Sarsiellidae of the Western Atlantic and Northern Gulf of Mexico, and Revision of the Sarsiellinae (Ostracoda: Myodocopina)

LOUIS S. KORNICKER

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ABSTRACT

Kornicker, Louis S. Sarsiellidae of the Western Atlantic and Northern Gulf of Mexico, and Revision of the Sarsiellinae (Ostracoda: Myodocopina). *Smithsonian Contributions to Zoology*, number 415, 217 pages, 113 figures, 34 plates, 7 tables, 1986.—The subfamily Sarsiellinae is revised by emending 4 genera and proposing a new name for one of them. The distribution of Sarsiellidae on the continental shelves of eastern North America, the northern Gulf of Mexico, the Caribbean Sea, and Bermuda is discussed. The revised Sarsiellidae is comprised of 2 subfamilies: Dantyinae (2 genera) and Sarsiellinae (12 genera). In the study area, the Dantyinae are represented by the genus *Dantya* with 2 species (1 new), and the Sarsiellinae are represented by the genera *Chelicopia* with 1 species, *Eurypylus* with 1 species, *Parasarsiella* with 1 species, and *Eusarsiella* with 37 species (13 new and 3 left in open nomenclature). Collections in the study area are mainly from the continental shelves of eastern North America and the northern Gulf of Mexico. The new species as well as some previously known species are described and illustrated, and keys are presented for species in the study area as well as for taxa of higher rank. The number of eggs per clutch in the Sarsiellidae is shown to be, in part, a function of carapace length. Using Hennigian principles it is derived that the superfamilies in the Myodocopina are comprised of the following families:

Cypridinacea
  Cypridinidae
Cylindroleberidacea
  Cylindroleberididae
Sarsiellacea
  Philomedidae
  Rutidermatidae
  Sarsiellidae

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Contents

Sarsiellidae of the Western Atlantic and Northern Gulf of Mexico, and Revision of the Sarsiellinae (Ostracoda: Myodocopina)

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Introduction

This work treats the Sarsiellidae living in Bermuda, the Bahamas, the Virgin Islands, and on the continental shelves along the east coast of North America and the northern Gulf of Mexico. Descriptions of two new species, one from the Dominican Republic and one from the vicinity of Venezuela are also included. A primary objective was to present supplementary descriptions of species described from the Bahamas by Kornicker (1958) and from off Georgia by Darby (1965). Lack of material prevented this for some of the species, mainly for *Eusarsiella punctata*, *E. truncana*, and *E. "carinata"* from the Bahamas. Diagnoses and illustrations are given of species from the Virgin Islands previously described by Poulsen (1965) and of a single species from Bermuda previously described by Kornicker (1981a:2). Fourteen new species are described and illustrated, 4 genera of Sarsiellinae are emended, and a new name is proposed for one of them.

In addition, a cladogram shows the relationship of the 5 families comprising the Myodocopina using the phylogenetic principles proposed by Hennig (1966), certain aspects of reproduction in the Myodocopina are discussed, and data are presented showing that the number of eggs per clutch in the Sarsiellidae is, in part, a function of carapace size.

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ABBREVIATIONS.—Specimens with numbers preceded by UMMP are those in the University of Michigan Museum of Paleontology; those preceded by USNM are those in the National Museum of Natural History.

DISPOSITION OF SPECIMENS.—Most of the specimens have been deposited at the National Museum of Natural History, Smithsonian Institution, and many of these have been assigned USNM numbers. The disposition of other specimens is given in the text in the section where the species is described or the "Station Data with Specimens Collected." The specimens in the "Material Examined" sections are listed in the same order as in the station data.

ACKNOWLEDGMENTS.—Credits are given in "Station Data with Specimens Collected" to the individuals and institutions who have contributed specimens used in this study. The collecting of many specimens was made possible by funds granted to the various institutions by the U.S. Bureau of Land Management. Specimens ob-

tained from the Mote Marine Laboratory were collected mostly under Bureau of Land Management Contract No. AA851-CT0-50. 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 carapaces; Kathryn Schroeder Brown for assisting in preparation and inking of appendage drawings; I.G. Sohn and C.F.E. Roper for reviewing the manuscript; and Theresa J. Slowik for final editing and preparation of the manuscript for publication. I also appreciate the assistance of Dr. Lee-Ann Hayek in statistical analyses, Dr. Donald R. Whitehead in the Hennigian analysis, and Elizabeth Harrison for general assistance.

Station Data with Specimens Examined

(Data are listed in geographic order following the eastern coastline of North and Central America from north to south, east to west.)

Canada

Petpeswick Inlet, Nova Scotia; 2 Nov 1974; shallow water; collected by Ursula Griggs.

Eusarsiella zostericola: 1 specimen (USNM 151230).

Off Cape Breton Island, Nova Scotia.

Sta V-16-65; 9 Sep 1960; 46°45′N; 56°22′W; depth 42 m. Collected by personnel aboard the R/V *Vema*, cruise 16.

Eusarsiella vema: 3 ovigerous females (USNM 156798 [holotype], 158110, 158111); 1 A–1 male (USNM 158112); 2 juveniles (USNM 158113).

Maine

Casco Bay; 1873; eel grass bottom; collected by U.S. Fish Commission.

Eusarsiella zostericola: 1 adult male (USNM 152446).

Massachusetts

Martha's Vineyard, 14 Sep 1975; small trawl; collected by Steven C. Kornicker and Louis S. Kornicker.

Sta 1; Lagoon Pond; at west end of bridge; depth 0.3 m (low tide) substrate of sand, pebbles, turtle grass.

Eusarsiella zostericola: 1 juvenile (USNM 156698).

Sta 2; Vineyard Haven Harbor; southeast side near east end of bridge; depth 0.3–1.0 m (low tide); turtle grass.

Eusarsiella zostericola: 20 specimens including ovigerous females, adult females without eggs, adult males and juveniles (USNM 156700).

Sta 3; Chappaquiddick Bridge; west side of north end; depth 0.6 m.

Eusarsiella zostericola: 1 ovigerous female + 19 juveniles (USNM 156702).

Martha's Vineyard; July 1965. Collected by Mrs. C.R. Stoertz.

Sta 1; Stonewell Pond (between Gay Head and Chilmark) separated from ocean by bar, near ocean side; depth 2 m.

Eusarsiella zostericola: 5 specimens (USNM 152453).

Sta 6; Stonewall Pond, near ocean side; depth 3 m.

Eusarsiella ozotothrix: 3 adult males (USNM 153929, 153930A, 153930B). (These specimens previously reported in Kornicker and Bowen, 1976:498.)

Sta 7; Lagoon Pond; depth 2 m.

Eusarsiella zostericola: 7 specimens (USNM 152451); 6 specimens (USNM 152459).

New York

Long Island Sound, collected by Marcia Bowen, New York Ocean Science Laboratory, Montauk, New York. Specimens returned to collector.

Sta EB 8-2; dump site between Eaton's Neck, Long Island, and Darien, Connecticut; 41°00′N, 73°26′W; depth 23.5 m; sandy bottom (93% sand, 3% silt, 4% clay); substrate temperature 3.0°C.

Eusarsiella ozotothrix: Right valve of adult female (from vial with other specimens of this species reported by Kornicker and Bowen, 1976:498).

Eusarsiella zostericola: 50 specimens; 1 juvenile (retained at NMNH).

Maryland

Rehobeth Bay, Maryland; collected by Les Watling.

Sta SC 97; Sally Cove, Rehobeth Bay; 18 Nov 1972; depth 1 m.

Eusarsiella texana: 1 juvenile (USNM 143997).

North Carolina

Bogue Sound; 15 Apr 1976; at pier of the University of North Carolina Institute of Marine Science, Carteret County; high intertidal; collected by Richard S. Fox.

Eusarsiella disparalis: 2 juveniles (USNM 156910).

Beaufort Shelf Transect; collected by John H. Day. (Bottom temperatures obtained by thrusting thermometer into substrate as soon as it was taken out of van Veen grab.)

Sta 30; 6 Apr 1965; 34°19′36″N, 75°56′48″W; 130 m; sandy mud; sediment temperature 20°C; van Veen grab sampler.
Eusarsiella radiicosta: 1 ovigerous female (USNM 156797).
Sta 141; 30 Sep 1965; 34°24′18″N, 75°57′42″W; 80 m; sediment temperature 24°C; muddy sand; dredged for 10 minutes with dredge 30 inches wide.
Eusarsiella pilipollicis: 1 ovigerous female (USNM 152865).
Sta 239; 30 Nov 1965; 34°24′48″N, 75°59′30″W; 40 m; sediment temperature 20.6°C; dredged for 10 minutes with dredge 30 inches wide.
Eusarsiella pilipollicis: 1 ovigerous female (USNM 156785).

Collected aboard R/V *Easton.* Received from Donald Watson, Virginia Institute of Marine Science, Gloucester Point, Virginia.

Cruise E-2-77, June 1977.
Sta 228-1; 35°42′30″N, 75°13′00″W; 39 m.
Eusarsiella texana: 1 adult male.
Sta 235-1, 35°24′30″N, 75°13′00″W; 36 m.
Eusarsiella texana: 1 ovigerous female (USNM 158574).
Eusarsiella spinosa: 1 ovigerous female.
Sta 279-1; 35°04′12″N, 75°34′24″W; 33 m.
Eusarsiella tubipora: 1 ovigerous female (USNM 158578).
Cruise E-5-77, Aug 1977.
Sta 149-3; 35°31′18″N, 75°12′48″W; 35 m.
Eusarsiella texana: 1 juvenile male (USNM 158577).
Eusarsiella ozotothrix: 2 ovigerous females.
Sta 239-1; 35°01′06″N, 75°34′00″W; 34 m.
Eusarsiella disparalis: 1 adult female (USNM 158575).
Cruise E-8-77, Oct 1977.
Sta 005-1; 34°35′30″N, 76°05′30″W; 38 m.
Eusarsiella radiicosta: 1 juvenile.
Sta 006-1; 34°38′00″N, 76°05′48″W; 36 m.
Eusarsiella radiicosta: 1 ovigerous female.
Sta 008-1; 34°40′18″N, 76°09′12″; 31 m.
Eusarsiella radiicosta: 1 juvenile.
Sta 014-1; 34°36′42″N, 76°05′30″W; 36 m.
Eusarsiella nodimarginis: 1 ovigerous female (USNM 193116).
Sta 319-1; 35°34′36″N, 75°13′42″; 31 m.
Eusarsiella ozotothrix: 1 adult male.

South Carolina

Skull Creek, west end of creek. Collected by *Fish Hawk.*

Eusarsiella zostericola: 1 ovigerous female (USNM 152444).

Georgia

Bureau of Land Management Southeast Coastal Study; received from Linda H. Pequegnat, Texas A & M University.

Sta 0215-1 (5B); 1 Feb 1977; 31°12′N, 81°08′W; 11 m.
Eurypylus rousei: 1 adult female (USNM 158208).

In collection of the Museum of Paleontology, University of Michigan (UMMP); received from Robert V. Kesling.

Off Sapelo Island; Aug, Sep 1961; Darby (1965:33) gives depth of 99–373 ft (30.2–113.7 m).
Eusarsiella nodimarginis: 1 paratype on 2 slides (UMMP 48804); holotype on 15 slides (UMMP 48803).
Off Sapelo Island; July 1961; Darby (1965:34) gives depth of 121 ft (36.9 m).
Eusarsiella radiicosta: 1 ovigerous female on 16 slides (UMMP 48805).
Eusarsiella tubipora: Holotype, ovigerous female on 15 slides (UMMP 48817).
Off Sapelo Island; Apr, May 1971; Darby (1965:36) gives depth of 81 ft (24.7 m).
Eusarsiella radiicosta: Holotype, instar IV female on 2 slides (UMMP 48807); 1 paratype, instar IV on 2 slides.
Off Sapelo Island; July, Aug 1961; Darby (1965:37) gives depths of 77–96 ft (23.5–29.3 m).
Eurypylus rousei: Holotype, 1 adult female on 9 slides.
Off Sapelo Island; Jul 1961; Darby (1965:39) gives depth of 81 ft (24.7 m).
Eusarsiella greyi: Adult female on 18 slides (UMMP 48814, holotype).
Eusarsiella species B: 1 adult female on 4 slides (UMMP 48815).
Eusarsiella species C: 1 instar IV male on 14 slides (UMMP 48816).

FLORIDA

Atlantic

Indian River, St. Lucie, Martin, and Brevard Counties, Florida; grab samples collected with post hole digger; received from William E. Miller, Harbor Branch Foundation, Inc. (Water depth given in cm or m; temperature given is that of bottom water; salinity given in parts per thousand.)

Sta 40; 12 Apr 1974; Fort Pierce, St. Lucie County; off Hutchinson Island, opposite marker buoy 191; *Halodule* grassflat; 27°26′18″N, 80°17′54″W; 18 cm; 21°C; salinity 36‰.

Eusarsiella zostericola: 2 ovigerous females (USNM 152494).

Sta 46; 4 Jan 1974; Fort Pierce, St. Lucie County; 50 m west of channel markers 171–172 when they are lined up; 27°32′12″N, 80°20′36″W; 2 m; 20.5°C; salinity 29.5‰.

Eusarsiella zostericola: 1 specimen (USNM 152495).

Sta 55; 21 Jun 1974; Haulover Canal, Brevard county; east side of river on northeast spoil bank's northern shoreline, cove area, 8 m offshore; *Halodule* grassflat; 28°44′06″N, 80°45′24″W; 25 cm; 34°C; salinity 42‰.

Eusarsiella zostericola: 2 adult females (USNM 152499).

Eusarsiella disparalis: 3 ovigerous females and 1 adult female (USNM 152500).

Sta 61; 29 Jul 1974; station locality same as sta 55; 30 cm; 31°C; salinity 32‰.

Eusarsiella disparalis: 2 specimens (USNM 156657); 2 specimens (USNM 156660).

Sta 66; 29 Aug 1974; locality same as sta 55; 1 m; 32.5°C, salinity 24.0‰.

Eusarsiella disparalis: 1 specimen (USNM 152505).

Sta 70; 8 Oct 1974; locality same as sta 55; 60 cm; 23.5°C; salinity 22.0‰.

Eusarsiella disparalis: 1 specimen (USNM 152506).

Sta 78; 14 Nov 1974; same locality as sta 55; 33 cm; 16°C; salinity 28.0‰.

Eusarsiella disparalis: 1 ovigerous female (returned to Harbor Branch Foundation).

Sta 100; 27 Feb 1975; same locality as sta 55; 22 cm; 17°C; salinity 32‰.

Eusarsiella disparalis: 1 ovigerous female + 1 adult female (USNM 153904); 1 ovigerous female (USNM 153905).

Sta 103; 26 Mar 1975; locality same as sta 55; 35 cm; 19°C; salinity 33‰.

Eusarsiella zostericola: 4 ovigerous females + 3 adult females + 1 adult male + 1 juvenile (USNM 153916); 2 ovigerous females + 2 adult females (USNM 153900); 2 ovigerous females + 5 adult females + 1 adult male (USNM 153906).

Eusarsiella disparalis: 3 ovigerous females + 2 adult females (USNM 153917); 2 ovigerous females (USNM 153903); 2 ovigerous females + 2 adult females (USNM 153907).

Sta 108; 23 Apr 1975; same locality as sta 55; 30 cm; 21°C; salinity 36‰.

Eusarsiella zostericola: 3 ovigerous females (USNM 152844); 10 ovigerous females + 1 adult female (USNM 153919); 1 ovigerous female (USNM 153921).

Eusarsiella disparalis: 2 ovigerous females (USNM 152843); 1 ovigerous female (USNM 152845); 1 adult female (USNM 153920).

Sta 114; 28 May 1975; same locality as sta 55; 35 cm; 26°C; salinity 35‰.

Eusarsiella zostericola: 3 ovigerous females (USNM 152836); 13 ovigerous females + 2 adult females + 1 juvenile (USNM 153923); 10 ovigerous females + 1 adult female + 1 juvenile (USNM 153911); 3 ovigerous females + 1 adult female (USNM 153913).

Eusarsiella disparalis: 6 ovigerous females + 1 adult female (USNM 152837); 4 ovigerous females + 1 adult female (USNM 153924); 1 ovigerous female (USNM 153910); 4 ovigerous females (USNM 153914).

Sta 120; 10 Jul 1975; same locality as sta 55; 45 cm; 28°C; salinity 28‰.

Eusarsiella zostericola: 2 ovigerous females (USNM 156662); 1 adult female (USNM 15663); 1 ovigerous female + 1 adult female (USNM 156661).

Eusarsiella disparalis: 2 ovigerous females (USNM 156658).

Sta 133; 8 Dec 1975; Link Port, St. Lucie County, 8 km north of Fort Pierce Inlet, west side of river, 100 m north of north jetty of Link Port Canal, 13 m offshore; 27°32′06″N, 80°20′54″W; 43 cm; 22°C; salinity 29‰.

Eusarsiella zostericola: 1 ovigerous female (USNM 157206).

Sta 144; 10 Nov 1976; same locality as sta 55; 30 cm; 15.5°C; salinity 34‰.

Eusarsiella zostericola: 1 specimen (USNM 158095).

Eusarsiella disparalis: 7 specimens (USNM 158096).

Sta 148; 16 Feb 1976; same locality as sta 133; 35 cm; 19°C; salinity 32‰.

Eusarsiella zostericola: 1 ovigerous female (USNM 157638).

Sta 156; 17 Feb 1976; same locality as sta 133; 36 cm; 20°C; salinity 33‰.

Eusarsiella zostericola: 1 ovigerous female (USNM 157205).

Sta 164; 19 Apr 1976; same locality as sta 133; 35 cm; 23°C; salinity 35‰.
Eusarsiella zostericola: 1 ovigerous female (USNM 157639).
Sta 190; 16 Jun 1976; same locality as sta 133; 30 cm; 20°C; salinity 20‰.
Eusarsiella zostericola: 1 specimen (USNM 157204).
Sta 215; 16 Dec 1976; St. Lucie Inlet, Martin County; station at postmarker one-fourth mile NW of Seminole Shores' western seawall, transect extends south from post; 27°10′54″N, 80°10′18″W; 42 cm; 23°C; salinity 32‰.
Eusarsiella disparalis: 1 ovigerous female (USNM 157644).
Eusarsiella zostericola: 1 ovigerous female (USNM 157645).
Sta 226; 15 Jun 1977; locality same as sta 55; 45 cm; 33.0°C; salinity 40‰.
Eusarsiella zostericola: 1 ovigerous female (USNM 158070); 1 specimen (returned to Fort Pierce Bureau).
Sta 230; 16 Aug 1977; locality same as sta 55; 47 cm; 32°C; salinity 36‰.
Eusarsiella disparalis: 1 ovigerous female (USNM 158067).
Eusarsiella zostericola: 1 specimen (returned to Fort Pierce Bureau).
Sta 234; 11 Oct 1977; locality same as sta 55; 56 cm; 29.0°C; salinity 29‰.
Eusarsiella zostericola: 2 specimens (USNM 158062); 1 specimen (USNM 158063).
Sta 238; 13 Dec 1977; locality same as sta 55; 38 cm; 18.5°C; salinity 38‰.
Eusarsiella zostericola: 2 specimens (USNM 158052); 1 specimen (USNM 158059).
Sta 242; 14 Nov 1978; same locality as sta 55; 32 cm; 17.5°C; salinity 37‰; caught on 1.0 mm mesh sieve.
Eusarsiella zostericola: 1 specimen (USNM 158058); 1 specimen (returned to Harbor Branch Foundation).
Sta 245; 10 Apr 1978; same locality as sta 55; 25 cm; approx. 20°C; salinity 33‰; caught on 0.5 mm mesh sieve.
Eusarsiella zostericola: 1 juvenile (returned to Harbor Branch Foundation).
Sta 249; 25 Apr 1978; Fort Pierce, St. Lucie County; east side of river, 200 yds west of Round Island's western boundary, approx. 1 mile NE of Link Port site; bare sand control; 48 cm; 28.0°C; salinity 36‰.
Eusarsiella zostericola: 1 ovigerous female (USNM 158100); 1 juvenile (USNM 158079).
Eusarsiella texana: 2 juveniles (USNM 158101); 1 juvenile (USNM 158080).
Sta 250; 25 Apr 1978; same locality as sta 249; grass control; 73 cm; 28.0°C; salinity 36‰.
Eusarsiella zostericola: 1 juvenile (USNM 158065); 4 specimens (returned to Harbor Branch Foundation).
Eusarsiella spinosa: 1 ovigerous female + 1 juvenile (USNM 158066); 1 adult male (USNM 158071).
Sta 252a; 22 May 1978; same locality as sta 249; outer section of cage, on sand; 44 cm; 29.5°C; salinity 35‰.
Eusarsiella zostericola: 3 specimens (USNM 158082).
Eusarsiella texana: 1 adult female (USNM 158108); 1 juvenile (USNM 158085); 1 specimen (returned to Harbor Branch Foundation).
Eusarsiella spinosa: 4 specimens (USNM 158084).
Eussarsiella disparalis: 1 juvenile (USNM 158083); 1 specimen (returned to Harbor Branch Foundation).
Eusarsiella ozotothrix: 1 adult female (USNM 158086).
Sta 252c; same station data as sta 252a except water depth only 15 cm.
Eusarsiella texana: 2 juveniles (USNM 158105).
Eusarsiella zostericola: 1 adult male (USNM 158106).
Sta 253; 22 May 1978; same locality as sta 252a; inner section of cage, on sand; 125 cm; 29.5°C; salinity 35‰.
Eusarsiella spinosa: 1 ovigerous female (USNM 158068).
Sta 254; 22 May 1978; same locality as sta 249; outer section of cage, on grass; 34 cm; 29.5°C; salinity 35‰.
Eusarsiella spinosa: 1 juvenile (USNM 158107).
Sta 255, 22 May 1978; same locality as sta 254; inner section of cage, on grass; 28 cm; 29.5°C; salinity 35‰.
Eusarsiella zostericola: 1 juvenile (returned to Harbor Branch Foundation).
Sta 256a; 22 May 1978; same locality as sta 249; sand control; 48 cm; 29.5°C; salinity 35‰.
Eusarsiella zostericola: 2 juveniles (USNM 158093); 1 juvenile (USNM 158088); 2 ovigerous females (returned to Harbor Branch Foundation).
Eusarsiella spinosa: 1 juvenile (USNM 158094).
Eusarsiella texana: 4 specimens (USNM 158091); 6 specimens (USNM 158087).
Eusarsiella disparalis: 2 juveniles (USNM 158089); 1 ovigerous female (returned to Harbor Branch Foundation).
Sta 256c; 22 May 1978; same station data as sta 256a except depth only 16 cm.
Eusarsiella spinosa: 2 specimens (returned to Harbor Branch Foundation).
Eusarsiella texana: 2 specimens (returned to Harbor Branch Foundation).
Sta 257; 22 May 1978; same locality as sta 249; grass control; 40 cm; 29.5°C; salinity 35‰.
Eusarsiella zostericola: 1 ovigerous female (returned to Harbor Branch Foundation).

Sta 266; 27 Jun 1978; same locality as sta 249; sand control; 47 cm; 29.5°C; salinity 32‰.
Eusarsiella spinosa: 1 adult male (USNM 158075).
Sta 267; 27 Jun 1978; same locality as sta 249; grass control; 42 cm; 29.5°C; salinity 32‰.
Eusarsiella zostericola: 1 specimen (USNM 158073).

Indian River, Vero Beach, Florida, 27 Oct 1971; 27°39′N, 80°23′W; public beach facing intercoastal canal near east end of causeway bridge; depth ⅓ m; sand bottom; collected in small net by L.S. Kornicker and Beatrice Kornicker.

Eusarsiella texana: 1 juvenile (USNM 152443).

Banana River, Eua Gallie, Brevard County, north of harbor cut, east of marker number 1, between double *Spartina* beds, 10 m off shore; 28°12′00″N, 80°37′00″W; grab samples collected with post-hole digger; received from John E. Miller, Harbor Branch Foundation. (Water depth given in cm; temperatures given are those of bottom water; salinity is given in parts per thousand.)

Sta 53; 19 Jun 1974; 30 cm; 35°C; salinity 40.5‰.
Eusarsiella zostericola: 1 specimen (USNM 152496); 1 ovigerous female (returned to Harbor Branch Foundation); 3 ovigerous females (USNM 152497); 1 ovigerous female + 1 adult female (USNM 152498).
Sta 101; 27 Feb 1975; same locality as sta 53; 25 cm; 21.5°C; salinity 18‰.
Eusarsiella zostericola: 2 ovigerous females (USNM 152837); 1 ovigerous female + 1 adult female (USNM 153915).
Sta 104; 26 Mar 1975; same locality as sta 53; 40 cm; 22.5°C; salinity 19‰.
Eusarsiella zostericola: 1 ovigerous female (USNM 152841); 3 ovigerous females (USNM 153918).
Sta 109; 23 Apr 1975; same locality as sta 53; 23 cm; 26°C; salinity 22‰.
Eusarsiella zostericola: 1 ovigerous female + 1 adult female (USNM 153922).
Sta 115; 28 May 1975; same locality as sta 53; 35 cm; 29°C; salinity 28‰.
Eusarsiella zostericola: 1 ovigerous female (USNM 153908).

Lake Worth, north end; 15 Feb 1976; flats along Mangroves west of U.S. AlA, 3.1 miles north of Holiday Inn on Singer Island (Palm Beach Shore); low water; 1430 hours; residue from surface sediment collected with small net in few centimeters of water; collected by F.M. Bayer.

Eusarsiella zostericola: 2 adult males + 1 ovigerous female + 3 juveniles (USNM 156743).

Biscayne Bay; tidal flats on Key Biscayne just south of Bear Cut Bridge; 25 Feb 1976; 1230 hours; taken with small net in few centimeters of water at low tide; collected by F.M. Bayer.

Eusarsiella disparalis: 1 adult male (USNM 156734).

Card Sound; 13 Jan 1976; depth 2 m; mud and sand bottom with alga *Batophora* and *Laurencie* spp.; Ockelman dredge; collected by C.Q. Messing.

Eusarsiella uncus: 1 adult female (USNM 156713 holotype).

Gulf of Mexico

Bureau of Land Management Continental Shelf Study in Gulf of Mexico; collected May 1975 to Dec 1977 by personnel of the Gulf Coast Research Laboratory, Ocean Springs, Mississippi; received from Dr. Richard W. Heard.

Transect 1, west of southern part of Florida peninsula.
Sta 2101; 26°24′59.6″N, 82°15′08.9″W; 10 m.
Dantya heardi: 1 ovigerous female (USNM 193089).
Sta 2104; 26°25′00.0″N, 83°23′00.8″W; 53 m.
Dantya heardi: 1 ovigerous female holotype (USNM 193083); 1 ovigerous female (USNM 158730): 1 juvenile male (USNM 158725); 3 juveniles (USNM 193087): 1 juvenile (USNM 193090).

Bureau of Land Management Southwest Florida Continental Shelf Study; Specimens collected by James K. Culter, Mote Marine Laboratory, Sarasota, Florida; all samples collected from a soft substrate with Unseld spade corer; except where noted, specimens returned to the Mote Marine Laboratory.

Sta 2; 14 Nov 1980; 26°45′50″N, 82°45′11″W; 24.4 m.
Eusarsiella radiicosta: 2 ovigerous females, 1 juvenile.
Sta 4; 31 Oct 1980; 26°45′49″N, 83°32′07″W; 55.8m.
Eusarsiella radiicosta: 1 ovigerous female, 1 adult female, 2 juveniles.
Eusarsiella paniculata: 1 ovigerous female (USNM 157973).

Eusarsiella bakeri: 1 ovigerous female.
Eusarsiella culteri: 1 ovigerous female (USNM 157972, holotype); 2 females (USNM 193082).
Sta 5; 1 Nov 1980; 26°45′42″N, 84°00′08″W; 90.8 m.
Eusarsiella pilipollicis: 1 ovigerous female.
Sta 6; 6 Nov 1980; 26°16′47″N; 82°38′21″W; 26.5 m.
Eusarsiella radiicosta: 2 adult females.
Eusarsiella greyi: 1 ovigerous female, 1 adult female.
Sta 6; 2 Feb 1982.
Eusarsiella radiicosta: 1 juvenile.
Sta 14; 12 Feb 1982; 25°46′01″N, 82°23′49″W; 26.0 m.
Eusarsiella radiicosta: 4 specimens.
Eusarsiella greyi: 1 ovigerous female.
Sta 16; 12 Mar 1982; 25°45′42″N; 83°11′04″W; 53.9 m.
Eusarsiella radiicosta: 1 adult female, 3 juveniles.
Sta 20; 12 Feb 1982; 25°17′20″N; 82°09′44″W; 22.5 m.
Eusarsiella radiicosta: 2 juveniles.
Eusarsiella disparalis: 1 ovigerous female.
Eusarsiella paniculata: 1 instar III (retained).
Eusarsiella capillaris: 1 adult female (USNM 193115); 1 instar III, 1 juvenile (all retained).
Sta 22; 11 Feb 1982; 25°17′11″N, 83°02′04″W; 52.7 m.
Eusarsiella radiicosta: 3 ovigerous females, 2 adult females, 3 juveniles.
Eusarsiella bakeri: 3 ovigerous females, 2 adult females, 1 juvenile.
Eusarsiella paniculata: 1 instar III (retained).
Sta 24; 8 Feb 1982; 25°16′54″N, 83°43′W; 88.4 m.
Eusarsiella radiicosta: 1 ovigerous female, 1 juvenile, 3 specimens.
Eusarsiella bakeri: 2 adult females.
Eusarsiella cutleri: 1 adult female (retained).
Sta 25; 1 Nov 1980; 24°47′57″N, 82°13′16″W; 25 m.
Eusarsiella disparalis: 1 ovigerous female.
Sta 28; 20 Nov 1980; 24°47′07″N, 83°13′05″W; 58.5 m.
Eusarsiella paniculata: 1 ovigerous female (USNM 193114).
Sta 28; 4 Aug 1981.
Eusarsiella bakeri: 2 ovigerous females, 1 adult female with 2 choniostomatid egg clones and 1 female choniostomatid within marsupium.
Sta 28; 11 Feb 1982.
Eusarsiella radiicosta: 3 ovigerous females.
Eusarsiella bakeri: 1 ovigerous female, 3 adult females, 1 juvenile.
Sta 28; 3 May 1982.
Eusarsiella radiicosta: 2 specimens.
Sta 28; 11 Aug 1982.
Eusarsiella radiicosta: 1 ovigerous female, 2 juveniles.
Eusarsiella bakeri: 1 ovigerous female, 1 specimen.
Sta 37; 2 Aug 1981; 25°16′38″N, 84°09′23″W; 148.0 m.
Dantya heardi: 1 A–1 male (USNM 158838); 2 juveniles (USNM 193084); 1 female + 2 juveniles (USNM 193085); 1 juvenile male (USNM 193088).

Southwest Florida Continental Shelf off Pinellas County; collected by, and specimens returned to, James K. Culter, Mote Marine Laboratory, Sarasota, Florida; samples containing specimens from more than one station collected on 28–30 May 1980 and on 13–17 Oct 1980 at depths ranging from 1.6 m to 13.9 m; localities of these specimens not shown on maps.

Vial B.
Eusarsiella disparalis: 1 juvenile.
Eusarsiella childi: 1 instar IV female.
Eusarsiella texana: 14 specimens.
Vial C.
Eusarsiella radiicosta: 10 specimens including 2 ovigerous females.
Eusarsiella disparalis: 2 adult males.
Vial D.
Eusarsiella radiicosta: 1 adult male.
Vial E.
Eusarsiella childi: 1 instar IV female.

Placida Harbor (part of Charlotte Harbor); collected by Roger F. Cressey and C.A. Child.

Sample 1; 22 Oct 1970; off Bird Key; west of swinging bridge to Gasparilla Island; 1–2 m; Ockelman dredge.
Eusarsiella texana: 2 adult males (USNM 143998).
Sample 2; July 1971; off Bird Key; 1–3 m; Ockelman dredge.
Eusarsiella texana: 95 specimens including ovigerous females + 1 adult male (USNM 144004); 3 ovigerous females (USNM 151999).
Eusarsiella zostericola: 2 ovigerous females (USNM 144000).
Eusarsiella spinosa: 1 ovigerous female with parasitic copepods + 1 adult female (USNM 144001).
Sample 3; 1 May 1974; off Bird Key; 2–3 m; Ockelman dredge tied to Otter trawl; mud washing.
Eusarsiella texana: 3 ovigerous females + 12 juveniles (USNM 151996); 1 adult male (USNM 151995); 32 ovigerous females + 2 adult males + 35 specimens, mostly juveniles (USNM 151304).
Eusarsiella cresseyi: 1 ovigerous female (USNM 151990, holotype); 1 ovigerous female + 6 juveniles (USNM 151991); 1 adult male (USNM 150100); 2 specimens (USNM 152303); 12 specimens (USNM 151993); 1 adult male (USNM 150282, allotype).

Eusarsiella zostericola: 2 ovigerous females + 1 adult female (USNM 152313).
Eusarsiella childi: 1 ovigerous female (USNM 151992, holotype).
Eusarsiella spinosa: 1 ovigerous female (USNM 152305); 1 juvenile (USNM 152306).
Eusarsiella disparalis: 1 adult female (USNM 150108); 3 juveniles (USNM 152308); 1 ovigerous female + 2 adult females (USNM 152310); 1 ovigerous female (USNM 152311); 3 juveniles (USNM 152308); 10 juveniles (USNM 152312).
Eusarsiella species: 1 stage IV female (USNM 151998); 1 juvenile male (USNM 152301).

Sample 4; 2 May 1974; off Bird Key; 2–3 m; mud bottom; weed washings from Otter trawl.
Eusarsiella texana: 2 ovigerous females + 5 juveniles (USNM 151997).
Eusarsiella cresseyi: 1 juvenile valve (USNM 151994).
Eusarsiella disparalis: 1 adult male (USNM 150109); 1 adult female (USNM 152307).

Sample 8; 19 Jun 1975; off Sandfly Key; weed washings from Otter trawl.
Eusarsiella disparalis: 1 adult male (USNM 156959).

Tampa Bay; May 1974; west side of bay, south of Gandy Bridge; collected by Carolyn Stiles Lewis.

Eusarsiella zostericola: 17 ovigerous females (USNM 156766).

Anclote Anchorage, near Tarpon Springs, north of Tampa; Grab samples, 15 × 15 cm sampler similar to post-hole digger, operated by hand; collected by Dr. Patsy A. McLaughlin. (Temperatures listed are those at bottom.)

Sta 5; 2 Feb 1976; 1.25 m; 13.5°C.
Eusarsiella zostericola: 1 specimen (USNM 157069).
Sta 5; 6 Apr 1976; 1.75 m; 25.0°C.
Eusarsiella zostericola: 1 specimen (USNM 157072).
Sta 5; 1 July 1976; 1.75 m; 29.6°C.
Eusarsiella zostericola: 1 ovigerous female (USNM 157574); 3 specimens (USNM 157575).
Sta 6; 23 Oct 1976; 2.0 m; 17.6°C.
Eusarsiella disparalis: 1 ovigerous female (USNM 157577).
Sta 11; 6 Mar 1976; 0.75 m; 26.2°C.
Eusarsiella zostericola: 1 specimen (USNM 157077).
Sta 13; 4 Jan 1976; 0.5 m; 16.0°C.
Eusarsiella zostericola: 3 specimens (USNM 157064).
Eusarsiella texana: 1 specimen (USNM 157095).
Sta 13; 2 May 1976; 1.0 m; 25.9°C.
Eusarsiella texana: 2 specimens (USNM 157579).
Sta 14; 5 Jan 1976; 1.3 m; 16.6°C.
Eusarsiella species: 1 specimen (USNM 157110).
Sta 14; 6 Jan 1976; 1.3 m; 16.5°C.
Eusarsiella zostericola: 1 specimen (USNM 157066).
Sta 14; 2 Feb 1976, 1.0 m; 16.8°C.
Eusarsiella zostericola: 1 specimen (USNM 157067); 2 specimens (USNM 157068).
Eusarsiella texana: 1 specimen (USNM 157101).
Sta 14; 6 Apr 1976; 0.75 m; 26.4°C.
Eusarsiella zostericola: 1 specimen (USNM 157071).
Sta 14; 2 Jun 1976; 1.25 m; 29.8°C.
Eusarsiella zostericola: 2 ovigerous females (USNM 157586); 1 ovigerous female (USNM 157588).
Sta 15; 25 Aug 1976; 2.0 m; 29.7°C.
Eusarsiella disparalis: 1 ovigerous female (USNM 157589).
Sta 16; 6 Jan 1976; 3.0 m; 13.1°C.
Eusarsiella texana: 1 specimen (USNM 157097); 3 specimens (USNM 157098).
Eusarsiella spinosa: 1 specimen (USNM 157107).
Sta 16; 7 Mar 1976; 3.0 m; 27.9°C.
Eusarsiella texana: 1 specimen (USNM 157089).
Sta 16; 3 May 1976; 3.0 m; 24.6°C.
Eusarsiella texana: 1 specimen (USNM 157591).
Sta 19; 6 Mar 1976; 1.0 m; 27.7°C.
Eusarsiella zostericola: 1 specimen (USNM 157075).
Sta 20; 6 Mar 1976; 1.0 m; 27.7°C.
Eusarsiella zostericola: 2 specimens (USNM 157076).
Sta 20; 2 May 1976; 1.25 m; 25.8°C.
Eusarsiella zostericola: 1 adult male (USNM 158326).
Sta 21; 7 Jan 1976; 0.75 m; 16.0°C.
Eusarsiella zostericola: 1 specimen (USNM 157065).
Sta 21; 2 Feb 1976; 1.0 m; 16.8°C.
Eusarsiella disparalis: 1 specimen (USNM 157105); 1 ovigerous female (USNM 157106).
Eusarsiella zostericola: 1 ovigerous female (USNM 157070).
Sta 21, 6 Apr 1976; 1.50 m; 25.2°C.
Eusarsiella zostericola: 1 specimen (USNM 157073).
Sta 21; 2 May 1976; 1.5 m; 24.5°C.
Eusarsiella zostericola: 2 specimens (USNM 157598).
Sta 22; 2 Jul 1976; 2.0 m; 29.5°C.
Eusarsiella zostericola: 1 specimen (USNM 157603).
Sta 28; 9 Jan 1976; 2.0 m; 11.7°C.
Eusarsiella texana: 1 specimen (USNM 157096).
Eusarsiella disparalis: 1 specimen (USNM 157104).
Sta 30; 2 Feb 1976; 0.75 m; temperature unknown.
Eusarsiella texana: 1 specimen (USNM 157100).
Sta 30; 7 Mar 1976; 1.25 m; 25.5°C.
Eusarsiella zostericola: 1 specimen (USNM 157128).
Sta 30; 6 Apr 1976, 2.25 m; 24.3°C.
Eusarsiella texana: 1 ovigerous female (USNM 157012); 1 specimen (USNM 158325).
Sta 31; 3 May 1976; 1.0 m; 24.0°C.

Eusarsiella zostericola: 1 specimen (USNM 157074); 1 specimen (USNM 157605).
Sta 32; 9 Jan 1976; 2.0 m; 11.8°C.
Eusarsiella disparalis: 1 ovigerous female (USNM 157103).
Eusarsiella texana: 1 specimen (USNM 157099).
Sta 32; 24 Oct 1976; 2.0 m; 19.2°C.
Eusarsiella texana: 1 juvenile (USNM 157607).

Anclote Anchorage, near Tarpon Springs, north of Tampa; trawl sample with 1 m opening and small bag with ¼ inch stretch mesh; collected by Dr. Patsy A. McLaughlin. (Temperatures given are water temperatures at bottom.)

Sta 5; 6 Apr 1976, day; 2.0 m; 25.3°C.
Eusarsiella zostericola: 1 specimen (USNM 157427).
Sta 6; 19 Jan 1976, day; 1.25 m; 9.0°C.
Eusarsiella species: 1 specimen (USNM 157124); 2 specimens (USNM 157125).
Eusarsiella cresseyi: 1 specimen (USNM 157431).
Sta 6; 19 Jan 1976, night; 1.25 m; 9.2°C.
Eusarsiella texana: 1 ovigerous female (USNM 157433); 2 specimens (USNM 157435); 4 specimens (USNM 157439).
Eusarsiella zostericola: 2 specimens (USNM 157434).
Sta 6; 18 Mar 1976, day; 2.5 m; 17.6°C.
Eusarsiella texana: 4 specimens (USNM 157442).
Sta 13; 16 Jan 1976, day; 1.0 m; 18.4°C.
Eusarsiella texana: 1 specimen (USNM 157446).
Eusarsiella zostericola: 1 ovigerous female (USNM 157449).
Sta 14; 16 Jan 1976, day; 1.25 m; 17.8°C.
Eusarsiella zostericola: 1 ovigerous female (USNM 157452).
Eusarsiella spinosa: 1 ovigerous female (USNM 157464); 1 specimen (USNM 157462).
Sta 14; 16 Jan 1976, night; 1.25 m; 18.1°C.
Eusarsiella zostericola: 6 specimens (USNM 157453); 3 specimens (USNM 157456); 2 specimens (USNM 157460).
Eusarsiella spinosa: 1 juvenile (USNM 157454); 2 ovigerous females (USNM 157457).
Eusarsiella texana: 1 specimen (USNM 157458); 1 ovigerous female (USNM 157466); 1 ovigerous female (USNM 157461).
Eusarsiella cresseyi: 1 adult male (USNM 157459).
Sta 14; 2 Feb 1976, night; 1.75 m; 16.7°C.
Eusarsiella zostericola: 1 ovigerous female (USNM 157467); 1 specimen (USNM 157468); 1 specimen (USNM 157469).
Sta 14; 2 Feb 1976, day; 1.0 m; 16.8°C.
Eusarsiella texana: 2 specimens (USNM 157094).
Sta 14; 15 Mar 1976, night; 1.5 m; 26.3°C.
Eusarsiella zostericola: 4 specimens (USNM 157472); 1 specimen (USNM 157474); 6 specimens (USNM 157491); 3 specimens (USNM 157493); 1 specimen (USNM 157494).
Eusarsiella spinosa: 1 specimen (USNM 157492).
Sta 14; 15 Mar 1976, day; 1.5 m; 25.1°C.
Eusarsiella zostericola: 6 specimens (USNM 157476); 1 ovigerous female (USNM 157477); 9 specimens (USNM 157478); 157 specimens (USNM 157480); 1 ovigerous female (USNM 157490).
Eusarsiella texana: 121 specimens (USNM 157481).
Eusarsiella spinosa: 25 specimens (USNM 157482); 4 ovigerous females (USNM 157483); 4 adult males (USNM 157485).
Eusarsiella disparalis: 2 specimens (USNM 157486).
Eusarsiella cresseyi: 1 specimen (USNM 157487).
Sta 14; 13 May 1976, day; 1.6 m; 31.3°C.
Eusarsiella zostericola: 2 specimens (USNM 157495).
Eusarsiella texana: 1 juvenile (USNM 157496).
Sta 16; 16 Jan 1976, day; 3.0 mm; 14.2°C.
Eusarsiella texana: 12 specimens (USNM 157501).
Eusarsiella disparalis: 1 ovigerous female (USNM 157502).
Eusarsiella spinosa: 1 ovigerous female (USNM 157503).
Sta 20; 15 Jan 1976, night; 0.5 m; 17.8°C.
Eusarsiella zostericola: 2 specimens (USNM 157080); 1 specimen (USNM 157511).
Eusarsiella texana: 1 specimen (USNM 157092).
Sta 20; 15 Mar 1976, night; 1.25 m; 26.0°C.
Eusarsiella texana: 1 adult male (USNM 157513).
Sta 21; 16 Jan 1976, night; 0.75 m; 16.9°C.
Eusarsiella zostericola: 5 specimens (USNM 157514).
Eusarsiella texana: 1 specimen (USNM 157091).
Eusarsiella spinosa: 1 specimen (USNM 157108).
Sta 21; 15 Jan 1976, day; 0.75 m; 16.7°C.
Eusarsiella zostericola: 4 specimens (USNM 157517); 1 specimen (USNM 157079); 2 specimens (USNM 157519).
Sta 21; 2 Feb 1976, day; 1.0 m; 16.8°C.
Eusarsiella zostericola: 1 ovigerous female (USNM 157523); 1 specimen (USNM 157524); 1 specimen (USNM 157524); 1 specimen (USNM 157538).
Eusarsiella spinosa: 1 specimen (USNM 157526).
Sta 21; 2 Feb 1976, night; 1.25 m; 15.0°C.
Eusarsiella zostericola: 1 specimen (USNM 157525).
Sta 21; 14 Mar 1976, night; 1.25 m; 26.9°C.
Eusarsiella zostericola: 2 specimens (USNM 157531).
Sta 21; 14 Mar 1976, day; 1.25 m; 25.3°C.
Eusarsiella zostericola: 1 ovigerous female (USNM 157533).
Sta 22; 15 Jan 1976, night; 1.25 m; 15.9°C.
Eusarsiella zostericola: 1 specimen (USNM 157534).

Sta 24; 18 Jan 1976, day; 2.0 m; 10.9°C.
Eusarsiella texana: 1 juvenile (lost).
Sta 29; 14 Jan 1976, day; 1.25 m; 16.0°C.
Eusarsiella texana: 1 specimen (USNM 157549).
Sta 29; 14 Jan 1976, night; 1.25 m; 15.3°C.
Eusarsiella zostericola: 1 adult male (USNM 157542).
Eusarsiella texana: 1 adult male (USNM 157544).
Eusarsiella childi: 1 ovigerous female (USNM 157547).
Sta 29; 17 Mar 1976, night; 1.0 m; 18.3°C.
Eusarsiella zostericola: 1 specimen (USNM 157552).
Sta 30; 18 Jan 1976, day; 0.75 m; 11.2°C.
Eusarsiella cresseyi: 1 specimen (USNM 157109).
Eusarsiella zostericola: 1 specimen (USNM 157078).
Sta 30; 2 Feb 1976, day; 1.0 m; 16.2°C.
Eusarsiella zostericola: 1 ovigerous female (USNM 157559).
Eusarsiella texana: 3 juveniles (USNM 157560).
Sta 30; 17 Mar 1976, day; 1.0 m; 19.8°C.
Eusarsiella zostericola: 1 ovigerous female (USNM 157563).
Eusarsiella texana: 1 specimen (USNM 157093).
Sta 30; 17 Mar 1976, night; 0.75 m; 17.1°C.
Eusarsiella disparalis: 1 specimen (USNM 157564).
Sta 31; 18 Jan 1976, night; 1.25 m; 9.0°C.
Eusarsiella texana: 1 specimen (USNM 157090); 3 specimens (USNM 157566).
Sta 32; 18 Jan 1976, day; 1.75 m; 11.2°C.
Eusarsiella texana: 1 specimen (USNM 157569).
Sta 32; 18 Jan 1976, night; 1.75 m; 10.0°C.
Eusarsiella texana: 1 juvenile (USNM 157568).

Alligator Harbor (near Lighthouse Point and Apalachee Bay), Franklyn County; exact date of collecting unknown, about 1957; collected by Darrell R. Jones; precise depth and locality unknown.

Sta 1, 5-2.
Eusarsiella cresseyi: 1 ovigerous female (USNM 149314).
Eusarsiella texana: 1 adult male (USNM 152442).
Eusarsiella ozotothrix: 1 ovigerous female (USNM 152441); reported by Kornicker and Bowen (1976).
Sta II, 5-1.
Eusarsiella texana: 1 female (USNM 156703).
Sta III, 5-2.
Eusarsiella texana: 2 females (USNM 156504).
Sta IV, 2-1.
Eusarsiella texana: 2 females (USNM 156705).
Sta IV, 2-2.
Eusarsiella texana: 1 female (USNM 156706).
Sta IV, 3-2.
Eusarsiella texana: 1 female + 1 juvenile (USNM 156707).

Panama City, about 2 miles (3.2 km) W of West Pass, which is entrance into St. Andrew Bay; plug sampler operated by hand, sampler dimensions 12.5 × 12.5 × 23 cm (height); Sediment washed through sieve with mesh of 0.701 mm^2; Collected by Carl H. Saloman, Southeast Fisheries Center, National Marine Fisheries Service, Panama City, Florida.

Sta 4; 18 Aug 1976; borrow pit; about 610 m offshore; depth 12.8 m; sand substrate.
Eusarsiella childi: 1 adult female (USNM 157693).
Sta 4; 24 Aug 1976.
Eusarsiella childi: 1 ovigerous female (USNM 157684).
Sta 4; 1 Sep 1976.
Eusarsiella texana: 1 ovigerous female (USNM 157688).
Sta 4; 8 Sep 1976.
Eusarsiella texana: 1 ovigerous female (USNM 157687).
Sta 4; 21 Sep 1976.
Eusarsiella texana: 4 ovigerous females (USNM 157680).
Sta 4; 4 Oct 1976.
Eusarsiella texana: 4 ovigerous females + 2 adult females + 1 juvenile (USNM 157683).
Eusarsiella spinosa: 1 ovigerous female (returned to C.H. Saloman).
Sta 4; 1 Nov 1976.
Eusarsiella texana: 1 ovigerous female (USNM 157685).
Eusarsiella childi: 1 adult female (USNM 157686).
Sta 4; 1 Mar 1977.
Eusarsiella childi: 2 ovigerous females (USNM 157689).
Sta 4; 1 Apr 1977.
Eusarsiella childi: 1 ovigerous female (USNM 157694).
Sta 30; 19 Apr 1976; about 610 m offshore and adjacent to sta 4; depth 9.1 m; sand substrate.
Eusarsiella texana: 1 ovigerous female (USNM 157673).
Eusarsiella childi: 1 ovigerous female (USNM 157695).
Sta 30; 16 Jul 1976.
Eusarsiella childi: 5 ovigerous females + 4 adult females (USNM 157656).
Sta 30; 3 Aug 1976.
Eusarsiella childi: 5 ovigerous females + 2 juveniles (USNM 157658).
Sta 30; 10 Aug 1976.
Eusarsiella childi: 9 ovigerous females + 1 juvenile (USNM 157419).
Sta 30; 18 Aug 1976.
Eusarsiella childi: 9 specimens (USNM 157615).
Sta 30; 24 Aug 1976.
Eusarsiella childi: 3 ovigerous females + 1 juvenile (USNM 157663).
Eusarsiella spinosa: 1 ovigerous female (USNM 157664).

Sta 30; 1 Sep 1976.
Eusarsiella texana: 1 ovigerous female (returned to C.H. Saloman).
Eusarsiella childi: 1 specimen (returned to C.H. Saloman).
Sta 30; 8 Sep 1976.
Eusarsiella texana: 2 specimens (1 ovigerous) (USNM 157617).
Eusarsiella spinosa: 1 ovigerous female (USNM 157618).
Eusarsiella disparalis: 1 ovigerous female (USNM 157619).
Sta 30; 21 Sep 1976.
Eusarsiella texana: 2 ovigerous females (USNM 157652).
Eusarsiella childi: 1 ovigerous female + 2 adult females (USNM 157651).
Sta 30; 4 Oct 1976.
Eusarsiella texana: 2 ovigerous females (USNM 157672, 157673).
Sta 30; 18 Oct 1976.
Eusarsiella childi: 5 specimens (USNM 157654).
Sta 30; 1 Nov 1976.
Eusarsiella childi: 1 specimen (USNM 157666).
Sta 30; 1 Dec 1976.
Eusarsiella childi: 1 specimen (USNM 157670).
Sta 30; 2 Feb 1977.
Eusarsiella childi: 1 specimen (USNM 157676).
Eusarsiella disparalis;; 1 adult female (USNM 157671).
Sta 30; 1 Mar 1977.
Eusarsiella texana: 1 ovigerous female (USNM 157667).
Eusarsiella childi: 1 ovigerous female (USNM 157669).
Sta 30; 1 Apr 1977.
Eusarsiella childi: 1 ovigerous female (USNM 157675).
Sta 30; 2 May 1977.
Eusarsiella childi: 1 ovigerous female (USNM 157668).

Louisiana

Sonnier Bank vicinity (previously known as Three Hickey Rock); 28°21′N,92°27′W; collected by Walter B. Sikora, Texas A & M University.

Sta THR-1; 20 Jun 1977; 60 m.
Eusarsiella gettlesoni: 1 specimen
Eusarsiella radiicosta: 2 specimens
Sta THR-2; 20 Jun 1977; 62 m.
Eusarsiella gettlesoni: 2 ovigerous females, 2 adult males, 1 specimen.
Eusarsiella radiicosta: 1 ovigerous female, 3 specimens
Eusarsiella pilipollicis: 1 ovigerous female.
Eusarsiella bakeri: 1 ovigerous female.
Sta THR-3; 20 Jun 1977, 61 m.
Eusarsiella gettlesoni: 1 ovigerous female
Eusarsiella radiicosta: 1 ovigerous female, 1 adult female.

Texas

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

Sta EFG-4; 17 Jun 1977; 99 m; 1 mile downstream of East Flower Garden.
Eusarsiella pilipollicis: 1 adult female.

Gulf of Mexico, off Galveston, R/V *Gyre* (Texas A & M University); 1974; collected by David Gettleson.

Cruise 10.
Sta 8; 28°10′N, 94°18′W; 56 m.
Eusarsiella gettelsoni: 1 adult female (USNM 154184); 1 specimen (USNM 156884).
Eusarsiella radiicosta: 1 juvenile female (USNM 158148).
Sta 16; 28°10′N, 94°18′W; 53.5 m.
Eusarsiella gettlesoni: 2 specimens (USNM 156904).
Cruise 11.
Sta 1; 28°24′N, 93°57′30″W; 49.25 m.
Eusarsiella radiicosta: 3 ovigerous females (USNM 158150, 158149, 158151).
Sta 2; 28°22′36″N, 94°01′30″W; 49.75 m.
Eusarsiella radiicosta: 1 ovigerous female (USNM 158152); 2 ovigerous females (USNM 158153); 2 ovigerous females (USNM 158154).
Sta 5; 28°19′30″N, 94°09′00″W; 50 m.
Eusarsiella gettlesoni: 1 juvenile (USNM 156819); 2 specimens (USNM 156891); 1 specimen (USNM 156892).
Eusarsiella radiicosta: 2 ovigerous females (USNM 158155); 1 instar IV male (USNM 158122); 6 females (USNM 158156); 2 adult males (158157).
Sta 7; 28°16′N, 94°06′30″W; 53 m.
Eusarsiella gettlesoni: 2 adult males (USNM 156824, 156825), 1 ovigerous female + 2 juveniles (USNM 156826), 1 specimen (USNM 156879); 2 specimens (USNM 156887); 4 specimens (USNM 156889); 3 specimens (USNM 156901); 1 ovigerous female (USNM 154182, holotype).
Eusarsiella radiicosta: 1 female (USNM 158158); 4 ovigerous females (USNM 158160, 158159).
Eusarsiella bakeri: 1 ovigerous female (USNM 154183).
Eusarsiella spinosa: 1 juvenile (USNM 158180).

Eusarsiella elofsoni: 1 ovigerous female (USNM 154181).

Sta 8; 28°15′N, 94°03′00″W; 57.75 m.
Eusarsiella radiicosta: 1 juvenile (USNM 158161); 1 adult male + 1 female (USNM 158162), 1 ovigerous female (USNM 158163).
Eusarsiella bakeri: 2 females (USNM 158172, 158177); 1 ovigerous female (USNM 158179).

Sta 9; 28°21′06″N, 93°40′18″W; 57.5 m.
Eusarsiella radiicosta: 1 ovigerous female (USNM 153973); 1 ovigerous female (USNM 158121); 1 adult male + 1 adult female (USNM 158165), 1 adult male (USNM 153938); 1 adult male + 1 adult female (USNM 158164).
Eusarsiella bakeri: 2 adult females (USNM 158175).
Eusarsiella spinosa: 1 female (USNM 158176).
Eusarsiella dispar: 1 adult female (USNM 158033, holotype).

Sta 11; 28°22′12″N, 93°49′30″W; 54.75 m.
Eusarsiella radiicosta: 1 juvenile male (USNM 158123); 1 adult male (USNM 158166); 1 ovigerous female (USNM 158167); 3 adult females (USNM 158168).
Eusarsiella gettlesoni: 2 specimens (USNM 156897).
Eusarsiella bakeri: 1 adult female (USNM 158174).

Sta 12; 28°23′30″N, 93°53′30″W; 51.75 m.
Eusarsiella radiicosta: 2 adult males + 1 adult female (USNM 158169); 1 juvenile (USNM 158171); 1 adult female (USNM 158170).
Eusarsiella bakeri: 1 ovigerous female (USNM 158117), 2 adult females (USNM 158173).
Eusarsiella dispar: 1 adult female (USNM 158040).
Eusarsiella greyi: 1 specimen (USNM 158178).

South Texas Bureau of Land Management, Outer Continental Shelf Study, The University of Texas Marine Institute's benthic ecology group; collected aboard R/V *Longhorn* by University of Texas Marine Institute personnel; received from Richard D. Kalke; samples were collected using a Smith-McIntyre grab (0.1 square meters); see Flint (1981, fig. 1) for map showing station localities.

Transect I, south of Port O'Connor.
Sta 3; 28 Jun 1976; 27°34′N, 96°07′W; 134 m.
Eusarsiella radiicosta: 2 ovigerous females.
Sta 6; 14 Feb 1977; 27°39′N, 96°12′W; 100 m.
Eusarsiella radiicosta: 1 adult male.
Sta 6; 1 Jun 1977.
Eusarsiella radiicosta: 2 ovigerous females, 1 adult female, 2 juveniles, 3 additional specimens.
Eusarsiella pilipollicis: 1 ovigerous female.
Sta 6; 6 Oct 1977.
Eusarsiella radiicosta: 2 adult females.
Sta 6; 10 Oct 1976.
Eusarsiella dispar: 1 adult male.

Transect II, off Port Aransas area.
Sta 3; 10 Apr 1976; 27°18′N, 96°23′W; 131 m.
Eusarsiella radiicosta: 1 adult female.
Sta 3; 9 Oct 1976.
Eusarsiella radiicosta: 1 instar IV male, 1 juvenile.
Sta 3; 19 Nov 1976.
Eusarsiella radiicosta: 3 specimens.
Sta 3; 9 Dec 1976.
Eusarsiella radiicosta: 1 juvenile.
Sta 3; 10 Feb 1977.
Eusarsiella radiicosta: 1 ovigerous female.
Sta 3; 3 Jun 1977.
Eusarsiella radiicosta: 1 instar III female, 3 juveniles.
Sta 3; 5 Oct 1977.
Eusarsiella radiicosta: 2 juveniles.

Transect III, off middle part of Padre Island.
Sta 3; 17 Jul 1976; 26°58′N, 96°33′W; 106 m.
Eusarsiella radiicosta: 1 specimen.
Sta 4; 26 Jun 1976; 26°10′N, 97°08′W; 15 m.
Eusarsiella dispar: 1 female, 1 early instar.
Sta 4; 28 Sep 1977.
Eusarsiella spinosa: 1 ovigerous female.
Sta 6; 23 Sep 1976; 27°24′N, 96°29′W; 98 m.
Eusarsiella radiicosta: 1 instar III female.
Sta 6; 26 May 1977.
Eusarsiella radiicosta: 2 adult females.

Transect IV, off Port Isabel.
Sta 1; 26 Jun 1976; 26°10′N, 97°01′W; 27 m.
Eusarsiella dispar: 1 juvenile.
Sta 1; 19 Sep 1976.
Eusarsiella dispar: 1 juvenile male.
Sta 1; 20 Sep 1976.
Eusarsiella dispar: 1 adult female (USNM 193112); 1 instar IV female.
Sta 1; 30 Jan 1977.
Eusarsiella dispar: 1 juvenile male.
Sta 1; 25 May 1977.
Eusarsiella dispar: 1 adult female (USNM 193113).
Sta 1; 28 May 1977.
Eusarsiella dispar: 1 instar IV female.
Sta 2; 25 Jun 1976; 26°10′N, 96°39′W; 47 m.
Eusarsiella radiicosta: 2 juveniles.
Eusarsiella dispar: 1 adult male.
Sta 2; 28 Jan 1977.
Eusarsiella radiicosta: 1 ovigerous female, 2 juveniles.
Sta 3; 19 Sep 1976; 26°10′N, 96°24′W; 91 m.
Eusarsiella radiicosta: 2 adult females, 1 juvenile male.
Sta 3; 28 Jan 1977.
Eusarsiella radiicosta: 1 ovigerous female, 1 juvenile.
Sta 3; 24 May 1977.
Eusarsiella radiicosta: 1 ovigerous female, 1 adult male, 1 juvenile male.
Sta 3; 24 May 1977.
Eusarsiella bakeri: 1 instar IV male (USNM 193110).
Sta 4; 26 Jun 1976; 26°10′N; 97°08′W; 15 m.

Eusarsiella dispar: 1 ovigerous female.
Eusarsiella radiicosta: 2 adult males, 1 juvenile.
Sta 4; 30 Jan 1977.
Eusarsiella radiicosta: 1 adult male, 2 juveniles.
Sta 4; 25 May 1977.
Eusarsiella radiicosta: 3 juveniles.
Sta 6; 20 Feb 1976; 26°10'N, 96°31'W; 65 m.
Eusarsiella radiicosta: 1 ovigerous female.
Sta 6; 25 Jun 1976.
Eusarsiella radiicosta: 1 ovigerous female, 3 specimens.
Sta 6; 19 Sep 1976.
Eusarsiella radiicosta: 7 adult females (1 with choniostomatid parasite), 4 adult males, 1 juvenile male, 2 juvenile females, 13 specimens including adult females.
Eusarsiella bakeri: 1 adult female (USNM 193109); 2 ovigerous females, 1 adult female with choniostomatid parasite.
Eusarsiella elofsoni: 1 ovigerous female (USNM 193106).
Sta 6; 28 Jan 1977.
Eusarsiella radiicosta: 1 adult male, 1 ovigerous female, 2 juveniles, 3 specimens.
Eusarsiella gettlesoni: 1 adult female (USNM 193108); 1 instar IV male, 1 instar IV female.
Sta 6; 24 May 1977.
Eusarsiella radiicosta: 1 adult male, 1 adult female, 1 ovigerous female.
Transect HR, on soft bottom adjacent to Hospital Rock (hard bottom).
Sta 1; 13 Feb 1976; 27°32'05"N, 96°28'19"W; 75 m.
Eusarsiella radiicosta: 1 juvenile.
Sta 1; 9 Oct 1976.
Eusarsiella radiicosta: 1 juvenile female.
Sta 1; 16 Nov 1976.
Eusarsiella radiicosta: 1 juvenile.
Transect SB, on soft bottom adjacent to Southern Bank (hard bottom).
Sta 3; 9 Apr 1976; 27°26'06"N, 96°32'47"W; 82 m.
Eusarsiella radiicosta: 4 ovigerous females, 1 adult female, 1 juvenile female, 1 instar IV male, 2 juveniles, 4 specimens.
Sta 3; 12 Jun 1976.
Eusarsiella radiicosta: 1 ovigerous female, 1 juvenile, 3 specimens.
Sta 3; 27 Aug 1976.
Eusarsiella radiicosta: 4 adult males, 4 ovigerous females, 1 instar II male, 1 juvenile female, 40 specimens.
Sta 3; 10 Dec 1976.
Eusarsiella radiicosta: 2 adult females, 29 specimens.
Eusarsiella bakeri: 1 adult female (USNM 193111).
Eusarsiella elofsoni: 1 juvenile (USNM 193107).

Benthic infaunal survey of the Corpus Christi ship channel near Ingleside, Texas; received from Richard D. Kalke, University of Texas Marine Science Institute.

Sta SR4; 17 Jul 1979; 27°49'N, 97°11'W; 1.8 m.
Eusarsiella cresseyi: 1 juvenile.
Eusarsiella spinosa: 1 ovigerous female.
Sta SR6; 18 Dec 1979; 27°49'N, 97°12'W; 3.0 m.
Eusarsiella dispar: 1 adult female with choniostomatid eggs clones in marsupium.
Sta SRBar 8; 19 Aug 1979; 27°49'N, 97°12'W; 0.6 m.
Eusarsiella texana: 1 adult male (USNM 193105).

Bahama Islands

San Salvador Island; 22 Dec 1979; dump reef on NW side of island; 21°08'N, 74°30'W; depth about 2.4 m; small net drawn along bottom in *Thalassia* bed; collected by Anne C. Cohen.

Chelicopia arostrata: 1 ovigerous female (USNM 158335); 2 juveniles (USNM 158583).
Eusarsiella athrix: 2 ovigerous females (USNM 158381, holotype; USNM 158382); 1 adult female (USNM 158598); 13 juveniles (USNM 158599).
Eusarseilla costata: 1 ovigerous female (USNM 158344); 1 adult male USNM 158333); 14 specimens including 3 adult females (USNM 157880); 3 early instars (USNM 157881); 1 ovigerous female (USNM 158332); 1 A–1 male (USNM 158595).

Andros Island; sta 91; 10 Mar 1966; Calabash Bay; 24°44'30"N, 77°48'18"W; intertidal flat; collected by M.L. Jones.

Eusarsiella capillaris: 1 instar IV male (USNM 154194).

Bimini Islands; collected by Louis S. Kornicker, 1955–1956.

Chelicopia arostrata: 1 dry specimen, probably adult female (USNM 122902, holotype).
Eusarsiella punctata: 1 whole dry specimen (USNM 122914, holotype).
Eusarsiella "carinata": 1 fragmented dry specimen (USNM 122911).
Eusarsiella capillaris: 1 whole dry specimen (USNM 122910, holotype).
Eusarsiella costata: 1 dry specimen (USNM 122912, holotype).
Eusarsiella gigacantha: 1 A–1 male (USNM 122913, holotype); 1 adult male (USNM 152314).
Eusarsiella uncus: 1 adult female (USNM 122915).

Cuba

Gulf of Batabano; sta 19; 23 Mar 1969; depth 4 m; coarse white sand, *Thalassia* present; Rastra

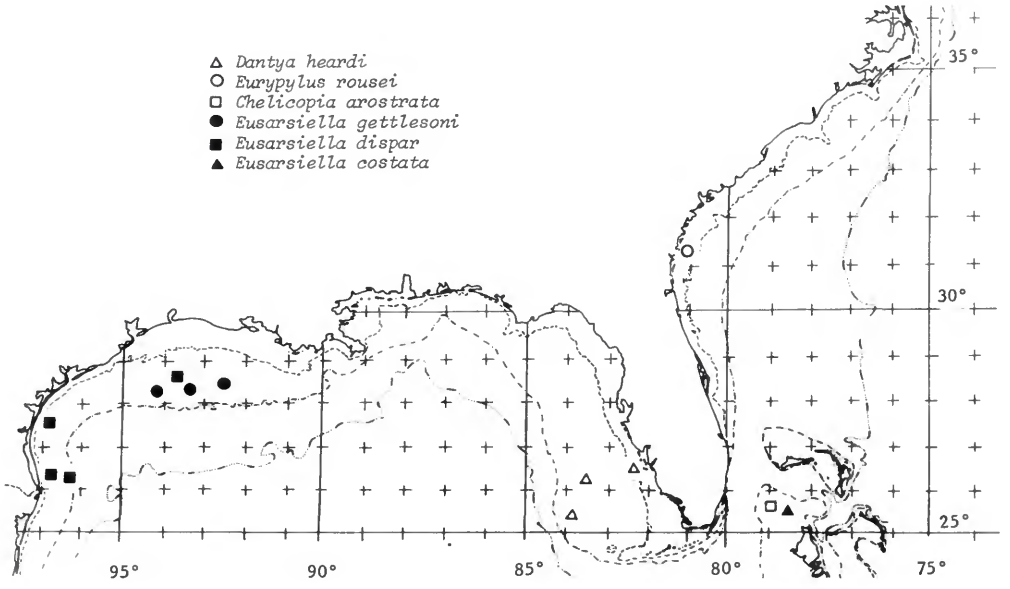


FIGURE 1.—Distribution of *Dantya heardi, Eurypylus rousei, Chelicopia arostrata, Eusarsiella gettlesoni, E. dispar,* and *E. costata.* (Some closely spaced stations are represented by a single symbol; depth contours represent 10, 100, and 1000 fathoms.)

dredge; collected by Dr. Trian Marian Gomoiu; Received from Dr. Francisca Elena Caraion, Institute of Biological Sciences, Bucharest, Romania.

Chelicopia arostrata: 1 ovigerous female (USNM 158582); 1 specimen returned to the Museum of Natural History "Grigore Antipa," Bucharest, Romania.

DOMINICAN REPUBLIC

Boca Chica; 14 Feb 1969; about 13 miles east of Santo Domingo; sta 10; 18°26′36″N, 69°36′36″W; shallow beach, sand between grass patches; collected by Meredith L. Jones.

Eusarsiella dominicana: 1 ovigerous female (USNM 154196)

VENEZUELA

Venezuela (mainland), Cumaná area; sta C-78-1-4; 16 Jan 1978; Turpialito, about 20 km east of central Cumaná, point near ferry terminal; water temperature 28°C; salinity 34‰; associated with rocks and algae; collected by hand by Meredith L. Jones.

Eusarsiella venezuelensis: 1 ovigerous female; (USNM 157807).

Eusarsiella species indeterminate; 1 juvenile male (USNM 158493).

Distribution

FIGURES 1–4

Eusarsiella zostericola has the greatest range of the species encountered in the study area. It is present in the bays and lagoons of the Atlantic coast from Canada to Florida and along the Gulf coast off Florida and south Texas. The maximum depth at which the species was collected is 44.5 m off Massachusetts. The same species has been reported from San Francisco Bay and estuaries in England, probably having been transported there with oysters transplanted from the Atlantic coast of North America (Kornicker, 1975b). *Eusarsiella texana* and *E. spinosa* live in bays and

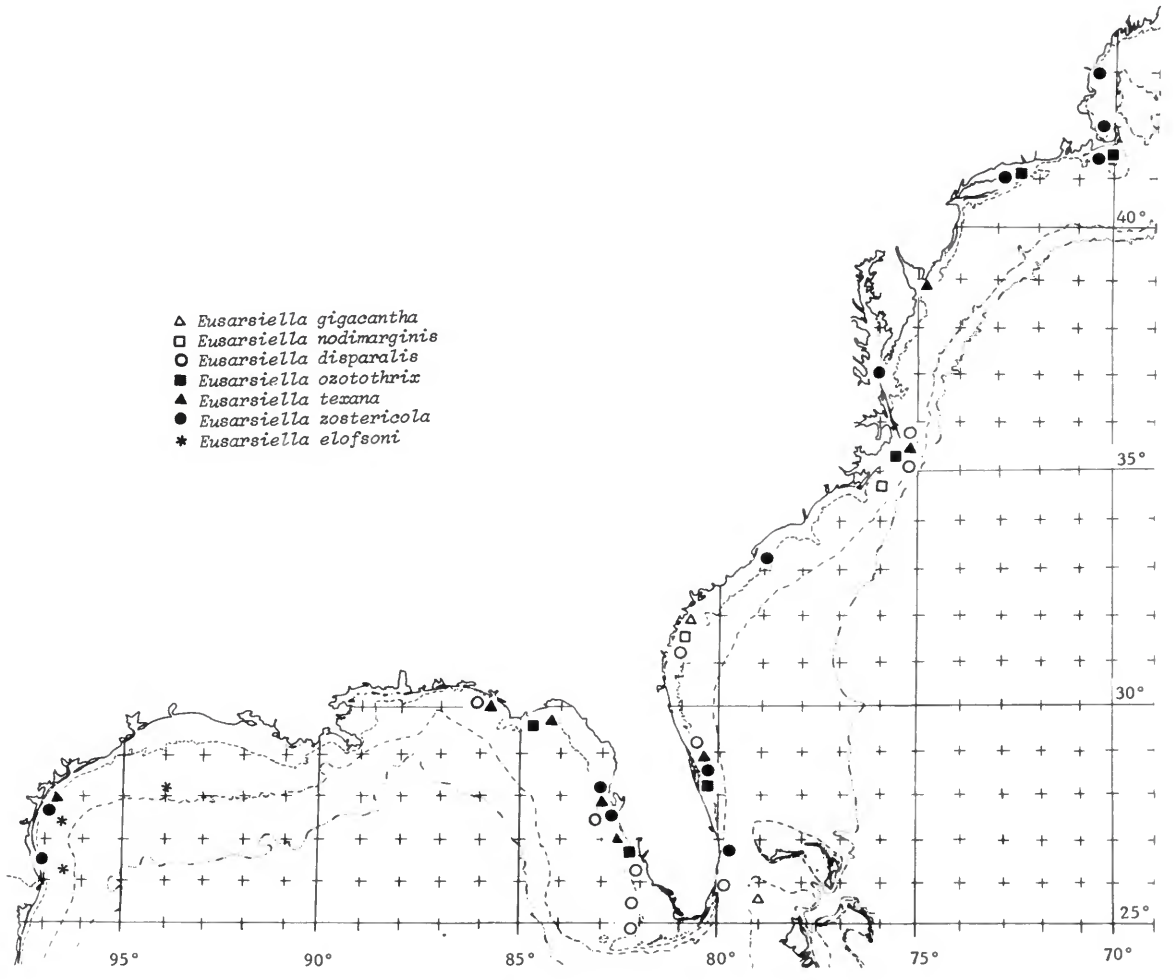


FIGURE 2.—Distribution of *Eusarsiella gigacantha*, *E. nodimarginis*, *E. disparalis*, *E. ozotothrix*, *E. texana*, *E. zostericola*, and *E. elofsoni*. (Some closely spaces stations are represented by a single symbol; depth contours represent 10, 100, and 1000 fathoms.)

lagoons of the middle Atlantic coast and the northern Gulf coast as well as offshore at depths less than 60 m. *Eusarsiella radiicosta* is fairly abundant in waters ranging in depth from about 14 to 134 m off the middle Atlantic and northern Gulf coasts. *Eusarsiella disparalis* is present in lagoons as well as offshore along the Atlantic coast from Georgia to Florida and along the Gulf coast off Florida. *Eusarsiella dispar*, a species closely related to *E. disparalis*, was collected off Texas at depths of 3–100 m. *Eusarsiella pilipollicis* was encountered off the middle Atlantic coast at depths of 40–114 m, and off the northern Gulf coast at depths of 62–100 m. *Eusarsiella ozotothrix* was collected in shallow waters from Massachusetts to Florida and in Florida bays of the Gulf of Mexico. *Eusarsiella greyi* lives on the continental shelf off Georgia and in the northern Gulf of Mexico at depths of about 25–52 m.

Eusarsiella capillaris was collected in the Bahamas and in the Gulf of Mexico off Florida at intertidal depths and as deep as 22.5 m. *Eusar-*

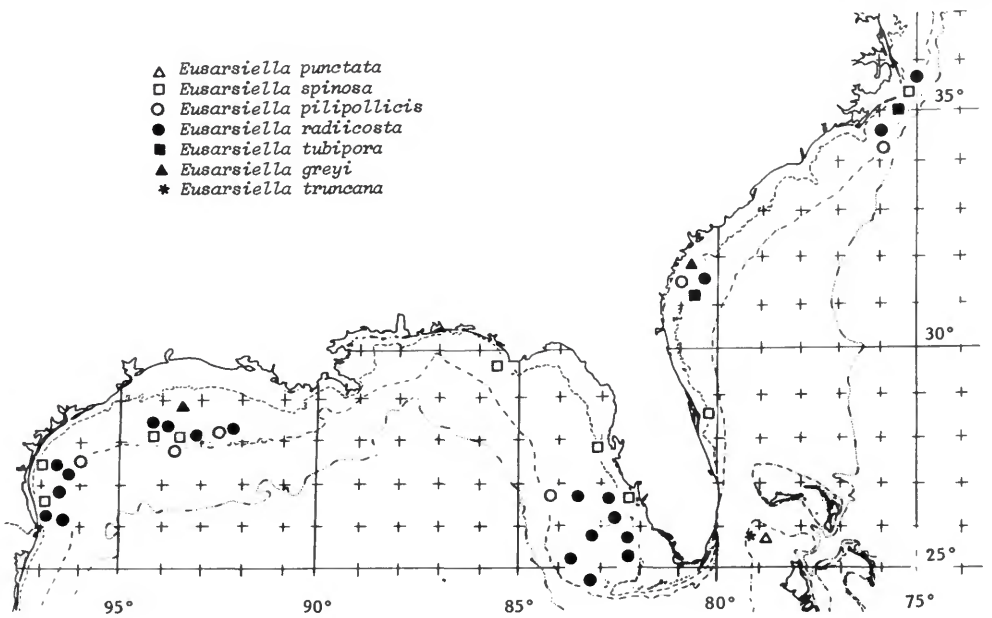


FIGURE 3.—Distribution of *Eusarsiella punctata*, *E. spinosa*, *E. pilipollicis*, *E. radiicosta*, *E. tubipora*, *E. greyi*, and *E. truncana*. (Some closely spaced stations are represented by a single symbol; depth contours represent 10, 100, and 1000 fathoms.)

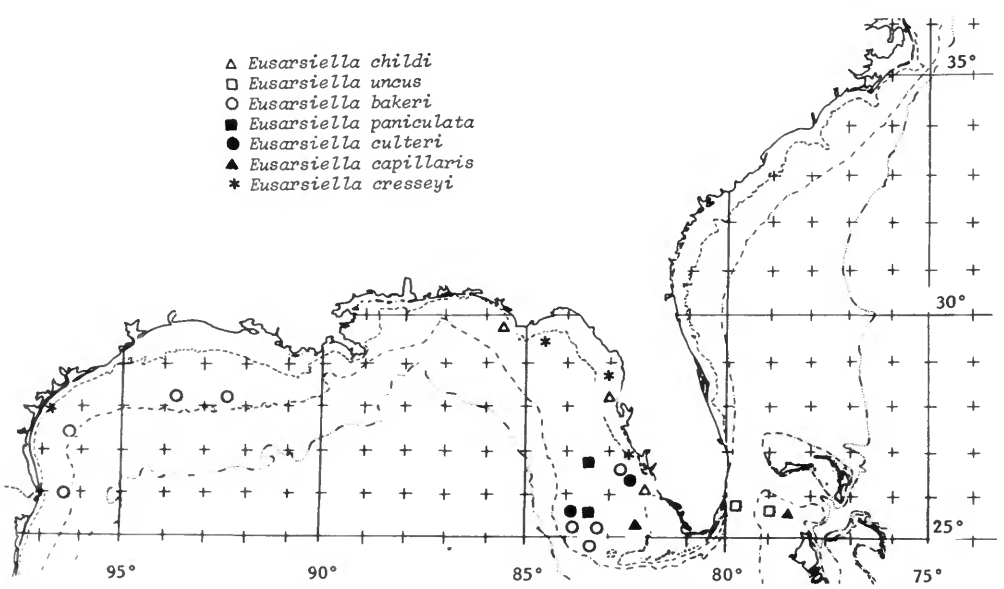


FIGURE 4.—Distribution of *Eusarsiella childi*, *E. uncus*, *E. bakeri*, *E. paniculata*, *E. culteri*, *E. capillaris*, and *E. cresseyi*. (Some closely spaced stations are represented by a single symbol; depth contours represent 10, 100, and 1000 fathoms.)

TABLE 1.—Distribution and known depth range (m) of the Sarsiellidae of the Western Atlantic and Northern Gulf of Mexico (dash indicates not collected; question mark indicates collected, but depth unknown).

Location	*Dantya*					*Eusarsiella*								
	magnificia	*heardi*	*Eurytylus rousei*	*Chelicopia arostrata*	*Parasarsiella globulus*	*punctata*	*truncana*	*"carinaa"*	*alata*	*cornuta*	*ovalis*	*denitifera*	*spicata*	*absens*
ATLANTIC														
Canada	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Maine	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Massachusetts	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rhode Island	–	–	–	–	–	–	–	–	–	–	–	–	–	–
New York	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Delaware	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Maryland	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Virginia	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North Carolina	–	–	–	–	–	–	–	–	–	–	–	–	–	–
South Carolina	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Georgia	–	–	11–29.3	–	–	–	–	–	–	–	–	–	–	–
Florida	–	–	–	–	–	–	–	–	–	–	–	–	–	–
GULF OF MEXICO														
Florida	–	10–148	–	–	–	–	–	–	–	–	–	–	–	–
Louisiana	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Texas														
East Flower Garden vicinity	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Off Galveston	–	–	–	–	–	–	–	–	–	–	–	–	–	–
South Texas	–	–	–	–	–	–	–	–	–	–	–	–	–	–
WEST INDIES														
Bahama Islands	–	–	–	1–3	–	1–5	1–20	1–20	–	–	–	–	–	–
Virgin Islands	–	–	–	–	?	–	–	–	5	5	50	34–40	50	–
Cuba	–	–	–	4	–	–	–	–	–	–	–	–	–	–
Dominician Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BELIZE	9–20	–	–	–	–	–	–	–	–	–	–	–	–	–
VENEZUELA	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BERMUDA	–	–	–	–	–	–	–	–	–	–	–	–	–	shallow

TABLE 1.—*Continued.*

Location	*Eusarsiella*													
	zostericola	*capillaris*	*paniculata*	*costata*	*gigacantha*	*spinosa*	*greyi*	*texana*	*disparalis*	*nodimarginis*	*radiicosta*	*pilipollicis*	*ozothotrix*	*dispar*
ATLANTIC														
Canada	shallow	–	–	–	–	–	–	–	–	–	–	–	–	–
Maine	?	–	–	–	–	–	–	–	–	–	–	–	–	–
Massachusetts	0.3–44.5	–	–	–	–	–	–	–	–	–	–	–	3	–
Rhode Island	2	–	–	–	–	–	–	–	–	–	–	–	–	–
New York	23.5	–	–	–	–	–	–	–	–	–	–	–	23.5	–
Delaware	?	–	–	–	–	–	–	–	–	–	–	–	–	–
Maryland	1	–	–	–	–	–	–	shallow	–	–	–	–	–	–
Virginia	shallow	–	–	–	–	–	–	shallow	–	–	–	–	–	–
North Carolina	–	–	–	–	–	36	–	35–39	34	36	31–130	40–80	31–35	–
South Carolina	shallow	–	–	–	–	–	–	–	–	–	–	–	–	–
Georgia	–	–	–	–	24.7	–	24.7	12	12–19	30–114	24.7–36.9	114	–	–
Florida	0.15–2	–	–	–	–	0.15–0.73	–	0.15–0.48	0.25–1	–	–	–	0.44	–
GULF OF MEXICO														
Florida	1–3	22.5	22.5–58.5	–	–	1–3	26.0–26.5	1–3	1–88.4	–	13.9–88.4	– 90.8	shallow	–
Louisiana	–	–	–	–	–	–	–	–	–	–	60–62	62	–	–
Texas														
East Flower Garden vicinity	–	–	–	–	–	–	–	–	–	–	–	99	–	–
Off Galveston	–	–	–	–	–	53–57.5	51.7	–	–	–	49.25–57.5	–	–	51.75–57.5
South Texas	0.3–3	–	–	–	–	1.8–15	–	0.6	–	–	15–134	100	–	3–100
WEST INDIES														
Bahama Islands	–	inter-tidal–20	–	1–5	1–20	–	–	–	–	–	–	–	–	–
Virgin Islands	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cuba	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dominican Republic	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BELIZE	–	–	–	–	–	–	–	–	–	–	–	–	–	–
VENEZUELA	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BERMUDA	–	–	–	–	–	–	–	–	–	–	–	–	–	–

TABLE 1.—*Continued.*

Location	*Eusarsiella*													
	tubipora	*gettlesoni*	*uncus*	*childi*	*cresseyi*	*elofsoni*	*bakeri*	*vema*	*dominicana*	*venezuelensis*	*athrix*	*culteri*	*species B*	*species C*
Atlantic														
Canada	–	–	–	–	–	–	–	42	–	–	–	–	–	–
Maine	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Massachusetts	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Rhode Island	–	–	–	–	–	–	–	–	–	–	–	–	–	–
New York	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Delaware	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Maryland	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Virginia	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North Carolina	33	–	–	–	–	–	–	–	–	–	–	–	–	–
South Carolina	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Georgia	39	–	–	–	–	–	–	–	–	–	–	–	24.7	24.7
Florida	–	–	2	–	–	–	–	–	–	–	–	–	–	–
GULF OF MEXICO														
Florida	–	–	–	1.25–12.8	0.75–3	–	52.7–88.4	–	–	–	–	55.8–88.4	–	–
Louisiana	–	60–62	–	–	–	–	–	–	–	–	–	–	–	–
Texas														
East Flower Garden vicinity	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Off Galveston	–	50–56	–	–	–	53	51.75–57.75	–	–	–	–	–	–	–
South Texas	–	65	–	–	1.8	65–82	65–91	–	–	–	–	–	–	–
WEST INDIES														
Bahama Islands	–	–	2–20	–	–	–	–	–	–	–	2.4	–	–	–
Virgin Islands	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cuba	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Dominican Republic	–	–	–	–	–	–	–	–	shallow	–	–	–	–	–
BELIZE	–	–	–	–	–	–	–	–	–	–	–	–	–	–
VENEZUELA	–	–	–	–	–	–	–	–	–	shallow	–	–	–	–
BERMUDA	–	–	–	–	–	–	–	–	–	–	–	–	–	–

siella paniculata, a species very closely related to *E. capillaris*, was collected only in the Gulf of Mexico off Florida at depths of 22.5–58.5 m. In one sample both species occurred together. *Eusarsiella gigacantha* was collected off Georgia and in the Bahamas at depths of 1–24.7 m. *E. uncus* was collected on the Atlantic shelf off Florida and in the Bahamas at depths of 2–20 m. *Chelicopia arostrata* was encountered in shallow waters of the Bahamas and Cuba.

Species encountered only along the Atlantic coast are *Eusarsiella vema* (off Canada), *E. tubipora* and *E. nodimarginis* (off North Carolina and Georgia), and *Eurypylus rousei* (off Georgia). Species encountered only in the Gulf of Mexico are *Dantya heardi*, *Eusarsiella childi*, *E. paniculata*, and *E. culteri* (off Florida), *E. cresseyi* and *E. bakeri* (off Florida and Texas), *E. gettlesoni* (off Louisiana and Texas), *E. dispar*, and *E. elofsoni* (off Texas).

Species collected only in the Bahamas are *E. punctata*, *E. truncana*, *E. "carinata,"* *E. costata*, and *E. athrix*. Species encountered only in the Virgin Islands are *E. alata*, *E. cornuta*, *E. ovalis*, *E. dentifera*, and *E. spicata*. *Eusarsiella absens* was collected only in Bermuda, *E. dominicana* only in the Dominicana Republic, and *E. venezuelensis* only in the vicinity of Venezuela. *Parasarsiella globulus* has been collected at an unknown depth off St. Croix, Virgin Islands, and also at depths of 932–2333 m off West Africa. The distribution of species discussed herein, except localities south of latitude 24°S and Bermuda, is shown in Figures 1–4; the maps include previously reported localities as well as new localities. The distribution of species is also shown in Table 1.

SARSIELLIDAE Brady and Norman, 1896

COMPOSITION.—The Sarsiellidae is comprised of 2 subfamilies: Sarsiellinae Brady and Norman, 1896, and Dantyinae Kornicker and Cohen, 1978. Both subfamilies have representatives in the study area.

DISTRIBUTION.—The known latitudinal range of members of this family is 63°N and 73°29'S, and the known depth range is intertidal to 4758 m (Kornicker and Caraion, 1980:2).

Key to the Subfamilies of the Sarsiellidae

(Females and juvenile males)

Carapace with prominent rostrum; second and third joints of endopodite of mandible with at least 2 stout claws . . . . . DANTYINAE

Carapace without rostrum or with minute rostrum; second and third joints of mandible with 1 stout claw . . . . . SARSIELLINAE

DANTYINAE Kornicker and Cohen, 1978

COMPOSITION.—This subfamily is comprised of 2 genera, *Dantya* Kornicker and Cohen (1978:491), and *Nealella* Kornicker and Caraion (1980:4). Only *Dantya* is represented in the study area.

DISTRIBUTION.—Members of this subfamily were previously known from the Caribbean Sea (Belize), the Indian Ocean, Indonesia, and Australia (Lizard Island, Great Barrier Reef). The range is extended to the Gulf of Mexico herein. Known depth range 10–550 m.

Dantya Kornicker and Cohen, 1978

Dantya Kornicker and Cohen, 1978:491.

TYPE-SPECIES.—*Dantya magnifica* Kornicker and Cohen, 1978:492.

COMPOSITION.—This genus is represented in the Gulf of Mexico by a new species, *Dantya heardi*. Another species, *D. magnifica* Kornicker and Cohen (1978:492), is known from Caribbean coral reefs off Belize. Three additional species live in the western Indian Ocean.

DISTRIBUTION.—Caribbean Sea, western Indian Ocean, Gulf of Mexico. Known depth range 10–550 m.

Key to Species of *Dantya*

(West Atlantic and Gulf of Mexico)

Surface of carapace with numerous knob-like processes; upper lip without anterior process ..... ***D. magnifica***
Surface of carapace without knob-like processes; upper lip with stout anterior process ..... ***D. heardi***

Dantya magnifica Kornicker and Cohen, 1978

FIGURE 5

Dantya magnifica Kornicker and Cohen, 1978: 490, figs. 1–5, pls. 1–7.—Kornicker, 1983:2 [key].

HOLOTYPE.—USNM 157129, juvenile female on slides and in alcohol.

TYPE-LOCALITY.—Carrie Bow Cay, Belize, 16°48′N, 88°05′W, about 20 m.

MATERIAL.—None.

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

DIAGNOSIS.—Ventral margin of rostrum forming right angle with anterior margin of valve ventral to rostrum; surface of valve reticulate and with numerous minute knob-like processes (Figure 5).

Upper Lip: Without anterior process.

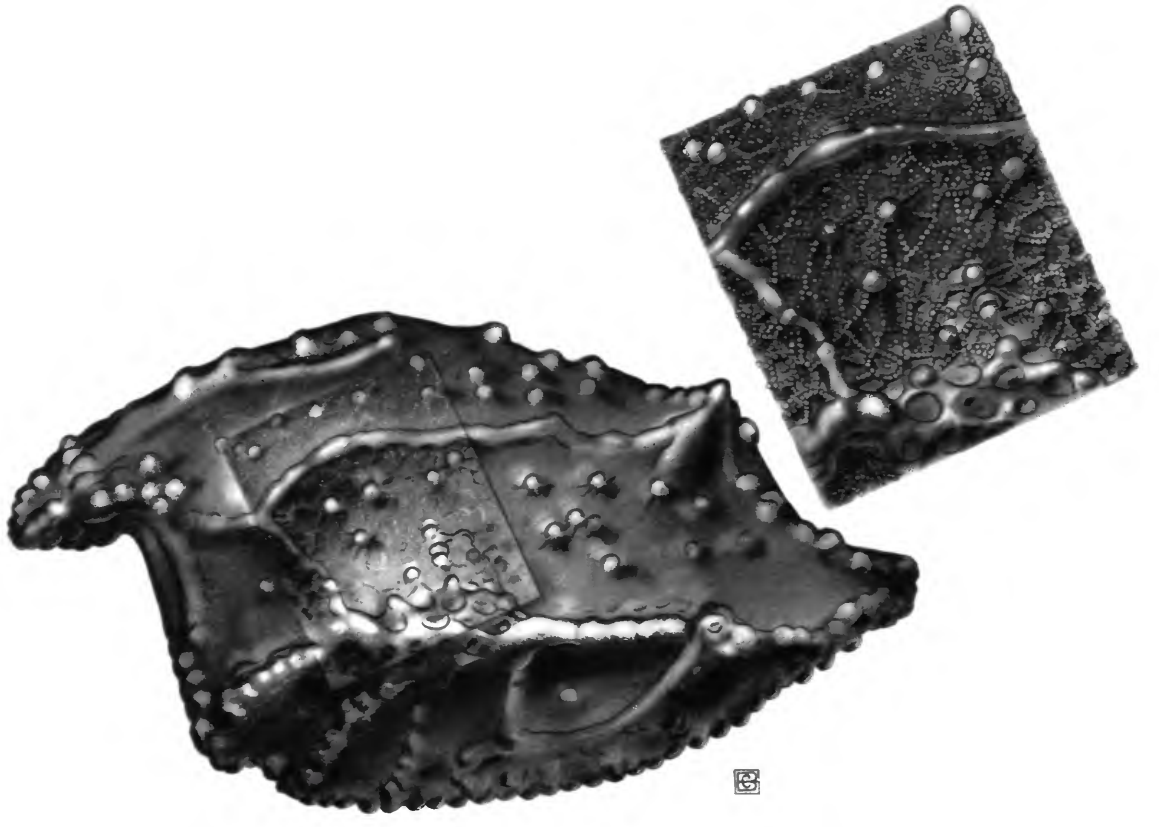


FIGURE 5.—*Dantya magnifica*, USNM 157129, instar IV female, holotype, complete carapace, length 1.05 mm.

FIGURE 6.—*Dantya heardi*, new species, USNM 158730, paratype, adult female, length 1.61 mm: lateral view of complete specimen and detail of fossae.

Dantya heardi, new species

FIGURES 6–8

ETYMOLOGY.—The species is named for Richard W. Heard, who supplied some specimens.

HOLOTYPE.—USNM 193083, 1 ovigerous female in alcohol.

TYPE-LOCALITY.—Southwest Florida continental shelf, sta 2104.

PARATYPES.—Southwest Florida shelf: sta 37: 1 A–1 male, USNM 158838; 2 juveniles, USNM 193084; 1 female + 2 juveniles, USNM 193085; 1 juvenile male, USNM 193088. Sta 2101: 1 ovigerous female, USNM 193089. Sta 2104: 1 ovigerous female, USNM 158730; 1 juvenile male, USNM 158725; 3 juveniles, USNM 193087; 1 juvenile, USNM, 193090.

DISTRIBUTION.—Continental shelf off southwest Florida; depth 10–148 m (Figure 1, Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 6–8).—Carapace elongate with well developed ros-

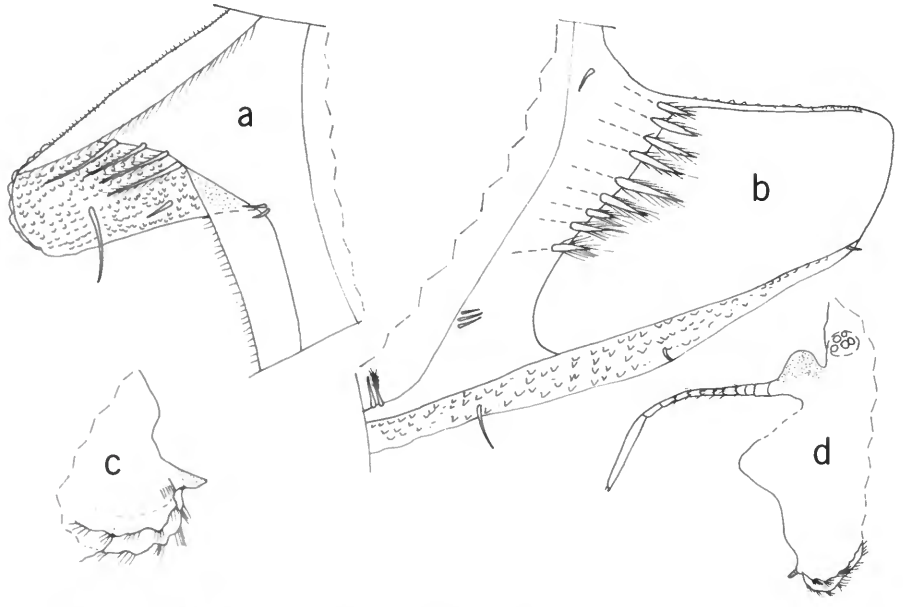


FIGURE 7.—*Dantya heardi*, new species, USNM 158730, paratype, adult female, length 1.61 mm: *a*, inside view of rostrum; *b*, inside view of caudal process; *c*, lateral view of upper lip, anterior to right; *d*, anterior of body showing, left lateral eye, medial eye, bellonci organ, and upper lip.

FIGURE 8.—*Dantya heardi*, new species, USNM 158730, paratype, adult female, length 1.61 mm: *a*, left first antenna, medial view; *b*, endopodite of left second antenna, medial view; *c*, right mandible, lateral view; *d*, left maxilla, lateral view; *e*, distal part of left fifth limb, anterior view; *f*, distal part of right fifth limb, posterior view (exopodial joints 3–5 not shown); *g*, sixth limb; *h*, seventh limb.

trum and caudal process (Figure 6); rostrum forming right-angle with anterior edge of valve ventral to rostrum; dorsal margin with distinct angles at anterior and posterior ends of hingement and linear along extent of hinge; ventral margin broadly convex and overhanging valve edge; anterior part of medial side of rostrum forming part of shell exterior and bearing 2 bristles (Figure 7*a*).

