

***Kolocheres angustus* A NEW SPECIES AND GENUS OF ASTEROCHERIDAE (COPEPODA:SIPHONOSTOMATOIDA) ASSOCIATED WITH SPONGES IN BRAZIL**

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ABSTRACT

Kolocheres angustus n. gen., n. sp. a new copepod associated with sponges is described from material collected in the Bahia State, Brazil. The species is a member of the family Asterocheridae and is readily distinguished by the reduced setation of its swimming legs and by the endopod of P4 reduced to a single segment which does not occur in any other genus.

Keywords: Copepoda, Siphonostomatoida, Asterocheridae, sponges, Brazil.

INTRODUCTION

Asterocheridae is a diverse siphonostomatoid family associated with invertebrates such as sponges, corals, polychaetes and echinoderms. Many asterocherid genera show a certain reduction in the segmentation and setation of the swimming legs. In Brazil the copepods associated with marine invertebrates are relatively poorly known in comparison with their fish-parasitic relatives. The present account describes a new genus of Asterocheridae found on sponge hosts in shallow waters in Viçosa Reefs, Bahia State, Brazil.

Diagnosis

Family Asterocheridae. Female: Characterized by the slender body with a short siphon; antennule 20-segmented, aesthetasc on 18th segment; mandibular palp 2-segmented; antenna and maxilliped with short claws. P1 to P4 with 3-segmented exopods, endopods of P1 and P2 3-segmented, of P3 2-segmented and of P4 1-segmented. P1 and P2 with a bicuspidate projection on second endopodal segment. Chaetotaxis reduced on almost all segments. Male: unknown.

Type-species: *Kolocheres angustus* n.sp. parasitic on sponges.

Etymology: *Kolocheres* from the Greek word "Kolos", meaning shortened, incomplete, referring to the reduction of the number of segments and "cheres" being frequently used in this family of copepods; *angustus* meaning narrow in latin.

Remarks

The new genus *Kolocheres* n. gen. exhibits reductions of the endopodal segmentation of P3 and P4, reductions on the chaetotaxis of all legs and a bicuspidate projection on the second endopodal segment of P1 and P2. In the family Asterocheridae the genera *Cletofontius* Thompson and Scott, 1903; *Cystomyzon* Stock, 1981;

Discopontius Nicholls, 1944; *Meandromyzon* Stock, 1989; *Oedomyzon* Stock, 1981; *Peltomyzon* Stock, 1975; *Siphonopontius* Malt, 1991 and *Tuphacheres* Stock, 1965 present some kind of reduction in both segmentation and setation of the swimming legs. *Psilomyzon* Stock, 1965, *Sinopontius* Boxshall, 1986 and *Inermocheres* Boxshall, 1986, although not lacking any segments on the legs also have a very reduced chaetotaxis.

Kolocheres n. gen. has a 1-segmented P4 endopod and a 2-segmented P3 endopod. The genera *Cystomyzon* and *Oedomyzon* have a completely reduced P4 represented by a 1-segmented vestige; besides that *Cystomyzon* also shows reductions on the endopods of P1 to P3 and on the exopod of P1.

In the genera *Tuphacheres* and *Cletopontius* the endopod of P4 is completely absent. In *Tuphacheres* the exopods of P1 to P4 and the endopod of P3 have only two segments. *Cletopontius* has biramous and 3-segmented P1 and P3. Thompson and Scott (1903) do not mention anything about P2, but it can be assumed to exhibit the biramous, 3-segmented condition observed in P1 and P3.

Meandromyzon lost one of the endopodal segments of P1; *Discopontius* and *Siphonopontius* show a 2-segmented endopod on P4 and *Peltomyzon* has the endopod of P3 and P4 with only two segments.

Then, among all these genera of Asterocheridae, only *Tuphacheres*, *Cystomyzon*, *Peltomyzon* and *Meandromyzon* have a 2-segmented P3 as in *Kolocheres* n. gen. however in *Tuphacheres* the endopod of P4 is absent and all the exopods are 2-segmented; in *Cystomyzon* the P4 is completely absent and all the endopods and the exopod of P1 are 2-segmented; *Peltomyzon* has a 2-segmented P4 and *Meandromyzon* has 2-segmented endopods on P1 and P4. *Kolocheres* n. gen. is the only genus that has the endopod of P4 reduced to a single segment.

