

Philomedidae of the Continental
Shelf of Eastern North America
and the Northern Gulf of Mexico
(Ostracoda: Myodocopina)

LOUIS S. KORNICKER

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ABSTRACT

Kornicker, Louis S. Philomedidae of the Continental Shelf of Eastern North America and the Northern Gulf of Mexico (Ostracoda: Myodocopina). *Smithsonian Contributions to Zoology*, number 393, 78 pages, 45 figures, 3 maps, 1 table, 1984.—The distribution of 3 genera of the Philomedidae, *Philomedes* with 6 species (3 new), *Pseudophilomedes* with 4 species (3 new), and *Harbansus* with 4 species (1 new), on the continental shelves of eastern North America and the Gulf of Mexico, the Bahamas, and the West Indies is discussed. The new species, as well as some previously known species, are described and illustrated.

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Contents

	<i>Page</i>
Introduction	1
Acknowledgments	1
Disposition of Specimens	1
Station Data and Material Examined	1
Distribution	10
PHILOMEDIDAE Müller, 1906	10
PHILOMEDINAE Müller, 1906	10
<i>Philomedes</i> Liljeborg, 1853	10
Key to Species of <i>Philomedes</i>	10
<i>Philomedes duplex</i> , new species	11
<i>Philomedes keslingi</i> , new species	23
<i>Philomedes hirutai</i> , new species	27
PSEUDOPHILOMEDINAE Kornicker, 1967	32
<i>Pseudophilomedes</i> Müller, 1893	33
Key to Species of <i>Pseudophilomedes</i>	33
<i>Pseudophilomedes ferulanus</i> Kornicker, 1958	33
<i>Pseudophilomedes ambon</i> , new species	38
<i>Pseudophilomedes polyancistrus</i> , new species	47
<i>Pseudophilomedes zeta</i> , new species	53
<i>Harbansus</i> Kornicker, 1978	59
Key to Species of <i>Harbansus</i>	59
<i>Harbansus paucichelatus</i> (Kornicker, 1958)	59
<i>Harbansus magnus</i> , new species	68
<i>Harbansus bowenae</i> Kornicker, 1978	73
<i>Harbansus dayi</i> Kornicker, 1978	76
Literature Cited	77

Philomedidae of the Continental Shelf of Eastern North America and the Northern Gulf of Mexico (Ostracoda: Myodocopina)

Louis S. Kornicker

Introduction

This work treats mainly the Philomedidae living on the continental shelf of eastern North America and the northern half of the Gulf of Mexico. It also includes a few specimens collected in the Bahamas and on the upper continental slope.

ACKNOWLEDGMENTS.—Credits are given in the section "Station Data and Material Examined" to the individuals and institutions who have contributed specimens used in this study. Many collections were made possible by funds granted to the various institutions by the U.S. Bureau of Land Management. Specimens obtained from the Mote Marine Laboratory were collected mostly under Bureau of Land Management Contract No. AA851-CTO-50. I deeply appreciate the opportunity to examine the collections.

I thank the following people for their help: Carolyn Gast for rendering the shaded drawings of the carapace; Kathryn Schroeder Brown for assistance in preparation and inking of appendage drawings; T.E. Bowman, I.G. Sohn, and Elizabeth Harrison for reviewing the manuscript;

Louis S. Kornicker, Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.

and Jack Korytowski for final editing and preparation of the manuscript for publication.

DISPOSITION OF SPECIMENS.—Most of the specimens have been deposited at the National Museum of Natural History, Smithsonian Institution; some have been given USNM numbers in the text. The disposition of other specimens is given in the text in "Station Data and Material Examined."

Station Data and Material Examined

(Listed in geographic order from north to south, east to west.)

CANADA CONTINENTAL SHELF

Off Cape Breton Island, sta V-16-65, 9 Sep 1960; 46°45'N, 56°22'W; 42 m; collected by personnel aboard the R/V *Vema*, Columbia University.

Harbansus dayi: 1 ovigerous female (USNM 158865), 20 specimens (USNM 158866).

Harbansus bowenae: 2 adult males (USNM 158867A, B), 10 specimens (USNM 158868).

NEW JERSEY CONTINENTAL SHELF

Outer Shelf, R/V *Columbus Iselin*; 0.10 square meter MacIntyre grab sampler; Nov 1975; col-

lector Marcia Bowen, Virginia Institute of Marine Science. Some specimens reported previously by Kornicker (1978:4).

Sta F1-7; 38°44'08"N, 73°14'42"W, 85 m.

Pseudophilomedes ferulanus: 1 specimen (USNM 158406).

Sta F4-7; 38°44'36"N, 73°03'04"W, 183 m (latitude incorrect in Kornicker, 1978:4).

Harbansus dayi: 11 specimens (USNM 156914, 156915).

Harbansus bowenae: 47 specimens (USNM 156664, 156666, 156912).

Sta F4-10; 38°44'36"N, 73°03'04"W, 183 m (latitude incorrect in Kornicker, 1978:4).

Harbansus dayi: 1 adult male (USNM 156941).

NORTH CAROLINA CONTINENTAL SHELF

Collected aboard R/V *Easton*; received from Donald Weston, Virginia Institute of Marine Science, Gloucester Point, Va. Specimens returned except those with USNM number. These specimens had been identified to genus, some to species by Donald Weston (in litt, Sep 1980), and were reexamined by me.

Cruise E-2-77, Jun 1977.

Sta 280-1; 35°01'06"N, 75°34'00"W; 33 m.

Pseudophilomedes zeta: 1 juvenile (USNM 158568), 1 specimen returned.

Cruise E-5-77, Aug 1977.

Sta 015-1; 34°37'54"N, 76°09'36"W; 36 m.

Harbansus paucichelatus: 4 specimens.

Sta 125; Aug 1977.

Harbansus bowenae: 1 specimen.

Cruise E-8-77, Oct 1978.

Sta 006-1; 34°38'00"N, 76°05'48"W; 36 m.

Harbansus paucichelatus: 2 specimens.

Cruise E-1-78, Jan 1978.

Sta 157-1; 35°02'06"N, 75°34'30"W; 34 m.

Harbansus paucichelatus: 2 specimens.

Beaufort Shelf Transect (BST); collected off Beaufort by Dr. John H. Day. Some specimens reported previously by Kornicker (1967:8).

BST 30L; 6 Apr 1965; 34°19'36"N, 75°56'48"W; 130 m; bottom temperature 20°C; sand mud substrate; 0.2 square meter Van Veen grab.

Pseudophilomedes ferulanus: 3 adult females, 3 ovigerous females (USNM 113020).

BST 55Q; 6 Apr 1965; 34°19'30"N, 75°56'18"W; 160 m; bottom temperature 22°C; sandy mud; 0.2 square meter Van Veen grab.

Pseudophilomedes ferulanus: 3 adult females, 1 ovigerous female (USNM 113022).

BST 108L; sta VIII; 28 Jun 1965; 34°23'30"N, 75°54'00"W; 122 m; bottom temperature 15.0°C; shelly sand; dredge for 10 minutes.

Pseudophilomedes ferulanus: 1 adult female (USNM 120510), 2 ovigerous females (USNM 156782).

BST 155H,J; sta IX; 30 Sep 1965; 34°23'00"N, 75°53'42"W; 160 m; bottom temperature 19.5°C; sandy mud; 0.2 square meter Van Veen grab.

Pseudophilomedes ferulanus: 1 adult female (USNM 120508), 1 ovigerous female + 1 juvenile (USNM 156870).

BST 155G (same station data as BST 155H,J).

Pseudophilomedes ferulanus: 1 adult female (USNM 120509).

BST 155K (same station data as BST 155H,J).

Pseudophilomedes ferulanus: 1 specimen (USNM 156871).

BST 233K; sta V; 24 Nov 1965; 34°04'30"N, 76°25'30"W; 20 m; bottom temperature 20°C; coarse sand; 0.2 square meter Van Veen grab.

Pseudophilomedes ferulanus: 1 female (USNM 156788).

BST 245N; sta VIII; 30 Nov 1965; 34°23'00"N, 75°55'42"W; 120 m; bottom temperature 14°C; muddy sand and spicules; 0.2 square meter Van Veen grab.

Pseudophilomedes ferulanus: 2 specimens (USNM 156792).

BST 251N,P; sta IX; 30 Nov 1965; 34°23'24"N, 75°55'00"W; 152 m; bottom temperature 16.5°C; 0.2 square meter Van Veen grab.

Pseudophilomedes ferulanus: 1 ovigerous female + 1 specimen (USNM 156791).

R/V *Gosnold*, collected by U.S. Bureau of Commercial Fisheries (now National Marine Fisheries Service); Campbell grab sampler. Specimens reported previously by Kornicker (1967:7).

Sta 1817; 23 Jun 1964; 34°00'00"N, 77°14'24"W; 28 m.

Pseudophilomedes ferulanus: 1 female (USNM 113576).

Sta 1857; 26 Jun 1964; 34°18'42"N, 76°00'06"W; 85 m.

Pseudophilomedes ferulanus: 1 ovigerous female (USNM 113021).

Sta 1877; 27 Jun 1964; 36°30'54"N, 76°46'00"W; 96 m.

Pseudophilomedes ferulanus: 2 specimens (USNM 113577).

Bureau of Land Management southeast coastal study; received from Linda H. Pequegnat, Texas A&M University.

Sta 0114-3 (1E); 10 Feb 1977; 32°12'N, 77°36'W; 44 m.

Harbansus paucichelatus: 4 adult females (USNM 158244).

SOUTH CAROLINA CONTINENTAL SHELF

Bureau of Land Management southeast coastal study; received from Linda H. Pequegnat, Texas A&M University.

Sta 0131-3 (2B); 12 Feb 1977; 32°50'N, 79°04'W; 22 m.

Harbansus paucichelatus: 1 juvenile female (USNM 158251).

Sta 0136-1 (2C); 13 Feb 1977; 32°50'N, 79°04'W; 22 m.

Harbansus paucichelatus: 1 ovigerous female (USNM 158246).

Sta 0136-2 (2C); 13 Feb 1977; 32°50'N, 79°04'W; 22 m.

Pseudophilomedes ferulanus: 1 adult male (USNM 158413).

Sta 0146-1 (2E); 14 Feb 1977; 32°40'N, 78°47'W; 36 m.

Harbansus paucichelatus: 1 ovigerous female (USNM 158245).

Sta 0166-3 (3B); 17 Feb 1977; 32°23'N, 80°09'W; 9 m.

Harbansus paucichelatus: 1 adult female.

Sta 0163-2 (3A); 17 Feb 1977; 32°26'N, 80°14'W; 14 m.

Harbansus paucichelatus: 1 specimen.

Pseudophilomedes zeta: 1 adult female (USNM 158407), 1 juvenile (USNM 158415).

Sta 0163-3 (3A); 17 Feb 1977; 32°26'N, 80°14'W; 14 m.

Pseudophilomedes zeta: 1 adult female (USNM 158411), 1 A-1 female (USNM 158416A), 3 juveniles (USNM 158416B).

Sta 0177-1 (3E); 18 Feb 1977; 32°01'N, 79°31'W; 43 m.

Harbansus paucichelatus: 1 juvenile male (USNM 158250).

Sta 0177-2 (3E); 18 Feb 1977; 32°01'N, 79°31'W; 43 m.

Harbansus paucichelatus: 1 adult male (USNM 158343).

Sta 0177-4 (3E); 18 Feb 1977; 32°01', 79°31'W; 43 m.

Harbansus paucichelatus: 1 juvenile male (USNM 158246).

SOUTH CAROLINA CONTINENTAL SLOPE

Bureau of Land Management southeast coastal study; received from Linda H. Pequegnat, Texas A&M University.

Sta 0155-3 (2G); 18 Feb 1977; 32°31'N, 78°31'W; 218 m.

Philomedes hirutai: 1 adult female (USNM 185282).

GEORGIA CONTINENTAL SHELF

Bureau of Land Management southeast coastal study; received from Linda H. Pequegnat, Texas A&M University.

Sta 0202-1 (4F); 23 Feb 1977; 31°27'N, 79°46'W; 65 m.

Harbansus paucichelatus: 1 juvenile male (USNM 158341).

Sta 0202-3 (4F); 23 Feb 1977; 31°27'N, 79°46'W; 65 m.

Harbansus paucichelatus: 5 specimens including one with a female choniostomatid and one with a juvenile choniostomatid (USNM 158347).

Sta 0225-2 (5D); 25 Feb 1977; 31°05'N, 80°35'W; 26 m.

Harbansus paucichelatus: 1 adult female (USNM 158349).

Sta 0230-1 (5E); 26 Feb 1977; 31°03'N, 80°26'W; 33 m.

Harbansus paucichelatus: 1 adult male (USNM 158249).

Bureau of Land Management southeast coastal study; collected by Texas Instruments Incorporated; received from Marcia Bowen, Virginia Institute of Marine Science.

Sta 0531-2 (5F); 12 May 1977; 31°02'01.6"N, 80°16'56.3"W; 37 m.

Pseudophilomedes ferulanus: 1 female.

Sapelo Island, Georgia; collected by David G. Darby in Sep 1961; depth 123 m. Received on loan from the University of Michigan Museum of Paleontology (UMMP) through Dr. Robert V. Kesling.

Philomedes keslingi: 1 adult female (UMMP 48781) [identified as *P. lilljeborgii* by Darby (1965:25)].

FLORIDA CONTINENTAL SHELF

Atlantic

Bureau of Land Management southeast coastal study; received from Linda H. Pequegnat, Texas A&M University.

Sta 0258-1 (6C); 28 Feb 1977; 30°23'N, 80°51'W; 29 m.

Harbansus paucichelatus: 5 adult females (USNM 158345).

Sta 0258-2 (6C); 28 Feb 1977; 30°23'N, 80°51'W; 29 m.

Harbansus paucichelatus: 1 ovigerous female (USNM 158344); 1 specimen (USNM 158348).

Sta 0269-3 (6F); 1 Mar 1977; 30°23'N, 80°18'W; 43 m.

Pseudophilomedes ferulanus: 1 adult female (USNM 158410), 1 specimen (USNM 185412).

Harbansus paucichelatus: 1 ovigerous female (USNM 158247).

Sta 0272-3 (6G); 1 Mar 1977; 30°23'N, 80°10'W; 147 m.

Pseudophilomedes polyancistrus: 1 adult female with choniostomatid parasite (USNM 158408).

Virginia Key, NE shore facing Bear Cut, depth about 20 cm; tidal flat with rocks, green algae (*Caulerpa*, *Padina*); sample obtained with small net drawn through sediment between rocks; collector F.M. Bayer. Specimens reported previously by Kornicker (1978:3).

Harbansus paucichelatus: 1 ovigerous female + 1 juvenile (USNM 156738).

Off Fort Pierce, Florida; Cruise 222, R/V *Gosnold*; Smith-MacIntyre Grab; collected by David K. Young party. Reported previously in Kornicker (1977:795).

Sta 0281D: 1 Mar 1974; 28°04'00"N, 80°12'48"W; 25 m; water temperature 20.4°C; salinity 34.0‰.

Pseudophilomedes ferulanus: 1 specimen (USNM 152507).

Indian River, Saint Lucie County, Fort Pierce, Florida; east side of river, 200 yards (183 m) west of Round Island's western boundary, approximately 1 mile northeast of Link Port site. Sample collected with posthole digger from inside and outside screened cages. Received from John E. Miller, Harbor Branch Foundation, Inc.

Sta 249C: 25 Apr 1978; bare sand control; depth 48 cm; water temperature 28.0°C; salinity 36 parts per thousand; caught on 0.5 mm mesh sieve.

Harbansus paucichelatus: 1 female (USNM 158078).

Off Hutchinson Island, St. Lucie County, Florida, sta 4; 27°20'40"N, 80°12'48"W; east of Florida Power and Light electrical generating plant; 7 Sep 1972. Salinity: surface and bottom both 35 parts per thousand. Temperature: Surface 31.5°C, bottom 32°C., 10.9 m; Shipek grab sampler; collected by W.G. Lyons, C.R. Futch, and R.M. Gallagher, material received and returned to D.K. Camp. The specimens were reported as "Ostracoda" in Camp et al. (1977:10).

Field no. EJ-772-88, HI-221.

Pseudophilomedes ferulanus: 1 specimen.

Field no. EJ-733-329, HI 613.

Harbansus paucichelatus: 1 specimen.

Field no. EJ-733-401, HI 710.

Harbansus paucichelatus: 1 specimen.

Field no. EJ-733-433, HI 787.

Harbansus paucichelatus: 2 specimens.

FLORIDA CONTINENTAL SLOPE

Atlantic

Bureau of Land Management, southeast coastal study; received from Linda H. Pequegnat, Texas A&M University.

Sta 0275-2 (6H); 1 Mar 1977; 30°23'N, 79°57'W; 460 m.

Harbansus magnus: 1 A-1 female (USNM 158253).

FLORIDA CONTINENTAL SHELF

Gulf of Mexico

Bureau of Land Management Continental Shelf Study in Gulf of Mexico; collections from the Gulf Coast Research Laboratory, Ocean Springs, Miss.; received from Dr. Richard W. Heard; date of collections 1975-1978.

Transect I, west of southern part of Florida peninsula.

Sta 2101; 26°24'59.6"N, 82°15'08.9"W; 10 m.

Harbansus paucichelatus: 3 specimens.

Sta 2105; 26°24'59.5"N, 83°49'57.6"W; 90 m.

Harbansus paucichelatus: 2 specimens.

Transect II, west of middle part of Florida peninsula.

Sta 2207; 27°57'00.4"N, 83°09'00.3"W; 17 m.

Harbansus paucichelatus: 1 female.

Sta 2209; 27°52'30.5"N, 83°33'59.0"W; 33 m.

Harbansus paucichelatus: 39 specimens.

Pseudophilomedes zeta: 1 female.

Sta 2210; 27°57'28.8"N, 83°33'59.0"W; 34 m.

Harbansus paucichelatus: 22 specimens.

Pseudophilomedes ferulanus: 1 female.

Pseudophilomedes zeta: 2 specimens.

Sta 2211; 27°56'29.5"N, 83°52'59.5"W; 40 m.

Harbansus paucichelatus: 1 specimen.

Pseudophilomedes ferulanus: 1 specimen.

Sta 2212; 27°51'00.0"N, 84°47'59.6"W; 190 m.

Harbansus paucichelatus: 2 specimens.

Pseudophilomedes ferulanus: 3 specimens.

Transect III, west of northern part of Florida peninsula.

Sta 2316; 28°42'00.3"N, 84°20'00.7"W; 33 m.

Harbansus paucichelatus: 1 specimen.

Pseudophilomedes ambon: 1 specimen.

Pseudophilomedes ferulanus: 2 juveniles.

Sta 2318; 29°05'00.8"N, 83°45'00.5"W; 20 m.

Harbansus paucichelatus: 2 females.

Transect IV, southwest of northern part of Florida peninsula.

Sta 2423; 29°20'00.4"N, 84°44'02.3"W; 30 m.

- Harbansus paucichelatus*: 3 specimens.
 Transect V, southwest of eastern end of Florida.
 Sta 2528; 29°54'58.6"N, 86°04'58.5"W; 36 m.
Harbansus paucichelatus: 2 specimens.
Pseudophilomedes ferulanus: 1 instar II.
 Transect IX, west of southern part of Florida peninsula.
 Sta 2960; 25°40'N, 82°20'W; 27 m.
Harbansus paucichelatus: 7 specimens.
 Supplemental Transect, west of middle part of Florida peninsula.
 Sta 2854; 29°24'00.1"N, 85°42'02.0"W; 42 m.
Harbansus paucichelatus: 1 female.
 Sta 2855; 30°08'02.1"N, 86°30'00.0"W; 40 m.
Harbansus paucichelatus: 2 specimens.
Pseudophilomedes zeta: 3 specimens.
 Sta 2856; 29°54'01.3"N, 87°24'00.2"W; 30 m.
Harbansus paucichelatus: 6 specimens.
Pseudophilomedes zeta: 1 male (USNM 193055), 4 specimens.

Southwest Florida

Bureau of Land Management southwest Florida continental shelf study, Specimens collected by, and returned to, James K. Culter, Mote Marine Laboratory, Sarasota, Florida, except those given USNM numbers, which were retained at NMNH. All samples collected from a soft substrate.

- Sta 2; 14 Nov 1980; 26°45'50"N, 82°45'11"W; 24.4 m.
Harbansus species indeterminate: 1 specimen (furca missing; with chionostomatid copepod).
 Sta 2; 2 May 1981.
Harbansus paucichelatus: 7 specimens.
 Sta 4; 31 Oct 1980; 26°45'49"N, 83°32'07"W; 55.8 m.
Harbansus paucichelatus: 3 specimens.
Pseudophilomedes ambon: 1 specimen.
 Sta 5; 1 Nov 1980; 26°45'42"N, 84°00'08"W; 90.8 m.
Pseudophilomedes ambon: 1 male, 1 juvenile.
Harbansus species indeterminate: 1 specimen (2nd antenna missing).
 Sta 5; 1 May 1981.
Harbansus paucichelatus: 1 male.
Pseudophilomedes ferulanus: 3 specimens.
 Sta 5; 22 Jul 1981.
Harbansus paucichelatus: 1 male (USNM 158876).
 Sta 6; 6 Nov 1980; 26°16'47"N, 82°38'21"W; 26.5 m.
Harbansus paucichelatus: 4 specimens.
 Sta 6; 1 May 1981.
Harbansus paucichelatus: 6 specimens.
 Sta 6; 28 Jul 1982.
Harbansus paucichelatus: 11 specimens.

- Sta 6; 2 Feb 1982.
Harbansus paucichelatus: 4 specimens.
 Sta 8; 5 Nov 1980; 26°16'43"N, 83°12'49"W; depth 48.5 m.
Harbansus paucichelatus: 1 specimen.
 Sta 8; 3 May 1981.
Harbansus paucichelatus: 3 specimens.
 Sta 8; Nov 1981.
Harbansus paucichelatus: 1 specimen.
 Sta 12; 4 Nov 1980; 26°16'43"N, 83°47'40"W; depth 97.5 m.
Harbansus paucichelatus: 7 specimens.
Pseudophilomedes ferulanus: 2 specimens.
 Sta 12; 30 Apr 1981.
Harbansus paucichelatus: 5 specimens.
Pseudophilomedes ambon: 4 specimens.
 Sta 12; 24 Jul 1981.
Harbansus paucichelatus: 1 specimen.
Pseudophilomedes ferulanus: 1 specimen.
 Sta 12; 12 Feb 1982.
Harbansus paucichelatus: 2 specimens.
Pseudophilomedes ambon: 3 specimens.
 Sta 14; 8 Nov 1980; 25°46'01"N, 82°23'49"W; 26.0 m.
Harbansus paucichelatus: 9 specimens.
Pseudophilomedes zeta: 1 specimen.
 Sta 14; 28 Apr 1981.
Harbansus paucichelatus: 13 specimens.
Pseudophilomedes zeta: 1 juvenile; 2 adult females (USNM 158870, 158871).
 Sta 14; 28 Jul 1982.
Harbansus paucichelatus: 16 specimens.
Pseudophilomedes zeta: 1 female.
 Sta 14; 12 Feb 1982.
Harbansus paucichelatus: 39 specimens.
Pseudophilomedes zeta: 9 specimens.
 Sta 16; 9 Nov 1980; 25°45'42"N, 83°11'04"W; 53.9 m.
Harbansus paucichelatus: 2 specimens.
 Sta 16; 28 Apr 1981.
Harbansus paucichelatus: 6 specimens.
 Sta 16; 27 Jul 1981.
Harbansus paucichelatus: 2 specimens.
 Sta 18; 15 Nov 1980; 25°45'37"N, 83°42'13"W; 86.6 m.
Pseudophilomedes ferulanus: 1 specimen.
 Sta 18; 4 Apr 1981.
Harbansus paucichelatus: 2 specimens.
Pseudophilomedes ferulanus: 1 male, 3 specimens.
 Sta 20; 18 Nov 1980; 25°17'20"W, 82°09'44"W; 22.5 m.
Pseudophilomedes ferulanus: 1 specimen.
 Sta 20; 27 May 1981.
Harbansus paucichelatus: 2 specimens.
Pseudophilomedes ferulanus: 1 juvenile.
 Sta 20; 29 Jul 1981.

- Harbansus paucichelatus*: 6 specimens.
Pseudophilomedes ferulanus: 5 specimens.
 Sta 20; 12 Feb 1982.
- Harbansus paucichelatus*: 6 specimens.
Pseudophilomedes ferulanus: 1 specimen.
 Sta 22; 18 Nov 1980; 25°17'11"N, 83°02'04"W;
 52.7 m.
- Harbansus paucichelatus*: 3 specimens.
 Sta 22; 27 May 1981.
- Harbansus paucichelatus*: 3 specimens.
 Sta 22; 1 Aug 1981.
- Harbansus paucichelatus*: 11 specimens.
 Sta 22; 22 Feb 1982.
- Harbansus paucichelatus*: 2 specimens (1 with chonios-
 matid copepod).
 Sta 24; 16 Nov 1980; 25°16'54"N, 83°43'11"W;
 88.4 m.
- Harbansus paucichelatus*: 5 specimens.
Pseudophilomedes ferulanus: 3 specimens.
 Sta 24; 25 Apr 1981.
- Harbansus paucichelatus*: 1 male.
Pseudophilomedes ferulanus: 10 specimens.
 Sta 24; 1 Aug 1981.
- Harbansus paucichelatus*: 1 specimen.
Pseudophilomedes ferulanus: 3 specimens.
 Sta 24; 8 Feb 1982.
- Harbansus paucichelatus*: 1 specimen.
Pseudophilomedes ferulanus: 6 specimens.
Pseudophilomedes species indeterminate: 1 A-1 male,
 valves missing (USNM 158869).
 Sta 25; 19 Nov 1980; 24°47'57"N, 82°13'16"W; 25 m.
- Harbansus paucichelatus*: 5 specimens.
Pseudophilomedes polyancistrus: 1 specimen.
 Sta 25; ? May 1981.
- Harbansus paucichelatus*: 13 specimens.
Pseudophilomedes polyancistrus: 1 specimen.
 Sta 25; 31 Aug 1981.
- Harbansus paucichelatus*: 8 specimens.
Pseudophilomedes polyancistrus: 1 specimen.
 Sta 26; 20 Nov 1980; 24°47'30"N, 83°52'15"W;
 38.0 m.
- Harbansus paucichelatus*: 5 specimens.
 Sta 26; ? May 1981.
- Harbansus paucichelatus*: 43 specimens.
 Sta 28; 20 Nov 1980; 24°47'07"N, 83°13'05"W;
 58.5 m.
- Harbansus paucichelatus*: 16 specimens (1 with chonios-
 tomatic copepod).
Pseudophilomedes ferulanus: 1 specimen.
 Sta 28; 24 Apr 1981.
- Harbansus paucichelatus*: 13 specimens.
 Sta 28; 4 Aug 1981.
- Harbansus paucichelatus*: 10 specimens.
 Sta 28; 11 Feb 1982.
- Harbansus paucichelatus*: 4 specimens.

- Pseudophilomedes ferulanus*: 1 specimen.
 Sta 34; 11 Feb 1982; 25°45'19"N, 83°57'38"W; 135 m.
Harbansus paucichelatus: 1 specimen.

Southwest Florida Continental Shelf off Pinellas County. Collected by, and returned to, James K. Culter, Mote Marine Laboratory, Sarasota, Florida. Vials contained specimens from one or more stations. Substrate fine to coarse sand. Localities of these specimens not shown on maps.

- Vial A, containing specimens collected on 28–30 May 1980 from 6 stations and on 15 Oct 1980 from 1 station between 27°55'06"N–28°10'00"N and 82°49'52"W–83°00'51"W; depth range 3.2–12 m.
Harbansus paucichelatus: 3 specimens.
- Vial C, containing specimens collected on 28–30 May 1980 from 11 stations between 27°55'06"N–28°10'00"N and 82°50'45"W–83°01'36"W; depth range 5.4–13.9 m; and on 13–17 Oct 1980 from 9 stations in same area.
Harbansus paucichelatus: 15 specimens.
Pseudophilomedes ferulanus: 7 specimens.
- Vial D, containing specimens collected on 28–30 May 1980 from 7 stations between 27°55'06"N–28°10'00"N and 82°49'42"W–83°01'36"W; depth range 1.7–13.9 m; and on 13–17 Oct 1980 from 11 stations in same area.
Harbansus paucichelatus: 3 specimens.
- Vial E, containing specimens collected on 28–30 May 1980 from 3 stations and on 13–17 Oct 1980 from 4 stations in same area as Vial C; depth range 8.4–13.9 m.
Harbansus paucichelatus: 2 specimens.
- Vial J, containing specimens collected on 28–30 May 1980 from 1 station and on 13–17 Oct 1980 from 3 stations between 27°55'06"N and 82°51'15"W–83°01'36"W; depth range 6.2–13.9 m.
Harbansus paucichelatus: 1 specimen.
Pseudophilomedes ferulanus: 1 specimen.

Anclotte Anchorage, near Tarpon Springs, north of Tampa; trawl sample with 1 m opening and small bag with 1/4" stretch mesh; collector Patsy A. McLaughlin.

- Sta 6; 19 Jan 1976; depth 1.25 m; bottom temperature 9.2°C; night trawl.
Harbansus paucichelatus: 1 ovigerous female (USNM 157436).

Placida Harbor (part of Charlotte Harbor) off Bird Key; 1974; collector Roger F. Cressey.

Specimens reported previously by Kornicker (1978:3).

Sample 3; 1 May; 2–3 m; Ockelman dredge tied to Otter trawl, mud washings.

Harbansus paucichelatus: 1 ovigerous female (USNM 150107), 1 adult female 151160, 1 adult female + 24 specimens (USNM 151985), 1 ovigerous female (USNM 151988), 2 specimens (USNM 152302, 152309).

Sample 4; 2 May; 2–3 m; mud bottom; weed washings from Otter trawl.

Harbansus paucichelatus: 1 ovigerous female (USNM 149329).

Sample 5; 16 Jul; 1–2 m; mud washings from Ockelman dredge tied to Otter trawl.

Harbansus paucichelatus: 2 specimens (USNM 151986); 1 adult female (USNM 151987).

ALABAMA CONTINENTAL SHELF

Bureau of Land Management Continental Shelf Study in Gulf of Mexico; collections from the Gulf Coast Research Laboratory, Ocean Springs, Miss.; received from Dr. Richard W. Heard.

Sta 2640; 29°43'29.3"N, 87°54'30.5"W; 22 m.

Harbansus paucichelatus: 1 female.

Pseudophilomedes ambon: 1 specimen.

Sta 2643; 29°36'31.0"N, 87°27'00.8"W; 68 m.

Harbansus paucichelatus: 2 specimens.

LOUISIANA CONTINENTAL SHELF

Sonnier Bank (previously known as Three Hickey Rock): continental shelf off Louisiana; 28°21'N; 92°27'W; collected by Walter B. Sikora, Texas A&M University.

Sta THR-1; 20 Jun 1977; 60 m.

Pseudophilomedes ambon: 1 adult male (USNM 158025), 1 juvenile male (USNM 158026).

Sta THR-2; 20 Jun 1977; 62 m.

Harbansus paucichelatus: 2 specimens (USNM 158851).

Philomedes duplex: 1 ovigerous female (USNM 158861).

Sta THR-3; 20 Jun 1977; 61 m.

Pseudophilomedes ambon: 1 adult female (USNM 158847), 18 specimens (USNM 158848).

Harbansus paucichelatus: 1 ovigerous female (USNM 158849).

Sta THR-4; 20 Jun 1977; 61 m.

Pseudophilomedes polyancistrus: 2 specimens (USNM 158846).

TEXAS CONTINENTAL SHELF

East Flower Garden vicinity; 27°53'N, 93°38'W; collected by Walter B. Sikora, Texas A&M University.

Sta EFG-1; 29 Aug 1976; about ¼ mile (0.4 km) downstream from East Flower Garden; 105 m.

Harbansus paucichelatus: 1 specimen (USNM 193031).

Pseudophilomedes polyancistrus: 4 specimens.

Sta EFG-3; 17 Jun 1977; ½ mile (0.8 km) downstream from the East Flower Garden; 105 m.

Harbansus paucichelatus: 15 specimens including 2 adult males (USNM 158853).

Pseudophilomedes polyancistrus: 50 specimens including adult males (USNM 158854).

Pseudophilomedes ambon: 4 specimens (USNM 158855).

Philomedes duplex: 1 adult female (USNM 158856); 271 specimens, some with parasitic nematodes (USNM 158857).

Sta EFG-3; 15 Sep 1977; 110 m.

Harbansus paucichelatus: 5 specimens (USNM 158858).

Pseudophilomedes polyancistrus: 19 specimens, 1 with parasitic nematode inside body (USNM 158859).

Pseudophilomedes ambon: 1 adult female (USNM 158024).

Philomedes duplex: 115 specimens, some with parasitic nematodes inside body (USNM 158860).

Sta EFG-4; 20 Jun 1977; one mile (1.6 km) downstream of the East Flower Garden; 91 m.

Harbansus paucichelatus: 2 adult males (USNM 158842).

Pseudophilomedes ambon: 1 ovigerous female (USNM 158023).

Philomedes duplex: 1 adult female, 1 adult male, 1 adult female, 8 specimens (USNM 158843A–D); 1 male, 1 female (USNM 158844, 158845).

Sta EFG-4; 15 Mar 1978, 103 m.

Harbansus paucichelatus: 1 ovigerous and 1 adult female (USNM 158862).

Philomedes duplex: 41 specimens (USNM 158863).

East Flower Garden brine seep area; 2–5 Sep 1980; depth 70–75 m; received from Eric N. Powell, Texas A&M University.

Sta 896-2(6), collected from either the carbonate bank around the brine "lake" or from the "lake" or sand "shoreline" adjacent to it.

Pseudophilomedes ambon: 1 ovigerous female (USNM 158864).

Off Galveston, R/V Gyre (Texas A&M University); 1974; collected by David Gettleton.

Cruise 10.

