

FIVE NEW SPECIES OF SPHAERODORIDAE (ANNELIDA: POLYCHAETA) FROM THE GULF OF MEXICO

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Abstract.—Five new species of Sphaerodoridae (Annelida: Polychaeta) are described from the Gulf of Mexico, including *Clavodorum mexicanum*, *Ephesiella bipapillata*, *Sphaerephesia fauchaldi*, *Sphaerodoridium lutzeni*, and *Sphaerodoropsis vittori*.

This study is based on two small collections of sphaerodorids from the Gulf of Mexico. One collection derives from Dr. Henry Kritzler, while the other was taken as part of the Bureau of Land Management's Outer Continental Shelf Baseline Environmental Survey along the coasts of Mississippi, Alabama, and Florida (MAFLA), southwest Florida (SOWFLA), the Louisiana Offshore Oil Port Study (LOOP), and the Mississippi Sound Study (MS). All MAFLA samples were collected by Dames and Moore, and SOWFLA samples by Woodward-Clyde Environmental Consultants. Details of the MAFLA survey are given by Dames and Moore (1979). In all, five new species of sphaerodorids are described from the northern Gulf of Mexico, including *Clavodorum mexicanum*, *Ephesiella bipapillata*, *Sphaerephesia fauchaldi*, *Sphaerodoridium lutzeni* and *Sphaerodoropsis vittori*.

These materials were generously made available by Joan M. Uebelacker and Paul G. Johnson, Barry Vittor and Associates, Mobile, Alabama, and most were originally treated by Kudenov (1984). All materials, including types, are deposited in the National Museum of Natural History, Smithsonian Institution, Washington D.C. (USNM).

Clavodorum Hartman and Fauchald, 1971
Clavodorum mexicanum, new species

Fig. 1

Material examined.—FLORIDA, GULF OF MEXICO: MAFLA sta 2209H, 27°52'30.5"N, 83°33'59.0"W, clayey-sandy-silt, 34 m Feb 1978; holotype, USNM 102786.—SOFLA sta 8C, 26°16.72'N, 83°12.81'W, fine sand, 48 m, Nov 1980; 1 paratype, USNM 102787.—ALABAMA, GULF OF MEXICO: MS sta 477-8, 30°01.89'N, 88°27.63'W, sand, 23.8 m, 31 Mar 1981; 1 paratype, USNM 102788.

Description.—Body short, grub-like, widest anteriorly; brown to white in alcohol. Length of holotype 2.1 mm; width to 0.6 mm without parapodia, 1 mm with parapodia; complete, having 21 setigers.

Prostomium truncate; median antenna long, gradually tapering, extending posteriorly to setiger 1 (Fig. 1A). Superior lateral antennae cylindrical, distally blunt, lacking proximal spurs. Inferior lateral antennae similar to superior ones, shorter, lacking proximal spurs. One pair of eyes present at level of peristomial cirri, latter papilliform. Proboscis short, muscular, extending posteriorly to setiger 6.

Parapodia uniramous, up to 4× longer than wide; acicular lobes conical, with pre-

