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Source: *Transactions of the American Microscopical Society*, Vol. 102, No. 2 (Apr., 1983), pp. 105-112

Published by: Blackwell Publishing on behalf of American Microscopical Society

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Accessed: 11/04/2009 10:29

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***Sarsameira* (Copepoda: Harpacticoida): An Update and a New Species from the Deep Sea¹**

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Abstract. A tabulation of morphological variability within the genus *Sarsameira* accompanies the description of a new species from the deep North Atlantic. *Sarsameira knorri* n. sp. differs from other *Sarsameira* species in the genus, except *S. sarsi*, in the setation of pereopod 5; it differs from *S. sarsi* in pereopod 3 endopod distal segment setation. A key to the species of *Sarsameira* is provided.

Five new species of *Sarsameira* have been described and our knowledge of morphology in the genus has been improved since Lang's (1948) monograph (Bodin, 1979), but no genus-level summary of morphological variability has been given. We provide such a summary in Table I and use it to place a new species from the deep sea. We include a new key to the genus.

All figures were made using a camera lucida. The abbreviations used were: A1, antennule; A2, antenna; Md, mandible; Mx1, maxillula; Mx2, maxilla; Mxp, maxilliped; Exp, exopod; Enp, endopod; P1-P5, pereopods 1-5; Benp, baseoendopodite; CR, caudal ramus. Body length was measured from the tip of the rostrum to the posterior edge of the telson. The caudal rami length/width ratios in Table I were calculated from measurements of the original published figures; the width was measured at the widest point of the ramus.

SYSTEMATIC ACCOUNT

Family Ameiridae Monard, 1927, Lang, 1948

Genus *Sarsameira* Wilson, 1924

Sarsameira knorri n. sp.

(Figs. 1, 2)

Synonymy. None.

Holotype. Adult female (0.50 mm long) from North Atlantic (40°24.0'N, 63°07.4'W, 4,626 m depth), dissected, parts mounted on slides (United States National Museum No. 195325).

Allotype. Adult male from same locality, dissected, parts mounted on slides (USNM No. 195326).

Paratype. 1 ♀ from 40°24.0'N, 63°07.4'W (USNM No. 195327); 1 ♀ from 40°24.3'N, 63°09.6'W, 4,626 m depth (USNM No. 195328).

¹ B. C. Coull supplied a critical paper and commented on the manuscript. This research was sponsored by the Office Of Naval Research Contract No. N00014-75-C-0201.

