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TAXONOMIC GUIDE TO THE POLYCHAETES OF THE NORTHERN GULF OF MEXICO

Volume VI

Prepared by

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CHAPTER 39

Jerry M. Gathof

FAMILY ONUPHIDAE Kinberg, 1865

INTRODUCTION

Onuphids are large, tube-dwelling polychaetes well-represented in the Gulf of Mexico. The body shape is usually cylindrical for the first 10-15 setigers, often becoming dorsally flattened posteriorly. The prostomium may be large or small, but always has two short frontal antennae, a pair of ventral palps, and five variously modified occipital antennae. Each occipital antenna is composed of a ceratophore which may be papillose, ringed or smooth, and a ceratostyle which may have longitudinal rows of minute papillae. Eyes are present or absent. A tentacular segment follows the prostomium, usually wrapping around the prostomium laterally. This may possess a pair of dorsal tentacular cirri. Notopodia are small, represented by thin notoacicula embedded in the notocirri. The neurosetae are diverse and include pectinate setae, pseudocompound falcigers, modified anterior recurved hooks, limbate setae, and compound falcigers and spinigers. Stout subacicular hooks may be present along with stout internal acicula. The pygidium is terminal and usually has 2-4 anal cirri. The eversible proboscis is equipped with paired mandibles and 4-5 pairs of toothed maxillae.

The family Onuphidae now includes 11 genera and over 190 species (Fauchald, 1977a:105). Fauchald has recently published several partial revisions of the family, based on material deposited at the Allan Hancock Foundation (1968b, 1972a), and type material of the genera Onuphis, Nothria and Paradiopatra (1982). Members of this family are frequently represented in collections from the Gulf of Mexico. Seven genera and 16 species have been identified from the Gulf of Mexico BLM-OCS material. Four of these species are potentially new to science and one is a questionable assignment.

PRINCIPAL DIAGNOSTIC CHARACTERS

Important generic characters for the family include modifications of the first 2-3 setigers (elongate parapodial lobes and modified setae), branchial arrangement (spiraled, pectinate, simple, or absent), presence of tentacular cirri, shape of the hoods on the pseudocompound hooks (pointed or blunt), and length of the occipital ceratophores.

The first 2-3 setigers are directed anteriorly in Ramphobrachium, Paranorthia, and Americonuphis. Ramphobrachium has simple, "grapple hook"-shaped setae (Figure 39-10e) on these anterior setigers as opposed to Paranorthia and Americonuphis which have compound falcigers. The branchiae are spiraled around a central axis in the genus Diopatra (Figure 39-4e), but may be simple, pectinate, or absent in other genera. Tentacular cirri are absent in Epidiopatra, Hyalinoecia, and Paronuphis but are present in all other genera. The pseudocompound hooded hooks of the first few setigers may have pointed hoods (Sarsonuphis) or blunt hoods (Mooreonuphis, Kinbergonuphis). In the genus Onuphis, the occipital ceratophores exceed the prostomium in length (Figure 39-26a).

Specific characters include the dentition of the anterior pseudocompound hooks, the number of anterior setigers with digitiform ventral cirri, the presence of large hooks on anterior setigers, the number of rings on the ceratophores, and the origin of the branchiae and subacicular hooks.

Setae in onuphids are generally similar within each genus. Limbate setae and pectinate setae (Figure 39-4i) are common to all genera. Compound falcigers and spinigers may be present on some anterior setigers (usually setigers 4-12). The first 1-7 setigers may have long, pseudocompound hooded hooks with one, two, or three teeth (Figures 39-18e; 4f,g); or long, recurved, grapple-shaped hooks with 1-2 rows of spines along the shaft (Figure 39-12d). Either intrafascicular or subacicular hooks are present in each species. Intrafascicular hooks lie parallel to the acicula and are distinctly emergent from the parapodia, whereas subacicular hooks lie at an angle to the acicula and emerge only slightly from the parapodia. Both subacicular and intrafascicular hooks usually begin just posterior to the start of the branchiae and continue to the pygidium.

The mandibles are composed of chitinized plates with long posterior margins for muscular attachment, and are located ventral to the maxillae. They are similar within each genus and historically have not been used as a specific character. Maxillary dentition is generally used only as a supplemental character due primarily to the amount of intraspecific variability. Like eunicids, the maxillae are not symmetrical--maxilla 3 is usually absent from the right side. Unless the proboscis is everted, a dorsal or ventral incision must be made to properly examine the maxillae. Care should be exercised not to cut too deeply when making the incision and consequently damage the maxillae. Ranges have been given in the maxillary formulae where variability has been observed in the material examined. One such maxillary formula, for Diopatra cuprea, is 1:(8-9):(6-8):(5-6):1 [left] and 1:(7-9):0:(5-7):1 [right]. The formulae represent the number of teeth on maxillae 1 through 5 on the left and right sides, respectively.

Anterior and posterior parapodia are illustrated for each species where possible; all parapodia were drawn from an anterior view. Figures were drawn from BLM-OCS specimens unless otherwise noted.

BIOLOGICAL NOTES

All onuphids are tubicolous, but are capable of moving during periods of stress (limited food resources, dissolved oxygen depletion or salinity changes), and constructing new tubes (Diopatra) or taking their tubes with them (Hyalinoecia). They are most abundant in the intertidal and shelf areas of the Gulf of Mexico. One genus, Ramphobrachium, is usually recorded from abyssal depths.

Onuphids were considered omnivorous scavengers by Fauchald and Jumars (1979). Other workers (Hartmann-Schröder, 1971; Schafer, 1962) believed them to be carnivorous. Onuphids are probably opportunists which become functional specialists on the more abundant food sources (Fauchald and Jumars, 1979). Tubes are thin and parchment-like, to thick and constructed of mucus and mud with bits of shell, rock, or plant debris stuck to the outside.

Reproductive information on the family is scarce. Schroeder and Hermans (1975) listed the genus Diopatra as being protandrically

hermaphroditic (male early in life, later becoming female); other onuphids may be viviparous. Stalked egg masses attached to the tube of the parent have been reported in some species of Diopatra. Periods of low salinity trigger spawning in some intertidal onuphids; the eggs are then deposited in masses as protection from the reduced salinities.

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

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

1a. Branchiae spiraled (Figure 39-4e). . . . . **Diopatra**, p. 39-5
1b. Branchiae simple, branched, pectinate or absent. 2

2a. Parapodia of first two or three setigers distinctly enlarged, directed anteriorly (Figures 39-10a,b; 12a; 14b). . . . . **Ramphobrachium**, p. 39-13
2b. Parapodia of first two or three setigers only slightly enlarged, not directed anteriorly. 3

3a. Anterior parapodia with foliose presetal lobes (Figure 39-16b) . . . . . **Nothria**, p. 39-17
3b. Anterior parapodia without foliose presetal lobes. 4

4a. Pseudocompound hooks with pointed hoods (Figure 39-18e). . . . . **Sarsonuphis**, p. 39-19
4b. Pseudocompound hooks with blunt hoods (Figure 39-20e). 5

5a. Spinigers present on at least one setiger between setigers 4 and 10. . . . . **Mooreonuphis**, p. 39-21
5b. Spinigers absent on setigers 4-10. 6

6a. Occipital ceratophores exceeding prostomium in length (Figure 39-26a). . . . . **Onuphis**, p. 39-25

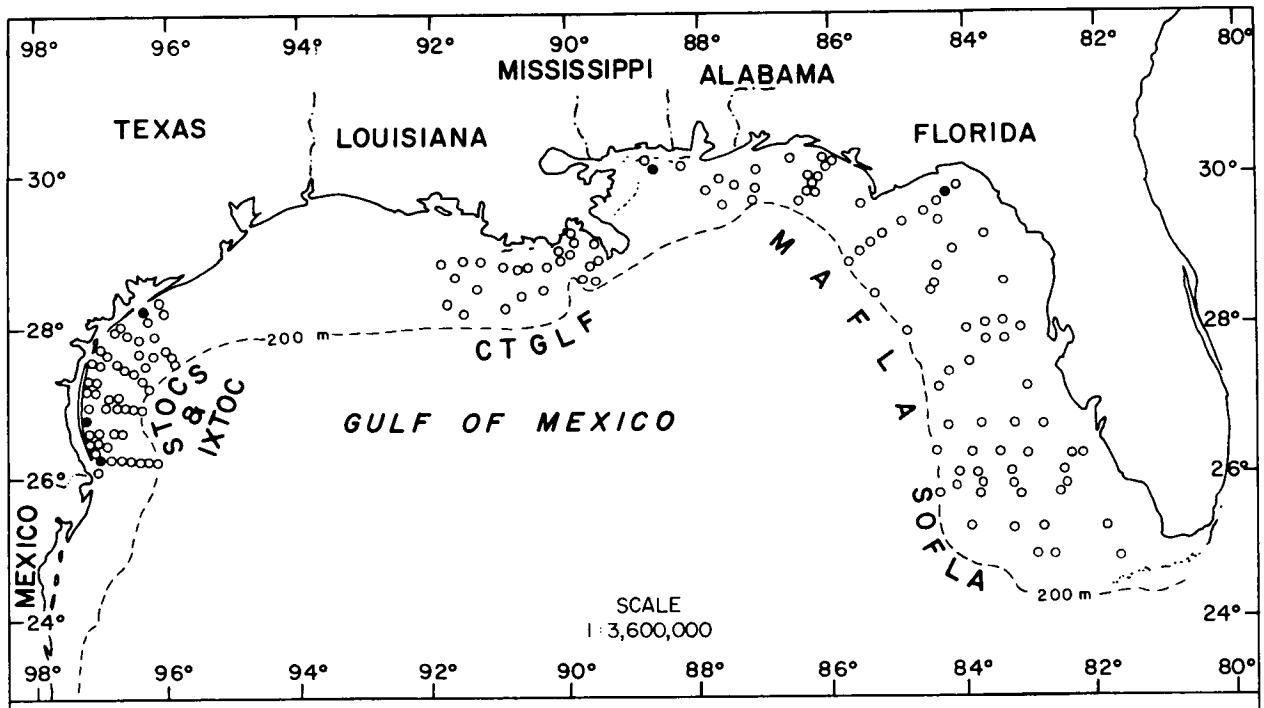

Figure 39-1. Distribution of Diopatra cf. papillata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

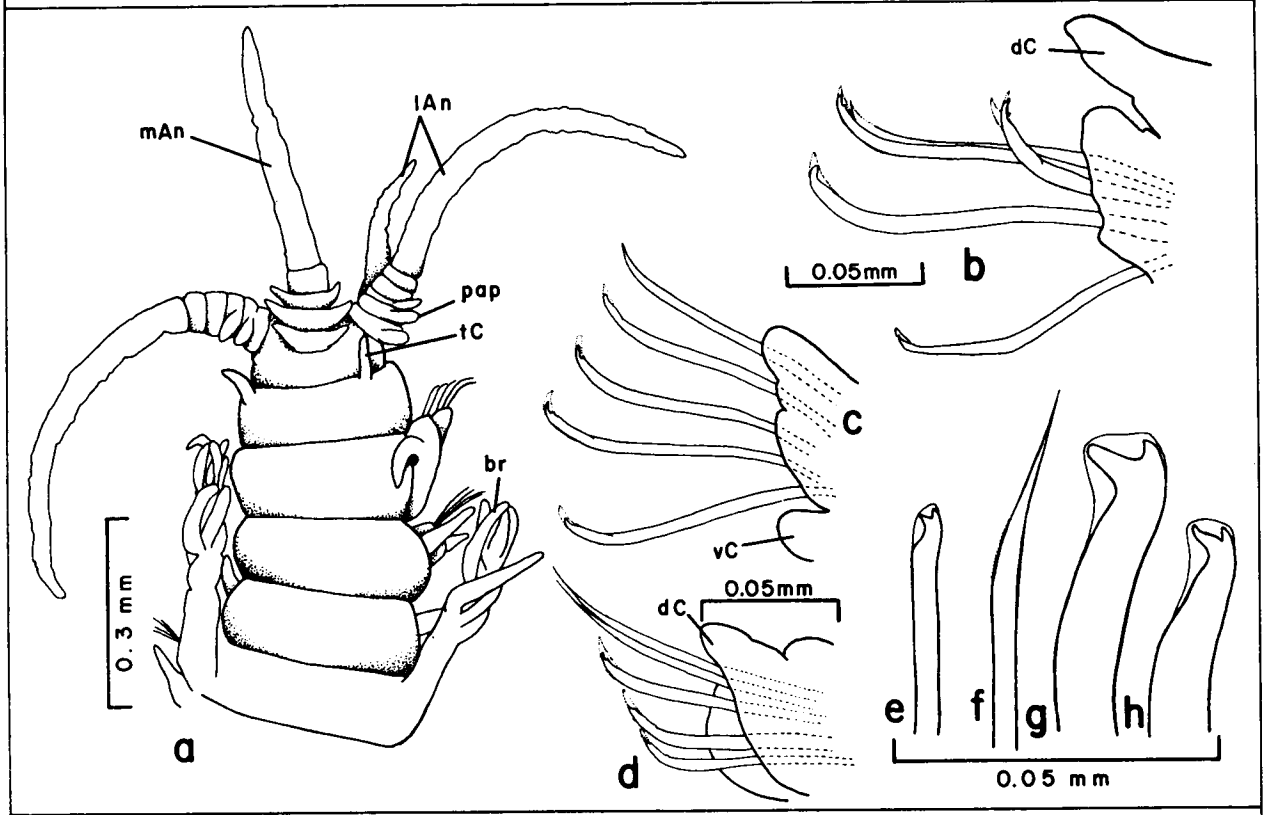

Figure 39-2. Diopatra cf. papillata: a, anterior end, dorsal view; b, parapodium from setiger 1; c, same, from setiger 2; d, same, from setiger 3; e, bidentate hook from setiger 6; f, limbate seta from setiger 6; g, superior subacicular hook; h, inferior subacicular hook.

6b. Occipital ceratophores not exceeding prostomium in length (Figure 39-32a). . . . . .**Kinbergonuphis**, p. 39-29

Genus **Diopatra** Audouin and Milne Edwards, 1833a

TYPE SPECIES: Diopatra amboinensis Audouin and Milne Edwards, 1833a.
REFERENCES:
Hartman, 1944b:49.
Gardiner, 1976:184.
Fauchald, 1968b:3; 1977a:105.
DIAGNOSIS: Prostomium large, with one pair of subulate frontal antennae and five occipital antennae having short or long ceratophores and long ceratostyles (occasionally with longitudinal rows of papillae). Eyes present or absent. Tentacular cirri present. Branchiae large, with numerous small filaments arranged spirally around a central axis. First parapodia not greatly enlarged. Pseudocompound hooks uni-, bi- or tridentate, with blunt hoods. Limbate setae, pectinate setae and subacicular hooks present. Acicula geniculate.
REMARKS: The proximalmost tooth of the pseudocompound setae may be reduced to a small boss and may be difficult to see.

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

1a. Median and inner lateral ceratophores with long lateral papillae (Figure 39-2a); pseudocompound hooks uni- and bidentate (Figure 39-2b). . . . . .**Diopatra** cf. **papillata**, p. 39-5
1b. Median and inner lateral ceratophores without lateral papillae; pseudocompound hooks bidentate or tridentate only, or both bi- and tridentate 2

2a. Pseudocompound hooks bi- and tridentate (Figure 39-4f,g) . . . . . **Diopatra neotridens**, p. 39-7
2b. Pseudocompound hooks either bidentate or tridentate. 3

3a. Pseudocompound hooks bidentate (Figure 39-6f,g). . . . . **Diopatra cuprea**, p. 39-9
3b. Pseudocompound hooks tridentate (Figure 39-8f) . . . . . .**Diopatra tridentata**, p. 39-11

Diopatra cf. **papillata** Fauchald, 1968
Figures 39-1, 2a-h

Diopatra papillata Fauchald, 1968b:11, pl. 2, figs. d-i.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2420C-7/76 (1 spec.), 2420F-7/76 (1 spec.), 2638C-11/77 (1 spec., USNM 89898); STOCS 4/I-4 F/77 (1 spec., USNM 89899), 4/III-4 F/77 (1 spec., USNM 89900), 4/IV-2 F/77 (1 spec., USNM 89901).
DESCRIPTION:
Length, to 5 mm (previously reported to 15 mm); width, to 0.2 mm (previously reported to 0.5 mm). Body small, with scattered brown pigment

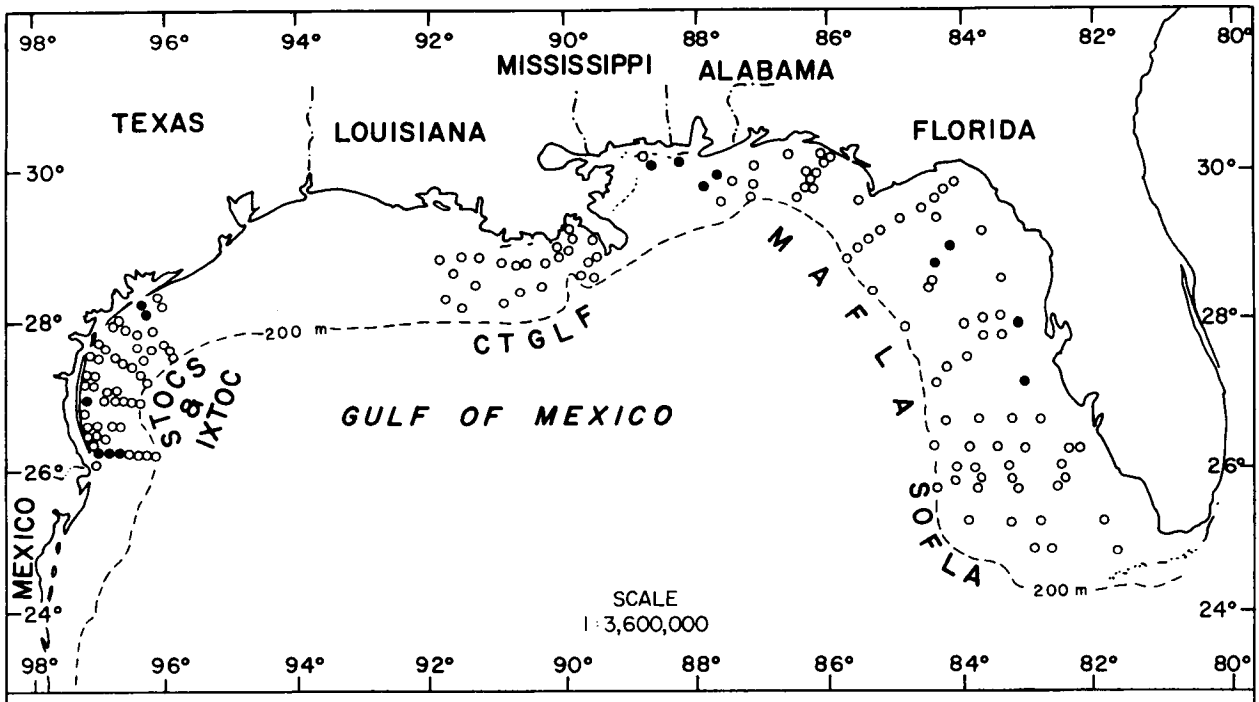

Figure 39-3. Distribution of Diopatra neotridens on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

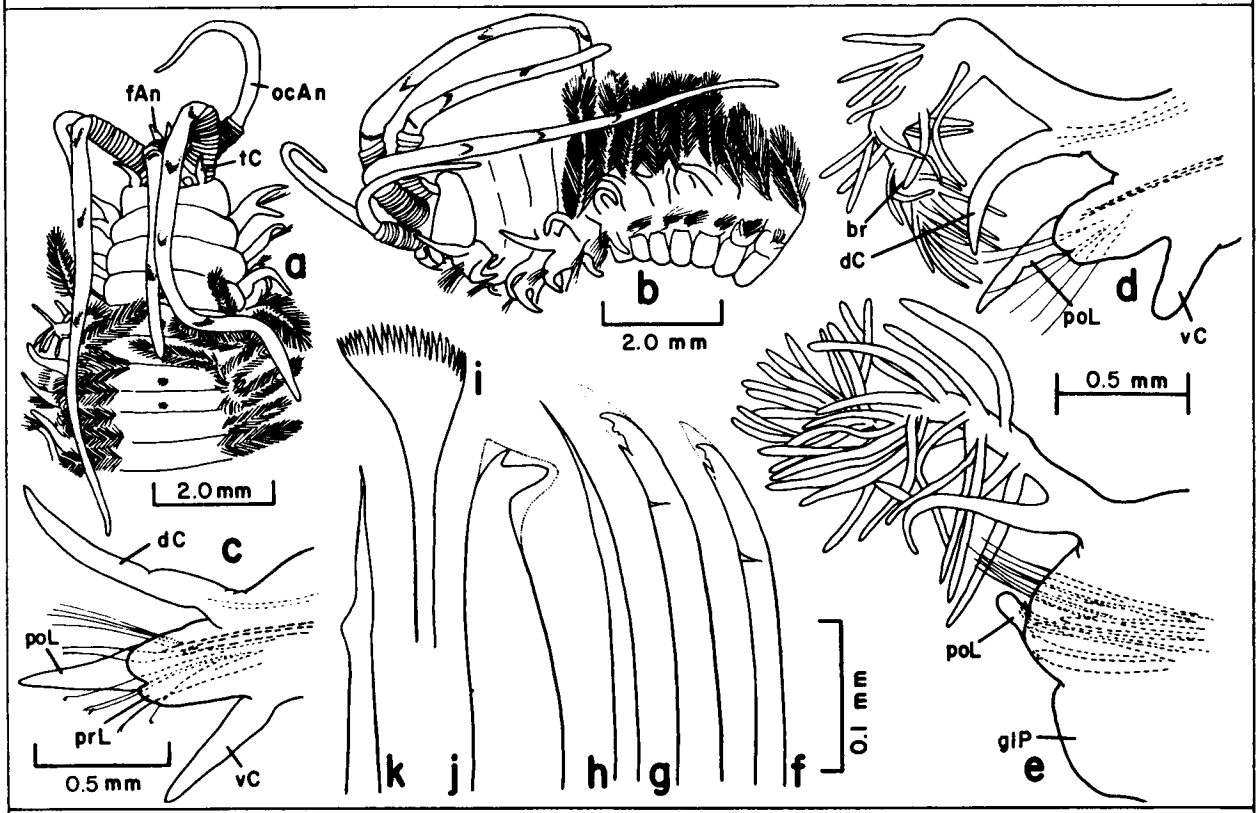

Figure 39-4. Diopatra neotridens: a, anterior end, dorsal view; b, same, lateral view; c, parapodium from setiger 2; d, same, from setiger 5; e, same, from setiger 25; f, bidentate pseudocompound hook from setiger 2; g, tridentate pseudocompound hook from same; h, limbate seta from same; i, pectinate seta; j, subacicular hook; k, aciculum.

dorsally; all specimens incomplete with up to 32 setigers. Prostomium small, rounded; eyes absent. Occipital antennae with 4-5 rings on ceratophores and large papillae on basalmost rings (Figure 39-2a); longest certatostyle reaching setiger 6. Peristomium equal to prostomium in length, with one pair of short tentacular cirri. Branchiae beginning on setigers 4-5, continuing for 4-5 setigers. Setigers 1-3 with uni- and bidentate pseudocompound hooded hooks, and capillary setae (Figures 39-2b-d). Setigers 4 and 5 with limbate setae. Setigers 6 and 7 with bidentate hooks (Figure 39-2e), and limbate setae (Figure 39-2f). Subacicular bidentate hooks (Figure 39-2g,h) beginning on setiger 9, numbering two per parapodium. Maxillae and pygidium not observed.
REMARKS: Gulf of Mexico BLM-OCS specimens differ from D. papillata in having uni- and bidentate pseudocompound hooks instead of only bidentate hooks, and three pairs of branchiae rather than 31 pairs. The smaller size of specimens examined in this study may account for observed differences. Pectinate setae were not observed, but may have been missing. These specimens may be juveniles.
PREVIOUSLY REPORTED HABITAT: 20-30 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered stations off Texas, Mississippi, and Florida (Figure 39-1); 10-24 m; very fine sand; silty and clayey sand.
DISTRIBUTION: Gulf of California, ?Gulf of Mexico.

Diopatra neotridens Hartman, 1944
Figures 39-3, 4a-k

Diopatra neotridens Hartman, 1944b:63, pl. 2, figs. 44-48; pl. 3, figs. 49-54; pl. 16, fig. 334.
Diopatra neotridens--Fauchald, 1968b:9, pl. 2, fig. b.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207G-7/76 (2 spec., USNM 89902), 2316-7/77 (1 spec.), 2317A-7/76 (1 spec.); STOCS 4/I-1 Sp/76 (1 spec., USNM 89903), 4/I-4 Sp/76 (6 spec., USNM 89904).
Supplementary Material:
California--off Turtle Bay, 52-62 m, 1940, O. Hartman coll./ID. (AHF-38, holotype).
DESCRIPTION:
Length, 53+ mm (previously reported to 60 mm); width, to 4 mm. Body cylindrical anteriorly, dorsally convex posteriorly; all specimens incomplete with up to 121 setigers. Preserved specimens with brown pigment dorsally and at bases of parapodia as described by Hartman (1944b:65). Prostomium small, globular; eyes absent. Occipital antennae long (Figure 39-4a), with 11-13 rings on ceratophores; longest ceratostyle with longitudinal rows of large papillae reaching setiger 16. Peristomium one-third length of prostomium, dorsally with one pair of filiform tentacular cirri. Branchiae beginning on setiger 4 (Figure 39-4b). Anterior setigers with long dorsal and ventral cirri (Figure 39-4c); ventral cirri digitiform to setiger 5 (Figure 39-4d), becoming pad-like thereafter (Figure 39-4e). Setigers 1-4 with pseudocompound bidentate (Figure 39-4f) and tridentate (Figure 39-4g) hooded hooks, and limbate setae (Figure 39-4h). Posterior setigers with pectinate (Figure 39-4i) and limbate setae. Subacicular hooks bidentate, hooded (Figure

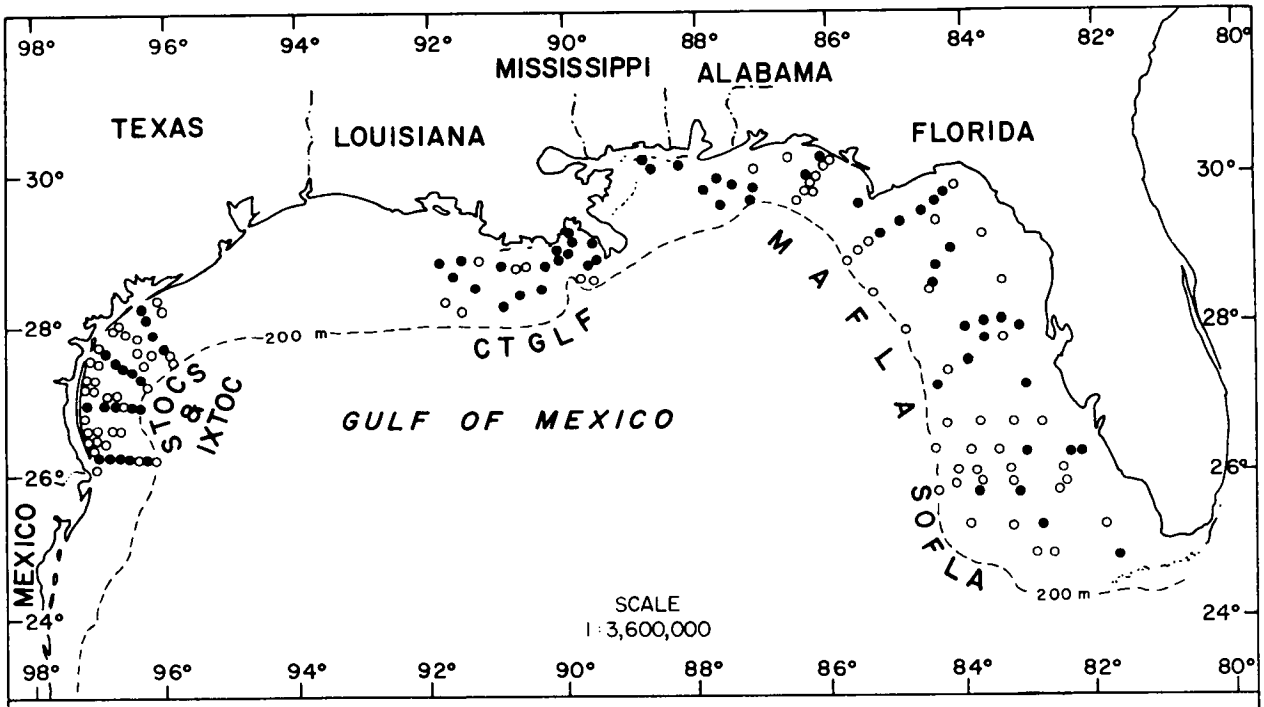

Figure 39-5. Distribution of Diopatra cuprea on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

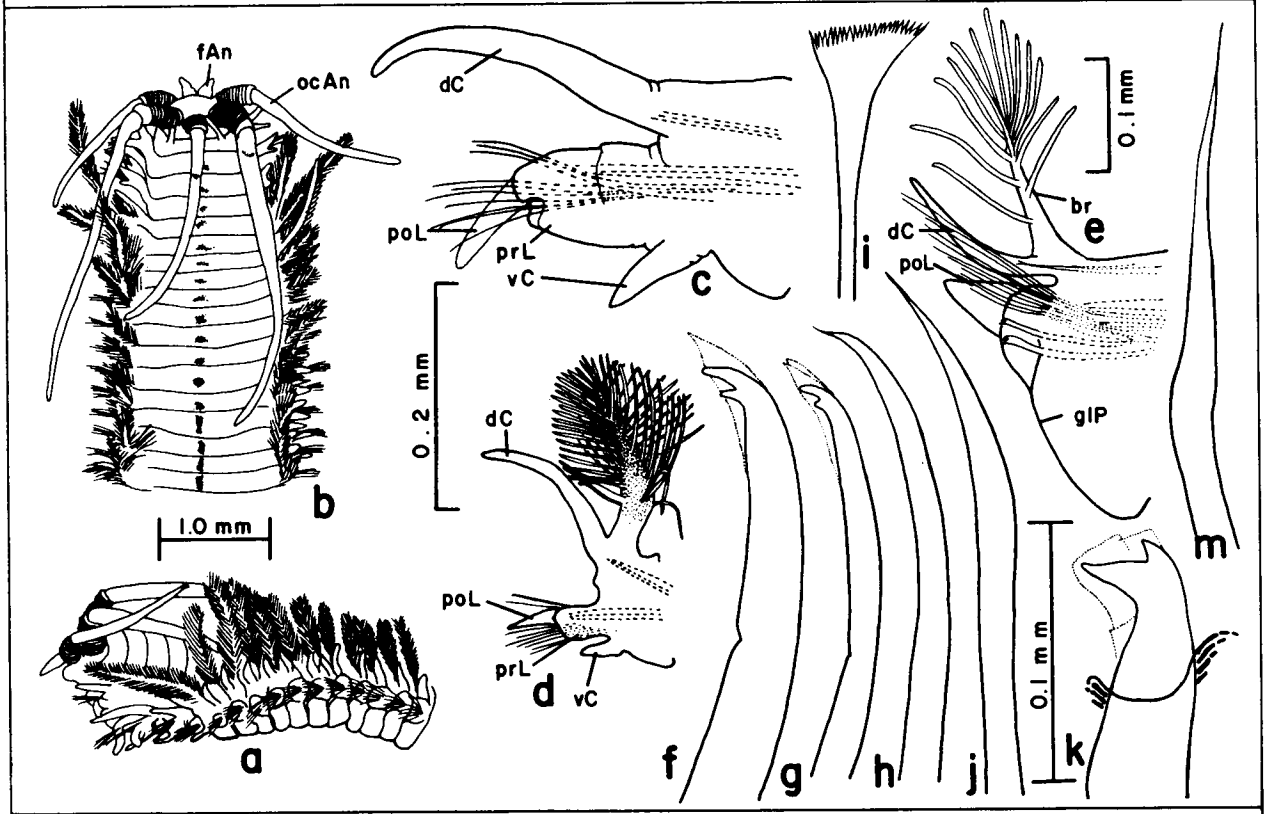

Figure 39-6. Diopatra cuprea: a, anterior end, lateral view; b, same, dorsal view; c, parapodium from setiger 2; d, same, from setiger 5; e, same, from setiger 25; f, large pseudocompound hook from setiger 2; g, smaller pseudocompound hook from same; h, limbate seta from same; i, pectinate seta; j, limbate seta from setiger 5; k, subacicular hook; m, aciculum.

39-4j), beginning on setigers 14-15. Acicula with subdistal knob (Figure 39-4k). Maxillary formula 1:7:5:4:1 left and 1:7:0:4:1 right. Mandibles with smooth anterior margin.
REMARKS: D. neotridens was described by Hartman (1944b:64) as having pseudocompound tridentate hooks on the first three setigers. Examination of the holotype (AHF-38) revealed pseudocompound tridentate hooks on setiger 4 as well. Maxillae and mandibles from the larger type specimen were three times the size of those from BLM-OCS specimens, which may account for differences in the maxillary dentition.
PREVIOUSLY REPORTED HABITAT: Intertidal to 25 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records throughout northern Gulf (Figure 39-3); 10-35 m; fine-very fine sand, silty fine to very fine sand, clayey sand.
DISTRIBUTION: California, Mexico to Panama, Gulf of Mexico.

Diopatra cuprea (Bosc, 1802)
Figures 39-5, 6a-m

Diopatra cuprea--Hartman, 1944b:54, pl. 1, figs. 9-14.
Diopatra cuprea--Pettibone, 1963:250, fig. 66.
Diopatra cuprea cuprea--Day, 1967:412, fig. 17.12.a-d; 1973:54.
Diopatra cuprea--Gardiner, 1976:185, fig. 23e-i.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 22F-11/80 (1 spec., USNM 89905), 25B-8/81 (1 spec., USNM 89906); MAFLA 2207J-8/77 (1 spec.), 2316C-7/76 (1 spec., USNM 89910), 2422J-7/76 (1 spec.); CTGLF 02-1/79 (1 spec., USNM 89907); STOCS 4/I-3 W/76 (9 spec., USNM 89908); IXTOC S49-5 12/79 (1 spec., USNM 89909).
Supplementary Material:
North Carolina--Cape Lookout, intertidal, July 1973, sand mixed with gravel and shell fragments, S. Gardiner coll./ID. (1 spec., USNM 52992).
DESCRIPTION:
Length, 70+ mm (previously reported to 270 mm); width, to 5 mm (previously reported to 7 mm). Body cylindrical, convex dorsally over first seven setigers, thereafter becoming flattened with parapodia oriented dorsolaterally (Figure 39-6a); all specimens incomplete with up to 135 setigers. Prostomium small, rounded, with five occipital antennae, each having 9-10 rings on ceratophore (Figure 39-6b). Ceratostyles smooth, without papillae, longest reaching to setiger 15. Peristomium about one-third length of prostomium, with one pair of filiform tentacular cirri. Branchiae beginning on setigers 4-5. Dorsal cirri long anteriorly (Figure 39-6c); ventral cirri digitiform to setiger 5 (Figure 39-6d), becoming pad-like thereafter (Figure 39-6e). Setigers 1-4 with one large (Figure 39-6f) and many smaller (Figure 39-6g) pseudocompound bidentate hooded hooks and limbate setae (Figure 39-6h). Posterior setigers with pectinate setae (Figure 39-6i) and limbate setae (Figure 39-6j). Bidentate subacicular hooded hooks (Figure 39-6k) beginning on setigers 15-16. Acicula slightly bent distally (Figure 39-6m). Maxillary formula 1:8-9:6-8:5-6:1 left and 1:7-9:0:5-7:1 right. Mandibles with smooth margins.
REMARKS: BLM-OCS specimens of D. cuprea do not exhibit papillation of the occipital ceratostyles as described by other workers (Hartman, 1944b:54).

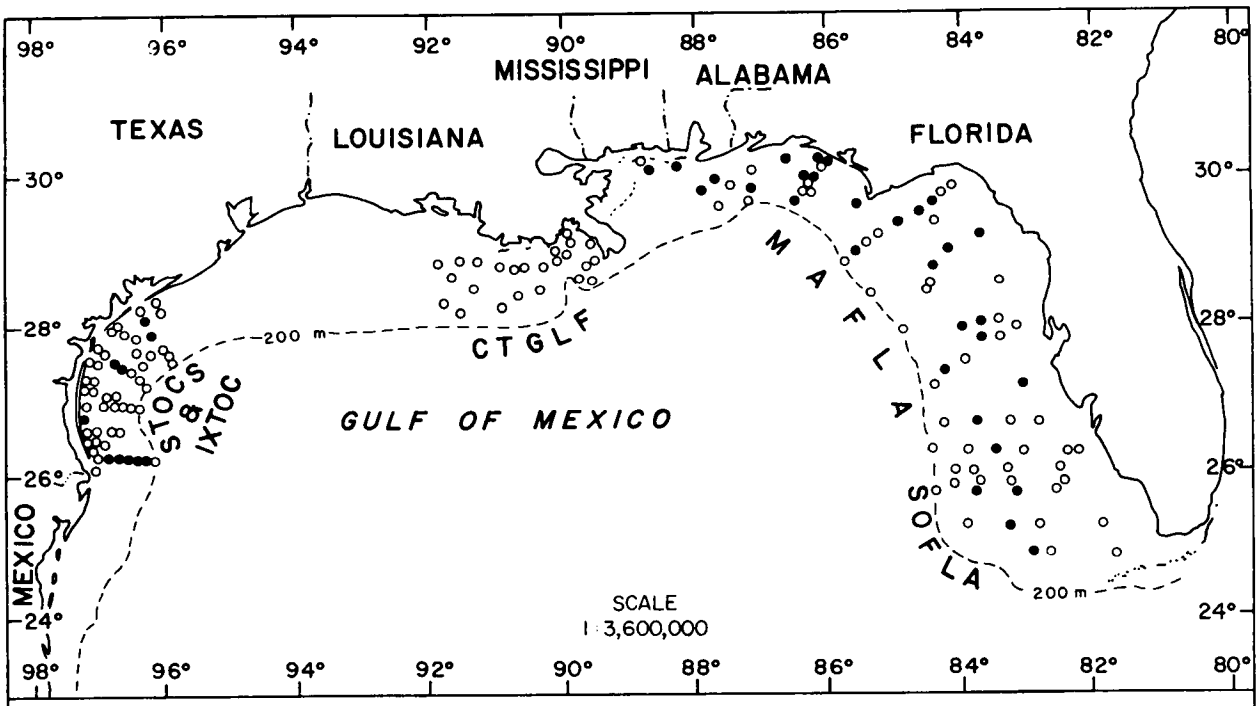

Figure 39-7. Distribution of Diopatra tridentata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

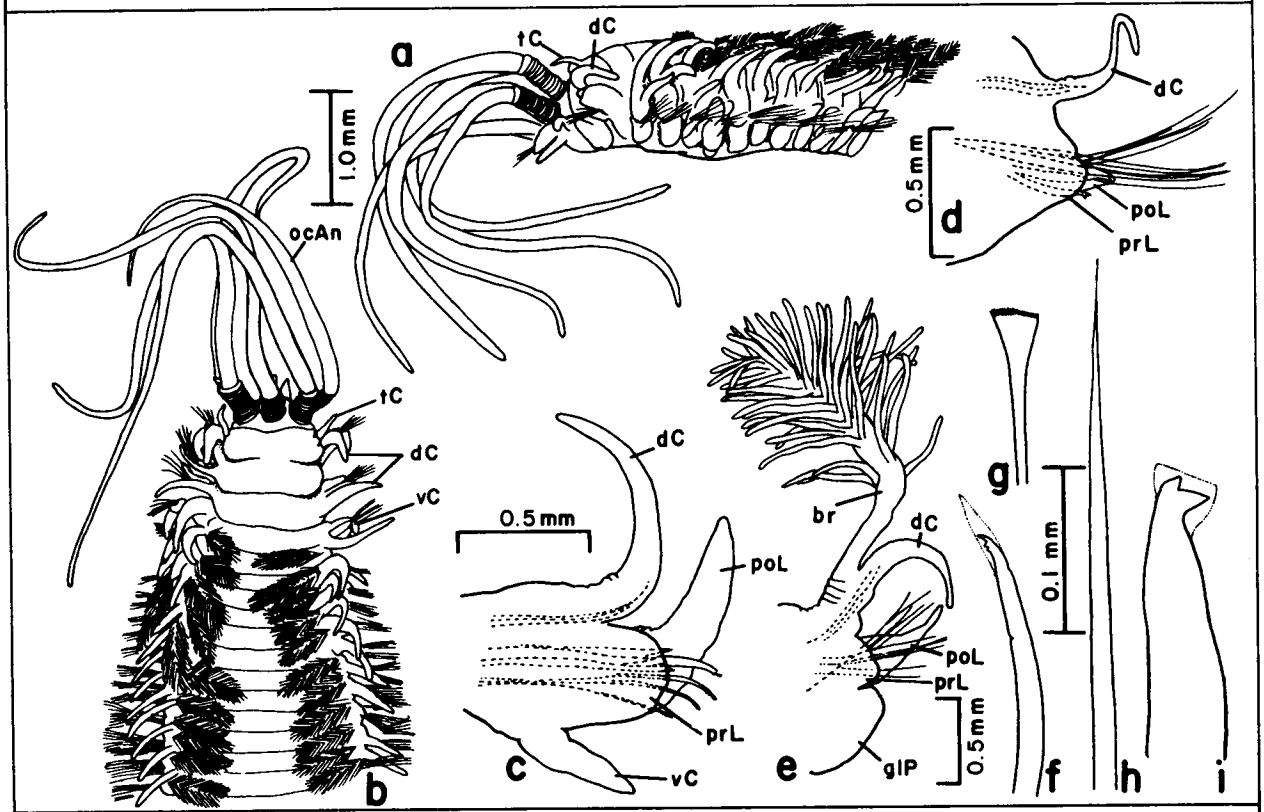

Figure 39-8. Diopatra tridentata: a, anterior end, lateral view; b, same, dorsal view; c, parapodium from setiger 2; d, same, from setiger 25; e, same, from setiger 5; f, pseudocompound hook from setiger 2; g, pectinate seta; h, capillary seta; i, subacicular hook.

PREVIOUSLY REPORTED HABITAT: Intertidal to 82 m; muddy sand, sand mixed with shell and gravel.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common throughout northern Gulf (Figure 39-5); 10-189 m; sands, silts and clays.
DISTRIBUTION: New England to Florida, Gulf of Mexico, Panama, Brazil, West and South Africa, Indian Ocean.

Diopatra tridentata Hartman, 1944
Figures 39-7, 8a-i

Diopatra tridentata--Hartman, 1944b:61, pl. 2, figs. 37-43, pl. 17, figs. 335, 336.
Diopatra tridentata--Fauchald, 1968b:13, pl. 2, fig. k.
Diopatra cuprea spiribranchis--Day, 1973:55.
Diopatra tridentata--Gardiner, 1976:185, fig. 23j-n.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 5B-8/81 (1 spec., USNM 89911); MAFLA 2422J-7/76 (1 spec.), 2423B-7/76 (3 spec.), 2423C-7/76 (1 spec.), 2436G-7/76 (1 spec.), 2638F-5/74 (1 spec., USNM 89912), 2639A-6/75 (1 spec.), 2851H-7/76 (1 spec.); STOCS 2/II-1 W/76 (1 spec., USNM 89913), 6/IV-1 F/76 (1 spec., USNM 89914), 6/IV-4 F/76 (4 spec., USNM 89915).
Supplementary Material:
California--off Huntington Beach, 16-30 m, 1940, O. Hartman coll./ID. (AHF-37, holotype).
DESCRIPTION:
Length, to 105 mm (previously reported to 55 mm); width, to 4 mm. Largest complete specimen with 215 setigers. Dorsum convex over first six setigers, thereafter becoming flattened with parapodia oriented dorsolaterally (Figure 39-8a). Prostomium small, globular (Figure 39-8b); one pair of small eyes located between bases of inner and outer lateral occipital antennae. Occipital antennae elongate, longest one extending posteriorly to setiger 26; ceratophores with 9-12 rings, ceratostyles smooth. Peristomium about same length as prostomium, with two subulate tentacular cirri. Setigers 1-4 with long dorsal and ventral cirri (Figure 39-8c); posterior setigers with smaller dorsal cirri and ventral glandular pads (Figure 39-8d). Branchiae beginning on setiger 4 (Figure 39-8e), continuing to setiger 50. Setigers 1-4 with tridentate pseudocompound hooks having pointed hoods (Figure 39-8f), and capillary setae. Posterior setigers with pectinate setae (Figure 39-8g) and capillary setae (Figure 39-8h). Bidentate subacicular hooded hooks (Figure 39-8i) beginning on setigers 14-16. Maxillary formula 1:7-9:7-8:5-7:1 left and 1:7-8:0:7-9:1 right. Mandibles with smooth cutting margin.
REMARKS: The tubes of BLM-OCS specimens of D. tridentata are smooth rather than annulate as described by Hartman (1944b:63).
PREVIOUSLY REPORTED HABITAT: 10-160 m; fine to medium sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Numerous stations in northern Gulf (Figure 39-7); 19-189 m; medium to very fine sand, silty and clayey sand, sandy and clayey silt, silty clay.
DISTRIBUTION: North Carolina, West Indies, Gulf of Mexico, Brazil, Columbia, California.

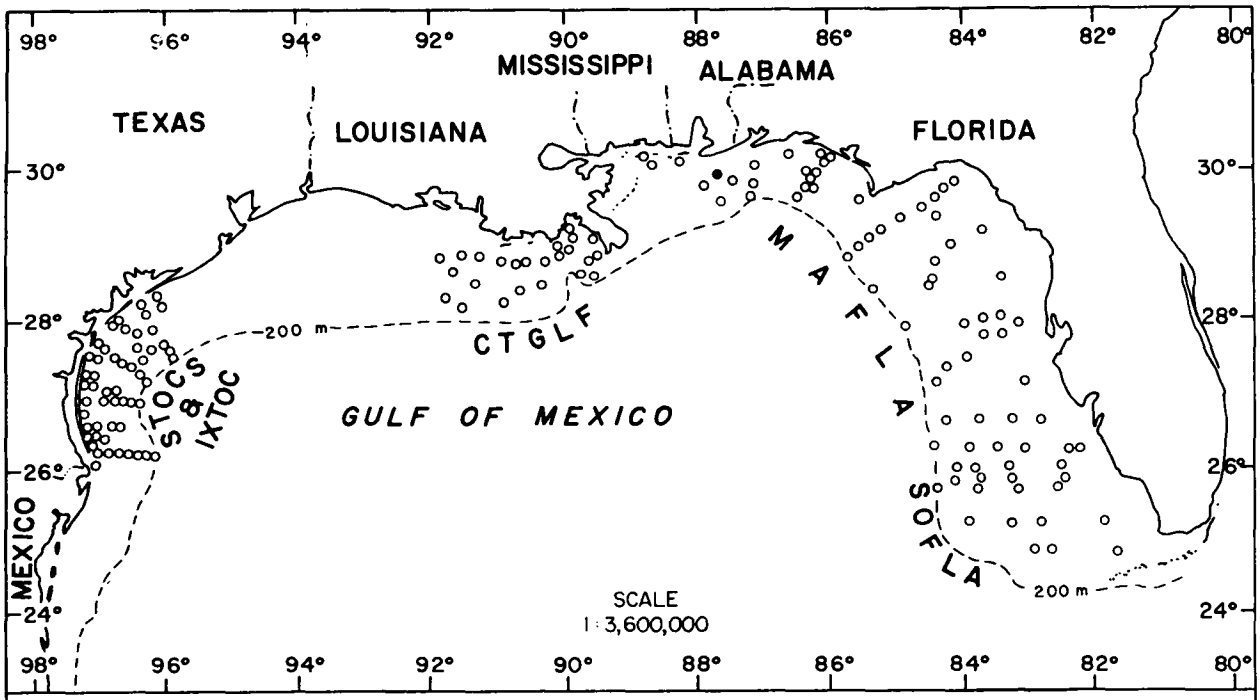

Figure 39-9. Distribution of Ramphobrachium atlanticum on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

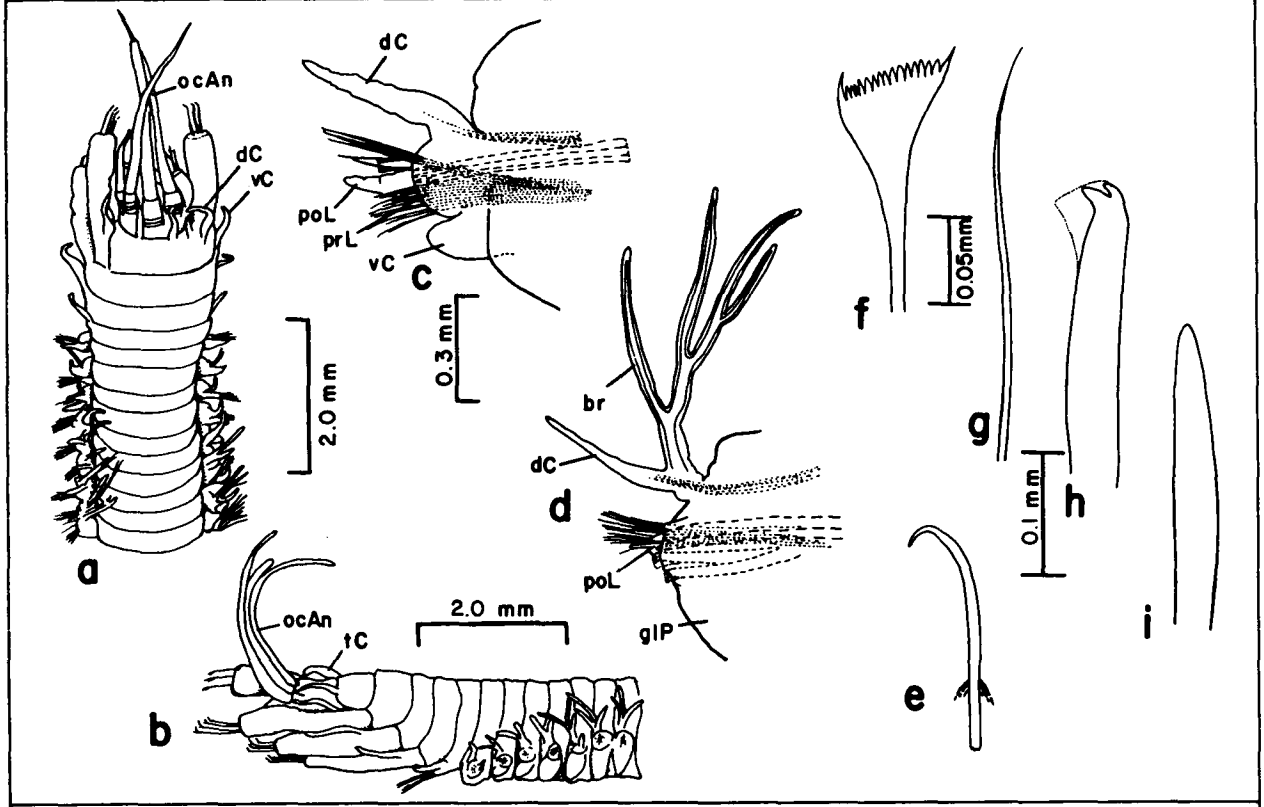

Figure 39-10. Ramphobrachium atlanticum: a, anterior end, dorsal view; b, same, lateral view; c, parapodium from setiger 5; d, same, from setiger 25; e, modified anterior hook from setiger 2; f, pectinate seta; g, capillary seta; h, subacicular hook; i, aciculum.

Genus **Ramphobrachium** Ehlers, 1887

TYPE SPECIES: Ramphobrachium agassizii Ehlers, 1887.
REFERENCES:
Berkeley and Berkeley, 1938b:428.
Hartman, 1944b:47; 1965:113.
Day, 1967:418.
Fauchald, 1968b:4; 1977a:105.
DIAGNOSIS: Prostomium with one pair of frontal antennae and five short, conical occipital antennae. Eyes present or absent. Tentacular cirri present. Branchiae simple or pectinate. First two or three anterior setigers long, projecting foreward, bearing long, hooked, pseudocompound setae with spiny shafts. Setae of remaining setigers including pectinate setae, compound spinigers, compound bidentate falcigers, and limbate setae. Subacicular hooks bidentate, hooded. Acicula rounded or pointed.

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

1a. Bidentate falcigers present on setiger 3 or 4. 2
1b. Bidentate falcigers absent on setigers 3 and 4 . . . . . .Ramphobrachium atlanticum, p. 39-13

2a. At least one modified anterior setiger extending beyond anterior margin of prostomium; branchiae beginning on setiger 5; bidentate falcigers present on setigers 3 and 4. . . . . Ramphobrachium sp. A, p. 39-15
2b. Modified anterior setigers not extending beyond anterior margin of prostomium; branchiae beginning on setiger 6; bidentate falcigers present on setiger 4 only. . . . . .Ramphobrachium diversosetosum, p. 39-17

Ramphobrachium atlanticum Day, 1973
Figures 39-9, 10a-i

Ramphobrachium atlanticum Day, 1973:56, fig. 8a-h.
Ramphobrachium atlanticum--Gardiner, 1976:195, fig. 25h,i.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2641-7/76 (1 spec., USNM 89916).
DESCRIPTION:
Length, 25 mm (previously reported to 55 mm); width, 2 mm (previously reported to 7 mm). Body cylindrical anteriorly, becoming dorsally flattened with parapodia oriented dorsolaterally; single specimen incomplete with 83 segments. Prostomium small, globular, with one pair of eyes located between inner and outer lateral occipital antennae. Five occipital antennae in crescentic arrangement over posterior margin of prostomium (Figure 39-10a); ceratophores with 3-6 rings; ceratostyles long, extending back well beyond anterior parapodia. Peristomium same length as prostomium, with two short tentacular cirri. Parapodia of first three setigers extremely long (Figure 39-10b), those of setiger 1 extending well beyond anterior margin of prostomium. Setigers 4 and 5

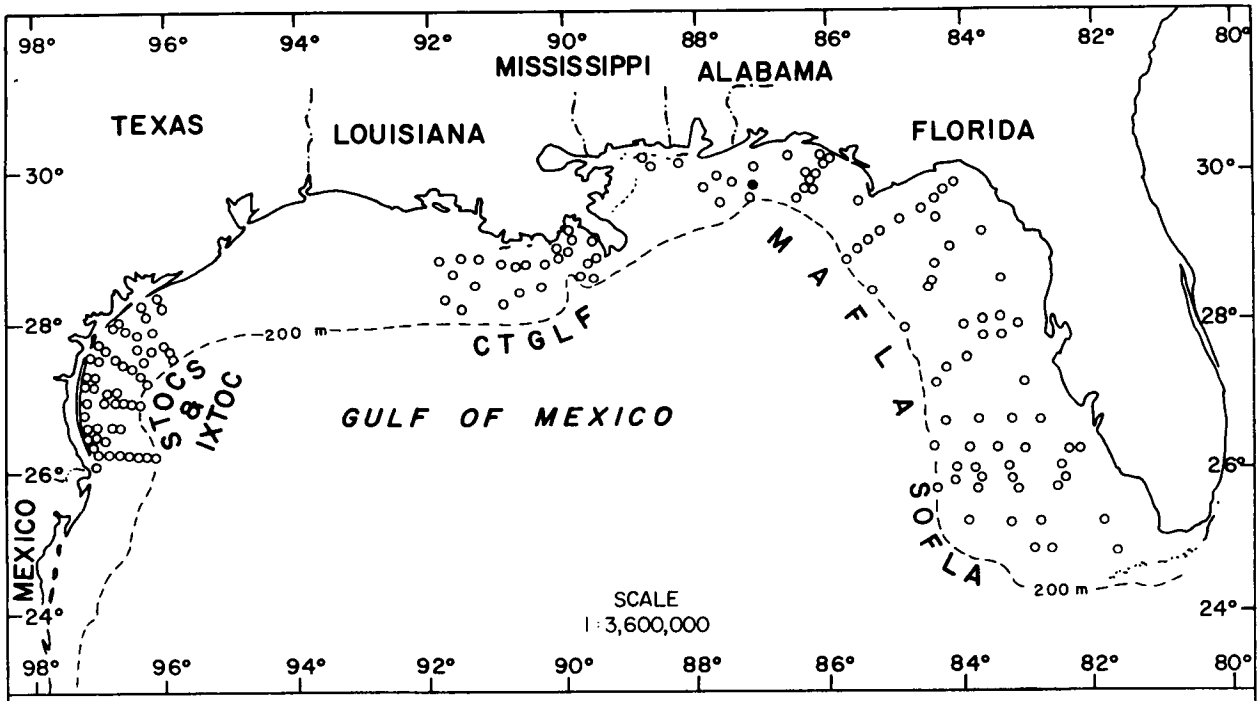

Figure 39-11. Distribution of Ramphobrachium sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

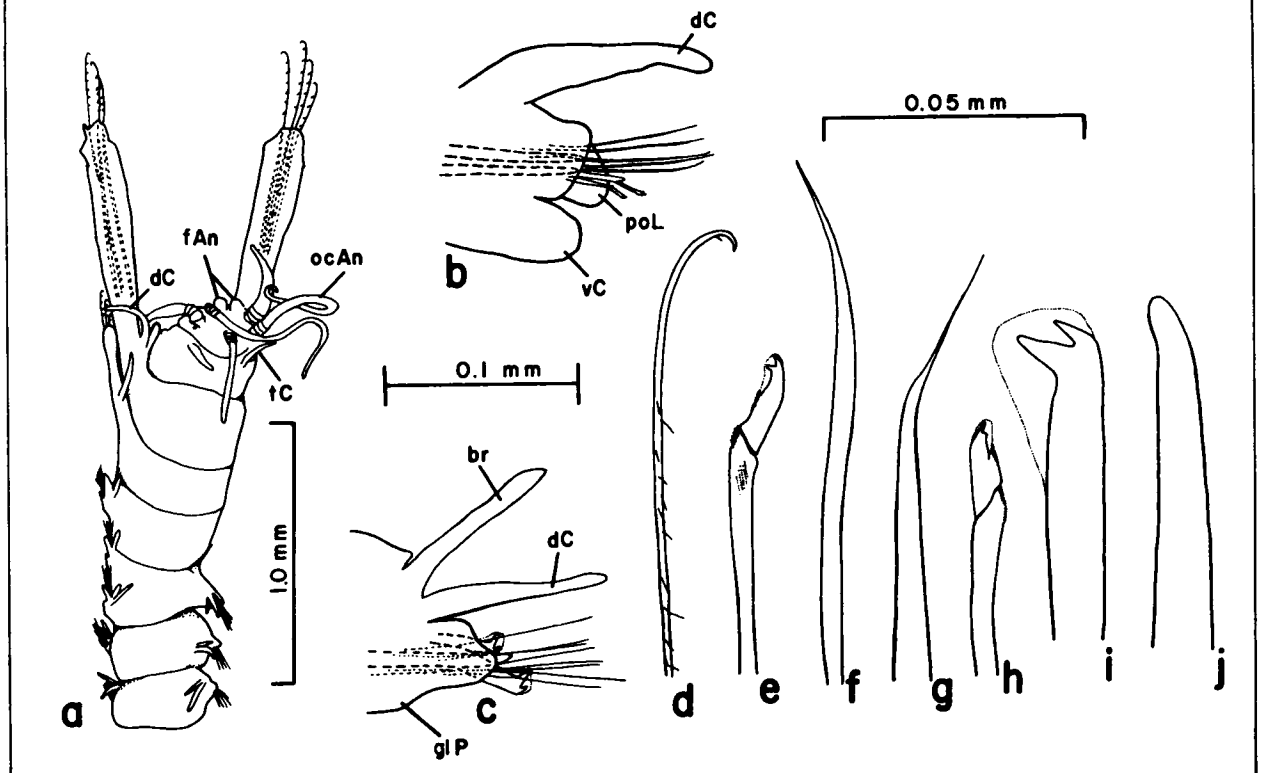

Figure 39-12. Ramphobrachium sp. A: a, anterior end, dorsolateral view; b, parapodium from setiger 3; c, same, from setiger 10; d, modified hook from setiger 1; e, compound falciger from setiger 3; f, limbate seta; g, aciculum from setiger 3; h, compound falciger from setiger 4; i, subacicular hook; j, aciculum.

with digitiform dorsal and ventral cirri and postsetal lobes (Figure 39-10c); ventral cirri becoming modified into glandular pads over next three setigers. Posterior setigers with dorsal cirri, pectinate branchiae and glandular ventral pads. Branchiae (Figure 39-10d) beginning on setiger 6 and continuing to end of fragment. Setae including modified hooks on first three setigers (Figure 39-10e), pectinate setae from setiger 4 (Figure 39-10f), and capillary setae (Figure 39-10g). Bidentate falcigers absent. Subacicular hooks (Figure 39-10h) hooded, bidentate, beginning on setiger 13. Acicula stout, blunt, numbering 2-4 per parapodium (Figure 39-10i). Maxillary formula 1:8:8:5:1 left and 1:11:0:8:1 right.

REMARKS: The specimen examined in this study differs slightly from the original description in the maxillary dentition, and in lacking spines along the shafts of the anterior hooked setae. However, the specimen was damaged, with only two hooked setae left intact.

PREVIOUSLY REPORTED HABITAT: 20-120 m, coarse sand.

GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Alabama (Figure 39-9); 37 m; fine sand.

DISTRIBUTION: North Carolina, Gulf of Mexico.

Ramphobrachium sp. A
Figures 39-11, 12a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2645G-6/75 (1 spec., USNM 89917).

DESCRIPTION:
Length, 4 mm; width, 0.4 mm. Body cylindrical anteriorly, incomplete with 15 setigers. Prostomium small, globular, with one pair of small black eyes (Figure 39-12a). Ceratophores of occipital antennae each with 3-4 rings; ceratostyles fairly short, longest reaching setiger 2. Peristomium equal to prostomium in length, with one pair of subulate tentacular cirri. Dorsal cirri long on first two setigers; ventral cirri digitiform on setigers 1-3 (Figure 39-12b), pad-like thereafter (Figure 39-12c). Branchiae simple, beginning on setiger 5. Setigers 1 and 2 elongate with modified unidentate hooks (Figure 39-12d). Setiger 3 with 4-5 bidentate falcigers (Figure 39-12e), 6-7 limbate setae (Figure 39-12f), and two geniculate acicula (Figure 39-12g). Setiger 4 with two bidentate falcigers (Figure 39-12h) and limbate setae; without spinigers. Posterior setigers with limbate setae, bidentate subacicular hooded hooks (Figure 39-12i), and distally blunt acicula (Figure 39-12j).

REMARKS: Ramphobrachium sp. A differs from other described species of the genus reported from the western hemisphere, in having only two rather than three modified anterior setigers with long, grapple-shaped hooks. The single specimen was small, possibly a juvenile, and was too damaged for a thorough examination.

GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Florida (Figure 39-11); 106 m; coarse sand.

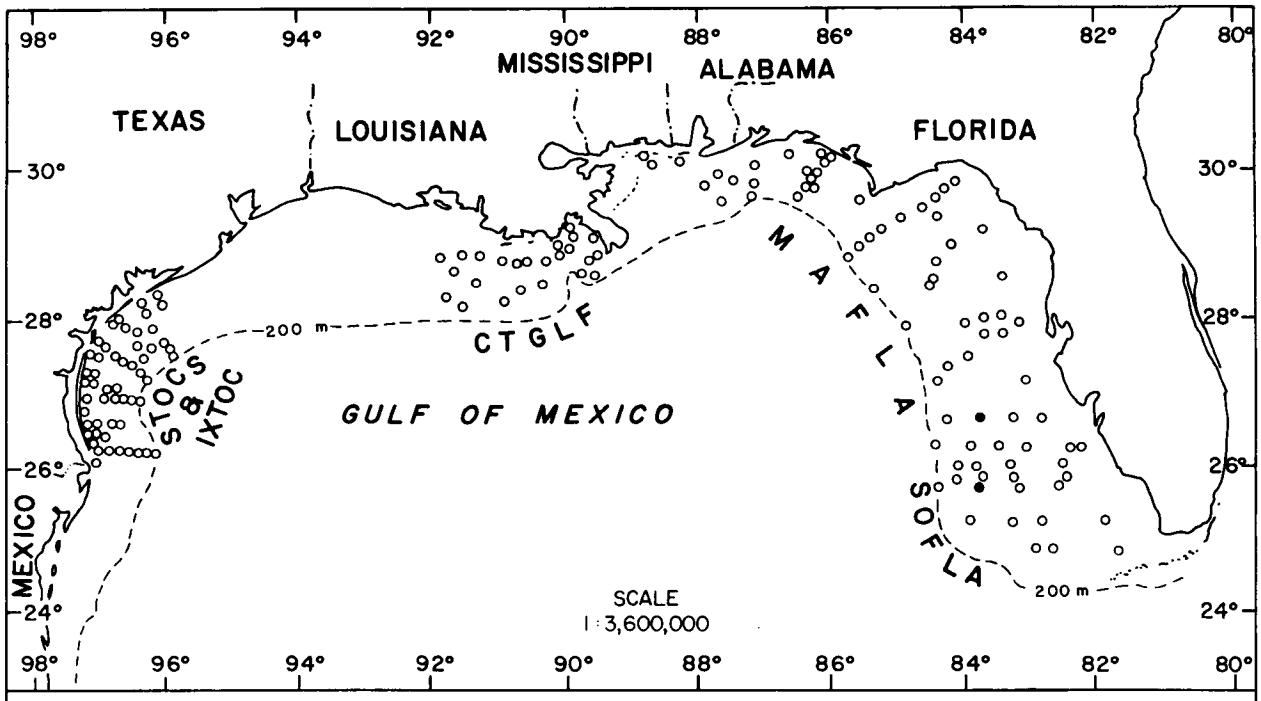

Figure 39-13. Distribution of Ramphobrachium diversosetosum on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

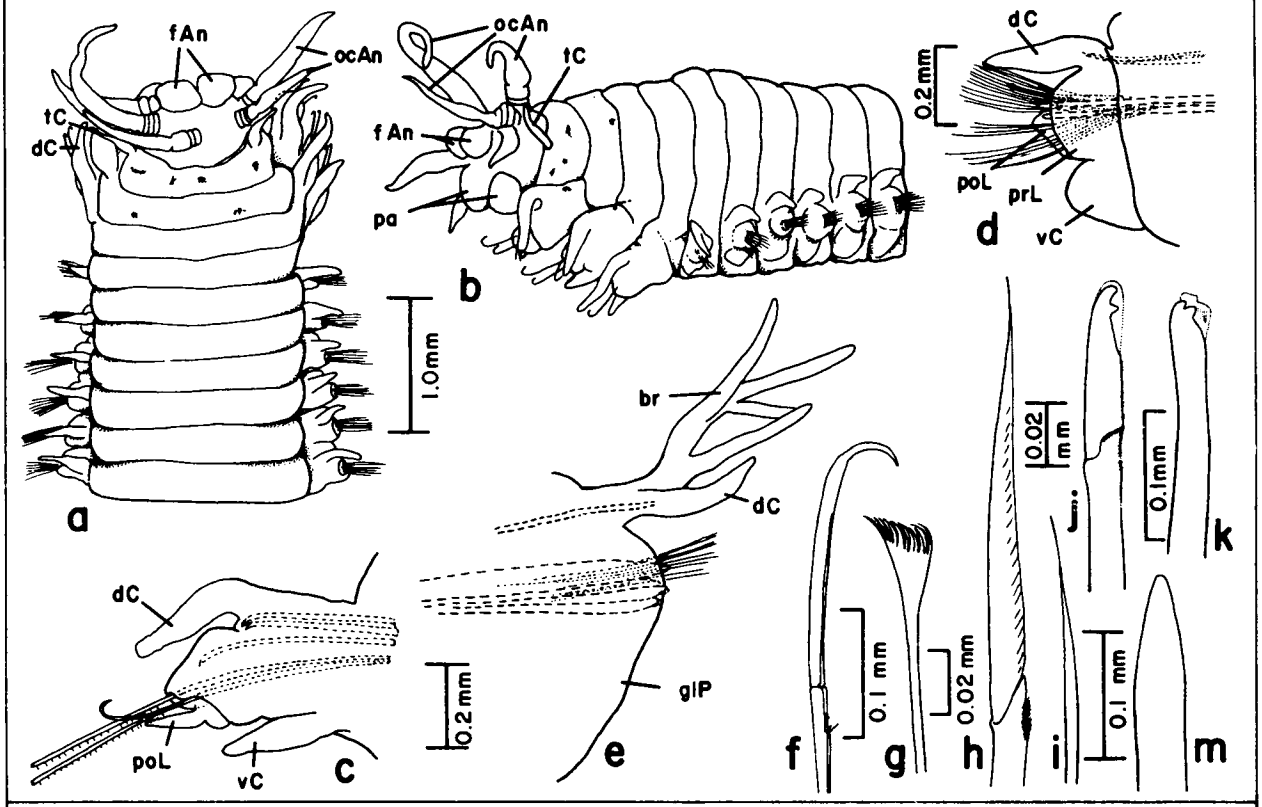

Figure 39-14. Ramphobrachium diversosetosum: a, anterior end, dorsal view; b, same, lateral view; c, parapodium from setiger 2; d, same, from setiger 5; e, same, from setiger 25; f, modified hook from setiger 2; g, pectinate seta; h, compound spiniger from setiger 4; i, limbate seta; j, compound falciger from setiger 4; k, subacicular hook; m, aciculum.

Ramphobrachium diversosetosum Monro, 1937
Figures 39-13, 14a-m

Ramphobrachium diversosetosum Monro, 1937:295, fig. 17a-i.
Ramphobrachium diversosetosum--Hartman, 1944b:47.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 5C-8/81 (1 spec., USNM 89919), 5D-11/80 (1 spec., USNM 89920); MAFLA 2958-2/77 (1 spec., USNM 89918).
DESCRIPTION:
Length, 20+ mm (previously reported to 30 mm); width, to 2.1 mm (previously reported to 3.0 mm). Body cylindrical anteriorly, becoming dorsally flattened with parapodia oriented dorsolaterally; all specimens incomplete with up to 41 segments. Prostomium small, globular (Figure 39-14a), with two pairs of eyes located posterior to each lateral pair of occipital antennae. Occipital antennae in crescentic arrangement over posterior margin of prostomium; ceratophores with 2-4 rings basally, becoming smooth toward junction with short subulate ceratostyles. Peristomium shorter than prostomium, with two subulate tentacular cirri. Parapodia of first three setigers elongate (Figure 39-14b), but not extending beyond anterior margin of prostomium. Setigers 1-3 with long dorsal and ventral cirri (Figure 39-14c). Setigers 4-5 with long dorsal cirri and conical ventral cirri (Figure 39-14d). Posterior setigers with digitiform dorsal cirri, pectinate branchiae, and glandular pads ventrally (Figure 39-14e). Branchiae beginning on setigers 11-12, continuing to end of fragment. Setae including modified pseudocompound hooks on first three setigers (Figure 39-14f); pectinate setae from setiger 4 (Figure 39-14g); and compound spinigers from setigers 4-7 (Figure 39-14h), replaced by limbate setae posteriorly (Figure 39-14i). Compound bidentate hooks (Figure 39-14j) present on setiger 4. Subacicular hooks hooded, bidentate (Figure 39-14k), beginning on setiger 14. Acicula stout, blunt (Figure 39-14m), numbering 2-4 per parapodium. Maxillary formula 1:8:6:5:1 left and 1:6:0:12:1 right.
REMARKS: Gulf of Mexico BLM-OCS specimens differ from the original description of R. diversosetosum only in having compound spinigers on setigers 4-7 rather than on setigers 4-14, and in having branchiae beginning on setigers 11-12 rather than on setiger 10. This species is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 183 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off west coast of Florida (Figure 39-13); 91-120 m; coarse to medium-fine sand.
DISTRIBUTION: Indian Ocean (Maldives), Gulf of Mexico.

Genus Nothria Malmgren, 1865b

TYPE SPECIES: Onuphis conchylega Sars, 1835.
REFERENCES:
Pettibone, 1970a:53.
Fauchald, 1982:88.
DIAGNOSIS: Prostomium large with one pair of oval frontal antennae and five occipital antennae having short ceratophores. Large eyes present. Tentacular cirri present. Branchiae simple or pectinate, or absent. Parapodia of setiger 1 larger than following parapodia. Pseudocompound

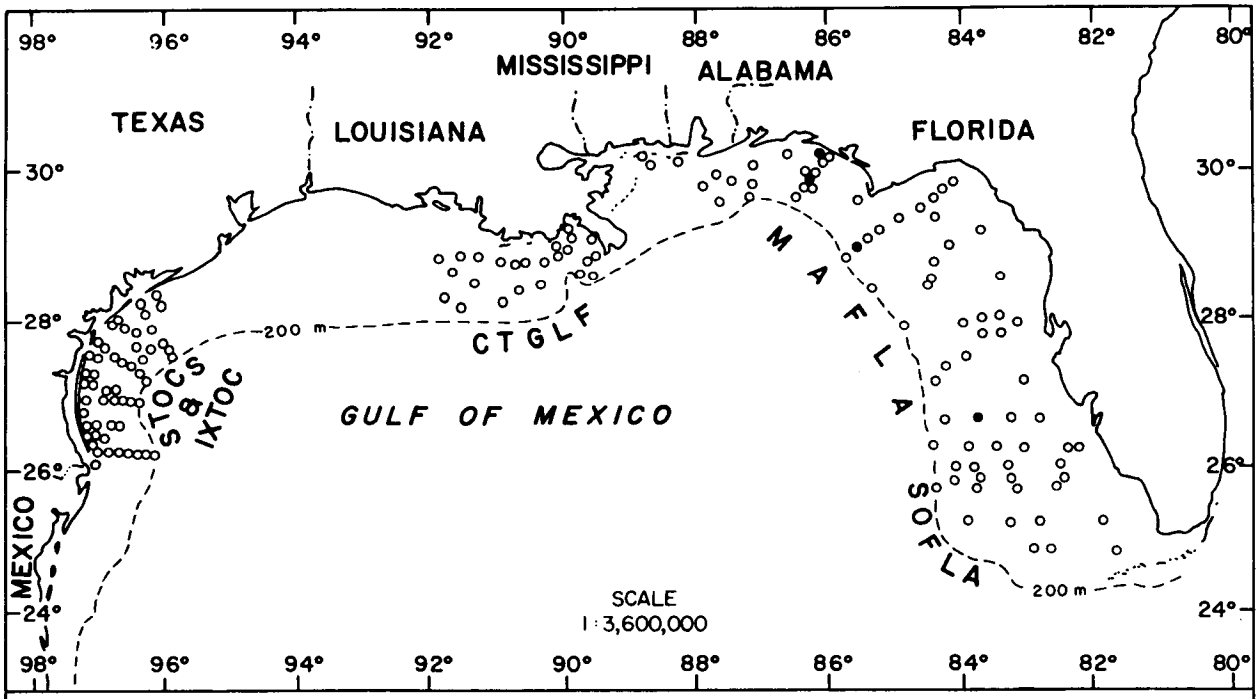

Figure 39-15. Distribution of Nothria sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

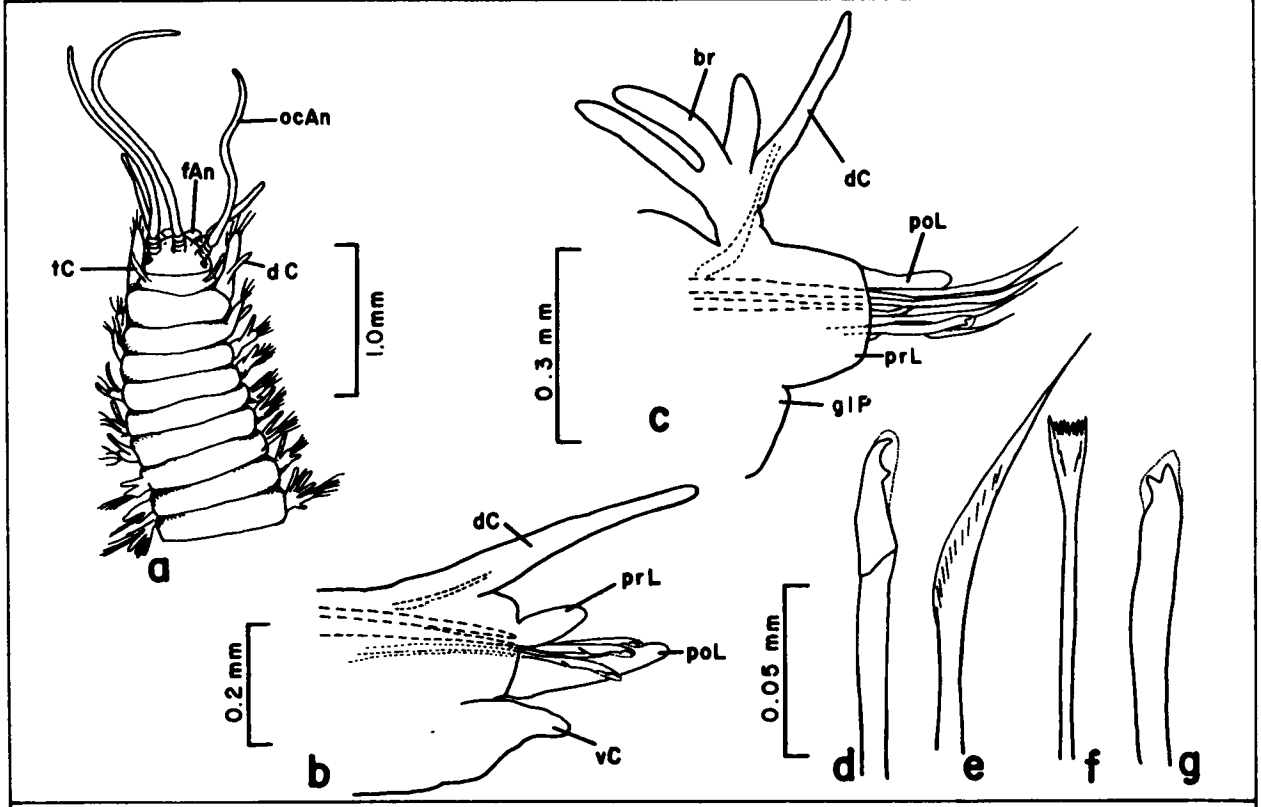

Figure 39-16. Nothria sp. A: a, anterior end, dorsal view; b, parapodium from setiger 2; c, same, from setiger 10; d, compound falciger from setiger 3; e, limbate seta from setiger 3; f, pectinate seta; g, intrafascicular hook.

hooks unidentate or bidentate, with blunt hoods. Limbate setae and scoop-shaped pectinate setae present. Intrafascicular hooks bidentate. Acicula pointed.

Nothria sp. A
Figures 39-15, 16a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 5D-5/81 (1 spec., USNM 89923); MAFLA 2426D-2/78 (1 spec.), 2528D-9/75 (1 spec., USNM 89921), 2533A-6/75 (1 spec., USNM 89922).
DESCRIPTION:
Length, 6+ mm; width, to 1 mm. Body cylindrical anteriorly, flattened posteriorly; all specimens incomplete with up to 22 setigers. Prostomium large, globular, with one pair of large eyes located between bases of inner and outer lateral antennae (Figure 39-16a). Ceratophores of occipital antennae with 3-4 rings; ceratostyles long, smooth, longest one reaching setiger 9. Peristomium about two-thirds prostomial length, with one pair of filiform tentacular cirri. Branchiae beginning on setiger 8 as single filaments, becoming pectinate with 3-5 filaments by setiger 10. Anterior setigers with digitiform presetal lobes and long postsetal lobes (Figure 39-16b); posterior setigers with conical postsetal lobes (Figure 39-16c). Setae including pseudocompound, bidentate hooded hooks on setigers 1-3 (Figure 39-16d); limbate setae (Figure 39-16e); pectinate setae with 9-10 teeth (Figure 39-16f); and bidentate intrafascicular hooded hooks beginning on setiger 7 (Figure 39-16g).
REMARKS: Nothria sp. A most closely resembles N. occidentalis (Fauchald, 1982:95) in having pseudocompound hooks on the first three setigers and 3-4 rings on the ceratophores. It differs from the latter in having pectinate rather than strap-like branchiae, and intrafascicular hooks beginning on setiger 7 rather than on setiger 9.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered stations off Florida (Figure 39-15); 37-91 m; coarse to fine sand.

Genus **Sarsonuphis** Fauchald, 1982

TYPE SPECIES: Onuphis quadricuspis Sars, 1872.
REFERENCE:
Fauchald, 1982:64.
DIAGNOSIS: Prostomium with one pair of short, subulate frontal antennae, and five occipital antennae having ceratophores no longer than prostomium. Eyes present. Tentacular cirri present. Branchiae pectinate if present. Anterior parapodia not enlarged; without foliose presetal lobes. Pseudocompound hooks bidentate, with pointed hoods. Spinigers absent; large hooks rarely present; pectinate setae flat. Subacicular hooks present. Acicula geniculate.

Sarsonuphis hartmanae (Kirkegaard, 1980)
Figures 39-17, 18a-j

Nothria hartmani [sic] Kirkegaard, 1980:87, fig. 2a-d.
Sarsonuphis hartmanae--Fauchald, 1982:73, fig. 22a,b.

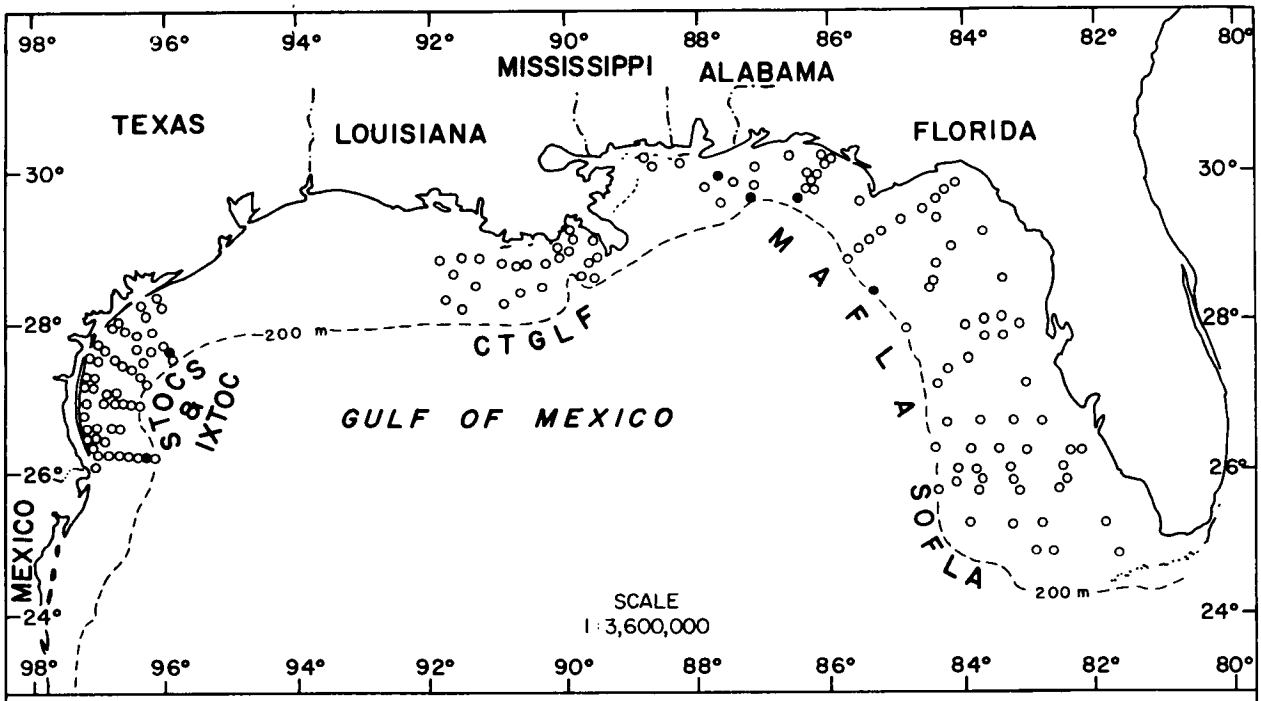

Figure 39-17. Distribution of Sarsonuphis hartmanae on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

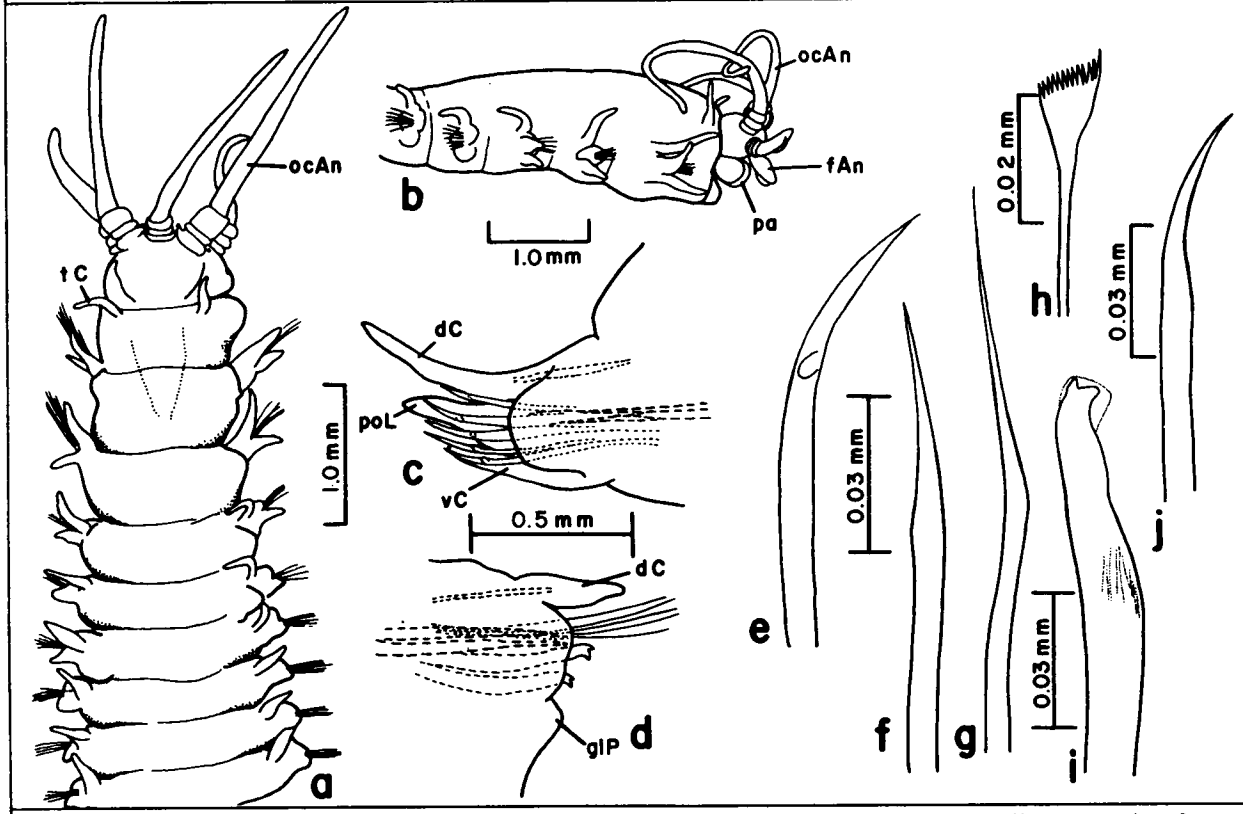

Figure 39-18. Sarsonuphis hartmanae: a, anterior end, dorsal view; b, same, lateral view; c, parapodium from setiger 2; d, same, from setiger 25; e, pseudocompound seta from setiger 2; f, limbate seta from setiger 8; g, same, from setiger 25; h, pectinate seta; i, subacicular hook; j, aciculum from setiger 25 (Figure b after Fauchald, 1982:73, fig. 22b).