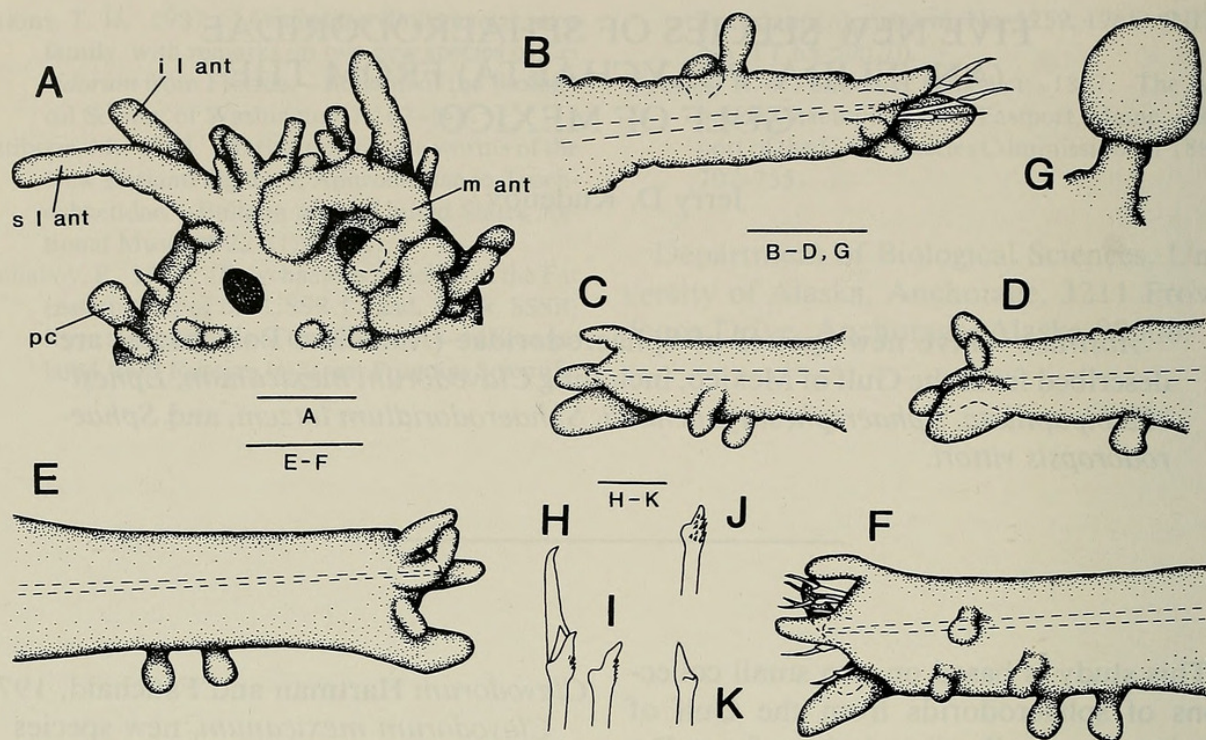


Fig. 1. *Clavodorum mexicanum*, new species (A–D, G–K: paratype, USNM 102787; E–F: holotype, USNM 102786): A, Anterior end, dorsal view [specimen illustrated missing right superior lateral antenna]; B, Parapodium, right setiger 9, dorsal view; C, Same, right setiger 14, anterior view; D, Same, left setiger 7, posterior view; E, Same, right setiger 8, posterior view; F, Same, anterior view; G, Macrotubercle; H, Composite falciger, lateral view; I, Same, shaft tip, lateral view; J, Same, ventrolateral view; K, Same, dorsolateral view; m ant, median antenna; s l ant, superior median antenna; i l ant, inferior median antenna. Scales: A, B–D, E–F, G = 0.05 mm; H–K = 0.1 mm.

setal lobe and 1–2 postsetal lobes, latter depending on body size, absent from last 3–4 setigers; all digitiform (Fig. 1B–F). Parapodia maximally developed around setiger 12, decreasing gradually in size posteriorly; last reduced abruptly. Ventral cirri thickly digitiform, inserted terminally on parapodia, extending beyond acicular lobes. Parapodial papillae numbering 3–6, depending on body size; with 16-setiger specimen (USNM 102787) having 1 papilla each on anterior parapodial surfaces, ventral inferior and dorsal superior distal edges (Fig. 1B–D); 21-setiger specimen (USNM 102786) having 3 papillae on anterior parapodial surfaces, 2 on ventral inferior edges, 1 on dorsal superior distal edge (Fig. 1E, F). Papillae absent from dorsal superior edges and posterior surfaces (Fig. 1B, D, E).

Dorsal macrotubercles stalked (Fig. 1G), arranged in 6 longitudinal rows, each macrotubercle having slender column and

spherical head. Ventral papillae arranged in zig-zag pattern of 10 alternating rows, each papilla ellipsoidal.

Composite falcigers numbering up to 6 per fascicle; blades smooth, unidentate (Fig. 1H), decreasing slightly in length inferiorly within a fascicle (Fig. 1F); shaft tips inflated, with dorsal superior branch long, conical and spinulose (Fig. 1H–J), ventral inferior branch medially notched, forming socket for blade (Fig. 1K).

Remarks.—*Clavodorum mexicanum* is most closely allied to *C. atlanticum* Hartman and Fauchald, 1971, from deep water near the Bermuda Islands, in having six rows of dorsal macrotubercles and in lacking elongate parapodia posteriorly. *Clavodorum mexicanum* differs from its congener in lacking accessory papillae on superior lateral antennae, in lacking postsetal lobes in the last three to four setigers, in having eyes, in having two postsetal lobes instead of one,

and in having ten ventral rows of papillae. *Clavodorum mexicanum* is also closely related to *C. longipes* Fauchald, 1974, in lacking postsetal parapodial lobes, that are absent from the last two to three parapodia in *C. mexicanum*, and the last eight to nine parapodia in *C. longipes*. Both *C. mexicanum* and *C. atlanticum* differ from *C. longipes* in lacking elongate parapodia in far posterior setigers. *Clavodorum mexicanum* was cited as *Clavodorum* sp. A by Kudenov (1984:36–39).

Size range.—Length 1.4–2.8 mm; width 0.3–0.5 mm without parapodia, 0.5–0.8 mm with parapodia; 16–21 setigers.

Etymology.—The epithet refers to the Gulf of Mexico from which this species was collected.

Distribution.—Northeast Gulf of Mexico, offshore of Alabama, Florida, fine sand to sandy-clayey-silt, 23.8–48 m.

Ephesiella Chamberlin, 1919, sensu
Hartman and Fauchald, 1971

Ephesiella bipapillata, new species
Fig. 2

Material examined.—LOUISIANA, GULF OF MEXICO: LOOP sta 481-8, 28°56'06"N, 90°01'30"W, 33.6 m, 11 Nov 1979; holotype, USNM 102789.—Sta 482-2, 28°54'48"N, 89°59'05"W, 33.6 m, 16 Apr 1980; 1 paratype, USNM 102790.

Description.—Body elongate, widest medially; white or pink (due to prior staining in rose bengal) in alcohol. Length of holotype 3.5 mm; width to 0.5 mm without parapodia, 0.6 mm with parapodia; complete, having 57 setigers.

