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TAXONOMIC GUIDE TO THE POLYCHAETES OF THE NORTHERN GULF OF MEXICO

Volume VII

Prepared by

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CHAPTER 49

Joan M. Uebelacker

Family SABELLARIIDAE Johnston, 1865

INTRODUCTION

The Sabellariidae are moderate-sized worms, ranging in length to about 50 mm. The body is divided into four distinctive regions, including the opercular region, the thorax, the abdomen, and the cauda. The opercular region is dominated by two fleshy opercular peduncles, which may be fused dorsally, and which are crowned with large, golden paleae. The paleae are arranged in 1-3 apparent rows on each opercular peduncle, although Hartman (1944d:325) stated that all sabellariids actually have two rows of opercular paleae. The outer anterior margins of the opercular peduncles are rimmed with a row of fleshy papillae; middorsally there may be a pair of stout nuchal hooks or several acicular spines. From the ventral sides of the opercular peduncles arise numerous filamentous buccal cirri; behind these is the mouth. Above the mouth arise two grooved, extensible palps and often a median tentacle; posterior to the mouth is a U-shaped, glandular, mucus-secreting region known as the building organ. The small prostomium is obscured between the opercular peduncles.

The thoracic region consists of two anterior segments bearing capillary neurosetae only. The second of these segments (first discernible body segment) includes the ventral building organ, ventrolateral setigerous lobes, ventral and lateral cirri, and paired dorsal branchiae. The first two setigers are followed by 3-4 paleal-bearing parathoracic segments. These thoracic paleae are paddle-shaped and distally frayed; each is accompanied by a slender, hispid companion seta. They occur in both the notopodia and neuropodia, although the notopodial paleae are larger. Cirriform branchiae commence on the second thoracic setiger and often continue along most of the abdomen.

The abdomen is delineated from the thorax by an abrupt change in the setae. The abdominal notosetae occur as numerous uncini borne on pinnules which are broad anteriorly but become progressively longer and narrower posteriorly. Abdominal neurosetae are hispid or serrate. A more or less pronounced longitudinal groove is often present along the ventrum.

The body terminates in a fairly smooth caudal region, or cauda, which is thought to be composed of numerous degenerative segments (Hartman, 1944d:326). The cylindrical, achaetous cauda is often quite long and is usually reflexed so as to lie in the ventral groove.

The family Sabellariidae has traditionally been allied with the Pectinariidae, which also possess opercular paleae. Fauchald (1977a) and Pettibone (1982) placed the two families in the order Terebellida. About 60 species in seven genera are currently recognized; two genera and three species occur in Gulf of Mexico BLM-OCS voucher collections. Of these, one species is potentially new to science and one is newly reported from the Gulf.

PRINCIPAL DIAGNOSTIC CHARACTERS

Sabellariid genera are distinguished according to characteristics of the opercular peduncles and paleae, presence of nuchal hooks, and number of parathoracic setigers. The apparent number of rows of opercular paleae is important, with Phalacrostemma and Monorchos having a single row; Gunnarea, Idanthyrsus and Lygdamis (Figure 49-2a) having two rows; and Phragmatopoma and Sabellaria (Figure 49-4a) having three rows. However, as Hartman (1944d:326) pointed out, in the latter two genera the paleae of the middle and inner rows actually arise from a single row, in which upward-directed "middle" paleae alternate with inward-directed "inner" paleae. In Phragmatopoma these middle, upward-directed paleae actually slant inward so as to form a cone concealing the inner paleae. The inner paleae of Sabellaria are not concealed.

The opercular peduncles are fused in Monorchos, Gunnarea, Idanthyrsus, Phragmatopoma and Sabellaria; and free from each other in Lygdamis and Phalacrostemma. Stout nuchal hooks occur anterodorsally on the operculum of Lygdamis (Figure 49-2a) and Idanthyrsus; other genera may have acicular nuchal spines (Figure 49-4a,b). Lygdamis and Phalacrostemma have four parathoracic setigers; the remaining genera have three.

Species designations are based almost exclusively on characteristics of the opercular paleae, since most other morphological features vary little within genera. In Lygdamis the paleae are stout spines; important specific considerations include the number of paleae in the inner and outer series, and their shape and relative thickness. In Sabellaria, the outer paleae are distally flattened and spinous (Figures 49-4c, 6c); the middle and inner paleae are usually thicker and spike-like (Figure 49-6d,e). Characteristics of the distal spines, particularly the central spike, of the outer paleae contribute to species distinctions. The middle paleae may all be similar in length or may alternate long and short (Figure 49-4d,e). The inner paleae may be distally serrate (Figure 49-4f) or smooth (Figure 49-6e).

Pigmentation patterns are somewhat distinctive, usually persist in preservative, and may be helpful in confirming identifications at the species level.

Juvenile sabellariids are difficult to identify due to the presence of opercular paleae which differ morphologically from those of the adult. Young individuals undergo a series of paleal molts (see Eckelbarger, 1975, 1977), gradually acquiring the adult paleal forms. In addition, larvae and juveniles of many species may possess opercular spines ("crown bristles") which differ from the paleae and which are totally lacking in the adult (Eckelbarger, 1977:250).

In the descriptions which follow, length measurements include the opercular paleae, but not the cauda (measured separately in Sabellaria). Width measurements were taken across the widest post-opercular body region. Illustrations are from Gulf of Mexico BLM-OCS material unless otherwise indicated.

BIOLOGICAL NOTES

Although sabellariids occur from nearshore to great depths in the ocean, they are best known as intertidal, reef-building worms. These species construct tubes of sand in dense aggregations, particularly in the warmer temperate regions. One species, Sabellaria alveolata from

Europe, has been given the common name "Honeycomb Worm" because of the appearance of its reefs (Wilson, 1969). The reef-builders require hard substrates, but favor areas of turbid water where wave motion provides the worms with a constant supply of sand for tube construction (Kirtley, 1971). The building organ is used to select appropriate-sized sand grains and cement them to the tube with mucus. Colonies form rather quickly, persist for perhaps 2-3 years, then deteriorate as worms die and their sand tubes disintegrate. Due to their rapid formation, sabellariid reefs sometimes pose a hazard to shipping by occluding ship channels.

Some reef-building species also occur subtidally; other species are not gregarious and thus do not form reefs at any depth. Most species require a hard substrate such as rocks or mollusk shells for settlement, although Sabellaria floridensis may build tubes on seagrasses. Sabellariids are sparsely represented on the Gulf of Mexico outer continental shelf by a few non-colonial species.

The opercular paleae are used for defense, and in some species, for handling of sand grains and for keeping the tube opening free from fouling organisms and algal spores (Eckelbarger, pers. comm.). In intertidal colonies, the operculum is used to plug the mouth of the tube to prevent dessication during periods of low water.

Sabellariids are filter-feeders, using their buccal cirri to trap phytoplankton. These food particles are then encased in mucus and transported by ciliary action to the mouth (Fauchald and Jumars, 1979). Fecal material is deposited by the cauda on the body surface, and from there is transported to the opening of the tube via ciliary action.

Reproduction, larval development, and population dynamics have been studied for a number of sabellariid species. Curtis (1978) listed the known breeding seasons of six species. In general, reproduction occurs during the summer in cooler regions, and during the winter in warmer waters. Gametes are shed into the seawater, where fertilization occurs. Fertilized eggs develop into trochophore larvae within 10-48 hours (Mauro, 1975; Eckelbarger, 1975, 1977). The larvae may remain planktonic for several weeks or months before metamorphosis and settlement. Larvae develop barb-like provisional setae which are directed posteriorly during swimming, but which may be extended to the front and sides when the larva is irritated. During metamorphosis, the provisional setae are lost, revealing primary opercular paleae, which rotate to project anteriorly (Eckelbarger, 1978:155). The larva then constructs a mucus tube to which sand grains are attached. In many colonial species, metamorphosis is induced by larval contact with the tube cement of other individuals of the same species, thus perpetuating reef-formation (Eckelbarger, 1978:160).

SPECIES OF SABELLARIIDAE RECORDED FROM GULF OF MEXICO BLM-OCS PROGRAMS

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Sabellaria floridensis Hartman, 1944	49-8
Sabellaria sp. A	49-10

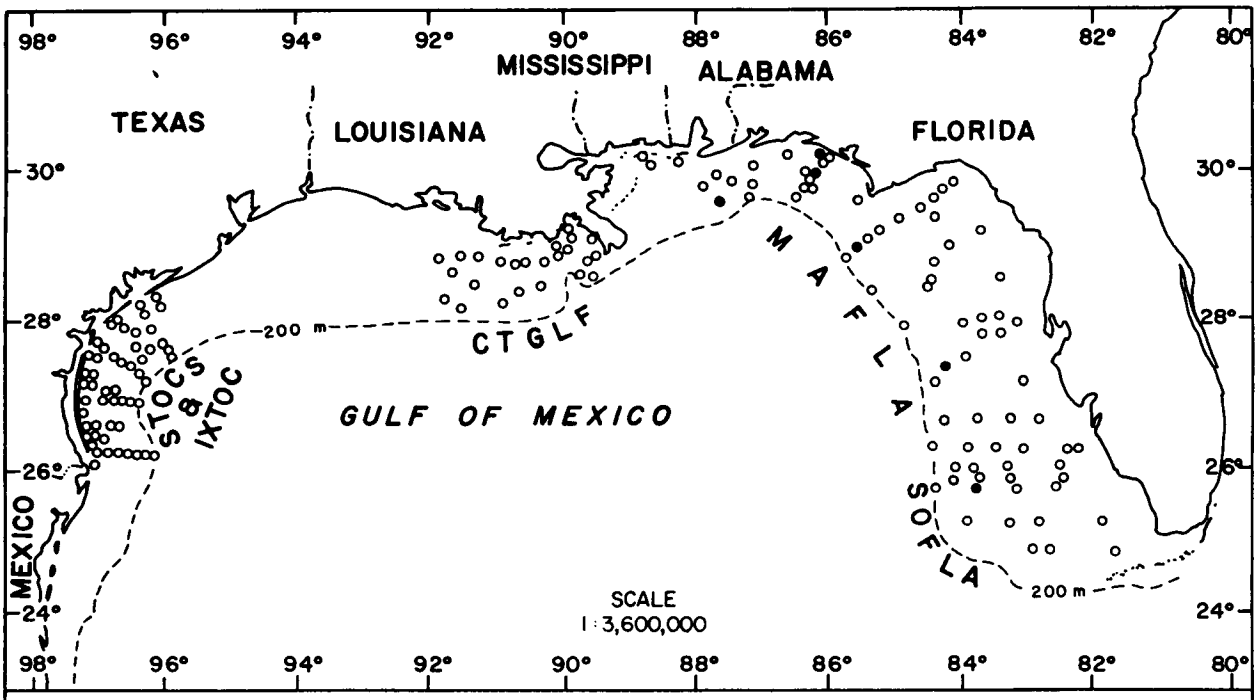

Figure 49-1. Distribution of Lygdamis indicus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

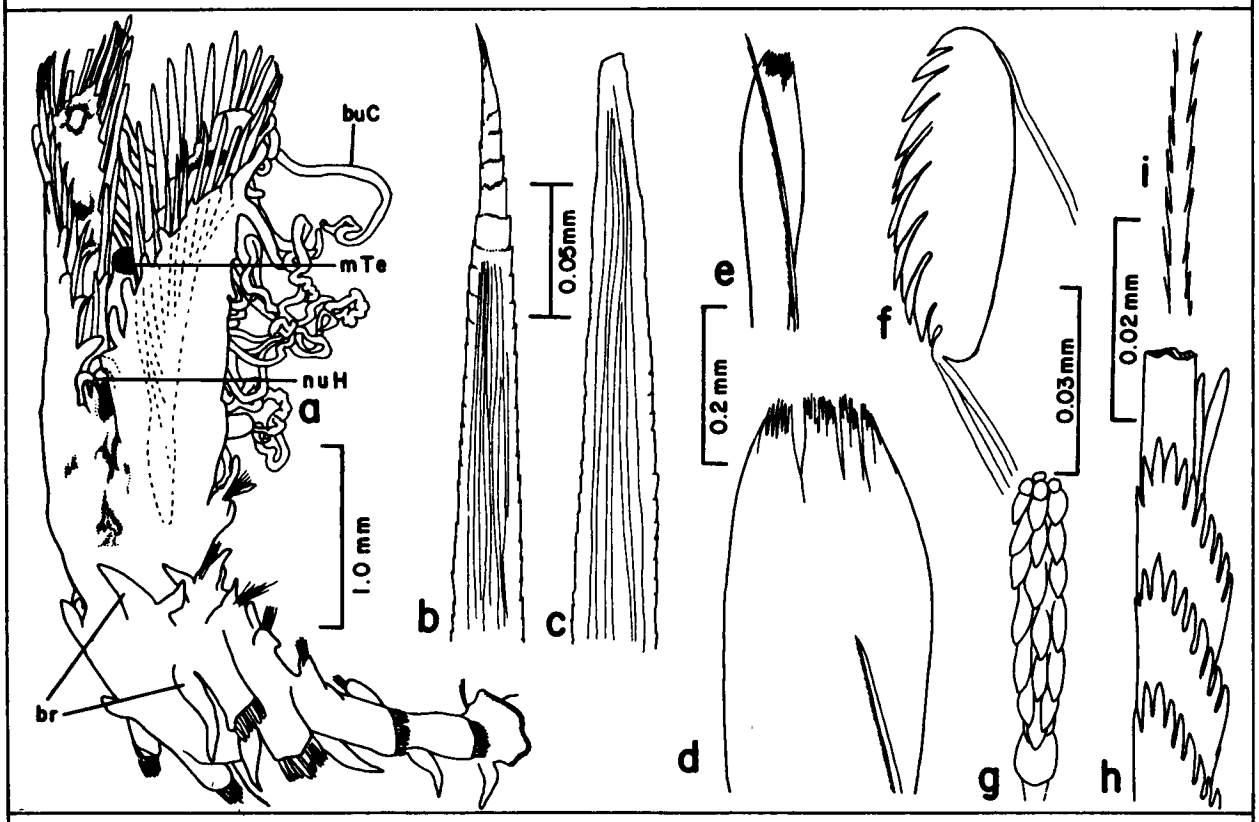

Figure 49-2. Lygdamis indicus: a, anterior end (dorsolateral view); b, outer palea from juvenile; c, inner palea from juvenile; d, parathoracic notopodial palea and companion seta; e, parathoracic neuropodial palea and companion seta; f, abdominal notopodial uncinus (profile); g, same (frontal view); h, portion of spirally serrate abdominal neuroseta; i, portion of hispid abdominal neuroseta.

Key to the Genera of Sabellariidae from the Gulf of Mexico BLM-OCS Programs

1a. Opercular paleae in two apparent rows; nuchal hooks present; four parathoracic setigers (Figure 49-2a). . . . . .**Lygdamis**, p. 49-5

1b. Opercular paleae in three apparent rows; nuchal hooks absent; three parathoracic setigers (Figures 49-4a, 6a). . . . . .**Sabellaria**, p. 49-6

Genus **Lygdamis** Kinberg, 1867

TYPE SPECIES: Lygdamis indicus Kinberg, 1867.
REFERENCES:
Hartman, 1944d:331.
Day, 1967:675.
Fauchald, 1977a:118.
DIAGNOSIS: Opercular peduncles long, not fused, each bearing two rows of paleae and numerous buccal cirri. Median tentacle and paired palps present in front of mouth. Nuchal hooks present dorsally. Four parathoracic setigers bearing paleae.

Lygdamis indicus Kinberg, 1867
Figures 49-1, 2a-i

Lygdamis indicus--Hartman, 1966b:230.
Lygdamis indicus--Day, 1967:677, fig. 33.3.c-h.
Lygdamis indicus--Intes and LeLoeuff, 1977:237.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 17C-5/74 (1 spec.), 2426G-2/78 (1 spec., USNM 75169), 2528D-6/75 (1 spec.), 2528F-11/77 (1 spec., USNM 75170), 2958G-9/77 (1 spec.).
Supplementary Material:
Florida--off Palm Beach, Apr. 1950, 55-73 m, rocky reef, Thompson-McGinty coll., D. Kirtley ID. (1 spec., USNM 38385).
DESCRIPTION:
Length, to 44 mm (previously reported to 30 mm); width, to 7 mm (previously reported to 5 mm). Body broadest across operculum; complete specimens with up to 47 setigers. Opercular lobes long, slanting, with brown pigment patches; upper surfaces between paleae with transverse brown lines (Figure 49-2a). Outer paleae slender, faintly serrate and distally pointed in juveniles (Figure 49-2b), smooth with tips often bent in adults, numbering 14-31 pairs. Inner paleae stouter, blunt-tipped, smooth in adults, faintly serrate in juveniles (Figure 49-2c), numbering 6-16 pairs. Anterior margins of opercular peduncles surrounded by 7-20 pairs of papillae; ventral sides with about 7-10 transverse rows of long, filamentous buccal cirri. Buccal cirri brown along one edge. Median tentacle stout with dark brown tip (Figure 49-2a). Nuchal hooks paired, stout, strongly curved. First two thoracic setigers with smooth capillary neurosetae only. Second thoracic setiger with two pairs of lateral conical cirri in addition to dorsal branchiae and ventral cirri. Branchiae continuing through thorax and often through anterior abdominal segments, becoming progressively smaller posteriorly.

Four parathoracic segments bearing broad, distally frayed paleae and slender, hispid companion setae in the notopodia (Figure 49-2d); neurosetae similar but paleae narrower (Figure 49-2e). Complete specimens with up to 39 abdominal setigers plus up to seven glandular, achaetous caudal segments. Abdominal notopodial pinnules broad anteriorly, narrow posteriorly; with numerous uncini having 2-4 columns of 7-9 teeth each (Figure 49-2f,g), crested on small specimens. Abdominal neurosetae including spirally serrate setae (Figure 49-2h) and slender hispid setae (Figure 49-2i). Anal tube short, distally lobed.
REMARKS: Gulf of Mexico BLM-OCS specimens exhibit the following trends from juvenile to adult: 1) darkening and expansion of pigmentation; 2) paleae becoming thicker and smooth, and tips of outer paleae becoming bent, then blunt; 3) increase followed by reduction in the number of paleae; and 4) increase in the number of buccal cirri. Gulf of Mexico material matches the specimen from Palm Beach, Florida, identified as L. indicus by D. Kirtley. It also agrees well with published descriptions of L. indicus, except in having a brown-tipped median tentacle. Lygdamis indicus is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 45-590 m; fine white sand, mud, rocky reefs.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in northeastern Gulf (Figure 49-1); 37-120 m; coarse to fine sand.
DISTRIBUTION: Hawaii, Indo-Pacific, east and west coasts of Africa, east coast of Florida, Gulf of Mexico.

Genus **Sabellaria** Savigny, 1818

TYPE SPECIES: Sabella alveolata Linnaeus, 1767.
REFERENCES:
Fauvel, 1927:206.
Hartman, 1944d:337.
Ushakov, 1955:349.
Day, 1967:671.
Hartmann-Schröder, 1971:497.
Fauchald, 1977a:119.
DIAGNOSIS: Opercular peduncles fused dorsally, each bearing three rows of paleae and numerous buccal cirri. Nuchal hooks absent but acicular nuchal spines may be present. Long, paired palps and often a median tentacle present in front of mouth. Three parathoracic setigers bearing paleae.

Key to the Gulf of Mexico BLM-OCS Species of Sabellaria

1a. Outer opercular paleae with serrate central spike (Figure 49-4c); middle opercular paleae alternating long and short (Figure 49-4d,e); inner opercular paleae distally serrate (Figure 49-4f). . . . . **Sabellaria floridensis**, p. 49-8

1b. Outer opercular paleae with hirsute central spike (Figure 49-6c); middle opercular paleae all long (Figure 49-6d); inner opercular paleae distally smooth (Figure 49-6e). . . . . **Sabellaria sp. A**, p. 49-10

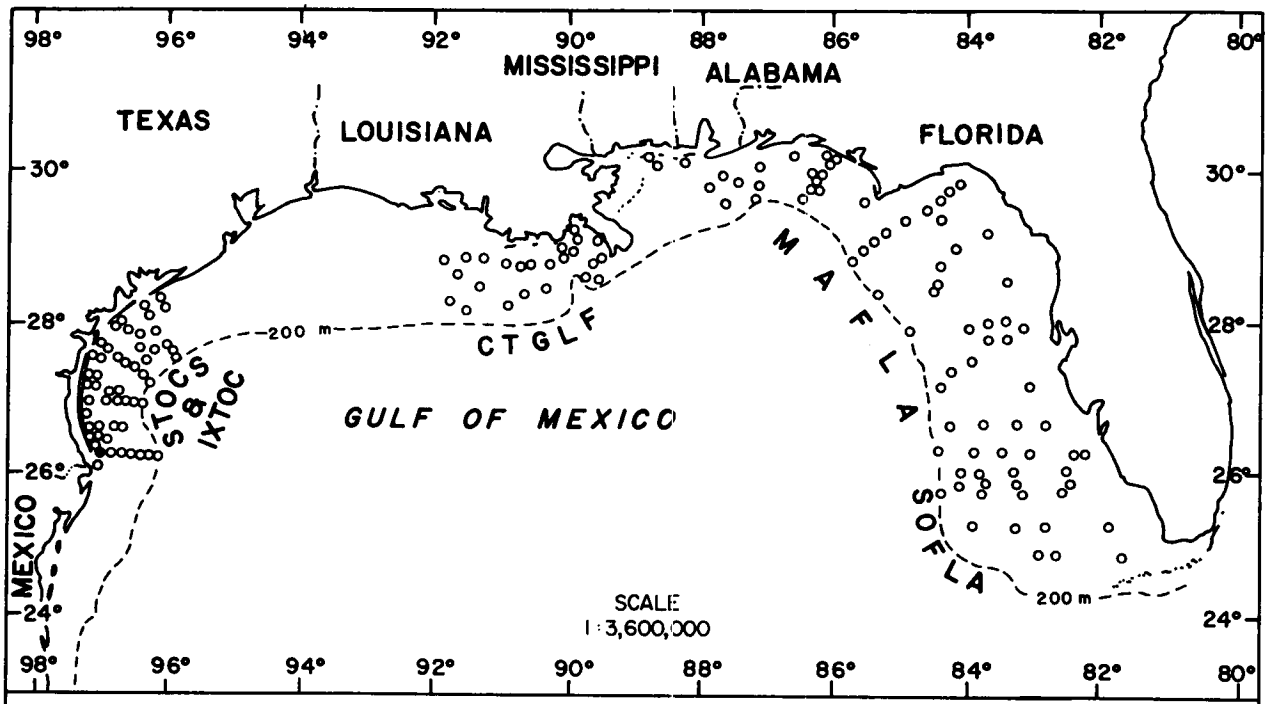

Figure 49-3. Distribution of Sabellaria floridensis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

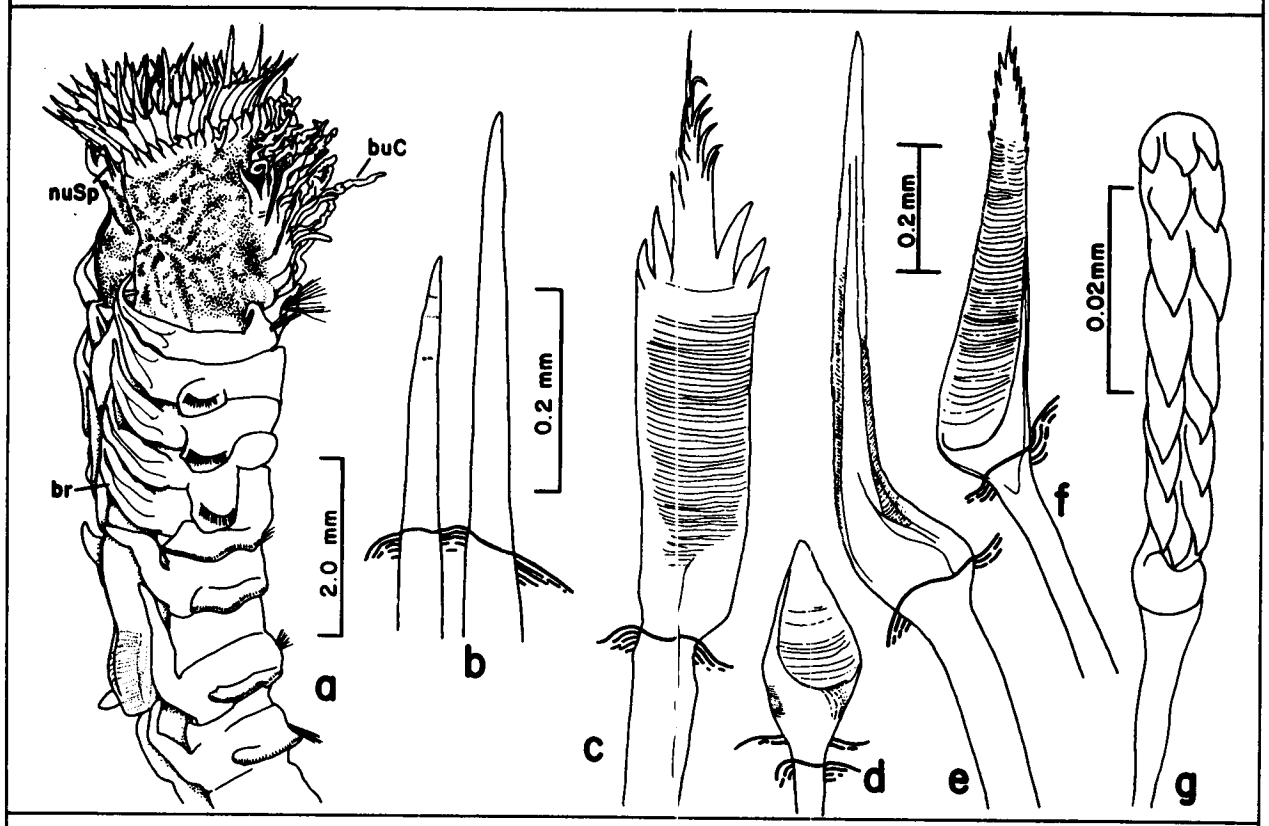

Figure 49-4. Sabellaria floridensis: a, anterior end (dorsolateral view); b, nuchal spines; c, outer palea; d, short middle palea; e, long middle palea; f, inner palea; g, abdominal notopodial uncinus (frontal view); scale same for c-f; spec. from IEC 723 TB-1/80 (fig. a), spec. from unknown location (figs. b-g).

Sabellaria floridensis Hartman, 1944
Figures 49-3, 4a-g

Sabellaria floridensis Hartman, 1944d:345, pl. 31, figs. 37-41; 1951a:107.
Sabellaria floridensis--Rioja, 1946a:196, figs. 2-9.
Sabellaria floridensis--Day, 1973:110.
Sabellaria floridensis--Eckelbarger, 1977:242, figs. 1-5, 6A.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
STOCS 4/IV-2 F/77 (1 juv., USNM 75206).
Supplementary Material:
Gulf of Mexico--off Tampa Bay, IEC 723TB 002-009, 27°38.1'N, 82°54.0'W, 12 m, Jan. 1980 (4 spec.); location unknown, coll. of Vittor & Assoc. (6 spec.).
Florida--Hutchinson Island, St. Lucie Co., 27°20'24"N, 80°13'04"W, 12.1 m, Sept. 1971, Sta. 4, T. Perkins ID. (8 spec., USNM 54607).
DESCRIPTION:
Length, to 37.4 mm (previously reported to 12 mm); width, to 2.4 mm (previously reported to 1.2 mm). Body broadest across operculum; complete specimens with up to 39 setigers, deeply grooved ventrally from setiger 6. Opercular lobes with dark mottled pigment (Figure 49-4a); acicular nuchal spines (Figure 49-4b) present anterodorsally, usually numbering two pairs. Outer paleae flattened, distally with long serrate central spike flanked by 1-3 pairs of lateral teeth (Figure 49-4c); numbering 9-27 pairs. Middle paleae geniculate, excavate basally, directed upward, alternating short (Figure 49-4d) and long (Figure 49-4e), numbering 4-8 pairs of each. Inner paleae geniculate, excavate basally, pointing inward, with serrate tips (Figure 49-4f), numbering 4-15 pairs. Anterior margins of opercular peduncles surrounded by 6-22 pairs of papillae; ventral sides with seven transverse rows of filamentous, brown-speckled buccal cirri. Median tentacle fairly short, distally pointed, unpigmented. First two thoracic setigers each with smooth capillary neurosetae and single pair of conical cirri. Branchiae present from second thoracic setiger through anterior 8-25 abdominal segments. Three parathoracic segments bearing broad, distally frayed paleae and slender, hispid companion setae in the notopodia; neurosetae similar but paleae narrower. Complete specimens with up to 33 abdominal segments. Abdominal notopodial pinnules broad anteriorly, narrow and prolonged posteriorly; with numerous uncini having 2-4 columns of 6-7 teeth each (Figure 49-4g). Abdominal neurosetae including spirally serrate setae and slender hispid setae. Anal tube slender, up to 6.8 mm in length, smooth, reflexed anteroventrally. Second abdominal segment with internal, cylindrical, ventricular structure.
REMARKS: In juveniles, the long middle opercular paleae may be absent, and pigmentation of the opercular lobes and buccal cirri may be much less extensive.
PREVIOUSLY REPORTED HABITAT: Intertidal to 30 m; solitary on corals, stones and shells.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Brownsville, Texas (Figure 49-3); 15 m; sand.
DISTRIBUTION: Gulf of Mexico, North Carolina to Florida.

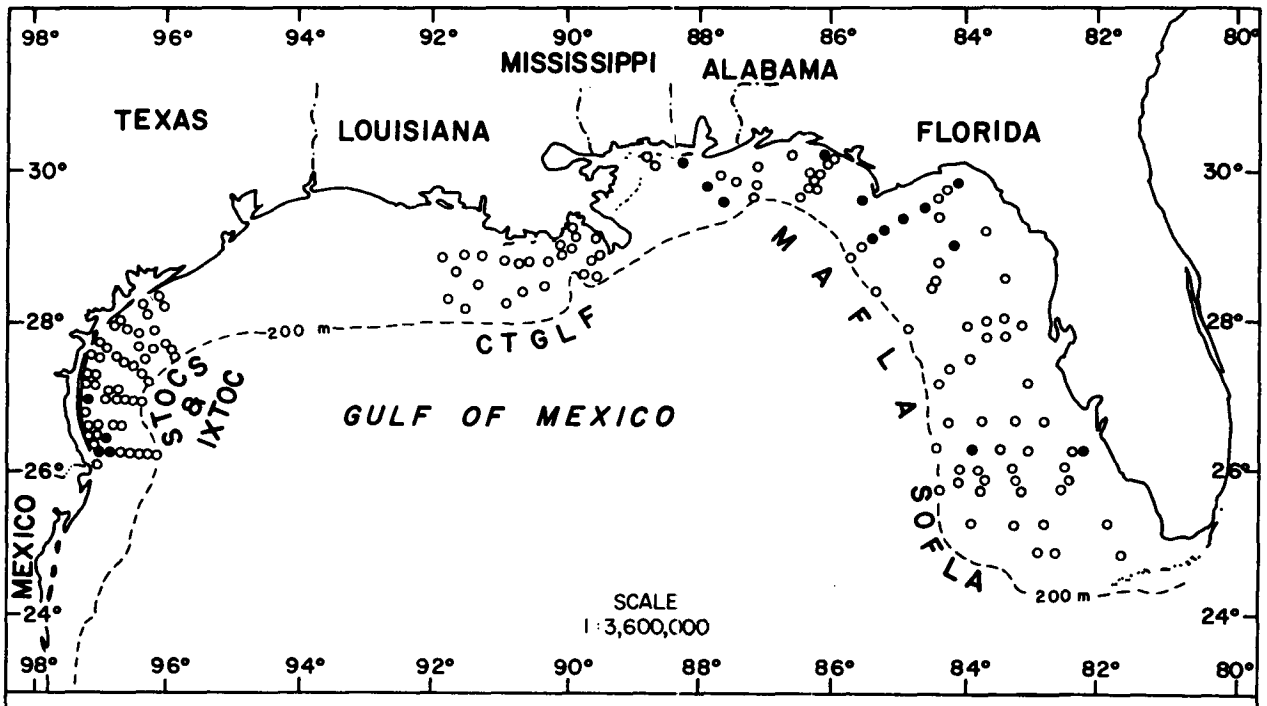

Figure 49-5. Distribution of Sabellaria sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

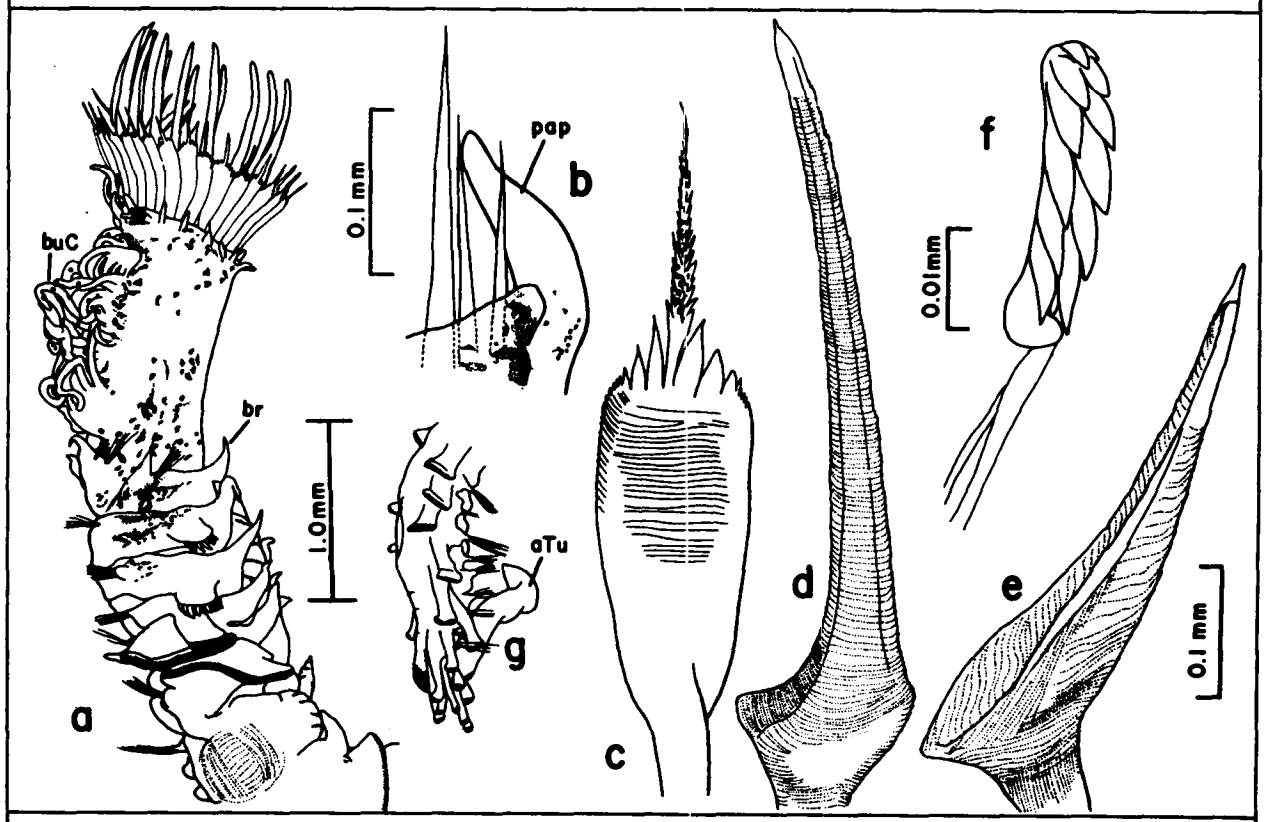

Figure 49-6. Sabellaria sp. A: a, anterior end (lateral view); b, nuchal spines; c, outer palea; d, middle palea; e, inner palea; f, abdominal notopodial uncinus (frontal view); g, posterior end (lateral view); scale same for c-e.

Sabellaria sp. A
Figures 49-5, 6a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 10D-5/74 (1 spec.), 14I-5/74 (3 spec., USNM 75171), 2422G-7/76 (1 juv.), 2423C-7/76 (3 spec.), 2423E-7/76 (1 juv.), 2423F-7/76 (1 spec., USNM 75172), 2423G-7/76 (1 spec.), 2528E-9/77 (5 spec.); STOCS 4/III-6 S/77 (3 spec., USNM 75208), 1/IV-4 F/77 (1 spec., USNM 75207), 4/IV-5 F/77 (1 spec., USNM 75209); IXTOC S18-3 12/80 (1 spec.).
Supplementary Material:
Gulf of Mexico--off Alabama, COE Sta. 477-5, Mar. 1981, 30°9.89'N, 88°27.63'W, 23.8 m, sand (1 spec.); Superport Sta. 3, July 1973, on shell (11 spec.); location unknown, coll. of Vittor & Assoc. (1 spec.).
DESCRIPTION:
Length, 15.3+ mm; width, to 1.5 mm. Body relatively small, shallowly grooved ventrally, complete specimens with up to 34 setigers. Anterior body and buccal cirri speckled with dark pigment spots (Figure 49-6a). Nuchal spines smooth, pointed, present anterodorsally on opercular lobes, numbering 2-3 pairs (Figure 49-6b). Outer opercular paleae flattened, with long, hispid, central spike between several pairs of lateral teeth (Figure 49-6c); numbering 15-26 pairs. Middle paleae long, slightly curved, transversely striated, basally excavate (Figure 49-6d); numbering 5-11 pairs. Bases of middle paleae alternating with those of inner paleae. Inner paleae slightly shorter than middle ones, pointing inward, transversely striated, basally excavate, with smooth tips appearing sheathed (Figure 49-6e); numbering 7-12 pairs. Anterior margins of opercular peduncles surrounded by 6-14 pairs of papillae; ventral sides with 6-7 transverse rows of filamentous buccal cirri. Median tentacle and palps similar in length, tapered, pointed, brown-speckled. First two thoracic setigers each with smooth capillary neurosetae and single pair of conical cirri. Branchiae present from second thoracic setiger through anterior 3-11 abdominal segments. Dorsum and branchiae with transverse ciliated ridges. Three parathoracic segments bearing broad, distally frayed paleae and slender, hispid companion setae in the notopodia; neurosetae similar but paleae narrower. Complete specimens with up to 28 abdominal segments. Abdominal notopodial pinnules broad anteriorly, narrow and prolonged posteriorly; with numerous uncini having 2-3 columns of 5-6 teeth each (Figure 49-6f). Abdominal neurosetae including spirally serrate setae and slender hispid setae. Anal tube slender, up to 4.6 mm long, reflexed anteroventrally, often with dark pigmented areas basally (Figure 49-6g). Second abdominal segment with internal, cylindrical, ventricular structure.
REMARKS: Sabellaria sp. A is nearly identical to S. alcocki Gravier, 1906, as described by Hartman (1969:503) and Day (1967:672). However, the taxonomic status of the species appears uncertain (Hartman, 1944d:339), since Gravier originally described S. spinulosa alcocki as having alternating long and short middle paleae rather than long middle paleae alternating with shorter inner paleae. Most Gulf of Mexico BLM-OCS specimens were originally referred to Sabellaria vulgaris, from which they differ in having longer, distally pointed middle paleae, and the outer paleae with a longer central spike.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off Florida, Alabama and Texas (Figure 49-5); 10-90 m; coarse to fine-very fine sand, silty fine to very fine sand, clayey sand, sandy silt.

CHAPTER 50

Paul S. Wolf

FAMILY PECTINARIIDAE Quatrefages, 1865

INTRODUCTION

Pectinariids are tubicolous polychaetes, commonly known as "ice cream cone" or "trumpet" worms because of their unique cone-shaped tubes. The tube is open at both ends, and is composed of sand grains, pieces of coral, shells, or perhaps a mixture of all three, cemented neatly together in one or two layers, but not attached to the substrate. The worm is itself cone-shaped and possesses few (up to 20) segments, but individuals can be quite large, with many species reaching 90 mm in length.

Pectinariids have a characteristically modified thoracic region, bearing an operculum that plugs the tube when the worm is withdrawn. The operculum is not borne on a stalk as in serpulids; rather, it is a thick muscular plate which forms the anterodorsal surface of the fused prostomium and peristomium. The operculum bears two anteroventral groups of thick, flattened, brass-colored setae or paleae which are arranged in two oblique, overlapping rows (Figure 50-2a). The operculum is surrounded dorsally and ventrally by a raised opercular rim, which may be smooth (Figure 50-4a) or cirrate (Figure 50-2a). Ventrally, beneath the paleae, is a thin semicircular membrane (cephalic veil) which is rimmed with slender papillae (Figure 50-6a) and forms a hood in front of the mouth. Where the cephalic veil fuses with the mouth there is a series of oral, grooved tentacles that are highly extensible (Figures 50-2b, 4b, 6a). Two pairs of tentacular cirri are visible in ventral view (Figure 50-4b). The anterior tentacular cirri are located lateral and slightly ventral to the paleae. The posterior tentacular cirri are located lateral to the mouth and are connected by the long, transverse, first ventral ridge. Two achaetous segments follow, each bearing a pair of lamellate lateral branchiae and a transverse ventral ridge. The thorax includes setigers 1-3, which bear simple notosetae only and an incomplete ventral ridge (glandular pads).

The abdominal setigers have both simple notosetae and neuropodial uncini. The uncini have a trough-like basal peg with one to several columns of both major and minor teeth (Figure 50-2f). The last few segments preceding the scaphe are usually achaetous but possess vestigial parapodia. The scaphe is composed of several fused segments which form a large, cup-shaped region (Figure 50-2g). At the anterodorsal margin of the scaphe, two oblique rows of few to many acicular scaphal setae are present. A fleshy, tongue-shaped, anal flap or lamella is present at the posterodorsal margin of the scaphe. The anal flap may possess anal cirri (Figure 50-2i).

The Pectinariidae have often been referred to as Amphictenidae Grube, 1851; however, the International Commission on Zoological Nomenclature has recently decided in favor of Pectinariidae even though that name is pre-dated by Amphictenidae (Melville, 1982:Opinion 1225).

The number of genera within the Pectinariidae is confusing. Authors such as Day (1967:678) cited only two genera: Petta Malmgren, 1865c, and Pectinaria Savigny, 1818, with the latter including the

subgenera Lagis, Amphictene, and Pectinaria. Fauchald (1977a:120) considered the three subgenera, as well as Cistenides Malmgren, 1865c, to be separate genera, thereby giving the family a total of five genera. Pettibone (1982:33) included only three genera (Amphictene, Petta and Cistena), and considered Pectinaria, Cistenides, and Lagis to be synonyms of Cistena. She also stated that there are about 50 species in the family.

PRINCIPAL DIAGNOSTIC CHARACTERS

The pectinariids are rather complex morphologically, but if the specimens are in good condition, the diagnostic characters are easily discerned.

The Head.

The most important diagnostic structures of the head area include the operculum, with its opercular rim, and the cephalic veil. The opercular rim is cirrate in Amphictene (Figure 50-2a) and smooth (Figure 50-4a) in the other genera. The operculum itself may be smooth, wrinkled, knobbed (Figure 50-4a), or even papillose (Figure 50-2a); however, this distinction is not of generic value, but can be used to separate some species as in Amphictene sp. A. The cephalic veil is marginally smooth in Petta, and cirrate (Figures 50-2b, 4b) in the remaining genera. The veil is fused to the operculum only in Lagis. The number of papillae on the cephalic veil, as well as those on the opercular rim, are given in most species descriptions, but these counts may vary with size or age and are of doubtful taxonomic value. The shape and number of pairs of paleae and the morphology, length, and number of palps are described for each species, but are also of little taxonomic value.

The Thorax.

Structures of the thorax are not important generic characters, but details of the ventral ridges are valuable at the species level. The ridges usually are composed of a few lateral lobes and a prominent midventral lobe (Figures 50-4b, 6a). Of these, the midventral lobe of the first ventral ridge is most important diagnostically. It may be smooth as in Pectinaria regalis (Figure 50-4b), minutely papillose as in P. gouldii (Figure 50-6a), or distinctly papillose as in Amphictene sp. A (Figure 50-2b) and P. papillosa Caullery, 1944. The remaining midventral lobes are usually smooth, although the third midventral ridge of Amphictene sp. A (Figure 50-2a) and P. papillosa is distinctly cirrate or papillose.

The Abdomen.

The abdomen begins at setiger 4, which is also the first unciniger. The number of uncinigers has been used to separate some pectinariid genera. According to Fauchald (1977a:120), Lagis has 12 uncinigers; Amphictene, Cistenides, and Pectinaria have 13 uncinigers; and Petta has 14 uncinigers. From the material studied herein, as well as that described by Long (1973), it is apparent that the number of uncinigers is useful only as a specific character. For example, Pectinaria gouldii, P. regalis Verrill, 1901, and P. meredithi Long, 1973, all have only 12 uncinigers, unlike P. papillosa which has 13 uncinigers. Amphictene sp. A has 12 uncinigers, unlike other species of the genus which have 13.

The number of achaetous prescaphal segments is not particularly useful at the generic or specific levels. Long (1973) has shown, for example, variability with regards to P. gouldii.

The Scaphe.

The scaphe is distinctly set off from the abdomen (Figure 50-4a) in all genera except Petta. The morphology of the structures of the scaphe, primarily the scaphal setae and anal flap, are valuable specific characters. The number of scaphal setae is variable, but large differences can be species specific. For example, P. regalis has 0-4 pairs of scaphal setae, whereas P. gouldii has 14-26 pairs. The shape of the scaphal setae is very useful. The setae are evenly tapered and straight in P. regalis (Figure 50-4f), subdistally expanded and slightly hooked in P. gouldii (Figure 50-6g), and tapered but slightly curved in P. meredithi.

The anal flap can be broad and cirrate as in P. gouldii (Figure 50-6h), to tongue-shaped and smooth as in P. regalis (not figured), or may have a dorsal cirrus and a few pairs of lateral and ventral cirri as in Amphictene sp. A (Figure 50-2g,i).

The Setae and Uncini.

Notosetae in all pectinariids are simple, long and tapered, with smooth to spinous margins (Figures 50-2e; 4d; 6c,d). In addition, there are shorter setae which may have a boss below the blade as in Amphictene sp. A (Figure 50-2c,d) and P. gouldii (Figure 50-6e), or simply a single serrate margin without a boss as in P. regalis (Figure 50-4c).

Pectinariid uncini are unique in having a trough-like basal peg surmounted by several small (minor) teeth, and one to several columns of large (major) teeth (Figure 50-2f) above them. The major teeth are arranged in one column in Cistenides, and in two or more columns in the remaining genera. The morphology of individual uncini should be viewed cautiously, however, since uncini of several kinds are usually present in a single neuropodial torus. The juvenile uncini have a distal crown of numerous teeth arched above a main fang. Some of these juvenile uncini are still present in the ventralmost part of the fascicle of adult specimens. As the individual uncini are examined from the ventral to the dorsal side of a single fascicle, a gradient appears, with the dorsalmost uncini representing the most recently formed, or adult, uncini. These adult uncini should, in all cases, be the uncini examined. This may not have been the case for all species currently described.

The Tube.

The shape of the tube and its composition are described for most species. However, the tubes constructed by a given species may vary depending on the material available. For example, the tube of Pectinaria regalis from the Gulf of Mexico BLM-OCS material was composed primarily of sand grains, whereas specimens of P. regalis from Puerto Rico built their tubes of coral and shell fragments, Foraminifera, and small shells (Long, 1973:861). The tube may curve slightly as in P. gouldii or be quite straight as in Amphictene sp. A. The material is incorporated into the tube in either one or two layers, with the pieces either abutting or overlapping each other.

BIOLOGICAL NOTES

Pectinariids are sedentary worms, common in shallow waters with soft mud to fine sand bottoms, or even coral rubble. The tube is oriented with the mouth downward and the narrow posterior end projecting slightly above the surface of the sediment. The paleae are used for digging into the sediment, which is then transported to the mouth by the oral tentacles or palps. The sediment is ingested and food particles are removed in the gut. The remains are expelled through the narrow end of the tube and deposited as a small mound near the worm.

According to works cited in Fauchald and Jumars (1979:232), a single pectinariid can turn over a substantial amount of sediment while removing organic content. The degree of motility of the worm is dependent on the amount of food available. The greater the amount of nutrient material, the less the animal needs to excavate.

In some species of pectinariids, sexes are separate, whereas other species, such as Lagis koreni Malmgren, 1865c, are hermaphroditic (Schroeder and Hermans, 1975:19). Regardless, larvae are planktonic.

SPECIES OF PECTINARIIDAE RECORDED FROM GULF OF MEXICO BLM-OCS PROGRAMS

	Page
Amphictene sp. A	50-4
Pectinaria regalis Verrill, 1901	50-8
Pectinaria gouldii (Verrill, 1873)	50-10

Key to the Genera of Pectinariidae from the Gulf of Mexico BLM-OCS Programs

1a. Opercular rim cirrate (Figure 50-2a). . . . . .**Amphictene**, p. 50-4
1b. Opercular rim not cirrate (Figure 50-4a). . . .**Pectinaria**, p. 50-6

Genus **Amphictene** Savigny, 1818

TYPE SPECIES: Amphitrite auricoma O. F. Müller, 1776.
REFERENCE:
Fauchald, 1977a:120.
DIAGNOSIS: Cephalic veil marginally cirrate, free from operculum. Opercular rim marginally cirrate. Scaphe distinctly set off from abdomen. Uncini with major teeth in two rows.

Amphictene sp. A

Figures 50-1, 2a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2419G-11/77 (1 spec., USNM 86828); STOCS 4/I-4 Sp/76 (3 spec., USNM 86826); IXTOC M21-3 12/80 (1 spec., USNM 86827).

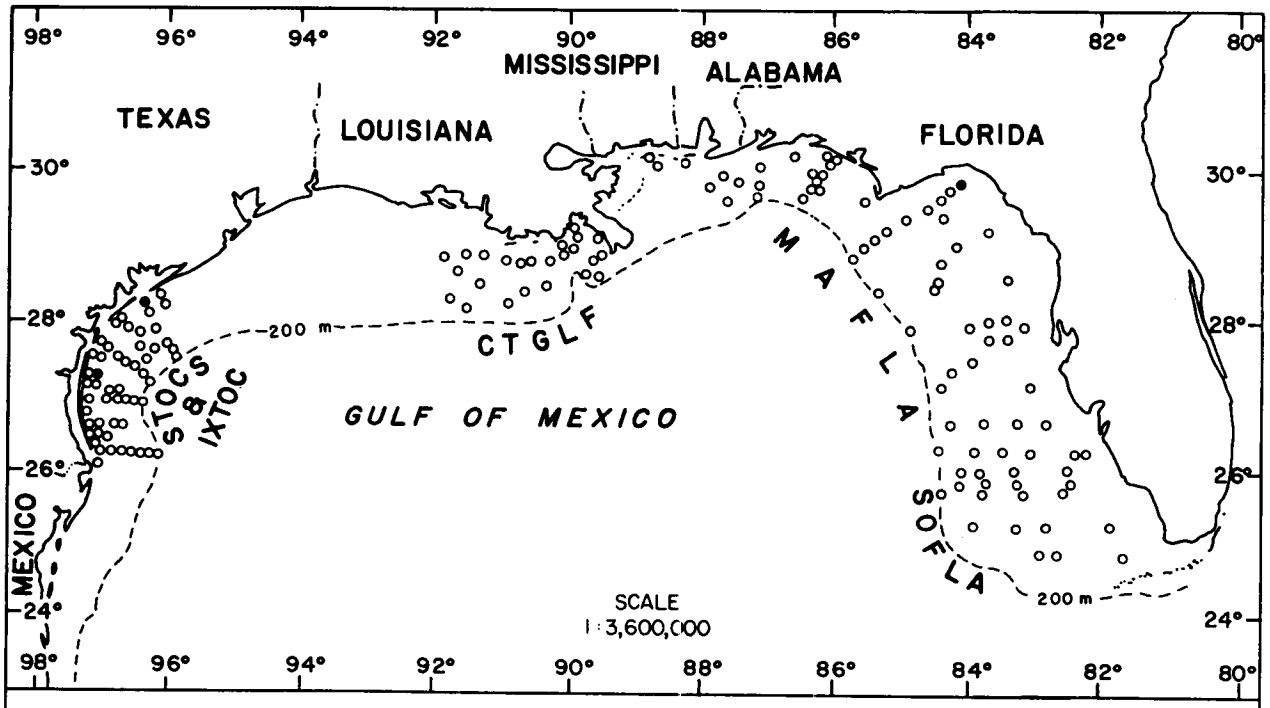

Figure 50-1. Distribution of Amphictene sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

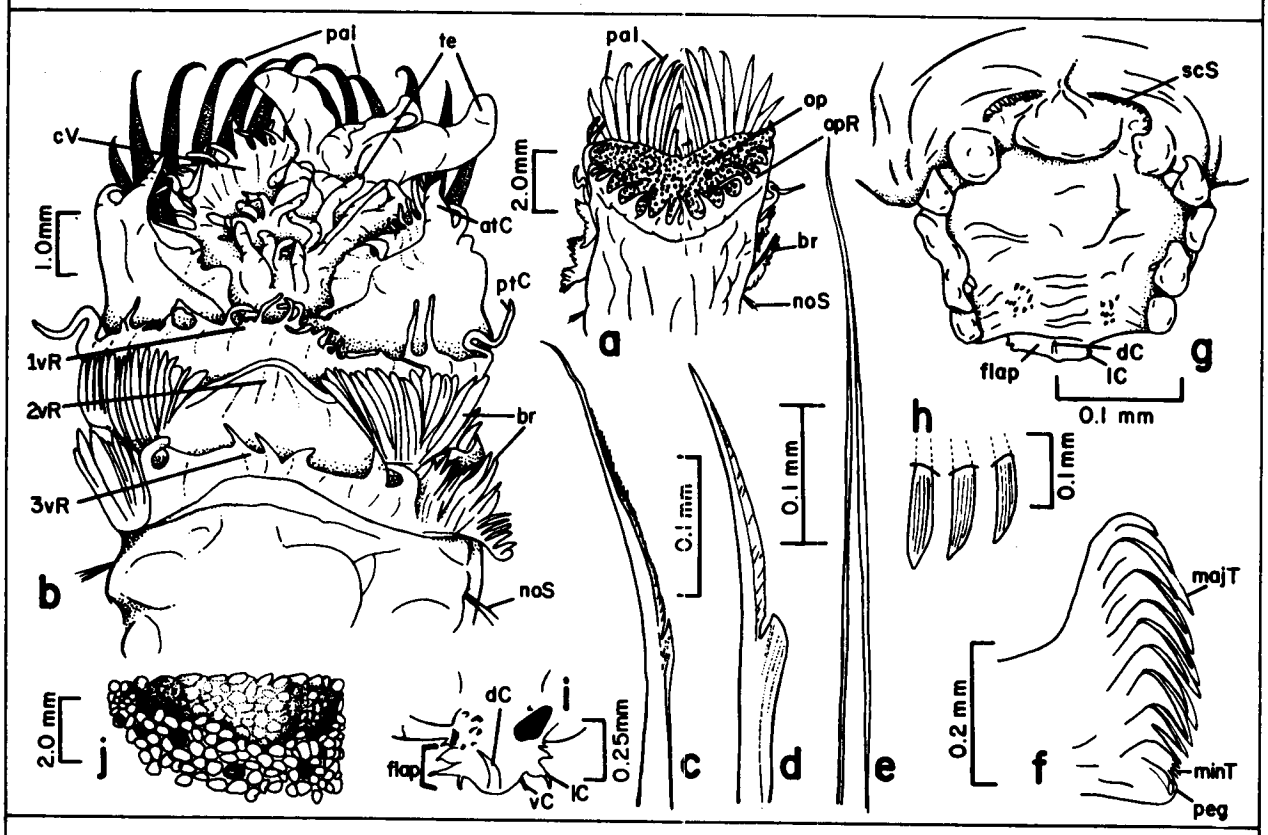

Figure 50-2. Amphictene sp. A: a, anterior end, dorsal view; b, same, ventral view; c, notoseta with boss, from setiger 2; d, same, from middle setiger; e, tapered notoseta from same; f, uncinus; g, scaphe from large specimen, dorsal view; h, scaphal setae; i, scaphe from small specimen, dorsal view; j, portion of tube.

Supplementary Material:
Gulf of Mexico--Louisiana, IEC Sta. 745CA-008-004, 29°35'38"N, 93°18'17"W, 11 m, fine sand, Sept. 1981, J. Gathof ID. (1 spec.).
DESCRIPTION:
Length, to 48 mm; width, to 5.0 mm. Opercular rim cirrate (Figure 50-2a), with 18-24 evenly spaced, digitiform papillae. Operculum with numerous irregularly arranged papillae, and 8-11 pairs of paleae, each tapering to a slender hooked tip (Figure 50-2a,b). Cephalic veil with 20-45 marginal papillae (Figure 50-2b). First ventral ridge with about 21 slender papillae (Figure 50-2b); second ventral ridge smooth; third ventral ridge with about seven stout papillae (Figure 50-2b). Number of setigers constant at 15. Notosetae including simple setae with serrate margins and small basal boss, restricted to setigers 1-3 (Figure 50-2c); simple setae with limbate margin and large basal boss, beginning on setiger 4 (Figure 50-2d); and tapered simple setae with smooth to minutely spinous margins (Figure 50-2e), present throughout. Uncini with several large teeth in two columns and few small teeth above trough-like basal peg (Figure 50-2f). Scaphe with 12-30 pairs of scaphal setae (Figure 50-2g), each slightly curved with pointed tip (Figure 50-2h). Anal flap with one dorsal cirrus, three pairs of lateral cirri, and one pair of ventral cirri (Figure 50-2g,i). Tube tapered, straight; composed of a single layer of clear sand grains (with few darker grains) neatly cemented together without overlap (Figure 50-2j).
REMARKS: Amphictene sp. A is unique among species of the genus in having long, slender papillae on the first and third ventral ridges and in having numerous papillae on the opercular rim. Dark pigmentation may be found dorsally on the scaphe on either side of the anal flap (Figure 50-2g,i). In Gulf of Mexico BLM-OCS specimens the scaphe was pigmented to a certain degree, i.e., a small specimen (about 7.5 mm long) had a completely blackened anal flap, whereas larger specimens had less extensive pigmentation, with pigment spots located on the anal flap (Figure 50-2i) or restricted to either side of the anal flap (Figure 50-2g).
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Texas (Figure 50-1); shallow water, 9-10 m; medium-fine sand, clayey and silty sand.

Genus **Pectinaria** Lamarck, 1818

TYPE SPECIES: Nereis cylindraria belgica Pallas, 1766.
REFERENCE:
Fauchald, 1977a:120.
DIAGNOSIS: Cephalic veil marginally cirrate, free from operculum. Opercular rim not marginally cirrate. Scaphe distinctly set off from abdomen. Uncini with major teeth in two rows.

Key to the Gulf of Mexico BLM-OCS Species of Pectinaria

1a. Opercular rim incised, with fusion marks (Figure 50-4a); all notosetae without basal boss or incision (Figure 50-4c). . . . . .**Pectinaria regalis**, p. 50-8

1b. Opercular rim not incised, without fusion marks; some notosetae with basal boss and incision (Figure 50-6e). . . . . **Pectinaria gouldii**, p. 50-10

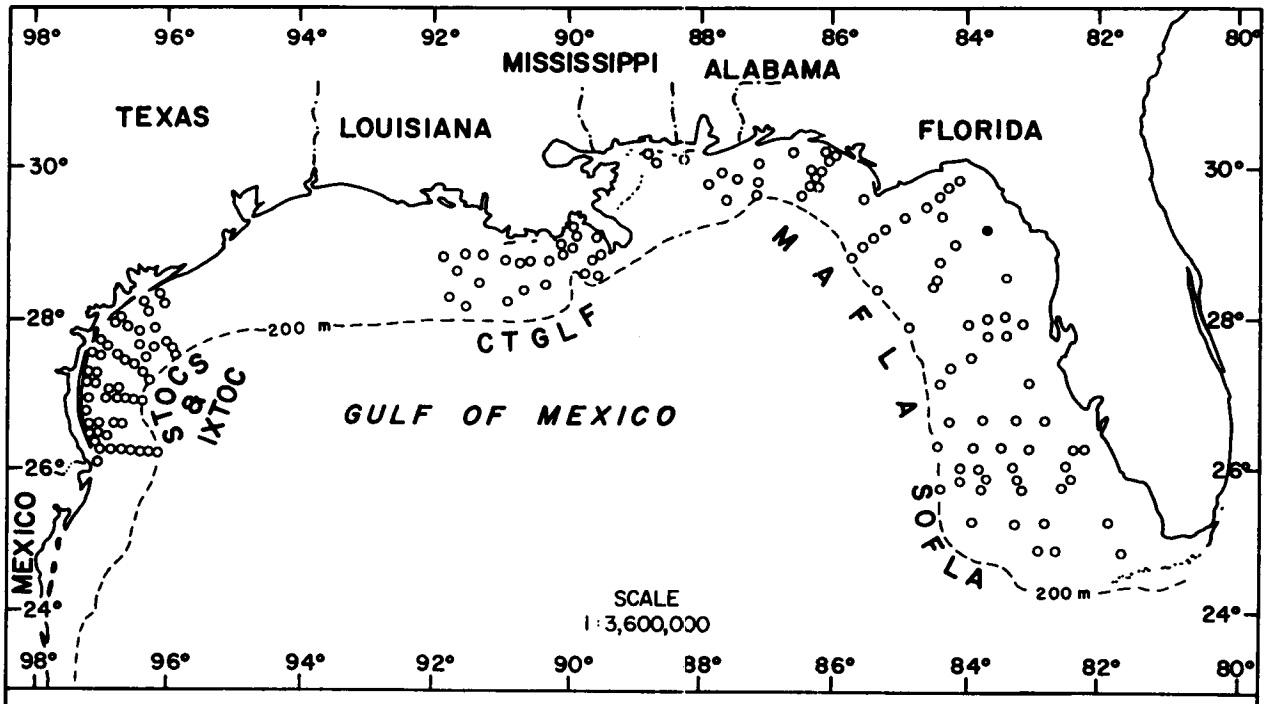

Figure 50-3. Distribution of Pectinaria regalis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

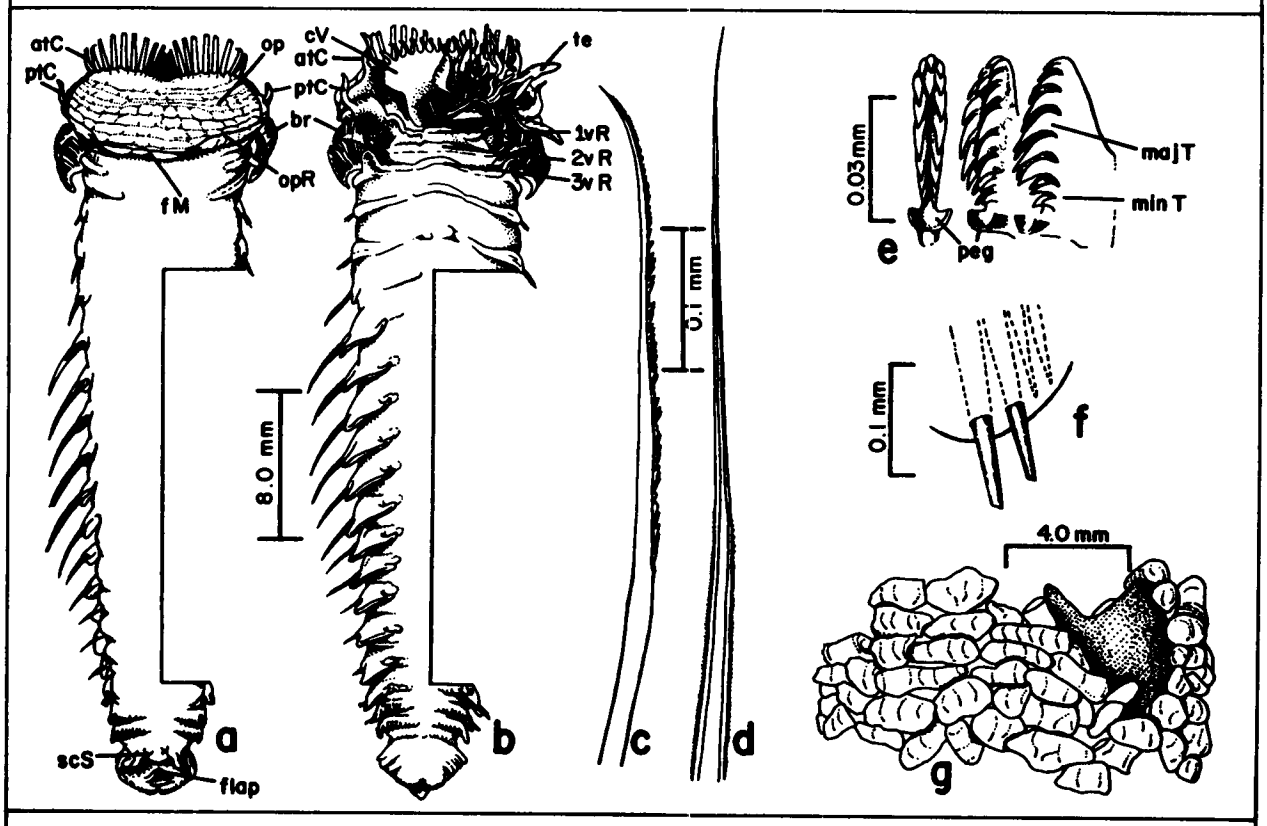

Figure 50-4. Pectinaria regalis: a, whole worm, dorsal view; b, same, ventral view; c, serrate notoseta; d, tapered notoseta; e, uncini; f, scaphal setae; g, portion of tube (Figures a,b,e,f from Long 1973, figs. 2A, 3A,C,D).

Pectinaria regalis Verrill, 1901
Figures 50-3, 4a-g

Pectinaria regalis Verrill, 1901:38, pl. 8, figs. 6, 7.
Cistenides regalis--Hartman, 1942b:71, figs. 129, 132, 133, 136, 137, 140.
Pectinaria regalis--Long, 1973:861, figs. 2A,B, 3A-D.
Cistena regalis--Gardiner and Wilson, 1979:169, fig. 4d-i.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2318I-2/78 (1 spec., USNM 86829).
Supplementary Material:
Gulf of Mexico--MAFLA VI C-C-8, trawl, 29°31'N, 87°22'W, No date (1 spec.).
DESCRIPTION:
Length, to 64 mm (previously reported to 90 mm); width, to 14 mm (previously reported to 17 mm). Opercular rim slightly incised, with fusion lines extending to opercular plate (Figure 50-4a); 8-14 pairs of paleae, tapering to fine, slightly curved tips. Cephalic veil with 21-48 papillae (Figure 50-4b). First ventral ridge with four lobes flanking a smooth to wrinkled midventral lobe (Figure 50-4b). Number of setigers constant at 16. Setigers 1-3 with notosetae only; 4-15 with both uncini and notosetae; 16 with notosetae only. Notosetae similar throughout, including slender simple setae with distinctly serrate margin (Figure 50-4c), and simple tapered setae with minute serrations along both margins (Figure 50-4d). Uncini (Figure 50-4e) with several teeth in 2-3 columns. Scaphe with 0-4 pairs of scaphal setae (Figure 50-4f), each seta nearly straight, evenly tapered. Anal flap smooth (Figure 50-4a), with middorsal cirrus (not figured). Tube of Gulf of Mexico BLM-OCS specimen tapered, slightly curved, with single layer of rounded, smooth, mainly white sand grains neatly cemented together with some slight overlap, surrounding thin, orange-colored lining (Figure 50-4g). Few small gastropod shells widely spaced among sand grains.
REMARKS: The Gulf of Mexico BLM-OCS specimens of Pectinaria regalis agreed well with the description given by Long (1973). The tube described by Long (1973:861, fig. 2B) was composed of large coral and shell fragments, Foraminifera, and small shells, unlike the tube of one Gulf of Mexico BLM-OCS specimen, which is primarily composed of sand grains. Also, Long (1973) stated that the number of papillae on the cephalic veil should be correlated with size measurements. The largest specimen examined herein (64 mm long) had 38 papillae. Long's largest specimen (90 mm long) had only 35 papillae, and Gardiner and Wilson's (1979) specimen (32 mm long) had 48 papillae. It may be that a correlation between the length of the worm and the number of cephalic-veil papillae exists within a single population but not among individuals of P. regalis collected from different areas.
PREVIOUSLY REPORTED HABITAT: Intertidal to 28 m, in clean sand and sand mixed with gravel and shell.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 50-3); 20 m; medium sand.
DISTRIBUTION: North Carolina to Georgia, Bermuda, Puerto Rico, Virgin Islands, Barbados, Bonaire, Florida Keys, Gulf of Mexico.

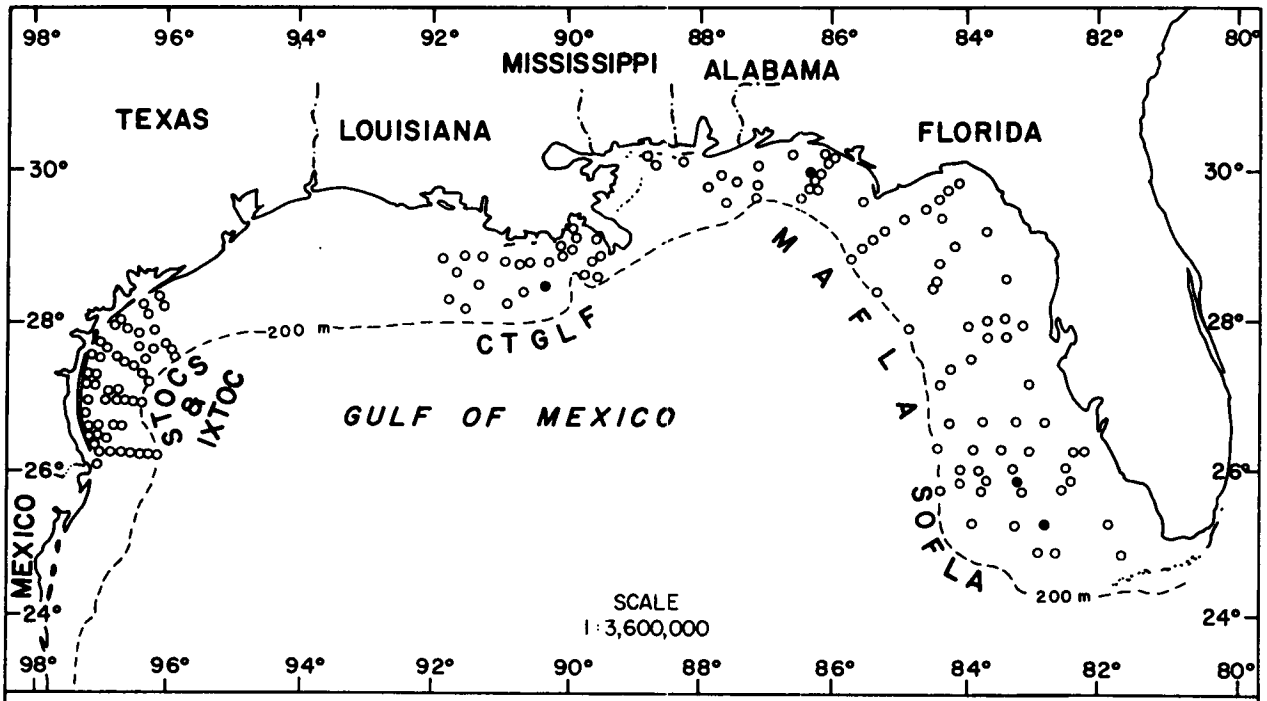

Figure 50-5. Distribution of Pectinaria gouldii on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

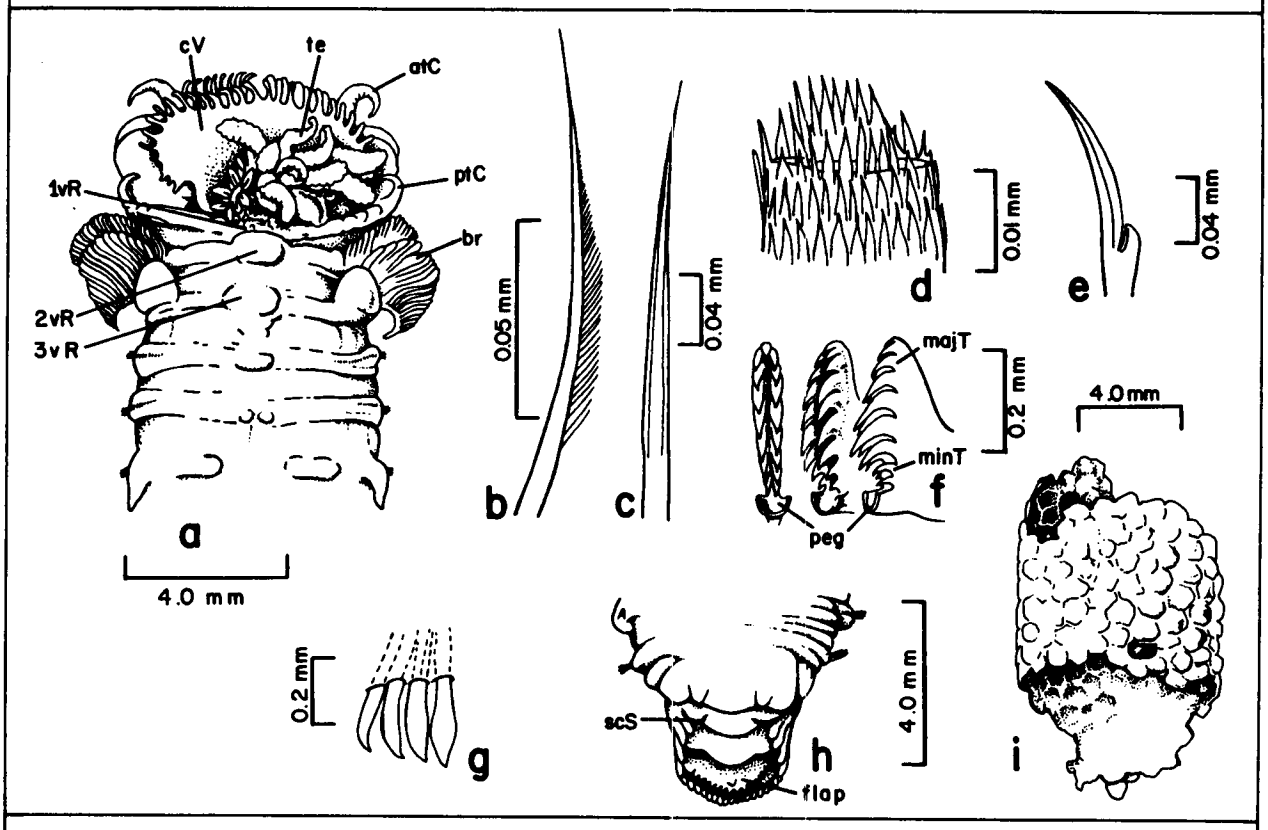

Figure 50-6. Pectinaria gouldii: a, anterior end, ventral view; b, notoseta with fine hairs, from setiger 2; c, tapered notoseta, from middle setiger; d, portion of same; e, notoseta with boss, from middle setiger; f, uncini; g, scaphal setae; h, scaphe, dorsal view; i, portion of tube (Figures a,f,h,i from Long 1973, figs. 4A-C,F).

Pectinaria gouldii (Verrill, 1873)
Figures 50-5, 6a-i

Cistenides gouldii Verrill, 1873:612, pl. 17, figs. 87, 87a.
Pectinaria gouldii--Verrill, 1881:290.
Pectinaria gouldii--Long, 1973:865, fig. 4a-g.
Cistenides gouldii--Hartman, 1951a:107.
Cistenides gouldii--Gardiner and Wilson, 1979:169.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 16B-8/81 (1 spec., USNM 86823), 22-11/80 (1 spec., USNM 86822); MAFLA 2532B-6/75 (2 spec., USNM 86825); CTGLF 03-5/78 (1 spec., USNM 86824).
DESCRIPTION:
Length, to 20 mm (previously reported to 45 mm); width, to 3.0 mm (previously reported to 9 mm). Opercular rim smooth, not incised; with 9-15 pairs of paleae tapering to fine, slightly curved tips. Cephalic veil with 12-38 marginal papillae (Figure 50-6a). First ventral ridge with four lobes; midventral lobe having few to many small papillae (Figure 50-6a). Number of setigers relatively constant at 15 or 16. Setigers 1-3 with notosetae only; setigers 4-15 with both uncini and notosetae; setiger 16 without uncini, with or without notosetae. Notosetae including simple setae with long, fine hairs along one margin, restricted to setigers 1-3 (Figure 50-6b); simple setae adorned with numerous spines on setigers 4 or 5 to 16 (Figure 50-6c,d); and simple setae with basal boss on setigers 4 or 5 to 16 (Figure 50-6e). Uncini (Figure 50-6f) with several teeth in 2-4 columns above trough-like basal peg. Scaphe having 4-13 pairs of scaphal setae (Figure 50-6g), each subdistally expanded, with slightly hooked, acuminate tip. Scaphe with papillose anal flap (Figure 50-6h). Tube tapered, slightly curved; composed of one layer of small, evenly sized, transparent sand grains, neatly cemented together, not overlapping (Figure 50-6i).
REMARKS: Gulf of Mexico BLM-OCS specimens of Pectinaria gouldii agree well with the description given by Long (1973). Previous accounts, however, did not mention the marginal hairs or spines on the notosetae, nor how the notosetae of setigers 1-3 differ from those of subsequent setigers.
PREVIOUSLY REPORTED HABITAT: Intertidal to 15 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Louisiana (Figure 50-5); 30-54 m; coarse to fine sand, silty clayey sand.
DISTRIBUTION: Cape Cod to Florida, Gulf of Mexico, West Indies.

CHAPTER 51

Joan M. Uebelacker

FAMILY AMPHARETIDAE Malmgren, 1867

INTRODUCTION

Ampharetids are small, tube-dwelling polychaetes, usually 10-60 mm in length, although deep-sea forms may be as small as 3.6 mm as adults (Zottoli, pers. comm.). Gulf of Mexico specimens are notably diminutive, rarely exceeding 20 mm in length. The body consists of two distinct regions: the thorax, with biramous parapodia; and the abdomen, with neuropodia present but notopodia rudimentary or lacking. The prostomium forms a hood over the mouth and may be smooth or variously folded so as to appear lobed. Small eyespots and nuchal ridges are often present. The peristomium consists of two segments which dorsally are reduced and ventrally form the lower lip of the mouth. Numerous feeding tentacles arise from the roof of the buccal cavity, and can be completely retracted into the mouth. Branchiae consist of 2-4 pairs of cylindrical, foliaceous, lamellate or papillose gills. The branchiae originate segmentally beginning on segment III, but may all appear to arise from a dorsal ridge across segment III. Notosetae begin on segment III as stout paleae or slender capillary setae, or on segment IV or V as narrowly winged limbate setae, and continue through a varying number of thoracic segments. Neuropodial uncini always begin on segment VII and continue throughout the thorax and abdomen. Members of the subfamily Melinninae have additional fine acicular neurosetae on segments III through V or VI. The abdomen tapers gradually to a rounded or lobed pygidium which may bear cirri.

The Ampharetidae are most closely related to the Trichobranchidae, and through them to the Terebellidae. These families have all been placed within the order Terebellida by Fauchald (1977a). Major revisions of the Ampharetidae include Hessle (1917) and Day (1964).

Three subfamilies are currently recognized: the Melinninae, with about nine genera; the Ampharetinae, with more than 50 genera; and the newly discovered, aberrant Alvinellinae with the two genera Alvinella Desbruyères and Laubier, 1980, and Paralvinella Desbruyères and Laubier, 1982, from East Pacific Rise hydrothermal vents. Nine genera in two subfamilies have been found in Gulf of Mexico BLM-OCS collections. The family currently includes about 225 species, but only 14 are known to occur on the northern Gulf of Mexico outer continental shelf. Of these, two genera and three additional species are potentially new to science, and five previously described species are newly reported from this region.

PRINCIPAL DIAGNOSTIC CHARACTERS

Morphological features of taxonomic importance in the ampharetids include characteristics of the prostomium, buccal tentacles, branchiae, nephridia, and thoracic and abdominal uncini; setation of segments III-VI, especially the presence of paleae; number of thoracic uncinigers; modification of posterior thoracic notopodia; and presence of abdominal

notopodial rudiments. The following generalized descriptions apply to the Ampharetinae and Melinninae, but not necessarily to the highly aberrant Alvinellinae.

The Head.

The shape of the prostomium is not necessarily a good diagnostic character because it changes with the movement of the mouth and buccal tentacles, and may show considerable variation in preserved specimens. Glandular ridges on the prostomium, however, are characteristic of certain genera, including Amphicteis. The buccal tentacles may be smooth, or distinctly papillose (Figure 51-22a,b) as in Ampharete and Sabellides.

The Branchiae.

The number of pairs of branchiae is of major generic importance; however, the branchiae tend to be deciduous and are often lost, and the full complement of branchiae may not be developed on juveniles. On large specimens, the number of branchiae can be ascertained by counting the basal scars, each of which contains a blood vessel. On small or damaged specimens it may be impossible to determine the number of branchiae if they are lost. Of the genera found in Gulf of Mexico BLM-OCS collections, only Genus A has three pairs of branchiae; the rest have four. Although the branchiae arise segmentally, they appear to be distinctly arranged segmentally only in a few genera; usually they appear as one or two rows on a ridge across segment III. The branchiae are generally cylindrical and tapered, but may be foliaceous, as in some species of Amphicteis (Figure 51-14a), or bipinnate, as in Isolda (Figure 51-2a).

Nephridia.

The number and arrangement of nephridia were considered taxonomically important by Hessle (1917). However, due to the small size and generally poor condition of Gulf of Mexico material, the nephridia were not observed even in cleared specimens, and are not included in the diagnoses.

Anterior Thoracic Segments.

In the subfamily Melinninae, segments III through VI form a "vest", the sides of which are connected by a smooth (as in Isolda) or dentate (as in Melinna) dorsal crest across segment VI (Figures 51-2b, 4a). Fine acicular neurosetae are embedded laterally on segments III through V or VI (Figure 51-2b). Notosetae may be present on segment IV as one or two pairs of stout, postbranchial ("nuchal") hooks. Limbate notosetae usually begin on segment V and well-developed notopodia on segment VII.

In the subfamily Ampharetinae, the anterior thoracic segments generally do not form a "vest," but are similar in appearance to subsequent thoracic segments. Segment III may be slightly enlarged laterally and may bear stout paleae, slender capillary setae, or may lack notosetae altogether. Segment IV is poorly developed and often completely fused with segment III, with notosetae lacking or with small notopodia and capillary notosetae present. Notosetae are usually present from segment V through the rest of the thorax. Neurosetae are absent from segments III through VI.

Posterior Thoracic Segments.

The notosetae of these segments are limbate setae in all ampharetids, and vary so little that they usually have no diagnostic value. Neuropodial uncini invariably begin on segment VII. The number of thoracic uncinigers is usually of generic importance, and ranges from 9-14. The Gulf of Mexico BLM-OCS genera all have 11, 12, 13 or 14 thoracic uncinigers, with the number apparently variable in Lysippe. In certain genera, such as Sosane and Genus A, one pair of posterior thoracic notopodia is displaced dorsally and bears hirsute notosetae (Figure 51-8a,b).

The Abdomen.

The number of abdominal segments is large and quite variable in the Melinninae, but more constant and seldom greater than 15 in the Ampharetinae. Notosetae are absent, but rudimentary notopodia in the form of a lobe or papilla may be visible in some genera. The neuropodia of the first one or two abdominal segments may consist of uncinigerous tori similar to the thorax; subsequent neuropodia appear as pinnules which may bear small dorsal cirri. Uncini are present on all abdominal neuropodia. The pygidium often has one or more pairs of cirri.

The Uncini.

The uncini are small, flattened plates which bear teeth in one or more columns above a small rostral point and basal prow (Figure 51-2c,d), or which are sometimes crested (Figure 51-2f). They differ from terebellid uncini (see Chapter 52) in having teeth of equal length arranged in distinct columns, rather than small teeth arranged in transverse arches or rows above a large main fang. Ampharetid uncini always occur in single rows along the uncinigerous tori, in contrast to the double rows found in many terebellids.

In large adults, all uncini may be similar, but in smaller specimens, the uncini vary from dorsal to ventral within a fascicle and from anterior to posterior along the body. Apparently, the first-formed larval uncini are small and crested. Subsequent uncini, which are larger and have fewer columns of teeth, form dorsal to the larval uncini. As the worm ages, the small, crested, ventralmost, larval uncini are eventually resorbed (Zottoli, pers. comm.). The number of columns of teeth on the larger, more dorsally located thoracic uncini, is often fairly constant within a genus, e.g. one column ("pectinate"; Figure 51-2c) in Amphicteis, Isolda and Melinna, and two columns in Ampharete (Figure 51-20c). The number of teeth per column is usually fairly constant within a species. Use of high magnification under oil immersion may be necessary to accurately determine the dentition of the uncini.

BIOLOGICAL NOTES

Ampharetids are tube-dwelling polychaetes found in soft sediments from estuarine and shallow to deep water marine environments, becoming increasingly common with depth (Day, 1967:686). At least two species are also known from fresh water (Fauchald and Jumars, 1979:195). Tubes are constructed of mucus and sediment, and often extend horizontally above the substrate. The head region of the worm, including the branchiae, protrudes from the tube. Although normally considered sessile,

ampharetids may be capable of some degree of locomotion through continuous tube-building.

Ampharetids may be classed as surface deposit-feeders, picking up food particles with their retractile buccal tentacles. Particle selectivity may occur in sympatric species. Gut content analyses have determined that the diet of some species of ampharetids includes detritus, unicellular algae, and larval invertebrates (Fauchald and Jumars, 1979:195).

Knowledge of reproduction in ampharetids is limited. Zottoli (1974) studied the reproduction and larval development of Hobsonia florida (Hartman, 1951a). Eggs are released into the tube of the female during the summer months, and are apparently fertilized by sperm from surrounding waters. Larvae probably leave the tube at an early stage, and continue their development on the sediment surface. Aspects of development were treated in detail by Zottoli (1974).

SPECIES OF AMPHARETIDAE RECORDED FROM GULF OF MEXICO BLM-OCS PROGRAMS

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Isolda pulchella F. Müller, 1858	51-5
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Key to the Genera of Ampharetidae from the Gulf of Mexico BLM-OCS Programs

1a. Segments III-V with fine, embedded acicular neurosetae (Figure 51-2b) (subfamily **Melinninae**). 2

1b. Segments III-V without neurosetae (subfamily **Ampharetinae**). . . 3

2a. Four pairs of branchiae, two smooth and two papillose; dorsal crest across segment VI smooth (Figure 51-2b). . . **Isolda**, p. 51-5

2b. Four pairs of smooth branchiae; dorsal crest across segment VI dentate (Figure 51-4a). . . . . **Melinna**, p. 51-7

3a. Posterior thorax with one pair of dorsally displaced notopodia bearing hirsute notosetae (Figure 51-8a,b). 4

3b. Posterior thorax without dorsally displaced notopodia or hirsute notosetae 5

4a. Four pairs of branchiae; third last thoracic notopodia dorsally displaced. . . . . .**Sosane**, p. 51-11
4b. Three pairs of branchiae; second last thoracic notopodia dorsally displaced. . . . . **Genus A**, p. 51-14

5a. Thoracic uncini with one column of teeth (Figure 51-12c,d). . . 6
5b. Thoracic uncini with two or more columns of teeth 7

6a. More than 20 abdominal segments. . . . . **Hobsonia***
6b. Fewer than 20 abdominal segments . . . . . .**Amphicteis**, p. 51-16

7a. Eleven thoracic uncinigers. . . . . **Sabellides**, p. 51-20
7b. Twelve or 13 (rarely 14) thoracic uncinigers. 8

8a. Buccal tentacles papillose (Figure 51-22a,b) . . . . . .**Ampharete**, p. 51-22
8b. Buccal tentacles smooth (Figure 51-26b) 9

9a. Segment III with short capillary setae (Figure 51-26a) . . . . . .**Lysippe**, p. 51-28
9b. Segment III with long paleae (Figure 51-28a,b). .**Genus B**, p. 51-31

*Hobsonia florida occurs in low salinity, inshore waters of the Gulf of Mexico (see Hartman, 1951a; Pettibone, 1953a, 1977b; Zottoli, 1974; Banse, 1979a), but is not known from BLM-OCS collections.

Genus **Isolda** F. Müller, 1858

TYPE SPECIES: Isolda pulchella F. Müller, 1858.
REFERENCES:
Day, 1964:106; 1967:691.
Fauchald, 1977a:126.
DIAGNOSIS: Buccal tentacles smooth. Four pairs of branchiae, two smooth and two papillose. Segment IV with stout notopodial hooks; limbate notosetae beginning on segment V. Segments III-V or VI with fine, acicular neurosetae. Dorsal crest across segment VI smooth. Thirteen thoracic uncinigers. Thoracic uncini pectinate.

Isolda pulchella F. Müller, 1858
Figures 51-1, 2a-f

Isolda pulchella--Day, 1967:691, fig. 35.1.k-n; 1973:113, fig. 15a-f.
Isolda pulchella--Intes and LeLoeuff, 1977:238.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 20C-4/81 (2 spec., USNM 75256), 20E-4/81 (1 spec., USNM 75257); MAFLA 2101K-2/78 (1 spec.), 2207K-11/77 (1 spec.), 2419-11/77 (1 spec., USNM 56034), 2422H-7/76 (1 spec.), 2423E-6/75 (1 spec.), 2423C-7/76 (1 spec.), 2423E-7/76 (1 spec.), 2529C-6/75 (1 spec.), 2640I-11/77 (1 spec.), 2851I-7/76 (1 spec.), 2853I-9/77 (1 spec.); STOCS 4/IV-1 W/76 (5 spec., USNM 91401), 4/IV-1 S/76 (2 spec., USNM 91402), 4/IV-2 S/76 (1 spec., USNM 91403), 4/IV-4 S/76 (1 spec., USNM 91404), 4/IV-2 F/76 (7

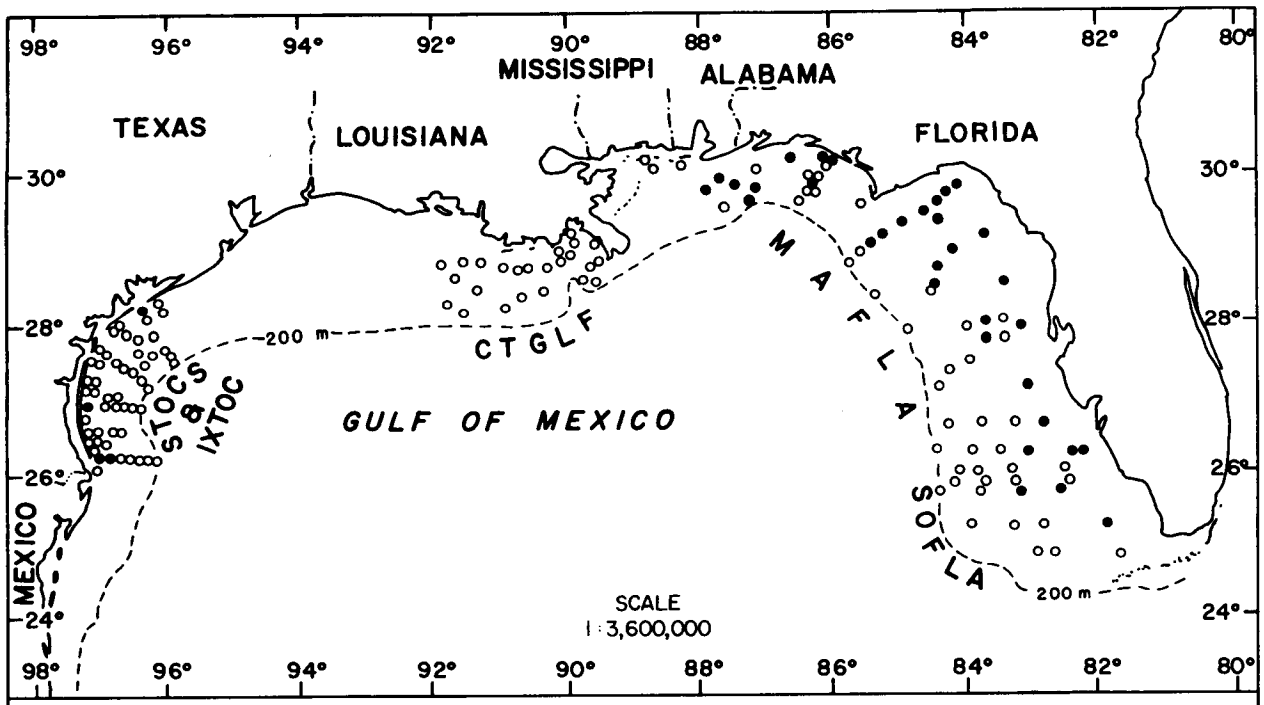

Figure 51-1. Distribution of Isolda pulchella on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

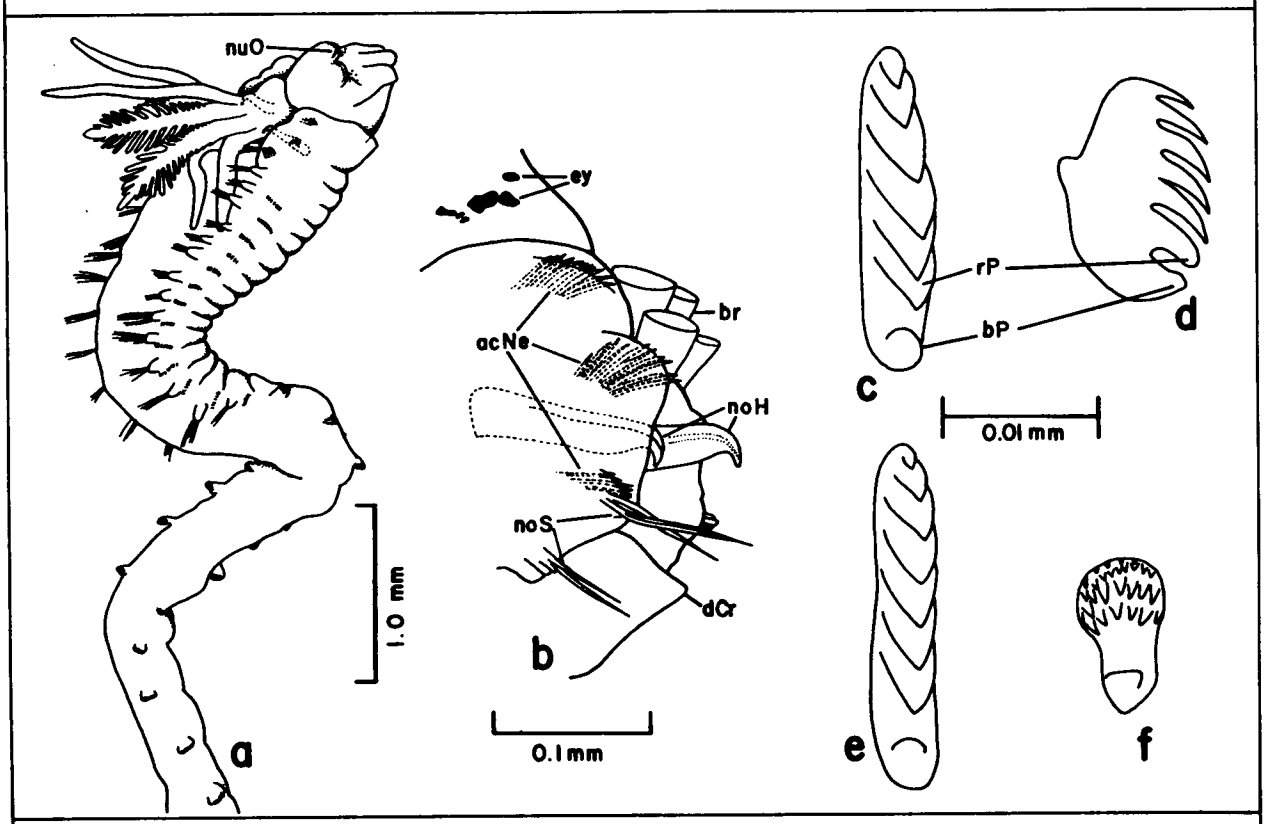

Figure 51-2. Isolda pulchella: a, anterior end (dorsolateral view); b, enlargement of segments III-VI (lateral view); c, d, thoracic uncini (edge-on view and profile); e, anterior abdominal uncinus (edge-on view); f, posterior abdominal uncinus (edge-on view).

spec., USNM 91405), 4/IV-4 F/76 (6 spec., USNM 91406), 4/IV-5 F/76 (6 spec., USNM 91407); IXTOC S53-11/79 (1 spec., USNM 75124).
DESCRIPTION:
Length, 16.7+ mm (previously reported to 45 mm); width, to 1.8 mm. Prostomium trilobed, with two groups of several minute eyespots (Figure 51-2a). Branchiae arranged in two groups of four, appearing to arise on segment III, united basally, pale or brownish colored, outer two pairs smooth and cylindrical, inner two pairs pinnate. Segments III-V with embedded, fine, acicular neurosetae (Figure 51-2b). Postbranchial notopodial hooks sharply curved; replacement hook sometimes visible internally at base of existing hook. Thoracic uncini pectinate with six (4-7) teeth (Figure 51-2c,d); numbering up to 50 per torus. Abdominal segments numbering from about 12 (juvenile) to 30-41 (complete adult specimens). Abdominal notopodial rudiments absent. Abdominal uncini pectinate with 4-7 teeth (Figure 51-2e), becoming crested (Figure 51-2f) on posterior segments of small specimens. Pygidium consisting of two rounded lobes without cirri.
REMARKS: In juveniles, the characteristic branchial pinnae may be poorly developed or absent, and the thorax may have 12 rather than 13 uncinigers. The identities of most of the juvenile BLM-OCS specimens were originally confused with other species.
PREVIOUSLY REPORTED HABITAT: Intertidal to 200 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Numerous stations in northeastern and western Gulf (Figure 51-1); mostly shallow water, 10-40 m, with occasional records up to 106 m; coarse to fine sand, silty very fine sand, clayey sand, clayey sandy silt.
DISTRIBUTION: Pacific Ocean, tropical West Africa, Brazil, Gulf of Mexico, North Carolina.

Genus **Melinna** Malmgren, 1865c

TYPE SPECIES: Sabellides cristata Sars, 1851.
REFERENCES:
Fauvel, 1927:236.
Berkeley and Berkeley, 1952:69.
Day, 1964:106; 1967:689.
Hartmann-Schröder, 1971:451.
Fauchald, 1972a:301; 1977a:126.
DIAGNOSIS: Buccal tentacles smooth. Four pairs of smooth branchiae. Segment IV with stout notopodial hooks; limbate notosetae beginning on segment V. Segments III-VI with fine acicular neurosetae. Dorsal crest across segment VI smooth or dentate. Fourteen thoracic uncinigers. Thoracic uncini pectinate.

Key to the Gulf of Mexico BLM-OCS Species of Melinna

1a. Fine acicular neurosetae present on segment VI; rostral point of uncini nearly as large as teeth above it (Figure 51-4b-d). . . . . **Melinna cristata**, p. 51-9

1b. Neurosetae absent from segment VI; rostral point of uncini much smaller than teeth above it (Figure 51-6b-e) . . . . . **Melinna maculata**, p. 51-9

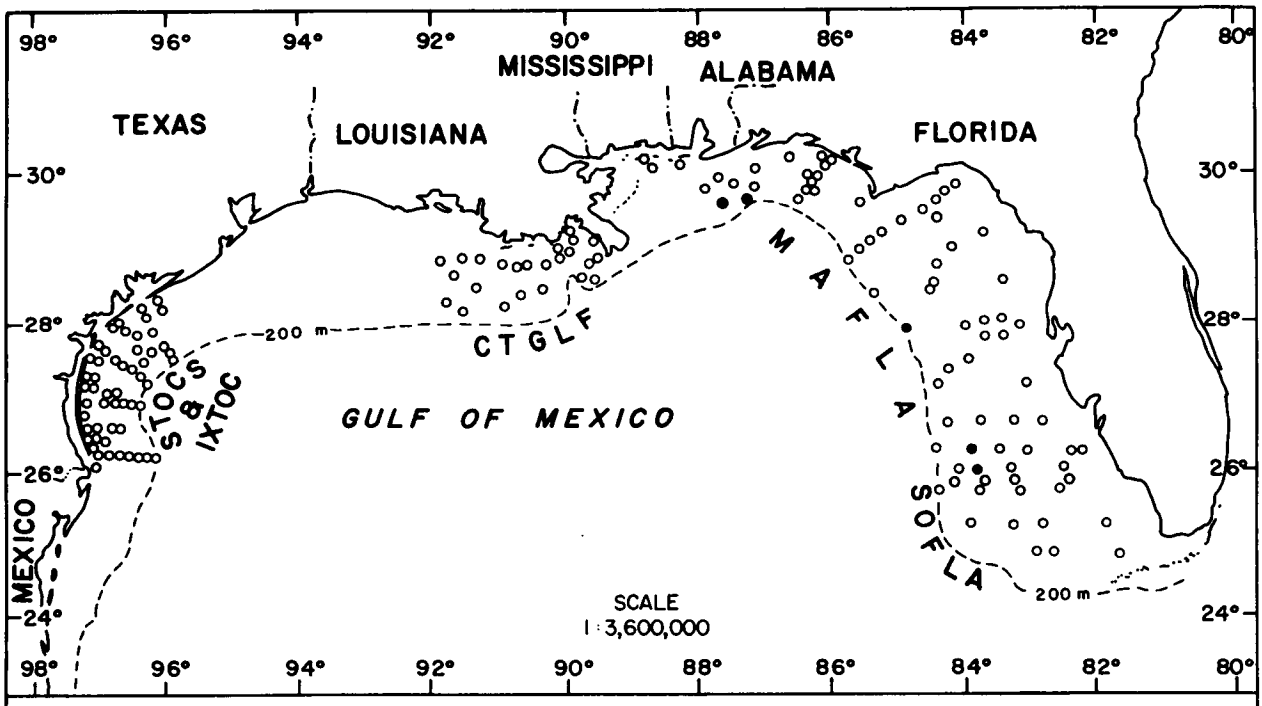

Figure 51-3. Distribution of Melinna cristata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

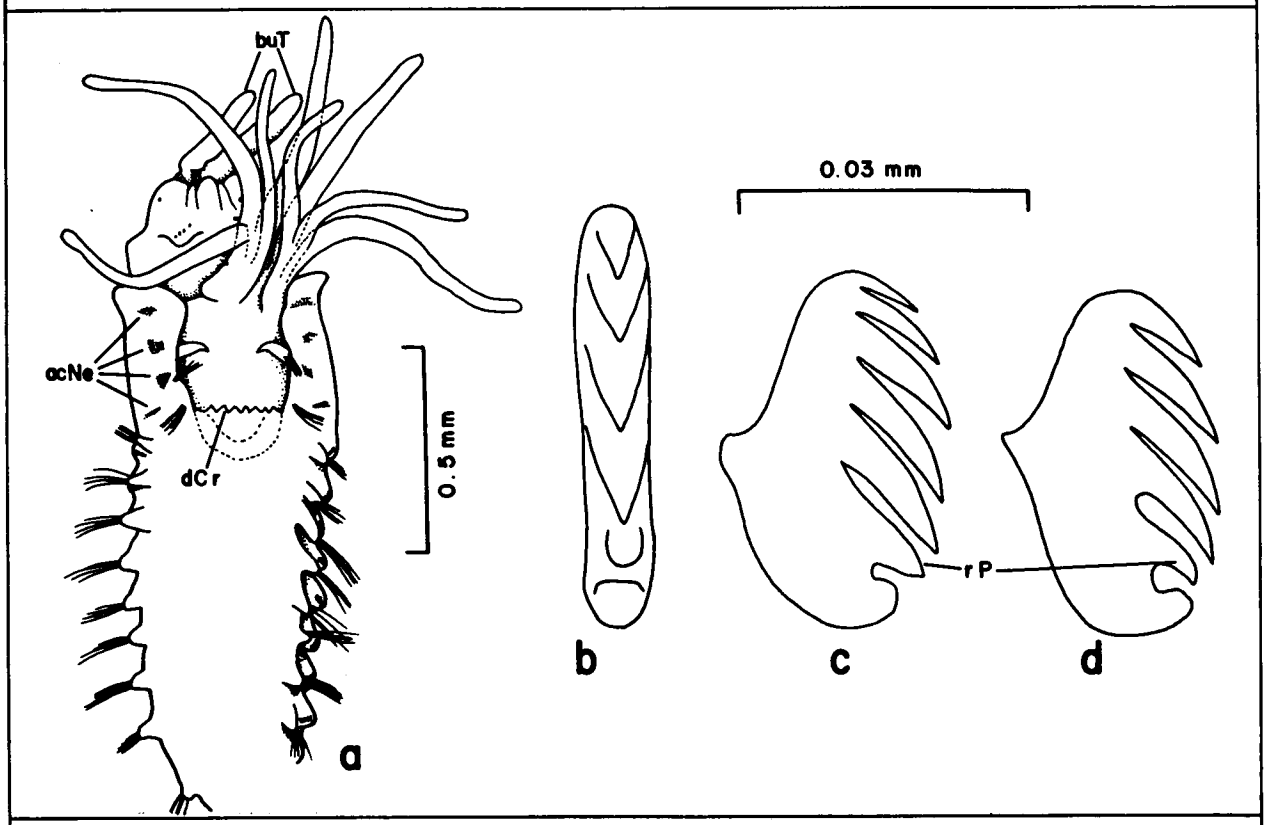

Figure 51-4. Melinna cristata: a, anterior end; b-d, thoracic uncini (edge-on view and profiles).

Melinna cristata (Sars, 1851)
Figures 51-3, 4a-d

Melinna cristata--Malmgren, 1865c:371, pl. 20, fig. 50.
Melinna cristata--Fauvel, 1927:237, fig. 83i-n.
Melinna cristata--Pettibone, 1956a:571.
Melinna cristata--Day, 1967:691, fig. 35.1.c-j.
Melinna cristata--Hartmann-Schröder, 1971:451.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12-7/81 (2 spec., USNM 75263); MAFLA 2105F-9/75 (1 spec.), 2212B-7/76 (1 spec.), 2643-6/75 (1 spec., USNM 56136), 2643B-7/76 (1 spec.), 2643A-11/77 (1 spec.), 2645C-11/77 (3 spec.), 2645D-11/77 (1 spec.), 2645E-11/77 (3 spec.), 2645G-11/77 (1 spec.), 2645H-11/77 (1 spec.), 2645I-11/77 (1 spec.).
DESCRIPTION:
Length, 13.4+ mm (previously reported to 65 mm); width, to 1.7 mm (previously reported to 3 mm). Prostomium with five lobes anteriorly (Figure 51-4a). Eyespots small; paired, present as two groups, or irregularly scattered on prostomium. Nuchal organs yellowish-white. Branchiae cirriform, wrinkled, arranged across segment III with one pair just anterior to remaining three pairs, united basally to 1/4-1/2 their length. Segments III-VI with embedded, fine acicular neurosetae. Postbranchial notopodial hooks curved at up to 90° angle. Dorsal crest across segment VI dentate with 5-16 teeth. Thoracic uncini pectinate with four (occasionally five) teeth above smaller rostral point (Figure 51-4b-d); numbering up to 25 per torus. About 36 abdominal segments; small notopodial rudiments present. Anterior abdominal uncini similar to thoracic uncini, becoming smaller and crested on posterior abdominal segments.
REMARKS: Identities of Melinna cristata and M. maculata were confused in Gulf of Mexico BLM-OCS collections. M. cristata is newly reported from the Gulf.
PREVIOUSLY REPORTED HABITAT: Intertidal to 407 m; sand, mud, rock, detritus.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in deep water in northeastern Gulf (Figure 51-3); 69-189 m; coarse to fine sand, silty very fine sand.
DISTRIBUTION: Widespread in cold waters of the Arctic, North Atlantic and South Pacific; North Carolina, Gulf of Mexico.

Melinna maculata Webster, 1879
Figures 51-5, 6a-e

Melinna maculata Webster, 1879:261, pl. 10, figs. 145-147.
Melinna maculata--Hartman, 1951a:108, pl. 27, figs. 1, 2.
Melinna maculata--Day, 1973:113.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2421B-7/76 (1 spec., USNM 71427), 2639D-6/75 (1 spec.), 2639A-11/77 (1 spec.), 2640C-8/77 (1 spec.); STOCS 1/IV-3 W/76 (1 spec., USNM

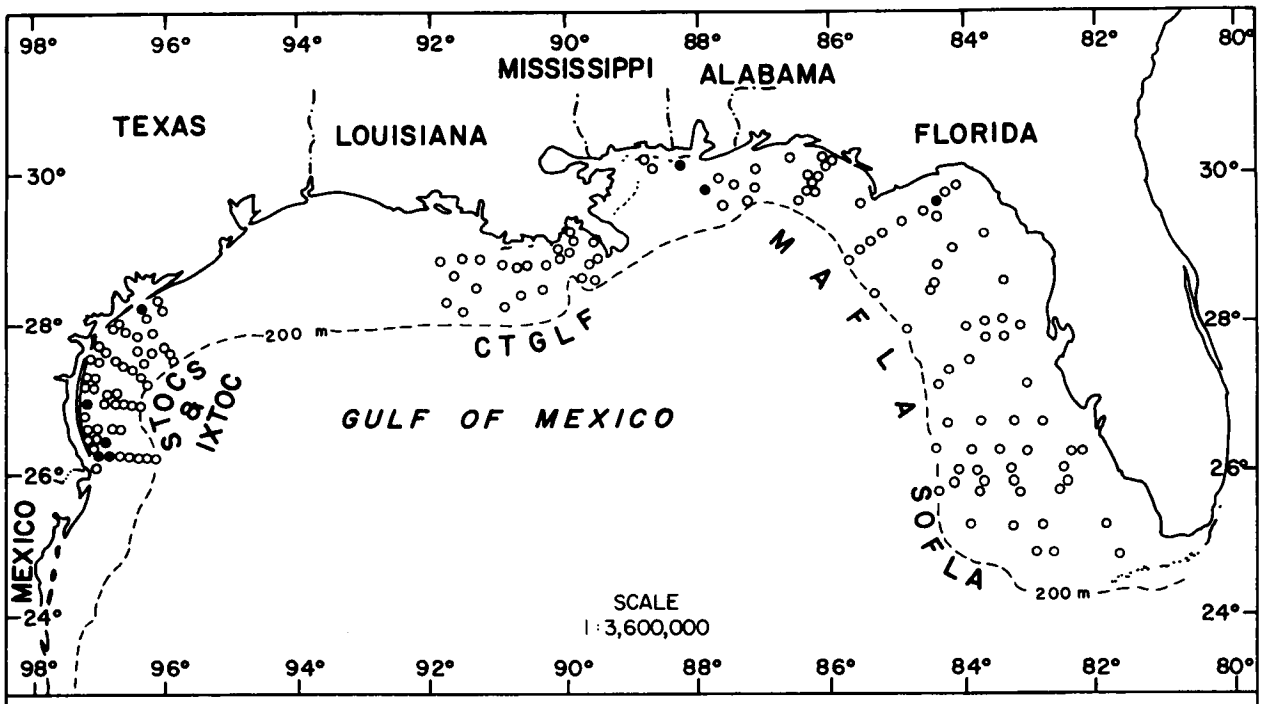

Figure 51-5. Distribution of Melinna maculata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

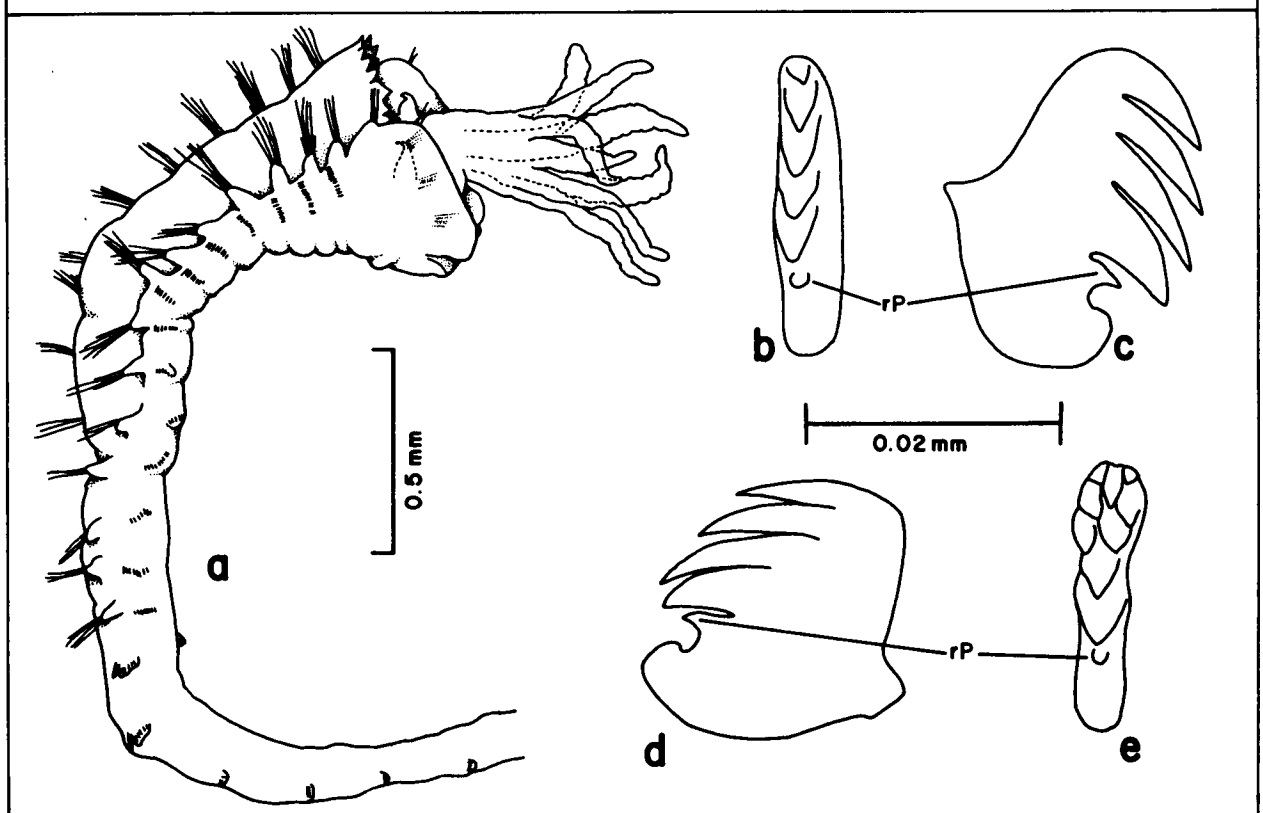

Figure 51-6. Melinna maculata: a, anterior end (lateral view); b, c, thoracic uncini (edge-on view and profile); d, anterior abdominal uncinus (profile); e, posterior abdominal uncinus (edge-on view).

91408), 4/IV-2 F/76 (3 spec., USNM 91409), 4/IV-5 F/76 (1 spec., USNM 91410); IXTOC S18-12/80 (1 spec., USNM 75125).
Supplementary Material:
Gulf of Mexico--Mobile Bay, 30°14'N, 88°03'W, Mobil Oil Sta. 052B-7/78, 6.5 m, sandy clay (1 spec.).
DESCRIPTION:
Length, to 18.7 mm (previously reported to 18+ mm); width, to 1.2 mm. Prostomium trilobed, middle lobe broadest, with two small eyespots. Nuchal organs unpigmented. Branchiae cirriform, wrinkled (Figure 51-6a), arranged across segment III with one pair just anterior to remaining three pairs, united basally to 1/3-1/2 their length, middle two pairs slightly flattened. Fine, embedded, acicular neurosetae on segments III-V, absent from segment VI. Postbranchial notopodial hooks curved at 90° angle. Dorsal crest across segment VI dentate with about 7-20 teeth. Thoracic uncini pectinate with 5 (4-6) teeth above minute rostral point (Figure 51-6b,c). Forty or more abdominal segments; notopodial rudiments small. Anterior abdominal uncini (Figure 51-6d) similar to thoracic uncini, becoming smaller with two to several columns of teeth (Figure 51-6e) on posterior abdominal segments.
REMARKS: Melinna maculata occurs in much shallower water in the Gulf of Mexico than does the closely related M. cristata.
PREVIOUSLY REPORTED HABITAT: Intertidal to 10 m; mud.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in shallow water in northeastern and western Gulf (Figure 51-5); 10-35 m; medium sand, silty fine sand, clayey sand, sandy silt.
DISTRIBUTION: Virginia to Gulf of Mexico; ?West Indies.