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2313C-7/76 (2 spec.), 2536I-2/78 (1 spec.), 2641E-6/75 (1 spec.), 2645-11/77 (2 spec., USNM 89924); STOCS 6/I-3 S/76 (1 spec., USNM 89925), 3/IV-1 W/76 (2 spec., USNM 89926), 3/IV-3 W/76 (4 spec., USNM 89927), 3/IV-5 F/76 (2 spec., USNM 89928).
DESCRIPTION:
Length, 11+ mm (previously reported to 12 mm); width, to 0.8 mm (previously reported to 2 mm). Body cylindrical anteriorly, flattened posteriorly, without pigment patterns; all specimens incomplete with up to 64 setigers. Prostomium small, globular (Figure 39-18a); with small black eyes. Ceratophores of occipital antennae each with three rings; inner lateral and medial ceratophores with long papillae on basal ring. Ceratostyles elongate, longest reaching setiger 3 (Figure 39-18b). Peristomium same length as prostomium, with one pair of subulate tentacular cirri. Branchiae absent. Dorsal cirri long anteriorly (Figure 39-18c), subulate posteriorly (Figure 39-18d); ventral cirri digitiform anteriorly, becoming pad-like by setigers 3-4. Postsetal lobes digitiform, continuing to setigers 7-8. Setigers 1-3 with distally entire, pseudocompound hooks having pointed hoods (Figure 39-18e). Setigers 4-10 with straight capillary setae (Figure 39-18f). Remaining setigers with slightly geniculate limbate setae (Figure 39-18g), and distally oblique pectinate setae having about 13 teeth (Figure 39-18h). Subacicular hooded hooks bidentate, beginning on setiger 11 (Figure 39-18i). Acicula pointed (Figure 39-18j). Maxillary formula 1:5:7:1:1 left and 1:9:0:7:1 right. Mandibles notched.
REMARKS: Specimens of Sarsonuphis hartmanae were previously identified as Onuphis sp. B in BLM-STOCS collections. This species is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 3820-4265 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in northern Gulf (Figure 39-17); 37-189 m; coarse to fine sand, clayey sand, clayey and sandy silt, silty clay.
DISTRIBUTION: North Atlantic, New England, Gulf of Mexico.

Genus Mooreonuphis Fauchald, 1982

TYPE SPECIES: Onuphis nebulosa Moore, 1911.
REFERENCE:
Fauchald, 1982:55.
DIAGNOSIS: Prostomium large or small, with one pair of oval frontal antennae and five occipital antennae having short ceratophores. Eyes present or absent. Tentacular cirri present. Branchiae simple or pectinate. Anterior parapodia not enlarged. Pseudocompound hooks bidentate or tridentate, with blunt hoods. Limbate setae, spinigers, large tridentate hooks, and flat pectinate setae present. Subacicular hooks present. Acicula pointed.

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

1a. Branchiae pectinate; ventral cirri digitiform to setiger 10 . . . . . .Mooreonuphis cf. nebulosa, p. 39-23

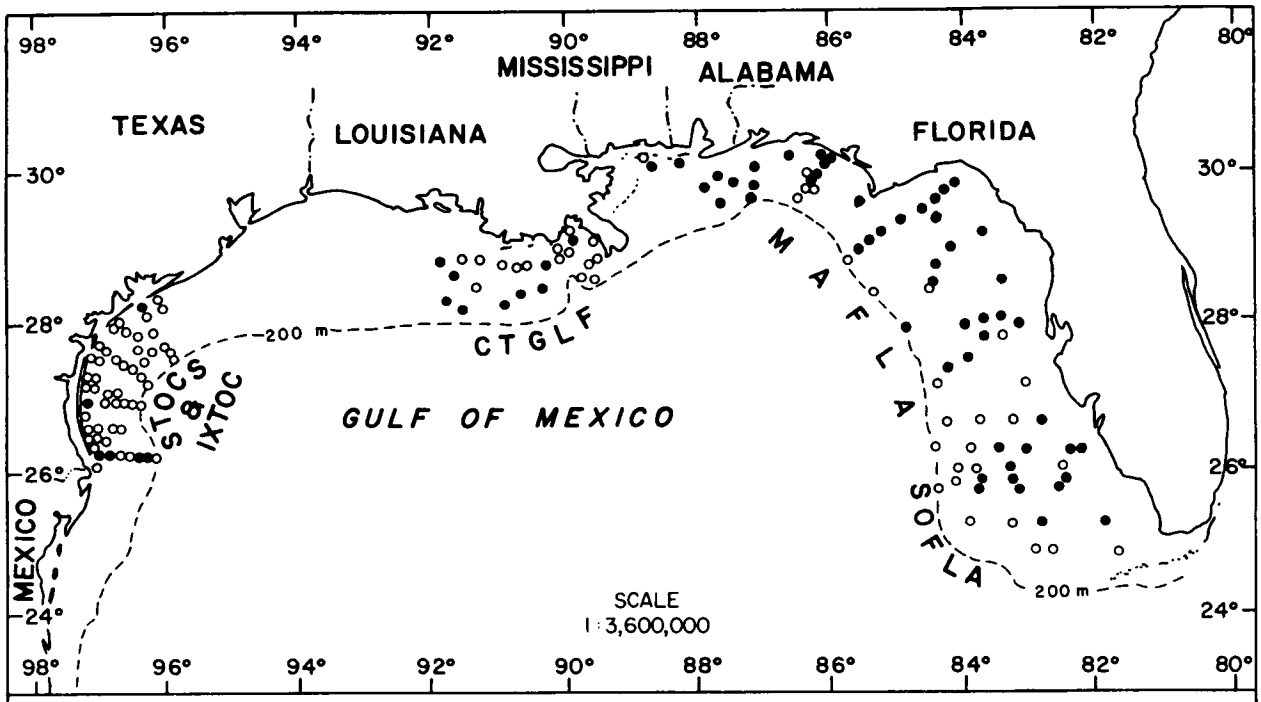

Figure 39-19. Distribution of Mooreonuphis cf. nebulosa on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

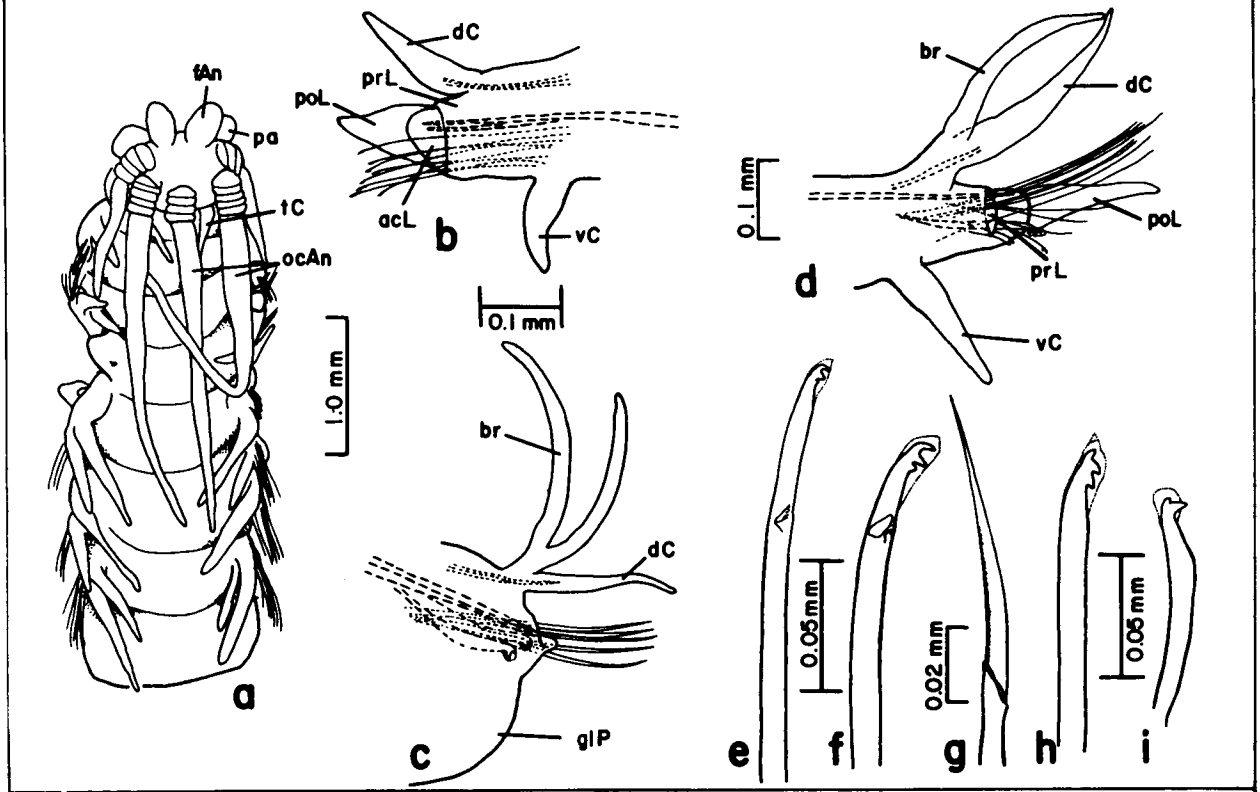

Figure 39-20. Mooreonuphis cf. nebulosa: a, anterior end, dorsal view; b, parapodium from setiger 1; c, same, from setiger 25; d, same, from setiger 6; e, superior pseudocompound seta; f, large, central pseudocompound seta; g, compound spiniger; h, large hook from setiger 6; i, subacicular hook (Figure g after Hartman, 1944b:208, pl. 4, fig. 85).

1b. Branchiae simple; ventral cirri digitiform to setigers 4-6 . . . . . **Mooreonuphis pallidula, p. 39-25**

Mooreonuphis cf. nebulosa (Moore, 1911)
Figures 39-19, 20a-i

Onuphis nebulosa Moore, 1911:269, pl. 17, figs. 58-68.
Onuphis nebulosa--Hartman, 1944b:75, pl. 4, figs. 76-85.
Mooreonuphis nebulosa--Fauchald, 1982:56, fig. 17a.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 14E-7/81 (1 spec., USNM 89929), 16-11/80 (1 spec., USNM 89930); MAFLA 2207B-7/76 (1 spec.), 2210B-7/76 (1 spec.), 2210G-7/76 (1 spec.), 2210H-7/76 (1 spec.), 2210I-7/76 (1 spec.), 2211B-7/76 (1 spec.), 2211D-8/77 (1 spec.), 2211G-8/77 (1 spec.), 2422D-7/76 (1 spec.), 2422F-7/76 (1 spec.), 2423B-7/76 (1 spec.), 2423C-7/76 (1 spec.), 2423E-7/76 (1 spec.), 2423F-7/76 (1 spec.), 2423G-7/76 (1 spec.), 2423I-7/76 (1 spec.), 2423F-11/77 (1 spec., USNM 89938), 2424C-7/76 (1 spec.), 2424E-7/76 (1 spec.), 2424J-7/76 (1 spec.), 2528-8/77 (1 spec., USNM 89939), 2530D-7/76 (1 spec.), 2639D-5/74 (1 spec.), 2640H-6/75 (1 spec.), 2642B-6/75 (1 spec., USNM 89940); CTGLF 04-5/78 (1 spec., USNM 89931); STOCS 4/III-6 F/76 (1 spec., USNM 89932), 4/IV-2 W/76 (2 spec., USNM 89937), 4/IV-4 F/76 (1 spec., USNM 89933), 4/IV-6 F/76 (1 spec., USNM 89934), 6/IV-3 F/76 (1 spec., USNM 89935), 6/IV-5 F/76 (1 spec., USNM 89936).
DESCRIPTION:
Length, to 53 mm (previously reported to 125 mm); width, to 2.0 mm (previously reported to 2.0 mm). Body cylindrical anteriorly, flattened posteriorly; all specimens incomplete with up to 153 setigers. Prostomium large, globular (Figure 39-20a); eyes absent. Ceratophores of occipital antennae each with 4-5 rings; ceratostyles smooth, inner lateral ones longest, reaching to setiger 6. Peristomium small, about half prostomial length; tentacular cirri subulate. Branchiae beginning on setiger 6 as single filaments, becoming pectinate with up to six filaments posteriorly. Dorsal cirri long throughout (Figure 39-20b-d). Ventral cirri conical to setiger 10, thereafter pad-like. Anterior parapodia with rounded presetal lobes (Figure 39-20d) and long postsetal lobes; posterior setigers with small, conical postsetal lobes. Setae including limbate setae on setigers 1-8, along with pseudocompound tridentate hooded hooks (Figure 39-20e,f), compound spinigers on setigers 7-16 (Figure 39-20g), stout tridentate hooks on setigers 4-10 (Figure 39-20h), limbate setae and bidentate subacicular hooded hooks posteriorly (Figure 39-20i). Maxillary formula 1:7:9:6:1 left and 1:10:1:8:1 right.
REMARKS: These specimens resemble M. nebulosa in many ways but the parapodia are longer than those of the latter (K. Fauchald, pers. comm.).
PREVIOUSLY REPORTED HABITAT: 130-142 m; green mud, sand and gravel.
GULF OF MEXICO BLM-OCS OCCURRENCE: Numerous stations throughout northern Gulf (Figure 39-19); 19-189 m; coarse to fine-very fine sand, silty fine to very fine sand, clayey sand, sandy and clayey silt.
DISTRIBUTION: California, Gulf of Mexico.

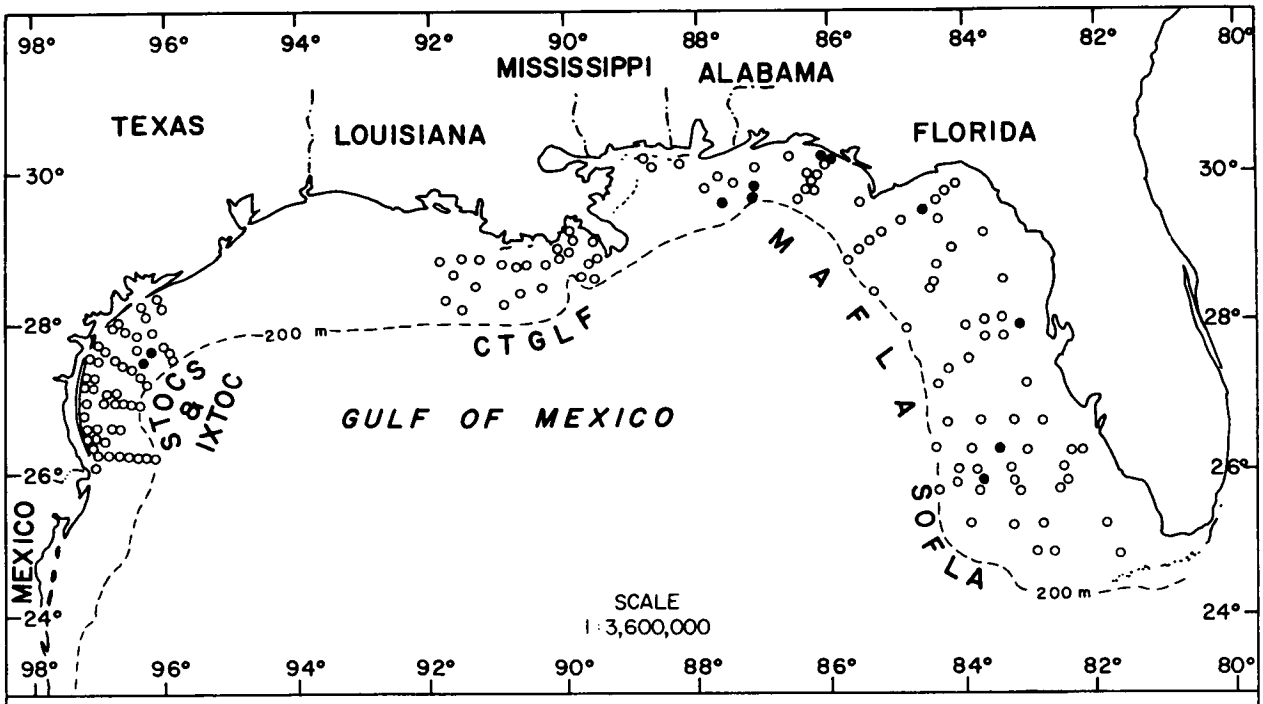

Figure 39-21. Distribution of Mooreonuphis pallidula on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

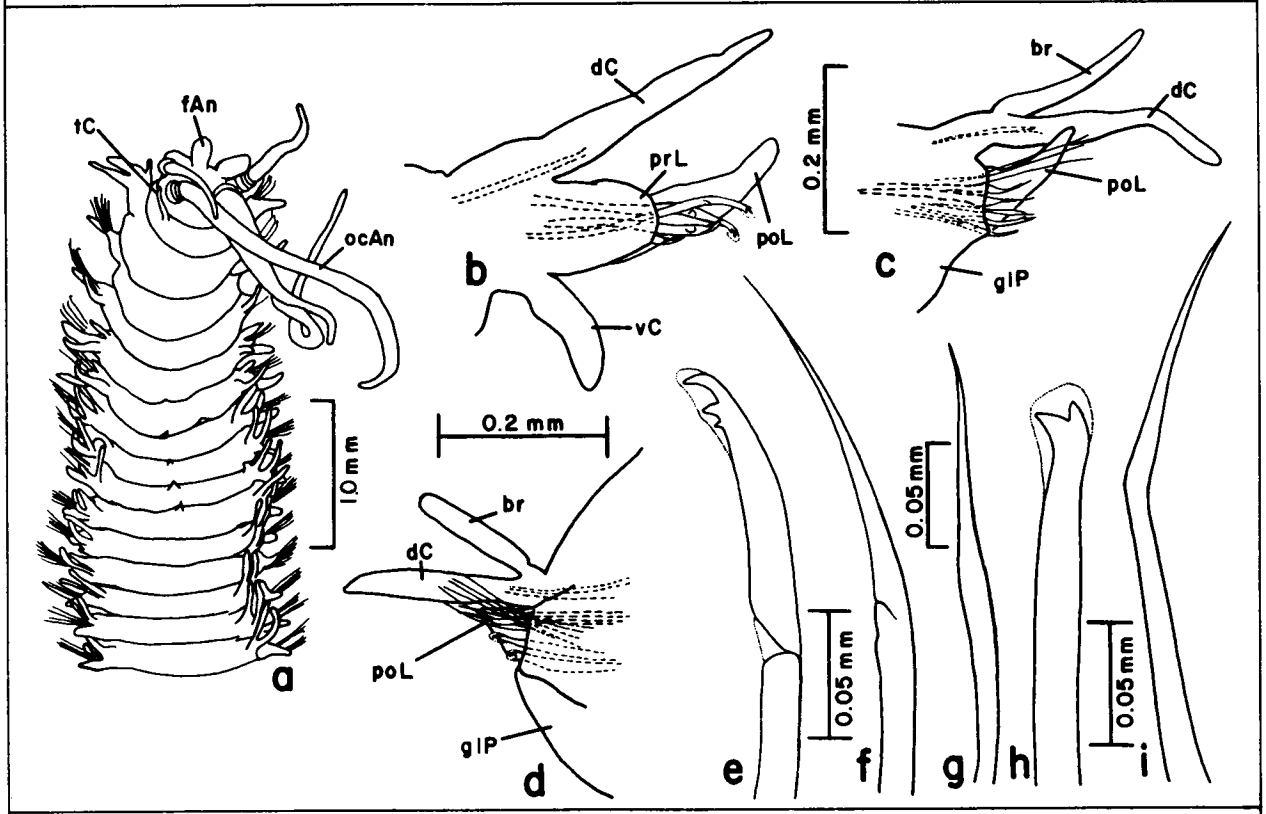

Figure 39-22. Mooreonuphis pallidula: a, anterior end, dorsal view; b, parapodium from setiger 1; c, same, from setiger 8; d, same, from setiger 25; e, pseudocompound hook from setiger 1; f, pseudocompound spiniger from setiger 12; g, limbate seta; h, subacicular hook; i, aciculum (Figures c,f,h,i after Hartman, 1965:293, pl. 17, figs e-h).

Mooreonuphis pallidula (Hartman, 1965)
Figures 39-21, 22a-i

Nothria pallidula Hartman, 1965:105, pl. 17, figs. d-h.
Nothria pallidula--Day, 1973:57.
Mooreonuphis pallidula--Fauchald, 1982:62, fig. 17b.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 18C-11/80 (1 spec., USNM 89941); MAFLA 2104J-2/78 (1 spec.), 2207J-8/76 (1 spec.), 2207K-8/77 (1 spec.), 2422F-7/76 (1 spec.), 2422I-7/76 (1 spec.), 2528-6/75 (1 spec.), 2529B-6/75 (1 spec.), 2643C-6/75 (1 spec.), 2644C-9/75 (10 spec., USNM 89946), 2645G-5/74 (1 spec.), 2645C-6/75 (1 spec.); STOCS 4/III-4 (1 spec., USNM 89945), SB3-1 8/76 (1 spec., USNM 89942), SB3-3 8/76 (1 spec., USNM 89943), HR1-1 F/76 (1 spec., USNM 89944).
DESCRIPTION:
Length, 20+ mm (previously reported to 16 mm); width, to 0.5 mm (previously reported to 2.7 mm). Body cylindrical anteriorly, flattened posteriorly; all specimens incomplete with up to 78 setigers. Prostomium small, rounded anteriorly, with one pair of small eyes. Ceratophores of occipital antennae composed of three rings; ceratostyles smooth, longest one reaching to setiger 9 (Figure 39-22a). Peristomium equal in length to prostomium, with one pair of filiform tentacular cirri. Branchiae composed of single strap-like filaments, present from setiger 6 to end of fragment. Dorsal cirri long, ventral cirri digitiform to setigers 4-6. Anterior setigers with rounded presetal lobes and long postsetal lobes (Figure 39-22b), postsetal lobes becoming smaller by setiger 8 (Figure 39-22c), reduced to small conical lobes by setiger 35 (Figure 39-22d). Setae including tridentate compound hooks on first five setigers (Figure 39-22e), pseudocompound spinigers on setigers 6-12 (Figure 39-22f), and limbate setae posteriorly (Figure 39-22g). Bidentate subacicular hooded hooks (Figure 39-22h) beginning about setigers 19-21. Acicula geniculate with pointed tips (Figure 39-22i). Maxillary formula 1:7:9:6:1 left and 1:7:0:8:1 right.
REMARKS: Reddish-brown bars were observed on the dorsum of many specimens. Mooreonuphis pallidula is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 200-805 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records throughout northern Gulf (Figure 39-21); 19-106 m; coarse to fine-very fine sand, silty clay.
DISTRIBUTION: Atlantic Coast of United States, Gulf of Mexico.

Genus **Onuphis** Audouin and Milne Edwards, 1833a

TYPE SPECIES: Onuphis eremita Audouin and Milne Edwards, 1833a.
REFERENCES:
Hartman, 1944b:66.
Fauchald, 1968b:29; 1977a:105; 1982:36.
DIAGNOSIS: Prostomium with one pair of long frontal antennae, and five occipital antennae having ceratophores longer than prostomium. Eyes present. Tentacular cirri present. Branchiae simple or pectinate. Anterior parapodia not greatly enlarged. Pseudocompound hooks bidentate or tridentate, with blunt hoods. Limbate setae, flat pectinate setae,

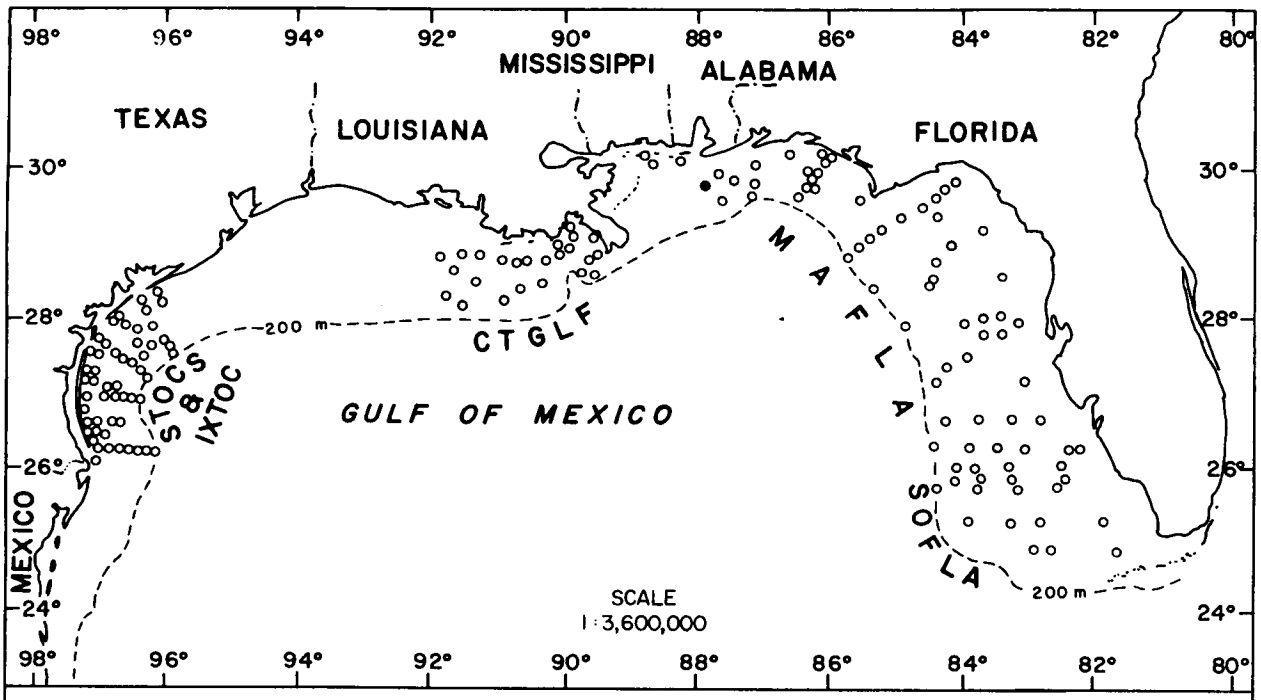

Figure 39-23. Distribution of Onuphis sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

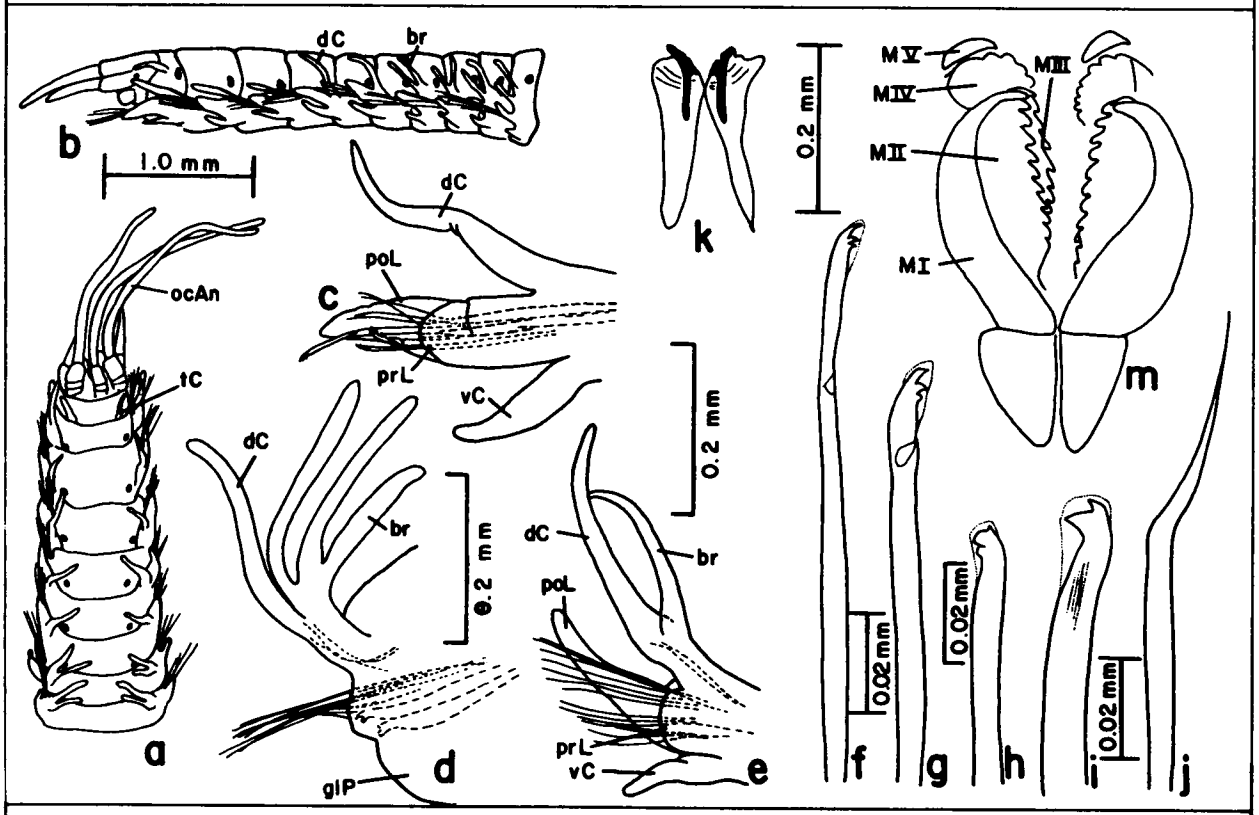

Figure 39-24. Onuphis sp. A: a, anterior end, dorsal view; b, same, lateral view; c, parapodium from setiger 2; d, same, from setiger 26; e, same, from setiger 7; f, superior pseudocompound hook from setiger 1; g, stout pseudocompound hook from setiger 2; h, large hook from setiger 10; i, subacicular hook; j, aciculum; k, mandibles; m, maxillae.

and large hooks often present. Subacicular hooks present. Acicula geniculate, pointed.

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

1a. Ceratophores with 4-5 rings; large hooks present on setigers 6-12 . . . . . .**Onuphis sp. A**, p. 39-27

1b. Ceratophores with 15-20 rings, large hooks absent from setigers 6-12. . . . . .**Onuphis eremita oculata**, p. 39-27

Onuphis sp. A
Figures 39-23, 24a-m

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2640-5/75 (3 spec., USNM 89947).
DESCRIPTION:
Length, 21+ mm; width, to 0.9 mm. Body cylindrical anteriorly, dorsally flattened posteriorly; all specimens incomplete with up to 77 setigers. Pigment spots present dorsal to each parapodium (Figure 39-24a,b). Prostomium small, globular, with one pair of small eyes. Ceratophores of occipital antennae short, composed of 4-5 rings; ceratostyles elongate, longest one reaching to setiger 6. Peristomium half as long as prostomium, with two subulate tentacular cirri. Branchiae beginning as single filaments on setiger 6 (Figure 39-24b) becoming pectinate with 3-4 filaments by setiger 11, continuing to end of fragments. Dorsal cirri long throughout (Figure 39-24c,d); ventral cirri digitiform from about setiger 7 (Figure 39-24e), becoming glandular pads posteriorly. Presetal lobes rounded throughout; postsetal lobes digitiform to setiger 16, thereafter rounded. Setigers 1-5 with 3-6 slender, tridentate, pseudocompound hooks (Figure 39-24f); 1-2 thicker, tridentate, pseudocompound hooks (Figure 39-24g); and limbate setae. Setigers 6-12 with capillary setae and 1-2 stout, tridentate hooded hooks (Figure 39-24h). Posterior setigers with limbate setae and bidentate subacicular hooks (Figure 39-24i). Acicula geniculate (Figure 39-24j). Mandibles with notched anterior margin (Figure 39-24k); maxillary formula 1:10:8:4:1 left and 1:11:0:7:1 right (Figure 39-24m).
REMARKS: Onuphis sp. A most closely resembles O. virgata (Fauchald, 1980) in having tridentate pseudocompound hooks and a similar pigmentation pattern. It differs from the latter in having cirriform ventral cirri to setiger 7 instead of setiger 12, and pseudocompound tridentate hooks on the first five setigers instead of the first seven setigers. These specimens may be juveniles.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Alabama (Figure 39-23); 45 m; medium sand.

Onuphis eremita oculata Hartman, 1951
Figures 39-25, 26a-j

Onuphis eremita oculata Hartman, 1951a:52, pl. 14, figs. 1, 2.
Onuphis eremita oculata--Fauchald, 1982:40, fig. 12b.

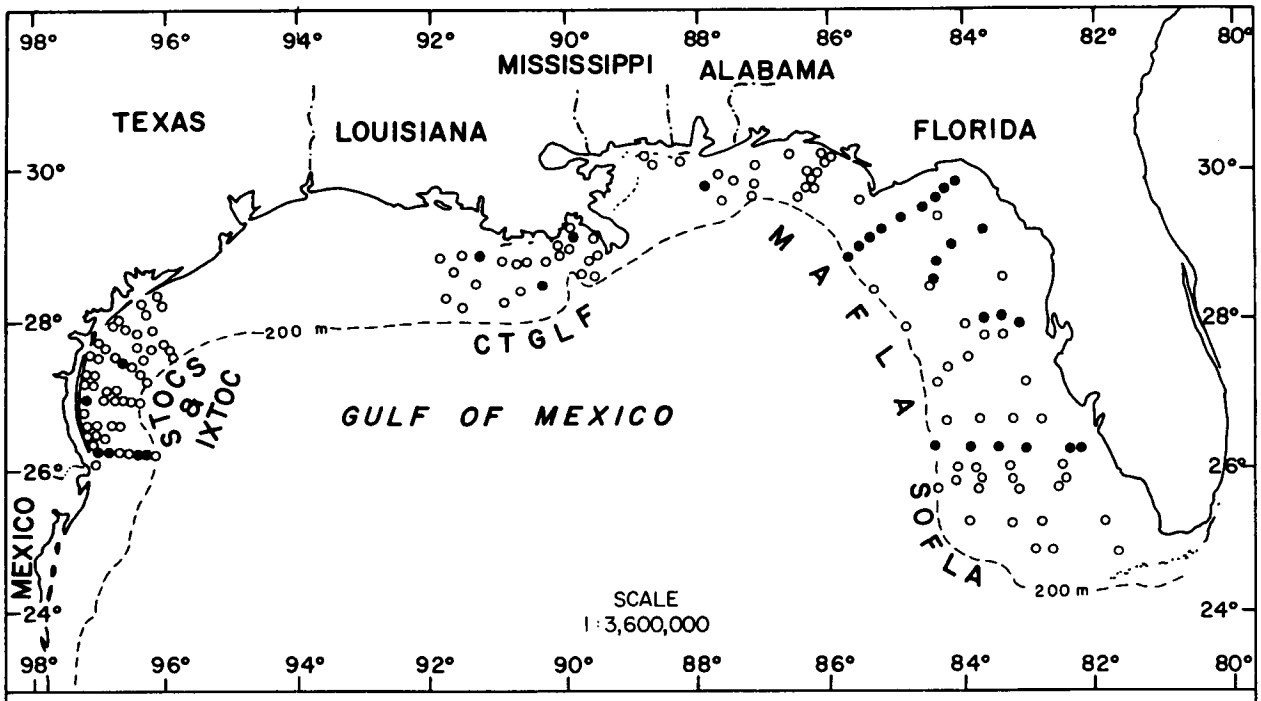

Figure 39-25. Distribution of Onuphis eremita oculata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

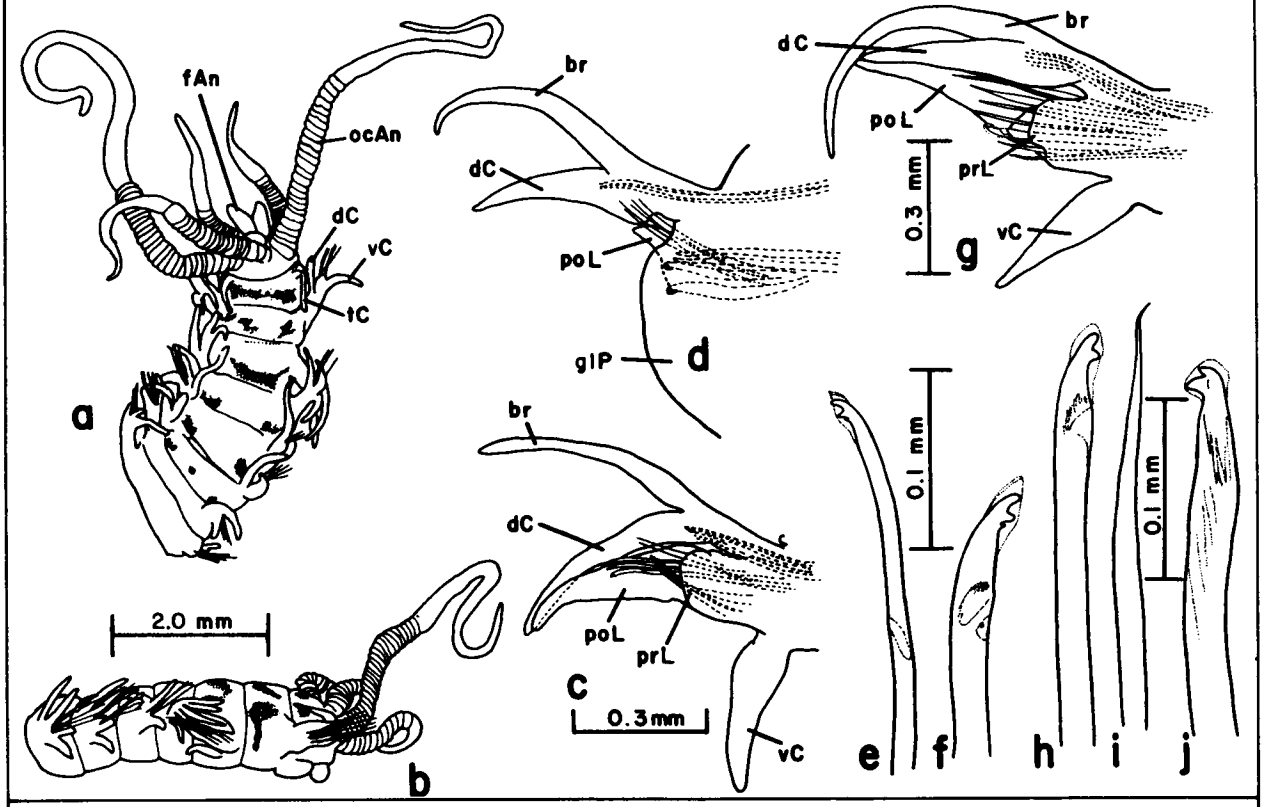

Figure 39-26. Onuphis eremita oculata: a, anterior end, dorsal view; b, same, lateral view; c, parapodium from setiger 1; d, same, from setiger 25; e, superior pseudocompound hook from setiger 2; f, inferior pseudocompound hook from same; g, parapodium from setiger 4; h, pseudocompound hook from same; i, limbate seta; j, subacicular hook.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2101-11/77 (1 spec.), 2318J-7/76 (1 spec., USNM 89952); CTGLF 19-9/78 (1 spec., USNM 89948); STOCS 2/II-2 Sp/76 (1 spec., USNM 89949), 4/III-3 Sp/76 (1 spec., USNM 89950), 4/IV-6 Sp/76 (1 spec., USNM 89951).
DESCRIPTION:
Length, 40.0+ mm (previously reported to 52.5 mm); width, to 2.0 mm (previously reported to 1.3 mm). Body cylindrical anteriorly, flattened posteriorly; all specimens incomplete with up to 75 setigers. Dark brown pigmentation present on dorsum of setigers 1-6. Prostomium globular with one pair of eyes located between bases of inner and outer lateral antennae. Ceratophores of occipital antennae long, with 15-20 rings (Figure 39-26a,b); longest ceratostyles reaching to setiger 18. Peristomium same length as prostomium, with one pair of digitiform tentacular cirri. Branchiae beginning on setiger 1 as single filaments, becoming pectinate with 5-6 filaments posteriorly. Anterior setigers with rounded presetal lobes (Figure 39-26c) and long postsetal lobes. Ventral cirri digitiform to setiger 6, pad-like thereafter. Posterior setigers with small, conical postsetal lobes (Figure 39-26d). Setae including tridentate pseudocompound hooded hooks on setigers 1-4 (Figure 39-26e); 1-2 stouter, tridentate hooded hooks on setigers 1-3 (Figure 39-26f); single, bidentate, pseudocompound hooded hooks on setiger 4 (Figure 39-26g,h); limbate setae from setiger 1 (Figure 39-26i); and bidentate, subacicular hooded hooks from setiger 10 (Figure 39-26j). Maxillary formula 1:7:11:7:1 left and 1:8:0:12:1 right.
REMARKS: BLM-OCS specimens were previously consistently identified as Onuphis eremita. The subspecies oculata was erected by Hartman (1951a:53) to include specimens of O. eremita with eyes, found in the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Intertidal to shelf depths.
GULF OF MEXICO BLM-OCS OCCURRENCE: Numerous stations throughout northern Gulf (Figure 39-25); 6-175 m; medium to fine-very fine sand, silty clay.
DISTRIBUTION: Gulf of Mexico.

Genus **Kinbergonuphis** Fauchald, 1982

TYPE SPECIES: Onuphis tenuis Hansen, 1882.
REFERENCE:
Fauchald, 1982:10.
DIAGNOSIS: Prostomium small, with one pair of oval frontal antennae, and five occipital antennae having ceratophores no longer than prostomium. Eyes present. Tentacular cirri present. Branchiae simple or pectinate. Anterior parapodia not enlarged. Pseudocompound hooks uni-, bi- or tridentate; always with short, blunt hoods. Compound spinigers absent; pectinate setae flat. Large hooks sometimes present. Subacicular hooks always present. Acicula pointed.

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

1a. Large tridentate hooks (Figure 39-30e) present on setigers 5-12. 2

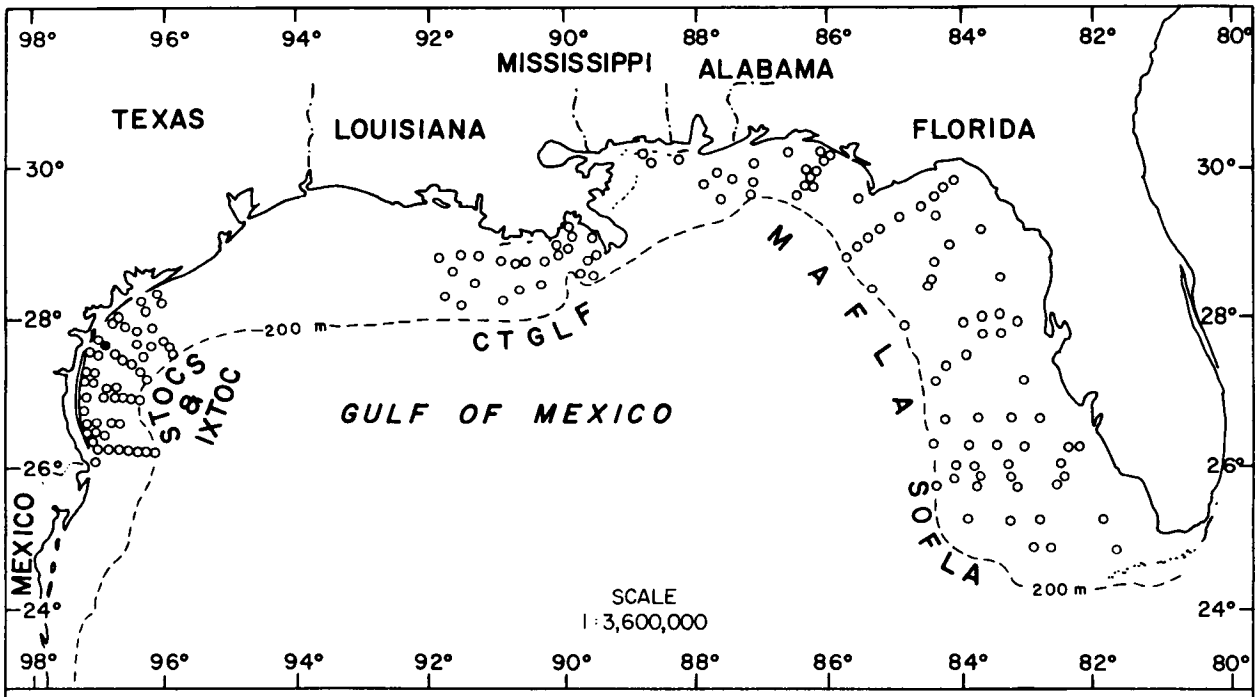

Figure 39-27. Distribution of Kinbergonuphis sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

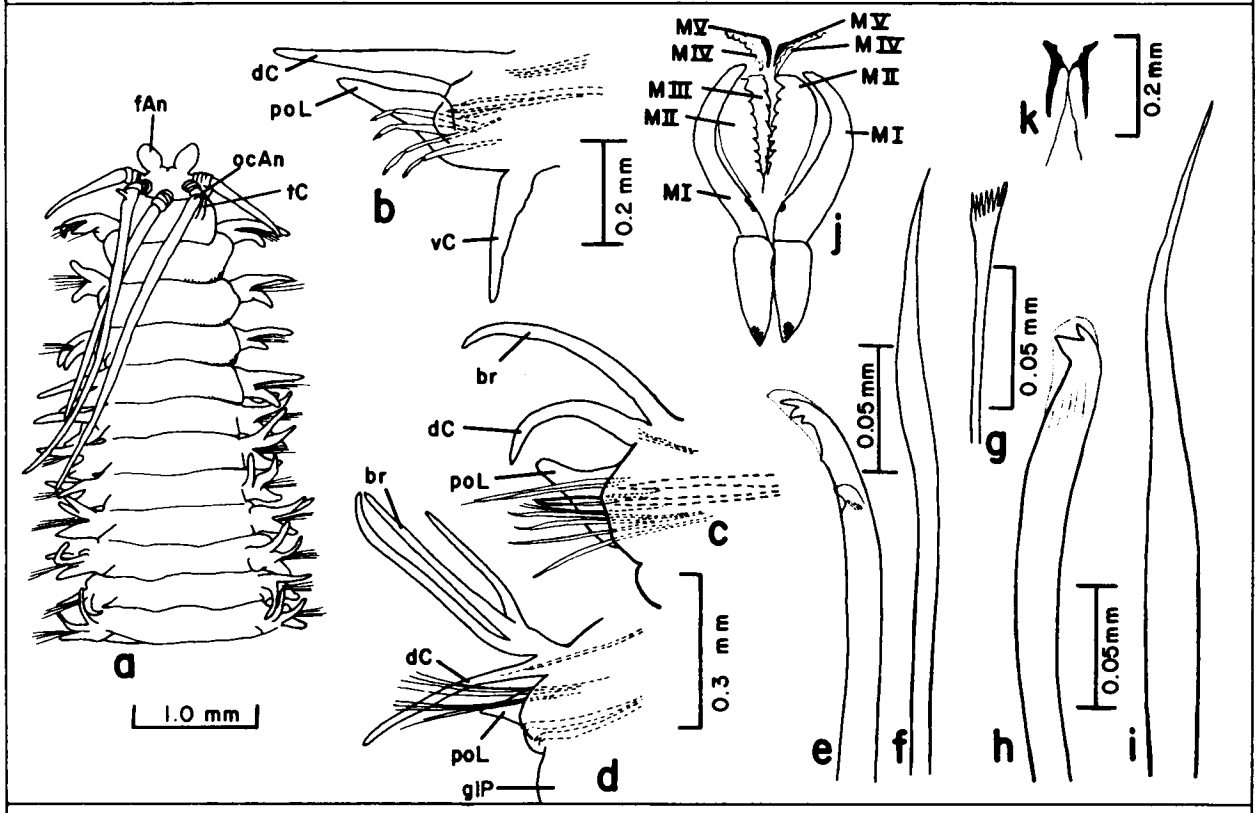

Figure 39-28. Kinbergonuphis sp. A: a, anterior end, dorsal view; b, parapodium from setiger 2; c, same, from setiger 10; d, same, from setiger 25; e, pseudocompound hook from setiger 2; f, limbate seta from setiger 10; g, pectinate seta from same; h, subacicular hook; i, aciculum; j, maxillae; k, mandibles.

1b. Large tridentate hooks absent on setigers 5-12 . . . . . **Kinbergonuphis sp. A, p. 39-31**

2a. Branchiae beginning on setiger 10; ventral cirri digitiform through setiger 7. . . . . **.Kinbergonuphis sp. B, p. 39-31**

2b. Branchiae beginning on setigers 5-6; ventral cirri digitiform through setiger 3. . . . . **.Kinbergonuphis sp. C, p. 39-34**

Kinbergonuphis sp. A
Figures 39-27, 28a-k

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
IXTOC M35-2 11/79 (1 spec., USNM 89953).
DESCRIPTION:
Length, 50+ mm; width, 1.1 mm. Body cylindrical anteriorly, dorsally flattened posteriorly; single specimen incomplete with 118 setigers. Prostomium rounded (Figure 39-28a), with two small eyes located between bases of inner and outer lateral occipital antennae. Ceratophores of occipital antennae each with 3-4 rings; ceratostyles elongate, longest reaching to setiger 7. Peristomium about half length of prostomium, with one pair of subulate tentacular cirri. Branchiae beginning on setiger 6 as single filaments, becoming pectinate by setiger 15, with up to five filaments posteriorly. Dorsal cirri long throughout (Figure 39-28b-d); ventral cirri digitiform to setiger 4, pad-like thereafter. Setigers 1-4 with tridentate pseudocompound hooded hooks (Figure 39-28e), and capillary setae. Remaining setigers with limbate setae (Figure 39-28f) and pectinate setae (Figure 39-28g). Subacicular hooded hooks bidentate (Figure 39-28h), present from setiger 15. Acicula geniculate (Figure 39-28i). Maxillary formula 1:8:9:7:1 left and 1:7:0:9:1 right (Figure 39-28j); mandibles small, with notched anterior margin (Figure 39-28k).
REMARKS: Kinbergonuphis sp. A most closely resembles K. tenuis (Hansen, 1882) in the placement and number of branchial pairs, and origin of subacicular hooks. It differs from the latter in having digitiform ventral cirri extending through the first four rather than seven setigers, branchiae beginning as single rather than as double filaments, and pseudocompound hooded hooks on only four anterior setigers rather than five.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Texas (Figure 39-27); 22 m; clayey silt.

Kinbergonuphis sp. B
Figures 39-29, 30a-i

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
STOCS 1/II-3 F/76 (1 spec., USNM 89954), 1/II-4 F/76 (1 spec., USNM 89955), 1/III-4 W/76 (1 spec., USNM 89956), 7/IV-4 F/76 (1 spec., USNM 89957); IXTOC S49-1 12/80 (1 spec., USNM 89958), S50-5 12/79 (1 spec., USNM 89959).

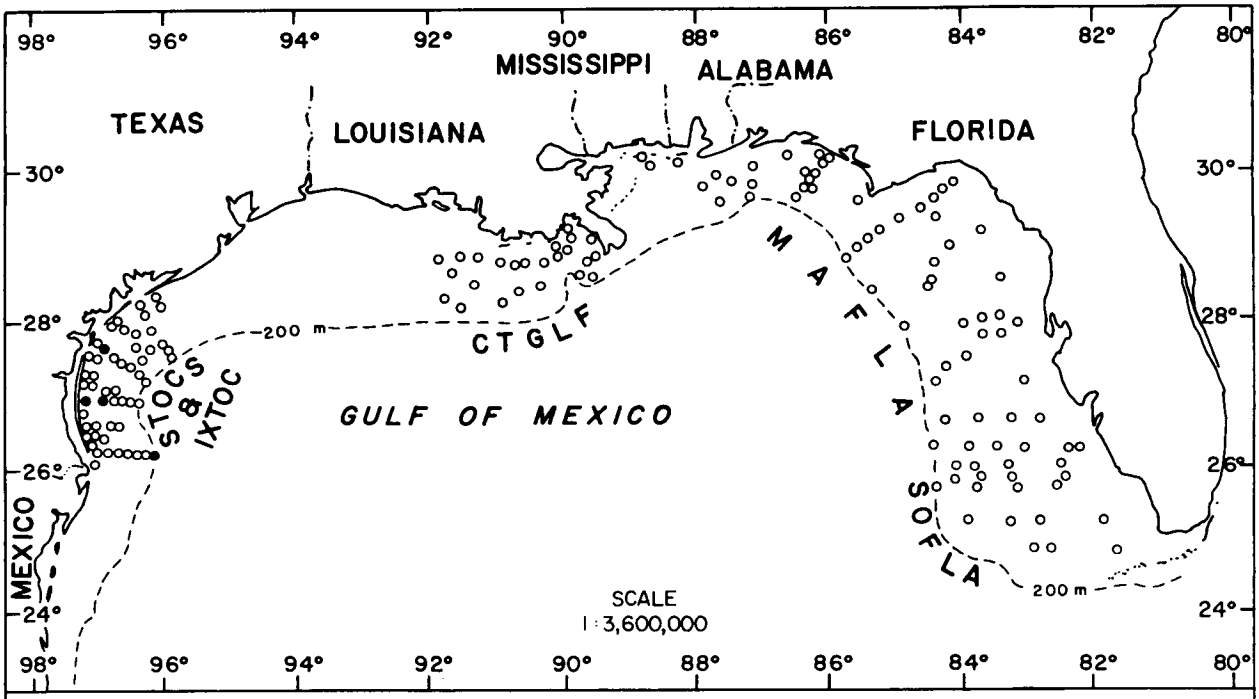

Figure 39-29. Distribution of Kinbergonuphis sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

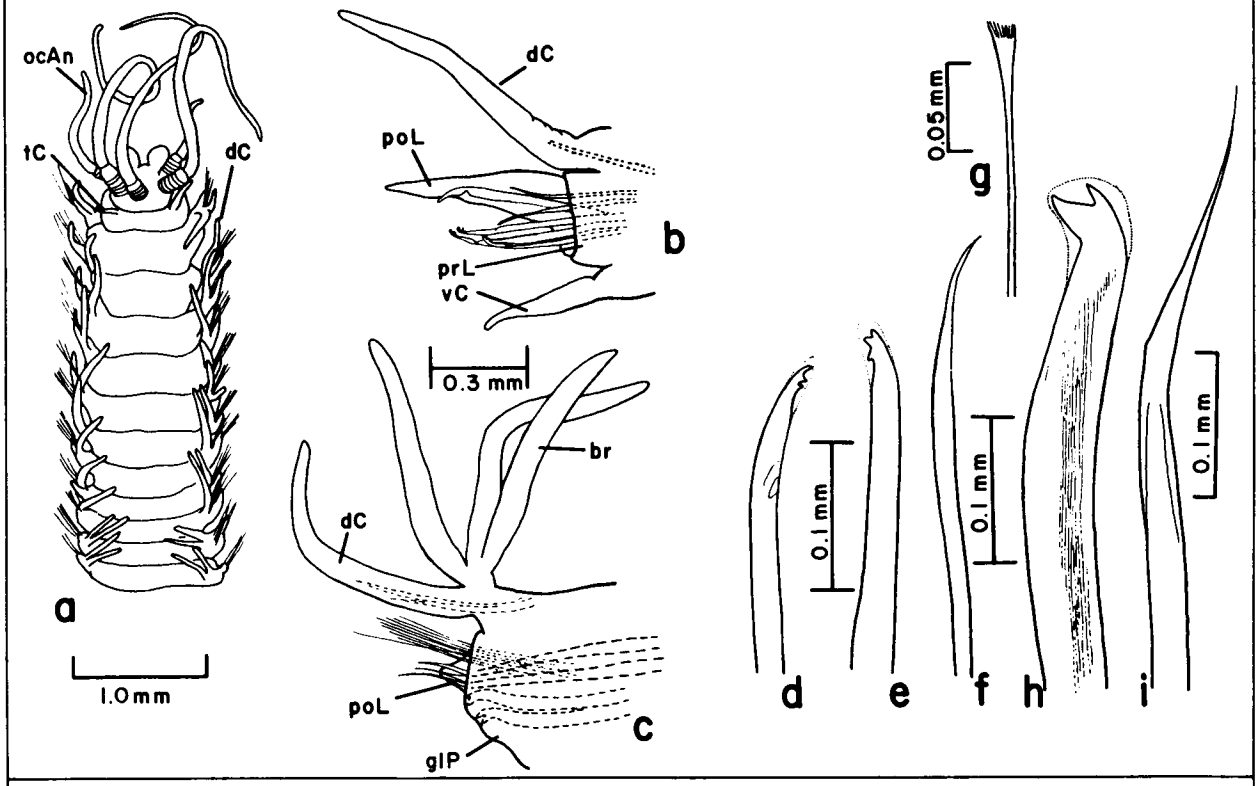

Figure 39-30. Kinbergonuphis sp. B: a, anterior end, dorsal view; b, parapodium from setiger 2; c, same, from setiger 25; d, pseudocompound hook from setiger 2; e, large hook from setiger 6; f, limbate seta from same; g, pectinate seta; h, subacicular hook; i, aciculum.

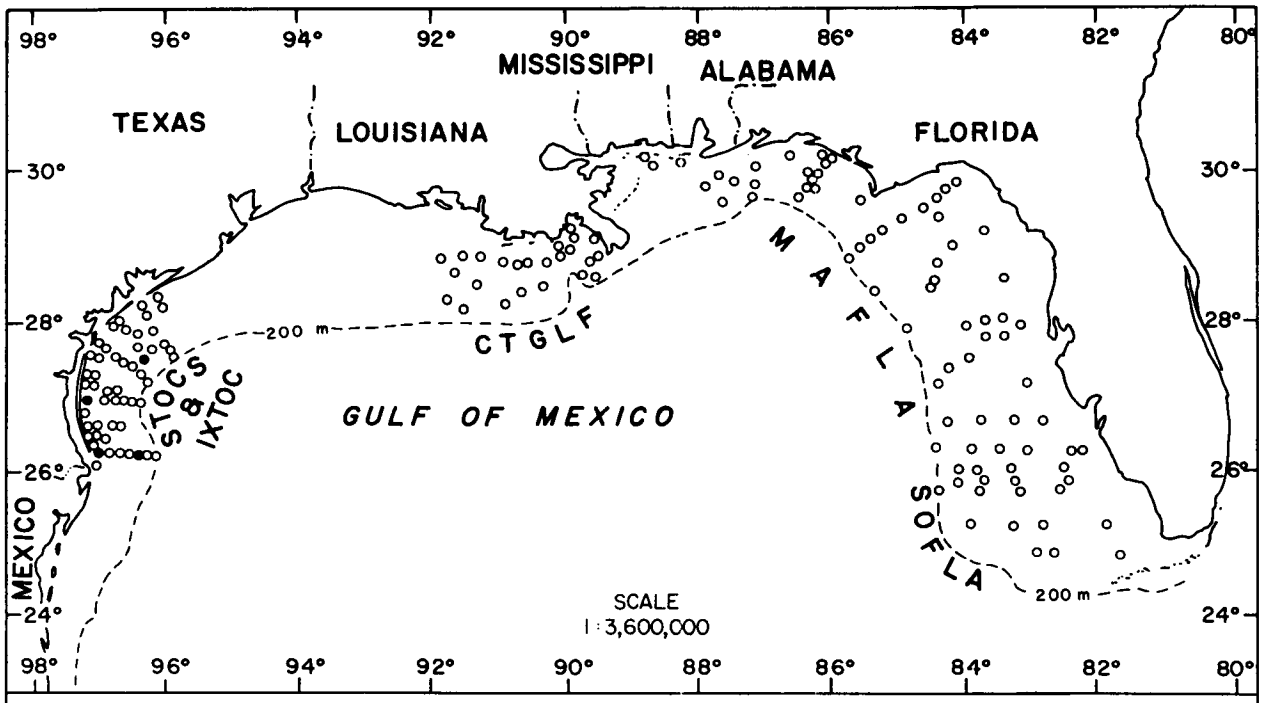

Figure 39-31. Distribution of Kinbergonuphis sp. C on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

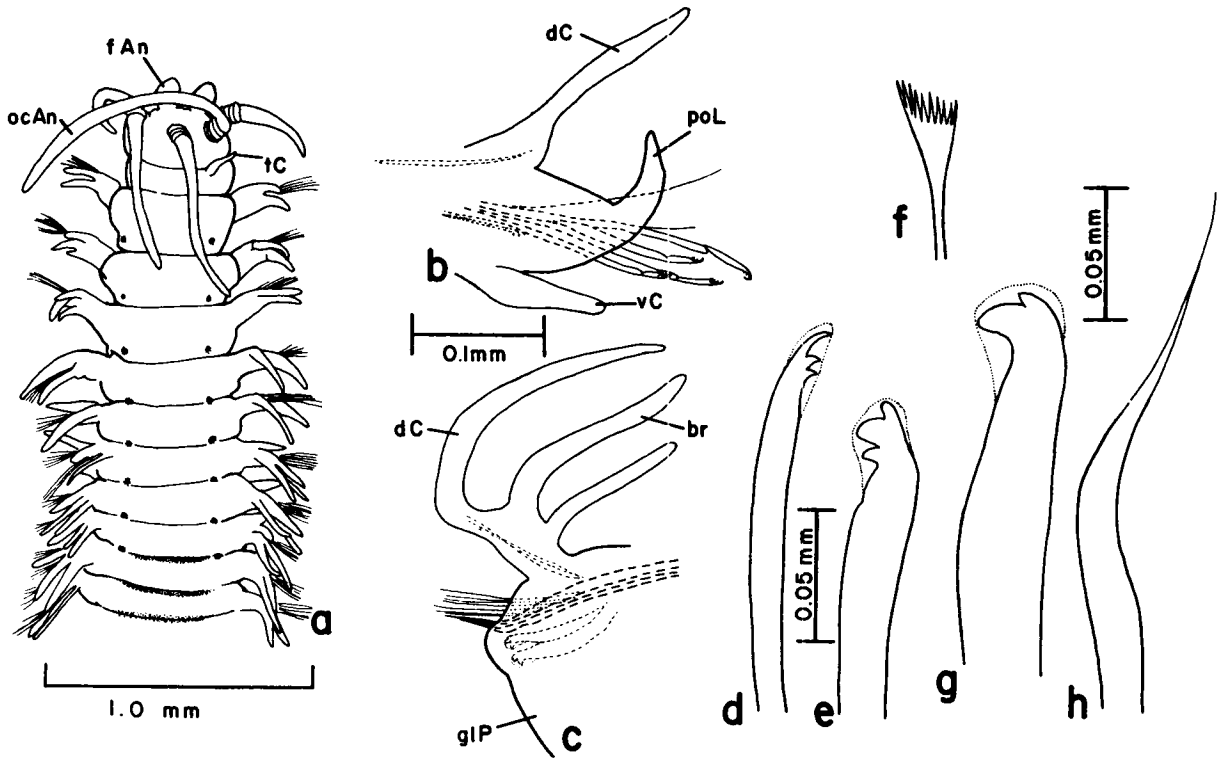

Figure 39-32. Kinbergonuphis sp. C: a, anterior end, dorsal view; b, parapodium from setiger 2; c, same, from setiger 25; d, pseudocompound hook from setiger 2; e, large hook from setiger 5; f, pectinate seta; g, subacicular hook; h, aciculum.

DESCRIPTION:
Length, 110+ mm; width, to 2.0 mm. Body cylindrical anteriorly, flattened posteriorly; all specimens incomplete with up to 300+ setigers. Prostomium globular (Figure 39-30a); eyes absent. Ceratophores of occipital antennae each with five rings; ceratostyles elongate, longest reaching setiger 11. Peristomium about one-third length of prostomium, with one pair of subulate tentacular cirri. Branchiae beginning on setiger 10 as single filaments, becoming pectinate by setiger 18, with up to five filaments posteriorly. Dorsal cirri elongate throughout (Figure 39-30b,c); ventral cirri digitiform to setiger 7, pad-like posteriorly. Setigers 1-5 with tridentate pseudocompound hooded hooks (Figure 39-30d), and capillary setae. Setigers 5-13 with stout, tridentate hooded hooks (Figure 39-30e). Remaining setigers with limbate setae (Figure 39-30f) and pectinate setae (Figure 39-30g). Subacicular hooded hooks bidentate (Figure 39-30h), beginning on setiger 20, numbering 2-3 per parapodium. Acicula geniculate (Figure 39-30i). Maxillary formula 1:13:0:7:1 left and 1:8:0:10:1 right. Mandibles with smooth anterior margin.
REMARKS: Kinbergonuphis sp. B most closely resembles K. pulchra (Fauchald, 1980) in the number of ceratophore rings and shape of the pseudocompound setae. It differs from the latter in that the branchiae begin on setiger 6 rather than on setiger 10, the ventral cirri are cirriform through setiger 7 rather than setiger 9, and the pseudocompound hooks are present on only the first five setigers rather than the first six.
GULF OF MEXICO BLM-OCS OCCURRENCE: Few stations off Texas (Figure 39-29); 22-130 m; sand, silty clay.

Kinbergonuphis sp. C
Figures 39-31, 32a-h

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
STOCS 4/III-3 F/76 (2 spec., USNM 89960), 4/IV-4 F/76 (1 spec., USNM 89961), 6/IV-1 F/76 (2 spec., USNM 89962), SB3-2 W/76 (1 spec., USNM 89963), SB3-3 W/76 (1 spec., USNM 89964), SB3-5 W/76 (1 spec., USNM 89965).
DESCRIPTION:
Length, 17+ mm; width, to 0.9 mm. Body cylindrical anteriorly, flattened posteriorly; all specimens incomplete with up to 103 setigers. Dark brown pigment spots present dorsolateral to bases of parapodia on first seven setigers (Figure 39-32a), followed by transverse brown bars from setiger 8. Prostomium globular with two small, black eyes. Ceratophores of occipital antennae each with 3-4 rings; ceratostyles elongate, longest one reaching to setiger 4. Peristomium small, half length of prostomium, with one pair of subulate tentacular cirri. Branchiae beginning on setigers 5-6 as single filaments, becoming pectinate with 3-4 filaments by setiger 10. Dorsal cirri long anteriorly; ventral cirri digitiform anteriorly (Figure 39-32b), becoming pad-like by setiger 4 (Figure 39-32c). Postsetal lobes long through setiger 11. Setigers 1-5 with pseudocompound tridentate hooded hooks (Figure 39-32d), and limbate setae. Setigers 5-12 with large tridentate hooks (Figure 39-32e), and capillary setae. Posterior setigers with limbate setae and pectinate setae (Figure 39-32f). Subacicular hooded hooks bidentate

(Figure 39-32g), beginning on setiger 15. Acicula geniculate (Figure 39-32h). Maxillae not observed.

REMARKS: Kinbergonuphis sp. C most closely resembles K. orensanzi (Fauchald, 1982) in the placement and shape of the branchiae and the number of rings on the ceratophores. It differs from the latter in having ventral cirri digitiform to setiger 6 or 7 rather than to setiger 5, and large hooks present from setigers 3-15 rather than 3-6. Gulf of Mexico BLM-OCS specimens were too small to permit examination of the maxillae.

GULF OF MEXICO BLM-OCS OCCURRENCE: Few stations off Texas (Figure 39-31); 15-82 m; sand, clayey sand, silty clay.

CHAPTER 40

Jerry M. Gathof

FAMILY EUNICIDAE Savigny, 1818

INTRODUCTION

The family Eunicidae is one of the oldest known and largest of all polychaete families. It was first erected by Savigny in 1818 and includes over 460 species named but only about 250 now considered valid (Fauchald, 1970:4; 1977a:106). Eunicids are long, cylindrical to oval in cross-section, and usually distinctly segmented. A single specimen was reported by Fauvel (1923:403) as measuring over three meters long. The prostomium is large, often notched anteriorly, with 1-5 occipital antennae. Palps are large and fused to the prostomium ventrally. Eyes may be present. Two apodous rings follow the prostomium--the first may exceed the prostomium in length and wrap around it laterally; the second is shorter and may have a pair of tentacular cirri. The parapodia are subbiramous, with the notopodia usually represented only by internal acicula in the dorsal cirri. The neurosetae are diverse and may include pectinate setae, pseudocompound or compound spinigers, bidentate compound falcigers, and narrowly to broadly limbate setae or smooth capillaries. Stout subacicular hooks may also be present along with stout internal acicula. The pygidium is terminal and usually has 2-4 anal cirri. The eversible proboscis is equipped with a massive feeding apparatus consisting of one pair of mandibles and 4-5 pairs of toothed maxillae.

There has been considerable historical disagreement among workers concerning the appropriate family designation. Some American workers (i.e., Verrill, 1900:638; Chamberlin, 1919b:229; Treadwell, 1921:4; 1922:130) considered the name Eunicidae Savigny, 1818, invalid because Verrill (1900) showed that the genus Eunice had been used for a genus of insects in 1816. They consequently adopted the name Leodicidae (Savigny, 1820), with Leodice as the principal genus. Hartman (1944b:98) addressed this problem and stated "since the laws of priority are obscured by other considerations in this case, I am using Eunice, the name which has received the widest acceptance." Most workers since (e.g., Fauchald, 1970:4) have preferred Eunicidae over Leodicidae as is the case herein.

Day (1967:374) considered the relationship between the Eunicidae, Onuphidae, Lysaretidae, Arabellidae, Lumbrineridae, and Dorvilleidae too close for each to be ranked as an independent family. Consequently, he designated these six groups as subfamilies under the family Eunicidae, although later (1973) he addressed them as separate families.

Seven genera and 241 species of eunicids were recognized by Fauchald (1977a). Five genera and 14 species have been identified from the Gulf of Mexico BLM-OCS material; three species are potentially new to science and one species is a questionable assignment.

PRINCIPAL DIAGNOSTIC CHARACTERS

Important generic characters include the number of occipital antennae, presence or absence of tentacular cirri on the second apodous ring, presence or absence of subacicular hooks and pectinate setae, forms of compound setae present (falcigers, spinigers or both) and the presence or absence of branchiae along the length of the body.

The number of occipital antennae and their appearance are of primary importance when identifying eunicid genera. A single median occipital antenna (Nematonereis), three occipital antennae (Lysidice) or five occipital antennae (Eunice, Palola, Euniphysa, Marphysa and Paramarphysa) may be present. Antennae appear smooth, or have distinct cylindrical or moniliform articles (Figure 40-18a), or are wrinkled (Figure 40-20b). An antennal formula has been employed in the species descriptions to indicate the relationship among the relative lengths of the occipital antennae. An example of one such formula is 1:1.75:3.0 for Eunice websteri. The first number represents the lateralmost pair of occipital antennae, the second number represents the middle pair of antennae and the third number represents the median antenna (for a total of five occipital antennae). The number representing the lateralmost antennae will always be one. There is some variability in relative antennal lengths within a species. The formulae given here are meant to be used as a secondary character for identification. When a series of specimens was examined, the modal (most frequently occurring) antennal formula is given herein. For genera with only three antennae, the formula will be composed of only two numbers. The tentacular cirri, when present on the second apodous ring, may also have cylindrical or moniliform articles, or may be irregularly wrinkled.

Subacicular hooks are present in all genera except Palola. They may be unidentate (Figure 40-10h), bidentate (Figure 40-24g) or tridentate (Figure 40-18h). Compound setae may include spinigers only (as in Euniphysa, Figure 40-28g), or bidentate falcigers (Figure 40-2e) as in most other genera. The branchiae may be absent entirely, restricted to a specific number of anterior setigers, or continuous to the end of the worm. Branchial filaments range from one to about 36 in number, in a pinnate or palmate arrangement.

Specific characters among the eunicids include the origin and number of branchial pairs, shape of the subacicular hooks and compound setae, maxillary dentition, shape of the acicula, and the degree of annulation of the occipital antennae. Hartman (1944b:100) used subacicular hook color as well as dentition to group species in the genus Eunice. Flavus-bidentate (yellow-bidentate), fuscus-bidentate (dark brown-bidentate), flavus-tridentate and fuscus-unidentate are the four groups she established. Fauchald (pers. comm.) agrees with this classification. Day (1967:380), however, questioned the validity of this character. The acicula may be pointed (Figure 40-26h) or expanded distally (Figure 40-22h).

Dissection of the maxillae is often necessary to distinguish between species. The maxillae are not symmetrical--maxilla 3 is usually absent from the right side. Unless the proboscis is everted, a dorsal or ventral incision must be made to observe the maxillae. Care should be taken when making the incision not to cut too deep and damage teeth on the maxillae. The number of teeth on each maxilla is occasionally variable within a species group, so ranges have been given herein where variability was observed. Maxillary dentition for each species is

represented according to formulae, such as 1:7:(8-9):8:1 [left] and 1:8:0:13:1 [right]. The formulae represent the number of teeth on maxillae 1 through 5 on the left and right sides, respectively. Variability is given inside parentheses as in maxillae 3 on the left side above. The mandibles are composed of heavily sclerotinized plates with long posterior margins for muscular attachment, and are located ventral to the maxillae. They are similar within each genus and historically have not been used as a specific character.

BIOLOGICAL NOTES

Eunicids are errant or tubicolous polychaetes frequently inhabiting coral reefs, sands and occasionally muddy substrates. Many species of this family (e.g., Palola) are instrumental in breaking down coralline rock. Their complex set of paired maxillae is used to attach the worm firmly to the coral while the paired ventral mandibles are used as a rasp, gouging and scraping away at the coralline rock. The worm ingests any microflora or fauna contained therein.

The genus Eunice is characterized as having motile juvenile forms that may become tubicolous as adults. They are considered carnivorous, preying on annelids, chaetognaths, ostracods, copepods, bivalves, and diatoms, but may also feed on detritus and carrion (Fauchald and Jumars, 1979:210). Members of the genus Marphysa are thought to be herbivores, omnivores or detritivores.

Reproduction in eunicids has been studied by many workers, with particular interest focused on the swarming behavior of the genus Palola (von Haffner, 1961; Hauenschild et al., 1968). Sexually mature adults of this genus possess three body regions: 1) the head and anterior segments; 2) the middle region of 225-350 segments with single branchial filaments; and 3) the posterior epitokous region characterized by a ventral ocellus on each segment close to the ventral nerve cord (Schroeder and Hermans, 1975:58). Gamete production is limited to this posterior region. There is little modification of the parapodia for swimming in the epitokous section. The epitokes are light sensitive and under the appropriate environmental stimuli (i.e., moon phase as well as possible hormonal control), entire worms or the detached posterior ends (depending on the species) swarm en masse to the surface where they release their gametes directly into the water. In the islands of the South Pacific, Polynesian natives collect the swarming worms at night for food and consider them a delicacy. The developing embryos which survive predation settle out within about three days. Little has been reported on reproduction in other genera of this family.

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

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

1a. Single median occipital antenna present . . .**Nematonereis**, p. 40-4
1b. Three to five occipital antennae present. 2

2a. Three occipital antennae present. . . . . .**Lysidice**, p. 40-6
2b. Five occipital antennae present 3

3a. Tentacular cirri present. 4
3b. Tentacular cirri absent. . . . . **Marphysa**, p. 40-8

4a. Composite setae including falcigers and sometimes spinigers. . . . . **Eunice**, p. 40-19
4b. Composite setae including spinigers only . . . **Euniphysa**, p. 40-29

Genus **Nematonereis** Schmarda, 1861

TYPE SPECIES: *Nematonereis unicornis* Schmarda, 1861.
REFERENCES:
Treadwell, 1921:82.
Hartman, 1944b:125.
Day, 1967:403.
Fauchald, 1977a:106.
DIAGNOSIS: Prostomium rounded anteriorly, with single median antenna; palps fused. Tentacular cirri absent. Parapodia subbiramous with short dorsal cirri, blunt setigerous lobes, and conical ventral cirri. Branchiae absent. Setae including pectinate setae, limbate setae, and compound bidentate falcigers. Subacicular hooks pale, bidentate, hooded. Acicula pale, distally blunt.

Nematonereis hebes Verrill, 1900
Figures 40-1, 2a-g

Nematonereis hebes Verrill, 1900:647.
Nematonereis hebes--Treadwell, 1921:82, figs. 288-297.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 14A-8/81 (1 spec., USNM 89995), 28F-11/80 (1 spec., USNM 89994); MAFLA 2211C-7/76 (1 spec.), 2211C-8/77 (1 spec.), 2318D-7/76 (1 spec., USNM 89997), 2422B-7/76 (1 spec.), 2423B-7/76 (1 spec., USNM 89996),

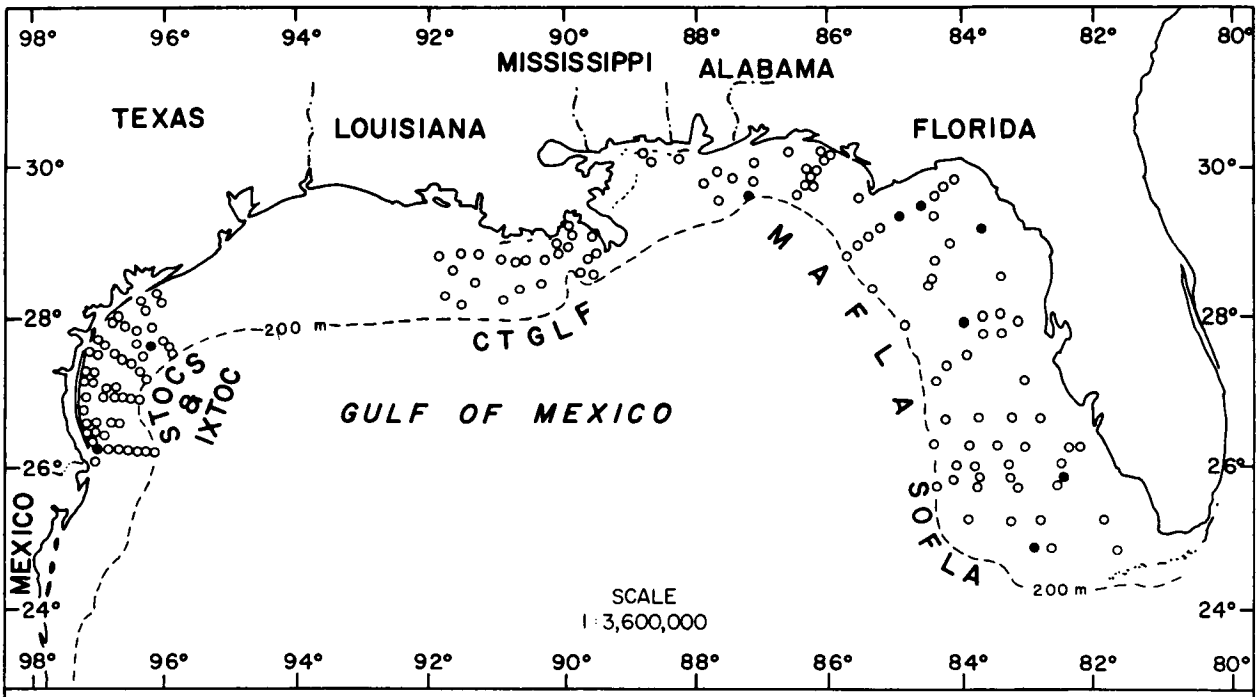

Figure 40-1. Distribution of Nematonereis hebes on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

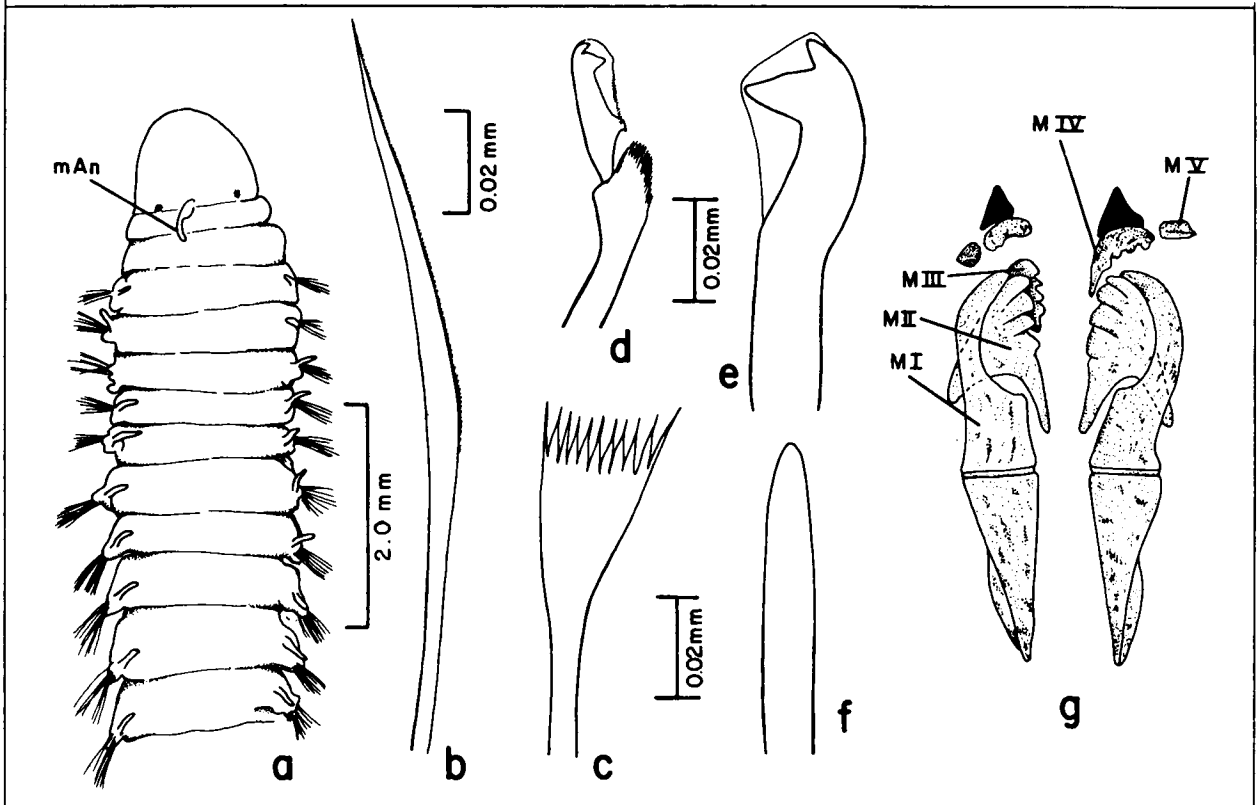

Figure 40-2. Nematonereis hebes: a, anterior end, dorsal view; b, limbate seta; c, pectinate seta; d, compound falciger; e, subacicular hooded hook; f, aciculum; g, maxillae, dorsal view (Figure g after Treadwell, 1921:83, fig. 296).

2423E-7/76 (1 spec., USNM 89998), 2645E-6/75 (1 spec.); STOCS 4/IV-5 5/76 (1 spec., USNM 90000), HR1-2 F/76 (1 spec., USNM 89999).
Supplementary Material:
Florida--Tampa Bay, 1963, J. Taylor coll./ID. (1 spec., USNM 45595).
DESCRIPTION:
Length, 8+ mm (previously reported to 30 mm); width, 0.2 mm (previously reported to 0.3 mm). Body long, thread-like; all specimens incomplete with up to 51 setigers. Prostomium rounded anteriorly (Figure 40-2a), with single, subulate median antenna, and 1-2 pairs of eyes. Dorsal cirri as small papillae on setiger 1; becoming larger, subulate on following setigers. Ventral cirri short, conical. Notosetae absent. Neurosetae including limbate setae (Figure 40-2b); pectinate setae (Figure 40-2c); bidentate falcigers (Figure 40-2d); and yellow, bidentate, subacicular hooks beginning on setigers 8-10 (Figure 40-2e). Acicula yellow, distally blunt (Figure 40-2f). Maxillary formula 1:4:4:2:1 left and 1:4:0:5:1 right (Figure 40-2g).
REMARKS: Nematonereis hebes was originally identified as N. unicornis in BLM-OCS collections. It differs from the latter in having bidentate subacicular hooks beginning on setigers 8-10 rather than tridentate subacicular hooks beginning on setiger 20 as described by Imajima and Hartman (1964:260).
PREVIOUSLY REPORTED HABITAT: None given.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered stations off Florida and Texas (Figure 40-1); 15-106 m; coarse to fine sand, silty fine sand.
DISTRIBUTION: Bermuda, Gulf of Mexico.

Genus **Lysidice** Savigny, 1818

TYPE SPECIES: Lysidice ninetta Audouin and Milne Edwards, 1833c.
REFERENCES:
Hartman, 1944b:124.
Day, 1967:400.
Fauchald, 1970:52; 1977a:106.
DIAGNOSIS: Prostomium with three smooth antennae. Palps fused with prostomium producing a bilobed appearance anteriorly. Tentacular cirri absent. Parapodia subbiramous with small dorsal cirri, blunt setigerous lobes and digitiform ventral cirri. Branchiae present or absent. Setae including pectinate setae, compound bidentate falcigers, and limbate setae. Subacicular hooks bidentate, hooded, black. Acicula unidentate, black.
REMARKS: The genus Lysidice was redefined by Ehlers (1868:366) to include species with three occipital antenna but without tentacular cirri or branchiae.

Lysidice ninetta Audouin and Milne Edwards, 1833c
Figures 40-3, 4a-i

Lysidice ninetta--Fauvel, 1923:411, fig. 162a-g.
Lysidice ninetta--Fauchald, 1970:52.
Lysidice ninetta--Knox and Green, 1972:463, figs. 1-5.
Lysidice ninetta--Gardiner, 1976:174, fig. 21a-d.
Lysidice ninetta ninetta--Day, 1973:52.

