

- HATAI, S. 1900. On the origin of the sperm-blastophore of some aquatic Oligochaeta. *Biol. Bull.*, 1: 149-154.
- HESS, O. 1959. Phase specific changes in the content of unsaturated fatty acids in the egg of *Tubifex* during meiosis and the first division. *Zeitschr. Naturforsch.*, 14b: 342-345.
- HIRAO, Y. 1967. Reproduction system and oogenesis in the fresh water Oligochaete, *Tubifex hattai*. *J. Fac. Sci. Hokkaido Univ. Ser. XI. Zool.*, 34: 439-448.
- INASE, M. 1960. The culture solution of the eggs of *Tubifex*. *Sci. Rep. Tohoku Univ. Fourth Ser. (Biol.)*, 26: 65-67.
1968. Cytochemical studies on pole plasm in eggs of earthworm, *Tubifex hattai*. *Sci. Rep. Tok. Univ. Ser. IV (Biol.)*, 34: 75-80.
- JAMIESON, B. G. M. 1978. A comparison of spermiogenesis and spermatozoal ultrastructure in megascolecid and lumbricid earthworms (Oligochaeta: Annelida). *Aust. J. Zool.*, 26: 225-240.
- KENNEDY, C. R. 1965. The distribution and habitat of *Limnodrilus* Claparède (Oligochaeta: Tubificidae). *Oikos*, 16: 26-38.
1966. Life history of *Limnodrilus hoffmeisteri* CLAP. (Oligochaeta—Tubificidae). *Oikos*, 17: 158-168.
- MEHRA, H. R. 1926. Cytoplasmic organs in the germ cells and somatic cells of *Tubifex*. *Univ. Allahabad Stud. (Zool. Sect.)*, 3: 1-56.
- NASSE, D. 1882. Beitrage zur Anatomie der Tubificiden. Inaugural Dissertation, Mit 2 Taf., Bonn. 30 pp.
- STEPHENSON, J. 1930. *The Oligochaeta*. Clarendon Press, Oxford. 978 pp.
- TUZET, O. 1946. Sur la spermatogénèse atypique des lombriciens. *Arch. Zool. Exp. Gen. Notes Rev.*, 84: 155-168.
- WEBSTER, P. M. & RICHARDS, K. S. 1977. Spermiogenesis in the enchytraeid *Lumbricillus rivalis* (Oligochaeta: Annelida). *J. Ultrastruct. Res.*, 61: 62-77.
- YASUZUMI, G. 1974. Electron microscope studies on spermiogenesis in various animal species. *Int. Rev. Cytol.*, 37: 53-119.

ENHYDROSOMA (COPEPODA, HARPACTICOIDA): AN UPDATE AND TWO NEW SPECIES¹

DAVID THISTLE

Department of Oceanography, Florida State University, Tallahassee, Florida
32306

THISTLE, D. 1980. *Enhydrosoma* (Copepoda, Harpacticoida): an update and two new species. *Trans. Amer. Micros. Soc.*, 99: 384-397. A tabularization of morphological variability within the genus is given in order to describe two new species. *Enhydrosoma franklini* n. sp. differs from other *Enhydrosoma* species in the fusion of P2-P4 exopod segments 1 and 2. *Enhydrosoma woodini* n. sp. differs from other *Enhydrosoma* species in the setation of the female P5. A new generic description and a key are provided.

Although eight new species (Bodin, 1979) and several keys (Lang, 1965; Borutzky, 1971; Coull, 1975) have been published since Lang's (1948) mono-

¹ S. S. Bell and P. Ringold contributed the specimens of *Enhydrosoma woodini* n. sp. 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-C0201.

TABLE I
Summary of salient morphological characters of *Enhydrosoma*

Species	No. segs A1	No. segs A2	P1		P2		P3		P4		P5		CR L/W ratio	No. segs P3 Enp δ	P5 δ	
			Exp	Enp	Exp	Enp	Exp	Enp	Exp	Enp	Exp	Enp				
<i>barnishi</i>	5	seta	0.0.022	0.021	0.0.022	1.020	0.0.122	1.021	0.0.122	0.120	3	f	4.6	3	2	f
<i>baruchi</i>	5	1	0.0.022	0.120	0.0.022	0.020	0.0.122	0.020	0.0.122	0.020	3	d	6.0	3	1	d
<i>bifurcarostratum</i>	5	seta	0.0.022	0.111	0.0.122	0.111	p	0.020	p	0.020	3	f	2.3*	3	2	*
<i>birsteini</i>	5	1	0.0.022	0.120	0.0.022	0.020	0.0.122	0.021	0.0.122	0.020	2	d	3.8	2	1	f
<i>buchholtzi</i>	5	1	0.0.022	0.111	0.0.022	0.020	0.0.122	0.021	p	0.111	3	d	3.3	3	2	f
<i>caeni</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.021	0.0.122	0.021	3	f	4.7	2	2	f
<i>curticauda</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.021	0.0.122	0.021	3	d	1.7	2	3	d
<i>curvitrostre</i> *	6	seta	0.1.022	0.021	p	p	p	p	0.0.022	1.111	3	d	2.8	p	p	p
	5	seta	0.0.022	0.021	p	p	0.0.022	0.020	p	0.020	3	d	3.7	p	2	d
<i>franklini</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.023	0.020	0.0.023	0.020	3	d	1.6	2	3	d
<i>gariene</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.021	0.0.122	0.021	4	f	1.5*	2	2	f
<i>hopkinsi</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.021	0.0.122	0.021	3	d	2.0	3	2	d
<i>lacunae</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.021	0.0.122	0.021	2	d	5.8	2	2	d
<i>latipes</i>	5	1	0.0.022	0.111	p	p	p	3	0.0.022	0.111	3	d	5.0	2	2	d
<i>littorale</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.120	0.0.122	0.021	3	d	3.3	3	2	d
<i>longifurcatum</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.023	0.021	0.0.023	0.021	3	d	5.7	2	2	f
<i>micrurum</i>	5	1	0.0.022	3	4	p	0.0.122	0.121	5	4	3	d	1.3	p	p	p
<i>migoti</i>	5*	1	0.0.022	0.120	0.0.022	0.020	0.0.122	0.021	0.0.122	0.020	4	f	4.0	2	0	d
<i>nicobaricum</i>	4	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.021	0.0.122	0.021	2	d	6.3	p	p	p
<i>propinquum</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.021	0.0.122	0.021	3	d	1.2	2	2	d
<i>radhakrishnai</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.021	0.0.122	0.020	3	f	3.5	2	2	f
<i>sarsi</i>	5	1	0.0.022	0.111	0.0.022	0.020	0.0.122	0.120	0.0.122	0.111	3	d	10.3	3	3	d
<i>sordidum</i>	5	1	0.0.122	0.020	5	2	5	3	5	3	3	f	2.0	p	p	p
<i>sordidum</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.122	0.021	0.0.122	0.021	3	f	6.8	3	2	d
<i>stylicaudatum</i>	5	1	0.0.022	0.020	0.0.122	0.020	0.0.122	0.020	0.0.122	0.020	3	d	1.7	p	p	p
<i>uniarticulatum</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.023	0.021	0.0.023	0.021	3	d	5.3	2	2	d
<i>woodini</i>	5	1	0.0.022	0.020	0.0.022	0.020	0.0.023	0.021	0.0.023	0.021	3	d	5.3	2	2	d