Prostomium truncate; median antenna short, digitiform; 2 pairs of lateral antennae equally long, cirriform (Fig. 2A). One pair of eyes present at level of peristomial cirri (Fig. 2A), latter digitiform, short. Single papilla present near base of each lateral antenna; median papilla inserted anterior to median antenna (Fig. 2A).

Parapodia uniramous, short, 2× longer than wide; acicular lobes conical; pre- and

postsetal lobes absent (Fig. 2B–D). Parapodial papillae numbering 9, including 4 on anterior surfaces (Fig. 2B); 3 on posterior surfaces, including 1 inserted on upper part of acicular lobe (Fig. 2C), 2 on dorsal superior edges (Fig. 2B–D). Latter including 1 near base of parapodium, and 1 inserted distally near tip of acicular lobe being large, erect. Ventral cirrus digitiform, basally inflated, not projecting beyond parapodial lobes (Fig. 2B–D).

Dorsal macrotubercles sessile, arranged in 2 longitudinal rows, each macrotubercle spherical with terminal papilla (Fig. 2E). Dorsal microtubercles arranged in 2 longitudinal rows, each microtubercle digitiform (Fig. 2F). Papillae distributed over dorsum in 22 longitudinal rows, including 3 each between rows of macro- and microtubercles, 16 between rows of microtubercles. Ventrum with 4 longitudinal rows of small elliptical papillae.

Single, stout recurved hook present in parapodia of setiger 1 (Fig. 2G). Composite falcigers numbering up to 5 per fascicle, present in all parapodia from setiger 2; blades smooth, unidentate, decreasing in length inferiorly within a fascicle (Fig. 2H–J); shaft tips inflated, obliquely truncate, with dorsal superior branch longest, pointed, ventral inferior branch forming socket for blade (Fig. 2H).

Remarks.—*Ephesiella bipapillata* is most closely allied to *Ephesiella mixta* Hartman and Fauchald, 1971, from abyssal depths in the northwest Atlantic, in having recurved hooks in setiger 1, two pairs of long lateral antennae, ventral cirri not projecting beyond parapodial lobes, and erect dorsal superior papillae on all parapodia. *Ephesiella bipapillata* differs from its congener in having only one instead of two simple hooks per fascicle, in having two dorsal superior distal papillae instead of one, and in having 26 total rows of dorsal and ventral papillae instead of a sparse, and an apparently random pattern.

Size range.—Length 2–3.5 mm; width

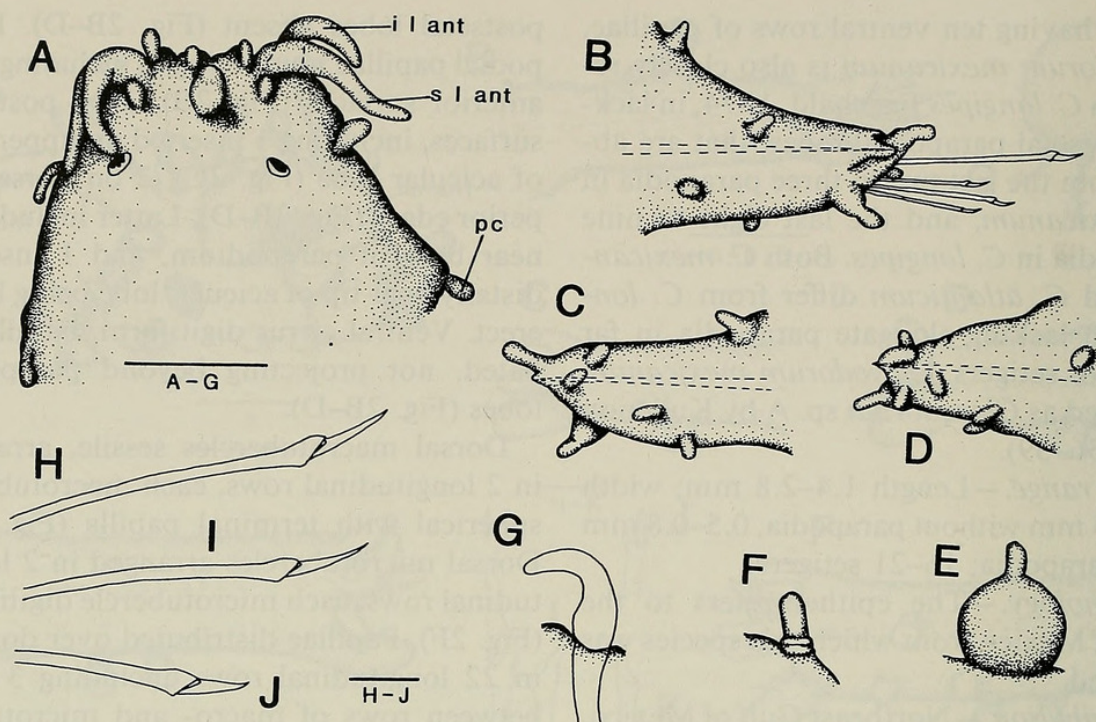


Fig. 2. *Ephesiella bipapillata*, new species (holotype, USNM 102789): A, Anterior end, dorsal view; B, Parapodium, right setiger 14, posterior view; C, Same, anterior view; D, Same, right setiger 17, oblique dorsolateral view of anterior surface exposing ventral cirrus; E, Macrotubercle; F, Microtubercle; G, Recurved simple hook, setiger 1; H-J, Composite falcigers from the same fascicle; H, Superior seta; I, Intermediate seta; J, Inferior seta; m ant, median antenna; s l ant, superior median antenna; i l ant, inferior median antenna. Scales: A-G = 0.05 mm; H-I = 0.01 mm.

without parapodia 0.2–0.5 mm, 0.3–0.6 mm wide with parapodia; 33–57 setigers.