Ornamentation (Figure 6): Horizontal rib extending from ventral edge of rostrum to angle forming posterior end of hinge; second horizontal rib extending from anteroventral corner of valve to point on ventral margin anterior to caudal process (this ridge intersecting lower edge of adductor muscle attachment area); third rib lying just wthin ventral margin of valve; fourth rib extending from dorsal edge of rostrum to posterodorsal margin in vicinity of posterior end of hinge and lying just within dorsal margin of valve; rib along ventral edge of rostrum dividing in vicinity of inner end of incisur to form 2 branches, 1 extending to anterior margin of valve in vicinity of second horizontal rib, other branch continuing posteriorly to vicinity of central adductor muscle attachments and then bending ventrally to intersect second horizontal rib; vertical rib connecting first and second horizontal ribs in posterior part of valve anterior to caudal process. Carapace with numerous fossae bearing minute spines (see detail in Figure 6); surface of valves between fossae and on ribs with spines smaller than those in fossae. Long bristles present along ventral margin of valve and sparsely distributed on lateral surface.

Infold (Figure 7*a*,*b*): Infold of rostrum with 4 spinous bristles along anterior; 2 small bristles at inner edge of incisur (Figure 7*a*); infold of caudal process with 9 broad spinous bristles forming row near anterior part of process; inner margin of infold anterior to caudal process with 1 dorsal and 3 ventral bristles and 2 bristles near ventral margin of valve (Figure 7*b*).

Selvage: Anterodorsal margin and anteroventral margin with broad lamella prolongation with hirsute fringe; fringe apparently absent on selvage along ventral margin; lamella prolongation absent on rostrum in vicinity of the 4 spinous bristles and along posterior edge of caudal process (Figure 7*a*).

Central Adductor Muscle Attachments: Consisting of about 20 ovoid attachments; these differ from fossae on valve in not having minute spines.

Size: USNM 158730, length 1.61 mm, height 0.84 mm; USNM 193083, length 1.68 mm. height 0.90 mm; USNM 193085, length 1.53 mm, height 0.90 mm; USNM 193089, length 1.67 mm, height 0.84 mm.

First Antenna (Figure 8*a*): First joint bare. Second joint: medial surface with spines forming rows; lateral surface with spines forming row along distal margin; dorsal margin with spinous bristle. Third joint short, not separated from fourth joint by suture, with 2 bristles, 1 ventral, 1 dorsal. Fourth joint elongate, with 3 bristles, 2 ventral, 1 dorsal. Fifth joint elongate; sensory bristle with 6 short marginal filaments and spine at tip. Sixth joint minute, fused to fifth joint, with spinous medial bristle about ½ length of sensory bristle of fifth joint. Seventh joint: a-bristle spinous, slightly longer than bristle of sixth joint; b-bristle slightly longer than a-bristle, with 1 short marginal filament and spine at tip; c-bristle about same length as sensory bristle, with about 4 short marginal filaments and minute spine at tip. Eighth joint: d- and e- bristles about same length as sensory bristle, bare with blunt tips; f-bristle with 6 short marginal filaments (tip broken off on illustrated limb); g-bristle about same length as sensory bristle, with 6 short marginal filaments and spine at tip.

Second Antenna (Figure 8*b*): Protopodite bare. Endopodite 2-jointed: first joint with 2 short proximal anterior bristles; second joint with long spinous terminal bristle. Exopodite: first joint with minute medial bristle bent at right-angle; joints 2–8 with slender spines forming row along distal margins; joints 4–8 with basal spines increasing in size on distal joints; basal spine of eighth joint longer than small ninth joint; bristles of joints 2–8 long, with 6–8 stout proximal ven-

tral spines and distal natatory hairs; rings bearing spines longer than those bearing hairs; ninth joint with 3 bristles (1 long bristle with 6 proximal ventral spines and distal natatory hairs, 2 small with short slender hairs).

Mandible (Figure 8*c*): Coxale with hirsute ventral margin; endite well developed, with long proximal hairs. Basale: dorsal margin with mid-bristle reaching past end of joint and 2 terminal bristles (proximal of these about ½ length of other); medial side with 2 small bristles near ventral margin; lateral side with 2 or 3 small bristles forming row near ventral margin; ventral margin with 4 small bristles. Exopodite minute, with 1 terminal bristle reaching past midlength of dorsal margin of first endopodial joint. First endopodial joint: dorsal margin with slender spines forming terminal row extending onto lateral surface; ventral margin with 1 small bristle and 2 long spinous claws. Second endopodial joint: dorsal margin with 4 bristles near midlength; lateral side with pectinate, unringed, short, claw-like bristles near middle of distal margin; ventral margin with 2 stout claws (proximal claw with slender ventral and dorsal spines; distal claw with 3 or 4 slender teeth and 1 stout tooth proximally on ventral margin); slender spines forming row on joint between proximal and distal claws. Third endopodial joint with 2 long claws, 1 shorter dorsal claw (tip broken on illustrated limb), and 2 ventral bristles.

Maxilla (Figure 8*d*): Three endites present: endite I with 6 terminal bristles; endite II with 2 proximal and 3 or 4 terminal bristles; endite III with 2 proximal and 3 or 4 terminal bristles. Coxale with 1 hirsute dorsal bristle. Basale with 1 or 2 distal bristles. Exopodite minute, with 1 spinous bristle. Endopodite: first joint with hairs along outer margin, 1 spinous alpha-bristle and 1 spinous beta-bristle (beta-bristle stouter than alpha-bristle); end joint with 2 fairly long spinous a-bristles, 1 shorter spinous c-bristle, and 5 stout, pectinate, terminal bristles.

Fifth Limb (Figure 8*e,f*): Three endites present: endite 1 with 2 spinous bristles; endite 11 with 1–4 bristles, endite III with 6 bristles. Exopodite (interpretation uncertain): first exopodial joint with 3 marginal bristles; second exopodial joint consisting of stout squarish tooth with 2 bristles along inner edge; third joint obscure but seemingly with 1 bristle on inner lobe and 1 on outer lobe; fused fourth and fifth joints with 3 bristles.

Sixth Limb (Figure 8*g*): Three endites present: endites 1 and II each with 2 short spinous bristles; endite III with 4 or 5 spinous bristles; endite 1V with 5 or 6 spinous bristles. End joint hirsute, with 8 spinous or hirsute bristles; a single ringed bristle on posterior margin.

Seventh Limb (Figure 8*h*): Each limb with 3 or 4 proximal bristles (1 or 2 on each side), and 6 terminal bristles (3 on each side); each bristle with 3–8 bells. Terminus consisting of comb with about 6 alate teeth opposite 2 small pegs.

Furca: Each lamella with 6 claws; claw 1 fused to lamella, remaining claws separated from lamella by sutures; claw 4 stouter than claw 3; anterior of lamella proximal to claw 1 hirsute; each claw with teeth along posterior margin. Furca similar to that of *D. magnifica* (Kornicker and Cohen, 1978: fig. 4d).

Bellonci Organ (Figure 7*d*): Elongate with 11 proximal sutures and rounded tip bearing spine. Hairs forming row along distal margins of segments visible under oil immersion.

Eyes (Figure 7*d*): Medial eye bare, pigmented brown. Lateral eye about same size as medial eye, with 4 or 5 amber ommatidia.

Upper Lip (Figure 7*c*): Consisting of left and right lobe, each with undulating margin and slender spines forming rows (both lobes shown on illustrated lip). A single stout tooth projecting anteriorly between lobes.

Genitalia: Consisting of small sclerotized ring on each side of body anterior to furca.

Y-Sclerite: Typical for genus.

Eggs: USNM 158730 with 3 well-developed eggs in marsupium as well as large unextruded undeveloped eggs; USNM 193083 with 4 eggs in marsupium; USNM 193089 with 2 eggs in marsupium.

COMPARISONS.—The carapace of *D. heardi* re-

sembles that of *D. magnifica* in that the rostrum forms a right angle with the anterior part of the valve ventral to the rostrum. On other species of *Dantya* the rostrum overhangs the incisur. The carapace of *D. heardi* does not have the numerous knob-like processes present on the carapace of *D. magnifica*. The upper lip of *D. heardi* bears a stout anterior process (Figure 7*c*) not present on the upper lip of *D. magnifica*.

REMARKS.—Juvenile males in the collection have a 3-jointed endopodite on the second antenna, indicating that the adult male endopodite is formed as a clasping organ. A complete copepod was observed in the gut of a juvenile male, indicating that like other members of the Sarsiellidae of which the gut content is known the Dantyinae are carnivores. An A−1 male (USNM 158838) has a well developed seventh limb bearing strongly tapering bristles. The presence of well-developed eggs in the marsupium of USNM 158730, which also bears unextruded undeveloped eggs, indicates that the species bears more than one brood.

SARSIELLINAE Brady and Norman, 1896

COMPOSITION.—The Sarsiellinae as revised herein is comprised of 12 genera, of which 4 are known from the study area: *Eusarsiella*, *Chelicopia*, *Eurypylus*, and *Parasarsiella*. Only *Eusarsiella* is represented by more than 1 species.

DISTRIBUTION.—Same as for Sarsiellidae.

Insufficient information is available to refer several species to genera, although they probably belong in either *Sarsiella* or *Eusarsiella* as emended herein. These species are *Eusarsiella guttata* Poulsen (1965:123), *Sarsiella simplex* Brady (1890:516), and *S. carinata* Scott (1905:368). I refer to the category "Genus and Species Indeterminate," two species known only from external views of the carapace: *Sarsiella rudis* Brady (1907:517), and *S. foveata* Brady (1890:517), both members of the Sarsiellinae.

Bonaduce et al. (1983:478), in a paper dealing with ostracodes from the Red Sea state, "Some specimens pertaining to the myodocopid genera *Anchoenia* [*Ancohenia*], *Rutiderma*, and *Sarsiella* were found in these samples but not discussed because of the scattered and rare findings." In figure 2 of that paper SEM micrographs of the carapaces of three specimens are presented: *Ancohenia*(?) sp. 1 (fig. 2:1–3); *Rutiderma*(?) sp. (fig. 2:4); and *Sarsiella* sp. 1 (fig. 2:5). At my request Dr. Bonaduce kindly forwarded for my examination representatives of the three illustrated species. A dry slide labeled "?*Ancohenia* n. sp., Red Sea, St. 5, Jackson Reef, 36 m, L = 0.75, H = 0.58" contained a left and right valve and also dried soft parts. I chemically treated the soft parts and mounted them in glycerine on a glass slide. The valves of the specimen examined do not appear to have a carbon or metallic coating usually used when taking SEM micrographs, and therefore, may not be the illustrated specimen (fig. 2:1–3). In my opinion, however, the specimens are conspecific. The specimen I examined is the first instar of a cylindroleberid, which I herewith refer to *Actinoseta* sp. Because of the immaturity of the specimen examined the generic referral must be considered tentative. The microstructures on the carapace of the species (fig. 2:3) indicate that it may be an undescribed species. Another dry slide labeled"? *Rutiderma*, Red Sea, N3, L = 0.63, H = 0.25" contained the coated valve illustrated in Bonaduce et al. (1983, fig. 2:4). In medial view the valve has a long straight dorsal margin having what appears to be a socket at each end. I cannot relate the valve to any known myodocopid, and therefore, refer it herewith to the category "incertae sedis." A third slide labeled "*Sarsiella* sp. 1, L = 0.62, H = 0.52, Red Sea, St. 5, Jackson Reef, 36 m" bears an uncoated right valve having appendages within it, and also, a small, coated shell fragment of presumably the left valve. The left valve is illustrated by Bonaduce et al. (1983, fig. 2:5) and is probably the left valve of the specimen I received. I herewith refer the species to *Rutiderma* sp.

Key to Genera of Sarsiellinae

(Adult and Instar IV females)

1. Furca without secondary claws between primary claws 2
   Furca with secondary claws between primary claws 9
2. Furca with only claw 1 fused to lamella 3
   Furca with at least 2 claws fused to lamella 6
3. Furca with 7 claws ..... ***Parasarsiella***
   Furca with 5 claws 4
4. First antenna without d-bristle ..... ***Adelta***
   First antenna with d-bristle 5
5. Seventh limb with terminal teeth ..... ***Eusarsiella***
   Seventh limb without terminal teeth ..... ***Sarsiella***
6. Furca with claws 1, 2, and 3 fused to lamella ..... ***Junctichela***
   Furca with claws 1 and 2 fused to lamella 7
7. First antenna with claw-like c-, f-, and g-bristles ..... ***Anscottiella***
   First antenna with bristle-like c-, f-, and g-bristles 8
8. Infold of caudal process with spinous bristles forming row along list; posterior infold without 2 setal bristles ..... ***Cymbicopia***
   Infold of caudal process without spinous bristles forming row along list; posterior infold with 2 setal bristles ..... ***Eurypylus***
9. Furca with claw 4 fused to lamella 10
   Furca with claw 4 separated from lamella by suture 11
10. First antenna with claw-like f- and g-bristles ..... ***Ancohenia***
    First antenna with bristle-like f- and g-bristles ..... ***Chelicopia***
11. Infold of caudal process with spinous bristles forming row along list; posterior infold without 2–3 setal bristles, only claw 1 of furca fused to lamella ..... ***Spinacopia***
    Infold of caudal process without spinous bristles forming row along list; posterior infold with 2–3 setal bristles; only claw 1, or both claws 1 and 2 of furca fused to lamella ..... ***Neomuelleriella***

Sarsiella, Norman, 1869, emended

Sarsiella Norman, 1869:293.

TYPE-SPECIES.—*Sarsiella capsula* Norman, 1869:293.

COMPOSITION.—*Sarsiella* as emended is comprised of the 16 species listed in Table 2. None are from the study area.

DISTRIBUTION.—The type-species, *S. capsula*, has been collected from the Mediterranean Sea and in the eastern Atlantic off the west coast of Africa; another species, *S. anommata*, has been collected also along the west coast of Africa; Poulsen (1965) has described 9 species from the vicinity of Thailand; Hiruta (1977, 1978) has described 2 species from the vicinity of Japan, and Chavtur (1983) has described 2 species from the Vietnam area. The known depth range of this genus is 3–534 m.

DIAGNOSIS.—First antenna: Female limb with normal rather than claw-like c-, f-, and g-bristles; d-bristle present.

Seventh Limb: Tip of female limb without teeth.

Furca: Each lamella with 5 claws; claw 1 fused to lamella, claws 2–5 separated from lamella by

TABLE 2.—Species of *Sarsiella* and morphology of the endopodite of the second antenna and the seventh limb of the adult or instar IV male (P = prehensile, 3-jointed; R = reduced, bare; dash indicates no data).

Species	Endopodite male second antenna	Male seventh limb
S. japonica Hiruta, 1977	P	R
S. misakiensis Kajiyama, 1912	P	R
S. anommata Kornicker and Caraion, 1978	–	–
S. capsula Norman, 1869	P	R
S. maculata (Poulsen, 1965)	P	R
S. striata (Poulsen, 1965)	–	–
S. verae (Poulsen, 1965)	P	R
S. longicornis (Poulsen, 1965)	P	R
S. armata (Poulsen, 1965)	P	R
S. nana (Poulsen, 1965)	–	–
S. multispinosa (Poulsen, 1965)	P	R
S. parvispinosa (Poulsen, 1965)	P	R
S. spinulosa (Poulsen, 1965)	–	–
S. murrayana Scott, 1894	–	–
S. fadeevi Chavtur, 1983	P	R
S. anspinulosa Chavtur, 1983	P	–

suture. Claws decreasing in length posteriorly along lamella.

COMPARISONS.—*Sarsiella* as emended herein is the only genus in the Sarsiellinae not having teeth at the tip of the seventh limb of the adult female. An A−1 (instar IV) female having terminal teeth on the seventh limb would also identify the species as not belonging in *Sarsiella*; however, some A−1 female instars not having terminal teeth on the seventh limb may not belong in *Sarsiella*. Only the genera *Adelta* Kornicker, 1975, and *Eusarsiella* Poulsen, 1965, sensu meu herein, also have a furca bearing five claws that decrease in length posteriorly along the lamella, and only claw 1 is fused to the lamella. *Sarsiella* differs from *Adelta* in having a d-bristle on the eighth joint of the first antenna. Adult females of *Sarsiella* and *Eusarsiella* differ only in the absence or presence, respectively, of teeth on the tip of the seventh limb. The endopodite of the second antenna of some males of *Eusarsiella* are not prehensile, whereas, all known adult male specimens of known species of *Sarsiella* have a prehensile endopodite.

REMARKS.—No species of *Sarsiella* sensu meu were present in the collection studied herein, but it is not unlikely that additional studies will reveal their presence in the study area. Terminal teeth or processes are present on female seventh limbs of other myodocopid families; therefore, their absence on species of *Sarsiella* is interpreted to be a synapomorphic character state. Because the seventh limb is used in brood care, the absence of terminal teeth is probably of more than trivial importance. The adult or instar IV male is known for 11 of the 16 species referred to the genus herein. On all the known males the endopodite of the second antenna has three joints and is prehensile in the adult, and the seventh limb is reduced and bare (Table 2).

Chelicopia Kornicker, 1958

Chelicopia Kornicker, 1958:253.

TYPE-SPECIES.—*Chelicopia arostrata* Kornicker, 1958:253, monotypy.

COMPOSITION.—*C. arostrata* is the only species known from the study area. Three additional species are known: *C. rotunda* (Hartmann, 1959:199), *C. kornickeri* (McKenzie, 1965:69), and *C. tasmanensis* Kornicker (1981b:386).

DISTRIBUTION.—Bahama Islands; Pacific coast of El Salvador; Scammon Lagoon, Baja California, Mexico; and the Tasman Sea off the west coast of South Island, New Zealand. Known depth range 1–768 m.

Chelicopia arostrata Kornicker, 1958

FIGURES 9, 10

Chelicopia arostrata Kornicker, 1958:253, figs. 47:2A,B, 82A–C, 83A–D, 84A–E, 89G,K,N.—Poulsen, 1965:56.

HOLOTYPE.—USNM 122902, dry specimen on slide, probably adult female.

TYPE-LOCALITY.—Bimini Islands, Bahamas, sta 91-1 (just south of middle of South Bimini).

MATERIAL.—See "Station Data with Specimens Examined."

DISTRIBUTION.—Bahama Islands, Cuba (Figure 1). Known depth range 1–4 m (Table 1).

REMARKS.—Kornicker (1958:figs. 82A–C; 83C–D; 84A–D) illustrated appendages of an A–1 male, incorrectly identifying it as a female. In his description (p. 253) and illustration (fig. 82A) of the mandible, small digitations present on the distal dorsal margins of claws of the first and second endopodial joints were omitted.

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE (Figures 9, 10).—Carapace oval in lateral view with truncate posterior and linear posteroventral corner reflecting location of caudal process (Figure 9*a*,*c*).

Ornamentation (Figure 9*a*): Surface with abundant long hairs, some with pointed tips, others with minute bulb at tip (the latter type not indicated on Figure 9*a*) minute spines forming rows on surface, especially in vicinity of caudal process where rows parallel edge of process; the spines also common near and along edges of valves (spines not shown on Figure 9*a*); surface with shallow, faint, round fossae.

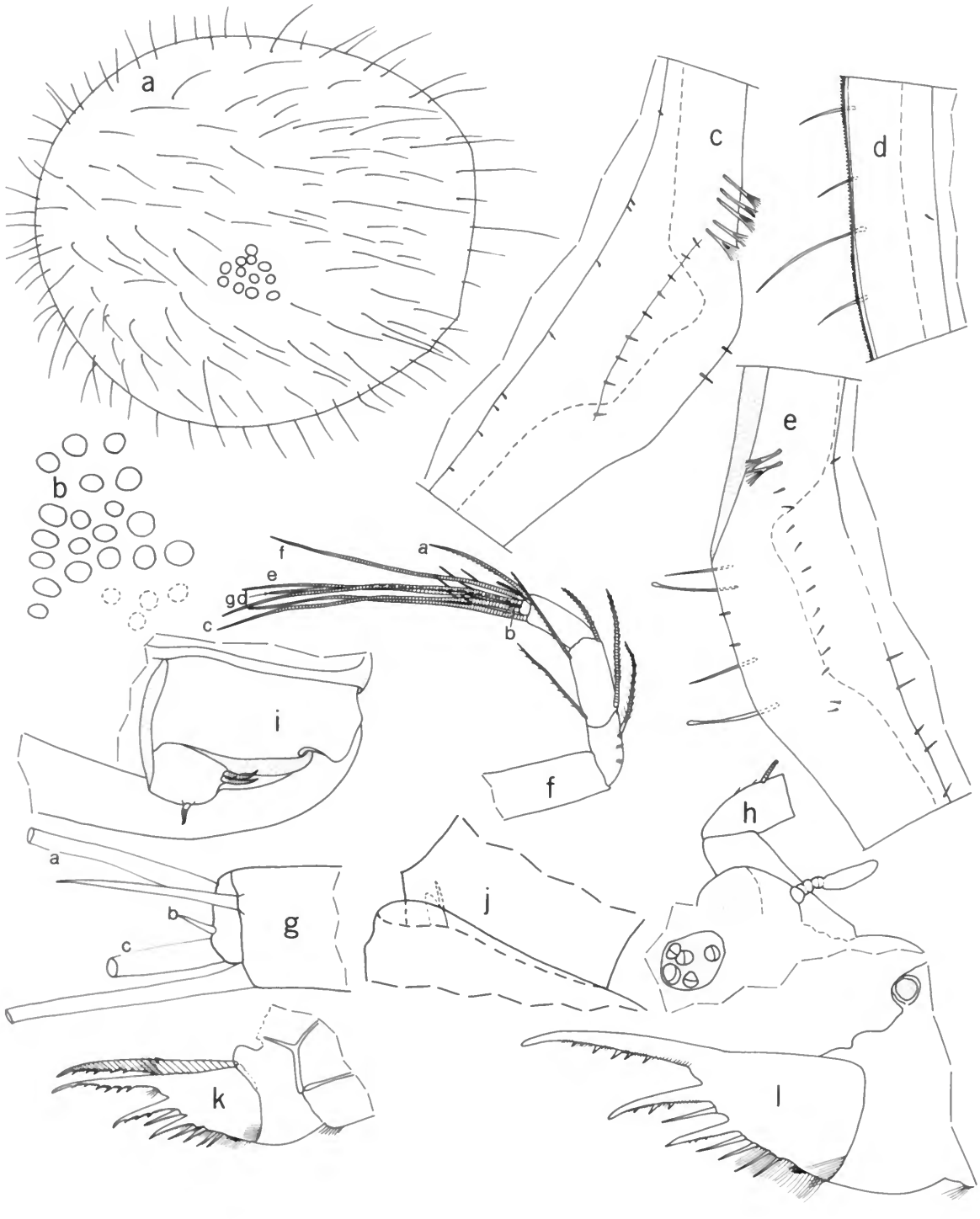
Infold (Figure 9*c–e*): Anterior infold with minute bristle near inner edge of infold (Figure 9*d*); infold of caudal process with 9–17 small bristles forming linear row at about middle of infold (Figure 9*c*,*e*); additional smaller bristles present along inner edge of infold (Figure 9*c*,*e*); posterior infold of left valve with 2 setal bristles just dorsal to caudal process; right valve with 3–5 setal bristles.

Central Adductor Muscle Attachments (Figure 9*b*): Consisting of about 17 or more oval attachments (not all shown on Figure 9*a*).

Size: USNM 158335, length 1.16 mm, height 1.07 mm; USNM 158582, length 1.16 mm, height 0.93 mm.

First Antenna (Figure 9*f*,*g*): First joint bare. Second joint with medial spines forming rows along dorsal margin, and 1 spinous dorsal bristle. Third and fourth joints fused; short third joint with 2 long bristles (1 ventral, 1 dorsal); fourth joint elongate, with 2 bristles (1 ventral, 1 dorsal). Sensory bristle of long fifth joint with 1 short proximal filament. Sixth joint minute, fused to fifth joint, with short spinous medial bristle. Seventh joint: a-bristle spinous, about 3 times length of bristle of sixth joint; b-bristle minute, about ¼ length of a-bristle (Figure 9*f*); c-bristle slightly longer than sensory bristle of fifth joint, with 2 short proximal filaments. Eighth joint: d- and e-bristles bare with blunt tips, subequal, about same length as bristle of fifth joint; f-bristle about same length as bristle of fifth joint, with 2 short proximal filaments; g-bristle about same length as c-bristle, with 2 short proximal filaments. [The absence of a dorsal bristle on the third joint of the first antenna illustrated by Kornicker (1958, fig. 84A), is probably due to its either having been broken off, or is an aberrancy; the appendage is from a juvenile male, not a female as indicated by Kornicker.]

Second Antenna (Figure 9*i*): Protopodite bare. Endopodite single jointed with 2 proximal anterior bristles and 1 short terminal bristle (the terminal bristle is on a minute node which could be considered an incipient second joint). Exopodite: first joint with well-developed, medial, terminal bristle forming right angle near middle of bristle (bristle not more than ¼ width of distal end of joint); bristle of second joint long, with 8–12 long, proximal, ventral spines, and distal natatory hairs; bristles of joints 3–8 with stout, proximal, ventral spines, and distal natatory hairs; ninth joint small, with 2 bristles (1 long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with natatory hairs, and 1 small, dorsal, bare); joints 2–8 with spines forming row along distal margin. [Endopodite and exopodite of second antenna illustrated by Kornicker (1958, fig. 84C,D) is that of a juvenile male, not a female as indicated by Kornicker.]

Mandible (Figures 9*j*, 10*a,f*): Coxale endite consisting of stout medial spine; long hairs present along ventral margin of coxale. Basale: 3 short medial bristles present near proximal ventral corner; 3 or 4 small distal bristles present near ventral margin; (1 with base medial to other 2 or 3 bristles); dorsal margin with 1 small, faint, subterminal bristle. Exopodite small, consisting of small lobe with proximal ventral bristle (Figures 9*j*, 10*f*). First endopodial joint: spines present on medial surface (the medial 2 spines near base of stout ventral claw may be considered to be minute bristles); stout ventral claw with about 7 dorsal ridges near tip and small spines forming row proximal to ridges. Second endopodial joint: stout ventral claw with about 12 dorsal ridges near tip and small spines forming row proximal to them. Third endopodial joint with stout terminal claw with dorsal ridges near tip, and minute bristles near base of claw (2 ventral, 1 dorsal). [Mandible illustrated by Kornicker (1958, fig. 82A) is that of a juvenile male, not a female as indicated by Kornicker.]

Maxilla (Figure 10*b,g*): Endite I with 6 pectinate and spinous claws and bristles (1 claw with long proximal hairs); endite II with 4 claws and bristles; endite III with 6 claws and bristles. Coxale with small dorsal bristle and dorsal hairs. Exopodite with 2 bristles. First endopodial joint with dorsal spines, and stout alpha- and beta-bristles with marginal spines (proximal spines stouter than distal spines). End joint with 2 slender a-bristles, 1 slender c-bristle, and 5 pectinate end-bristles. [Maxilla illustrated by Kornicker (1958, fig. 83D) is that of a juvenile male, not of a female as indicated by Kornicker.]

Fifth Limb (Figure 10*c*): Single endite with 1 small bristle. Exopodite: first joint with 3 bristles; joints 2–5 fused, with total of 13 bristles (2 of these quite small). [Fifth limb illustrated by Kornicker (1958, fig 82B) is that of a juvenile male, not a female as indicated by Kornicker.]

Sixth Limb (Figure 10*d*): Endite I with 3 bristles; endite II with 1 bristle. End joint with 13–15 bristles (the posterior 1 or 2 of these stouter than others and with long hairs except near tip); limb hirsute. [Sixth limb illustrated by Kornicker (1958, fig. 82B) is that of a juvenile male, not a female as indicated by Kornicker.]

Seventh Limb (Figure 10*e*): Four bristles in proximal group, 2 on each side; 6 bristles in distal group, 3 on each side; each bristle with up to 6 bells. Terminus with opposing combs, each with about 3 recurved teeth. [Seventh limb illustrated by Kornicker (1958: fig. 83C) is that of a juvenile male, not of a female as indicated by Kornicker.]

Furca (Figure 9*k,l*): Each lamella with 7 or 8 claws (usually 8); claws 1, 2, and 4 fused to lamella, remaining claws separated from lamella by suture; claws 1, 2, 4 primary claws, remaining claws secondary claws; long hairs along edge of lamella following claws and medially at bases of posterior secondary claws: right lamella located slightly anterior to left lamella; left lamella with 3 forward pointing spines on edge of lamella following last claw.

Bellonci Organ (Figure 9*h*): Elongate with about 5 weakly developed sutures in proximal half; becoming broader in distal half, and with rounded tip.

FIGURE 9.—*Chelicopia arostrata* Kornicker, USNM 158335, adult female, length 1.16 mm: *a*, complete specimen from left (all central adductor muscle attachments not shown); *b*, inside view of left valve showing central adductor muscle attachments, anterior to right; *c*, inside view of posteroventral corner of right valve; *d*, inside view of anterior of right valve; *e*, posterodorsal corner of left valve; *f*, right first antenna, medial view; *g*, detail from *f* showing bristles of joints 5–7; *h*, part of anterior of body showing joints 1 and 2 of left first antenna, right lateral eye, medial eye and bellonci organ; *i*, part of second antenna, medial view; *j*, distal part of basale, proximal part of first endopodial joint, and exopodite of left mandible, medial view; *k*, posterior of body showing left lamella of furca, claw 1 of right lamella, and Y-sclerite; *l*, posterior of body showing left lamella of furca and left genitalia.

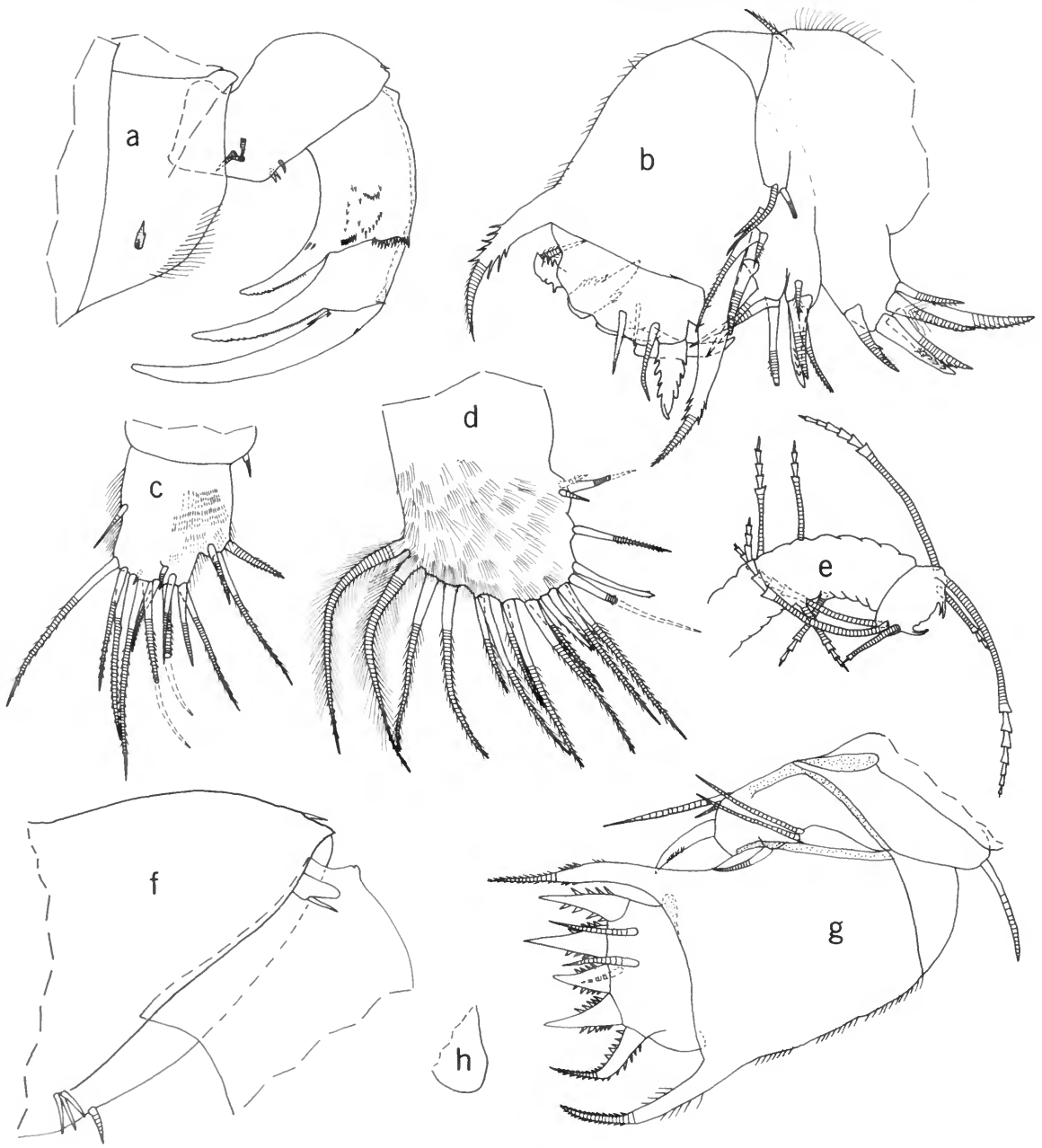

FIGURE 10.—*Chelicopia arostrata* Kornicker, USNM 158335, adult female, length 1.16 mm; *a*, left mandible, medial view (exopodite not shown); *b*, left maxilla, lateral view; *c*, distal part of fifth limb; *d*, sixth limb; *e*, seventh limb. USNM 158582, adult female, length 1.16 mm; *f*, basale, exopodite, and proximal part of first endopodial joint of right mandible, lateral view; *g*, right maxilla, lateral view (all endite bristles not shown); *h*, lateral view of upper lip, anterior to right.

Eyes (Figure 9*h*): Medial eye lightly pigmented, bare. Lateral eye lightly pigmented, smaller than medial eye, with 5 ommatidia.

Upper Lip (Figure 10*h*): Rounded.

Posterior of Body (Figure 9*l*): With hairs ventral to middle.

Genitalia (Figure 9*l*): A sclerotized ring on each side of body anterior to furca.

Y-Sclerite (Figure 9*k*): Typical for subfamily.

Eggs: USNM 158335 with large unextruded eggs; USNM 158582 with 1 egg in marsupium and smaller unextruded eggs.

Eurypylus Brady, 1869

Eurypylus Brady, 1869:141.—Kornicker and McKenzie, 1976:348 [diagnosis, key].

TYPE-SPECIES.—*Eurypylus petrosus* Brady, 1869:141, monotypy.

COMPOSITION.—Kornicker and McKenzie referred to *Eurypylus*, in addition to *E. petrosus, E. setifer* (Poulsen (1965:62), and *E. concentricostatus* (Hartman, 1974:235). Another species, *Eurypylus rousei*, is referred to the genus herein.

DISTRIBUTION.—Continental shelf off Georgia; mangrove area in vicinity of Tanzania, east Africa; Cape Verde Islands off west Africa; shallow water in vicinity of Singapore. Depth range: shallow water to depth of about 30 m.

DIAGNOSIS (emended).—Carapace of female and juveniles oval in lateral view, without incisur but with small caudal process. Infold of caudal process of known species with few small scattered bristles. Posterior infold with 2 setal bristles (known only for *E. rousei* and *E. setifer*).

First Antenna: Seventh and eighth joints without claw-like bristles; d-bristle present.

Seventh Limb: Tip of limb of adult and instar IV female with teeth.

Furca: Claws 1 and 2 fused to lamella and with blunt or pointed teeth; remaining claws small, secondary, separated from lamella by suture and with pointed tips; no secondary claws between primary claws; 4 to 8 claws on each lamella of known species.

COMPARISONS.—The furca of *Eurypylus* is similar to that of *Cymbicopia* Kornicker, 1975, as emended herein, in having claws 1 and 2 fused to the lamella, and in not having secondary claws between primary claws. The infold of the caudal process of *Eurypylus* does not have a row of 6–8 spinous bristles along the list as on *Cymbicopia*, and has 2 setal bristles on the posterior list. The 2 setal bristles are not present on *Cymbicopia*. The furca of *Eurypylus* is also similar to that of *Anscottiella* Kornicker, 1975, but the first antenna is without the clawlike c-, f-, and g-bristles present on *Anscottiella*.

Key to Species of *Eurypylus*

(Adult and Instar IV females)

1. Endopodite of second antenna without ventral bristle 2
   Endopodite of second antenna with ventral bristle 3
2. Carapace with concentric rib; furca with 5 claws . . . . ***E. concentricosatus***
   Carapace without concentric rib; furca with 4 claws . . . . . ***E. petrosus***
3. Endopodite of second antenna with ventral bristle only slightly longer than proximal bristles; furca with 7–8 claws . . . . . ***E. setifer***
   Endopodite of second antenna with ventral bristle about 3 times length of proximal bristles; furca with 5 claws . . . . . ***E. rousei***

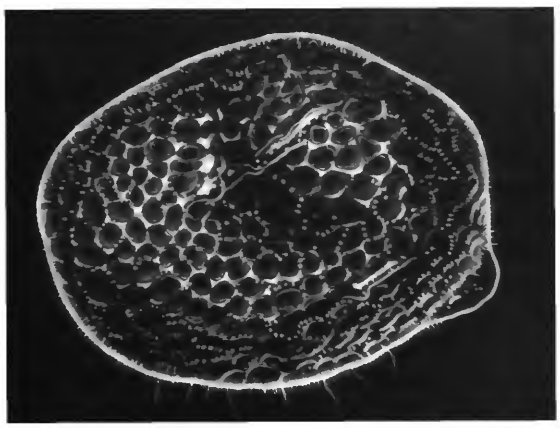

FIGURE 11.—*Eurypylus rousei* (Darby), USNM 158208, adult female, length 1.19 mm, lateral view of complete specimen, anterior to left.

Eurypylus rousei (Darby, 1965), new combination

FIGURES 11–14

Sarsiella rousei Darby, 1965:37, pl. 25: figs. 10–12; pl. 26: figs. 1–3.

HOLOTYPE.—UMMP 48811, female on slides.

TYPE-LOCALITY.—Continental shelf off Georgia. Darby (1965:37) includes a paratype (UMMP 48812) in his locality data for the species: "Taken from 77 to 96 feet of water, offshore, salinity of about 32 parts per thousand. July and August."

MATERIAL.—See "Station Data with Specimens Examined."

DISTRIBUTION.—Continental shelf off Georgia (Figure 1). Depth range 11–29.3 m (Table 1).

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE (Figures 11–13).—USNM 158208: Carapace oval in lateral view with short caudal process with rounded edge (Figure 11); anterior smoothly rounded but rostrum and location of incisur indicated by minute lateral lip visible at high magnification (10–40× objective) (Figure 12*c* at 40× objective). Surface with weakly developed U-shaped ridge visible on right valve of USNM 158208 (Figure 12*a*) and only in part on left valve (Figure 11).

Ornamentation (Figures 11–12*a,d*): Surface with fairly large shallow fossae (Figure 11); surface between fossae with numerous short stout processes visible at low magnification (10× objective); abundant slender bristles with broad flat tip visible at higher magnification along valve edge (Figure 12*d* drawn wtih 50× objective); short slender pointed bristles and long slender pointed bristles, some of the latter with broad proximal part, sparsely distributed over valve surface; surface of valve coated with gelatinous transparent substance (the jell covers all except the long narrow pointed bristles, Figure 12*b*).

Infold (Figure 12*b*): Minute bristle usually present on anterior infold of Sarsiellinae not observed on either valve (Figure 12*c*). Infold of caudal process with 6 small bristles forming row; 2 additional small bristles (ventral of the 2 stouter than other and with blunt tip) at inner edge of infold of caudal process (Figure 12*b*). Posterior infold with 2 setal bristles (Figure 12*b*).

Selvage (Figure 12*b*): Broad lamellar prolongation with smooth outer edge present along free margins, and forming square edge at caudal process.

Size: USNM 158208, length 1.19 mm, height 0.93 mm.

First Antenna (Figure 13*a*): First joint bare. Second joint with 1 dorsal bristle with faint marginal spines. Third and fourth joints fused; short third joint with 2 bristles, 1 ventral, 1 dorsal; long fourth joint with short dorsal bristle and 2 long ventral bristles. Sensory bristle of long fifth joint with 2 minute filaments (1 proximal, 1 just distal to middle). Sixth joint minute, fused to fifth with 1 short medial bristle near dorsal margin. Seventh joint: a-bristle about twice length of bristle of sixth joint; b-bristle narrow, bare, less than twice length of a-bristle; c-bristle slightly longer than sensory bristle of fifth joint, with 2 minute marginal filaments. Eighth joint: d- and e-bristles well developed, about twice length of b-bristle, with blunt tips; f-bristle slightly shorter than c-bristle, bare; g-bristle very slightly longer than f-bristle, with 2 minute marginal filaments. Tips, of b-, c-, f-, and g-bristles, as well as sensory

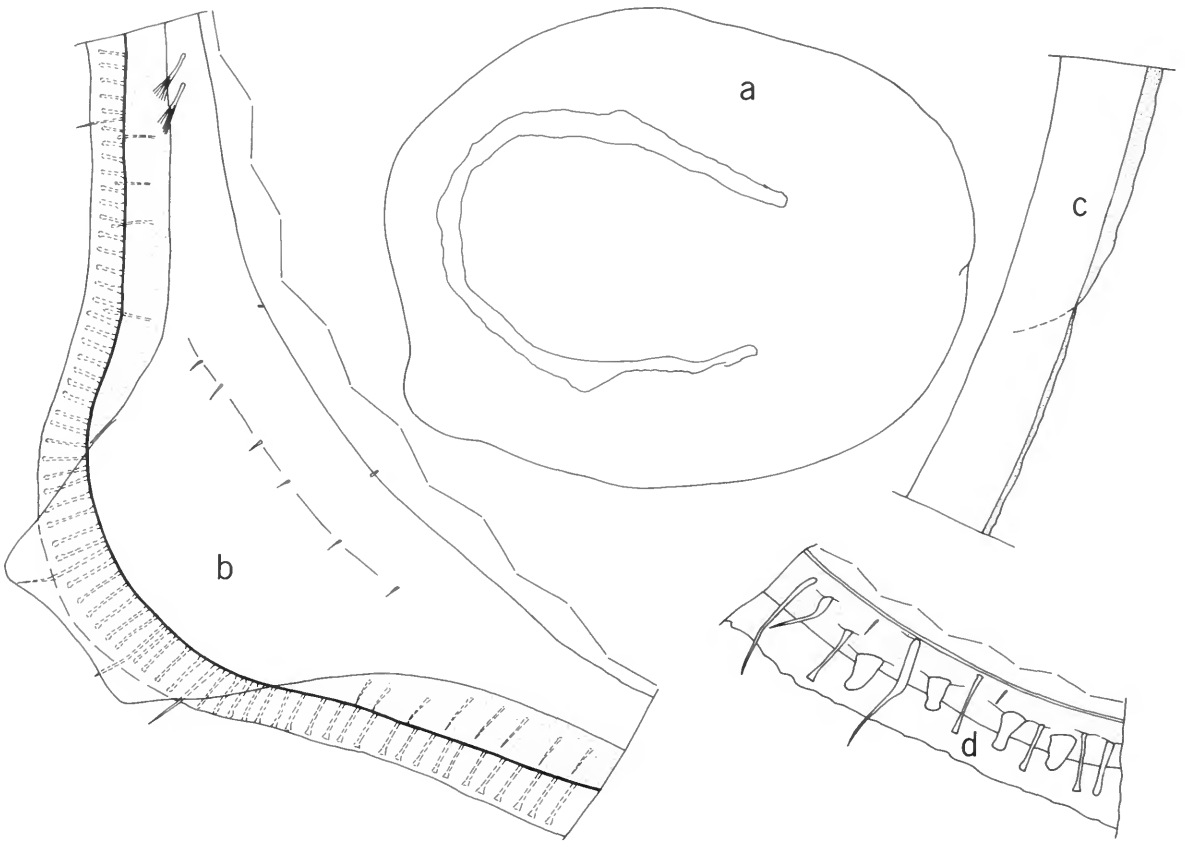

FIGURE 12.—*Eurypylus rousei* (Darby), USNM 158208, adult female, length 1.19 mm: *a*, separated right valve, lateral view; *b*, inside view of posterior of left valve showing outer row of bristles embedded in jell (thickest line represents valve edge); *c*, inside view of anterior of left valve; *d*, inside view of left valve showing selection of bristle types along posterior end of ventral margin (true density of bristles not shown; outer line represents outer edge of jell).

bristle of fifth joint, with distal end tapering to blunt tip without spine (tips of these bristles not nearly as broad and flat as tips of d- and e-bristles).

Second Antenna (Figure 13*b*): Protopodite bare. Endopodite with single joint bearing 2 short, bare, proximal, anterior bristles, and small terminal protuberance with long spinous bristle (bristle missing on left limb of USNM 158208). Exopodite: elongate first joint with fairly large distal medial bristle with blunt tip; bristle of second joint fairly long, reaching well past ninth joint, with about 35 stout ventral spines followed by natatory hairs; bristles of joints 3–8 with proximal stout ventral spines and distal natatory hairs; ninth joint with 2 bristles (1 long with slender ventral spines and distal natatory hairs, 1 short with small faint marginal spines); middle joints with minute faint spines forming row along distal lateral margins.

Mandible (Figure 13*c*): Coxale endite consisting of short stout spine in proximal ventral corner; ventral margin of coxale with long hairs. Basale: medial side with 4 small bristles near ventral margin (3 proximal, 1 distal) and 1 minute proximal bristle on ventral margin; dorsal

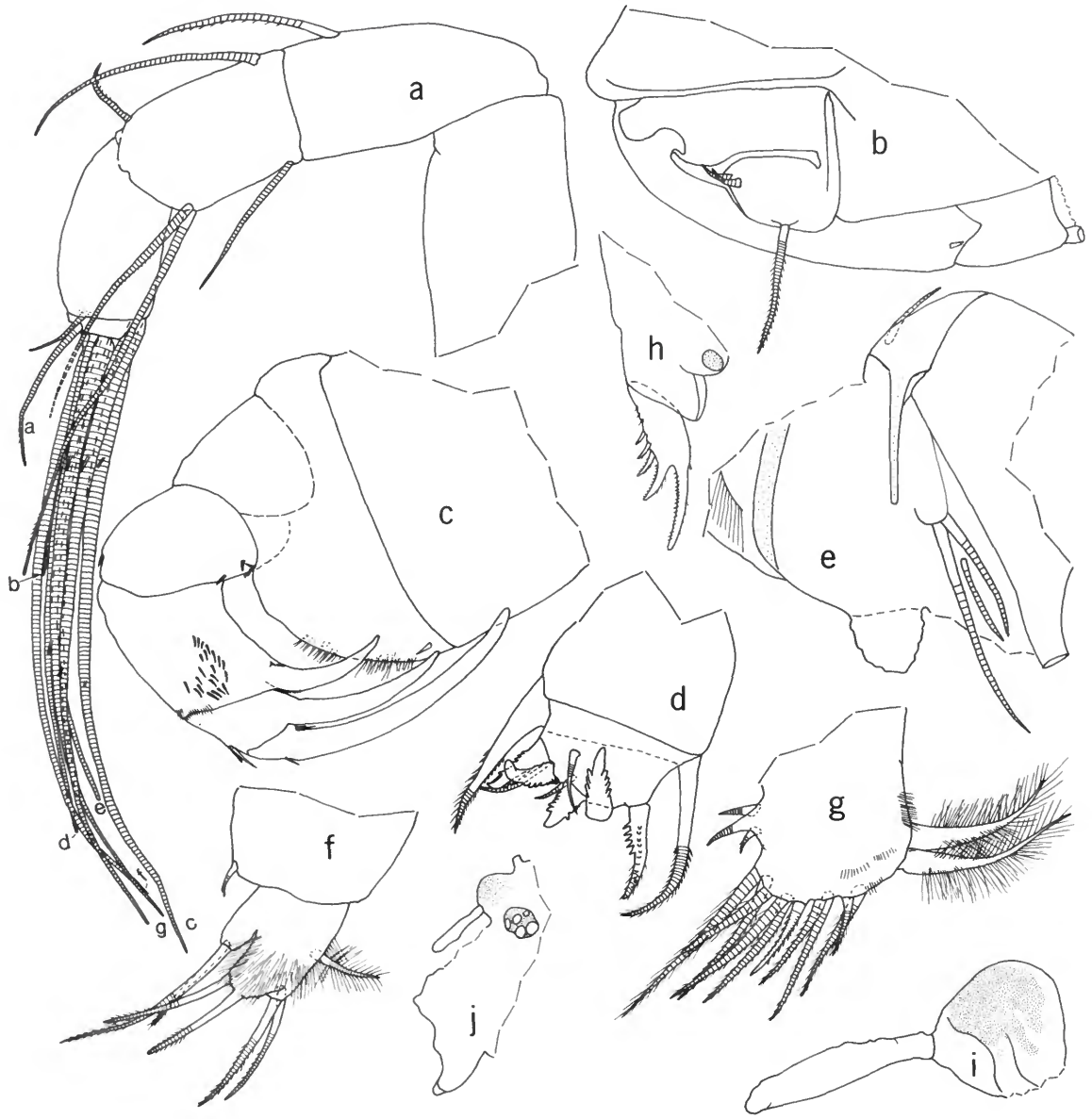

FIGURE 13.—*Eurypylus rousei* (Darby), USNM 158208, adult female, length 1.19 mm: *a*, right first antenna, medial view; *b*, part of right second antenna, medial view; *c*, right mandible, medial view; *d*, maxilla, medial view; *e*, proximal part of maxilla showing bristle on coxale (top of illustration), exopodite, bristle on basale (near exopodite), and part of first endopodial joint (on right); *f*, distal part of fifth limb; *g*, sixth limb; *h*, right lamella of furca and right genitalia (stippled); *i*, medial eye and bellonci organ; *j*, anterior and body showing left lateral eye, medial eye, bellonci organ, and upper lip.

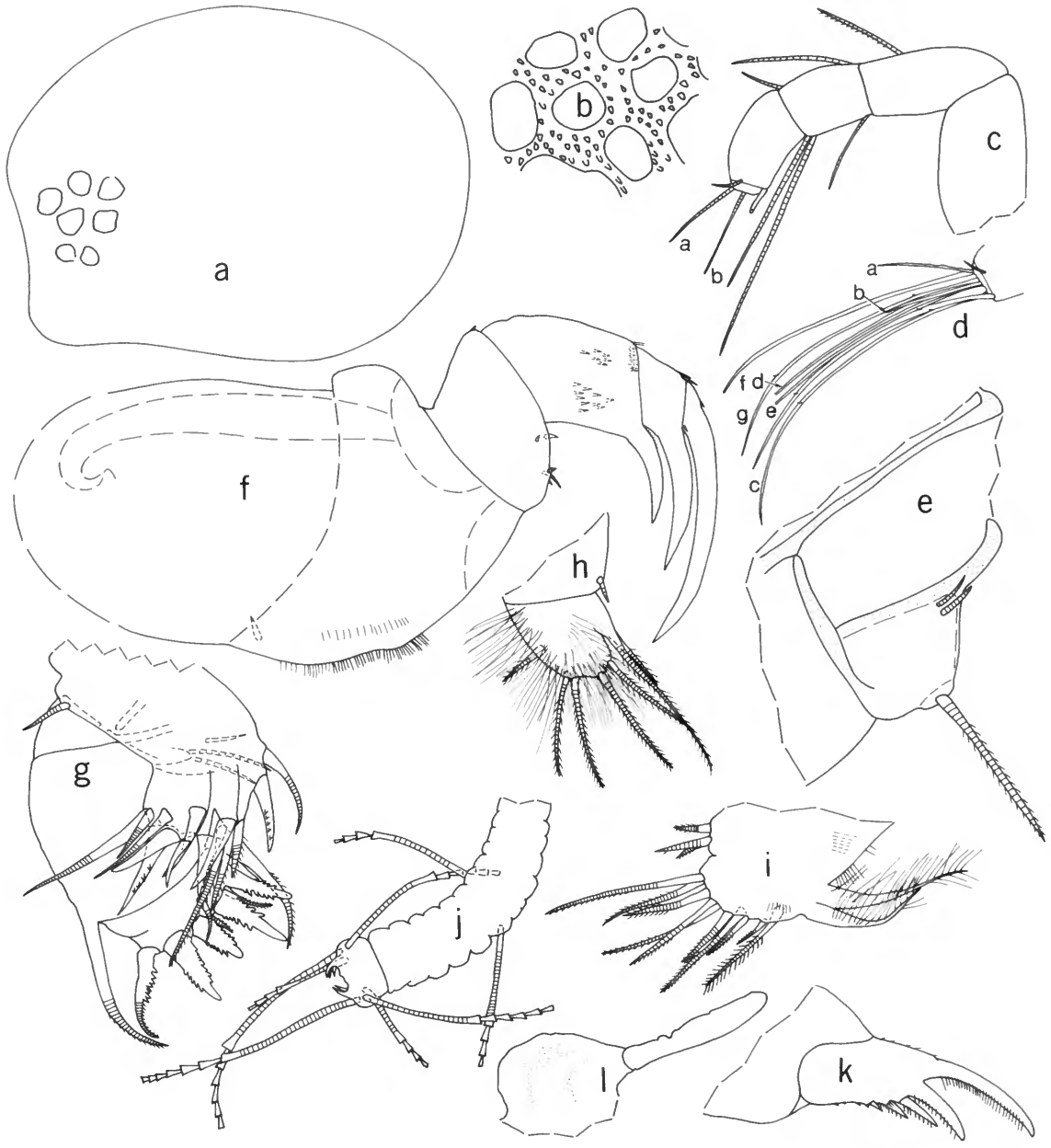

FIGURE 14.—*Eurypylus rousei* (Darby), USNM 48811, holotype, adult female, length 1.26 mm: *a*, lateral view of right valve (all ornamentation not shown); *b*, detail of surface of left valve showing fossae and short processes between fossae; *c*, medial view of right first antenna (only a- and b-bristles of seventh joint and no bristles of eighth joint shown); *d*, tip of first antenna shown in *c* with all bristles shown; *e*, part of left second antenna, medial view; *f*, right mandible, lateral view; *g*, maxilla, medial view; *h*, distal part of fifth limb; *i*, sixth limb; *j*, seventh limb; *k*, right lamella of furca; *l*, medial eye and bellonci organ.

margin with 1 small subterminal bristle. Exopodite absent. First endopodial joint with medial spines and 2 minute medial bristles near base of stout ventral claw; ventral claw with minute faint proximal spines on anterior margin. Second endopodial joint with 2 small subterminal bristles on dorsal margin, and stout ventral claw. End joint with stout terminal claw and 3 minute bristles at base of claw (2 ventral, 1 dorsal).

Maxilla (Figures 13*d,e*): Three endites present with total of about 15 spinous and pectinate bristles. Precoxale with fringe of hairs. Coxale with dorsal bristle. Basale with bristle near exopodite. Exopodite with 2 bristles (Figure 13*e*). Endopodite (Figure 13*d*): first joint with pectinate alpha- and beta-bristles; second joint with 2 subequal a-bristles, 1 short c-bristle, and 5 pectinate end bristles.

Fifth Limb (Figure 13*f*): Epipodial appendage with about 30 bristles. Single endite with 1 short bristle. First exopodial joint with 2 spinous bristles; exopodial joints 3–5 fused, hirsute, with total of 5 spinous bristles.

Sixth Limb (Figure 13*g*): Single endite with 3 short bristles. End joint with 10 spinous anterior bristles (one of the bristles with spear-like tip), followed by short space and 2 stout hirsute bristles.

Seventh Limb: Not observed (lost?).

Furca (Figure 13*h*): Each lamella with 5 claws decreasing in size posteriorly along lamella; claws 1 and 2 fused to lamella and with rounded tips; claws 3–5 separated from lamella by suture and with pointed tips; claws 1–3 with teeth visible along posterior margins, and with slender hairs along anterior margins; anterior of lamella with few hairs; lamella following claws with few minute spines.

Bellonci Organ (Figure 13*i,j*): Elongate, broadening distally, with rounded tip.

Eyes: Medial eye bare, with brown pigment (Figure 13*i,j*). Lateral eye about same size as medial eye, with 5 ommatidia and brown pigment (Figure 13*j*).

Upper Lip (Figure 13*j*): Helmet shaped, projecting anteriorly.

Posterior of Body (Figure 13*h*): Bare.

Genitalia (Figure 13*h*): Consisting of sclerotized ring on each side of body anterior to furca.

Y-Sclerite: Typical for family.

SUPPLEMENTARY DESCRIPTION OF HOLOTYPE (Figure 14).—(UMMP 48811, adult female.) Carapace (Figure 14*a,b*) similar to that of USNM 158208.

Infold: Not examined.

Size: Length 1.26 mm, height 0.96 mm (Darby, 1965:37).

First Antenna (Figure 14*c,d*): Differs from USNM 158208 in having 3 ventral bristles on fourth joint of right limb (2 on left limb), and slightly shorter b-bristle on seventh joint.

Second Antenna (Figure 14*e*): Protopodite and endopodite similar to USNM 158208. Exopodite: bristle of second joint with 29 ventral spines followed by natatory hairs; exopodite otherwise similar to USNM 158208.

Mandible, Maxilla, Fifth and Sixth Limbs (Figure 14*f–i*): Similar to USNM 158208.

Seventh Limb (Figure 14*j*): Six bristles in terminal group (3 on each side); 2 bristles in proximal group (1 on each side); each bristle with up to 5 bells. Terminus with opposing combs, each with 3–5 teeth.

Furca (Figure 14*k*): Tips of claws 1 and 2 broadly pointed, not rounded; limb otherwise similar to USNM 158208. (Darby 1965:37, did not mention that both claws 1 and 2 are fused to lamellae of this species.)

Bellonci Organ, Eyes (Figure 14*l*), *Upper Lip, Posterior of Body:* Similar to USNM 158208.

Parasarsiella Poulsen, 1965

Parasarsiella Poulsen, 1965:70.

TYPE-SPECIES.—*Sarsiella globulus* Brady, 1887, monotypy.

COMPOSITION.—Only the type-species is known.

DIAGNOSIS.—Each lamella with more than 5 claws; only claw 1 fused to lamella; claw 3 longer and stouter than claw 4.

DISTRIBUTION.—Between the Canary Islands and Cape Verde Islands at depths of 932–2333 m. Off Frederiksted, St. Criox, U.S. Virgin Islands, at unknown depth.

Parasarsiella globulus (Brady, 1887)

FIGURE 15

Sarsiella globulus Brady, 1887:199, pl. 15: figs. 8,9.—Brady and Norman, 1896:679, pl. LX: figs. 5–17.—Müller, 1912:36 [key], 38.—Kornicker, 1969c: Table 1.
Parasarsiella globulus.—Poulsen, 1965:70, figs. 20, 21.
Sarsiella globosa.—Hartmann, 1975:601.

LECTOTYPE.—Specimen described and illustrated by Brady and Norman, 1896:679, pl. LX: figs. 5–17. Designated herein.

TYPE-LOCALITY.—According to Brady (1887:199, 200) the species was collected at 3 depths: 932 m on 12 July (1883), 1485 m on 11 July (1883), and 2330 m on 15 July (1883). Kornicker (1969c: table 1) corrected the first date to 11 July, and the last depth to 2333 m, but inadvertently omitted the occurrence of *P. globulus* at the middle station. It is the station listed on line 64 of his table 1. The date of the middle station should be 14 July 1883 and the depth 1495 m. All stations are from the voyage of the *Talisman* in 1883. In order of increasing depth the cruise station numbers are 85, 96, and 99. The localities of all 3 stations are between the Canary Islands and the Cape Verde Islands (de Folin and Périer, 1887:238, 239).

MATERIAL.—None.

DISTRIBUTION.—Same as for genus (Table 1).

REMARKS.—In proposing the unique specimen described by Brady and Norman (1896:679) as lectotype for this species, it was necessary to assume that the specimen is part of the type-series. Because the locality given for their specimen is one of the stations listed by Brady (1887:200) this assumption seems warranted. The caudal process of the specimen illustrated by Brady (1887: pl. 15: figs. 8, 9) is shorter than that of the specimen illustrated by Brady and Norman (1896, pl. LX: figs. 5, 6); also the former specimen appears to be without the riblets present on the latter specimen. These differences suggest that the 2 specimens may belong to different species, and possibly different genera. The new genus *Parasarsiella* proposed by Poulsen (1965:70) is diagnosed mainly by its soft parts, which are unknown for Brady's specimen, but are known for the Brady and Norman specimen. Therefore, it is expedient to select the Brady and

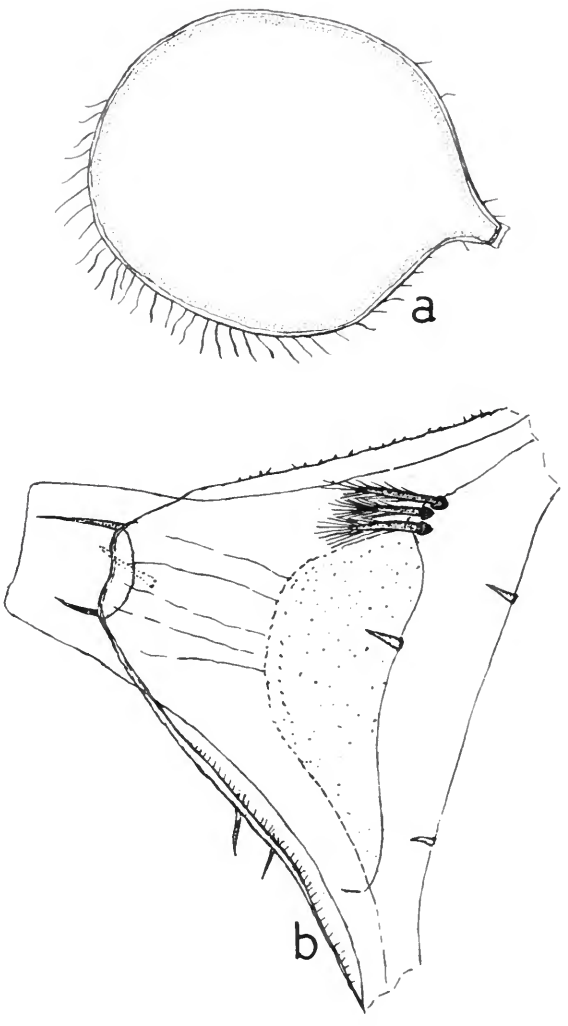

FIGURE 15.—*Parasarsiella globulus* (Brady), juvenile male, length 1.33 mm (from Poulsen, 1965, fig. 20*a*,*b*): *a*, carapace (dotted pattern of surface not shown); *b*, caudal process of left valve, medial view.

Norman specimen as the lectotype.

Poulsen (1965:70) states that in all essential respects the juvenile male he studied from the west Atlantic resembles the specimen from the east Atlantic described and illustrated by Brady and Norman (1896:679, pl. LX: figs. 5–17). However, Poulsen (1965:72) states that the carapace of his specimen is without ridges and processes, whereas, Brady and Norman (1896:679) state that the carapace of their specimen bears riblets. This difference between the east and west Atlantic specimens suggests that they are not conspecific.

Cymbicopia Kornicker, 1975, emended

Muelleriella Poulsen, 1965:57 [part].
Cymbicopia Kornicker, 1975a:608 [part].

TYPE-SPECIES.—*Sarsiella hanseni* Brady, 1898.

COMPOSITION.—This genus was proposed by Kornicker (1975a:608) to include 4 species: *C. hanseni* (Brady, 1898:438), *C. hispida* (Brady, 1898:439), *C. zealandica* (Poulsen, 1965:58), and *C. brevicosta* Kornicker, 1975a:633. In the present revision *Cymbicopia* comprises only *C. hanseni* and *C. brevisosta*. The species *C. zealandica* and *C. hispida* are referred to the genus *Neomuelleriella* herein.

DISTRIBUTION.—New Zealand at depths of 15 m and less.

DIAGNOSIS.—Infold of caudal process with spinous bristles (6–8 on known species) forming row along list; posterior infold without paired setal bristles.

First Antenna: All bristles of seventh and eighth joints normal, none claw-like ; d-bristle present.

Second Antenna: Female endopodite of known species weakly 2-jointed: first joint with 2 proximal anterior bristles; small second joint with long spinous bristle. Male endopodite of known species 3-jointed; first joint with 2 short proximal anterior bristles; second joint elongate, with 2 proximal bristles; third joint elongate, reflexed on second, with 2 small terminal bristles.

Seventh Limb: Tip of female limb with teeth; male limb well developed but without terminal teeth.

Furca: Each lamella with claws 1 and 2 fused to lamella, remaining claws separated from lamella by suture; all claws slender, pointed, decreasing in length posteriorly along lamella; 4–7 claws on each lamella of known species.

COMPARISONS.—The furca of *Cymbicopia* resembles those of *Eurypylus* and *Anscottiella* in having claws 1 and 2 fused to the lamella and in not having secondary claws between primary claws. The first antenna of *Cymbicopia* differs from that of *Anscottiella* in not having claw-like c-, f-, and g-bristles. The infold of the caudal process of *Cymbicopia* differs from those of *Eurypylus* and *Anscottiella* in having spinous bristles forming a row along the list, and the posterior infold differs in not having 2 setal bristles.

Key to the Species of *Cymbicopia*

Midrib of carapace extending posteriorly past middle of carapace; furca with 4 (rarely 5) claws on each lamella ..... ***C. hanseni***
Midrib of carapace not reaching posteriorly past middle of carapace; furca with 6 or 7 (rarely 5) claws on each lamella ..... ***C. brevicosta***

Neomuelleriella, new name and emended

Muelleriella Poulsen, 1965:57 [part].—Cohen and Kornicker, 1975: table 1 [part]. [Name previously occupied.]
Cymbicopia Kornicker, 1975a:608 [part].

ETYMOLOGY.—The genus is named for G.W. Müller (gender is feminine).

TYPE-SPECIES.—*Muelleriella zealandica* Poulsen, 1965:58, by subsequent designation in Cohen and Kornicker (1975: table 1).

COMPOSITION.—*Neomuelleriella* comprises *N. zealandica* (Poulsen, 1965:58) and *N. hispida* (Brady, 1898:439).

DISTRIBUTION.—New Zealand.

DIAGNOSIS.—Carapace of female as well as male with narrow rostrum on known species. Posterior infold with 2 or 3 setal bristles near caudal process. Infold of caudal process with scattered bristles.

First Antenna: All bristles of seventh and eighth joints normal, none claw-like ; d-bristle present.

Second Antenna: Female endopodite of known species weakly 2-jointed: first joint with 1 short proximal anterior bristle; small second joint with 1 long spinous bristle (second joint may have additional short bare bristle). Male known only for *N. hispida:* endopodite formed as 3-jointed clasper: first joint with short proximal anterior bristle; second joint elongate with 3 short stout proximal bristles; third joint elongate, reflexed on second, with 2 small terminal bristles.

Seventh Limb: Female limb with terminal teeth; male limb reduced, bare.

Furca: Each lamella with 7 or 8 claws; claw 3 shorter and more slender than claw 4; all claws slender; 3 main claws with pointed (*N. hispida*) or rounded (*N. zealandica*) tips. Female of *N. zealandica* with claws 1 and 2 fused to lamella; adult female of *N. hispida* with only claw 1 fused to lamella, but juveniles and adult male with claws 1 and 2 fused to lamellae.

COMPARISONS.—The furca of *Neomuelleriella* resembles those of *Spinacopia*, *Ancohenia*, and *Chelicopia* in having secondary claws between primary claws. The furca of *Neomuelleriella* does not have the fourth claw fused to the lamella as in *Ancohenia* and *Chelicopia*. The infold of the caudal process of *Spinacopia* bears a row of spinous bristles along the list and does not have setal bristles on the posterior infold, whereas, the infold of the caudal process of *Neomuelleriella* bears a few scattered bare bristles and has 2 or 3 setal bristles on the posterior infold.

Key to the Species of *Neomuelleriella*

(Adult female)

Carapace shorter than 1.20 mm; second claw of furca separated from lamella by suture* ..... ***N. hispida***

Carapace longer than 1.35 mm; second claw of furca fused to lamella ..... ***N. zealandica***

* Second claw of furca not separated from lamella by suture on juveniles and adult male.

Eusarsiella Cohen and Kornicker, 1975, emended

Eusarsiella Poulsen, 1965 [part].—Cohen and Kornicker, 1975 [part].

TYPE-SPECIES.—*Sarsiella tumida* Scott, 1905, by subsequent designation in Cohen and Kornicker (1975, table 1).

COMPOSITION.—The 50 species in Table 3 are herewith referred to *Eusarsiella.*

DISTRIBUTION.—Worldwide between latitudes of about 63°N and 37°S, generally found in bays, lagoons, and on the continental shelf and upper slope. Usually collected in waters of normal marine salinity, but also found in waters of lower and higher salinity (18–40.5%. (Kornicker, 1977b:791)). Known depth range is intertidal to 1120 m.

NOMENCLATURAL STATEMENT.—Because Cohen and Kornicker (1975, Appendix: table 1) made the genus name *Eusarsiella* available by designating the type-species, they take authorship of the genus, and the genus takes the date when it became available (*International Code of Zoological Nomenclature*, 1964: articles 10, 13b).

DIAGNOSIS.—*First Antenna:* c-, f-, g-bristles not claw-like; d-bristle present.

Seventh Limb: Tip of adult female limb with teeth.

Furca: Each lamella of adult males and fe-

TABLE 3.—Species of *Eusarsiella* and morphology of the endopodite of second antenna of adult male, the seventh limb of adult male and the seventh limbs of instar IV male and female. (B = well developed with bristles; N = not prehensile; P = prehensile; R = reduced, bare; T = terminal teeth; dash indicates no data; asterisk indicates data derived from juvenile male.)

Species	Adult Male		Instar IV	
	Endopodite of second antenna	Seventh limb	Seventh limb Female	Male
E. spicata Poulsen, 1965	–	–	–	–
E. zostericola (Cushman, 1906)	P	R	B,T	R
E. paniculata, new species	–	–	–	–
E. costata (Kornicker, 1958)	P	R	–	R
E. spinosa (Kornicker and Wise, 1962)	N	R	–	–
E. texana (Kornicker and Wise, 1962)	P	R	B,T	–
E. greyi (Darby, 1965)	–	–	–	–
E. disparalis (Darby, 1965)	P	R	B,T	R
E. pilipollicis (Darby, 1965)	–	–	–	–
E. radiicosta (Darby, 1965)	N	R	B,T	R
E. ozotothrix (Kornicker and Bowen, 1976)	N	R	–	–
E. maurae (Kornicker, 1977)	–	–	–	–
E. dispar, new species	P	R	B,T	–
E. tubipora (Darby, 1965)	–	–	–	–
E. uncus, new species	–	–	–	–
E. childi, new species	–	–	–	–
E. cresseyi, new species	N	R	–	–
E. elofsoni, new species	–	–	–	–
E. bakeri, new species	N*	B*	–	B
E. vema, new species	P*	R*	–	R
E. dominica, new species	–	–	–	–
E. venezuelensis, new species	–	–	–	–
E. athrix, new species	–	–	–	–
E. culteri, new species	–	–	–	–
E. punctata (Kornicker, 1958)	–	–	–	–
E. truncana (Kornicker, 1958)	–	–	–	–
E. gigacantha (Kornicker, 1958)	P	R	B,T	–
E. capillaris (Kornicker, 1958)	N*	B*	–	B
E. "carinata" (Kornicker, 1958)	N	B	–	–
E. pseudospinosa (Baker, 1977)	–	–	–	–
E. ovalis Poulsen, 1965	P*	R*	–	R
E. magna Poulsen, 1965	–	–	–	–
E. africana (Kornicker and Caraion, 1978)	N	R	–	R
E. lunata (Kornicker, 1975)	P	R	–	R
E. ocula (Kornicker and Caraion, 1978)	N	R	B,T	–
E. neapolis (Kornicker, 1974)	N	R	–	R
E. dornellasae (Kornicker and Caraion, 1978)	N	R	–	–
E. gomoiui (Kornicker and Caraion, 1978)	N	R	–	–
E. rudescui (Kornicker and Caraion, 1978)	–	–	–	–
E. janicea (Kornicker, 1976)	–	–	–	–
E. tumida (Scott, 1905)	–	–	–	–
E. cornuta Poulsen, 1965	–	–	–	–
E. dentifera Poulsen, 1965	–	–	–	–
E. longipenna Poulsen, 1965	–	–	B,T	–
E. absens (Kornicker, 1981) (new data)	N	R	–	–
E. sculpta (Brady, 1890)	–	–	–	–
E. alata Poulsen, 1965	–	–	–	–
E. rugosa (Poulsen, 1965)	N	R	–	–
E. gettlesoni, new species	P	B	B,T	B
E. microthrix (Chavtur, 1983)	–	–	–	–

TABLE 4.—Bristles on first and second antennae and seventh limbs of species of *Eusarsiella* in the West Atlantic and Gulf of Mexico. First antenna: number of dorsal bristles on second joint (column 1); number of ventral bristles on third joint (column 2); number of ventral bristles on fourth joint (column 3). Second antenna, endopodite: number of proximal bristles (column 4); number of distal bristles (column 5). Seventh limb: number of proximal bristles (column 6). (Dash indicates no data; J = data from juvenile specimens; ♂ = data from adult male; where not otherwise indicated, data are from adult female.)

Species	1	2	3	4	5	6
E. zostericola	1	0	3	2	1	4–6
E. punctata	1	1	3	1	1	4
E. truncana	1	1	3	–	–	4
E. "carinata"	0♂, J	1 J	2 J	2 J	1 J	2
E. alata	1 J	1 J	1 J	2 J	1 J	0 J
E. cornuta	1	1	2	2	0	2
E. ovalis	1	1	2	1	0	2
E. dentifera	1	1	2	2	0	4
E. spincata	1	1	2	2	1	4
E. absens	1	0	3	1	0	4
E. capillaris	0	1	3	2	1	2
E. paniculata	1	1	2	2	1	2
E. costata	1	1	3	1	1	4
E. gigacantha	1	1	2	2	1	11
E. spinosa	1	1	2	2	0	2
E. texana	1	0	2	2	0	4
E. greyi	1	1	2–3	2	1	2–4
E. disparalis	1	0	2	2	1	4–5
E. nodimarginis	1	1	3	2	0–1	4
E. pilipollicis	1	1	2	1–2	0	2
E. radiicosta	1	1	2–3	1	0	4
E. ozotothrix	1	1	2	1	1	2
E. dispar	1	0	2	2	1	4
E. tubipora	1	1	2	2	1	2
E. gettlesoni	1	1	2	1	0	2
E. uncus	1	1	3	1	1	6–7
E. childi	1	0	2	1–2	1	4
E. cresseyi	1	1	2	1	1	2
E. elofsoni	1	1	2	2	1	4
E. bakeri	1	1	2	2	0	2
E. vema	1	0	2	2	1	2
E. dominicana	1	1	1	2	1	4
E. venezuelensis	1	1	3	2–3	1	4
E. athrix	1	0	2	1	1	3–4
E. culteri	1	1	2	2–3	1	2
E. species B	1	1	2–3	2	1	2
E. species C	1 J	1 J	2–3 J	–	–	–

males with 5 claws; claw 1 fused to lamella, claws 2–5 separated from lamella by suture. Claws decreasing in length posteriorly along lamella.

DISCUSSION.—The seventh limbs of instar IV females are known for only 9 species. All seventh limbs have marginal bristles and terminal teeth (Table 3). The seventh limbs of either the instar IV or adult male are known for 24 species: 20

are reduced and bare, 4 are well developed and have marginal bristles but no terminal teeth (Table 3). The endopodites of the second antennae of either the instar IV or adult male are known for 24 species: 14 have 1 or 2 joints, 10 have 3 joints that are prehensible in the adult (Table 3). Poulsen (1965:79) separated *Eusarsiella* from *Sarsiella* mainly on its having a 3-jointed prehensile endopodite on the male second antenna. I have emended *Eusarsiella* to include some males having 1 or 2 joints that are not prehensile. The adult male is known for less than half the species referred herein to *Eusarsiella*. The number and distribution of bristles on the first and second antennae and seventh limb are useful in discriminating species (Table 4).

COMPARISONS.—The genus *Eusarsiella* as emended herein differs from the genus *Sarsiella* as emended herein in having terminal teeth on the seventh limb of the adult female. The teeth are probably also present on the seventh limb of the A−1 (instar IV) female of most species. The furca of *Eusarsiella*, which is similar to those of *Sarsiella* and *Adelta* Kornicker, differs from the furcae of other genera of the Sarsiellinae in the following combination of characters: only claw 1 fused to lamella, and no secondary claws between primary claws. The female first antenna of *Eusarsiella* differs from those of *Anscottiella* Kornicker, 1975, and *Ancohenia* Kornicker, 1976, in having normal rather than claw-like f- and g-bristles on the eighth joint. *Adelta* Kornicker, 1975, differs from *Eusarsiella* in not having a d-bristle on the eighth joint of the first antenna.

REMARKS.—The species *Sarsiella rugosa* Poulsen, 1965, is known from only an adult male, so it cannot be referred with certainty to either *Sarsiella* or *Eusarsiella* as emended herein. I have referred it to *Eusarsiella* because the endopodite of the second antenna is not prehensile; only prehensile endopodites are present on the species of *Sarsiella* presently known. Except for its short bellonci organ, the species resembles *Eusarsiella longipenna* Poulsen (1965:104), which is known only from a juvenile female, collected in the vicinity of Thailand.

Key to the Species of *Eusarsiella*

(Females; West Atlantic and Gulf of Mexico)

1. Surface of carapace with numerous round processes bearing abundant hairs (often a long hair near the tip of the process is surrounded by abundant shorter hairs); the hirsute processes on some specimens coalesce to form ridges; caudal processes narrow, elongate 2
   Surface of carapace without numerous round processes bearing abundant hairs; caudal process varying from long and narrow to barely evident 7
2. Bristles on round processes finger-like 3
   Bristles on round processes pointed 4
3. First antenna with dorsal bristle on second joint ..... ***E. paniculata***, new species
   First antenna without dorsal bristle on second joint ..... ***E. capillaris***
4. Rounded processes on carapace not projecting past posterior end of carapace ..... ***E. spinosa***
   Rounded processes on carapace projecting past posterior end of carapace 5
5. Caudal process forming angle of about 50° with ventral edge of carapace ..... ***E. pilipollicis***
   Caudal process forming angle of about 75° with ventral edge of carapace 6

6. First antenna with dorsal bristle on second joint ..... ***E. cornuta***
   First antenna without dorsal bristle on second joint ..... ***E. "carinata"***
7. Carapace with 2 stout alar processes along dorsal margin; female and juvenile carapaces often asymmetrical; first antenna without ventral bristle on third joint 8
   Carapace without 2 stout alar processes along dorsal margin; carapace symmetrical; first antenna with or without ventral bristle on third joint 9
8. Vertical rib extending from near middle of valve to ventral margin; horizontal midrib not reaching posterior margin of valve ..... ***E. disparalis***
   Without vertical rib; horizontal midrib extending well past posterior margin of valve ..... ***E. dispar,*** new species
9. Carapace thin with flat sides; narrow peripheral ridge present; surface with few lateral hairs; caudal process short; first antenna without ventral bristle on third joint 10
   Carapace with convex sides; narrow peripheral ridge present or absent; surface with few or many hairs; caudal process short or long; first antenna with or without ventral bristle on third joint 11
10. Short horizontal rib present in anterior part of valve ..... ***E. childi,*** new species
    Without horizontal rib ..... ***E. texana***
11. Carapace with alar process in posterodorsal part of each valve; surface with few lateral hairs 12
    Carapace without alar process; posterodorsal part of valve bulbous or flat; surface with few or many lateral hairs 18
12. Carapace with rib extending from middle of valve toward anterior margin 13
    Carapace without anterior rib 15
13. Valve margins without processes; first antenna without ventral bristle on third joint ..... ***E. zostericola***
    Valve margins with small processes; first antenna with ventral bristle on third joint 14
14. Anteroventral part of each valve with fossae ..... ***E. nodimarginis***
    Anteroventral part of each valve without fossae ..... ***E. elofsoni,*** new species
15. Length of caudal process twice that of width measured at base of process ..... ***E. greyi***
    Length of caudal process less than twice that of width measured at base of process 16
16. First antenna without ventral bristle on third joint ..... ***E. vema,*** new species
    First antenna with ventral bristle on third joint 17
17. Anterior and ventral margins of carapace crenulate .... ***E. gigacantha***
    Anterior and ventral margins of carapace smooth ..... ***E. alata***
18. Each valve with continuous or discontinuous concentric ridge 19
    Valves without concentric ridge 26

19. Surface of valve with numerous bristles having flared tips and appearing tube-like ..... ***E. tubipora***
    Surface bristles having pointed or digitate tips and not appearing tube-like 20
20. Surface of valves with numerous riblets having more or less random orientation ..... ***E. culteri,*** new species
    Valves without randomly oriented riblets 21
21. Valves with oblique rib projecting from posteroventral part of concentric ridge ..... ***E. costata***
    Valves without oblique rib 22
22. Concentric ridge divided near middle of both dorsal and ventral sections ..... ***E. cresseyi,*** new species
    Concentric ridge not divided near middle of both dorsal and ventral sections 23
23. Ventral edge of ventral section of concentric ridge with pointed processes 24
    Ventral section of concentric ridge without pointed processes 25
24. Posterior end of concentric ridge extending past valve edge; endopodite of second antenna with 1 distal bristle; seventh limb with 4 proximal bristles ..... ***E. spicata***
    Posterior end of concentric ridge not extending past valve edge; endopodite of second antenna without distal bristle; seventh limb with 2 proximal bristles ..... ***E. bakeri,*** new species
25. Surface of valve and concentric ridge with bristles having digitate tips; endopodite of second antenna with 1 distal bristle ..... ***E. ozotothrix***
    Valve and concentric ridge with only pointed bristles; endopodite of second antenna without distal bristle ..... ***E. gettlesoni,*** new species
26. Anterior and ventral margins of each valve crenulate; 2 well-defined horizontal ribs present ..... ***E. uncus,*** new species
    Anterior and ventral margins on each valve smooth; horizontal ribs, if present, poorly defined 27
27. Each valve with C-shaped ridge along posterior part ..... ***E. dentifera***
    Each valve without C-shaped ridge 28
28. First antenna without dorsal bristle on second joint 29
    First antenna with dorsal bristle on second joint 30
29. Endopodite of second antenna with 1 small distal spine ..... ***E. athrix,*** new species
    Endopodite of second antenna without distal spine ..... ***E. absens***
30. First antenna with 1 ventral bristle on fourth joint ..... ***E. dominicana,*** new species
    First antenna with 2–3 ventral bristles on fourth joint 31
31. Valves with radiating ribs (ribs poorly defined on some specimens); posteroventral corner forming sharply defined right-angle; endopodite of second antenna with 1 proximal bristle and no distal bristle ..... ***E. radiicosta***
    Valves without radiating ribs; tip of caudal process narrowly or broadly

rounded; endopodite of second antenna with 1–3 proximal and 0–1 distal bristles 32

32. Distal end of caudal process broadly rounded; first antenna with 2 ventral bristles on fourth joint; seventh limb with 2 proximal bristles ..... ***E. ovalis***

Distal end of caudal process not broadly rounded; first antenna with 3 ventral bristles on fourth joint; seventh joint with 4 proximal bristles 33

33. Lateral surface of valves with abundant short bristles .... ***E. truncana***

Lateral surface of valves with sparse bristles or without bristles 34

34. Endopodite of second antenna with 1 proximal bristle; lateral surface of valves without bristles ..... ***E. punctata***

Endopodite of second antenna with 2–3 proximal bristles; lateral surface of valves with sparse bristles ..... ***E. venezuelensis,*** new species

Eusarsiella zostericola (Cushman, 1906)

FIGURE 16

Sarsiella zostericola Cushman, 1906:264, pl. 28: figs. 7–18.—Williams, 1907:79.—Müller, 1912:37, 39.—Blake, 1933:230.—Kornicker and Wise, 1960:395, 396, fig. 5; 1962:61, figs. 2A–G, 4A–C.—Wass, 1965:29.—Fish, 1926:141.—Hulings, 1966:41.—Kornicker, 1967:4, figs. 1–5, pls. 1, 2; 1969a:3–5, 7, 36; 1969b:110; 1974a:10, table 1, figs. 1–5; 1975b:129–135, 139, fig. 1; 1977b:791–796.—Parker, 1975:109, 140, 198.—Stiles and Blake, 1976:230.—Hiruta, 1977:44, 58, 59; 1978:277.—Boesch, 1977:254.—Orth, 1977:295, 296.—Kornicker and Caraion, 1978:54.—Carlton, 1979:433, 435.—Wass and Andrews, 1979:276.—Hedgpeth, 1980:664, fig. 1.

Sarsiella americana Cushman, 1906:363, pl. 27: figs. 1–6.—Müller, 1912:37–39; 1931:23.—Fish, 1926:141.—Jones, 1958a:48.—Miner, 1950:399, 400, pl. 126.—Kornicker and Wise, 1962:61.—Parker, 1975:168–170, 188.

Sarsiella tricostata Jones, 1958a:48, figs. 1, 2; 1958b:238, figs. 1–3; 1961:228, 239, 261, 262, 268, 270, 279, 288, 290, 307, 311–315, 317, 320.—Kornicker and Wise, 1962:61, 62, 69.—McKenzie, 1965: 57, 67.—Kornicker, 1975b:130.

Eusarsiella americana (Cushman).—Poulsen, 1965:45, 83, 84, 160.

Eusarsiella zostericola (Cushman).—Poulsen, 1965:45, 83, 84, 160.—Kornicker, 1967:4, 10.

Sarsiella cf. *S. zostericola* Cushman.—Siddiqui and Grigg, 1975:374, pl. 1: fig 8.

Not *Sarsiella zostericola* Cushman.—Baker, 1977a:43, 47 [see "Remarks," below].

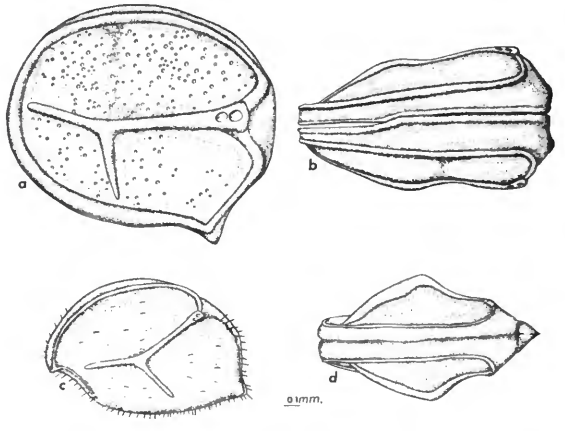

FIGURE 16.—*Eusarsiella zostericola* (Cushman), USNM 113463, adult female, length 1.25 mm: *a*, lateral view; *b*, dorsal view. USNM 113509, adult male, length 1.01 mm: *c*, lateral view; *d*, dorsal view. (From Kornicker, 1967, fig. 3.)

LECTOTYPE.—USNM 113357, male, by subsequent designation (Kornicker, 1967:4).

TYPE-LOCALITY.—Gate of Canso, Woods Hole Harbor, Massachusetts.

MATERIAL.—See "Station Data with Specimens Examined."

DISTRIBUTION.—Atlantic coast: Halifax, Nova Scotia, to Lake Worth, Florida. Gulf coast: Placida Harbor, Florida, to Port Isabel, Texas. Pacific coast: San Francisco Harbor. England: coast of Essex (Kornicker, 1975b) (Figure 2). Known depth range 0.18–44.5 m (Table 1).

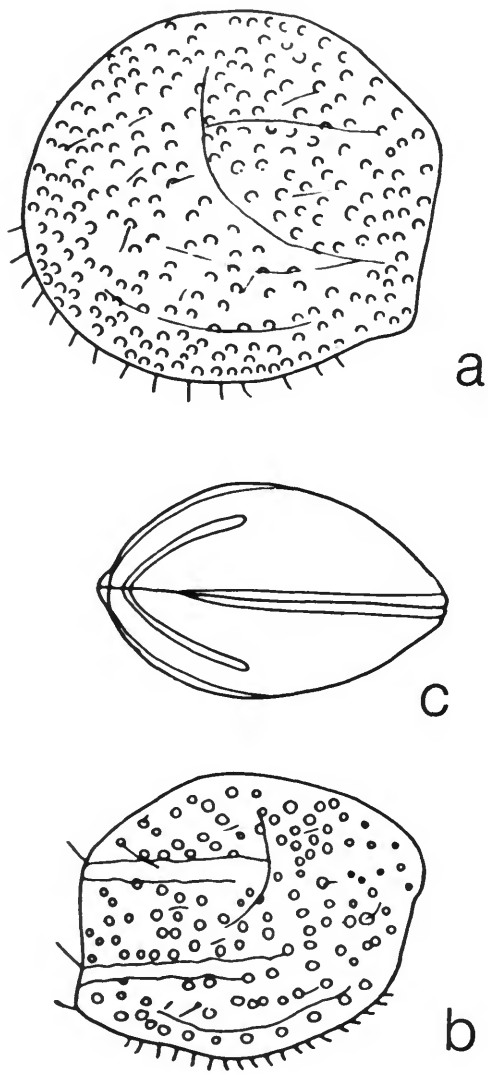

FIGURE 17.—*Eusarsiella punctata* (Kornicker), USNM 122914, paratype, female, length 1.04 mm: *a*, lateral view. Paratype, adult male, length 0.98 mm: *b*, lateral view; *c*, dorsal view. (From Kornicker, 1958, fig. 88L–P.)

DIAGNOSIS.—Carapace of female oval in lateral view except for posterventral caudal process; lateral surface with 3 raised ribs radiating from hub slightly forward of center; posterior rib terminating in knob with 2 small lateral pits; narrow smooth ridge paralleling valve margin (Figure 16*a*,*b*).

First Antenna: Second joint with spinous dorsal bristle; third joint without ventral bristle; fourth joint with 3 ventral bristles.

Second Antenna: Endopodite of female single-jointed with 2 proximal anterior bristles and 1 short terminal spine.

Seventh Limb: Limb of female with 6 terminal and 4–6 proximal bristles (Kornicker, 1967:16).

REMARKS.—Baker (1977a:43) reported *Sarsiella zostericola* along the coast of Southern California off Dana Point, Newport Beach, Point Fermin, and Santa Monica. Baker (in litt., 1977) kindly informed me of the stations (USC 4722, 5334, 5970, 6098, 6179) at which *S. zostericola* had been collected and later arranged for a loan from the Allan Hancock Foundation of the specimens he had identified as *S. zostericola*. The stations from which I received samples are those noted above except for 5334, which, according to my interpretation of the label in the vial, is 5354. I found 3 sarsiellids in the vial from sta 4722, 1 female sarsiellid from sta 5354, 1 female sarsiellid from sta 5970, no specimens in the vial from sta 6098, and 1 female sarsiellid from sta 6179. I am not in accord with Baker on his identification of the sarsiellids as *S. zostericola*. The carapace of the female *zostericola* has a smooth peripheral ridge just within the edge of each valve. The anteroventral and anterodorsal parts of the peripheral ridge on the specimens identified as *S. zostericola* by Baker have nodes. I did not study the California specimens in detail but the presence of the nodes on the peripheral ridge of the carapace does not, in my opinion, permit inclusion of the specimens in *Eusarsiella zostericola*.

Eusarsiella punctata (Kornicker, 1958)

FIGURE 17

Sarsiella punctata Kornicker, 1958:251, figs. 47:3A,B, 79A–I, 88L,P,M.

Eusarsiella punctata.—Poulsen, 1965:83, 122, 123.

HOLOTYPE.—USNM 122914, whole dry specimen on cardboard slide.

TYPE-LOCALITY.—Bimini, Bahamas; 1–20 m.

MATERIAL.—Holotype.

DISTRIBUTION.—Bimini, Bahamas (Figure 3). Known depth range 1–5 m (Table 1).

DIAGNOSIS.—Carapace of female oval in lateral view with posteroventral corner forming a right-angle (Figure 17*a*). Surface strongly punctate and without surface hairs. Length of female (all adult?) 0.97–1.26 mm (4 specimens; Kornicker, 1958:25).

First Antenna: Dorsal bristle of second joint with marginal spines (Kornicker, 1958: fig. 79C). Ventral bristle of third joint about ¾ length of fourth joint; fourth joint with 3 ventral bristles.

Second Antenna: Endopodite of female single jointed with 1 anterior bristle and small ventral spine (Kornicker, 1958, fig. 79I).

Seventh Limb: Limb of female with 10 bristles (4 proximal, 6 terminal) (Kornicker, 1958, fig. 79B).

Eusarsiella truncana (Kornicker, 1958)

FIGURE 18

Sarsiella truncana Kornicker, 1958:250, figs. 78A–E, 88Q, 89C.

Eusarsiella truncana.—Poulsen, 1965:83, 92.

HOLOTYPE.—Not extant.

TYPE-LOCALITY.—Bimini, Bahamas.

MATERIAL.—None.

DISTRIBUTION.—Bimini, Bahamas (Figure 3). Known depth range 1–20 m (Table 1).

DIAGNOSIS.—Carapace of female oval in lateral view with truncate posterior (Figure 18). Surface with abundant short hairs and minute punctae. Length 1.01–1.36 mm (3 specimens) (Kornicker, 1958:250).

First Antenna: Dorsal bristle of second joint with few hairs. Ventral bristle of third joint reaching distal end of fourth joint; fourth joint with 3 ventral bristles (Kornicker, 1958, fig. 78B).

Seventh Limb: Seventh limb of female with 10 bristles (4 proximal, 6 terminal; Kornicker, 1958, fig. 78E).

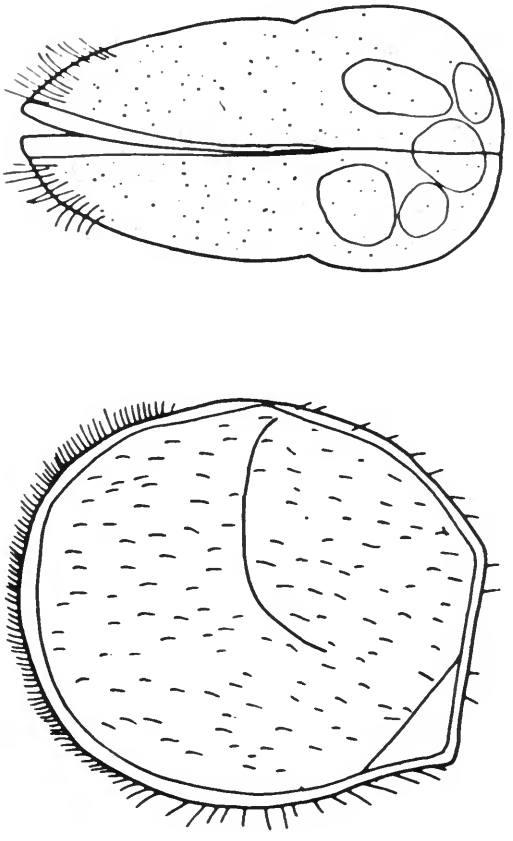

FIGURE 18.—*Eusarsiella truncana* (Kornicker), adult female, length 1.3 mm: lateral and dorsal views. (From Kornicker, 1958: figs. 88Q, 89C.)

Eusarsiella "carinata" (Kornicker, 1958)

FIGURE 19

Sarsiella carinata Kornicker, 1958:247, figs. 47:5*a,b*, 73:A–F; 75A–D, 88J,N,R, 89E.

Eusarsiella carinata.—Poulsen, 1965:83.

Sarsiella carinata.—Warner and Moore, 1984:32.

Not *Sarsiella carinata* Scott, 1905. [See comments by Poulsen, 1965:75].

MATERIAL.—USNM 122911, adult female illustrated by Kornicker, (1958, fig. 47:5a, b). The specimen is dry, on a cardboard slide, and the carapace is in fragments.

DISTRIBUTION.—Bimini, Bahamas. Known depth range 1–20 m (Table 1).