* See Systematic Notations.

graph, no summary of the morphological variability within *Enhydrosoma* has been given. I have made a compilation of this variability in Table I and have used it to place two new species; i.e., *Enhydrosoma franklini* n. sp. and *Enhydrosoma woodini* n. sp. Further, although *E. franklini* n. sp. is an *Enhydrosoma*, the description of the genus had to be revised in order to accommodate this new species.

All figures were made using a camera lucida. The following abbreviations were used: A1, antennule; A2, antenna; Md, mandible; Mx, maxilla; Mxl, maxillula; 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 by measuring the original published figures; the width was measured at the widest point of the ramus.

SYSTEMATIC ACCOUNT

Family Cletodidae T. Scott, 1904

Genus *Enhydrosoma* Boeck, 1872

Enhydrosoma n. g. Boeck, 1892, p. 53. (part.)

Synonymy. *Cletodes* n. g. Brady, 1872, p. 473. (part.), *Cletodes* many authors (part.).

Redescription

Body elongate. Female genital double segment transversely septate dorsally. Anal operculum semicircular. Caudal ramus shape and length variable; may be sexually dimorphic. A1 female 5-segmented (4-segmented in *E. nicobaricum*) aesthetasc on segment 3; haplocer in male. A2 with allobasis; exopod 1-segmented (reduced to a seta in *E. barnishi*, *E. bifurcarostratum*, and *E. curvirostre*). P1-P4 exopod 3-segmented (segments 2 and 3 fused in *E. franklini* n. sp.), all segments short. P1-P4 endopod 2-segmented (P4 Enp 1-segmented in *E. birsteini*, *E. radhakrishnai*, and *E. uniarticulatum*). Male P3 endopod may be modified. P5 exopod may be fused to baseoendopodite. Females with one egg sac. Marine and fresh-water species.

Species Included (See Table I). *Incertae sedis.* *Enhydrosoma pontica* Jakubisiak, 1938, by Lang (1948); Por (1960) considers this species to be a junior synonym of *E. sordidum*. *E. tunisensis* Monard, 1935 by Bodin (1979).

Remarks. Following Coull (1975), *Enhydrosoma vicinum* Por, 1967 is considered to be a junior synonym of *E. hopkinsi* Lang, 1965. Following Bodin (1979), *E. wellsii* Bodin, 1968 is considered to be a junior synonym of *Cletodes latirostris* Drzycimski, 1967. Following Lang (1965), *E. ivitteae*, *E. mangroviae*, *E. gerlachi*, *E. minimum*, *E. guaratubae*, and *E. cananeiae* Jakobi, 1955 are ignored because in the original descriptions, figures and text do not agree.

Enhydrosoma franklini n. sp.

(Figs. 1, 2)

Synonymy. None.

Holotype. Adult female (0.52 mm long) from subtidal sand, 2 m depth, St. George Sound, Franklin County, Florida (29°54.0'N, 84°37.8'W), dissected, parts mounted on slides (USNM no. 173878). Named for the county of the type locality.

