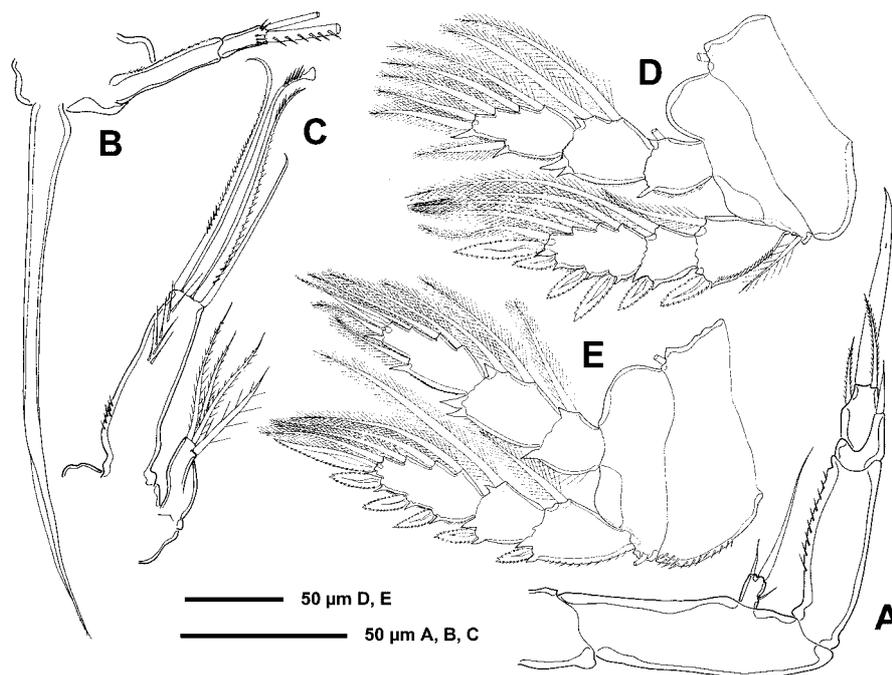
Fifth leg (see Giesbrecht 1899: fig. 11, Taf. 2) 2-segmented, with protopod incorporated into somite; free segment oval, armed with 3 distal plumose setae, and ornamented with spinules. Sixth leg (see Giesbrecht 1899: fig. 7, Taf. 2) represented by paired opercular plates, each armed with seta, closing off gonopores on genital double-somite.

**Adult male:** Body (see Giesbrecht 1899: fig. 10, Taf. 2) cycloform, more slender than female, with oval cephalothorax and cylindrical urosome. Total length 590 µm and maximum width 260 µm (n = 1). Prosome comprising cephalothorax fully incorporating first pedigerous somite and 3 free pedigerous somites. Urosome 5-segmented, comprising pedigerous somite 5, genital somite and 3 free abdominal somites. Caudal ramus as in female.

Appendages similar to those of female except for the following. Antennule (see Giesbrecht 1899: fig. 3, Taf. 2) 17-segmented, 210 µm long, with an aesthetasc on segment 16 and geniculation located between segments 15 and 16. Maxilliped (see Giesbrecht 1899: fig. 12, Taf. 2) with thorn-like process in proximal-half of basis. Sixth leg (see Giesbrecht 1899: fig. 15, Taf. 2) forming large opercular plate closing off genital apertures, armed with 2 setae.

**Hosts.** The most common host of *Asterocheres suberitis* is the hermit crab sponge *Suberites domuncula* (Olivi) [*domunculus* = "little house"], which is a Mediterranean species that typically grows on an empty snail shell or a shell occupied by a snail or hermit crab and less commonly on other substrates such as bivalve shells or wharf pilings (Riedl 2000). *Suberites domuncula* hosts other siphonostomatoid copepods such as *Sponginticola uncifer* Topsent, 1928 and *Asterocheres simulans* (T. Scott, 1898) (Topsent 1928; Ivanenko 1997). Recently, Mariani & Uriz (2001) found *A. suberitis* associated with other sponge species such as the wide-

spread *Cliona viridis* (Schmidt), *Scopalina* sp. and the Mediterranean *Scopalina lophyropoda* Schmidt. However, these authors recognized that their copepod identification must be treated with caution.