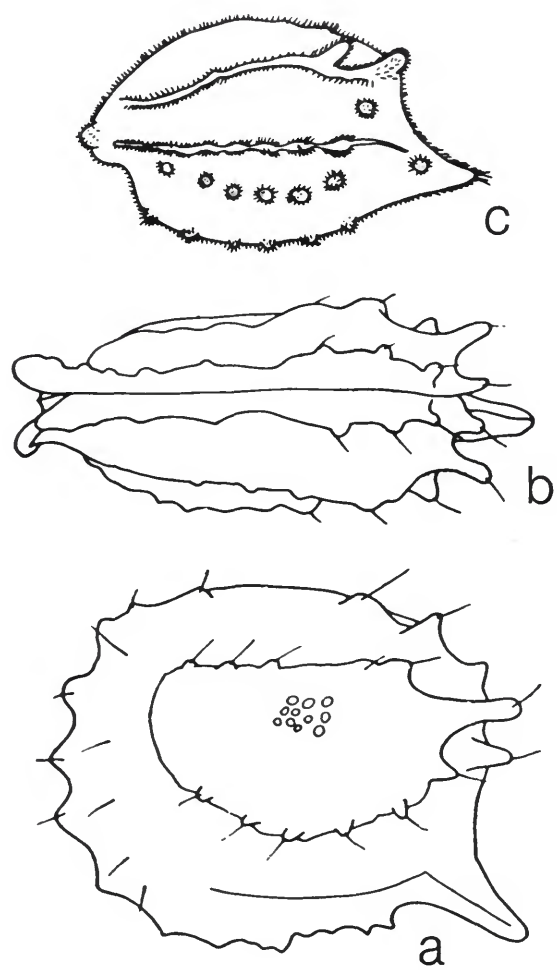

FIGURE 19.—*Eusarsiella "carinata"* (Kornicker), adult female, length 1.42 mm: *a, b,* lateral and dorsal views. Adult male, length 1.18 mm: *c,* lateral view. (From Kornicker, 1958: fig. 88J,N,R.)

REMARKS.—Kornicker (1958:248, fig. 73B, E–G) considered a specimen designated as number CP38-5 to be a juvenile female. The stage of development of the seventh limb indicates that it is instar IV (A–1). The carapace length of the specimen (1.28 mm) is longer than that of an adult male (1.18 mm) and shorter than that of 2 adult females (1.42, 1.48 mm; Kornicker, 1958:248). This relationship suggests that the juvenile is female; on the other hand, the absence of terminal teeth on the seventh limb (Kornicker, 1958:fig. 73G) suggests a male. It is also possible that the specimens are not conspecific. Further study of the species is necessary to resolve this problem. In the diagnosis below the specimen is identified as instar IV (?)female. The material on hand did not permit description of the species and, therefore it is not given a new name.

DIAGNOSIS.—Ornamentation of female carapace similar to that of *E. pilipollicus* and *E. cornuta.* Angle formed by caudal process and posterior margin of carapace of *E. "carinata"* smaller than that of *E. pilipollicus* (compare carapace of *E. pilipollicus* (Figure 60) and that of *E. "carinata"* (Figure 19*a*)). Carapace length of adult female 1.42–1.48 mm (2 specimens) (Kornicker, 1958:248), much larger than carapace of *E. cornuta* (length 0.91 mm; Poulsen, 1965:105). Although Poulsen (1965) did not include the caudal process in length measurements, including it would not materially change length given for *E.* cornuta.

First Antenna: Instar IV (?)female and adult male without dorsal bristle on second joint (Kornicker, 1958: figs. 73F, 74B).

Second Antenna: Endopodite of instar IV (?)female with 2 anterior bristles on first joint

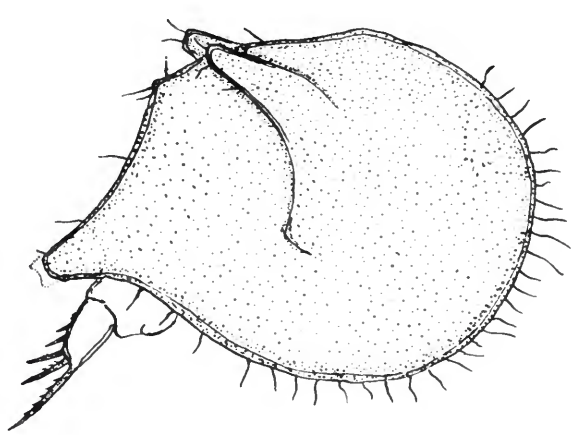

FIGURE 20.—*Eusarsiella alata* Poulsen, holotype, juvenile female (probably instar III), length excluding caudal process, 0.80 mm, lateral view of complete specimen. (From Poulsen, 1965, fig. 33*a*.)

and 1 short bristle on small second joint (Kornicker, 1958, fig. 73E). Endopodite of adult male with second joint only weakly separated from first joint (first and second joints could be interpreted as being fused); first joint with 2 anterior bristles, second joint with 2 bristles (Kornicker, 1958, fig. 74C).

Seventh Limb: Limb of adult female with 8 bristles (2 proximal, 6 terminal), and with terminal combs (Kornicker, 1958, fig. 73C). Limb of instar IV (?)female with 4 terminal bristles and without terminal combs (Kornicker, 1958, fig. 73G). Limb of adult male with 6 bristles (2 proximal, 4 terminal) and without terminal combs (Kornicker, 1958, fig. 75C).

Eusarsiella alata Poulsen, 1965

FIGURE 20

Eusarsiella alata Poulsen, 1965:107, fig. 33.
Sarsiella alata.—Kornicker, 1967:3 [by inference].—Cohen and Kornicker, 1975:26.

HOLOTYPE.—Juvenile female in Universitets Zoologiske Museum, Copenhagen, Denmark; unique specimen (probably instar III).

TYPE-LOCALITY.—South of St. Croix, Virgin Islands, West Indies, 5 m.

MATERIAL.—None.

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

DIAGNOSIS.—Each valve with prominent posterodorsal alar process (Figure 20). Free margin smooth, without crenulations.

First Antenna: Second joint with dorsal bristle. Ventral bristle of third joint less than half length of dorsal bristle (Poulsen, 1965, fig. 33b).

Second Antenna: Endopodite with 2 anterior bristles and 1 minute ventral bristle (Poulsen, 1965, fig. 33*c*).

Sixth Limb: Wide gap between anterior and posterior bristles of end joint (Poulsen, 1965, fig. 33*f*).

Furca: Claws I and 2 slightly S-shaped (Poulsen, 1965, fig. 33*g*).

REMARKS.—Because the unique specimen upon which this species is based is a juvenile having an underdeveloped seventh limb, it is not possible with certainty to determine whether it is a member of *Sarsiella* or *Eusarsiella*. However, because no other species of *Sarsiella*, as emended herein, have been collected in the study area, I have assumed that the species belongs in *Eusarsiella*.

Eusarsiella cornuta Poulsen, 1965

FIGURE 21

Eusarsiella cornuta Poulsen, 1965:105, fig. 32.
Sarsiella cornuta.—Kornicker, 1967:3 [by inference].—Cohen and Kornicker, 1975:26.

HOLOTYPE.—Ovigerous female in Universitets Zoologiske Museum, Copenhagen, Denmark; unique specimen.

TYPE-LOCALITY.—South of St. Croix, Virgin Islands, West Indies, 5 m.

MATERIAL.—None.

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

DIAGNOSIS.—Carapace with prominent caudal process forming slightly more than a right-angle with posterior margin of valve (Figure 21). Carapace small, length 0.91 mm. Each valve with lateral oval ridge bearing 3 large processes along

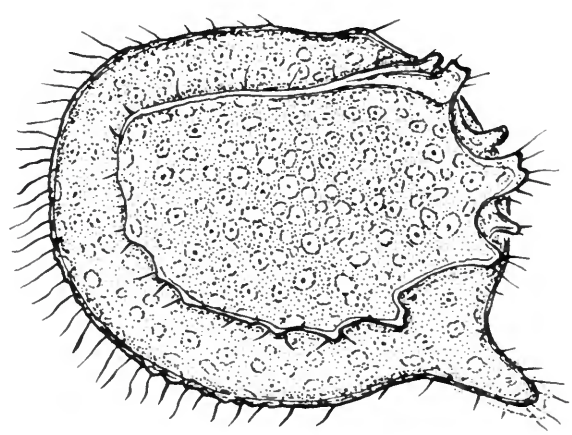

FIGURE 21.—*Eusarsiella cornuta* Poulsen, holotype, adult female, length excluding caudal process, 0.91 mm, lateral view. (From Poulsen, 1965, fig. 32*a*).

posterior part and smaller processes along ventral part; a second ridge bearing 3 processes present between posterior part of oval ridge and posterior edge of valve (Figure 21). Valve surface with fossae bearing central pore (Poulsen, 1965, fig. 32*b*).

Infold: Infold of caudal process with 2 short bristles (Poulsen, 1965, fig. 32*c*).

First Antenna: Second joint with bare dorsal bristle with base fairly close to distal margin of joint. Third joint with ventral bristle about half length of dorsal bristle. Fourth joint with 2 ventral bristles (Poulsen, 1965, fig. 32*d*).

Second Antenna: Endopodite of second joint with 2 anterior bristles and bare ventral margin (Poulsen, 1965, fig. 32*e*).

Seventh Limb: Two bristles in proximal group, 1 on each side; 5 bristles in terminal group, 2 on one side, 3 on other. Terminus with opposing combs bearing 1 or 2 teeth.

Eusarsiella ovalis Poulsen, 1965

FIGURE 22

Eusarsiella ovalis Poulsen, 1965:119, figs. 39, 40.
Sarsiella ovalis.—Kornicker 1967:3 [by inference].—Cohen and Kornicker, 1975:26.

HOLOTYPE.—Female in Universitets Zoologiske Museum, Copenhagen, Denmark. (Cylindrical bristles of the seventh limb indicate that the specimen is adult.)

TYPE-LOCALITY.—Virgin Islands, West Indies.

MATERIAL.—None.

DISTRIBUTION.—Virgin Islands, West Indies (holotype); north of St. Thomas, Virgin Islands, 50 m (paratype Table 1).

DIAGNOSIS.—Carapace oval with caudal process forming low bulge (Figure 22a). Carapace length 0.79 mm.

Infold: Infold in caudal process unusual in having sclerotized curved ridge convex anteriorly (Figure 22*b*); 5 bristles forming row posterior to sclerotized ridge.

First Antenna: Second joint with dorsal bristle. Third joint with minute ventral bristle and

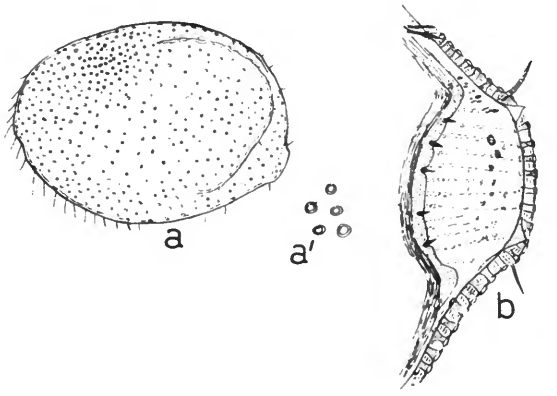

FIGURE 22.—*Eusarsiella ovalis* Poulsen, holotype, female, length 0.79 mm: *a*, lateral view; *a'*, detail of surface pores; *b*, caudal process, medial view. (From Poulsen, 1965, fig. 39*a,b*.)

long dorsal bristle. Fourth joint with 2 ventral bristles (Poulsen, 1965: fig. 39*c*).

Second Antenna: Endopodite with 1 short anterior bristle; ventral margin bare except for tooth-like process (Poulsen, 1965, fig. 39*d*).

Seventh Limb: With 8 bristles, 2 in proximal group, 6 in terminal group. Terminus with opposing combs, each consisting of short, stout, medial tooth with 1 or 2 smaller teeth on each side.

Eusarsiella dentifera Poulsen, 1965

FIGURE 23

Eusarsiella dentifera Poulsen, 1965:92, fig. 27.
Sarsiella dentifera.—Kornicker, 1967:3 [by inference].—Cohen and Kornicker, 1975:26.

HOLOTYPE.—Ovigerous female in Universitets Zoologiske Museum, Copenhagen, Denmark; unique specimen.

TYPE-LOCALITY.—West of Thatch Island, Virgin Islands, West Indies, 34–40 m.

MATERIAL.—None

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

DIAGNOSIS.—Carapace oval in lateral view with small posteriorly projecting caudal process. Posterior half of valve with semicircular ridge

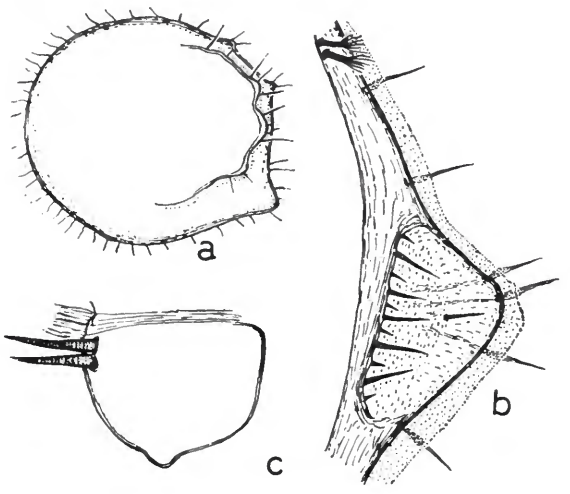

FIGURE 23.—*Eusarsiella dentifera* Poulsen, holotype, adult female, length excluding caudal process 1.15 mm: *a*, lateral view; *b*, posterior of right valve, medial view; *c*, endopodite of right second antenna, medial view. (From Poulsen, 1965, fig. 27*a,b,d*.)

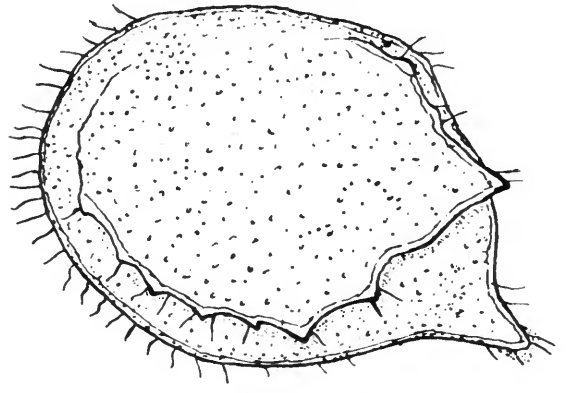

FIGURE 24.—*Eusarsiella spicata* Poulsen, holotype, adult female, length excluding caudal process 0.64 mm, lateral view. (From Poulsen, 1965, fig. 45*a*.)

with 3 or 4 small bulges (Figure 23*a*). Carapace length 1.15 mm.

Infold: Infold of caudal process with ridge bearing 10–12 bristles (long and short bristles alternating) (Figure 23*b*).

Selvage: Lamella prolongation of selvage not increasing in width at posterior end of caudal process (Figure 23*b*).

First Antenna: Second joint with dorsal bristle. Third joint with dorsal bristle about same length as second joint, and slightly shorter ventral bristle. Fourth joint with 2 ventral bristles.

Second Antenna: Endopodite with 2 anterior bristles and small ventral bulge (Figure 23*c*).

Seventh Limb: Each limb with 10 bristles, 4 in proximal group, 6 in terminal group. Terminus with stout curved tooth opposite 1 long and 2 shorter curved slender teeth.

Eusarsiella spicata Poulsen, 1965

FIGURE 24

Eusarsiella spicata Poulsen, 1965:133, fig. 45.
Sarsiella spicata.—Kornicker, 1967:3 [by inference].—Cohen and Kornicker, 1975:26.

HOLOTYPE.—Ovigerous female in Universitets Zoologiske Museum, Copenhagen, Denmark.

TYPE-LOCALITY.—East of St. Thomas, Virgin Islands, West Indies, 50 m.

MATERIAL.—None.

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

DIAGNOSIS.—Caudal process prominent, oriented posteroventrally (Figure 24). Each valve with elliptical ridge triangular in posterior part and with small pointed processes along ventral part (Figure 24). Carapace very small: length 0.62–0.65 mm.

First Antenna: Second joint with dorsal bristle. Third joint with fairly long ventral and dorsal bristle. Fourth joint with 2 ventral bristles (Poulsen, 1965, fig. 45*c*).

Second Antenna: Endopodite with 2 small anterior bristles and ventral process bearing small bristle (ventral process could be interpreted either as small second joint, or stout unringed proximal part of terminal bristle) (Poulsen, 1965, fig. 45*e*).

Sixth Limb: Single endite with 1 bristle (Poulsen, 1965, fig. 45*h*).

Seventh Limb: With 10 bristles, 4 proximal, 6 terminal. Terminus consisting of opposing combs

with 3 teeth (1 long, 2 short) opposite single large tooth (Poulsen, 1965, fig. 45*i*).

Eusarsiella absens (Kornicker, 1981), new combination

FIGURE 25

Sarsiella absens Kornicker, 1981a:2, figs. 1, 2.

HOLOTYPE.—USNM 158116, adult female on slide and in alcohol.

TYPE-LOCALITY.—Castle Harbor, Bermuda.

MATERIAL.—None.

DISTRIBUTION.—Bermuda, in shallow water (Table 1).

DIAGNOSIS.—Carapace of female oval in lateral view with truncate posterior; posteroventral corner rounded; horizontal rib present below central adductor muscle attachments; a second rib extending onto posterodorsal bulge; surface with abundant well-developed fossae; few bristles present on lateral surface (Figure 25).

Size: Length 1.17–1.22 mm (3 specimens).

First Antenna: Second joint with 1 dorsal bristle; third joint without ventral bristle; fourth joint with 3 ventral bristles.

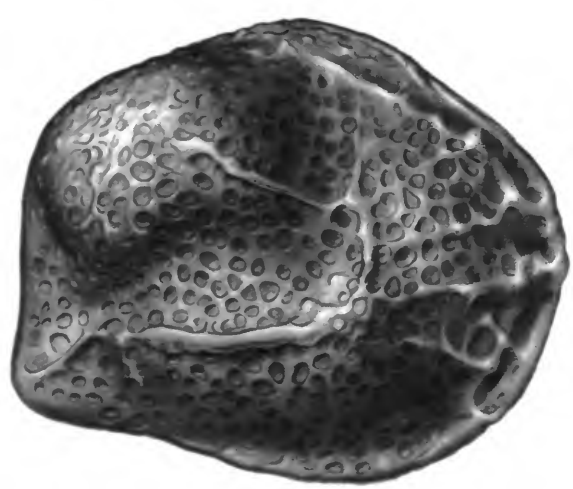

FIGURE 25.—*Eusarsiella absens* (Kornicker), paratype, adult female, length 1.17 mm, lateral view. (From Kornicker, 1981a, fig. 1.)

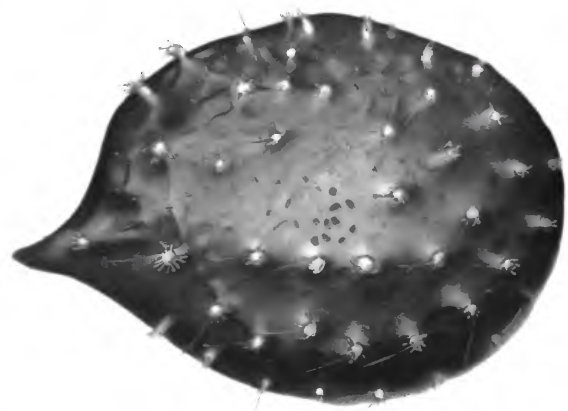

FIGURE 26.—*Eusarsiella capillaris* (Kornicker), USNM 154194, instar IV male, lateral view of complete specimen, length 0.97 mm.

Second Antenna: Endopodite with single proximal anterior bristle and bare ventral margin.

Seventh Limb: Proximal group with 4 bristles, 2 on each side.

Eusarsiella capillaris (Kornicker, 1958)

FIGURES 26–28*a–c*; PLATE 1

Sarsiella capillaris Kornicker, 1958:248, figs. 47:7*a,b*, 76A–F,H, 89A,B,D,F,O.

Eusarsiella capillaris.—Poulsen, 1965:83.

HOLOTYPE.—USNM 122910, specimen 92-1, whole dry specimen on slide, female, length 1.15 mm (Kornicker, 1958:249).

TYPE-LOCALITY.—Bimini, Bahamas.

MATERIAL.—Holotype; in addition, see "Station Data with Specimens Examined" (p. 7).

DISTRIBUTION.—Great Bahama Bank and

FIGURE 27.—*Eusarsiella capillaris* (Kornicker), USNM 154194, instar IV male, length 0.97 mm: *a*, posterior of right valve, inside view; *b*, right first antenna, lateral view; *c*, part of left second antenna, medial view; *d*, left mandible, medial view; *e*, maxilla, lateral view; *f*, endites of maxilla; *g*, part of maxilla showing exopodite; *h*, distal part of fifth limb; *i*, seventh limb.


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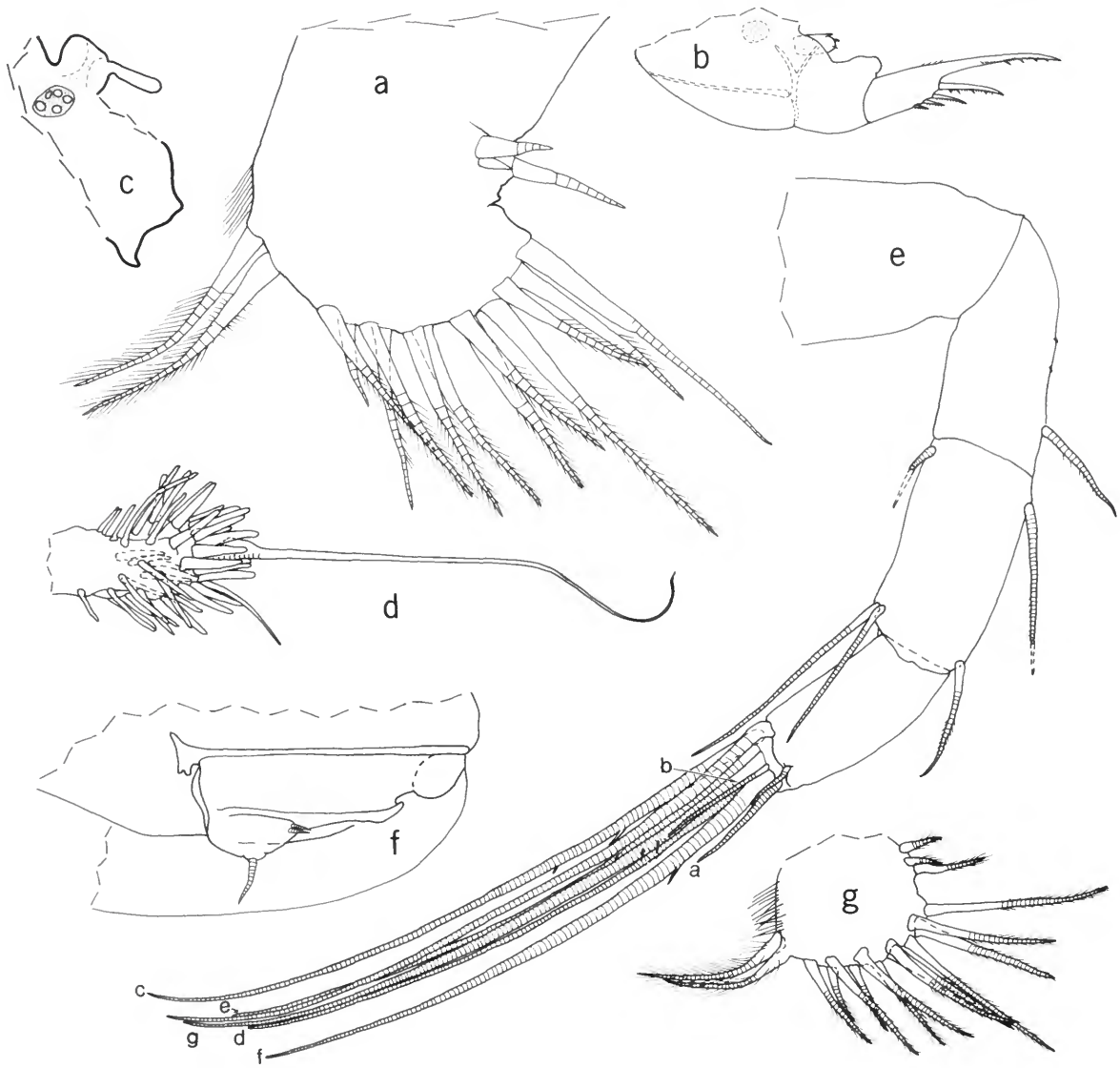

FIGURE 28.—*Eusarsiella capillaris* (Kornicker), USNM 154194, instar IV male, length 0.97 mm *a–c*: *a*, sixth limb; *b*, posterior of body showing right lamella of furca, right genital lobe, and Y-sclerite; *c*, anterior of body showing right lateral eye, medial eye, bellonci organ, anterior process, and upper lip. *Eusarsiella paniculata*, new species, USNM 157973, holotype, adult female, length 1.24 mm: *d*, process on outer surface of carapace; *e*, left first antenna, medial view; *f*, part of left second antenna, medial view; *g*, sixth limb.

southwest Florida continental shelf (Figure 4). Known depth range intertidal to 22.5 m (Table 1).

DESCRIPTION OF INSTAR IV MALE (Figures 26–28*a–c*, Plate 1).—Carapace oval in lateral view with elongate caudal process tapering to point (Figure 26, 27*a*).

Ornamentation (Figures 26–27*a*; Plate

1): Each valve with numerous processes bearing 10–16 finger-like bristles and 1 (rarely 2) long terminal bristles (Figure 26, Plate 1*a–e*) (central bristle missing from some processes in Figure 26); individual bristles distributed on valve surface, and especially numerous along free margin (Figure 26, Plate 1*a,f*); terminal bristle of process with pore near base (Plate 1*c,e*); surface of finger-like bristles (on processes) with longitudinal ridges (Plate 1*b,d*); anterior and ventral margins of each valve and, also, edge of caudal process with medium and long bristles, all having widened part either proximally or near middle (Figure 27*a*), surface of valves coated with gelatinous film embedding individual papillae (extent of coating in vicinity of caudal process shown in Figure 27*a*; appearance of dried film shown in Plate 1*e*).

Infold (Figure 27*a*): Infold of caudal process with 2 or 3 small bristles; 1 or 2 additional small bristles present near inner margin of infold in vicinity of caudal process; posterior infold with 2 setal bristles.

Selvage: Broad lamellar prolongation with smooth outer edge present along anterior, ventral, and posterior margin of each valve.

Size: USNM 154194, length including caudal process 0.97 mm, height 0.69 mm.

First Antenna (Figure 27*b*): First joint bare. Second joint with few faint dorsal spines. Third and fourth joints fused; small third joint with 2 bristles (1 ventral, 1 dorsal); long fourth joint with 4 bristles (2 long and 1 minute ventral, 1 dorsal). Bristle of long fifth joint with 1 small proximal filament and minute terminal process. Sixth joint minute, fused with fifth joint, with small medial bristle near dorsal margin. Seventh joint: a-bristle about twice length of bristle of sixth joint; b-bristle longer than a-bristle, bare except for minute terminal process; c-bristle about same length as bristle of fifth joint, with 2 small proximal filaments and minute terminal process. Eighth joint: d- and e-bristles bare with blunt tips not reaching tip of c-bristle; f-bristle about two-thirds length of c-bristle, with 1 small proximal filament and minute terminal process; g-bristle only slightly shorter than c-bristle, with 2 small proximal filaments and minute terminal process.

Second Antenna (Figure 27*c*): Protopodite bare. Endopodite 2-jointed: first joint with 2 proximal anterior bristles; second joint small with 1 small pointed terminal bristle. Exopodite: elongate first joint with minute, recurved, terminal bristle with blunt tip; bristles of joints 2–8 with proximal ventral spines and distal natatory hairs; ninth joint with 2 bristles (1 long with slender, proximal, ventral spines and distal natatory hairs; 1 very small and bare); joints 2–8 with faint spines forming row along distal margins.

Mandible (Figure 27*d*): Coxale with hairs along ventral margin; endite represented by small medial spine. Basale: dorsal margin with 1 minute, subterminal, spine-like bristle; ventral margin with 6 bristles (some with bases on medial or lateral side). First endopodial joint: ventral margin with stout terminal claw; dorsal margin with slender terminal spines; medial surface with distal spines, and 1 minute spine-like bristle at base of ventral claw. Second endopodial joint with stout ventral claw and small, spine-like, dorsal bristle. Third endopodial joint with stout terminal claw with 2 minute bristles near base (1 ventral, 1 dorsal).

Maxilla (Figure 27*e–g*): Three endites present with total of 14 claws and bristles (Figure 27*f*). Basale with single bristle near exopodite (Figure 27*g*). Exopodite with 2 or 3 bristles (Figure 27*g*). Endopodite: First joint with single alpha- and beta-bristle; second joint with 2 a-bristles, 1 c-bristle, and 5 end bristles (Figure 27*e*).

Fifth Limb (Figure 27*h*): Single endite with 1 small bristle. Exopodite: first joint with 2 bristles; second joint with 3 bristles; joints 3–5 fused, hirsute, with total of 6 bristles.

Sixth Limb (Figure 28*a*): Single endite with 3 bristles. End joint with 12 slender bristles (either bare or with short marginal spines) separated by short space from 2 posterior bristles with long marginal hairs; posterior edge of limb with long hairs.

Seventh Limb (Figure 27*i*): Two bristles in

proximal group (1 on each side), 4 bristles in terminal group (2 on each side); bristles strongly tapering distally (juvenile character), and with up to 4 bells. Tip of limb bare.

Furca (Figure 28*b*): Each lamella with 5 claws; claw 1 fused to lamella; claws 2–5 separated from lamella by suture; left lamella with 2 spines following claw 5; anterior of lamella with several slender spines; claw 1 with 5 stout teeth and numerous smaller teeth; teeth of claws 2–5 also with some teeth larger than others, but difference between large and small teeth not as great as on claw 1.

Bellonci Organ (Figure 28*c*): Elongate, broadening distally, with rounded tip.

Eyes (Figure 28*c*): Lateral eye lightly pigmented, with 5 ommatidia. Medial eye larger than lateral eye, bare, with light brown pigment.

Upper Lip (Figure 28*c*): Helmet shaped, projecting anteriorly.

Posterior of Body (Figure 28*b*): Bare except for few spines at dorsal corner.

Copulatory Organs (Figure 28*b*): Fairly well developed, lobate, with several bristles, but without hooklike terminal part; areas with light brown pigment might represent testes and seminal vesicles.

Y-Sclerite (Figure 28*b*): Typical for family.

Gut Content: Several crustacean fragments observed within gut.

DESCRIPTION OF ADULT FEMALE.—Lateral outline of carapace similar to that of *Eusarsiella paniculata* (Figure 29).

Size: USNM 193115, length 1.28 mm, height 0.93 mm.

First Antenna: Second joint without dorsal bristle.

Seventh Limb: Each limb with 2 proximal bristles (1 on each side) and 6 terminal bristles (3 on each side). Terminus with opposing combs.

REMARKS.—This species is unusual in lacking a dorsal bristle on the second joint of the first antenna. It is absent on the limb illustrated by Kornicker (1958, fig. 76B) and also on the specimens referred to the species herein.

Eusarsiella paniculata, new species

FIGURES 28*d–g*, 29, 30

ETYMOLOGY.—From the Latin *paniculus* (tuft), in reference to the tufts of bristles on the carapace.

HOLOTYPE.—USNM 157973, ovigerous female on slide and in alcohol.

TYPE-LOCALITY.—West Florida continental shelf, sta 4, 22.5–58.5 m.

PARATYPES.—West Florida shelf: 1 instar III, sta 20; 1 instar III, sta 22; USNM 193114, 1 ovigerous female, sta 28.

DISTRIBUTION.—West Florida continental shelf; depth 22.5–58.5 m (Figure 4, Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 28*d–g*–30).—Carapace oval in lateral view with backward pointed caudal process (Figure 29). Gelatinous coating present.

Ornamentation (Figures 28*d*, 29): Surface with numerous processes bearing short tapering bristles and 1 very long bristle (Figures 28*d*, 29); some processes without long bristle; shallow bare fossae abundant (Figure 29); surface between fossae bearing minute pointed papillae; papillae longer along valve margin; fossae may be covered

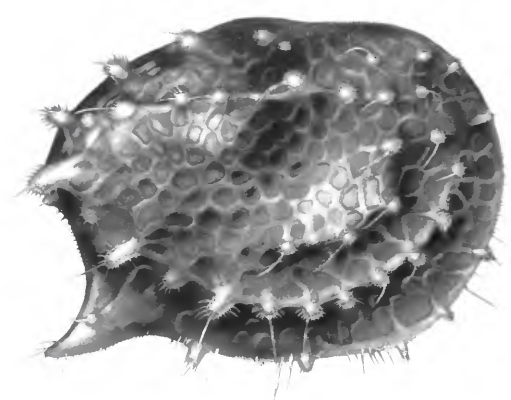

FIGURE 29.—*Eusarsiella paniculata*, new species, USNM 157973, holotype, adult female, lateral view of complete specimen, length 1.24 mm.

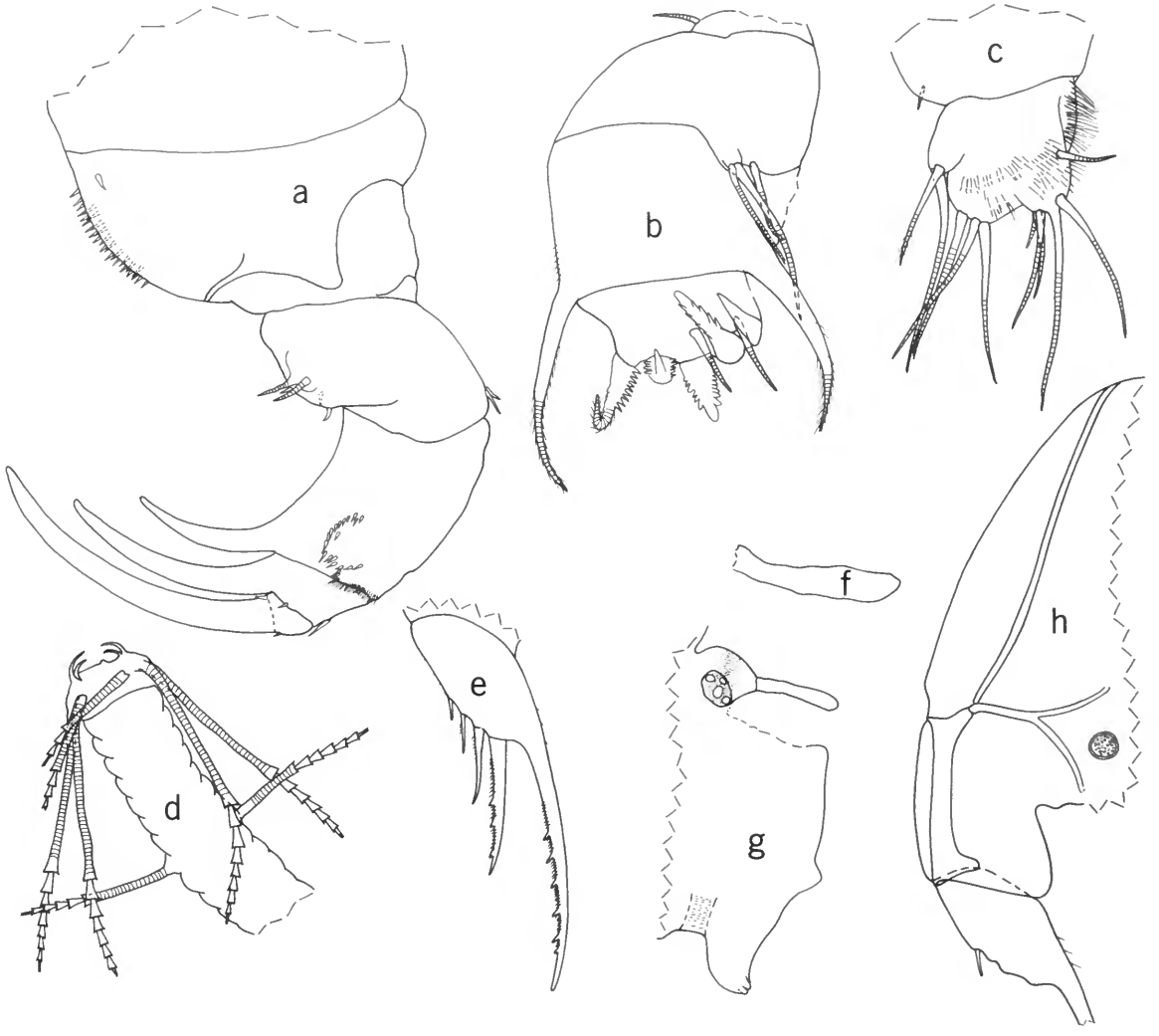

FIGURE 30.—*Eusarsiella paniculata,* new species, USNM 157973, holotype, adult female, length 1.24 mm: *a,* left mandible, medial view; *b,* maxilla, lateral view; *c,* distal part of fifth limb; *d,* seventh limb; *e,* right lamella of furca; *f,* bellonci organ; *g,* anterior of body showing right lateral eye, medial eye, bellonci organ, anterior process, upper lip, and anterior end of esophagus (dashed); *h,* posterior of body showing sclerites, round genital process of right side, and right lamella of furca.

with thin film bearing faint reticulations (reticulations visible using × 10 objective and transmitted light). Bristles of various lengths abundant along valve edge and at tip of caudal process, most with broad proximal part becoming wider just proximal to midlength of bristle; surface of valve otherwise without long bristles except on processes.

Infold: Anterior infold with 1 small bristle near inner margin; infold of caudal process with 6 or 7 small bristles forming irregular row near anterior end; 1 small bristle and group of 3 small bristles at inner margin of infold anterior to caudal process; posterior infold with 2 setal bristles.

Selvage: Broad lamella prolongation with smooth outer edge present along anterior, ventral, and posterior margins of each valve; broad lamella prolongation in vicinity of caudal process with fringe along outer edge.

Size: USNM 157973, length 1.24 mm, height 0.95 mm; USNM 193114, length 1.32 mm, height 1.03 mm.

First Antenna (Figure 28*e*): First joint bare. Second joint with 1 dorsal bristle and minute spines forming 2 rows on dorsal margin. Third joint with 2 bristles, 1 ventral, 1 dorsal. Fourth joint fused to 3rd joint, with 3 bristles, 2 ventral, 1 dorsal. Bristle of long fifth joint with 1 small proximal filament and minute terminal process. Sixth joint minute, fused to fifth joint, with small medial bristle near dorsal margin. Seventh joint: a-bristle about twice length of bristle of sixth joint; b-bristle slightly longer than a-bristle, bare except for minute terminal process; c-bristle about same length as bristle of fifth joint, with 2 small proximal filaments and minute terminal process. Eighth joint: d- and e-bristles bare with blunt tips not reaching tip of c-bristle; f-bristle about same length as d-bristle, with 1 small proximal filament and minute terminal process; g-bristle almost same length as c-bristle, with 2 small proximal filaments and minute terminal process.

Second Antenna (Figure 28*f*): Protopodite bare. Endopodite weakly 2-jointed: first joint with 2 proximal anterior bristles; small second joint with short pointed terminal bristle. Exopodite: first joint with minute, straight, terminal bristle with blunt tip; bristles of joints 2–8 with proximal ventral spines and distal natatory hairs, also with few proximal dorsal hairs; ninth joint with 2 bristles (1 long with proximal ventral spines and distal natatory hairs, and 1 small bare); joints 2–8 with faint minute spines forming row along distal margins.

Mandible (Figure 30*a*): Coxale with spines along ventral margin; endite represented by small medial spine. Basale: dorsal margin with 2 minute, subterminal, spine-like bristles; ventral margin with 5 or 6 bristles (some with bases on medial or lateral side). First endopodial joint: ventral margin with stout terminal claw; medial surface with distal spines. Second endopodial joint with stout ventral claw, a small, spine-like, dorsal bristle, and a small medial spine at middle of distal margin. Third endopodial joint with stout terminal claw with 2 minute bristles near base (1 ventral, 1 dorsal).

Maxilla (Figure 30*b*): Three endites present, with total of about 12 bristles. Coxale with small dorsal bristle. Basale with short bristle near exopodite. Exopodite with 2 bristles. Endopodite: first joint with single alpha- and beta-bristle; second joint with 2 a-bristles, 1 c-bristle (not shown on illustrated maxilla), and 5 end bristles.

Fifth Limb (Figure 30*c*): Epipodial appendage with 36 bristles. Single endite with 1 small bristle. Exopodite: first joint with 2 bristles; second joint with 3 bristles; joints 3–5 fused, with total of 6 bristles.

Sixth Limb (Figure 28*g*): Single endite with 3 bristles. End joint with 12 slender bristles with short marginal spines separated by short space from 2 posterior bristles with long marginal hairs; posterior edge of limb with long hairs.

Seventh Limb (Figure 30*d*): Two bristles in proximal group (1 on each side), each with 5 or 6 bells; 6 bristles in terminal group (3 on each side), each with 3–8 bells. Tip of limb with opposing combs, each with about 5 curved teeth; a small protuberance present between combs.

Furca (Figure 30*e*): Each lamella with 5 claws; claw 1 fused to lamella; claws 2–5 separated from lamella by suture; right lamella slightly anterior to left lamella; right lamella with spines forming rows along anterior margin; left lamella with spines following claw 5; claw 1 with 6 or 7 stout teeth and numerous small teeth; claw 2 with some teeth larger than others, but differ-

ence between large and small teeth not as great as on claw 1.

Bellonci Organ (Figure 30*f,g*): Broadening distally.

Eyes (Figure 30*g*): Lateral eye with brown pigment and 5 ommatidia. Medial eye larger than lateral eye, bare with brown pigment.

Upper Lip (Figure 30*g*): Helmet shaped, with anterior projections.

Posterior of Body (Figure 30*h*): Evenly rounded, bare.

Genitalia (Figure 30*h*): Round sclerotized ring on each side of body anterior to furca.

Y-Sclerite (Figure 30*h*): Typical for genus.

Eggs: USNM 157973 with 4 eggs in marsupium as well as smaller unextruded eggs; USNM 193114 with 5 eggs and also smaller unextruded eggs.

COMPARISONS.—The carapace of *E. paniculata* closely resembles that of *E. capillaris*. The two species differ in that *E. capillaris* is without a bristle on the dorsal margin of the second joint of the first antenna. Also, bristles on processes of the carapace of *E. capillaris* are broader and have blunter tips.

Eusarsiella costata (Kornicker, 1958)

FIGURES 31–35

Sarsiella costata Kornicker 1958:251, figs. 47:4A,B, 80A–E, 81A–E, 88B,C,G.
Eusarsiella costata.—Poulsen, 1965:83.

HOLOTYPE.—USNM 122912, dry specimen, length 1.02 mm, (Kornicker, 1958:252, number 156-2).

TYPE-LOCALITY.—Bimini Islands, Bahamas.

MATERIAL.—Holotype; in addition, see "Station Data with Specimens Examined."

DISTRIBUTION.—Bahamas at depths of 1–5 m (Figure 1, Table 1).

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE (Figures 31, 32).—Carapace oval in lateral view except for truncate posterior (Figures 31, 32*a*); anterior and ventral margins extending past valve edge.

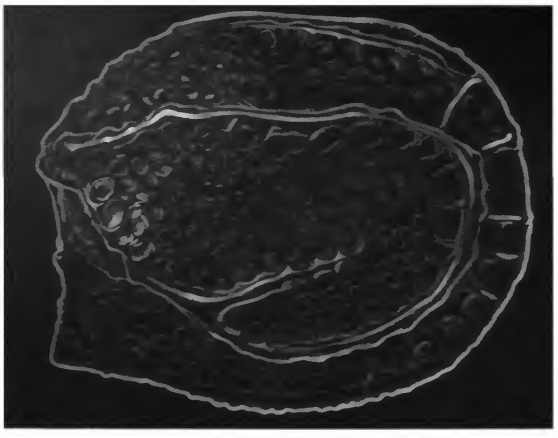

FIGURE 31.—*Eusarsiella costata* (Kornicker), USNM 158322, adult female, lateral view of complete specimen, length 1.18 mm.

Ornamentation (Figures 31, 32*a*): Each valve with oval ridge, broad and rounded anteriorly but becoming narrow posterodorsally; posterior tip of ridge may extend slightly past valve edge; oblique rib branching dorsally from ventral part of oval ridge and terminating just ventral to central adductor muscle attachments. Posterior margin of each valve with 2 low processes extending slightly past valve edge. Valve surface with numerous large fossae with irregular margin (just a few shown in Figure 32*a*). Bristles present along anterior and ventral margins, and very sparsely distributed on lateral surface. Surface not coated by gelatinous substance.

Infold (Figure 32*b*): Anterior infold with minute bristle near middle of valve; infold of caudal process with 12 or 13 small bristles (a few of these branching distally); 2 setal bristles present on posterior infold just dorsal to middle of margin (Figure 32*b*); several minute bristles present along inner edge of infold in vicinity of caudal process.

Selvage: Broad lamellar prolongation with smooth outer edge present along free margin of each valve.

Size: USNM 158334, length 1.18 mm, height 1.01 mm; USNM 157880 (3 specimens), length

1.19 mm, height 0.99 mm, length 1.14 mm, height 0.95 mm, length 1.16 mm, height 0.96 mm; USNM 158332, length 1.18 mm, height 0.98 mm.

First Antenna (Figure 32*c*): First joint bare. Second joint with few dorsal spines, and 1 dorsal bristle having long hairs near middle. Third and fourth joints fused; third joint with 2 bristles (1 ventral, 1 dorsal); fourth joint with 4 bristles (1 dorsal, 3 ventral). Bristle of fifth joint with 1 minute proximal filament and 1 minute distal spine. Sixth joint fused with fifth with short medial bristle. Seventh joint: a-bristle about twice length of bristle of sixth joint; b-bristle longer than a-bristle, with minute distal filament or spine; c-bristle slightly longer than bristle of fifth joint, with 1 or 2 minute proximal filaments. Eighth joint: d- and e-bristles bare with blunt tips; d-bristle slightly longer than f-bristle, shorter than c-bristle; e-bristle more than one-half, but less than two-thirds, length of d-bristle; f-bristle stout, shorter than c-bristle, without marginal filaments; g-bristle slightly shorter than c-bristle, with 2 minute filaments near middle; bristle of fifth joint, b- and c-bristles of seventh joint, and f- and g-bristles of eighth joint with minute terminal spine.

Second Antenna (Figure 32*d*): Protopodite bare. Endopodite single jointed with 1 proximal anterior bristle, 1 minute terminal spine with tip drawn out (could be interpreted as unringed bristle) and spines of different widths forming several rows on medial surface (Figure 32*d*). Exopodite: first joint with minute, terminal, medial bristle; bristles of joints 2–8 with proximal ventral spines and distal natatory hairs; ninth joint with 2 bristles (ventral bristle with proximal spines and distal natatory hairs, dorsal bristle short, bare); basal spines absent; joints 3–7 with few minute spines along distal dorsal corner.

Mandible (Figure 32*e*): Coxale: endite consisting of stout spine with few faint marginal spines; ventral margin with stiff hairs. Basale: dorsal margin with spine-like midbristle, and 2 small terminal bristles; 5 small bristles present near ventral margin. First endopodial joint: medial surface with stout spines; ventral claw with few proximal ventral spines. Second endopodial joint with faint dorsal bristle and stout ventral claw. End joint with stout terminal claw and 2 minute bristles (1 ventral, 1 dorsal).

Maxilla (Figure 32*f–h*): Three endites with claws and bristles (Figure 32*g*). Coxale with short dorsal bristle; precoxale and coxale with fringe of long hairs near dorsal margin. Basale with 1 bristle near exopodite (Figure 32*f*). Exopodite with 3 bristles (middle bristle longer than others; (Figure 32*h*). Endopodite: first joint with pectinate alpha- and beta-bristles; second joint with 2 bare a-bristles, 1 c-bristle, and usual 5 pectinate end bristles.

Fifth Limb (Figure 32*i*): Epipodial appendage with 33 bristles. Single endite with 1 short bristle. Exopodite: first joint with 2 spinous bristles; second joint with 3 spinous bristles; third to fifth joints fused (third joint with 3 short bristles on inner lobe and 1 bristle on outer edge of fused joints; fourth and fifth joints with total of 2 spinous bristles).

Sixth Limb (Figure 32*j*): Single endite with 3 bristles. End joint with 11 or 12 bristles with short marginal spines followed by space and then 2 stout hirsute bristles.

Seventh Limb (Figure 32*k*): Six bristles in terminal group (3 on each side); 4 bristles in proximal group (2 on each side); each bristle with up to 6 bells (diameter of terminal bell very small). Terminus consisting of opposing combs, each with 3 recurved teeth (only 2 teeth shown in each comb of illustrated limb).

Furca (Figure 32*l*): Each lamella with 5 slender pointed claws; claw 1 fused to lamella, re-

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FIGURE 32.—*Eusarsiella costata* (Kornicker), USNM 158322, adult female, length 1.18 mm: *a*, outline of right valve showing ridges and few fossae; *b*, posterior of right valve, inside view; *c*, right first antenna, medial view; *d*, part of left second antenna, medial view; *e*, right mandible, medial view; *f*, maxilla, lateral view; *g*, endites of maxilla; *h*, exopodite of maxilla; *i*, distal part of fifth limb; *j*, sixth limb; *k*, seventh limb; *l*, right lamella of furca, right genital process, right Y-sclerite; *m*, left lateral eye, medial eye and bellonci organ; *n*, left Y-sclerite.


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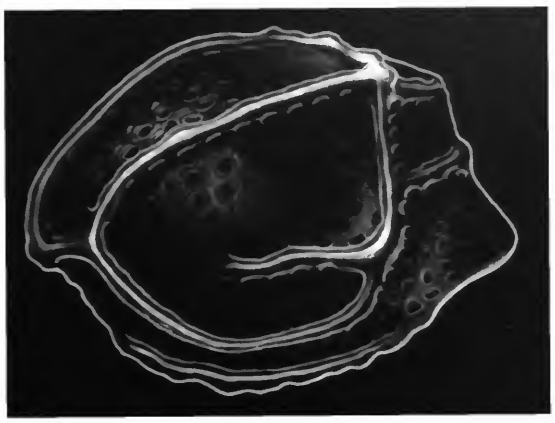

FIGURE 33.—*Eusarsiella costata* (Kornicker), USNM 158333, adult male, lateral view of complete specimen, length 0.91 mm.

maining claws separated from lamella by suture; right lamella slightly anterior to left lamella, and with minute pointed process following posterior claw; left lamella with 4 pointed processes following posterior claw; posterior margins of claws with teeth forming row; long teeth interspersed with shorter teeth on claws 1–3.

Bellonci Organ (Figure 32*m*): Elongate, broadening distally, with rounded tip.

Eyes (Figure 32*m*): Medial eye bare, with light brown pigment. Lateral eye slightly smaller than medial eye, with light brown pigment and 5 ommatidia.

Upper Lip: Typical for genus.

Posterior of Body (Figure 32*l*): Bare.

Genitalia (Figure 32*l*): Oval sclerotized ring on each side of body anterior to furca.

Y-Sclerite (Figure 32*l*): Dorsal branch of USNM 158334 tending to have faint dorsal branch at tip.

Eggs: USNM 158334 with 4 eggs in marsupium and additional smaller unextruded eggs. USNM 157880 includes 2 ovigerous females, 1 with 4 eggs, other with 5. USNM 158332 with 5 eggs in marsupium.

SUPPLEMENTARY DESCRIPTION OF ADULT MALE (Figures 33, 34).—Carapace in lateral view differs from that of female in having slightly projecting rostrum forming below it a shallow incisur; caudal process more strongly developed than that of female (Figure 33).

Ornamentation (Figure 33): Similar to that of female.

Infold and Selvage: Not examined in detail.

Size: USNM 158333, length 0.91 mm, height 0.68 mm.

First Antenna (Figure 34*a*): First and second joints without spines; dorsal bristles of first and second joints broken off on right limb of USNM 158333 (left limb missing), third joint with small ventral bristle; third and fourth joints fused; fourth joint with 1 dorsal bristle (ventral bristles not observed), fifth joint wedged ventrally between fourth and sixth joints, with bulbous proximal part bearing abundant thin filaments, and with single stout bristle having at least 1 short filament (distal part of bristle broken off on limb examined). Sixth joint long, with single, bare, medial bristle. Seventh joint: a-bristle longer than bristle of sixth joint, with few faint spines; b-bristle about twice length of a-bristle, with 1 distal filament; c-bristle stout (distal part broken off on limb examined). Eighth joint: d- and e-bristles about twice length of b-bristle, bare, with fairly blunt tips; f-bristle only slightly shorter than d- and e-bristles, with 3 marginal filaments, and 2 minute spines at tip; g-bristle stout (distal part broken off on limb examined).

Second Antenna (Figure 34*b*): Protopodite bare. Endopodite 3-jointed: first joint short, with 1 small, proximal, anterior bristle, and numerous spines forming rows; second joint elongate with 3 short ventral spines bearing faint hairs; third joint recurved, with 2 small bristles near tip. Exopodite: elongate first joint with minute, terminal, medial bristle; second joint about twice

FIGURE 34.—*Eusarsiella costata* (Kornicker), USNM 158333, adult male, length 0.91 mm: *a*, right first antenna, medial view (long filaments of sensory bristle not shown); *b*, part of left second antenna, medial view; *c*, right mandible, lateral view; *d*, part of left mandible, medial view; *e*, distal part of fifth limb; *f*, sixth limb; *g*, right lamella of furca; *h*, left lamella of furca and claw 1 of right lamella; *i*, left lateral eye and medial eye (stippled); *j*, copulatory limb.


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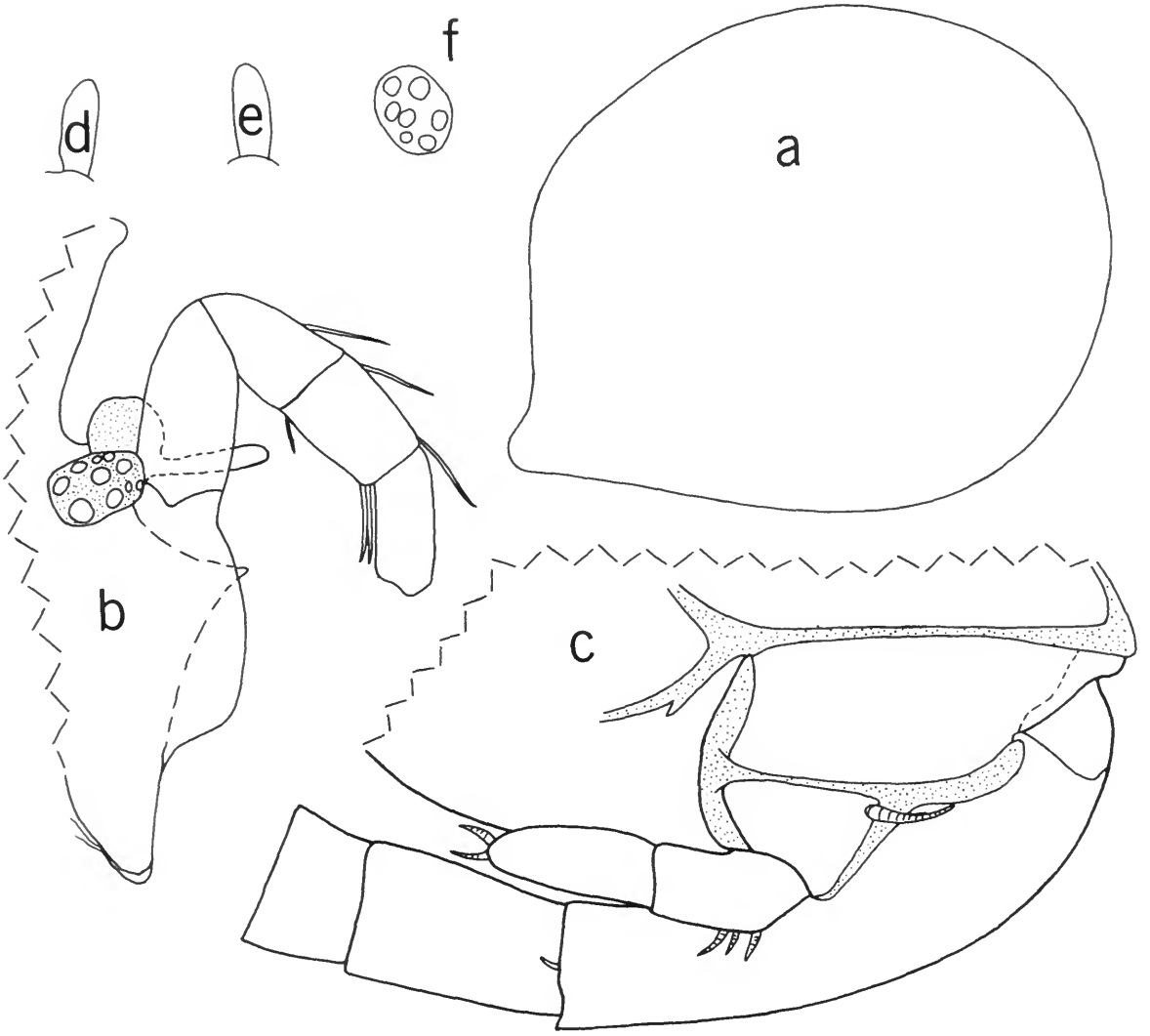


FIGURE 35.—*Eusarsiella costata* (Kornicker), USNM 158595, instar IV male, length 0.83 mm: *a*, outline of complete specimen; *b*, anterior of body showing part of right first antenna, right lateral eye, medial eye, bellonci organ, and upper lip; *c*, part of left second antenna, medial view; *d*, *e*, left and right seventh limbs; *f*, left lateral eye.

length of third joint; remaining joints slightly smaller than preceding joint; bristle of second joint long, with about 7 stout, proximal, ventral spines, and distal, faint, natatory hairs; bristles of joints 3–8 with proximal ventral spines and natatory hairs; small ninth joint with 2 bristles (ventral bristle long, with proximal ventral spines and distal natatory hairs, dorsal bristle short, bare).

Mandible (Figure 34*c,d*): Coxale endite consisting of short bristle-like, medial spine. Basale: dorsal margin with small bristle distal to middle, and 2 terminal bristles (1 long, 1 short); ventral margin with 1 small midbristle; medial side with

4 small bristles (3 proximal forming group, 1 distal). First endopodial joint: ventral margin with 1 ventral bristle bearing few hairs; medial surface with long proximal hairs near dorsal margin and short spines near ventral margin; lateral surface with spines in distal dorsal corner. Second endopodial joint: ventral margin with short subterminal bristle; dorsal margin with spines forming rows. End joint with long, stout, unringed claw, 2 short ventral bristles, and 1 small medial bristle near dorsal margin. Exopodite well-developed, hirsute; although base of exopodite present on lateral side of basale, distal tip tends to twist onto medial side of first endopodial joint.

Maxilla: Reduced.

Fifth Limb (Figure 34*e*): Single endite with 1 small bristle. Exopodite: first joint with 2 hirsute bristles; second joint with 2 bristles hirsute proximally; third joint with 3 bristles (1 very small) on inner lobe and 1 long bristle on outer lobe; fused fourth and fifth joints with 4 bristles.

Sixth Limb (Figure 34*f*): Single endite with 3 bristles. End joint with 12 spinous or hirsute bristles followed by space and then 2 stout hirsute bristles.

Seventh Limb: Not observed.

Furca (Figure 34*g,h*): Each limb with 5 slender pointed claws; claw 1 fused to lamella, remaining claws separated from lamella by suture; right lamella anterior to left (Figure 34*h*); each lamella with 2 or 3 pointed processes following posterior claw; claws with long and short teeth along posterior margin.

Bellonci Organ: Broken off.

Eyes (Figure 34*i*): Medial eye bare with light amber pigment. Lateral eye about same size as medial eye, with light amber pigment and about 10 ommatidia.

Copulatory Organs (Figure 34*j*): Each of paired copulatory organs with several lobes; distal lobe with sclerotized curved process having peg and bristles on inner edge of curvature.

DESCRIPTION OF INSTAR IV Male (Instar A–1 Figure 35).—Carapace oval in lateral view, with small caudal process and without rostrum or incisur (Figure 35*a*).

Ornamentation: Similar to that of adult female.

Infold: Not examined.

Size: USNM 158595, length 0.83 mm, height 0.70.

First Antenna (Figure 35*b*): First joint without bristles. Second joint with 1 dorsal bristle. Third and fourth joints fused; third joint with 2 bristles (1 ventral, 1 dorsal); fourth joint with 3 bristles (2 ventral, 1 dorsal). Remaining joints not examined in detail, but in general similar to those of adult female.

Second Antenna (Figure 35*c*): Protopodite bare. Endopodite 3-jointed: first joint with 1 proximal anterior bristle; second joint elongate with 3 ventral bristles; third joint elongate with 2 small terminal bristles (Figure 35*c*). Exopodite similar to that of adult female.

Mandible, Maxilla, Fifth and Sixth Limbs: Not examined in detail but well developed and, in general, similar to those of adult female.

Seventh Limb (Figure 35*d,e*): Faint, small, bare.

Furca: Not examined in detail but, in general, similar to that of adult female.

Bellonci Organ (Figure 35*b*): Elongate with rounded tip.

Eyes (Figure 35*b*): Medial eye with light amber pigment. Lateral eye with light amber pigment and 7–11 ommatidia, some indistinct and small.

Upper Lip (Figure 35*b*): Similar to that of adult female

Copulatory Organs: Consisting of weakly developed lobes.

Y-Sclerite: Typical for genus.

Eusarsiella gigacantha (Kornicker, 1958)

Figures 36–38

Sarsiella gigacantha Kornicker, 1958:250, figs. 47:8A,B, 76G, 77A–E, 88A,F,H,I.

Eusarsiella gigacantha.—Poulsen, 1965:83.

Sarsiella georgiana Darby, 1965:36, pl. 25: figs. 2–9.

HOLOTYPE.—USNM 122913, A–1 male, on slides and in alcohol.

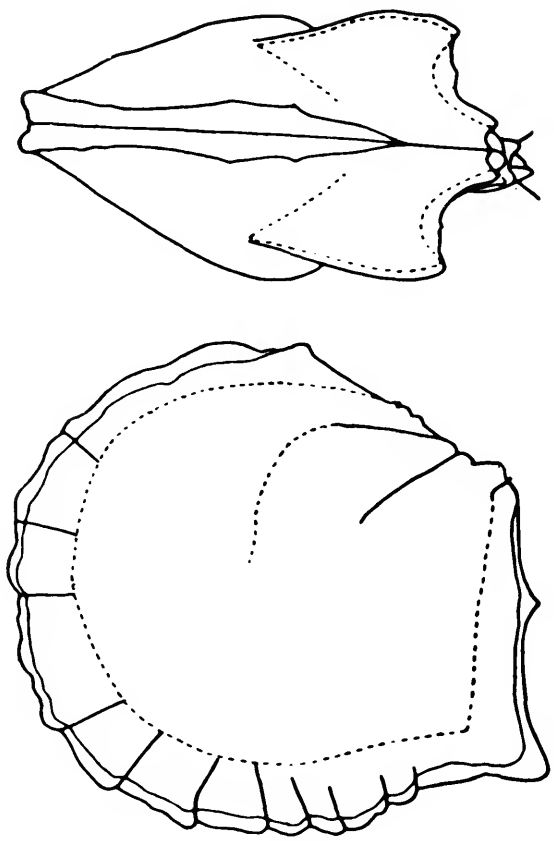


FIGURE 36.—*Eusarsiella gigacantha* (Kornicker), holotype, adult female, length 1.37 mm, lateral and dorsal views of complete specimen. (From Kornicker, 1958, fig. 88A,H).

TYPE-LOCALITY.—In the vicinity of Bimini, Bahamas.

MATERIAL.—Holotype; USNM 152314, adult male paratype.

DISTRIBUTION.—Bahamas and continental shelf of Georgia (Figure 2). Known depth range 1–24.7 m (Table 1).

DIAGNOSIS.—Carapace of adult female with alar posterodorsal process and crenulate anterior and ventral margins (Figure 36). Length 1.37 mm.

Seventh Limb: Females with many (ca. 15) bristles (Kornicker, 1958, fig. 76G).

SUPPLEMENTARY DESCRIPTION OF ADULT MALE (Figures 37, 38).—Carapace elongate with large rostrum and shallow incisur.

Ornamentation (Figure 37): Ventral margin with 8 ruffle-like processes; posterior margin with 2 processes (1 at posterodorsal corner, other near middle of posterior margin), each with long terminal bristle; surface with large alar process in posterodorsal part of valve (tip of process with single bristle); a narrow rib extending posteriorly from point near valve middle; ventral margin with bristles forming 2 rows; surface of valve with few scattered bristles, no fossae, and without coating of amorphous gel.

Infold: Two setal bristles present on posterior infold dorsal to caudal process.

Size: USNM 152314, length 1.23 mm, height 0.54 mm. Specimen number 122D-2 (from Kornicker 1958:250) length 1.3 mm, height 0.85 mm.

First Antenna (Figure 38*a*): Sensory bristle of fifth joint with abundant filaments on proximal bell-like part and about 5 short distal filaments; small bulge present at base of sensory bristle adjacent to filamentous bulbous part. Minute sixth joint with slender medial bristle. Seventh joint: a-bristle extending just beyond bristle of sixth joint; b-bristle almost twice length of a-bristle, with 1 short distal filament; c-bristle with tip broken off on specimens examined, long with

FIGURE 37.—*Eusarsiella gigacantha* (Kornicker), USNM 152314, paratype, adult male, lateral view of complete specimen, length 1.23 mm.

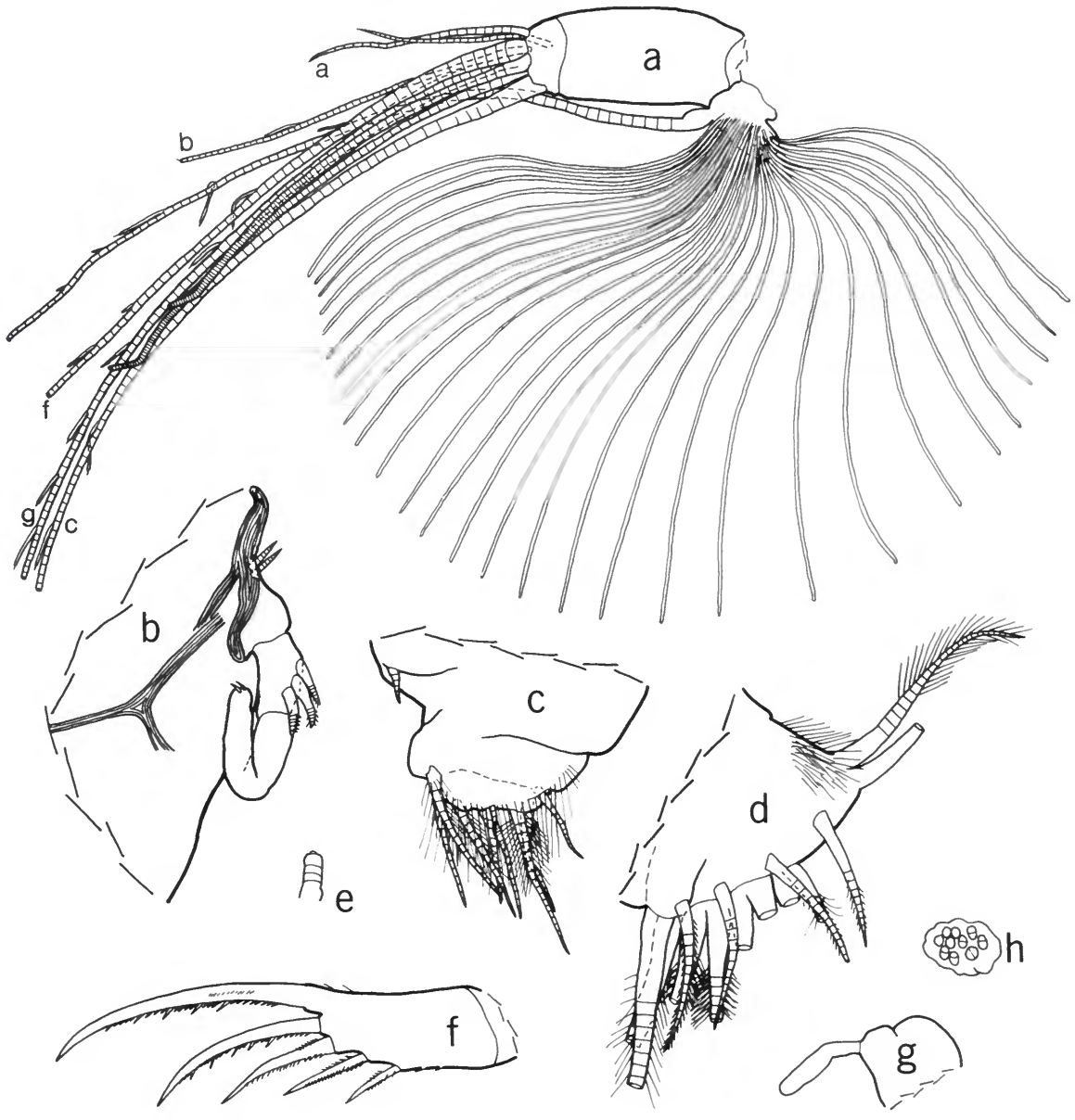


FIGURE 38.—*Eusarsiella gigacantha* (Kornicker), USNM 152314, paratype, adult male, length 1.23 mm: *a*, distal part of left first antenna, lateral view; *b*, part of right second antenna, lateral view; *c*, distal part of fifth limb; *d*, part of sixth limb; *e*, seventh limb; *f*, right lamella of furca, medial view; *g*, medial eye and bellonci organ; *h*, left lateral eye.

at least 5 short marginal filaments. Eighth joint: d- and e-bristles bare, both well developed; f-bristle with tip missing on specimen examined, well developed with at least 4 marginal filaments; g-bristle similar to c-bristle, with at least 5 short marginal filaments.

Second Antenna: Protopodite bare. Endopodite 3-jointed (Figure 38b): first joint short with 2 short, proximal, anterior bristles; second joint only about one-third longer than anterior margin of first joint, with 3 short, stout bristles; third joint elongate, curving back on itself near middle, with rounded tip having 2 minute bristles. Exopodite without basal spines.

Maxilla: Reduced with few weak bristles.

Fifth Limb (Figure 38*c*): Epipodial appendage with 36 bristles. Single endite with 1 small bristle. Exopodite: First joint with 2 faint bristles; remaining joints with total of about 7 faint bristles, some hirsute.

Sixth Limb (Figure 38*d*): Fragmented on specimen examined but seemingly typical for genus.

Seventh Limb (Figure 38*e*): Minute, bare.

Furca (Figure 38*f*): Each lamella with 5 claws; claw 1 fused to lamella; remaining claws separated from lamella by suture; margin of lamella following claw 5 with few spines.

Bellonci Organ (Figure 38g): Elongate, widening distally, with rounded tip.

Eyes: Medial eye pigmented, bare (Figure 38*g*); lateral eye about same size as medial eye, pigmented, with 10 ommatidia (Figure 38*h*).

SUPPLEMENTARY DESCRIPTION OF A−1 MALE (holotype).—Kornicker (1958:250) stated that the undissected dried holotype was a female. Upon softening the specimen chemically and then removing it from the carapace, I have been able to identify it as an A−1 male, because of its having an elongate, 3-jointed endopodite of the second antenna. The carapace was illustrated by Kornicker (1958, figs. 47:8*a*,*b*; 88:H).

Size (from Kornicker 1958:250): USNM 122913 (Kornicker specimen number 190-1A) length 1.37 mm, width 0.75 mm, height 1.14 mm.

First Antenna: Sensory bristle well-developed, as long as c-bristle of seventh joint, not short as indicated in illustration of female first antenna illustrated by Kornicker (1958:fig. 77*c*).

Endopodite of Second Antenna: Three jointed: first joint short with 2 small, proximal, anterior bristles; second joint longer than first, with 2 short bristles; third joint elongate, linear, with spine or bristle at tip.

REMARKS.—Kornicker (1958, figs. 76G, 77) illustrated the appendages of a specimen he labeled female. The strongly tapered bristles of the seventh limb of the specimen (Kornicker, 1958, fig. 76G) indicate that the specimen is a juvenile female, probably an A−1 instar. The large number of bristles (15) on the seventh limb should make this species easily identifiable.

Eusarsiella spinosa (Kornicker and Wise, 1962), new combination

FIGURES 39–42; PLATES 2–4

Sarsiella spinosa Kornicker and Wise, 1962:72, figs. 10A–D.

HOLOTYPE.—USNM 107846, ovigerous female, 2 valves in alcohol, appendage slide lost.

TYPE-LOCALITY.—Laguna Madre near Port Isabel, Texas.

MATERIAL.—Holotype; Paratype, USNM 107845, dry specimen from Aransas Bay, Texas. In addition, see "Station Data with Specimens Examined."

DISTRIBUTION.—North Carolina continental shelf; Indian River, near Fort Pierce, Florida; Placida Harbor, Florida; Anclote Anchorage, Florida; Florida and Texas continental shelf; Laguna Madre, Aransas Bay, Corpus Christi ship channel, Texas (Figure 3, Table 1). Known depth range 0.15–57.5 m.

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE (Figures 39, 40, 42*a–d*; Plates 2–4).—Carapace oval in lateral view with prominent caudal process and without incisur; surface with about 17 spinous nodes forming oval approximately parallel to valve edge; a single node present anteriorly within oval, 5 nodes present be-

FIGURE 39.—*Eusarsiella spinosa* (Kornicker and Wise), USNM 144002, adult female, lateral and dorsal views of complete specimen (appendages not shown), length 1.05 mm.

FIGURE 40.—*Eusarsiella spinosa* (Kornicker and Wise), USNM 152305, adult female, length 1.04 mm: *a*, posteroventral part of left valve, inside view; *b*, caudal process of right valve, inside view; *c*, some of central adductor muscle attachment scars of left valve, outside view, anterior to left; *d*, left first antenna, medial view; *e*, part of right second antenna showing endopodite, medial view; *f*, left mandible, medial view; *g*, maxilla, medial view, endites not shown; *h*, fifth limb; i, sixth limb; *j*, seventh limb; *k*, left lamella of furca; *l*, left lateral eye and bellonci organ; *m*, anterior of body showing upper lip bearing 2 anterior nodes; *n*, left Y-sclerite.

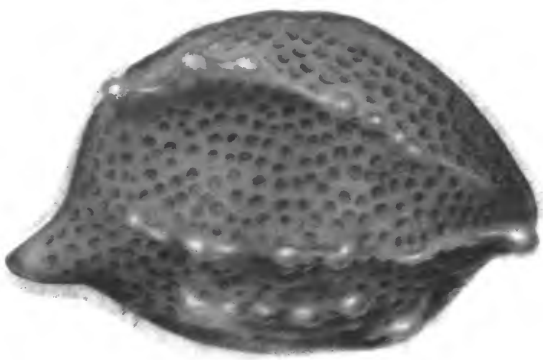


FIGURE 41.—*Eusarsiella spinosa* (Kornicker and Wise), USNM 158075, adult male, lateral view of complete specimen, length 0.96 mm.

tween oval and anteroventral margin of valve, 4 small nodes present between oval and posterior valve margin (Figure 39; Plates 2*a*,*b*, 3*a*, 4*a*–*c*).

Ornamentation (Plates 2–4): In addition to nodes, surface with shallow bare fossae and abundant short pointed bristles; bristles on nodes longer than those between nodes and some have rounded tips with papillae (Plate 2*d*); long bristles, wide proximally, present along anterior and ventral valve margins and scattered over lateral surface of valves.

Infold (Figures 40*a*,*b* 42*c*,*d*; Plate 4*f*): Anterior infold at middle of valve with minute bristle near inner margin; posterior margin with 2 setose bristles dorsal to caudal process; caudal process with 3–5 bristles forming row and an additional bristle near inner margin.

Selvage: Wide lamellar prolongations with smooth outer edge present along anterior, ventral and posterior margins (Plate 4*f*).

Central Adductor Muscle Attachments: Consisting of several individual oval attachments (Figure 40*c*).

Size: USNM 152305, length 1.04 mm, height including caudal process 1.06 mm, height excluding caudal process 0.89 mm; USNM 144002, length 1.05 mm, height including caudal process 1.01 mm, height excluding caudal process 0.85 mm; USNM 158176, length 1.08 mm, height including caudal process 1.12 mm, height excluding caudal process 0.97 mm; USNM 157484, length 1.10 mm, height including caudal process 1.06 mm, height excluding caudal process 0.89 mm; USNM 107846, holotype, separated valves preserved in alcohol, left valve, length 1.18 mm, height including caudal process 1.12 mm, height excluding caudal process 0.99 mm; right valve, length 1.17 mm, height including caudal process 1.18 mm, height excluding caudal process 0.99 mm. USNM 107845, paratype from Aransas Bay, Texas, dry complete specimen, length 1.12 mm, height including caudal process 1.07 mm; height excluding caudal process 0.92 mm.

First Antenna (Figure 40*d*): First joint bare. Second joint with 1 dorsal bristle with short marginal spines. Third joint not separated from fourth by suture, with 1 dorsal bristle reaching fifth joint and 1 ventral bristle almost reaching middle of fourth joint; fourth joint with 1 dorsal bristle and 2 long ventral bristles. Sensory bristle of fifth joint with 2 short filaments, 1 proximal, 1 near middle; sixth joint with short medial bristle. Seventh joint: a-bristle about 3 times length of sixth joint; b-bristle bare, about twice length of a-bristle; c-bristle about same length as sensory bristle of fifth joint, with 2 minute filaments, 1 proximal, 1 near middle. Eighth joint: d- and e-bristles bare with blunt tips, almost as long as c-bristle; f- and g-bristles same length as c-bristle, with 2 minute filaments.

Second Antenna (Figure 40*e*): Protopodite bare. Endopodite one-jointed with 2 short anterior bristles and small terminal knob. Expodite: first joint with short medial spine on distal margin; bristle on second joint with several long hairs proximally on dorsal margin, about 15 proximal spines on ventral margin distal to the long hairs on dorsal margin, and natatory hairs on both margins distal to spines; some ventral spines also present on bristles of joints 3–5; bristles of joints 3–8 with natatory hairs; ninth joint with 2 bristles, 1 long with natatory hairs, 1 short, bare.

Mandible (Figure 40*f*): Coxale endite consisting of short stout spine with minute spine at tip; ventral margin of coxale with short hairs. Basale:

FIGURE 42.—*Eusarsiella spinosa* (Kornicker and Wise), USNM 144002, adult female, length 1.05 mm: *a*, posterior of body showing right lamella of furca, right genital process, and right Y-sclerite; *b*, anterior of body showing left lateral eye, upper lip, medial eye and bellonci organ. USNM 107846, holotype, adult female, length of left valve, 1.18 mm, length of right valve, 1.17 mm: *c*, caudal process of left valve; *d*, posteroventral part of right valve showing caudal process and setal bristles. USNM 158071, adult male, length 0.92 mm: *e*, left first antenna, lateral view; *f*, part of right second antenna, medial view; *g*, right mandible, lateral view; *h*, distal part of fifth limb; *i*, sixth limb; *j*, right lateral eye, medial eye and bellonci organ. USNM 158075, adult male, length 0.96 mm: *k*, left seventh limb; *l*, posterior of body showing right lamella of furca, copulatory organs, Y-sclerite, and right seventh limb (upper stippled triangle); *m*, left Y-sclerite.

ventral margin of basale with 4 short bristles, 3 proximal, 1 distal; 1 short bristle present on lateral surface near distal ventral bristle; dorsal margin with 2 short spines. Exopodite absent. Endopodite: first joint with spines on medial surface and stout smooth ventral claw; second joint with minute dorsal claw and stout smooth main claw; third joint with minute ventral and dorsal bristle and stout smooth terminal claw.

Maxilla (Figure 40*g*): Coxale with short anterior bristle; endite I with 6 bristles; endites II and III with total of about 8 bristles; basale with 1 short bristle near exopodite; exopodite with 2 bristles, 1 slightly more than ½ length of other. Endopodite: first joint with alpha- and beta-bristles with few proximal teeth and distal marginal spines; second joint with 2 lateral a-bristles, 1 medial c-bristle, and 5 pectinate terminal bristles. tles.

Fifth Limb (Figure 40*h*): Epipodial appendage with 29 bristles; single endite present with 1 short bristle. Exopodite: first joint with 2 bristles with short marginal spines; second to fifth joints fused, hirsute; second joint with 2 spinous bristles; fused third to fifth joints with total of 4 bristles, 1 very short.

Sixth Limb (Figure 40*i*): Endite I with 3 short bristles; end joint with 10 spinous bristles separated by space from 2 stout posterior hirsute bristles; posterior margin of limb hirsute.

Seventh Limb (Figure 40*j*): Each limb with 8 bristles, 2 proximal, 1 on each side, and 6 terminal, 3 on each side; each bristle with 1–5 bells, no marginal spines; terminus with opposing combs, each with 5 or 6 teeth.

Furca (Figures 40*k*, 42*a*): Each lamella with 5 (rarely 6) claws followed by several small spines; claw 1 continuous with lamella, others separated by suture from lamella; all claws with pointed tips; claws 1–4 with teeth along posterior margins, some longer than others; slender spines or hairs present between claws 4 and 5, and 5 and 6.

Bellonci Organ (Figures 40*l*, 42*b*): One jointed, elongate, broadening distally, with rounded tip.

Eyes (Figures 40*l*, 42*b*): Lateral eye small pigmented, with 3 ommatidia; medial eye bare, pigmented, larger than lateral eye.

Upper Lip (Figures 40*m*, 42*b*): Helmet-shaped with 2 anterior processes, but without hairs or spines.

Genitalia (Figure 42*a*): Consisting of oval sclerotized ring.

Y-Sclerite (Figure 40*h*, 42*a*): Typical for family.

Eggs: USNM 152305 with 2 eggs in marsupium; USNM 144002 with 8 eggs in marsupium and several smaller unextruded eggs.

REMARKS.—Kornicker and Wise (1962:72) reported the seventh limb to have 3 bristles in the proximal group; both specimens examined from Placida Harbor, Florida, have only 2.

DESCRIPTION OF ADULT MALE (Figures 41, 42*e–m*).—Carapace elongate with rostrum, shallow incisur, and projecting caudal process with rounded tip (Figure 41).

Ornamentation (Figure 41): Rostrum with small lateral protuberance. Upper rib with about 4 low processes on anterior separated by saddle from 3 or 4 low processes on posterior half; posterior processes generally more prominent than anterior processes, and on some specimens the process closest to the posterior edge of valve separated by saddle from the more anterior of the posterior processes; considerable variability in degree of prominence of individual processes. Middle rib consisting of about 7 low processes more-or-less coalescing to form the rib. About 5 low processes present between ventral margin of valve and middle rib; the processes tend to coalesce to form rib. Except for small process near anteroventral corner of valve, ventral margin without processes. Surface of valve including processes and ribs with abundant long, slender hairs with tips covered by gelantinous film; a few long hairs with broad bases along free margins of valves and sparsely distributed on valve surface (these penetrate gelatinous film); bristles on processes and ribs are longer and more densely distributed than those between ribs. Surface of valves with large, shallow, bare fossae. Some

carapaces with brown pigment in lower half.

Infold: Not examined in detail.

Size: USNM 158071, length 0.92 mm, height 0.58 mm, USNM 158075, length 0.96 mm, height 0.65 mm; USNM 157485A, length 0.82 mm, height 0.58 mm; USNM 157485B (3 specimens), length 0.84 mm, height 0.60 mm, length 0.84 mm, height 0.59 mm, length 0.84 mm, height 0.57 mm.

First Antenna (Figure 42*e*): First joint bare. Second joint with 1 dorsal bristle. Third and fourth joints fused; third joint with 2 bristles, 1 dorsal, 1 ventral; fourth joint with 3 bristles, 1 dorsal, 2 ventral. Sensory bristle of small fifth joint with cup-like proximal part with abundant long slender filaments; stem with several faint filaments (not shown on illustrated limb). Long sixth joint with short, terminal, medial bristle. Seventh joint: a-bristle much longer than bristle of sixth joint; b-bristle slender, broken off on limb examined; c-bristle long, with 3 marginal filaments. Eighth joint: d- and e-bristles bare, shorter than c-bristle, with blunt tips; f-bristle about same length as e-bristle, with 3 marginal filaments; g-bristle slightly longer than f-bristle, with 3 marginal filaments.

Second Antenna (Figure 42*f*): Protopodite bare. Endopodite 2-jointed: first joint with 2 small, proximal, anterior bristles; second joint small with 1 short terminal bristle. Exopodite: elongate first joint with 1 small bent medial bristle on distal margin; second joint about twice length of third joint; bristle of second joint fairly long (long proximal natatory hairs on dorsal margin followed by 3–10 spines on ventral margin, and then natatory hairs on both margins); bristles of joints 2–8 with natatory hairs (a few bristles may have ventral spines); small ninth joint with 2 bristles (1 long, 1 short), both with natatory hairs, no spines.

Mandible (Figure 42*g*:): Coxale endite consisting of small spine. Basale: 5 short bristles near or on ventral margin (2 of these fused proximally on illustrated limb); 2 distal bristles on dorsal margin. Exopodite well developed, hirsute, with distal part on medial side of first endopodial joint. First endopodial joint: dorsal margin with terminal spines forming row; ventral margin with 2 terminal bristles (1 short, 1 long with distal rings); medial surface hirsute. Second endopodial joint with 2 or 3 long bristles (1 ventral, 1 or 2 dorsal); spines present forming row medial to base of ventral bristle. End joint with 1 short, stout claw and 3 bristles (1 short, 2 minute).

Maxilla: Extremely reduced, with weakly developed bristles.

Fifth Limb (Figure 42*h*): Epipodial appendage with 33 bristles. Single endite with 1 small bristle. First exopodial joint with 2 bristles. Exopodial joints 2–5 with total of about 5 bristles.

Sixth Limb (Figure 42*i*): Single endite with 3 small bristles. End joint with 10 hirsute or spinous bristles followed by small space and then 2 hirsute bristles.

Seventh Limb (Figure 42,*k*,*l*): Minute, bare.

Furca (Figure 42*l*): Each lamella with 5 claws; claw 1 joined to lamella, remaining claws separated from lamella by suture.

Bellonci Organ (Figure 42*j*): Elongate with rounded tip.

Eyes (Figure 42*j*): Medial eye pigmented black or brown, bare. Lateral eye about same size as medial eye, with black or brown pigment and 7 or 8 ommatidia.

Copulatory Organ and Y-Sclerite (Figure 42*l*): Typical for genus.

Eusarsiella texana (Kornicker and Wise, 1962), new combination

FIGURES 43–48; PLATES 5–9

Sarsiella texana Kornicker and Wise, 1962:63, figs. 4D–G, 5A–F, 6A–I, 7A–I, 9A–D, 10E,F,H.—Wass, 1965:29 [listed].—Kornicker, 1969a:36; 1977b:791, 792.—Hiruta, 1977:59.—Wass and Andrews, 1979:275.

Sarsiella angusta Darby, 1965:38, pl. 26: figs. 4–6.—Parker, 1975:131, 140.

HOLOTYPE.—USNM 107841, ovigerous female, dried valves on slide.

TYPE-LOCALITY.—Aransas Bay, Texas.

MATERIAL.—See "Station Data with Specimens Examined."

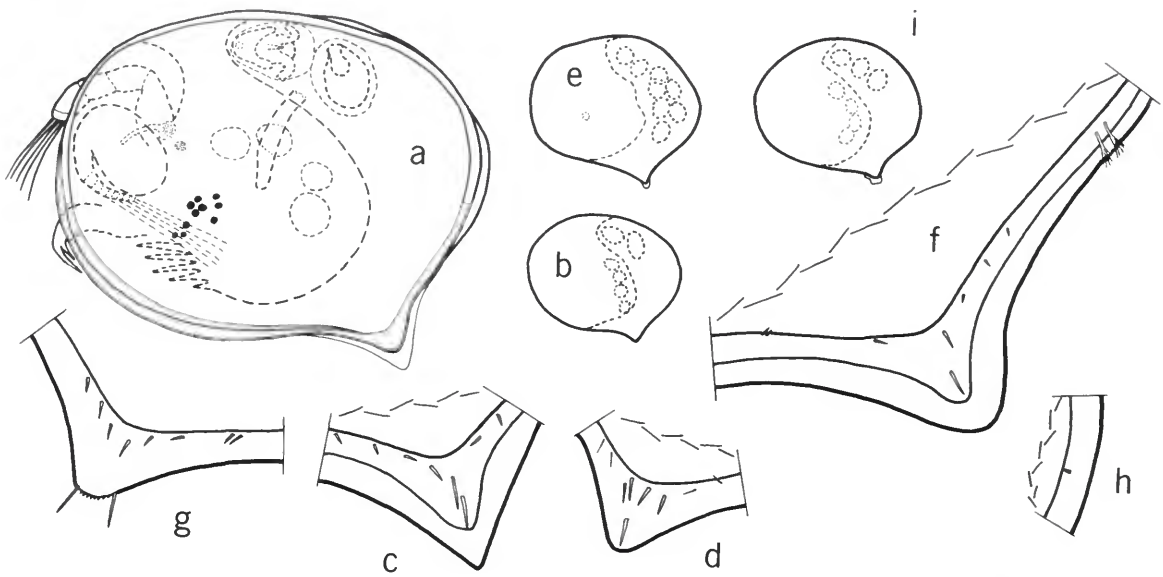


FIGURE 43.—*Eusarsiella texana* (Kornicker and Wise), adult females. USNM 149325B, length 1.17 mm: *a*, complete specimen showing 2 well-developed eggs in marsupium, 4 small unextruded eggs, central adductor muscle attachments, and position of appendages; *b*, complete specimen drawn at lower magnification than *a* and showing only eggs and posterior boundary of body; *c*, caudal process of right valve, inside view; *d*, caudal process of left valve, inside view. USNM 149325A, length 1.33 mm: *e*, complete specimen showing eggs in marsupium, position of central adductor muscle attachments, and posterior boundary of body; *f*, posterodorsal part of right valve showing caudal process and setal bristles, inside view; *g*, caudal process of left valve, inside view; *h*, anterior of left valve showing minute bristle on infold. USNM 149325C, length 1.29 mm: i, complete specimen showing 3 eggs in marsupium, 4 unextruded eggs, and posterior boundary of body. (Same magnification: *b*,*e*,i; *c*,*d*,*f*–*h*.).

DISTRIBUTION.—Rehobeth Bay, Maryland; Chesapeake Bay; continental shelves off Virginia, North Carolina, Georgia, and west Florida; Indian River, Placida Harbor, Alligator Harbor, and Anclote Anchorage, Florida; Texas Bays and Lagoons (Figure 2, Table 1). Known depth range 0.15–39 m. Parker (1975:131) listed the species (as *Sarsiella angusta*) among ostracodes collected in Hadley Harbor, Massachusetts; its presence there needs confirmation, but is certainly possible.

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE (Figures 43, 44, 48; Plates 5, 6).—Carapace oval in lateral view with short posteroventral caudal process; carapace narrow in dorsal view, sides flat, parallel, except for flaring anteroventral part; narrow concentric ridge present just within valve margins curves ventrally in caudal process area almost parallel to outer edge of process (Figure 43).

Ornamentation (Plates 5, 6*a*–*e*): Ridge paralleling valve edge appearing crinkled when viewed with dissecting microscope at low power, but when viewed with SEM distinctly ornamented with handlike clumps around shallow fossae with a central node (Plates 5*e*,*f*, 6*c*) and ridged tubercles (Plates 5*e*, 6*b*); bristles with crenulate base numerous along valve edge and scattered over valve surface (Plates 5*a*,*b*, 6*d*,*e*). Bristles emerge from slightly raised closed pore (Plate 6*d*); surface of valves at high magnification pustulose (Plate 6*d*). (Specimen photographed

FIGURE 44.—*Eusarsiella texana* (Kornicker and Wise), USNM 149325A, adult female, length 1.33 mm: *a*, left first antenna, medial view; *b*, endopodite of right second antenna, medial view; *c*, left mandible, medial view; *d*, part of ventral margin of coxale of right mandible showing endite (dashed triangle), lateral view; *e*, maxilla, medial view; *f*, right Y-sclerite and right genital process, anterior to right; *g*, fifth limb; *h*, sixth limb; *i*, seventh limb; *j*, anterior of body showing left lateral eye, medial eye, bellonci organ, and upper lip; *k*, exopodite of maxilla.

FIGURE 45.—*Eusarsiella texana* (Kornicker and Wise), USNM 152442, adult male, elongate form, lateral view of complete specimen, length 1.10 mm.

with the SEM did not have soft parts and is probably an A−1 juvenile, length 1.08 mm, but ornamentation is similar to that of adult).

Infold: Anterior infold slightly below valve middle with minute bristle near inner margin (Figure 43*h*); posterior infold with 2 setose bristles dorsal to caudal process; caudal process with only 2 or 3 bristles in addition to bristles along inner margin of infold (Figure 43*c,d,f,g*).

Selvage: Wide lamellar prolongation with minutely crenulate margin present along ventral margin (Plate 6*f*).

Central Adductor Muscle Attachments: Consisting of about 10 ovoid attachments (Figure 43*a*).

Size: USNM 151999A, length 1.33 mm, height 1.11 mm; USNM 151999B, length 1.17 mm, height 0.95 mm; USNM 151999C, length 1.29 mm, height 1.07 mm; USNM 144004, length 1.08 mm, height 0.95 with caudal process, 0.85 without caudal process; USNM 152304A, length 1.08 mm, height 0.92 mm (smallest ovigerous female in sample 3). (All height measurements include caudal process except where noted.)

First Antenna (Figure 44*a*): First joint bare. Second joint with spines along dorsal margin and 1 dorsal bristle with short marginal spines. Third joint short with 1 spinous dorsal bristle reaching distal margin of fourth joint; third and fourth joints not separated by suture; fourth joint with 1 short terminal dorsal bristle and 2 longer terminal ventral bristles; medial surface of fourth joint with few slender hairs forming row. Sensory bristle of fifth joint with 2 small marginal filaments, 1 proximal, 1 subterminal; sixth joint with small medial bristle. Seventh joint: a-bristle longer than medial bristle of sixth joint; b-bristle short, about one-half length of sensory bristle of fifth joint; c-bristle same length as sensory bristle, with 2 minute filaments, 1 proximal, 1 subterminal; eighth joint: d- and e-bristles bare, about same length as sensory bristle; f-bristle slightly shorter than sensory bristle, with 1 minute subterminal filament; g-bristle same length as sensory bristle, with 2 minute filaments, 1 proximal, 1 subterminal.

Second Antenna (Figure 44*b*): Protopodite bare, without medial bristle. Endopodite 1-jointed with 2 short bare proximal bristles. Exopodite: first joint with long hairs forming short rows along ventral margin, with small medial spine on distal margin; bristle of second joint reaching past end of exopodite, with natatory hairs, no marginal spines; bristles of joints 3–8 with natatory hairs, no spines; ninth joint with 2 bristles, 1 long with natatory hairs, 1 short with short marginal spines; joints 2–5 with few short spines along distal margin.

Mandible (Figure 44*c,d*): Coxale with short spines along ventral margin extending onto medial and lateral surfaces near margin, with small medial endite near ventral margin near middle of coxale. Basale: dorsal margin with 2 well-developed short bristles or spines, 1 distal to middle, 2 subterminal; medial surface near ventral margin with 4 short bristles, 3 proximal forming group, 1 distal; lateral surface at ventral margin with 1 short bristle near middle of margin. Endopodite: dorsal margin of first joint with slightly rippled outline, with cluster of spines near distal margin; medial surface with spines near middle; ventral margin with stout bare terminal claw; second joint with minute dorsal bristle and bare main claw; third joint with 1 short ventral bristle and 1 short dorsal bristle at base of main claw.