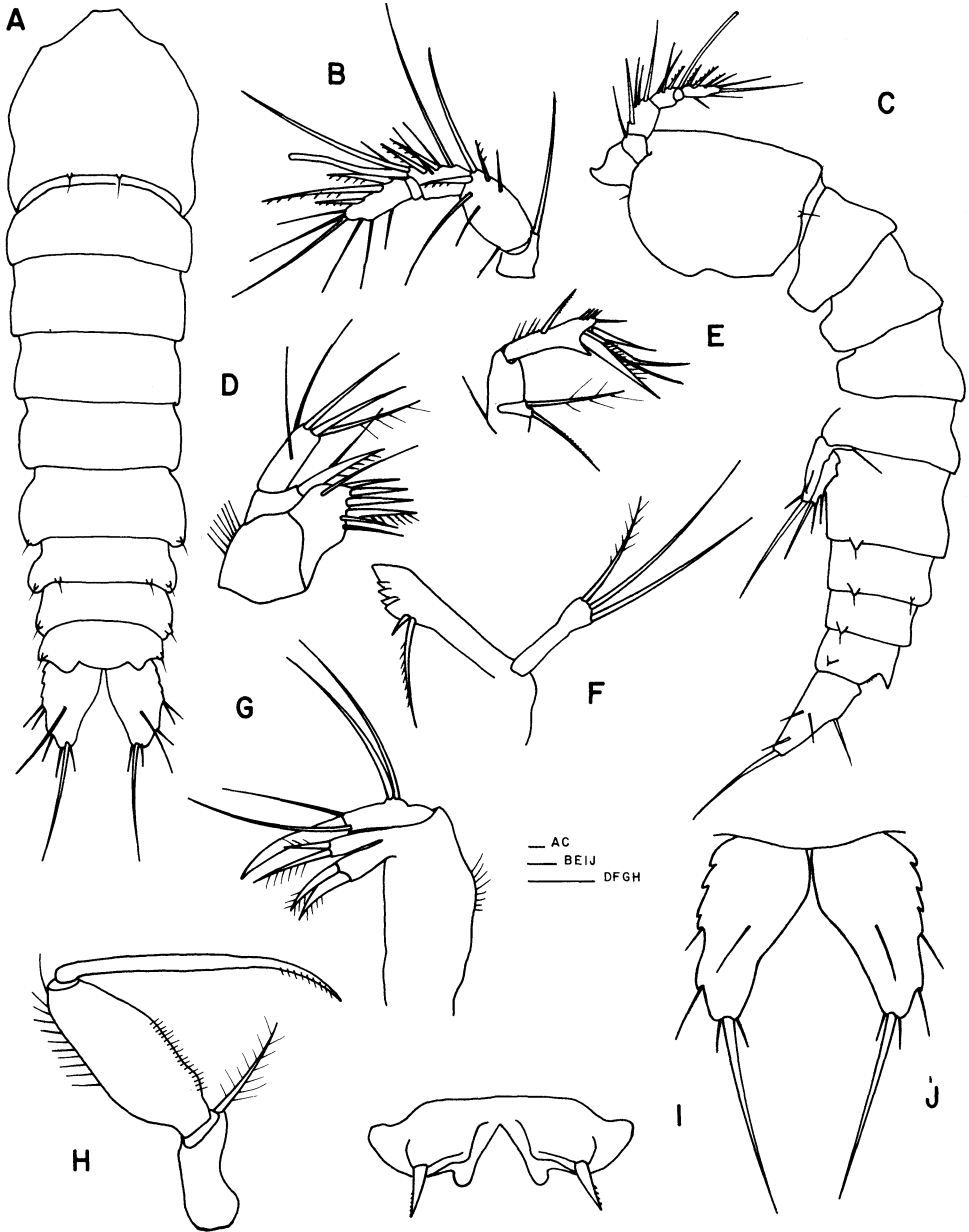


FIG. 1. *Enhydrosoma franklini* n. sp. Female holotype: C, lateral view; I, genital field. Female paratype: A, dorsal view; B, A1; D, Mx1; E, A2; F, Md; G, Mx; H, Mxp; J, CR. Scale lines represent 0.01 mm.

Allotype. Adult male from same locality, dissected, parts mounted on slides (USNM no. 173879).

Paratypes. Females from same locality, dissected, parts mounted on slides. 7 ♀♀, 7 ♂♂ in vial (USNM no. 173880).

Description

Female. Body width not greatly reduced posteriorly. Lateral margins urosome segments 3–6 with seta-bearing processes (Fig. 1C). Rostrum not set off. Caudal rami 1.8 times as long as wide; 1 principal and 2 accessory terminal setae, 2 lateral setae and 1 dorsal seta; lateral margins incised (Fig. 1I).

A1 (Fig. 1A). 5-segmented, aesthetasc on segment 3.

A2 (Fig. 1B). With allobasis, exopod 1-segmented with 2 setae; free endopod article with 6 major setae.

Md (Fig. 1E). Precoxa with denticulate *pars incisiva*, bears 2 setae. No *lacinia*, no *pars molaris*. Coxa-basis with 3 setae.

Mxl (Fig. 1D). Arthrite of precoxa with 1 surface seta and 6 distal setae. Coxa with 2 apical setae. Basis with 4 apical setae and 1 surface seta.

Mx (Fig. 1F). Syncoxa with 2 endites, each with 2 setae. Basis with strong seta flanked by 2 slender setae. Endopod represented by 2 setae.

Mxp (Fig. 1G). Basis with 1 seta on inner distal corner. Endopod segment 1 with lateral and medial setal rows; segment 2 a claw.

P1–P4 (Figs. 2A–2D). Setal formulae given in Table I; P2–P4 exopod segments 1 and 2 fused, but setal formulae given as if they were free.

P5 (Fig. 2E). Benp not fused to Exp, medial projection bears 1 major seta terminally and a row of small setae, 1 major (2 total) medial seta; pointed process above plane of medial Benp projection. Exp with 1 terminal and 2 lateral setae; two lateral indentations.

Male. CR as in female; slightly longer than length of last 2 somites combined. A1 haplocer (Fig. 2G). P2–P4 Exp segments 1–2 fused. P1–P4 setal formulae as in female. P3 unmodified (Fig. 2F). P5 Benp not fused to Exp, with 2 major (3 total) lateral setae; exopod with 1 terminal and two lateral setae and two lateral projections (Fig. 2H).

Remarks. *Enhydrosoma franklini* n. sp. differs from other *Enhydrosoma* species in the fusion of P2–P4 exopod segments 1 and 2. It is known only from the type locality.

Enhydrosoma woodini n. sp. (Figs. 3, 4)

Synonymy. None.

Holotype. Adult female (0.45 mm long) from an intertidal *Spartina* marsh, Belle Creek, Carteret County, Beaufort, North Carolina (34°46'N, 76°40'W), dissected, parts mounted on slides (USNM no. 173881). The specimens were collected by S. S. Bell and P. Ringold. The species has been named for P. Ringold's major professor, Dr. S. A. Woodin, a noted ecologist.

Allotype. Adult male from the same locality, dissected, parts mounted on slide (USNM no. 173882).

Paratypes. Specimens from same locality, dissected, and mounted on slides. 12 ♀♀ and 9 ♂♂ in vial (USNM no. 173883).