**FIGURE 1.** *Asterocheres suberitis*, Giesbrecht, 1897, cotype female. A, antenna; B, mandible; C, maxillule; D, leg 2; E, leg 3.

**Distribution.** Mediterranean (Giesbrecht 1895; Mariani & Uriz 2001), north Atlantic (according to Stock (1967) and Gotto (1993) the form referred to as *A. echinicola* by T. Scott (1898, 1900) and Norman & T. Scott (1906) from the Clyde and Loch Fyne almost certainly belong to *A. suberitis*), and India (Krishnaswamy 1959—this record requires confirmation).

**Remarks.** Giesbrecht (1895) collected this species from *Suberites domuncula* (Olivi) from Naples, but reported it under the binomen *Cyclopicera echinicola* Norman, 1868. Giesbrecht (1897) subsequently realised that his specimens from *S. domuncula* were not conspecific with *C. echinicola* and renamed it *Asterocheres suberitis*.

Our examination of Giesbrecht's (1897) cotypes revealed the following errors in his original and subsequent descriptions: 1) the antennal endopod is composed of 3 instead of 2 segments as illustrated by Giesbrecht (1899); 2) the mandibular palp is clearly 2-segmented and not 1-segmented as depicted in the original illustration; 3) the ornamentation of the inner lobe of the maxillule was overlooked by Giesbrecht (1899); and 4) legs 2 and 3 were never illustrated by Giesbrecht (1897, 1899).

This species, like *A. intermedius* discussed above, belongs to the group of congeners with 21-segmented antennules in females. However, *A. suberitis* can be distinguished from other members of this group as follows. *Asterocheres suberitis* can be easily separated from *A. lilljeborgi*, *A. simulans* (see Ivanenko 1997), *A. bacescui*, *A. jeanyatmanae*, *A. reginae* and *A. lunatus* (see Johnsson 1998) by lacking a dorsoventrally flattened prosome. *Asterocheres suberitis*, like most *Asterocheres* species, possesses a siphon reaching the maxilliped base. In contrast, the siphon of *A. ellisi*, *A. urabensis*, *A. hirsutus*, *A. intermedius*, *A. tenerus* and *A. astroidicola* extends to leg 1 or 2. *Asterocheres suberitis* has caudal rami 1.5 times longer than wide, while in *A. tenuicornis* and *A. echinicola* they are 6 and 2.5 times longer than wide, respectively, and in *A. flustrae* it is about as long as wide. *Asterocheres uncinatus* has a 2-segmented endopod on the antenna (see Marcus & Por 1960 and Marcus 1965), while *A. suberitis* has 3 segments on this appendage. The 2-segmented mandibular

palp of *A. suberitis* separates it from *A. minutus*, *A. violaceus* and *A. madeirensis*, each having a 1-segmented mandibular palp.

In 1903, T. Scott collected some *Asterocheres* specimens from Scotia Bay (South Orkneys) which in his opinion closely resembled *A. suberitis*. Although he reported some differences between them, such as the shape of the siphon, the length of the fifth leg, and the proportional lengths in the antennular segments and abdominal somites, he considered that these differences were not sufficient enough to establish a new species, and therefore, named the Scotia Bay specimens *Asterocheres suberitis antarctica*. However, comparisons between the illustrations of these two forms revealed another difference: the antennary exopod of the Scotia Bay specimens bears “two or three short terminal bristles” rather than a small medial seta and 2 terminal setae, one of them very long, as in *A. suberitis*. Thus contrary to T. Scott’s opinion, we consider that these two forms are not conspecific and that the differences enumerated above are enough to separate them at species level. Nevertheless, as *A. s. antarctica* material is no longer extant, the establishment of a new species must be postponed until more specimens are collected.

### ***Asterocheres tenerus* (Hansen, 1923)**

(Figs 2–4)