Genus **Sosane** Malmgren, 1865

TYPE SPECIES: Sosane sulcata Malmgren, 1865.
REFERENCES:
Malmgren, 1865c:367.
Hartmann-Schröder, 1971:462.
Fauchald, 1977a:128.
DIAGNOSIS: Prostomium without glandular ridges. Buccal tentacles smooth. Four pairs of smooth branchiae. Segment III with paleae or capillary notosetae. Twelve thoracic unciniger s. One pair of posterior thoracic notopodia displaced dorsally, with hirsute notosetae. Thoracic uncini with 1-3 columns of teeth. Abdominal notopodial rudiments present.

Sosane sulcata Malmgren, 1865
Figures 51-7, 8a-e

Sosane sulcata Malmgren, 1865c:368, pl. 26, fig. 79.
Sosane sulcata--Hartmann-Schröder, 1971:462.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2643H-6/75 (1 spec.); STOCS 6/I-6 S/77 (1 spec., USNM 91413), 6/II-5 6/76 (1 spec., USNM 91412), 3/IV-4 S/76 (1 spec.), HR1-6 F/76 (2 spec., USNM 71422), SB3-5 8/76 (2 spec.), SB4-5 3/76 (1 spec., USNM 91411).

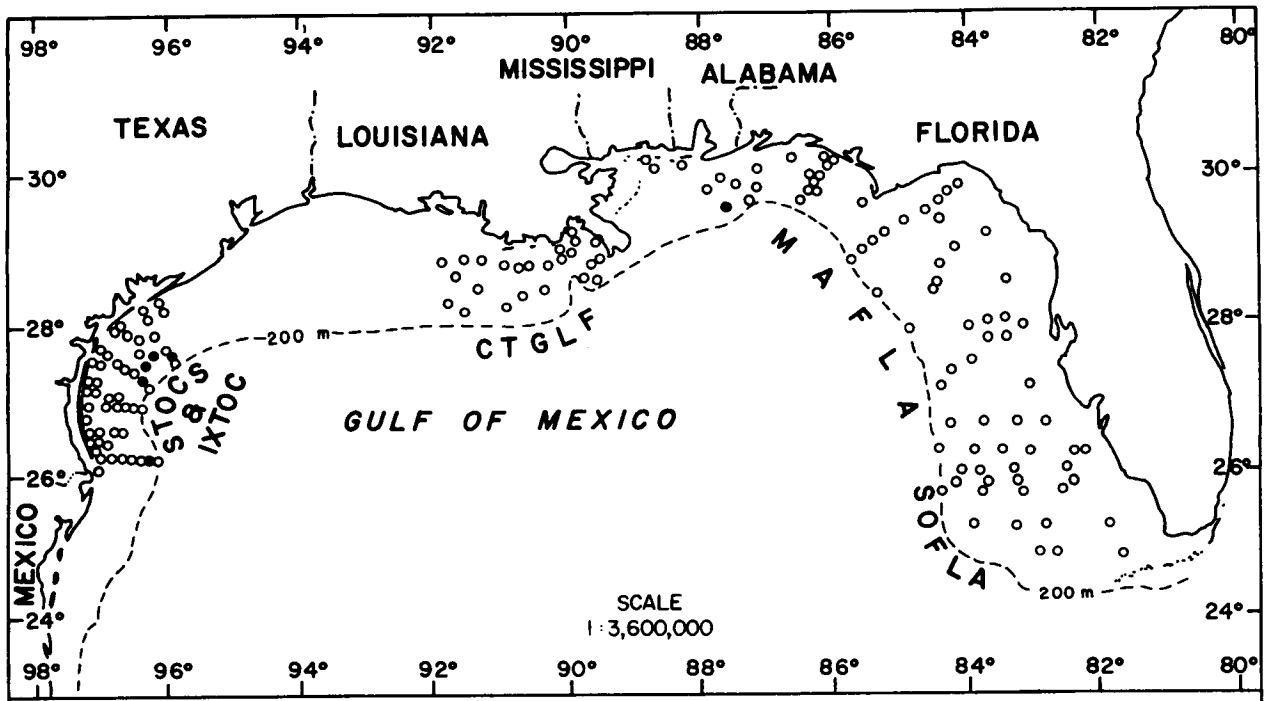

Figure 51-7. Distribution of Sosane sulcata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

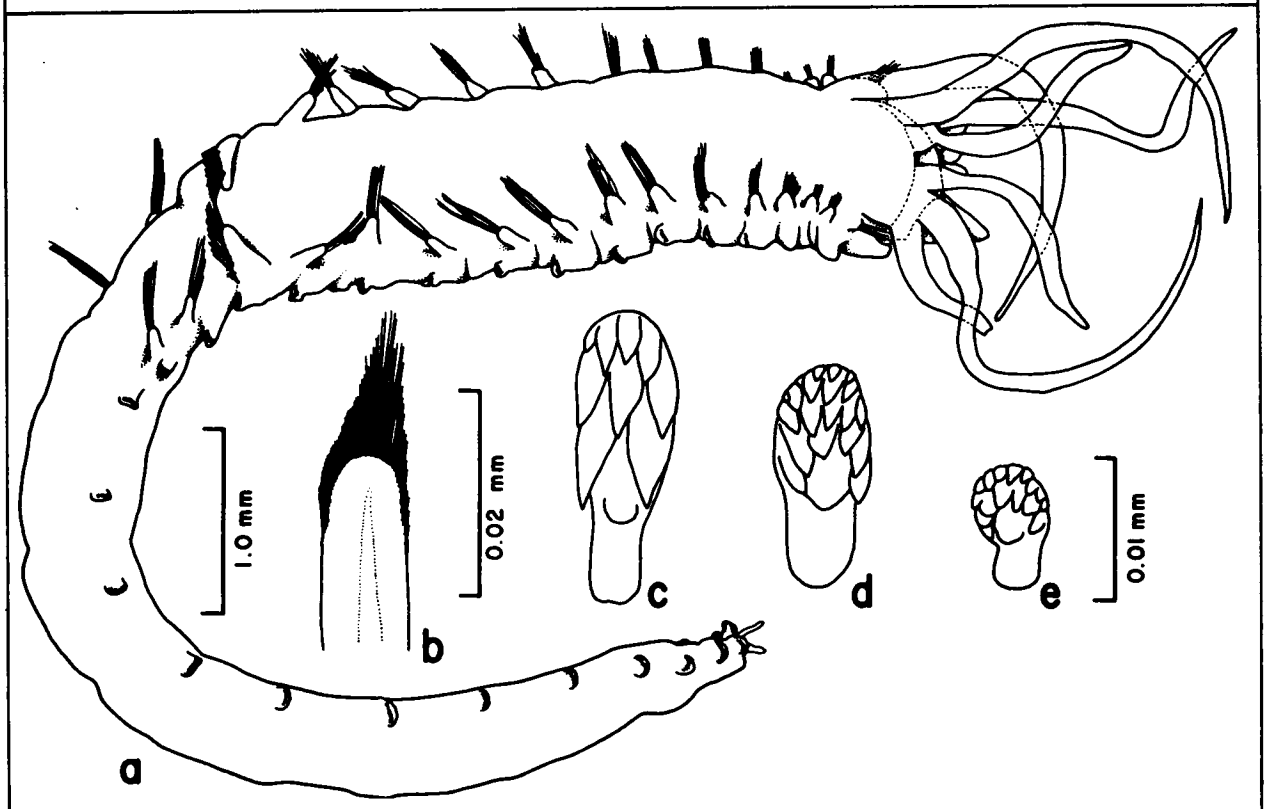

Figure 51-8. Sosane sulcata: a, whole worm (dorsolateral view); b, tip of hirsute notoseta from tenth thoracic unciniger; c, thoracic uncinus (edge-on view); d, e, abdominal uncini (edge-on view).

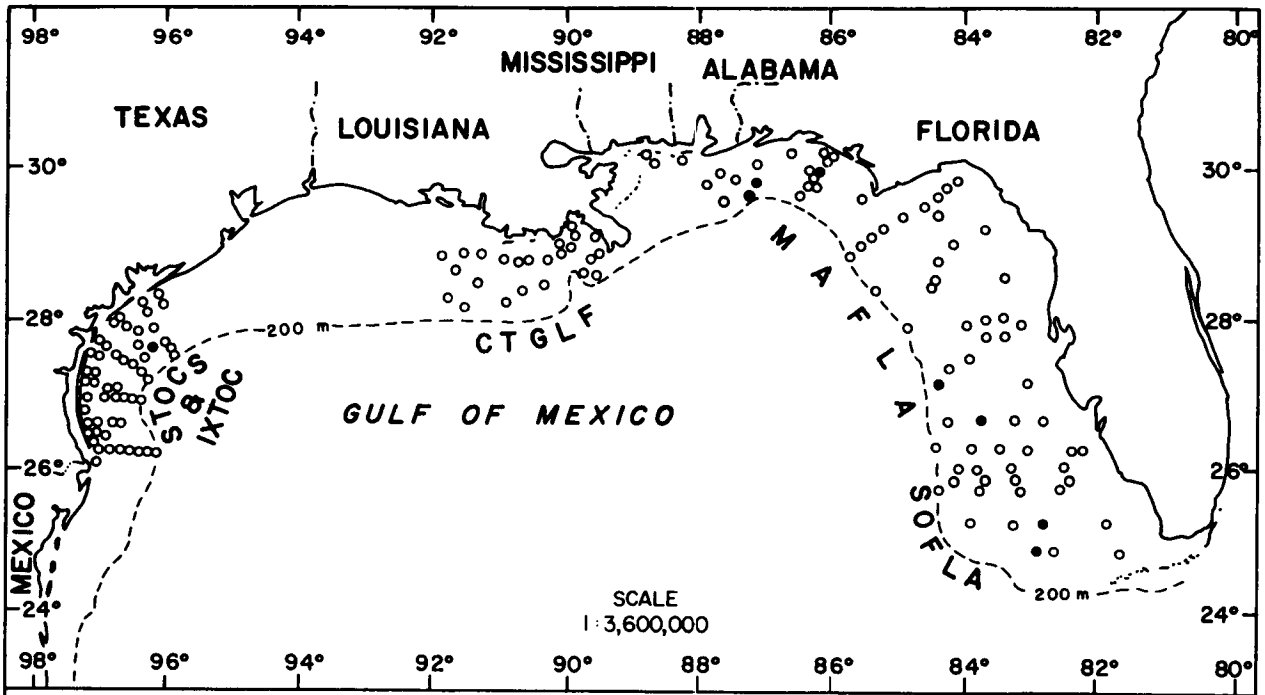

Figure 51-9. Distribution of ampharetid Genus A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

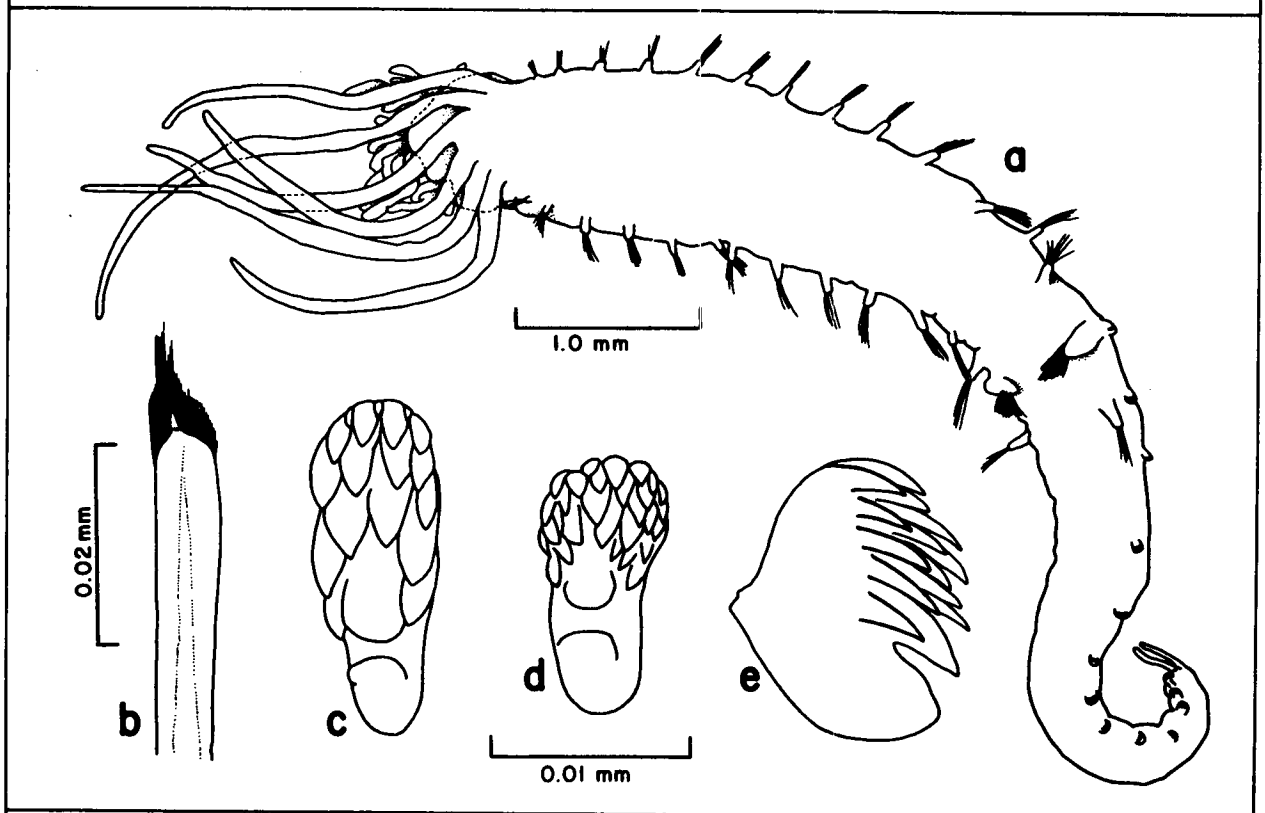

Figure 51-10. Genus A: a, whole worm; b, tip of hirsute notoseta from eleventh thoracic unciniger; c, thoracic uncinus (edge-on view); d, e, abdominal uncini (edge-on view and profile).

DESCRIPTION:
Length, to 13.6 mm (previously reported to 20 mm); width, to 1.3 mm (previously reported to 2 mm). Prostomium trilobed; eyespots absent, or present as a single pair or as two small groups. Branchiae slender, somewhat flattened, tapering to fine points, arranged in two groups of four on ridge across segment III, with short basal separation between the two groups (Figure 51-8a). Segment III with numerous slender capillary notosetae; paleae absent. Limbate notosetae present from segment IV, continuing throughout thorax. Notopodia of tenth (third last) thoracic unciniger displaced dorsally and bearing hirsute setae (Figure 51-8b). Thoracic uncini with three columns of 2-5 teeth (Figure 51-8c). Twelve abdominal segments. Abdominal notopodial rudiments not observed. Abdominal neuropodial pinnules without cirri. Abdominal uncini crested (Figure 51-8d,e). Pygidium with two short cirri. One specimen with oocytes in coelom.
REMARKS: Sosane sulcata is newly reported from the Gulf of Mexico. Identifications of BLM-OCS specimens of this species were confused.
PREVIOUSLY REPORTED HABITAT: None given.
GULF OF MEXICO BLM-OCS OCCURRENCE: Several stations in moderately deep water, mostly in western Gulf (Figure 51-7); 69-100 m; fine sand, clayey sand, silty clay.
DISTRIBUTION: North Sea, Mediterranean, West Africa, Gulf of Mexico.

Genus A
Figures 51-9, 10a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 28-11/80 (3 spec., USNM 75265); MAFLA 17E-5/74 (1 spec.), 19G-5/74 (1 spec., USNM 71428), 2531C-11/77 (1 spec.), 2746K-2/78 (1 spec.); STOCS HR1-6 F/76 (1 spec., USNM 91423).
DESCRIPTION:
Length, to 20.4 mm; width, to 2.2 mm. Prostomium smooth or trilobed, without eyes or glandular ridges. Nuchal organs yellowish-white. Buccal tentacles numerous, smooth. Branchiae numbering three pairs; long, slender, ciliated, basally contiguous, arranged on arc across segment III (Figure 51-10a). Segment III asetigerous; notosetae present from segment IV. Fifteen thoracic setigers, of which 12 are uncinigerous. Notopodia of eleventh (second last) thoracic unciniger displaced dorsally and bearing hirsute notosetae (Figure 51-10b). Thoracic neuropodia with about 6-30 uncini, increasing in number from anterior to posterior along the body, decreasing in size ventrally. Thoracic uncini with 3-4 columns of 3-5 teeth (Figure 51-10c); crested on posterior thoracic segments of smaller specimens. Eleven abdominal segments. Abdominal notopodial rudiments absent. Abdominal neuropodial pinnules without cirri. Abdominal uncini crested (Figure 51-10d,e). Pygidium with two cirri having basal pigment spots. Four specimens with oocytes in coelom.
REMARKS: According to the generic key of Fauchald (1977a:121), no known ampharetid genus possesses three pairs of branchiae and twelve thoracic uncinigers including a posterior pair of dorsally displaced notopodia; thus, these specimens apparently represent an undescribed genus. Genus A resembles Sosane sulcata in many characteristics, especially dentition of the uncini; the two may be closely related. They are found in

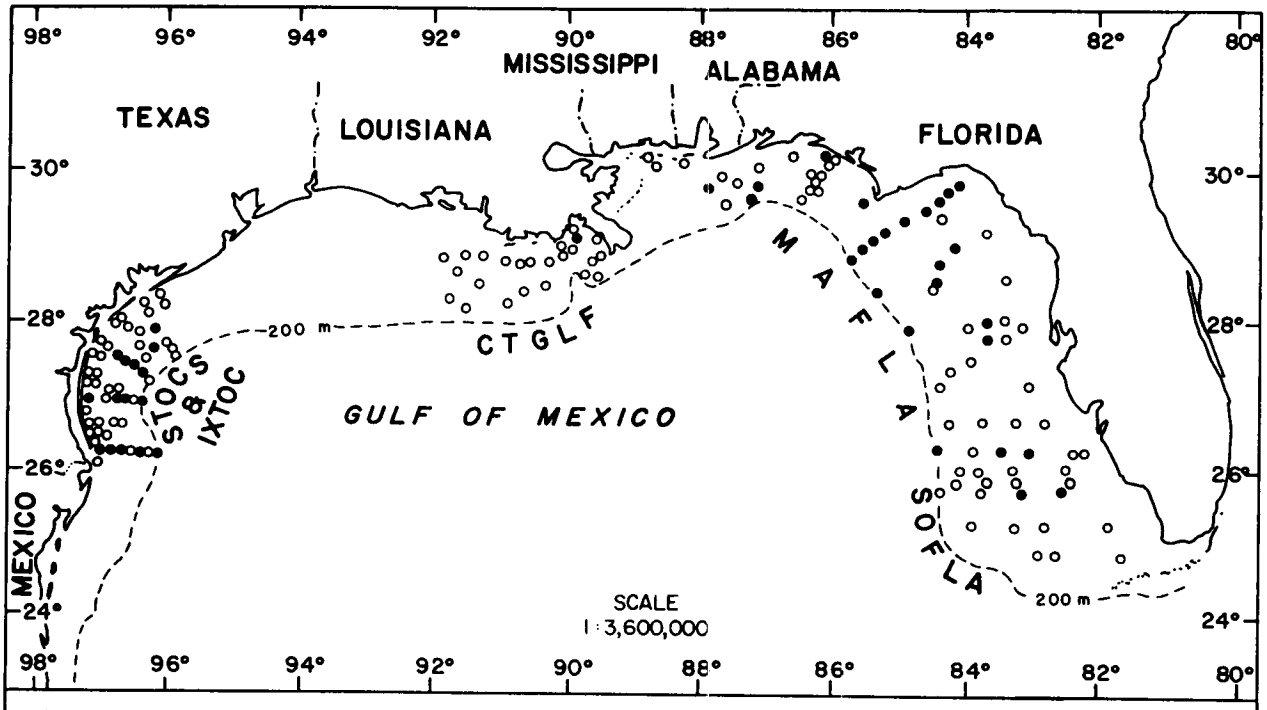

Figure 51-11. Distribution of Amphicteis gunneri on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

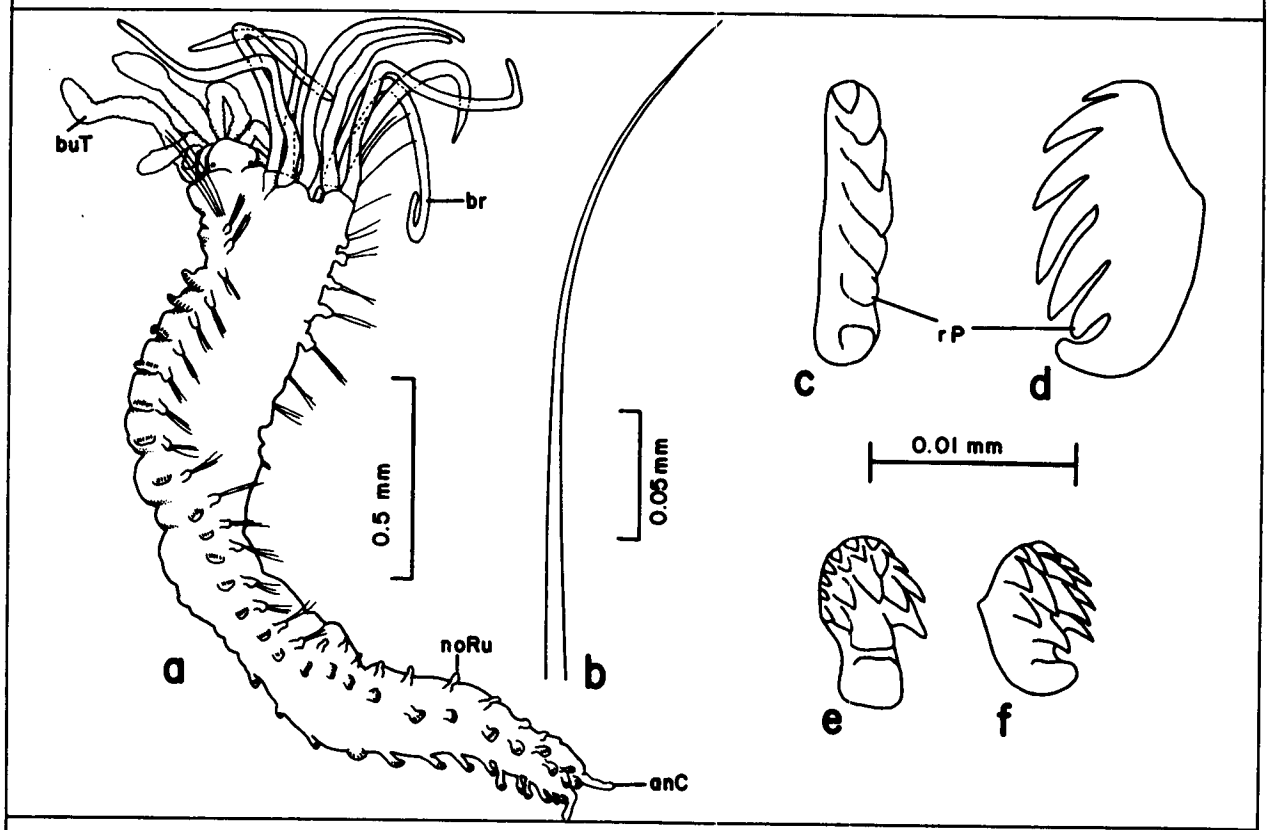

Figure 51-12. Amphicteis gunneri: a, whole worm (dorsolateral view); b, palea from segment III; c, d, thoracic uncini (edge-on view and profile); e, f, abdominal uncini (edge-on view and partial profile).

similar depth ranges in the Gulf of Mexico, and co-occur at one BLM-STOCS station.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in moderately deep water in northeastern and western Gulf (Figure 51-9); 45-121 m; coarse to fine sand, silty very fine sand.

Genus **Amphicteis** Grube, 1850

TYPE SPECIES: Amphitrite gunneri Sars, 1835.
REFERENCES:
Fauvel, 1927:230.
Berkeley and Berkeley, 1952:68.
Day, 1964:113, 1967:695.
Hartmann-Schröder, 1971:461.
Fauchald, 1972a:282; 1977a:125.
DIAGNOSIS: Prostomium with two glandular ridges. Buccal tentacles smooth. Four pairs of smooth, cylindrical or foliaceous branchiae. Segment III usually with paleae. Fourteen thoracic uncinigers. Thoracic uncini pectinate. Abdominal notopodial rudiments present or absent.

Key to the Gulf of Mexico BLM-OCS Species of Amphicteis

1a. Branchiae slender and cylindrical (Figure 51-12a). . . . . **Amphicteis gunneri**, p. 51-16
1b. Branchiae flattened to foliaceous (Figure 51-14a). . . . . .**Amphicteis scaphobranchiata**, p. 51-18

Amphicteis gunneri (Sars, 1835)
Figures 51-11, 12a-f

Amphicteis gunneri--Malmgren, 1865c:365, pl. 19, fig. 46.
Amphicteis gunneri--Fauvel, 1927:231, fig. 80a-k.
Amphicteis gunneri--Imajima and Hartman, 1964:331.
Amphicteis gunneri--Day, 1967:695, fig. 35.2.g-n; 1973:115.
Amphicteis gunneri--Hartmann-Schröder, 1971:461, fig. 159f-i.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2209C-7/76 (1 spec.), 2210A-11/77 (1 spec.); CTGLF 01-5/78 (1 spec., USNM 91415); STOCS 2/I-4 W/76 (1 spec., USNM 91414), 2/II-2 2/75 (1 spec., USNM 71420), HR4-3 S/76 (1 spec., USNM 71421).
DESCRIPTION:
Length, to 15.9 mm (previously reported to 60 mm); width, to 1.7 mm (previously reported to 3 mm). Prostomium trilobed; eyespots absent, or present as a single pair or as two small groups. Glandular ridges not evident on most specimens. Nuchal organs brownish in color. Branchiae cylindrical, arranged in two rows of two pairs each on ridge across segment III (Figure 51-12a). Segment III with long, fairly stout, wingless paleae tapering gradually to fine tips (Figure 51-12b); numbering 4-14 on each side. Limbate notosetae beginning on segment IV and continuing throughout thorax. Thoracic uncini with 4-6 teeth above

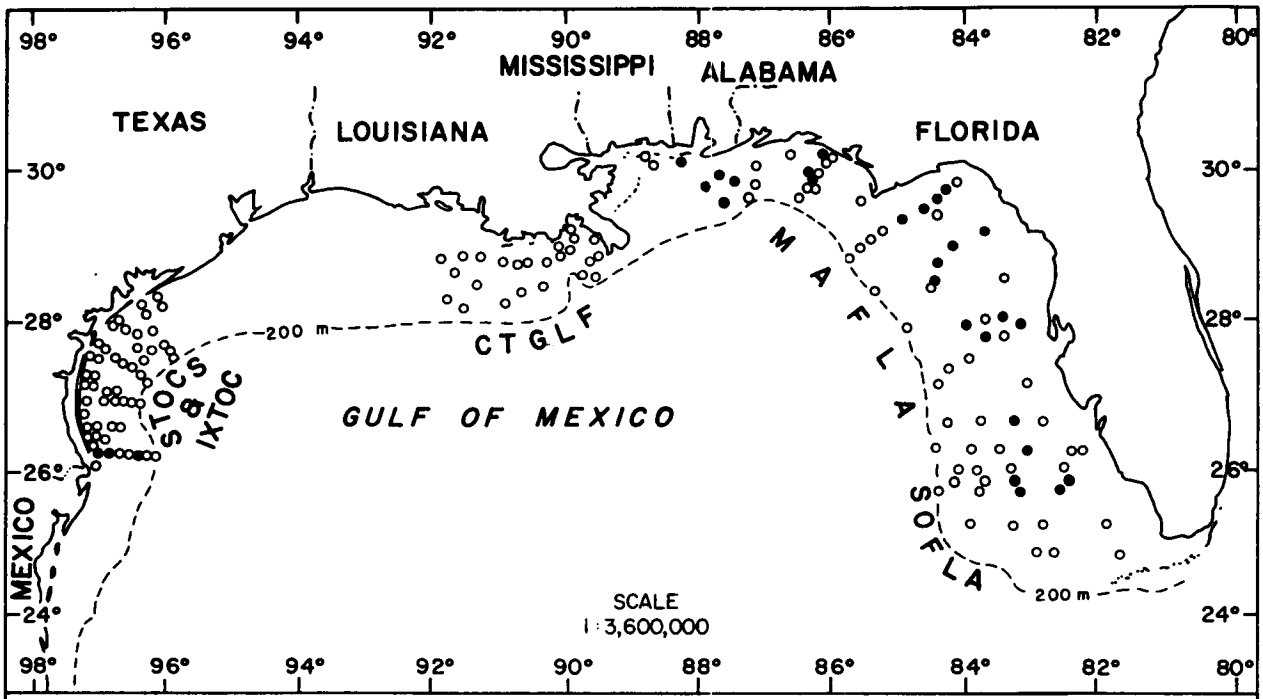

Figure 51-13. Distribution of Amphicteis scaphobranchiata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

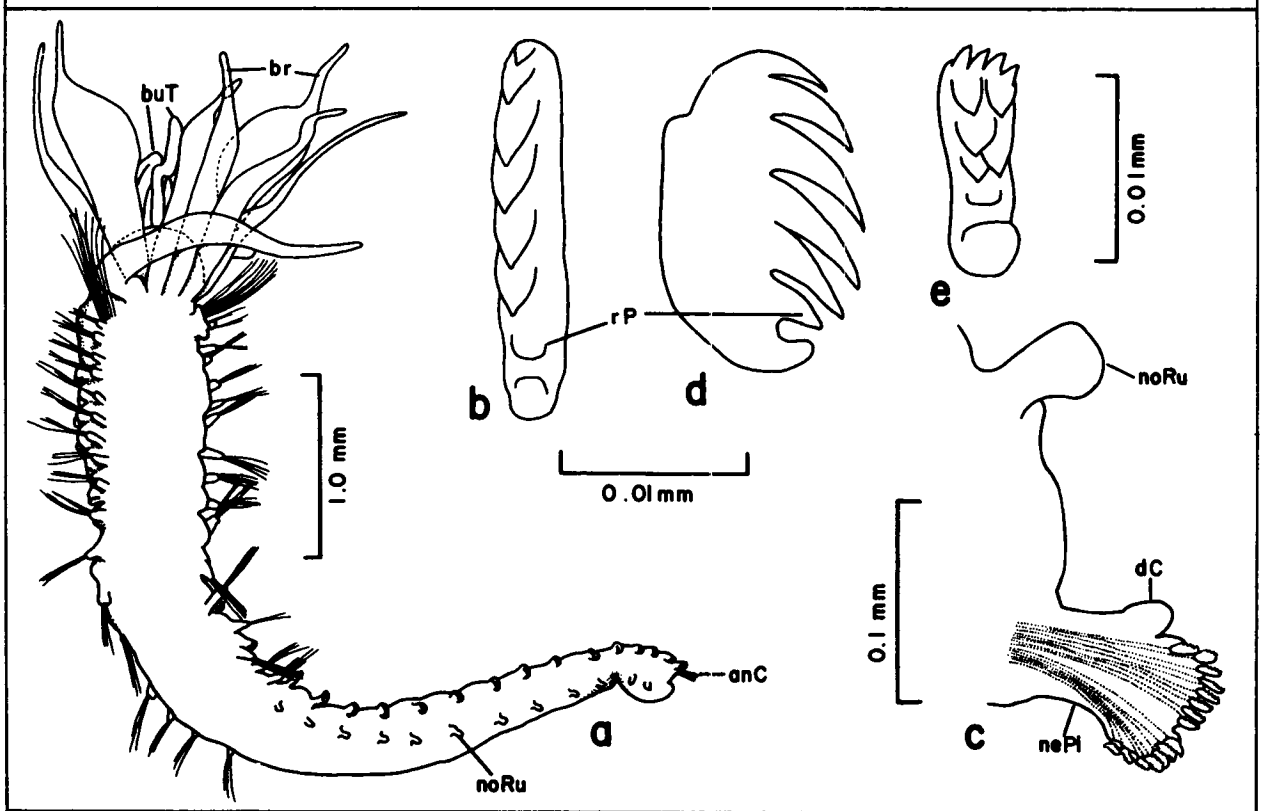

Figure 51-14. Amphicteis scaphobranchiata: a, whole worm; b, thoracic uncinus (edge-on view); c, abdominal parapodium (anterior view); d, anterior abdominal uncinus (profile); e, posterior abdominal uncinus (edge-on view).

rostral point (Figure 51-12c,d), crested on small specimens. Twelve to 16 abdominal segments. Large abdominal notopodial rudiments present, decreasing in size posteriorly. Abdominal neuropodial pinnules with short dorsal cirri. Abdominal uncini pectinate with 3-5 teeth above rostral point, with 2-3 columns of teeth or crested on smaller specimens (Figure 51-12e,f). Pygidium with 2-4 short, digitiform cirri. One specimen with oocytes in coelom.
REMARKS: This species was confused with Ampharete acutifrons in BLM-CTGLF collections.
PREVIOUSLY REPORTED HABITAT: Intertidal to 5000 m; coarse sand with gravel, shell or stones; mud, clay; with algae and mollusks.
GULF OF MEXICO BLM-OCS OCCURRENCE: Widespread in northern Gulf (Figure 51-11); 10-189 m; sands, silts and clays.
DISTRIBUTION: Cosmopolitan.

Amphicteis scaphobranchiata Moore, 1906a
Figures 51-13, 14a-e

Amphicteis scaphobranchiata--Moore, 1923:202.
Amphicteis scaphobranchiata--Berkeley and Berkeley, 1952:68, figs. 139-141.
Amphicteis scaphobranchiata--Hartman, 1969:549, figs. 1-6.
Amphicteis scaphobranchiata--Fauchald, 1972a:286, pl. 58, fig. c.
Amphicteis scaphobranchiata--Banse, 1979a:1545.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 14C-4/81 (1 spec., USNM 75254), 16B-4/81 (2 spec., USNM 75255); MAFLA 2208H-8/77 (1 spec.), 2209K-8/77 (1 spec.), 2211C-11/77 (1 spec.), 2318K-11/77 (1 spec.), 2528F-1/76 (1 spec.), 2640H-8/77 (2 spec.), 2640I-8/77 (1 spec.), 2959-11/77 (2 spec., USNM 56135), 2959C-11/77 (3 spec.), 2960I-9/77 (2 spec.); STOCS 1/IV-2 F/76 (1 spec., USNM 91416), 1/IV-4 F/76 (1 spec., USNM 91417), 1/IV-5 F/76 (2 spec., USNM 91418), 4/IV-4 F/76 (2 spec., USNM 91419).
DESCRIPTION:
Length, to 22.8 mm (previously reported to 54 mm); width, to 2.6 mm (previously reported to 3.5 mm). Prostomium with diverging glandular ridges (sometimes not evident). Eyespots numerous, small, present in two groups. Nuchal organs yellowish-white to brown. Branchiae (Figure 51-14a) arranged in two rows of two pairs each on ridge across segment III; anteromedial pair broadly foliaceous, tapering abruptly to slender, often hooked tips; remaining pairs flattened to less broadly foliaceous, tapering to slender tips. Segment III with long, fairly stout, wingless paleae tapering gradually to fine tips, numbering 7-13 on each side. Limbate notosetae present from segment IV, continuing throughout thorax. Thoracic uncini with 4-6 teeth above slightly smaller rostral point (Figure 51-14b). Fifteen abdominal segments. Abdomen with digitiform or globular notopodial rudiments (Figure 51-14c). Abdominal neuropodial pinnules with short dorsal cirri. Abdominal uncini pectinate with 4-5 teeth above rostral point, similar to thoracic uncini (Figure 51-14d); with 2-3 irregular rows of teeth (Figure 51-14e) or crested on posteriormost pinnules. Pygidium with two slender cirri.
REMARKS: The original and some subsequent descriptions of A. scaphobranchiata reported 13 abdominal uncinigers. Specimens examined by

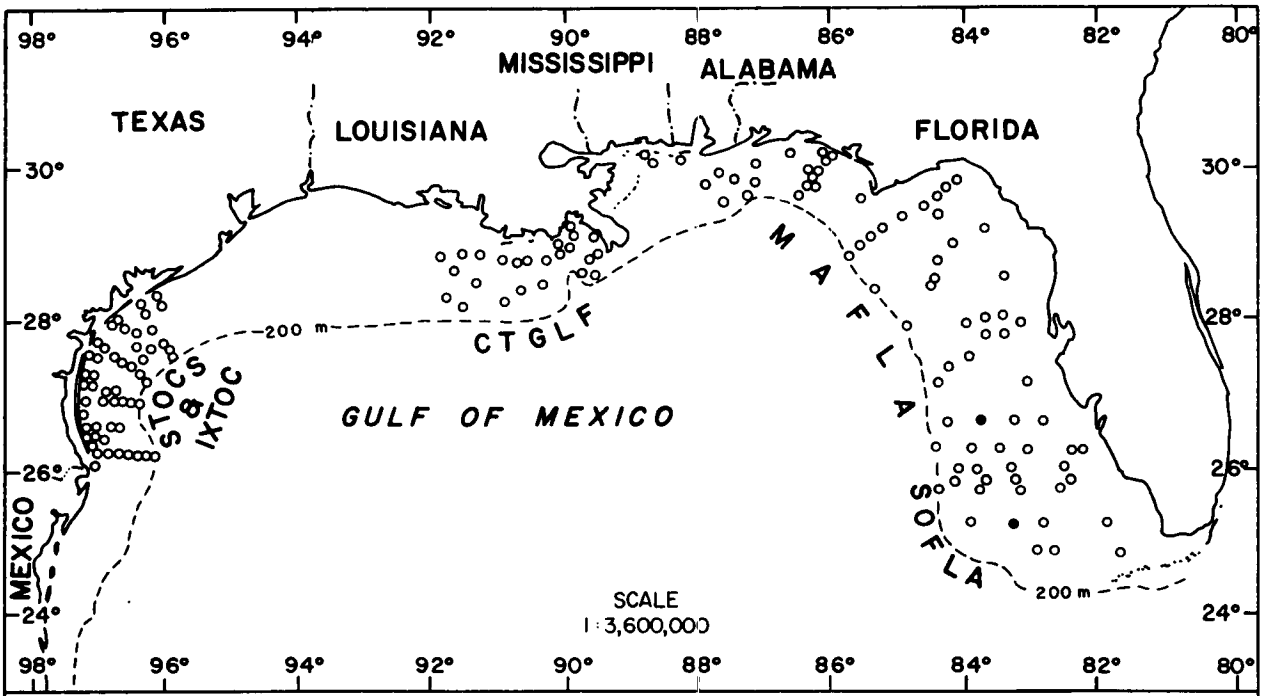

Figure 51-15. Distribution of Sabellides octocirrata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

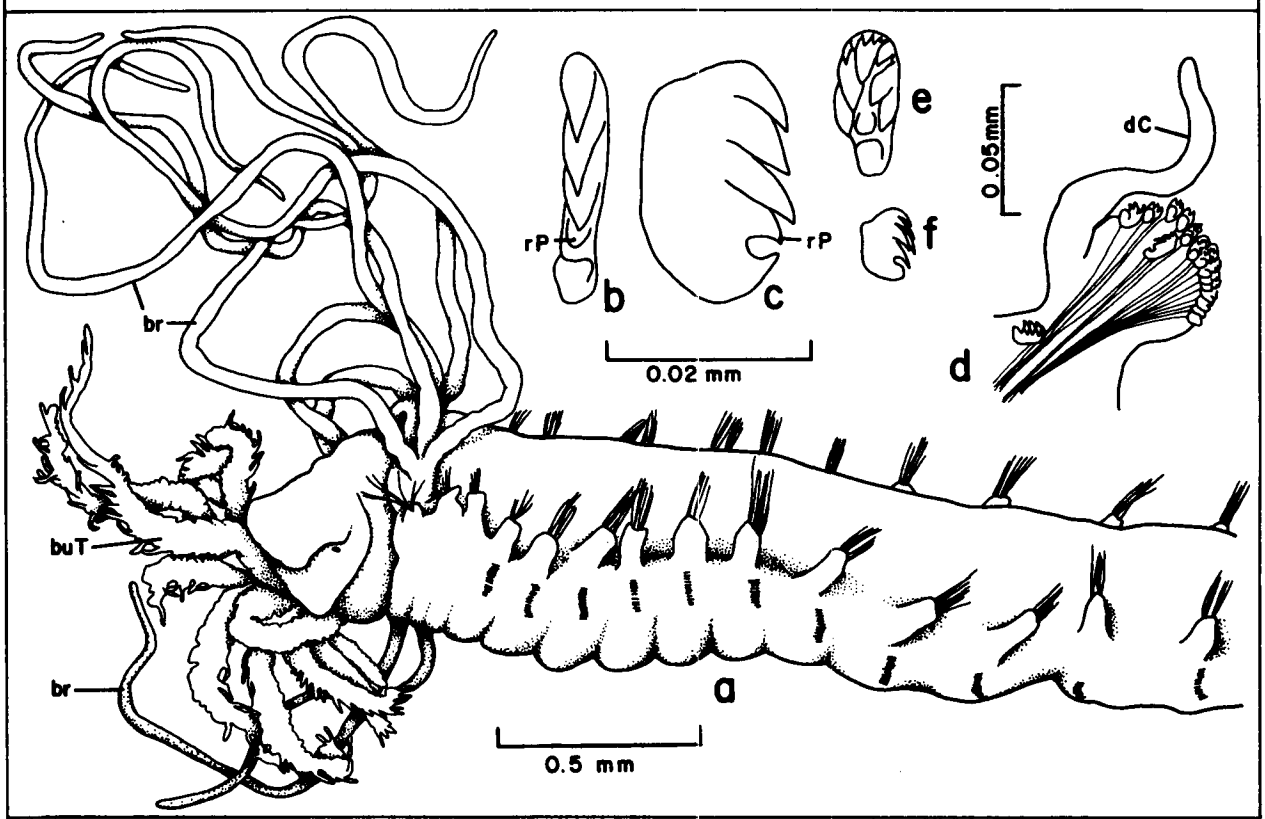

Figure 51-16. Sabellides octocirrata: a, anterior end (lateral view); b, c, thoracic uncini (edge-on view and profile); d, abdominal neuropodial pinnule; e, f, abdominal uncini (edge-on view and profile).

Banse (1979a:1546) and all those examined here have 15 abdominal uncinigers. Some of the Gulf of Mexico BLM-OCS specimens of this species were originally referred to Amphicteis sp. A and Phyllamphicteis collaribranchis. A. scaphobranchiata is newly reported from this region.
PREVIOUSLY REPORTED HABITAT: 16-925 m; mud, fine sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Widespread in northeastern Gulf, occasional in western Gulf (Figure 51-13); shallow water, 14-69 m; coarse to fine-very fine sand, silty fine sand, clayey sand, clayey and sandy silt.
DISTRIBUTION: Washington to Baja California, Gulf of Mexico.

Genus **Sabellides** Milne Edwards, 1838

TYPE SPECIES: Sabella octocirrata Sars, 1835.
REFERENCES:
Fauvel, 1927:231.
Ushakov, 1955:369.
Day, 1964:116; 1967:696.
Fauchald, 1977a:127.
DIAGNOSIS: Prostomium usually trilobed, without glandular ridges. Buccal tentacles papillose. Four pairs of smooth branchiae. Segment III with setae poorly developed or lacking. Segment IV asetigerous. Eleven thoracic uncinigers. Thoracic uncini with 1-2 columns of teeth. Abdominal notopodial rudiments absent.

Key to the Gulf of Mexico BLM-OCS Species of Sabellides

1a. Segment III with notosetae; thoracic uncini with one column of teeth (Figure 51-16b,c); abdominal neuropodial pinnules with long dorsal cirri (Figure 51-16d) . . .**Sabellides octocirrata**, p. 51-20
1b. Segment III without notosetae; thoracic uncini with 2-3 columns of teeth (Figure 51-18b); abdominal neuropodial pinnules without dorsal cirri. . . . . **Sabellides sp. A**, p. 51-22

Sabellides octocirrata (Sars, 1835)
Figures 51-15, 16a-f

Sabellides octocirrata--Malmgren, 1865c:369, pl. 25, fig. 74.
Sabellides octocirrata--Fauvel, 1927:232, fig. 81a-g.
Sabellides octocirrata--Day, 1967:697, fig. 35.3.h-k.
Sabellides octocirrata--Hartmann-Schröder, 1971:454.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 24C-8/81 (1 spec., USNM 75264).
DESCRIPTION:
Length, 5.7 mm (previously reported to 10 mm); width, 0.6 mm (previously reported to 1 mm). Prostomium trilobed with two small eyespots (Figure 51-16a). Nuchal organs not observed. Branchiae long, filiform, arranged on ridge across segment III in two groups of four separated by short gap. Nephridial papillae large, paired, visible on branchial ridge medial to innermost branchiae. Segment III with several slender

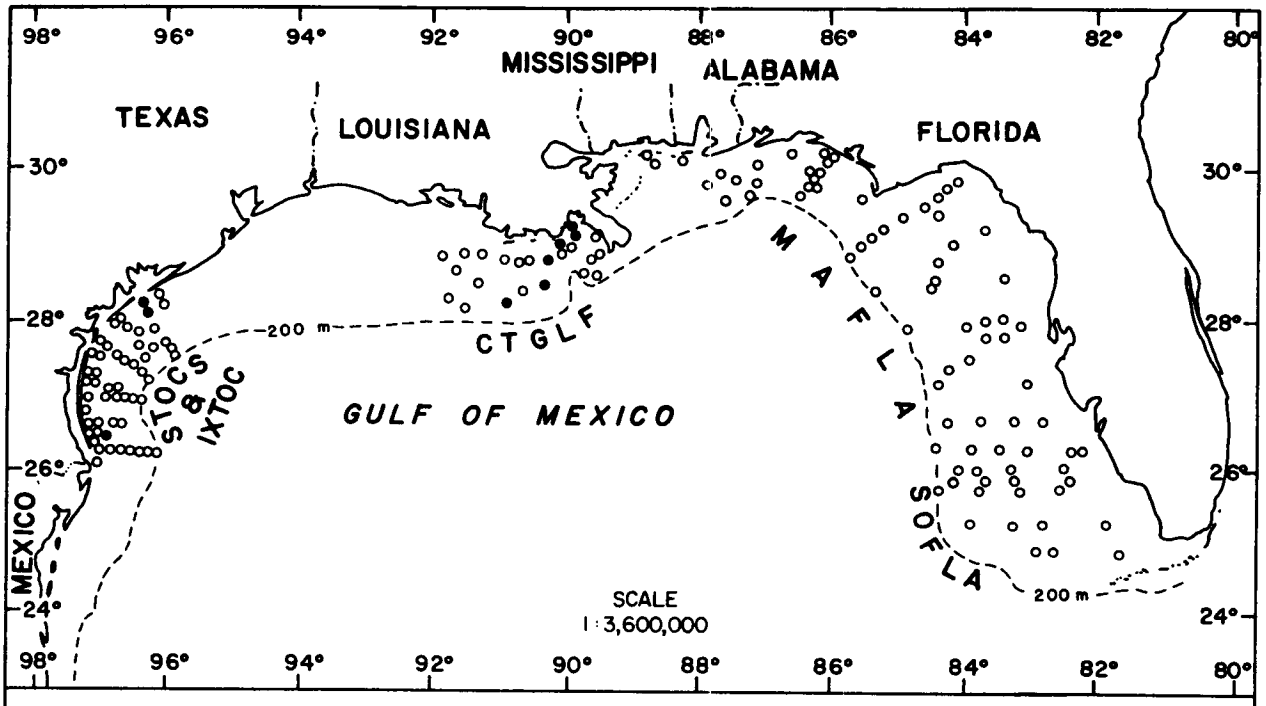

Figure 51-17. Distribution of Sabellides sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

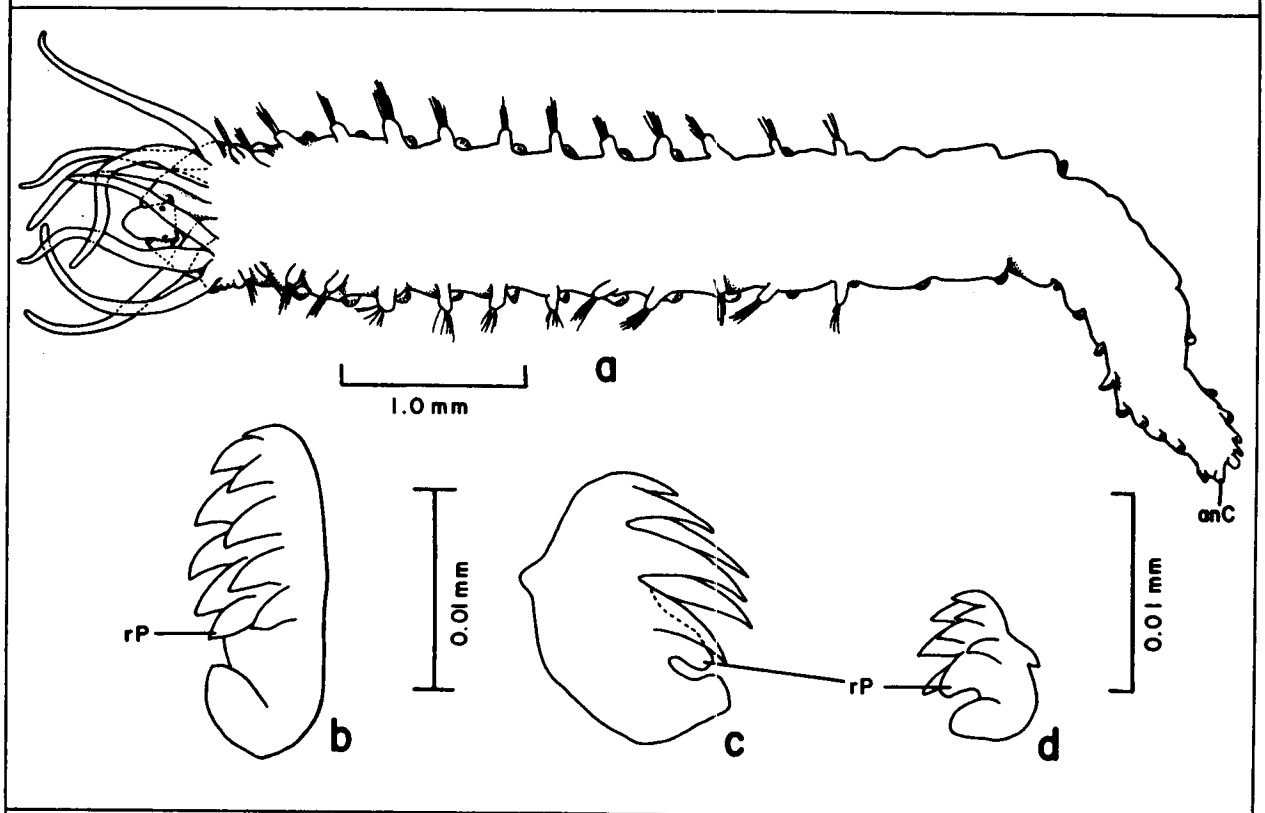

Figure 51-18. Sabellides sp. A: a, whole worm (from LOOP specimen); b, thoracic uncinus (partial profile); c, d, abdominal uncini (profile and partial profile).

notosetae on each side. Thoracic neuropodia with 14-18 pectinate uncini having three teeth above rostral point (Figure 51-16b,c). Fourteen abdominal segments. First two abdominal segments with neuropodial tori having pectinate uncini similar to thoracic uncini. Remaining abdominal segments with neuropodial pinnules having long dorsal cirri (Figure 51-16d) and crested uncini (Figure 51-16e,f). Pygidium with two slender cirri.
REMARKS: Sabellides octocirrata is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Shallow water, among bryozoans.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off southwestern Florida (Figure 51-15); 88-91 m; coarse to medium sand.
DISTRIBUTION: North Atlantic including Bay of Fundy; Mediterranean, South Africa, ?Alaska, Gulf of Mexico.

Sabellides sp. A
Figures 51-17, 18a-d

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
CTGLF 21-5/78 (3 spec., USNM 71419; 14 spec.); IXTOC N38-12/79 (1 spec., USNM 75126).
Supplementary Material:
Gulf of Mexico--off Louisiana, 29°05'56"N, 90°07'00"W, LOOP Sta. 474-3, Nov. 1979, 11.0 m, clayey silt (1 spec.).
DESCRIPTION:
Length, to 6.5 mm; width, to 0.9 mm. Prostomium trilobed with two eyespots (Figure 51-18a). Nuchal organs not observed. Branchiae fairly long, slender, evenly tapering, arranged on ridge across segment III with one pair anterior to remaining three pairs; short gap between gills of innermost pair. Segments III and IV asetigerous; notosetae present from segment V. Thoracic neuropodia with about 10-20 uncini having two (occasionally three) columns of 3-5 teeth each above rostral point (Figure 51-18b). Ten or eleven abdominal segments. Abdominal neuropodial pinnules without cirri. Abdominal uncini with 2-3 columns of 2-4 teeth each above rostral point (Figure 51-18c,d), crested on smaller specimens. Pygidium with two short, rounded cirri having basal pigment spots. Several specimens with oocytes in coelom.
REMARKS: Sabellides sp. A resembles S. borealis Sars, 1856 (see Ushakov, 1955:370) in having thoracic uncini with two columns of teeth, but differs from the latter in lacking setae on segment III, in having fewer than 12 abdominal segments, and in lacking abdominal neuropodial cirri. BLM-CTGLF specimens were originally referred to Ampharete americana.
GULF OF MEXICO BLM-OCS OCCURRENCE: Shallow water in north-central and western Gulf (Figure 51-17); 10-37 m; sand, silty clayey sand, sandy and clayey silt, sandy silty clay.

Genus **Ampharete** Malmgren, 1865c

TYPE SPECIES: Amphicteis acutifrons Grube, 1860a.
REFERENCES:
Fauvel, 1927:227.

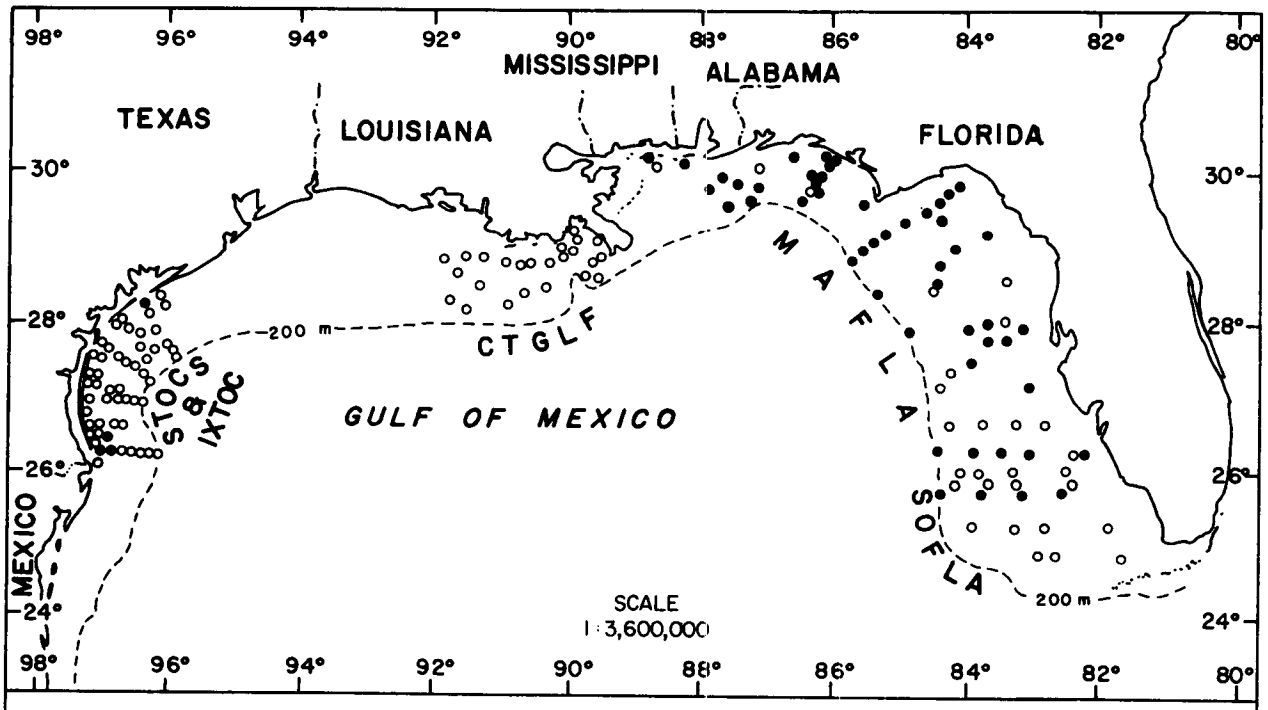

Figure 51-19. Distribution of Ampharete sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

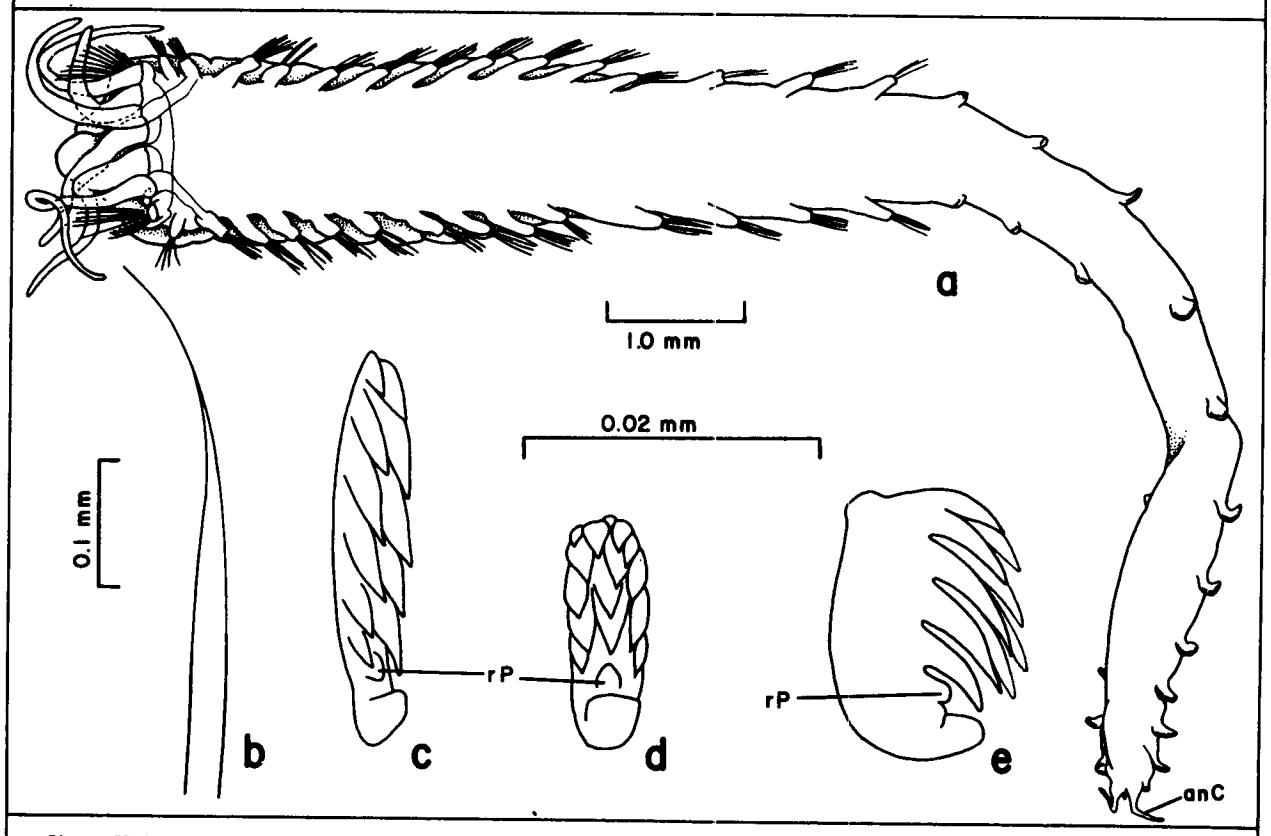

Figure 51-20. Ampharete sp. A: a, whole worm; b, palea from segment III; c, thoracic uncinus (edge-on view); d, e, abdominal uncini (edge-on view and profile).

Berkeley and Berkeley, 1952:65.
Day, 1964:114; 1967:699.
Hartmann-Schröder, 1971:456.
Fauchald, 1977a:124.
DIAGNOSIS: Prostomium usually trilobed, without glandular ridges. Buccal tentacles papillose. Four pairs of smooth branchiae. Segment III with paleae or capillary setae. Segment IV asetigerous. Twelve thoracic uncinigers. Thoracic uncini usually with two columns of teeth. Abdominal notopodial rudiments usually absent.

Key to the Gulf of Mexico BLM-OCS Species of Ampharete

1a. Segment III with large paleae (Figure 51-20a,b). . . . . .Ampharete sp. A, p. 51-24
1b. Segment III with slender capillary setae (Figures 51-22a, 24a) 2

2a. Innermost pair of branchiae separated by large gap (Figure 51-22a); anterior thoracic neuropodia with fewer than 15 uncini . . . . . Ampharete parvidentata, p. 51-26
2b. Innermost pair of branchiae separated by small gap; anterior thoracic neuropodia with 20 or more uncini . . . . . .Ampharete sp. B, p. 51-26

Ampharete sp. A
Figures 51-19, 20a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2317A-8/76 (1 spec.), 2422J-7/76 (1 spec.), 2423C-7/76 (6 spec.), 2528H-11/77 (1 spec.), 2530E-1/76 (1 spec.), 2640-7/76 (14 spec., USNM 56134), 2640B-7/76 (1 spec.), 2641A-9/77 (1 spec.), 2958F-8/77 (1 spec.), 2959E-8/77 (2 spec.); STOCS 4/I-6 S/76 (1 spec., USNM 91420), 1/IV-2 W/76 (1 spec., USNM 91421), 4/IV-2 S/76 (2 spec., USNM 91422); IXTOC S18-12/80 (1 spec., USNM 75123).
Supplementary Material:
Gulf of Mexico--off Alabama, 30°9.3'N, 88°6.5'W, IEC 732 MO 001-008, June 1980, 11.0 m, sand (1 spec.).
DESCRIPTION:
Length, to 13.6 mm; width, to 1.5 mm. Prostomium trilobed, with two, four, or numerous small eyespots. Branchiae varying in length, tapering to slender tips, arranged with one pair slightly posterior to three pairs across segment III. No gap between gills of innermost pair (Figure 51-20a). Segment III with stout paleae tapering to moderately long, fine tips (Figure 51-20b), numbering 7-15 on each side. Limbate notosetae beginning on segment V, continuing throughout thorax. Thoracic neuropodia with about 15-40 uncini having two columns of 4-6 teeth each above rostral point (Figure 51-20c). Eleven or twelve abdominal segments, with small notopodial rudiments anteriorly. Abdominal neuropodial pinnules with short dorsal cirri. Abdominal uncini with 2-3 columns of 3-6 teeth each above rostral point (Figure 51-20d,e). Pygidium with two cirri and several small papillae. Two specimens with oocytes in coelom.

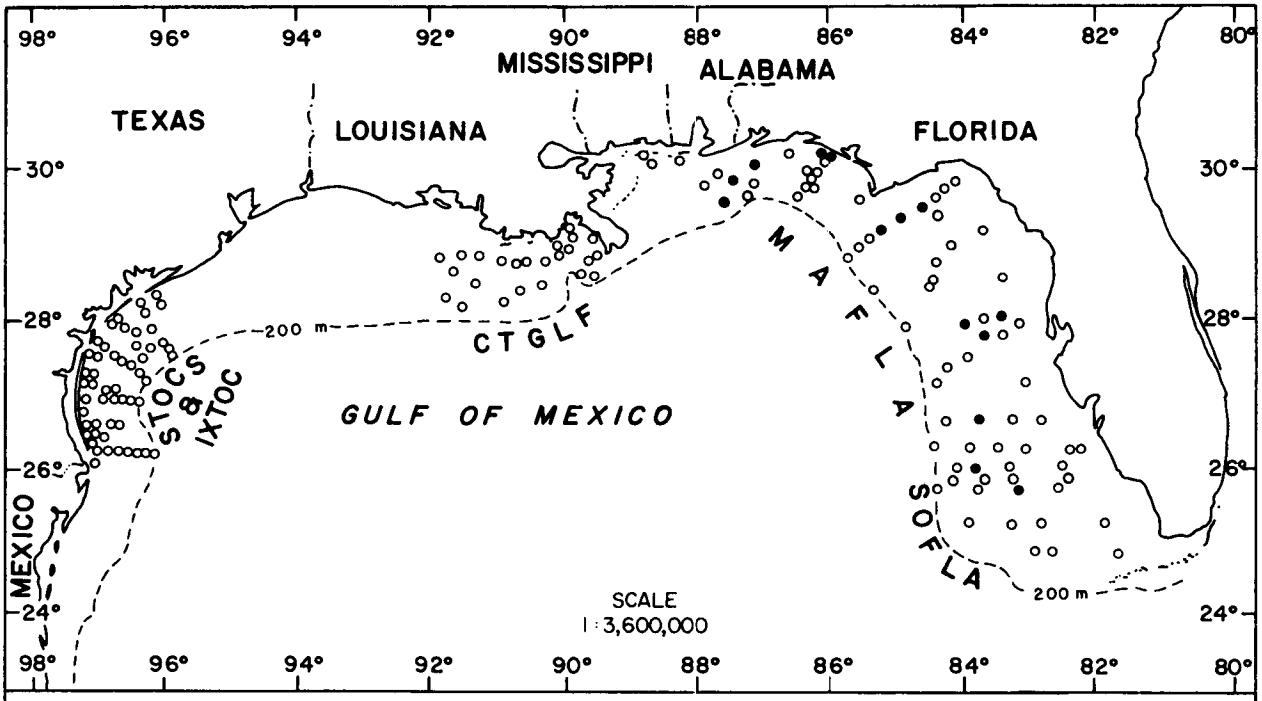

Figure 51-21. Distribution of Ampharete parvidentata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

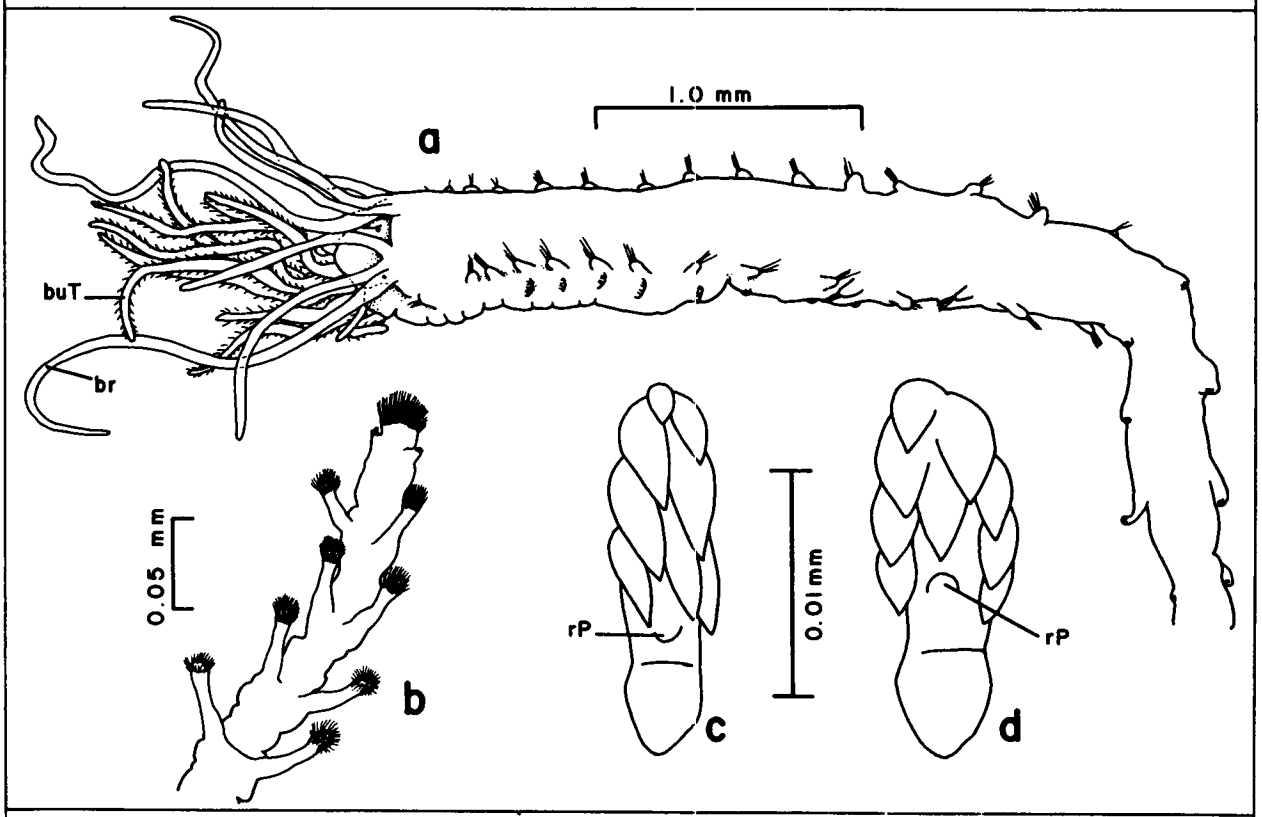

Figure 51-22. Ampharete parvidentata: a, anterior end; b, tip of buccal tentacle; c, thoracic uncinus (edge-on view); d, abdominal uncinus (edge-on view).

REMARKS: Ampharete sp. A is similar to A. arctica Malmgren, 1865c. It differs from the latter in having paleae with smoothly tapered tips, rather than abruptly tapered as illustrated by Malmgren (1865c, pl. 26, fig. 77C) and Ushakov (1955:367, fig. 136H). Most Gulf of Mexico BLM-OCS specimens were originally referred to Ampharete acutifrons (Grube, 1860a), which differs from Ampharete sp. A in having numerous caudal cirri, long dorsal cirri on the abdominal neuropodial pinnules, and a gap between the branchiae of the innermost pair (Day, 1967:699; Ushakov, 1955:366).
GULF OF MEXICO BLM-OCS OCCURRENCE: Ubiquitous in northeastern Gulf, occasional in western Gulf (Figure 51-19); 10-189 m; sands and silts.

Ampharete parvidentata Day, 1973
Figures 51-21, 22a-d

Ampharete parvidentata Day, 1973:115, fig. 15n-s.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12C-11/80 (1 spec., USNM 75253); MAFLA 2208D-7/76 (1 spec.), 2422J-7/76 (2 spec.), 2423B-6/75 (1 spec.), 2423C-7/76 (1 spec.), 2423J-7/76 (2 spec.), 2424E-6/75 (1 spec.), 2959G-11/77 (1 spec., USNM 71423).
DESCRIPTION:
Length, to 5.4 mm (previously reported to 12 mm); width, to 0.5 mm. Prostomium rounded or trilobed, with two or four small eyespots. Branchiae long, slender; outermost pair longest, innermost pair much shorter and separated from each other by broad gap (Figure 51-22a). Buccal tentacles numerous, long, papillose, ciliated (Figure 51-22b). Segment III with few, short, slender setae. Thoracic neuropodia with 3-12 uncini having two (occasionally three) columns of 4 (3-5) teeth each above rostral point (Figure 51-22c). Nine to eleven abdominal segments. Abdominal notopodial rudiments absent. Abdominal neuropodial pinnules with short, rounded dorsal cirri. Abdominal uncini mostly with three columns of 1-4 teeth each (Figure 51-22d). Pygidium with two slender cirri, each having basal pigment spot.
REMARKS: Ampharete parvidentata is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 35-120 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in moderate depths in northeastern Gulf (Figure 51-21); 19-91 m; coarse to fine sand, silty fine sand, clayey sandy silt.
DISTRIBUTION: North Carolina, Gulf of Mexico.

Ampharete sp. B
Figures 51-23, 24a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2528D-6/75 (1 spec.), 2528F-11/77 (1 spec.), 2529I-6/75 (2 spec., USNM 71424), 2639G-6/75 (1 spec.), 2639H-6/75 (3 spec.), 2852F-7/76 (1 spec.).

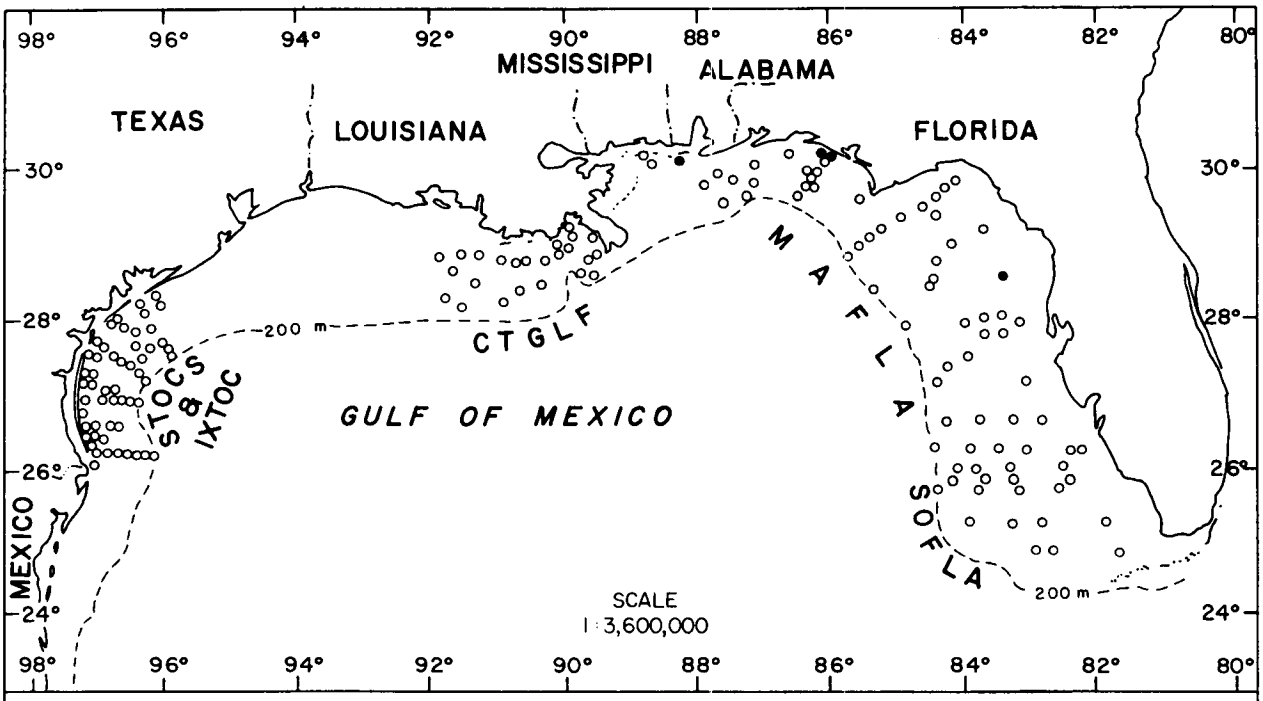

Figure 51-23. Distribution of Ampharete sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

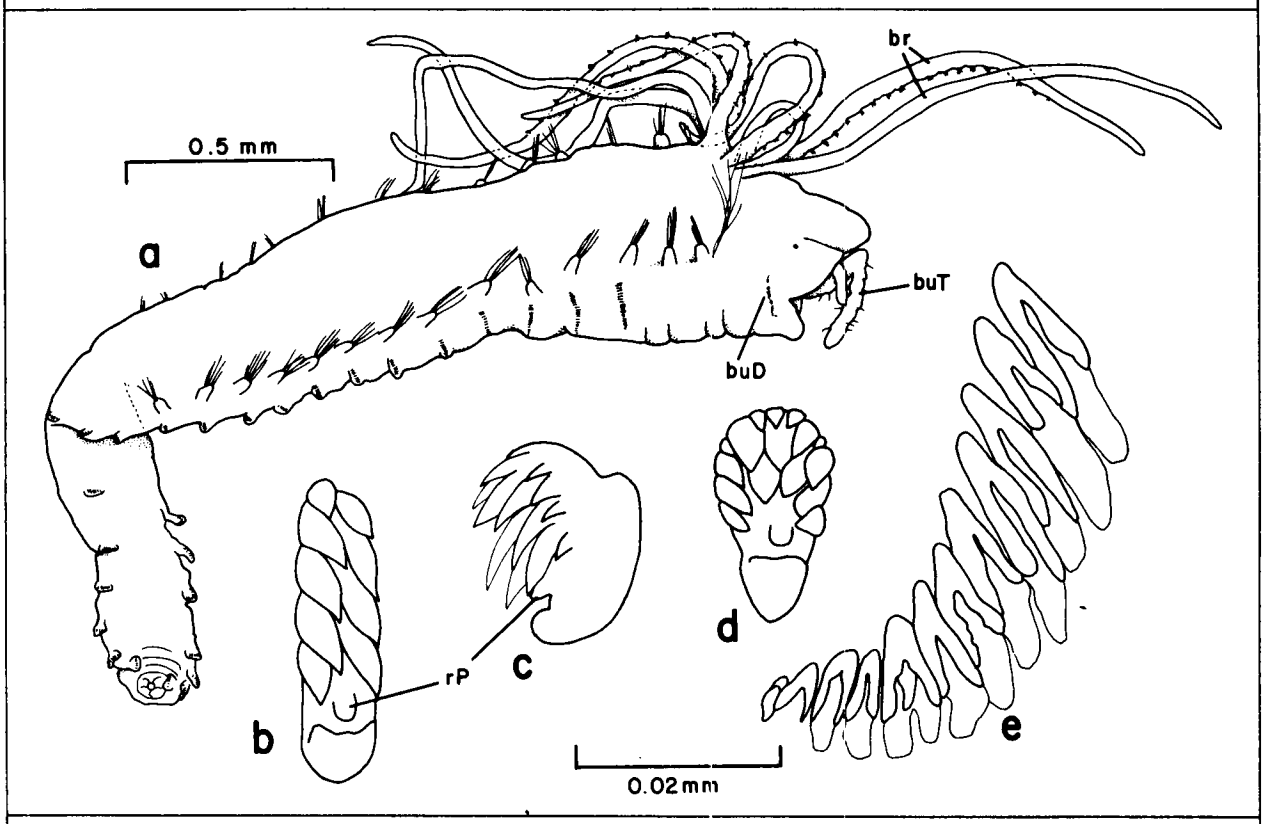

Figure 51-24. Ampharete sp. B: a, whole worm (dorsolateral view); b, thoracic uncinus (edge-on view); c, d, posterior abdominal uncini (partial profile and edge-on view); e, portion of buccal denticles.

DESCRIPTION:
Length, to 7.1 mm; width, to 1.0 mm. Prostomium trilobed with two or four small eyespots. Branchiae long, filamentous, outermost pair longest; arranged in two groups separated by short gap; innermost pair and anteromedial pair with distinct tufts of cilia (Figure 51-24a). Segment III with 6-13 fairly long, slender setae on each side. Thoracic neuropodia with 25-50 uncini anteriorly, decreasing in number in posterior thorax. Thoracic uncini with two (occasionally three) columns of 5 (4-6) teeth each above rostral point (Figure 51-24b). Ten or eleven abdominal segments. Abdominal notopodial rudiments not observed. Abdominal neuropodial pinnules without cirri. Anterior abdominal uncini similar to thoracic uncini, becoming crested toward posterior end (Figure 51-24c,d). Pygidium with two cirri and numerous short papillae. Buccal organ with long series of about 35-50 denticles (Figure 51-24e). One specimen with oocytes in coelom.
REMARKS: Buccal denticles are known in the genus Gnathampharete Desbruyères, 1978, but have not previously been reported in any species of Ampharete. The denticles are difficult to see even in adequately cleared specimens, and may occur more commonly than currently believed. Ampharete sp. B is similar to A. americana Day, 1973, but differs from the latter in having buccal denticles; longer, ciliated branchiae; more numerous uncini on anterior thoracic neuropodia; and fewer abdominal segments. Gulf of Mexico BLM-OCS specimens of Ampharete sp. B were originally referred to several other species.
GULF OF MEXICO BLM-OCS OCCURRENCE: Infrequent in northeastern Gulf (Figure 51-23); 22-38 m; coarse to medium sand, sandy silt.

Genus **Lysippe** Malmgren, 1865

TYPE SPECIES: Lysippe labiata Malmgren, 1865.
REFERENCES:
Malmgren, 1865c:367.
Day, 1964:114.
Hartmann-Schröder, 1971:452.
Fauchald, 1972a:298; 1977a:126.
DIAGNOSIS: Prostomium trilobed, without glandular ridges. Buccal tentacles smooth. Four pairs of smooth branchiae. Notosetae present on all thoracic segments beginning on segment III. Thirteen thoracic uncinigers. Thoracic uncini with 2-3 columns of teeth. Abdominal notopodial rudiments present or absent.

Lysippe cf. **annectens** Moore, 1923
Figures 51-25, 26a-d

Lysippe annectens Moore, 1923:201, pl. 17, figs. 11-13.
Lysippe annectens--Hartman, 1969:563, figs. 1-6.
Lysippe annectens--Fauchald, 1972a:299.
Lysippe annectens--Loi, 1980:141.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 16B-7/81 (1 spec., USNM 75258), 22D-11/80 (1 spec., USNM 75260), 22E-11/80 (2 spec., USNM 75261), 22A-4/81 (4 spec., USNM 75259),

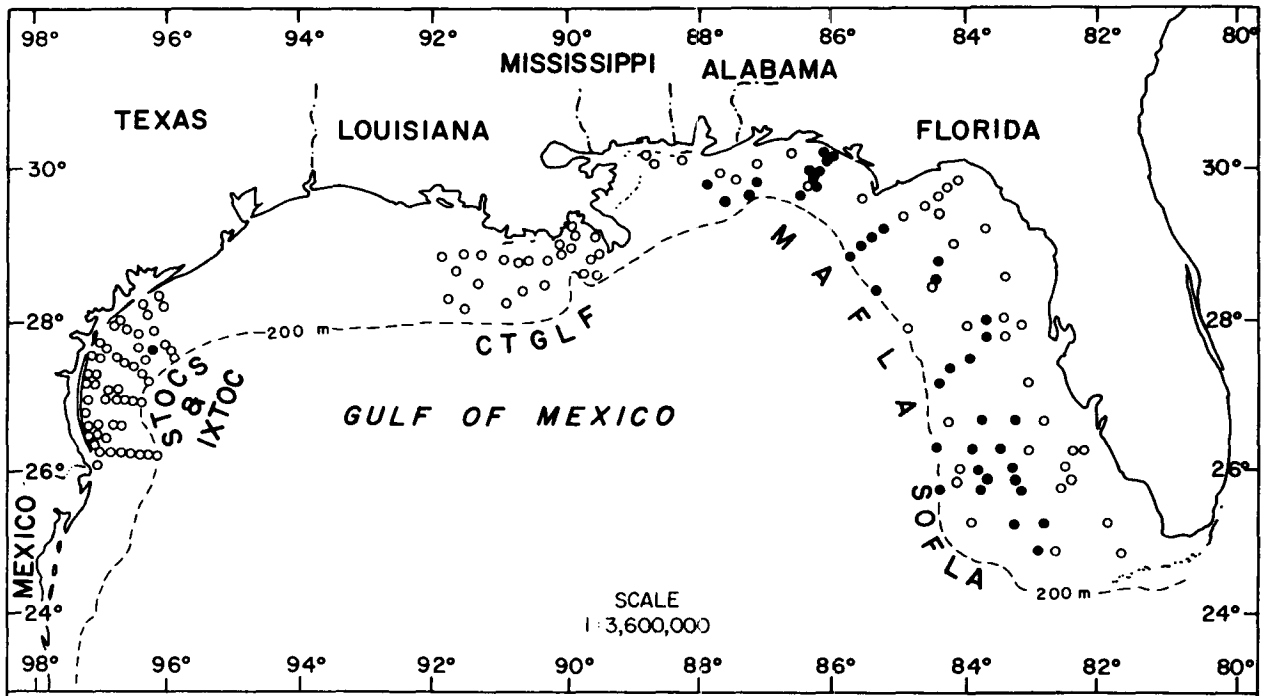

Figure 51-25. Distribution of Lysippe cf. annectens on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

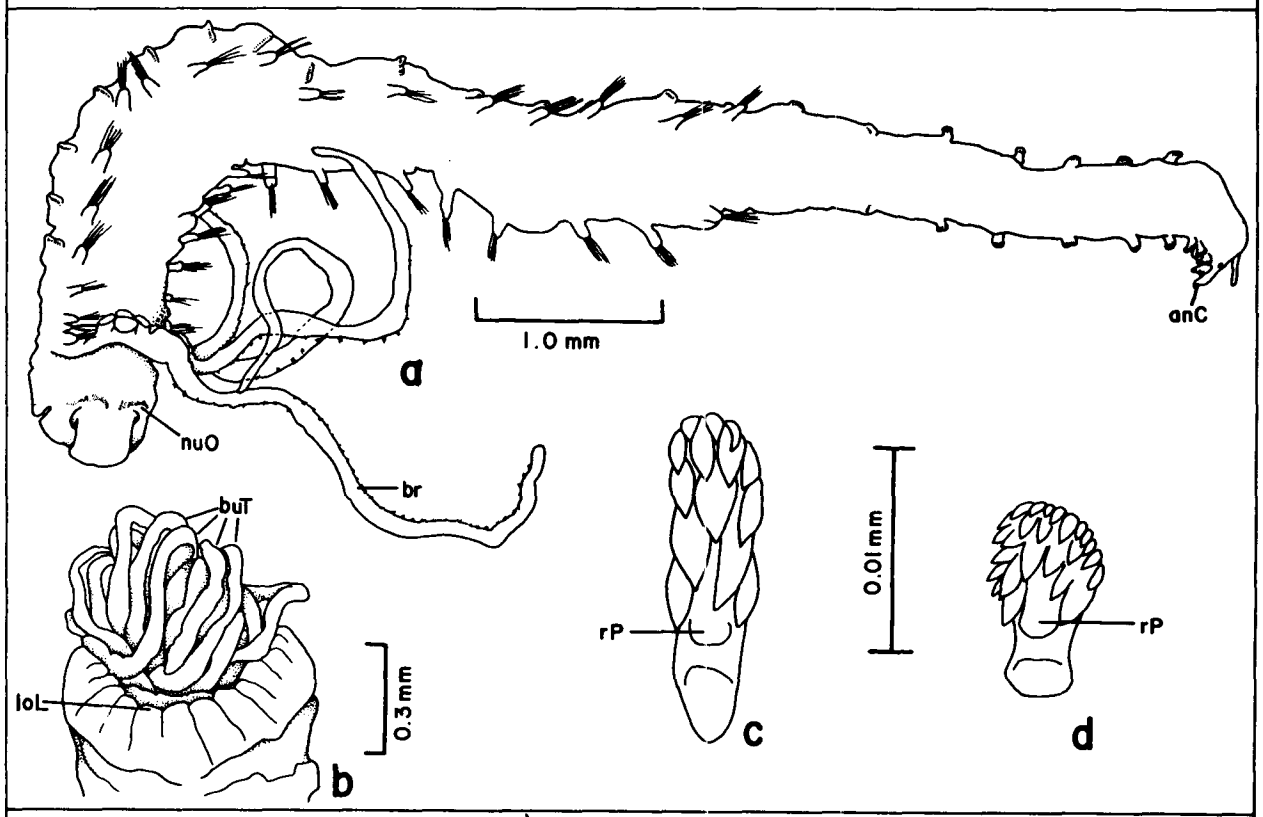

Figure 51-26. Lysippe cf. annectens: a, whole worm (dorsolateral view); b, lower lip and buccal tentacles (ventral view); c, thoracic uncinus (edge-on view); d, posterior abdominal uncinus (edge-on view).

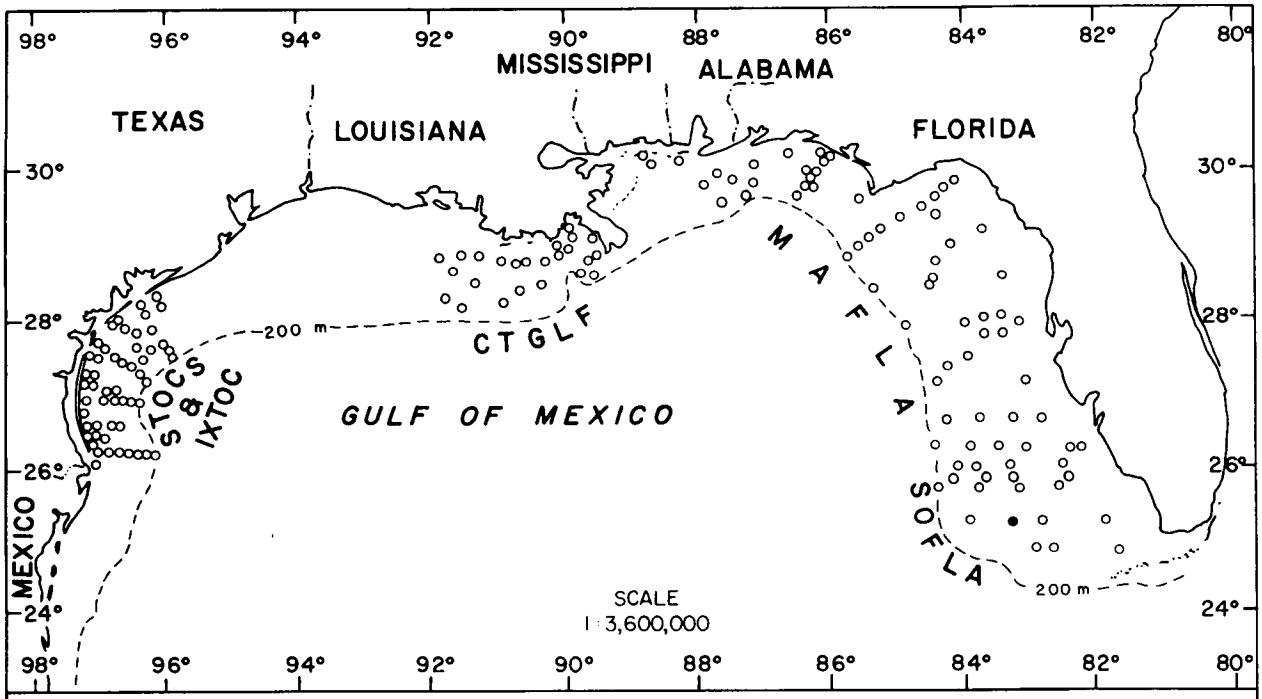

Figure 51-27. Distribution of ampharetid Genus B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

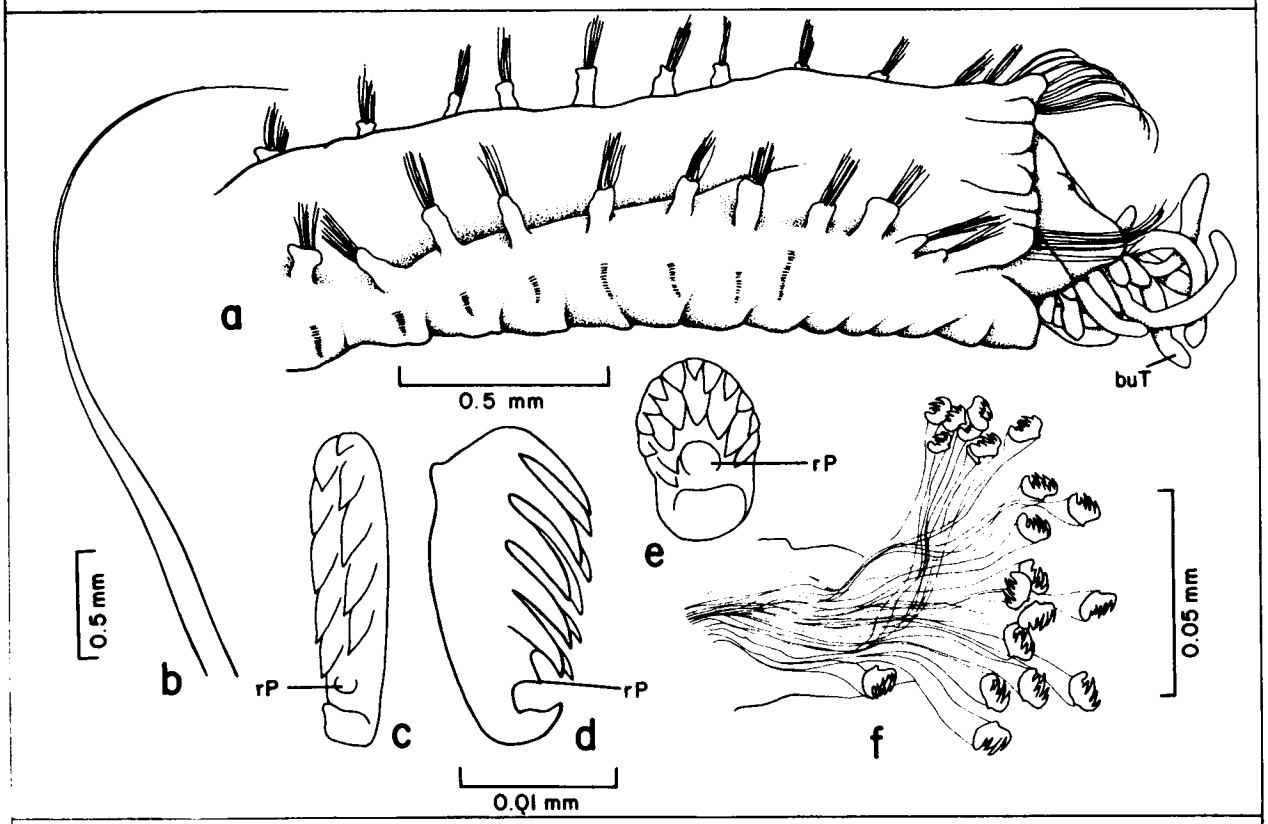

Figure 51-28. Genus B: a, anterior end (dorsolateral view); b, palea from segment III; c, d, thoracic uncini (edge-on view and profile); e, abdominal uncinus (edge-on view); f, abdominal neuropodial pinnule.

28C-11/80 (1 spec., USNM 75262); MAFLA 19E-5/74 (1 spec.), 20H-5/74 (2 spec.), 2105F-9/75 (2 spec.), 2209G-8/77 (1 spec.), 2210B-7/76 (1 spec., USNM 71425), 2210D-7/76 (2 spec.), 2210I-7/76 (1 spec.), 2316K-8/76 (1 spec.), 2426H-11/77 (1 spec.), 2531E-9/77 (2 spec.), 2534C-6/75 (2 spec.), 2643A-9/75 (5 spec.), 2645E-2/78 (3 spec.), 2959C-8/77 (2 spec.), 2959D-8/77 (2 spec.), 2959E-8/77 (2 spec.), 2959D-11/77 (2 spec., USNM 71426); STOCS HR1-2 11/76 (5 spec., USNM 91424).

DESCRIPTION:

Length, to 9.5 mm (previously reported to 27 mm); width, to 1.2 mm (previously reported to 2 mm). Prostomium without eyes, or with 2-4 small eyespots. Nuchal organs usually distinctly pigmented (Figure 51-26a), yellowish-brown. Lower lip crenulate (Figure 51-26b). Branchiae long, slender, with ciliary tufts, sometimes with irregular brown pigment patches; outermost pair longest, those of innermost pair separated by short gap. Segment III with 6-14 slender notosetae on each side. Twelve or 13 (rarely 14) thoracic uncinigers. Thoracic neuropodia with 8-30 uncini having 2-4 irregular columns of teeth (Figure 51-26c). Ten to 12 abdominal segments. Abdominal notopodial rudiments and neuropodial cirri not observed. Abdominal uncini anteriorly similar to thoracic uncini, posteriorly smaller and crested (Figure 51-26d). Pygidium with two cirri having basal pigment spots. Five specimens with oocytes in coelom.

REMARKS: The number of thoracic uncinigers, usually a reliable generic character, appears to be variable within this genus. Among the three species of Lysippe having a crenulate lower lip, L. annectens has been reported to have 13 or 14 thoracic uncinigers (Fauchald, 1972a:299; Hartman, 1969:563); L. capensis, 12; and L. labiata, 13 (Fauchald 1972a:299). The Gulf of Mexico BLM-OCS specimens show considerable variability in this regard. Most of the smaller individuals have 12 thoracic uncinigers, while most of the larger ones have 13. One fairly large specimen (Figure 51-26a) has 14. These specimens seem to differ from the California species L. annectens only in having fewer thoracic uncini (Moore reported thoracic neuropodia with 60-70 uncini), distinctly pigmented nuchal organs, and ciliary tufts on the branchiae. Gulf of Mexico BLM-OCS specimens of L. cf. annectens were originally referred to numerous other species. The genus Lysippe is newly reported from this region.

PREVIOUSLY REPORTED HABITAT: 70-2000 m; mud.

GULF OF MEXICO BLM-OCS OCCURRENCE: Widespread in northeastern Gulf and one record in western Gulf (Figure 51-25); 27-189 m; coarse to fine sand, silty fine sand, clayey and sandy silt.

DISTRIBUTION: Southern California to Baja California, ?Gulf of Mexico.

Genus B

Figures 51-27, 28a-f

MATERIAL EXAMINED:

Gulf of Mexico BLM-OCS:

SOFLA 24F-11/80 (2 spec., USNM 75266).

DESCRIPTION:

Length, to 7.7 mm; width, to 0.6 mm. Prostomium trilobed, with two small eyes, without glandular ridges (Figure 51-28a). Nuchal organs not observed. Buccal tentacles numerous, smooth. Four pairs of long, slender, wrinkled branchiae (not illustrated) in two groups separated by

short median gap, appearing to arise from segment III. Segment III with paleae tapering gradually to long, slender, curved tips (Figure 51-28b), numbering 8-10 on each side. Capillary notosetae present from segment IV. Sixteen thoracic setigers, of which 12 are uncinigerous. First thoracic neuropodia each with 30-35 uncini; following thoracic neuropodia with 11-17 uncini. Thoracic uncini with two columns of 5-6 teeth (Figure 51-28c,d); ventralmost uncini smaller with three columns of teeth. Twelve or thirteen abdominal segments. Abdominal notopodial rudiments absent. Abdominal neuropodial pinnules without cirri. Uncini of first two pairs of abdominal neuropodia similar to thoracic uncini and located on tori; following abdominal segments with crested uncini (Figure 51-28e) in disarray on pinnules (Figure 51-28f). Pygidium without cirri. Larger specimen with oocytes in coelom.

REMARKS: Genus B approaches Eclysippe Eliason, 1955, in all characters except the number of branchiae. However, the status of Eclysippe is apparently confused; Day (1964) and Fauchald (1977a) reported three pairs of branchiae, but Fauvel (1936) described four pairs of branchiae in the type species, Lysippe vanelli.

GULF OF MEXICO BLM-OCS OCCURRENCE: One station off southwestern Florida (Figure 51-27); 88 m; medium sand.

CHAPTER 52

Henry Kritzler

FAMILY TEREBELLIDAE Grube, 1850

INTRODUCTION

Terebellids are small (5-10 mm) to large (100-300 mm), typically tubicolous polychaetes. The body is divided into two distinct regions: a robust, cylindrical thorax with biramous parapodia, and a longer, slender, tapering abdominal region usually with neuropodia only. The prostomium is reduced and usually so fused with the buccal segment or peristomium that they are difficult to distinguish. Eyespots may be present. The prostomium-peristomium (tentacular lobe) gives rise to numerous nonretractile, filamentous, grooved feeding tentacles. The buccal segment (which may or may not be the primitive first segment) is apodous and achaetous. Branchiae, when present, appear as 1-3 pairs of filamentous, whorled, or dendritically branched contractile gills, usually on the second, third, and/or fourth segments, rarely on other segments. Some Polycirrinae and Amphitritinae lack branchiae. Rounded or cylindrical notopodia bearing limbate setae first appear on segments II, III, or IV. Neurosetae, when present, are mainly short, avicular uncini with a main fang and crest of denticles, or are pectinate uncini with a single vertical series of teeth, or rarely are acicular. Thoracic neurosetae are generally borne on low ridges (tori). In the abdomen they often occur on the distal end of prominent, projecting pinnules. Terebellids usually possess both noto- and neurosetae, although some species lack one or the other either in the thorax or abdomen or both. Also, as in Hauchiella for example, setae may be absent entirely. The pygidium is nondescript, without anal cirri.

First erected by Grube in 1850, the family Terebellidae was revised in 1867 by Malmgren, whose organization is still generally accepted. Another important revision is that of Hessle (1917), who clarified its relationship to the other "Terebellomorph" families--the Ampharetidae, the Pectinariidae and the presumably primitive, ancestral Trichobranchidae. Later authors (Chamberlin, 1919b; Fauvel, 1927) proposed the consolidation of the Trichobranchidae as a subfamily within the Terebellidae, a view which was endorsed by Day (1967) and others, but not by Hartman (1959b), Hartmann-Schröder (1971), Fauchald (1977a), or the present author.

Fauchald (1977a) recognized 48 genera and 357 species of terebellids; Pettibone (1982), about 60 genera and 375 species. Of these, 16 described genera including 15 established species and four tentative assignments have been identified from the Gulf of Mexico BLM-OCS voucher collections. In addition, 14 species and two genera are possibly new to science.

PRINCIPAL DIAGNOSTIC CHARACTERS

The main morphological characters used in the identification of terebellids are: 1) the shape of and structures associated with the head (prostomium-peristomium) and first 2-3 achaetous segments; 2) the

number, shape, and segmental arrangement of branchiae; 3) the number and setal arrangement of thoracic segments; and 4) the morphology and distribution of the setae, especially the small neuropodial uncini. These characters serve initially to assign specimens to one of four subfamilies: the Artacaminae, Amphitritinae, Thelepinae, or Polycirrinae.

The Head.

The head generally is useful only in identifying at the subfamily level. The presence of a ventral, peristomial, papillose proboscis is characteristic of the Artacaminae. The large, frilly tentacular lobe, formed by the nearly complete fusion of the prostomium and peristomium, places most specimens in the subfamily Polycirrinae. In the Thelepinae and Amphitritinae, the prostomium and peristomium combine to form a collar-like tentacular lobe.

The Buccal Tentacles.

In general, buccal tentacles are more or less filiform, grooved, highly secretory, ciliated structures originating from the buccal or tentacular lobe. Because of their extremely contractile nature, which results in variation in shape depending on the circumstances of preservation, the tentacles are not particularly helpful in species identification. Exceptions may be found in species of Telothelepus (Figure 52-70a) and in Genus A (Figure 52-60a). The origin of the tentacles (resulting from variation in the structure of the buccal segment) may also have diagnostic value, as in some of the Polycirrinae.

Lateral Lappets.

These structures, less likely to be affected by circumstances of preservation, are useful in the identification of species in a number of genera. They occur, if at all, on the first four segments and may be simple, differing only in size from one segment to another, as in Pista cristata (Figure 52-44a) and P. fasciata (Figure 52-38b); or complex, differing greatly among the four segments, as in P. palmata (Figure 52-48a,b).

Branchiae.

In most terebellids, branchiae are confined to anterior segments, and with few exceptions, are found only in species known to be tubicolous. The active, creeping Polycirrinae lack branchiae as do some genera of the Amphitritinae (e.g., Laeana and Lanassa), which may be less sedentary than known tube-dwellers of that subfamily.

The branchiae may consist of filaments supported by a stalk, or simple filaments arising directly from the body wall, as is characteristic of the Thelepinae. Stalked branchiae may be tufted or whorled, with the filaments arising individually from a central stalk (Figure 52-44a), or as regularly dichotomous or dendritic branches (Figure 52-48a). The length and thickness of the stalks are probably unreliable in diagnosis, being greatly affected by circumstances of preservation or regeneration.

The Notosetae.

Terebellid notosetae are variously modified simple setae. In the Amphitritinae the notosetae are especially useful in identification. The generic key includes a dichotomy between notosetae with "serrate" tips and "smooth" tips. Herein the following classification of "serrate" notosetae is used:

Faintly hispid--serrations visible only under oil immersion (1000x magnification), as in Neoleprea sp. B (Figure 52-30c).

Hispid--serrations visible under a high power objective (430x magnification), as in Neoleprea sp. A (Figure 52-28c) and others.

Denticulate--serrations visible under the low power objective (100x magnification), as in Terebella rubra (Figure 52-36c).

Feathered--extreme, practically pinnate serrations easily visible under low power, as in Polycirrus cf. albicans (Figure 52-20b) and P. cf. denticulatus (Figure 52-18c).

Plumose--setae appear serrate but actually are made up of a chain of nested cones with the apices oriented toward the base, as in Polycirrus plumosus (Figure 52-8c). This is not readily apparent, except in broken setae at high magnification.

Penicillate--slender setae with delicate, terminal hairs visible only under oil immersion, as in Amaeana trilobata (Figure 52-22d).

Flagged--setae in which the wings are reduced or absent and the hispid to denticulate tip is expanded to one side, as in Terebella rubra (Figure 52-36c) and Neoleprea sp. A (Figure 52-28c), easily seen at 430x magnification or less.

Not to be confused with "serrate" setae are those with diagonal striae in the web which do not extend beyond the edge of the web, leaving it smooth.

The Neurosetae.

Three kinds of neurosetae occur in terebellids: acicular spines, as seen in Amaeana trilobata (Figure 52-22e); avicular uncini, characteristic of most species (Figure 52-24d-f); and pectinate uncini, which easily distinguish Loimia (Figure 52-52d-g) from other genera. Pectinate uncini have small teeth or denticles arranged in a single vertical series above the main fang or rostrum. In avicular uncini the denticles are arranged in a series of transverse rows. The number and arrangement of denticles in the avicular uncini are of such great taxonomic importance that a "dental formula" has been developed to express the number of teeth in each arc. For example, MF:3:5-6:4-5 signifies that the first arc above the main fang (MF) has three teeth, the second arc has 5-6 teeth, and the third has 4-5 teeth.

The presence and position of a subrostral ligament, and the development of basal shafts by the chitinization of the basal web (Figure 52-38f) and suspensory fiber are also diagnostic characters for a number of species. The subrostral attachment is shown in the position characteristic of most Amphitritinae in Figure 52-34d. In the Thelepinae it has migrated down to the end of the prow in place of the prow attachment, as in Euthelepus sp. A (Figure 52-66d). Intermediate conditions are known--e.g., Rhinothelepus sp. A (Figure 52-68e,g). In order to determine the presence of basal shafts (Figure 52-38d), the uncinigerous tori or pinnules should be excised, the uncini teased apart and/or the tissue dissolved away using 5% KOH or dilute chlorine bleach (see Materials and Methods). The uncini should then be stained using Methylene Blue and examined under oil immersion. In distinguishing between species of Pista, of which there are many, this examination should include at least the first and last single rows of thoracic uncini, one or more of the double rows, and a few abdominal ones as well.

The neurosetae of thoracic setigers are usually arranged in a single vertical series on the uncinigerous tori. This is the case for

species of the subfamilies Polycirrinae and Thelepinae which have uncini. In the Amphitritinae the nature of the double rows of thoracic uncini can be difficult to discern. Most of the trouble derives from ambiguity in descriptions and from variation within species, which may be a consequence of development. Uncini "interlocking face-to-face," as in Pista cristata (Figure 52-44e), are actually a double row appearing as a single row with all uncini side-by-side, each facing the direction opposite to that of adjacent uncini. Truly double rows are either "face-to-face" as in Neoleprea sp. A (Figure 52-28f) and Lanassa sp. A (Figure 52-24f), or "back-to-back" as in Lanice conchilega (Figure 52-58f). There may be a space between the two rows in some posterior setigers. The occurrence of intermediate situations as in Lanice conchilega or Lanassa sp. A, leads the author to suspect that these differences are consequences of development, and to offer the hypothesis that the posterior thoracic uncini in the Amphitritinae begin as "single" rows interlocking face-to-face, and that they either remain in this arrangement or change to one of the other kinds of "truly" double rows depending on the migration of the alternate individual uncini as the worm grows.

Uncinigerous ridges on abdominal segments become more prominent and often project out from the body as truncate lobes or pinnules. Uncini in the abdomen are usually arranged in single rows and continue to the pygidium, although in reduced numbers.

Ventral Glandular Pads.

Limited to thoracic segments, the ventral glandular pads are concentrations of giant glandular cells (Day 1967:709) arranged in a particular pattern that may be of diagnostic value when present. In Lysilla sp. A (Figure 52-4b) and Lysilla sp. B (Figure 52-6a), they consist of polygonal papillae. In Polycirrus sp. B (Figure 52-14a) they may be divided into median and lateral sections, the former often lying in a shallow groove. This subdivision is scarcely apparent in Pista fasciata (Figure 52-38b) and Rhinothelepus sp. A (Figure 52-68b), and altogether absent in Eupolymnia sp. A (Figure 52-56b).

Nephridia and Nephridial Papillae.

These structures were made a principal basis for diagnosis by Hessle (1917). With few exceptions they were not useful in the study of the generally very small BLM-OCS specimens because of the necessity of dissection for accurate observation.

BIOLOGICAL NOTES

Most terebellids are tubicolous. The principal exceptions are the Polycirrinae which creep naked on the substrate, and some members of the Artacaminae which burrow through the sediments with the aid of their peristomial proboscis. The majority of the tubicolous species are found in contact with solid surfaces provided by shell hash, gravel, seagrasses and algae, sponges, etc. Their tubes are often found under large rocks or in cracks and crevices. A number of species of polynoids and sigalionids are known to commensally inhabit the tubes of terebellids. Habitats providing numerous interstices such as the basal portion of coral heads, hydroids, algal stalks or holdfasts, are often used. Actual boring into lime rock and shells, as seen in some spionids and

sabellids, does not seem to occur. Tubes are constructed of mucus, heavily incorporated with particulate matter.

Most terebellids are surface deposit-feeders which use their grooved tentacles to collect and transfer organic detritus, unicellular algae, or sedimentary particles to the mouth. Mucus secreted by the tentacles may enable some terebellids to prey upon living, motile, epibenthic or planktonic organisms brought in contact with the bottom by turbulence (pers. obs. of author). The role of ciliary action in extending the tentacles and in transporting food has been described by Dales (1963) and by Fauchald and Jumars (1979). Observations on many living specimens of Streblosoma hartmanae Kritzler, 1971, have shown that the use of the prostomial lips in transferring food from the tentacles to the mouth is limited to ciliary, rather than muscular, action.

Most terebellids are restricted to unpolluted environments. Their tubes may be buried in black, reducing sediment, and due to the diffusion of oxygen out into the surrounding water, the immediate habitat becomes aerobic. The unusual notopodial branchiae of Enoplobranchus sanguineus are an adaptation for living in a habitat characterized by low oxygen tension (Day, 1967).

In most terebellids the sexes are probably separate. Gametes are produced in the ventral part of the thorax, accumulate in the coelom and are released via the nephridia (Fauvel, 1927). Fertilization is external and development generally takes place in the plankton; however, some species produce benthonic larvae. In some cases the eggs develop in gelatinous masses in the tubes of the adults. Some terebellids have been reported to be hermaphroditic or viviparous (Schroeder and Hermans, 1975).

SPECIES OF TEREBELLIDAE RECORDED FROM GULF OF MEXICO BLM-OCS PROGRAMS

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Lysilla sp. B	52-12
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Polycirrus sp. A	52-17
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Polycirrus sp. B	52-20
Polycirrus eximius dubius Day, 1973	52-20
Polycirrus cf. denticulatus Saint Joseph, 1894	52-23
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Amaeana trilobata (Sars, 1863)	52-27
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Telothelepus cf. *capensis* Day, 1955..... 52-72

Key to the Subfamilies and Genera of Terebellidae from the Gulf of Mexico BLM-OCS Programs*

1a. Large peristomial proboscis present. . . (subfamily **Artacaminae**)**
1b. Proboscis absent 2

2a. Branchiae absent; tentacular lobe large, frilly; ventral glandular pads more or less reduced (subfamily **Polycirrinae**) 4
2b. Branchiae usually present; tentacular lobe not especially large or frilly; ventral glandular pads well-developed. 3

3a. Branchiae mostly stalked and dendritic, rarely filamentous or lacking; uncini in double rows in some thoracic neuropodia (subfamily **Amphitritinae**). 7
3b. Branchiae filamentous; uncini in single rows in all thoracic neuropodia (subfamily **Thelepinae**) 17

4a. Setae entirely absent. . . . . **Hauchiella**, p. 52-7
4b. Setae present. 5

5a. Neurosetae absent. . . . . .**Lysilla**, p. 52-9
5b. Neurosetae present 6

6a. Abdominal neurosetae avicular (Figure 52-18d,e). . . . . **Polycirrus**, p. 52-13
6b. Abdominal neurosetae acicular (Figure 52-22e). . **Amaeana**, p. 52-25

7a. Branchiae absent 8
7b. Branchiae present. 9

8a. Neurosetae present from setiger 2; all notosetae denticulate . . . . . .**Lanassa**, p. 52-27
8b. Neurosetae present from setiger 7; some notosetae smooth . . . . . .**Genus B**, p. 52-30

9a. Notosetae with serrate tips 10
9b. Notosetae with smooth tips. 14

10a. Uncini present from third thoracic setiger . . **Neoleprea**, p. 52-32
10b. Uncini present from second thoracic setiger 11

11a. Branchiae sessile or with very short stalks. . . . . .**Amphitrite****
11b. Branchiae with well-developed stalks. 12

12a. Lateral lappets present. . . . . **Neoamphitrite**, p. 52-34
12b. Lateral lappets absent. 13

13a. Two pairs of dendritic branchiae. . . . . .**Amphitritides****
13b. Three pairs of dendritic branchiae. . . . . .**Terebella**, p. 52-39

14a. Some anterior thoracic uncini with long basal shafts (Figure 52-38f). . . . . .**Pista**, p. 52-40
14b. All thoracic uncini without basal shafts. 15

15a. Uncini pectinate (Figure 52-52d-g). . . . . **Loimia**, p. 52-51
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16a. Posterior thoracic uncini in double rows face-to-face. . . . . **Eupolymnia**, p. 52-55
16b. Posterior thoracic uncini in double rows back-to-back (Figure 52-58f) . . . . . .**Lanice**, p. 52-59

17a. First notosetae occurring on first postbranchial segment . . . . . .**Genus A**, p. 52-62
17b. First notosetae occurring on a branchial segment. 18

18a. First notosetae occurring on first branchial segment . . . . . .**Streblosoma**, p. 52-63
18b. First notosetae occurring on second branchial segment 19

19a. Lateral lappets present on one or more thoracic segments (Figure 52-66a). . . . . .**Euthelepus**, p. 52-68
19b. Lateral lappets absent. 20

20a. Thoracic uncini present. . . . . **Rhinothelepus**, p. 52-70
20b. Thoracic uncini absent. . . . . **Telothelepus**, p. 52-72

*While every effort has been made to conform to existing generic diagnoses, some changes have been made in an attempt to mitigate some of the confusion in the literature and/or to include material encountered herein which did not exactly fit and otherwise would have required erection of new genera. This has been especially true in cases of genera such as Polycirrus, Neoamphitrite, and Pista.