Sta 8; 28°10'N, 94°18'W; 56 m. (Latitude reported in-

- correctly as 25°10'N in Kornicker, 1978:4.)
Philomedes duplex: 3 specimens (USNM 157851).
- Sta 16; 28°10'N, 94°18'W; 53.5 m. (Latitude reported incorrectly in Kornicker, 1978:4.)
Philomedes duplex: 31 specimens (USNM 157855), 5 specimens (USNM 157868), 4 specimens (USNM 157870), 1 juvenile female (USNM 158241).
Pseudophilomedes ambon: 1 juvenile (USNM 158007), 1 juvenile (USNM 158019).
- Cruise 11.
 Sta 1; 28°24'N, 93°57'30"W; 49.25 m.
Philomedes duplex: 1 specimen (USNM 157856), 4 specimens (USNM 157862), 1 specimen (USNM 157863).
Pseudophilomedes ambon: 1 adult female (USNM 158010), 1 juvenile (USNM 158015); 1 ovigerous female (USNM 158017), 1 adult female (USNM 158018).
Pseudophilomedes polyancistrus: 1 A-1 male (USNM 158042).
- Sta 2; 28°22'36"N, 94°01'30"W; 49.75 m.
Philomedes duplex: 1 specimen (USNM 157861).
Pseudophilomedes ambon: 1 ovigerous female (USNM 156911), 1 adult female (USNM 158011).
Pseudophilomedes polyancistrus: 1 adult female (USNM 158037), 1 A-1 female (USNM 158043), 1 ovigerous female (USNM 158047), 1 adult male (USNM 158048).
- Sta 5; 28°19'30"N, 94°09'00"W, 50 m.
Philomedes duplex: 11 specimens (USNM 157850), 7 specimens (USNM 157852), 4 specimens (USNM 157857), 4 specimens (USNM 157869).
- Sta 7; 28°16'N, 94°30"W, 53 m.
Philomedes duplex: 2 adult males (USNM 157844A,B), 1 ovigerous female (USNM 157845), 46 specimens (USNM 157846), 69 specimens (USNM 157848), 58 specimens (USNM 157849), 36 specimens (USNM 157866).
Pseudophilomedes ambon: 2 juveniles (USNM 158008), 1 adult female (USNM 158016), 1 juvenile (USNM 158020), 1 juvenile (USNM 158021).
- Sta 28°15'18"N., 94°03'00"W, 57.75 m.
Philomedes duplex: 3 specimens (USNM 157853), 1 specimen (USNM 157864), 3 specimens (USNM 157867), 4 specimens (USNM 157872), 2 adult males (USNM 158231, 158235).
Pseudophilomedes ambon: 1 juvenile (USNM 158006), 1 juvenile (USNM 158009).
Pseudophilomedes polyancistrus: 1 specimen (USNM 158034), 2 adult females (USNM 158035), 1 ovigerous female (USNM 158041).
- Sta 9; 28°21'06"N, 93°40'18"W; 57.5 m.
Philomedes duplex: 1 adult female (USNM 153939), 1 adult male (USNM 154180), 1 adult male (USNM 157842), 3 juveniles (USNM 157843), 2 specimens (USNM 157858), 1 specimen (USNM 157859).
- Pseudophilomedes ambon*: 2 adult female and 3 juveniles (USNM 158012).
Pseudophilomedes polyancistrus: 1 adult female (USNM 158032), 1 juvenile female (USNM 158045).
- Sta 11; 28°22'12"N, 93°49'30"W; 54.75 m.
Philomedes duplex: 12 specimens including adult male and female (USNM 157847), 2 specimens (USNM 157865), 6 specimens (USNM 157871).
Pseudophilomedes ambon: 1 ovigerous female (USNM 158005), 1 adult male (USNM 158013), 1 juvenile (USNM 158014).
Pseudophilomedes polyancistrus: 4 adult females (USNM 158036), 2 adult females (USNM 158038), 1 adult female (USNM 158044).
- Sta 12; 28°23'30"N, 93°53'30"W; 51.75 m.
Philomedes duplex: 1 specimen (USNM 157854), 3 specimens (USNM 157860).
Pseudophilomedes polyancistrus: 5 adult females (USNM 158039, 158046, 158306).
- Stetson Bank; 28°10'N, 94°18'W; received from Rosalie Maddocks, University of Houston, who had received collection from Richard Titten, Department of Oceanography, Texas A&M University.
- Sta STB-1B; 5 Aug 1976; 55.8 m.
Harbansus paucichelatus: 1 specimen (USNM 193033).
Philomedes duplex: 1 female (USNM 193034).
- Sta STB-2B; 5 Aug 1976; 51.2 m.
Pseudophilomedes ambon: 1 juvenile (USNM 193036).
- Sta STB-2D; 5 Aug 1976; 51.2 m.
Pseudophilomedes ambon: 2 specimens (USNM 193037).
- Sta STB-2E; 5 Aug 1976; 52 m.
Pseudophilomedes ambon: 1 specimen (USNM 193038).
- Sta STB-4B; 6 Aug 1976; 50 m.
Philomedes duplex: 1 male (USNM 193039).
- Heald Bank, 40 mi (64 km) SW of Sabine Pass; *Magnolia* cruise 15; depth about 15 m; 18 Oct 1953; collector W.G. Hewatt. Reported previously in Kornicker (1978:4).
- Harbansus paucichelatus*: 1 ovigerous female (USNM 96478).
- Bureau of Land Management South Texas Outer Continental Shelf Study; University of Texas Marine Science Institute's benthic ecology group; collected aboard R/V *Longhorn* by University of Texas Science Institute personnel. Received from Richard D. Kalke.
- Transect I, south of Port O'Connor.
 Sta 3; 1 Jun 77; 27°34'N, 96°07'W, 134 m.

Harbansus paucichelatus: 1 specimen.
Sta 3; 6 Oct 1977; 27°34'N, 96°07'W, 134 m.
Philomedes duplex: 1 juvenile.
Sta 6; 10 Oct 1976; 27°39'N, 96°12'W; 100 m.
Harbansus paucichelatus: 1 juvenile.
Sta 6; 14 Feb 1977.
Harbansus paucichelatus: 1 female.

Transect II, off Port Aransas.
Sta 3; 27 Aug 1976; 27°18'N, 96°23'W; 131 m.
Philomedes duplex: 1 A-1 male.
Sta 3; 10 Feb 1977; 27°18'N, 96°23'W; 131 m.
Harbansus paucichelatus: 1 female.
Sta 6; 9 Oct 1976; 27°24'N, 96°29'W; 98 m.
Harbansus paucichelatus: 1 female.
Sta 6; 10 Feb 1977.
Harbansus paucichelatus: 1 specimen.

Transect III, off middle part of Padre Island.
Sta 2; 27 Jun 1976; 26°58'N, 96°48'W; 65 m.
Harbansus paucichelatus: 1 specimen.
Sta 3; 23 Sep 1976; 26°58'N, 96°33'W, 106 m.
Harbansus paucichelatus: 1 juvenile.
Sta 3; 29 Sep 1977.
Philomedes duplex: 1 juvenile.
Sta 4; 1 Feb 1977; 26°58'N, 97°20'W; 15 m.
Harbansus paucichelatus: 1 juvenile.
Sta 6; 4 Mar 1977; 26°58'N, 96°30'W; 125 m.
Philomedes duplex: 1 juvenile.
Sta 6; 27 Jun 1976.
Harbansus paucichelatus: 2 specimens.

Transect IV, off Port Isabel.
Sta 1; 20 Sep 1976; 26°10'N, 97°01'W; 27 m.
Harbansus paucichelatus: 28 specimens.
Sta 1; 30 Jan 1977.
Harbansus paucichelatus: 4 specimens.
Sta 2; 19 Sep 1976; 26°10'N, 96°39'W; 47 m.
Harbansus paucichelatus: 6 females.
Sta 2; 28 Jan 1977.
Harbansus paucichelatus: 7 specimens, including 4 adult males.
Sta 3; 24 May 1977; 26°10'N, 96°24'W; 91 m.
Philomedes duplex: 1 ovigerous female.
Sta 3; 29 Sep 1977.
Pseudophilomedes ferulanus: 2 specimens.
Harbansus paucichelatus: 1 specimen.
Sta 4; 26 Jun 1976; 26°10'N, 97°08'W, 15 m.
Pseudophilomedes polyancistrus: 5 specimens.
Sta 4; 20 Sep 1976.
Harbansus paucichelatus: 1 adult female (USNM 193043), 2 females and 1 male.
Sta 4; 30 Jan 1977.
Harbansus paucichelatus: 15 specimens including 2 adult males.
Pseudophilomedes ferulanus: 2 specimens.
Pseudophilomedes polyancistrus: 1 specimen.
Sta 4; 25 May 1977.
Pseudophilomedes ferulanus: 1 specimen.

Pseudophilomedes polyancistrus: 2 specimens.
Sta 5; 20 Sep 1976; 26°10'N, 96°54'W; 37 m.
Harbansus paucichelatus: 1 female.
Sta 6; 19 Sep 1976; 26°10'N, 96°31'W; 65 m.
Harbansus paucichelatus: 9 specimens.
Pseudophilomedes polyancistrus: 2 specimens.
Sta 6; 28 Jan 1977.
Harbansus paucichelatus: 1 female.
Philomedes duplex: 3 specimens.
Sta 6; 27 Sep 1977.
Pseudophilomedes ferulanus: 1 juvenile.
Pseudophilomedes polyancistrus: 6 specimens.
Sta 7; 24 May 1977; 26°10'N, 96°20'W; 130 m.
Harbansus paucichelatus: 1 specimen.
Sta 7; 27 Sep 1977.
Philomedes duplex: 1 juvenile.

Transect HR, on soft bottom adjacent to Hospital Rock (hard bottom).
Sta 1; 10 Dec 1976; 27°32'05"N, 96°28'19"W; 75 m.
Harbansus paucichelatus: 1 female.
Sta 4; 27 Aug 1976; 27°33'02"N, 96°29'03"; 76 m.
Harbansus paucichelatus: 1 female.

Transect SB, on soft bottom adjacent to Southern Bank (hard bottom).
Sta 3; 12 Jun 1976; 27°26'06"N, 96°31'47"W; 82 m.
Pseudophilomedes ferulanus: 2 specimens.
Sta 3; 10 Dec 1976.
Harbansus paucichelatus: 1 female.

BAHAMA ISLANDS

San Salvador Island, dump reef, 22 Dec 1979; water depth about 4 m; small net drawn along bottom *Thalassia* bed. Collected by Anne C. Cohen.

Harbansus paucichelatus: 1 adult male, 1 ovigerous female + 2 specimens (USNM 158405).

BELIZE

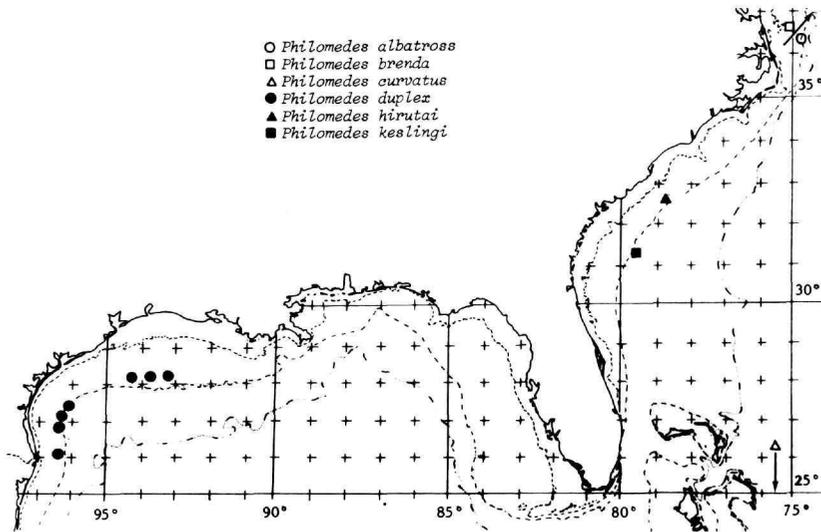
Carrie Bow Cay, 16°48'N, 88°05'W, small aquarium net scraping surface of sand, 1976; collector Anne C. Cohen. Specimens reported previously by Kornicker (1978:2).

Sta 16; 12 May; sand and rubble zone of lagoon; depth 1.5 m.

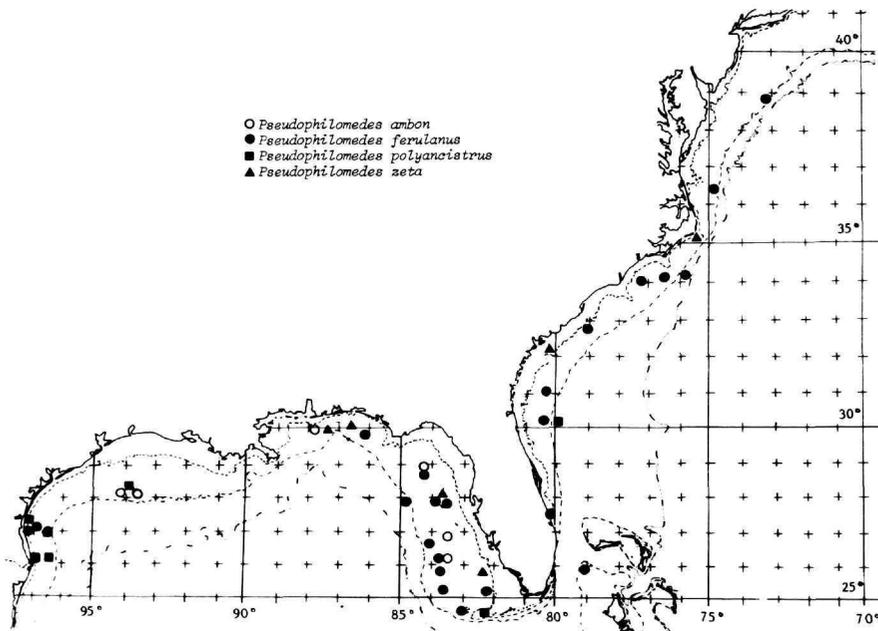
Harbansus paucichelatus: 1 adult male (USNM 156988).

Sta 62; 15 May; sand trough of outer fore-reef; 24 m.

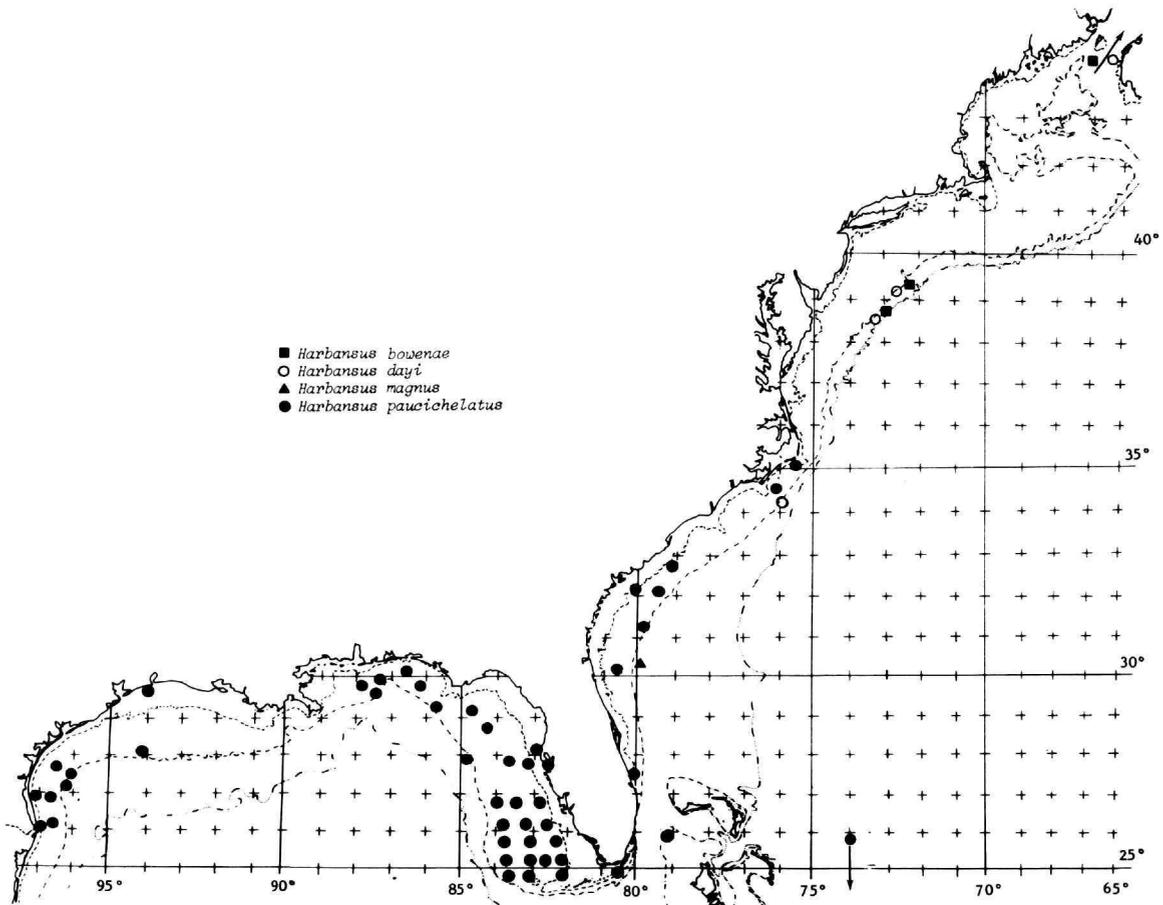
Harbansus paucichelatus: 1 adult female with chionostomatid copepod (USNM 157320).



MAP 1.—Distribution of *Philomedes albatross*, *P. brenda*, *P. curvatus*, *P. duplex*, *P. hirutai*, and *P. keslingi*. (Some closely spaced stations are represented by a single symbol; depth contours represent 10, 100, and 1000 fathoms; arrows indicate those specimens captured beyond the range of the map.)



MAP 2.—Distribution of *Pseudophilomedes ambon*, *P. ferulanus*, *P. polyancistrus*, and *P. zeta*. (Some closely spaced stations are represented by a single symbol; depth contours represent 10, 100, and 1000 fathoms.)



MAP 3.—Distribution of *Harbansus bowenae*, *H. dayi*, *H. magnus*, and *H. paucichelatus*. (Some closely spaced stations are represented by a single symbol; depth contours represent 10, 100, and 1000 fathoms; arrows indicate those specimens captured beyond the range of the map.)

Distribution

Philomedes brenda is the only species of Philomedidae known from as far north as Greenland (Table 1; Kornicker, 1982:2). That species extends south to Nova Scotia. Nova Scotia is also the southern limit of *Philomedes albatross* whose northern limit is Labrador (Kornicker, 1978:2). Two additional species, *Harbansus dayi* and *H. bowenae*, also live on the Canadian shelf. These species extend south to North Carolina. Three species also living off North Carolina, *Harbansus*

paucichelatus, *Pseudophilomedes ferulanus*, and *P. zeta* extend southward and into the Gulf of Mexico. *Harbansus paucichelatus* and *Pseudophilomedes ferulanus* also live in the Bahamas. Two species, *Philomedes duplex* and *Pseudophilomedes ambon*, were collected only in the Gulf of Mexico. *Pseudophilomedes polyancistrus*, mainly found in the Gulf, was also collected on the Atlantic shelf off Florida. The distribution of species discussed herein are shown in Table 1 and Maps 1–3. Localities in the Bahamas, the Virgin Islands,

TABLE 1.—Distribution and known depth range (m) of species of *Philomedes*, *Harbanus*, and *Pseudophilomedes* on the continental shelf of eastern North America and the Gulf of Mexico (dash indicates not collected).

Locality	<i>Philomedes</i>								<i>Harbanus</i>					<i>Pseudophilomedes</i>			
	<i>curvatus</i>	<i>brevula</i>	<i>albivittatus</i>	<i>hirtus</i>	<i>kestingi</i>	<i>duplex</i>	<i>dayi</i>	<i>bovencue</i>	<i>punctichelatus</i>	<i>magnus</i>	<i>fenestratus</i>	<i>uobon</i>	<i>polyancistrus</i>	<i>zeta</i>			
ATLANTIC:																	
Greenland	37																
Canada		58.5-67.7															
Foxe Basin			18-95														
Labrador			91														
Newfoundland		265	448				42										
Cape Breton Island		408-412	448				42										
Grand Manan		7-9															
Nova Scotia		122.5-448	91.4														
New Jersey							136-196	183-196			85						
North Carolina							160-198	36	34-44		20-160		33				
South Carolina				218					9-43		22		14				
Georgia					123				26-65		37						
Florida									0.2-43	460	10.9-43		147				
GULF OF MEXICO																	
Florida									1-190		22.5-190	33-97.5	25	17-40			
Alabama									22-66			22					
Louisiana																	
Sonmier Bank									61-62			60-61	61				
Texas																	
East Flower									61-110			61-105	105-110				
Garden vicinity																	
Off Galveston												49.3-57.7	49.3-57.7				
Stetson Bank						49.3-57.5											
Heald Bank						50-55.8			55.8			51.2-52					
South Texas shelf									15								
						65-134			15-134		82-106		65-106				
WEST INDIES																	
Bahama Islands									0.15-57.7		about 6						
Virgin Islands	900																
BELIZE									1.5-24								

and Belize south of latitude 25°S as well as localities north of latitude 45°N are indicated on maps with arrows.

PHILOMEDIDAE Müller, 1906

The Philomedidae comprises 2 subfamilies; Philomedinae Müller, 1906:12 and Pseudophilomedinae Kornicker, 1967:5. Both subfamilies have representatives in the study area.

PHILOMEDINAE Müller, 1906

Two genera of Philomedinae have previously been reported from the study area: *Philomedes* Liljeborg, 1853:176 (Kornicker, 1982:2) and *Zeugophilomedes* Kornicker, 1983:478 (Kornicker, 1983:478). Only *Philomedes* is reported upon herein.

***Philomedes* Liljeborg, 1853**

TYPE-SPECIES.—*Philomedes longicornis* Liljeborg, 1853:176 [= *Cypridina Brenda* Baird, 1850:181].

The following species of *Philomedes* have previously been reported from the study area: *P.*

brenda (Baird, 1850:181), *P. curvatus* Poulsen, 1962:355, and *P. albatross* Kornicker, 1982:16. *P. brenda* has been collected in an area extending from Nova Scotia to the northwestern tip of Greenland, *P. albatross* has been collected off Labrador, New Foundland, Cape Breton Island, and Nova Scotia (Table 1; Kornicker, 1982:7, 17), and *P. curvatus* Poulsen, 1962:355, has been collected in the Virgin Islands (Table 1; Poulsen, 1965:355). These species were not in the present collections. Two species that had been collected in the Gulf of St. Lawrence and identified by Brady (1870:450) as *Bradycinetus* species and ? *Philomedes interpuncta* were referred to *Philomedes* species indeterminate by Kornicker (1982:5). A species collected off Georgia and identified by Darby (1965:25) as *P. lilljeborgi* is referred herein to *P. keslingi*, new species. In addition to *P. keslingi*, two new species are described, *P. duplex* from the Gulf of Mexico, and *P. hirutai* from off South Carolina.

DISTRIBUTION.—Members of this genus are widespread, ranging from the Arctic to Antarctic, and have a known depth range of intertidal to 3382 m (Kornicker, 1975:229). Species in the present collection are from both the Atlantic Ocean and Gulf of Mexico (Map 1).

Key to Species of *Philomedes*

(West Atlantic and Gulf of Mexico)

- 1. 2nd joint of 1st antenna with 1 ventral bristle 2
- 2nd joint of 1st antenna with 2 or 3 ventral bristles 3
- 2. Dorsal margin of mandibular basale with 3 bristles 4
- Dorsal margin of mandibular basale with more than 3 bristles 5
- 3. 7th limb with 2 pegs opposite comb; carapace length of adult female less than 1.5 mm *P. duplex*, new species
- 7th limb with 3 pegs opposite comb; carapace length of adult female more than 1.6 mm *P. keslingi*, new species
- 4. 7th limb with 2 pegs opposite comb; 2nd endopodial joint of 2nd antenna of adult female with 2 bristles *P. hirutai*, new species
- 7th limb with 8 elongate pegs opposite comb; 2nd endopodial joint of 2nd antenna of adult female with 3 bristles *P. curvatus*
- 5. 7th limb with 5–7 elongate pegs opposite comb *P. albatross*
- 7th limb with 7–9 short pegs opposite comb *P. brenda*

Philomedes duplex, new species

Figures 1–8

ETYMOLOGY.—From the Latin *duplex* (double, twice), referring to the pair of ventral bristles on the 2nd joint of the 1st antenna.

HOLOTYPE.—USNM 157842, adult female, partly dissected, in alcohol.

TYPE-LOCALITY.—R/V *Gyre* cruise 11, station 9, Gulf of Mexico off Texas.

PARATYPES.—USNM 153939, 154180, 157842–157872, 158231, 158235, 158241, 158243–158245, 158856, 158857, 158860, 158861, 158863, 193034, 193039.

DISTRIBUTION.—Continental shelf off Texas; known depth range 49–134 m (Map 1).

DIAGNOSIS.—Anterior margin of rostrum concave; infold of carapace without “pocket;” length of adult females 1.24–1.33 mm (6 specimens). 2nd joint of 1st antenna of adult female with 1 dorsal bristle, 1 lateral bristle, and 2 (rarely 3) ventral bristles. 1st endopodial joint of 2nd antenna of adult female with 6 short bristles; 2nd joint with 1 long proximal bristle, 1 long or 2 short distal bristles, and 1 recurved terminal bristle. Dorsal margin of mandibular basale with 1 bristle distal to midline and 2 terminal. Seventh limb with 4 proximal bristles (2 on each side) and 5 distal bristles (3 on peg side, 2 on comb side); terminus with comb of about 9 alate teeth opposite 2 short pegs. Each lamella of furca with 10 claws decreasing in length posteriorly along lamella.

DESCRIPTION OF ADULT FEMALE (Figures 1–5).—Carapace oval in lateral view with prominent rostrum and narrow but distinct caudal process (Figure 1); anterior margin of rostrum concave; anteroventral corner of rostrum usually with minute process (Figure 2*a,b*); edge of valve along dorsal margin of caudal process minutely serrate (Figure 2*c*); specimens in collection with thin uncalcified valves, but some with minute oval nodules (probably artifacts); posterior margin of carapace concave on some specimens (Figure 1) but linear on others.

Ornamentation: Surface with sparsely distrib-

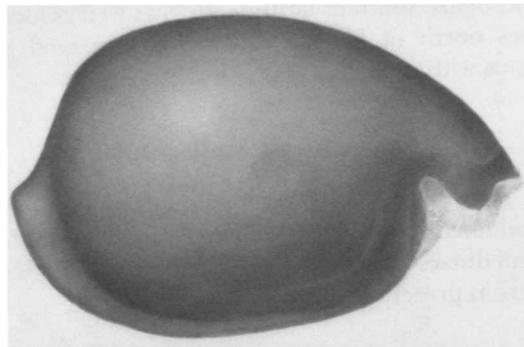


FIGURE 1.—*Philomedes duplex*, new species, USNM 153939, paratype, length 1.33 mm, lateral view of complete specimen.

uted long bristles emerging from closed pore with lip; short bristles forming row along edge of caudal process; surface of valve weakly reticulate; long bristles forming row proximal to ventral margin of valve and posterior margin of caudal process (Figure 2*c*).

Infold: Infold of rostrum with 13–17 bristles, most with marginal spines (Figure 2*a,b*; all marginal spines not in illustration); infold just ventral to incisur with 1 small bristle; anteroventral infold with 13 or 14 short, stout, spinous bristles along narrow weakly developed list; anteroventral margin proximal to list with about 12 ridges more-or-less parallel to valve edge; middle part of ventral infold with narrow list but no bristles; list on posterior part of ventral infold continuing along posterior infold, and with total of about 34 minute bristles, either singly or in pairs; infold of caudal process between list and valve edge broad, with 5 or 6 small bristles (Figure 2*c*).

Selvage: Selvage with broad, fringed, lamella prolongation except along posterior edge of caudal process where it becomes narrow; selvage along anterior margin ventral to incisur with long hairs with bases near middle of outer side of lamella prolongation.

Size: USNM 153939, length 1.33 mm, height 0.86 mm; USNM 157842, length 1.31 mm, height 0.90 mm; USNM 157845, length 1.24 mm, height 0.78 mm; USNM 157847B, length



FIGURE 2.—*Philomedes duplex*, new species, USNM 153939, paratype, adult female, length 1.33 mm: *a, b*, rostrum and incisor of right and left valves, inside view; *c*, caudal process of left valve, inside view; *d*, left 1st antenna, lateral view (small letters = terminal bristles); *e, f*, endopodites of left and right 2nd antennae, medial view.

1.33 mm, height 0.87 mm; USNM 157848B, length 1.24 mm, height 0.90 mm; USNM 157848C, length 1.29 mm, height 0.89 mm.

First Antenna (Figure 2d): 1st joint bare. 2nd joint spinous, with 1 dorsal bristle, 1 lateral bristle, and 2 (rarely 3) ventral bristles. 3rd joint short, with few dorsal spines and 3 bristles, 1 ventral, 2 dorsal. 4th joint with 5 terminal bristles, 4 ventral, 1 dorsal. Sensory bristle of long 5th joint with 4 proximal filaments and 4 at tip including stem. Medial bristle of minute 6th joint spinous, about same length as 5th joint. 7th joint: a-bristle spinous, about one and one-half times length of bristle of 6th joint; b-bristle shorter than sensory bristle of 5th joint, with 1 proximal and 4 distal filaments including stem; c-bristle same length as sensory bristle, with 4 or 5 proximal and 4 distal filaments including stem. 8th joint: d- and e-bristles bare with blunt tips, about same length as sensory bristle; f-bristle longer than b-bristle, with 4 proximal and 4 distal filaments including stem; g-bristle same length as sensory bristle, with 3 or 4 proximal and 4 terminal filaments including stem.

Second Antenna: Protopodite bare. Endopodite 2-jointed (Figure 2e): 1st joint short with 6 short bristles, 5 proximal, 1 distal; 2nd joint elongate with 1 long proximal ventral bristle and either 1 long or 2 short distal ventral bristles, and 1 recurved terminal bristle (right endopodite of USNM 153939 aberrant, Figure 2f). Exopodite: bristles of joints 2–5 fairly short, bare; bristles of joints 6–8 long, with natatory hairs; 9th joint with 7 bristles (3 short, 4 long), all with natatory hairs; 1st joint with minute terminal medial bristle with open tip; joints 2–8 with minute spines forming row along distal margin and basal spines increasing in size on distal joints; basal spine on joint 8 reaching past distal end of joint 9; lateral spine not observed on 9th joint.

Mandible (Figure 3a): Coxale endite bifurcate, spinous, with minute bristle near base. Basale: dorsal margin with 1 bristle distal to middle and 2 terminal (of these, lateral bristle about one-half length of medial bristle); medial surface hirsute, with 7 proximal bristles (3 pectinate and

3 spinous near middle, and 1 spinous near ventral margin), and 1 spinous distal bristle near ventral margin; ventral margin with 5 spinous bristles (longest of these distal to others). Exopodite hirsute, about three-fourths length of distal margin of 1st endopodial joint, with 2 subterminal bristles. 1st endopodial joint with 4 ventral bristles (1 of these very short). 2nd endopodial joint: ventral margin with bristles forming 2 distal groups (3 bristles in each group); dorsal margin with 12 bristles more-or-less forming 2 groups near middle (some of these bristles with bases on medial or lateral sides of joint); medial surface with spines forming rows. 3rd endopodial joint with 3 claws with ventral teeth, and 4 bristles.

Maxilla (Figure 3b): Endite I with 9 bristles; endite II with about 6 bristles; endite III with about 9 distal bristles and 1 proximal bristle; endites I and II shorter than endite III; endite I broader than endites II and III. Precoxale and coxale with dorsal lamellar prolongation with hirsute fringe. Coxale with spinous dorsal bristle. Basale with 3 distal bristles (dorsal of these short). Exopodite short, with 3 terminal bristles (2 long, 1 short). Endopodite: 1st joint with 1 spinous alpha-bristle and 5 beta-bristles; end joint with 3 pectinate claw-like bristles and about 9 ringed bristles (beta-bristles and most bristles on end joint not shown on illustrated limb).

Fifth Limb (Figure 4): Endite I with 6 bristles; endites II and III each with about 8 bristles. 1st exopodial joint: anterior side with 2 bristles (1 of these with few long spines); main tooth with stout bifurcate tooth anterior to large club-like tooth followed by 2 pectinate and 1 smooth tooth and 1 proximal, spinous bristle. 2nd exopodial joint: anterior side of large squarish tooth with small spinous bristle in distal outer corner and small bristle on lobe proximal to outer distal corner (lobe may be on 1st joint); posterior side of joint obscure but with 3 or 4 bristles. Outer lobe of 3rd exopodial joint with 2 spinous bristles, inner lobe with 3 bristles. Fused 4th and 5th exopodial joints with total of 7 spinous bristles. Epipodial appendage with 45 bristles.

Sixth Limb (Figure 5a): Endite I with 1 long,



FIGURE 3.—*Philomedes duplex*, new species, USNM 153939, paratype, adult female, length 1.33 mm: *a*, right mandible, medial view; *b*, right maxilla, lateral view (all bristles not shown on end joint).

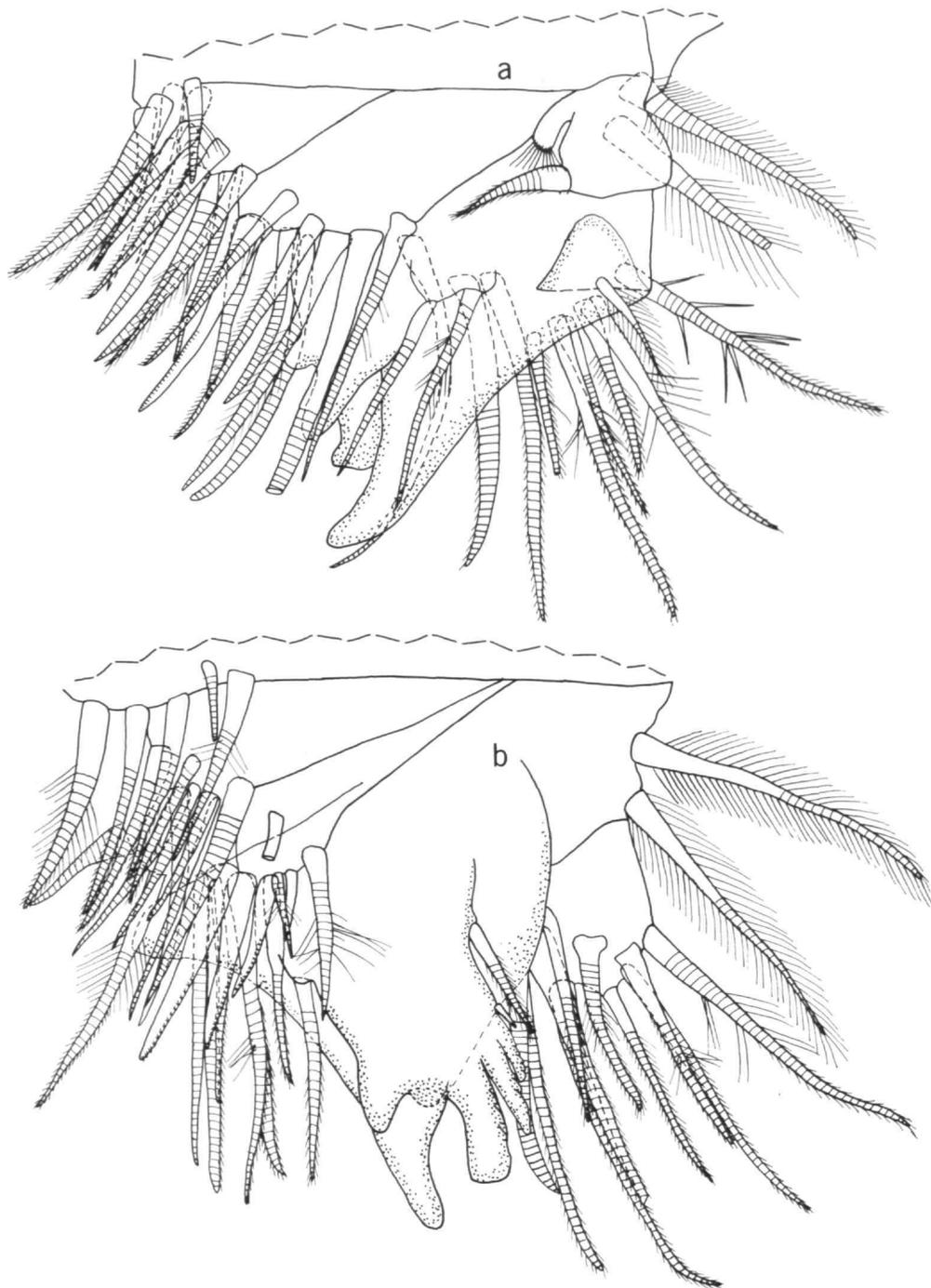


FIGURE 4.—*Philomedes duplex*, new species, USNM 153939, paratype, adult female, length 1.33 mm; *a*, *b*, right and left 5th limbs, anterior view.

spinous, terminal bristle and 2 short, spinous, medial bristles; endite II with 3 spinous terminal bristles and 1 short, spinous, medial bristle; endites III and IV each with 8 terminal bristles and 1 short, spinous, medial bristle; end joint projecting posteriorly, with 16 or 17 spinous and hirsute bristles; 3 hirsute bristles in place of epipodial appendage.