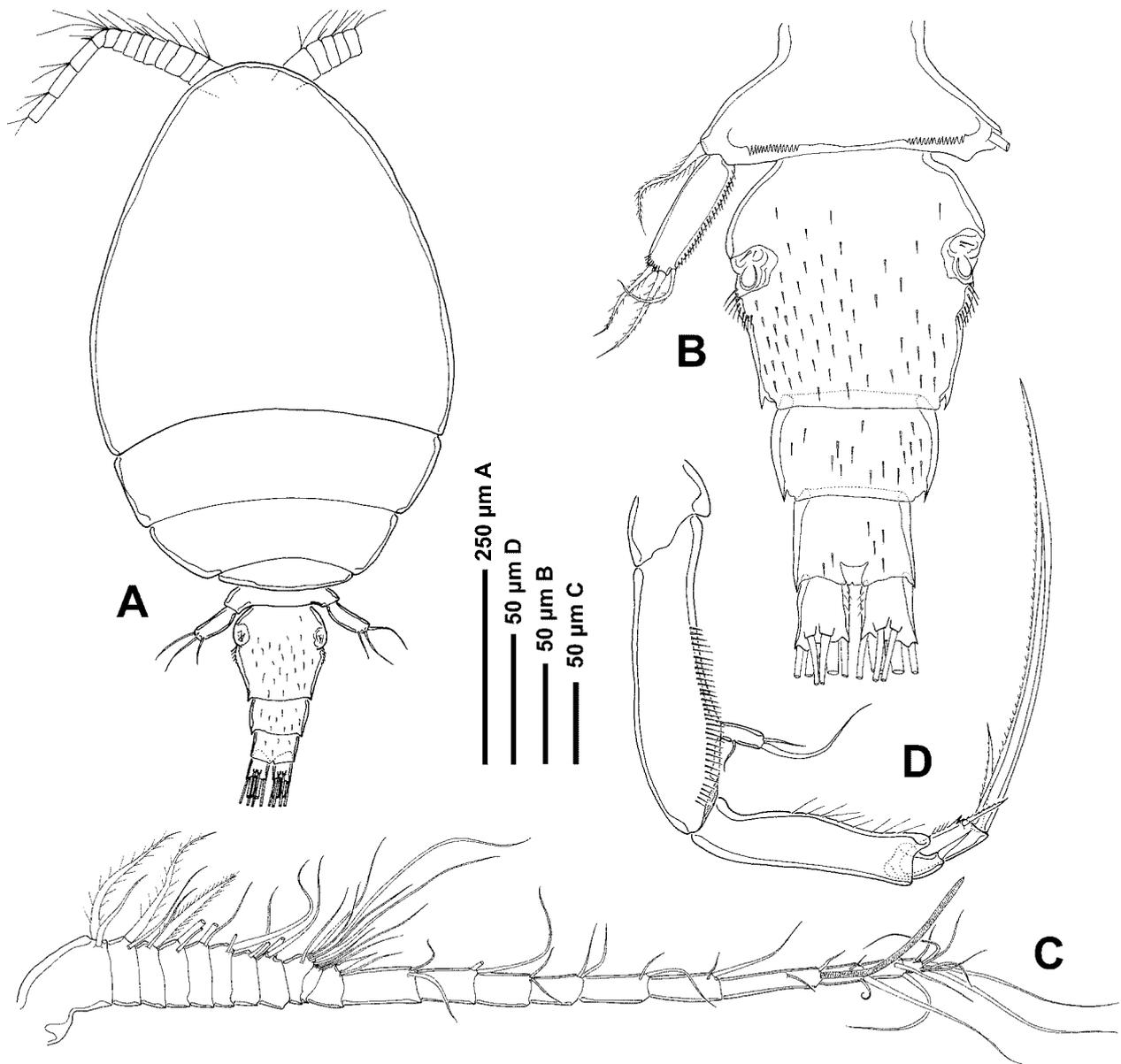
*Ascomyzon tenerum* Hansen 1923: 7.

*Asterocheres tenerus*: Stock 1966b: 152; Johnsson 1998: 92.

**Material examined.** Holotype ♀ and 8 paratypes (5 ♀ and 3 ♂) (ZMUC. CRU-8357) collected during the “Danish Ingolf Expedition” in Davis Strait, Station 25 (63°30’N, 54°25’W), at 582 fathoms depth (ca. 1.06 km).

