

SYLLIDAE (POLYCHAETA), PRINCIPALLY FROM FLORIDA, WITH DESCRIPTIONS OF A NEW GENUS AND TWENTY-ONE NEW SPECIES

Thomas H. Perkins

Abstract.—The following new species are described: *Brania gallagheri*, *Dioplosyllis octodentata*, *Exogone arenosa*, *E. atlantica*, *Odontosyllis longigulata*, *Pionosyllis gesae*, *Plakosyllis quadrioculata*, *Sphaerosyllis aciculata*, *S. bilobata*, *S. brevidentata*, *S. glandulata*, *S. magnidentata*, *S. piriferopsis*, *S. riseri*, *S. taylori*, *Streptosyllis pettiboneae*, *Syllides bansei*, *S. floridanus*, *Trypanosyllis inglei*, *T. parvidentata*, and *T. savagei*. *Dentatisyllis*, n. gen., is proposed for *Syllis carolinae* Day. *Brania swedmarki* Gidholm is newly reported for the western Atlantic. *Brania wellfleetensis* Pettibone is newly reported from Tampa Bay, Florida. *Exogone longicirris* (Webster and Benedict) is removed from synonymy with *E. dispar* (Webster), and both and *E. lourei* Berkeley and Berkeley are additionally described. *Parapionosyllis longicirrata* (Webster and Benedict) is newly reported from both coasts of Florida, and *Pionosyllis manca* Treadwell from Virginia is reported as a synonym. Presence of *Pionosyllis uraga* Imajima, originally described from Japan, is confirmed for North Carolina and newly reported from Florida. Florida specimens of *Trypanosyllis coeliaca* Claparède are described. *Sphaerosyllis longicauda* Webster and Benedict is removed from synonymy with *S. erinaceus* Claparède and redescribed. North American specimens previously referred to *S. hystrix* Claparède are referred to *S. taylori*, n. sp. Specimens from North Carolina previously referred to *S. pirifera* are referred to *S. glandulata*, n. sp. Characters of systematic importance to *Sphaerosyllis* Claparède are discussed, and a key is given for 13 species of the genus from the northwestern Atlantic Ocean.

This report is one of several (Perkins, 1979) based primarily on specimens collected between September 1971 and July 1973 in an environmental baseline study of marine biota near the Florida Power and Light Company nuclear power plant at Hutchinson Island, St. Lucie County, Florida. Specimens representing significant range extensions and numerous new species from these collections are reported herein. Some Syllidae collected at Hutchinson Island are not included in this report, but will be included in a complete report on the Polychaeta which is in preparation. Additional specimens collected later at Hutchinson Island and other specimens from Maine to the Florida Keys, Bimini, Bahamas, the eastern Gulf of Mexico and the Northeast Pacific are included.

The study area was characterized and methods of collection were described by Gallagher and Hollinger (1977). Sediments were described by Gallagher (1977); other aspects of the physical and chemical environment were reported by Worth and Hollinger (1977). Brief descriptions of sampling stations and methods were also given by Perkins (1979).

Types and other specimens available for study are deposited in the Allan Hancock Foundation, University of Southern California (AHF), the Invertebrate Reference Collection of the Florida Department of Natural Resources Marine Research Laboratory (FSBC I), the U.S. National Museum of Natural History, Smithsonian Institution (USNM), the Virginia Institute of Marine Science Invertebrate Collection (VIMS), and the Zoologisches Museum, Hamburg (ZMH).

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Brania Quatrefages, 1865

Brania swedmarki Gidholm, 1962

Brania swedmarki Gidholm, 1962:256–258; fig. 3.—Hartmann-Schröder, 1974a:195, 196.

Material examined.—FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 11 specimens (USNM 60475; FSBC I 20576). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 2 specimens (FSBC I 20577, 20578). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 3 specimens (FSBC I 20579–20581).

Remarks.—*Brania swedmarki* was described from Roscoff, France, and has since been reported from the northwestern North Sea (Hartmann-Schröder, 1974a). Hutchinson Island specimens are in excellent agreement with Gidholm's (1962) description except for variations attributable to differences in preservation or state of contraction.

Specimens from the Florida east coast represent the first Western Atlantic records for the species.

Brania wellfleetensis Pettibone, 1956

Fig. 1

Brania wellfleetensis Pettibone, 1956:282, fig. 2a-c; 1963:134, 135, fig. 35h. *Brania* sp. Taylor, 1971:223-225, fig. 5a, b.—Hall and Saloman, 1975:12 [list].

Material examined.—MASSACHUSETTS: Wellfleet Harbor, Cape Cod Bay side, sandy bottom, among tubes of *Diopatra cuprea* (Bosc); 25 Aug. 1953; holotype (USNM 27783). Chappaquoit, Buzzards Bay, muddy sand; paratype (USNM 27784). FLORIDA, GULF OF MEXICO: Hillsborough Bay, Tampa Bay; S. Santos col. and det., 1975-1979; 32 specimens (USNM 60477; FSBC I 22498; AHF 367; J. L. Simon). Same, 27°49'03"N, 82°26'07"W, sand, 4 m; J. Taylor and C. Saloman cols., 4 Sep. 1963; 3 specimens (FSBC I 15458). Upper Tampa Bay, 27°49'29"N, 82°33'50"W, shelly sand, 1 m; J. Taylor and C. Saloman cols., 27 Aug. 1963; 24 specimens (FSBC I 15456). Same, 27°49'28"N, 82°33'24"W, sand, 5 m; J. Taylor and C. Saloman cols., 27 Aug. 1963; 2 specimens (FSBC I 15457). Lower Tampa Bay, 27°36'56"N, 82°41'05"W, sand, 9 m; J. Taylor and C. Saloman cols., 25 Oct. 1963; 2 specimens (FSBC I 17924). Same, 27°34'54"N, 82°43'01"W, sand, 7 m; J. Taylor and C. Saloman cols., 30 Oct. 1963; 1 specimen (FSBC I 15459). Same, 27°34'24"N, 82°42'53"W, sand with algae cover, 6 m; J. Taylor and C. Saloman cols., 4 Nov. 1963; 1 specimen (FSBC I 15460). Same, 27°35'26"N, 82°45'27"W, sand with algae and *Thalassia* cover, 3 m; J. Taylor and C. Saloman cols., 9 Oct. 1963; 2 specimens (FSBC I 13187).

Additional description.—Holotype: mature male with sperm in setigers 12-34 of 41 setigers, without natatory setae, with notoacacula between dorsal cirri and parapodial lobes first visible at about setiger 20 and continuing to setiger 33. Prostomium with anteromedian part forming rounded, obtuse angle. Antennae, tentacular cirri and dorsal cirri slightly pseudoarticulated [preserved]. Parapodia mostly with 4 compound setae but 1-2 additional setae on anterior parapodia (Fig. 1c); upper one with blade edge oriented ventrally; lower 3 with blade edges oriented dorsally; blades with about 5 long, slender serrations; shafts with few indistinct serrations below tip. Superior simple setae beginning on setiger 34 (Fig. 1a, b), with pointed, slightly hooked tips, mostly with 2 large serrations below tip and indistinct serrations below. Inferior simple setae on last 3 or 4 setigers (Fig. 1d), slightly curved, with pointed tips, without serrations or hairs below tips. Acicula solitary, with slightly knobbed tips. Pygidium with 3 anal cirri (Pettibone, 1963). Pharynx coiled, with small, indistinct middorsal tooth slightly back

more anterior setigers (13–30) on mature specimens. Compound setae (Fig. 1g–k) with blades slightly stouter than those of holotype, with similar number of stouter serrations; shafts similar, often stouter below. Inferior simple setae on several posterior segments (Fig. 1l) with tips pointed and few small serrations below tips. Pharynx longer than proventriculus, extending from posterior half of setiger 1 to posterior part of setiger 6 when inverted; anterior rim surrounded by 10, soft, ciliated papillae; middorsal tooth small; tip back from rim by about $\frac{1}{6}$ of total length (Fig. 1m). Proventriculus long, cylindrical, about 3 segments long in setigers 6–9, with about 30 (28–32) rows of muscle cells in mature specimens.

Sexually mature specimens with sperm and eggs or ventrally attached embryos beginning on setigers 12–14 and extending to setigers 27–43. Notoacicula in sexual segments; one female with long natatory setae; males with natatory setae not seen. Six-setiger stage embryos without dorsal cirri on setiger 2 attached by pygidial end below ventral cirri of one female (USNM 60477).

Remarks.—Specimens from the Tampa Bay area differ from the holotype in having a larger number of segments on most mature specimens; however, some mature specimens are about the same size. They also differ from the holotype in having superior simple setae of most specimens beginning on more anterior segments and in always having inferior simple setae with a few small serrations below the tips.

Brania wellfleetensis has previously been reported only from Massachusetts. Gulf of Mexico specimens reported herein may constitute a disjunct population, with only slight differences from the more northern form.

Brania gallagheri, new species

Figs. 2, 3

Material examined.—FLORIDA: Hutchinson Island Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand, holotype (R. Gallagher col., Jan. 1972; USNM 60209), 13 paratypes (USNM 54503, 54504; AHF Poly 1305; ZMH P-16386–16388, FSBC I 20597, 20598, 20603–20605). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 3 paratypes (USNM 54502; AHF Poly 1306; FSBC I 20583). Sta. III, 27°22.0'N, 80°12.4'W, about 7 m, medium calcareous sand; 19 paratypes (AHF Poly 1307; FSBC I 20584–20593, 20595, 20596).

Description.—Well-preserved, sexually mature specimens of 50–60 setigers 5–7 mm long, 0.2–0.5 mm wide with parapodia. Body without color markings; eyes orange to dark red; pharynx often brown with ring of yellowish brown cells anterior to rim. Prostomium (Fig. 2a–c) about twice as wide as median length, anteromedian part forming rounded, obtuse angle; lateral margins rounded; posterior margin straight. Two pairs of eyes near

lateral margins of posterior half; outer, anterior pair more lateral; small, composed of aggregated pigment spots on most specimens; large, with lenses, with outer pair larger on some sexually mature males and females. Median antenna originating near posterior margin, extending about to tips of palps or beyond, similar to upper tentacular cirri. Lateral antennae originating on anterior margin anterior to eyes, extending about to tips of palps, similar to lower tentacular cirri. Posterior third of palps fused, each about as long as prostomial width on noncompressed specimen (Fig. 2a). Tentacular segment similar but slightly shorter than following segment, upper tentacular cirri subequal to median antenna, extending about to tips of palps. Lower tentacular cirri shorter, similar to lateral antennae. Dorsal cirri of setiger 1 slender, longer than median antenna and upper tentacular cirri. absent on setiger 2; slenderer than those on setiger 1, extending to or beyond tips of setae on other setigers; all originating on short cirrophores (Fig. 2a, d). Parapodial lobes distally truncate, bilabiate. Ventral cirri originating from lower margins of parapodial lobes, slightly slenderer than dorsal cirri, extending about to tips of parapodial lobes. Solitary, superior simple setae (Fig. 3a–c, i, j) above acicula beginning on setiger 14–21 of mature specimens, 8–20 on other specimens, with tips bluntly-pointed, 1–2 blunt to pointed teeth near tips above indistinct, irregular serrations on large specimens; tips pointed on juveniles. Usually 4 compound setae (Fig. 3d–f, k–m), 1–2 additional ones on anterior setigers; upper ones with blade edges oriented ventrally; lower 3 with blade edges oriented dorsally; blades short, falcigerous, unidentate, with up to 7 relatively stout serrations on larger specimens, fewer serrations on juveniles (Fig. 3k–m); shafts with few indistinct serrations on protuberance below tips; lower shafts greatly inflated on some middle and posterior parapodia of mature specimens (Fig. 3f), slender on juveniles (Fig. 3m). Solitary, bidentate inferior simple setae on few posterior segments (Fig. 3g, n). Acicula solitary, with knobbed tips (Fig. 3h). Pygidium with 3 anal cirri; long, subcylindrical lateral pair about as long as last 3 or 4 segments; shorter, slenderer median one originating ventrally (Fig. 2e). Males with sperm beginning in setiger 15–18, extending to setiger 49 in specimen of 59 setigers; with short, natatory setae and notoacacula (Fig. 2d) between bases of dorsal cirri and parapodial lobes, or with only notoacacula, beginning on setiger 20 or 21 and extending to about end of sexual region. Females with eggs beginning in setigers 16 or 17 and long, natatory setae and notoacacula, or with only notoacacula, beginning on setiger 18 and extending to about 10 segments from posterior end.

Pharynx relatively thick-walled, extending to about setiger 6, with long, broad, anterior middorsal tooth (Fig. 2b, c), anterior end surrounded by 10 soft, ciliated lobes. Proventriculus of adults cylindrical, slightly longer than pharynx, 5–6 times longer than diameter, in 7–9 segments, with about 45 rows of muscle cells, with anterior 6 rows small. Ventricle convoluted in

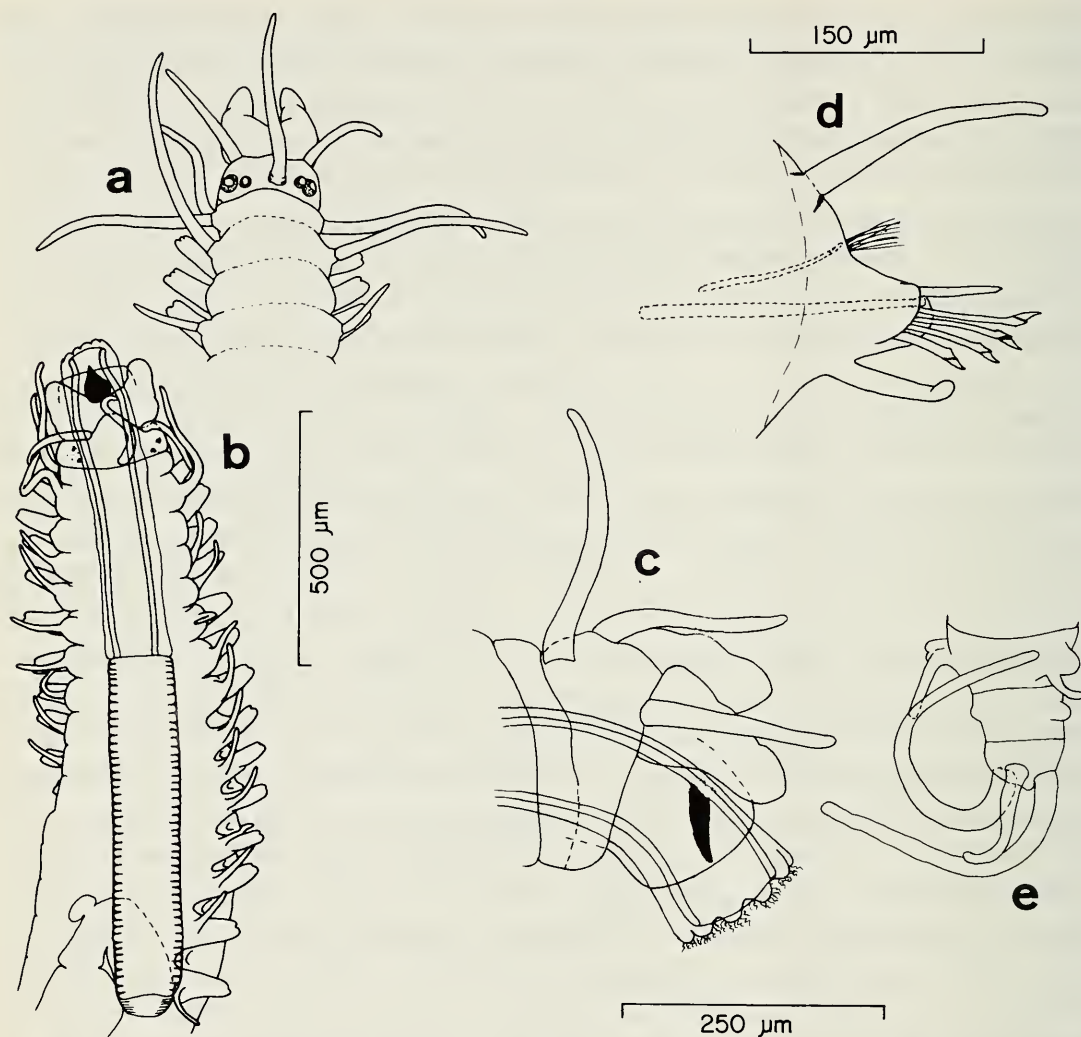


Fig. 2. *Brania gallagheri*: a, Anterior end, dorsal view; b, Same, slightly flattened showing internal structure, pharyngeal tooth darkened; c, Same, lateral view; d, Parapodium of setiger 37 of male, slightly turned anterior view; e, Pygidium, ventral view (a, d, USNM 54502; b, FSBC I 20601; c, e, USNM 54503).

figured specimen (Fig. 2b), 1–2 segments long depending on state of contraction.

Remarks.—*Brania gallagheri* is very similar to *B. wellfleetensis* Pettibone in general shape. However, *B. gallagheri* has longer and slenderer antennae and cirri and a larger, broader middorsal pharyngeal tooth. The proventriculus of *B. gallagheri* is about 6 segments long with about 45 rows of muscle cells, while that of *B. wellfleetensis* is about 3 segments long with about 30 rows of muscle cells; inferior simple setae of *B. gallagheri* have bidentate tips, while those of *B. wellfleetensis* are unidentate; and sperm and eggs begin in setigers 15–18 and notoacacula and natatory setae begin in setigers 18–21 of *B. gallagheri*, while sexual products, natatory setae and notoacacula begin in setigers 12–14 of *B. wellfleetensis*.

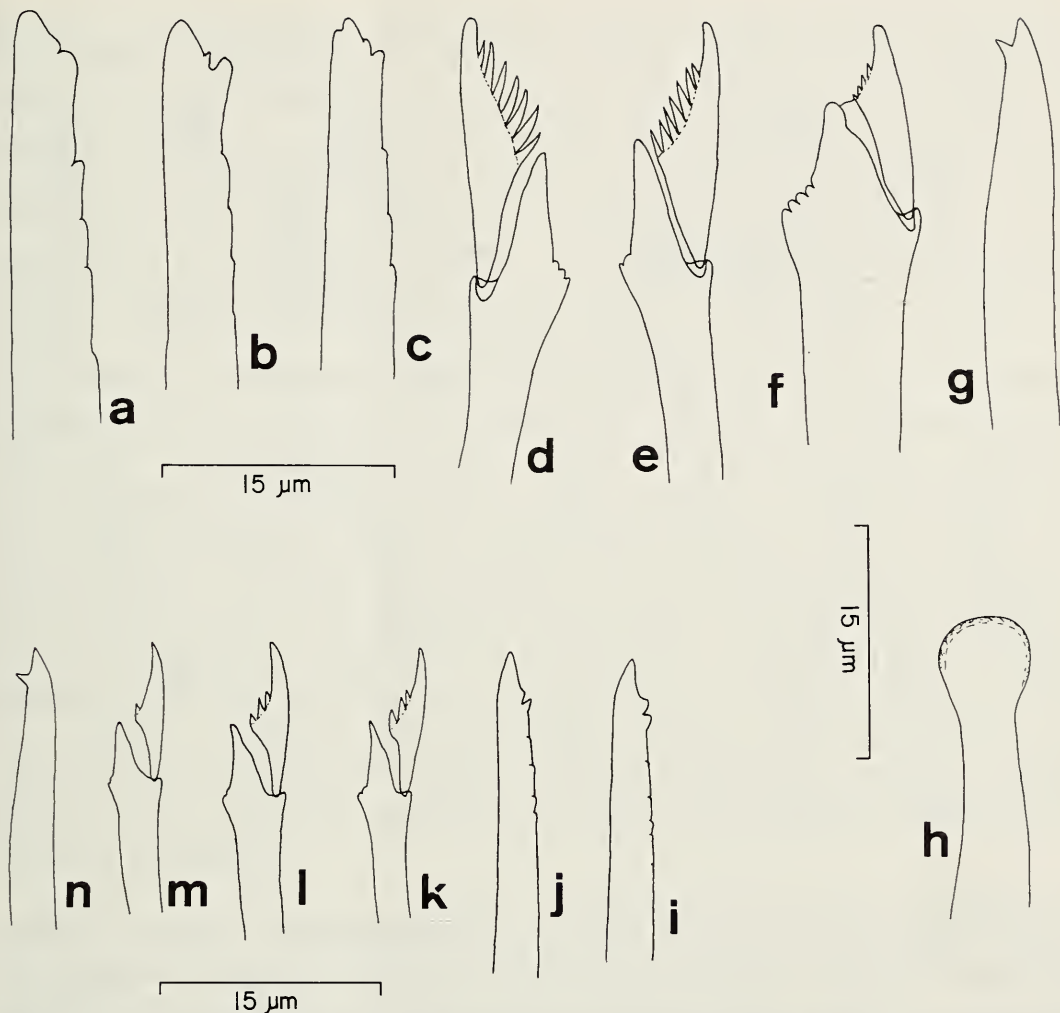


Fig. 3. *Brania gallagheri*: a–c, Superior simple setae, middle segments; d, Upper compound seta of setiger 37; e, Middle compound seta of same; f, Lower compound seta of same, blade somewhat turned; g, Inferior simple seta of posterior setiger; h, Aciculum of setiger 37; i, j, Superior simple setae, posterior setigers of juvenile; k, Upper compound seta of same; l, Middle compound seta of same; m, Lower compound seta of same; n, Inferior simple seta of same (a–h, USNM 54502; i–n, FSBC I 20584).

Etymology.—The species is named in honor of Mr. Robert M. Gallagher, who was instrumental in providing the excellent specimens from the Hutchinson Island study.

Dioplosyllis Gidholm, 1962
Dioplosyllis octodentata, new species

Fig. 4

Material examined.—FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher,

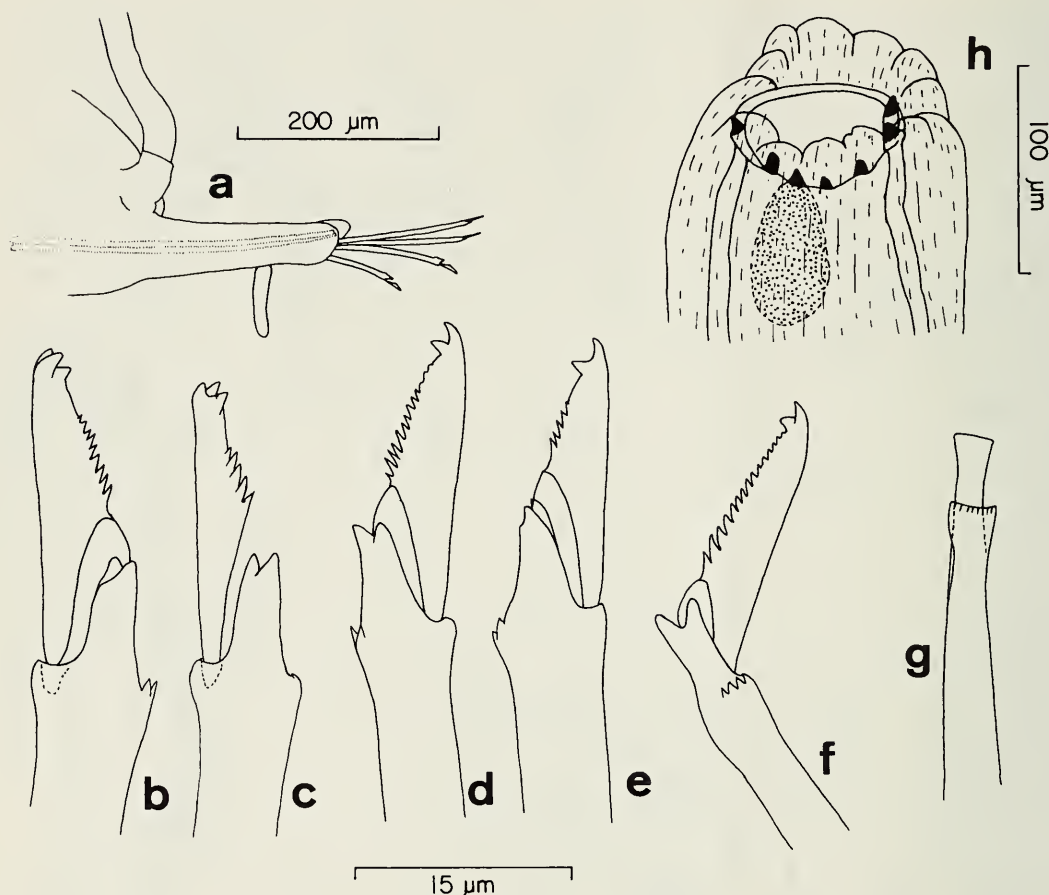


Fig. 4. *Dioplosyllis octodentata*: a, Posterior parapodium, posterior view; b–e, Compound setae of same: b, Upper; c, Upper middle; d, Lower middle; e, Lower; f, Compound seta, oblique view; g, Acicula, anterior parapodium; h, Tip of pharynx, ventral view, teeth darkened, midventral tooth obscuring tip of middorsal tooth which is outlined by dashed line and stippled (FSBC I 23501).

col., Nov. 1972; USNM 54509), 2 paratypes (FSBC I 23500, 23501). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 1 paratype (USNM 54508). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 1 paratype (FSBC I 23502).

Description.—Holotype, largest adult specimen, incomplete posteriorly, in 2 pieces, 8 mm long, 0.5 mm wide without parapodia, with about 50 setigerous segments; complete juvenile relatively long, slender, with about 35 setigers. Prostomium pentagonal, about twice as wide as long, with pointed anteromedial lobe comprising anterior half; sides of lateral half rounded; posterior edge convex, with very slight medioposterior notch. Antennae on short ceratophores, lengths 3–5 times prostomial width, median slightly longer; laterals originating from sides of anteromedial lobe; median originating between posterior eyes. Palps longer than prostomial lobe, stouter

distally, probably free to base. Eyes 3 pairs; 2 pairs on posterior half in trapezoidal arrangement open to front, lensed; anterior eyespots medial to origins of lateral antennae. Nuchal organs on posterior part. Tentacular segment slightly narrower than following segment; tentacular cirri 2 pairs, on short cirrophores, similar to dorsal cirri of following segments. Transverse rows of cilia on ventrum and on dorsal and ventral borders of parapodial lobes on setigerous segments; cilia apparently not extending across dorsum. Dorsal cirri without obvious regular arrangement of alternating lengths, 2–3 mm long. Parapodial lobes (Fig. 4a) as long as body width, with 6–8 falcigerous compound setae in anterior segments and 4–5 in posterior segments. Ventral cirri attached near middle of ventral margins of parapodial lobes, extending about to tips. Shafts of compound setae (Fig. 4b–e) with pronounced bifurcation on tips, with transverse row of serrations below tips. Upper compound setae with stout shafts; lower compound setae with shafts similar in diameter to those in middle of bundle and not as thick as upper shafts; blades of compound setae stoutest in upper parts, longest in middle, shortest in lower parts of bundle; tips of blades tridentate, with principal tooth bifurcate in plane perpendicular to blade (Fig. 4b, c). Solitary, slender, bidentate, superior simple setae on posterior setigers of 2 small, complete specimens; principal tooth longer than secondary, strongly falcate. Two acicula in anterior parapodia (Fig. 4g); solitary aciculum in posterior parapodia.

Pharynx usually in first 7 setigers in adults, proventriculus in setigers 8–12 or 14; pharynx and proventriculus in more anterior segments of smaller specimens. Pharynx slightly less than $1\frac{1}{2}$ times longer than proventriculus; tip armed with large, middorsal tooth and ventral arc of 7 smaller teeth (Fig. 4h); rim otherwise smooth in figured specimen but appearing indistinctly scalloped in holotype (however, pharynx of latter somewhat contorted, not allowing satisfactory illustration). Proventriculus with about 33 rows of muscle cells including 10 small rows anterior to chitinous ring.

Remarks.—Differences among species of *Dioplosyllis* were recently tabulated by Mueller and Fauchald (1976). *D. octodentata* is closely allied with *D. cirrosa* Gidholm (1962:253–255) from the Atlantic coast of France. *D. octodentata* differs from *D. cirrosa* in the following characters. The pharynx of *D. octodentata* has a ventral arc of 7 small teeth on the edge while the pharynx of *D. cirrosa* has a ventral arc of 5 small teeth with tips removed from the edge. Anterior eyespots are present on the prostomium of *D. octodentata* and absent on *D. cirrosa*. The length of the pharynx compared with the length of the proventriculus of *D. octodentata* is 1.5:1 while the pharynx of *D. cirrosa* is almost twice as long as the proventriculus. The proventriculus of *D. octodentata* has about 33 rows of muscle cells while that of *D. cirrosa* has 45. Shafts of compound setae of *D. octodentata* are

distally much more deeply notched than those of *D. cirrosa*, and the 3 teeth on tips of blades are much larger.

Specimens of *D. octodentata* may be easily misidentified as *Eusyllis lamelligera* Marion and Bobretzky, 1875, since both species have long dorsal cirri and a pharynx with a denticulate margin. [Pettibone (1963:120–122) referred both *Syllis fragilis* Webster (1879:217–220, pl. 4, figs. 42, 43) and *Eusyllis tenera* Verrill (1882:368) to *E. lamelligera*.] However, palps of *E. lamelligera* are fused for about a third of their dorsal length, and the details of the setae of the 2 species are greatly different.

Etymology.—The specific name, derived from the Latin adjectives, *octo*, meaning eight, and *dentata*, meaning toothed, refers to the number of pharyngeal teeth.

Exogone Örsted, 1845

Exogone dispar (Webster, 1879)

Paedophylax dispar Webster, 1879:223, pl. 4, fig. 49, pl. 5, figs. 50–55.

Exogone dispar.—Pettibone, 1963:130, fig. 35d (synonymy) [in part; not *Paedophylax longicirris* Webster and Benedict].—Taylor, 1971:201–204 [in part].—Hall and Saloman, 1975:12 [list; in part].—Day, 1973:33, 34 [in part; not *E. clavator* Ehlers and *E. uniformis* Hartman].—Westheide, 1974:106–109, figs. 48, 49 [in part; not Hartman and Fauchald, 1971, mixture of species; not Kohn and Lloyd, 1973].—Gardiner, 1976:132, fig. 11f–i [in part].

Material examined.—4 specimens on slides, from Webster's private collection identified as *Paedophylax dispar*, now deposited at Smithsonian Institution, without locality data but probably type-specimens from Virginia (USNM 27560). NEW JERSEY: Great Egg Harbor; numerous specimens (USNM 495, 498; as *Paedophylax dispar* by Webster). NORTH CAROLINA: Cape Lookout; S. Gardiner and H. Wilson, cols. (USNM 52918, 52919). Off Beaufort, J. H. Day, col., 16 specimens (USNM 51072). FLORIDA: Lower Tampa Bay, 27°36'56"N, 82°41'05"W, 9 m, J. Taylor and C. Saloman cols., 25 Oct. 1963; 79 specimens (USNM 60478).

Description.—Long, slender, at most about 5 mm long, with up to 40 segments. Median antenna long, club-shaped, extending about to tips of palps; lateral antennae papilliform; 4 eyes. Proventriculus cylindrical, shorter than pharynx, with 17–20 rows of muscle cells, in 2–3 segments beginning in setiger 4 when pharynx inverted. Dorsal cirri on all setigers. Obscure oblate, subdermal gland below dorsal cirrus of each parapodium. Setae including superior and inferior simple setae, compound spinigers and falcigers. Superior simple setae of middle segments strongly bent near tips; tips pointed, smooth or irregularly dentate on outer edges below tips, without spines or aristaes. Spinigers similar throughout body, with shafts slightly enlarged

near tips and spinous; blades shorter on posterior segments. Falcigers with bidentate blades, primary tooth much smaller than secondary, serrate on anterior segments, shorter, without serrations on posterior segments. Inferior simple setae on posterior parapodia, with bidentate tips, secondary tooth smaller than primary. Pygidium with 2 cirri. Sexually mature specimens with natatory setae beginning on setiger 14 or 15; eggs and sperm often found in more anterior segments, e.g., setiger 10.

Remarks.—The synonymy of the species is complicated. *Exogone longiceps* (Verrill, 1879) and *E. dispar* were described at about the same time. Verrill was aware of Webster's species and differentiated *E. longiceps* from *E. dispar* on rather questionable characters. Types of *E. longiceps* have apparently been lost, but it appears very similar if not identical with *E. dispar* (Pettibone, 1963). Pettibone (1954, 1963) also included *E. longicirris* (Webster and Benedict) in synonymy with *E. dispar*; *E. longicirris* is a different species. Day (1973) included *E. clavator* Ehlers from South Africa and *E. uniformis* Hartman from California in synonymy with *E. dispar*. However, according to Day (1967) spinigerous compound setae are absent from posterior segments of *E. clavator*; they are present on posterior segments of *E. dispar*; and according to Banse (1972), *E. uniformis* has a long proventriculus "with 26 or 27 rows of muscular columns" extending through 7–8 setigers, a short median antenna (Banse, 1972:201, fig. 5e) and setae which are similar to *E. lourei* Berkeley and Berkeley.

Specimens reported as *E. dispar* from Alaska by Pettibone (1954) apparently included 2 species. One of the species had superior simple setae with an arista and is possibly *E. longicirris*; the other species may be *E. lourei*, which she included in her synonymy. The same type of aristate superior simple seta was described by Kohn and Lloyd (1973) for specimens from Easter Island referred to *E. dispar*.

In Atlantic areas, specimens reported as *E. dispar* by Hartman (1965) and Hartman and Fauchald (1971) are apparently a mixture of species and should be re-examined. Specimens reported as *E. dispar* by Taylor (1971) from Tampa Bay, Florida, include both *E. dispar* and *E. arenosa*, n. sp. About half of the specimens from Bogue Sound and Banks Channel, North Carolina (USNM 52916, 52917), reported as *E. dispar* by Gardiner (1976), are similar to *E. arenosa*, n. sp., in having enlarged shafts of spinigers on setiger 2, but the shafts differ in shape from those of *E. arenosa*. The specimens are similar to *E. dispar* in having superior simple setae without spines on the tips and the proventriculus of mature specimens with about 20 rows of muscle cells. All of Gardiner's (1976) specimens from Cape Lookout (USNM 52918, 52919) are typical examples of *E. dispar*.

I can confirm the presence of the species on the east coast of North America from Massachusetts to Florida and the Gulf of Mexico and from the Galapagos Islands in the eastern Pacific Ocean.

Exogone longicirris (Webster and Benedict, 1887)

Fig. 5a-f

Paedophylax longicirris Webster and Benedict, 1887:722, pl. 3, figs. 46-50.
Exogone dispar.—Pettibone, 1954:259; 1963:130-131 [in part; not *Paedophylax dispar* Webster].

Material examined.—MAINE: Eastport; 4 syntypes (USNM 439).

Description.—Slender, up to about 3 mm long and 0.3 mm wide. Median antenna long, cylindrical, extending almost to tips of palps, lateral antennae about $\frac{1}{4}$ as long; 4 eyes. Proventriculus cylindrical, $\frac{2}{3}$ as long as pharynx with about 11 large and 5 small rows of muscle cells; in length of 3 segments beginning in setiger 4 or 5; pharynx light-colored, about 5 segments long. Dorsal cirri on all setigers. Setae including superior and inferior simple setae, compound spinigers and falcigers. Superior simple setae on middle and posterior parapodia (Fig. 5a, b), with 2 subequal teeth on tips, with arista beginning below tips on concave edge and extending beyond. Spinigers (Webster and Benedict, 1887:pl. 3, fig. 48) similar throughout body, shorter posteriorly. Blades of falcigers (Fig. 5c, d) with similar primary and secondary teeth, with arista or hood beginning at bases and extending to near tips. Inferior simple setae on posterior parapodia (Fig. 5e), similar to superior simple setae but with shorter aristae and sharper teeth. Acicula (Fig. 5f) solitary, with knobbed tips. Pygidium with 3 anal cirri.

Remarks.—*Exogone longicirris* differs from *E. dispar* (Webster) in having bidentate superior and inferior simple setae which are also aristate and in having compound falcigers with hooded blades. I cannot determine from examination of the types that compound spinigers are present on posterior setigers. There are no posterior segments on the syntypes I examined, and most setae of middle segments are broken.