Maxilla (Figure 44*e*): Coxale with short anterior bristle; endite I with 6 bristles; endite II with 3 bristles; endite III with 4 bristles. Exopod-

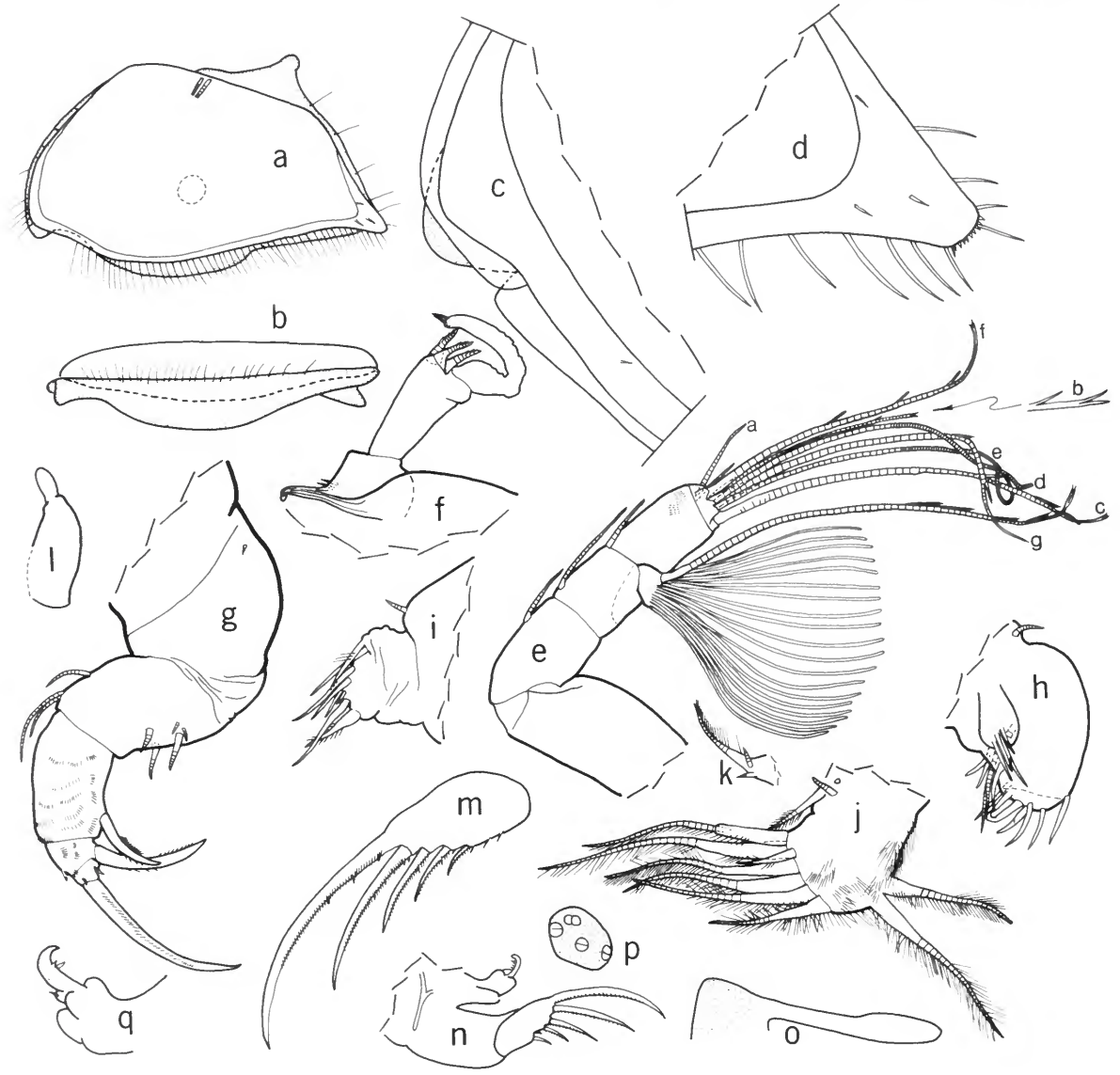


FIGURE 46.—*Eusarsiella texana* (Kornicker and Wise), USNM 152442, adult male, elongate form, length 1.10 mm. *a–d*: Right valve: *a*, complete valve, inside view; *b*, complete valve, ventral view (slightly oblique); *c*, anterior part, inside view; *d*, caudal process, inside view. *e–g*: appendages: *e*, right first antenna, lateral view; *f*, endopodite of left second antenna, medial view; *g*, right mandible, medial view; *h*, maxilla; *i*, distal part of fifth limb; *j*, right sixth limb, medial view; *k*, endite I of left sixth limb, medial view; *l*, seventh limb; *m*, left lamella of furca; *n*, posterior of body showing right lamella of furca, right copulatory organ, and right Y-sclerite; *o*, medial eye and bellonci organ; *p*, lateral eye; *q*, tip of left copulatory organ, lateral view.

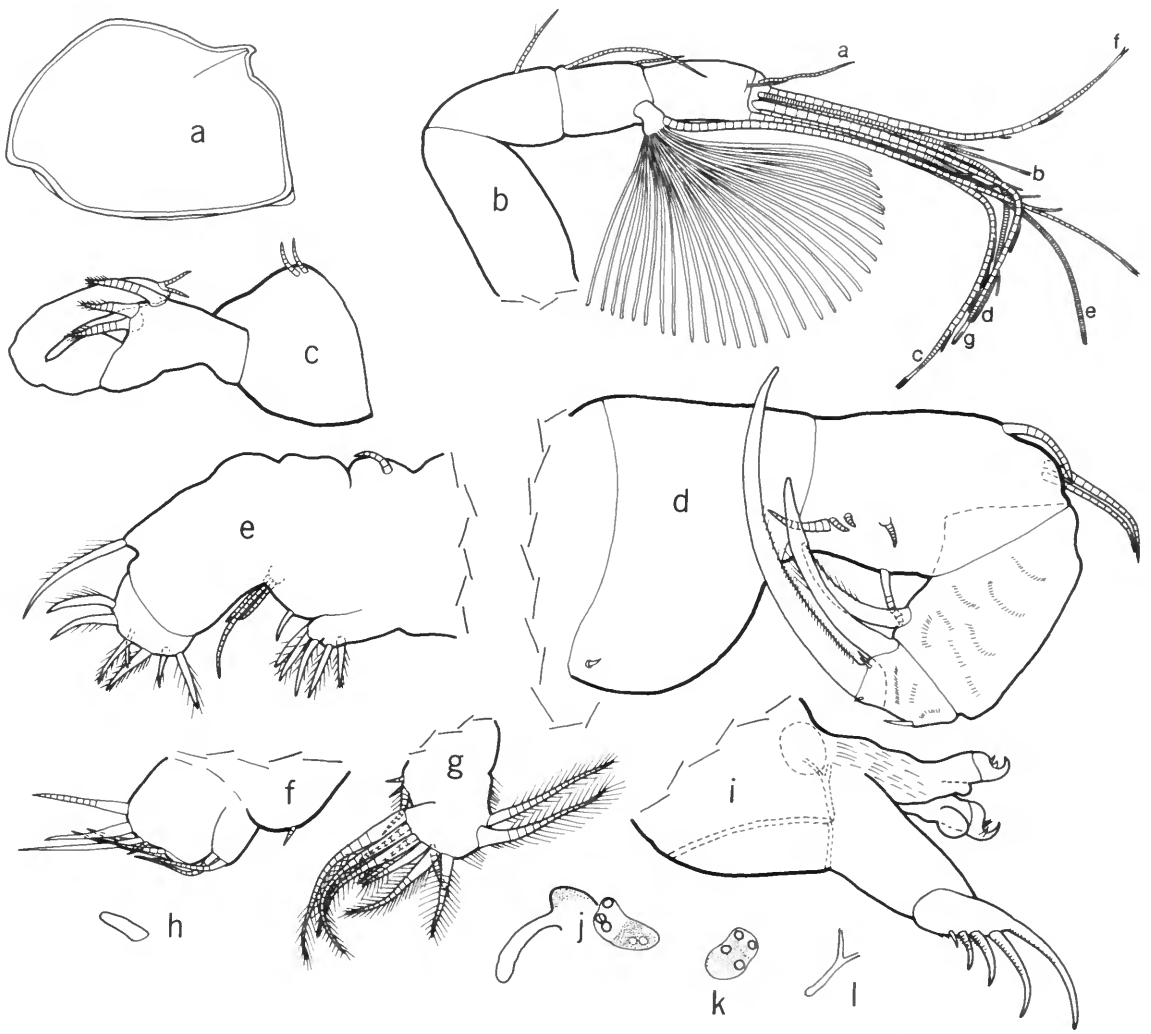


FIGURE 47.—*Eusarsiella texana* (Kornicker and Wise), USNM 151995, adult male, short form, length 0.81 mm: *a*, lateral view of complete specimen; *b*, left first antenna, medial view; *c*, endopodite of right second antenna, medial view; *d*, left mandible, medial view; *e*, maxilla (not all bristles shown); *f*, distal part of fifth limb; *g*, sixth limb; *h*, right seventh limb; *i*, posterior of body showing right lamella of furca, copulatory organs, and sclerites; *j*, left lateral eye, medial eye, and bellonci organ; *k*, right lateral eye; *l*, right Y-sclerite.

ite with 3 bristles, 1 bristle in middle and 2 shorter bristles, one on each side and lateral to long midbristle. Endopodite: first joint with alpha- and beta-bristles with few proximal teeth and distal marginal spines becoming finer distally along bristles; second joint with 2 lateral a-bristles, 1 medial c-bristle, and 5 stout pectinate terminal bristles.

Fifth Limb (Figure 44*g*): Epipodial appendage with 34 bristles; single endite present with 1 short bristle. Exopodite: first joint with 2 bristles with short marginal spines; second to fifth joints fused,

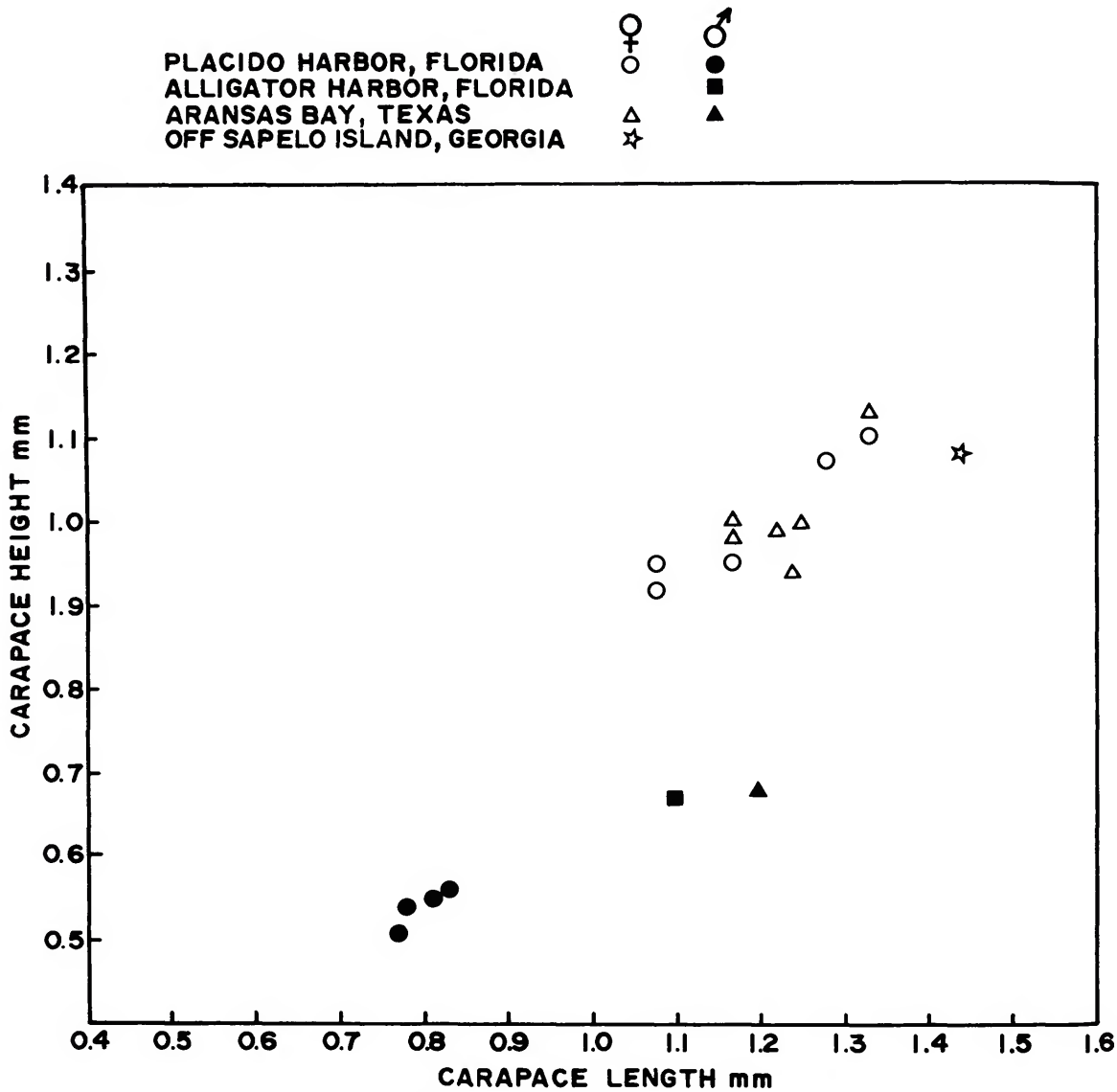


FIGURE 48.—*Eusarsiella texana* (Kornicker and Wise). Comparison of carapace length and height of adult males and females from Florida, Texas, and Georgia.

hirsute; second joint with 3 spinous bristles; fused third to fifth joints with total of 4 bristles, 1 very short.

Sixth Limb (Figure 44*h*): Endite I with 3 bristles; end joint with 7–8 spinous bristles separated by space without bristles from 2 stout posterior hirsute bristles (appendage illustrated aberrant in having only 1 posterior bristle on end joint).

Seventh Limb (Figure 44*i*): Each limb with 10 bristles, 4 proximal, 2 on each side, and 6 terminal, 3 on each side; each bristle with 2–5 bells, no marginal spines; terminus with opposing

combs, each with about 5 teeth.

Furca: Each lamella with 5 claws followed by several small spines; claw 1 continuous with lamella, others separated from lamella by suture; all claws with pointed tips and teeth along posterior margins; teeth in groups of about 6, with each tooth progressively longer and stouter distally.

Bellonci Organ (Figure 44*j*): Elongate, broadening distally, with rounded tip.

Eyes (Figure 44*j*): Lateral eye small, pigmented with 3 ommatidia; medial eye bare, pigmented, larger than lateral eye.

Upper Lip (Figure 44*j*): Helmet-shaped, without hairs or spines.

Genitalia (Figure 44*f*): Consisting of oval sclerotized ring.

Y-Sclerite (Figure 44*f*): Ventral branch with small triangular process on dorsal margin.

Eggs: USNM 15199A with 8 eggs in marsupium and 5 smaller eggs within body; USNM 15199B with 2 well-developed eggs in marsupium and about 6 unextruded; USNM 15199C with 3 large eggs in marsupium and 6 unextruded eggs; USNM 151996, 2 specimens, 1 with 5 eggs, the other with 7 eggs in marsupium; USNM 152304A with 2 eggs in marsupium.

DESCRIPTION OF ADULT MALE (Figures 45–48; Plates 7–9).—Carapace elongate with shallow incisur and prolonged posteroventral corner terminating in small caudal process (Figures 45, 46*a,b*, 47*a;* Plates 7*a,b*, 8*a,b*, 9*a*); posterodorsal corner with pointed process; alar process extending ventrally past edge of valve on some specimens; rostrum with small lateral process extending past anterior valve edge.

Ornamentation (Plates 7*c–e*, 8*c,d,f*, 9*b–f*): Narrow ridge paralleling valve edge except anteroventrally; surface of ridge with minute overlapping scales with convex posterior margins; scales present on posterodorsal process and on caudal process; the ridge forms outer edge of alar ventral process; surface with few scattered long bristles (Plates 7*c*, 8*c*, 9*d*).

Infold: Anteroventral infold with minute bristle posterior and ventral to incisur; caudal process with 2 small bristles plus 1 near inner margin of infold; usual 2 posterior flagellate bristles not observed.

Selvage (Plate 9*e*): Broad lamellar prolongation with smooth outer edge present along anterior, ventral, and posterior margin; selvage split at incisur.

Central Adductor Muscle Attachments (Figure 45): Consisting of about 12 individual ovoid attachments.

Size: USNM 152442, length 1.10 mm, height 0.66 mm, height 60% of length; USNM 151995, length 0.81 mm, height 0.57 mm, height 70% of length; USNM 152304B, length 0.81 mm, height 0.55 mm, height 68% of length; USNM 152304C (empty carapace), length 0.77 mm, height 0.51 mm, height 66% of length; USNM 144004A, length 0.83 mm, height 0.56 mm, height 67% of length; USNM 144004B, length 0.78 mm, height 0.54 mm, height 69% of length.

First Antenna (Figures 46*e*, 47*b*): First joint bare. Second joint with few long marginal hairs, third joint not delimited from fourth by suture, with 1 dorsal bristle; fourth joint with 1 dorsal bristle reaching middle of sixth joint. Fifth joint wedged between fourth and sixth joints at ventral margin; sensory bristle of fifth joint with abundant filaments (not all shown in illustrations), principle bristle with 4 short distal filaments and bifurcate tip; sixth joint with few distal spines on medial surface and 1 short, medial, terminal bristle. Seventh joint: a-bristle 2 to 3 times length of bristle of sixth joint; b-bristle about 3 times length of a-bristle, with 1 short distal filament and bifurcate tip; c-bristle longer than b-bristle, with 4 short distal filaments and bifurcate tip. Eighth joint: d- and e-bristles bare, filament-like with blunt tip, about same length as c-bristle; f-bristle as long as c-bristle, with 3 short distal filaments and bifurcate tip; g-bristle similar to f-bristle but with 4 short distal filaments and bifurcate tip.

Second Antenna (Figures 46*f*, 47*c*): Protopodite bare. Endopodite 3-jointed: first joint

short with 2 minute anterior bristles; second joint elongate with 3 short, stout, spinous bristles, third joint elongate with 2 short bristles and ridges at tip. Exopodite: first joint with minute medial bristle on terminal margin; bristle of second joint extending past ninth joint, with natatory hairs but not spines; bristles of joints 2–8 with natatory hairs; ninth joint with 2 bristles, 1 long, 1 short, both with natatory hairs; joints 2–7 with short spines forming row along terminal margin.

Mandible (Figures 46*g*, 47*d*): Coxale endite consisting of minute, medial, proximal spine. Basale: medial surface with 4 short bristles near ventral margin (3 proximal, 1 near middle); ventral margin with 1 short bristle with base on lateral side; dorsal margin with 1 short midbristle and 2 fairly short terminal bristles. Endopodite: first joint with short spines forming clusters on medial surface and 1 stout, ventral, spinous, claw; second joint with spines forming clusters on medial surface and 1 stout, spinous claw; a minute bristle may be present on lateral side near dorsal edge of base of claw; dorsal margin of second joint with minute bristle; end joint with stout spinous terminal claw and 3 minute bristles near base of claw, 2 ventral, 1 dorsal. Exopodite absent.

Maxilla (Figures 46*h*, 47*e*): Limb minute, bristles weakly developed; precoxale and coxale with epipodial fringe along dorsal margin; coxale with short anterior bristle; exopodite with 3 bristles; first endopodite joint with 1 long alpha-bristle; endopodial and endite bristles weakly developed and difficult to discern on specimen.

Fifth Limb (Figures 46*i*, 47*f*): Epipodial appendage with 32 or 33 bristles. Endite I with 1 short bristle. Exopodial bristles weakly developed: first joint with 2 bristles, remaining fused joints with about 6 bristles.

Sixth Limb (Figures 46*j,k*, 47*g*): Endite I with 1 or 2 short bare bristles and 1 longer hirsute bristle; end joint with 1–3 short bristles with short hairs and marginal spines on medial side near ventral margin, and 8 longer hirsute bristles along ventral margin; posterior margin, and medial and lateral surfaces hirsute.

Seventh Limb (Figures 46*l*, 47*h*): Minute, bulbous proximally on USNM 152442, but not on 151995.

Furca (Figures 46*m,n*, 47*i*): Each lamella with 5 pointed claws; claw 1 joined with lamella, claws 2–5 separated from lamella by suture; minute spine between claws 4 and 5 on both lamellae; 3 minute spines following claw 5 on left lamella only; all claws with minute teeth along posterior margins, some teeth slightly longer and stouter than others.

Bellonci Organ (Figures 46*o,p*, 47*j,k*): Elongate, expanding distally, with rounded tip.

Eyes (Figures 46*o,p*, 47*j,k*): Lateral eye pigmented, with 4 or 5 ommatidia; medial eye pigmented, about same size as lateral eye.

Upper Lip: Not observed.

Posterior of Body (Figures 46*n*, 47*i*): Bare.

Copulatory Organs (Figures 46*n*, 47*i*): Clasping organ long with terminal hook; a peg present medially near middle of concave margin of hook; 1 or 2 proximal lobes present with short bristles.

Y-Sclerite (Figures 46*n*, 47*i,l*): Typical for genus.

SUPPLEMENTARY DESCRIPTION OF INSTAR IV FEMALE.—Carapace similar in shape to instar IV female illustrated by Kornicker and Wise (1962, fig. 7A–C) except small riblets shown in their dorsal view (fig. 7C) not present.

Size: USNM 157683A, length 0.94 mm, height 0.70 mm: USNM 152304C, length 0.83 mm, height 0.69 mm; USNM 152304B, length 0.83 mm, height 0.65 mm.

Seventh Limb: Each limb with 4 proximal bristles (2 on each side) and 4 terminal bristles (2 on each side); all bristles strongly tapering; terminal bristles with minute bell near tip. Terminus with few minute teeth near middle. (Terminal teeth and bells on terminal bristles not present on seventh limb illustrated by Kornicker and Wise (1962,fig. 7F), possibly overlooked; appendages of that specimen not extant.)

DISCUSSION OF VARIABILITY IN SIZE (Adult Carapace; Figure 48).—The carapaces of males

collected in Aransas Bay, Texas (length 1.20 mm, Kornicker and Wise, 1962:68) and Alligator Harbor, Florida (length 1.10 mm) are longer than those collected in Placida Harbor (length 0.77–0.83 mm). No females were collected in Alligator Harbor, but the adult females from Aransas Bay and Placida Harbor are about the same size. The female reported from off Sapelo Island, Georgia (length 1.44 mm; Darby, 1965:38) is longer than the longest females from Aransas Bay (length 1.33 mm; Kornicker and Wise, 1962:68) and from Placida Harbor (length 1.33 mm). The carapace and appendages of both the elongate form and the short form of the adult male are illustrated herein (Figures 44–46; Plates 7–9).

Eusarsiella greyi (Darby, 1965), new combination

FIGURES 49–51

Sarsiella greyi Darby, 1965:38, pl. 27: figs. 1–9 [holotype only; not paratypes, UMMP 48815, 48816 = *Eusarsiella* species B, C, respectively, herein].

HOLOTYPE.—UMMP 48814, ovigerous female on 18 slides.

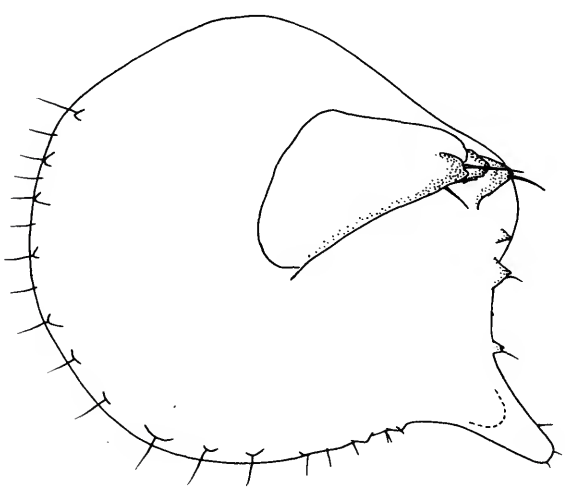


FIGURE 49.—*Eusarsiella greyi* (Darby), UMMP 48814, holotype, adult female, lateral view of left valve, length 1.14 mm.

FIGURE 50.—*Eusarsiella greyi* (Darby), USNM 158178, adult female, lateral view of complete specimen and dorsal view of left valve, length 1.11 mm.

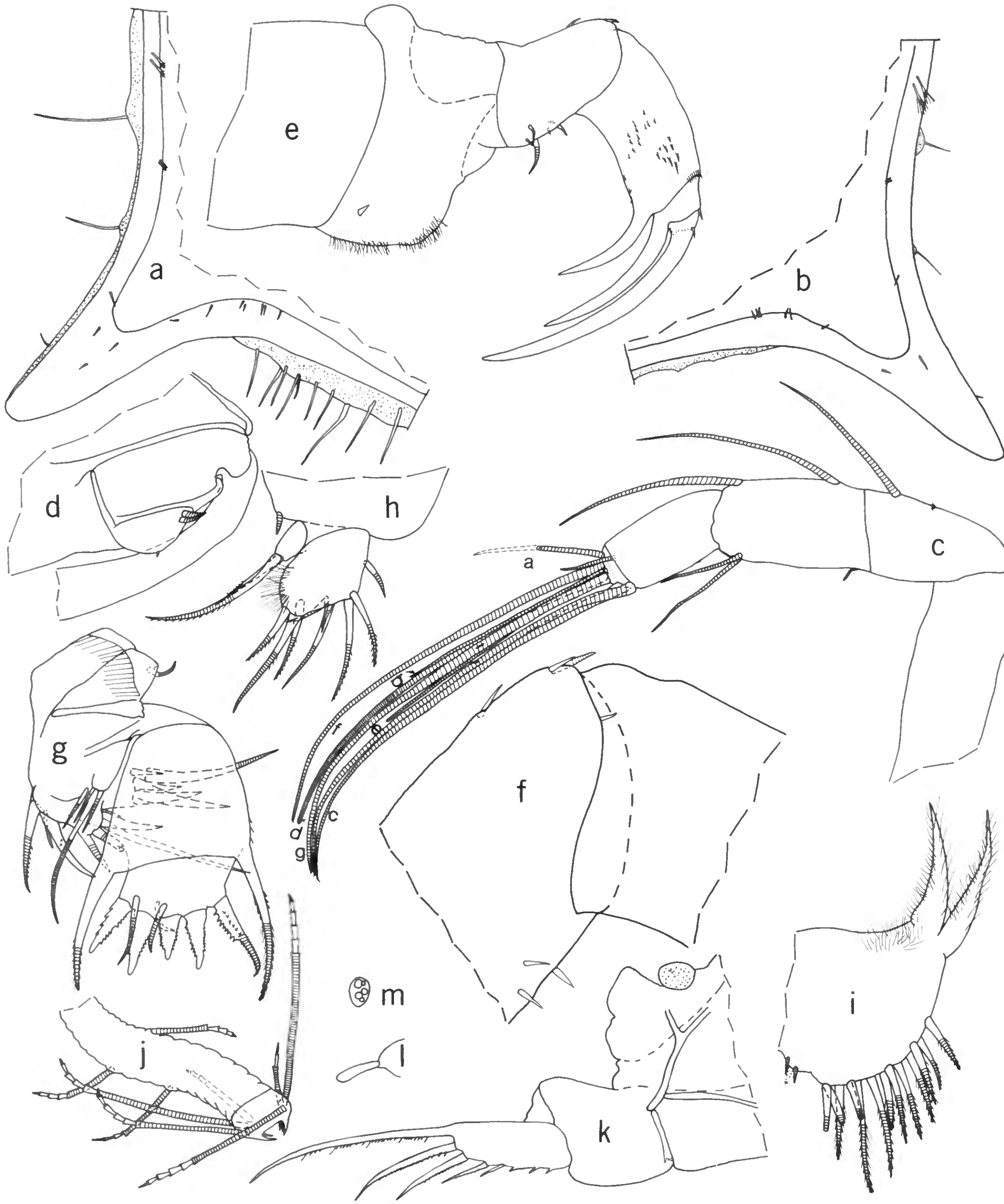
TYPE-LOCALITY.—Georgia continental shelf.

MATERIAL.—Holotype; in addition see "Station Data with Specimens Examined."

DISTRIBUTION.—Continental shelves off Georgia, western Florida, and Texas (Figure 3). Known depth range 24.7–51.75 m (Table 1).

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE (Figures 50, 51).—USNM 158178. Carapace oval in lateral view with elongate caudal process, triangular in dorsal view, wide alar process in posterodorsal part of each valve (Figure 50).

Ornamentation (Figure 50): Diagonal rib present on posterodorsal bulge; anterior end of rib terminating near middle of valve; posterior end of rib terminating as small process on posterior end of bulge; a low rib (bearing 2 small processes) extending from posterior process at end of diagonal rib to posterodorsal edge of valve (see dorsal view of valve, Figure 50); 2 small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processes on posterior edge of valve dorsal to caudal process (see lateral view of valve, Figure 50); ventral and anteroventral margin of valve with minute processes extending slightly past edge of valve; bristles abundant along anterior and ventral margins, and sparsely distributed over valve surface (not all shown on Figure 50); only a few bristles present along posterior margin of valve and on caudal process; carapace decalcified, surface appearing smooth, without fossae. Gelatinous coating absent.

Infold (Figure 51*a,b*): Anterior infold with minute bristle near middle. Distal half of infold of caudal process distal to U-shaped end of inner margin of infold with 2 or 3 bristles; proximal ventral part of caudal process with 6 or 7 small bristles near inner edge of infold; posterior infold with 3 bristles between caudal process and 2 setal bristles.

Selvage: Wide continuous lamellar prolongation present along anterior, ventral, and posterior margins.

Size: USNM 158178, length including caudal process 1.11 mm, length excluding caudal process 0.94 mm, height 0.86 mm. (UMMP 48814 holotype, length 1.14 mm, height 0.86 mm; my measurement of disarticulated right valve mounted on permanent slide, length including caudal process 1.24 mm, length excluding caudal process 1.10 mm, height 0.97 mm.)

First Antenna (Figure 51*c*): First joint bare. Second joint with few dorsal spines and 1 dorsal bristle. Third and fourth joints fused; third joint short, with 1 long dorsal bristle and 1 short ventral bristle; fourth joint long, with 3 or 4 bristles (1 dorsal, 2 or 3 ventral). Bristle of fifth joint with minute filament near middle and minute terminal spine. Sixth joint fused to fifth, with short bare medial bristle. Seventh joint: a-bristle more than twice length of bristle of sixth joint; b-bristle about ½ length of bristle of fifth joint; c-bristle same length as bristle of fifth joint, without marginal filaments. Eighth joint: d- and e-bristles bare with blunt tips (d-bristle slightly shorter than c-bristle; e-bristle about two-thirds length of d-bristle); f-bristle same length as d-bristle, without marginal filaments; g-bristle same length as c-bristle, without marginal filaments; c-, f-, and g-bristles with minute terminal spine.

Second Antenna (Figure 51*d*): Protopodite bare. Endopodite single jointed, with 2 short, proximal, anterior bristles, and minute terminal spine. Exopodite: first joint with minute medial bristle on distal margin; bristle on second joint with very slender, proximal, ventral spines, and distal natatory hairs; bristles of joints 3–6 with natatory hairs, no spines; bristles of joints 7 and 8 with few faint, proximal, ventral spines and distal natatory hairs; ninth joint with 2 bristles (ventral bristle shorter than bristle of eighth joint, with proximal ventral spines and distal natatory hairs; dorsal bristle short, with short marginal hairs); basal spines absent; joints 3–6 with few minute spines on distal dorsal corner.

Mandible (Figure 51*e,f*): Coxale endite consisting of stout spine; ventral margin of coxale hirsute. Basale: 6 small bristles near or on ventral margin (2 of these lateral); dorsal margin with 1 faint midbristle and 2 small subterminal bristles. Exopodite: represented by minute lateral bristle with base inward from dorsal margin (Figure 51*f*). Endopodite: first joint with medial spines and stout ventral claw; second joint with minute dorsal bristle and stout ventral claw; end joint with stout terminal claw and 2 minute bristles near base of claw (1 ventral, 1 dorsal).

Maxilla (Figure 51*g*): Precoxale and coxale with fringe of hairs dorsally; coxale with single

FIGURE 51.—*Eusarsiella greyi* (Darby), USNM 158178, adult female, length 1.11 mm: *a,b*, inside view of posteriors of left and right valves showing bristles of caudal process and setal bristles; *c*, right first antenna, medial view (left limb bears additional ventral bristle on fourth joint); *d*, part of left second antenna, medial view; *e*, left mandible, medial view; *f*, basale and proximal part of first endopodial joint of right mandible, lateral view (note small bristle on distal margin of basale representing exopodite); *g*, maxilla, lateral view; *h*, distal part of fifth limb; *i*, sixth limb; *j*, seventh limb; *k*, posterior of body showing left lamella of furca, left Y-sclerite, and left genital process; *l*, medial eye and bellonci organ; *m*, right lateral eye.,

dorsal bristle. 3 endites with total of 17 claws and bristles (endite I with 7; endite II with 4; endite III with 6) (not all shown on illustrated limb). Basale with small bristle near exopodite. Exopodite with 3 bristles (1 long bristle with 1 short bristle on each side). First endopodial joint with spinous and pectinate alpha- and beta-bristles. Second endopodial joint with 2 a-bristles, 1 c-bristle and 5 pectinate end bristles.

Fifth Limb (Figure 51*h*): Single endite with 1 short bristle. Exopodite: first joint with 2 bristles; joints 2–5 fused, with total of 9 bristles (3 on second joint, 3 on inner part of third joint, 1 on outer part, and 2 on combined fourth and fifth joints).

Sixth Limb (Figure 51*i*): Single endite with 3 bristles (middle bristle longer than others but missing on illustrated limb). End joint with 13 bristles with small marginal spines, followed by space and then 2 stout hirsute bristles.

Seventh Limb (Figure 51*j*): Six bristles in terminal group (3 on each side); 3 bristles in proximal group (1 on one side, 2 on other); each bristle with up to 5 bells. Terminus consisting of opposing combs, each with 4 or more faint teeth.

Furca (Figure 51*k*): Each lamella with 5 slender claws with teeth along posterior margin; claw 1 fused to lamella, remaining claws separated from lamella by suture; claw 1 of right lamella anterior to claw 1 of left lamella; left and right lamellae with 3 or 5 stout spines on margin following claw 5.

Bellonci Organ (Figure 51l): Elongate, broadening distally, with rounded tip.

Eyes: Medial eye fragmented, but may have dark pigment (Figure 51*l*). Lateral eyes unpigmented, each with 5 ommatidia (Figure 51*m*).

Posterior of Body (Figure 51*k*): Bare.

Genitalia (Figure 51*k*): Oval process on each side of body anterior to anus.

Y-Sclerite (Figure 51*k*): Typical for genus.

Eggs: USNM 158178 with 5 eggs in marsupium, also with unextruded eggs.

SUPPLEMENTARY DESCRIPTION OF HOLOTYPE (Figure 49).—UMMP 48814. Carapace similar to that of USNM 158178.

Size: UMMP 48814, length 1.14 mm, height 1.02 mm (from Darby, 1965:39).

First Antenna: Similar to that of USNM 158178 with following exceptions: fourth joint with 3 bristles (1 dorsal, 2 ventral); b-bristle with minute filament near middle; c-bristle with minute filament proximal to middle; f-bristle with short proximal filament; g-bristle with short proximal filament near middle.

Second Antenna, Mandible, Maxilla, Fifth and Sixth Limbs: Similar to those of USNM 158178, except exopodial bristle not observed on mandible.

Seventh Limb: Six bristles in terminal group (3 on each side); 4 bristles in proximal group (2 on each side); each bristle with up to 7 bells. Terminus consisting of opposing combs, each with 4 or more faint teeth.

Furca: Furca similar to that of USNM 158178 except 4–5 spines following claw 5 on each lamella.

Bellonci Organ: Similar to that of USNM 158178.

Eyes: Medial eye with brownish pigment. Lateral eyes similar to those of USNM 158178.

Eusarsiella disparalis (Darby, 1965), new combination

FIGURES 52–57; PLATES 10–12

Sarsiella disparalis Darby, 1965:40, pls. 30, 31.—Kornicker, 1967:38, figs. 17–19, pl. 4.—1977b:791–793, 795, 796.—Bowman and Kornicker, 1968:113.—Sohn and Kornicker, 1969:105.

HOLOTYPE.—Museum of Paleontology, University of Michigan, No. 48819, female.

TYPE-LOCALITY.—On continental shelf off Sapelo Island, Georgia, at a depth of either 41 ft (12 m) or 61 ft (22 m).

MATERIAL.—See "Station Data with Specimens Examined."

DISTRIBUTION.—Bogue Sound, North Carolina; Georgia continental shelf; Indian River, Biscayne Bay, Placida Harbor, Anclote Anchorage, Florida; west Flordia continental shelf (Figure 2).

FIGURE 52.—*Eusarsiella disparalis* (Darby), USNM 150109, adult male, lateral and dorsal views of complete specimen, length 1.06 mm.

Known depth range intertidal to 88.4 m (Table 1).

CORRECTION.—In a previous paper (Kornicker, 1967:39) I incorrectly listed a station as number 158 with collection data of that station. It should have been section 138 with the following collection data: date collected 30 Sep 1965; 34°28′30″N, 76°07′0″W; depth 40 m; sediment temperature 25°C; sand and mud bottom; dredged for 10 minutes with dredge 30 inches wide. It is of special importance that the depth is 40 m at station 138 and 200 m at station 158.

DESCRIPTION OF ADULT MALE (Figures 52–54*g*, 55, 56*d*).—Carapace symmetrical with projecting rostrum and caudal process; ventral margin linear, dorsal margin convex; carapace smaller than that of female (Figures 52, 54*g*).

Ornamentation (Figures 52, 54*g*): Each valve with lateral rib having medial and posterodorsal alar projections; anterior end of rib not reaching anterior edge of valve; a thin strut extends from alar projection near middle of valve to point about half-way between rib and ventral margin of valve, or just reaching marginal ridge; a narrow ridge parallelling valve margin continuous around edge of valve except on posterodorsal part in vicinity of 3 short processes, 2 above and 1 below alar projection; a fourth, much smaller process present on posterior margin below lowermost short process; marginal ridge extending onto rostrum but not onto caudal process; surface of lateral rib and strut, posterodorsal nodes and marginal ridge with surface tubercles similar to those on carapace of female; ventral and anterior margins with long bristles; scattered bristles sparsely distributed on valve surface; a single long bristle present on posterior edge of posterodorsal alar projection and on 2 short posterior processes below alar projection.

Infold: Not examined.

Selvage: Lamellar prolongation present along anterior and ventral margins.

Size: USNM 150109, length 1.06 mm, height 0.71 mm; USNM 156734, length 1.15 mm, height 0.71 mm.

First Antenna (Figure 53*a*): First joint bare; second joint with short dorsal bristle with long proximal and short distal spines; third and fourth joints fused; third joint with slender dorsal bristle; fourth joint with 1 short dorsal bristle and 1 or 2 minute ventral bristles; sensory bristle of small fifth joint with numerous filaments on basal part, 4 short distal filaments, and bifurcate tip; sixth joint with short medial bristle. Seventh joint: a-bristle about one-fourth length of sensory bristle; b-bristle more than twice length of a-bristle, with 1 short distal filament; c-bristle reaching slightly past sensory bristle, with 4 distal filaments and bifurcate tip. Eighth joint: d- and e-bristles bare, slightly shorter than c-bristle; f- and g-bristles slightly shorter than c-bristle, with 4 short distal filaments and bifurcate tip.

Second Antenna (Figures 53*b*, 56*g*): Protopodite bare, without medial bristle. Endopodite 3-jointed: first joint with 2 short proximal bristles on ventral margin; second joint about

same length as first, with 3 short stout bristles with short marginal spines; third joint elongate recurved, tip with 2 minute bristles and faint ridges. Exopodite: first joint with hairs along ventral margin; distal medial margin with triangular process but without medial spine; bristles of joints 2–8 with natatory hairs, no spines; ninth joint with 2 bristles, 1 long, 1 short, both with natatory hairs; distal margins of joints 2–8 with short spines forming row.

Mandible (Figure 53*c*): Ventral margin of coxale bare, small endite present. Basale: dorsal margin with 1 midbristle and 2 longer subterminal bristles; ventral margin with short bristle distal to middle; medial side with 3 short proximal bristles and 1 short bristle near middle (all closer to ventral margin than to dorsal margin); lateral side bare. Exopodite absent. Endopodite: first joint with few spines forming 2 short rows on lateral side near dorsal margin and many spines forming crescents on medial surface; dorsal margin with few distal spines; ventral margin with short spinous claw; second joint with few spines on medial and lateral sides; dorsal margin with short bristle; ventral margin with stout spinous subterminal claw; 1 minute terminal bristle present distal to base of stout claw; end joint with stout terminal claw with minute teeth forming row along middle of medial and lateral sides near concave margin; 1 short dorsal bristle and 2 short ventral bristles on each side of base of stout claw.

Maxilla (Figure 53*d*): Limb minute, bristles weakly developed; precoxale and coxale with epipodial fringe along dorsal margins; coxale with short spinous anterior bristle; expodite with 3 bristles, 2 long, 1 short; joints of endopodite fused, with total of 8 bristles.

Fifth Limb (Figure 53*e*): Epipodial appendage with 33 bristles. Endite I with 1 short bristle. Exopodite: first joint with 2 bristles, remaining fused joints with 5–6 bristles.

Sixth Limb (Figure 53*f*): Endite I with 3 bristles, 1 stout terminal, 2 short, medial; end joint with 4 short bristles with bases on medial side, each bristle with long proximal and short distal spines, and 8 longer, stout hirsute bristles along margin; medial surface of limb and posterior margin hirsute.

Seventh Limb (Figure 53*g*): Minute, vestigal.

Furca (Figure 53*h*): Each limb with 5 claws; claw 1 joined to lamella, remaining claws separated from lamella by suture; concave margin of each claw with stout teeth near base and minute slender teeth on remaining part; lamella following claws with several minute spines.

Bellonci Organ (Figure 53*i,j*): Rod shaped, elongate with rounded tip.

Eyes: Lateral eye pigmented with 4 ommatidia; medial eye slightly smaller than lateral eye, pigmented.

Upper Lip (Figure 53*i*): Projecting slightly anteriorly.

Copulatory Organs (Figure 53*h*): Clasping organs long with terminal hook, a cylindrical spinelike process near base of concave margin of hook, and several short bristles (not examined under high magnification).

Y-Sclerite (Figure 53*h*): Typical for genus.

DESCRIPTION OF ADULT FEMALE (Figures 54*d*, 55; Plates 10–12).—Carapace of female differs from that of male in being larger, in not having a rostrum, in having the caudal process located farther forward on the ventral margin; also differs in having a more convex ventral margin in lateral view. Carapace either symmetrical or asymmetrical; asymmetrical carapaces with left valve usually without lateral process, strut, or dorsal processes, but with marginal ridge, and may have subdued posterodorsal marginal process (1 specimen observed with left valve with lateral rib but without dorsal alar projections.)

Ornamentation (Plates 10–12): Lateral rib differs from that of male in reaching marginal ridge

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FIGURE 53.—*Eusarsiella disparalis* (Darby), USNM 150109, adult male, length 1.06 mm *a*, right first antenna, lateral view; *b*, endopodite of right second antenna, lateral view; *c*, left mandible, medial view; *d*, maxilla; *e*, distal part of fifth limb; *f*, sixth limb; *g*, right seventh limb; *h*, right lamella of furca, right copulatory limb, right Y-sclerite; *i*, anterior of body showing part of left lateral eye, medial eye, bellonci organ, and upper lip; *j*, right lateral eye.


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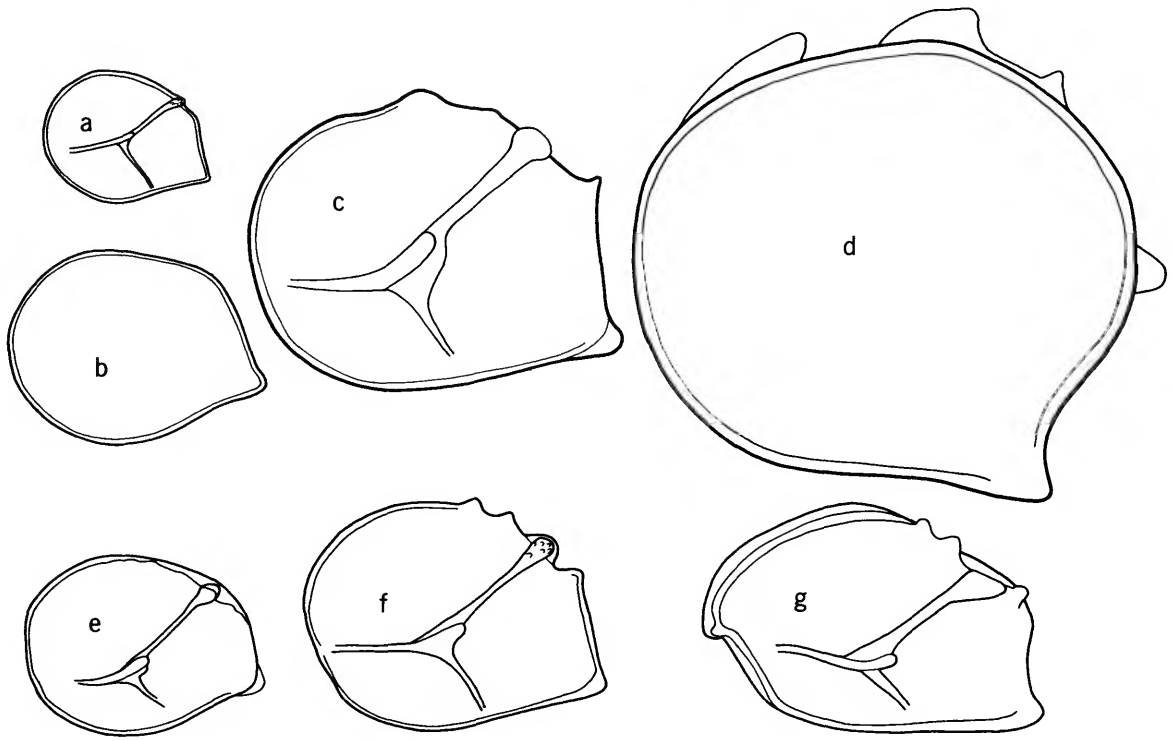

FIGURE 54.—*Eusarsiella disparalis* (Darby), lateral view of complete carapace from left. Females: *a*, USNM 152312C, instar II (A–3), length 0.53 mm; *b*, USNM 152312B, instar III (A–2), length 0.76 mm; *c*, USNM 152308B, instar IV (A–1), length 1.17 mm; *d*, USNM 152307, adult, length 1.52 mm. Males: *e*, USNM 152308C, instar III (A–2), length 0.80 mm; *f*, USNM 152308A, instar IV (A–1), length 0.96 mm; *g*, USNM 150109, adult, length 1.06 mm. All figures with same magnification.

near middle of anterior margin; strut below lateral rib differs from that of male in intersecting marginal ridge near middle of ventral margin; marginal ridge near point of intersection with strut with 1 or more short processes, not present on male; marginal ridge near dorsal margin with 2 alar projections, not present on male; posterodorsal part of valve near edge with only 2 short processes, 1 above and 1 below alar projection of lateral rib; surface of ribs with ridged tubercles; bristles along carapace edge and sparsely distributed on valve surface.

Central Adductor Muscle Attachments: Consisting of about 9 oval attachments around larger clump of 4–5 attachments (Plate 12*e*).

Size: USNM 158033, length including processes 1.49 mm, length without processes 1.34 mm, height with caudal process 1.32 mm, height without caudal process 1.10 mm, width with processes 1.41 mm; USNM 144001, maximum length 1.55 mm, maximum height 1.49 mm; USNM 150108, length including processes 1.52 mm, length excluding processes 1.41 mm, height including caudal process 1.37 mm, height without caudal process 1.14 mm; USNM 152311, maximum length 1.59 mm, maximum height 1.49 mm. Darby (1965:40) gave the length of 2 females as 1.50 mm, 1.44 mm. Kornicker (1967:40) gave the length of 2 females as 1.50 mm, 1.43 mm.

Eggs and Parasites: USNM 152311 with 13 eggs in marsupium; USNM 144001 with 1 ostra-

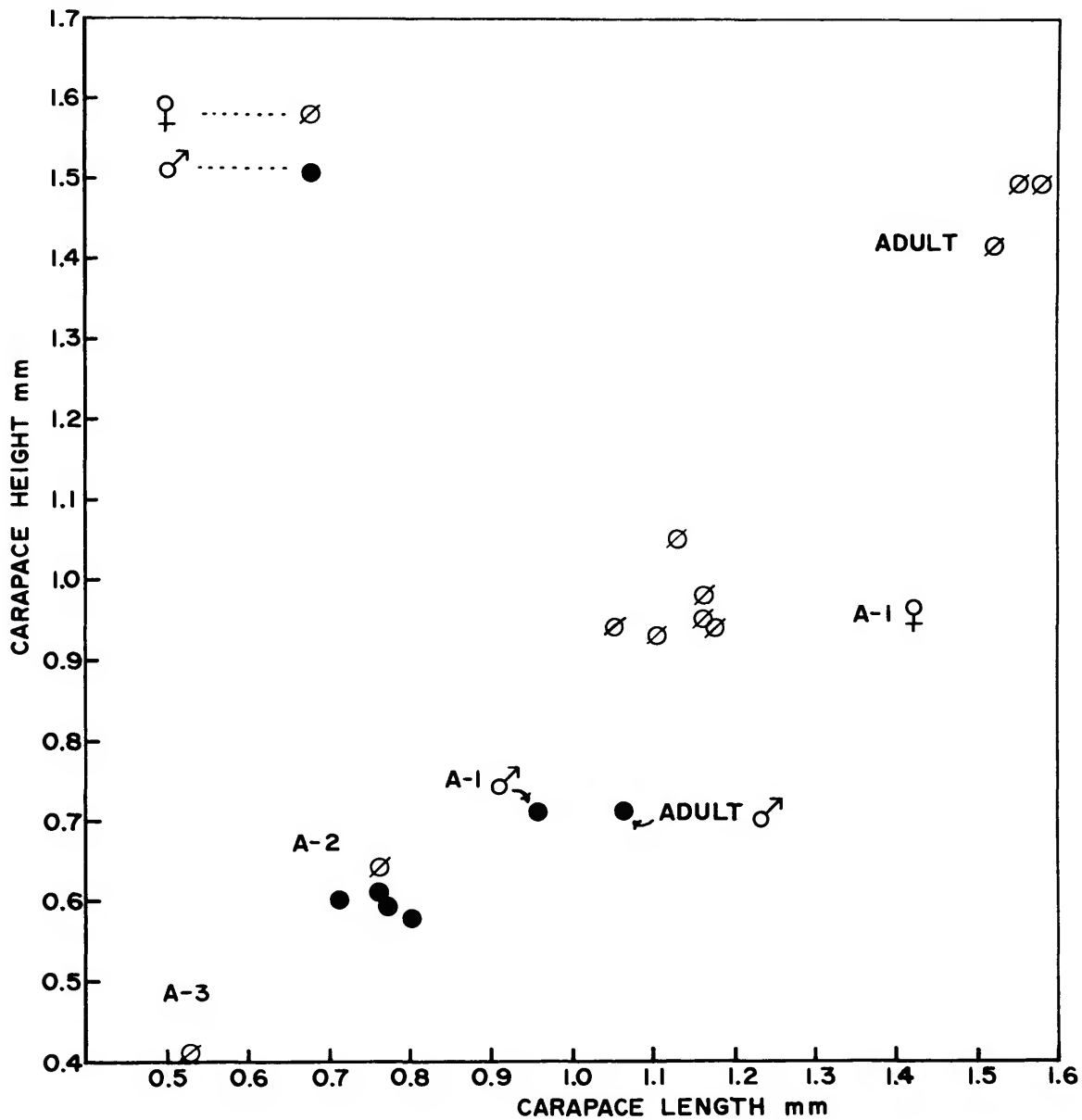

FIGURE 55.—*Eusarsiella disparalis* (Darby), relationship between shell length and height of specimens from Placida Harbor, Florida.

cod egg in marsupium + 1 male and 1 female choniostomatid copepod and 1 copepod egg clone. A female choniostomatid copepod and several isopod egg clones were reported by Kornicker (1967:44) in another specimen of this species that had been identified by Darby (1965), and had been collected off the coast of Georgia.

DESCRIPTION OF A–3 FEMALE (Instar II; Fig-

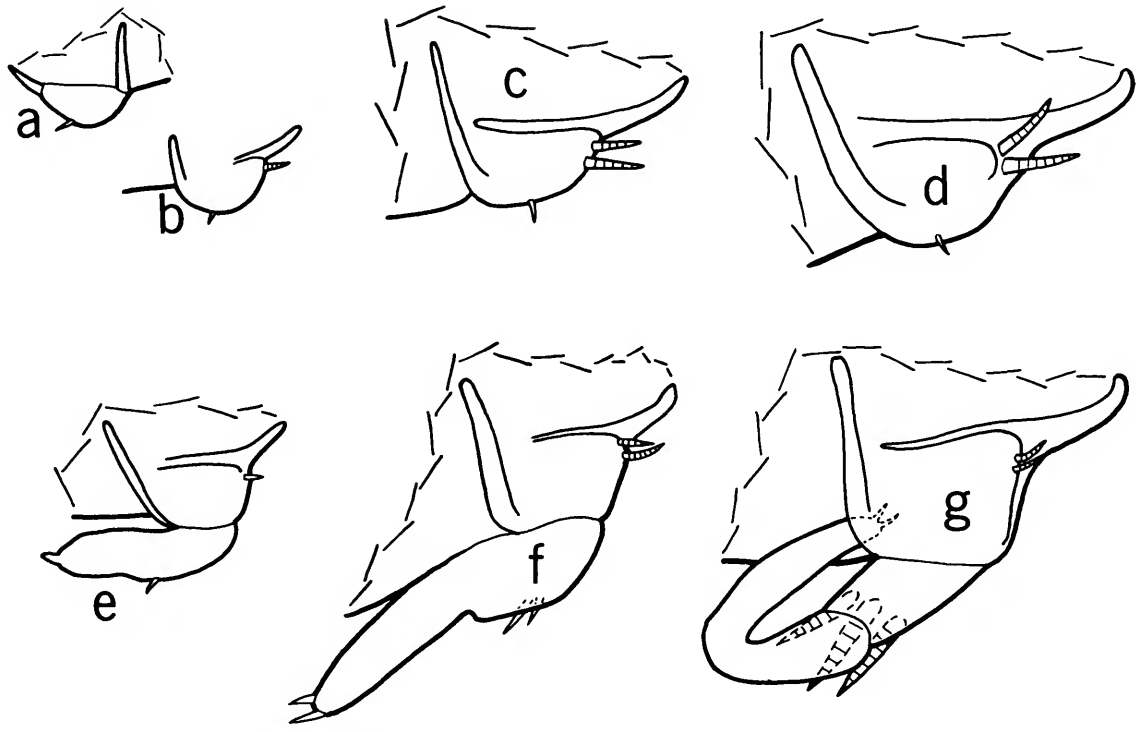

FIGURE 56.—*Eusarsiella disparalis* (Darby), ontogenetic development and sexual dimorphism of the endopodite of the second antenna, left limbs, medial view, females: *a*, USNM 152312C, instar II (A–3); *b*, USNM 152312B, instar III (A–2); *c*, USNM 150308B, instar IV (A–1); *d*, USNM 152311, adult. Males: *e*,153308C, instar III (A–2); *f*, USNM 150308A, instar IV (A–1); *g*, USNM 150109, adult. All figures with same magnification.

ures 54*a*, 55, 56*a*, 57*a*).—Carapace symmetrical with well developed lateral ridge and strut but without dorsal projections and posterior marginal processes; caudal process in posteroventral corner of valve (Figure 54*a*). Size: USNM 152312C, length 0.53 mm, height 0.42 mm.

Second Antenna (Figure 56*a*): Endopodite 1-jointed with minute terminal bristle. Long bristles of exopodite with natatory hairs.

FIGURE 57.—*Eusarsiella disparalis* (Darby), seventh limbs of juvenile females: *a*, USNM 152312C, instar II (A–3); *b*, USNM 152312B, instar III (A–2). All figures with same magnification.

Sixth Limb: Vestigal.

Seventh Limb: Minute (Figure 57*a*).

Furca: With 5 claws.

DESCRIPTION OF A–2 FEMALE (Instar III; Figures 54*b*, 55, 56*b*, 57*b*).—Carapace asymmetrical: left valve unornamented except for faint marginal rim; right valve similar to that of Instar II except for having subdued dorsal projections (Figure 54*b*).

Size: USNM 152312B, length 0.76 mm, height 0.64 mm.

Second Antenna (Figure 56*b*): Endopodite similar to that of instar II except for having 1 short proximal anterior bristle. Long bristles of exopodite with natatory hairs.

Sixth Limb: Well developed with many bristles.

Seventh Limb (Figure 57*b*): Elongate without bristles.

Furca: With 5 claws.

DESCRIPTION OF A−1 FEMALE (Instar IV; Figures 54*c*, 55, 56*c*).—Carapaces either symmetrical or asymmetrical: left valve either unornamented except for marginal rim, or similar to right valve except for having reduced (or lacking) dorsal projections; right valve with well developed lateral rib similar to that of adult female, strut, anterior and posterior dorsal alar projections, 2 small posterodorsal processes, 1 above, and 1 below end of lateral rib, and marginal rim (Figure 54*c*).

Size: USNM 152308B, length 1.17 mm, height 0.94 mm; USNM 152312A, length 1.05 mm, height 0.93 mm; USNM 152312E, length 1.13 mm, height 1.05 mm; USNM 152312F, length 1.10 mm, height 0.93 mm; USNM 1523121, length 1.16 mm, height 0.95 mm; USNM 152312G, length 1.16 mm, height 0.98 mm.

Second Antenna (Figure 56*c*): Similar to that of adult female.

Sixth Limb and Furca: Similar to that of adult female (not examined in detail).

Seventh Limb: With 8 tapered bristles, 4 terminal, 4 proximal; few comb teeth present.

DESCRIPTION OF A−2 MALE (Instar III; Figures 54*e*, 55, 56*e*).—Carapace symmetrical, similar to that of A−2 female (Figure 54*e*).

Size: USNM 152308C, length 0.80 mm, height 0.58 mm; USNM 152312D, length 0.71 mm, height 0.60 mm; USNM 152312H, length 0.77 mm, height 0.59 mm; USNM 152312J, length 0.76 mm, height 0.61 mm.

Second Antenna (Figure 56*e*): Endopodite 2-jointed: first joint with 1 minute proximal bristle; second joint elongate with 1 minute ventral bristle near middle and short terminal process.

DESCRIPTION OF A−1 MALE (Instar IV; Figures 54*f*, 55, 56*f*).—Carapace symmetrical with well developed lateral rib and strut, with 3 posterodorsal marginal processes, 2 above and 1 below end of lateral rib; faint marginal rim present (Figure 54*f*).

Size: USNM 152308A, length 0.96 mm, height 0.72 mm.

Second Antenna (Figure 56*f*): Endopodite 2-jointed; first joint with 2 short proximal bristles; second joint elongate with 2 short ventral bristles proximally and 2 terminal bristles; small indentation in margin representing where joint divides to form 3-jointed endopodite of adult male.

DISCUSSION OF SYMMETRY OF VALVES.—Darby (1965:40) based the name of this species on the dissimilarity of the ornamentation of the left and right valves of some specimens, and noted that on asymmetrical specimens the ornamentation was lacking on the left valve. Kornicker (1967:38) compared the left and right appendages of two asymmetrical mature females and found only minor differences between them. He also examined them for parasites but found none. Darby had 5 specimens in his collection from off Georgia; Kornicker had 2 specimens in the collection from off North Carolina. The collections from Placida Harbor contained 23 specimens which were used to further investigate asymmetry. The distribution of asymmetrical and symmetrical forms among the males and females in the collection is shown in Table 5. All the males in the collection (6) have symmetrical carapaces. The youngest specimen in the collection, an A−3 (instar II) female, was the only female on which no asymmetry was detected. An A−2 (instar III) female was the youngest asymmetrical specimen in the collection. Three of the A−1 (instar IV) females and 1 adult female are classified in Table 1 as slightly asymmetric because the 2 dorsal alar projections but not the middle alar projections were less well developed on the left valve than on the right. Eight adult females and 3 A−1 (instar IV) females lacked all major ornamentation on the left valve. In all instances of asymmetry, the left valve was the one lacking some ornamentation, confirming the observation of Darby (1965:40).

Members of the Sarsiellidae probably spend considerable time burrowed in the sediment, but

TABLE 5.—Number of specimens of *Eusarsiella disparalis* with symmetric or asymmetric carapaces (all specimens from Placida Harbor, Florida).

Stage of Development	Females			Males	
	Symmetric	Slightly Asymmetric	Highly Asymmetric	Symmetric	Asymmetric
A–3 (Instar II)	1	0	0	0	0
A–2 (Instar III)	0	0	1	4	0
A–I (Instar IV)	0	3	3	1	0
Adult	0	1	8	1	0

TABLE 6.—Growth factors for carapace length of *Eusarsiella disparalis* from Placida Harbor, Florida.

Growth stage (number of specimens)	Females		Males	
	Average length (mm)	Growth factor	Average length (mm)	Growth factor
Adult (3♀, 1♂)	1.55		1.06	
		1.37		1.10
A–1 (Instar IV) (6♀, 1♂)	1.13		0.96	
		1.49		1.26
A–2 (Instar III) (1♀, 4♂)	0.76		0.76	
		1.43		—
A–3 (Instar II) (1♀, 0♂)	0.53		—	

bristles of the second antennae of both juveniles and adults have natatory hairs indicating that they are capable of swimming. Unless compensated for in some way not readily visible, it seems likely that specimens of *E. disparalis* having highly asymmetric carapaces are handicapped when swimming, if they are able to swim at all. Males of *E. disparalis* and a few females are not handicapped by shell asymmetry. The data suggest that adult females are more likely to be highly asymmetrical than juvenile females.

ONTOGENY.—Using a key to early myodocopid instars (Kornicker, 1965:3), it was estimated that the earliest instar in the collection from Placida Harbor, Florida, an A–3 female, is the second instar (instar II), and that the collection contains females of instars II, III, and IV, and males of instars III and IV, in addition to adults of both sexes. The small number of specimens in the collection does not permit calculation of accurate growth factors; however, as shown in Table 6, the growth factor between the last and next-to-last stage of the male (1.10) is much lower than that of the female (1.37). This is also evident in Figures 54, 55, which also show that the growth factor of the height of the last and next-to-last stage of the male is smaller than that of the length. A similar relationship between the growth factors of the female and male and height and length of the last and next-to-last stage of the male was observed by Kornicker (1969:35) for another sarsiellid, *Spinacopia sandersi* Kornicker, 1965.

In lateral outline the juvenile instars have a truncate posterior similar to that of the adult male, but are without a rostrum (Figure 54). The lateral rib with its anterior and posterior alar projections and the strut are already present in the A–3 female (instar II Figure 54*a*), but the dorsal alar projections and the posterodorsal marginal processes are absent on that instar and on the A–2 female (Instar III; Figure 54*b*). The dorsal alar projections and the posterodorsal processes are present on the A–1 female (instar

IV; Figure 54*c*), but reach their full development in the adult female (Figure 54*d*). The carapace of the A–2 male (instar III; Figure 54*e*) is similar to that of the A–2 female. The A–I male (Instar IV; Figure 54*f*) is similar to that of the adult male (Figure 54*g*) in having 3 distinct posterodorsal marginal processes, 2 above and 1 below the end of the lateral ridge; it differs from the A–I female in lacking the dorsal projections. The asymmetry of the valves has already been discussed.

The endopodites of the second antennae of the juvenile females (instars II–IV) are similar to that of the adult female in being 1-jointed and having a minute terminal bristle (Figure 56*a–d*). The bristle is proportionately slightly longer on the juveniles than it is on the adult. The endopodite bears no proximal bristle on the A–3 female (instar II; Figure 56*a*), 1 on the A–2 female (instar III; Figure 56*b*) and 2 on the A–I female (instar IV; Figure 56*c*) and on the adult (Figure 56*d*). The endopodite of the A–2 male (instar III) bears 1 proximal bristle on the first joint, 1 short midbristle and a terminal process on the elongate second joint (Figure 56*e*). The first joints of the endopodites of the A–I male (instar IV; Figure 56*f*) and the adult male bear 2 proximal bristles (Figure 56*g*). The elongate second joint of the A–I male bears 2 short bristles proximal to the middle and 2 short terminal bristles; an indentation near the middle of the ventral margin represents the position of a suture that is present on the adult endopodite. The adult endopodite is 3-jointed with 3 bristles on the second joint and 2 short terminal bristles on the third joint.

The seventh limb of the A–3 female (instar II) is rudimentary and without bristles (Figure 57*a*); the seventh limb of the A–2 female (instar III) is elongate, but also without bristles (Figure 57*b*); the seventh limb of the A–I female (instar IV) is elongate with bristles tapering, and fewer bristles than on adult female. The sixth limb of the A–3 female (instar II) is rudimentary; the presence or absence of a bristle could not be determined with certainty; the sixth limb of the A–2 female (instar III) has numerous bristles, similar to that of the adult. The furcae on all the developmental stages represented in the collection have 5 claws on each lamella. The presence of the same number (5) claws on the caudal furca of the A–3, A–2, and A–I instars and on the adults was observed also on *Eusarsiella zostericola* Cushman, 1909, by Kornicker (1967:29), and for *Sarsiella japonica* Hiruta (1977), and *S. misakiensis* Kajiyama (1912), by Hiruta (1977:54; 1978:274, 276). This suggests that the development of the furcal claws in the genus *Sarsiella* and *Eusarsiella* differs from that in the genus *Spinacopia* Kornicker, 1969, in which the number of claws increases from 4 on the A–3 instar to 6 on the A–2 instar, and then to 7 on the A–I instar (Kornicker, 1969a:36).

Eusarsiella nodimarginis (Darby, 1965), new combination

FIGURES 58, 59

Sarsiella nodimarginis, Darby, 1965:33, pl. 21: figs. 1–8; pl. 22: figs. 1, 2.

HOLOTYPE.—UMMP 48803, female, carapace and appendages on 15 glass slides.

MATERIAL.—See "Station Data with Specimens Examined."

DISTRIBUTION.—Continental shelf off North Carolina and Georgia. Collected from depth of 36 m off North Carolina and from about 30–114 m off Georgia (Figure 2, Table 1).

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE (Figure 58, 59).—Carapace with nodes along dorsal, anterior and ventral margins (about 27 total); caudal process well developed; posterior margin straight with 3 small processes; each valve with wide alar process with nodes along outer edge; area anterior and ventral to valve middle with large pits; surface of valve elsewhere smooth, unpitted (Figure 58).

Infold: Infold of caudal process with 4 small bristles (Figure 59*a*); additional smaller bristles on ventral infold just anterior to caudal process; posterior infold with 2 setal bristles dorsal to

FIGURE 58.—*Eusarsiella nodimarginis* (Darby), UMMP 48804, paratype, adult female, lateral and dorsal views. Length of dry specimen approx. 1.2 mm. (Photographs from Darby, 1965, pl. 22: figs. 1,2.)

caudal process. (Bristles of infold difficult to see on mounted holotype.)

Size: UMMP 48803, length 1.68 mm, height 1.44 mm (from Darby, 1965:33). USNM 193108, length 1.70 mm, height including caudal process 1.62 mm, height without caudal process 1.37 mm; UMMP 48804, dry specimen, length ca. 1.2 mm.

First Antenna (Figure 59*b*): First joint bare. Second joint with 1 dorsal bristle with few short marginal hairs. Third and fourth joints fused; third joint with 1 short bare ventral bristle and 1 longer dorsal bristle with short marginal spines; fourth joint with 4 bristles (3 bare, ventral, 1 spinous, dorsal). Sensory bristle of fifth joint with 2 minute proximal filaments and 1 minute subterminal filament. Fused sixth joint with 1 short medial bristle near dorsal margin. Seventh joint: a-bristle about 3 times length of bristle of sixth joint with short, faint marginal spines; b-bristle bare, about twice length of a-bristle; c-bristle longer than sensory bristle of fifth joint, with 2 minute proximal filaments. Eighth joint: d- and e-bristles bare with blunt tips, both longer than b-bristle but shorter than sensory bristle of fifth joint (e-bristle slightly shorter than d-bristle); f-bristle shorter than sensory bristle, about same length as d-bristle, with minute subterminal filament; g-bristle about same length as sensory bristle, with minute subterminal filament.

Second Antenna (Figure 59*c*): Protopodite bare. Endopodite 1-jointed with 2 short proximal anterior bristles; distal end of joint either bare or with minute spine (holotype without terminal spine on right endopodite, and with spine on left endopodite). Exopodite: first joint with minute, medial, terminal bristle; bristle of second joint with proximal ventral spines and distal natatory hairs; bristles of joints 3–8 with natatory hairs, some with few proximal ventral spines; ninth joint with 2 bristles (1 long with natatory hairs and few proximal ventral spines, 1 short, with short marginal hairs).

Mandible (Figure 59*d*): Coxale endite consisting of stout spine-like process with few marginal spines. Ventral margin of coxale with slender hairs and spines. Basale: dorsal margin with 1 short bristle distal to middle and 2 short terminal bristles; 5 or 6 small bristles present near ventral margin. First endopodial joint: ventral

FIGURE 59.—*Eusarsiella nodimarginis* (Darby), UMMP 48803, holotype, adult female, length 1.68 mm: *a*, caudal process of right valve, lateral view (dashed bristles are on infold); *b*, right first antenna, lateral view; *c*, part of right second antenna, medial view; *d*, right mandible, lateral view; *e*, maxilla, lateral view; *f*, distal part of left fifth limb; *g*, sixth limb and distal part of right fifth limb, medial view; *h*, seventh limb; *i*, left lamella of furca; *j*, right lateral eye, medial eye and bellonci organ; *k*, some of brush-like bristles of left side.


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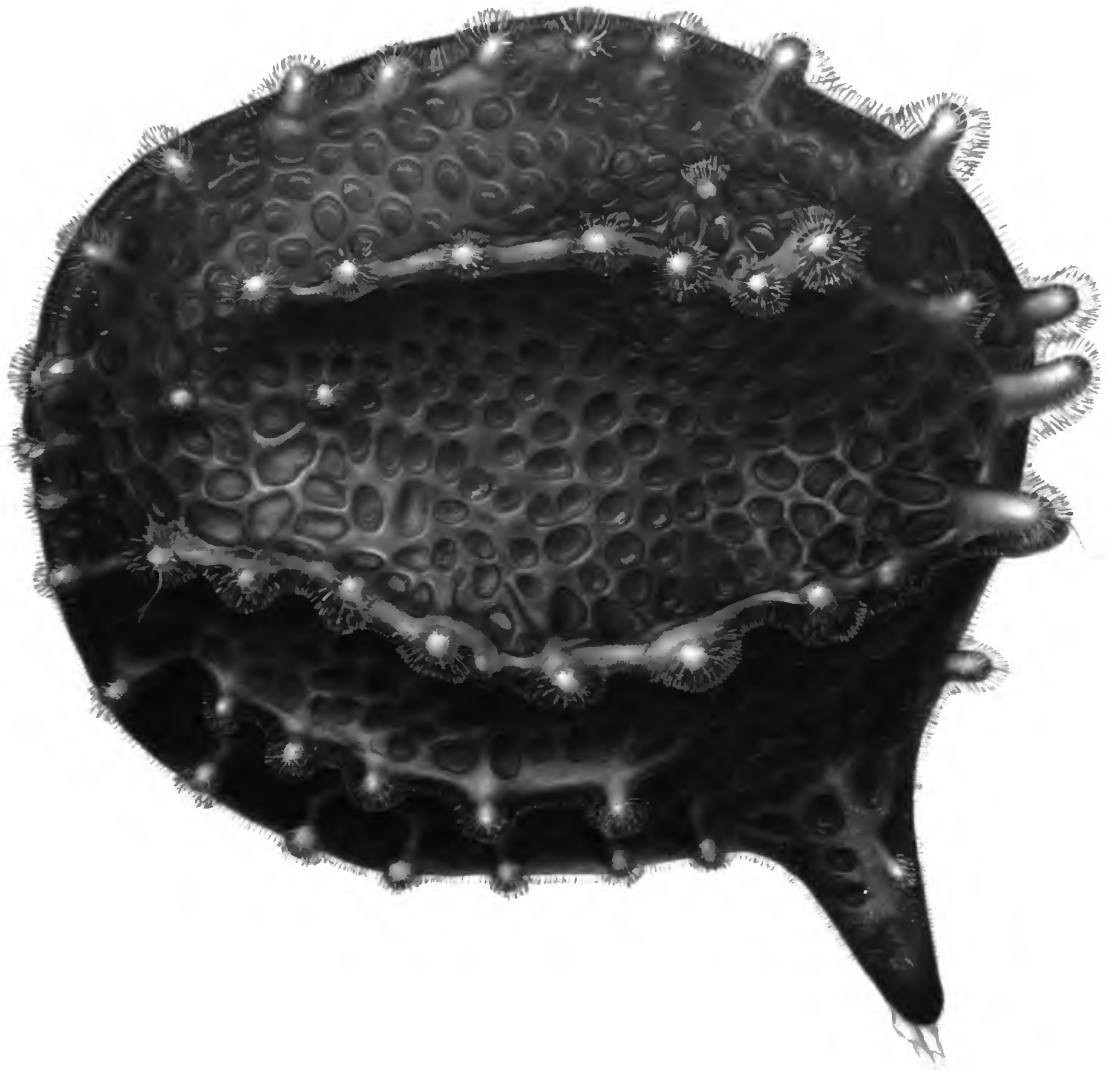


FIGURE 60.—*Eusarsiella pilipollicis* (Darby), USNM 152865, adult female, lateral view of complete specimen, length 1.44 mm.

margin with stout terminal claw; medial surface with scattered spines; dorsal margin with terminal spines forming row. Second endopodial joint: ventral margin with stout terminal claw; dorsal margin with short terminal bristle. Third endopodial joint with stout terminal claw, 1 minute dorsal bristle, and 1 minute ventral bristle.

Maxilla (Figure 59*e*): Typical of genus. Exopodite with 3 bristles (2 short, bare, 1 long, spinous).

Fifth Limb (Figure 59*f,g*): Single endite with 1 small bristle. Exopodite: first joint with 2 bristles; remaining joints fused; second joint with 3 bristles; third to fifth joints with total of 5 or 6 bristles.

Sixth Limb (Figure 59*g*): Single endite with 3

bristles (2 much smaller than third); end joint with 12 or 13 bristles followed by space, and then 2 stout plumose bristles.

Seventh Limb (Figure 59*h*): Each limb with 4 proximal bristles, 2 on each side, and 6 terminal bristles (3 on each side); each bristle with up to 6 bells. Terminus consisting of opposing combs, each with several faint teeth.

Furca (Figure 59*i*): Each lamella with 5 claws decreasing in length posteriorly along lamella; claw 1 fused to lamella, remaining claws separated from lamella by suture; all claws with short and long teeth along posterior margin; teeth very faint on fifth claw; several fairly stout spines on each lamella following fifth claw; spines present along anterior margin of right lamella proximal to claw 1.

Bellonci Organ (Figure 59*j*): Elongate, broadening distally, with rounded tip.

Eyes (Figure 59*j*): Lateral eyes pigmented, each with 5 ommatidia; medial eye pigmented, larger than lateral eye.

Brush-like Organ (Figure 59*k*): Several minute bristles present anterior to furca.

Eggs: UMMP 48803, 48804, each with 10 eggs (Darby, 1965:33). USNM 193108 with 12 eggs and small unextruded eggs.

Gut Content: Holotype with copepod in gut.

Eusarsiella pilipollicis (Darby, 1965), new combination

FIGURES 60, 61; PLATE 13

Sarsiella pilipollicis Darby, 1965:35, pl. 23: figs. 2–9.

HOLOTYPE.—UMMP 48806, female, length 1.37 mm.

TYPE-LOCALITY.—Offshore of Sapelo Island, Georgia, water depth 114 m.

MATERIAL.—See "Station Data with Specimens Examined."

DISTRIBUTION.—Continental shelves off North Carolina, Georgia, Florida, Louisiana, and Texas (Figure 3). Known depth range 40–114 m (Table 1).

SUPPLEMENTARY DESCRIPTION OF ADULT FEMALE (Figures 60, 61, Plate 13).—Carapace oval in lateral view with elongate caudal process and no rostrum (Figure 60); surface with 2 horizontal midribs weakly connected at their posterior ends, and 1 short horizontal anteroventral rib; upper and lower midribs with 8 spinous processes in addition to long spinous terminal process at posterior end; anteroventral rib with 4 spinous processes; 2 spinous processes present between anterior ends of midribs; 21–22 spinous processes present near edge of valve; 1 small spinous process present near middle of caudal process.

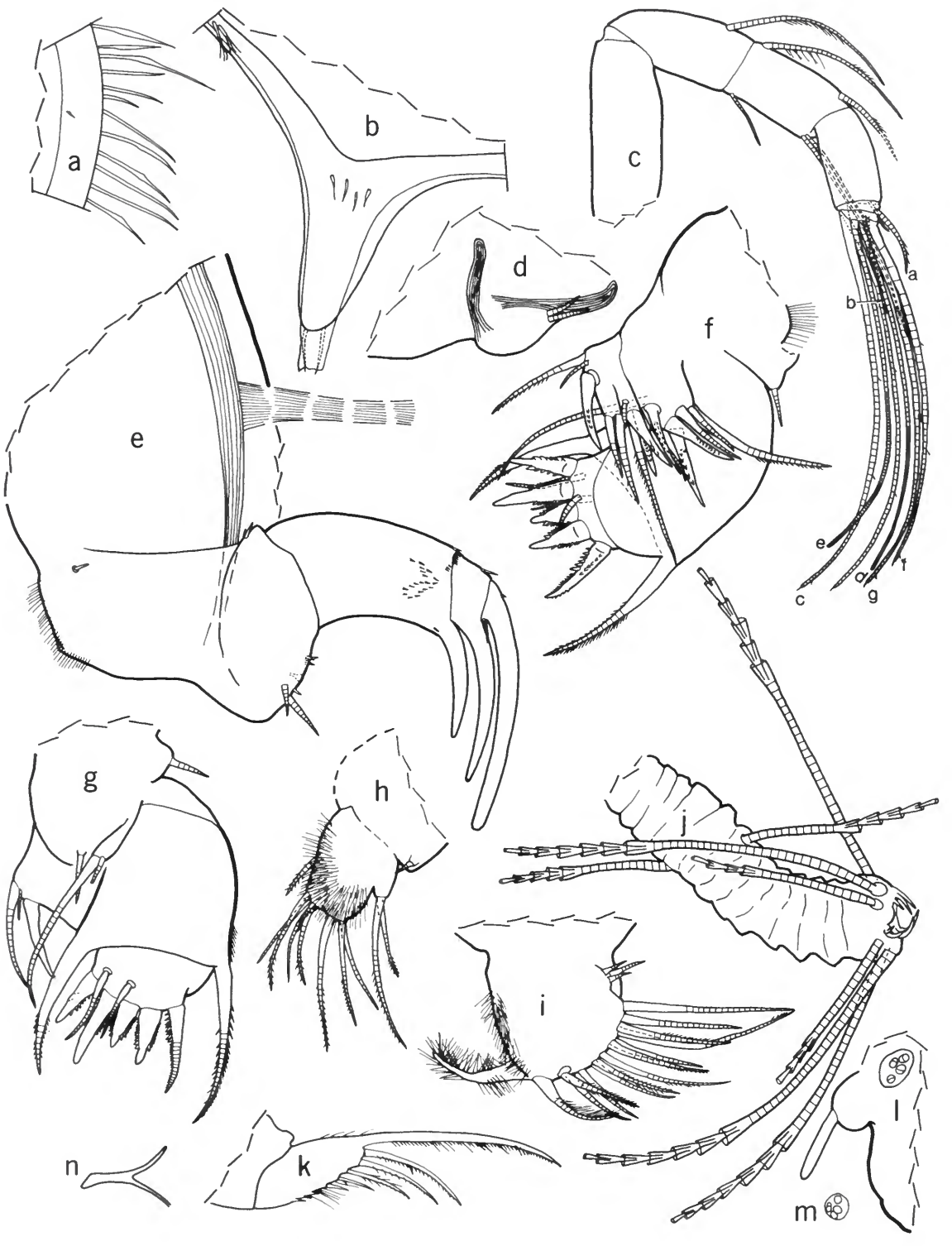
Ornamentation (Figures 60, 61*a*; Plate 13): Surface with distinct fossae; margins of fossae and area between fossae with minute slender hairs; slightly longer hairs present on ribs and processes, in vicinity of valve margins, and on caudal process (these hairs taper to point, except some of the longer hairs on processes may have minute swellings at tip); long hairs with swelling near middle scattered over valve surface and along edges (Figure 61*a*); transparent substance between short bristles visible on horizontal ribs and along valve margin.

Infold: Anterior infold with minute bristle near valve middle (Figure 61*a*); infold of caudal process with 4 bristles forming proximal row; posterior with 2 setose bristles (Figure 61*b*).

Selvage: Wide lamellar prolongation present around anterior, ventral, and posterior margins (Figure 61*b*).

Size: USNM 152865, length including processes 1.44 mm, length excluding processes 1.39 mm, height including caudal process 1.44 mm; height excluding caudal process 1.16 mm. USNM 156785, length including processes 1.22 mm, length excluding processes 1.17 mm, height including caudal process 1.18 mm, height excluding caudal process 0.99 mm.

First Antenna (Figure 61*c*): First joint bare; second joint with 1 spinous dorsal bristle and few faint spines along dorsal margin; third and fourth joints fused; third joint short with 1 long spinous dorsal bristle and 1 short bare ventral bristle; fourth joint with 1 short spinous dorsal bristle and 2 long bare ventral bristles; sensory bristle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of fifth joint with 2 minute filaments on middle part and 1 near tip; medial bristle of sixth joint short. Seventh joint: a-bristle about twice length of bristle of sixth joint, with marginal spines; b-bristle slender, bare, about 1½ times the length of a-bristle; c-bristle about same length as sensory bristle of fifth joint, with 2 minute filaments on middle part and 1 near tip. Eighth joint: d- and e-bristles bare with blunt tips, slightly shorter than c-bristle; f- and g-bristles about same length as c-bristle, with 2 minute filaments on middle part and 1 near tip.

Second Antenna (Figure 61*d*): Protopodite bare; endopodite 1-jointed with 1 or 2 short anterior bristles. Exopodite: first joint with short terminal, medial spine; dorsal margin of bristle of second joint with natatory hairs; ventral margin with 1 natatory hair followed by 7–14 spines and then natatory hairs; bristles of joints 3–8 with natatory hairs; ninth joint with 2 bristles, 1 long with natatory hairs, 1 short bare; lateral terminal margin of joints 3–7 with short spines forming row.

Mandible (Figure 61*e*): Coxale endite consisting of sharp spine; ventral margin of coxale with long hairs. Basale: medial surface with proximal bristle near ventral margin and 1 minute distal bristle; ventral margin with 2 proximal bristles, 1 much longer than other; lateral surface with 2 small distal bristles near ventral margin; dorsal margin with 2 minute subterminal spines. Exopodite absent. Endopodite: first joint with medial surface with distal spines and 1 minute bristle near base of main claw; dorsal margin with terminal spines; second joint with short dorsal bristle and main ventral claw; third joint with short ventral bristle and minute dorsal bristle at base of main claw (tip of main claw on illustrated limb broken).

Maxilla (Figure 61*f,g*): Coxale with short anterior bristle and hirsute epipodial appendage. Endite I with 7 bristles; endite II with 4 bristles; endite III with 5 bristles. Basale with short bristle near exopodite. Exopodite with 2 bristles, inner bristle about ½ length of outer bristle. Exopodite: first joint with alpha- and beta-bristles with proximal marginal teeth and distal marginal spines; second joint with 2 lateral a-bristles, 1 medial c-bristle, and 5 stout pectinate terminal bristles.

Fifth Limb (Figure 61*h*): Epipodial appendage with about 30 bristles; single endite present with 1 short bristle. Exopodite: first joint with 2 spinous bristles; second to fifth joints fused; second joint with 3 spinous bristles; third to fifth joints with total of 6 bristles; exopodite hirsute.

Sixth Limb (Figure 61*i*): Endite I with 3 short bristles; end joint with 12 or 13 slender bristles either bare or with short spines followed by 2 stout hirsute posterior bristles; posterior part of limb hirsute.

Seventh Limb (Figure 61*j*): Each limb with 8 bristles, 2 proximal, 1 on each side, and 6 terminal, 3 on each side; each bristle with 3–6 bells and no distal marginal spines; terminus with opposing combs, each with about 5 teeth.

Furca (Figure 61*k*): Each lamella with 5 or 6 claws followed by several small spines (USNM 152865 with 5 claws on right lamella and 6 on left); claw 1 continuous with lamella, others separated from lamella by suture; claw 1 with posterior marginal teeth forming 8 groups, each with 5–8 teeth increasing in length distally; claws 2–4 with long and short teeth along posterior margin; claw 4 with few teeth along anterior margin; claws 5 and 6 bare or with few teeth along posterior margin; anterior of lamella with slender spines and hairs; long medial hairs present at base of claws and following claws.

Bellonci Organ (Figure 61*l*): One-jointed, elongate with rounded tip.

FIGURE 61.—*Eusarsiella pilipollicis* (Darby), USNM 152865, adult female, length 1.44 mm: *a*, inside view of anterior margin of left valve showing minute anterior bristle of infold; *b*, posterior of left valve showing bristles of infold of caudal process; *c*, right first antenna, lateral view; *d*, endopodite of left second antenna, medial view; *e*, left mandible, medial view; *f*, maxilla, medial view; *g*, maxilla, lateral view; *h*, distal part of fifth limb; *i*, sixth limb; *j*, seventh limb; *k*, right lamella of furca; *l*, anterior of body showing left lateral eye, medial eye, and bellonci organ; *m*, right lateral eye; *n*, right Y-sclerite, anterior to right.

Eyes (Figure 61*l,m*): Lateral eye small with 4 or 5 ommatidia; medial eye bare, larger than lateral eye.

Upper Lip: Not observed.

Anterior of Body: Triangular process present between medial eye and upper lip.

Genitalia: Oval sclerotized rim.

Y-Sclerite (Figure 61*n*): Normal for family.

Eggs: USNM 152865 with 7 eggs in marsupium and additional smaller unextruded eggs; USNM 156785 with 9 eggs in marsupium.

Eusarsiella radiicosta (Darby, 1965), new combination

FIGURES 62–69; PLATES 14–17

Sarsiella radiicosta Darby, 1965:35, pls. 24: figs 1–11, 25:1.
?Sarsiella sculpta.—Darby, 1965:34, pls. 22: figs. 3–8, 23:1. [Not *S. sculpta* Brady, 1890:516.]

HOLOTYPE.—Museum of Paleontology, University of Michigan, UMMP 48807, instar IV female, 2 slides.

TYPE-LOCALITY.—Off Sapelo Island, Georgia.

MATERIAL.—See "Station Data with Specimens Examined."

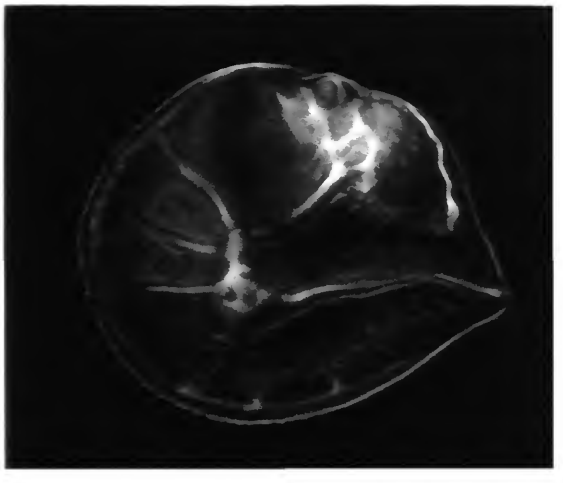

FIGURE 62.—*Eusarsiella radiicosta* (Darby), USNM 156797, adult female, lateral view of complete specimen, length 1.11 mm.

DISTRIBUTION.—Continental shelves off North Carolina, Georgia, west Florida, Louisiana, and Texas (Figure 3). Known depth range 13.9–134 m (Table 1).

REMARKS.—The specimens from the Gulf of Mexico referred herein to *S. radiicosta* may be an undescribed species closely related to *E. radiicosta*. The females from the Gulf of Mexico are smaller than the 2 females from the Atlantic, the upper rib continues as a curved rib over the posterodorsal bulge (Figure 65) rather than blending into the anterior part of the bulge as on the Atlantic females (Figure 62), and the dorsal bristle of the second joint of the first antenna bears long proximal spines (Figure 66*b*) that are absent on the first antenna of the Atlantic females (Figure 63*d*). In order not to lose information I have described both the Atlantic and Gulf of Mexico forms.

Darby (1965:34, pls. 22: figs. 3–8, 23:1) referred an ovigerous female (UMMP 48805) collected on the continental shelf off Georgia to *S. sculpta* Brady (1890:516). I examined the appendages of that specimen and found them similar to the appendages of *E. radiicosta* (Darby), which are illustrated herein. The angularity of the posteroventral corner of left valve is shown better in Darby's illustration of the corner (pl. 22: fig 6) than it is in the illustration of the whole valve (pl. 22: fig. 7) in which the corner appears to be slightly out of focus. The valves have ribs similar to those of *E. radiicosta* although they are not all visible on Darby's photograph. I have referred Darby's specimen to *E. radiicosta* herein, but question the reference because the central adductor muscle attachment scars may differ (compare Darby, 1965, pl. 22: fig. 8, pl. 25: fig. 1). I did not compare muscle scars of additional specimens reported upon herein, which are indistinct.

Present collections from the south Texas shelf contain an undescribed species resembling *E. radiicosta* except the shells are smaller, have a more rounded posteroventral corner, a slightly wider and scalloped overhang along the anterior and ventral margins, and a minute spine on the

FIGURE 63.—*Eusarsiella radiicosta* (Darby), USNM 156797, adult female, length 1.11 mm: *a*, inside view of anterior of left valve showing minute anterior bristle of infold; *b*, posterior of left valve, inside view; *c*, posterior of right valve, inside view; *d*, left first antenna, medial view; *e*, part of right second antenna, medial view; *f*, left mandible, medial view; *g*, maxilla, medial view.

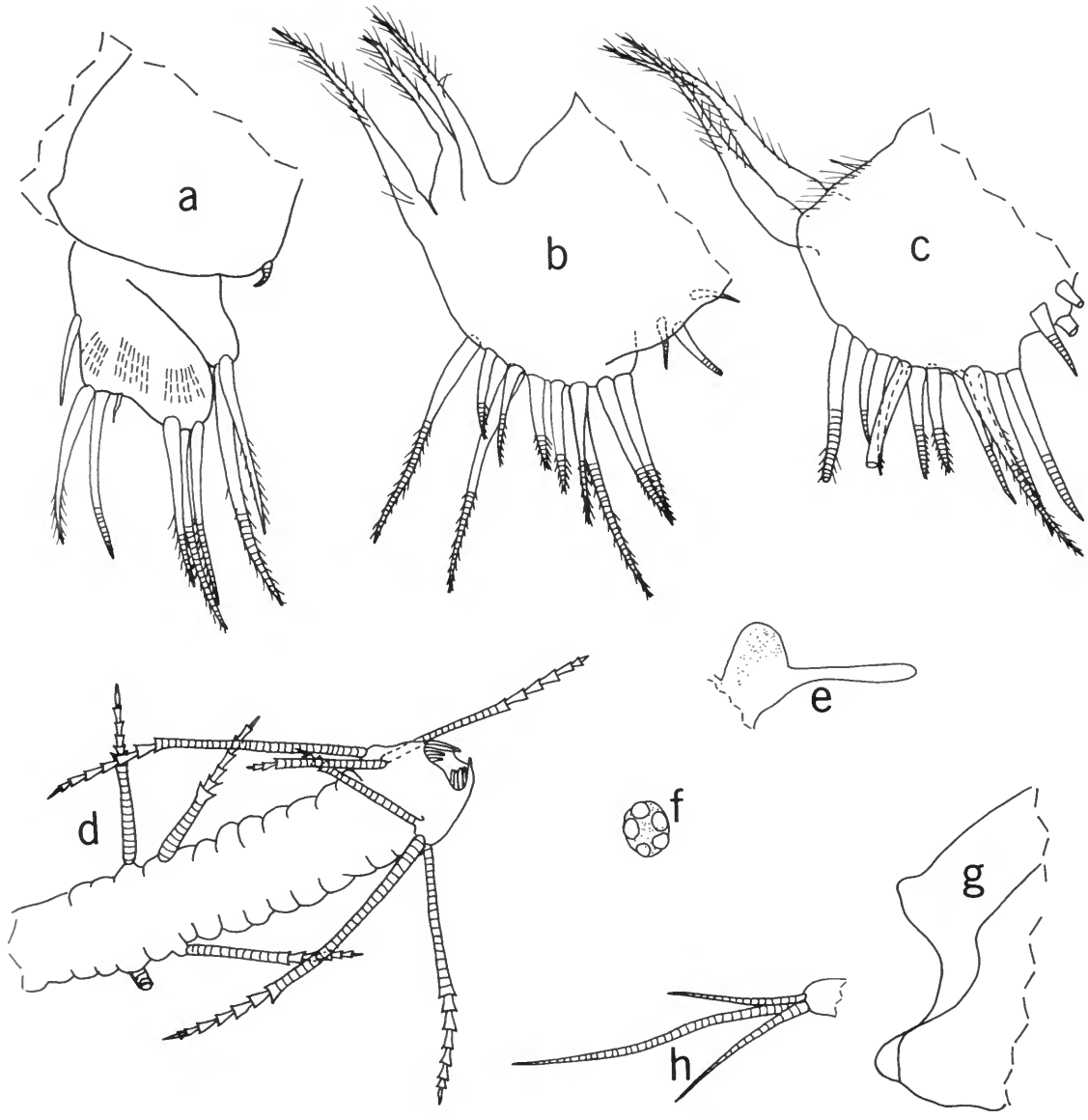

FIGURE 64.—*Eusarsiella radiicosta* (Darby), USNM 156797, length 1.11 mm: *a*, sixth limb; *b*, *c*, right and left sixth limbs; *d*, seventh limb; *e*, medial eye and bellonci organ; *f*, right lateral eye; *g*, anterior of body showing projecting anterior process and upper lip; *h*, UMMP 48808, paratype, juvenile female, exopodite of maxilla.

small distal process of the endopodite of the female second antenna.

DESCRIPTION OF ADULT FEMALE (Figures 62–64).—The specimen described here was collected from the Atlantic Ocean. Carapace with rounded anterior, ventral, and dorsal margins; posterior margin linear, truncate, forming almost a right angle with posterior end of ventral

FIGURE 65.—*Eusarsiella radiicosta* (Darby), USNM 153937, adult female, lateral view of complete specimen, length 0.99 mm.

margin; posterodorsal part of valve bulbous; anterior margin with no indication of incisur or rostrum (Figures 62, 63*b,c*).

Ornamentation (Figure 62): Surface without gelatinous coating; 2 ribs extending posteriorly from central adductor muscle area; lower of these extending onto caudal process; upper rib extending onto posterodorsal bulge; 4 or 5 very faint low ribs fanning outward from rib near valve middle and intersecting low peripheral ridge. Surface with shallow fossae having minute papillae; smaller papillae present on surfaces between fossae and on ribs. Bristles present along anterior and ventral margins and scattered over valve surface.

Infold: Anterior infold with minute bristle near inner margin below valve middle (Figure 63*a*). Infold of caudal process with 4–6 scattered bristles near middle; additional smaller bristles present along inner margin of posteroventral and posterior infolds; posterior infold dorsal to caudal process with 2 setal bristles (Figure 63*b,c*).

Selvage: Wide lamellar prolongation with smooth outer edge present along anterior, ventral and posterior margins.

Size: USNM 156797, length 1.11 mm, height 0.94 mm.

First Antenna (Figure 63*d*): First joint bare. Second joint with 1 spinous dorsal bristle near middle. Third and fourth joints fused; small third joint with 1 small spinous ventral bristle and 1 longer spinous dorsal bristle; fourth joint with 4 spinous terminal bristles (1 dorsal, 3 ventral). Sensory bristle of long fifth joint with 1 minute filament proximal to middle of bristle. Medial bristle of minute sixth joint with marginal spines. Seventh joint: a-bristle twice length of medial bristle of sixth joint, either bare or with few marginal hairs; b-bristle about twice length of a-bristle, with 1 minute marginal filament; c-bristle about same length as sensory bristle of fifth joint, with 2 minute marginal filaments. Eighth joint: d-bristle bare with blunt tip, about twice length of b-bristles; e-bristle bare with blunt tip, bristle only slightly longer than b-bristle; f-bristle slightly shorter than c-bristle, without filaments; g-bristle about same length as c-bristle, bare or with minute proximal filament.

Second Antenna (Figure 63*e*). Protopodite bare. Endopodite 1-jointed, with 1 short proximal anterior bristle; terminal node absent or barely present. Exopodite: first joint with minute medial, terminal bristle; bristle of second joint long, with about 20 proximal spines along ventral margin and distal natatory hairs; bristles of joints 3–5 with natatory hairs; bristles of joints 6–8 with natatory hairs, and few proximal ventral spines; ninth joint with 2 bristles (1 long with natatory hairs and ventral spines, 1 short with few short hairs); joints 2–7 with minute spines forming row along terminal margin.