**Redescription of adult female:** Body (Fig. 2A) cycloform, with oval cephalothorax and cylindrical urosome. Total length 904 µm (n = 1); maximum width 452 µm. Ratio of length to width of prosome 1.5:1. Ratio of length of prosome to urosome 2.6:1. Prosome comprising cephalothorax fully incorporating first pedigerous somite and 3 free pedigerous somites. Pedigerous somite 4 much smaller and narrower than preceding somites. Dorsal cephalothoracic shield and free pedigerous somites ornamented with integumental pores and sensillae (these features not shown in Fig. 2A). Urosome (Fig. 2B) 4-segmented, comprising pedigerous somite 5, genital double-somite and 2 free abdominal somites. Genital double-somite and following somites furnished with large spinules. Pedigerous somite 5 narrow, largely concealed under tergite of pedigerous somite 4, with spinular row on each side of dorsal midline. Genital double-somite about as long as wide, with separate genital apertures, each comprising ventrolateral copulatory pore and dorsolateral gonopore (oviduct opening); lateral margins with rows of setules posterior to genital apertures. Caudal rami longer than wide, armed with 6 setae (seta I absent); setae III–VI arranged along posterior margin; setae II and VII inserted subapically on dorsal surface.

Antennule (Fig. 2C) 21-segmented, 544 µm long. Segmental homologies (expressed segment given first followed by ancestral segment(s) in brackets) and setation pattern as follows: 1(I)-2, 2(II)-2, 3(III)-2, 4(IV)-2, 5(V)-2, 6(VI)-2, 7(VII)-2, 8(VIII)-2, 9(IX–XII)-7, 10(XIII)-2, 11(XIV)-1+spine, 12(XV)-2, 13(XVI)-2, 14(XVII)-2, 15(XVIII)-2, 16(XIX)-2, 17(XX)-2, 18(XXI)-2+ae, 19(XXII–XXIV)-3, 20(XXV)-2, 21(XXVI–XXVIII)-7. Segment 10 (XIII) reduced, partly overlapped by distal expansion of compound segment 9 (IX–XII). One of two setae on segments 1–8 plumose. Antenna (Fig. 2D) biramous, 430 µm long (including claw); coxa small, unarmed; basis elongated, unarmed, and ornamented with row of spinules along inner margin. Exopod 1-segmented, with small medial seta and 2 subequal terminal setae. Endopod 3-segmented; first segment elongated, with few setules along inner margin; second segment distomedially produced, bearing terminal seta; third segment ornamented with coarse spinules and few setules along inner margin and armed apically with long spinulate claw flanked by 2 unequal barbed setae.



**FIGURE 2.** *Asterocheres tenerus* (Hansen, 1923), paratype female. A, habitus, dorsal; B, urosome, dorsal; C, antennule; D, antenna.