**Not represented in Gulf of Mexico BLM-OCS voucher collections.

Genus **Hauchiella** Levinsen, 1893

TYPE SPECIES: Polycirrus tribullata McIntosh, 1869.
REFERENCES:
Wollebaek, 1912:74.
Hessle, 1917:233.
McIntosh, 1922a:201.
Hartmann-Schröder, 1971:485.

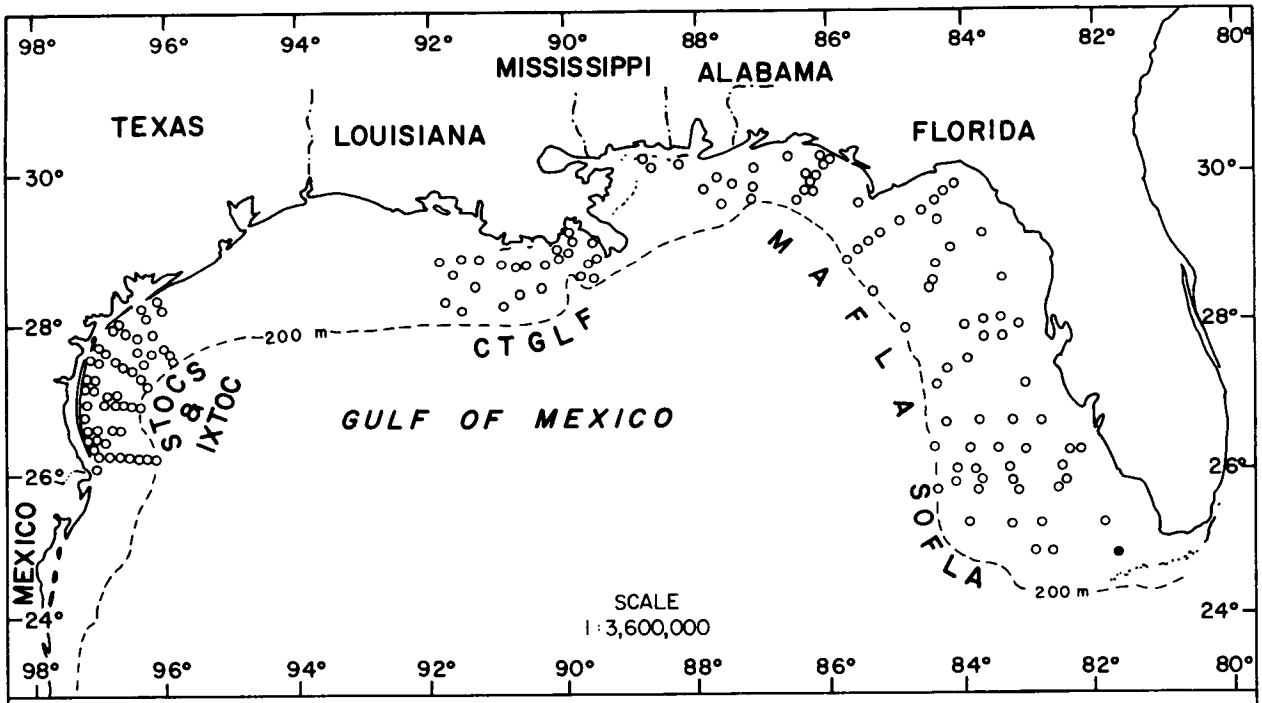

Figure 52-1. Distribution of Hauchiella sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

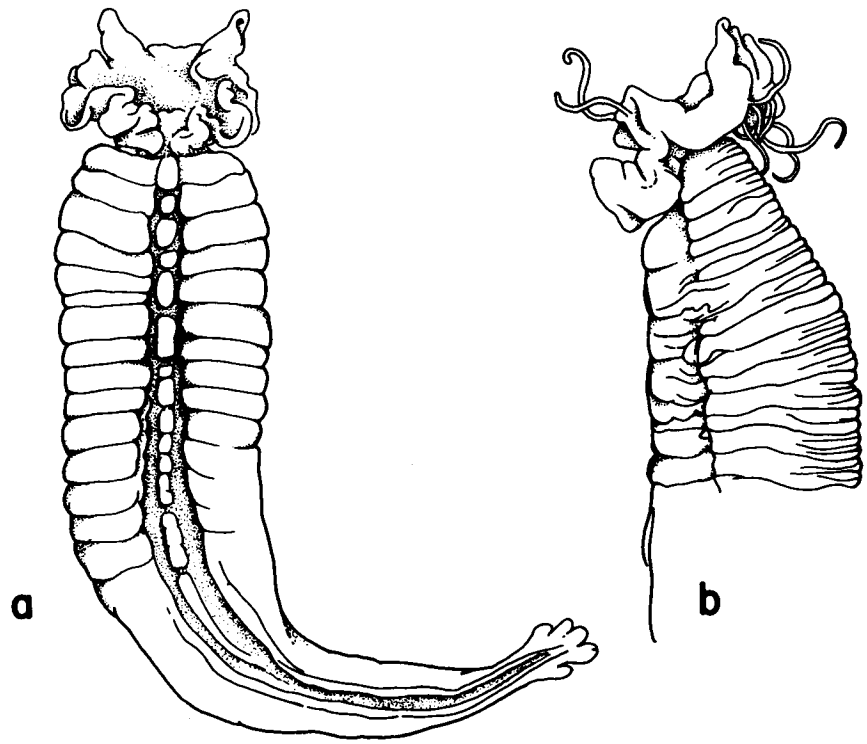

Figure 52-2. Hauchiella sp. A: a, whole worm, ventral view; b, anterior end, dorsolateral view.

DIAGNOSIS: Body polycirrinid in shape. Notopodia, neuropodia, and setae entirely absent.
REMARKS: McIntosh's allusion to the disc-like lateral processes has been left out of the generic diagnosis as this now appears to be a specific characteristic.

Hauchiella sp. A
Figures 52-1, 2a,b

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 25A-4/81 (1 spec., USNM 90525).
DESCRIPTION:
Length, 22 mm; width, 2 mm. Tentacular lobe arranged in bilaterally symmetrical folds (Figure 52-2a). Lower lip formed by ventral portion of first segment. Tentacles numerous, slender, variable in length, emerging from edges and dorsal surface of tentacular lobe. Body somewhat fusiform, rounded dorsally, grooved laterally and ventrally. Segments numbering about 40; segmentation difficult to discern posteriorly. Anterior segments with secondary and tertiary rings (Figure 52-2b). Lateral disc-like processes absent. Small, somewhat rectangular shields present in ventral groove, coalescing posteriorly. Very small papillae present on anterior dorsal segmental rings. Pygidium somewhat damaged, with terminal anus and folded appendages.
REMARKS: Hauchiella sp. A is distinguished from H. tribullata in lacking the three circular, flattened nephridial processes found on each side of the thorax of the latter. This is the first record of the genus in the Gulf of Mexico.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off southwestern tip of Florida (Figure 52-1); 24 m; silt/clay.

Genus **Lysilla** Malmgren, 1865

TYPE SPECIES: Lysilla loveni Malmgren, 1865.
REFERENCES:
Wollebaek, 1912:75.
Hessle, 1917:230.
McIntosh, 1922a:203.
Fauvel, 1927:286.
Hartmann-Schröder, 1971:489.
DIAGNOSIS: Anterior end swollen, dorsally convex, ventrolaterally rounded and projecting. Posterior end slender. Thorax minutely tuberculate; ventrolateral tubercles in six rows per segment. Abdomen with fine secondary segmental rings. Prostomium-peristomium with wide, frilly cephalic lobe, variably contractile and folded. Numerous tentacles present, each grooved and clavate dorsolaterally, filiform ventrolaterally. Segment I with posteriorly extended tongue-like process. Ventral shields reduced. Nephridial papillae and small, flask-shaped notopodia present from segments III-VIII. Capillary setae smooth or faintly hispid, slender, mostly embedded in notopodia. Uncini and tori entirely absent.

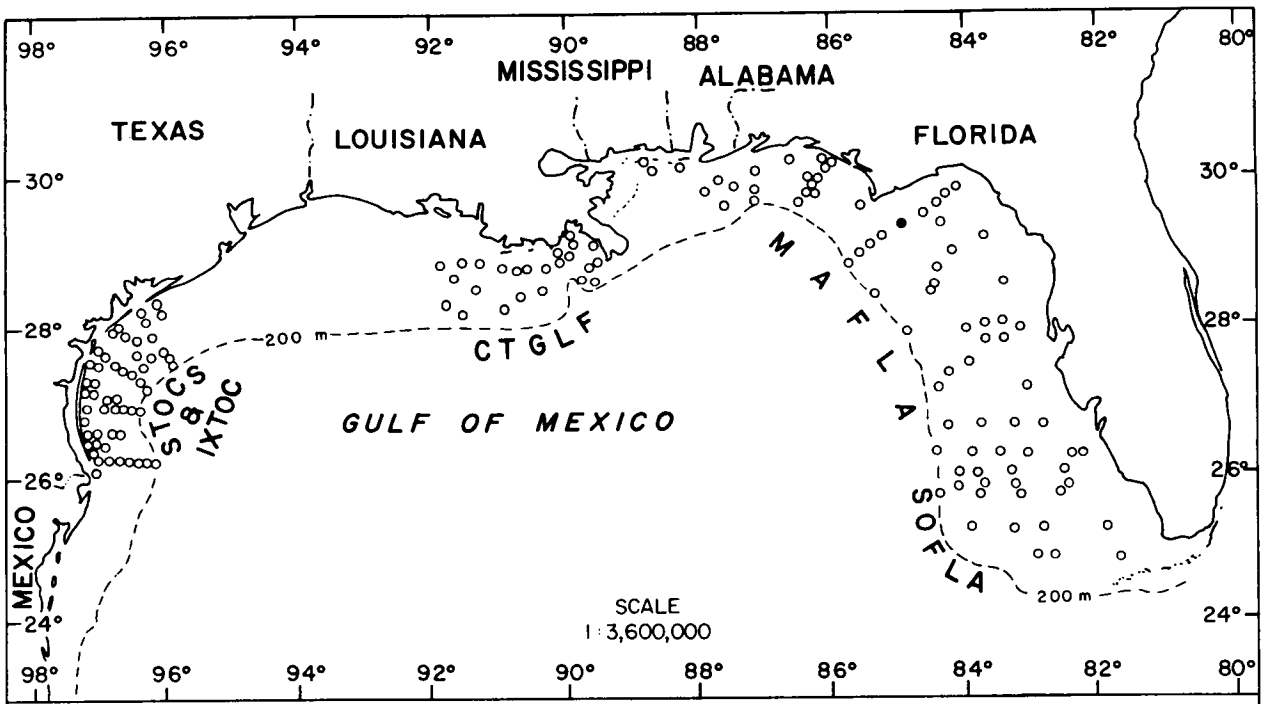

Figure 52-3. Distribution of Lysilla sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

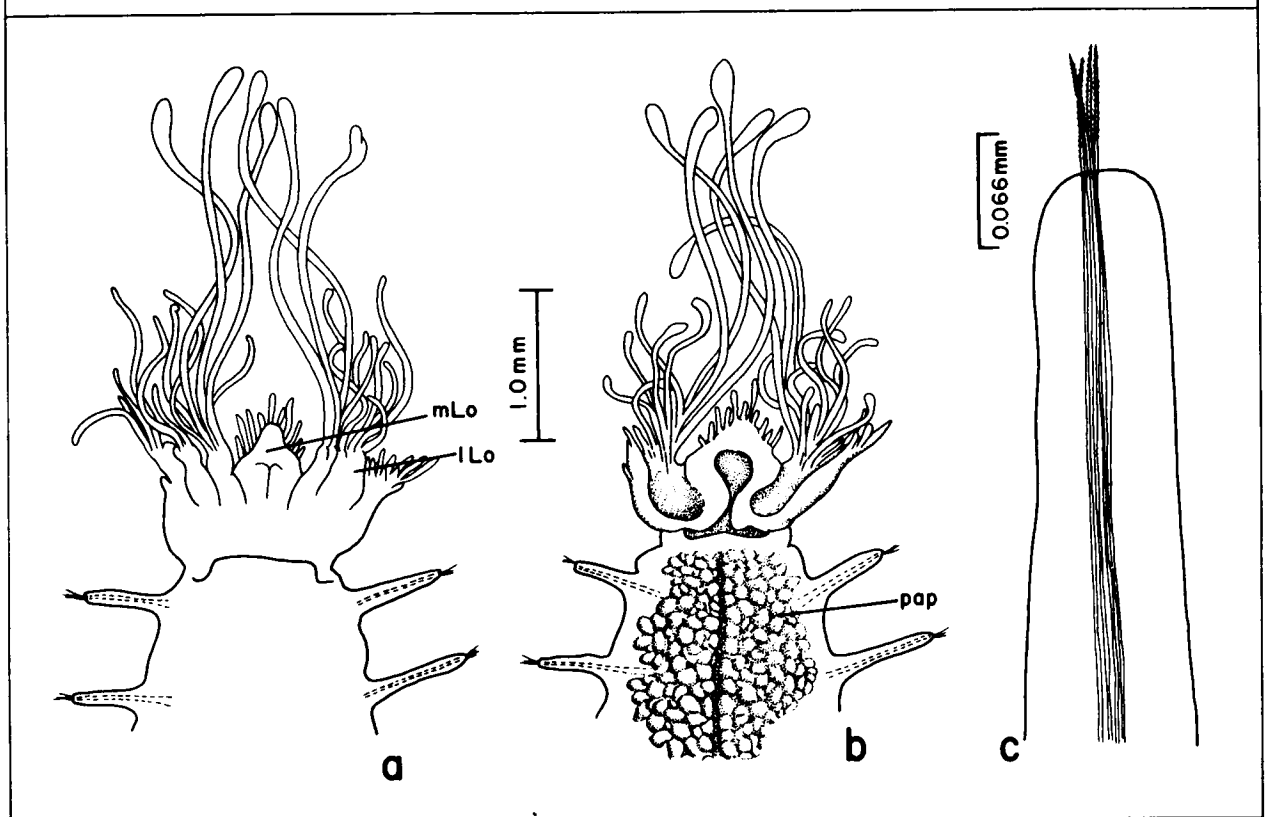

Figure 52-4. Lysilla sp. A: a, anterior end, dorsal view; b, same, ventral view; c, thoracic notopodium showing imbedded notosetae.

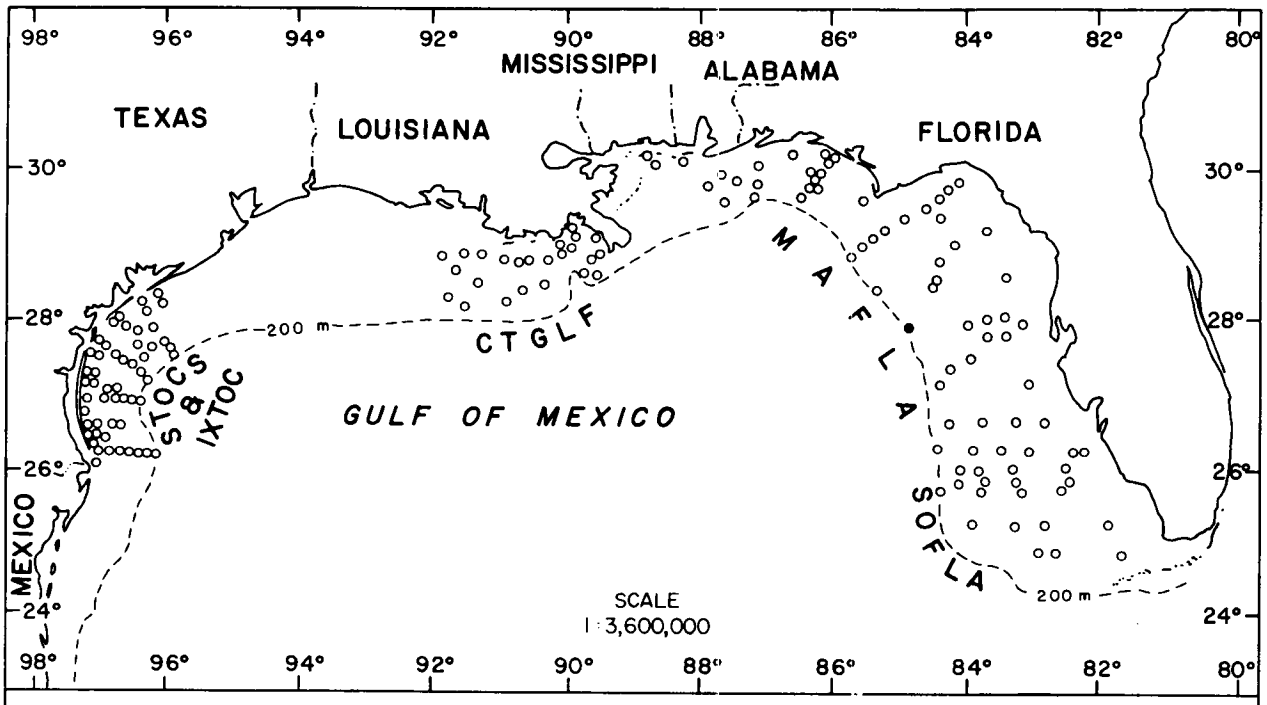

Figure 52-5. Distribution of Lysilla sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

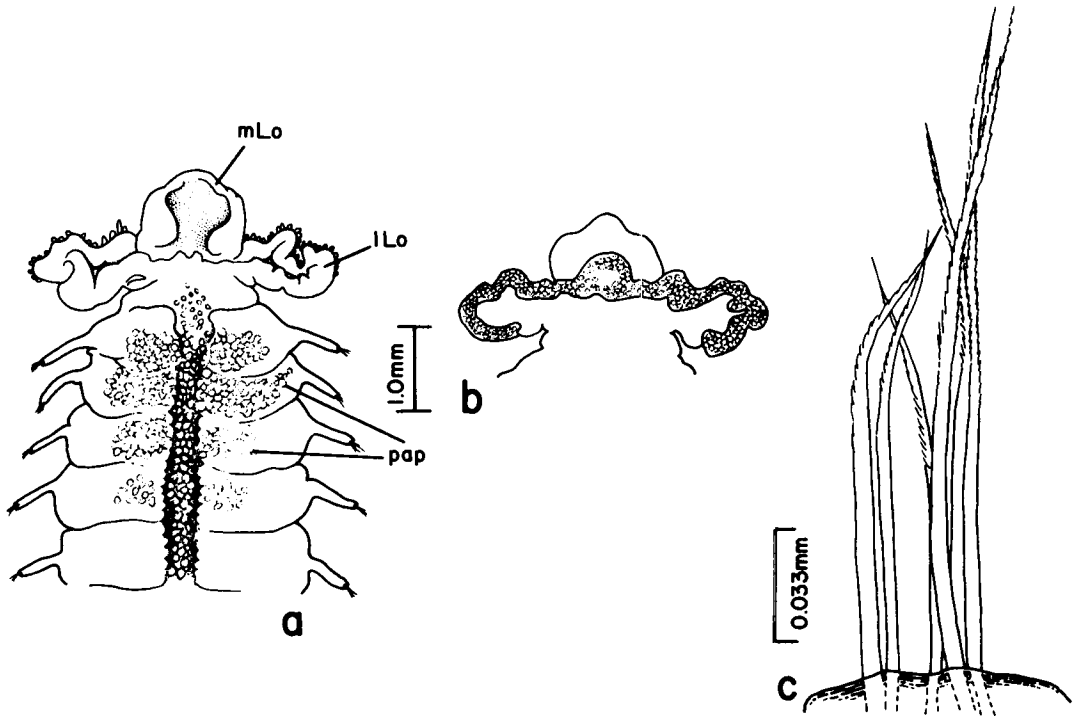

Figure 52-6. Lysilla sp. B: a, anterior end, ventral view; b, tentacular lobe, dorsal view; c, thoracic notosetae.

Key to the Gulf of Mexico BLM-OCS Species of Lysilla

1a. Lateral tentacular lobes each subdivided into three forward-directed, digitate projections (Figure 52-4a). . . . . .Lysilla sp. A, p. 52-12

1b. Lateral tentacular lobes folded and frilly, but not subdivided (Figure 52-6b). . . . . .Lysilla sp. B, p. 52-12

Lysilla sp. A
Figures 52-3, 4a-c

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2423F-7/76 (1 spec., USNM 90530).
DESCRIPTION:
Length, 18 mm; width, 1.5 mm. Tentacular lobe divided into a slightly pointed median lobe and two large lateral lobes. Each lateral lobe subdivided into three forward-directed, digitate structures bearing numerous slender tentacles of various lengths (Figure 52-4a); innermost process on each side bearing two or three long tentacles having inflated tips. Median lobe with few short, slender tentacles. Folds of tentacular lobe forming upper lip; distinct lower lip absent. Eyes absent. Nephridial papillae absent. Narrow midventral groove extending full length of thorax. Ventrum with closely spaced, irregularly distributed, polygonal glandular papillae (Figure 52-4b). Dorsal surface smooth, segmental annulations absent. Thirteen thoracic setigers. Notosetae slender, faintly hispid, embedded except for tips (Figure 52-4c).
REMARKS: Lysilla sp. A differs from L. loveni Malmgren, 1865, L. macintoshi Gravier, 1907, and L. pacifica Hessle, 1917, in having more than 12 thoracic setigers; and from L. alba Webster, 1879, L. ubianensis Caullery, 1944, and L. albomaculata Caullery, 1944, in the shape of the tentacular lobe. Lysilla sp. A most closely resembles L. pambanensis Fauvel, 1928, which has 13-18 thoracic setigers and a similar tentacular lobe. It differs from the latter in having faintly hispid, rather than smooth notosetae.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Cape San Blas, Florida (Figure 52-3); 19 m; silty fine sand.

Lysilla sp. B
Figures 52-5, 6a-c

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2212G-2/78 (2 spec., USNM 90531).
DESCRIPTION:
Length, 12 mm; width, 3 mm. Tentacular lobe divided into a rounded, forward-projecting median lobe and two lateral lobes; the latter with irregular folds creating ventral grooves leading to the mouth (Figure 52-6a). Folds of median lobe forming upper lip. Posterior edge of mouth with small tongue-like projection. Dorsal edges of all tentacular lobes with what appears to be numerous stumps of tentacles (Figure 52-6b). Eyes absent. Midventral groove of thorax wide, cutting through distinct segmental divisions. Ventral surface covered with irregularly

distributed, closely packed, polygonal glandular papillae which become more regularly arranged in the median groove. Dorsal surface faintly sculptured in a similar manner. Nephridial papillae not observed. Thirteen thoracic setigers beginning on segment III. Notosetae (Figure 52-6c) faintly hispid.
REMARKS: The tongue-like projection on the posterior edge of the mouth is similar to that of L. alba Webster, 1879, and L. loveni Malmgren, 1865. Lysilla sp. B differs from the preceding species, and from L. pambanensis Fauvel, 1928, in the shape of the tentacular lobe and possibly in lacking long, distally inflated tentacles. It differs from other species referred to in "REMARKS" for Lysilla sp. A in the number of thoracic setigers.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record near edge of Florida shelf (Figure 52-5); 189 m; silty very fine sand.

Genus **Polycirrus** Grube, 1850

TYPE SPECIES: Polycirrus medusa Grube, 1850.
REFERENCES:
Wollebaek, 1912:83.
Hessle, 1917:219.
Fauvel, 1927:278.
Hartmann-Schröder, 1971:486.
DIAGNOSIS: Thorax with up to 70 pairs of notopodia beginning on segment II or III; abdomen with variable number of segments. Tentacular lobe large, usually frilly and folded, often tri-lobed, giving rise to numerous tentacles. Branchiae and eyes absent. Notosetae smooth, hispid, or strongly plumose. Thoracic neurosetae present or absent; abdominal neurosetae present. Uncini avicular, usually with a long, slender prow devoid of ligament attachments; sometimes pectinate.
REMARKS: Subdivision of the numerous species of the genus (39 recognized by Fauchald, 1977a) into natural groupings would make identification much easier, but as Hessle (1917) pointed out, the utility of such systems like Caullery's (1915) will be marginal until all species are adequately described. Dependence upon the numbers of pairs of nephridia (a principal criterion employed by Hessle, 1917 and Fauvel, 1927) proved unsuitable for the generally small specimens examined in the BLM-OCS voucher collections.

Key to the Gulf of Mexico BLM-OCS Species of Polycirrus

1a. Notosetae of two kinds including plumose setae 2
1b. Notosetae of one kind; plumose setae absent. 4

2a. Thorax with 13-19 setigers 3
2b. Thorax with more than 20 setigers . . . . **Polycirrus carolinensis***

3a. Tentacular lobe pleated, with three large lobes (Figure 52-8a); lateral lobes rounded, similar in size to median lobe; ventral glandular shields present. . . . . **Polycirrus plumosus**, p. 52-15
3b. Tentacular lobe not pleated (Figure 52-10a); lateral lobes as small, hump-shaped bosses, median lobe long; ventral glandular shields absent. . . . . **Polycirrus sp. A**, p. 52-17

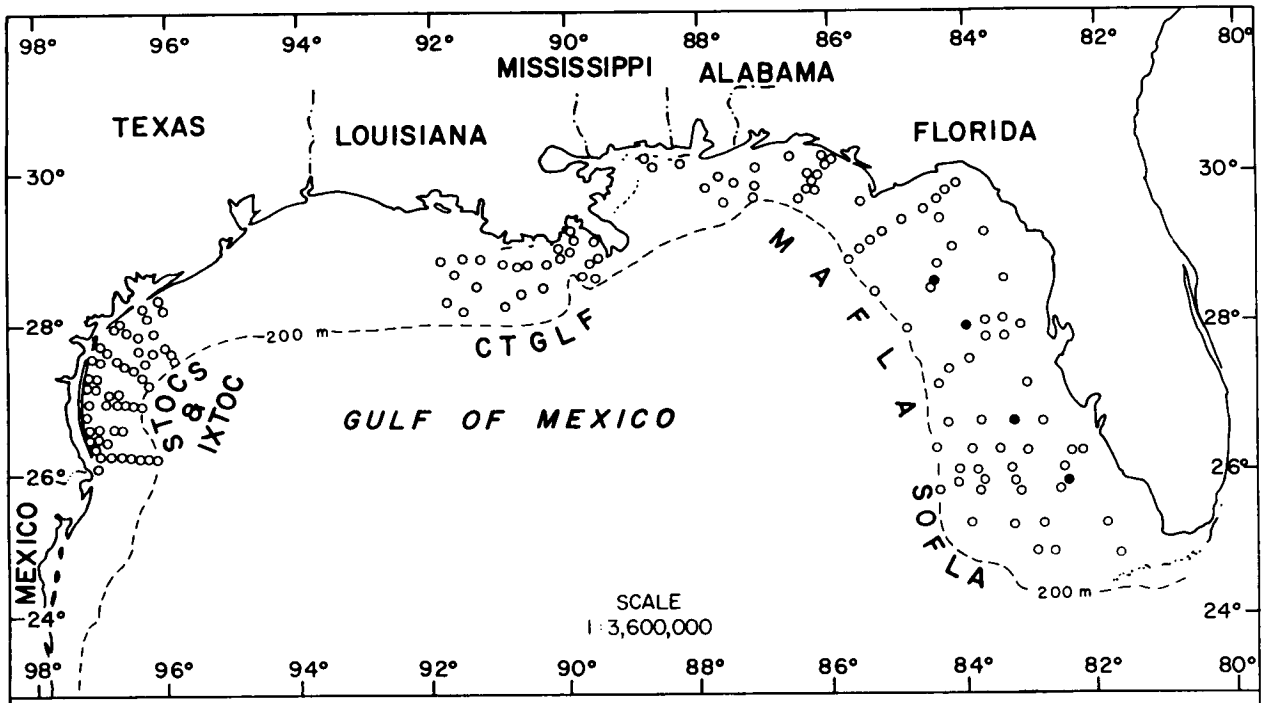

Figure 52-7. Distribution of Polycirrus plumosus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

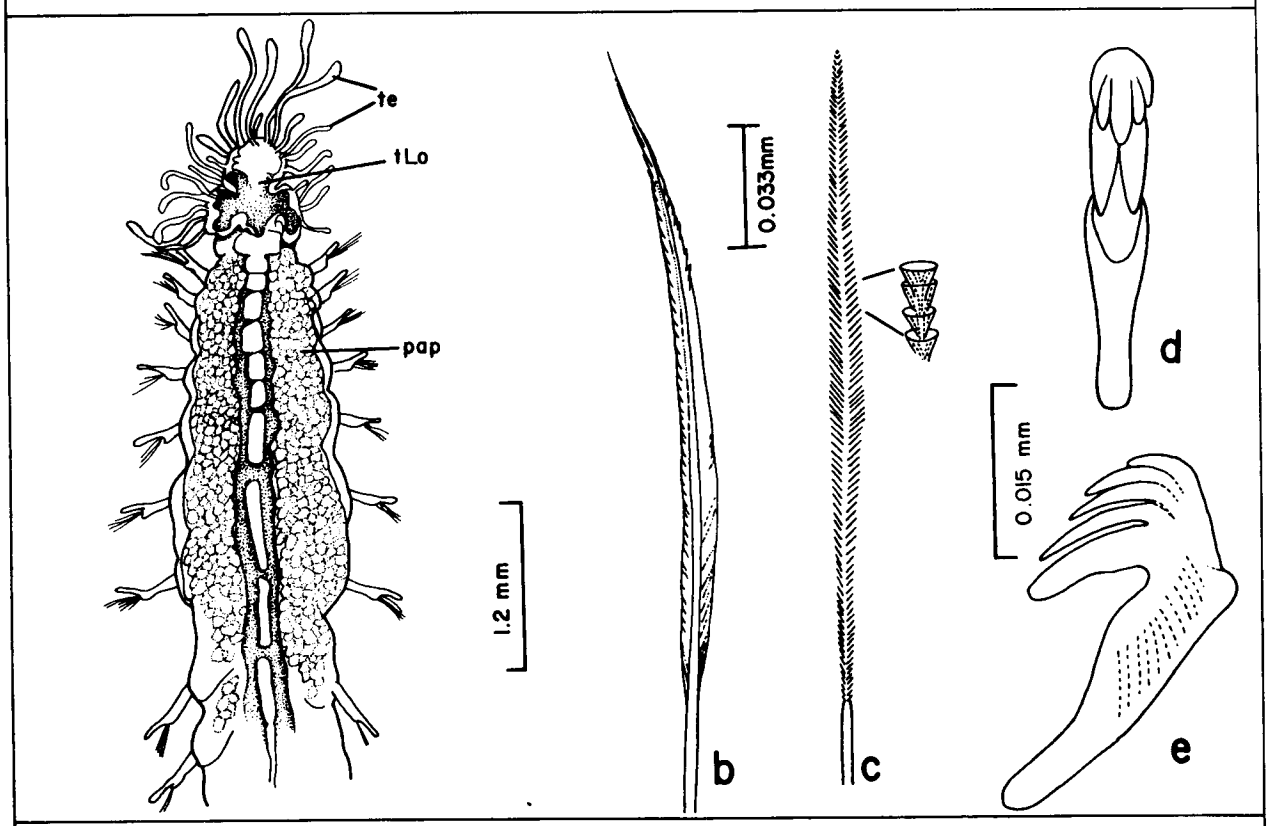

Figure 52-8. Polycirrus plumosus: a, anterior end, ventral view; b, faintly hispid notoseta; c, plumose notoseta, showing enlargement of cones; d, uncinus, frontal view; e, same, lateral view.

4a. Notosetae smooth-edged (Figure 52-12b) . . . . . .**Polycirrus** cf. **haematodes**, p. 52-17
4b. Notosetae hispid or feathered. 5

5a. Notosetae all hispid 6
5b. At least some notosetae feathered (Figure 52-18c). 7

6a. Notosetae lanceolate (Figure 52-14b). . **Polycirrus sp. B**, p. 52-20
6b. Notosetae very slender (Figure 52-16b) . . . . . .**Polycirrus eximius dubius**, p. 52-20

7a. Nineteen thoracic setigers, with uncini from the 11th; notosetae smooth (Figure 52-18b) and feathered (Figure 52-18c) . . . . . .**Polycirrus** cf. **denticulatus**, p. 52-23
7b. Seventeen thoracic setigers, with uncini from the 15th; all notosetae feathered (Figure 52-20b). . . . . .**Polycirrus** cf. **albicans**, p. 52-25

*Not found in Gulf of Mexico BLM-OCS collections, but known from off Alabama.

Polycirrus plumosus (Wollebaek, 1912)
Figures 52-7, 8a-e

Ereutho plumosa Wollebaek, 1912:82, pl. 21, fig. 104.
Polycirrus plumosus--Hessle, 1917:224.
Polycirrus plumosus--Day, 1967:718, fig. 36.3.a-d.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 4-11/80 (1 spec., USNM 90616), 14E-8/81 (1 spec., USNM 90617); MAFLA 2211D-8/77 (1 spec., USNM 90563), 2315A-11/77 (1 spec.).
DESCRIPTION:
Length, 4+ mm (previously reported to 36 mm); width, less than 0.5 mm. Largest specimen incomplete with 22 segments. Tentacular membrane rounded, divided by folds into a median and two lateral lobes (Figure 52-8a). Tentacles slender, variable in length; longer, distally clubbed tentacles at tip of median lobe. Midventral groove with indistinct glandular shields; rest of anterior ventrum with irregular polygonal papillae. Thorax with 17 setigers starting on segment III. Number of abdominal segments unknown. Notopodia slender with prominent cirrus. Notosetae including faintly hispid, slender capillary setae (Figure 52-8b), and distinctly plumose setae (Figure 52-8c). Uncini small, beginning on first abdominal segment; dental formula MF:1:2:5-6 (Figure 52-8d,e).
REMARKS: Complete specimens examined are in general agreement with Day's (1967) description and figures, except that the "smooth" notosetae are faintly hispid and compare more favorably with Wollebaek's (1912) description and figures. The uncini possess more teeth than shown by either Day or Wollebaek. Identifications of P. plumosus in BLM-OCS collections were confused with other species of Polycirrus and Amaeana trilobata. P. plumosus is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Sandy mud bottoms.

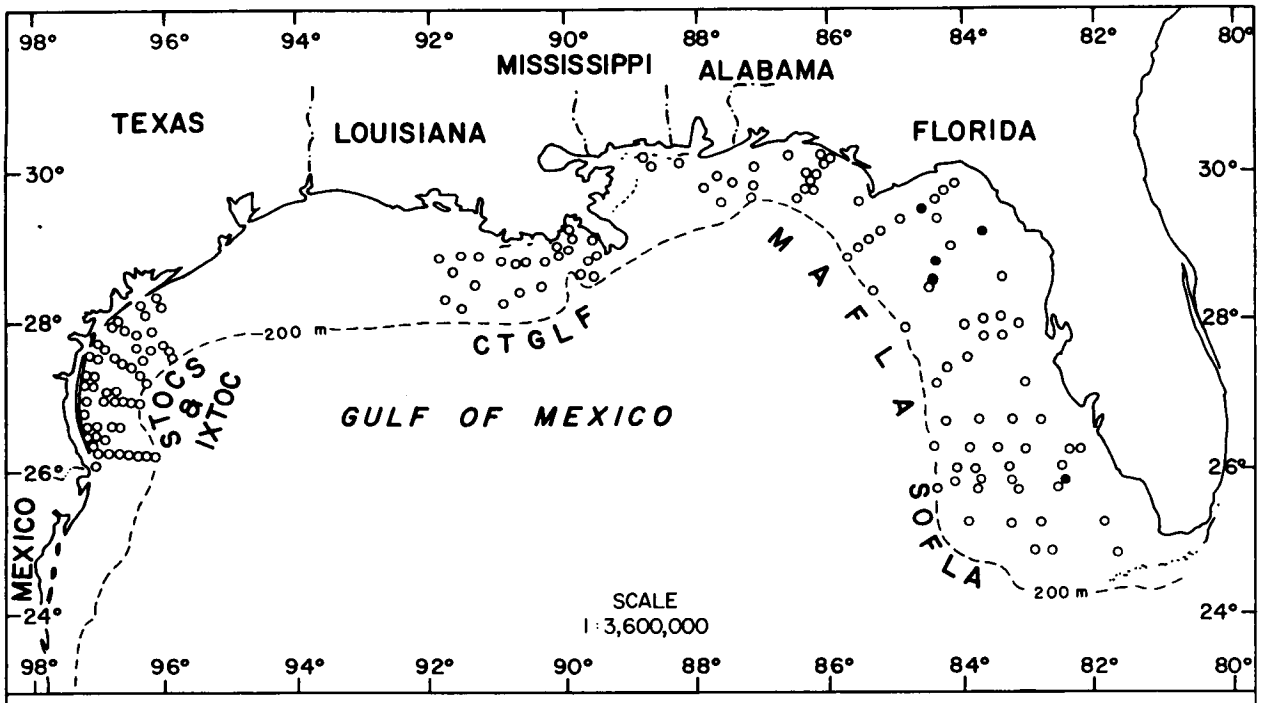

Figure 52-9. Distribution of Polycirrus sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

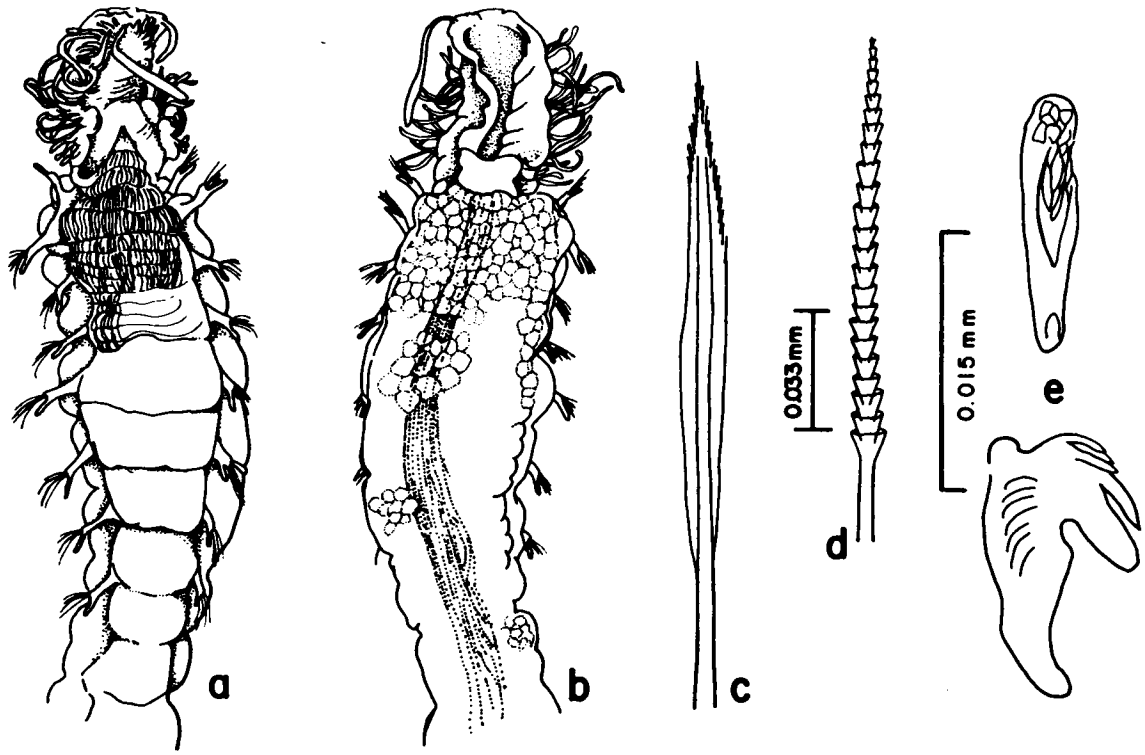

Figure 52-10. Polycirrus sp. A: a, anterior end, dorsal view; b, same, ventral view; c, limbate notoseta; d, plumose notoseta; e, abdominal uncini.

GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off Florida (Figure 52-7); 25-43 m; coarse sand, silty fine sand.
DISTRIBUTION: West coast of Sweden, Norway, South Africa, Gulf of Mexico.

Polycirrus sp. A
Figures 52-9, 10a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 14E-5/74 (1 spec., USNM 90767), 2315I-1/76 (2 spec., USNM 90520, 90524), 2316F-8/76 (1 spec., USNM 90768), 2316I-11/77 (3 spec., USNM 90522), 2318B-9/75 (1 spec., USNM 90523), 2422E-7/76 (1 spec., USNM 90521).
Supplementary Material:
Southeastern U. S.--6C, Feb. 1977, TI/BLM (2 spec., USNM 90769-70).
DESCRIPTION:
Length, to 22 mm; width, to 1.1 mm. Largest specimen complete with 94 segments. Median tentacular lobe very long; lateral lobes as two tentaculiferous bosses on each side of median lobe (Figure 52-10a,b). Tentacles numerous, variable in size, those of anterior end of median lobe long, thickened distally. Midventral groove narrow anteriorly, widening in posterior thorax and abdomen. Ventrum without glandular plates but covered with large, irregular, polygonal papillae (Figure 52-10b). Seventeen thoracic setigers followed by one or two asetigerous segments. Seventy-two abdominal setigers. Notosetae of two kinds--long, hispid, limbate setae (Figure 52-10c), and shorter plumose setae (Figure 52-10d)--first appearing on segment III, borne on slender notopodia, each with a prominent cirrus. Minute Polycirrus-type uncini (Figure 52-10e) borne on prominent abdominal pinnules. Uncini with long, narrow prow; pronounced posterior hump; and several rows of denticles above the main fang (MF:1:3:5-6:∿). Pygidium as a simple ring around the terminal anus.
REMARKS: Polycirrus sp. A is distinguished from P. plumosus, which it closely resembles, by the character of the tentacular lobe and the absence of median ventral glandular shields. It differs from Amaeana accraensis, with which thoracic fragments were identified in the Gulf of Mexico BLM-OCS collections, also by the character of the tentacular lobe, and of course the abdominal neurosetae. In Amaeana species the tentacular lobe is trefoil-shaped, consisting of a pointed median and rounded lateral lobes. In addition, notopodial cirri are lacking in Amaeana.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 52-9); 20-38 m; medium to medium-fine sand, silty fine sand, coarse sand-rubble.

Polycirrus cf. haematodes (Claparède, 1864)
Figures 52-11, 12a-d

Polycirrus cf. haematodes--Day, 1967:717, fig. 36.2.g-k.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207I-8/77 (1 spec., USNM 90587).

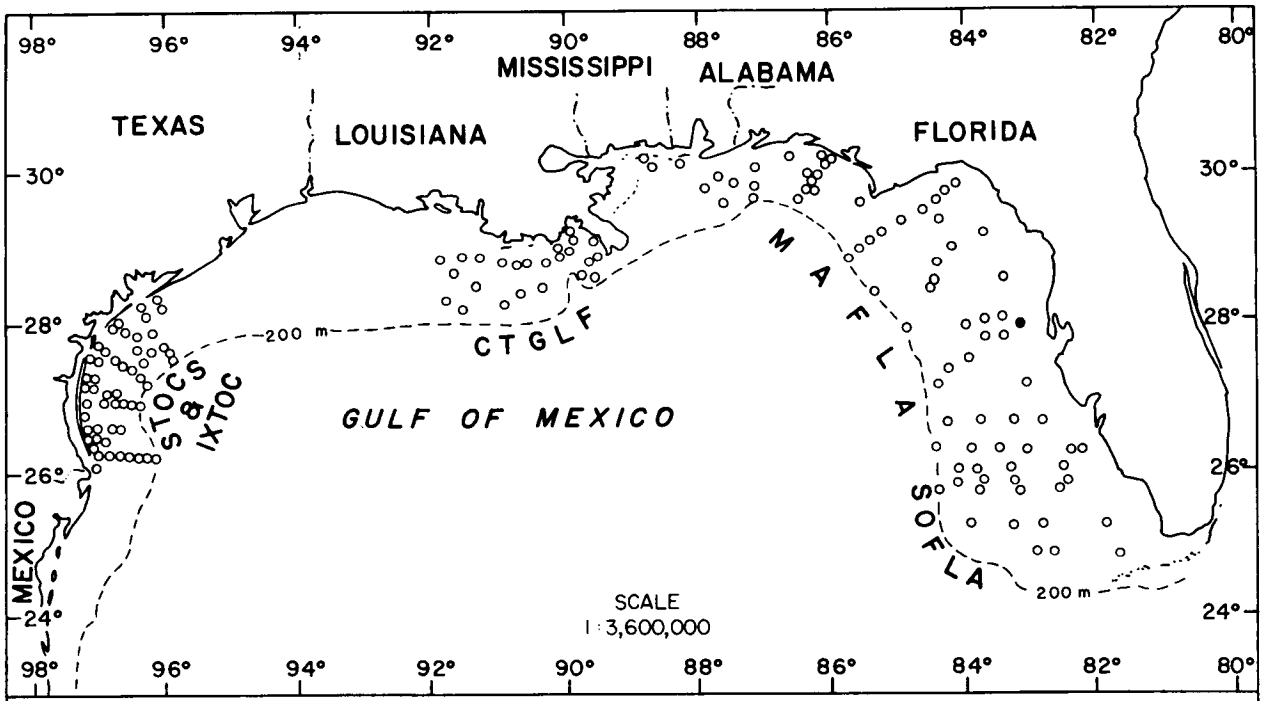

Figure 52-11. Distribution of Polycirrus cf. haematodes on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

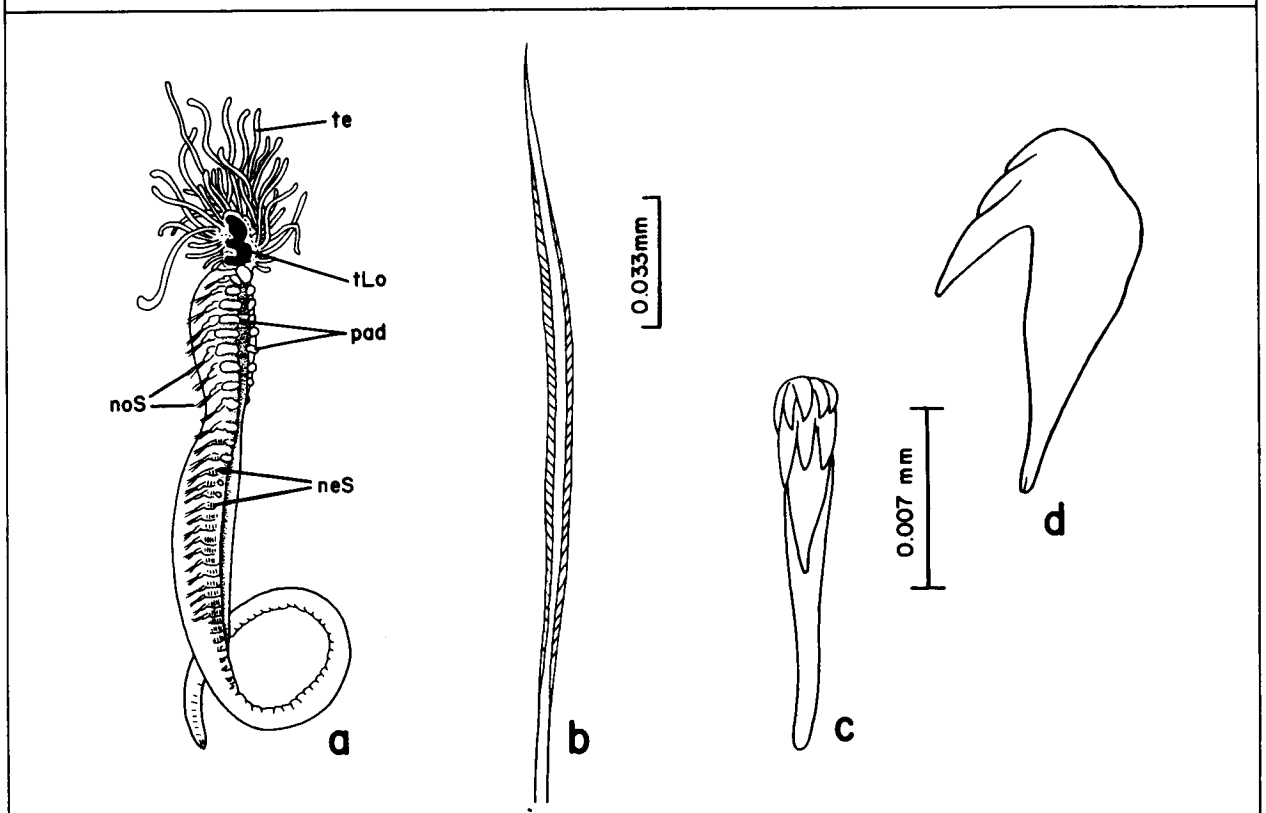

Figure 52-12. Polycirrus cf. haematodes: a, whole worm, ventrolateral view (no scale); b, smooth notoseta; c, uncinus, frontal view; d, same, lateral view (Figure a from Day 1967:716, fig. 36.2.g).

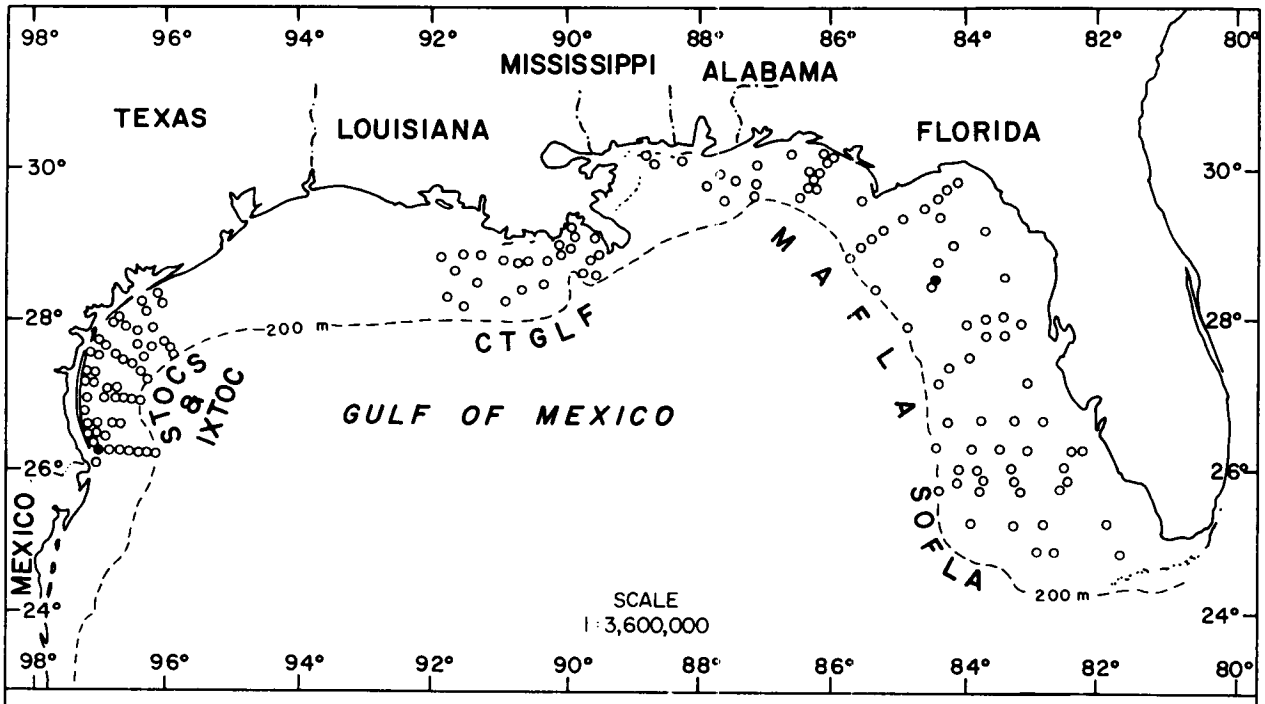

Figure 52-13. Distribution of Polycirrus sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

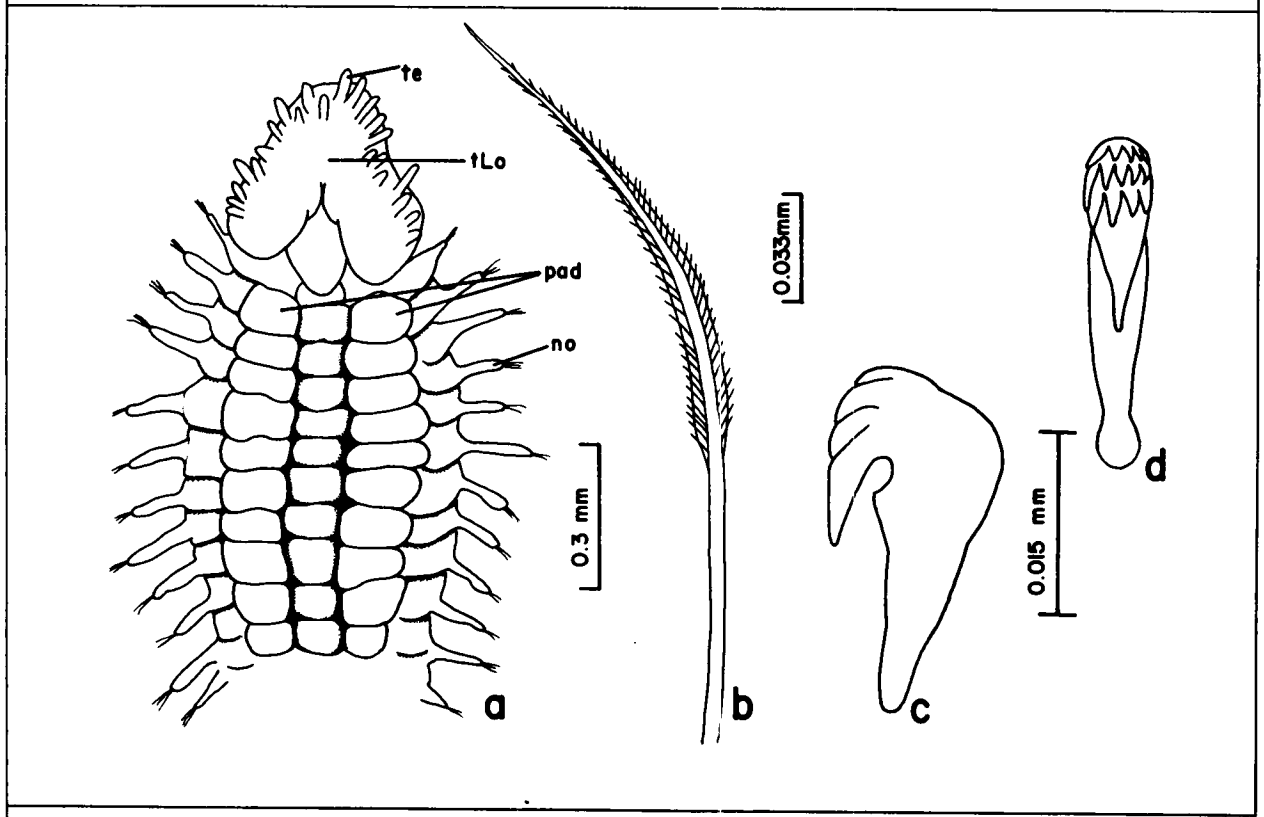

Figure 52-14. Polycirrus sp. B: a, anterior end, ventral view; b, hispid notoseta; c, uncinus, lateral view; d, same, frontal view.

DESCRIPTION:
Length, 18 mm (previously reported to 15 mm); width, 1.1 mm. Only specimen complete with about 65 segments. Tentacular lobe large, trilobed, with pleated margins (Figure 52-12a). Paired ventrolateral glandular pads present on first 10-16 setigers, separated by a midventral groove; glandular swellings becoming less conspicuous around setigers 6-10, disappearing in posterior thorax around setiger 16. Thorax with 23 setigers; abdomen with about 40. Notosetae smooth-edged; cross-striations (seen under oil immersion) not extending beyond margin of narrow wing (Figure 52-12b). Neurosetae present from setiger 16. Uncinal dental formula MF:3:4-5 (Figure 52-12c,d).
REMARKS: Gulf of Mexico BLM-OCS specimens of Polycirrus cf. haematodes agree well with Day's description, with the exception of the dental formula, which he reported as MF:1-3:ca 12.
PREVIOUSLY REPORTED HABITAT: Tube of fine sand usually attached to, or in crevices of rocks.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Tampa, Florida (Figure 52-11); 19 m; fine-very fine sand.
DISTRIBUTION: Scotland, English Channel, Mediterranean, ?Cape of Good Hope, ?Gulf of Mexico.

Polycirrus sp. B
Figures 52-13, 14a-d

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2315A-11/77 (1 spec., USNM 90535); STOCS 4/IV-3 W/76 (3 spec., USNM 90534).
DESCRIPTION:
Length, to 15 mm; width, to 0.6 mm. Largest specimen complete with about 50 segments. Tentacular lobe weakly trilobed, rounded, compact, not frilly or folded. Anterior thorax with about ten rows of well-developed ventral glandular pads, three pads per row with midventral pads lying in a shallow groove (Figure 52-14a). Seventeen pairs of notopodia starting on segment II; notopodial lobes prominent. Notosetae slender, lanceolate distally, with hispid tips (Figure 52-14b). Thoracic neurosetae absent. Neuropodia present from setiger 18 to end of abdomen, about 32 segments. Uncini small (Figure 52-14c,d); dental formula MF:3-4:5:5.
REMARKS: Polycirrus sp. B differs from P. latidens Eliason, 1962a, P. arenivorus Caullery, 1915, and P. pennulifera Verrill, 1900, in the number of thoracic setigers. It resembles P. medusa Grube, 1850, and P. aquila Caullery, 1944, in having slender, hispid notosetae, but can be distinguished from the former in having notopodia from the second segment, and from the latter in having more denticles on its uncini.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Florida and one off Texas (Figure 52-13); 15-38 m; sand, silty fine sand.

Polycirrus eximius dubius Day, 1973
Figures 52-15, 16a-d

Polycirrus eximius dubius--Day, 1973:123, fig. 16g.

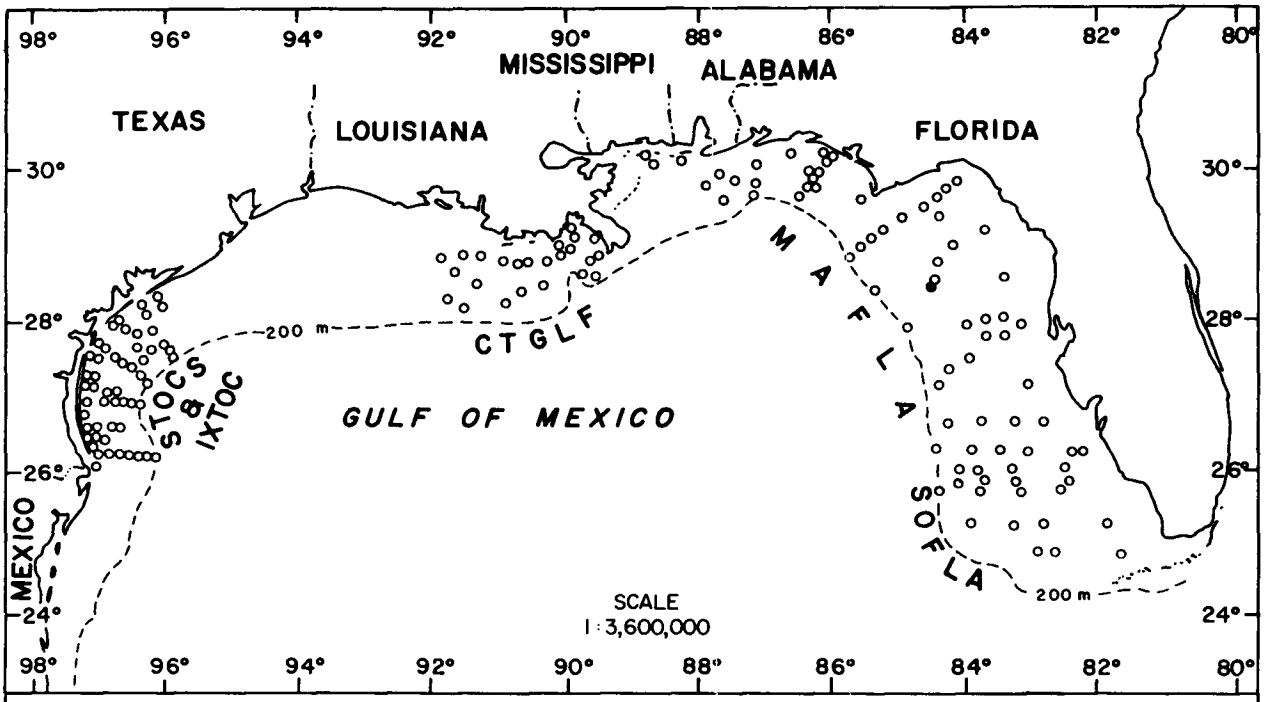

Figure 52-15. Distribution of Polycirrus eximius dubius on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

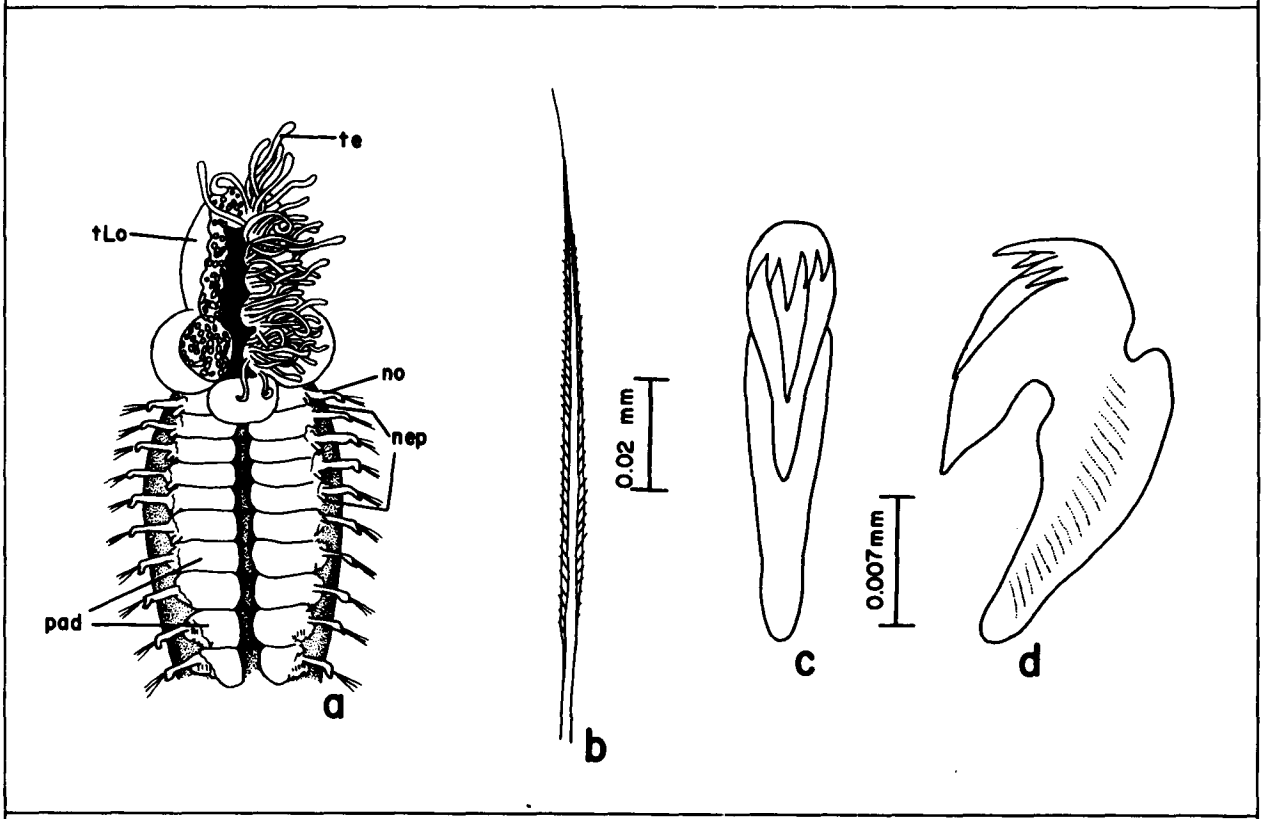

Figure 52-16. Polycirrus eximius dubius: a, anterior end, ventral view; b, hispid notoseta; c, uncinus, frontal view; d, same, lateral view (Figure a from Day 1973:121, fig. 16h).

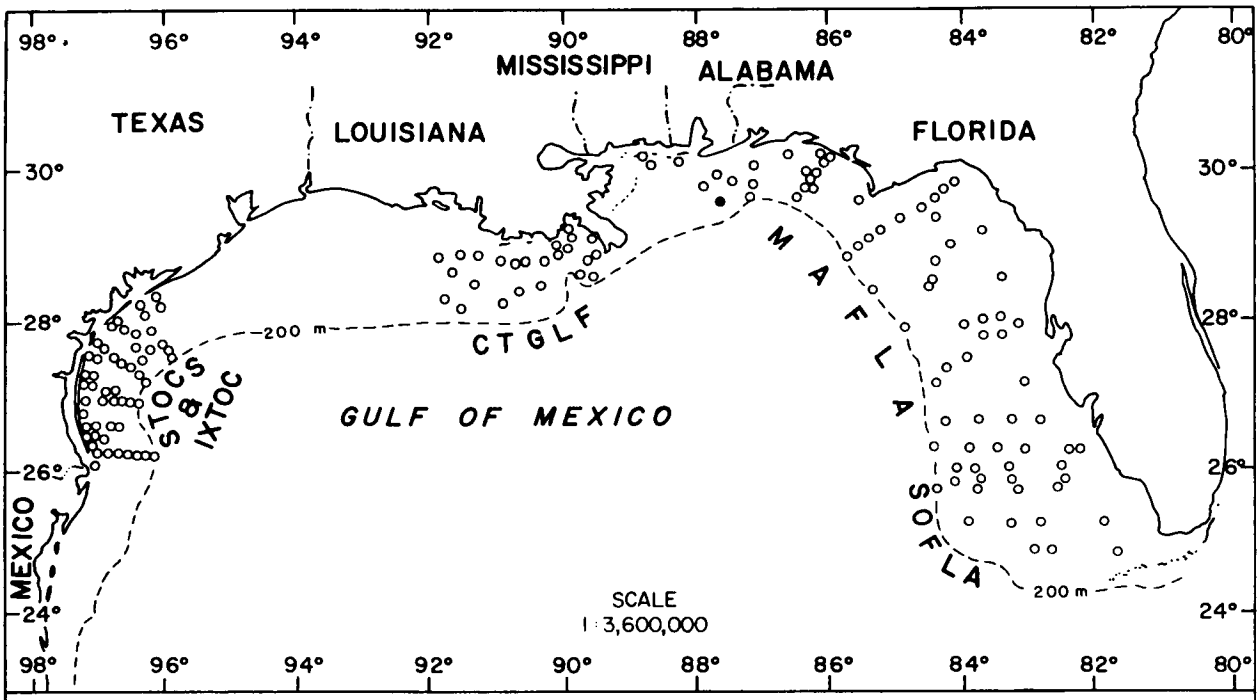

Figure 52-17. Distribution of Polycirrus cf. denticulatus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

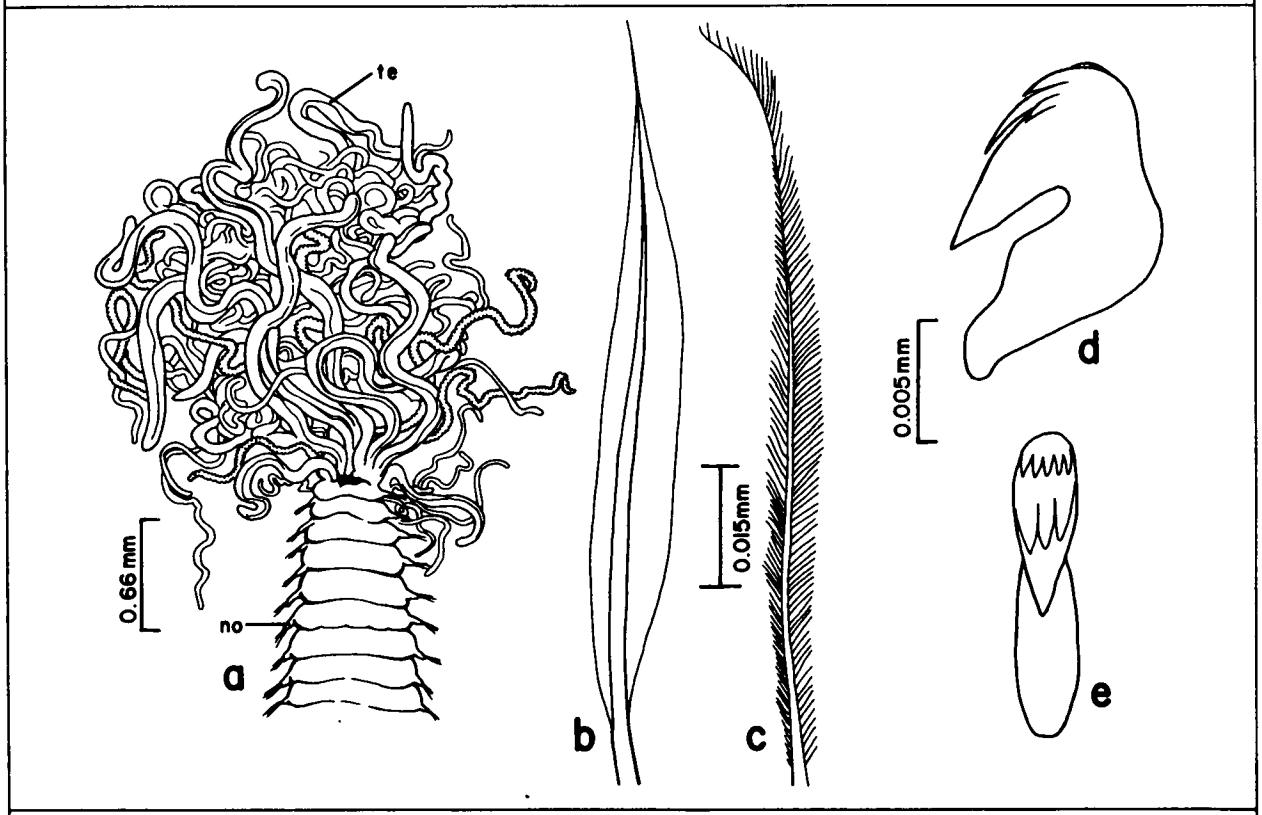

Figure 52-18. Polycirrus cf. denticulatus: a, anterior end, ventral view; b, smooth notoseta; c, feathered notoseta; d, uncinus, lateral view; e, same, frontal view.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2314-9/75 (1 spec., USNM 90591).
DESCRIPTION:
Length, 18 mm (previously reported to 20 mm); width, 1.6 mm. Body complete with 81 segments. Tentacular lobe trilobed, large, frilly, with many tentacles. Ten pairs of ventral glandular pads from segment II, separated by shallow median groove (Figure 52-16a). Thorax with 41 setigers beginning on segment II. Prominent nephridial papillae on segments II-VII. Notosetae uniformly long, slender, distinctly hispid (Figure 52-16b). Uncini in a short row on setiger 9, and longer rows on subsequent segments. Uncinal dental formula MF:1:4-5 (Figure 52-16c,d).
REMARKS: The Gulf of Mexico BLM-MAFLA specimen of P. eximius dubius differs slightly from Day's description in having 41 thoracic setigers instead of 31, and in having notosetae which are distinctly hispid rather than faintly hispid. Other characters, such as the distribution and number of nephridial papillae and the setiger on which the uncini begin, match Day's description well. The MAFLA specimen was originally identified as P. carolinensis Day, 1973. P. eximius dubius is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: On coral; 18 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Florida (Figure 52-15); 29 m; medium-coarse sand.
DISTRIBUTION: North Carolina, Gulf of Mexico.

Polycirrus cf. **denticulatus** Saint Joseph, 1894
Figures 52-17, 18a-e

Polycirrus denticulatus--McIntosh, 1922a:201, pl. 127, figs. 7, 7c.
Polycirrus denticulatus--Fauvel, 1927:284, fig. 98o-s.
Polycirrus denticulatus--Southern, 1914:128.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 14E-5/74 (1 spec., USNM 90573).
DESCRIPTION:
Length, 6 mm (previously reported to 20 mm); width, 0.6 mm. Tentacular lobe compact, trilobed, bearing numerous long tentacles of three kinds--slender and smooth, jointed, and thick and grooved (Figure 52-18a). About ten pairs of ventral glandular pads. Thorax with 19 setigers beginning on segment II. Notopodial cirri poorly developed. Notosetae including short, broadly limbate, smooth setae (Figure 52-18b); and feathered setae (Figure 52-18c) having distinct pinnae easily seen under low magnification. Minute uncini (Figure 52-18d) first appearing on setiger 11; dental formula MF:3:5-6 (Figure 52-18e).
REMARKS: The single specimen examined differs from P. denticulatus, as described by Fauvel (1927), in possessing two kinds of notosetae and an uncinal dental formula different from that reported for the species (MF:1:5-6). Southern (1914), however, reported two kinds of notosetae (smooth and denticulate) in specimens he identified with this species, but offered the opinion that the denticulate ones were merely abraded examples of the smooth setae. The BLM-OCS specimen was originally referred to Amaeana accraensis.

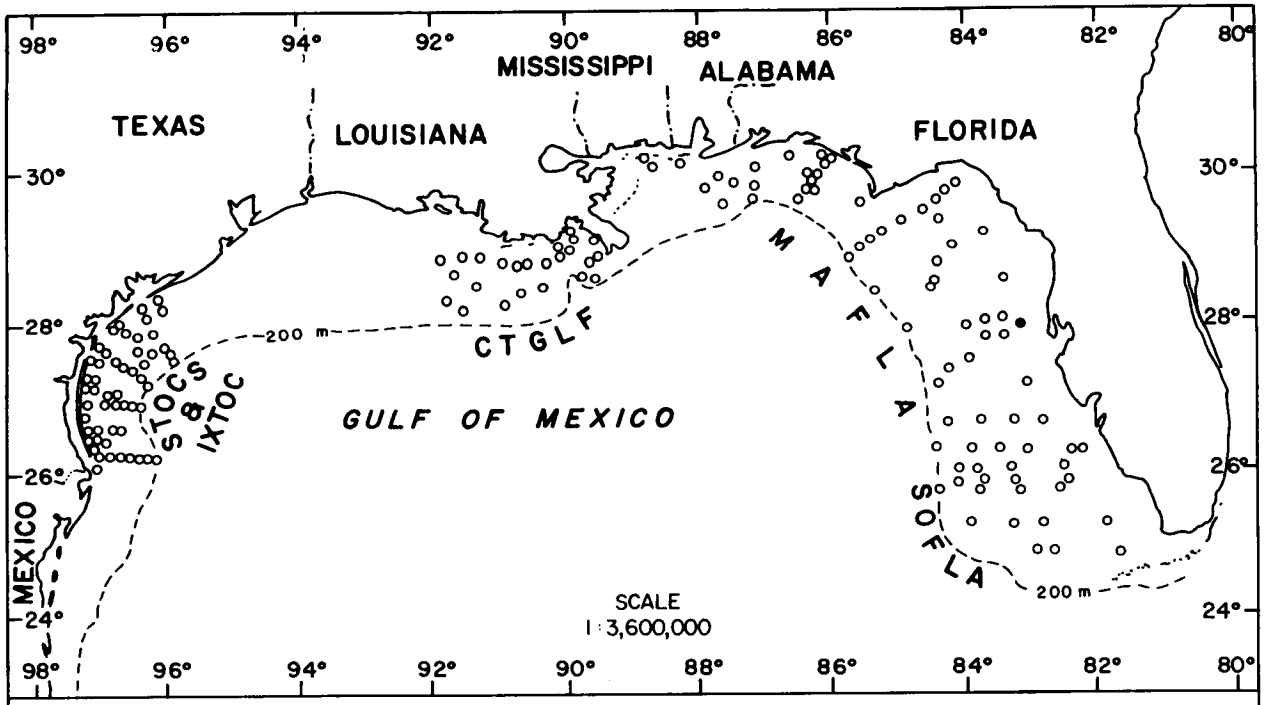

Figure 52-19. Distribution of Polycirrus cf. albicans on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

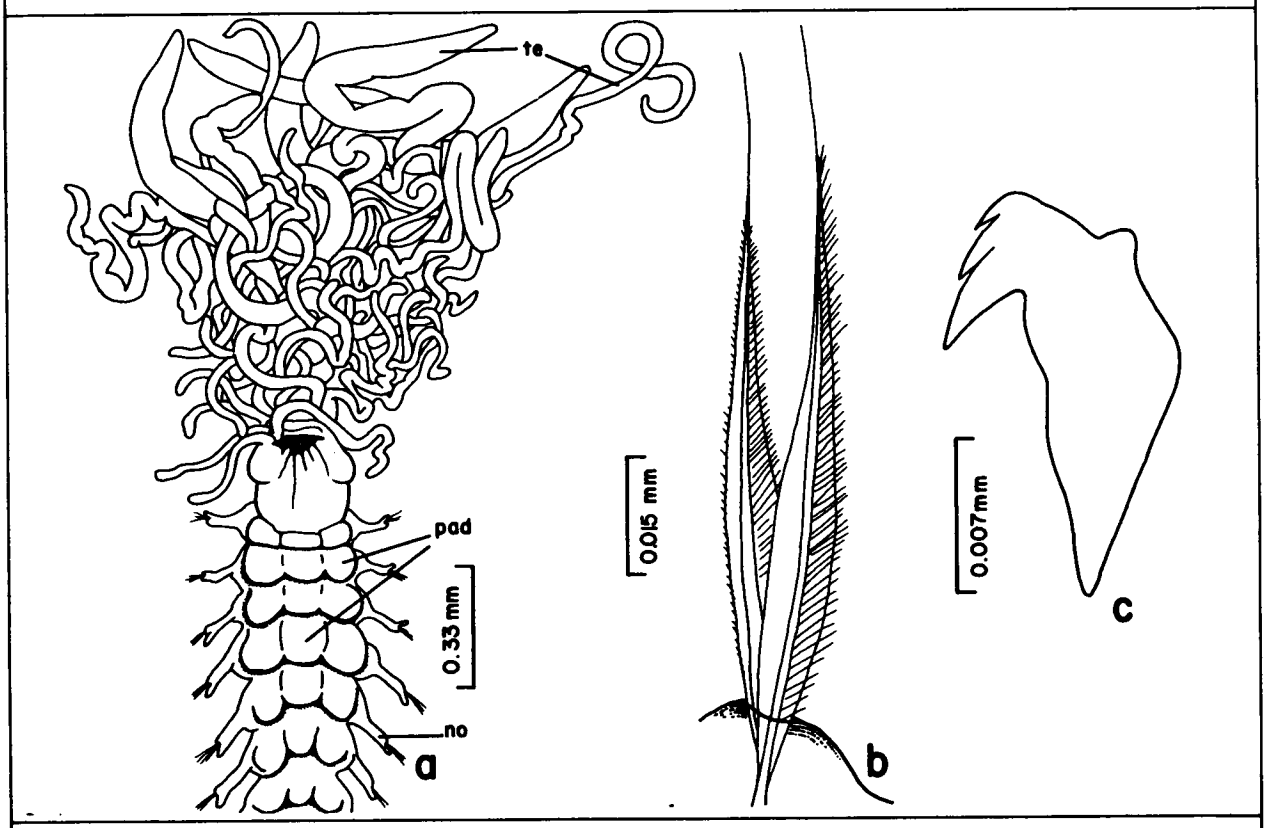

Figure 52-20. Polycirrus cf. albicans: a, anterior end, ventral view; b, lanceolate notosetae, retracted into parapodium; c, uncinus, lateral view.

PREVIOUSLY REPORTED HABITAT: Found in Laminarian holdfasts; dredgings of algae, hydrozoans, and serpulids.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Alabama (Figure 52-17); 37 m; coarse sand-rubble.
DISTRIBUTION: English Channel, Atlantic coast of Ireland, Mediterranean, ?Gulf of Mexico.

Polycirrus cf. **albicans** (Malmgren, 1865)
Figures 52-19, 20a-c

Leucariste arcticus--Wollebaek, 1912:86, pl. 20, figs. 5-7.
Polycirrus albicans--Hessle, 1917:223.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207G-11/77 (1 spec., USNM 90572), 2207I-11/77 (1 spec., USNM 90571).
DESCRIPTION:
Length, 5+ mm; width, 0.3 mm. Larger specimen incomplete with 23 segments. Tentacular lobe compact, trilobed, bearing numerous long tentacles of two kinds, slender and thick (Figure 52-20a). Ventral glandular pads present on about first eight setigers. Body consisting of 17 thoracic setigers and an indeterminable number of abdominal segments. Notopodia well-developed beginning on segment II; each with 5-6 retractile, lanceolate notosetae (Figure 52-20b). Limbation of notosetae feathered on one side of setal shaft (visible at 100x magnification) and hispid on the other (visible at 430x magnification). Uncini small (Figure 52-20c), present from setiger 15; dental formual MF:4:6.
REMARKS: Gulf of Mexico BLM-OCS specimens differ from P. albicans in that the exposed tips of the notosetae are lanceolate rather than uniformly slender, as described and figured by Wollebaek (1912). Identifications of Polycirrus cf. albicans in BLM-OCS collections were originally confused with other species of Polycirrus.
PREVIOUSLY REPORTED HABITAT: None reported.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Tampa, Florida (Figure 52-19); 19 m; fine-very fine sand.
DISTRIBUTION: Arctic, North Atlantic, Spitzbergen, west coast of Norway, ?Gulf of Mexico.

Genus **Amaeana** Hartman, 1959b

TYPE SPECIES: Polycirrus trilobata Sars, 1863.
REFERENCES:
Hartman, 1959b:495.
Day, 1967:718.
Fauchald, 1977a:130.
DIAGNOSIS: Tentacular lobe trefoil-shaped with an anterior pointed lobe and two rounded, frilly lateral lobes bearing numerous tentacles. Eyes and branchiae absent. Ventral glandular pads present. Ten to 13 thoracic segments; notosetae present from segment III. Thoracic neuropodia and neurosetae absent. Achaetous region present between thoracic and abdominal setigers. Abdominal segments numerous, with conical neuropodial pinnules bearing acicular setae.

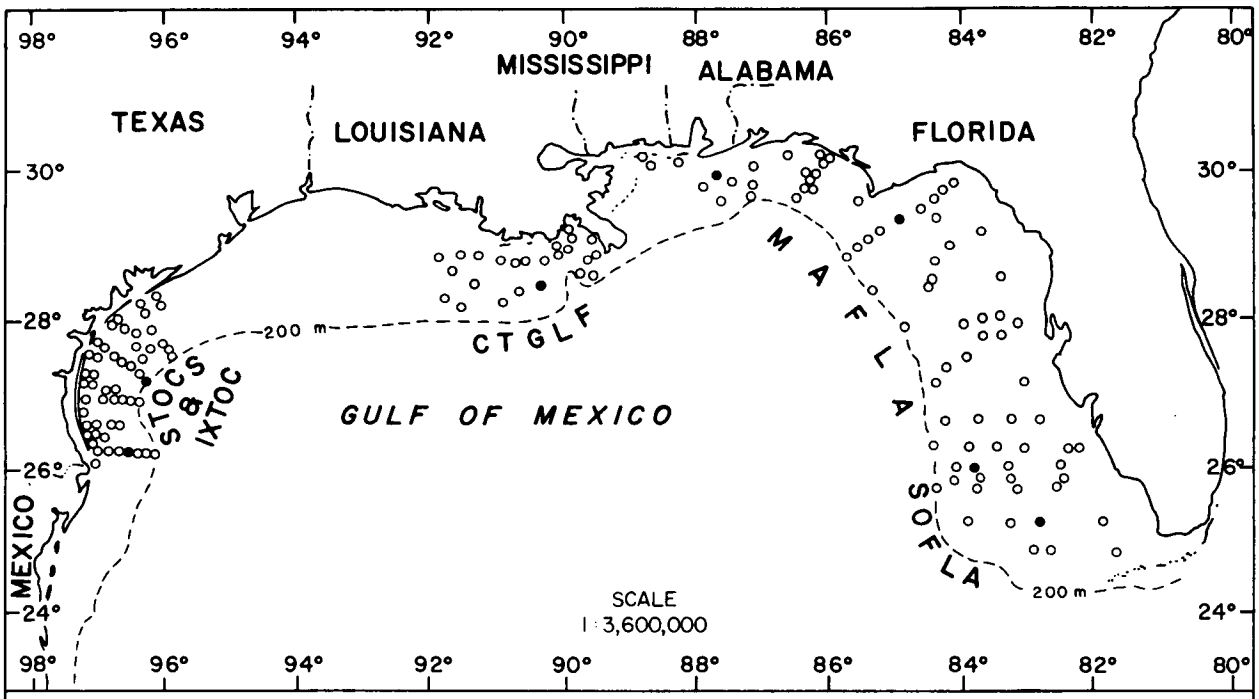

Figure 52-21. Distribution of Amaeana trilobata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

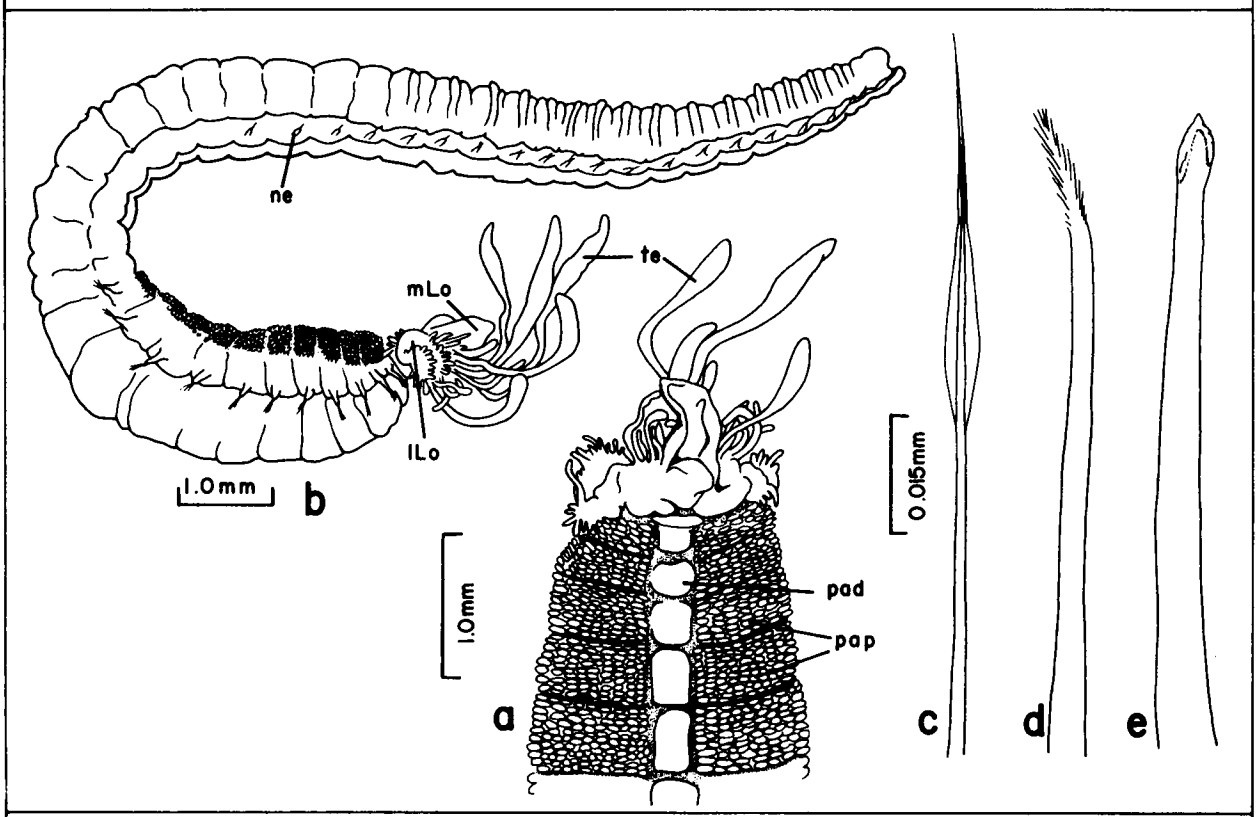

Figure 52-22. Amaeana trilobata: a, anterior end, ventral view; b, whole worm, lateral view; c, limbate thoracic notoseta; d, penicillate thoracic notoseta; e, acicular abdominal neuroseta.

Amaeana trilobata (Sars, 1863)
Figures 52-21, 22a-e

Amaea trilobata--Malmgren, 1865c:392, pl. 25, fig. 70.
Amaea trilobata--Wollebaek, 1912:76, pl. 17, figs. 1-5.
Amaea trilobata--Hessle, 1917:229.
Amaea trilobata--Fauvel, 1927:285, fig. 99a-e.
Amaeana trilobata--Day, 1967:718, fig. 36.3.e-h; 1973:122, fig. 16d-f.
Amaeana trilobata--Hartmann-Schröder, 1971:486.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12-11/80 (2 spec., USNM 90603), 22B-11/80 (1 spec., USNM 90554); MAFLA 13G-5/74 (1 spec., USNM 90557); 2423-8/77 (2 spec., USNM 56036); CTGLF 03-5/78 (3 spec., USNM 90555-6); STOCS 3/II-3 7/76 (1 spec., USNM 90559), 2/IV-3 F/76 (1 spec., USNM 90558).
DESCRIPTION:
Length, to 31 mm (previously reported to 52 mm); width, 1.8 mm. Largest specimen complete with 43 segments. Tentacular lobe roughly trefoil-shaped (Figure 52-22a); median lobe pointed with 4-6 long, club-shaped tentacles; lateral lobes folded, frilly, with numerous shorter tentacles. Thorax with 11 setigers. Ventral surface of thorax covered with numerous glandular papillae, separated by smooth glandular pads in midventral groove. Wide midventral groove extending full length of body (Figure 52-22b). Notopodia moderately long, slender, bearing two kinds of retractile notosetae. Each fascicle with up to 25 slender setae, slightly limbate near tip (Figure 52-22c); and a single thick seta (Figure 52-22d), slightly bent and penicillate. Abdominal region with 23-32 segments. First 3-9 abdominal segments apodous and achaetous; following segments with distinct, conical neuropodia bearing 6-7 stout acicular spines (Figure 52-22e). Uncini totally absent.
REMARKS: The acicular neurosetae figured herein are so like those figured by Wollebaek (1912) and so unlike those figured by Fauvel (1927) and Day (1967), who considered them notosetae, as to raise doubts that the latter authors were dealing with the same species. A. trilobata is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Fine sands and mud; 50-500 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records throughout northern Gulf (Figure 52-21); 10-134 m; coarse to fine sand, silts and clays.
DISTRIBUTION: Arctic, Norway, New England, Mediterranean, Japan, Gulf of Mexico.

Genus **Lanassa** Malmgren, 1865

TYPE SPECIES: Lanassa nordenskioldi Malmgren, 1865.
REFERENCES:
Hessle, 1917:204.
Day, 1967:721.
Hartmann-Schröder, 1971:468.
DIAGNOSIS: Thorax with up to 16 setigers; abdomen long with many segments. Eyes present or absent. Branchiae absent. Lateral lappets present or absent. Notosetae with serrate tips, present from segment IV. Avicular uncini present in neuropodia from segment V, arranged in double rows face-to-face from segment IX.

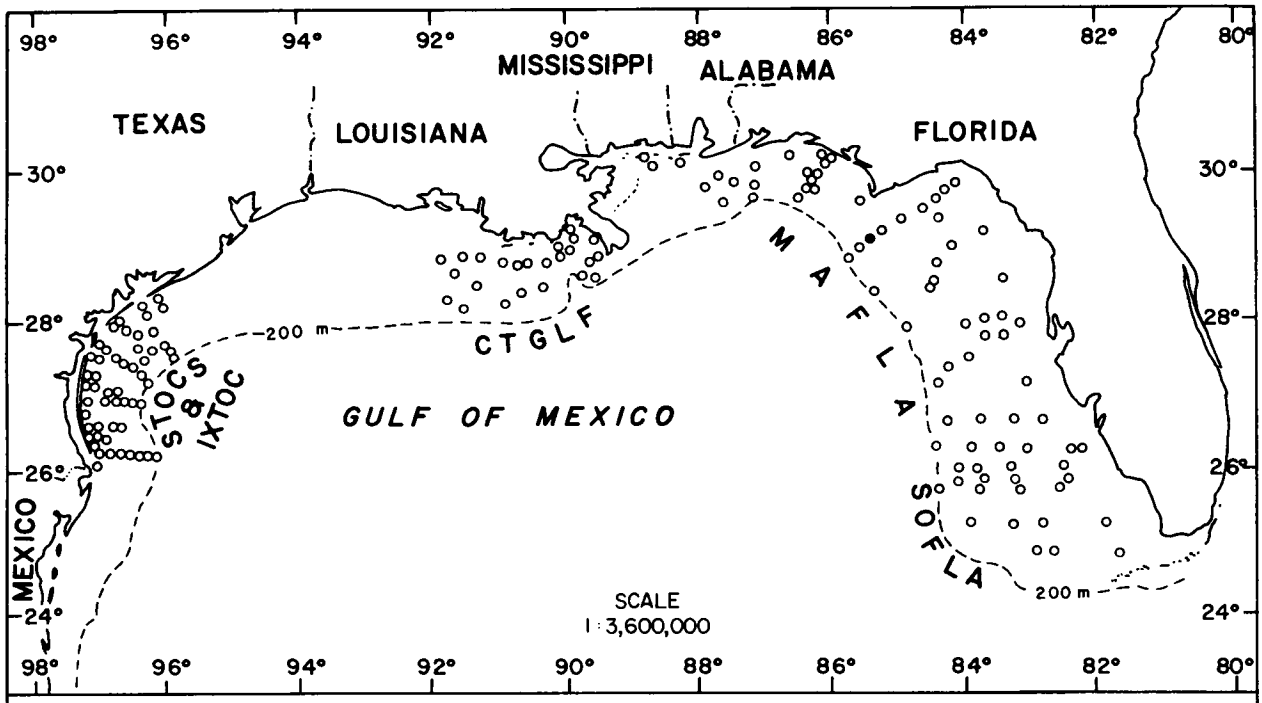

Figure 52-23. Distribution of Lanassa sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

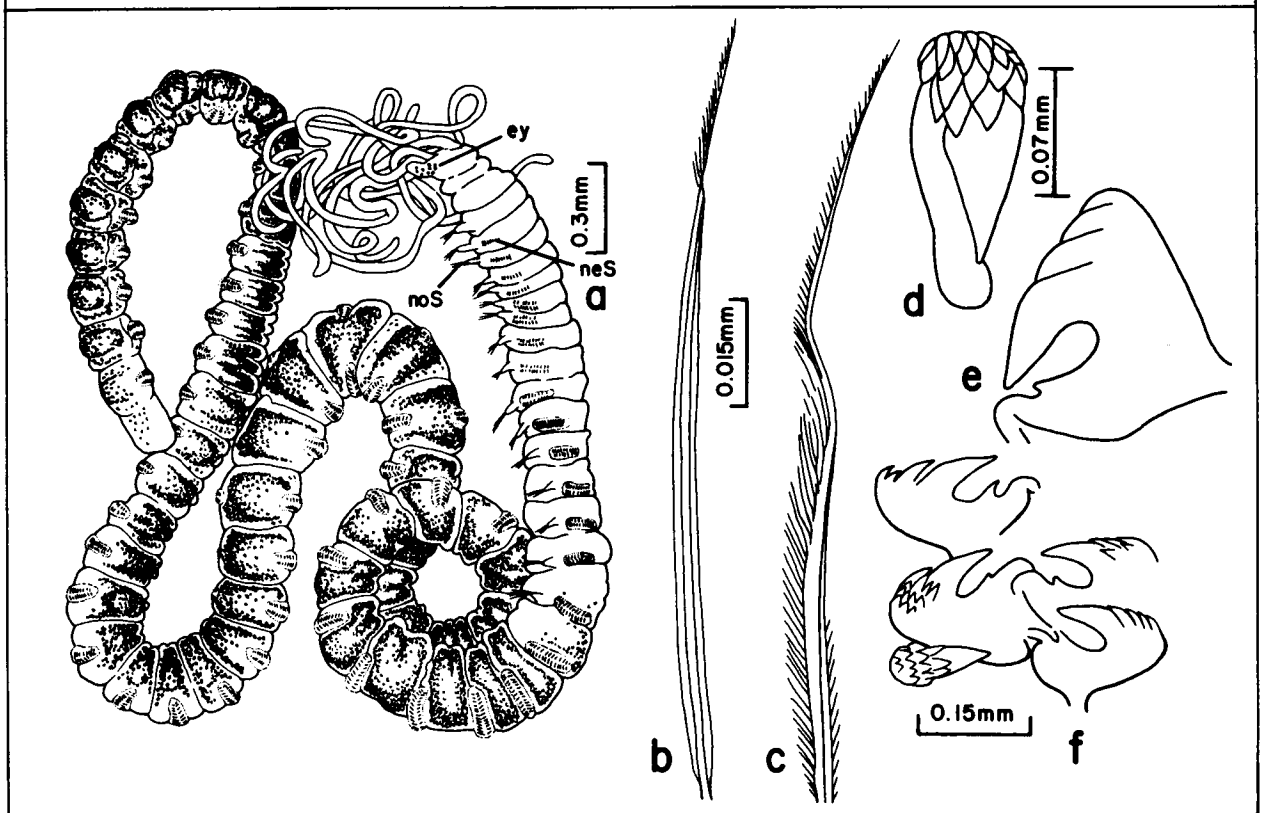

Figure 52-24. Lanassa sp. A: a, whole worm; b, thoracic notoseta; c, twisted tip of same (no scale); d, uncinus, frontal view; e, same, lateral view; f, double row arrangement of uncini from posterior thoracic unciniger.

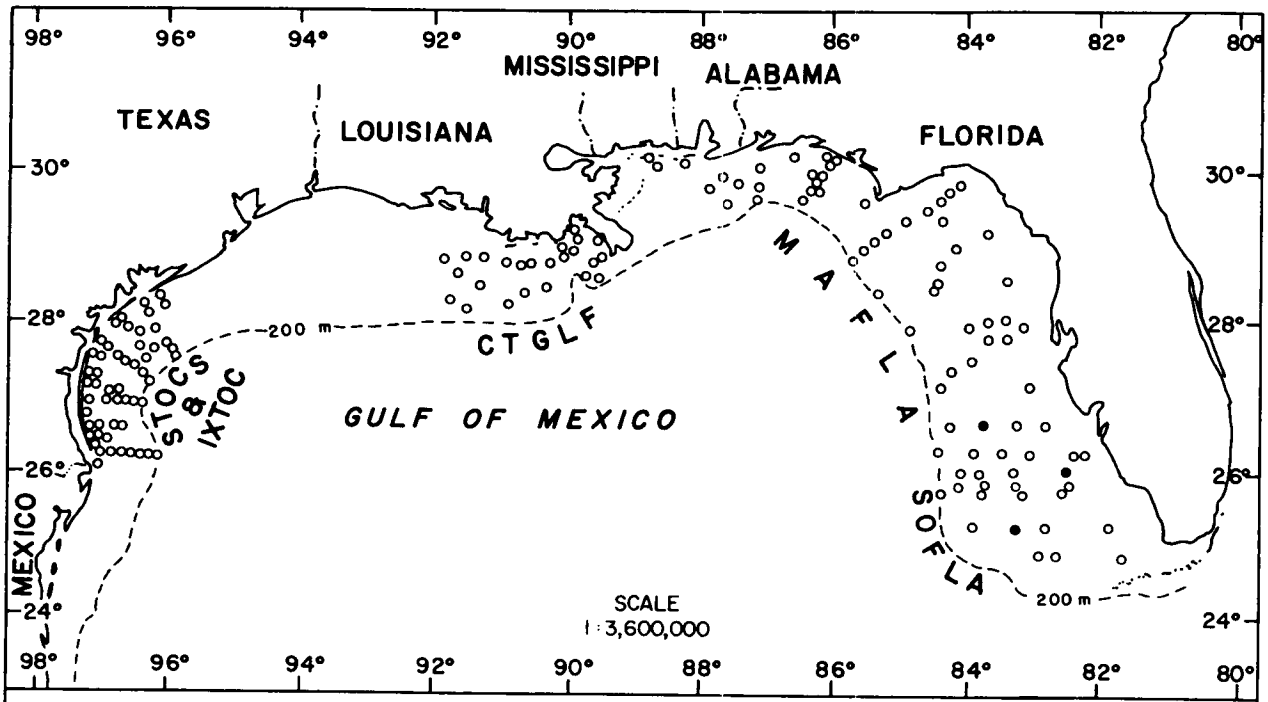

Figure 52-25. Distribution of terebellid Genus B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

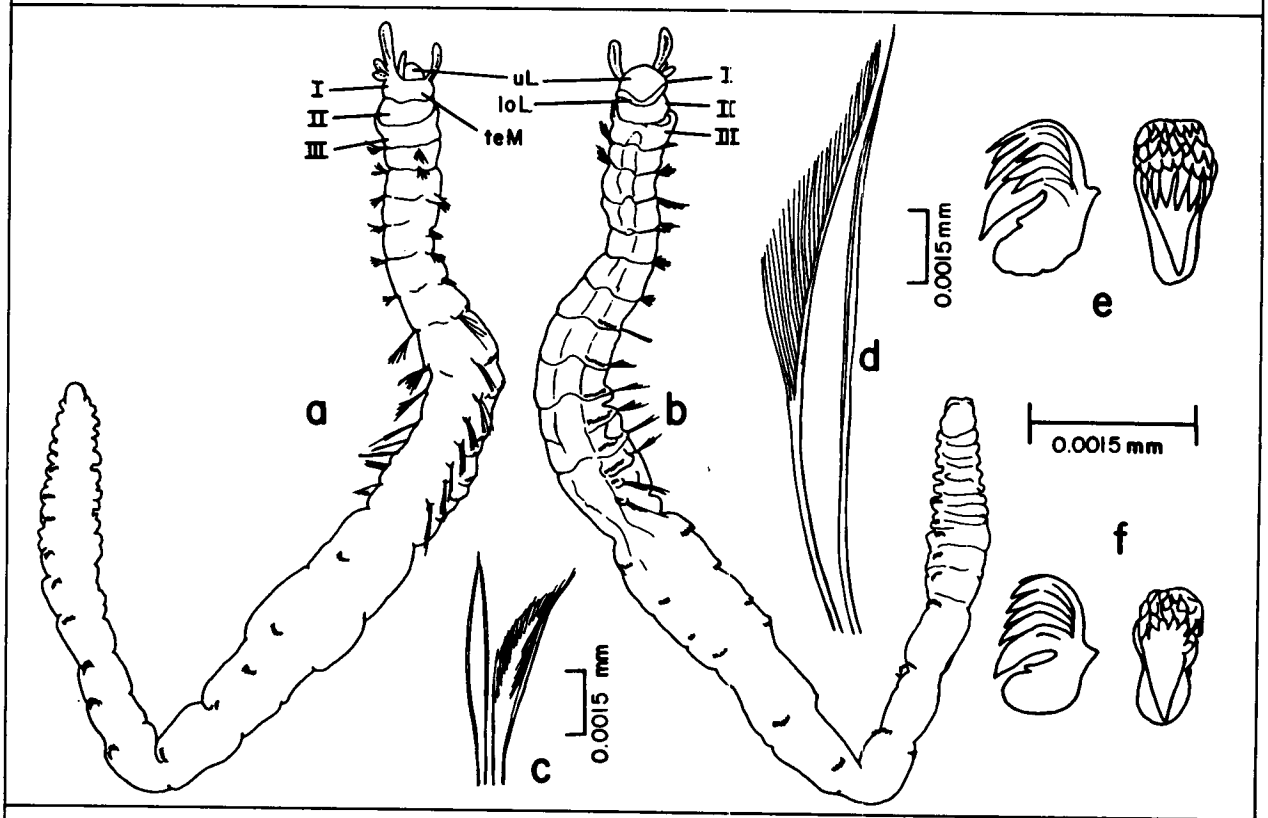

Figure 52-26. Genus B: a, whole worm, dorsolateral view; b, same, ventral view; c, notosetae from setiger 5; d, same, from setiger 12; e, thoracic uncini; f, abdominal uncini.

Lanassa sp. A
Figures 52-23, 24a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2425E-9/75 (1 spec., USNM 90529).
DESCRIPTION:
Length, 15 mm; width, 0.3 mm. Only specimen complete with 72 segments. Body long, cylindrical (Figure 52-24a). Tentacular lobe small and collar-shaped, with relatively few long, slender tentacles extending from prostomial fold. Eyes present. Lateral lappets absent. Ventral glandular pads absent in thorax. Abdominal segments densely covered with small papillae. Thorax with 16 setigers. Notosetae slender, narrowly limbate, distinctly hispid, often twisted at tip (Figure 52-24b,c). Neuropodial uncini present from setiger 2; dental formula MF:3-4:5-6:8-10:12-14 (Figure 52-24d,e); occurring in single rows through setiger 6, thereafter face-to-face in double rows to end of body (Figure 52-24f).
REMARKS: Descriptions of the 7-8 known species of Lanassa seem to indicate that they may have eyespots or lateral lappets, but not both. Accordingly, the present specimen may be allocated to the oculate subdivision consisting of L. capensis Day, 1955, and L. venusta pacifica Annenkova, 1938, neither of which have double rows of uncini extending beyond the third or fourth abdominal segment.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Cape San Blas, Florida (Figure 52-23); 36 m; medium sand.

Genus B
Figures 52-25, 26a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 5-11/80 (1 spec., USNM 90519), 6E-7/81 (1 spec., USNM 90517), 24A-4/81 (1 spec., USNM 90518).
DESCRIPTION:
Length, to 3.5 mm; width, less than 0.2 mm. All three specimens complete, longest with 39 segments. Tentacular lobe as a simple fold, shorter than upper lip, bearing few simple stubby tentacles (Figure 52-26a). Lateral lappets present on segment III, absent on segments I and II. Branchiae absent. Ventral glandular pads poorly developed or lacking. Narrow ventral groove starting on segment II, widening in posterior thorax and disappearing in abdomen (Figure 52-26b). First notosetae on segment IV. First neurosetae on setiger 7 (segment X). Anterior notosetae including short, wide limbate setae in which most of the width is the shaft, and concave spatulate setae with fine hairs in the concavity (Figure 52-26c). After setiger 6, notosetae changing to slender, barely limbate setae; and slender setae lacking webs and having flagged, hispid tips (Figure 52-26d). Fourteen thoracic setigers. Uncini in single rows on setigers 7-9; in double rows interlocking face-to-face from setiger 10 through rest of thorax and first three abdominal segments. Abdominal uncinigerous tori hard to detect except on last few segments. Pygidium simple, unadorned. Thoracic and abdominal uncini (Figure 52-26e,f) with several rows of small denticles above main fang, dental formulae MF:6:8:10∿ and MF:10:12:14∿, respectively.

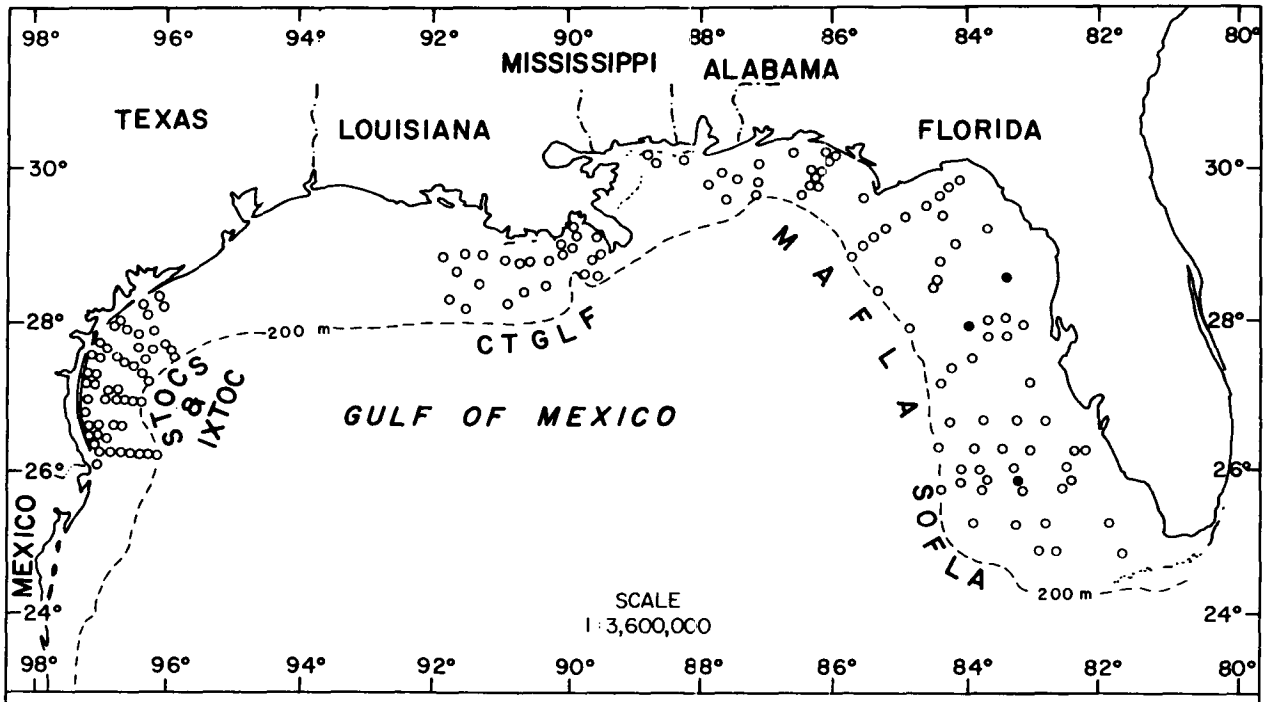

Figure 52-27. Distribution of Neoleprea sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

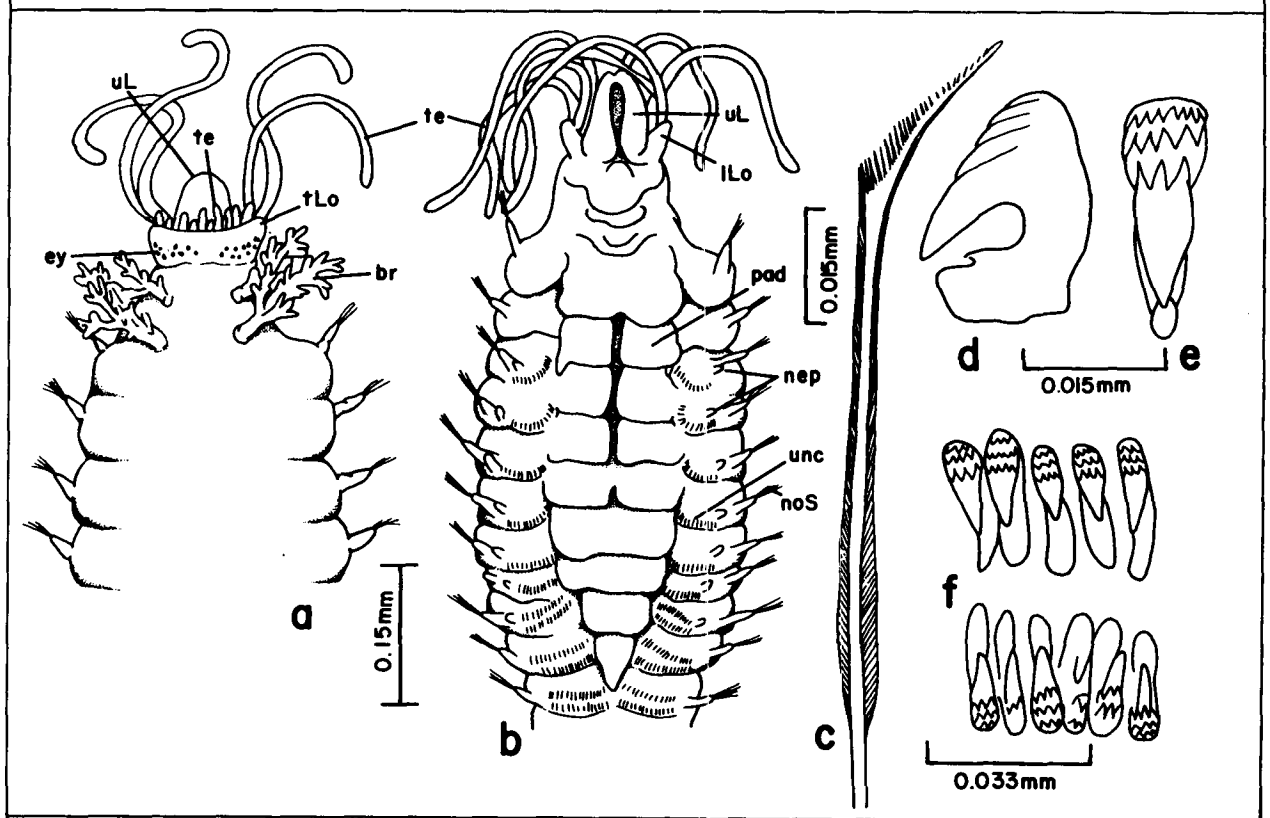

Figure 52-28. Neoleprea sp. A: a, anterior end, dorsal view; b, same, ventral view; c, Terebella-type notoseta; d, uncinus, lateral view; e, same, frontal view; f, double row arrangement of uncini from posterior thoracic unciniger.

REMARKS: Genus B is close to Proclea Saint Joseph, 1894, differing from it in the number of thoracic setigers, the setiger on which uncini first appear and some characteristics of the notosetae.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off southwestern Florida (Figure 52-25); 26-91 m; coarse to very fine sand.

Genus **Neoleprea** Hessle, 1917

TYPE SPECIES: Neoleprea streptochaeta (Ehlers, 1907).
REFERENCES:
Hessle, 1917:191.
Fauchald, 1977a:132.
DIAGNOSIS: Two or three pairs of dendritically branched branchiae arising from distinct stalks. Lateral lappets absent. Eyes present or absent. Nephridia usually present in segments III and VI-XII. Notosetae present from segment III, neurosetae from segment V. Some notosetae with serrate tips.