The chaetotaxis in *Kolocheres* n. gen. is also very modified. Huys & Boxshall (1991) and Boxshall & Huys (1994) considered the setal formula of *Asterocheres reginae* Boxshall & Huys, 1994 to be the most primitive found in Siphonostomatoida. So the setal formula of the first and second exopodal segments of all legs would be I-1 however in *Kolocheres* n. gen. it is I-0. *Tuphacheres* also has I-0 as the setal formula of the first exopodal segment but the second segment is absent. *Meandromyzon* has a very similar chaetotaxis, the only difference being found in the second exopodal segment which has lost the spine instead of the seta, therefore becoming 0-1 and not I-0. *Siphonopontius* has the first exopodal segment reduced to I-0 as in *Kolocheres* n. gen. but on the second exopod segment it is I-0 only in P1, on all the other legs it is I-1 as in *Asterocheres reginae*.

In *Discopontius* P2 and P3 are unknown and in P1 and P4 the first and second exopodal segments are I-1; I-1. In *Cletopontius* P2 is also unknown and only the first exopodal segment of P4 is modified to I-0. In *Peltomyzon*, *Oedomyzon* and *Cystomyzon* the first and second exopodal segments are exactly as in *A. reginae*. In *Psilomyzon* there is no reduction on the legs however the first exopodal segment is reduced to I-0 in all legs and the same occurs on the second exopodal segment of P4. Besides that the first and second endopodal segments lack any setae or spine, being 0-0 as in *Kolocheres* n. gen.

In *Inermocheres* and *Sinopontius* the legs do not show any reduction however their reduced chaetotaxis is very similar to *Kolocheres* n. gen. *Sinopontius* has the first endopodal and exopodal segments of P1 to P2 and the second endopodal and exopodal segments of P1 and P2 exactly the same as in *Kolocheres* n. gen. In *Inermocheres* the first and second exopodal and the endopodal segments of P1 to P3 are identical to *Kolocheres* n. gen. The second and last endopodal segment of P3 and the exopod of P4 has the same formula in both genera.

In *Tuphacheres* only the second endopodal segment of P1 and P2 is reduced to 0-0. In all other genera the first endopodal segment of all legs is similar to *A. reginae*.

Since the third endopodal or exopodal segments of the typical siphonostomatoid has many setae and spines it is possible to observe many transitional stages of chaetotaxis reduction in all these genera.

Kolocheres angustus n. sp.

Material examined: Holotype - female (MNRJ 8576) from Viçosa Reefs, Abrolhos, Bahia, Brazil collected by P. S. Young et al. on 28/II/1994. Paratypes - 1 female (MNRJ 8577) from the same locality, 1 female (MNRJ 11404) from the same locality but collected by P. S. Young et al. on 26/VIII/1995 and 1 female (MNRJ 11405) from Rasinho do Coiceiro, Porto de Galinhas, Pernambuco, Brazil collected by P. S. Young and C. S. Serejo on 20/II/1995.

Diagnosis: Female: Body (fig. 1a) very slender, with a narrow prosome and a long urosome. Mean body length 465 μm (462 - 469 μm) (excluding caudal setae) and greatest width 183 μm (181 - 186 μm) based on two specimens.

Leg 1 somite fused with cephalosome and with slightly pointed epimera. Pedigerous somites 2 and 3 very similar and also with slightly pointed epimera. Pedigerous somite 4 narrower than preceding somite and partially covering pedigerous somite 5. Ratio of length to width of prosome 1.6 : 1. Ratio of length of prosome to that of urosome 1.7 : 1.