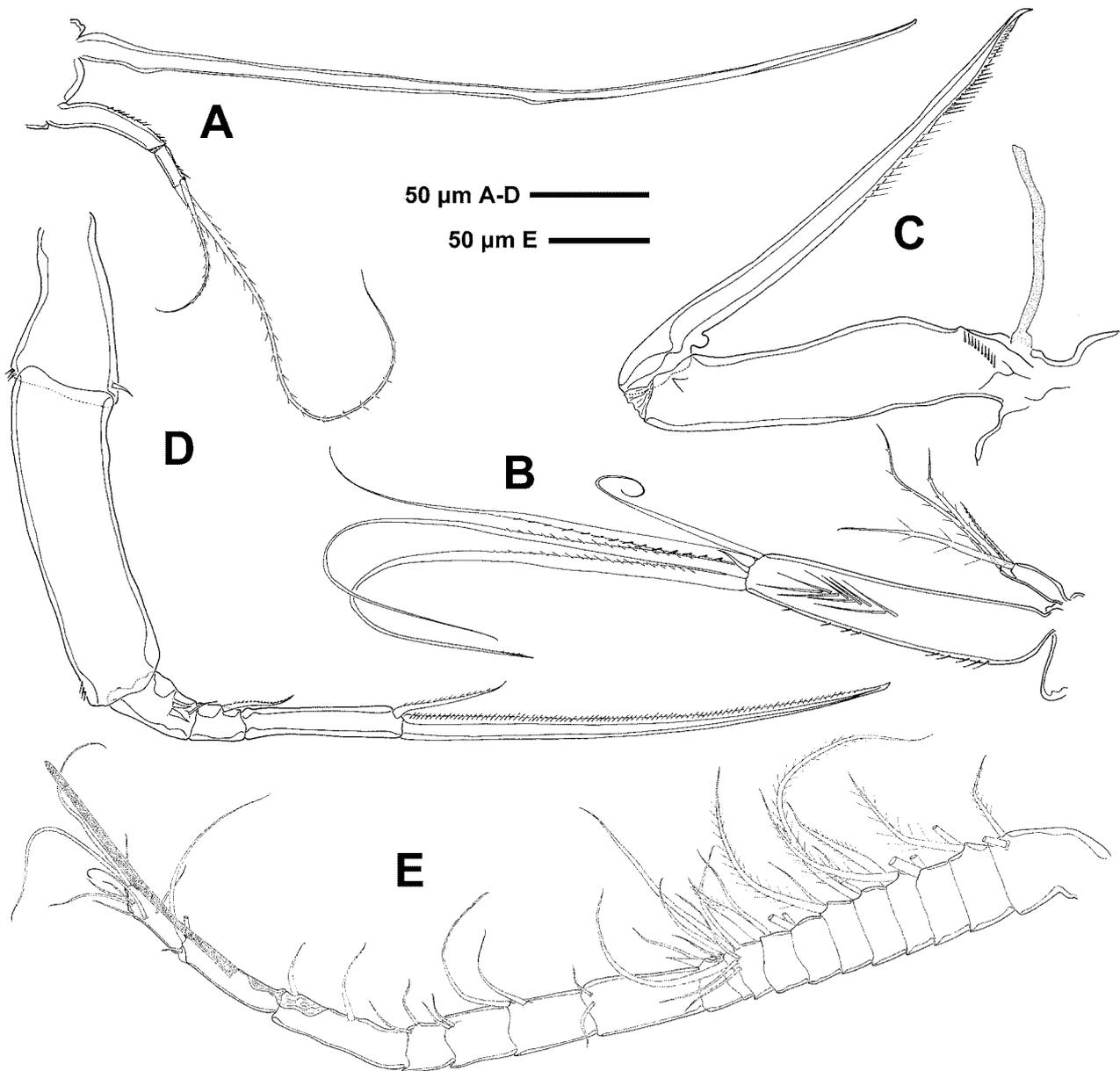
Siphon long and slender, 370  $\mu\text{m}$  long, reaching the intercoxal plate of leg 2. Mandible (Fig. 3A) composed of stylet-like gnathobase (356  $\mu\text{m}$  long) and 2-segmented palp. First segment of palp ornamented with an incomplete row of spinules; second segment with spinules along distal margin and armed apically with 2 unequal, pinnate setae. Maxillule (Fig. 3B) bilobed, with inner lobe 4 times longer than outer lobe. Outer lobe armed distally with 4 barbed setae. Inner lobe ornamented with spinules laterally and long setules along midline, and armed with 5 distal setae, one of them very short.

Maxilla (Fig. 3C) 2-segmented, with partial transverse suture on syncoxa, possibly marking plane of praecoxa-coxa fusion; praecoxal region bearing long flaccid element medially, representing tubular extension of external opening of maxillary gland; coxal region unarmed, ornamented with row of spinules proximally. Claw-like basis bearing small hyaline process proximally and row of spinules along distal margin. Maxilliped (Fig. 3D) 5-segmented, comprising short syncoxa, long basis and 3 free endopodal segments. Syncoxa with short seta distomedially and few spinules distolaterally; basis with few spinules distolaterally. First endopodal

segment with thin distal seta and 2 robust medial setae. Second endopodal segment with medial barbed seta. Third endopodal segment bearing long spinulate claw and apical spinulate seta.

Swimming legs 1–4 (Figs 4A–D) biramous, with only leg 1 complete. Spine and seta formula as follows:

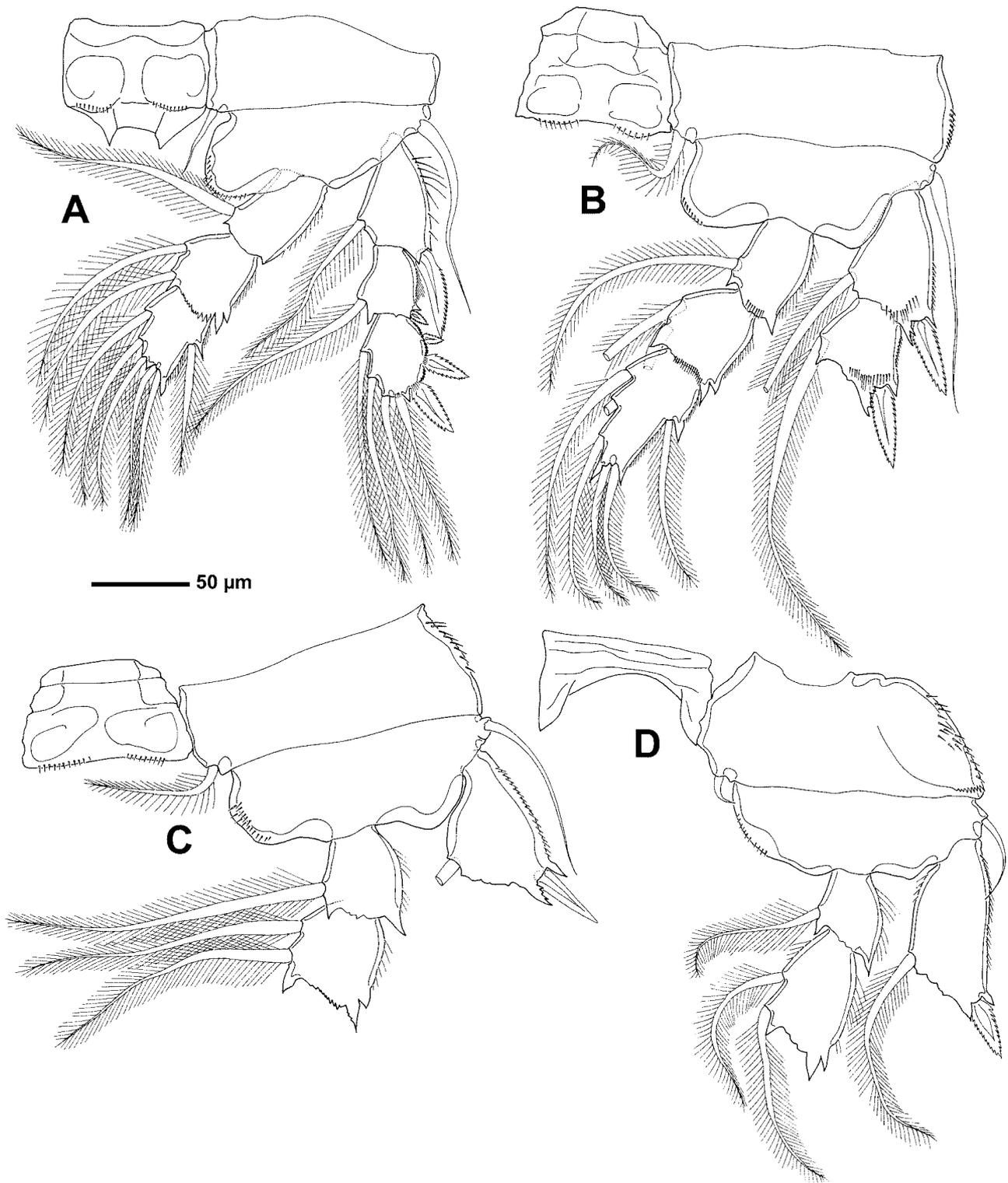
	Coxa	Basis	Exopod	Endopod
Leg 1	0-1	1-0	I-1; I-1; III,2,2	0-1; 0-2; 1,2,3
Leg 2	0-1	1-0	I-1; I-1; ?	0-1; 0-2; 1,2,3
Leg 3	0-1	1-0	I-1; ?; ?	0-1; 0-2; ?
Leg 4	0-1	1-0	I-1; ?; ?	0-1; 0-2; ?



**FIGURE 3.** *Asterocheres tenerus* (Hansen, 1923), paratype female (A–D) and paratype male (E). A, mandible; B, maxillule; C, maxilla; D, maxilliped; E, antennule.

Intercoxal sclerite of legs 1–3 ornamented with rows of spinules along posterior margin. Coxae of legs 2–4 ornamented with rows of spinules laterally; coxal seta naked in legs 1 and 4, plumose in legs 2 and 3;

outer basal seta of all legs naked. Outer spine of first exopodal segment of leg 3 smooth. Lateral margins of exopodal segments with minute spinules; lateral margins of endopodal segments with row of setules.