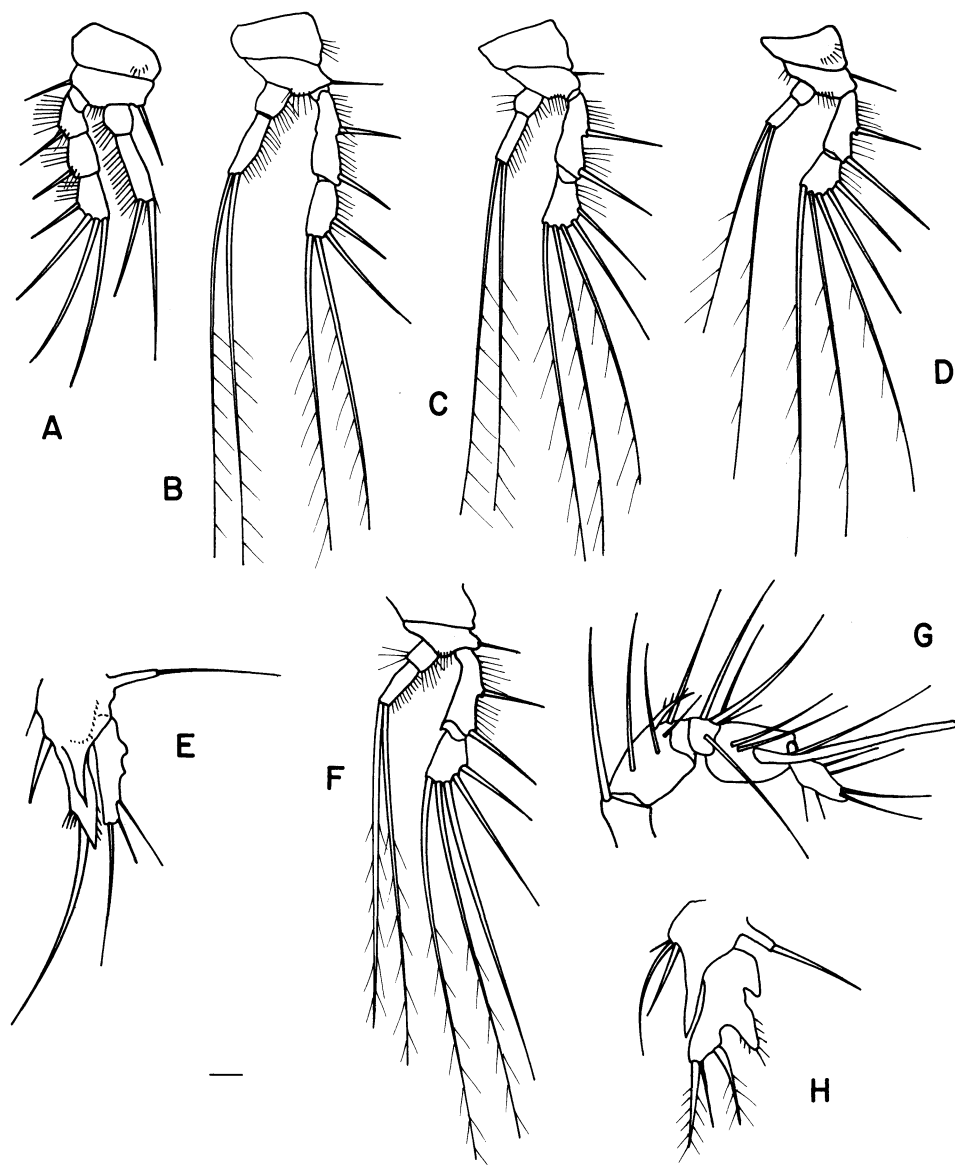


FIG. 2. *Enhydrosoma franklini* n. sp. Female holotype: A-E, P1-P5. Male allotype: F, P3; G, A1; H, P5. Scale line represents 0.01 mm.

Description

Female. Body width not greatly reduced posteriorly. Lateral margins of cephalosoma and body segments with seta-bearing processes. Rostrum not set off. CR 5.3 times as long as wide; 1 principal and 2 accessory terminal setae, 2 lateral setae and 1 dorsal seta (Fig. 3H).

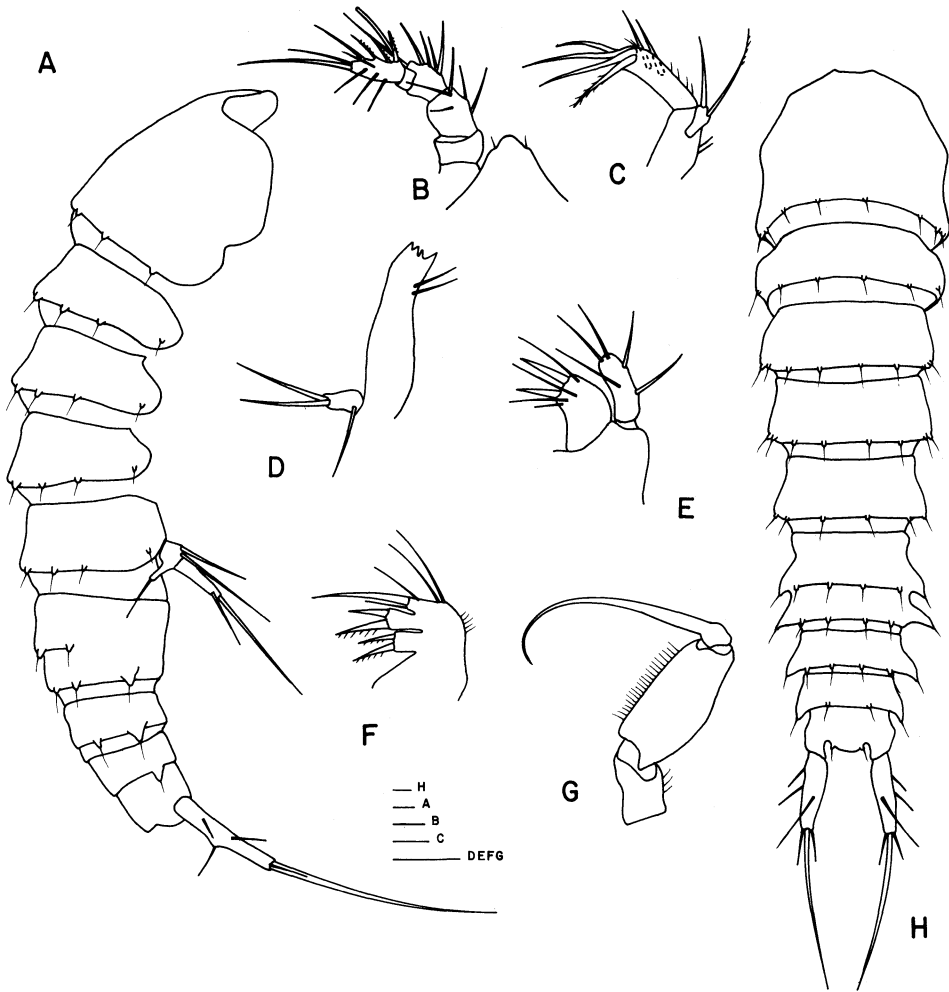


FIG. 3. *Enhydrosoma woodini* n. sp. Female holotype: A, lateral view; B, A1; C, A2. Male allotype: D, Md; G, Mxp. Female paratype: F, Mx; H, dorsal view. Composite: E, Mxl. Scale lines represent 0.01 mm.