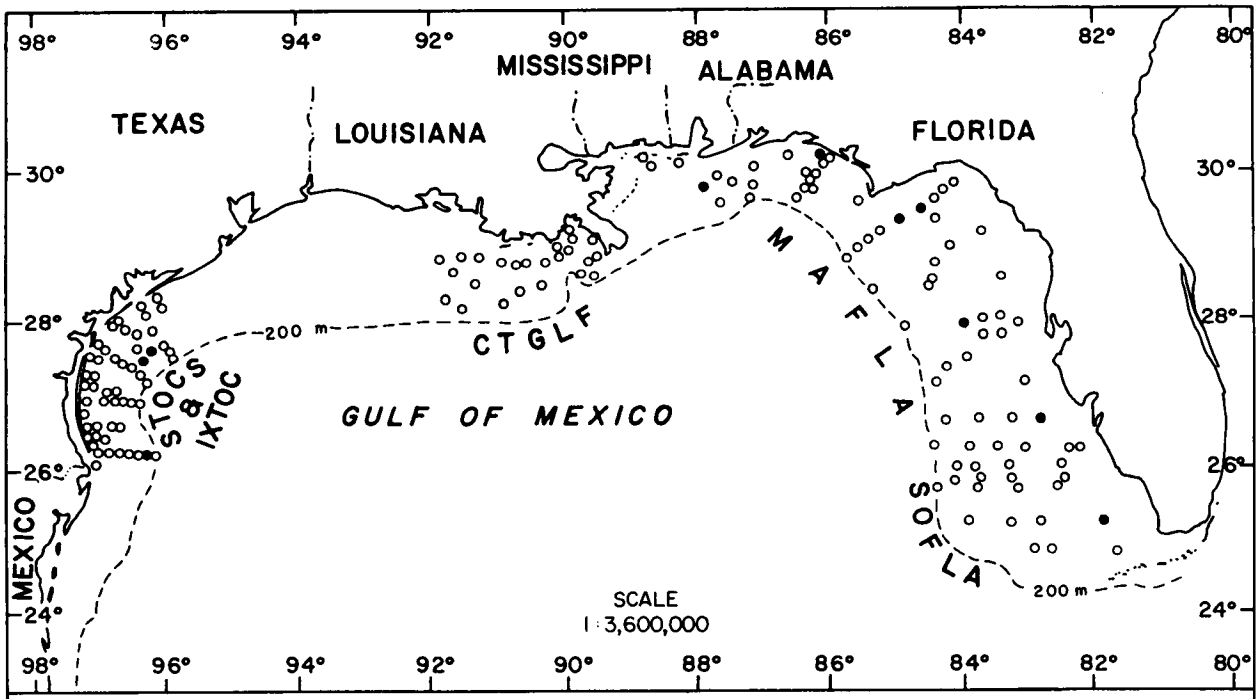

Figure 40-3. Distribution of Lysidice ninetta on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

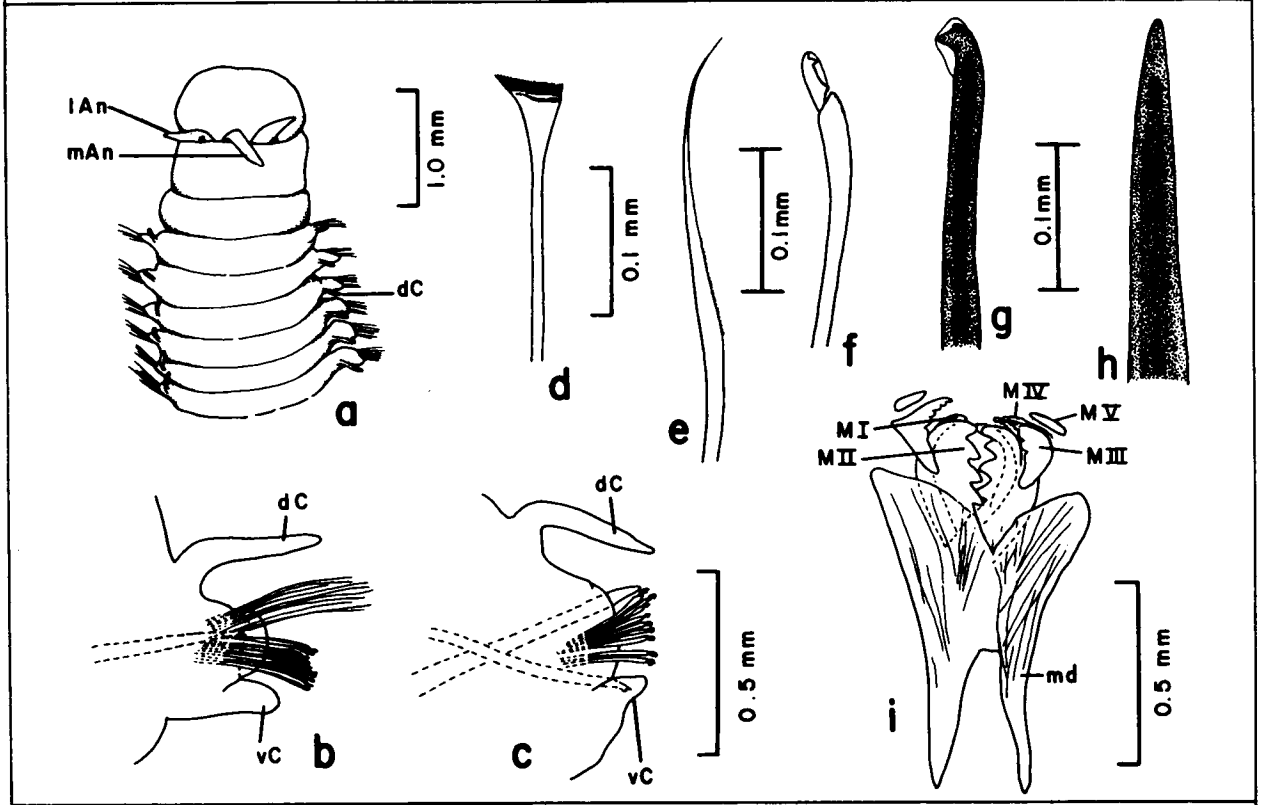

Figure 40-4. Lysidice ninetta: a, anterior end, dorsal view; b, anterior parapodium, posterior view; c, posterior parapodium, posterior view; d, pectinate seta; e, limbate seta; f, compound falciger; g, subacicular hooded hook; h, aciculum; i, mandibles and maxillae, ventral view.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2D-12/80 (3 spec., USNM 90001), 20E-8/81 (1 spec., USNM 90002); MAFLA 2211G-7/76 (1 spec.), 2211D-8/77 (1 spec.), 2422I-7/76 (1 spec.), 2423-7/76 (1 spec., USNM 55869), 2423C-7/76 (2 spec.), 2423H-7/76 (1 spec.), 2528G-6/75 (1 spec.), 2528K-2/78 (6 spec.), 2640G-6/75 (1 spec.); STOCS 4/III-5 F/76 (1 spec., USNM 90005), HR1-5 F/76 (1 spec., USNM 90003), HR3-5 F/76 (1 spec., USNM 90004), SB3-3 Sp/76 (1 spec., USNM 90006).
DESCRIPTION:
Length, 30+ mm (previously reported to 60 mm); width, to 1.6 mm (previously reported to 2.0 mm). Body cylindrical, gradually tapering posteriorly; all specimens incomplete with up to 100 setigers. Prostomium rounded or slightly bilobed anteriorly (Figure 40-4a), with one pair of small, oval or reniform eyes, and three subulate occipital antennae. Antennal ratio 1:1.3. First apodous ring about twice as long as second. Branchiae absent. Dorsal cirri short, digitiform (Figure 40-4b). Ventral cirri short, conical (Figure 40-4c). Notoacicula absent. Neurosetae including pectinate setae (Figure 40-4d); limbate setae (Figure 40-4e); and hooded, bidentate falcigers (Figure 40-4f). Bidentate subacicular hooded hooks (Figure 40-4g) beginning on setigers 14-18. Acicula single, thick, dark, distally blunt (Figure 40-4h). Maxillary formula 1:4:(5-6):(3-4):1 left and 1:4:0:(5-6):1 right (Figure 40-4i).
REMARKS: Lysidice ninetta was previously separated from L. collaris on the shape of the eyes, which are oval in the former and reniform in the latter. Fauchald (1970) synonymized these two species under L. ninetta.
PREVIOUSLY REPORTED HABITAT: Intertidal; on rock and dead coral.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered stations throughout northern Gulf (Figure 40-3); 15-82 m; coarse to medium-fine sand, silty fine sand.
DISTRIBUTION: Cosmopolitan in warm waters.

Genus **Marphysa** Quatrefages, 1865

TYPE SPECIES: Nereis sanguinea Montagu, 1815.
REFERENCES:
Hartman, 1944b:126.
Day, 1967:393.
Fauchald, 1970:54; 1977a:106.
Gardiner, 1976:175.
DIAGNOSIS: Prostomium with five long or short, smooth to moniliform occipital antennae. Palps fused to prostomium ventrally. Tentacular cirri absent. Parapodia subbiramous with long, occasionally bifurcate dorsal cirri; blunt setigerous lobes; and conical ventral cirri. Branchiae arising from base of dorsal cirri as simple or palmate filaments. Setae including pectinate setae, limbate setae, and compound falcigers and spinigers. Subacicular hooks pale or dark, uni- or bidentate. Acicula unidentate, pale or dark.

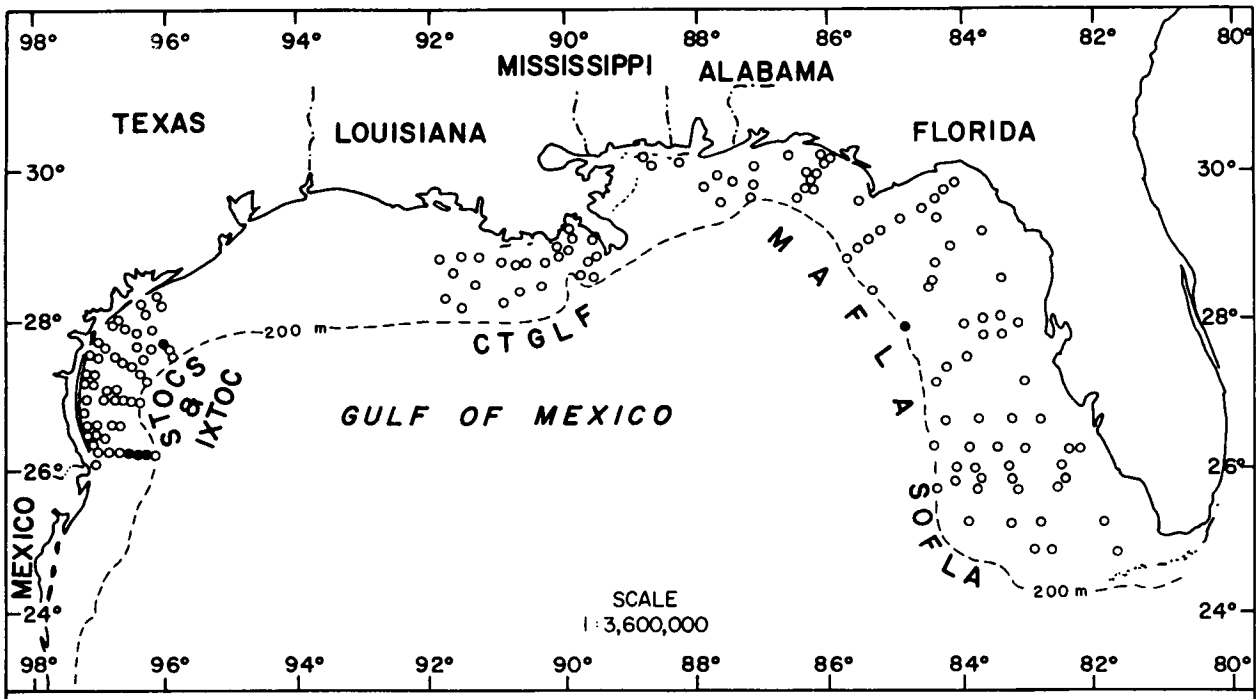

Figure 40-5. Distribution of Marphysa cf. bellii on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

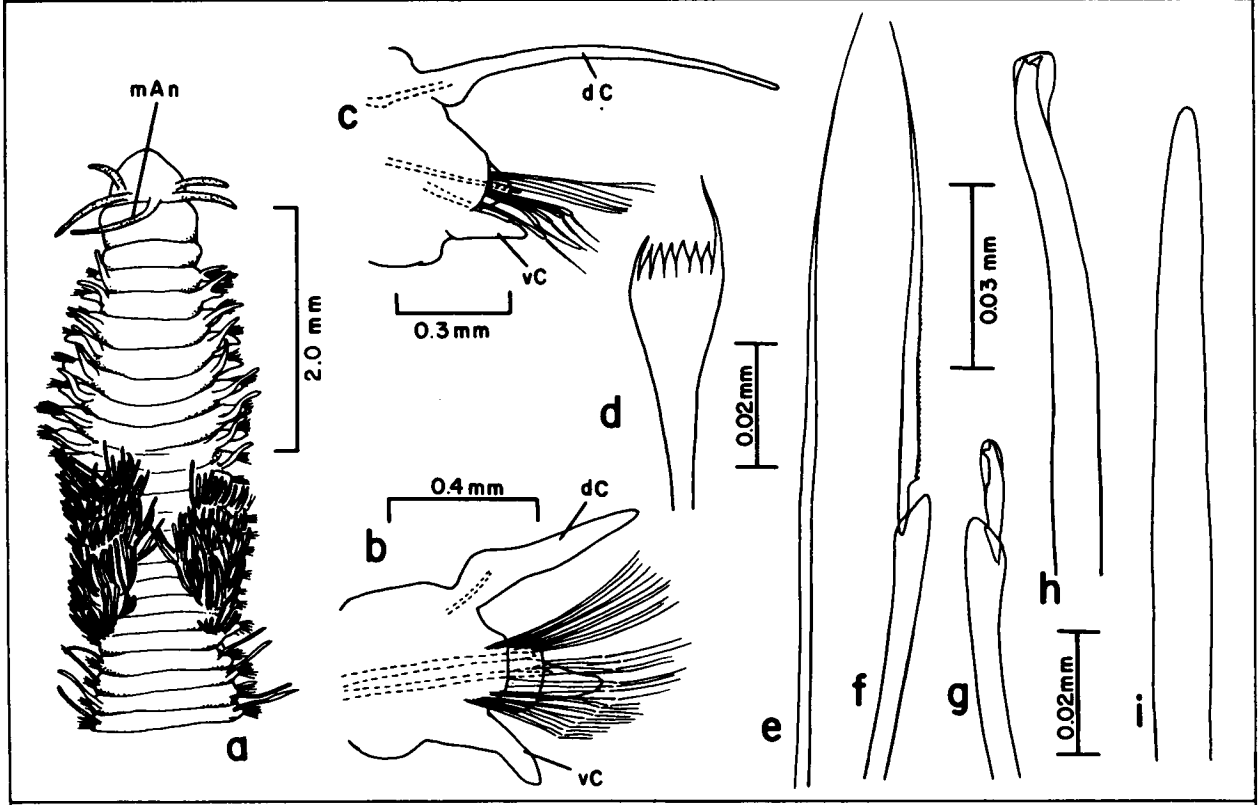

Figure 40-6. Marphysa cf. bellii: a, anterior end, dorsal view; b, anterior parapodium, anterior view; c, posterior parapodium, anterior view; d, pectinate seta; e, capillary seta; f, compound spiniger; g, compound falciger; h, subacicular hooded hook; i, aciculum.

Key to the Gulf of Mexico BLM-OCS Species of *Marphysa*

1a. Compound setae including both spinigers and falcigers. . . . . .Marphysa cf. bellii, p. 40-10
1b. Compound setae either spinigers or falcigers, not both. 2

2a. Compound setae spinigers only 3
2b. Compound setae falcigers only 4

3a. Subacicular setae distally bifid (Figure 40-8g); branchiae beginning on setiger 42. . . . . **Marphysa sanguinea**, p. 40-12
3b. Subacicular setae distally entire (Figure 40-10h); branchiae beginning on setigers 11-13. . . . . .**Marphysa sp. B**, p. 40-15

4a. Dorsal cirri simple anteriorly, bifurcate from setiger 12 (Figure 40-12c). . . . . **Marphysa mortenseni**, p. 40-15
4b. Dorsal cirri simple throughout. 5

5a. Bidentate falcigers with long blades anteriorly (Figure 40-14e); pectinate setae with few large teeth (Figure 40-14d) . . . . . **Marphysa sp. A**, p. 40-17
5b. Bidentate falcigers with short blades anteriorly (Figure 40-16e); pectinate setae with many small teeth (Figure 40-16d). . . . . .Marphysa cf. conferta, p. 40-19

Marphysa cf. *bellii* (Audouin and Milne Edwards, 1834)
Figures 40-5, 6a-i

Marphysa bellii--Fauvel, 1923:410, fig. 161i-q.
Marphysa bellii--Wesenberg-Lund, 1949:305.
Marphysa bellii--Pettibone, 1963:238, fig. 63a-d.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2212I-8/77 (3 spec.), 2212J-8/77 (1 spec., USNM 90007); STOCS 5/I-4 Sp/77 (1 spec., USNM 90010), 2/IV-5 W/77 (1 spec., USNM 90013), 3/IV-3 W/77 (1 spec., USNM 90012), 3/IV-5 W/77 (1 spec., USNM 90009), 6/IV-2 W/77 (1 spec., USNM 90008), 6/IV-3 W/77 (1 spec., USNM 90011).
DESCRIPTION:
Length, 15+ mm (previously reported to 200 mm); width, to 1 mm (previously reported to 3 mm). Dorsum convex, pale; all specimens incomplete with up to 96 setigers. Prostomium rounded, anteriorly entire (Figure 40-6a), with five irregularly wrinkled occipital antennae. Antennal ratio 1:1.2:1.4. Eyes absent. First apodous ring equal in length to prostomium; second apodous ring same length as following setigers. Branchiae beginning on setigers 7-10 and continuing to setigers 14-19, with up to eight filaments. Dorsal cirri subulate on prebranchial setigers (Figure 40-6b); long, basally enlarged on posterior setigers (Figure 40-6c). Ventral cirri long anteriorly, conical posteriorly. Notosetae represented by 2-3 acicula in dorsal cirri. Neurosetae including pectinate setae (Figure 40-6d); capillary setae (Figure 40-6e); compound spinigers (Figure 40-6f); and compound, bidentate falcigers (Figure 40-6g) beginning about setigers 16-18. Subacicular hooded hooks bidentate (Figure 40-6h), single, beginning on setigers 18-24. Acicula

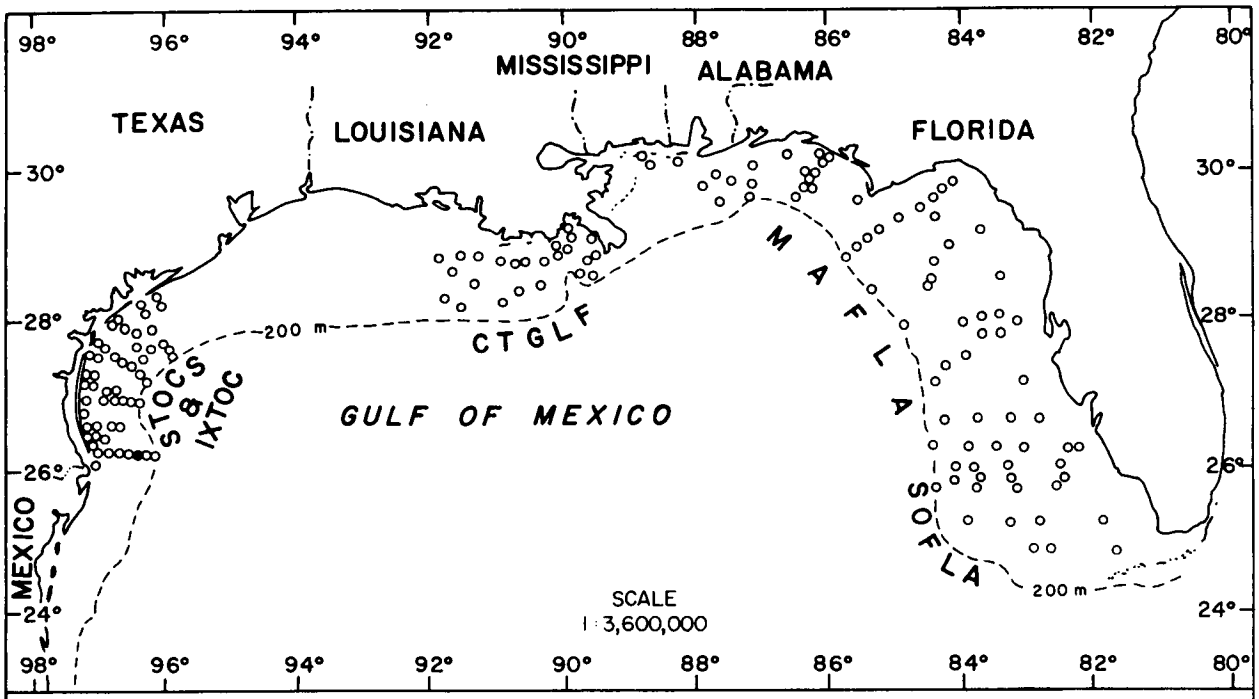

Figure 40-7. Distribution of Marphysa sanguinea on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

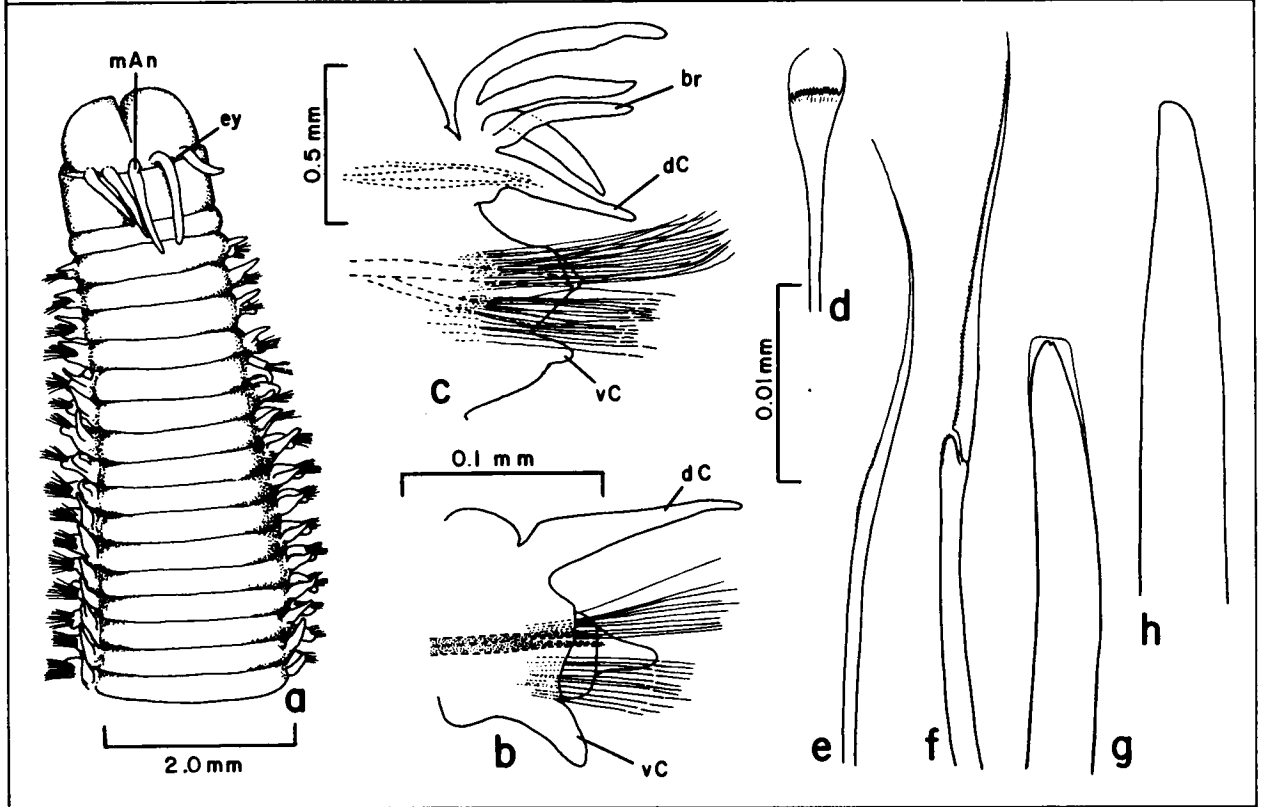

Figure 40-8. Marphysa sanguinea: a, anterior end, dorsal view; b, anterior parapodium, anterior view; c, posterior parapodium, anterior view; d, pectinate seta; e, limbate seta; f, compound spiniger; g, subacicular hooded hook; h, aciculum.

light brown to yellow, distally blunt (Figure 40-6i). Maxillary formula 1:(4-5):(5-6):3:1 left and 1:(6-7):0:(5-7):1 right.
REMARKS: These specimens differ from M. belli in having up to ten pairs of branchiae with 8-10 filaments rather than 20 pairs with 10-18 filaments, and the maxillary formula given above rather than 1:7:(7-8):6:1 left and 1:8:0:(8-9):1 right for M. belli. These characters are variable and are close to the ranges given for M. bellii (Fauvel, 1923:410). The differences are not considered sufficient to warrant a new species designation.
PREVIOUSLY REPORTED HABITAT: Intertidal to 126 m; muddy sand, under stones and in roots of Zostera.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off Texas and one station off Florida (Figure 40-5); 47-189 m; clayey sand, silty very fine sand, sandy and silty clay.
DISTRIBUTION: Ireland, English Channel, France, Mediterranean, Adriatic, West Africa, Indochina, Massachusetts, Rhode Island, Florida, Gulf of Mexico, West Indies.

Marphysa sanguinea (Montagu, 1815)
Figures 40-7, 8a-h

Marphysa sanguinea--Fauvel, 1923:408, figs. 161a-h.
Marphysa sanguinea--Hartman, 1944b:127, pl. 8, figs. 179-183; 1951a:55, pl. 14, figs. 3-6.
Marphysa sanguinea--Day, 1967:393, fig. 17.5.u-y.
Marphysa sanguinea--Fauchald, 1970:55.
Marphysa sanguinea--Gardiner, 1976:178, fig. 21o-s.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
STOCS 6/IV-3 F/76 (1 spec., USNM 90017).
DESCRIPTION:
Length, 27+ mm (previously reported to 150 mm); width, 3 mm (previously reported to 6 mm). Body large, convex dorsally, incomplete with 88 setigers. Prostomium globular, deeply notched anteriorly, with one pair of small eyes (Figure 40-8a). Five occipital antennae attached to ceratophores; antennal ratio 1:1.1:1.2. First apodous ring equal in length to prostomium; second apodous ring shorter, same length as following setigers. Branchiae beginning on setiger 42 and continuing to end of fragment, with up to six filaments. Dorsal cirri subulate (Figure 40-8b); ventral cirri short, conical. Notosetae represented by 4-5 acicula in dorsal cirri (Figure 40-8c). Neurosetae including pectinate setae (Figure 40-8d), limbate setae (Figure 40-8e), and compound spinigers (Figure 40-8f). Subacicular hooded hooks yellow, distally bifid, numbering 1-2 per parapodium beginning on setiger 48 (Figure 40-8g). Acicula light brown, distally blunt (Figure 40-8h). Maxillary formula 1:4:(5-6):3:1 left and 1:(4-5):0:(6-8):1 right.
REMARKS: Many Gulf of Mexico BLM-OCS specimens originally identified as M. sanguinea have since been referred to Marphysa cf. bellii and M. conferta.
PREVIOUSLY REPORTED HABITAT: Intertidal; soft, muddy sand mixed with clay and shell fragments.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off southern Texas (Figure 40-7); 65 m; clayey sand.

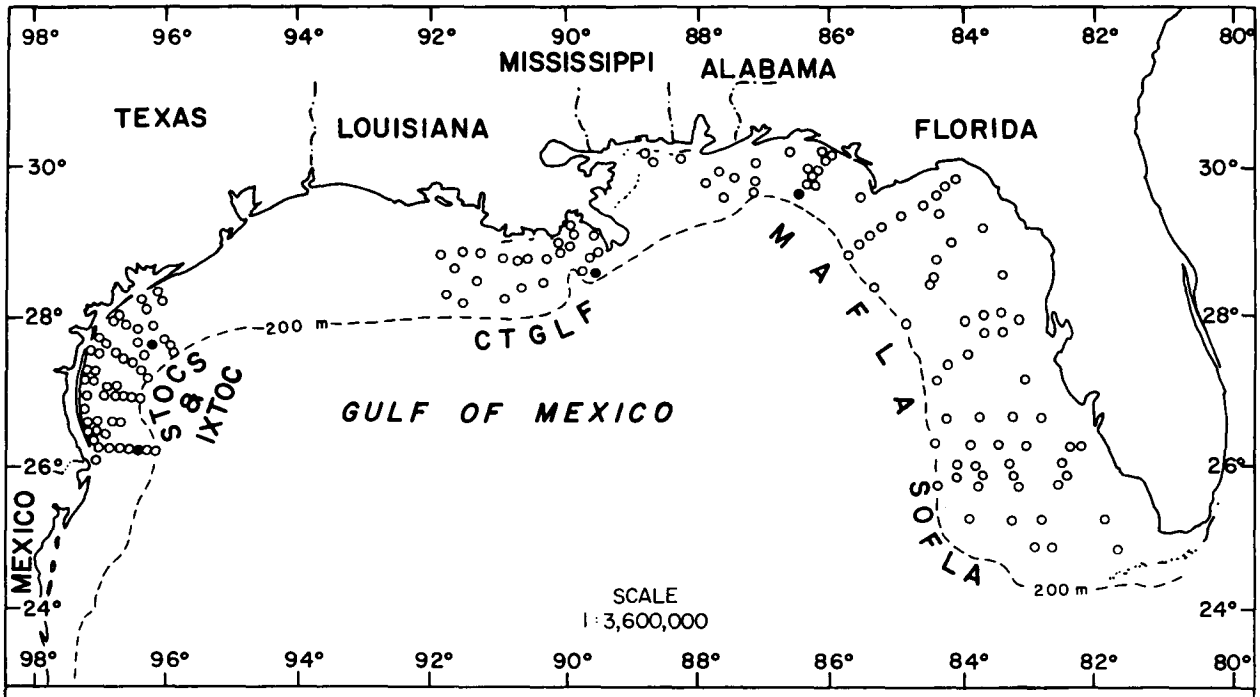

Figure 40-9. Distribution of Marphysa sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

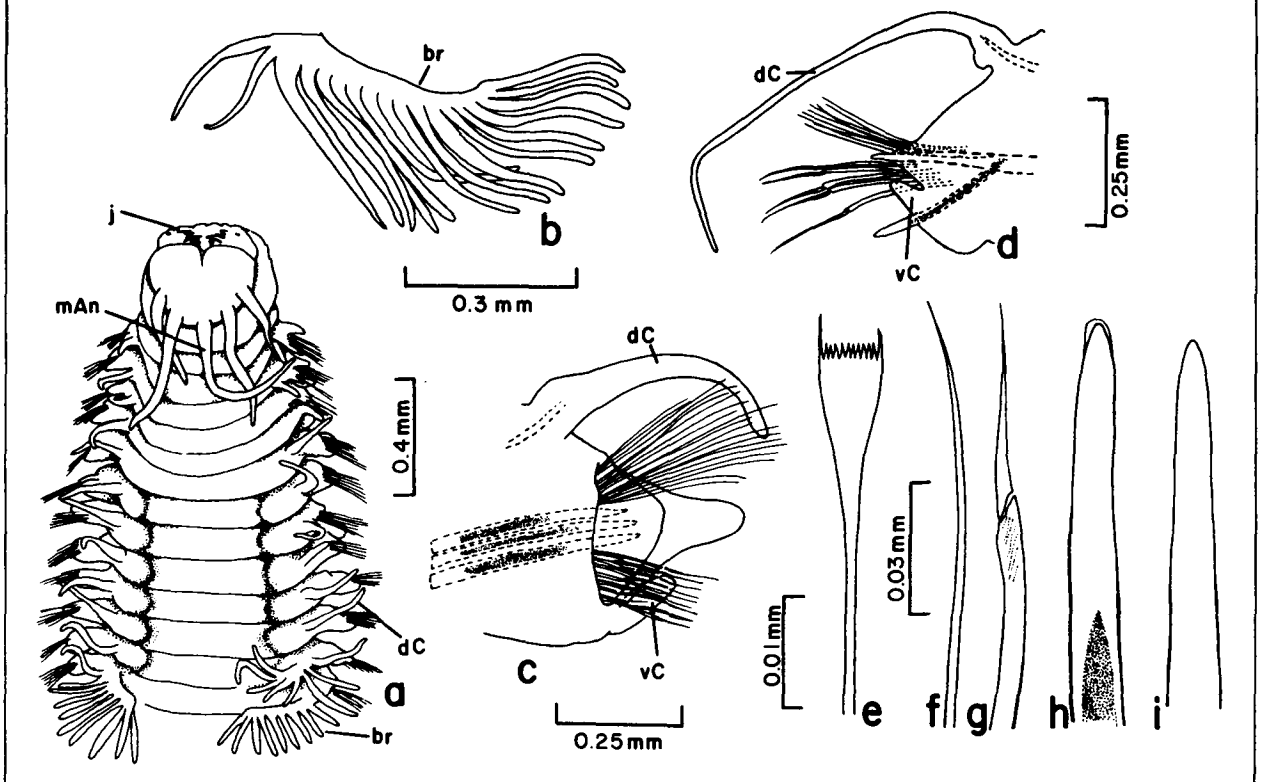

Figure 40-10. Marphysa sp. B: a, anterior end, dorsal view (prostomium tilted dorsally); b, branchia; c, anterior parapodium, anterior view; d, posterior parapodium, anterior view; e, pectinate seta; f, capillary seta; g, compound spiniger; h, subacicular hooded seta; i, aciculum.

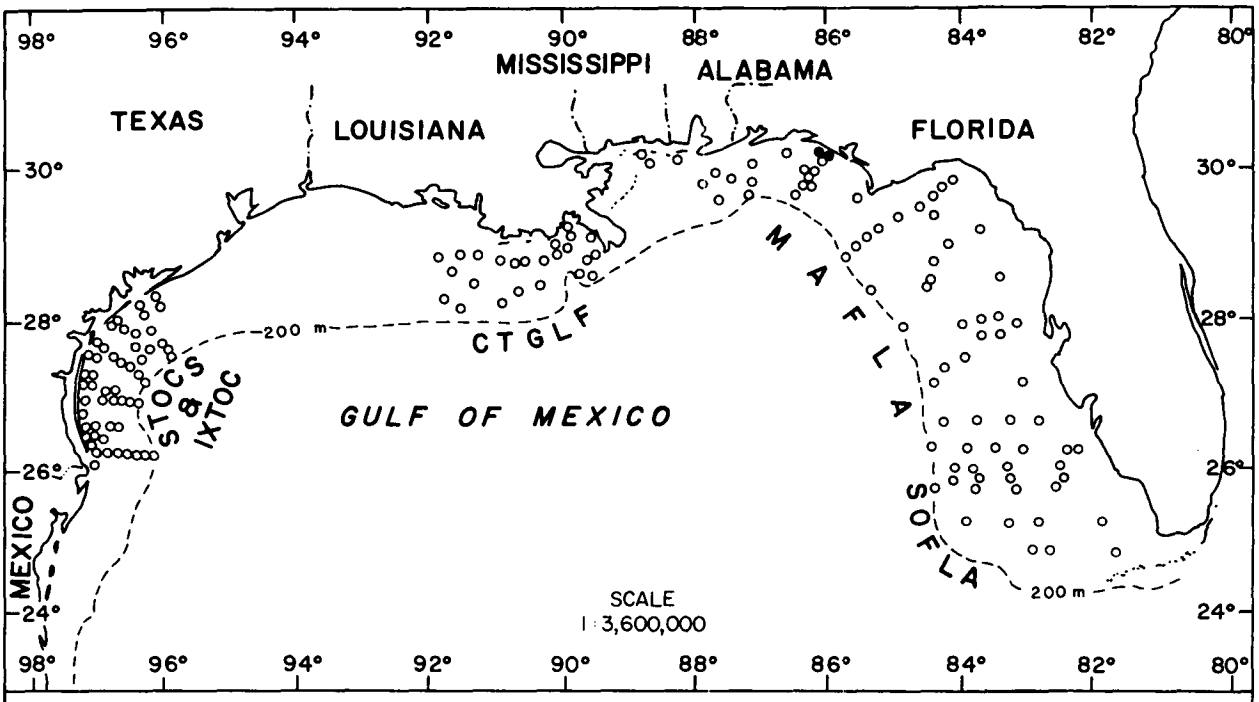

Figure 40-11. Distribution of Marphysa mortenseni on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

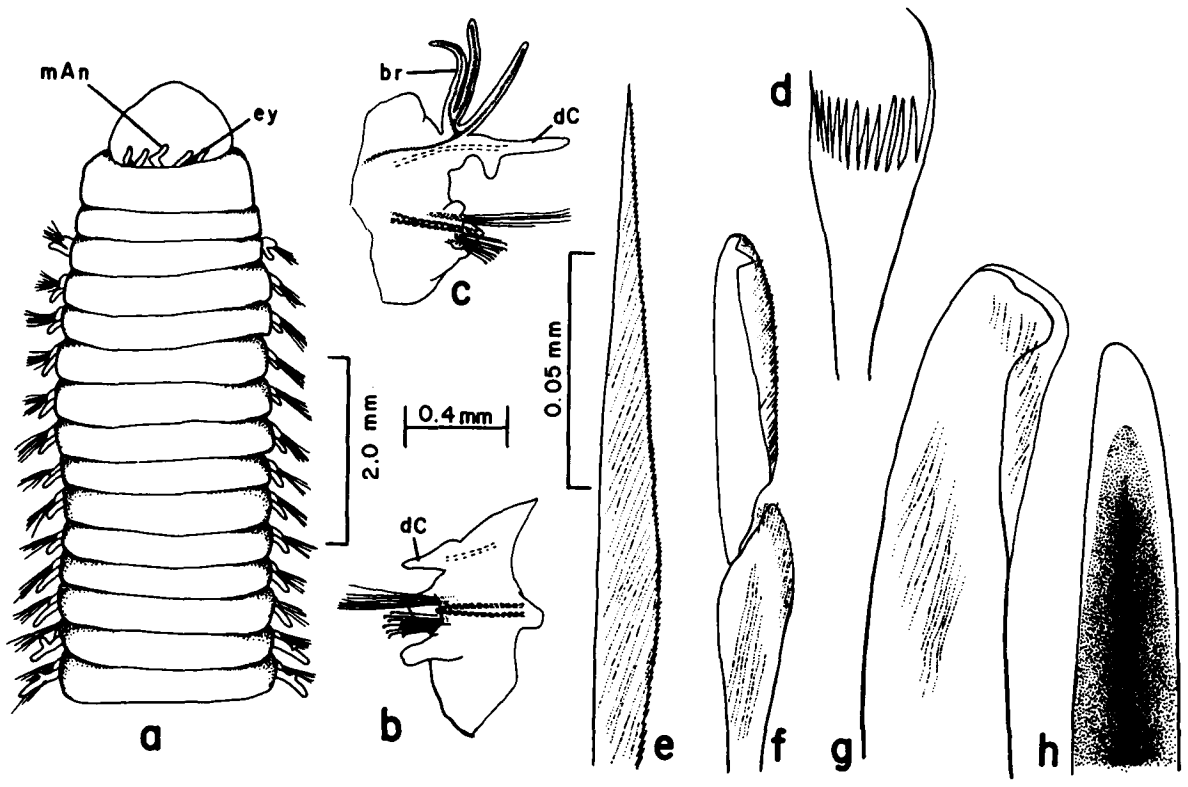

Figure 40-12. Marphysa mortenseni: a, anterior end, dorsal view; b, anterior parapodium, anterior view; c, posterior parapodium, anterior view; d, pectinate seta; e, limbate seta; f, compound falciger; g, subacicular hooded hook; h, aciculum.

DISTRIBUTION: Cosmopolitan in warm waters.

Marphysa sp. B
Figures 40-9, 10a-i

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2536H-9/75 (1 spec., USNM 90023); CTGLF 09-8/78 (1 spec., USNM 90018); STOCS 6/IV-1 F/76 (2 spec., USNM 90019), 6/IV-2 No date (1 spec., USNM 90022), 6/IV-3 Sp/77 (1 spec., USNM 90020), HR1-6 7/76 (1 spec., USNM 90021).
DESCRIPTION:
Length, 23+ mm (previously reported to 45 mm); width, to 2.5 mm (previously reported to 4 mm). Body large, pale; all specimens incomplete with up to 87 setigers. Prostomium globular, notched anteriorly, with five long, smooth occipital antennae (Figure 40-10a). Antennal ratio 1:1.2:1.4. Eyes absent. First apodous ring equal in length to prostomium; second apodous ring same length as following setigers. Branchiae beginning on setigers 11-13 and continuing to setigers 20-25, with up to 15 filaments (Figure 40-10b). Dorsal cirri subulate on prebranchial setigers (Figure 40-10c), longer and basally enlarged on posterior setigers (Figure 40-10d). Ventral cirri conical anteriorly, smaller and bulbous posteriorly. Notosetae represented by 3-4 acicula in dorsal cirri. Neurosetae including pectinate setae (Figure 40-10e), limbate setae (Figure 40-10f), and compound spinigers (Figure 40-10g). Subacicular setae single, hooded, light brown, distally entire (Figure 40-10h), present beginning about setigers 26-28. Acicula yellow, distally blunt (Figure 40-10i). Maxillary formula 1:(4-6):(6-8):(2-3):1 left and 1:(5-7):0:(5-7):1 right.
REMARKS: Marphysa sp. B most closely resembles M. disjuncta Hartman, 1961. It differs from the latter in lacking eyes, and in having branchiae beginning on setigers 11-13 rather than on setigers 13-14 and numbering 9-12 pairs rather than 15 pairs.
GULF OF MEXICO BLM-OCS OCCURRENCE: Few stations in northern Gulf (Figure 40-9); 65-189 m; clayey sand, silt, clayey silt.

Marphysa mortenseni Monro, 1928
Figures 40-11, 12a-h

Marphysa mortenseni Monro, 1928:86, figs. 9-12.
Marphysa mortenseni--Hartman, 1944b:129.
Marphysa mortenseni--Fauchald, 1970:63, pl. 7, fig. c.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2528H-2/78 (1 spec., USNM 90024), 2529E-9/75 (1 spec.).
DESCRIPTION:
Length, 57+ mm (previously reported to 47 mm); width, to 6 mm (previously reported to 5 mm). Body large, convex dorsally; both specimens incomplete with up to 115 setigers. Prostomium rounded, anteriorly entire, with one pair of small eyes (Figure 40-12a), and five short subulate antennae. Antennae all equal in length. First apodous ring about two-thirds length of prostomium; second apodous ring same length

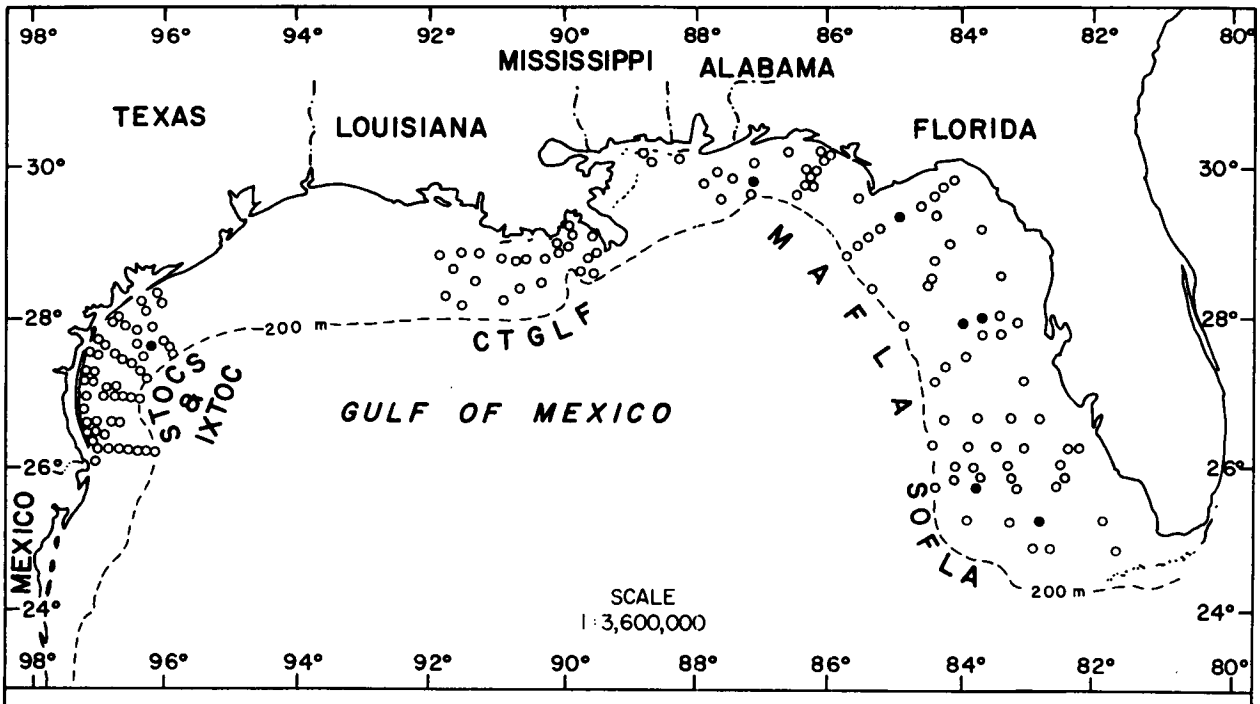

Figure 40-13. Distribution of Marphysa sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

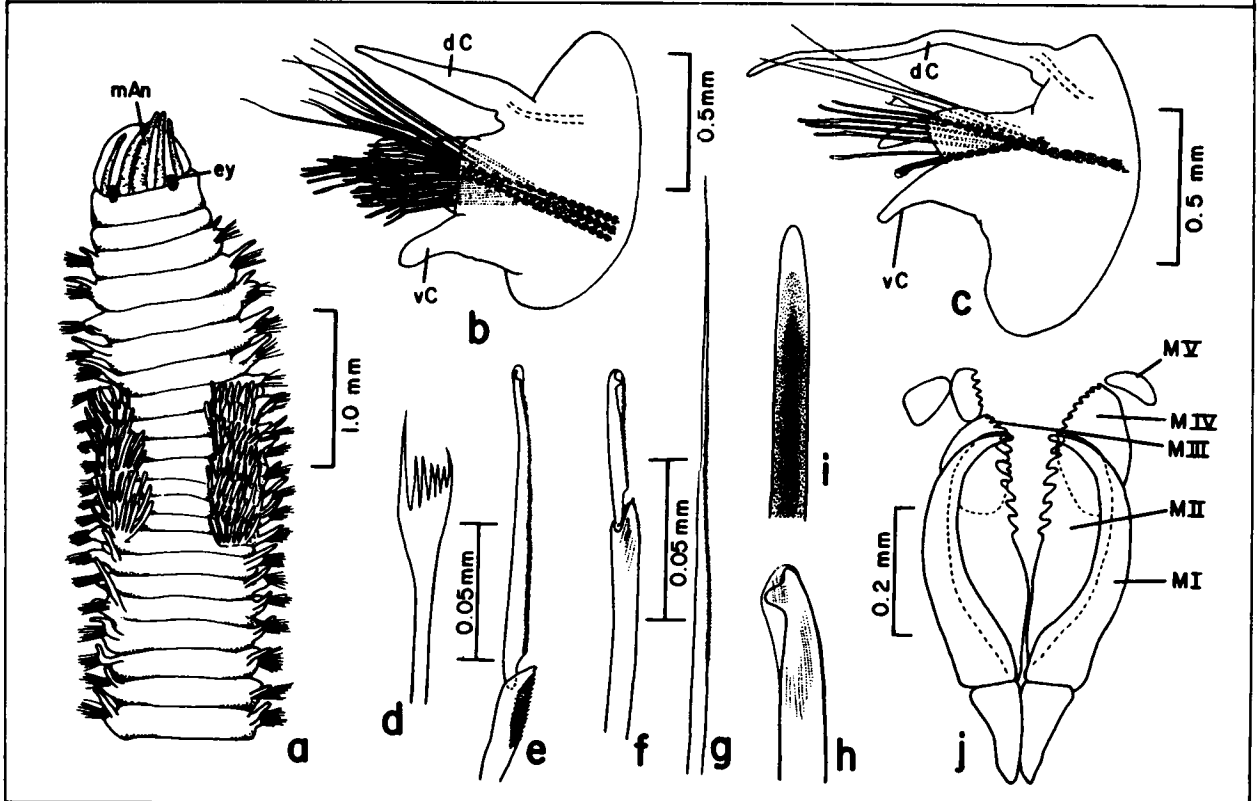

Figure 40-14. Marphysa sp. A: a, anterior end, dorsal view; b, anterior parapodium, anterior view; c, posterior parapodium, anterior view; d, pectinate seta; e, anterior compound falciger; f, posterior compound falciger; g, limbate seta; h, subacicular hooded hook; i, aciculum; j, maxillae.

as following setigers. Branchiae beginning on setiger 22 and continuing to end of fragments, with up to four filaments. Dorsal cirri short, subulate anteriorly (Figure 40-12b); bifurcate from setiger 12 (Figure 40-12c). Ventral cirri short, conical. Notosetae represented by 3-4 acicula in dorsal cirri. Neurosetae including pectinate setae (Figure 40-12d); limbate setae (Figure 40-12e); and hooded, bidentate falcigers (Figure 40-12f). Subacicular hooks single, yellow, hooded, vaguely bidentate distally (Figure 40-12g), beginning on setiger 29. Acicula dark brown to black, distally blunt (Figure 40-12h). Maxillary formula 1:8:6:4:1 left and 1:7:0:10:1 right.
REMARKS: BLM-OCS specimens of M. mortenseni do not have paired maxillae 3 as described by Monro (1928), but otherwise match previous descriptions.
PREVIOUSLY REPORTED HABITAT: Intertidal; sandy shore.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off Florida (Figure 40-11); 37-38 m; coarse sand.
DISTRIBUTION: Pacific side of Panama, southern California and Mexico, Gulf of Mexico.

Marphysa sp. A
Figures 40-13, 14a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 22C-11/80 (1 spec., USNM 90025); MAFLA 19C-5/74 (3 spec., USNM 90026), 2210H-2/78 (1 spec.), 2211F-2/78 (1 spec.), 2423E-7/76 (1 spec.), 2958E-11/77 (1 spec.); STOCS HR1-2 7/76 (1 spec., USNM 90027).
DESCRIPTION:
Length, 35+ mm; width, to 2 mm. Dorsum convex, pale; all specimens incomplete with up to 117 segments. Prostomium globular, anteriorly entire, with one pair of dark eyes (Figure 40-14a), and five irregularly wrinkled occipital antennae. Antennal ratio 1:1.2:1.4. First apodous ring slightly longer than second one. Branchiae beginning on setigers 8-15, numbering 5-14 pairs, with up to seven filaments. Dorsal cirri subulate on prebranchial setigers (Figure 40-14b), longer than setae on posterior setigers (Figure 40-14c). Ventral cirri digitiform throughout. Notosetae represented by 2-3 acicula in dorsal cirri. Neurosetae including pectinate setae (Figure 40-14d); hooded, bidentate falcigers with long blades anteriorly (Figure 40-14e), blades decreasing slightly in length posteriorly (Figure 40-14f); and limbate setae (Figure 40-14g). Subacicular hooks single, dark, hooded, bidentate (Figure 40-14h), present beginning on setigers 16-34. Acicula dark, distally blunt (Figure 40-14i). Maxillary formula 1:(5-6):(5-7):(2-4):1 left and 1:7:0:(5-12):1 right (Figure 40-14j).
REMARKS: Marphysa sp. A most closely resembles M. conferta; it differs from the latter in having unusually long falciger blades throughout the body.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered stations throughout northern Gulf (Figure 40-13); 19-120 m; coarse to fine sand, silty fine to very fine sand.

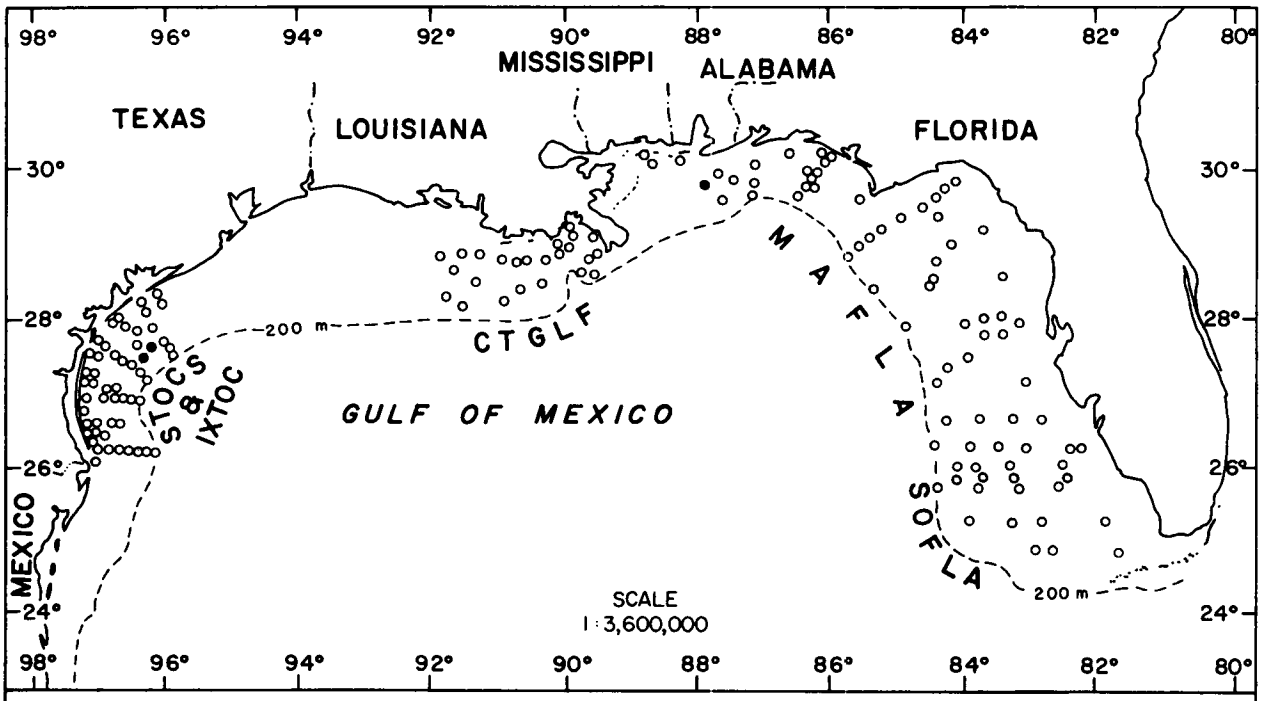

Figure 40-15. Distribution of Marphysa cf. conferta on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

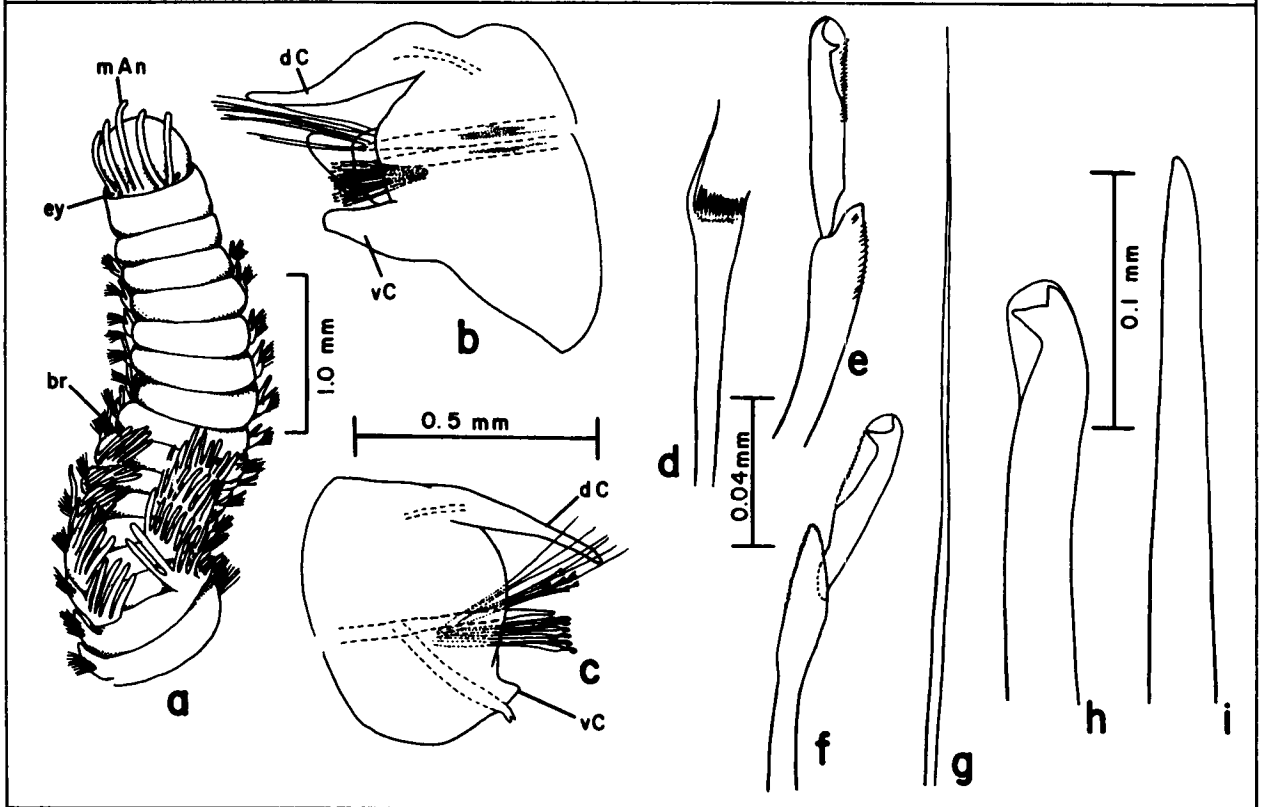

Figure 40-16. Marphysa cf. conferta: a, anterior end, dorsal view; b, anterior parapodium, anterior view; c, posterior parapodium, posterior view; d, pectinate seta; e, anterior compound falciger; f, posterior compound falciger; g, capillary seta; h, subacicular hooded hook; i, aciculum.

Marphysa cf. conferta Moore, 1911
Figures 40-15, 16a-i

Marphysa conferta Moore, 1911:252, pl. 16, figs. 29-34.
Marphysa conferta--Hartman, 1944b:129.
Marphysa conferta--Fauchald, 1970:59.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2640I-7/77 (1 spec., USNM 90028); STOCS HR1-6 11/76 (2 spec., USNM 90030), SB3-6 Sp/76 (1 spec., USNM 90029).
DESCRIPTION:
Length, 15+ mm (previously reported to 24 mm); width, to 1 mm (previously reported to 1.9 mm). Dorsum convex, pale; all specimens incomplete with up to 54 setigers. Prostomium globular, anteriorly entire, with two small eyes (Figure 40-16a), and five long, smooth occipital antennae. Antennal ratio 1:1.2:1.4. First apodous ring about two-thirds length of prostomium; second apodous ring about same length as following setigers. Branchiae beginning on setigers 7-17 and continuing to end of fragment, with up to six filaments. Dorsal cirri subulate throughout (Figure 40-16b). Ventral cirri conical anteriorly, bulbous posteriorly (Figure 40-16c). Notosetae represented by 2-3 acicula in dorsal cirri. Neurosetae including pectinate setae (Figure 40-16d); hooded, bidentate falcigers with fairly long blades anteriorly (Figure 40-16e), blades becoming shorter posteriorly (Figure 40-16f); and capillary setae (Figure 40-16g). Subacicular hooded hooks single, bidentate (Figure 40-16h), present from setiger 17. Acicula light brown to yellow, distally blunt (Figure 40-16i). Maxillary formula 1:6:(4-5):3:1 left and 1:6:0:(5-7):1 right.
REMARKS: These specimens differ from previous descriptions of M. conferta (Moore, 1911) only in having a smooth anterior prostomial margin, and more numerous branchiae which begin on setiger 7 rather than on setiger 10.
PREVIOUSLY REPORTED HABITAT: 38-40 fathoms, coarse gray sand, yellow mud and rocks; kelp holdfasts.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Alabama and two off Texas (Figure 40-15); 35-82 m; medium sand, silty clay.
DISTRIBUTION: Southern California to northern Baja California, Gulf of Mexico.

Genus Eunice Cuvier, 1817

TYPE SPECIES: Nereis aphroditois Pallas, 1788.
REFERENCES:
Fauvel, 1923:398.
Hartman, 1944b:98.
Day, 1967:380.
Fauchald, 1970:8.
Gardiner, 1976:179.
DIAGNOSIS: Prostomium with five smooth, wrinkled or distinctly articled occipital antennae. Palps fused to prostomium ventrally. One pair of tentacular cirri present on second apodous ring. Parapodia subbiramous with long dorsal cirri, blunt setigerous lobes and conical ventral cirri. Branchiae arising from base of dorsal cirri as simple or palmate

filaments. Setae including pectinate setae, limbate setae, hooded bidentate falcigers, and sometimes spinigers. Subacicular hooks pale or dark; uni-, bi- or tridentate. Acicula numbering 1-3 per neuropodium, pale or dark, distally tapered or expanded (Figure 40-20e).

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

1a. Subacicular hooks tridentate (Figure 40-18h). 2
1b. Subacicular hooks bidentate (Figure 40-22g) 3

2a. Acicula distally tapered (Figure 40-18i); compound falcigers with pointed hoods (Figure 40-18g) . . . . . Eunice vittata, p. 40-20
2b. Acicula distally expanded (Figure 40-20i); compound falcigers without pointed hoods (Figure 40-20g). . . . . Eunice antennata, p. 40-23

3a. Subacicular hooks with strongly recurved teeth (Figure 40-22g); acicula distally expanded (Figure 40-22h). . . . . Eunice filamentosa, p. 40-25
3b. Subacicular hooks without strongly recurved teeth (Figure 40-24h); acicula distally tapered (Figure 40-24i). 4

4a. Prostomial antennae and tentacular cirri distinctly articled (Figure 40-24a); branchiae beginning on setiger 3. . . . . .Eunice websteri, p. 40-27
4b. Prostomial antennae and tentacular cirri irregularly wrinkled (Figure 40-26a); branchiae beginning on setigers 71-73. . . . . .Eunice tenuis, p. 40-27

Eunice vittata (Delle Chiaje, 1828)
Figures 40-17, 18a-i

Eunice vittata--Fauvel, 1923:404, fig. 158h-n.
Eunice vittata--Hartman, 1944b:118.
Eunice vittata--Day, 1967:385, fig. 17.3.a-e.
Eunice vittata--Fauchald, 1970:48, pl. 3, figs. 1,m.
Eunice vittata--Knox and Green, 1972:461.
Eunice vittata--Gardiner, 1976:181, fig. 22k-n.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2D-12/81 (7 spec., USNM 90032), 16C-7/81 (3 spec., USNM 90031); MAFLA 2422J-7/76 (2 spec.), 2423B-7/76 (5 spec.), 2423D-7/76 (6 spec.), 2423F-7/76 (3 spec.), 2423H-7/76 (5 spec.), 2423I-7/76 (4 spec.), 2423J-7/76 (6 spec.), 2528C-No date (2 spec.), 2528E-6/75 (1 spec.), 2528H-6/75 (1 spec.), 2531G-6/75 (1 spec.), 2531H-7/77 (2 spec.), 2640H-6/75 (1 spec.), 2642I-6/75 (1 spec.), 2852-7/76 (1 spec., USNM 55868); STOCS HR1-1 7/76 (1 spec., USNM 90034), HR1-4 W/76 (6 spec., USNM 90036), HR1-6 11/76 (1 spec., USNM 90035), SB3-3 12/76 (1 spec., USNM 90033).
Supplementary Material:
North Carolina--Onslow Bay, Nov. 1974, on rock and dead coral, E. Powell coll., S. L. Gardiner ID. (1 spec., USNM 52988).

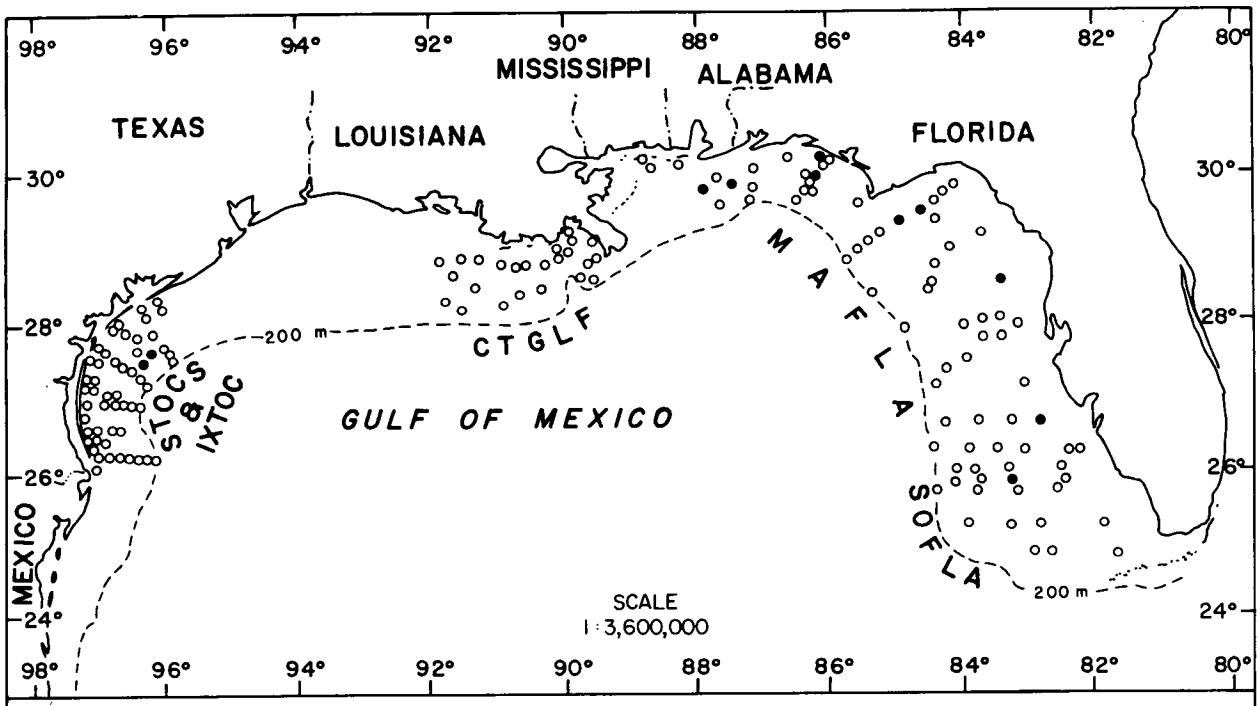

Figure 40-17. Distribution of Eunice vittata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

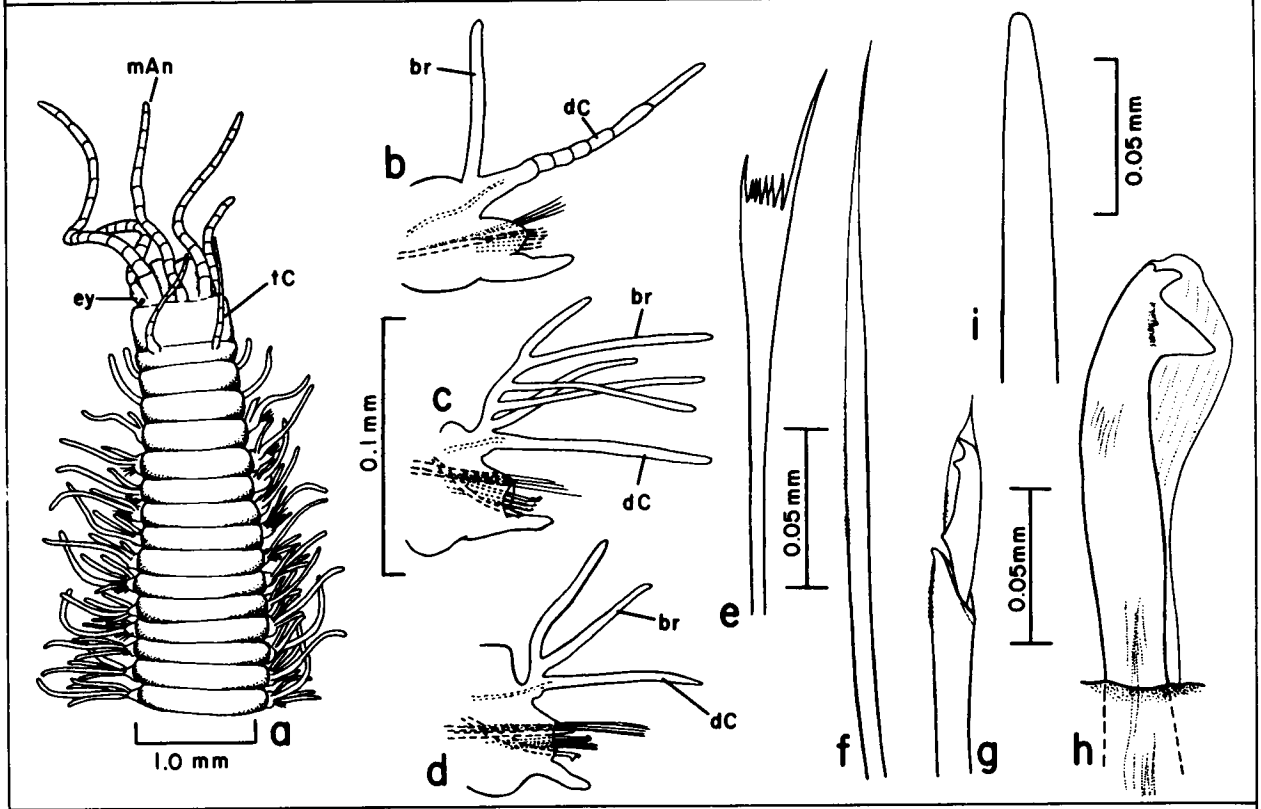

Figure 40-18. Eunice vittata: a, anterior end, dorsal view; b, anterior parapodium, posterior view; c, branchial parapodium, posterior view; d, posterior parapodium, posterior view; e, pectinate seta; f, capillary seta; g, compound falciger; h, subacicular hooded hook; i, aciculum.

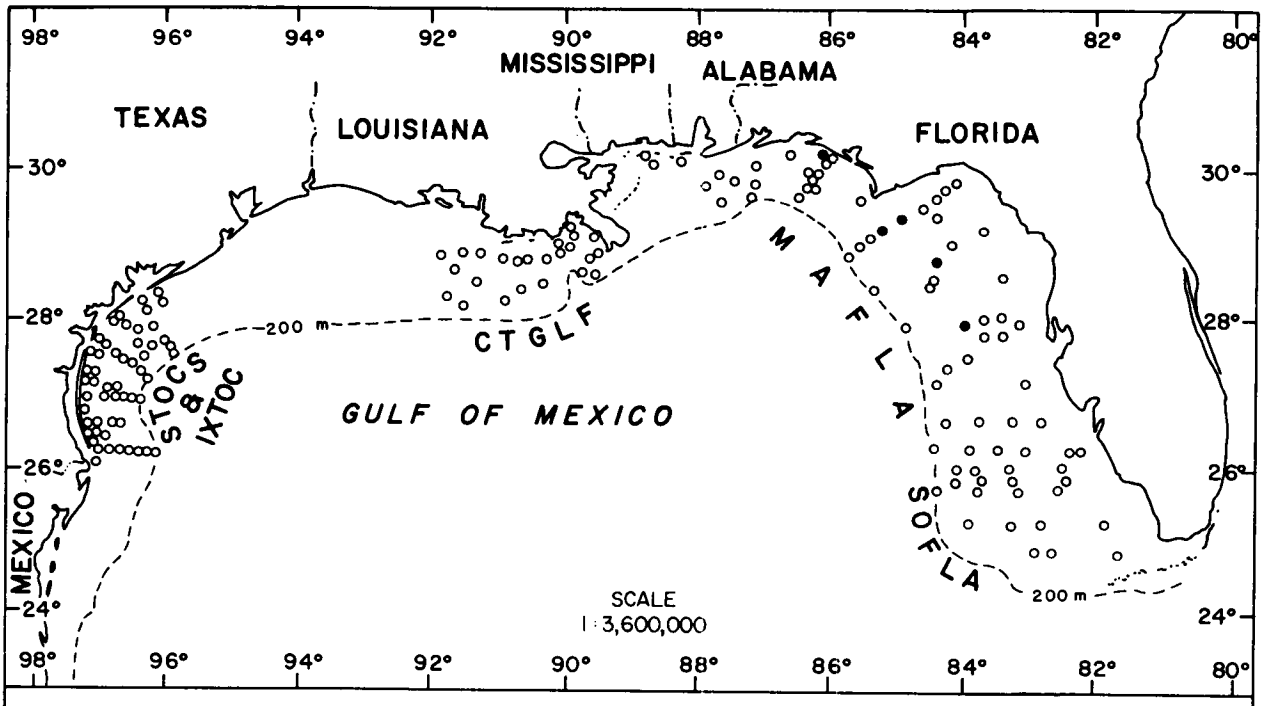

Figure 40-19. Distribution of Eunice antennata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

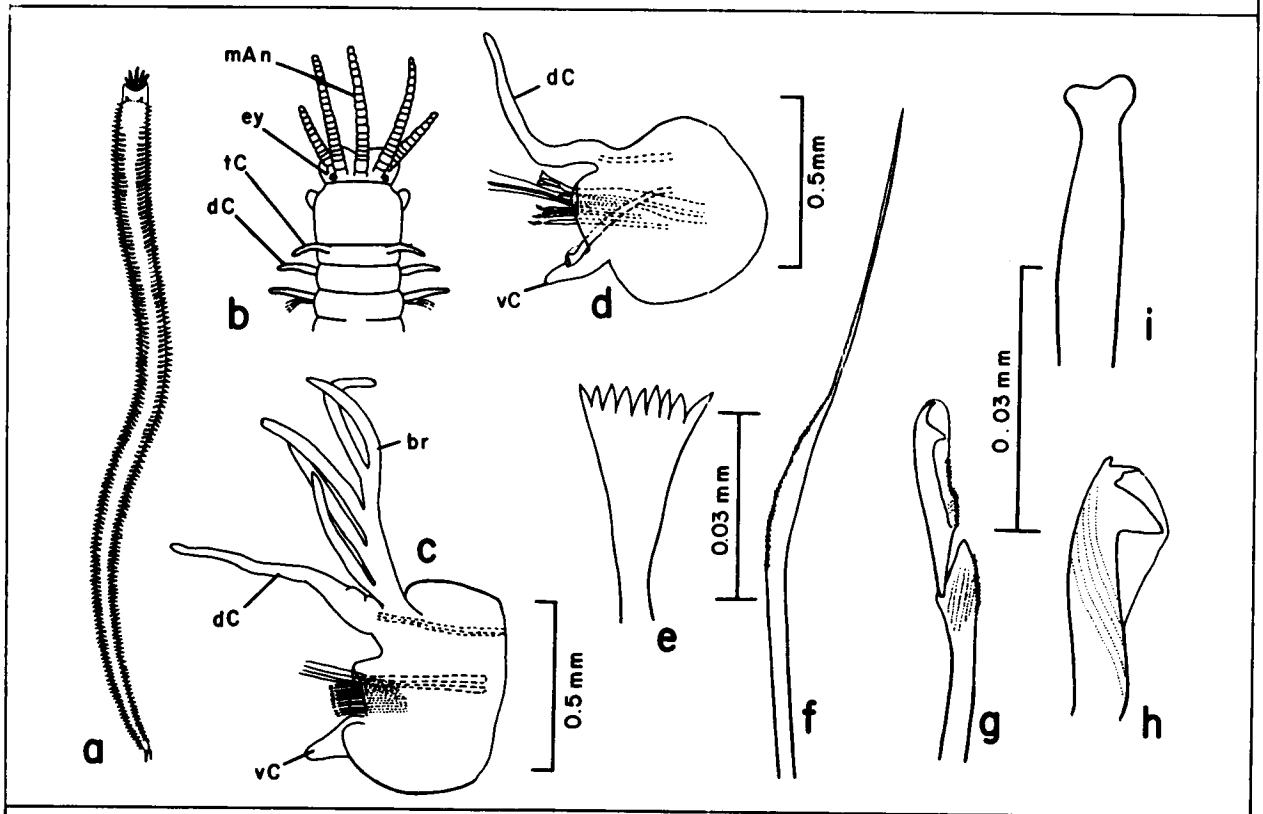

Figure 40-20. Eunice antennata: a, whole worm, dorsal view; b, anterior end, dorsal view; c, anterior parapodium, posterior view; d, posterior parapodium, posterior view; e, pectinate seta; f, limbate seta; g, compound falciger; h, subacicular hooded hook; i, aciculum (Figure a after Day, 1967:383, fig. 17.2.k; figure b after Gardiner, 1976:180, fig. 22c).

DESCRIPTION:
Length, 27+ mm (previously reported to 38 mm); width, to 3 mm (previously reported to 3 mm). Dorsum pale; all specimens incomplete with up to 68 setigers. Prostomium globular, notched anteriorly (Figure 40-18a), with one pair of dark eyes and five occipital antennae having cylindrical articles. Antennal ratio 1:2:2. First apodous ring longer than prostomium; second apodous ring short, with two long, cylindrically articled tentacular cirri extending beyond anterior margin of prostomium. Branchiae beginning as single filaments on setiger 3 (Figure 40-18b), reaching maximum of five filaments by setiger 15 (Figure 40-18c), continuing to end of fragments (Figure 40-18d). Dorsal cirri articled anteriorly, filiform posteriorly. Notosetae represented by 2-3 acicula in dorsal cirri. Neurosetae including 4-6 superior pectinate setae (Figure 40-18e); finely serrate limbate setae (Figure 40-18f); and compound bidentate hooks with pointed hoods (Figure 40-18g). Subacicular hooded hooks yellow, tridentate (Figure 40-18h), first appearing about setiger 18. Acicula yellow, distally blunt (Figure 40-18i). Maxillary formula 1:9:9:10:1 left and 1:10:0:13:1 right.
REMARKS: Some specimens of Eunice vittata were originally identified as Eunice rubra in the BLM-STOCS program. They differ from E. rubra in having branchiae beginning on setiger 3 rather than setiger 5, pointed hoods on the compound bidentate hooks, and acicula which are straight and distally blunt rather than curved and distally bifid.
PREVIOUSLY REPORTED HABITAT: Intertidal on dead coral and rock.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records throughout northern Gulf (Figure 40-17); 19-82 m; coarse to fine sand, silty fine sand, silty clay.
DISTRIBUTION: English Channel, Mediterranean, West Africa, North Carolina to West Indies, Gulf of Mexico, California to Panama, New Zealand.

Eunice antennata (Savigny, 1820)
Figures 40-19, 20a-i

Eunice antennata--Hartman, 1944b:115, pl. 7, figs. 154-156.
Eunice antennata--Day, 1967:384, fig. 17.2.k-q; 1973:53.
Eunice antennata--Gardiner, 1976:181, fig. 22c-j.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211J-7/76 (2 spec.), 2316E-7/76 (1 spec.), 2423B-7/76 (1 spec.), 2423G-7/76 (1 spec.), 2424B-7/76 (3 spec., USNM 90038), 2528C-6/75 (1 spec.), 2528K-2/78 (3 spec., USNM 90039), 2528-2/78 (2 spec., USNM 90037).
DESCRIPTION:
Length, 35+ mm (previously reported to 110 mm); width, to 2.5 mm (previously reported to 6 mm). Body long, tapering gently posteriorly (Figure 40-20a); all specimens incomplete with up to 40 setigers. Prostomium globular, notched anteriorly (Figure 40-20b), with one pair of distinct eyes and five distinctly moniliform occipital antennae. Antennal ratio 1:1.2:1.3. First apodous ring wrapping laterally around prostomium, about same length as prostomium; second apodous ring short, with two small, faintly articulated tentacular cirri. Setigers 1-3 without branchiae; setigers 4-6 with single branchial filaments arising from base of dorsal cirri; thereafter number of branchial filaments

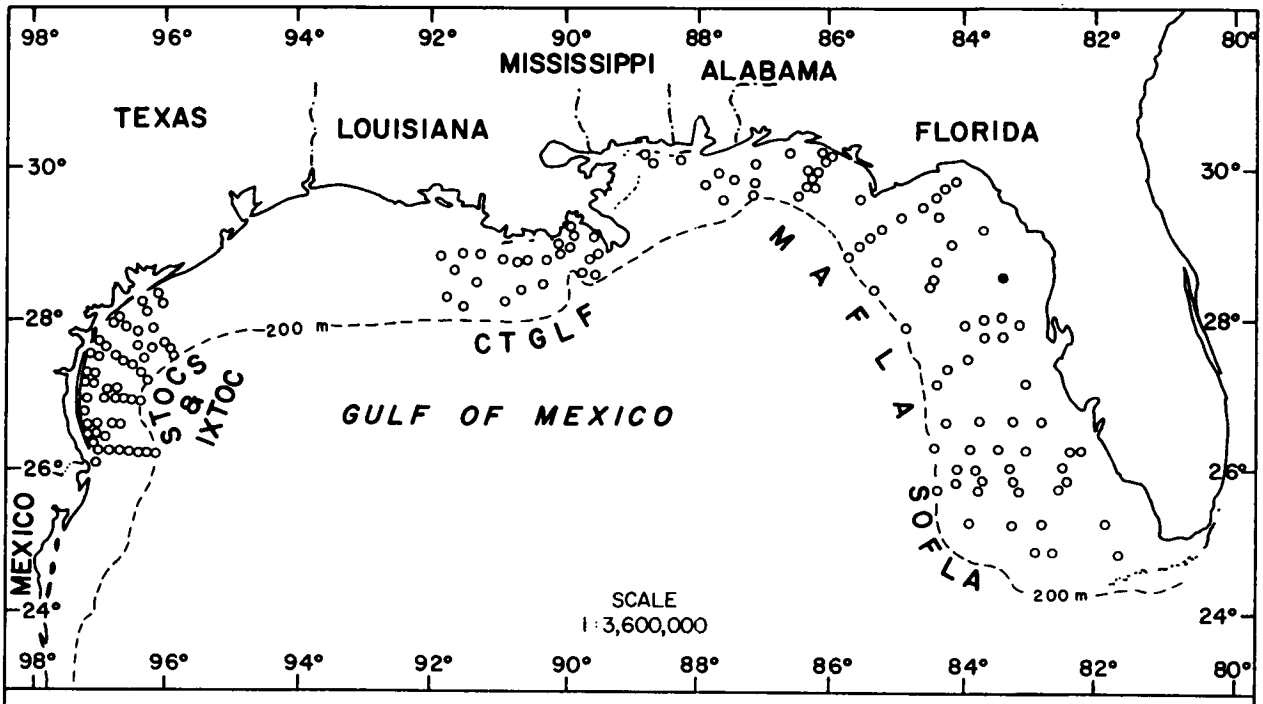

Figure 40-21. Distribution of Eunice filamentosa on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

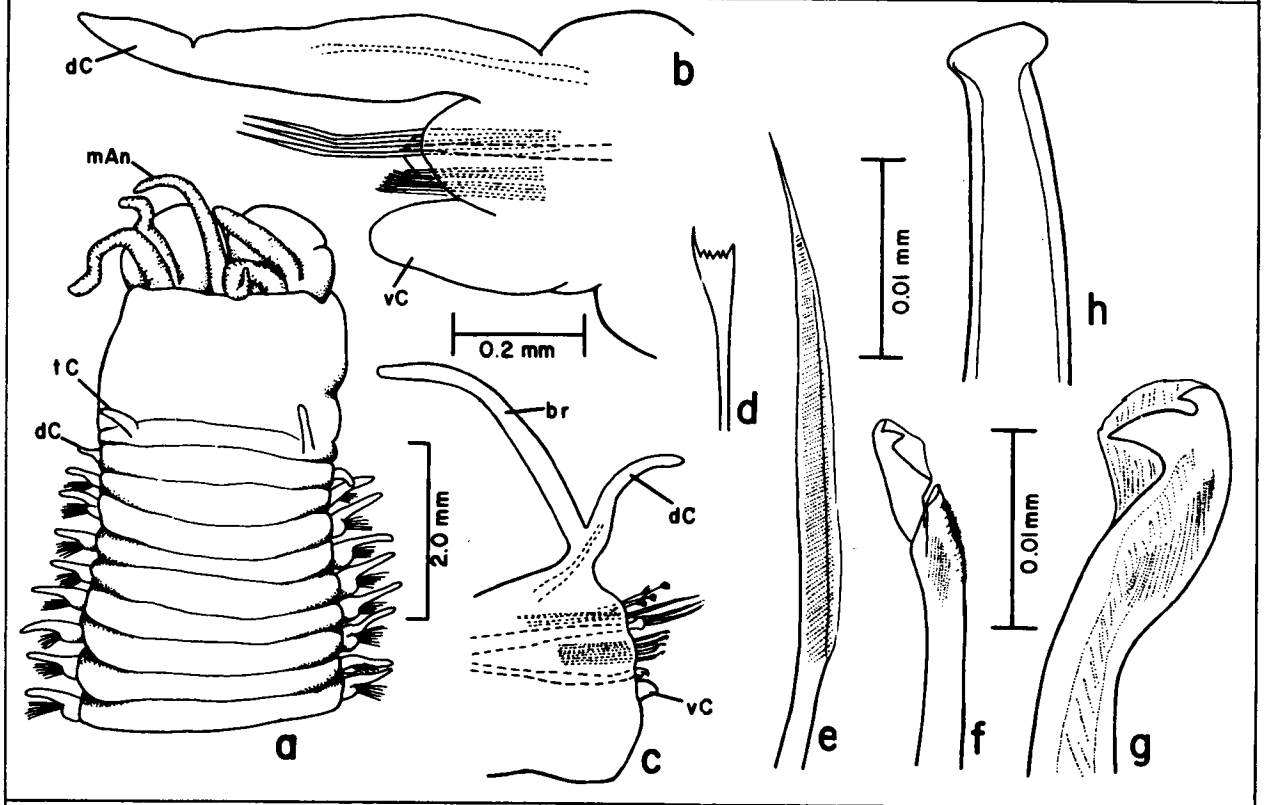

Figure 40-22. Eunice filamentosa: a, anterior end, dorsal view; b, anterior parapodium, posterior view; c, posterior parapodium, posterior view; d, pectinate seta; e, limbate seta; f, compound falciger; g, subacicular hooded hook; h, aciculum.

increasing to about five on setiger 15, then decreasing to one by setiger 20 or 28, where branchiae cease. Branchiae reappearing as single filaments posteriorly. Dorsal cirri long anteriorly (Figure 40-20c) and posteriorly (Figure 40-20d). Ventral cirri conical, arising from body wall on abranchiate setigers, projecting from neuropodial lobes in branchial region. Notosetae represented by 3-4 internal acicula in dorsal cirri. Neurosetae including pectinate setae (Figure 40-20e), serrate capillary setae (Figure 40-20f) and compound bidentate falcigers (Figure 40-20g). Subacicular hooded hooks yellow, tridentate (Figure 40-20h), beginning about setiger 15. Acicula yellow, distally expanded (Figure 40-20i). Pygidium with two long anal cirri. Maxillary formula 1:8:8:11:0 left and 1:6:0:8:0 right.
REMARKS: Specimens of Eunice antennata from the BLM-OCS material have longer occipital antennae and fewer branchial filaments than those reported by Day (1967:384) and Gardiner (1976:181), although the setae match well. E. australis Day (1967:385) closely resembles E. antennata but has no branchiae posteriorly.
PREVIOUSLY REPORTED HABITAT: Intertidal to 275 m; on coral, shelly and rock bottoms.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off Florida (Figure 40-19); 19-43 m; coarse to medium sand, silty fine sand.
DISTRIBUTION: Cosmopolitan in subtropical and tropical waters.