Key to the Gulf of Mexico BLM-OCS Species of Neoleprea

1a. Tips of notosetae flagged ("Terebella-type" setae; Figure 52-28c); eyespots present. . . . . .**Neoleprea sp. A**, p. 52-32
1b. Tips of notosetae faintly hispid (Figure 52-30c), not flagged; eyespots absent. . . . . **Neoleprea sp. B**, p. 52-34

Neoleprea sp. A
Figures 52-27, 28a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 16C-7/81 (1 spec., USNM 90604); MAFLA 2211F-7/76 (1 spec., USNM 90537), 2852H-7/76 (1 spec., USNM 90536).
DESCRIPTION:
Length, 9+ mm; width, 0.3 mm. Largest specimen incomplete with 24 segments. Tentacular lobe collar-shaped, surmounting forward-projecting upper lip (Figure 52-28a); irregular row of eyespots present across posterior margin. Peristomium, as seen from below (Figure 52-28b), forming large lateral lobes. Glandular pads separated by a midventral groove on segments III-VII; pads entire on segments VIII-XII, absent thereafter. Nephridial papillae present on setigers 3-9. Two pairs of branchiae, on segments II-III, each with several stout branches arising from a single stalk. Thorax with 19 segments, notopodia starting on the third (second branchiferous). All notosetae "Terebella-type" with flagged, denticulate tips above long, narrow wings (Figure 52-28c). Neurosetae avicular, first appearing on segment V (third setigerous); dental formula MF:4:4-6:8-10 (Figure 52-28d,e). Double rows of uncini beginning about setiger 9 and continuing onto the abdomen; interlocking face-to-face in some specimens, double rows face-to-face in others (Figure 52-28f).
REMARKS: Neoleprea sp. A resembles N. streptochaeta (Ehlers, 1907), N. japonica Hessle, 1917, and N. spiralis (Johnson, 1901) in having "Terebella-type" flagged notosetae, but differs from the above species

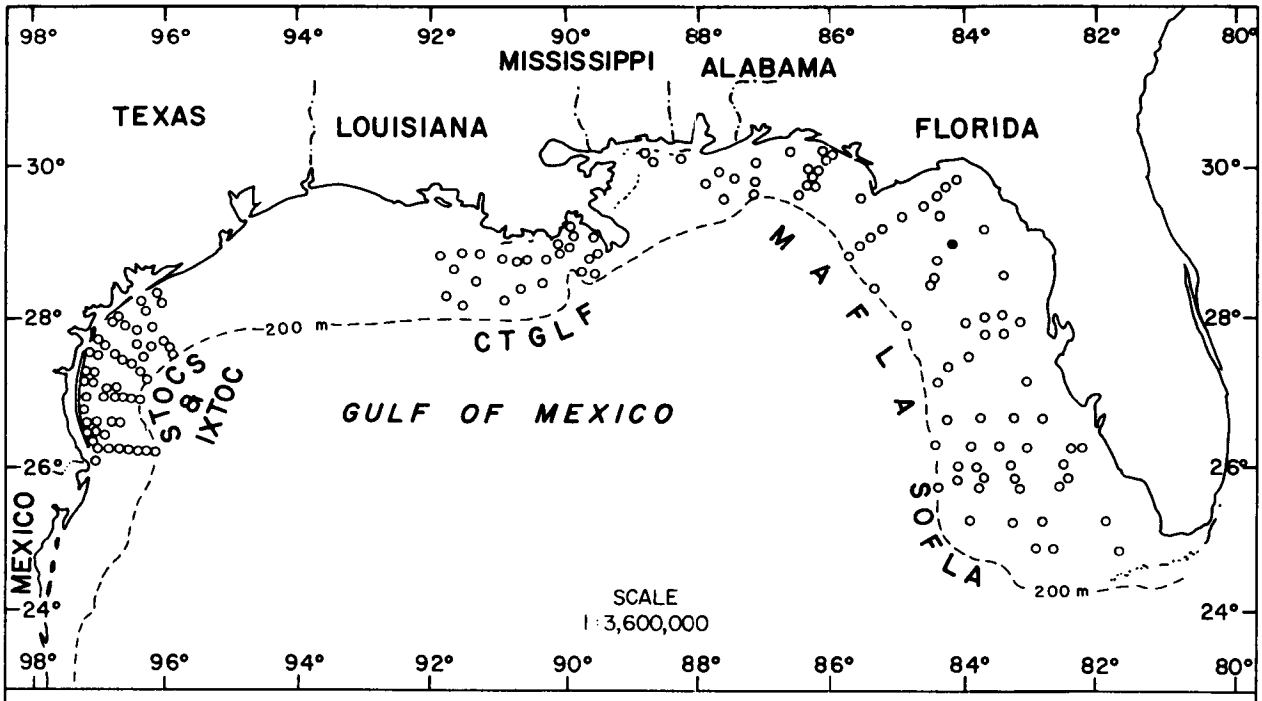

Figure 52-29. Distribution of Neoleprea sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

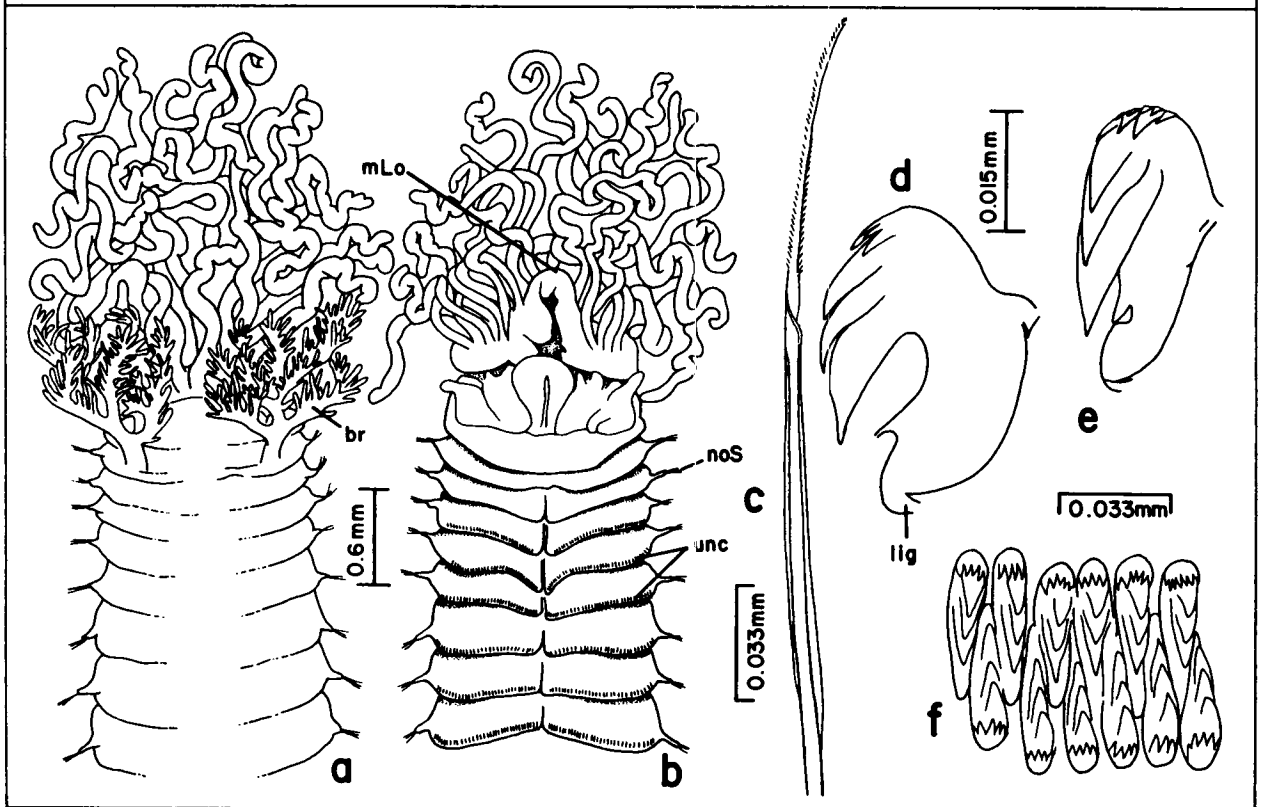

Figure 52-30. Neoleprea sp. B: a, anterior end, dorsal view; b, same, ventral view; c, notoseta; d, thoracic uncinus, lateral view; e, same, anterolateral view; f, interlocking face-to-face arrangement of uncini from posterior thoracic unciniger.

in possessing eyespots. The genus Neoleprea is newly reported from the Gulf of Mexico.
GULF OF MEXICO BLM-OCS OCCURRENCE: Three stations off Florida (Figure 52-27); 22-54 m; coarse to fine sand.

Neoleprea sp. B
Figures 52-29, 30a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2317F-6/75 (1 spec., USNM 90528).
DESCRIPTION:
Length, 21 mm; width, 1.7 mm. Only specimen complete with 58 segments. Tentacular lobe simple, collar-like, with forward-projecting median lobe giving rise to numerous slender tentacles (Figure 52-30a,b). Eyespots absent. Segment II broad, variously folded, with midventral glandular pad. Segmental glandular pads beginning on segment III, disappearing about segment XVI. Nephridial papillae not observed. Dendritically branched, stalked branchiae present on segments II and III (Figure 52-30a). Thorax with 19 segments. All notosetae slender, narrowly winged, with faintly hispid tips (Figure 52-30c). Neurosetae avicular, with prominent ligament attachment on prow; dental formula MF:1:1:5-7 (Figure 52-30d,e). Uncini arranged in single rows facing forward on segments V-IX, in double rows interlocking face-to-face on rest of thorax and onto abdomen (Figure 52-30f).
REMARKS: Neoleprea sp. B most closely resembles N. spiralis (Johnson, 1901) in lacking both lateral lappets and eyespots, and in the morphology of the notosetae. The notosetae of N. spiralis are reported as being "slightly flagged." The slight twist between the winged and hispid portions of the notosetae in Neoleprea sp. B may indicate an incipient flagging. However, the uncinal dental formula of the two species and the extension of double rows of uncini onto the abdomen in Neoleprea sp. B clearly separate the two.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Florida (Figure 52-29); 29 m; silty very fine sand.

Genus **Neoamphitrite** Hessle, 1917

TYPE SPECIES: Amphitrite affinis Malmgren, 1865.
REFERENCE:
Hessle, 1917:178.
DIAGNOSIS: Three pairs of dendritically branched branchiae arising from distinct stalks on segments II-IV. Lateral lappets well-developed. Thoracic setigers numbering 17 or more, beginning on segment IV (third branchiferous). Uncini first appearing on segment V (setiger 2). Anterior and posterior nephridia present.

Key to the Gulf of Mexico BLM-OCS Species of Neoamphitrite

1a. Thorax with 17 setigers; uncini occurring in single rows on setigers 2-7 (segments V-X). . . . . .**Neoamphitrite edwardsi**, p. 52-37

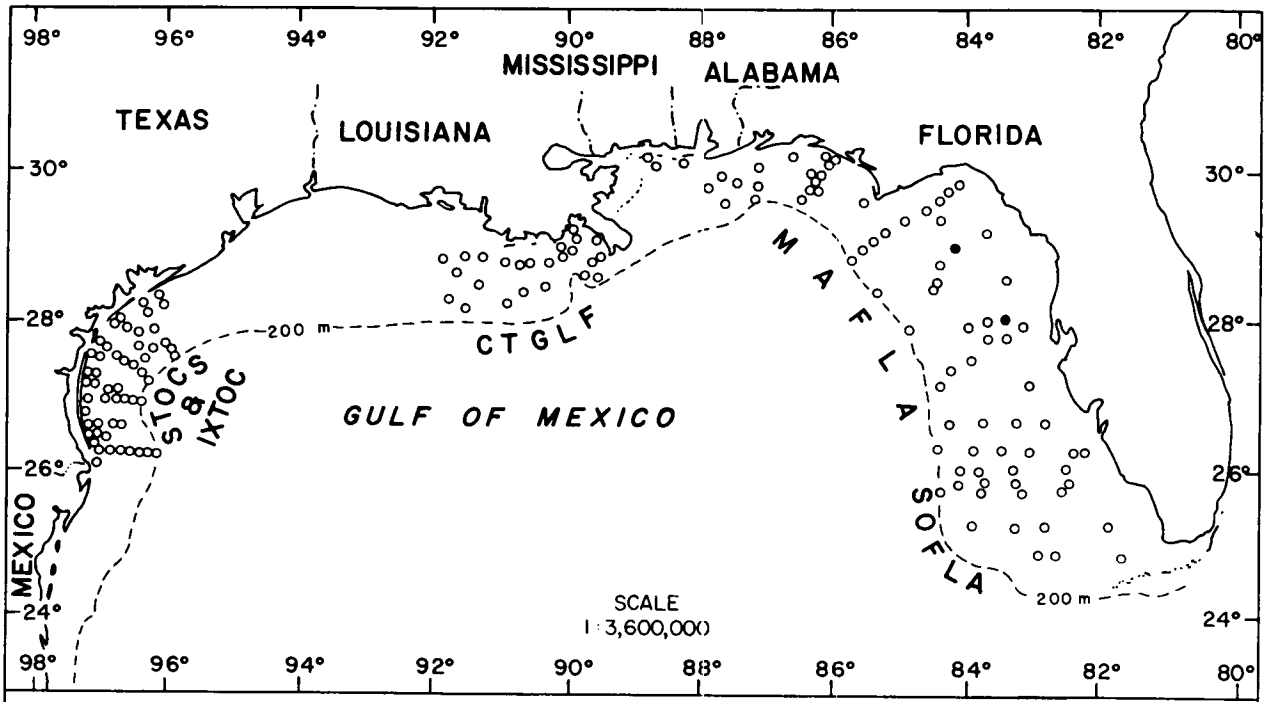

Figure 52-31. Distribution of Neoamphitrite edwardsi on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

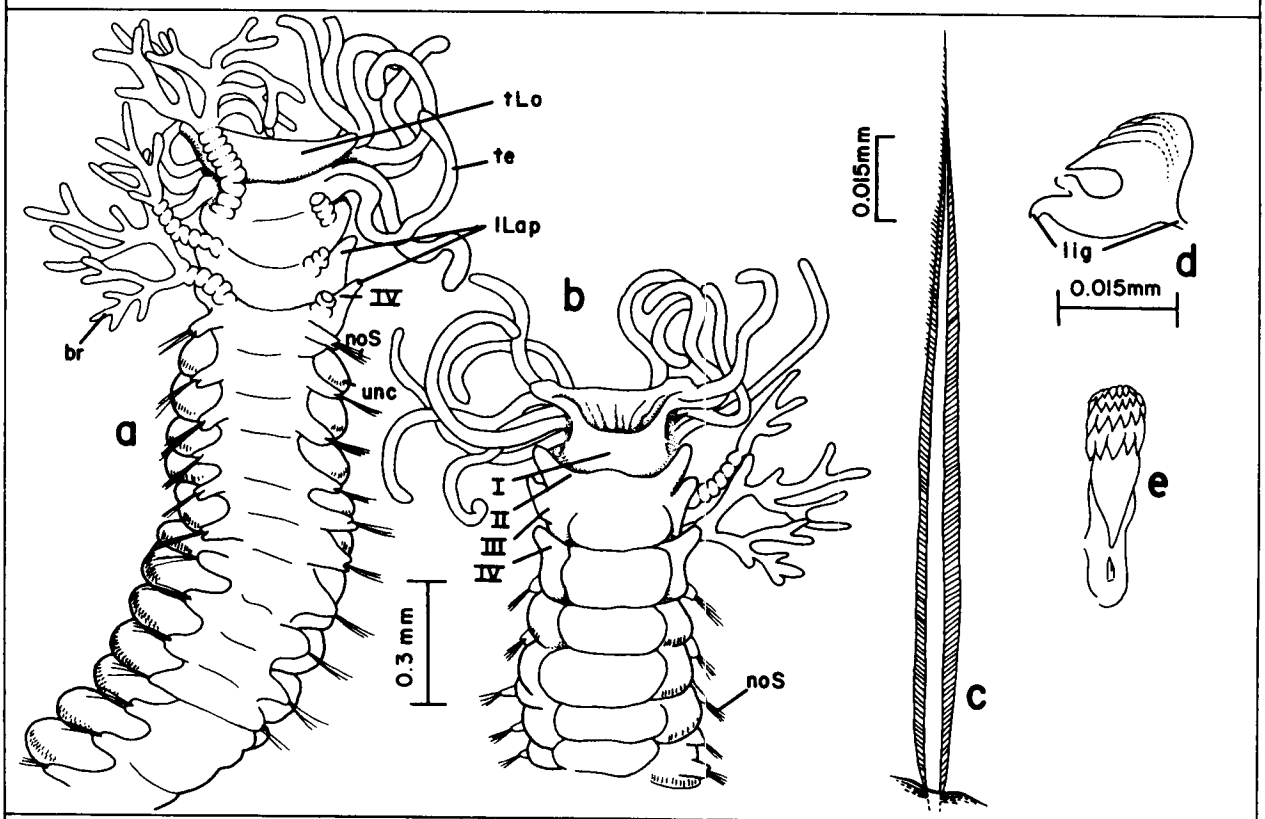

Figure 52-32. Neoamphitrite edwardsi: a, anterior end, dorsal view; b, same, ventral view; c, notoseta; d, thoracic uncinus, lateral view; e, same, frontal view.

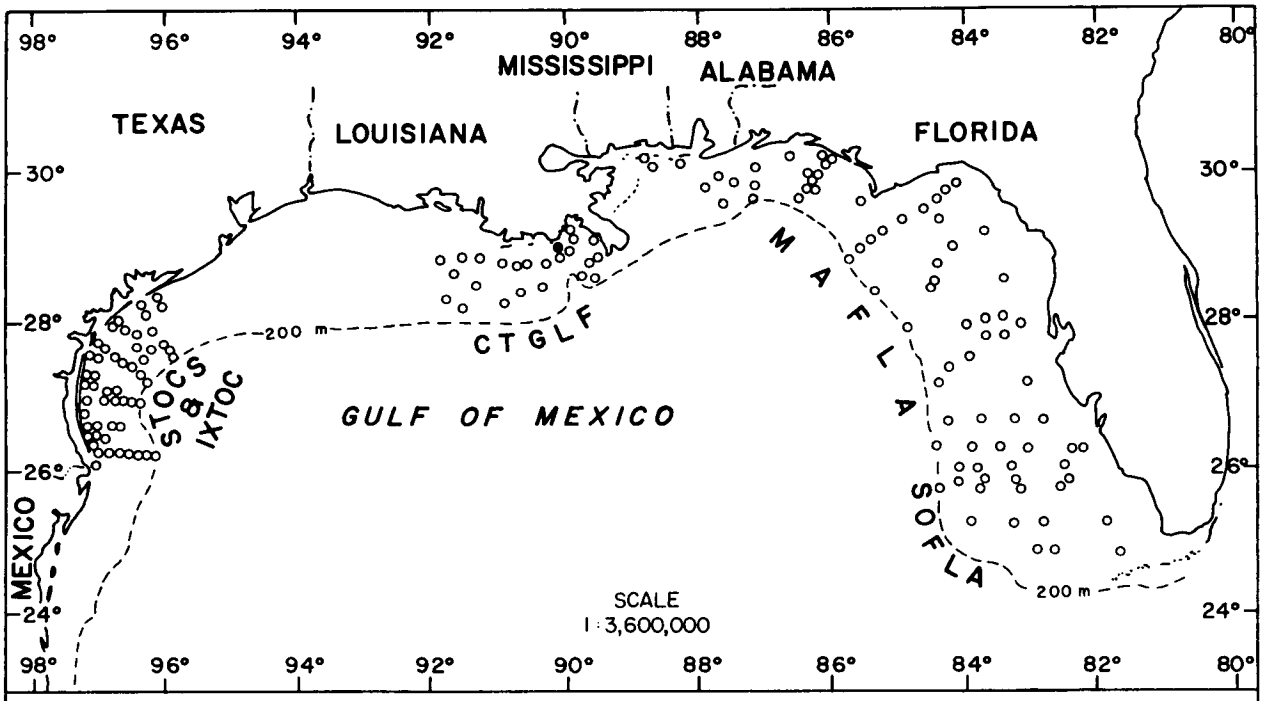

Figure 52-33. Distribution of Neoamphitrite sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

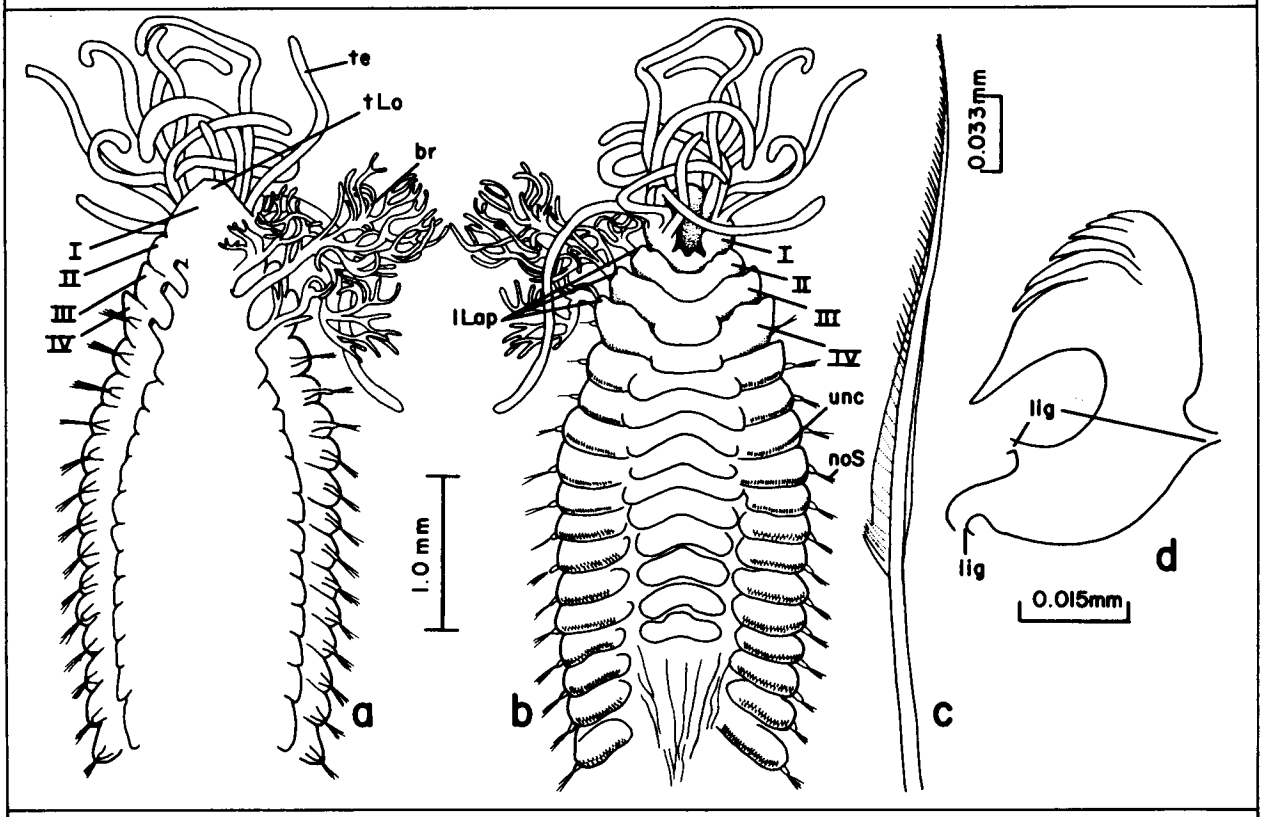

Figure 52-34. Neoamphitrite sp. A: a, anterior end, dorsal view; b, same, ventral view; c, notoseta; d, thoracic uncinus, lateral view.

1b. Thorax with 29-32 setigers; uncini occurring in single rows on setigers 2-6 (segments V-IX). . . . .**Neoamphitrite sp. A**, p. 52-37

Neoamphitrite edwardsi (Quatrefages, 1865)
Figures 52-31, 32a-e

Terebella edwardsi Quatrefages, 1865:354, pl. 19, fig. 1.
Amphitrite gigantea McIntosh, 1922a:114, pl. 120, fig. 11, pl. 125A, figs. 10, 10b.
Amphitrite edwardsi--Fauvel, 1927:245, fig. 84a-i.
Neoamphitrite edwardsi--Banse and Hobson, 1968:45.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2208I-7/76 (1 spec., USNM 90593), 2317A-9/75 (1 spec., USNM 90592).
DESCRIPTION:
Length, 6+ mm (previously reported to 300 mm); width, to 0.8 mm (previously reported to 20 mm). Larger specimen incomplete with 23 segments. Tentacular lobe appearing as a flat, slightly concave flap; lower portion forming upper lip (Figure 52-32a). Eyes absent. Lateral lappets present on segments II-IV. Ventral glandular pads well-defined on setigers 6-8 (Figure 52-32b), found as far back as setiger 12. Nephridial papillae not observed. Branchiae arising from stout, moderately long, somewhat annulated stalks, each with three main branches which again split three times each. Notosetae stout, with thick stems and narrow wings (Figure 52-32c); wings bearing diagonal striae extending beyond distal edge, giving hispid appearance. Uncini avicular with at least four rows of denticles above main fang, prominent subrostral prow, and posterior ligament attachments. Dental formula MF:4-5:6-7:8-9:10-12 (Figure 52-32d,e). Uncini occurring in single rows facing forward in setigers 2-7; double rows interlocking face-to-face in setigers 8-17; returning to single rows, with suspensory fibers well-developed in abdominal segments.
REMARKS: Previous identifications of this species were confused in BLM-OCS collections. Neoamphitrite edwardsi is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Seagrass beds, in mud and muddy sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two records off Florida (Figure 52-31); 29-30 m; silty very fine sand, clayey sandy silt.
DISTRIBUTION: Atlantic coast of France, English Channel, Gulf of Mexico, Puget Sound, Japan.

Neoamphitrite sp. A
Figures 52-33, 34a-d

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
CTGLF 02-5/78 (4 spec., USNM 90544-6).
DESCRIPTION:
Length, 16+ mm; width, to 1.1 mm. Largest specimen incomplete with 43 segments. Tentacular lobe with forward-projecting median portion (Figure 52-34a), and numerous long slender tentacles arising from

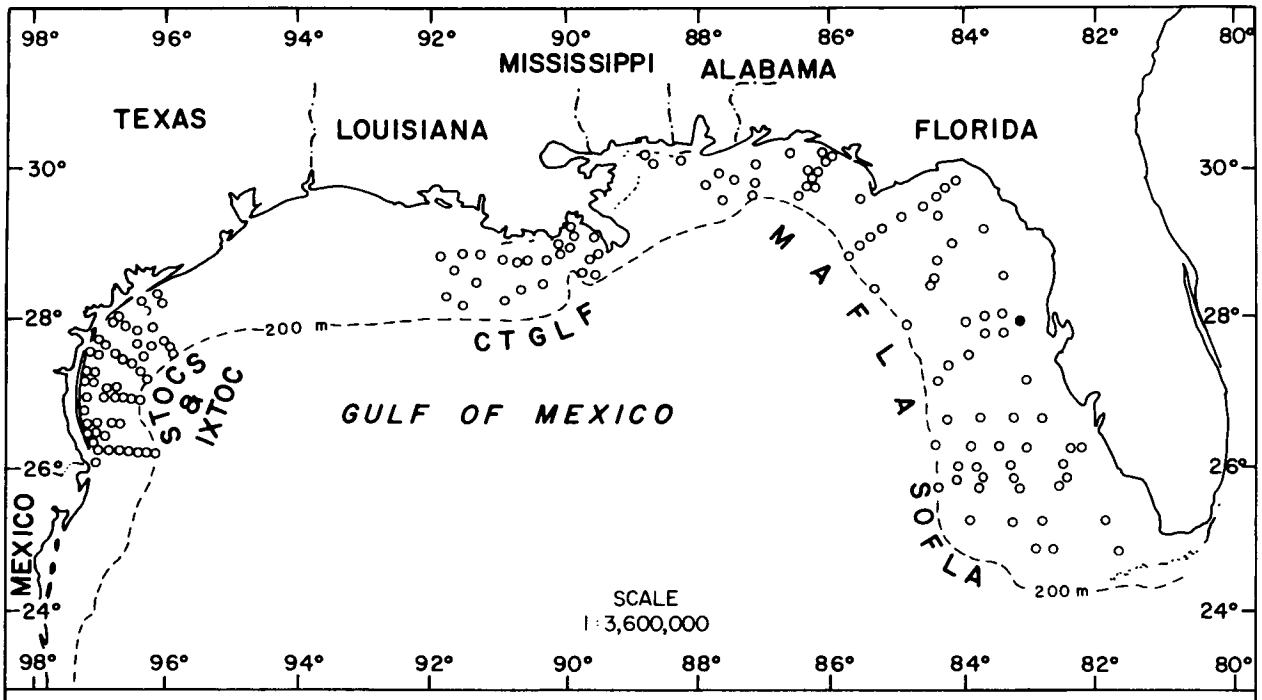

Figure 52-35. Distribution of Terebella rubra on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

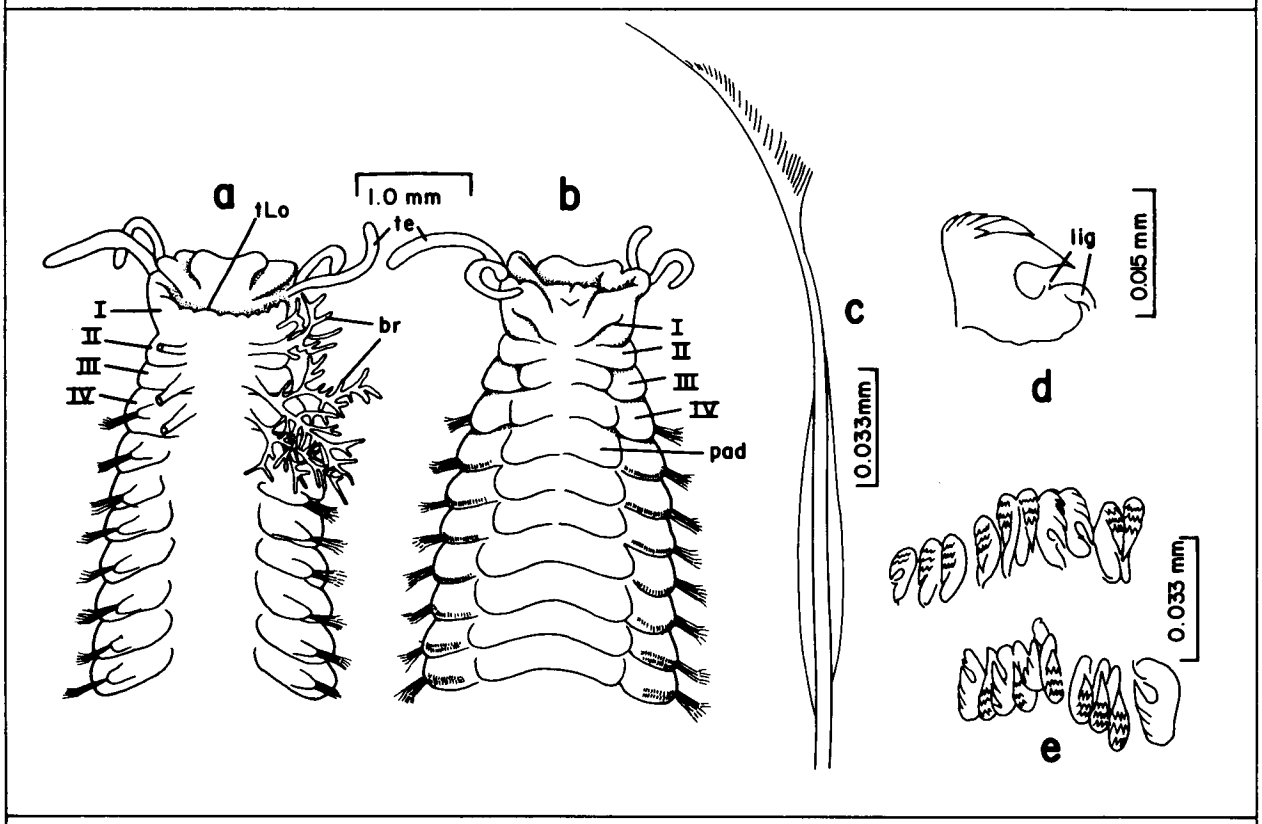

Figure 52-36. Terebella rubra: a, anterior end, dorsal view; b, same, ventral view; c, Terebella-type notoseta; d, thoracic uncinus, lateral view; e, double row arrangement of uncini from posterior thoracic unciniger.

ventrolateral portions (Figure 52-34b). Eyes absent. Lateral lappets present on segments II-IV. Ventral thoracic glandular region with 12 pads starting on segment III, pads becoming smaller and distinctly separated from uncinigerous tori around segment X. Nephridia not observed. Branchiae dendritically branched, arising from distinct slender stalks on segments II-IV. Thorax with 29-32 setigers. Notosetae with narrow wings terminating in hispid tips (Figure 52-34c); not flagged as in Terebella. Uncini with prominent subrostral and posterior ligament attachments (Figure 52-34d), a row of three denticles above main fang and several rows of smaller teeth above that. Dental formula MF:3:4-5:5-6:6-8∿. Uncini occurring in single rows facing forward from setigers 2-6; interlocking double rows face-to-face from setiger 7 through remaining thoracic setigers.
REMARKS: Neoamphitrite sp. A is most similar to N. grayi (Malmgren, 1865). BLM-CTGLF specimens were originally assigned to Loimia viridis, Terebella rubra, and Pista palmata.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Louisiana (Figure 52-33); 12 m; sandy clayey silt.

Genus **Terebella** Linnaeus, 1767

TYPE SPECIES: Terebella lapidaria Linnaeus, 1767.
REFERENCES:
Hessle, 1917:187.
Fauvel, 1927:254.
Day, 1967:747.
DIAGNOSIS: Three pairs of stalked and branched branchiae on segments II-IV. Lateral lappets absent. Ventral glandular pads well-developed. Anterior and posterior nephridia present. Thorax with more than 20 setigers. Notosetae with denticulate tips, present from segment IV; uncini avicular, present from segment V.

Terebella rubra (Verrill, 1873)
Figures 52-35, 36a-e

Leprea rubra Verrill, 1873:321.
Terebella rubra--Hartman, 1945:44; 1951a:112.
Terebella rubra--Day, 1973:119.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207B-7/76 (1 spec., USNM 90598), 2207E-11/77 (1 spec., USNM 90599).
DESCRIPTION:
Length, 6+ mm (previously reported to 30 mm); width, to 1.1 mm. Largest specimen incomplete with 16 segments. Tentacular lobe wrinkled, collar-like (Figure 52-36a), lower edge forming upper lips. Eyes absent. Ventral glandular pads broad and prominent from segment III to segment VIII or IX (Figure 52-36b), diminishing through segments XII-XIII. Branchiae dendritically branched, arising from distinct stalks on segments II-IV. Nephridia not observed. Notosetae first present on segment IV as typical "Terebella-type" setae, with long, slender shafts having narrow wings medially, and terminal serrate flag (Figure 52-36c).

Uncini with prominent ligament attachment on prow; dental formula MF:4-5:6-7:8-9 ∿ (Figure 52-36d). Uncini arranged in single rows facing forward on first six uncinigers, thereafter changing abruptly to double rows face-to-face (Figure 52-36e).

REMARKS: Hartman (1959b:527) listed Terebella rubra Linnaeus, 1788, Terebella rubra Risso, 1826, and Leprea rubra Verrill, 1873, under the genus Terebella within the Terebellidae. This means that all are homonyms, with T. rubra Linnaeus being senior. However, Hartman (1951a:112) pointed out that T. rubra Linnaeus was not retained in the list of valid species, and in 1959 questionably referred it to the Eunicidae. Terebella rubra Risso was shown by Fauvel (1927:249) to be more properly a member of Amphitrite as a senior synonym of A. rubra Marenzeller, 1884. However, since A. rubra (Risso, 1826) has stalked and branched branchiae as well as lateral lappets, it should be considered Neoamphitrite rubra (Risso) as per Fauchald (1977a:131) and the generic key used herein. Leprea rubra Verrill was reassigned to the genus Terebella (Hartman, 1945:44). Thus the Terebellidae now contains Neoamphitrite rubra (Risso, 1826) and Terebella rubra (Verrill, 1873). Accordingly, Terebella rubra (Verrill) and perhaps even Neoamphitrite rubra (Risso) must have their specific epithets changed in accordance with article 57 of the International Code of Zoological Nomenclature. Until then, Terebella rubra (Verrill, 1873) is retained herein as was done by Day (1973:119) and Hartman (1951a:112).

PREVIOUSLY REPORTED HABITAT: Pilings, oyster beds, rocks, and shell; intertidal to 7 m.

GULF OF MEXICO BLM-OCS OCCURRENCE: Numerous records on Florida shelf (Figure 52-35); 11-43 m; coarse to fine-very fine sand, silty fine sand.

DISTRIBUTION: Massachusetts to North Carolina, Gulf of Mexico.

Genus **Pista** Malmgren, 1865

TYPE SPECIES: Amphitrite cristata O. F. Müller, 1776.

REFERENCES:

Hessle, 1917:153.
Fauvel, 1927:262.
Caullery, 1944:146.
Day, 1967:736.
Hartmann-Schröder, 1971:469.

DIAGNOSIS: One or two (rarely three) pairs of branched branchiae on long to short stalks. Eyes present or absent. Lateral lappets well-developed on segments II-IV. Thorax with 15-24 pairs of notopodia starting on segment IV, bearing winged, smooth-tipped capillary setae. Uncini avicular, present from segment V, with long-handled basal shafts in first two or three uncinigers (sometimes more); arranged in double rows face-to-face in posterior thorax.

Key to the Gulf of Mexico BLM-OCS Species of Pista

1a. All thoracic uncini with long-handled basal shafts (Figure 52-38d). . . . . **Pista fasciata**, p. 52-42

1b. Thoracic uncini of double rows without basal shafts (Figure 52-42e). 2

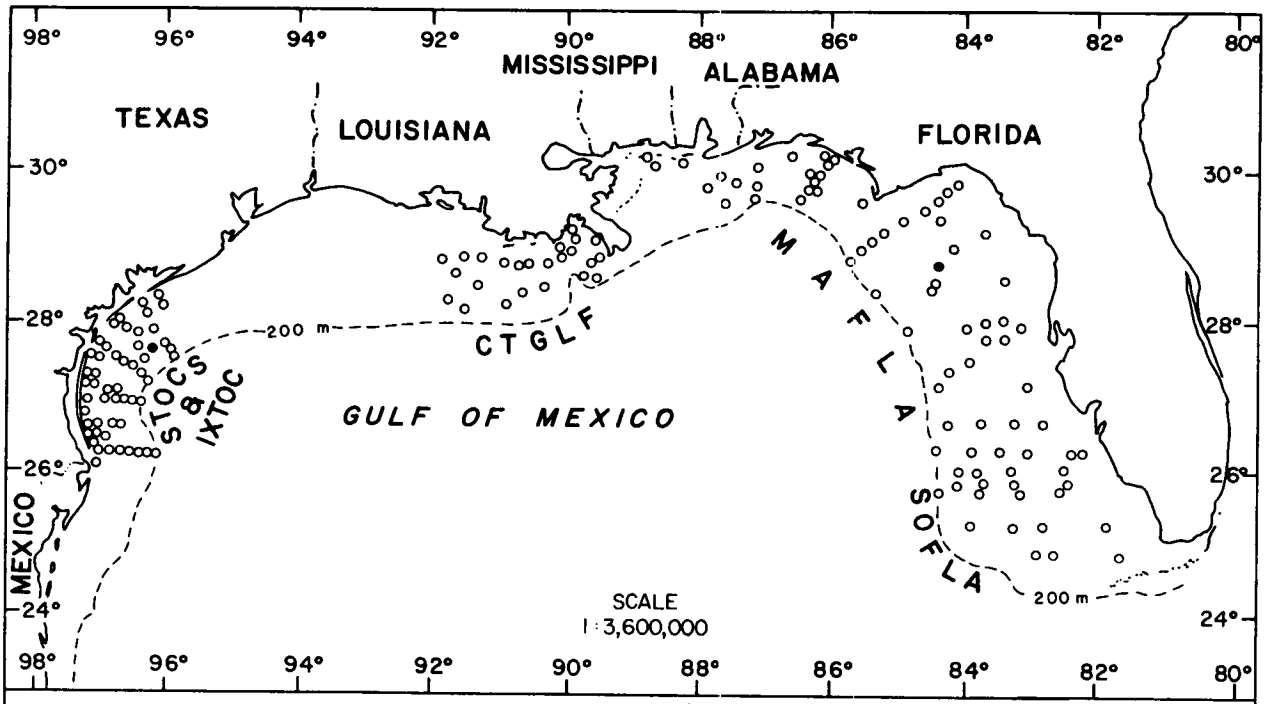

Figure 52-37. Distribution of Pista fasciata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

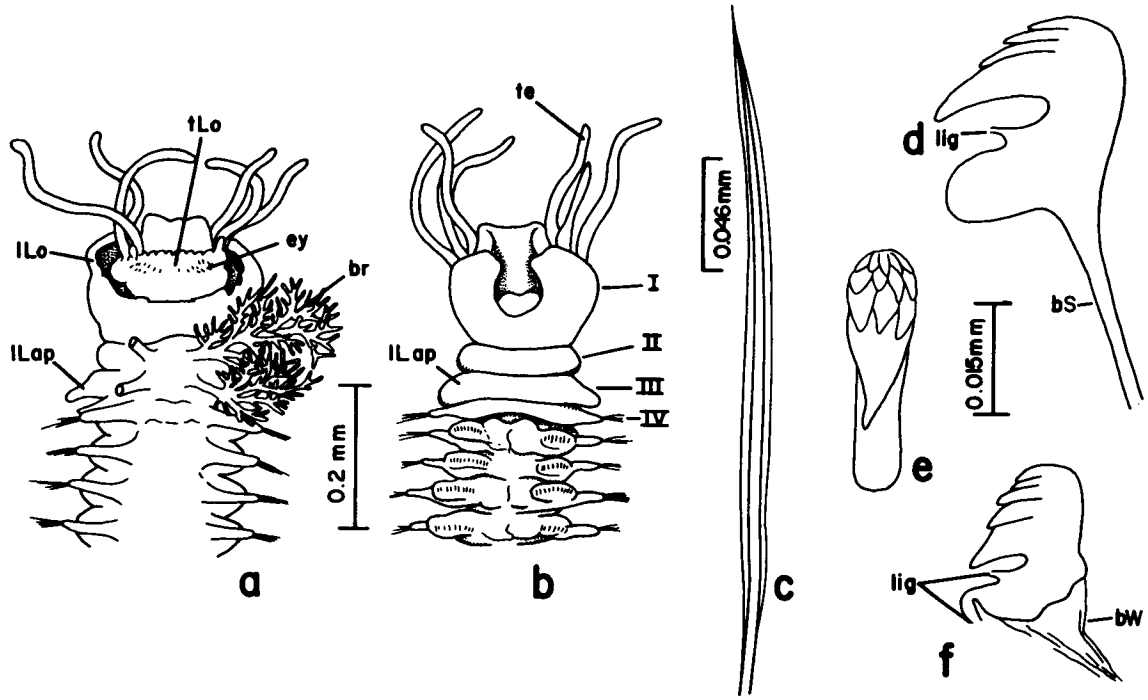

Figure 52-38. Pista fasciata: a, anterior end, dorsal view; b, same, ventral view; c, notoseta; d, thoracic uncinus, lateral view; e, same, frontal view; f, abdominal uncinus.

2a. Thoracic uncini of first three rows only with basal shafts. . . 3
2b. Thoracic uncini of all single rows with basal shafts. 4

3a. Uncini of first three rows with long necks, basal shafts tapered (Figure 52-40c). . . . . .**Pista quadrilobata**, p. 52-45
3b. Uncini of first three rows without long necks (Figure 52-42d), basal shafts not tapered. . . . . .**Pista sp. A**, p. 52-45

4a. Terminal filaments of branchiae branched (Figures 52-46a, 48a) 5
4b. Terminal filaments of branchiae unbranched, whorled (Figure 52-44a). . . . . **Pista cristata**, p. 52-47

5a. One pair of branchiae. . . . . **Pista sp. B**, p. 52-49
5b. Two pairs of branchiae . . . . . **Pista palmata**, p. 52-49

Pista fasciata (Grube, 1869)
Figures 52-37, 38a-f

Pista fasciata--Berkeley and Berkeley, 1952:79, fig. 160.
Pista fasciata--Fauvel, 1953:425, fig. 224a-d.
Pista fasciata--Day, 1967:742, fig. 36.8.k-m.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2316I-8/76 (1 spec., USNM 90588); STOCS HR1-4 7/76 (1 spec., USNM 90589).
DESCRIPTION:
Length, 9+ mm (previously reported to 58 mm); width, to 2.1 mm. Largest specimen incomplete with 25 segments. Tentacular lobe with few short, stout tentacles (mostly missing) and a row of eyespots (Figure 52-38a). Buccal segment with large lateral lobes forming ventral collar having median notch (Figure 52-38b). Lateral lappets absent on segment II; segment III with lateral lappets smaller than those of segment I. Ventral glandular pads present on first 14 setigers. Branchiae present on segments II and III, with short stems and irregularly branched filaments, not spiraled. Notosetae slender, narrowly winged, smooth (Figure 52-38c); present on 17 thoracic segments. All thoracic uncini with long, slender basal shafts (Figure 52-38d); especially long in first three uncinigers. Uncini with three large denticles in one row above main fang, and one or two rows of a few denticles each above them; dental formula MF:3:4-5:5-6 (Figure 52-38e). Uncini in single rows facing forward in setigers 2-7; in double rows interlocking face-to-face in setigers 8-20, trending toward back-to-back in last three thoracic segments. Abdominal uncini without basal shafts, but with pronounced ligament attachments on prow and basal web (Figure 52-38f).
REMARKS: The BLM-STOCS specimen was originally referred to Loimia medusa. Pista fasciata is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Sublittoral to 255 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two records off Florida and one off southern Texas (Figure 52-37); 19-75 m; silty fine sand, silty clay.
DISTRIBUTION: Indo-Pacific, Red Sea, Bay of Bengal, Japan to Alaska, southern California, Gulf of Mexico.

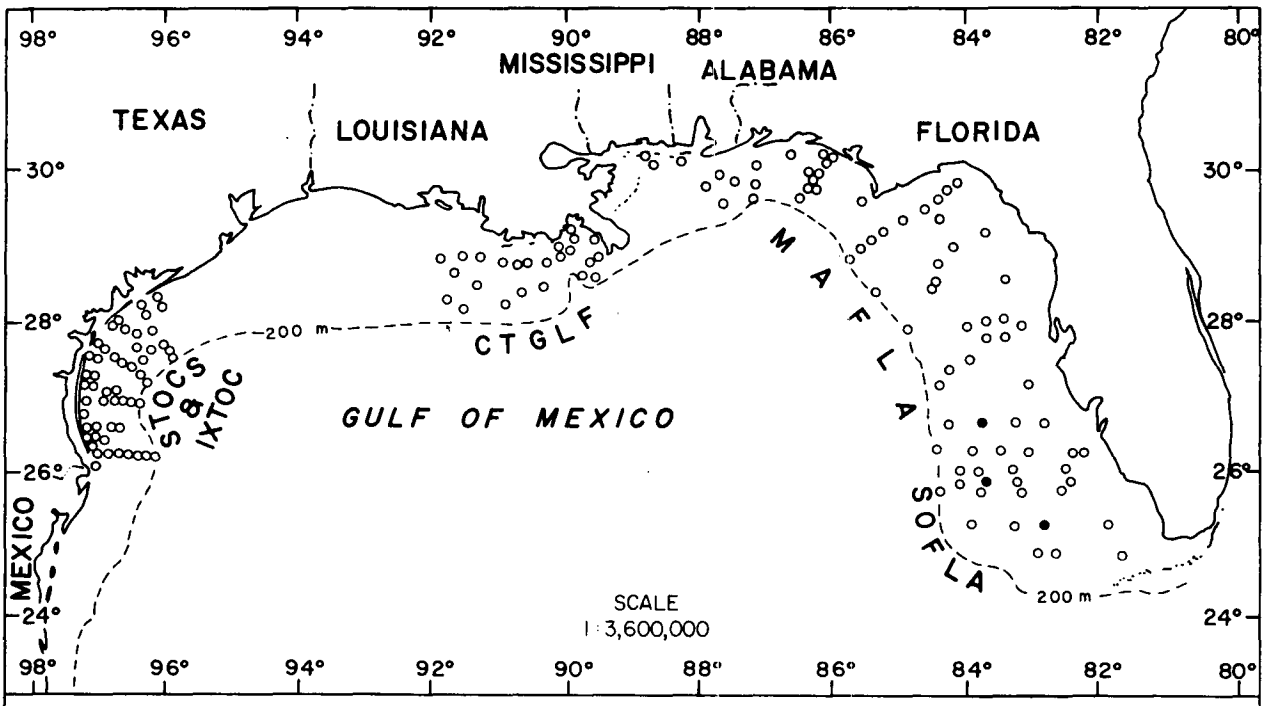

Figure 52-39. Distribution of Pista quadrilobata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

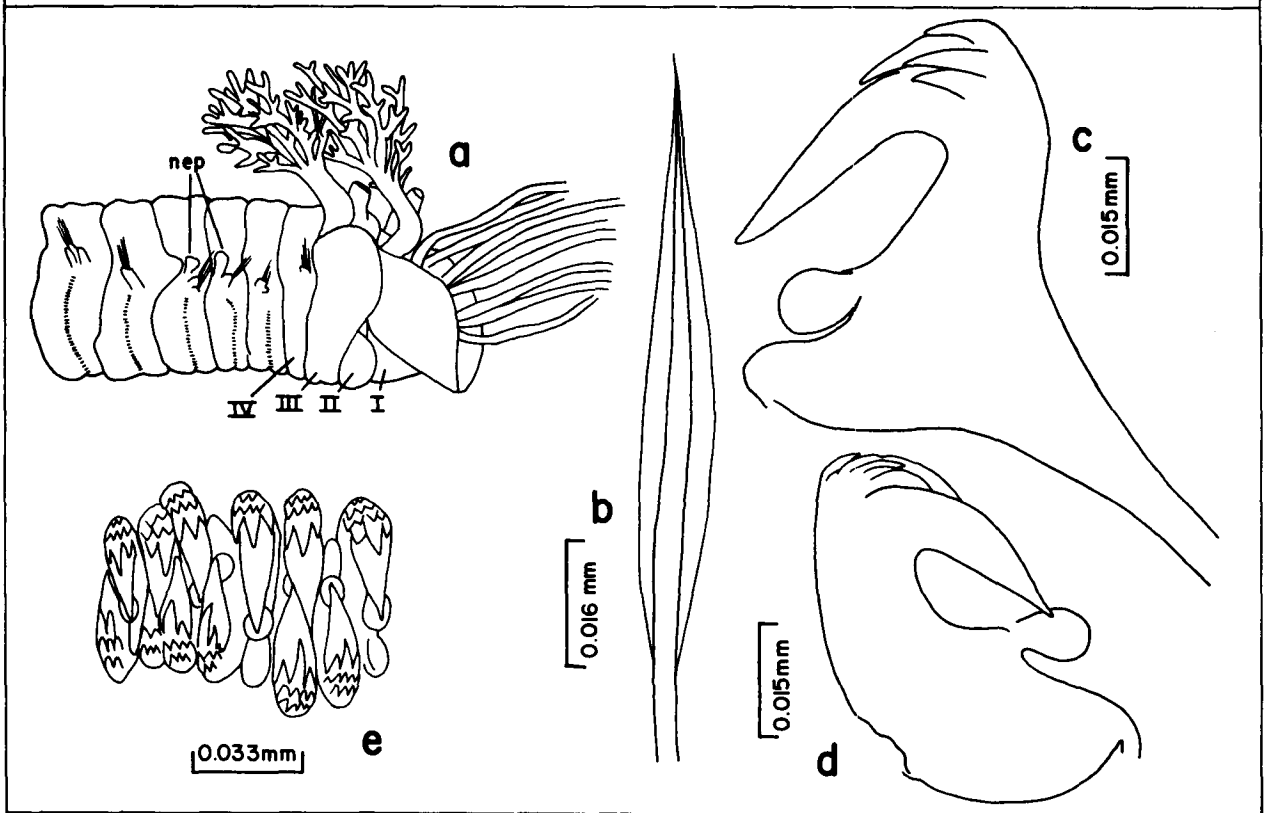

Figure 52-40. Pista quadrilobata: a, anterior end, lateral view (no scale); b, thoracic notoseta; c, thoracic uncinus from setiger 3, lateral view; d, same, from setiger 16, lateral view; e, interlocking face-to-face arrangement of uncini from thoracic unciniger 16.

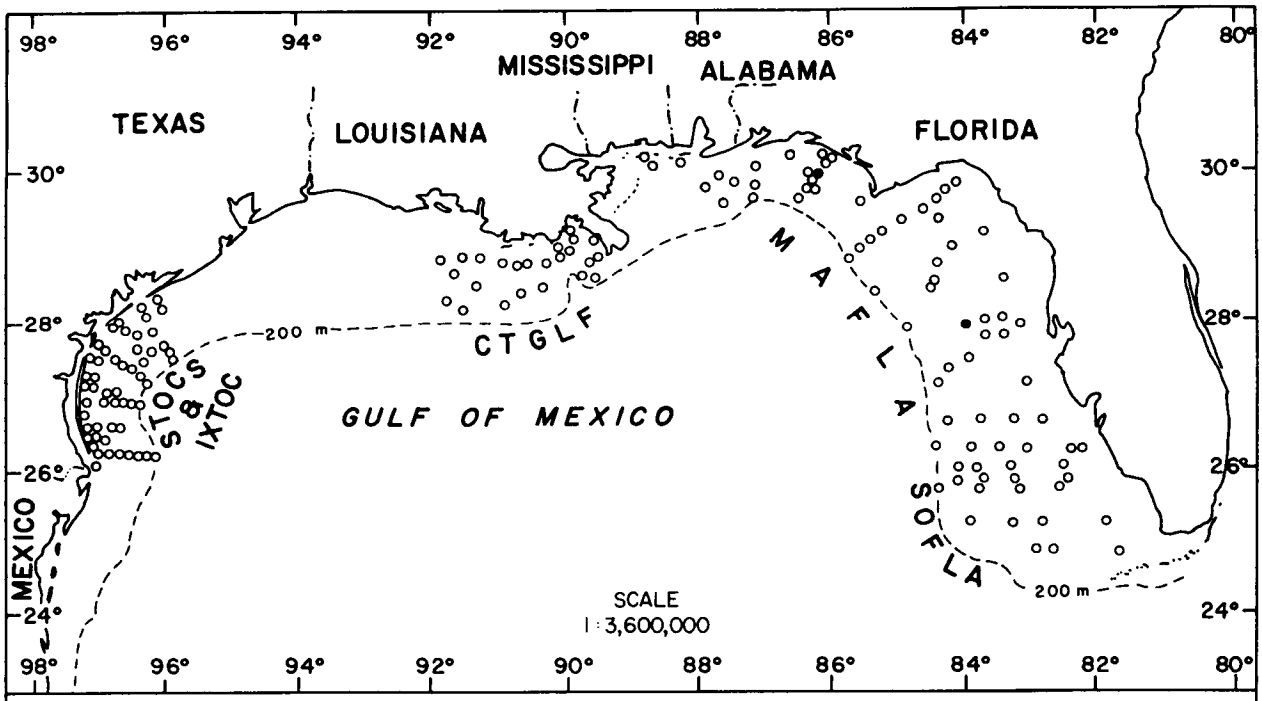

Figure 52-41. Distribution of Pista sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

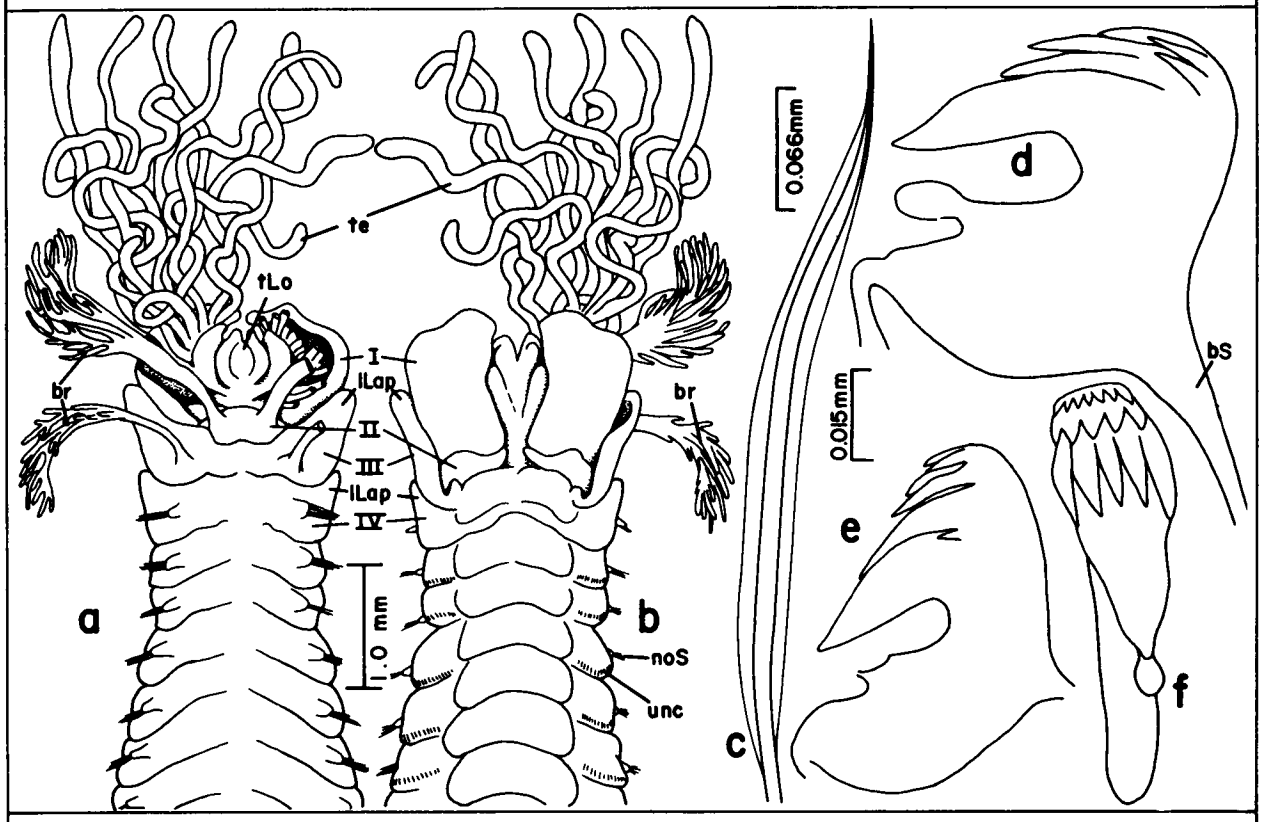

Figure 52-42. Pista sp. A: anterior end, dorsal view; b, same, ventral view; c, notoseta; d, thoracic uncinus from setiger 2, lateral view; e, same, from setiger 15; f, typical uncinus, frontal view.

Pista quadrilobata (Augener, 1918)
Figures 52-39, 40a-e

Nicolea quadrilobata Augener, 1918:532, pl. 6, fig. 183; pl. 7, figs. 226, 227; text-fig. 90.
Pista quadrilobata--Day, 1967:740, fig. 36.8.a-e; 1973:120, fig. 16a-e.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 5C-8/81 (1 spec., USNM 90605), 18E-11/80 (1 spec., USNM 90606), 22B-11/80 (1 spec., USNM 90607).
Supplementary Material:
Gulf of Mexico--Offshore Mississippi, Superport III, Sta. 3, July 1973, P. Johnson ID. (3 spec., USNM 51249).
DESCRIPTION:
Length, to 23 mm (previously reported to 35 mm); width, to 1.2 mm. Largest specimen complete with 83 segments. Tentacular lobe collar-shaped, with numerous tentacles and eyespots. Buccal segment with large, wing-like lateral lappets (Figure 52-40a); segment II short with small ventrolateral lappets; segment III with large lateral lappets usually obscuring lateral view of segment II. Ventral glandular pads beginning on segment III, continuing for 16-18 segments. Nephridial papillae located just dorsal to notopodia on segments VI and VII. Branchiae numbering two pairs, dendritically branched, on short stalks arising from segments II and III. Notosetae short, moderately winged (Figure 52-40b), beginning on segment IV and continuing for 18 setigers. Avicular uncini of first three rows with long necks below rostrum, and elongate, tapering basal shafts (Figure 52-40c). Uncini of subsequent segments without long necks or basal shafts (Figure 52-40d); occurring in single rows facing forward in first six uncinigers, and in double rows interlocking face-to-face in remaining thoracic uncinigers. Most uncini with dental formula MF:3:5-6:9-12.
PREVIOUSLY REPORTED HABITAT: On coral; intertidal to 18 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Three records off southwestern Florida (Figure 52-39); 53-91 m; coarse to fine sand.
DISTRIBUTION: South Africa, North Carolina, Gulf of Mexico.

Pista sp. A
Figures 52-41, 42a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211E-2/78 (1 spec., USNM 90527), 2531-11/77 (1 spec., USNM 90526).
DESCRIPTION:
Length, 13+ mm; width, to 1.7 mm. Largest specimen incomplete with 31 segments. Tentacular lobe small, collar-like, with three pronounced notches anteriorly (Figure 52-42a), bearing numerous long, slender tentacles. Eyes absent. Peristomium with large, wing-like ventrolateral lobes. Segment II without lateral lappets but completely concealed laterally by large lateral lappets of segment III (Figure 52-42b). Lateral lappets of segment IV small. Ventral glandular pads beginning on segment III, continuing for 16 segments. Two pairs of branchiae located on segments II-III, with stout stalks and dichotomously branched

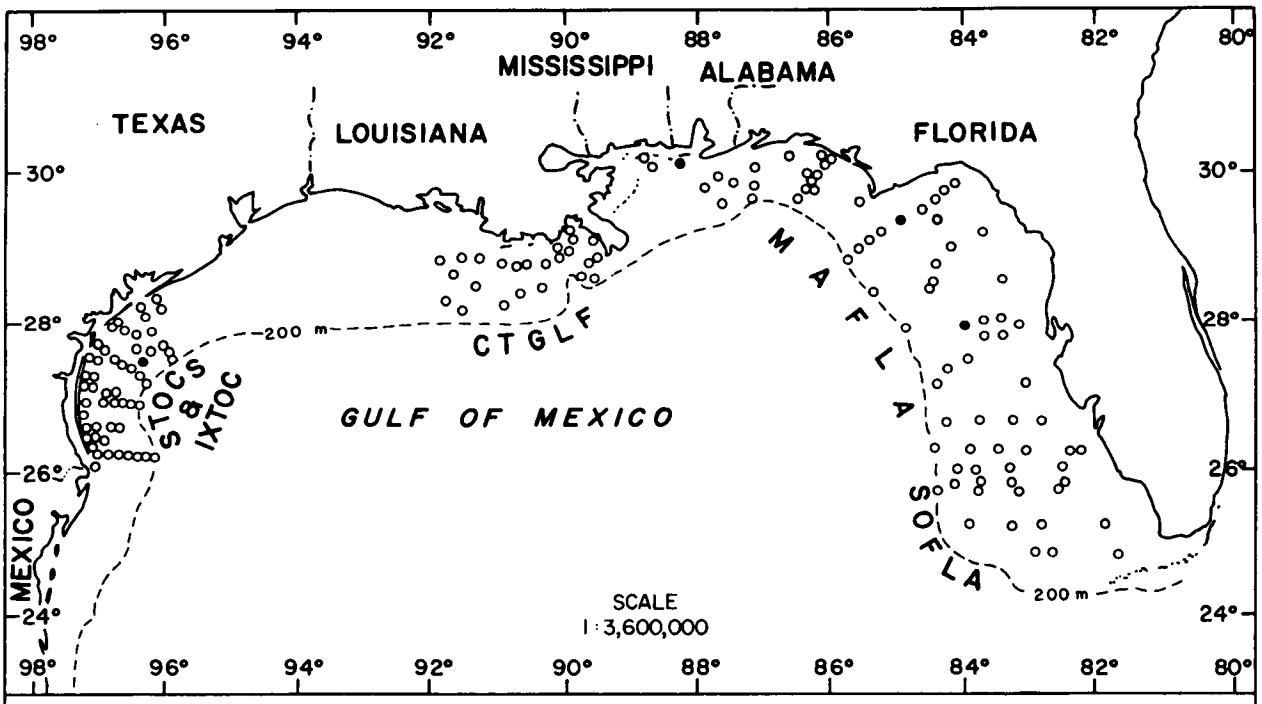

Figure 52-43. Distribution of Pista cristata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

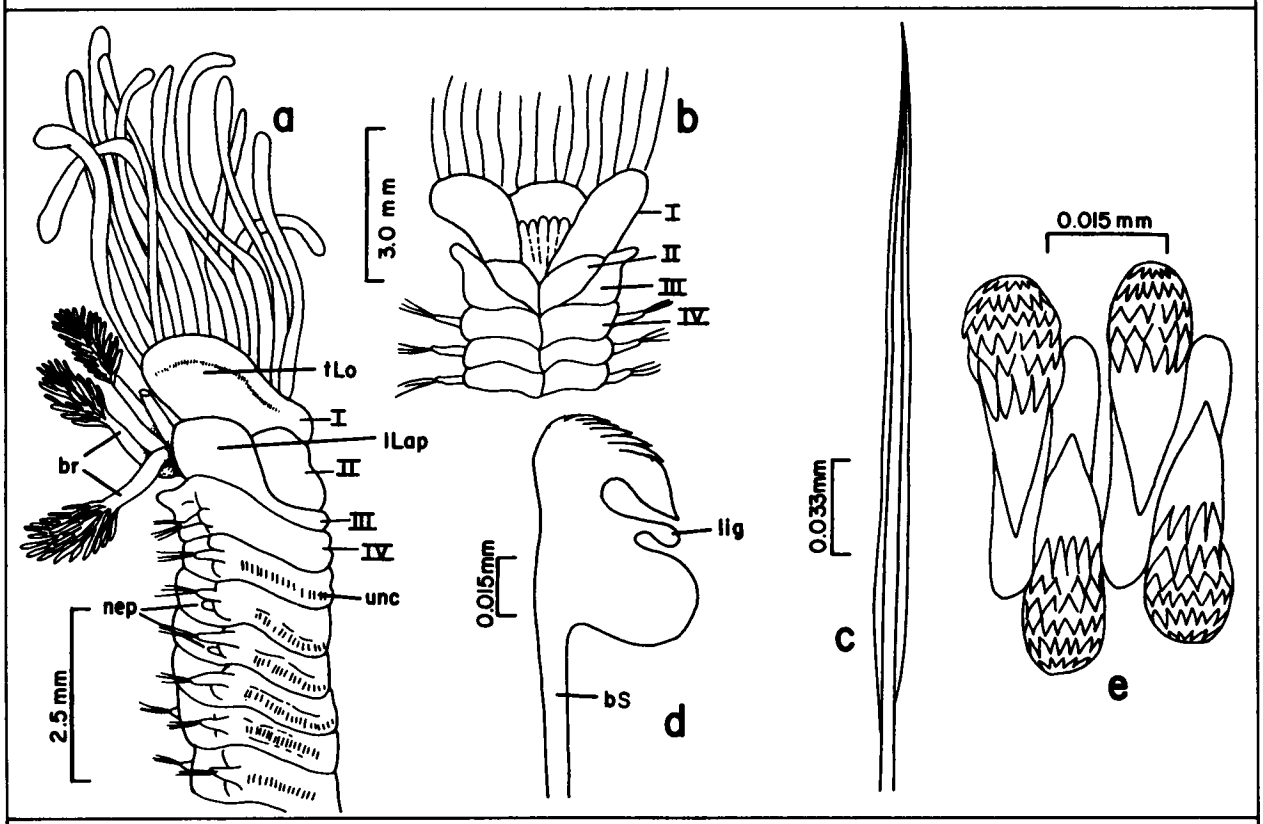

Figure 52-44. Pista cristata: a, anterior end, dorsolateral view; b, same, ventral view; c, narrow-winged notoseta; d, uncinus from setiger 2, lateral view; e, interlocking face-to-face arrangement of uncini from posterior thoracic unciniger.

terminal filaments. Thorax consisting of 15 setigers, with long, moderately winged notosetae (Figure 52-42c). Uncini avicular, with short, slender basal shafts in first row (Figure 52-42d), without basal shafts in remaining thoracic segments (Figure 52-42e). Uncini arranged in single rows through segment 10, thereafter in double rows interlocking face-to-face, gradually changing to back-to-back in last 2-3 thoracic setigers. All uncini with main fang surmounted by three rows of denticles (Figure 52-42f), dental formula MF:5:5-6:7-8:∿.
REMARKS: Pista sp. A closely resembles P. quadrilobata (Augener, 1918) in the shape and arrangement of the lateral lappets, but differs from the latter in the arrangement of the thoracic uncini. Identifications were confused with other species of Pista in BLM-OCS collections.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two records off Florida (Figure 52-41); 43-45 m; coarse sand.

Pista cristata (O. F. Müller, 1776)
Figures 52-43, 44a-e

Pista cristata--Wollebaek, 1912:99, pl. 30, figs. 1-5.
Pista cristata--Hessle, 1917:154.
Pista cristata--McIntosh, 1922a:158, pl. 119, fig. 9.9a, pl. 125A, fig. 8.8c.
Pista cristata--Fauvel, 1927:266, fig. 93a-g.
Pista cristata--Day, 1967:738, fig. 36.7.h-j; 1973:119.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 9F-5/74 (1 spec., USNM 56038), 9G-5/74 (1 spec.), 10I-5/74 (1 spec., USNM 90569); 2211F-8/77 (1 spec.), 2211J-2/78 (1 spec.), 2423A-9/75 (1 spec.), 2423I-7/76 (1 spec.); STOCS SB3-5 S/76 (1 spec., USNM 90567), SB4-3 5/76 (1 spec., USNM 90568).
DESCRIPTION:
Length, 44+ mm (previously reported to 90 mm); width, to 4.0 mm (previously reported to 6 mm). Largest specimen incomplete with 85 segments. Tentacular lobe broad, collar-shaped, bearing numerous slender tentacles; eyes absent (some specimens with line of diffuse pigment spots; Figure 52-44a). Lateral lappets of segment III large, concealing dorsolateral portion of those on segment II, which, in turn, obscure ventral view of those on segment III (Figure 52-44b). Lateral lappets on segment IV small. Ventral glandular pads present on setigers 8-17. Nephridial papillae present on segments VI and VII. Two pairs of branchiae, each with long, naked stalk and terminal tuft of filaments arranged in whorl. Size of branchiae variable, possibly due to state of regeneration. Seventeen thoracic setigers. Notosetae long, slender, narrowly winged (Figure 52-44c). Uncini present from setiger 2, occurring in single rows facing forward through setiger 7, with long slender basal shafts (Figure 52-44d); in double rows interlocking face-to-face on setigers 8-17 (Figure 52-44e). Dental formula MF:3-5:6:7:8∿. All uncini with prominent subrostral ligaments. Pygidium naked, without papillae.
REMARKS: Identifications of Pista cristata were confused with other species of Pista in BLM-OCS collections.
PREVIOUSLY REPORTED HABITAT: Shell hash on sandy or muddy bottoms, often among sea grasses; intertidal to 200 m.

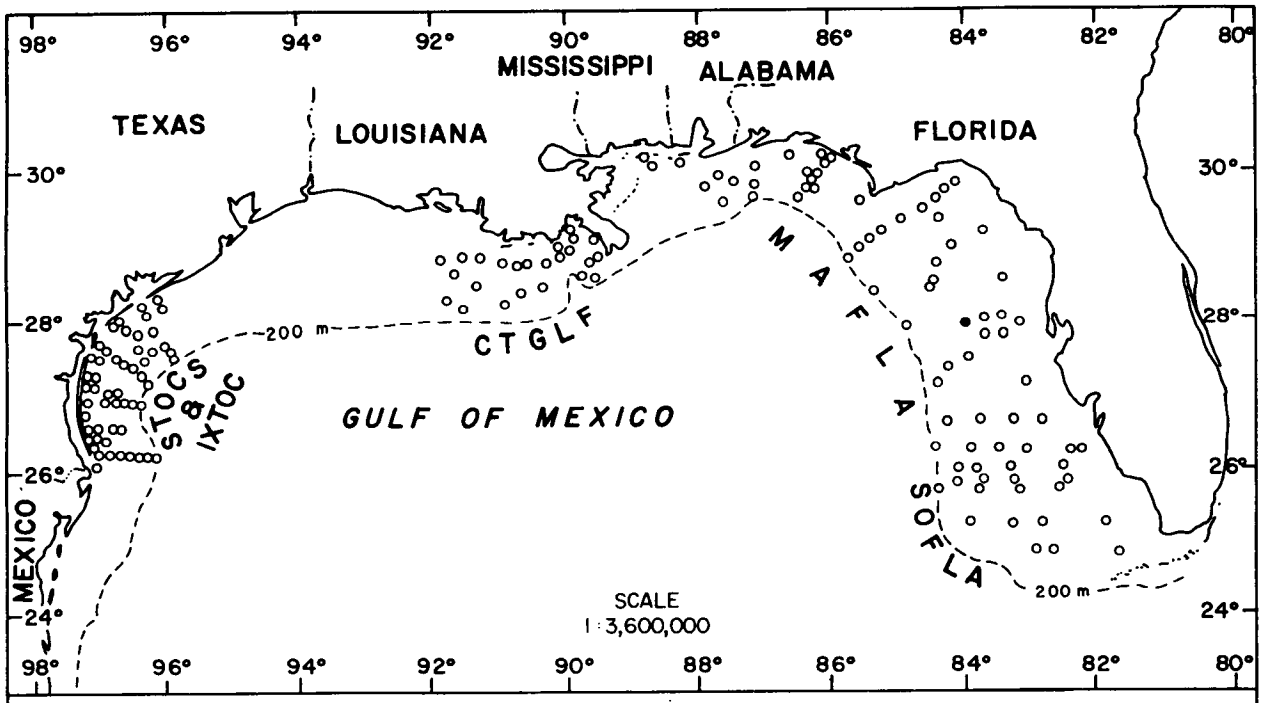

Figure 52-45. Distribution of Pista sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

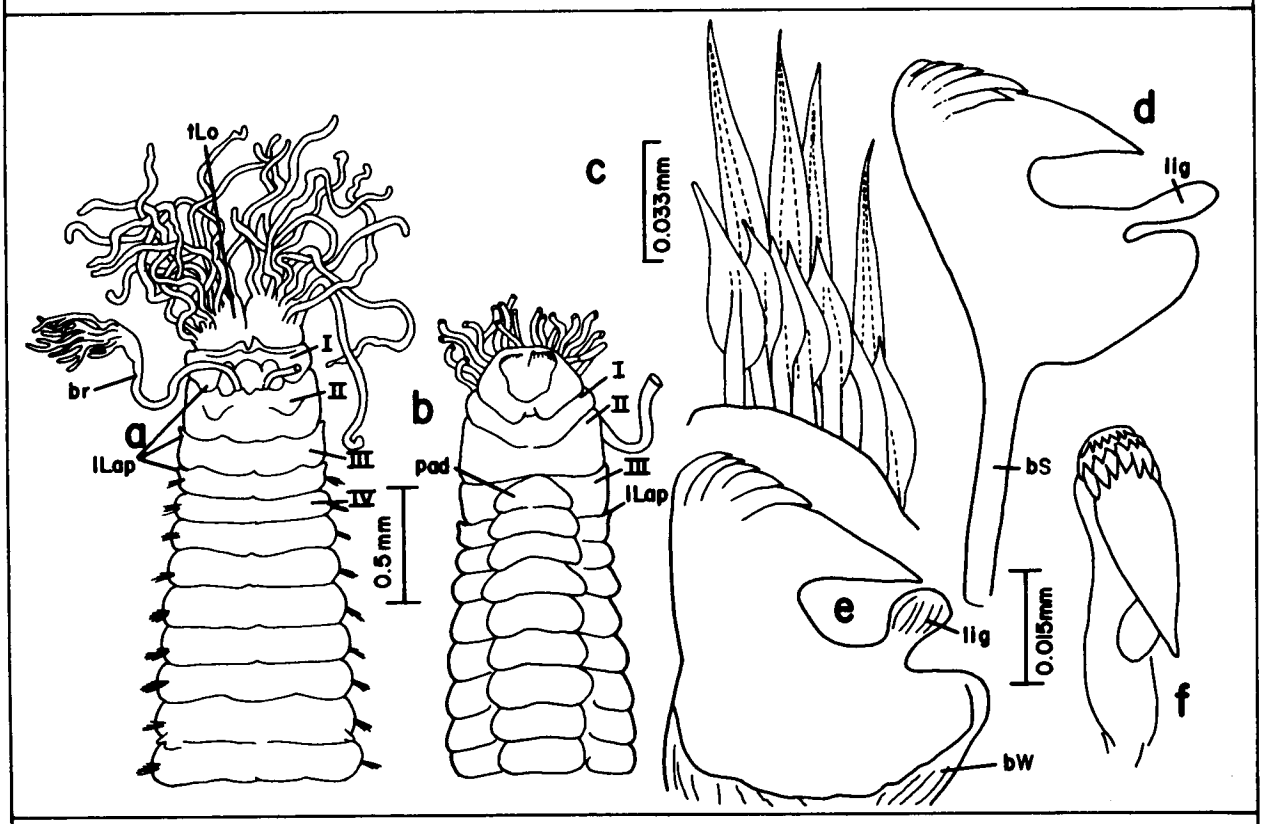

Figure 52-46. Pista sp. B: a, anterior end, dorsal view; b, same, ventral view; c, thoracic notosetae; d, thoracic uncinus from setiger 2, lateral view; e, same, from setiger 13; f, typical uncinus, frontal view.

GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off Florida and southern Texas (Figure 52-43); 19-82 m; coarse sand, silty fine sand, sandy silty clay.
DISTRIBUTION: Antarctica, Japan, White Sea, Bering Sea, Alaska, boreal and Arctic Atlantic Ocean, Norway, Mediterranean, New England to Florida, Gulf of Mexico.

Pista sp. B
Figures 52-45, 46a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211J-11/77 (2 spec., USNM 90532-3).
DESCRIPTION:
Length, 15+ mm; width, to 1.0 mm. Larger specimen incomplete with 44 segments. Tentacular lobe anterodorsally cleft (Figure 52-46a), bearing numerous long, slender tentacles; eyes absent. Peristomium small, collar-like, without lateral lobes. Lateral lappets present on segments II-IV, progressively decreasing in size. Ventrum of thorax with about 14 glandular pads beginning on segment III (Figure 52-46b). One pair of branchiae, with long, slender stalks terminating in loosely branched filaments. Thorax with 20 segments. Notosetae of two lengths, lanceolate, broadly winged (Figure 52-46c). Uncini on segments V-IX in single rows, with basal shafts (Figure 52-46d); remaining thoracic uncini without shafts but with basal webs (Figure 52-46e), arranged in double rows, interlocking face-to-face. All uncini with several rows of small denticles above main fang; dental formula MF:5:7:9:11 (Figure 52-46f). Ligament on prow of uncini becoming increasingly prominent proceeding posteriorly from double row uncinigers. Abdominal uncini with prominent basal webs and suspensory fibers. Subrostral ligament prominent in all uncini. Pygidium consisting of anus surrounded by unadorned ridge.
REMARKS: Specimens examined could not be identified with any species of Pista whose descriptions were available to the author. Identifications were previously confused with P. quadrilobata in BLM-OCS voucher collections.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Florida (Figure 52-45); 43 m; coarse sand.

Pista palmata (Verrill, 1873)
Figures 52-47, 48a-f

Scionopsis palmata Verrill, 1873:320.
Pista palmata--Hartman, 1951a:112.
Pista palmata--Day, 1973:119.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211B-7/76 (1 spec.), 2211F-8/77 (1 spec., USNM 90561), 2423I-7/76 (1 spec., USNM 90562); STOCS 4/IV-1 Sp/76 (9 spec., USNM 90609), 4/IV-3 F/76 (2 spec., USNM 90560), 4/IV-2 F/77 (2 spec., USNM 90610), 4/IV-5 W/77 (1 spec., USNM 90608); IXTOC S53-3 12/80 (1 Spec., USNM 90611).
Supplementary Material:
New England--Woods Hole, Mass., M. Pettibone ID. (3 spec., USNM 44455).

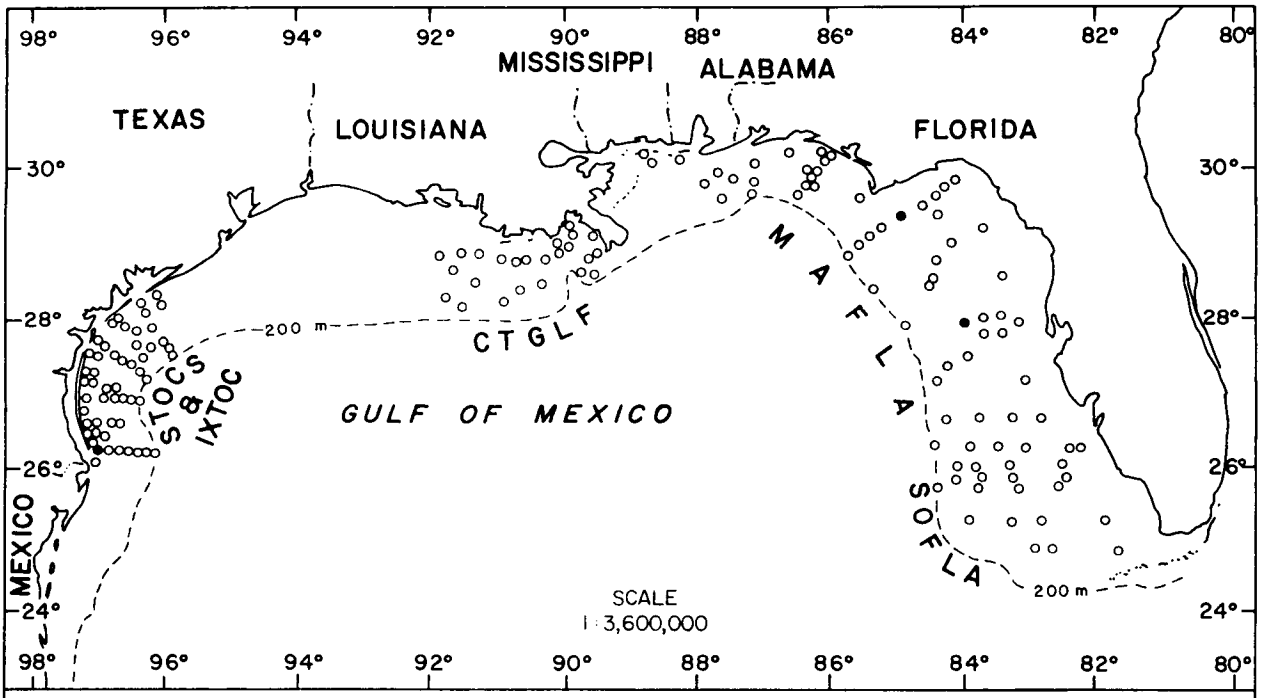

Figure 52-47. Distribution of Pista palmata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

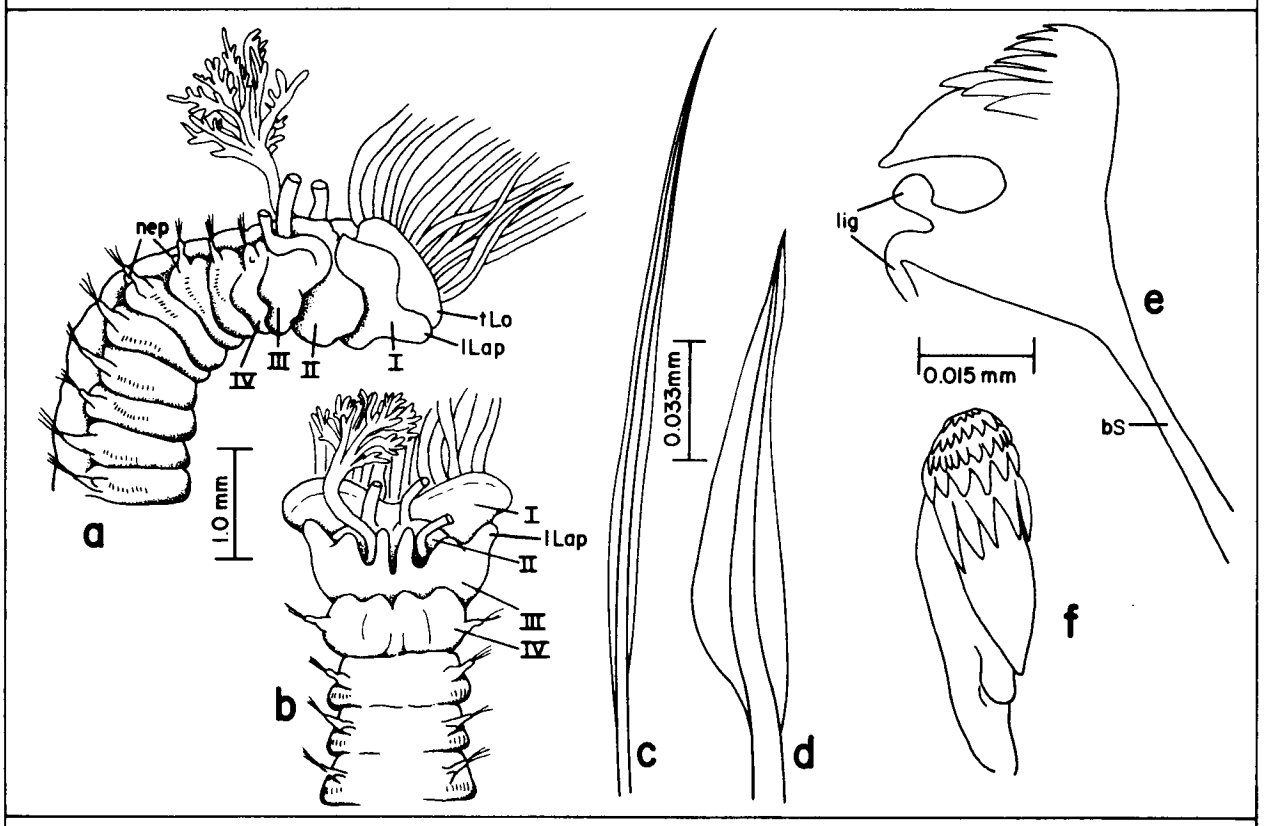

Figure 52-48. Pista palmata: a, anterior end, lateral view; b, same, dorsal view; c, narrow-winged notoseta; d, broad-winged notoseta; e, thoracic uncinus from setiger 3, lateral view; f, same, frontal view.

DESCRIPTION:
Length, 21+ mm (previously reported to 70 mm); width, to 1.5 mm. Largest specimen incomplete with 45 segments. Tentacular lobe collar-like, inconspicuous, with numerous long tentacles (Figure 52-48a). Eyes absent. Buccal segment large, projecting laterally, slightly notched middorsally (Figure 52-48b). Segment II with prominent ventrolateral lappets, diminished dorsally so as to be almost concealed by branchial stalks and well-developed lateral lappets of segment III, the latter of which extend up and over the dorsal surface in complex folds forming erect, digitiform lobes medially (Figure 52-48b). Lateral lappets of segment IV small. Ventral glandular pads present, but obscured on specimens examined. Nephridial papillae as low protuberances dorsal to notopodia on segments VI and VII. Two pairs of branchiae on segments II and III, each with moderately long, stout stalks surmounted by dichotomously branched filaments. Thorax with 20 segments. Thoracic notopodia with long, slender, narrowly winged setae (Figure 52-48c), and short, lanceolate, broadly winged setae (Figure 52-48d). Uncini in single rows on first eight uncinigers, thereafter in double rows interlocking face-to-face. All single row uncini with long-handled basal shafts (Figure 52-48e), with at least four rows of small denticles above main fang (Figure 52-48f). Ligament on prow of uncinus becoming more prominent in posterior thoracic and abdominal segments. Subrostral ligament prominent throughout.
REMARKS: The dorsal digitiform lobes on segment III are diagnostic for this species. Identifications in BLM-OCS collections were confused with other species of Pista.
GULF OF MEXICO BLM-OCS OCCURRENCE: Few records off Florida and southern Texas (Figure 52-47); 15-43 m; coarse sand, silty fine sand.
DISTRIBUTION: New England, New Jersey, Virginia, Gulf of Mexico.

Genus **Loimia** Malmgren, 1865

TYPE SPECIES: Terebella medusa Savigny, 1818.
REFERENCES:
Hessle, 1917:170.
Day, 1967:742.
Hartmann-Schröder, 1971:470.
DIAGNOSIS: Three pairs of branchiae with irregularly branched filaments. Eyes absent. Lateral lobes present. Thorax with 17 setigers. Notosetae present from segment IV as smooth, slender, narrowly winged setae. Uncini present from segment V, all pectinate. Uncini in double rows back-to-back in posterior thorax.

Key to the Gulf of Mexico BLM-OCS Species of Loimia

1a. Thoracic uncini with 4-6 teeth (Figure 52-50d,e) . . . . . **Loimia medusa**, p. 52-54
1b. Thoracic uncini with 6-8 teeth (Figure 52-52d,f) . . . . . **Loimia viridis**, p. 52-54

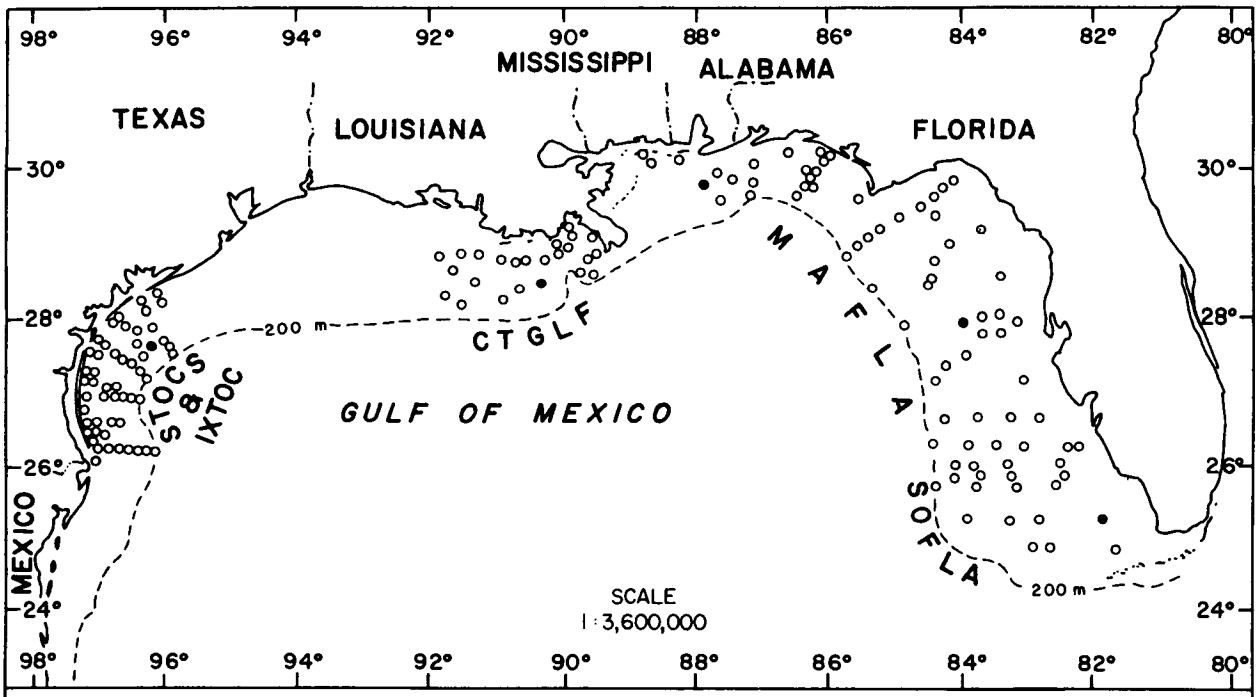

Figure 52-49. Distribution of Loimia medusa on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

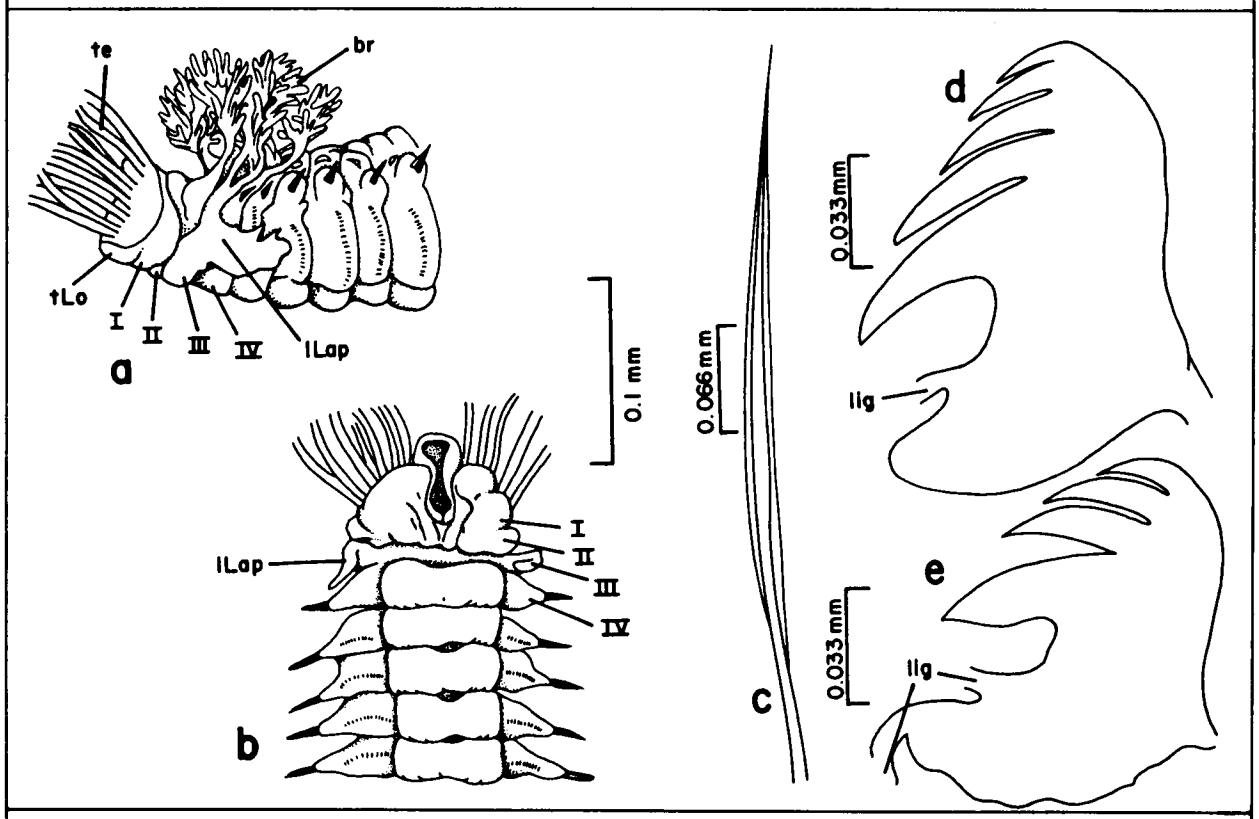

Figure 52-50. Loimia medusa: a, anterior end, lateral view; b, same, ventral view; c, notoseta; d, thoracic uncinus from setiger 2, lateral view; e, same, from setiger 13.

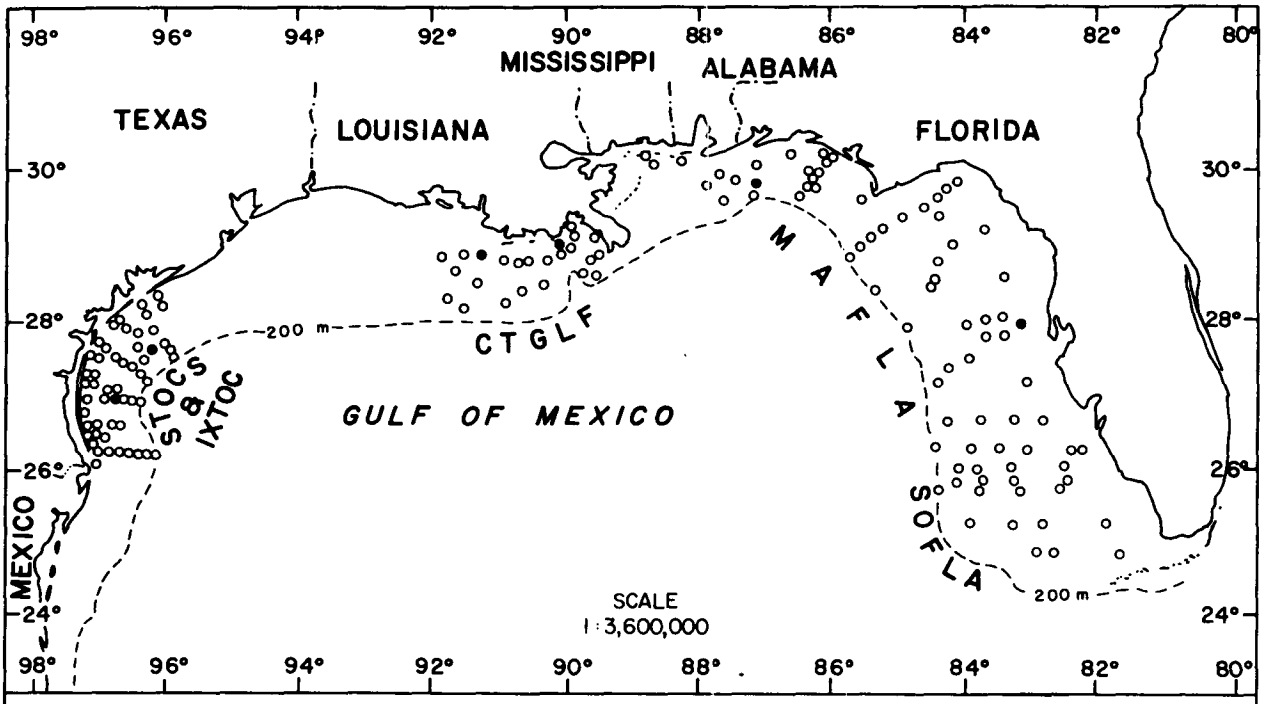

Figure 52-51. Distribution of Loimia viridis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

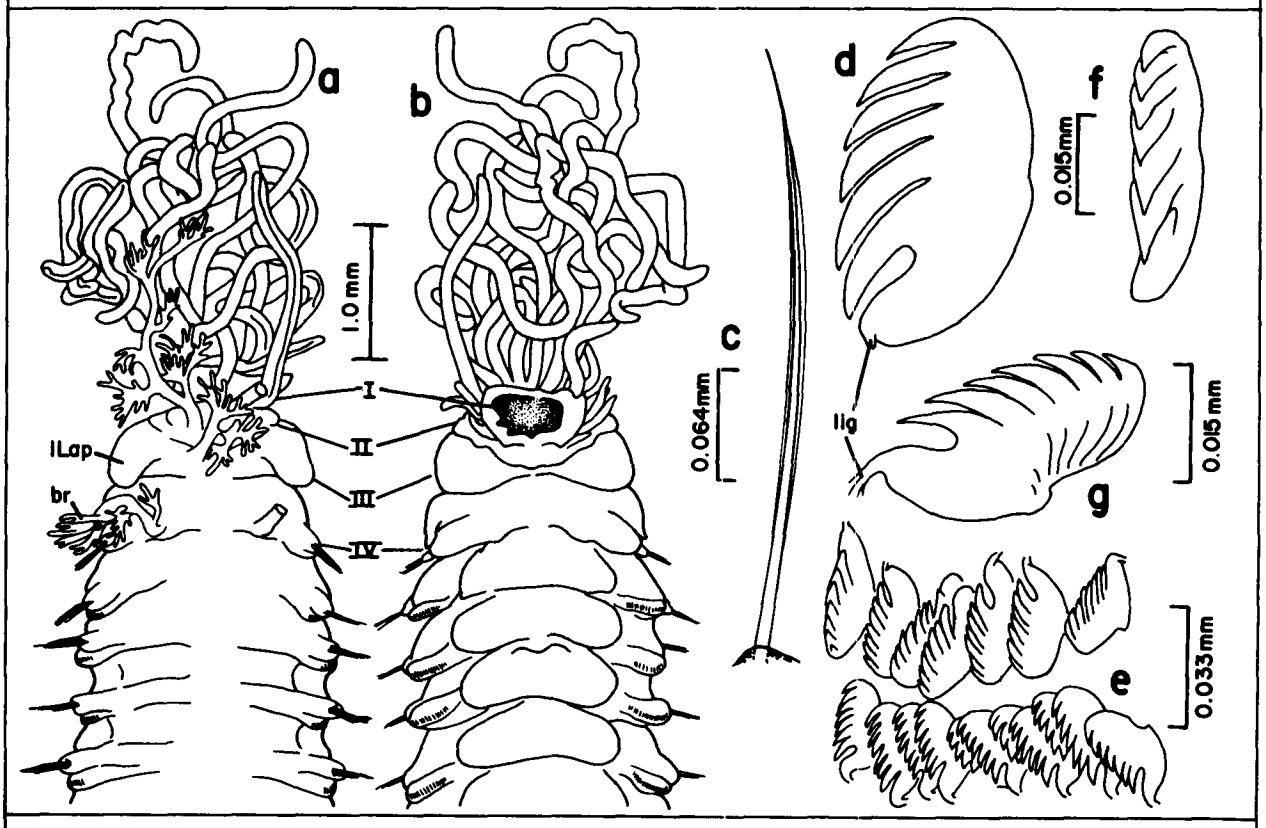

Figure 52-52. Loimia viridis: a, anterior end, dorsal view; b, same, ventral view; c, notoseta; d, typical pectinate uncinus; e, double row arrangement of uncini from posterior thoracic unciniger; f, thoracic uncinus from setiger 4, frontal view; g, abdominal uncinus from setiger 19, lateral view.

Loimia medusa (Savigny, 1818)
Figures 52-49, 50a-e

Loimia medusa--Hessle, 1917:170.
Loimia medusa--Hartman, 1945:46, pl. 10, figs. 2, 3; 1951a:111.
Loimia medusa--Day, 1967:743, fig. 36.9.a-e; 1973:120.
Loimia medusa--Hartmann-Schröder, 1971:471.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 20-11/80 (1 spec., USNM 90612); MAFLA 2211C-7/76 (1 spec., USNM 90549), 2211E-8/77 (1 spec.), 2318I-2/78 (1 spec.), 2640-9/77 (1 spec., USNM 56037), 2640F-2/78 (1 spec.); CTGLF 03-5/78 (1 spec., USNM 90547); STOCS HR1-4 7/76 (1 spec., USNM 90548), HR1-1 W/76 (1 spec., USNM 90613).
DESCRIPTION:
Length, to 84 mm (previously reported to 250 mm); width, to 10 mm. Largest specimen complete with 46 segments. Tentacular lobe with numerous long, slender tentacles and a small, folded, median projection (Figure 52-50a,b). Buccal segment with large lateral lobes, deeply notched ventrally; segment II almost completely concealed by segments I and III. Segment III with large, wing-like lateral lobes (Figure 52-50b), deeply incised ventrally. Branchiae arising from segments II-IV, size variable. Nephridial papillae present on segments III and VI-IX. Notosetae (Figure 52-50c) long, slender, narrowly winged. Uncini pectinate, with 5-6 teeth in segments V-X (Figure 52-50d), four (rarely five) in segments XI-XX (Figure 52-50e), the latter arranged in double rows back-to-back with little or no separation between the rows. Abdominal uncini mostly with five teeth, sometimes six; with strongly developed ligament on prow. Pygidium with ridge of 3-4 rounded protuberances surrounding terminal anus.
REMARKS: Identifications of central Gulf voucher specimens were confused with other species.
PREVIOUSLY REPORTED HABITAT: Vertical tubes buried in sediments ranging from sandy muds to gravel; intertidal to 100 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records throughout northern Gulf (Figure 52-49); 10-91 m; coarse to medium sand, silty and clayey sand.

Loimia viridis Moore, 1903
Figures 52-51, 52a-g

Loimia viridis Moore, 1903a:723, pl. 40, figs. 11-14.
Loimia viridis--Hartman, 1945:46, pl. 10, figs. 4, 5; 1951a:111.
Loimia viridis--Day, 1973:120.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207J-8/77 (1 spec., USNM 90553), 2644F-6/75 (1 spec.); CTGLF 02-5/78 (4 spec.), 19-4/78 (1 spec., USNM 90551); STOCS HR-2 No date (2 spec., USNM 90552); IXTOC S51-6 12/80 (1 spec., USNM 90550).
DESCRIPTION:
Length, 16+ mm (previously reported to 107 mm); width, to 2.5 mm (previously reported to 7.5 mm). Largest specimen incomplete with 24

segments. Tentacular lobe as a simple collar with numerous, fairly short, thick tentacles. Buccal segment without large lateral lobes. Segment II small, nearly concealed from view by lateral lappets of segments I and III. Branchiae arising from segments II-IV on moderately long stalks terminating in irregularly branched filaments (Figure 52-52a). Three pairs of nephridial papillae on setigers 3-5. Nine ventral glandular pads beginning on segment V (Figure 52-52b). Notosetae long, slender, narrowly winged (Figure 52-52c). Uncini (Figure 52-52d) in single rows on first 4-5 uncinigers; in double rows back-to-back (interlocking in some specimens) on remainder of thorax (Figure 52-52e). Single row thoracic uncini mostly with six teeth (Figure 52-52f), double row uncini with seven. Abdominal uncini (Figure 52-52g) with at least seven teeth, sometimes eight. All uncini with well-developed subrostral ligaments becoming more pronounced and chitinized on posterior setigers.
REMARKS: Loimia viridis may be distinguished from L. medusa by the greater number of teeth on the uncini; the generally shorter and thicker prostomial tentacles; and the less prominent lateral lappets on anterior segments. According to Hartman (1945, 1951a), the nature of the tube may be used to distinguish these species--L. medusa adorns its tube with coarse particles of sand, shell fragments, foraminiferans, etc., whereas L. viridis tubes are uniformly covered with fine sand or mud. This character, however, is of no value when identifying specimens without tubes, which is often the case after processing benthic samples. Tube adornment may prove to be simply an ecotypic character of the habitat which these species respectively prefer.
PREVIOUSLY REPORTED HABITAT: Muddy sand, oyster shell; intertidal.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records throughout northern Gulf (Figure 52-51); 12-72 m; coarse to fine-very fine sand, sandy clayey silt, silty clay.
DISTRIBUTION: Massachusetts, North Carolina, Gulf of Mexico.

Genus **Eupolymnia** Verrill, 1900

TYPE SPECIES: Amphitrite nesidensis Delle Chiaje, 1828.
REFERENCES:
Verrill, 1900:660.
Hessle, 1917:174 (as Polymnia).
Fauvel, 1927:257 (as Polymnia).
Hartmann-Schröder, 1971:477.
DIAGNOSIS: Tentacular lobe generally with eyespots. Lateral lappets present. Three pairs of dendritic, stalked branchiae on segments II-IV. Seventeen thoracic setigers. Smooth-tipped notosetae present from segment IV. Avicular uncini present from segment V, arranged in single rows on first six uncinigers; through rest of thorax in double rows face-to-face, either interlocking or separated.

Key to the Gulf of Mexico BLM-OCS Species of Eupolymnia

1a. Eyespots present; lateral lappets small on segment III (Figure 52-54a); uncinal dental formula MF:2:4:5. . . . . **Eupolymnia nebulosa**, p. 52-57

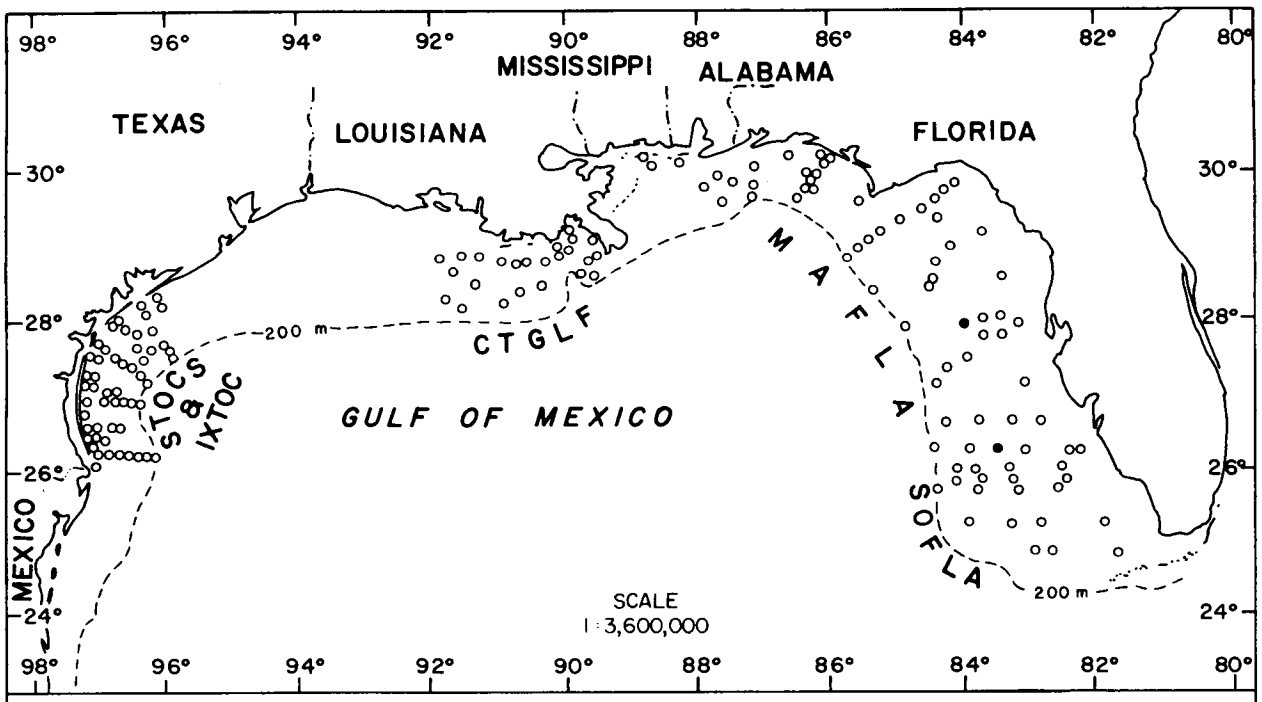

Figure 52-53. Distribution of Eupolymnia nebulosa on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

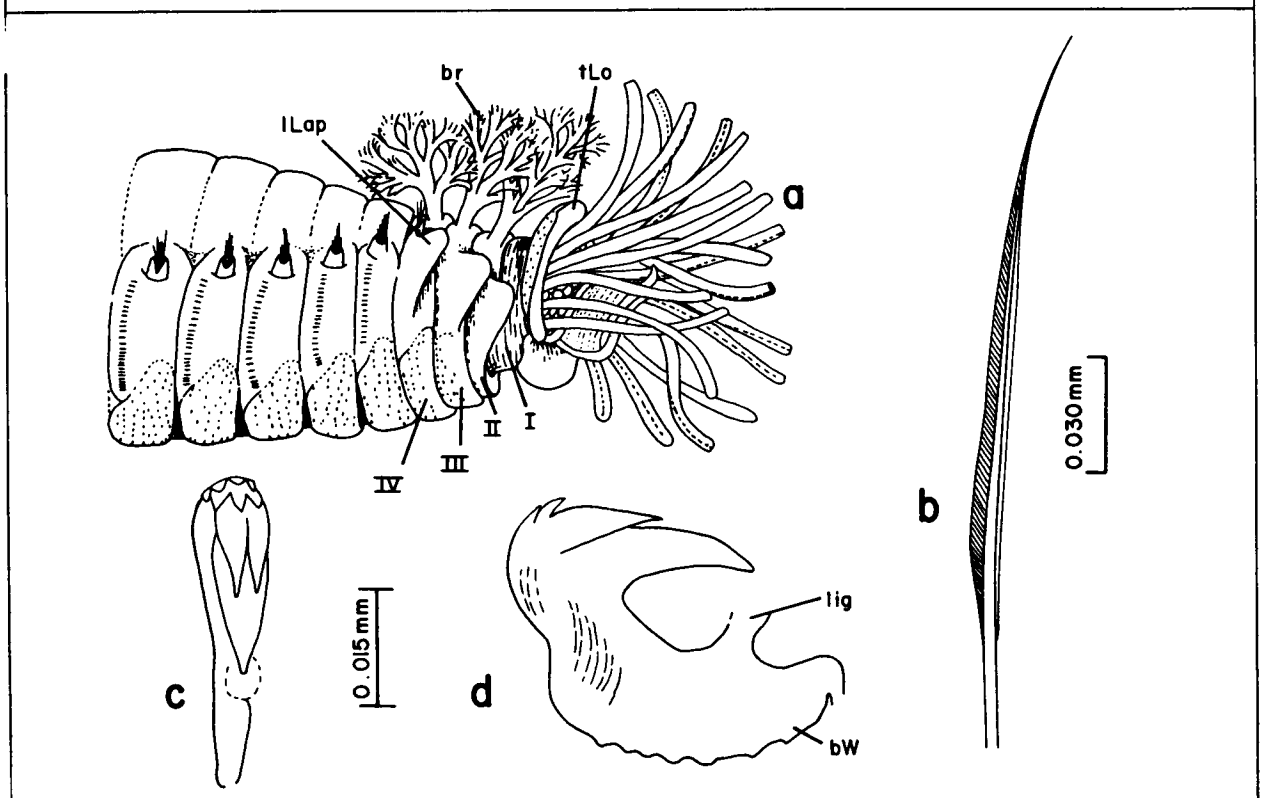

Figure 52-54. Eupolymnia nebulosa: a, anterior end, lateral view (no scale); b, notoseta; c, thoracic uncinus, frontal view; d, same, lateral view (Figure a from Day 1967:745, fig. 36.9.h).

1b. Eyespots absent; lateral lappets large on segment III (Figure 52-56a,b); uncinal dental formula MF:1:3:5-6. . . . . Eupolymnia sp. A, p. 52-57

Eupolymnia nebulosa (Montagu, 1818)
Figures 52-53, 54a-d

Polymnia nebulosa--Hessle, 1917:174.
Polymnia nebulosa--McIntosh, 1922a:129, pl. 114, fig. 6; pl. 125A, fig. 33a.
Polymnia nebulosa--Fauvel, 1927:257, fig. 89a-g.
Eupolymnia nebulosa--Day, 1967:744, fig. 36.9.f-h.
Eupolymnia nebulosa--Hartmann-Schröder, 1971:477, fig. 165d-g.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2104-2/78 (1 spec., USNM 90565), 2211D-8/77 (1 spec., USNM 90566).
DESCRIPTION:
Length, 11+ mm (previously reported to 150 mm); width, to 1.7 mm. Larger specimen incomplete with 25 segments. Tentacular lobe with double line of eyespots on raised prostomial fold. Small lateral lappets present on segments II-IV (Figure 52-54a). Branchiae irregularly branched with well-developed stalks. Notosetae asymmetrically winged (Figure 52-54b), wider wing with diagonal striations visible only under oil immersion. Uncini present from setiger 2, in single rows to setiger 3 or 4; remaining thoracic setigers with uncini in double rows interlocking face-to-face. Main fang of uncini surmounted by two large denticles with 1-2 rows of 3-5 smaller denticles above these; dental formula MF:2:3-5:3-5 (Figure 52-54c,d). Prow ligament and basal web well-developed on both thoracic and abdominal uncini.
REMARKS: Specimens available for examination were too damaged to accurately count the 14-15 ventral glandular pads or nephridial papillae reported for this species. All other characters, however, agree with previous descriptions of this species. The pygidium was not observed but has been previously reported as an unsculptured, smooth ridge surrounding the terminal anus.
PREVIOUSLY REPORTED HABITAT: Eulitoral to 500 m; mud, sand, shell, rubble, clay substrata; attached to stones or coral.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 52-53); 43-53 m; coarse sand.
DISTRIBUTION: Atlantic, from Scotland and English Channel to tropical western Africa and Falkland Islands; Gulf of Mexico; Mediterranean; Red Sea; Persian Gulf; tropical Indian Ocean; Pacific (Japan).

Eupolymnia sp. A
Figures 52-55, 56a-d

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 22B-11/80 (1 spec., USNM 90542); MAFLA 2420A-9/75 (1 spec., USNM 90543), 2420B-9/75 (1 spec.).