A1 (Fig. 3B). 5-segmented, aesthetasc on segment 3.

A2 (Fig. 3C). With allobasis, exopod 1-segmented with 2 setae.

Md (Fig. 3D). Precoxa with denticulate *pars incisiva*, with 2 setae. No *lacinia*, no *pars molaris*. Coxa-basis with 3 setae.

Mxl (Fig. 3E). Arthrite of precoxa with 2 apical and 4 surface setae. Basis with 5 setae.

Mx (Fig. 3F). Syncoxa with 2 endites, each with 2 setae. Basis with robust seta flanked by two slender setae apically. Enp represented by 2 setae.

Mxp (Fig. 3G). Basis lacks seta on inner distal corner. Enp 1-segmented with medial setal row; segment 2 a claw.

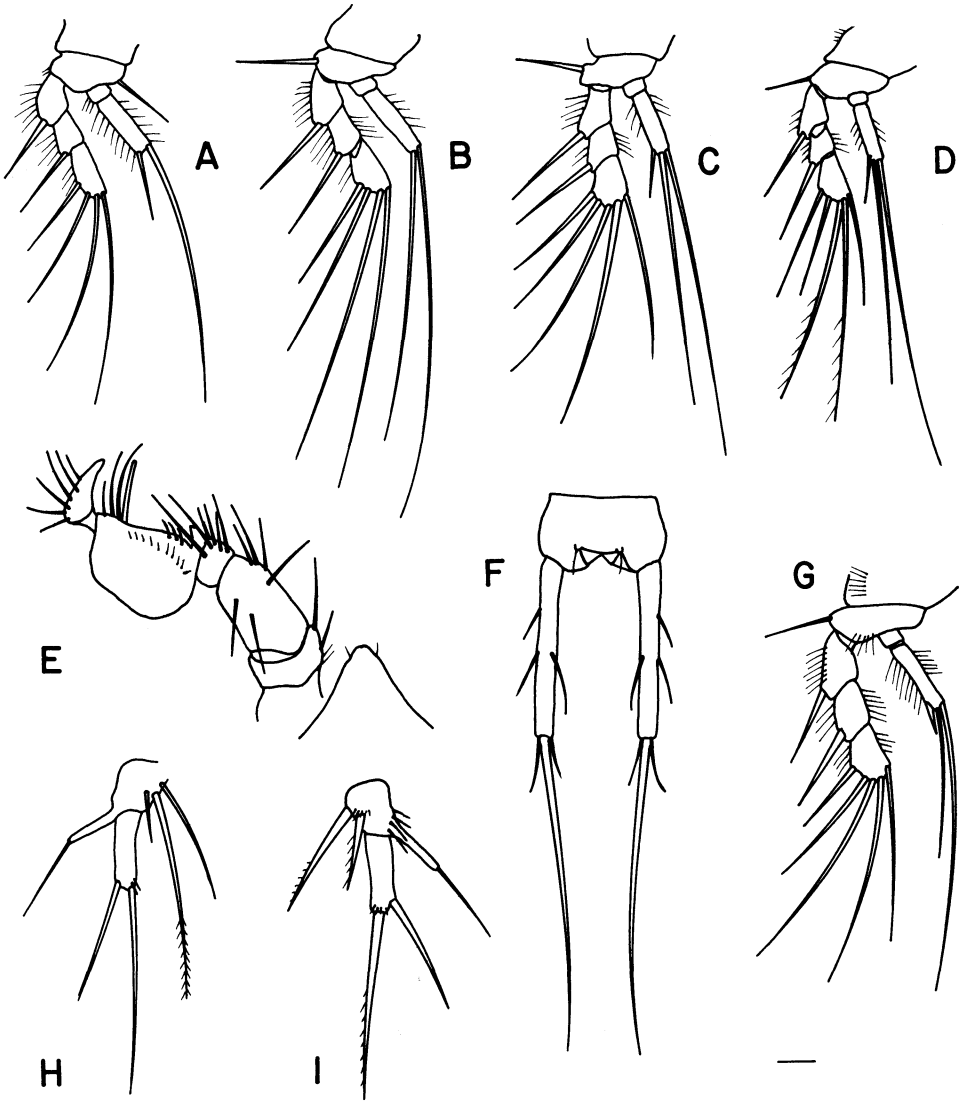


FIG. 4. *Enhydrosoma woodini* n. sp. Female holotype: A–D, H, P1–P5. Male allotype: E, A1; F, CR; G, P3; I, P5. Scale line represents 0.01 mm.

P1–P4 (Figs. 4A–4D). Setal formulae given in Table I.
 P5 (Fig. 4H). Exp not fused to Benp. Benp medial projection with 3 setae. Exp with 2 terminal setae.
Male. CR setation as in female (Fig. 4F). A1 haplocer (Fig. 4E). P1–P4 setal formulae as in female. P3 unmodified (Fig. 4G). P5 as in female except that Benp inner projection bears 2 stout setae (Fig. 4I).
Remarks. *Enhydrosoma woodini* n. sp. differs from other *Enhydrosoma* species in the setation of the female P5. *E. woodini* is most similar to *E.*

longifurcatum; it differs in having 2 rather than 3 P5 Exp setae and a free P5 Exp in the male. Known only from the type locality.

Systematic Notations and Sources of Table I Entries

Enhydrosoma barnishi Wells, 1967. Original description.

E. baruchi Coull, 1975. Original description. *Enhydrosoma* specimens which approximate *E. baruchi* in morphology have been found in Narragansett Bay, Rhode Island, by J. B. Frithsen.

E. bifurcarostratum Shen & Tai, 1965. Original description. Male CR L/W = 3.3. Male P5 Benp and Exp are illustrated as separate lobes.

E. birsteini Borutzky, 1971. Original description.

E. bucholtzi Boeck, 1872. All entries from Lang (1948) except for the P3 Exp which comes from Sars (1909).

E. caeni Raibaut, 1965. Original description. See also Monchenko (1967).

E. curticauda Boeck, 1872. All entries from Lang (1948) except female P3 and P4 setal formulae which are from Sars (1909). Tschislenko's (1967) specimens have female P3 Enp segment 3 with 2 setae rather than 3 as in Lang (1948) and Sars (1909). Tschislenko's specimens have the male P5 inner expansion of Benp with 2 setae rather than 3 as in Sars (1909) and Lang (1948). Tschislenko's specimens are unlikely to be *E. curticauda*.