Eunice filamentosa Grube, 1856
Figures 40-21, 22a-h

Eunice filamentosa--Monro, 1933d:65, fig. 27.
Eunice filamentosa--Hartman, 1944b:107, pl. 6, figs. 123-126.
Eunice filamentosa--Fauchald, 1970:31, pl. 3, figs. c-g.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2852H-7/76 (1 spec., USNM 90040).
Supplementary Material:
North Carolina--off Beaufort, 34°04'N, 75°25'W, 20 m, Nov. 1965, J. H. Day coll./ID. (1 spec., USNM 51135).
DESCRIPTION:
Length, 15+ mm (previously reported to 100 mm); width, 2 mm (previously reported to 3 mm). Body pale dorsally; incomplete with 85 setigers. Prostomium globular, deeply incised anteriorly (Figure 40-22a), with one pair of eyes, and five irregularly wrinkled occipital antennae. Antennal ratio 1:1.25:1.5. First apodous ring about twice as long as prostomium. Tentacular cirri short, about one-third length of first apodous ring. Branchiae beginning on setiger 21 as single filaments and continuing as such to end of fragment. Dorsal cirri digitiform. Ventral cirri long on setigers 1-3 (Figure 40-22b), thereafter short, blunt, arising from neuropodial pad (Figure 40-22c). Notosetae represented by 3-4 acicula in dorsal cirri. Neurosetae including pectinate setae (Figure 40-22d); limbate setae (Figure 40-22e); and compound, hooded, bidentate falcigers with curved shafts (Figure 40-22f). Subacicular hooded hooks bidentate, amber, with recurved teeth (Figure 40-22g). Acicula yellow, distally expanded (Figure 40-22h).
REMARKS: E. filamentosa differs from other described species of the genus in the unique "beaked" shape of the bidentate subacicular hooks.

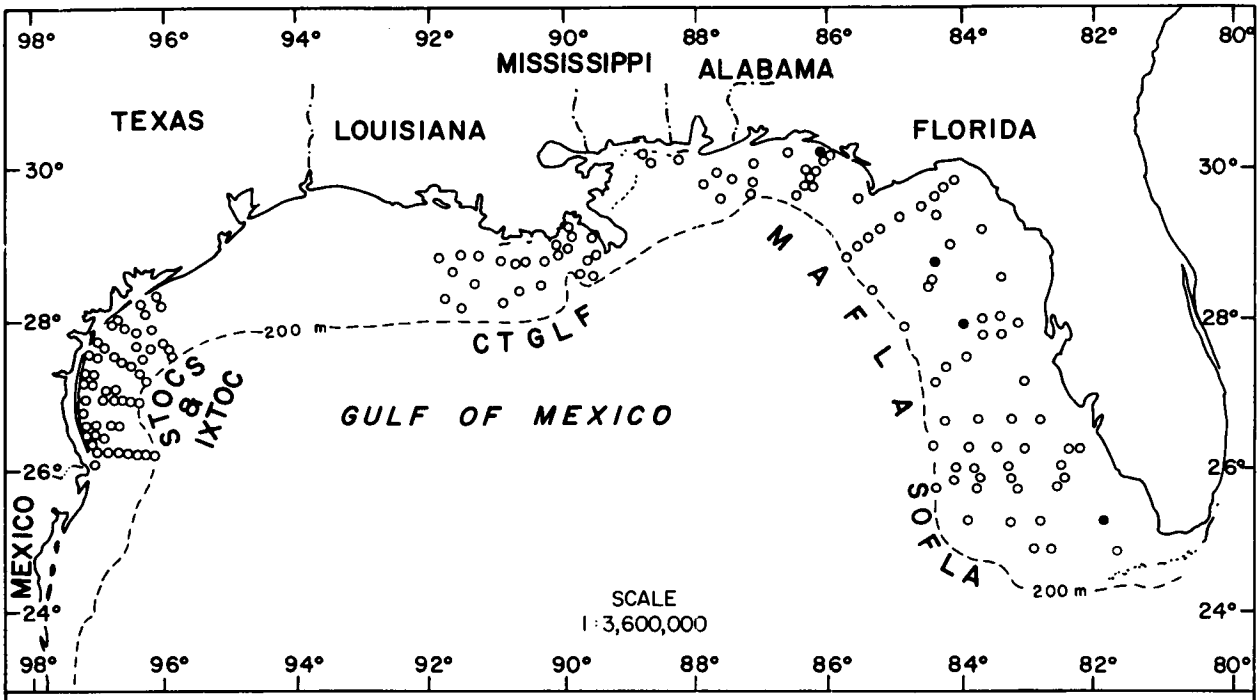

Figure 40-23. Distribution of Eunice websteri on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

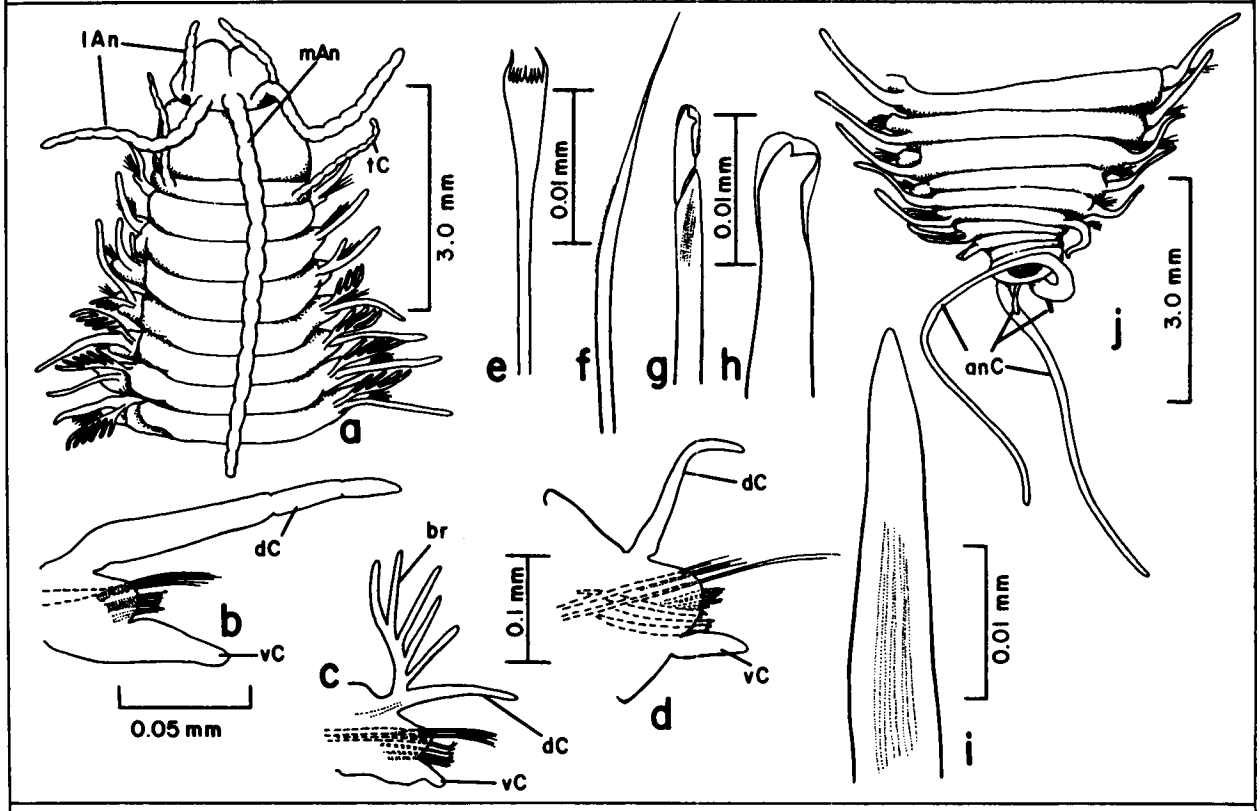

Figure 40-24. Eunice websteri: a, anterior end, dorsal view; b, anterior parapodium, posterior view; c, branchial parapodium, posterior view; d, posterior parapodium, posterior view; e, pectinate seta; f, limbate seta; g, compound falciger; h, subacicular hooded hook; i, aciculum; j, posterior end, dorsal view.

PREVIOUSLY REPORTED HABITAT: Intertidal to 63 m; on gravel.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Florida (Figure 40-21); 22 m; medium sand.
DISTRIBUTION: Eastern and western tropical America, Bermuda, Gulf of Mexico.

Eunice websteri Fauchald, 1969
Figures 40-23, 24a-j

Eunice longicirrata Webster, 1884:318, pl. 12, figs. 75-80.
Eunice websteri Fauchald, 1969:12, fig. 6a-e.
Eunice websteri--Gardiner, 1976:179, fig. 22a,b.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 20A-8/81 (1 spec., USNM 90041); MAFLA 2211H-7/76 (1 spec.), 2316H-7/76 (1 spec.); 2528K-2/78 (1 spec., USNM 90042).
DESCRIPTION:
Length, to 52 mm (previously reported to 110 mm); width, to 4 mm (previously reported to 4 mm). Dorsum pale, convex dorsally, flattened ventrally; largest complete specimen with 141 setigers. Prostomium globular, deeply notched anteriorly (Figure 40-24a), with one pair of eyes occasionally concealed by peristomium, and five occipital antennae having distinct cylindrical articles. Antennal ratio 1:1.75:3.0. First apodous ring longer than prostomium; second apodous ring shorter, with two long, cylindrically articled tentacular cirri extending anteriorly beyond eyes. Branchiae beginning on setiger 3 as single filaments, reaching maximum of nine filaments by setiger 20, continuing to setiger 30. Dorsal cirri long, cylindrically articled on first four setigers, cirriform thereafter. Ventral cirri long on first five setigers (Figure 40-24b), becoming pad-like with bulbous tips by setiger 7 (Figure 40-24c), more elongate posteriorly (Figure 40-24d). Notosetae represented by 2-3 internal acicula in dorsal cirri. Neurosetae including pectinate setae (Figure 40-24e), serrate capillary setae (Figure 40-24f) and hooded, bidentate falcigers (Figure 40-24g). Subacicular hooded hooks bidentate (Figure 40-24h), beginning about setiger 28. Acicula yellow, distally pointed or blunt (Figure 40-24i). Pygidium with four anal cirri (Figure 40-24j). Maxillary formula 1:7:9:8:1 left and 1:8:0:13:1 right.
REMARKS: Eunice websteri was originally described as E. longicirrata by Webster (1884). Fauchald (1969) changed the specific name to websteri because of a previous description of Nicidion longicirrata (Grube, 1856), as Nicidion is now considered a subgenus of Eunice.
PREVIOUSLY REPORTED HABITAT: Intertidal to shallow depths.
GULF OF MEXICO BLM-OCS OCCURRENCE: Few records off Florida (Figure 40-23); 22-43 m; coarse sand, silty fine sand.
DISTRIBUTION: North Carolina, Bermuda, Gulf of Mexico, West Indies.

Eunice tenuis (Treadwell, 1921)
Figures 40-25, 26a-h

Leodice tenuis Treadwell, 1921:51, pl. 4, fig. 11, text-figs. 154-163.
?Eunice tenuis--Hartman, 1956:283.

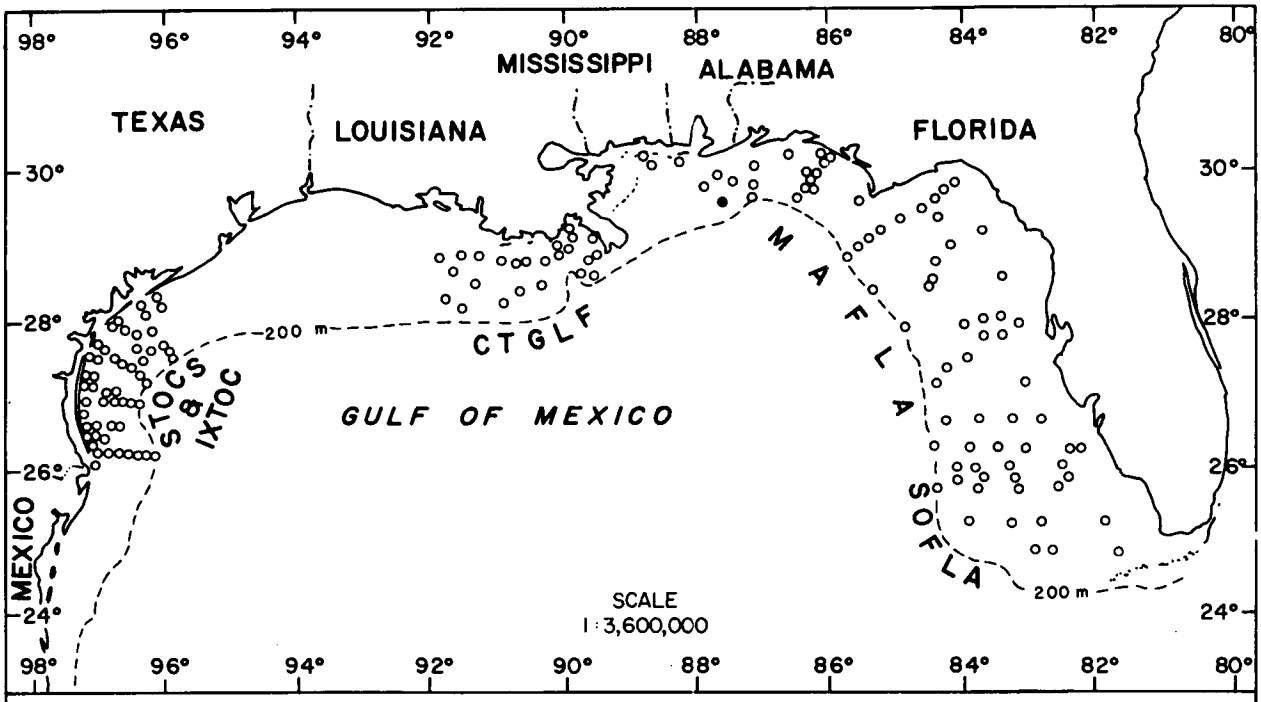

Figure 40-25. Distribution of Eunice tenuis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

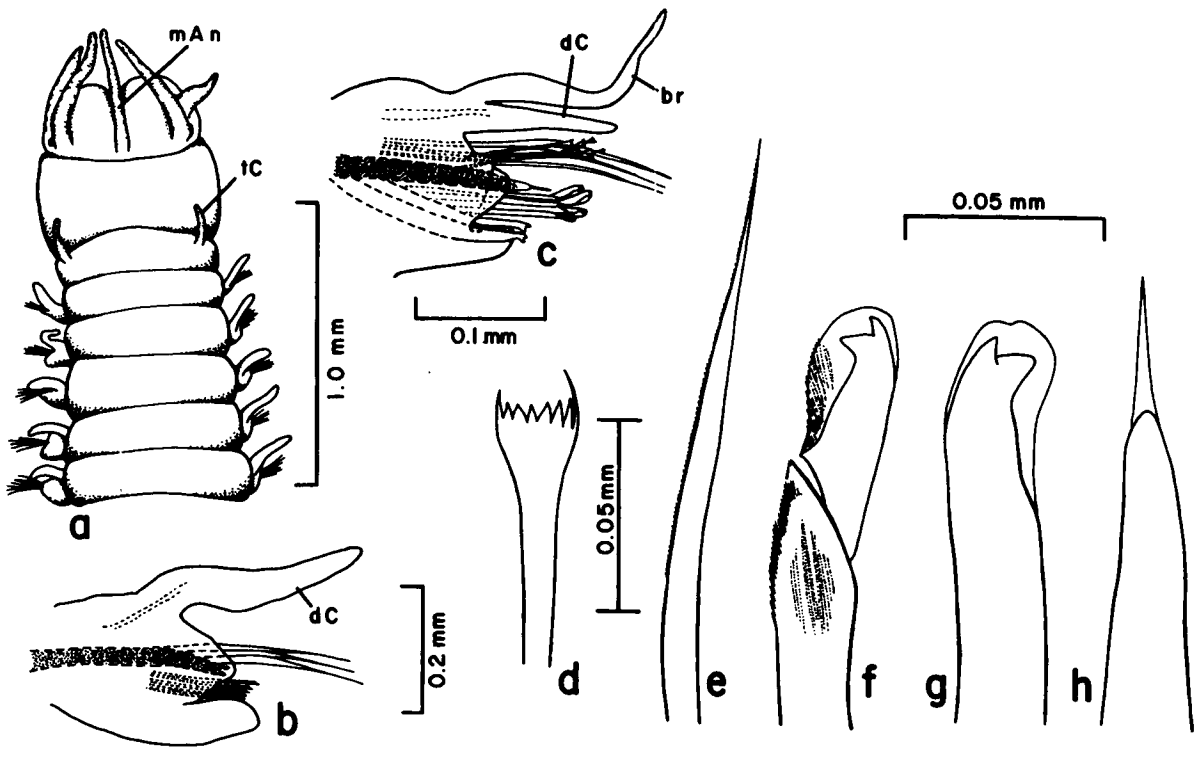

Figure 40-26. Eunice tenuis: a, anterior end, dorsal view; b, anterior parapodium, posterior view; c, posterior parapodium, posterior view; d, pectinate seta; e, limbate seta; f, compound falciger; g, subacicular hooded hook; h, aciculum.

Eunice tenuis--Gardiner, 1976:182, fig. 22u-x.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 14D-5/74 (1 spec., USNM 90043).
DESCRIPTION:
Length, 40.0+ mm (previously reported to 460 mm); width, to 0.8 mm. Dorsum convex, pale; only specimen incomplete with 168 setigers. Prostomium globular, deeply notched anteriorly (Figure 40-26a); with one pair of eyes occasionally concealed by peristomium; and five irregularly wrinkled occipital antennae. Antennal ratio 1:1.2:1.2. First apodous ring about as long as prostomium; second apodous ring shorter, with two short, irregularly wrinkled tentacular cirri. Branchiae beginning on setiger 71 as single filaments and continuing as such to end of fragment. Dorsal cirri digitiform anteriorly (Figure 40-26b), more cirriform posteriorly (Figure 40-26c). Ventral cirri long on first three setigers, becoming pad-like with bulbous tips by setiger 7. Notosetae represented by 2-3 acicula in dorsal cirri. Neurosetae including 6-8 superior pectinate setae (Figure 40-26d); finely serrate limbate setae (Figure 40-26e); and compound, hooded, bidentate falcigers (Figure 40-26f). Subacicular hooded hooks bidentate (Figure 40-26g), beginning on setiger 98. Acicula yellow, pointed or blunt (Figure 40-26h), numbering 2-3 per neuropodium. Maxillary formula 1:5:4:2:1 left and 1:4:0:6:1 right.
REMARKS: This specimen was previously identified as Eunice sp. in BLM-OCS material.
PREVIOUSLY REPORTED HABITAT: Intertidal; muddy sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Alabama (Figure 40-25); 69 m; fine sand.
DISTRIBUTION: North Carolina, Dry Tortugas, Gulf of Mexico.

Genus Euniphysa Wesenberg-Lund, 1949

TYPE SPECIES: Euniphysa aculeata Wesenberg-Lund, 1949.
REFERENCES:
Wesenberg-Lund, 1949:305.
Fauchald, 1977a:106.
DIAGNOSIS: Prostomium with five long, smooth antennae. Palps fused to prostomium ventrally, often producing anterior bilobed appearance. One pair of tentacular cirri on second apodous ring. Parapodia subbiramous with long dorsal cirri, rounded setigerous lobes, and short pad-like or conical ventral cirri. Setae including pectinate setae, compound spinigers, pseudocompound spinigers, compound falcigers, and broadly limbate setae. Subacicular hooded hooks dark, bidentate. Acicula usually black, numbering 2-4 per parapodium.

Euniphysa sp. A
Figures 40-27, 28a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 22F-11/80 (1 spec., USNM 90050); MAFLA 17F-5/74 (1 spec.), 2423F-7/76 (1 spec.), 2423J-7/76 (1 spec.), 2423F-8/77 (1 spec., USNM 90047),

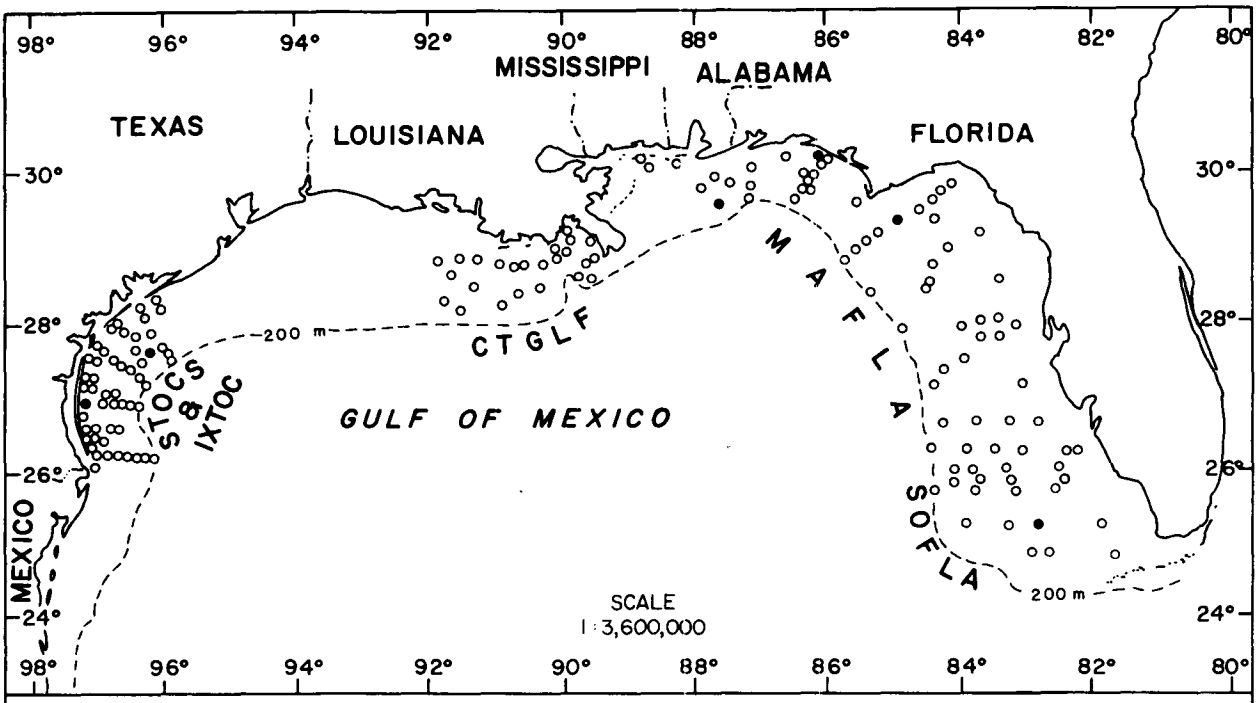

Figure 40-27. Distribution of Euniphysa sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

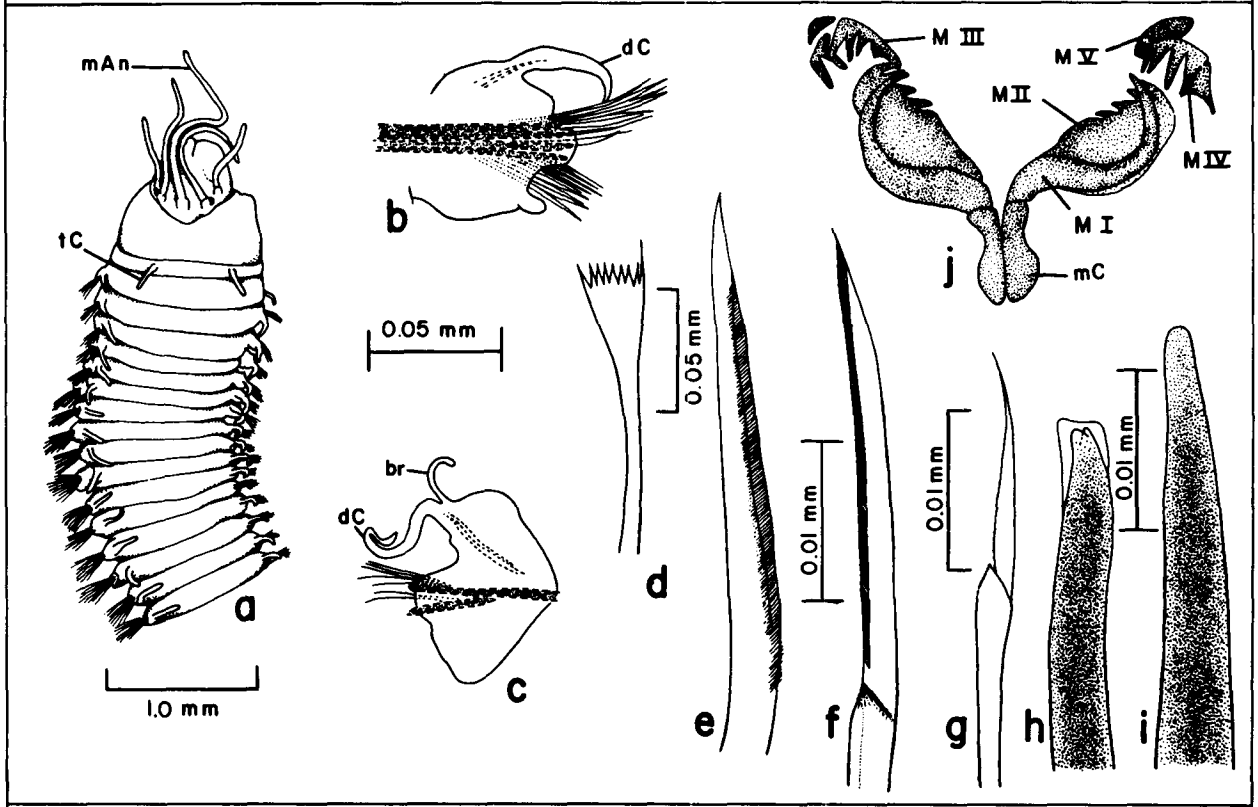

Figure 40-28. Euniphysa sp. A: a, anterior end, dorsal view; b, anterior parapodium, anterior view; c, posterior parapodium, posterior view; d, pectinate seta; e, limbate seta; f, pseudocompound spiniger; g, compound spiniger; h, subacicular hooded hook; i, aciculum; j, maxillae.

2423K-8/77 (1 spec., USNM 90045), 2528K-2/78 (1 spec., USNM 90046); STOCS 3/III-3 11/77 (1 spec., USNM 90048), HR1-1 11/76 (1 spec., USNM 90049).

DESCRIPTION:

Length, 24.0+ mm; width, to 2.0 mm. Body pale, flattened dorsoventrally; all specimens incomplete with up to 65 setigers. Prostomium globular, notched anteriorly, with one pair of small eyes (Figure 40-28a), and five long, smooth occipital antennae. Antennal ratio 1:2.0:2.75. First apodous ring as long as prostomium; second apodous ring shorter, with two small, subulate tentacular cirri. Branchiae beginning as single filaments on setigers 30-38, continuing as such to end of fragment. Dorsal cirri short, subulate anteriorly (Figure 40-28b). Ventral cirri as small, bulb-like projections off neuropodial lobes by setiger 2. Notosetae represented by 3-4 acicula in dorsal cirri (Figure 40-28c). Neurosetae including pectinate setae (Figure 40-28d); superior limbate setae (Figure 40-28e); three preacicular rows of pseudocompound spinigers (Figure 40-28f) on anterior setigers and inferior compound spinigers (Figure 40-28g) on middle to posterior setigers. Subacicular hooded hooks single, black, bifid (Figure 40-28h), beginning on setigers 35-40. Acicula black, unidentate (Figure 40-28i). Maxillary formula 1:(4-5):3:2:1 left and 1:4:0:5:1 right (Figure 40-28j).

REMARKS: Euniphysa sp. A differs from E. aculeata (Wesenberg-Lund, 1949) in having branchiae that begin around setiger 30 rather than setiger 17, and in having a different maxillary formula.

GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off Florida and Texas (Figure 40-27); 19-69 m; coarse to fine sand, silty fine sand.

CHAPTER 41

Joan M. Uebelacker

FAMILY LUMBRINERIDAE Malmgren, 1867

INTRODUCTION

Lumbrinerids are long, cylindrical worms with all setigers essentially alike. The prostomium is elongate or rounded, blunt or pointed, and lacks eyes and appendages. Occasionally, small nuchal papillae are present in a pocket between the prostomium and peristomium. The peristomium consists of one or two smooth, apodous rings. Parapodia are uniramous, or subbiramous with rudimentary notopodia; they lack appendages other than pre- and postsetal lobes, and branchiae in some genera. Setae include limbate forms and simple or composite hooded hooks. The jaw apparatus is well-developed and consists of a pair of ventral mandibles and four pairs of lateral maxillae in a muscular bulb. The paired maxillary carriers are usually fairly short and broad. The first maxillae (M-I) are curved forceps. The second through fourth maxillae (M-II, M-III, M-IV) are strongly curved plates usually with one or more teeth on the convex side. The mandibles are flared anteriorly, with posterior shafts partially to completely fused along their length.

In the past, lumbrinerids were considered by some authors to belong to the family Eunicidae, but are now generally held to be a distinct family within the superfamily Eunicea and Order Eunicida (Fauchald, 1977a; Pettibone, 1982). Up to nine genera are recognized, including the recent additions of Kuwaita Mohammad, 1973; Lumbrinerides and Lumbrineriopsis Orensanz, 1973b; Paraninoe Levenstein, 1977; and Arabelloneris Hartmann-Schröder, 1979b. Fauchald (1970, 1977a) declined to consider Augeneria Monro, 1930, as a valid genus. However, Imajima and Higuchi (1975) treated Augeneria as valid, pointing out several distinctive features which separate members of the genus from Lumbrineris. Based on their reasoning, Augeneria is included herein, bringing to five the number of recognized genera of lumbrinerids from the Gulf of Mexico. Around 200 species have been described in the family with more continually being added; 21 occur on the northern Gulf of Mexico outer continental shelf. Of these, eight species are potentially new to science, and four others are newly reported from this region.

PRINCIPAL DIAGNOSTIC CHARACTERS

Lumbrinerid genera are distinguished by the presence or absence of nuchal papillae, dorsal cirri, branchiae, and the jaw apparatus; the kind of branchiae, if present; dentition of the hooded hooks; and shape and dentition of the jaw apparatus. Characters routinely used to separate species include relative lengths of the pre- and postsetal lobes, especially in the posterior body region; origin and articulation of the hooded hooks; and number of teeth on the maxillae. More attention should be paid to the dentition of the hooded hooks, and to the shape of the mandibles, maxillary carriers, maxillae and supporting plates, particularly in distinguishing the numerous species of Lumbrineris.

Identification of lumbrinerids necessitates examination of the jaw apparatus. In small specimens the dorsal tissues covering the maxillae can be carefully cut away. Use of a clearing solution may aid in making the maxillae more visible. In larger specimens, a dorsal or ventral incision can be made to excise the entire pharyngeal bulb. Muscle tissue should then be carefully teased away, starting with the ventral side to avoid damaging the quite fragile mandibles. Every attempt should be made to view the mandibles although it is not always possible to do so, particularly in small specimens where the mandibles may be transparent or poorly sclerotinized. When muscle tissue is removed from the maxillae, care should be taken not to disrupt or break any of the maxillary structures.

Identification also depends on the origin and articulation of the hooded hooks. It may be necessary, particularly with larger specimens, to remove and mount several parapodia from the anterior and early midbody regions (first 20-40 setigers). Small specimens can often be mounted whole. Hooded hooks are usually first present either from setiger 1 or not until after setiger 10 or so. Anterior hooded hooks, if present, are either simple or composite, but become entirely simple by setigers 20-30. Limbate setae are present anteriorly and may persist through the midbody region; they are almost always simple but may appear pseudocomposite due to fracture of the blade. In a few species (e.g., Lumbrineris januarii), some anterior limbate setae are truly composite.

Length:width ratios have been included for the maxillary carriers, first maxillae, and mandibles. These ratios have not been utilized as taxonomic characters in the past, but they help to characterize a given population, and may be of interest to future investigators. Length was measured along the longest vertical axis of the maxillary carriers and longest diagonal axis of M-I and the mandibles. Width was measured across the broadest horizontal axis of either the left or right (not both) maxillary carriers and M-I (dashed lines in Figure 41-2g).

In the illustrations, all views of the anterior end, parapodia, and maxillae are dorsal unless otherwise indicated. Figures of all mandibles are from a ventral view.

BIOLOGICAL NOTES

Lumbrinerids are primarily soft bottom inhabitants but also occur on hard substrates such as coral reefs. They are common in continental shelf sediments, but may be found anywhere from intertidal to abyssal depths. Most are free-living burrowers, although some species may construct temporary mucus tubes (Fauchald, 1977a:107; Fauchald and Jumars, 1979:219). Day (1967:428) noted that creeping forms found under stones and among algae tend to have a more rounded prostomium and shorter body than the burrowing species.

All lumbrinerids, with the exception of the poorly known genus Ophiuricola, have a well-developed jaw apparatus suitable for grasping food material. Most species are probably either predaceous carnivores or scavengers, and feed with a combination grasping/sucking motion of the partially everted pharyngeal bulb and maxillae. The teeth of the maxillae are hollow, and may be associated with poison glands (Fauchald, pers. comm.). Selective deposit-feeding has been reported in at least one species (Fauchald and Jumars, 1979:218); however, Fauchald (pers. comm.) suggested that sand grains and detritus, when found in the gut,

are simply indigestible material sucked in with the prey, and not evidence of a true deposit-feeding mode.

Little information has been reported concerning reproduction in lumbrinerids. Mature gametes have been found during all seasons in Lumbrineris impatiens from Florida (Schroeder and Hermans, 1975:91). Two species have been observed to lay eggs in gelatinous masses attached to mud or algae (Pettibone, 1963:256). The larvae develop to at least the four-setiger stage before emerging from the gelatinous masses, and lack a pelagic existence.

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

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

1a. Branchiae present as one or more filaments arising from postsetal lobes of anterior parapodia (Figure 41-4b) . . . . **Ninoe**, p. 41-5

1b. Branchiae absent. 2

2a. Hooded hooks bidentate (Figure 41-10e); prostomium usually longer than wide (Figure 41-10a) 3

2b. Hooded hooks multidentate; prostomium usually about as long as wide. 4

3a. Maxillary carriers broad anteriorly (Figure 41-10f); M-IV without denticulate margin. . . . . **Lumbrinerides**, p. 41-9

3b. Maxillary carriers slender anteriorly (Figure 41-12f); M-IV with denticulate margin (Figure 41-12f). . . **Lumbrineriopsis**, p. 41-15

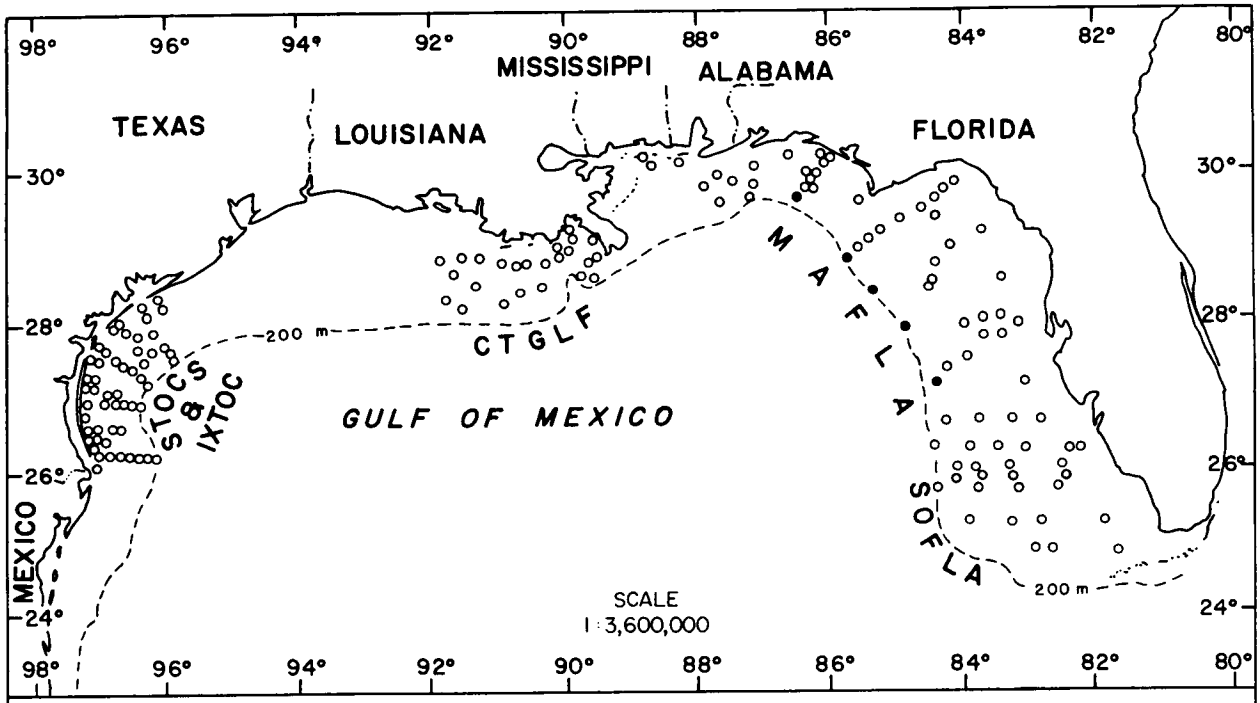

Figure 41-1. Distribution of Ninoe sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

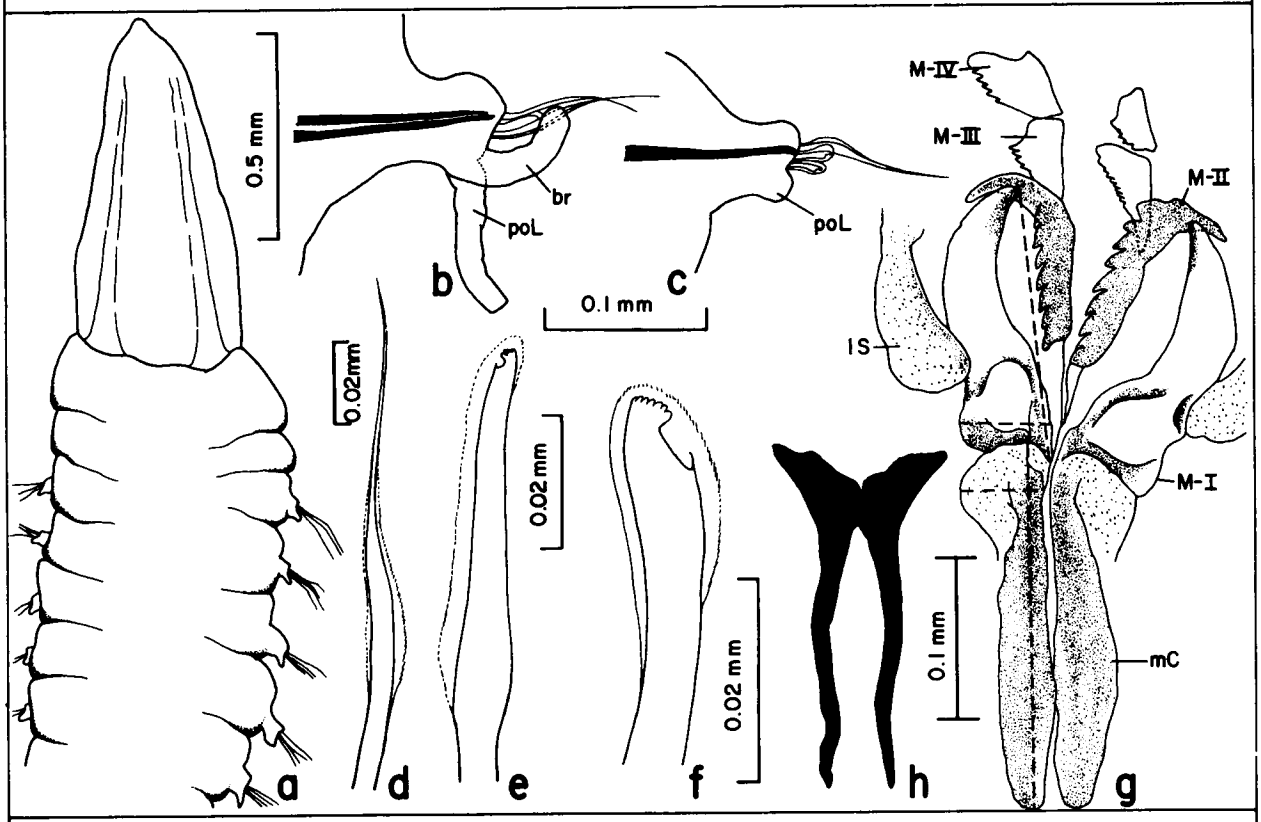

Figure 41-2. Ninoe sp. A: a, anterior end; b, parapodium from setiger 14; c, parapodium from setiger 28; d, limbate seta from setiger 14; e, hooded hook from setiger 2; f, same, from setiger 32; g, maxillae; h, mandibles (dashed lines in figure g indicate measurement axes of M-I and maxillary carriers).

4a. M-IV with white or transparent centers and black margins (Figure 41-14g); shafts of mandibles divergent (Figure 41-14h); nuchal antennae present (Figure 41-14a). . . . . .**Augeneria**, p. 41-17

4b. M-IV with dark centers and margins; shafts of mandibles fused or slightly divergent; nuchal antennae usually absent. . . . . .**Lumbrineris**, p. 41-18

Genus Ninoe Kinberg, 1865

TYPE SPECIES: Ninoe chilensis Kinberg, 1865.
REFERENCES:
Fauchald, 1970:114.
Orensanz, 1973b:378.
Imajima and Higuchi, 1975:10.
Fauchald, 1977a:109.
DIAGNOSIS: Prostomium conical. Nuchal antennae present or absent. Branchiae present as one or more filaments arising from postsetal lobes of some parapodia. Hooded hooks multidentate; limbate setae present. M-IV and often M-III denticulate.

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

1a. Hooded hooks long-bladed (Figure 41-2e), beginning on setiger 1; all branchiae as a single filament arising from postsetal lobe (Figure 41-2b). . . . . **Ninoe sp. A**, p. 41-5

1b. Hooded hooks short-bladed (Figure 41-4e), beginning posterior to setiger 20; branchiae with up to several filaments arising from postsetal lobe (Figure 41-4b). . . . . .**Ninoe sp. B**, p. 41-7

Ninoe sp. A
Figures 41-1, 2a-h

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2212C-8/77 (1 spec.), 2212H-11/77 (1 spec.), 2313H-8/77 (1 spec.), 2313D-11/77 (1 spec.), 2427J-7/76 (1 spec., USNM 67768), 2536E-1/76 (1 spec.).
DESCRIPTION:
Length, 12.8+ mm; width, to 1.7 mm. Body slender; all specimens incomplete with up to 61 setigers. Prostomium elongate, conical (Figure 41-2a), 1.5-2.4 times as long as wide. Peristomium consisting of two apodous rings. Parapodia well-developed, without presetal lobes. Postsetal lobes short, ovoid to digitiform anteriorly, becoming longer with single branchial filament (Figure 41-2b) from setigers 7-11 to 20-25; thereafter, postsetal lobes short (Figure 41-2c). Anterior parapodia with 2-4 narrowly winged limbate setae (Figure 41-2d) and 1-2 slender, long-bladed hooded hooks (Figure 41-2e) from setiger 1. Blades of hooded hooks becoming shorter by postbranchial segments (Figure 41-2f). Acicula dark brown. Maxillary carriers long, slender (Figure 41-2g), 3.9-6.8 times as long as wide. M-I slightly curved, with no accessory teeth, 2.8-3.8 times as long as wide. Lateral supports broad, extending along anterior three-fourths of M-I. M-II curved anteriorly, with 6-10

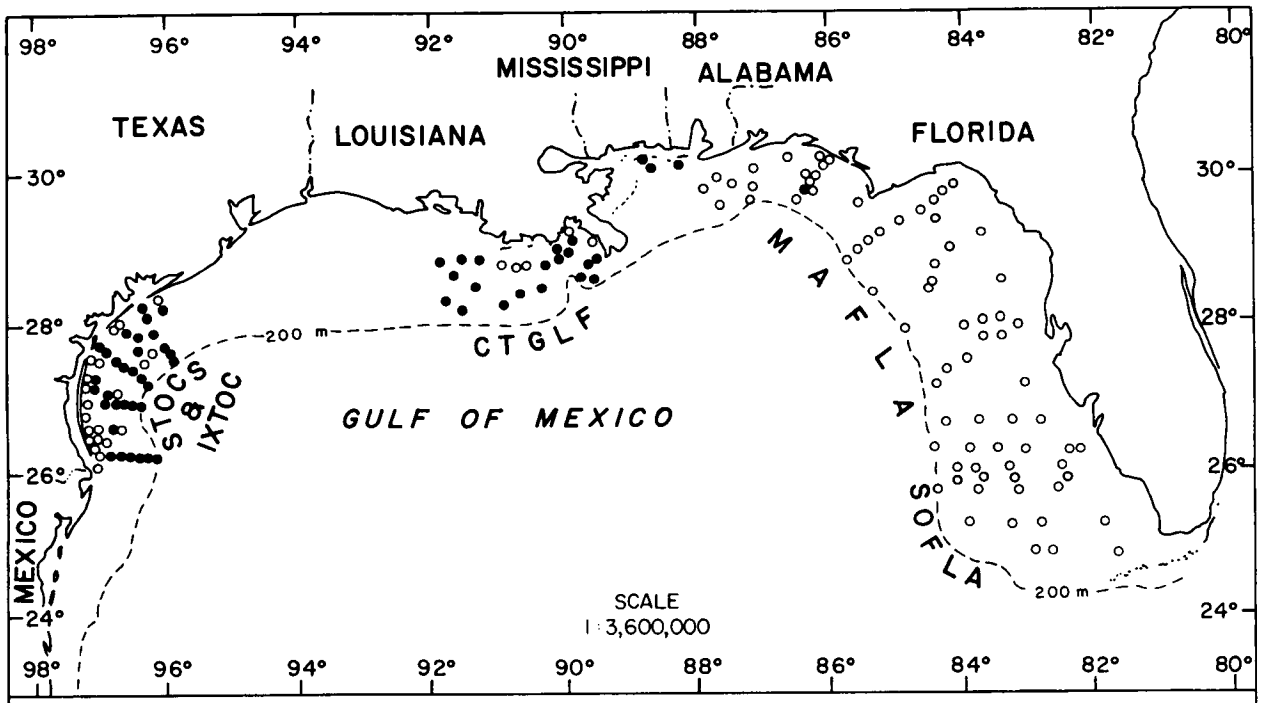

Figure 41-3. Distribution of Ninoe sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

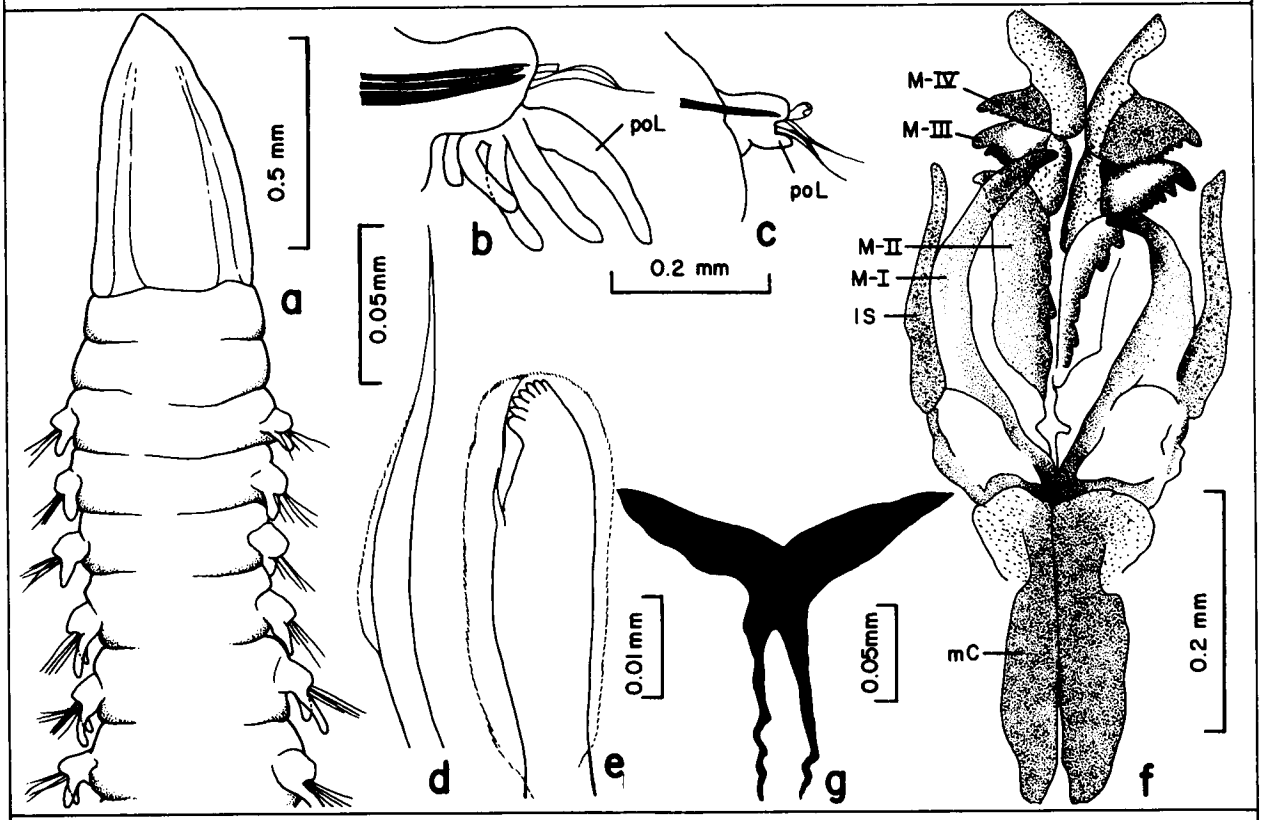

Figure 41-4. Ninoe sp. B: a, anterior end; b, parapodium from setiger 21; c, parapodium from setiger 46; d, limbate seta from setiger 12; e, hooded hook from setiger 36; f, maxillae; g, mandibles.

teeth. M-III with denticulate margin of 4-14 small teeth, distalmost tooth larger and rounded. M-IV with denticulate margin of 4-12 small teeth, distalmost tooth rounded. Mandibles black, with anterior ends flared and shafts well-separated (Figure 41-2h), 1.5-2.4 times as long as wide.

REMARKS: Ninoe sp. A resembles N. nigripes Verrill, 1873. It differs from the latter in having branchiae composed of one rather than up to seven filaments, and in having linear rather than triangular maxillary carriers.

GULF OF MEXICO BLM-OCS OCCURRENCE: Along shelf edge in northeastern Gulf (Figure 41-1); deep water, 121-189 m; silty very fine sand, clayey sandy silt.

Ninoe sp. B
Figures 41-3, 4a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2639-6/75 (1 spec., USNM 55881; 2 spec.); CTGLF 04-5/78 (1 spec., USNM 90979); STOCS 1/II-1 S/76 (1 spec., USNM 90980), 6/II-5 3/76 (1 spec., USNM 90981), 6/IV-6 S/76 (2 spec., USNM 90982); IXTOC S54-11/79 (1 spec., USNM 75139).

DESCRIPTION:
Length, 21+ mm; width, to 0.6 mm. Body long, fairly stout anteriorly; all specimens incomplete with up to 87 setigers. Prostomium conical, pointed (Figure 41-4a), 1.1-2.2 times as long as wide. Peristomium consisting of two apodous rings. Parapodia well-developed, largest in midbody region; with short, rounded presetal lobes throughout. Postsetal lobes digitiform, giving rise to digitate branchiae having up to six filaments (Figure 41-4b), beginning on setigers 3-5 and ending on setigers 25-35. Thereafter postsetal lobes short and digitiform (Figure 41-4c). Anterior parapodia with 4-6 broadly winged limbate setae (Figure 41-4d). Multidentate hooded hooks (Figure 41-4e) first appearing on immediate postbranchial segments (setigers 25-37). Acicula dark brown. Maxillary carriers narrow, with slightly expanded anterior portion (Figure 41-4f), 3-5 times as long as wide. M-I curved, narrow basally, with smooth margins, 2.5-3.6 times as long as wide. Lateral supports extending along anterior two-thirds of M-I. M-II with 5-8 teeth. M-III with denticulate margin of 5-8 small teeth. M-IV as curved, triangular plates with about 7-8 small teeth along lower margin. Mandibles broadly flared anteriorly, separated posteriorly (Figure 41-4g), about as long as wide.

REMARKS: Ninoe sp. B is similar to N. nigripes Verrill, 1873, with which it was confused in the BLM-OCS collections, and N. gayheadia Hartman, 1965. It differs from both in lacking hooded hooks anteriorly and from the latter in having denticulate rather than unidentate third maxillae.

GULF OF MEXICO BLM-OCS OCCURRENCE: Common in central and western Gulf (Figure 41-3); 6-134 m; primarily silts and clays, occasionally sand.

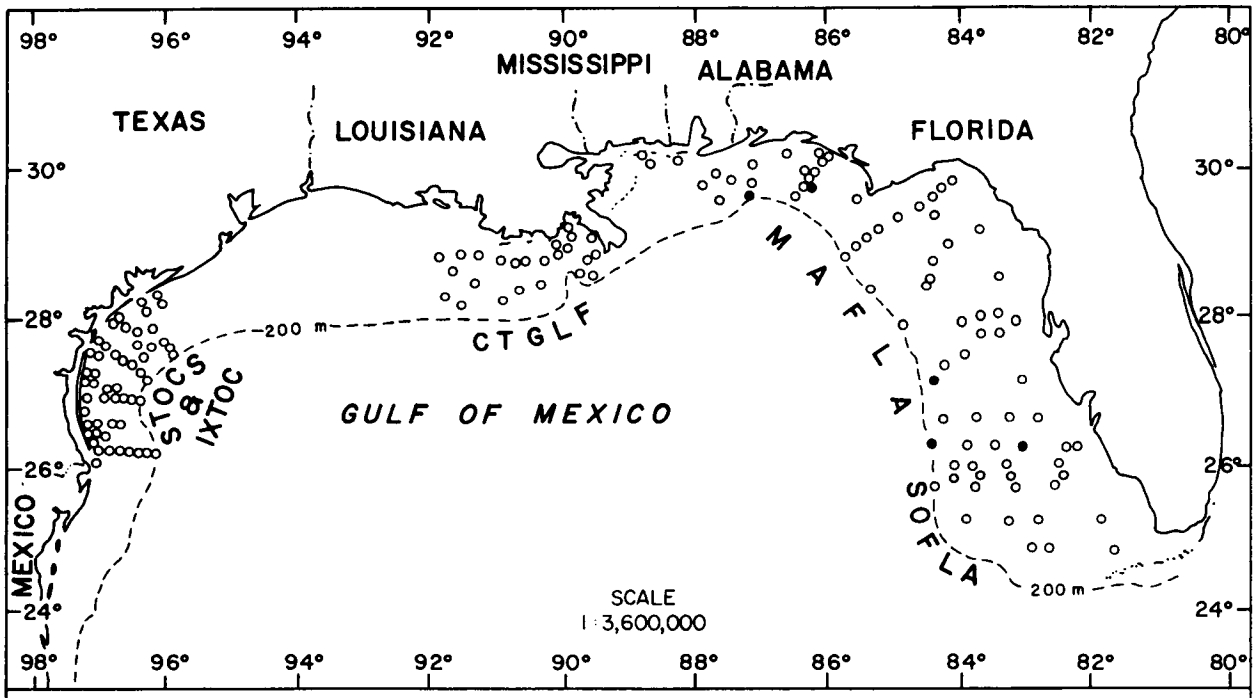

Figure 41-5. Distribution of Lumbrinerides sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

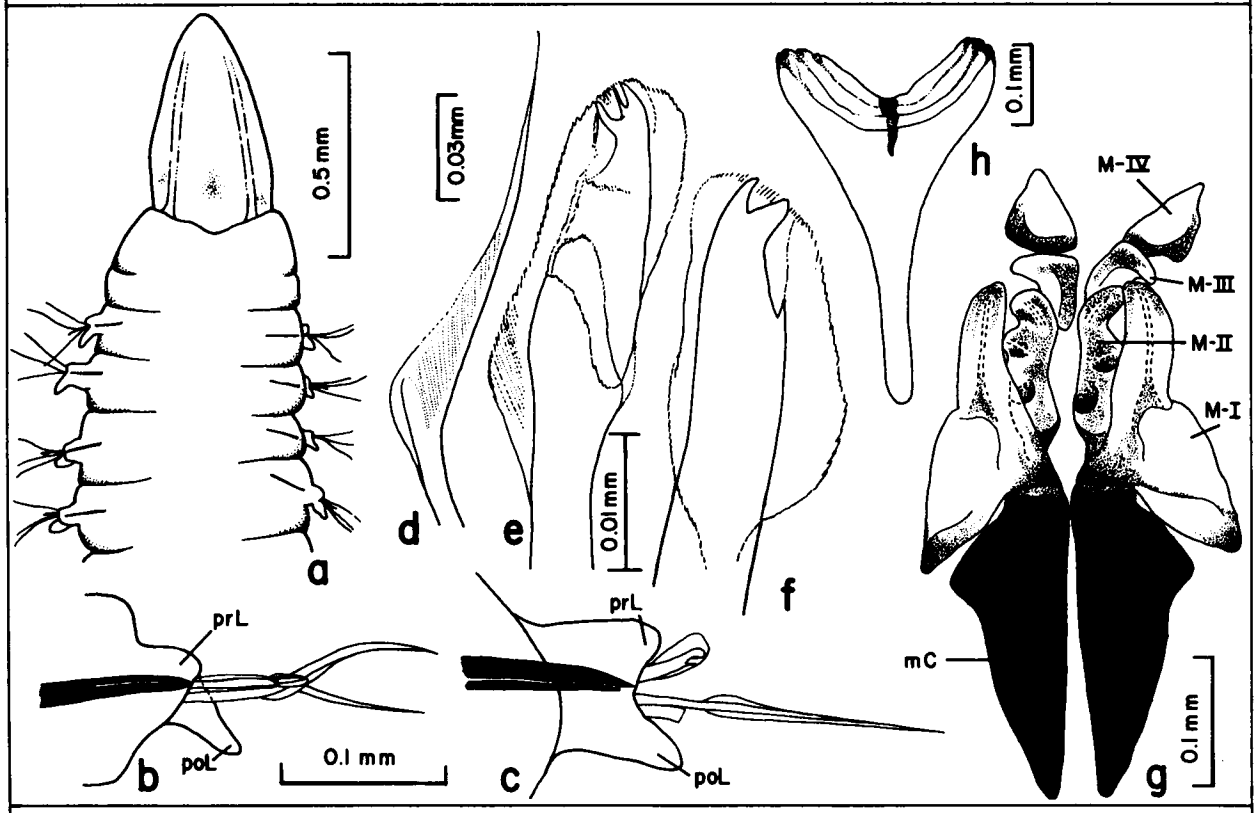

Figure 41-6. Lumbrinerides sp. A: a, anterior end; b, parapodium from setiger 5; c, parapodium from setiger 10; d, limbate seta from setiger 10; e, composite hooded hook from setiger 3; f, simple hooded hook from setiger 7; g, maxillae; h, mandibles.

Genus **Lumbrinerides** Orensanz, 1973

TYPE SPECIES: Lumbrinerides gesae Orensanz, 1973b.
REFERENCES:
Orensanz, 1973b:371.
Fauchald, 1977a:109.
Perkins, 1979:416.
DIAGNOSIS: Prostomium elongate, pointed. Peristomium consisting of one or two apodous rings. Parapodia small anteriorly. Branchiae absent. Hooded hooks bidentate; limbate setae present. Maxillary carriers large, triangular, broad anteriorly. M-I with up to two accessory teeth on inner margins; M-II with several blunt teeth; M-III and M-IV as flattened plates. Mandibles fused throughout most or entire length.

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

1a. Anterior hooded hooks simple; M-I with accessory teeth. 2
1b. Anterior hooded hooks composite (Figure 41-6e); M-I without accessory teeth (Figure 41-6g). . . . . **.Lumbrinerides sp. A**, p. 41-9

2a. M-I each with one accessory tooth on inner margin near tip (Figure 41-8f); maxillary carriers without pronounced constriction along outer margins (Figure 41-8f) . . . . . **Lumbrinerides ?acuta**, p. 41-11
2b. M-I each with two accessory teeth on inner margin near middle (Figure 41-10f); maxillary carriers with pronounced constriction near middle of outer margins (Figure 41-10f) . . . . . **Lumbrinerides dayi**, p. 41-13

Lumbrinerides sp. A
Figures 41-5, 6a-h

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2645G-6/75 (3 spec.), 2645E-8/77 (1 spec.), 2645F-9/77 (1 spec.), 2645G-2/78 (1 spec., USNM 67774).
DESCRIPTION:
Length, 8.4+ mm; width, to 0.6 mm. Body small, slender; all specimens incomplete with up to 33 setigers. Prostomium elongate, conical, with some brown spots (Figure 41-6a); 1.6-2.3 times as long as wide. Peristomium consisting of two indistinct rings. Anterior parapodia small with short, rounded presetal lobes and longer, digitiform postsetal lobes (Figure 41-6b); parapodia becoming larger and presetal lobes slightly longer in midbody region (Figure 41-6c). Limbate setae with fairly narrow wing arising from blunt stalk (Figure 41-6d), numbering 2-3 per fascicle. Hooded hooks composite, with small accessory tooth between two main teeth (Figure 41-6e), present from setiger 1, becoming simple and bidentate (Figure 41-6f) by setigers 4-8. Acicula black, numbering two per parapodium. Maxillary carriers with rectangular anteromedial edge (Figure 41-6g), 2.4-2.8 times as long as wide. M-I broad basally, slightly curved distally, without accessory teeth on inner margin, 1.8-2.2 times as long as wide. M-II with three rounded teeth.

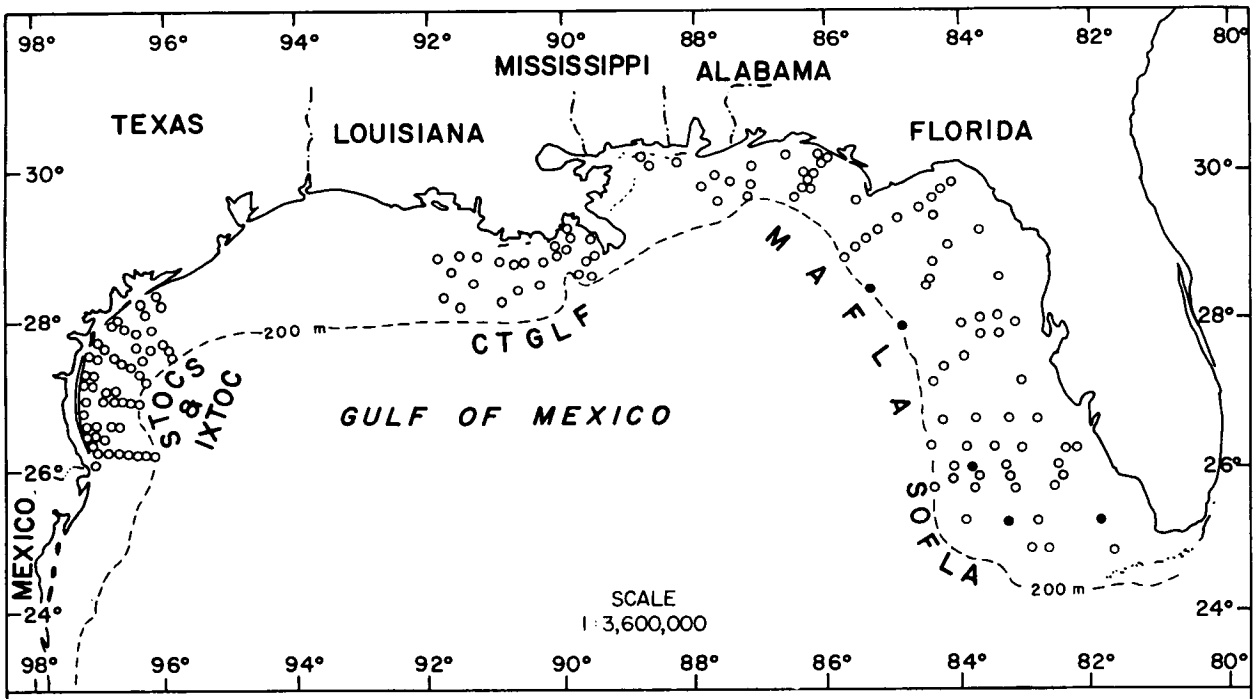

Figure 41-7. Distribution of Lumbrinerides ?acuta on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

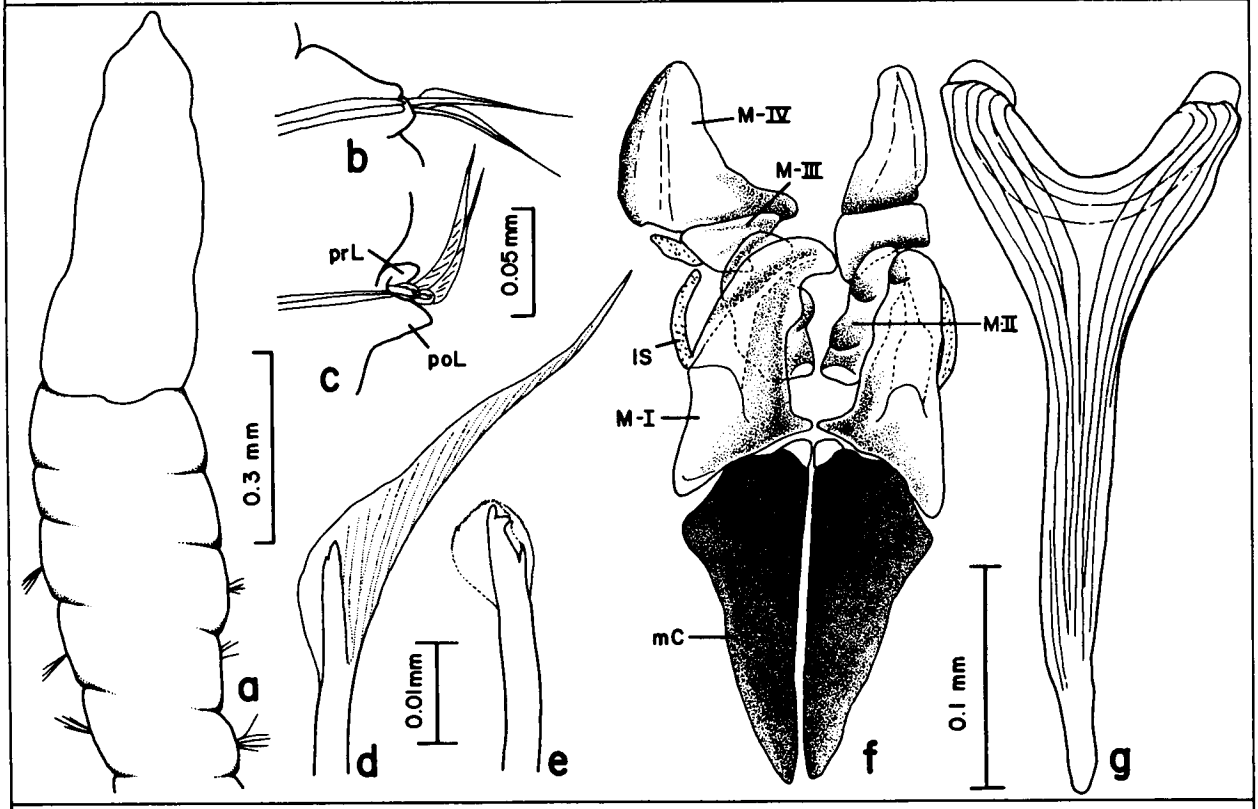

Figure 41-8. Lumbrinerides ?acuta: a, anterior end; b, parapodium from setiger 3; c, parapodium from setiger 7; d, limbate seta from setiger 16; e, hooded hook from setiger 16; f, maxillae; g, mandibles.

M-III and M-IV fairly small, triangular. Mandibles fused over entire length (Figure 41-6h), 1.3 times as long as wide.
REMARKS: Lumbrinerides sp. A is similar to L. jonesi Perkins (1979:423, fig. 2) from the east coast of Florida, in having two peristomial rings, M-I without accessory teeth, and mandibles posteriorly entire. It differs from L. jonesi in having anterior composite hooded hooks beginning on setiger 1, black acicula, teeth of M-II rounded and well-separated rather than molar-like, and the prostomium twice or less as long as wide. The two species also differ in the shape of the maxillary carriers. This is the first report of composite hooded hooks in the genus Lumbrinerides. BLM-MAFLA specimens were originally identified as Lumbrineris cf. crassicephala Hartman, 1965.
GULF OF MEXICO BLM-OCS OCCURRENCE: Several stations in northeastern Gulf, particularly in deep water (Figure 41-5); 33-168 m; coarse to fine sand, silty very fine sand.

Lumbrinerides ?acuta (Verrill, 1875)
Figures 41-7, 8a-g

Lumbriconereis acuta Verrill, 1875:39, pl. 3, fig. 5.
Lumbrineris acuta--Hartman, 1942a:114, fig. 10a-d.
Lumbrinerides acuta--Gardiner, 1976:203, fig. 26i-l [in part; not fig. 26f-h].
Lumbrinerides acuta--Perkins, 1979:419, fig. 1a.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12A-11/80 (4 spec., USNM 75336), 12D-11/80 (2 spec., USNM 75337); MAFLA 2212C-8/77 (1 spec.), 2313H-11/77 (1 spec.).
Supplementary Material:
Rhode Island--off Block Island, 26 m, Aug. 1874 (USNM 12895, 4 syntypes; USNM 13392, 1 syntype).
DESCRIPTION:
Length, 5.6+ mm (previously reported to 40 mm); width, to 0.26 mm. Body small, slender, thread-like; all specimens incomplete. Prostomium elongate, conical, with acuminate tip (Figure 41-8a), 2.2-4.0 times as long as wide. Peristomium consisting of two apodous rings. Parapodia small in anterior and midbody regions, with short pre- and postsetal lobes (Figure 41-8b,c). Limbate setae with broad wing arising from central stalk (Figure 41-8d), numbering 3-4 anteriorly. Hooded hooks small, bidentate, with teeth nearly at right angle to each other (Figure 41-8e), first present from setigers 5-6; numbering 1-3 per fascicle. Acicula slender, yellow, numbering 2-3 per parapodium. Maxillary carriers broadest about one-third distance from anterior tip, with gently curved anterior margin (Figure 41-8f), 2.3-3.4 times as long as wide. M-I with fairly large accessory tooth on inner margin near tip; 1.5-2.2 times as long as wide. Lateral supports extending along anterior two-thirds of M-I. M-II fairly short with three blunt teeth. M-III and M-IV triangular. Mandibles fused over entire length (Figure 41-8g), 1.7-2.9 times as long as wide.
REMARKS: These small specimens may be juveniles of L. acuta with the hooded hooks present more anteriorly than noted on larger adult specimens by previous authors. Origin of the hooded hooks cannot be determined on the syntypes because most anterior setae are broken; however, a

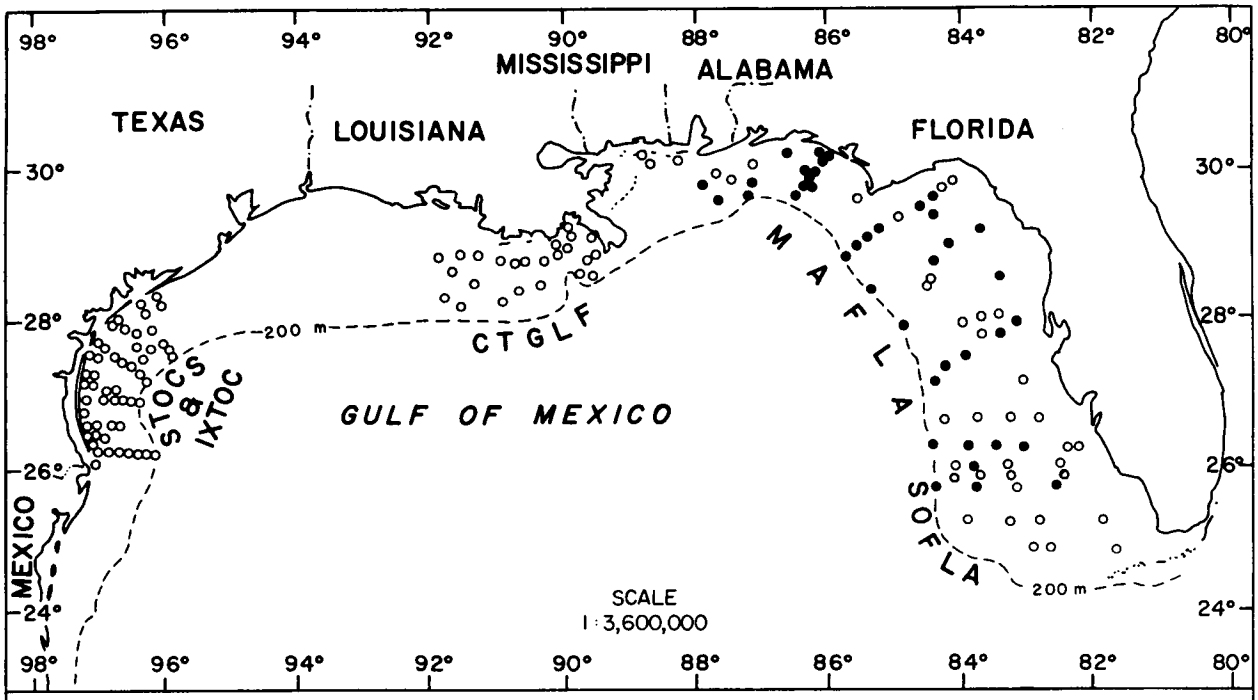

Figure 41-9. Distribution of Lumbrinerides dayi on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

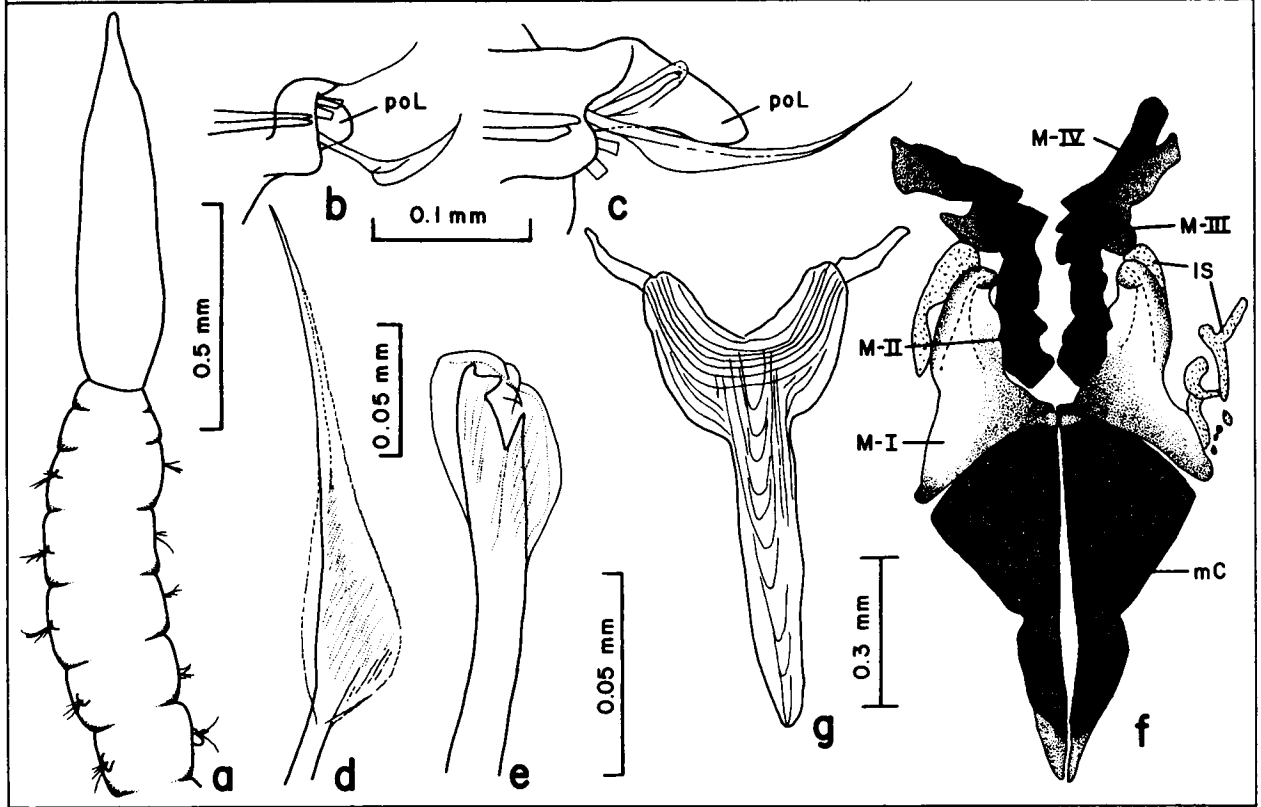

Figure 41-10. Lumbrinerides dayi: a, anterior end (small specimen); b, parapodium from setiger 3 (anterior view); c, parapodium from setiger 18 (anterior view); d, limbate seta from setiger 12; e, hooded hook from setiger 20; f, maxillae; g, mandibles.

hook was observed on setiger 11 of one syntype. Gulf of Mexico specimens differ from the syntypes in having a relatively longer prostomium and slightly differently shaped maxillary carriers.
PREVIOUSLY REPORTED HABITAT: 26 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Primarily in deep water off Florida (Figure 41-7); 22-189 m; coarse to fine sand, silty very fine sand, clayey sandy silt.
DISTRIBUTION: New England, ?Gulf of Mexico.

Lumbrinerides dayi Perkins, 1979
Figures 41-9, 10a-g

Lumbrinerides dayi Perkins, 1979:421, fig. 1c-e.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12D-11/80 (1 spec., USNM 75338); MAFLA 2422C-7/76 (2 spec.), 2424C-7/76 (1 spec.), 2424I-7/76 (1 spec.), 2424J-7/76 (2 spec.), 2425D-9/75 (1 spec.), 2531-11/77 (USNM 55875, 1 paratype), 2640D-6/75 (1 spec.), 2640I-6/75 (1 spec.), 2748H-2/78 (1 spec.).
Supplementary Material:
North Carolina--off Beaufort, 34°34'N, 78°25'W, Apr. 1965, 20 m, J. H. Day coll. (USNM 51145, holotype).
DESCRIPTION:
Length, 60+ mm; width, to 1.0 mm (previously reported to 1.16 mm). Body fairly large, long, cylindrical; all specimens incomplete, largest with 101+ setigers. Prostomium and anterior body with irregular brown pigment spots. Prostomium elongate with acuminate tip (Figure 41-10a), 1.9-4.3 times as long as wide (prostomium of holotype 1.4 times as long as wide). Peristomium consisting of two short, apodous rings. Parapodia small anteriorly (Figure 41-10b), becoming slightly larger in midbody region (Figure 41-10c); presetal lobes rounded, postsetal lobes fairly long and auricular to digitiform in midbody region. Limbate setae broadly winged (Figure 41-10d), numbering 3-4 anteriorly. Hooded hooks simple with two triangular teeth nearly at right angle (Figure 41-10e); numbering one per fascicle anteriorly beginning on setigers 1-8, 3-4 per fascicle in midbody region. Acicula slender, yellow to light brown, numbering 1-3 per parapodium. Maxillary carriers (Figure 41-10f) broadly triangular anteriorly, narrow posteriorly below notch; 2.0-3.4 times as long as wide. M-I with two shallow accessory teeth along inner margin; 1.5-2.0 times as long as wide. Lateral supports extending along anterior half of M-I. M-II with three low, rounded teeth. M-III and M-IV flattened or curved. Mandibles brown, ypsiloid, fused along entire length, about twice as long as wide (Figure 41-10g).
REMARKS: Lumbrinerides dayi was confused with L. acuta in BLM-MAFLA collections.
PREVIOUSLY REPORTED HABITAT: 20-47 m; sand and broken shell, coarse carbonate sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in northeastern Gulf (Figure 41-9); 19-189 m; primarily coarse to very fine sand and silty very fine sand, also clayey and sandy silt.
DISTRIBUTION: North Carolina, Florida, Puerto Rico, Gulf of Mexico.

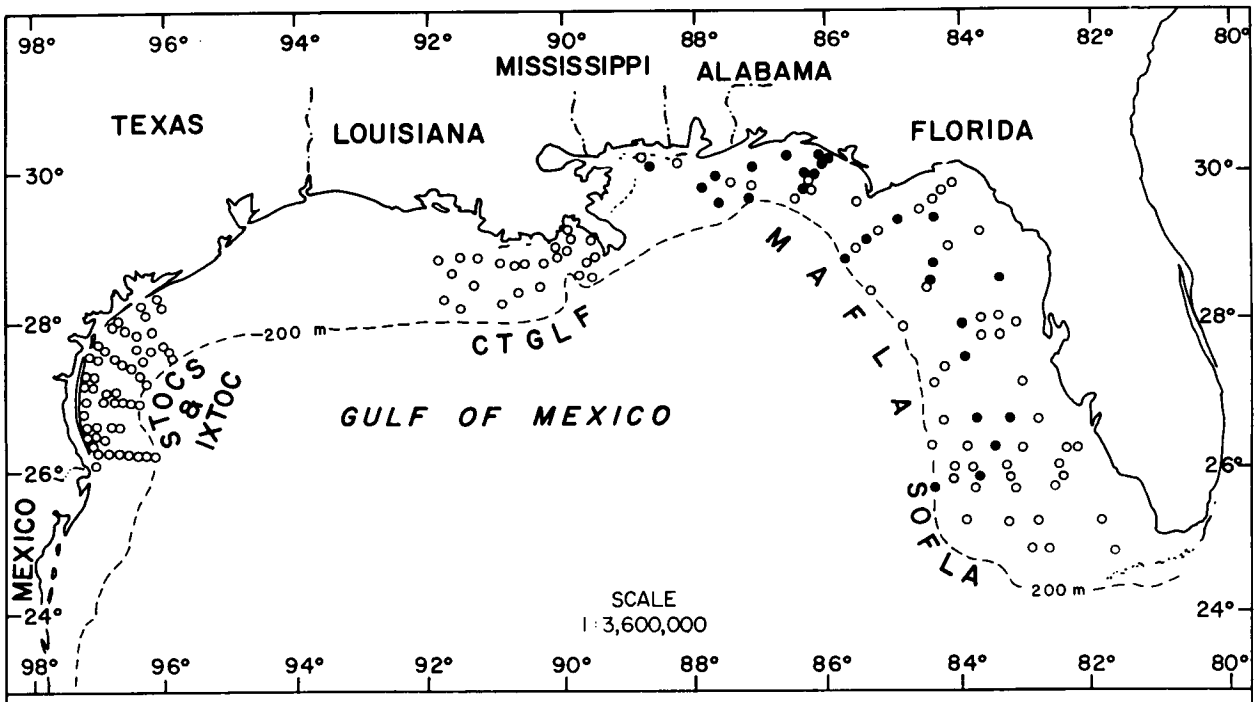

Figure 41-11. Distribution of Lumbrineriopsis paradoxa on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

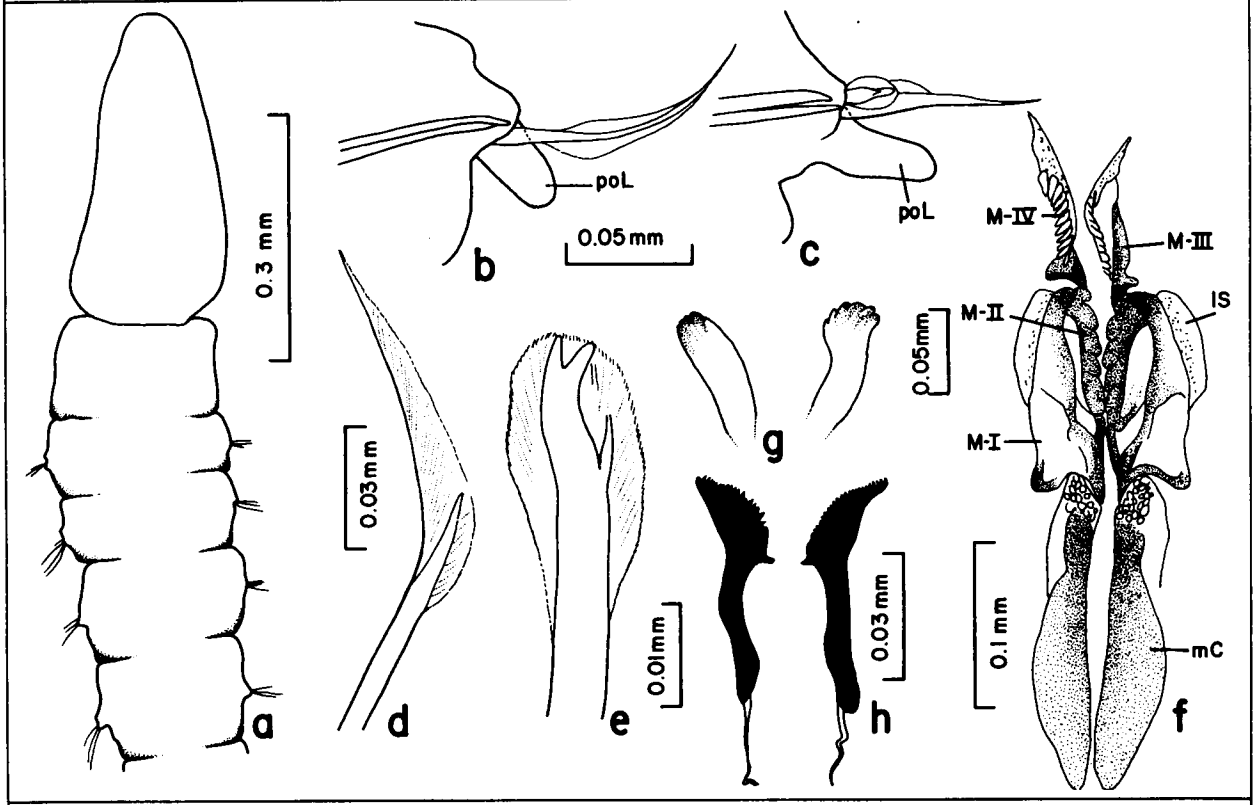

Figure 41-12. Lumbrineriopsis paradoxa: a, anterior end; b, parapodium from setiger 7; c, parapodium from setiger 18; d, limbate seta from setiger 2; e, hooded hook from setiger 5; f, maxillae; g, mandibles; h, same, juvenile.

Genus **Lumbrineriopsis** Orensanz, 1973

TYPE SPECIES: Lumbriconereis mucronata Ehlers, 1908.
REFERENCES:
Orensanz, 1973b:375.
Imajima and Higuchi, 1975:15.
Fauchald, 1977a:109.
DIAGNOSIS: Prostomium elongate, pointed. Branchiae absent. Hooded hooks simple, bidentate; limbate setae present. Maxillary carriers long, not expanded anteriorly. M-IV with denticulate margin. Mandibles not fused posteriorly.