Etymology.—The epithet derives from the presence of two dorsal superior distal parapodial papillae.

Distribution.—Northcentral Gulf of Mexico, 33.6 m.

Sphaerephesia Fauchald, 1972

Sphaerephesia fauchaldi, new species

Fig. 3

Material examined.—FLORIDA: GULF OF MEXICO: SOFLA sta 16B, 25°45.7'N, 83°11.07'W, fine sand, 54 m, Apr 1981; holotype, USNM 102785.

Description.—Body short, grub-like, widest anteriorly; translucent to white in alcohol. Length of holotype 2.2 mm; width 0.6 mm without parapodia, 0.8 mm wide with parapodia; complete, having 16 setigers. Holotype ovigerous.

Prostomium truncate anteriorly; median antenna large, stout, distally blunt (Fig. 3A,

B). Superior lateral antennae short, slender; medial and inferior pairs each 2× longer, cylindrical, inflated basally, all lacking proximal papillar spurs (Fig. 3A, B). Eyes absent. Peristomial cirri digitiform, distally blunt, about as long as medial, inferior antennae (Fig. 3A, B). Proboscis short, muscular, extending posteriorly to setiger 4. Eight papillae encircled by prostomial antennae (not illustrated); papillae otherwise present on peristomium.

Parapodia uniramous, up to 2× longer than wide; acicular lobes rounded, with pre-setal lobe large, conical, projecting beyond acicular lobe; postsetal lobes absent (Fig. 3C, D). Ventral cirri digitiform, inserted on distal 1/3 of parapodial lobes, extending beyond acicular lobes (Fig. 3C, D). Parapodial papillae number 8, including 4 on anterior parapodial surfaces; 2 on posterior surfaces; 2 on superior dorsal edges including one inserted distally; ventral inferior edges lacking papillae (Fig. 3C, D).