Mandible (Figure 63*f*): Coxale endite consisting of single spine with few slender marginal hairs and spines; ventral margin of coxale with slender hairs proximally and spines distally. Basale: medial side near ventral margin with 4 small bristles; lateral side near ventral margin with 2 small bristles; dorsal margin with 1 small mid-bristle and 2 small subterminal bristles. No exopodite present. First endopodial joint: dorsal margin with proximal concavity and minute spines forming terminal row; ventral margin with stout terminal claw with minute, faint, medial bristle near base; medial side of joint with 16


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FIGURE 67.—*Eusarsiella radiicosta* (Darby), USNM 153938, adult male, lateral view of complete specimen, length 0.98 mm.

spines (the distal of these longer than others). Second endopodial joint with stout ventral claw and slender dorsal bristle. Third endopodial joint with stout terminal claw, 2 minute ventral bristles and 1 minute dorsal bristle.

Maxilla (Figure 63*g*): Typical of genus. Exopodite with 3 bristles (1 long, 2 short).

Fifth Limb (Figure 64*a*): Single endite with 1 small bristle. Exopodite: first joint with 2 spinous bristles; joints 2–5 fused; joint 2 with 3 spinous bristles; joints 3–5 with total of 4 bristles.

Sixth Limb (Figure 64*b,c*): Single endite with 3 short spinous bristles. End joint with 10 spinous bristles followed by space and then 2 or 3 broad hirsute bristles.

Seventh Limb (Figure 64*d*): Proximal group with 4 bristles, 2 on each side: distal group with 6 bristles, 3 on each side; bristles with 3–8 bells. Terminus with opposing combs, each with 10–13 recurved teeth.

Furca: Each lamella with 5 claws; claw 1 fused to lamella, claws 2–5 separated from lamella by suture; claws 1–4 with teeth along posterior margins, teeth very faint or absent on claw 5; some teeth on claws 1–3 larger than others; all claws slender and tapering to point, but tip of claw 1 more rounded than others; minute spine on lamella between claws 4 or 5 and following claw 5.

Bellonci Organ (Figure 64*e*): Elongate with rounded tip.

Eyes: Each lateral eye with brown pigment and 5 ommatidia (Figure 64*f*); Medial eye about same size as lateral eye, with brown pigment (Figure 64*e*).

Upper Lip (Figure 64*g*): Helmet shaped.

Genitalia: A small sclerotized ring on each side of animal.

Y-Sclerite: Normal for genus.

Eggs: USNM 156797 with 4 eggs in marsupium and additional smaller unextruded eggs.

SUPPLEMENTARY DESCRIPTION OF HOLOTYPE.—UMMP 48807. (The appendages of this specimen are on a single slide. It is a wholemount except for removed first and second antennae, which are also on the slide). Darby (1965:36) gave the dimensions of the shell of the holotype as length 0.975 mm, height 0.775 mm.

First Antenna: Differs from USNM 156797 in having only 2 ventral bristles on fourth joint and e-bristle about same length as b-bristle.

Second Antenna: Similar to that of USNM 156797 except all natatory bristles except short one of ninth joint with ventral spines. (Darby, 1965:35, states that no setae were observed on the endopodite. Actually, 1 proximal anterior seta is present on the endopodite of each limb of the holotype.)

Mandible: Differs from USNM 156797 in having about 23 spines instead of 16 on the medial side of the first endopodial joint.

Maxilla: Similar to that of USNM 156797.

Fifth Limb: Similar to that of USNM 156797 except second exopodial joint with 4 instead of 3 bristles.

Sixth Limb: This limb difficult to see in detail on mounted specimen, but appears to be similar to that of USNM 156797.

Seventh Limb: Proximal group with 4 strongly

FIGURE 66.—*Eusarsiella radiicosta* (Darby), USNM 153937, adult female, length 0.99 mm: *a*, posterior of left valve, inside view; *b*, left first antenna, right lateral eye, medial eye, and bellonci organ; *c*, endopodite of left second antenna, lateral view; *d*, left mandible, medial view; *e*, maxilla, lateral view; *f*, distal part of fifth limb.

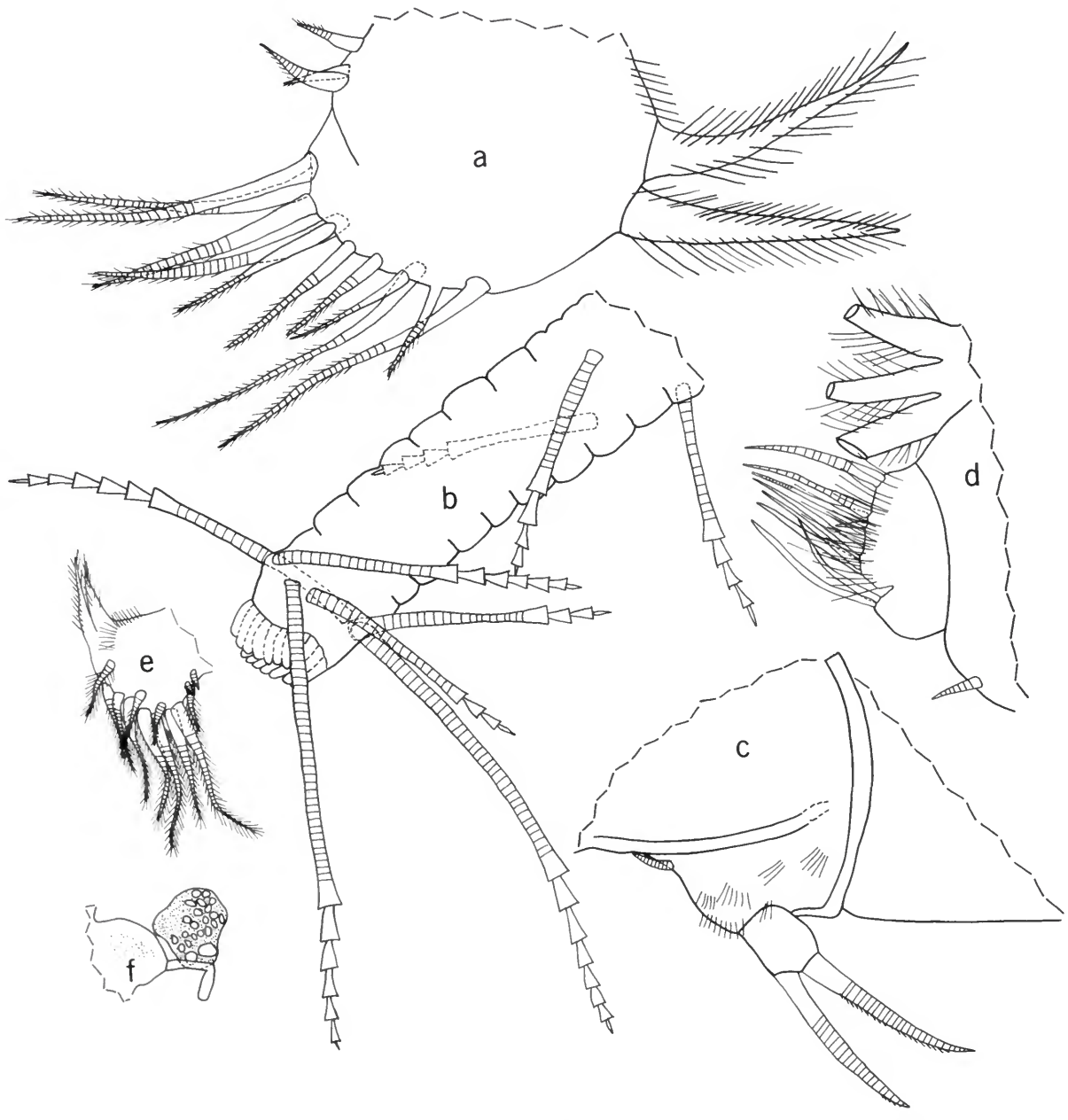


FIGURE 68.—*Eusarsiella radiicosta* (Darby), USNM 153937, adult female, length 0.99 mm: *a*, sixth limb; *b*, seventh limb. USNM 153938, adult male, length 0.98 mm; *c*, endopodite of right first antenna, medial view; *d*, distal part of fifth limb; *e*, sixth limb; *f*, lateral eye, medial eye, and bellonci organ.

tapering bristles, 2 on each side, distal group with 4 bristles, 2 on each side; each bristle with 2 or 3 bells. Terminus consisting of opposing poorly developed small combs, each with just a few teeth.

Furca: Differs from furca of USNM 156797 in that tips of all claws are extremely pointed, almost drawn out; a small spine is present between claws 4 and 5, and 2 minute spines are present on each lamella following fifth claw.

Bellonci Organ: Similar to that of USNM 156797.

Eyes: Similar to those of USNM 156797, but ommatidia of lateral eyes slightly larger.

Upper Lip: Hidden on specimen.

Genitalia: None present.

Y-Sclerite: Similar to that of USNM 156797.

REMARKS.—Strongly tapering bristles with few bells on seventh limbs of holotype plus the absence of genitalia indicate that the specimen is a juvenile. The endopodite of the second antenna indicates that the specimen is female.

SUPPLEMENTARY DESCRIPTION OF PARATYPE (Figure 64*h*).—UMMP 48808. The appendages are on one slide.

First Antenna: Similar to that of holotype, except e-bristle slightly longer than b-bristle.

Second Antenna and Mandible: Similar to those of holotype.

Maxilla: Similar to that of holotype. Exopodite on both limbs with 3 bristles (1 long, and 2 about ½ length of long bristle; Figure 64*h*).

Fifth and Sixth Limbs: Similar to those of holotype.

Seventh Limb: Similar to that of holotype except some proximal bristles without bells.

Furca, Bellonci Organ, Eyes, Genitalia, and Y-Sclerite: Similar to those of holotype.

REMARKS.—The specimen is a juvenile female, probably the same age as holotype.

DESCRIPTION OF ADULT FEMALE (Figures 65, 66, 68*a,b*; Plates 14–17).—This specimen was collected from the Gulf of Mexico. Carapace oval in lateral view with truncate posterior margin forming close to right angle with ventral margin; posterodorsal part of each valve forming bulge (Figures 65, 66*a*).

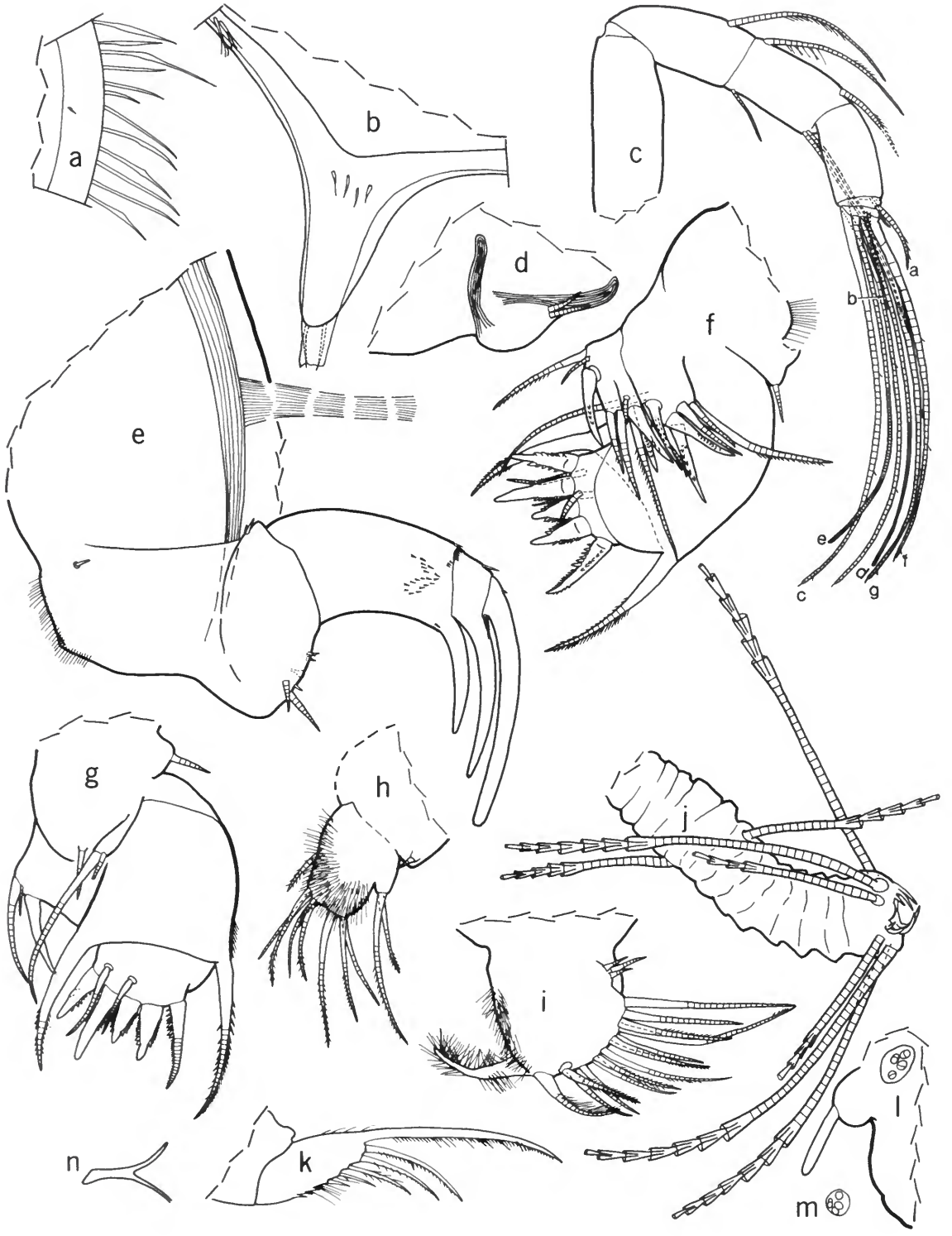
Ornamentation (Plates 14, 15): Upper rib extending dorsally from vicinity of central adductor muscle area then bending posteriorly onto posterodorsal bulge, continuing across bulge and curving ventrally near posterior end of bulge (Figure 65; rib less evident in Plate 14*a*). Lower rib extending posteriorly from central adductor muscle area to caudal process. Four or 5 faint radial ribs extending from previously described ribs to anterior margin of valve where they intersect low peripheral ridge (radial ribs not visible on all specimens; Plate 14*a*). Long bristles present along ventral and anterior margins, along edge of caudal process (Figure 66*a*), and sparsely distributed on valve surface (Plates 14*a*, *b*, 15*b,e,f*). Surface without gelatinous coating. Fossae numerous and filled with minute papillae (Plates 14*a,b,d–f*, 15*a,c,d*). Minute papillae also present between fossae (Plates 14*c,e,f*, 15*b*).

Infold (Figure 66*a*; Plates 16, 17): 1 minute bristle present at inner edge of anterior infold near middle of anterior edge of valve; infold of caudal process with 3 small bristles (Figure 66*a*; Plate 16*b–f*); about 9 small bristles present along inner edge of infold proximal to caudal process (Plates 16*b*, 17*a,b*); 2 setal bristles present on posterior infold dorsal to caudal process (Figure 66*a*; Plate 17*c–e*).

Selvage: Wide lamellar prolongation without marginal fringe present along anterior, ventral, and posterior margins of each valve (Plates 16*a*, *b*, 17*f*).

Size: USNM 153937, length 0.99 mm, height 0.84 mm; USNM 158149, length 0.89 mm, height 0.78 mm; USNM 158150, length 1.00 mm, height 0.86 mm; USNM 158151, length 0.96 mm, height 0.85 mm; USNM 158152, length 0.94 mm, height 0.81 mm; USNM 158163, length 0.91 mm, height 0.79 mm; USNM 158164, length 1.01 mm, height 0.82 mm.

First Antenna (Figure 66*b*): First joint bare. Second joint with 1 dorsal bristle with 1 or more long proximal spines and numerous short distal spines. Third and fourth joints fused; short third joint with 1 long dorsal bristle and 1 short ventral bristle, both with short marginal spines; long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fourth joint with 4 bristles (1 dorsal, 3 ventral; 2 of latter reaching distal end of fifth joint). Sensory bristle of fifth joint with minute filament proximal to middle, and spine at tip. Medial bristle of minute fused sixth joint short with marginal spines. Seventh joint: a-bristle about twice length of bristle of sixth joint, with few marginal spines; b-bristle about twice length of a-bristle, with 1 minute filament; c-bristle same length as sensory bristle of fifth joint, with 1 minute proximal filament. Eighth joint: e-bristle slightly longer than b-bristle, bare with blunt tip; d-bristle only slightly shorter than c-bristle, bare with blunt tip; f-bristle about same length as c-bristle, with 2 minute filaments near middle; g-bristle only slightly shorter than f-bristle, with 1 minute proximal filament. Minute spine present at tips of sensory bristle and c-, f-, and g-bristles.

Second Antenna (Figure 66*c*): Protopodite bare. Endopodite 1-jointed, with 1 short proximal anterior bristle and small but distinct terminal node (Figure 66*c*). Exopodite: first joint with small terminal medial bristle; bristle of second joint with about 13 slender proximal ventral spines and distal natatory hairs; bristles of joints 3–7 with natatory hairs, no ventral spines; bristle of joint 8 with few proximal ventral spines and natatory hairs distal to spines; ninth joint with 2 bristles (1 with natatory hairs and few proximal ventral spines, other shorter and with short marginal hairs); joints 2–7 with minute spines forming row along distal margin.

Mandible (Figure 66*d*): Coxale endite consisting of stout spine with few marginal spines; ventral margin of coxale with long hairs proximally, and stouter, more spinelike hairs distally. Basale: medial side with 4 small bristles near ventral margin; lateral side with 2 short bristles near ventral margin; dorsal margin with 1 short bristle distal to middle and 2 small subterminal bristles. Exopodite absent. First endopodial joint: dorsal margin slightly undulate proximally, and with short spines forming row along terminal margin (row extends onto medial and lateral sides); ventral margin with stout terminal claw; medial side with about 30 faint spines (not counting row along terminal end near dorsal margin). Second endopodial joint with small dorsal bristle and stout ventral claw. Third endopodial joint with stout terminal claw, 1 minute dorsal bristle, and 2 minute ventral bristles.

Maxilla (Figure 66*e*): Typical for genus. Exopodite with 3 bristles (longer of these about twice length of others).

Fifth limb (Figure 66*f*): Single endite represented by 1 small bristle. Exopodite: First joint with 2 spinous bristles; remaining joints fused; second joint with 3 spinous bristles; joints 3–5 with total of 4 bristles.

Sixth Limb: (Figure 68*a*): Single endite with 3 short bristles. End joint with 11 spinous bristles followed by space and then 2 broad hirsute bristles.

Seventh Limb (Figure 68*b*): Three or 4 bristles in proximal group (1 or 2 on each side); 6 bristles in terminal group (3 on each side); each bristle with 3–6 bells. Terminus with opposing combs, each with about 10 recurved teeth.

Furca: Each lamella with 5 slender, pointed claws; claw 1 fused to lamella, remaining claws separated from lamella by suture; claws 1–4 with teeth along posterior margin, some longer than others; minute spine between claws 4 and 5 and following claw 5.

Bellonci Organ (Figure 66*b*): Elongate, broadening distally with rounded tip.

Eyes (Figure 66*b*): Lateral eyes pigmented brown, each with 4 or 5 ommatidia. Medial eye about same size as lateral eye, bare.

Upper Lip: Typical for genus.

FIGURE 69.—*Eusarsiella radiicosta* (Darby), USNM 153938, adult male, length 0.98 mm: *a*, right first antenna, medial view; *b*, left mandible, medial view; *c,d*, copulatory limbs; *e*, USNM 158123, paratype, instar IV (A−1) male, length 0.89 mm, lateral outline of complete specimen. USNM 158123, paratype, instar IV (A−1) male, length 0.77 mm; *f*, lateral view of complete specimen; *g*, endopodite of left second antenna, medial view; *h*, right seventh limb; *i*, right lateral eye, medial eye, and bellonci organ; *j*, left lateral eye, medial eye, and bellonci organ; *k*, right copulatory limb, lateral view.

Genitalia: Oval sclerotized ring on each side of body.

Y-Sclerite: Typical for genus.

Eggs: USNM 153937 with 2 eggs in marsupium; USNM 158149 with 3 eggs.

DESCRIPTION OF ADULT MALE (Gulf of Mexico; Figures 67, 68*c–f*, 69*a–d*).—Carapace somewhat elongate, with distinct rostrum and shallow incisur; posterior truncate in lateral view forming nearly a right angle with ventral margin (Figure 67); extent of lateral overlap along ventral margin variable.

Ornamentation (Figure 67): Posterodorsal part of each valve with small crescent-like projecting process bearing minute spine-like processes; low narrow rib extending from broad part of valve in vicinity of central adductor muscle attachments towards posterior valve edge in vicinity of caudal process, but fading out prior to reaching margin. Margin of valve with low, narrow peripheral ridge bearing numerous minute spine-like processes. Long bristles present along ventral margin of each valve and along edge of caudal process. Surface fossae smaller than those of female, but with similar minute processes.

Infold: Not examined.

Selvage: Present along anterior, ventral, and posterior margins, edge smooth.

Size: USNM 153938, length 0.98 mm, height 0.65 mm; USNM 158157, 2 specimens, length 0.98 mm, height 0.67 mm, length 0.89 mm, height 0.63 mm; USNM 158162, length 0.99 mm, height 0.68 mm; USNM 158164, length 0.91 mm, height 0.65 mm; USNM 158165, length 0.96 mm, height 0.79 mm.

First Antenna (Figure 69*a*): First joint bare. Second joint with 1 dorsal bristle with long proximal and short distal spines. Third and fourth joints fused; third joint with 2 bristles (1 long, dorsal, other short, ventral); fourth joint with 3 bristles (1 dorsal, 2 ventral). Fifth joint wedged ventrally between fourth and sixth joints; sensory bristle with stout flaring proximal part with numerous slender filaments (not shown in illustrated limb) and 1 stout bristle with 5 short, distal, marginal filaments. Sixth joint elongate with short, terminal, medial bristle. Seventh joint: a-bristle about two and one-third times length of bristle of sixth joint; b-bristle slightly more than twice length of a-bristle, with 1 short distal filament; c-bristle reaching past tip of sensory bristle of fifth joint, with 6 short, distal, marginal filaments. Eighth joint: d- and e-bristles bare, with blunt tips reaching tip of sensory bristle; f-bristle reaching tip of sensory bristle, with 4 small distal filaments (tip broken off of illustrated limb); g-bristle same length as c-bristle, with 5 short, distal, marginal filaments.

Second Antenna (Figure 68*c*): Protopodite bare. Endopodite 2-jointed: first joint with 1 short proximal bristle (or without bristle) and hairs forming rows; second joint with 2 terminal bristles (Figure 68*c*). Exopodite: first joint with fairly large triangular medial process on terminal margin; bristle of second joint with few proximal dorsal hairs followed by about 20 slender ventral spines, and then both ventral and dorsal natatory hairs; bristles of joints 3–8 with natatory hairs; ninth joint with 2 bristles (1 long with natatory hairs, 1 short with marginal hairs); joints 2–7 with spines forming row along distal margin.

Mandible (Figure 69*b*): Coxale endite represented by small ringed spine. Basale: ventral margin with 1 short bristle proximal to middle; medial side near ventral margin with 4 small bristles (3 proximal of these forming cluster); dorsal margin with 3 bristles (1 distal to middle, 2 subterminal). First endopodial joint: ventral margin with 2 subterminal bristles; medial and lateral surfaces and dorsal margin with spines forming rows. Second endopodial joint: ventral margin with 1 terminal bristle; dorsal margin with 1 short subterminal bristle; medial and lateral surfaces with small spines forming few rows. Third endopodial joint having proximal and distal parts (2 jointed?): proximal part with 1 small medial bristle; distal part with 1 short ventral bristle and 1 long terminal claw with minute teeth along ventral margin. No exopodite present.

Maxilla: Extremely reduced, typical of genus, with numerous weakly developed spinous bristles on endites and endopodite. Exopodite

indistinct on specimen examined but probably with 3 bristles.

Fifth Limb (Figure 68*d*): Epipodial appendage with 32 bristles. Single endite with 1 small bristle. Exopodite: first joint with 2 weakly developed bristles; remaining joints fused, with total of 6 or 7 bristles.

Sixth Limb (Figure 68*e*): Single endite with 3 bristles (2 short with few short spines, 1 longer, hirsute). End joint hirsute, with 12 bristles (7 hirsute bristles along anterior and ventral margin, 2 hirsute broad posterior bristles, and 3 medial bristles with long proximal hairs and short distal spines).

Seventh Limb: Not observed, either absent or minute, bare.

Bellonci Organ (Figure 68*f*): Elongate, broadening distally, with rounded tip.

Eyes (Figure 68*f*): Lateral eyes pigmented brown, each with about 12 ommatidia (more shown in illustrated eye squashed under cover glass). Medial eye lightly pigmented, about same size as lateral eye.

Copulatory Organs (Figures 69*c,d*): Each clasping organ consisting of about 3 lobes: first lobe with sclerotized tip bearing small spines; second lobe with 2 proximal and 2 terminal bristles; third lobe consisting of proximal part with small sclerotized hook and 4 small bristles at base of hook, and distal part with large sclerotized hook with bifurcate tip.

DESCRIPTION OF A−1 Male (Figure 69*e–k*).—Shape and ornamentation similar to that of adult female, but carapace smaller (Figure 69*e,f*).

Size: USNM 158122, length 0.77 mm, height 0.60 mm; USNM 158123, length 0.89 mm, height 0.66 mm.

First Antenna: First joint bare. Second joint with 1 dorsal bristle with few short, faint, marginal hairs. Third and fourth joints fused; third joint with short ventral bristle and longer dorsal bristle; fourth joint with 3 bristles (2 ventral, 1 dorsal); remaining joints, in general, similar to those of adult female. (USNM 158122 has adult male appendages visible inside those of the A−1 male. The abundant long slender filaments of the sensory bristle of the fifth joint of the adult male are visible in the upper part of the body of the animal proximal to the first antenna.)

Second Antenna: Protopodite bare. Endopodite 2-jointed (Figure 69*g*): first joint with 1 short, proximal, anterior bristle; second joint short with 2 terminal bristles. Exopodite: first joint with minute, recurved, medial, terminal bristle; bristle of second joint with ventral spines; bristles of joints 3–8 with proximal ventral spines and distal natatory hairs; ninth joint with 2 bristles (1 long with proximal ventral spines and distal natatory hairs, 1 short, bare); joints 2–7 with few minute spines forming row along distal margin.

Mandible, Maxilla, Fifth and Sixth Limbs: In general, similar to those of adult female.

Seventh Limb (Figure 69*h*): Minute, bare.

Furca, Bellonci Organ, Eyes (Figure 69*i,j*): Similar to those of adult male.

Copulatory Organs (Figure 69*k*): Copulatory limbs present but not as well developed as on adult male. Terminal hook-like processes appearing only weakly sclerotized.

Eusarsiella ozotothrix (Kornicker and Bowen, 1976), new combination

FIGURES 70–73; PLATES 18–20

Sarsiella ozotothrix Kornicker and Bowen, 1976:497, figs. 1–3.

HOLOTYPE.—USNM 152455, female in alcohol and on slides.

TYPE-LOCALITY.—Stonewall Pond, Martha's Vineyard, Massachusettes.

MATERIAL.—See "Station Data with Specimens Examined."

DISTRIBUTION.—Martha's Vineyard, Massachusetts; Long Island Sound; Indian River, Florida; Alligator Harbor, Florida (Figure 2). Known depth range 0.44–35 m (Table 1).

CORRECTION.—The measured paratype listed by Kornicker and Bowen (1976:499) under "Size" as USNM 152455-B should have been listed as USNM 152454-B, and males listed as USNM 153920 under "Material Examined"

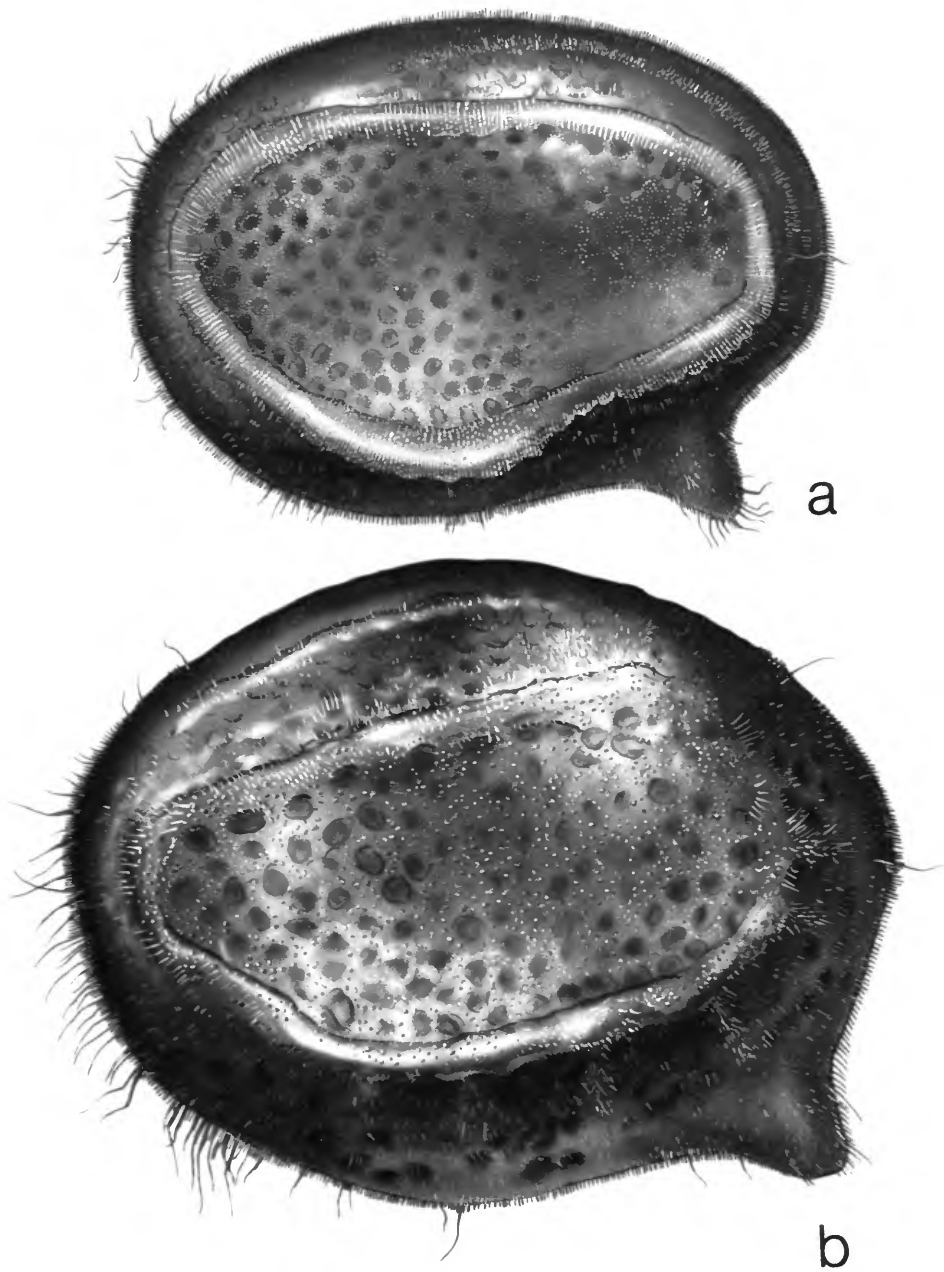


FIGURE 70.—*Eusarsiella ozotothrix* (Kornicker and Bowen), adult females: *a*, paratype, USNM 152441, length 0.95 mm, from Alligator Harbor, Florida; *b*, holotype, USNM 152455, length 1.05 mm, from Martha's Vineyard, Massachusetts.

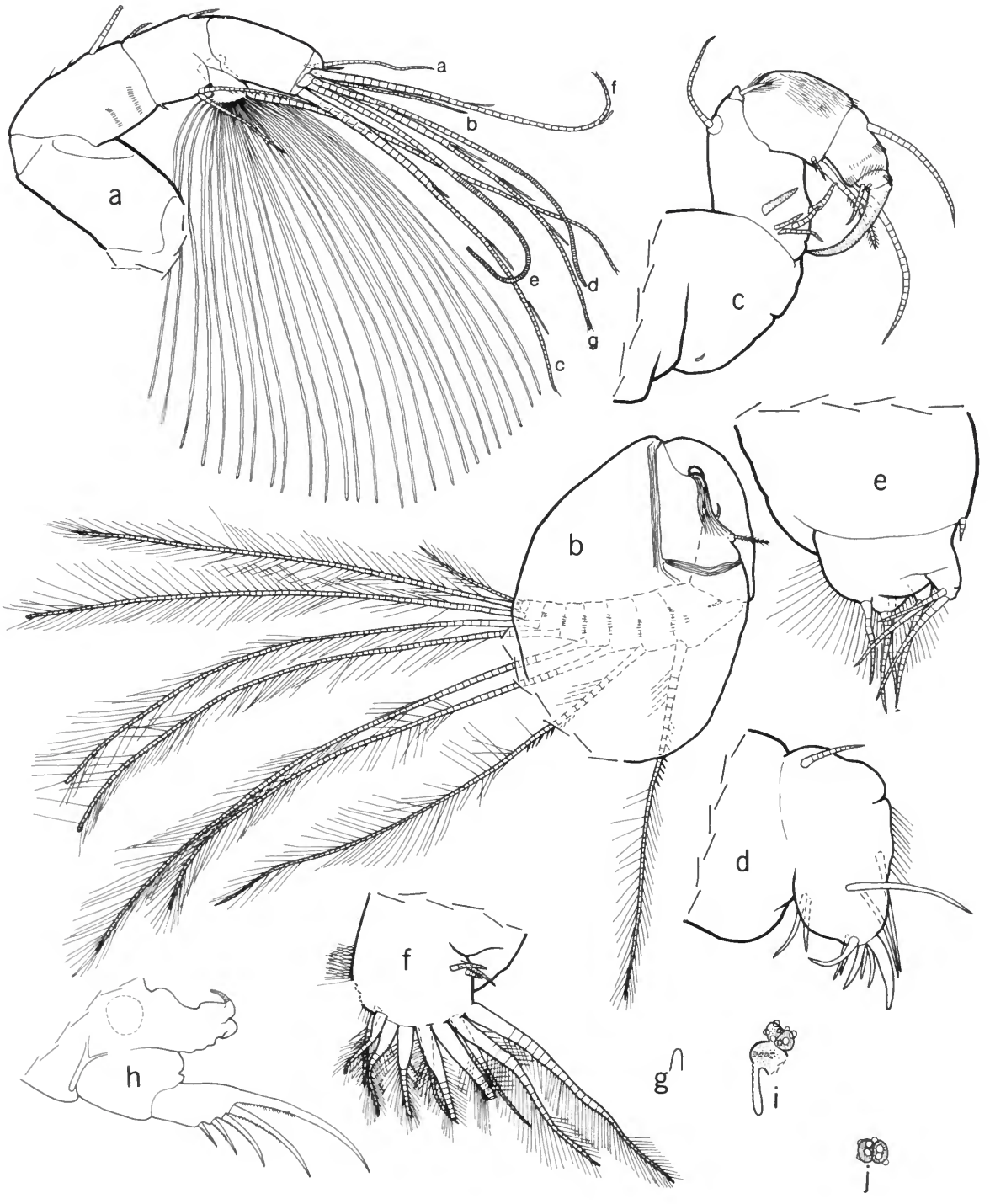
FIGURE 71.—*Eusarsiella ozotothrix* (Kornicker and Bowen), USNM 158086, adult female, length 1.04 mm, from Indian River, Florida.

(1976:498) should have been listed as USNM 153930. The specimen listed under "Size" as USNM 152455-A is the holotype.

REMARKS.—The single paratype from Alligator Harbor, Florida, an ovigerous female, differs from females from Martha's Vineyard, including the holotype, in having a more acute caudal process, in being smaller, and in having better definition of the posterior end of the concentric ridge lying just within the valve margin (compare Figures 70*a* and 70*b*). A specimen collected in the present work from Indian River, Florida, also differs from the holotype in having a more acute caudal process and a somewhat better defined concentric ridge (Figure 71). Although the variability is considered intraspecific herein, more then one species might be involved.

DISCUSSION OF MICROSTRUCTURE (Plates 18–20).—Of the three female specimens I examined, one from Long Island Sound, one from Martha's Vineyard, and one from Alligator Harbor, Florida (Plates 18–20), all had been distorted during the freeze-drying process. None of the specimens were treated with potassium hydroxide prior to drying, so the gelatinous film usually coating specimens was not removed. The specimens were vibrated with an ultrasonic cleaner for about 5 seconds previous to freezing to remove adhering debris. This caused a small tear in the middle of the specimen from Alligator Harbor (Plate 18*c*). The specimen from Long Island Sound did not have a gelatinous coating. The reason for this is not known. The absence of the coating permits the fossae to appear better defined in the Long Island Sound specimen (Plate 18*a*) than in the specimens from Martha's Vineyard (Plate 18*b*) and Alligator Harbor (Plate 18*c*). The abundant bristles on the surface of this species generally have digitate tips (Plates 19*f*, 20*d*), but the gelatinous coating tends to make the digitations clump together on drying, so that they tend to appear ball-like (Plate 19*c*,*e*). The digitations are not easily visible when using a light microscope. Bristles with digitate tips are on the bottom of fossae, generally near the outer rim, as well as on the surface between (Plate 19*a*–*e*). The bristles between fossae are generally longer than those at the bottom of fossae (Plate 19*b*), but this is not always apparent (Plate 19*e*). The bristles forming the ribs of this species are much longer than surface bristles (Plate 18*a*), and also have digitate tips. They generally clump together during the freeze-drying process, which makes them difficult to photograph. Some of the spines on the bottom of fossae have tapered tips

FIGURE 72.—*Eusarsiella ozotothrix* (Kornicker and Bowen), USNM 153929, adult male, lateral view of complete specimen, length 0.98 mm.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(Plate 20*d*). Short bristles with tapered tips are present along the valve margins (Plate 20*c*). Some bristles appearing to have tapered tips may result from a clumping of terminal digitations (Plate 20*a*,*b*). Very long tapering bristles having a larger diameter in their basal part are abundant along the valve margins (Plates 18*a*, 20*c*), and sparsely distributed on the valve surface (Plate 20*d*). The broad part bears crenulations on one side (Plate 20*d*). The tips of bristles tend to project slightly from the gelatinous coat when the specimen is freeze-dried (lower part of Plate 20*a*,*b*). No difference could be found in the microstructures of the specimens from the three areas.

Infold (Plate 20*e*,*f*): The inner view of the left valve of the specimen from Martha's Vineyard shows the position of the central adductor muscle, the bristles of the caudal process, the 2 posterior bristles dorsal to the caudal process, and the wide lamellar prolongation of the selvage along the valve edge (Plate 20*e*). The bristles of the caudal process and the 2 posterior bristles are more clearly shown in Plate 20*f*.

DESCRIPTION OF ADULT MALE (Figures 72, 73).—Carapace with projecting rostrum and with caudal process projecting posteriorly (Figure 72); tip of rostrum extending slightly past valve edge; smaller than female.

Ornamentation (Figure 72): Flat oval fossae abundant but indistinct; upper rib extending from rostrum to point near posterodorsal corner of valve; lower rib extending from lower posterior end of rostrum to point anterior to caudal process; vertical rib connecting upper and lower ribs at posterior ends; horizontal ribs not connected at anterior ends; ribs formed by closely spaced bristles; surface of valve with abundant short bristles; long bristles present along valve margins and sparsely distributed on valve surface; long bristles evenly spaced along ribs; surface between short bristles with transparent gelatinous film.

Infold: Minute bristle on anteroventral infold below rostrum; only 1 or 2 bristles observed on infold of caudal process; 2 plumous bristles present on infold dorsal to caudal process.

Selvage: Wide lamellar prolongation with smooth margins present along anterior, ventral, and posterior margins.

Size: USNM 153930A, length 0.88 mm, height 0.59 mm; USNM 153930B, length 0.94 mm, height 0.63 mm; USNM 153929, length only, 0.98 mm.

First Antenna (Figure 73*a*): First joint bare; second joint with rows of short spines on medial and lateral surfaces and on dorsal margin, and with 1 dorsal bristle; third joint fused to fourth and with 2 short bristles, 1 dorsal, 1 ventral; fourth joint with 2 slender ventral bristles and 1 short dorsal bristle; fifth joint wedged ventrally between fourth and sixth joints, with filamentous sensory bristle with cup-like base; main stem of sensory bristle with 3 or 4 short filaments and 2 spines at tip; medial bristle of sixth joint very short. Seventh joint: a-bristle about same length as joints 5–8; b-bristle slender, slightly longer than a-bristle, bare; c-bristle with 2 short marginal filaments and 2 spines at tip. Eighth joint: d- and e-bristles bare with blunt tips, about same length as c-bristle; f-bristle same length as c-bristle, with 2 short marginal filaments and tip with 2 spines; g-bristle similar to f-bristle, but with 3 short marginal filaments.

Second Antenna (Figure 73*b*): Protopodite bare; endopodite with 1 short proximal bristle and 1 slightly longer spinous terminal bristle, the latter with base on small node which could be considered a second joint. Exopodite: first joint with short medial spine on distal margin; bristle of second joint with spine along ventral margin proximal to middle, and long hairs along proximal part of dorsal margin and along both ventral

FIGURE 73.—*Eusarsiella ozotothrix* (Kornicker and Bowen), USNM 153930A, adult male, length 0.88 mm: *a*, right first antenna, lateral view; *b*, left second antenna, medial view; *c*, left mandible, medial view; *d*, maxilla; *e*, distal part of fifth limb; *f*, sixth limb; *g*, right seventh limb; *h*, right lamella of furca and right copulatory limb; *i*, left lateral eye, medial eye and bellonci organ. USNM 153930B, adult male, length 0.94 mm: *j*, right lateral eye.

and dorsal margins distal to ventral spines; bristle of third joint similar to that of bristle of second joint but longer; bristles of joints 4–8 with natatory hairs but without spines; ninth joint with 2 bristles with natatory hairs; joints 2–7 with short spines forming row along distal margin; few small medial spines forming row on second joint proximal to distal row of spines.

Mandible (Figure 73*c*): Coxale endite consisting of stout spine; ventral margin of coxale bare. Basale: dorsal margin with long bristle distal to middle; medial side with 1 stout spine and 3 annulate bristles, ventral margin with 1 short midbristle. Exopodite consisting of hirsute process bending around first endopodite joint so that distal part is medial. Endopodite: first joint with abundant fine hairs on medial surface near dorsal margin, and short spines forming rows on both medial and lateral sides; ventral margin with 1 long, stout, spinous, terminal bristle and 2 short bristles, the latter with bases on medial side near base of terminal bristle; second joint with 1 long midbristle on dorsal margin, 1 long, terminal, ventral bristle, and spines forming rows on medial surface; third joint with stout terminal claw with 3 short medial bristles at base, 2 ventral, 1 dorsal.

Maxilla (Figure 73*d*): Weakly developed, difficult to observe in detail; coxale with 1 anterior bristle; end joint of endopodite with transparent weakly developed nonannulate bristles.

Fifth Limb (Figure 73*e*): Epipodial appendage with 28 bristles; single endite with 1 short bristle. Exopodite: joints fused, first joint with 2 hirsute bristles, remaining joints with total of 5 hirsute bristles.

Sixth Limb (Figure 73*f*): Endite with 3 bristles; end joint with 13 bristles (the 2 long, hirsute, posterior bristles are missing from both limbs of USNM 153930A, possibly broken off during the dissections).

Seventh Limb (Figure 73*g*): Minute, bare.

Furca (Figure 73*h*): Each lamella with 5 pointed claws; claw 1 fused to lamella; claws 2–5 separated from lamella by suture. (Furca similar to that on female illustrated by Kornicker and Bowen (1976; fig. 3*i*); however, in their description of the female furca (1976:501), claws separated from or fused to the lamellae were inadvertantly reversed).

Bellonci Organ (Figure 73*i*): Elongate with rounded tip.

Eyes (Figure 73*i,j*): Lateral eyes pigmented, appearing to consist of anterior and posterior segments, each with 4 or 5 ommatidia (total 9). Medial eye bare, pigmented, about same size as lateral eye.

Copulatory Organs (Figure 73*h*): Elongate with sclerotized hook-like process at tip.

Y-Sclerite (Figure 73*h*): Typical for family.

Eusarsiella dispar, new species

FIGURES 74, 75

ETYMOLOGY.—The specific name from the Latin *dispar* (different, unequal) in reference to dissimilarities between ornamentation of the left and right valves.

HOLOTYPE.—USNM 158033, adult female in alcohol and on slide.

TYPE-LOCALITY.—R/V *Gyre* cruise 11, station 9, Gulf of Mexico, 57.5 m.

PARATYPES.—Texas continental shelf: 1 adult female, USNM 158040, R/V *Gyre* cruise 11, sta 12. R/V *Longhorn*: 1 adult male, transect I, sta 6; 1 female, 1 early instar, transect III, sta 4; 2 adult females, + 2 stage IV females, USNM 193113, 2 juvenile males, 1 juvenile, transect IV, sta 1; 1 adult male, transect IV, sta 2; 1 ovigerous female, transect IV, sta 4. Corpus Christi ship channel: 1 adult female, sta SR 6.

DISTRIBUTION.—Texas continental shelf and Corpus Christi ship channel (Figure 1). Known depth range 3–100 m (Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 74, 75).—Carapace oval in lateral view with long tapering caudal process, and without rostrum (Figure 74).

Ornamentation (Figures 74, 75*a*): Right valve: lateral alar process with 2 long backward oriented projections, 1 in vicinity of central ad-

FIGURE 74.—*Eusarsiella dispar*, new species, USNM 158033, holotype, adult female, lateral and dorsal (slightly oblique) views of complete specimen, length 1.49 mm.

ductor muscle attachment and 1 at posterior end extending well past posterior margin of valve; dorsal margin with 3 backward pointing processes: posterior margin with 2 backward pointing processes; ventral margin with 5 small processes. Left valve: similar to right valve except processes less well developed, especially anterior of these, which may be missing; ventral margin may have only 4 small processes; surfaces of processes with striped shingle-like microstructures. Long hairs present along outer margin of valve and sparsely distributed on valve surface. Gelatinous coating not present.

Infold (Figure 75*a*): Anterior infold with small bristle near middle. Infold of caudal process with 5 or 6 bristles; 2 bristles present on ventral infold just anterior to caudal process; posterior infold with 3 or 4 small bristles and 2 setiferous bristles.

Selvage: Wide lamellar prolongation with smooth outer edge present along anterior, ventral, and posterior margins of valves.

Size: USNM 158033, length including spines 1.49 mm, length without spines, 1.34 mm, height with caudal process 1.32 mm, height without caudal process 1.10 mm; USNM 193112, length including processes 1.33 mm, height including processes 1.19 mm; USNM 158040, length including processes 1.34 mm; USNM 193113, length including processes 1.27 mm, height including processes 1.16 mm.

First Antenna (Figure 75*b*): First joint bare. Second joint with 1 dorsal bristle and dorsal spines. Third and fourth joints fused; third joint with 1 dorsal bristle; long fourth joint with 3 bristles (1 dorsal, 2 ventral). Sensory bristle of long fifth joint with 1 minute proximal filament and spine at tip. Fifth and sixth joints fused; medial bristle of sixth joint short, spinous. Seventh joint: a-bristle bare, about same length as bristle of sixth joint; bare b-bristle about 2 or 2½ times length of a-bristle; c-bristle about same length as sensory bristle of fifth joint, with spine at tip. Eighth joint: d- and e-bristles bare with blunt tip, both bristles shorter than c-bristle, d-bristle longer than e-bristle; f-bristle slightly longer than d-bristle, with minute proximal filament and spine at tip; g-bristle about same length as c-bristle, with minute proximal filament and spine at tip.

Second Antenna (Figure 75*d*): Protopodite bare. Endopodite 1-jointed, with 2 proximal anterior bristles and ventral spine. Exopodite: first joint with long ventral hairs and minute, medial bristle on terminal margin; second joint about twice length of third joint; bristles of joints 2–8 long, with natatory hairs, no ventral spines; ninth joint with 2 bristles (1 long with natatory hairs, 1 short with short marginal hairs); joints 2–6 with 1–3 minute medial spines on distal margins.

Mandible (Figure 75*e*): Coxale endite consisting of single spine; ventral margin of coxale with short spines along ventral margin. Basale: dorsal


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margin with 3 short unringed bristles (1 distal, 2 terminal) with slender pointed tips; medial side near ventral margin with 4 bristles (3 proximal, 1 distal); lateral side with 1 short distal bristle near ventral margin. Endopodite: first joint with medial spines and ventral claw with few faint minute proximal spines on dorsal margin; dorsal margin of joint undulate proximally; second joint with minute dorsal bristle and stout ventral claw; third joint with stout terminal claw and 3 minute bristles (1 dorsal, 2 ventral).

Maxilla (Figure 75*f*): Three endites present, each with 4 or 5 bristles (some claw-like and pectinate). Precoxale and coxale with dorsal fringe of long hairs; coxale with short dorsal bristle. Basale with 1 short bristle near exopodite. Exopodite with 3 bristles (1 of these longer than others). Endopodite: first joint with 1 spinous alpha-bristle and 1 spnous beta-bristle; end joint with 2 bare a-bristles, 1 bare c-bristle, and 5 terminal claw-like bristles.

Fifth Limb (Figure 75*g*): Single endite with 1 short bare bristle. Exopodite: first joint with 2 spinous bristles; remaining joints fused, hirsute, with total of 7 bristles (1 of these minute).

Sixth Limb (Figure 75*h*): Single endite with 3 bristles. End joint with 9 spinous bristles followed by space and 2 long, stout, hirsute bristles.

Seventh Limb (Figure 75*i*): Four bristles in proximal group (2 on each side), 6 bristles in terminal group (3 on each side), each bristle with up to 5 bells. Terminus consisting of opposing combs, each with about 10 teeth.

Furca (Figure 75*j*): Each lamella with 5 slender claws; claw 1 fused to lamella, claws 2–5 separated from lamella by suture; claws 1–4 with posterior teeth of varying length; margin of lamella between claws 4 and 5 with 2 minute spines; margin of right lamella following claw 5 bare; margin of left lamella following claw 5 with about 8 spines forming 3 groups.

Bellonci Organ (Figure 75*k*): Elongate, broadening distally, with rounded tip.

Eyes (Figure 75*k*): Medial eye bare, with brown pigment. Lateral eye small, about same size as medial eye, with brown pigment and about 5 minute ommatidia.

Upper Lip (Figure 75*k*): Helmet shaped.

Comparisons: The appendages of the new species *E. dispar* are similar to those of *E. disparalis*, and the close relationship between the 2 species is further indicated by the dissimilarities between the left and right valves of specimens of both species. The carapace of the adult *E. dispar* differs from that of *E. disparalis* in not having a rib extending from near the middle of the valve to the ventral margin. The ornamental processes on the valves of *E. dispar* are longer than those of *E. disparalis.*

Eusarsiella tubipora (Darby, 1965), new combination

FIGURES 76–78

Sarsiella tubipora Darby, 1965:39, pl. 29:1–11.
Not *Sarsiella tubipora.*—Baker, 1977a:43.

HOLOTYPE.—UMMP 48817, 15 slides in the Museum of Paleontology, The University of Michigan, Ann Arbor, Michigan.

TYPE-LOCALITY.—Continental shelf off Sapelo Island, Georgia, water depth 36.7 m, July 1965.

MATERIAL.—Holotype. See "Station Data with Specimens Examined."

DISTRIBUTION.—Continental shelf off North Carolina and Georgia (Figure 3). Known depth range 33–39 m (Table 1). Its presence in Hadley Harbor, Massachusetts (Parker, 1975:131) needs confirmation.

REMARKS.—Specimens from off the coast of Southern California identified as *Sarsiella tubi-*

FIGURE 75.—*Eusarsiella dispar*, new species, USNM, 158033, holotype, adult female, length 1.49 mm: *a*, inside view of posterior of right valve; *b*, left first antenna, lateral view; *c*, tip of right first antenna showing proximal part of sensory bristle of fifth joint, short medial bristle of sixth joint, a- and b-bristles of seventh joint; *d*, part of right second antenna, lateral view; *e*, left mandible, medial view; *f*, maxilla, lateral view; *g*, distal part of fifth limb; *h*, right sixth limb, lateral view; *i*, seventh limb; *j*, right lamella of furca.

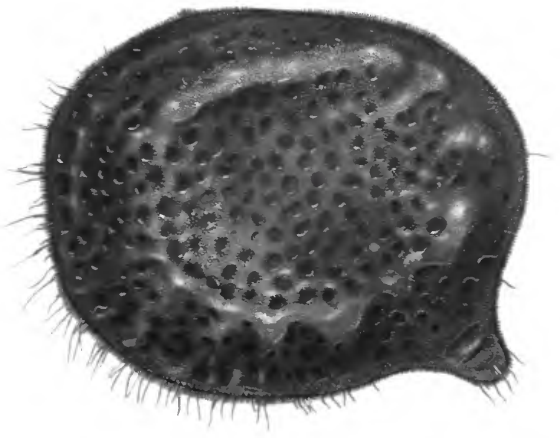


FIGURE 76.—*Eusarsiella tubipora* (Darby), USNM 158578, adult female, lateral view of complete specimen, length 1.30 mm.

pora by James H. Baker (1977a:43) were obtained from the Allan Hancock Foundation and found to be an undescribed species having pointed bristles on the carapace, not flared bristles, as on *tubipora*.

REDESCRIPTION OF ADULT FEMALE (Figures 76–78).—(Previously described in Darby 1965.) Carapace oval in lateral view with projecting posteroventral caudal process (Figures 76, 78*a*).

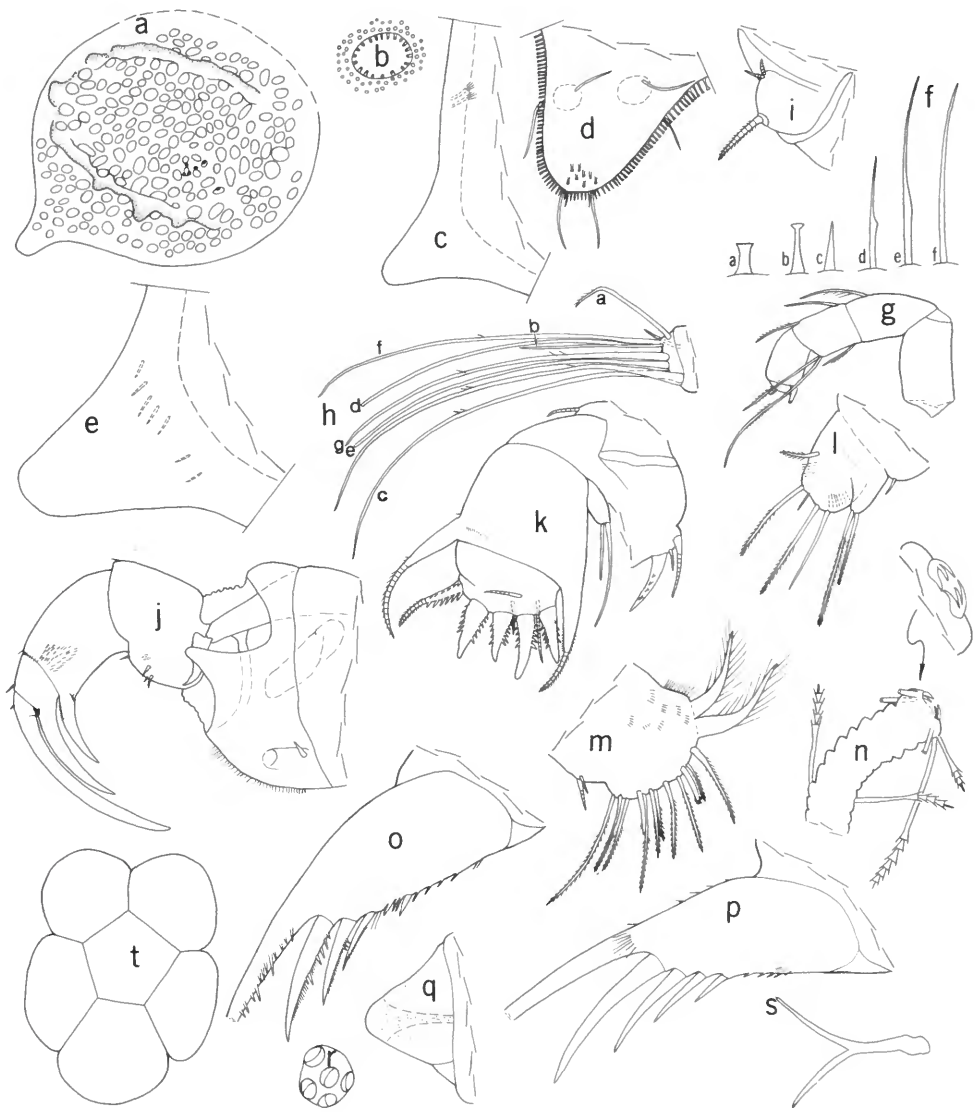
Ornamentation (Figures 76–78*b,d,f*): Discontinuous concentric ridge, better defined in its dorsal and ventral segments present on each valve; ridge delimited mainly on its outer edge where it is raised above that part of shell outside the ridge; inner edge of the ridge at about same level as shell proximal to ridge, and therefore, not well defined. Surface of valve with numerous shallow fossae, and with abundant short bristles flaring distally and appearing to have flat tips with serrate edge when viewed with light microscope; slightly longer and more slender bristles around valve margins; these taper toward their distal end and then widen to form flare at tip (Figure 77); in vicinity of tip of caudal process these bristles tend to have tapered tips without terminal flare; a few short bristles of this type also observed around edges of some fossae; very

FIGURE 77.—*Eusarsiella tubipora* (Darby), USNM 158578, adult female, width of square showing detail of bristles, 0.025 mm.

FIGURE 78.—*Eusarsiella tubipora* (Darby), UMMP 48817, holotype, adult female, length 1.55 mm according to Darby (1965:40): *a*, outside view of right valve, length 1.15 mm; *b*, detail of fossa near middle of right valve; *c*, posterior of right valve showing setal bristles as seen through valve; *d*, outside view of caudal process of right valve showing marginal bristles and some lateral bristles; *e*, caudal process of right valve showing bristles of infold as seen through valve; *f*, sketch of of bristles of outer surface of carapace (*a*, bristles with flat tip abundant on valve surface; *b*, bristles around valve edge; *c*, bristles around tip of caudal process; *d,e,f*, long bristles along anterior and ventral margins and scattered over valve surface); *g*, left second antenna, lateral view (bristles of joints 7 and 8 not shown); *h*, tip of left first antenna, lateral view; *i*, endopodite of right second antenna, medial view; *j*, right mandible, medial view; *k*, maxilla, medial view; *l*, distal part of tip of fifth limb; *m*, sixth limb; *n*, seventh limb; *o*, left lamella of furca, lateral view; *p*, right lamella of furca, medial view; *q*, medial eye (dorsal view?); *r*, lateral eye; *s*, left Y-sclerite, anterior to left; *t*, 6 eggs (flattened under cover slip).

long bristles sparsely distributed over valve surface but abundant along anterior and ventral margins (for outlines of various bristles see Figure 78*f*). Surface of valve covered by transparent film embedding short bristles having flared tips.

Infold (Figure 78*c,d*): It was necessary to study this through outer surface of shell because both valves of holotype are permanently mounted with outer side up. Infold of caudal process with about 7 short bristles forming row parallel to inner edge of infold (Figure 78*e*). It is possible that additional bristles are present posterior to the row of 7 bristles, but none were visible on specimen examined. Posterior infold



with 2 setal bristles (Figure 78*c*).

Selvage: Lamellar prolongation of selvage at tip of caudal process extending to end of the 2 long bristles projecting outward from tip of process.

Size: Holotype, length 1.55 mm, height 0.98 mm (Darby, 1965:40). My measurements of mounted valves are as follows: right valve, length 1.15 mm, height 0.99 mm; edges of left valve covered by mounting medium and not measurable with any degree of accuracy, but its length is roughly 1.12 mm. My measurements of the valves were made with the specimen in the position illustrated by Darby (1965, plate 29:11). According to the caption of the plate, the left valve illustrated by Darby is magnified 50 times. According to that magnification the valve is 1.14 mm, which is in close agreement to my measurement. USNM 158578, length 1.30 mm, height 1.08 mm.

First Antenna (Figure 78*g,h*): First joint bare; second joint with spines along dorsal margin and 1 dorsal bristle with faint hairs; third joint fused to fourth, with 2 bristles, 1 bare dorsal, 1 hirsute ventral; fourth joint with 3 bristles, 1 dorsal, 2 ventral, all with short marginal spines; sensory bristle of fifth joint with 2 or 3 minute filaments; medial bristle of sixth joint short. Seventh joint: a-bristle about 3 times longer than bristle of sixth joint, with spines distally; b-bristle slender, bare, about ⅓ length of sensory bristle and longer than a-bristle; c-bristle slightly longer than sensory bristle, with 2 minute filaments near middle. Eighth joint: d- and e-bristles bare, with blunt tips, about three-fourths length of c-bristle; f-bristle about same length as e-bristle, with 1 minute filament; g-bristle with 3 minute filaments, same length as f-bristle.

Second Antenna (Figure 78*i*): Protopodite bare. Endopodite with 2 short proximal bristles and stout spinous terminal bristle, the latter bristle on small mound that could be considered a second joint. Exopodite: first joint with small medial spine on distal margin and long distal hairs on lateral side; bristle of second joint long with 21–25 stout spines proximally on ventral margin, long natatory hairs distal to spines, and 2 long hairs on dorsal margin proximal to spines; bristle of third joint with 9–12 stout spines proximally on ventral margin and distal natatory hairs; bristles of joints 4–8 with 6–8 stout proximal spines on ventral margin and distal natatory hairs; ninth joint with 2 bristles, dorsal of these short and with natatory hairs, ventral bristle long with few very slender spines near middle of ventral margin and distal natatory hairs; joints 2–7 with minute spines along distal margin on lateral side; basal spines absent.

Mandible (Figure 78*j*): Coxale with stout medial spine and hairs along ventral margin and on lateral side near ventral margin. Basale: medial side with 2 small bristles near ventral margin; ventral margin with 2 minute bristles; lateral side near ventral margin with 2 minute bristles; dorsal margin with minute subterminal bristle, no mid-bristle. Endopodite: medial surface of first joint with spines forming distal cluster and also forming row in distal dorsal corner; dorsal margin with spines forming terminal row; ventral margin with stout terminal claw with faint teeth proximally along dorsal margin; minute medial bristle present near base of claw; dorsal margin of second joint with fairly long, unringed, subterminal bristle; ventral margin with stout terminal claw; end joint with stout terminal claw and a minute ventral and dorsal bristle near base of terminal claw.

Maxilla (Figure 78*k*): Coxale with small dorsal bristle; endite I with about 6 bristles; endite II with 3–4 terminal bristles (one of these with 4 large teeth), and 1 proximal bristle near exopodite; endite III with 5 bristles. Exopodite with 2 slender bristles, inner of these about ½ length of other. Endopodite: alpha-bristle of first joint with just 2 pairs of slender spines on unringed parts and many spines on ringed part; beta-bristle with about 6 pairs of spines on unringed part and many more slender spines on ringed part; end joint with 2 bare a-bristles, 1 bare c-bristle, and 5 stout end bristles, the anterior of these with 6 pairs of stout proximal teeth on unringed part and numerous slender spines on ringed part,

remaining stout bristles with 4–6 stout proximal teeth on each side and without rings or slender spines.

Fifth Limb (Figure 78*l*): Single endite with 1 short bristle. Exopodite: first joint with 2 spinous bristles; remaining joints fused, hirsute, with total of 5 bristles, some with short marginal spines.

Sixth Limb (Figure 78*m*): Single endite with 2 short bristles; end joint hirsute, with 12 slender bristles with short marginal spines followed by 2 stout, hirsute, posterior bristles.

Seventh Limb (Figure 78*n*): Proximal group consisting of 2 bristles with 4 terminal bells; distal group with 5 or 6 terminal bristles with 3–6 bells. Terminus with opposing combs, each with 3 teeth.

Furca (Figure 78*o,p*): Right lamella with 5 claws followed by about 5 minute spines; left lamella with 4 claws followed by 3 minute spines, the fifth claw and about 6 minute spines; claw 1 joined to lamella, remaining claws separated from lamella by suture; claw 1 with medial hairs near base; anterior margin of lamella with a few faint spines; claws 1–4 with short and long teeth along posterior margin; claw 5 with only short marginal teeth; teeth form both medial and lateral row.

Bellonci Organ: Missing from specimen. Simple, club-shaped according to Darby (1965:40).

Eyes: Medial eye pigmented, bare (Figure 78*q*); lateral eye smaller than medial eye, with 5 divided ommatidia (Figure 78*r*).

Genitalia: Tear-shaped with round depression or opening.

Y-Sclerite (Figure 78*s*): Normal for genus.

Eggs: Holotype with 6 eggs (Figure 78*t*).

Eusarsiella gettlesoni, new species

FIGURES 79–82; PLATE 21

ETYMOLOGY.—The species is named after its collector, David Gettleson, Texas A & M University.

HOLOTYPE.—USNM 154182, ovigerous female in alcohol.

TYPE-LOCALITY.—R/V *Gyre* cruise 11, station 7, Gulf of Mexico, off Galveston, Texas, water depth 53 m.

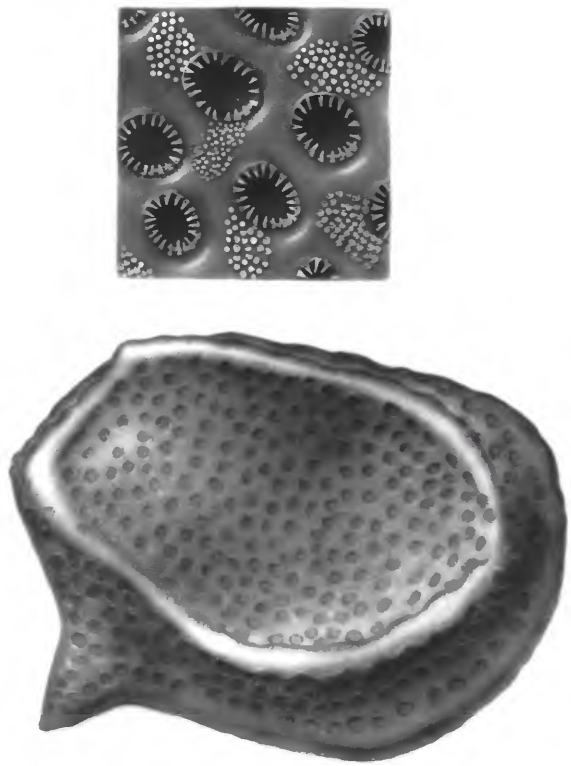


FIGURE 79.—*Eusarsiella gettlesoni*, new species, USNM 154182, holotype, adult female, lateral view of complete specimen, length 0.90 mm, and detail of surface.

PARATYPES.—Louisiana continental shelf: 1 specimen, sta THR-1; 2 ovigerous females, 2 adult males, and 1 specimen, sta THR-2; 1 ovigerous female, sta THR-3. Texas continental shelf: R/V *Gyre*, cruise 10: USNM 154184, 1 adult female, USNM 156884, 1 specimen, sta 8; USNM 156904, 2 specimens, sta 16. Cruise 11: USNM 156819, 1 juvenile, USNM 156891, 2 specimens, USNM 156892, 1 specimen, sta 5; USNM 156824, 156825, 2 adult males, USNM 156826, 1 ovigerous female + 2 juveniles, USNM 156878, 1 specimen, USNM 156887, 2 specimens, USNM 156889, 4 specimens, USNM 156901, 3 specimens, sta 7; USNM 156897, 2 specimens, sta 11.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DISTRIBUTION.—Continental shelf off Louisiana and Texas (Figure 1). Known depth range 50–65 m (Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 79, 80, Plate 21).—Carapace oval in lateral view with prominent caudal process and without rostrum or incisur (Figure 79, Plate 21a).

Ornamentation (Figures 79, 80*a*, Plate 21): Continuous oval rib present on each valve approximately parallel to outer margin of valve except for posterior extension near middle of posterior end; long bristles distributed along oval rib and along anterior and ventral margins of valves; surface of valve with small flat-bottomed fossae; an inward pointing row of short bristles with broad tips present around perimeter of each fossae; surface of oval rib with numerous short bristles with bulbous tips covered by minute knobs; surface of valves between fossae with minute papillae; patches of short bristles similar to those forming perimeter of fossae are scattered over valve surface (papillae are missing from these patches); bottom of fossae bare or with few small bristles. Surface not coated with gelatinous film.

Infold (Figure 80*b,c*): Anterior infold with minute bristle near middle of anterior margin; infold of caudal process with 5 or 6 small bristles and 1 bristle near inner edge of infold; 1 small bristle near inner margin of infold present anterior to caudal process; posterior infold with 2 setose bristles.

FIGURE 81.—*Eusarsiella gettlesoni,* new species, USNM 156824, paratype, adult male, lateral view of complete specimen, length 0.83 mm.

Size: USNM 154184, length 0.88 mm, height including caudal process 0.72 mm, height excluding caudal process 0.70 mm; USNM 156826 length, 0.93 mm, height including caudal process 0.93 mm, height excluding caudal process 0.90 mm; USNM 156887, length 0.97 mm, height including caudal process 0.85 mm, height excluding caudal process 0.79 mm.

First Antenna (Figure 80*d*): First joint bare. Second joint with 1 dorsal bristle and few spines along dorsal margin. Third and fourth joints fused; third joint with long dorsal and short ventral bristle; fourth joint with short dorsal bristle and 2 long ventral bristles. Sensory bristle of fifth joint with 3 minute filaments, 1 proximal, 1 near middle, 1 subterminal; medial bristle of sixth joint short. Seventh joint: a-bristle bare, about two-thirds length of dorsal margin of fifth joint; b-bristle bare, about same length as a-bristle; c-bristle same length or slightly longer than sensory bristle of fifth joint, with 2 or 3 minute marginal filaments. Eighth joint: d- and e-bristles bare with blunt tips, slightly shorter than c-bristle; f-bristle slightly shorter than c-bristle, with 2 minute marginal filaments; g-bristle about same length as c-bristle, with 3 minute

FIGURE 80.—*Eusarsiella gettlesoni,* new species, USNM 154184, paratype, adult female, length 0.88 mm: *a,* complete specimen showing position of central adductor muscle attachments (dashed oval) and representative fossae; *b,c,* posterior of left and right valves showing bristles on infold of caudal process and 2 setal bristles; *d,* left second antenna, medial view; *e,* part of right second antenna, lateral view; *f,* left mandible, medial view; *g,* maxilla, medial view; *h,* distal part of 5th limb (some bristles missing); *i,* sixth limb; *j,* seventh limb; *k,* right lamella of furca; *l,* medial eye and bellonci organ; *m,* right Y-sclerite, brush-like organ, and right genital process (anterior to lower right). USNM 156826, paratype, adult female, length 0.93 mm: *n,* ventral part of coxale of right mandible, medial view; *o,* basale of right mandible, medial view; *p,* exopodite of maxilla; *q,* distal part of fifth limb.

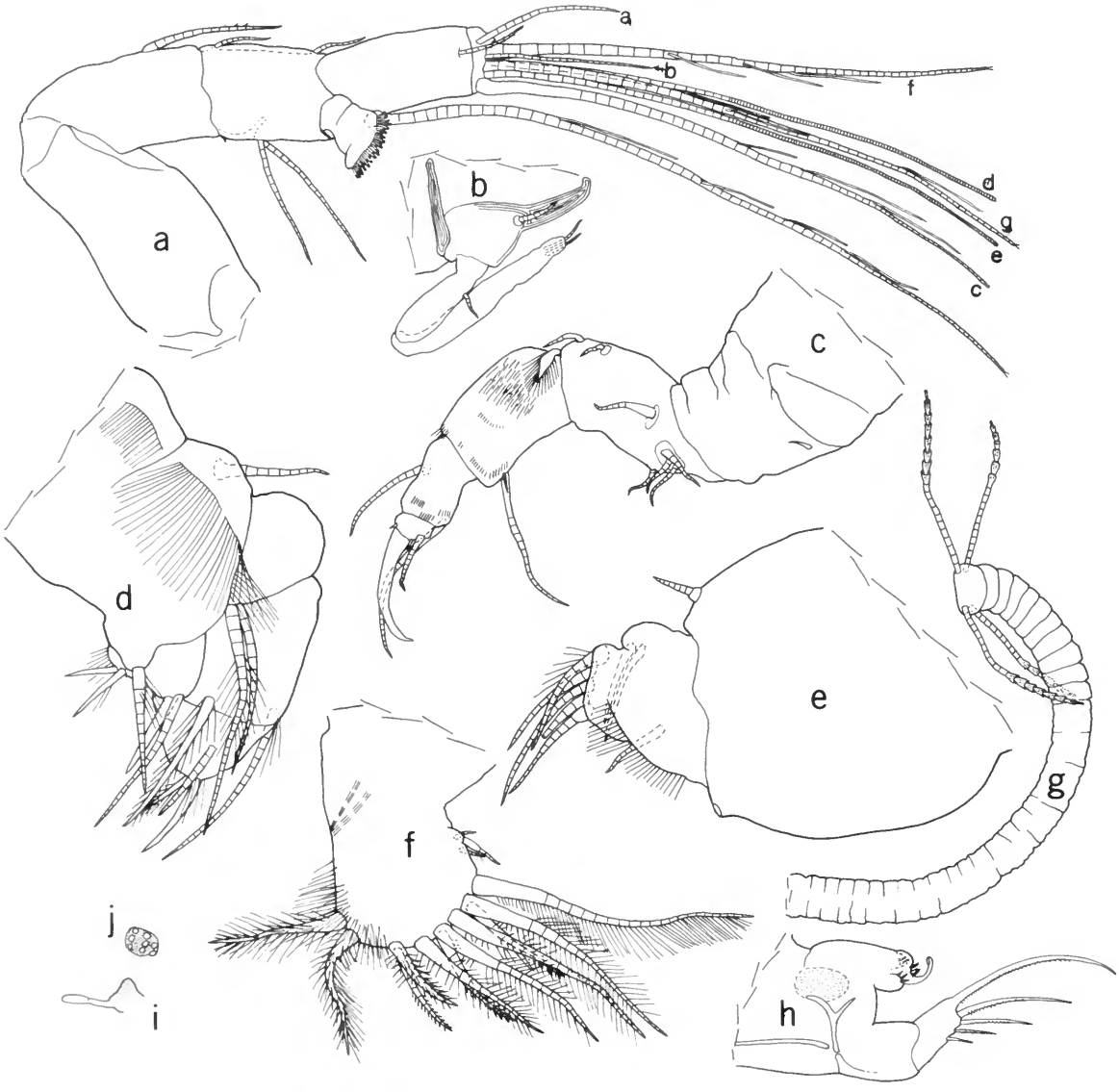

FIGURE 82.—*Eusarsiella gettlesoni,* new species, USNM 156825, paratype, adult male, length 0.89 mm: *a,* left first antenna, medial view (only proximal part of filaments of sensory bristle shown); *b,* endopodite of left second antenna, medial view; *c,* right mandible, medial view; *d,* maxilla; *e,* distal part of fifth limb; *f,* sixth limb; *g,* seventh limb; *h,* posterior of body showing right lamella of furca, right copulatory limb, and right Y-sclerite; *i,* medial eye and bellonci organ; *j,* right lateral eye.

marginal filaments; c-, f-, and g-bristles terminating in minute spine.

Second Antenna (Figure 80*e*): Protopodite bare. Endopodite with 1 proximal bristle and short terminal protuberance. Exopodite: first joint with minute medial bristle on terminal margin; bristle of second joint with slender proximal spines along ventral margin and distal natatory

hairs; bristles of joints 3–6 with natatory hairs and a few slender hair-like ventral spines; bristles of joints 7 and 8 with natatory hairs; ninth joint with 2 bristles: 1 long with natatory hairs, 1 short, dorsal, bare or with faint, short marginal spines; joints 2–8 with short spines forming row along distal margins.

Mandible (Figure 80*f,n,o*): Coxale with proximal medial spine and fringe of hairs along ventral margin. Basale: 5 small bristles near ventral margin; dorsal margin with 2 minute subterminal bristles. Endopodite: First joint: medial surface with numerous spines; dorsal margin with few minute terminal spines forming row extending onto medial surface; ventral margin with stout terminal claw; 1 minute medial bristle present near base of claw; second joint with stout terminal claw on ventral margin; end joint with stout terminal claw with minute ventral and dorsal bristle near base.

Maxilla (Figure 80*g,p*): Coxale with short dorsal bristle; 3 endites with total of 14 bristles; basale with 1 short bristle near exopodite. Endopodite: first joint with spinous alpha- and beta-bristles; end joint with 2 a-bristles, 1 c-bristle and 5 pectinate terminal bristles. Exopodite with 2 bristles, 1 of these slightly more than ½ length of other (Figure 80*p*).

Fifth Limb (Figure 80*h,q*): Single endite with 1 short bristle. Exopodite: first joint lobate with 2 bristles; second to fifth joints hirsute, fused, with total of 7 bristles.

Sixth Limb (Figure 80*i*): Single endite with 3 short bristles; end joint with 7–9 spinous bristles and 2 posterior hirsute bristles; long hairs present in the vicinity of posterior margin of end joint.

Seventh Limb (Figure 80*j*): Two proximal bristles with up to 5 bells; 5 distal bristles, 2 on one side, 3 on other, with 3–8 bells; bells decrease in size distally; terminus with opposing combs, with about 5 faint teeth.

Furca (Figure 80*k*): Each lamella with 5 claws; claw 1 continuous with lamella, claws 2–5 separated from lamella by suture; claws 1–5 with teeth along posterior margins, some longer than others; faint spines along anterior margin of lamella; several very slender spines on lamella following claw 5; USNM 156826 with long stiff medial hairs at base of claw 5 and following claw 5 of left lamella.

Bellonci Organ (figure 80*l*): Elongate, broadening distally with rounded tip.

Eyes: Medial eye pigmented, bare (Figure 80*l*). Lateral eye pigmented, about same size as medial eye, with about 4 ommatidia.

Brush-like Organ (Figure 80*m*): Consisting of 5 minute bristles dorsal to genitalia.

Genitalia (Figure 80*m*): Consisting of a small kidney-shaped process on each side of body.

Y-Sclerite (Figure 80*m*): Normal for family.

Posterior of Body: Bare without processes.

Eggs: USNM 156826 with 2 eggs and small, unextruded eggs.

DESCRIPTION OF ADULT MALE (Figures 81, 82).—Carapace more elongate than that of female and with prominent rostrum.

Ornamentation (Figure 81): Oval ridge somewhat similar to that of female but posterior end more triangular, ridge missing in vicinity of rostrum, and ridge less well developed between the 2 posterodorsal processes than elsewhere. Fossae and bristles similar to those of female.

Infold: Not examined.

Size (measurements include caudal process): USNM 156825, length 0.89 mm, height 0.62 mm; USNM 156824, length 0.83 mm, height 0.55 mm.

First Antenna (Figure 82*a*): First joint bare. Second joint with single dorsal bristle. Third and fourth joints fused; third joint with short dorsal bristle and minute ventral bristle; fourth joint with 2 ventral bristles near middle of joint and 1 dorsal bristle. Fifth joint small, located ventrally between fourth and sixth joints; sensory bristle with basal cup bearing abundant slender filaments and single stout bristle with 4 slender, fairly long, filaments. Sixth joint long, with small distal medial bristle. Seventh joint: a-bristle bare, about twice length of bristle of sixth joint; b-bristle bare, slightly longer than a-bristle; c-bristle reaching slightly past tip of sensory bristle of fifth joint, with 3 marginal filaments. Eighth joint: d- and e-bristles bare with blunt tips not reaching tip of sensory bristle; f-bristle about same length as d-bristle, with 3 marginal fila-

ments; g-bristle slightly longer than d-bristle, with 3 marginal filaments.

Second Antenna (Figure 82*b*): Protopodite bare. Endopodite 3-jointed: first joint with 1 proximal anterior bristle; second joint elongate with 1 short proximal bristle; third joint elongate, reflexed on second joint and much longer than it, with 2 small terminal or subterminal bristles. Exopodite: first joint with 1 small terminal, medial bristle with open tip; bristle of second joint with about 10 proximal, slender, ventral spines and natatory hairs; bristles of joints 3–7 with natatory hairs and few slender ventral spines; bristle of eighth joint and both bristles (dorsal of these short) of ninth joint with only natatory hairs; joints 2–6 with minute spines forming row along distal margin.

Mandible (Figure 82*c*): Coxale endite consisting of single spine; ventral margin of coxale without hairs. Basale: medial side with 4 bristles (1 near middle, 3 near ventral margin); ventral margin with 1 bristle near middle; dorsal margin with 2 subterminal bristles. Exopodite hirsute, with base on lateral side but distal part on medial side. Endopodite: dorsal margin of first joint with indentation into which exopodite fits; ventral margin with 1 long distal bristle; medial surface with spines; dorsal margin of second joint with 1 long midbristle; ventral margin with 2 subterminal bristles (1 long, 1 very short); medial surface with spines; end joint with 1 unringed, terminal claw, 1 fairly long ventral bristle, and 2 minute bristles (1 ventral and 1 dorsal to base of terminal claw).

Maxilla (Figure 82*d*): Limb reduced. Precoxale and coxale with fringe of dorsal hairs; coxale with single dorsal bristle. Bristles weak (obscure on limbs examined and not all shown on cited figure).

Fifth Limb (Figure 82*e*): Single endite with 1 short bristle. Exopodite reduced: first joint with 2 bristles; remaining joints fused, with total of about 6 bristles. Epipodial appendage with about 28 bristles.

Sixth Limb (Figure 82*f*): Single endite with 3 short bristles; end joint with total of 11 bristles, the posterior 2 of these more hirsute than others.

Seventh Limb (Figure 82*g*): Each limb with 4 terminal bristles, each with 6 or 7 bells. Terminus bare, without opposing combs.

Furca (Figure 82*h*): Each lamella with 5 pointed claws; long and short pointed teeth present along posterior margins of claws 1 and 2, remaining claws with mainly short pointed teeth; 3 minute spines on left lamella following claw 5.

Bellonci Organ (Figure 82*i*): Elongate, broadening distally with rounded tip.

Eyes: Medial eye pigmented, bare (Figure 82*i*). Lateral eyes pigmented, slightly larger than medial eye, each with about 8 small ommatidia (Figure 82*j*).

Copulatory Organ (Figure 82*h*): Each copulatory limb consisting of 3 lobes bearing several bristles; distal lobe with terminal sclerotized hook.

Y-Sclerite (Figure 82*h*): Normal for family.

Posterior of Body: Bare without processes.

COMPARISONS: The carapace of the new species *E. gettlesoni* resembles that of *E. ozotothrix* Kornicker and Bowen, 1976. The female differs from that species in not having a terminal bristle on the endopodite of the second antenna. Also, the oval rib on the valve of *E. ozotothrix* is mainly defined by bristles, whereas the oval rib of *E. gettlesoni* is mainly defined by shell.

Eusarsiella uncus, new species

FIGURES 83–85; PLATES 22, 23

Sarsiella sculpta.—Kornicker, 1958:252, figs. 47:6A,B; 82:D,E; 88:D,K,E,O,S.

Eusarsiella sculpta.—Poulsen, 1965:92 [applies to Kornicker's specimens only].

Not *Sarsiella sculpta* Brady, 1890:516.

Not *Sarsiella sculpta* sensu Darby, 1965:34 [= *Sarsiella radiicosta* Darby].

ETYMOLOGY.—The specific name from the Latin *uncus* (hook, barb, angle), in reference to the hook-like margins of the tip of the seventh limb of this species.

HOLOTYPE.—USNM 156713, 1 adult female on slides and in alcohol.

FIGURE 83.—*Eusarsiella uncus*, new species, USNM 156713, holotype, adult female, lateral view of complete specimen; length 1.65 mm.

TYPE-LOCALITY.—Card Sound, Florida.

PARATYPE.—USNM 122915, 1 adult female.

DISTRIBUTION.—Card Sound, Florida, Bimini, Bahamas (Figure 4). Known depth range 2–20 m (Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 83–85; Plates 22, 23).—Carapace oval in lateral view with projecting, triangular, caudal process, and bulbous posterodorsal area (Figure 83; Plate 22 *a–c*). Anterior and ventral valve margins distinctly crenulate (Figure 83; Plate 22*a*).

Ornamentation (Figures 83, 84*a*; Plates 22, 23): Each valve with low narrow upper and lower ribs (Figure 83; Plate 22*a*); surface of valves with shallow but distinct fossae (Plates 22, 23*c*); long hairs scattered over valve surface and along anterior margin (Figure 84*a*; Plates 22, 23*a,b*); some bristles emerging from closed pore with narrow peripheral lip (Plate 23*a*); bristles may have ribbed flattened proximal part and minute pore (Plate 23*b*); bottoms of fossae and valve surface between fossae with minute processes (Plates 22*d–f*, 23*a,c–f*); posterior part of dorsal margin with 2 minute processes (Figure 83; Plate 22*a*); posterior margin with 4 minute processes (Figure 83; Plate (22*a,d*).

Infold: Anterior infold with minute bristle near inner edge (Figure 84*a*); infold of caudal process with 10 or 11 slender bristles forming row (Figure 84*b,c*); infold anterior to caudal process with minute bristles forming groups of 1–3 bristles along inner margin of infold (Figure 84*b*); posterior infold with 2 setal bristles dorsal to caudal process (Figure 84*b*).

Selvage: Wide lamellar prolongation with smooth outer edge present along anterior and ventral valve margins.

Size: USNM 156713, length 1.65 mm, height including caudal process 1.47 mm, height excluding caudal process 1.42 mm. Measurements given by Kornicker (1958:252) of 2 females: length 1.65 mm, height 1.45 mm; length 1.54 mm, height 1.31 mm.

First Antenna (Figure 84*d,e*): First joint bare. Second joint with 1 dorsal bristle with few short marginal spines. Third and fourth joints fused; third joint short with 2 bristles (1 short, ventral, 1 longer, dorsal); long fourth joint with 4 bristles (3 ventral, 1 dorsal). Sensory bristle of long fifth joint with 2 minute marginal filaments. Bristle of minute, fused, sixth joint with 1 short medial bristle. Seventh joint: a-bristle bare, about twice length of bristle of sixth joint; b-bristle about one-third longer than a-bristle, with 1 minute marginal filament; c-bristle extending slightly past sensory bristle of fifth joint, with 3 minute marginal filaments. Eighth joint: d- and e-bristles bare with blunt tips (d-bristle about twice length of b-bristle, e-bristle shorter than d-bristle); f-bristle about same length as d-bristle, with 1 minute filament near tip; g-bristle only slightly shorter than c-bristle, with 2 minute marginal filaments.

Second Antenna: Protopodite bare. Endopodite 1-jointed with 1 short proximal anterior bristle and small terminal node bearing 1 minute bristle (Figure 84*f*). Exopodite: first joint with minute, medial, terminal bristle (appearing to have open tip); bristle of second joint about twice length of combined exopodial joints 2–9, with 10 or 11 stout, proximal, ventral spines and distal

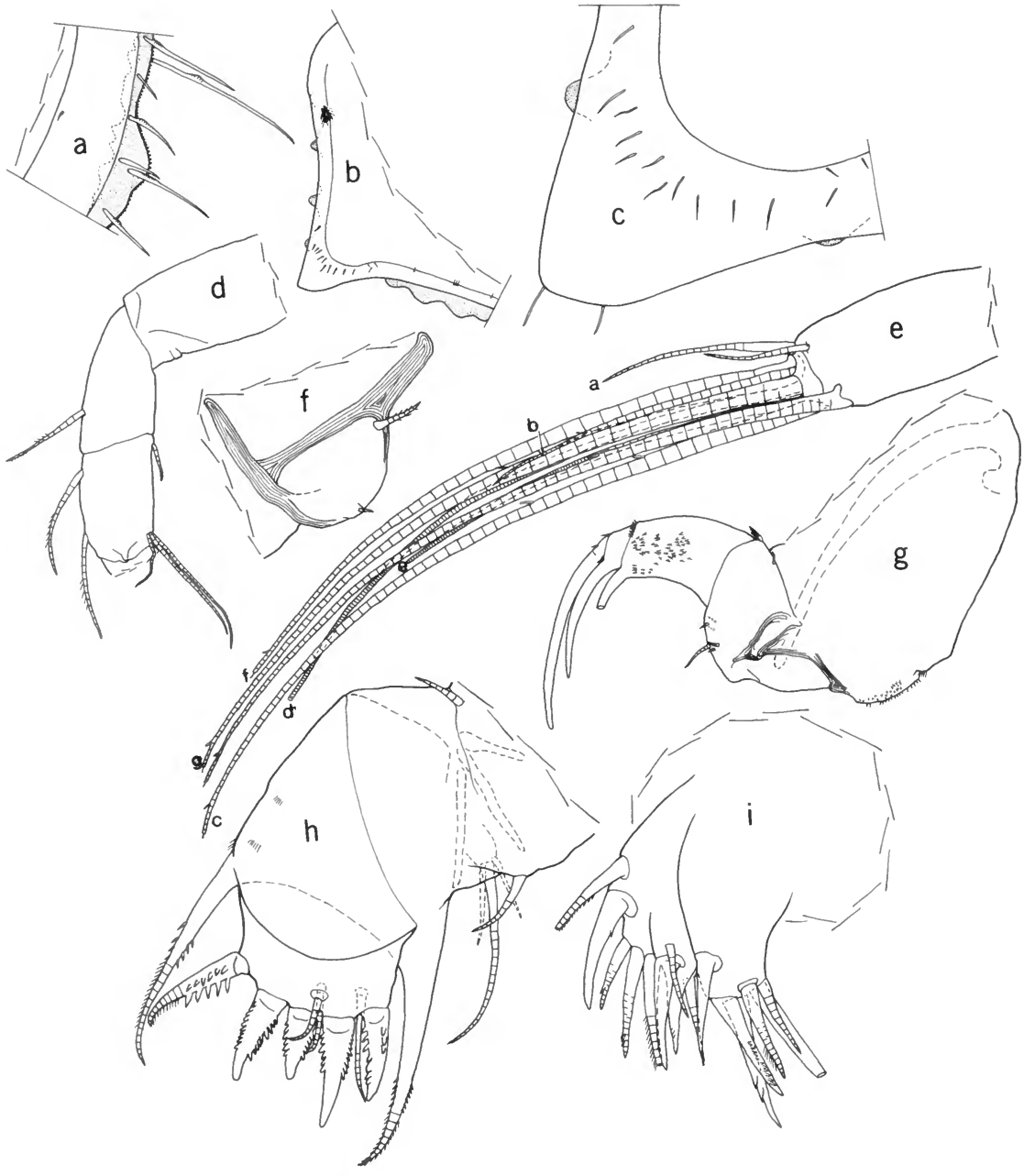

FIGURE 84.—*Eusarsiella uncus*, new species, USNM 156713, holotype, adult female, length 1.65 mm: *a*, inside view of anterior margin showing minute anterior bristle of infold; *b*, inside view of posterior of left valve showing bristles of infold; *c*, inside view of caudal process of left valve; *d*, joints 1–4 of right first antenna, medial view; *e*, joints 5–8 of right first antenna, medial view; *f*, endopodite of left second antenna, medial view; *g*, right mandible, medial view; *h*, maxilla, medial view; *i*, endites of maxilla.

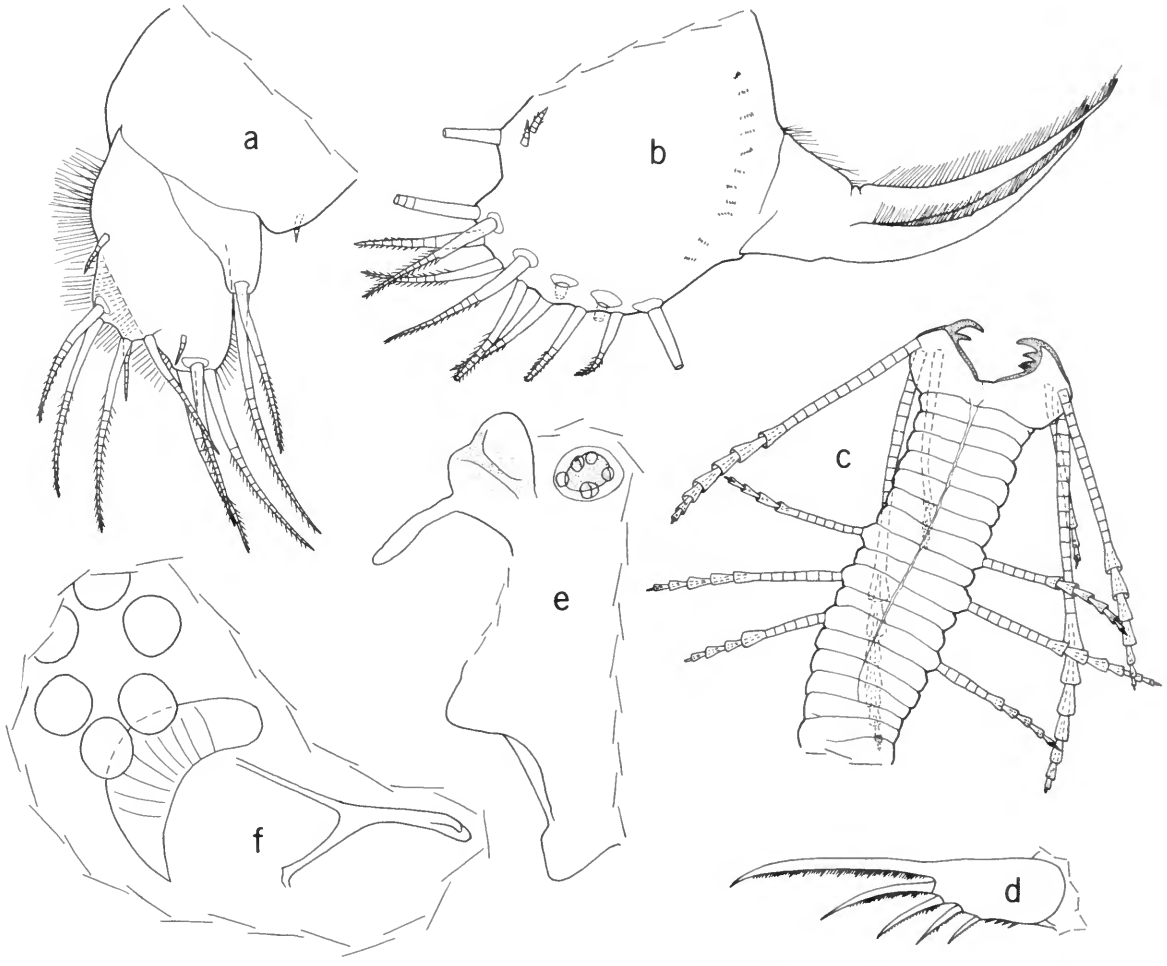

FIGURE 85.—*Eusarsiella uncus*, new species, USNM 156713, holotype, adult female, length 1.65 mm: *a*, distal part of fifth limb; *b*, sixth limb; *c*, seventh limb; *d*, left lamella of furca; *e*, anterior of body showing left lateral eye, medial eye, bellonci organ, anterior process, and upper lip; *f*, posterior of body viewed from left showing left Y-sclerite, crustacean in gut, and small unextruded eggs in ovaries, posterior end of body to right.

natatory hairs; bristles of joints 3–8 with stout, proximal, ventral spines and distal natatory hairs; ninth joint with 2 bristles (1 long with proximal ventral spines and distal natatory hairs, 1 shorter and with few short marginal hairs); a few minute spines observed along distal margin of joints 5–7.

Mandible (Figure 84*g*): Coxale endite consisting of small spine (broken off on illustrated limb); ventral margin of coxale with slender spines and hairs. Basale: 6 bristles present in vicinity of ventral margin; dorsal margin with 1 minute bristle near middle and 2 small terminal bristles. First endopodial joint: medial surface with numerous spines; ventral margin with stout terminal claw. Second endopodial joint with minute dorsal bristle and stout ventral claw. End joint with stout terminal claw and 3 minute bristles (1 dorsal, 2 ventral).

Maxilla (Figure 84*h*,*i*): Endites I–III with

about 6, 4, and 5 bristles, respectively. Coxale with short bare bristle on distoanterior margin. Exopodite with 3 bristles (1 long, 2 short). Endopodite: first joint with stout spinous and pectinate alpha- and beta-bristles; second joint with 2 small a-bristles, 1 small c-bristle, and 5 pectinate end bristles.

Fifth Limb (Figure 85*a*): Single endite with 1 small bristle. Exopodite: first joint with 2 spinous bristles; remaining joints not well defined; second joint with 3 long terminal bristles and 1 small proximal bristle (the latter could be interpreted as being on third joint); joints 3–5 with total of 6 bristles.