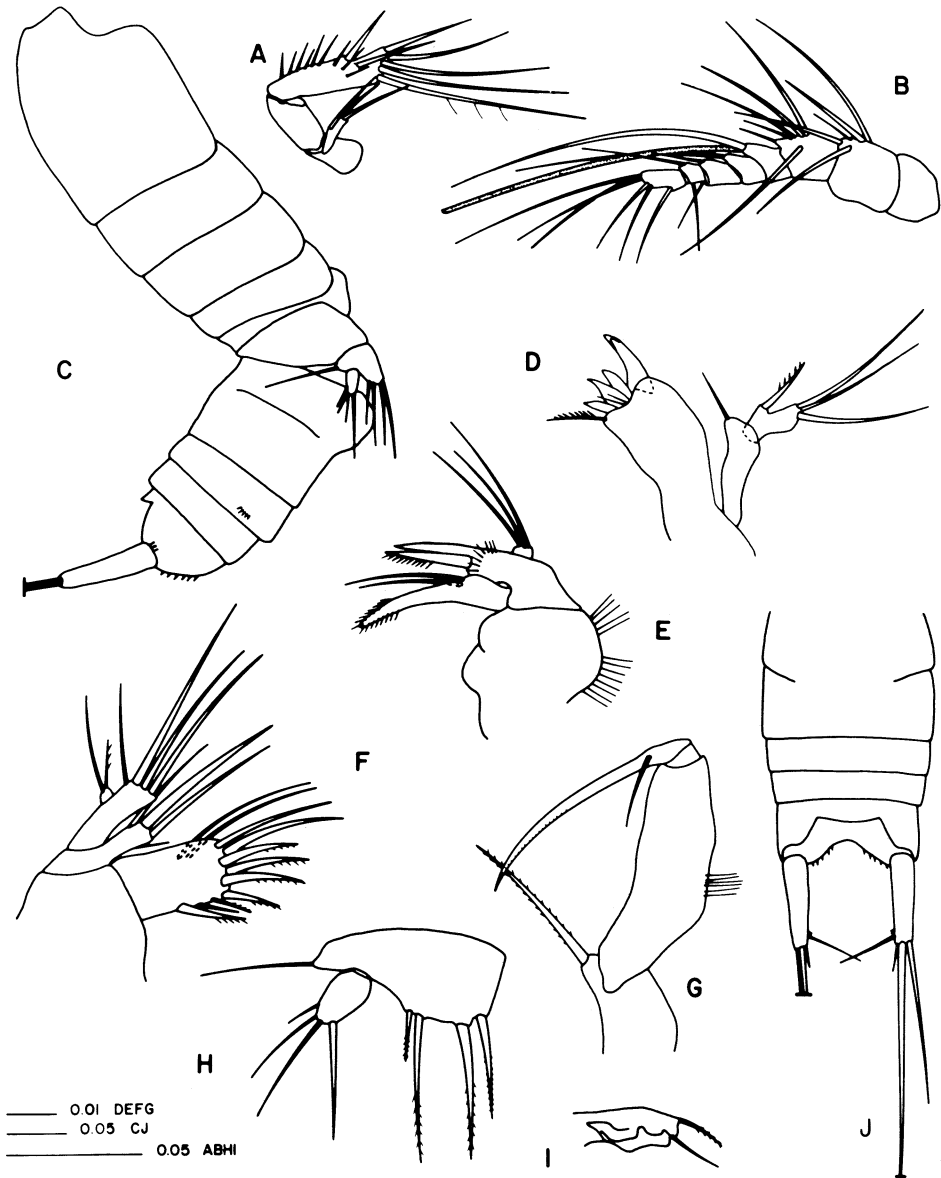


FIG. 1. *Sarsameira knorri* n. sp. female holotype. A, second antenna; B, first antenna; C, lateral view; D, mandible; E, maxilla; F, maxillula; G, maxilliped; H, pereopod 5; I, genital region (left side); J, urosome (dorsal view). Scale lines are in mm.

Description

Female. Body width not greatly reduced posteriorly. Rostrum not set off. Caudal rami 3.5 times as long as wide; 2 principal and 1 accessory seta, 1 medial seta.