Dorsal macrotubercles sessile, arranged

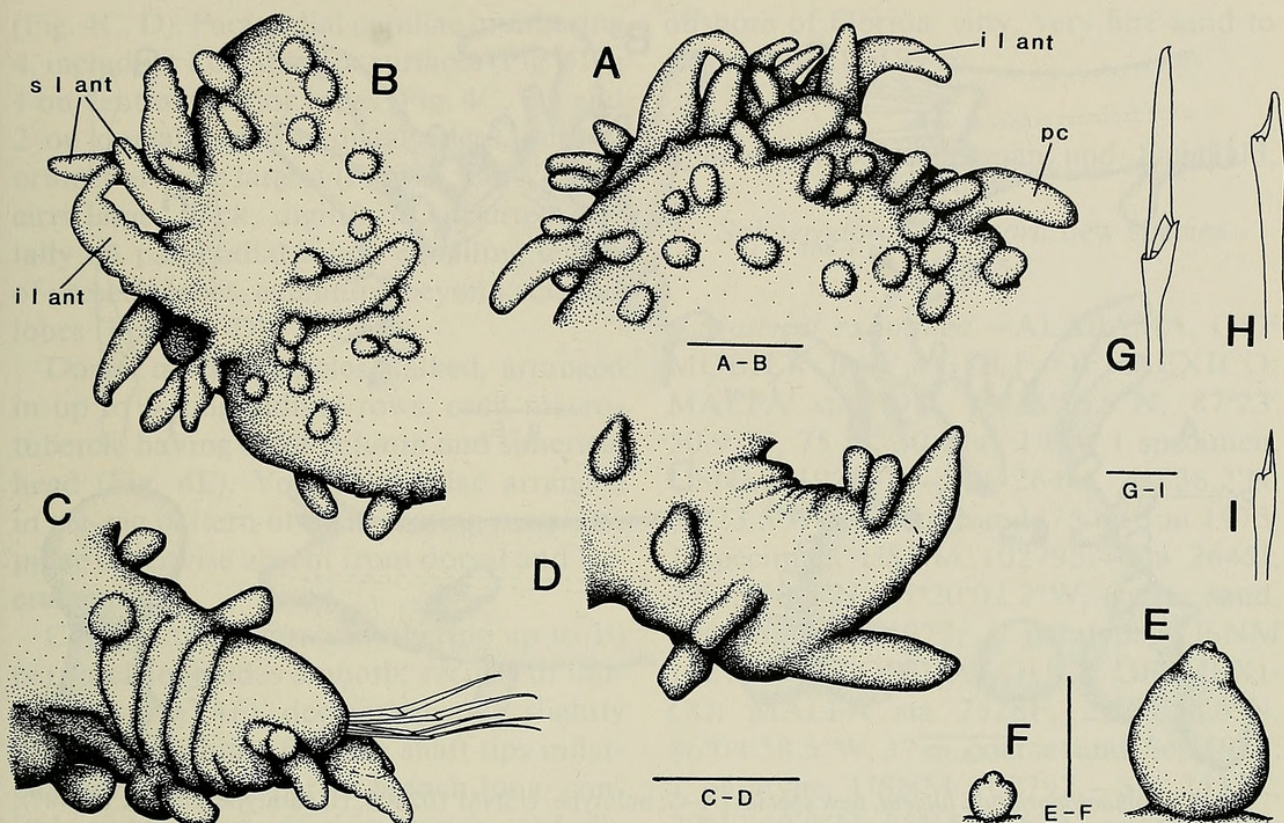


Fig. 3. *Sphaerephesia fauchaldi*, new species (holotype, USNM 102785): A, Anterior end, dorsal view; B, Anterior end, left lateral view; C, Parapodium, left setiger 9, dorsal view; D, Same, left setiger 12, oblique anterolateral view; E, Macrotubercle; F, Microtubercle; G, Composite falciger, lateral view; H, Same, shaft tip, lateral ventral view; I, Same, shaft tip, ventrolateral view; m ant, median antenna; s l ant, superior median antenna; i l ant, inferior median antenna. Scales: A-B, C-D, E-F = 0.05 mm; G-I = 0.01 mm.

in 4 longitudinal rows, each macrotubercle spherical with stout terminal papilla (Fig. 3E). Dorsum otherwise with approximately 12 irregular rows of microtubercles (Fig. 3F), each having small spherical heads. Ventral papillae appearing to be arranged in 12 irregular longitudinal rows.

Composite falcigers numbering 5–7 per fascicles anteriorly, increasing up to 16 posteriorly; blades long, smooth, with falcate unidentate tips (Fig. 3G); shaft tips not inflated, with dorsal superior branch entire, spike-shaped and ventral inferior branch medially notched, forming socket for blade (Fig. 3H, I).

Remarks. — *Sphaerephesia fauchaldi* is most closely allied to *Sphaerephesia chilensis* Fauchald, 1974, from intertidal and shallow subtidal depths of central and southern Chile, in having eight papillae encircled by three pairs of similarly shaped prostomial antennae (which could not be illustrated),

and similar composite falcigers. *Sphaerephesia fauchaldi* differs from its congener in having five instead of one to two parapodial papillae, and in having 12 rows of sessile dorsal microtubercles.

These two species are zoogeographically and probably also evolutionarily related. *Sphaerephesia chilensis* is known from the southeastern Pacific (Chile), while *Sphaerephesia fauchaldi* is newly reported from the northeastern Gulf of Mexico. It is probable that these species may have diverged from a more widely distributed ancestral stock present in these regions prior to the Miocene closure of the Panama Isthmus. *Sphaerephesia fauchaldi* was cited as *Sphaerephesia* sp. A by Kudenov (1984:36–3).

Etymology. — The epithet is named after Kristian Fauchald in honor of his contributions to our understanding of this family.

Distribution. — East Gulf of Mexico, offshore of Florida, fine sand, 54 m.