Seventh Limb (Figure 5b): Each limb with 4 proximal bristles (2 on each side) and 5 distal bristles (3 on peg side, 2 on comb side); each bristle with 3–5 bells and distal marginal spines; terminus with comb of about 9 alate teeth opposite 2 short pegs.

Furca: Each lamella with 10 claws decreasing in length posteriorly along lamella; hairs present medially at base of claw 1 and also following claw 10; posterior margin of claw 1 with stout teeth alternating with 1 or 2 small teeth; remaining claws with teeth along posterior margins.

Bellonci Organ (Figure 5c): Elongate with suture near middle and rounded tip.

Eyes (Figure 5c): Medial eye light amber, bare. Lateral eyes minute, each with 2 amber ommatidia.

Upper lip (Figure 5c): Hirsute with anterior projection with faint processes.

Y-Sclerite (Figure 5d): Ventral branch almost

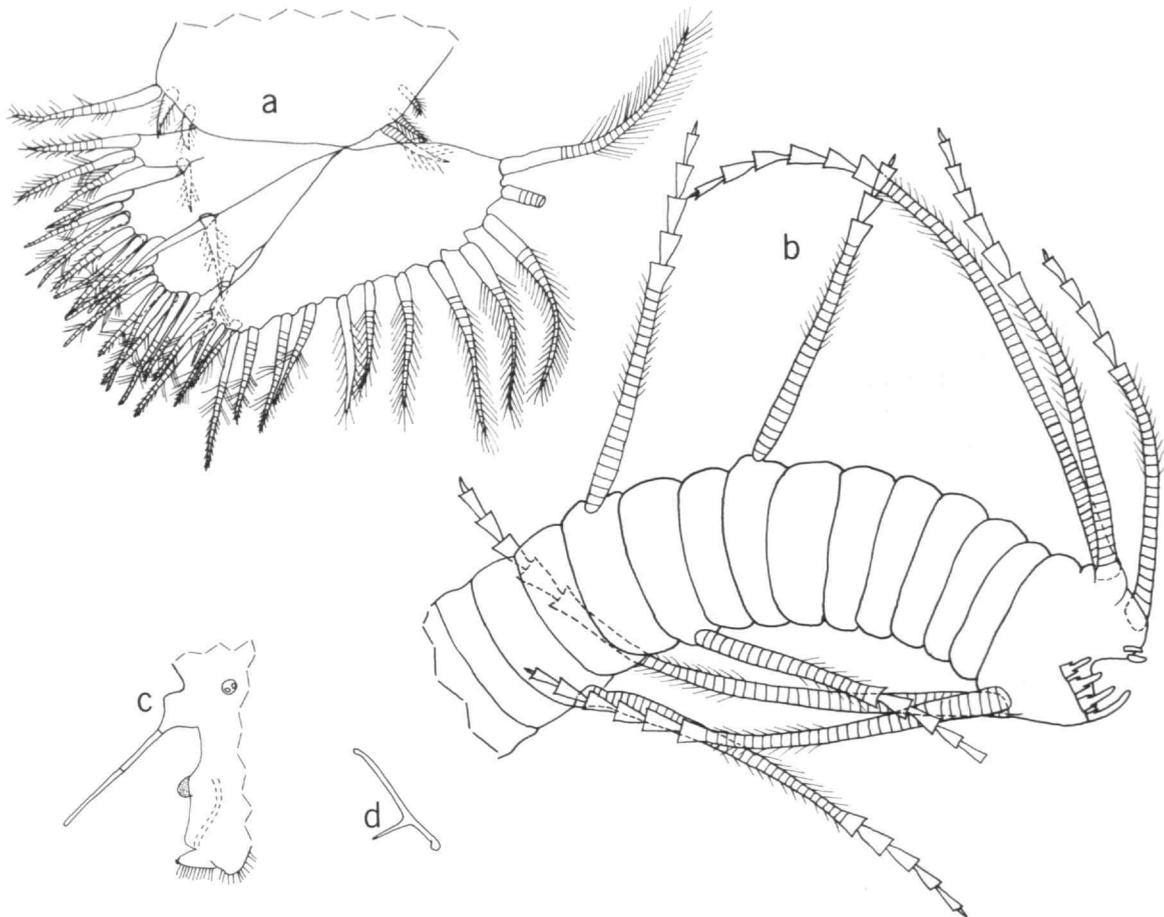


FIGURE 5.—*Philomedes duplex*, new species, USNM 153939, paratype, adult female, length 1.33 mm: a, 6th limb; b, 7th limb; c, medial eye, bellonci organ, left lateral eye, upper lip, and sclerotized anterior process; d, left Y-sclerite, anterior to left.

forming right angle with dorsal branch.

Genitalia: Small oval area colored pink with Rose-Bengal dye, on each side of body anterior to furca.

Eggs: USNM 153939 with about 10 unextruded eggs; USNM 157845 with 4 eggs in marsupium.

DESCRIPTION OF ADULT MALE (Figures 6–8).—Carapace more elongate than that of adult female, with incisur forming right angle, and with broadly convex margin on rostrum (Figure 6).

Size: USNM 154180, length 1.31 mm, height 0.68 mm; USNM 157844A, length 1.34 mm, height 0.74 mm; USNM 157844B, length 1.25 mm, height 0.66 mm; USNM 157847A, length 1.30 mm, height 0.65 mm; USNM 157848A, length 1.33 mm, height 0.60 mm; USNM 158231, length 1.27 mm, height 0.68 mm.

First Antenna (Figure 7a): 1st joint bare. 2nd joint spinous, with 4 bristles (2 ventral, 1 dorsal, 1 lateral). 3rd joint short, spinous, with 3 bristles (1 ventral, 2 dorsal). 4th joint elongate, with few spines and 5 bristles (4 ventral, 1 dorsal). 5th joint small, wedged ventrally between 4th and 6th joints; sensory bristle with stout stem with 5 short terminal filaments and abundant long proximal filaments. Medial bristle of long 6th joint with long spines near middle. 7th joint: a-bristle short spinous; b-bristle broken on specimen studied; c-bristle very long, with 13 marginal filaments. 8th joint: d- and e-bristles bare, tips broken on USNM 154180; f-bristle very long, with

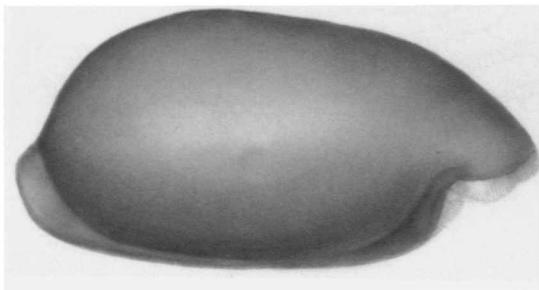


FIGURE 6.—*Philomedes duplex*, new species, USNM 154180, paratype, adult male, length 1.31 mm, lateral view of complete specimen.

about 12 marginal filaments; g-bristle broken on USNM 154180.

Second Antenna (Figure 7b): Protopodite bare. Endopodite 3-jointed: 1st joint short with 6 bristles (5 proximal, 1 distal); 2nd joint elongate, with 3 midbristles; 3rd joint elongate, reflexed on 2nd, with 1 proximal bristle (about same length as midbristles of 2nd joint) and 2 subterminal bristles; tip with 5 or 6 ridges. Exopodite: 1st joint with faint spines forming rows along concave margin, and minute terminal medial bristle; 2nd joint about half length of third but wider; joints 4–9 small, decreasing in width distally along stem; bristle of 2nd joint fairly short (reaching 7th joint), with ventral spines but no natatory hairs; bristles of joints 3–8 with natatory hairs; 9th joint with 6 bristles (2 short, 1 medium, 3 long), all with natatory hairs; joints 3–8 with narrow basal spines increasing in length distally along stem; basal spine of 8th joint same length as 9th joint; no lateral spine observed on 9th joint; joints 2–8 with minute spines forming row along distal margin.

Mandible (Figure 7c, d): Coxale endite minute, bifurcate distally, but without spines; minute bristle just distal to endite. Basale: dorsal margin with 1 bristle distal to middle and 2 terminal (of these, lateral bristle about one-third length of medial bristle); medial surface hirsute, with 7 spinous proximal bristles near ventral margin (1 closer to ventral margin than others); ventral margin with 4 spinous bristles (distal of these longer than others); lateral surface with 1 spinous bristle near middle of ventral margin. Exopodite hirsute, about two-thirds length of distal margin of 1st endopodial joint, with 2 subterminal bristles. 1st endopodial joint with 4 or 5 ventral bristles (1 or 2 of these very short); medial surface with short spines forming rows. 2nd endopodial joint: ventral margin with bristles forming 2 distal groups (3 bristles in each group); dorsal margin with bristles forming 2 groups near middle (5 or 6 bristles in proximal group, 6 in distal group); medial surface with spines forming rows. 3rd endopodial joint with 3 claws with ventral teeth (ventral teeth not shown on illustration), and 4 bristles.



FIGURE 7.—*Philomedes duplex*, new species, USNM 154180, paratype, adult male, length 1.31 mm: *a*, right 1st antenna, medial view; *b*, endopodite of right 2nd antenna, lateral view; *c*, left mandible, medial view; *d*, proximal prongs and distal bristle of coxale endite of right mandible, lateral view through coxale; *e*, maxilla (not all bristles shown).

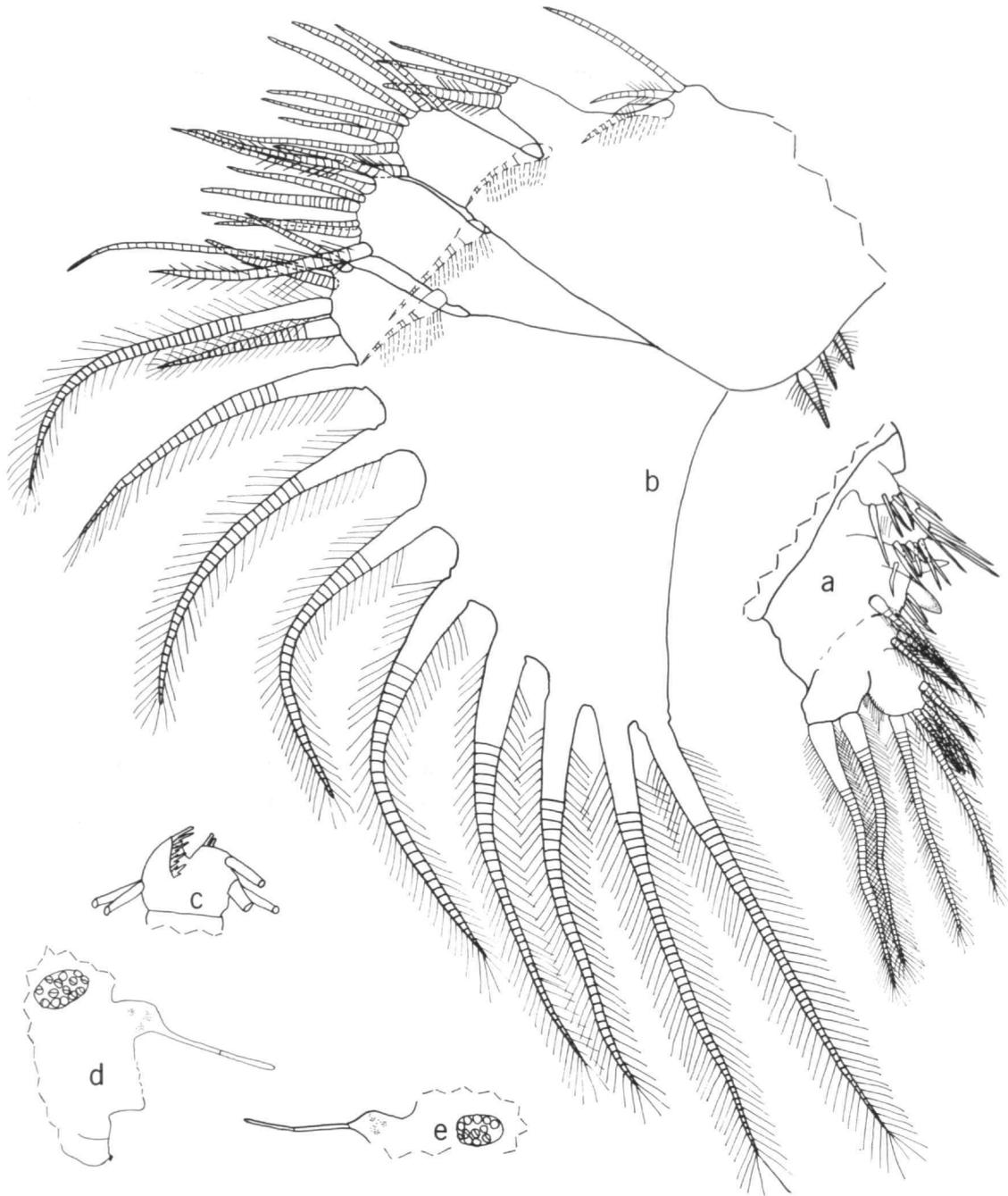


FIGURE 8.—*Philomedes duplex*, new species, USNM 154180, paratype, adult male, length 1.31 mm: *a*, 5th limb; *b*, 6th limb; *c*, tip of 7th limb (only proximal parts of bristles shown); *d*, medial eye and bellonci organ, right lateral eye, upper lip; *e*, medial eye and bellonci organ, left lateral eye.

Maxilla (Figure 7e): Reduced; coxale endites and endite bristles weakly developed; coxale with fringed lamella prolongation along dorsal margin and stout hirsute dorsal bristle; basale with 3 bristles. Exopodite with 3 hirsute bristles (2 long, stout; 1 short). Endopodite: 1st joint hirsute, with 1 alpha-bristle near middle of anterior margin, and 4 or 5 beta-bristles; 2nd joint with many weakly developed bristles.

Fifth Limb (Figure 8a): Epipodial appendage with 45 bristles. Endites and exopodite weakly developed. Endites I–III with numerous weakly developed bristles. Exopodite: 1st joint with 2 finger-formed bristles and several slender bristles, all weakly developed; 2nd joint with sclerotized finger-formed bristle and several weakly developed bristles; 3rd joint with 3 short slender bristles on inner lobe and 2 long bristles on outer lobe, all bristles hirsute; joints 4 and 5 fused, with total of 5 hirsute bristles.

Sixth Limb (Figure 8b): Endite I with 3 bristles; endite II with 4 bristles (1 medial, 3 terminal); endite III with 9 bristles (1 medial, 8 terminal); endite IV with 8 bristles (1 medial, 7 terminal); medial bristle and posterior terminal bristle of endites hirsute, others bare. End joint projecting posteriorly, with 13 bristles (mostly hirsute) along ventral margin. 3 short hirsute bristles present in place of epipodial appendage.

Seventh Limb (Figure 8c): Each limb with 6 proximal bristles (3 on each side) and 5 distal bristles (3 on peg side, 2 on comb side); each bristle with 4 or 5 bells and distal marginal spines; terminus with comb of about 10 alate teeth opposite 2 short pegs.

Furca: Similar to that of female.

Bellonci Organ (Figure 8d,e): Similar to that of female.

Eyes (Figure 8d,e): Medial eye bare, with a few spots of light pigment. Lateral eye slightly larger than medial eye, pigmented light amber, with about 13 ommatidia.

COMPARISONS.—The only previously described species of *Philomedes* with a pair of bristles on the ventral margin of the 2nd joint of the 1st antenna is *P. lofthousae* Kornicker, 1975:281.

The latter species is much larger than *P. duplex*, the dorsal margin of the 2nd joint of the 1st antenna of the adult female bears 2 bristles rather than 1; and the dorsal margin of the mandibular basale bears 4 bristles rather than 3.

Philomedes keslingi, new species

FIGURE 9

Philomedes lilljeborgi Darby, 1965:25, pl. 10.

ETYMOLOGY.—The species is named for Professor Robert V. Kesling, The University of Michigan.

HOLOTYPE.—UMMP 48781, adult female on slides (unique specimen).

TYPE-LOCALITY.—Continental shelf off Sapelo Island, Georgia, depth 123 m.

DISTRIBUTIONS.—Collected only at type-locality (Map 1).

REMARKS.—Although Darby (1965:25) referred the single female *Philomedes* in his collections from off Sapelo Island, Georgia, to *P. lilljeborgii* (Sars, 1866:112), which was described in detail (female only) by Skogsberg (1920:402), Darby's specimen differs from *P. lilljeborgii* in having 2 or 3 ventral bristles compared to 1 ventral bristle on the 2nd joint of the 1st antenna, 3 compared to 6 or 7 dorsal bristles on the mandibular basale, and 3 compared to 8 or more pegs opposite the comb of the 7th limb. Also, the carapace of Darby's specimen does not have the projecting caudal process present on *P. lilljeborgii*. These differences do not permit inclusion of Darby's specimen in *P. lilljeborgii*.

DIAGNOSIS.—Anterior margin of rostrum concave; infold of caudal process without "pocket;" length of adult female 1.74 mm (1 specimen). 2nd joint of 1st antenna of adult female with 1 dorsal bristle, 1 lateral bristle, and 2 or 3 ventral bristles. 1st endopodial joint of 2nd antenna of adult female with 6 bristles; 2nd joint with 1 long proximal bristle, 2 short distal bristles, and 1 dorsal subterminal bristle. Dorsal margin of mandibular basale with 1 bristle distal to middle and 2 terminal. 7th limb with 4–6 proximal bristles

(2 or 3 on each side) and 5 distal bristles (3 on peg side, 2 on comb side); terminus with comb of 9–11 alate teeth opposite 3 elongate spinous pegs. Each lamella of furca with 10 claws decreasing in length posteriorly along lamella.

DESCRIPTION OF ADULT FEMALE (Figure 9).—Carapace oval in lateral view with truncate posterior and projecting rostrum; posteroventral corner with finely crenulate margin visible at high magnification ($\times 40$ objective; Figure 9a);

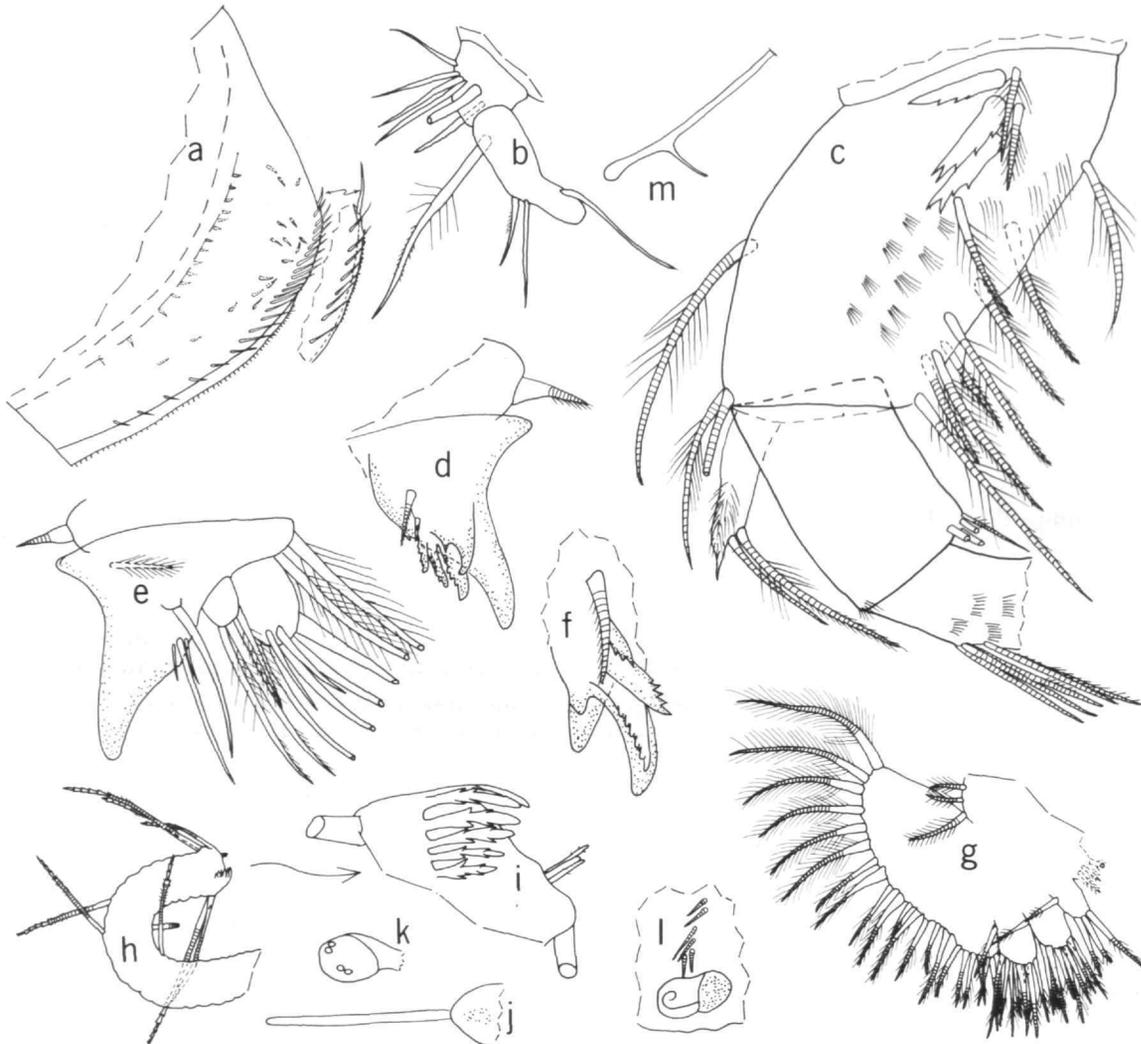


FIGURE 9.—*Philomedes keslingi*, new species, UMP 48781, holotype, adult female, length 1.74 mm: a, caudal process of left valve, lateral view (dashed bristles are on infold); b, endopodite of right 2nd antenna, medial view; c, part of right mandible, medial view; d, part of left 5th limb, anterior view; e, part of right 5th limb, posterior view; f, main tooth of 1st exopodial joint of right 5th limb; g, 6th limb; h, 7th limb; i, detail showing tip of h; j, medial eye and bellonci organ; k, lateral eye; l, genital organ and brush-like organ on right side of body; m, left Y-sclerite, anterior towards right, medial view.

anterior margin of rostrum concave (see Darby, 1965, pl. 10: figs. 2, 6); minute process at ventral tip of rostrum barely evident and not projecting past edge of rostrum.

Ornamentation: Reticulate structure visible in transmitted light; lateral surface with sparsely distributed bristles, some with broad bases; posteroventral corner of valves with bristles forming row near edge (Figure 9a); ventral margin with more widely spaced bristles forming row; anteroventral corner of valves ventral to rostrum with 2 or 3 rows of bristles; bristles also forming row along edge of incisur and present on rostrum.

Infold: Rostral infold with about 23 bristles forming row; bristle present on infold near inner end of incisur; anteroventral infold with about 17 ridges paralleling edge of valve and about 6 bristles near valve edge; infold broad along posteroventral corner of valve (caudal process), with numerous minute bristles along list and about 17 minute bristles between list and edge of valve.

Selvage: Selvage with broad, fringed, lamellar prolongation except along posterior edge of valve where it appears to terminate just ventral to crenulate margin of tip of caudal process (Figure 9a); selvage along anterior margin ventral to incisur with long hairs with bases near middle of lamellar prolongation. (The caudal process of the left valve only is not obscure on Darby's slide of the holotype. The dorsal part of the list in the vicinity of the caudal process appears to be torn and is left blank in Figure 9a).

Size: Holotype, UMMP 48781, length 1.74 mm, height 1.62 mm (Darby, 1965:26).

First Antenna (Darby, 1965, pl. 10: fig. 1): 1st joint bare. 2nd joint spinous, with 1 dorsal bristle, 1 lateral bristle, and 2 or 3 ventral bristles. 3rd joint short with 3 bristles (1 ventral, 2 dorsal). 4th joint with 1 dorsal bristle and 4 ventral bristles (2 long, 2 short). Sensory bristle of long 5th joint with 4 proximal filaments and 5 at tip including stem. Medial bristle of minute 6th joint almost as long as 5th joint, with long proximal spines. 7th joint: a-bristle about 2 or 2½ times length of bristle of 6th joint, with short marginal

spines; b-bristle shorter than sensory bristle, with 1 proximal and 4 terminal filaments including stem; c-bristle about same length as sensory bristle, with 4 proximal and 5 distal filaments including stem. 8th joint: d- and e-bristles bare with blunt tips, longer than b-bristle but slightly shorter than sensory bristle; f-bristle slightly longer than b-bristle, with 4 proximal and 4 terminal filaments including stem.

Second Antenna: Protopodite bare. Endopodite 2 jointed (Figure 9b): 1st joint with 6 bare bristles; 2nd joint with 3 ventral bristles and 1 dorsal subterminal bristle (Figure 9b; also see Darby, 1965, fig. 11). Exopodite: 1st joint with minute, terminal, medial bristle; bristles of joints 2–5 fairly short, bare (some broken off); bristles of joints 6–8 long, with natatory hairs (some bristles broken); 9th joint with 4 stout bristles with natatory hairs (some bristles broken) and 3 slender shorter bristles (smallest with short spines, others with long hairs); joints 2–8 with spines forming row along distal margin, and basal spine on joint 8 almost reaching distal end of 9th joint; 9th joint without lateral spine.

Mandible (Figure 9c, also Darby, 1965, pl. 10: fig. 3): Coxale endite bifurcate, spinous, with minute bristle near base. Basale: dorsal margin with 1 bristle distal to middle and 2 terminal (of latter, lateral bristle about one-half length of medial bristle); medial surface with spines forming rows, 5 proximal bristles near middle (3 stout pectinate, 2 slender with both long spines and minute teeth), 1 spinous bristle near middle just distal to stout pectinate bristles, and 3 distal bristles near ventral margin (distal of these longer than others and with base on, or almost on, ventral margin); ventral margin with 1 proximal spinous bristle; lateral surface with 4 short spinous bristles with bases close to ventral margin. Exopodite hirsute, almost three-fourths length of distal margin of 1st endopodial joint, with 2 subterminal bristles. 1st endopodial joint with 4 ventral bristles (1 of these short). 2nd endopodial joint: ventral margin with distal bristles forming 2 groups (3 spinous bristles in each

group); dorsal margin with bristles forming 2 groups (5 bristles in proximal group; 5 longer bristles in group near middle of margin); medial surface with spines forming rows. 3rd endopodial joint with 3 claws with ventral teeth, and 4 bristles.

Maxilla (Darby, 1965, pl. 10: fig. 4): Precoxale and coxale with dorsal fringe; coxale with hirsute dorsal bristle. Endite I broad, with 9 or 10 bristles; endite II narrow, with 6 bristles; endite III with 1 proximal and about 8 distal bristles; endites I and II shorter than endite III. Exopodite with 3 bristles (2 long, 1 short). Basale with 3 distal bristles (dorsal of these short). Endopodite: 1st joint with 1 spinous alpha-bristle and minimum of 3 or 4 beta-bristles (exact number of beta-bristles obscure on holotype); end joint with 3 pectinate claw-like bristles and about 8 ringed bristles.

Fifth Limb (Figure 9d-f; also Darby, 1965, pl. 10: fig. 5): Endite I with 6 bristles; endites II and III each with about 8 bristles. 1st exopodial joint: main tooth of left limb with bifurcate tooth anterior to pectinate distal tooth; distal tooth followed by 2 pectinate teeth, 1 slender pointed tooth with few faint marginal teeth, and 1 spinous bristle (Figure 9d); main tooth of right limb somewhat different (Figure 9f). 2nd exopodial joint with large triangular tooth having 1 or 2 minute processes along inner edge; small bristle on lobe proximal to outer distal corner of tooth (Figure 9d,e); slender bristle on anterior side near distal corner of tooth (Figure 9e); posterior side with 4 bristles. Inner lobe of 3rd exopodial joint with 3 spinous bristles; outer lobe with 2 spinous bristles. Fused 4th and 5th joints with total of 6 spinous bristles (spines not shown on bristles in Figure 9e);

Sixth Limb (Figure 9g; also Darby, 1965, pl. 10: fig. 7): Endite I with 3 bristles; endite II with 4 spinous bristles (3 terminal, 1 proximal); endites III and IV each with 9 spinous bristles (8 terminal, 1 proximal); end joint with 22 or 23 spinous and hirsute bristles; 3 hirsute bristles in place of epipodial appendage.

Seventh Limb (Figure 9h,i; also Darby, 1965, pl. 10: fig. 10): Each limb with 4-6 proximal bris-

les (2 or 3 on each side) and 5 distal bristles (3 on peg side, 2 on comb side); each bristle with 4 or 5 bells and distal marginal spines; terminus with comb of 9-11 alate teeth opposite 3 elongate spinous pegs.

Furca (Darby, 1965, pl. 10: fig. 8): Each lamella with 10 claws decreasing in length posteriorly along lamella: hairs present medially on claws near their base and following claw 10; posterior margin of claw 1 with alternating large and small teeth; remaining claws with teeth along posterior margins; claw 1 of right lamella anterior to claw 1 of left lamella. (In the photograph by Darby (1965, pl. 10: fig. 8) claw 1 of the left lamella appears to be anterior to claw 1 of the right lamella. This is because the camera was focused on the left lamella.)

Bellonci Organ (Figure 9j; also Darby, 1965, pl. 10: fig. 9): Elongate, cylindrical with rounded tip; middle suture, if present, very faint.

Eyes: Medial eye with light amber pigment (Figure 9j; also Darby, 1965, pl. 10: fig. 9). Lateral eye minute, unpigmented, with 4 minute ommatidia (Figure 9k).

Y-Sclerite (Figure 9m): Typical for genus.

Genitalia (Figure 9l): Small rounded sclerotized process on each side of body anterior to furca.

Brush-like Organ (Figure 9l): 6 or 7 minute ringed bristles above each genital organ.

Eggs: Large unextruded eggs visible on slide bearing furca.

COMPARISONS.—*P. keslingi* closely resembles *P. duplex*, a new species described herein, which also bears 2 (rarely 3) ventral bristles on the 2nd joint of the 1st antenna. It differs from *P. duplex* in having 3 rather than 2 pegs opposite the comb of the 7th limb. The length of the single known specimen of *P. keslingi* is 1.74 mm compared to 1.24-1.33 mm for 6 measured specimens of *P. duplex*. *P. keslingi* differs from *P. lofthousae* Kornicker, 1975:281, in having 1 instead of 2 dorsal bristles on the 2nd joint of the 1st antenna, 3 instead of 4 bristles on the dorsal margin of the mandibular basale, and in having a smaller carapace. The length of *P. lofthousae* is 2.37-2.42 mm (2 specimens).

Philomedes hirutai, new species

FIGURES 10–13

ETYMOLOGY.—Named for Dr. Shinichi Hiruta, Hokkaido University, Japan.

HOLOTYPE.—USNM 158252, adult female on slide and in alcohol (unique specimen).

TYPE-LOCALITY.—Upper continental slope off South Carolina, Bureau of Land Management southeast coastal study, sta 0155-2 (2G), depth 218 m.

DISTRIBUTION.—Collected only at the type-locality (Map 1).

DIAGNOSIS.—Anterior margin of rostrum concave; length of adult female 1.79 mm (1 specimen). 2nd joint of 1st antenna of adult female with 3 bristles (1 ventral, 1 dorsal, 1 lateral). 1st endopodial joint of 2nd antenna of adult female with 6 bristles, 2nd joint with 1 spinous ventral bristle and 1 recurved terminal bristle. Dorsal margin of mandibular basale with 1 bristle distal to middle and 2 terminal. 7th limb with 8 proximal bristles (4 on each side) and 5 distal bristles (3 on peg side, 2 on comb side); terminus with comb of about 5 alate teeth opposite 2 pegs (outer peg shorter than inner peg). Each lamella of furca with 10 claws decreasing in length posteriorly along lamella.

DESCRIPTION OF ADULT FEMALE (Figures 10–13).—Carapace oval in lateral view with promi-

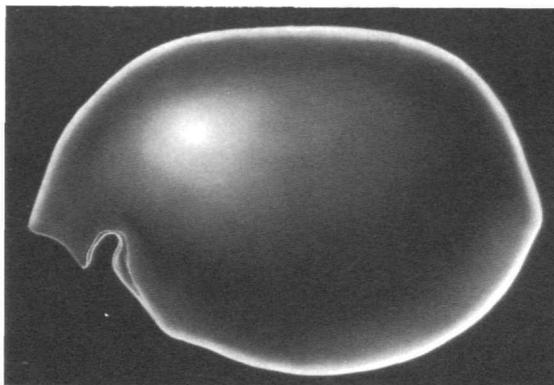


FIGURE 10.—*Philomedes hirutai*, new species, USNM 158252, holotype, adult female, length 1.79 mm, lateral view of complete specimen.

nent rostrum having concave distal margin; posterior end forming angle just below valve middle; without caudal process except for slight broadening of infold at posteroventral curvature of valve (Figure 11c–f); anteroventral corner of rostrum with minute process barely extending past edge of rostrum (Figure 11b); posterior margin of valve, ventral to bristle on inner side of valve at posterior angle, minutely pustulose (Figure 11c,e,f); viewed from inside, edge of valve between posterior angle and “caudal process” linear (Figure 11c–f).

Ornamentation: Valve surface with widely distributed short and long bristles, many with broad basal part; bristles more abundant along ventral margin and, also, along posterior margin ventral to posterior angle (Figure 11c,e); weak reticulations visible in transmitted light.

Infold: Infold of rostrum with 17 hairy bristles along posterior and distal margins, and 3 widely spaced bristles along ventral margin (Figure 11b); 1 minute bristle present proximal to ventral part of inner end of incisur (Figure 11b); anteroventral infold with about 11 ridges, the outer of these being the list; anteroventral list with about 10 short, stout, spinous bristles; middle part of ventral infold with narrow list but no bristles; list on posteroventral and posterior infold (to point just dorsal to angle near middle of posterior valve margin) with about 45 small bristles (in groups of 1 to 3 bristles, usually 2); list not present along posterodorsal infold between point just dorsal to posterior valve angle and posterior juncture of ligament; posterodorsal infold with about 10 bristles (many of these longer than those along list, Figure 11c; not all bristles shown in Figure 11c); USNM 158252, in vicinity of “caudal process,” with 1 bristle between list and valve edge on left valve (Figure 11c) but without bristle on right valve (Figure 11d).

Selvage: With broad, fringed, lamella prolongation except along posterior edge of valve dorsal to posteroventral curvature where selvage becomes narrow and bare (Figure 11f); anteroventral selvage with long hairs with bases at proximal edge of lamellar prolongation.

Size: Length 1.79 mm, height 1.23 mm.