**FIGURE 4.** *Asterocheres tenerus* (Hansen, 1923), paratype female. A, leg 1; B, leg 2; C, leg 3; D, leg 4.

Leg 5 (Fig. 2B) with protopodal segment incorporated into somite; protopodal seta located laterally; free segment slender, armed with 3 distal plumose setae and ornamented with medial spinular row. Leg 6 (Fig. 2B) represented by paired opercular plates closing off gonopores on genital double-somite; armed with 2 smooth setae, one of them minute.

**Adult male:** Body cyclopiform, with oval cephalothorax and cylindrical urosome. Total length 890  $\mu\text{m}$  ( $n = 1$ ); maximum width 460  $\mu\text{m}$ . Prosome comprising cephalothorax fully incorporating first pedigerous somite and 3 free pedigerous somites. Urosome 5-segmented, comprising pedigerous somite 5, genital somite and 3 free abdominal somites. Caudal ramus armed as in female.

Appendages as in female, except for the following. Antennule (Fig. 3E) 18-segmented, geniculate; segmental homologies (expressed segment given first followed by ancestral segment(s) in brackets) and setation pattern as follows: 1(I)-2, 2(II)-2, 3(III)-2, 4(IV)-2, 5(V)-2, 6(VI)-2, 7(VII)-2, 8(VIII)-2, 9(IX-XII)-7, 10(XIII)-1+spine, 11(XIV)-1+spine, 12(XV)-2, 13(XVI)-2, 14(XVII)-2, 15(XVIII)-2, 16(XIX-XX)-2, 17(XXI-XXIII)-3+ae, 18(XXIV-XXVIII)-9. Geniculation located between segments 16 (XIX-XX) and 17 (XXI-XXIII). Segment 10(XIII) reduced, partly overlapped by distal expansion of compound segment 9 (IX-XII). Maxilliped with small tooth-like process in proximal-half of basis. Leg 6 forming large opercular plates closing off genital apertures, armed with 2 smooth setae.

**Hosts.** Unknown.

**Distribution.** Atlantic Ocean (Hansen, 1923).

**Remarks.** A detailed re-examination of *Asterocheres tenerus* type material has revealed the following differences between our observations and the original description by Hansen (1923): 1) the highly reduced tenth (XII) antennular segment of the female was overlooked by Hansen; 2) the antennary exopod bears 3 instead of one element, and the proximal margin of the distal endopodal segment articulates on the lateral side of the preceding segment; 3) the oral siphon extends to the intercoxal plate of leg 2, a feature that is unclear in the original description (according to Hansen, the siphon reaches beyond the insertion of leg 1 or beyond that of leg 2); 4) the inner lobe of the maxillule possesses 5 rather than 4 terminal setae; 5) the aesthetasc-like extension on the proximal part of the maxillary syncoxa was overlooked by Hansen; 6) the maxilliped is composed of 5 instead of 4 segments; 7) the swimming legs, which were not described by Hansen, are indeed present in the type specimens; 8) the free segment of leg 5 bears 3 instead of 2 distal setae; and 9) the male antennule is comprised of 18 rather than 17 segments.

Based on our redescription, *A. tenerus* belongs to the group of *Asterocheres* species having a 21-segmented antennule, which is currently composed of 20 species total as mentioned in the Remarks section of *A. intermedius*. *Asterocheres tenerus* differs from *A. bacescui*, *A. madeirensis*, *A. minutus*, and *A. violaceus* by having a 2-segmented rather than 1-segmented mandibular palp. *Asterocheres tenerus* can be distinguished from *A. lilljeborgi*, *A. echinicola*, *A. uncinatus*, *A. tenuicornis*, *A. simulans*, *A. suberitis*, *A. jeanyeatmanae*, *A. reginae*, *A. flustrae* and *A. lunatus* by having an oral siphon that reaches the insertion of leg 2 rather than only to the insertion of the maxillipeds.

*Asterocheres tenerus* differs from *A. ellisi* by lacking a dorsoventrally flattened prosome and from *A. intermedius* by having a genital double-somite that is as long as wide rather than longer than wide. The length of caudal rami separates *A. tenerus* from *A. hirsutus*. *Asterocheres tenerus* has caudal rami that are slightly longer than wide, while *A. hirsutus* possesses caudal rami that are 2.5 times longer than wide. *Asterocheres tenerus* can be differentiated from the remaining 2 species, *A. astroidicola* and *A. urabensis*, by having considerably slimmer and longer claws on the antenna, maxilla and maxilliped.

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