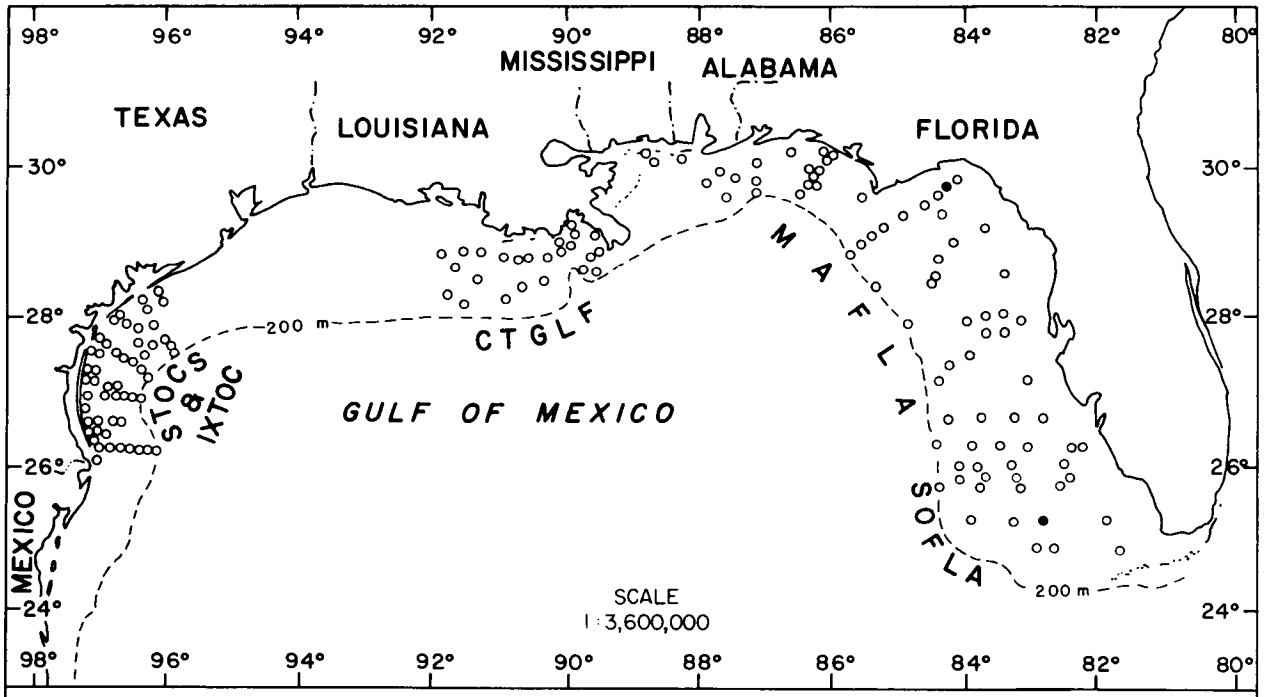

Figure 52-55. Distribution of Eupolymnia sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

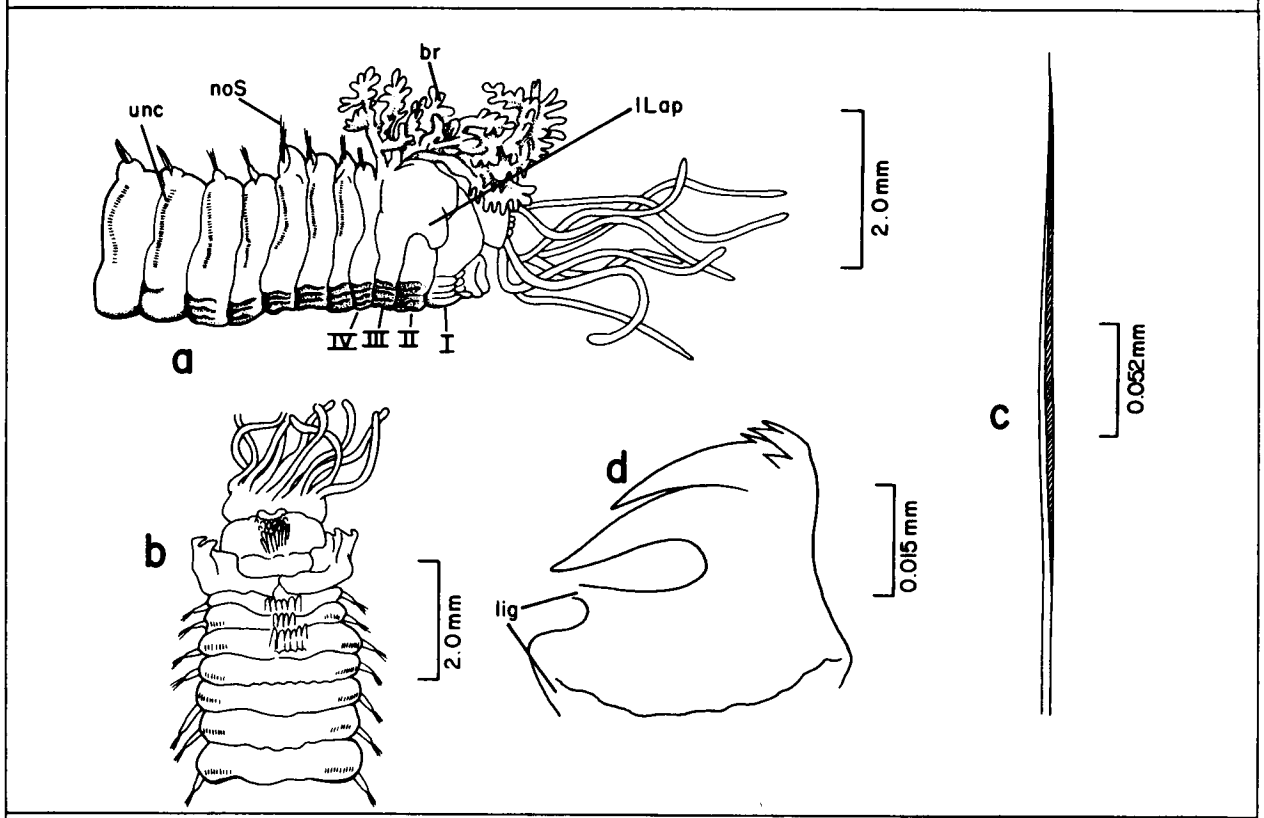

Figure 52-56. Eupolymnia sp. A: a, anterior end, dorsolateral view; b, same, ventral view; c, notoseta; d, thoracic uncinus, lateral view.

DESCRIPTION:
Length, to 39 mm; width, to 2.9 mm. Largest specimen complete with 82 segments. Tentacular lobe with numerous long, slender tentacles; eyes absent. Lateral lappets small or absent on segments II and IV; large and pronounced on segment III (Figure 52-56a), obscuring view of segment II dorsolaterally. Ventral surface of segments I-VII strongly pleated, giving rise to crenulations on anterior edges (Figure 52-56b); remaining thoracic segments each with single, poorly defined ventral glandular pad. Branchiae with irregularly branched filaments on stout stalks. Notosetae long, slender, unilimbate with diagonal striations visible on wing only under oil immersion (Figure 52-56c). Uncini in single rows on setigers 2-7, double rows interlocking face-to-face on remaining thoracic setigers. Dental formula MF:1:3:5-6; prow ligament and basal web well-developed (Figure 52-56d). Pygidium similar to that reported for E. nebulosa.
REMARKS: Eupolymnia sp. A closely resembles E. nesidensis (Delle Chiaje, 1828) in the dentition and general arrangement of the uncini, but differs from the latter in the shape and arrangement of the tentacular lobe and lateral lappets. Identifications were originally confused in MAFLA BLM-OCS collections with Lanice conchilega.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Apalachee Bay, Florida (Figure 52-55); 14 m; fine-very fine sand.

Genus **Lanice** Malmgren, 1865

TYPE SPECIES: Nereis conchilega Pallas, 1766.
REFERENCES:
Hessle, 1917:167.
Fauvel, 1927:255.
Day, 1967:743.
Hartmann-Schröder, 1971:481.
DIAGNOSIS: Prostomial fold with or without eyespots. Lateral lappets present. Three pairs of dendritic, stalked branchiae on segments II-IV. Thorax with 17 setigers; abdomen with numerous segments. Notosetae smooth-tipped, present from segment IV; uncini avicular, present from segment V. Uncini of some posterior thoracic setigers in double rows back-to-back.
REMARKS: Fauchald (1977a:130) ascribed lateral lappets to segments II and IV of Lanice, and Day (1967:743), to the first three segments. Fauvel (1927:255), Hartmann-Schröder (1971:481), and the present writer are purposely vague as to their distribution, because Lanice conchilega (see below) has lappets on segments I and III only.

Lanice conchilega (Pallas, 1766)
Figures 52-57, 58a-f

Lanice conchilega--Hessle, 1917:167.
Lanice conchilega--Fauvel, 1927:255, fig. 88a-h.
Lanice conchilega--Day, 1967:743, fig. 36.8.n-r.
Lanice conchilega--Hartmann-Schröder, 1971;481.

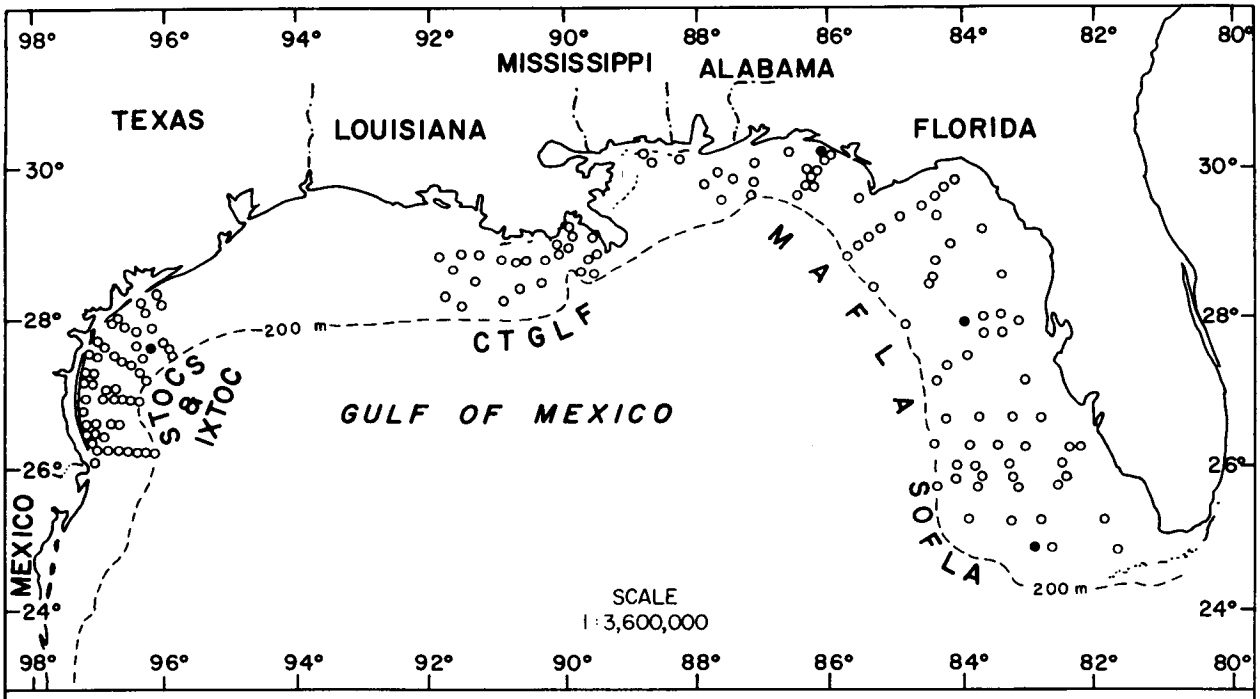

Figure 52-57. Distribution of Lanice conchilega on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

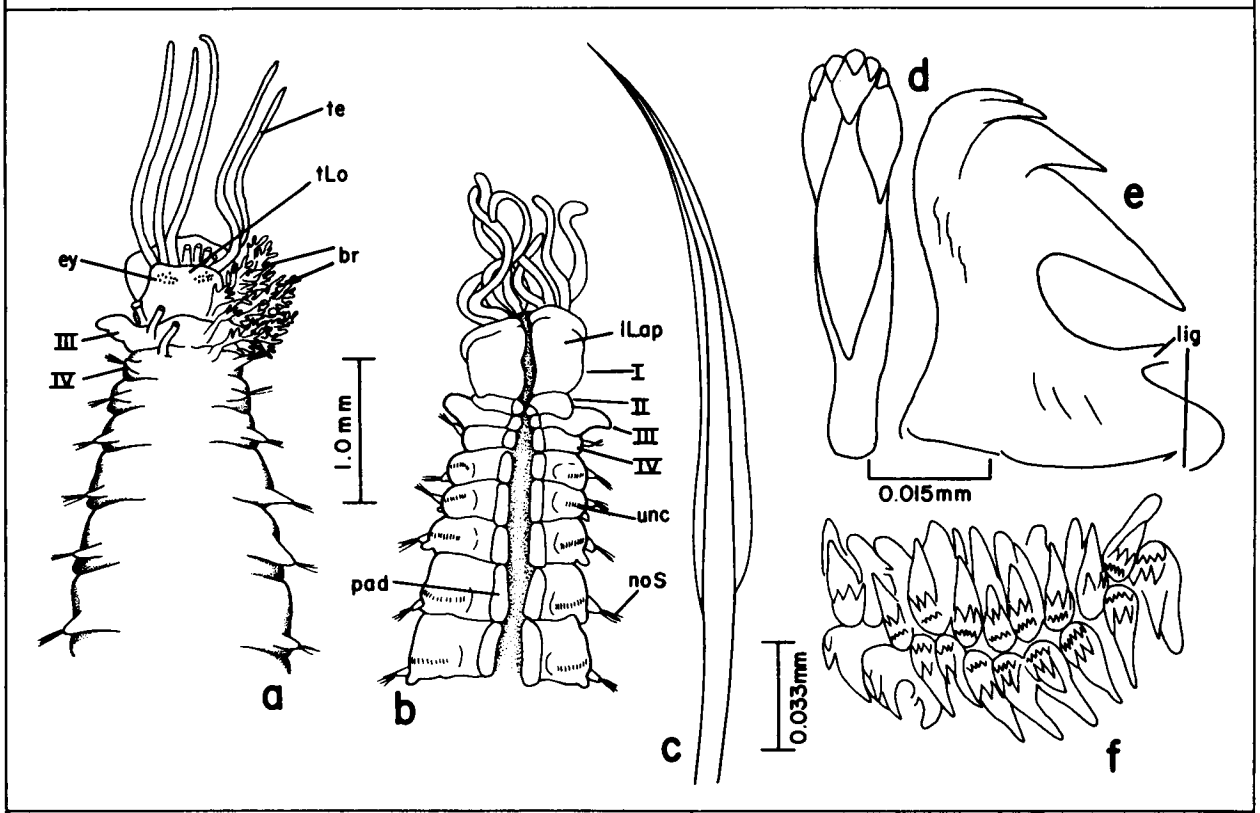

Figure 52-58. Lanice conchilega: a, anterior end, dorsal view; b, same, ventral view; c, notoseta; d, thoracic uncinus from setiger 2, frontal view; e, same, lateral view; f, double row arrangement of uncini from posterior thoracic unciniger.

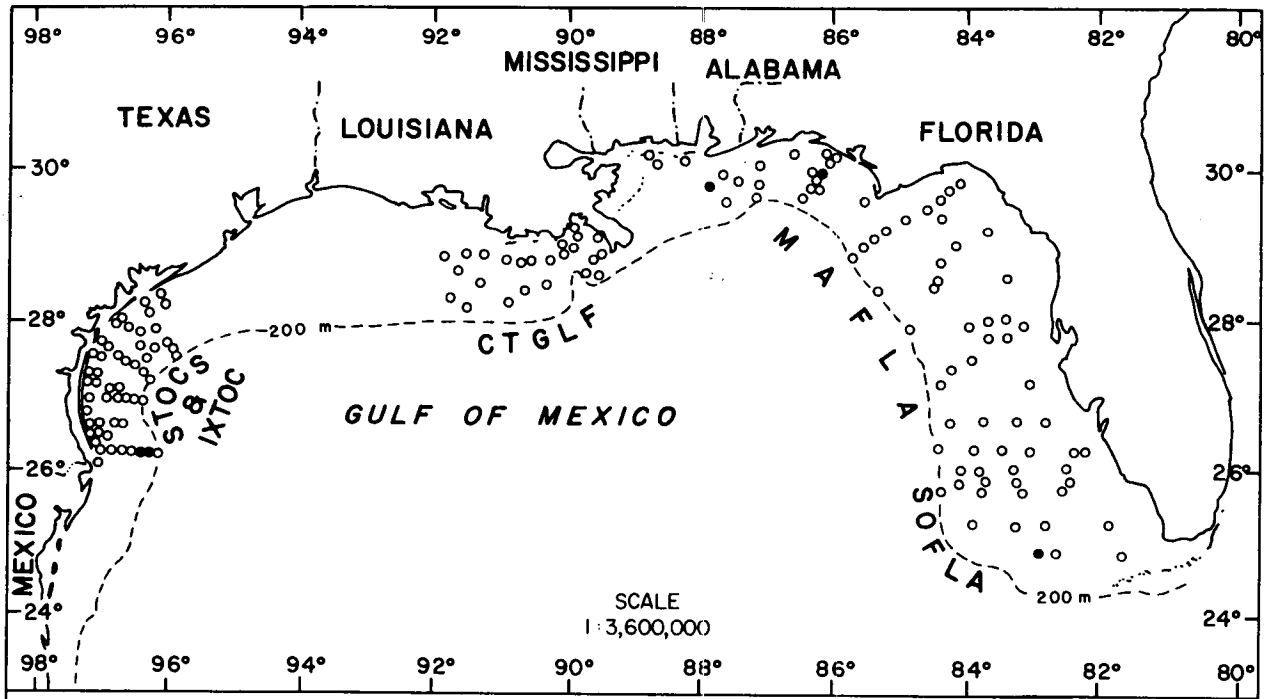

Figure 52-59. Distribution of terebellid Genus A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

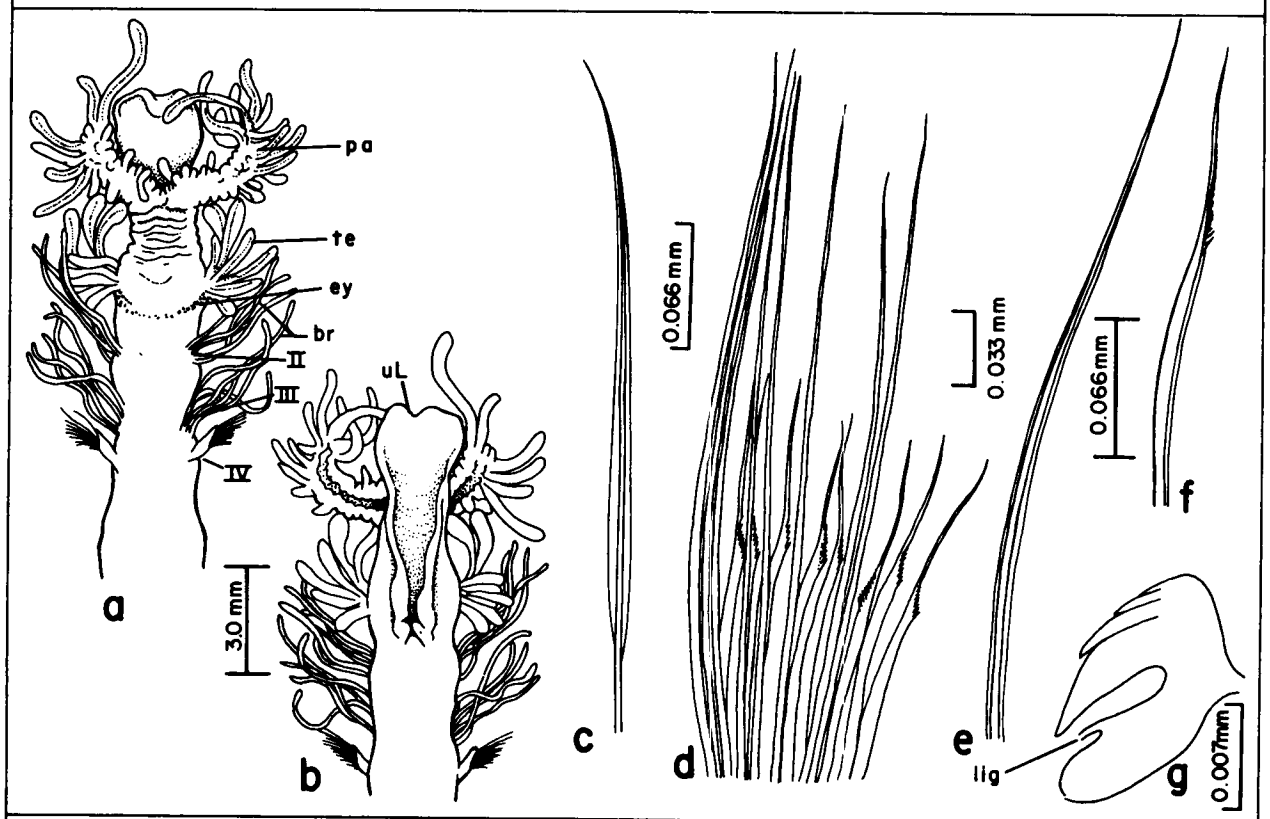

Figure 52-60. Genus A: a, anterior end, dorsal view; b, same, ventral view; c, posterior thoracic notoseta; d-f, thoracic notosetae from setiger 1; g, thoracic uncinus from setiger 12.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 28C-8/81 (1 spec., USNM 90614); MAFLA 2211F-2/78 (1 spec., USNM 90574), 2528-11/77 (1 spec., USNM 90575); STOCS HR1-3 7/76 (1 spec., USNM 90615).
DESCRIPTION:
Length, to 38 mm (previously reported to 300 mm); width, to 1.1 mm. Largest specimen complete with 119 segments. Tentacular lobe short, collar-shaped, with eyespots and numerous long tentacles (Figure 52-58a). Segment I with large, forward-projecting ventrolateral lappets (Figure 52-58b), forming sheath around tentacular lobe. Segment II lacking lateral lappets, compressed, inconspicuous dorsally due to large lateral lappets of segment III. Paired ventral glandular pads through all thoracic setigers (Figure 52-58b), much longer than wide; separated by deep, wide, median ventral groove. Branchiae with irregularly subdivided filaments atop slender stalks. Notosetae lanceolate, narrowly winged (Figure 52-58c). Avicular uncini with 2-3 stout, outwardly projecting denticles above main fang, surmounted by 5-6 small ones on crest, MF:2-3:5-6 (Figure 52-58d,e); arranged in single rows from setigers 2-7, double rows interlocking back-to-back through setigers 8-11, separating into two distinct rows in setigers 12-17 (Figure 52-58f). Pronounced ligament present on prow of posterior thoracic and abdominal uncini. Pygidium as a ridge with several low papillae surrounding anus.
REMARKS: Lanice conchilega is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Sandy to muddy bottoms, rocks and shell hash; tube covered with shell and sand grains, having multiple branches at top.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records throughout northern Gulf (Figure 52-57); 37-81 m; coarse to fine sand, silty clay.
DISTRIBUTION: Atlantic, from Sweden to English Channel to tropical W. Africa; Gulf of Mexico; Mediterranean; Persian Gulf; Arctic Ocean; New Zealand; southern California.

Genus A
Figures 52-59, 60a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 28F-11/80 (1 spec., USNM 90514); MAFLA 2531G-6/75 (1 spec., USNM 90516), 2640-11/77 (1 spec., USNM 56040); STOCS 3/IV-3 5/77 (1 spec., USNM 90513), 6/IV-3 F/77 (1 spec., USNM 90515).
DESCRIPTION:
Length, 27+ mm; width, to 2.5 mm. All specimens incomplete, abdomens missing; longest (and least well-preserved) with 21 segments. Distal half of long tentacular lobe with transverse ridges on dorsal surface (Figure 52-60a), divided distally into two palp-like structures which are grooved on the ventral side and give rise to numerous tentacles of varying lengths. Band of eyespots, somewhat more numerous laterally, present across base of tentacular lobe. Separate cluster of 10-12 short and long, club-shaped tentacles arising on each side just anterior to eyespots. Upper lip (Figure 52-60b) extending forward as a thin flexible membrane beyond bifurcation of tentacular lobe. Lateral edges of upper lip folding downward, converging medially with lower lip to form mouth at level of eyespots. Branchiae arising as long, independent

filaments arranged in dorsolateral clusters on segments II and III. Notosetae starting on segment IV (first postbranchial segment). Posterior thoracic notosetae long, slender, narrowly winged (Figure 52-60c). Anterior thoracic notosetae (Figure 52-60d) including six or seven setae like posterior ones (Figure 52-60e) above a row of eight or nine shorter setae (Figure 52-60f) which abruptly terminate in a slender filament. Shorter setae bearing a row of teeth at point of change in thickness. Avicular uncini (Figure 52-60g) lacking thelepinid "button," first appearing on segment X (setiger 7), occurring in single rows throughout. Uncinal dental formula MF:6-8:10-12.

REMARKS: The long, sessile, filamentous branchiae and uncini occurring in single rows throughout tentatively key these specimens to the subfamily Thelepinae. The absence of the thelepinid "button" on the uncini suggests a relationship to Rhinothelepus Hutchings, but the unusual palp-like bifurcations of the tentacular lobe, the long upper lip, and the notosetae set them apart from any known genus. They are therefore provisionally considered representative of a new genus.

GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered in northeastern and western Gulf (Figure 52-59); 35-91 m; coarse to fine sand, clayey sand.

Genus **Streblosoma** Sars, 1872

TYPE SPECIES: Streblosoma bairdi (Malmgren, 1865).

REFERENCES:

Hessle, 1917:210.
McIntosh, 1922a:180.
Fauvel, 1927:274.
Day, 1967:723.
Hartmann-Schröder, 1971:490.

DIAGNOSIS: Prostomium with or without eyespots. Lateral lappets absent. Ventral glandular pads well-developed. Branchiae usually present as a pair or clusters of sessile filaments on segments II-IV. Both thorax and abdomen with numerous (more than 25) setigers. Notosetae present from segment II (first branchiferous segment). Uncini first appearing from setigers 3-5, bearing a characteristic thelepinid "button" on the prow.

REMARKS: The generic diagnosis is expanded to include S. verrilli Treadwell, 1911, in which uncinigerous tori first appear on setiger 3, and S. crassibranchia Treadwell, 1914, in which they first appear on setiger 5.

Key to Gulf of Mexico BLM-OCS Species of Streblosoma

1a. Uncini present from setiger 3. . . .**Streblosoma verrilli**, p. 52-63
1b. Uncini present from setiger 4. . . **Streblosoma hartmanae**, p. 52-66

Streblosoma verrilli Treadwell, 1911
Figures 52-61, 62a-f

Streblosoma verrilli Treadwell, 1911:11, figs. 27-29.
Streblosoma verrilli--Monro, 1933b:1073, fig. 20A,B,?C.
Streblosoma verrilli--Hartman, 1959b:522.

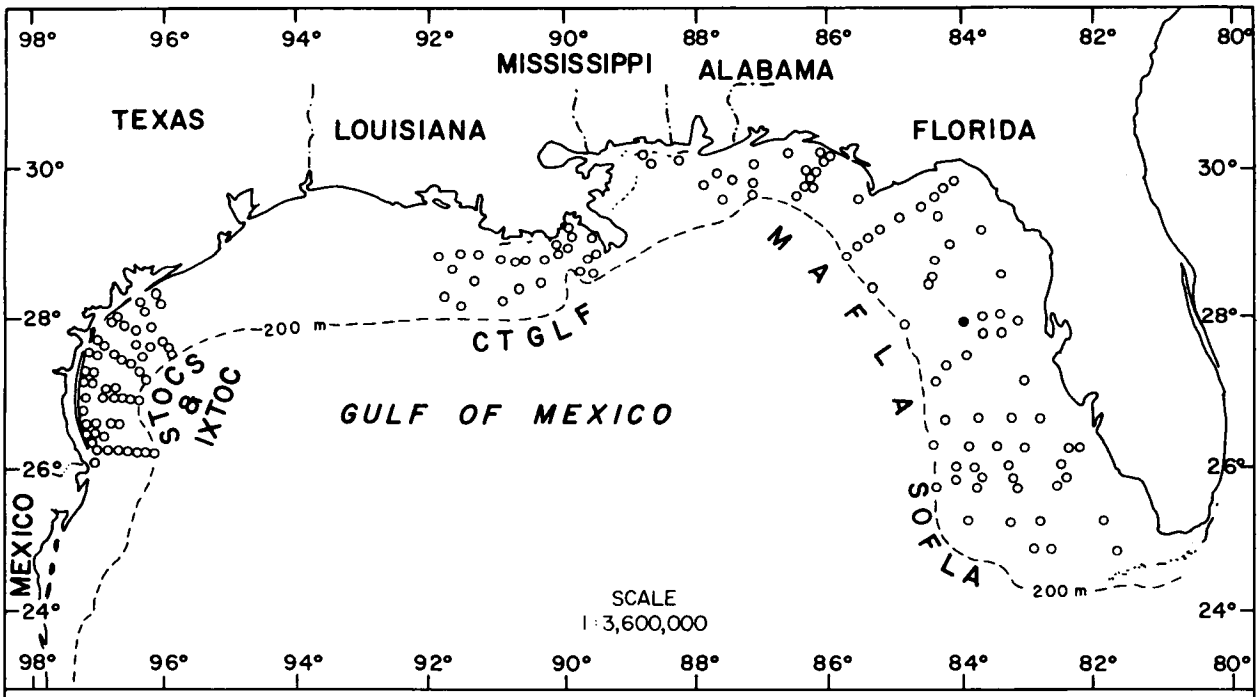

Figure 52-61. Distribution of Streblosoma verrilli on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

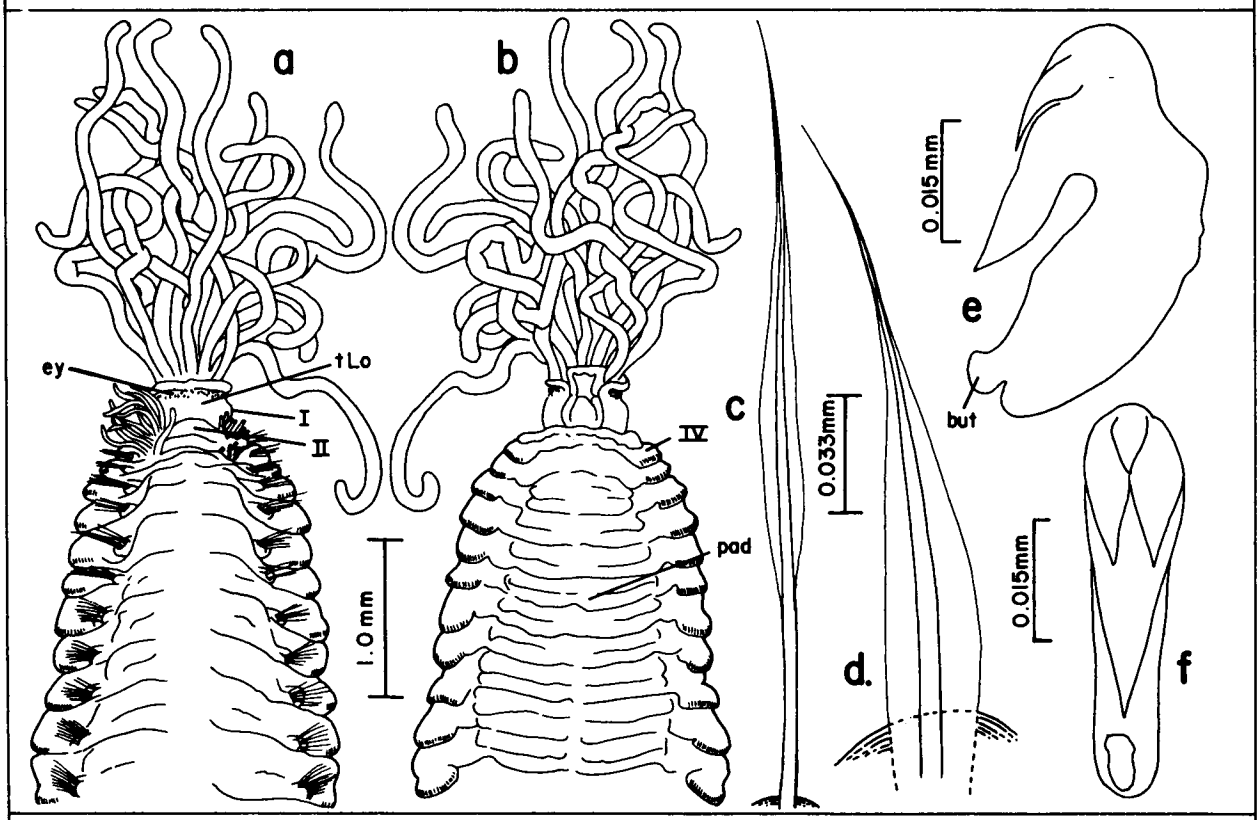

Figure 52-62. Streblosoma verrilli: a, anterior end, dorsal view; b, same, ventral view; c, narrow-winged notoseta; d, broad-winged notoseta; e, thoracic uncinus from setiger 11, lateral view; f, same, frontal view.

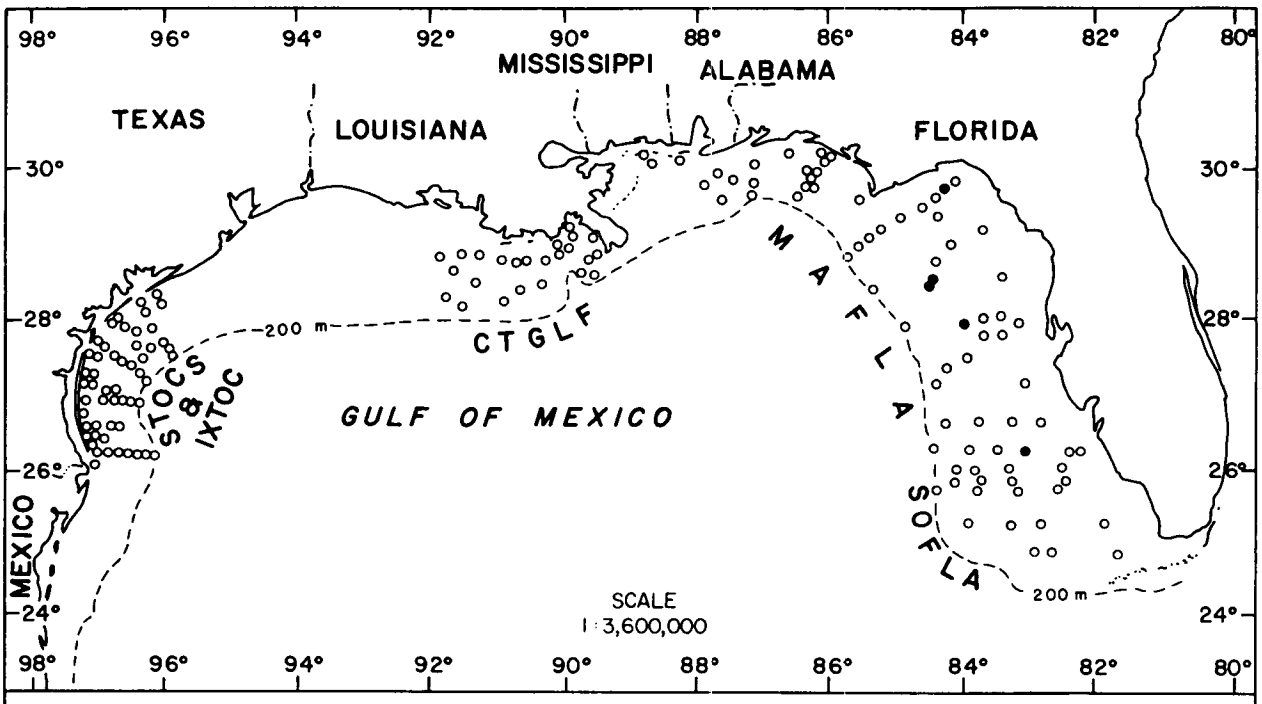

Figure 52-63. Distribution of Streblosoma hartmanae on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

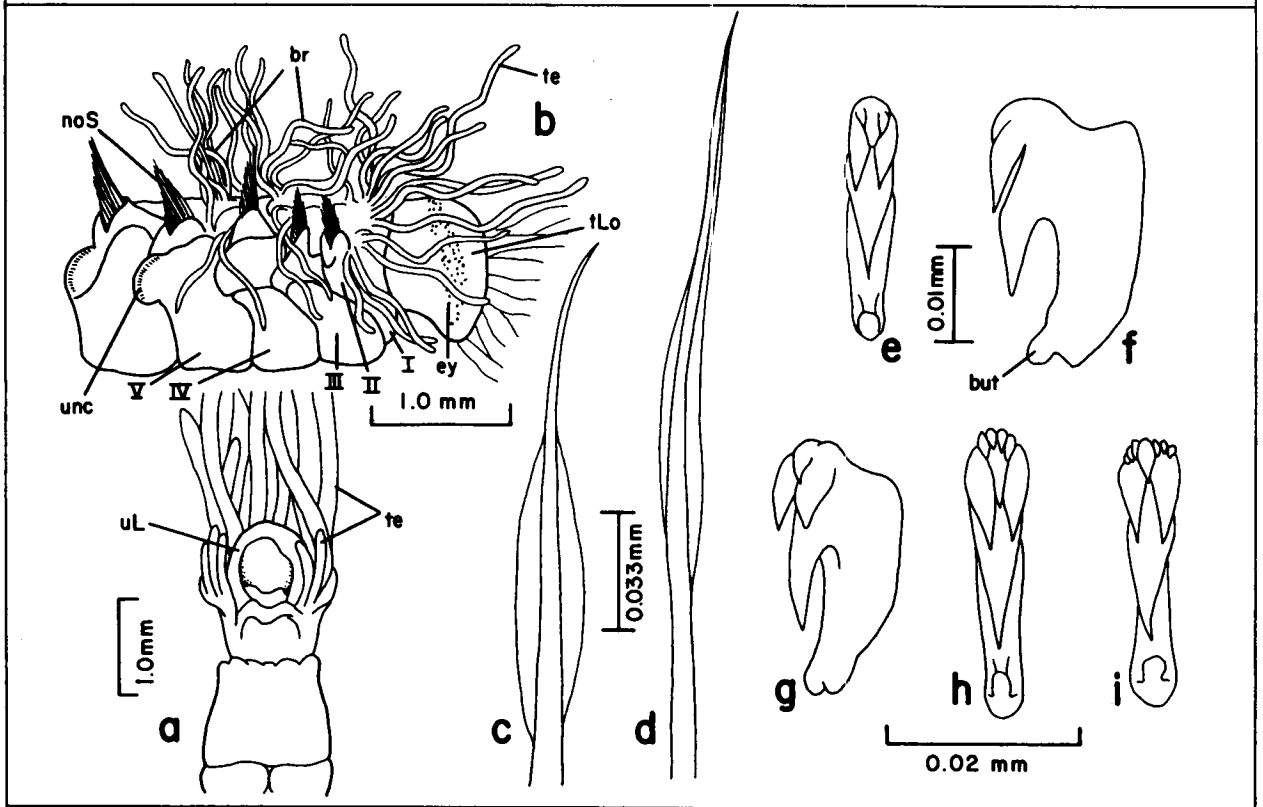

Figure 52-64. Streblosoma hartmanae: a, anterior end, ventral view; b, same, lateral view; c, short thoracic notoseta; d, long thoracic notoseta; e, thoracic uncinus from segment 22, frontal view; f, g, same, from segment 9, with different dental formulae; h, i, same, frontal view.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211D-8/77 (1 spec., USNM 90570).
Supplementary Material:
Florida--Dry Tortugas, Fort Jefferson, June 1909, A. L. Treadwell ID. (AMNH 459, holotype).
DESCRIPTION:
Length, 39+ mm (previously reported to 90 mm); width, 2.0 mm (previously reported to 7 mm). Only specimen incomplete with 32 thoracic segments. Tentacular lobe collar-shaped, slightly notched ventrally, with numerous long, slender tentacles (Figure 52-62a,b). Upper lip short, truncate, with band of eyespots on dorsal margin. Ventral glandular pads present on 14 segments, progressively diminishing in size and giving way to a midventral groove. Branchiae present on segments II-IV as clusters of 3-5 independent filaments. Notopodia low, rounded, bearing long, lanceolate, narrowly winged setae (Figure 52-62c), and short, broadly winged setae (Figure 52-62d). Neuropodia first appearing as low ridges anteriorly, gradually enlarging into broad pinnules, positioned ventrolateral to ventral groove in posterior thorax. Neurosetae beginning on segment IV (setiger 3) as typical thelepinid uncini with obvious "button" on prow (Figure 52-62e); dental formula MF:2:1 (Figure 52-62f).
PREVIOUSLY REPORTED HABITAT: Coral reefs; on rocks and sand in shallow water.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Florida (Figure 52-61); 43 m; coarse sand.
DISTRIBUTION: Panama, Galapagos, Gulf of Mexico.

Streblosoma hartmanae Kritzler, 1971
Figures 52-63, 64a-i

Streblosoma hartmanae Kritzler, 1971:904, figs. 1-8.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2103C-6/75 (1 spec., USNM 90595), 2211F-7/76 (1 spec.), 2314I-9/75 (1 spec., USNM 90594; 7 spec.), 2315A-11/77 (2 spec., USNM 90596), 2420B-9/75 (1 spec., USNM 90597).
DESCRIPTION:
Length, to 45 mm (previously reported to 65 mm); width, to 2.7 mm (previously reported to 1.5 mm). Tentacular lobe collar-shaped with numerous tentacles of varying lengths; ventral tentacles not extending beyond horseshoe-shaped upper lip (Figure 52-64a). Lower lip double, inner and outer lobes slightly notched medially. Eyespots present in double row on dorsal margin of upper lip (Figure 52-64b). Ventral glandular pads prominent on first 12 setigerous segments, diminishing in size on the following three segments. Branchiae each with a transverse band of gently spiraling filaments. Thorax with about 32 segments; abdomen with up to 29 segments. Notopodia bearing short (Figure 52-64c) and long (Figure 52-64d), lanceolate, moderately winged notosetae. Neurosetae first appearing on segment V (setiger 4) as typical thelepinid uncini with pronounced "button" on prow (Figure 52-64e,f). Dental formula variable, e.g., MF:2:1 (Figure 52-64f,g), MF:2:3 (Figure 52-64e), MF:3:4 (Figure 52-64h), MF:2:7 (Figure 52-64i). Pygidium unmodified.

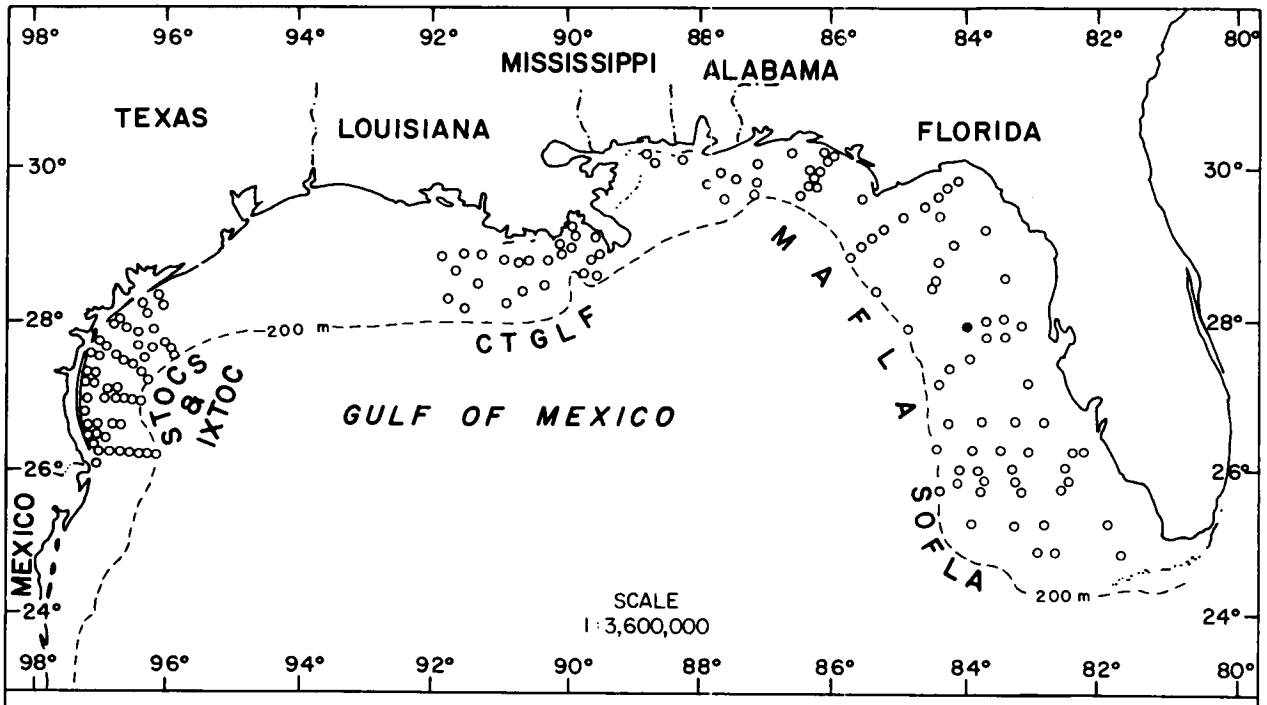

Figure 52-65. Distribution of Euthelepus sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

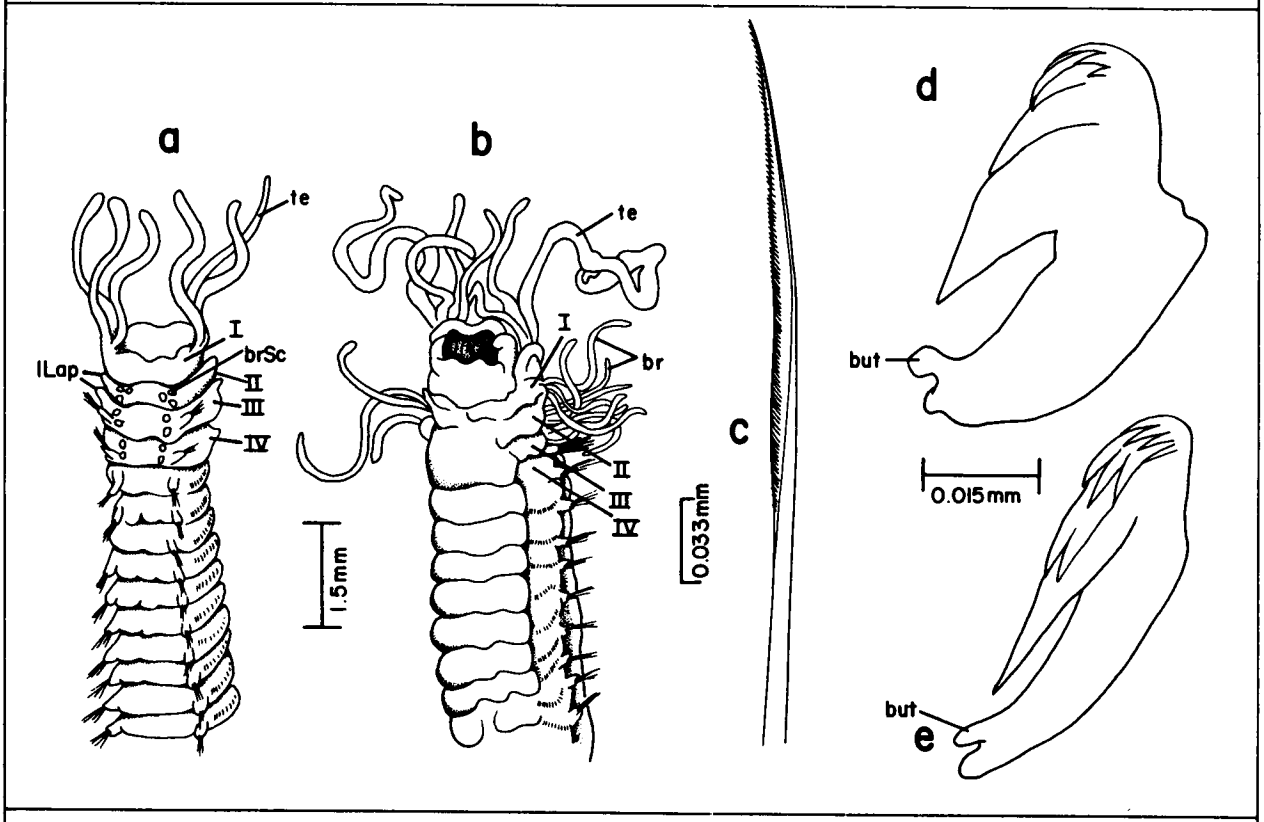

Figure 52-66. Euthelepus sp. A: a, anterior end, dorsolateral view (branchiae omitted); b, same, ventrolateral view; c, notoseta; d, thoracic uncinus, lateral view; e, same, oblique view.

REMARKS: Identifications of some BLM-OCS voucher material were originally confused with Streblosoma verrilli.
PREVIOUSLY REPORTED HABITAT: Intertidal and sublittoral beds of Thalassia and Diplanthera.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 52-63); 14-43 m; coarse to fine-very fine sand, silty fine and very fine sand.
DISTRIBUTION: Northeastern Gulf of Mexico, east coast of Florida.

Genus **Euthelepus** McIntosh, 1885

TYPE SPECIES: Euthelepus setabulensis McIntosh, 1885.
REFERENCES:
McIntosh, 1885:465.
Fauvel, 1927:275.
Day, 1967:726.
DIAGNOSIS: Tentacular lobe collar-like. Lateral lappets well-developed. Ventral glandular pads present on anterior segments. Branchiae long and slender, with up to three filaments arising on either side of segments II-IV. Notosetae present from segment III (second branchiferous segment) through approximately 20 setigers. Avicular uncini present from segment V (setiger 3).

Euthelepus sp. A
Figures 52-65, 66a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211G-11/77 (1 spec., USNM 90602).
DESCRIPTION:
Length, 22+ mm; width, 1.7 mm. Only specimen incomplete with 40 thoracic segments. Tentacular lobe small with few (3-4) tentacles arising from dorsolateral edges (Figure 52-66a). Prostomium reduced to upper lips. Eyes absent. Lateral lappets on segments II-IV; largest on segment III. Ventral glandular pads well-developed, fused together on segments III-V, distinct and extending across ventrum of segments VI-XI, thereafter divided by a median groove (Figure 52-66b). Branchiae long, filamentous, numbering three pairs on segment II, two pairs each on segments III and IV. Notosetae unilimbate, hispid near tips (Figure 52-66c); each fascicle with 2-3 heavy, opaque setae and 10-12 smaller, more translucent ones. Thoracic uncini thelepinid-type with "button" on prow (Figure 52-66d); dental formula MF:2:3:5-6 (Figure 52-66e).
REMARKS: This species differs from the known species of the genus in that it has more than two branchiae on all three branchiferous segments. Euthelepus kinsemboensis Augener, 1918, is closer to Euthelepus sp. A than the rest, having six branchiae on segment II, four on segment III, but only two on segment IV. All the rest have no more than two branchiae on any segment. Another point of difference between E. kinsemboensis and Euthelepus sp. A is that in the former the branchiae on segment II are stout at the base, tapering toward the tip and arranged in a row across the dorsum, presenting an ampharetid-like picture, whereas in Euthelepus sp. A they are set in two discrete groups of three each and are uniformly slender. Furthermore, E. kinsemboensis has two kinds of notosetae and Euthelepus sp. A has only one.

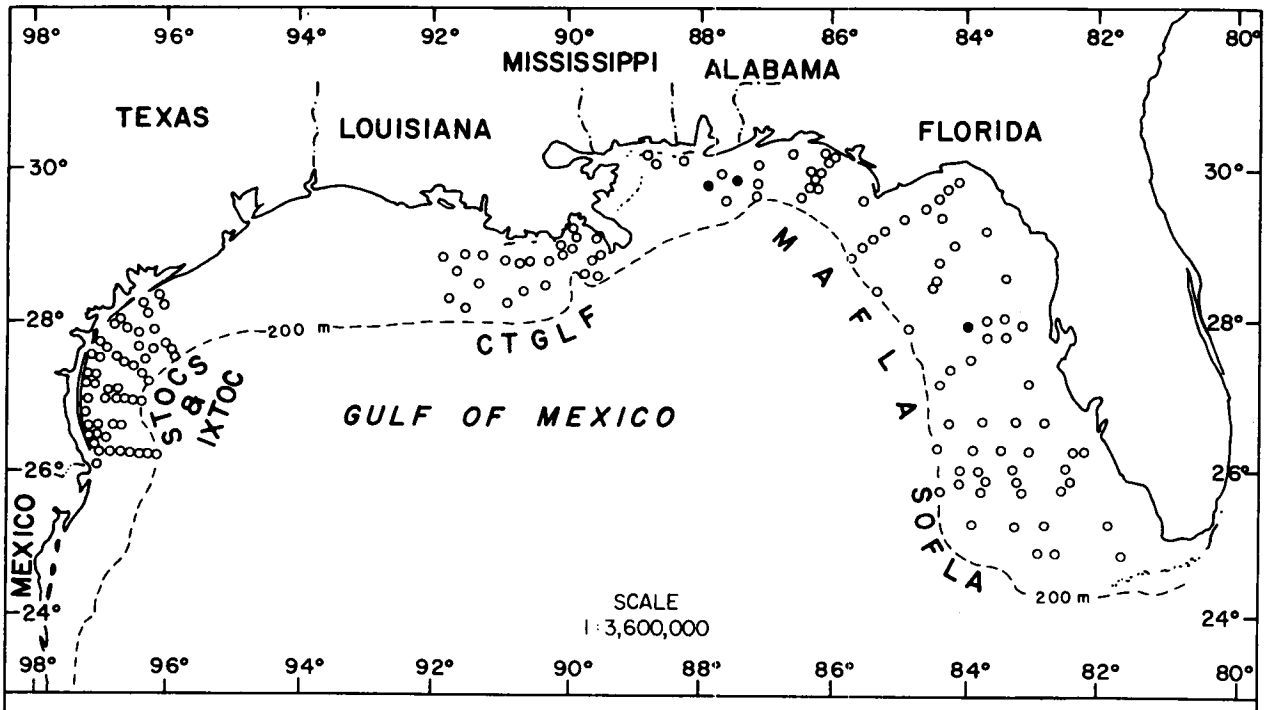

Figure 52-67. Distribution of Rhinothelepus sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

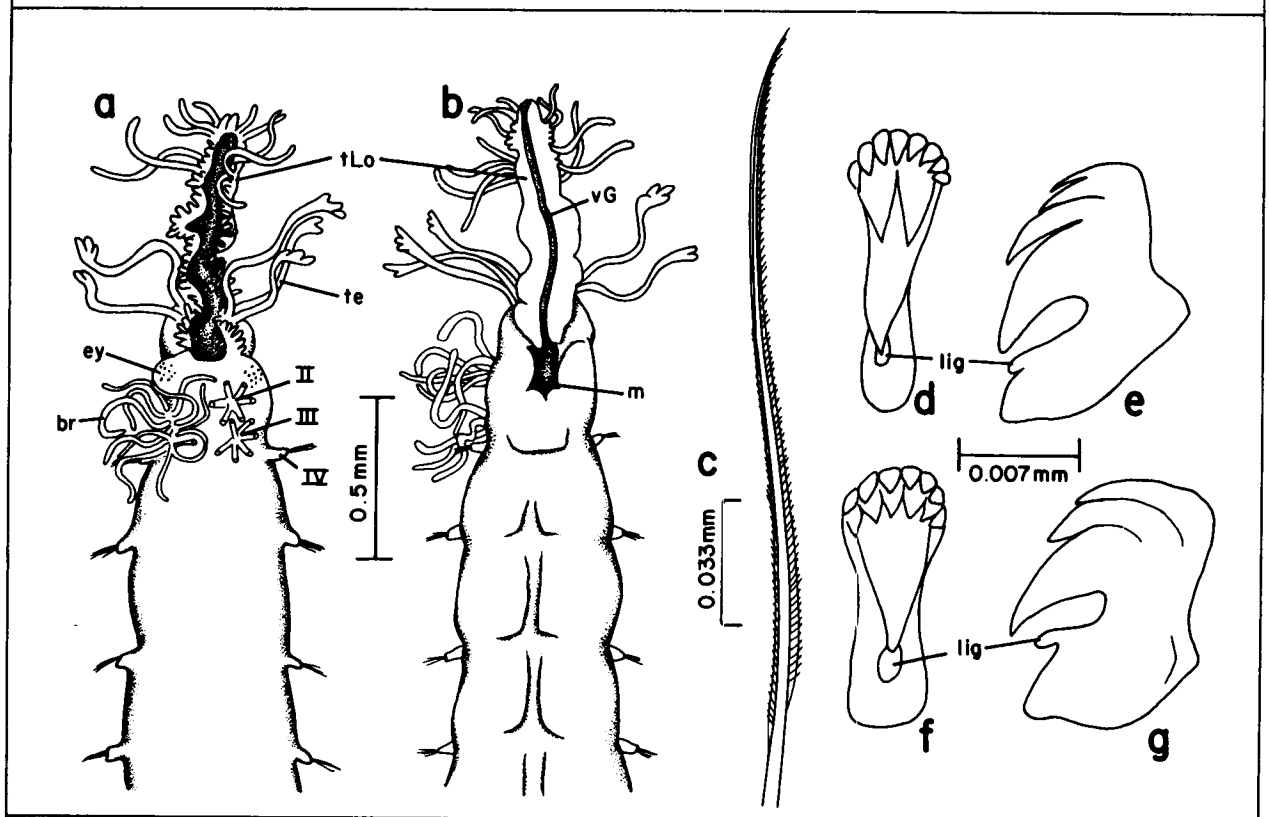

Figure 52-68. Rhinothelepus sp. A: a, anterior end, dorsal view; b, same, ventral view; c, notoseta; d, thoracic uncinus from setiger 8, frontal view; e, same, lateral view; f, abdominal uncinus, frontal view; g, same, lateral view.

GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Florida (Figure 52-65); 43 m; coarse sand.

Genus **Rhinothelepus** Hutchings, 1974

TYPE SPECIES: Rhinothelepus lobatus Hutchings, 1974.
REFERENCES:
Hutchings, 1974:192; 1977:12.
DIAGNOSIS: Tentacular lobe long, with numerous oral tentacles. Branchiae present as simple filaments on segments II and III. Notosetae smooth-tipped, capillary, starting on segment III, numbering 15 pairs. Uncini with short base, without a terminal thelepinid button. Lateral lobes absent.

Rhinothelepus sp. A
Figures 52-67, 68a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 16H-5/74 (1 spec., USNM 90541), 2211D-7/76 (1 spec.), 2211F-7/76 (2 spec.), 2211C-8/77 (1 spec.), 2211F-8/77 (1 spec.), 2211H-8/77 (2 spec.), 2211I-8/77 (1 spec.), 2211K-11/77 (1 spec.), 2211E-2/78 (1 spec.), 2640I-7/76 (3 spec., USNM 90538-40).
DESCRIPTION:
Length, 21+ mm; width, to 1.5 mm. Largest specimen incomplete with 22 segments. Tentacular lobe long, extending forward from mouth a distance equal in length to first three setigerous segments (Figure 52-68a). Lateral margins of tentacular lobe dorsally convoluted with numerous short tentacular knobs; basally, 2-3 pairs of long tentacles present, terminating in 2-5 digitate branches (more obvious on larger specimens); distally, 8-10 moderately long, slender tentacles present. Ventral groove extending the length of the lobe, opening into the mouth (Figure 52-68b). Eyespots present on dorsolateral base of prostomium. Ventral glandular pads indistinct. Two pairs of branchiae present on segments II and III, each branchia consisting of a rosette of six long, independent filaments. Thorax with 19 setigers. Notosetae long, slender, narrowly winged, faintly hispid (Figure 52-68c). Uncini avicular, small, without long prow or button found in other thelepinids. Thoracic uncini (Figure 52-68d,e) beginning on setigers 7-11 (usually 8), with two large denticles above main fang, surmounted by a row of smaller ones; dental formula MF:2:9-11. Abdominal uncini (Figure 52-68f,g) with two rows of small denticles above main fang; dental formula MF:6-7:8-9.
REMARKS: It is noteworthy that 12 of the 19 specimens representing this provisional species were collected at the same station on four expeditions conducted at different seasons of two years. These specimens were assigned to the genus Rhinothelepus Hutchings, 1974, because of the presence of an elongate tentacular lobe and thoracic uncini. Rhinothelepus sp. A differs from R. lobatus Hutchings, 1974, and R. macer Hutchings, 1977, in the arrangement of the branchiae, the number of thoracic setigers, the segments on which uncini first appear, the absence of a thelepinid button on the uncini, and most of all, the unusual nature of the tentacles.

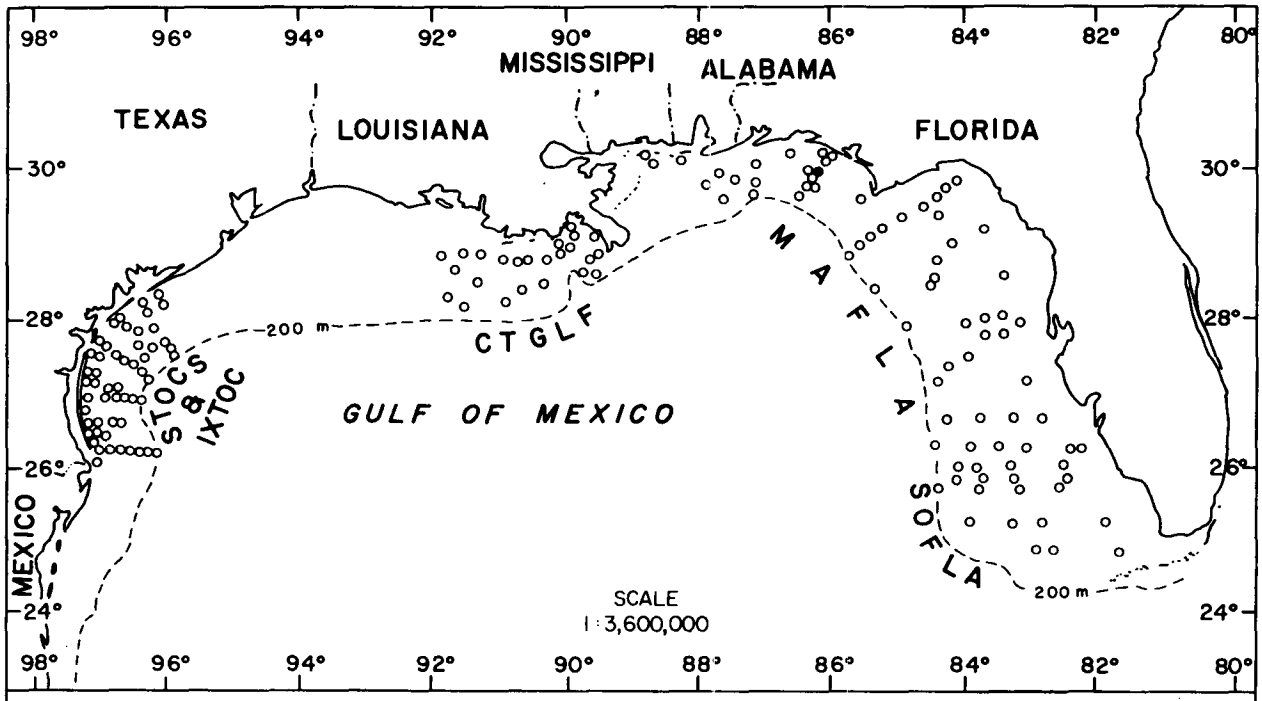

Figure 52-69. Distribution of Telothelepus cf. capensis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

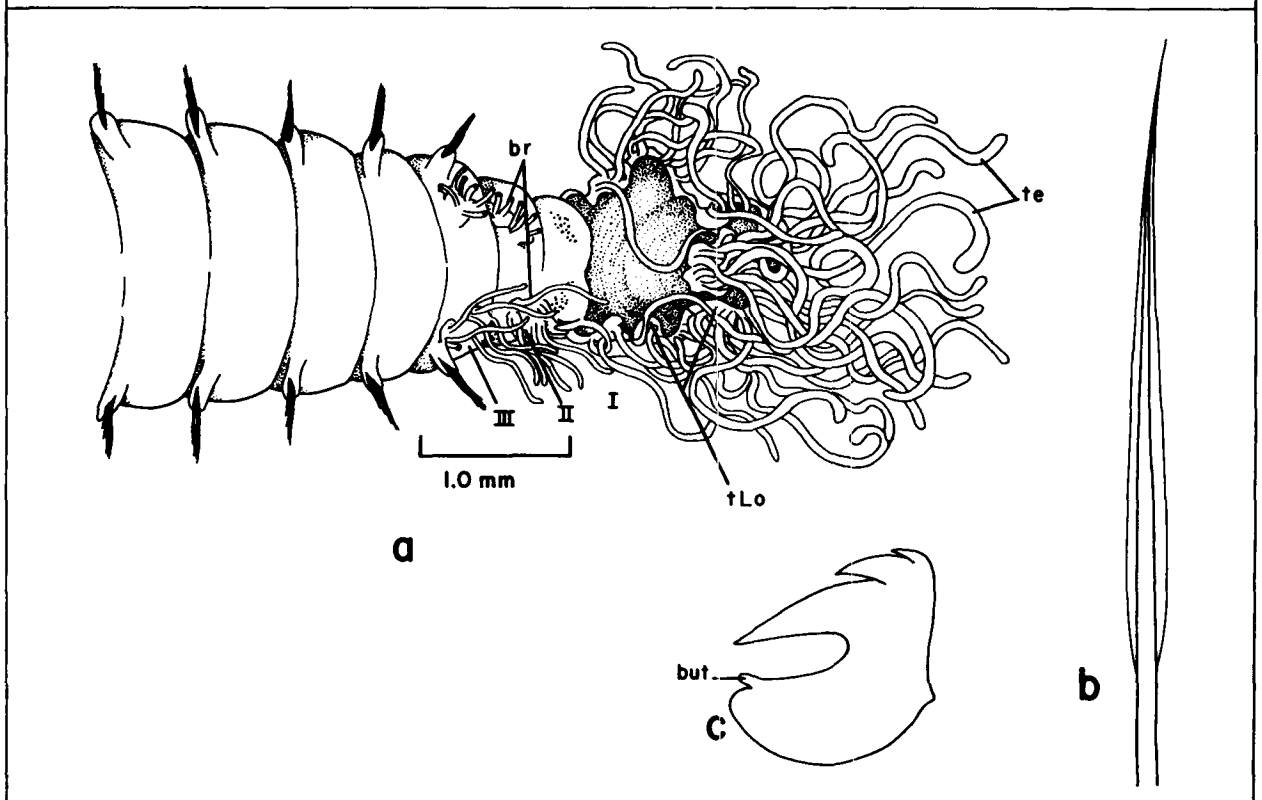

Figure 52-70. Telothelepus cf. capensis: a, anterior end, dorsal view; b, notoseta; c, abdominal uncinus (not found in BLM-OCS Gulf of Mexico specimens; figure c from Day 1967:734, fig. 36.6.c.)

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Alabama (Figure 52-67); 19-52 m; coarse to medium sand, silty very fine sand.

Genus **Telothelepus** Day, 1955

TYPE SPECIES: Telothelepus capensis Day, 1955.
REFERENCE:
Day, 1967:731.
DIAGNOSIS: Tentacular lobe long, with frilly margin and numerous slender tentacles. Filamentous branchiae arising from bosses on segments II-IV. Lateral lappets absent. Notosetae present from segment III. Thorax without uncini. Abdominal uncini present.

Telothelepus cf. **capensis** Day, 1955
Figures 52-69, 70a-c

Telothelepus capensis--Day, 1967:731, fig. 36.6.b,c.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2531C-9/77 (1 spec., USNM 90590).
DESCRIPTION:
Length, 15+ mm (previously reported to 50 mm); width, 1.8 mm. Only specimen incomplete with 15 segments. Tentacular lobe long; lateral margin convoluted and bent back dorsally, with many long, slender tentacles (Figure 52-70a). Eyespots present, forming two small, dense, widely separated clusters on posterodorsal surface of prostomium. Ventral pads absent from anterior segments. Branchiae as numerous (more than six) simple filaments borne on a pair of bosses on segments II and III. Thorax incomplete with 13 setigers. Notosetae smooth-tipped, winged (Figure 52-70b).
REMARKS: The frilly tentacular lobe, arrangement of the branchiae, and general characters of the worm (except for the absence of nephridia), is much like that figured and described by Day (1967). No uncini were found on the single anterior fragment examined, but according to Day (1967), "each uncinus [Figure 52-70c] with a short base, a deep prow with a dorsal button, and a dental formula of MF:5-6:8:10." The lack of a more complete specimen, allowing confirmation of the absence of thoracic uncini and the nature of the abdominal uncini, necessitates the tentative specific assignment for the Gulf of Mexico BLM-OCS specimen.
PREVIOUSLY REPORTED HABITAT: Sheltered sand banks; intertidal to shallow depths.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off northwestern Florida (Figure 52-69); 45 m; coarse sand.
DISTRIBUTION: South Africa, ?Gulf of Mexico.

CHAPTER 53

Henry Kritzler

FAMILY TRICHOBRANCHIDAE Malmgren, 1865

INTRODUCTION

The Trichobranchidae are a small family of polychaetes closely related to and resembling the terebellids (Chapter 52) in the division of body regions; in the presence of numerous, non-retractile, tentacular feeding filaments; and in the general shape and position of the branchiae. The prostomium, unlike that found in the terebellids, is large and folded, forming a hood over the mouth; it is distinctly separated from the peristomial tentacular membrane and upper lip. Eyes may be present. Up to four pairs of branchiae are present on anterior segments, either as simple filaments or lamellae, or fused into a single branchial trunk with four lamellate lobes. Glandular ventral pads are poorly developed. Notosetae are all smooth-tipped and capillary. The neuropodia are equipped with long-shafted hooks in the thorax, and with multidentate uncini in the abdomen. Nephridia are present in anterior segments. The pygidium is nondescript, with a terminal anus and no anal cirri.

As mentioned in the introduction to the family Terebellidae (Chapter 52), the trichobranchids--and especially the genus Trichobranchus--are considered by some authors (Hessle, 1917) to be representative of an ancestral form which gave rise early on to the Pectinariidae, and later to the Ampharetidae and Terebellidae. Seven genera, four of which are monotypic, are currently recognized for the approximately 27 species in the family (Fauchald, 1977a). Two species, Terebellides stroemi and Trichobranchus glacialis, were represented in the BLM-OCS voucher collections.

PRINCIPAL DIAGNOSTIC CHARACTERS

The main diagnostic characters used in the identification of trichobranchids include the number, segmental arrangement and morphology of the branchiae. The independent, stalkless, filiform branchiae characteristic of Filibranchus, Octobranchus, Unobranchus and most Trichobranchus species are considered to represent the primitive condition. Departures range from the jointed condition found in Trichobranchus americanus and the pectinate branchial lamellae of Ampharetides, to the reduction in numbers (Filibranchus, Unobranchus), and the coalescence of the basal portions and the lamellate expansion of the branchiae found in Terebellides.

Notosetae are not particularly diagnostic. However, characteristics of the neurosetae, especially dentition, may be useful in species separation. Distribution of nephridial papillae is also diagnostic.

BIOLOGICAL NOTES

Trichobranchids are tubicolous inhabitants of muddy to muddy sand substrates or heavy deposits of silt and organic detritus often found in seagrass beds. They range from the shallowest sublittoral zone to abyssal depths of up to 5000 m. Selective surface deposit-feeding, as described for the terebellids, is also the presumed mode of feeding in most species of trichobranchids (Fauchald and Jumars, 1979). Sexes are separate, and according to Thorson (1946), no free-living pelagic juvenile stage is known in their development.

SPECIES OF TRICHOBRANCHIDAE RECORDED FROM GULF OF MEXICO BLM-OCS PROGRAMS

	Page
Trichobranchus glacialis Malmgren, 1865	53-2
Terebellides stroemi Sars, 1835	53-4

Key to the Genera of Trichobranchidae from the Gulf of Mexico BLM-OCS Programs

1a. Two to three pairs of filamentous, smooth or ringed branchiae (Figure 53-2a). . . . . .**Trichobranchus**, p. 53-2

1b. One branchial stalk with four lamellate lobes (Figure 53-4a) . . . . . .**Terebellides**, p. 53-4

Genus **Trichobranchus** Malmgren, 1865

TYPE SPECIES: Trichobranchus glacialis Malmgren, 1865.
REFERENCES:
Wollebaek, 1912:79.
Hessle, 1917:130.
Fauvel, 1927:288.
Day, 1967:711.
Hartmann-Schröder, 1971:493.
DIAGNOSIS: Thorax with 15-17 setigers; abdomen long, with numerous segments. Eyes present or absent. Branchiae numbering 2-3 pairs. Thoracic neurosetae as rostrate hooks; abdominal uncini avicular.

Trichobranchus glacialis Malmgren, 1865
Figures 53-1, 2a-e

Trichobranchus glacialis--Wollebaek, 1912:79, pl. 19, figs. 1-8.
Trichobranchus glacialis--Hessle, 1917:130.
Trichobranchus glacialis--Fauvel, 1927:288, fig. 100a-h.
Trichobranchus glacialis--Day, 1967:711, fig. 36.1.a-e.
Trichobranchus glacialis--Hartmann-Schröder, 1971:494, fig. 170c-e.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12B-11/80 (2 spec., USNM 90618), 12-11/80 (1 spec., USNM 90619),

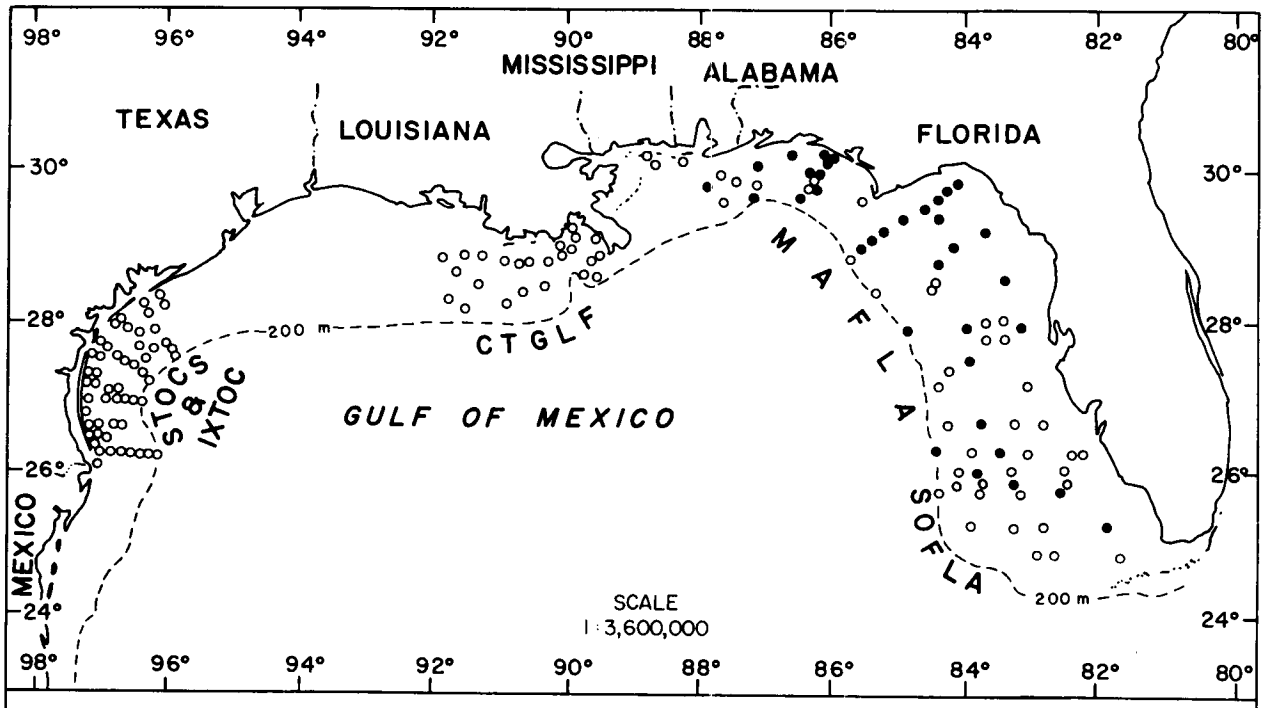

Figure 53-1. Distribution of Trichobranchus glacialis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

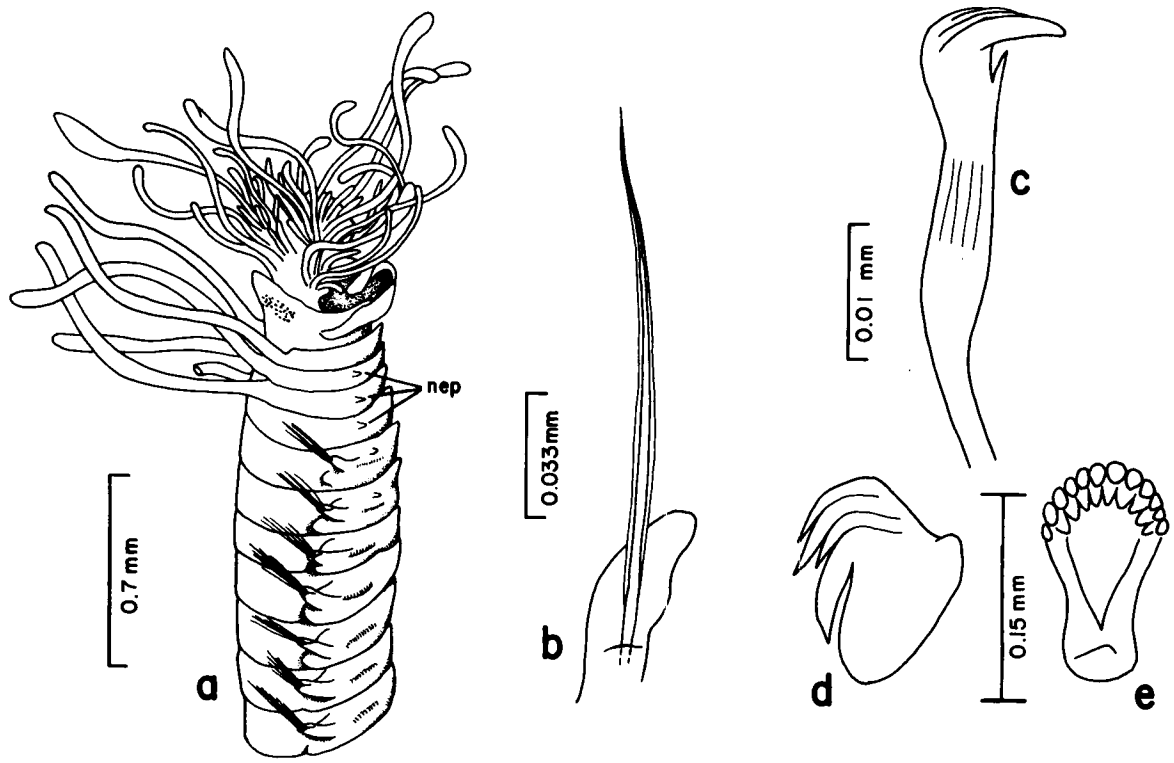

Figure 53-2. Trichobranchus glacialis: a, anterior end, dorsolateral view; b, notoseta projecting from thoracic notopodium; c, thoracic neuropodial rostrate hook; d, abdominal uncinus, lateral view; e, same, frontal view.

14A-7/81 (7 spec., USNM 90620), 14E-8/81 (1 spec., USNM 90621); MAFLA 2420H-6/75 (1 spec., USNM 90586), 2422C-7/76 (1 spec., USNM 90585), 2530-1/76 (2 spec., USNM 56042), 2531C-9/77 (2 spec., USNM 90583), 2645H-11/77 (2 spec., USNM 90584).

DESCRIPTION:

Length, to 6 mm (previously reported to 30 mm); width, to 0.2 mm. Body long; complete specimens with 15 thoracic setigers and 22 abdominal setigers. Tentacular lobe convoluted, with many short tentacles, and a few longer ones on dorsal surface. Prostomium with two dorsolateral clusters of eyespots (Figure 53-2a). Lateral lappets of segment 1 uniting ventrally to form shelf-like lower lip. Segments 2-5 achaetous; segments 2-4 each bearing a pair of long, filamentous branchiae. Branchiae faintly ringed in some specimens, and obviously thicker than tentacular filaments. Nephridial papillae present on segments 3-7, just anterior to neuropodia on first two setigers (Figure 53-2a). Notosetae and neurosetae first appearing on segment 6. Notosetae long, slender, slightly winged, projecting from distinct notopodial lobes (Figure 53-2b). Thoracic neurosetae (Figure 53-2c) as long-shafted rostrate hooks with one row of 10-12 long denticles above rostrum and a single spur-like tooth below. Abdominal uncini (Figure 53-2d,e) thick, with two rows of similar-sized denticles above main fang; dental formula MF:10-11:12-13. Uncini borne on rather long, well-developed pinnules.

REMARKS: T. glacialis is the only species of the genus reported from the Gulf of Mexico.

PREVIOUSLY REPORTED HABITAT: Mud, sand, and muddy sand substrates, in pockets of sediment between stones, shells or algal holdfasts.

GULF OF MEXICO BLM-OCS OCCURRENCE: Numerous records in northeastern Gulf (Figure 53-1); 10-168 m; predominantly in coarse to medium sand, also in fine to very fine sand, silty fine sand and clayey silt.

DISTRIBUTION: Cosmopolitan.

Genus **Terebellides** Sars, 1835

TYPE SPECIES: Terebellides stroemi Sars, 1835.

REFERENCES:

Hessle, 1917:136.
Fauvel, 1927:291.
Day, 1967:711.
Fauchald, 1977a:134.

DIAGNOSIS: Thorax with 17 or 18 setigers; abdomen long with many segments. Eyes absent. Single branchia divided distally into four lamellate lobes. Lateral lappets absent. Thoracic neurosetae of two kinds; abdominal uncini avicular.

Terebellides stroemi Sars, 1835
Figures 53-3, 4a-f

Terebellides stroemi--Wollebaek, 1912:78, text fig. 9; pl. 18, figs. 1-9.
Terebellides stroemi--Hessle, 1917:137.
Terebellides stroemi--Fauvel, 1927:291, fig. 100i-q.
Terebellides stroemi--Day, 1967:713, fig. 36.1.f,g.
Terebellides stroemi--Hartmann-Schröder, 1971:494, fig. 171a-e.

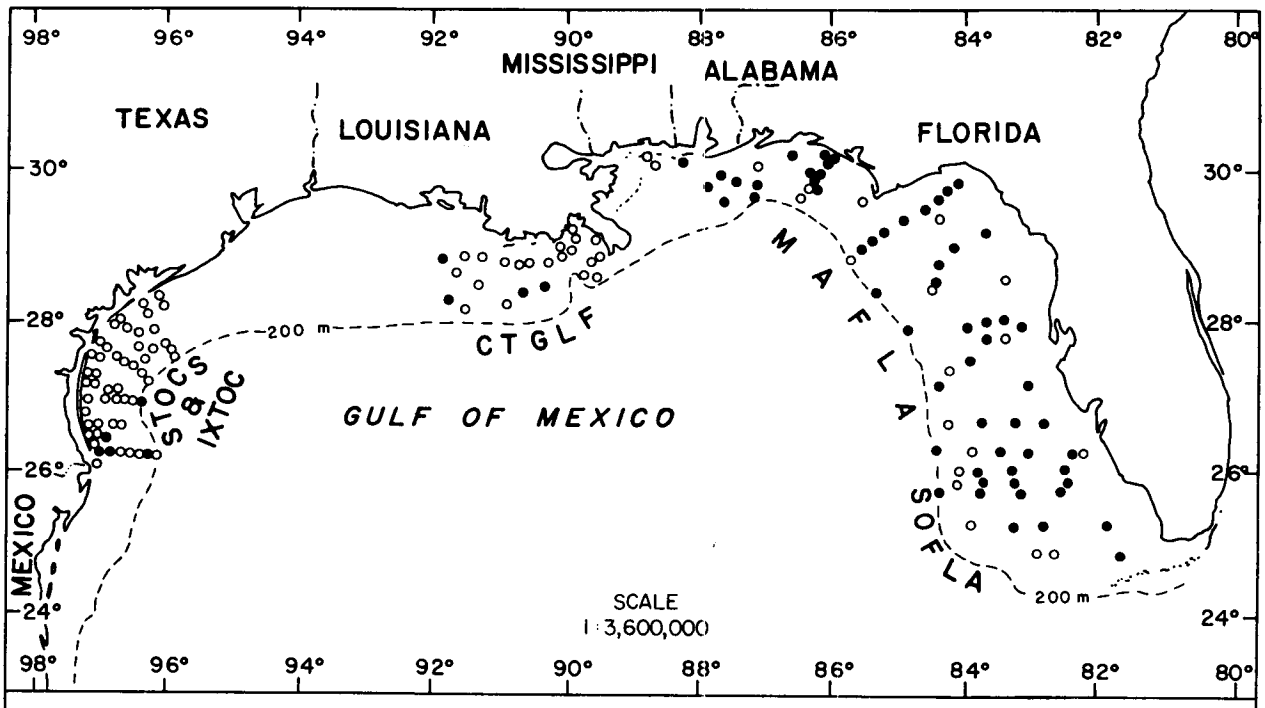

Figure 53-3. Distribution of Terebellides stroemi on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

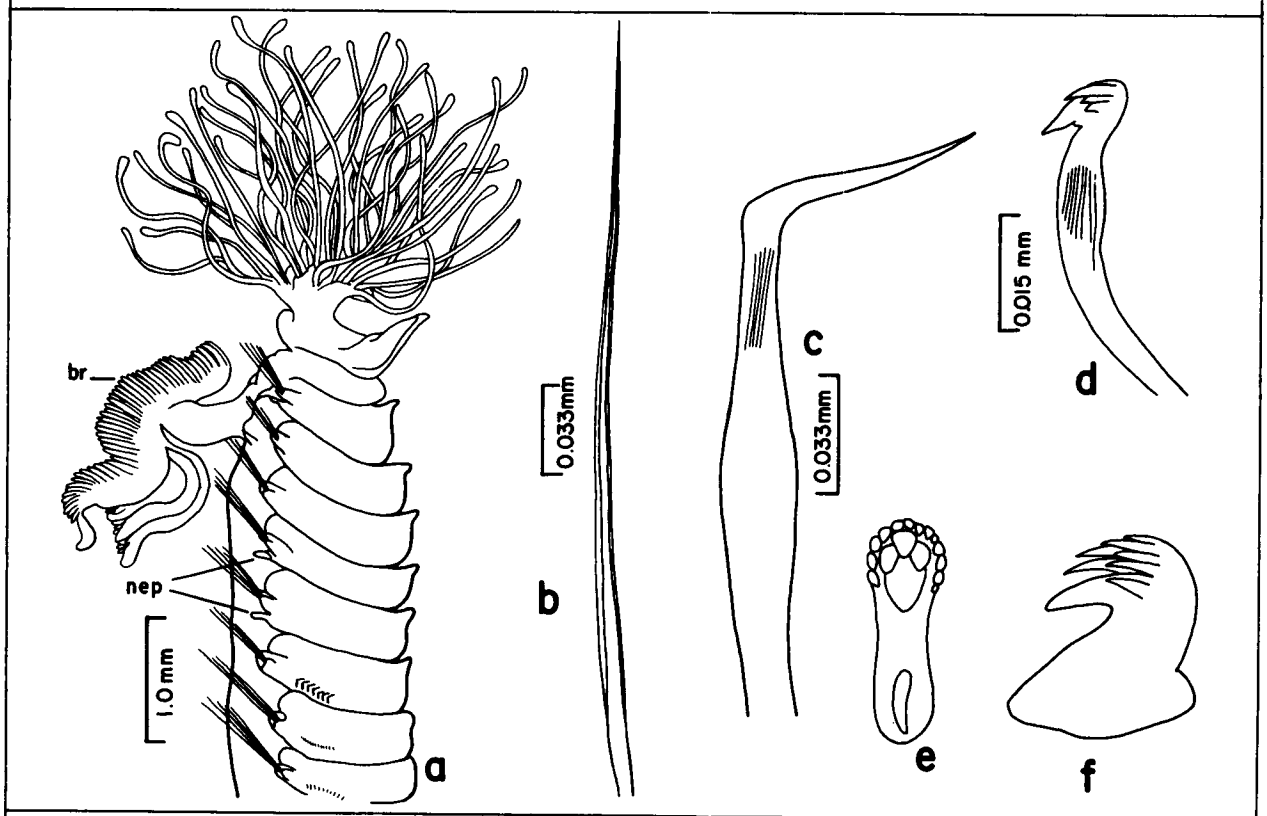

Figure 53-4. Terebellides stroemi: a, anterior end, dorsolateral view; b, notoseta; c, acicular hook from segment 8; d, neuropodial rostrate hook from subsequent thoracic setiger; e, abdominal uncinus, frontal view; f, same, lateral view (Figures e,f from Day 1967:712, fig. 36.1.i,j, no scale).

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6A-11/80 (4 spec., USNM 90622), 14B-7/81 (3 spec., USNM 90623); MAFLA 14J-5/74 (1 spec., USNM 56041), 15J-5/74 (3 spec., USNM 90577), 2104G-6/75 (2 spec., USNM 90581), 2317A-8/76 (2 spec., USNM 90582), 2420E-1/76 (1 spec., USNM 90579); CTGLF 03-1/79 (1 spec., USNM 90576); STOCS 3/IV-1 W/76 (1 spec., USNM 90580), 4/IV-W/76 (1 spec., USNM 90578); IXTOC S53-11/79 (1 spec.), S53-3 11/79 (1 spec., USNM 90624).
DESCRIPTION:
Length, to 43 mm (previously reported to 75 mm); width, to 2.8 mm. Body uniformly tapered, with 17 or 18 thoracic setigers and 22-32 abdominal setigers. Tentacular lobe frilly, with numerous long, slender tentacles on dorsal surface. Lateral lobes on peristomium joining ventrally to form shelf-like lower lip (Figure 53-4a); anteroventral edges of segments 2-9 extending forward to form less prominent lip-like shelves. Single, large branchial stalk arising from segments 2-4, bearing four partially fused lamellate lobes. Nephridial papillae dorsal to notopodia on segments 3, 6 and 7. Notosetae long, slender, narrowly winged (Figure 53-4b), beginning on segment 3. Neurosetae beginning on segment 8 (setiger 6) as geniculate acicular hooks with long, smooth tips (Figure 53-4c); subsequent thoracic neurosetae as long-handled, rostrate hooks with several rows of denticles over rostrum (Figure 53-4d). All abdominal uncini avicular with three stout denticles above main fang, surmounted by second row of 10-12 smaller teeth (Figure 53-4e,f); dental formula MF:3:10-12. Pygidium with terminal anus surrounded by slightly crenulated ridge.
REMARKS: T. stroemi is the only species of the genus reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Soft bottoms of pure mud; mixtures of mud, fine sand, shell or clay, or decomposed organic material. Also found between algal holdfasts, stones and shell fragments. Tube cylindrical, membranous, encrusted with mud or fine sands. Specimens from southern latitudes smaller, with branchiae less fused than those from type locality (Norway).
GULF OF MEXICO BLM-OCS OCCURRENCE: Numerous records in northeastern Gulf, a few off Louisiana and southern Texas (Figure 53-3); 10-180 m; predominately in coarse to medium sand or silty fine to very fine sand, also in silty clayey sand, sandy silt, clayey silt, and silty clay.
DISTRIBUTION: Cosmopolitan from Arctic to sub-Antarctic.

CHAPTER 54

Joan M. Uebelacker

FAMILY SABELLIDAE Malmgren, 1867

INTRODUCTION

Sabellids are tubicolous worms, ranging in size from minute (less than 5 mm in length) to large and conspicuous (several cm in length). The body is cylindrical, tapering posteriorly but modified anteriorly to form a distinctive branchial crown. Sabellids are commonly called "fanworms" or "feather duster" worms, due to the appearance of this crown, which in life is spread gracefully above the mouth of the tube, and often is beautifully colored.

The branchial crown consists of two semicircular or spiraled branchial lobes branching into a number of filaments or radioles. The radioles each bear two rows of pinnules, and may be connected along part of their length by a delicate membrane. The radioles and pinnules are supported by an internal skeleton of cartilaginous cells. A pair of slender, filamentous or tapered palps are usually attached to the inner basal margins of the branchial lobes between paired dorsal and ventral lips. In sabellids, the branchial lobes are not strongly attached to the body and may be easily lost from preserved specimens. The operculum, which is formed from a modified radiole in members of the closely related family Serpulidae (see Chapter 55), is absent in sabellids.

The base of the branchial lobes, which attaches to the anterior end of the thorax, is termed the branchial basis. Generally the branchial basis is surrounded by a more or less well-developed collar arising from the peristomium. The first setiger has uniramous parapodia bearing slender setae, often called collar setae due to their proximity to the collar. The remainder of the thorax consists of a variable number of setigers having biramous parapodia. The notosetae generally include limbate forms; paleae, modified paleae (subspatulate setae), or modified limbate setae (bayonet setae) may be present as well. The thoracic neurosetae are acicular uncini in the subfamilies Myxicolinae and Fabriciinae, and avicular uncini in the subfamily Sabellinae. Various forms of companion setae may accompany the uncini in the Sabellinae. A ciliated fecal groove runs along the middorsum of the thorax, and generally turns to one side and crosses to the midventrum at the last thoracic setiger. Ventrally, glandular rectangles known as ventral shields may be present.

The abdomen consists of a varying number of similar setigers with biramous parapodia. Here the setae reverse positions; i.e., uncini are present in the notopodia and limbate setae in the neuropodia. In the subfamily Myxicolinae, the abdominal uncini occur in long tori which nearly encircle the body. Ventral shields, if present, are split by the fecal groove which now runs midventrally. The abdomen terminates in a small pygidium which may bear eyespots or a single caudal filament.

Rioja (1923) erected the three subfamilies Myxicolinae, Fabriciinae and Sabellinae. This scheme was followed by Fauvel (1927) and Fauchald (1977a). Day (1967), following Johansson (1927), included the Myxicolinae in the Fabriciinae. Fauchald (1977a) and Pettibone (1982) placed

the sabellids in the order Sabellida, along with the serpulids and several small, related families.

Thirty-four genera and about 300 species are currently recognized in the Sabellidae (Fauchald, 1977a), including one genus in the Myxicolinae, 13 genera in the Fabriciinae, and 20 genera in the Sabellinae. Gulf of Mexico BLM-OCS collections contained six genera and nine species in the Fabriciinae, five genera and nine species in the Sabellinae, and possibly a single juvenile Myxicola. The 18 species described herein include eight potentially new species and five questionable assignments. Two of the previously known species are newly reported from the Gulf of Mexico.

PRINCIPAL DIAGNOSTIC CHARACTERS

The two main subfamilies of sabellids, the Fabriciinae and the Sabellinae, are distinguished mainly on the basis of the thoracic neurosetae. The Fabriciinae have acicular uncini, i.e. the handles are long and gently curved (Figure 54-10f), and companion setae are never present. The Sabellinae have avicular uncini in which the handles are long or short, but always at a sharp angle to the neck (Figure 54-22f) except in the genus Potamethus, in which the thoracic uncini have long, gently curved handles (Figure 54-28h). Companion setae of various forms (Figures 54-20h, 22e, 32e, 36f) are present in Potamethus and many other genera of the Sabellinae.

The Branchial Crown.

Several features of the branchial crown have generic significance. The branchial lobes are usually semicircular, but may be spiralled, as in Bispira and several other genera. The radioles are partially united by a membrane in certain genera including Chone. Branchial lobes are usually about equal in size, but in a few genera such as Spirographis, one lobe may have many more radioles than the other. The numbers of pairs of radioles are important generic characters in some genera of the Fabriciinae such as Fabricia. Numbers of pairs of radioles vary within narrow limits in some genera such as Hypsicomus; in other genera the number of pairs may be of little significance, varying with the size of the worm. If eyes are present, their size, shape and location on the radioles are generally important at the species level, particularly in Megalomma, Potamilla and Sabella. The length and shape of the radiole tips may help to separate species of Chone. The shapes of small projections known as stylodes on the external sides of the radioles of Branchiomma are important in separating species. Schizobranchia has dichotomously divided radioles.

The Collar.

The general degree of development of the collar and the number of collar lobes are in some cases important as generic characters; however, features of the collar are usually more important at the specific level. The height of the collar relative to the branchial basis, and the point of insertion of the collar setae, have been used to separate species of Chone and some other genera. The occurrence of the collar setae in long rows rather than in tufts distinguishes Hypsicomus from other genera.

The Thorax.

The number of thoracic setigers is occasionally important at either the generic or specific levels, although variation in this number is common in many species, often due to cropping and subsequent regeneration. The usual number of thoracic setigers is eight or less, and in some genera this does not vary except for cropping. Characteristics of the thoracic setae are important at all taxonomic levels within the family. The shape of the thoracic uncini has already been discussed with respect to subfamily designation; i.e., acicular in the Fabriciinae, avicular in the Sabellinae. The length of the handles of the thoracic uncini may be an important generic character (as in Potamethus). The presence of neuropodial companion setae characterizes about two-thirds of the genera of the Sabellinae. Notopodial paleae are present in many genera. The long notopodial limbate setae (upper thoracic setae) generally vary little among taxa, but the shapes of the lower thoracic setae are important in separating species. The shapes of the neuropodial companion setae can aid in separating species of certain genera, particularly Sabella.

Ventral shields (Figure 54-24d) commonly occur in the Sabellinae, but are not universal among the Fabriciinae. The presence of ventral shields in the anterior thorax can help to distinguish some species of Chone and Euchone (see Banse, 1972b). Members of some genera of the Fabriciinae, such as Chone and Euchone, have a distinct glandular ring around setiger 2.

The Abdomen.

The number of abdominal setigers is fairly constant in some of the smaller members of the Fabriciinae, as in some species of Euchone, Fabricia and Fabriciola, but otherwise varies with the size of the worm. The posterior setigers are modified to form a ventral depression (Figure 54-2a) in Euchone; the number of setigers involved may be used as a specific character. The abdominal uncini vary somewhat among genera, particularly in the Fabriciinae; e.g., they have short handles (Figure 54-12g,h) in Dialychone and long handles (Figure 54-14f,g) in Jasmineira. The abdominal neurosetae are generally limbate setae, but their arrangement may be of taxonomic value. Some species of Hypsicomus have both paleae (Figure 54-20j) and capillary neurosetae. The pygidium of sabellids is generally unremarkable.

Staining Patterns.

Banse (1970, 1972b) used staining patterns in methyl green to aid in distinguishing species of Chone and Euchone. Glandular areas of the collar, ventral thorax, parapodia, abdomen, and particularly the ventral shields (if present) readily accept stain. According to Banse, species-specific patterns can be discerned. Staining techniques were tried on most species in the present study, but the results generally were ambiguous. In most cases, staining patterns varied as much within as among species. Staining did help to differentiate the two species of Chone reported herein, and proved marginally useful in separating the genera Dialychone and Jasmineira, and the three species of Euchone.

Body length was measured between the tips of the radioles and pygidium. All illustrations were taken from Gulf of Mexico BLM-OCS specimens except as noted.

BIOLOGICAL NOTES

Sabellids are common worldwide from all depths. The family is not exclusively marine; some taxa, such as Manayunkia, are known from brackish water and freshwater lakes. Most sabellid species construct permanent tubes covered with mud, sand or shell particles, either attached to rocks, coral, or any hard substrate, or buried in the sediment. Some species bore holes in coral (Day, 1967:753). Smaller members of the Fabriciinae may construct temporary tubes and move around actively, but most species are sessile (Fauchald, 1977a:135). The larger species are often brightly and variously colored. They are common and conspicuous on coral reefs.

During feeding, the branchial crown is spread to form a funnel or plume for filter-feeding. Ciliary movements on the pinnules set up water currents across the radioles. Food particles are trapped and moved via cilia down the central channels of the radioles to the palps and lips around the mouth, where particle selection takes place (see Fauchald and Jumars, 1979:243). Particle selection is apparently size-dependent, with the smallest particles consumed as food, and larger particles incorporated into the tube or rejected. Surface deposit-feeding by sweeping or trailing the radioles across the sediment may be an alternative feeding mode in some of the Fabriciinae, particularly fresh and brackish water forms.

The branchial crown also serves an important respiratory function in sabellids having tubes closed at the posterior end (Fauchald and Jumars, 1979:244). The respiratory role of the crown is less significant if the tubes are open at both ends, allowing irrigation currents to flow in both directions.

Light receptors on the radioles along with giant nerve axons allow rapid withdrawal of the body into the tube in the event of perceived danger. This is responsible for the "shadow reflex" commonly observed in sabellids (Dales, 1963). Motile species crawl backwards and often have eyes on the pygidium.

Asexual reproduction and hermaphroditism are known in sabellids, as well as dioecious sexual reproduction (Schroeder and Hermans, 1975). Some species, such as Chone teres, follow a lunar spawning cycle. Fertilization is generally external, followed by pelagic larval development (Pettibone, 1982). Brooding of eggs has been reported in the Fabriciinae and in a few species of Potamilla and Potamethus.

SPECIES OF SABELLIDAE RECORDED FROM GULF OF MEXICO BLM-OCS PROGRAMS

	Page
Euchone cf. southerni Banse, 1970	54-6
Euchone cf. incolor Hartman, 1965	54-9
Euchone sp. A	54-11
Chone cf. americana Day, 1973	54-12
Chone sp. A	54-15
Dialychone sp. A	54-17
Jasmineira cf. pacifica Annenkova, 1937	54-19
Fabriciola trilobata Fitzhugh, 1983	54-20
Fabricia sp. A	54-24
Hypsicomus phaeotaenia (Schmarda, 1861)	54-26

Megalomma bioculatum Ehlers, 1887 54-27
Megalomma sp. A 54-30
Megalomma sp. B 54-32
Potamethus sp. A 54-34
Potamilla cf. *reniformis* (Müller, 1771) 54-36
Sabella sp. A 54-38
Sabella microphthalma Verrill, 1873 54-40
Sabella melanostigma Schmarda, 1861 54-42

Key to the Subfamilies and Genera of Sabellidae from the Gulf of Mexico BLM-OCS Programs

1a. Uncini of abdominal setigers in long rows nearly encircling body (subfamily **Myxicolinae**). . . . . **Myxicola***
1b. Uncini of abdominal setigers on discrete tori not encircling body 2

2a. Thoracic neuropodia with acicular uncini having long, gently curved handles (Figure 54-6f); companion setae absent (subfamily **Fabriciinae**). 3
2b. Thoracic neuropodia usually with avicular uncini having long or short, sharply curved handles (Figures 54-22f, 36g); companion setae (Figures 54-20h, 22e, 32e, 36f) often present (subfamily **Sabellinae**) 8

3a. Abdomen with at least eight setigers. 4
3b. Abdomen with at most three setigers 7

4a. Last few abdominal setigers modified to form anal depression (Figure 54-2a). . . . . **Euchone**, p. 54-6
4b. Last few abdominal setigers not modified. 5

5a. Radioles united by a membrane (often torn). . . . .**Chone**, p. 54-12
5b. Radioles not united by a membrane 6

6a. Abdominal uncini short-handled (Figure 54-12g,h) . . . . . **Dialychone**, p. 54-17
6b. Abdominal uncini long-handled (Figure 54-14f,g). . . . . **Jasmineira**, p. 54-19

7a. Palps long, filamentous (Figure 54-16a). . . .**Fabriciola**, p. 54-20
7b. Palps short, not filamentous. . . . . **Fabricia**, p. 54-22

8a. Collar setae occurring in long rows (Figure 54-20a,c). . . . . **Hypsicomus**, p. 54-24
8b. Collar setae occurring in tufts 9

9a. Eyes of radioles compound, located subdistally (Figure 54-22a) . . . . . .**Megalomma**, p. 54-27
9b. Eyes of radioles, if present and compound, not located subdistally. 10

*Possibly represented in Gulf of Mexico BLM-OCS voucher collections by one juvenile specimen.

10a. Thoracic uncini with long, gently curved handles (Figure 54-28h) . . . . . **Potamethus**, p. 54-32
10b. Thoracic uncini with long or short, sharply bent handles (Figures 54-30h, 34f). 11

11a. Thoracic notosetae including long limbate setae and shorter paleae (Figure 54-30e,f). . . . . **Potamilla**, p. 54-34
11b. Thoracic notosetae including long and short limbate setae; paleae absent. . . . . .**Sabella**, p. 54-38

Genus **Euchone** Malmgren, 1865

TYPE SPECIES: Sabella analis Kröyer, 1856.
REFERENCES:
Fauvel, 1927:339.
Ushakov, 1955:418.
Day, 1967:774.
Banse, 1970:389; 1972b:481.
Hartmann-Schröder, 1971:520.
Fauchald, 1977a:138.
DIAGNOSIS: Thorax with eight and abdomen with few to numerous setigers. Branchial lobes semicircular; radioles sometimes united by a membrane. Collar well-developed. Setiger 2 with a postsetal glandular ring. Thoracic notosetae including limbate setae, paleae or subspatulate setae, and bayonet setae. Thoracic neuropodial uncini acicular, with long, gently curved handles. Abdominal notopodial uncini avicular, with square or rounded bases. Abdominal neurosetae limbate. Posterior setigers modified to form anal depression with lateral wings.

Key to the Gulf of Mexico BLM-OCS Species of Euchone

1a. Twelve abdominal setigers, last 4-5 forming anal depression (Figure 54-2a). . . . . **Euchone** cf. **southerni**, p. 54-6
1b. Eight to eleven abdominal setigers, last three forming anal depression (Figure 54-4a) 2

2a. Eight abdominal setigers; thoracic collar not incised midventrally (Figure 54-4a). . . . . **Euchone** cf. **incolor**, p. 54-9
2b. Ten or eleven abdominal setigers; thoracic collar incised midventrally (Figure 54-6b). . . . . **Euchone sp. A**, p. 54-11

Euchone cf. **southerni** Banse, 1970
Figures 54-1, 2a-i

Euchone southerni Banse, 1970:401.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 5D-7/81 (1 spec., USNM 90359); MAFLA 2212K-2/78 (1 spec., USNM 90360), 2313G-11/77 (1 spec.), 2644D-9/75 (1 spec.), 2645-11/77 (1 spec., USNM 90358).

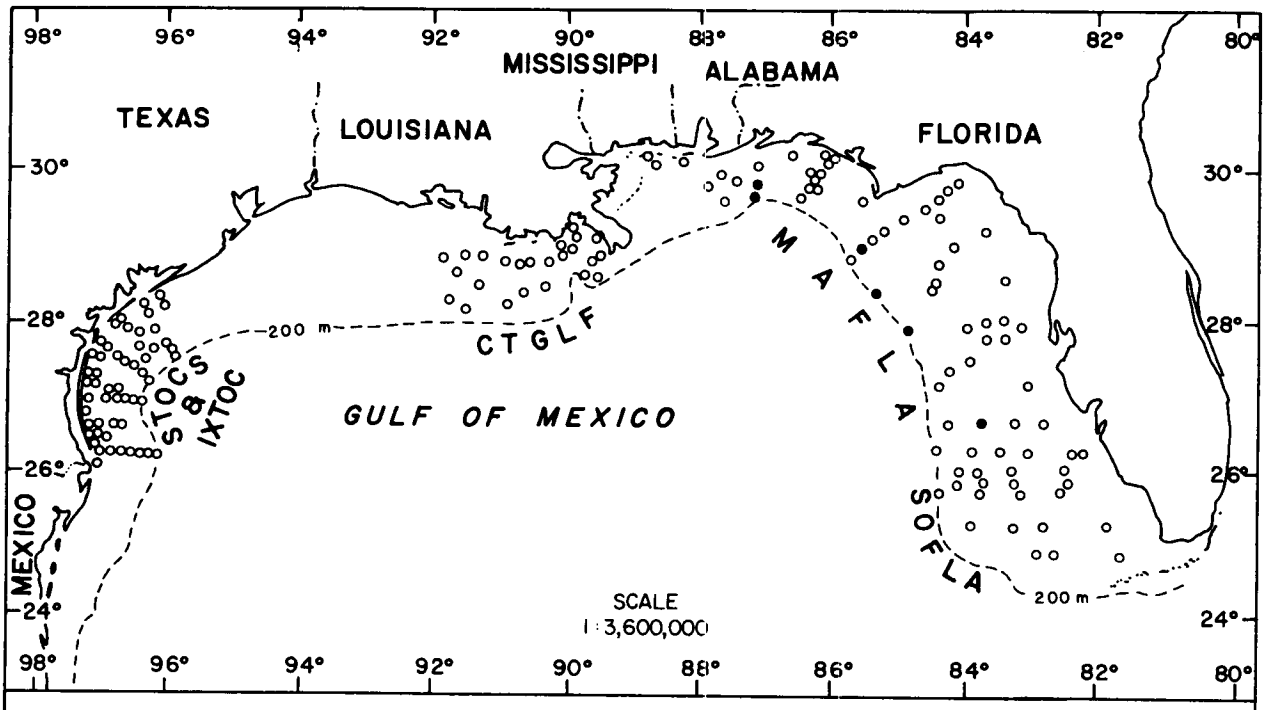

Figure 54-1. Distribution of Euchone cf. southerni on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

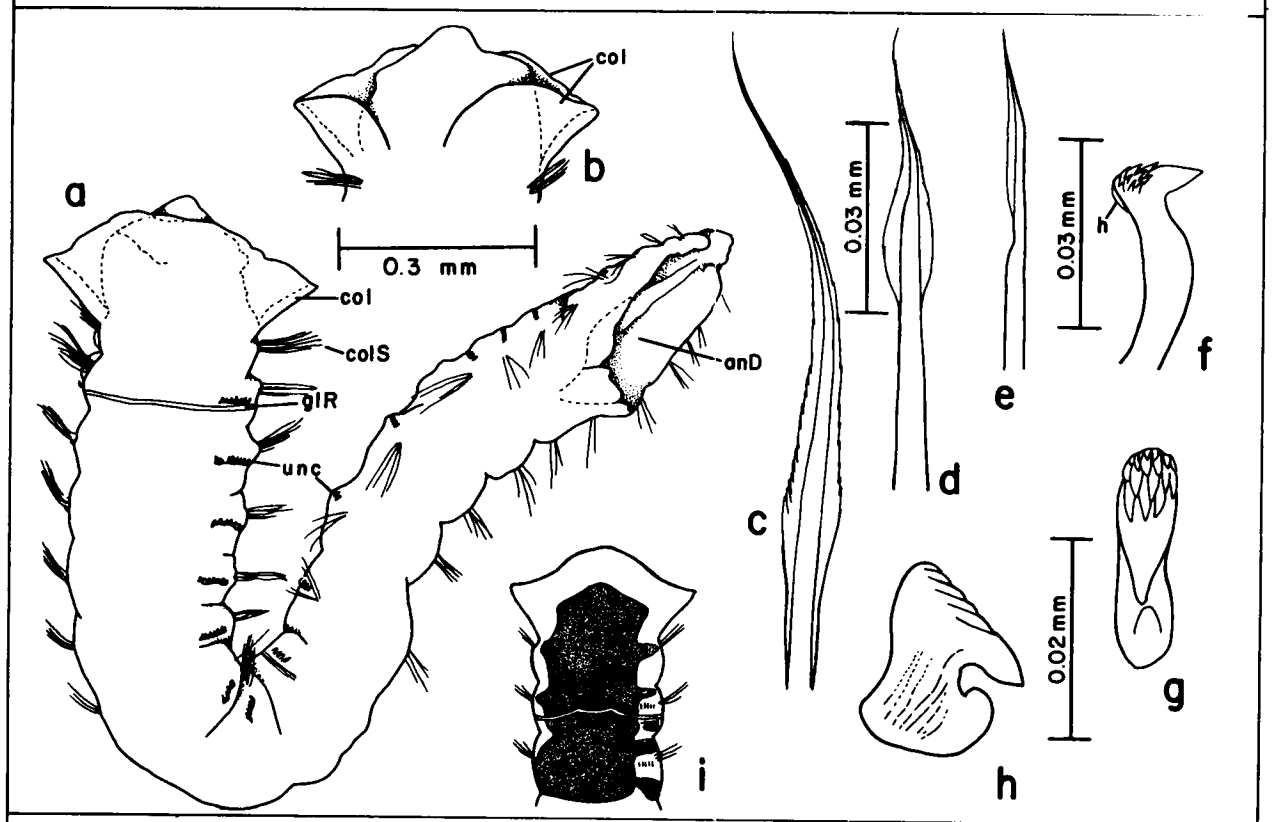

Figure 54-2. Euchone cf. southerni: a, whole worm (radioles not shown); b, collar, dorsal view; c, thoracic limbate notoseta; d, thoracic subspatulate notoseta; e, thoracic bayonet notoseta; f, thoracic uncinus; g, h, abdominal uncini; i, anterior ventral staining pattern (not to scale).

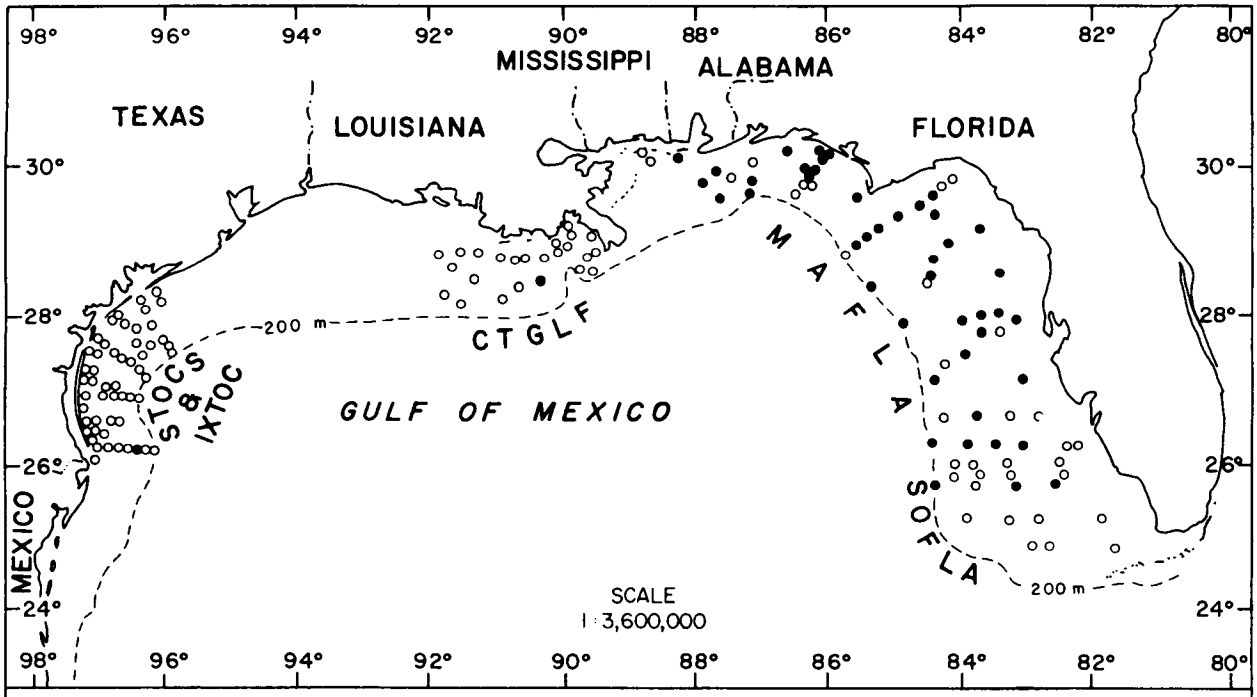

Figure 54-3. Distribution of Euchone cf. incolor on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

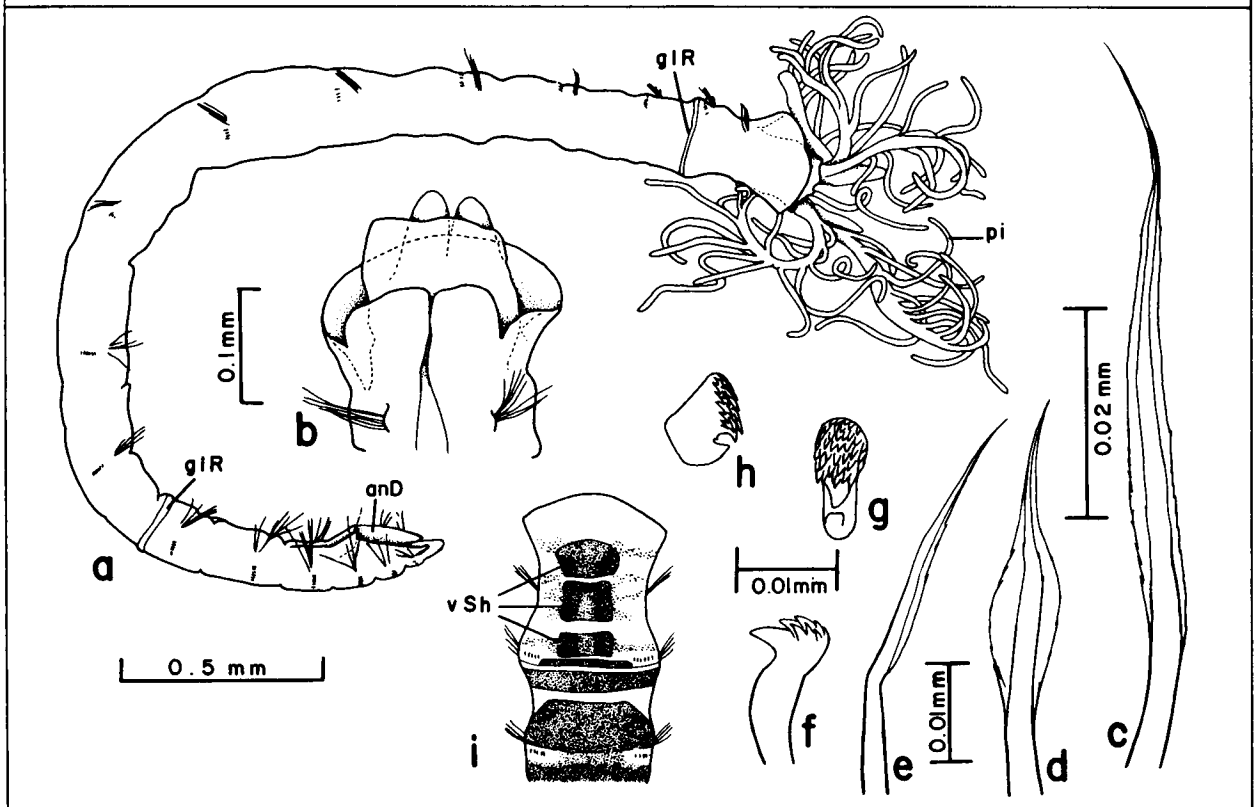

Figure 54-4. Euchone cf. incolor: a, whole worm, ventrolateral view anteriorly; b, collar, dorsal view; c, thoracic limbate notoseta; d, thoracic subspatulate notoseta; e, thoracic bayonet notoseta; f, thoracic uncinus; g, h, abdominal uncini; i, anterior ventral staining pattern (not to scale).