Genital double-somite (fig. 1b), 85 x 103 μm , wider than long, ratio of length to width 0.8 : 1, rounded anteriorly in widest part. Seta and a small posterior spine located close to genital openings, posterior corners slightly rounded. Postgenital somite 46 x 56 μm , wider than long, ratio of length to width 0.8 : 1, armed with 2 sensillae posteriorly, posterior corners slightly protuberant. Anal somite 32 x 41 μm , wider than long, smaller than preceding somite, with 2 small grooves in the midregion and 2 sensillae near dorsal midline, ratio of length to width 0.8 : 1. Caudal rami rectangular, 47 x 17 μm almost three times longer than wide and also longer than postgenital somite, with a seta I on the midregion, smooth and 14 μm long and 6 setae distally: setae II to VII with 27, 33, 59, 47, 15, 28 μm respectively. All distal setae plumose.

Antennule slender (fig. 1c) 151 μm long, not including setae, 20-segmented. Basal part 9-segmented, rather broad, distal part slender. Length of segments measured along their posterior margins 16 μm (25 μm along anterior margin); 7; 5; 4; 4; 4; 6; 7; 7; 2; 4; 4; 7; 6; 7; 7; 9; 10; 8 and 14 μm respectively. Segmental homologies and setation as follows: I-2; II-2; III-2; IV-1; V-2; VI-1; VII-1; VIII-2; IX-XII-7; XIII-1; XIV-1; XV-1; XVI-1; XVII-1; XVIII-1; XIX-1; XX-1; XXI- 1+ae; XXII-2; XXIII-XXVIII-8. All setae smooth. Aesthetasc on segment XXI 50 μm long.

Antenna (fig. 1d) 104 μm long (including claw) with short allobasis 41 μm long, exopod 1-segmented, 5 μm long armed with 2 equal apical setae. Endopod 3-segmented, first segment 29 μm long with a row of setulae laterally; second segment armed with 1 small seta, 5 μm , slightly longer than third segment which is 4 μm long and has 2 setae. terminal claw short, 20 μm .

Oral cone (fig. 1a) produced into short siphon-like distal portion, 78 μm , almost reaching to the maxilliped. Mandible (fig. 1e) comprising stylet and slender 2-segmented palp: stylet 76 μm long with denticulate margin subapically. First segment of palp 21 μm , 2.5 times longer than second segment (8 μm) armed with short smooth seta and long plumose seta, both located apically. Maxillule (fig. 1f) bilobed, inner lobe 31 μm , almost twice longer than outer lobe, with row of setulae laterally and armed with 4 smooth setae, 3 of them long and one short. Outer lobe 16 μm long, also armed with 4 smooth