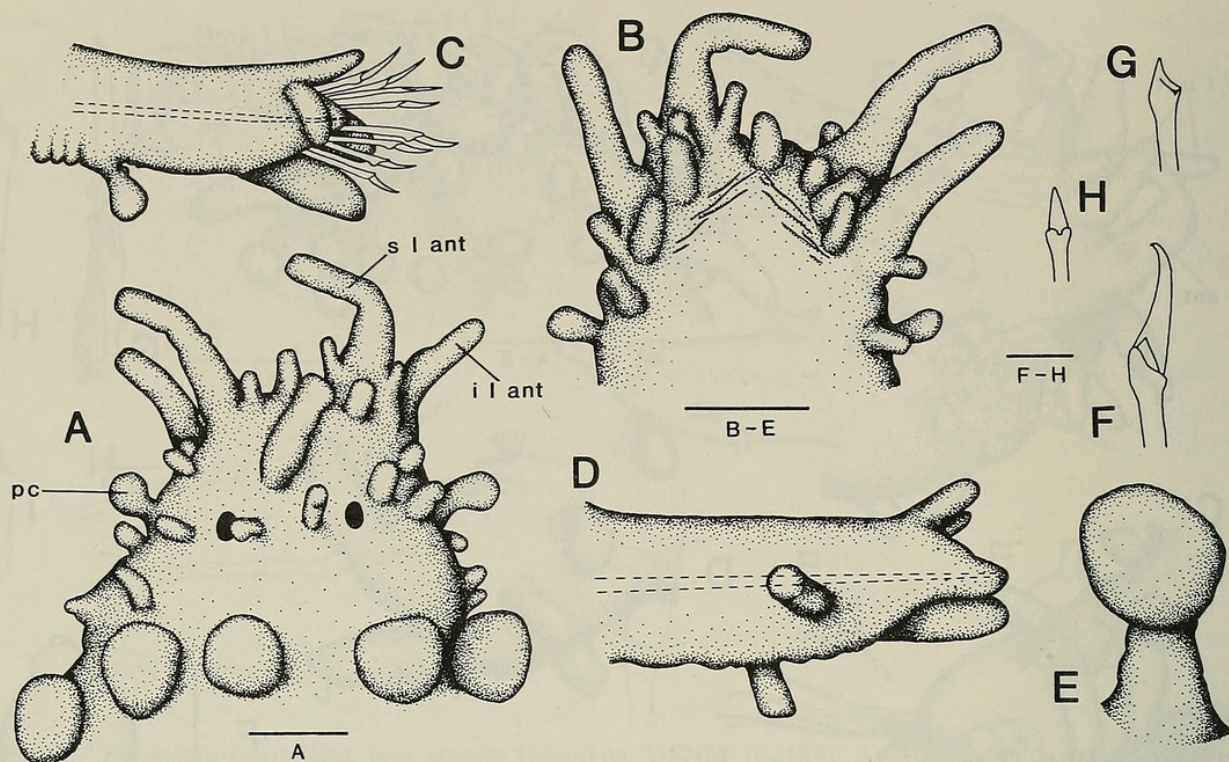


Fig. 4. *Sphaerodoridium lutzeni*, new species (A–G: holotype, USNM 102803; H, paratype, USNM 102807): A, Anterior end, dorsal view; B, Anterior end, ventral view; C, Parapodium, right setiger 8, posterior view; D, Same, left setiger 5, anterior view; E, Macrotubercle; F, Composite falciger, lateral view; G, Same, shaft tip, lateroventral view; H, Same, ventral view; m ant, median antenna; s l ant, superior median antenna; i l ant, inferior median antenna. Scales: A, B–E = 0.05 mm; F–H = 0.01 mm.

Sphaerodoridium Lützen, 1961, restricted
sensu Fauchald, 1974

Sphaerodoridium lutzeni, new species
Fig. 4

Material examined.—FLORIDA, GULF OF MEXICO: MAFLA sta 2209C, 27°52'30.5"N, 83°33'59.0"W, clayey-sandy-silt, 34 m, Aug 1977; 1 paratype, USNM 102802.—Sta 2209G, 27°52'30.5"N, 83°33'59.0"W, clayey-sandy-silt, 34 m, Aug 1977; holotype, USNM 102803.—Sta 2210C, 27°57'28.8"N, 83°42'29.2"W, silty-very fine sand, 37 m, Jul 1976; 1 paratype, USNM 102804.—?Sta 2422F, 29°30'N, 84°27'W, medium fine sand, 24 m, Jul 1976; 1 specimen, USNM 102805.—Sta 2423C, 29°37'00.8"N, 84°17'00.2"W, silty fine sand, 19 m, Nov 1977; 2 paratypes, USNM 102806.—Sta 2536G, 29°30'0.16"N, 86°24'59.0"W, clayey silt, 189 m, Jul 1976; 2 paratypes, USNM 102807.

Description.—Body grub-like; transparent body wall with white macrotubercles in alcohol. Length of holotype 2 mm; width 0.3 mm without parapodia, 0.4 mm wide with parapodia; complete, having 16 setigers.

Anterior end bluntly rounded; median antenna short, digitiform; superior lateral antennae long, digitiform, each with 2 proximal papillae (Fig. 4A); inferior lateral antennae similar to median in shape, size, each with single proximal papilla (Fig. 4B). One pair of eyes present at level of peristomial cirri (Fig. 4A). Peristomial cirri digitiform, shorter than median antenna (Fig. 4A, B). Proboscis large, extending posteriorly to setiger 5. Papillae present on prostomium, peristomium.

Parapodia uniramous, up to 4× longer than wide; acicular lobes conical, with pre-setal lobes large, digitiform, projecting beyond acicular lobe; postsetal lobes absent

(Fig. 4C, D). Parapodial papillae numbering 4, including 1 on anterior surfaces (Fig. 4D); 1 on ventral inferior edges (Fig. 4C, D); and 2 on dorsal superior distal edges, superiormost of these largest (Fig. 4C, D). Ventral cirri large, thick, digitiform, inserted distally on parapodial lobes, equalling length of presetal lobes, extending beyond aciculae lobes (Fig. 4C, D).

Dorsal macrotubercles stalked, arranged in up to 6 longitudinal rows, each macrotubercle having stout column and spherical head (Fig. 4E). Ventral papillae arranged in zig-zag pattern of 6 alternating rows. Papillae otherwise absent from dorsal and lateral surfaces.

Composite falcigers numbering up to 10 per fascicle; blades smooth, recurved, unidentate (Fig. 4F), decreasing only slightly inferiorly within a fascicle; shaft tips inflated, with dorsal superior branch long, conical, and ventral inferior branch medially notched, forming socket for blade (Fig. 4G, H).

Remarks.—*Sphaerodoridium lutzeni* differs from the only other described species, *Sphaerodoridium caparedii* (Greeff 1866) in having inferior lateral prostomial antennae each with a single proximal papilla, in lacking ventral transverse rows of papillae, in lacking papillae on dorsal and lateral surfaces, in having a regular zig-zag pattern of six alternating rows of ventral papillae, and in having four instead of two parapodial papillae. It is highly probable that the specimen of *Sphaerodoridium* (*Ephesiella*) *claparedii* sensu Day (1973:36) is referable to *Sphaerodoridium lutzeni* since it lacks dorsal papillae. *Sphaerodoridium lutzeni* was cited as *Sphaerodoridium* sp. A by Kudenov (1984:36–11).