Sixth Limb (Figure 85*b*): Single endite with 3 bristles (2 short, 1 long). End joint projecting posteriorly; ventral margin with 12 bristles with short marginal spines followed by space, and then 2 stout hirsute bristles.

Seventh Limb (Figure 85*c*): Each limb with 6 or 7 proximal bristles (3 or 4 on each side), and 6 terminal bristles (3 on each side); each bristle with up to 7 bells. Terminus having V-shaped opening with 2 to 4 stout teeth distally on each margin, giving hook-like appearance to each margin.

Furca (Figure 85*d*): Each lamella with 5 claws followed by 4 or 5 small, stout, spines; claw 1 fused with lamella, remaining claws separated from lamella by suture; posterior margin of claws with groups of teeth forming row, some teeth longer than others.

Bellonci Organ (Figure 85*e*): Elongate broadening distally, with rounded tip.

Eyes (Figure 85*e*): Medial eye bare, lightly pigmented. Lateral eye smaller than medial eye, lightly pigmented, with 5 ommatidia.

Upper Lip (Figure 85*e*): Helmet shaped.

Anterior of Body (Figure 85*e*): Triangular process present between medial eye and upper lip.

Y-Sclerite (Figure 85*f*): Typical for genus.

Eggs: USNM 156713 with small unextruded eggs (Figure 85*f*).

Gut Content: USNM 156713 with crustacean fragments in gut (including urosome of adult female harpacticoid copepod; identified by T.E. Bowman, 1976; Figure 85*f*).

Epiphytes: Valves of USNM 156713 with diatoms attached by short thin thread (Plates 22*d,f*, 23*c–f*).

COMPARISONS.—The deep V-shaped angle of the terminus of the seventh limb of *E. uncus* with its hook-like margins differs from that of other species in the genus. Also, the elongate posterior projection of the sixth limb proximal to the 2 hirsute bristles is unusual. The shape and ornamentation of the carapace easily distinguishes *E. uncus* from many other species of *Eusarsiella*. Several specimens similar in lateral outline to *Eusarsiella uncus* were collected on the east Florida shelf and on the East Flower Garden off Texas. The specimens are smaller (length 1.44 mm), have 2 rather than 1 proximal bristle on the endopodite of the female second antenna and are lacking horizontal ribs on the carapace. Remaining appendages, including the seventh limb, are similar to those of *E. uncus*. The specimens are to be tentatively considered an undescribed species.

Eusarsiella childi, new species

FIGURES 86, 87; PLATES 24, 25

ETYMOLOGY.—This species is named for C. Allan Child, Smithsonian Institution, who collected some of the specimens reported herein.

HOLOTYPE.—USNM 151992, ovigerous female in alcohol and on slides.

TYPE-LOCALITY.—Sample 3, off Bird Key, Placida Harbor, Florida, 2–3 m.

PARATYPES.—Florida: continental shelf off Pinella County, 1 instar IV female, vial B; 1 instar IV female, vial E. Anclote Anchorage, USNM 157547, 1 ovigerous female. Panama City, sta 4: USNM 157693, 1 adult female; USNM 157684, 1 ovigerous female; USNM 157686, 1 adult female; USNM 157689, 2 ovigerous females; USNM 157694, 1 ovigerous female. Sta 30: USNM 157695, 1 ovigerous female; USNM 157656, 5 ovigerous females, 4 adult females;

FIGURE 86.—*Eusarsiella childi*, new species, USNM 151992, holotype, adult female, lateral view of complete specimen, anterior to left, length 1.26 mm.

USNM 157658, 5 ovigerous females, 2 juveniles; USNM 157419, 9 ovigerous females, 1 juvenile; USNM 157615, 9 specimens; USNM 157663, 3 ovigerous females, 1 juvenile; 1 specimen returned to C.H. Saloman; USNM 157651, 1 ovigerous female, 2 adult females; USNM 157654, 5 specimens; USNM 157666, 1 specimen; USNM 157670, 1 specimen, USNM 157676, 1 specimen; USNM 157669, 1 ovigerous female; USNM 157675, 1 ovigerous female; USNM 157668, 1 ovigerous female.

DISTRIBUTION.—Florida: Placida Harbor, Anclote Anchorage, Panama City, continental shelf (Figure 4). Only collected in Gulf of Mexico. Known depth range 1.25–12.8 m (Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 86, 87; Plates 24, 25).—Carapace oval in lateral view with very small posteriorly oriented caudal process at posteroventral corner; carapace narrow in dorsal view with parallel sides; narrow oval ridge just within valve edge more-or-less paralleling edge except in vicinity of caudal process; short, narrow, horizontal rib present in anteroventral part of valve with posterior end at central adductor muscle scars (Figure 86; Plate 24*a–c*).

Ornamentation (Plates 24, 25*a,b*): Surface of valves including oval ridge and horizontal rib with minute pustules; long bristles abundant along anterior and ventral edges of each valve; shorter bristles scattered over valve surface.

Infold (Figure 87*a,b;* Plate 25*d–f*): Anterior infold slightly below valve middle with minute bristle near inner margin (Figure 87*b*); posterior infold with 2 setose bristles dorsal to caudal process (Plate 25*f*); caudal process with 4–6 bristles (Plate 25*d,e*); inner margin of infold in vicinity of caudal process with about 11 minute bristles (Figure 87*a*).

Selvage: Wide lamellar prolongation along anterior, ventral, and posterior margin of each valve; outer edge of prolongation convex posterior to caudal process (Figure 87*a*).

Central Adductor Muscle Attachments (Figure 86): Consisting of 11 oval attachments.

Size: USNM 151992, length 1.26 mm, height 1.04 mm; USNM 157547, length 1.15 mm, height 0.97 mm; USNM 157419 (3 specimens), length 1.28 mm, height 1.10 mm, length 1.22 mm, height 1.03 mm, length 1.28 mm, height 1.10 mm.

First Antenna (Figure 87*c*): First joint bare. Second joint with 1 dorsal bristle and spines along dorsal margin. Third joint not separated from fourth by suture, with 1 dorsal bristle; fourth joint with 3 bristles, 1 dorsal, 2 ventral. Sensory bristle of fifth joint with 1 minute proximal filament. Medial bristle of sixth joint short, with base near dorsal margin. Seventh joint: a-bristle 2 or 3 times length of bristle on sixth joint; b-bristle slender, bare, more than twice length of a-bristle; c-bristle long, bare, about same length as sensory bristle. Eighth joint: d- and e-bristles bare, d-bristle longer than e-bristle but shorter than c-bristle; f- and g-bristles same length as c-bristle, each with 1 minute proximal filament.

Second Antenna (Figure 87*d*): Protopodite bare; endopodite 1-jointed with 1 or 2 small anterior bristles and 1 minute terminal bristle. Exopodite: first joint with long hairs along ventral margin and minute terminal, medial spine; bristle of second joint with few long proximal hairs followed by 7 short slender spines on ventral margin, and then by natatory hairs; bristles

FIGURE 87.—*Eusarsiella childi,* new species, USNM 151992, holotype, adult female, length 1.26 mm: *a,* inside view of posterior of left valve showing bristles of infold; *b,* inside view of anterior of left valve showing anterior bristle of infold; *c,* right first antenna, medial view; *d,* part of left second antenna, medial view; *e,* right Y-sclerite, anterior toward right; *f,* right mandible, medial view; *g,* maxilla, medial view; *h,* exopodite of maxilla illustrated in *g; i,* distal part of fifth limb; *j,* sixth limb; *k,* seventh limb; *l,m,* lateral views of right and left lamellae of furca; *n,* left lateral eye, medial eye and bellonci organ; *o,* lower part of anterior of body showing upper lip, anterior to left.

of joints 3–8 with natatory hairs; ninth joint with long bristle with natatory hairs and 1 short bristle with short marginal spines; joints 2–6 with faint spines along terminal margins.

Mandible (Figure 87*f*): Coxale: ventral margin with abundant short spines; endite consisting of small stout spine. Basale: medial surface with 3 short bristles near ventral margin; ventral margin with 1 short distal bristle; lateral surface with 1 distal bristle near ventral margin; dorsal margin with 3 short subterminal bristles. Endopodite: first joint with spines on medial surface and terminally on dorsal margin, and stout smooth ventral claw; second joint with 2 distal spines on medial surface, a minute terminal dorsal spine, and stout smooth ventral claw; third endopodite joint with stout smooth terminal claw, and 2 minute bristles (1 ventral, 1 dorsal to base of claw).

Maxilla (Figure 87*g,h*): Coxale with short anterior bristle; endite I with 5 or 6 bristles; endite II with 3 or 4 bristles; endite III with 4 bristles. Basale with 1 bristle near exopodite. Exopodite with 3 bristles, 1 bristle in middle and 2 shorter bristles, 1 on each side (Figure 87*h*). Endopodite: alpha- and beta-bristles with few proximal teeth and fine distal spines or hairs (the latter difficult to discern on beta-bristle); second joint with 2 lateral a-bristles, 1 medial c-bristle, and 5 stout pectinate terminal bristles.

Fifth Limb (Figure 87*i*): Epipodial appendage with 36 bristles; single endite with 1 short bristle. Exopodite: first joint with 2 bristles with short marginal spines; second to fifth joints fused, hirsute; second joint with 3 spinous bristles; fused third to fifth joints with total of 4 bristles, all except shortest with marginal spines.

Sixth Limb (Figure 87*j*): Endite I with 3 bristles, 1 longer than others; end joint with 8 bristles with short marginal spines or bare, separated by space from 2 very long hirsute bristles; medial side with hairs near posterior margin.

Seventh Limb (Figure 87*k*): Each limb with 10 bristles, 4 proximal, 2 on each side, and 6 terminal, 3 on each side; each bristle with 3–6 bells, no marginal spines; terminus with opposing combs, each with about 8 teeth.

Furca (Figure 87*l,m*): Each lamella with 5 claws; claw 1 continuous with lamella, claws 2–5 separated from lamella by suture; all claws with pointed tips; claws 1–3 with teeth along posterior margins; proximal tooth stouter than others; remaining teeth fairly equal in size and not forming groups; a stout spine continuous with lamella present between claws 4 and 5 and following claw 5 (left lamellar with spines larger than those on right and with additional smaller spine following posterior spine).

Bellonci Organ (Figure 87*n*): Elongate, 1-jointed, broadening distally, with tapered tip.

Eyes (Figure 87*n*): Lateral eye small, pigmented, with 3 ommatidia; medial eye bare, pigmented, larger than lateral eye.

Upper Lip (Figure 87*o*): Helmet shaped without hairs or spines.

Y-Sclerite (Figure 87*e*): Tip of dorsal branch minutely bifurcate; dorsal margin of ventral branch with slight widening near proximal end.

Eggs: USNM 151992 with 10 eggs in marsupium; USNM 157547 with 6 eggs.

Gut Content: Gut with fairly complete crustacean and segmented worm.

COMPARISONS.—The carapace of the new species *E. childi* resembles superficially that of *E. texana*. It differs in having a horizontal lateral rib in the anteroventral part of each valve. Also, on *E. texana* the oval ridge near the edge of the valve bends downward in the vicinity of the caudal process more-or-less following the outline of the outer edge of the caudal process; this does not occur on *E. childi*. In addition, the caudal process is much more prominent on *E. texana* than it is on *E. childi*.

Eusarsiella cresseyi, new species

FIGURES 88–93; PLATES 26, 27

ETYMOLOGY.—The species is named for Roger Cressey of the Smithsonian Institution.

HOLOTYPE.—USNM 151990, ovigerous female, length 1.02 mm, whole specimen in alcohol.

FIGURE 88.—*Eusarsiella cresseyi*, new species, USNM 149314, paratype, adult female, lateral and dorsal views of complete specimen, length 1.00 mm.

TYPE-LOCALITY.—Placida Harbor, branch of Charlotte Harbor, off Bird Key, Florida, sample 3, 1 May 1974.

ALLOTYPE.—USNM 150282, adult male from same sample as holotype.

PARATYPES.—Placida Harbor: USNM 150100, 1 adult male, USNM 152303, 2 specimens, USNM 151991, 1 ovigerous female and 6 juveniles, USNM 151993, 12 specimens, from same sample as holotype: USNM 151994, 1 juvenile valve from sample 4. Anclote Anchorage: USNM 157431, 1 specimen, sta 6; USNM 157459, 1 adult male, USNM 157487, 1 specimen, sta 14; USNM 157109, 1 specimen, sta 30. Alligator Harbor: USNM 149314, 1 ovigerous female, sta I, 5-2. Corpus Christi ship canal, Texas: 1 juvenile, sta SR4.

DISTRIBUTION.—Florida: Placida Harbor, Anclote Anchorage, Alligator Harbor; Corpus Christi ship canal, Texas (Figure 4). Depth 0.75–3 m (Table 1).

DESCRIPTION OF FEMALE (Figures 88–90; Plates 26, 27).—Carapace oval in lateral view with projecting caudal process but without incisur.

Ornamentation (Figure 88; Plate 26): Carapace with U-shaped rib paralleling valve edge on anterior part of valve; rib slightly lower and more narrow at its anterior extremity dividing the rib into an upper and lower part, the latter being the longer of the two; 2 additional ribs present on each valve, one paralleling the posterodorsal valve edge, the other paralleling the posteroventral valve edge dorsal to the caudal process; all ribs consisting of long, closely spaced bristles with digitate tips; shorter bristles densely distributed over valve surface; long bristles with broad bases present along anterior and ventral margins of valves and on caudal process, and also scattered on lateral surface; transparent substance apparently filling spaces between long bristles forming ribs; ovoid bare, flat fossae with thin low rims widely distributed over valve surface but more clearly seen in the area of central muscle scar attachments (Plate 26*a,b,j*).

Infold (Figure 88*a–c*; Plate 27): Anterior infold slightly below valve middle with minute bristle near inner margin; posterior infold with 2 plumose bristles dorsal to caudal process; caudal process with 19–24 bristles; a few minute bristles present along inner margin of infold just anterior to caudal process.

Selvage (Figure 89*b, c;* Plate 27*b,d*): Wide lamellar prolongation with smooth margin present along anterior, ventral and posterior margins, and at tip of caudal process.

Size: USNM 149314, length 1.00 mm, height with caudal process 0.87 mm, height without caudal process 0.76 mm; USNM 151990 (holotype), length 1.02 mm, height with caudal process 0.95 mm, height without caudal process 0.82; USNM 151991, length 1.00 mm, height with caudal process 1.00 mm, height without caudal process 0.85 mm.

First Antenna (Figure 89*d,* 90*d*): First joint bare. Second joint with spines along dorsal and ventral margins and on medial surface, and 1 bristle on distal dorsal margin. Third and fourth

FIGURE 89.—*Eusarsiella cresseyi*, new species, USNM 149314, paratype, adult female, length 1.00 mm: *a*, inside view of anterior of valve showing bristle on anterior infold; *b*, inside view of left valve showing bristles on infold of caudal process and 2 setal bristles; *c*, inside view of posterior of right valve; *d*, right first antenna, lateral view; *e*, endopodite of left second antenna, medial view; *f*, right mandible, medial view; *g*, maxilla, lateral view; *h*, distal part of fifth limb; *i*, sixth limb; *j*, seventh limb.

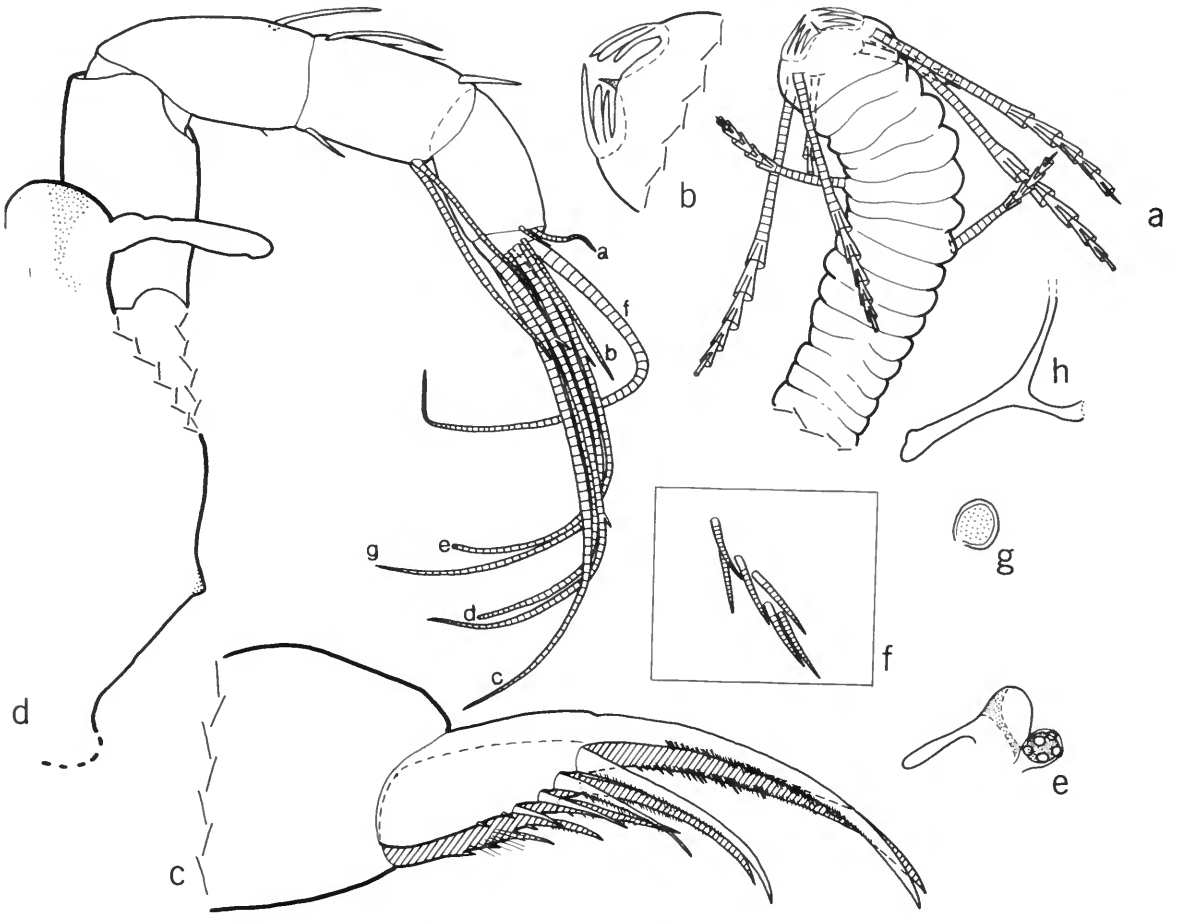

FIGURE 90.—*Eusarsiella cresseyi*, new species, USNM 149314, paratype, adult female, length 1.00 mm: *a*, opposite seventh limb to that shown in Figure 89*j*; *b*, detail of tip of seventh limb in *a* (note terminal spine between combs); *c*, caudal furca; *d*, anterior of body showing left first antenna, medial eye, bellonci organ, anterior process, and upper lip (dashed); *e*, left lateral eye, medial eye, and bellonci organ; *f*, right brush-like organ; *g*, right genital process; *h*, right Y-sclerite.

joints fused; third joint short with 1 ventral and 1 dorsal bristle, neither reaching distal end of fourth joint; fourth joint with one terminal short dorsal bristle and 2 long terminal ventral bristles, both with very faint marginal spines; spines forming clusters present on dorsal margin and medial surface of fourth joint. Sensory bristle of fifth joint with 2 minute marginal filaments. Sixth joint with small terminal medial bristle. Seventh joint; a-bristle about twice length of bristle on sixth joint; b-bristle short, slender, about 3 times length of a-bristle, c-bristle about same length as sensory bristle, with 1 or 2 minute marginal filaments. Eighth joint: d- and e-bristles bare, slightly shorter than sensory bristle; f- and g-bristles about same length as sensory bristle, with 1 or 2 minute marginal filaments. (Marginal filaments extremely small and exact number uncertain.)

Second Antenna (Figure 89*e*): Protopodite bare, without medial bristle. Endopodite 1-jointed with 1 short bare proximal bristle and 1

FIGURE 91.—*Eusarsiella cresseyi*, new species, USNM 150100, paratype, adult male, lateral and dorsal view (right valve oblique) of complete specimen (appendages ommitted), length 0.82 mm.

long spinous terminal bristle. Exopodite: first joint with clusters of long hairs along ventral margin and with small recurved medial terminal bristle; bristle of second joint reaching well past end of limb and with small slender ventral spines proximally and natatory hairs distally; ninth joint with only 2 bristles, 1 long with natatory hairs, 1 short, bare; joints 2–4 with short spines forming row along terminal margin; bristles of joints 3 and 4 with ventral spines proximally and natatory hairs distally along both margins and proximally along dorsal margin; bristle of joint 4 with natatory hairs proximal to few marginal spines on ventral margin proximal to middle; bristles of joints 5–8 with natatory hairs.

Mandible (Figure 89*f*): Coxale with hairs along ventral margin and on lateral side near dorsal margin, and small endite on medial side near ventral margin. Basale: dorsal margin with very faint subterminal spine; ventral margin with 5 short bristles (3 of these forming group on medial surface). No exopodite present. Endopodite: first joint with slightly rippled dorsal margin with slender subterminal spines forming row extending onto medial surface, ventral margin with short faint medial bristle at base of main claw; medial surface of joint with short stout spines forming distal group; main claw with 3 or 4 minute teeth proximally on dorsal margin; second joint with minute dorsal bristle and smooth main ventral claw; third joint with 2 minute ventral bristles near base of main claw; ventral margin of main claw with 3 or 4 minute proximal teeth.

Maxilla (Figure 89*g*): Coxale with short anterior bristle and hirsute epipodial appendage. Endites with total of about 12 bristles including 2 on margin of endite I. Protopodite with transparent thumb-like process near base of endite I. Basale with 1 short bristle close to exopodite. Exopodite with 2 bristles, inner bristle about one-half length of outer bristle. Endopodite: first joint with alpha- and beta-bristle with proximal marginal teeth and distal marginal hairs or slender spines; second joint with 2 lateral a-bristles, 1 medial c-bristle, and 5 stout pectinate terminal bristles.

Fifth Limb (Figure 89*h*): Epipodial appendage with 28 bristles; single endite present with 1 short bristle. Exopodite: first joint with 2 bristles with faint marginal spines; second to fifth joint fused; second joint with 2 spinous bristles of equal length; third to fifth joints with total of 3 bristles; exopodite with hairs along outer margin.

Sixth Limb (Figure 89*i*): Endite I with 2 short bristles; end joint with 9 slender bristles (bare or with short marginal spines) separated by short gap from 2 stout hirsute posterior bristles; limb with long hairs on posterior half.

Seventh Limb (Figure 89*j*, 90*a*, *b*): Each limb with 8 bristles, 2 proximal, 1 on each side, and 6 terminal, 3 on each side; each bristle with 2–5 bells and no distal marginal spines; proximal bristles and 2 of the terminal bristles short; terminus with opposing combs, each with 5 to 7 teeth; a minute but distinct spine present in center of terminus between combs.

Furca (Figure 90*c*): Each lamella with 5 claws followed by several small spines; claw 1 continuous with lamella, others separated from lamella by suture; claws 1–3 with teeth forming lateral and medial row along posterior margin; claws 4

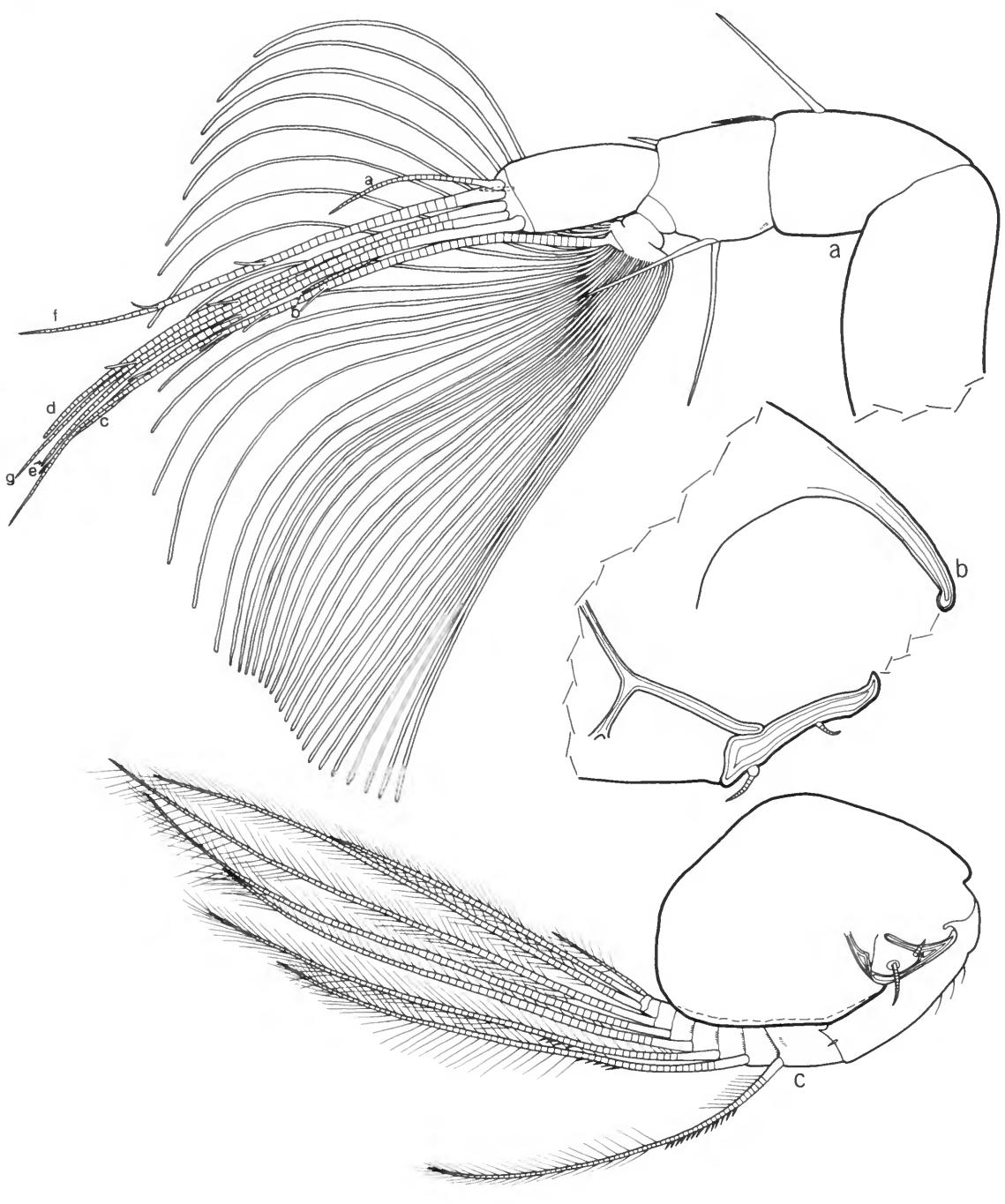

FIGURE 92.—*Eusarsiella cresseyi*, new species, USNM 150282, paratype, adult male, length 0.80 mm: *a*, left first antenna, lateral view; *b*, protopodite and endopodite of right second antenna, lateral view; *c*, left second antenna, medial view.

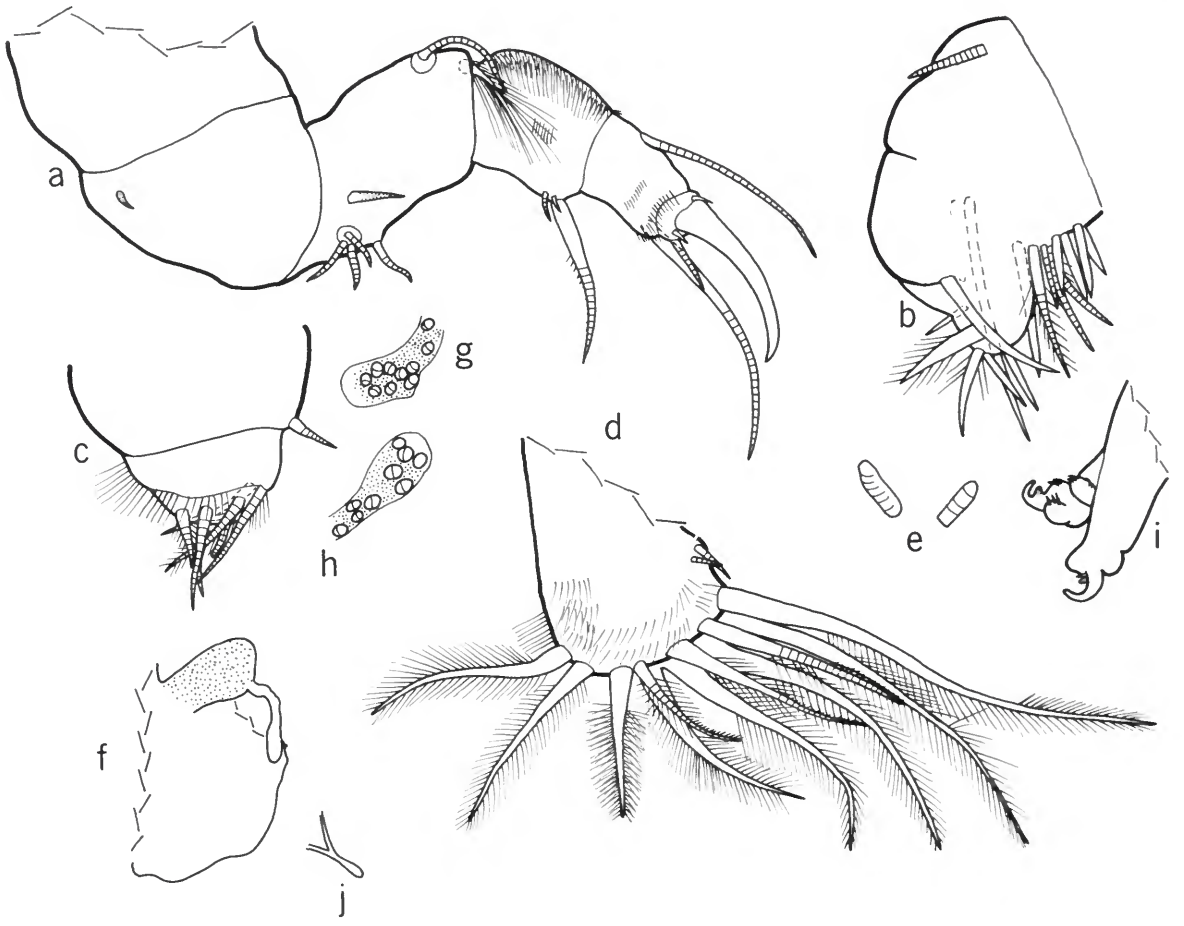

FIGURE 93.—*Eusarsiella cresseyi*, new species, USNM 150282, paratype, adult male, length 0.80 mm: *a*, left mandible; *b*, maxilla; *c*, distal part of fifth limb; *d*, sixth limb; *e*, right and left seventh limb; *f*, anterior of body showing medial eye, bellonci organ, and upper lip (lower curvature); *g,h*, left and right lateral eyes; *i*, copulatory limbs (anterior to left); *j*, left Y-sclerite (anterior to left).

and 5 with single row of teeth along posterior margin; claws 2–5 with hairs along anterior margin; medial hairs present at base of claws and following claw 5.

Bellonci Organ (Figure 90*d,e*): One-jointed, elongate, broadening distally, with rounded tip.

Eyes (Figure 90*d, e*): Lateral eye small with about 5 minute ommatidia; medial eye bare, larger than lateral eye.

Upper Lip (Figure 90*d*): Helmet shaped without hairs or spines.

Posterior of Body: Small spines forming clusters on lateral and medial surfaces of vestment proximal to furca visible at high magnification (× 1000).

Anterior of Body (Figure 90*d*): Triangular process present between medial eye and upper lip.

Brush-like Organ (Figure 90*f*): Consisting of about 7 minute bristles anterior to Y-sclerite and proximal to genitalia.

Genitalia (Figure 90*g*): Oval spermatophore

present on USNM 149314.

Y-Sclerite (Figure 90*h*): Normal for family.

Eggs: USNM 149314 with 7 eggs in marsupium.

Gut Content: USNM 149314 with juvenile copepod in gut.

DESCRIPTION OF ADULT MALE (Figures 91–93).—Carapace with projecting rostrum and with caudal process projecting posteriorly; smaller than female (Figure 91).

Ornamentation (Figure 91): Flat oval fossae on valves more distinct than on female; upper rib extending from rostrum to posterodorsal knob but discontinuous near middle of valve; lower rib extending from rostrum near incisur to point near middle of posterior margin where rib curves upward to form posterior knob which lies below and posterior to posterodorsal knob; upper and lower ribs may be continuous between posterodorsal and posterior knobs but are not connected on rostrum.

Infold: Similar to that on female except only 11 or 12 bristles on infold of caudal process.

Selvage: Similar to that of female.

Size: USNM 150282, length 0.80 mm, height 0.54 mm; USNM 150100, length 0.82 mm, height 0.62 mm.

First Antenna (Figure 92*a*): First joint bare, second joint with spines forming short rows on medial surface near dorsal margin and with 1 dorsal bristle with tip not reaching distal end of fourth joint. Third and fourth joints fused; third joint with short slender dorsal bristle and minute ventral bristle; fourth joint with 1 short dorsal bristle and 2 subequal ventral bristles. Sensory bristle of small fifth joint with numerous filaments on basal part and 3 or 4 short filaments near middle. Sixth joint with short medial bristle. Seventh joint: a-bristle about ⅓ the length of sensory bristle; b-bristle with short triangular base, slender, slightly longer than a-bristle; c-bristle slightly shorter than sensory bristle, with 2 short marginal filaments. Eighth joint: d- and e-bristles bare, about same length as c-bristle; f- and g-bristles about same length as c-bristle, with 2 short marginal filaments.

Second Antenna (Figure 92*b,c*): Protopodite bare, without medial bristle. Endopodite 1-jointed with short proximal bristle and slightly longer terminal bristle. Exopodite: first joint with hairs proximally along ventral margin and minute medial spine; distribution of spines and natatory hairs on bristles of joints 1–9 shown in Figure 92*c*; ninth joint with 2 bristles; joints 2–6 and probably 7 with spines forming row along distal margin.

Mandible (Figure 93*a*): Ventral margin of coxale bare; small endite present. Basale: dorsal margin with 1 fairly long subterminal bristle; ventral margin with short proximal bristle; medial side with 3 short bristles forming group near ventral margin and 1 knife-like bristle dorsal to group of 3 bristles; lateral side with 1 minute bristle near proximal ventral margin. Exopodite consisting of small transparent process with abundant long hairs. Endopodite: first joint hirsute along dorsal margin and with slender spines forming row at middle of medial surface, and with 3 ventral bristles, 2 short, 1 long, stout; second joint with spines forming row on medial side near distal margin, and 2 bristles, 1 near middle of dorsal margin, 1 terminal on ventral margin; end joint with stout terminal claw and 3 small bristles, 1 dorsal, 2 ventral.

Maxilla (Figure 93*b*): Limb smaller than that of female, bristles weakly developed; anterior margin of coxale with short bristle; exopodite with 2 long bristles; first joint of endopodite with alpha- and beta-bristle; bristles of end joint weakly developed.

Fifth Limb (Figure 93*c*): Epipodial appendage with 26 bristles. Endite I with 1 short bristle. Exopodite, first joint with 2 bristles; second to fifth joints fused, with total of 5 bristles; long hairs present along outer side of exopodite.

Sixth Limb (Figure 93*d*): Endite I with 2 or 3 short bristles; end joint with 2 or 3 bristles with bases on medial side near ventral margin and 8 broader bristles along ventral margin; the former bristles with long proximal hairs and short distal spines, the latter bristles with only long hairs; limb hirsute.

Seventh Limb (Figure 93*e*): Minute, vestigal.

Furca: Distribution and number of claws similar to those of female furca.

Bellonci Organ (Figure 93*f*): Similar to that of female.

Eyes (Figure 93*g,h*): Lateral eye about same size as medial eye, larger than that of female, with 5 or 6 ommatidia; medial eye similar to that of female.

Upper Lip: Similar to that of female.

Copulatory Organ (Figure 93*i*): Complex clasping organs hanging down at each side. Each clasper consisting of 3 lobes with few short bristles; main lobe terminating in sclerotized hook and proximal tooth near base of inner curvature.

Y-Sclerite: Similar to that of female.

COMPARISONS.—The new species, *E. cresseyi*, is much smaller than *E. tubipora* (Darby, 1965), and also differs from that species in having only 1 instead of 2 proximal bristles on the endopodite of the second antenna. The carapace of *E. cresseyi* differs from that of *E. ozothothrix* Kornicker and Bowen (1976:497) in that the upper horizontal rib is divided into 2 parts.

Eusarsiella elofsoni, new species

FIGURES 94, 95; PLATES 28–30

ETYMOLOGY.—The species is named for O. Elofson, who has contributed much to the study of myodocopid Ostracoda.

HOLOTYPE.—USNM 154181, ovigerous female on slides and in alcohol.

TYPE-LOCALITY.—R/V *Gyre* cruise 11, station 7, Gulf of Mexico, off Galveston, Texas, 53 m.

PARATYPES.—Texas continental shelf: USNM 193106, 1 ovigerous female, sta 6 off Port Isabel; USNM 193107, 1 juvenile, sta 3 near Southern Bank.

DISTRIBUTION.—Texas continental shelf at depths of 53–82 m (Figure 2, Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 94, 95; Plates 28–30).—Carapace oval in lateral view with prominent posteroventral caudal process and without incisur (Figure 94; Plate 28*a*).

Ornamentation (Figures 94, 95*a*; Plates 28, 29*a–c*): Each valve with horizontal rib extending from near anterior or valve to just below valve middle where it intersects anterior end of alate rib extending to posterodorsal corner of valve; intersection of ribs located in vicinity of central adductor muscle attachments; posterior, anterior, and ventral edge of valve with prominent processes (Figure 94); posterior edge of valve with 4 processes (Figures 94, 95*a*); horizontal posterior edge of alate process with 3 processes including posterodorsal end of alate rib (a fourth process medial to 3 processes on the horizontal edge, all visible in dorsal view in Figure

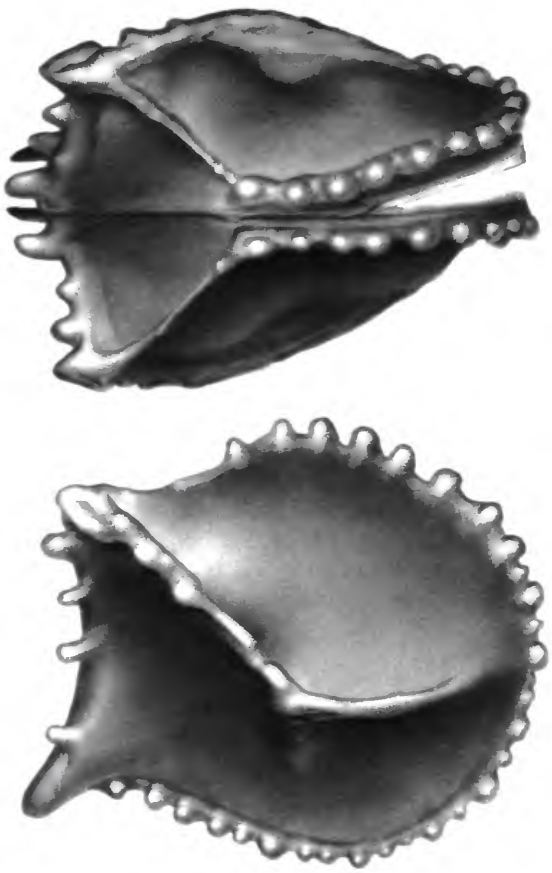

FIGURE 94.—*Eusarsiella elofsoni*, new species, USNM 154181, holotype, adult female, lateral and dorsal views of complete specimen, length 1.62 mm.

FIGURE 95.—*Eusarsiella elofsoni*, new species, USNM 154181, holotype, adult female, length 1.62 mm: *a*, inside view of posterior of left valve; *b*, left first antenna, medial view; *c*, endopodite of left second antenna, medial view; *d*, right mandible, medial view; *e*, maxilla, lateral view; *f*, distal part of fifth limb; *g*, sixth limb; *h*, seventh limb; *i*, left lamella of furca, lateral view; *j*, dorsal part of anterior of body showing left lateral eye, medial eye, and bellonci organ, anterior to left.

94, is also the upper process on the posterior edge of valve); a narrow rib extending from posterior process on dorsal margin of valve to posterodorsal end of alate rib (see dorsal view in Figure 94). Most processes with 1 or 2 long bristles; additional long bristles along valve edge medial to marginal processes along anterior and ventral margin; a few long bristles scattered over valve surface, but very sparse; surface of valves smooth, without visible punctae, and without gelatinous coating. Minute pustules visible on some processes at very high magnification (Plate 29*a*).

Infold (Figure 95*a*; Plates 29*d–f*, 30): Infold just below middle of anterior margin with usual small bristle near inner edge. Infold of caudal process with about 8 bristles (Figure 95*a*; Plates 29*d–f*, 30*a,c,d*); a few additional bristles present on infold posterior and anterior to caudal process (Figure 95*a*, Plate 30*e,f*); posterior infold with 2 setal bristles dorsal to middle (Plate 30*b*).

Selvage: Selvage with wide lamellar prolongation with smooth edge present along anterior, ventral, and posterior margins; prolongation off caudal process with squarish tip.

Size: USNM 154181 length 1.62 mm, height 1.37 mm; USNM 193106, length 1.80 mm, height 1.52 mm.

First Antenna (Figure 95*b*): First joint about same length as combined lengths of joints 2–5, with minute medial spines forming rows near ventral margin. Second joint with spinous dorsal bristle. Third and fourth joints fused; third joint with 1 long spinous dorsal bristle and 1 short, bare, ventral bristle; fourth joint with 3 bristles (1 dorsal, 2 ventral). Sensory bristle of long fifth joint with 1 small proximal filament and spine at tip. Medial bristle of minute sixth joint short, bare. Seventh joint: a-bristle about 3 times length of bristle of sixth joint, spinous; b-bristle about one-third longer than a-bristle, bare except for minute spine at tip; c-bristle same length as sensory bristle of fifth joint, with minute spine at tip. Eighth joint: d- and e-bristles well developed, bare with blunt tips (distal parts broken off on illustrated limb but shown by dashed lines); f-bristle shorter than c-bristle, with spine at tip; g-bristle about same length as c-bristle, with small proximal filament and spine at tip.

Second Antenna (Figure 95*c*): Protopodite bare. Endopodite single jointed with 2 proximal anterior bristles and small terminal bristle on small mound. Exopodite: elongate first joint with small medial bristle on terminal margin; bristle of second joint long, with about 20 proximal spines on ventral margin and distal natatory hairs on both margins; bristles of joints 2–8 with natatory hairs (bristle of eighth joint with or without few slender ventral spines); ninth joint with 2 bristles (1 short, bare or with few hairs, 1 long with natatory hairs and few ventral spines): joints 4–7 with few minute lateral spines along distal margins.

Mandible (Figure 95*d*): Coxale endite consisting of stout spine; ventral margin of coxale hirsute. Basale: 6 bristles present near ventral margin; dorsal margin with 1 small midbristle and 2 small terminal bristles. Endopodite: first joint with numerous medial spines and stout ventral claw; second joint with small dorsal bristle and stout ventral claw; end joint with stout terminal claw and 3 small bristles, 2 ventral, 1 dorsal.

Maxilla (Figure 95*e*): Coxale with short bare bristle on dorsal margin. Exopodite with 3 bristles (1 long, 2 short). A small bristle near base of endite I. Endite I with 6 terminal bristles; endite II with 4 bristles; endite III with 6 bristles. Basale and endopodite typical for genus.

Fifth Limb (Figure 95*f*): Single endite with 1 short bristle Exopodite: first joint with 2 spinous bristles; remaining joints fused, with total of 9 bristles (interpretation: second joint with 3 bristles; third joint with 3 inner bristles and 1 outer bristle, fourth and fifth joints with total of 2 bristles). Epipodial appendage with 37 bristles.

Sixth Limb (Figure 95*g*): Single endite with 3 bristles (2 small, 1 long). End joint with 12 or 13 bristles with short marginal spines followed by rather long space and then 2 stout hirsute bristles; the 2 hirsute bristles on posterior projection of joint, but bristles not separated from joint by basal suture.

Seventh Limb (Figure 95*h*): Four bristles in

proximal group, 2 on each side; 6 bristles in terminal group, 3 on each side; each bristle with up to 6 bells. Terminus consisting of opposing combs, each with 3–5 teeth.

Furca (Figure 95*i*): Each lamella with 5 claws; claw 1 fused to lamella, remaining claws separated from lamella by suture; claws 1–4 with both large and small teeth along posterior margins; several spines on lamella following fifth claw.

Bellonci Organ (Figure 95*j*): Elongate with rounded tip.

Eyes (Figure 95*j*): Medial eye lightly pigmented. Lateral eye about same size as medial eye, lightly pigmented, with minute ommatidia (either 5 divided or 10 individual ommatidia, exact condition and number uncertain).

Genitalia: Small sclerotized ring on each side of body anterior to furca.

Posterior of Body: Bare.

Y-Sclerite: Typical for genus.

Eggs: USNM 154181 with 7 eggs in marsupium.

COMPARISONS.—The new species *E. elofsoni* is closely related to *E. nodimarginis* (Darby, 1965). A narrow rib extending from the posterior outer corner of the alate rib to the posterior process along the dorsal margin of *E. elofsoni* was not observed on *E. nodimarginis*. The primary difference between the 2 species is the presence of fossae in the anteroventral quadrant of the carapace of *E. nodimarginis*. These were observed in a specimen collected off North Carolina (USNM 193108) as well as in the type-specimens. They cover a greater area than covered by the central adductor muscle attachments. The processes along the posterior shell edge are generally better developed on *E. elofsoni*.

Eusarsiella bakeri, new species

FIGURES 96–98, PLATES 31–34

ETYMOLOGY.—This species is named for James H. Baker.

HOLOTYPE.—USNM 154183, ovigerous female on slides and in alcohol.

FIGURE 96.—*Eusarsiella bakeri*, new species, USNM 154183, holotype, adult female, lateral view of complete specimen, length 0.83 mm.

TYPE-LOCALITY.—R/V *Gyre*, cruise 11, sta 7, Gulf of Mexico off Galveston, Texas, 53 m.

PARATYPES.—Southwest Florida continental shelf: 1 ovigerous female, sta 4; 3 ovigerous females, 2 adult females, 1 juvenile, sta 22; 2 adult females, sta 24; 4 ovigerous females, 4 adult females, 1 juvenile, 1 specimen, sta 28. Louisiana continental shelf, 1 ovigerous female, sta THR-2. Texas continental shelf: R/V *Gyre* cruise 11, USNM 158179, 1 ovigerous female, USNM 158172, 158177, 2 females, sta 8; USMN 158175, 2 adult females, sta 9; USNM 158174, 1 adult female, sta 11; USNM 158117, 1 ovigerous female, USNM 158173, 2 adult females, sta 12. R/V *Longhorn*, USNM 193110, 1 stage IV male, sta 3; USNM 193109, 1 adult female, 2 ovigerous females, sta 6. Transect SB, adjacent to Southern Bank, USNM 193111, 1 adult female, sta 3.

DISTRIBUTION.—Gulf of Mexico, on continental shelf off Florida, Louisiana, and Texas (Figure 4). Known depth range 51.75–91 m (Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 96–98; PLATES 31–34).—Carapace oval in lateral view with elongate caudal process and without rostrum or incisur (Figure 96; Plates 31*a,b*, 32*a,c*).

FIGURE 97.—*Eusarsiella bakeri*, new species, USNM 154183, holotype, adult female, length 0.83 mm: *a*, posterior of left valve showing bristles on infold of caudal process and 2 setal bristles; *b*, detail of fossae on left valve; *c*, outside view of central adductor muscle attachment scars of left valve, anterior to left; *d*, joints 2–8 of left first antenna, medial view; *e*, endopodite of left second antenna, medial view; *f*, lateral view of ventral part of coxale of right mandible showing hairs and medial spine representing endite (dashed); *g*, left mandible, medial view (proximal part of coxale bearing endite fragmented); *h*, maxilla, lateral view; *i*, distal part of fifth limb.

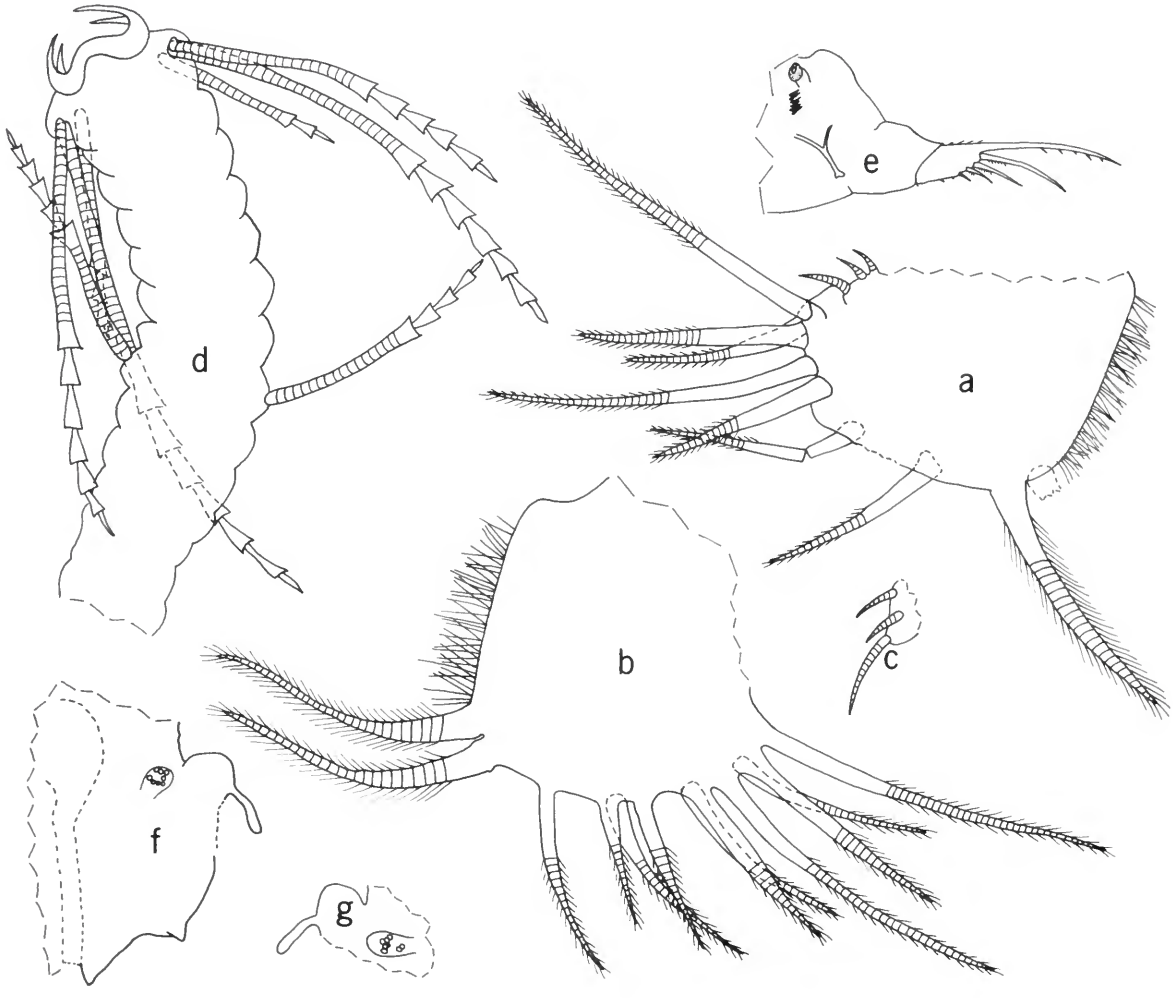

FIGURE 98.—*Eusarsiella bakeri*, new species, USNM 154183, holotype, adult female, length 0.83 mm: *a*, left sixth limb, lateral view; *b*, right sixth limb, lateral view (endite missing); *c*, endite of right sixth limb, medial view; *d*, seventh limb; *e*, posterior of body showing right lamella of furca, right brush-like organ, right genital process, and right Y-sclerite; *f*, anterior of body showing right lateral eye, medial eye, bellonci organ, right anterior process, upper lip, and anterior part of gut (dashed); *g*, left lateral eye, medial eye, and bellonci organ.

Ornamentation (Figures 96, 97*b*; Plates 32*b*,*d*, 33, 34): Continuous oval ridge composed of shell present on each valve approximately parallel to outer margin except for posteroventral corner in vicinity of caudal process (Figure 96, Plate 31*a*); ridge bearing about 7 small processes along posterior and posteroventral edge, the posterior 2 being larger than others (Figure 96; Plates 31*a*, 34*a*); ridge and processes with minute papillae (Plate 33*c*); long bristles distributed along oval ridge and along anterior and ventral margins of valves (Plates 31, 34*c*,*d*); surface of valves with small flat-bottomed fossae (Plates 32*b*,*d*, 33*a*,*b*, 34*a*,*b*); an inward pointing row of

5–10 short processes present around perimeter of fossae except in vicinity of central muscle attachment and valve edges where processes around perimeter of fossae are smaller and more numerous (Plates 32*b*, 33*b*); some fossae coalesce to form large fossae (Figure 97*b*); 5 processes present along posterior edge of valve and 2 smaller processes along ventral edge anterior to caudal process (Figure 96; Plate 31*a*,*b*); short bristles or papillae along anterior margin of valve with bulbous tips covered by minute knobs (Plate 33*d*). Surface of valves not coated with gelatinous film.

Infold (Figure 97*a*): Anterior infold with minute bristle near inner edge just below middle of anterior valve margin; infold of caudal process with 4 small bristles and 1 bristle near inner edge of infold; posterior infold with 2 setose bristles; 1 small bristle near inner edge of infold just anterior to caudal process.

Central Adductor Muscle Attachments (Figure 97*c*): Consisting of about 12 oval attachments visible on inner side of valve.

Size: USNM 154183, length including caudal process 0.83 mm, length excluding caudal process 0.80 mm; height including caudal process 0.67 mm, height excluding caudal process 0.64 mm. USNM 158117, length including caudal process 0.89 mm, length excluding caudal process 0.82 mm; height including caudal process 0.76 mm, height excluding caudal process 0.68 mm. USNM 158172, length including caudal process 0.83 mm, length excluding caudal process 0.82; height including caudal process 0.71 mm, height excluding caudal process 0.66 mm.

First Antenna (Figure 97*d*): First joint bare. Second joint with 1 dorsal bristle. Third and fourth joints fused; third joint with long dorsal bristle and shorter ventral bristle; fourth joint with short dorsal bristle and 2 longer ventral bristles. Sensory bristle of fifth joint with 2 minute filaments, 1 proximal, 1 near middle. Sixth joint with short medial bristle. Seventh joint: a-bristle with few spines, about same length as fifth joint; b-bristle bare, shorter than a-bristle; c-bristle about same length as sensory bristle of fifth joint, with 3 small marginal filaments. Eighth joint: d- and e-bristles bare with blunt tips, slightly shorter than c-bristle; f-bristle shorter than c-bristle, with 1 or 2 minute filaments; g-bristle about same length as c-bristle, with 3 minute marginal filaments.

Second Antenna (Figure 97*e*): Protopodite bare. Endopodite with 2 proximal anterior bristles and short terminal protuberance. Expodite: first joint with small medial bristle on terminal margin; bristle of second joint with slender ventral spines and distal natatory hairs; bristles of joints 3–8 with few slender, proximal, ventral spines and natatory hairs; ninth joint with 1 long bristle with natatory hairs and slender, proximal ventral spines, and 1 short bare dorsal bristle.

Mandible (Figure 97*f*,*g*): Coxale with proximal medial spine and fringe of hairs along ventral margin (Figure 97*f*): Basale: 4 small bristles near ventral margin; dorsal margin with minute subterminal spine. Endopodite: first joint: medial surface with medial spines; dorsal margin with small spines forming terminal row; ventral margin with stout terminal claw; second joint with stout terminal claw on ventral margin; dorsal margin with minute subterminal bristle; end joint with stout terminal claw with minute ventral and dorsal bristle near base.

Maxilla (Figure 97*h*): Coxale with short dorsal bristle; 3 endites with total of about 14 bristles. Basale with 1 short bristle near exopodite. Exopodite with 2 bristles, 1 of these more than ½ length of other. Endopodite: first joint with spinous alpha- and beta-bristles; end joint with 2 a-bristles, 1 c-bristle, and 5 pectinate end bristles.

Fifth Limb (Figure 97*i*): Single endite with 1 short bristle. Exopodite: first joint lobate with 2 bristles; second to fifth joints fused, hirsute with total of 8 bristles.

Sixth Limb (Figure 98*a*–*c*): Single endite with 3 short bristles; end joint with 7–10 spinous bristles and 3 posterior hirsute bristles; long hairs present in vicinity of posterior margin of end joint.

Seventh Limb (Figure 98*d*): Two proximal bristles present, each with 4 or 5 bells; 6 distal

bristles, 3 on each side, with 2–6 bells; terminus with opposing combs, each with 3 or 4 teeth.

Furca (Figure 98*e*): Each lamella with 5 claws; claw 1 continuous with lamella, claws 2–5 separated from lamella by suture; posterior margins of claws with pointed teeth, some longer than others; 2 slender spines on lamella following claw 5 on right lamella, about 5 on left.

Bellonci Organ (Figure 98*f,g*): Elongate, broadening distally with rounded tip.

Eyes (Figure 98*f,g*): Lateral eyes unpigmented, small, with about 8 minute yellow globules (ommatidia?) Medial eye unpigmented bare, larger than lateral eye.

Brush-like Organ (Figure 98*e*): Consisting of several minute bristles near genitalia.

Y-Sclerite (Figure 98*e*): Normal for family.

Posterior of Body: Bare, without processes.

Eggs: USNM 154183 with 3 eggs; USNM 158117 with 2 eggs and small, unextruded eggs.

COMPARISONS.—The oval ridge on each valve of the new species *E. bakeri* differs from that of *E. cornuta* Poulsen, 1965, in being narrower in the posterior half, in having smaller posterior processes, and in not having anterior processes. Also, the fossae of *E. bakeri* are without the central pore present in the fossae of *E. cornuta*, and the shell surface between fossae of *E. bakeri* is not punctate like that of *E. cornuta*. The long teeth on claw 1 of the caudal furca of *E. bakeri* are sharply pointed, not blunt as on *E. cornuta*. The carapace of *E. bakeri* differs from that of *E. gettlesoni* in having more processes on the oval ridge, in having a longer caudal process, and in having more and smaller inward pointing processes along the perimeters of the fossae within the oval ridge (except for the fossae near the central adductor muscle attachments).

Eusarsiella vema, new species

FIGURES 99–101

ETYMOLOGY.—The species is named for the R/V *Vema*.

HOLOTYPE.—USNM 156798, ovigerous female, on slides and in alcohol.

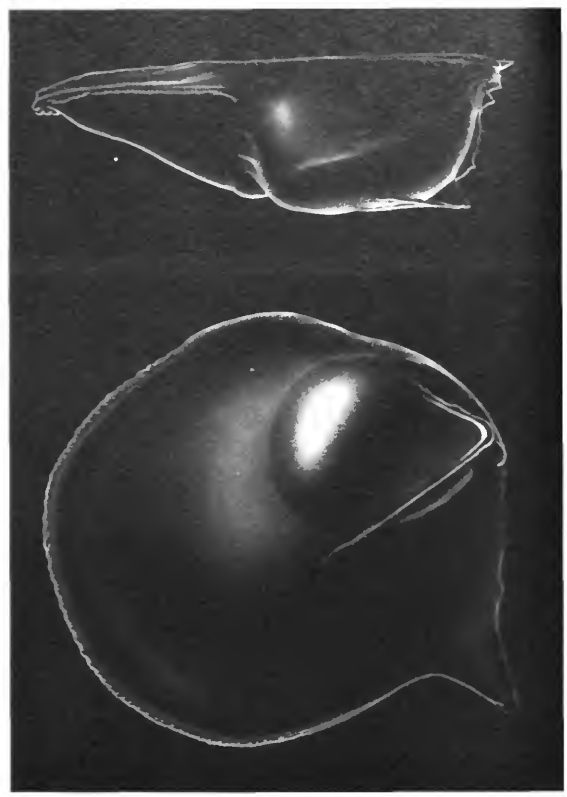

FIGURE 99.—*Eusarsiella vema*, new species, USNM 156798, holotype, adult female, lateral and dorsal views of complete specimen (only left valve of specimen drawn), length 1.28 mm.

TYPE-LOCALITY.—R/V *Vema* Cruise 16, station V-16-65, off Cape Breton Island, Nova Scotia, Canada (46°45′N, 56°22′W).

PARATYPES.—All from same sample as holotype: USNM 158110, 158111, 2 ovigerous females; USNM 158112, 1 A-1 male; USNM 158113, 2 juveniles.

DISTRIBUTION.—Collected only at type-locality. Depth 42 m (Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 99–101*a–e*).—Carapace oval in lateral view with projecting caudal process; posterodorsal part of each valve inflated forming large bulbous process; narrow angular ridge terminating in small posterior pointing process superimposed on each postero-

FIGURE 100.—*Eusarsiella vema*, new species, USNM 156798, holotype, adult female, length 1.28 mm: *a*, dorsal view of complete specimen; *b*, inside view of anterior edge of right valve showing minute anterior bristle of infold; *c*, inside view of posterior of right valve showing bristles of infold and extension of lamellar prolongation of selvage in vicinity of caudal process (dashed); *d*, inside view of caudal process of left valve; *e*, dorsal part of anterior of body showing joints 1–4 of right second antenna, left lateral eye, medial eye, and bellonci organ; *f*, joints 5–8 of right first antenna, medial view; *g*, endopodite of left second antenna, medial view; *h*, left mandible, medial view; *i*, maxilla, lateral view; *j*, left sixth limb (2 stout hirsute posterior bristles broken off end joint); *k*, left side of posterior part of body showing left genital process and left Y-sclerite.

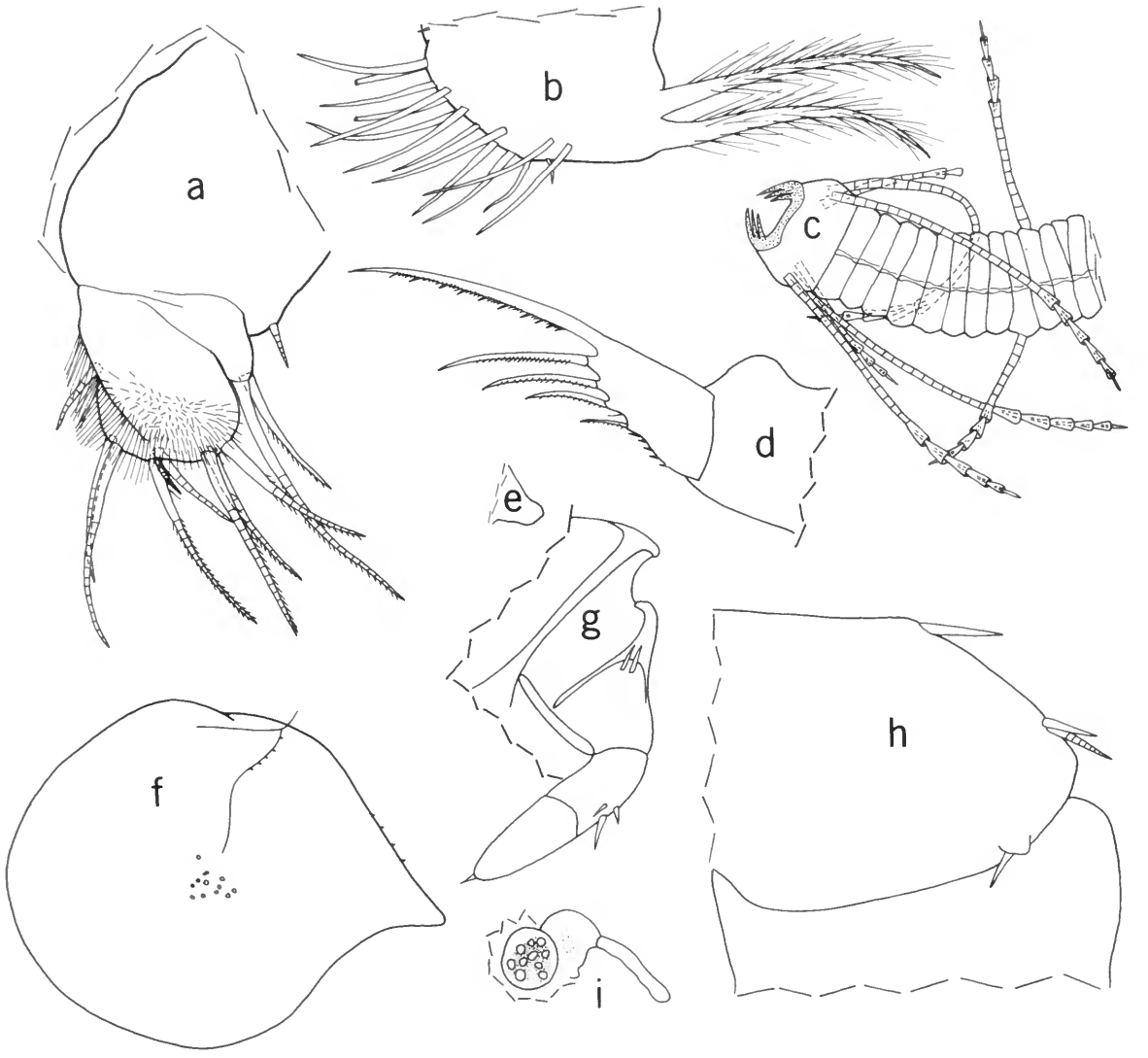

FIGURE 101.—*Eusarsiella vema*, new species, USNM 156798, holotype, adult female, length 1.28 mm: *a*, distal part of fifth limb; *b*, sixth limb (only 1 short proximal bristle shown on endite); *c*, seventh limb; *d*, left lamella of furca, lateral view; *e*, profile of upper lip, anterior to right, USNM 158112, paratype, instar IV (A−1) male, length 1.13 mm; *f*, lateral view of complete specimen; *g*, distal part of protopodite and proximal part of endopodite of left second antenna, medial view; *h*, distal part of basale and proximal part of first endopodial joint of right mandible, lateral view (note lateral bristle representing exopodite); *i*, right lateral eye, medial eye, and bellonci organ.

dorsal bulbous process; in dorsal view posterior end of processes truncate (Figures 99, 100*a*).

Ornamentation: Surface not coated with amorphous gel; surface bristles sparse except along valve margins; minute, short, stout spines visible on surface when viewed at high magnification (× 40 objective).

Infold (Figure 100*b–d*): Anterior infold with 1 minute bristle near inner margin (Figure 100*b*); infold of caudal process with 5–7 scattered bristles (Figure 100*c–d*); 2 setose bristles present on posterior infold just ventral to posterior ends of bulbous processes; several minute bristles present along inner margin of infold anterior and dorsal to caudal process.

Selvage: Broad lamellar prolongation with smooth margin present along anterior, ventral, and posterior margins of each valve; prolongation extending past caudal process with square end (Figure 100*c*).

Size (including caudal process): USNM 156798, length 1.28 mm, height 1.31 mm; USNM 158110, length 1.27 mm, height 1.26 mm; USNM 158111, length 1.28 mm, height 1.25 mm.

First Antenna (Figure 100*e,f*): First joint bare. second joint with dorsal spines and 1 dorsal bristle. Third and fourth joints fused; third joint with dorsal bristle; fourth joint with 1 dorsal and 2 ventral bristles. Long fifth joint with dorsal spines; sensory bristle with minute filament near middle and spine at tip. Minute sixth joint with small medial bristle. Seventh joint: a-bristle much longer than medial bristle of sixth joint; b-bristle about ½ length of sensory bristle of fifth joint, with spine at tip; c-bristle same length as sensory bristle, with spine at tip. Eighth joint: d- and e-bristles bare with blunt tips; d-bristle almost same length as c-bristle; e-bristle about three-fourths length of c-bristle (broken on illustrated limb); f-bristle only slightly shorter than c-bristle, with spine at tip; g-bristle same length as c-bristle, with spine at tip.

Second Antenna (Figure 100*g*): Protopodite bare. Endopodite 1-jointed with 2 short, proximal, anterior bristles and 1 minute, terminal, unringed bristle. Exopodite: elongate first joint with ventral hairs forming rows and 1 small, recurved, terminal, medial bristle; bristle of second joint long, with proximal ventral spines and distal natatory hairs; bristle of third joint with few proximal ventral spines and distal natatory hairs; bristles of joints 4–8 with only natatory hairs; ninth joint with 2 bristles (1 long with few proximal ventral spines and distal natatory hairs, 1 short bare).

Mandible (Figure 100*h*): Coxale: endite consisting of stout process with marginal spines; ventral margin of joint with long hairs. Basale: ventral margin with 3 bristles, 1 short and 2 minute; medial side near ventral margin with 1 minute bristle; lateral side near ventral margin with 2 minute bristles; dorsal margin with 3 minute bristles (1 near middle, 2 subterminal). Exopodite absent. First endopodial joint: dorsal margin undulate proximally and with spines forming terminal row; ventral margin with or without small spine and with stout terminal claw; medial surface with scattered spines. Second endopodial joint with stout ventral claw and small dorsal bristle. Third endopodial joint with stout terminal claw and 2 small bristles (1 ventral, 1 dorsal).

Maxilla (Figure 100*i*): Dorsal margin of coxale with fringed lamellar prolongation and short terminal bristle. Endites I to III each with 4–6 bristles, total of about 15, some pectinate. Basale with 1 bristle near exopodite. Exopodite with 3 bristles (1 long, spinous, 2 short, bare). Endopodite: first joint with spinous and pectinate alpha- and beta-bristles; second joint with 5 pectinate end bristles, 2 slender a-bristles, and 1 slender c-bristle.

Fifth Limb (Figure 101*a*): Single endite with short bare bristle with open tubelike tip. Exopodite: first joint with 2 spinous bristles; second to fifth joints fused, with total of 9 spinous bristles (these probably consist of 3 on second joint; 1 outer and 3 inner on third joint, and 2 on combined fourth and fifth joints).

Sixth Limb (Figures 100*j*, 100*b*): Single endite with 1 short, stout, spinous, terminal bristle and 2 minute proximal medial bristles; end joint with

15 or 16 slender spinous bristles and 2 stout, hirsute, posterior bristles.

Seventh Limb (Figure 101*c*): Each limb with 8 bristles, 2 proximal (1 on each side), 6 terminal (3 on each side); each bristle with up to 5 bells. Terminus consisting of opposing combs, each with several faint teeth.

Furca (Figure 101*d*): Each lamella with 5 long slender claws; claw 1 without basal suture; marginal teeth on claws consisting of both long and short teeth; several spines present along lamella following claw 5.

Bellonci Organ (Figure 100*e*): Elongate, single jointed, with rounded tip.

Eyes (Figure 100*e*) Medial eye lightly pigmented, bare. Lateral eye about same size as medial eye, with brown pigment and 5 ommatidia.

Upper lip (Figure101*e*): Helmet shaped.

Genitalia (Figure100*k*): Oval sclerotized ring on each side of body.

Y-Sclerite (Figure100*k*): Typical for family.

Eggs: USNM 156798 with 5 eggs in marsupium and several smaller unextruded eggs.

DESCRIPTION OF A−1 MALE (Figure 101*f–i*).—Carapace more truncate posteriorly than that of adult female; each valve with pointed process present in posterodorsal part but without inflated bulbous process present on adult female (Figure 101*f*).

Size: USNM 158112, length 1.13 mm, height 1.00 mm.

First Antenna: Similar to that of adult female (also without ventral bristle on third joint).

Second Antenna (Figure 101*g*): Protopodite and exopodite similar to that of adult female. Endopodite elongate, 3-jointed: first joint with 2 small proximal anterior bristles; second joint elongate with 3 small ventral bristles; third joint elongate with 1 small terminal bristle.

Mandible: Exopodite represented by minute bristle on distal lateral margin of basale some distance from dorsal margin (Figure 101*h*).

Maxilla, Fifth and Sixth Limbs: Not examined in detail but, in general, similar to that of adult female.

Seventh Limb: Absent.

Furca: Similar to that of adult female.

Bellonci Organ (Figure 101*i*): Similar to that of adult female.

Eyes (Figure 101*i*): Medial eye bare, with light amber pigment. Lateral eye about same size as medial eye, pigmented light amber, with about 10 ommatidia.

COMPARISONS.—The new species, *E. vema*, differs from *E. gigacantha*, *E. greyi*, and *E. alata* in lacking a ventral bristle on the third joint of the first antenna. It differs from *E. athrix* and *E. absens*, which also lack a ventral bristle on the third joint of the first antenna, in having a longer caudal process.

Eusarsiella dominicana, new species

FIGURES 102, 103

ETYMOLOGY.—The species is named after the country near which it was collected.

HOLOTYPE.—USNM 154196, ovigerous female on slide and in alcohol. Unique specimen.

TYPE-LOCALITY.—Collected from off the Dominican Republic, Hispaniola Island, West Indies.

DISTRIBUTION.—Collected only at type-locality. Depth shallow (Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 102, 103).—Carapace oval in lateral view with small

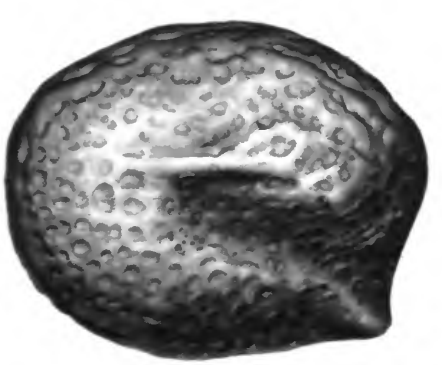

FIGURE 102.—*Eusarsiella dominicana*, new species, USNM 154196, holotype, adult female, lateral view of complete specimen, length 1.08 mm.

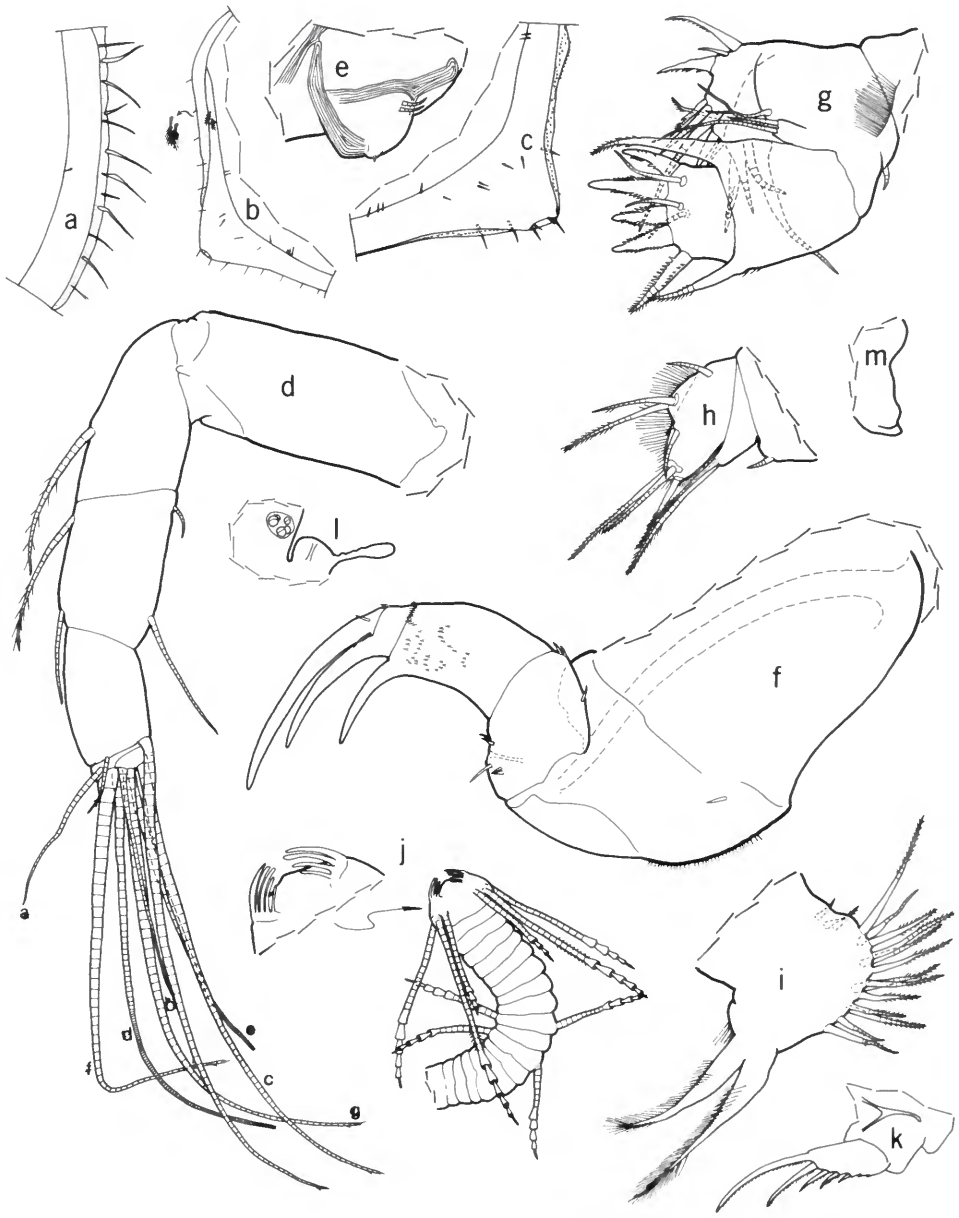

FIGURE 103.—*Eusarsiella dominicana*, new species, USNM 154196, holotype, adult female, length 1.08 mm: *a*, anterior of right valve showing peripheral bristles and minute anterior bristle of infold; *b*, posterior of left valve, inside view; *c*, inside view of posteroventral corner of right valve showing bristles; *d*, right first antenna, medial view; *e*, endopodite of left second antenna, medial view; *f*, right mandible, medial view; *g*, maxilla, lateral view; *h*, distal part of fifth limb; *i*, sixth limb; *j*, seventh limb; *k*, posterior of body showing left lamella of furca and left Y-sclerite; *l*, right lateral eye, medial eye, and bellonci organ; *m*, profile of lower half of body showing lower lip at ventral end.

caudal process forming right angle; posterior margin of carapace slightly concave in lateral view (Figure 102).

Ornamentation (Figures 102, 103*a*): Surface with shallow fossae and bristles along outer margin (bristles not shown in Figure 102), but with only few bristles on lateral surface. Posterodorsal part of each valve bulbous and with low horizontal rib extending from bulbous area anteriorly to point just dorsal to area of central adductor muscle attachments. Surface with minute pustulae not covered by gelatinous film.

Infold (Figure 103*a–c*): Anterior infold with minute bristles near inner edge just below middle of anterior margin (Figure 103*a*). Infold of caudal process with 4 or 5 small bristles (Figure 103*b,c*); posterior infold with 2 small bristles near inner edge and 2 spinous dorsal bristles (Figure 103*b*); 4 small bristles present on inner edge of infold just anterior to caudal process.

Selvage: Free margin with wide continuous transparent lamella with smooth outer edge.

Size: USNM 154196, length 1.08 mm, height 0.86 mm.

First Antenna (Figure 103*d*): First joint bare. Second joint with 1 dorsal bristle. Third and fourth joints fused; third joint with 2 bristles (1 dorsal, long, 1 ventral, short); fourth joint with 2 distal bristles (1 ventral, 1 dorsal). Sensory bristle of long fifth joint with 3 minute marginal spines and spine at tip. Sixth joint fused with fifth, with 1 short medial bristle. Seventh joint: a-bristle about 3 times length of bristle of sixth joint; b-bristle about ⅓ longer than a-bristle, bare except for spine at tip; c-bristle slightly longer than sensory bristle of fifth joint, with small marginal spine near tip and spine on tip. Eighth joint: d- and e-bristles bare with blunt tips, e-bristle shorter and narrower than d-bristle; f-bristle slightly shorter than g-bristle; g-bristle about same length as c-bristle; both f- and g-bristles with small marginal spine near tip and small spine on tip.

Second Antenna (Figure 103*e*): Protopodite bare. Endopodite 1-jointed with 2 short proximal anterior bristles and small terminal protuberance with minute spine-like bristle. Exopodite: elongate first joint with small medial terminal bristle; bristles of joints 2–8 and longer of 2 bristles of ninth joint with proximal ventral spines and distal natatory hairs; short bristle of ninth joint with small marginal hairs; joints 2–8 with 1–4 small lateral spines along distal margin.

Mandible (Figure 103*f*): Coxale endite represented by single stout spine; ventral margin of coxale with spines and hairs. Basale: medial side near ventral margin with 4 bristles (3 proximal, 1 distal); ventral margin with small proximal bristle; dorsal margin with 1 short bristle near middle and 2 short terminal bristles. Endopodite: first joint with medial spines and stout terminal ventral claw; second joint with minute dorsal terminal bristle and stout terminal ventral claw; end joint with 3 minute bristles (2 ventral, 1 dorsal) and stout terminal claw.

Maxilla (Figure 103*g*): Coxale with short dorsal bristle and fringe of long hairs. Endite I with 6 bristles; endite II with 4 or 5 bristles; endite II with 6 bristles. Basale with bristle near exopodite. Exopodite with 3 bristles (middle bristle much shorter than 2 outer bristles). Endopodite: first joint with few distal spines along dorsal margin and spinous alpha- and beta-bristles; end joint with 2 short a-bristles, 1 short c-bristle, and 5 stout pectinate end bristles (anterior bristle ringed distally).

Fifth Limb (Figure 103*f*): Epipodial appendage with 32 bristles. Single endite with 1 short bare bristle. Exopodite: first joint with 2 spinous bristles; joints 2–5 fused, hirsute, with total of 8 bristles (1 of these minute).

Sixth Limb (Figure 103*i*): Single endite with 3 short bristles. End joint 13 ventral bristles with short marginal spines and 2 long hirsute posterior bristles; hairs present on posterior edge of end joint proximal to posterior bristles.

Seventh Limb (Figure 103*j*): Proximal group with 4 bristles, 2 on each side, each with 4 distal bells; distal group with 6 bristles, 3 on each side, each with 3–5 distal bells. Terminus with opposing combs, each with about 6 curved teeth.

Furca (Figure 103*k*): Each lamella with 5

slender claws; claw 1 fused with lamella, remaining claws separated from lamella by suture; 3 small spines present on lamella following claw 5; posterior margins of claws 1–4 with short and long teeth forming groups.

Bellonci Organ (Figure 103*l*): Elongate, widening distally, with broadly rounded tip.

Eyes (Figure 103*l*): Medial eye lightly pigmented, bare. Lateral eye about same size, or slightly smaller than medial eye, lightly pigmented, with 4 amber ommatidia.

Upper Lip (Figure 103*m*): Simple, helmet shaped.

Y-Sclerite (Figure 103*k*): Typical for family.

Eggs: USNM 154196 with 7 eggs in marsupium, and also smaller unextruded eggs.

COMPARISONS.—The new species *E. dominicana* resembles *E. punctata* (Kornicker, 1958:251) and *E. ovalis* Poulsen (1965:119). It differs from both these species in having only 1 ventral bristle on the fourth joint of the first antenna. It also differs from *E. ovalis* in having more proximal bristles on the seventh limb, in having 3 bristles on the exopodite of the maxilla, in having a terminal bristle on the endopodite of the second antenna, and in not having a strongly sclerotized ridge on the anterior part of the infold of the caudal process. It also differs from *E. punctata* in having a narrower caudal process, and in having 2 proximal bristles on the endopodite of the second antenna.

Eusarsiella venezuelensis, new species

FIGURES 104, 105

ETYMOLOGY.—The specific name from the vicinity in which the holotype was collected.

HOLOTYE.—USNM 157807, 1 ovigerous female on slide and in alcohol. Unique specimen.

TYPE-LOCALITY.—Venezuela (mainland), Cumaná area; sta C-78-1–4.

DISTRIBUTION.—Collected only at type-locality. Depth shallow (Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 104, 105).—Carapace ovoid in lateral view except for truncate posterior (Figure 104).

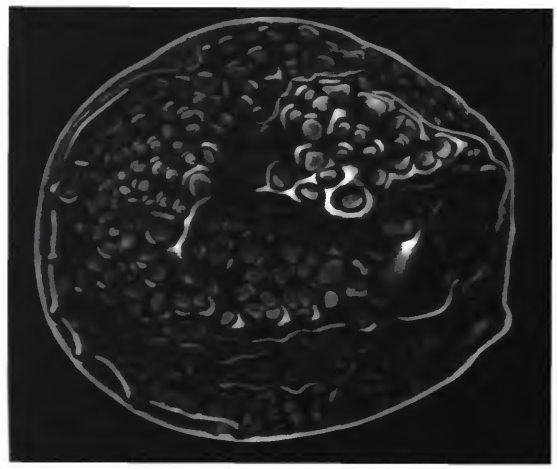

FIGURE 104.—*Eusarsiella venezuelensis*, new species, USNM 157807, holotype, adult female, lateral view of complete specimen, length 1.12 mm.

Ornamentation (Figures 104, 105*a*): Surface with abundant shallow fossae; each valve with bulbous posterodorsal process with uneven dorsal margin; a small rounded process forming ventral part of the posterodorsal process; a small indistinct crescentic rib present just anterior to central adductor muscle attachments. Long and short bristles present along anterior and ventral margins and sparsely distributed on valve surface. Gelatinous coating absent.

Infold (Figure 105*a*): Broad infold along free margins; 1 minute bristle present near inner margin of anterior infold just ventral to valve middle; infold in posteroventral corner with 11 or 12 small bristles forming row in addition to 3 or 4 small bristles along inner edge; 5 or 6 small bristles present along inner edge of infold anterior to the posteroventral bristles (only the posterior of these shown in Figure 105*a*); posterior infold with 2 small bristles near inner edge and 2 setal bristles.

Selvage: Selvage with broad lamella prolongation with smooth outer edge present along anterior, ventral, and posterior margins.

Size: USNM 157807, length 1.12 mm, height 0.98 mm.


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First Antenna (Figure 105*b*): First joint bare. Second joint with 1 spinous dorsal bristle. Third and fourth joints fused; third joint short with 2 spinous bristles (1 ventral, 1 dorsal); fourth joint elongate, with 4 spinous bristles (3 ventral, 1 dorsal). Sensory bristle of elongate fifth joint with 3 minute filaments (distal of these spine-like), and spine-like filament at tip. Sixth joint minute, fused to fifth joint, with short spinous medial bristle. Seventh joint: a-bristle spinous, about twice length of bristle of sixth joint; b-bristle about one-third longer than a-bristle, bare except for spine-like process at tip; c-bristle longer than sensory bristle of fifth joint, with 3 minute marginal filaments (distal of these spine-like), and spine-like process at tip. Eighth joint: d- and e-bristles bare with blunt tips not reaching tip of bristle of fifth joint; f-bristle about same length as e-bristle, with minute marginal spine near tip and spine-like process at tip.

Second Antenna: Protopodite bare. Endopodite 1-jointed with 2 or 3 short, proximal, anterior bristles, and small terminal protuberance bearing minute pointed bristle (Figure 105*c*). Exopodite: elongate first joint with small, terminal, medial bristle; bristles of joints 2–8 with stout, proximal, ventral spines and distal natatory hairs; ninth joint with 2 bristles (1 long with slender, proximal, ventral spines, and distal natatory hairs, and 1 short, bare, dorsal bristle).

Mandible (Figure 105*d*): Coxale endite consisting of single stout spine-like process with minute marginal teeth or spines; ventral margin of coxale with hairs and spines. Basale: dorsal margin with 1 small midbristle and 2 small subterminal bristles; 6 bristles on or near ventral margin (2 or 3 medial, 2 lateral, 1 or 2 ventral). Exopodite absent: first endopodial joint with medial spines and stout ventral claw; small spine-like medial bristle present at base of claw; dorsal margin with slender terminal spines forming row extending onto medial side. Second endopodial joint with stout ventral claw; dorsal margin of joint with 1 minute, faint, spine-like bristle. Third endopodial joint with stout terminal claw and 2 minute bristles (1 ventral, 1 dorsal).

Maxilla (Figure 105*e,f*): Limb typical for genus. Exopodite with 3 bristles (Figure 105*f*).

Fifth Limb (Figure 105*g*): Epipodial appendage with 37 bristles. Single endite with 1 bristle. Exopodite: first joint with 2 bristles; second to fifth joints not well defined, with total of 10 bristles.

Sixth Limb (Figure 105*h*): Single endite with 3 bristles. End joint with 11–13 slender bristles (bearing short marginal spines), followed by wide space and then 2 stout hirsute bristles.

Seventh Limb (Figure 105*i*): Proximal group with 4 bristles (2 on each side); distal groups with 6 bristles (3 on each side); each bristle with up to 7 bells. Terminus consisting of opposing combs, each with 3–5 recurved teeth.

Furca (Figure 105*j*): Each lamella with 5 stout claws followed by several spines; claw 1 fused with lamella; claws 2–5 separated from lamella by suture; all claws with teeth forming lateral and medial row along posterior margin; teeth of claws 1–4 consisting of large and small teeth, teeth of claw 5 tending to be of similar size; distal hairs present along anterior margins of claws 1–3; medial hairs near base of claw 1 of left lamella.

Bellonci Organ (Figure 105*k*): Elongate, widening distally, with broadly rounded tip.

Eyes (Figure 105*k*): Medial eye bare with brown pigment. Lateral eye slightly smaller than medial eye, brown, with 5 or 6 ommatidia.

Upper Lip (Figure 105*l*): Helmet shaped.

Eggs: USNM 157807 with 9 eggs.

COMPARISONS.—The carapace of the new species *E. venezuelensis* resembles that of *E. truncana*

FIGURE 105.—*Eusarsiella venezuelensis*, new species, USNM 157807, holotype, adult female, length 1.12 mm: *a*, inside view of posterior of left valve showing peripheral bristles, bristles of infold of caudal process and 2 setal bristles; *b*, right first antenna, medial view; *c*, endopodite of left second antenna, medial view; *d*, right mandible, medial view; *e*, maxilla, medial view; *f*, exopodite of maxilla illustrated in *e*, as seen through limb; *g*, distal part of fifth limb; *h*, sixth limb; *i*, seventh limb; *j*, left lamella of furca; *k*, right lateral eye, medial eye, and bellonci organ; *l*, profile of upper lip, anterior to left.

(Kornicker, 1958:250) in lateral outline, but is less hirsute and bears more rugged ornamentation. The fourth joint of the first antenna of *E. venezuelensis* bears 3 ventral bristles compared to only 1 on *E. dominicana* new species, herein. The carapace of *E. venezuelensis* is more ornate than that of *E. punctata* (Kornicker, 1958:251) and bears more than 1 proximal anterior bristle on the endopodite of the second antenna. The infold of the caudal process of *E. venezuelensis* differs from that of *E. ovalis* Poulsen (1965:119) and appendages differ in the distribution and lengths of bristles on the first antenna, the endopodite of the second antenna and the seventh limb. The infold of the caudal process of *E. venezuelensis* differs considerable from that of *E. dentifera* Poulsen (1965:92) and the endopodite of the second antenna bears a small terminal spine absent on *E. dentifera.*

Eusarsiella athrix, new species

FIGURES 106–108

ETYMOLOGY.—The specific name from the Greek *athrix* (without hair) refers to the absence of a ventral bristle on the third joint of the female first antenna.

HOLOTYPE.—USNM 158381, ovigerous female, on slides and in alcohol.

TYPE-LOCALITY.—San Salvador (Dump Reef), Bahamas.

PARATYPES.—From type-locality: USNM 158382, 1 ovigerous female; USNM 158598, 1 adult female; USNM 158599, 13 juveniles.

DISTRIBUTION.—Collected only at type-locality. Depth 2.4 m (Table 1).

DESCRIPTION OF ADULT FEMALE (Figures 106–108).—Carapace in lateral view with fairly linear posterior margin and evenly rounded posteroventral corner (Figures 106, 107*b,c,g*); slight indication of incisur visible at high magnification (× 40 objective; Figure 107*a*); posterodorsal part of each valve bulbous.

Ornamentation (Figures 106, 107*a–c,g*): Surface with abundant fairly large fossae (Figure 106) and minute papillae (the latter larger in vicinity of valve edge, Figure 107*a*). Bristles sparsely distributed over valve surface and more abundant along edges (Figure 107*b,c,g*); posteroventral valve corner "caudal process" with about 10–15 fairly long bristles (Figure 107*b,c*). Surface not covered by gelatinous film.

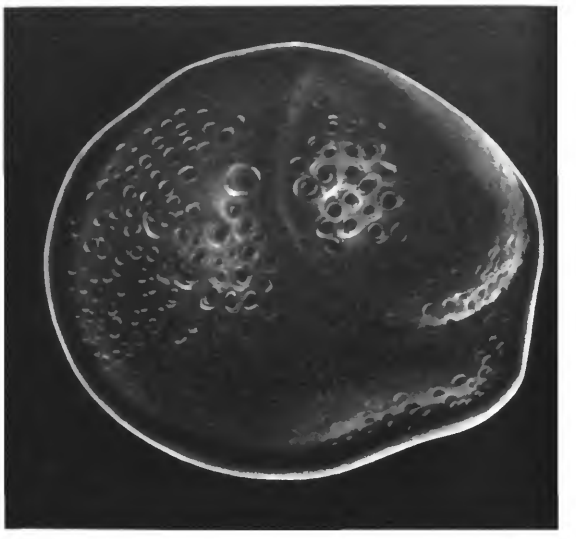
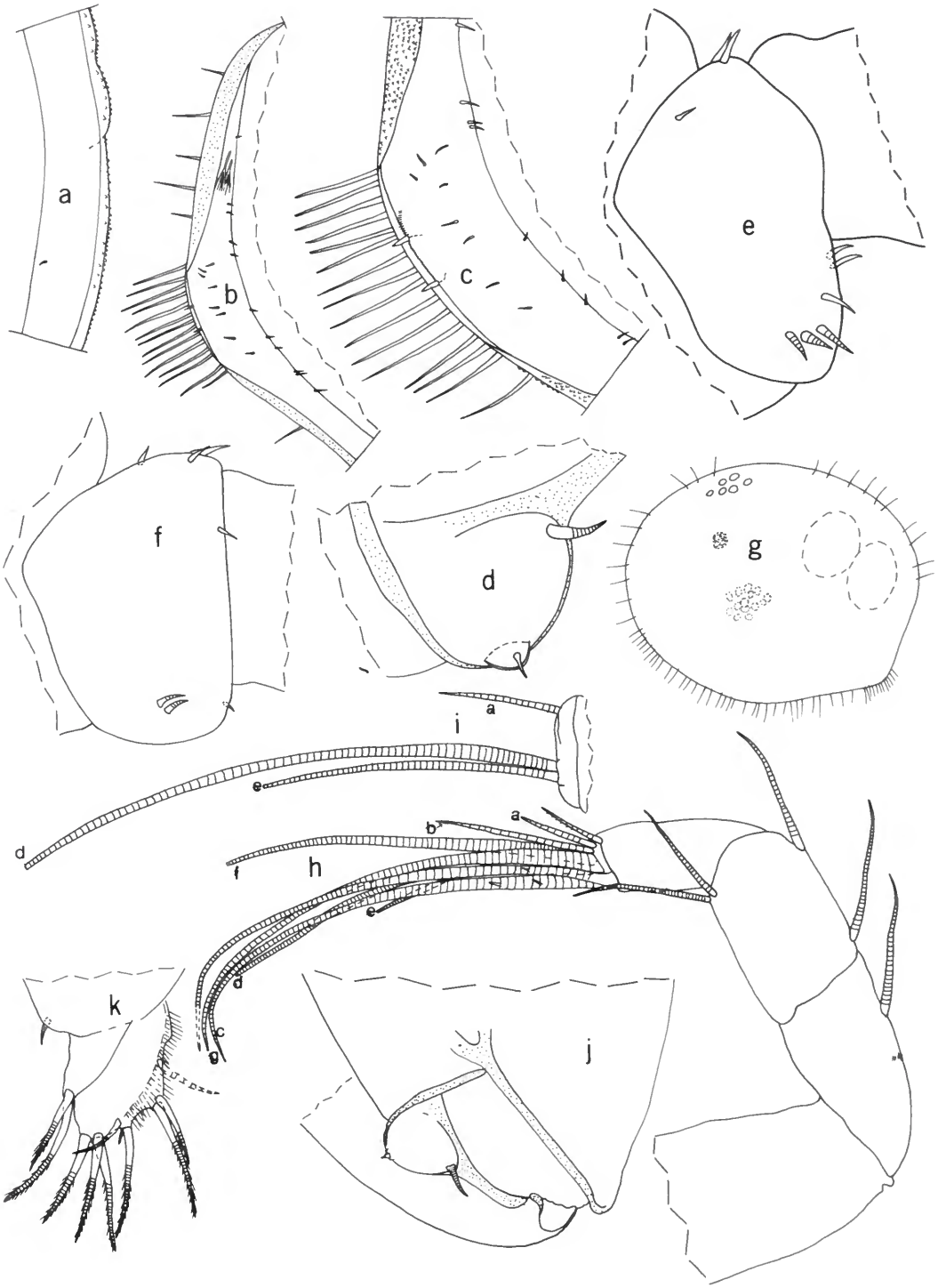


FIGURE 106.—*Eusarsiella athrix*, new species, USNM 158381, holotype, adult female, lateral view of complete specimen, length 1.08 mm.