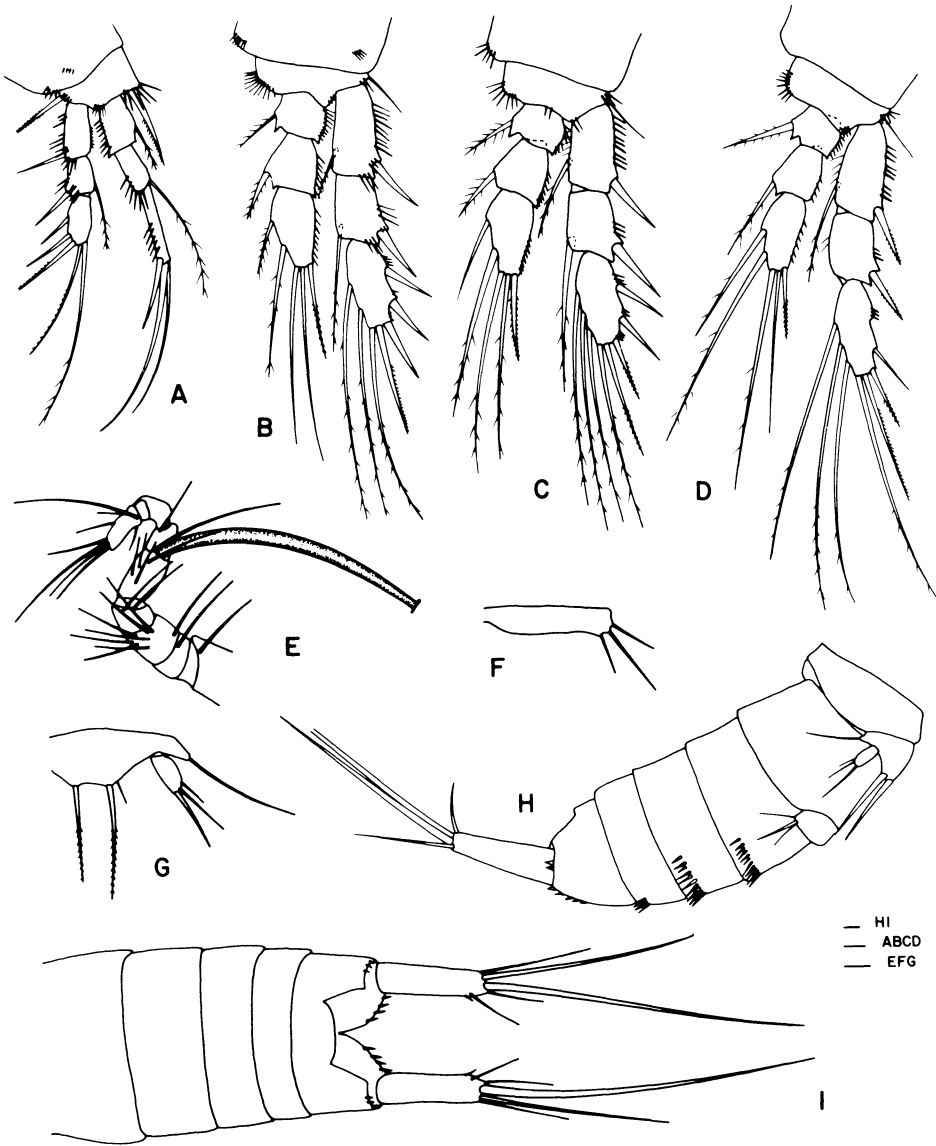


FIG. 2. *Sarsameira knorri* n. sp. A-D, holotype; E-I, allotype. A-D, pereopods 1-4; E, antenna 1; F, pereopod 6; G, pereopod 5; H, urosome (lateral view); I, urosome (dorsal view). Scale lines represent 10 μ m.

A1 (Fig. 1B). 8-segmented, aesthetasc on segment 4.

A2 (Fig. 1A). With basis, exopod 1-segmented with 3 setae; distal endopod article with 5 major apical setae and 2 major subapical setae.

Md (Fig. 1D). Precoxa with denticulate *pars incisiva*. No *lacinia*, no *pars molaris*. Coxa-basis with 1 seta; endite with 4 setae.

Mx1 (Fig. 1F). Arthrite of precoxa with 2 surface setae, 6 distal setae, and

TABLE I
Summary of salient morphological characters of *Sarsameira* Wilson, 1924

Species	Ist seg P1 End longer than entire P1 Exp	No. seg A1	No. seg A2 Exp	P1		P2	
				Exp	End	Exp	End
<i>S. boeckii</i>	Y	8	1	0.1.023	1.1.120	1.1.223	1.1.221
<i>S. difficilis</i>	N	?	1	0.0.023	1.1.111	1.1.223	1.1.221
<i>S. elegantula</i>	Y	8	2	0.1.122	1.1.120	1.1.123	0.1.121
<i>S. elongata</i>	Y	8	1	0.1.023	1.1.021	1.1.223	1.1.221
<i>S. exilis</i>	N	9	2	0.1.023	1.1.021	1.1.223	1.1.121
<i>S. giraulti</i>	N	8	2	0.1.023	1.1.021	1.1.223	1.1.221
<i>S. knorri</i> n. sp.	N	8	1	0.1.023	1.1.021	1.1.323	1.1.221
<i>S. longifurcata</i>	N	8	1	0.1.023	1.1.021	1.1.223	1.1.221
<i>S. longiremis</i>	N	8	1	0.1.023	1.1.021	1.1.223	1.1.221
<i>S. major</i>	N	8	2	0.1.023	1.1.021	1.1.223	1.1.221
<i>S. minor</i>	Y	8	2	0.1.023	1.1.020	1.1.123	1.1.121
<i>S. parva</i>	N	8	1	0.1.023	1.1.021	1.1.223	1.1.221
<i>S. peresi</i>	N	9	2	0.1.023	1.1.021	1.1.123	1.1.121
<i>S. propinqua</i>	N	8	1	0.1.023	1.1.120	1.1.223	1.1.221
<i>S. sarsi</i>	N	8	1	0.1.023	1.1.021	1.1.223	1.1.221
<i>S. tenuipes</i>	Y	8	2	0.1.023	1.1.020	?	?

3 lateral setae. Coxa with 2 apical and 2 subapical setae. Basis with 3 apical setae and 1 subapical seta. Endopod with 2 setae.

Mx2 (Fig. 1E). Syncoxa with 1 well-developed endite bearing 2 setae. Basis with a massive apical seta flanked by a pointed projection. Endopod with 3 setae.

Mxp (Fig. 1G). Basis with 1 seta. Endopod first segment with lateral setules; segment 2 a claw with 1 accessory seta.

P1-P4 (Fig. 2A-D). Setal formulae given in Table I.

P5 (Fig. 1H). Benp and Exp not fused. Right Benp inner lobe with 4 setae, left with 3 setae; Exp with 4 setae.

Male. CR similar to female; setation as illustrated. A1 haplocer with 8 segments; single aesthetasc on segment 5 (Fig. 2E). P1-P4 setal formulae as in female. P5 Benp and Exp not fused; both Benp inner lobe and Exp with 3 setae (Fig. 2G).