Exogone lourei Berkeley and Berkeley, 1938

Exogone lourei Berkeley and Berkeley, 1938:44, figs. 6-12; 1948:79, fig. 117.—Berkeley, 1967:1055.—Pettibone, 1967:5.—Banse and Hobson, 1968:16, fig. 4d, e.—Banse, 1972:200-202, figs. 5a-d; 1974:58, figs. 14h-j.
Exogone uniformis Hartman, 1961:73, 74 [in part; pl. 6, fig. 1, pl. 7, fig. 1 and 8 specimens from type-locality, but not holotype (AHF Poly 0170) or paratypes (AHF Poly 0171), fide Banse (1972)]; 1968:427, 428 [in part; unnumbered figures of anterior and posterior ends].

Material examined.—BRITISH COLUMBIA: False Narrows; holotype (USNM 32895). WASHINGTON: Puget Sound, 47°41'33"N, 122°24'18"W, 23 m (16-36), Sta. 1 of Banse and Hobson (1968); 27 Feb. 1963; 1 specimen (USNM 36538).

Description.—Slender, up to about 8 mm long with about 50 segments.

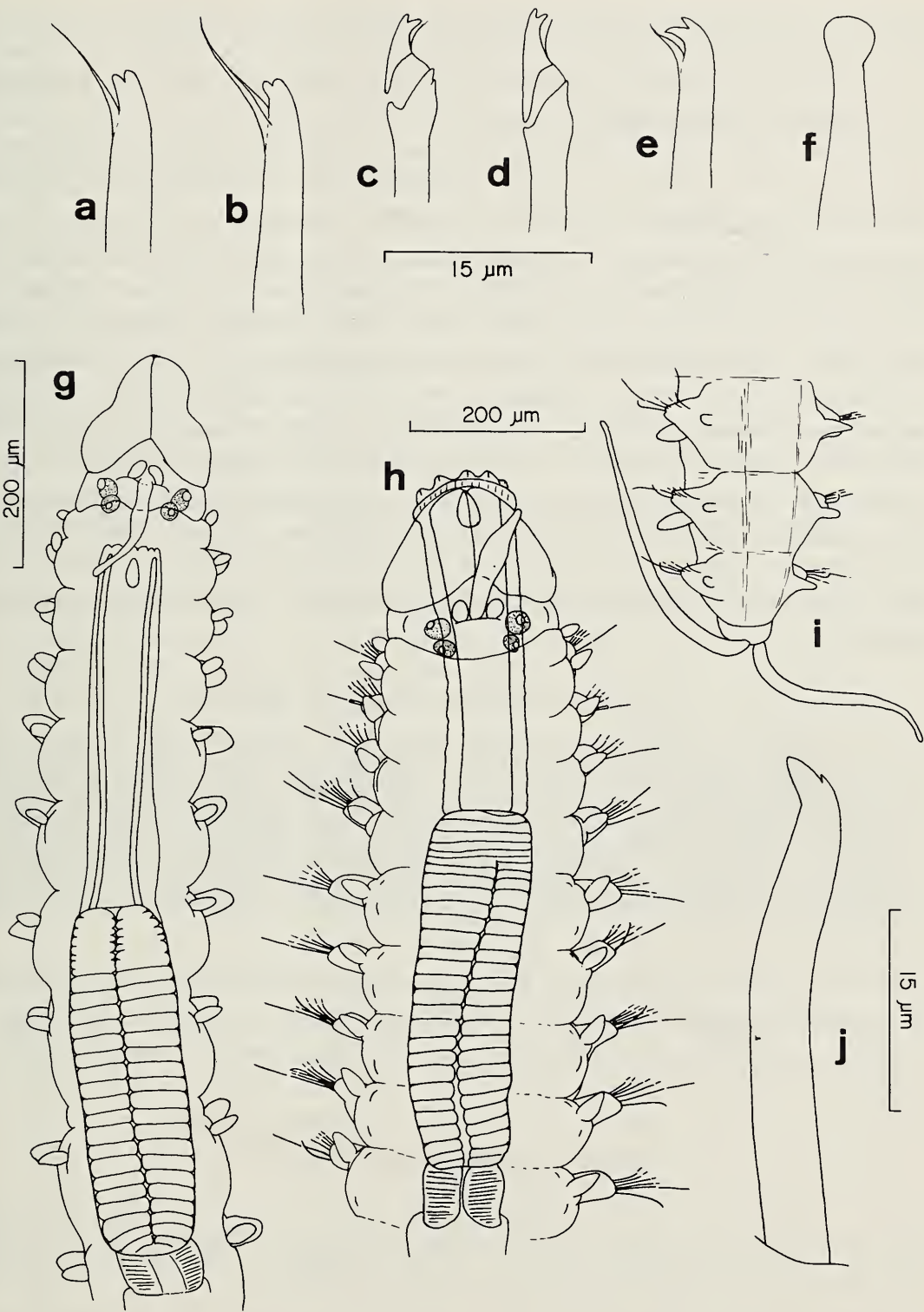


Fig. 5. *Exogone longicirris*: a, b, Superior simple setae; c, d, Compound falcigers; e, Inferior simple seta; f, Aciculum. *Exogone arenosa*: g, Anterior end, relaxed specimen; h, Same, contracted specimen (FSBC I 23522); i, Posterior end, ventral view; j, Inferior simple seta (FSBC I 23516).

Median antenna long, nearly reaching to anterior ends of palps; lateral antennae short, ovoid; 4 eyes. Proventriculus cylindrical, shorter than pharynx, with about 20 rows of muscle cells on mature specimens, in length of 3 or 4 segments beginning in setiger 3 or 4; pharynx dark red, with tip rolled backwards when everted. Dorsal cirri on all setigers. Setae including superior and inferior simple setae, compound spinigers and falcigers. Superior simple setae beginning on anterior setigers, strongly bent near tips; tips pointed; irregularly dentate on outer edges below tips but without spines or aristaes (Banse and Hobson, 1968:fig. 4d). Spinigers of setiger 2 enlarged, with large, triangular process below tip of shafts and tongue-shaped process on one side of tip, with blades shorter than on setiger 1 or 3 (Banse, 1972:fig. 5b). Spinigers continuing to posterior end but gradually shorter. Falcigers (Banse and Hobson, 1968:fig. 4e) bidentate, with secondary tooth much larger than primary, serrate on edge on anterior setigers, slightly shorter and without serrations posteriorly. Inferior simple setae on middle and posterior segments, sigmoid, tips bidentate with primary tooth much smaller than secondary. Pygidium with 2 anal cirri. Natatory setae, sperm, 2 ova or embryos per segment beginning on about setiger 17 and extending to about setiger 35.

Exogone uniformis Hartman, 1961

Exogone uniformis Hartman, 1961:73, 74 [in part, not pl. 6, fig. 1, pl. 7, fig. 1 and 8 specimens from type-locality, fide Banse, 1972]; 1968:427, 428 [in part, not unnumbered figures of anterior and posterior ends].—Banse, 1972:202, 203, fig. 5e [diagnosis and additional description based on examination of holotype (AHF Poly 0170) and 3 paratypes (AHF Poly 0171)].

Remarks.—Both Hartman's (1961) description and material of *E. uniformis* included *E. lourei* Berkeley and Berkeley; however, the 2 species differ as diagnosed by Banse (1972). Also see remarks under *E. dispar* and *E. arenosa*.

Exogone arenosa, new species

Figs. 5g–j, 6

Exogone dispar.—Taylor, 1971:201–204.—Hall and Saloman, 1975:12 [list] [in part, not *Paedophylax dispar* Webster, 1879].

Material examined.—FLORIDA: Hutchinson Island Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Jan. 1972; USNM 60442), 54 paratypes (USNM 60443; AHF Poly 1308, 1309; ZMH P-16389; FSBC I 23503–23511). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 17 paratypes (ZMH P-16390; FSBC I

23512–23516). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 10 paratypes (FSBC I 23517–23523). Palm Beach, 0.5–0.75 mi off Breakers Hotel, “Breakers Reef,” 26°42.8'N, 80°01.2'W, 23.7 m; J. W. Smith *et al.*, cols., Mar. 1976; 1 paratype (FSBC I 23524). Tampa Bay, 27°36'56"N, 82°41'05"W, 9 m, sand; J. Taylor and C. Saloman, cols., 25 Oct. 1963; 170 paratypes (USNM 60444).

Description.—Tube mucoid, covered to some extent with sand. Body without color markings; eyes light to dark red, rarely black. Well-preserved, sexually mature specimens mostly 5–6 mm long, about 0.25 mm wide, about 50 setigerous segments. Prostomium (Fig. 5g, h) about twice as wide as median length; anteromedian part forming rounded, obtuse angle; lateral sides rounded; posterior side often covered by fold of tentacular segment. Two pairs of lensed eyes on posterior part in about middle and in contact on each side; anterior pair slightly larger, more lateral. Long, fusiform median antenna originating about middle of prostomium, extending anteriorly to near tips of palps; papilliform lateral antennae originating between base of median antenna and anterior pair of eyes; all antennae on slight prominence of prostomium. Palps together slightly wider than prostomium, slightly longer than median prostomial length, with anterior notch and median dorsal furrow. Tentacular segment slightly wider than prostomium, about half length of following segments, with pair of small, ovoid tentacular cirri on anterolateral margins. Small, pyriform or papilliform dorsal cirri on all setigers of almost all specimens; few juvenile specimens (FSBC I 23525) with dorsal cirri absent from setiger 2; cirri well above parapodia, usually shorter than parapodial lobes. Parapodial lobes stout, truncate, distally bilabiate. Ventral cirri slightly flattened, smaller than but otherwise similar to dorsal cirri, originating on ventral median parts of parapodial lobes. Solitary, superior simple setae (Fig. 6b, c) with long, thin secondary spine near tips, beginning on first setiger of juveniles, on more posterior setigers of larger specimens (setiger 1–15), not as thick as shafts of compound setae on anterior segments, becoming much stouter on posterior segments. Compound setae (Fig. 6a, d–g) both spinigerous and falcigerous. Spinigers 1, occasionally 2, in upper parts of bundles. Spinigers of setiger 2 (Fig. 6a, d) with stout shafts having single, large, stout, triangular process below tips on same side as pectinate edges of blades and tooth on one side of tips; blades 30–43 μm long. Shafts of spinigers of remaining segments (Fig. 6e) without triangular process. Spinigerous blades of setiger 3 always longer than those of setiger 2, 38–49 μm long; blades 26–30 μm long at posterior end. Falcigerous blades bidentate, with secondary tooth much stouter than primary, numbering 6–7 on anterior parapodia, 3–4 on median parapodia, 2–3 on posterior parapodia, about 10 μm long on anterior segments with about 6 long serrations below secondary tooth, shorter posteriorly, 6 μm or less in length and smooth below secondary tooth. Solitary, bidentate, inferior simple setae

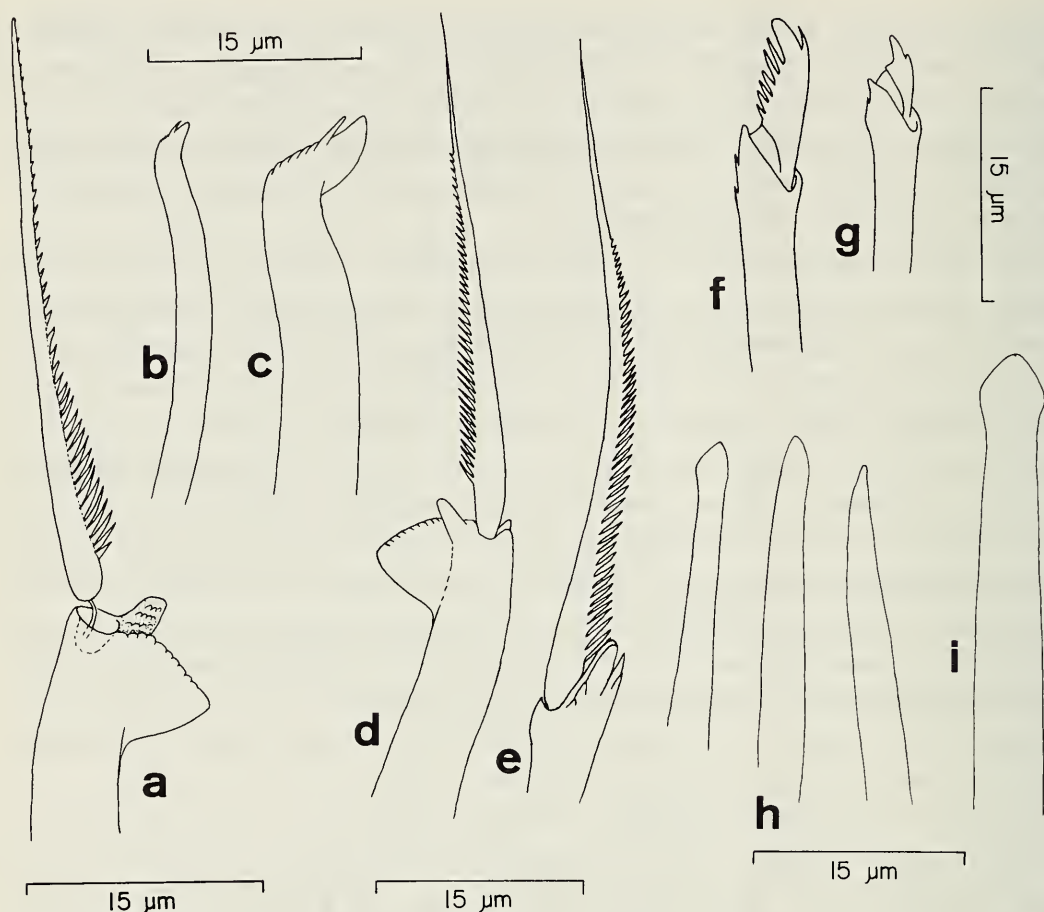


Fig. 6. *Exogone arenosa*: a, Spiniger with stout, triangular process on shaft, setiger 2; b, Superior simple seta, setiger 10; c, Same, posterior setiger; d–g (FSBC I 23516): d, Spiniger with stout, triangular process on shaft, setiger 2; e, Spiniger without stout triangular process on shaft, setiger 3; f, Falciger, setiger 2; g, Falciger, setiger 49; h, Acicula, setiger 3; i, Aciculum, posterior setiger.

(Fig. 5j) on last 16 setigers of large specimen, on posterior 5–7 segments of most specimens. Three acicula in anterior parapodia; solitary, much stouter one in posterior parapodia (Fig. 6h, i). Pygidium (Fig. 5i) rounded, with pair of anal cirri about as long as last 3 setigerous segments. Sexually mature males with natatory setae beginning on setiger 19–20 for maximum of 22 segments; sperm mostly beginning on segment anterior to that on which natatory setae begin, extending to 1–2 segments anterior to segment having posteriormost natatory setae. External embryos 2 per segment, attached to median side of ventral cirri of some females beginning on setiger 19–20, continuing for 15–19 segments; natatory setae absent on females with external embryos, occasionally found on more immature specimens. Approximately last 10 segments lacking sex products or natatory setae.

Pharynx relatively thin walled, with large, anterior middorsal tooth; anterior end surrounded by 10 soft papillae; wall surrounded by brownish glands. Location of pharynx depending upon state of contraction, usually in first 5 setigerous segments of relaxed specimens, extending from anterior of palps to posterior part of setiger 3 of contracted specimens. Proventriculus about equal in length to pharynx, cylindrical, slightly greater than 3 times longer than diameter, with 25–28 rows of muscle cells with anterior 6 rows small in sexually mature adults, with fewer rows of muscle cells, e.g., 12 large and 6 small rows in juveniles. Posterior part of proventriculus usually extending to anterior part of setiger 9 with well-defined ventricle in same.

Remarks.—*Exogone arenosa* differs from *E. dispar* Webster in having shafts of spinigers of setiger 2 enlarged with a large triangular process near the tips, in having a longer proventriculus and in having superior simple setae with a spine on the tips. *E. arenosa* is very similar to *E. lourei* Berkeley and Berkeley from the northeast Pacific; compound setae of the 2 species appear identical. However, superior simple setae of *E. arenosa* differ from those of *E. lourei* in having a well-defined spine on the tips, and the proventriculus of *E. arenosa* is longer with up to 28 rows of muscle cells while that of *E. lourei* has about 20 rows of muscle cells. The compound setae and proventriculus of *E. uniformis* Hartman, 1961, are similar to those of *E. arenosa*. *E. uniformis* has a shorter median antenna and superior simple setae apparently do not have a spine on the tips (cf. Banse, 1972:203).

Etymology.—The specific name is derived from Latin and refers to the sandy tube.

Exogone atlantica, new species

Fig. 7

Material examined.—FLORIDA: Eastern Gulf of Mexico off Egmont Key, Project Hourglass Sta. C, 27°37'N, 83°28'W, 37 m, in scleractinian *Siderastrea radians* (Pallas, 1766); R/V *Hernan Cortez*, B. Presley, col., 13 Dec. 1966; holotype (USNM 60345). Same, Project Hourglass Sta. B, 27°37'N, 83°07'W, 18 m; 3 Apr. 1967; 2 paratypes (FSBC I 23526). Same, off Sanibel Island, Project Hourglass Sta. L, 26°24'N, 83°22'W, 55 m; 15 Nov. 1967; 1 paratype (USNM 60346). Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 5 paratypes (AHF Poly 1310; ZMH P-13191; FSBC I 23527–23529).

Description.—Pharynx reddish brown, surrounded by thin, brownish glands. Maximum length 3.2 mm, 38 setigerous segments; body anteriorly tapered for first few segments, gradually tapered posteriorly. Prostomium (Fig. 7a) longer than wide. Three pairs of eyes; anterior pair small, apparently lensed, on margin anterior to lateral antennae, remaining 2 pairs larger,

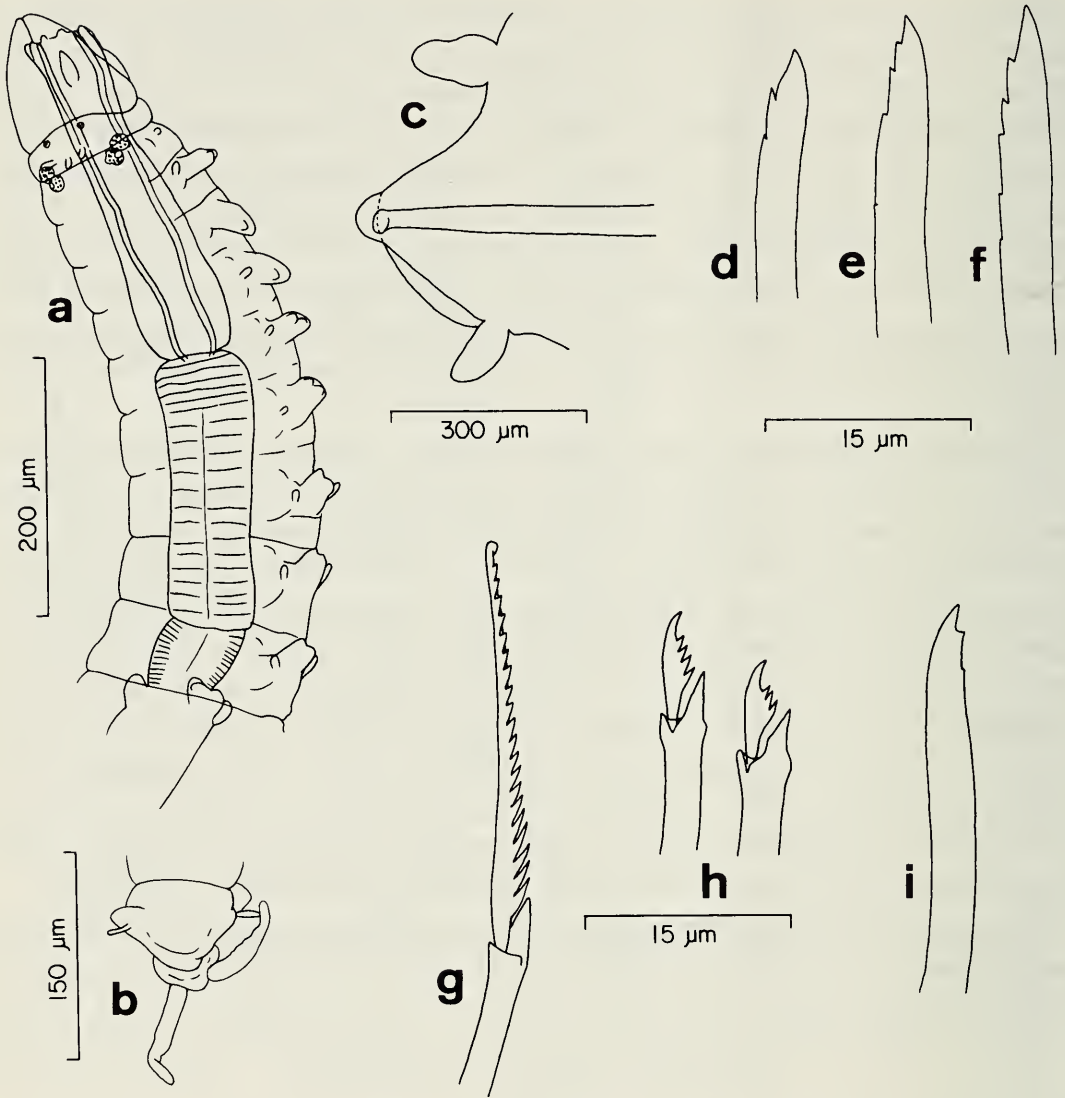


Fig. 7. *Exogone atlantica*: a, Anterior end of holotype, left lateral antenna partially obscuring lateroanterior, lensed eye; b, Posterior end, ventral view; c, Parapodium, anterior setiger, posterior view (FSBC I 23527); d-f, Superior simple setae: d, Setiger 12; e, Middle setiger; f, Posterior setiger; g, Spiniger, anterior setiger (FSBC I 23527); h, Upper and lower falcigers of same; i, Inferior simple seta.

lensed, on posterior part of prostomial lobe, arranged as flattened trapezoid open to front, partially covered by fold of tentacular segment. Three minute antennae between anterior pair of large eyes. Palps slightly narrower and about as long as prostomial width, subtriangular, with small anterior notch and dorsal furrow. Tentacular segment visible dorsally, anteriorly forming fold covering posterior part of prostomium; length similar to following segments; width intermediate between those of prostomium and setiger 1. Single pair of minute tentacular cirri smaller than antennae and dorsal cirri on

lateral sides. Dorsal cirri absent from setiger 2, short, somewhat oval in outline on other segments, originating well above parapodial lobes. Ventral cirri about same length but more slender than dorsal cirri, originating on median ventral edges of parapodial lobes, often longer on posterior than on anterior segments. Solitary, superior simple setae (Fig. 7d-f) on all parapodia, with acute tips, coarsely serrate near tips with 2-5 pointed teeth on edge. Upper compound setae (Fig. 7g) solitary spinigers, occurring only on anterior half of body on 2 specimens, on all but posterior 4-10 setigers of others; blades of spinigers long, thin, tips rounded or slightly hooked, finely serrate on edge, about half as long on posterior as in anterior segments; shafts thin, with distal part acutely tipped, broad at socket of blade. Falcigers (Fig. 7h) 3-4 in each parapodium; shafts stouter than those of spinigers; all blades similar, delicate, slightly falcate, unidentate, almost as wide and less than twice as long as shaft width, with up to 4 coarse serrations on edge. Solitary, inferior simple setae on posterior segments (Fig. 7i), with acute tips, with 1, occasionally 2, pointed secondary teeth on concave side near tips. Acicula solitary; tips slightly enlarged, bent forward. Pygidium (Fig. 7b) with pair of long, slender anal cirri. One somewhat damaged sexually mature specimen with sex products in setigers 11-28; gravid segments with bundles of about 10 short, very fine, natatory setae between parapodia and dorsal cirri.

Pharynx long, extending posteriorly to setiger 4-6. Middorsal tooth relatively large, anterior; anterior end surrounded by about 10 soft lobes. Proventriculus narrow, cylindrical, in setigers 4-6 to 7-8, with 17-20 rows of muscle cells, anterior 5-6 small; prominent ventricle in setiger 8 or 9. Relative lengths of pharynx and proventriculus 1:0.8.

Remarks.—*Exogone atlantica* is similar to *E. microtentaculata* Westheide (1974:121-123, figs. 51a-d, 56) from the Galapagos Islands, but differs in the relative lengths of the pharynx and proventriculus, in shapes of superior and inferior simple setae and possibly in the shape of acicular tips.

Etymology.—The specific name refers to the type-locality of this species as opposed to that of the closely related tropical Pacific species, *E. microtentaculata* Westheide.

Odontosyllis Claparède, 1863

Odontosyllis longigulata, new species

Fig. 8

Material examined.—FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., May 1972; USNM 60445), 13 paratypes (USNM 60447; ZMH P-16392; FSBC I 23530-23536). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 13 paratypes (USNM 60446; AHF Poly 1311; FSBC I 23537-23544).

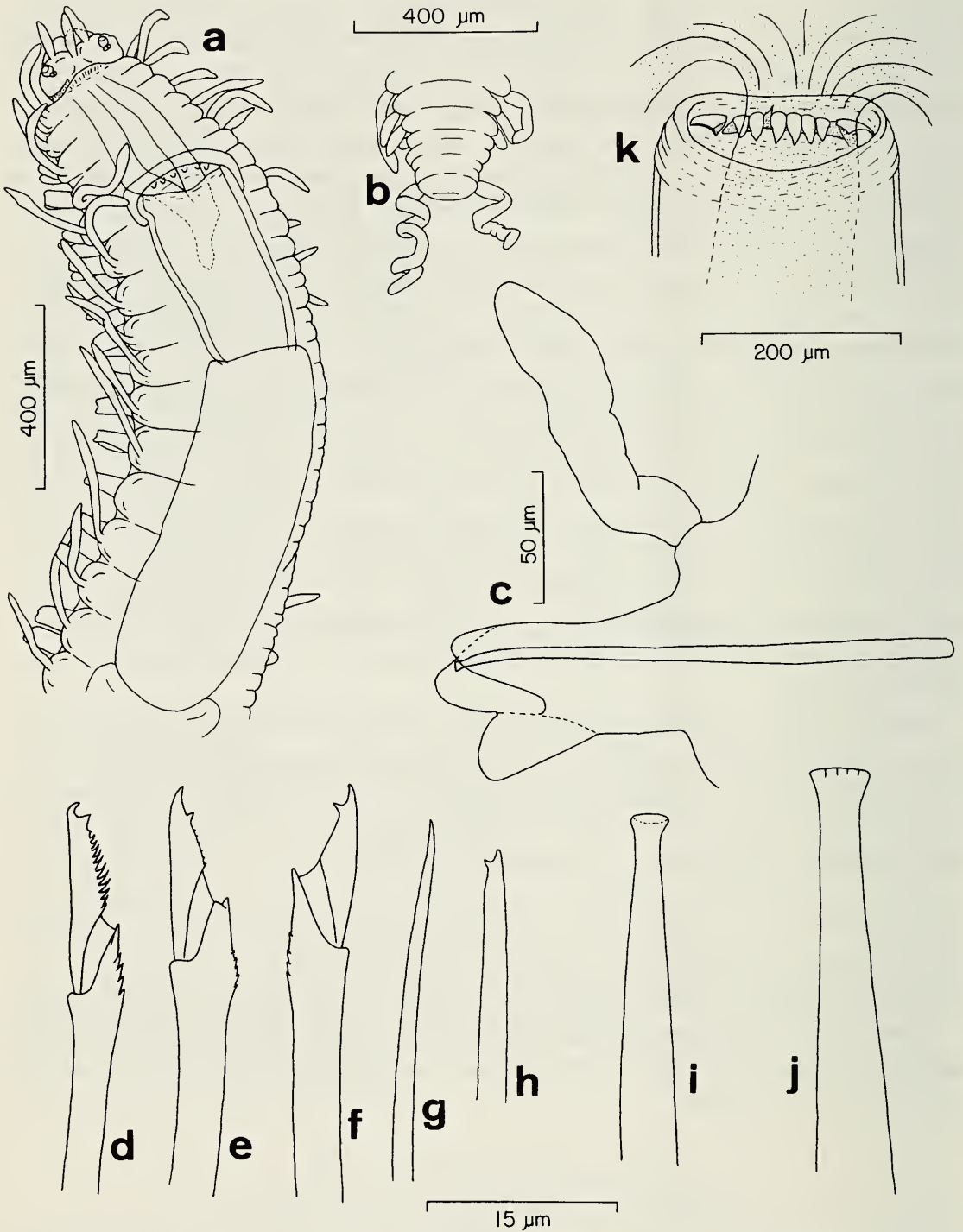


Fig. 8. *Odontosyllis longigulata*: a, Anterior end, dorsal view (FSBC I 23532); b, Posterior end of holotype, dorsal view; c, Parapodium, slightly turned, anterior view; d–j (AHF Poly 1311): d, Upper falciger, setiger 10; e, Lower falciger of same; f, Falcigers, posterior setigers; g, Superior simple seta of same; h, Inferior simple seta of same; i, Aciculum, setiger 10; j, Same, posterior setiger; k, Anterior border of pharynx, dorsal view (FSBC I 23532).

Description.—Body without color markings; pharynx often dark reddish brown. Maximum length about 6.5 mm with maximum of about 50 segments. Prostomial lobe oval, about twice as wide as long, posteriorly notched. Two pairs of lensed eyes in trapezoidal, almost rectangular, arrangement, anterior pair larger. Three short, similar, club-shaped to fusiform antennae, about half as long as prostomial width; median originating from about middle of prostomial lobe; laterals originating on anterolateral margin between anterior pair of eyes; all generally directed upward. Ciliated nuchal organs posterior to eyes on curved lateral parts of prostomium. Palps basally fused, free tips usually bent ventrally. Tentacular segment visible dorsally only as short, anteriorly rounded, nuchal fold (Fig. 8a). Tentacular cirri generally directed ventrally. Dorsal tentacular cirri slightly longer than ventral; ventral tentacular cirri slightly longer than antennae. Setigerous segments strongly arched dorsally, flattened ventrally. Dorsal cirri club shaped to fusiform on anterior segments, fusiform posteriorly, about twice as long as antennae on setiger 1; short, $\frac{1}{2}$ to $\frac{1}{3}$ body width without parapodia behind first few segments. Parapodial lobes (Fig. 8c) relatively slender. Ventral cirri originating near tips of parapodial lobes, appearing slightly compressed, extending laterally about to tips; ventral margins forming line about 30° from aciculum. Only bidentate compound setae on anterior parapodia, joined by solitary superior and inferior simple setae on posterior parapodia. Superior simple setae (Fig. 8g) smooth, slender, slightly curved, unidentate. Blades of upper compound setae of anterior parapodia (Fig. 8d) with tips strongly falcate, with large secondary tooth below primary; blade edges pectinate, with about 12 long serrations. Distal ends of shafts of upper compound setae of anterior parapodia strongly serrate. Blades of lower compound setae of anterior parapodia shorter, stouter than upper blades, with primary teeth not as falcate, and secondary teeth not as stout, with about 6, short serrations on blade edges. Shafts of lower compound setae of anterior parapodia (Fig. 8e) slightly stouter than dorsal; distal ends bifid, with about 5 small serrations below tips. All compound setae of posterior segments similar; blades with long, pointed, only slightly falcate primary tooth, secondary tooth short, triangular, otherwise smooth. Inferior simple setae (Fig. 8h) slender, half as thick as shafts of compound setae; tips bidentate, similar in shape but smaller than blade tips of compound setae. Acicula (Fig. 8i, j) solitary, about twice as stout in posterior parapodia, slightly enlarged near tips, truncate. Pygidium (Fig. 8b) with long, helically curved anal cirri; length of cirri of 1 specimen equal to that of posterior 10–12 segments.

Pharynx long, thin walled, in setigers 2–7 to 5–9 (5–6 segments), with long dorsal projection at entrance; trepan (Fig. 8k) with ventral row of about 6 teeth and 2 lateral plates. Proventriculus long, in setigers 8–9 to 15 (7–8 segments), with 60–70 rows of muscle cells. Length ratio of pharynx to proventriculus 1:1.8.

Remarks.—*Odontosyllis longigulata* is superficially similar to *O. undecimdongta* Imajima and Hartman (1964:114, pl. 26, figs. h, i, pl. 27, figs. a–e) from Japan in having a short, rounded nuchal fold, short antennae and dorsal cirri, bidentate compound setae, superior and inferior simple setae, and blunt-tipped acicula. *O. undecimdongta* is a larger species, 20 mm long and 2 mm wide with 120 setigerous segments, the nuchal fold is larger, the pharynx has 11 teeth, and parapodia are much stouter than those of *O. longigulata*.

Etymology.—The specific name, derived from Latin, refers to the long pharynx.

Parapionosyllis Fauvel, 1923

Parapionosyllis longicirrata (Webster and Benedict, 1884)

Fig. 9

Sphaerosyllis longicirrata Webster and Benedict, 1884:715, 716, pl. 8, figs. 95–100.

Pionosyllis manca Treadwell, 1931:1, 2, fig. 1.

Parapionosyllis longicirrata.—Pettibone, 1963:132, fig. 35e–f.—Day, 1973:32.—Gardiner, 1976:133, fig. 11o–r.

Material examined.—MASSACHUSETTS: Orleans, Cape Cod; Pettibone, col., 25 Aug. 1954; 2 specimens (USNM 27522). Provincetown, Cape Cod, muddy sand; Pettibone, col., 29 Aug. 1954; 1 specimen (USNM 32519). VIRGINIA: Off Cape Henry, 38 m, bottom net, USFC *Fish Hawk* Sta. 8835, 1 paratype of *Pionosyllis manca* Treadwell (USNM 19600). NORTH CAROLINA: Off Beaufort, 34°34'N, 76°25'W, 20 m, sand and broken shell; 4+ specimens (USNM 51070). FLORIDA: Hutchinson Island Sta. I, 27°21.3'N, 80°14.1'W, about 8 m, very fine to fine quartose sand; 1 specimen (FSBC I 20795). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 10 specimens (FSBC I 20612–20621). Sta. III, 27°22.0'N, 80°12.4'W, about 7 m, medium calcareous sand; 21 specimens (FSBC I 20622–20633). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 15 specimens (USNM 54517; FSBC I 20634–20645). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 35 specimens (USNM 54516, 54518; FSBC I 20646–20657, 20659–20661). Palm Beach, 0.5–0.75 mi off Breakers Hotel, "Breakers Reef," 26°42.8'N, 80°01.2'W, 23.7 m, in galleries of fossil coral; J. W. Smith *et al.*, cols., 3 March 1976; 1 specimen (FSBC I 20662). Tampa Bay; J. Taylor, col., 1963; 4 specimens (USNM 54170). Same, 27°36'56"N, 82°41'05"W, 9 m, sand; J. Taylor and C. Saloman, cols., 25 Oct. 1963; 17 specimens (FSBC I 17926). Same, 27°36'38"N, 82°43'29"W, 11 m, sand; J. Taylor and C. Saloman, cols., 29 Oct. 1963; 1 specimen (FSBC I 17422).