Size range.—Length 0.9–2.5 mm; width 0.2–0.5 mm without parapodia, 0.3–0.8 mm with parapodia; 8–16 setigers.

Etymology.—The epithet is named after Professor Jörgen Lützen, who first proposed the genus *Sphaerodoridium*.

Distribution.—Northeast Gulf of Mexico,

offshore of Florida, silty, very fine sand to clayey silt, 19–189 m.

Sphaerodoropsis Hartman and Fauchald, 1971

Sphaerodoropsis vittori, new species

Fig. 5

Material examined.—ALABAMA, OFF MOBILE BAY, GULF OF MEXICO: MALFA sta 19C, 29°36'10.9"N, 87°23'30.9"W, 75 m, 30 May 1974; 1 specimen, USNM 102791.—Sta 2644I, 29°36.2'N, 87°23.5'W, medium sand, 75 m, Jun 1975; 1 specimen, USNM 102795.—Sta 2645I, 29°35'00.5"N, 87°20'02.2"W, coarse sand, 106 m, Nov 1977; 1 paratype, USNM 102796.—FLORIDA, GULF OF MEXICO: MALFA sta 2528F, 29°54'58.6"N, 86°04'58.5"W, 37 m, coarse sand, Sep 1977; 1 paratype, USNM 102792.—Sta 2533C, 29°42'59.9"N, 85°15'28.6"W, coarse sand, 67 m, Jul 1976; 1 specimen, USNM 102794.—Sta 2528G, same; 1 paratype, USNM 102793.—Sta 2746D, 27°03.5'N, 84°13.7'W, silty, very fine sand, 121 m, Feb 1978; holotype, USNM 102797.—Sta SO-FLA 4C, 26°45.81'N, 83°32.12'W, medium sand, 56 m, Mar 1981; 1 paratype, USNM 102798.—Sta 5A, 26°45.7'N, 84°00.13'W, coarse sand, 91 m, May 1981; 1 paratype, USNM 102799.

Description.—Body grub-like, widest anteriorly; light brown to white in alcohol. Length of holotype 3.5 mm (3.8 mm with proboscis everted); width 1 mm without parapodia, 1.2 mm wide with parapodia; complete, having 32 setigers.

Anterior end truncate; median antenna short, digitiform; 2 pairs cirriform lateral antennae, with superior lateral antennae shorter than inferior lateral antennae (Fig. 5A [angle of illustration distorts this relationship]). Eyes absent. Peristomial cirri digitiform, longer, larger than median antenna. Proboscis large, muscular, extending posteriorly to setiger 8 (everted in holotype). Prostomium, peristomium studded with