Remarks. *Sarsameira knorri* n. sp. differs from other *Sarsameira* species, except *S. sarsi*, in P5 setation. It differs from *S. sarsi* in P3 End distal segment setation. The species is known only from the type localities. *S. knorri* n. sp. is named for *R/V Knorr*, the ship used during sample collection.

Systematic Notations and Sources of Table I Entries

Table I was constructed from the literature, not from an examination of types.

Sarsameira boeckii (Lang, 1936). Lang (1936) originally described this

TABLE I
Continued

Species	P3		P4		P5		CR L/W ratio	P5 ♂	
	Exp	End	Exp	End	Benp	Exp		Benp	Exp
<i>S. boeckii</i>	1.1.323	1.1.321	1.1.323	1.1.221	4	5	1.3	?	?
<i>S. difficilis</i>	?	?	?	?	5	5	1.2	?	?
<i>S. elegantula</i>	1.1.123	0.1.121	1.1.223	1.1.121	?	?	1.3	4	6
<i>S. elongata</i>	1.1.323	1.1.321	1.1.323	1.1.221	5	5	1.8	?	?
<i>S. exilis</i>	1.1.223	1.1.221	1.1.223	1.1.221	5	6	1.5	5	6
<i>S. giraulti</i>	1.1.323	1.1.321	1.1.323	1.1.221	5	7	1.3	?	?
<i>S. knorri</i> n. sp.	1.1.323	1.1.221	1.1.323	1.1.221	3-4	4	3.5	3	3
<i>S. longifurcata</i>	1.1.323	1.1.321	1.1.323	1.1.221	3	5	4.2	?	?
<i>S. longiremis</i>	1.1.323	1.1.321	1.1.323	1.1.221	4	5	0.8	2-3	4
<i>S. major</i>	1.1.323	1.1.321	1.1.323	?	4	5	1.5	?	?
<i>S. minor</i>	1.1.123	1.1.121	1.1.223	1.1.221	4	6	1.0	3	6
<i>S. parva</i>	1.1.323	1.1.321	1.1.323	1.1.221	4	5	0.9	2	4
<i>S. peresi</i>	1.1.223	1.1.221	1.1.323	1.1.221	5	6	1.3	?	?
<i>S. propinqua</i>	1.1.323	1.1.321	1.1.323	1.1.221	4	5	1.7	2	4
<i>S. sarsi</i>	1.1.323	1.1.321	1.1.323	1.1.221	4	4	1.0	?	?
<i>S. tenuipes</i>	?	?	?	?	4	5	?	?	?

species as *Ameira boeckii*. Lang (1948) transferred it to *Sarsameira*. All entries in Table I come from the original description. Male undescribed.

S. difficilis (Smirnov, 1946). Smirnov described the species as *Parameira difficilis*. Lang (1965) moved it to *Sarsameira*. First segment P1 End length, P1, P2, female P5, and CR dimensions are from the original description. A2 Exp entry is from Wells (1976). Wells treated the species as if the P1 Exp segment 2 had an inner seta. Bodin (1970) treated it as if the seta were absent. Male undescribed.

S. elegantula Kunz, 1975. All entries in Table I are from the original description of the male. Female undescribed.

S. elongata (Sars, 1909b). Originally, the species was described as *Parameira elongata*. Lang (1948) transferred it to *Sarsameira*. All entries in Table I are from the original description. Male undescribed.

S. exilis (T. & A. Scott, 1894). T. and A. Scott originally described the species as *Ameira exilis*. Lang (1948) transferred the species to *Pseudosarsameira*. Lang (1965) incorporated *Pseudosarsameira* into *Sarsameira*. The entries for A1, A2 Exp, P1, P3, female P5, CR dimension, and P1 End segment-1 length are from original description. T. and A. Scott described the female A1 as 9-segmented and the male A1 as 10-segmented. This condition seems unusual. The entries for the A2 Exp, P2, and P4 are from Lang (1948). The male P5 entry comes from Wells (1978). See Wells (1968) for a redescription of the species.

S. giraulti Monard, 1935. Original description. Monard illustrated the fe-

male P5 Exp as having 7 setae. In his redescription of the species, Wells (1968) illustrated the female P5 Exp with 6 setae. Wells (1976) reported it as 6–7 setae in his key. Male undescribed.

S. knorri n. sp. Original description above.

S. longifurcata Becker, 1974. Original description. Male undescribed.

S. longiremis (T. Scott, 1894). Scott originally described the species as *Ameira longiremis*. Sars (1920) transferred it to *Parameira*. Lang (1948) moved it to *Sarsameira*. All entries came from the original description, except that the P2 and P3 entries are from Lang (1948) and the male P5 entry is from Drzycimski (1969). Bodin (1970) tentatively assigned a female to this species but subsequently placed it in *incertae sedis* (Bodin, 1979).