Description.—Body without color markings; pharynx often surrounded

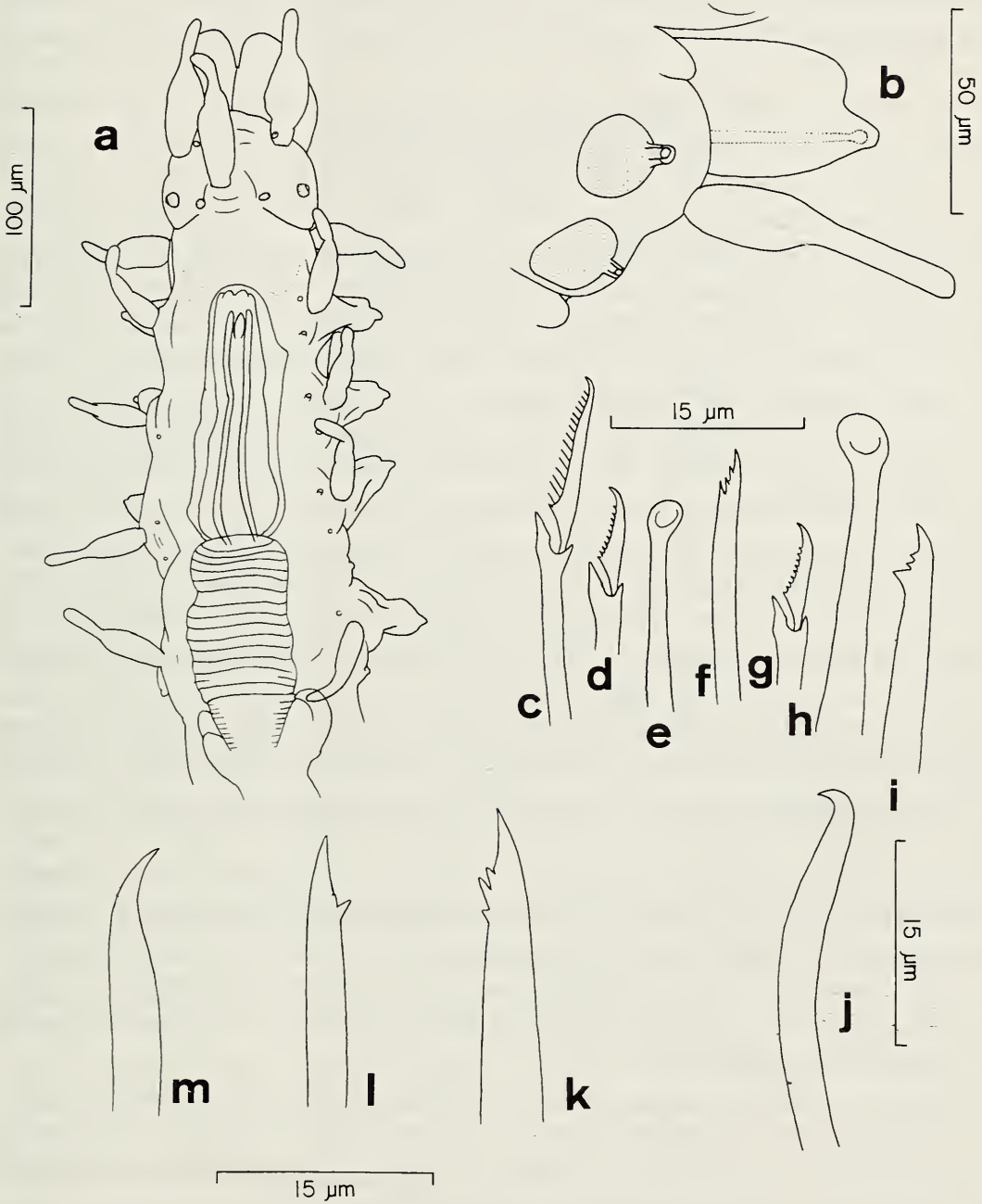


Fig. 9. *Parapionosyllis longicirrata*: a-j, Florida specimens: a, Anterior end of juvenile, dorsal view (FSBC I 20662); b, Anterior parapodium, dorsal view; c-f, Anterior setiger: c, Upper falciger; d, Lower falciger; e, Aciculum; f, Superior simple seta; g-j, Posterior setiger: g, Falciger; h, Aciculum; i, Superior simple seta; j, Inferior simple seta; k-m, Massachusetts specimen (USNM 27522): k, Superior simple seta, middle segment; l, Same, posterior segment; m, Inferior simple seta of same.

by brownish glands; paired, light brown glands often prominent above dorsal cirri and occasionally on palps. Some juveniles lacking eyes on prostomium; others with 3 pairs of eyes, single pair of anterior eyespots, 2 pairs of lensed eyes on posterior half; eyespots mostly absent and posterior 2 pairs greatly enlarged on sexually mature specimens. Subdermal glands, similar to parapodial glands, visible near anterior ends of palps of few specimens. Dorsal cirri on all setigerous segments. Dorsum not papillate, but each segment with 2 subdermal, dorsal glands on each side with openings above dorsal cirri (Fig. 9a, b). Superior simple setae (Fig. 9f, j) of anterior region of moderate size but greatly enlarged in posterior region. Compound setae 5–10 per parapodium (Figs. 9c, d, g); all finely serrate on blade edge; blades unidentate, dorsally long, shorter ventrally in anterior region, all about same length in posterior region; shafts with long tips smooth and pointed, collar surrounding socket of hinge, in face view, relatively long, thin, broader than remainder, easily broken. Inferior simple setae on posterior segments (Fig. 9j), about as stout as corresponding superior simple setae, strongly hooked near tips, smooth. Acicula (Fig. 9e, h) solitary, with widened, circular tips, relatively slender in anterior region, similar in shape but much stouter in posterior region. Some mature males and females with natatory setae beginning on setiger 11 or 12. Males with sperm from setiger 10 or 11 to near posterior end; females with 2 internal eggs or external embryos per segment beginning on setiger 11 or 12, extending to 5–10 segments from posterior end; embryos apparently in subspherical cases attached medially to ventral cirri.

Pharynx slightly longer than proventriculus, mostly found from anterior prostomial margin to posterior border of setiger 2; anterior margin smooth, surrounded by 10 soft lobes. Proventriculus found in 2–4 segments depending on contraction, mostly beginning at anterior border of setiger 3, cylindrical, about twice as long as wide, with about 15 transverse rows of muscle cells, anterior 6 small.

Remarks.—Florida specimens are in agreement with Massachusetts specimens identified by Pettibone (USNM 27522, 32519), except that superior simple setae, although similar, are more strongly serrate, and inferior simple setae are more strongly hooked (Fig. 9k–m). Setae of the paratype of *Pionosyllis manca* Treadwell appear identical with Florida specimens; however, antennae were missing from the specimen. Pettibone (1963) stated that *P. longicirrata* females had one egg per segment and embryos with up to 5 setigers attached ventrally to the body wall. Florida specimens have 2 eggs per segment, and external embryos, which occurred on 3 Florida specimens, were not highly developed. Florida, North Carolina and Massachusetts specimens have 2 subdermal glands above parapodia of each setigerous segment, but these could not be definitely confirmed on the paratype of *Pionosyllis manca* from Virginia. The figure of an upper simple seta illus-

trated from North Carolina specimens by Gardiner (1976:134, fig. 11p) is incorrect; it possibly was drawn from a damaged shaft of a compound seta.

Pionosyllis Malmgren, 1867
Pionosyllis gesae, new species
Fig. 10

Material examined.—FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher *et al.*, cols., Mar. 1976; USNM 60456), 9 paratypes (USNM 60457–60459; ZMH P-16393; FSBC I 23545–23548). Sta. III, 27°22.0'N, 80°12.4'W, about 7 m, medium calcareous sand; 1 paratype (FSBC I 23551). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 4 paratypes (USNM 60460; ZMH P-13691; FSBC I 23549, 23550). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 1 paratype (FSBC I 23552).

Description.—Body without color markings. Slender; longest specimen 5.0 mm long (range, 2.9–5.0, $n = 10$), posteriorly incomplete, with 50 setigerous segments; maximum number of setigerous segments 53 (34–53 for all 8 apparently complete specimens, 49–53 for 4 complete specimens). Prostomium (Fig. 10a, b) generally oval, slightly wider than long, composed of 3 indistinct lobes; anterior lobe between lateral antennae and in front of medial antenna; lateral lobes comprising lateral sides of prostomium beginning anteriorly inside lateral antennae, ending posteriorly near midline. Some specimens with 3 pairs of eyes; 2 large pairs in arc on posterior third of prostomium in line with origin of median antenna; small anterior pair medially adjacent to origins of lateral antennae; only anterior pair of eyespots visible on some specimens. Median antenna originating slightly posterior to mid-length of prostomium. Lateral antennae originating slightly posterolateral to anterior eyespots near anterior border of prostomium. Antennae long, slender, 3–4 times longer than prostomial width, considerably thicker than dorsal cirri. Palps flattened, anteriorly rounded, about as long as prostomial length, only slightly fused, if at all, at base. Band of cilia on each side of prostomium on anterior border of lateral lobes; ciliated nuchal organs on posterior part separated by posterior extension of prostomium. Tentacular segment occasionally similar in length to following segment, usually contracting to less than half that length; transverse band of cilia on dorsal side. Dorsal and ventral tentacular cirri similar to lateral antennae. Dorsal cirri absent from setiger 2; alternately long and very short on other segments; long dorsal cirri originating on short cirrophores, about 1½ times body width without parapodia; short cirri not as thick as long cirri, extending only about half distance to tips of parapodial lobes, apparently originating directly from body wall. Parapodial lobes (Fig. 10c, d) long, subcylindrical, truncate, well separated, with row of 4–5 tufts of cilia on dorsal and ventral sides; rows

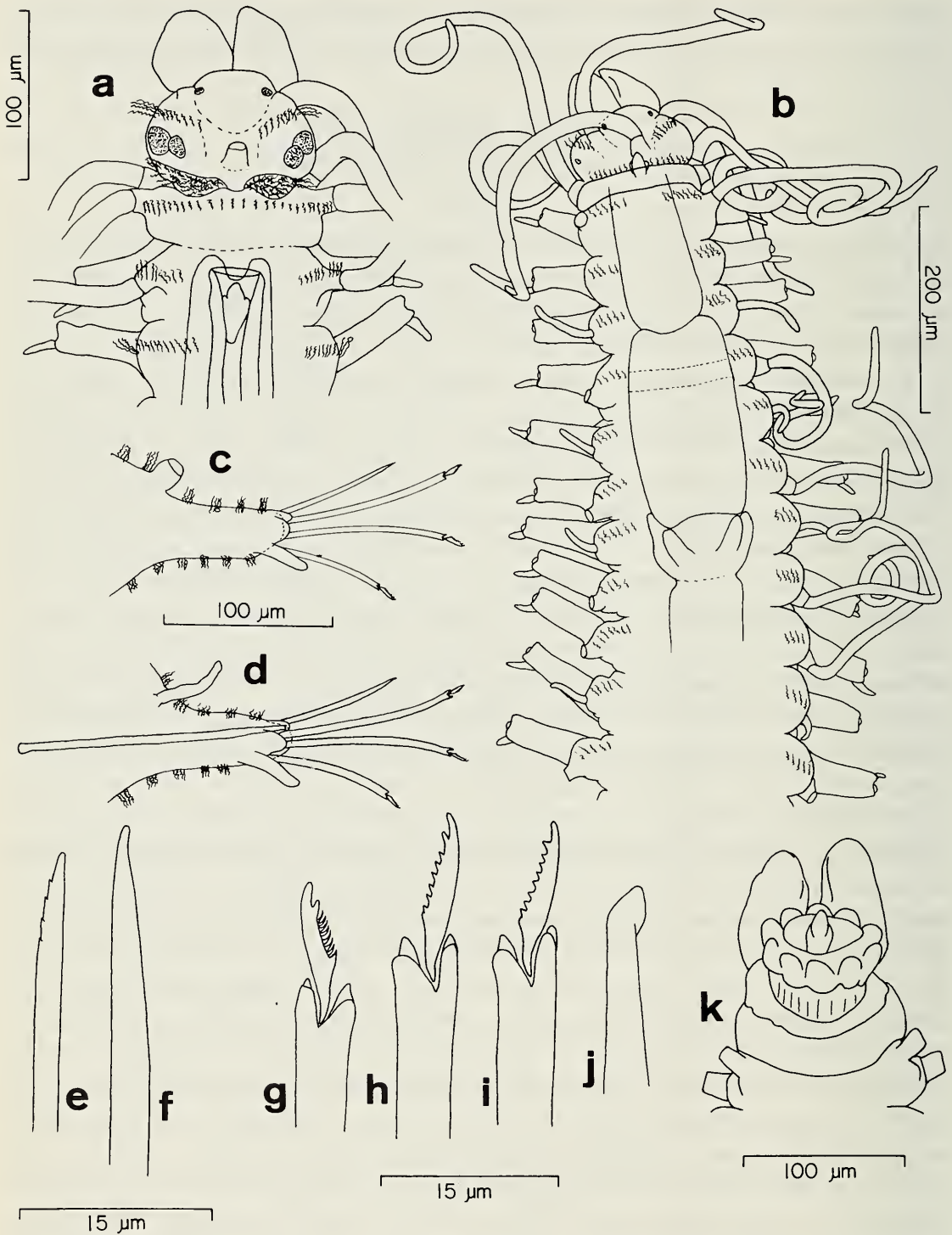


Fig. 10. *Pionosyllis gesae*: a, Anterior end, dorsal view (ZMH P-16393); b, Same (ZMH P-13691); c, Parapodium with long dorsal cirrus (missing), posterior view; d, Parapodium with short dorsal cirrus, posterior view; e, Superior simple seta, anterior setiger; f, Same, posterior setiger; g-i, Compound falcigers, middle setiger: g, Upper; h, Middle; i, Lower; j, Aciculum of same; k, Anterior end, showing proboscis, ventral view (FSBC I 23549).

of tufts apparently extending to dorsum in middle of each segment. Ventral cirri originating ventroposteriorly near tips of parapodia, subulate, extending slightly past parapodial tips. All parapodia with 3 compound falcigers and 1 superior simple seta; simple setae (Fig. 10e, f) straight, fine tipped, finely serrate near tips on anterior setigers, entirely smooth on middle and posterior setigers. Blades of falcigers with serrate margins, slightly falcate, bidentate with primary tooth larger. Blades of upper falcigers of anterior and middle segments (Fig. 10g) with about 8 long, fine teeth below secondary tooth, blade edges oriented ventrally. Two ventral falcigers (Fig. 10h, i) with blades having 6–7 or more short triangular teeth below secondary tooth, with blade edges oriented dorsally. Dentition of all falcigers in posterior parapodia similar to that of ventral 2 of anterior parapodia. Shaft tips of falcigers quadrilobate with pair of pointed lobes and pair of rounded lobes. Acicula solitary, parallel sided except for tips; tips slightly enlarged, bent anteriorly. Pygidium with pair of long anal cirri similar to longest dorsal cirri. Most sexually mature specimens with sexual products in about 20 segments beginning with setiger 9, products occasionally beginning in setiger 8 or 10, setiger 12 on one specimen. None with natatory setae.

Pharynx brownish, extending posteriorly to setiger 4 when inverted, with smooth anterior rim surrounded by 10 soft papillae (Fig. 10k). Median dorsal tooth anterior, trilobed; lateral lobes small; median lobe much longer and wider. Proventriculus slightly barrel-shaped, in setigers 5–7, with chitinous ring possibly in position indicated by dashed lines (Fig. 10b) but not obvious, with about 23 very irregular muscle cell rings.

Remarks.—*Pionosyllis gesae* is very similar to *Eusyllis heterocirrata* Hartmann-Schröder (1959:118–121, figs. 64–66), from El Salvador and eastern Africa. According to Dr. Hartmann-Schröder (personal communication), *E. heterocirrata* has all falcigers with similar, relatively coarse serrations, and ciliation is not visible. Further, she stated that she could not definitely determine that the pharynx of *E. heterocirrata* has a denticulate margin; if the pharyngeal margin of the latter species proves to be smooth, it should be referred to *Pionosyllis*. Additionally, *E. heterocirrata* has 26–30 segments and is 1.8–3.2 mm long including specimens from Tanzania and Natal, southeastern Africa. Thus, in addition to a possible difference in the pharynx and the presence of cilia, specimens of *P. gesae* are larger, have a greater number of segments and have blades of upper falcigers of anterior and middle segments with long, fine serrations. *Pionosyllis gesae* also shows some similarity to *Dioplosyllis* Gidholm, 1962, particularly in the shape of the prostomium and dorsal cirri and in having rows of cilia across the prostomium, peristomium and setigerous segments. However, the ventral arc of small teeth in the pharynx of *Dioplosyllis* is not present, and the chitinous ring in the proventriculus, if present, is indistinct.

Etymology.—The species is named in honor of Dr. Gesa Hartmann-Schröder, whose advice made possible description of this species and others.

Pionosyllis uraga Imajima, 1966

Pionosyllis uraga Imajima, 1966a:114, 116, fig. 37.—Banse and Hobson, 1968:16, 17, fig. 4f, g.

Pionosyllis cf. *uraga*.—Day, 1973:33, fig. 4k–m.

Pionosyllis sp.—Gardiner, 1976:137.

Material examined.—NORTH CAROLINA: off Beaufort, 34°19'N, 75°56'W, 130 m; J. H. Day, col., 1965; 1 specimen (USNM 51071). FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 3 specimens (USNM 54521; FSBC I 20663). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 2 specimens (USNM 54519; FSBC I 20664). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 10 specimens (USNM 54520; FSBC I 20665–20671).

Remarks.—*Pionosyllis uraga* was described from Japan and has also been reported from Puget Sound, Washington (Banse and Hobson, 1968). North Carolina and Hutchinson Island specimens are in agreement with Imajima's description, except that the middorsal tooth is near the midpoint rather than near the anterior margin of the pharynx. Compound setae have fine serrations on blade edges and 3–4 rows of serrations on shaft tips. Acicula also appear to agree. All specimens from Florida and North Carolina are anterior pieces only, as was also the case with Imajima's specimens.

Plakosyllis Hartmann-Schröder, 1956

Plakosyllis quadrioculata, new species

Figs. 11, 12

Material examined.—FLORIDA: Hutchinson Island Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Sep. 1972; USNM 60219), 6 paratypes (USNM 54507; ZMH P-16394; FSBC I 23553, 23554). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 14 paratypes (USNM 54505, 54506, 60220; AHF Poly 1312, 1313; FSBC I 23555–23558). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 3 paratypes (FSBC I 23559, 23560).

Description.—Body without color markings. Maximum length 3.0 mm, width 0.3 mm; mature specimens with 30–55 setigers. Body strongly flattened, ribbon-like, gradually broadening for first 7–8 segments, parallel sided except for few segments near posterior end, cuticle thick on prostomium and body but not on cirri (Fig. 11b). Prostomium (Fig. 11a–c) about twice wider than long, trapezoidal, widest near anterior margin, with pair of ventrolateral lobes on anterior margin and much larger, broader middle lobe;

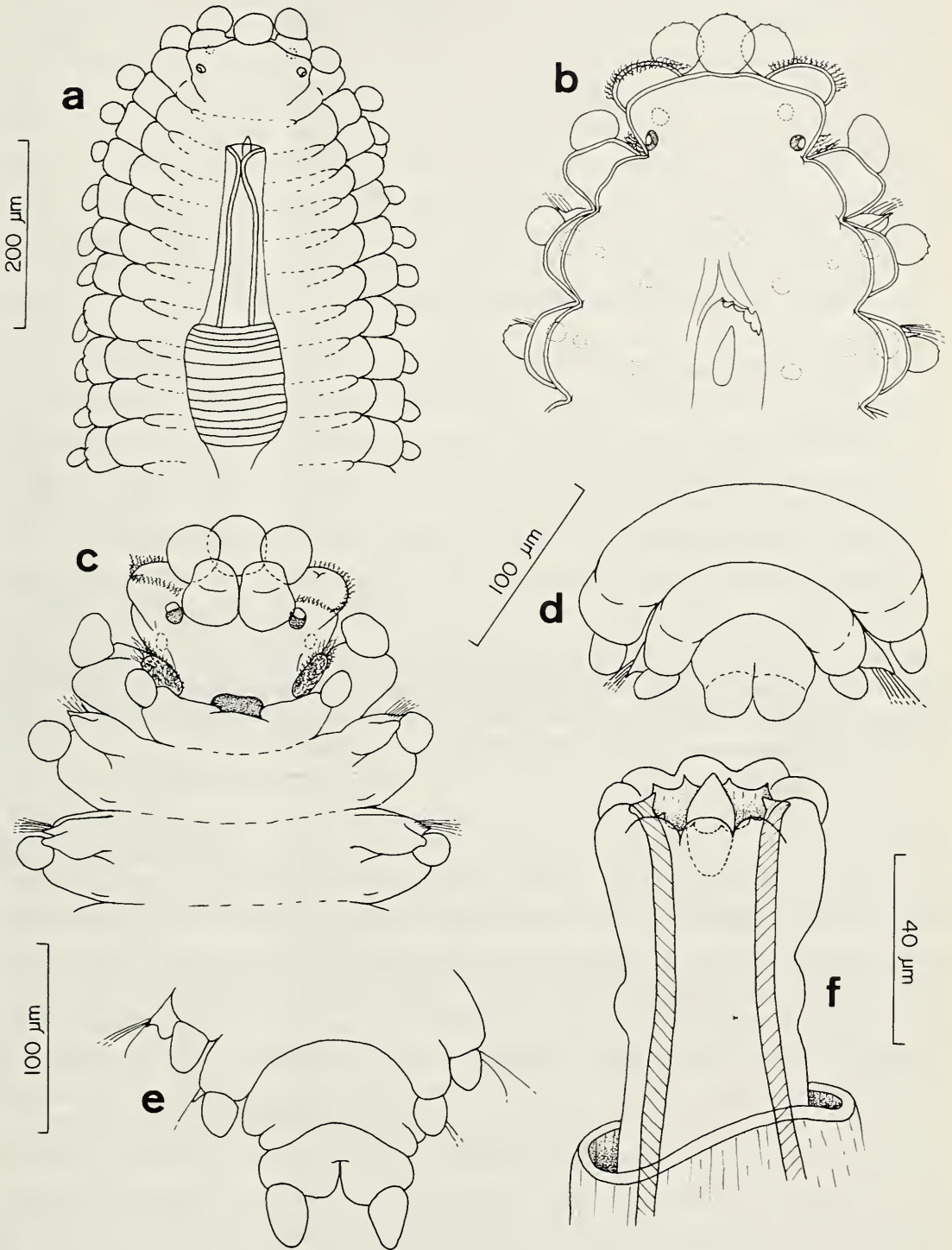


Fig. 11. *Plakosyllis quadrioculata*: a, Anterior end of holotype, dorsal view; b, Same, of small specimen (FSBC I 23555); c, Same, ventral view; d, Posterior end of holotype, dorsal view; e, Same (USNM 60220); f, Anterior end of everted pharynx, ventral view (USNM 60220).

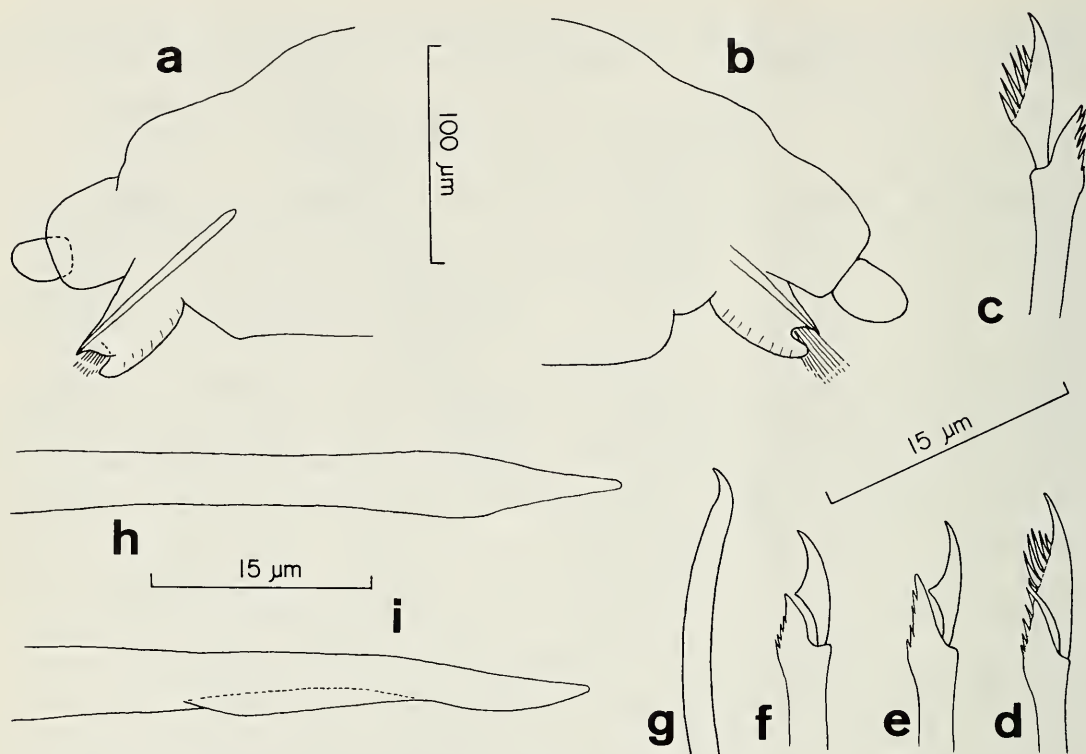


Fig. 12. *Plakosyllis quadrioculata* (a–g FSBC I 23554): a, Parapodium of midregion, anterior view; b, Same, posterior view; c, Upper compound seta, anterior setiger (blade turned); d, Same, posterior setiger; e, f, Lower compound setae, anterior setiger; g, Inferior simple seta; h, Aciculum, dorsal view (USNM 54506); i, Same, lateral view.

median antenna spherical, attached on anterior border of middle lobe; lateral antennae spherical, slightly smaller than median, attached on anterior borders of ventrolateral lobes; eyes lensed, 2 pairs, smaller pair dorsolateral near posterior border, larger pair ventral, lateral to bases of palps, closer together and more anterior than dorsal pair; palps originating near middle of ventral side, extending to near anterior border, oval in outline, apparently completely separated to bases; ciliary rows on ventrolateral lobes beginning in front of ventral eyes and extending to dorsal side of lobes above lateral antennae; ciliated nuchal organs ventrolateral, between prostomium and tentacular segment. Tentacular segment shorter than following segment, with 2 pairs of tentacular cirri; dorsal pair subequal to lateral antennae, slightly larger than dorsal cirri; ventral pair originating ventrally and not visible from dorsum, smaller than dorsal cirri. Setigerous segments (Fig. 12a, b) similar throughout, arched dorsally, straight or slightly concave ventrally, 8–10 times wider than long in mature specimens (Fig. 11a), relatively narrower in immature specimens (Fig. 11b). Dorsal cirri spherical to oblong, with single article, without visible sensory hairs but with small bumps indicating they were originally present, attached on much broader, stouter

cirrophores, tips extending laterally farther than setal lobes. Setal lobes acutely pointed. Ventral cirri fused with lower parts of setal lobes for most of their length, with unfused, conical tips extending almost to tips of setal lobes on posterior sides. Setae compound falcigers with short unidentate blades (Fig. 12d-f) on anterior and middle parapodia joined by slender, slightly hooked inferior simple setae on posterior setigers (Fig. 12g); compound setae 8-12, similar on all parapodia, of 2 types; 3-5 upper compound setae having blades 9-10 μm long, proximally with about 6 long, slender serrations, with moderately hooked tips, shafts with 4-5 long spines on edge of distal end; 5-7 lower compound setae with smooth blades about 7 μm long, shafts slightly stouter than shafts of upper setae, lightly serrate on distal end. Acicula (Fig. 12h, i) solitary, stout, slightly broadened near tips in dorsal view, ending in long, acute tips, often emergent or confined in pointed lobe on upper part of setal lobes. Dorsum of each segment of mature specimens with transverse row of subcuticular glands containing granular material; glands fewer and apparently empty in immature specimen (Fig. 11b). Pygidium (Fig. 11d, e) somewhat flattened, medially divided, with pair of lateroposterior anal cirri similar but larger than dorsal cirri of posterior segments; cirri well separated from remainder of pygidium by well defined constrictions; constrictions becoming obscure on fully developed sexual stolons. Sexual reproduction by posterior budding of stolons; stolons beginning on setigers 23-29, completely filled with sexual products except for 2-3 posterior segments, 2 with pair of large ventrolateral eyes on anterior stoloniferous segment; single female stolon with long natatory setae between dorsal cirri and setal lobes; female stolons with about 6 crowded, isohedral eggs per segment.

Pharynx (Fig. 11f) longer than proventriculus, slender, thick walled, located in setigers 1-5 or 6 of mature specimens when inverted, with trepan of 10 small, widely spaced, pointed teeth in addition to larger middorsal tooth, anterior border surrounded by 10 soft lobes. Proventriculus cylindrical to barrel-shaped, with about 14 rows of muscle cells with anterior 4-5 rows small, about 3 segments long, usually in setigers 7-9. Ratio of pharynx:proventriculus lengths about 3:2; both found in more anterior segments of immature specimens.

Remarks.—*Plakosyllis quadrioculata* differs from *P. brevipes* Hartmann-Schröder (1956:87-89, figs. 1-5) in having 2 pairs of eyes, one dorsal and one ventral, shorter ventral cirri, compound setae having upper blades with very long teeth throughout the body and shafts with very long, slender serrations on the distal end, inferior simple setae, and distinctly articulated anal cirri on specimens which are not sexually modified; also, *P. quadrioculata* lacks superior simple setae.

Type-specimens of *P. brevipes* were reported from Naples and Banyuls-sur-Mer in the Mediterranean Sea. Weinstein (1961) described a pair of small

ventral eyes on the prostomium of additional specimens of *P. brevipes* from Banyuls-sur-Mer in addition to the 2 dorsal pairs described by Hartmann-Schröder but did not report superior simple setae.

Gidholm (1962:250–252, fig. 1) reported 2 pairs of ventral eyes and a single dorsal pair on the prostomium of specimens referred to *P. brevipes* from Roscoff on the Atlantic coast of France. Setae of Gidholm's specimens also appear to differ from those described by Weinstein, and setae of posterior setigers described by Weinstein appear identical with setae originally described for the species by Hartmann-Schröder (1956:89, fig. 4). These differences suggest that Gidholm's specimens are referable to another species.

Plakosyllis quadrioculata differs from *P. americana* Hartman (1961:75, 76, pl. 33, fig. 1), which has a prostomium with 4 dorsal eyes and no ventral eyes, about 100 segments maximally and compound setae with entirely smooth shafts.

Hartmann-Schröder (1956) originally placed the genus in the subfamily Exogoninae because of reduction in antennae, palps, and cirri and because of the pronounced flattened condition of the body. Weinstein (1961) suggested that the genus was related to *Trypanosyllis* Claparède of the Syllinae and *Eurysyllis* Ehlers, 1864, which Fauvel (1923) placed in the Syllinae, but which Fauchald (1977) placed in the Exogoninae. Gidholm (1962) referred *Plakosyllis* to *Eurysyllis*. *Eurysyllis* species have large globular papillae on the dorsum; this and other differences and similarities were noted by Gidholm.

The only significant difference of *Plakosyllis* from the small *Trypanosyllis* species described herein is in the reduction of antennae, tentacular cirri, and dorsal cirri to a single article from the multiarticulate condition, and it is suggested that the genus be referred to the Syllinae along with the closely related *Eurysyllis*. In this regard, *Sphaerodoridium guilbaulti* Rullier (1974:33–35, fig. 2), based on a single specimen from the Atlantic coast of the United States, appears to be a *Eurysyllis*.

Etymology.—The specific name is derived from the Latin prefix *quadri*, meaning four, and *oculata*, having eyes, referring to the number of eyes.

Sphaerosyllis Claparède, 1863

Remarks.—Previous reports of this genus from eastern North America, the Bahamas, and Cuba have been included under 10 specific names. *S. brevifrons* Webster and Benedict, 1884, and *S. longicauda* Webster and Benedict, 1887, have been referred to *S. erinaceus* Claparède, 1863 (Pettibone, 1963), although it appears that both are distinct from one another and from *S. erinaceus*. *S. hystrix* Claparède was recorded by Pettibone (1963) from South Norwalk, Connecticut; the specimens, first reported by Webster and Benedict (1884) as *S. brevifrons*, are referred herein to *S. taylora*, n.

sp. *S. renaudae* Hartmann-Schröder, 1958, was described from a single anterior fragment from Bimini, The Bahamas. A solitary specimen reported as *S. pirifera* [not Claparède, 1868] from North Carolina by Day (1973) and Gardiner (1976) is referred herein to *S. glandulata*, n. sp. Specimens from North Carolina reported as *S. erinaceus* by Gardiner (1976) are referred to *S. longicauda*. *S. centroamericana* Hartmann-Schröder, 1959, was recently reported from Cuba by Hartmann-Schröder (1979). An additional new species, *S. labyrinthophila*, recently described by Gardiner and Wilson (1979) from North Carolina, was also collected at Hutchinson Island.

Sphaerosyllis erinaceus and *S. hystrix* were also reported from Delaware by Kinner and Maurer (1978), and *S. hystrix* by Maurer *et al.* (1976); I have not examined their specimens and confirmed their records. However, *S. hystrix* and *S. erinaceus* are European species, and I have no evidence that they occur in the northwestern Atlantic from numerous specimens of this genus that I have examined. *S. hystrix* specimens reported by Kinner and Maurer (1978) and Maurer *et al.* (1976) are probably *S. taylori*, n. sp. Specimens of *S. erinaceus* (a doubtful species in my opinion) reported by Kinner and Maurer (1978) are probably *S. longicauda*. *S. hystrix* and *S. erinaceus* are therefore not included in the key.

Sphaerosyllis longicirrata Webster and Benedict was discussed above as a member of the genus *Parapionosyllis* Fauvel, 1923. Another species, *S. fortuita* Webster, 1879, was described from a single Virginia specimen. The specimen was apparently never deposited in the U.S. National Museum of Natural History where most of Webster's types are found. I cannot definitely decide from the original description that the species is a member of *Sphaerosyllis* Claparède.

As far as I can determine, species names noted above include only 7 *Sphaerosyllis* species, 2 of which are newly described. An additional 8 new species are described herein, increasing the number of known species in the genus from eastern North America to 13.

Characters of systematic importance at the species level include: number and position of prostomial eyes; degree and character of fusion between the prostomium and tentacular segment; presence or absence of nuchal organs; relative sizes and shapes of antennae, tentacular cirri, dorsal cirri, and anal cirri; presence or absence of dorsal cirri on the second setigerous segment; fine detail of the setae; changes in setae within parapodia and along the body; shape of acicula and changes in acicular size along the body; arrangement, number, and possibly length of glandular papillae; presence or absence of segmental glands opening above dorsal cirri and the contents thereof; specific segments in which sexual products and natatory setae occur; number of embryos per segment and position of incubated embryos, either dorsal or ventral; segmental positions and length-width ratios of the pharynx and proventriculus; size and position within the pharynx of the pharyngeal

tooth; arrangement and number of rows of muscle cells of the proventriculus; and possibly the length and width of the body and the number of segments. Additionally, I have described what appear to be dorsal and lateral lobes of the brain extending into the first and second setigers. The structures were discovered in cleared, unstained specimens, and their existence was tentatively confirmed by histological examination. The structures are contiguous with the dorsal parts of the brain in the prostomial lobe, and histological examination indicates them to be surrounded by a membrane continuous with that surrounding the brain. The specimens, however, were poorly preserved for critical histological examination. The structures may be of systematic importance as indicated in the species descriptions.

Key to *Sphaerosyllis* Species from Eastern North America

1. Eyes absent *S. renaudae*
- Eyes present 2
2. Four eyes 3
- Six eyes 8
3. Eyes on anterior and posterior prostomial margins; acicula slender, straight, pointed *S. brevidentata*, n. sp.
- Eyes on posterior half of prostomium; acicula stout, with tips bent forward at about right angles 4
4. Dorsal parapodial glands absent *S. piriferopsis*, n. sp.
- Dorsal parapodial glands beginning on setiger 4 or 5 5
5. Parapodial glands filled with rods 6
- Parapodial glands filled with spheres or granules 7
6. Superior simple setae and compound setae in middle segments ...
..... *S. taylori*, n. sp.
- Superior simple setae and simple acicular setae in middle segments
..... *S. aciculata*, n. sp.
7. Median antenna originating near posterior prostomial margin; blades of upper compound setae of anterior segments about 12 μm long *S. glandulata*, n. sp.
- All antennae originating on anterior prostomial margin; blades of upper compound setae of anterior segments about 40 μm long
..... *S. magnidentata*, n. sp.
8. Two pairs of eyes on prostomium in flattened, trapezoidal arrangement open posteriorly and third pair near posterior border of tentacular segment; anterior pair large *S. centroamericana*
- All eyes on prostomium; anterior pair small 9
9. Blades of compound setae bidentate *S. bilobata*, n. sp.
- Blades of compound setae unidentate 10

10. Pygidium with midventral anal cirrus; integumental papillae both long and short *S. longicauda*
 – Midventral anal cirrus absent; all integumental papillae similar in size (short) 11
11. Paired, semicircular nuchal folds covering posterior eyes; blades of upper compound setae of anterior segments about 30 μm long *S. labyrinthophila*
 – Paired nuchal folds absent; blades of compound setae of anterior segments about 10 μm long 12
12. Prostomium and tentacular segments fused; anal cirri slender; length to 1.5 mm, with 17 setigers *S. riseri*, n. sp.
 – Prostomium and tentacular segments distinct; anal cirri bulbous; greater than 2.5 mm long, with 27 setigers *S. brevifrons*

Sphaerosyllis aciculata, new species

Figs. 13, 14

Material examined.—FLORIDA: Hutchinson Island Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Nov. 1971; USNM 60221), 1 paratype (USNM 60222). Sta. I, 27°21.3'N, 80°14.1'W, about 8 m, very fine to fine quartose sand; 1 paratype (FSBC I 23561). Tampa Bay, 27°36'20"N, 82°40'49"W, 8 m, sand; J. Taylor and C. Saloman, cols., 25 Oct. 1963; 1 paratype (FSBC I 23562). Tarpon Springs, Anclote Anchorage, 1 mi W of Bailey's Bluff, 4–5 m, shelly sand; R. Ernest, col., Nov. 1973; 1 paratype (FSBC I 23563). Same, 28°11.8'N, 82°47.6'W, 2.5 m, sand with *Syringodium* cover; J. Studt and R. Ernest, cols., 5 Dec. 1975; 1 paratype (ZMH P-16395).