E. curvirostre (Scott, 1894). Scott described this species as *Cletodes curvirostris*. Lang (1936) transferred the species to *Enhydrosoma*; and in 1948, he changed the species name to *E. curvirostre* (Lang, 1948). The entries for A1, A2 Exp, P1, P4, female P5, and CR dimensions come from the original description of Scottish material. The 6-segmented A1, the presence of a seta on the distomedial corner of P1 Exp segment 2, and the presence of a distomedial seta on P4 Enp segment 1 are otherwise unknown in the genus. Sars (1909) described an otherwise similar specimen as *Cletodes curvirostris* which did not have the anomalous features. Lang (1936) transferred the species to *Enhydrosoma* from *Cletodes* based on material morphologically similar to that of Sars. The second entry for *E. curvirostre* is based on Sars' (1909) treatment which Lang (1948) follows. If Scott's (1894) description is accurate, the differences between his specimens and those of Sars' are too great to exist within one species. A revisional treatment of this species goes beyond the intended scope of the present paper.

Bodin (1970, 1973) has found specimens which he identified as *E. curvirostre*. These specimens differ from the descriptions of Scott (1894) and Sars (1909). Bodin feels that the variability is intraspecific, but no studies of variability of these characters have been made within the genus. Therefore, his reports have not been used in compiling Table I.

E. franklini n. sp. Original description.

E. gariene Gurney, 1930. Original description. Gurney (1930) described females with short CR (L/W = 1.5) and an apparently conspecific male with long CR (L/W = 4.4). Lorenzen (1969) confirmed this sexual dimorphism. He found specimens of males and females which fit *E. gariene*. Males have long CR. Females had both short (92 specimens) and long (19 specimens) CR. Further, Lorenzen found a long CR male copulating with a short CR female; see also Monchenko (1967).

E. hopkinsi Lang, 1965. Original description.

E. lacunae Jakubisiak, 1933. Original description.

E. latipes (A. Scott, 1909). All entries are from the original description, except P3 Enp and P4 entries which come from Lang (1948), and the male P3 Enp and P5 entries which come from Wells (1967). Wells (1967) illustrates a female P5 which corresponds in outline to that figured by Scott (1909) but which bears 3 setae rather than 2.

E. littorale Wells, 1967. Original description.

E. longifurcatum Sars, 1909. These entries come from the original description: A1, A2 Exp, P1, P2, female P5, and CR. Male P5 from Lang (1948). Roe (1959) illustrates parts of a male specimen from Lough Ine, Ireland. The P1, P2 setal formulae agree with the original description. The number of setae on P3 and P4 Enp, the furca, and the P5 agree with Lang (1948). Given this support for Roe's identification, I have used her figures to fill the remaining entries.

E. micrurum Monard, 1928. All entries are from the original description, except P1 and P3 Enp which come from Lang (1948).

E. migoti Monard, 1926. All entries come from the original description, except female P5 which comes from Monard (1928). Monard (1926) described a male with a 5-segmented A1; Monard (1928) described a female with a 4-segmented A1.

E. nicobaricum Sewell, 1940. Original description.

E. propinquum (Brady, 1880). The following entries are from the original description: A2 Exp, P1, female P5, and CR; Brady appears to have misinterpreted the A1 segmentation because he illustrates many more than five segments. Sars (1909) assigned Norwegian specimens to *E. propinquum*. Sars' description fits the original description where the two descriptions overlap; I have used Sars' description to fill these entries: A1, P3, male P3 Enp, and male P5. Monard's (1928) description of Mediterranean specimens which he assigns to *E. propinquum* corresponds to Brady's and Sars' where the descriptions overlap; I have used Monard's setal counts for P2 and P4. Mielke (1975) described a specimen from the island of Sylt (North Sea) which fits this composite description; see also Por (1960), Marinov (1971), and Apostolov (1973). Pallares' (1975) specimens have 2 setae on P3 and P4 Enp and are unlikely to be *E. propinquum*.

E. radhakrishnai Ranga Reddy, 1979. Original description.

E. sarsi (T. Scott, 1904). All entries come from Sars (1920) except male P5 which comes from Lang (1948); see Por (1960). Bodin (1970) assigns specimens to *E. sarsi* which have male P3 Enp 2-articled rather than 3-articled.

E. sordidum Monard, 1926. The CR L/W entry comes from original description; the remaining entries from Monard (1928). Although Monard (1926) reports the female P5 Exp as having 3 setae, his figure and 1928 treatment show 4 setae. Wells (1965) assigned specimens to *E. sordidum* that had 4 large setae on the female P5 Exp. Monard's (1926) figure shows 3 large setae and 1 small seta. Although the setation of the inner lobe of the Benp is similar to that originally described, Wells' specimens have elongate CR ($L/W = 7$) versus the short CR ($L/W = 2$) originally described. Lorenzen (1969) found females with long and short CR in a single population of *E. gariene*. Wells' specimens suggest that such dimorphism also occurs in *E. sordidum*; see also Por (1960).

Marinov (1971) illustrates a specimen with a P5 like that of *E. sordidum*. However, P1 and P2 Exp segment 3 have 4 setae rather than 5 as in the

original description. In terms of the characters in Table I, Marinov's specimen corresponds to *E. curticauda* Boeck except for the fusion of P5 Exp.