Lumbrineriopsis paradoxa (Saint Joseph, 1888)
Figures 41-11, 12a-h

Lumbriconereis paradoxa Saint Joseph, 1888:217, pl. 8, figs. 72, 73, pl. 9, figs. 74-76.
Lumbriconereis paradoxa--Fauvel, 1923:434, fig. 173a-h.
Lumbrineris paradoxa--Hartman, 1965:119, pl. 20, figs. a,b.
Lumbrineris paradoxa--Day, 1973:59.
Lumbrineriopsis paradoxa--Gardiner, 1976:205, fig. 26m-o.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 4D-11/80 (1 spec., USNM 75356); MAFLA 2211H-7/76 (1 spec.), 2211D-8/77 (1 spec.), 2315A-11/77 (1 spec.), 2529-6/75 (1 spec., USNM 55876), 2640I-6/75 (1 spec.).
DESCRIPTION:
Length, to 75 mm (previously reported to 30+ mm); width, to 1.2 mm (previously reported to 1 mm). Body long, cylindrical; with up to 275 setigers. Prostomium conical (Figure 41-12a), 1.5-3.0 times as long as wide. Peristomium consisting of one apodous ring. Parapodia small throughout (Figure 41-12b,c), with digitiform postsetal lobes up to three times as long as setal lobes. Limbate setae broadly winged (Figure 41-12d), numbering 2-3 per fascicle anteriorly. Hooded hooks with both teeth nearly parallel to long axis of shaft (Figure 41-12e); numbering 1-2 per fascicle, first appearing on setiger 1. Acicula pointed, yellow, numbering 2-3 per parapodium. Pygidium slender, rounded. Maxillary carriers slender, narrow anteriorly, broadest medially (Figure 41-12f), 4.7-6.0 times as long as wide. M-I long with fairly smooth margins, 2.7-2.8 times as long as wide. Lateral supports extending along anterior half of M-I. M-II with 5-6 teeth. M-III long, triangular. M-IV as rounded plates with denticulate inner margins having eight or more small teeth. Mandibles separated throughout, transparent posteriorly (Figure 41-12g); mandibles of juveniles black, with several rows of sharp spines along anterior margins (Figure 41-12h).
REMARKS: L. paradoxa is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 44-1700 m; fine sand, muddy sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in northeastern Gulf (Figure 41-11); 19-180 m; primarily coarse to very fine sand, also silty fine to very fine sand, occasionally clayey or sandy silt.
DISTRIBUTION: West Africa, Azores, Bermuda, North Carolina, Gulf of Mexico.

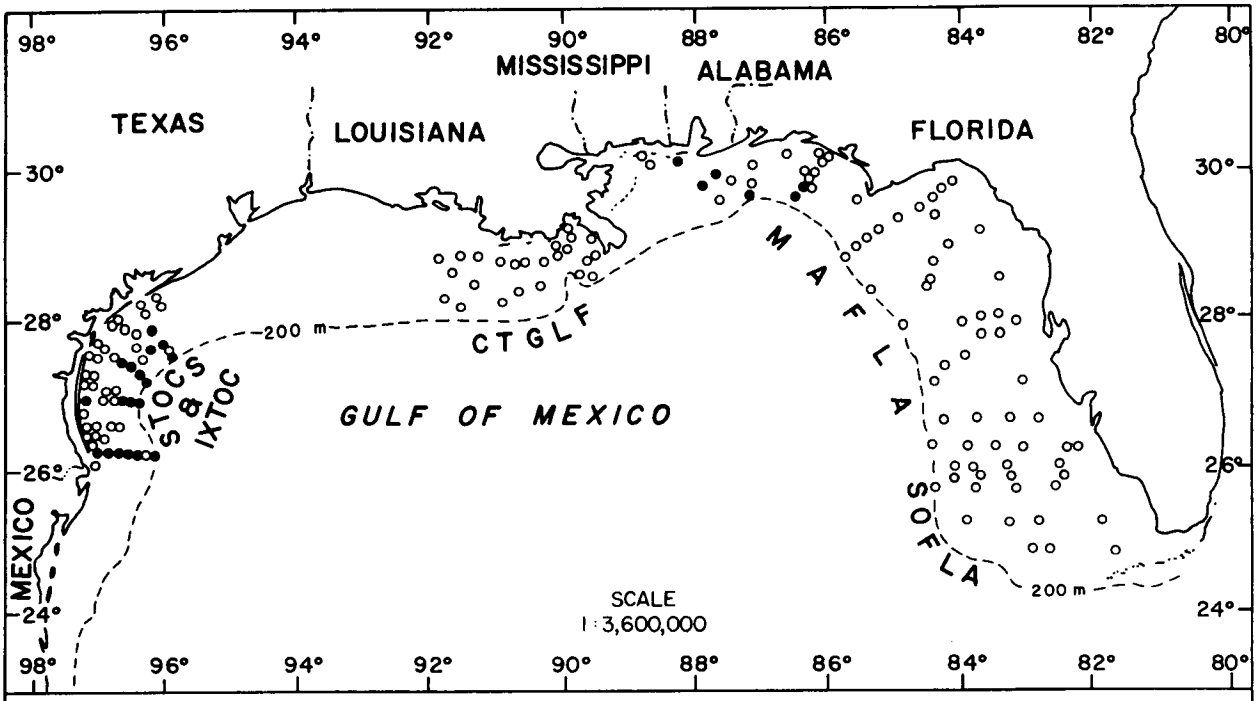

Figure 41-13. Distribution of Augeneria bidens on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

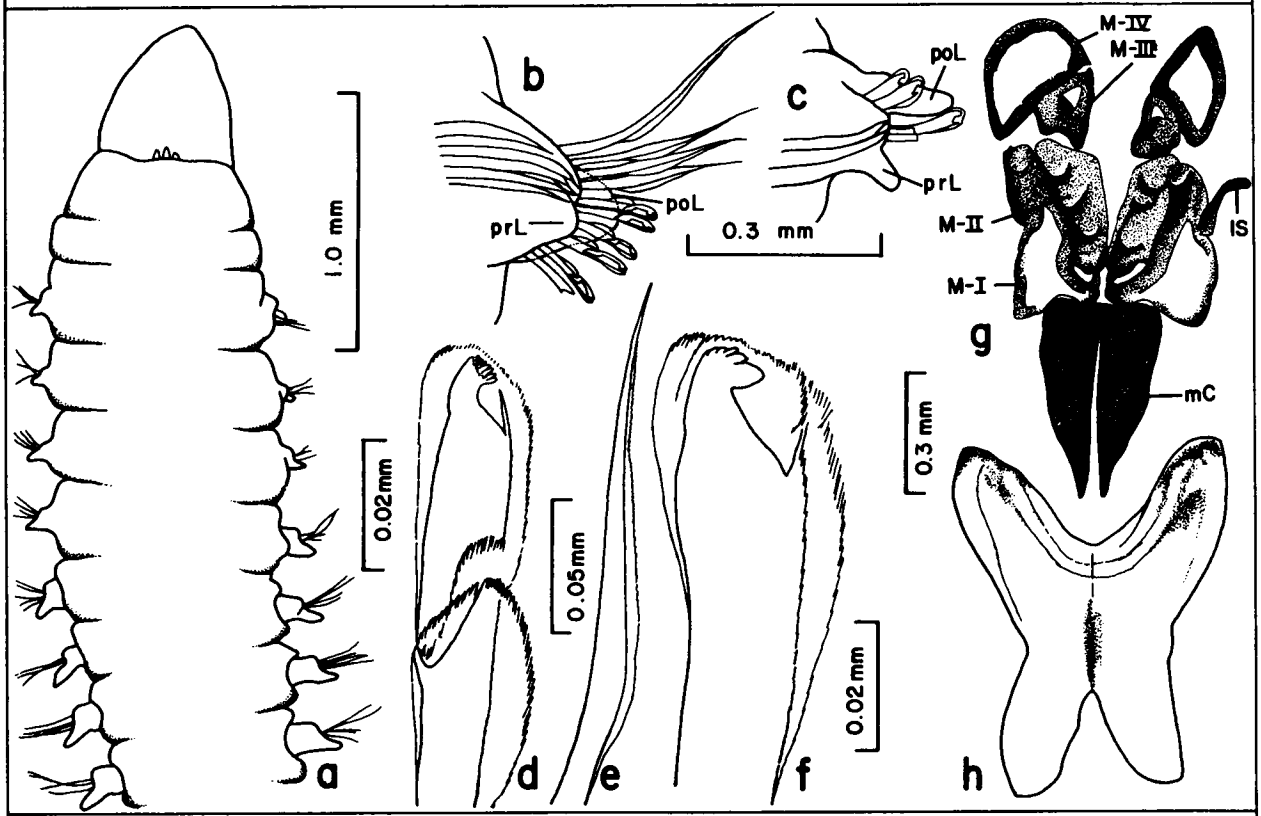

Figure 41-14. Augeneria bidens: a, anterior end; b, parapodium from setiger 5 (anterior view); c, parapodium from setiger 20 (anterior view); d, composite hooded hook from setiger 3; e, limbate seta from setiger 5; f, simple hooded hook from setiger 20; g, maxillae; h, mandibles.

Genus **Augeneria** Monro, 1930

TYPE SPECIES: Augeneria tentaculata Monro, 1930.
REFERENCES:
Orensanz, 1973b:369.
Imajima and Higuchi, 1975:6.
DIAGNOSIS: Prostomium conical with one or more nuchal antennae. Branchiae absent. Anterior hooded hooks composite, multidentate. Limbate setae present. M-II with three blunt teeth. M-IV as large, transparent or white plates with black margins. Mandibles with short, thick, divergent shafts.

Augeneria bidens (Ehlers, 1887)
Figures 41-13, 14a-h

Lumbriconereis bidens Ehlers, 1887:103, pl. 31, figs. 7-17.
Augeneria bidens--Orensanz, 1973b:372 [distributional map].
Lumbrineris albidentata--Day, 1973:60 [Not Ehlers, 1908].
Lumbrineris albidentata--Gardiner, 1976:202, fig. 27j-n.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2536-7/76 (1 spec., USNM 56140), 2536G-9/77 (1 spec.); STOCS HR4-S/76 (1 spec., USNM 90983).
Supplementary Material:
Gulf of Mexico--off Carysfort Reef, Mar. 1869, 31 m (MCZ, 1 syntype); Conch Reef, May 1869, 254 m (MCZ 760, 1 syntype); 24°8'N, 82°51'W, 620 m (MCZ 1239, 1 syntype); S.S. BLAKE, Agassiz 1877-78 (MCZ 756, 1 syntype).
North Carolina--off Beaufort, 34°24'N, 76°05'W, sand and shell, J. H. Day coll./donor (56 spec., USNM 51148).
Mid-Atlantic States--39°12.2'N, 72°23.5'W, Sta. H1/A BLM-06B, 400 m, Mar. 1977 (1 spec., USNM 57419).
Maryland--38°42.7'N, 73°24.9'W, Sta. E4/H BLM-08B, 80 m, Aug. 1977 (1 spec., USNM 56868).
DESCRIPTION:
Length, 22+ mm (previously reported to 50+ mm); width, to 2 mm. Body fairly robust; all specimens incomplete with up to 62 setigers. Prostomium bluntly conical, about as long as wide, with three small nuchal antennae (Figure 41-14a), often obscured by anterior margin of peristomium (North Carolina specimens with 0-3 nuchal antennae). Peristomium consisting of two apodous rings. Parapodia well-developed; presetal lobes short anteriorly, digitiform in midbody region; postsetal lobes auricular anteriorly (Figure 41-14b), short and digitiform in midbody region (Figure 41-14c). Composite hooded hooks (Figure 41-14d) present from setiger 1. Anterior parapodia with 3-6 hooded hooks and 5-8 limbate setae (Figure 41-14e). Hooded hooks becoming simple (Figure 41-14f) around setigers 10-15. Acicula yellow, with fine filamentous tips, numbering 3-7 per parapodium anteriorly. Maxillary carriers fairly narrow, triangular (Figure 41-14g), 2.6-3.6 times as long as wide. M-I curved with expanded basal portion, 1.9-2.8 times as long as wide. Lateral supports small, extending along anterior half of M-I. M-II with three blunt teeth, posteriormost smallest. Area between bases of M-II and M-I white or transparent; teeth of M-I and M-II sometimes appearing white. M-III as thick, triangular plates with one tooth. M-IV as

large, curved plates with white or transparent centers and black margins. Mandibles white, molar-shaped; shafts broad, well-separated (Figure 41-14h); 1.3-2.1 times as long as wide.
REMARKS: Gulf of Mexico BLM-OCS specimens of Augeneria bidens, along with specimens examined from the east coast of the U. S., were previously identified as Lumbrineris albidentata Ehlers, 1908, described from South Africa. They differ from the latter in having shorter pre- and postsetal lobes in the midbody region, hooded hooks becoming simple before setiger 30, and differently shaped maxillae and mandibles. Augeneria tentaculata Monro, 1930, from Antarctic and sub-Antarctic areas, South America and Japan, may be synonymous with A. bidens.
PREVIOUSLY REPORTED HABITAT: 40-200 m; sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common off northwestern Florida, Alabama, and Texas (Figure 41-13); 15-189 m; primarily silts and clays, occasionally coarse to fine sand.
DISTRIBUTION: Maryland to North Carolina, Gulf of Mexico.

Genus **Lumbrineris** Blainville, 1828

TYPE SPECIES: Lumbrineris latreilli Audouin and Milne Edwards, 1834.
REFERENCES:
Orensanz, 1973b:345.
Imajima and Higuchi, 1975:16.
Fauchald, 1977a:109.
DIAGNOSIS: Prostomium conical or rounded. Nuchal antenna present or absent. Branchiae absent. Setae including limbate forms and simple or composite multidentate hooded hooks. Pygidium with anal cirri. Maxillae and mandibles of variable shape and dentition.
REMARKS: Characters of juveniles may show considerable variability from the adults. For example, hooded hooks often appear more anteriorly in juveniles; composite hooks, if present in adults, may be absent in juveniles; and the jaw apparatus is often poorly developed in small specimens. Thus, juveniles are not necessarily identifiable using this or any other standard key.

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

1a. Anterior hooded hooks simple. 2
1b. Anterior hooded hooks composite 8

2a. Hooded hooks first present from setiger 1 3
2b. Hooded hooks first present posterior to setiger 7 5

3a. Acicula black. . . . . .**Lumbrineris brevipes**, p. 41-19
3b. Acicula yellow or light brown 4

4a. Maxillary carriers broad anteriorly, rounded posteriorly, strongly notched laterally (Figure 41-18g); mandibles short, broadly X-shaped (Figure 41-18h) . . . . . **Lumbrineris candida**, p. 41-21
4b. Maxillary carriers triangular, unnotched or slightly notched laterally (Figure 41-20g); mandibles long, ypsiloid (Figure 41-20h). . . . . **Lumbrineris verrilli**, p. 41-24

5a. Mandibles with shafts separated along most of their length (Figure 41-22g) 6
5b. Mandibles with shafts fused along most of their length (Figure 41-26g). 7

6a. Hooded hooks first present from setigers 26-29; posterior parapodia with short presetal lobes and long postsetal lobes . . . . . **Lumbrineris tenuis**, p. 41-26
6b. Hooded hooks first present from setigers 35-40; posterior parapodia with long pre- and postsetal lobes (Figure 41-24c) . . . . . **Lumbrineris sp. A**, p. 41-28

7a. Hooded hooks first present from setigers 31-51 (15-24 in small specimens); M-III with two teeth. . **Lumbrineris ernesti**, p. 41-28
7b. Hooded hooks first present from setigers 11-18; M-III with one tooth. . . . . **Lumbrineris sp. B**, p. 41-32

8a. Middle limbate setae of anterior fascicles composite (Figure 41-30e); composite hooded hooks first present from setigers 14-23. . . . . **Lumbrineris januarii**, p. 41-32
8b. Limbate setae all simple; composite hooded hooks first present from setiger 1. 9

9a. Prostomium rounded. 10
9b. Prostomium conical. 11

10a. M-III with two teeth; M-IV with one tooth (Figure 41-32h). . . . . **Lumbrineris coccinea**, p. 41-35
10b. M-III with 3-5 teeth; M-IV with two teeth (Figure 41-34f). . . . . **Lumbrineris inflata**, p. 41-37

11a. M-III with two teeth. 12
11b. M-III with one tooth. 13

12a. M-IV with one tooth (Figure 41-36g'); maxillary carriers deeply notched laterally (Figure 41-36g); anterior hooded hooks long-bladed (Figure 41-36e) . . . . . **Lumbrineris latreilli**, p. 41-39
12b. M-IV with two teeth (Figure 41-38h); maxillary carriers unnotched laterally (Figure 41-38g); anterior hooded hooks short-bladed (Figure 41-38e). . . . . **Lumbrineris sp. E**, p. 41-41

13a. Prostomium longer than wide (Figure 41-40a); M-II with 4-5 teeth (Figure 41-40h). . . . . **Lumbrineris sp. C**, p. 41-41
13b. Prostomium about as long as wide; M-II with three teeth (Figure 41-42g). . . . . **Lumbrineris sp. D**, p. 41-44

Lumbrineris brevipes (McIntosh, 1903)
Figures 41-15, 16a-h

Lumbriconereis brevipes McIntosh, 1903:147, text-fig. 3, pl. 12, figs. 33, 34.
Lumbrineris brevipes--Pettibone, 1963:260, fig. 68h.
Lumbrineris brevipes--Day, 1973:62.

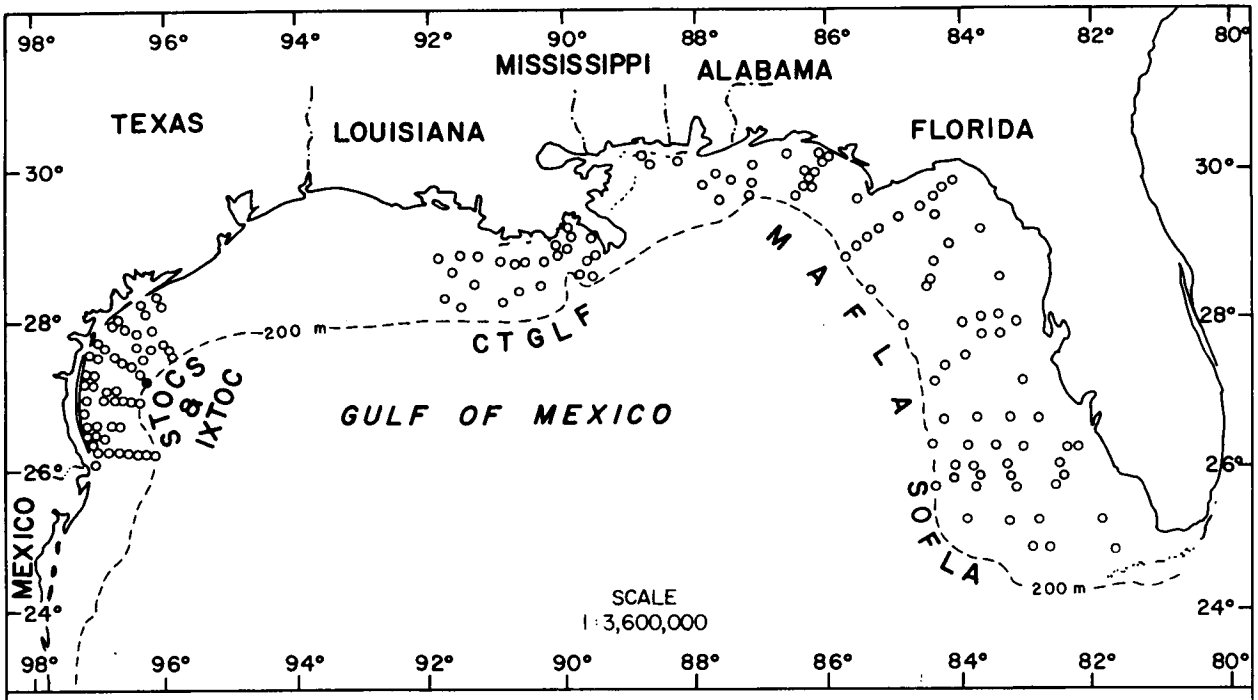

Figure 41-15. Distribution of Lumbrineris brevipes on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

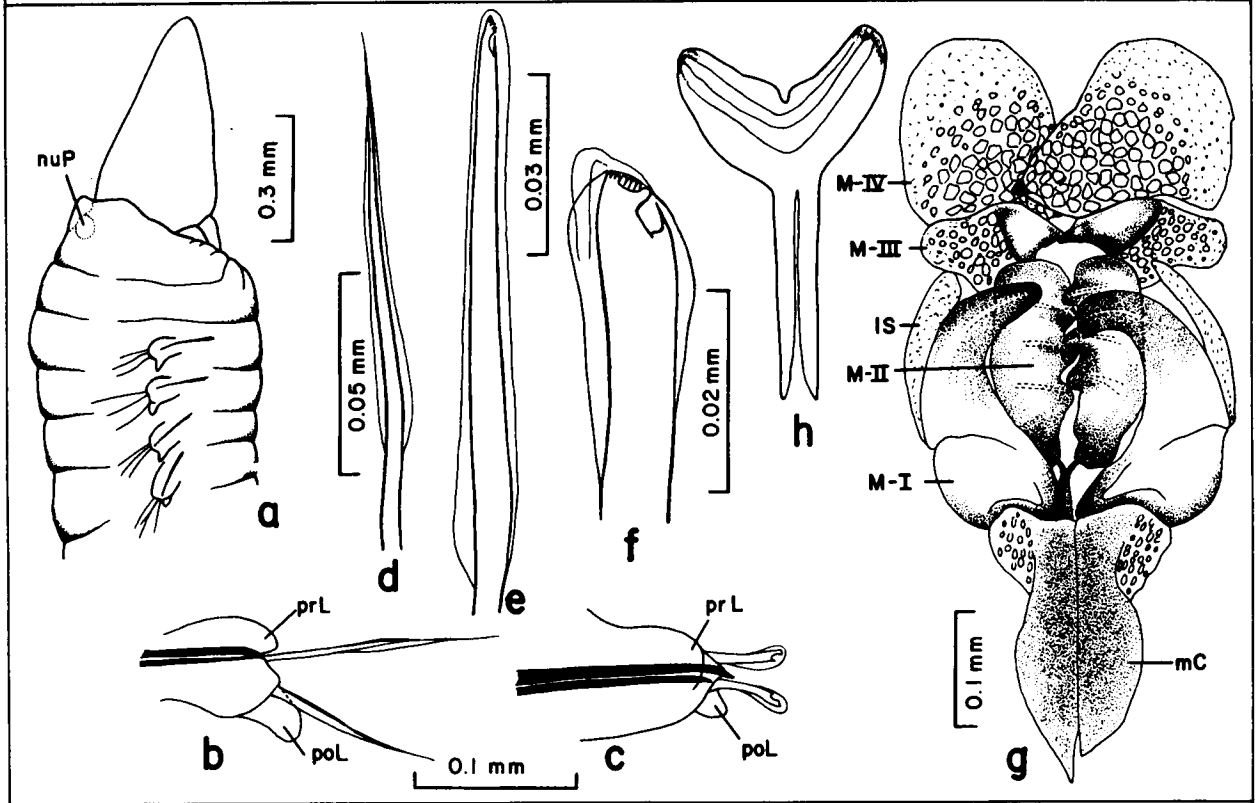

Figure 41-16. Lumbrineris brevipes: a, anterior end (lateral view); b, parapodium from setiger 2; c, parapodium from setiger 22 (anterior view); d, limbate seta from setiger 2; e, hooded hook from setiger 4; f, same, from setiger 23; g, maxillae; h, mandibles (from USNM 33765; no scale).

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
STOCS 3/II-3 11/76 (1 spec., USNM 90993).
Supplementary Material:
Mid-Atlantic States--40°15'30"N, 70°27'00"W, Sta. 2242 USFC, 106 m, Sept. 1884, M. Pettibone ID. (2 spec., USNM 33765); 39°21.6'N, 73°31.0'W, Sta. A2 BLM-03B, 132 m, R/V GILLISS, June 1976, G. Gaston ID. (1 spec., USNM 56992).
DESCRIPTION:
Length, 3.6+ mm; width, 0.6 mm (previously reported to 2 mm). Gulf of Mexico specimen fairly small, cylindrical, incomplete with 24 setigers. Prostomium conical, pointed (Figure 41-16a), up to twice as long as wide. Small, globular nuchal papilla located middorsally at base of prostomium, concealed by anterior margin of peristomium. Peristomium consisting of two apodous rings. Parapodia with small presetal lobes, and short, digitiform postsetal lobes anteriorly (Figure 41-16b), lobes becoming shorter in midbody region (Figure 41-16c). Anterior parapodia with narrow limbate setae (Figure 41-16d) and long-bladed hooded hooks (Figure 41-16e); blades of hooks becoming shorter by setiger 20 (Figure 41-16f). Acicula black, with fine filamentous tips; numbering two per parapodium. Maxillary carriers shallowly notched laterally (Figure 41-16g), 2-3 times as long as wide. Lateral supports extending along anterior two-thirds of M-I. M-II fairly long, with three stout teeth. M-III and M-IV as large, curved plates, each with one tooth. Mandibles of Atlantic specimens white, well-calcified; broad anteriorly, with narrow, slightly separated shafts (Figure 41-16h), 1.6 times as long as wide.
REMARKS: Pettibone (1963:261) reported the postsetal lobes as having a vascular loop, which would place this species in the genus Paraninoe. However, no vascularization was observed in the postsetal lobes of specimens examined herein, even after clearing; they are thus retained in the genus Lumbrineris. L. brevipes is newly reported from the Gulf of Mexico.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station in deep water off Corpus Christi, Texas (Figure 41-15); 131 m; silty clay.
DISTRIBUTION: Massachusetts to North Carolina, Gulf of Mexico, northwestern Spain, southern California, Antarctic.

Lumbrineris candida (Treadwell, 1921)
Figures 41-17, 18a-h

Lumbrinereis candida Treadwell, 1921:96, text-figs. 344-350, pl. 8, figs. 7-9.
Lumbrineris candida--Hartman, 1956:288.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 20E-7/81 (3 spec., USNM 75339); MAFLA 2211C-8/77 (1 spec.), 2211H-8/77 (1 spec.), 2425D-9/75 (1 spec.), 2528C-8/77 (1 spec.), 2528D-8/77 (1 spec.), 2528H-8/77 (1 spec.), 2531G-7/76 (1 spec.), 2531F-11/77 (1 spec.), 2748H-2/78 (1 spec., USNM 67775), 2853I-8/77 (1 spec.).
Supplementary Material:
West Indies--Buccoo Bay, Tobago (AMNH 1277, holotype).

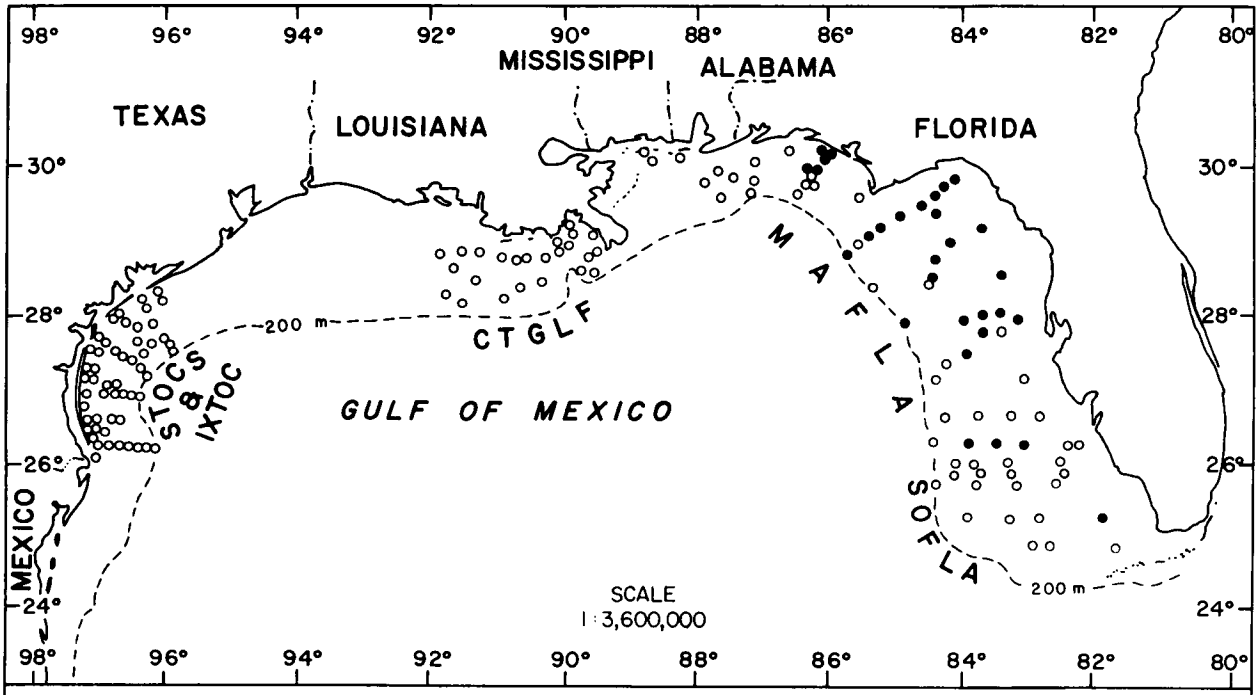

Figure 41-17. Distribution of Lumbrineris candida on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

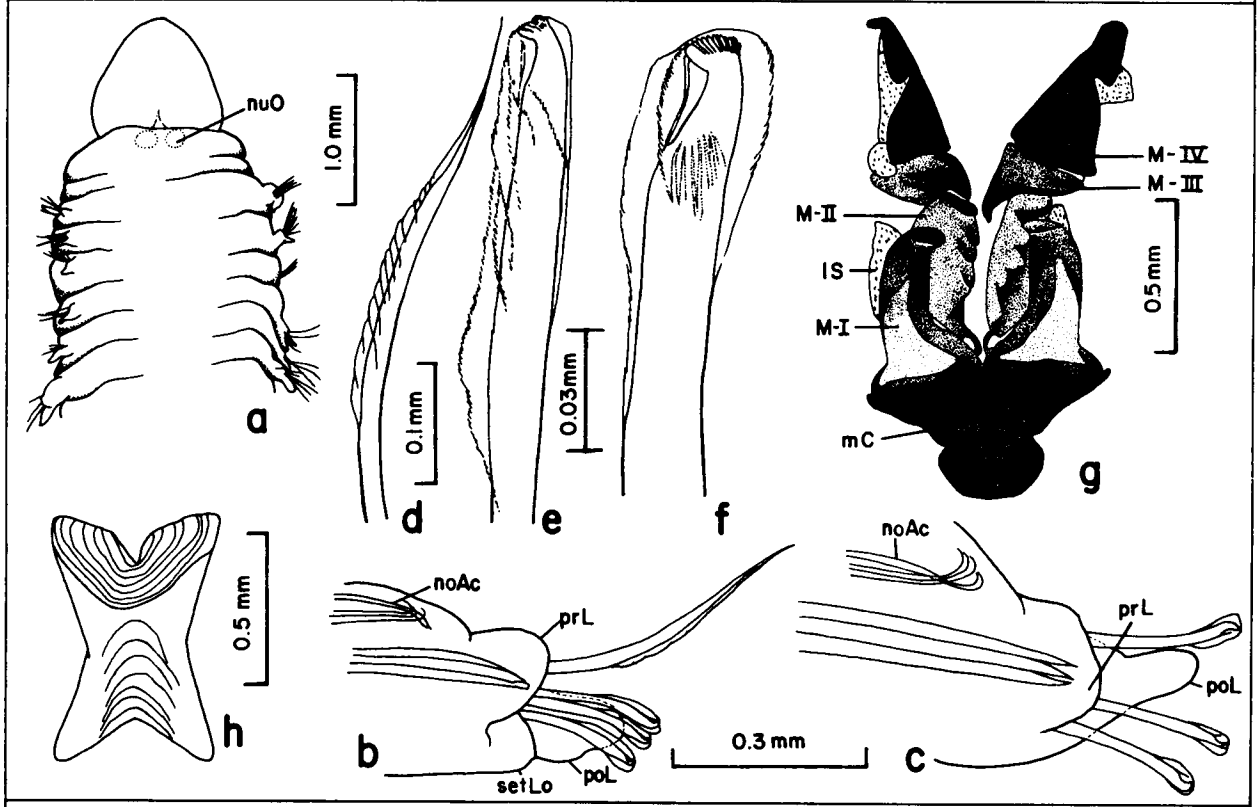

Figure 41-18. Lumbrineris candida: a, anterior end; b, parapodium from setiger 13 (anterior view); c, parapodium from midbody region (anterior view); d, limbate seta from setiger 13; e, hooded hook from setiger 1; f, same, from midbody region; g, maxillae; h, mandibles.

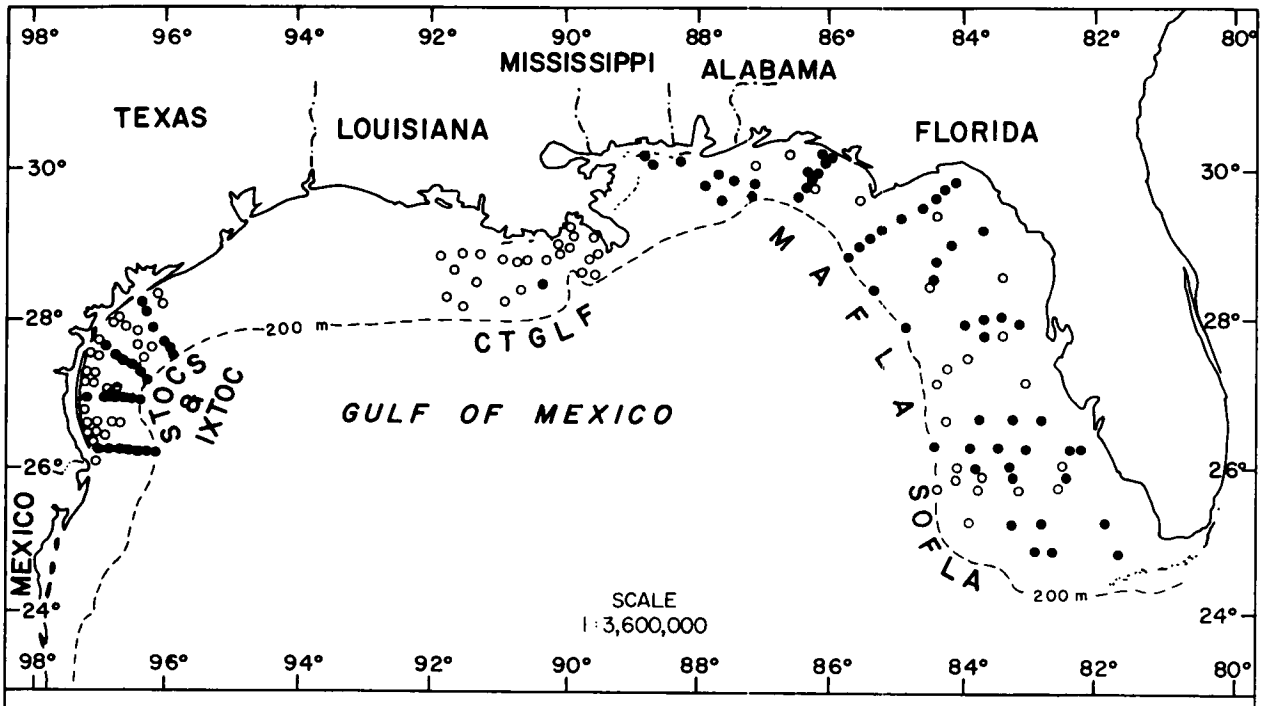

Figure 41-19. Distribution of Lumbrineris verrilli on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

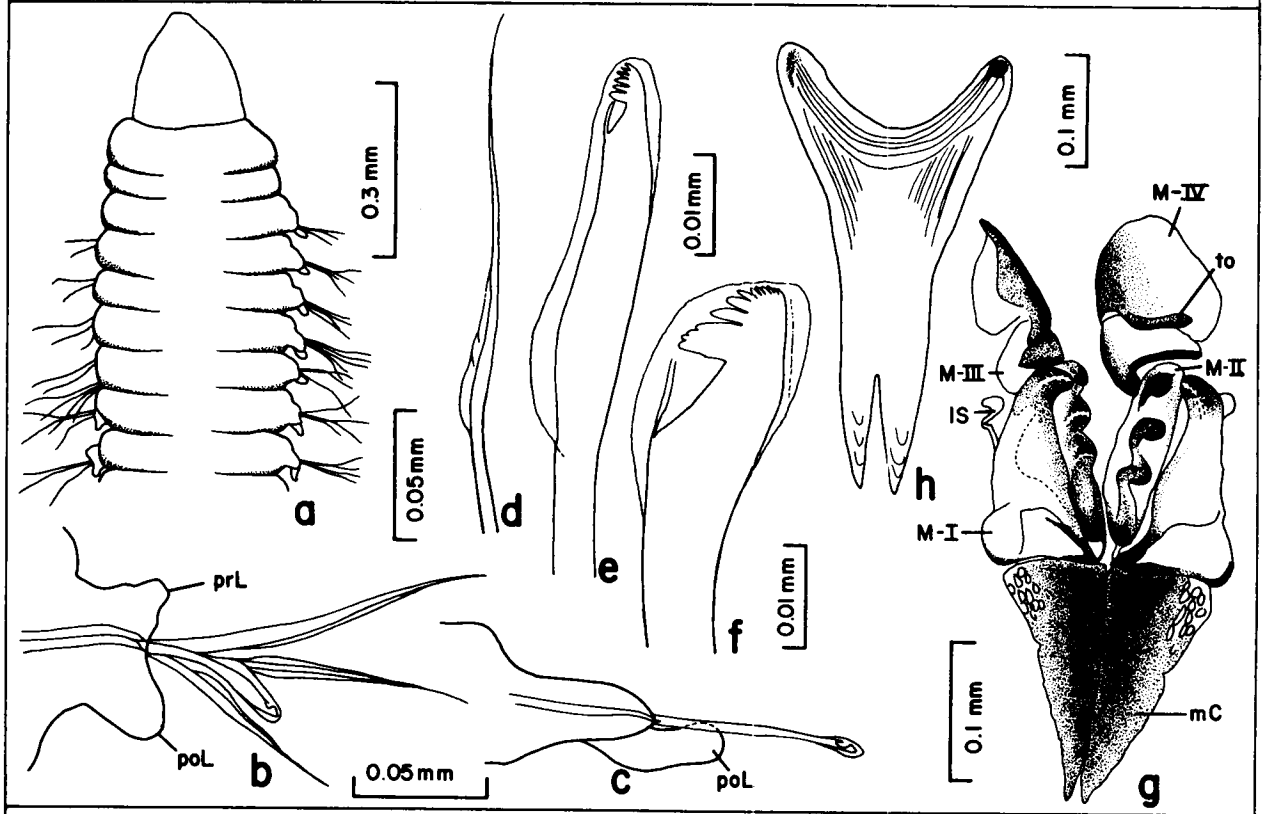

Figure 41-20. Lumbrineris verrilli: a, anterior end; b, parapodium from setiger 8; c, parapodium from posterior region; d, limbate seta from setiger 17; e, hooded hook from setiger 5; f, same, from setiger 28; g, maxillae; h, mandibles.

DESCRIPTION:
Length, to 364 mm (holotype); width, to 1.9 mm. Body large, stout, often dark brown or green, iridescent; holotype complete with 665 setigers. Prostomium bluntly conical (Figure 41-18a), usually slightly wider than long. Peristomium consisting of two apodous rings. Nuchal organs as paired eversible lobes between prostomium and peristomium. Parapodia well-developed, with short, rounded presetal lobes. Postsetal lobes longer, digitiform anteriorly (Figure 41-18b), increasing slightly in length in midbody region (Figure 41-18c). Anterior parapodia with up to six limbate setae (Figure 41-18d), and three long-bladed hooded hooks starting on setiger 1 (Figure 41-18e). Parapodia of midbody region with broad, short-bladed hooded hooks (Figure 41-18f), without limbate setae. Pygidium of holotype with four short anal cirri. Acicula yellow, with brown, aristate tips. Maxillary carriers broad anteriorly, rounded posteriorly, with deep lateral notch (Figure 41-18g), 1.2-1.7 times as long as wide. M-I broad basally, 1.3-1.8 times as long as wide. Lateral supports extending along anterior half of M-I. M-II broad with four small, rounded teeth. M-III as curved, triangular plates. M-IV long, broad, curved, deeply notched along outer lateral borders. Mandibles short, broadly X-shaped (Figure 41-18h), 1.2-1.5 times as long as wide.
REMARKS: L. candida was previously known only from the type-locality.
PREVIOUSLY REPORTED HABITAT: Shallow water; fine sand around plant roots.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common off Florida (Figure 41-17); 10-189 m; primarily coarse to very fine sand and silty fine to very fine sand, also clayey sandy silt.
DISTRIBUTION: Tobago, West Indies; Gulf of Mexico.

Lumbrineris verrilli Perkins, 1979
Figures 41-19, 20a-h

Lumbrineris verrilli Perkins, 1979:441, figs. 10, 11.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2C-11/80 (6 spec., USNM 75348); MAFLA 2207J-8/77 (2 spec.), 2208H-8/77 (1 spec.), 2208K-8/77 (1 spec.), 2209H-11/77 (1 spec.), 2422C-7/76 (1 spec.), 2422J-7/76 (27 spec.), 2423C-7/76 (1 spec.), 2423I-7/76 (2 spec.), 2424I-7/76 (1 spec.), 2640C-6/75 (1 spec., USNM 67773), 2641E-6/75 (2 spec.), 2643F-6/75 (2 spec.); CTGLF 03-5/78 (4 spec.); STOCS 1/IV-1 F/76 (53 spec., USNM 90992); IXTOC S53-11/79 (3 spec., USNM 75136; 1 spec., USNM 75137).
Supplementary Material:
Gulf of Mexico--Florida, lower Tampa Bay, 27°33'27"N, 82°42'36"W, 5 m, Nov. 1963, Taylor & Saloman, colls., EJ-63-405 (USNM 57440, holotype; USNM 57441, 28 paratypes); Alabama, Mississippi Sound, Feb. 1973, B. A. Vittor, coll. (1 spec., USNM 67777).
DESCRIPTION:
Length, 17.2+ mm (previously reported to 45 mm); width, to 0.6 mm (previously reported to 0.7 mm). Body small, slender; longest specimen incomplete with 235 setigers; smaller, complete specimens with up to 120 setigers. Prostomium conical or acorn-shaped, about same length as width (Figure 41-20a). Peristomium consisting of two apodous rings. Presetal lobes short, pointed anteriorly, becoming shorter and rounded

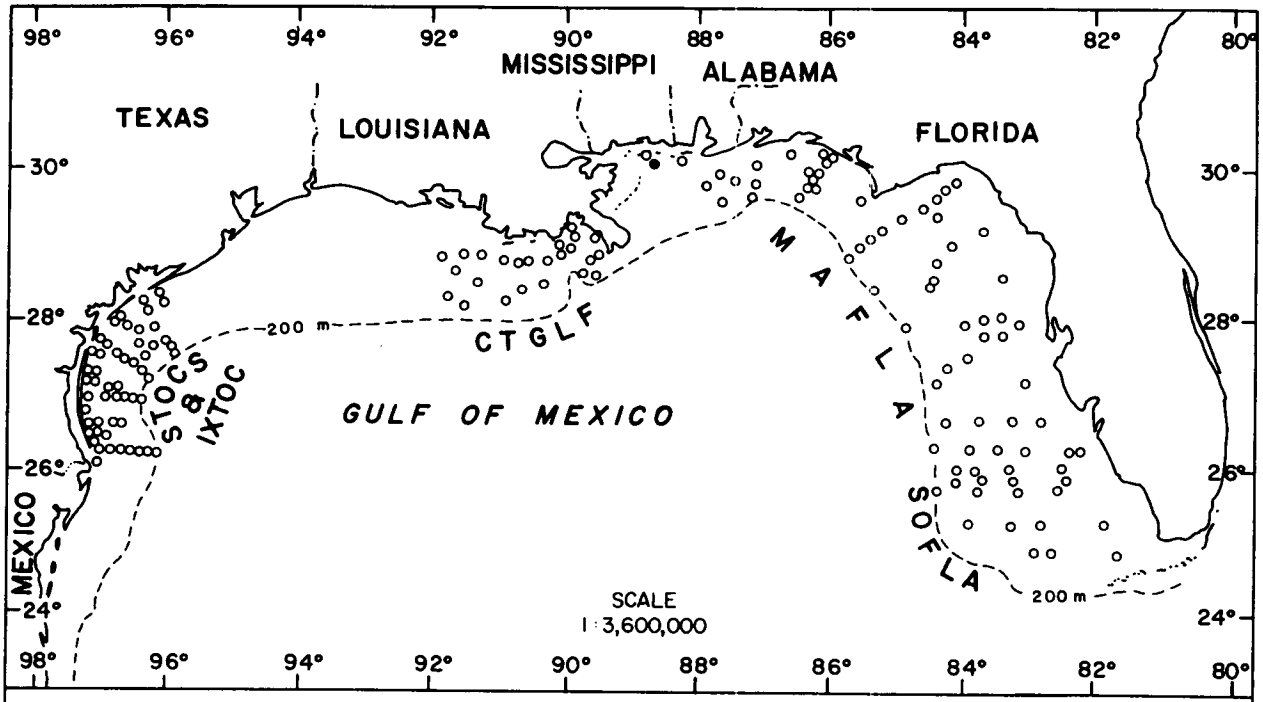

Figure 41-21. Distribution of Lumbrineris tenuis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

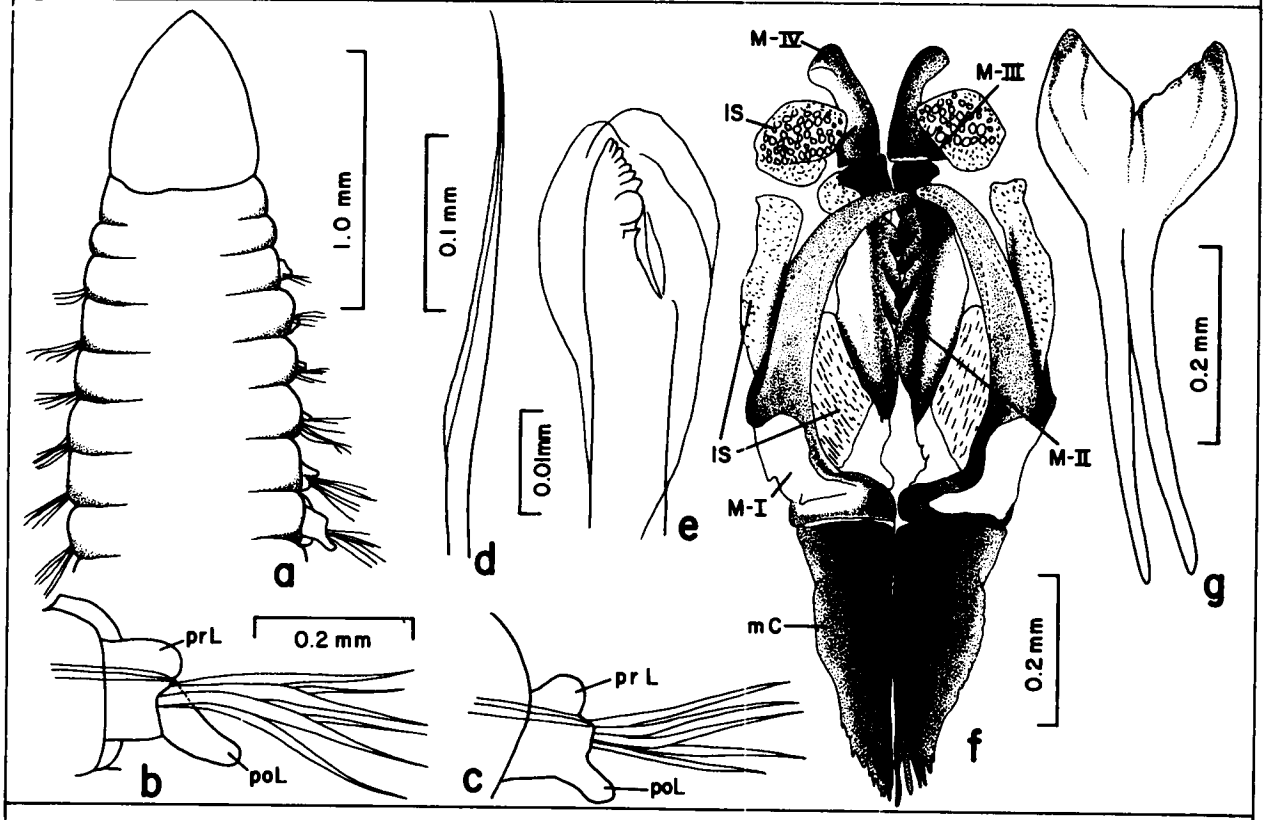

Figure 41-22. Lumbrineris tenuis: a, anterior end; b, parapodium from setiger 12; c, parapodium from setiger 25; d, limbate seta from setiger 8; e, hooded hook from setiger 33; f, maxillae; g, mandibles.

throughout rest of body. Postsetal lobes slightly longer than presetal lobes in anterior (Figure 41-20b) and midbody regions, long and digitiform posteriorly (Figure 41-20c). Anterior parapodia with 3-4 limbate setae (Figure 41-20d) and 1-2 simple, long-bladed hooded hooks (Figure 41-20e) present from setiger 1. Limbate setae absent after setigers 21-49. Middle parapodia with 2-3 short-bladed hooded hooks (Figure 41-20f). Acicula yellow, with fine, filamentous tips. Pygidium with two slender, tapered anal cirri. Maxillary carriers triangular, shallowly notched laterally (Figure 41-20g), 2.0-3.2 times as long as wide. M-I fairly short, 1.4-1.9 times as long as wide. Lateral supports small or absent. M-II with 3-4 blunt teeth. M-III curved, triangular, with one tooth. M-IV as large, curved plates with dark, straight tooth along posterior margins. Mandibles white, ypsiloid, incised basally (Figure 41-20h).
REMARKS: Gulf of Mexico BLM-OCS specimens of L. verrilli were originally referred to L. impatiens, L. parvapedata, L. tenuis, and Lumbrineris sp.
PREVIOUSLY REPORTED HABITAT: 3-11 m; sand, coarse calcareous sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Widespread throughout northern Gulf (Figure 41-19); 10-189 m; in all sediment types from coarse sand to silty clay.
DISTRIBUTION: East coast of Florida, Gulf of Mexico.

Lumbrineris tenuis (Verrill, 1873)
Figures 41-21, 22a-g

Lumbrineris tenuis--Hartman, 1944a:340, pl. 49, figs. 3-5.
Lumbrineris bassi Hartman, 1944b:150, pl. 10, figs. 217-223.
Lumbrineris tenuis--Gardiner, 1976:199, fig. 26p-r.
Lumbrineris tenuis--Perkins, 1979:433, fig. 7a-j.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2638C-8/77 (1 spec., USNM 67770), 2638G-11/77 (1 spec.).
Supplementary Material:
Florida--Tampa Bay (Boca Ciega Bay), 27°43'26"N, 82°43'37"W, 1 m, Oct. 1963, Taylor & Saloman, colls., T. H. Perkins ID. (10 spec., USNM 57439).
DESCRIPTION:
Length, 6+ mm (previously reported to 70 mm); width, to 1 mm. Body stout anteriorly, incomplete. Prostomium bluntly conical (Figure 41-22a), about as long as wide. Peristomium consisting of two apodous rings. Parapodia well-developed; postsetal lobes short and auricular to moderately long and digitiform anteriorly (Figure 41-22b), shorter in early midbody region (Figure 41-22c) or becoming gradually longer throughout midbody region, long and digitiform posteriorly. Presetal lobes short throughout. Anterior parapodia with about eight long limbate setae (Figure 41-22d). Hooded hooks simple (Figure 41-22e), first appearing on setigers 26-29. Acicula yellow, with fine, filamentous tips. Pygidium with four short, digitiform anal cirri. Maxillary carriers triangular, slightly notched laterally (Figure 41-22f), 2.3-3.1 times as long as wide. M-I long and slender, 2.0-3.6 times as long as wide. Lateral supports extending along anterior two-thirds of M-I. M-II with four teeth; base well-separated from base of M-I; supports

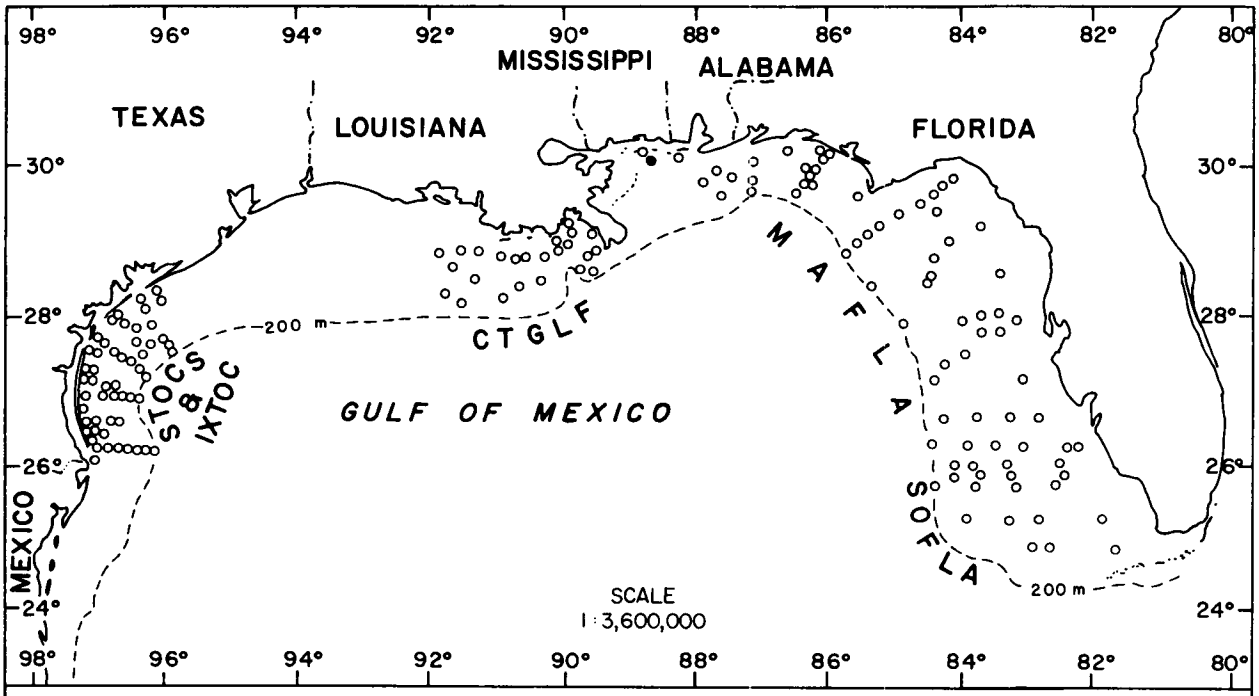

Figure 41-23. Distribution of Lumbrineris sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

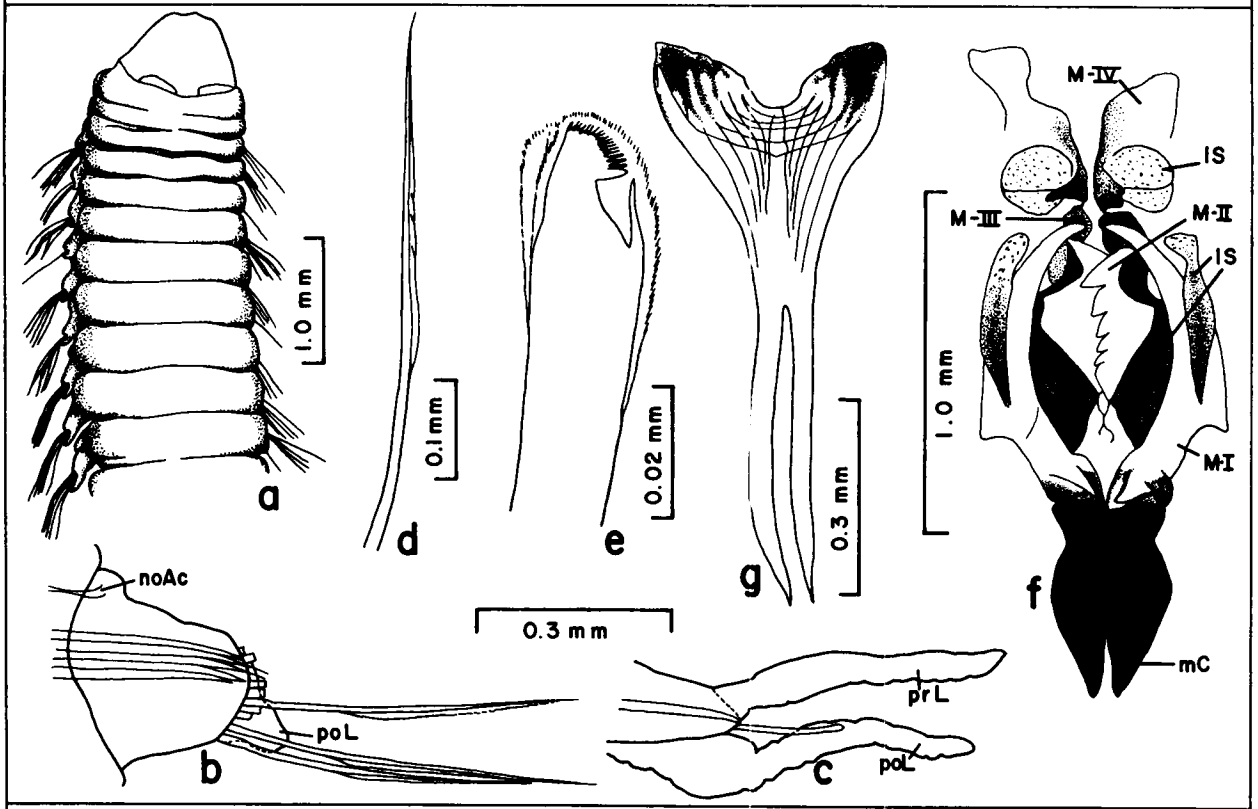

Figure 41-24. Lumbrineris sp. A: a, anterior end; b, parapodium from setiger 7 (anterior view); c, parapodium from far posterior region; d, limbate seta from setiger 7; e, hooded hook from far posterior region; f, maxillae; g, mandibles.

fairly large. M-III small, triangular, with one tooth. M-IV long, curved, with prominent tooth and large, rounded supports. Mandibles with long, slender, slightly divergent shafts (Figure 41-22g), 2.5-4.0 times as long as wide.
REMARKS: Lumbrineris tenuis includes some Gulf of Mexico BLM-OCS specimens previously identified as L. bassi.
PREVIOUSLY REPORTED HABITAT: Intertidal to abyssal; fine to coarse sand, muddy sand, shell, algae and seagrass cover.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Mississippi (Figure 41-21); 24 m; sandy silt.
DISTRIBUTION: Maine to Florida, Gulf of Mexico.

Lumbrineris sp. A
Figures 41-23, 24a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2638H-9/77 (1 spec., USNM 67771).
Supplementary Material:
Gulf of Mexico--Texas, IEC Sta. 721 SN, 29°34.6'N, 93°50.1'W, 11 m, silt and clay (1 spec.).
DESCRIPTION:
Length, 43+ mm; width, 2.6 mm. Body large, stout; one nearly complete specimen with 136 setigers. Prostomium bluntly conical (Figure 41-24a), about same length as width. Peristomium consisting of two apodous rings. Anterior parapodia with inconspicuous presetal lobes and short, lamellar postsetal lobes (Figure 41-24b). Pre- and postsetal lobes becoming rounded and equal in length in midbody region; long, cirriform and equal in length in posterior region (Figure 41-24c). Anterior parapodia with limbate setae only (Figure 41-24d). Hooded hooks simple, with crest of numerous small teeth (Figure 41-24e), first appearing on setigers 35-40. Maxillary carriers about as broad medially as anteriorly; laterally notched about one-fourth distance from anterior edge (Figure 41-24f), 2.7-3.1 times as long as wide. M-I slender, 3.5-3.6 times as long as wide. Lateral supports extending along anterior two-thirds of M-I. M-II with 4-5 teeth; darker, lateral portions forming distinct, curved boundary along lighter, medial portions. M-III small, triangular, with one tooth. M-IV as long, curved plates with prominent tooth and large, rounded supports. Mandibles with broadly flared anterior portion and long, slender, slightly divergent shafts (Figure 41-24g), about 2.5 times as long as wide.
REMARKS: This species was confused with L. tenuis in Gulf of Mexico BLM-OCS material. It resembles L. tenuis in lacking hooded hooks anteriorly and in certain features of the jaw apparatus, but differs from the latter in having the hooded hooks originating more posteriorly and in having long presetal lobes in the posterior body region.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Mississippi (Figure 41-23); 24 m; sandy silt.

Lumbrineris ernesti Perkins, 1979
Figures 41-25, 26a-g

Lumbrineris ernesti Perkins, 1979:429, figs. 5a-f, 6a-g.

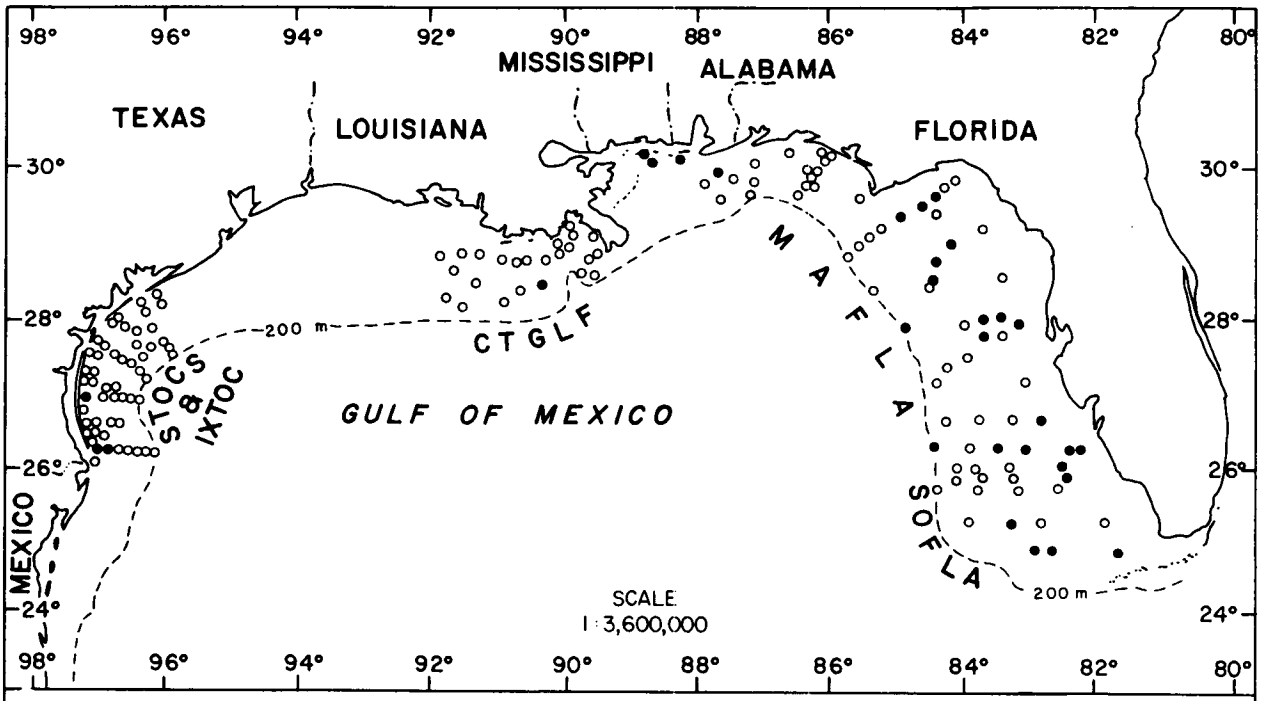

Figure 41-25. Distribution of Lumbrineris ernesti on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

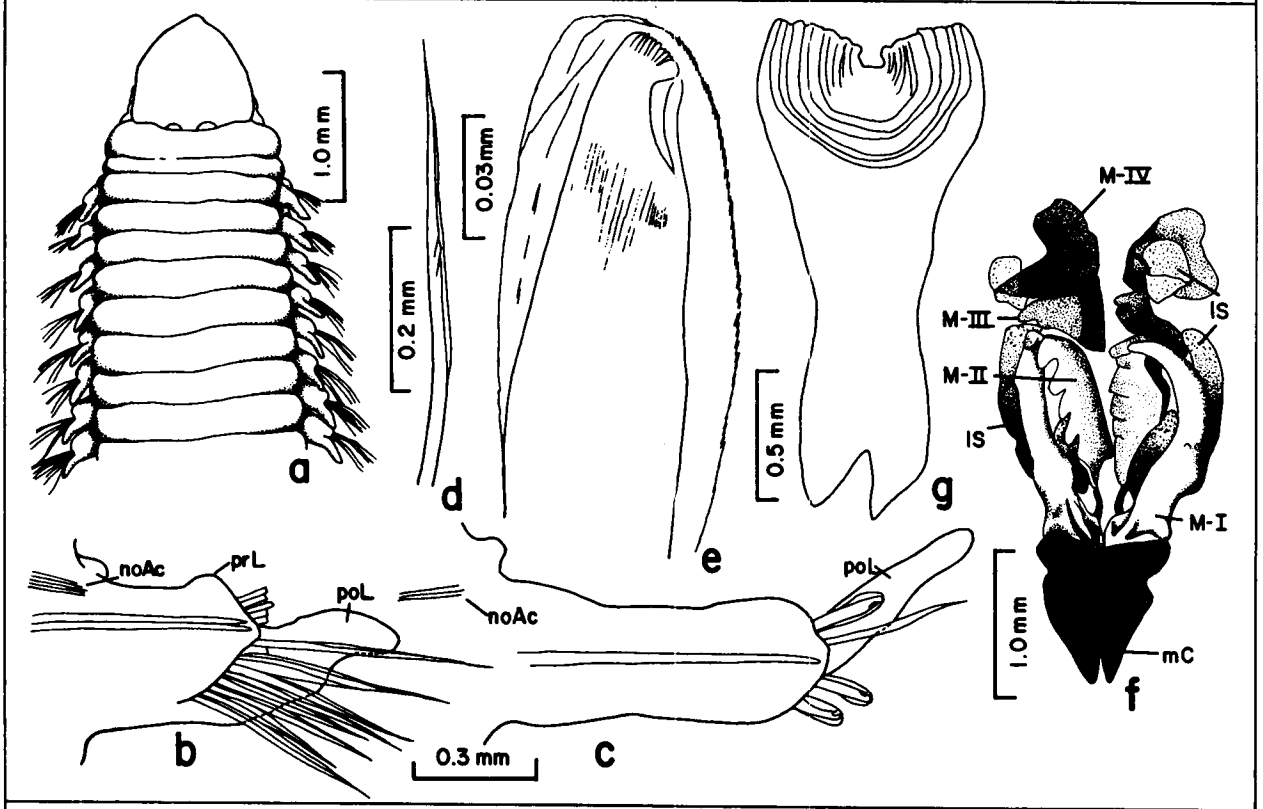

Figure 41-26. Lumbrineris ernesti: a, anterior end; b, parapodium from setiger 6 (anterior view); c, parapodium from posterior region (anterior view); d, limbate seta from setiger 6; e, hooded hook from midbody region, f, maxillae; g, mandibles; b-f from Mobile Bay specimen.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6-11/80 (2 juv., USNM 75341), 6A-11/80 (2 juv., USNM 75342), 6B-No date (2 spec., USNM 75343); MAFLA 1F-5/74 (USNM 55878, 1 paratype), 2207B-7/76 (1 spec.), 2207D-8/77 (2 spec.), 2207E-8/77 (1 spec.), 2207E-2/78 (1 spec.), 2316K-8/76 (1 spec.), 2421A-9/77 (1 spec.), 2423H-1/76? (1 spec.), 2637F-6/75 (1 spec.); CTGLF 03-5/78 (2 spec., USNM 90984); STOCS 1/IV-2 W/76 (2 spec., USNM 90985), 4/III-6 W/76 (1 spec., USNM 90986); IXTOC S53-11/79 (2 spec., USNM 75134).
Supplementary Material:
Gulf of Mexico--Florida, Anclote Anchorage, Pinellas Co., 28°12.6'N, 82°47.6'W, 3.5 m, Dec. 1975 (USNM 57438, holotype); Tampa Bay, 1963, J. Taylor, coll. (USNM 45598, 7 paratypes); Alabama, Mobile Bay, Mobil Oil Sta. 051-E, 30°15'13"N, 88°03'08"W, 6.2 m, clayey sand, Apr. 1979, coll. of B. A. Vittor & Assoc. (1 spec.); Texas, 5 miles offshore northern Mustang Island, 15-16 m, silty sand, T. R. Calnan ID., coll. of Univ. Texas Austin (1 spec.).
North Carolina--off Beaufort, 34°29'N, 76°13'W, 33 m, Feb. 1965, F. Grassle, coll. (USNM 54280, 1 paratype).
DESCRIPTION:
Length, 208+ mm (previously reported to 105 mm); width, to 5 mm (previously reported to 5 mm). Largest specimens massive, robust; one nearly complete specimen with 325 setigers. Prostomium conical (Figure 41-26a), usually somewhat wider than long. Peristomium consisting of two apodous rings. Nuchal organs as paired, eversible lobes covered by anterior margin of peristomium. Parapodia well-developed, with short, rounded presetal lobes throughout. Postsetal lobes moderately long and auricular anteriorly (Figure 41-26b), tapered in midbody region, becoming as long as setal lobes in posterior region and inclined dorsally at about 30° angle (Figure 41-26c). Limbate setae (Figure 41-26d) numbering 10-11 per fascicle anteriorly, gradually diminishing in number to one per fascicle in medial and posterior regions. Hooded hooks simple (Figure 41-26e), first appearing on setigers 31-51 (15-24 in small specimens). Acicula yellow. Pygidium with two anal cirri. Maxillary carriers incised laterally (Figure 41-26f), 1.7-3.2 times as long as wide. M-I slender, 3-4 times as long as wide. Lateral supports extending along anterior two-thirds of M-I. Left M-II with four teeth; right M-II with four teeth and sometimes an additional small, fifth tooth below anteriormost tooth. M-III each with one pointed and one rounded tooth. M-IV each with long, curved, pointed tooth and rounded or rectangular supports. Mandibles white or light brown, shafts separated over short basal section (Figure 41-26g), 2.1-2.4 times as long as wide.
REMARKS: Juvenile specimens have hooded hooks first appearing on setigers 8-10. Gulf of Mexico BLM-OCS specimens of L. ernesti were originally confused with several other species, principally L. erecta and L. tenuis.
PREVIOUSLY REPORTED HABITAT: 3-33 m; fine to coarse sand, silt, mixed seagrasses.
GULF OF MEXICO BLM-OCS OCCURRENCE: Widespread in northeastern Gulf with a few occurrences in central and western Gulf (Figure 41-25); 11-189 m; primarily silty fine to very fine sand, also coarse to very fine sand, clayey sand, sandy and clayey silt, silty clay.
DISTRIBUTION: North Carolina to Florida, Gulf of Mexico.

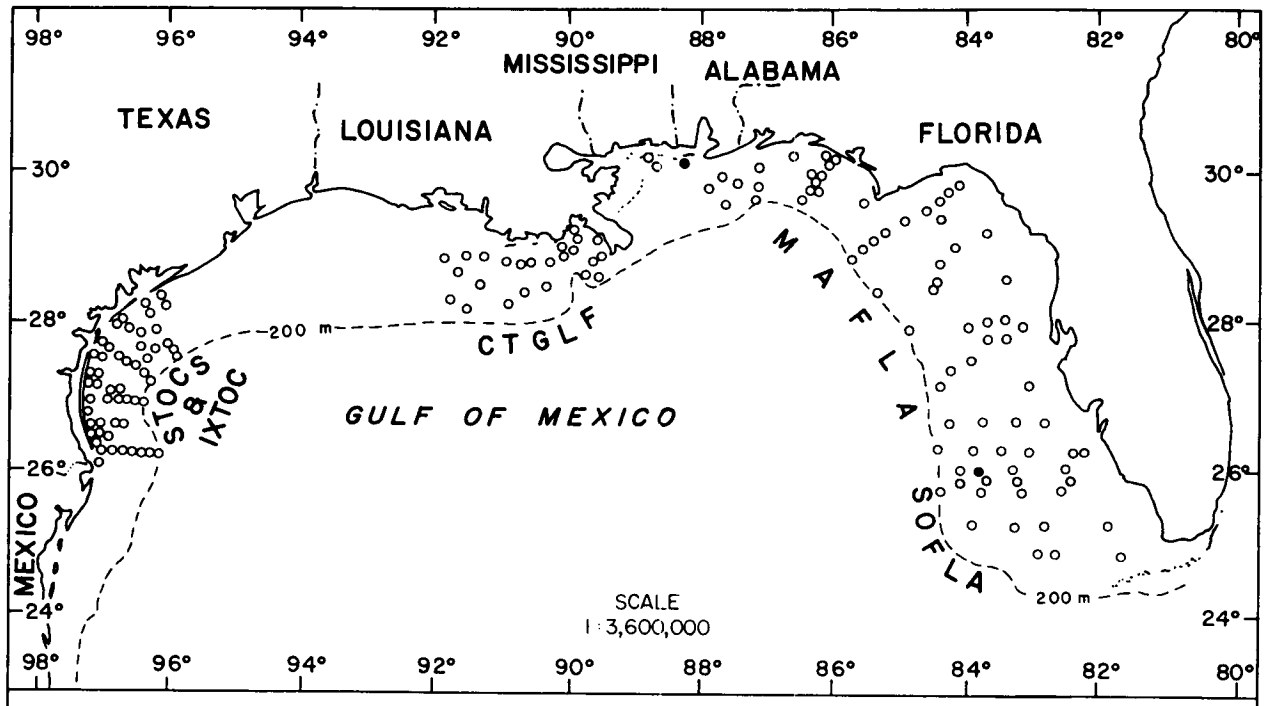

Figure 41-27. Distribution of Lumbrineris sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

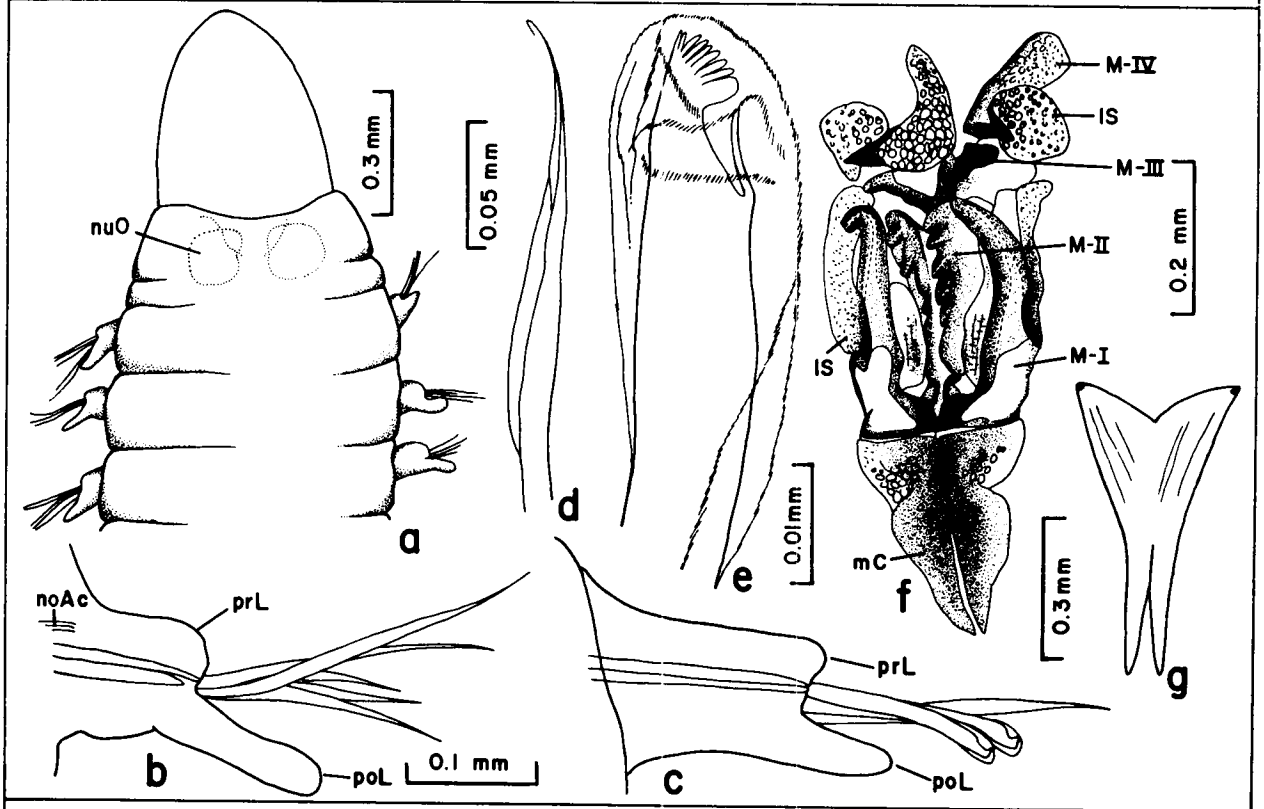

Figure 41-28. Lumbrineris sp. B: a, anterior end; b, parapodium from setiger 5; c, parapodium from setiger 19; d, limbate seta from setiger 13; e, hooded hook from setiger 14; f, maxillae; g, mandibles.

Lumbrineris sp. B
Figures 41-27, 28a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12-11/80 (2 spec., USNM 75349); MAFLA location and date unknown (3 spec.), 2639I-7/76 (1 spec., USNM 67772).
DESCRIPTION:
Length, 7.8+ mm; width, 1.0 mm. Two specimens emerald green in color; all specimens incomplete with up to 47 setigers; one specimen with oocytes. Prostomium rounded to conical, about as long as wide. Peristomium consisting of two apodous rings, covering large, rounded, eversible nuchal lobes (Figure 41-28a). Parapodia well-developed with short, rounded presetal lobes. Postsetal lobes digitiform, about as long as setal lobes anteriorly (Figure 41-28b), becoming slightly shorter toward midbody region (Figure 41-28c). Anterior parapodia with 6-7 limbate setae (Figure 41-28d). Hooded hooks simple (Figure 41-28e), first appearing on setigers 11-18. Acicula yellow, with fine, filamentous tips. Maxillary carriers triangular, notched laterally (Figure 41-28f), 2.4-2.6 times as long as wide. M-I fairly long and slender, 3.1-3.3 times as long as wide. Lateral supports extending along anterior two-thirds of M-I. M-II with 4-5 teeth. M-III and M-IV each with one pointed tooth. Mandibles transparent with black spot at anterior tips, shafts separated over short basal portion (Figure 41-28g), 2.1-2.2 times as long as wide.
REMARKS: Lumbrineris sp. B is similar to Gulf of Mexico specimens of L. tenuis, particularly with respect to the maxillae. It differs from the latter in having longer postsetal lobes anteriorly, hooded hooks first appearing more anteriorly, and mandibles with shafts fused over most of their length.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Alabama and one off southwestern Florida (Figure 41-27); 32-90 m; fine sand, sandy silt.

Lumbrineris januarii (Grube, 1878a)
Figures 41-29, 30a-i

Lumbrineris januarii--Hartman, 1944b:167, pl. 13, figs. 278-284.
Lumbrineris januarii--Day, 1973:62.
Lumbrineris januarii--Gardiner, 1976:199, fig. 26a-e.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 14B-4/81 (1 spec., USNM 75345); MAFLA 2207D-11/77 (1 spec.), 2207E-2/78 (1 spec.), 2207J-2/78 (1 spec.), 2420-7/76 (1 spec., USNM 56141), 2421-8/77 (1 spec., USNM 55880), 2421A-8/77 (1 spec.); STOCS 4/III-6 W/76 (1 spec., USNM 90989), 4/III-5 S/76 (3 spec., USNM 90988), 4/III-4 F/76 (1 spec., USNM 90991), 4/III-4 W/77 (2 spec., USNM 90987), 1/IV-2 W/76 (1 spec., USNM 90990); IXTOC S52-11/79 (1 spec., USNM 75135).
Supplementary Material:
Florida--Hutchinson Island, St. Lucie Co., 27°21'06"N, 80°13'58"W, Sta. 1, 8.5 m, Nov. 1971, Gallagher & Cobb colls., T. H. Perkins ID. (1 spec., USNM 54662).

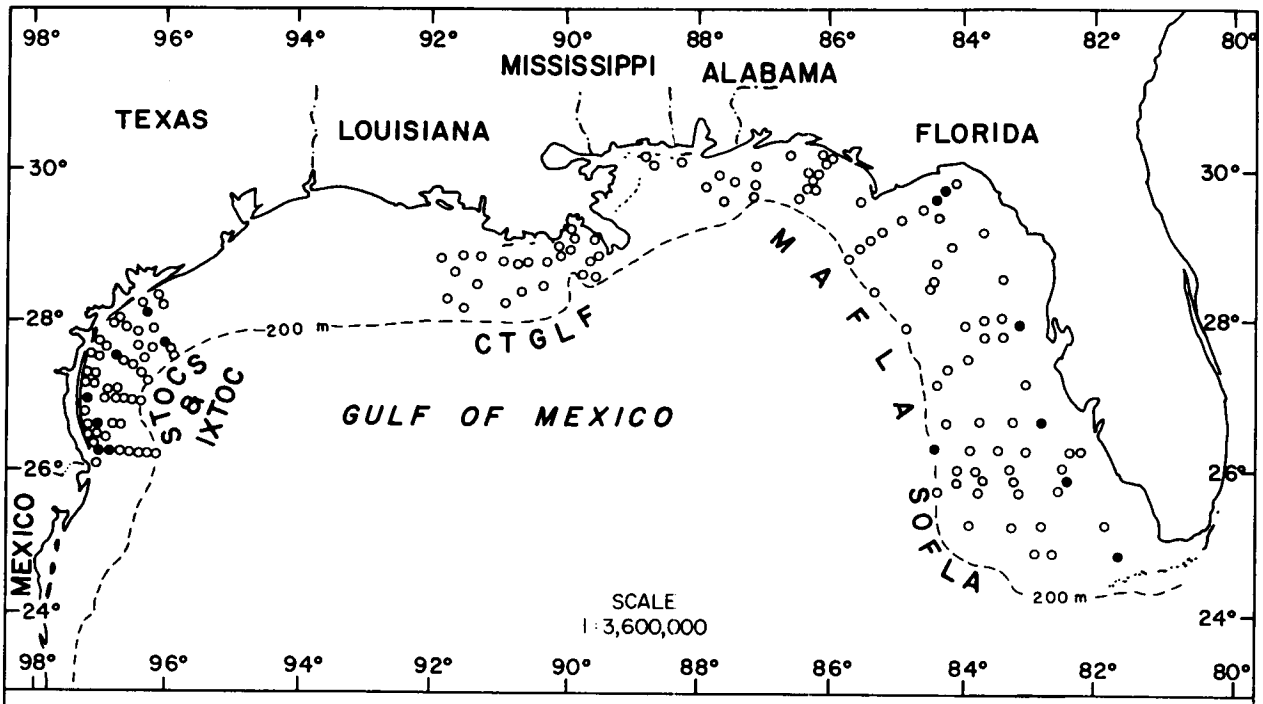

Figure 41-29. Distribution of Lumbrineris januarii on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

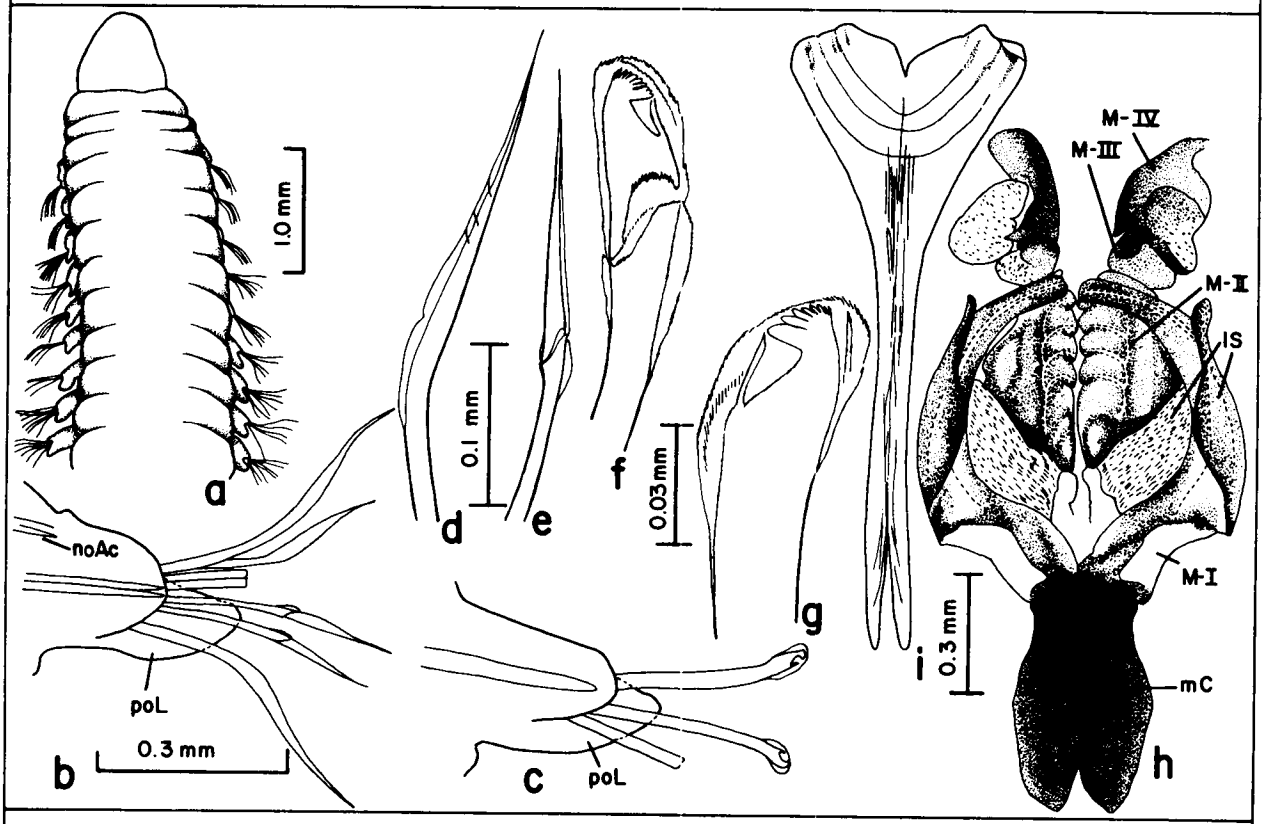

Figure 41-30. Lumbrineris januarii: a, anterior end; b, parapodium from setiger 10 (anterior view); c, parapodium from posterior region (anterior view); d, simple limbate seta from setiger 6; e, composite limbate seta from setiger 6; f, composite hooded hook from early midbody region; g, simple hooded hook from posterior region; h, maxillae; i, mandibles.