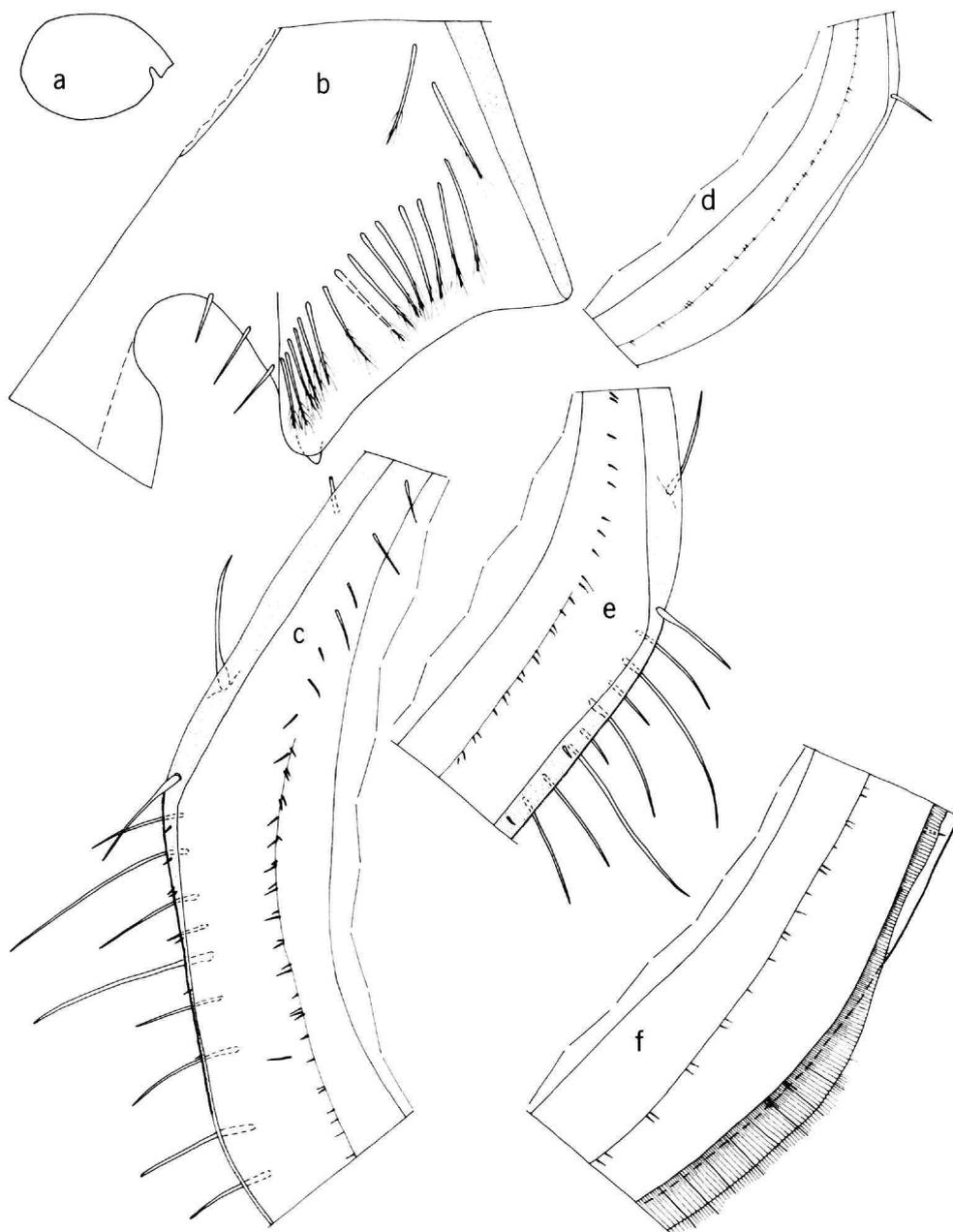


FIGURE 11.—*Philomedes hirutai*, new species, USNM 158252, holotype, adult female, length 1.79 mm: *a*, outline of complete specimen. Inside views of left valve: *b*, rostrum; *c*, posterior showing posterior corner near middle, and slight caudal process near bottom. Inside views of right valve: *d*, posterior showing posterior corner near bristle, and caudal process near bottom; *e*, detail of posterior corner in *d* showing more bristles; *f*, detail of caudal process area in *d* showing selvage.

First Antenna (Figure 12a,b): 1st joint with medial and lateral spines. 2nd joint spinous, with 3 equilength bristles (1 ventral, 1 dorsal, 1 lateral). 3rd joint short with 3 or 4 bristles (1 ventral, 2 or 3 dorsal). 4th joint with 5 bristles (1 dorsal, 4 ventral; left limb of USNM 158252 with only 2 ventral bristles considered atypical). Sensory bristle of long 5th joint with 6 short proximal filaments and 5 terminal filaments including stem. Short 6th joint with spinous medial bristle. 7th joint: spinous a-bristle about twice length of bristle of 6th joint; b-bristle about twice length of a-bristle, shorter than sensory bristle of 5th joint, with 4 marginal filaments (1 proximal, 3 subterminal); c-bristle only slightly shorter than sensory bristle, with 5 proximal and 5 terminal filaments including stem. 8th joint: d- and e-bristles bare with blunt tips, about same length as c-bristle; f-bristle longer than b-bristle but shorter than c-bristle, with 8 filaments including stem; g-bristle same length as sensory bristle, with 3 proximal and 5 terminal filaments including stem.

Second Antenna (Figure 12c,d): Protopodite bare. Endopodite 2-jointed: 1st joint with 6 short equilength bristles; 2nd joint elongate, with 1 spinous ventral bristle (shortness of bristle of right limb of USNM 158252 considered atypical, Figure 12c), and 1 recurved terminal bristle. Exopodite: 1st joint with medial hairs forming rows and minute, terminal, medial bristle with tubular tip; bristle of 2nd joint just reaching past distal end of 9th joint, with about 7 faint ventral spines near middle and with spine at tip; bristles of joints 3–5 short, less than twice length of bristle of 2nd joint, bare except for spine at tip; bristles of joints 6–8 long, with natatory hairs, some with few faint ventral spines near middle; 9th joint with 7 bristles (3 long with natatory hairs and few faint spines; 1 medium with natatory hairs; 3 short with numerous small marginal spines, no hairs); joints 2–8 with fairly long hairs forming row along distal margin; joints 3–8 with small basal spines; 9th joint with small lateral spine.

Mandible (Figure 12e): Coxale endite bifur-

cate, spinous, with minute bristle near base. Basale: dorsal margin with 3 bristles (1 near middle, 2 terminal); medial side with long spines forming rows, 5 proximal ventral bristles (3 unringed and strongly pectinate, 2 ringed, spinous, and weakly pectinate), and 1 additional spinous bristle just distal to the 5 proximal bristles; ventral margin with 2 spinous distal bristles; lateral surface with 5 spinous bristles near ventral margin (proximal bristle especially close to margin). Exopodite hirsute, about three-fourths length of dorsal margin of 1st endopodial joint, with 2 spinous subterminal bristles (distal bristle shorter than other). 1st endopodial joint with short medial spines forming rows and 4 ventral bristles (3 long, 1 short). 2nd endopodial joint: ventral margin with bristles forming 2 distal groups (3 bristles in proximal group, 3 or 4 in other); dorsal margin with bristles forming 2 groups near middle (4 bristles in proximal group, 6 in other); medial surface with long and short spines forming rows. End joint with 3 stout claws with ventral spines (dorsal claw about one-half length of middle claw; ventral claw about three-fourths length of middle claw), and 4 bristles (at least 3 of these with spines).

Maxilla (Figures 12f, 13a): Precoxale and coxale with dorsal fringe; coxale with plumose dorsal bristle. Endite I broad, with 10 spinous bristles; endite II narrow, with 6 spinous bristles; endite III narrow, much longer than endite II, with 1 proximal bristle and about 8 distal bristles. Basale with 3 bristles along distal margin (1 dorsal, 2 ventral). Exopodite with 3 bristles (2 long, spinous; 1 short, bare). 1st endopodial joint with 1 alpha-bristle with long proximal and short, distal, marginal spines, 5 bare beta-bristles (Figure 13a), and hairs along anterior margin. 2nd endopodial joint obscure on specimen examined but with 3 stout pectinate claws (not all shown on illustrated limb) in addition to ringed bristles.

Fifth Limb (Figure 13b): Endite I with about 5 bristles; endites II and III each with about 10 spinous bristles; some bristles of endites claw-like, pectinate, others bristle-like, some with spear-like tips. 1st exopodial joint: main tooth



FIGURE 12.—*Philomedes hirutai*, new species, USNM 158252, holotype, adult female, length 1.79 mm: *a*, right 1st antenna, medial view; *b*, tip of left 1st antenna, lateral view (b-bristle not shown); *c*, endopodite and part of protopodite of right 2nd antenna, medial view; *d*, endopodite of left 2nd antenna, medial view; *e*, left mandible, medial view; *f*, right maxilla, lateral view (not all endopodial bristles shown).

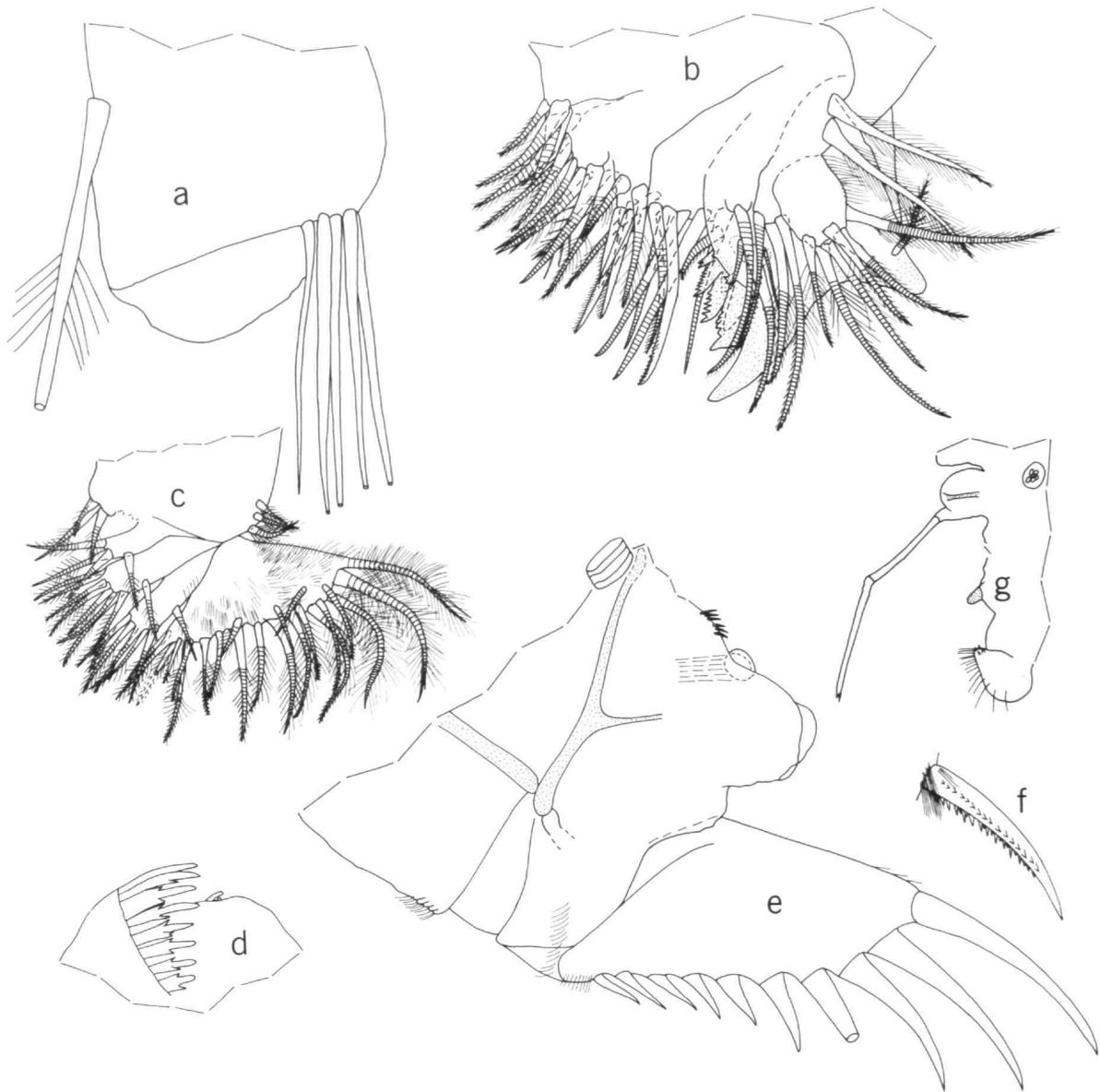


FIGURE 13.—*Philomedes hirutai*, new species, USNM 158252, holotype, adult female, length 1.79 mm: *a*, maxilla, alpha- and beta-bristles of 1st endopodial joint of left limb, medial view; *b*, right 5th limb, posterior view; *c*, 6th limb; *d*, tip of 7th limb (bristles not shown); *e*, posterior of body showing right lamella of furca, genital organ, brush-like organ, proximal part of 7th limb, Y-sclerite (stippled), and lower part of girdle (stippled); *f*, claw 1 of left lamella of furca, medial view; *g*, anterior of body showing medial eye, bellonci organ, left lateral eye, upper lip, and sclerotized anterior process.

consisting of 3 stout pectinate teeth followed closely by tooth having only 1 small marginal tooth; distal pectinate tooth of main tooth with large bifurcate tooth on anterior side; short spinous bristle present just proximal to proximal tooth of main tooth; 2 anterior bristles present on outer edge of 1st joint proximal to distal tooth of main tooth (not shown on illustrated limb); anterior side of 1st joint with 1 short stout bristle near outer edge (not shown on illustrated limb). 2nd exopodial joint: large tooth with 1 or 2 small bifurcate teeth along inner margin; posterior side with 3 bare a- and b-bristles forming group (long middle bristle and 2 short bristles), and 1 stout proximal c-bristle with distal spines; posterior side of 2nd joint with small spinous d-bristle near outer corner of tooth. Inner lobe of 3rd exopodial joint with 3 spinous and pectinate bristles; outer lobe with 2 subequal bristles with long proximal and short distal spines. Fused 4th and 5th exopodial joints hirsute, with 6 spinous bristles.

Sixth Limb (Figure 13c): Endite I with 3 bristles; endite II with 4 bristles; endite III with 9 bristles; endite IV with 8 or 9 bristles. End joint with 22 or 23 spinous and hirsute bristles; 3 short hirsute bristles present in place of epipodial appendage.

Seventh Limb (Figure 13d): Each limb with 6 bristles on comb side (4 proximal, 2 terminal) and 7 bristles on peg side (4 proximal, 3 terminal); total bristles 13, each bristle with up to 5 bells. Terminus consisting of comb with about 15 alate teeth of similar type but of different lengths; 2 pegs present opposite comb (outer peg about one-third to one-half length of inner recurved peg).

Furca (Figure 13e,f): Each lamella with 10 claws decreasing in length posteriorly along lamella; claw 1 with teeth along posterior edge and also medial row (posterior teeth with smaller tooth between each pair of stout teeth) (Figure 13f); remaining claws with teeth along posterior edge; 6 posterior claws with spines or few teeth along anterior edge; clusters of hairs present medially at bases of claws and on edge of lamella

following claws; (teeth and most hairs not shown in Figure 13e); a few small spines present along anterior margin of lamella; claw 1 of right lamella located anterior to that of left lamella.

Bellonci Organ (Figure 13g): Long, slender, with suture near middle, and pointed tip; small ventral subapical spine.

Eyes (Figure 13g): Medial eye with narrow linear zone of brown pigment near middle. Lateral eye not seen with certainty: if present, minute, faint unpigmented, with 5 or 6 minute cells (ommatidia?).

Upper Lip (Figure 13g): Shape typical for genus, with minute anterior processes and abundant hairs.

Genitalia (Figure 13e): Faint oval area on each side of body.

Anterior of Body (Figure 13g): With single sclerotized process between medial eye and upper lip.

Posterior of Body (Figure 13e): With small area with minute ridges bearing hairs.

Brush-like Organ (Figure 13e): Consisting of about 6 minute bristles near genitalia.

Y-Sclerite (Figure 13e): Typical for genus.

Eggs: USNM 158252 with small unextruded eggs.

COMPARISONS.—*Philomedes hirutai* resembles *P. charcoti* Daday, 1908:9, in having 2 bristles on the 2nd endopodial joint of the female 2nd antenna and 2 pegs on the tip of the 7th limb. It differs in having a rostrum with a concave distal margin, not convex as on *P. charcoti*. Also, the furcal claws of *P. hirutai* decrease fairly regularly in size, whereas, the anterior 5 claws are much stouter than the remaining claws on *P. charcoti*.

PSEUDOPHILOMEDINAE Kornicker, 1967

Five genera of Pseudophilomedinae have previously been reported from the study area: *Tetragonodon* Brady and Norman, 1896:667 (Kornicker, 1968:456), *Paramekodon* Brady and Norman, 1896:670 (Kornicker, 1968:464), *Angulo-rostrum* Kornicker, 1981:2 (Kornicker, 1981:10), *Harbansus* Kornicker, 1978:13 (Kornicker,

1981:16, 32, 39), and *Pseudophilomedes* Müller, 1893:358 (Kornicker, 1958:235). Only *Pseudophilomedes* and *Harbansus* are reported upon herein.

Pseudophilomedes Müller, 1893

TYPE-SPECIES.—*Pseudophilomedes foveolatus* Müller, 1894.

Only 1 species of *Pseudophilomedes* has previously been collected from the study area, *Pseudophilomedes ferulanus* Kornicker, 1958:235. The known range of that species is extended herein and 3 new species are described: *P. ambon*, *P.*

polyancistrus, and *P. zeta*.

DISTRIBUTION.—Members of *Pseudophilomedes* have been reported from the Gulf of Naples (Müller, 1894:212), the Great Bahama Bank (Kornicker, 1958:235), Atlantic shelf of Georgia (Darby, 1965:26), North Carolina (Kornicker, 1967:8), Spanish Sahara and Mauritania (Kornicker and Caraion, 1977:4). The known depth range is 6–534 m (Kornicker and Caraion, 1977:47). The geographic range of the genus is extended herein to the continental shelf of the Gulf of Mexico off Florida, Louisiana, and Texas.

Key to Species of *Pseudophilomedes*

(West Atlantic and Gulf of Mexico)

1. Adult female and juveniles with secondary teeth distally as well as proximally on prolonged tooth of 2nd exopodial joint of 5th limb *P. polyancistrus*, new species
Adult females and juveniles without distal teeth on prolonged tooth of 2nd exopodial joint of 5th limb 2
2. Carapace with vertical rib near posterior end . . . *P. ambon*, new species
Carapace without vertical rib near posterior end 3
3. Adult females and juveniles with 5th limb having 3 stout claws on distal tooth of 1st exopodial joint *P. zeta*, new species
Adult females and juveniles with 5th limb having 2 stout claws on distal tooth of 1st exopodial joint *P. ferulanus*

Pseudophilomedes ferulanus Kornicker, 1958

FIGURES 14–16

Pseudophilomedes ferulana Kornicker, 1958:235, figs. 46: 1a,b, 2a,b; 56A–D.—Darby, 1965:64–70, fig. 10, pls. 11, 12.

Pseudophilomedes ferulanus.—Kornicker, 1967:8, figs. 1–6, pl. 1.—1969:119, figs. 3, 4, pl. II.—1977:792.—Bowen et al., 1979: fig. 3.

HOLOTYPE.—USNM 113287, adult female on slides (Kornicker, 1958:236, specimen number 165-1).

TYPE-LOCALITY.—Bimini, Bahamas.

MATERIAL.—See “Station Data and Material Examined.”

DISTRIBUTION.—This species was described originally from Bimini, Bahamas. The northernmost locality in the present paper is on the continental shelf off New Jersey (38°44′08″N). The southernmost locality on the Atlantic shelf is near the southern end of Florida (27°20′40″N). The species was collected on both the eastern and western parts of the continental shelf in the Gulf of Mexico, but not along the shelf between Alabama and west Texas (between roughly 88°W and 96°W; Map 2). Known depth range 6–190 m.

DIAGNOSIS.—Posterior end of carapace with projecting caudal process (Figures 14*d*, 15); infold of rostrum with 4 long bristles; infold of caudal process with 6 frond-like bristles; length of adult female 1.52–1.73 mm (5 specimens, from Kornicker, 1967:9). Exopodite of 2nd antenna with natatory bristles. 2nd endopodial joint of maxilla of female with 3 slender bristles (2 long, 1 short) and stout finger-like terminal process (Figure 16*b*). Exopodite of 5th limb of female: distal tooth of 1st joint with 2 prongs; 2nd joint prolonged distally to form fang-like tooth having proximally along inner margin two 3-pronged teeth and smaller single tooth (Figure 14*a*). 7th limb of female with 5–7 proximal bristles (2 or 3 on one side, 3 or 4 on other); male without 7th limb. Each lamella of furca with 8 claws; claw 3 thinner than claw 4; claw 1 with stout medial tooth near middle.

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE HOLOTYPE (Figure 14*a–c*).—Fifth Limb (Figure 14*a*): 1st exopodial joint with 2 teeth: proximal tooth with 3 prongs, distal tooth with 2 prongs (bristles not illustrated). 2nd exopodial joint with long saber-like tooth with 3 sets of teeth along inner margin (distal set consisting of 1 tooth; proximal 2 sets each consisting of 3 teeth).

Furca (Figure 14*b*): Each lamella with 8 claws; claw 3 more slender than claw 4; claw 1 with large tooth near midlength of medial side.

Genitalia (Figure 14*c*): Oval process with narrow sclerotized peripheral rim on each side of body anterior to furca.

Brush-like Organ (Figure 14*c*): Consisting of 6 minute bristles dorsal to genitalia.

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALES FROM ATLANTIC (Figure 14*d–i*).—Carapace with shallow incisur and small caudal process; surface with abundant fossae (Figure 14*d*).

Furca (Figure 14*e,h,i*): Each lamella with 8 claws followed by small process fused to lamella; claw 1 with large medial tooth near middle; claw 3 narrower than claw 4; claw 5 much narrower than claw 6 on some specimens (Figure 14*e,h*) but only slightly narrower on others (Figure 14*i*).

Bellonci Organ (Figure 14*f*): Elongate with

about 10 sutures in proximal half; widening slightly near midlength; tip pointed, with minute terminal spine.

Eyes (Figure 14*f*): Medial eye with dark brown pigment; lateral eye with black pigment and 3 ommatidia.

Posterior of Body (Figure 14*g*): Posterodorsal curvature with downward pointing spines.

Y-Sclerite (Figure 14*g*): Typical for genus.

REMARKS.—The dried holotype (USNM 113287) was softened with the surfactant Contrad 70¹ and some appendages mounted under a coverslip and illustrated (Figure 14*a–c*). The furca is not in a good position on the slide (Figure 14*b*). The furcal claws of the holotype, as well as the paratype illustrated by Kornicker (1958, fig. 56*A*), are more slender than on furcae on specimens from the Atlantic shelf (Figure 14*e,h,i*). Also, the 5th claw on the furca of the holotype is not noticeably narrower than the 6th. I have attributed the difference observed between the Bimini and Atlantic shelf specimens to intraspecific variability. The holotype is an adult female, not a male as stated previously (Kornicker, 1967:9).

DESCRIPTION OF ADULT MALE (Figures 14*j,k*, 15, 16).—Carapace oval in lateral view with well-developed rostrum and caudal process; ventral margin forming obtuse angle with valve margin ventral to rostrum; valve highest slightly anterior to valve middle (Figure 15).

Ornamentation (Figure 15): Each valve with depressed sulcus near middle; surface with shallow fossae; low ridge present near anterior edge of rostrum extending onto valve posterior to incisur; right valve only of USNM 158413 with aberrant spine near ventral margin (Figure 15); left valve with 7 or 8 minute processes along anterior edge of rostrum; surface with scattered bristles, especially abundant along anterior, ventral, and posterior margins; bristles longer in posterior part of valve; many bristles with as many as 8 branches; minute papillae visible at

¹ Manufactured by Harlco, 60th and Woodland Avenue, Philadelphia, Pennsylvania 19143, under license from the Decon Laboratories, Ltd., Ellen St., Portslade, Brighton, U.K.

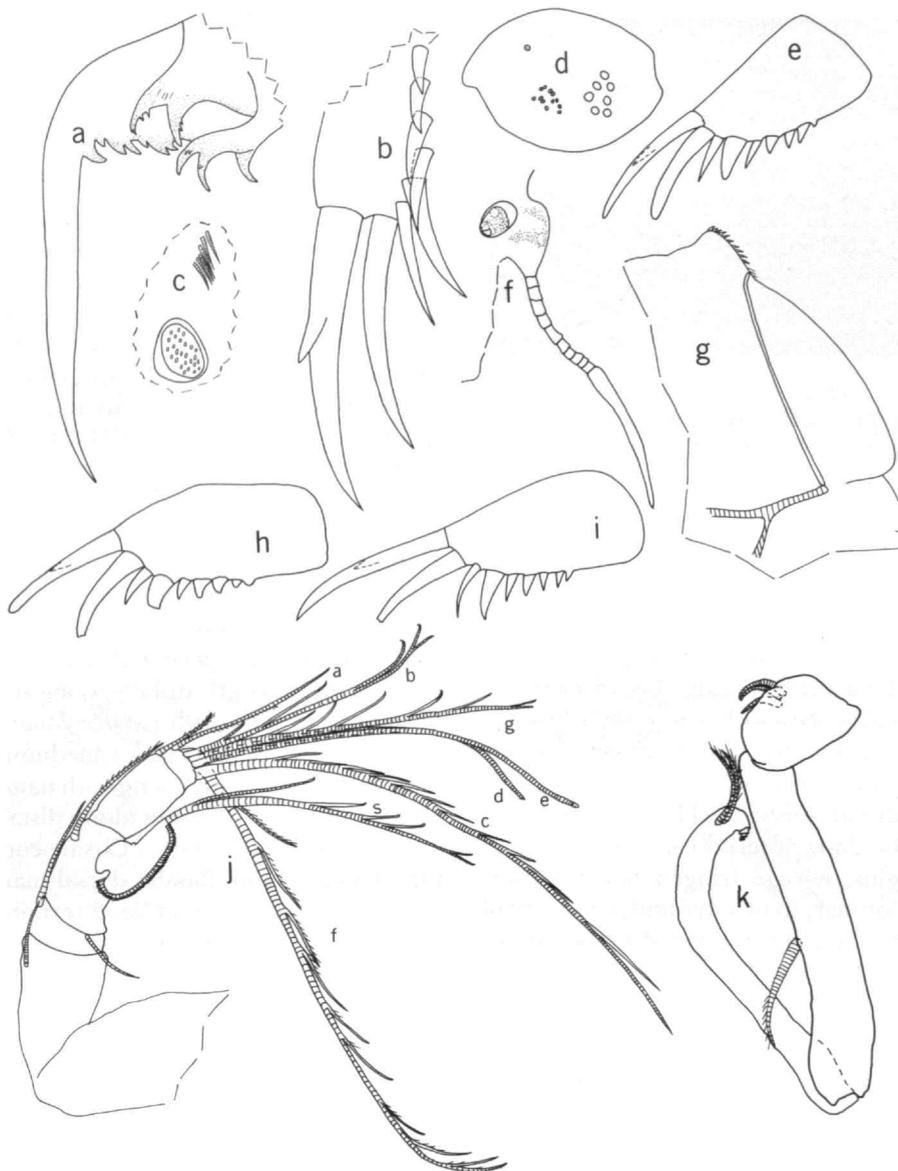


FIGURE 14.—*Pseudophilomedes ferulanus* Kornicker. USNM 113287, holotype, adult female, length 1.5 mm: *a*, 1st and 2nd exopodial joints of right 5th limb, anterior view (bristles not shown); *b*, right lamella of furca, medial view (lamella flattened under cover slip and somewhat distorted); *c*, genital organ and brush-like organ. USNM 158410, adult female, length 1.55 mm, height 1.13 mm: *d*, complete specimen showing left lateral eye in upper left, small central adductor muscle attachments, and 7 shallow fossae (the latter abundant on valve surface); *e*, left lamella of furca; *f*, right lateral eye, medial eye and bellonci organ; *g*, posterior of body viewed from left showing Y-sclerite, girdle, and spines along posterodorsal surface of body. USNM 110321, ovigerous female, length 1.73 mm: *h*, left lamella of furca, lateral view. USNM 158406, adult female: *i*, left lamella of furca, lateral view. USNM 158413, adult male, length 1.47 mm: *j*, left 1st antenna, medial view; *k*, endopodite of 2nd antenna.

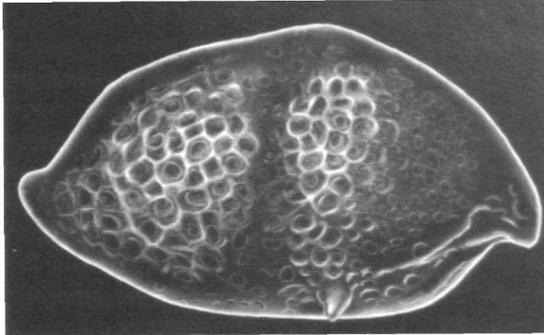


FIGURE 15.—*Pseudophilomedes ferulanus*, USNM 158413, adult male, length 1.47 mm, lateral view of complete specimen (spine on right valve an aberrant feature).

high magnification ($\times 20$ objective).

Infold: Rostral infold with 4 long bristles forming row and 1 small bristle near inner end of incisur; infold of caudal process with 6 frond-like bristles forming row; anteroventral infold with 1 small bristle near middle; posterior infold dorsal to caudal process with 3 or 4 single bristles; additional small bristles present along posteroventral and posterior infold.

Selvage: Broad selvage with long marginal fringe present along anterodorsal, anterior, and ventral margins; selvage fringed but narrower along posterior margin of valve and in vicinity of caudal process; selvage undivided in vicinity of incisur.

Size: USNM 158413, length 1.47 mm, height 0.79 mm.

First Antenna (Figure 14j): 1st joint with few lateral distal hairs (hairs not illustrated). 2nd joint with hairs forming row along distal margin, and 1 dorsal bristle with base on medial side. 3rd joint short with 2 bristles (1 ventral, 1 dorsal) both bases on medial side; cluster of short lateral spines on distal margin of joint. 4th joint elongate with 1 dorsal bristle with base on medial surface. 5th joint small, wedged ventrally between 4th and 6th joints; sensory bristle with broad base with backward pointing proximal end, and with abundant sensory filaments; stem of sensory bristle with 1 long proximal filament with spine at tip, 3 short distal filaments, and bifurcate tip.

Dorsal margin of elongate 6th joint with 1 bristle with indistinct marginal spines. 7th joint: a-bristle with indistinct marginal spines; b-bristle with 3 marginal filaments and bifurcate tip; c-bristle stout, about twice length of b-bristle, with about 10 marginal filaments. 8th joint; d- and e-bristles bare with blunt tips, longer than b-bristle; f-bristle about same length as c-bristle, with 9 or 10 pectinate filaments (bristle of illustrated limb bent ventrally, but bristle of opposite limb in normal position parallel to other bristles); g-bristle about same length as d- and e-bristles, with 5 dorsal filaments and bifurcate tip.

Second Antenna (Figure 14k): Protopodite bare. Endopodite 3-jointed: 1st joint short with 3 anterior bristles; 2nd joint elongate with 1 spinous ventral bristle distal to middle; 3rd joint elongate, reflexed with 2 spinous bristles near recurved tip; tip with few ridges and small terminal teeth. Exopodite: 1st joint elongate with small medial spine terminally; joints 2–9 short, decreasing in length distally along limb; bristles of joints 2–8 long with natatory hairs; 9th joint with 4 bristles (1 short and 1 medium, both with long marginal spines; 2 long with natatory hairs); joints 2–9 with few spines along distal margins.

Mandible (Figure 16a): Coxale endite consisting of weak spine. Basale: dorsal margin with 3 long bristles (1 near middle, 2 terminal); ventral margin with 2 spinous bristles (1 proximal, short, with faint small spines; 1 distal, long, with many distinct spines); medial side with 2 spinous bristles with bases closer to ventral margin than to dorsal margin. Exopodite about one-half length of dorsal margin of 1st endopodial joint, hirsute terminally, with 2 long terminal bristles. 1st endopodial joint with 3 ventral bristles (1 short and 2 long; 1 of the latter with long proximal spines). 2nd endopodial joint: ventral margin with ventral spines and 3 distal bristles forming 2 groups (1 in proximal group, 2 in distal group); dorsal margin with 4 bristles (1 proximal, 3 near middle). End joint with 3 claws (medial claw less than one-half length of longest claw) and 3 bristles.

Maxilla (Figure 16b): Limb reduced, precoxale, coxale, and basale with fringe of long hairs along dorsal margin. Proximal 2 endites forming



FIGURE 16.—*Pseudophilomedes ferulanus* Kornicker, USNM 158413, adult male, length 1.47 mm: *a*, right mandible, medial view; *b*, maxilla; *c*, 5th limb; *d*, 6th limb; *e*, right lamella of furca, copulatory organ, and Y-sclerite; *f*, anterior of body showing medial eye, bellonci organ, and right lateral eye; *g*, left lateral eye; *h*, posterior of body showing left Y-sclerite, spines on posterodorsal curvature, and part of left lamella of furca.

lobes, 3rd endite not forming lobe; endite bristles weakly developed, some finger-like without rings; endite I with 5 bristles; endite II with 3 proximal and 4 distal bristles; endite III with 2

fairly long bristles. Coxale with 1 stout bristle near dorsal margin. Basale with 1 long distal bristle. Exopodite consisting of 3 long bristles forming row near distal margin of basale. Endo-

podite: 1st joint hirsute, with 1 ringed alpha-bristle and 1 beta-bristle; 2nd joint with 2 ringed, slender bristles, 1 short unringed bristle, and 1 long, stout, unringed bristle with distal spines.

Fifth Limb (Figure 16c): Single endite with 2 small ringed bristles. Exopodite: 1st joint with 4 small bristles (2 ringed, 2 unringed); 2nd joint with 1 short proximal bristle, 1 longer spinous distal bristle, and 1 bare, unringed, finger-like process on inner margin; inner lobe of 3rd joint with 1 spinous bristle, outer lobe with 2 spinous bristles; fused 4th and 5th joints hirsute, with 4 ringed bristles (1 proximal along inner edge, 3 terminal). Epipodial appendage incomplete on specimen examined, remaining part with 34 bristles.

Sixth Limb (Figure 16d): Endite I with 2 short spinous bristles; endite II with 1 long hirsute bristle and 0 or 1 shorter spinous bristle; endite III with 5 bristles (2 long, hirsute; 1 short, hirsute; and 2 short, spinous); endite IV with 3 or 4 bristles (2 long, hirsute; 1 or 2 short, spinous). End joint with 1 hirsute anterior bristle followed by 6 spinous bristles and 2 hirsute posterior bristles; limb hirsute; 1 short bristle in place of epipodial appendage.

Seventh Limb: Absent.

Furca (Figure 16e): Each lamella with 8 claws followed by round process fused to lamella; claw 3 about same length but about one-half width of claw 4; claw 5 slightly narrower than claw 6; each claw with teeth along posterior edge; proximal teeth longer than distal teeth; no large medial tooth present on claw 1; claw 1 of right lamella anterior to claw 1 of left lamella.

Bellonci Organ (Figure 16f): Elongate with about 8 proximal sutures, broadening near middle, then tapering to pointed tip.

Eyes: Medial eye bare, with dark brown pigment (Figure 16f). Lateral eye almost twice size of medial eye, with dense black pigment; 8–11 ommatidia visible along periphery of black central area; additional ommatidia in black area obscure (Figure 16f,g).