Description.—Parapodial glands brown to light yellowish brown. Maximum length 2.2 mm; width about 0.1 mm excluding parapodia; maximum of 21 setigerous segments. Prostomium clearly fused with tentacular segment (Fig. 13a, b), with latter surrounding posterior and lateral sides of prostomium as fold covering posterior part of prostomial lobe. Median antenna originating on anterior edge of fold, possibly shorter than lateral antennae. Lateral antennae originating on anterolateral margins of prostomium on short, anterior projections (distinct in contracted specimen). Anterior margin of prostomium slightly concave. Two pairs of lensed eyes on posterior half, in flattened, rectangular arrangement; anterior pair slightly larger. Palps long when not turned under or contracted; anterior fourth not fused; anterior notch and dorsal median furrow evident in relaxed specimen. Tentacular cirri originating dorsally on lateral projections of tentacular segment on about same line as origins of lateral antennae (Fig. 13a); cirri directed upward on short projections on relaxed specimen (Fig. 13b), directed anteromedially around front of prostomium on contracted specimen. Glan-

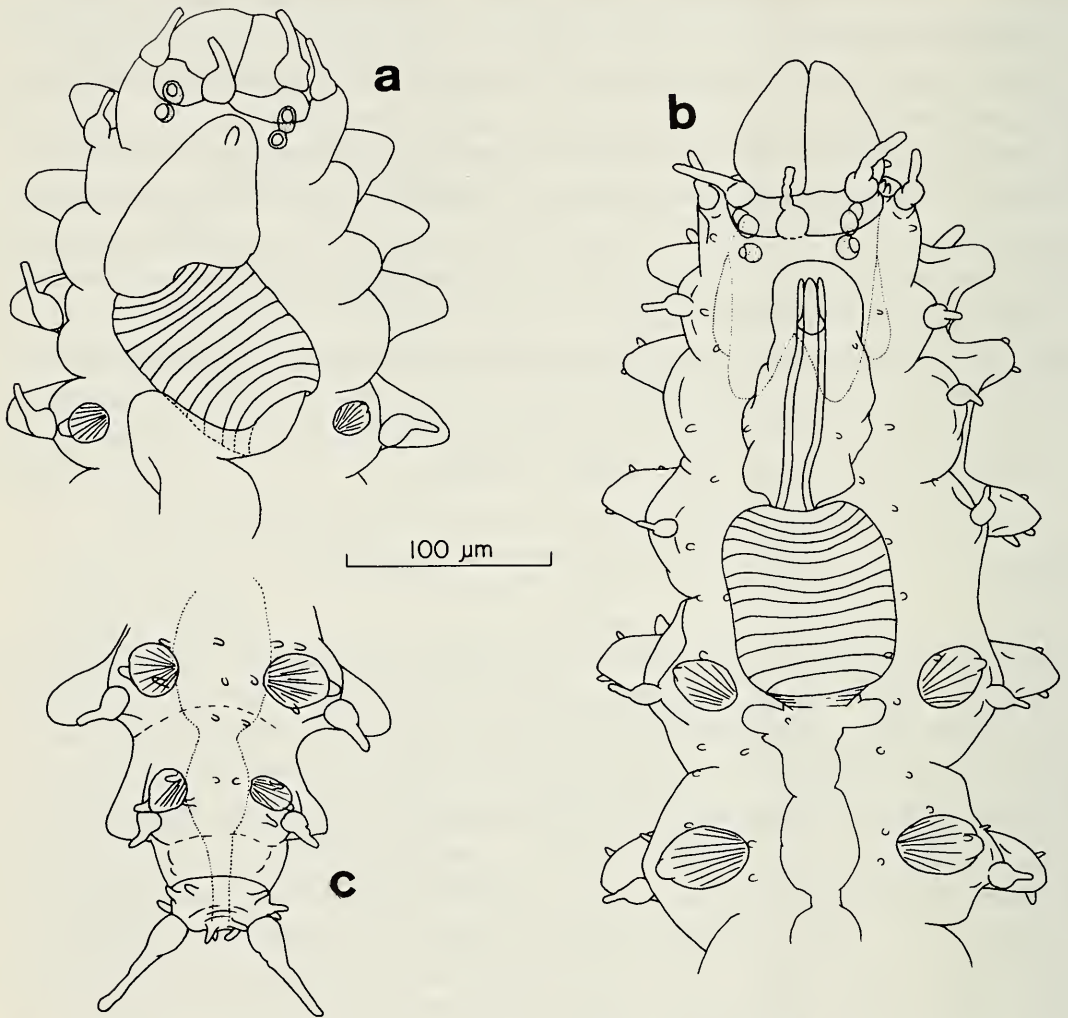


Fig. 13. *Sphaerosyllis aciculata*: a, Anterior end of contracted specimen, dorsal view (USNM 60222); b, Same, holotype; c, Posterior end, dorsal view.

dular papillae on tentacular segment below and above tentacular cirri. Dorsal lobes of brain (Fig. 13b) extending posteriorly to middle of setiger 2; lateral lobes extending to near posterior edge of setiger 1. Dorsum of each segment with 8–10 small glandular papillae. Single specimen with dorsal cirrus on one parapodium of setiger 2; dorsal cirri absent on setiger 2 of remaining specimens; cirri relatively small, not extending past tips of parapodial lobes of other segments, spherical bases and cylindrical tips of about equal length. Parapodial lobes blunt with single anterior and single posterior apical papillae; third papilla sometimes evident on anterior edge about half distance from base to tip. Ventral cirri short, cylindrical. Solitary, superior simple setae (Fig. 14a–c) on all parapodia, relatively broad in lateral view. Setigers 1–8 with 4 short-bladed compound setae (Fig. 14d, e); blades of

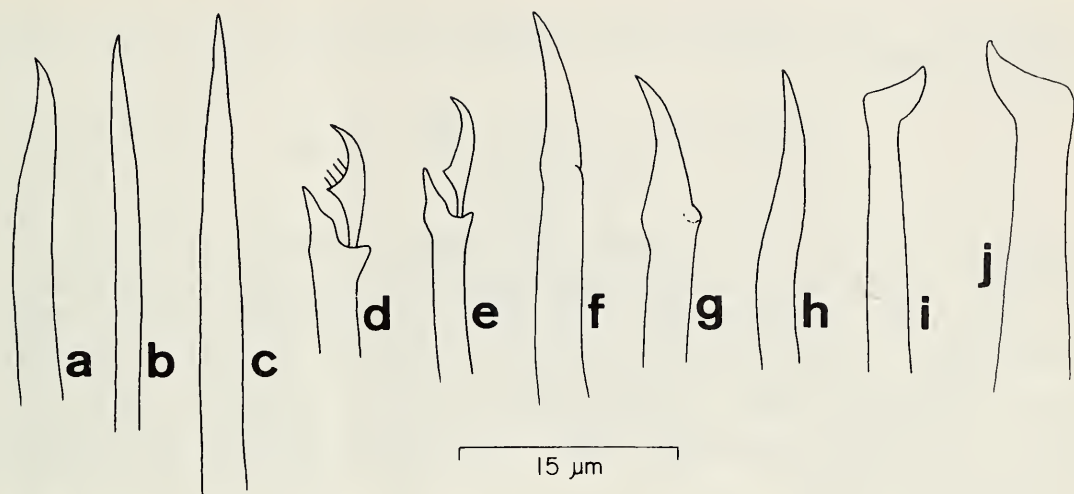


Fig. 14. *Sphaerosyllis aciculata*: a, Superior simple seta, setiger 6, lateral view; b, Same, dorsal view; c, Same, posterior setiger; d, Upper falciger, setiger 6; e, Lower falciger of same; f, Upper simple acicular seta, posterior setiger; g, Lower simple acicular seta of same; h, Inferior simple seta of same; i, Aciculum, setiger 6; j, Same, posterior setiger.

uppermost seta finely serrate. Following segments with compound setae replaced with about 3 slightly enlarged, simple, acicular setae (Fig. 14f, g) homologous with shafts of anterior compound setae; upper acicular setae more highly modified, showing little resemblance to shafts; tips of lowermost acicular setae strongly similar to tips of shafts of anterior compound setae. Solitary, inferior simple setae (Fig. 14h) on posterior parapodia. Acicula (Fig. 14i, j) solitary, stout in anterior region, about twice as stout in posterior region, with tips slightly enlarged and bent forward at almost right angle. Parapodial glands (Fig. 13b) containing rods, beginning with setiger 4, extending to posterior end; glands opening on dorsum above dorsal cirri; one gland empty, another partly empty on one specimen. Pygidium (Fig. 13c) with pair of long, stout, anal cirri, generally similar to dorsal cirri; in addition, pygidium with 10 long papillae visible in dorsal view. One female with internal eggs in setigers 7–15.

Pharynx very narrow, with moderately thick walls, surrounded by relatively large but not prominently colored glandular region. Relatively large middorsal tooth anterior, about as wide as anterior opening. Pharynx located in setigers 1 and 2 of relaxed specimen. Proventriculus shorter than pharynx, only slightly longer than wide, extending through about $1\frac{1}{2}$ segments in setigers 3 and 4. Muscle cells arranged in 13–14 irregular transverse rows, anterior 4–5 small. Relative lengths of pharynx to proventriculus 5:4.

Remarks.—*Sphaerosyllis aciculata* differs from other species in the genus in having compound setae replaced entirely by simple, acicular setae in middle and posterior segments.

Etymology.—The specific name is derived from Latin and refers to the aciculated setae.

Sphaerosyllis bilobata, new species

Figs. 15, 16

Material examined.—FLORIDA: Hutchinson Island Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Nov. 1971; USNM 60465), 5 paratypes (USNM 60466, 60470; FSBC I 23565–23567). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 4 paratypes (FSBC I 23568–23571). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 10 paratypes (USNM 60467–60469; FSBC I 23572–23575).

Description.—Body without color markings; eyes reddish. Maximum length 1.9 mm, about 0.1 mm wide without parapodia, 26 setigers. Prostomium (Figs. 15a, 16a) wider than long, anteriorly convex, almost semicircular; posterior border nearly straight; sides rounded. Lateral antennae originating on anterolateral borders of prostomium lateral to anterior eyespots; about half length of median. Median antenna originating from posterior border of prostomium on short lobe separate from tentacular segment and associated lobes; length about equal to median prostomia length. Three pairs of eyes; pair of eyespots on anterior margin at about middle of each side; 2 pairs of lensed eyes on posterior half, with anterolateral pair much larger on sexually mature specimens (Figs. 15a, 16a). Dorsal lobes of brain extending to posterior border of setiger 1; lateral lobes extending well into setiger 2. Palps anteriorly rounded, much shorter than prostomium, appearing completely fused dorsally except for median furrow. Tentacular segment distinct dorsally, about half as long as following segment, intermediate in width between narrower prostomium and wider setiger 1; tentacular cirri originating lateral to posterior pair of lensed eyes, about half size of lateral antennae and dorsal cirri; pair of eyelid-like nuchal folds on anterior margin of tentacular segment covering ciliated nuchal organs between prostomium and tentacular segment and posterior 2 pairs of eyes (Figs. 15a, 16a), beginning medially near midline, extending around lateral margins of prostomium, ending above tentacular cirri; no glandular papillae. Dorsal cirri absent from setiger 2, replaced by glandular papillae. Dorsum of each segment otherwise with about 4 short papillae. Dorsal cirri of remaining segments with spherical bases and cylindrical tips, shorter than setigerous lobes; spherical parts about equal in length to cylindrical parts. Setigerous lobes (Fig. 15d) conical, acutely pointed; 2 small papillae usually visible, one on anterior side about half distance from base to tip, other on posterior side near tip. Ventral cirri cylindrical, less than half length of setigerous lobes. Solitary, superior simple setae (Fig. 15j) on all parapodia,

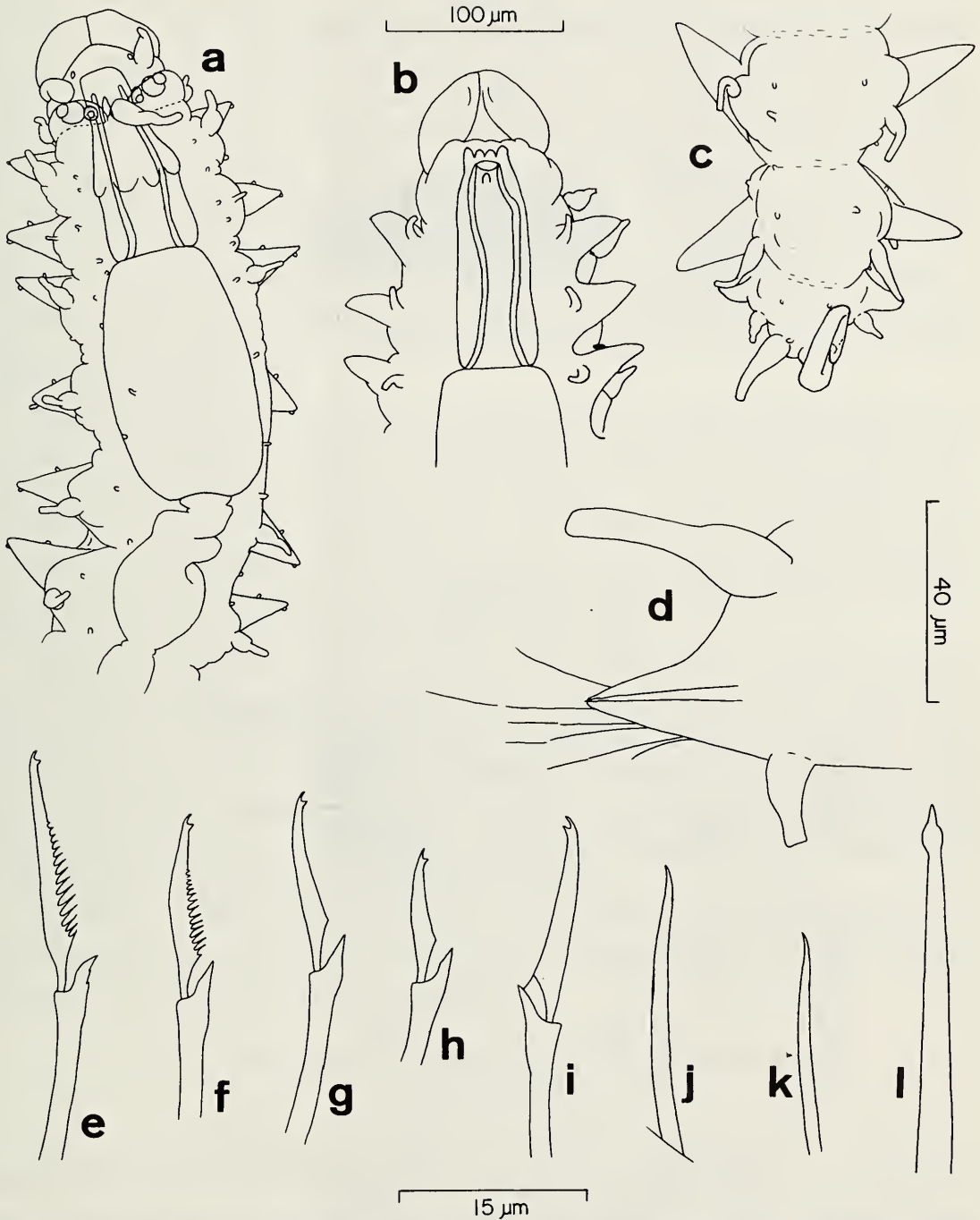


Fig. 15. *Sphaerosyllis bilobata*: a, Anterior end, dorsal view (USNM 60469); b, Same, ventral view (USNM 60467); c, Posterior end, dorsal view (USNM 60469); d, Posterior parapodium, posterior view; e-h, Compound setae, anterior setiger: e, Upper; f, Upper middle; g, Lower middle; h, Lower; i-k, Posterior setiger: i, Middle compound seta; j, Superior simple seta; k, Inferior simple seta; l, Aciculum, anterior setiger.

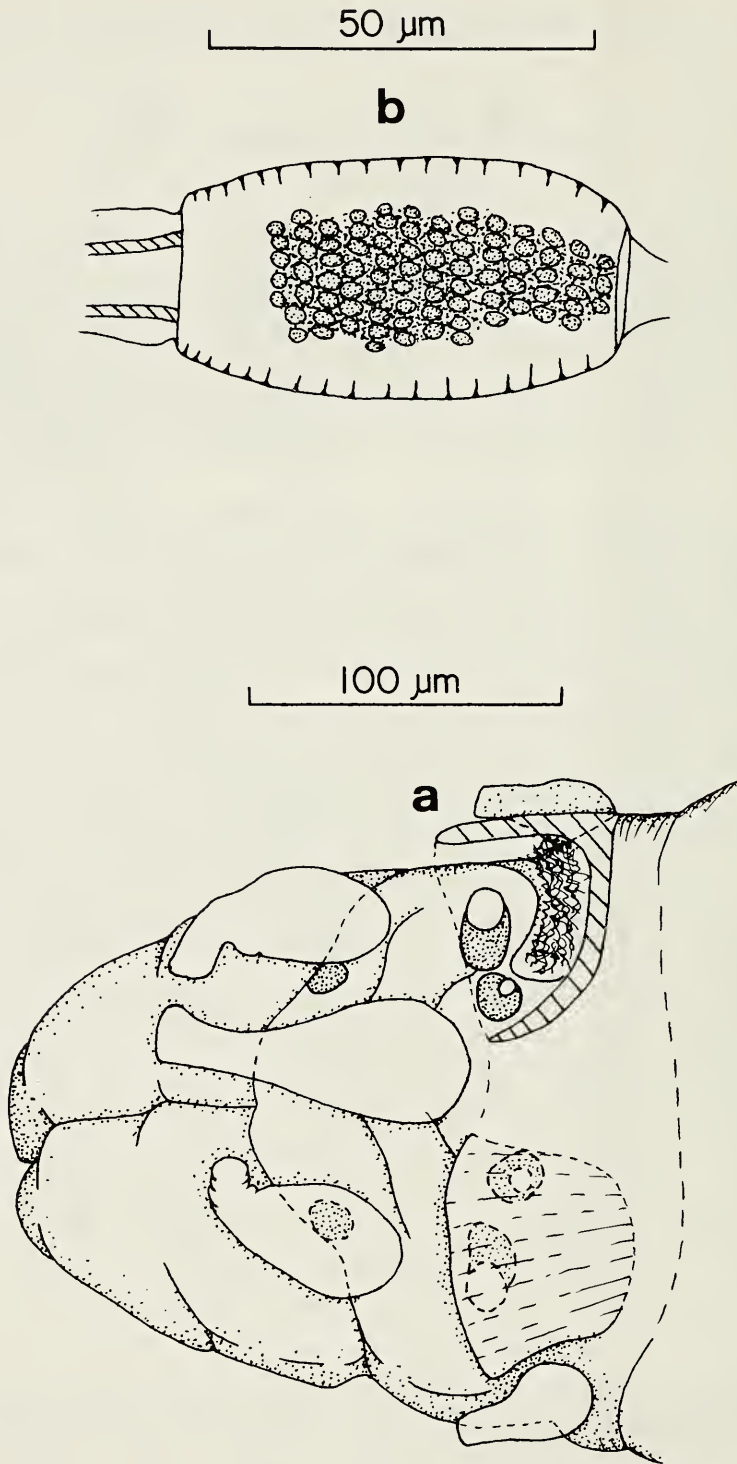


Fig. 16. *Sphaerosyllis bilobata*, paratype (USNM 60466): a, Anterior end, slightly turned dorsal view, showing cutaway of eyelid-like fold on right side beginning laterally with extreme lateral margin of fold; b, Proventriculus, dorsal view, showing arrangement of muscle cells.

slender, smooth, about as long as shafts of compound setae. About 5 compound setae (Fig. 15e–h) on anterior parapodia, 4 on posterior parapodia, similar; blades bidentate with similar primary and secondary teeth; upper blades about 20 μm long, with fine serrations on basal $\frac{2}{3}$; lower blades smooth, about 10 μm long. Inferior simple setae on posterior parapodia (Fig. 15k), more slender, shorter than superior simple setae. Acicula (Fig. 15 l) solitary, slender; each with subdistal bulb and conical tip. Pygidium short, subcylindrical, with few glandular papillae; anal cirri stouter than dorsal cirri, 3–4 times longer. Embryos 2 per segment, found dorsally on setigers 9–19 of some sexually mature females; females mostly with internal eggs. Sperm in setigers 9 to 21–24 in males. Natatory setae on one specimen beginning with setiger 9.

Pharynx surrounded by thick, brownish glands or lobes, usually extending to posterior margin of setiger 2, with anterior end narrower than remainder; chitinous wall relatively thick, narrow, slightly shorter than length of proventriculus; middorsal tooth anterior, of average size; anterior end surrounded by soft lobes. Proventriculus barrel-shaped, in setigers 3–5; 18–19 transverse rows of muscle cells, anterior 5 small; cells in dorsal view also arranged in 2 opposite diagonal planes (Fig. 16b).

Remarks.—*Sphaerosyllis bilobata* is very similar to *S. erinaceus bidentata* Hartmann-Schröder (1974b:134, figs. 116–119) from West Africa [= *S. bidentata*]. It differs in the following characters: shape of tentacular folds covering posterior part of the prostomium; relative sizes of median and lateral antennae and tentacular and dorsal cirri; relative lengths of upper and lower compound setae; and lack of dentition on lower compound setae and superior simple setae of *S. bilobata*.

Etymology.—The specific name is derived from the Latin prefix, *bi-*, meaning double or twice, and the latinized Greek adjective, *lobata*, meaning lobed, and refers to the tentacular lobes.

Sphaerosyllis brevidentata, new species

Fig. 17

Material examined.—FLORIDA: Hutchinson Island Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Jan. 1973; USNM 60215), 1 paratype (FSBC I 23564). THE BAHAMAS: S portion of Bimini Lagoon, 25°43'N, 79°16'W, in submerged plastic sponges; A. Schoener, col., 1970–1971; 1 paratype (USNM 51547).

Description.—Body without color markings; pharynx surrounded by brownish glands. Length 1.2 mm; width 0.13 mm without parapodia, 0.18 mm with parapodia; male with 17 setigers; female with 14 setigers. Prostomium (Fig. 17a) oval, about twice as wide as long. Two pairs of lensed eyes; anterior pair in position usually occupied by minute eyespots on *Sphaero-*

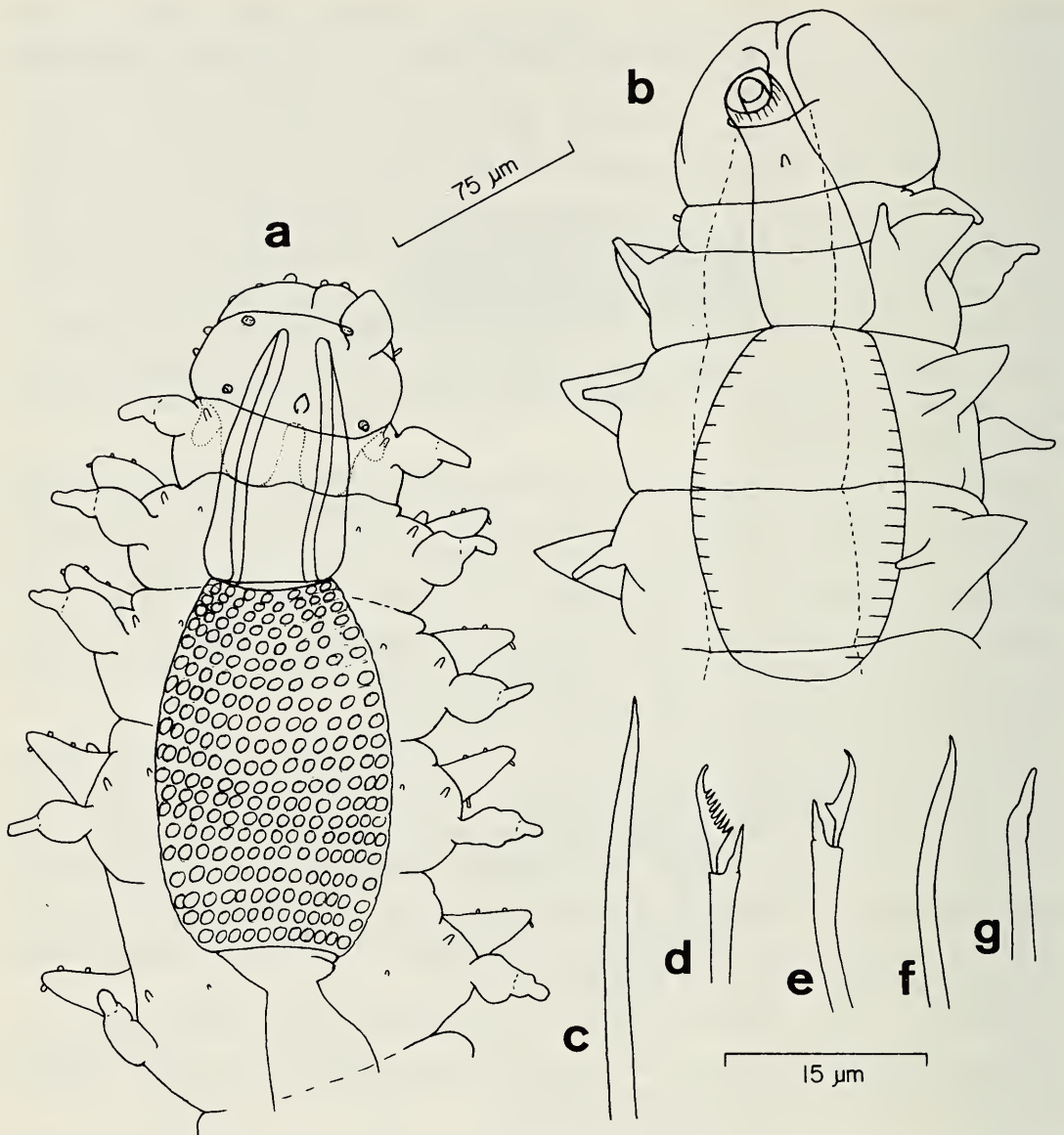


Fig. 17. *Sphaerosyllis brevidentata*: a, Anterior end, dorsal view (FSBC I 23564); b, Same, holotype, ventral view; c, Superior simple seta, posterior setiger; d, Upper compound seta; e, Lower compound seta; f, Inferior simple seta; g, Aciculum.

syllis spp. having 3 pairs of eyes, on anterior margin slightly medial to lateral antennae; posterior pair small, located near posterolateral margin. Median antenna missing; single lateral antenna on anterior margin, extending anteriorly about to tips of palps, pyriform, without usual cylindrical tip. Lobes of brain very short; dorsal lobes extending to beginning of setiger 1, covered by very thin integument; lateral lobes extending about half that distance. Palps very short, papillate, completely fused except for median furrow. Tentacular segment dorsally distinct, completely separated from prostomium, unmodified, about $\frac{2}{3}$ length of following segment in relaxed specimen

but reduced by about half in another specimen, without tentacular folds covering part of prostomium, with glandular papillae above tentacular cirri. Dorsum with 4 papillae per segment; larger pair situated slightly in front of dorsal cirri; smaller pair medial to larger pair. Dorsal cirri on all setigerous segments, similar in size and shape to tentacular cirri, extending laterally for about same distance as parapodial lobes, with globular bases indistinctly separated from tips, often with 2 constrictions of cylindrical parts. Parapodial lobes conical, with slightly rounded tips, with at least 1 papilla on anterior margin short distance from tips, and another on posterior side near tips. Ventral cirri short, cylindrical, attached to bases of parapodial lobes. Solitary, superior simple setae (Fig. 17c) on all parapodia and solitary, inferior simple setae (Fig. 17f) on posterior segments; both smooth, tips acute; inferior simple setae strongly curved, not as stout as superior simple setae. Four compound setae (Fig. 17d, e) with short blades on all parapodia; blades slightly curved, unidentate, upper 2 serrate, lower 2 smooth. Solitary aciculum (Fig. 17g) in each parapodium, slightly curved near tip; tip long, conical. Pygidium hemispherical, with long, glandular papillae; anal cirri lost. Mature male with sexual products in setigers 7–12; scars of external embryos visible on female, 2 per segment, on dorsum of setigers 7–10.

Pharynx (Fig. 17a, b) thickly chitinized, beginning near level of anterior pair of eyes, extending to posterior part of setiger 1, about 0.11 mm long, with small anterior opening; middorsal tooth small, located $\frac{1}{4}$ to $\frac{1}{3}$ of distance from anterior end. Proventriculus barrel-shaped, in setigers 2, 3, and part of 4; length about 0.13 mm; width about 0.05 mm. Muscle cells in dorsal view arranged in 3 planes: prominent, transverse plane and 2 opposite diagonal planes, with 19–20 transverse rows, anterior 5 small.

Remarks.—*Sphaerosyllis brevidentata* shows some resemblance to *S. brevifrons* Webster and Benedict (1884:714, 715, pl. 3, figs. 24–30) and *S. riseri*, n. sp., but differs from both in having only 2 pairs of eyes, one pair of which is located on the anterior prostomial margin and the other located on the posterior prostomial margin. Type-specimens and others of *S. brevifrons* have a similar tentacular segment, antennae, and cirri to those of *S. brevidentata*, but *S. brevifrons* is a much larger species. Antennae and cirri of *S. riseri*, n. sp., have distinct spherical bases and cylindrical tips, with the tips contracted into the bases; *S. riseri* also has a prostomium and tentacular segment showing a great deal of fusion.

Etymology.—The specific name is derived from Latin, and refers to the small pharyngeal tooth of this species.

Sphaerosyllis glandulata, new species

Figs. 18, 19

Sphaerosyllis sp. Taylor, 1971:229–231, fig. 5g–j.—Hall and Saloman, 1975:12 [list].

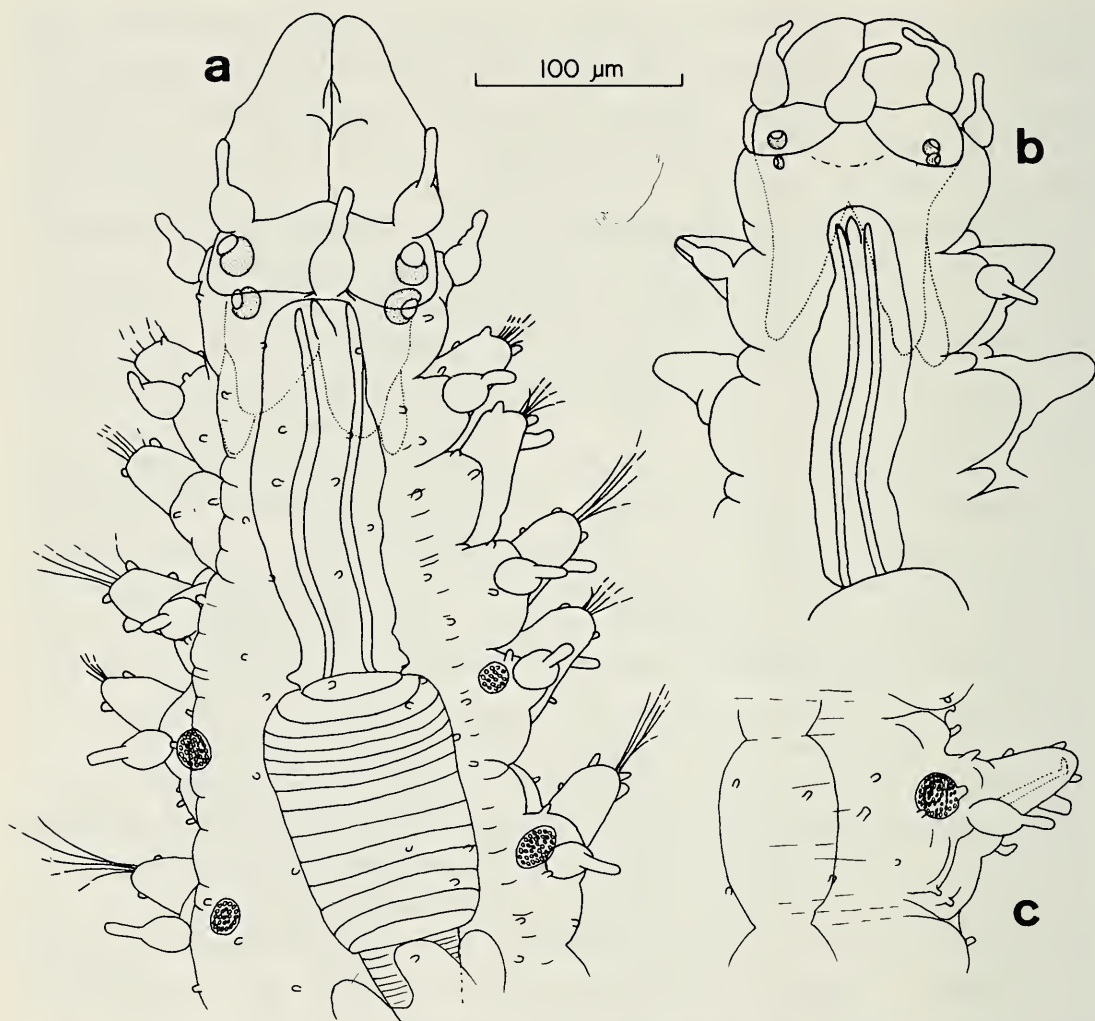


Fig. 18. *Sphaerosyllis glandulata*: a, Anterior end, dorsal view (USNM 60217); b, Same, contracted specimen (AHF Poly 1315); c, Middle segment, dorsal view (not scaled).

Sphaerosyllis pirifera.—Day, 1973:34.—Gardiner, 1976:131, fig. 10p–r [not Claparède, 1868].

Material examined.—FLORIDA: Hutchinson Island Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Nov. 1972; USNM 60216), 14 paratypes (USNM 60218; ZMH P-16396; FSBC I 23578–23585). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 9 paratypes (USNM 60217; AHF Poly 1314; ZMH P-16397; FSBC I 23586–23590). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 17 paratypes (AHF Poly 1315; FSBC I 23591–23598). Tampa Bay, 27°36'15"N, 82°43'22"W, 9 m, sand; J. Taylor and C. Saloman, cols., 25 Oct. 1963; 3 paratypes (FSBC I 23599). Same; J. Taylor, col., 1963; 7

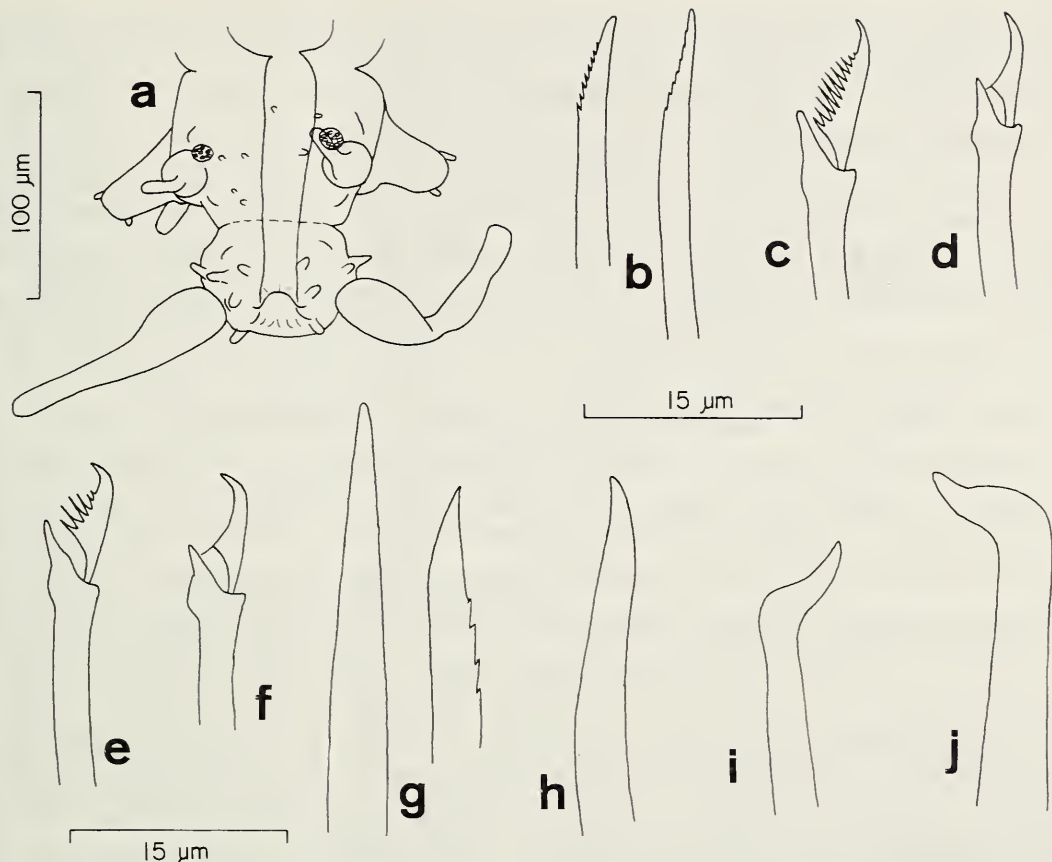


Fig. 19. *Sphaerosyllis glandulata*: a, Posterior end, dorsal view (USNM 60217); b, Superior simple setae, anterior setigers; c, Upper falciger, anterior setiger; d, Lower falciger of same; e, Upper falciger, posterior setiger; f, Lower falciger of same; g, Superior simple setae, posterior setigers, dorsal and lateral views; h, Inferior simple seta, posterior setiger; i, Aciculum, anterior setiger; j, Same, posterior setiger.

paratypes (USNM 45555). NORTH CAROLINA: off Beaufort, 20 m, sand and broken shell; J. H. Day, col., 1965; 1 paratype (USNM 51074).