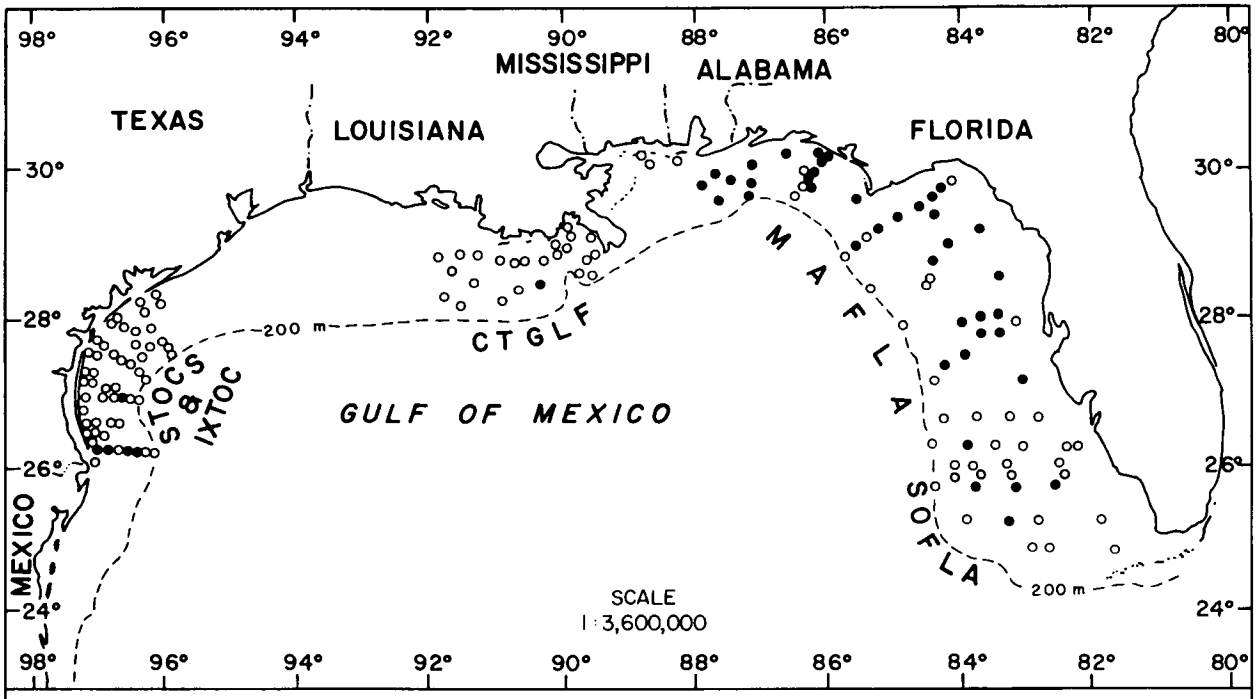

Figure 41-31. Distribution of Lumbrineris coccinea on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

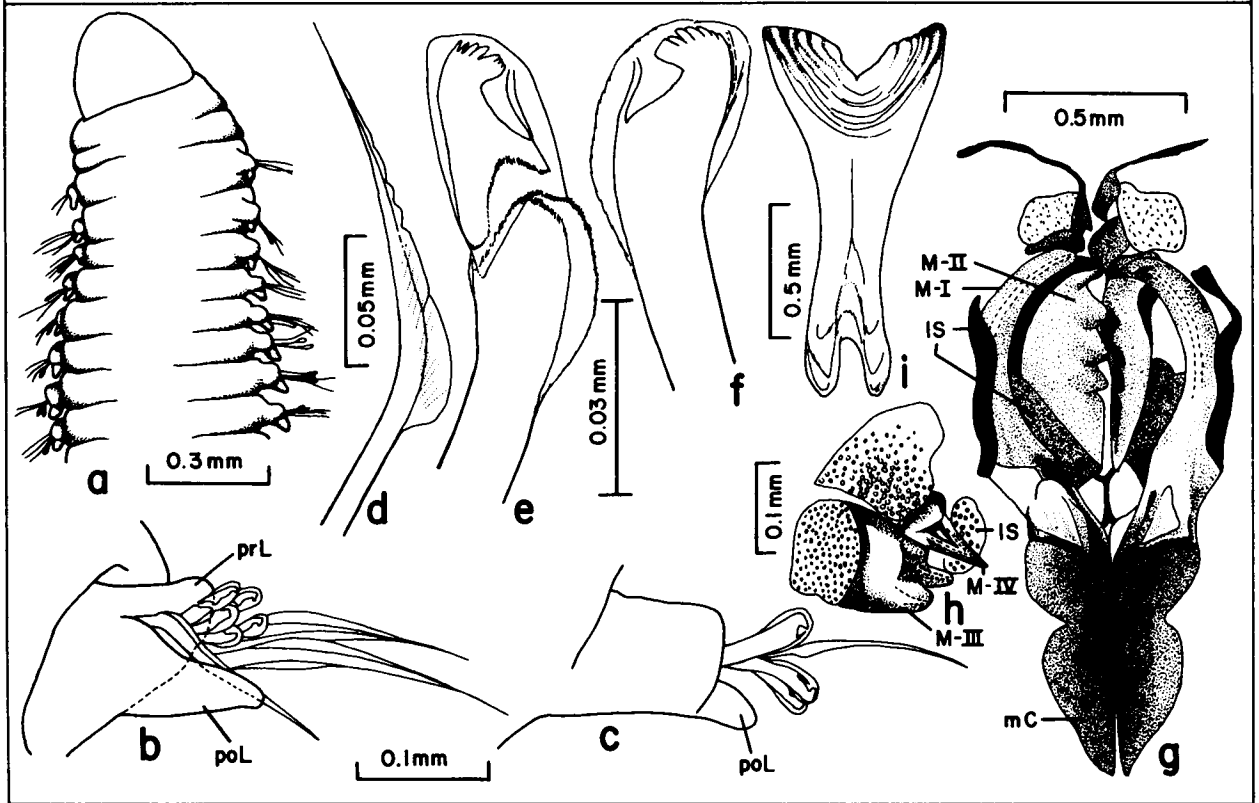

Figure 41-32. Lumbrineris coccinea: a, anterior end; b, parapodium from setiger 10 (posterior view); c, parapodium from setiger 31; d, limbate seta from setiger 11; e, composite hooded hook from setiger 14; f, simple hooded hook from setiger 31; g, maxillae; h, detail of M-III and M-IV; i, mandibles.

DESCRIPTION:
Length, 58.7+ mm (previously reported to 80 mm); width, to 1.8 mm (previously reported to 2 mm). Body moderately large; all specimens incomplete with up to 176 setigers. Prostomium conical or acorn-shaped, about as long as wide (Figure 41-30a). Peristomium consisting of two apodous rings. Parapodia well-developed with short presetal lobes. Postsetal lobes moderately long, auricular to digitiform anteriorly (Figure 41-30b), becoming shorter in medial and posterior regions (Figure 41-30c). Anterior setal fascicles including several superior, simple limbate setae (Figure 41-30d), about four medial composite limbate setae (Figure 41-30e), and 1-2 inferior simple limbate setae. Composite hooded hooks (Figure 41-30f) replacing composite limbate setae around setigers 12-23. Simple hooded hooks (Figure 41-30g) gradually replacing composite hooks around setigers 19-29. Acicula yellow, slender, distally blunt. Maxillary carriers slightly notched laterally (Figure 41-30h), 2.4-4.0 times as long as wide. M-I fairly long, slender, 1.7-4.0 times as long as wide. Lateral supports extending along anterior two-thirds of M-I. M-II with five teeth, and broad supports along oblique posterior borders. M-III with two teeth. M-IV with single long, pointed tooth above rounded supports. Mandibles with long, slender shafts fused except for short basal portion (Figure 41-30i), about three times as long as wide.
REMARKS: L. januarii is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 10-40 m; sand mixed with shell particles.
GULF OF MEXICO BLM-OCS OCCURRENCE: Several stations off Florida and Texas (Figure 41-29); mainly shallow water, 14-36 m; also 82 and 168 m; medium to fine sand, silty and clayey fine sand, silty and sandy clay.
DISTRIBUTION: North Carolina to Florida; Gulf of Mexico; Tobago, West Indies; Rio de Janeiro, Brazil.

Lumbrineris coccinea (Renier, 1804)
Figures 41-31, 32a-i

Lumbriconereis coccinea--Fauvel, 1923:432, fig. 172g-n.
Lumbrineris coccinea--Day, 1967:436, fig. 17.16.i-m; 1973:59.
Lumbrineris coccinea--Gardiner, 1976:198, fig. 25r-t.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 24F-11/80 (1 spec., USNM 75340); MAFLA 18J-5/74 (3 spec.), 2208E-8/77 (1 spec.) 2208G-8/77 (1 spec.), 2422C-7/76 (7 spec.), 2422G-7/76 (1 spec.), 2423-7/76 (1 spec., USNM 55877), 2423E-7/76 (3 spec.), 2423I-7/76 (1 spec.), 2643B-6/75 (1 spec.); CTGLF 03-5/78 (1 spec., USNM 90994); STOCS 1/IV-1 F/76 (1 spec., USNM 90996), 2/IV-4 W/77 (3 spec., USNM 90995).
Supplementary Material:
Florida--Seahorse Key, June 1958, E. Lowe Pierce coll., M. Pettibone ID. (2 spec., USNM 33751).
DESCRIPTION:
Length, 41+ mm (previously reported to 50 mm); width, to 1.2 mm (previously reported to 3 mm). Body long, cylindrical, robust anteriorly; largest specimen incomplete with 100+ setigers. Prostomium rounded, about as long as wide (Figure 41-32a). Peristomium consisting of two apodous rings. Parapodia well-developed, largest around setigers 8-15,

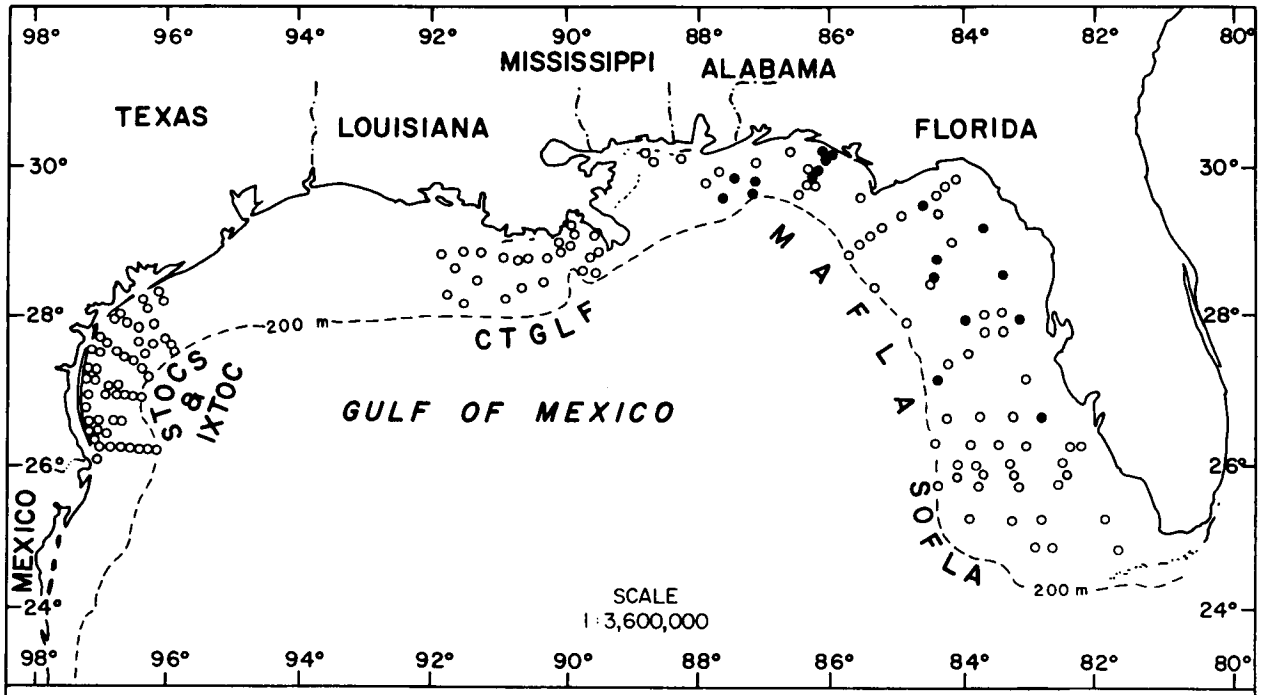

Figure 41-33. Distribution of Lumbrineris inflata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

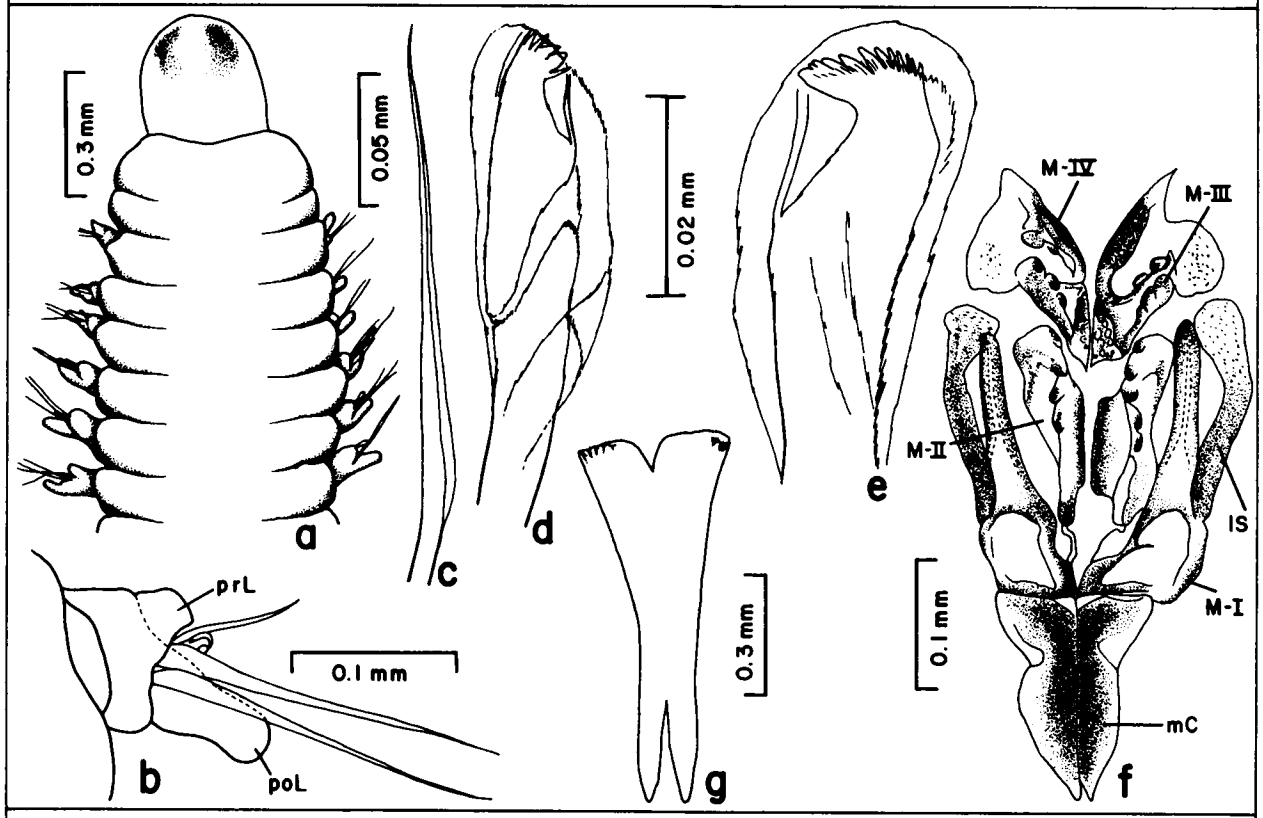

Figure 41-34. Lumbrineris inflata: a, anterior end; b, parapodium from setiger 11; c, limbate seta from setiger 7; d, composite hooded hook from setiger 2; e, simple hooded hook from setiger 29; f, maxillae; g, mandibles.

with short or inconspicuous presetal lobes throughout. Postsetal lobes auricular anteriorly (Figure 41-32b), becoming short and digitiform in medial and posterior regions (Figure 41-32c). Anterior limbate setae broadly winged (Figure 41-32d). Hooded hooks composite (Figure 41-32e) from setiger 1, becoming simple (Figure 41-32f) by setigers 5-22. Parapodia of midbody region with about three hooded hooks; limbate setae absent. Acicula yellow, with filamentous tips. Pygidium with four short anal cirri. Maxillary carriers deeply notched laterally (Figure 41-32g), 1.5-3.2 times as long as wide. M-I 1.7-3.3 times as long as wide, with lateral supports extending along anterior two-thirds. M-II with 4-5 teeth and broad lateral supports. M-III with two teeth; M-IV with one pointed tooth and rounded supports (Figure 41-32h). Mandibles with slender shafts separated over posterior one-fourth to one-half (Figure 41-32i), 2.3-3.0 times as long as wide.
REMARKS: Identifications of some Gulf of Mexico BLM specimens of L. coccinea, particularly juveniles, were confused with other species.
PREVIOUSLY REPORTED HABITAT: Intertidal to 1,300 m; common on coral, algal tufts, rock.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in northeastern Gulf, several stations off Texas and one off Louisiana (Figure 41-31); 14-120 m; primarily coarse to fine-very fine sand and silty fine to very fine sand, also clays and silts.
DISTRIBUTION: Cosmopolitan.

Lumbrineris inflata Moore, 1911
Figures 41-33, 34a-g

Lumbrineris inflata Moore, 1911:289, pls. 19, 20, figs. 128-134.
Lumbrineris cingulata Treadwell, 1917:263, pl. 2, figs. 7-12.
Lumbrineris inflata--Day, 1967:435, fig. 17.16.d-h; 1973:59.
Lumbrineris inflata--Gardiner, 1976:198, fig. 25n-q.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2D-11/80 (1 spec., USNM 75344); MAFLA 2211E-7/76 (1 spec.), 2316E-8/76 (1 spec.), 2528B-6/75 (1 spec.), 2528-8/77 (1 spec., USNM 55879), 2852E-7/76 (1 spec.).
Supplementary Material:
California--Monterey Bay, 18 m, ALBATROSS, May 1904 (USNM 17205, 1 syntype; USNM 16840, 2 syntypes).
Bermuda--holotype of Lumbrineris cingulata (AMNH 1921).
DESCRIPTION:
Length, to 34.5 mm (Bermuda specimen) (previously reported to 60 mm); width, to 1.1 mm (previously reported to 3 mm). Body fairly stout anteriorly. Bermuda specimen complete with 91 setigers; all Gulf of Mexico specimens incomplete with up to 34 setigers. Prostomium rounded, usually with two light brown patches dorsally (Figure 41-34a). Peristomium consisting of two apodous rings. Anterior parapodia with short, rounded presetal lobes and moderately long, digitiform postsetal lobes (Figure 41-34b); postsetal lobes slightly shorter toward midbody region. Limbate setae narrowly winged (Figure 41-34c). Hooded hooks composite (Figure 41-34d) from setiger 1, becoming simple (Figure 41-34e) around setiger 22. Acicula yellow to light brown. Maxillary carriers triangular, distinctly notched laterally (Figure 41-34f); 2.3-3.4 times as long

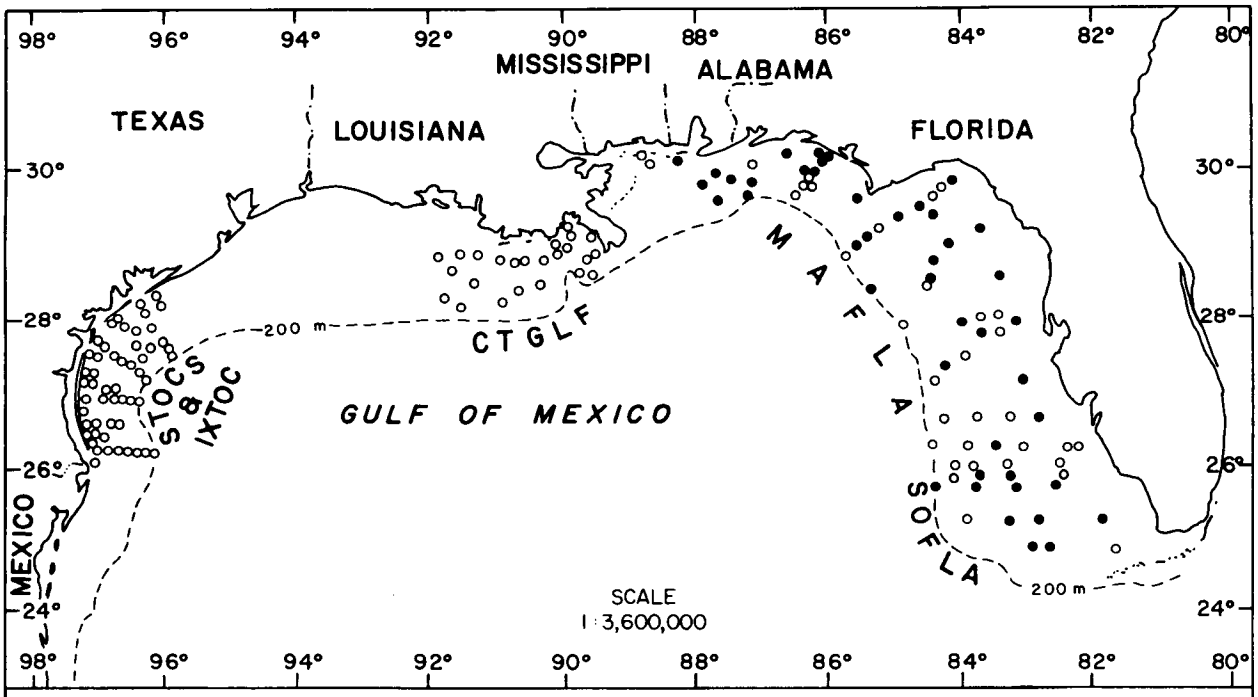

Figure 41-35. Distribution of Lumbrineris latreilli on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

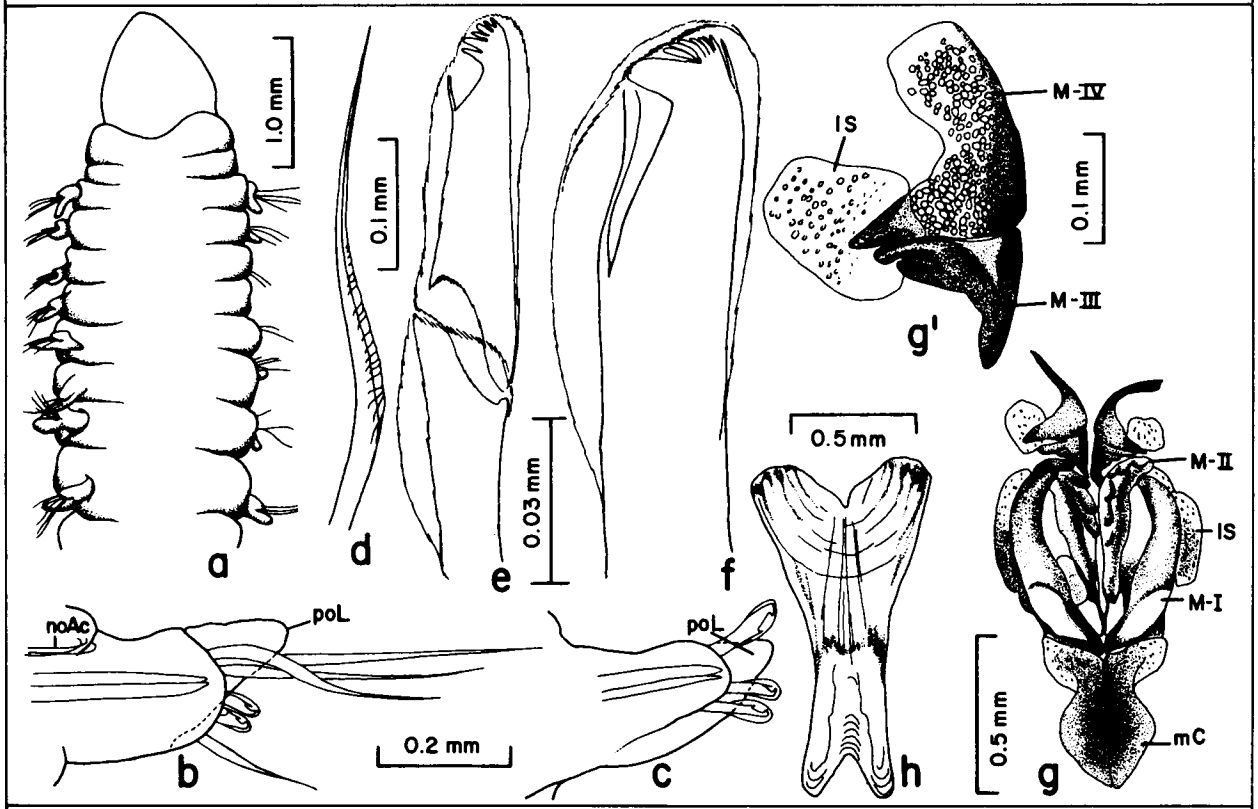

Figure 41-36. Lumbrineris latreilli: a, anterior end; b, parapodium from setiger 19 (anterior view); c, parapodium from midbody region (anterior view); d, limbate seta from setiger 19; e, composite hooded hook from setiger 3; f, simple hooded hook from midbody region; g, maxillae; g', detail of M-III and M-IV; h, mandibles.

as wide. M-I 2-4 times as long as wide, with well-developed lateral supports extending beyond anterior tips. M-II with four teeth (left) and five teeth (right). M-III with 3-5 teeth. M-IV with two teeth. Mandibles translucent, narrow anteriorly, separated over short distance posteriorly (Figure 41-34g), 2.2-2.5 times as long as wide.
REMARKS: Gulf of Mexico BLM-OCS specimens differ from the types in having a less distinctly rounded prostomium with brown patches, relatively shorter postsetal lobes in the midbody region, M-III with 3-5 teeth rather than three distinct teeth, and mandibles somewhat narrower anteriorly. These minor differences may reflect geographic variation. Juveniles may have simple rather than composite hooded hooks anteriorly.
PREVIOUSLY REPORTED HABITAT: Intertidal to 130 m; mud, shells, gravel, sand, rock, coral.
GULF OF MEXICO BLM-OCS OCCURRENCE: Widespread in northeastern Gulf (Figure 41-33); 19-121 m; coarse to fine-very sand, silty fine to very fine sand.
DISTRIBUTION: Circumtropical.

Lumbrineris latreilli (Audouin and Milne Edwards, 1834)
Figures 41-35, 36a-h

Lumbrineris latreilli--Hartman, 1944b:158, pl. 9, figs. 213-216.
Lumbrineris latreilli--Pettibone, 1963:258, fig. 67a-c.
Lumbrineris latreilli--Day, 1967:438, fig. 17.16.p-t; 1973:60.
Lumbrineris latreilli--Fauchald, 1970:94, pl. 15, figs. f-h.
Lumbrineris latreilli--Orensanz, 1973b:359, pl. 6, figs. 1-7.
Lumbrineris latreilli--Gardiner, 1976:202, figs. 26x, 27a-d.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2-11/80 (3 spec., USNM 75347), 2B-11/80 (9 spec., USNM 75346); MAFLA 2422C-7/76 (2 spec.), 2425D-9/75 (1 spec.), 2645B-6/75 (1 spec.), 2851I-7/76 (1 spec., USNM 67776).
DESCRIPTION:
Length, 34+ mm (previously reported to 300 mm); width, to 1.5 mm (previously reported to 5 mm). Body fairly stout; all specimens incomplete with up to 57 setigers. Prostomium conical (Figure 41-36a), about as long as wide. Peristomium consisting of two apodous rings. Parapodia well-developed with short presetal lobes. Postsetal lobes moderately long, digitiform anteriorly (Figure 41-36b), becoming shorter in midbody region (Figure 41-36c). Anterior parapodia with slender limbate setae (Figure 41-36d), and long-bladed, composite hooded hooks (Figure 41-36e) from setiger 1. Blades of composite hooded hooks gradually becoming shorter. Simple hooded hooks (Figure 41-36f) replacing composite hooks by setigers 17-24. Acicula yellow. Maxillary carriers deeply incised laterally (Figure 41-36g), 2.2-2.6 times as long as wide. M-I fairly long and slender, 2.5-3.8 times as long as wide. Lateral supports extending along anterior two-thirds of M-I. M-II with 4-6 teeth. M-III with two teeth. M-IV with single, long, pointed tooth and rounded supports (Figure 41-36g'). Mandibles white, with shafts separated over short basal portion (Figure 41-36h), 1.6-2.0 times as long as wide.
REMARKS: Some MAFLA specimens of L. latreilli were originally identified as L. branchiata and L. cruzensis.

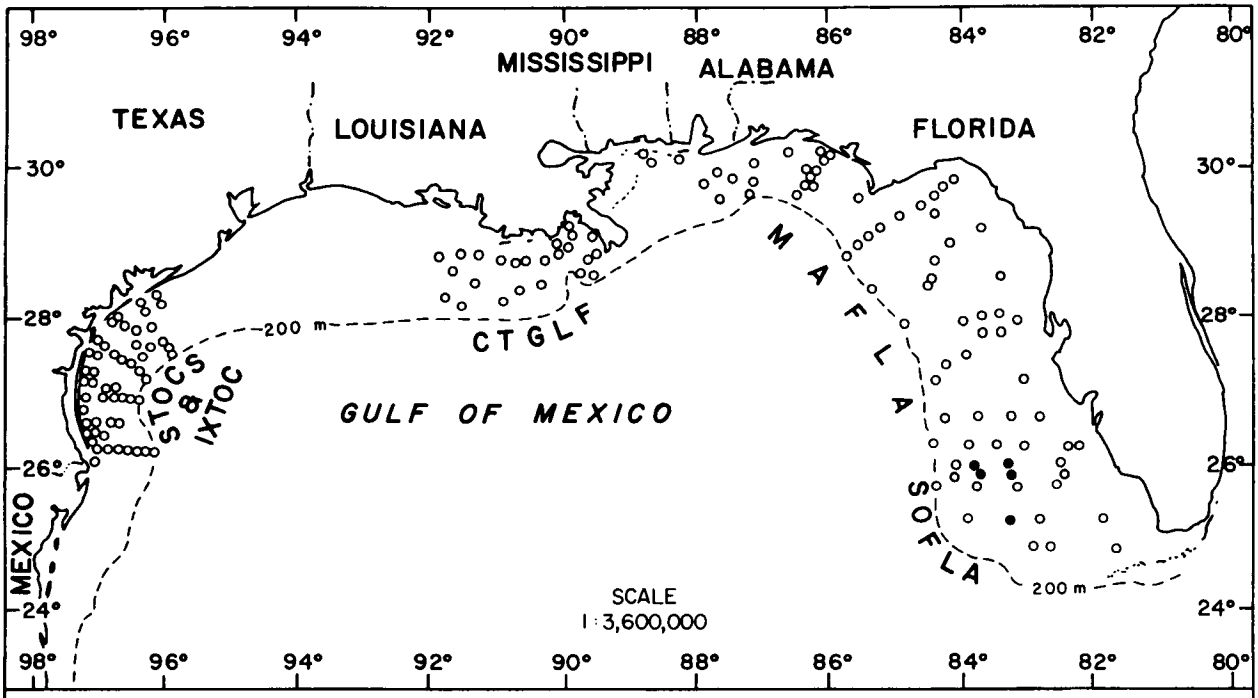

Figure 41-37. Distribution of Lumbrineris sp. E on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

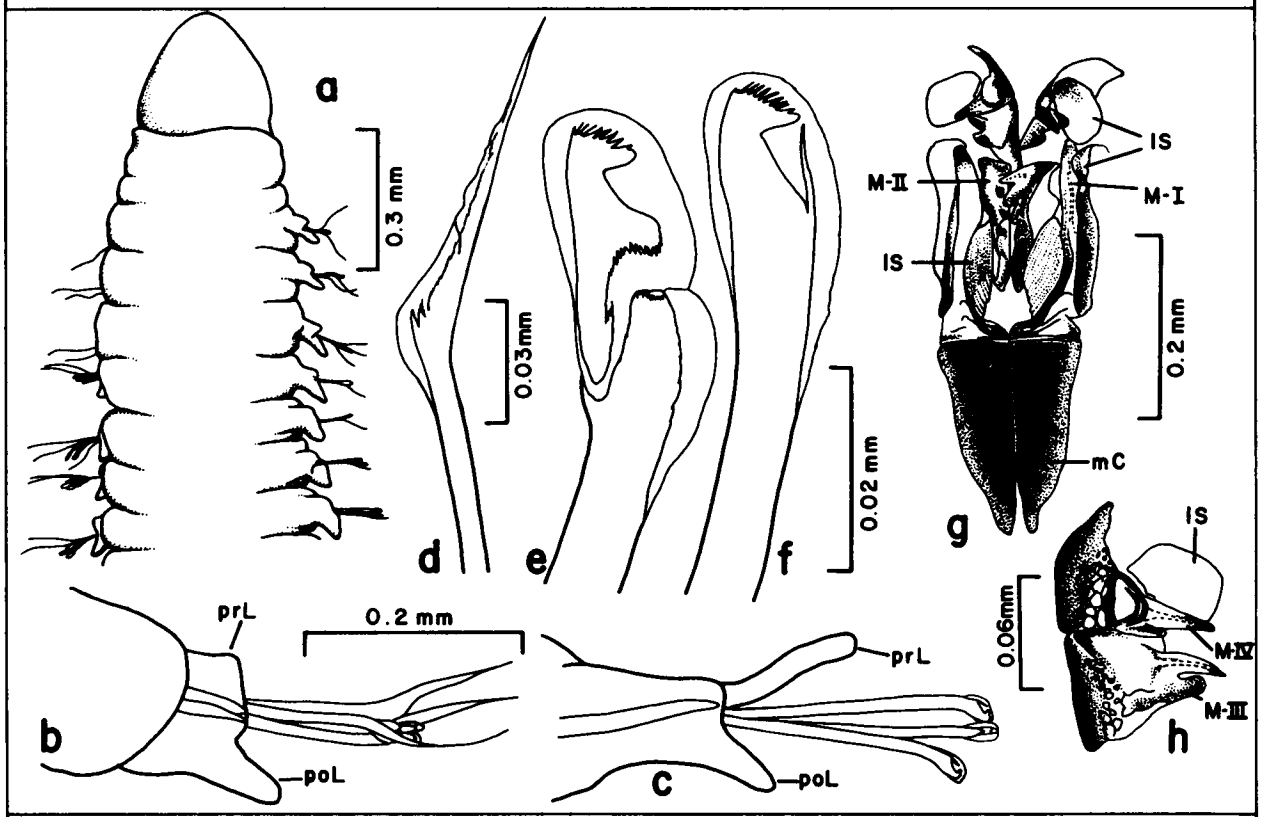

Figure 41-38. Lumbrineris sp. E: a, anterior end; b, anterior parapodium; c, posterior parapodium; d, limbate seta from setiger 9; e, composite hooded hook from setiger 11; f, simple hooded hook from setiger 14; g, maxillae; h, detail of M-III and M-IV.

PREVIOUSLY REPORTED HABITAT: Intertidal to 2,360 m; sand, gravel, shell fragments, mud, rock, algae, Zostera.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in northeastern Gulf (Figure 41-35); 10-180 m; primarily coarse to fine-very fine sand and silty fine to very fine sand, rarely clayey sandy silt and silty clay.
DISTRIBUTION: Cosmopolitan in temperate and tropical waters.

Lumbrineris sp. E
Figures 41-37, 38a-h

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 8A-11/80 (1 spec., USNM 75351), 8B-11/80 (3 spec., USNM 75352), 8C-11/80 (10 spec., USNM 75353), 16B-11/80 (1 spec., USNM 75354), 24F-11/80 (1 spec., USNM 75355).
DESCRIPTION:
Length, 24.7+ mm; width, to 1.0 mm. Body small to moderate in size; largest specimen nearly complete with 119 setigers. Prostomium conical (Figure 41-38a), about as long as wide. Peristomium consisting of two apodous rings. Parapodia well-developed throughout. Presetal lobes low and rounded anteriorly (Figure 41-38b), becoming long and digitiform posteriorly (Figure 41-38c). Postsetal lobes short and digitiform to auricular anteriorly, becoming longer posteriorly. Anterior parapodia with 3-4 broadly winged limbate setae (Figure 41-38d), and 1-3 short-bladed, composite hooded hooks (Figure 41-38e) starting on setiger 1. Hooded hooks becoming simple (Figure 41-38f) by setigers 8-17. Limbate setae gradually disappearing in midbody region. Acicula yellow. Pygidium with two long, slender, terminal cirri and two short lateral cirri. Maxillary carriers unnotched or slightly notched laterally (Figure 41-38g), 2.5-3.3 times as long as wide. M-I slender, 2.4-3.2 times as long as wide, with lateral supports extending along most of their length. M-II with four teeth and broad, longitudinally striated lateral supports. M-III with two teeth; upper tooth pointed, lower tooth shorter, rounded (Figure 41-38h). M-IV with long, pointed tooth above minute tooth; lateral supports rounded. Mandibles white or transparent, with long shafts separated basally.
REMARKS: This species resembles Lumbrineris sp. A, particularly in the shape of the jaws and parapodial lobes. It differs from the latter in having hooded hooks anteriorly and in having M-III and M-IV each with two teeth. The pre- and postsetal lobes may be less well-developed posteriorly on small specimens.
GULF OF MEXICO BLM-OCS OCCURRENCE: Few records off southwestern Florida (Figure 41-37); intermediate depths, 48-90 m; medium to fine sand.

Lumbrineris sp. C
Figures 41-39, 40a-h

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2535B-6/75 (1 spec., USNM 67769), 2536E-6/75 (1 spec.), 2536E-2/78 (1 spec.).

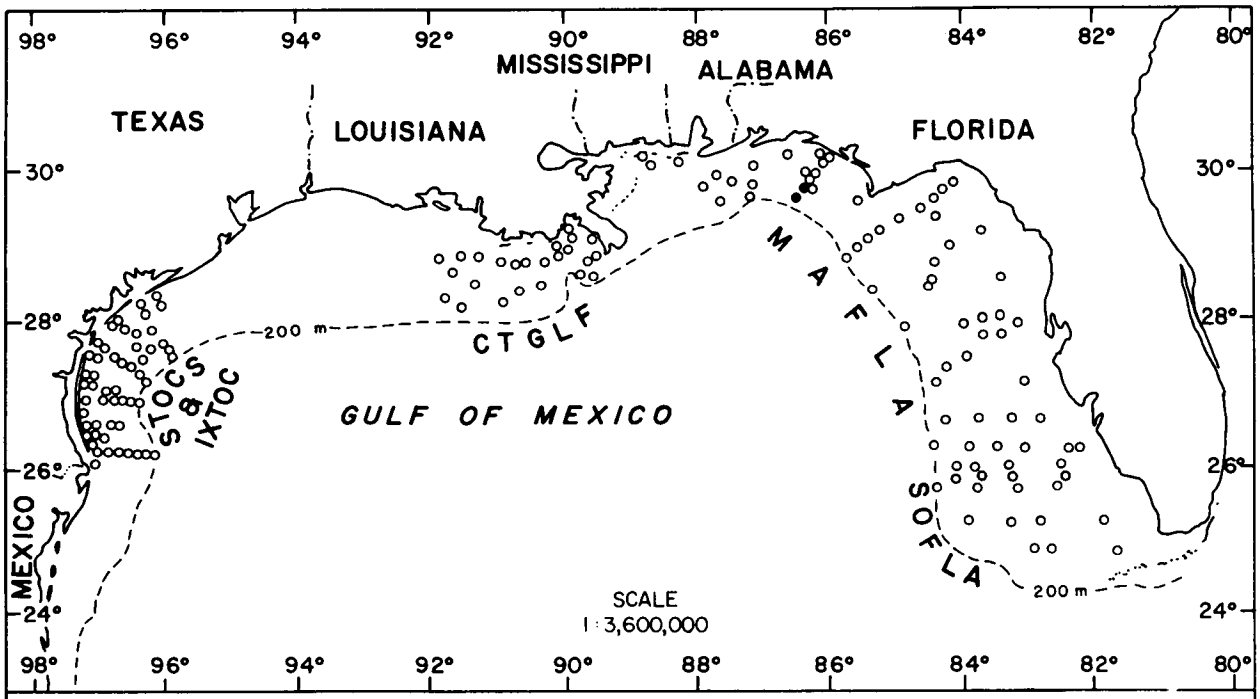

Figure 41-39. Distribution of Lumbrineris sp. C on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

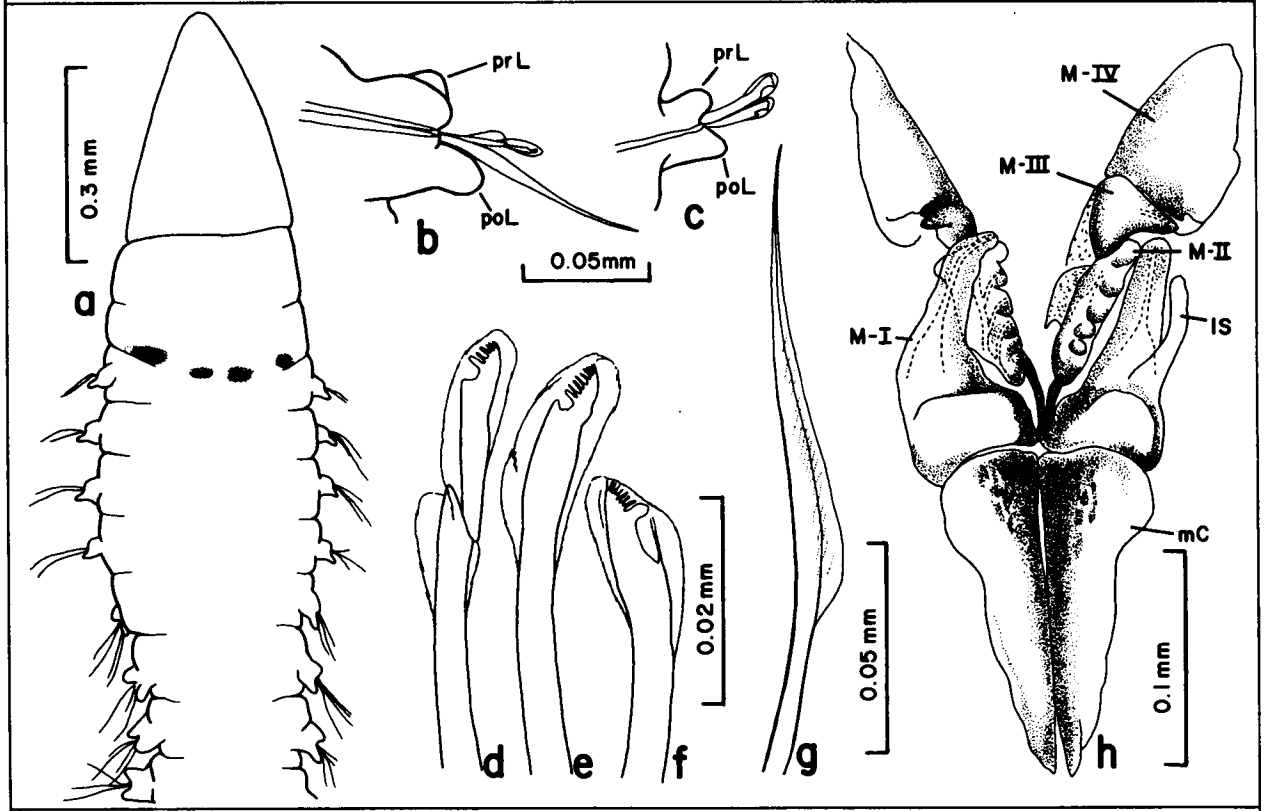

Figure 41-40. Lumbrineris sp. C: a, anterior end; b, parapodium from setiger 9; c, parapodium from setiger 34; d, composite hooded hook from setiger 10; e, simple hooded hook from setiger 14; f, same, from setiger 24; g, limbate seta from setiger 7; h, maxillae.

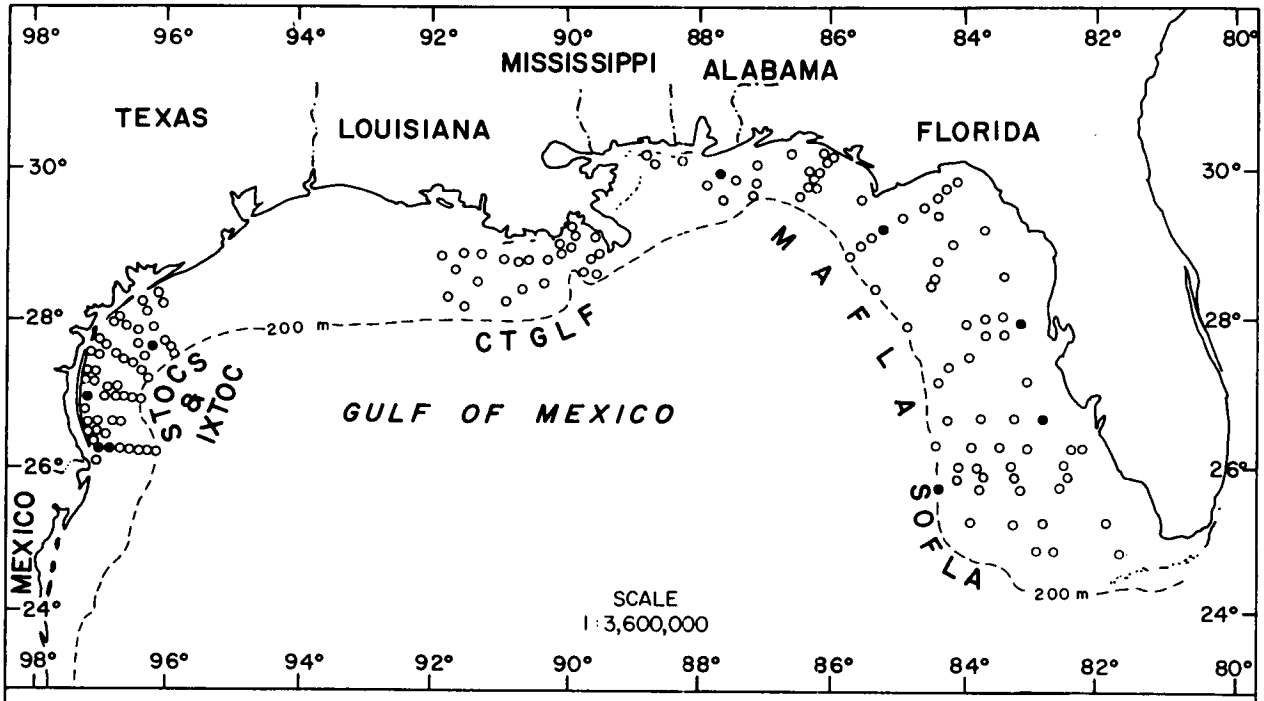

Figure 41-41. Distribution of Lumbrineris sp. D on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

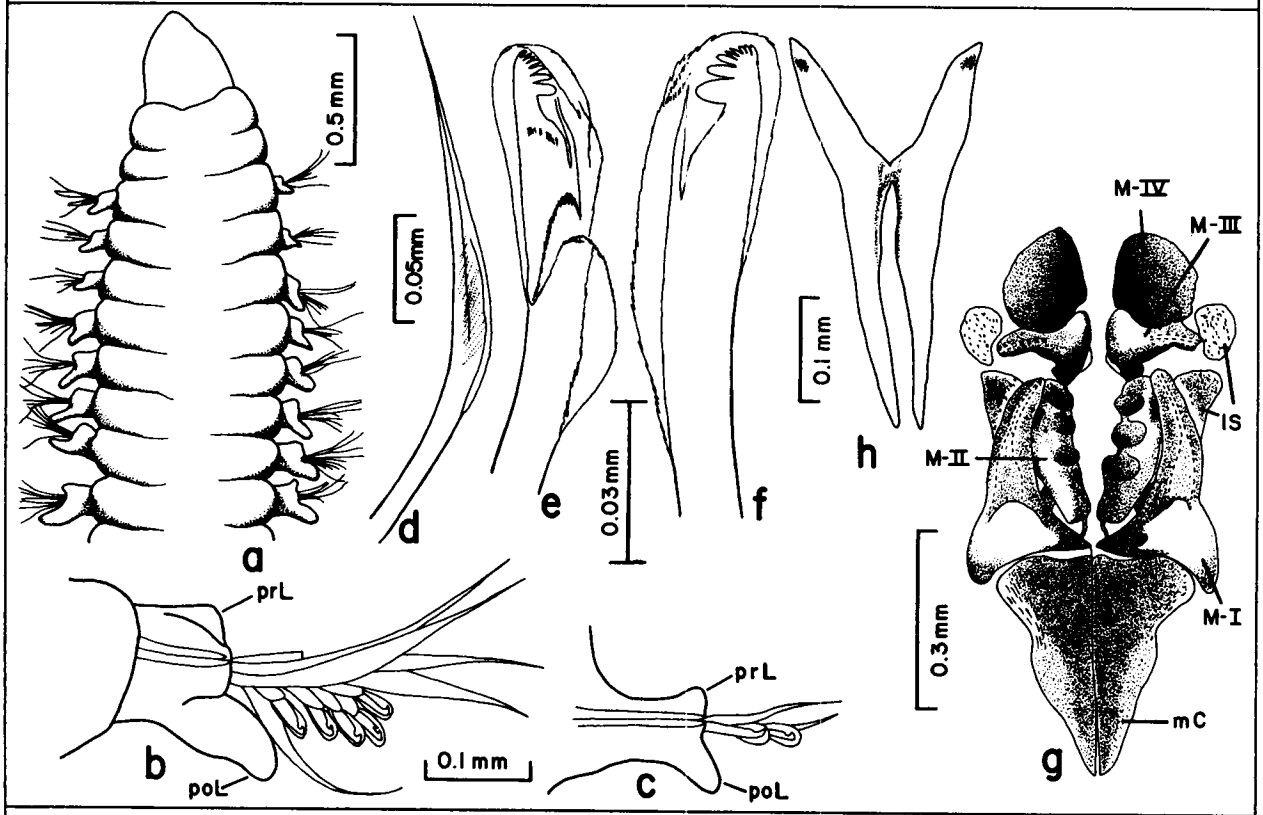

Figure 41-42. Lumbrineris sp. D: a, anterior end; b, parapodium from setiger 7; c, parapodium from setiger 29; d, limbate seta from setiger 13; e, composite hooded hook from setiger 12; f, simple hooded hook from setiger 19; g, maxillae; h, mandibles.

DESCRIPTION:
Length, 9.6+ mm; width, to 0.3 mm. Body slender, small; all specimens incomplete with up to 51 setigers. Prostomium elongate, pointed (Figure 41-40a), 1.6 times as long as wide. Peristomium consisting of two indistinct apodous rings, with arc of four brown pigment spots along posterior edge of second ring. Parapodia fairly well-developed anteriorly, becoming smaller in midbody region. Pre- and postsetal lobes short (Figure 41-40b,c). Composite hooded hooks (Figure 41-40d) present from setiger 1, replaced by simple hooded hooks around setigers 10-12. Blades of simple hooded hooks fairly long at first (Figure 41-40e), gradually becoming shorter (Figure 41-40f). Limbate setae long, broadly winged (Figure 41-40g), numbering 3-4 per fascicle anteriorly, absent from medial parapodia. Acicula yellow, with filamentous tips. Maxillary carriers triangular, slightly notched laterally (Figure 41-40h), 3-4 times as long as wide. M-I 2.0-3.2 times as long as wide. Lateral supports extending along middle portion of M-I. M-II with 4-5 blunt teeth. M-III with single pointed tooth. M-IV as large, rounded plates with long, straight tooth along basal margin. Mandibles not observed.
REMARKS: Lumbrineris sp. C was originally identified as L. crassidentata Fauchald, 1970. It differs from the latter in having composite hooded hooks anteriorly.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations in deep water off northwestern Florida (Figure 41-39); 117-189 m; clayey silt.

Lumbrineris sp. D
Figures 41-41, 42a-h

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2B-11/80 (1 spec., USNM 75350); MAFLA 2207E-8/77 (2 spec., USNM 67767), 2424F-7/76 (4 spec.), 2641E-6/75 (1 spec.), 2957C-8/77 (1 spec.), 2957H-8/77 (1 spec.); STOCS 4/III-4 F/76 (1 spec., USNM 90997), 4/IV-3 W/76 (2 spec., USNM 90998), HR2-6 7/76 (1 spec., USNM 90999); IXTOC S52-11/79 (2 spec., USNM 75138).
DESCRIPTION:
Length, 22.1+ mm; width, to 2.0 mm. Body intermediate in size, with up to 100 setigers. Prostomium conical, blunt or pointed (Figure 41-42a), about as long as wide. Peristomium consisting of two apodous rings, first one slightly longer. Parapodia well-developed with short, rectangular or rounded presetal lobes and longer, auricular to digitiform postsetal lobes anteriorly (Figure 41-42b). Middle and posterior parapodia with short, rounded, pre- and postsetal lobes (Figure 41-42c). Anterior parapodia with 3-6 limbate setae (Figure 41-42d) and 2-6 composite hooded hooks (Figure 41-42e) from setiger 1, replaced by simple hooded hooks (Figure 41-42f) around setigers 6-20. Acicula yellow. Pygidium with two rounded lobes, without cirri. Maxillary carriers triangular, unnotched or shallowly notched laterally (Figure 41-42g), 2.1-2.8 times as long as wide. M-I broad basally, 1.7-2.5 times as long as wide. Lateral supports as small, rounded patches near tips of M-I. M-II with three (rarely four) blunt teeth. M-III with single, long, blunt tooth. M-IV as curved, rounded plates with rounded supports. Mandibles white with black spot at each anterior tip; delicate; shafts separated basally or throughout length (Figure 41-42h), 2.5 times as long as wide.

REMARKS: Original identifications of Lumbrineris sp. D were confused, but most Gulf of Mexico BLM-OCS specimens previously identified as L. cruzensis are herein referred to Lumbrineris sp. D.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in eastern and western Gulf (Figure 41-41); 15-180 m; medium to fine-very fine sand, silty very fine sand, clayey sand.

CHAPTER 42

Joan M. Uebelacker

FAMILY ARABELLIDAE Hartman, 1944b

INTRODUCTION

Arabellids are long, cylindrical, usually iridescent, and lumbrinerid-like in appearance. The prostomium is conical, lacks appendages, and often has eyespots near the posterior border. The peristomium is smooth and also lacks appendages. Parapodia are essentially uniramous, with the notopodium represented at most by notoacicula and a small, papillar lobe. Neuropodial presetal lobes are poorly developed; postsetal lobes are usually well-developed and digitiform. Branchiae are absent. Setae include smooth or serrate limbate forms, and sometimes hooded acicular setae or stout acicular spines. There are no hooded hooks. The jaw apparatus is usually black or brown, and well-chitinized. Paired ventral mandibles are usually present. The maxillae may be absent, as in Biborin; reduced to a slender rod, as in Drilognathus; or may consist of long, slender, paired maxillary carriers with a ventral unpaired piece, and 2-5 pairs of toothed maxillae. The arabellids are free-living, or parasitic in other polychaetes or echiurans. The parasitic forms often have a rudimentary jaw apparatus and lack setae.

Like the lumbrinerids, the arabellids are members of the superfamily Eunicea (Eunicacea: Pettibone, 1982) in the order Eunicida, as recognized by Fauchald (1977a). The family is most closely related to the Lysaretidae (Hartman, 1944b:170). According to Fauchald (1977a:110), the Arabellidae comprise nine genera, including Notopsilus, which was considered by Orensanz (1974a) to be a subgenus of Arabella. Four genera have been identified from Gulf of Mexico BLM-OCS collections. To date, at least 80 species of arabellids have been described from the world oceans. Fourteen species occur on the northern Gulf of Mexico outer continental shelf, including six species potentially new to science and one parasitic species newly reported from this region.

PRINCIPAL DIAGNOSTIC CHARACTERS

Characteristics of the setae and the jaw apparatus are of primary importance in distinguishing the genera and species of arabellids. Features of generic importance include the presence of acicular spines, degree of development of the maxillae, and shape of the mandibles and maxillary carriers. Characters useful in identifying to the species level include relative size of the anterior parapodia, presence of hooded acicular setae, presence of mandibles, shape of the mandibles and various maxillary parts, and dentition of the maxillae, particularly M-I. Fauchald (1970) presented a comprehensive summary of diagnostic characters of the arabellid genera and species-groups.

As in the lumbrinerids, examination of the maxillary apparatus is essential. Clearing with a solution such as Hoyer's (Coull, 1977) is helpful in making these structures visible, but overlying tissues must be removed to expose the small teeth of the maxillae. The entire

pharyngeal bulb can be carefully pulled out of the body through a dorsal or ventral incision, to facilitate removal of tissue and examination of structures. The number of teeth on each maxilla should be counted, and especially in Drilonereis, the shapes of M-I, the unpaired ventral maxillary carrier, and the mandibles should be drawn or otherwise noted. The descriptions which follow include length ratios of the paired maxillary carriers to the unpaired carrier and to the maxillae, and the length:width ratio of the mandibles. Measurements are made as indicated by the dashed lines in Figure 42-12d. Given sufficient data, means are reported followed by the range in parentheses.

Setal characteristics are generally not of specific importance except in Arabella. Species of this genus may be distinguished according to the presence or absence of hooded acicular setae and serrate limbate setae in the midbody region, in combination with maxillary characteristics.

All illustrations of the anterior end, parapodia, maxillae, and mandibles are from a dorsal view unless otherwise indicated. All figures are drawn from Gulf of Mexico BLM-OCS specimens except as noted.

BIOLOGICAL NOTES

Arabellids are generally free-living, although a number of endoparasitic species have been reported (Pettibone, 1957c). The free-living forms are burrowers, moving slowly through sand or mud. The parasitic forms have been found to infect echiuroids and members of the polychaete families Onuphidae, Eunicidae, Syllidae and Terebellidae. They are thought to enter the host at a young stage, continue development, and then leave the host before reaching sexual maturity. Many of these species are somewhat modified for parasitic existence through reduction or loss of setae, jaw structures, pigmentation, and mucus glands (Pettibone, 1963:268).

The free-living arabellids have a well-developed jaw apparatus, and like the lumbrinerids, are probably predaceous carnivores or highly selective deposit feeders (Fauchald and Jumars, 1979:199). Virtually nothing is known concerning their reproduction.

As evidenced by the BLM-OCS sampling programs, arabellids are far less common on the northern Gulf of Mexico outer continental shelf than the morphologically and ecologically similar lumbrinerids.

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

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

1a. Acicular spines absent. 2
1b. Acicular spines present (Figure 42-10c) 3

2a. Jaws well-developed with 4-5 pairs of maxillae; paired maxillary carriers separate (Figure 42-2e). . . . . .**Arabella**, p. 42-3
2b. Jaws poorly developed with two pairs of minute maxillae; paired maxillary carriers fused (Figure 42-8c) . .**Labrorostratus**, p. 42-9

3a. M-I strongly falcate (Figure 42-10d). . . . .**Drilonereis**, p. 42-11
3b. M-I weakly falcate or entirely dentate (Figure 42-28f) . . . . . **Notocirrus**, p. 42-27

Genus **Arabella** Grube, 1850

TYPE SPECIES: *Nereis iricolor* Montagu, 1804.
REFERENCES:
Day, 1967:444.
Fauchald, 1970:122; 1977a:110.
Orensanz, 1974a:384.
Gardiner, 1976:206.
DIAGNOSIS: Prostomium conical, usually with four eyes near posterior border. Peristomium consisting of two apodous rings. Parapodia subbiramous. Setae including limbate forms and sometimes hooded acicular setae; acicular spines absent. Maxillae numbering five pairs; M-I distally falcate or dentate. Maxillary carriers as long, slender, paired supports; with median, ventral, unpaired piece. Mandibles present, joined medially.

Key to the Gulf of Mexico BLM-OCS Species of *Arabella*

1a. Hooded acicular setae (Figure 42-4e) present on middle and posterior parapodia. 2
1b. Hooded acicular setae absent. . . . . **Arabella iricolor**, p. 42-5

2a. M-II asymmetrical, left one short, right one long (Figure 42-4f) . . . . . **Arabella mutans**, p. 42-5
2b. M-II symmetrical, both long (Figure 42-6f) . . . . . **Arabella multidentata**, p. 42-9

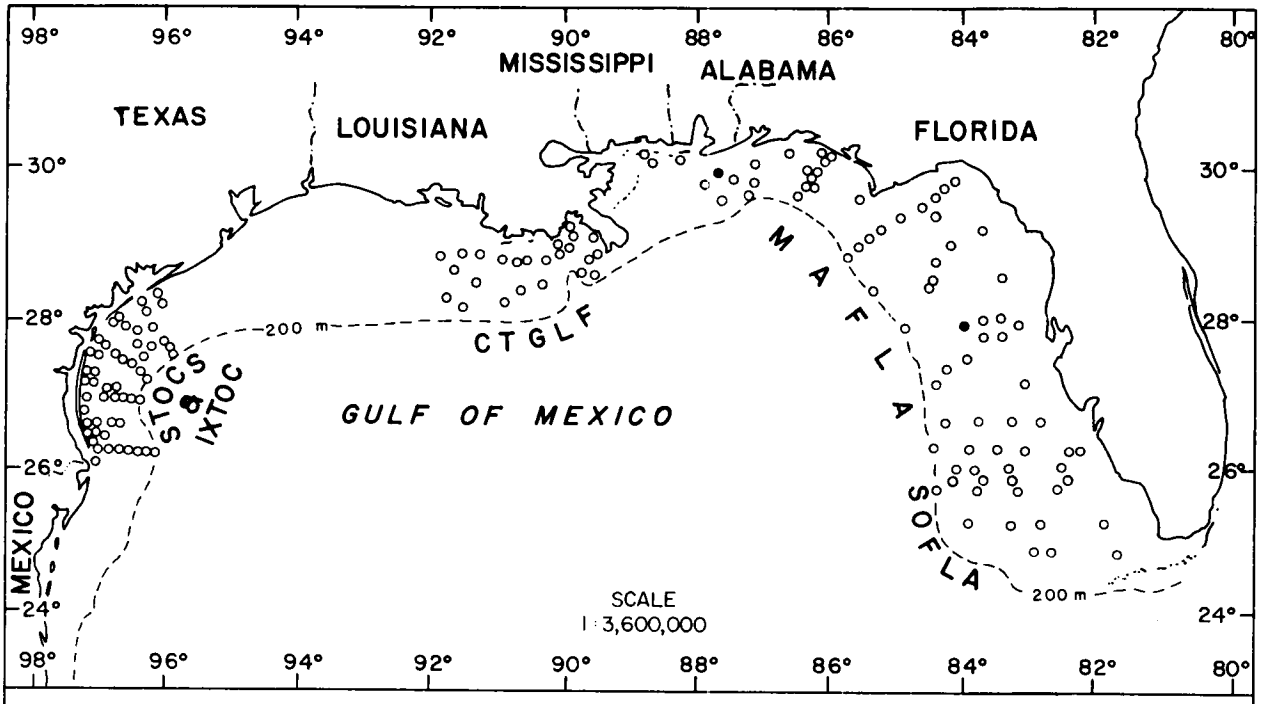

Figure 42-1. Distribution of Arabella iricolor on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

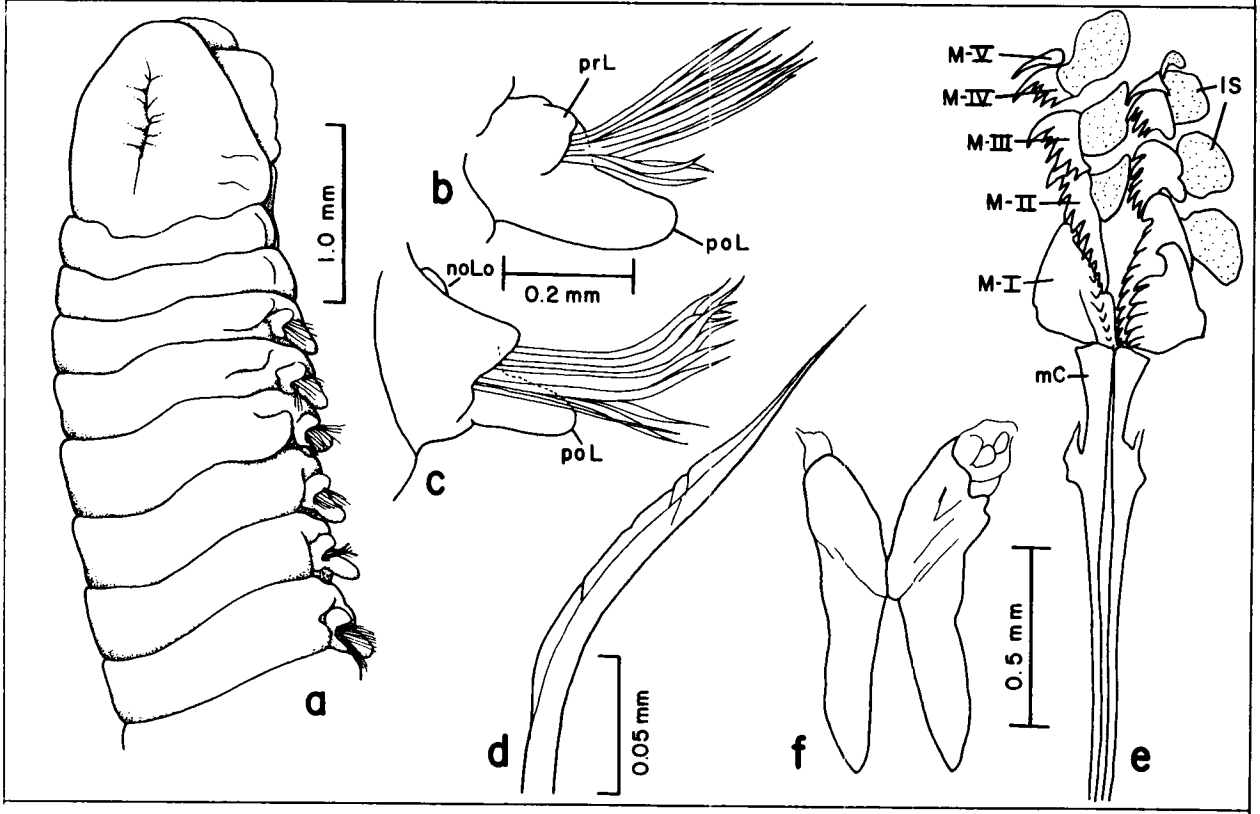

Figure 42-2. Arabella iricolor: a, anterior end; b, parapodium from setiger 8 (anterior view); c, parapodium from midbody region (anterior view); d, limbate seta from midbody region; e, maxillae; f, mandibles (ventral view).

Arabella iricolor (Montagu, 1804)
Figures 42-1, 2a-f

Arabella iricolor--Pettibone, 1963:269, fig. 71a-e.
Arabella iricolor--Fauchald, 1970:125, pl. 20, figs. a-d.
Arabella iricolor--Orensanz, 1974a:384, pl. 1, figs. 1-5.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 15I-5/74 (1 spec.); 2211H-8/77 (1 spec., USNM 71429).
DESCRIPTION:
Length, 130+ mm (previously reported to 600 mm); width, to 2.4 mm (previously reported to 5 mm). Body large, iridescent, dark orangish-brown; both specimens incomplete, larger one with 255 setigers. Prostomium blunt or pointed, slightly depressed dorsally, about same length as width (Figure 42-2a). Eyes absent. Parapodia fairly small; presetal lobes short throughout. Postsetal lobes brown, digitiform, longer than setal lobes anteriorly (Figure 42-2b), becoming slightly shorter in midbody region (Figure 42-2c). All setae smooth, narrowly winged (Figure 42-2d), longer superiorly, numbering 9-13 per fascicle in midbody region. Paired maxillary carriers about 2-4 times as long as unpaired carrier and 1.7-2.1 times as long as maxillae. M-I fairly short, distally falcate, left piece with 7-8 basal teeth and right piece with 6-7 basal teeth (Figure 42-2e). M-II asymmetrical, left piece with base midway along M-I, right piece with base ventral to base of M-I, each piece with 10-13 teeth. M-III, IV and V symmetrical. M-III each with 7-8 teeth, anteriormost tooth longest. M-IV each with 4-5 teeth, anteriormost tooth longest. M-V each with one tooth. Mandibles slightly curved, joined medially (Figure 42-2f), 4.4-5.7 times as long as wide.
REMARKS: McIntosh (1910:397), whose account of A. iricolor Fauchald (1970:126) considered to be authoritative, described M-II as symmetrical. However, Fauchald and most other authors report their specimens as having asymmetrical M-II. The latter account is followed here. Most Gulf of Mexico BLM-OCS specimens originally referred to A. iricolor are actually A. mutans.
PREVIOUSLY REPORTED HABITAT: Intertidal to 85 m; shell, oysters, seagrasses, algae, sand, mud, gravel, under rocks, among bryozoans and ascidians.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off Florida and Alabama (Figure 42-1); 43-53 m; coarse sand, with rubble.
DISTRIBUTION: Cosmopolitan in temperate and tropical seas.

Arabella mutans (Chamberlin, 1919)
Figures 42-3, 4a-g

Cenothrix mutans Chamberlin, 1919b:330, pl. 61, figs. 2-9, pl. 62, fig. 1.
Arabella mutans--Day, 1967:446, fig. 17.18.f-h; 1973:64.
Arabella mutans--Fauchald, 1970:128, pl. 21, figs. a-f.
Arabella mutans--Gardiner, 1976:206, fig. 27o-q.
Arabella (Cenothrix) mutans--Perkins, 1979:445, fig. 12a-k.

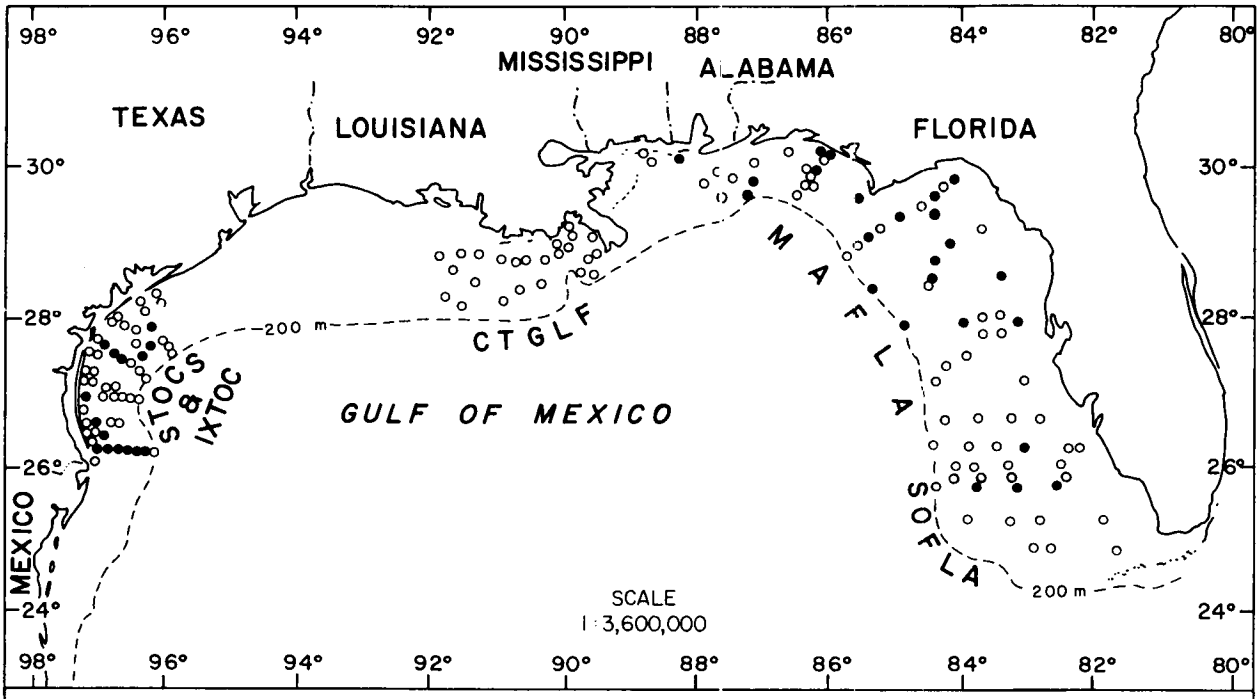

Figure 42-3. Distribution of Arabella mutans on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

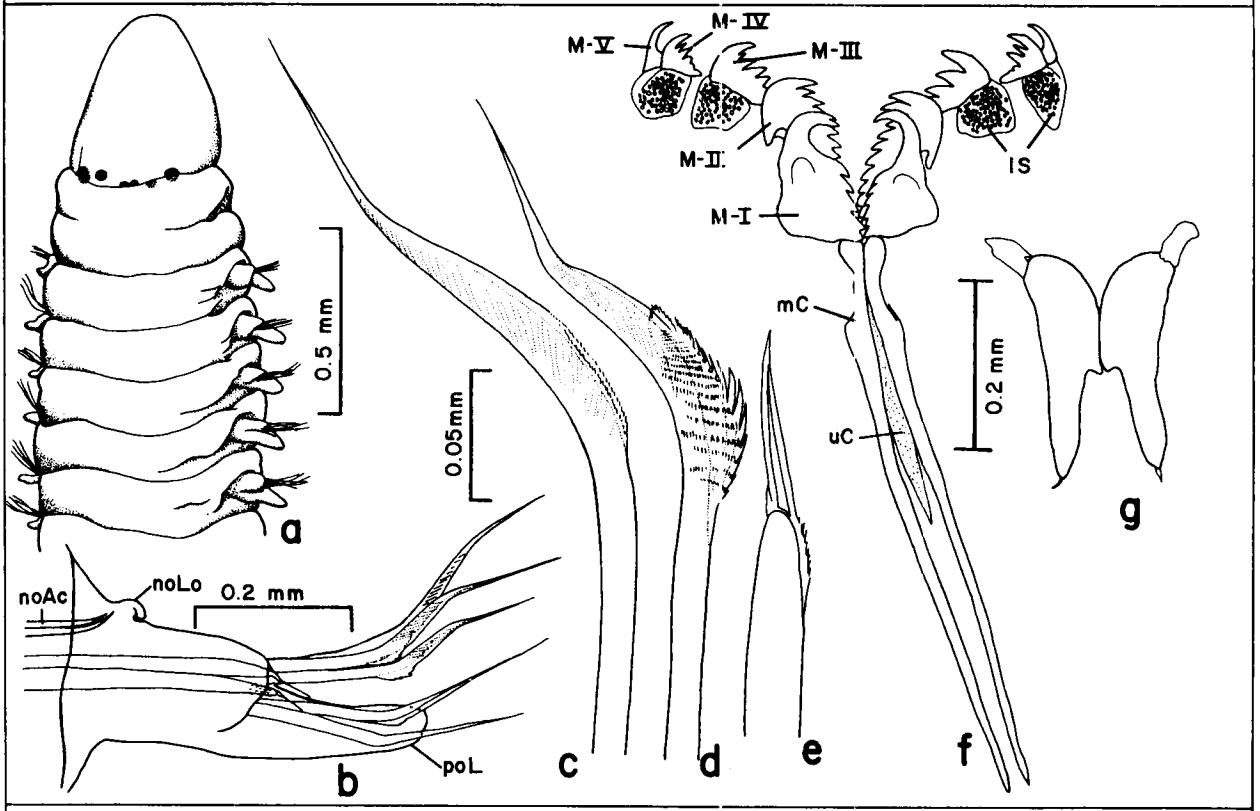

Figure 42-4. Arabella mutans: a, anterior end; b, parapodium from midbody region (anterior view); c, lightly serrate limbate seta from midbody region; d, transversely serrate limbate seta from same; e, inferior hooded acicular seta from same; f, maxillae; g, mandibles; scale same for c-e.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 18H-5/74 (1 spec.), 2207K-11/77 (1 spec., USNM 71431), 2211D-7/76 (1 spec.), 2315E-9/75 (1 spec.), 2316J-8/76 (1 spec., USNM 71430), 2317-8/77 (1 spec., USNM 55882), 2423B-7/76 (1 spec.), 2423F-11/77 (1 spec.), 2528E-7/76 (1 spec.), 2639B-6/75 (1 spec.); STOCS 6/IV-3 F/76 (1 spec., USNM 90970), 6/IV-4 S/77 (1 spec., USNM 90971), HR1-2 7/76 (1 spec., USNM 90973), HR1-5 F/76 (1 spec., USNM 90974), SB3-5 8/76 (1 spec., USNM 90972); IXTOC S52-11/79 (1 spec., USNM 75132).
Supplementary Material:
Easter Island--Dec. 1904 (USNM 19740, holotype).
North Carolina--Cape Lookout, intertidal, June 1975, sand mixed with gravel and shell fragments, S. Gardiner coll./ID. (5 spec., USNM 53027).
Florida--Hutchinson Island, St. Lucie Co., 27°21'23"N, 80°13'24"W, T. H. Perkins ID.: Sta. 2, May 1973, 11.2 m (1 spec., USNM 54694), Sta. 2, Mar. 1973, 10.9 m (1 spec., USNM 54695), 1973 (1 spec., USNM 54696).
Gulf of Mexico--Albatross Sta. 2372-74, Feb. 1885 (3 spec., USNM 29508).
DESCRIPTION:
Length, 120+ mm (previously reported to 190 mm); width, to 3.4 mm. Body large, iridescent, yellowish-orange to orangish-brown; largest specimen incomplete with 455 setigers; complete specimens smaller with up to 200 setigers. Prostomium pointed or blunt, up to 1.7 times as long as wide, with four eyes and occasionally additional small eyespots (Figure 42-4a). Parapodia well-developed with short presetal lobes and moderately long, brown, digitiform postsetal lobes throughout (Figure 42-4b). All anterior and posterior setae smooth or lightly serrate, limbate. Setae of midbody region including lightly serrate limbate setae (Figure 42-4c); transversely serrate limbate setae (Figure 42-4d); and single, inferior, hooded acicular setae (Figure 42-4e). Acicula with filamentous tips. Pygidium with two or four short anal cirri. Paired maxillary carriers 1.5-2.3 times as long as unpaired carrier and 2.0 (1.4-2.4) times as long as maxillae. M-I asymmetrical, falcate, left piece with 1-2 distal teeth and 5-9 basal teeth, right piece with one distal tooth and 4-9 basal teeth (Figure 42-4f). M-II asymmetrical, left piece short with 5-10 teeth, right piece long with 10-15 teeth. M-III, IV, and V usually symmetrical. M-III each with 4-10 teeth, anteriormost tooth largest. M-IV each with 3-7 teeth, anteriormost tooth largest. M-V each with one tooth. Mandibles slender, joined medially (Figure 42-4g), 4.1 (3.1-6.0) times as long as wide.
REMARKS: Perkins (1979:445) distinguished Arabella mutans from A. maculosa Verrill, 1900, on the basis of the left M-I having a bifid tip (simple in A. maculosa), and the inferior setae being more asymmetrically hooded in the latter. Specimens reported here include many relatively small individuals with simple-tipped left M-I, but no difference in the symmetry of the hooded acicular setae. The bifid tip of the left M-I may be a character that develops with age. Some specimens of A. mutans were originally referred to A. iricolor, A. semimaculata and Notocirrus cf. spiniferus in BLM-OCS collections.
PREVIOUSLY REPORTED HABITAT: Intertidal to 160 m; coarse calcareous sand, coral, mud and sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in northeastern and western Gulf (Figure 42-3); 10-189 m; sands, silts and clays.
DISTRIBUTION: Easter Island, Galapagos, Gulf of California, South Africa to tropical east Africa, Zanzibar, Cape Verde Islands, North Carolina to Florida, Gulf of Mexico, Argentina.

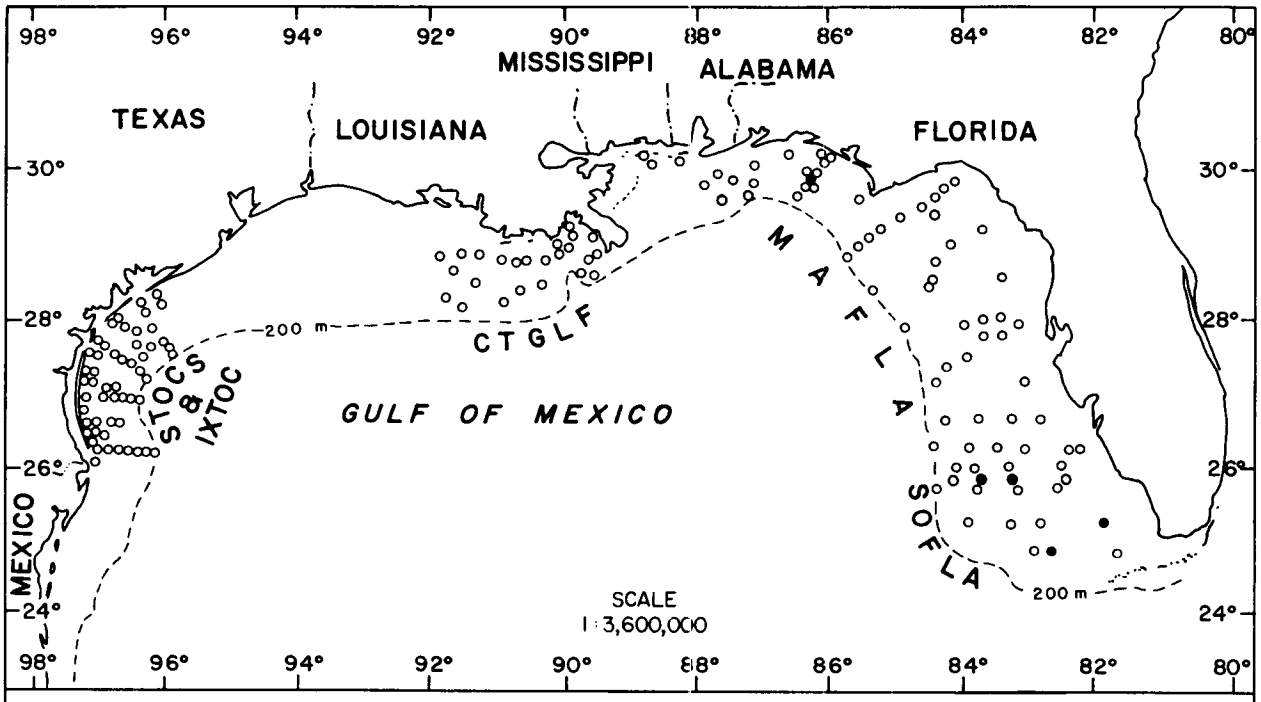

Figure 42-5. Distribution of Arabella multidentata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

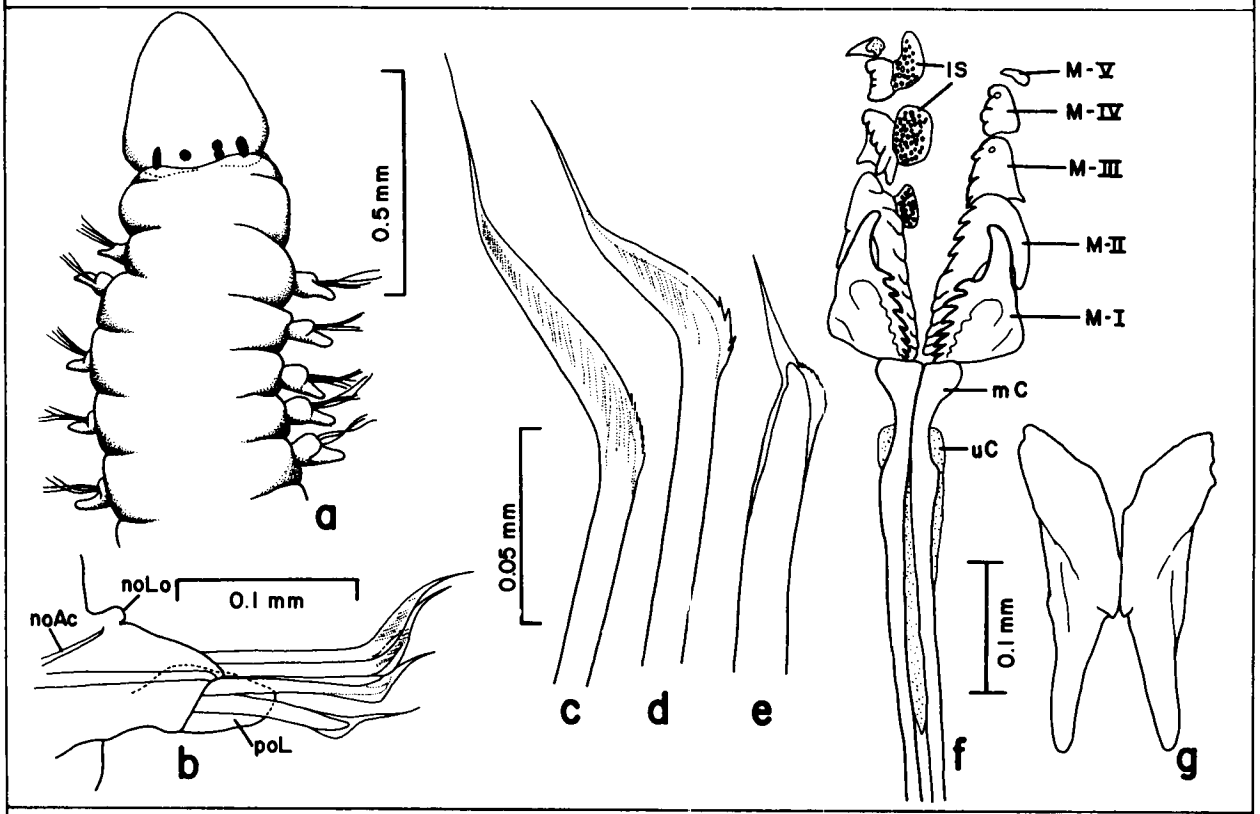

Figure 42-6. Arabella multidentata: a, anterior end; b, parapodium from posterior region (anterior view); c, lightly serrate limbate seta from midbody region; d, transversely serrate limbate seta from same; e, inferior hooded acicular seta from same; f, maxillae; g, mandibles; scale same for c-e.

Arabella multidentata (Ehlers, 1887)
Figures 42-5, 6a-g

Aracoda multidentata Ehlers, 1887:112, pl. 34, figs. 8-10, pl. 35, figs. 1-4.
Arabella (Cenothrix) multidentata--Perkins, 1979:447, fig. 13a-h.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 16D-4/81 (1 spec., USNM 75330), 18E-4/81 (1 spec., USNM 75331); MAFLA 2533I-6/75 (1 spec.).
Supplementary Material:
Florida--Hutchinson Island, St. Lucie Co., T. H. Perkins ID., Futch, Jaap and Gallagher, colls.: 27°22'08"N, 80°13'46"W, Sta. 5, July 1973, 9.0 m (1 spec., USNM 54699), 27°21'23"N, 80°13'24"W, Sta. 5, 10 m (1 spec., USNM 54700).
DESCRIPTION:
Length, to 70.0 mm (previously reported to 33+ mm); width, to 2.2 mm. Body fairly slender, iridescent yellow, with up to 243 setigers. Prostomium about same length as width, with 4-5 small eyes near posterior border (Figure 42-6a). Parapodia well-developed with moderately long, digitiform postsetal lobes throughout (Figure 42-6b). Setae limbate anteriorly. Setae of medial and posterior regions including 2-3 smooth to lightly serrate limbate setae (Figure 42-6c), 1-2 transversely serrate limbate setae (Figure 42-6d), and one inferior hooded acicular seta (Figure 42-6e) per fascicle. Pygidium with two or four small anal cirri. Paired maxillary carriers 1.5-2.2 times as long as unpaired carrier, and 2-2.3 times as long as maxillae. Maxillae symmetrical (Figure 42-6f). M-I distally falcate, each with 6-7 teeth basally. M-II long and symmetrical, each with 10-11 teeth, anteriormost tooth usually largest. M-III each with 4-6 teeth, anteriormost tooth usually largest. M-IV each with about four teeth. M-V each with one tooth. Mandibles joined medially (Figure 42-6g), 3.5-4.6 times as long as wide.
REMARKS: Gulf of Mexico BLM-OCS specimens were originally identified as Arabella mutans, which this species closely resembles.
PREVIOUSLY REPORTED HABITAT: 11-201 m; coarse calcareous sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Panama City, Florida and several off southwestern Florida (Figure 42-5); 22-87 m; coarse to fine sand, silty clay.
DISTRIBUTION: South Africa, Zanzibar, Maldive Islands, Bikini Atoll, Easter Island, North Carolina to Florida, Gulf of Mexico.