Genitalia (Figure 16e): Copulatory limb on each side consisting of several lobes (1 of the

lobes with terminal teeth).

Posterior of Body (Figure 16h): Area dorsal to dorsal end of posterior girdle with spines forming rows.

Y-Sclerite (Figure 16h): With normal ventral and dorsal branches.

REMARKS CONCERNING JUVENILES.—Natatory hairs are present on the expodial bristles of the 2nd antennae of both male and female juveniles.

SEXUAL DIMORPHISM.—In addition to usual difference between males and females of this genus, the male is without 7th limbs.

VARIABILITY.—Many specimens collected from the west Texas continental shelf are lacking a secondary claw between the 2nd and 3rd primary claws of the furca. In at least 1 specimen 1 lamella has the secondary claw whereas the other lamella is without it. The absence of the secondary claw is interpreted as intraspecific variability.

Pseudophilomedes ambon, new species

FIGURES 17–22

ETYMOLOGY.—From the Greek *ambon* (ridge, crest) in reference to the vertical rib near the posterior end of the carapace.

HOLOTYPE.—USNM 158005, adult undissected ovigerous female in alcohol, length 1.36 mm.

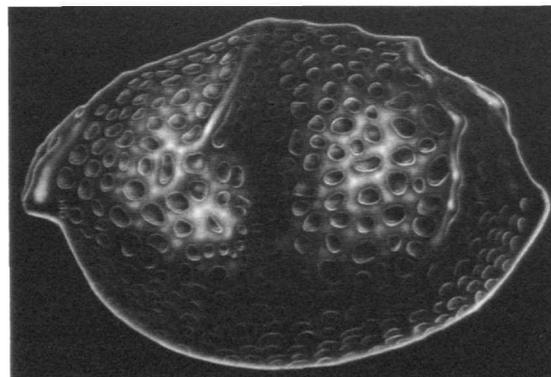


FIGURE 17.—*Pseudophilomedes ambon*, new species, USNM 156911, paratype, ovigerous female, length 1.44 mm, lateral view of complete specimen.

TYPE-LOCALITY.—R/V *Gyre*, cruise 11, station 11, continental shelf off Texas, 54.75 m.

ALLOTYPE.—USNM 158013, adult male from same station as holotype.

PARATYPES.—USNM 156911, 158005–158021, 158023–158026, 158847, 158848, 158855, 158864, 193036–193038.

DISTRIBUTION.—The new species was collected on the continental shelf in the Gulf of Mexico from Florida to Texas between about 83°30'W and 94°30'W (Map 2). Known depth range 49–110 m.

DIAGNOSIS.—Posterior end of carapace with projecting caudal process and vertical lateral rib (Figures 17, 20); infold of rostrum with 4 long bristles (Figures 18c, 21a); infold of caudal process with 6 frond-like bristles (Figures 18d, 21b); length of adult female 1.36–1.64 mm (5 specimens). Exopodite of 2nd antenna with natatory bristles. 2nd exopodial joint of maxilla of adult female with 3 bristles (2 long, 1 short) and stout finger-like terminal process (Figure 18i). Exopodite of 5th limb of female: distal tooth of 1st joint with 2 prongs (rarely 3 prongs); 2nd joint prolonged distally to form fang-like tooth having proximally along inner margin 2 3-pronged teeth and smaller single tooth (Figure 19a–e). 7th limb of adult female with 4–6 proximal bristles (2 or 3 on each side) and 6 distal bristles (3 on each side) (Figure 19j); male without 7th limb. Each lamella of furca with 8 claws; claw 3 thinner than claw 4; claw 1 of female with stout medial tooth near middle (Figure 19h).

DESCRIPTION OF ADULT FEMALE (Figures 17–19).—Carapace oval in lateral view, with small rostrum and caudal process; ventral margin of rostrum forming slightly obtuse angle with valve margin ventral to rostrum.

Ornamentation (Figures 17, 18a,b): Each valve with vertical rib near posterior end; depressed sulcus near middle with slightly oblique rib just anterior to dorsal end; low lateral process near tip of rostrum; surface with well-developed shallow fossae and small round protuberances between fossae (Figure 18b); surface with widely scattered bristles; bristles forming row along an-

terior and ventral valve margins.

Infold: Rostral infold with 4 spinous bristles; anteroventral infold with 1 small bristle (Figure 18c); infold of caudal process with 6 frond-like bristles forming row (Figure 18d); inner margin of posterior and posteroventral infold with about 11 slender bristles and 2 shorter and stouter bristles with bases on inner edge of infold beneath narrow lip overhanging the inner edge of infold.

Selvage (Figure 18c): Broad lamellar prolongation with marginal fringe of long hairs present along anterior, ventral, and posterior valve margins; selvage continuous in vicinity of incisur.

Size: USNM 156911, length 1.44 mm, height 0.97 mm; USNM 158005, length 1.36 mm, height 0.94 mm; USNM 158017, length 1.48 mm, height 0.99 mm; USNM 158023, length 1.46 mm, height 0.97 mm; USNM 158847, length 1.64 mm, height 1.23 mm.

First Antenna (Figure 18e, f): 1st joint spinous. 2nd joint spinous, with 1 dorsal bristle. 3rd joint spinous, with 2 bristles (1 ventral, 1 dorsal). 4th joint spinous, with 3 bristles (1 dorsal, 2 ventral). Sensory bristle of long 5th joint with 2 short proximal filaments and bifurcate tip. Medial bristle of minute 6th joint short, spinous. 7th joint: a-bristle about three times length of bristle of 6th joint, spinous; b-bristle about one and one-half times length of a-bristle, with distal filament and bifurcate tip; c-bristle slightly longer than sensory bristle of 5th joint, with 2 or 3 short proximal filaments, 1 distal filament, and bifurcate tip. 8th joint: d- and e-bristles about same length as c-bristle, bare with blunt tips; f-bristle about same length as sensory bristle, with 2 short proximal filaments and 4 short distal filaments excluding tip of stem; g-bristle about same length as c-bristle, with 2 short proximal filaments, 1 distal filament, and bifurcate tip.

Second Antenna (Figure 18g): Protopodite with spines forming rows on medial surface. Endopodite 1-jointed, with 2 short spinous anterior bristles and 1 long spinous terminal bristle. Exopodite: 1st joint with 1 minute medial spine on distal margin. Bristle of 2nd joint fairly long;

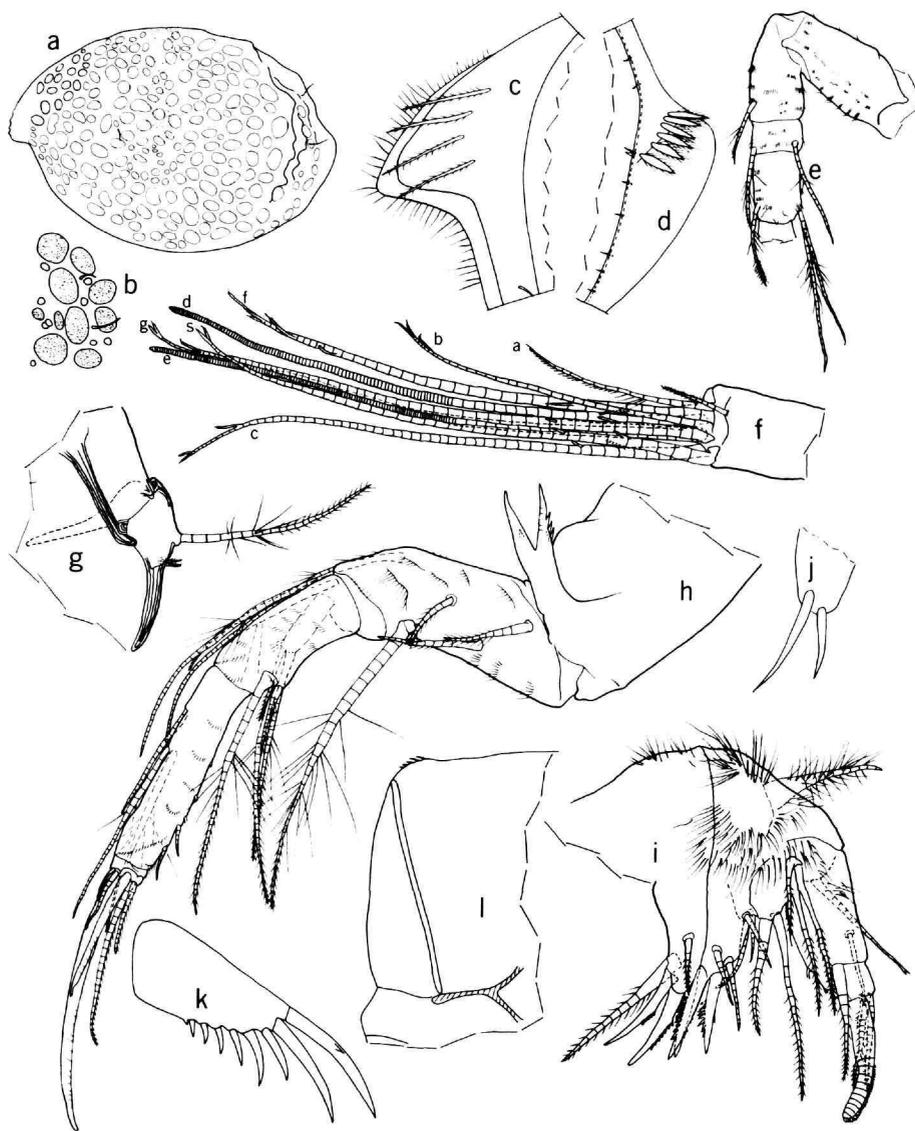


FIGURE 18.—*Pseudophilomedes ambon*, new species. USNM 156911, paratype, ovigerous female, length 1.44 mm: *a*, lateral outline of complete specimen (with less detail than shown in Figure 17); *b*, detail of surface showing shallow fossae (stippled), smaller round pustules between them (not stippled), and 2 bristles; *c*, anterior of right valve, inside view; *d*, caudal process of right valve, inside view; *e*, joints 1–4 of right 1st antenna, medial view; *f*, joints 5–8 of same 1st antenna shown in *e* but at twice the magnification; *g*, endopodite and part of protopodite of left 2nd antenna, lateral view; *h*, right mandible, medial view; *i*, right maxilla, lateral view; *j*, small third endite of right maxilla at two and one-half times magnification shown in *i*. USNM 158023, paratype, ovigerous female, length 1.46 mm: *k*, left lamella of furca, medial view (only medial tooth of 1st claw shown); *l*, posterior of body showing right Y-sclerite (striped), position of girdle, and spines along posterodorsal curvature.

ventral margin with proximal hair-like spines and distal natatory hairs; dorsal margin with natatory hairs. Bristles of joints 3–8 similar to that of 2nd joint except longer; 9th joint with 3 bristles (1 long, 1 medium, 1 short), all with natatory hairs. Joints 2–9 with spines forming row along distal margin; basal spines absent.

Mandible (Figure 18h): Coxale endite elongate, bifurcate, with 1 tooth on 1 prong, 3 or 4 on other, latter prong with few weak rings. Basale: dorsal margin with 3 bristles (1 just distal to middle, 2 terminal); medial surface spinous, with 2 short spinous bristles about midway between ventral and dorsal margins, and 2 spinous bristles (1 short, 1 very long) near or on ventral margin. Exopodite reaching just past middle of 1st endopodial joint, with 2 spinous bristles (1 long, 1 short). 1st endopodial joint with medial spines and 3 spinous ventral bristles (2 long, 1 short). 2nd endopodial joint: medial surface spinous; dorsal margin with 3 or 4 bristles proximal to middle; ventral margin spinous, with 2 or 3 short distal bristles (1 proximal, 1 or 2 distal). 3rd endopodial joint with 3 claws (1 short and dorsal; 1 very long and lateral; 1 medial, about one-half length of long claw) and 3 spinous bristles.

Maxilla (Figure 18i, j): Endite I with 3 pectinate claws and 2 spinous bristles; endite II with 2 terminal pectinate claws and 3 bristles (1 of these on proximal part of anterior margin); endite III very small, with 2 small terminal bristles (endite III could be considered to be proximal lobe on endite II, also proximal anterior bristle on endite II could be on endite III). Precoxale and coxale hairs, with dorsal lamellar prolongation with hairs. Coxale with stout hairs. Basale hairs, with 3 long spinous distal bristles. Exopodite consisting of cluster of 3 spinous bristles (2 long, 1 short). Endopodite: 1st joint spinous, with 1 alpha- and 1 beta-bristle, both with short marginal spines; 2nd joint with terminal finger-like process and 3 spinous bristles.

Fifth Limb (Figure 19a–e): Single endite with 2 short spinous bristles. 1st exopodial joint with 2 teeth: proximal tooth with 3 pectinate prongs and 3 short hairs; distal tooth with 2

(rarely 3) pectinate prongs and proximal bristle (proximal bristle located posterior to proximal tooth). 2nd exopodial joint prolonged distally to form long fang-like tooth followed along inner margin by a single tooth and 2 larger 3-pronged teeth; posterior side with 2 bristles. 3rd exopodial joint with 2 short hairs. 4th and 5th exopodial joints fused, hairs, with total of 4 spinous bristles.

Sixth Limb (Figures 19f): Endite I with 1 short hairs; endite II with 2 short hairs proximal bristles and 1 long hairs terminal bristle; endites III and IV each with 4 or 5 bristles (2 or 3 short, spinous; 2 long, hairs). End joint with 7 or 8 bristles along ventral margin (5 or 6 anterior bristles with short or long stiff spines; 2 posterior bristles with abundant long hairs). 1 or no bristle in place of epipodial appendage.

Seventh Limb (Figure 19g): Each limb with 4 to 6 proximal bristles, 2 or 3 on each side, and 6 distal bristles, 3 on each side; each bristle with up to 5 bells and marginal spines; terminus consisting of opposing combs, each with several faint teeth.

Furca (Figure 19h): Each lamella with 8 claws; claw 3 thinner than claw 4 but about same length; claw 1 with stout medial tooth near middle; posterior margin of claw 1 with proximal teeth stronger than slender distal teeth; remaining claws with slender teeth.

Bellonci Organ (Figure 19i): Elongate with about 8 sutures in proximal half; distal end tapered.

Eyes: Medial eye pigmented (Figure 19i). Lateral eye about same size as medial eye, pigmented but without visible ommatidia (Figure 19j; USNM 156911), or brown with 3 ommatidia (USNM 158847).

Brush-like Organ (Figure 19k): Consisting of 6 minute bristles on each side of body adjacent to genitalia.

Genitalia (Figure 19k): Consisting of round process with narrow sclerotized rim.

Posterior of Body (Figure 18l): Posterodorsal corner of body with backward pointing spines or serrations.

Eggs: USNM 156911, 3; USNM 158005,

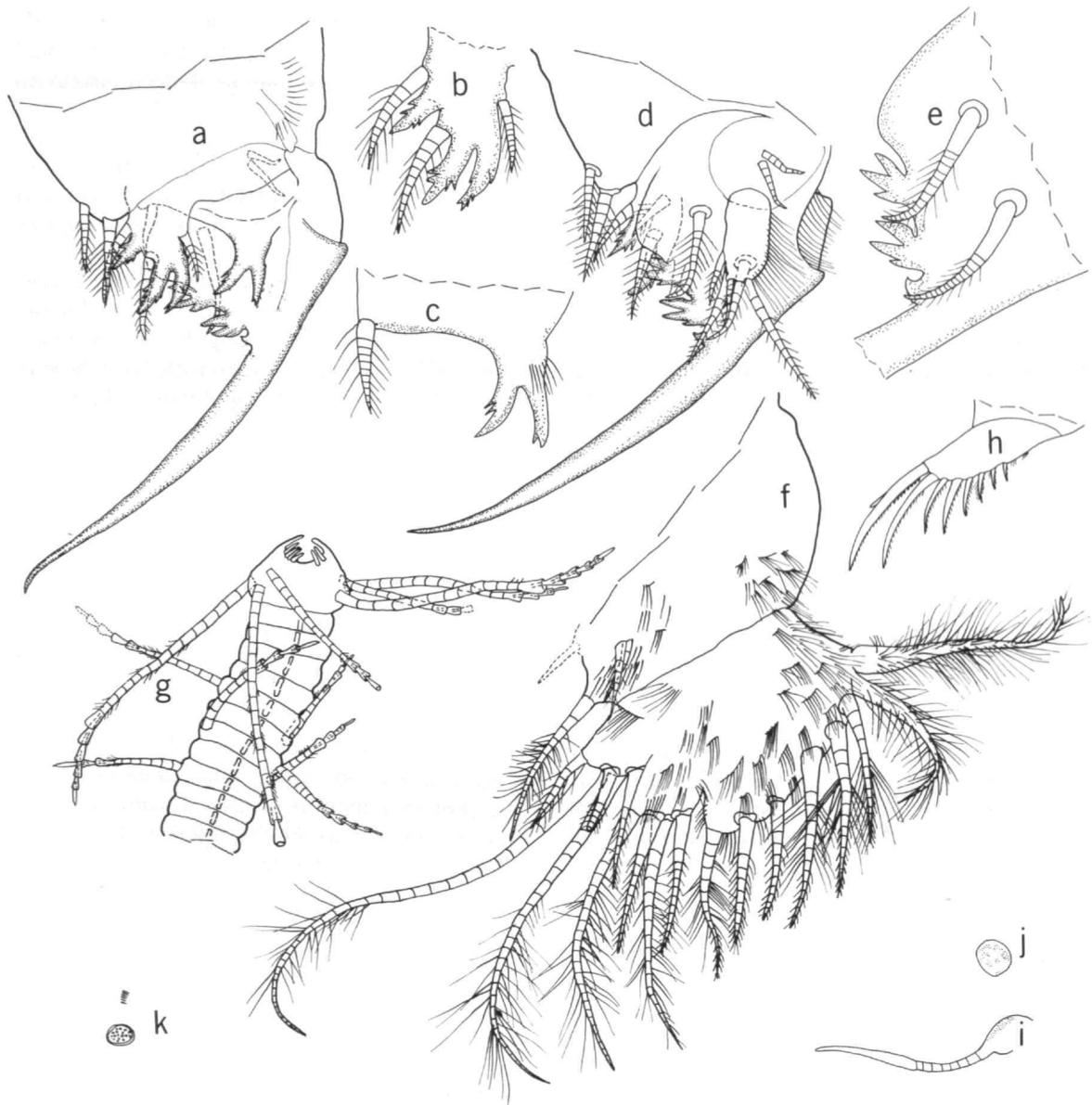


FIGURE 19.—*Pseudophilomedes ambon*, new species, USNM 156911, paratype, ovigerous female, length 1.44 mm: *a*, left 5th limb, anterior view (not all bristles on posterior side shown); *b*, *c*, detail from *a* showing proximal and distal teeth and bristles of 1st exopodal joint; *d*, right 5th limb, posterior view; *e*, detail from *d* showing teeth and bristles of 2nd exopodal joint; *f*, 6th limb; *g*, 7th limb; *h*, left lamella of furca, lateral view; *i*, medial eye and bellonci organ; *j*, right lateral eye (same magnification as *i*); *k*, left genital process and brush-like organ.

158017, 158023, each with 2.

DESCRIPTION OF INSTAR III FEMALE (A-2).—Carapace similar in shape and ornamentation to that of adult female.

Infold: Not examined.

Size: USNM 158021, length 0.82 mm, height 0.59 mm.

First Antenna: Similar to that of adult female, but not examined in detail.

Second Antenna: Protopodite similar to that of adult female. Endopodite with 1 short proximal anterior bristle and 1 long terminal bristle; Exopodite similar to that of adult female (bristles with ventral spines and natatory hairs; 9th joint with 3 bristles).

Mandible, Maxilla, 5th Limb: Not examined in detail, but well developed and, in general, similar to those of adult female.

Sixth Limb: Well developed but with fewer bristles than on limb of adult female; end joint with total of 6 bristles; 1 bristle in place of epipodial appendage; endite I with 4 bristles (bristles on remaining endites not counted).

Seventh Limb: Elongate but without bristles or terminal combs.

Furca: Each lamella with 7 claws plus 1 or 2 short partly formed claws; claw 3 thinner than claw 4 and slightly shorter; claw 1 with large medial tooth near middle.

Bellonci Organ: Similar to that of adult female, but with squarish tip (broken?).

Eyes: Medial eye only weakly pigmented; lateral eyes not observed.

DESCRIPTION OF ADULT MALE (Figures 20–22).—Carapace more elongate than that of female and with broader caudal process (Figure 20).

Ornamentation (Figures 20, 21a,b): Each valve with vertical rib near posterior end of valve (rib less well developed than on female); low lateral process present on rostrum near tip; depressed sulcus present near valve middle; surface with well-developed shallow fossae (Figure 20); surface with long bristles forming row near caudal process and with long tassel-like bristles along dorsal margin (Figure 21b), and sparsely distrib-

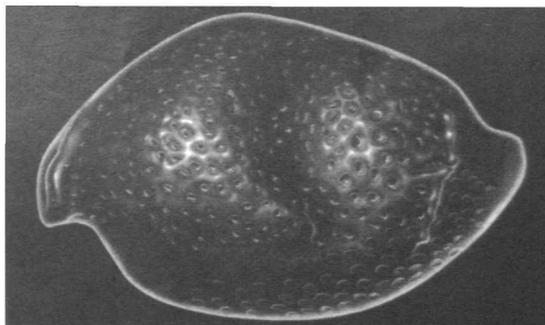


FIGURE 20.—*Pseudophilomedes ambon*, new species, USNM 158013, allotype, adult male, length 1.20 mm, lateral view of complete specimen.

uted on lateral surface; single bristles forming row along ventral and anterior margins (Figure 21a,b) and sparsely distributed on lateral surface.

Infold: Rostral infold with 4 spinous bristles and 1 small bristle near inner end of incisur (Figure 21a); anteroventral margin with single bristle (Figure 21a); infold of caudal process with 6 frond-like bristles forming row (Figure 21b); inner edge of posterior infold with about 13 short slender bristles (Figure 21b).

Selvage: Broad lamellar prolongation with marginal fringe of long hairs present along anterior, ventral, and posterior margins; selvage continuous in vicinity of incisur.

Size: USNM 158013, length 1.20 mm, height 0.80 mm; USNM 158025, length 1.18 mm, height 0.79 mm.

First Antenna (Figure 21d): 1st joint with small faint medial spines forming rows, and few stouter, individual, distal, lateral spines. 2nd joint with medial and lateral spines and 1 dorsal bristle. 3rd joint short with 2 bristles (1 dorsal, 1 ventral). 4th joint with 1 distal dorsal bristle. 5th joint small, wedged ventrally between 4th and 6th joints; sensory bristle with cup-like basal part with abundant narrow filaments (filaments not shown on illustrated limb), and stem with 1 long proximal filament, 3 short distal filaments, and bifurcate tip. Long 6th joint with spinous medial bristle. 7th joint: a-bristle spinous, about same length as bristle of 6th joint; b-bristle about three



FIGURE 21.—*Pseudophilomedes ambon*, new species. USNM 158013, allotype, adult male, length 1.20 mm: *a*, anterior of left valve, inside view; *b*, posterior of left valve, inside view; *c*, left mandible, medial view. USNM 158025, paratype, adult male, length 1.18 mm: *d*, left 1st antenna, medial view (long filaments of basal part of sensory bristle of 5th joint not shown); *e*, endopodite of 2nd antenna; *f*, right maxilla, lateral view (endites II and III not shown); *g*, endites I, II, and III of right maxilla shown in *f*.

times length of a-bristle, with 2 proximal filaments, 1 distal filament, and bifurcate tip; c-bristle almost twice length of b-bristle, with 10 marginal filaments (some with spines) and bifurcate tip. 8th joint: d- and e-bristles bare with blunt tips; d-bristle longer than b-bristle (d-bristle broken on illustrated limb); e-bristle longer and stouter than d-bristle; f-bristle about same length as c-bristle, with 9 marginal filaments (some with spines) and bifurcate tip; g-bristle longer than b-bristle, with 4 short marginal filaments and bifurcate tip. Filaments and tips of b-, c-, f-, and g-bristles with minute terminal spine. (f-bristle bent dorsally on both limbs of USNM 158025, but not on USNM 158013.)

Second Antenna (Figure 21e): Protopodite bare. Endopodite 3-jointed: 1st joint short with 2 or 3 short anterior bristles; 2nd joint elongate with 1 midbristle; 3rd joint recurved on 2nd joint, elongate with 2 short spinous subterminal bristles and tip with few ridges. Exopodite: 1st joint elongate, with small recurved medial spine terminally; joints 2–9 short, decreasing in length distally along limb; bristles of joints 2–8 long, with natatory hairs; 9th joint with 4 bristles (1 short with short marginal hairs, 1 medium, and 2 long with natatory hairs); joints 2–8 with slender spines forming row along distal margin; basal spines absent.

Mandible (Figure 21c): Coxale endite represented by small spine. Basale: dorsal margin with 3 bristles (1 near middle, 2 terminal); ventral margin with 2 bristles (1 medium, proximal; 1 long, distal); medial surface spinous, with 2 bristles (1 near middle, 1 distal, both closer to ventral margin than to dorsal margin). Exopodite reaching past middle of dorsal margin of 1st endopodial joint, with 2 terminal bristles. 1st endopodial joint with medial spines and 3 ventral bristles. 2nd endopodial joint: medial surface with spines forming rows; ventral margin with 3 distal bristles forming 2 groups with 1 bristle in proximal group and 2 in terminal group; dorsal margin with 1 proximal bristle and 3 bristles near middle; 3rd endopodial joint with 3 claws and 3 bristles. Mandibles of USNM 158025 aberrant:

endopodial joints of right limb dwarfed and end claws minute; 2nd endopodial joint of left limb unusually long; many bristles missing and aberrant on both limbs.

Maxilla (Figure 21f,g): Limb reduced. Precoxale, coxale, and basale with fringe of long hairs along dorsal margin. 3 small endites with weakly developed bristles, some finger-like without rings (Figure 21g): endites I and II with 5 bristles; endite III very small, with 2 short unringed terminal bristles. Basale with 3 long bristles along distal margin. Exopodite consisting of cluster of 3 bristles (2 long, 1 short). 1st endopodial joint hirsute, with 1 short subterminal and 1 long terminal bristle. 2nd endopodial joint with 4 bristles (2 ringed, 2 unringed; of the latter, 1 finger-like with blunt tip and marginal spines).

Fifth Limb (Figure 22a): Epipodial appendage with 41 bristles. Single endite with 1 small bristle. Exopodite: 1st joint with 4 bristles (3 ringed; 1 unringed, finger-like); 2nd joint with 1 small proximal bristle, 1 distal bristle with long marginal hairs, and 1 short faint peg-like tooth on inner margin; 3rd joint with 1 spinous bristle on inner lobe and 2 hirsute bristles on outer lobe; fused 4th and 5th joints hirsute, with 4 ringed bristles.

Sixth Limb (Figure 22b): Endite I with 1 or 2 short hirsute bristles; endite II with 1 long hirsute bristle; endites III and IV each with 5 bristles (2 long, 3 shorter). End joint with 9 bristles along ventral margin (anterior bristle and 2 posterior bristles hirsute, remaining bristles not as stout as hirsute bristles, and with long proximal and short distal spines, and with bases set slightly back from margin). A small bristle present in place of epipodial appendage. Limb hirsute.

Seventh Limb: Absent on both USNM 158013 and 158025.

Furca (Figure 22c): Each lamella with 8 or 9 claws followed by 2 or 3 small spinous processes; claw 3 more slender than claw 4 but about same length; posterior margin of claws with stout proximal teeth followed by more slender teeth.

Bellonci Organ (Figure 22d,e): Elongate with about 8 weak sutures proximally, broadening

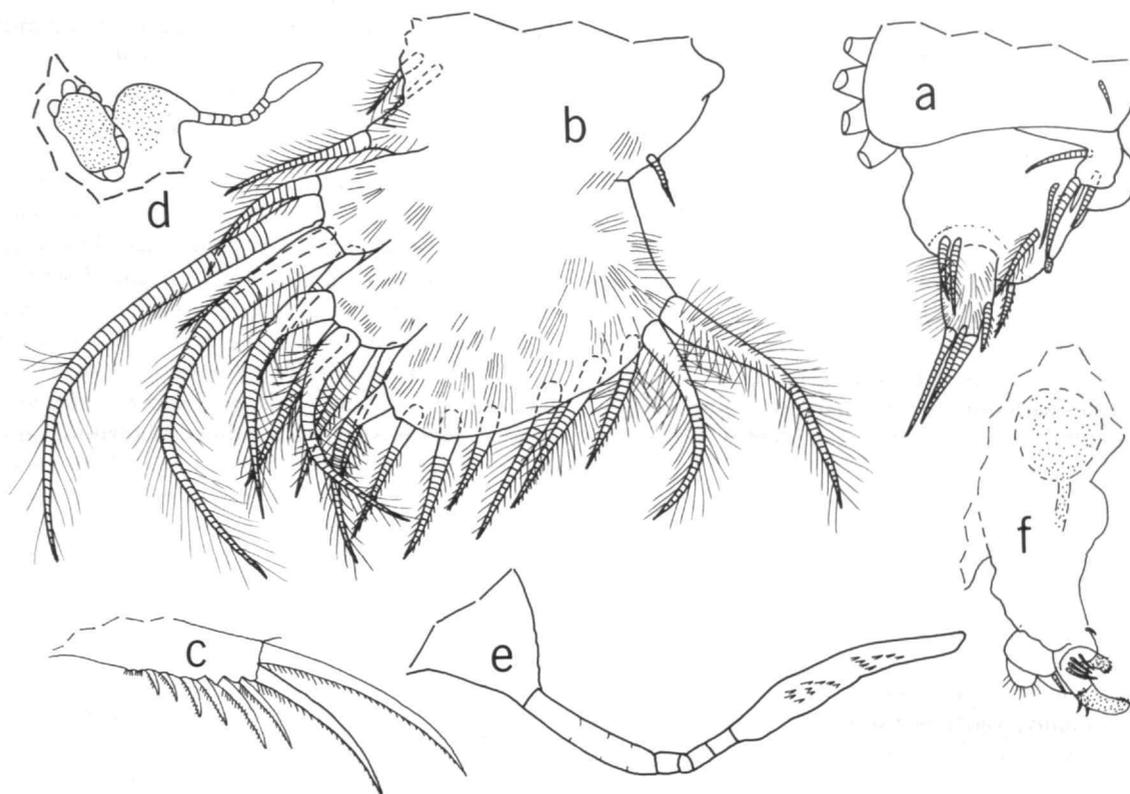


FIGURE 22.—*Pseudophilomedes ambon*, new species, USNM 158025, paratype, adult male, length 1.18 mm: a, 5th limb; b, 6th limb; c, left lamella of furca, medial view; d, medial eye, bellonci organ, and right lateral eye; e, bellonci organ and distal part of medial eye viewed under cover slip; f, right copulatory limb, lateral view.

distally and with tapering tip. Spines visible on broad distal part when viewed under high magnification ($100\times$ objective; figure 22e).

Eyes (Figure 22d): Medial eye with brown pigment. Lateral eye well developed, pigmented brown or black, with about 20 ommatidia (only few of the ommatidia shown in illustrated eye).

Copulatory Organ (Figure 22f): Elongate consisting of several lobes on each side of body; bristles present on lobes; distal lobe with sclerotized hook-like process with 4 terminal teeth.

SEXUAL DIMORPHISM.—In addition to usual differences between males and females of this genus, the male is without 7th limbs.

COMPARISONS.—Specimens referred to *P. am-*

bon herein differ from *P. ferulanus* in having a vertical rib on the posterior part of the carapace (Figures 17, 20). Differentiating the two species by presence or absence of the vertical rib is difficult if shells are decalcified or contain concretions, because the rib, if present, is obscure. The posterior furcal claws of females of *P. ambon* are more slender than those of many specimens of *P. ferulanus* (cf. Figure 14e,h,i with 18k). It is possible that the presence or absence of the vertical rib and the difference in shape of furcal claws are the result of intraspecific variability. Because of this and the difficulty in identifying the two species, it may be expedient to refer *P. ambon* to *P. ferulanus*.

Pseudophilomedes polyancistrus, new species

FIGURES 23–27

ETYMOLOGY.—From the Greek *polyancistros* (with many hooks) in reference to the hook-like prongs on the inner margin of the large tooth forming the 2nd exopodial joint of the female 5th limb.

HOLOTYPE.—USNM 158047, ovigerous female, partly dissected, in alcohol.

TYPE-LOCALITY.—R/V *Gyre*, cruise 11, station 2, Gulf of Mexico.

PARATYPES.—USNM 158032, 158034–158039, 158041–158048, 158306, 158408, 158854, 158859.

DISTRIBUTION.—One specimen was collected in the Atlantic on the continental shelf off northern Florida (30°23'N, 80°10'W) at a depth of 147 m. Additional specimens were collected in the Gulf of Mexico off Florida and Texas (Map 2). Known depth range 15–147 m.

DIAGNOSIS.—Posterior end of carapace with slight projection of caudal process in female, greater projection in adult male (Figures 23, 26); infold of rostrum with 3 long bristles (Figure 24a); infold of caudal process with 4 frond-like bristles (Figure 24b); length of adult female 0.89–1.00 mm (6 specimens). Exopodite of 2nd

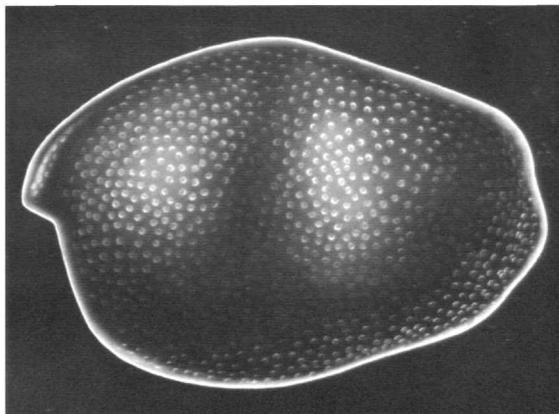


FIGURE 23.—*Pseudophilomedes polyancistrus*, new species, USNM 158047, holotype, ovigerous female, length 0.96 mm, lateral view of complete specimen.

antenna with natatory bristles. 2nd exopodial joint of maxilla of adult female with 2 bristles (1 long, 1 short) and a stout finger-like terminal process (Figure 24f). Exopodite of 5th limb of female: distal tooth of 1st joint with 3 prongs; 2nd joint prolonged to form curved tooth with total of 7 both proximal and distal hook-like prongs (3 large, 4 small) along inner margin (Figure 24g). 7th limb of adult female with 2 proximal bristles (1 on each side) and 6 distal bristles (3 on each side) (Figure 24i); male without 7th limb. Each lamella of furca with 6 or 7 claws; claw 3 thinner and shorter than claw 4; claw 1 of female with slender medial tooth near middle (Figure 25a).

DESCRIPTION OF ADULT FEMALE (Figures 23–25).—Carapace elongate with triangular rostrum, and caudal process indicated by very slight projection just below middle of posterior margin (Figures 23, 24b, 25e); ventral margin of rostrum forming obtuse angle with anterior margin of valve below rostrum.

Ornamentation (Figure 23): Surface of valve appearing smooth but minute shallow fossae visible on some specimens, and minute rimmed pores visible at high magnification (40 × objective). Long bristles present along anterior and ventral margins and sparsely distributed over lateral surface.