Description.—Body without color markings; pharynx surrounded by light, brownish glands; parapodial glands yellow, obscure. Maximum length 7.0 mm, width 0.18 mm without parapodia, 45 setigers. Prostomium and tentacular segment fused (Fig. 18a, b); tentacular segment forming fold covering posterior part of prostomium; median antenna originating from fold. Two pairs of lensed eyes on posterior half, in flattened trapezoid arrangement, anterior and wider pair usually slightly larger. Lateral antennae originating on anterolateral margins of prostomial lobe in front of anterior pair of eyes, with bulbous bases and cylindrical tips, similar to median antenna; antennae about $1\frac{1}{2}$ times lengths and widths of tentacular and dorsal cirri. Glandular papillae absent from prostomium. Dorsal lobes of brain extending into setiger 1; lateral lobes slightly longer. Palps together about as wide as

prostomium, extended or bent ventrally, about as long as antennae when turned ventrally. Tentacular segment enclosing most of lateral margins of prostomial lobe, with arc of few glandular papillae on dorsum. Tentacular cirri smaller than antennae, originating on transverse line below anterior pair of eyes. Several short, glandular papillae on dorsum and parapodial lobes of each setiger in median segments (Fig. 18c). Dorsal cirri absent from setiger 2; replaced by glandular papillae. Dorsal cirri of other segments similar to antennae but smaller, not extending past tips of setigerous lobes, with bulbous bases oval in outline, mostly longer than cylindrical tips. Setigerous lobes stout, bluntly rounded. Ventral cirri slender, cylindrical, not extending past tips of setigerous lobes. Solitary, superior simple setae (Fig. 19b, g) present from setiger 1 on all but largest specimens, beginning behind first several setigers on latter, with slightly bent, slightly serrate tips on anterior setigers, much stouter on posterior segments, with 4 stout teeth on lower sides near tips. Four compound setae on anterior parapodia (Fig. 19c, d); blades of upper slightly longer than lower (12–8 μm); edges with long serrations; 3, occasionally 4, compound setae on posterior parapodia (Fig. 19e, f); all blades about 8 μm long; upper ones with long serrations; shafts of compound setae similar throughout body, stouter on posterior segments, distal ends smooth. Solitary inferior simple setae (Fig. 19h) on posterior segments, curved, as stout as superior simple setae. Acicula (Fig. 19i, j) solitary, with tips strongly bent anteriorly at slightly less than right angle in anterior parapodia, stouter, similar in shape in posterior parapodia. Spherical parapodial glands containing yellow, opaque, spherical granules always on dorsal side above each parapodial lobe medial to dorsal cirri beginning with setiger 4, with opening above dorsal cirri; glands mostly empty in one specimen, with granular particles present in and around spherical vesicles. Pygidium (Fig. 19a) hexagonal in outline with pair of long, anal cirri on posterolateral margins; transverse row of about 6 relatively long, glandular papillae dorsally in middle of lobe and 4 widely spaced terminal papillae. Sexually mature males with sex products beginning in setiger 10–11 and continuing to setiger 31 in one specimen; natatory setae on one male beginning on setiger 11, with sperm in setiger 10 in same. Females with internal eggs, 2 per segment, beginning mostly in setiger 10–11; eggs beginning in largest female (7 mm long, with 44 setigers) by setiger 12 (possibly setiger 11), extending posteriorly to setiger 32; no females with external embryos or natatory setae. Number of segments containing sexual products apparently related to animal size with posterior 10–12 segments usually empty.

Pharynx long and narrow, with relatively thick walls (usually not strongly bent or folded), mostly located in first 3 setigers and part of tentacular segment; middorsal tooth anterior, relatively large. Proventriculus cylindrical, located in most of length of setigers 4 and 5, with 13–14 irregular transverse rows of muscle cells, anterior 4–5 rows small.

Remarks.—I am not aware of descriptions of any *Sphaerosyllis* species having parapodial glands containing spherical granules. In view of the constancy of this character, I feel that the specimens represent an undescribed species of this genus. The specimen from North Carolina reported as *S. pirifera* by Day (1973) and Gardiner (1976) is *S. glandulata*. Note, however, that parapodial glands are not readily observable except in cleared specimens, and gland contents become coagulated in preserved specimens.

Etymology.—The specific name is derived from the Latin, *glandulata*, meaning glanded, and refers to the parapodial glands.

Sphaerosyllis longicauda Webster and Benedict, 1887

Figs. 20, 21

Sphaerosyllis longicauda Webster and Benedict, 1887:720, pl. 3, figs. 35–39.

Brania sp. Hartman, 1944:pl. 24, figs. 1, 2.

Sphaerosyllis erinaceus.—Pettibone, 1963:135, 136, fig. 35a [in part].—Gardiner, 1976:131, fig. 10s–v [not Claparède, 1863].

Material examined.—MAINE: Eastport; syntypes on 3 slides (USNM 27557) [alcoholic syntypes in poor condition (USNM 400)]. NORTH CAROLINA: Banks Channel, Wrightsville Beach, intertidal, on rocks; R. Fox, col.; 11 specimens (USNM 52915). FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 2 specimens (FSBC I 20672, 20673). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 15 specimens (USNM 54525, 54526; FSBC I 20674–20681).

Description.—Body without color markings; integument covered with sediment. Females of Florida specimens maximally 2.6 mm long, 0.2 mm wide without parapodia, with 26 setigerous segments; males smaller, maximally 2.1 mm long, with 24 setigerous segments. Prostomium (Fig. 20a, b) oval, about 3 times wider than long, broadly fused dorsally with tentacular segment. Three pairs of lensed eyes; anterior eyes small, located in usual position of eyespots, on anterior margin of prostomial lobe medial to lateral antennae; posterior 2 pairs larger, in arc on posterior part of prostomial lobe; arc either anteriorly concave or convex depending upon state of contraction of specimen; lateral pair of eyes larger. Lateral antennae originating on anterolateral margins of prostomial lobe, with bulbous bases and cylindrical tips, often extending slightly past palps. Median antenna originating from anterior emargination of tentacular fold covering posterior part of prostomium, 1½ times lengths of lateral antennae, occasionally extending farther anteriorly. Palps short, dorsally fused, with wide, median, anterior notch and dorsal, median furrow, without papillae. Dorsal lobes of brain extending to anterior part of setiger 1; lateral lobes extending to about middle of same segment. Tentacular segment visible dorsally principally as fold

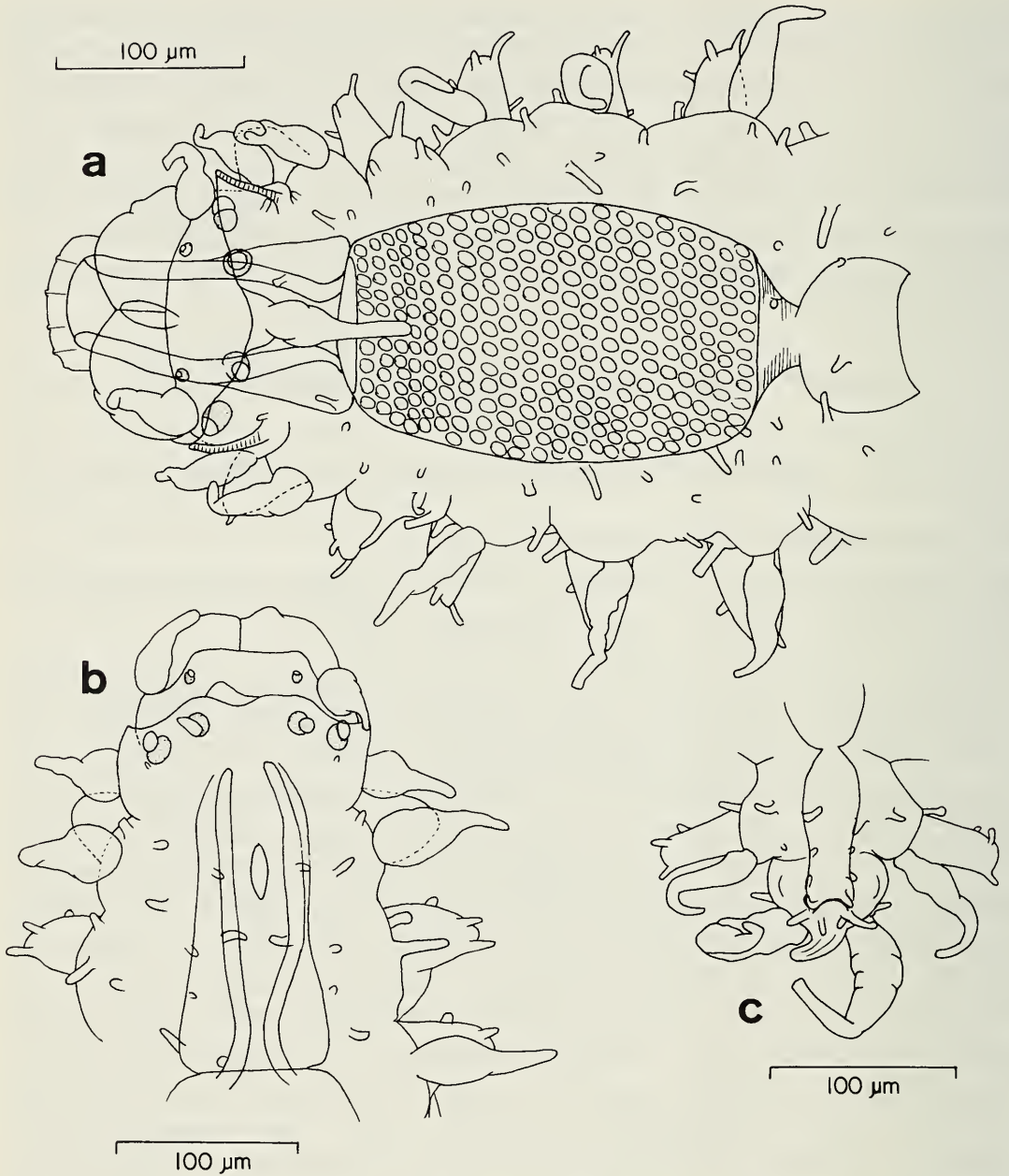


Fig. 20. *Sphaerosyllis longicauda*: a, Anterior end, dorsal view (USNM 54525); b, Same, relaxed specimen; c, Posterior end, dorsal view.

covering posterior half of prostomial lobe; tentacular cirri similar to lateral antennae, originating below lateral eyes; few short papillae on tentacular fold. Dorsum of each segment papillated with both long and short papillae (Fig. 20a). Dorsal cirri absent from setiger 2, replaced by glandular papillae, on remaining segments relatively slender, much longer than parapodial lobes. Parapodial lobes stout, with blunt tips, with about 4 long, prominent

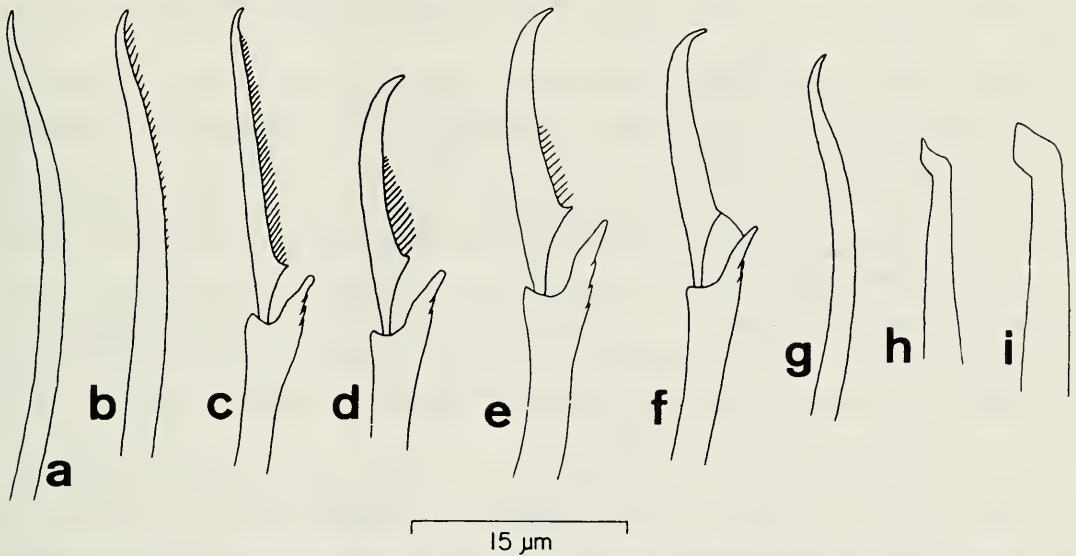


Fig. 21. *Sphaerosyllis longicauda*: a, Superior simple seta, anterior setiger; b, Same, posterior setiger; c, Upper compound seta, anterior setiger; d, Lower compound seta, setiger 10; e, Upper compound seta, posterior setiger; f, Same; g, Inferior simple seta, posterior setiger; h, Aciculum, anterior setiger; i, Same, posterior setiger.

glandular papillae; long, most prominent papilla on posterior tip; 1 each on anterodorsal part of tip, on anterior margin about half distance from base to tip, and on posterior margin near base. Ventral cirri short, cylindrical. Solitary, superior simple setae (Fig. 21a, b) on all setigers, slightly curved near tips, smooth on anterior segments, stouter and serrate on concave side near tips on posterior segments. About 7 compound setae on anterior parapodia (Fig. 21c, d), with unidentate blades; upper blades longest, 22 μm , with fine serrations from bases to near tips; lower blades about 12 μm , smooth. Five or 6 compound setae with similar, shorter blades, 12–15 μm long, on posterior parapodia (Fig. 21e, f); upper blades with fine serrations or smooth; blades and shafts often stouter than on anterior segments. Distal ends of shafts of compound setae with about 3 serrations. Solitary, small, smooth, inferior simple setae (Fig. 21g) on posterior parapodia. Acicula (Fig. 21h, i) solitary, relatively slender, sharply anteriorly curved near tips, with acute tips in anterior parapodia; much stouter in posterior parapodia but similar in shape except tips not as pointed. Pygidium hemispherical, with 2 rather long, stout, lateral anal cirri about twice length of dorsal cirri and prominent, midventral projection or cirrus, with about 10 long papillae visible dorsally. Sexually mature males with sexual products beginning in setiger 8, extending to setigers 16–21. Females with 4 internal eggs or dorsal, external embryos, beginning on setigers 8 or 9, extending to setigers 16–21; single pair of embryos between parapodial lobes and dorsal cirri; second

pair above dorsal cirri; one male with natatory setae beginning on setiger 8.

Pharynx (Fig. 20a) strongly chitinized, basally surrounded by lightly colored glands, located in tentacular segment and first 2 setigerous segments of relaxed specimens, ending posteriorly in setiger 2 with anterior end extending past palps of contracted specimens, about 0.17 mm long. Middorsal tooth large, about $\frac{1}{3}$ distance from anterior end; anterior end surrounded by stiff cylinder with about 10 papillae on margin. Proventriculus barrel shaped, located in setigers 3–5 of relaxed specimens, extending anteriorly into setiger 2 in contracted specimens. Muscle cells in dorsal view arranged in 3 planes: prominent transverse plane; 2 opposite, diagonal planes; 18–21 transverse rows; anterior 5 small.

Remarks.—*Sphaerosyllis longicauda* has been referred to *S. erinaceus* Claparède, 1863 (Pettibone, 1963). However, it differs from *S. erinaceus* in that the middorsal pharyngeal tooth is not at the anterior end of the pharynx, and the pygidium has a ventrally originating median anal cirrus in addition to the lateral pair. My specimens are in reasonably good agreement with types of *S. longicauda*; however, examination of critical details of the type-specimens was not possible because of poor quality of the slides, and new material from the type-locality will possibly aid in confirming this determination. Specimens reported as *S. erinaceus* by Gardiner (1976; USNM 52915) are *S. longicauda*.

Sphaerosyllis erinaceus Claparède (1863:45, 46, pl. 8, fig. 38) is based on a very short description of a juvenile with figures of the prostomium and pygidium only; type material has apparently been lost. It was redescribed by Saint-Joseph (1887:207, 208, pl. 10, figs. 81–83) based on a single specimen from near the type-locality. Saint-Joseph's description is in agreement with Claparède's short description and must be accepted if the species is to stand. However, paired tentacular lobes, that Saint-Joseph did not describe, have been described on specimens from other areas and referred to *S. erinaceus* (*S. longicauda*.—Eliason, 1920:11–13, not Webster and Benedict, 1887; Hartmann-Schröder, 1971:168, synonymy), and Saint-Joseph's specimen should be re-examined to determine the presence of the lobes.

Sphaerosyllis longicauda was originally reported from New England and is now known from North Carolina and Florida.

Sphaerosyllis magnidentata, new species

Fig. 22

Material examined.—FLORIDA: Monroe County, John Pennekamp State Park, South Creek channel marker No. 2, 3.8 m, in sand, shell, and coral rubble with *Thalassia*, *Penicillus*, and *Halimeda* cover; R. J. Helbling, col., 13 Nov. 1975; holotype (USNM 60452), 2 paratypes (USNM 60453; FSBC I 23600). Same; col., 1979; 4 paratypes (USNM 60454; FSBC I 23601). THE BAHAMAS: S portion of Bimini Lagoon, 25°43'N, 79°16'W, in sub-

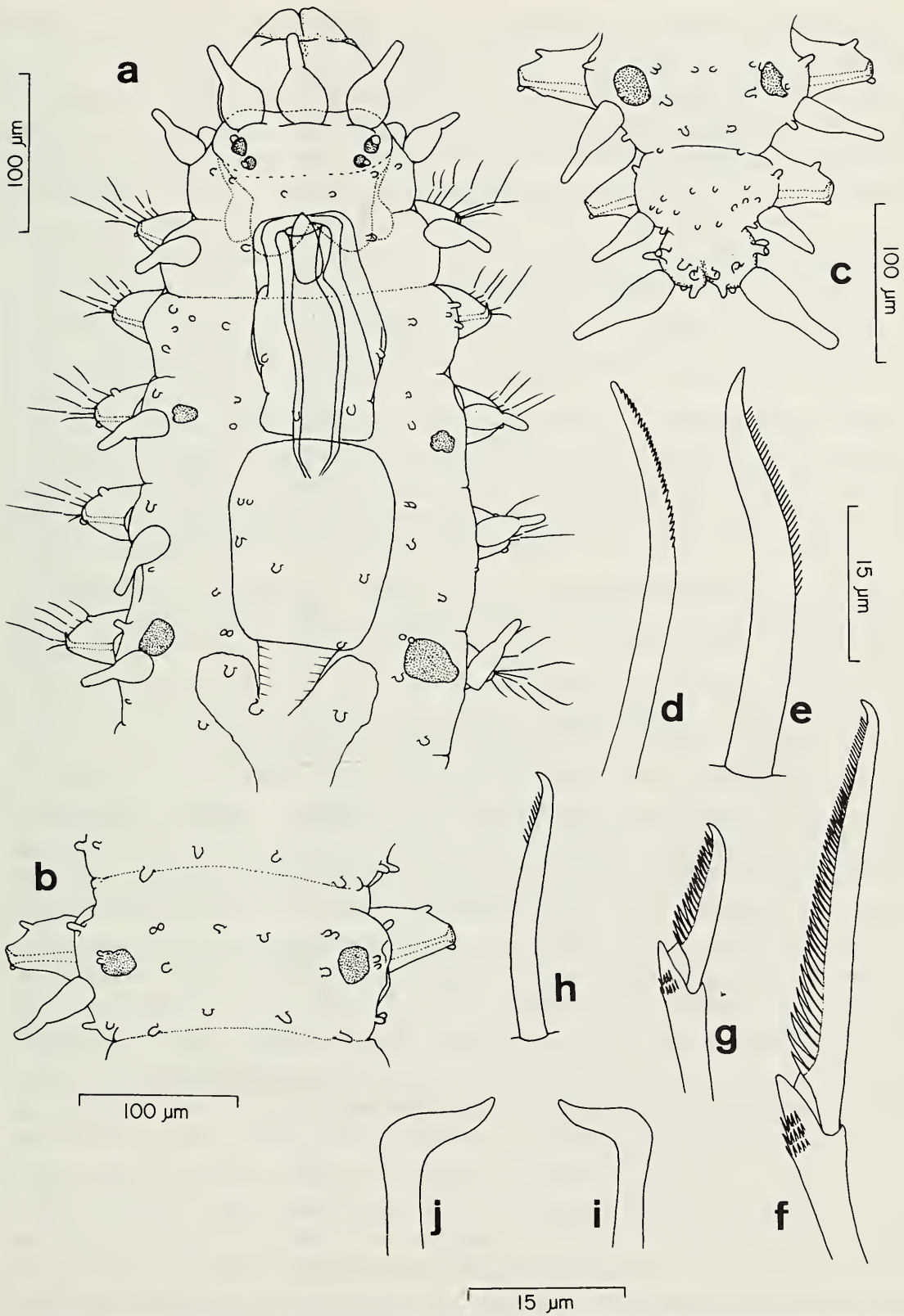


Fig. 22. *Sphaerosyllis magnidentata*: a-c, Holotype: a, Anterior end, dorsal view; b, Middle segment, dorsal view; c, Posterior end, dorsal view; d-i, Paratype (USNM 60453): d, Superior simple seta, setiger 4; e, Same, posterior setiger; f, Upper compound seta, setiger 4; g, Lower compound seta of same; h, Inferior simple seta, posterior setiger; i, Aciculum, setiger 4; j, Same, posterior setiger.

merged plastic sponges; A. Schoener, col., 1970–1971; 1 paratype (USNM 60455).

Description.—Body without color markings. Holotype 1.8 mm long, 0.25 mm wide including parapodia across proventriculus, 20 setigers; paratypes with 18–21 setigers. Prostomium and tentacular segment almost completely fused dorsally (Fig. 22a), separated only by obscure groove. Prostomium about 3 times wider than long with 2 pairs of relatively small, lensed eyes on posterior half in flattened trapezoidal arrangement open to front, anterior pair slightly larger. All three antennae similar, each about half as long as prostomial width, constricted at base, with globular base and cylindrical tip, all originating near anterior prostomial margin. Palps dorsally smooth, with fused part almost as wide, longer than prostomium; anterior divided parts usually turned ventrally. Dorsal lobes of brain extending to about middle of setiger 1; ventrolateral lobes slightly shorter. Tentacular segment about as long as, slightly wider than, and laterally surrounding posterior half of prostomium; tentacular cirri originating below eyes, about $\frac{2}{3}$ lengths of antennae, similar to dorsal cirri of following segments. Six glandular papillae in transverse row above tentacular cirri. Dorsal cirri absent from setiger 2, constricted at bases on other anterior setigers, with bulbous bases and cylindrical tips, with elongate, nearly cylindrical bases and narrower, cylindrical tips on middle and posterior setigers; all extending to about tips of parapodial lobes. Dorsal parapodial glands beginning on setiger 5, possibly also on setiger 3, extending to posterior end; contents granular; dorsal opening not seen. Setal lobes relatively stout, blunt. Ventral cirri cylindrical, slender, not extending to tips of setal lobes. Solitary, superior simple setae (Fig. 22d, e) emerging above acicula on all parapodia, curved dorsally, serrate on ventral border near tips, longer and stouter on posterior setigers. About 7 compound setae on anterior parapodia, 4 on posterior parapodia (Fig. 22f, g); blades with unidentate, hooked tips; edges serrate to near tips; serrations relatively long, large, closely spaced proximally, shorter and more slender distally; upper blades long on anterior parapodia, gradually shorter below (43 and 17 μm on setiger 4, slightly shorter anteriorly); blades similar on posterior parapodia but upper blades shorter (about 30 μm). Shafts of compound setae with 2 or 3 rows of serrations subdistally. Solitary, inferior simple setae on posterior parapodia (Fig. 22h), with hooked, unidentate tips, serrate near tips on concave margins. Acicula (Fig. 22i, j) solitary, stout, with tips bent forward at about right angle, slightly stouter in posterior parapodia. Glandular papillae on dorsum and parapodia of setigerous segments as figured on anterior and middle segments (Fig. 22a, b). Pygidium subspherical, with dorsal transverse row of 8 large papillae, 4 similar, terminal papillae surrounding anus; anal cirri similar in shape to dorsal cirri of posterior segments but longer and stouter. No sexually mature specimens seen.

Pharynx (Fig. 22a) about 140 μm long, thick walled, surrounded by thick glands, extending from anterior margin of setiger 1 to near posterior margin of setiger 3; middorsal tooth anterior, massive; soft papillae surrounding anterior end possibly absent. Proventriculus short, subcylindrical, about 120 μm long, 105 μm wide, extending to about middle of setiger 5 in slightly less than 2 segments, with about 14 irregular, transverse rows of muscle cells, anterior 4 rows small.

Remarks.—*Sphaerosyllis magnidentata* resembles *S. ovigera* Langerhans (1879:567, 568, pl. 32, fig. 23; Fauvel, 1923:302–304, fig. 116a–d) in the origin of the median antenna, but differs in having smooth palps, long- and short-bladed compound setae, and parapodial glands containing granular material, not rods as in *S. ovigera*.

In addition to differences indicated in the key, *S. magnidentata* differs from other *Sphaerosyllis* species reported herein with dorsal parapodial glands and acicula bent forward at about a right angle, in having a massive middorsal pharyngeal tooth and upper compound setae with very long blades.

Etymology.—The specific name is derived from the Latin *magna*, meaning large, and *dentata*, meaning toothed, and refers to the large pharyngeal tooth.

Sphaerosyllis piriferopsis, new species

Figs. 23, 24

Material examined.—FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., May 1972; USNM 60210), 18 paratypes (USNM 16398; ZMH P-60211; FSBC I 23602–23608). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 21 paratypes (AHF Poly 1316; ZMH P-16399; FSBC I 23609–23617). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 6 paratypes (FSBC I 23618–23622). Monroe County, John Pennekamp State Park, South Creek channel marker No. 2, 3.8 m, in sand, shell, and coral rubble with *Thalassia*, *Penicillus*, and *Halimeda* cover; R. J. Helbling, col., 13 Nov. 1975; 1 paratype (FSBC I 23622). THE BAHAMAS: S portion of Bimini Lagoon, 25°43'N, 79°16'W, in submerged plastic sponges; A. Schoener, col., 1970–1971; 2 paratypes (USNM 54326).

Description.—Body without color markings; pharynx surrounded by brownish glands; dark brown eye pigment often in dorsal lobes of brain, extending posteriorly into setiger 1. Maximum length 2.3 mm, width 0.12 mm without parapodia, 30 setigers. Prostomium and tentacular segment fused (Fig. 23a, b), with tentacular segment dorsally forming fold covering posterior part of prostomium; median antenna often originating from anterior margin of fold. Prostomium about twice as wide as long, with 2 pairs

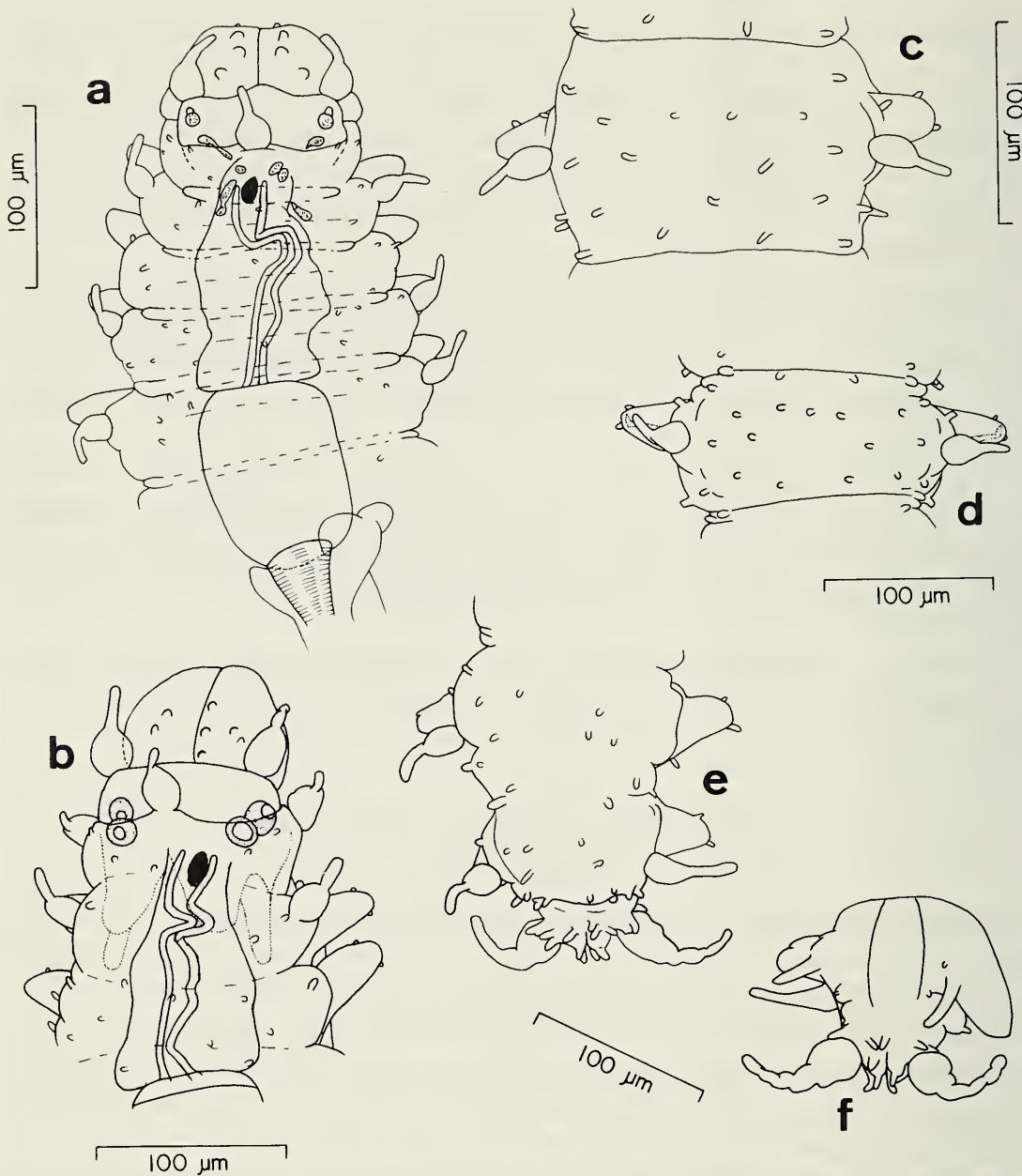


Fig. 23. *Sphaerosyllis piriferopsis*: a, Anterior end, dorsal view, pharyngeal tooth darkened (AHF Poly 1316); b, Same, holotype; c, Middle segment, dorsal view; d, Same (ZMH P-16398); e, Posterior end, dorsal view; f, Same, ventral view.

of lensed eyes on posterior half arranged in flattened trapezoid open to front; posterior pair often indistinct, possibly absent, with eye pigment in dorsal lobes of brain; anterior pair slightly larger. Lateral antennae attached on anterolateral margins, similar in shape but slightly larger than median antenna, usually not extending past palps. All antennae with bulbous bases and cylindrical tips; length of tips about equal to that of bases. Dorsal lobes

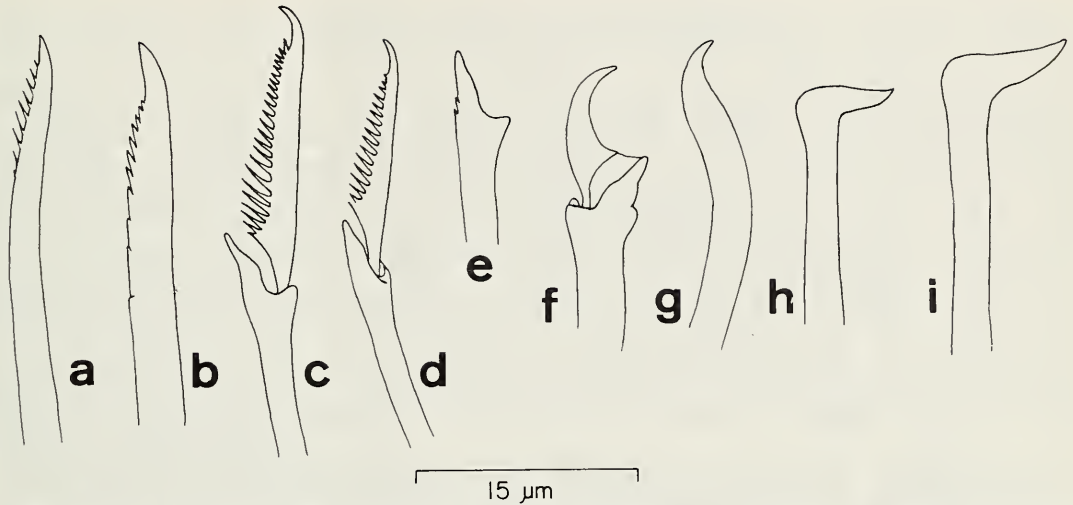


Fig. 24. *Sphaerosyllis piriferopsis*: a, Superior simple seta, anterior setiger (AHF Poly 1316); b, Same, posterior setiger; c, Upper compound seta, anterior setiger; d, Same; e, Shaft of same; f, Lower compound seta, posterior setiger; g, Inferior simple seta, posterior setiger; h, Aciculum, anterior setiger; i, Same, posterior setiger.

of brain extending to about middle of setiger 1; lateral lobes slightly longer. Palps together slightly wider and about as long as prostomium, tips usually turned ventrally, large papillae or bumps on dorsal side and smaller papillae on tips. Tentacular segment visible dorsally although fused with prostomium, enclosing lateral sides of prostomium, with several glandular papillae dorsally. Tentacular cirri usually originating ventrolateral to eyes or more anteriorly on contracted specimens, about as stout but shorter than lateral antennae. Dorsal cirri absent from setiger 2, replaced by glandular papillae. Dorsal cirri on other setigers similar to antennae but not as stout; tips extending to or slightly past parapodial tips. Parapodial lobes stout, bluntly rounded. Ventral cirri slender, cylindrical, originating near parapodial bases, not extending past tips. Small, spherical, glandular papillae on dorsum and parapodia of median segments (Fig. 23c, d). Solitary superior simple setae above acicula on all parapodia, serrate on edge near tips, slender on anterior segments, stouter on posterior segments (Fig. 24a, b). About 5 compound setae on anterior parapodia (Fig. 24c–e), about 3 on posterior parapodia; upper blades on anterior parapodia about twice as long ($17\ \mu\text{m}$) as lower ones, with long, thin serrations from bases to near tips; lower blades smooth or nearly so; tips unidentate; blades of compound setae on posterior parapodia all about same length as lower ones of anterior parapodia but stouter, more strongly hooked (Fig. 24f). Shafts of compound setae similar throughout body but stouter posteriorly, with few serrations on distal ends. Solitary, inferior simple setae (Fig. 24g) on posterior parapodia, about as stout as corresponding superior simple setae but more

strongly curved. Acicula (Fig. 24h, i) solitary, relatively stout, with tips bent anteriorly at right angle; posterior acicula only slightly stouter than anterior. Dorsal parapodial glands always absent. Pygidial lobe (Fig. 23e, f) triangular in outline, with pair of anal cirri similar but longer and thicker than dorsal cirri, several relatively long, glandular papillae dorsally and ventrally between anal cirri and 4 terminal papillae. Sexually mature females with 2 external or internal embryos per segment; external embryos with 4–6 setigers each, attached ventrally by pygidium near parapodial lobes beginning on setiger 14 in some females, but on setiger 13 in one, continuing on 10 segments of one female; short natatory setae on 10 segments of one female, beginning on setiger 13. Males with sperm in setigers 11–24 and natatory setae on setigers 12–24; sperm in setiger 11 apparently originating in setiger 12.