Genus **Labrorostratus** Saint Joseph, 1888

TYPE SPECIES: Labrorostratus parasiticus Saint Joseph, 1888.
REFERENCES:
Fauvel, 1923:440.
Fauchald, 1977a:110.
DIAGNOSIS: Prostomium with four eyes along posterior margin. Peristomium consisting of two apodous rings. Setae mostly limbate; hooded acicular setae present or absent. Maxillary carriers fused except for anterior rounded portions. Maxillae rudimentary, numbering two pairs. Mandibles present. Free-living or endoparasitic in syllid polychaetes.

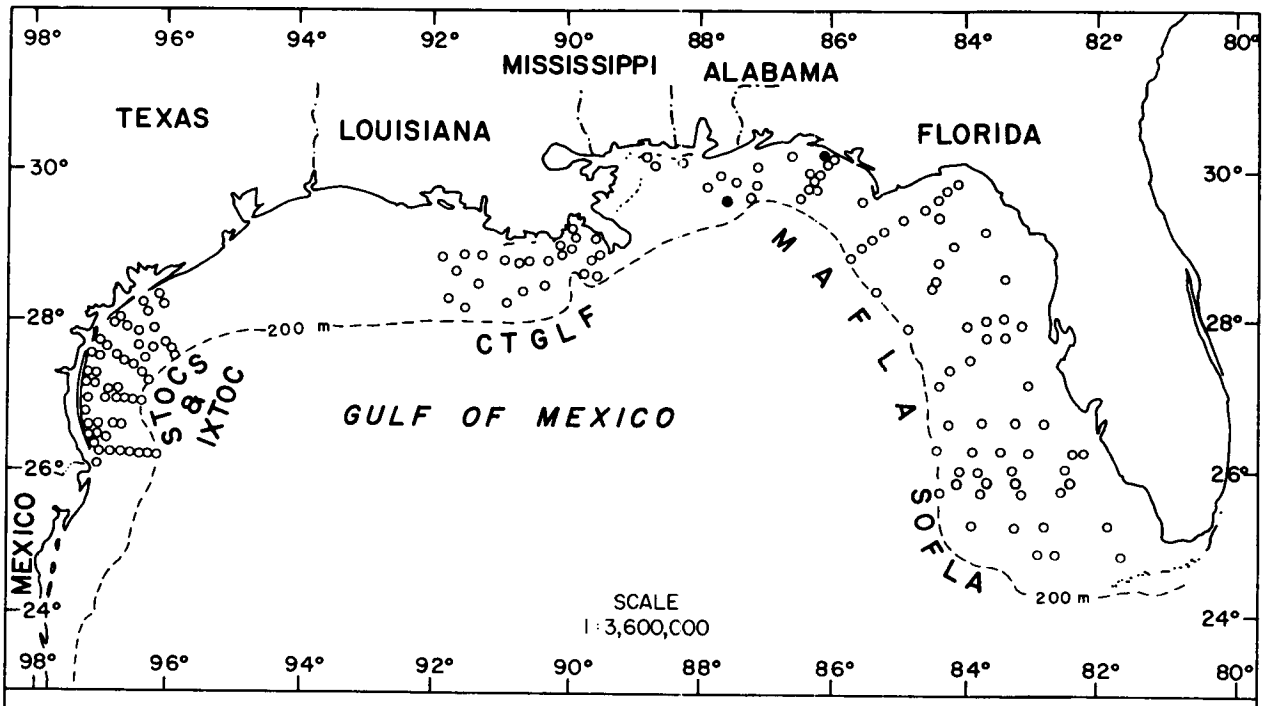

Figure 42-7. Distribution of Labrorostratus luteus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

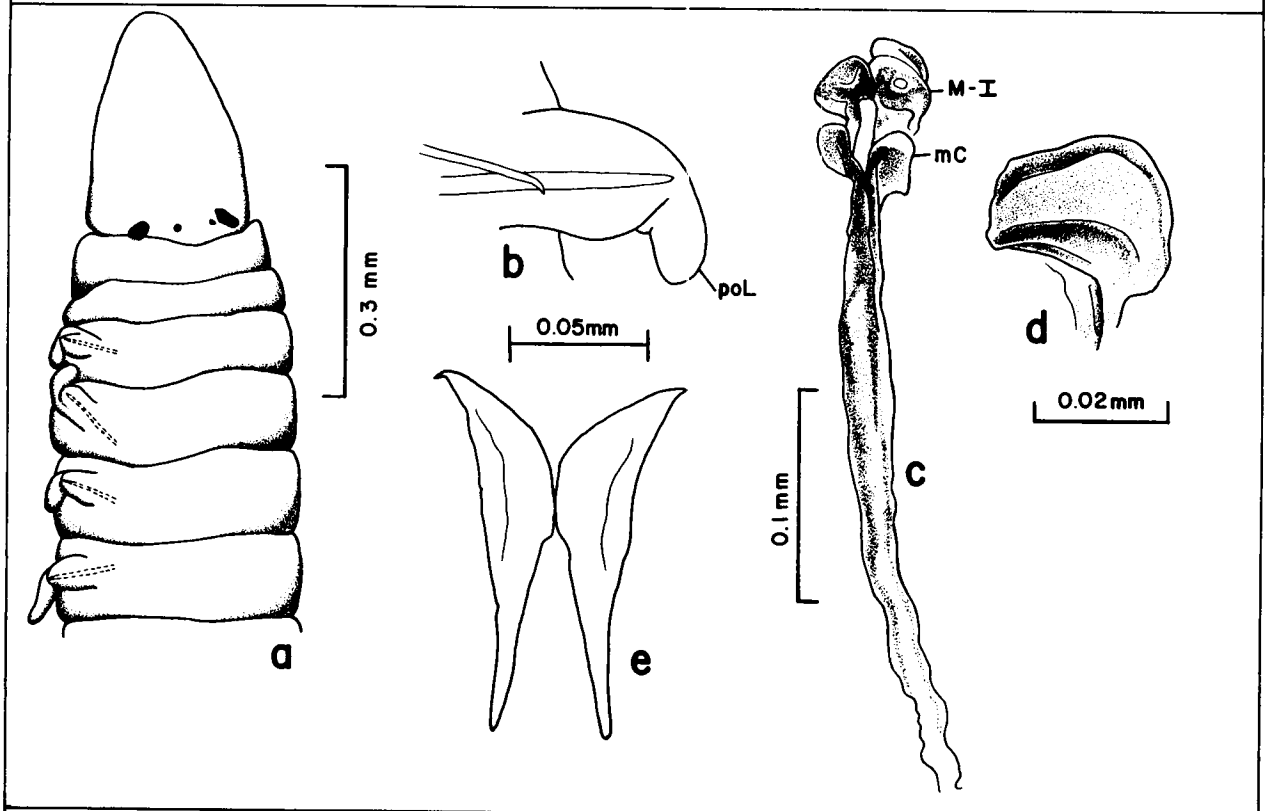

Figure 42-8. Labrorostratus luteus: a, anterior end; b, parapodium from midbody region; c, maxillae; d, detail of right M-I; e, mandibles.

Labrorostratus luteus Uebelacker, 1978
Figures 42-7, 8a-e

Labrorostratus luteus Uebelacker, 1978:151, figs. 1-10.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2643B-6/75 (2 juv.).
DESCRIPTION:
Length, 7.3+ mm (previously reported to 12 mm); width, 0.3 mm (previously reported to 0.85 mm). Body slender, thread-like, pale; both specimens incomplete with up to 39 setigers. Prostomium bluntly conical, with 2-4 eyes, lateral pair large, medial pair smaller or absent (Figure 42-8a). Parapodia well-developed throughout, with digitiform postsetal lobes about as long as setal lobes (Figure 42-8b). Parapodia subbiramous with single slender notoaciculum, and single stouter neuroaciculum. Setae absent. Maxillary carriers long, slender (Figure 42-8c); unpaired ventral carrier not observed. M-I hollow with blunt or beaked tip (Figure 42-8c,d). M-II not observed. Mandibles well-developed in one specimen (Figure 42-8e), about 3.5-4 times as long as wide; rudimentary in the other specimen.
REMARKS: These specimens are juveniles, which presumably have not yet developed some of the adult characters such as the setae and the second maxillae. They were not found in hosts. L. luteus was previously known only from the Bahamas type-locality.
PREVIOUSLY REPORTED HABITAT: 15-17 m; endoparasitic in the syllid Haplosyllis spongicola, found in Gelliodes digitalis sponges from coral heads.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off western Florida and Alabama (Figure 42-7); 37-69 m; coarse to fine sand.
DISTRIBUTION: Bahamas, Gulf of Mexico.

Genus **Drilonereis** Claparède, 1870b

TYPE SPECIES: Lumbriconereis filum Claparède, 1868.
REFERENCES:
Treadwell, 1921:107.
Pettibone, 1963:271.
Day, 1967:447.
Fauchald, 1970:133; 1977a:110.
Orensanz, 1974a:395.
DIAGNOSIS: Prostomium bluntly conical, depressed, with median dorsal and ventral furrows. Eyes usually absent. Peristomium consisting of two apodous rings. Parapodia with postsetal lobes longer than presetal lobes. Setal fascicles with limbate setae and a single acicular spine. Maxillary carriers consisting of a long, slender pair plus a median, ventral, unpaired piece. Four or five normally symmetrical pairs of toothed maxillae; M-I strongly falcate with smooth or dentate bases. Mandibles present or absent.

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

1a. Mandibles present. 2
1b. Mandibles absent 8

2a. M-I with distinct basal teeth (Figure 42-10d') 3
2b. M-I without distinct basal teeth (Figure 42-18d) 6

3a. Anterior parapodia inconspicuous, barely projecting beyond body wall (Figure 42-10a,b); M-I with 2-3 basal teeth (Figure 42-10d') . . . . . **.Drilonereis longa** [in part], p. 42-12
3b. Anterior parapodia small but distinctly projecting beyond body wall (Figure 42-12a); M-I with four or more basal teeth. 4

4a. M-I with about 6-7 basal teeth (Figure 42-12d'). . . . . **.Drilonereis sp. A**, p. 42-15
4b. M-I with four basal teeth (Figures 42-14d, 16d). 5

5a. Mandibles oval (Figure 42-14d), 1.3-1.5 times as long as wide. . . . . **.Drilonereis magna**, p. 42-17
5b. Mandibles posteriorly pointed (Figure 42-16d), more than twice as long as wide. . . . . **.Drilonereis** cf. **debilis**, p. 42-20

6a. Mandibles triangular (Figure 42-18d), less than twice as long as wide; anterior parapodia small but conspicuous (Figure 42-18a,b) . . . . . **.Drilonereis sp. B**, p. 42-20
6b. Mandibles posteriorly tapered (Figure 42-20d), at least three times as long as wide. 7

7a. Anterior parapodia inconspicuous (Figure 42-20a,b) . . . . . **.Drilonereis sp. C**, p. 42-22
7b. Anterior parapodia well-developed (Figure 42-22a,b). . . . . **.Drilonereis sp. E** [in part], p. 42-22

8a. M-I with distinct basal teeth. 9
8b. M-I without distinct basal teeth 10

9a. M-I with 5-8 basal teeth (Figure 42-24d) . . . . . **.Drilonereis sp. D**, p. 42-25
9b. M-I with 2-3 basal teeth (Figure 42-10d'). . . . . **.Drilonereis longa** [in part], p. 42-12

10a. Anterior parapodia well-developed (Figure 42-22a,b). . . . . **.Drilonereis sp. E** [in part], p. 42-22
10b. Anterior parapodia inconspicuous (Figure 42-26a,b) . . . . . **.Drilonereis spatula**, p. 42-27

Drilonereis longa Webster, 1879
Figures 42-9, 10a-d

Drilonereis longa Webster, 1879:240, pl. 7, figs. 84-88.
Drilonereis longa--Treadwell, 1921:109, text-figs. 407-411.
Drilonereis longa--Pettibone, 1963:272, fig. 72a-h.
Drilonereis longa--Day, 1973:63.

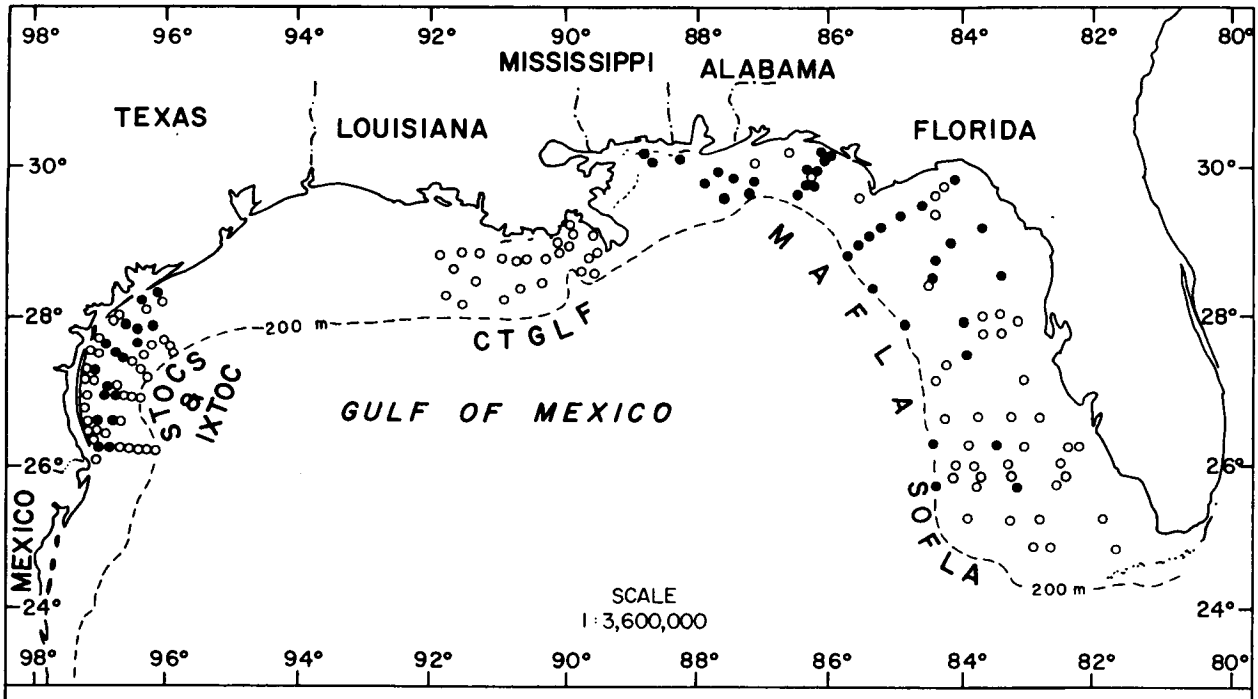

Figure 42-9. Distribution of Drilonereis longa on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

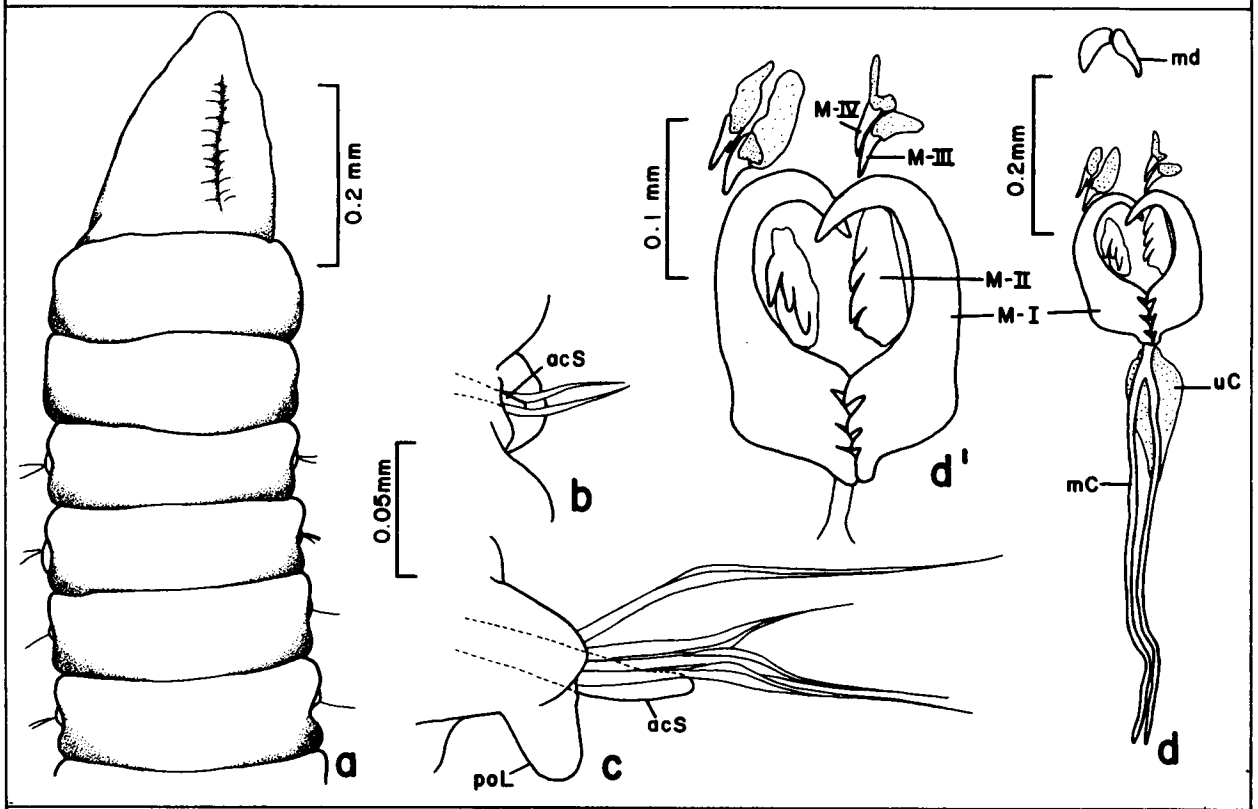

Figure 42-10. Drilonereis longa: a, anterior end; b, parapodium from setiger 6; c, parapodium from midbody region; d, jaw apparatus; d', detail of maxillae.

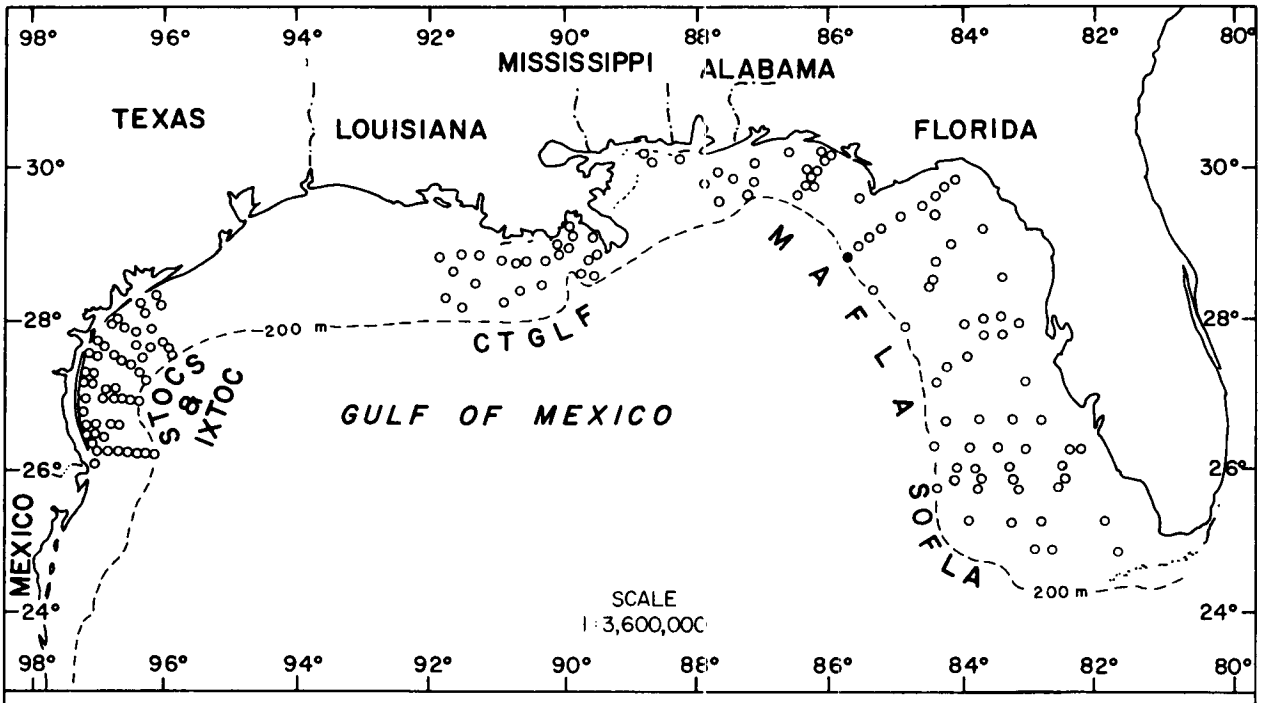

Figure 42-11. Distribution of Drilonereis sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

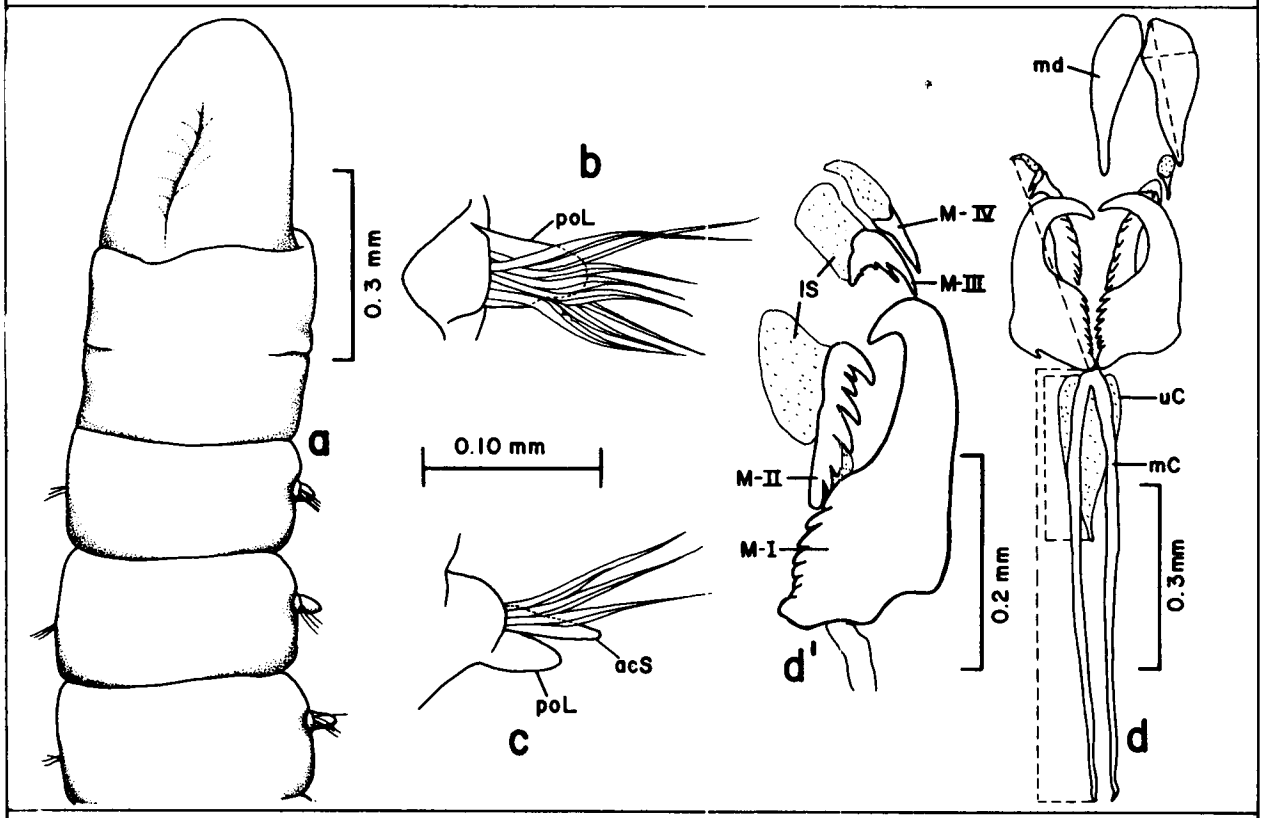

Figure 42-12. Drilonereis sp. A: a, anterior end; b, parapodium from setiger 15; c, parapodium from setiger 37; d, jaw apparatus; d', detail of right maxillae; dashed lines indicate axes of measurement of maxillary carriers, maxillae and mandibles.

Drilonereis longa--Gardiner, 1976:210, fig. 28g,h.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2316C-8/76 (1 spec.), 2422H-7/76 (1 spec.), 2426J-11/77 (1 spec.), 2531G-2/78 (1 spec.), 2638C-8/77 (1 spec.), 2640-6/75 (1 spec., USNM 55883), 2640E-6/75 (1 spec.), 2640C-11/77 (1 spec.); STOCS 1/IV-F/77 (4 spec., USNM 90975); IXTOC S53-11/79 (1 spec., USNM 75133).
DESCRIPTION:
Length, 109+ mm (previously reported to 710 mm); width, to 0.5 mm (previously reported to 1.5 mm). Body slender, thread-like, cylindrical; pale, iridescent; all specimens incomplete with up to 260 setigers. Prostomium bluntly pointed (Figure 42-10a). Parapodia inconspicuous anteriorly (Figure 42-10a,b), somewhat larger medially (Figure 42-10c); postsetal lobes short, rounded. Limbate setae narrowly winged (Figure 42-10c). Acicular spine small and slender anteriorly, becoming more prominent in midbody region (Figure 42-10b,c). Paired maxillary carriers 2.4-3.5 times as long as unpaired ventral carrier; 1.8-3.1 times as long as maxillae (Figure 42-10d). M-I each with 2-3 large basal teeth (Figure 42-10d'). M-II each with 2-5 equal teeth. M-III each with one large tooth surmounting up to three small teeth. M-IV usually each with one tooth but occasionally having an additional minute tooth. M-V absent. Mandibles small, sometimes oval to triangular, but usually curved and posteriorly pointed (Figure 42-10d); paired pieces touching or slightly separated anteriorly, strongly divergent posteriorly; 2.0-3.0 times as long as wide; occasionally absent.
REMARKS: D. longa was originally confused in BLM-OCS collections with D. magna, D. filum and D. monroi.
PREVIOUSLY REPORTED HABITAT: Intertidal to 2450 m; sand, mud, silty clay, with worm tubes, fine gravel or shell rubble.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common in northeastern and western Gulf (Figure 42-9); 4.5-189 m; sands, silts and clays.
DISTRIBUTION: Massachusetts to Georgia, Gulf of Mexico, West Indies, Washington, southern California.

Drilonereis sp. A
Figures 42-11, 12a-d'

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2427B-7/76 (1 spec.), 2427C-7/76 (2 spec., USNM 71432).
DESCRIPTION:
Length, 23.8+ mm; width, to 0.6 mm. Body slender, cylindrical; pale, iridescent; all specimens incomplete with up to 81 setigers. Prostomium blunt anteriorly, slightly depressed dorsally (Figure 42-12a). Parapodia small anteriorly (Figure 42-12b), becoming slightly larger in midbody region, with digitiform postsetal lobes (Figure 42-12c). Limbate setae narrowly winged (Figure 42-12b,c). Acicular spines sometimes not visible until after setiger 20, becoming prominent by about setiger 30 (Figure 42-12c). Paired maxillary carriers about three times as long as unpaired ventral carrier and about twice as long as maxillae (Figure 42-12d). M-I each with about 6-7 small basal teeth. M-II each with seven teeth; first, fourth and fifth teeth longer than the others (Figure 42-12d'). M-III each with one large tooth surmounting two smaller

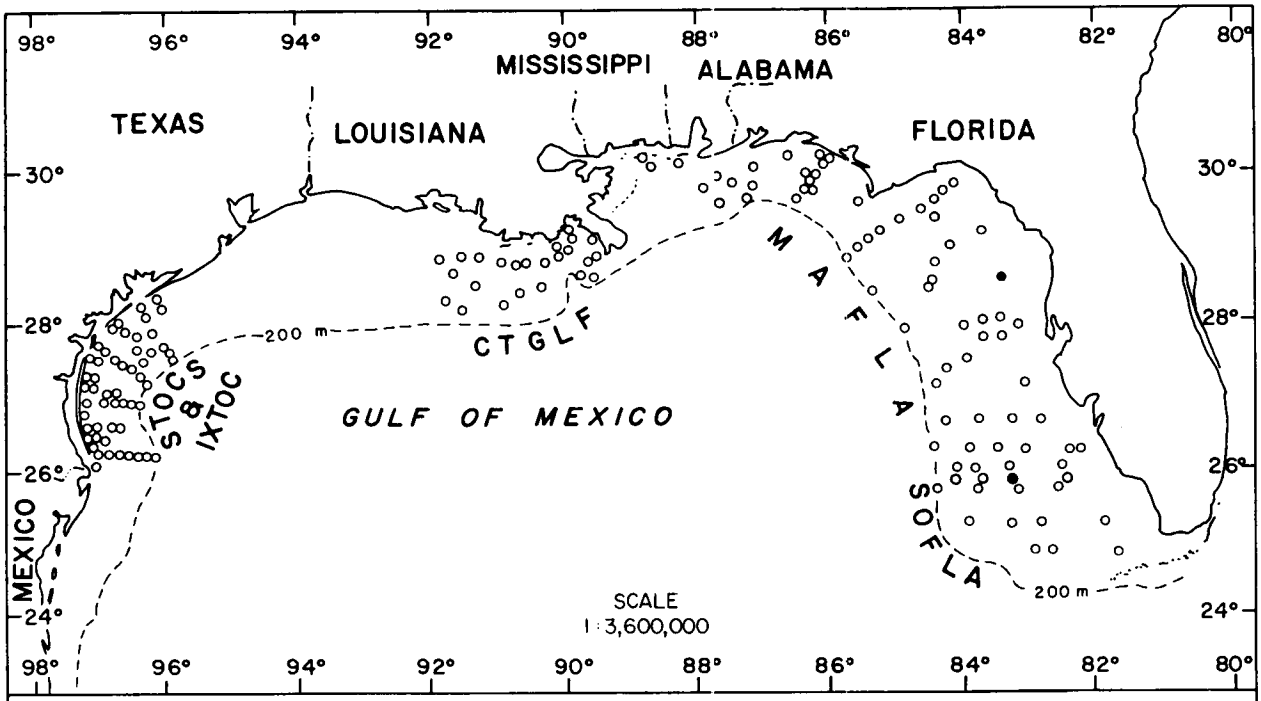

Figure 42-13. Distribution of Drilonereis magna on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

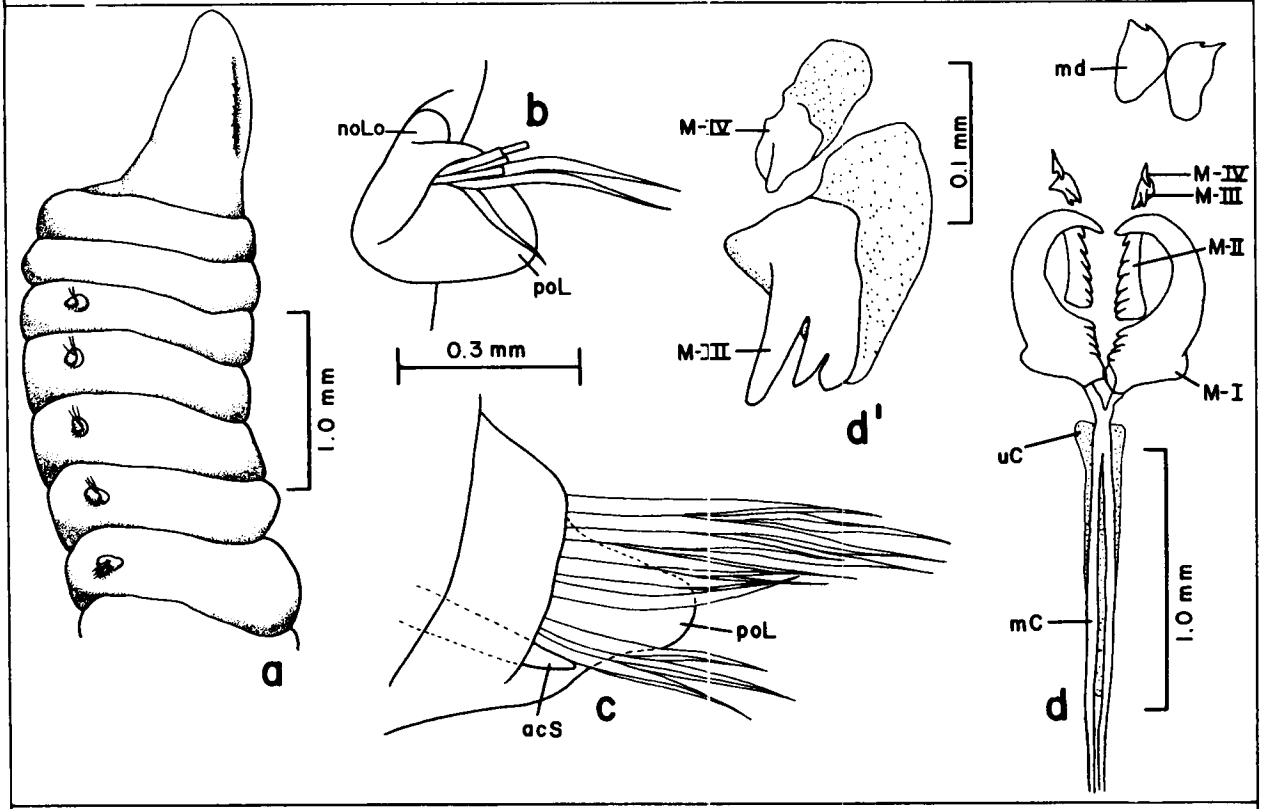

Figure 42-14. Drilonereis magna: a, anterior end (lateral view); b, parapodium from setiger 6 (anterior view); c, parapodium from midbody region (anterior view); d, jaw apparatus; d', detail of left M-III and M-IV.

teeth and sometimes several minute denticles. M-IV each with single slender tooth. M-V absent. Mandibles curved, pointed and divergent posteriorly (Figure 42-12d), 2.4-2.9 times as long as wide.
REMARKS: Drilonereis sp. A is similar to D. falcata Moore, 1911. It differs from the latter in having small anterior parapodia, and mandibles of a different shape. This species was originally identified as Drilonereis filum in BLM-MAFLA collections.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station in deep water off Cape San Blas, Florida (Figure 42-11); 175 m; clayey sandy silt.

Drilonereis magna Webster and Benedict, 1887
Figures 42-13, 14a-d'

Drilonereis magna Webster and Benedict, 1887:725, pl. 4, figs. 60-63.
Drilonereis cylindrica Hartman, 1951a:64, pl. 16, figs. 3-5.
Drilonereis magna--Pettibone, 1963:273, fig. 71h.
Drilonereis magna--Day, 1973:63.
Drilonereis magna--Gardiner, 1976:210, fig. 28i-k.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 16C-7/81 (1 spec., USNM 75333); MAFLA 2852G-7/76 (1 spec.).
Supplementary Material:
Gulf of Mexico--Tampa Bay, Florida, 1963, J. Taylor coll./ID. (1 spec., USNM 45603, as Drilonereis cylindrica).
DESCRIPTION:
Length, 240+ mm (previously reported to 330+ mm); width, to 2.4 mm (previously reported to 3 mm). Body fairly stout, cylindrical; pale, iridescent; both specimens incomplete with up to 300 setigers. Prostomium triangular (Figure 42-14a). Parapodia small anteriorly (Figure 42-14b), becoming gradually larger with short, digitiform postsetal lobes in midbody region (Figure 42-14c). Limbate setae smooth, narrowly winged (Figure 42-14c), numbering about ten per fascicle in midbody region. Acicular spines not observed anteriorly, stout in midbody region. Paired maxillary carriers about 1.8 times as long as unpaired ventral carrier; 2.0-2.7 times as long as maxillae (Figure 42-14d). M-I each with 3-4 basal teeth. M-II each with 6-7 equal teeth. M-III each with large tooth surmounting 1-2 smaller teeth (Figure 42-14d'). M-IV each with 1-2 teeth. M-V absent. Mandibles rounded, with anterolateral corners somewhat drawn out and pointed (Figure 42-14d), 1.3-1.5 times as long as wide.
REMARKS: The single BLM-MAFLA specimen was originally identified as D. cylindrica.
PREVIOUSLY REPORTED HABITAT: Intertidal to 1100 m; mud, fine to coarse sand, gravel.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off central and southwestern Florida (Figure 42-13); 22-54 m; medium to fine sand.
DISTRIBUTION: Newfoundland to South Carolina, Gulf of Mexico, Washington, southern California to Mexico, South Africa.

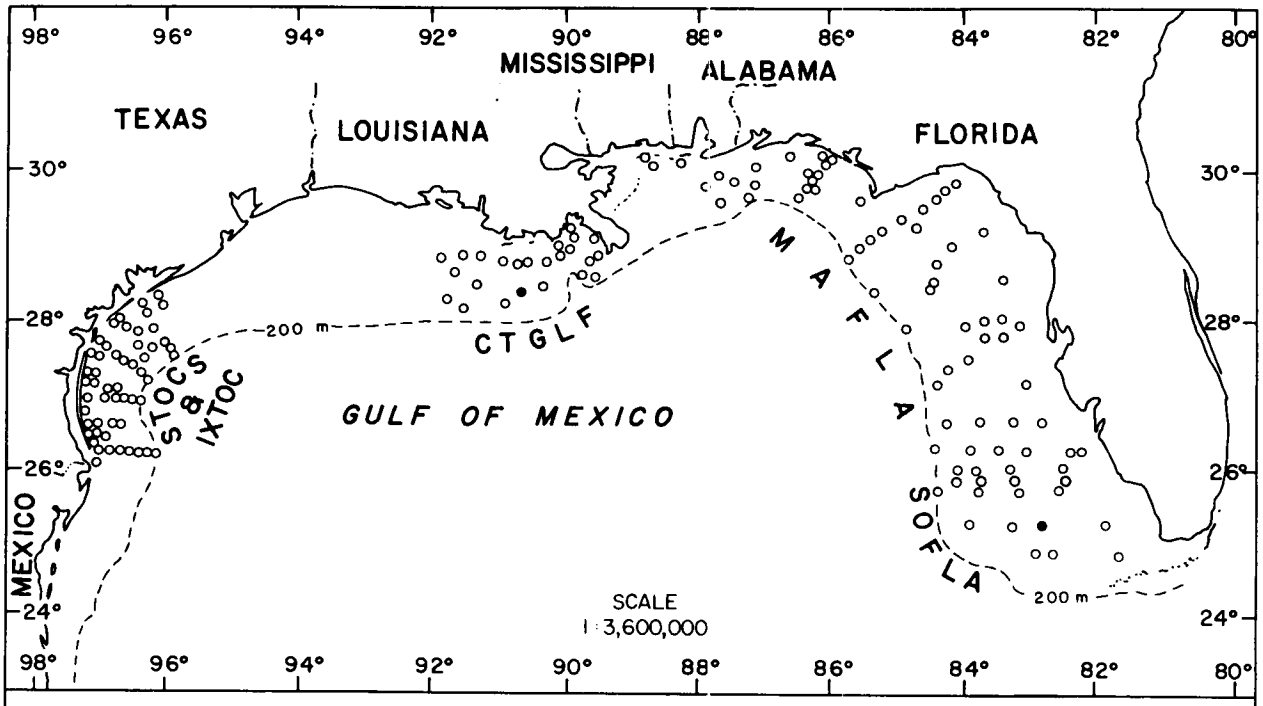

Figure 42-15. Distribution of Drilonereis cf. debilis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

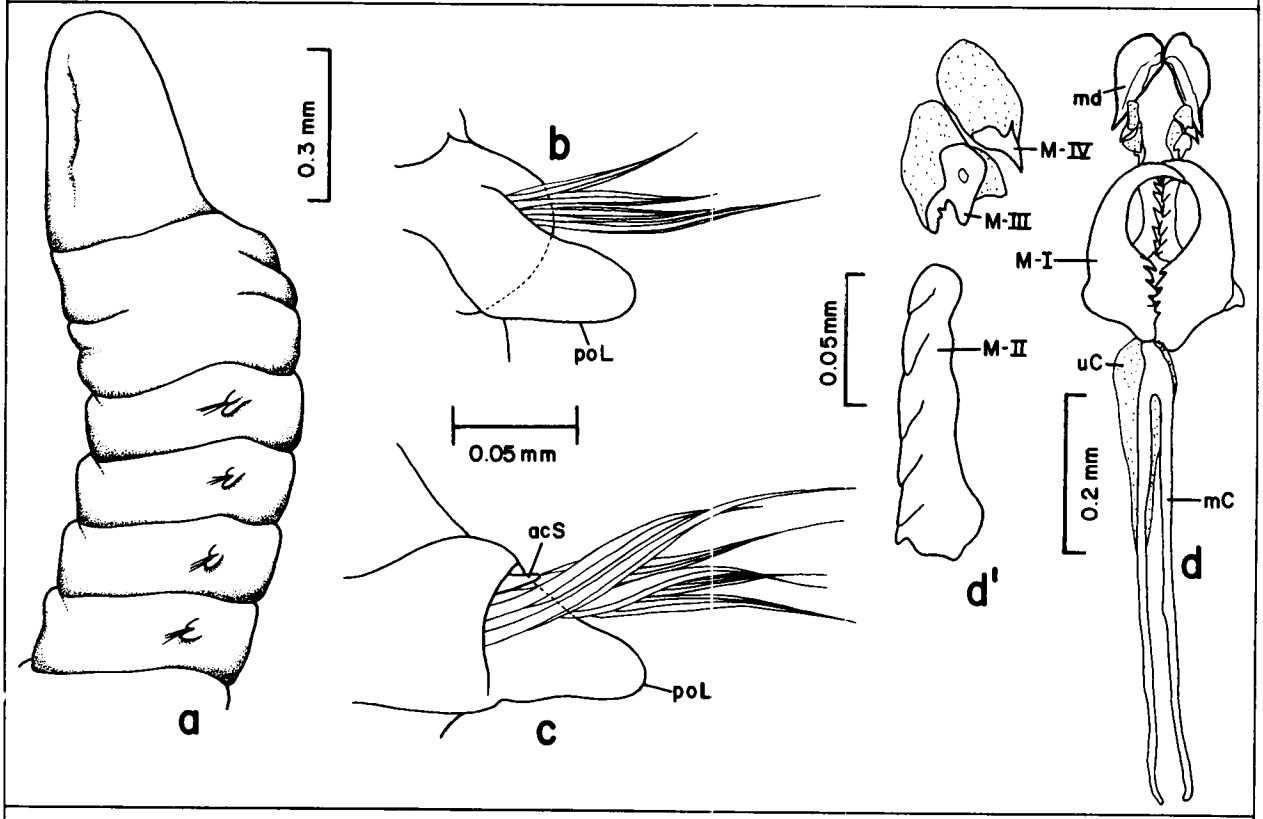

Figure 42-16. Drilonereis cf. debilis: a, anterior end; b, parapodium from setiger 10 (ventral view); c, parapodium from setiger 42; d, jaw apparatus; d', detail of right M-II, M-III and M-IV.

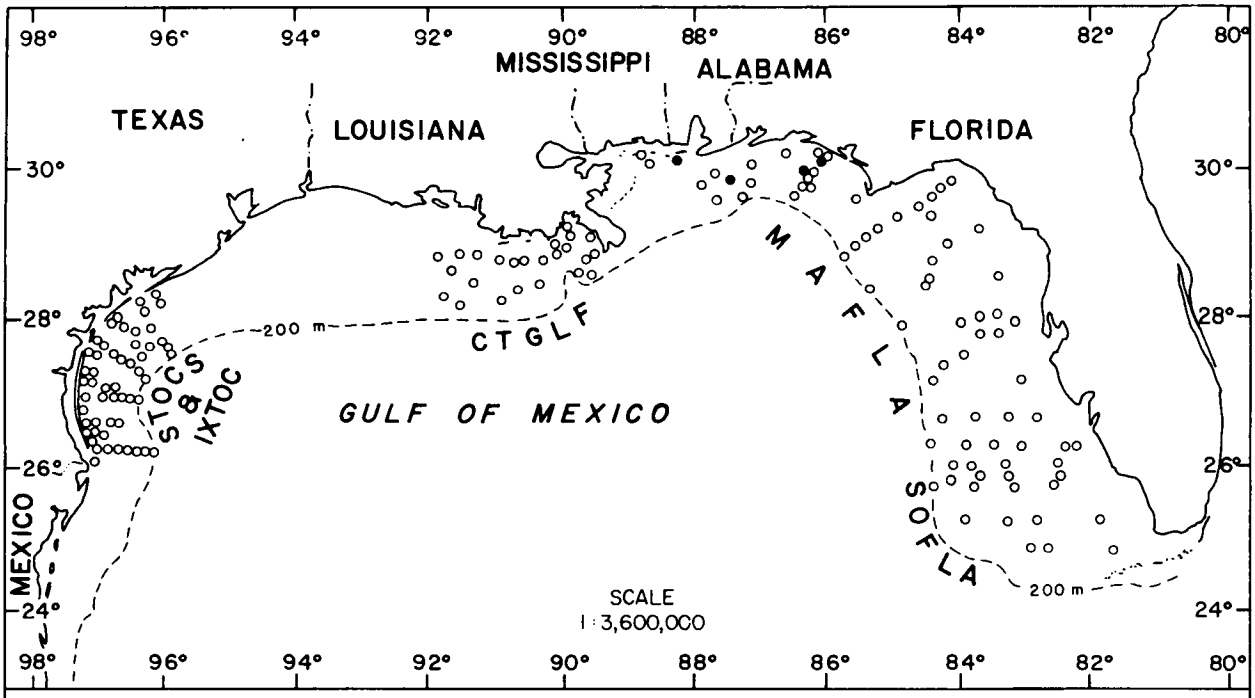

Figure 42-17. Distribution of Drilonereis sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

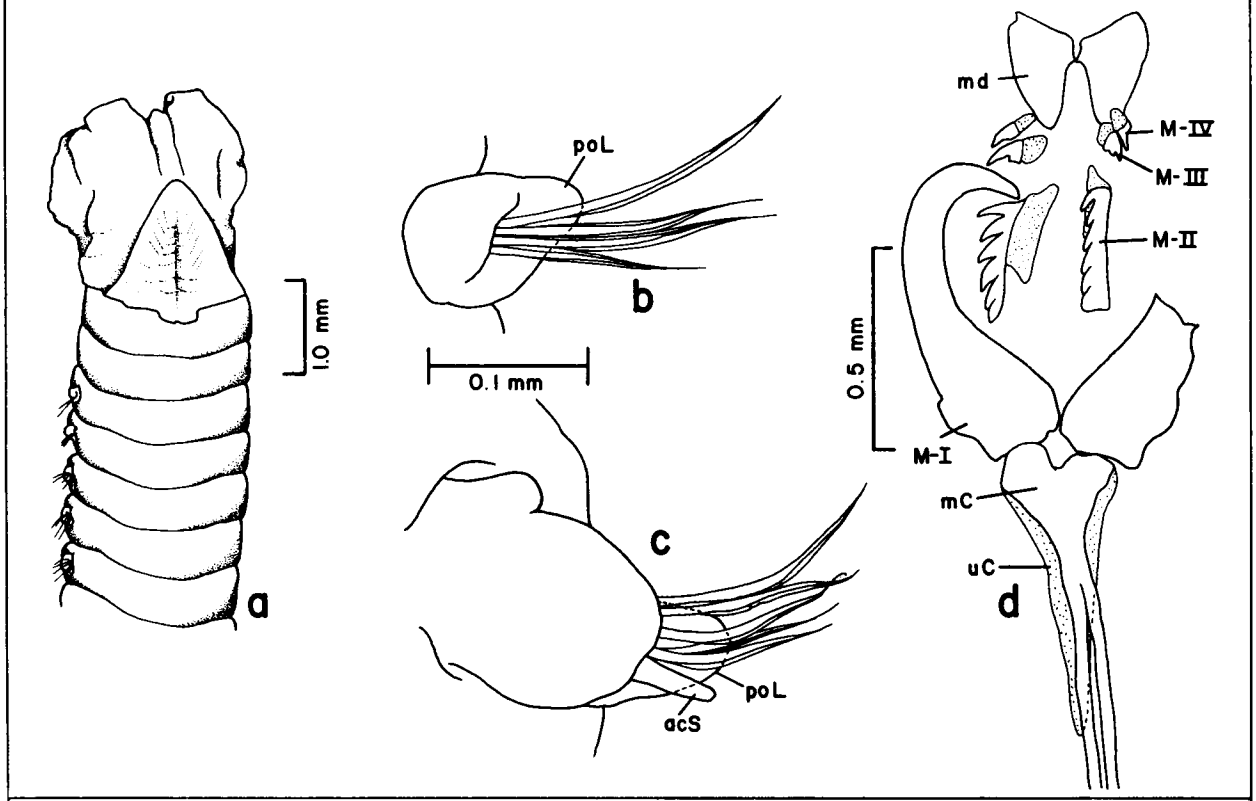

Figure 42-18. Drilonereis sp. B: a, anterior end (from USNM 53030); b, parapodium from setiger 5; c, parapodium from midbody region; d, jaw apparatus (right M-I broken).

Drilonereis cf. debilis (Ehlers, 1887)
Figures 42-15, 16a-d'

Aracoda debilis Ehlers, 1887:113, pl. 35, figs. 5-8.
Drilonereis debilis--Hartman, 1951a:65.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 22B-11/80 (1 spec., USNM 75332); CTGLF 04-6/78 (1 spec., USNM 90976).
DESCRIPTION:
Length, 30.6+ mm (previously reported to 40 mm); width, to 0.6 mm. Body cylindrical, iridescent, both specimens incomplete with up to 127 setigers. Prostomium distally rounded (Figure 42-16a). Parapodia small but conspicuous anteriorly (Figure 42-16b), becoming slightly larger in midbody region (Figure 42-16c). Limbate setae narrowly winged (Figure 42-16b,c). Acicular spine present from setiger 1, becoming larger in midbody region (Figure 42-16c). Paired maxillary carriers about 2-5 times as long as unpaired ventral carrier; 1.8-2.3 times as long as maxillae (Figure 42-16d). M-I each with four basal teeth. M-II each with 5-6 equal teeth (Figure 42-16d'). M-III each with single tooth sometimes surmounting minute denticles. M-IV each with single tooth. M-V absent. Mandibles curved, joined anteriorly, pointed and divergent posteriorly (Figure 42-16d), 2.5 times as long as wide.
REMARKS: These specimens differ from the original description of D. debilis in having four rather than 2-3 basal teeth on M-I, and in lacking M-V. They were originally referred to Drilonereis sp. and D. longa.
PREVIOUSLY REPORTED HABITAT: 347 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station in central Gulf and one off southwestern Florida (Figure 42-15); 45-53 m; fine sand, clayey silt.
DISTRIBUTION: Gulf of Mexico.

Drilonereis sp. B
Figures 42-17, 18a-d

Drilonereis sp. B--Gardiner, 1976:209, fig. 28f.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2642I-6/75 (1 spec.).
Supplementary Material:
North Carolina--Cape Lookout, Aug. 1972, intertidal sand mixed with gravel and shell fragments, S. L. Gardiner coll./ID. (1 spec., USNM 53030).
DESCRIPTION:
Length, 52.7+ mm (previously reported to 240+ mm); width, 1.1 mm (previously reported to 2 mm). BLM-MAFLA specimen slender, pale, iridescent anteriorly, incomplete with 137 setigers. Prostomium triangular (Figure 42-18a). Parapodia small anteriorly (Figure 42-18a,b), becoming gradually larger and well-developed in midbody region (Figure 42-18c); postsetal lobes rounded to digitiform. Limbate setae narrowly winged (Figure 42-18b,c). Acicular spines solitary; small and slender anteriorly,

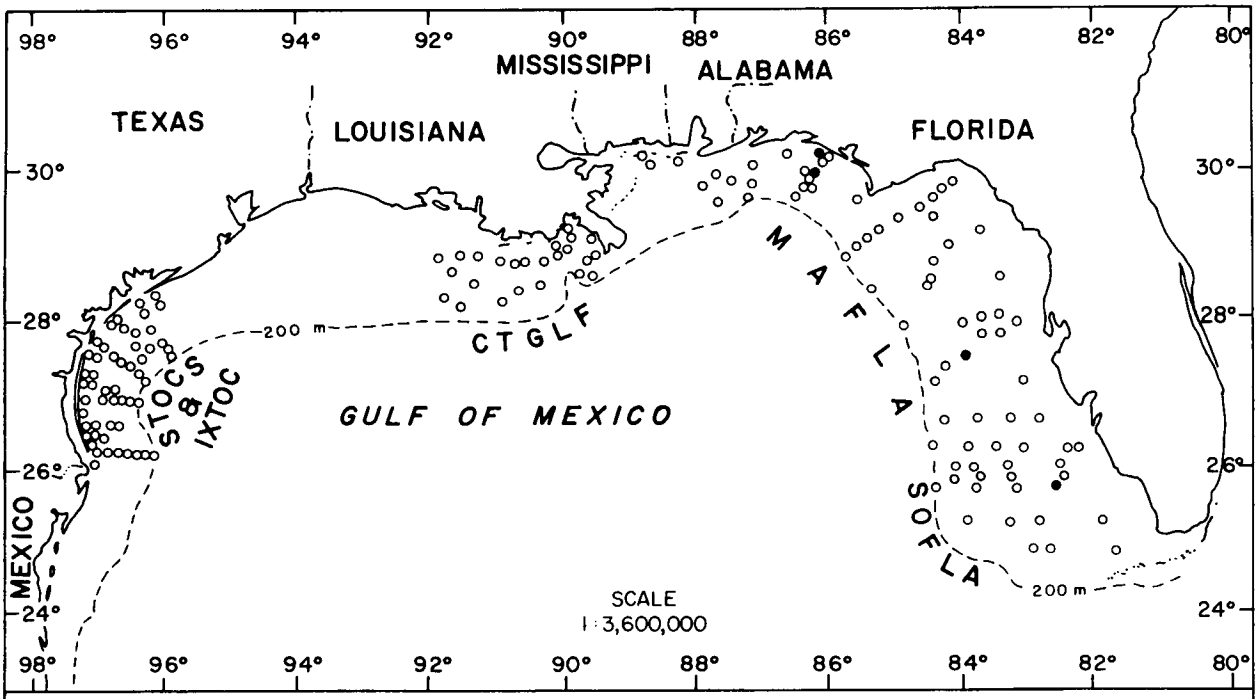

Figure 42-19. Distribution of Drilonereis sp. C on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

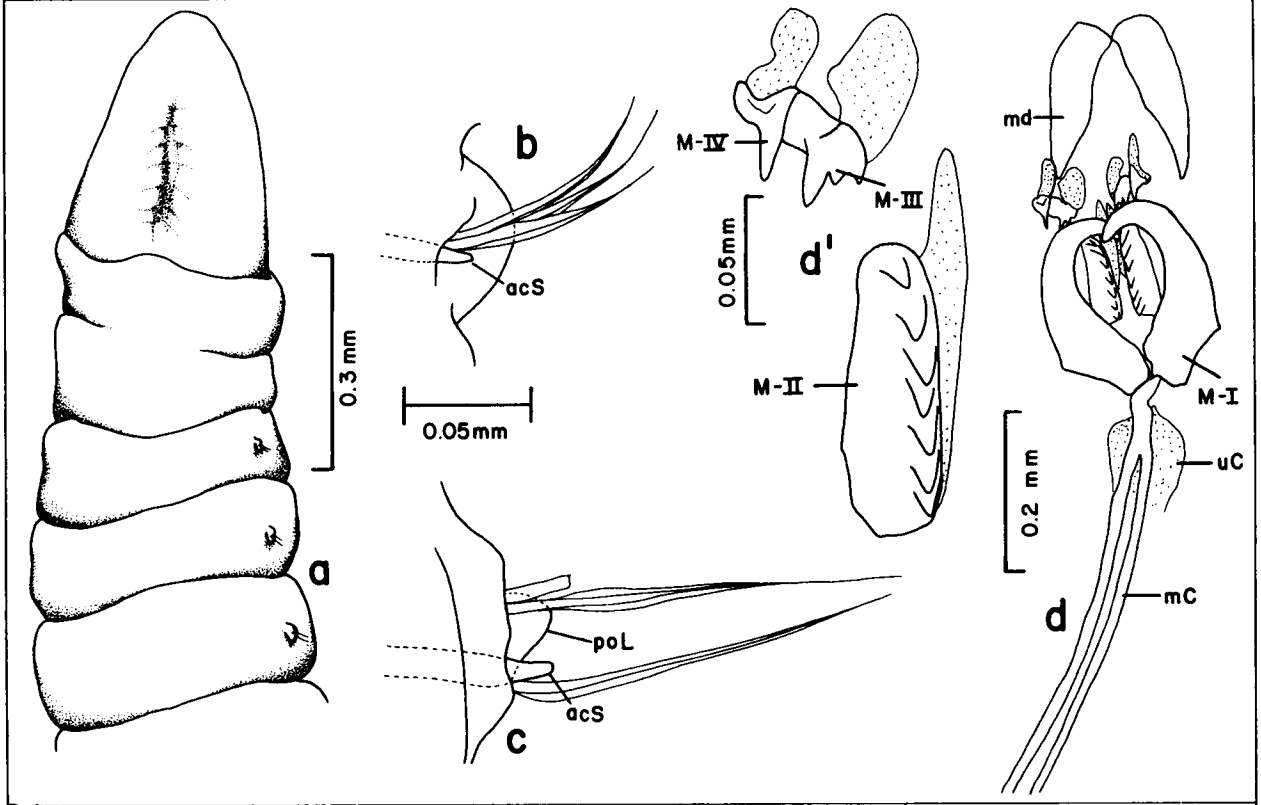

Figure 42-20. Drilonereis sp. C: a, anterior end; b, parapodium from setiger 6; c, parapodium from midbody region; d, jaw apparatus; d', detail of left M-II, M-III and M-IV.

becoming gradually longer and stouter (Figure 42-18c). Paired maxillary carriers 1.6-2.0 times as long as unpaired ventral carrier; 1.4-1.5 times as long as maxillae. M-I without basal teeth (Figure 42-18d). M-II each with 5-11 teeth, anteriormost tooth slightly longer than the others. M-III each with slender tooth surmounting much smaller tooth. M-IV each with single tooth. M-V absent. Mandibles triangular, joined medially (Figure 42-18d), 1.6-1.8 times as long as wide.
REMARKS: According to Gardiner (1976:209), Drilonereis sp. B is close to D. filum. However, confusion still exists concerning the presence or absence of mandibles and of basal teeth on the first maxillae of D. filum.
PREVIOUSLY REPORTED HABITAT: Intertidal; sandy mud, sand mixed with gravel and shell fragments.
GULF OF MEXICO BLM-OCS OCCURRENCE: Four stations off Alabama and western Florida (Figure 42-17); 32-52 m; coarse to medium sand, sandy silt.
DISTRIBUTION: North Carolina, Gulf of Mexico.

Drilonereis sp. C
Figures 42-19, 20a-d'

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2528A-9/75 (1 spec.), 2748C-2/78 (1 spec., USNM 71433).
DESCRIPTION:
Length, 57.8+ mm; width, to 0.8 mm. Body slender, cylindrical; pale, iridescent; both specimens incomplete with up to 157 setigers. Prostomium triangular (Figure 42-20a). Parapodia inconspicuous anteriorly (Figure 42-20b), remaining small in midbody region (Figure 42-20c). Limbate setae narrowly winged (Figure 42-20b,c). Acicular spines slender anteriorly, becoming slightly larger in midbody region (Figure 42-20b,c). Paired maxillary carriers 2.0-2.3 times as long as maxillae; about 3-5 times as long as unpaired ventral carrier, which fades posteriorly with no distinct border (Figure 42-20d). M-I without basal teeth. M-II each with 4-7 teeth (Figure 42-20d'). M-III each with slender tooth surmounting 2-3 smaller teeth. M-IV each with single tooth. M-V absent. Mandibles curved, nearly separated anteriorly, pointed and divergent posteriorly (Figure 42-20d), 3.5-4.4 times as long as wide.
REMARKS: This species is similar to Drilonereis attenuata (Treadwell, 1911) from the Dry Tortugas, particularly in the structure of the maxillae and the shape of the unpaired carrier. It differs from the latter in having M-IV each with one tooth rather than two, and in having mandibles.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off Florida (Figure 42-19); 27-50 m; coarse to fine sand.

Drilonereis sp. E
Figures 42-21, 22a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 24D-11/80 (1 spec., USNM 75334); MAFLA 2530F-7/76 (1 spec.), 2531G-6/75 (1 spec.), 2645I-7/76 (1 spec., USNM 71435); STOCS HR1-3 7/76

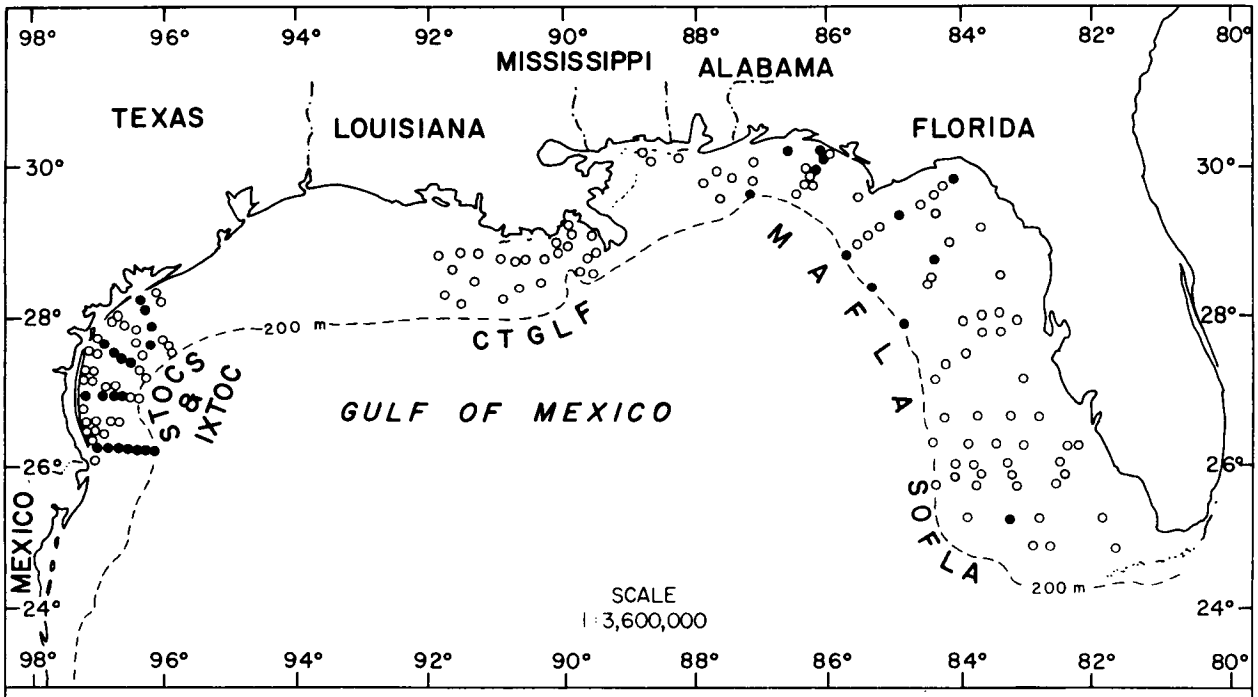

Figure 42-21. Distribution of Drilonereis sp. E on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

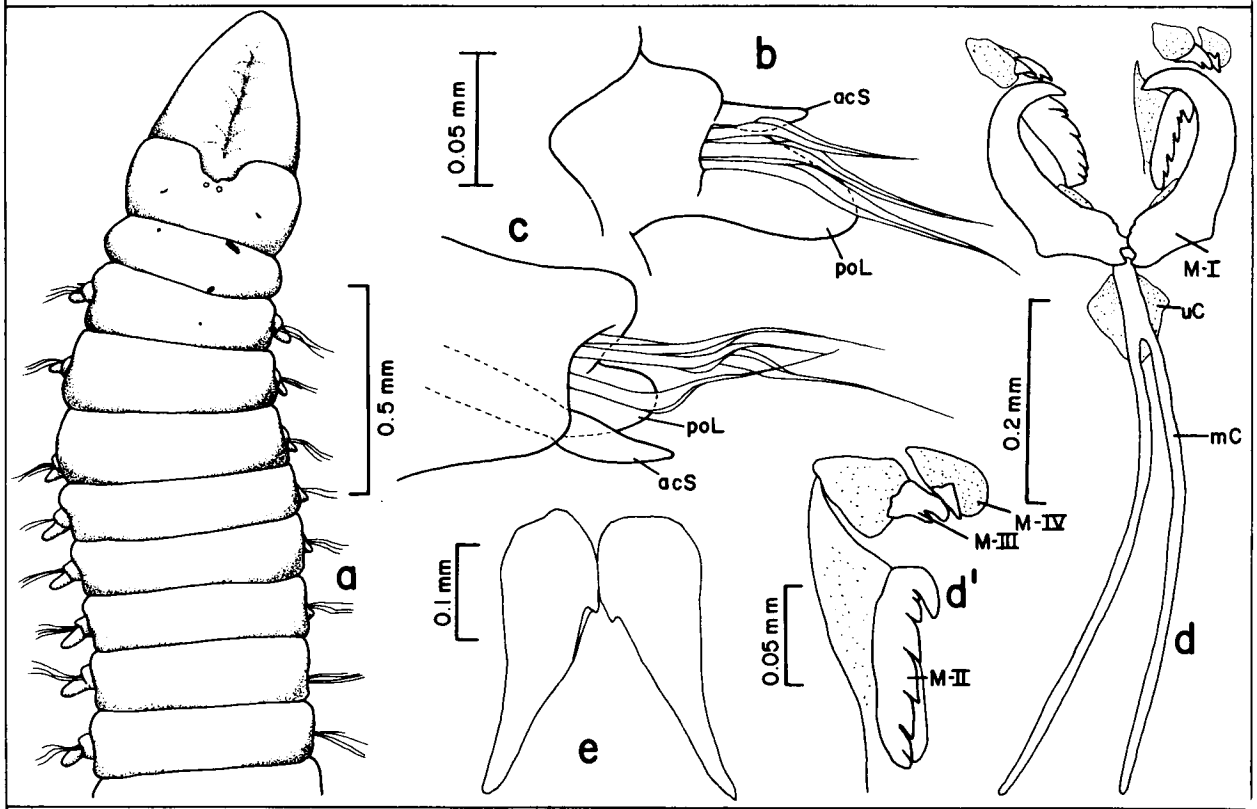

Figure 42-22. Drilonereis sp. E: a, anterior end; b, parapodium from setiger 9; c, parapodium from midbody region (anterior view); d, jaw apparatus; d', detail of right M-II, M-III and M-IV; e, mandibles.

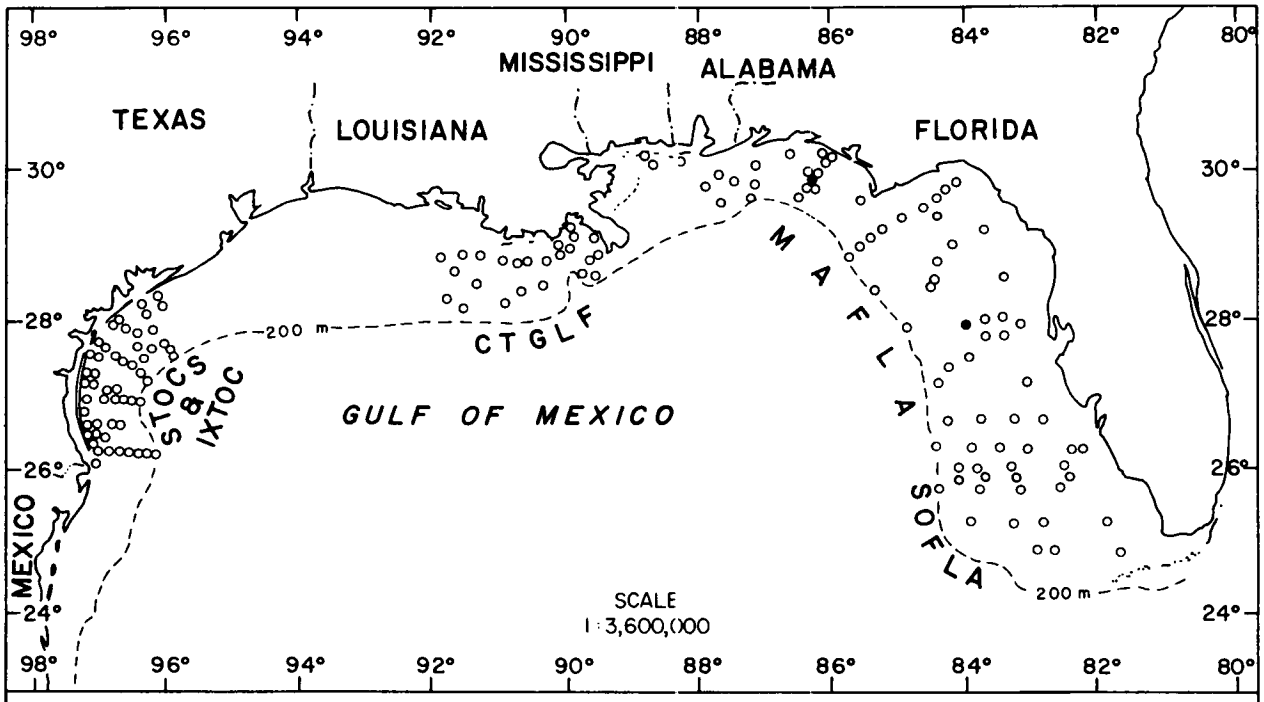

Figure 42-23. Distribution of Drilonereis sp. D on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

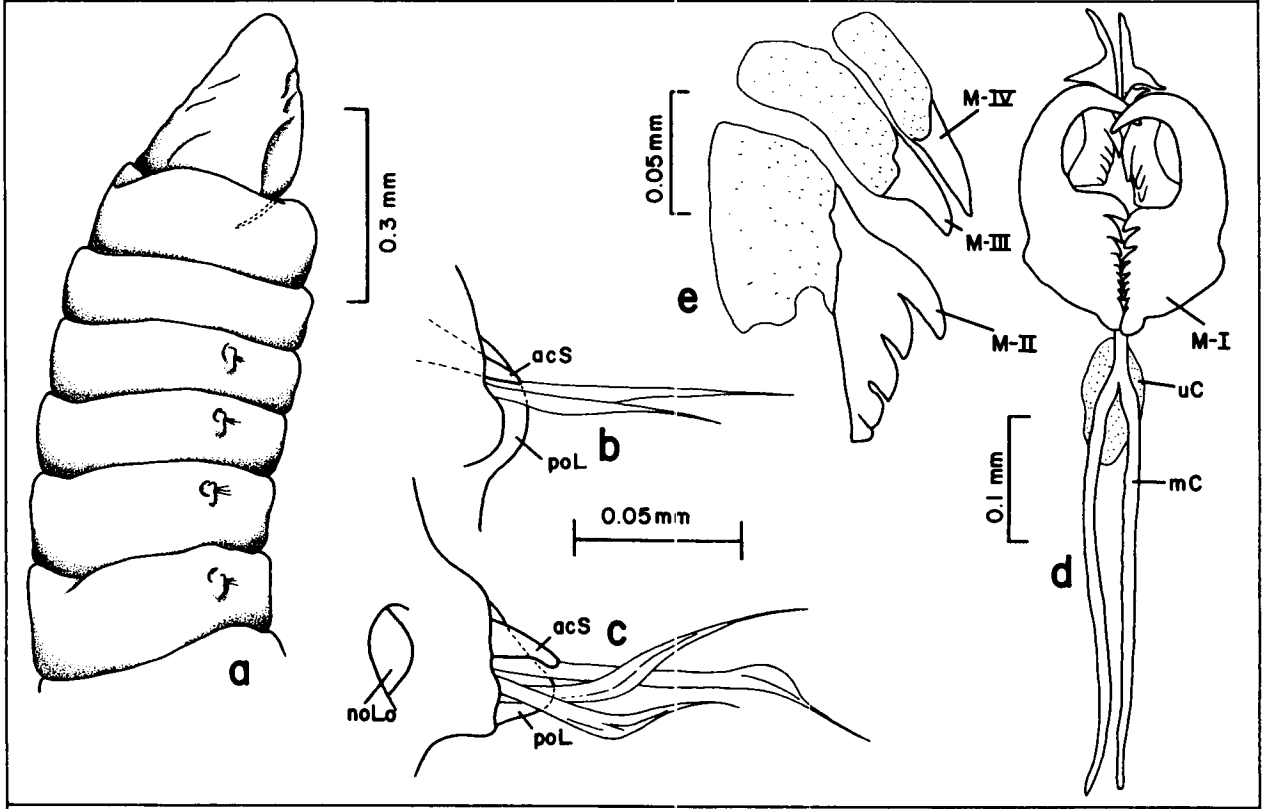

Figure 42-24. Drilonereis sp. D: a, anterior end (lateral view); b, parapodium from anterior region (ventral view); c, parapodium from midbody region; d, jaw apparatus; e, detail of right M-II, M-III and M-IV.

(1 spec., USNM 90977).
DESCRIPTION:
Length, to 31.1 mm; width, to 0.6 mm. Body slender; pale anteriorly, darkening to iridescent orangish-brown or patchy brown in midbody region; one specimen complete with 244 setigers. Prostomium fairly long, bluntly pointed, prolonged posteromedially; with two small, round nuchal organs at base of prolongation (Figure 42-22a). One specimen with small, dark, subcutaneous spots in peristomium and setiger 1 (Figure 42-22a). Parapodia well-developed throughout; postsetal lobes long and rounded to digitiform anteriorly, becoming gradually smaller in midbody region (Figure 42-22b,c). Limbate setae narrowly winged (Figure 42-22b,c). Acicular spines fairly slender anteriorly, present from setiger 1, becoming larger in midbody region (Figure 42-22b,c). Paired maxillary carriers 4.6-10 times as long as short, diamond-shaped, unpaired carrier; 1.9-2.5 times as long as maxillae (Figure 42-22d). M-I without well-defined basal teeth. M-II each with 6-7 teeth; first tooth longest, second shortest, rest equal to each other in length (Figure 42-22d'). M-III each with large tooth surmounting smaller tooth. M-IV each with single tooth. M-V each with single tooth, or M-V absent. Mandibles rounded anteriorly, tapered posteriorly (Figure 42-22e), three times as long as wide; or absent.
REMARKS: Drilonereis sp. E is similar to D. monroi Day, 1960, from South Africa, in the dentition of the maxillae and in having well-developed anterior parapodia. It differs from the latter in having fewer teeth on M-III, and a differently shaped prostomium and unpaired maxillary carrier. Drilonereis sp. E was confused with D. magna in BLM-STOCS collections.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in northeastern Gulf, common in western Gulf (Figure 42-21); 10-189 m; sands, silts and clays.

Drilonereis sp. D
Figures 42-23, 24a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211G-8/77 (1 spec., USNM 71434), 2533F-6/75 (1 spec.).
DESCRIPTION:
Length, 32.4+ mm; width, to 0.6 mm. Body slender, thread-like; iridescent orangish-brown; both specimens incomplete with up to 55 setigers. Prostomium bluntly pointed (Figure 42-24a). One individual with two subcutaneous dark spots on second peristomial ring. Parapodia inconspicuous anteriorly with poorly developed postsetal lobes (Figure 42-24b); parapodia remaining small with somewhat larger postsetal lobes in midbody region (Figure 42-24c). Limbate setae narrowly winged anteriorly, with moderately broad wings in midbody region (Figure 42-24c). Acicular spines present but only slightly emergent from setiger 1, becoming gradually longer and stouter over next few setigers (Figure 42-24b,c). Paired maxillary carriers 3.0-3.5 times as long as unpaired ventral carrier; 1.6 times as long as maxillae (Figure 42-24d). M-I each with 5-8 small basal teeth. M-II each with 4-6 teeth, anteriormost tooth largest (Figure 42-24e). M-III each with 1-2 teeth. M-IV each with single tooth. M-V and mandibles absent.

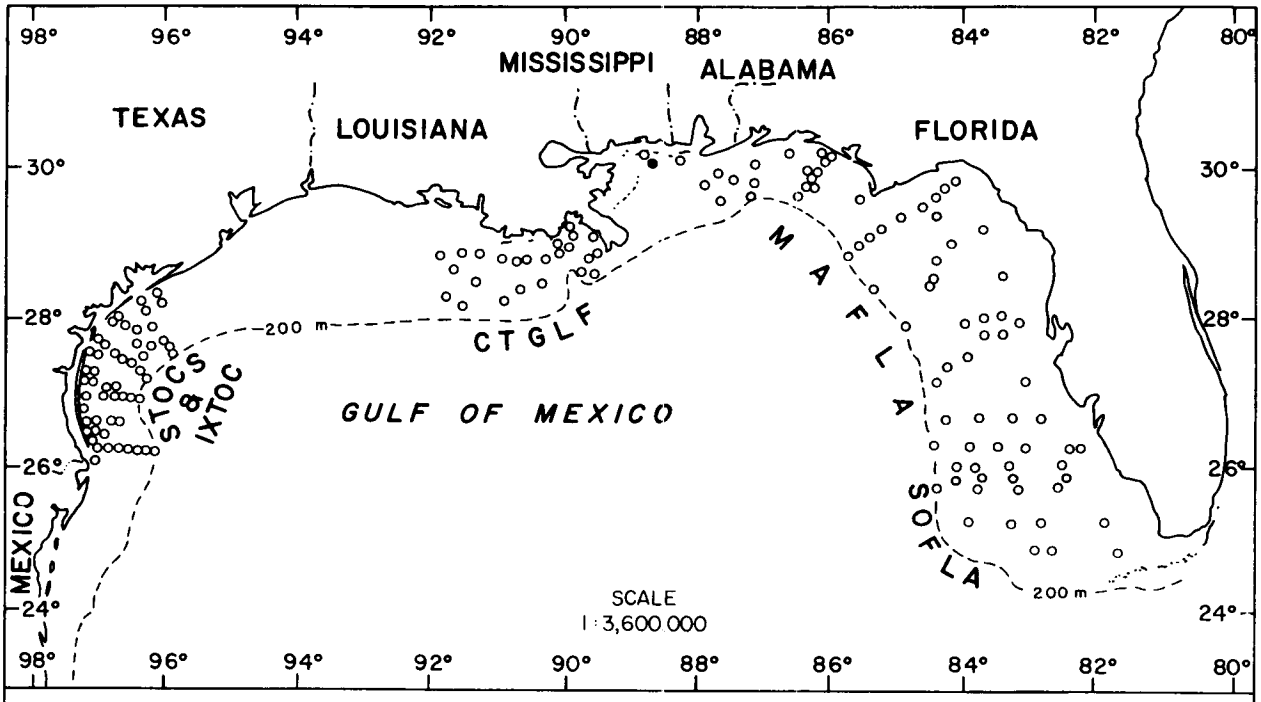

Figure 42-25. Distribution of Drilonereis spatula on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

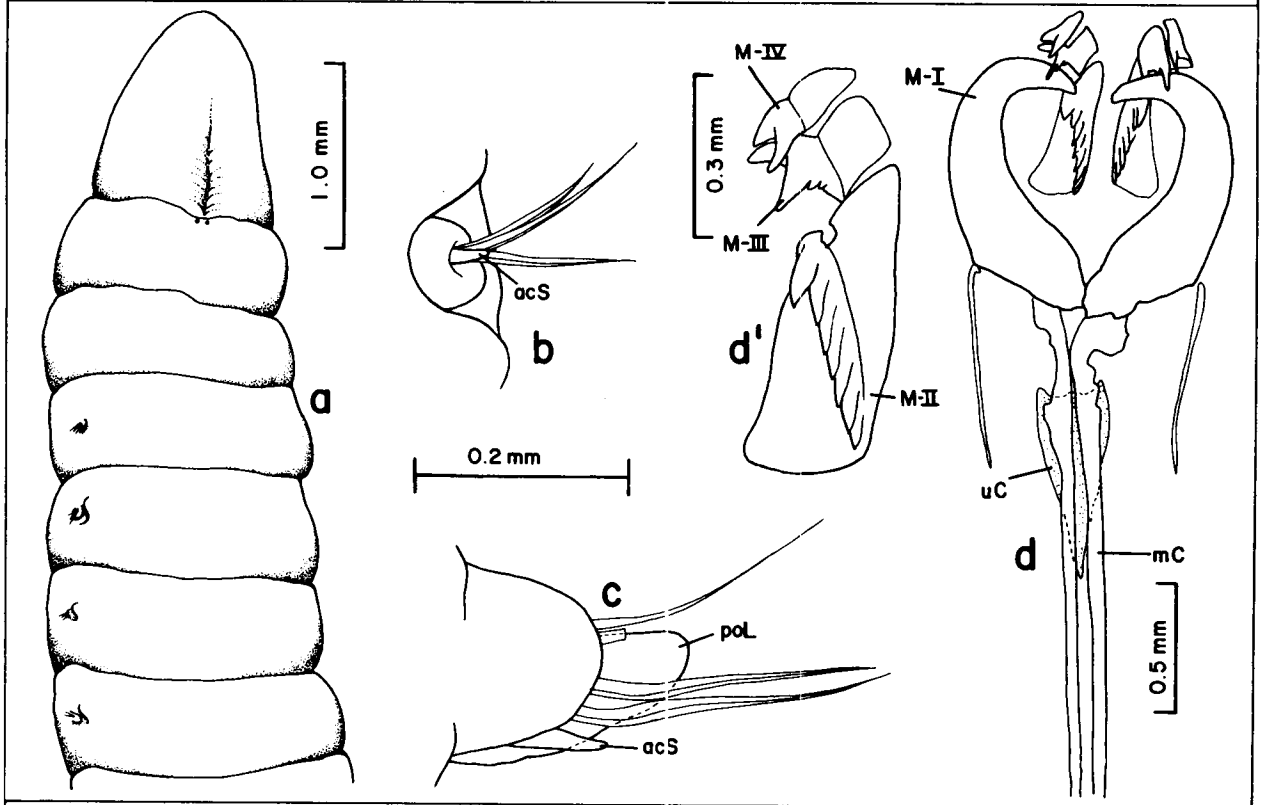

Figure 42-26. Drilonereis spatula: a, anterior end; b, parapodium from setiger 5 (posterior view); c, parapodium from midbody region (anterior view); d, jaw apparatus; d', detail of left M-II, M-III and M-IV.

REMARKS: Drilonereis sp. D resembles D. brattstroemi Fauchald, 1972b, from Norway, particularly in the dentition of the maxillae. It differs from the latter in lacking M-V, and in the shape of the unpaired maxillary carrier. Drilonereis sp. D was confused with D. longa in BLM-MAFLA collections.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off Tampa and Panama City, Florida (Figure 42-23); 43-67 m; coarse sand.

Drilonereis spatula (Treadwell, 1911)
Figures 42-25, 26a-d'

Aracoda spatula Treadwell, 1911:6, figs. 12-14.
Drilonereis spatula--Treadwell, 1921:108, text-figs. 400-406.
Drilonereis brunnea Treadwell, 1921:111, text-figs. 418-420.
Drilonereis spatula--Hartman, 1951a:65; 1956:290.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2638G-11/77 (1 spec.).
DESCRIPTION:
Length, 61.2+ mm (previously reported to 365 mm); width, 2.7 mm (previously reported to 4 mm). Body relatively large, robust; iridescent light brown; incomplete with 101 setigers. Prostomium bluntly triangular, with two small nuchal pits at base (Figure 42-26a). Parapodia inconspicuous anteriorly (Figure 42-26a,b), becoming well-developed in midbody region, with digitiform postsetal lobes nearly as long as setal lobes (Figure 42-26c). Limbate setae narrowly winged (Figure 42-26b,c). Acicular spines present from setiger 1, short and slender anteriorly, slightly larger in midbody region (Figure 42-26b,c). Paired maxillary carriers 3.6 times as long as unpaired ventral carrier and 2.5 times as long as maxillae. M-I smooth basally, with long, slender, posterolateral extensions (Figure 42-26d). M-II each with seven teeth, anteriormost tooth largest. M-III each with large tooth surmounting two small teeth (Figure 42-26d'). M-IV each with large tooth above minute knob. M-V and mandibles absent.
REMARKS: Treadwell (1921:108) reported M-III and M-IV each with one tooth. However, his figure of the maxillae of D. brunnea (1921:112, text-fig. 420) shows M-III and M-IV having a configuration similar to that of the BLM-MAFLA specimen examined here, with small denticles below the large, terminal tooth of each.
PREVIOUSLY REPORTED HABITAT: Sand, with Lumbrineris and Arabella.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Mississippi (Figure 42-25); 24 m; sandy silt.
DISTRIBUTION: Gulf of Mexico, including Dry Tortugas and Key West; Tobago, West Indies.

Genus Notocirrus Schmarda, 1861

TYPE SPECIES: Notocirrus chilensis Schmarda, 1861.
REFERENCES:
Hartman, 1944b:174.
Day, 1967:448.