FIGURE 107.—*Eusarsiella athrix*, new species, USNM 158381, holotype, adult female, length 1.08 mm: *a*, inside view of anterior of left valve showing minute anterior bristle of infold; *b*, inside view of posterior of left valve showing peripheral bristles, bristles of infold of caudal process and 2 setal bristles; *c*, detail from *b*, showing bristles in vicinity of caudal process; *d*, endopodite of left second antenna, medial view; *e*, basale of left mandible, medial view; *f*, lateral view of basale of right mandible (note bristle representing exopodite). USNM 158382, paratype, adult female, length 1.14 mm; *g*, lateral view of complete specimen showing position of 2 unextruded eggs, central adductor muscle attachments, left lateral eye, and representative fossae (near dorsal margin); *h*, right first antenna, medial view; *i*, lateral view of tip of left first antenna showing pointed a-bristle, long d-bristle, and shorter e-bristle (d- and e-bristles with blunt tips); *j*, part of left second antenna, medial view; *k*, distal part of fifth limb.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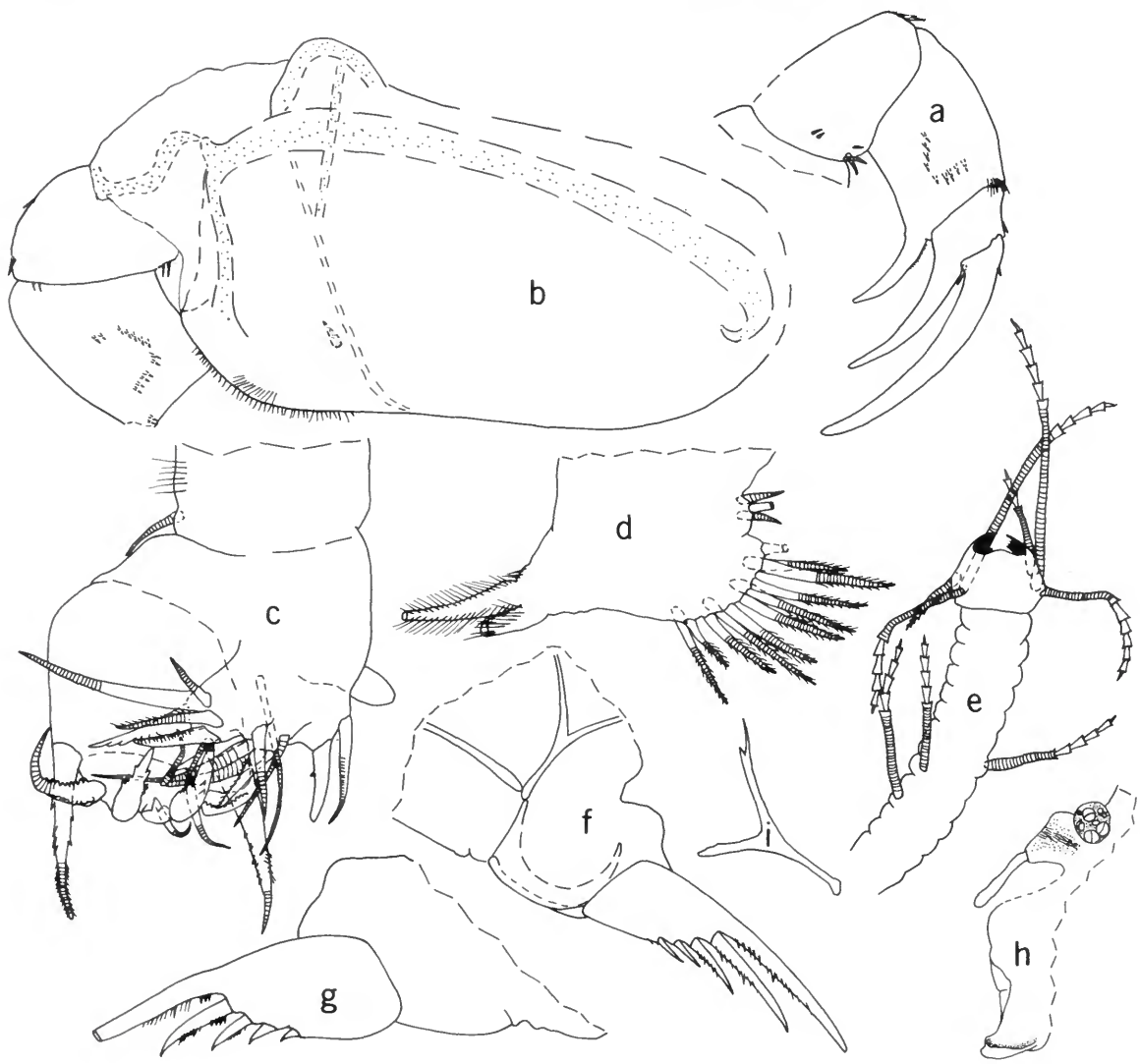

FIGURE 108.—*Eusarsiella athrix*, new species, USNM 158382, paratype, adult female, length 1.14 mm: *a*, basale and endopodite of right mandible, lateral view; *b*, coxale, basale, and first endopodial joints of left mandible, lateral view; *c*, maxilla, medial view; *d*, sixth limb; *e*, seventh limb; *f*, posterior of body showing right lamella of furca and sclerites; *g*, left lamella of furca; *h*, anterior of body showing left lateral eye, medial eye, bellonci organ, and upper lip; *i*, left Y-sclerite, anterior to left.

Infold (Figure 107*a–c*): Anterior infold with minute bristle near inner margin (Figure 107*a*). Infold of posterodorsal corner "caudal process" with about 8 small bristles near middle, additional smaller bristles along inner edge, and 2 short faint processes along outer edge (Figure 107*c*); posterior infold with 2 setal bristles near middle (Figure 107*b*).

Selvage: Free margin with wide, continuous, transparent lamellar prolongation with smooth outer edge.

Size: USNM 158381, length 1.08 mm, height 0.91 mm; USNM 158382, length 1.14 mm, height 0.96 mm; USNM 158598, length 1.06 mm, height 0.92 mm.

First Antenna (Figure 107*h,i*): First joint bare. Second joint with 1 dorsal bristle and few faint spines proximal to bristle. Third joint fused to fourth; short third joint with 1 dorsal bristle and no ventral bristle (3 specimens examined); long fourth joint with 3 subequal bristles (1 dorsal, 2 ventral). Sensory bristle of long fifth joint with minute proximal filament and spine at tip. Sixth joint fused to fifth joint, minute, with short medial bristle with few faint marginal spines. Seventh joint: a-bristle longer than bristle of sixth joint; b-bristle about twice length of a-bristle, bare except for minute terminal spine; c-bristle long, with 2 minute proximal filaments and minute terminal spine. Eighth joint: d- and e-bristles bare with blunt tips, e-bristle just reaching past middle of d-bristle; f- and g-bristles bare except for spine at tip, bristles about same length as c-bristle, but usually f-bristle shorter than c-bristle (distal part of f-bristle not shown on illustrated limb).

Second Antenna (Figure 107*d,j*): Protopodite bare. Endopodite with single proximal anterior bristle on large first joint; minute protuberance in middle of ventral margin could be small second joint; second joint with small terminal spine with broad base. Exopodite: first joint with minute medial distal bristle; bristles of joints 2–8 and longer of 2 bristles of ninth joint with proximal ventral spines and distal natatory hairs; short bristle of ninth joint with short marginal hairs; joints 2–7 or 2–8 with few spines forming row along distal margin.

Mandible (Figures 107*e,f*, 108*a,b*): Coxale endite represented by single stout spine, or with additional spine near base; ventral margin of coxale with spines and hairs. Basale: ventral edge with broad sclerotized area bearing 6 or more small bristles, some medial, others lateral; dorsal margin with 2 subterminal bristles and 1 near middle (the latter on medial side on some specimens); distal margin with none, 1, or 2 slender lateral spines or bristles near dorsal margin. Endopodite: first joint with medial spines and stout terminal ventral claw; second joint with minute subterminal dorsal bristle and stout terminal ventral claw; end joint with 2 minute bristles (1 ventral, 1 dorsal) and stout terminal claw.

Maxilla (Figure 108*c*): Coxale with short dorsal bristle and fringe of long hairs. Three endites with total of about 14 bristles. Basale with 1 bristle near exopodite. Exopodite with 3 bristles (2 short, 1 long). Endopodite: first joint with spinous alpha- and beta-bristles, both ringed distally; end joint with 2 short a-bristles, 1 short c-bristle, and 5 stout pectinate end bristles, the anterior of these ringed distally.

Fifth Limb (Figure 107*k*): Epipodial appendage with 31 bristles. Single endite with 1 small bare bristle. Exopodite: first joint with 2 spinous bristles; joints 2–5 fused, hirsute, with total of 9 bristles (1 of these minute).

Sixth Limb (Figure 108*d*): Single endite with 3 bristles. End joint with posterior projection bearing 2 stout hirsute bristles, and with 11 anteroventral bristles.

Seventh Limb (Figure 108*e*): Proximal group with 3 or 4 bristles (1 or 2 on each side), each with 4 or 5 distal bells; distal group with 6 bristles (3 on each side), each with 3–6 distal bells. Terminus with opposing combs. Each with 6–8 curved teeth.

Furca (Figure 108*f,g*): Each lamella with 5 claws; claw 1 fused to lamella, remaining claws separated from lamella by suture; claw 1 of right lamella anterior to claw 1 of left lamella; 2 small spines present on lamella following claw 5; posterior margins of claws 1–3 with short and long teeth.

Bellonci Organ (Figure 108*h*): Elongate, widening distally, with either broadly rounded or squarish tip.

Eyes: Medial eye bare with brown pigment

(Figure 108*h*). Lateral eye smaller than medial eye, with brown pigment and 5 divided ommatidia of varying size and smaller oval amber cells (Figure 108*h*).

Upper Lip (Figure 108*h*): Simple, helmet shaped.

Y-Sclerite: Tip of dorsal branch with terminal fork on left Y-sclerite of USNM 158382 (Figure 108*i*), right Y-sclerite normal (Figure 108*f*).

Eggs: USNM 158382 with 5 eggs (2 shown in Figure 107*g*) in marsupium and additional smaller unextruded eggs; USNM 158381 with 4 eggs in marsupium and additional smaller unextruded eggs.

Gut Content: USNM 158381 with large nematode in gut.

COMPARISONS.—The carapace of the new species *E. athrix* closely resembles that of *E. punctata* (Kornicker, 1958:251). It differs from that species in not having a ventral bristle on the third joint of the female first antenna. The carapace of *E. athrix* is higher relative to length than that of the female of *E. ovalis* Poulsen (1965:119). Also, the first antenna of the latter species has a ventral bristle on the third joint of the first antenna. *E. ovalis* also differs in the distribution of bristles on the infold of the caudal process (Poulsen, 1965, fig. 39*b*). The carapace of *E. athrix* also resembles that of *E. dominicana* described herein. It differs from that species in not having a ventral bristle on the third joint of the first antenna, and in having more ventral bristles on the fourth joint. The carapace of *E. athrix* differs from that of *E. absens* (Kornicker, 1980:2) in not having lateral ribs; the latter species also differs from *E. athrix* in not having a terminal bristle on the endopodite of the female second antenna.

Eusarsiella culteri, new species

FIGURES 109, 110

ETYMOLOGY.—This species was named for James Culter, who collected specimens.

HOLOTYPE.—USNM 157972, ovigerous female on slide and in alcohol.

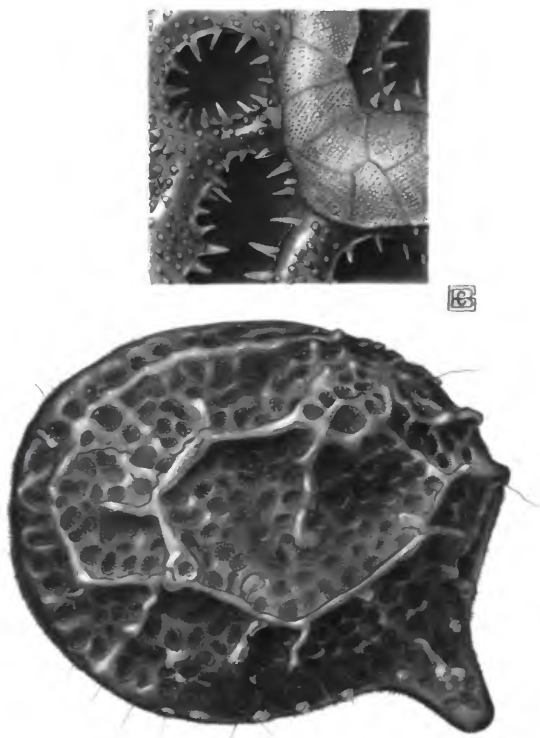

FIGURE 109.—*Eusarsiella culteri*, new species, USNM 157972, holotype, adult female, lateral view and detail of complete specimen, length 1.23 mm.

TYPE-LOCALITY.—West Florida continental shelf, BLM sta 4.

PARATYPES.—West Florida shelf: USNM 193082, 2 females from same station as holotype; 1 adult female, BLM sta 24.

DISTRIBUTION.—West Florida shelf. Known depth range 55.8–88.4 m (Figure 4, Table 1).

FIGURE 110.—*Eusarsiella culteri*, new species, USNM 157972, holotype, adult female, length 1.23 mm: *a*, right first antenna, medial view; *b*, part of right second antenna, medial view; *c*, left mandible, medial view; *d*, maxilla, medial view; *e*, distal part of fifth limb; *f*, sixth limb; *g*, seventh limb; *h*, left lamella of furca, medial view; *i*, anterior of body showing left lateral eye, medial eye, bellonci organ, and upper lip (ventral curvature); *j*, posterior of body showing part of left lamella of furca, left genital process, left Y-sclerite (stippled), sclerite forming girdle, and sclerite connecting Y-sclerite and furca.


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DESCRIPTION OF ADULT FEMALE (Figures 109, 110).—Carapace oval in lateral view, with well developed caudal process (Figure 109).

Ornamentation (Figure 109): Each valve with numerous ribs and riblets; surface of ribs with numerous minute spines separated into polygons (detail in Figure 109); surface of valve with abundant short spines and fossae; spines pointing inward within edge of fossae (detail in Figure 109); minute processes forming row along ventral edge of valve and on caudal process; surface and margins with scattered bristles. Surface not coated by gelatinous substance.

Infold: Anterior infold with minute bristle near middle of valve; infold of caudal process with 6 small bristles forming proximal row perpendicular to axis to caudal process; 2 setal bristles present on posterior infold near midheight of valve; several minute bristles present along inner edge of infold in vicinity of caudal process.

Selvage: Broad lamella prolongation with smooth edge present along free margin of each valve.

Central Adductor Muscle Attachments: Consisting of about 13 oval scars.

Size: USNM 157972, length 1.23 mm, height 0.98 mm; USNM 193082, 2 specimens, length 1.27 mm, height 1.18 mm, length 1.21 mm, height 1.12 mm.

First Antenna (Figure 110*a*): First joint bare. Second joint with 1 dorsal bristle. Third and fourth joints fused; third joint with 2 bristles (1 ventral, 1 dorsal); fourth joint with 3 bristles (2 ventral, 1 dorsal). Sensory bristle of long fifth joint with 2 indistinct short filaments (tip of bristle missing on illustrated limb). Sixth joint minute, fused to fifth joint, with small medial bristle. Seventh joint: a-bristle more than 3 times length of bristle of sixth joint; b-bristle slender, bare, longer than a-bristle; c-bristle long, with 3 indistinct, minute filaments. Eighth joint: d- and e-bristles slightly shorter than c-bristle, bare with blunt tips; f-bristle bare (tip missing on illustrated limb); g-bristle slightly shorter than c-bristle, with 2 or 3 indistinct, minute filaments.

Second Antenna (Figure 110*b*): Protopodite bare. Endopodite weakly 2-jointed: first joint with 2 or 3 short anterior bristles; second joint with long spinous terminal bristle. Exopodite: first joint with minute, recurved, terminal, medial bristle; bristle of second joint long, with 13 or 14 proximal ventral spines and distal natatory hairs; bristles of joints 3–8 with ventral spines and natatory hairs; ninth joint with 1 long ventral bristle with ventral spines and natatory hairs, and 1 short dorsal bristle with natatory hairs.

Mandible (Figure 110*c*): Coxale: endite represented by small spine; ventral margin with stiff spines. Basale: ventral margin with 2 small unringed bristles, and 2 longer ringed bristles; dorsal margin with small terminal bristle. First endopodial joint with numerous medial spines, spines forming row terminally on dorsal margin, and stout ventral claw with minute spines forming proximal row on dorsal margin. Second endopodial joint with small dorsal bristle and stout ventral claw. Third endopodial joint with stout terminal claw having 3 minute bristles at base (1 dorsal, 2 ventral).

Maxilla (Figure 110*d*): Three endites with pectinate claws and spinous ringed bristles. Coxale with small dorsal bristle and dorsal fringe of long hairs. Basale with bristle near exopodite. Exopodite small, with 2 bristles. First endopodial joint with spinous alpha- and beta-bristles, and indistinct distal spines along dorsal margin. Second endopodial joint with 2 small a-bristles, 1 small c-bristle, and 5 pectinate end bristles.

Fifth Limb (Figure 110*e*): Single endite with 1 small bristle. Exopodite: first joint with 2 spinous bristles; second joint with 2 spinous bristles; third to fifth joints fused, with total of 5 bristles.

Sixth Limb (Figure 110*f*): Single endite with 3 bristles. End joint with 11 bristles with short marginal spines followed by space and then 2 stout hirsute bristles.

Seventh Limb (Figure 110*g*): Two bristles in proximal group, 1 on each side, each bristle with 4 bells; 6 bristles in terminal group, 3 on each side, each bristle with up to 7 bells. Terminus

consisting of opposing comb, each with 3–5 recurved teeth (not all teeth shown on illustrated limb).

Furca (Figure 110*h*): Each lamella with 5 slender pointed claws; claw 1 fused to lamella, remaining claws separated from lamella by suture; right lamella slightly anterior to left lamella; right lamella of USNM 157972 aberrant in having additional small claw following claw 5; each lamella with several spines following last claw; claws 1–4 with long teeth interspersed with shorter, more slender teeth.

Bellonci Organ (Figure 110*i*): Elongate, broadening distally, with rounded tip.

Eyes (Figure 110*i*): Medial eye bare with brown pigment; lateral eye smaller than medial eye, brown with 4 ommatidia.

Upper Lip (Figure 110*i*): Typical for genus.

Genitalia (Figure 110*j*): Oval sclerotized ring on each side of body anterior to furca.

Posterior of Body (Figure 110*j*): Bare.

Y-Sclerite (Figure 110*j*): Typical for genus.

Eggs: USNM 157972 with 4 eggs in marsupium; USNM 193082 with 3 eggs in marsupium.

COMPARISONS.—The placement of ribs and riblets on the carapace of *E. culteri* differs from that of previously described species. The polygonal surface of the ribs is unusual. The presence of a long terminal bristle on the endopodite of the second antenna of the female is not present on many species of *Eusarsiella*.

Eusarsiella species B

FIGURE 111*a*

Sarsiella greyi Darby, 1965:38, pl. 27: fig. 10 [only paratype UMMP 48815].

MATERIAL.—UMMP 48815, adult female on 4 slides: 1, separated valves; 2, left first antenna; 3, left second antenna; 4, wholemount of remaining appendages.

DISTRIBUTION.—Off Georgia, depth 24.7 m.

DESCRIPTION OF ADULT FEMALE (Figure 111*a*).—Carapace bulbose in posterodorsal part;

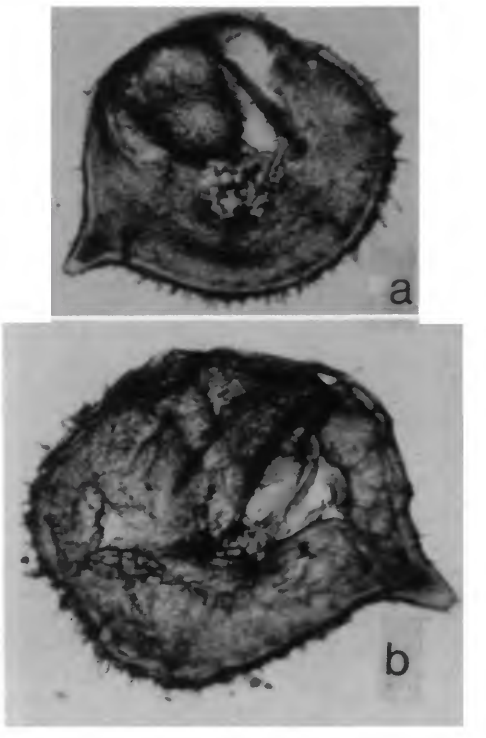

FIGURE 111.—*a*, *Eusarsiella* species B, UMMP 48815, adult female, exterior of right valve, length 0.97 mm, (from Darby, 1965, pl. 27: fig. 10); *b*, *Eusarsiella* species C, UMMP 48816, juvenile male, length 1.15 mm, exterior of left valve (from Darby, 1965, pl. 28: fig. 4).

caudal process shorter than that of *Eusarsiella greyi* (compare Figure 111*a* with Figure 49).

Infold: Infold of caudal process with 3 or 4 proximal bristles and 1 distal bristle; additional smaller bristles present along inner margin of infold in general vicinity of caudal process; 2 setal bristles on posterior infold; small bristle on anterior infold near inner margin.

Size: Length 0.90 mm, height 0.84 mm (Darby, 1965:39). My measurement of disarticulated right valve mounted in Turtox CMC-10 (nonresinous mounting medium): length including caudal process 0.97 mm, length without caudal process 0.90 mm, height 0.82 mm.

First Antenna: Second joint with dorsal spines

forming rows, and 1 dorsal bristle about same length as fourth joint. Third joint with medial and dorsal spines and 2 bristles (1 dorsal bristle about ¼ longer than bristle of second joint, and 1 very small ventral bristle). Fourth joint fused to third, with abundant medial and dorsal spines and 3 or 4 bristles (1 spinous dorsal bristle about the same length as dorsal bristle of third joint, 2 ventral bristles about same length as dorsal bristle, and 1 ventral bristle about ½ length of dorsal bristle, present only on left limb. Fifth joint with spines along dorsal margin and long ventral bristle with spine at tip. Sixth joint fused to fifth, with small bare medial bristle. Seventh joint: a-bristle more than twice length of bristle of sixth joint; b-bristle about ½ length of bristle of fifth joint; c-bristle same length as bristle of fifth joint, without marginal filaments. Eighth joint: d- and e-bristles bare with blunt tips (d-bristle more than ¾ length of c-bristle; e-bristle about ⅔ length of d-bristle); f- and g-bristles longer than d-bristle but shorter than c-bristle, without marginal filaments; c-, f-, and g-bristles with minute terminal spine.

Second Antenna: Protopodite bare. Endopodite single jointed, with 2 short, proximal, anterior bristles, and minute terminal spine. Exopodite: first joint with minute medial bristle on distal margin and spines along ventral margin; bristle of second joint with very slender, proximal, ventral spines, and distal natatory hairs; bristle of joints 3 and 4 with slender ventral spines and distal natatory hairs; bristles of joints 5–8 with only natatory hairs; ninth joint with 1 long bristle with few, faint, proximal spines and distal natatory hairs, and 1 short dorsal bristle (dorsal bristle not present on left limb).

Mandible: Coxale endite consisting of stout spine; ventral margin of coxale hirsute. Basale: 6 small bristles near or on ventral margin (1 bristle in proximal group about 3 times longer than others); dorsal margin with 1 small midbristle on left limb, none on right, and 2 small subterminal bristles. Exopodite absent. Endopodite: first joint with medial spines and stout ventral claw; second joint with 1 minute dorsal bristle, and 1 stout ventral claw longer than claw of first joint; third joint with stout ventral claw longer than claw of second joint and 2 minute bristles (1 ventral, 1 dorsal).

Maxilla, Fifth and Sixth Limbs: Similar to those of female *Eusarsiella greyi.*

Seventh Limb: Two cylindrical bristles in proximal group (1 on each side), each bristle with 3 bells, 6 cylindrical bristles in terminal group (3 on each side), each bristle with up to 5 bells. Terminus consisting of opposing combs, each with 5 or 6 faint teeth.

Furca: Each lamella with 5 slender claws with teeth along posterior margin; claws 2 and 3 with 5 or 6 stout proximal teeth followed by distal sets of long and short teeth; claw 5 with a few faint anterior spines; claw 1 fused to lamella, following claws separated from lamella by suture; lamellae following claws without stout spines like those on furca of *Eusarsiella greyi* (only a single faint spine following claws of left lamella).

Bellonci Organ: Missing from slides.

Eyes: Medial eye missing from slides. Lateral eye with black pigment and 4 divided ommatidia.

Genitalia: Oval process on each side of body anterior to anus.

Y-Sclerite: Typical for genus.

COMPARISONS.—The short caudal process on the unique specimen of *Eusarsiella* species B does not permit its inclusion in *E. greyi.* The appendages differ from those of *E. greyi* mainly in that the first antenna bears numerous spines on joints 4 and 5. The first antenna of *Eusarsiella* species B differs from that of *E. vema,* new species, in having a ventral bristle on the third joint.

Eusarsiella species C

FIGURE 111*b*

Sarsiella greyi Darby, 1965:38, pl. 28 [only paratype UMMP 48816].

MATERIAL.—UMMP 48816, 14 slides including appendages and left valve.

DISTRIBUTION.—Off Georgia, depth 24.7 m.

DESCRIPTION OF JUVENILE MALE (instar IV;

Figure 111*b*).—Carapace with large posterodorsal process; ribs extending anteriorly from central adductor muscle area, rib continuing posterodorsally onto posterodorsal process; latter rib without nodes.

Infold: Infold of caudal process with 2 proximal and 1 distal bristles; 2 similar bristles present on inner margin of infold near caudal process (1 of these between caudal process and 2 posterior setal bristles, but much closer to caudal process than to setal bristles).

Size: Length 1.09 mm, height 0.936 mm (Darby, 1965:39). My measurement of disarticulate left valve mounted in Turtox CMC-10: length including caudal process 1.15 mm, length without caudal process 1.08 mm; height 0.96 mm.

First Antenna (Darby, 1965, pl. 28: fig. 1): Second joint with numerous dorsal spines forming rows, few distal ventral spines, and 1 dorsal bristle about ¼ longer than fourth joint. Third joint with medial, dorsal and ventral spines and 2 bristles (1 dorsal bristle about same length as bristle of second joint, and 1 small ventral bristle). Fourth joint fused to third, with abundant medial, dorsal and ventral spines and 4 bristles (1 spinous dorsal bristle about ¼ length shorter than dorsal bristle of third joint, 2 ventral bristles about ⅔ length of dorsal bristle, and 1 small ventral bristle (present only on left limb). Fifth joint with numerous spines along dorsal margin and 1 long ventral bristle with short filament near middle and spine at tip. Sixth joint fused to fifth with small bare medial bristle. Seventh joint: a-bristle bare, more than twice length of bristle of sixth joint; b-bristle slender, about ½ length of bristle of fifth joint; c-bristle about same length as bristle of fifth joint, with small proximal filament. Eighth joint: d- and e-bristles bare with blunt tips (d-bristle more than ¾ length of c-bristle; e-bristle about ⅔ length of c-bristle); f-bristle about same length as d-bristle; g-bristle slightly shorter than c-bristle, with 1 proximal filament; c-, f-, and g-bristles with minute terminal spine.

Second Antenna (Darby, 1965, pl. 28: fig. 6): Protopodite bare. Endopodite with 2 joints: first joint with medial spines forming rows near middle and 2 short, proximal, anterior bristles bearing faint marginal spines; second joint small, with 3 bristles (1 minute and 2 about ¾ length of bristles on first joint). Exopodite: first joint with faint ventral spines and small, terminal, medial bristle; bristle of second joint with proximal ventral spines and distal natatory hairs; bristles of joints 3–7 with natatory hairs; bristle of eighth joint with slender proximal ventral spines and distal natatory hairs; ninth joint with 2 bristles (1 long with slender proximal ventral spines and distal natatory hairs, 1 short, dorsal, with few slender spines).

Mandible (Darby, 1965, pl. 28: fig. 2): Morphology similar to that of *Eusarsiella* species B (UMMP 48815) except with considerably more medial spines on first endopodial joint, and with proximal ventral bristle of basale about ¼ longer.

Maxilla (Darby, 1965, pl. 28: fig. 1): Morphology similar to that of female *E. greyi*.

Fifth and Sixth Limbs: Similar to those of female *E. greyi*.

Seventh Limb: Not present according to Darby (1965:39).

Furca (Darby, 1965, pl. 28: fig. 7): Similar to that of female *E. greyi*, 4 or 5 stout spines and several smaller spines following claw 5 of each lamella.

Bellonci Organ: Elongate, broadening distally, with rounded tip.

Eyes: Medial eye bare, well developed. Lateral eye only slightly smaller than medial eye, with 5 divided ommatidia.

Copulatory Organ (Darby, 1965, pl. 28: fig. 7): Only partly developed, consisting of small lobes bearing 1–3 minute bristles.

Y-Sclerite: Typical for genus.

COMPARISONS.—*Eusarsiella* species C differs from *E. greyi* in having numerous spines on the fourth and fifth joints on the first antenna. It shares that character with *Eusarsiella* species B described herein. The single instar IV male of *Eusarsiella* species C is larger than the single ovigerous female of *Eusarsiella* species B, and has

a longer caudal process. The endopodite of the second antenna of *Eusarsiella* species C resembles that of the male *E. radiata* but differs in having an additional proximal anterior bristle on the first joint. Ribs on carapace are similar to those of *E. nodimarginis*, except posterodorsal rib without nodes. When the adult male of *E. nodimarginis* is known, it may be possible to refer *E.* species C to that species.

REMARKS.—Because the seventh limb of *Eusarsiella* species C is not known, it is not certain that the species belongs in *Eusarsiella* rather than *Sarsiella*; however, because no other species of *Sarsiella* is known from the study area I have referred the species to *Eusarsiella*.

Reproduction

Kornicker (1975a:49, figs. 25–28; 1981:35, fig. 6) presented data indicating that clutch size is, in part, a function of carapace size in the families Cypridinidae, Philomedidae, and Cylindrolebrididae, but found no significant correlation between carapace length and clutch size in the Sarsiellidae and Rutidermatidae (Kornicker, 1975a:52). The relationship between clutch size and carapace length in the Sarsiellidae was calculated herein using the data of Kornicker (1975a, table 18; 1983:7, 11, 17), Kornicker and Bowen (1976:502), Kornicker and Caraion (1978:11, 17, 22, 27, 33, 36, 40, 47, 50; 1980:8, 15) and the new data obtained in this study. Clutch size was found to be, in part, a function of carapace size in the Sarsiellidae (Figure 112; $y = 1.9x + 3.8$, $r = 0.25$, $N = 57$; correlation coefficient significant at the 0.05 level). Members of *Spinacopia*, a genus usually restricted to bathyal and abyssal depths, appears to have fewer eggs for a given carapace length than most other members of the Sarsiellinae (Figure 112). Members of the Dantyinae also appear to have fewer eggs than most members of the Sarsiellinae (Figure 112). The curve relating clutch and carapace size of the Sarsiellinae excluding *Spinacopia* (Figure 112; $y = 5.1x + 0.34$, $r = 0.48$, $N = 46$) is steeper than that of the Sarsiellidae and closer to the relationship found with the Cypridinidae, Philomedidae, and Cylindroleberididae. The correlation coefficient of the Sarsiellinae excluding *Spinacopia* is significant at the 0.01 level. The equation for slopes of lines for *Dantyinae* and *Spinacopia*, respectively, are $y = 4.2x - 3.5$ and $y = 2.0x + 1.5$, but correlation coefficients are not significant at the 0.05 level. The latter is probably the result of few samples.

Eggs are quite small when they first appear in the ovaries, becoming larger as they progress through the ducts. When deposited in the marsupium each egg appears as an undifferentiated mass or as a membrane enclosing numerous globules. Each egg undergoes further development in the marsupium; lateral eyes (when present in that species) and appendages appear. Eventually, the eggs are released almost as a unit from the marsupium, and each larva escapes from the membrane as the first instar.

A second clutch of eggs develops within the ovaries of many species while the previous clutch is still present in the marsupium (Table 7). The term "clutch overlap" is used herein for this phenomenon. The second clutch is usually easily differentiated from the clutch in the marsupium by the smaller size of eggs. Clutch overlap may be an adaptation permitting more rapid clutch production.

The observation of clutch overlap in a specimen is useful in revealing that the species of which the specimen is a member is capable of having at least 2 clutches of eggs. Not all species having more than a single clutch have clutch overlap; for example, Cohen (1983:250) observed that in *Skogsbergia lerneri* (Kornicker, 1958:229) new eggs became visible in the ovaries 2–4 days (maximum 9 days) after the release of the previous brood from the marsupium. The variability of the time in which the new eggs became visible in the ovaries (2–9 days) suggests the possibility that clutch overlap may not consistently occur in the same specimen or species.

The absence in Table 7 of members of the Rutidermatidae, Pseudophilomedinae, Cylindro-

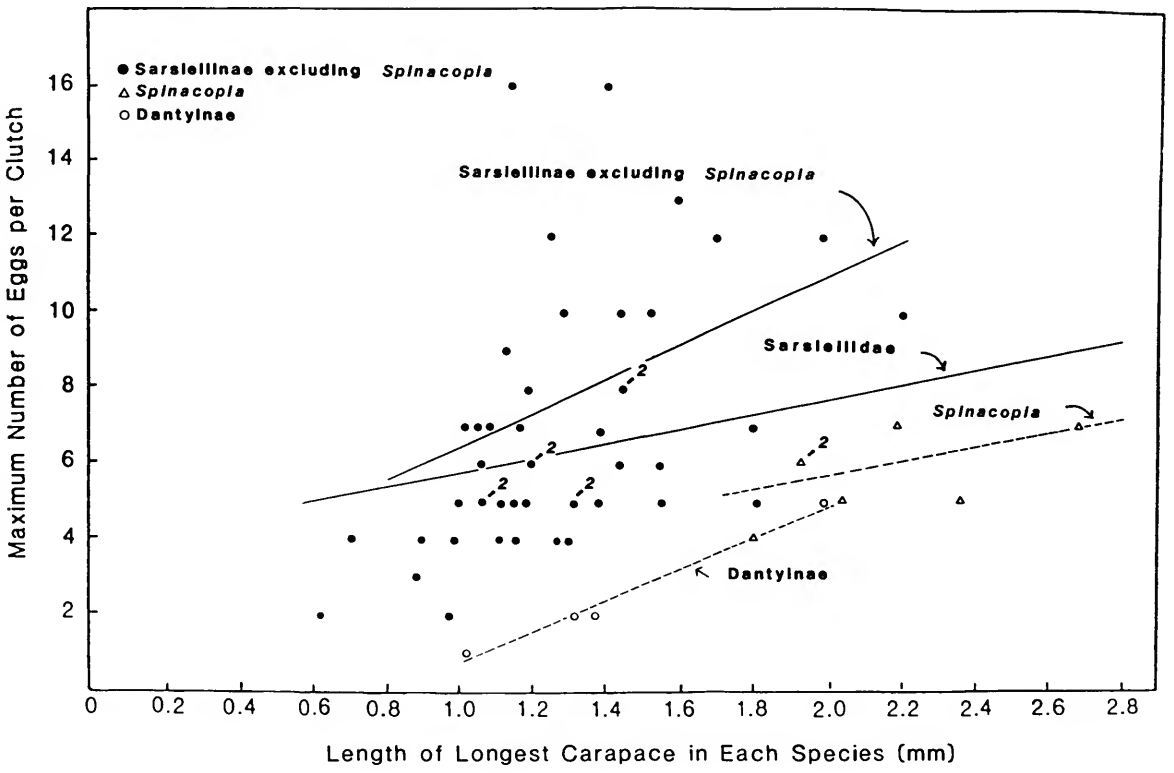

FIGURE 112.—Comparison of relation between the maximum number of eggs per clutch and the maximum length of carapace in the Sarsiellidae, the subfamily Sarsiellinae excluding *Spinacopia*, the subfamily Dantyinae, and the genus *Spinacopia*.

leberidinae, and Cyclasteropinae could be the result of lack of observations, lack of clutch overlap, or because species produce only a single clutch of eggs.

In a field study of the life history of *Sarsiella japonica* Hiruta (1977:44; 1980b:41) concluded that the species has a single generation per year, and that adult females are able to produce eggs at least twice during the reproductive period. The latter conclusion was based on an adult female with large eggs in the ovaries and no eggs in the marsupium being collected at the end of the reproductive period; this suggested to Hiruta (1980:44) that a batch of eggs had left the marsupium prior to the capture of the specimen. Many members of the Sarsiellidae have at least 2 clutches of eggs and clutch overlap (Table 7). Specimens of *S. japonica* having eggs both in the ovaries and marsupium were not mentioned by Hiruta (1977; 1980b).

Hulings (1969:420) concluded from a field study of *Parasterope pollex* Kornicker, 1967, inhabiting Hadley Harbor, Massachusetts, that the brooding period ranges from 3 to 4 weeks, and that the breeding females die after the brooding period. Whether the females have more than 1 clutch during the brooding period is not known. Müller (1894:174) observed that a living female of *Cylindroleberis teres* (Norman, 1861:280) had more than 1 brood, but he did not mention clutch overlap. Fenwick (1984:275) observed that females of *Leuroleberis zealandica* (Baird, 1850:102) appear to produce only 1 brood of eggs.

TABLE 7.—Species of Myodocopina having eggs both in the ovaries and marsupium.

Taxon	Number of Specimens	Reference
CYPRIDINIDAE		
CYPRIDININAE		
Metavargulus optilus	1	Kornicker (1968:448)
Gigantocypris muelleri	several	Skogsberg (1920:213)
PHILOMEDIDAE		
PHILOMEDINAE		
Euphilomedes producta	several	Baker (1977:250)
Philomedes brenda	1	Skogsberg (1920:355), Elofson (1969:165)
CYLINDROLEBERIDIDAE		
ASTEROPTERONINAE		
Asteropella kaufmani	1	Kornicker (1981:271)
Asteropella monambon	1	Kornicker (1981:227)
Microasteropteron bacescui	2	Kornicker (1981:351)
SARSIELLIDAE		
DANTYINAE		
Nealella muelleri	1	Kornicker (1983:17)
SARSIELLINAE		
Adelta theta	1	Kornicker (1975:645)
Ancohenia hawaiiensis	1	Kornicker (1976:11)
Junctichela margalefi	1	Kornicker and Caraion (1978:50)
Chelicopia arostrata	1	present paper (p. 33)
Eusarsiella neapolis	1	Kornicker and Caraion (1978:17)
Eusarsiella ocula	1	Kornicker and Caraion (1978:33)
Eusarsiella gomoiui	1	Kornicker and Caraion (1978:40)
Eusarsiella rudescui	1	Kornicker and Caraion (1978:47)
Eusarsiella africana	2	Kornicker and Caraion (1978:27)
Eusarsiella zostericola	several	Kornicker (1967:16)
Eusarsiella disparalis	2	Darby (1965:40)
Eusarsiella costata	1	present paper (p. 64)
Eusarsiella spinosa	2	present paper (p. 75)
Eusarsiella texana	3	present paper (p. 83)
Eusarsiella pilipollicis	3	present paper (p. 104)
Eusarsiella radiicosta	7	present paper (p. 109)
Eusarsiella dominicana	1	present paper (p. 161)
Eusarsiella athrix	2	present paper (p. 168)
Eusarsiella greyi	2	present paper (p. 88)
Eusarsiella gettlesoni	2	present paper (p. 131)
Eusarsiella bakeri	2	present paper (p. 154)
Eusarsiella paniculata	1	present paper (p. 61)
Eusarsiella nodimarginis	1	present paper (p. 101)

Familial Relationships

FIGURE 113

Kornicker and Sohn (1976:4) concluded that the order Myodocopida formed a monophyletic group having as a sister group the order Halocyprida containing suborders Cladocopina and Halocypridina. The character state in the sister group has been used herein to interpret directionality of character states in families within the Myodocopia.

Autapomorphic character states identify

monophyletic groups but do not show relationships between the groups. The Cylindroleberididae have many autapomorphic character states, including the "baleen-comb" on the maxilla, and a flat distal comb on the fifth limb. The Cypridinidae have at least one strong autapomorphic character state: the c- and f-bristles of the adult male bear discs used by the male for grasping the female during copulation (the discs could be sense organs). The Rutidermatidae have chela-like claws on the mandible of the adult female and juveniles of both sexes (the claw on the second endopodial joint forms a pincer with the main claw of the end joint). The Sarsiellidae have a stout claw on the first endopodial joint of adult females and juveniles of both sexes. The upper lip of the Philomedidae tapers anteriorly and bears anterior tubular glandular openings in addition to more proximal lateral slit-like glandular openings. The directionality of this character state is uncertain, and the lip is not in my opinion strong evidence that the Philomedidae is a monophyletic group; however, I have assumed it to be a monophyletic group in this analysis.

Synapomorphies indicate relationships between groups. I have interpreted the following character states to be synapomorphies.

1. Strong adult sexual dimorphism of the sensory bristle of the fifth joint of the fifth antenna. This indicates a possible synapomorphy in the Cylindroleberididae, Philomedidae, Sarsiellidae, and Rutidermatidae.

2. Strong adult sexual dimorphism of the maxilla and fifth limb. This indicates a probable synapomorphy in the Philomedidae, Sarsiellidae, and Rutidermatidae.

3. Extreme reduction of the fifth joint of the first antenna of the adult male. This indicates a probable synapomorphy in the Philomedidae, Rutidermatidae, and Sarsiellidae.

4. Large tooth on second exopodial joint of fifth limb of

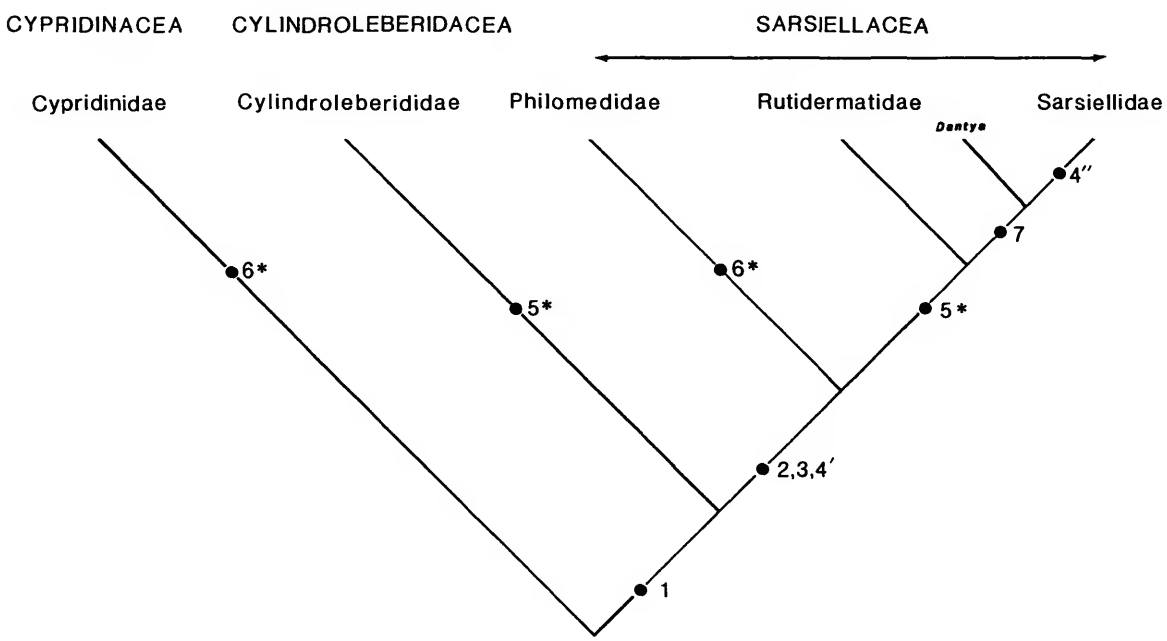

FIGURE 113.—Cladogram reconstructing phylogeny of the suborder Myodocopina and indicating proposed composition of superfamilies. Solid circles indicate synapomorphies; asterisks indicate convergences; single prime indicates possible convergence; double prime indicates late development. Numbers refer to numbered morphological characters referred to in text (see above).

adult females and juveniles of both sexes. This indicates a probable synapomorphy in the Philomedidae, Rutidermatidae, and in the genus *Dantya* of the Sarsiellidae (see below).

5. Absence of glands in the upper lip. This indicates a probable synapomorphy in the Rutidermatidae and Sarsiellidae, and possibly in some Cylindroleberididae.

6. Presence of slit-like glandular openings in the upper lip. This indicates a possible synapomorphy in the Cypridinidae and Philomedidae, but was probably a convergence.

7. Stout claw on first endopodial joint of the mandible of adult females and juveniles of both sexes. This indicates a probable synapomorphy in the subfamiles Dantyinae and Sarsiellinae. This character state is autapomorphic for the Sarsiellidae.

A classification based on only a few synapomorphies must be considered tentative. The Cylindroleberididae is a divergent type clearly separated from other familes and has been recognized as such by most investigators. If this family is excluded from the analysis, then synapomorphic character states 1, 2, 3 suggest a close relationship of the Philomedidae, Rutidermatidae, and Sarsiellidae. This relationship produces 1 convergence (character 6). In contrast, if character state 6 is considered synapomorphic it would suggest a close relationship of Cypridinidae and Philomedidae. That relationship produces 3 convergences (characters 1, 2, 3). Clearly the first relationship is parsimonious. Synapomorphic character state 5 suggests a close relationship of Rutidermatidae and Sarsiellidae. This presents no convergences except possibly in character 4. Character 4 concerns a large tooth on the fifth limb of Philomedidae and Rutidermatidae, which also is present in the genus *Dantya* of the Sarsiellidae. Because other genera of Sarsiellidae have only bristles on the fifth limb, they are convergent with the Cypridinidae (the cypridinids have claws not bristles). I interpret the absence of the tooth on most sarsiellids to be an apomorphic condition, having evolved after the lineage containing the genus *Dantya* had diverged from the Rutidermatidae. If this interpretation is correct character 4 could be an additional synapomorphy suggesting a close relationship of Philomedidae, Rutidermatidae, and Sarsiellidae.

The relationship of the Cylindroleberididae to other families is difficult to assess. Unlike members of other families it is a filter feeder and many of its appendages are adapted for that habit. Apomorphic character state 1 suggests a close relationship of Cylindroleberididae, Philomedidae, Rutidermatidae and Sarsiellidae. I could identify no synapomorphic character state showing a close relationship of the Cypridinidae, Philomedidae, Rutidermatidae, and Sarsiellidae. Therefore, I have portrayed the Philomedidae, Rutidermatidae, and Sarsiellidae as being more closely related to the Cylindroleberididae than to the Cypridinidae in the reconstructed phylogeny (Figure 113). This produces a possible convergence (character 5). Character 5 refers to the absence of glands in the upper lip. The upper lip of Cylindroleberididae has received little study and reports are conflicting. Skogsberg (1920:170) states that the Cylindroleberididae have a gland in the upper lip, whereas, Cannon (1933:758) states that labral glands in the cylindroleberidids are minute or absent.

My interpretation supports suspicions about myodocopine relationships raised previously by Poulsen (1965:483). If only *Bauplane* of the cylindroleberids is considered, the placement of the Cylindroleberididae and Cypridinidae on the cladogram (Figure 113) would be reversed. Inclusion of the cylindroleberids in the initial analysis would not have changed conclusions.

Based on the above considerations I propose that the 3 superfamilies established by McKenzie et al. (1983:38) comprise the following families.

Cypridinacea
  Cypridinidae
Cylindroleberidacea
  Cylindroleberididae
Sarsiellacea
  Philomelidae
  Rutidermatidae
  Sarsiellidae

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Plates 1–34

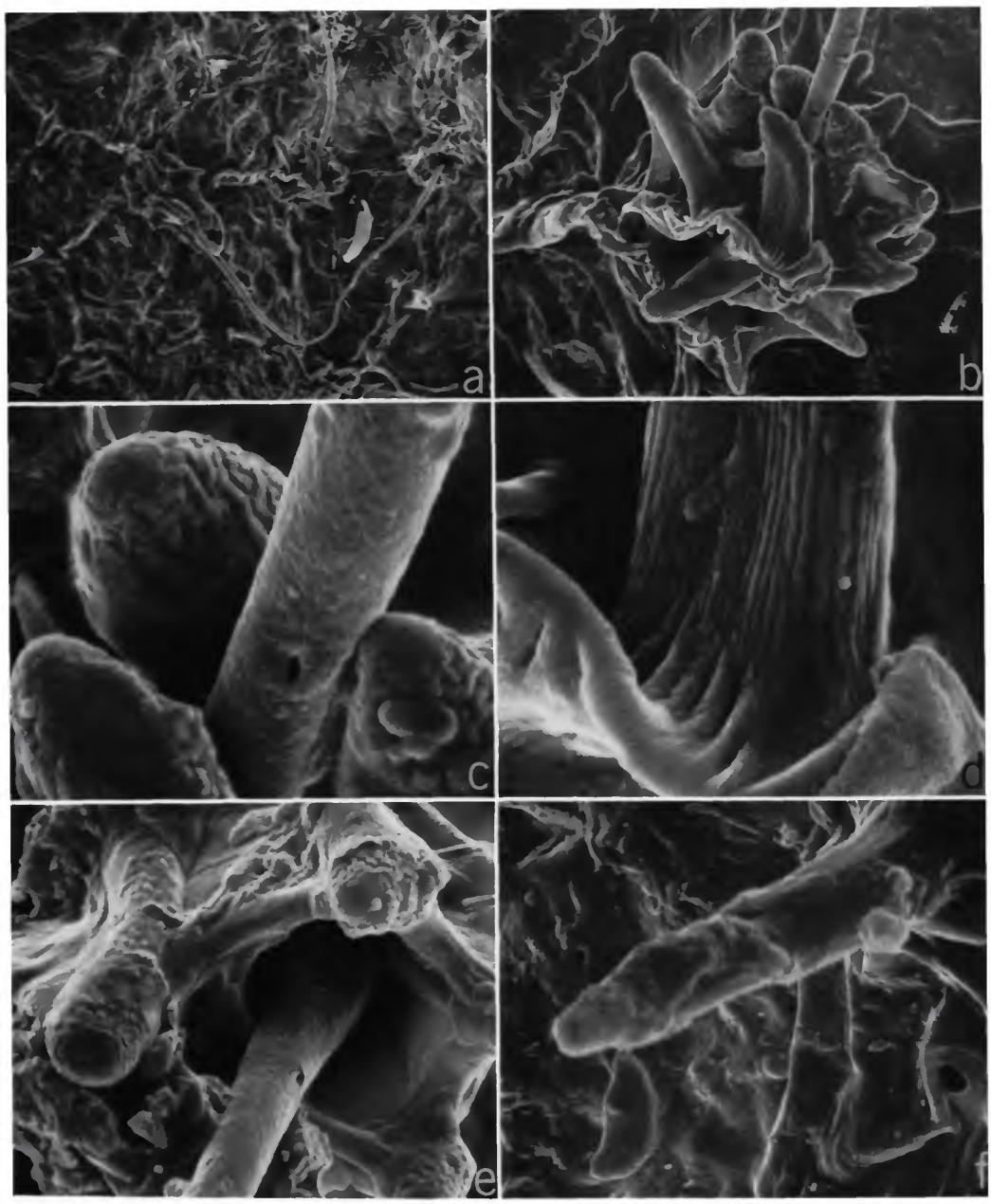

PLATE 1.—*Eusarsiella capillaris* (Kornicker), USNM 154194, male instar IV, outside views of right valve: *a*, surface showing clusters of short bristles surrounding a long bristle, × 500; *b*, detail of cluster of bristles near middle of *a*, × 2000; *c*, detail showing pore near base of long bristle in *b*, × 10,000; *d*, detail of base of short bristle in *b*, × 10,000; *e*, detail of short bristles and base of long bristle at middle right of *a*, × 5000; *f*, detail of short bristle and surface pore in lower left of *a*, × 4000. (Micrographs reduced to 73% for publication.)

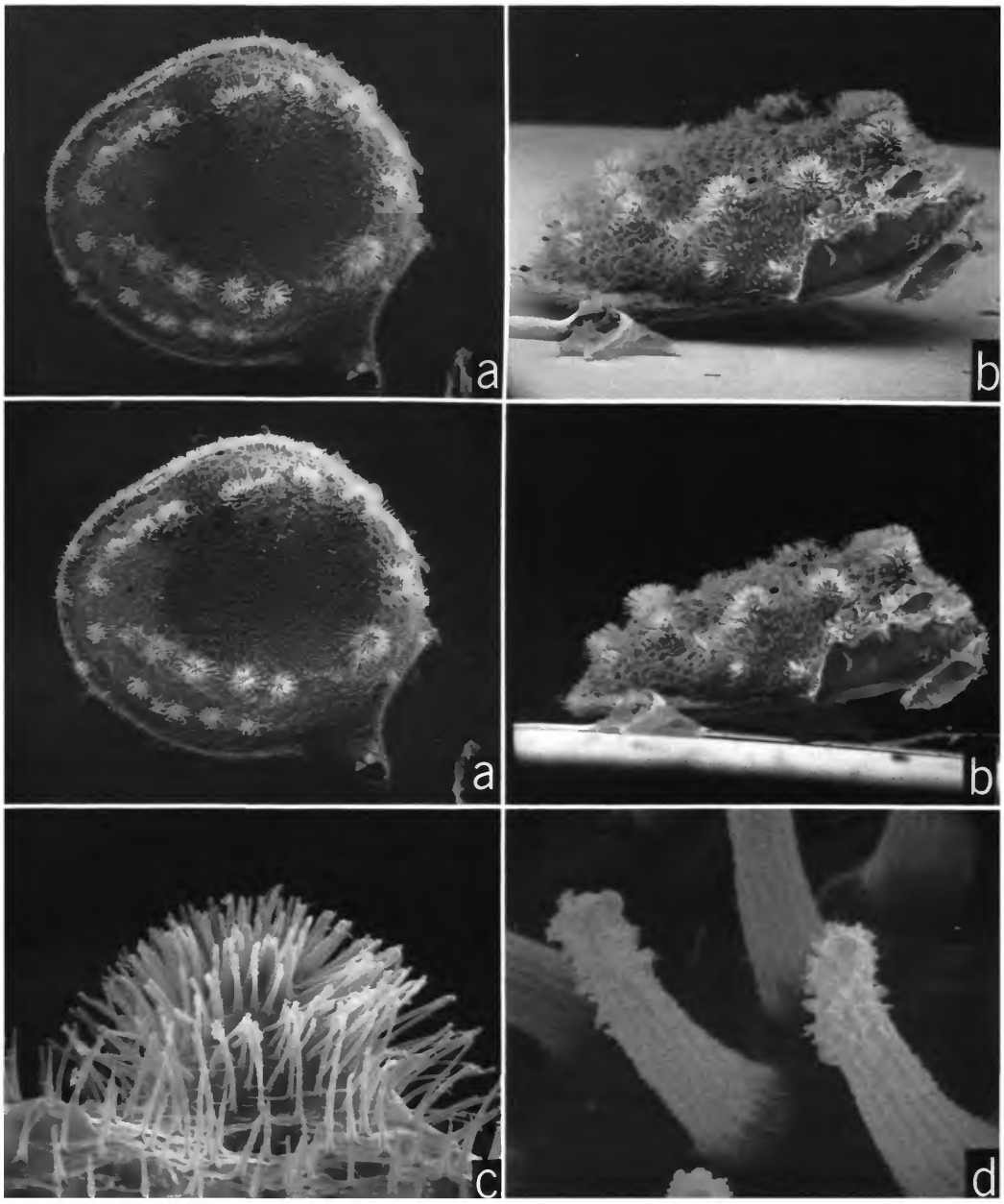

PLATE 2.—*Eusarsiella spinosa* (Kornicker and Wise), USNM 157484, adult female, length 1.10 mm, outside views of left valve: *a*, lateral view, stereoscopic pair, × 70; *b*, posterior view, venter toward left of micrograph, stereoscopic pair, × 95; *c*, posterodorsal node, ventral view, × 650; *d*, detail of bristles from apex of node, from Plate 3*b*, × 1400. (Micrographs reduced to 73% for publication.)

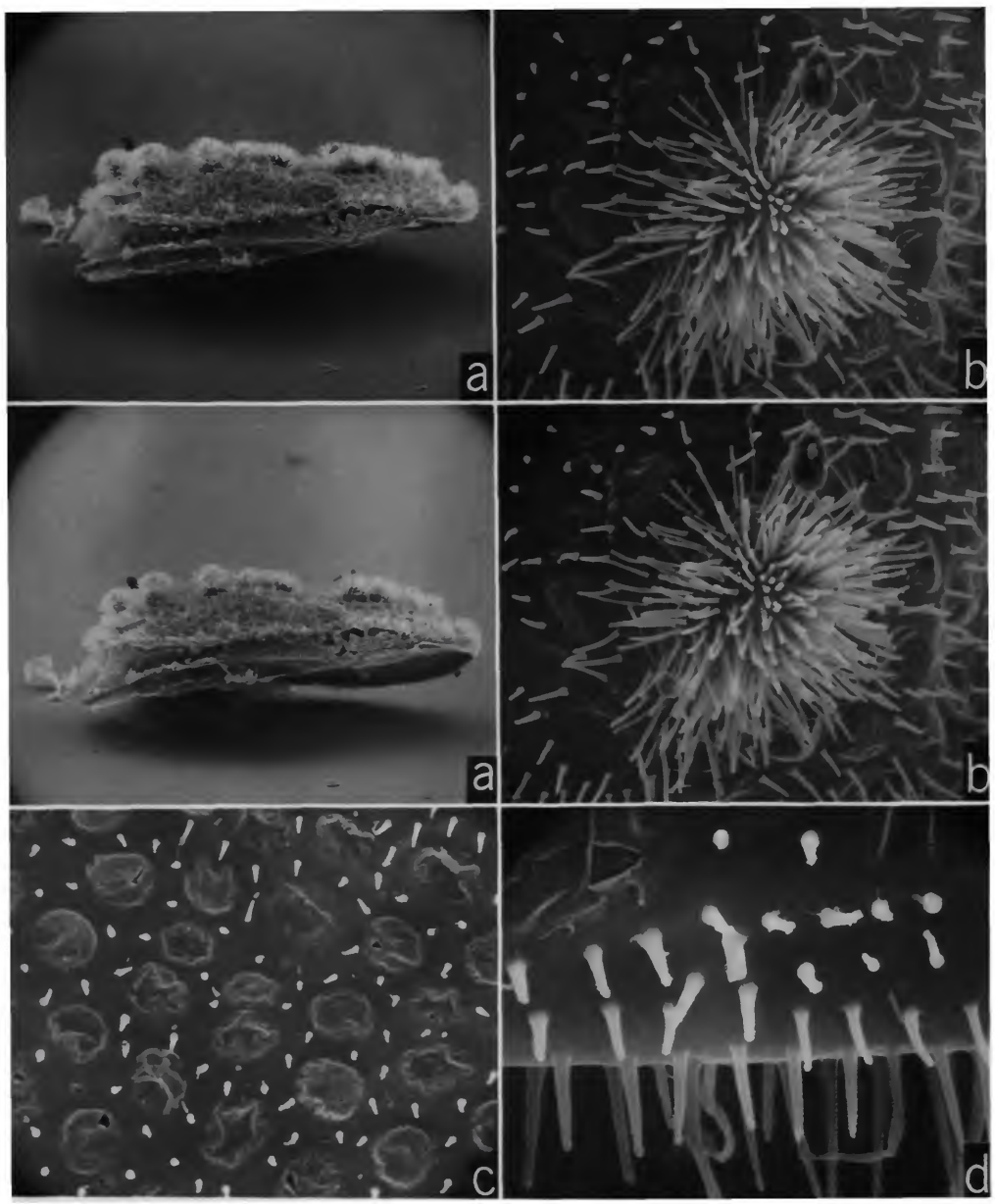

PLATE 3.—*Eusarsiella spinosa* (Kornicker and Wise), USNM 157484, adult female, length 1.10 mm, outside views of left valve: *a*, dorsal view, stereoscopic pair, × 70; *b*, posterior node dorsal to caudal process, from Plate 2a, stereoscopic pair, × 500; *c*, surface of anterodorsal part of valve inside ring of nodes, from Plate 2*a*, × 500; *d*, ventral margin, from Plate 2 *a*, × 1400. (Micrographs reduced to 82% for publication.)

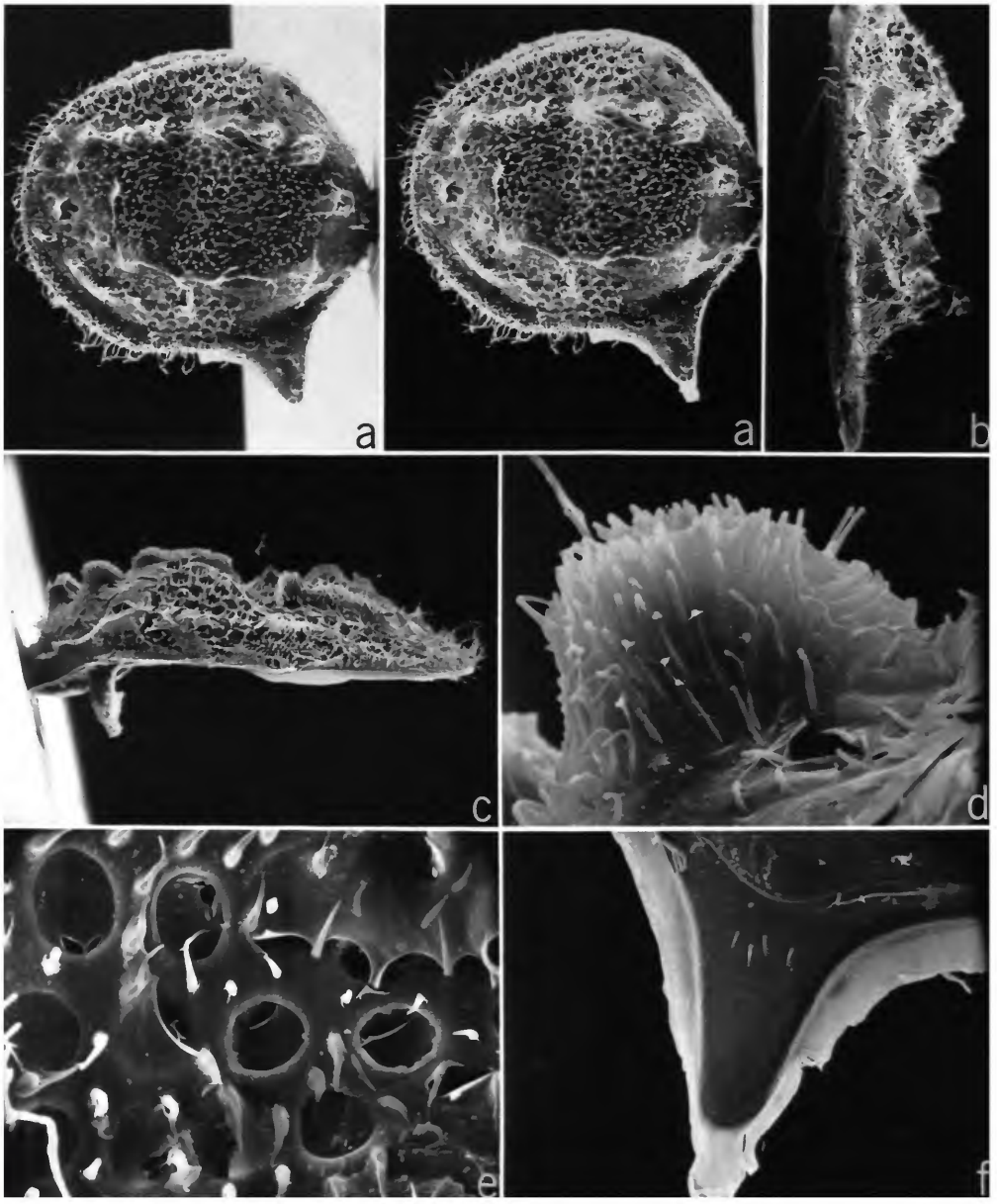

PLATE 4.—*Eusarsiella spinosa* (Kornicker and Wise), USNM 152305, adult female, length 1.04 mm, left valve: *a*, lateral view, steroscopic pair, × 75; *b*, anterior view, venter toward bottom of micrograph, × 100; *c*, dorsal view, anterior to right, × 100; *d*, detail of anterodorsal node, from *c*, × 950; *e*, detail of surface anteror to middle of *c*, × 700; *f*, inside view of caudal process, × 275. (Micrographs reduced to 66% for publication.)

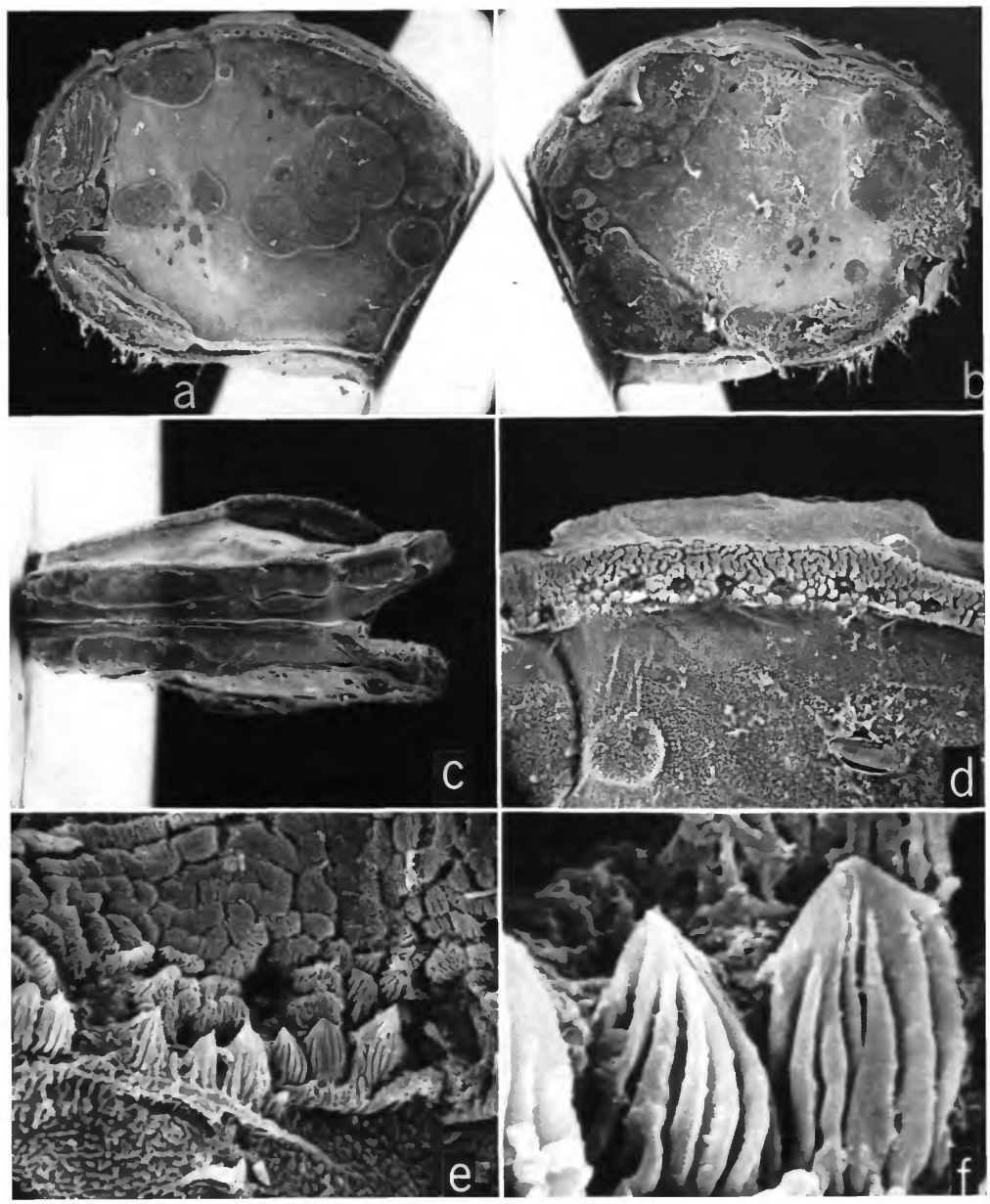

PLATE 5.—*Eusarsiella texana* (Kornicker and Wise), USNM 144004, adult female, length 1.08 mm, outside views of hinged valves: *a*, view from left side, × 90; *b*, view from right side, × 90, *c*, dorsal view, × 90; *d*, dorsal edge of valve, note diatom at lower right, from *a*, × 400; *e*, detail of peripheral ridge in *a*, × 2000; *f*, detail of hand-shaped processes in *e*, × 10,000. (Micrographs reduced to 73% for publication.)

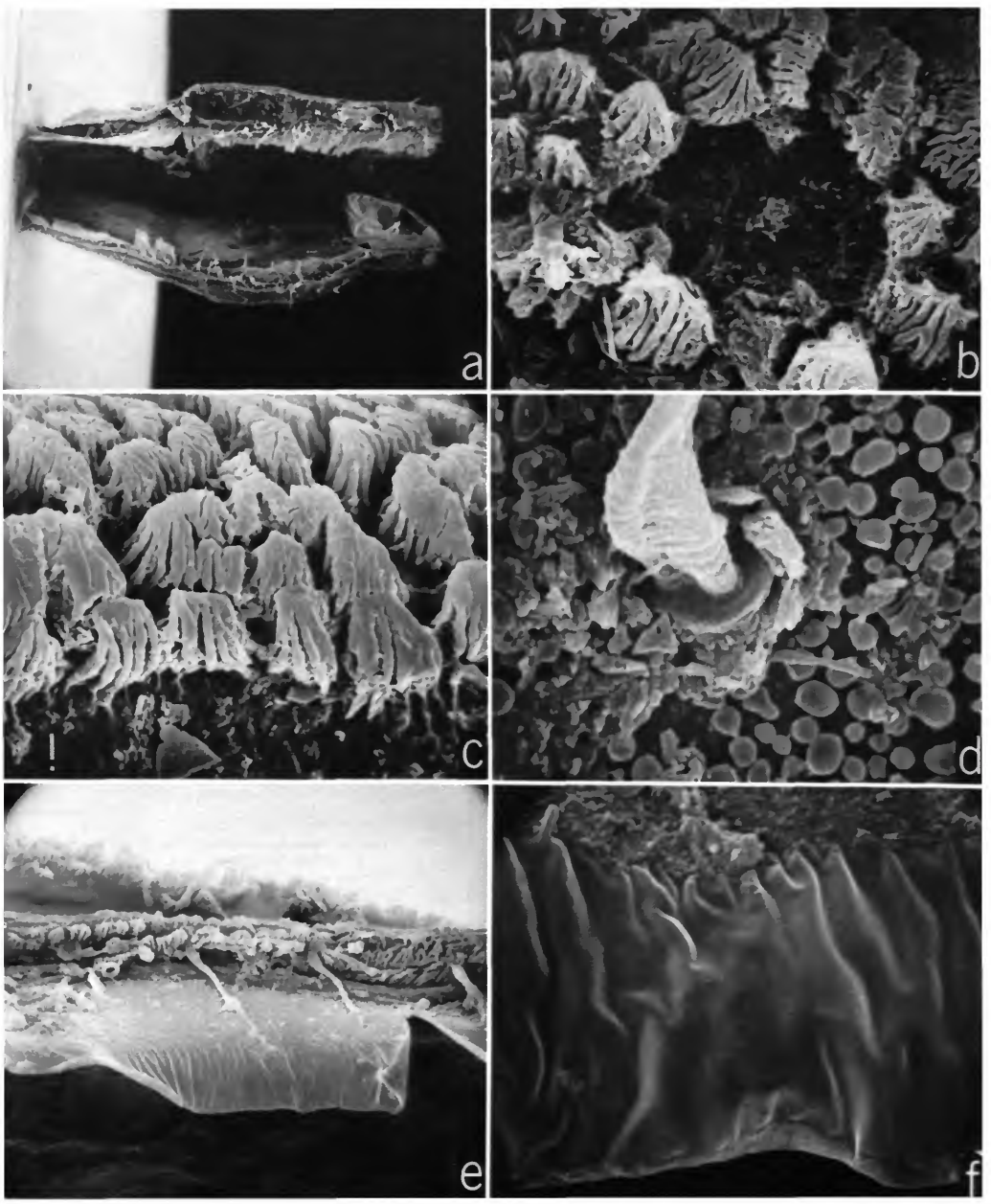

PLATE 6.—*Eusarsiella texana* (Kornicker and Wise), USNM 144004, adult female, length 1.08 mm, outside views of hinged valves: *a*, ventral view, anterior to right, × 90; *b*, detail of dorsal rim, from Plate 5*d*, × 4000; *c*, detail of ventral edge of left valve, from *a*, × 3200; *d*, base of bristle on lateral side of right valve, from Plate 5*b*, × 5000; *e*, selvage along ventral margin of left valve, from *a*, × 850; *f*, detail of lamella prolongation of selvage, from *e*, × 5000. (Micrographs reduced to 73% for publication.)

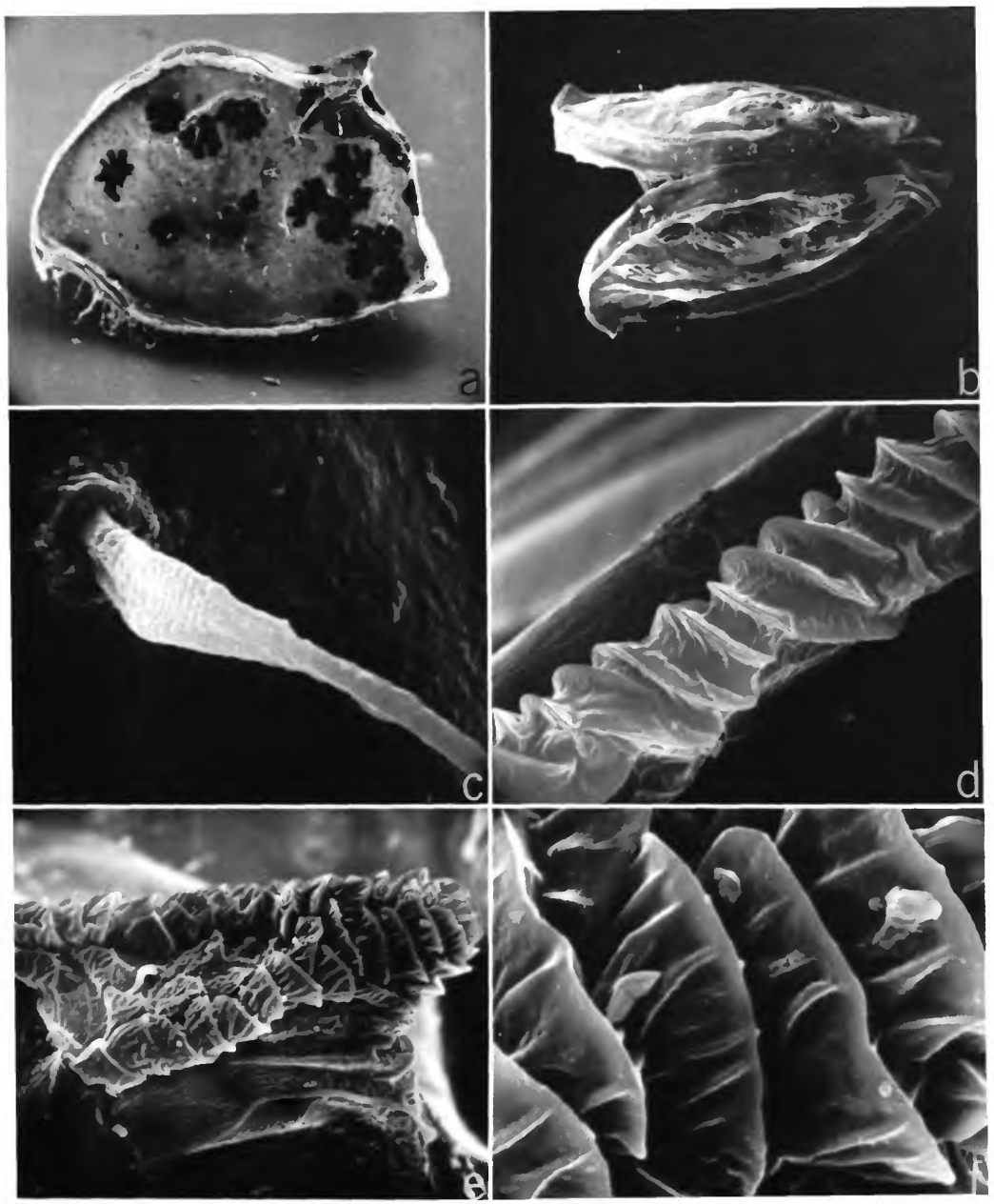

PLATE 7.—*Eusarsiella texana* (Kornicker and Wise), USNM 151995, adult male, length 0.81 mm, outside views of hinged valves: *a*, view from left side, × 105; *b*, dorsal view, × 100; *c*, base of bristle in middle of left valve, from *a*, × 5500; *d*, detail of anterodorsal part of peripheral ridge, from *a*, × 2000; *e*, detail of posterodorsal process, from *a*, × 1100; *f*, detail of posterodorsal process, from *e*, × 5500. (Micrographs reduced to 73% for publication.)

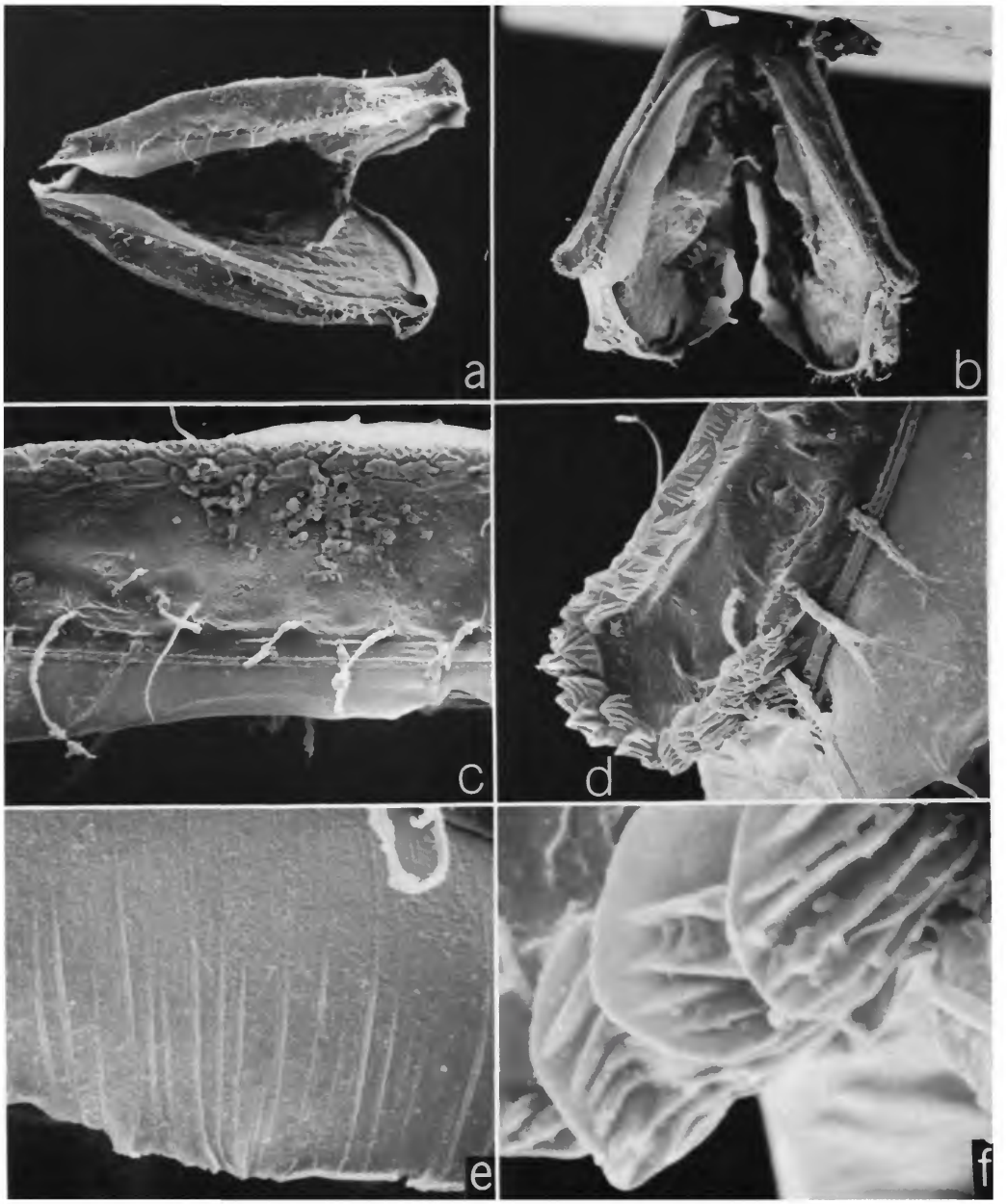

PLATE 8.—*Eusarsiella texana* (Kornicker and Wise), USNM 151995, adult male, length 0.81 mm, outside views of hinged valves: *a*, ventral view, × 115; *b*, anterior view, venter towards bottom of micrograph, × 145; *c*, detail of venter, from *a*, × 450; *d*, anterior view of rostrum of right valve, × 900; *e*, detail of lamella prolongation along ventral margin of valve near posterior end, from *a*, × 2000; *f*, detail of edge of rostrum, from *d*, × 5250. (Micrographs reduced to 73% for publication.)

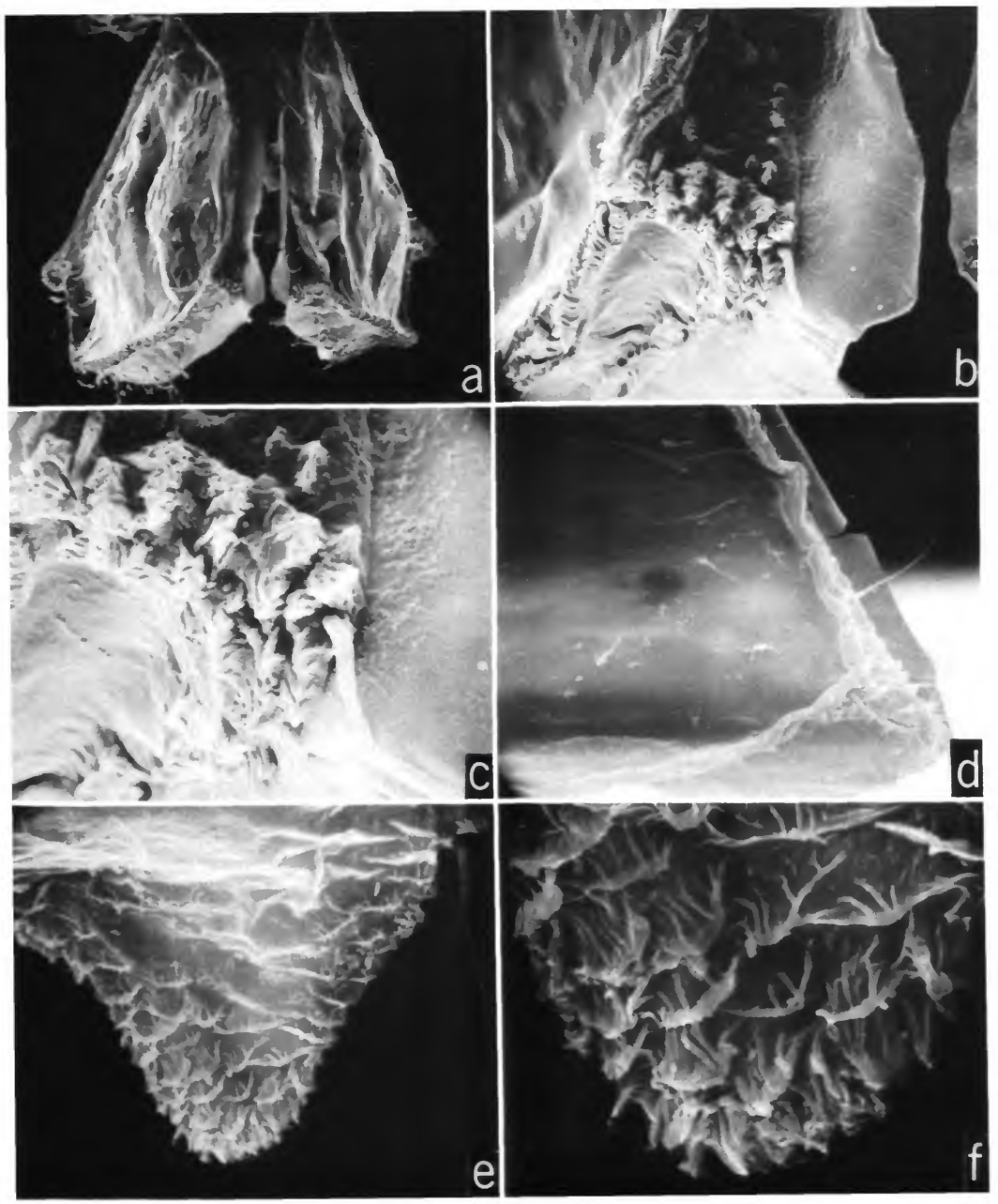

PLATE 9.—*Eusarsiella texana* (Kornicker and Wise), USNM 151995, adult male, length 0.81 mm, outside view of hinged valves: *a*, posterior view, venter towards bottom of micrograph, × 150; *b*, detail showing caudal process of left valve, from *a*, × 900; *c*, detail of *b*, × 1800. USNM 152442, adult male, length 1.10 mm, outside view of the left valve: *d*, posteroventral corner, × 500; *e*, posterodorsal process, dorsal view, × 800; *f*, detail of *e*, × 2100. (Micrographs reduced to 73% for publication.)

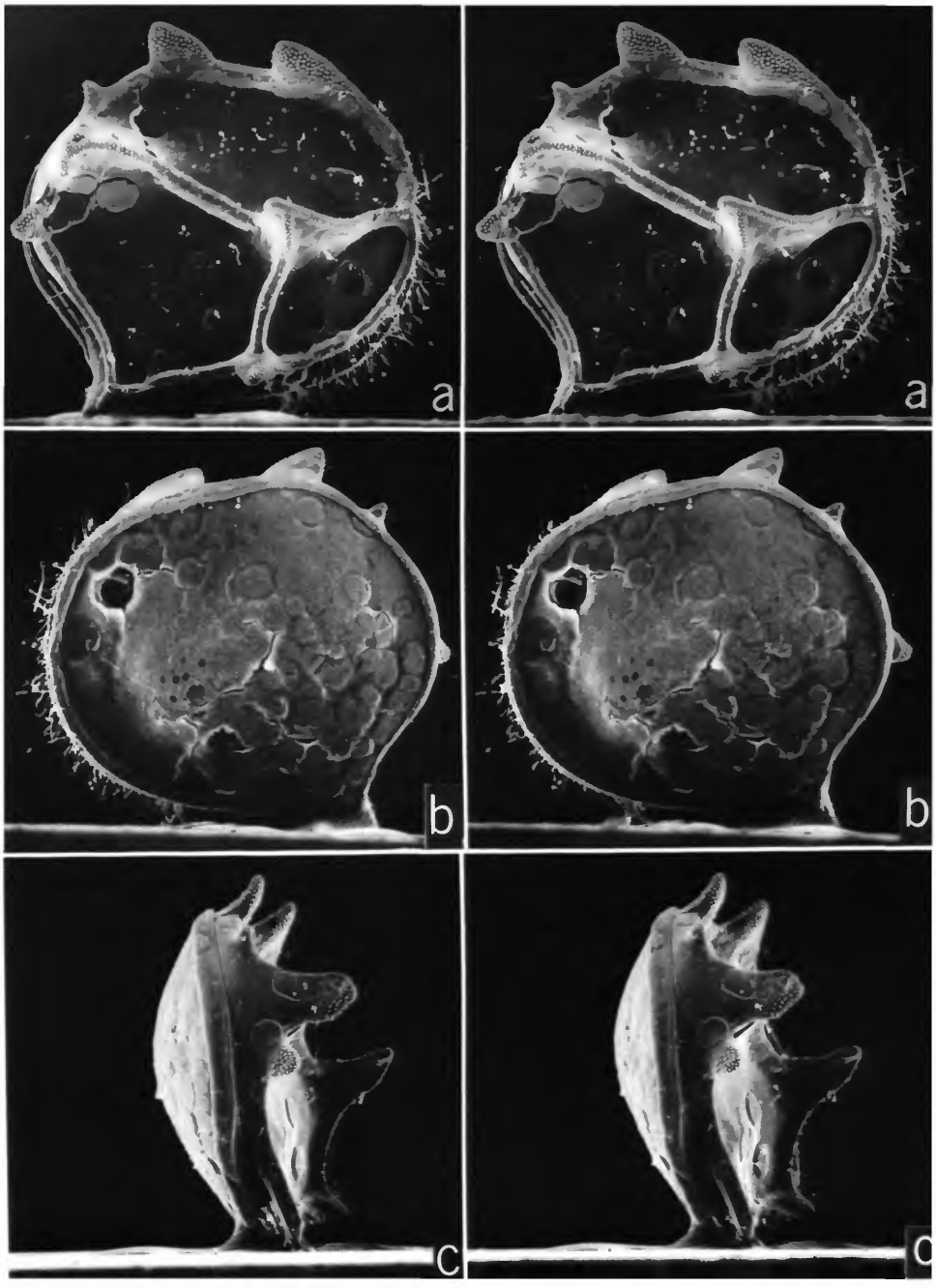

PLATE 10.—*Eusarsiella disparalis* (Darby), USNM 150108, adult female, length 1.52 mm, outside views of complete specimen, stereoscopic pairs: *a*, view from right side, × 50; *b*, view from left side, × 50; *c*, posterior view, × 50. (Micrographs reduced to 76% for publication.)

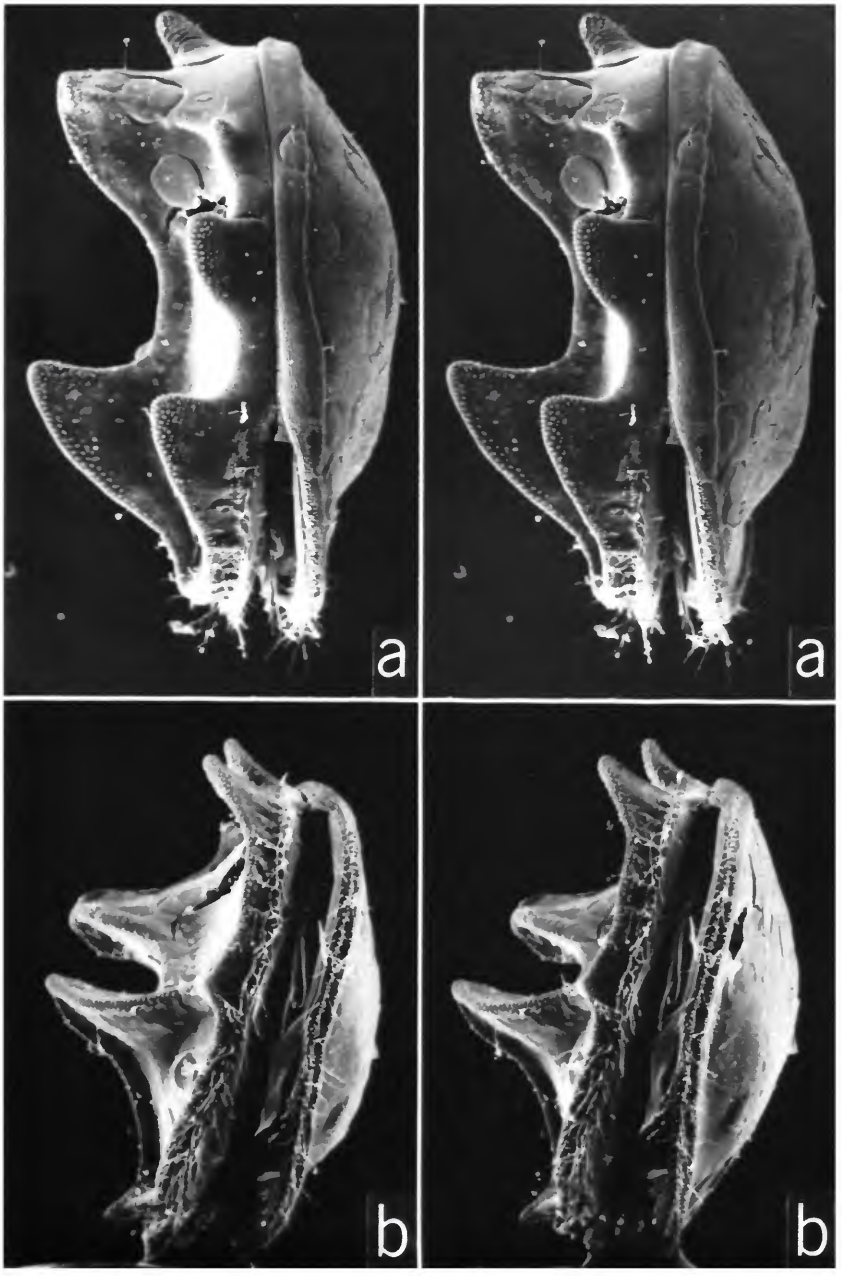

PLATE 11.—*Eusarsiella disparalis* (Darby), USNM 150108, adult female, length 1.52 mm, outside views of complete specimen, stereoscopic pairs: *a*, dorsal view, × 50; *b*, anterior view, × 50.