Pharynx (Fig. 23a, b) long, narrow, thin walled, often bent from contraction in preserved specimens, usually in first 3 setigers, surrounded by prominent glands; middorsal tooth relatively large, anterior. Proventriculus shorter than pharynx, cylindrical, usually in setigers 4 and 5; 13–14 irregular, transverse rows of muscle cells, anterior 4–5 small.

Remarks.—*Sphaerosyllis piriferopsis* shows similarity to *S. pirifera* Claparède (1868:515, 516, pl. 14, fig. 2; Viguier, 1884:96–99, pl. 4, fig. 38, pl. 5, figs. 39–43; Fauvel, 1923:301, 302, fig. 115 l–p). However, the prostomium and tentacular segment of *S. piriferopsis* are not completely fused; yellowish “glands” in setiger 1 are absent; glandular papillae are numerous but small, and thus the body is not always encrusted with sand; compound setae are fewer in number in each parapodium (3–5 vs. 6–8) and have shorter blades (maximum length 50 μm in *S. pirifera* according to Claparède’s apparently incorrectly scaled figure, and 23 μm according to Viguier’s figure vs. 17 μm in *S. piriferopsis*); and sexual products and natatory setae begin in more posterior segments of *S. piriferopsis*. All these differences appear to be reliable taxonomic characters. Yellowish “glands” of *S. pirifera* may be homologous with “lateral lobes of the brain” reported in *S. piriferopsis*. Differences between Claparède’s and Viguier’s figures of *S. pirifera*, other than length of blades of compound setae, are the presence or absence of dorsal cirri on setiger 2 and the degree of fusion of the prostomium and tentacular segment.

Further, several authors have stated their opinion that *S. hystrix* Claparède, 1863, and *S. pirifera* are synonymous, and that presence or absence of parapodial glands containing rods from setiger 4 posteriad is an unreliable specific character. This is absolutely contrary to my experience, and in my opinion, *S. pirifera* and *S. hystrix* cannot be considered synonyms.

Etymology.—The specific name, derived from the previously described species, *pirifera*, and the Greek suffix, *-opsis*, meaning likeness, refers to the similarity between the two species.

Sphaerosyllis riseri, new species

Fig. 25

Material examined.—FLORIDA: Monroe County, John Pennekamp State Park, South Creek channel marker No. 2, 3.8 m, in sand, shell and coral rubble, with *Thalassia*, *Penicillus* and *Halimeda* cover; R. J. Helbling, col., 10 May 1976; holotype (USNM 60471). Hutchinson Island Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 2 paratypes (USNM 54451; FSBC I 23626). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 2 paratypes (USNM 54452). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 3 paratypes (USNM 54450; FSBC I 23624, 23625).

Description.—Body without color markings; pharynx surrounded by brownish glands; lateral lobes of brain yellowish brown; sperm brown; ova or embryos light yellow. Minute; maximum length 1.5 mm, width 0.14 mm without parapodia, 17 setigers. Prostomium fused dorsally with tentacular segment (Fig. 25a, b); tentacular segment forming thin fold over posterior part of prostomial lobe covering posterior pair of eyes, with median antenna originating from anterior part of fold between posterior 2 pairs of eyes on relaxed specimens or slightly in front of fold on contracted specimens. Three pairs of eyes; pair of anterior eyespots adjacent to origins of lateral antennae; 2 pairs of lensed eyes on posterior half above origins of tentacular cirri, very close together laterally. Lateral antennae originating on anterior margin of prostomium on line slightly medial to posterior 2 pairs of eyes, closer to midline than lateral margins; antennae all of similar size, with bulbous bases and cylindrical tips; tips contracted into bases and distally ciliated. Dorsal lobes of brain wide, extending to posterior part of setiger 1; lateral lobes slightly longer. Palps short, each broader than long, papillate dorsally. Tentacular segment partially surrounding lateral margins of prostomial lobe; tentacular cirri similar in shape but smaller than antennae and dorsal cirri, originating on anterior part of lateral extensions. Four glandular papillae per segment on dorsum in 2 longitudinal rows plus 2 per segment occurring singly in front of dorsal cirri (Fig. 25c); 12 on ventrum in 3 transverse rows of 4 each. Dorsal cirri on all setigerous segments, similar to antennae but slightly smaller on anterior setigers, slightly longer posteriorly. Parapodial lobes short, pointed (Fig. 25a, b, e), triangular in dorsal view. Body of sexually modified regions of females often narrower, resulting from extrusion of eggs from body cavity, with parapodial lobes appearing much longer and more acutely pointed. Parapodia with anterior and posterior papillae subdistally (Fig. 25c) with posterior one closer to tips. Ventral cirri shorter than parapodial lobes, digitiform. Solitary, superior simple setae on all parapodia (Fig. 25g), smooth on anterior segments, lightly serrate near tips posteriorly. Five compound setae on anterior parapodia, 4 on posterior para-

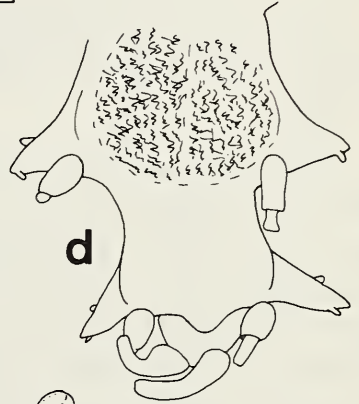
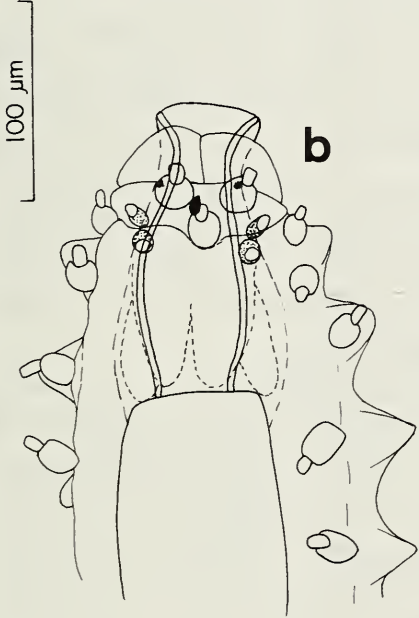
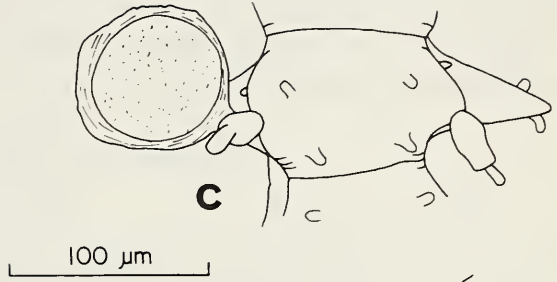
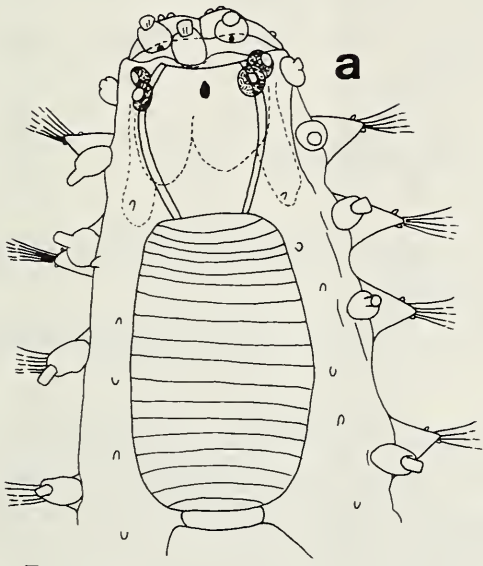
podia; all blades 7–8 μm long, unidentate, often with fine serrations on blade edge of upper ones (Fig. 25f); blades slightly longer on first 2–3 setigers. Solitary, curved, inferior simple setae on posterior parapodia (Fig. 25h). Acicula (Fig. 25i) solitary, slender, slightly enlarged near tips; tips long, thin. Pygidium with pair of anal cirri about 3 times longer than dorsal cirri (Fig. 25d). Sexually mature specimens including 3 males and 2 females; males with brownish sperm in setigers 7–16; females with 2 spherical embryos per segment in setigers 7–13; embryos carried between parapodial lobes and dorsal cirri when external (Fig. 25c). Natatory setae not seen.

Pharynx (Fig. 25a, b) in anterior 2 setigers of relaxed specimens, extending only to middle of setiger 2 in contracted specimens, thin walled, wide, vase-shaped, with anterior opening narrower than widest part or anterior end often flared when everted; middorsal tooth minute, originating about 0.6 of distance from posterior to anterior margins. Ratio of pharynx to proventriculus lengths 1:1.1. Pharynx often turned slightly ventrally, appearing shorter in contracted specimens. Proventriculus barrel shaped, in total length of 3 segments, middle of setiger 1 to setiger 5; muscle cells arranged in 2 opposite diagonal planes in addition to more prominent transverse plane; 17–18 transverse rows of muscle cells, anterior 5–6 rows small.

Remarks.—*Sphaerosyllis riseri* is very similar to *S. tetralix* Eliason (1920:13–15, fig. 4; Hartmann-Schröder, 1971:165–167, fig. 54a–c). *S. riseri* is maximally 1.5 mm long with 17 setigers, while *S. tetralix* is maximally 4 mm long with 29 segments. Antennae and cirri of *S. riseri* have distal parts ciliated on the tips and strongly contracted into the bases, while on *S. tetralix* they not distally ciliated and are flask shaped, as typical of other members of the genus, on anterior segments and cirriform on posterior segments. Antennae of *S. riseri* are all similar, while the median antenna of *S. tetralix* is larger than the lateral two. Eggs and sperm first begin in setiger 7 of mature specimens of *S. riseri* and in setiger 8 of *S. tetralix*, and *S. riseri* has 2 eggs per segment vs. 4 for *S. tetralix*. The proventriculus of *S. riseri* has about 18 rows of muscle cells while that of *S. tetralix* has about 20 rows. Papillation of the dorsum is identical for the 2 species; *S. riseri* has about 12 small papillae per segment on the ventral side in regular arrangement, while *S. tetralix* was reported to have diffusely arranged papillae ventrally. Diffusely arranged papillae reported on the ventrum of *S. tetralix*

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Fig. 25. *Sphaerosyllis riseri*: a, Anterior end, dorsal view, pharyngeal tooth darkened (USNM 54450); b, Same (USNM 54451); c, Middle segment, dorsal view (USNM 54450); d, Posterior end, dorsal view (USNM 54451); e, Parapodium, ventral view (USNM 54452); f, Compound setae, setiger 7; g, Superior simple seta; h, Inferior simple seta, posterior segment; i, Acicula, dorsal and lateral views.



15 μm

indicates an irregular arrangement, but the arrangement is probably regular with numerous papillae and therefore difficult to determine.

Etymology.—The species is named in honor of Dr. Nathan W. Riser, who assisted me in describing this species and others.

Sphaerosyllis taylori, new species

Fig. 26

Sphaerosyllis brevifrons.—Webster and Benedict, 1884:714, 715 [in part, specimens from South Norwalk, Connecticut].

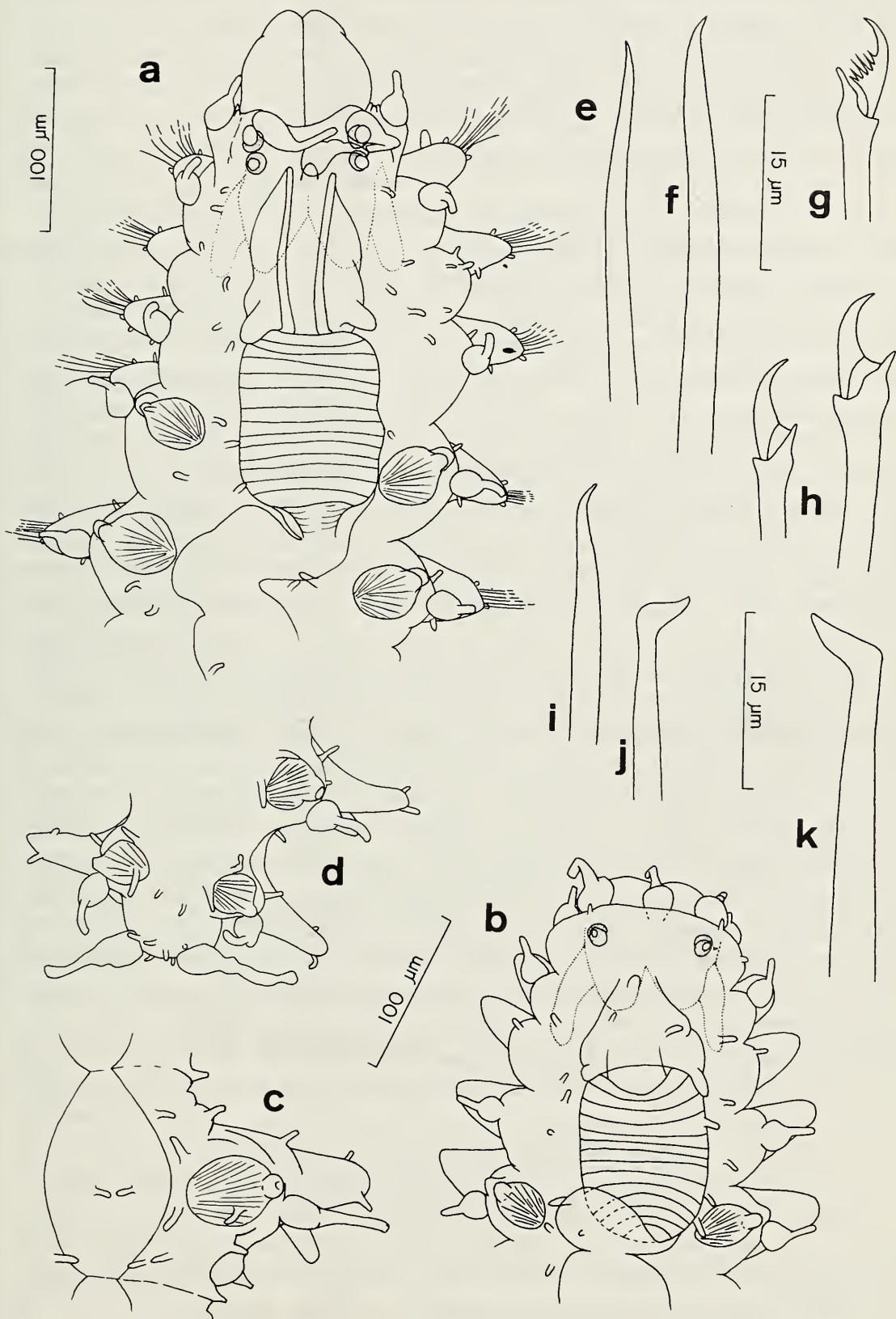
Sphaerosyllis hystrix.—Pettibone, 1963:136, 137, fig. 35g [not Claparède, 1863].

Material examined.—FLORIDA: Hutchinson Island Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Sep. 1972; USNM 60212), 33 paratypes (USNM 54522, 54524, 60213; AHF Poly 1317; ZMH P-16400; FSBC I 23627–23637). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 7 paratypes (USNM 54523; FSBC I 23638–23640). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 10 paratypes (AHF Poly 1318; ZMH P-16401; FSBC I 23641–23645). Tampa Bay, 27°34'54"N, 82°43'01"W, 7 m, sand; J. Taylor and C. Saloman, cols., 10 Oct. 1963; 3 paratypes (USNM 60214; FSBC I 23646). CONNECTICUT: South Norwalk; paratypes (USNM 27556; specimens on 3 slides originally identified by Webster as *S. brevifrons* Webster and Benedict). MARYLAND: Chincoteague Bay in *Zostera* beds; R. Orth, col., 29 Nov. 1970; 3 paratypes (USNM 44084).

Description.—Body without color markings; brownish glands surrounding pharynx. Maximum length 2.4 mm, width 0.2 mm without parapodia, 24 setigers. Prostomium and tentacular segment almost completely fused dorsally (Fig. 26a, b). Two pairs of lensed eyes on posterior half, very close together laterally, in nearly rectangular arrangement, anterior pair slightly larger. Lateral antennae originating on anterolateral margin of prostomium in front of eyes, with bulbous bases and cylindrical tips; lengths slightly less than distance between right and left eyes. Median antenna originating between posterior pair of eyes of relaxed specimens, often attached to anterior

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Fig. 26. *Sphaerosyllis taylori*: a, Anterior end, dorsal view (USNM 54524); b, Same, contracted specimen (USNM 54522); c, Parapodium, middle segment, dorsal view (USNM 54524); d, Posterior end of holotype, dorsal view; e, Superior simple seta, anterior setiger; f, Same, posterior setiger; g, Upper compound seta, anterior setiger; h, Compound setae, posterior setiger; i, Inferior simple seta, posterior setiger; j, Aciculum, anterior setiger; k, Same, posterior setiger.



part of tentacular fold on contracted specimens; antennae similar in length or median slightly shorter. Dorsal and lateral lobes of brain extending to anterior part of setiger 2 of relaxed specimens, extending only into setiger 1 of contracted specimens. Palps together about as wide as prostomium, exceeding length of lateral antennae by about half in extended specimens, with tips mostly bent ventrally. Tentacular segment completely enclosing lateral margins of prostomium, with few, glandular papillae below tentacular cirri and on dorsum; tentacular cirri originating on about same transverse line as lateral antennae, similar to dorsal cirri, about as thick as antennae but shorter. Dorsum of each segment with about 20 long, glandular papillae in characteristic arrangement (Fig. 26c). Dorsal cirri absent from setiger 2, replaced by glandular papillae; dorsal cirri of other setigers with bulbous bases and cylindrical tips often extending past tips of parapodial lobes. Parapodial lobes stout, blunt; each with 2 apical papillae, anterior one slightly below tip on ventral side; posterior one nearer to tip, nearly dorsal in position, 2 other papillae anteriorly and posteriorly below dorsal cirrus (Fig. 26c). Ventral cirri cylindrical, not extending past tips of parapodial lobes. Solitary, smooth, slightly curved, superior simple setae on all parapodia (Fig. 26e, f), slender anteriorly, much stouter posteriorly. Blades of compound setae (Fig. 26g, h) all similar in size, 10–8 μm long dorsally to ventrally on anterior parapodia, similar in shape except upper ones of anterior parapodia with about 6 long, fine serrations on edge; all unidentate. Shafts of compound setae mostly stouter on posterior segments. Solitary, inferior simple setae (Fig. 26i) on posterior parapodia, slightly slenderer than corresponding superior simple setae. Acicula (Fig. 26j, k) solitary, bent forward near tips at about right angle; tips pointed; relatively slender in anterior segments, about twice as stout in posterior segments. Spherical to oblate parapodial glands containing needle-like rods; glands always above parapodial lobes medial to dorsal cirri beginning on setiger 4, with dorsal opening slightly in front of and medial to origins of cirri. Pygidium (Fig. 26d) short, bluntly rounded, with pair of anal cirri similar in shape but about twice as large as posterior dorsal cirri, with about 6 glandular papillae on dorsal side. Sexually mature males with sex products beginning in setiger 6 or 7, extending to setiger 20, but usually to about setiger 15. Natatory setae on some males beginning on segment following that with sex products, usually setiger 7. Females with internal ova beginning in setiger 7 or 8, extending to about setiger 15; none with externally attached embryos or natatory setae.

Lengths of pharynx and proventriculus (Fig. 26a, b) about equal. Pharynx in setigers 1 and 2, surrounded by thick glands, often lobed about middle; middorsal tooth anterior. Proventriculus cylindrical, not much longer than wide, usually, if not always, within setigers 3 and 4, with 13–14 very irregular, transverse muscle cell rows, anterior 4–5 rows small.

Remarks.—*Sphaerosyllis taylori* differs from European descriptions of *S.*

hystrix Claparède (1863:45, pl. 13, figs. 36, 37; Fauvel, 1923:301, fig. 115g, h; not i, k; Hartmann-Schröder and Stripp, 1968:13, 14, fig. 6a–c; Hartmann-Schröder, 1971:67, fig. 54d–f; 1974a:197) in having a pharynx and proventriculus of nearly equal length, compound setae with shorter blades with fewer serrations and of similar length in each parapodium and throughout the body, smooth, superior simple setae on all parapodia, and in being smaller with fewer segments.

Claparède's figure (1863:fig. 36) of the anterior end of *S. hystrix* shows the pharynx in almost 3 segments and the proventriculus in setigers 3 and 4. Fauvel's figure (1923:fig. 115g), attributed to Claparède, shows the pharynx occupying three segments and the proventriculus about two segments long mostly in setigers 5 and 6. Figures of Hartmann-Schröder and Stripp (1968) and Hartmann-Schröder (1971) show compound setae to be larger with many more serrations than those of *S. taylori*, and superior simple setae with a denticulate ventral margin. Claparède's figure (1863:fig. 36) shows only compound setae on anterior parapodia; Fauvel's figure (1923:fig. 115h), attributed to Claparède, shows only compound setae on a sexually modified parapodium. Fauvel (1923) and Hartmann-Schröder (1971) stated that superior simple setae were present on middle and posterior segments; Hartmann-Schröder (1971) stated that blades of compound setae were moderately long to short.

There are obvious problems with other European descriptions of *S. hystrix*. Saint-Joseph (1887:204–207) reported 2 larval forms with 2 modes of ventral incubation of embryos, and embryos first occurring on different segments on specimens from Dinard, France. The description of McIntosh (1908:156–159, pl. 59, figs. 3, 4, 8; pl. 70, fig. 1; 1910:pl. 79, figs. 11–13) included specimens with both dorsal and ventral incubation of embryos, and is so confused that it can be ignored. Southern (1914:19, 20) reported females from Ireland with both 2 and 4 eggs per segment in setigers 8–19 and males with natatory setae beginning on setigers 10 or 11. It appears certain that the accounts of Saint-Joseph, McIntosh and Southern each referred to more than one species, and their specimens should be reexamined.

Etymology.—It is a pleasure to name this species in honor of Dr. John L. Taylor, who assisted in the Hutchinson Island study, and has been of much help to me by providing specimens and advice.

Streptosyllis Webster and Benedict, 1884

Streptosyllis pettiboneae, new species

Figs. 27, 28

Material examined.—FLORIDA: Hutchinson Island Sta. III, 27°22.0'N, 80°12.4'W, about 7 m, medium calcareous sand; holotype (R. Gallagher, col., Sep. 1971; USNM 60448), 7 paratypes (USNM 60450; AHF Poly 1319;

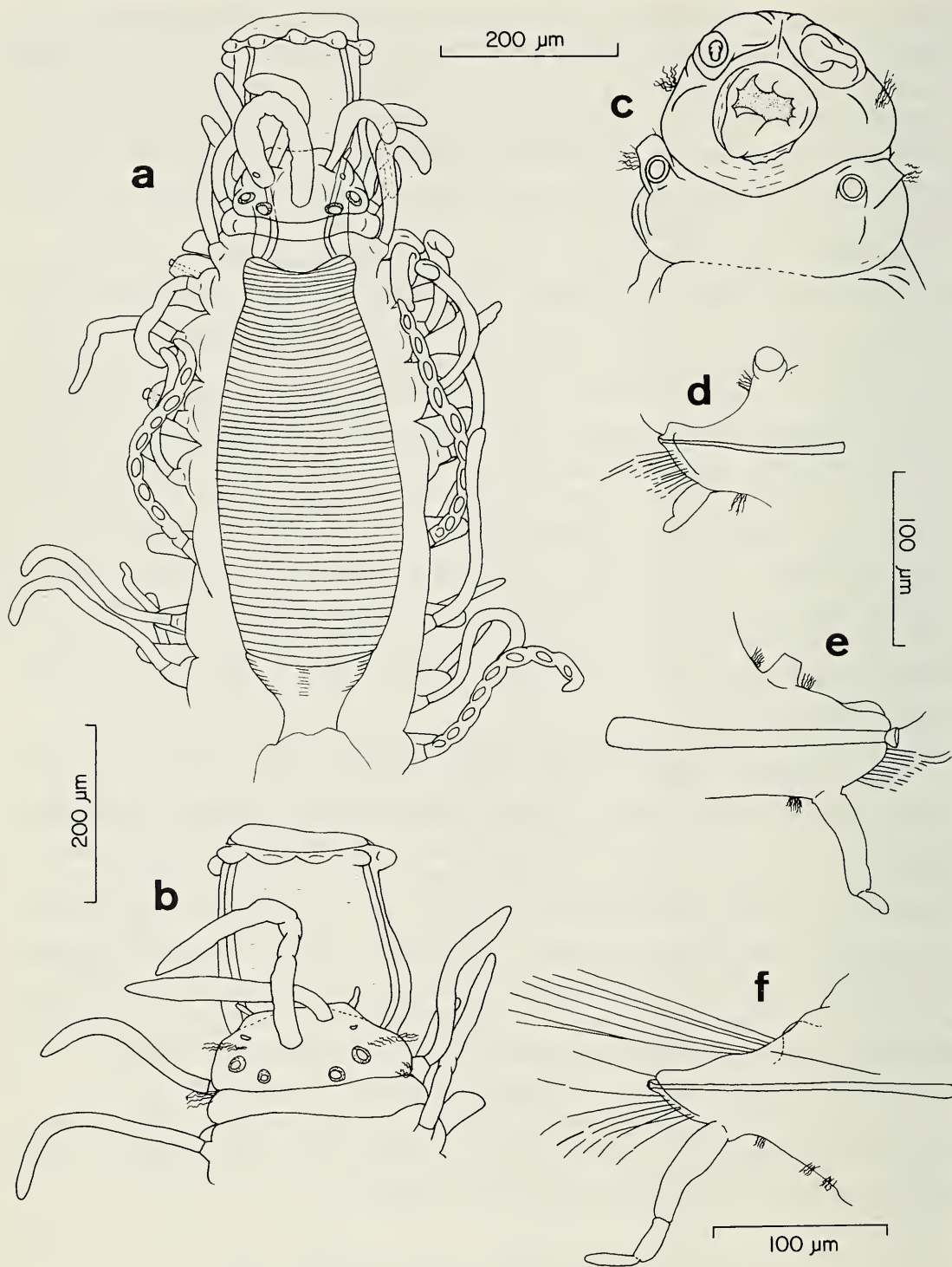


Fig. 27. *Streptosyllis pettiboneae*: a, Anterior end, dorsal view; b, Same; c, Anterior end, ventral view; d-f, Parapodia (FSBC I 23648): d, Setiger 1, anterior view; e, Setiger 3, posterior view; f, Setiger 20, anterior view.

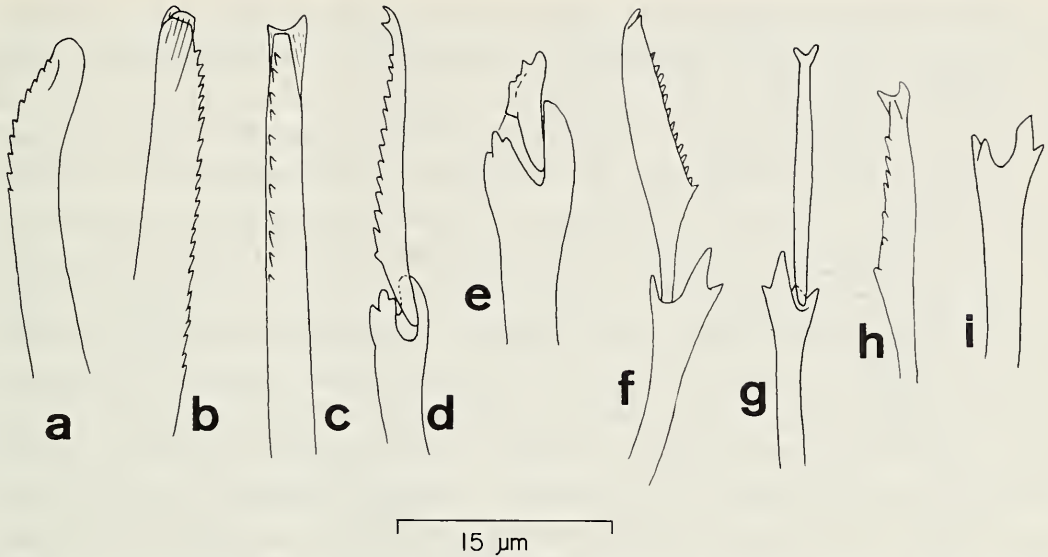


Fig. 28. *Streptosyllis pettiboneae*: a, Superior simple seta, anterior setiger; b, Same, middle setiger, lateral view; c, Same, ventral view; d, Upper compound seta, anterior setiger; e, Lower compound seta, anterior setiger; f-i, Compound setae, middle segments: f, Lateral view (of blade); g, Dorsal view (of blade); h, Lateroventral view of blade; i, Shaft.

ZMH P-16402; FSBC I 23647-23649). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 1 paratype (USNM 60449). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 2 paratypes (FSBC I 23650, 23651). Tampa Bay, 27°36'56"N, 82°41'05"W, 9 m, sand; J. Taylor and C. Saloman, cols., 25 Oct. 1963; 3 paratypes (USNM 60451).

Description.—Pharynx uncolored to reddish brown or brown. Largest specimen slightly greater than 4.0 mm long, width 0.9 mm without parapodia across proventriculus, 48 setigers. Prostomium (Fig. 27a, b) pentagonal; width less than twice length; posterior border slightly convex. Mature specimens with 3 pairs of lensed eyes; anterior pair small, lateroposterior to origins of lateral antennae; 2 posterior pairs larger, arranged in flattened trapezoid open to front; interior pair on posterior margin. Antennae smooth; median antenna originating between posterior 2 pairs of eyes; origins of lateral antennae near anterior margin of prostomium at middle of each side, anteromedial to anterior pair of eyespots; shapes and lengths of antennae variable; shape cylindrical to clavate, with median usually longer than prostomial width, longer and stouter than lateral antennae. Palps (Fig. 27b, c) composed of 2 distinct parts, pair of cushion-shaped ventral lobes and pair of filiform lobes emanating from middle of cushion-shaped lobes; cushion-shaped lobes rarely visible from dorsum; filiform lobes relatively long, often observable below anterior pair of eyes when pharynx everted. Rows of cilia on prostomium in front of anterior pair of larger eyes and on posterolateral

margins. Prostomial integument light brown, appearing glandular. Tentacular segment with same integumental consistency as prostomium; length depending on state of eversion of pharynx and state of contraction of specimen, short when pharynx everted, always visible dorsally. Tentacular cirri not articulate, directed slightly anterolaterally; dorsal tentacular cirri from slightly longer to almost twice as long as ventral tentacular cirri. Dorsal cirri (Fig. 27a) of anterior 5 setigers not articulate, similar to dorsal tentacular cirri and lateral antennae, with short cirrophores; becoming slightly longer, almost as long as body width after setiger 5; articulate on setiger 6; smooth or only wrinkled on setigers 7 and 8; thereafter alternately articulate and smooth or only wrinkled to posterior end; articulate dorsal cirri with 9–10 articles; each article containing 2 large cells of granular material; smooth dorsal cirri long, clavate to cylindrical, diameter slightly less than, and lengths equal to articulated dorsal cirri. Parapodial lobes (Fig. 27d–f) blunt, much stouter on setigers 2–5 than on other setigers. Ventral cirri attached near lower compound setae, about as long as parapodial lobes, slightly constricted at bases, with stout bases and long, slender tips. Solitary, superior simple setae on all parapodia (Fig. 28a–c) short, stout, without hyaline hoods, abruptly bent near tips, serrate on ventral edge near tips on setigers 1–5; after setiger 5 longer, more slender, serrate on ventral borders near tips, with short, distally bifid, hyaline hoods. Compound setae of first 5 setigers (Fig. 28d, e) including 1–3 upper, long-bladed falcigers, 10–12 lower, stout, short-bladed falcigers; long blades serrate on edge, with slender, bidentate tips; shafts of long-bladed falcigers with longest part smooth, shortest part trilobed; short falcigerous blades stout, bidentate, with 2 serrations below secondary tooth; shafts of short-bladed falcigers similar to those of long-bladed ones but stouter. Compound setae behind setiger 5 (Fig. 28f–i) relatively long falcigers; blades flattened, serrate on edge; tips unequally bifid in plane perpendicular to narrow axis of blades; bifid tips in ventral view appearing hooded or encapsulated; shafts distally with 1 long and 3 short, pointed lobes. Inferior simple setae absent. Acicula solitary, greatly enlarged and emergent in setigers 2–5, with knobbed tips. Patches of cilia medial to dorsal and ventral cirri, apparently also continuing onto dorsum and ventrum of each segment. Pygidium triangular in outline, with short, ventrally originating median cirrus; one specimen with single long, slightly thicker lateral cirrus about as long as last 8 segments. Sexually mature specimens with sexual products beginning in setigers 13–14, extending to near posterior end, often “spilling over” from originating segments into adjacent anterior or posterior segments, appearing similar in all specimens. Natatory setae, when present, either long or short (probably indicating females and males), usually beginning on segment after appearance of internal sexual products, usually on all segments containing sexual products. Solitary, slender notoacacula in parapodia with natatory setae.

Pharynx (Fig. 27a, b) broad, much shorter than proventriculus, often bent, extending from mouth to anterior part of setiger 3 when inverted, extending to about anterior part of setiger 1 when everted; 10 soft papillae around anterior end; chitinous part often everted past soft papillae by as much as half total length; middorsal tooth absent. Proventriculus long, barrel-shaped, in 6 segments, setigers 3–8 or 2–7, with about 55 rows of muscle cells.

Remarks.—*Streptosyllis pettiboneae* is similar to *S. websteri* Southern (1914:26–28, pl. 2, fig. 3) and differs in the following characters: longer compound setae of setigers 1–5 have bidentate blades; shafts of compound setae behind setiger 5 are not serrate near the tips; blades of compound setae after setiger 5 appear unidentate, but tips are covered by hyaline hoods which are distally bifid; hoods of superior simple setae are concave on tips; some dorsal cirri behind setiger 5, in alternate arrangement, are distinctly articulate; and sexual modification first appears on a more posterior segment, setigers 13–14 vs. 11 for *S. websteri*.

Etymology.—The species is named in honor of Dr. Marian H. Pettibone in an attempt to express my sincere appreciation for all the help she has provided me during the last several years.

Syllides Örsted, 1845

Syllides bansei, new species

Figs. 29, 30

Material examined.—FLORIDA: Hutchinson Island Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Nov. 1972; USNM 60440), 9 paratypes (AHF Poly 1320; ZMH P-16403; FSBC I 23653–23659). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 3 paratypes (AHF Poly 1321; ZMH P-16404; FSBC I 23660). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 1 paratype (AHF Poly 1322). Tarpon Springs, Anclote Anchorage, 28°12.6'N, 82°47.4'W, 2.5 m, sand with *Syringodium* cover; J. Studt and R. Ernest, cols., 17 Jan. 1975; 12 paratypes (USNM 60441). Same, 28°12.6'N, 82°46.7'W, 1.5 m, sand with *Halodule* cover; 17 Jan. 1975; 1 paratype (FSBC I 23661). Same, 28°12.5'N, 82°46.5'W, 0.5 m, sand; 5 Dec. 1975; 1 paratype (FSBC I 23662).