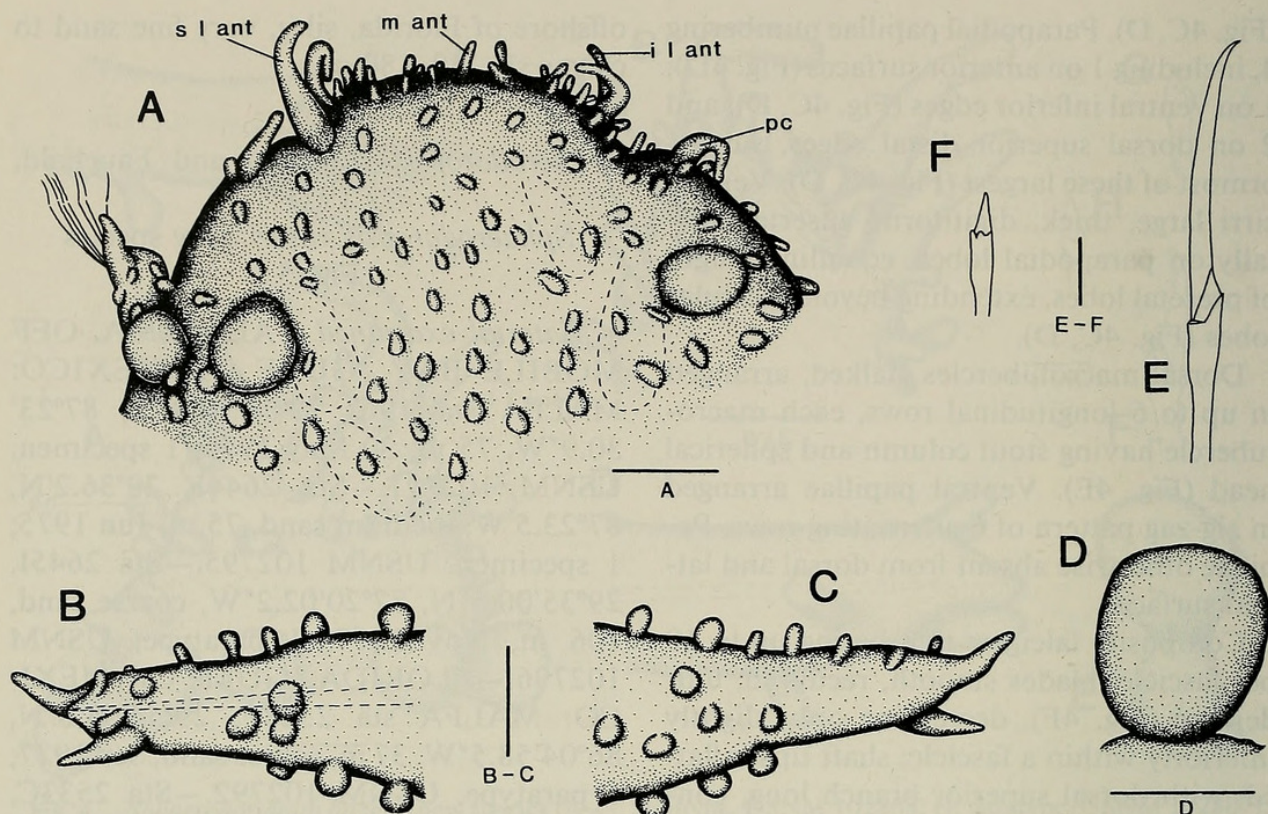


Fig. 5. *Sphaerodoropsis vittori*, new species (holotype, USNM 102797): A, Anterior end, oblique dorsal view from posterior perspective [angle of illustration incorrectly suggesting lateral prostomial antennae of equal lengths]; B, Parapodium, left setiger 13, posterior view; C, Same, anterior view; D, Macrotubercle; E, Composite falciger, lateral view; F, Same, shaft tip, ventrolateral view; m ant, median antenna; s l ant, superior median antenna; i l ant, inferior median antenna. Scales: A, B-C, D = 0.05 mm; E-F = 0.01 mm.

small papillae, including cluster of 3 near base of inferior lateral antennae (Fig. 5A).

Parapodia uniramous, short, up to $3\times$ longer than wide; acicular lobes conical; presetal lobes long, digitiform; postsetal lobes absent (Fig. 5B, C). Parapodial papillae stout, numbering 20, including postsetal superior papilla inserted on acicular lobe (Fig. 5B); 6 on anterior surfaces (Fig. 5C); 5 on posterior surfaces (Fig. 5B); 5 on dorsal superior edges (Fig. 5C); 3 on ventral inferior edges (Fig. 5C). Ventral cirri subulate, projecting beyond acicular lobes.

Dorsal macrotubercles sessile (Fig. 5D), arranged in 4 longitudinal rows, each macrotubercle spherical. Dorsum and ventrum densely covered by short randomly arranged papillae.

Composite falcigers numbering up to 10 per fascicle; blades long, smooth, distally recurved, unidentate (Fig. 5E), decreasing

in length ventrally within a fascicle; shafts long; shaft tips inflated, with dorsal superior branch long, spike-shaped, distally entire or sometimes bifid, and ventral inferior branch medially notched, forming socket for blade (Fig. 5F).

Remarks. — *Sphaerodoropsis vittori* is most closely allied to *Sphaerodoropsis triplicata* Fauchald, 1974, from a depth of 675–715 m offshore of Durban, South Africa, in having four rows of dorsal macrotubercles, two pairs of lateral prostomial antennae, a presetal parapodial lobe, dorsal superior parapodial papillae, and ventral cirri projecting well beyond acicular lobes. *Sphaerodoropsis vittori* differs from its congener in having only one superior parapodial papilla instead of two large ones, in having up to 13 additional stout parapodial papillae rather than smooth and wrinkled parapodia, and a cluster of three prostomial pa-

pillae near the base of each inferior lateral antenna. *Sphaerodoropsis vittori* is also related to *Sphaerodoropsis philippi* Fauvel, 1911, in having numerous parapodial papillae. However, *Sphaerodoropsis vittori* differs from *S. philippi* in having 20 stout papillae per parapodium instead of up to 10–11 slender ones. *Sphaerodoropsis philippi* further lacks both dorsal superior distal parapodial papillae, and ventral cirri that project beyond acicular lobes. *Sphaerodoropsis vittori* was cited as *Sphaerodoropsis* sp. A by Kudenov (1984:36–5).

Size range.—Length 0.7–7.5 mm; width 0.2–0.5 without parapodia, 0.3–0.8 mm with parapodia; 12–32 setigers.

Etymology.—The epithet takes its name from Barry M. Vittor, in recognition of his efforts to characterize the polychaete fauna of the northeastern Gulf of Mexico.

Distribution.—Northeast and east Gulf of Mexico, offshore of Florida, silty, very fine sand to coarse sand, 37–121 m.

Acknowledgments

I wish to thank Paul Johnson and Joan Uebelacker, Barry Vittor and Associates, Mobile, Alabama, for allowing me to work on sphaerodorids collected as part of the Bureau of Land Management's program in the Gulf of Mexico. I am also indebted to Susan J. Williams, Allan Hancock Foundation, University of Southern California, Los Angeles, California, both for lending specimens and for generously making space and facilities available; and to Kristian Fauchald, Natural Museum of Natural History, for reviewing this manuscript.

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