Infold: (Figure 24a,b) Rostral infold with 3 long bristles forming row and 1 small bristle near inner end of incisor (Figure 24a); anteroventral margin with 1 small bristle; infold of caudal process with 4 spinous bristles (Figure 24b); inner edge of infold along anterodorsal and dorsal margins in vicinity of caudal process with several minute bristles. (Right valve of USNM 158047 unusual in having only 2 spinous bristles on infold of caudal process.)

Selvage (Figure 24a): Selvage with broad lamellar prolongation with fringed margin present along anterior and ventral margins; prolongation not divided in vicinity of incisor. Fringed lamellar prolongation also present along posterior margin but may be absent along edge of caudal process.



FIGURE 24.—*Pseudophilomedes polyanistrus*, new species, USNM 158041, paratype, ovigerous female, length 0.89 mm: *a*, anterior of right valve, inside view; *b*, posteroventral curvature of right valve, inside view; *c*, right 1st antenna, medial view; *d*, endopodite and distal part of protopodite of right 2nd antenna, medial view; *e*, right mandible, lateral view; *f*, right maxilla, medial view; *g*, left 5th limb, anterior view; *h*, 6th limb; *i*, 7th limb.

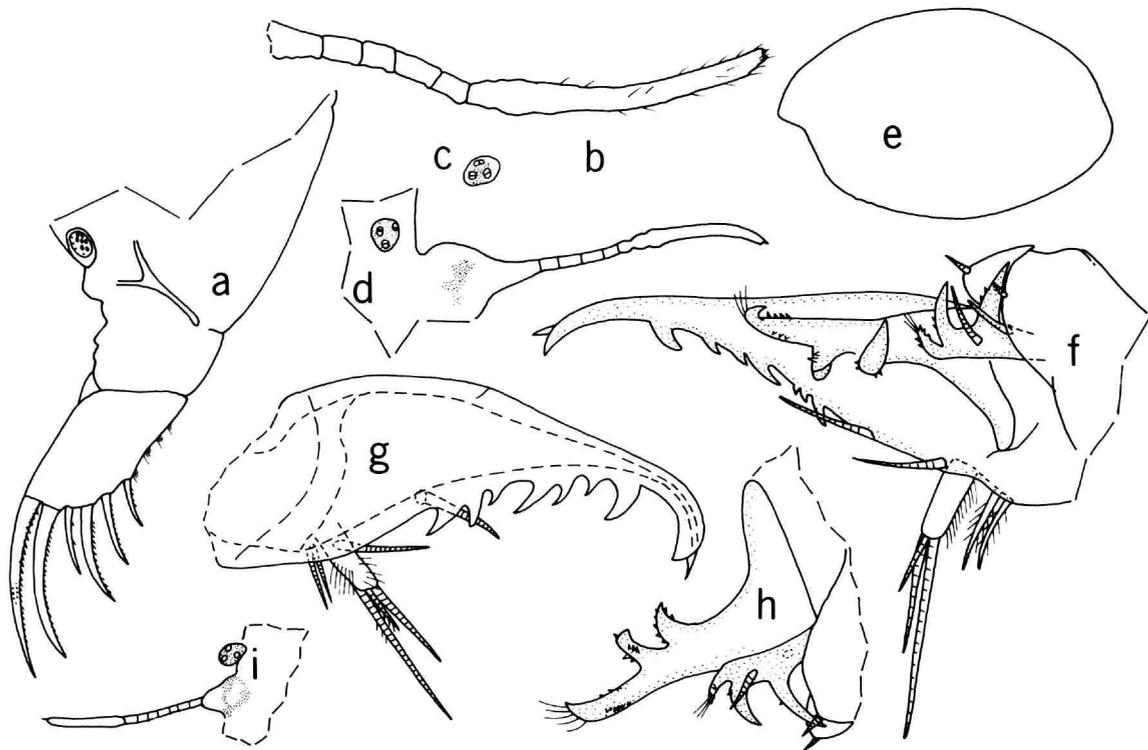


FIGURE 25.—*Pseudophilomedes polyancistrus*, new species. USNM 158041, paratype, ovigerous female, length 0.89 mm: *a*, posterior of body showing left lamella of furca, left Y-sclerite, and left genital process; *b*, bellonci organ; *c*, left lateral eye. USNM 158047, holotype, ovigerous female, length 0.96 mm: *d*, medial eye, bellonci organ, and right lateral eye. USNM 158408, paratype, adult female, length 1.00 mm: *e*, outline of attached valves with body removed; *f*, right 5th limb, anterior view; *g*, left 5th limb, anterior view; *h*, distal and proximal teeth of 1st joint of left 5th limb, anterior view; *i*, lateral eye, medial eye and bellonci organ.

Size: USNM 158036 (one of the specimens with this number), length 0.98 mm, height 0.65 mm; USNM 158041, length 0.89 mm, height 0.64 mm; USNM 158047, length 0.96 mm, height 0.66 mm; USNM 158306, 2 specimens: length 0.94 mm, height 0.59 mm and length 0.98 mm, height 0.60 mm; USNM 158408 (carapace of adult female with animal removed), length 1.00 mm, height 0.65 mm.

First Antenna (Figure 24c): 1st joint with few lateral spines forming rows. 2nd joint with 1 dorsal bristle (on illustrated right limb dorsal bristles on joints 2–4 appear to be on medial side some distance from dorsal margin; these bristles are on dorsal margin of left limb of same speci-

men), few dorsal spines forming rows (appear medial on illustrated limb), and distal lateral spines forming row. 3rd joint short, with 2 bristles (1 ventral, 1 dorsal, and few spines near base of ventral bristle). 4th joint with 3 bristles (1 dorsal, 2 ventral) and few ventral spines forming row. Sensory bristle of 5th joint with short proximal filament and double spine at tip (tip broken off on illustrated limb). Minute 6th joint fused to 5th, with short spinous medial bristle. 7th joint: a-bristle spinous, about 3 times length of bristle of 6th joint; b-bristle same length as a-bristle (USNM 158041), or one-third longer than a-bristle (USNM 158408), bare except for spine at tip; c-bristle same length as sensory bristle of

5th joint, bare except for double spine at tip. 8th joint: d- and e-bristles bare with blunt tips, about same length as c-bristle; f-bristle shorter than c-bristle, with minute proximal filament and double spine at tip; g-bristle same length as c-bristle, with 2 minute proximal filaments and double spine at tip.

Second Antenna (Figure 24d): Protopodite bare. Endopodite weakly 2-jointed. 1st joint with 2 short proximal anterior bristles; small 2nd joint with long spinous terminal bristle. Exopodite: long 1st joint with minute medial bristle on distal margin; bristle of short 2nd joint with hair-like proximal spines along ventral margin and long distal hairs along ventral and dorsal margins; bristles of joints 3–8 similar to that of 2nd joint except longer; 9th joint with 3 bristles (1 long and 1 medium similar to bristle of 2nd joint, 1 short, with short marginal hairs); joints 2–8 with minute spines along distal margins; basal spines absent.

Mandible (Figure 24e): Coxale endite elongate with bifurcate and pectinate tip. Basale: dorsal margin with 3 bristles (1 just distal to middle, 2 terminal); medial surface with 1 or 2 bristles (1 proximal, 0 or 1 distal) near ventral margin or midway between ventral and dorsal margins, and 2 distal bristles (1 short, 1 very long) on or near ventral margin; medial and lateral surfaces of joint with spines forming rows. Exopodite reaching to middle of 1st endopodial joint, with 2 terminal bristles. 1st endopodial joint with medial spines forming rows; ventral margin with 3 bristles (1 minute; 2 long, spinous). 2nd endopodial joint: medial surface spinous; lateral surface with distal spines forming row; dorsal margin with 3 or 4 bristles near middle; ventral margin with 2 small distal bristles; end joint with 2 claws (1 long lateral, 1 medial and ventral about two-thirds length of long claw) and 3 ringed bristles (1 short, medial to long claw; 1 lateral to and about same length as smaller ventral claw; 1 ventral, short).

Maxilla (Figure 24f): Endite I with 2 pectinate claws and 2 ringed bristles; endite II with 2 pectinate claws and 2 ringed bristles; endite III small, with 2 small bristles. Dorsal margins of

precoxale, coxale, and basale with fringe of long hairs. Coxale with dorsal bristle with stout proximal part. Basale with 3 bristles on distal margin (2 ventral, 1 dorsal). Exopodite consisting of 3 subequal bristles on lateral side of limb. Endopodite: 1st joint spinous, with 1 or 2 distal bristles; 2nd joint with finger-like terminal process and 2 bristles (1 short, 1 long).

Fifth Limb (Figures 24g, 25f–h): Single endite with 1 or 2 short bristles. 1st exopodial joint with 2 teeth: proximal tooth with 3 pectinate prongs and 2 short bristles; distal tooth with 3 pectinate prongs. 2nd exopodial joint prolonged to form curved tooth with 7 hook-like prongs (3 large, 4 small) along inner margin; 2 bristles present proximal to teeth along inner margin (1 of these could be on inner lobe of 3rd joint). 3rd exopodial joint with 2 hirsute bristles on outer lobe. 4th and 5th joints fused, hirsute, with 3 terminal bristles.

Sixth Limb (Figure 24h): Endite I with 2 short spinous bristles; endite II with 1 long spinous bristle; endite III with 5 spinous bristles; endite IV with 4 spinous bristles. End joint with 7 spinous bristles followed by 2 hirsute bristles.

Seventh Limb (Figure 24i): Each limb with 2 proximal bristles, 1 on each side, and 6 distal bristles, 3 on each side; each bristle with up to 4 bells and marginal spines; terminus consisting of opposing combs having 3 and 5 teeth.

Furca (Figure 25a): Each lamella with 6 or 7 claws; claw 3 shorter and more slender than claw 4 (some specimens without short 3rd claw); claw 4 followed by 2 or 3 smaller claws decreasing in length proximally along lamella; several sets of spines on each lamella following last claw; claw 1 with slender medial tooth near middle.

Bellonci Organ (Figure 25b,d,i): Elongate with about 5 proximal sutures, widening in middle, with broad tip with pointed spine or spines. Minute spines present on distal half visible at high magnification (100 × objective; Figure 25b).

Eyes: Medial eye with small amount of brown pigment, tapering distally (Figure 25d,i). Lateral eye about one-half diameter of medial eye, with dark brown pigment and 3 ommatidia (Figure 25c,d,i).

Genitalia (Figure 25a): Oval sclerotized ring on each side of body anterior to furca.

Posterior of Body (Figure 25a): Without spines, hairs, or processes.

Y-Sclerite (Figure 25a): Branching distally.

Eggs: USNM 158041 with 2 eggs in marsupium, USNM 158047 with 6 eggs in marsupium.

Parasites: USNM 158408, adult female, with choniostomatid copepod within carapace.

DESCRIPTION OF ADULT MALE (Figures 26, 27).—Carapace oval in lateral view, with small rostrum and caudal process (Figure 26, 27a); ventral margin of rostrum forming slightly obtuse angle with valve margin ventral to rostrum.

Ornamentation (Figure 26): Each valve with depressed sulcus near middle; surface appearing smooth at low magnification but with faint shallow fossae and minute protuberances; surface with widely scattered bristles; bristles forming row along anterior and ventral margins; 3 or 4 long bristles, some divided, near edge of caudal process.

Infold: Rostral infold with 3 long bristles forming row and 1 small bristle near inner end of incisur; infold of caudal process with at least 4 frond-like bristles forming row; anteroventral infold with 1 small bristle near middle; additional small bristles present along inner edge of posteroventral infold.

Selvae: Similar to that of female.

Size: USNM 158048, length 0.91 mm, height 0.56 mm.

First Antenna (Figure 27b): 1st joint with few lateral distal hairs. 2nd joint with few hairs and spines forming rows, and 1 dorsal bristle with base on medial surface of joint. 3rd joint short, with 1 ventral and 1 dorsal bristle, both with bases on medial surface, and distal lateral spines forming row. 4th joint elongate with 1 dorsal bristle with base on medial surface. 5th joint small, wedged ventrally between 4th and 6th joints; sensory bristle with broad base with backward pointing proximal end and abundant filaments; stem of sensory bristle with 3 marginal filaments and bifurcate tip. Elongate 6th joint with distal medial bristle almost same length as joint. 7th joint: a-bristle almost twice length of

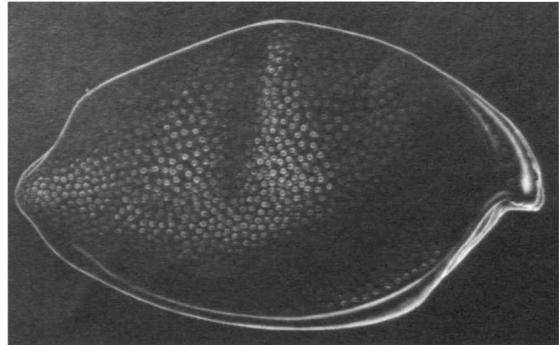


FIGURE 26.—*Pseudophilomedes polyancistrus*, new species, USNM 158048, paratype, adult male, length 0.91 mm, lateral view of complete specimen.

bristle of 6th joint, bare except for spine at tip; b-bristle about twice length of a-bristle, with 3 marginal filaments and bifurcate tip; c-bristle stout, about twice length of b-bristle, with about 11 marginal filaments. 8th joint: d- and e-bristles bare with blunt tips, longer than b-bristle; f-bristle slightly shorter than c-bristle, longer than d- and e-bristles, with about 10 marginal filaments, some pectinate; g-bristle about same length as d- and e-bristles, with 5 marginal filaments and bifurcate tip.

Second Antenna (Figure 27c,d): Protopodite bare. Endopodite 3-jointed (Figure 27c): 1st joint short with 3 anterior bristles; 2nd joint elongate with 1 ventral bristle distal to middle; 3rd joint elongate, tapering to rounded tip, with 2 small spinous bristles near tip. Exopodite (Figure 27d): 1st joint elongate with small recurved medial spine terminally; joints 2–9 short, decreasing in length distally along limb; bristles of joints 2–8 long with natatory hairs; 9th joint with 3 or 4 bristles (1 short with short marginal spines; 0 or 1 medium; 2 long with natatory hairs); joints 2–9 with spines forming row along distal margins (only on lateral side of joint 9); no basal spines.

Mandible (Figure 27e): Coxale endite consisting of small medial spine. Basale: dorsal margin with 3 bristles (1 near middle, 2 terminal); ventral margin with 2 bristles (1 short, near middle; 1 long, distal); medial side with 2 short bristles with bases closer to ventral than to dorsal margin.



FIGURE 27.—*Pseudophilomedes polyanctistrus*, new species, USNM 158048, paratype, adult male, length 0.91 mm: *a*, outline of separated right valve, lateral view; *b*, right 1st antenna, medial view (proximal filaments of sensory bristle not shown); *c*, endopodite and distal part of protopodite of left 2nd antenna; *d*, exopodite of left 2nd antenna, lateral view; *e*, right mandible, lateral view; *f*, left maxilla, lateral view (all endite bristles not shown); *g*, 5th limb; *h*, 6th limb; *i*, posterior of body showing right lamella of furca, right copulatory limb, and right Y-sclerite; *j*, medial eye and bellonci organ; *k*, left lateral eye.

Exopodite about one-half length of dorsal margin of 1st endopodial joint, with 2 long terminal bristles. 1st endopodial joint with 3 ventral bristles (2 long, 1 short). 2nd endopodial joint: ven-

tral margin with spines and 2 short distal bristles; dorsal margin with 4 bristles (1 proximal, 3 near middle). End joint with 1 long stout claw, 2 short ventral bristles, and 2 lateral bristles (the longer

of these weakly ringed, claw-like).

Maxilla (Figure 27f): Limb reduced. Precoxale, coxale, basale with fringe of long hairs along dorsal margin. 3 small endites with weakly developed bristles, some finger-like without rings; endites I and II elongate with 3–5 bristles; endite III short with 2 or 3 small bristles. Coxale with 1 long bristle near dorsal margin. Basale with 1 long bristle near dorsal margin and 1 long and 1 short ventral bristle near margin. Exopodite consisting of 3 long bristles near distal margin of basale. Endopodite: 1st joint hirsute, with 1 long, ringed, alpha-bristle; 2nd joint with 3 ringed terminal bristles (longest of these with many spines).

Fifth Limb (Figure 27g): Epipodial appendage with 38 or 39 bristles. Single endite with 2 bristles (1 ringed, 1 unringed). Exopodite: 1st joint with small bristles (2 unringed, 3 ringed); 2nd joint with 2 proximal, small, finger-like processes and 1 distal, spinous, ringed bristle; inner lobe of 3rd joint with 1 short bristle, outer lobe with 2 long bristles; fused 4th and 5th joints hirsute, with 3 ringed bristles.

Sixth Limb (Figures 27h): Endite I with 2 short bristles; endite II with 1 longer hirsute bristle; endite III with 5 spinous and hirsute bristles; endite IV with 4 spinous and hirsute bristles. End joint with 6 or 7 spinous bristles followed by 2 stout hirsute bristles. Limb hirsute.

Seventh Limb: Absent.

Furca (Figure 27i): Each lamella with 6 or 7 claws; claw 3 shorter and more slender than claw 4; several sets of spines on each lamella following last claw; each claw with teeth along posterior edge; no large medial tooth present on claw 1.

Bellonci Organ (Figure 27j): Elongate with about 6 proximal sutures, broadening near middle, then tapering to narrowly rounded tip.

Eyes: Medial eye with few spots of brown or black pigment (Figure 27j). Lateral eye about same size as medial eye, with brown or black pigment and about 11 divided ommatidia (Figure 27k).

Genitalia (Figure 27i): Elongate with lobes at tip, some bearing small sclerotized processes and bristles.

Y-Sclerite (Figure 27i): Branching distally.

REMARKS CONCERNING JUVENILES.—USNM 158043, A-1 female (length 0.80 mm, height 0.57 mm) and USNM 158042, A-1 male (length 0.84 mm, height 0.57 mm), both with natatory hairs on exopodial bristles of 2nd antennae. The latter without 7th limbs.

SEXUAL DIMORPHISM.—In addition to usual differences between males and females of this genus, the male of *P. polyancistrus* is without 7th limbs.

COMPARISONS.—The new species differs from previously described species of the genus in females and juveniles having secondary teeth distally as well as proximally along the inner margin of the prolonged tooth of the 2nd exopodial joint of the 5th limb.

Pseudophilomedes zeta, new species

FIGURES 28–31

ETYMOLOGY.—From the Greek *zeta* (6th letter of the Greek alphabet) in reference to the 6 prongs on the teeth of the 1st exopodial joint of the 5th limb.

HOLOTYPE.—USNM 158409, adult female in alcohol.

TYPE-LOCALITY.—South Carolina continental shelf, sta 0163-2 (3A), depth 14 m.

PARATYPES.—USNM 158407, 158411, 158415, 158416A,B, 158870, 158871, 193055.

DISTRIBUTION.—Collected on the continental shelf off North Carolina (35°01'06"N) and South Carolina (32°26'N) at depths of 14–33 m. In the Gulf of Mexico collected on the continental shelf of Florida at depths of 17–40 m (Map 2).

DIAGNOSIS.—Posterior end of carapace fairly evenly rounded with very narrow caudal process (Figures 28, 29a); infold of rostrum with 3 (rarely 2) long bristles (Figure 29d,f); infold of caudal process divided and with 5 or 6 frond-like bristles (Figure 29b,c,e,g); length of adult female 0.96–1.33 mm (5 specimens). Exopodite of 2nd antenna with natatory bristles. 2nd exopodial joint of maxilla of adult female with 1 short bristle

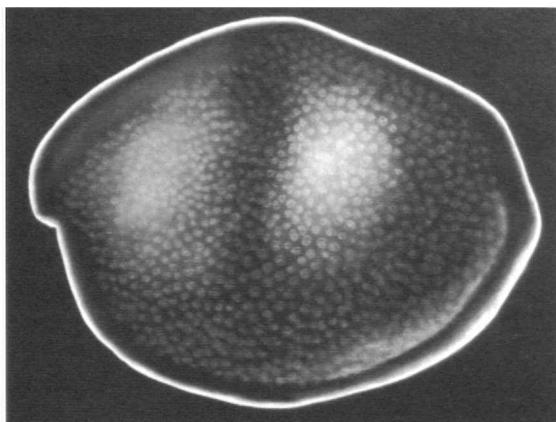


FIGURE 28.—*Pseudophilomedes zeta*, new species, USNM 158409, holotype, adult female, length 1.15, lateral view of complete specimen.

and a stout finger-like terminal process (Figure 30*d*). Exopodite of 5th limb of female: distal tooth of 1st joint with 3 prongs; 2nd joint prolonged distally to form fang-like tooth bearing 7 small proximal teeth along inner margin (Figure 30*f,g*). 7th limb of adult female with 2 proximal bristles (1 on each side) and 5 or 6 distal bristles (2 or 3 on each side) (Figure 31*a*). Each lamella of furca with 6 claws; claw 3 thinner and shorter than claw 4; claw 1 with long slender medial tooth near middle (Figure 31*e,f*).

DESCRIPTION OF ADULT FEMALE (Figures 28–31*h*).—Carapace elongate with small rostrum and shallow incisur; posterior end fairly evenly rounded in lateral view, with very narrow caudal process (Figures 28, 29*a*).

Ornamentation (Figure 28): Surface smooth; low lateral ridge present on rostrum paralleling anterior margin; anterior edge of rostrum with few small pustules. Surface and margins with long hairs; some hairs bifurcate or setose. Carapace and body of some specimens with black or red pigmented spots.

Infold (Figure 29*b–g*): Infold of rostrum with 3 (rarely 2) long spinous bristles in addition to 1 smaller bristle near inner end of incisur (Figure 29*d,f*); anteroventral infold with 1 small bristle. Infold of caudal process complex with passage-way between dorsal and ventral segments of list

(Figure 29*b,c,e,g*); dorsal segment of list with 6 flat spinous bristles; ventral segment of list bare; inner edge of infold in vicinity of caudal process with several minute bristles.

Selvage (Figure 29*f*): Selvage with broad lamellar prolongation with fringed margin present along anterior and ventral margins; prolongation not divided in vicinity of incisur. Fringed lamellar prolongation also present along posterior margin but fringe absent in vicinity of caudal process.

Size: USNM 158407, length 1.33 mm, height 0.91 mm; USNM 158409, length 1.15 mm, height 0.85 mm; USNM 158411, length 1.29 mm, height 0.94 mm; USNM 158870, length 0.96 mm, height 0.66 mm; USNM 158871, length 1.02 mm, height 0.75 mm.

First Antenna (Figure 30*a*): 1st joint with spines forming rows on medial surface, distally on lateral surface, and along ventral margin. 2nd joint with spinous dorsal bristle, spines forming distal row on lateral surface, and few spines on medial surface near dorsal margin. 3rd joint short, well defined, with 2 bristles (1 dorsal with long proximal and short distal spines; 1 ventral with faint short marginal spines) and few spines on dorsal margin. 4th joint elongate, with 3 bristles (1 dorsal, 2 ventral; all with long proximal and short distal spines), and faint spines along ventral margin. 5th joint elongate; sensory bristle with 1 small proximal filament and 2 spines at tip. 6th joint minute, fused with 5th joint, with short spinous medial bristle. 7th joint: a-bristle about 4 times length of bristle of 6th joint, with long proximal and short distal spines; b-bristle about one-fourth longer than a-bristle, bare except for spine at tip; c-bristle about same length as sensory bristle of 5th joint, with 2 small proximal filaments, 1 small subterminal filament, and 2 spines at tip. 8th joint: d- and e-bristles bare with blunt tips, both bristles about same length or slightly longer than c-bristle; f-bristle slightly shorter than c-bristle, with 2 small proximal filaments, 1 small subterminal filament, and 2 spines at tip. g-bristle same length as c-bristle with 2 small proximal filaments, 1 small subterminal filament, and 2 spines at tip.

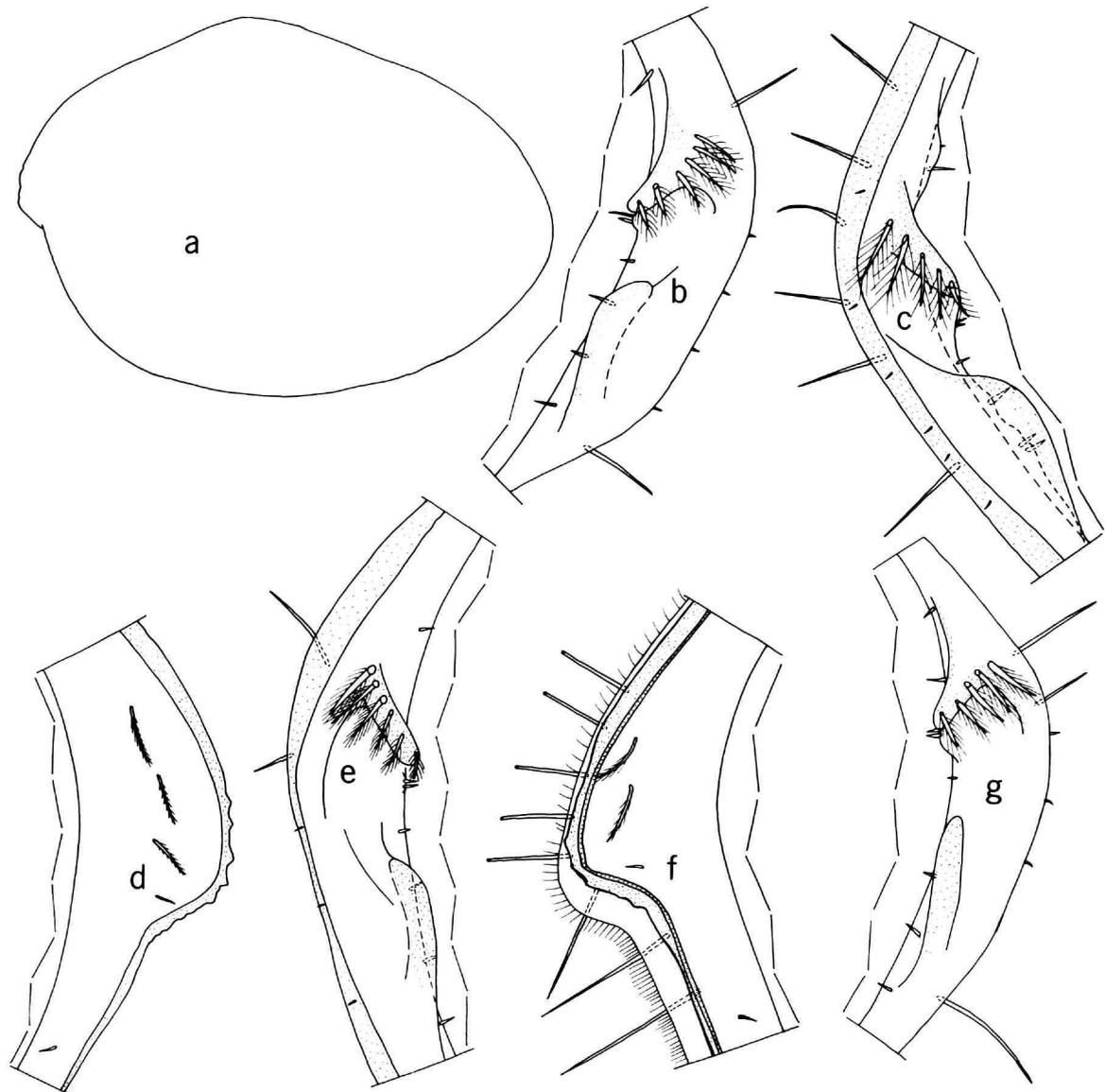


FIGURE 29.—*Pseudophilomedes zeta*, new species. USNM 158407, paratype, adult female, length 1.33 mm: *a*, outline of attached valves with body removed; *b*, *c*, posterior of right and left valves, inside view. USNM 158411, paratype, adult female, length 1.29 mm: *d*, *e*, anterior and posterior of left valve, inside view; *f*, *g*, anterior and posterior of right valve, inside view.

Second Antenna (Figure 30*b*): Protopodite bare. Endopodite 1-jointed, with 2 short proximal anterior bristles, and 1 longer spinous terminal bristle with base on low knob (knob could

be considered incipient 2nd joint). Exopodite: 1st joint with minute, terminal, medial bristle (unringed and with blunt tip); bristle of 2nd joint fairly long, reaching well past 9th joint, with few

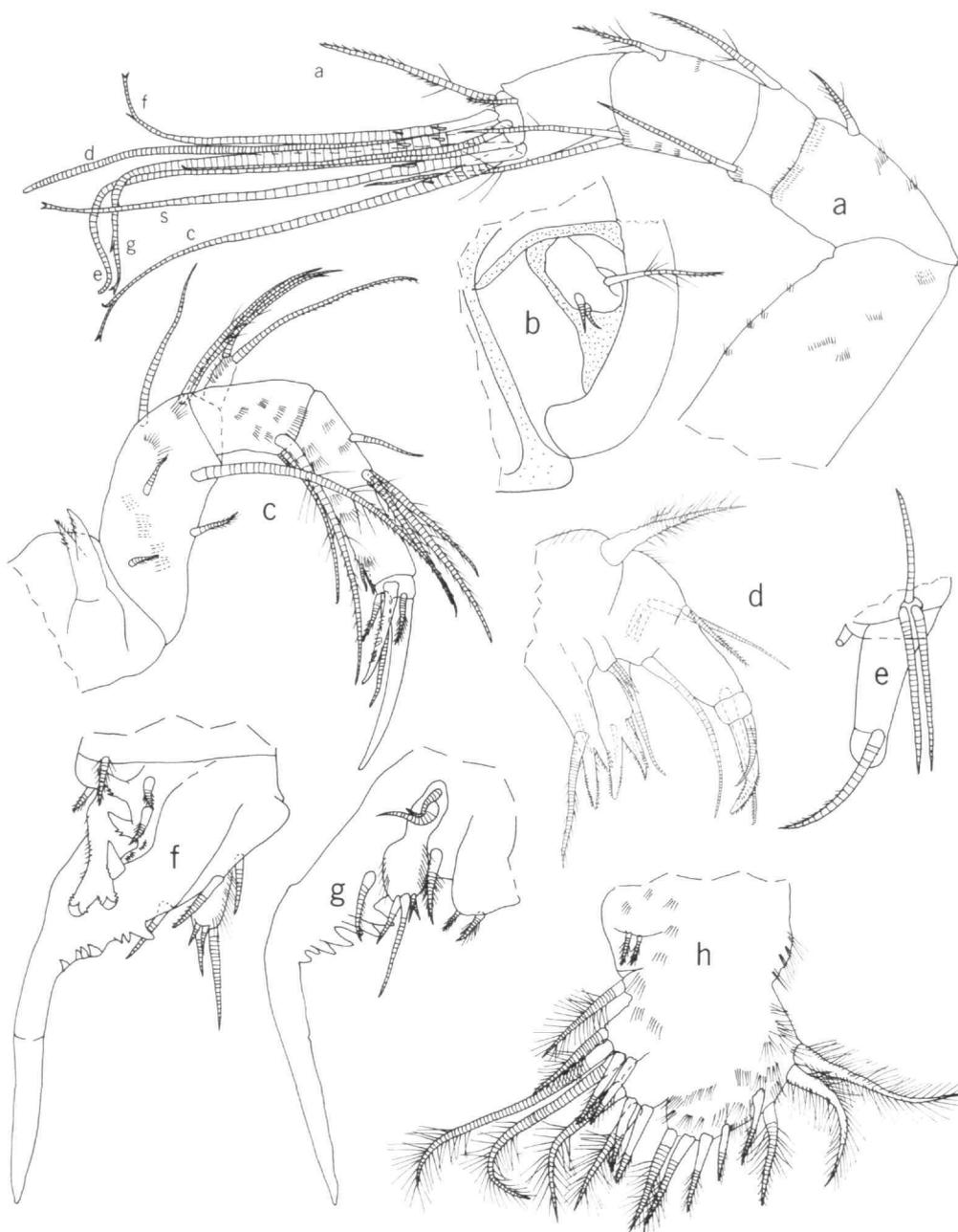


FIGURE 30.—*Pseudophilomedes zeta*, new species, USNM 158407, paratype, adult female, length 1.33 mm: *a*, right 1st antenna, medial view; *b*, endopodite, distal part of protopodite, and proximal part of 1st joint of exopodite of right 2nd antenna, medial view; *c*, left mandible, medial view; *d*, left maxilla, medial view; *e*, part of right maxilla showing 3 exopodial bristles and alpha-bristle of 1st endopodial joint, lateral view, anterior of limb towards right; *f*, right 5th limb, anterior view; *g*, left 5th limb, posterior view; *h*, 6th limb.

proximal dorsal hairs, followed by fairly stout ventral spines becoming thinner distally along bristle, and then natatory hairs along both ventral and dorsal margins; bristles of joints 3–8 with fairly stout proximal ventral spines and distal natatory hairs; 9th joint with 3 bristles (dorsal bristle fairly short, with faint short marginal hairs; middle bristle fairly long, with slender proximal ventral spines and distal natatory hairs; ventral bristle long, with fairly stout proximal ventral spine becoming thinner distally along bristle and followed by natatory hairs on both margins; joints 2–8 with minute spines forming row along distal margin; basal spines absent.

Mandible (Figure 30c): Coxale endite with bifurcate and pectinate tip and without bristle near base. Basale: dorsal margin with 3 bristles (1 distal to middle, 2 terminal); medial surface spinous, with 2 short spinous bristles near middle (1 proximal, 1 distal); ventral margin with 1 short bristle distal to middle and 1 (rarely 2) long subterminal bristle. Exopodite reaching just past midlength of dorsal margin of 1st endopodial joint, with distal spines and 2 terminal bristles (outer medial bristle shorter than inner lateral bristle). 1st endopodial joint with medial spines and 3 ventral bristles (1 small, 2 long). 2nd endopodial joint: medial surface with spines; ventral margin with spines and 2 short subterminal bristles; dorsal margin with 1 proximal bristle and 3 longer bristles near middle. 3rd endopodial joint with 2 claws (shorter of these with ventral spines) and 3 ringed bristles.

Maxilla (Figure 30d,e): Precoxale and coxale with fringe of long dorsal hairs. Coxale with stout hirsute dorsal bristle. Endite I with 2 pectinate claws and 2 bristles; endite II with 2 pectinate claws and 2 bristles; endite III minute with 2 or 3 small bristles (endite III could be considered basal lobe on endite II). Basale with dorsal hairs and 3 long bristles. Exopodite consisting of cluster of 3 subequal bristles (Figure 30e). 1st endopodial joint with 1 spinous alpha-bristle reaching tip of stout bristle of end joint. 2nd endopodial joint with 1 short spinous bristle and 1 stout, finger-like terminal process.

Fifth Limb (Figure 30f,g): Single endite with 2 small, widely spaced bristles. 1st exopodial joint with 2 teeth: proximal tooth with 3 pectinate teeth and 2 bristles (Figure 30f); distal tooth with 3 pectinate teeth (Figure 30f). 2nd exopodial joint forming long saber-tooth with 7 proximal prong-like teeth forming 3 groups of 3, 3, and 1 (Figure 30g); 2 spinous bristles present proximal to teeth near inner margin. 3rd exopodial joint with 2 hirsute bristles on outer lobe. 4th and 5th joints fused, hirsute, with 4 terminal bristles (1 or 2 of these very small). Epipodial appendage with 41 bristles.

Sixth Limb (Figure 30h): Endite I with 2 short bristles; endite II with 1 medium-length hirsute bristle; endite III with 5 bristles (1 short, 2 long with long spines, and 2 short with short marginal spines); endite IV with 3–5 bristles. End joint with 7–10 bristles (last 2 or 3 bristles long, hirsute).