DESCRIPTION:
Length, to 3.2 mm; width, to 0.3 mm. Body small, slender. Radioles numbering four pairs; united by membrane up to half their length; tips filiform, longer than pinnules. Collar laterally expanded, well-separated dorsally, not incised ventrally, about same length as branchial basis (Figure 54-2a,b). Ventral shields absent. Collar setae including limbate setae and slightly shorter bayonet setae. Thoracic notosetae including long limbate setae (Figure 54-2c), subspatulate setae (Figure 54-2d), and short bayonet setae (Figure 54-2e). Thoracic neuropodia with 3-8 acicular uncini having long, curved handles and small, closely appressed hood on convex side of apex (Figure 54-2f). Abdomen with 12 setigers, last 4-5 forming anal depression (Figure 54-2a). Abdominal notopodial uncini avicular with crest of teeth in three or more columns above main fang (Figure 54-2g), bases square (Figure 54-2h). Abdominal neurosetae long, narrowly limbate. Pygidium conical, sometimes with faint eyespots. One specimen with eggs from setiger 4 through several anterior abdominal segments. Thorax staining dark ventrally, without inter- or intrasegmental demarcations (Figure 54-2i). Abdomen staining with two transverse bands around each segment.
REMARKS: These specimens differ from the account of E. southerni given by Banse, primarily in displaying a more extensive staining pattern on both the abdomen and the ventral thorax, and in lacking ventral shields. Gulf of Mexico specimens exhibit characters of both the stem species and the subspecies E. s. incisa Banse (1970:402).
PREVIOUSLY REPORTED HABITAT: 2-5 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered stations in eastern Gulf (Figure 54-1); deep water, 75-189 m; coarse to fine sand, silty very fine sand, clayey sandy silt.
DISTRIBUTION: Ireland, ?Gulf of Mexico.

Euchone cf. **incolor** Hartman, 1965
Figures 54-3, 4a-i

Euchone incolor Hartman, 1965:231, pl. 51, figs. a-d; 1966a:203; 1969:681, figs. 1-4.
Euchone incolor--Banse, 1970:393, fig. 2a-f.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 5D-7/81 (5 spec., USNM 90361); MAFLA 2211H-7/76 (4 spec.), 2422C-7/76 (2 spec.), 2422J-7/76 (1 spec.), 2423B-7/76 (3 spec.), 2529C-6/75 (1 spec.), 2531F-6/75 (1 spec.); CTGLF 03-5/78 (1 spec.); STOCS 6/IV-2 S/F/76 (2 spec., USNM 90362).
DESCRIPTION:
Length, to 3.2 mm (previously reported to 8.5 mm); width, to 0.2 mm (previously reported to 0.8 mm). Body small, slender. Radioles numbering three pairs, with short tips and long pinnules; connecting membrane absent. Collar shorter than branchial basis, produced ventrally, separated middorsally, deeply notched dorsolaterally (Figure 54-4a,b). Small ventral shields present anteriorly. Collar setae including limbate setae and slightly shorter bayonet setae. Thoracic notosetae including long limbate setae (Figure 54-4c), subspatulate setae (Figure 54-4d), and short bayonet setae (Figure 54-4e). Thoracic neuropodia with 2-5 acicular uncini (Figure 54-4f). Abdomen with eight setigers,

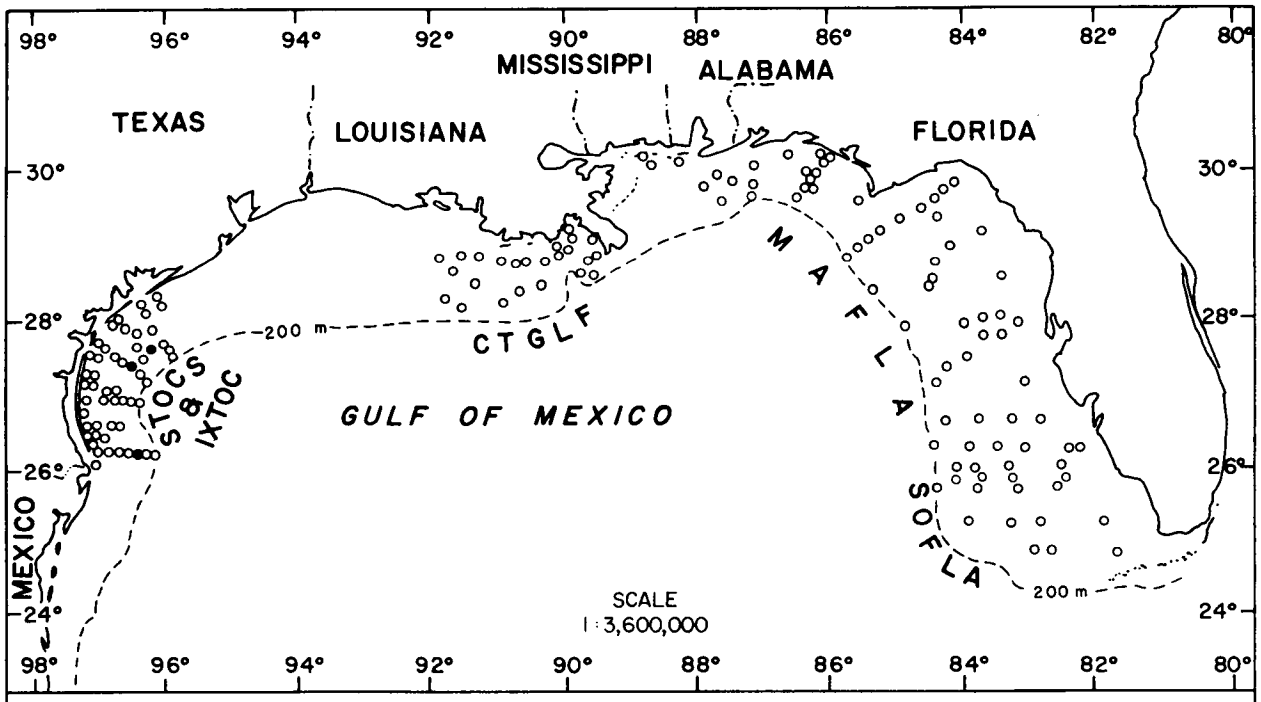

Figure 54-5. Distribution of Euchone sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

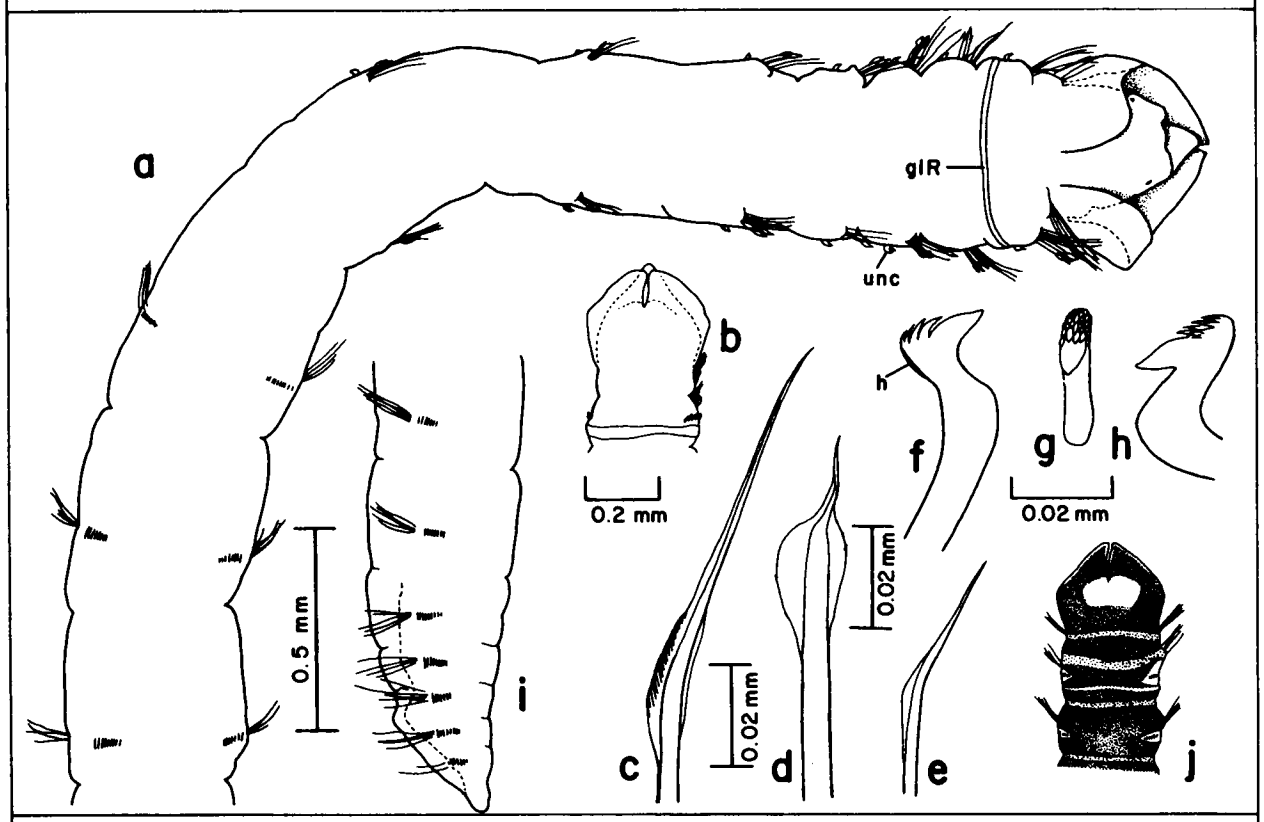

Figure 54-6. Euchone sp. A: a, anterior end, dorsal view; b, anterior end, ventral view; c, thoracic limbate notoseta; d, thoracic subspatulate seta; e, thoracic bayonet seta; f, thoracic uncinus; g, h, abdominal uncini; i, posterior end, lateral view; j, anterior ventral staining pattern (not to scale).

last three forming anal depression (Figure 54-4a). Third abdominal setiger with presetal glandular ring. Abdominal notopodial uncini small, square, with several rows of numerous teeth above main fang (Figure 54-4g,h). Abdominal neurosetae long, narrowly limbate. Pygidium short, conical. Four specimens with eggs from setigers 6 to 9-11. Ventral shields present anteriorly but poorly developed, staining dark (Figure 54-4i); abdomen staining with two broad transverse bands per segment. Pygidium staining dark.
REMARKS: These specimens differ from previous accounts of E. incolor in having ventral shields anteriorly, and in having deep dorsolateral notches in the collar. E. incolor is the only species of the genus known to have a presetal glandular ring on the third abdominal setiger.
PREVIOUSLY REPORTED HABITAT: 17.5-2500 m; silty and sandy mud, broken shells, muddy sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Numerous records throughout northern Gulf (Figure 54-3); 19-189 m; coarse to fine-very fine sand, silty fine to very fine sand, clayey and sandy silt, sandy clay.
DISTRIBUTION: New England, Bermuda, ?Gulf of Mexico, Bering Sea, British Columbia to Gulf of California.

Euchone sp. A
Figures 54-5, 6a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
STOCS 5/II-4 8/76 (1 spec., USNM 90420), 6/IV-2 S/F/76 (1 spec., USNM 89421), HR1-2 F/76 (1 spec., USNM 90422).
DESCRIPTION:
Length, 4.9+ mm; width, to 0.4 mm. Body fairly small, slender. Radioles missing from all specimens. Collar shorter than branchial basis dorsally but not ventrally; incised midventrally (Figure 54-6a,b). Small eyespots present on peristomium. Ventral shields absent. Collar setae including limbate setae and slightly shorter bayonet setae. Thoracic notosetae including long limbate setae (Figure 54-6c), subspatulate setae (Figure 54-6d), and short bayonet setae (Figure 54-6e). Thoracic neuropodia with 2-7 acicular uncini having closely appressed hood on convex side of apex (Figure 54-6f). Abdomen with 10-11 setigers, last three forming anal depression. Abdominal notopodial uncini with long necks, posterior prolongation, and crest of small teeth above main fang (Figure 54-6g,h). Abdominal neurosetae long, narrowly limbate. Pygidium short, conical (Figure 54-6i). One specimen with eggs in coelom of setigers 6-11. Ventral thorax staining dark anteriorly except for narrow transverse bands including glandular ring, and broad area on collar below midventral incision (Figure 54-6j); abdominal segments staining irregularly.
REMARKS: Banse (1970) reviewed all known species of Euchone having 12 or fewer abdominal segments preceding the anal depression. Of these, none has 7-8 anterior abdominal segments followed by three depression segments. Euchone sp. A resembles E. southerni incisa Banse, 1970, in having a ventrally incised collar and eight anterior abdominal segments. It differs from the latter in having the collar shorter dorsally than ventrally; in having three, rather than five, anal depression segments; and in having differently shaped abdominal uncini.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off southern Texas (Figure 54-5); moderate depths, 65-78 m; clayey sand, clayey silt.

Genus **Chone** Kröyer, 1856

TYPE SPECIES: Chone infundibuliformis Kröyer, 1856.
REFERENCES:
Fauvel, 1927:334.
Ushakov, 1955:417.
Day, 1967:776.
Hartmann-Schröder, 1971:517.
Banse, 1972b:460.
Fauchald, 1977a:138.
DIAGNOSIS: Thorax with eight and abdomen with numerous setigers. Branchial lobes semicircular; radioles united by a membrane. Collar well-developed. Setiger 2 with a postsetal glandular ring. Thoracic notosetae including limbate setae, paleae or subspatulate setae, and bayonet setae. Thoracic neuropodial uncini acicular, with long, gently curved handles. Abdominal notopodial uncini avicular, with square or rounded bases. Abdominal neurosetae limbate. Posterior setigers not modified.

Key to the Gulf of Mexico BLM-OCS Species of Chone

1a. Collar usually shorter than branchial basis (Figure 54-8a); abdomen with two widely separated transverse staining bands per segment (Figure 54-8k,m). . . . . **Chone** cf. **americana**, p. 54-12

1b. Collar usually as long as or longer than branchial basis, at least ventrally (Figure 54-10a); abdomen with one broad or two narrowly separated transverse staining bands per segment (Figure 54-10k,m) . . . . . .**Chone sp. A**, p. 54-15

Chone cf. **americana** Day, 1973
Figures 54-7, 8a-m

Chone americana Day, 1973:129, fig. 17a-l.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12D-11/80 (1 spec., USNM 90365), 16B-11/80 (2 spec., USNM 90363); MAFLA 6F-5/74 (1 spec.), 2207J-8/77 (2 spec.), 2207K-8/77 (1 spec.), 2208I-8/77 (1 spec.), 2209D-7/76 (4 spec.), 2209E-8/77 (1 spec.), 2209J-8/77 (1 spec.), 2209J-2/78 (1 spec.), 2211J-8/77 (2 spec.), 2211D-2/78 (2 spec.), 2313J-2/78 (3 spec.), 2316G-8/76 (1 spec.), 2318C-8/76 (1 spec.), 2422E-7/76 (2 spec.), 2422F-7/76 (1 spec.), 2422G-7/76 (1 spec.), 2423E-7/76 (1 spec.), 2531F-6/75 (2 spec., USNM 90366), 2531E-11/77 (1 spec.), 2854D-8/77 (1 spec., USNM 90364); IXTOC S50-4 11/79 (1 spec., USNM 90367), S53-5 11/79 (1 spec., USNM 90369).
Supplementary Material:
North Carolina--off Beaufort, 30°20'N, 75°57'W, 80 m, Apr. 1965, sandy mud, J. H. Day coll./ID. (USNM 43137, 50+ paratypes).

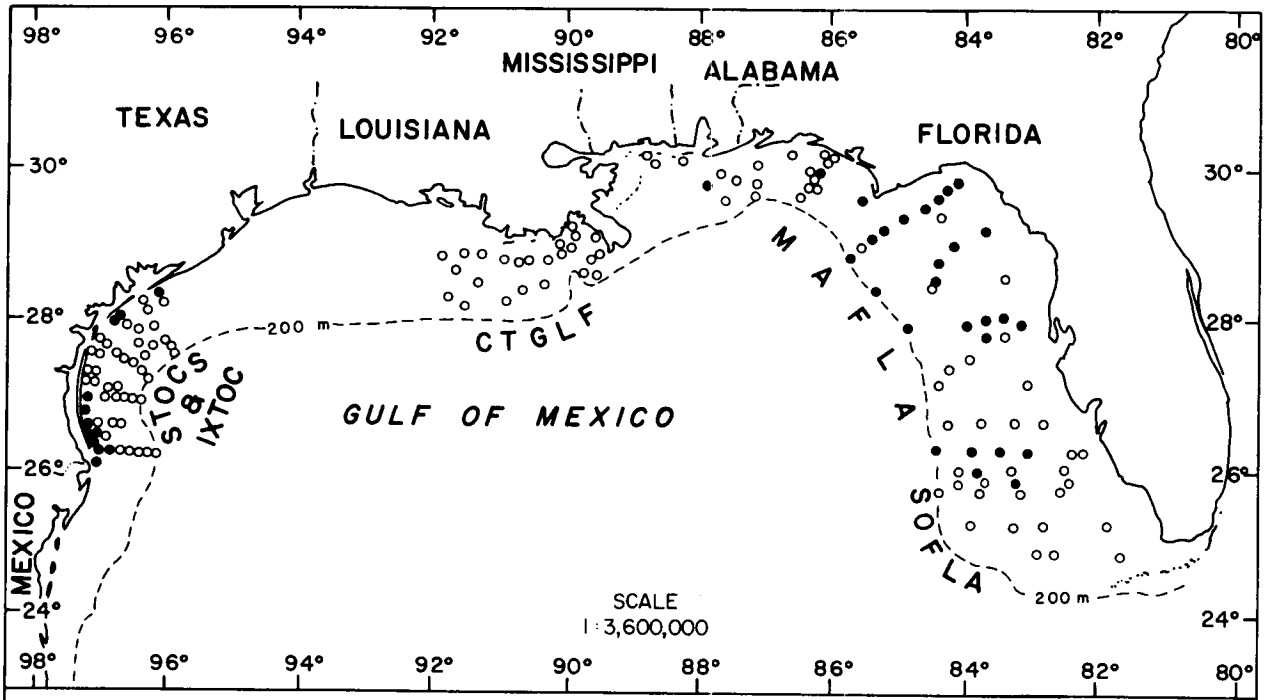

Figure 54-7. Distribution of Chone cf. americana on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

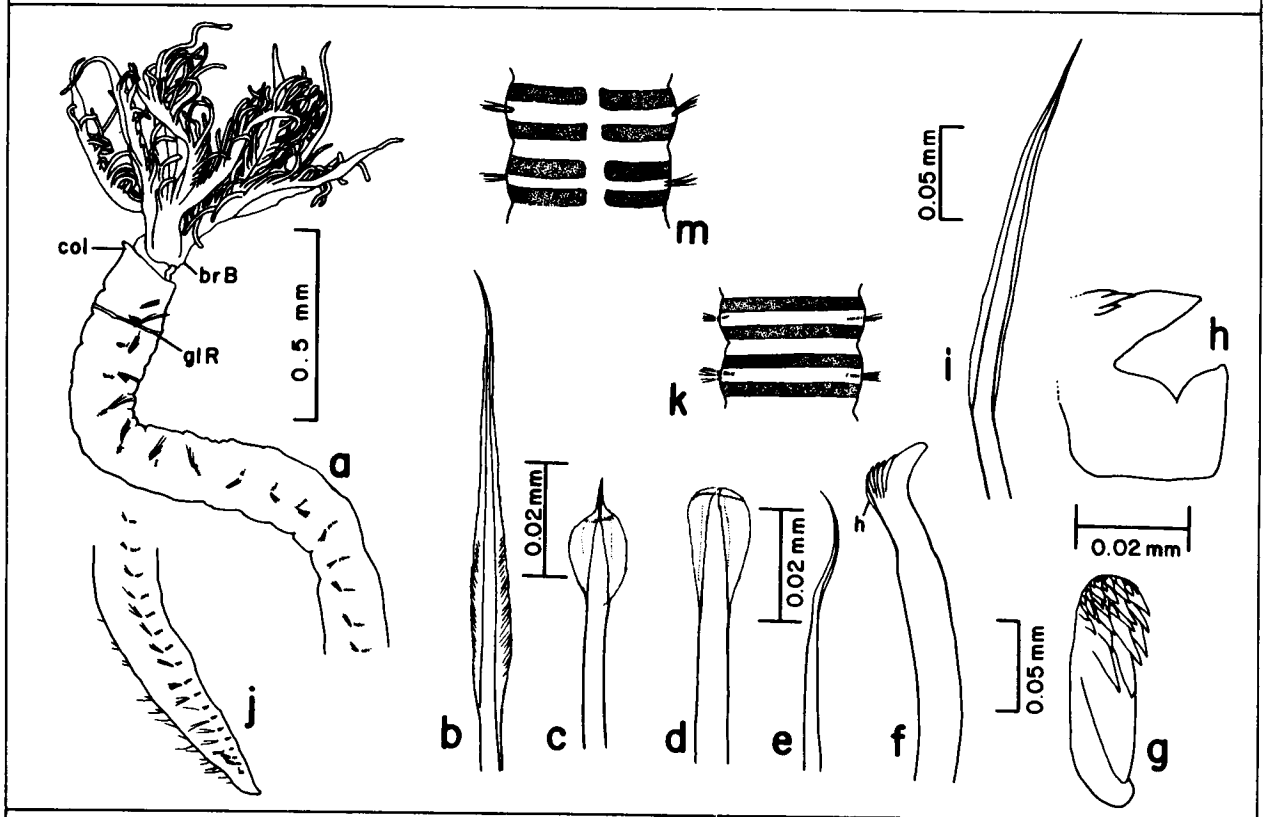

Figure 54-8. Chone cf. americana: a, anterior end, lateral view; b, thoracic limbate notoseta; c, d, thoracic notopodial paleae; e, thoracic bayonet notoseta; f, thoracic uncinus; g, h, abdominal uncini; i, abdominal neuroseta; j, posterior end, lateral view; k, midabdominal staining pattern, dorsal view; m, same, ventral view (k, m not to scale).

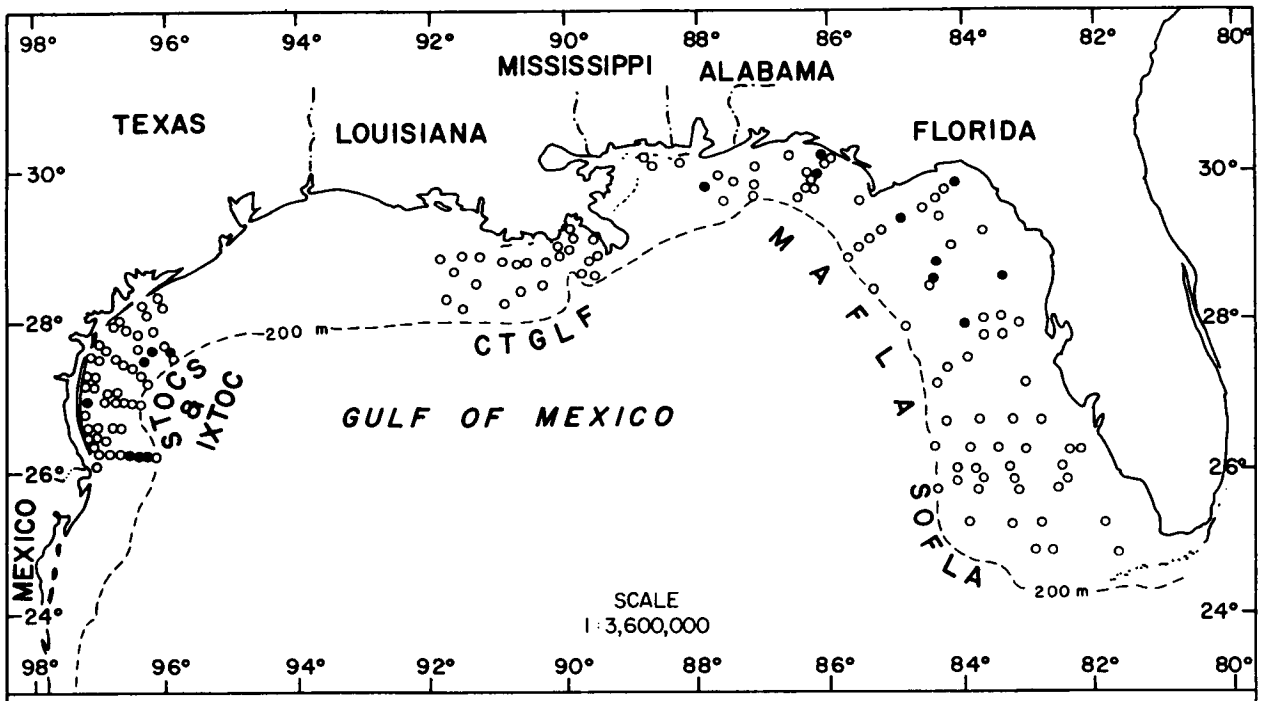

Figure 54-9. Distribution of Chone sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

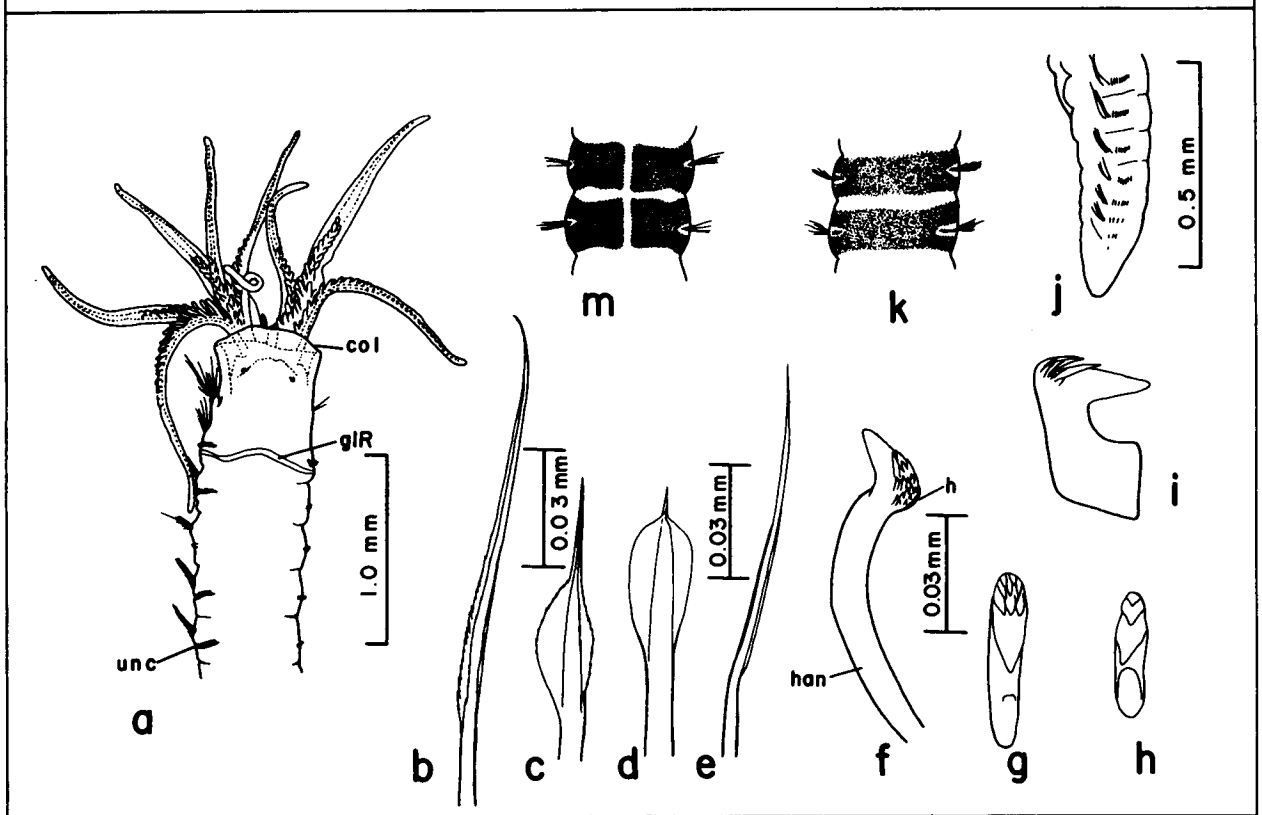

Figure 54-10. Chone sp. A: a, anterior end, ventral view (radioles regenerating); b, thoracic limbate notoseta; c, thoracic subspatulate notoseta; d, thoracic notopodial palea; e, thoracic bayonet notoseta; f, thoracic uncinus; g-i, abdominal uncini; j, posterior end, lateral view; k, abdominal staining pattern, dorsal view; m, same, ventral view (k, m not to scale).

DESCRIPTION:
Length, to 40 mm (previously reported to 26 mm); width, to 1.8 mm. Body fairly small, slender, smoothly tapered posteriorly. Radioles numbering 4-10 pairs; united by membrane up to four-fifths their length; with long, tapering, often filiform tips. Up to two nude ventral filaments present. Ventral shields absent. Collar low, shorter than branchial basis (Figure 54-8a); margin smooth, sometimes produced or slightly notched ventrally. Collar setae inserted at same level as and about same size as following thoracic notosetae. Thoracic notosetae including 2-7 long limbate setae (Figure 54-8b), 2-8 paleae having mucronate or truncate tips (Figure 54-8c,d), and 2-8 short bayonet setae (Figure 54-8e). Thoracic neuropodia with up to 20 acicular uncini having closely appressed hood on convex side of apex and slight expansion in shaft below apex (Figure 54-8f). Abdomen with 12 to about 50 segments. Abdominal uncini avicular with crest of small teeth above large main fang (Figure 54-8g), bases square (Figure 54-8h). Abdominal neurosetae limbate, slightly geniculate (Figure 54-8i), becoming longer posteriorly. Pygidium conical (Figure 54-8j), with or without short caudal filament. One specimen with eggs from setiger 4 through the anterior abdomen. Thoracic staining pattern somewhat variable but abdomen always with two widely separated transverse staining bands per segment (Figure 54-8k,m).
REMARKS: The thoracic spatulate notosetae appear to change with age. In juveniles these setae are subspatulate. The tips become narrower and smaller (mucronate) with increasing size of the specimen, eventually becoming minute or lost altogether. The paratypes of C. americana differ from Gulf of Mexico BLM-OCS specimens in having abdominal uncini mostly with 2-3 columns rather than a crest of small teeth above the main fang.
PREVIOUSLY REPORTED HABITAT: 19-160 m; sandy mud.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in eastern and western Gulf (Figure 54-7); 4.5-189 m; coarse to fine-very fine sand, silty fine to very fine sand, clayey sandy silt, clayey sand.
DISTRIBUTION: North Carolina, ?Gulf of Mexico.

Chone sp. A
Figures 54-9, 10a-m

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211C-7/76 (1 spec.), 2211J-7/76 (1 spec.), 2211C-8/77 (2 spec., USNM 90374), 2315A-11/77 (3 spec.), 2423K-8/77 (1 spec., USNM 90373), 2528F-7/76 (1 spec.), 2528J-2/78 (1 spec.), 2528K-2/78 (1 spec.), 2531F-6/75 (1 spec.), 2531G-2/78 (1 spec.), 2531H-2/78 (2 spec.), 2640G-11/77 (2 spec.), 2852E-8/77 (1 spec.); STOCS HR1-1 3/76 (3 spec., USNM 90379), HR1-2 3/76 (1 spec., USNM 90378), HR1-5 3/76 (1 spec., USNM 90371), HR1-6 7/76 (2 spec., USNM 90370), HR1-4 S/F/76 (1 spec., USNM 90381), HR1-2 F/76 (1 spec., USNM 90372), HR1-6 F/76 (1 spec., USNM 90369), HR1-1 11/76 (1 spec., USNM 90380), HR1-4 11/76 (3 spec., USNM 90382), SB3-3 Sp/76 (1 spec., USNM 90377), SB3-1 8/76 (4 spec., USNM 90376), SB4-2 12/76 (1 spec., USNM 90375).
DESCRIPTION:
Length, to 28.4 mm; width, to 2.9 mm. Body fairly short, broad, smoothly tapered posteriorly. Radioles usually long, numbering 5-10 pairs; united by membrane up to four-fifths their length; with fairly long,

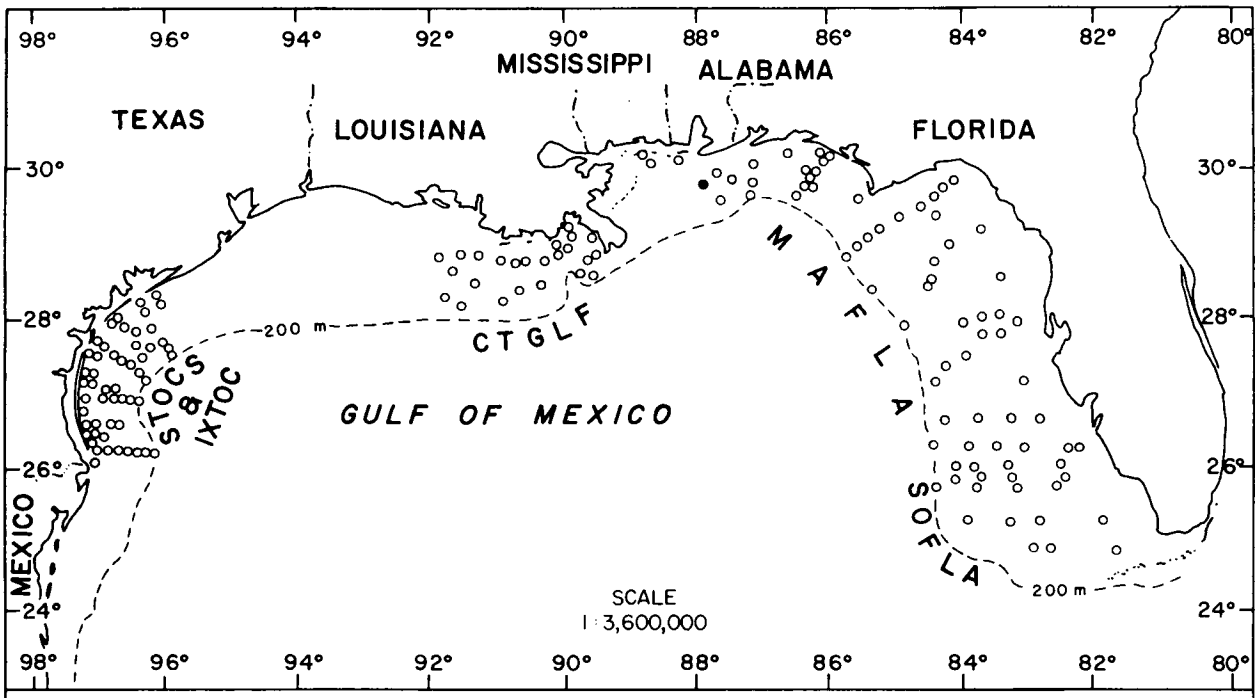

Figure 54-11. Distribution of Dialychone sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

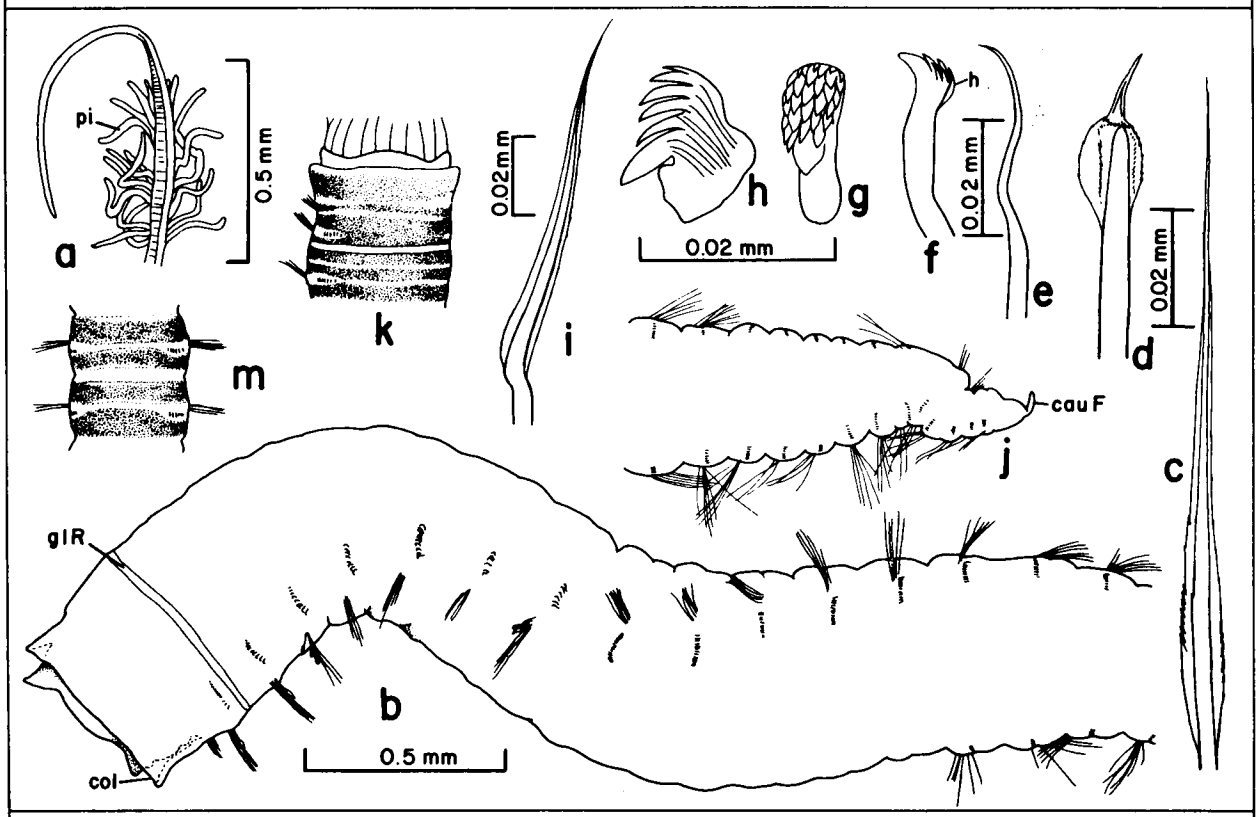

Figure 54-12. Dialychone sp. A: a, tip of radiole; b, anterior end (radioles not shown); c, thoracic limbate notoseta; d, thoracic notopodial palea; e, thoracic bayonet notoseta; f, thoracic uncinus; g, h, abdominal uncini; i, abdominal neuroseta; j, posterior end, dorsolateral view; k, anterior thoracic staining pattern, ventral view; m, abdominal staining pattern, dorsal view (k, m not to scale).

tapered to filiform tips. Up to seven nude ventral filaments present. Collar fairly high, sometimes slightly produced ventrally, usually covering branchial basis (Figure 54-10a). Peristomium with two small eyespots. Ventral shields absent. Collar setae including limbate setae and slightly shorter bayonet setae; inserted at same level as and about same size as following thoracic notosetae. Thoracic notosetae including long limbate setae (Figure 54-10b), subspatulate setae (Figure 54-10c) or paleae (Figure 54-10d), and moderately long bayonet setae (Figure 54-10e). Thoracic neuropodia with up to 21 acicular uncini having long, nearly straight to strongly curved handles and small, closely appressed hood on convex side of apex (Figure 54-10f). Abdomen with 19-36 setigers. Abdominal notopodial uncini avicular, with crest of small teeth in 1-3 columns above main fang (Figure 54-10g,h), bases square (Figure 54-10i). Abdominal neurosetae limbate, slightly geniculate, becoming longer posteriorly. Pygidium conical, without caudal filament (Figure 54-10j). Abdomen staining with single broad band or two narrowly separated bands per segment (Figure 54-10k,m); posterior end staining dark.
REMARKS: The distinctions between Chone sp. A and C. cf. americana are not clear cut in all specimens. These taxa may in fact represent varieties of the same species, or they may represent a suite of species with a mosaic of characters which are not easily separable. The paratypes of Chone americana seem to be intermediate in some respects between Gulf of Mexico BLM-OCS C. cf. americana and Chone sp. A. The collars of the paratypes are variable in relative length, the staining patterns in some cases are intermediate, and the abdominal uncini mostly have 2-3 columns of teeth above the main fang.
GULF OF MEXICO BLM-OCS OCCURRENCE: Fairly common in eastern and western Gulf (Figure 54-9); 10-100 m; coarse to medium-fine sand, silty fine sand, clayey sand, sandy and silty clay.

Genus **Dialychone** Claparède, 1870a

TYPE SPECIES: Dialychone acustica Claparede, 1870a.
REFERENCES:
Fauvel, 1927:333.
Fauchald, 1977a:138.
DIAGNOSIS: Thorax with eight and abdomen with numerous setigers. Branchial lobes semicircular; radioles not united by membrane. Collar well-developed. Thoracic notosetae including limbate setae and paleae. Thoracic neuropodial uncini acicular with long, gently curved handles. Abdominal notopodial uncini with short, square bases. Abdominal neurosetae limbate. Posterior setigers not modified.

Dialychone sp. A
Figures 54-11, 12a-m

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2640K-2/78 (1 spec., USNM 90383).
DESCRIPTION:
Length, 4.9 mm; width, 0.4 mm. Body small, smoothly tapered posteriorly. Radioles numbering seven pairs, with numerous short pinnules and long filiform tips (Figure 54-12a); connecting membrane absent. Collar

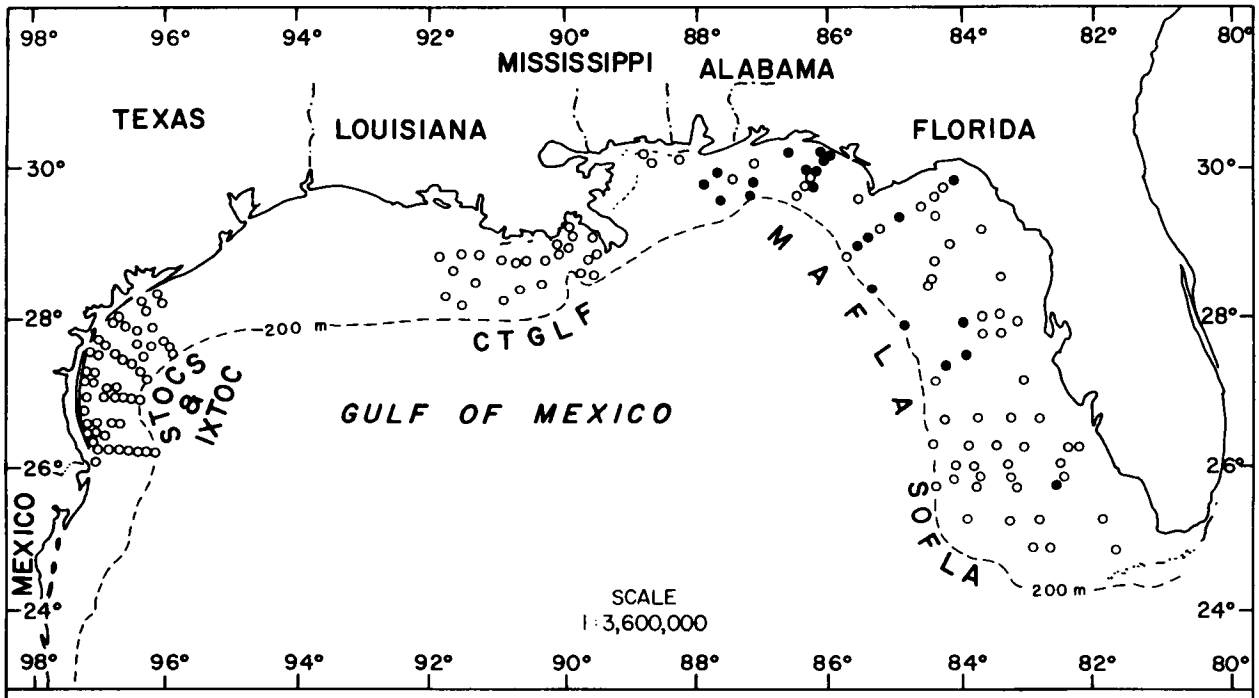

Figure 54-13. Distribution of Jasmineira cf. pacifica on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

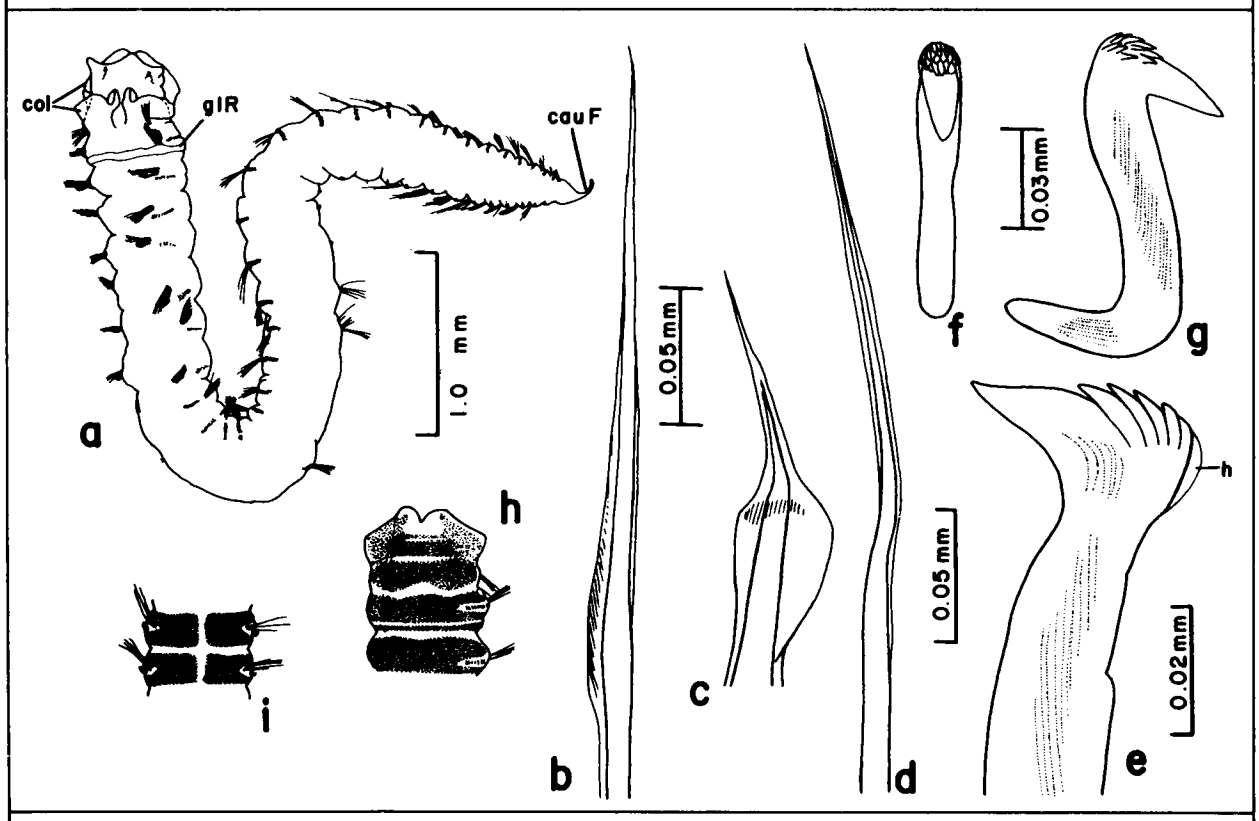

Figure 54-14. Jasmineira cf. pacifica: a, whole worm, dorsal view (radioles not shown); b, thoracic limbate notoseta; c, thoracic subspatulate seta; d, thoracic bayonet notoseta; e, thoracic uncinus; f, g, abdominal uncini; h, anterior thoracic staining pattern, ventral view; i, abdominal staining pattern, ventral view (h, i not to scale).

low, even, shorter than branchial basis (Figure 54-12b). Collar setae including limbate setae and slightly shorter bayonet setae; inserted at same level as following thoracic notosetae. Setiger 2 with postsetal glandular ring. Thoracic notosetae including long limbate setae (Figure 54-12c), paleae with mucronate tips (Figure 54-12d), and short bayonet setae (Figure 54-12e). Thoracic neuropodia with 6-9 acicular uncini having closely appressed hood on convex side of apex (Figure 54-12f). Abdomen with 22 setigers. Abdominal notopodial uncini with crest of small teeth above main fang (Figure 54-12g); bases short, square; lateral striations prominent (Figure 54-12h). Abdominal neurosetae limbate, slightly geniculate (Figure 54-12i). Pygidium conical, with short caudal filament (Figure 54-12j). Thorax and abdomen generally with two lightly staining bands per segment (Figure 54-12k,m).
REMARKS: Dialychone sp. A differs from the only known species of the genus, D. acustica, in having thoracic bayonet setae, fewer radioles and abdominal segments, and a shorter collar. The MAFLA specimen was originally referred to Jasmineira elegans.
GULF OF MEXICO BLM-OCS OCCURRENCE: Single record off Alabama (Figure 54-11); 35 m; medium sand.

Genus **Jasmineira** Langerhans, 1880

TYPE SPECIES: Jasmineira caudata Langerhans, 1880.
REFERENCES:
Fauvel, 1927:330.
Ushakov, 1955:417.
Hartman, 1965:232.
Day, 1967:779.
Hartmann-Schröder, 1971:512.
Fauchald, 1977a:139.
DIAGNOSIS: Thorax with eight and abdomen with numerous setigers. Branchial lobes semicircular; radioles not united by a membrane. Collar well-developed. Thoracic notosetae including limbate setae and paleae or subspatulate setae; bayonet setae sometimes present. Thoracic neuropodial uncini acicular, with long, gently curved handles. Abdominal notopodial uncini avicular, with long handles, often S-shaped. Abdominal neurosetae limbate. Posterior setigers usually not modified.

Jasmineira cf. **pacifica** Annenkova, 1937
Figures 54-13, 14a-i

Jasmineira pacifica--Ushakov, 1955:417, fig. 157I-K.
Jasmineira pacifica--Banse, 1979b:875, fig. 3.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211H-7/76 (1 spec.), 2313C-11/77 (1 spec.), 2313D-11/77 (1 spec., USNM 90384), 2313H-2/78 (1 spec.), 2313I-2/78 (1 spec.), 2531F-11/77 (2 spec., USNM 90385), 2531I-11/77 (2 spec., USNM 90386), 2534E-1/76 (1 spec.), 2643B-9/75 (1 spec.).
DESCRIPTION:
Length, 20.1+ mm (previously reported to 12 mm); width, to 2.2 mm (previously reported to 0.6 mm). Body slender, smoothly tapered

posteriorly. Radioles long, numbering about eight pairs, with several additional nude ventral filaments; tips and pinnules long, filiform. Peristomium with eyespots. Collar low, deeply separated and infolded middorsally (Figure 54-14a), higher and bilobed ventrally (Figure 54-14a,h). Ventral shields present but obscure. Collar setae including limbate setae and slightly shorter bayonet setae. Setiger 2 with postsetal glandular ring. Thoracic notosetae including long limbate setae (Figure 54-14b), subspatulate setae with long mucronate tips (Figure 54-14c); and fairly long bayonet setae (Figure 54-14d). Thoracic neuropodia with up to 16 acicular uncini having small, closely appressed hood on convex side of apex; handle below apex with slight constriction and swelling (Figure 54-14e). Abdomen with 20-27 setigers. Abdominal notopodial uncini S-shaped, with crest of small teeth above main fang; necks long, strongly curved basally, handles fairly long (Figure 54-14f,g). Abdominal neurosetae limbate. Pygidium conical, with slender caudal filament (Figure 54-14a). Thorax staining ventrally as shown in Figure 54-14h; not staining dorsally. Abdomen staining with single broad band per segment, split by midventral groove (Figure 54-14i).
REMARKS: Gulf of Mexico BLM-OCS specimens were originally referred to several other species of Jasmineira. These specimens differ from J. pacifica, as described by Banse (1979b), in that the dorsal margins of the collar leave exposed a considerable length of the peristomium, and the ventral collar margins barely cover the peristomium. In J. pacifica, the dorsal collar margins cover the peristomium and the ventral collar margins extend beyond the branchial basis.
PREVIOUSLY REPORTED HABITAT: 25-2900 m; sand, gravel with mud.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in eastern Gulf (Figure 54-13); 10-189 m; coarse to fine sand, silty fine to very fine sand, clayey sandy silt.
DISTRIBUTION: Sea of Japan, northeastern Pacific, ?Gulf of Mexico.

Genus **Fabriciola** Friedrich, 1939

TYPE SPECIES: Manayunkia pacifica Annenkova, 1934a.
REFERENCES:
Ushakov, 1955:416.
Banse, 1956b:429.
Day, 1967:781.
Hartmann-Schröder, 1971:514.
Fauchald, 1977a:139.
DIAGNOSIS: Thorax with eight and abdomen with three setigers. Three pairs of radioles, not united by membrane; pinnules long, all ending about same level; branchial hearts present. Palps paired, long, filamentous, without blood vessels. Collar poorly to well-developed. Peristomium and pygidium with paired eyespots. Thoracic notosetae including limbate and sometimes subspatulate setae. Thoracic neuropodial uncini acicular, with long, gently curved handles. Abdominal neurosetae slender, limbate.

Fabriciola trilobata Fitzhugh, 1983
Figures 54-15, 16a-g

Fabriciola trilobata Fitzhugh, 1983:276, figs. 1, 2, 3a-c.

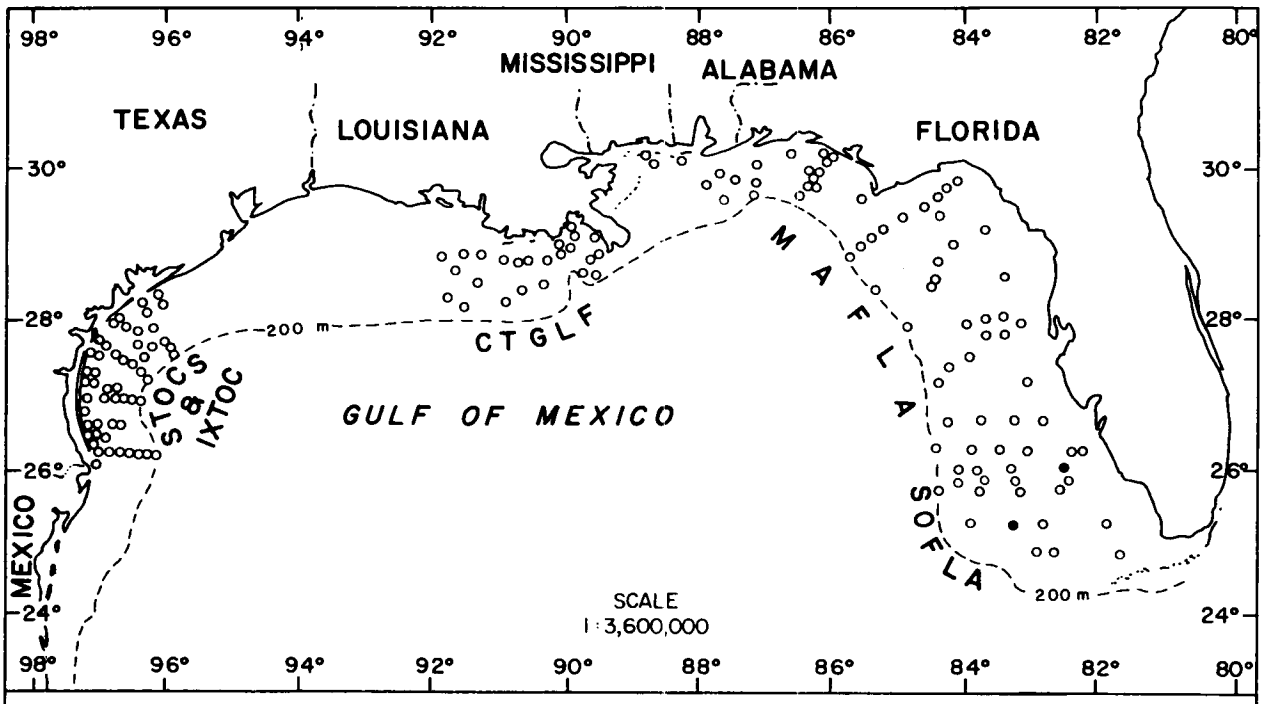

Figure 54-17. Distribution of Fabricia sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

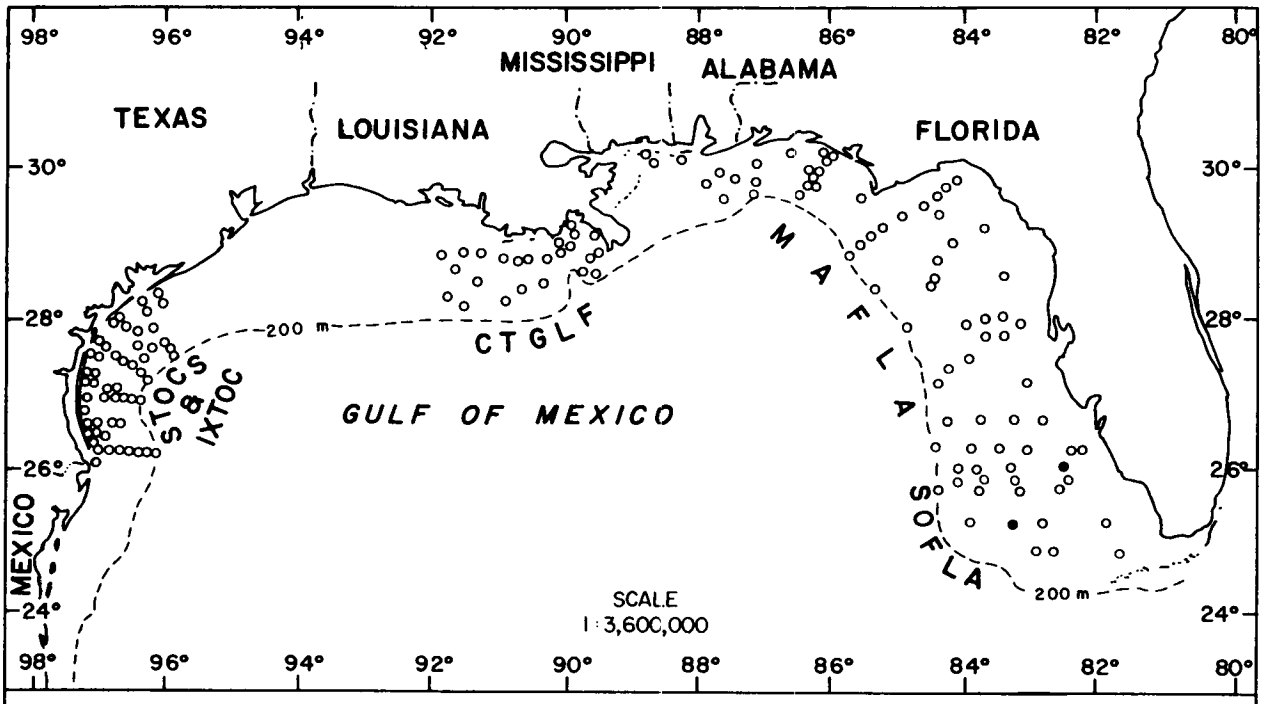

Figure 54-17. Distribution of Fabricia sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

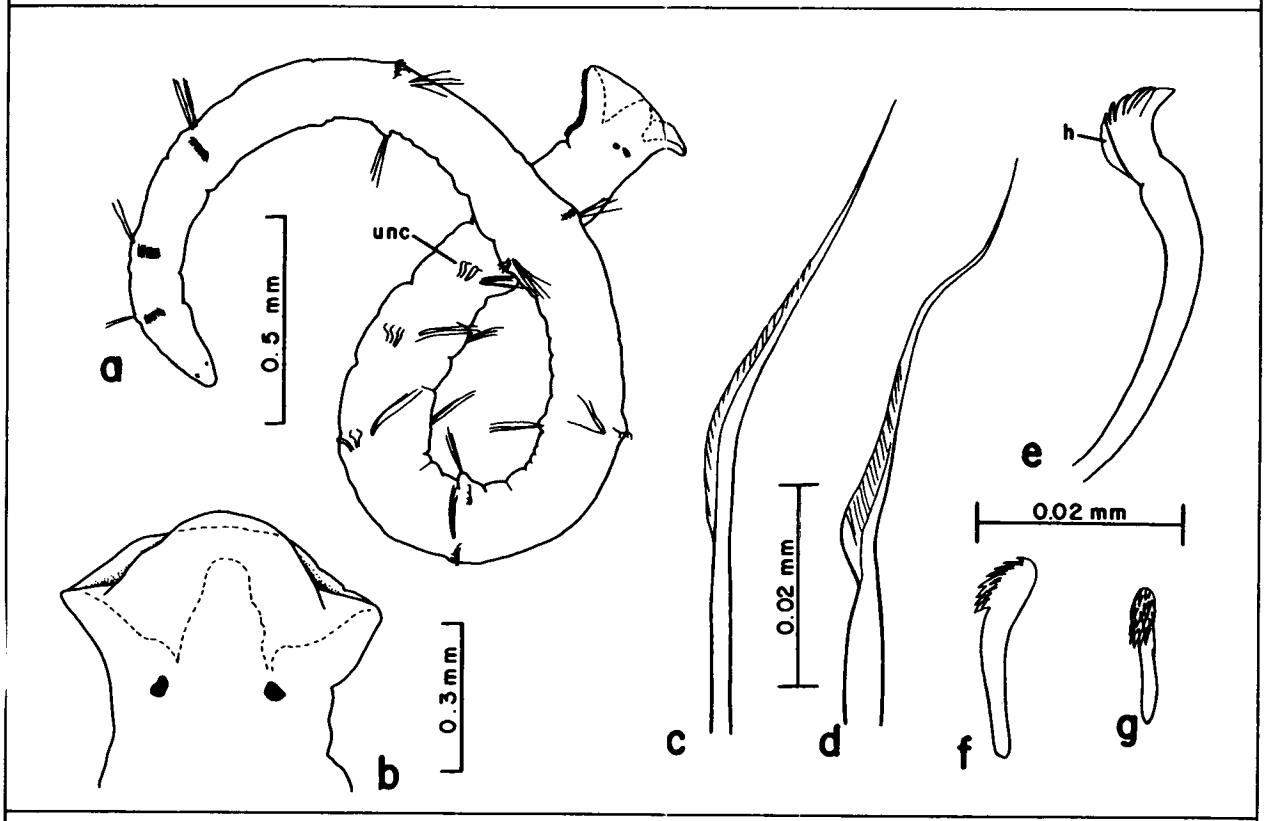

Figure 54-18. Fabricia sp. A: a, whole worm, lateral view (radioles not shown); b, collar, dorsal view; c, d, thoracic limbate notosetae; e, thoracic uncinus; f, g, abdominal uncini.

DIAGNOSIS: Thorax with eight and abdomen with three setigers. Two or three pairs of radioles, not united by membrane; pinnules long, ending about same level; branchial hearts present. Palps short, not filamentous. Collar poorly to well-developed. Peristomium and pygidium with paired eyespots. Thoracic notosetae including limbate and sometimes subspatulate setae. Thoracic neuropodial uncini acicular, with long, gently curved handles. Abdominal neurosetae slender, limbate.

Fabricia sp. A
Figures 54-17, 18a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6A-7/81 (2 spec., USNM 90394), 6D-7/81 (6 spec., USNM 90395-6), 24B-8/81 (1 spec., USNM 90397).
DESCRIPTION:
Length, to 3.6 mm; width, to 0.16 mm. Body minute; middle setigers relatively long (Figure 54-18a); unpigmented except for peristomial and pygidial eyespots. Radioles numbering two pairs, with long, slender pinnules and tips. Palps and branchial hearts not observed. Collar high, campanulate, extending beyond branchial basis; with expanded middorsal lobe (Figure 54-18b); gently curved ventrally; densely ciliated on ventral side (Figure 54-18a). Collar setae slender, limbate. Setiger 2 without postsetal glandular ring. Thoracic notosetae including long, slender limbate setae (Figure 54-18c) and shorter limbate setae with basally expanded shafts (Figure 54-18d); subspatulate setae absent. Thoracic neuropodia with up to five acicular uncini having closely appressed hood on convex side of apex, prominent constriction and swelling below apex, and secondary tooth not set off from primary tooth (Figure 54-18e). Abdominal notopodial uncini slender in profile (Figure 54-18f), with about four columns of minute teeth (Figure 54-18g). Abdominal neurosetae slender, limbate. Pygidium conical, with eyespots.
REMARKS: Fabricia sp. A differs from most members of the genus in having a well-developed collar. F. filamentosa Day, 1963, from South Africa, also has an expanded collar with a dorsal lappet. However, Fabricia sp. A differs from the latter in having thoracic uncini with a more prominent subapical constriction and swelling, and in having abdominal uncini with more teeth.
GULF OF MEXICO BLM-OCS OCCURRENCE: Rare off southwestern Florida (Figure 54-17); 26-88 m; medium to very fine sand.

Genus **Hypsicomus** Grube, 1870

TYPE SPECIES: Sabella phaeotaenia Schmarda, 1861.
REFERENCES:
Fauvel, 1927:312.
Day, 1967:760.
Fauchald, 1977a:139.
DIAGNOSIS: Branchial lobes semicircular; radioles with ocelli. Collar well-developed; collar setae short, arranged in long, slanting rows. Thoracic notosetae including limbate setae and paleae. Thoracic neurosetae including avicular uncini and pennoned companion setae. Abdominal

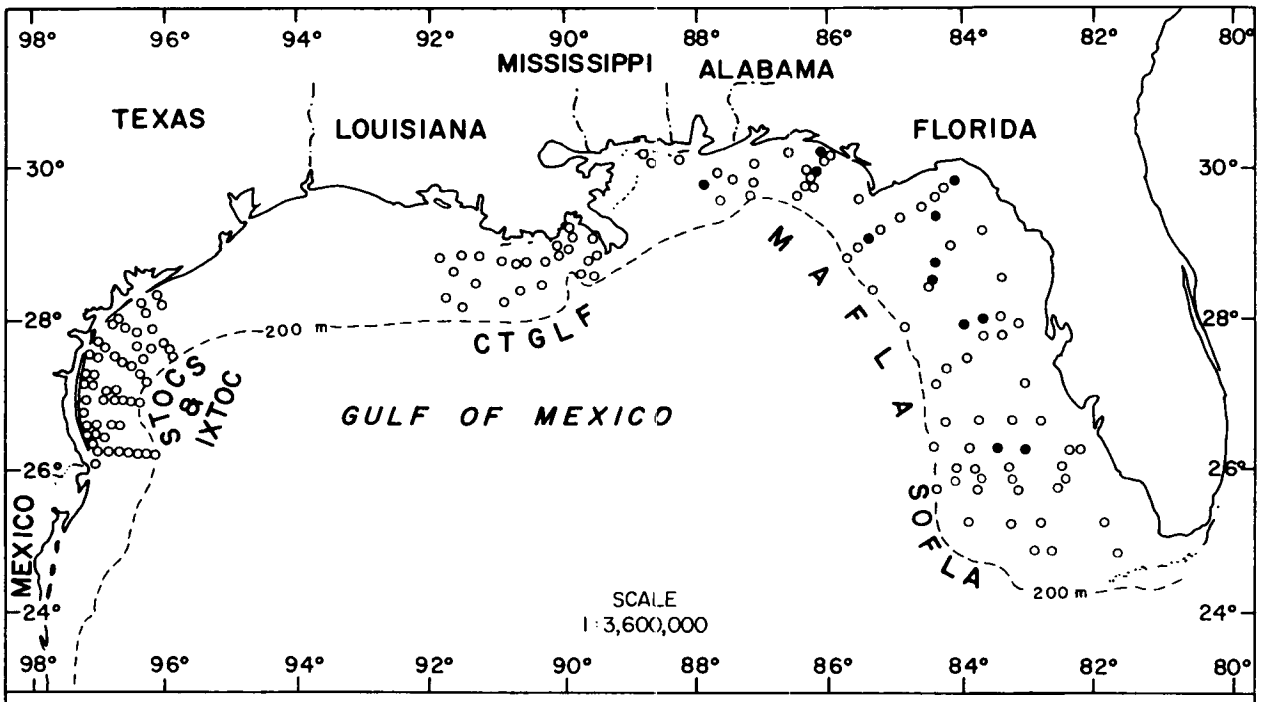

Figure 54-19. Distribution of Hypsicomus phaeotaenia on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

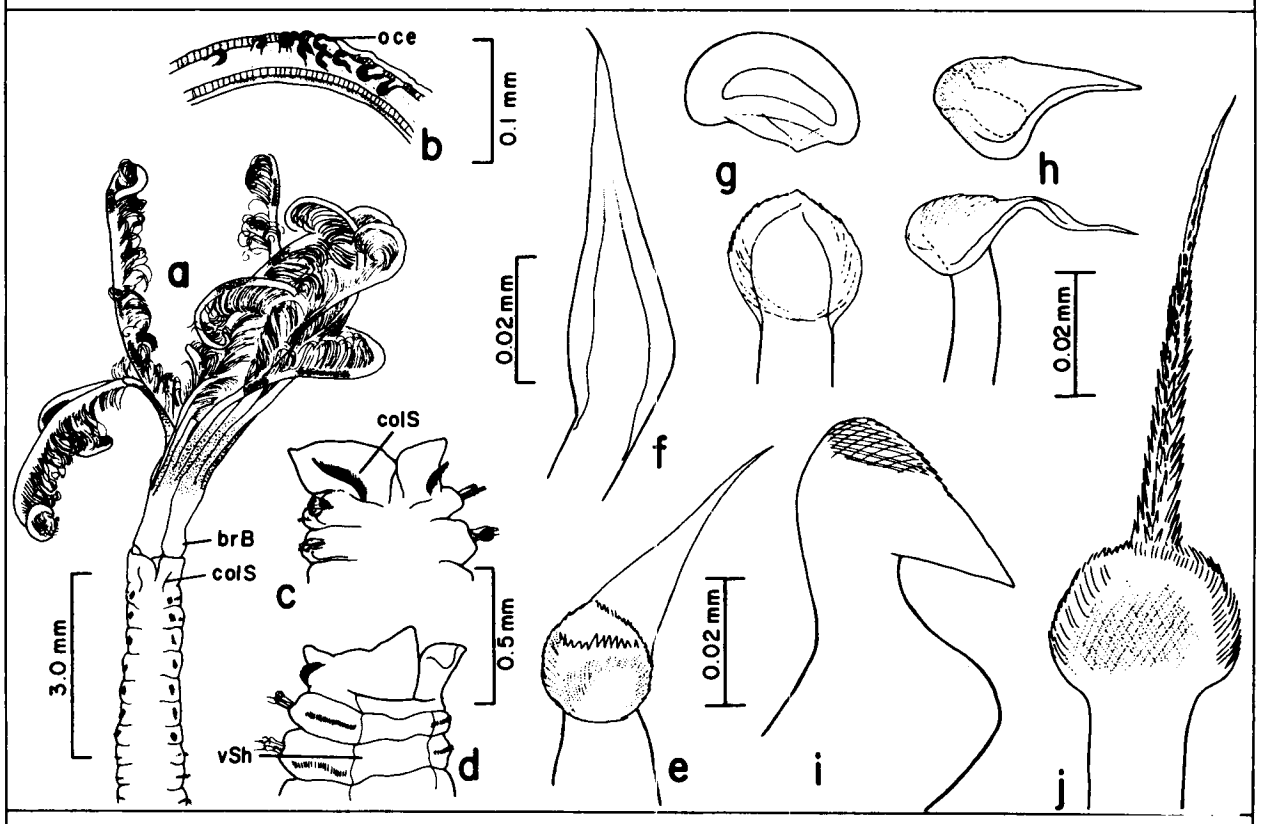

Figure 54-20. Hypsicomus phaeotaenia: a, anterior end, dorsal view; b, portion of radiole showing ocelli; c, collar, dorsal view; d, same, ventrolateral view; e, collar seta; f, thoracic limbate notoseta; g, thoracic notopodial paleae, views from above and side; h, thoracic pennoned neurosetae, views from above and side; i, thoracic uncinus; j, abdominal neuropodial palea.

notopodia with avicular uncini; neuropodia with paleae and capillary or limbate setae.

Hypsicomus phaeotaenia (Schmarda, 1861)
Figures 54-19, 20a-j

Hypsicomus phaeotaenia--Fauvel, 1927:312, fig. 108a-l.
Hypsicomus phaeotaenia--Imajima and Hartman, 1964:357.
Hypsicomus phaeotaenia--Day, 1967:761, fig. 37.2.i-n; 1973:125.
Hypsicomus phaeotaenia--Wu, 1968:43, fig. 5A-F.
Hypsicomus phaeotaenia--Fauchald, 1977b:62.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211D-8/77 (1 spec., USNM 90398), 2316K-11/77 (1 spec.), 2528-9/77 (3 spec.), 2528-11/77 (1 spec., USNM 90399), 2531H-6/75 (1 spec.), 2531F-2/78 (1 spec., USNM 90400).
DESCRIPTION:
Length, 13.6+ mm (previously reported to 60 mm); width, to 1.12 mm (previously reported to 4 mm). Body cylindrical, unpigmented to brown in color; ventral shields often brown; brown band usually present anterior to ventral shield of collar segment. Radioles arising from long base, numbering 4-10 pairs, united by membrane up to one-third their length; often with several transverse brown bands (Figure 54-20a). Pigmented ocelli in small groups or rows of about 10-30, arising from lateral edges of radioles (Figure 54-20b) about midway along their length, at level of third color band. Collar fairly even, incised and attached to peristomium middorsally (Figure 54-20c); ventrally incised and produced as two triangular lobes (Figure 54-20d), or even and entire. Thorax with 7-8 setigers. Collar setae with short triangular blade arising from bulbous portion (Figure 54-20e); arranged in long, slanting, double rows usually occupying more than half segmental length of setiger 1 (Figure 54-20a,c). Thoracic notopodia with 2-3 limbate setae having short triangular blades (Figure 54-20f), and about 5-10 paleae having globular blades lacking tips (Figure 54-20g). Thoracic neuropodia with anterior row of pennoned companion setae having asymmetrical blades (Figure 54-20h), and posterior row of avicular uncini having thick handles and striated crests (Figure 54-20i). Abdomen with up to 63 setigers. Abdominal notopodia with avicular uncini similar to those of thorax but having slightly longer beaks. Abdominal neuropodia with 1-3 paleae having globular blades and long hirsute tips (Figure 54-20j), and 1-3 hirsute capillary setae. Pygidium rounded, with two red eyespots.
REMARKS: The ocelli were faintly pigmented and difficult to see on the radioles of some specimens.
PREVIOUSLY REPORTED HABITAT: Intertidal to 600 m; burrowing in coral; found in scrapings from piles of quays.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in northeastern Gulf (Figure 54-19); moderately shallow depth, 10-53 m; coarse to fine sand, silty fine to very fine sand.
DISTRIBUTION: Circumtropical.

Genus **Megalomma** Johansson, 1926

TYPE SPECIES: Amphitrite vesiculosa Montagu, 1815.
REFERENCES:
Fauvel, 1927:314 (as Branchiomma).
Day, 1967:757.
Fauchald, 1972a:331; 1977a:139.
DIAGNOSIS: Branchial lobes semicircular; connecting membrane absent. Some radioles with large, subdistal compound eyes. Collar well-developed, with two or four lobes; collar setae occurring in tufts. Thoracic notosetae including limbate setae and sometimes paleae. Thoracic neurosetae including avicular uncini and pennoned companion setae. Abdominal notopodia with avicular uncini; neuropodia with limbate setae.

Key to the Gulf of Mexico BLM-OCS Species of Megalomma

1a. Subterminal eyes present only on dorsalmost pair of radioles (Figure 54-22a). . . . . .**Megalomma bioculatum**, p. 54-27
1b. Subterminal eyes present on other radioles in addition to dorsalmost pair 2

2a. Collar with two well-developed dorsal lobes (Figure 54-24a); eyes of radioles spherical (Figure 54-24b,c). . . . . .**Megalomma sp. A**, p. 54-30
2b. Collar without dorsal lobes (Figure 54-26a); eyes of radioles oval (Figure 54-26a,b). . . . . **Megalomma sp. B**, p. 54-32

Megalomma bioculatum (Ehlers, 1887)
Figures 54-21, 22a-g

Branchiomma bioculatum Ehlers, 1887:260, pl. 53, figs. 1-9.
Megalomma bioculatum--Rioja, 1946a:199.
Megalomma bioculatum--Hartman, 1951a:115.
Megalomma bioculatum--Day, 1967:760; 1973:126.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6B-11/80 (10 spec., USNM 90401); MAFLA 2207G-8/77 (1 spec.), 2207K-8/77 (2 spec., USNM 90402), 2211F-7/76 (1 spec.), 2211K-11/77 (1 juv.), 2316H-11/77 (1 spec.), 2422J-7/76 (1 spec.), 2423G-7/76 (1 spec.), 2423H-8/77 (1 spec., USNM 90409), 2641D-6/75 (1 spec.), 2642F-6/75 (1 spec.); CTGLF 02-5/78 (1 spec.); STOCS 4/III-5 Sp/76 (1 juv., USNM 90408), 4/III-1 8/76 (1 juv., USNM 90407), 4/IV-1 F/76 (2 spec., USNM 90405), 6/IV-4 F/76 (1 spec., USNM 90403), SB3-4 8/76 (1 spec., USNM 90404), SB3-6 8/76 (1 spec., USNM 90410), SB4-3 8/76 (1 spec., USNM 90406).
Supplementary Material:
Gulf of Mexico--Florida Keys, off Grassy Key, 24°37'42"N, 80°58'36"W, 139-185 m, Feb. 1969, T. Perkins ID. (2 spec., USNM 67956); Mobile Bay, Sta. 88-30 A9d, Mar. 1973 (1 spec.), Mobil Oil Sta. 054B-8/78, 30°15'13"N, 88°03'08"W (1 spec.); off Alabama, Anderson artificial reef, AII#4, June 1975, P. G. Johnson ID. (1 spec.); off Mississippi, COE Sta. 029-8, 30°17.90'N, 89°40.50'W, 3.7 m, silty clay, Apr. 1981 (1 spec.).

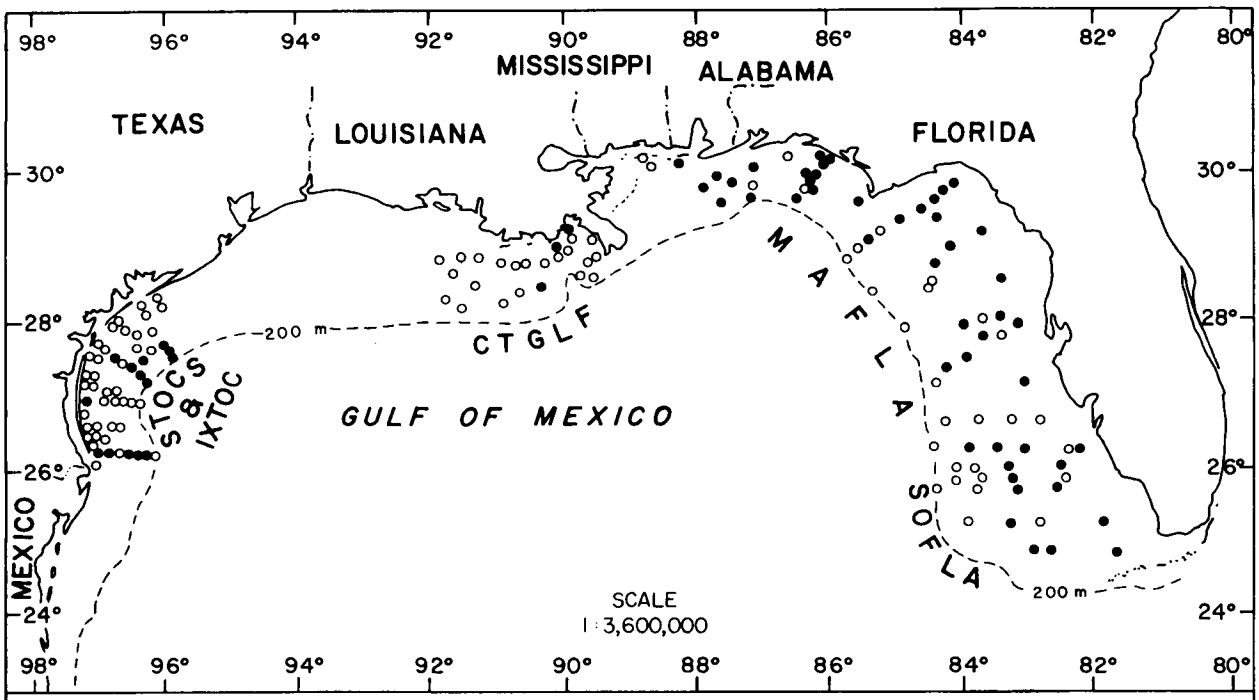

Figure 54-21. Distribution of Megalomma bioculatum on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

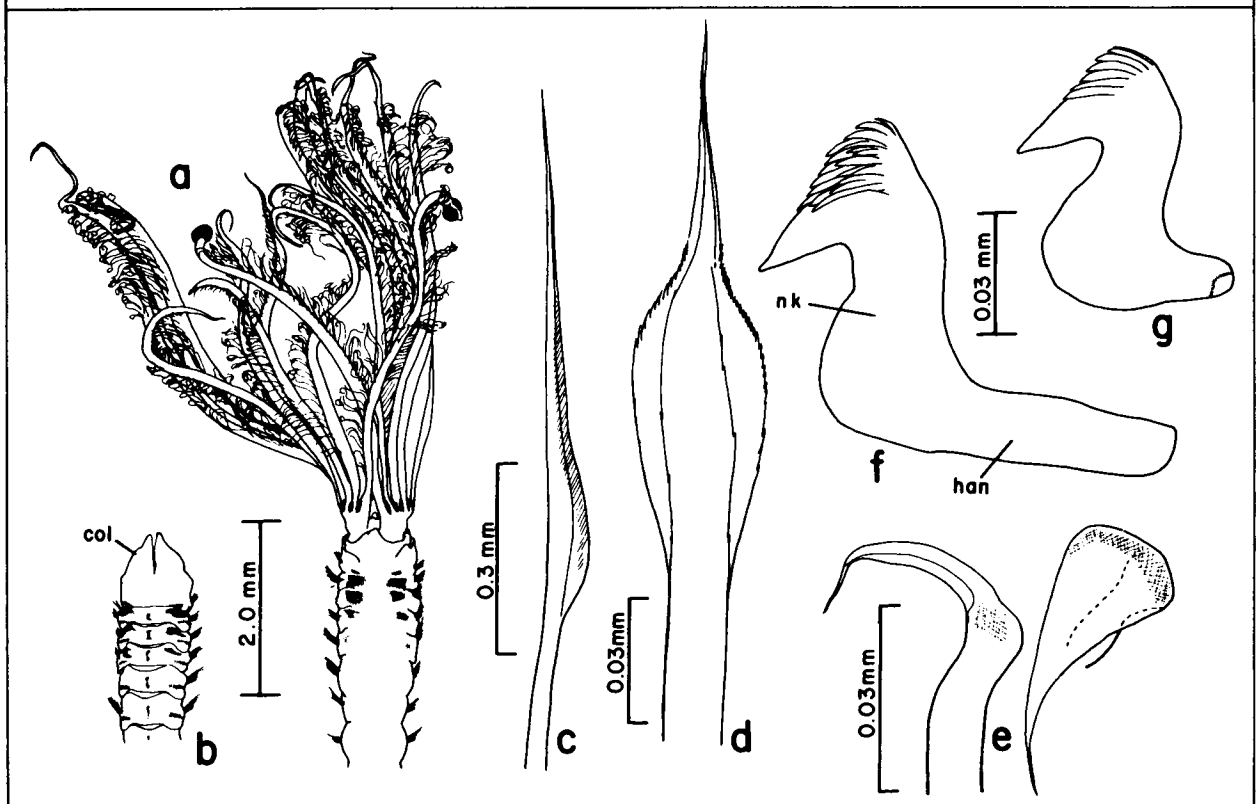

Figure 54-22. Megalomma bioculatum: a, anterior end, dorsal view; b, same, ventral view; c, thoracic limbate notoseta; d, thoracic notopodial palea; e, thoracic pennoned neurosetae, views from side and above; f, thoracic uncinus; g, abdominal uncinus.

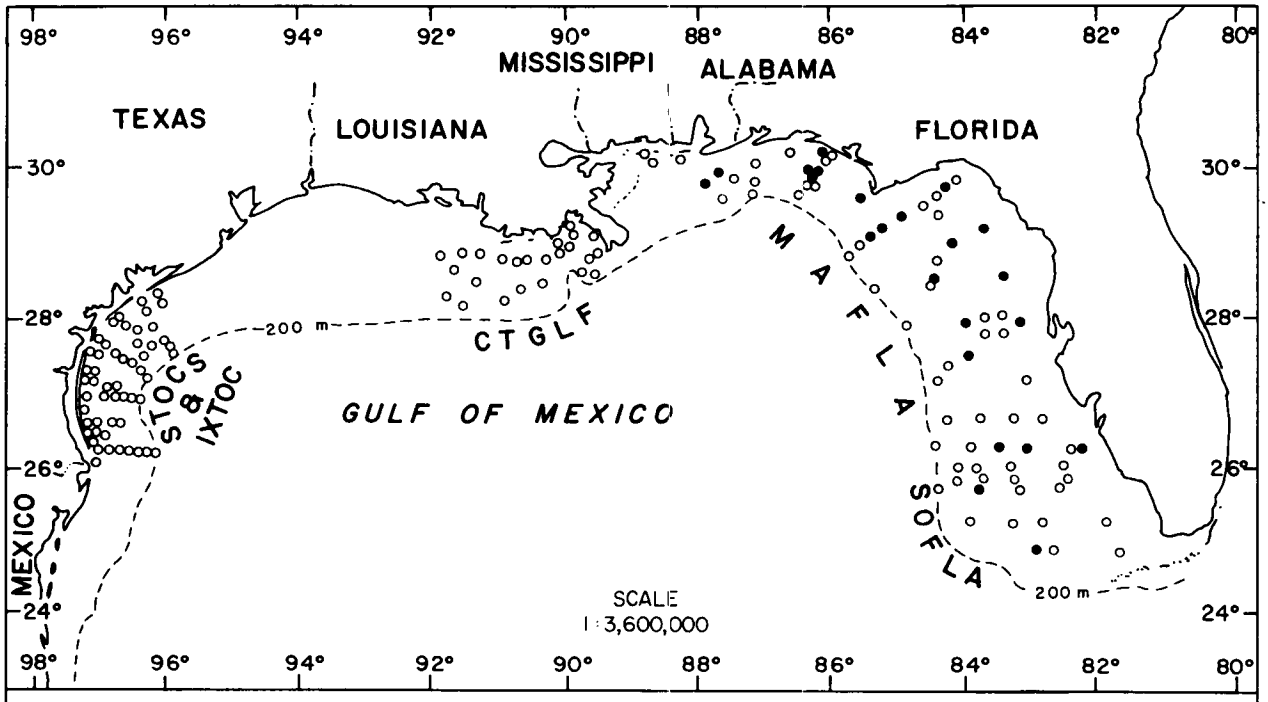

Figure 54-23. Distribution of Megalomma sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

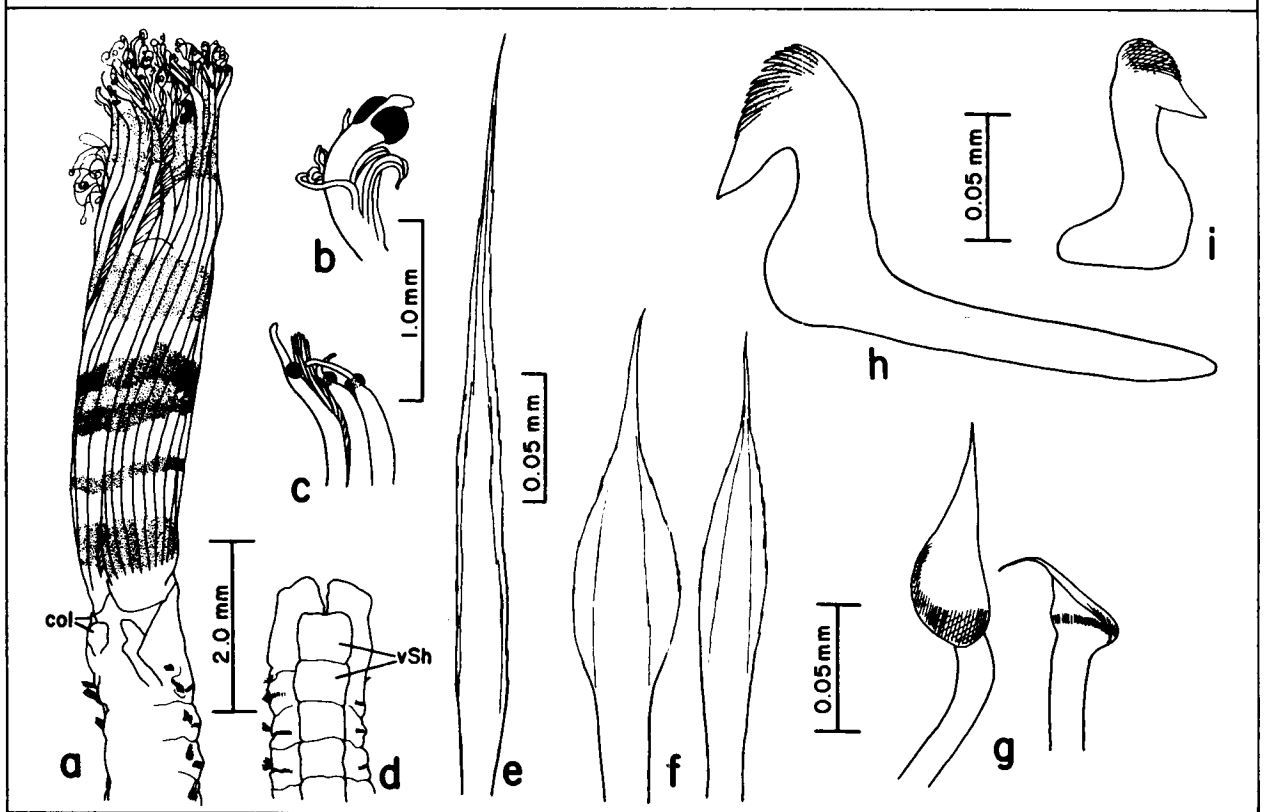

Figure 54-24. Megalomma sp. A: a, anterior end, dorsolateral view; b, tip of middorsal radiole; c, tips of other radioles; d, anterior end, ventral view (radioles not shown); e, thoracic limbate notoseta; f, thoracic notopodial paleae; g, thoracic pennoned neurosetae, views from above and side; h, thoracic uncinus; i, abdominal uncinus.

DESCRIPTION:
Length, to 74 mm (previously reported to 73 mm); width, to 3 mm (previously reported to 2.5 mm). Body pale or with brown pigment patches on anterior setigers. Radioles numbering 6-15 pairs, often with brown streaks basally and transverse brown bands medially; tips long, filiform; dorsalmost pair with large spherical eyes below short tips (Figure 54-22a). Palps long, triangular, often brown. Collar with dorsal edges low, rounded, well-separated; ventral edges prolonged as two triangular lobes (Figure 54-22b). Thorax with eight setigers (one specimen with five). Collar setae slender, limbate, of varying lengths. Thoracic notopodia with upper arc of numerous slender limbate setae (Figure 54-22c), and lower transverse group of broadly limbate setae having fairly long, narrow blades and long, tapered tips (Figure 54-22d). Thoracic neuropodia with anterior row of pennoned companion setae having nearly symmetrical triangular blades (Figure 54-22e), and posterior row of avicular uncini having long handles and crest of small teeth (Figure 54-22f). Abdomen with up to 81 setigers. Abdominal notopodia with avicular uncini having short handles (Figure 54-22g). Abdominal neurosetae limbate. Pygidium small, with four rounded lobes. Several specimens with eggs or sperm in coelom of abdominal segments.
REMARKS: Several specimens retained tubes constructed of mud or shell hash and sand grains.
PREVIOUSLY REPORTED HABITAT: 20-200 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common throughout northern Gulf (Figure 54-21); 10-189 m; sands, silts and clays.
DISTRIBUTION: Gulf of Mexico, Florida, North Carolina, tropical western Africa.

Megalomma sp. A
Figures 54-23, 24a-i

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 28A-8/81 (1 spec., USNM 90411); MAFLA 2211B-7/76 (1 spec., USNM 90412), 2211C-7/76 (1 spec.), 2211G-7/76 (1 spec.), 2315A-8/76 (1 spec.), 2528E-11/77 (1 spec.), 2531B-6/75 (1 spec.), 2533A-2/75 (1 spec.), 2854C-8/77 (1 spec., USNM 90413).
DESCRIPTION:
Length, to 62 mm; width, to 4.6 mm. Body brownish in color. Radioles numbering 12-28 pairs, usually with transverse brown bands (Figure 54-24a); dorsalmost pair stouter than others, each with large subterminal eye below short tip (Figure 54-24b); remaining radioles mostly with small compound eyes below digitiform tips (Figure 54-24c). Eyes of radioles spherical. Palps long, triangular, tapering to long digitiform tips. Collar folded dorsolaterally, forming distinct dorsal lobes (Figure 54-24a); incised midventrally forming two low, triangular lobes (Figure 54-24d). Thorax with eight setigers (one specimen with five). Collar setae slender, limbate, of two lengths. Thoracic notopodia with upper arc of numerous slender limbate setae (Figure 54-24e), and lower transverse group of limbate setae having moderately broad blades with smoothly tapered tips (Figure 54-24f). Thoracic neuropodia with anterior row of pennoned companion setae having nearly symmetrical triangular blades (Figure 54-24g), and posterior row of avicular uncini having long handles and crest of minute teeth (Figure 54-24h). Abdomen with up

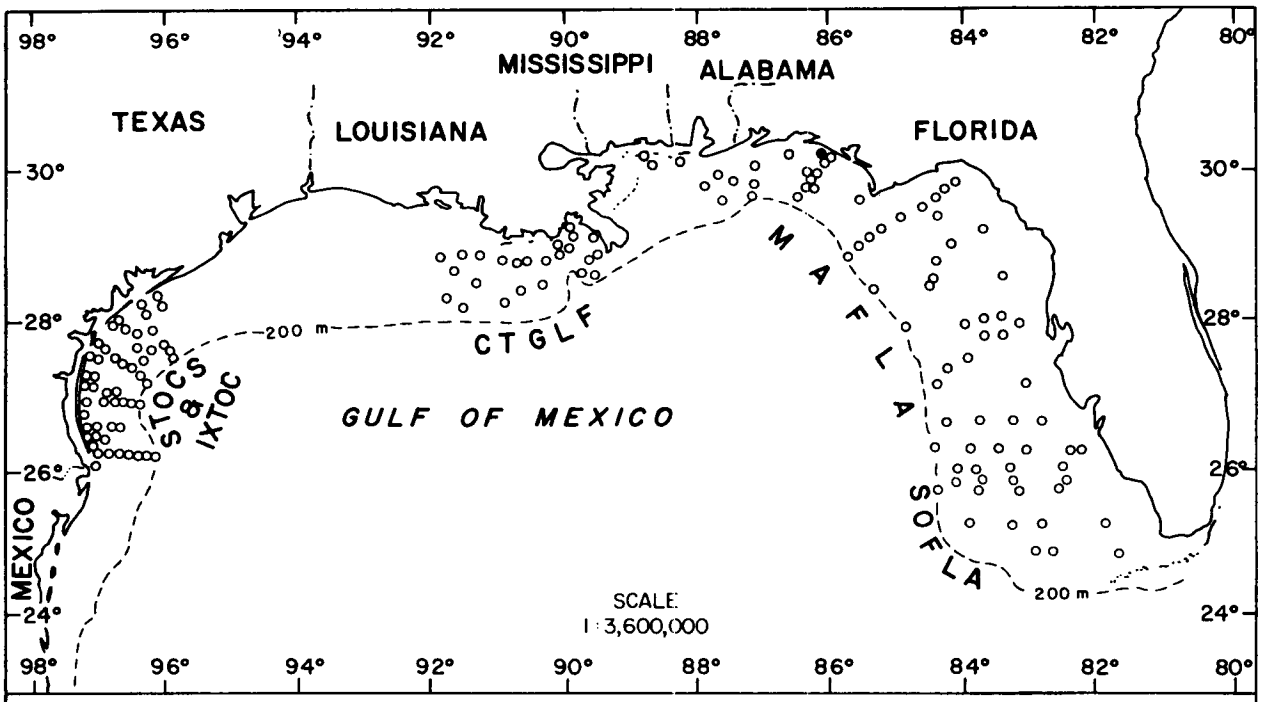

Figure 54-25. Distribution of Megalomma sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

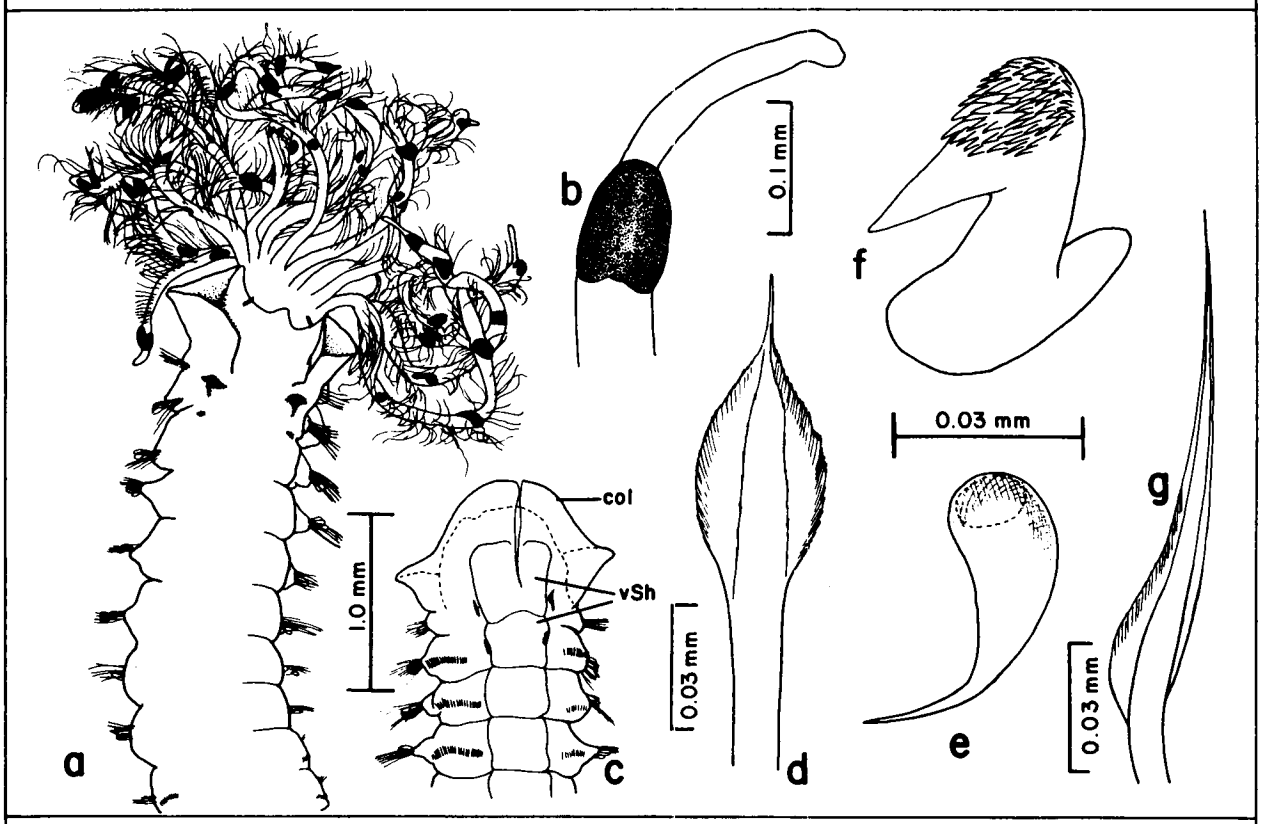

Figure 54-26. Megalomma sp. B: a, anterior end, dorsal view; b, tip of radiole; c, anterior end, ventral view; d, thoracic notopodial palea; e, thoracic pennoned neuroseta, view from above; f, thoracic uncinus; g, abdominal neuroseta.

to 88 setigers. Abdominal notopodia with avicular uncini having short handles (Figure 54-24i). Abdominal neurosetae limbate. Pygidium rounded.
REMARKS: The largest specimen retained a tube constructed of shell hash. Although these specimens match published descriptions of Megalomma vesiculosum (Montagu, 1815) (see Saint Joseph, 1894:300, pl. 11, figs. 303-314; Fauvel, 1927:315, fig. 109a-q; Day, 1967:758, fig. 37.1.p-u), they apparently differ from M. vesiculosum in having the lower thoracic notosetae with broader blades (T. H. Perkins, pers. comm.).
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in eastern Gulf (Figure 54-23); 11-120 m; coarse to fine-very fine sand, silty fine to very fine sand.

Megalomma sp. B
Figures 54-25, 26a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2528E-11/77 (1 spec., USNM 90414).
DESCRIPTION:
Length, 11.9 mm; width, 0.8 mm. Body pale, with brown pigment patches dorsally and ventrally on first two setigers. Radioles numbering nine pairs, dorsalmost pair missing, remaining pairs with scattered brown pigment patches (Figure 54-26a) and oval pigment concentrations (simple eyes?) below digitiform tips (Figure 54-26b). Palps relatively short, broad basally, with abruptly tapered tips. Collar flared, with dorsal edges widely separated, ventral edges prolonged as two curved lobes (Figure 54-26c). Thorax with eight setigers. Collar setae slender, limbate. Thoracic notopodia with slender limbate setae, and paleae having broad blades and short tips (Figure 54-26d). Thoracic neuropodia with anterior row of pennoned companion setae having asymmetrical, curved blades (Figure 54-26e), and posterior row of avicular uncini having short handles and crest of numerous small teeth (Figure 54-26f). Abdomen with 54 setigers. Abdominal notopodia with avicular uncini similar to those of thorax; neuropodia with broadly winged limbate setae (Figure 54-26g). Pygidium rounded, with several eyespots.
REMARKS: Megalomma sp. B is unusual in having simple, rather than compound subterminal eyes on the radioles. The dorsalmost pair of radioles, broken off in this specimen, bear a pair of large, compound, subdistal eyes, according to observations of T. H. Perkins (pers. comm.) on other specimens belonging to the same species. The medial pigment patches on the radioles appear uncharacteristic for this genus.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off northwestern Florida (Figure 54-25); 37 m; coarse sand.

Genus **Potamethus** Chamberlin, 1919b

TYPE SPECIES: Potamilla malmgreni Hansen, 1878.
REFERENCE:
Fauchald, 1977a:139.
DIAGNOSIS: Branchial lobes semicircular, connecting membrane absent. Eyes absent. Collar well-developed, long ventrally. Thoracic notosetae

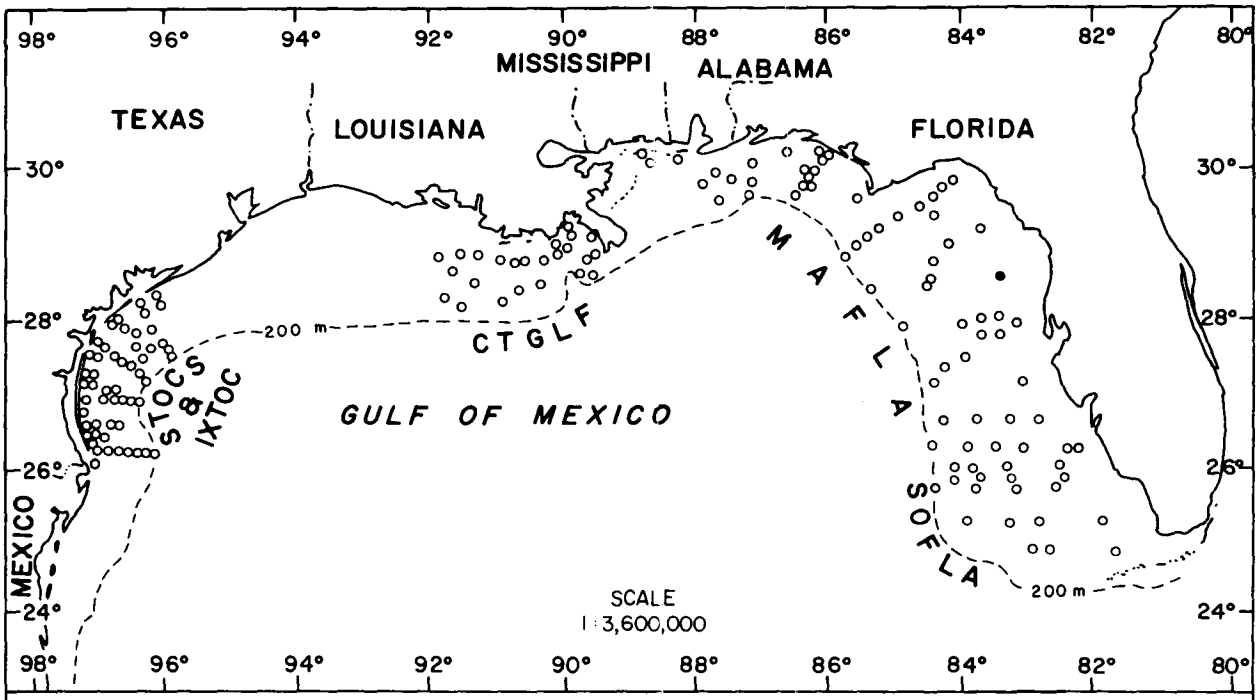

Figure 54-27. Distribution of Potamethus sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

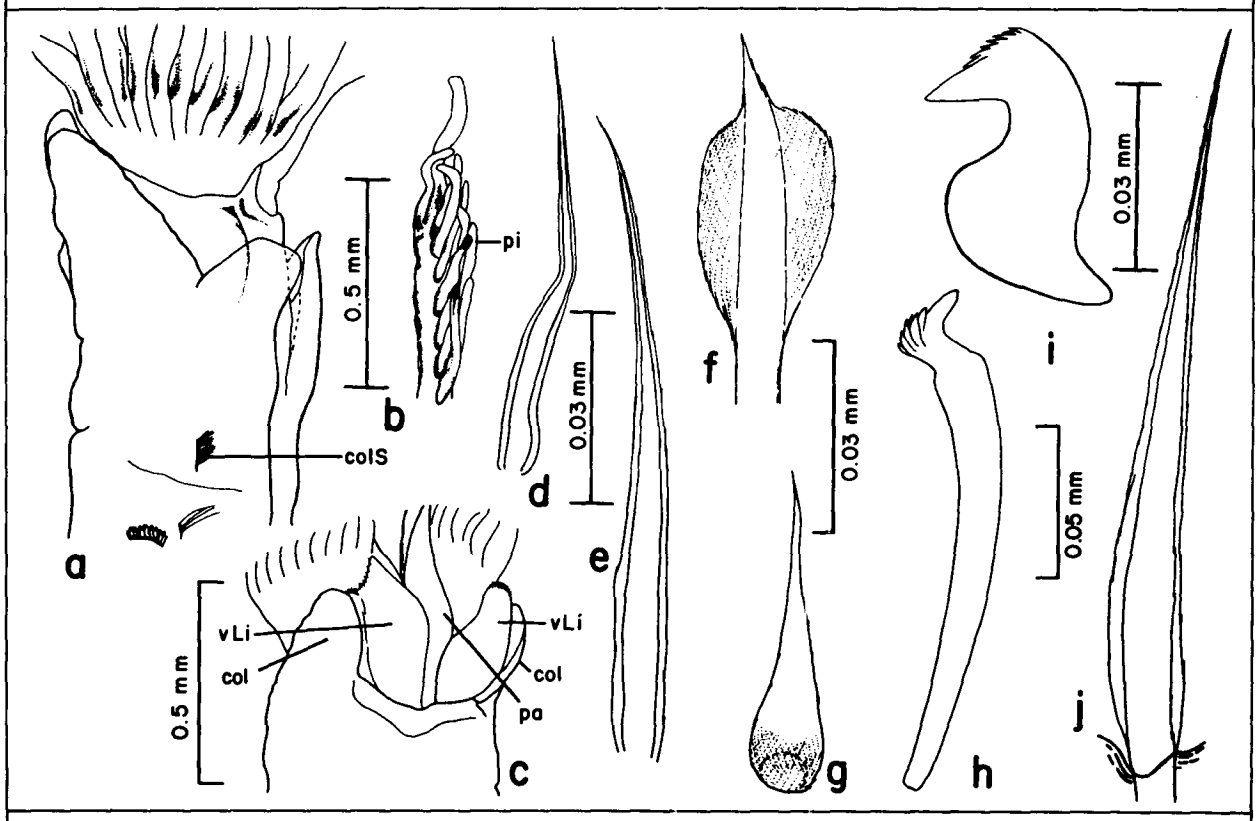

Figure 54-28. Potamethus sp. A: a, anterior end, lateral view; b, tip of radiole; c, collar, ventrolateral view; d, collar seta; e, thoracic limbate seta; f, thoracic palea; g, thoracic pennoned neuroseta, view from above, h, thoracic uncinus; i, abdominal uncinus; j, abdominal neuroseta.

including limbate setae and paleae. Thoracic neurosetae including avicular uncini with long, gently to sharply curved handles, and pennoned companion setae. Abdominal notopodia with avicular uncini; neuropodia with limbate setae.

Potamethus sp. A
Figures 54-27, 28a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2852H-7/76 (1 spec., USNM 90430).
DESCRIPTION:
Length, 9.6+ mm; width, 0.6 mm. Body slender, cylindrical. Radioles numbering nine pairs, with brown streaks (Figure 54-28a); tips digitiform (Figure 54-28b); eyes absent. Palps long, slender, tapered. Collar with rounded dorsal lobes separated from lateral edges by notch (Figure 54-28a); lateral lobes high, rounded, widely separated ventrally, exposing ventral lips and palps (Figure 54-28c). Thorax with eight setigers. Collar setae short, slender, limbate (Figure 54-28d), arranged in short row. Thoracic notopodia with slender limbate setae (Figure 54-28e), and paleae having short tips (Figure 54-28f). Thoracic neuropodia with anterior row of pennoned companion setae having long, slender, symmetrical blades (Figure 54-28g); and posterior row of avicular uncini having long, gently curved handles and crest of small teeth (Figure 54-28h). Abdomen incomplete with 11 setigers. First abdominal setiger normal on right side, transitional on left side, with thoracic notosetae and abdominal neurosetae. Abdominal notopodia with avicular uncini having short handles (Figure 54-28i). Abdominal neurosetae including fairly long, slender limbate setae (Figure 54-28j) and somewhat shorter, broader limbate setae.
REMARKS: Potamethus sp. A resembles P. spathiferus (Ehlers, 1887), but differs from the latter in the wide ventral separation of the collar lobes, and in having longer tips on the thoracic paleae.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off central Florida (Figure 54-27); 22 m; medium sand.

Genus **Potamilla** Malmgren, 1865c

TYPE SPECIES: Sabella neglecta Sars, 1851.
REFERENCES:
Fauvel, 1927:308.
Ushakov, 1955:408.
Day, 1967:764.
Hartmann-Schröder, 1971:505.
Fauchald, 1977a:139.
DIAGNOSIS: Branchial lobes semicircular, connecting membrane absent. Radioles often with simple or compound eyes. Collar well-developed, with two or four lobes; collar setae occurring in tufts. Thoracic notosetae including limbate setae and sometimes paleae. Thoracic neurosetae including avicular uncini and pennoned companion setae. Abdominal notopodia with avicular uncini; neuropodia with limbate setae.
REMARKS: The genus as defined includes Pseudopotamilla Bush, 1904.