Description.—Interior body (sexual?) contents brown after first several segments; pharynx surrounded by brown glands. Maximum length 2.5 mm, 30 setigerous segments. Prostomium (Fig. 29a–d) about 2½ times wider than long; anterior margin projecting as obtuse angle; lateral margins rounded; posterior margin straight or concave. Two pairs of large, lensed eyes on posterior half; anterior pair larger, on lateral margins; smaller pair near posterior margin in about middle of each side; pair of eyespots almost always on anterior margin on line between 2 larger pairs, slightly lateral to

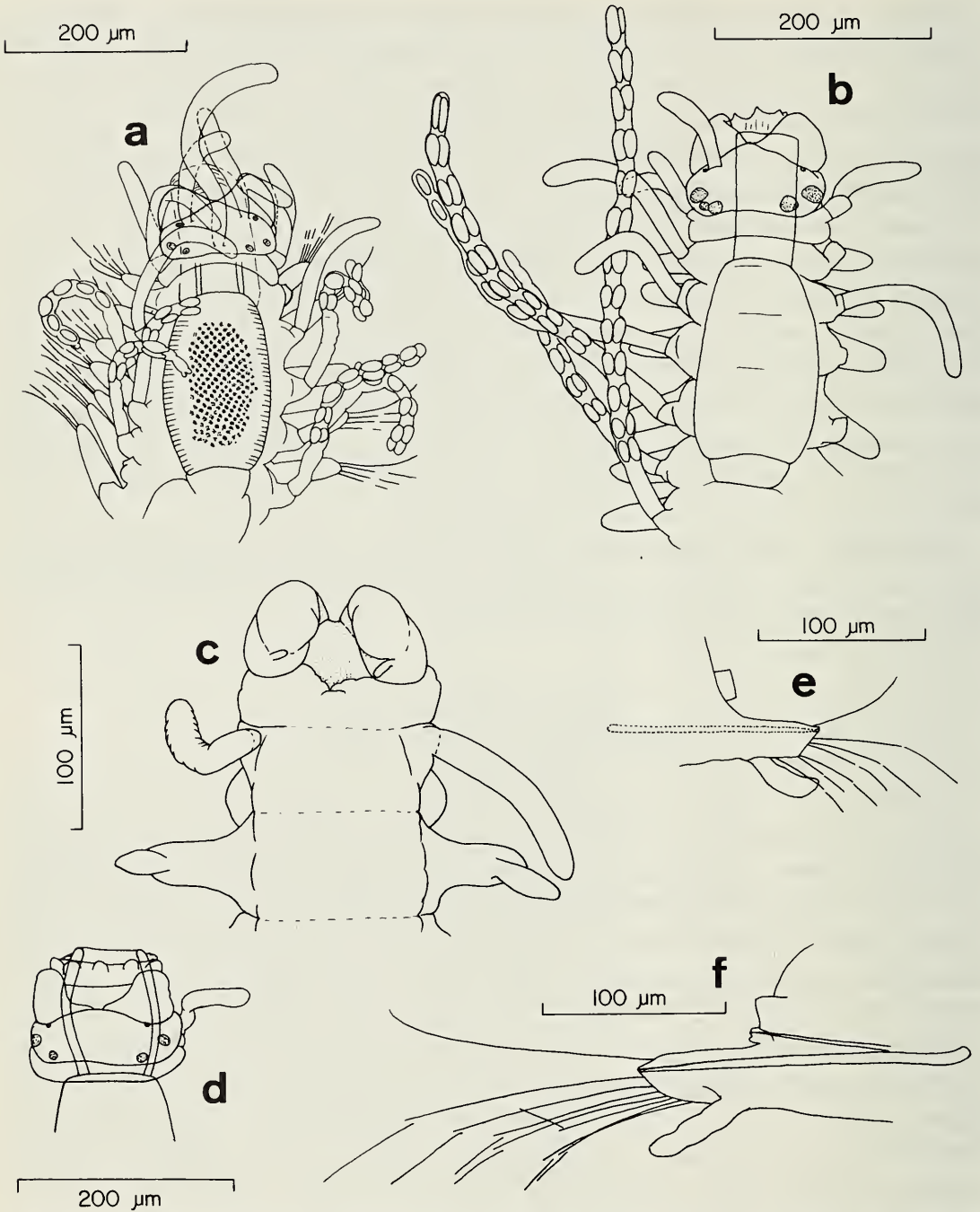


Fig. 29. *Syllides bansei*: a, Anterior end, dorsal view; b, Same; c, Anterior end, ventral view; d, Anterior end, dorsal view; e, Parapodium, setiger 2, anterior view; f, Same, middle setiger, posterior view.

origins of lateral antennae. Lateral antennae originating on anterior margin at about middle of each side, about as long as prostomium plus palps; median antenna originating between posterior pair of eyes, $1\frac{1}{2}$ to 2 times longer than lateral antennae. Antennae, tentacular cirri, and dorsal cirri of first 2

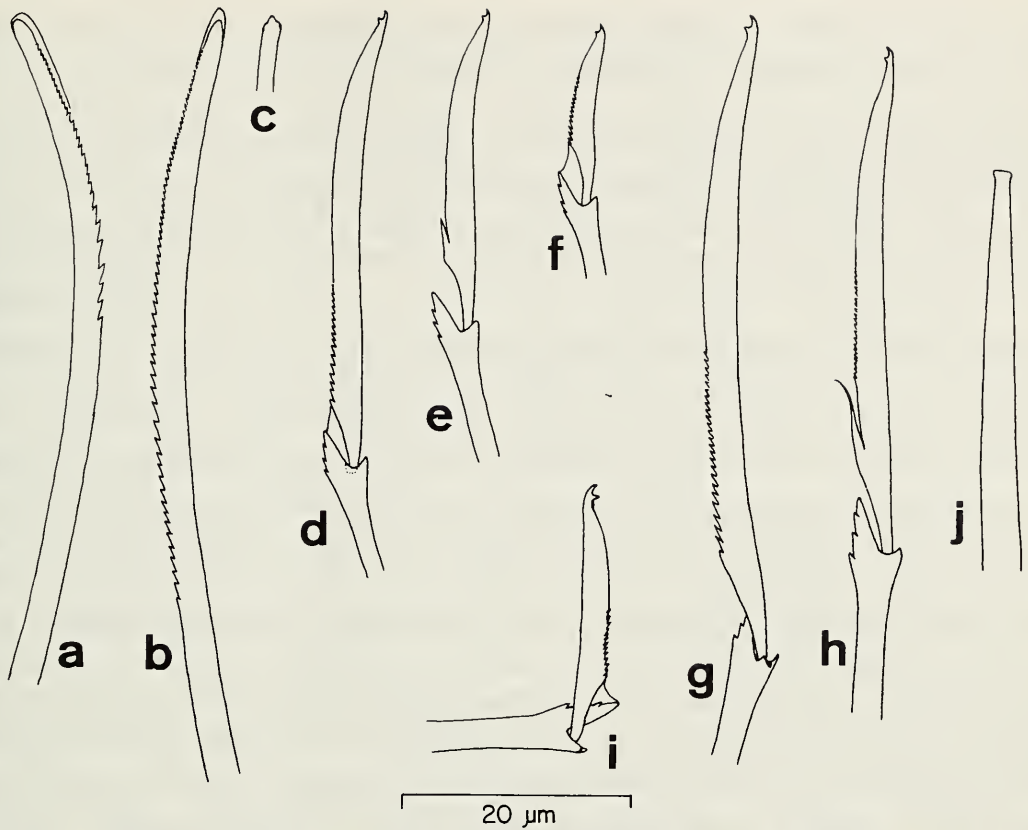


Fig. 30. *Syllides bansei*: a, Superior simple seta, anterior setiger; b, Same, middle setiger; c, Tip of same, dorsal view; d-i, Compound setae: d, Upper, anterior setiger; e, Middle of same; f, Lower of same; g, Upper, middle setiger; h, Middle of same; i, Lower of same; j, Aciculum, anterior setiger.

setigerous segments smooth or only wrinkled. Palps in dorsal view not appearing medially fused; each subtriangular, slightly shorter than length of prostomium; anterior edges often ventrally turned; lateral edges always ventrally turned; pair of small digitiform appendages ventroposteriorly (Fig. 29c). Tentacular segment shorter than following segment, definitely separated by grooves from prostomium and setiger 1. Dorsal tentacular cirri similar to median antenna and dorsal cirri of setigers 1 and 2; ventral tentacular cirri similar to lateral antennae. Dorsal cirri after first 2 setigers articulate, maximally with 20 articles; basal parts smooth or pseudoarticulated; articles composed of 2 oval cells containing material of mostly uniform texture and grey-green color. Parapodial lobes (Fig. 29e, f) well extended from body, almost half as long as body width; tips rounded in dorsal view, obliquely truncate laterally at greater or lesser angle to ventrum. Ventral cirri originating from about middle of lower margins of parapodial lobes; anterior 5 pairs clavate, short, stouter than following; more posterior ventral cirri longer, more filiform. Solitary, superior simple setae on all setigers

(Fig. 30a, b), slightly curved toward dorsum, lightly serrate on convex edge for about half emergent length; tips covered by slightly expanded, evenly rounded, hyaline hoods; setae shorter, stouter than following, abruptly tapering in width only near tips on first 5 setigers, gradually tapering toward tips more posteriorly. Compound setae similar in shape and number in all but last few parapodia, 7–9 in anterior parapodia, 5–7 in posterior parapodia, longer on middle parapodia than on setigers 1–5. Blades of compound setae 26–65 μm long, of 3 basic types (Fig. 30d–i), all bidentate; upper blades usually solitary, often absent, long, lightly serrate on basal half; middle blades, 2–3, intermediate in length, with single, basal spur, otherwise smooth (very fine serrations may be present above spur); lower blades, 3–5, similar to upper blades but shorter than upper and middle types. Shafts of compound setae similar throughout body; distal end serrate in side view, pointed; short part of hinge broader than remainder of shaft in plane view. Inferior simple setae absent. Acicula (Fig. 30j) (neuroacicula) solitary, similar in size and shape throughout body, relatively slender, gradually narrowed to slightly enlarged tips; tips truncate or slightly concave, appearing ragged. Slender notoacicula in sexually modified segments of adults beginning in parapodia of setigers 8 or 9, extending to 2–3 segments from pygidium. Pygidium with paired lateral anal cirri apparently lost; several specimens with slender, short median anal cirrus. Single sexually mature specimen with 3–5 very short natatory setae on parapodia of setigers 11–29; no specimens with internal eggs or external embryos; sexual products in segments with notoacicula.

Ratio of pharynx to proventriculus lengths about 2:3; pharynx (Fig. 29a, b, d) thickly chitinized, slightly less than twice long as wide, without mid-dorsal tooth, surrounded anteriorly by about 10 semicircular, soft papillae proximal to smooth anterior end of chitinous part when completely everted. Proventriculus barrel-shaped, about $1\frac{1}{2}$ times longer than wide, occupying 3– $5\frac{1}{2}$ segments depending on size of specimen and state of eversion of pharynx, usually ending near posterior part of setiger 5, with 35 transverse rows of muscle cells, also arranged in 2 opposite, diagonal planes (Fig. 26a).

Remarks.—The genus *Syllides* Örsted, 1845, was recently reviewed by Banse (1971). *S. bansei* is similar to *S. benedicti* Banse (1971:1478, 1479, fig. 6), differing in the following characters: smaller size (2.5 mm vs. 6.5 mm); smaller maximum number of segments (30 vs. 70); smaller length to width ratio of proventriculus (1.5:1 vs. 3:1); more anterior position of proventriculus (ending at posterior part of setiger 5 vs. about setiger 10 for *S. benedicti*); shape of tips of superior simple setae; fine detail of blades of upper and lower compound setae (finely toothed in *S. bansei* vs. smooth); and possibly in shape of tips of shafts of compound setae.

Etymology.—The species is named in honor of Dr. Karl Banse, whose review of the genus facilitated the description of this species.

Syllides floridanus, new species

Figs. 31, 32; Table 1

Material examined.—FLORIDA: Hutchinson Island Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Nov. 1971; USNM 60438), 2 paratypes (USNM 60439). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 1 paratype (FSBC I 23663).

Description.—Articulate dorsal cirri brownish yellow; middle and posterior segments often dark yellow, possibly from sexual products. Dimensions: see Table 1. Prostomium (Fig. 31a, b) about twice as wide as long, pentagonal, anterior margin forming obtuse angle, lateral margins almost straight, posterior margin straight or convex. Three pairs of lensed eyes; posterior 2 pairs on posterior half of prostomial lobe, in trapezoidal arrangement, with posterior ones about equidistant between origin of median antenna and lateral pair of eyes; lateral pair near middle of lateral margins; anterior pair small, on anterior margin on line between 2 posterior pairs, often damaged. Median antenna originating between lateral pair of eyes, all missing. Lateral antennae originating between median antenna and anterior pair of eyes, slightly nearer to anterior eyes than median antenna; length about 0.18 mm, equal to prostomial width or slightly less. Palps (Fig. 31a-c) short, triangular, not appearing medially fused; pair of digitiform appendages ventrally on lateroposterior parts. Lateroanterior prostomial margins ciliated. Texture of dorsal surface of prostomium glandular. Tentacular segment slightly shorter than following segment; dorsal tentacular cirri about twice longer than lateral antennae (0.24:0.13 mm); ventral tentacular cirri shorter than dorsal; texture of integument glandular, same as that of prostomium. Dorsal cirri of setigers 1 and 2 smooth or only wrinkled; long on setiger 1 (0.5 mm), much shorter (0.3 mm) on setiger 2. Articulated dorsal cirri beginning with setiger 3 (Fig. 31b), continuing to posterior end, with maximum of 20 articles; articles distinct from proximal parts, each composed of 2 cells containing numerous particles showing granular appearance. Parapodial lobes (Fig. 31d, e) long, cylindrical; dorsal anterior lobe on end; rows of cilia above and below apparently also extending across dorsum of each segment. Ventral cirri originating from about middle of ventral border of parapodia, extending laterally to parapodial tips, subulate. Solitary, superior simple setae (Fig. 32a, b) on all parapodia, long, slender, fine tipped, distally serrate, basally rounded; serrate parts flattened; tips slightly hooked, capitate. Compound setae (Fig. 32c-i) long falcigers, 9-10 in each parapodium; blades bidentate, distal teeth similar in size, primary tooth strongly hooked, secondary tooth pointed; upper blades 1-2 per parapodium (often absent), serrate on proximal third, 80-100 μ m long, with basal serrations only slightly enlarged; blades below upper ones with about 3 long,

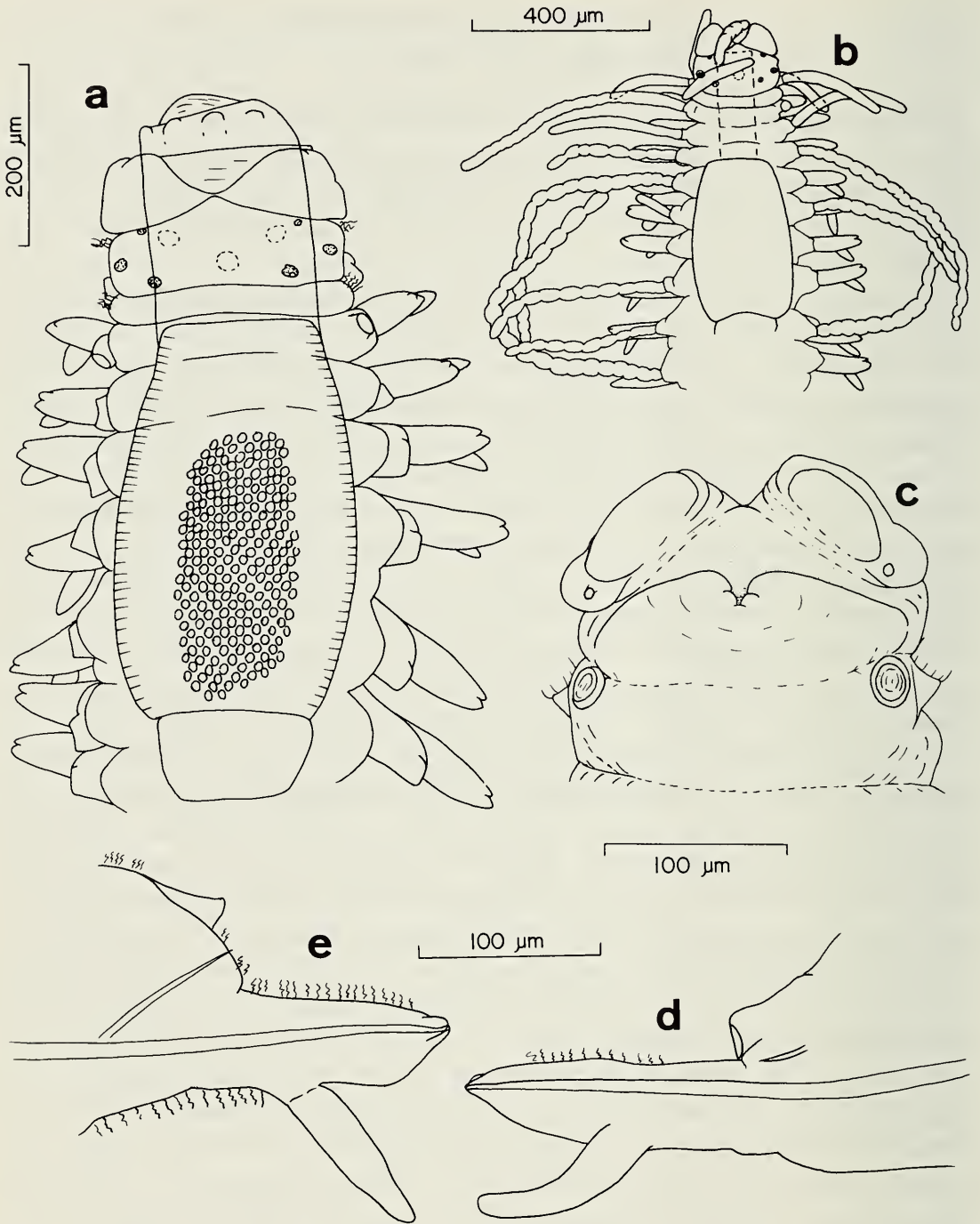


Fig. 31. *Syllides floridanus*: a, Anterior end, dorsal view; b, Same, holotype; c, Same, ventral view; d, Parapodium, setiger 10, anterior view; e, Same, setiger 22, posterior view.

basal spines more or less parallel to blade edge proximally, with smaller serrations distally on basal third, 2–3 per parapodium, 64–81 μm long; about 2 shorter blades below basally spined blades, 48–58 μm long, with edges similar to those of upper blades; lower blades 24–34 μm long, finely serrate

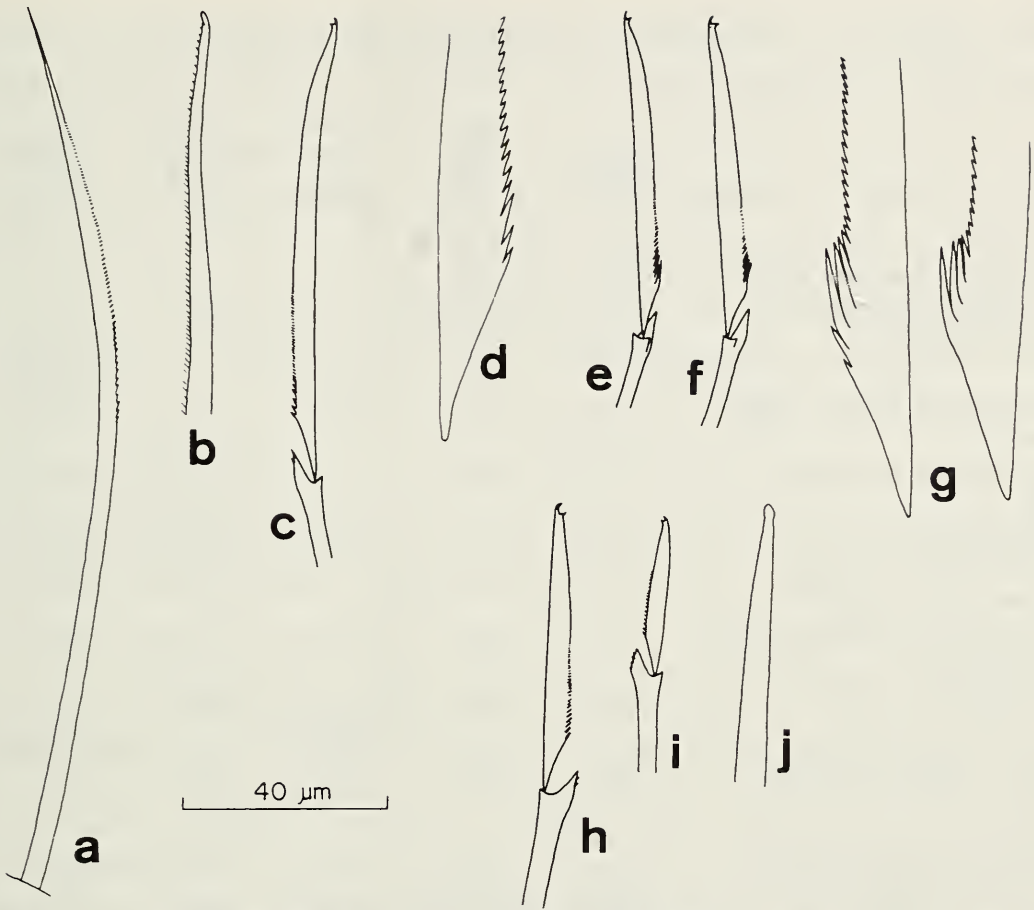


Fig. 32. *Syllides floridanus*: a, Superior simple seta, setiger 10; b, Tip of same (magnified); c, Upper compound seta, setiger 10; d, Base of blade of same, setiger 30; e, Upper middle compound seta, setiger 10; f, Same, setiger 20; g, Bases of blades of same, setiger 30; h, Lower middle compound seta, setiger 20; i, Lower compound seta of same; j, Aciculum, setiger 10 (b, d and g not scaled).

on edge. Shafts similar throughout; distal ends pointed, weakly to strongly serrate; short parts of hinge wider than width of remainder of shaft. Inferior simple setae absent. Neuroacicula (Fig. 32j) solitary; tips slightly enlarged, blunt. Notoacicula (Fig. 31e, f) slender, beginning at least by setiger 10. Pygidium with all lateral anal cirri lost, with short, slender median cirrus. No sexually mature specimens with natatory setae, ova, or external embryos or internal sexual products observed; all probably first appearing in segments with notoacicula.

Pharynx surrounded by brown glands, with about 10 reduced, soft papillae surrounding anterior end; middorsal tooth absent. Proventriculus in 4–5 segments, barrel-shaped; about 42 transverse rows of muscle cells in dorsal view, also arranged in 2 diagonal planes.

Remarks.—*Syllides floridanus* is similar to specimens from the northeast

Table 1.—Morphometric characters of *Syllides japonica* from Japan, the northeastern Pacific and New England, *S. j. edentatus* from the Galápagos Islands and *S. floridanus*.

Character	<i>S. japonicus</i> Imajima, Japan	<i>S. japonicus</i> Banse, Northeast Pacific	<i>S. japonicus</i> Banse, New England	<i>S. japonica</i> <i>edentata</i> Westheide, Galápagos Islands	<i>S. floridanus</i> n. sp., Hutchinson Island, Florida
Length (mm)	6-7	Incomplete	4	3.3	3.5
Width (without parapodia, mm)	0.36	0.38	0.5	0.3	0.3
No. setigerous segments	42-46	Incomplete	34	32	38
Pharyngeal papillae	Present	Absent	Present	?	Present (reduced)
Pharynx:proventriculus, length ratio	?	1:1.5	1:1.4	?	1:1.5
Proventriculus, width:length ratio	?	1:1.75	1:2.1	?	1:1.6
Muscle cell rows	?	?	50	45-50	42
Maximum number articles (dorsal cirri)	30	?	?	13	20
Natatory setae (notoacacula) from setiger	?	10	10	9	10
Superior simple seta, tip	Blunt	Fine	Recurved, bidentate	Fine	Fine, capitate
Superior simple seta, length (μm)	100	250	150	150	150
Blades of compound setae:					
Dorsalmost, proximal teeth	Long spines	Long spines and stiff hairs	Long spines	Fine hairs	Stiff hairs
Dorsalmost, length (μm)	84	125	150	65	80-100
Ventralmost, length (μm)	34	25-30	30-40?	27	24-34
Ventralmost:dorsalmost length ratio	1:2.5	1:5	1:3.8	1:2.4	1:3
Basally spined, length (μm)	45 (-84)	?	80 (-150)	47	64-81
No. compound setae (setiger number)	7 (2)	20 (4)	17 (4)	15 (ant)	10 (4)
No. compound setae (setiger number)	8 (10)	10 (25)	10 (mid)	10 (13)	9 (21)

Pacific (USNM 45264) and New England (USNM 10080, 33152) referred to *S. japonicus* Imajima, 1966, by Banse (1971:1477, 1478, fig. 5) and to *S. j. edentata* Westheide (1974:81-83, figs. 36e, 37) from the Galápagos Islands. [One of the New England specimens (USNM 10080), from Cape Cod Bay, was originally identified by Verrill as *S. setosus* Verrill (1882:369); the latter may be one of Verrill's types but was not considered to be such by Banse.] *S. japonicus* Imajima from Japan (Imajima, 1966a:112, 114, fig. 36) has a pharynx with a subterminal, middorsal tooth and perhaps should not be a

member of the genus. Banse's specimens and those of *S. j. edentatus* do not have a pharyngeal tooth and appear to be typical members of the genus. Banse's northeast Pacific specimens lack soft papillae surrounding the anterior end of the pharynx, but such papillae are present in New England specimens. The integument of the tentacular segment and first setigerous segment of northeast Pacific specimens is glandular and similar to that of the prostomium, while in New England specimens only the integument of the tentacular segment is similar to that of the prostomium. Eyes are faint in the epitokous specimen and absent in the nonepitokous specimens Banse reported from New England, but well developed on the Pacific specimens. Superior simple setae of New England specimens are sturdy and flattened in the serrated area and have a recurved tip which under interference microscopy is bidentate with lower cusp small; superior simple setae of northeastern Pacific specimens are very thin and finely pointed (Dr. N. W. Riser, personal communication). Superior simple setae of *S. floridanus* are stout at the base and very fine tipped, with tips entire, slightly hooked and capitate or hooded. Additionally, large basal spines of certain blades of compound setae of New England specimens are curved toward the opposite edges of blades, while on *S. floridanus* such are curved parallel to the toothed edges of the blades. Other differences are noted in Table 1. Such differences seem to indicate 5 distinct species in specimens noted above, 4 of which are typical members of *Syllides*. Certainly, *S. j. edentatus* should be elevated to specific rank. I am unable at this time to describe the New England and northeast Pacific specimens.

Trypanosyllis Claparède, 1864

Trypanosyllis coeliaca Claparède, 1868

Figs. 33, 34

Trypanosyllis coeliaca Claparède, 1868:513, 514, pl. 13, fig. 3.—Fauvel, 1923:270, fig. 101f-h.—Cognetti, 1957:27-29, text-fig. 5a, pl. 1, fig. 5.—Hartmann-Schröder, 1977:85, figs. 23, 24.

Material examined.—FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 7 specimens (USNM 54537; FSBC I 20682-20686). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 9 specimens (FSBC I 20687-20692). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 3 specimens (USNM 54538; FSBC I 20693, 20694).

Description.—Body without color markings; eyes dark reddish brown. Flattened, ribbonlike; largest specimen (posteriorly incomplete) 6.0 mm long, 0.65 mm wide across proventriculus, 73 setigers; complete specimen 5.5 mm long, 0.6 mm wide, 79 setigers. Prostomium (Fig. 33a, b) about twice as wide as long; dorsal outline rectangular to trapezoidal; anterior

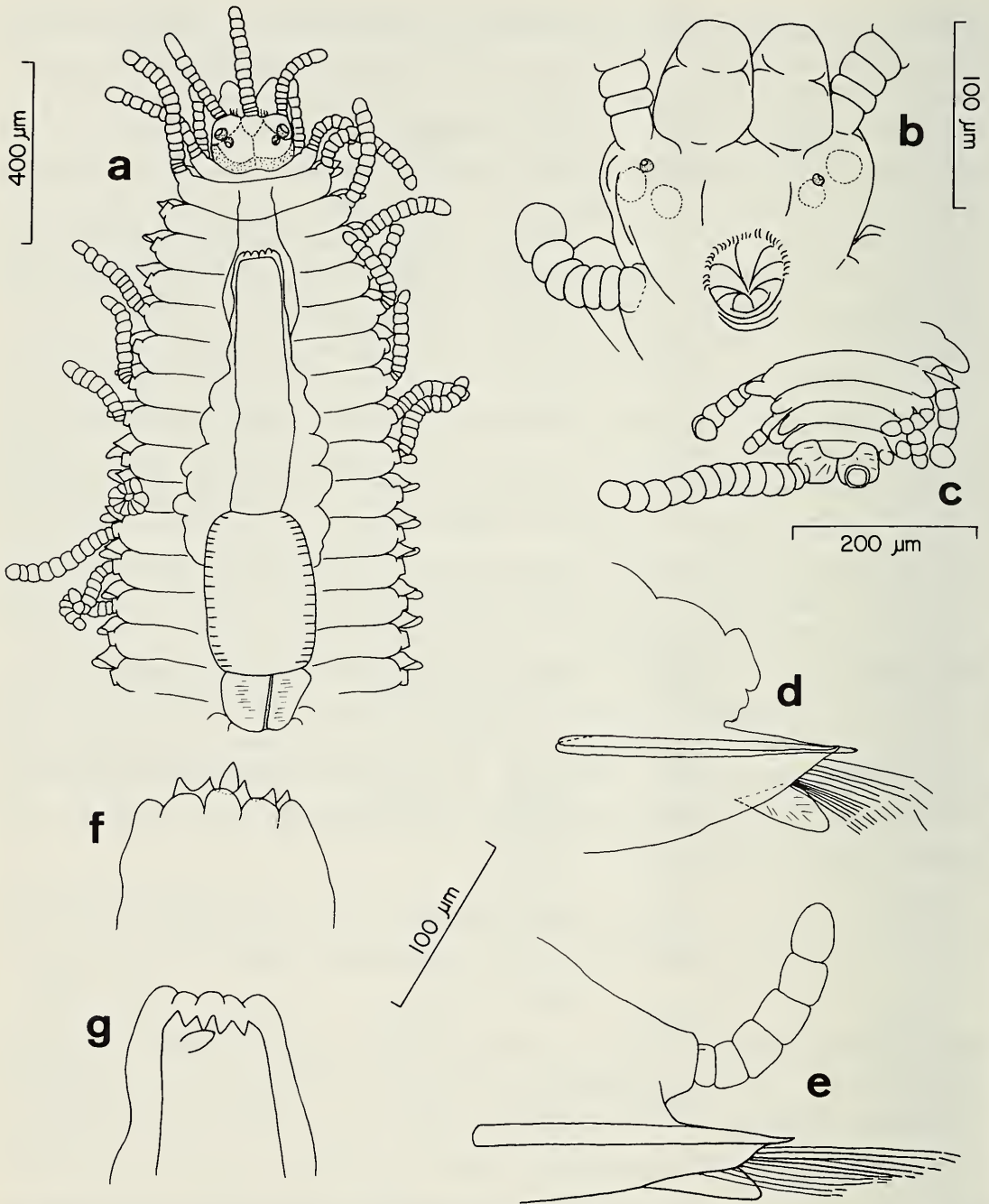


Fig. 33. *Trypanosyllis coeliaca*: a, Anterior end, dorsal view; b, Same, ventral view (FSBC I 20689); c, Posterior end of same, ventral view; d, Parapodium, anterior setiger, anterior view (cirrus missing); e, Same, posterior setiger; f, Anterior border of pharynx, dorsal view (FSBC I 20689); g, Same (USNM 54538).

margin nearly straight, with rounded corners, mostly wider than posterior margin; posterior margin convex, with slight median concavity; 5 lobes dorsally, consisting of 2 triangular, anterolateral lobes, triangular median anterior lobe, and 2 posterior lobes with triangular anterior extensions between

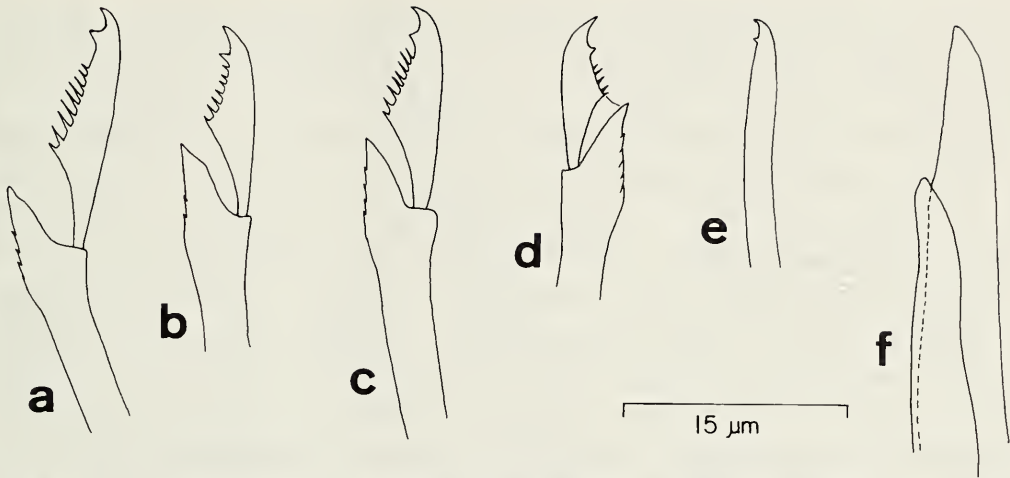


Fig. 34. *Trypanosyllis coeliaca*: a, Upper compound seta, anterior setiger; b, Lower compound seta of same; c, Upper compound seta, posterior setiger; d, Lower compound seta of same; e, Inferior simple seta of same; f, Acicula, anterior setiger.

anterolateral and anteromedial lobes. Lateral antennae and anterolateral pair of dorsal eyes on anterolateral lobes; median antenna originating on anterior margin of anteromedial lobe; posterior pair of dorsal eyes on anterolateral margins of posterior lobes. Ciliated nuchal organs extending across posterior margin of prostomium; ciliated areas also on anterior margin of medial lobe. Dorsal eyes in trapezoidal arrangement open to front, anterolateral pair larger; third pair of eyes on ventral side of prostomium posterior to origin of lateral antennae and palps, generally situated on each side between 2 dorsal pairs. Median antenna with 13 articles, about twice length of prostomium, extending for greater than twice length of palps; lateral antennae slightly shorter, with 10–11 articles, originating ventrally on short ceratophores. Palps originating from anteroventral prostomial margin, shorter than prostomium, appearing superficially articulated, constricted and completely separated at bases in ventral view, ending in round tips, often anteriorly divergent. Tentacular segment dorsally reduced to $\frac{1}{4}$ length of following segment. Dorsal tentacular cirri originating on short cirrophores, with 10–11 articles, slightly longer than lateral antennae and shorter than dorsal cirri of setiger 1. Ventral tentacular cirri $\frac{2}{3}$ length of dorsal tentacular cirri, with 7–8 articles. Setigerous segments 7–8 times wider than long. Dorsal cirri with short cirrophores, with 15–16 articles on setiger 1, thereafter with about 10 articles on anterior setigers, long and short in middle segments with about 8 and 12 articles. Parapodial lobes (Fig. 33d, e) flattened, convex posteriorly, more convex anteriorly, with tips acutely pointed, slightly acuminate in dorsal view. Ventral cirri originating below emergence of setae, flattened, with round tips, often extending past tips of setal lobes of anterior segments, shorter posteriorly. Compound setae (Fig.

34a–d) 9–10 in each parapodium; blades bidentate, with relatively long serrations on edge, upper blades longer (18–13 μm), with more serrations than lower blades on anterior segments, only slightly longer posteriorly (14–12 μm). Shafts of compound setae with few short serrations subdistally. Solitary, slender, bidentate, inferior simple setae (Fig. 34e) on posterior parapodia. Acicula (Fig. 34f) 2 in each parapodium of anterior setigers, 1 in posterior parapodia; smaller one of anterior parapodia slightly bent near tips; tips of larger acicula stout, emergent, obliquely acute; acicula of posterior setigers similar to larger, anterior ones. Pygidium (Fig. 33c) composed of 3 lobes, posteriorly divided; anal cirri long, stout, with 12–13 articles. Sexual reproduction by stolons; stolons formed by posterior budding; one with dorsal and ventral pairs of eyes, 27 setigerous segments long.