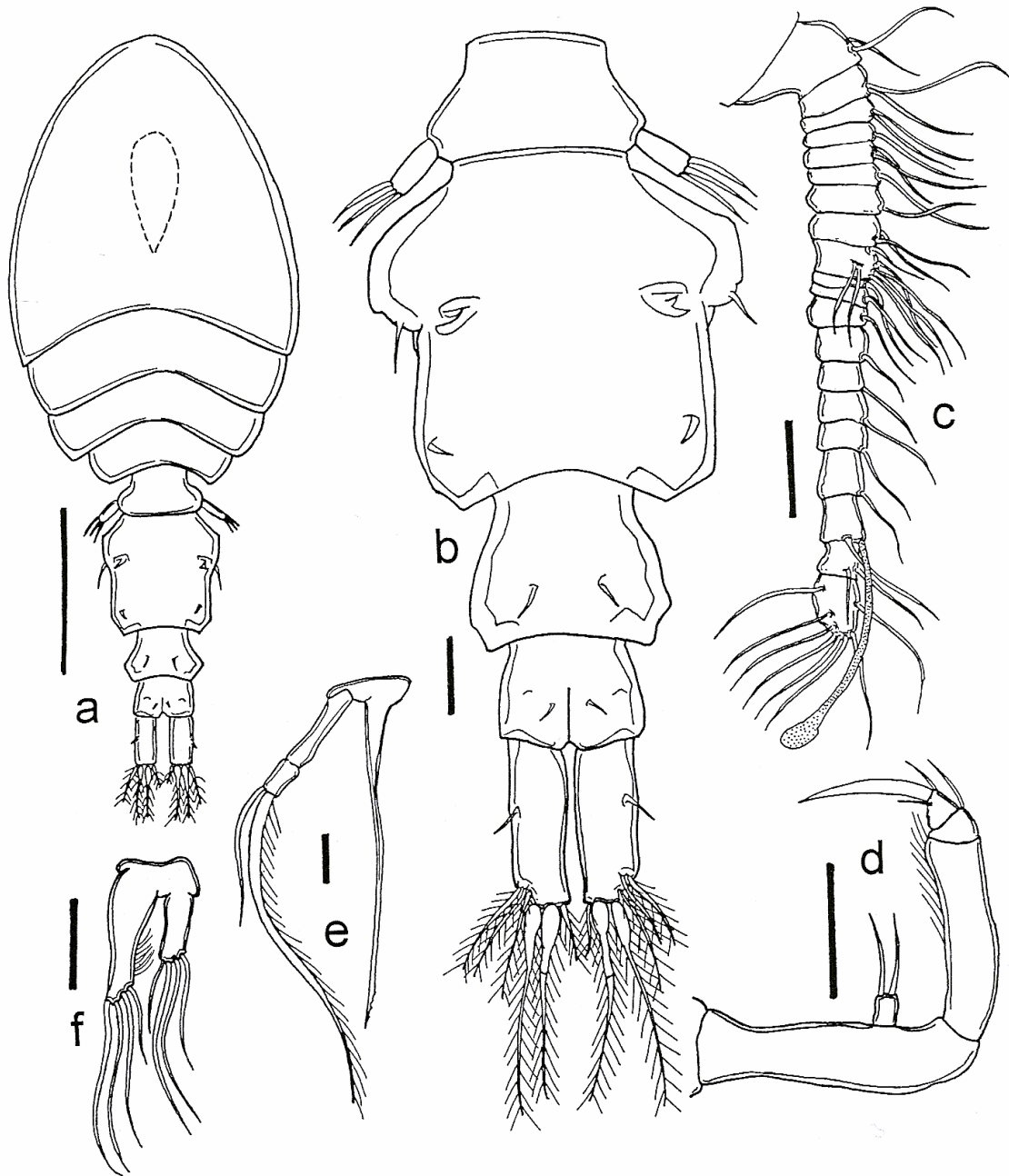


Figure 1. *Kolocheres angustus* n. gen. n. sp. Female Holotype, MNRJ 8576: a) dorsal view; b) urosome; c) antennule; d) antenna; e) mandible; f) maxillule. Scale bars equal 0.02 mm, except "a" which equals 0.1 mm.

setae. Maxilla (fig. 2a) with strong syncoxa 45 x 24 μm , covered by sparse setulae and curved claw 63 μm . Maxilliped (fig. 2b) 5-segmented, comprising short syncoxa, 16 μm long, a basis 45 μm , endopod 2-segmented 9 and 13 μm respectively, with row of setulae on lateral margin of first segment, and 2 setae; second bearing short curved claw, 22 μm and a seta.

Swimming legs 1-4 (figs. 2c - 2f) biramous. P1 and P2 with 3-segmented rami. P3 and P4 with 3-segmented exopods. P3 with 2-segmented endopod and P4 with 1-segmented endopod. All coxae bearing smooth inner seta and basis of all legs with plumose outer seta. First and second exopodal segments of all legs bearing spine on outer margin. First endopodal segment of all legs unarmed, second endopodal segment of P1 and P2 also unarmed. P1 and P2 with second endopodal segment bearing a bicuspidate projection on outer margin.

	coxa	basis	exop.	endop.
P1	0-1	1-0	I-0;I-0;II,I,3	0-0;0-0;1,4
P2	0-1	1-0	I-0;I-0;II,I,4	0-0;0-0;0,4
P3	0-1	1-0	I-0;I-0;II,I	0-0;I
P4	0-1	1-0	I-0;I-0;II-I	0-0

Fifth leg (fig. 1b) with elongated free segment, 17 x 7 μm , armed with 3 smooth setae apically.

Male: Unknown.