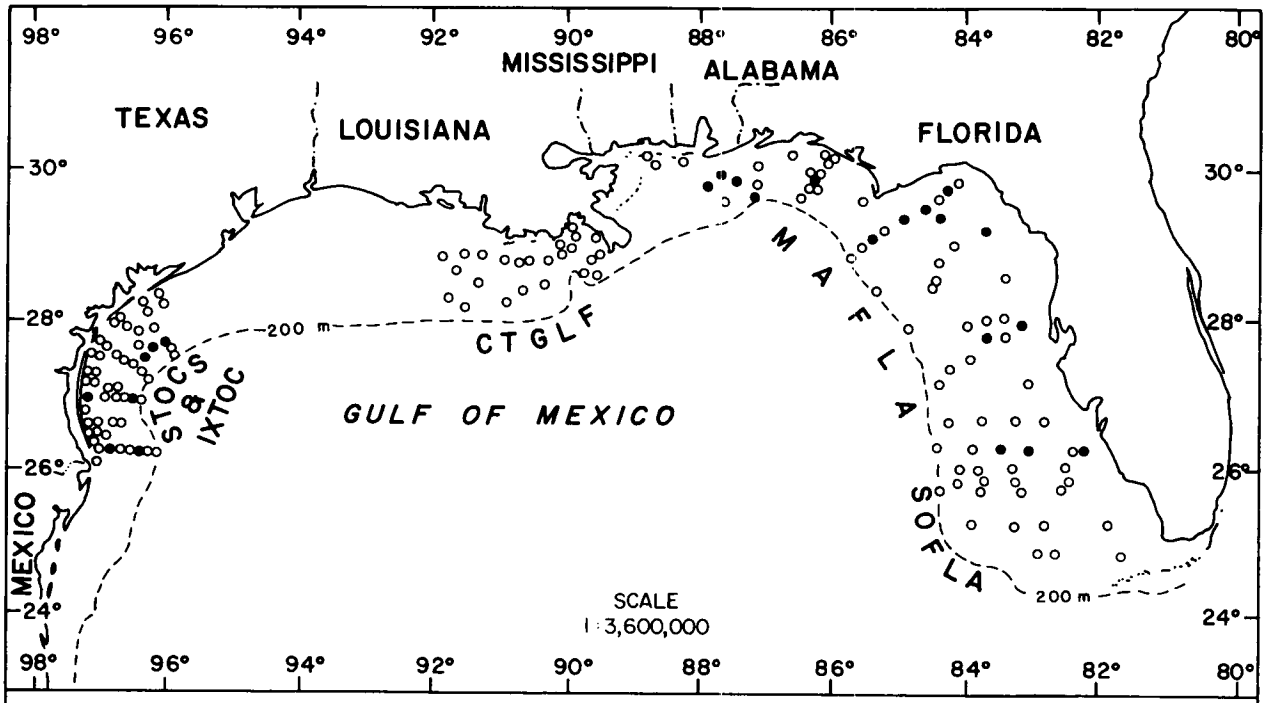

Figure 54-29. Distribution of Potamilla cf. reniformis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

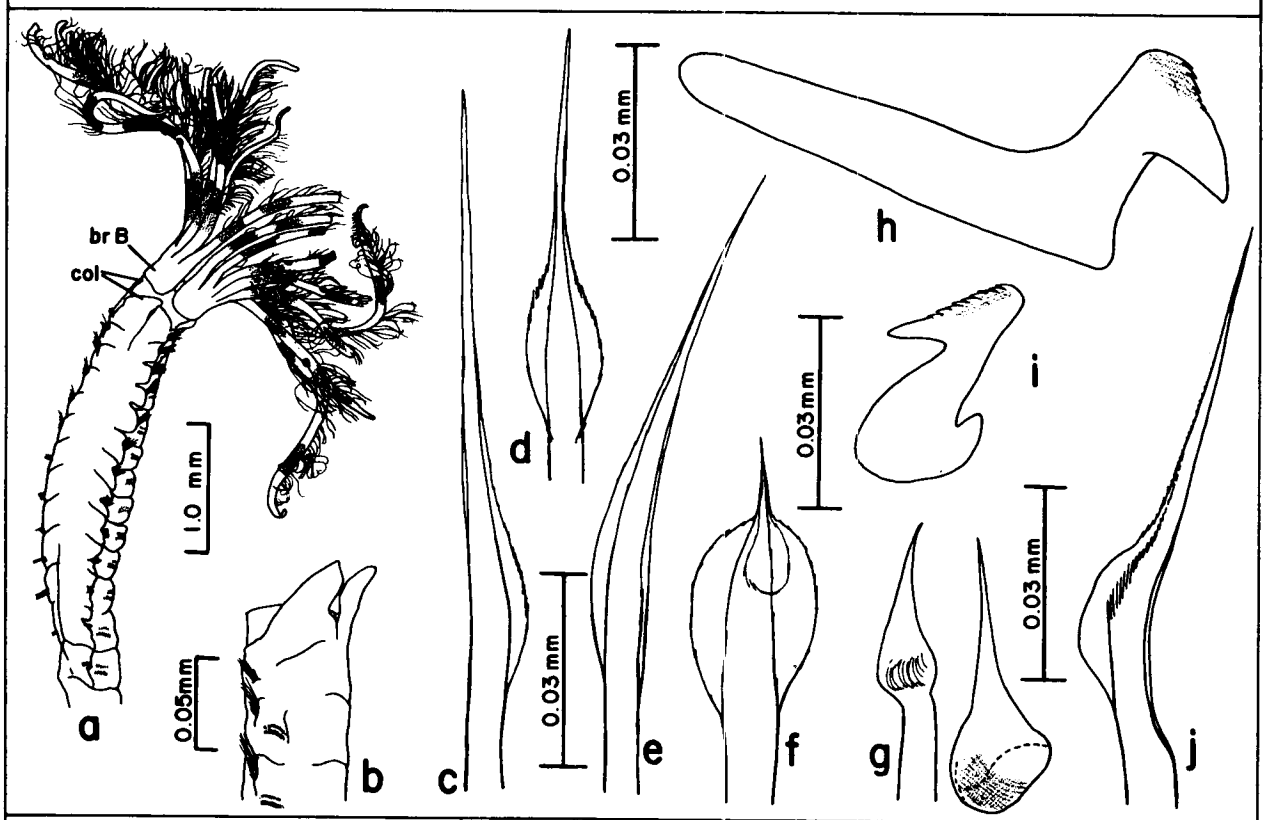

Figure 54-30. Potamilla cf. reniformis: a, anterior end, dorsal view (dorsal radioles broken off); b, collar, ventrolateral view; c, limbate collar seta; d, subspatulate collar seta; e, thoracic limbate notoseta; f, thoracic notopodial palea; g, thoracic pennoned neurosetae, views from side and above; h, thoracic uncinus; i, abdominal uncinus; j, abdominal neuroseta.

Potamilla cf. reniformis (O. F. Müller, 1771)
Figures 54-29, 30a-j

Potamilla reniformis--Fauvel, 1927:309, fig. 107a-l.
Pseudopotamilla reniformis--Hartman, 1945:47.
Potamilla reniformis--Pettibone, 1954:336, fig. 38o-u.
Potamilla reniformis--Day, 1967:764, fig. 37.3.a-f; 1973:126.
Potamilla reniformis--Hartmann-Schröder, 1971:506, fig. 174a-h.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 12D-5/74 (1 spec., USNM 90423), 16F-5/74 (1 spec., USNM 90426), 2533A-9/77 (1 spec., USNM 90427), 2645A-6/75 (1 spec., USNM 90428), 2645E-2/78 (3 spec., USNM 90429); STOCS HR1-4 S/F/76 (1 spec., USNM 90424), SB3-3 Sp/76 (1 spec., USNM 90425).
Supplementary Material:
Bahamas--Grand Bahama Island, S. of Lucaya, Hydrolab, on coral, 15 m, Jan. 1974 (2 spec.).
Gulf of Mexico--16 km S. of Dauphin Island, Alabama, on dead shell, June 1973 (4 spec.).
DESCRIPTION:
Length, 10.4+ mm (previously reported to 120 mm); width, to 0.7 mm (previously reported to 2 mm). Body pale or brownish in color. Radioles numbering 5-12 pairs, longer dorsally; often with three transverse brown bands; tips fairly short, digitiform. Eyes compound, numbering 1-5 per radiole (Figure 54-30a), almost always absent from dorsalmost and 1-2 ventralmost pairs of radioles. Palps long, slender, tapered. Collar with rounded dorsal lobes attached to peristomium middorsally, margins turned posteriorly then lateroanteriorly forming deep V laterally; extending ventrally to form two prolonged, pointed or rounded lobes (Figure 54-30b); often bluish-tinged. Peristomium usually with pair of dark eyespots. Thorax with 7-19 setigers. Collar setae including slender limbate setae (Figure 54-30c), and shorter, broader, subspatulate setae (Figure 54-30d). Thoracic notopodia with slender limbate setae (Figure 54-30e), and paleae having nearly spherical blades with short, faint tips (Figure 54-30f). Thoracic neuropodia with anterior row of pennoned companion setae having long, smooth, triangular blades (Figure 54-30g), and posterior row of avicular uncini having long handles and crest of minute teeth (Figure 54-30h). Abdomen with up to 47 setigers. Abdominal notopodia with avicular uncini having short handles and high crest of minute denticles (Figure 54-30i). Abdominal neurosetae limbate, broadly winged basally, slightly geniculate (Figure 54-30j). Pygidium rounded, without eyespots.
REMARKS: T. H. Perkins (pers. comm.), who examined specimens of P. reniformis from Europe, possibly including the type-locality, indicated that the collar of those specimens extends higher dorsally, over the branchial basis, whereas in Gulf of Mexico BLM-OCS specimens the dorsal lobes of the collar are shorter. Some BLM-OCS specimens were initally referred to other species of Potamilla.
PREVIOUSLY REPORTED HABITAT: Intertidal to 580 m; sand, shell, gravel, in holes of large stones, among algae, sponges and mollusks; boring into shells; euhaline to polyhaline.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in northeastern and northwestern Gulf (Figure 54-29); 11-106 m; coarse to fine-very fine sand, clayey sand, silty fine sand, clayey sandy silt, silty clay.

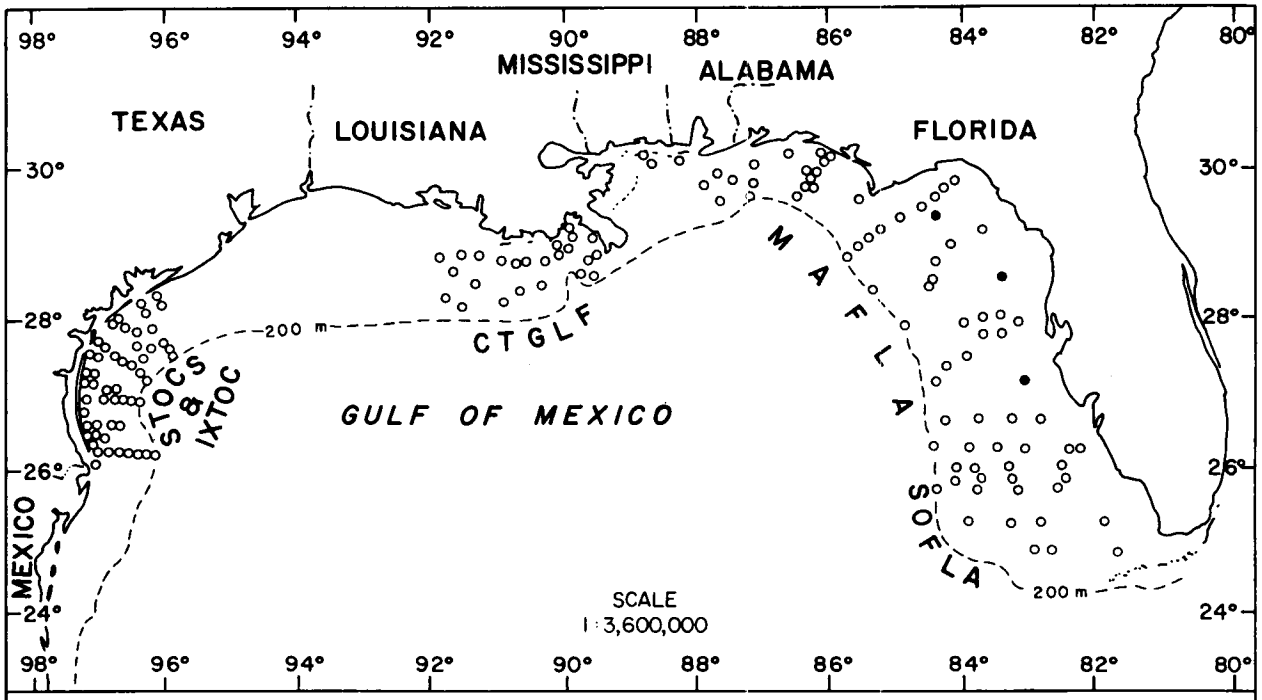

Figure 54-31. Distribution of Sabella sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

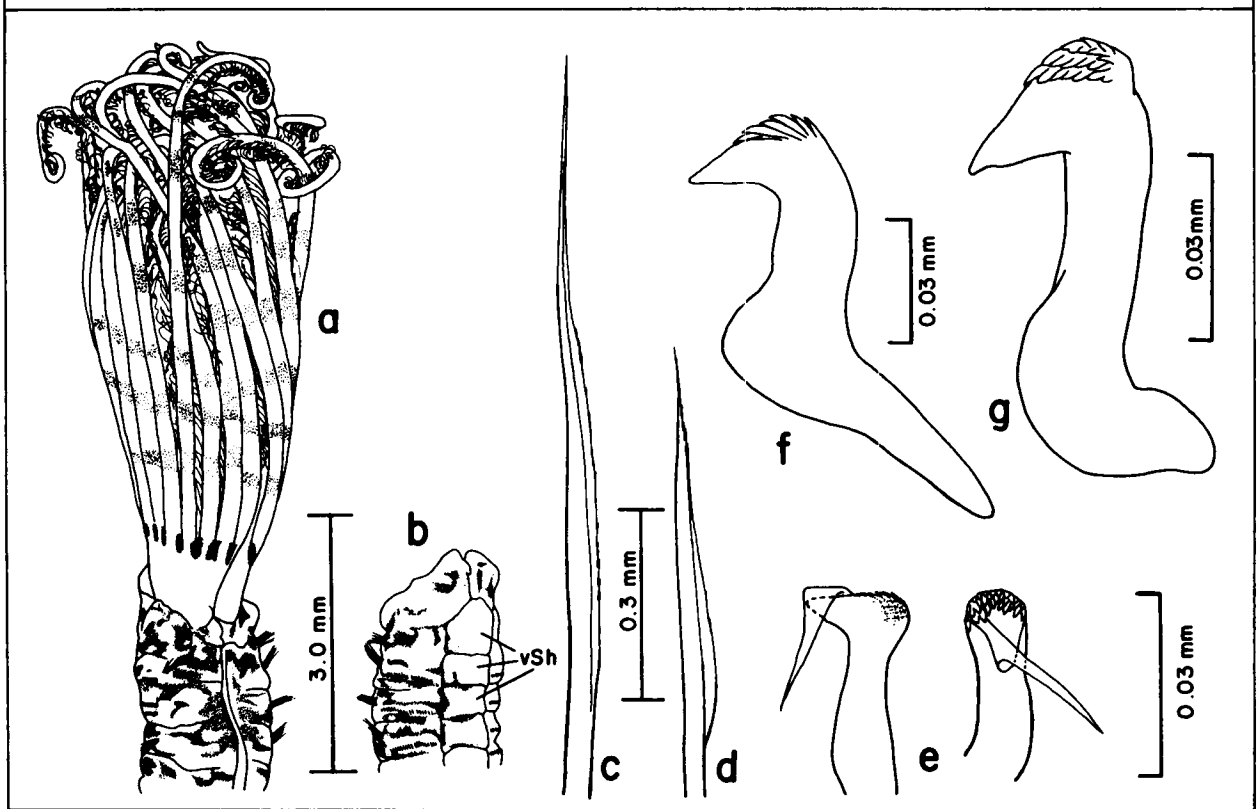

Figure 54-32. Sabella sp. A: a, anterior end, dorsolateral view; b, same, ventrolateral view (radioles not shown); c, d, thoracic notosetae; e, thoracic companion neurosetae; f, thoracic uncinus; g, abdominal uncinus.

DISTRIBUTION: Cosmopolitan.

Genus **Sabella** Linnaeus, 1767

TYPE SPECIES: Sabella penicillus Linnaeus, 1767.
REFERENCES:
Fauvel, 1927:297.
Day, 1967:763.
Hartmann-Schröder, 1971:503.
Fauchald, 1977a:140.
Banse, 1979b:877.
DIAGNOSIS: Branchial lobes semicircular; connecting membrane present or absent. Radioles with or without eyespots. Collar well-developed, with two or four lobes; collar setae occurring in tufts. Thoracic notosetae limbate, of two lengths; paleae absent. Thoracic neurosetae including avicular uncini and companion setae. Abdominal notopodia with avicular uncini; neuropodia with limbate setae.

Key to the Gulf of Mexico BLM-OCS Species of Sabella

1a. Radioles without eyes; body mottled brown (Figure 54-32a). . . . . .**Sabella sp. A**, p. 54-38
1b. Radioles with eyes; body pale or with regularly arranged brown spots 2

2a. Eyes unpaired, scattered irregularly along radioles (Figure 54-34a); body pale or brownish in color . . . . . .**Sabella microphthalma**, p. 54-40
2b. Eyes paired (Figure 54-36a,b); body with regularly arranged brown spots. . . . . .**Sabella melanostigma**, p. 54-42

Sabella sp. A
Figures 54-31, 32a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2852B-7/76 (1 spec., USNM 90415), 2853C-8/77 (1 spec.).
DESCRIPTION:
Length, to 30.6 mm; width, to 1.7 mm. Body mottled brown. Radioles numbering ten pairs, with longitudinal pigment streaks basally and several pale transverse bands along length (Figure 54-32a). Outer edges of radioles slightly flanged; tips short, digitiform; eyes absent. Palps slender, tapering to long points. Collar low, widely separated dorsally, not notched laterally, prolonged ventrally as two triangular lobes (Figure 54-32b). Thorax with eight setigers. Collar setae slender, limbate. Thoracic notopodia with long and short slender limbate setae (Figure 54-32c,d). Thoracic neuropodia with anterior row of acicular companion setae having crest of small teeth, and long triangular sheath curving over main fang (Figure 54-32e); and posterior row of avicular uncini having handles of moderate length and crest of small denticles (Figure 54-32f). Abdomen with up to 85 setigers. Abdominal notopodia with avicular uncini having short handles, long necks, and

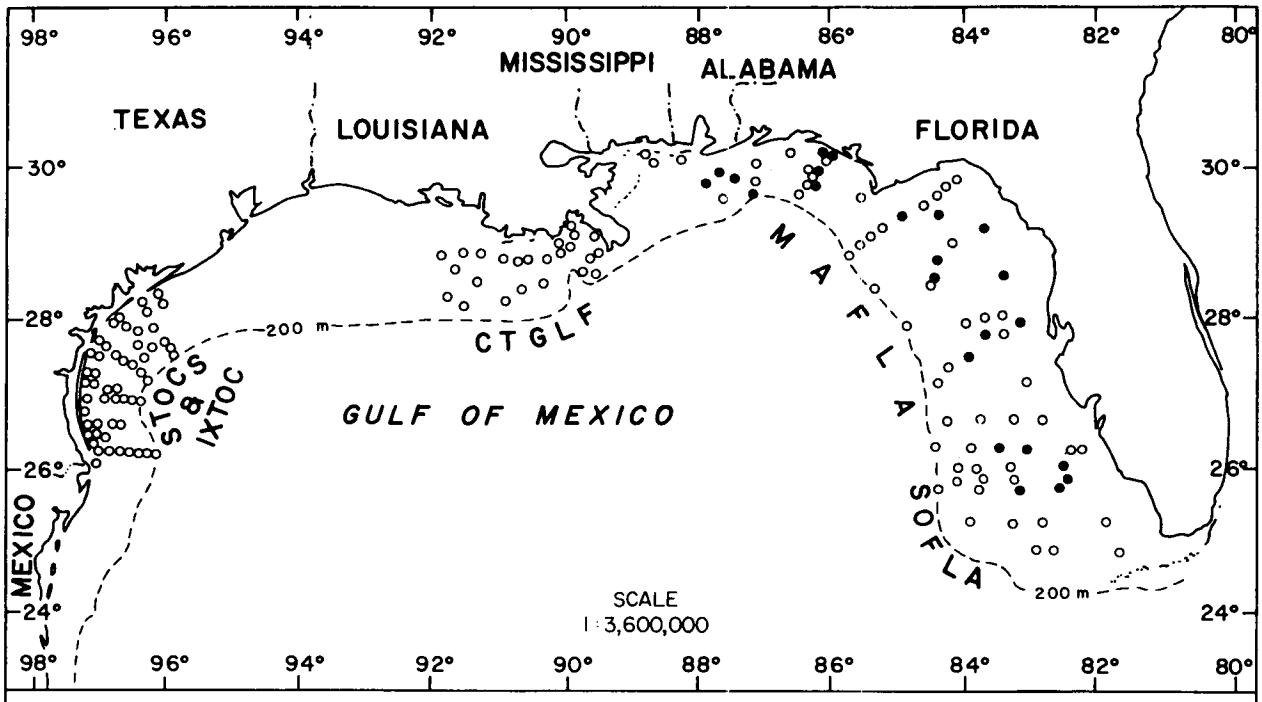

Figure 54-33. Distribution of Sabella microphthalma on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

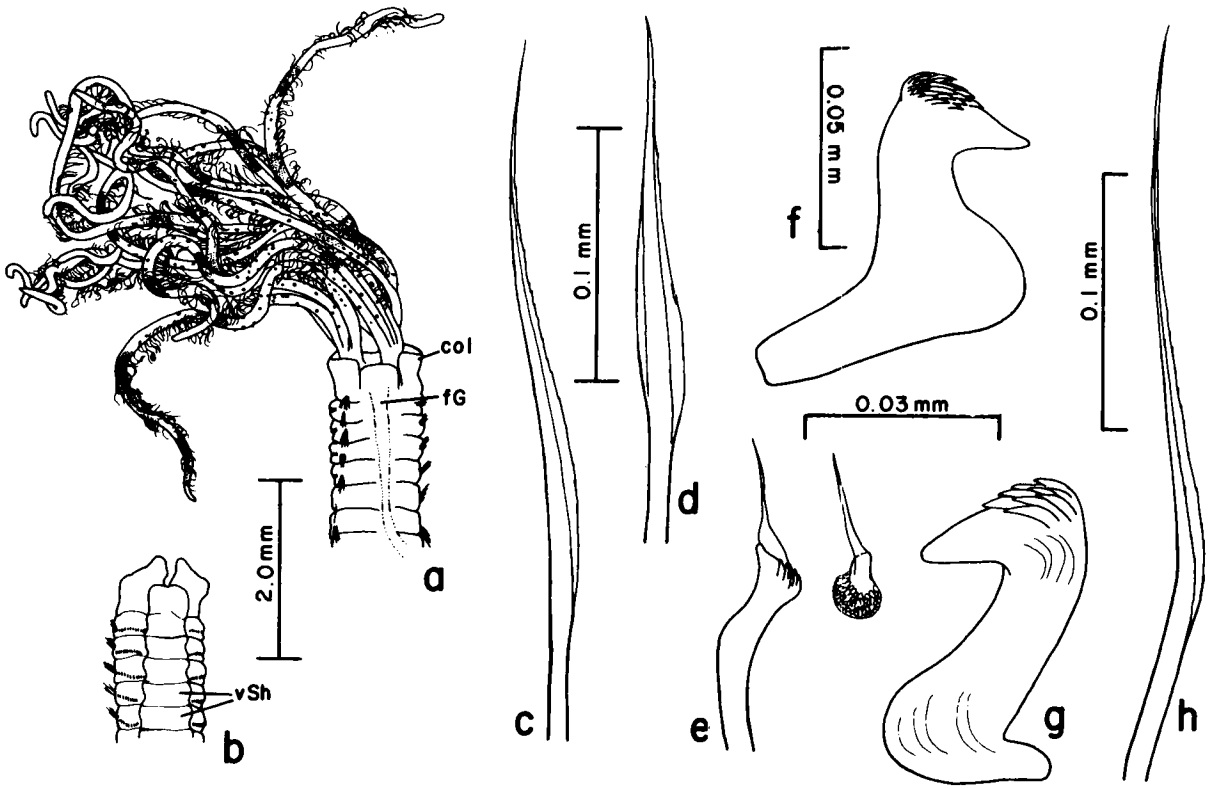

Figure 54-34. Sabella microphthalma: a, anterior end, dorsal view; b, same, ventral view (radioles not shown); c, d, thoracic notosetae; e, thoracic companion neurosetae; f, thoracic uncinus; g, abdominal uncinus; h, abdominal neuroseta (Figure f from USNM 53985).

crest of minute denticles (Figure 54-32g). Abdominal neurosetae slender, limbate, fairly short. Pygidium small, without eyespots.
REMARKS: Sabella sp. A resembles S. albicans Johannson, 1922, from Japan, particularly in the shapes of the thoracic neurosetae. It differs from the latter in lacking broadly limbate thoracic notosetae and in having radioles with much shorter tips. The color patterns resemble those described for Sabella jamaicensis (Augener, 1922), from Jamaica, but the original description of S. jamaicensis contains little additional information. Thus, examination of type-material would be necessary to determine any affinity between these specimens and S. jamaicensis.
GULF OF MEXICO BLM-OCS OCCURRENCE: Three scattered records off Florida (Figure 54-31); 22-36 m; coarse to fine sand.

Sabella microphthalma Verrill, 1873
Figures 54-33, 34a-h

Sabella microphthalma--Hartman, 1945:47; 1951a:117.
Sabella microphthalma--Day, 1973:127.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6D-11/80 (1 spec., USNM 90416), 14D-11/80 (1 spec., USNM 89417); MAFLA 12C-5/74 (1 spec.), 2209E-8/77 (1 spec.), 2315A-2/78 (1 spec.), 2316E-11/77 (1 spec.), 2316J-11/77 (1 spec., USNM 90418), 2318J-8/76 (1 spec.), 2531I-2/78 (1 spec.), 2640B-6/75 (1 spec.), 2640C-8/77 (1 spec.), 2640-11/77 (1 spec., USNM 90419), 2642I-6/75 (1 spec.).
Supplementary Material:
Gulf of Mexico--off Alabama, Edwards artificial reef, #3-0152, June 1976 (3 spec.); COE Sta. 477-1, 30°09.89'N, 88°27.63'W, 23.8 m, sand, Mar. 1981 (1 juv.); off Louisiana, Superport Sta. 3, on shell, 38 m, July 1973 (1 spec.).
North Carolina--Cape Lookout, intertidal, in cemented material of Petaloproctus socialis, Nov. and Dec. 1974, H. Wilson coll., T. Perkins ID. (5 spec., USNM 53985).
DESCRIPTION:
Length, to 38 mm (previously reported to 30 mm); width, to 3 mm. Body pale to brownish in color. Radioles numbering 5-15 pairs, with several transverse color bands. Eyes small, numerous, irregularly scattered over radioles (Figure 54-34a). Outer edges of radioles slightly flanged; tips digitiform. Collar with dorsal lobes rounded, well-separated; entire laterally; ventral lobes triangular (Figure 54-34b). Peristomium with eyespots in small specimens. Thorax with eight setigers (one specimen with five). Collar setae slender, limbate. Thoracic notosetae including long, slender limbate setae (Figure 54-34c), and shorter, broader limbate setae (Figure 54-34d). Thoracic neuropodia with anterior row of acicular companion setae having crest of minute teeth and long pointed sheath arising from main fang (Figure 54-34e); and posterior row of avicular uncini having fairly short handles and crest of small teeth (Figure 54-34f). Abdomen with up to 50 setigers. Abdominal notopodia with avicular uncini having short handles and crest of few small teeth above main fang (Figure 54-34g). Abdominal neurosetae slender, limbate (Figure 54-34h). Pygidium rounded, with numerous eyespots. Two specimens ovigerous.

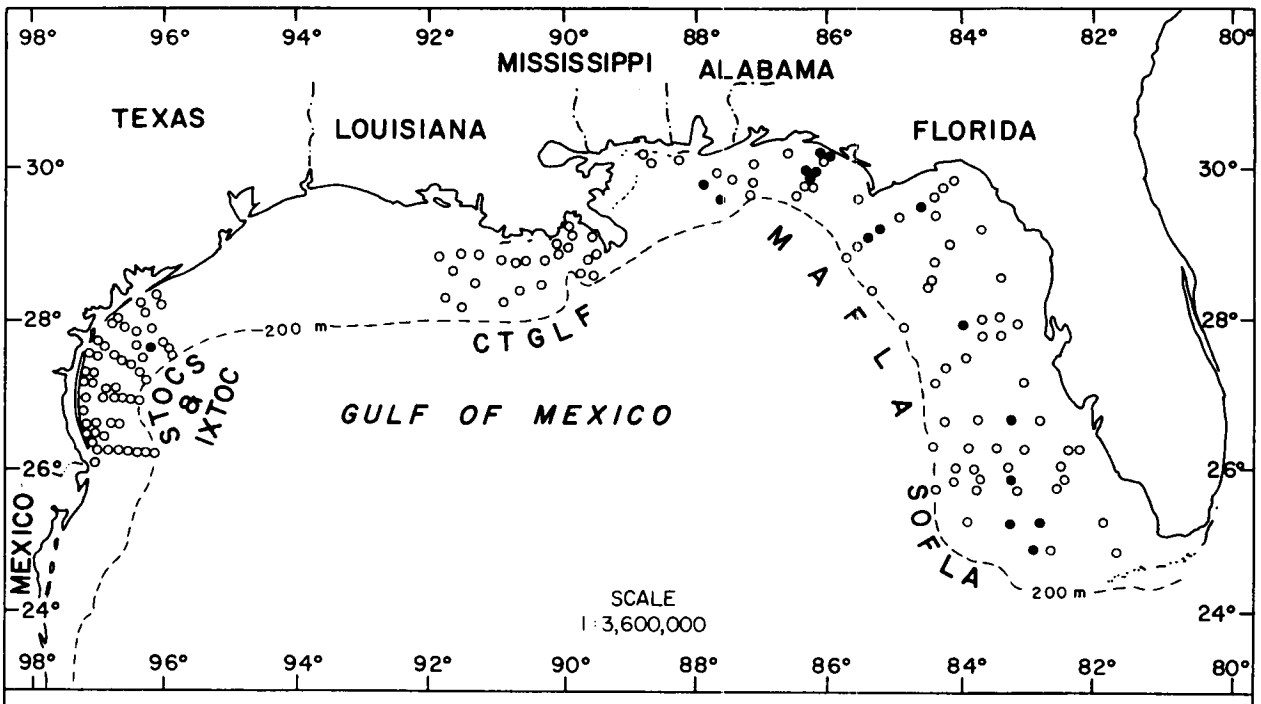

Figure 54-35. Distribution of Sabella melanostigma on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

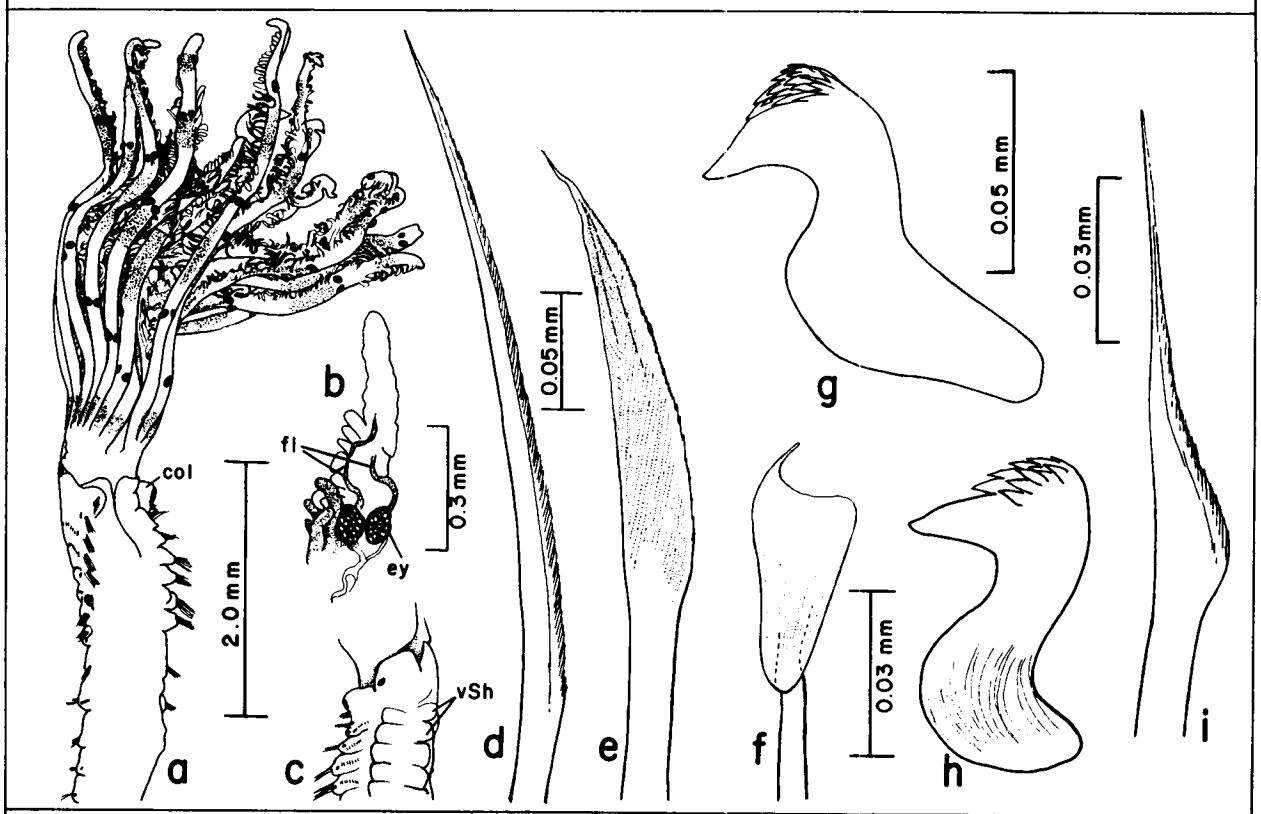

Figure 54-36. Sabella melanostigma: a, anterior end, dorsolateral view; b, tip of raciole; c, anterior end, ventrolateral view; d, e, thoracic notosetae; f, thoracic companion neuroseta; g, thoracic uncinus; h, abdominal uncinus; i, abdominal neuroseta.

REMARKS: Many of the smaller specimens of S. microphthalma were originally referred to Potamilla since the shorter thoracic notosetae of these specimens are proportionately broader, resembling elongate paleae.
PREVIOUSLY REPORTED HABITAT: Intertidal to 40 m; on oyster reefs, attached to whelk egg cases, among pile faunas, along retaining walls, in algal clumps.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in eastern Gulf (Figure 54-33); 19-180 m; coarse to fine-very fine sand, silty fine to very fine sand, clayey sandy silt.
DISTRIBUTION: Massachusetts to Florida, Gulf of Mexico.

Sabella melanostigma Schmarda, 1861
Figures 54-35, 36a-i

Sabella melanostigma--Hoagland, 1919:577, pl. 30, figs. 10-15, pl. 31, figs. 1, 2.
Sabella melanostigma--Mullin, 1923:49, pl. 7, figs. 4-6.
Sabella melanostigma--Treadwell, 1939b:295, fig. 109.
Sabella melanostigma--Day, 1973:126.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 4C-10/81 (1 spec., USNM 90431); MAFLA 2211C-7/76 (1 spec., USNM 90435), 2211D-11/77 (1 spec., USNM 90436), 2211E-2/78 (1 spec., USNM 90432), 2531E-7/76 (1 spec., USNM 90433), 2532I-7/76 (3 juv., USNM 90437), 2533A-6/75 (4 juv., USNM 90438); STOCS HR1-5 7/76 (1 juv., USNM 90434).
Supplementary Material:
Bahamas--Grand Bahama Island, off Lucaya, Hydrolab, 17 m, on coral reef, Sept. 1973 (1 spec.), Jan. 1974 (1 spec.).
North Carolina--Wrightsville Beach, Intracoastal Waterway, intertidal on rocks, Nov. 1973, S. L. Gardiner coll./ID. (5 spec., USNM 53981).
DESCRIPTION:
Length, to 73 mm (previously reported to 65 mm); width, to 5 mm (previously reported to 6 mm). Body with brown patches dorsally and ventrally on collar, with interramal pigment spots, occasionally with brown patches dorsal and ventral to each parapodium. Radioles numbering 4-25 pairs, with several transverse pigment bands (Figure 54-36a); connecting membrane present basally. Eyes paired, compound, numbering 2-6 pairs per radiole. Outer edges of radioles distinctly flanged; tips short, digitiform (Figure 54-36b). Palps fairly long, digitiform to triangular, with brown tips. Collar with dorsal lobes rounded, well-separated; notched laterally; ventral lobes triangular (Figure 54-36c). Peristomium with two eyespots in small specimens. Thorax with 7-14 setigers. Collar setae and thoracic notosetae limbate, of two lengths, longer ones slender, shorter ones broader (Figure 54-36d,e). Thoracic neuropodia with anterior row of companion setae having transparent, flipper-shaped blades (Figure 54-36f); and posterior row of avicular uncini having fairly short handles and crest of small teeth (Figure 54-36g). Abdomen with up to 114 setigers. Abdominal notopodia with avicular uncini having short handles and crest of small teeth (Figure 54-36h). Abdominal neurosetae limbate, broad basally (Figure 54-36i). Pygidium bilobed, with eyespots.

REMARKS: The thoracic companion setae are difficult to see, particularly on small specimens, which could lead to confusion with other genera. T. H. Perkins (pers. comm.), who examined the Gulf of Mexico BLM-OCS specimens, suggested that two species may be present. The first, which he indicated may be Sabella variegata Kröyer, 1856 (possibly synonymous with S. melanostigma), would include specimens which have pigment spots ventral (and sometimes also dorsal) to each parapodium. The second species would include those individuals with interramal rather than dorsal and ventral pigment spots. However, all the BLM-OCS specimens are small or in poor condition, so identities remain uncertain.

PREVIOUSLY REPORTED HABITAT: Intertidal to 50 m; tide pools and sheltered side of rocks, flat coral rocks, coral reef, sand.

GULF OF MEXICO BLM-OCS OCCURRENCE: Common in eastern Gulf and one record off Texas (Figure 54-35); moderate depths, 24-88 m; coarse to fine sand.

DISTRIBUTION: Bermuda, North Carolina, West Indies, Gulf of Mexico.

CHAPTER 55

Harry A. ten Hove and Paul S. Wolf

FAMILY SERPULIDAE Johnston, 1865

INTRODUCTION

The Serpulidae are a large family of polychaetes, whose members inhabit calcareous tubes. A conspicuous frilly plume emerges from the opening of the tube, prompting the common names of "plume worms", "fan worms", or "feather dusters" associated with the family.

The frilly plume actually consists of several pairs of bipinnate, ciliated filaments or radioles which are attached to pectinate, semicircular or spiraled lobes. One of the radioles is usually smooth and modified to form an operculum distally. The operculum is often chitinized or calcified, and is used to plug the tube opening when the worm is withdrawn. In some genera, e.g., Hydroides, fouled opercula are shed regularly and replaced by a new one at the opposite side of the crown.

The mouth is located at the base of, and is surrounded by, the radioles. The base of the crown is surrounded by a membranous thoracic collar, which is usually divided into two dorsolateral lobes and one medioventral lobe. Dorsally, the thoracic collar curves posteriorly into two thoracic membranes. These membranes continue posteriorly above the notopodia, at least to the second thoracic setiger, often curving ventrally and uniting to form a free membranous apron. The thoracic membranes usually encompass the entire dorsal thoracic region. The thorax consists of 7 (exceptionally 5-14) segments including the collar segment. The collar segment usually possesses notosetae only; these are termed collar setae. In some genera, the bundle of collar setae is reduced or absent entirely. Subsequent thoracic parapodia possess simple limbate notosetae, sometimes accompanied by sickle-shaped ("Apomatus") setae, and uncinate neurosetae.

A short achaetous region may follow the thorax and mark the beginning of the abdominal region. The abdomen consists of numerous segments, each with simple sickle-shaped, flat trumpet-shaped, or geniculate setae in the neuropodia and uncini in the notopodia. This setal arrangement is the opposite of that encountered in the thorax, and is termed "setal inversion." On far posterior setigers the neurosetae may become very long, smooth and slender. The pygidium is usually bilobed and bears a terminal slit-like anus.

Serpulid taxonomy is currently confused, owing in part to inadequate species descriptions in the extant literature. This is perhaps not surprising since many of the genera were described before 1900. Saint Joseph (1894) published an early review of the family followed by Pixell (1912, 1913) and Fauvel (1927). Recently, Day (1967), Straughan (1967a,b,c; 1969), ten Hove and Weerdenburg (1978), Zibrowius (1968; 1969a,b,c; 1971a,b,c; 1972a,b; 1973a,b; 1977), ten Hove (1970, 1973, 1974, 1975), and Imajima (1976a,b; 1977b; 1978; 1979) have provided partial treatments of the family on a regional basis. The works of ten Hove are especially useful for serpulids encountered in the Caribbean and Gulf of Mexico. Southward (1963) and Fauchald (1977a) have provided keys to the serpulid genera. Uchida (1978) gave a revision of the

family which, unfortunately, was based upon rather formalistic criteria, and it contains many errors and omissions.

According to Pettibone (1982) there are currently about 50 genera and 350 species of serpulids, while ten Hove (1979a) gave a more conservative number of 240 species. Ten genera and 14 species are described herein, of which two genera and six species may be new to science.

PRINCIPAL DIAGNOSTIC CHARACTERS

The Serpulidae were divided into three subfamilies, the Spirorbinae, Serpulinae, and Filograninae, by workers such as Day (1967). Recently, however, the Spirorbinae have been elevated to family rank, and consequently are not treated herein.

In the Serpulinae, with such genera as Pomatoceros Philippi, 1844, Spirobranchus Blainville, 1818, Hydroides Gunnerus, 1768, and Serpula Linnaeus, 1758, the operculum is always present and never has pinnules on its stalk (with the exception of the bathyal genus Spirodiscus Fauvel, 1909). In the Filograninae, with such genera as Filograna Oken, 1815, Protula Montagu, 1804, and Apomatus Philippi, 1844, the operculum is either absent or poorly developed and bears pinnules on its stalk. Within both subfamilies, generic and specific differentiation centers mainly on the morphology of the operculum, if present, the collar setae, and the uncini.

The operculum can be chitinous as in Hydroides, Vermiliopsis, and Pseudovermilia, or calcareous as in Spirobranchus and Pomatoceros. These hard opercula may be distally flattened as in Pomatoleios, conical as in Pomatoceros (Figures 55-24b) and Vermiliopsis (Figure 55-28a-c), or spinous as in Hydroides (Figures 55-12b, 14a) and Spirobranchus. In other genera, the operculum is soft and membranous. In Apomatus the operculum is spherical (Figure 55-6a); in Serpula and Crucigera it is funnel-shaped, formed by fused, fleshy radii (Figures 55-8a, 10a).

Attempts to separate genera based solely on the operculum can lead to error due to intra- and interspecific variability (see Pseudovermilia occidentalis (McIntosh, 1885) and Pomatoceros americanus Day, 1973, herein). Unfortunately, many of the described serpulid species are based on sparse material, and the extent of intraspecific variability is not known.

The morphology of the collar setae is an important generic character. Collar setae can be the bayonet-type as in Hydroides (Figures 55-14f, 16e) and Serpula (Figure 55-8c), fin-and-blade type as in Salmacina (Figure 55-2d) and Filogranula sp. A (Figure 55-22f), or limbate as in Protula (Figure 55-4c), Apomatus (Figure 55-6c) and Pomatoceros (Figure 55-24f). The number and arrangement of basal teeth in the bayonet-type setae has been used as a specific character. This can, however, be extremely variable in some species such as Hydroides norvegica or constant in others such as H. elegans (see ten Hove, 1974:47). Again, the intraspecific variability of the collar setae is not documented for most species; thus, this character should be used with caution.

Another important generic character is the morphology of the thoracic and abdominal setae. The setae may be sickle-shaped (also termed "setae of Apomatus") as in the thorax of Salmacina (Figure 55-2e), Protula (Figure 55-4d,e), and of course, Apomatus (Figure 55-6d,e); "trumpet"-shaped as in the abdomen of Serpula (Figure 55-8e) and

Hydroides (Figures 55-12k, 14i); or geniculate as in Filogranula sp. A (Figure 55-22i) and Pomatoceros (Figure 55-24g,h). The morphology of each setal type is probably a good generic character. However, since the angle of view combined with the small size of the setae may result in misleading conceptions, especially for the trumpet-shaped and geniculate setae, the character should be used cautiously. For each species, abdominal setae are figured.

The number of vertical rows of teeth present on thoracic versus abdominal uncini is considered generically diagnostic in some cases. For example, in Vermiliopsis the thoracic and abdominal uncini have teeth arranged in a single vertical row (saw-shaped uncini). In Pseudovermilia, however, the thoracic uncini are saw-shaped, whereas the abdominal uncini have teeth arranged in several vertical rows (rasp-shaped uncini). In other genera, the uncini may vary along the thorax and/or abdomen from saw- to rasp-shaped. Uncini are figured herein for each species, but no attempt is made to use them as a diagnostic specific character or to illustrate the differences between anterior and posterior uncini.

Specific identification of serpulids has traditionally centered primarily on a combination of characters including morphological differences in the opercula, thoracic membranes, collar setae, and to a lesser extent, uncini. Recently, however, workers such as ten Hove (1975, pl. 7, 8; 1979a:402) have stressed the importance of tube morphology for species separation in some genera. Indeed, some species can only be identified with certainty after examination of the tube (e.g., see "REMARKS" herein for Vermiliopsis annulata). The absence of tubes (which were discarded during processing of Gulf of Mexico BLM-OCS samples), as well as previous incomplete descriptions of other specific characters, have made identification of serpulid species from Gulf of Mexico BLM-OCS material extremely difficult, and in some cases impossible.

BIOLOGICAL NOTES

Serpulids are sedentary, constructing their tubes on hard surfaces and, as in Hydroides elegans, can even form important fouling communities on ships' hulls, pier pilings, etc. Some serpulids such as Pomatoleios in tropical Australia and South Africa and Galeolaria in temperate Australia form thick coralliform masses (ten Hove, 1979b). Ditrupa Berkeley, 1835, a deep water form, builds a solitary, unattached, tusk-shaped tube (Day, 1967:792; Wilson, 1976:298). Gulf of Mexico BLM-OCS specimens were removed from hard surfaces (e.g., shells, coral, and rock) prior to examination by the authors; therefore, the exact surfaces to which they were attached are unknown.

Members of the Serpulidae are filter-feeders like the Sabellidae (see Chapter 54), using the fan of radioles to filter plankton from the water column. The radioles serve both a nutritive and a respiratory function (Dixon, 1977:281). The structure and function of the tentacular crown are complex, and are treated in detail by Johansson (1927), Nicol (1930), Thomas (1940), Hall (1954), Dales (1957b), Fitzsimons (1965), Lewis (1968), and Bonar (1972).

Sexes are usually separate, although members of the nominal genera Salmacina and Filograna and other serpulids have been found to be hermaphroditic. Fertilization occurs externally and the larvae are

planktonic. Some species, such as Chitinopoma serrula and Microprotula ovicellata Uchida, 1978, construct brood chambers. Filograna implexa is hermaphroditic and broods its young within the tube. Some species of Filograna, Filogranula, and Josephella may also reproduce asexually by fragmentation (ten Hove, 1979a:401-402).

SPECIES OF SERPULIDAE RECORDED FROM GULF OF MEXICO BLM-OCS PROGRAMS

	Page
Salmacina sp. A	55-7
Protula sp. A	55-9
Apomatus sp. A	55-11
Serpula sp. A	55-13
Crucigera websteri Benedict, 1887	55-15
Hydroides sp. A	55-17
Hydroides bispinosa Bush, 1910	55-19
Hydroides dianthus (Verrill, 1873)	55-21
Hydroides protulicola Benedict, 1887	55-21
Hydroides microtis Mörch, 1863	55-23
Filogranula sp. A	55-27
Pomatoceros americanus Day, 1973	55-29
Pseudovermilia occidentalis (McIntosh, 1885)	55-31
Vermiliopsis annulata (Schmarda, 1861)	55-33

Key to the Genera of Serpulidae from the Gulf of Mexico BLM-OCS Programs

1a. Operculum present 3
1b. Operculum absent 2

2a. Radioles enlarged distally (Figure 55-2a); collar setae fin-and-blade type (Figure 55-2d); all uncini rasp-shaped; body small (to 4 mm long). . . . . **Salmacina**, p. 55-5
2b. Radioles not enlarged distally (Figure 55-4a); collar setae limbate (Figure 55-4c); all uncini rasp-shaped; body larger (to a few cm long). . . . . **Protula**, p. 55-7

3a. Operculum entirely soft, membranous (Figures 55-6a, 8a). 4
3b. Operculum at least in part hard, chitinized or calcified (Figures 55-12b, 22b) 6

4a. Operculum globular; opercular stalk with pinnules (Figure 55-6a) . . . . . .**Apomatus**, p. 55-9
4b. Operculum funnel-shaped; opercular stalk without pinnules (Figure 55-8a) 5

5a. Operculum without basal processes (Figure 55-8a) . . . . . .**Serpula**, p. 55-13
5b. Operculum with basal processes (Figure 55-10a) . . . . . .**Crucigera**, p. 55-13

6a. Radioles arranged in a spiral . . . . . **Spirobranchus***

6b. Radioles arranged in two semicircles 7

7a. Operculum composed of basal funnel of fused radii (Figures 55-12b, 14a) and distal crown of chitinized spines. . .**Hydroides**, p. 55-15
7b. Operculum not composed of basal funnel and distal crown. 8

8a. Operculum funnel-shaped, with a single central spine (Figure 55-22b). . . . . .**Filogranula**, p. 55-25
8b. Operculum distally enclosed (Figure 55-24a); cap smooth or with spines (Figure 55-26b) 9

9a. Opercular stalk with wings (Figure 55-24a-c) . . . . . .**Pomatoceros**, p. 55-27
9b. Opercular stalk without wings 10

10a. Anterior abdominal uncini with teeth in several vertical rows. . . . . **Pseudovermilia**, p. 55-29
10b. Anterior abdominal uncini with teeth in a single vertical row. . . . . **Vermiliopsis**, p. 55-31

*Not found in Gulf of Mexico BLM-OCS material; see ten Hove (1970:22).

Genus **Salmacina** Claparède, 1870a

TYPE SPECIES: Salmacina incrustans Claparède, 1870a.
REFERENCES:
Straughan, 1967b:250.
Hartmann-Schröder, 1971:538.
Zibrowius, 1973b:80.
Fauchald, 1977a:146.
DIAGNOSIS: Operculum absent. Radioles enlarged distally. Thorax with 5-9 segments. Collar setae fin-and-blade type. Thoracic notosetae including limbate and "Apomatus" setae. Abdominal neurosetae faintly geniculate. Thoracic and abdominal uncini rasp-shaped.
REMARKS: The nominal genus Salmacina is similar to Filograna Oken, 1815, but differs from the latter in lacking an operculum. However, operculate specimens may shed their opercula when killed. The animals concerned are very small, and criteria used for identification lie near the limits of the light-microscope. Consequently many identifications in the literature cannot be trusted. Gee (1963:705) gave some consistent differences between operculate and non-operculate populations in a detailed study. On the other hand, most recent workers (e.g., Zibrowius, 1973b:80) are of the opinion that both genera are synonymous. Some recent work in the Mediterranean (ten Hove and Pantus, unpubl.) appears to confirm Gee's conclusion that operculate and non-operculate forms belong to different species. Vannini (1975) and co-workers, studying the asexual reproduction in Filograna and Salmacina, gave an indication that clonal differences within the group are not impossible, and showed a correlation between number of thoracic segments of parent and descendant.

In conclusion, the taxonomy of the group is very confused, and a much-needed revision will have to be made with help of SEM, in order to elucidate the small but apparently constant differences in collar setae (and maybe in uncini) as given by Gee (1963). Moreover, his

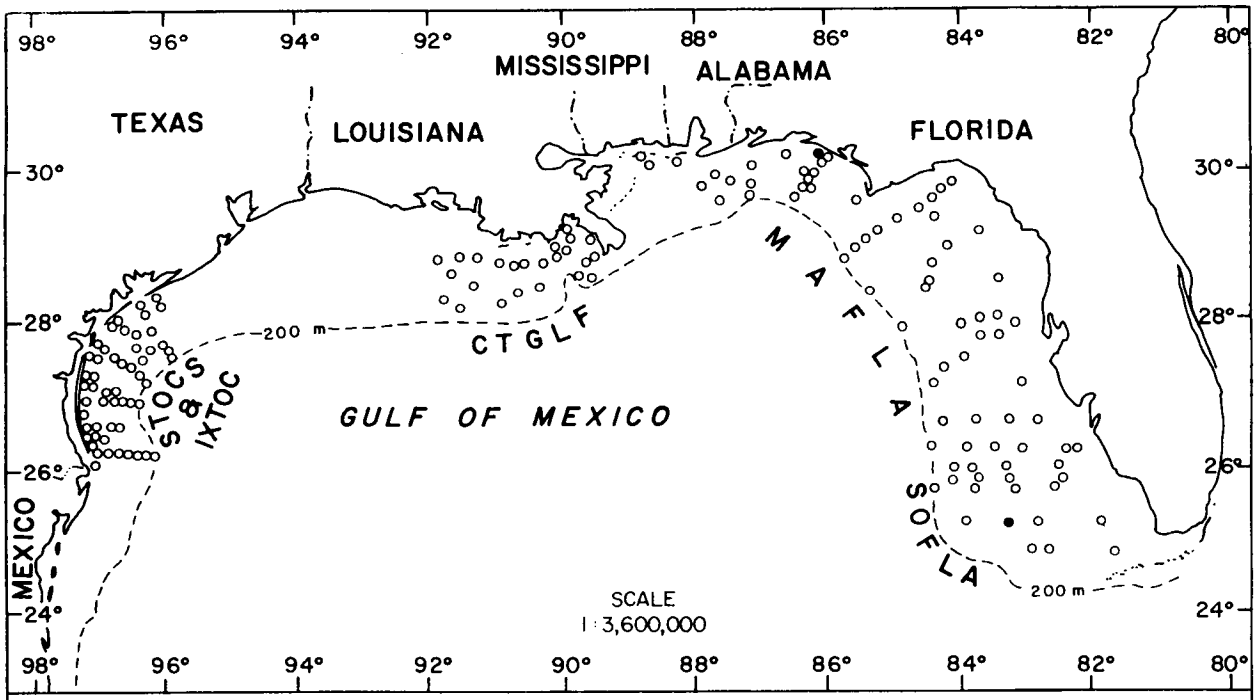

Figure 55-1. Distribution of Salmacina sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

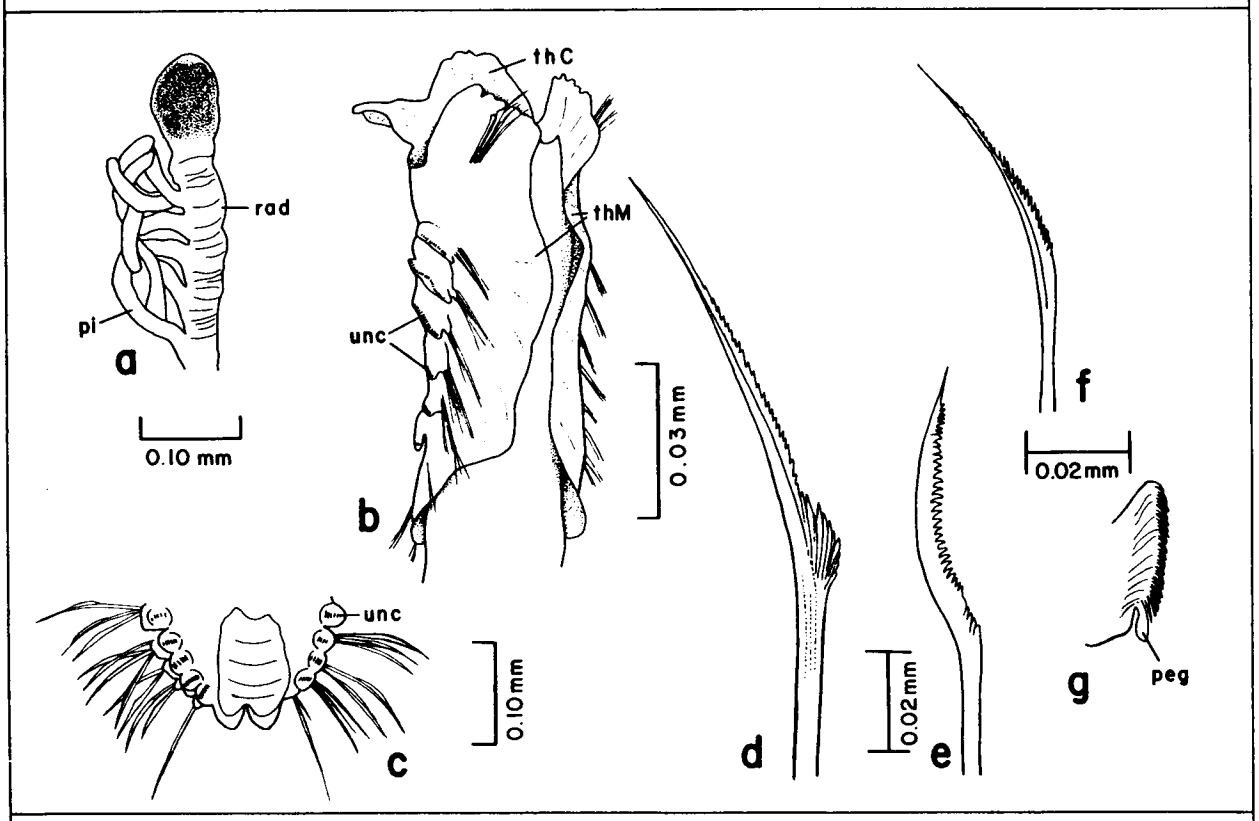

Figure 55-2. Salmacina sp. A: a, tip of radiole; b, thoracic region, oblique view (crown omitted); c, posterior end, dorsal view; d, collar seta; e, "Apomatus" thoracic notoseta; f, abdominal neuroseta; g, thoracic uncinus.

quantitative approach is worth following, and may be the only way to solve the complex. In view of all these uncertainties we prefer to use the name Salmacina, at least indicating that we had non-operculate specimens.

Salmacina sp. A
Figures 55-1, 2a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 24C-8/81 (18 spec., USNM 86666); MAFLA 2528I-6/77 (102 spec.).
DESCRIPTION:
Length, to 4.0 mm; width, to 0.3 mm. Thorax with 8-9 setigers. Largest specimen complete with 26 abdominal setigers and ten radioles. Each radiole with enlarged spherical tip (Figure 55-2a); radioles without pigmentation. Operculum absent. Thoracic collar (Figure 55-2b) trilobed with ventral lobe notched medially; dorsal lobes crenulate. Thoracic membrane continuous to end of thoracic region. Abdomen with uncini borne on small tori (Figure 55-2c). Collar setae with dentate fin and serrate blade (Figure 55-2d). Thoracic notosetae of "Apomatus"-type (Figure 55-2e). Abdominal neurosetae faintly geniculate with serrate margin (Figure 55-2f). Thoracic uncini with several vertical rows of teeth above large peg (Figure 55-2g), present from setiger 2. Abdominal uncini similar to, but smaller than thoracic uncini.
REMARKS: Salmacina sp. A perhaps differs from other species of the genus in having crenulate dorsal lobes on the thoracic collar. This character, however, may not be a constant one. Salmacina sp. A apparently differs from S. amphidentata Jones, 1962, from Jamaica, in the numbers of thoracic segments and radioles. See, however, generic remarks above. Salmacina sp. A probably forms dense colonies since many specimens were found in each sample.
GULF OF MEXICO BLM-OCS OCCURRENCE: Locally abundant off Florida (Figure 55-1); 37-88 m; coarse to medium sand.

Genus **Protula** Risso, 1826

TYPE SPECIES: Serpula tubularia Montagu, 1803.
REFERENCES:
McIntosh, 1923:330.
Day, 1967:818.
Fauchald, 1977a:146.
DIAGNOSIS: Operculum absent. Radioles in semicircular or spiraled arrangement. Thorax with seven setigers. Collar setae limbate. Thoracic notosetae including limbate setae and sometimes "Apomatus" setae. Abdominal neurosetae with dentate or sickle-shaped blades. Thoracic and anterior abdominal uncini saw-shaped; posterior uncini may be rasp-shaped.

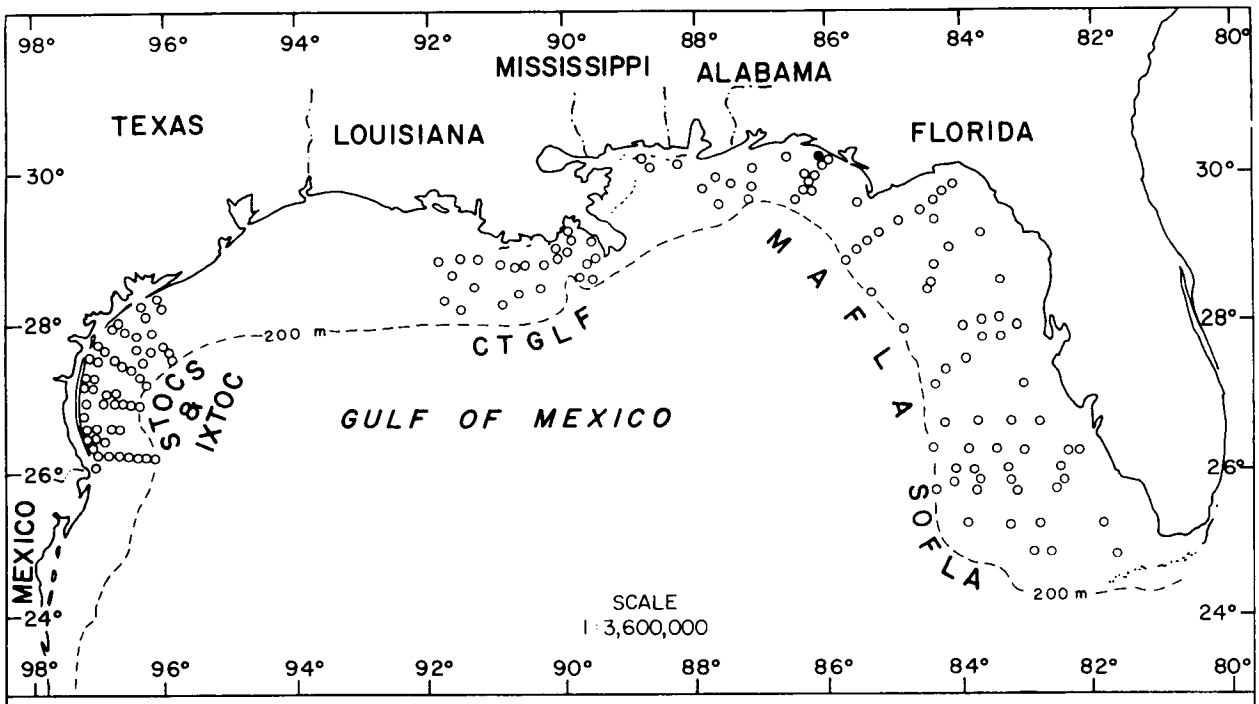

Figure 55-3. Distribution of Protula sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

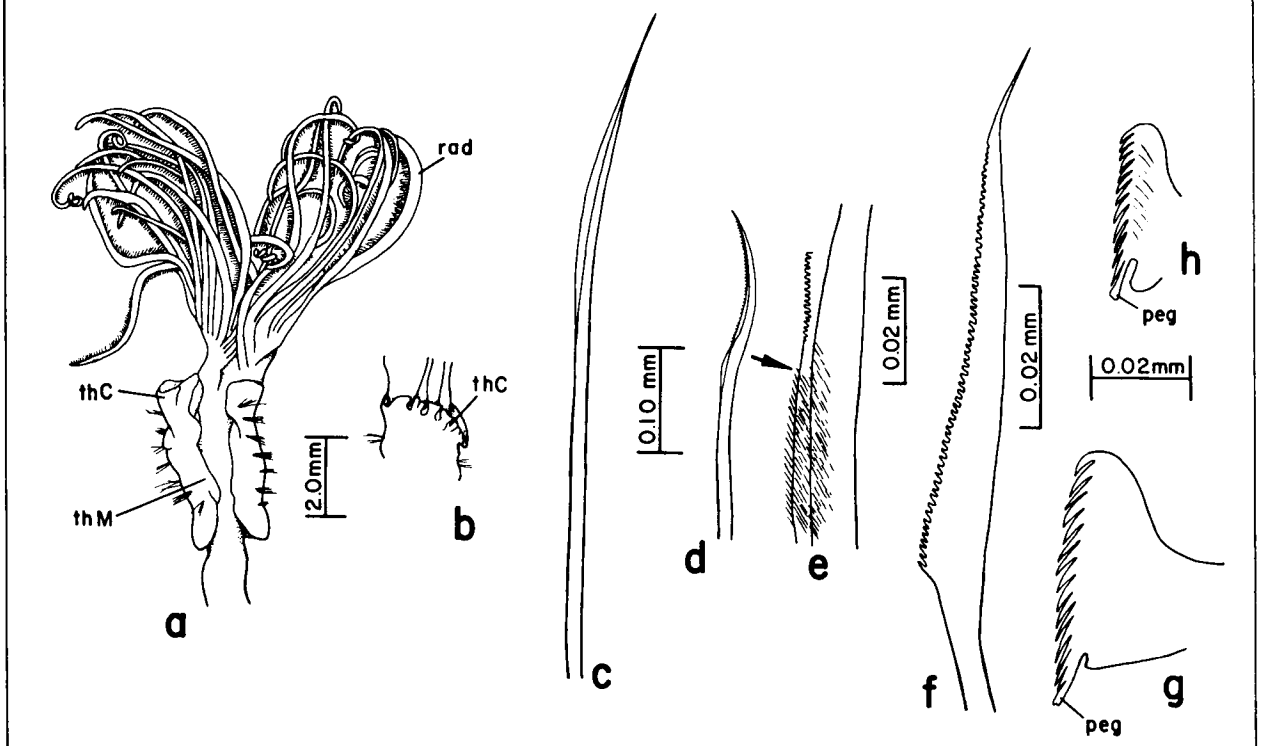

Figure 55-4. Protula sp. A: a, thoracic region, dorsal view; b, thoracic collar, ventral view; c, collar seta; d, "Apomatus" thoracic notoseta; e, basal portion of same; f, anterior abdominal neuroseta; g, thoracic uncinus; h, anterior abdominal uncinus.

Protula sp. A
Figures 55-3, 4a-h

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2528G-11/77 (1 spec., USNM 86681).
DESCRIPTION:
Length, 20 mm; width, 1.75 mm. Only specimen complete with seven thoracic setigers, about 55 abdominal setigers, and about 30 radioles. Radioles arranged in two semicircles (Figure 55-4a). Thoracic collar with large dorsal lobes (Figure 55-4a) and one low ventral lobe (Figure 55-4b); lobes with many folds but without distinct incisions. Thoracic membranes extending through setiger 7, united ventrally. Pygidium damaged. Collar setae limbate (Figure 55-4c), similar to subsequent thoracic notosetae. Last thoracic notopodia with additional "Apomatus" setae (Figure 55-4d,e). Anterior abdominal neurosetae with broad, dentate blades (Figure 55-4f); posterior abdominal neurosetae long, slender, smooth. Thoracic uncini each saw- to rasp-shaped with about 15 teeth (when seen in profile) above long, minutely bifid basal peg (Figure 55-4g), present from setiger 2. Anterior abdominal uncini smaller than thoracic uncini, saw-shaped with about 12 teeth above long, entire basal peg (Figure 55-4h). Far posterior abdominal uncini rasp-shaped.
REMARKS: The Gulf of Mexico BLM-OCS specimen of Protula could not be identified to species due to lack of a tube and to the inadequacy of previously published species descriptions. Even the generic determination is somewhat doubtful, since the second radiole on the left side was without its tip; an operculum may have broken off. On the other hand, the opposite radiole did not show a swollen end, as it does generally in Apomatus, and the abdominal neurosetae of this specimen are rather different from those of Apomatus sp. A. In view of the uncertainties in identifying specimens of Protula, as already indicated by Fauvel (1927:381) and by Zibrowius (1968:182), we refrained from an identification to species. See also "REMARKS" under Apomatus.

Among the nominal species described from the eastern United States are Protula media Stimpson (1854:30, figured in Hartman, 1944a, pl. 33, fig. 17) and Protula americana McIntosh (1885:512), both apparently with a more northern distribution. Protula diomedeae Benedict (1887:547), mentioned from the Gulf of Mexico too, appears to be characterized by its thick-walled tube. For the more southernly occurring species, see the discussion in Zibrowius (1970:17).
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off northwestern Florida (Figure 55-3); 37 m; coarse sand.

Genus **Apomatus** Philippi, 1844

TYPE SPECIES: Apomatus ampulliferus Philippi, 1844.
REFERENCES:
Fauvel, 1927:384.
Hartmann-Schröder, 1971:539.
Fauchald, 1977a:143.
DIAGNOSIS: Operculum globular, membranous; opercular stalk with pinnules. Thorax with seven setigers. Collar setae limbate; thoracic notosetae including limbate and "Apomatus" forms. Abdominal neurosetae

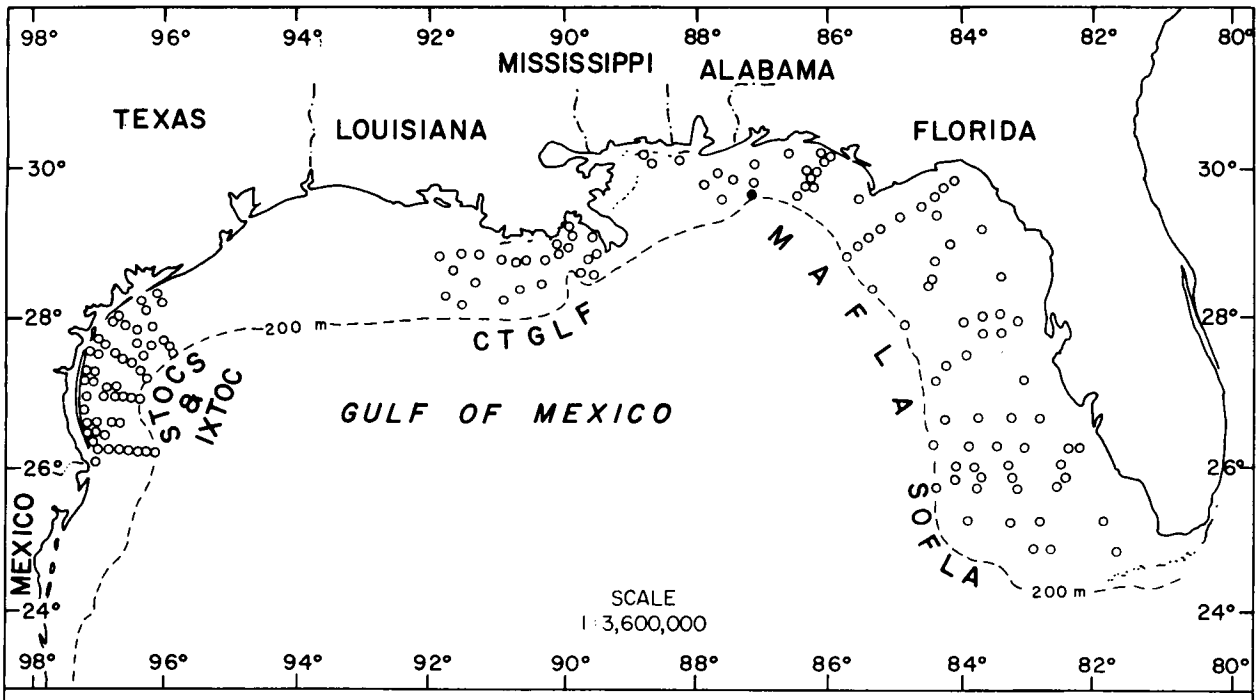

Figure 55-5. Distribution of Apomatus sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

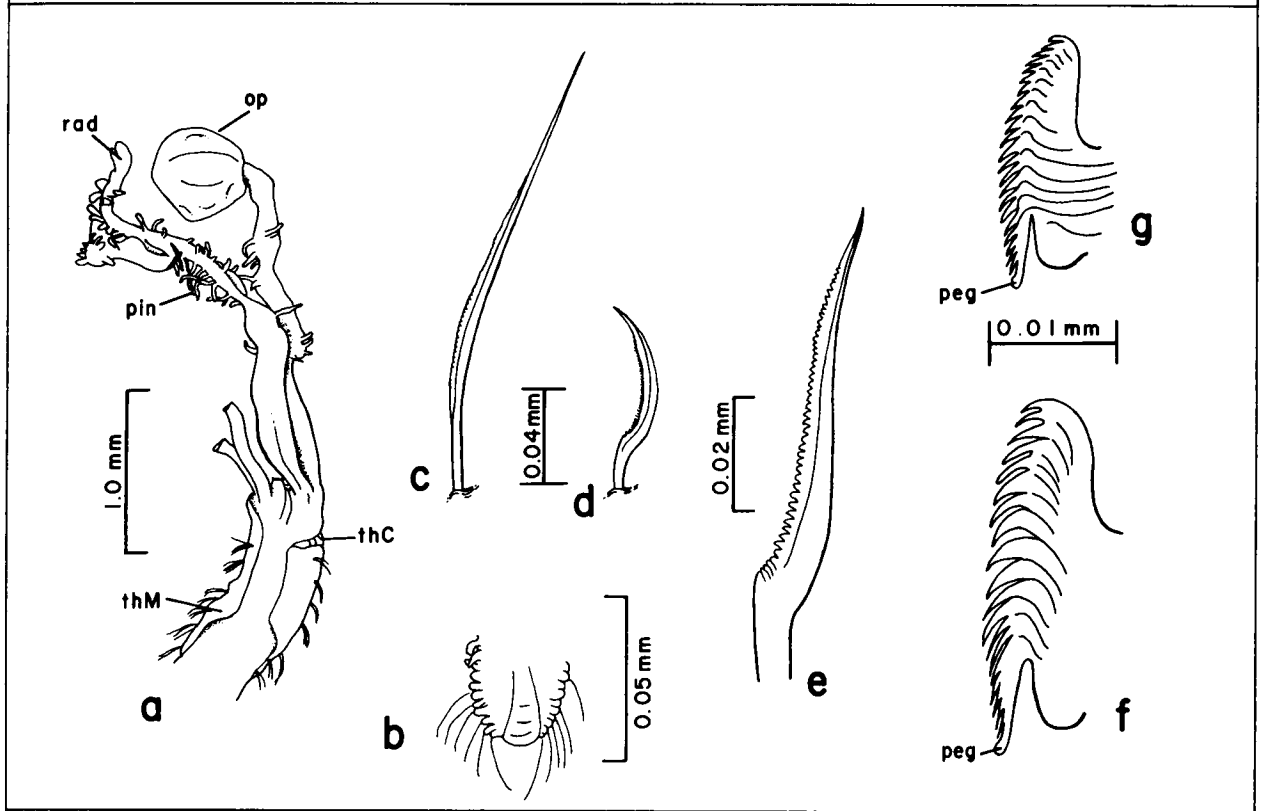

Figure 55-6. Apomatus sp. A: a, thoracic region, dorsal view (most radioles omitted); b, posterior end, dorsal view; c, collar seta; d, e, abdominal sickle setae; f, thoracic uncinus; g, abdominal uncinus.

dentate, sickle-shaped. Thoracic and abdominal uncini rasp-shaped, with teeth continuing on long anterior peg.

Apomatus sp. A
Figures 55-5, 6a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2645I-6/75 (1 spec., USNM 86672).
DESCRIPTION:
Length, 6.0 mm; width, 0.5 mm. Only specimen complete with seven thoracic setigers, 37 abdominal setigers, and 14 radioles lacking pigmentation. Operculum (Figure 55-6a) clear, spherical, membranous, borne on second dorsal radiole on right side. Thoracic collar damaged ventrally, rounded dorsally. Thoracic membranes narrowing abruptly around setiger 5, continuing to setiger 7; united ventrally. Abdominal segments crowded; small uncinigerous tori present on far posterior segments. Posterior end with dorsal raised glandular area (Figure 55-6b). Collar setae and thoracic notosetae with minute serrations along limbate margin (Figure 55-6c). Abdominal neurosetae dentate, sickle-shaped (Figure 55-6d,e). Last 12 abdominal setigers with long, slender, smooth capillary neurosetae (Figure 55-6b). Thoracic and abdominal uncini (Figure 55-6f,g) with long basal peg and 2-3 columns of teeth; abdominal uncini smaller than those of thorax. Thoracic uncini present from setiger 2.
REMARKS: As in Protula we refrained from determination to species, in view of the confused taxonomic status of the complex. It should be noted that herein the classical differentiation in Apomatus and Protula has been followed, based upon presence or absence of operculum only. In this context it is remarkable that Philippi (1844:188) originally proposed the taxon Apomatus for non-operculate forms as in Protula and Psygmobranchus (now considered a synonym of Protula), but the name Apomatus apparently stuck to the problematical operculate species Apomatus ampulliferus only.

Zibrowius (1968:182) correctly pointed out that the complex is highly debatable and confused. Recent work by ten Hove and Pantus (in preparation) indicates that operculate and non-operculate specimens in the Mediterranean are distinguished by different patterns of thoracic blood vessels, and by the presence of "Apomatus" setae exclusively in operculate specimens. This is in contradiction with several literature records, attributing "Apomatus" setae to non-operculate specimens. Although the opercula are easily lost, which might explain the apparent contradiction, we feel that more work is needed before a revision is possible. The literature review by Uchida (1978:75) is useful in that it brings together a lot of relevant literature; however, the uncritical approach of this author, as well as his exclusion of existing infraspecific variability coupled with possible intra-authoric variability in approach and in methods of rendering setae, lessens the usefulness of the review considerably. A real revision only can be based on a thorough study of actual material, and not on literature only.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Florida (Figure 55-5); 106 m; coarse sand.

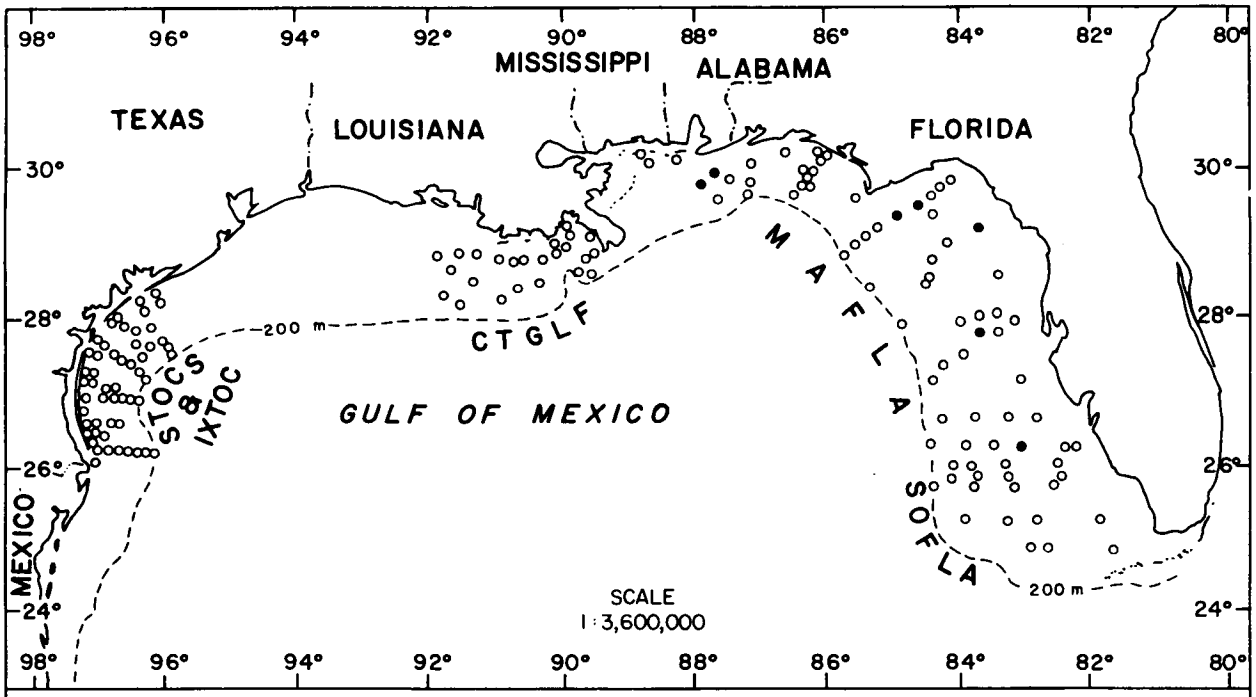

Figure 55-7. Distribution of Serpula sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

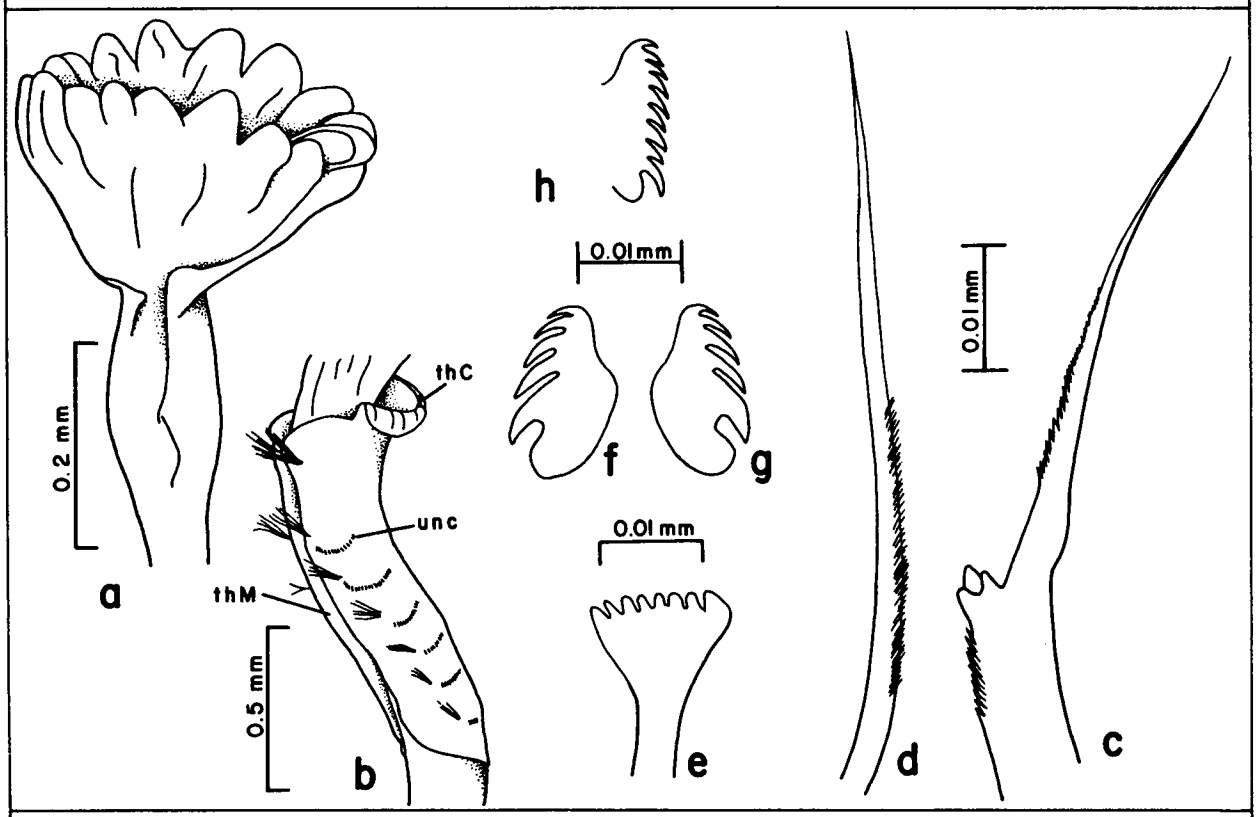

Figure 55-8. Serpula sp. A: a, operculum; b, thoracic region, lateral view (crown omitted); c, bayonet-type collar seta; d, capillary collar seta; e, abdominal neuroseta; f, thoracic uncinus; g, anterior abdominal uncinus; h, posterior abdominal uncinus.

Genus **Serpula** Linnaeus, 1758

TYPE SPECIES: Serpula vermicularis Linnaeus, 1767.
REFERENCES:
Heppel, 1963:443.
Day, 1967:809.
Zibrowius, 1968:96.
Fauchald, 1977a:147.
DIAGNOSIS: Operculum soft, funnel-shaped, formed of fused radii. Opercular stalk smooth, rounded in cross-section, without wings. Thorax with seven (rarely up to 10) setigers. Collar setae including bayonet-shaped setae and capillary setae. Thoracic notosetae limbate, hispid. Abdominal neurosetae flat trumpet-shaped. Uncini saw-shaped, except for posterior end of abdomen which may possess rasp-shaped uncini; anterior tooth simple, sharply pointed.

Serpula sp. A
Figures 55-7, 8a-h

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 12G-5/74 (1 spec.), 2103B-6/75 (1 spec.), 2209F-6/76 (1 spec.), 2318J-11/77 (1 spec.), 2422E-6/76 (1 spec.), 2423C-6/76 (1 spec.), 2423E-7/76 (1 spec.), 2423F-7/76 (1 spec.), 2423G-7/76 (2 spec.), 2423J-7/76 (1 spec.), 2640E-6/75 (1 spec.).
DESCRIPTION:
Length, to 6.0 mm; width, to 0.25 mm. Largest specimen complete with seven thoracic setigers, about 25 abdominal setigers, and about 12 radioles. Operculum (Figure 55-8a) with 18 fused, rounded radii. Thoracic collar with two low dorsal lobes (Figure 55-8b) and two higher ventral lobes. Thoracic membranes extending through setiger 7 (Figure 55-8b), united ventrally. Pygidium damaged. Collar setae including bayonet-type setae with 2-3 stout teeth basally and a proximal rasp (or denticulate zone) (Figure 55-8c), and slender, hispid capillary setae (Figure 55-8d). Thoracic notosetae simple, hispid. Anterior abdominal neurosetae dentate, flat trumpet-shaped, with one lateral tooth expanded (Figure 55-8e). Thoracic uncini present from setiger 2. Thoracic and anterior abdominal uncini (Figure 55-8f,g) with five teeth in a single vertical row. Posterior abdominal uncini (Figure 55-8h) with nine teeth in a single vertical row, basal peg poorly developed.
REMARKS: Gulf of Mexico BLM-OCS specimens of Serpula could not be identified to species due to the lack of tubes and to the confused taxonomic status of members of the genus (ten Hove and Jansen-Jacobs, in prep.).
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Alabama (Figure 55-7); 19-43 m; coarse sand, silty sand, clayey silt.

Genus **Crucigera** Benedict, 1887

TYPE SPECIES: Crucigera websteri Benedict, 1887.
REFERENCES:
Fauchald, 1977a:144.
ten Hove and Jansen-Jacobs (in prep.).

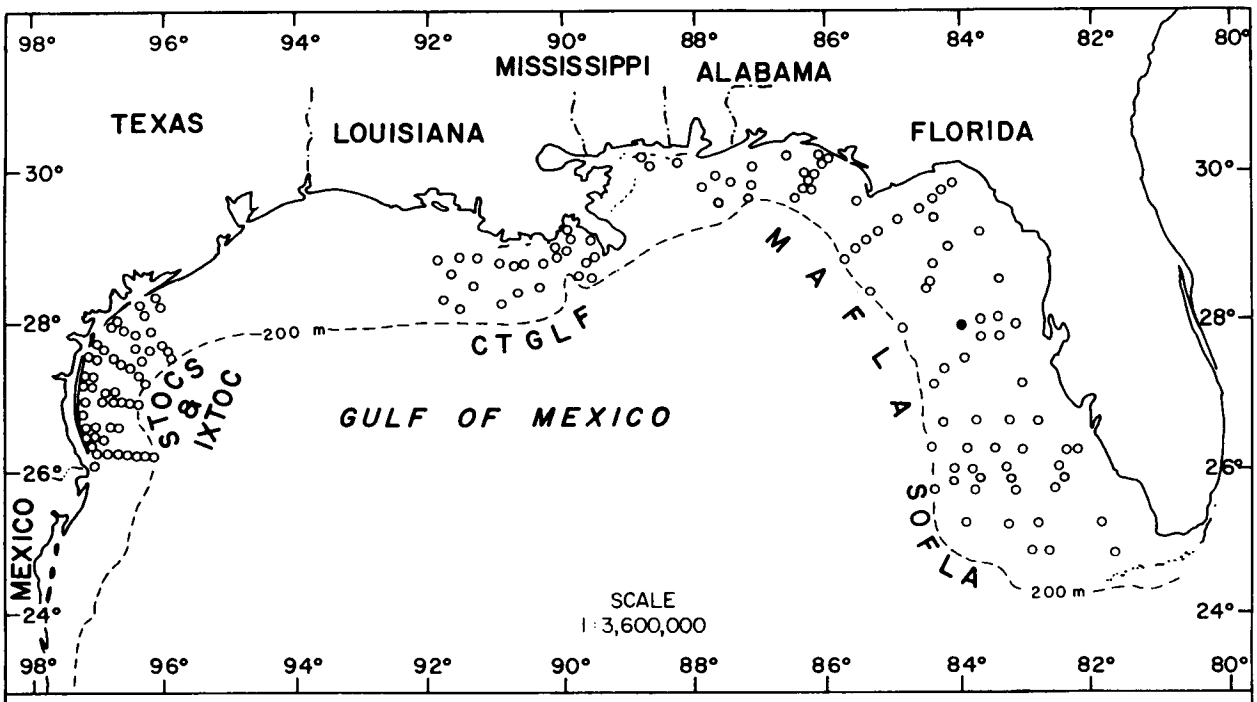

Figure 55-9. Distribution of Crucigera websteri on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

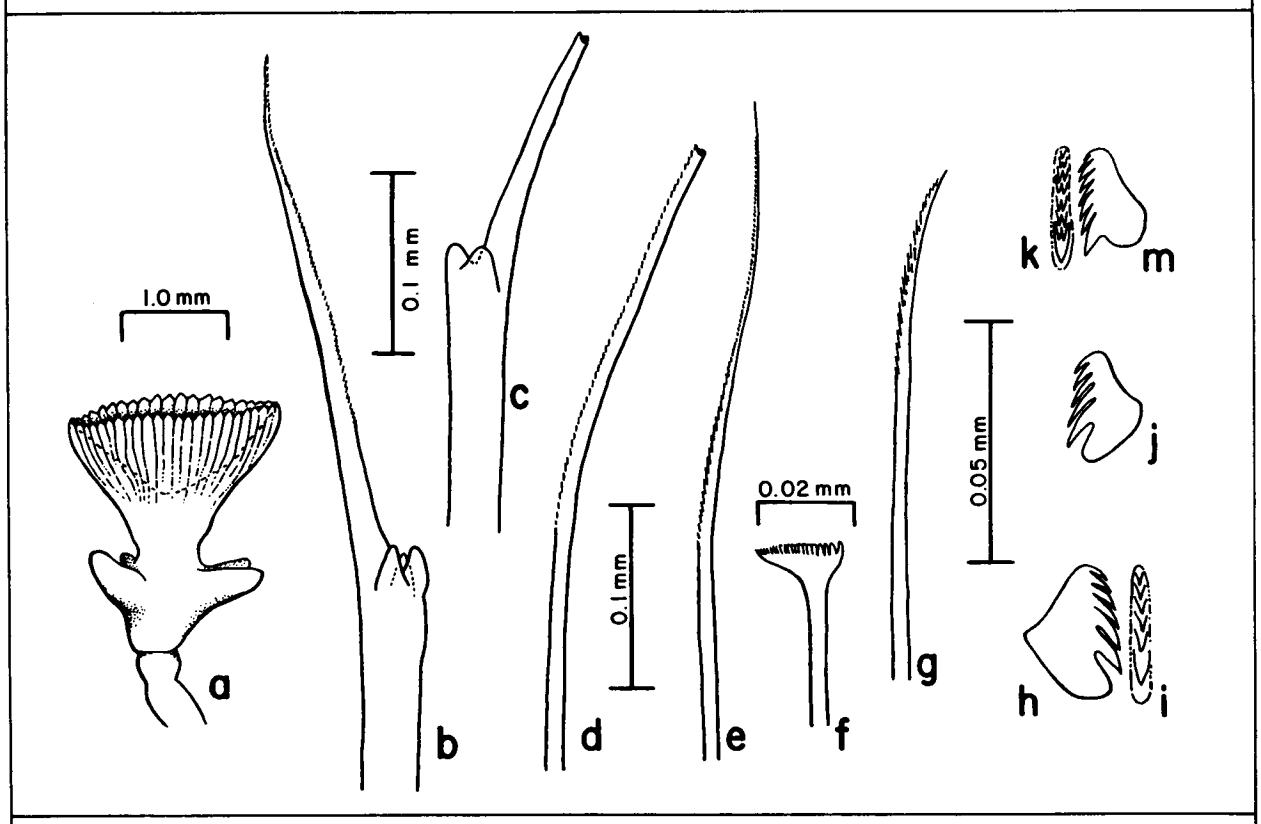

Figure 55-10. Crucigera websteri: a, operculum, lateral view; b, c, bayonet-type collar setae; d, limbate collar seta; e, thoracic notoseta; f, trumpet-shaped abdominal seta; g, capillary abdominal seta; h, thoracic uncinus, lateral view; i, same, frontal view; j, anterior abdominal uncinus; k, posterior abdominal uncinus, frontal view; m, same, lateral view (Figures a-m from ten Hove and Jansen-Jacobs, in prep.).

DIAGNOSIS: Operculum membranous, funnel-shaped with marginal crenulations distally and 2-4 rounded to digitiform processes basally. Thorax with seven segments. Collar setae including bayonet-shaped setae and capillary setae. Thoracic notosetae limbate. Abdominal neurosetae flat trumpet-shaped with long capillary setae on far posterior setigers. Thoracic uncini saw-shaped; abdominal uncini saw-shaped anteriorly, to rasp-shaped posteriorly.

Crucigera websteri Benedict, 1887
Figures 55-9, 10a-m

Crucigera websteri Benedict, 1887:550, pl. 21; figs. 24, 25, pl. 22; figs. 26-30.
Crucigera websteri--ten Hove and Jansen-Jacobs (in prep.).

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211E-6/76 (2 spec., USNM 86675).
DESCRIPTION:
Length, to 3.0 mm (previously reported to 40 mm); width, to 0.3 mm (previously reported to 2 mm). Largest specimen complete with seven thoracic setigers, about 25 abdominal setigers, and about 12 radioles. Each radiole with long filiform tip about equal in length to the pinnules. Operculum (Figure 55-10a) with about 37 pointed to blunt marginal crenulations distally and four digitiform processes basally arranged as a cross. Thoracic collar with two smooth, rounded dorsal lobes and three longer ventral lobes each with an irregular crenulate margin. Thoracic membranes extending through third abdominal setiger, united ventrally. Collar setae including bayonet-type setae without a proximal rasp, with 2-3 heavy teeth and a minutely hispid blade (Figure 55-10b,c); and slender, hispid capillary setae (Figure 55-10d). Thoracic notosetae slender, hispid (Figure 55-10e). Abdominal neurosetae flat trumpet-shaped, bearing numerous pointed to blunt teeth (Figure 55-10f). Far posterior setigers with 1-2 additional long capillary setae with hispid tips (Figure 55-10g). Thoracic uncini saw-shaped with 5-6 teeth (Figure 55-10h,i). Anterior abdominal uncini similar to thoracic uncini but smaller (Figure 55-10j). Posterior uncini rasp-shaped with 2-3 rows of teeth, eight teeth visible in profile (Figure 55-10k,m).
REMARKS: Gulf of Mexico BLM-OCS specimens of Crucigera websteri are juveniles, but match well the description by ten Hove and Jansen-Jacobs (in prep.).
PREVIOUSLY REPORTED HABITAT: 2-86 m; known as a fouling organism.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 55-9); 43 m; coarse sand.

Genus **Hydroides** Gunnerus, 1768

TYPE SPECIES: Hydroides norvegica Gunnerus, 1768.
REFERENCES:
Zibrowius, 1971d:721.
ten Hove, 1974:46.
Fauchald, 1977a:144.

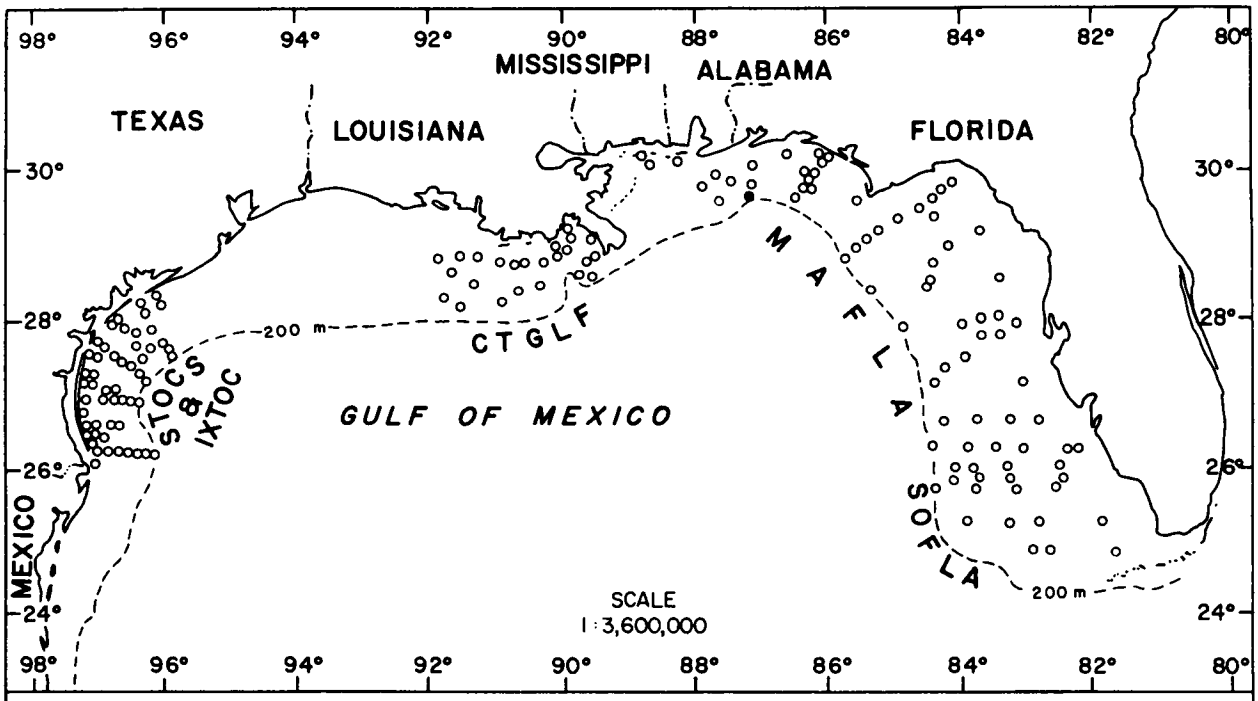

Figure 55-11. Distribution of Hydroides sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

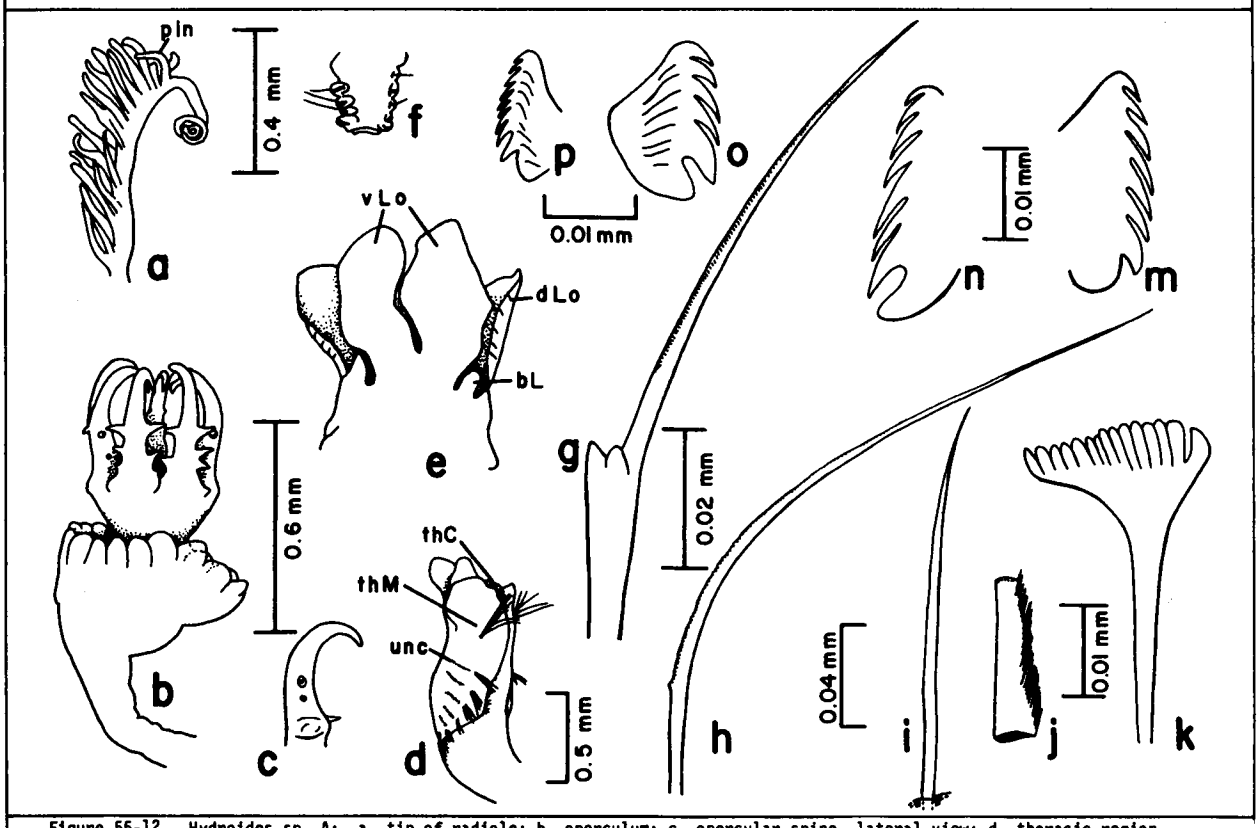

Figure 55-12. Hydroides sp. A: a, tip of radiole; b, operculum; c, opercular spine, lateral view; d, thoracic region, lateral view (crown omitted); e, thoracic collar, ventral view; f, posterior end, dorsal view; g, bayonet-type collar seta; h, capillary collar seta; i, thoracic notoseta; j, basal portion of same; k, abdominal neuroseta; m, superior thoracic uncinus; n, middle thoracic uncinus; o. anterior abdominal uncinus; p, posterior abdominal uncinus.

DIAGNOSIS: Operculum with soft, basal funnel formed of fused radii, and distal crown of chitinized spines. Opercular stalk smooth, rounded in cross-section. Thorax with seven setigers. Collar setae including bayonet-shaped setae and capillary setae. Thoracic notosetae limbate. Abdominal neurosetae flat trumpet-shaped. Thoracic uncini saw-shaped; abdominal uncini saw- to rasp-shaped; anterior tooth simple, sharply pointed.

Key to the Gulf of Mexico BLM-OCS Species of Hydroides

1a. All opercular spines curving inward (Figures 55-12b, 14a). . . . 2
1b. At least some opercular spines curving outward (Figures 55-16a, 18a) 3

2a. Opercular spines each with 2-3 pairs of lateral spinules (Figure 55-12b,c). . . . . **Hydroides sp. A**, p. 55-17
2b. Opercular spines each with one pair of lateral spinules (Figure 55-14a,b). . . . . **Hydroides bispinosa**, p. 55-19

3a. Ventral opercular spines curving outward, dorsal ones curving inward (Figure 55-16a). . . . . **Hydroides dianthus**, p. 55-21
3b. All opercular spines curving outward (Figure 55-18b) 4

4a. Opercular spines with pointed tips (Figure 55-18a,b) . . . . . .**Hydroides protulicola**, p. 55-21
4b. Opercular spines with blunt tips (Figures 55-20a,b). . . . . **Hydroides microtis**, p. 55-23

Hydroides sp. A
Figures 55-11, 12a-p

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2645C-6/75 (1 spec.), 2645C-2/78 (1 spec.), 2645J-2/78 (1 spec., USNM 86684).
DESCRIPTION:
Length, to 9.0 mm; width, to 0.60 mm. Largest specimen complete with seven thoracic setigers, 54 abdominal setigers, and 16 radioles. Each radiole (Figure 55-12a) with long, filiform tip and moderately long pinnules; without pigmentation. Operculum (Figure 55-12b) with 6-7 spines strongly curving inward, each having 2-3 pairs of lateral spinules and one inner basal spinule (Figure 55-12c). Basal funnel with about 16 rounded radii (Figure 55-12b). Thoracic collar with two broadly rounded dorsal lobes (Figure 55-12d) and two large ventral lobes; dorsal and ventral lobes separated by one pair of small basal lobes (Figure 55-12e). Thoracic membrane extending through setiger 7. Pygidium (Figure 55-12f) with simple terminal anus. Collar setae including bayonet-type setae (Figure 55-12g) without proximal rasp, with 2-3 teeth basally, and minutely serrate blade distally; and slender, serrate capillary setae (Figure 55-12h). Subsequent thoracic notosetae limbate (Figure 55-12i), with minutely serrate margin (Figure 55-12j). Abdominal neuropodia with 2-6 trumpet-shaped setae (Figure 55-12k); replaced posteriorly by long simple setae. Thoracic uncini saw-shaped with seven

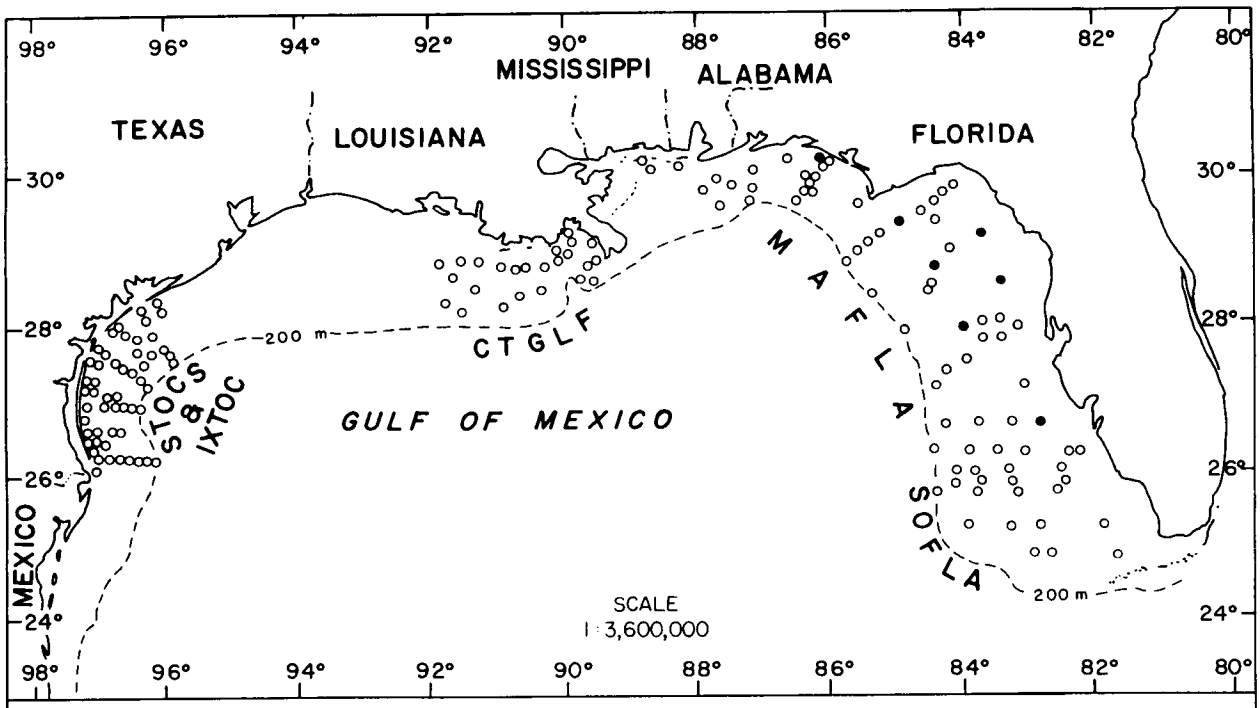

Figure 55-13. Distribution of Hydroides bispinosa on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

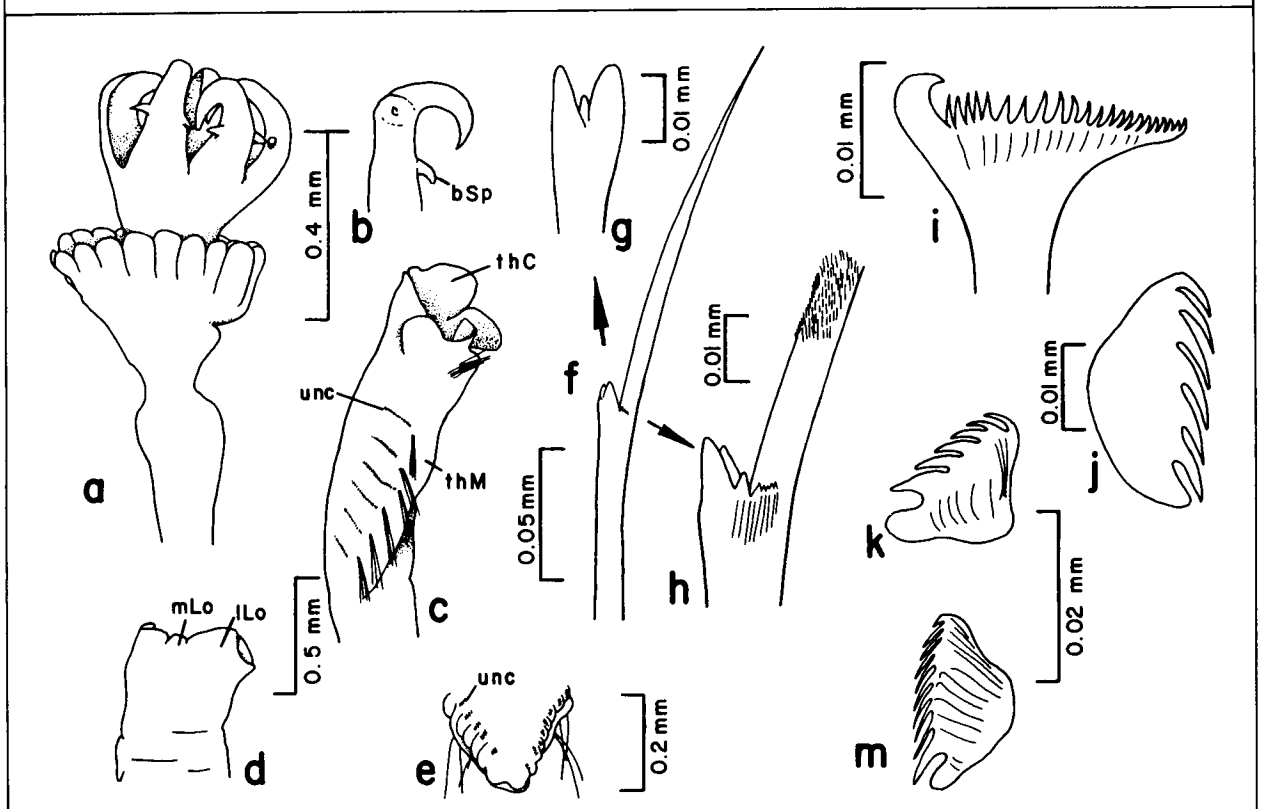

Figure 55-14. Hydroides bispinosa: a, operculum; b, opercular spine, lateral view; c, thoracic region, lateral view (crown omitted); d, thoracic collar, ventral view; e, posterior end, dorsal view; f, bayonet-type collar seta, lateral view; g, basal teeth of same, frontal view; h, same, lateral view; i, abdominal neuroseta; j, thoracic uncinus; k, anterior abdominal uncinus; m, posterior abdominal uncinus.

teeth (Figure 55-12m,n); shape of base varying. Abdominal uncini saw-shaped with 5-6 teeth anteriorly (Figure 55-12o), gradually becoming smaller and rasp-shaped posteriorly (Figure 55-12p).
REMARKS: Hydroides sp. A differs from other species of the genus in the form of its opercular spines. This species has also been found on the Shelf of Surinam and off Klein Curacao (ten Hove, unpublished).
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 55-11); 106 m; coarse sand.

Hydroides bispinosa Bush, 1910
Figures 55-13, 14a-m

Hydroides bispinosa Bush, 1910:496.
Hydroides bispinosa--Hartman, 1942b:88.
Hydroides bispinosa--Wells and Gray, 1964:74.
Hydroides bispinosa--Zibrowius, 1971d:717.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2D-11/80 (3 spec., USNM 86660); MAFLA 2211H-6/76 (1 spec.), 2316C-11/77 (1 spec.), 2318E-11/77 (1 spec.), 2318I-11/77 (1 spec.), 2318J-11/77 (1 spec.), 2423H-7/76 (2 spec.), 2528E-6/75 (1 spec.), 2852H-7/76 (2 spec.), 2852J-7/76 (1 spec., USNM 86679).
DESCRIPTION:
Length, to 10.0 mm; width, to 0.50 mm. Largest specimen complete with seven thoracic setigers, 54 abdominal setigers, and about 20 radioles. Each radiole with long filiform tip and moderately long pinnules; without pigmentation. Operculum (Figure 55-14a) with 6-11 (usually 7 or 8) spines strongly curving inward, each having one pair of lateral spinules and one sharply pointed inner basal spinule (Figure 55-14b). Basal funnel with 14-24 rounded radii (Figure 55-14a). Thoracic collar (Figure 55-14c) with two broad dorsal lobes overlapping middorsally; and three ventral lobes, medial lobe much smaller than lateral lobes (Figure 55-14d). Thoracic membrane extending through setiger 7, fused laterally to integument (Figure 55-14c). Pygidium (Figure 55-14e) shallowly bilobed. Collar setae including bayonet-type setae (Figure 55-14f), and slender, serrate capillary setae. Bayonet-type collar setae without proximal rasp, two stout teeth frontally (Figure 55-14g) and several accessory teeth of varying size (Figure 55-14h); blade hispid distally. Abdominal neurosetae flat trumpet-shaped, curved distally, dentate with one strongly hooked outer tooth (Figure 55-14i). Thoracic and anterior abdominal uncini saw-shaped with 6-7 teeth (Figure 55-14j,k). Posterior abdominal uncini (Figure 55-14m) rasp-shaped with up to ten long, slender teeth when seen in profile.
REMARKS: The opercular crown of Hydroides bispinosa is similar to that of H. parva Treadwell, 1901. In H. parva, however, the opercular spines are hooked with an angular appearance and the radii of the basal funnel are pointed. Also, in H. bispinosa, the opercular peduncle is inserted acentric, slightly displaced to the dorsal side, whereas in H. parva, it is generally centric.
PREVIOUSLY REPORTED HABITAT: Off Cape Hatteras, hard substrates; common in the Caribbean, in lagoons (ten Hove, unpublished).
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 55-13); 19-43 m; coarse sand to silty sand.