E. stylicaudatum (Willey, 1935). Original description.

E. uniarticulatum Borutzky, 1928. Original description. See also Shen & Tai (1962).

E. woodini n. sp. Original description.

KEY TO THE FEMALES OF *ENHYDROSOMA*
(Modified from Coull, 1975)²

1. Caudal rami at most as long as last somite	2
Caudal rami longer than last somite	7
2. Exp A2 well developed, with 2 setae	3
Exp A2 rudimentary, with 1 seta	<i>E. buchholtzi</i>
3. Exp and Benp P5 not confluent	4
Exp and Benp P5 confluent	<i>E. gariene</i>
4. Enp P4 2-segmented	5
Enp P4 1-segmented	<i>E. uniarticulatum</i>
5. Exp P5 with 1 terminal and 2 outer setae	<i>E. hopkinsi</i>
Exp P5 with 1 terminal and 3 outer setae	<i>E. propinquum</i>
Exp P5 with 3 terminal and 1 outer setae	6
6. Enp P1 distal segment with 3 setae	<i>E. micrurum</i>
Enp P1 distal segment with 2 setae	<i>E. curticauda</i>
7. Exp A2 rudimentary with 1 seta	8
Exp A2 well developed with 2 setae	10
8. Exp and Benp P5 confluent	9
Exp and Benp P5 not confluent	<i>E. curvirostre</i>
9. Enp P3-P4 distal segment with 3 setae	<i>E. barnishi</i>
Enp P3-P4 distal segment with 2 setae	<i>E. bifurcarostratum</i>
10. Enp P1 distal segment with 2 setae	11
Enp P1 distal segment with 3 setae	16
11. Exp P1 distal segment with 4 setae	12
Exp P1 distal segment with 5 setae	<i>E. sordidum</i>
12. Enp P4 distal segment with 2 setae	13
Enp P4 distal segment with 3 setae	14
13. Enp P4 1-segmented	<i>E. radhakrishnai</i>
Enp P4 2-segmented	<i>E. franklini</i> n. sp.
14. Exp and Benp P5 not confluent	15
Exp and Benp P5 confluent	<i>E. caeni</i>
15. Number of major setae on P5 Benp and Exp, respectively:	
2:2	<i>E. nicobaricum</i>
2:3	<i>E. lacunae</i>
3:2	<i>E. woodini</i> n. sp.
3:3	<i>E. longifurcatum</i>
3:4	<i>E. littorale</i>
16. Number of setae P4 Exp and Enp distal segments, respectively:	
4:3	<i>E. latipes</i>

² *Enhydrosoma stylicaudatum* is omitted because no female has been described.

5:2	17
5:3	<i>E. sarsi</i>
17. Exp and Benp P5 confluent	<i>E. migoti</i>
Exp and Benp P5 not confluent	18
18. Number of major setae on P5 Benp and Exp, respectively:	
2:5	<i>E. birsteini</i>
3:6	<i>E. baruchi</i>

KEY TO THE MALES OF *ENHYDROSOMA*
(Modified from Coull, 1975)³

1. Exp A2 rudimentary, with a single seta	2
Exp A2 well developed, with 2 setae	4
2. Exp and Benp P5 confluent	3
Exp and Benp P5 not confluent	<i>E. curvirostre</i>
3. Exp portion P5 with 2 setae	<i>E. barnishi</i>
Exp portion P5 with 3 setae	<i>E. buchholtzi</i>
4. Enp P3 2-segmented	5
Enp P3 3-segmented	14
5. Caudal rami shorter than last 2 somites combined	6
Caudal rami at least as long as last 2 somites combined	10
6. Exp and Benp P5 confluent	7
Exp and Benp P5 not confluent	9
7. Caudal rami semi-oval with small knob at outer proximal corner	<i>E. gariene</i>
Caudal rami tapering gradually, with no knobs	8
8. Enp P1 1-segmented	<i>E. radhakrishnai</i>
Enp P1 2-segmented	<i>E. caeni</i>
9. Exp and Benp P5 with 3 setae each	<i>E. curticauda</i>
Exp and Benp P5 with 2 setae each	<i>E. propinquum</i>
10. Exp and Benp P5 not confluent	11
Exp and Benp P5 confluent	13
11. Number of major setae on P5 Benp and Exp, respectively:	
2:2	12
0:4	<i>E. migoti</i>
3:3	<i>E. franklini</i> n. sp.
12. Enp P1 distal article with 2 setae	<i>E. lacunae</i> and <i>E. woodini</i> n. sp. ⁴
Enp P1 distal segment with 3 setae	<i>E. latipes</i>
13. Benp P5 with 1 seta	<i>E. birsteini</i>
Benp P5 with 2 setae	<i>E. longifurcatum</i>
14. Exp and Benp P5 not confluent	15
Exp and Benp P5 confluent	<i>E. baruchi</i>
15. Number of major setae on P5 Benp and Exp, respectively:	
2:2	16

³*Enhydrosoma micrurum*, *E. nicobaricum*, *E. sordidum*, and *E. uniarticulatum* are omitted because the male P5 has not been described.

⁴The male of *Enhydrosoma lacunae* cannot be distinguished from that of *E. woodini* n. sp. on the basis of the published description, although the females differ in species-level characters.

- 2:3 *E. bifurcarostratum*
 2:4 *E. stylicaudatum*
 3:4 *E. sarsi*
16. Caudal rami shorter than last somite; basis Mxp with plumose seta at inner distal corner *E. hopkinsi*
 Caudal rami longer than last somite; basis Mxp without seta at inner distal corner *E. littorale*