Seventh Limb (Figure 31a): 2 bristles in proximal group (1 on each side); 5 or 6 bristles in terminal group (2 or 3 on each side); each bristle with 2–6 bells and marginal spines. Terminus consisting of small opposing combs, each with 3 to 5 teeth.

Furca (Figure 31e–g): Each lamella with 6 claws; claws 1, 2, 4 main claws; claws 3, 5, 6 secondary claws; claws 5 and 6 set slightly laterally and proximal to edge of lamella; edge of lamella following claw 6 with 1 or more minute processes; all claws with teeth along posterior margins; those along proximal posterior margin of claw 1 fairly long (Figure 31e,g); claw 1 with very long, slender, medial tooth near middle (Figure 31f) (not present on left claw of USNM 158411, Figure 31g).

Bellonci Organ (Figure 31c,d): Elongate with 9 or 10 sutures in proximal half; broadening in middle part, then tapering to fairly broad tip bearing spines and small process; hairs on distal half visible at high magnification (40 × objective; Figure 31d).

Eyes (Figure 31c,d): Lateral eyes pigmented black, each with 3 ommatidia (Figure 31c). Medial eye larger than lateral, with black pigment.

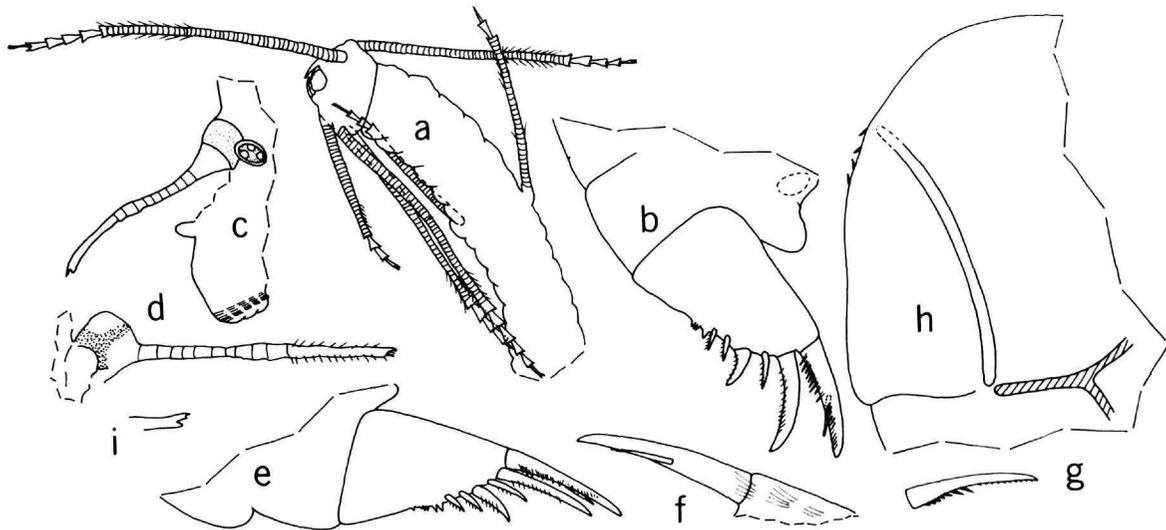


FIGURE 31.—*Pseudophilomedes zeta*, new species. USNM 158407, paratype, adult female, length 1.33 mm: *a*, 7th limb; *b*, posterior of body showing right lamella of furca and position of genital process (dashed circle); *c*, anterior of body showing left lateral eye, medial eye, bellonci organ, anterior process, and upper lip; *d*, medial eye and bellonci organ viewed under cover slip. USNM 158411, paratype, adult female, length 1.29 mm: *e*, right lamella of furca; *f*, claw 1 of right lamella of furca, medial view; *g*, claw 1 of left lamella of furca, medial view; *h*, posterior of body showing right Y-sclerite, right half of girdle, and spines along posterodorsal curvature. USNM 158416A, paratype, A-1 female: *i*, length 0.99 mm, tip of bellonci organ.

Genitalia (Figure 31*b*): Small oval process anterior to furca.

Posterior of Body (Figure 31*h*): Posterodorsal margin with few small spines.

Y-Sclerite (Figure 31*h*): Branching distally.

Eggs: USNM 158870 with 1 well-developed egg in marsupium.

DESCRIPTION OF A-1 FEMALE.—Carapace similar in shape to that of adult female.

Size: USNM 158416A, length 0.99 mm, height 0.68 mm.

Second Antenna: Exopodial bristles long, with natatory hairs and ventral spines similar to those of adult female. Endopodite similar to that of adult female, but may have only 1 short anterior proximal bristle.

Seventh Limb: Bristles strongly tapered (juvenile character).

Furca: Similar to that of adult female.

Bellonci Organ (Figure 31*i*): Tip bifurcate,

otherwise similar to that of adult female.

Eyes: Similar to those of adult female.

COMPARISONS.—*Pseudophilomedes zeta* differs from *P. ambon* and *P. ferulanus* in having 3 instead of 2 stout claws on the distal tooth of the 1st exopodial joint of the 5th limb of the adult female. The teeth along the inner margin of the saber-like tooth of the 2nd exopodial joint of the 5th limb of *P. zeta* are proximal, not stretched out as on *P. polyancistrus*. The maxilla of *P. zeta* differs from that of both *P. ambon*, *P. ferulanus*, and *P. polyancistrus* in having only 1 bristle at the base of the stout terminal bristle of the 2nd endopodial joint. Long medial tooth of claw 1 of furcal lamellae more slender than that of *P. ferulanus* and *P. ambon*. Some specimens of *P. zeta* have areas of black or red pigment in body and carapace, not observed in other species. The furca of *P. zeta* bears 6 claws, fewer than the 7 or 8 claws on *P. ferulanus* and *P. ambon*. The 7th

limb of the adult female bears only 2 proximal bristles, fewer than the 4–7 bristles on the 7th limbs of *P. ferulanus* or *P. ambon*.

***Harbansus* Kornicker, 1978**

TYPE-SPECIES.—*Harbansus bradmyersi* Kornicker, 1978:13.

Three species of *Harbansus* have previously been reported from the study area: *H. paucichelata* (Kornicker, 1958:233), *H. dayi* Kornicker, 1978:32, and *H. bowenae* Kornicker, 1978:39. The known range of all 3 species is extended herein, and the adult male of *H. bowenae* is de-

scribed. A new species, *H. magnus*, is described on a single specimen collected on the continental slope east of Florida.

DISTRIBUTION.—This genus is known from the western coast of Africa (Kornicker and Caraiou, 1977:27), the western coast of North and Central America (Kornicker, 1978:1), the eastern coast of Central and North America (Kornicker: 1978:1), the Gulf of Mexico, the Bahamas, and Hawaii (Kornicker, 1978:1), and off Lizard Island, Australia (Kornicker, 1983a:181). The known depth range of the genus is 1–1015 m. Species in the present collection are from both the Atlantic Ocean and Gulf of Mexico.

Key to Species of *Harbansus*

(West Atlantic and Gulf of Mexico)

- 1. Each lamella of furca with 8 claws *H. magnus*, new species
 Each lamella of furca with not more than 6 claws 2
- 2. Adult females and juveniles with natatory hairs on exopodial bristles of 2nd antenna and with horizontal ribs on shell *H. paucichelatus*
 Adult females and juveniles without natatory hairs on exopodial bristles of 2nd antenna and without horizontal ribs on shell 3
- 3. 2nd joint of endopodite of 2nd antenna of adult female minute
 *H. bowenae*
 2nd joint of endopodite of 2nd antenna of adult female elongate
 *H. dayi*

***Harbansus paucichelatus* (Kornicker, 1958)**

FIGURES 32–37

Philomedes paucichelata Kornicker, 1958:233, figs. 46: 4a,b; 54A–E, 55A–C, 87B,E,H.

Euphilomedes paucichelata.—Kornicker, 1970:36.

Harbansus paucichelatus.—Kornicker, 1978:16, figs. 5–9, pls. 1, 2.

HOLOTYPE.—USNM 122905, dried specimen in poor condition.

TYPE-LOCALITY.—Bimini Islands, Bahamas.

MATERIAL.—See “Station Data and Material Examined.”

DISTRIBUTION.—This species described originally from Bimini, Bahamas, is the most widespread species of the Philomedidae in the study area (Map 3). It was collected in the Atlantic off North Carolina (35°02'06"N) as well as off the

southern tip of Florida and in the Gulf of Mexico. It has previously been reported as far south as Belize (Kornicker, 1978:2). Known depth range is 15 cm to 135 m.

VARIABILITY.—The considerable variability observed in specimens referred herein to *H. paucichelatus* suggests a complex of species. Initially I attempted to divide the species on the basis of furcal claws. Those with stout primary claws were referred to *H. paucichelatus* while those with slender primary claws were referred to a new species. So many specimens could not be referred to either species with certainty that I found it expedient to consider the complex as a single species.

Two species with ribs similar to those of *H. paucichelatus* are to be described in a later publication. Both species bear minute spines on the

carapace. One of the species bears long natatory bristles on the exopodite of the 2nd antenna, similar to those on *H. paucichelatus* whereas the other has short bristles bearing only spines, no distal hairs. The degree of carapace spinosity on these forms is quite variable, some having abundant spines, others having just a few spines. The later shells are so similar to those of *H. paucichelatus* that these also could be considered to be part of the *H. paucichelatus* species complex, or possibly hybrids. I have, however, included in *H. paucichelatus* only specimens without spines.

Some of the various forms referred to *H. paucichelatus* are briefly described below; variations in morphology are noted in the "Diagnosis."

DIAGNOSIS.—Carapace elongate with long narrow rostrum with minutely scalloped edge and projecting caudal process. The latter longer on some specimens than on others.

Ornamentation: Small shallow fossae abundant over valve surface. Number and position of lateral ribs variable: some specimens with single faint rib near rostrum, others with 2 to 4 ribs, either faint or well defined (Figure 32f). Early instars and adult males often with less well-defined ribs than late instars and adult females. All specimens with many single bristles, but some also with double bristles and/or setose bristles (Figure 32g).

Infold: Infold of rostrum generally with only 4 bristles, but some specimens with as many as 6 bristles. Ridge on infold of caudal process generally with 6 frond-like bristles.

Size: Adult females: length 0.90–1.20 mm. Adult males: length 0.84–1.06 mm.

First Antenna: 2nd joint with 1 bristle (dorsal).

Second Antenna: Protopodite of adult female generally with faint spines forming rows on dorsal half (Figure 33d), but spines absent on some specimens. Instars and adults of both sexes with exopodial bristles of joints 2–8 and long bristle of 9th joint with natatory hairs. Endopodite of adult female 2 jointed: 1st joint with 2 proximal anterior bristles; 2nd joint with long bristle near middle, and tip either bare (Figure 32b), or with

minute-to-small spine (Figure 32c); many specimens with tip of 2nd joint of left limb differing from that on right limb. Endopodite of juvenile females differing from that of most adult females in having a fairly long spine (unringed, but could be considered to be a bristle) at tip (Figure 34a, b). 3rd joint of male endopodite of 2nd antenna without proximal bristle or process.

Mandible: Medial side of basale of female generally with single bristle in proximal ventral corner (Kornicker, 1978, fig. 6f), but rarely also with an adjacent spine (Figure 32d).

Seventh Limb: Adult male generally without 7th limb, but minute bare 7th limb observed on USNM 193053.

Furca: Each lamella of adult with 6 claws (rarely 5); main claws 1, 2, and 4 fairly stubby, especially those of females (Figures 33i, 35), or slender (Figure 36d).

Eyes: Medial eye pigmented brown. Lateral eye of adult female small, unpigmented, with about 5 ommatidia (Figure 33k). Lateral eye of adult male fairly large, about same size as medial eye, with or without pigment, with about 12 ommatidia (Figure 33b; Kornicker, 1978, fig. 9h).

SUPPLEMENTARY DESCRIPTION OF USNM 156988, ADULT MALE (Figure 33a).—Previously described by Kornicker (1978:21, fig. 9b–k).

Mandible: Kornicker (1978:22, fig. 9e) incorrectly described and illustrated the end joint of a mandible having only 1 ventral bristle; reexamination of the appendage revealed 2 ventral bristles (Figure 33a).

DESCRIPTION OF USNM 158343, ADULT MALE (Figure 33b, 35b).—Carapace elongate with long slender rostrum and projecting caudal process (Figure 33b).

Ornamentation: Surface with abundant shallow fossae and several weakly developed horizontal ribs (ribs shown diagrammatically on Figure 33b). Surface bristles mostly of single type but a few double bristles present.

Size: Length 1.06 mm, height 0.56 mm.

Furca (Figures 33b, 35b): Main claws more slender than those of adult female, and without

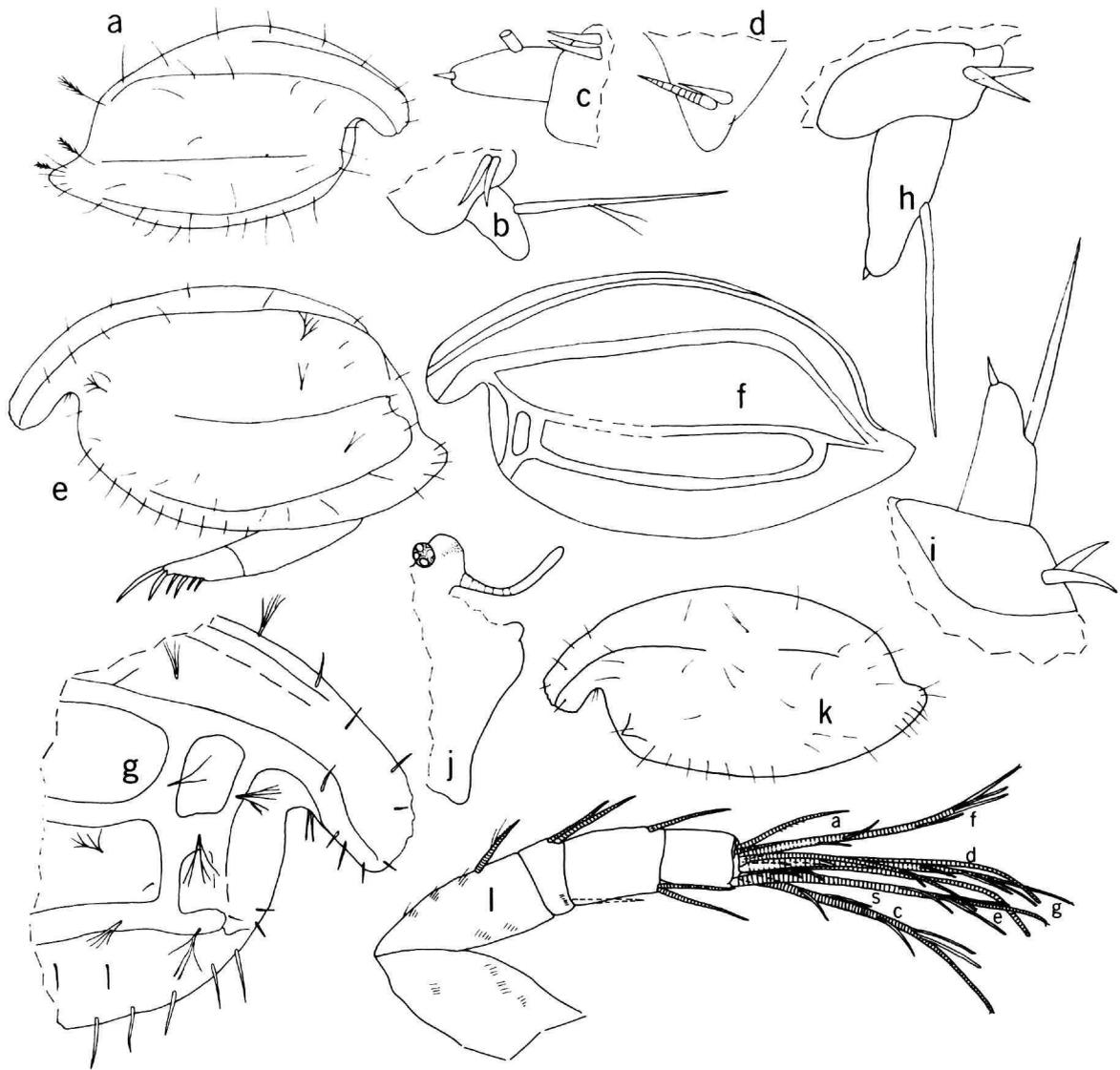


FIGURE 32.—*Harbansus paucichelatus* (Kornicker). USNM 157320, adult female, length 1.03 mm: *a*, lateral view of complete specimens (ribs diagramatic); *b*, endopodite of left 2nd antenna, medial view; *c*, endopodite of right 2nd antenna, medial view (only proximal part of marginal bristle of 2nd joint shown); *d*, medial bristle and spine at proximal ventral corner of basale of right mandible. USNM 158078, adult female, length 0.99 mm: *e*, lateral view of complete specimen showing furca and some surface bristles (ribs diagramatic). USNM 158348, adult female, length 1.04 mm: *f*, lateral view of complete specimen (ribs diagramatic); *g*, anterior of right valve, lateral view; *h*, *i*, endopodites of left and right 2nd antennae, medial view; *j*, anterior of body showing right lateral eye, medial eye, bellonci organ, upper lip, and anterior process. USNM 158251, A-1 female, length 0.96 mm: *k*, attached valves with body removed, lateral view; *l*, left 1st antenna, medial view (small letters = terminal bristles).

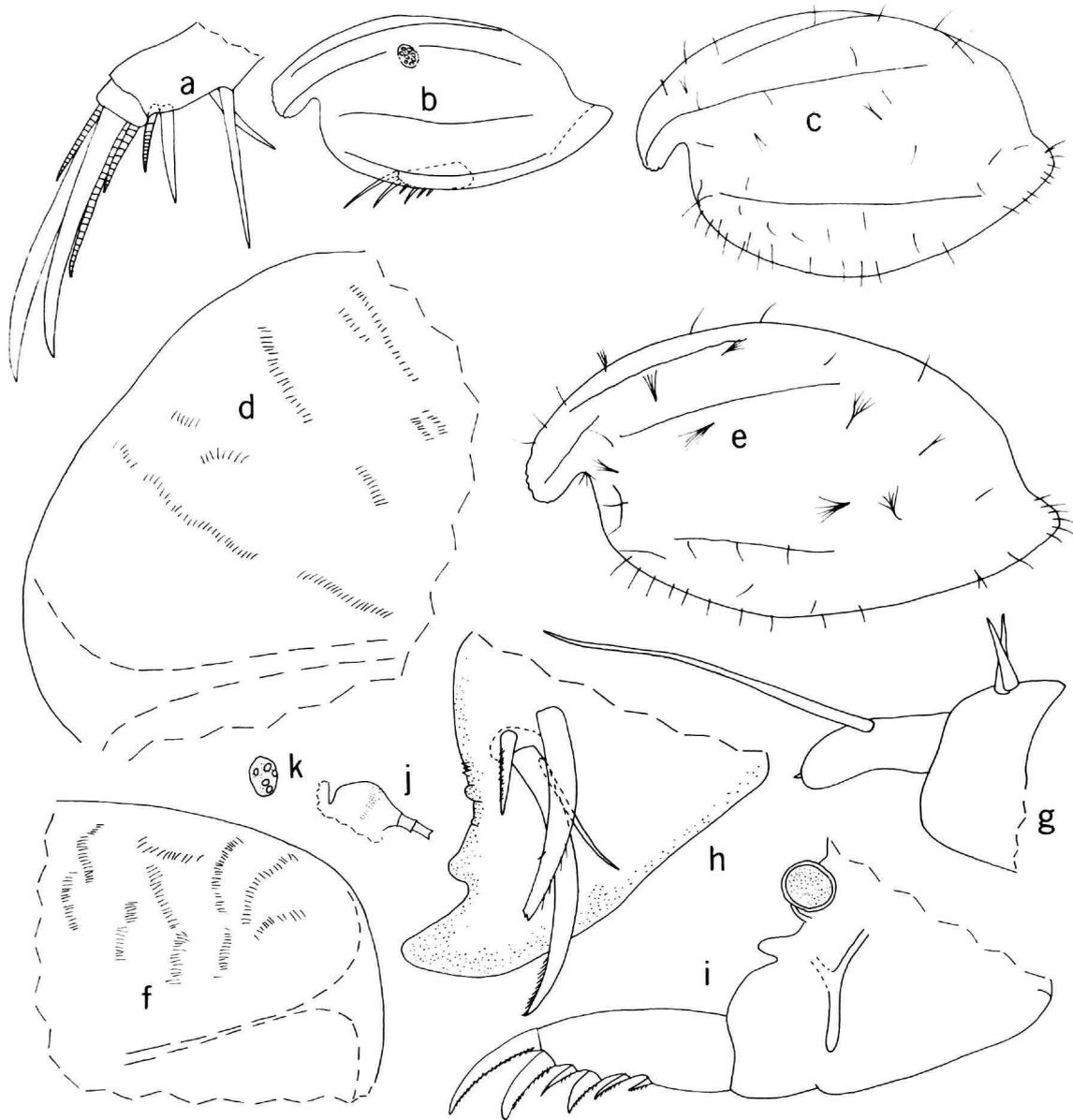


FIGURE 33.—*Harbansus paucichelatus* (Kornicker). USNM 156988, adult male, length 0.93 mm: *a*, distal end of right mandible, medial view. USNM 158343, adult male, length 1.06 mm: *b*, lateral view of complete specimen (ribs diagramatic). USNM 149329, adult female, length 0.92 mm: *c*, lateral view of complete specimen (ribs diagramatic); *d*, posterior dorsal quarter of protopodite of left 2nd antenna showing surface spines, medial view. USNM 158344, ovigerous female, length 1.20 mm: *e*, lateral view of complete valve; *f*, posterior dorsal quarter of protopodite of right 2nd antenna, medial view; *g*, endopodite of right 2nd antenna, medial view; *h*, 2nd exopodial joint of 5th limb, posterior view; *i*, posterior part of body showing left lamella of furca, left Y-sclerite, and left genital process; *j*, medial eye and proximal part of bellonci organ; *k*, lateral eye.



FIGURE 34.—*Harbansus paucichelatus* (Kornicker), USNM 158251, A-1 female, length 0.96 mm: *a*, endopodite and distal part of protopodite of left 2nd antenna, medial view; *b*, endopodite, distal part of protopodite, and proximal part of exopodite of right 2nd antenna, medial view; *c*, 9th exopodial joint of right 2nd antenna, medial view; *d*, right mandible, medial view; *e*, right maxilla, medial view (not all bristles shown on endites); *f*, right 5th limb, anterior view (not all endite bristles shown); *g*, detail of exopodial joints 1 and 2, from *f*; *h*, detail of 2nd exopodial joint, from *g*; *i*, left 5th limb, posterior view (all exopodial bristles not shown); *j*, detail of 2nd exopodial joint, from *i*; *k*, detail of exopodial joints 3–5, from *i*; *l*, 6th limb; *m*, 7th limb; *n*, detail of tip of 7th limb, from *m*; *o*, right lamella of furca, lateral view; *p*, claw 1 of left lamella, posterior view; *q*, right lateral eye, medial eye, and bellonci organ (drawn with $\times 20$ objective); *r*, bellonci organ drawn under cover slip at high magnification ($\times 100$ objective).

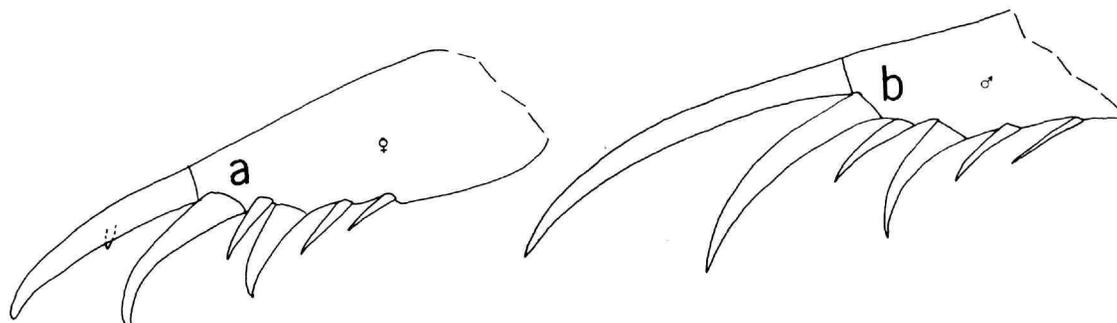


FIGURE 35.—Comparison of left furcal lamellae of female (a) and male (b). *Harbansus paucichelatus*.

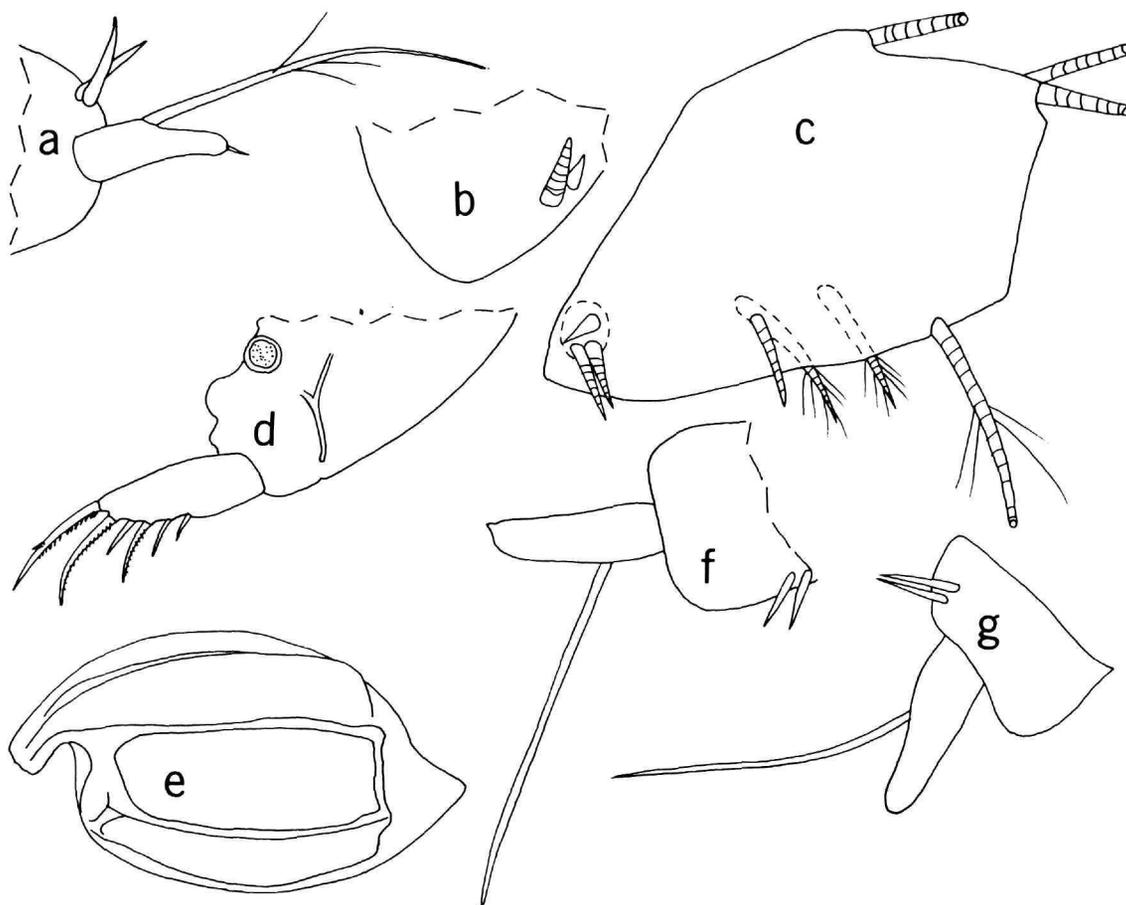


FIGURE 36.—*Harbansus paucichelatus* (Kornicker). USNM 157994, ovigerous female, length 0.89 mm: a, endopodite of left 2nd antenna, medial view; b, medial bristle and spine at proximal ventral corner of basale of right mandible; c, basale of left mandible, medial view; d, posterior of body showing left lamella of furca, left Y-sclerite, and left genital process. USNM 156905A, adult female, length 0.96 mm: e, lateral view of complete specimen (ribs diagrammatic); f, g, endopodites of right and left 2nd antennae, medial view.

stout medial tooth near middle of claw 1.

Lateral Eye: Well developed with dark brown pigment visible through shell.

SUPPLEMENTARY DESCRIPTION OF USNM 149329, ADULT FEMALE (Figure 33c,d); previously described by Kornicker, 1978:16; figs. 5–7a–i).—Bristles of outside of each valve consisting of scattered single bristles and few double bristles (Figure 33c).

Size: Length 0.92 mm, height 0.56 mm.

Second Antenna: Protopodite with short spines forming rows on dorsal half of medial surface (Figure 33d). Minute spine reported on lateral side of 9th exopodial joint by Kornicker (1978:20) is actually on medial side and could be interpreted as minute unringed bristle.

DESCRIPTION OF USNM 158344, ADULT FEMALE (Figure 33e–k).—Carapace more elongate than that of USNM 149329 (cf. 33e and 33c).

Ornamentation (Figure 33e): 2 or 3 horizontal ribs evident but weakly developed. Surface bristles consisting of single, double, and setose bristles.

Infold: Infold of rostrum with 4 bristles; ridge on infold of caudal process with 6 frond-like bristles.

Size: Length 1.20 mm, height 0.65 mm.

First Antenna, Second Antenna (Figure 33f,g), *Mandible, Maxilla, Fifth Limb* (Figure 33h), *Sixth Limb, Seventh Limb; Furca* (Figure 33i); *Medial Eye* (Figure 33j); *Lateral Eye* (Figure 33k), *Y-Sclerite* (Figure 33i), *Genitalia* (Figure 33i): Similar to those in earlier description of adult female by Kornicker (1978:17–21).

Bellonci Organ: Distal part broken off on USNM 158344, proximal part segmented (Figure 33j).

Eggs: 1 egg in brood chamber.

DESCRIPTION OF USNM 157320, ADULT FEMALE (Figure 32a–d).—Carapace with longer caudal process than that of USNM 149329 (cf. Figures 32a and 33c).

Ornamentation: Surface with 3 or 4 lateral ribs, the 2 middle of these well developed. Surface bristles consisting of single bristles, some with marginal hairs (hairs may be foreign growth) (Figure 32a).

Infold: Infold of rostrum with 4 bristles; ridge on infold of caudal process with 6 frond-like bristles.

Size: Length 1.03 mm, height 0.56 mm.

Second Antenna: Endopodite of right limb with terminal spine (Figure 32c); endopodite of left limb without terminal spine (Figure 32b). Limb otherwise similar to that of adult female described by Kornicker (1978:17).

Mandible: Medial surface of basale with 1 bristle and 1 spine forming group in proximal ventral corner (Figure 32d). Mandible otherwise similar to that of adult female described by Kornicker (1978:20).

Additional Limbs: Similar to those of adult female described by Kornicker (1978:17–21).

Parasites: Marsupium with 1 female choniostomatid and 3 sacs containing choniostomatid larvae. Kornicker (1978:16) mistakenly interpreted the choniostomatids to be ostracod eggs; none are present.

DESCRIPTION OF USNM 158078, ADULT FEMALE (Figure 32e, 35a).—Carapace elongate with long narrow rostrum and projecting caudal process (Figure 32e).

Ornamentation: Each valve with 3 distinct horizontal ribs (ribs shown diagrammatically in Figure 32e). Surface with abundant shallow fossae. Bristles consisting of single, double, and setal types (all bristles not shown in Figure 32e).

Size: Length 0.99 mm, height 0.61 mm.

Furca (Figures 32e, 35a): Main claws fairly stubby; claw 1 with fairly large medial tooth near middle.

DESCRIPTION OF USNM 158348, ?ADULT FEMALE (Figure 32f–j).—Carapace similar in shape to adult female USNM 158344.

Ornamentation: Each valve with 4 well-developed, horizontal ribs (Figure 32f). Surface with numerous setose bristles in addition to many single and few double bristles (Figure 32g).

Infold: Rostral, infold with 6 bristles; ridge on infold of caudal process with about 6 frond-like bristles.

Size: Length 1.04 mm, height 0.58 mm.

First Antenna: Similar to that of adult female.

Second Antenna: Protopodite similar to that of

adult female except fewer medial spines visible. Exopodite similar to that of adult female. Endopodite: end joint of endopodite of left limb with minute spine (Figure 32*h*); end joint of right limb with small bristle without visible rings (Figure 32*i*).

Mandible, Maxilla, Fifth, Sixth, and Seventh Limbs, Furca, Eyes, and Bellonci Organ (Figure 32*j*), *Upper Lip* (Figure 32*j*): Similar to those of adult female.

Genitalia: Oval with sclerotized rim absent from each side of body.

Eggs: Small unextruded eggs within body.

Remarks: The endopodite of the left limb of the 2nd antenna is similar to that of adult female, but the endopodite of the right limb bears a small bristle on the end joint similar to that on the juvenile A-1 female (USNM 158251) described herein. Small eggs are present in the ovaries. This plus the lack of tapered bristles on the 7th limb suggest that the specimen is adult, but the absence of genitalia indicates sexual maturity has not been reached.

DESCRIPTION OF USNM 158251, A-1 FEMALE (Figures 32*k*, 34).—Carapace more elongate than adult female illustrated by Kornicker (1978, fig. 5) (Figure 32*k*).

Ornamentation: Faint shallow fossae abundant. Faint rib visible reaching slightly posterior to rostrum (Figure 32*k*). Only single bristles on carapace.

Infold: Not examined in detail, but infold of rostrum with 4 bristles, and infold of caudal process with about 5 frond-like bristles.

Size: Length 0.80 mm, height 0.45 mm.

First Antenna (Figure 32*l*): In general, similar to that of adult female.

Second Antenna (Figure 34*a-c*): Protopodite without medial spines. Endopodite similar to that of adult female USNM 158247 in having a fairly long terminal spine on the 2nd endopodial joint; 1st joint with usual 2 anterior bristles (Figure 34*a,b*). Exopodite: 1st joint elongate with minute, terminal, medial bristle; bristle of 2nd joint reaching well past 9th joint, with about 15 ventral spines (distal spines more slender than prox-

imal spines) followed by short slender spine-like ventral hairs; bristles of joints 3–8 similar in length to those of adult female but without proximal dorsal hairs, with 6–9 proximal ventral spines, and distal natatory hairs on both margins; 9th joint with 2 bristles (dorsal bristle short and with short marginal spines; ventral bristle about same length as combined joints 2–8, with few stout spines proximally along ventral margin and short hairs distally along both margins); basal spines absent but 9th joint with minute medial spine (could be considered unringed bristle, Figure 34*c*); joints 2–8 with minute spines forming row along distal margin.

Mandible (Figure 34*d*), *Maxilla* (Figure 34*e*), *Fifth Limb* (Figure 34*f-k*), *Sixth Limb* (Figure 34*l*): In general, similar to limbs of adult female.

Seventh Limb (Figure 34*m,n*): Each limb with same number of bristles as on adult female, but bristles strongly tapering and with fewer bells (juvenile characters). Tip of limb with comb of 3 recurved teeth opposite 2 pegs; comb and pegs occupy smaller area than on adult female.

Furca (Figure 34*o,p*): Each lamella with 6 claws; claws 1, 2, 4 stout; claws 3, 5, 6 slender; claw 1 with stout distal medial tooth and small teeth along posterior margin (Figure 34*p*); claw 3 about same length as claw 4; claw 6 about one-half length of claw 5.