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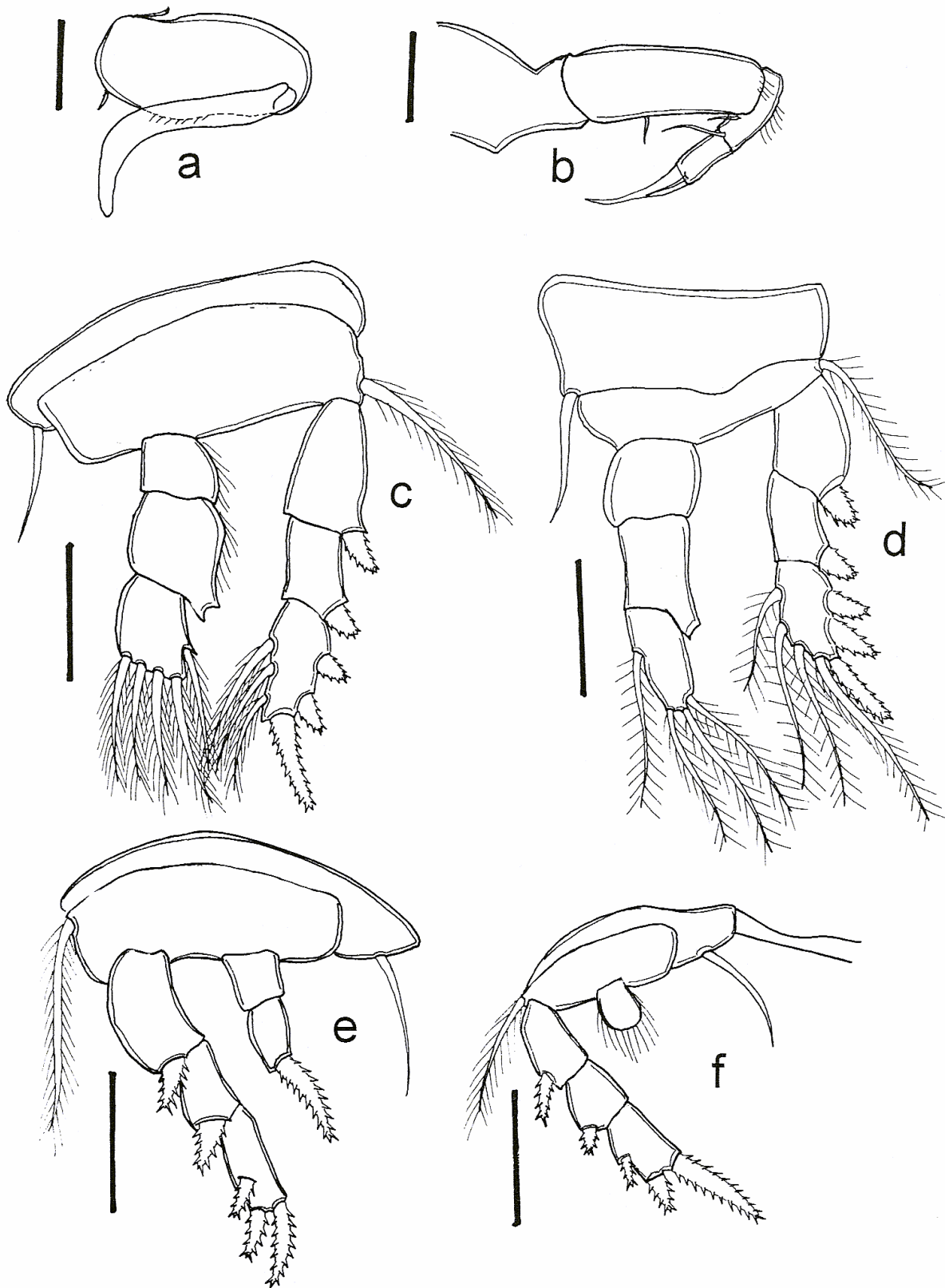


Figure 2. *Kolocheres angustus* n. gen. n. sp. Female Holotype, MNRJ 8576: a) maxilla; b) maxilliped; c) P1; d) P2; e) P3; f) P4. Scale bars equal 0.02 mm.

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