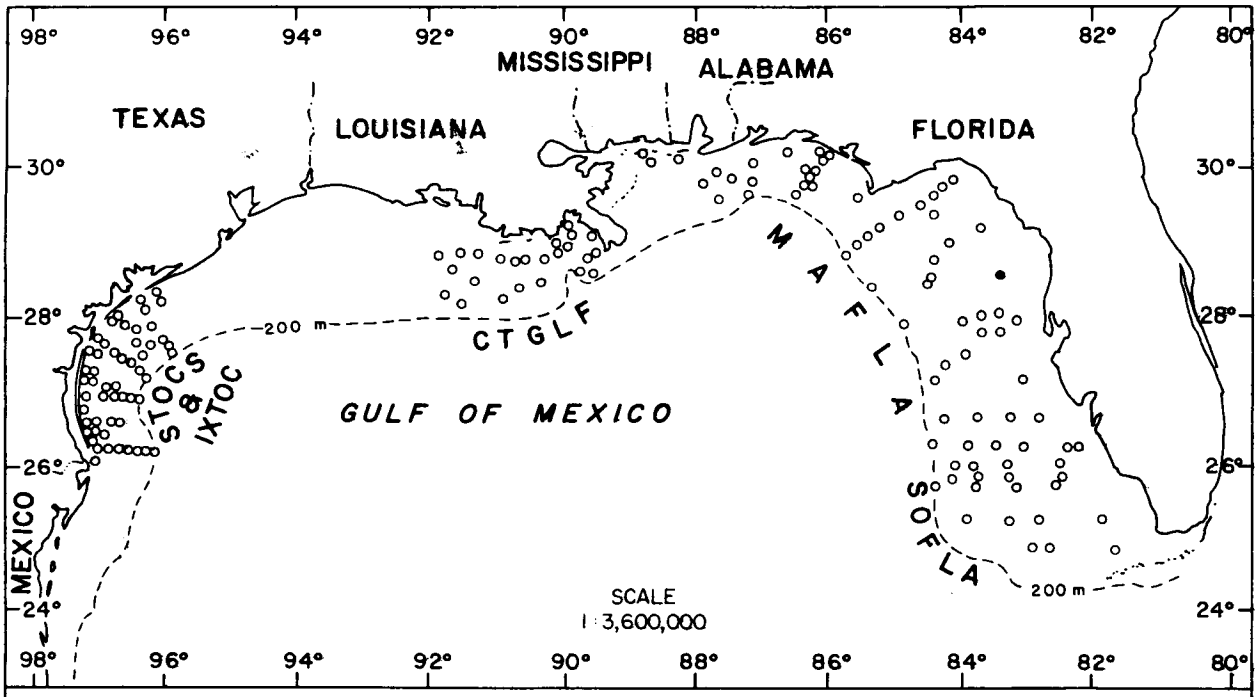

Figure 55-15. Distribution of Hydroides dianthus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

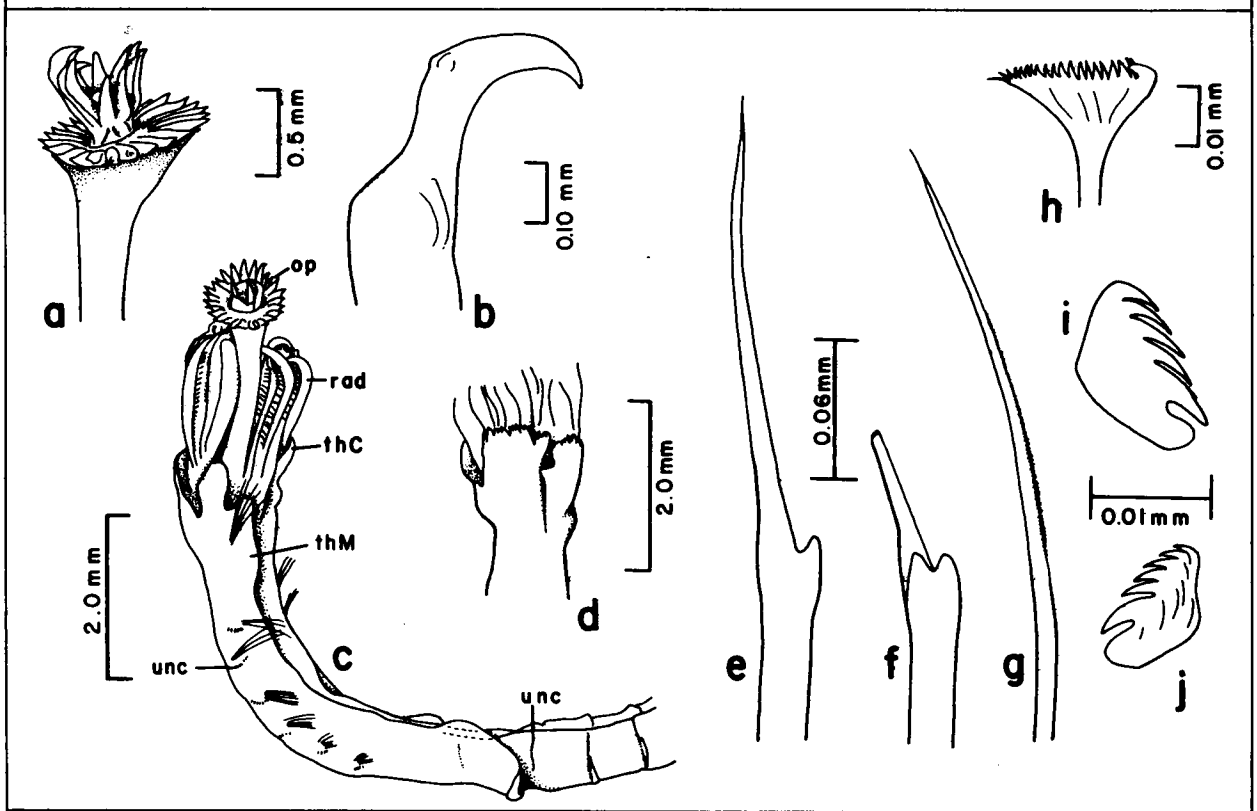

Figure 55-16. Hydroides dianthus: a, operculum, lateral view; b, opercular spine; c, anterior end, lateral view; d, thoracic collar, ventral view; e, bayonet-type collar seta, lateral view; f, same, frontal view; g, thoracic notoseta; h, abdominal neuroseta; i, thoracic uncinus; j, anterior abdominal uncinus.

DISTRIBUTION: North Carolina, Caribbean, Gulf of Mexico.

Hydroides dianthus (Verrill, 1873)
Figures 55-15, 16a-j

Serpula dianthus Verrill, 1873:620.
Eupomatus dianthus--Hartman, 1945:48, pl. 10, fig. 1; 1951a:118.
Hydroides dianthus--Zibrowius, 1971d:697, figs. 1-5.
Hydroides dianthus--Day, 1973:132.
Hydroides dianthus--Haines and Maurer, 1980:43.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2852D-7/76 (1 spec., USNM 86678).
DESCRIPTION:
Length, 15+ mm (previously reported to 25 mm); width, to 0.75 mm. Only specimen incomplete with seven thoracic setigers, 18 abdominal setigers, and about 20 radioles. Each radiole with filiform tip and moderately long pinnules; without pigmentation. Operculum (Figure 55-16a) dorsally with four large spines (Figure 55-16b) curving inward, and seven smaller spines curving slightly outward ventrally. Bases of opercular spines unadorned. Opercular basal funnel with 34 acuminate radii (Figure 55-16a). Thoracic collar with small, narrow dorsal lobes (Figure 55-16c) and large, rather frayed ventral lobes (Figure 55-16d). Thoracic membranes extending to second abdominal setiger (Figure 55-16c), united ventrally. Collar setae including bayonet-type setae and slender, hispid capillary setae. Bayonet-type setae without proximal rasp, with two heavy teeth; blades smooth to minutely hispid distally (Figure 55-16e,f). Thoracic notosetae slender, hispid (Figure 55-16g). Abdominal neurosetae flat trumpet-shaped, bearing numerous pointed teeth and one stout hooked tooth on one edge (Figure 55-16h). Thoracic uncini (Figure 55-16i) saw-shaped with five teeth. Anterior abdominal uncini (Figure 55-16j) saw-shaped with six teeth.
REMARKS: The single Gulf of Mexico BLM-OCS specimen matches previous descriptions of H. dianthus. In the Caribbean this species is replaced by the similar H. sanctaecrucis (Mörch, 1863) which differs from H. dianthus only in having small accessory spinules on the outside of the opercular spines.
PREVIOUSLY REPORTED HABITAT: Intertidal to 30 m, estuarine; sand-shell, on submerged rocks; fouling.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Florida (Figure 55-15); 22 m; medium sand.
DISTRIBUTION: Massachusetts to Florida, northern Gulf of Mexico; Mediterranean, Bay of Biscay (introduced), Senegal.

Hydroides protulicola Benedict, 1887
Figures 55-17, 18a-m

Hydroides protulicola Benedict, 1887:550, figs. 17-23.
Eupomatus protulicola--Rioja, 1946a:199, figs. 10-13.
Eupomatus protulicola--Hartman, 1951a:119.
Hydroides protulicola--Zibrowius, 1971d:695.
Hydroides protulicola--Day, 1973:134.

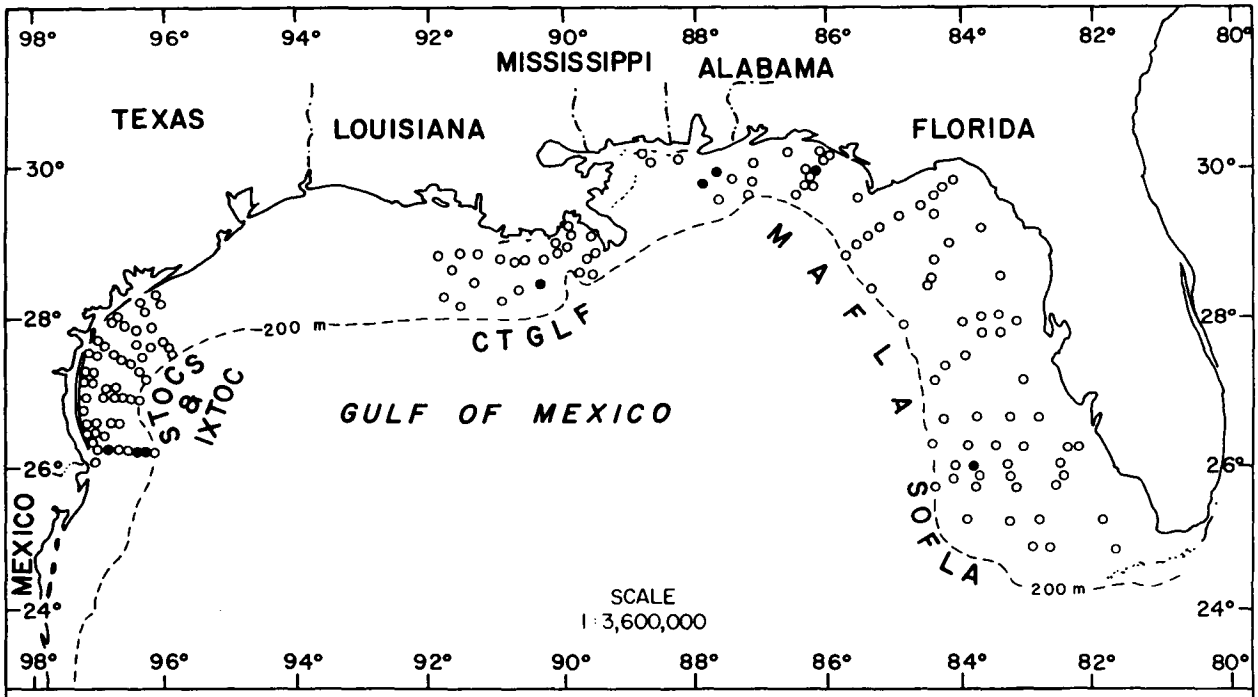

Figure 55-17. Distribution of Hydroides protulicola on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

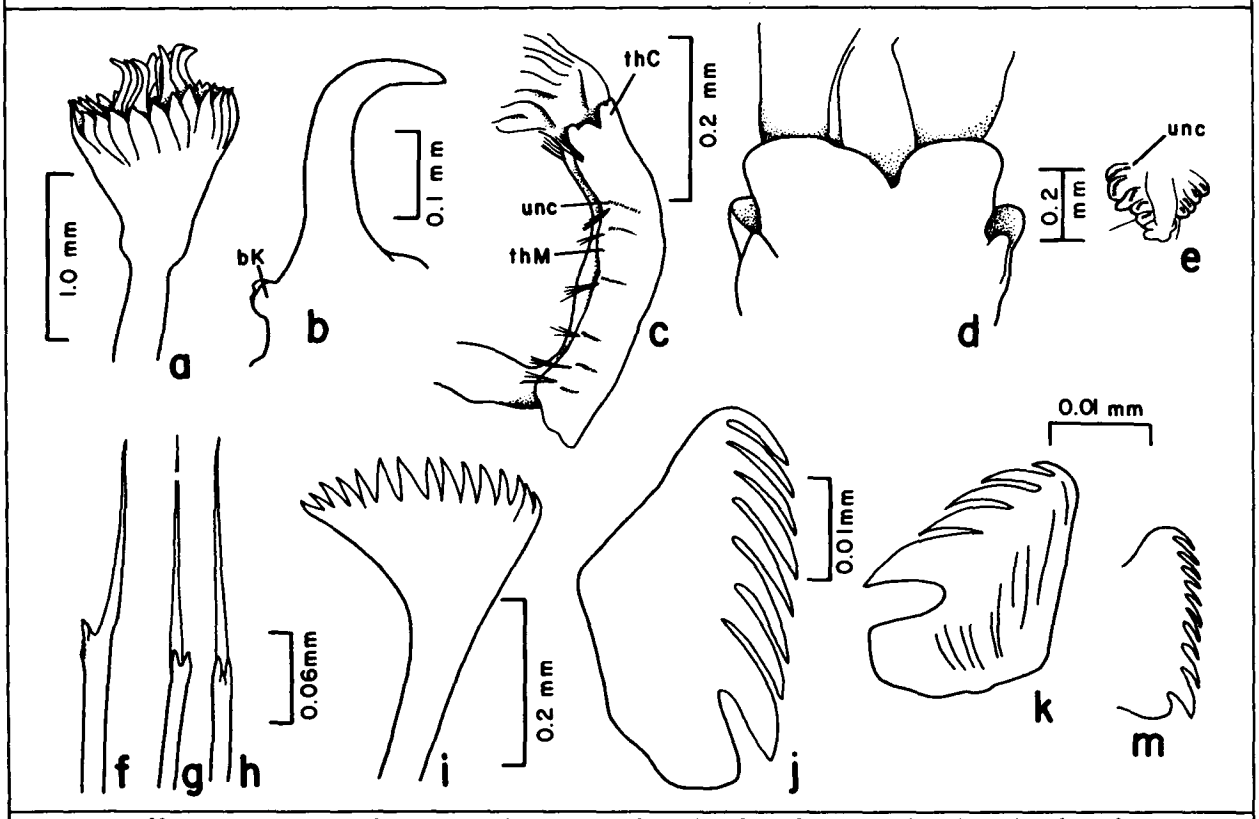

Figure 55-18. Hydroides protulicola: a, operculum; b, opercular spine, lateral view; c, thoracic region, lateral view; d, thoracic collar, ventral view; e, posterior end, dorsal view; f, bayonet-type collar seta, lateral view; g, h, same, two forms, frontal view; i, abdominal neuroseta; j, thoracic uncinus; k, anterior abdominal uncinus; m, posterior abdominal uncinus.

Hydroides protulicola--Cooley, 1978:21, 77.
Hydroides protulicola--Barnes, 1982:13, 15, 16.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12A-11/80 (1 spec., USNM 86665); MAFLA 13J-5/74 (1 spec., USNM 86671), 2531H-7/77 (1 spec.), 2531K-8/77 (1 spec.), 2531F-2/78 (2 spec.), 2640B-11/77 (1 spec., USNM 86682); CTGLF 03-5/78 (2 spec., USNM 86667); STOCS 1/IV-2 Sp/76 (2 spec., USNM 86669), 3/IV-1 W/76 (1 spec., USNM 86668), 6/IV-5 F/76 (1 spec., USNM 86670).
DESCRIPTION:
Length, 23+ mm (previously reported to 10 mm); width, to 0.75 mm (previously reported to 1.5 mm). Largest specimen incomplete with seven thoracic setigers, about 20 abdominal setigers, and about 20 radioles. Each radiole with filiform tip and rather long pinnules; without pigmentation. Operculum (Figure 55-18a) with about 11-15 spines, all curving outwards. Dorsalmost spines of some specimens larger, grading in size to ventralmost or smaller ones; spines equal in length in other specimens. Each spine with inner basal knob (Figure 55-18b). Opercular basal funnel with 20-31 acuminate radii (Figure 55-18a). Thoracic collar with dorsal lobes narrow but equal in length to ventral lobes (Figure 55-18c); ventral lobes wide midventrally with smooth margins, only slightly cleft (Figure 55-18d). Thoracic membrane extending through setiger 7 (Figure 55-18c), united ventrally. Pygidium bilobed (Figure 55-18e). Collar setae including bayonet-type setae (Figure 55-18f-h) and slender, hispid capillary setae. Bayonet-type setae with a proximal rasp, two heavy teeth, and an occasional accessory tooth (Figure 55-18f-h); blades smooth to minutely hispid distally. Abdominal neurosetae flat trumpet-shaped with pointed teeth set on curved margin; teeth of one end slightly hooked (Figure 55-18i). Thoracic uncini saw-shaped with 7-8 teeth (Figure 55-18j). Anterior abdominal uncini (Figure 55-18k) saw-shaped with five teeth. Posterior uncini (Figure 55-18m) rasp-shaped, with several vertical rows of about ten teeth each.
REMARKS: Some Gulf of Mexico BLM-OCS specimens differ slightly from previous descriptions of H. protulicola in that the opercular spines are larger dorsally, grading in length ventrally.
PREVIOUSLY REPORTED HABITAT: Intertidal to 40 m, attached to tubes of Protula (Benedict, 1887:550), to shells of the mollusc Pinna (Rioja, 1946a:200); artificial reef (Barnes, 1982:13, 15, 16).
GULF OF MEXICO BLM-OCS OCCURRENCE: Sparsely distributed in northern Gulf (Figure 55-17); 27-91 m; coarse to fine sand, clayey sand.
DISTRIBUTION: North Carolina, Gulf of Mexico.

Hydroides microtis Mörch, 1863
Figures 55-19, 20a-n

Hydroides (Eucarphus) microtis Mörch, 1863:380.
Vermilia microtis--Quatrefages, 1865:536.
Eupomatus microtis--Wells and Gray, 1964:74.
Eupomatus microtis--Wells et al., 1964:566, 580-581.
Eupomatus microtis--Wells and Wells, 1969:109.
Hydroides microtis--Robertson and Mau-Lastovicka, 1979:323.

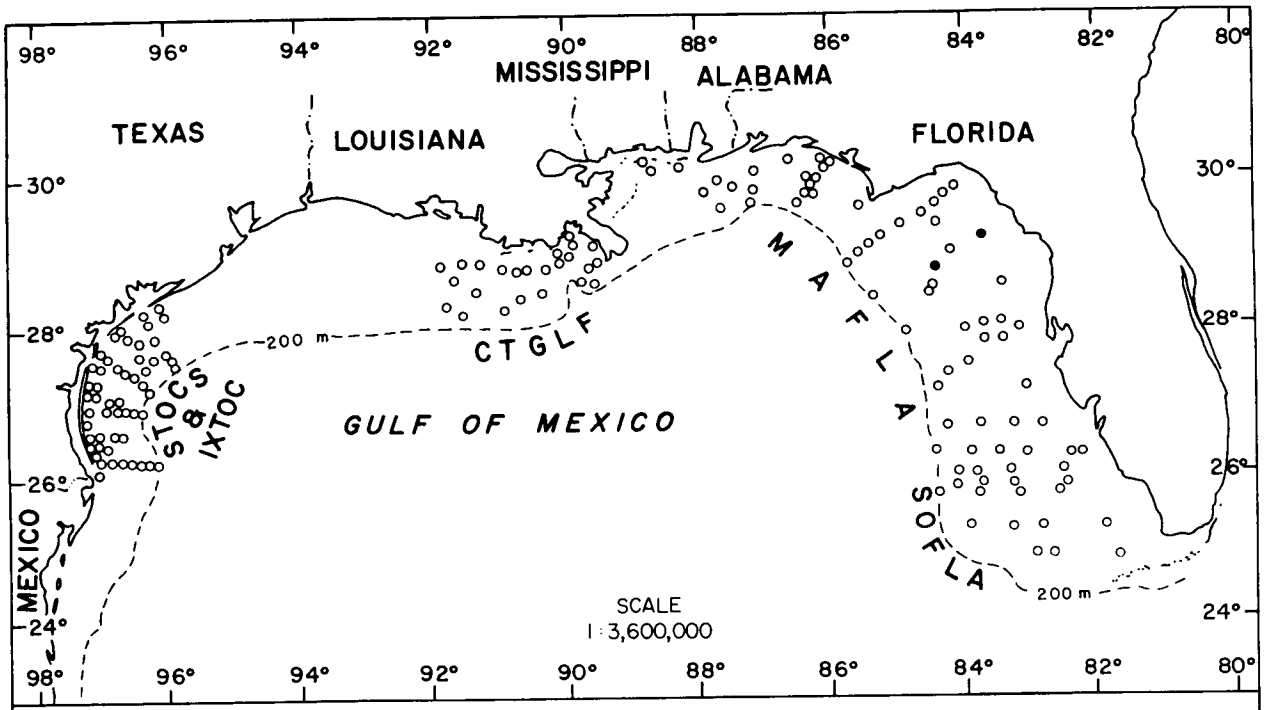

Figure 55-19. Distribution of Hydroides microtis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

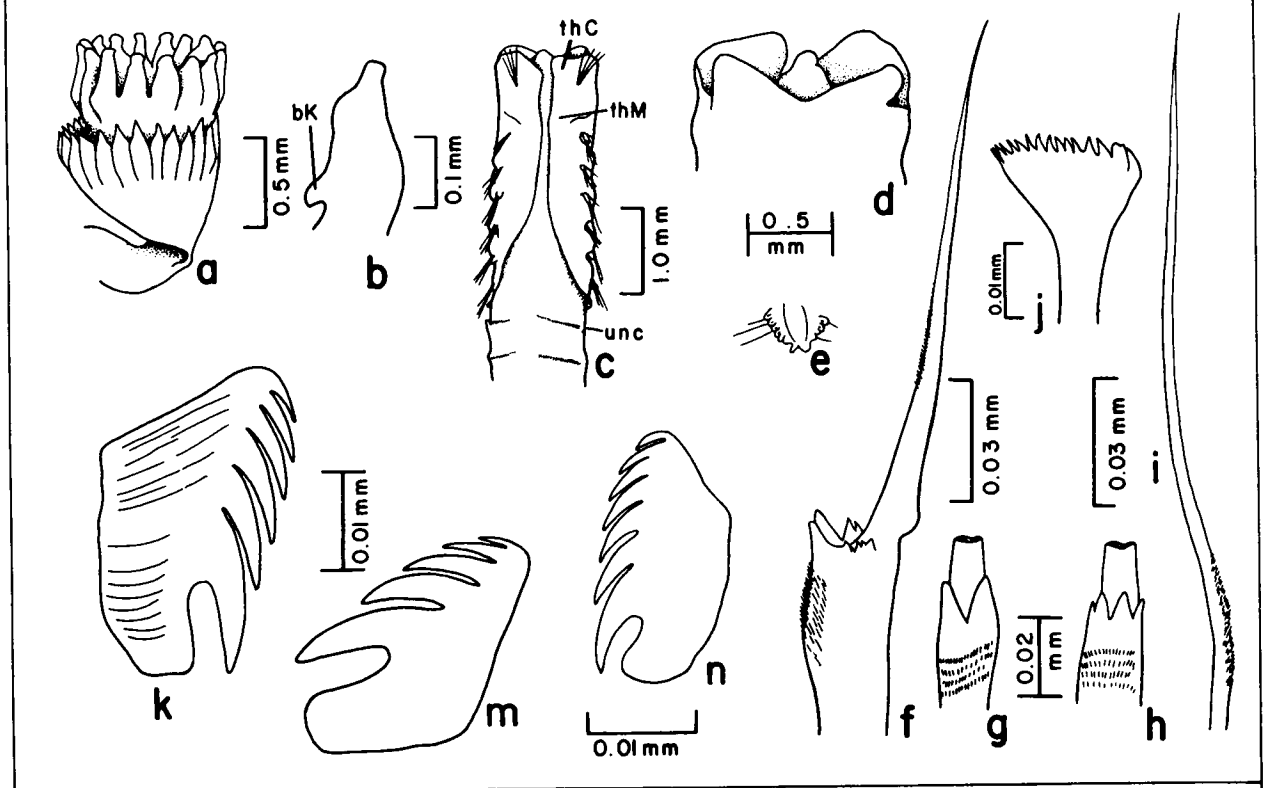

Figure 55-20. Hydroides microtis: a, operculum; b, opercular spine, lateral view; c, thoracic region, dorsal view (crown omitted); d, thoracic collar, ventral view; e, posterior end, dorsal view; f, bayonet-type collar seta, lateral view; g, h, same, two forms, frontal view; i, capillary collar seta; j, abdominal neuroseta; k, thoracic uncinus; m, anterior abdominal uncinus; n, posterior abdominal uncinus.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2D-11/80 (3 spec., USNM 86661); MAFLA 2316F-11/77 (1 spec., USNM 86680), 2316J-11/77 (1 spec.), 2318C-2/76 (1 spec.), 2423C-7/76 (1 spec., USNM 86676), 2423H-7/76 (1 spec.), 2528H-6/75 (1 spec.).
DESCRIPTION:
Length, to 18 mm; width, to 1.0 mm. Largest specimen nearly complete with seven thoracic setigers, about 70 abdominal setigers, and about 30 radioles. Each radiole with long filiform tip and moderately long pinnules; without pigmentation. Operculum (Figure 55-20a) with 12-16 spines, curving slightly outward, each having knobbed tip and inner basal knob (Figure 55-20b). Basal funnel with acuminate radii (Figure 55-20a). Thoracic collar (Figure 55-20c,d) with small dorsal lobes and larger ventral lobes. Thoracic membrane extending through setiger 7, united ventrally. Pygidium (Figure 55-20e) bilobed with small dorsal glandular pad. Collar setae including bayonet-type setae (Figure 55-20f-h) and slender, hispid capillary setae (Figure 55-20i). Bayonet-type collar setae with proximal rasp, and 2-4 heavy teeth; blades hispid distally. Convex side of blade of some collar setae with distinct hump (Figure 55-20f). Abdominal neurosetae flat trumpet-shaped (Figure 55-20j) with rounded teeth and long, slender, smooth shafts. Thoracic uncini saw-edged with 5-8 teeth (Figure 55-20k). Anterior abdominal uncini saw-shaped with five teeth (Figure 55-20m). Posterior abdominal uncini smaller, rasp-shaped with about nine teeth visible in profile (Figure 55-20n).
REMARKS: This is the first illustrated description of Hydroides microtis. Mörch's (1863:380) diagnosis: "Paleae [of operculum] angustae vertice fere recte truncato, vix auriculato, inflexo" does not fit any other species known from the area. Hydroides microtis resembles H. arnoldi Augener, 1918, also figured in Zibrowius (1973b:24, fig. 1) and H. bandaensis Zibrowius, 1972a. The exact relation between the species can only be ascertained by comparison of material. There is notable variation in the opercular spines, i.e., they are much stouter and shorter in larger specimens. Regardless, the authors believe all material examined herein belongs to the same species.
PREVIOUSLY REPORTED HABITAT: On shells of Aequipecten gibbus (as Pecten irradians in Mörch, 1863).
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 55-19); 19-37 m; coarse to medium sand, silty sand.
DISTRIBUTION: Cape Hatteras, Gulf of Mexico, Shelf of Surinam (ten Hove, unpublished).

Genus **Filogranula** Langerhans, 1884

TYPE SPECIES: Filogranula gracilis Langerhans, 1884.
REFERENCES:
Zibrowius, 1968:137 (as Omphalopoma); 1972b:121.
Fauchald, 1977a:144.
Bianchi, 1981:92.
DIAGNOSIS: Operculum somewhat cylindrical, distally flat or cupped, with or without central spine. Opercular stalk smooth, occasionally with pinnules. Thorax with 6-7 setigers. Collar setae including fin-and-blade type setae, and straight bilimbate setae. Thoracic notosetae limbate and "Apomatus-type." Abdominal setae geniculate, with dentate

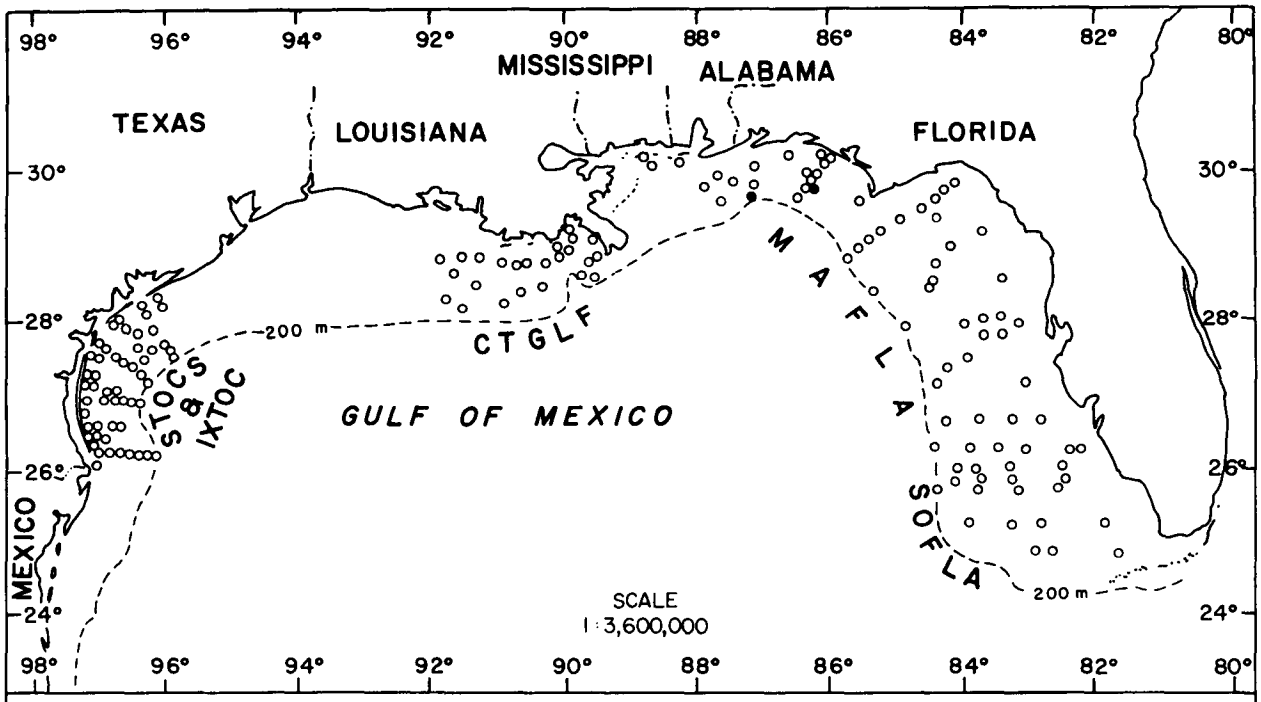

Figure 55-21. Distribution of serpulid Filogranula sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

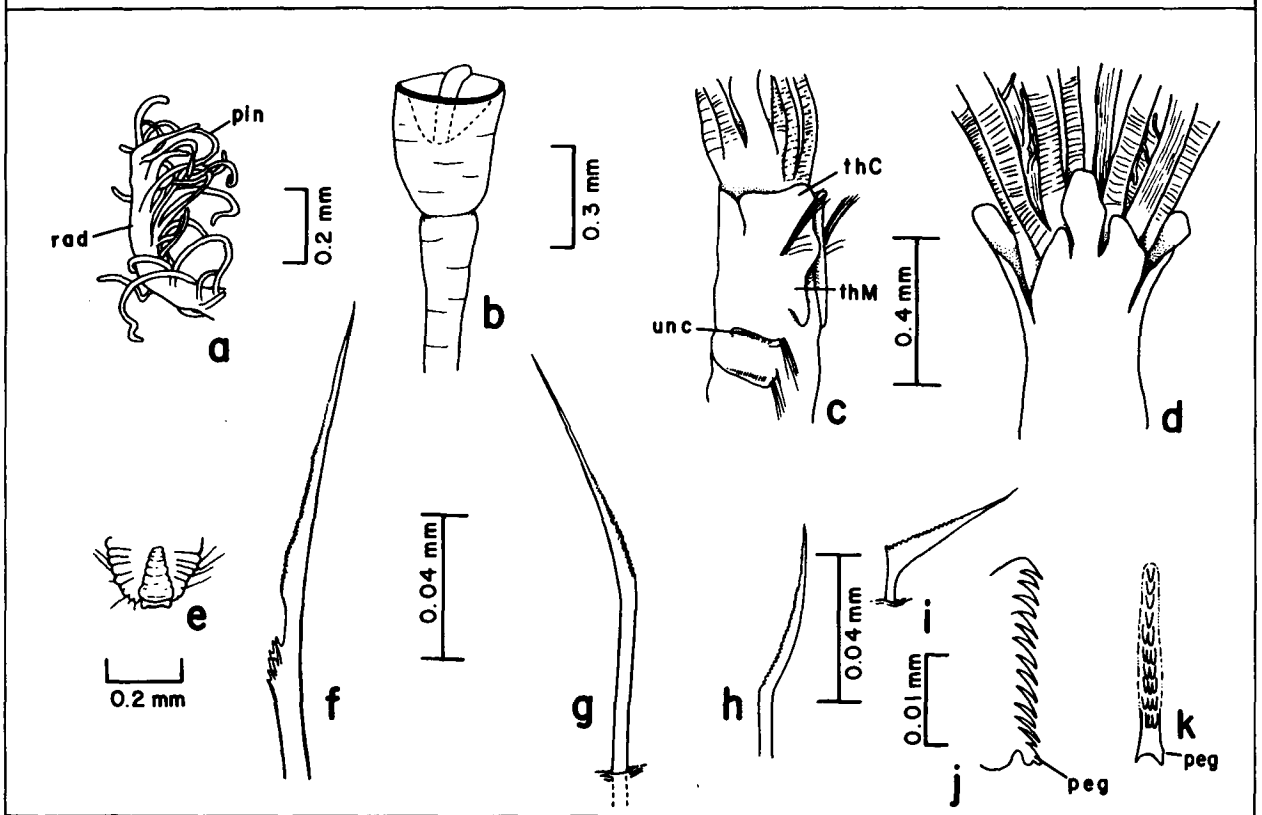

Figure 55-22. Filogranula sp. A: a, radiole; b, operculum; c, anterior thoracic region, lateral view; d, thoracic collar, ventral view; e, posterior end, dorsal view; f, fin-and-blade type collar seta; g, thoracic capillary notoseta; h, thoracic "Apomatus" notoseta; i, abdominal neuroseta; j, thoracic uncinus; k, same, frontal view, schematic diagram.

edge. Thoracic uncini saw-shaped anteriorly to partly rasp-shaped posteriorly; anterior peg bifurcate. Abdominal uncini rasp-shaped.
REMARKS: Filogranula is most similar to Chitinopoma Levinsen, 1884, but differs from the latter in having a bifurcate basal peg on the uncini, and in having an opercular spine. The thoracic uncini are saw- to rasp-shaped posteriorly, which has not been noted in previous descriptions of the genus.

Filogranula sp. A
Figures 55-21, 22a-k

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2534F-7/76 (1 spec.), 2645A-6/75 (2 spec.), 2645I-6/75 (1 spec., USNM 86673).
DESCRIPTION:
Length, to 7.0 mm; width, to 0.60 mm. Largest specimen complete with seven thoracic setigers, 36 abdominal setigers, and 12 radioles. Each radiole with long filiform pinnules (Figure 55-22a), without pigmentation. Operculum (Figure 55-22b) somewhat cylindrical with sunken funnel distally; single curved, blunt spine arising from center of funnel. Operculum membranous except for chitinized outer rim, funnel and spine. Opercular stalk smooth, rounded in cross-section, without wings. Thoracic collar with two dorsal lobes (Figure 55-22c) and three ventral lobes (Figure 55-22d). Thoracic membranes extending to setiger 2, fused to integument laterally. Raised, indistinctly segmented glandular area present above bilobed pygidium (Figure 55-22e). Collar setae fin-and-blade type with fin of about two rows of basal spines separated from serrate blade (Figure 55-22f). Thoracic notosetae simple, serrate (Figure 55-22g); two additional "Apomatus" setae (Figure 55-22h) per parapodium present from setiger 3. Abdominal neuropodia each with one geniculate seta having a serrate, triangular blade (Figure 55-22i). Thoracic uncini beginning on setiger 2; each saw-shaped anteriorly, partly rasp-shaped posteriorly with about 14 teeth seen in profile and a bifurcate basal peg (Figure 55-22j,k). Abdominal uncini rasp-shaped.
REMARKS: Since the species of Filogranula are distinguished by their tube morphology rather than by other characters, our material could not be identified to species level. The opercular spine is often broken but its base can still be observed inside the operculum.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 55-21); 73-106 m; coarse sand.

Genus **Pomatoceros** Philippi, 1844

TYPE SPECIES: Serpula triquetra Linnaeus, 1767.
REFERENCES:
Day, 1967:801.
Zibrowius, 1968:161.
Fauchald, 1977a:146.
DIAGNOSIS: Operculum flat or asymmetrically cone-shaped. Opercular stalk smooth, triangular in cross-section, with wings. Thorax with seven setigers. Collar setae and thoracic notosetae limbate. Abdominal neurosetae dentate, strongly geniculate. Uncini saw-shaped in thorax

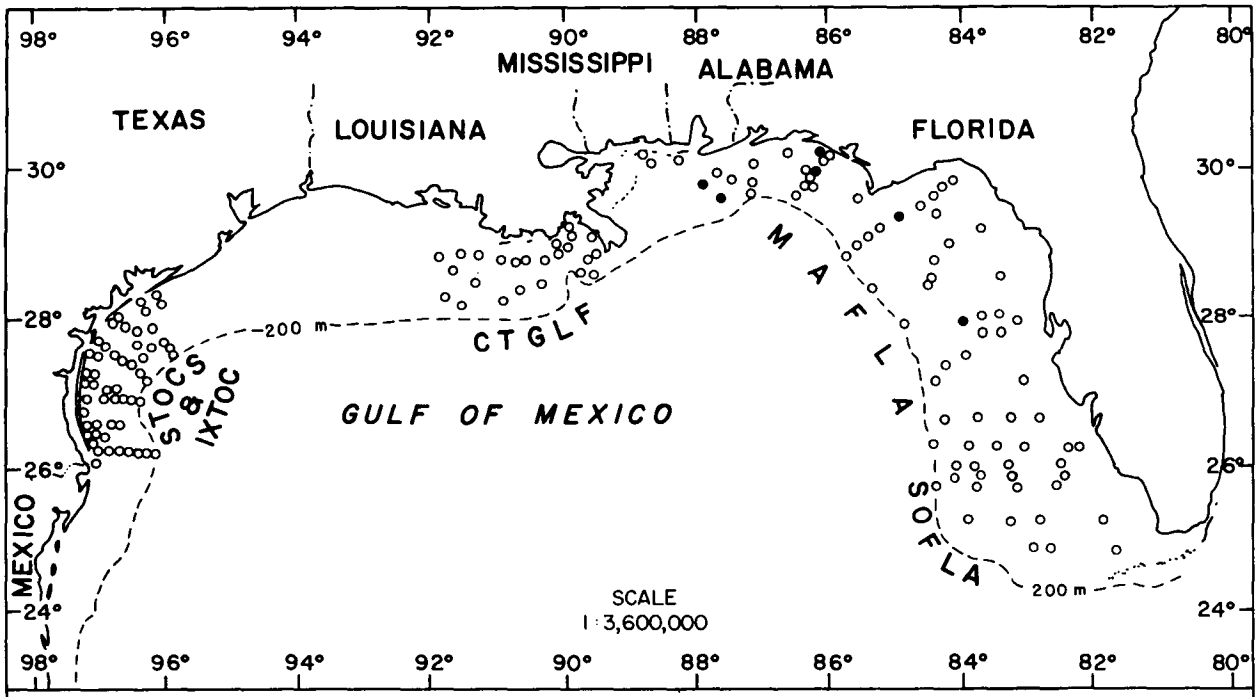

Figure 55-23. Distribution of Pomatoceros americanus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

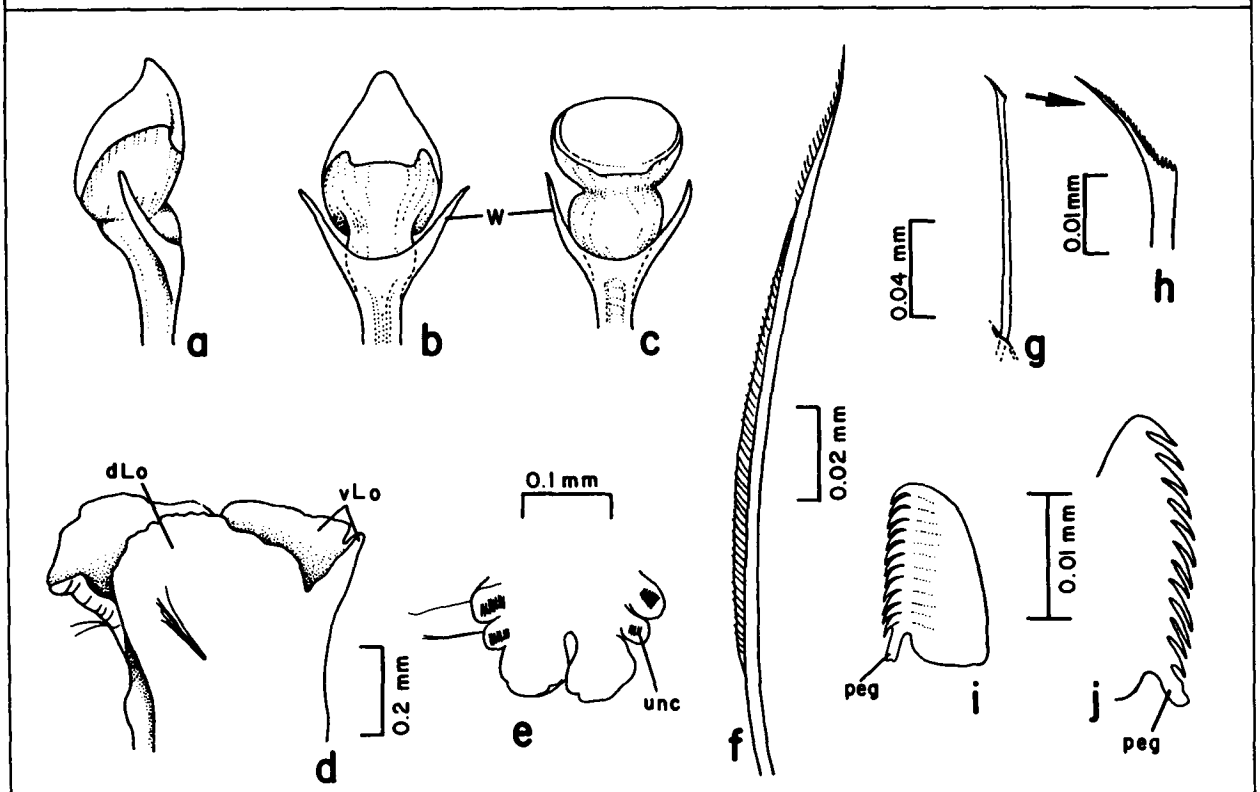

Figure 55-24. Pomatoceros americanus: a, operculum, conical form, lateral view; b, same, dorsal view; c, operculum, flattened form, dorsal view; d, thoracic collar, lateral view; e, posterior end, dorsal view; f, collar seta; g, abdominal neuroseta; h, distal end of same; i, thoracic uncinus; j, abdominal uncinus (Figures a-c, g from Day 1973, fig. 18b-d, f).

and anterior abdomen with gouge-shaped basal peg; may be rasp-shaped posteriorly.

Pomatoceros americanus Day, 1973
Figures 55-23, 24a-j

Pomatoceros americanus Day, 1973:131, fig. 18a-f.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 14C-5/74 (1 spec.), 2211C-6/76 (1 spec.), 2211E-6/76 (3 spec., USNM 86674), 2211H-6/76 (1 spec.), 2211J-6/76 (1 spec.), 2423C-7/76 (3 spec.), 2528E-2/78 (1 spec.), 2531E-7/76 (3 spec.), 2640-11/77 (1 spec.).
DESCRIPTION:
Length, to 10 mm (previously reported to 18 mm); width, to 0.75 mm. Largest specimen complete with seven thoracic setigers, about 40 abdominal setigers, and about 20 radioles. Operculum swollen basally, somewhat acuminate distally when viewed laterally (Figure 55-24a), conical when viewed dorsally (Figure 55-24b), sometimes distally flattened (Figure 55-24c); pair of wings present below operculum. Thoracic collar (Figure 55-24d) low, with rounded, smooth to crenulate dorsal and ventral lobes. Thoracic membranes extending through setiger 7, united ventrally. Pygidium deeply bilobed (Figure 55-24e). Collar setae and thoracic notosetae simple, limbate, faintly frayed distally (Figure 55-24f). Abdominal neurosetae long, slender (Figure 55-24g), strongly geniculate and dentate distally (Figure 55-24h). Thoracic uncini (Figure 55-24i) saw-shaped with about 12 teeth above bifid (gouge-shaped) peg. Abdominal uncini similar to thoracic uncini (Figure 55-24j), peg entire to bifid.
REMARKS: It is probable that records of Pomatoceros caeruleus (non Schmarda) Wells and Gray (1964:74) and Wells et al. (1964:566), and P. triqueter (non Linnaeus) McCloskey (1970:26) belong to P. americanus. Farther south (Mexico, Puerto Rico, Surinam, Brazil), P. americanus is replaced by the smaller species P. minutus Rioja, 1941. The tube of the latter species is entirely ornamented with six or more longitudinal rows of circular to oblong pits which are also found in juvenile specimens only of P. americanus. Fully grown adults of P. americanus possess tubes which do not show such pits (see Day, 1973, fig. 18a).
PREVIOUSLY REPORTED HABITAT: On corals and Pecten shells; 18-75 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Alabama (Figure 55-23); 19-69 m; coarse sand, silty sand.
DISTRIBUTION: North Carolina to Tortugas, Florida; northern Gulf of Mexico.

Genus **Pseudovermilia** Bush, 1907b

TYPE SPECIES: Spirobranchus occidentalis McIntosh, 1885.
REFERENCES:
ten Hove, 1975:52.
Fauchald, 1977a:146.
DIAGNOSIS: Operculum with hard, conical to hooked cap. Opercular stalk smooth, rounded in cross-section, without wings. Thorax with seven

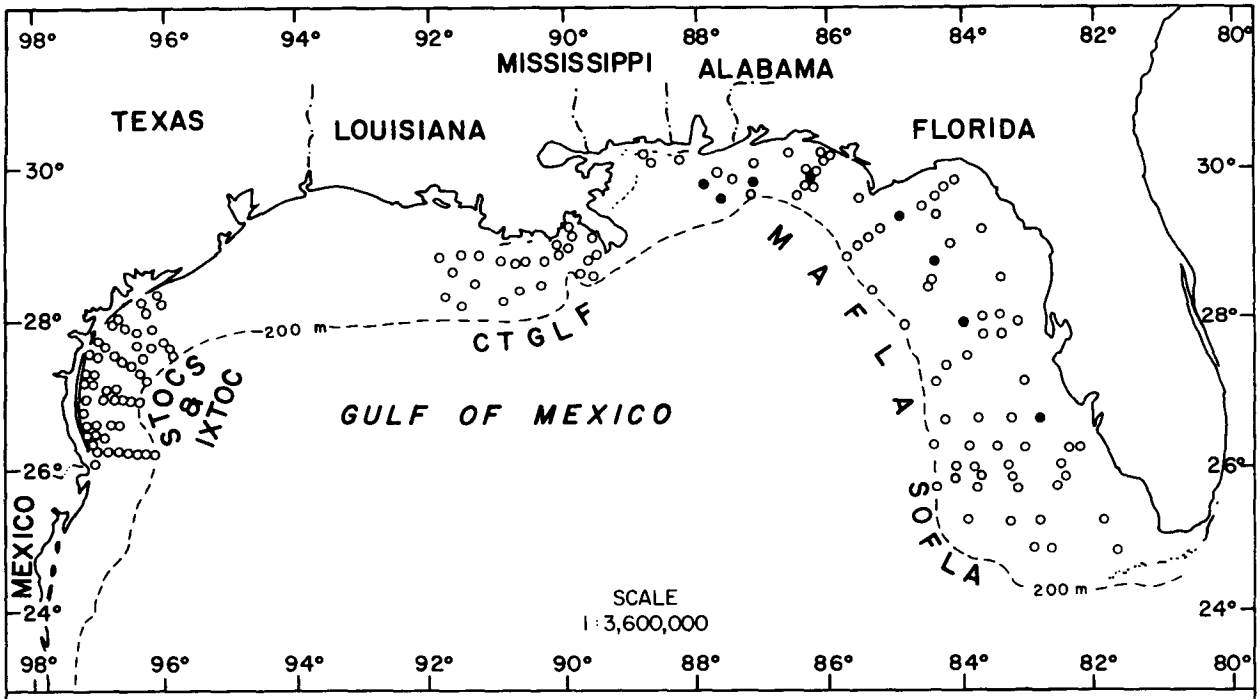

Figure 55-25. Distribution of Pseudovermilia occidentalis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

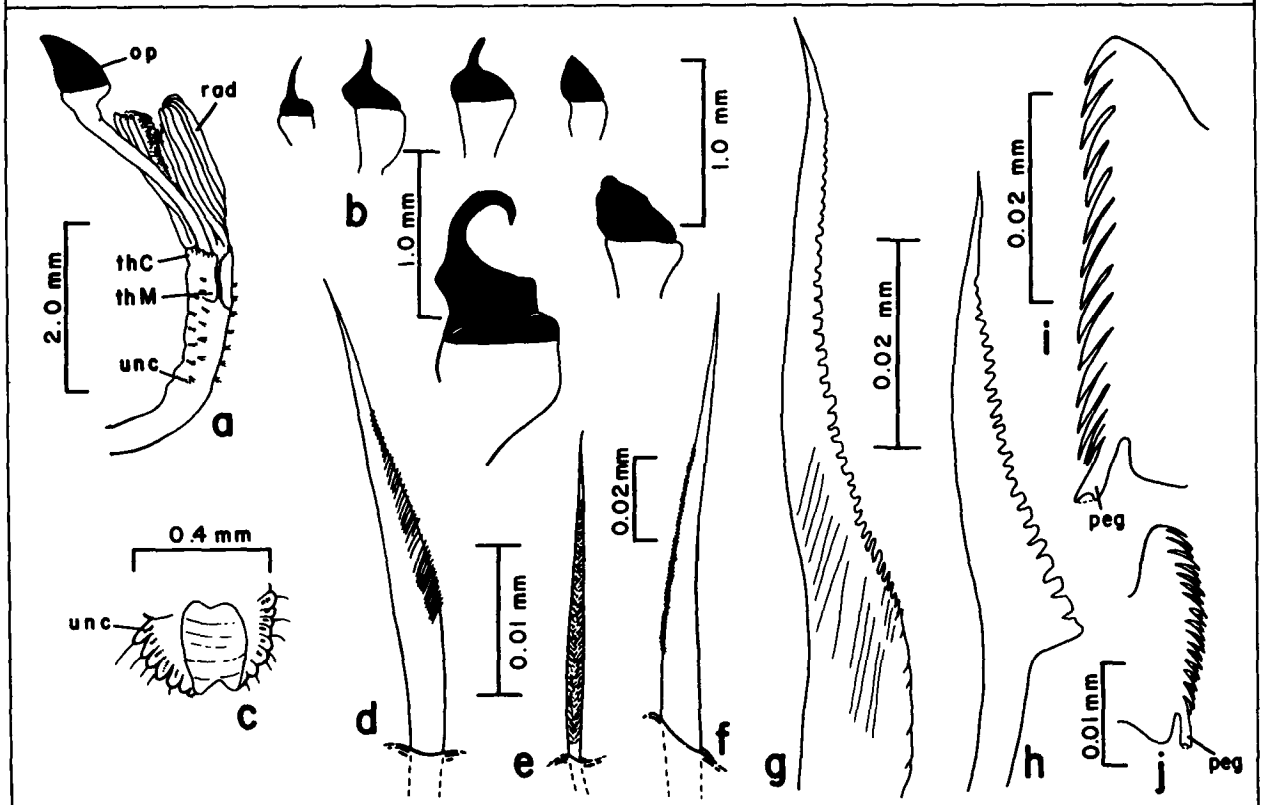

Figure 55-26. Pseudovermilia occidentalis: a, anterior end, dorsolateral view; b, various opercular forms; c, posterior end, dorsal view; d, wide-bladed collar seta; e, narrow-bladed collar seta; f, thoracic limbate notoseta; g, thoracic "Apomatus" notoseta; h, abdominal neuroseta; i, thoracic uncinus; j, abdominal uncinus (Figure b from ten Hove 1975, pl. I, figs. a,b,e,i,k, and pl. II, fig. d).

setigers. Collar setae simple, limbate. Thoracic notosetae including limbate and "Apomatus"-type setae. Abdominal neurosetae geniculate, dentate. Thoracic uncini saw-shaped with bifurcate anterior peg. Abdominal uncini rasp-shaped.

Pseudovermilia occidentalis (McIntosh, 1885)
Figures 55-25, 26a-j

Spirobranchus occidentalis McIntosh, 1885:529, pl. 55, fig. 10, pl. 29A, figs. 31-32.
Pseudovermilia occidentalis--ten Hove, 1975:59, figs. 114-123, 144, 145, 155, 156, 159, 161-164, 170-172; pl. I, figs. a-l; pl. II, figs. a-e; pl. III, figs. a-j; pl. VII, figs. a-k.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2D-11/80 (6 spec., USNM 86659); MAFLA 14C-5/74 (3 spec.), 2211J-6/76 (1 spec.), 2316J-11/77 (2 spec.), 2423B-7/76 (1 spec.), 2423H-7/76 (1 spec.), 2423J-7/76 (1 spec.), 2533B-6/75 (2 spec.), 2640B-7/76 (5 spec., USNM 86677), 2644E-6/75 (1 spec.).
DESCRIPTION:
Length, to 12 mm (previously reported to 10.5 mm); width, to 0.5 mm (previously reported to 0.64 mm). Largest specimen complete with seven thoracic setigers, 35 abdominal setigers, and about 20 radioles. Operculum (Figure 55-26a,b) with black, variably shaped cap atop fleshy, bulbous expansion. Thoracic collar with low, rounded dorsal lobes (Figure 55-26a) and midventral triangular flap. Thoracic membranes extending through setiger 2, fused laterally to integument. Posterior end with large dorsal glandular pad above bilobed pygidium (Figure 55-26c). Collar setae and thoracic notosetae simple, limbate, narrow to wide-bladed, with hispid margin (Figure 55-26d-f). Thoracic notopodia with additional "Apomatus" setae from setiger 3 (Figure 55-26g). Anterior abdominal neurosetae geniculate, dentate (Figure 55-26h); posterior ones long, slender, capillary. Thoracic uncini saw-shaped with about 14 teeth above large bifid peg (Figure 55-26i). Abdominal uncini rasp-shaped with about three columns of about 16 teeth each above long, bifid peg (Figure 55-26j).
REMARKS: The specimens examined herein match the description given by ten Hove (1975:59). The tube, described for the species by ten Hove (1975:63), was not present.
PREVIOUSLY REPORTED HABITAT: Subtidal to 250 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Alabama (Figure 55-25); 19-75 m; coarse sand, silty sand.
DISTRIBUTION: Hawaii, California, Galapagos; Gulf of Mexico, Georgia to Bermuda to southern Brazil; Azores, Josephine Bank, Cape Verde Islands, St. Helena and Senegal; Red Sea.

Genus **Vermiliopsis** Saint Joseph, 1894

TYPE SPECIES: Vermilia infundibulum Philippi, 1844.
REFERENCES:
Day, 1967:812.
Zibrowius, 1968:119.

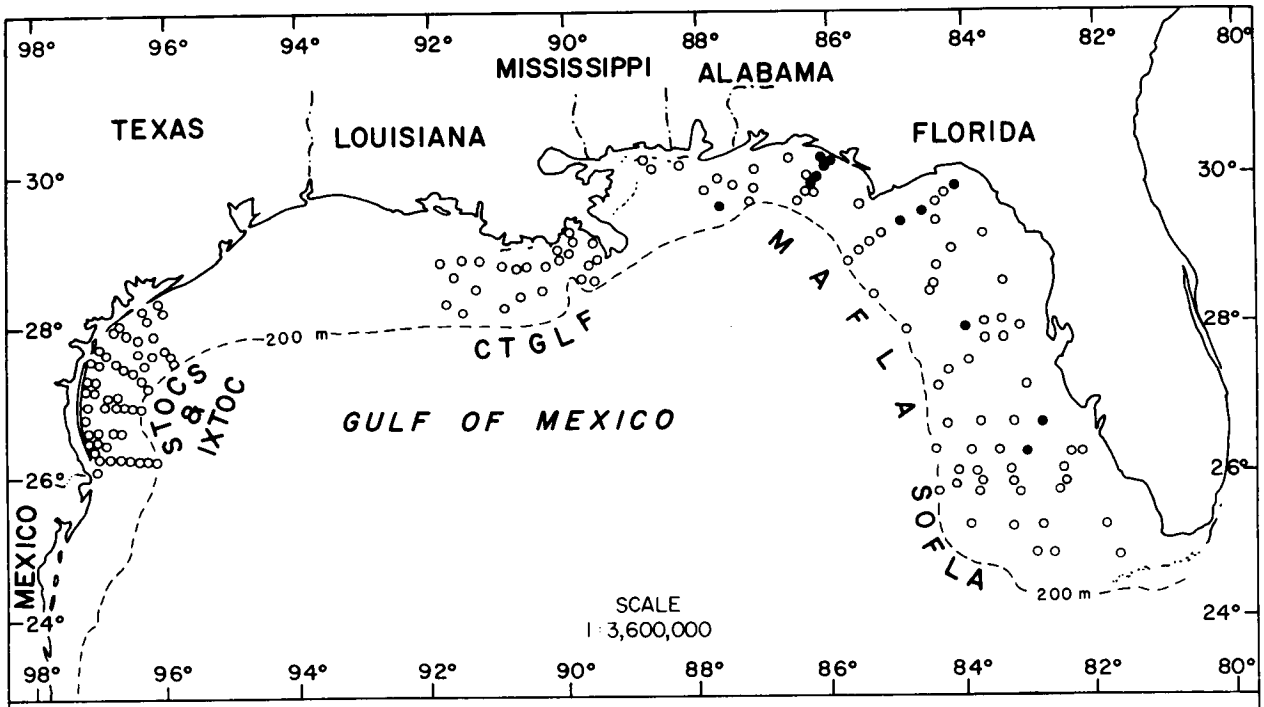

Figure 55-27. Distribution of Vermiliopsis annulata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

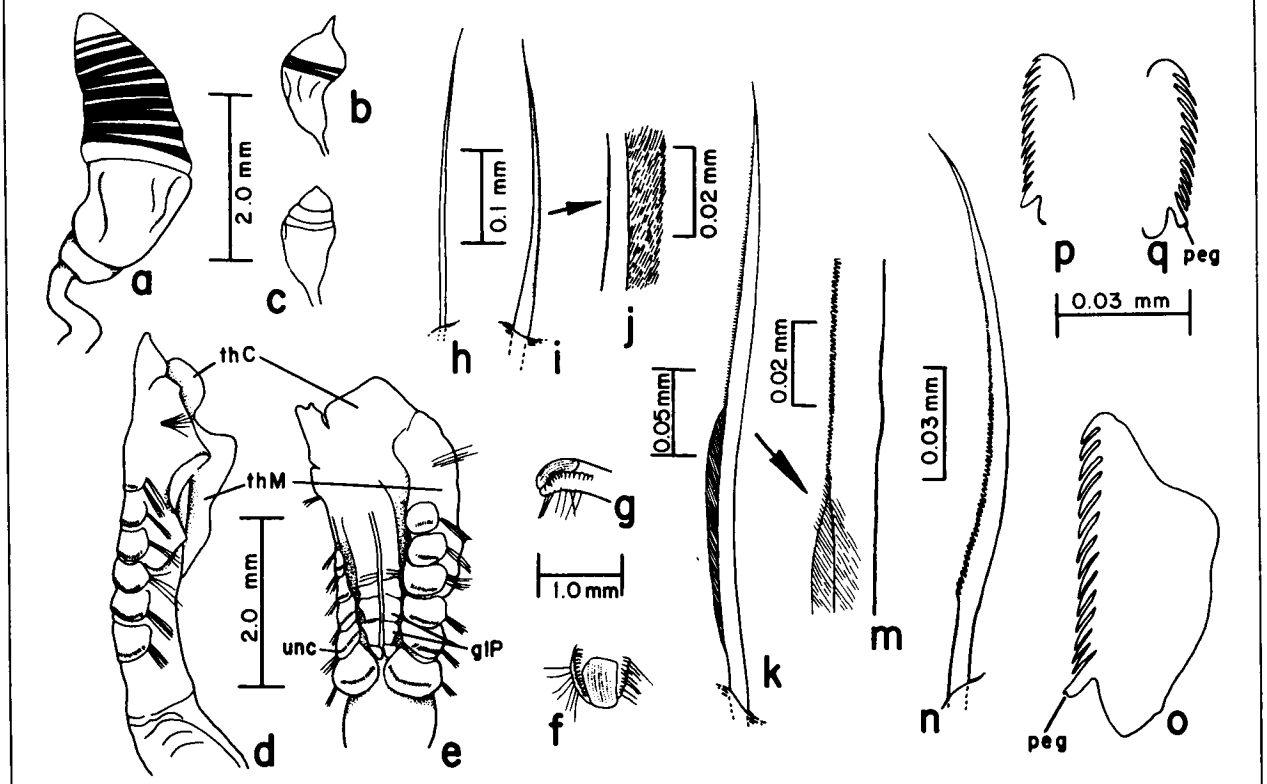

Figure 55-28. Vermiliopsis annulata: a-c, various forms of opercula; d, thoracic region, lateral view (crown omitted); e, same, ventral view; f, posterior end, dorsal view; g, same, lateral view; h-j, collar setae; k, thoracic "Apomatus" seta; m, basal portion of same; n, anterior abdominal neuroseta; o, thoracic uncinus; p, anterior abdominal uncinus; q, posterior abdominal uncinus.

Fauchald, 1977a:147.
DIAGNOSIS: Operculum cylindrical or conical, chitinized, with internal septa. Opercular stalk smooth, rounded in cross-section, without wings. Thorax with seven setigers. Collar setae simple, limbate. Thoracic notosetae including limbate and "Apomatus"-type setae. Abdominal neurosetae geniculate with dentate edge. Thoracic and anterior abdominal uncini saw-shaped, with simple rounded or pointed anterior peg; far posterior uncini sometimes rasp-shaped.
REMARKS: It should be noted that we indicated Vermilia infundibulum Philippi, 1844, as Type-species, and not the customary Serpula infundibulum Martini, 1776, generally cited as S. infundibulum Linnaeus, 1788, but first mentioned in the Systema Naturae by Gmelin (1791:3745). This nominal species is an unidentifiable form from the "E. Indies," presumably the Malaysian Archipelago, as already mentioned by Quatrefages (1865:524) and Zibrowius (1971c:1374). In view of the fact that the name, however, has been used well over a hundred times for a Mediterranean species, we now are of the opinion that it would be unwise to refrain from using the name (as suggested by Mörch, 1863:389). A more complete discussion will be given by ten Hove and Aarts (in preparation).

Vermiliopsis annulata (Schmarda, 1861)
Figures 55-27, 28a-q

Vermilia annulata Schmarda, 1861:28, pl. 21, fig. 176.
Paravermilia bermudensis Bush, 1907b:132; 1910:500, pl. 36, fig. 8.
Paravermilia amblia Bush, 1907b:133; 1910:500, pl. 36, fig. 1.
Vermiliopsis annulata--Rioja, 1959:292, figs. 86-91.
Vermiliopsis sp.--Zibrowius 1970:7, pl. 1, figs. 7-17.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2D-11/80 (10 spec., USNM 86662-86664); MAFLA 24H-5/74 (1 spec.), 2103A-2/78 (1 spec.), 2211D-8/77 (1 spec.), 2419J-2/78 (2 spec.), 2422D-6/76 (2 spec.), 2423G-6/76 (1 spec.), 2423B-7/76 (1 spec.), 2423J-7/76 (2 spec.), 2528E-6/75 (2 spec.), 2528G-6/75 (1 spec.), 2528I-6/75 (1 spec.), 2528E-9/77 (2 spec.), 2528I-9/77 (1 spec.), 2528F-2/78 (1 spec., USNM 86683), 2529B-6/75 (1 spec.), 2530I-6/75 (1 spec.), 2531-7/76 (1 spec.), 2533B-6/75 (1 spec.).
DESCRIPTION:
Length, to 17 mm; width, to 2.0 mm. Largest specimen complete with seven thoracic setigers, about 75 abdominal setigers, and about 24 radioles. Operculum generally conical, light brown to yellow, weakly chitinized with few to many annuli (Figure 55-28a-c). Smaller individuals possessing opercula with fewer annuli and variably pointed or rounded tips (Figure 55-28b,c). Thoracic collar with large, slanting dorsal lobes and high ventral lobes (Figure 55-28d,e). Thoracic membranes extending through setiger 4, fused laterally to integument (Figure 55-28d). Ventral thoracic glandular pads well-developed (Figure 55-28e). Posterior end with dorsal glandular pad above terminal anus (Figure 55-28f,g). Collar setae slender to broad, hispid, limbate (Figure 55-28h-j). Thoracic notosetae including limbate setae similar to collar setae, and 3-4 additional "Apomatus" setae, having basal limbation below dentate blade (Figure 55-28k,m). Anterior abdominal

neurosetae slightly geniculate, and gently curved with dentate blades (Figure 55-28n). Posterior abdominal neurosetae long, slender, smooth except for limbate tips. Thoracic uncini saw-shaped with 14 teeth, basal peg entire (Figure 55-28o). Anterior abdominal uncini saw-shaped with about 13 teeth, basal peg entire (Figure 55-28p). Posterior abdominal uncini rasp-shaped with 2-3 columns of 12-13 teeth each (Figure 55-28q).

REMARKS: At least three nominal species of Vermiliopsis have been reported from the Gulf of Mexico and Caribbean waters--V. amblia (Bush, 1907b), V. annulata (Schmarda, 1861), and V. bermudensis (Bush, 1907b). All three belong to a difficult complex of species including V. infundibulum (Philippi, 1844) from Europe and V. glandigera Gravier, 1906, from the Red Sea. A necessary revision should include tube characteristics since in the Antilles two species occur with different ecological preference and with different tubes (ten Hove, unpublished). Since no tubes were available for study, it could not be determined with certainty whether the specimens described herein include more than one species. The opercula cover the entire range of variability displayed by the three nominal species. Ten Hove and Perkins (in prep.) show that the number of annuli (internal septa) of the operculum increases with increasing depth. This apparently not being a distinctive character, we decided to use the name annulata for all our material, although there is a possibility that the material from shallower depths includes a second, yet undescribed species.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Alabama (Figure 55-27); 10-69 m; coarse sand, silty sand.

CHAPTER 56

Paul S. Wolf

FAMILY SACCOCIRRIDAE Czerniavsky, 1881

INTRODUCTION

Saccocirrids are archiannelid polychaetes most often found inhabiting coarse-grained substrata in the intertidal zones. Members of the family range from 4-80 mm in length, with most species being about 20 mm long. The family is known for a single genus, characterized by a pair of tentacles emerging laterally from a rounded prostomium (Figure 56-2a); a slender, distinctly segmented body; and a bilobed pygidium (Figure 56-2d,e) which may have a series of adhesive papillae on the ventrum of each lobe. There is a pair of small, subepidermal eyes located anteriorly on the prostomium (Figure 56-2a). A pair of ciliated nuchal organs lies posterior to the prostomium. The lateral tentacles each contain an internal canal that unites with the other canal within the prostomium, and then separates into two lateral sacs called ampullae (Figure 56-2a). The canals and ampullae contain fluid which forms an internal hydrostatic skeleton. Contraction of the muscles in this system apparently causes a lashing movement of the tentacles (Martin, 1977:101). Some species of Saccocirrus possess a muscular pharyngeal pad which lies ventral to a ciliated pharynx in the first 3-4 setigers (Figure 56-2a). Saccocirrid setae are entirely simple, with expanded tips which may be entire to quadrifid (Figure 56-2c). The setae may emerge from well-developed parapodia (Figure 56-2c), or from the body wall itself. Mature males have 1-2 copulatory organs on each fertile segment. Females of all known species except Saccocirrus pussicus Marcus have seminal receptacles.

Jouin (1971:51) gave an overview of the saccocirrids with a key to the 11 species known at the time. The family now includes about 13 recognized species. Only one species, potentially new to science, is represented in Gulf of Mexico BLM-OCS collections.

PRINCIPAL DIAGNOSTIC CHARACTERS

Primary specific characters of the Saccocirridae include the presence and shape of a pharyngeal pad; the presence of a bilobed pygidium and adhesive glands having adhesive papillae on the pygidium; and the morphology of the setae.

The pharyngeal pad is quite muscular (Figure 56-2a), and occurs in about half the species of Saccocirrus. It is sometimes barrel-shaped as in S. archboldi Kirsteuer (1967) and Saccocirrus sp. A (Figure 56-2a), or heart-shaped as in S. sonomacus Martin (1977). It is found anteriorly within the first few setigers, beneath the pharynx itself.

All species except S. minor Aiyar and Alikunhi, 1944, have a bilobed pygidium, i.e., with a pair of terminal lobes located below a dorsal anus (Figure 56-2d,e). One species, S. cirratus Aiyar and Alikunhi, 1944, also has a pair of long anal cirri. The remaining species have only the two lobes, but these lobes may have a series of ventral adhesive papillae in addition to the adhesive glands as in S.

pussicus, and S. krusadensis Alikunhi, 1943. Species such as S. archboldi and S. parvus Gerlach, 1953, have adhesive glands but lack adhesive papillae. Adhesive glands may be few (S. parvus) to numerous (S. pussicus) or may simply be represented by two pads as in S. minor.

Saccocirrids have uniramous parapodia throughout, with 3-4 kinds of simple setae. Each kind of seta differs in length and sometimes in width, and in the dentition or shape of its tip. There is usually one long seta per parapodium. It can be very long and thin as in S. sonomacus, to only slightly longer than the other setae of the same bundle as in Saccocirrus sp. A (Figure 56-2c). The long seta is usually distally bifid, with or without additional dentition (Figure 56-2c), but in at least one species (S. archboldi) the long seta is rounded distally. The 2-3 other kinds of setae within the setal bundle may differ from each other only slightly as in Saccocirrus sp. A (Figure 56-2c), or they may differ quite noticeably as in S. sonomacus. Regardless, the setae are usually at least bifid but may also have additional dentition as in Saccocirrus sp. A (Figure 56-2c). In S. parvus, however, the longest seta is bifid while the remaining setae have broad, blunt tips. The number of setae per parapodium can serve as a specific character as well. For example, there are six setae per bundle in S. parvus, five in S. archboldi and Saccocirrus sp. A, and up to nine in other species.

BIOLOGICAL NOTES

Saccocirrids live interstitially and feed on diatoms, copepods, and detritus. Individuals attach themselves to the sand grains by using glutinous secretions from the anal lobes, body wall, and tentacles (Pettibone, 1982:41).

Saccocirrids have separate sexes and a complex reproductive system which includes copulation. Males have 1-2 copulatory organs on fertile segments. Females have 1-2 seminal receptacles which are used to receive the sperm during copulation. Saccocirrids have either paired or unilateral gonads. In Saccocirrus sonomacus, for example, they develop in the left side of females and in the right side of males in each segment in a zone of 50 or more segments (Martin, 1977:101). Early development takes place within the body of the female and the young emerge as trochophore larvae (Pettibone, 1982:41).

Genus **Saccocirrus** Bobretzky, 1872

TYPE SPECIES: Saccocirrus papillocercus Bobretzky, 1872.
REFERENCES:
Jouin, 1971:51.
Fauchald, 1977a:155.
Pettibone, 1982:41.
DIAGNOSIS: Prostomium rounded anteriorly, eyes and paired lateral tentacles present. Pharyngeal pad present or absent. Ampullae present. Parapodia uniramous throughout, without dorsal or ventral cirri; setigerous lobes poorly to well-developed, each with a bundle of 5-9 simple setae. Setae long to short, with bifid to quadrifid or truncate tips. Pygidium with dorsal anus and paired anal lobes, with or without adhesive papillae.

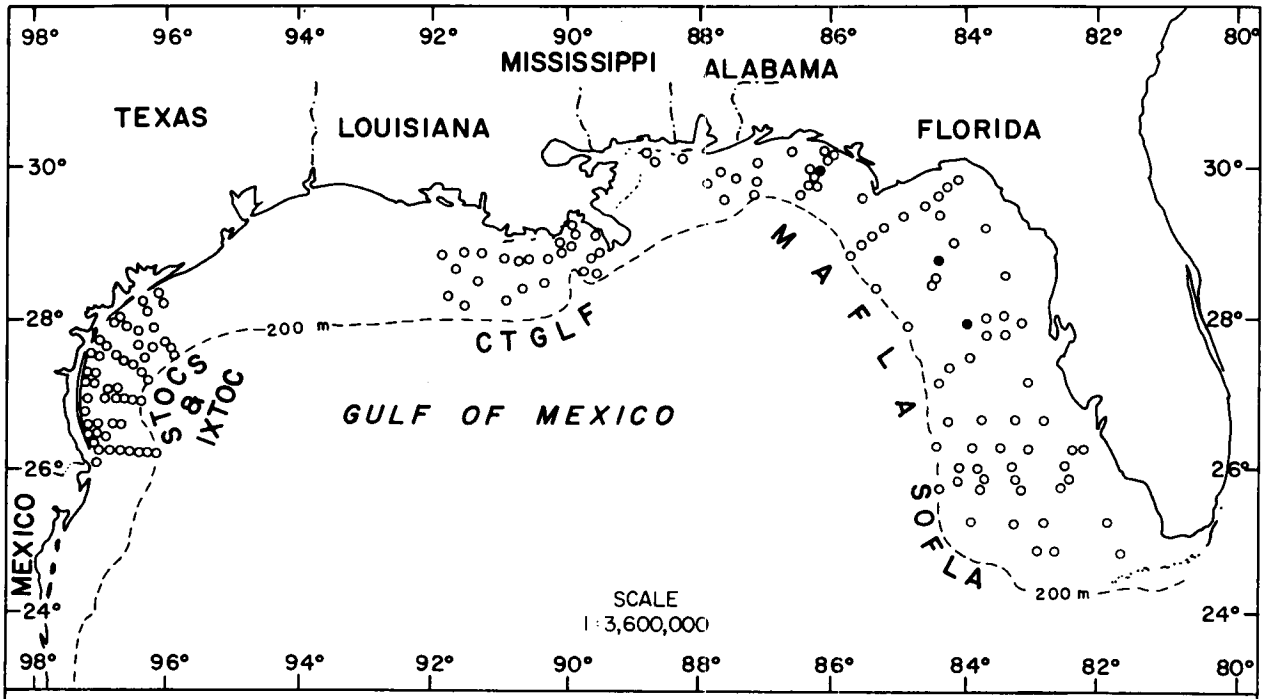

Figure 56-1. Distribution of Saccocirrus sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

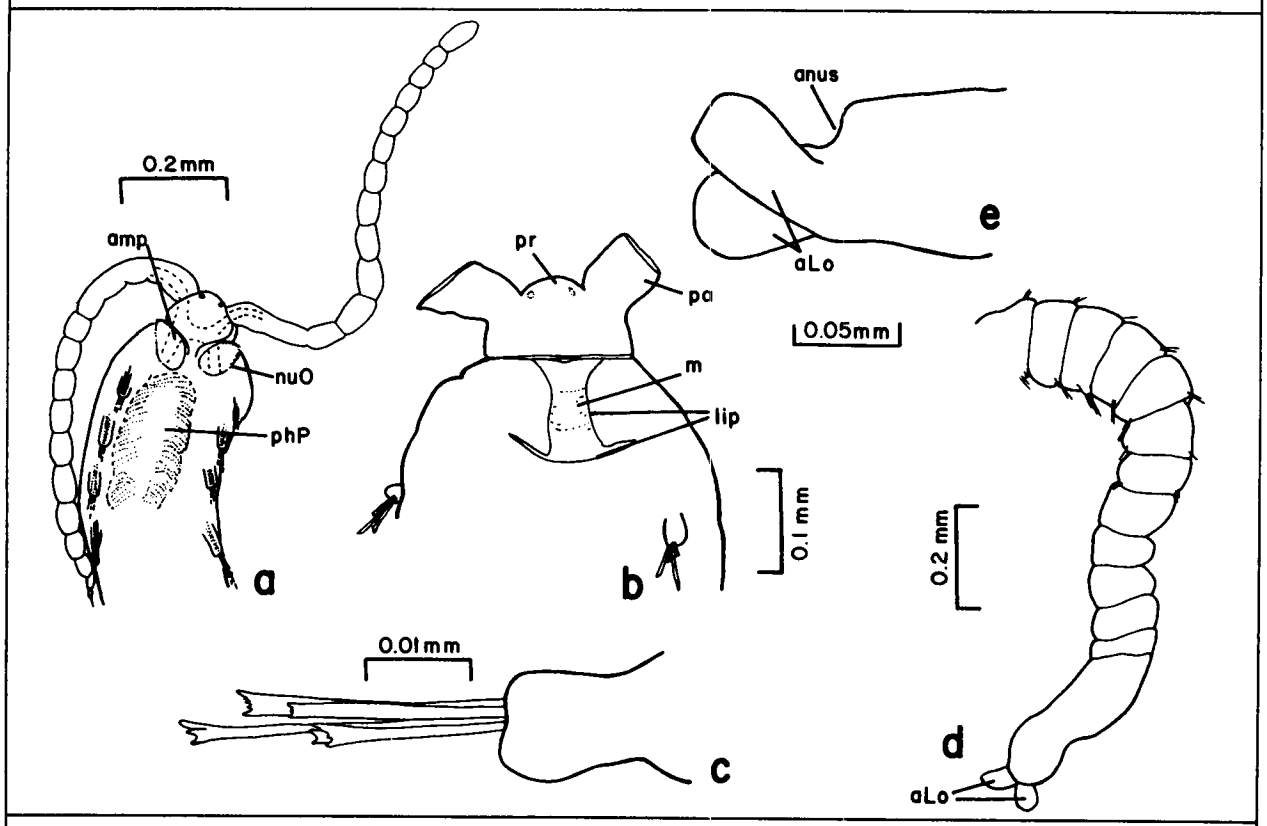

Figure 56-2. Saccocirrus sp. A: a, anterior end, dorsal view; b, same, ventral view; c, anterior parapodium, anterior view; d, posterior end, dorsal view; e, pygidium, lateral view.

Saccocirrus sp. A
Figures 56-1, 2a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211K-2/78 (1 spec., USNM 86847), 2316F-11/77 (1 spec.), 2531H-2/78 (1 spec.).
DESCRIPTION:
Length, to 8 mm; width, to 0.2 mm. Largest specimen complete with about 70 setigers. Prostomium rounded anteriorly, with one pair of small eyes. Lateral tentacles smooth to slightly wrinkled basally, becoming distinctly articled distally (Figure 56-2a). Deep grooves present dorsally behind prostomium on either side of midline followed by pair of large ciliated nuchal organs. Ampullae extending posteriorly to posterior margin of nuchal organs (Figure 56-2a). Pharyngeal pad present in setigers 1-3, with numerous distinct muscle bands. Mouth T-shaped with two lateral lips and one posterior lip (Figure 56-2b). Parapodia with well-developed setigerous lobes, each bearing five (rarely six) simple setae (Figure 56-2c). Longest seta of bundle trifid with one outer tooth wider than other teeth (Figure 56-2c). Two setae of each bundle with narrow bifid tips; two remaining setae with broader tips having two distinct outer teeth and 1-2 minute inner teeth (Figure 56-2c). Posterior end (Figure 56-2d) with five short achaetous segments followed by a long smooth region and a bilobed pygidium. Anal lobes without adhesive papillae (Figure 56-2e).
REMARKS: Saccocirrus sp. A is unique among the species of the genus in possessing distinctly articled lateral tentacles. All of the specimens examined herein are considered immature since none contained gametes, copulatory organs, or seminal receptacles.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 56-1); 35-45 m; coarse sand, silty fine sand.

CHAPTER 57

Jerry M. Gathof

FAMILY HARTMANIELLIDAE Imajima, 1977a

INTRODUCTION

The family Hartmaniellidae was erected by Imajima in 1977 to contain one previously unknown species, Hartmaniella erecta. One additional potentially new species occurs in the Gulf of Mexico BLM-OCS collections. This family most closely resembles the Lumbrineridae in the general body shape and elaborately toothed maxillary structures, but differs from the latter in having well-developed notopodial cirri and in lacking hooded hooks.

The body is cylindrical with many distinct setigers. The prostomium, as in most lumbrinerids, is small and globular, without appendages or eyes. Two apodous rings follow the prostomium. The first is large, at least as long as the prostomium, and may have small tubercles along its anterior margin. The second apodous ring is shorter, about the same length as the following setigers. Parapodia are biramous with the notopodia represented by 2-4 slender acicula in the notocirri. Notocirri are bilobed and interramal cirri are present. Neurosetae include both simple and composite forms.

PRINCIPAL DIAGNOSTIC CHARACTERS

Since only two species are known in the family, it is difficult to establish principal diagnostic characters with certainty. Characters which may be important in separating species include the setiger on which the bilobed notocirri first occur, the tuberculation of the first apodous ring, and the maxillary dentition.

BIOLOGICAL NOTES

The family Hartmaniellidae has been previously reported only from Japan and Madagascar (Pettibone, 1982:19). No habitat or life history information was included in the original description. Depths of occurrence were reported as 60-100 meters.

Genus Hartmaniella Imajima, 1977

TYPE SPECIES: Hartmaniella erecta Imajima, 1977.
REFERENCE:
Imajima, 1977a:211.
DIAGNOSIS: Body long, cylindrical, with many distinct segments. Prostomium globular, without appendages or eyes, followed by two apodous rings. Anterior parapodia uniramous, becoming biramous with notoacicula, bilobed notocirri and interramal cirri on setiger 5 or 6. Maxillae consisting of four pairs of heavily chitinized, toothed plates.

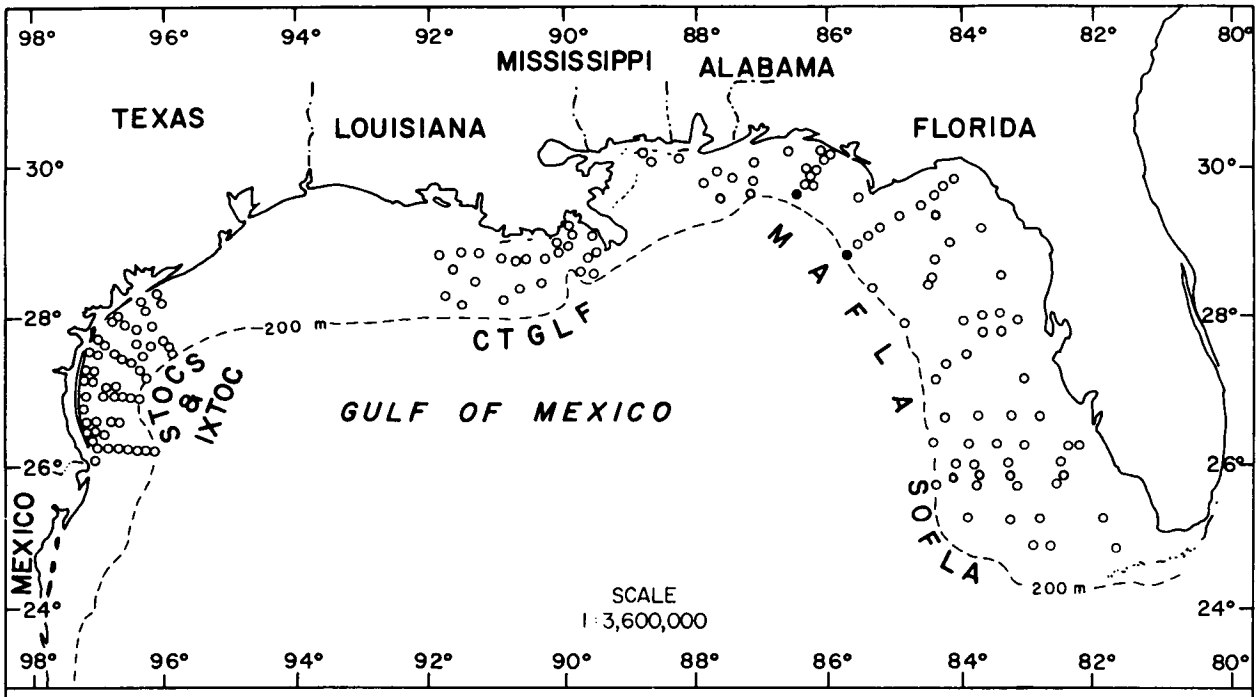

Figure 57-1. Distribution of Hartmaniella sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

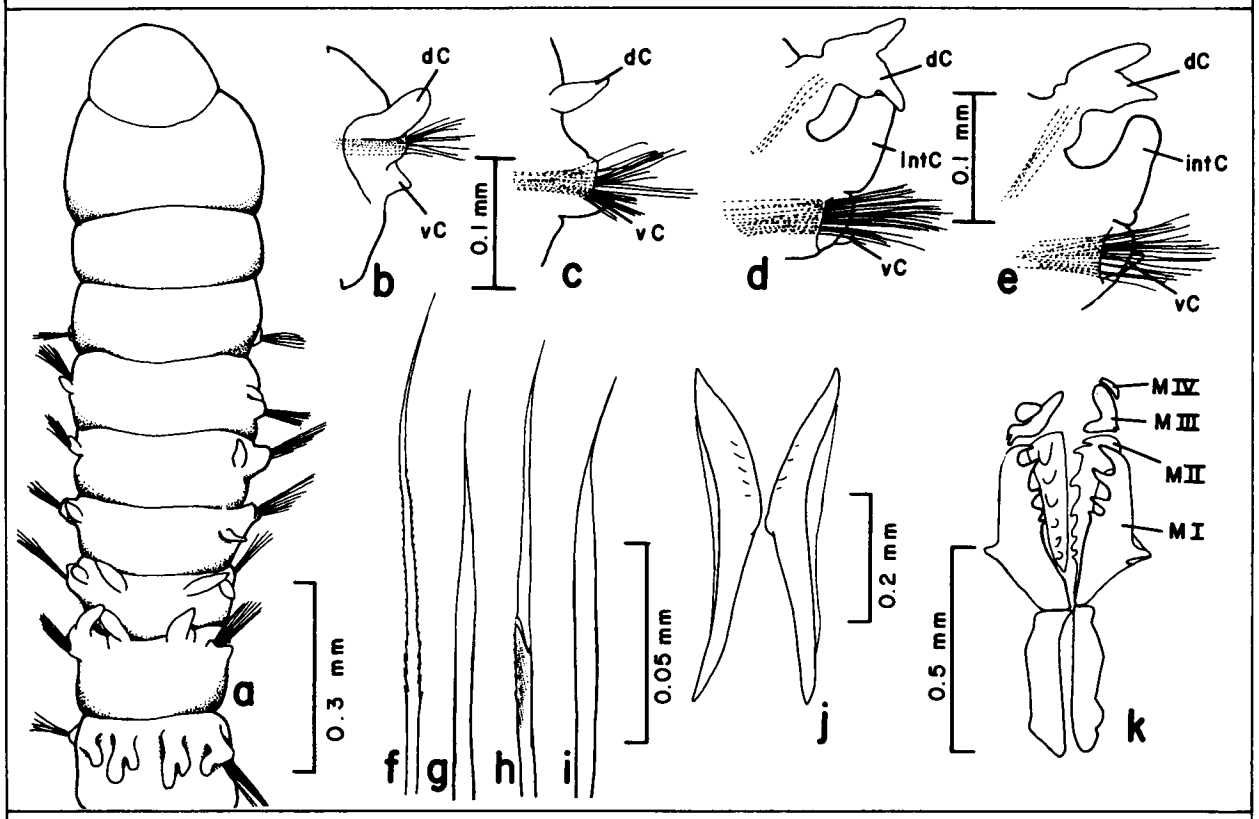

Figure 57-2. Hartmaniella sp. A: a, anterior end, dorsal view; b, parapodium from setiger 1, posterior view; c, same, from setiger 5; d, same, from setiger 10; e, same, from setiger 30; f, serrate capillary seta; g, smooth capillary seta; h, composite spiniger; i, aciculum; j, mandibles; k, maxillae.

Mandibles ventral to maxillae, pointed and separate throughout their length. Setae including capillary setae and compound spinigers.

Hartmaniella sp. A
Figures 57-1, 2a-k

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2427E-7/76 (1 spec., USNM 89731), 2536F-11/77 (1 spec.), 2536D-2/78 (1 spec., USNM 89732).
DESCRIPTION:
Length, 35+ mm; width, to 1 mm. All specimens incomplete with up to 56 setigers. Prostomium globular (Figure 57-2a). First apodous ring long, smooth, without papillae, wrapping around prostomium laterally; second apodous ring shorter than first, same length as following setigers. Parapodia of setiger 1 with small dorsal and ventral cirri and setal lobes (Figure 57-2b). Setal lobes becoming larger by setiger 5, with subulate dorsal cirri and conical ventral cirri (Figure 57-2c). Notopodial lobes becoming developed and notocirri bilobed from setiger 6; becoming well-defined by setiger 7 (Figure 57-2d). Interramal cirri large, flattened, present from setiger 6 through at least setiger 30 (Figure 57-2e). Posterior parapodia not observed. Neurosetae including serrate capillary setae (Figure 57-2f), smooth capillary setae (Figure 57-2g), and compound spinigers (Figure 57-2h). All acicula with pointed tips (Figure 57-2i). Mandibles separate with pointed posterior ends (Figure 57-2j). Maxillary formula 5:6:2:1 left and 4:7:2:1 right (Figure 57-2k).
REMARKS: Hartmaniella sp. A differs from H. erecta Imajima, 1977a, in having bilobed dorsal cirri beginning on setiger 6 rather than setiger 5, in lacking papillae on the first apodous ring, and in having the maxillary formula given above rather than 4:6:2:1 left and 4:5:2:1 right.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off northwestern Florida (Figure 57-1); deep water, 175-189 m; clayey and sandy silt.

CHAPTER 58

Jerry M. Gathof

FAMILY ARENICOLIDAE Johnston, 1835

INTRODUCTION

Arenicolids are large (reported to over one meter in length), thick-bodied polychaetes common in estuaries and intertidal areas of the Gulf of Mexico. No specimens were collected in the BLM-OCS program but their frequent occurrence among inshore collections prompted their inclusion in this work. Commonly known as "lugworms," arenicolids are frequently sold as fish bait in many areas along the east coast of the United States (D'Asaro and Chen, 1976).

The prostomium is small, bi- or trilobed, without appendages or eyes. Two achaetous segments follow the prostomium, each of which may have 3-5 annulations and a pair of statocysts. The proboscis is an eversible, smooth or papillose sac; jaws are absent. The body is conventionally divided into two or three regions, with segments in each region having 3-5 annulations. Members of the genera Arenicolides and Branchiomaldane have an anterior prebranchial region and a branchial region, whereas species of Arenicola and Abarenicola also have a postbranchial, apodous region. Parapodia are biramous, without acicula. Notopodia are short and truncate, with spinous capillary setae. Neuropodia consist of long ventrolateral ridges (tori) with a row of long-shafted hooks. Branchiae are filamentous or arborescent tufts behind the notopodia in the branchial region. The pygidium is a terminal pore and lacks anal cirri.

Important family revisions include those by Ashworth (1912) and Wells (1959). Fauchald (1977a) recognized four genera and 28 species within this family. Only one species, Arenicola cristata, is commonly found along the Gulf coast (Hartman, 1951a).

PRINCIPAL DIAGNOSTIC CHARACTERS

Characters important in diagnosing genera of the family Arenicolidae include the number of annuli on branchial segments (two or five per segment), presence of an achaetous posterior region, number of prebranchial setigers, and length of the neuropodia.

The genus Branchiomaldane differs from other genera in this family in having only two annuli per branchial segment, rather than five; smooth rather than spinulose notosetae; and distinct denticles at the crest of the neuropodial hooks. Arenicolides lacks the posterior achaetous region. Arenicola differs from Abarenicola in having long neuropodia which almost meet ventrally in the branchial region.

Specific differences include the number of body segments, number of pairs of branchiae, structure of the peristomial statocysts, and internal structures such as the number of pairs of esophageal ceca. Setae include smooth or faintly to densely spinulose forms in the notopodia, and stout, recurved hooks in the neuropodia. The neuropodial hooks have one to numerous teeth at the crest.

BIOLOGICAL NOTES

The family Arenicolidae has been studied extensively by several workers (Kermack, 1953; Wells, 1954, 1959, 1962). They are infaunal polychaetes which construct U-shaped burrows in mud and sand bottoms. Sediment is ingested by the eversible proboscis, causing a sediment depression at the head end of the burrow, and is passed through the gut to the anus. The anterior body is situated in the horizontal part of the burrow, and the posterior end extends nearly to the sediment-water interface. Orientation in the tube is facilitated by a pair of statocysts on the peristomium, which serve as gravity detectors. Water is pumped through the mucus-lined burrow to facilitate respiration. Individuals of this family travel up and down the vertical leg of the tube at regular intervals to deposit fecal castings at the surface.

Sexes are separate. Gametes are released into surrounding waters, or eggs may extend out of the burrow in a gelatinous mass (sometimes six feet long in *Arenicola cristata*). The larvae have a short planktonic stage and settle out quickly. Recently, *Arenicola cristata* has been used as an indicator organism of sublethal toxicity effects as well as bioaccumulation of toxic substances in bioassay testing (D'Arsaro, 1982). The organism's tolerance of salinity changes coupled with its infaunal life style contribute to its suitability for use in estuarine testing studies.

CHAPTER 59

Paul S. Wolf

FAMILY A

INTRODUCTION

Unknown Family A, with its two species, Aberranta enigmatica Hartman, 1965, and Aberranta sp. A (described herein), occurs rarely in benthic samples. This may be due to the relatively small size of its members (up to 4.0 mm for about 40 setigers). Members of Family A have a spherical prostomium that bears a single median antenna, and may have a pair of small eyes. A pair of stout, grooved palps are present (Figure 59-2a). One or possibly two achaetous segments follow the prostomium. Parapodia are biramous throughout. Dorsal and ventral cirri are lacking; however, dorsal and ventral lanceolate postsetal lamellae are present. One pair of filiform branchiae per segment occurs dorsal to the parapodia (Figure 59-2b) from about setiger 3. The noto- and neurosetae both include long simple setae with serrate margins, tapering to straight or slightly hooked tips (Figure 59-2c,d). Additionally, 2-3 lyrate neurosetae (Figure 59-2e), which resemble those found among some paraonids (Chapter 2), are present. The pygidium is simple, with or possibly without a pair of lanceolate anal cirri.

Aberranta enigmatica was described by Hartman (1965) under the heading "Family Unknown, Near Spionidae." Hobson (1971:249), after examining additional specimens of A. enigmatica, added slightly to the description, but still did not assign the species to any family. Family A may represent an intermediate group between the Paraonidae and Spionidae. It differs from the Spionidae, however, in having palps that arise ventrally instead of dorsally.

Family A currently includes a single genus. One species of Aberranta, presumably new to science, is described from Gulf of Mexico BLM-OCS material.

PRINCIPAL DIAGNOSTIC CHARACTERS

The specific differences cited herein are difficult to assess since descriptions of both A. enigmatica and Aberranta sp. A are based on examinations of very few specimens in each case. In addition, both species are quite small, and in the case of Aberranta sp. A, represented by poorly preserved material.

The lengths of the palps and median antenna may be important specific characters. In A. enigmatica the palps extend back to the anterior margin of setiger 1, whereas in Aberranta sp. A, they extend back to the anterior margin of setiger 3 (Figure 59-2a). The median antenna of A. enigmatica is only twice as long as the prostomium, but that of Aberranta sp. A is about three times the prostomial length (Figure 59-2a).

The noto- and neurosetae of Aberranta sp. A and A. enigmatica are quite similar, except that in the former species the lyrate neurosetae have spinous shafts (Figure 59-2e), whereas in the latter the shafts are smooth.

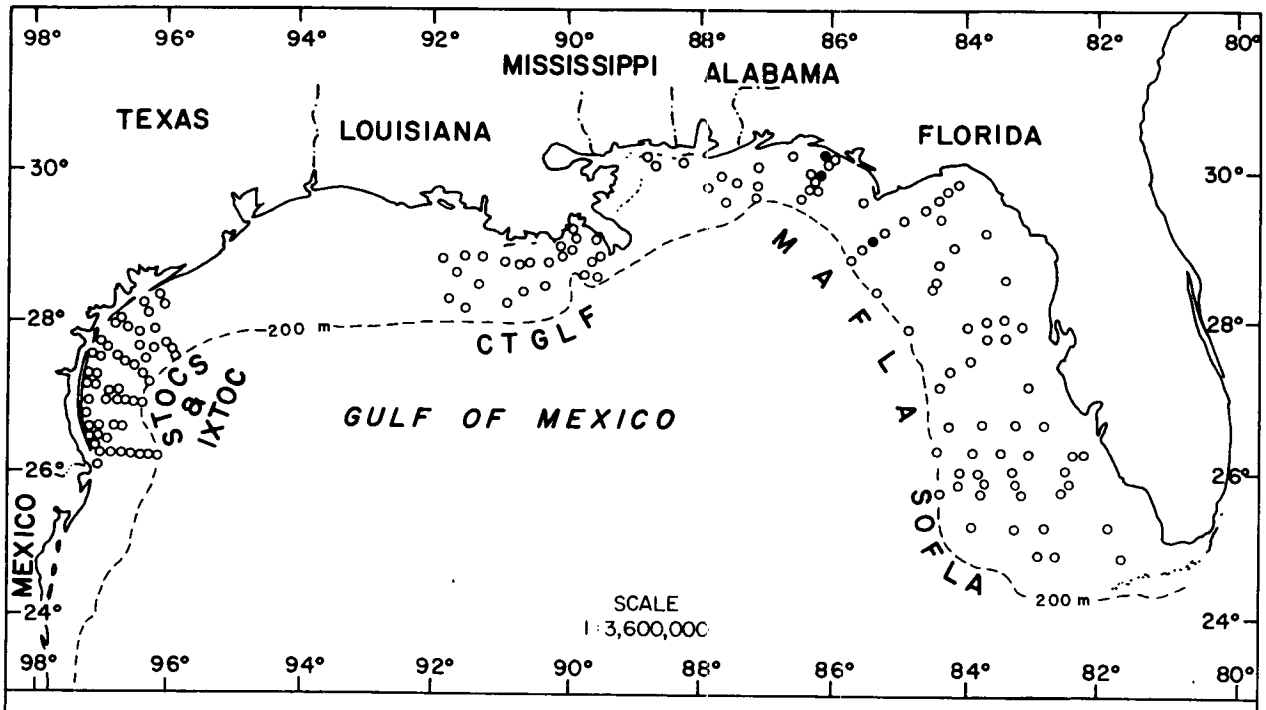

Figure 59-1. Distribution of Aberranta sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

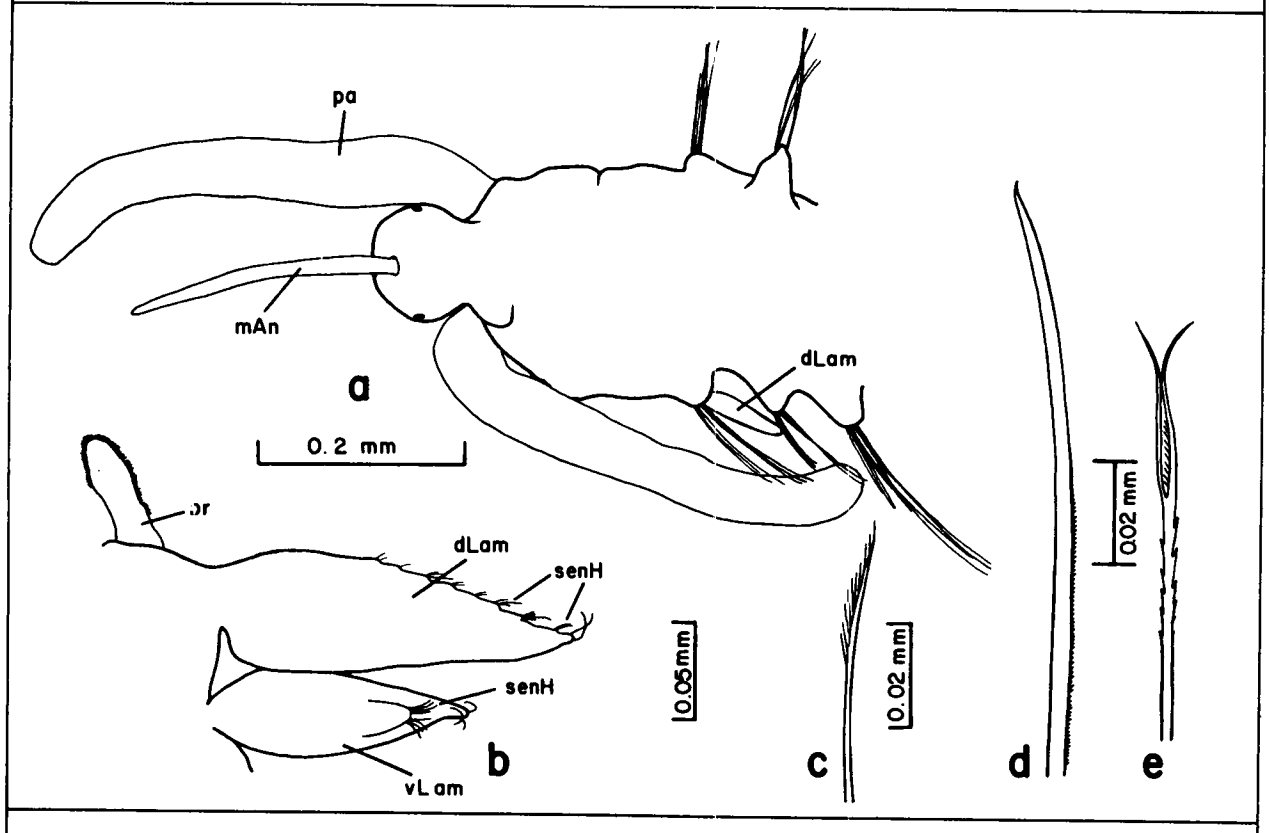

Figure 59-2. Aberranta sp. A: a, anterior end, dorsal view (most dorsal and ventral lamellae missing); b, middle parapodium, posterior view (setae omitted); c, notoseta with distinct hairs and straight tip; d, neuroseta with hooked tip; e, lyrate neuroseta.

BIOLOGICAL NOTES

Family A is rarely collected, and the biology remains unknown. Sexes are probably separate since one specimen of A. enigmatica contained large eggs (Hartman, 1965:155), and one specimen of Aberranta sp. A contained sperm. Judging by Hartman's figure (1965, pl. 32, fig. g), the eggs of A. enigmatica are relatively large and few in number, indicating perhaps direct development (i.e., without a planktonic larval stage) of its young.

Aberranta enigmatica is found off New England in muds at depths of 68-300 meters, whereas Aberranta sp. A occurs in the Gulf of Mexico off Florida (Figure 59-1) in medium to coarse sand in 36-45 meters.

Genus **Aberranta** Hartman, 1965

TYPE SPECIES: Aberranta enigmatica Hartman, 1965.
REFERENCES:
Hartman, 1965:155.
Hobson, 1971:249.
Fauchald, 1977a:25.
DIAGNOSIS: Prostomium spherical in shape, with or without eyes, with single median antenna. Palps thick, paired. Parapodia biramous throughout, with lanceolate dorsal and ventral postsetal lamellae; dorsal and ventral cirri absent. Filiform branchiae present on all but a few anterior segments. Noto- and neurosetae simple with filiform and hooked tips; neurosetae also including 2-3 lyrate setae.

Aberranta sp. A
Figures 59-1, 2a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2425E-7/76 (3 spec., USNM 89490), 2528E-11/77 (1 spec.), 2531H-8/77 (1 male), 2531I-8/77 (1 spec.), 2531K-9/77 (2 spec.).
DESCRIPTION:
Length, to 4.0 mm; width, to 0.3 mm. Complete specimens with about 35-40 setigers. Prostomium rounded anteriorly, with one pair of eyes (Figure 59-2a). Median antenna long, slender, about three times as long as prostomium. Palps stout, emerging ventrally, extending back to about setiger 3. One or possibly two achaetous segments present behind prostomium. Dorsal lamellae of parapodia larger than ventral lamellae, with row of stiff sensory hairs along dorsal margin, terminating in two longer hairs (Figure 59-2b). Ventral lamellae with two groups of sensory hairs on posterior surface, terminating in 2-3 hairs (Figure 59-2b). Branchiae small, filiform, paired, present on each setiger beginning about setiger 3 (Figure 59-2b). Noto- and neuropodia with numerous (10-15) simple setae in both rami. Notosetae including long, slender, simple setae with minutely serrate margins and filiform tips; and smaller setae having distinct hairs along one margin, also with filiform tips (Figure 59-2c). Neurosetae including stout forms with serrate margins and hooked tips (Figure 59-2d); short, slender setae with distinct hairs and fine tips similar to those in notopodia (Figure 59-2c); and lyrate setae with long, slender tines, one tine having distinct

hairs, shaft below tines with distinct spines (Figure 59-2e). Pygidium simple; cirri not present on specimens examined.

REMARKS: The author has examined paratypes of Aberranta enigmatica (AHF-0912) as well as specimens of that species identified by Hobson (USNM 43519; see Hobson, 1971). It was found that A. enigmatica differs from Aberranta sp. A in having shorter palps and possibly a shorter median antenna, and in having lyrate setae with smooth instead of spinous shafts. Other characters including the morphology and distribution of the setae (except the lyrate setae), and the morphology of the dorsal and ventral lamellae, are quite similar in the two species.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 59-1); 36-45 m; coarse to medium sand.

CHAPTER 60

Paul S. Wolf

FAMILY B

INTRODUCTION

Unknown Family B is represented by a single genus of minute (less than 2.0 mm) worms superficially resembling small sigalionids without elytra. Indeed, Family B shares the following characteristics with the sigalionid genus Pholoe*: the prostomium has a single median and no lateral antennae, the tentacular segment is achaetous, and the neuropodial compound falcigers have unidentate blades. In addition, members of both Family B and the Sigalionidae possess an eversible proboscis with two pairs of pincer-like jaws and terminal papillae; anteriorly directed tentaculophores bearing two pairs of tentacular cirri; long, filiform palps emerging ventral to the tentaculophores; and ventral cirri of segment 2 longer than subsequent ventral cirri.

Members of Family B differ from the sigalionids in lacking elytra; however, in place of the elytra are paired lobes with 2-4 long, filiform papillae, present on segments 2, 4, 5, 7, and alternate segments thereafter. This arrangement is the same as that of the elytrophores and elytra in the Polynoidae, i.e., occurring on alternate segments posteriorly instead of every segment as in the sigalionids. It must be noted however, that the elytra do not occur on every segment in sigalionids until after segment 25 or 27 (23 in Pholoe). The longest specimen of Family B examined possessed only 24 segments. Thus it is possible that longer individuals, if such exist, do have groups of papillae on every segment posteriorly.

Members of Family B also differ from the sigalionids in having only uniramous parapodia, and in lacking ctenidia and branchiae.

Family B may well be an aberrant offshoot of the Sigalionidae that has become adapted to an interstitial existence. Such morphologial adaptation is not unknown among polychaetes. The meiofaunal or interstitial dorvilleid genera (e.g., Parapodrilus Westheide, 1965, and Ikosipodus Westheide, 1982a) appear quite different morphologically from their macroinfaunal counterparts. In the Dorvilleidae, the adaptation to an interstitial habitat is accompanied by increased neoteny (Westheide, 1982a). It is possible that Family B is a neotenic sigalionid which bears closest resemblance to members of the sigalionid genus Pholoe in having a single median antenna, two pairs of tentacular cirri, and unidentate compound falcigers.

Until positive affinities can be established, the individuals discussed herein are assigned to an unknown but potentially new family, designated for convenience as Family B. A single genus and species, undescribed at this time and simply referred to as Genus A, occurs on the northern Gulf of Mexico outer continental shelf.

*Pettibone (1982:14, and pers. comm.) placed Pholoe within the family Pholoidae rather than Sigalionidae; however, see Chapter 25 (Sigalionidae).

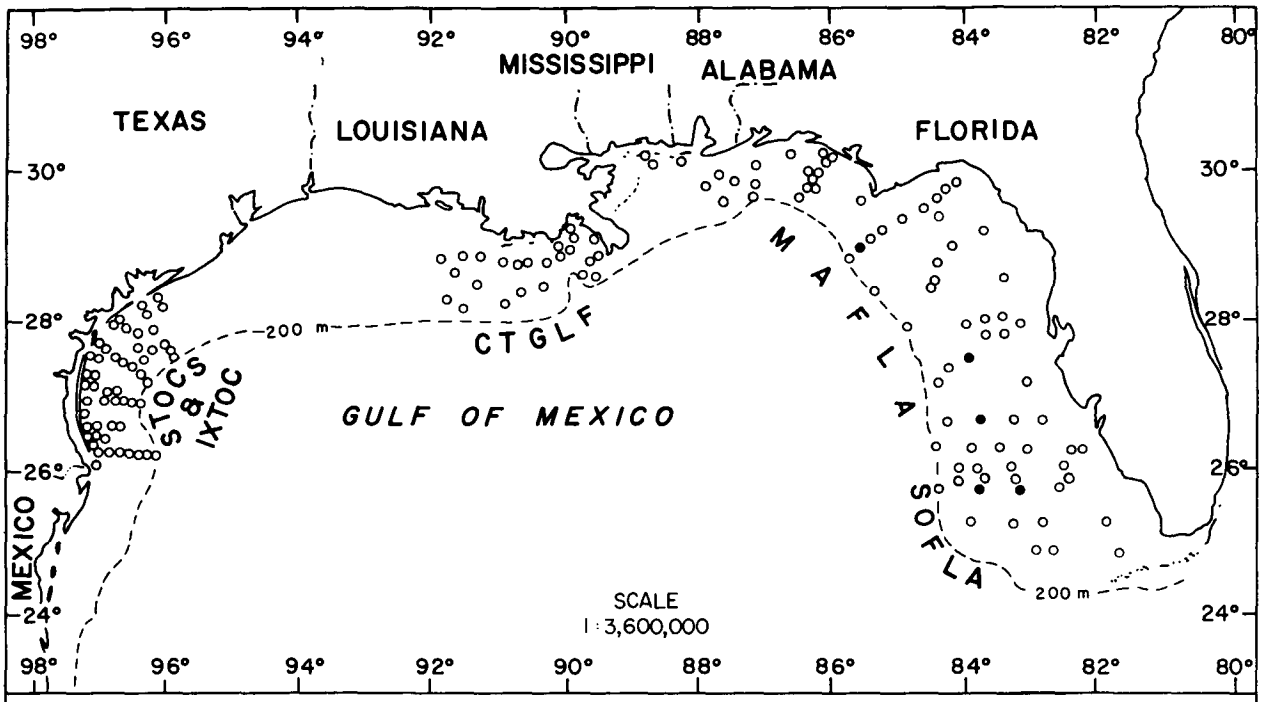

Figure 60-1. Distribution of Genus A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

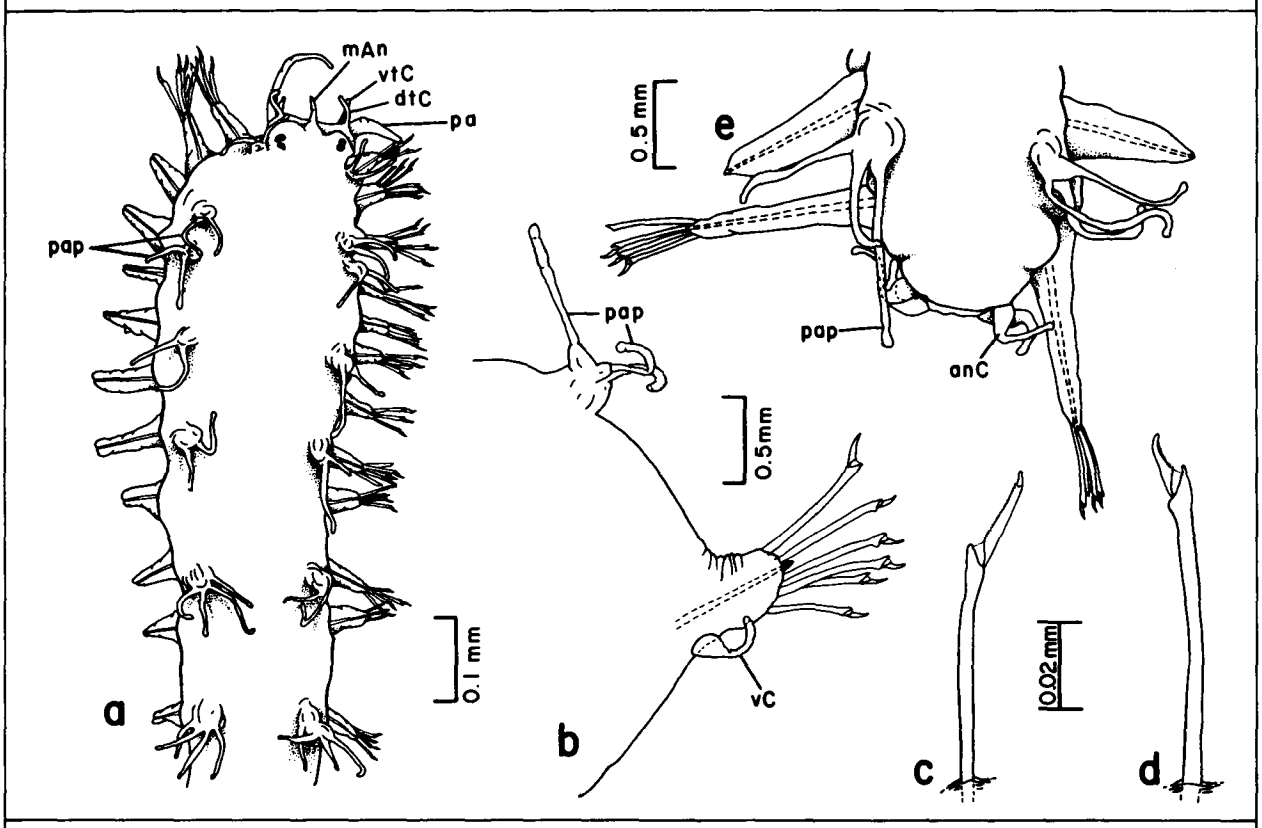

Figure 60-2. Genus A: a, anterior end, dorsal view; b, parapodium from segment 8, posterior view; c, neuroseta from segment 2; d, neuroseta from segment 9; e, posterior end, dorsal view.

Genus A
Figures 60-1, 2a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 5A-8/81 (3 spec.-1 ovig., USNM 86845), 5B-8/81 (3 spec., USNM 86844); MAFLA 2426G-2/78 (2 spec., USNM 89582), 2748-7/78 (1 spec.-ovig., USNM 86846), 2958J-2/77 (1 spec.), 2958I-8/77 (1 spec.-ovig.), 2959H-8/77 (1 spec.).
DESCRIPTION:
Length, to 1.75 mm; width, to 0.50 mm. Complete specimens with 21-24 segments. Prostomium (Figure 60-2a) bilobed with a terminal median antenna and two pairs of eyespots. Tentacular segment achaetous, fused to prostomium. Tentaculophores bearing two pairs of slender tentacular cirri, all equal in length, with knobbed tips; pair of filiform palps emerging ventral to tentaculophores. Dorsum smooth except for groups of long, filiform papillae with knobbed tips arising from small mounds above the parapodia (Figure 60-2a,b) on segments 2, 4, 5, 7 and alternate segments thereafter. Anterior 5-6 groups each with two papillae, subsequent groups with 3-4 papillae. Ventral cirri of segment 2 (= buccal cirri) twice as long as following ventral cirri. Parapodia elongate when extended, each supported by single aciculum (Figure 60-2a,b). Setae as compound falcigers with unidentate blades. Blades of setae slightly longer on segment 2, with minute teeth along inner margins (Figure 60-2c). Blades of subsequent setae equal in length, with longer, thinner teeth along inner margin (Figure 60-2d). Pygidium (Figure 60-2e) with terminal anus and two pairs of anal cirri, equal in length, having knobbed tips. Proboscis eversible with two pairs of sigalionid-like jaws and about nine pairs of distal papillae.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 60-1); 50-120 m; coarse to fine sand, silty very fine sand.

The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The MMS **Minerals Revenue Management** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.