LITERATURE CITED

- APOSTOLOV, A. 1973. Sur divers Harpacticoïdes (Copépodes) de la Mer Noire. *Zool. Anz.*, 190: 88-110.
- BODIN, P. 1968. Copépodes harpactides des étages bathyal et abyssal du Golfe de Gascogne. *Mem. Mus. Natl. Hist. Nat. Ser A*, 55: 1-107.
1970. Copépodes harpacticoïdes marins des environs de La Rochelle. I. Espèces de la vase intertidale de Châtelailon. *Téthys*, 2: 385-436.
1973. Copépodes harpacticoïdes marins des environs de La Rochelle. Espèces de la zone intertidale des Nauteries. *Téthys*, 4: 651-682.
1979. *Catalogue des Nouveaux Copépodes Harpacticoïdes Marins* (nouvelle édition). Brest, Université de Bretagne Occidentale. 228 pp.
- BOECK, A. 1872. Nye Slaegter og Arter af Saltvands Copepoder. *Forh. Vidensk Selsk. Krist.* 1872, pp. 35-60.
- BORUTZKY, E. V. 1928. *Enhydrosoma uniarticulatum* sp. n. (Copepoda-Harpacticoïda), ein neuer Vertreter der Gattung *Enhydrosoma*. *Zool. Anz.*, 80: 158-160.
1971. New species of Copepoda Harpacticoïda (Crustacea) from the Aral Sea. *Bjull. Mosk. Obshch. Ispyt. Prir.*, 76: 111-122. (in Russian)
- BRADY, G. S. 1872. A list of the non-parasitic marine Copepoda of the northeast coast of England. *Trans. Nat. Hist. Soc. Northumbria*, 4: 473.
1880. *A Monograph of the Free and Semi-parasitic Copepoda of the British Islands*. Vol. 2. The Ray Society, London. 182 pp.
- COULL, B. C. 1975. Three new harpacticoïd copepods from the North Inlet Estuary, Georgetown, South Carolina, U.S.A. *Crustaceana*, 29: 113-126.
- DRZYCIMSKI, I. 1967. Zwei neue Cletodidae (Copepoda, Harpacticoïda) aus dem westnorwegischen Küstengebiet. *Sarsia*, 29: 199-205.
- GURNEY, R. 1930. Two new species of estuarine Copepoda. *Zool. Anz.*, 87: 321-326.
- JAKOBI, H. 1955. O genero *Enhydrosoma* no manguezal da Costa S. Paulo-Parana. *Dusenía*, 6: 89-96.
- JAKUBISIAK, S. 1933. Sur les harpacticoïdes saumâtres de Cuba. *Ann. Mus. Zool. Pol.*, 10: 93-96.
1938. Les harpacticoïdes de la Mer Noire (Côtes Roumaines). *Ann. Sci. Univ. Jassy.*, 24: 387-402.
- LANG, K. 1936. Die Familie der Cletodidae Sars, 1909. *Zool. Jahrb. Abt. Allg. Zool. Physiol. Tiere.*, 68: 445-480.
1948. Monographie der Harpacticiden. Nordiska Bokhandeln, Stockholm. 1,682 pp.
1965. Copepoda Harpacticoïdea from the Californian Pacific coast. *K. Sven. Vetensk-apsakad Handl.*, 10: 1-560.
- LORENZEN, S. 1969. Harpacticoiden aus dem lenitischen Watt und den Salzwiesen der Nordseeküste. *Kiel. Meeresforsch.*, 25: 215-223.
- MARINOV, T. 1971. Harpacticoïds of the Bulgarian Black Sea coast. *Izy. nauchnoizsl. Inst. Rib. Stop. Okeanogr. Varna*, 11: 43-87. (in Bulgarian)
- MIELKE, W. 1975. Systematic der Copepoda eines Sandstrandes der Nordseeinsel Sylt. *Mikrof. Meeresb.*, 52: 1-134.
- MONARD, A. 1926. Descriptions de quelques espèces nouvelles d'harpacticoïdes marin de la région de Banyuls. *Rev. Suisse Zool.*, 33: 619-628.
1928. Les harpacticoïdes marins de Banyuls. *Arch. Zool. Exp. Gen.*, 67: 259-443.

1935. Les harpacticoïdes marins de la région de Salammbô. *Bull. Stn. Oceanogr. Salammbô*, 34: 81–82.
- MONCHENKO, V. I. 1967. Recent observations on the harpacticoids of the Black Sea. *Dokl. Akad. Nauk. Ukr. SSR*, 29: 461–465. (in Russian)
- PALLARES, R. E. 1975. Marine copepods from the Deseado Estuary (Santa Cruz, Argentina): Systematic and ecological contribution: IV (conclusion). *Physis Secc A, Oceanos Org.*, 34: 213–227.
- POR, F. D. 1960. Littorale harpacticoiden der Nordwest-küste des Scharzen Meeres. *Trav. Mus. Hist. Nat. 'Grigore Antipa,'* 2: 97–143.
1967. Level bottom Harpacticoida (Crustacea, Copepoda) from Elat (Red Sea), part I. *Isr. J. Zool.*, 16: 101–165.
- RAIBAUT, A. 1965. Sur quelques Cletodidae (Copépoda, Harpacticoida) du Bassin de Thau. *Crustaceana*, 8: 113–120.
- RANGA REDDY, Y. 1979. *Enhydrosoma radhakrishnai* n. sp. (Copepoda, Harpacticoida) from Lake Kolleru, South India. *Crustaceana*, 36: 9–14.
- ROE, K. 1959. Some harpacticids from Lough Ine, with descriptions of two new species. *Proc. R. Ir. Acad., Sect. B*, 60: 277–289.
- SARS, G. O. 1909. *An Account of the Crustacea of Norway*. V. Copepoda Harpacticoida. Bergen Museum, Bergen. 449 pp.
1920. *An Account of the Crustacea of Norway*. VII. Copepoda Supplement. Bergen Museum, Bergen. 90 pp.
- SCOTT, A. 1909. The Copepoda of the Siboga-Expedition. *Siboga Exped. Monogr.*, 29a: 1–324.
- SCOTT, T. 1894. Additions to the fauna of the Firth of Forth. *Rep. Fishery Bd. Scotl.*, 12: 231–271.
1904. On some new and rare Crustacea from the Scottish seas. *Rep. Fishery Bd. Scotl.*, 23: 141–153.
- SEWELL, R. B. S. 1940. Copepoda, Harpacticoida. *Sci. Rep. John Murry Expedition 1933–1934. British Mus. (Nat. Hist.)*, 7: 117–382.
- SHEN, C. J. & TAI, A. Y. 1962. The Copepoda of the Wu Li Lake, Wu-Sih, Kiangsu Province. III. Harpacticoida. *Acta Zool. Sin.*, 14: 393–410.
1965. Descriptions of six new species of freshwater copepods chiefly from the Pearl River Delta, South China. *Acta Zootaxon. Sin.*, 2: 126–140.
- TSCHISLENKO, L. L. 1967. Les copépodes harpacticoïdes du littoral carelien de la Mer Blanche. *Proc. White Sea Biol. Sta. Zool. Inst.*, 7: 48–196. (in Russian)
- WELLS, J. B. J. 1965. Copepoda (Crustacea) from the meiobenthos of some Scottish marine sublittoral muds. *Proc. R. Soc. Edinb., Sect. B*, 69: 1–33.
1967. The littoral Copepoda (Crustacea) of Inhaca Island, Mozambique. *Trans. R. Soc. Edinb.*, 67: 189–358.
- WILLEY, A. 1935. Harpacticoid Copepoda from Bermuda. II. *Ann. Mag. Nat. Hist., Ser. 10* (15): 50–100.