Bellonci Organ (Figure 34*q,r*): Elongate with about 8 faint sutures in proximal half; broadening distally and with rounded tip.

Eyes (Figure 34*q*): Similar to those of adult female.

REMARKS.—The endopodite of the 2nd antenna of the A-1 female bears a fairly long terminal/spine on the end joint generally not present on adult females. A similar loss of a spine on the endopodite of the 2nd antenna occurs in the development of *Harbansus dayi* Kornicker (Kornicker, 1978:32). The juveniles and adults of *H. paucichelatus* have natatory bristles on the exopodites of the 2nd antennae showing that they are capable of swimming.

DESCRIPTION OF USNM 158247, ADULT FE-

MALE.—Carapace elongate with well-developed caudal process.

Ornamentation: Surface with 2 horizontal ribs and undivided bristles.

Central Adductor Muscle Attachments: About 30 individual scars.

Size: Length 0.96 mm, height 0.54 mm.

First Antenna: Similar to that described previously by Kornicker (1978:17), except no medial spines on 4th joint.

Second Antenna: Protopodite and exopodite similar to adult female described by Kornicker (1978:17). Endopodite differs from previously described females in having a fairly long terminal spine on 2nd joint of both limbs.

Mandible, Maxilla, Fifth Limb, Sixth Limb, Seventh Limb: Similar to those described for adult female by Kornicker (1978:20, 21).

Furca: Each lamella with 6 claws; primary claws 1, 2, 4 fairly short with blunt tips; secondary claws about same length as claw 4, with slender tips.

Bellonci Organ: Cylindrical, with about 6 sutures proximally, then broadening distal to mid-length and terminating in elongate narrow niple.

Eyes: Lateral eye small, unpigmented, with 5 minute ommatidia. Medial eye larger than lateral eye, with brown pigment.

Upper Lip: Typical for genus.

Genitalia: Oval, on each side of animal, each with attached oval (spermatophore?).

Eggs: 5 eggs in marsupium.

DESCRIPTION OF USNM 157994, ADULT FEMALE (Figures 36a–d, 37).—Carapace elongate with long narrow rostrum and projecting caudal process (Figure 37).

Ornamentation: Surface with numerous well-defined shallow fossae; 2 well-defined horizontal ribs present connected anteriorly and posteriorly by well-defined vertical ribs (Figure 37). Surface bristles sparsely distributed and of single type, some with broad bases. Surface spines absent.

Infold: Infold of rostrum with 4 bristles; ridge on infold of caudal process with 6 frond-like bristles.

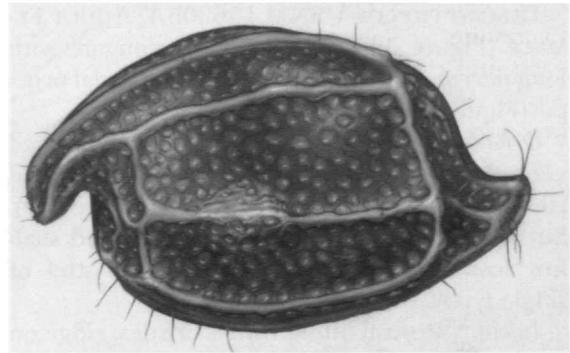


FIGURE 37.—*Harbansus paucichelatus* (Kornicker), USNM 157994, ovigerous female, length 0.89 mm, lateral view of attached valves with body removed.

Size: Length 0.89 mm, height 0.56 mm.

First Antenna: Similar to that described previously by Kornicker (1978:17).

Second Antenna: Endopodite 2-jointed (Figure 36a): 1st joint with 2 short ventral bristles; end joint with long ventral bristles with long marginal spines near middle, and short terminal bristle.

Mandible: Basale with single spine and 1 or 2 small, ringed bristles medially in proximal ventral corner (Figure 36b,c).

Maxilla, Fifth Limb: Similar to those described previously by Kornicker (1978:21).

Sixth Limb: End joint with 7 bristles (5 spinous anterior bristles and 2 hirsute posterior bristles).

Seventh Limb: Similar to that described previously by Kornicker (1978:21).

Furca (Figure 36d): Distribution and number of primary claws similar to that described previously by Kornicker (1978:21), but primary claws slender.

Bellonci Organ: Similar to that described by Kornicker (1978:21).

Eyes: Medial eye without dark pigment (light amber); lateral eye unpigmented, with 5 small ommatidia.

Genitalia (Figure 36d): Oval process with sclerotized rim.

Y-Sclerite (Figure 36d): Typical.

Eggs: 1 egg in marsupium.

DESCRIPTION OF USNM 156905A, ADULT FEMALE (Figure 36e-g).—Carapace elongate with long narrow rostrum and projecting caudal process (Figure 36e).

Ornamentation: Carapace with well-defined ventral and dorsal ribs in addition to 2 horizontal ribs above and below valve middle (Figure 36e). Surface with numerous fairly well-defined shallow fossae, but no spines. Surface bristles of single type sparsely distributed.

Infold: Rostral infold with 4 bristles; ridge on infold of caudal process with 6 frond-like bristles.

Size: Length 0.96 mm, height 0.60 mm.

Second Antenna: Tip of 2nd joint of right limb bare (Figure 36g), that of left limb with minute spine (Figure 36f). 9th joint of exopodite of right limb with 1 long and 2 short bristles (aberrant), left limb with usual total of 2 bristles. Limb otherwise similar to USNM 157994.

Mandible: Proximal ventral corner of basale with single bristle and no spine, otherwise similar to basale of USNM 157994. Exopodite and endopodite of right limb aberrant, but left limb similar to USNM 157994.

Remaining Limbs: Not examined in detail but, in general, similar to those of USNM 157994.

Eggs: 1 egg in marsupium.

DESCRIPTION OF USNM 156905B, ADULT FEMALE.—Carapace shape and ornamentation similar to that of USNM 156905A (Figure 36e).

Infold: Rostral infold with 6 bristles; ridge on infold of caudal process with 6 frond-like bristles.

Size: Length 0.95 mm, height 0.59 mm.

Second Antenna: Tips of 2nd endopodial joints of both left and right limbs bare; remaining parts of limb similar to that of USNM 157994.

Mandible: Number of bristles and spines on medial side of proximal ventral corner of basale not examined, but in general limb similar to that of USNM 157994.

Remaining Limbs: Not examined in detail but in general similar to those of USNM 157994.

Eggs: 1 egg in marsupium.

DESCRIPTION OF USNM 193053, ADULT MALE.—Carapace with only weakly defined ribs confined to posterior half.

Size: Length 0.90 mm, height 0.50 mm.

Lateral Eye: Unpigmented, with about 12 ommatidia.

Seventh Limb: Minute, bare.

Harbansus magnus, new species

FIGURES 38–41

ETYMOLOGY.—From the Latin *magnus* (large, great) in reference to the large size of the species.

HOLOTYPE.—USNM 158253, A-1 female on slides and in alcohol; unique specimen.

TYPE-LOCALITY.—Florida continental slope; Bureau of Land Management southeast coastal study, Sta 0275-2 (6H); 1 Mar 1977; 30°23'N, 79°57'W; depth 460 m.

DISTRIBUTION.—Known only from the type-locality (Map 3).

DIAGNOSIS.—Carapace larger than previously described species (A-1 female with length of 2.19 mm); lateral surface without ribs; protuberances on unique specimen could be artifacts (Figure 38). 2nd joint of 1st antenna with 1 dorsal bristle (Figure 39a). 2nd antenna: 1st endopodial joint

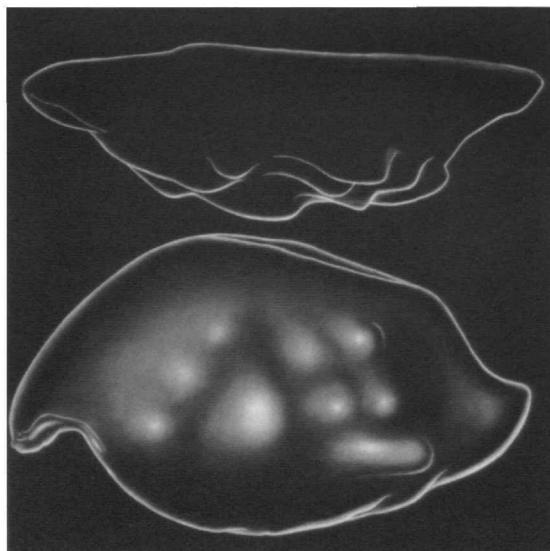


FIGURE 38.—*Harbansus magnus*, new species, USNM 158253, holotype, A-1 female, length 2.19 mm, dorsal view of left valve and lateral view of complete specimen (protuberances may be artifacts caused by microconcretions formed within each valve).



FIGURE 39.—*Harbansus magnus*, new species, USNM 158253, holotype, A-1 female, length 2.19 mm: *a*, left 1st antenna, medial view (small letters = terminal bristles); *b*, endopodite and proximal part of protopodite of right 2nd antenna, medial view; *c*, right mandible, medial view; *d*, right maxilla showing bristles of exopodite and 1st endopodial joint, lateral view; *e*, claws and bristles on 2nd endopodial joint of right maxilla, lateral view; *f*, left maxilla, medial view; *g*, 7th limb; *h*, detail of tip of 7th limb shown in *g*.



FIGURE 40.—*Harbansus magnus*, new species, USNM 158253, holotype, A-1 female, length 2.19 mm: *a*, right 5th limb, anterior view; *b*, detail of 2nd exopodial joint of right 5th limb shown in *a*; *c*, distal part of left 5th limb, posterior view; *d*, 6th limb; *e*, right lamella of furca; *f*, anterior of body showing medial eye, bellonci organ, upper lip, and anterior process; *g*, posterior of body showing sclerites (stippled).

with 1 short bristle; 2nd joint with long proximal and shorter terminal bristle (Figure 39*b*); exopodite without natatory setae. Ventral margin of 2nd endopodial joint of mandible with bristles forming 2 groups, each with 2 bristles (Figure 39*c*). 7th limb with 11–13 bristles; terminus with 2 pegs (Figure 39*g*). Each lamella of furca with 8 or 9 claws; claw 3 thinner and shorter than claw 4 (Figure 40*e*). Lateral eyes absent.

DESCRIPTION OF A-1 FEMALE (Figures 38–41).—Carapace elongate with long rostrum and caudal process (Figure 38); dorsal margin linear in vicinity of hinge; rostrum with lateral overlap extending past ventral margin of rostrum (Figure 41*a*).

Ornamentation (Figure 38): Surface with numerous ill-defined protuberances difficult to delineate because of transparency of thin-walled valves containing concretions (the protuberances could be artifacts); surface with shallow fossae and numerous long bristles; bristles more abundant in vicinity of rostrum, ventral margin, and caudal process; no bristles divided. Dorsal tip of caudal process of right valve with triangular projection (Figure 41*b*). 2 bristles at inner end of incisur lateral to lamellar prolongation of selvage.

Infold (Figure 41): Triangular rostrum with 5 spinous bristles forming irregular row (Figure 41*a*); anteroventral infold with 1 short bristle near inner end of incisur and 1 near ventral margin; 4 or 5 ridges present on anteroventral infold parallel to outer edge of valve; ventral infold without bristles; about 7 bristles, either single or in pairs, present along inner edge of infold in vicinity of caudal process; caudal process with anterior overhanging lip bearing 4 or 5 frond-like bristles (Figure 41*b*); outer edge of infold of caudal process with 3 minute bristles (dorsal bristle spinous) (Figure 41*b*).

Selvage: Wide lamellar prolongation present along free margins, except along distal edge of caudal process; prolongation divided at inner end of incisur; long fringe present along outer edge of anterior, ventral, and posterior prolongations.

Size: Length 2.19 mm, height 1.27 mm.

First Antenna (Figure 39): 1st joint bare. 2nd

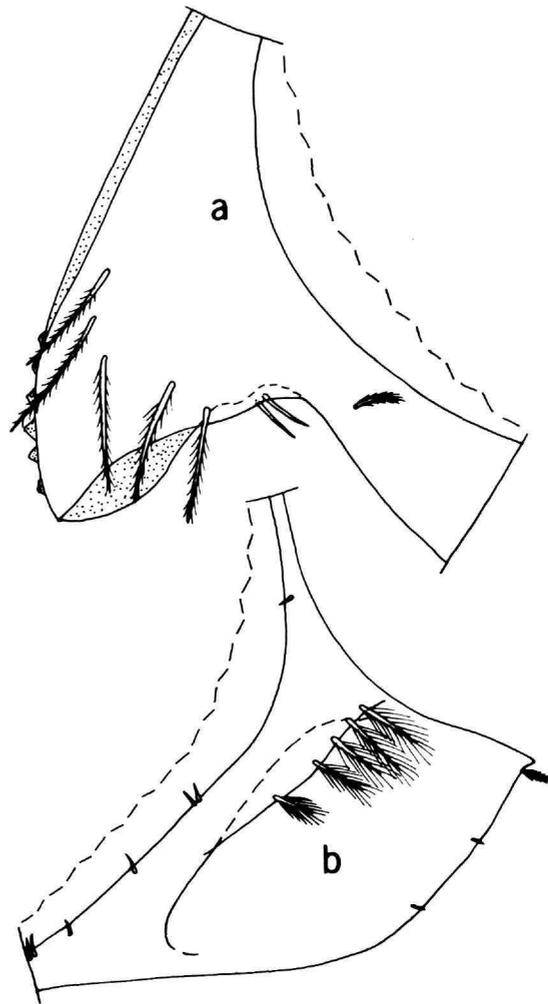


FIGURE 41.—*Harbansus magnus*, new species, USNM 158253, holotype, A-1 female, length 2.19 mm, inside views of right valve: *a*, rostrum and incisur; *b*, caudal process.

joint with medial spines on or near dorsal and ventral margins, and 1 spinous dorsal bristle. 3rd joint short, spinous, with 3 spinous bristles (1 ventral, 2 dorsal). 4th joint long, spinous, with 3 spinous bristles (2 ventral, 1 dorsal). Sensory bristle of 5th joint with 3 short, proximal and 3 short, distal, marginal filaments. 6th joint minute, fused to 5th, with long spinous medial bristle. 7th joint: a-bristle spinous, longer than bristle of 6th joint (distal part of a-bristle broken off on

both limbs; b-bristle shorter than sensory bristle of 5th joint, with 1 marginal filament near middle and 2 distal; c-bristle about same length as sensory bristle, with 3 proximal and 3 distal marginal filaments. 8th joint: d- and e-bristles bare with blunt tips, bristles about same length as c-bristle; f-bristle about same length as c-bristle, with 5 marginal filaments (2 proximal, 3 distal); g-bristle about same length as c-bristle, with 5 marginal filaments (2 proximal, 3 distal). Filaments and stems of bristles b, c, f, and g with 1 or 2 minute terminal spines.

Second Antenna (Figure 39b): Protopodite bare. Endopodite 2-jointed: 1st joint with 1 short, proximal, anterior bristle; 2nd joint elongate, with 1 long, spinous, ventral bristle, and shorter terminal bristle. Exopodite: long 1st joint with short, tube-like, medial, terminal bristle; bristles of joints 2–8 short, with stout ventral spines (segments of bristles long, only terminal segment with narrow rings); 9th joint with 4 bristles (2 bristles with stout spines and similar to bristles of joints 2–8; 1 medium bristle and 1 very short bristle with narrow rings and short, slender, marginal spines); joints 2–8 with spines forming rows alongs distal edge (spines longer near base of bristle).

Mandible (Figure 39c): Coxale endite bifurcate with abundant, long, slender spines, and few short stout teeth near tip, no small bristle at base. Basale: dorsal margin with 3 bristles (1 near middle, 2 terminal); ventral margin with 6 bristles along medial sclerotized ridge (4 proximal, 2 distal), and 2 or 3 bristles (1 near middle, 1 or 2 distal) along lateral sclerotized ridge (on illustrated right limb of USNM 158253 medial ridge lies dorsal to lateral ridge, opposite to that of left limb); medial surface and proximal ventral margin with numerous long hairs forming rows. Exopodite with hirsute tip reaching to about midlength of dorsal margin of 1st endopodial joint, with 2 terminal bristles (distal bristle slightly longer than other). 1st endopodial joint with medial hairs and 3 ventral bristles (1 bristle minute, others long). 2nd endopodial joint: medial surface with spines forming rows, some extending onto ventral margin; ventral margin with

bristles forming 2 distal groups, 2 bristles in each group (medial bristle of distal group unringed, claw-like, but with short marginal spines); dorsal margin with 2 proximal bristles and 5 bristles forming group near middle (1 short, 4 long). End joint with 3 claws and 3 bristles (dorsal claw very short, all claws with ventral spines).

Maxilla (Figure 39d–f): Endite I broad, with 6 spinous and pectinate bristles; endite II narrow, with 6 spinous and pectinate bristles; endite III narrow, with 1 proximal lateral bristle and about 7 distal bristles (Figure 39f). Precoxale and coxale with fringe of dorsal hairs; coxale with stout, hirsute, dorsal bristle. Basale with 3 terminal bristles (2 ventral, 1 medial near dorsal margin). Exopodite consisting of small lateral lobe with 3 spinous bristles (1 short, 2 long) (Figure 39d). 1st endopodial joint spinous, with stout alpha-bristle with long proximal hairs and few faint, short, distal spines, and 2 spinous beta-bristles (Figure 39d). End joint with about 9 bristles including 3 pectinate, unringed, claw-like bristles.

Fifth Limb (Figure 40a–c): Endite I with 3 bristles; endite II with 5 bristles; endite III with 9 or 10 bristles and hirsute lobe on outer edge. Exopodite: 1st joint with 2 bristles near middle of anterior margin, and 1 small bristle on outer corner; main tooth consisting of 3 pectinate teeth and 1 smooth proximal peg-like tooth; distal tooth with large anterior lobe; 1 bristle present on margin proximal to peg-like tooth (Figure 40a); 2nd joint with large triangular tooth with undulate inner edge (Figure 40b) and 3 posterior bristles near midlength of inner edge (Figure 40c); 3rd joint with 2 bristles on outer lobe and 3 on inner lobe (Figure 40c); 4th and 5th joints fused, with total of 5 spinous bristles. Epipodial appendage with about 36 bristles.

Sixth Limb (Figure 40d): Endite I small, with 3 bristles; endite II slender, with 3 or 4 terminal bristles; endite III broad, with 7 terminal bristles; endite IV broad, with 4 or 5 terminal bristles. End joint narrow, not prolonged posteriorly, hirsute, with 8 or 9 bristles (6 or 7 anterior bristles spinous, 2 posterior bristles plumose); 1 spinous bristle in place of epipodial appendage.

Seventh Limb (Figure 39g,h): One limb with 7 proximal bristles (3 on one side, 4 on other), other limb with 9 proximal bristles (4 on one side, 5 on other); both limbs with 4 terminal bristles (2 on each side); all bristles strongly tapering distally (juvenile character); each bristle with 1 or 2 distal bells and marginal hairs. Terminus with comb with 5 teeth opposite 2 elongate pegs. (Small number of bells on bristles also juvenile character; additional bells visible inside of bristles of specimen examined which is preparing to molt.)

Furca (Figure 40e): Right lamella with 8 claws, left with 9; claw 3 narrower and shorter than claw 4; claw 1, 2, and 4 with groups of various sized teeth along posterior margin; remaining claws with teeth along both margins; claw 1 with stout medial teeth; claw 1 of right lamella located anterior to claw 1 of left lamella; several spines along anterior margin of right lamella; hairs present medially at bases of claws and following claws.

Bellonci Organ (Figure 40f): Elongate with about 5 sutures in middle part, broadening distally to rounded tip.

Eyes (Figure 40f): Medial eye bare, unpigmented. Lateral eyes absent.

Upper Lip (Figure 40f): With several small anterior processes.

Y-Sclerite (Figure 40g): Branching distally.

Genitalia: Oval genitalia visible on either side of new body inside integument of USNM 158253, which was about to shed its old skin.

COMPARISONS.—*H. magnus* is much larger than previously described species of the genus and has 8 claws on the furca, compared to 6 for previously described species. The nodes on the illustrated carapace (Figure 38) may be artifacts caused by concretions.

Harbansus bowenae Kornicker, 1978

FIGURES 42–44

Harbansus bowenae Kornicker, 1978:38, figs. 23–26, pl. 11.—Bowen et al., 1979, fig. 3.

HOLOTYPE.—USNM 156664, adult female in alcohol.

TYPE-LOCALITY.—Outer edge of continental shelf off New Jersey, R/V *Columbus Iselin*, sta F4–7, 183 m.

MATERIAL.—See “Station List and Material Examined.”

DISTRIBUTION.—Bowen et al. (1979, fig. 3) reported this species in the Middle Atlantic Bight between roughly 37°N and 39°N (Map 3). The range is extended herein north to Canada (46°45'N). Known depth range is 42–196 m.

DIAGNOSIS.—Carapace surface with small fossae but without lateral ribs (Figure 42). 2nd joint of 1st antenna with 1 dorsal bristle on both adult male (Figure 43a) and female. Female 2nd antenna: 1st endopodial joint with 1 short bristle; minute 2nd joint with long spinous terminal bristle; exopodite without natatory bristles. Ventral margin of 2nd endopodial joint of mandible of both males and females with bristles forming 2 groups having 1 bristle in proximal group and 2 in distal group (Figure 43c). Female 7th limb with 7 or 8 bristles and 2 terminal pegs; male 7th limb with 4 or 5 bristles and 1 terminal peg (Figure 43g). Each lamella of furca with 6 claws; claw 3 thinner than claw 4. Males and females without lateral eyes.

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE (Figure 44).—Carapace with anterior margin of rostrum extending past straight or slightly concave valve edge (Figure 44a).

Fifth Limb: USNM 156912 with 4 minute teeth (could be interpreted as 2 teeth, each with 2 cusps) near inner margin of large tooth forming

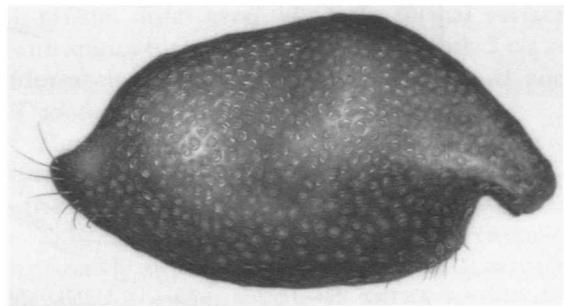


FIGURE 42.—*Harbansus bowenae*, USNM 158867A, adult male, length 1.07 mm, lateral view of complete specimen.

2nd exopodial joint (Figure 44b).

DESCRIPTION OF ADULT MALE (Figures 42, 43).—Carapace elongate with prominent rostrum and short caudal process (Figure 42); ribs absent.

Ornamentation (Figure 42): Surface with numerous shallow fossae; long bristles present along caudal process and anteroventral margin, and widely scattered over valve surface; 2 short bristles present at inner end of incisur.

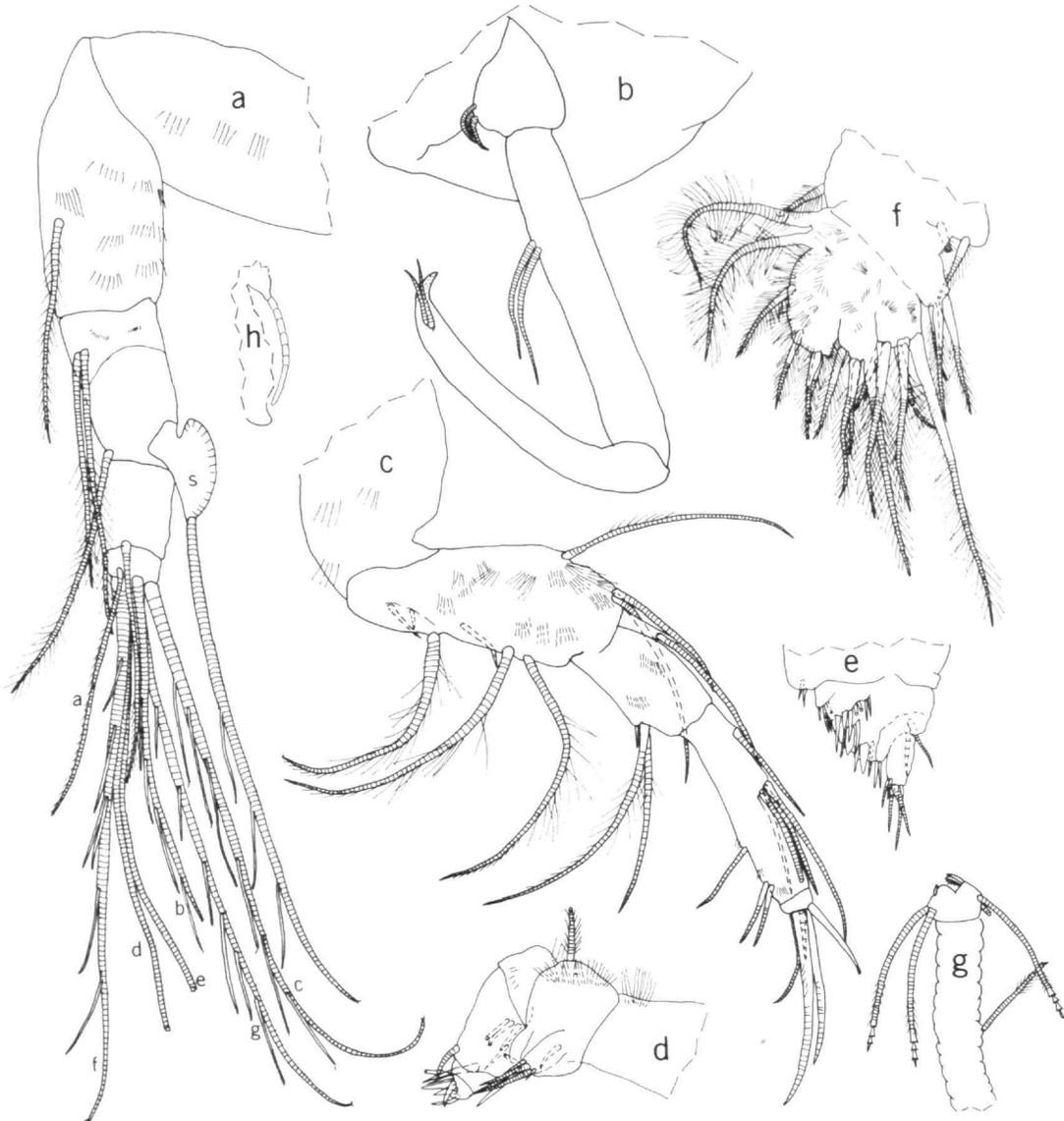


FIGURE 43.—*Harbansus bowenae*, USNM 158867A, adult male, length 1.07 mm: a, right 1st antenna, medial view; b, endopodite of right 2nd antenna, medial view; c, right mandible, lateral view; d, right maxilla, medial view; e, 5th limb; f, 6th limb; g, 7th limb; h, anterior of body showing medial eye and bellonci organ, upper lip.

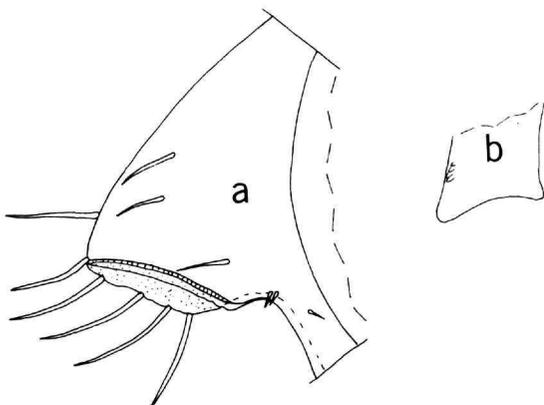


FIGURE 44.—*Harbansus bowenae*, USNM 156666C, paratype, adult female, length 1.14 mm: *a*, rostrum of right valve, inside view. USNM 156912, paratype, adult female, length 0.92 mm: *b*, 2nd exopodial joint of 5th limb.

Infold: Rostral infold with 2 or 3 long bristles with short marginal spines; 1 short bristle present just ventral to inner edge of incisur; infold of caudal process with 5 or 6 setose bristles along anterior edge of pocket; few small bristles along inner edge of infold in vicinity of caudal process.

Size: USNM 158867A, length 1.07 mm, height 0.74 mm; USNM 158867B, length 1.09 mm, height 0.50 mm.

First Antenna (Figure 43a): 1st joint with medial hairs forming rows. 2nd joint with medial and lateral spines and 1 spinous dorsal bristle. 3rd joint short, with small medial spines and 2 spinous dorsal bristles. 4th joint with 1 spinous dorsal bristle. 5th joint wedged ventrally between 4th and 6th joints, sensory bristle with bulbous proximal part bearing numerous long thin filaments, and stem with 3 filaments near middle and 2 spines at tip. 6th joint with spinous medial bristle. 7th joint: a-bristle spinous, about same length as bristle of 6th joint; b-bristle broken, with 4 marginal filaments on remaining part; c-bristle with 6 marginal filaments and 2 spines at tip. 8th joint: d- and e-bristles broken, bare; f-bristle with 6 or 7 marginal filaments and 2 spines at tip; g-bristle with 6 marginal filaments and 2 spines at tip.

Second Antenna (Figure 43b): Protopodite bare. Endopodite 3-jointed: 1st joint short with

3 short anterior bristles; 2nd joint elongate with 2 long proximal bristles; 3rd joint elongate, reflexed, with 2 short bristles near sclerotized beak-like tip. Exopodite: 1st joint elongate with 2 rows of long hairs distally on ventral margin, and with minute, terminal, medial bristle; 2nd to 9th joints decreasing in length distally; bristle of 2nd joint reaching past end of 9th joint with natatory hairs, no spines; bristles of joints 3–8 about twice length of bristle of 2nd joint, with natatory hairs, no spines; 9th joint with 3 bristles (dorsal bristle short, with few slender ventral spines, no hairs; middle bristle of medium length; ventral bristle long, both with natatory hairs, no spines); joints 2–8 with short spines forming row along distal margin, no basal spines.

Mandible (Figure 43c): Coxale with slender lateral spines forming row; endite not observed. Basale: medial and lateral surface with hairs and slender spines, and 2 proximal bristles (longer of these ringed), and 1 ringed bristle near middle, all bristles near ventral margin; ventral margin with 1 long spinous subterminal bristle; lateral surface with 2 long bristles with bases near or on ventral margin (bristles proximal to subterminal ventral bristle); dorsal margin with 3 long bristles (2 terminal, 1 near middle). Exopodite with hirsute tip reaching to midlength of dorsal margin of 1st endopodial joint, with single long subterminal bristle. Endopodite narrow: 1st joint with medial spines and 3 ventral bristles (2 long, 1 minute); 2nd joint with ventral margin with bristles forming 2 groups (proximal group with 1 bristle, distal group with 2); dorsal margin with bristles forming 2 groups (proximal group with 1 bristle, distal group with 4); medial surface with spines forming rows; end joint with 3 claws (dorsal claw about $\frac{1}{2}$ length of middle claw), and 2 slender bristles.

Maxilla (Figure 43d): Limb reduced, some bristles of endopodite broad, flat; exopodite relatively well developed, with 3 ringed bristles.

Fifth Limb (Figure 43e): Endites and exopodite weakly developed. Endite I with 2 weakly developed bristles; endite II with 4 weakly developed bristles; endite III with about 7 bristles (3 broader than others and unringed). Exopod-

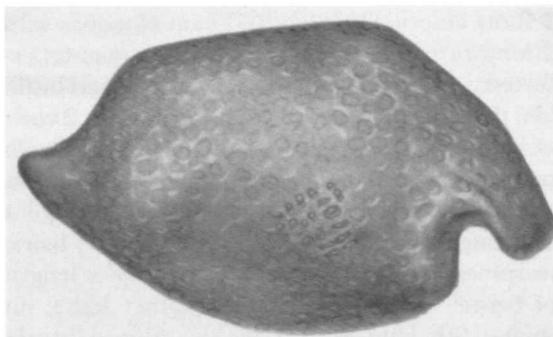


FIGURE 45.—*Harbansus dayi*, USNM 156779, holotype, adult female, length 1.40 mm, lateral view of complete specimen. (From Kornicker, 1978, fig. 18).

ite: 1st joint with slender bristle and finger-formed bristle; 2nd joint with 1 ringed bristle, 1 unringed bristle, and 1 finger-formed bristle; 3rd joint with 2 slender unringed bristles on outer lobe and 2 unringed bristles on inner lobe; 4th and 5th joints fused, with 5 bristles. Epipodial appendage with 37 hirsute bristles.

Six Limb (Figure 43f): 1 fairly long hirsute bristle in place of epipodial appendage. Endite I and 1 or 2 hirsute bristles; endite II with 3 bristles (2 hirsute, 1 spinous); endite III with 3 hirsute and 2 spinous bristles; endite IV with 2 hirsute and 2 spinous bristles. End joint with 6 bristles (2 spinous and 1 hirsute anterior bristles, 1 spinous midbristle, and 2 stout hirsute posterior bristles); indentation in margin of end joint near base of inner of the 2 posterior bristles. Limb hirsute.

Seventh Limb (Figure 43g): Each limb with 4 terminal bristles (2 on each side) and 1 or no proximal bristle; terminal bristles with 3 or 4 bells; proximal bristle with 1 bell; all bristles with marginal spines. Terminal comb with 6 or 7 spinous recurved teeth; 1 peg opposite comb.

Furca: Each lamella with 6 claws; claws 1, 2, 4, long stout; claws 3, 5, 6 short slender; claw 3 about same length as claw 4; stout claws with teeth along posterior margin; slender claws with proximal spines on anterior and posterior margins; lamellae with few hairs on anterior margin

and following claws; claw 1 without stout distal medial teeth present on female.

Bellonci Organ (Figure 43h): Elongate with about 7 sutures in proximal two-thirds; tip rounded.

Eyes (Figure 43h): Medial eye bare, unpigmented. Lateral eyes absent.

Upper Lip (Figure 43h): With anterior projection.

Genitalia: Each limb elongate, lobate, with terminal process with marginal teeth; lobes with total of about 6 small bristles.

Harbansus dayi Kornicker, 1978

FIGURE 45

Harbansus dayi Kornicker, 1978:32, figs. 3f, 18–22, pls. 9, 10.—Bowen et al., 1979:246, fig. 3.

HOLOTYPE.—USNM 156779, undissected adult female in alcohol.

TYPE-LOCALITY.—Continental shelf off North Carolina, Beaufort shelf transect, sta 155 G, 160 m.

MATERIAL.—See “Station Data and Material Examined.”

DISTRIBUTION.—This species was known previously from the New Jersey and North Carolina continental shelf (34°00′00″N–39°16′31″N). Its range is extended herein to Canada (46°45′N; Map 3). Known depth range is 42–196 m.

DIAGNOSIS.—Carapace with large fossae but no lateral ribs (Figure 45). 2nd joint of 1st antenna of both males and females with 2 bristles (1 ventral, 1 dorsal). Female 2nd antenna: 1st endopodial joint with 2 short bristles; elongate 2nd joint with 1 long proximal bristle and no terminal bristle; exopodite without natatory setae. Ventral margin of 2nd endopodial joint of mandible with bristles forming 2 groups having 2 bristles in each group. Female 7th limb with 8 bristles and 3 terminal pegs; Male 7th limb with 4 or 5 bristles and 1 or 2 terminal pegs. Furca with 6 claws on each lamella; claw 3 thinner and shorter than claw 4. Lateral eyes of both males and females small.

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