Pharynx (Fig. 33a, f, g) relatively wide, long, in setigers 2–9 or 3–10, slightly more than $1\frac{1}{2}$ times length of proventriculus; trepan consisting of 10 small, acutely pointed teeth and larger, middorsal tooth; anterior end surrounded by 10 prominent, soft lobes; posterior part surrounded by light brown glands. Proventriculus (Fig. 33a) short, thick, opaque in transmitted light in glycerin, in about 4 segments; length to width ratio 3:2; about 20 transverse rows of muscle cells also arranged in 2 opposite, diagonal arcs; rows of muscle cells not obviously divided by median line. Ventricle occupying about 2 segments, medially divided.

Remarks.—Hutchinson Island specimens are in agreement with the original description and other European descriptions of *T. coeliaca*. The pharynx of Hutchinson Island specimens appears similar to that described for *T. fertilis* Verrill (1900:616, 617) from Bermuda, but many other characters are not in agreement.

Trypanosyllis coeliaca was described from the Gulf of Naples. It was previously known from the Mediterranean Sea, the eastern North Atlantic and adjacent seas (Hartmann-Schröder, 1977), Florida (Rullier, 1974), and the Solomon Islands (Gibbs, 1971). Gibbs (1971:142) gave no description for the single specimen he reported, and I have not examined it. Rullier (1974:29, 30) reported 2 very young individuals, 2 mm long with 20 setigers, and I cannot confirm from his short description that Hutchinson Island specimens are the same species as the specimens he reported.

Trypanosyllis inglei, new species

Fig. 35

Material examined.—FLORIDA: Hutchinson Island Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Sep. 1972; USNM 60223); 12 paratypes (USNM 60224; AHF Poly 1323; ZMH P-16405; FSBC I 23664–23672). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 13 paratypes (USNM 60225; AHF Poly 1324;

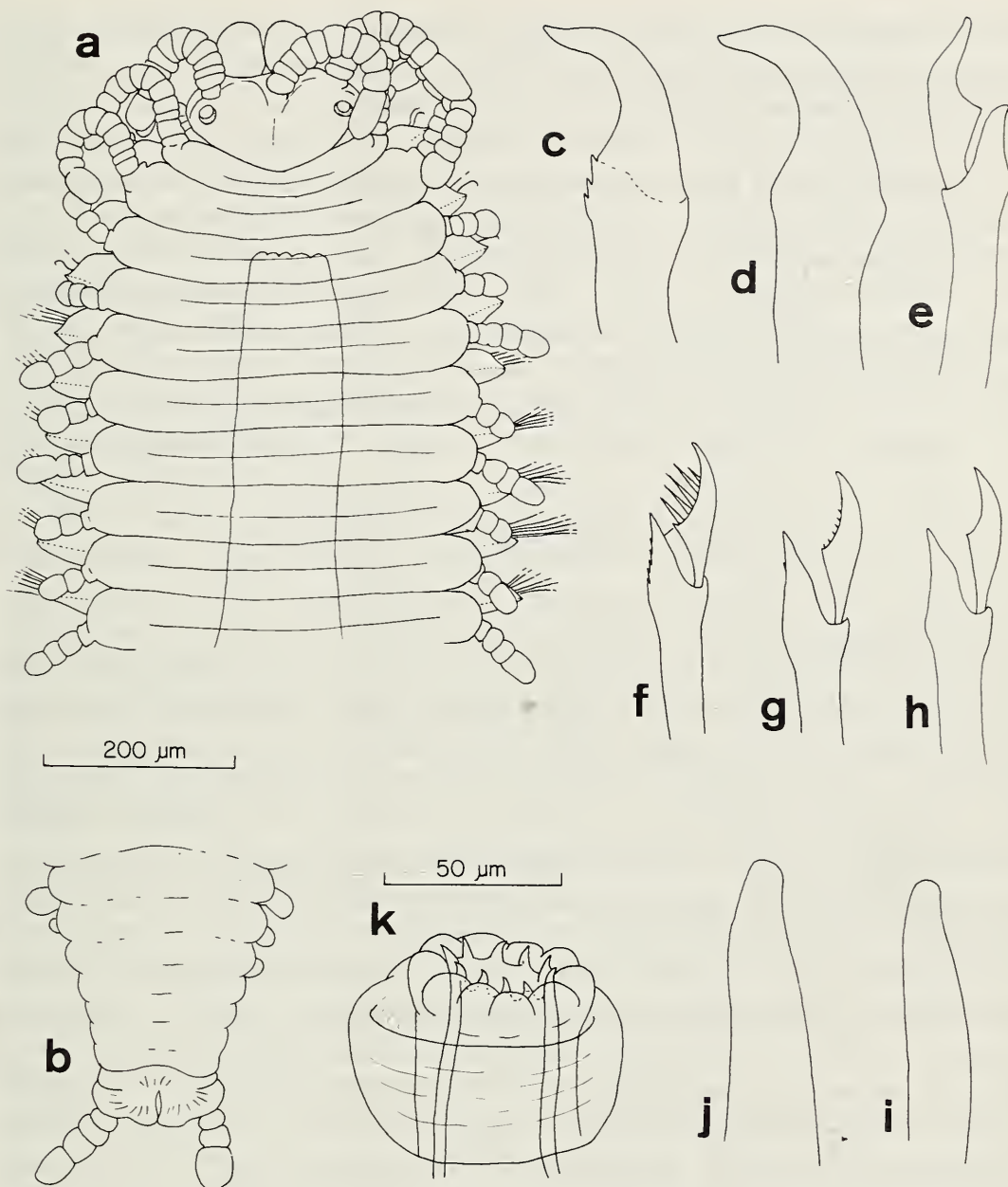


Fig. 35. *Trypanosyllis inglei*: a, Anterior end, dorsal view; b, Posterior end, dorsal view; c-e, Setae, setigers 1-4: c, Incompletely fused hook; d, Completely fused hook; e, Stout compound seta; f-h, Compound setae, setiger 8: f, Upper; g, Middle; h, Lower; i, Aciculum, anterior setiger; j, Same, posterior setiger; k, Anterior border of pharynx, ventral view (c-j not scaled).

ZMH P-16406; FSBC I 23673-23680). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 2 paratypes (FSBC I 23681, 23682).

Description.—Without color markings. Maximum length 8.5 mm, width across proventriculus 0.6 mm, 100 segments; flattened, ribbonlike. Prostomium (Fig. 35a) generally bilobed, about twice as wide as long, reniform,

posterior margin convex, lateral margins rounded, anterior margin straight or concave. Single pair of lensed eyes near anterior margin at about middle of each side. Median and lateral antennae originating near anterior margin on short ceratophores, with about 11 articles; lateral antennae originating above lateral edges of palps; distal articles longer. Palps shorter than mid-prostomial length, together occupying about half total width of anterior prostomial margin, completely separated basally, short, oval in outline. Tentacular segment distinct dorsally, about half length of following segments, appearing biannulate; dorsal tentacular cirri similar to antennae; ventral tentacular cirri about half length of dorsal tentacular cirri, with about 8 articles. Width of setigerous segments 5–7 times length, appearing biannulate; integument very thick. Dorsal cirri of setiger 1 similar to antennae and dorsal tentacular cirri; short on setigers 2 and 3, with 2–3 articles; longer on setigers 4 and 6, with 3–4 articles; short on setigers 5, 7, and 8, with 1–2 articles; alternately long and short thereafter, with 2 and 4 articles anteriorly and 1 and 2 articles posteriorly; all originating on short, distinct cirrophores. Setigerous lobes flattened, acutely pointed, more convex on anterior border than posterior. Ventral cirri of anterior parapodia small, oval, flattened, constricted at base, originating near tips of parapodial lobes on posterior side; broader, longer, originating obliquely on posterior sides with more lateroanterior origins, extending laterally to about tips of parapodial lobes, with nipple-shaped tips on posterior parapodia. Parapodia of setigers 1–4 with about 3 stout, simple, unidentate hooks formed from fusion of blades and shafts of compound setae (Fig. 35c, d) and mostly single, stout, compound setae with unidentate blades (Fig. 35e); hooks as stout as or stouter than acicula; stoutest hook in each parapodium completely fused, other hooks not completely fused. Setae beginning on setiger 5 compound falcigers (Fig. 35f–h) with short, hooked, unidentate blades; dorsal blades with long serrations; ventral blades mostly smooth; blades otherwise similar in size and shape throughout body, length about 10 μ m. Solitary, inferior simple setae on posterior parapodia, about as stout as shafts of compound setae, slightly curved, unidentate. Acicula (Fig. 35i, j) solitary in all parapodia, stout, with rounded tips, not emergent, confined within acute dorso-posterior lobes. Pygidium (Fig. 35b) composed of 2 flattened, divided lobes, with pair of anal cirri similar to dorsal cirri of midregion, with length of each cirrus not exceeding total width of pygidium.

Pharynx (Fig. 35k) long, slender, often somewhat bent from contraction during fixation, normally in setigers 4–13 when inverted; trepan with 10 widely spaced, acute teeth; 10 soft, rounded lobes encircling distal end. Proventriculus long, narrow, usually in setigers 13–21 (about 9 segments), maximum length 1.0 mm, width 0.16 mm, with 50–57 irregular transverse rows of muscle cells.

Remarks.—*Trypanosyllis inglei* cannot be assigned to the subgenera

erected by Imajima and Hartman (1964) since both compound setae and simple setae formed from fusion of shafts and blades of compound setae are present; I know of no described species having both compound unidentate setae and simple setae of this type. However, the species appears to be more aligned with the subgenus *Trypanobia* than with *Trypanosyllis* or *Trypanedenta*, since a middorsal pharyngeal tooth is absent, some simple setae formed from fusion of shafts and blades are present, and blades of compound setae are unidentate.

Etymology.—The species is named in honor of Robert M. Ingle, previous Director of the Florida Department of Natural Resources Marine Research Laboratory, who was instrumental in initiating the project in which this species was collected.

Trypanosyllis parvidentata, new species

Fig. 36

Material examined.—FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Sep. 1972; USNM 54540). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 2 paratypes (USNM 54541; FSBC I 23683). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 1 paratype (FSBC I 23684).

Description.—Body without color markings; eyes dark red. All specimens posteriorly incomplete; largest specimen 10 mm long, width 0.45 mm across proventriculus, gradually widening for anterior half of body, 90 segments, flattened, ribbonlike. Prostomium (Fig. 36a) wider than long; anterior margin straight; lateral margins rounded; posterior margin convex, with median concavity; 5 lobes dorsally including pair of anterolateral lobes, anteromedial lobe, and pair of posterior lobes; ciliated nuchal organ covering posterior width. Eyes 2 pairs, well separated, in trapezoidal arrangement open to front; anterior pair larger, lensed, on anterolateral lobes; posterior pair possibly not lensed, on posterior lobes; ventral eyes apparently absent. Median antenna originating from anteromedial lobe; lateral antennae originating from anterolateral lobes; all on short ceratophores, with 8–10 articles. Palps about as long as prostomial lobe without nuchal organ, narrow at bases, well separated, originating from anteroventral margin, bent ventrally in specimen figured (Fig. 36a). Tentacular segment relatively short dorsally; dorsal tentacular cirri originating on short cirrophores, similar to antennae; ventral tentacular cirri about half as long as dorsal, with about 5 articles. Anterior setigerous segments about 6 times wider than long. Dorsal cirri originating on short cirrophores, with about 15 articles on setiger 1, 10–13 articles on setiger 2, with about 10 articles on following few anterior setigers; dorsal cirri beginning at about setiger 5, alternately long and short, with 15

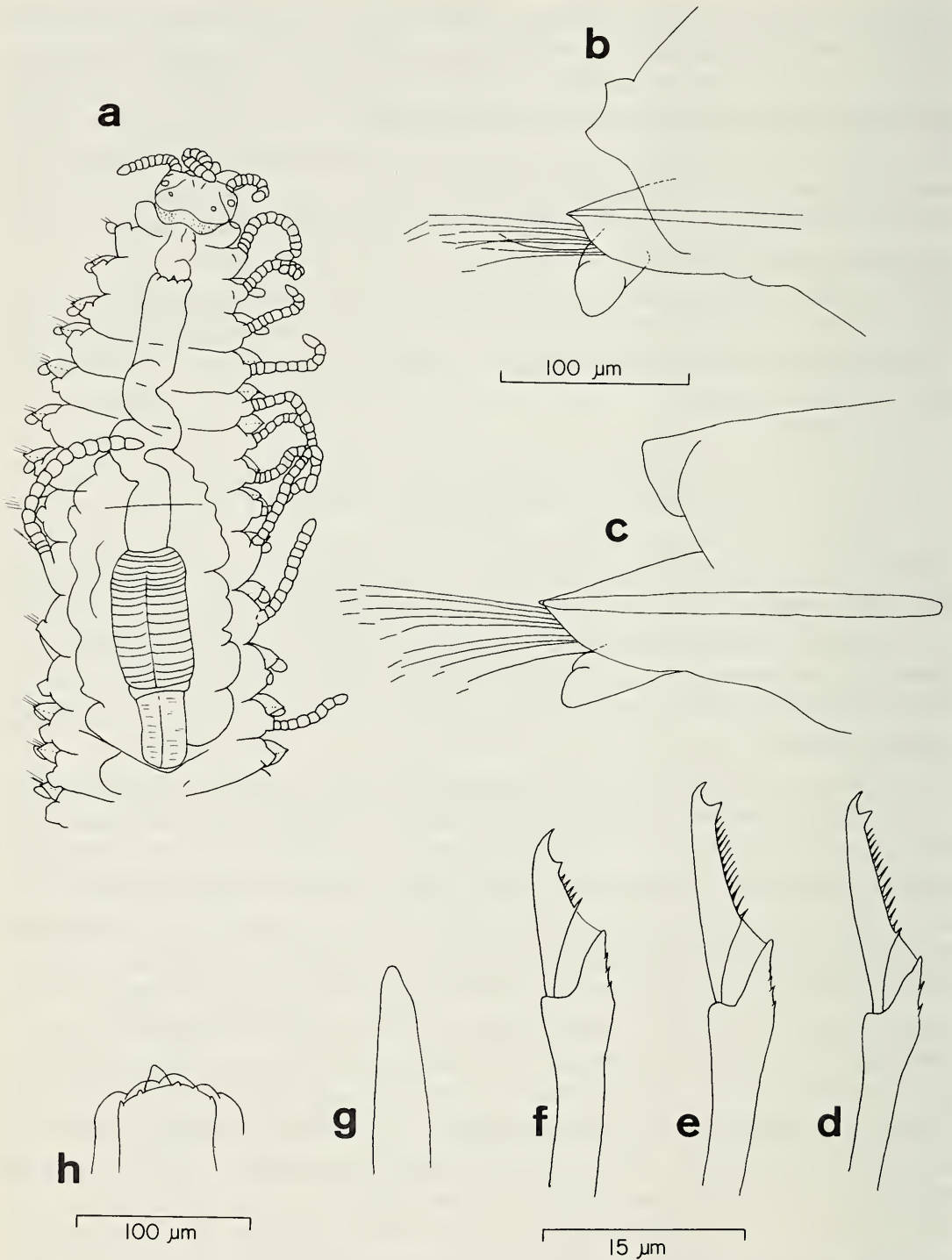


Fig. 36. *Trypanosyllis parvidentata*: a, Anterior end, dorsal view [composite figure of holotype and paratype (FSBC I 23684)]; b, Parapodium, anterior setiger, somewhat oblique anterior view (cirrus missing); c, Same, posterior setiger; d, Upper compound seta, anterior setiger; e, Same, posterior setiger; f, Lower compound seta of same; g, Aciculum, anterior setiger; h, Anterior border of pharynx of holotype, dorsal view.

and 10 articles. Parapodial lobes (Fig. 36b, c) flattened, convex anteriorly and posteriorly; tips acuminate. Ventral cirri originating from near tips of parapodial lobes, stout, superficially appearing articulate, with somewhat ventrally pointing apices. Compound setae (Fig. 36d–f) 8–9 in each parapodium; blades falcigerous, bidentate, similar in anterior and posterior segments but possibly more strongly hooked and with primary and secondary teeth more widely separated in posterior segments, about 16 μm long dorsally, about 11 μm long ventrally; edges with numerous fine serrations from bases to secondary teeth; shafts serrate subdistally. Inferior simple setae not observed. Acicula (Fig. 36g) solitary in all parapodia, with slightly beveled, rounded tips, stouter in posterior segments. Pygidium not observed.

Pharynx (Fig. 36a, h) occupying length of setigers 2–8 or 3–9, often strongly bent from contraction, with thin walls; trepan with 10 very small, obscure teeth and large middorsal tooth; 10 soft lobes surrounding anterior end. Proventriculus (Fig. 36a) 3–4 segments long (setigers 9–11 to 12–13), about twice longer than wide (150 μm \times 290 μm , 170 μm \times 340 μm), with 18 transverse, medially divided muscle cell rows; ventricle about 2 segments long, also medially divided.

Remarks.—*Trypanosyllis parvidentata* differs from other members of the genus in having a trepan of 10 minute teeth in addition to a large, middorsal tooth. Additionally, the species differs from other *Trypanosyllis* species reported herein in the length and number of articles of antennae and cirri, and the fine detail of the compound setae.

Etymology.—The species name is derived from Latin and refers to the minute teeth on the trepan.

Trypanosyllis savagei, new species

Fig. 37

Material examined.—FLORIDA: Hutchinson Island Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; holotype (R. Gallagher, col., Nov. 1971; USNM 60461), 2 paratypes (FSBC I 23685). Sta. V, 27°22.9'N, 80°13.9'W, about 11 m, coarse calcareous sand; 4 paratypes (USNM 60462–60464; FSBC I 23686).

Description.—Body without color markings; eyes light reddish orange. Length less than 5 mm; width 0.4 mm at proventriculus; flattened, ribbon-like, maximum 80 segments. Prostomium (Fig. 37a) oval in outline, wider than long, with concave posterior indentation; 5 lobes dorsally including small, anteromedial lobe, pair of small, anterolateral lobes, and pair of large, posterolateral lobes; latter with acute extensions between anteromedial and anterolateral lobes. Two pairs of dorsal eyes close together on opposite sides of midline; anterior pair slightly more widely separated, possibly situated on anterolateral lobes and covered by posterolateral lobes; both dorsal

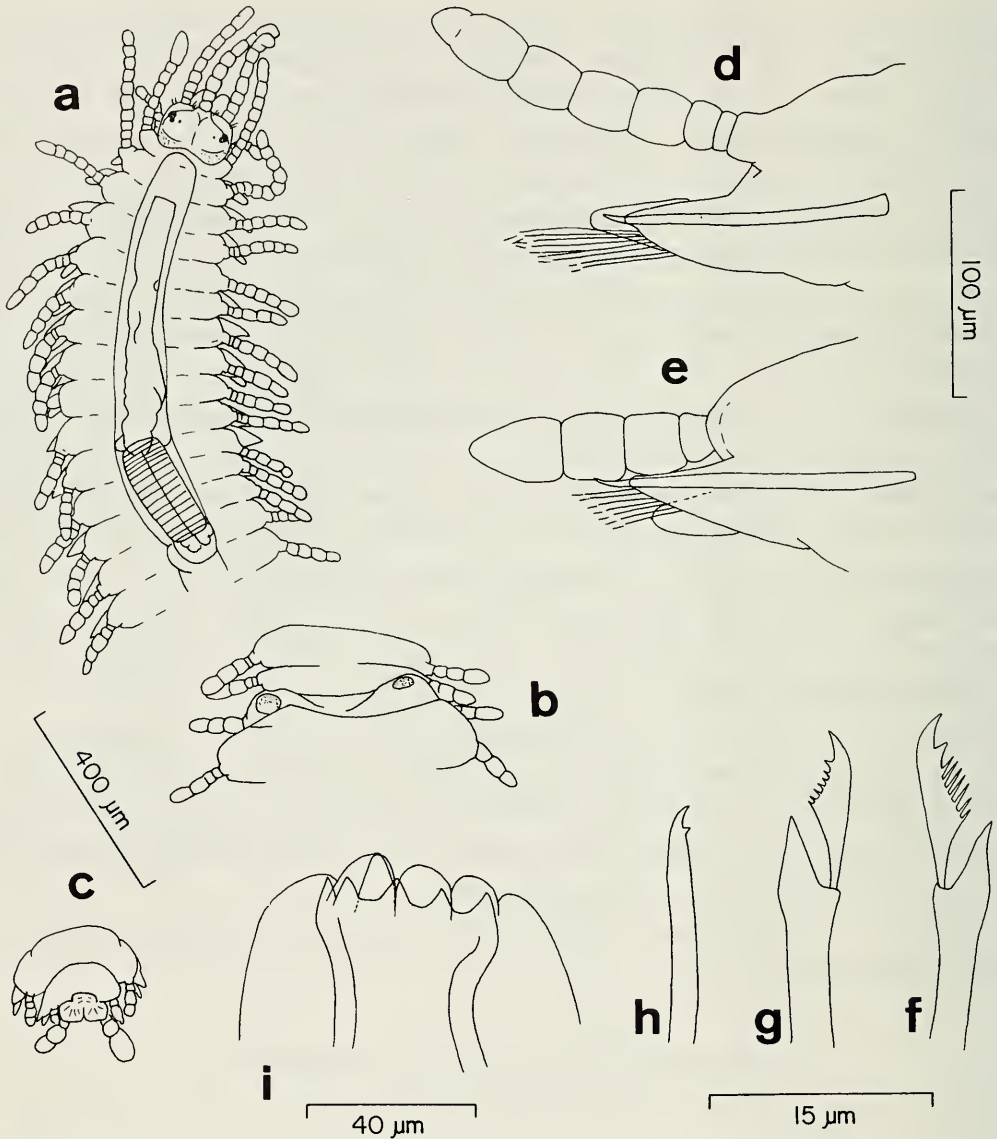


Fig. 37. *Trypanosyllis savagei*: a, Anterior end, dorsal view; b, Middle segments, including anterior end of developing reproductive stolon, dorsal view; c, Posterior end, dorsal view; d, Anterior parapodium, slightly oblique anterior view; e, Same, posterior parapodium; f, Upper compound seta, anterior setiger; g, Compound seta, posterior setiger; h, Inferior simple seta, posterior setiger; i, Anterior border of pharynx, dorsal view.

pairs near lateral margins; smaller, ventral pair of eyes slightly medial to 2 dorsal pairs. Median antenna originating from raised anteromedial lobe, with about 8 articles; lateral antennae originating on anterior margin on short ceratophores, extending for about same distance and similar to median; distal articles about 2 times longer than others. Palps small, about equal in length to half prostomial length, completely separated at bases. Ciliated nuchal organs on posterior margin of prostomium and tufts of cilia on an-

terior margin. Tentacular segment dorsally distinct but reduced to less than half length of following segment, laterally surrounding posterior half of prostomium. Tentacular cirri originating on short cirrophores; dorsal tentacular cirri similar to antennae; ventral tentacular cirri more slender, about half as long as dorsal, with about 6 articles. Mouth opening on ventral posterior border of prostomial lobe. Dorsal cirri of setiger 1 similar to dorsal tentacular cirri and antennae; length equal to about half body width, with 5–6 articles on other anterior segments, with 3–4 or fewer articles on segments behind proventriculus; all originating on distinct, short cirrophores. Parapodial lobes (Fig. 37d, e) flattened; tips usually acutely pointed; anterior and posterior borders convex; posterior borders more convex than anterior ones. Ventral cirri originating from about middle of ventral margins of parapodial lobes about half distance from bases to tips, projecting laterally for about same distance or for slightly greater distance than parapodial lobes; cirri stout, pyriform in outline; tips rounded. Blades of all compound setae similar (Fig. 37f, g), about 12 μm long, slender, falcigerous and bidentate, with primary tooth more prominent than secondary; blade edges pectinate to secondary tooth, with longer serrations on upper blades. Shafts smooth. Solitary, inferior simple setae on posterior parapodia, slender, curved, bidentate. Acicula solitary, stout, acute, often emergent. Pygidium (Fig. 37c) composed of 2 flattened posterior lobes and median, anterior lobe, with pair of anal cirri originating from outer posterior corners on ventral side; each cirrus with about 3 articles. Sexual reproduction by stolons formed by posterior budding; stolon beginning on setiger 45 in specimen figured (Fig. 37b), containing sexual products in all but last few segments.

Pharynx long, narrow, mostly in setigers 2–9; trepan of 10 almost equitriangular, small teeth and larger middorsal tooth; anterior margin surrounded by 10 soft lobes (Fig. 37i). Proventriculus (Fig. 37a) slightly greater than half pharyngeal length, cylindrical, greater than twice longer than wide (220 μm long, 90 μm wide), occupying 3–4 segments (setigers 10–14), with about 17 medially divided, transverse rows of muscle cells. Ventricle in figured specimen convoluted, medially divided.

Remarks.—*Trypanosyllis savagei* is similar to specimens of *T. coeliaca* Claparède from Hutchinson Island but differs in several important characters. Although mature specimens of both species have about the same number of segments, *T. savagei* is much smaller and slenderer, and characters such as number of setae per parapodium, number of articles on antennae and cirri, and number of acicula in anterior parapodia are reduced as compared with *T. coeliaca*. The principal difference between the two species is in the shape and character of the proventriculus. The proventriculus of *T. coeliaca* is very stout and opaque in glycerin with transmitted light (see Cognetti, 1957:pl. 1, fig. 5), while the proventriculus of *T. savagei* is slender (greater than 2 times longer than wide) and translucent in glycerin.

Etymology.—The species is named in honor of Thomas Savage, formerly of the Florida Department of Natural Resources Marine Research Laboratory.

Dentatisyllis, new genus

Type-species.—*Syllis carolinae* Day, 1973.

Diagnosis.—Body long, cylindrical, with numerous segments. Prostomium with 3 antennae; tentacular segment with 2 pairs of cirri, all articulated. Palps free at base. Eversible pharynx with trepan of 10 teeth and large middorsal tooth; anterior margin surrounded by 10 soft lobes. Nuchal organs absent. Dorsal cirri articulate; parapodial lobes conical; ventral cirri present. Setae compound falcigers joined by superior and inferior simple setae on posterior segments.

Remarks.—*Dentatisyllis* has the same relationship to *Typosyllis* Langerhans, 1879, as *Geminosyllis* Imajima, 1966, has to *Haplosyllis* Langerhans, 1879. Both *Typosyllis* and *Dentatisyllis* have numerous cylindrical segments with conical parapodial lobes, and similar antennae, cirri, palps and setae. *Dentatisyllis* differs from *Typosyllis* in having an eversion pharynx with several teeth on the margin while the latter has a pharynx with a smooth anterior margin. *Dentatisyllis* differs from *Trypanosyllis* Claparède, 1864, in that the latter has numerous flattened segments and flattened parapodial lobes.

Etymology.—The generic name is formed from the Latin *dentata*, meaning toothed, and the stem generic name, *Syllis*. Gender: feminine.

Dentatisyllis carolinae, new combination

Fig. 38

Syllis (*Typosyllis*) *regulata carolinae* Day, 1973:30, fig. 4a–f.—Gardiner, 1976:141, fig. 12x–z, 13a.

Material examined.—NORTH CAROLINA: off Beaufort, 34°34'N, 76°25'W, 20 m, sand and broken shell; J. H. Day, col., 19 May 1965; holotype (USNM 43146), 4 paratypes (USNM 43147). SOUTH CAROLINA: 32°13'00"N, 79°52'02"W, 24 m, 17 Feb. 1977; 1 specimen (VIMS). GEORGIA: 31°11'59"N, 81°08'00"W, 11 m; R. Bertelsen, col.; 1 specimen (USNM 60472). FLORIDA: Hutchinson Island Sta. I, 27°21.3'N, 80°14.1'W, about 8 m, very fine to fine quartose sand; 1 specimen (FSBC I 20695). Sta. II, 27°21.6'N, 80°13.2'W, about 11 m, coarse calcareous sand; 90 specimens (USNM 54535; FSBC I 4543, 20696–20729). Sta. III, 27°22.0'N, 80°12.4'W, about 7 m, medium calcareous sand; 2 specimens (FSBC I 20731, 20732). Sta. IV, 27°20.7'N, 80°12.8'W, about 11 m, coarse calcareous sand; 134 specimens (FSBC I 20733–20767). Sta. V, 27°22.9'N, 80°13.9'W, about 11

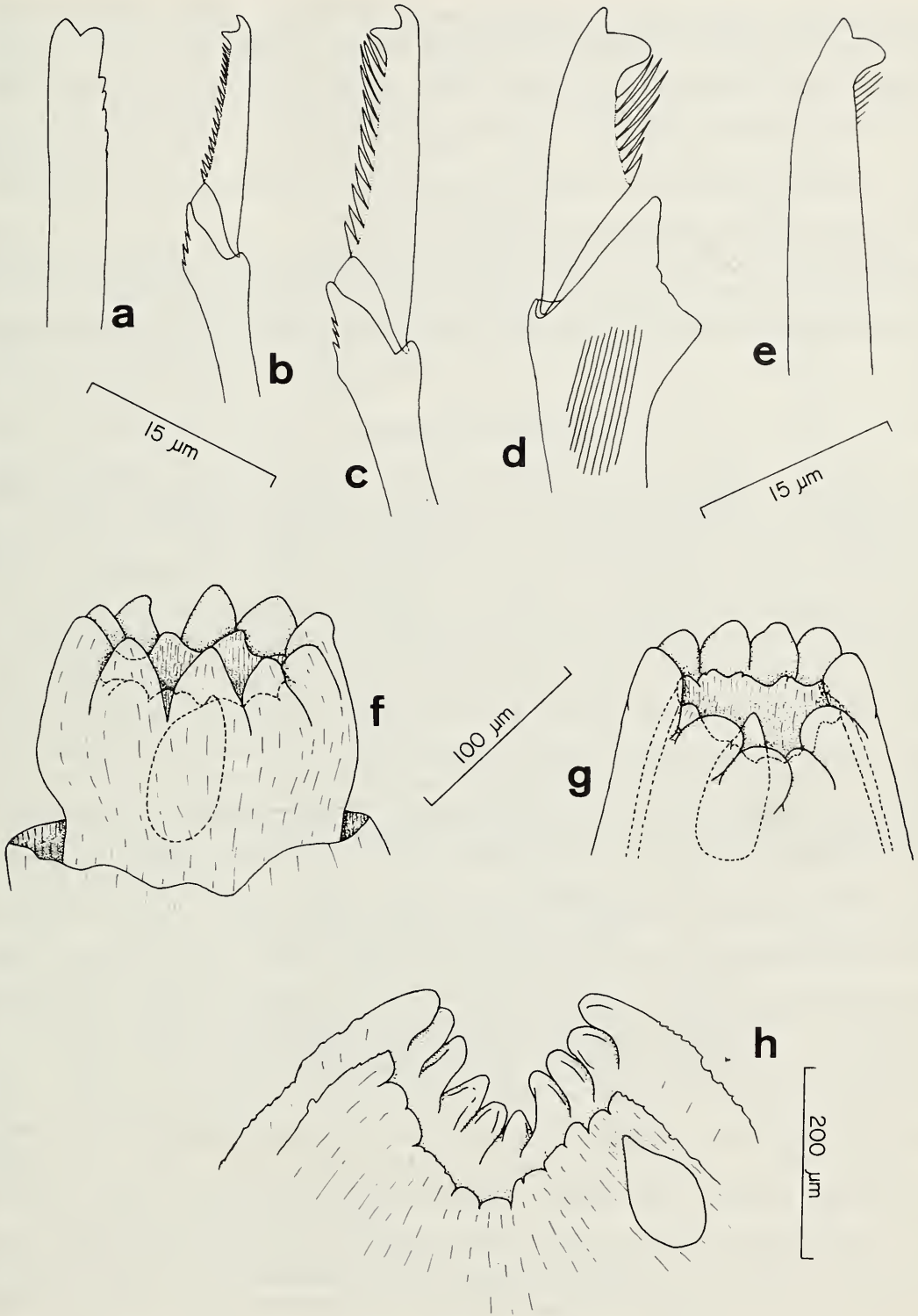


Fig. 38. *Dentatisyllis carolinae*: a–e, Setae, posterior setigers (FSBC I 20779): a, Superior simple; b, Small, upper compound; c, Large, upper compound; d, Lower compound; e, Inferior simple; f–h, Anterior border of pharynx: f, Paratype, lateral view, everted; g, Small specimen, ventral view (FSBC I 20767); h, Large, mature specimen (USNM 60474).

m, coarse calcareous sand; 85 specimens (USNM 54534, 60473, 60474; VIMS; FSBC I 20768–20783, 20785–20794). Johns Pass, Tampa Bay area, Pinellas County; B. Howton and R. Dalton, cols., 12 July 1978; 1 specimen (FSBC I 20840). Northeastern Gulf of Mexico, 29°20'00.4"N, 84°44'02.3"W, 30 m, coarse calcareous sand; U.S. Dept. Interior, Bureau of Land Management Miss.-Ala.-Fla. (MAFLA) Study, Transect IV, Sta. 2423; R/V *Columbus Iselin*, July 1976; 1 specimen (USNM 55831).

Additional description.—Body slightly tapered for anterior third, broadest in middle, tapered for most of posterior third. Antennae and dorsal cirri of anterior segments relatively slender; dorsal cirri of middle segments much stouter and longer. Prostomium of juveniles with pair of eyespots near anterior margin in addition to 2 larger pairs. Median antenna with about 35 articles; lateral antennae originating posterior to anterior border on short ceratophores, with about 25 articles. Dorsal tentacular cirri similar to median antenna; ventral tentacular cirri similar to lateral antennae, with about 22 articles. Dorsal cirri of setiger 1 much longer than median antenna, with up to 55 articles; setiger 2 dorsal cirri similar to lateral antennae, with 27 articles; setiger 3 dorsal cirri similar to median antenna; dorsal cirri of setigers 4, 6, and 9 similar to cirri of setiger 1; dorsal cirri with about 30 articles on setigers 5, 7, and 8; thereafter alternately short and long to posterior end, with about 30 articles on short cirri and about 55 articles on long cirri of middle segments. Superior simple setae truncate but distinctly bilobed or bifid, with few serrations on ventral borders (Fig. 38a). Falcigers of anterior setigers numerous, with slender shafts and blades. Upper falcigers of posterior setigers with slender shafts and blades; blades as long as upper ones of anterior parapodia on some mature specimens but mostly shorter and similar in length to lower blades (Fig. 38b, c); lower falcigers of posterior setigers with stout shafts and blades (Fig. 38d). Inferior simple setae with tips similar to tips of blades of lower compound setae of posterior segments, with several stiff hairs below secondary tooth (Fig. 38e). Up to 5 acicula in anterior parapodia, 3 in middle parapodia, reduced to 1–2 in posterior parapodia. Pygidium with short, slender, smooth, ventrally originating anal cirrus in addition to 2 ventrolaterally originating articulated ones.

Pharynx (Fig. 38f–h) longer than proventriculus, thin walled, especially on anterior margin, light brown, usually located in setigers 1–2 to 9–11, in 10–11 segments when inverted, with trepan of 10, somewhat irregular teeth on anterior chitinous margin and large middorsal tooth near anterior margin with tip not extending to trepan; anterior end surrounded by 10 soft lobes in apposition to teeth of trepan. Proventriculus usually located in setigers 10–12 to 14–17, in 5–8 segments when pharynx not everted, subcylindrical; length:width ratios 3:1 to 5:1.

Remarks.—Compound setae of *D. carolinae* are remarkably similar to those of *Typosyllis regulata* Imajima, 1966, from Japan; antennae and cirri

are similar but shorter on *T. regulata*. However, the anterior border of the pharynx of *T. regulata* is smooth (Imajima, 1966b:290, fig. 64b). Therefore, the 2 species cannot be placed in the same genus, and *D. carolinae* is certainly not a subspecies of *T. regulata* as it was originally described (Day, 1973).

The length and number of articles of antennae and cirri described herein appear to be typical for syllid species with long, articulated dorsal cirri of alternate lengths. The arrangement may become obscured when antennae or cirri have been broken off and are regenerating, resulting in their being shorter, with fewer articles. Small specimens of the species also have antennae and cirri with fewer articles.

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Florida Department of Natural Resources, Marine Research Laboratory,
100 Eighth Avenue, S.E., St. Petersburg, Florida 33701.