S. major (Sars, 1909a). Sars originally described the species as *Parameira major*. Lang (1948) transferred it to *Sarsameira*. All entries in Table I come from the original description. Male undescribed.

S. minor Wells, 1967. Original description.

S. parva (Boeck, 1872). Boeck described the species as *Ameira parva*. Sars (1909a) placed it in *Parameira*; Lang (1948) transferred the species to *Sarsameira*. Lang (1948) believed *Ameira longiremis* var. *intermedia*, described by T. Scott (1894), was a junior synonym to *S. parva*. All entries are from Sars (1909a) except the male P5 entry, which comes from Lang (1948). See also Bodin (1968).

S. pendula (Shen & Bai, 1956). This species was described as *Parameira pendula* despite the absence of A2, P1, and P5. Lang (1965) changed it to *Sarsameira pendula*. Bodin (1979) moved it to *incertae sedis*. The species is of interest because its pereopod 2–4 setation caused Lang (1965) to make *Pseudosarsameira* Lang a junior synonym of *Sarsameira*.

S. peresi Bodin, 1970. Original description. Male undescribed.

S. propinqua (Scott, 1902). Scott originally reported this species as *Ameira propinqua*. Sars (1909a) transferred it to *Parameira*. Lang (1948) transferred the species to *Sarsameira*. All entries in Table I are from Sars (1909a), except that the male P5 entry is from Drzycimski (1969). Scott (1902) illustrated the P1 Exp segment-2 without a seta. This may be an oversight because most genus members have this seta, and Sars (1909a) and Lang (1948) illustrate a seta.

S. sarsi Lang, 1948. T. Scott (1894) originally described the species as *Ameira longiremis* var. *intermedia*, considering it a variety of *A. longiremis*. Sars (1920) described a similar specimen as *Parameira intermedia*, feeling that it warranted a distinct species name. Lang (1948) believed that Sars was incorrect. He thought *A. longiremis* var. *intermedia* was a junior synonym of *A. parva* and that *P. intermedia* was a new species. Lang (1948) renamed *P. intermedia* as *Sarsameira sarsi*. The P1 End segment-1 length, A1, A2 Exp, female P5, and CR dimensions are from Sars (1920). The P2, P3, and P4 entries are from Lang (1948). Male undescribed.

S. tenuipes (Thompson & Scott, 1903). Thompson and Scott originally described the species as *Ameira tenuipes*. Lang (1965) transferred it to *Sarsameira*. In his key, Wells (1976) noted that this species was described inade-

quately and did not include it. All entries in Table I are from the original description. Male undescribed.

KEY TO *SARSAMEIRA* FEMALES
(except *S. elegantula*)

1. Exp A2 1-segmented	2
Exp A2 2-segmented	3
2. First segment P1 End longer than entire P1 Exp	4
First segment P1 End shorter than entire P1 Exp	5
3. Distal segment P1 End with 2 setae	6
Distal segment P1 End with 3 setae	7
4. Number of major setae on P5 Benp and Exp, respectively:	
4:5	<i>S. boeckii</i>
5:5	<i>S. elongata</i>
5. Number of major setae on P5 Benp and Exp, respectively:	
3:5	<i>S. longifurcata</i>
3-4:4	11
4:5	12
5:5	<i>S. difficilis</i>
6. Number of major setae on P5 Benp and Exp, respectively:	
4:5	<i>S. tenuipes</i>
4:6	<i>S. minor</i>
7. Distal segment P2 Exp with 6 setae	8
Distal segment P2 Exp with 7 setae	9
8. A1 8-segmented	<i>S. elegantula</i>
A1 9-segmented	<i>S. peresi</i>
9. Distal segment P3 Exp with 7 setae	<i>S. exilis</i>
Distal segment P3 Exp with 8 setae	10
10. Number of major setae on P5 Benp and Exp, respectively:	
4:5	<i>S. major</i>
5:7	<i>S. giraulti</i>
11. Distal segment P3 End with 5 setae	<i>S. knorri</i> n. sp.
Distal segment P3 End with 6 setae	<i>S. sarsi</i>
12. Caudal rami longer than wide	<i>S. propinqua</i>
Caudal rami not longer than wide	13
13. Operculum in half-circle with P5 Benp normal	<i>S. parva</i>
Operculum heart-shaped with second proximal setae of P5 Benp geniculate and smooth	<i>S. longiremis</i>

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