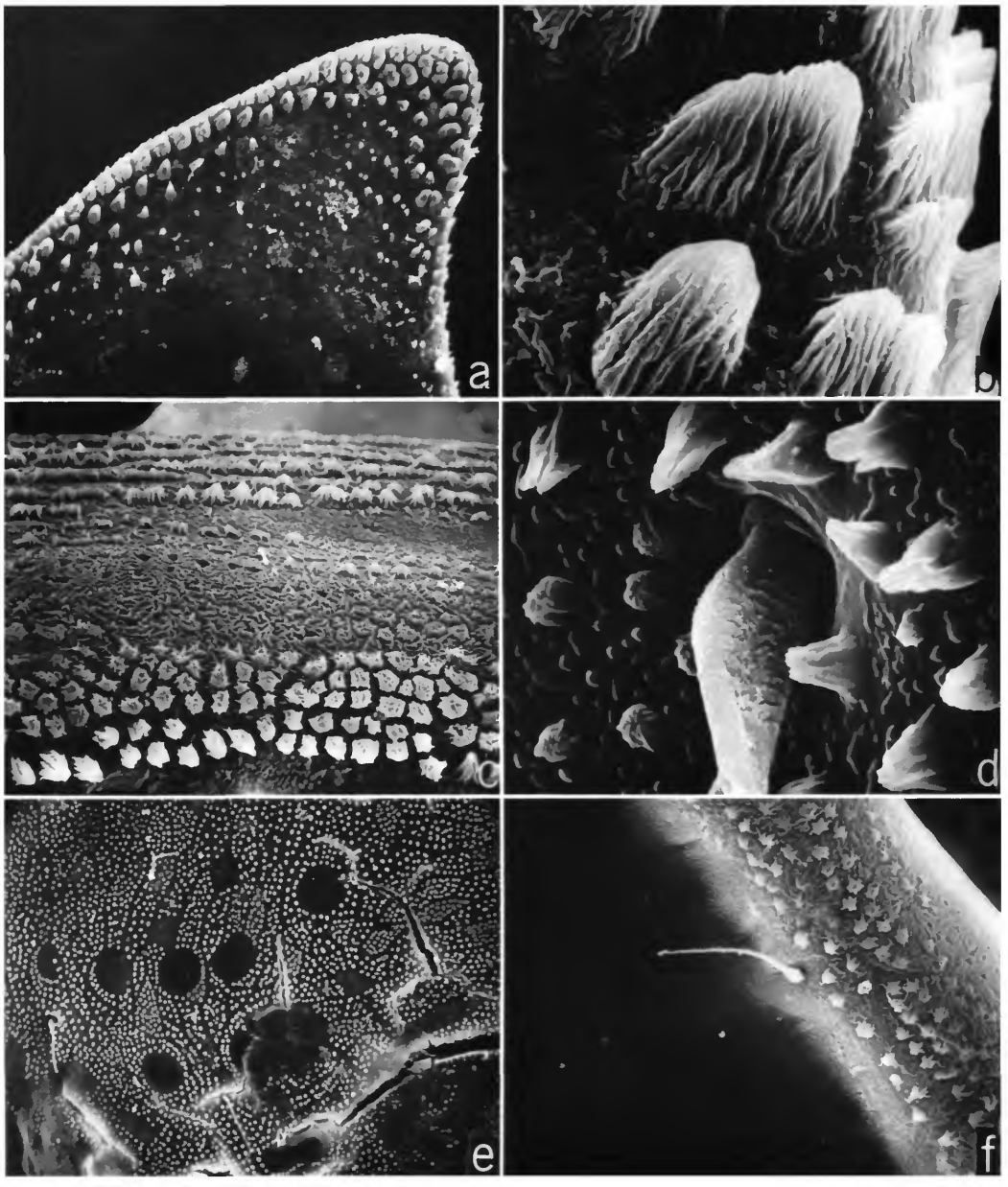

PLATE 12.—*Eusarsiella disparalis* (Darby), USNM 150108, adult female, length 1.52 mm, outside views: *a*, dorsal view of tip of alar process near middle of right valve, from Plate 11*a*, × 300; *b*, detail of surface alar process near middle of right tubercles on process shown in *a*, × 3000; *c*, detail of surface of dorsal part of peripheral ridge of left valve, from Plate 10*b*, × 1600; *d*, detail of surface of left valve showing tubercles, base of bristle and pore from which bristle emerges, from lower left of *e*, × 5000; *e*, detail of central adductor muscle attachments, from Plate 10*b*, × 300; *f*, detail of anterodorsal part of peripheral ridge, from Plate 10*a*, × 1000. (Micrographs reduced to 71% for publication.)

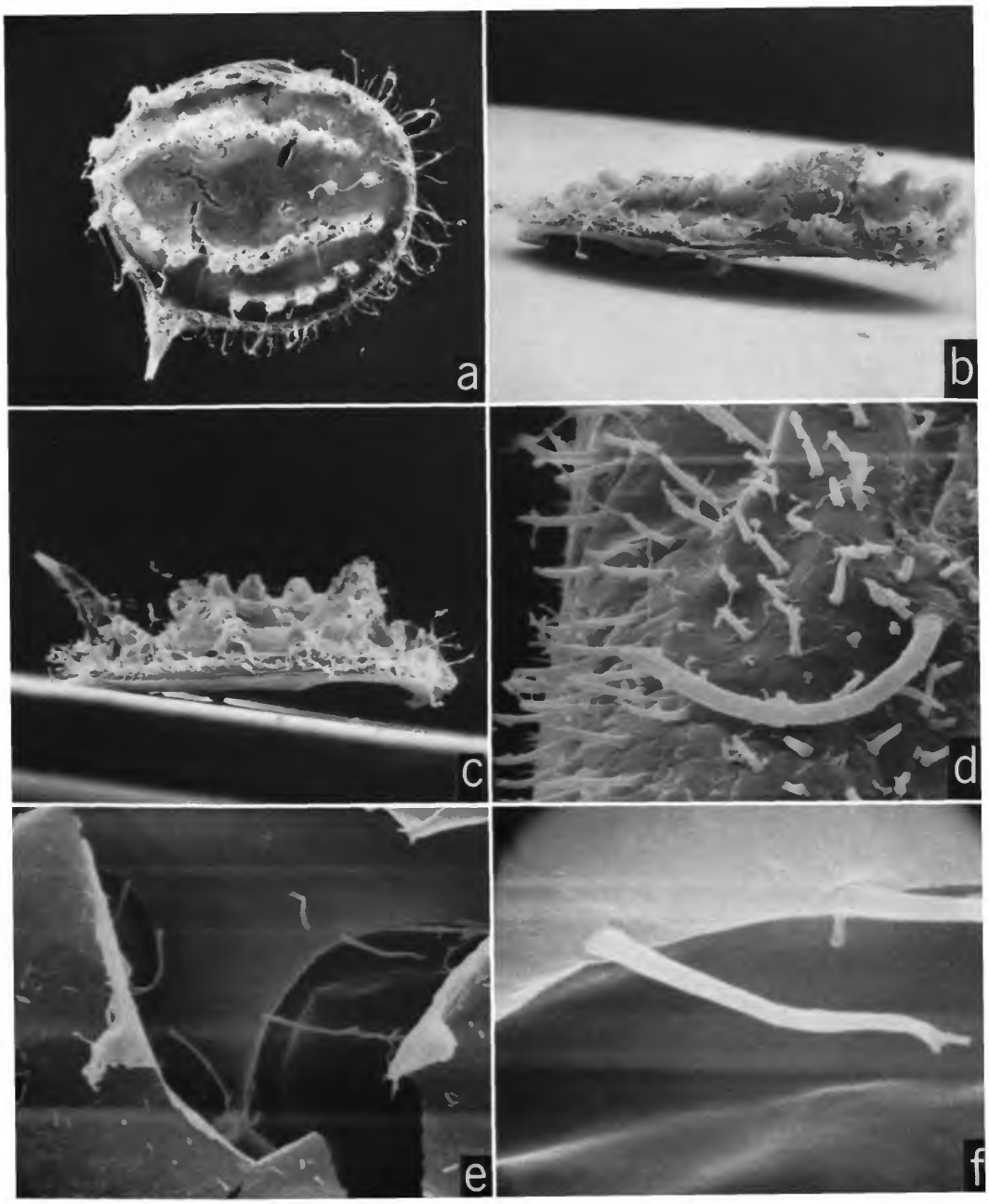

PLATE 13.—*Eusarsiella pilipollicus* (Darby), USNM 152865, adult female, outside views of right valve: *a*, lateral view, × 50, *b*, dorsal view, anterior to left, × 65; *c*, anterior view, venter to left, × 75; *d*, bristles on posterior half of caudal process, from *a*, × 2500; *e*, tear in coating near dorsal margin of *a*, × 1800; *f*, detail from edge of fossa in *e*. (Micrographs reduced to 75% for publication.)

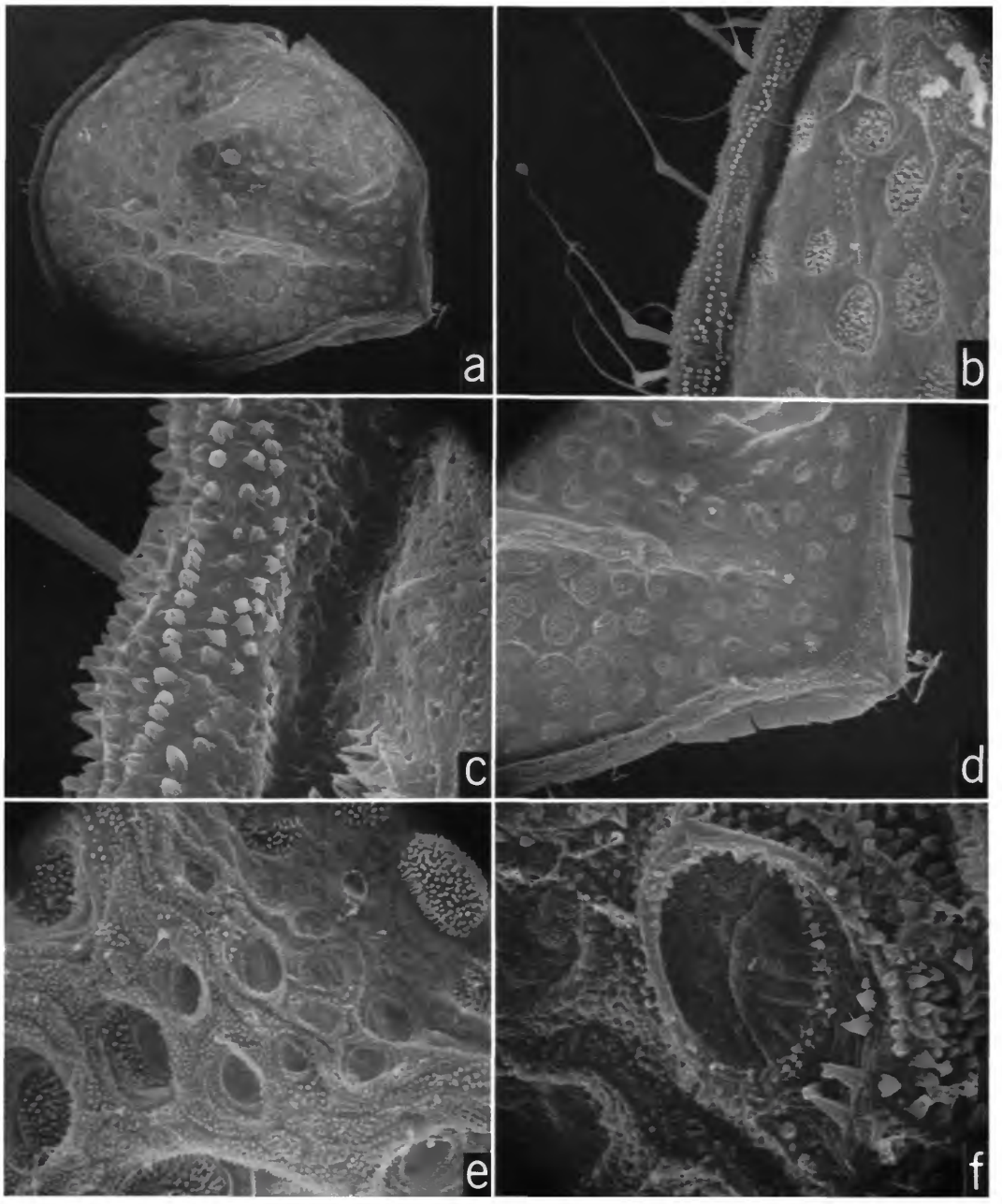

PLATE 14.—*Eusarsiella radiicosta* (Darby), USNM 153937, adult female, length 0.99 mm, outside views of left valve: *a*, lateral view, × 90; *b*, anterior margin, from *a*, × 500; *c*, detail of anterior margin shown in *b*, × 2000; *d*, posterodorsal corner of valve, × 200; *e*, fossae in vicinity of dorsal adductor muscle attachments, from *a*, × 500; *f*, fossae of central adductor muscle attachments, × 2000. (Micrographs reduced to 75% for publication.)

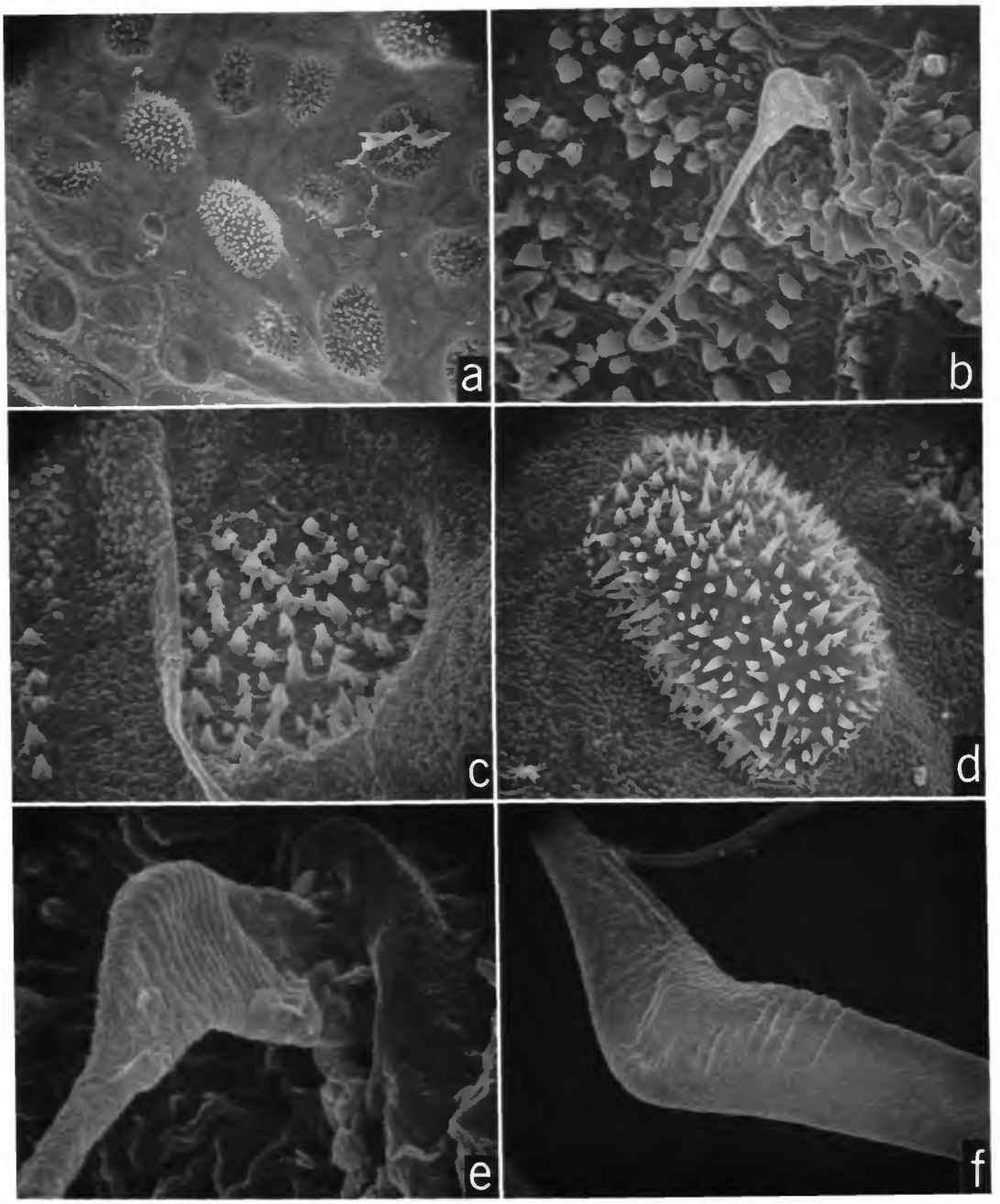

PLATE 15.—*Eusarsiella radiicosta* (Darby), USNM 153937, adult female, length 0.99 mm, outside views of left valve: *a*, fossae of central adductor muscle attachments at lower left (fossae without minute papillae on bottom) and other surface fossae (with papillae on bottom), from Plate 14*e*, × 500; *b*, bristle and surface papillae, from near middle of Plate 14*e*, × 3000; *c*, fossa from lower right of *a*, × 1700; *d*, raised fossa from near middle of *a*, × 1700; *e*, detail of base of bristle shown in *b*, × 10,000; *f*, indistinctly ribbed part of marginal bristle, from middle of Plate 14*b*, × 5000. (Micrographs reduced to 76% for publication.)

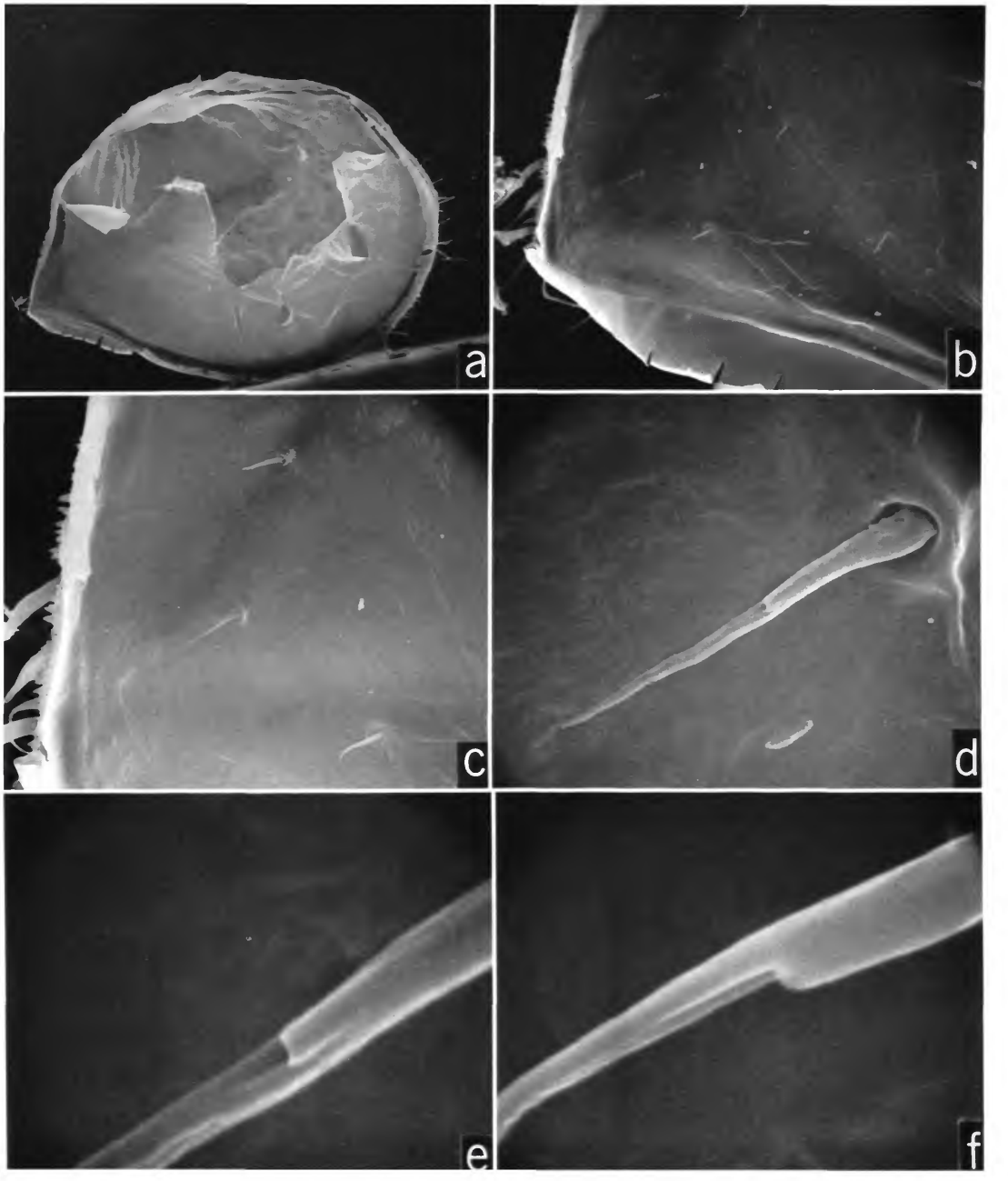

PLATE 16.—*Eusarsiella radiicosta* (Darby), USNM 153937, adult female, length 0.99 mm, inside views of left valve: *a*, complete valve, × 90; *b*, posteroventral corner showing 3 bristles on infold of caudal process and additional bristles along inner margin of infold, from *a*, × 500; *c*, detail from *b* showing 3 bristles of caudal process, × 1000; *d*, bristle in middle of caudal process, from *c*, × 6380; *e*, detail of groove in bristle shown in *d*, × 20,000; *f*, detail showing groove in lower bristle of infold of caudal process from *b*, × 20,000. (Micrographs reduced to 76% for publication.)

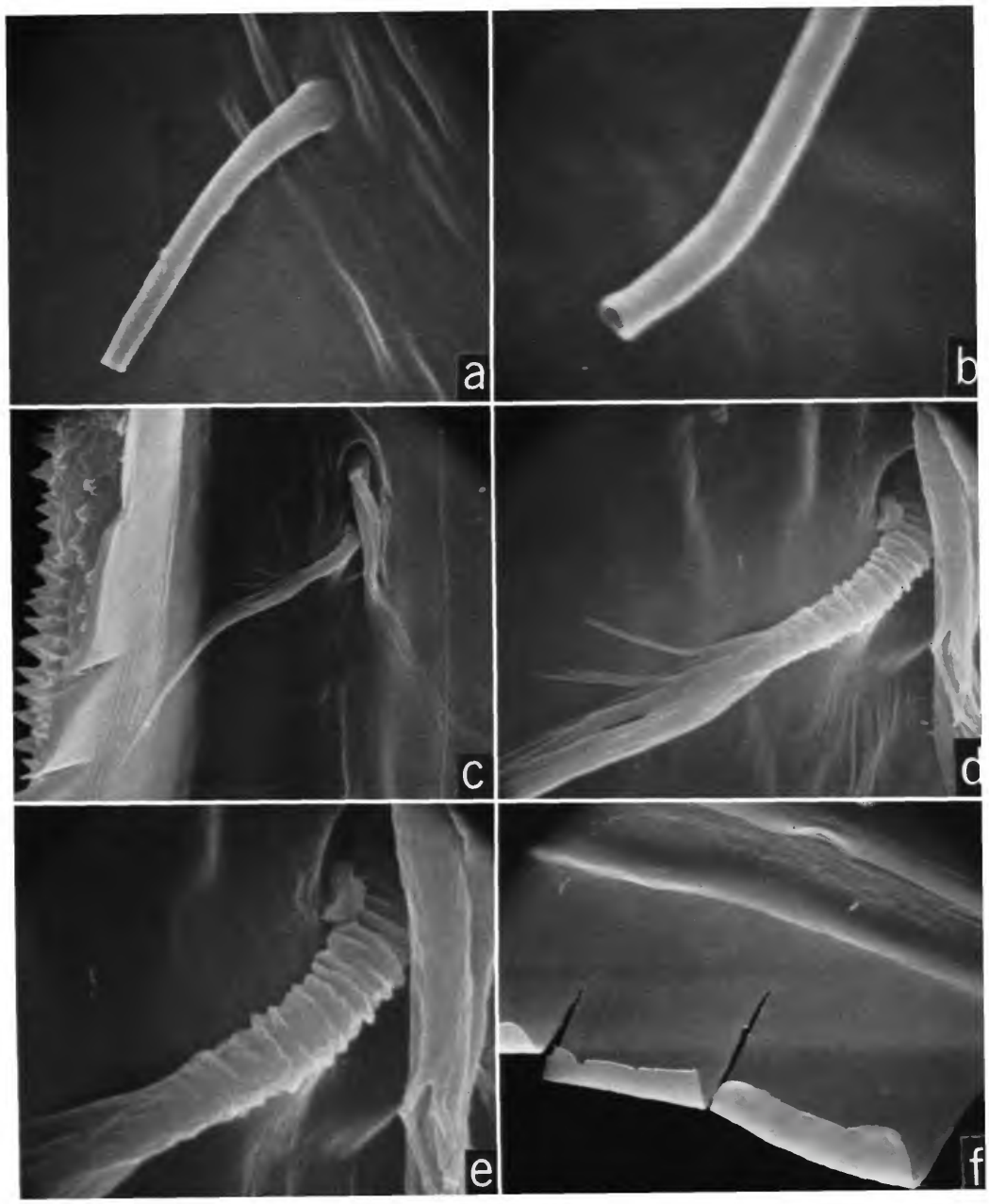

PLATE 17.—*Eusarsiella radiicosta* (Darby), USNM 153937, adult female, length 0.99 mm, inside views of left valve: *a*, upper bristle on inner margin of infold anterior to caudal process, from Plate 16*b*; *b*, distal part of lower bristle on inner margin of infold anterior to caudal process, from Plate 16*b*, × 20,000; *c*, 2 setal bristles on posterior infold, from Plate 16*a*, × 2000; *d*, detail of setal bristles shown in *c*, × 5800; *e*, proximal part of bristle shown in *d*, × 10,000; *f*, lamellar prolongation of selvage along posteroventral margin, from Plate 16*b*, × 1400. (Micrographs reduced to 73% for publication.)

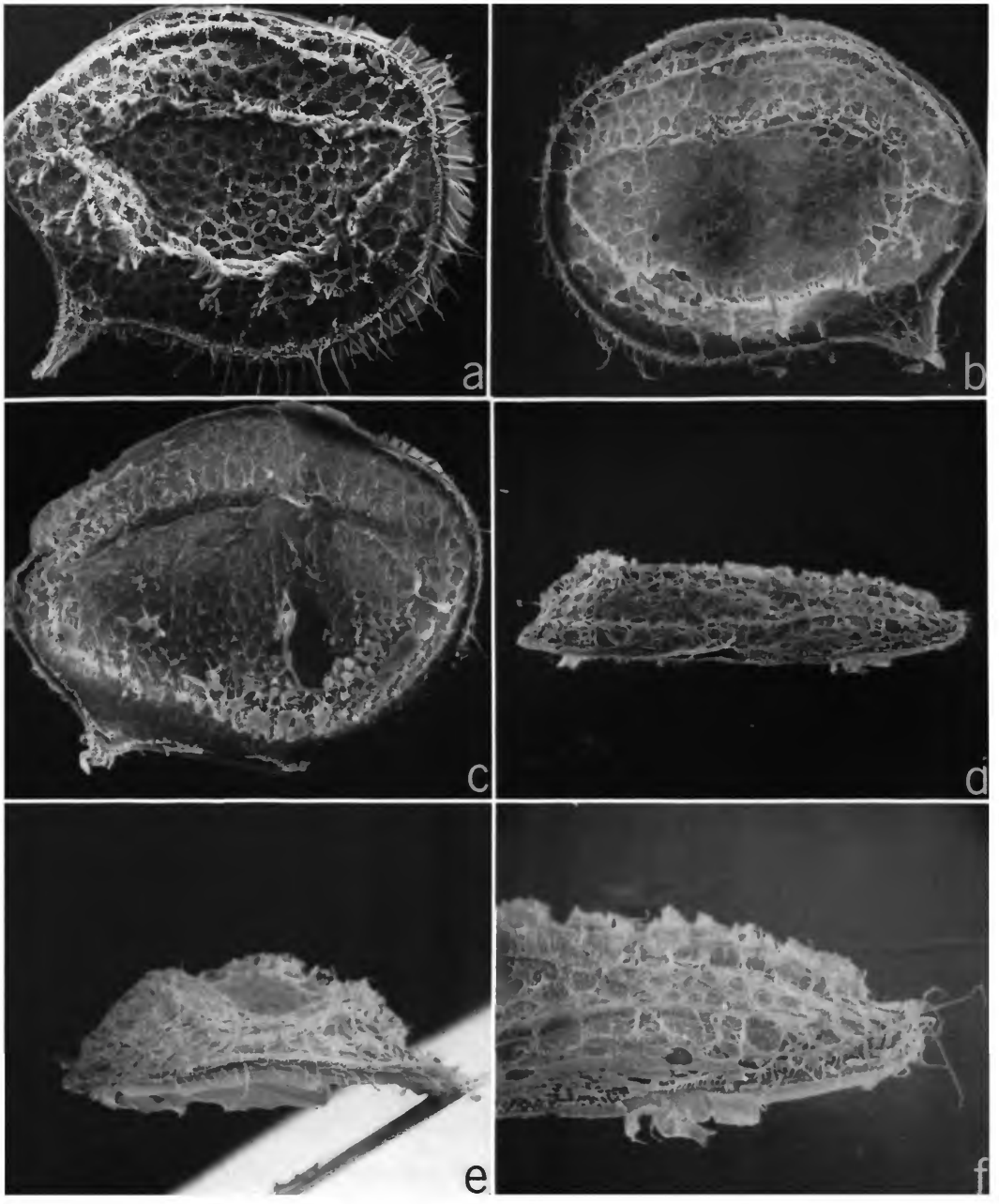

PLATE 18.—*Eusarsiella ozotothrix* (Kornicker and Bowen), adult female, outside views of carapace: *a*, paratype from Long Island Sound, New York, right valve, × 95; *b*, USNM 152455, holotype from Martha's Vineyard, Massachusetts, length 1.05 mm, left valve, × 90; *c*, USNM 152441, paratype from Alligator Harbor, Florida, length 0.96 mm, right valve, × 100; *d*, dorsal view of *b*, anterior to right, × 95; *e*, anterior view of *b*, ventral margin to right, × 95; *f*, dorsal view of anterior end of valve, from *d*, × 200. (Micrographs reduced to 73% for publication.)

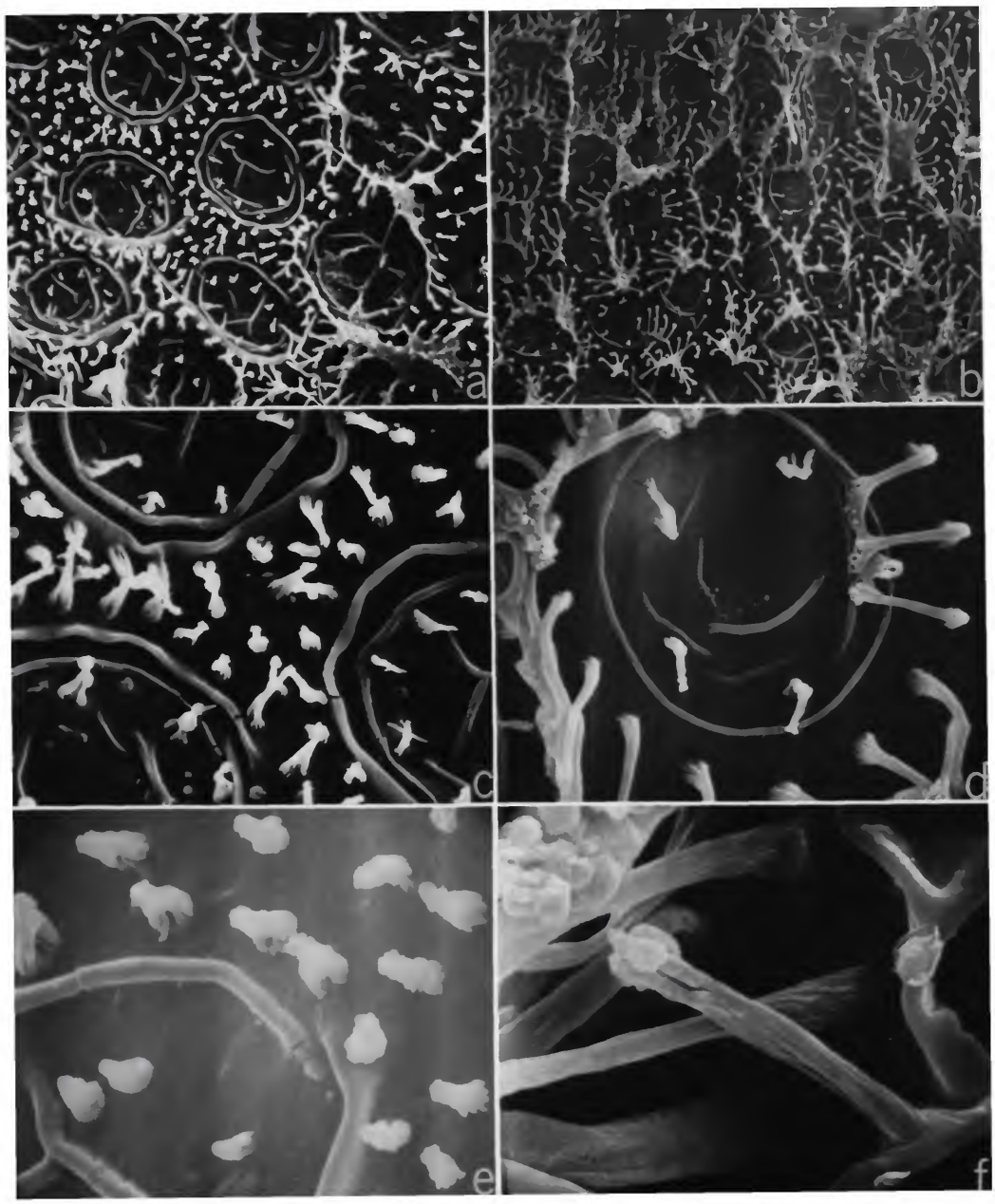

PLATE 19.—*Eusarsiella ozotothrix* (Kornicker and Bowen), adult females, ornamentation of carapace: *a*, bristles and fossae, from Plate 18*a*, × 700; *b*, bristles and fossae, from Plate 18*c*, × 500; *c*, detail from *a*, × 2000; *d*, detail from *b*, × 3000; *e*, bristles and fossae, from Plate 18*b*, × 5000; *f*, detail of bristles, from Plate 18*a*, × 5000; *a,c,f:* specimen from Long Island Sound; *b,d*: specimen from Alligator Harbor; *e*, specimen from Martha's Vineyard. (Micrographs reduced to 73% for publication.)

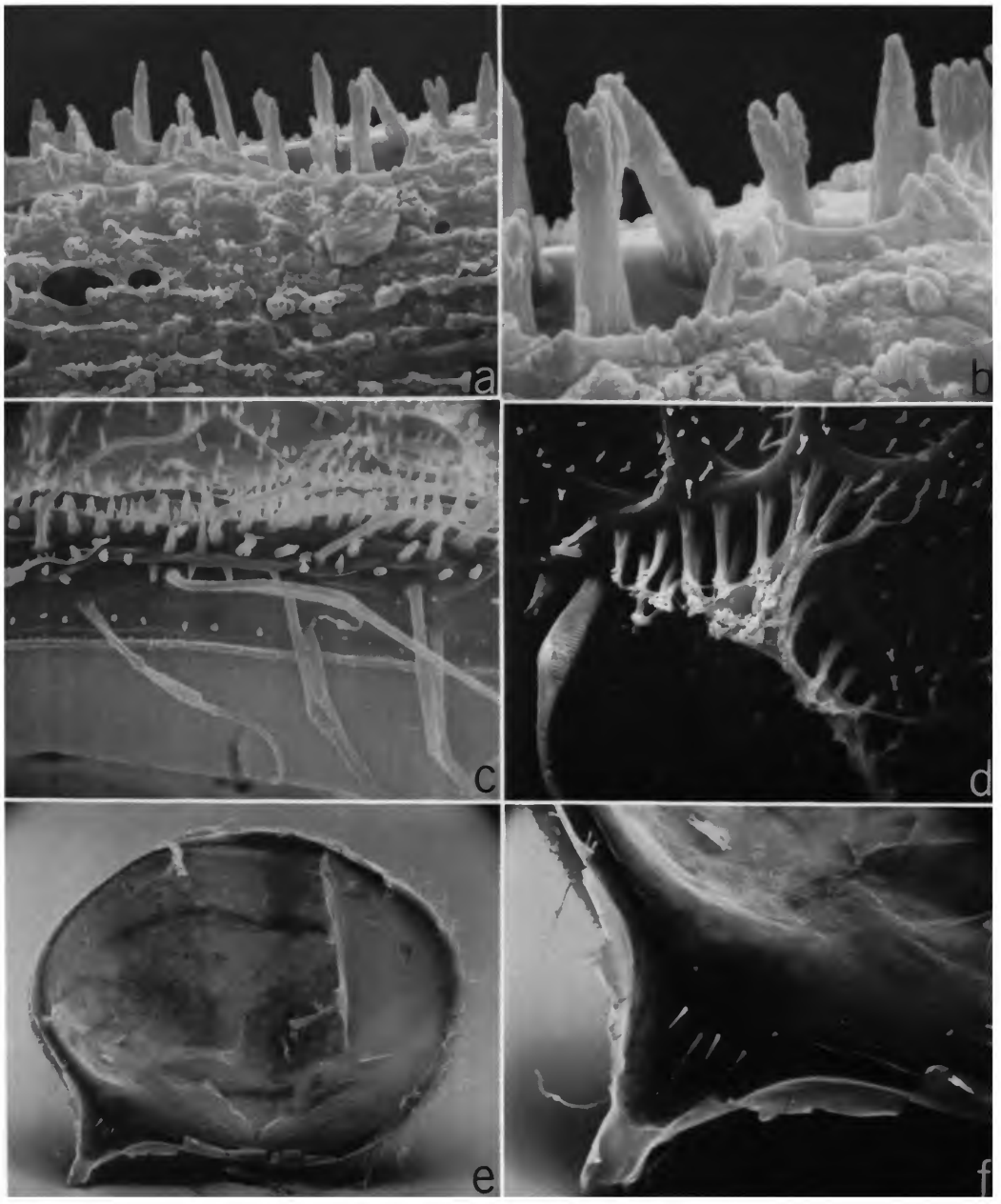

PLATE 20.—*Eusarsiella ozotothrix* (Kornicker and Bowen), USNM 152455, holotype from Martha's Vineyard, adult female, left valve, outside views: *a*, bristles near middle of dorsal margin, from Plate 18*b*, × 2000; *b*, detail from *a*, × 5000; *c*, anterior view of anterior margin of valve, from Plate 18*e*, × 1000; *d*, cluster of bristles near anteroventral margin, from Plate 18*b*, × 1250. Inside views: *e*, complete valve, × 90; *f*, caudal process and paired posterior bristles, × 260. (Micrographs reduced to 73% for publication.)

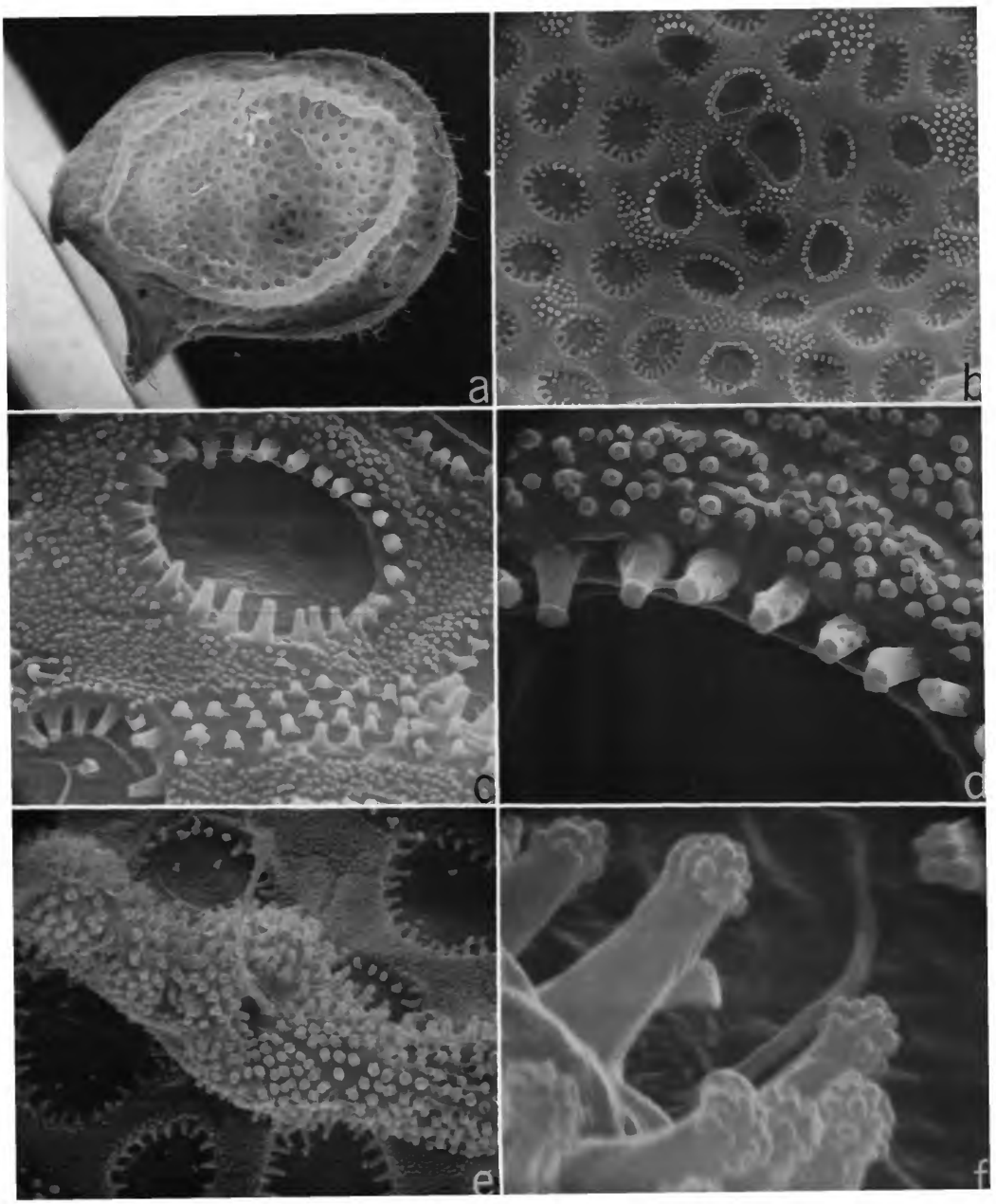

PLATE 21.—*Eusarsiella gettlesoni*, new species, USNM 154184, paratype, adult female, length 0.88 mm, outside views; *a*, right valve, × 100; *b*, middle *a*, showing fossae in vicinity of central adductor muscle attachments (darker area of *a*), × 500; *c*, detail of fossa in lower middle of *b*, × 2000; *d*, detail of peripheral spines along upper margin of fossa in *c*, × 5000; *e*, anterodorsal part of oval rib, from *a*, × 1000; *f*, detail of short bristles along dorsal edge of anterior part of rib shown in *e*, × 10,000. (Micrographs reduced to 73% for publication.)

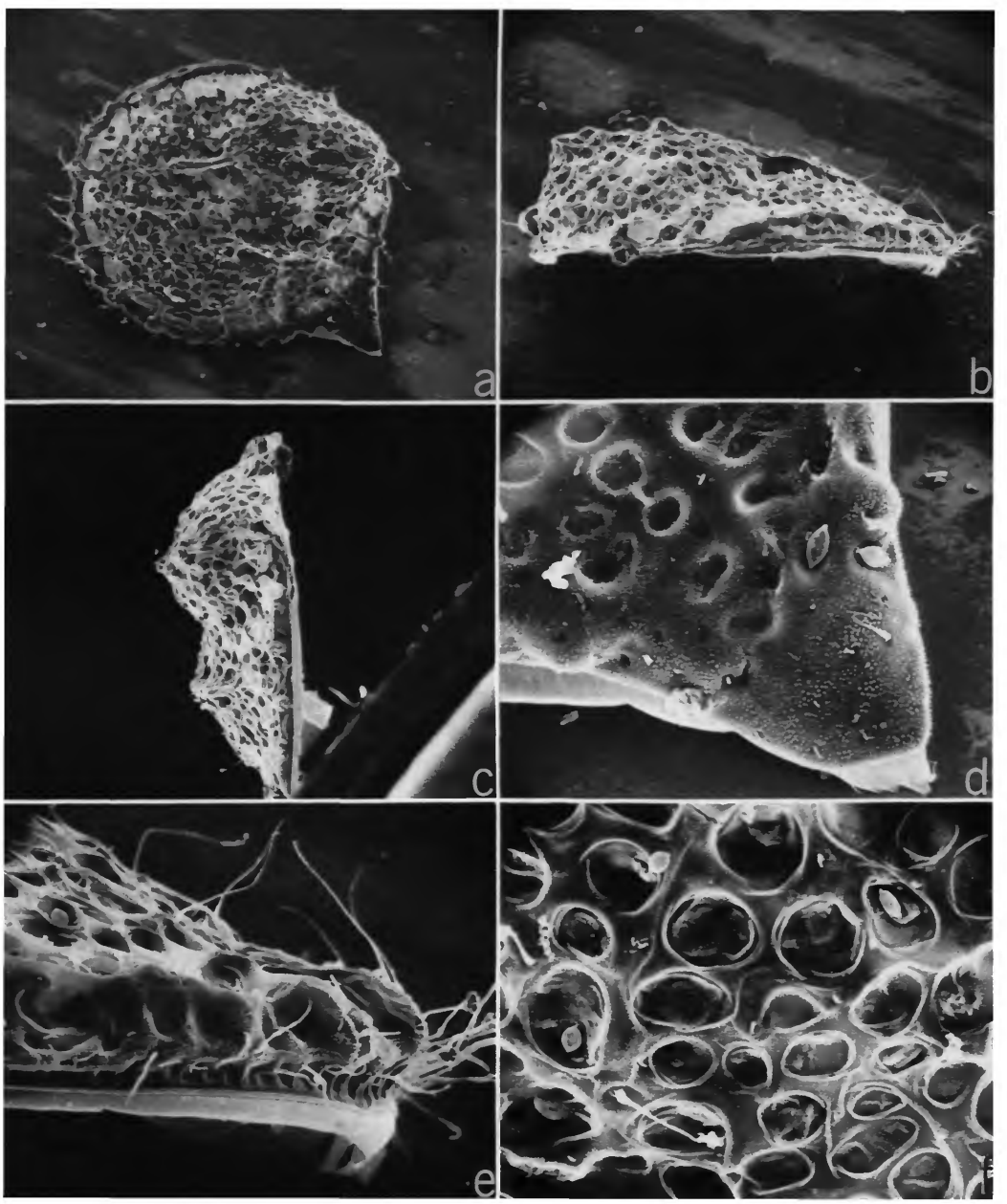

PLATE 22.—*Eusarsiella uncus,* new species, USNM 156713, holotype, adult female, outside views of left valve: *a,* lateral view, × 42; *b,* dorsal view, anterior to right, × 55; *c,* posterior view, venter to bottom, × 55; *d,* posteroventral corner, from *a,* note diatoms, × 300; *e,* dorsal view of anterior end, from *b,* × 220: *f,* surface between ribs and anterior to middle of valve, note diatoms, × 300. (Micrographs reduced to 73% for publication.)

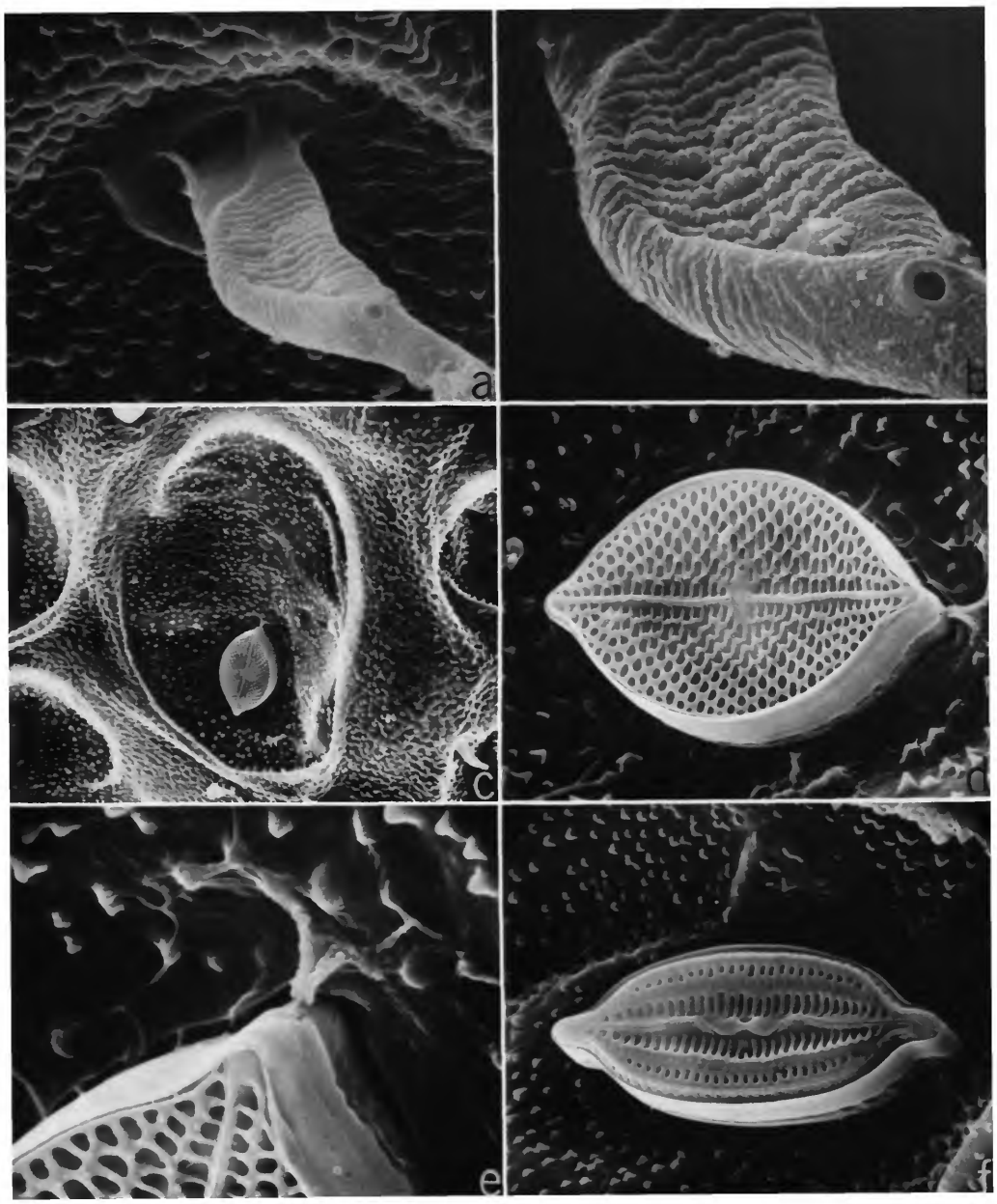

PLATE 23.—*Eusarsiella uncus*, new species, USNM 156713, holotype, adult female, outside views of left valve: *a*, base of bristle shown in lower left of Plate 22*f*, × 4000; *b*, detail of bristle in *a*, showing pore, × 10,000; *c*, detail showing surface texture and diatom in lower left of Plate 22*f*, × 1000; *d*, diatom in *c*, × 4000; *e*, detail showing attaching stalk of diatom, from *d*, × 10,000; *f*, detail of surface and diatom in upper right of Plate 22*f*, × 4000. (Micrographs reduced to 73% for publication.)

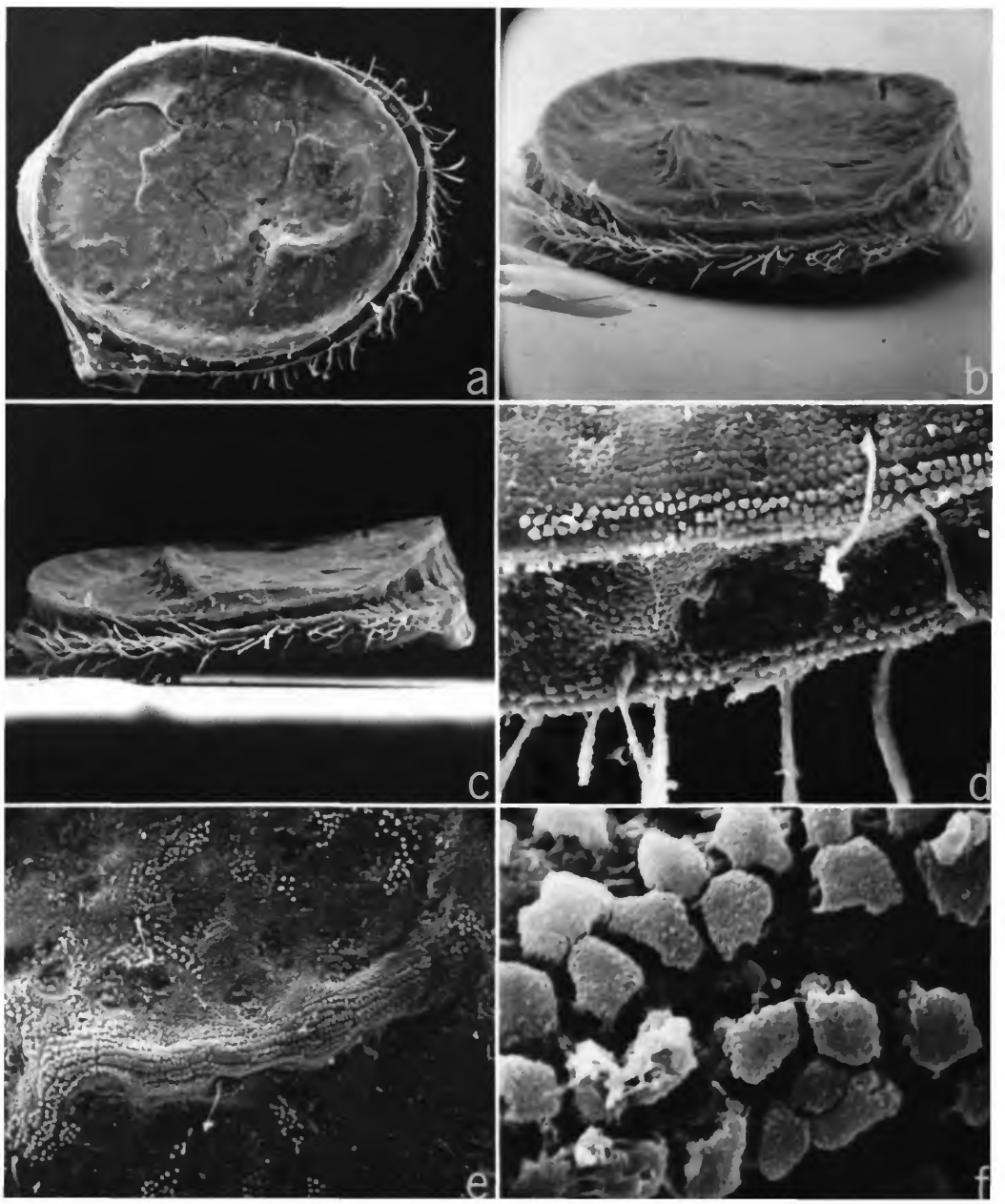

PLATE 24.—*Eusarsiella childi*, new species, USNM 151992, holotype, adult female, length 1.26 mm, outside views of right valve: *a*, lateral view, × 70; *b,c*, oblique anterior views, venter to left, × 90; *d*, detail of ventral margin, from *a*, × 720; *e*, detail of lateral rib in anteroventral part of valve, from *a*, × 325; *f*, detail of rib surface, from *e*, × 5500. (Micrographs reduced to 73% for publication.)

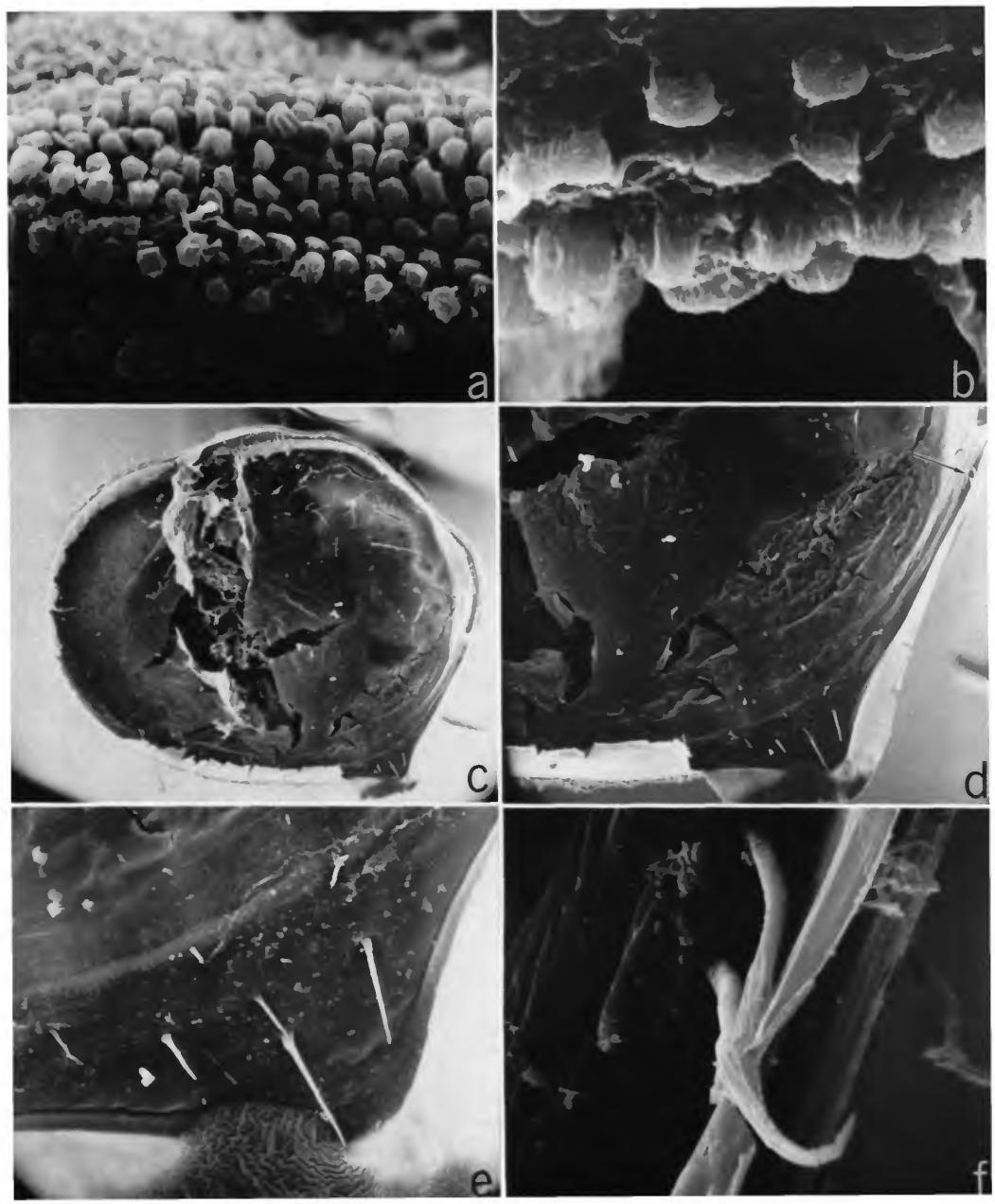

PLATE 25.—*Eusarsiella childi,* new species, USNM 151992, holotype, adult female, length 1.26 mm, right valve: *a,* detail of outer surface of dorsal part of inner oval ridge, from Plate 24 *a,* × 2200; *b,* detail of ventral edge of valve, from Plate 24*d,* × 5500; *c,* inside view of valve, × 75; *d,* postero-ventral corner, from *c,* × 180; *e,* detail of bristles on infold of caudal process, × 250; *f,* two posterior setal bristles near valve midheight, see arrow in *d,* × 250. (Micrographs reduced to 73% for publication.)

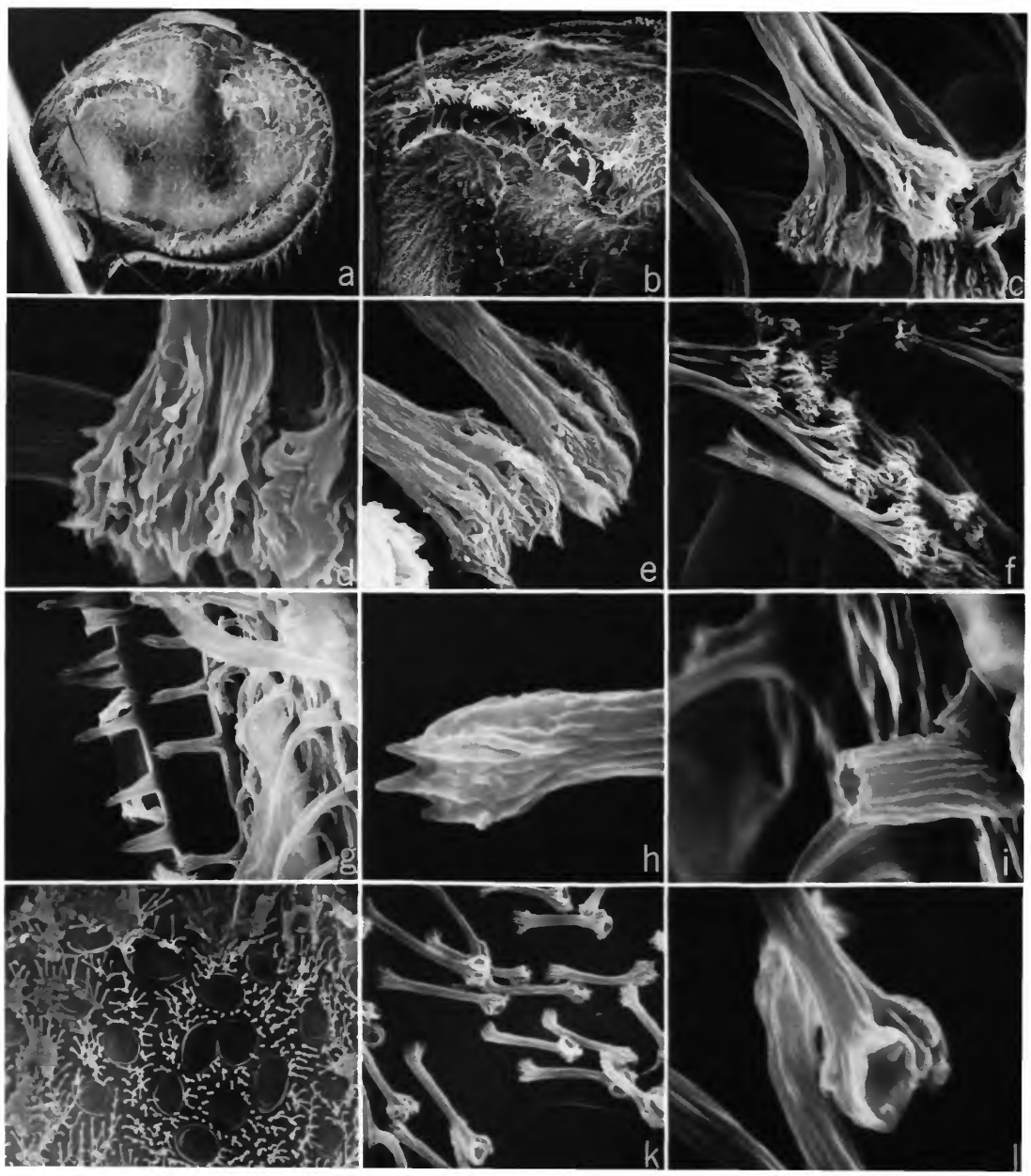

PLATE 26.—*Eusarsiella cresseyi*, new species, USNM 149314, paratype, adult female, length 1.00 mm, outside views of right valve: *a*, view from right, × 90; *b*, posterodorsal part of valve showing posterodorsal rib formed by bristles, × 200; *c*, tips of bristles forming rib in *b*, × 5000; *d*, tips of bristles in *c*, × 15,000; *e*, tips of bristles forming rib near ventral margin, from *a*, × 5000; *f*, bristles of rib near posteroventral margin, × 1950; *g*, posterodorsal margin (dorsal margin of valve towards left of micrograph), × 2600; *h*, tip of bristle in *g*, × 19,500; *i*, broken bristle in *g* showing hollow center, × 1300; *j*, detail of *a*, showing fossae of central adductor muscle attachments, × 500; *k*, bristles ventral to posterodorsal rib, from *b*, × 3000; *l*, tips of bristles shown in *k*, × 19,500. (Micrographs reduced to 54% for publication.)

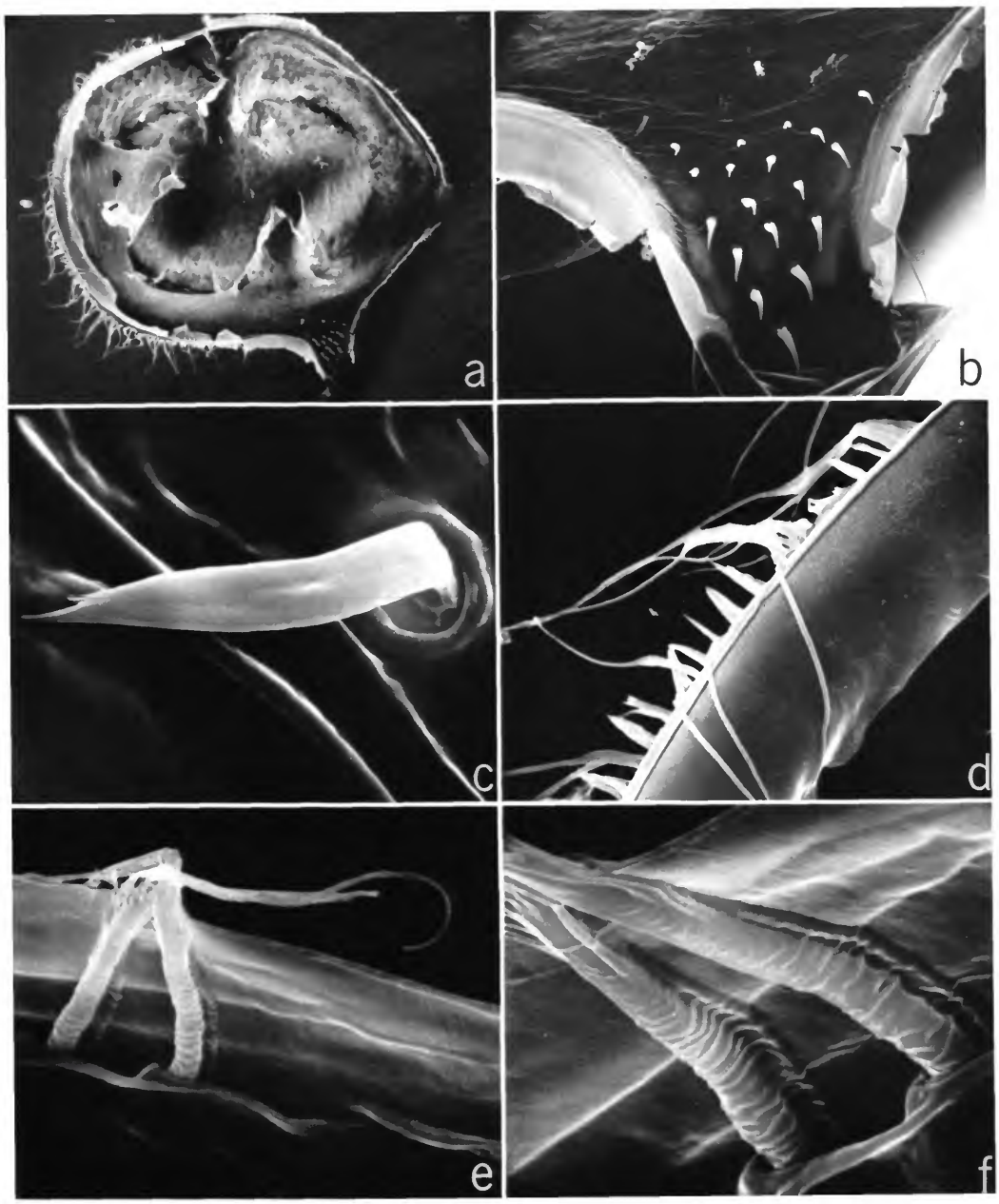

PLATE 27.—*Eusarsiella cresseyi*, new species, USNM 149314, paratype, adult female, length 1.00 mm, inside views of right valve: *a*, complete valve, × 80; *b*, caudal process, × 470; *c*, bristle of caudal process, × 7750; *d*, anterior margin lamella prolongation of selvage folded inward, × 725; *e*, posterior setal bristles on infold dorsal to caudal process, × 4000; *f*, proximal parts of setal bristles shown in *e*, × 8100. (Micrographs reduced to 73% for publication.)

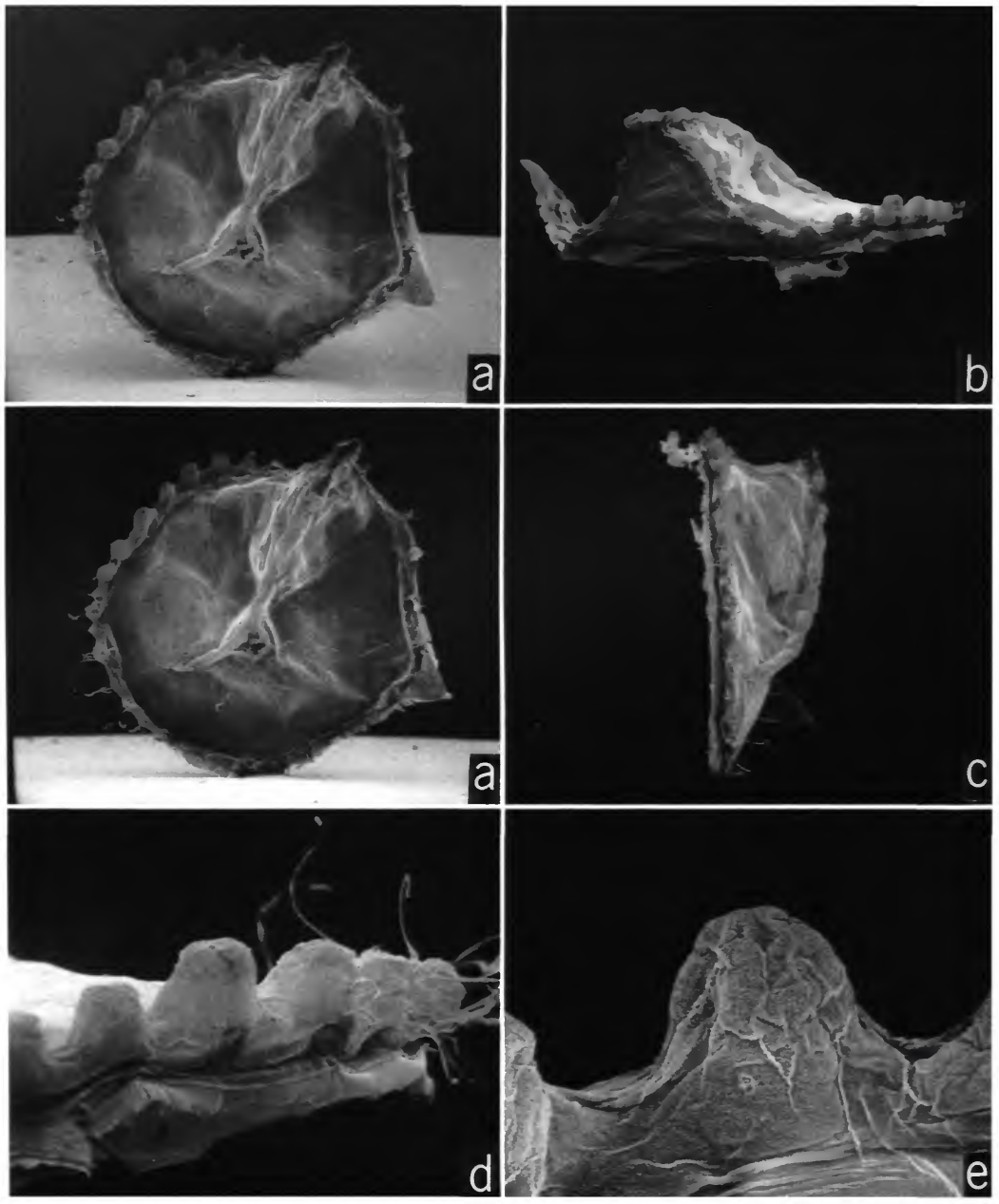

PLATE 28.—*Eusarsiella elofsoni*, new species, USNM 154181, holotype, adult female, lateral views of left valve (caudal process bent): *a*, lateral view, stereoscopic pair, × 52; *b*, dorsal view, × 60; *c*, anterior view of *a*, × 55; *d*, dorsal view of anterior end, from *b*, × 235; *e*, detail of node along anterodorsal margin, from *a*, × 520. (Micrographs reduced to 73% for publication).

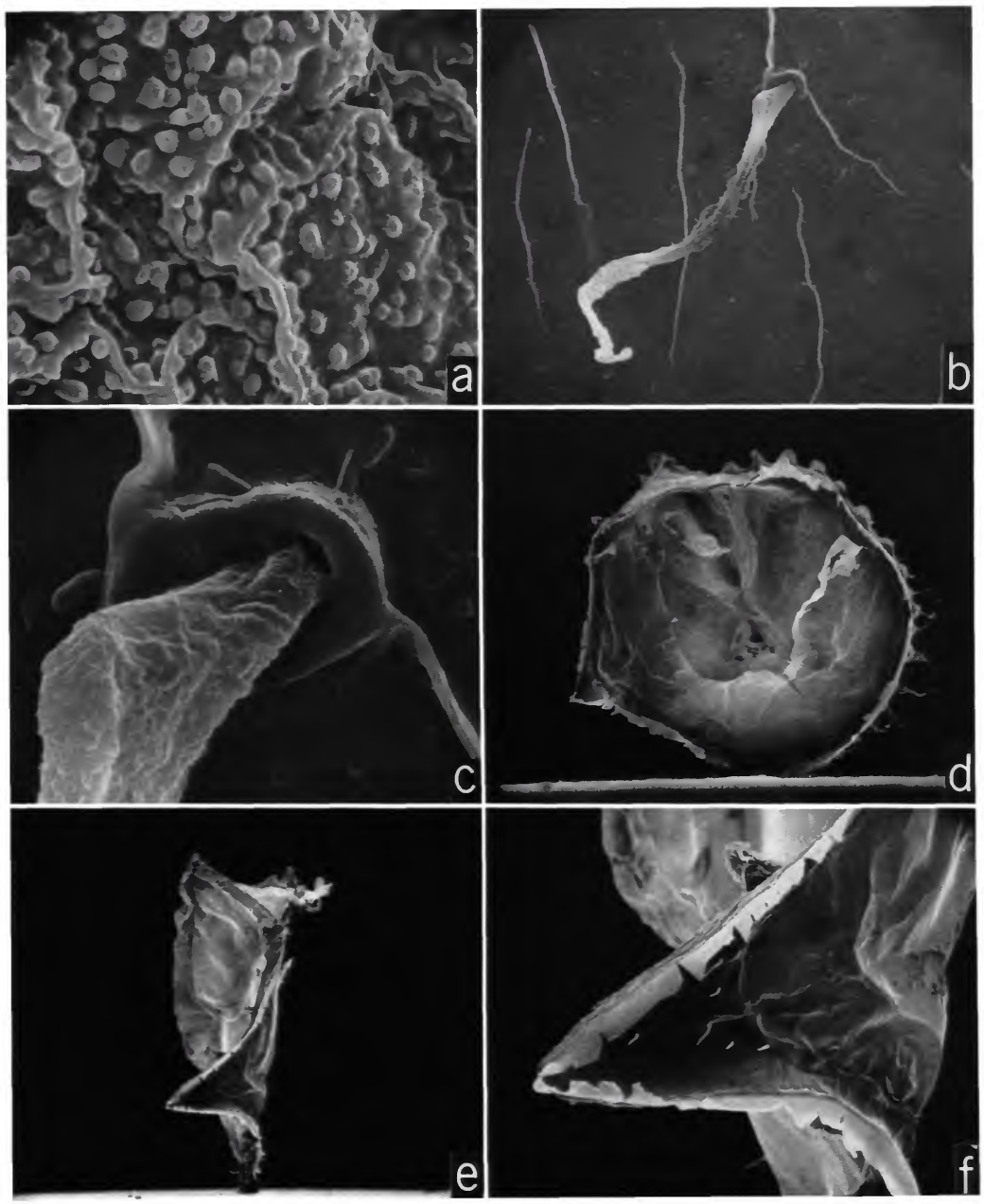

PLATE 29.—*Eusarsiella elofsoni*, new species, USNM 154181, holotype, adult female, left valve: *a*, detail of surface on node shown in Plate 28*e*, × 5200; *b*, bristle on anteroventral part of valve, from Plate 28*a*, × 750; *c*, detail of base of bristle shown in *b*; *d*, inside view of valve (caudal process bent), × 50; *e*, posterior view, × 52; *f*, detail of inner side of caudal process, from *e*, × 215. (Micrographs reduced to 73% for publication.)

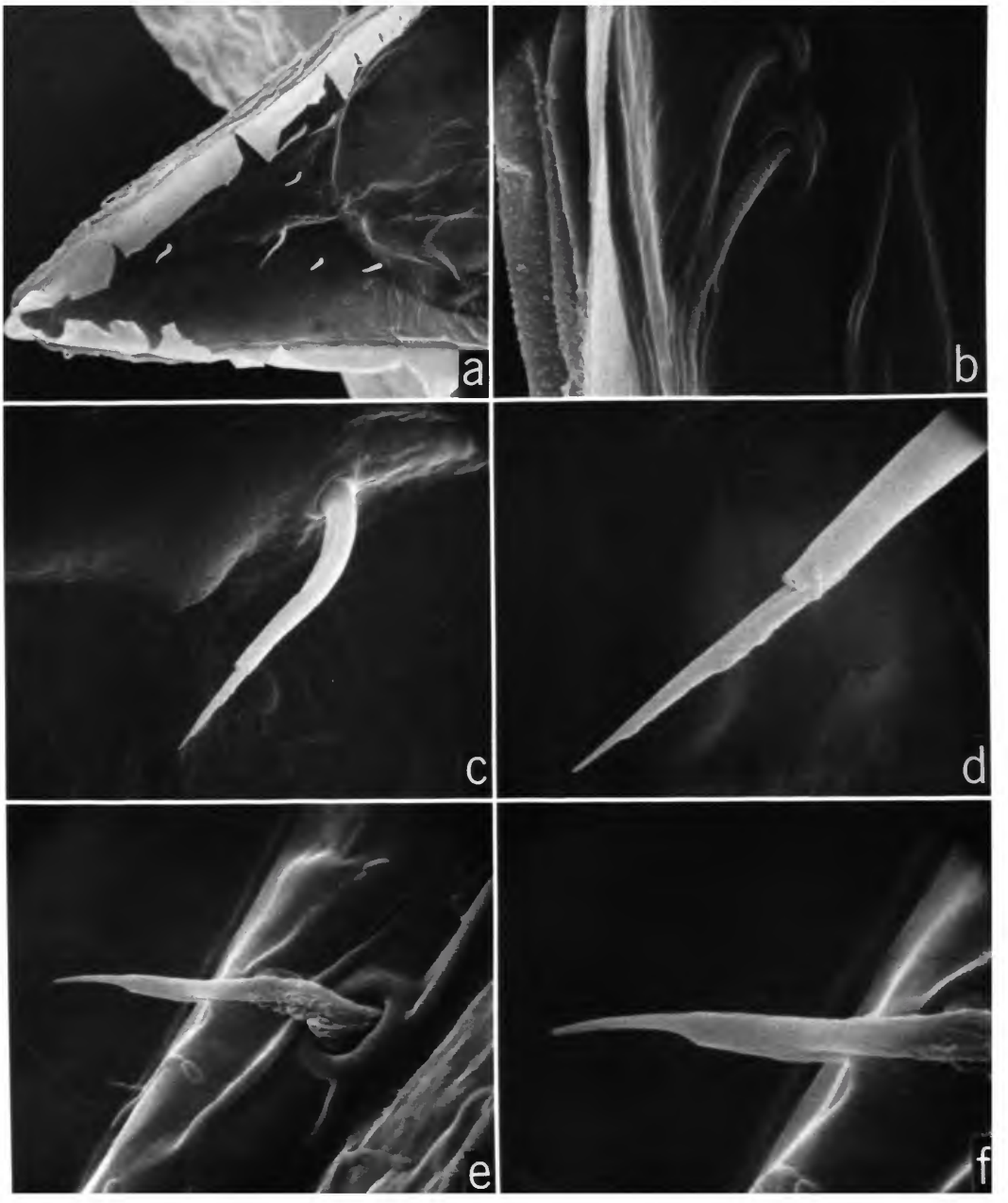

PLATE 30.—*Eusarsiella elofsoni*, new species, USNM 154181, holotype, adult female, inside views of left valve: *a*, detail of inner side of caudal process, from Plate 29*e*, × 320; *b*, setal bristles of posterior infold, from Plate 29*d*, × 500; *c*, bristle at middle of caudal process, from *a*, × 2100; *d*, detail of tip of bristle shown in *c*, × 5250; *e*, bristle along inner margin of infold anterior to caudal process, from Plate 29*f*, × 5000; *f*, detail of tip of bristle shown in *e*, × 10,000. (Micrographs reduced to 73% for publication.)

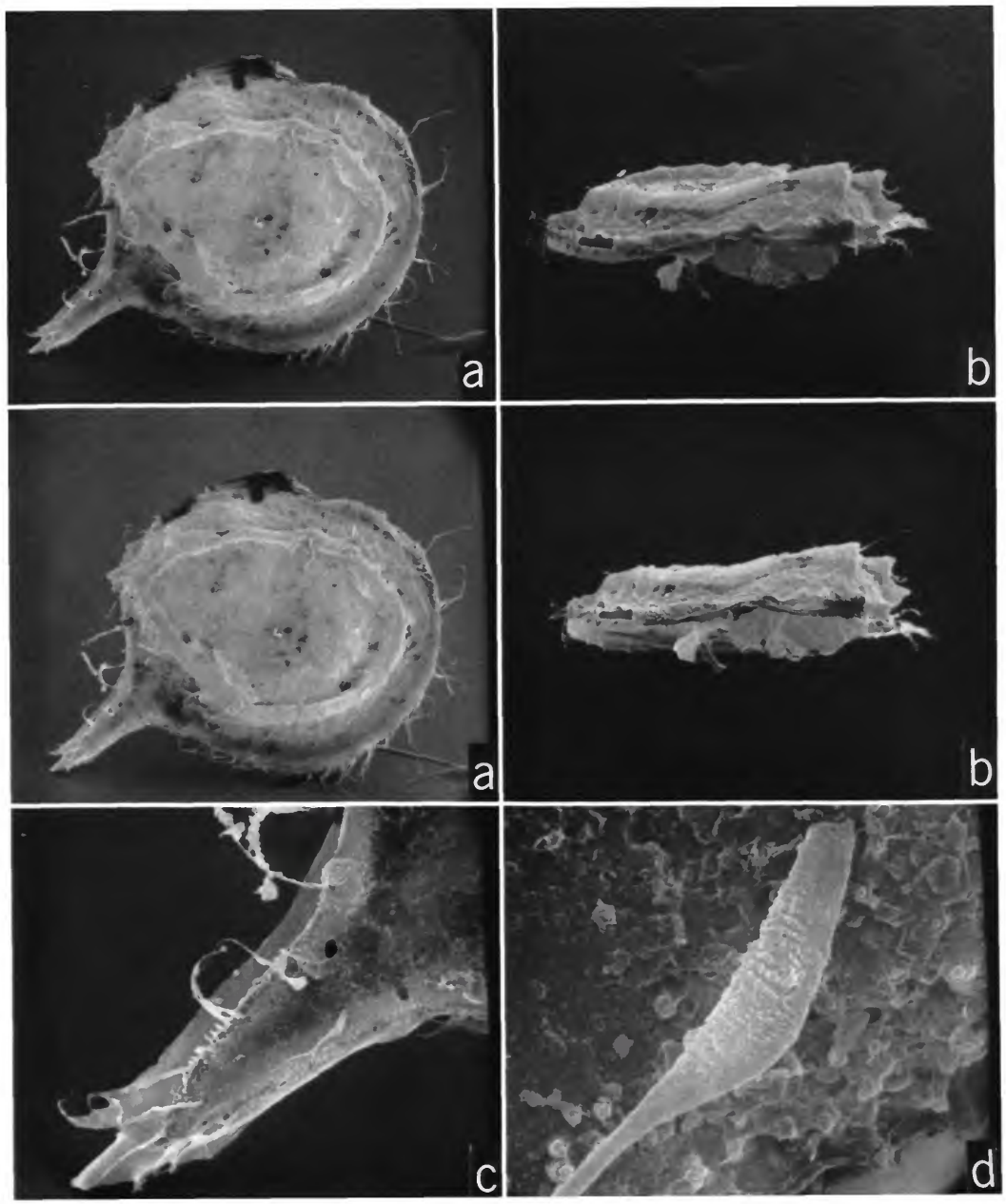

PLATE 31.—*Eusarsiella bakeri*, new species, USNM 154183, holotype, adult female, length 0.83 mm, outside views of right valve: *a*, lateral view, stereoscopic pair, × 90; *b*, dorsal view, stereoscopic pair, × 90; *c*, lateral view of caudal process, from *a*, × 335; *d*, proximal part of bristle on caudal process, from *c*, × 3350. (Micrographs reduced to 73% for publication.)

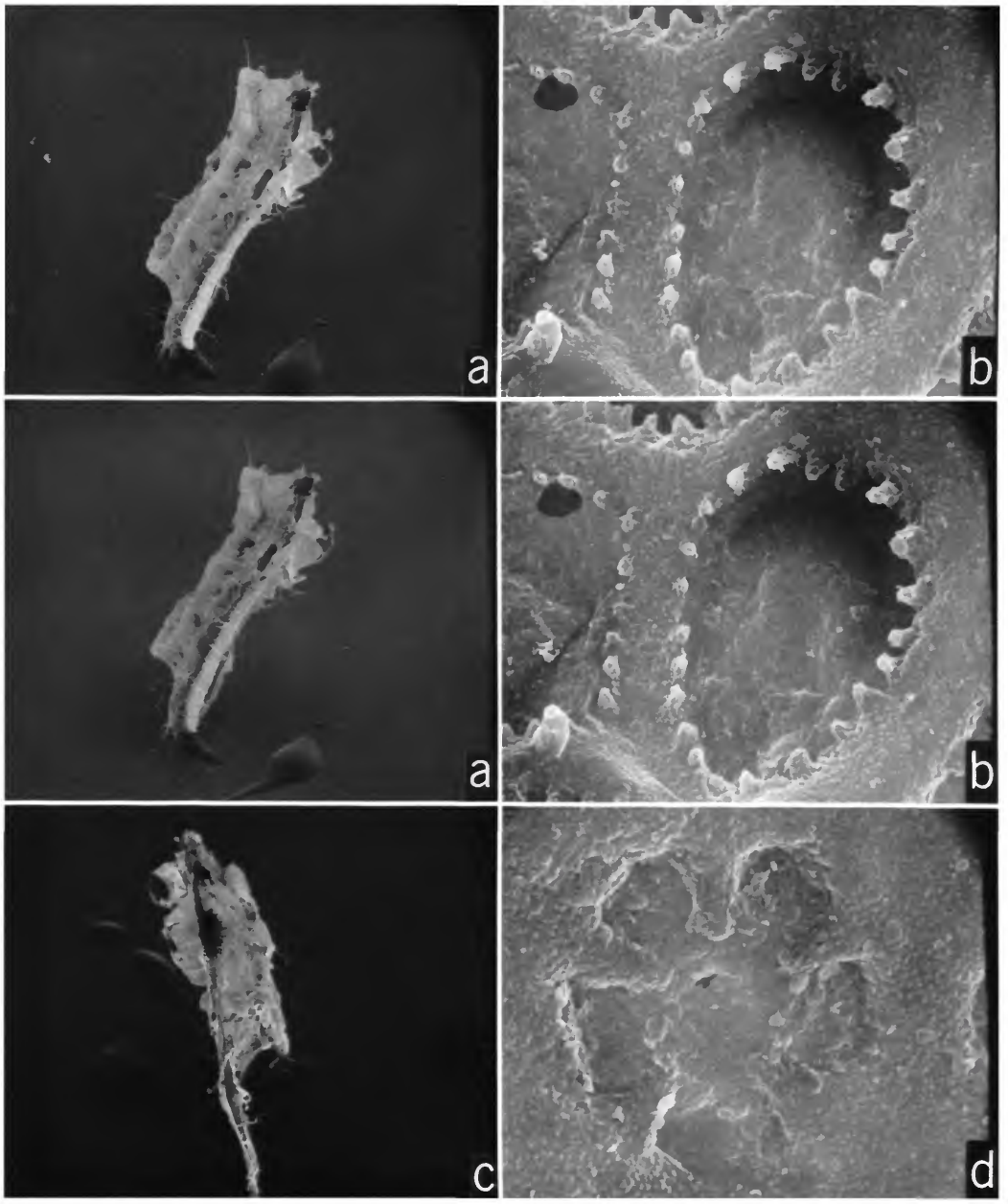

PLATE 32.—*Eusarsiella bakeri,* new species, USNM 154183, holotype, adult female, length 0.83 mm, outside views of right valve: *a,* anterior view, stereoscopic pair, × 85; *b,* fossae of central adductor muscle attachments, stereoscopic pair, from Plate 33*b,* × 2250; *c,* posterior view, × 85; *d,* fossa posterior to central adductor muscle attachments, from Plate 33*b,* × 2800. (Micrographs reduced to 73% for publication.)

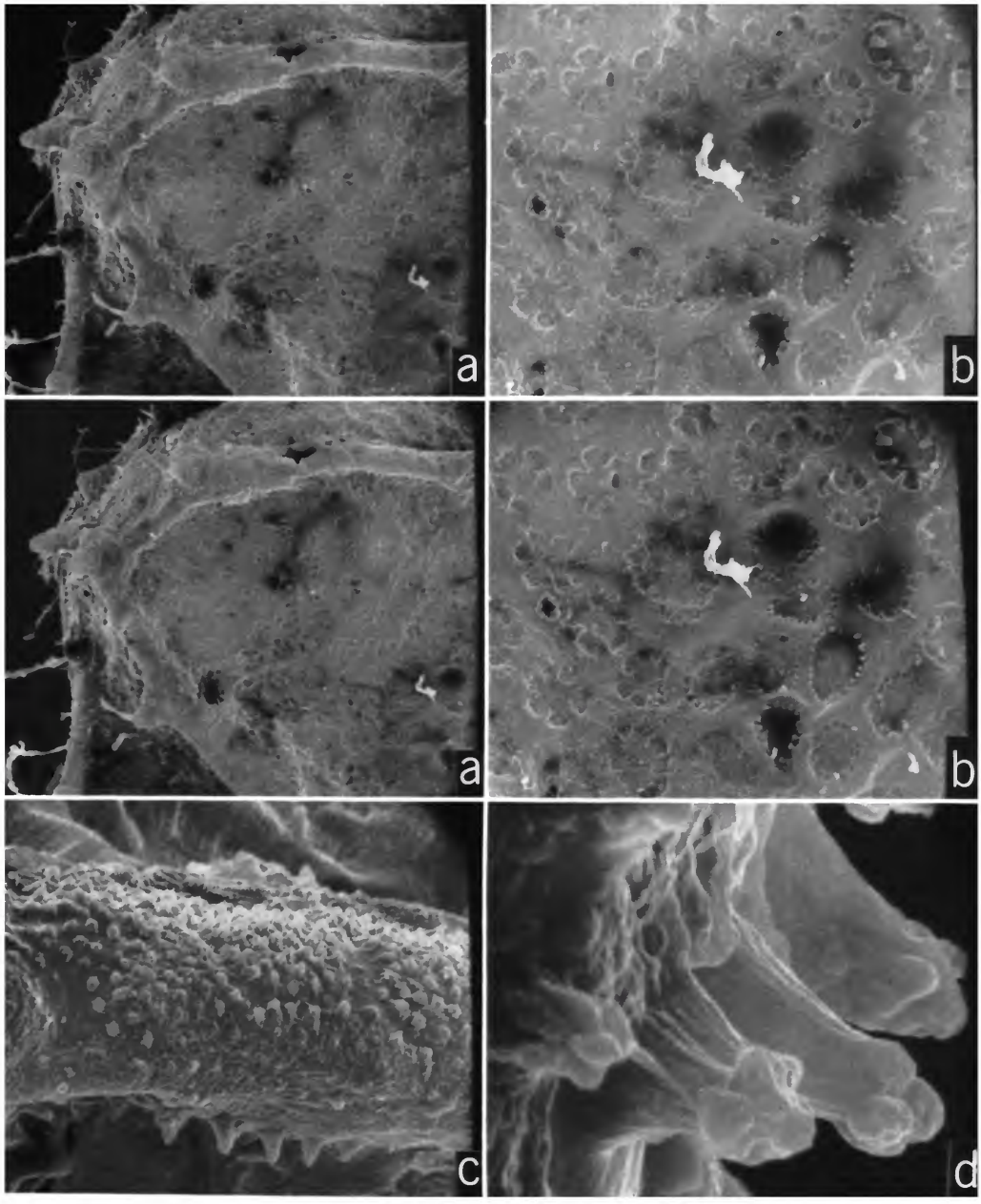

PLATE 33.—*Eusarsiella bakeri*, new species, USNM 154183, holotype, adult female, length 0.83 mm, outside views of right valve: *a*, lateral view of posterior, from Plate 31*a*, × 200; *b*, fossae in vicinity of central adductor muscle attachments, from Plate 31*a* (most of these fossae also shown in lower right of *a*), stereoscopic pair, × 500; *c*, detail of surface of dorsal part of oval ridge, from upper right of *a*, × 1700; *d*, long and short bristles along anterior margin of valve, from Plate 34*c*, × 2000. (Micrographs reduced to 73% for publication.)

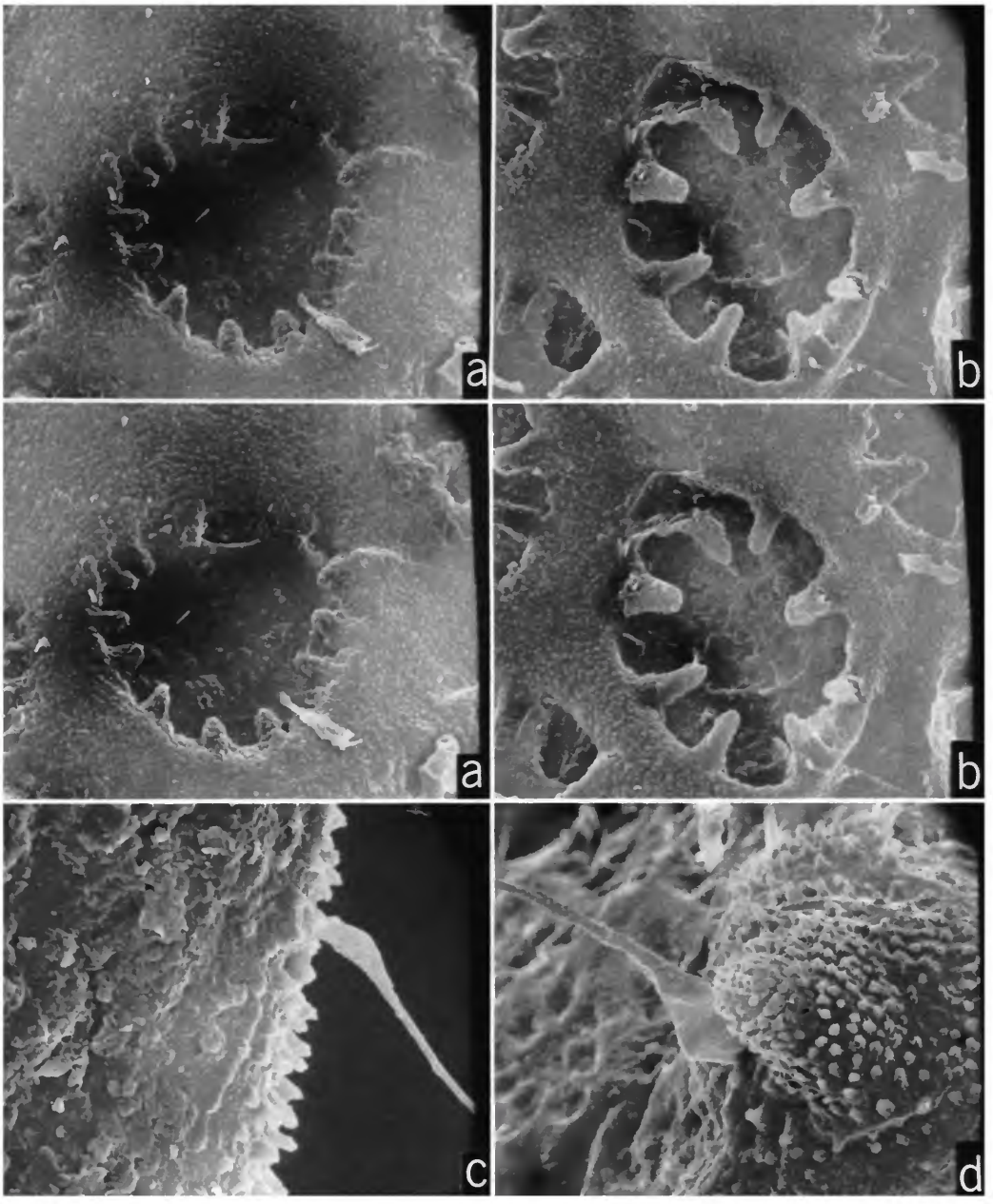

PLATE 34.—*Eusarsiella bakeri*, new species, USNM 154183, holotype, adult female, length 0.83 mm: *a*, fossa of central adductor muscle attachment, from Plate 33*b*, stereoscopic pair, × 2250; *b*, fossa dorsal to central adductor muscle attachment area, stereoscopic pair, from Plate 33*b*, *c*, anterior margin of valve, from Plate 31*a*, × 2000; *d*, process on oval ridge, from upper left of Plate 31*a*, × 1300. (Micrographs reduced to 73% for publication.)

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