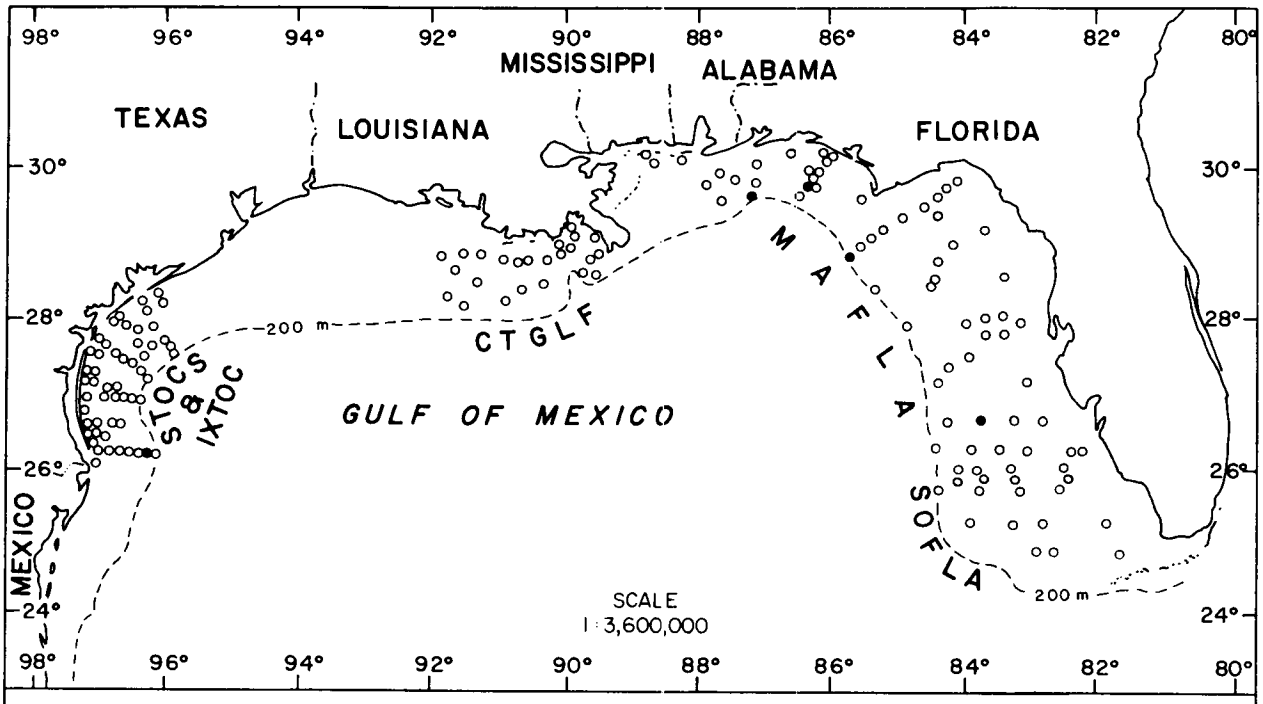

Figure 42-27. Distribution of Notocirrus sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

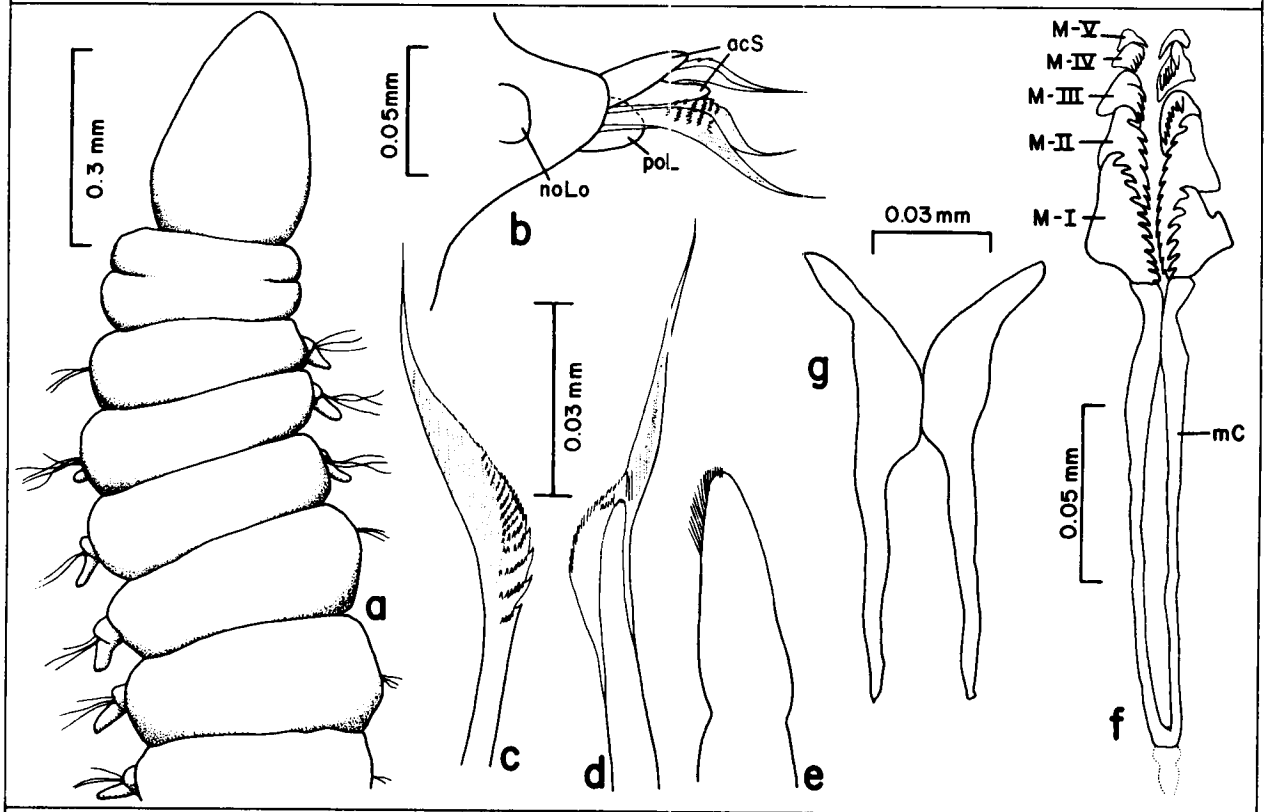

Figure 42-28. Notocirrus sp. A: a, anterior end; b, parapodium from midbody region; c, transversely serrate limbate seta from setiger 35; d, hooded acicular seta from setiger 14; e, acicular spine from setiger 14; f, maxillae; g, mandibles; scale same for c-e.

Orensanz, 1974a:390.
Fauchald, 1977a:110.
DIAGNOSIS: Prostomium conical, usually with four eyes. Setae including limbate forms and stout acicular spines. Maxillae as 4-5 pairs of toothed plates; M-I dentate or weakly falcate. Mandibles present.

Notocirrus sp. A
Figures 42-27, 28a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 5B-7/81 (1 spec., USNM 75335); MAFLA 2535F-6/75 (1 spec.); STOCS 3/IV-2 F/77 (1 spec., USNM 90978).
DESCRIPTION:
Length, to 28.9+ mm; width, to 0.4 mm. Body slender, thread-like, pale; all specimens incomplete with up to 99 setigers. Prostomium 1.4 times as long as wide, with or without eyes (Figure 42-28a). Peristomium consisting of two apodous rings. Parapodia well-developed throughout; postsetal lobes relatively long anteriorly (Figure 42-28a), short and digitiform in midbody region (Figure 42-28b). Setae of midbody region including transversely serrate limbate setae (Figure 42-28c), one hooded acicular seta (Figure 42-28d), and two stout acicular spines (Figure 42-28e) per fascicle. Maxillary carriers 1.6-2.3 times as long as maxillae and about 2.5 times as long as slender unpaired ventral carrier. M-I and M-II asymmetrical (Figure 42-28f). Left M-I long with about 9-11 equal teeth, right M-I short with six teeth. Left M-II short with 6-10 teeth, right M-II longer with 9-12 teeth; anteriormost tooth largest. M-III symmetrical, each with about 7-9 teeth, anteriormost tooth largest. M-IV slightly asymmetrical, left piece with 4-7 teeth, right piece with seven teeth. M-V each with one tooth, closely allied with M-IV. Mandibles long, slender, joined medially (Figure 42-28g), 4.5-7.3 times as long as wide; 1.0-1.3 times as long as maxillae.
REMARKS: These specimens resemble Notocirrus spiniferus Moore, 1906b, from the northeastern U. S. coast, in having two acicular spines per fascicle, and in the shape and dentition of the maxillae (as shown by Pettibone, 1963:275, fig. 73f,g). They differ from N. spiniferus in having hooded acicular setae.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in deep water off Florida and Texas (Figure 42-27); 91-175 m; coarse sand, clayey sand, clayey and sandy silt.

CHAPTER 43

Katherine M. Gilbert

Family LYSARETIDAE Kinberg, 1865

INTRODUCTION

Lysaretids are long (up to 68.5 cm), cylindrical worms, among the largest of polychaetes. The prostomium is rounded (Figure 43-2a) or bluntly conical (Figure 43-4a), and is followed by a uni- or biannulate peristomial segment. Two pairs of eyes and one or three short antennae are situated along the posterior margin of the prostomium. Parapodia are subbiramous. The notopodia are represented by notoacicula extending into the bases of large, foliaceous dorsal cirri (Figure 43-2b,c). The neuropodia are well-developed with large postsetal lobes. Branchiae and ventral cirri are lacking. Setae are all simple and include limbate (Figure 43-2d) and capillary forms, and uni- or bidentate acicular setae (Figure 43-2e). The latter are sometimes hooded and are subacicular in position. The proboscis is eversible and consists of mandibles (Figures 43-2f, 4f), five pairs of maxillae (Figures 43-2g, 4g) and two or three maxillary carriers (Figure 43-2g). The pygidium possesses two pairs of short caudal cirri.

Lysaretids are closely related to the families Eunicidae, Arabellidae and Lumbrineridae. Ehlers (1868) revised the family Eunicidae on the basis of similar jaw structure to include the lysaretids and related families as subfamilies. Day (1967) followed this scheme. Hartman (1944b) restated the original family designations under the superfamily Eunicea. Fauchald (1970) supported family status for the Lysaretidae due to the distinct dorsal cirri and the presence of a third maxillary carrier. Although the latter has been reported as absent in Lysarete (Gardiner, 1976), a membranous plate supporting the paired carriers was present on specimens examined by Fauchald (pers. comm.) and the author.

Presently, the family is represented by four genera, Oenone, Lysarete, Halla and the recently erected genus Tainokia (Knox and Green, 1972), encompassing 11 species. Imajima and Hartman (1964) synonymized Halla and Oenone on the belief that the annulation of the peristomial segment is variable. Fauchald (1970), however, maintained the generic separation. Formerly, the family included the genus Iphitime. Fauchald (1970) removed this genus and established a new family, Imphitimidae, based on the presence of branchiae and composite setae. Two genera of Lysaretidae occur in the Gulf of Mexico BLM-OCS collections, each represented by a single species.

PRINCIPAL DIAGNOSTIC CHARACTERS

At the generic level, taxonomic identification is based on the number of antennae, annulation of the peristomial segment, and the shape and arrangement of the jaw structures. Within the genera, species may be separated according to the origin of acicular setae (when present), and the shape, arrangement and number of teeth on the maxillae. This last character, the number of teeth, may exhibit either intra- or interspecific variability (Fauchald, 1970). The jaws of the lysaretids must

be partially extracted and the tissue removed or dissolved to view the maxillae and mandibles.

BIOLOGICAL NOTES

Lysaretids occur primarily as tropical reef-inhabiting polychaetes with range extensions into the warm, temperate regions. Generally, they are found at shallow depths (intertidal to 80 m) but have been reported up to 132 m (Hartman, 1944b). They are known as burrowers in coral reefs and sandy sediments (Ebbs, 1966; Taylor, 1971; Fauchald and Jumars, 1979). Supposedly, lysaretids are able to pulverize the calcareous sediments with their jaws. Members of the order Eunicea are often associated with coral reef destruction (Hartman, 1954; Ebbs, 1966). Oenone fulgida has been observed in burrows within the dead areas of reefs. Its maxillae may function as holdfasts while the mandibles are employed in a rasping motion on the coral. While boring, the antennae of lysaretids may be either covered by a fold of the peristomium, as with Oenone (Figure 43-2a) or folded back over the peristomium, exemplified by Lysarete (Figure 43-4a).

Examination of the gut contents of these motile worms indicates that they consume materials from the substrate, including algae, small crustaceans and polychaetes.

Sexes are separate. Little more is known on the reproduction of these worms.

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

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

1a. Maxillary carriers long, slender, separate (Figure 43-2g); peristomium uniannulate (Figure 43-2a); acicular setae present (Figure 43-2e). . . . . .**Oenone**, p. 43-2

1b. Maxillary carriers short, broad, fused (Figure 43-4g); peristomium biannulate (Figure 43-4a); acicular setae absent . . . . . .**Lysarete**, p. 43-6

Genus **Oenone** Savigny, 1818

TYPE SPECIES: Aglaura fulgida Savigny, 1818.
REFERENCES:
Hartman, 1944b:183.
Ebbs, 1966:539.
Fauchald, 1977a:111.
DIAGNOSIS: Prostomium rounded with three antennae emerging from under the peristomial segment. Peristomium uniannulate. Setae including

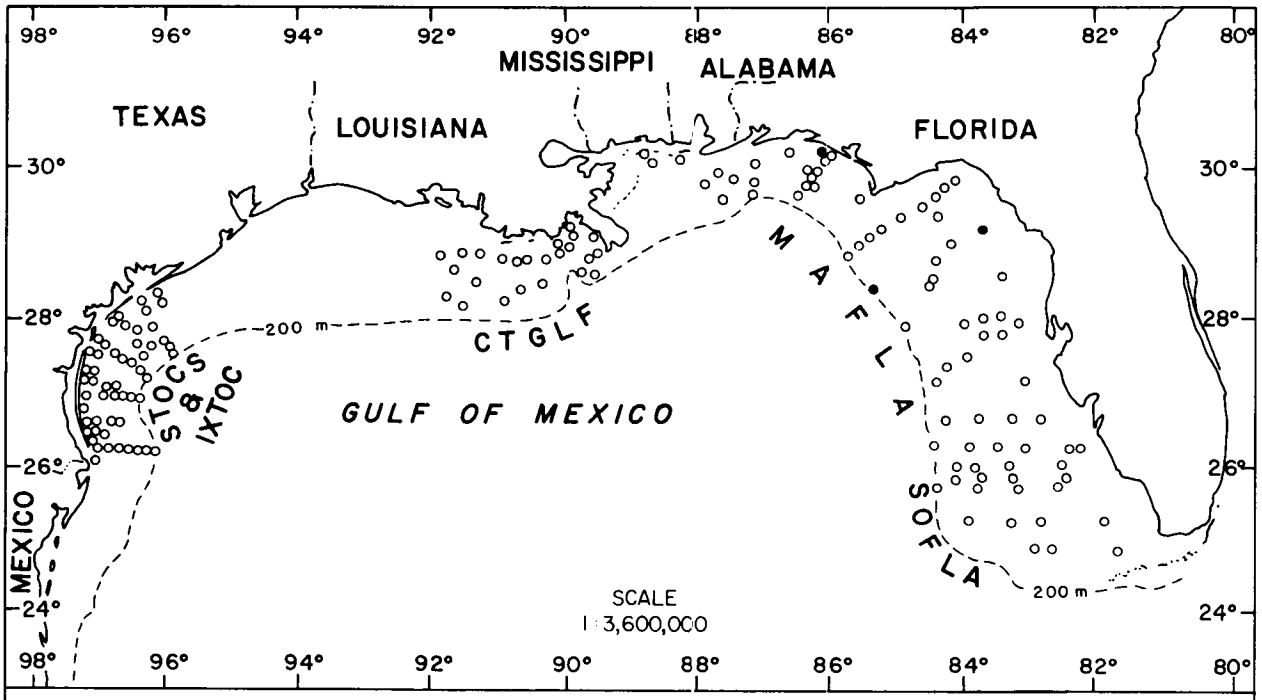

Figure 43-1. Distribution of Oenone fulgida on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

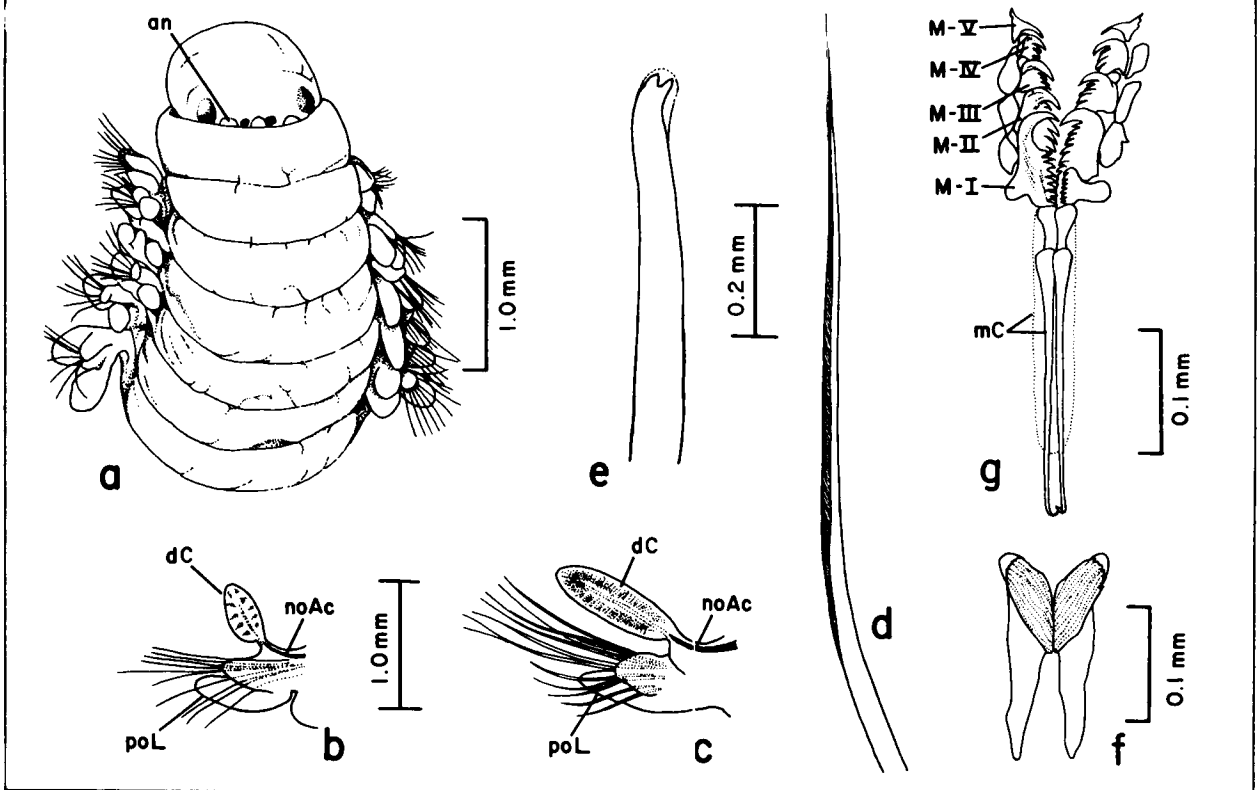

Figure 43-2. Oenone fulgida: a, anterior end (dorsal view); b, anterior parapodium (anterior view); c, posterior parapodium (anterior view); d, unilimbate seta; e, acicular seta; f, mandibles; g, maxillae.

limbate, smooth capillary, and hooded acicular forms. Acicular setae present from midbody region. Maxillary arrangement symmetrical or asymmetrical. Paired maxillary carriers black, long, slender and separate; third carrier clear, twice width and two-thirds length of paired carriers.

Oenone fulgida Savigny, 1818
Figures 43-1, 2a-g

Aglaurides fulgida--Hartman, 1944b:185, pl. 14, figs. 303-307.
Oenone fulgida--Ebbs, 1966:539, figs. 11, 12.
Oenone fulgida--Day, 1967:426, fig. 17.14.a-g.
Oenone fulgida--Fauchald, 1970:144, pl. 24, figs. a-d.
Oenone fulgida--Gardiner, 1976:211, figs. 281-o, 29a.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2528I-9/77 (1 spec.).
Supplementary Material:
Gulf of Mexico--Florida Middle Grounds, Sta. 251, 29°40'N, 86°17'W, Mar. 1976, 74 m, coarse sand-rubble (1 spec.).
DESCRIPTION:
Length, to 101.0 mm (previously reported to 124+ mm); width, to 5.5 mm (previously reported to 6 mm). Body long, cylindrical; complete specimens with up to 197 segments. Prostomium rounded (Figure 43-2a), with four eyes along posterior margin; outer pair large, reniform, lentigerous; inner pair smaller, round, subdermal. Antennae short, barely protruding from under peristomial segment. Parapodia similar throughout with dorsal cirri becoming flattened and long posteriorly (Figure 43-2b,c). Notopodia with 9-10 slender, yellow acicula extending into dorsal cirri; notopodial lobes absent. Neuropodia with four yellow acicula and long postsetal lobes. Neurosetae including smooth capillary setae and unilimbate (Figure 43-2d) or occasionally bilimbate setae. Hooded acicular setae beginning on setigers 48-51, first few appearing entire, becoming distinctly bifid posteriorly (Figure 43-2e). Pygidium with two pairs of short cirri. Jaws black. Mandibles paired, joined medially (Figure 43-2f). Paired maxillary carriers long, slender, (Figure 43-2g); unpaired maxillary carrier clear, difficult to discern. Distal teeth of maxillae falcate; maxillary arrangement symmetrical or asymmetrical. Dentition for asymmetrical maxillae arrangement (Figure 43-2g): M-I with eight teeth (right), one distal and nine basal teeth (left); M-II with 13 teeth (right), nine teeth (left); M-III with eight teeth (right), seven teeth (left); M-IV each with five teeth; M-V each with one tooth. Dentition for symmetrical maxillae arrangement (similar to left side in Figure 43-2g): M-I each with one distal and 7-8 basal teeth; M-II each with 10-11 teeth; M-III each with nine teeth; M-IV each with six teeth; M-V each with one tooth.
REMARKS: Review of the literature on Oenone fulgida reveals a large discrepancy in the reported first appearance of the acicular setae, ranging from setigers 14-70 (Fauvel, 1917; Imajima and Hartman, 1964; Imajima, 1967; Fauchald, 1970). The possibility of separation into several species has been suggested by Fauchald (1970), but further examination along with statistical analyses are needed. The jaw

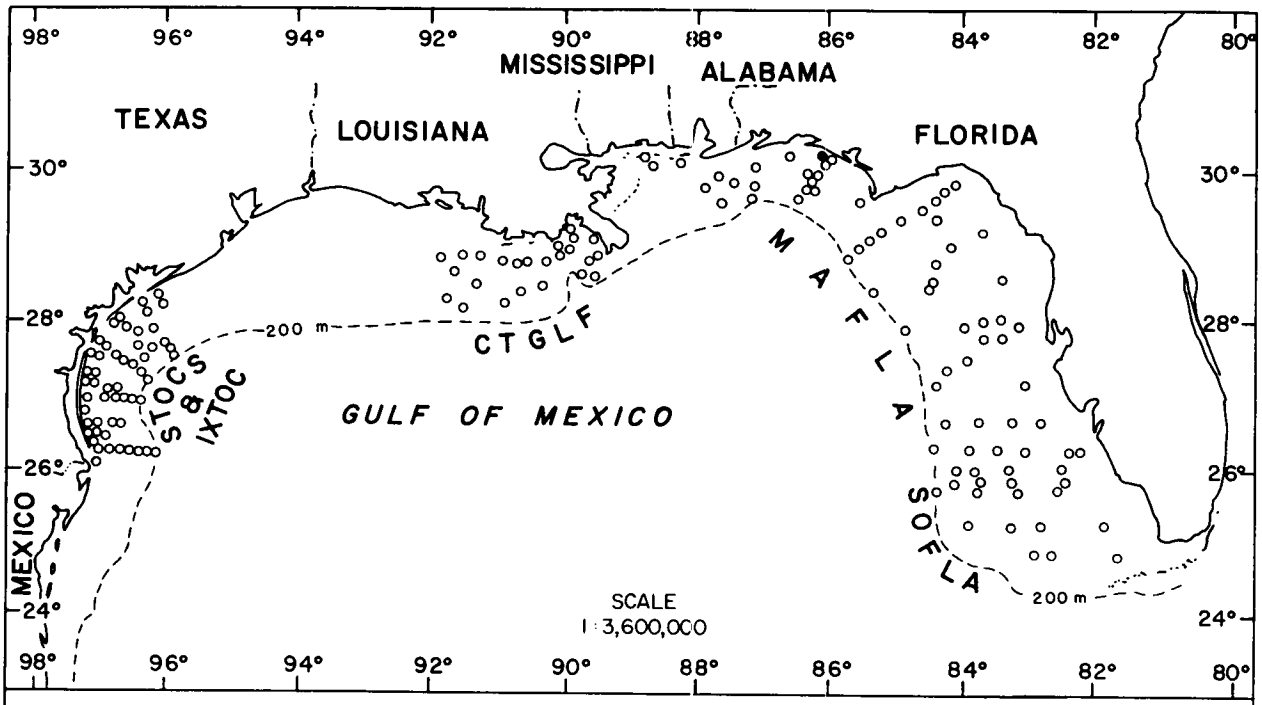

Figure 43-3. Distribution of Lysarete brasiliensis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

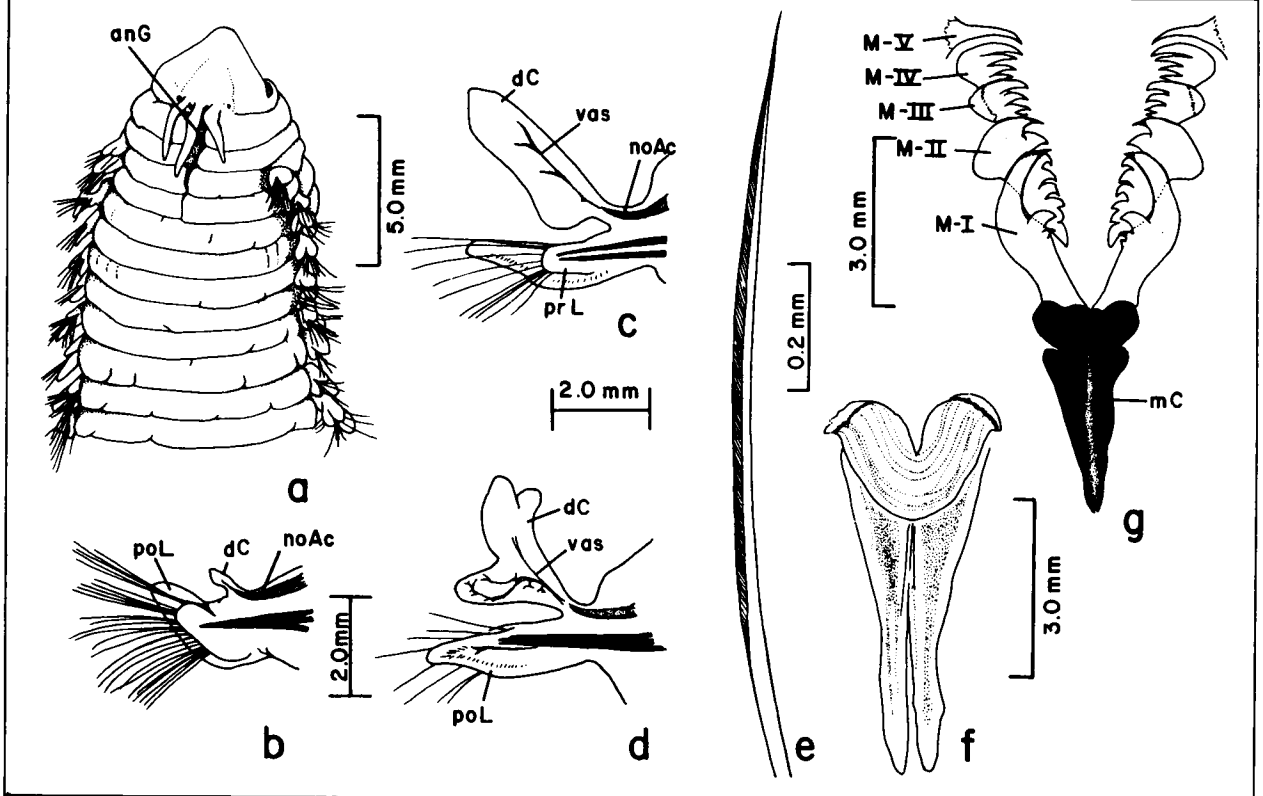

Figure 43-4. Lysarete brasiliensis: a, anterior end (dorsal view); b, anterior parapodium (anterior view); c, posterior parapodium (anterior view); d, same (posterior view); e, unilimbate seta; f, mandibles; g, maxillae.

structure also reflects variability, with both symmetrical and asymmetrical maxillae reported (Hartman, 1944b; Fauchald, 1970).
PREVIOUSLY REPORTED HABITAT: Intertidal to 90 m; associated with coral reefs and sandy sediments.
GULF OF MEXICO BLM-OCS OCCURRENCE: Few records off northwestern Florida (Figure 43-1); 20-177 m, medium to coarse sand, clayey sandy silt.
DISTRIBUTION: Circumtropical, extending into warm temperate regions of Argentina, N. Carolina, Gulf of Mexico.

Genus **Lysarete** Kinberg, 1865

TYPE SPECIES: Lysarete brasiliensis Kinberg, 1865.
REFERENCES:
Orensanz, 1975:105.
Fauchald, 1977a:111.
DIAGNOSIS: Prostomium bluntly triangular, with three antennae arising from posterior margin. Peristomial segment biannulate. Setae entirely limbate; acicular setae absent. Paired maxillary carriers fused, black and chitinous, short and broad; third carrier as a membranous plate, equal in size and situated dorsal to the paired carriers.

Lysarete brasiliensis Kinberg, 1865
Figures 43-3, 4a-g

Lysarete brasiliensis--Ehlers, 1887:107, fig. 33.
Oenone brevimaxillata--Treadwell, 1931:1, figs. 4-9.
Lysarete brasiliensis--Hartman, 1951a:5, pl. 14, figs. 7, 8.
Lysarete brasiliensis--Orensanz, 1975:105, fig. VIII 1-6.
Lysarete brasiliensis--Gardiner, 1976:213, fig. 29b,c.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2528-6/75 (1 spec., USNM 55884).
Supplementary Material:
Gulf of Mexico--Off Dauphin Isl., Alabama, Apr. 1978, P. G. Johnson ID. (1 spec.).
Atlantic--Bogue Sound, N. Carolina, Apr. 1973, S. L. Gardiner ID. (1 spec., USNM 53040).
DESCRIPTION:
Length, to 201+ mm (previously reported to 685 mm); width, to 11 mm. Body long, cylindrical, incomplete with 232 segments. Prostomium triangular with four small, round, subdermal eyes, and three antennae alternating with eyes in row along posterior margin (Figure 43-4a). Middle antenna slightly longer than lateral ones. Peristomial segment incised middorsally forming distinct groove extending onto setiger 1 or 2, apparently in relation to length of median antenna (see "REMARKS"). Parapodia subbiramous (Figure 43-4b-d). Notopodia with 6-11 slender, yellow acicula; notopodial lobes absent. Neuropodia with long postsetal lobes and 2-3 stout, black neuroacicula. Dorsal cirri digitiform anteriorly, becoming foliaceous between setigers 18 and 40; sometimes developing terminal lobes posteriorly (Figure 43-4d); neuropodial postsetal lobes occasionally portraying similar development. Vascularization apparent throughout parapodial lobes. Setae simple, limbate (Figure 43-

4e), upper setae slightly longer than lower ones. Mandibles white with dark shading on shafts and across flared anterior tips (Figure 43-4f). Paired maxillary carriers short, broad, posteriorly acute with midlateral notch (Figure 43-4g); third carrier, a clear membranous plate situated dorsal to paired carriers, extending posteriorly and connecting with maxillae supports. Distal tooth of first maxillae large, falcate. M-I with one distal and three basal teeth (right), one distal and two basal teeth (left); M-II each with eight teeth; M-III each with five teeth; M-IV each with six teeth; M-V each with one tooth.

REMARKS: A small, 25 mm (juvenile?) specimen (USNM 53040) exhibited slight differences in the characters described above. These included a rounded prostomium (similar to Oenone), dorsal cirri remaining digitiform throughout the body length, absence of maxilla V from both sides, incomplete maxillary carriers, and a shorter antennal groove extending only across the anterior half of the first peristomial ring. On adult specimens examined, the length of the median dorsal peristomial groove corresponds to the length of the median antenna. Also, on adult specimens the antennae were directed posteriorly (Figure 43-4a). It appears that this antennal groove may serve to contain and protect the antennae while the animal is boring.

PREVIOUSLY REPORTED HABITAT: Shallow depths to 80 m; sand and on pilings.

GULF OF MEXICO BLM-OCS OCCURRENCE: One station off Panama City, Florida (Figure 43-3); 37 m; coarse sand.

DISTRIBUTION: Western Atlantic from Argentina to N. Carolina, Gulf of Mexico.

CHAPTER 44

Paul S. Wolf

FAMILY DORVILLEIDAE Chamberlin, 1919b

INTRODUCTION

The Dorvilleidae comprise a complex group of species which ranges in size from about 0.6 mm for interstitial forms to about 140 mm for some species of Eteonopsis. Most species are between 4 and 30 mm in length. The prostomium is rounded anteriorly and usually expanded laterally where the antennae and palps arise. Palps and antennae are variously developed; one or both pair of appendages may be absent. Palps may be thick and stout to minute and papilliform; antennae may be long and multiarticulate to small and clavate. Posterior to the prostomium there may be a pair of conspicuous, ciliated nuchal organs set into small depressions. The nuchal organs sometimes cannot be seen due to retraction of the prostomium. Dorvilleids possess two apodous peristomial rings, not true segments (Åkesson, 1967), anterior to setiger 1. Parapodia are well-developed and set off from the body. Most genera possess dorsal and ventral cirri at least on anterior segments. When present, dorsal cirri are well-developed with long cirrophores bearing a single internal aciculum, and short cirrostyles; or they are small and papilliform without acicula. Some species possess both forms of dorsal cirri; some have none at all. Branchiae, when present, occur below the dorsal cirri on the dorsal edge of the parapodia. Setae are normally few in number with simple setae above the aciculum and compound falcigers below. All but one monotypic genus, Parapodrilus Westheide, 1965, have chitinized mouthparts consisting of 2-7 paired rows of maxillae and a pair of mandibles.

Two important revisions of the dorvilleids include Pettibone (1961) and Jumars (1974). Pettibone (1961) used only external morphological characters to separate the five genera known at that time. Fauchald (1970) and Jumars (1974) have since suggested and employed, to a certain extent, the morphology of the mouthparts in separating genera and some species. Recent descriptions of new species have relied heavily on maxillary morphology in specific diagnoses (e.g., Oug, 1978; Westheide, 1977b and 1982a; Blake, 1979; Perkins, 1979; and Wainwright and Perkins, 1982).

Gaston and Benner (1981) included the Iphitimidae Fauchald, 1970, within the Dorvilleidae. This view is not accepted herein as, in my opinion (also Fauchald, pers. comm.), the similarities and differences should await much more detailed treatment before the families are synonymized. The dorvilleids are presently known to include about eight genera and 50 species (Pettibone, 1982); however, three potentially new genera and 11 potentially new species are included among the nine genera and 15 species found in Gulf of Mexico BLM-OCS collections.

PRINCIPAL DIAGNOSTIC CHARACTERS

The generic characters considered diagnostic herein include the general maxillary morphology, the degree of development of the head

appendages, and the distribution and degree of development of the dorsal cirri.

The methods used to extract and scrutinize the mouthparts generally followed Fauchald (1970:146). In larger specimens, a longitudinal mid-dorsal slit was made in the body wall and the buccal mass removed. The mandibles were then removed along with as much tissue as possible. The mandibles and maxillae were placed on a slide, dorsal side up, using Hoyer's or CMC-10 as mounting media. These media are especially useful since they clear any remaining tissue. Specimens that were too small for dissection were mounted whole, dorsal side up, in one of the above media.

Terminology of the mouthparts generally follows Jumars (1974:102) in that the names assigned to the various maxillary parts do not infer any phylogenetic links between the Dorvilleidae and other families within the Eunicea, as was attempted by Fauchald (1970). This non-phylogenetic approach was chosen because the many different types of jaws found during the course of examining the available material did not lend themselves to terminology traditionally used for the Eunicea.

Most of the dorvilleid genera that have relatively large individuals (e.g., Dorvillea, Schistomeringos, Protodorvillea) have a pharyngeal apparatus similar to that shown in Figure 44-20f. It consists of dorsalmost posterior plates fused into a V-shaped structure (maxillary carriers), and four rows of maxillae, two superior and two inferior. Both the superior and inferior maxillary rows usually consist of comparatively long, dentate basal plates. The basal plates of the superior maxillary rows may be fused posteriorly. The basal plates of the inferior maxillary rows are separated and are normally smaller than their superior counterparts. Anterior to the basal plates are the free denticles. Each denticle usually consists of a main fang flanked by smaller teeth. Teeth along the anterior margin of the denticle are called the lateral teeth; those along the posterior margin are the medial teeth (Figure 44-20h,i). Generally, the anterior free denticles are longer and more slender, and have smaller teeth than the posterior denticles. The number, shape, distribution, and presence or absence of all the above structures are herein considered primary generic and specific characters.

Dorvilleid genera which contain smaller individuals (e.g., Meiodorvillea, Genus A, Genus C, and Ikosipodus Westheide, 1982a) have somewhat reduced maxillae (see Figures 44-22f; 26h; 28k,m; 30i). The maxillary carriers may be absent and there are usually only two rows of maxillae. Mandibles are usually present.

Species of Ophryotrocha and Eteonopsis possess P-type (juvenile or primitive) and K-type (adult) maxillae. P-type maxillae are usually composed of more free denticles and large, dentate maxillary carriers (Figure 44-6g). The P-type maxillae gradually become reduced to the K-type maxillae, i.e., the free denticles fuse and/or become reduced in number, and the maxillary carriers become very large, ice-tong shaped and smooth (Figure 44-6h). In some species of Ophryotrocha, the P-type maxillae are replaced by the K-type at sexual maturity at a fixed number of segments (Oug, 1978:301). Pfannenstiel (1975) stated that in some species of Ophryotrocha, some specimens may develop the K-type maxillae occasionally while others never develop the K-type.

Details of the maxillae also provide useful specific characters. Dentition and shape of the free denticles are most useful. The number of free denticles in each maxillary row can also be important, but

maturity of the individual must be taken into account, since juveniles possess far fewer free denticles than adults.

The presence and relative development of the palps and antennae are useful secondary generic characters. Genera such as Dorvillea, Schistomeringos, and Genus B generally have long, multiarticulate antennae (Figures 44-16a, 20a). In these genera, antennae are usually as long as or longer than the palps which are stout, large, and normally biarticulate.

In Protodorvillea the antennae, if present, are much shorter than the long, biarticulate palps (Figure 44-8a). In Pettiboneia, Genus A, Genus C, and Meiodorvillea, antennae and palps are usually quite small and clavate, although the palps may be biarticulate (Figures 44-2a, 4a, 26a, 28a). In some species of Meiodorvillea, palps may be absent (Fig.

considered herein as an ecophenotypic adaptation similar to what has been described by Light (1974) for Asychis elongatus (see Chapter 15). More material needs to be studied in order to support or negate this opinion.

In summary, the author is of the opinion that the most important generic and specific diagnostic characters are those of the maxillary apparatus. All other morphological characters have proven to be secondary in value with respect to the material examined herein. In order to identify any dorvilleid, even to genus, the maxillae must be examined.

BIOLOGICAL NOTES

The Dorvilleidae are poorly known taxonomically, as indicated by the number of new taxa found in the small amount of material examined herein; therefore, generalizations concerning the biology and ecology of the family are difficult to make. Also, the mouthparts, which may give important clues to the feeding habits of the species, are not well-described. For example, Pettiboneia has several (12-14) rows of rasp-like denticles, probably used for grazing on algae or detritus. Ikosipodus and Genus C (described herein) have long, sharply pointed denticles, indicating perhaps a predatory lifestyle. The blunt pincer-like jaws of Genus A and some individuals of Meiodorvillea sp. A may be used for feeding within pits of sandgrains. Fauchald and Jumars (1979:209) suggested that all dorvilleids are facultative carnivores and that some dorvilleids are specifically adapted to a "plant-derived" diet.

Day (1967:450) stated that dorvilleids crawl over the sediment surface, but some interstitial forms have since been described, such as Parapodrilus Westheide, 1965, and Ikosipodus Westheide, 1982a. Eteonopsis geryonicola Esmark, 1874, is symbiotic, living in the branchial chamber of the crab Geryon tridens Kröyer.

Westheide (1982a:123) provided a cursory review of the reproductive strategy of dorvilleids. It seems that some species spawn in the open water, whereas Ophryotrocha puerilis Claparède and Mecznikow, 1869, is said to "pseudocopulate" after a courtship display. Ikosipodus carolinensis exhibits sexual dimorphism and apparently reproduces by internal fertilization since the female possesses a seminal receptacle (Westheide, 1982a). Hermaphroditism and viviparity are also known among the family (Pettibone, 1982:21).

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

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

1a. Maxillae arranged in two or four rows (Figures 44-28k, 14j) . . 2
1b. Maxillae arranged in 12-14 rows (Figure 44-4i) . . . . . **Pettiboneia**, p. 44-7

2a. Maxillary carriers characteristically enlarged (Figure 44-6f,h). . . . . **Ophryotrocha**, p. 44-11
2b. Maxillary carriers, when present, not enlarged (Figure 44-14j) 3

3a. Maxillae arranged in four rows. 4
3b. Maxillae arranged in two rows 9

4a. Maxillary rows complete, each with basal plate and free denticles (Figure 44-14j); maxillary carriers present (Figure 44-14j) . . 5
4b. Some maxillary rows incomplete, without basal plate or free denticles (Figures 44-12e, 22f); maxillary carriers present or absent 7

5a. Antennae multiarticulate (Figure 44-16a); dorsal cirri large, with cirrophore, cirrostyle, and aciculum (Figure 44-16c-f). 6
5b. Antennae simple (Figure 44-8a); dorsal cirri small, papilliform, without acicula (Figure 44-8b) . . . . . **Protodorvillea**, p. 44-12

6a. Furcate setae present (Figures 44-10j, 16h). . . . . **Schistomeringos** [in part], p. 44-15
6b. Furcate setae absent. . . . . **Dorvillea**, p. 44-24

7a. Maxillary rows without free denticles (Figure 44-22f); maxillary carriers absent; dorsal cirri absent. . . . . **Genus A**, p. 44-29
7b. Maxillary rows with free denticles (Figures 44-24i, 12e); maxillary carriers present or absent; dorsal cirri present 8

8a. Maxillae composed entirely of free denticles (Figure 44-24i); maxillary carriers absent; dorsal cirri well-developed anteriorly, with acicula; small posteriorly, without acicula (Figure 44-24d,e) . . . . . **Genus B**, p. 44-32
8b. Maxillae composed of superior basal plates and superior and inferior free denticles (Figure 44-12e); maxillary carriers present (Figure 44-12e) or absent; dorsal cirri well-developed throughout, with acicula (Figure 44-12b). **Schistomeringos** [in part], p. 44-15

9a. Maxillae with long, sharply pointed teeth anteriorly (Figure 44-26h); maxillary carriers fused dorsally to maxillae, then produced into long posterior process (Figure 44-26h); palps present . . . . . **Genus C**, p. 44-32

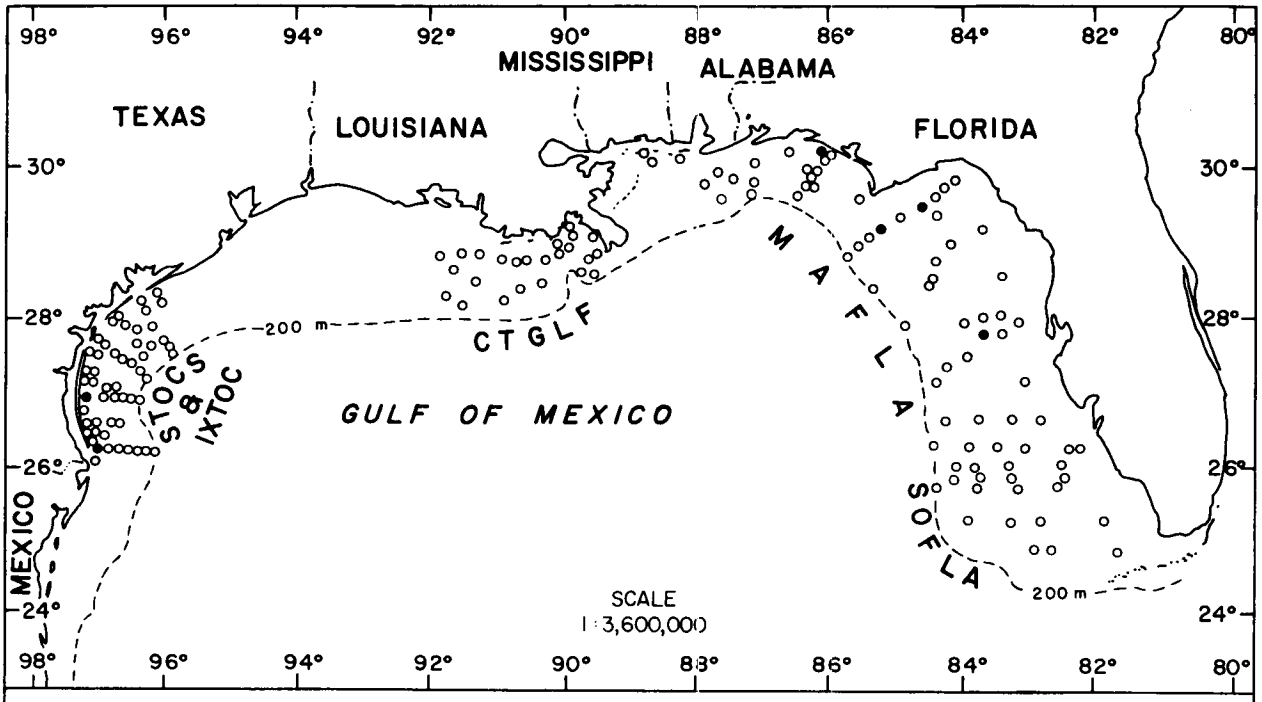

Figure 44-1. Distribution of Pettiboneia sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

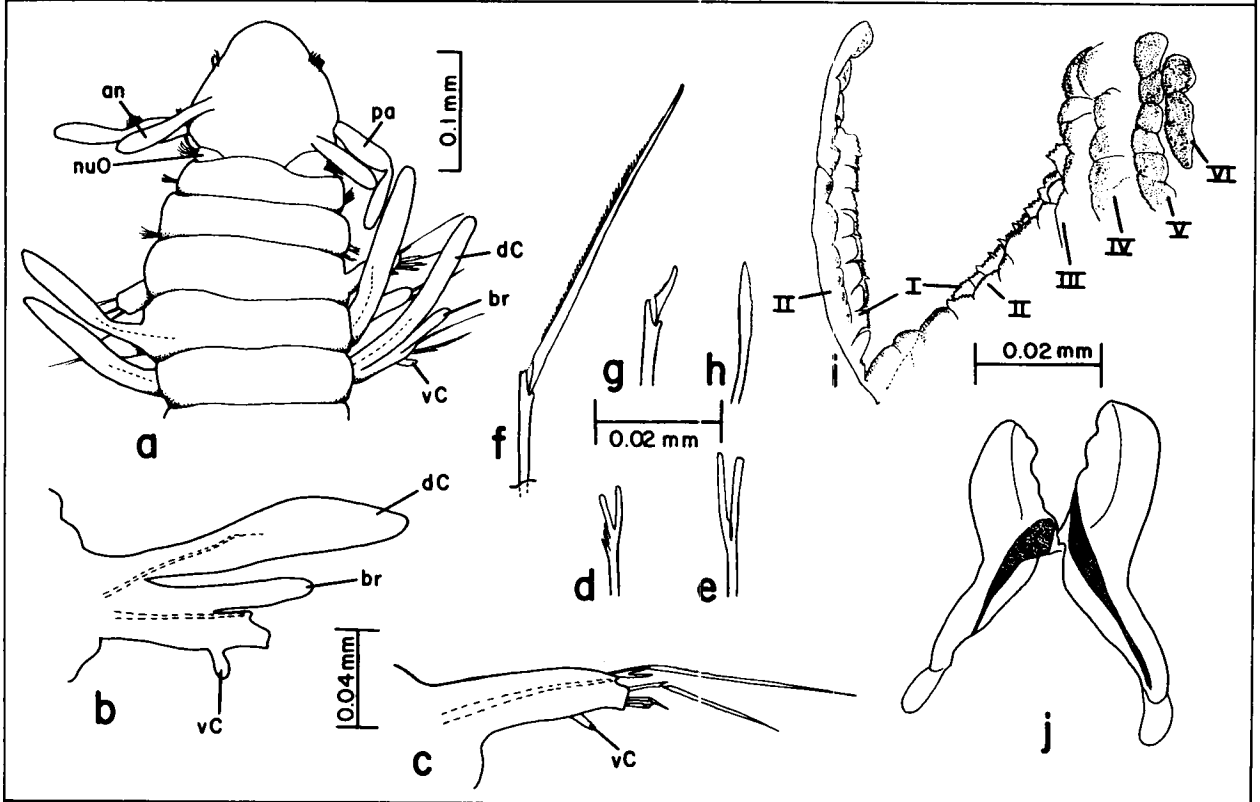

Figure 44-2. Pettiboneia sp. A: a, anterior end; b, anterior parapodium (posterior view); c, posterior parapodium (posterior view); d, furcate seta from anterior setiger; e, same, from posterior setiger; f, superior subacicular seta; g, inferior subacicular seta; h, inferior simple seta; i, maxillae (dorsal view, left side not completely shown); j, mandibles (dorsal view).

9b. Maxillae without long, sharply pointed teeth; maxillary carriers not fused to maxillae nor produced into long posterior process (Figure 44-28k,m); palps present or absent . . . . . .Meiodorvillea, p. 44-33

Genus **Pettiboneia** Orensanz, 1973

TYPE SPECIES: Pettiboneia sanmatiensis Orensanz, 1973.
REFERENCES:
Orensanz, 1973a:337.
Blake, 1979:136.
DIAGNOSIS: Maxillae composed of 6-7 pairs of denticle rows, each consisting only of free denticles; rows II-VI or VII with rasping denticles. Denticle rows not fused posteriorly. Maxillary carriers absent. Prostomium with well-developed, biarticulate palps; antennae digitiform, simple, shorter than palps. Dorsal cirri present anteriorly, long, simple, with an aciculum; absent posteriorly. Branchiae present or absent. Furcate setae present.
REMARKS: The above diagnosis is modified from that of Blake (1979) to accommodate the two species described herein. Each possesses six pairs of denticle rows instead of seven as in P. sanmatiensis. A few rows more or less in this kind of specialized maxillary apparatus is not considered to be sufficient to erect a new genus. Armstrong and Jumars (1978) described Protodorvillea pugettensis and P. dibranchiata, both of which probably belong in Pettiboneia primarily because of their jaw morphology (Blake, pers. comm. and in prep.).

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

1a. Maxillae with free denticles strongly chitinized (Figure 44-2i); two kinds of furcate setae present (Figure 44-2d,e); eyes small or absent (Figure 44-2a) . . . . . **Pettiboneia sp. A**, p. 44-7
1b. Maxillae with free denticles weakly chitinized (Figure 44-4i); single kind of furcate setae present (Figure 44-4d); eyes large (Figure 44-4a). . . . . **Pettiboneia sp. B**, p. 44-9

Pettiboneia sp. A
Figures 44-1, 2a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2209I-6/76 (1 spec., USNM 89597), 2422C-6/76 (2 spec.-1 ovig.), 2424B-7/76 (4 spec., USNM 89557), 2424C-7/76 (3 spec.), 2424E-7/76 (1 spec., USNM 89596), 2424H-7/76 (1 spec.), 2528H-8/77 (2 spec., USNM 89594-5); STOCS 4/III-1 No date (1 spec.), 4/IV-1 F/76 (2 spec., USNM 89556, 89593).
DESCRIPTION:
Length, to 4.0 mm; width, to 0.2 mm. Largest specimen complete with 43 setigers. Prostomium (Figure 44-2a) conical, rounded anteriorly; eyes absent, or present as one small pair. Ciliated areas present on anterior end and head appendages (Figure 44-2a). Antennae smooth, digitiform. Palps biarticulate, longer than antennae. Single pair of large

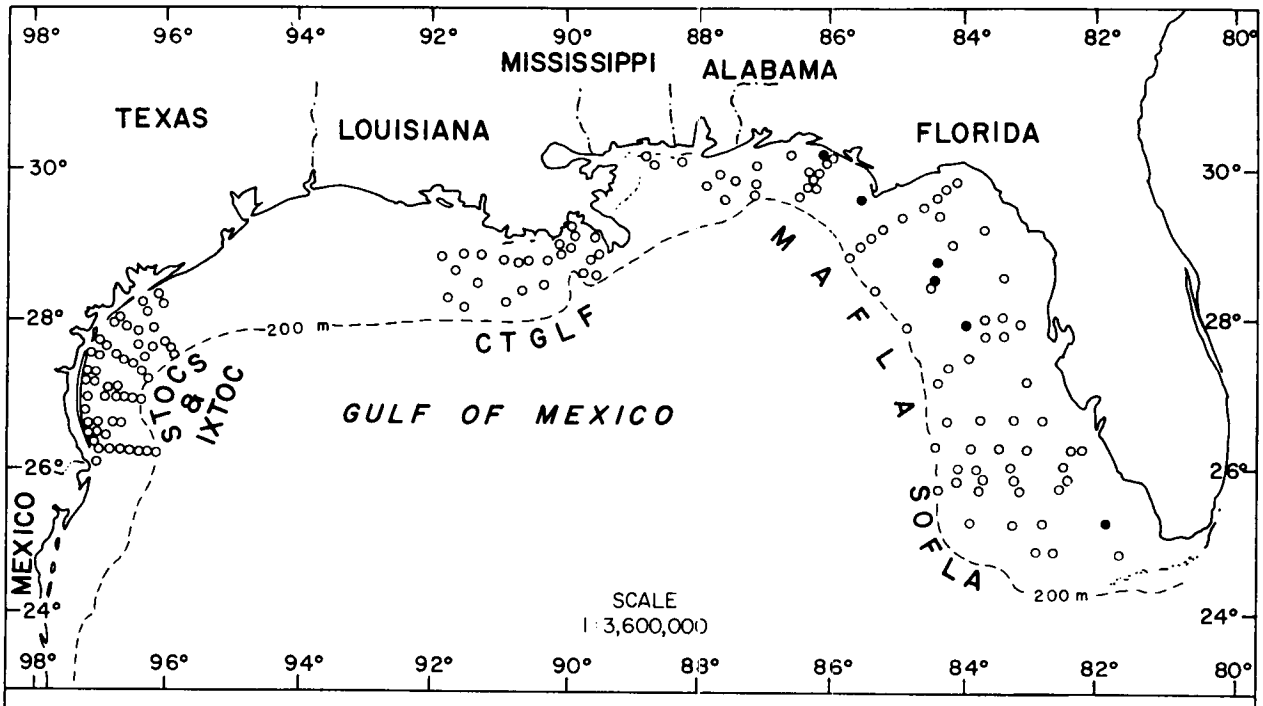

Figure 44-3. Distribution of Pettiboneia sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

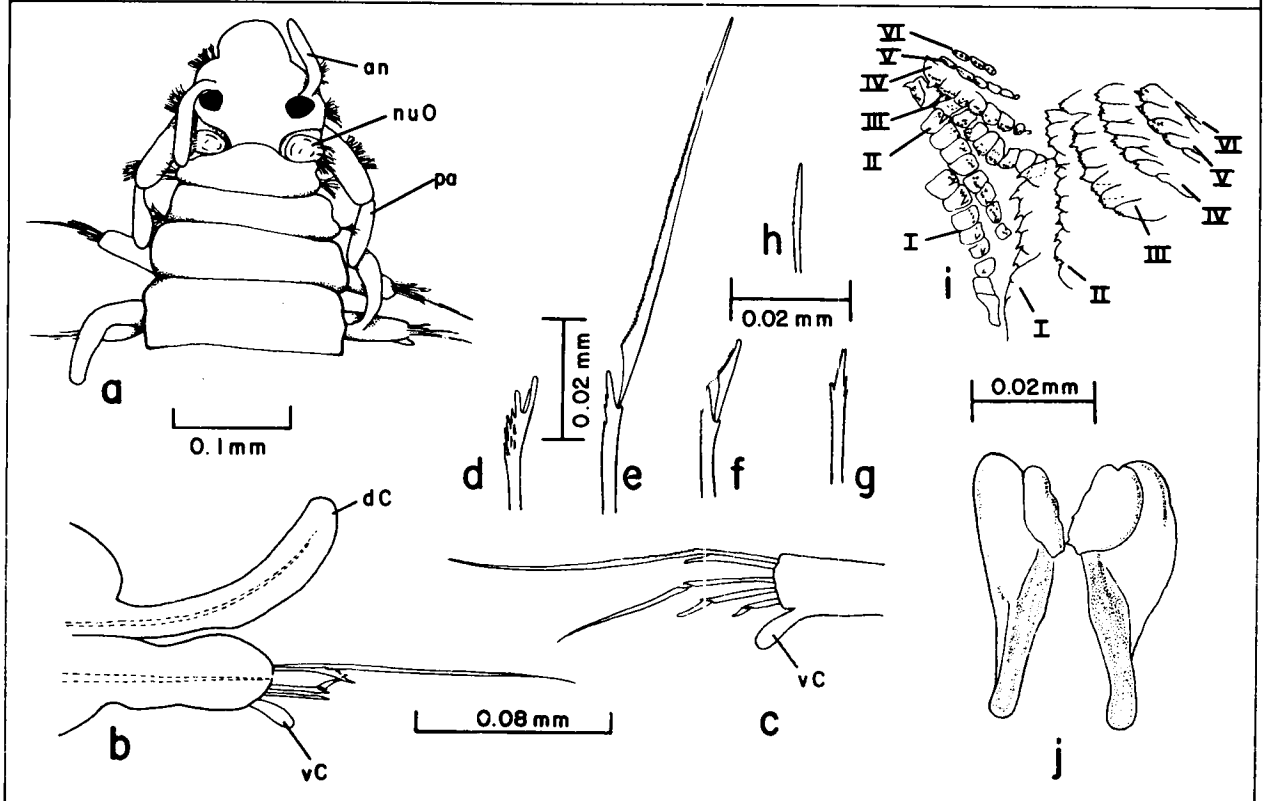

Figure 44-4. Pettiboneia sp. B: a, anterior end; b, anterior parapodium (posterior view); c, posterior parapodium (posterior view), d, furcate seta; e, superior subacicular seta; f, inferior subacicular seta; g, setal shaft (edge-on view); h, inferior simple seta; i, maxillae (dorsal view); j, mandibles (dorsal view).

nuchal organs present at posterior margin of prostomium. Dorsal cirri present from setigers 2 to 8 or 9 (Figure 44-2b), absent thereafter (Figure 44-2c). Branchiae present from setigers 3-5 to 8, or absent entirely. Parapodia without well-developed pre- or postsetal lobes (Figure 44-2b,c). Supra-acicular setae including simple serrate setae tapering to fine tips, and furcate setae. Furcate setae of anterior few setigers small, with tines slightly unequal in length, and spines below short tine (Figure 44-2d); thereafter, with tines long, slightly unequal in length, spines absent below short tine (Figure 44-2e). Subacicular setae compound, with long to short blades having unidentate tips (Figure 44-2f,g). Far posterior parapodia with inferior simple setae (Figure 44-2h). Maxillae in six pairs of rows (Figure 44-2i), each row composed of separate plates. Rows II-VI with rounded plates, each having numerous minute teeth. Plates of row I flattened, with one large tooth and several smaller ones. Mandibles scalloped along anterior inner margins (Figure 44-2j).

REMARKS: Pettiboneia sp. A differs from P. sanmatiensis Orensanz, 1973a, in having 12 rows of maxillae instead of 14, in having longer dorsal cirri, and in possessing branchiae. Pettiboneia sp. A differs from Pettiboneia sp. B in having branchiae (in some individuals); furcate setae with longer tines; and a larger maxillary apparatus with well-formed denticle plates. Pettiboneia sp. A also lacks eyes or possesses only a small pair and each mandible is narrower than those of Pettiboneia sp. B.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Texas (Figure 44-1); 15-37 m; coarse to medium-fine sand, clayey sandy silt.

Pettiboneia sp. B
Figures 44-3, 4a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 20A-5/81 (1 spec., USNM 89558); MAFLA 2211F-11/77 (2 spec., USNM 89559), 2315A-7/76 (1 spec.), 2316C-11/77 (1 spec., USNM 89560), 2528J-8/77 (1 spec.), 2854G-8/77 (1 spec.).

DESCRIPTION:
Length, to 7.0 mm; width, to 0.4 mm. Largest specimen complete with 87 setigers. Prostomium (Figure 44-4a) expanded medially, rounded anteriorly with single pair of large eyes at antennal bases. Prostomium and two achaetous peristomial rings with distinct ciliary patches. Antennae smooth, digitiform; palps longer than antennae, biarticulate. Single pair of large ciliated nuchal organs present at posterior margin of prostomium. Dorsal cirri present from setigers 2-18 to 21 (Figure 44-4b), absent posteriorly (Figure 44-4c). Neuropodia without well-developed pre- and postsetal lobes. Supra-acicular setae including long, simple, serrate setae tapering to fine tips; and furcate setae with blunt-tipped tines, slightly unequal in length. Short tine with about four rows of well-developed spines (Figure 44-4d). Subacicular setae compound, unidentate, with long to short serrate blades (Figure 44-4e,f), apical tips of setal shafts bifid from edge-on view (Figure 44-4g). Inferior simple setae present on far posterior parapodia (Figure 44-4h). Pygidium rounded with one pair of filiform, ventral, subterminal cirri. Maxillae arranged in six pairs of rows (Figure 44-4i), each row composed of separate plates, each plate with one main tooth and

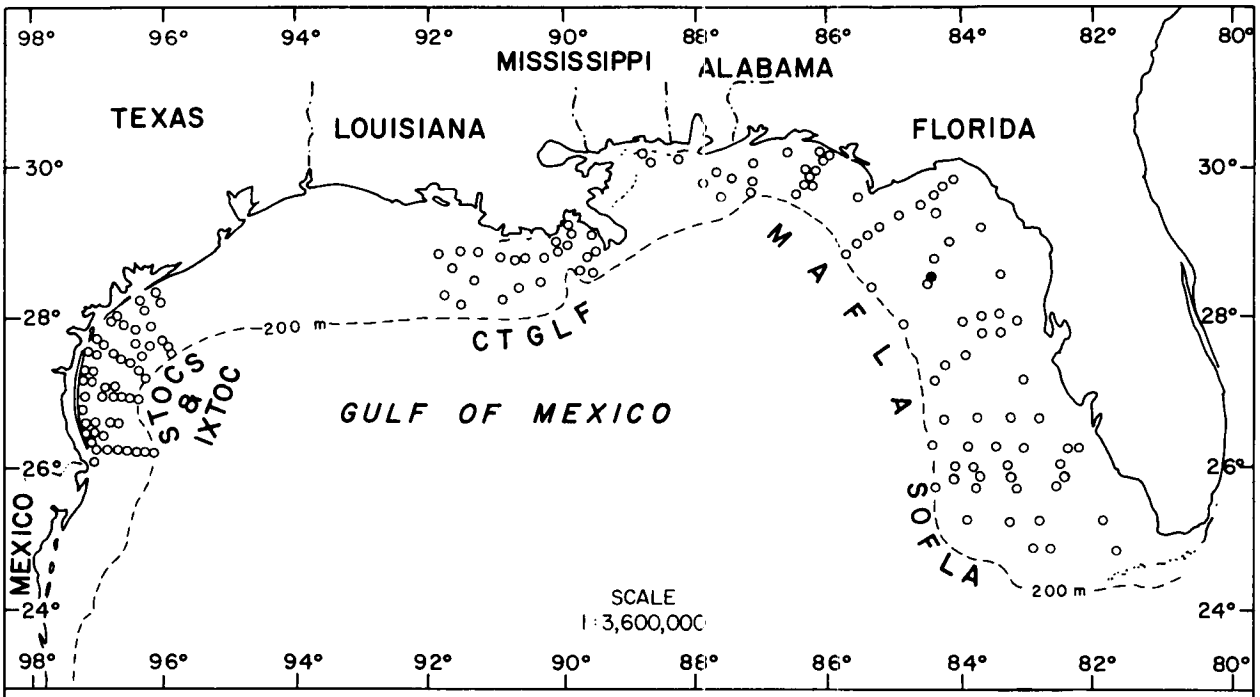

Figure 44-5. Distribution of Ophryotrocha sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

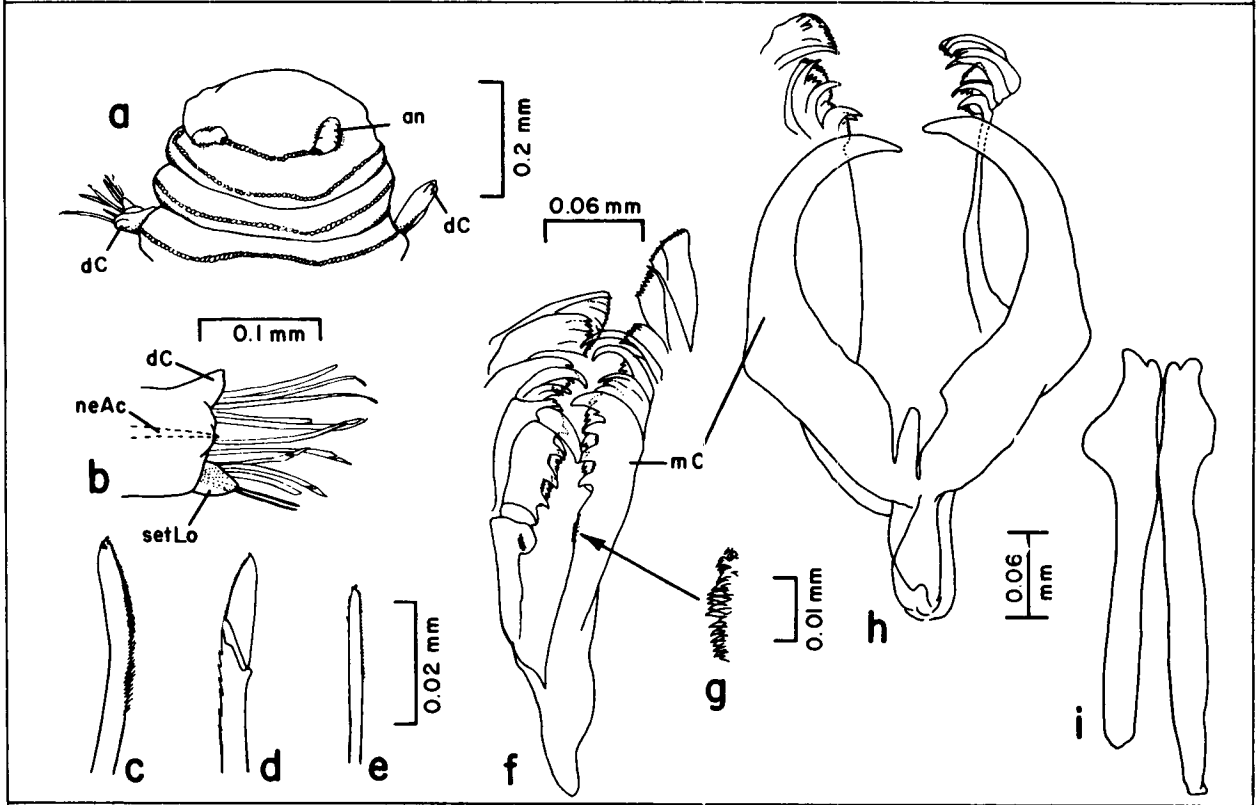

Figure 44-6. Ophryotrocha sp. A: a, anterior end; b, middle parapodium (posterior view); c, supra-acicular seta; d, subacicular falciger; e, inferior simple seta; f, P-type maxillae (dorsal view); g, minute spines from maxillary carrier; h, K-type maxillae (dorsal view); i, mandibles (dorsal view).

numerous fine teeth. Basal plates and maxillary carriers absent. Mandibles aliform (Figure 44-4j).
REMARKS: Pettiboneia sp. B differs from Pettiboneia sp. A in having weakly chitinized, less-developed maxillae, and a single kind of furcate seta; and in lacking branchiae altogether. In Pettiboneia sp. B the head can be withdrawn so that the nuchal organs and the two achaetous rings are not visible. Also, some individuals have very small, light-colored eyes which may be the result of fading in alcohol.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 44-3); 22-43 m; coarse to medium-fine sand, silty fine sand.

Genus **Ophryotrocha** Claparède and Mecznikow, 1869

TYPE SPECIES: Ophryotrocha puerilis Claparede and Mecznikow, 1869.
REFERENCE:
Jumars, 1974:123.
DIAGNOSIS: Maxillae arranged in four rows, or denticles of superior and inferior rows fused, producing two rows. Maxillary carriers (K-type) large, fused basally and strongly curved distally, appearing ice-tong shaped. Prostomium large, rounded, with (or without?) small globular palps. Antennae small, papilliform. Dorsal cirri present, without notoacicula, or absent. Ventral cirri present or absent. Branchiae and furcate setae absent.
REMARKS: Ophryotrocha is morphologically similar to Eteonopsis Esmark, 1874; the two differ primarily in terms of life style. The former comprises free-living species; the latter is known for a single species that inhabits gill chambers of the crab Geryon (see Gaston and Benner, 1981).

Ophryotrocha sp. A
Figures 44-5, 6a-i

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2315A-11/77 (2 spec., USNM 89583-4).
DESCRIPTION:
Length, 3.0+ mm; width, to 0.50 mm. Larger specimen incomplete with about 27 setigers. Prostomium (Figure 44-6a) broadly rounded. Eyes absent. Antennae small, globular. Palps not observed. Prostomium and each segment with transverse dorsal ridge of large subepidermal gland cells and external cilia (Figure 44-6a). Dorsal cirri present throughout as a more or less pronounced lobe at tips of parapodia (Figure 44-6b). Ventral cirri absent. Parapodia without well-developed pre- and postsetal lobes. Supra-acicular setae (Figure 44-6c) simple, flattened distally, marginally serrate, with small apical tooth, numbering 4-6 per parapodium. Subacicular setae compound (Figure 44-6d), with tips similar to those of supra-acicular setae. Inferior simple setae (Figure 44-6e) more slender than supra-acicular setae, but similar in shape and dentition; numbering two per parapodium. Both P-type (Figure 44-6f) and K-type (Figure 44-6h) jaws observed. P-type maxillary carriers (Figure 44-6f) strongly dentate along inner margin, hooked anteriorly; with group of minute spines medially (Figure 44-6g); number of rows of maxillae uncertain; superiormost denticles long, sharply pointed; inferior-

most denticles broad, pectinate. K-type maxillary carriers (Figure 44-6h) with large, smooth, sharply pointed forceps; two rows of maxillae, each row having about four free denticles; each denticle having large dorsal tooth fused to pectinate plate. Mandibles (Figure 44-6i) fused, each piece slender with bifid anterior margin; similar in both P- and K-type jaws.
REMARKS: Ophryotrocha sp. A differs from other species of the genus in the distinctive dentition of the maxillary carriers of the P-type jaws, including the numerous minute spines along the inner margin. Also, the maxillary carriers of the K-type jaws are unique in possessing an inner basal process where the carriers fuse, and a relatively short posterior process. Ophryotrocha sp. A differs from O. puerilis Claparède and Mecznikow, 1869, in lacking ventral cirri, and may also differ in lacking palps, but this is uncertain due to the poor condition of the specimens available for examination.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 44-5); 38 m; silty fine sand.

Genus **Protodorvillea** Pettibone, 1961

TYPE SPECIES: Staurocephalus kefersteini McIntosh, 1869.
REFERENCES:
Pettibone, 1961:178.
Jumars, 1974:117 [in part].
DIAGNOSIS: Maxillae arranged in four rows, each with a prominent basal plate and several free denticles. Maxillary carriers well-developed. Prostomium with long, slender palps having palpostyles. Antennae small, smooth or with indistinct articles, much shorter than palps. Dorsal cirri small, globular, present throughout from setiger 1, without acicula or cirrostyles.
REMARKS: Some species of Protodorvillea should probably be reassigned to other genera, as suggested for P. gaspeensis Pettibone, 1961, by Wainright and Perkins (1982:700), and for P. pugettensis and P. dibranchiata Armstrong and Jumars, 1978, by Blake (pers. comm.). The removal of the above species from Protodorvillea is suggested in each case based primarily on morphology of the mouthparts.

Protodorvillea kefersteini (McIntosh, 1869)
Figures 44-7, 8a-m

Protodorvillea kefersteini--Hartmann-Schröder, 1971:262, fig. 87a-g.
Protodorvillea kefersteini--Day, 1973:64.
Protodorvillea kefersteini--Orensanz, 1973a:335, pl. 4, figs. 1-9.
Protodorvillea bifida Perkins, 1979:453, figs. 16a-e, 17a-f.
Protodorvillea kefersteini--Perkins, 1979:456, fig. 17g-m.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2E-11/80 (1 spec., USNM 89545), 5E-8/81 (3 spec., USNM 89546), 20D-11/80 (4 spec., USNM 89547; 2 spec.), 20B-8/81 (5 spec., USNM 89548; 2 spec.); MAFLA 2422C-6/76 (10 spec.), 2423C-7/76 (3 spec., USNM 89549), 2423E-7/76 (5 spec., USNM 89550), 2423G-7/76 (2 spec.), 2424C-7/76 (2

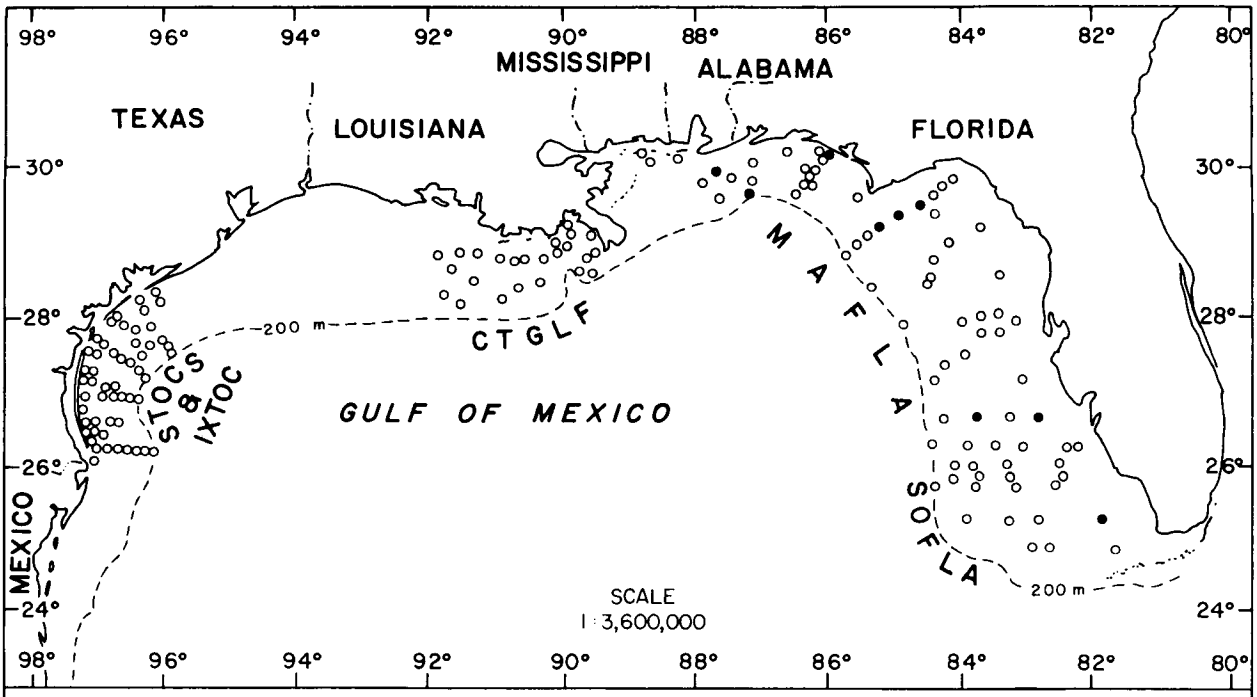

Figure 44-7. Distribution of Protodorvillea kefersteini on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

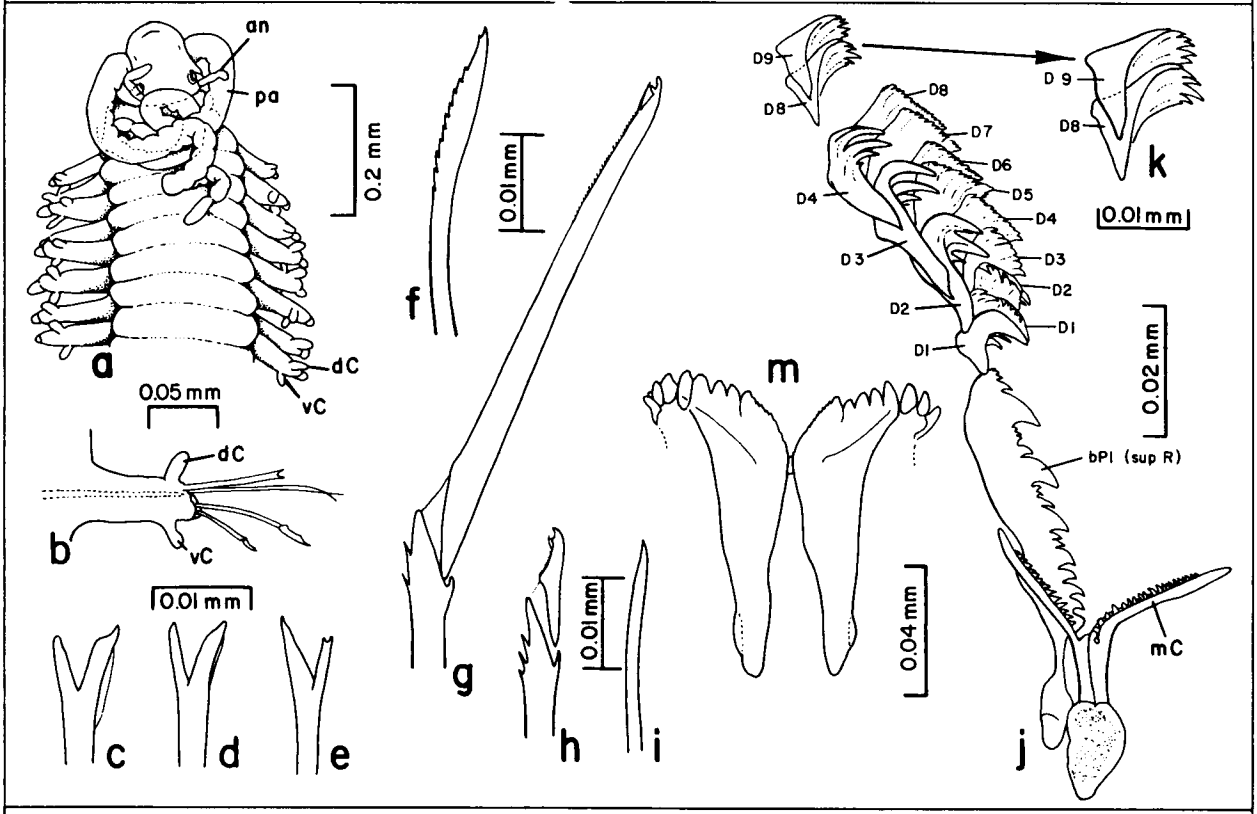

Figure 44-8. Protodorvillea kefersteini: a, anterior end; b, anterior parapodium (posterior view); c, furcate seta (lateral view); d, same (oblique view); e, different furcate seta (oblique view); f, cultriform seta; g, upper compound falciger; h, lower compound falciger; i, inferior simple seta; j, posterior portion of maxillae (left side only, dorsal view); k, free denticles 8, 9 from superior row; m, mandibles (dorsal view) (Figures a, b, f, i, m from Perkins 1979, figs. 16a, 17a, f, e and 16d, respectively).

spec.-1 male), 2529A-6/75 (1 spec.), 2641B-6/75 (1 spec.), 2645H-6/75 (4 spec.).
Supplementary Material:
North Carolina--Beaufort, 34°20'N, 75°57'W, 80 m, Apr. 1965, J. H. Day ID. (7 spec., USNM 51158).
Florida--Hutchinson Island, 27°22'08"N, 80°13'46"W, Nov. 1972, 10.6 m, T. H. Perkins ID. (2 spec., USNM 54707-8), as Protodorvillea bifida (USNM 57472, 2 paratypes).
DESCRIPTION:
Length, to 8.0 mm (previously reported to 15 mm); width, to 0.3 mm (previously reported to 0.25 mm). Largest specimen complete with 69 setigers. Prostomium (Figure 44-8a) rounded anteriorly, with 1-2 pairs of eyes, sometimes faded. Antennae small, indistinctly articled. Palps long, wrinkled, with palpostyles. Dorsal cirri present throughout. Parapodia (Figure 44-8b) without well-developed pre- and postsetal lobes. Supra-acicular setae including furcate setae (Figure 44-8c-e); simple, serrate setae; and cultriform setae (Figure 44-8f) on far posterior setigers. Tines of furcate setae similar in length, one tine wider with acuminate tip, other tine with tip appearing entire (Figure 44-8c,d) or bifid (Figure 44-8e) from oblique or edge-on view. Subacicular compound falcigers bidentate (Figure 44-8g,h); additional slender simple setae (Figure 44-8i) present on far posterior setigers. Maxillae (Figure 44-8j,k) with about 19 free denticles in each superior row, 22 free denticles in each inferior row. Basal plates of superior row each with seven large teeth and 13 smaller teeth. Posterior free denticles with several sharply pointed teeth and long basal extensions. Anterior free denticles with gradually smaller teeth and shorter basal extensions (Figure 44-8k). Basal plates of inferior row each with numerous teeth (not figured); free denticles broad, pectinate (Figure 44-8j). Maxillary carriers fused, with prominent teeth. Mandibles (Figure 44-8m) fused, each side with about eight prominent teeth and numerous small teeth on anterior inner margins.
REMARKS: Protodorvillea bifida Perkins, 1979, was described as differing from P. kefersteini in having furcate setae with a bifid shorter tine, and in having compound falcigers with a more distinct secondary tooth. In the material examined herein, considerable variation was noted in the above-mentioned characters. The furcate setae shown in Figure 44-8c-e were drawn from the same individual from Florida (SOFLA 20D-11/80). Figure 44-8c and d represent the same seta at a lateral view (c) and an oblique view (d). It can be seen that the short tine is definitely not bifid, nor does it appear worn. Figure 44-8e is an oblique view of a furcate seta with a bifid tine as described by Perkins (1979) for P. bifida. It should be noted, however, that the bifid-tined furcate setae appeared only on BLM-OCS specimens from SOFLA material. The entire tine appeared on specimens examined from SOFLA, MAFLA, and North Carolina. On specimens which possessed the bifid tine, it dominated throughout the worm. In the material examined, it also appeared that the development of the secondary tooth of the falcigers is variable, not only among parapodia of the same worm, but also within the same fascicle. The major character used herein to synonymize P. bifida and P. kefersteini is the morphology of the maxillae; it is identical in all specimens examined. Even the mandibles were identical, including the serrate anterior inner margin (when not worn).
PREVIOUSLY REPORTED HABITAT: Intertidal to 120 m.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Alabama (Figure 44-7); 19-106 m, coarse to fine sand, silty fine sand.
DISTRIBUTION: Scotland to South Africa, Massachusetts to Florida, Gulf of Mexico.

Genus **Schistomeringos** Jumars, 1974

TYPE SPECIES: Nereis rudolphi Delle Chiaje, 1828.
REFERENCE:
Jumars, 1974:103.
DIAGNOSIS: Maxillae arranged in four rows, each usually having a prominent basal plate and several free denticles. Posterior free denticles usually with large, curved teeth flanked by smaller teeth; anterior free denticles usually long with more numerous but smaller teeth. Prostomium with well-developed palps usually having palpostyles; antennae articled, similar in length to palps. Dorsal cirri present from setiger 2, with acicula and cirrostyles. Furcate setae present. Branchiae present or absent.
REMARKS: Schistomeringos is similar to Dorvillea Parfitt, 1866, differing only in the presence of furcate setae. Authors such as Blake (1975:81), Oug (1978:302), and Westheide (1982a:123) have suggested that the presence or absence of furcate setae is not a valid generic character. Indeed, in material examined herein, its presence is often intraspecifically variable (see Schistomeringos sp. A, and "REMARKS" for Schistomeringos sp. B). This author agrees that Schistomeringos should be synonymized with Dorvillea (except see Schistomeringos sp. B).

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

1a. Cirrophores of anterior dorsal cirri bulbous, swollen distally (Figure 44-10a,b); posterior cirrophores digitiform (Figure 44-10c). . . . . **.Schistomeringos sp. A**, p. 44-15
1b. Cirrophores of dorsal cirri digitiform throughout (Figure 44-16c-f). 2

2a. Maxillae without basal plates in inferior row (Figure 44-12e). . . . . **.Schistomeringos sp. B**, p. 44-18
2b. Maxillae with basal plates in inferior row (Figure 44-14j). . . 3

3a. Anterior free denticles of inferior rows of maxillae broad, pectinate (Figure 44-14q-t); branchiae absent. . . . . **.Schistomeringos pectinata**, p. 44-20
3b. Anterior free denticles of inferior rows of maxillae long, slender (Figure 44-16o-q); branchiae present or absent (Figure 44-16c-f) . . . . . **Schistomeringos cf. rudolphi**, p. 44-21

Schistomeringos sp. A
Figures 44-9, 10a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207G-11/77 (1 spec., USNM 89561), 2315A-2/78 (3 spec., USNM

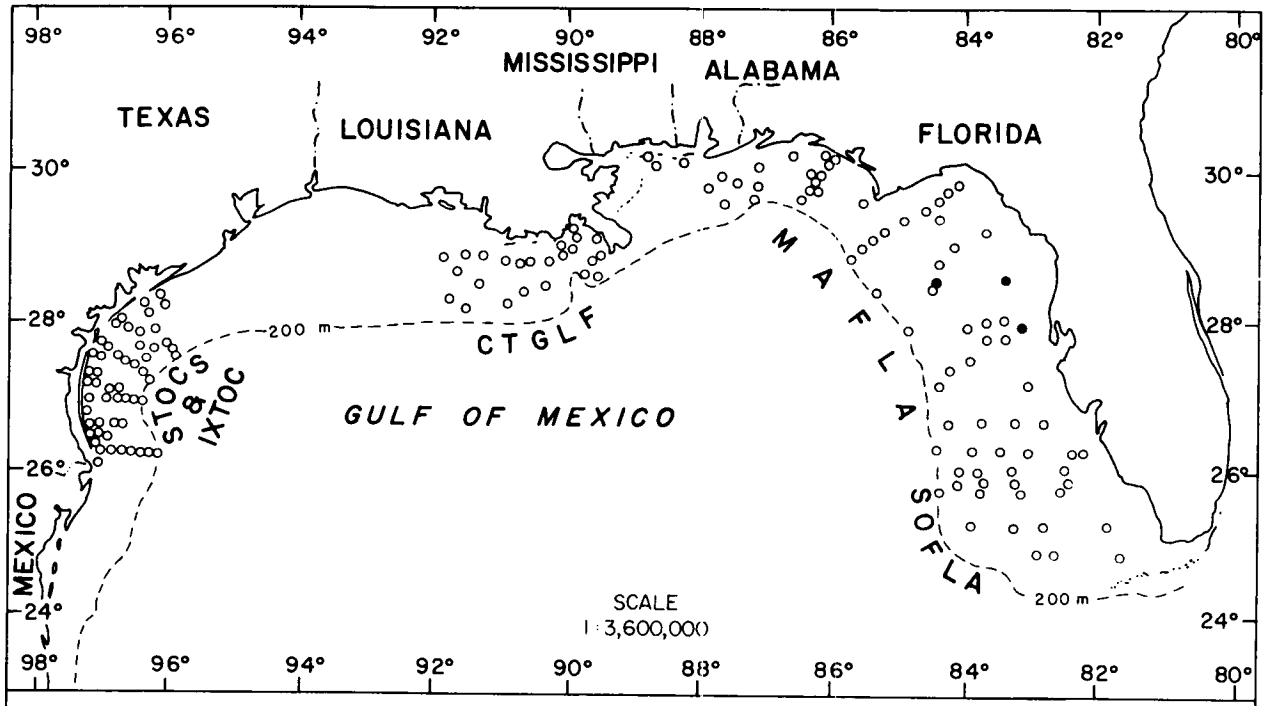

Figure 44-9. Distribution of Schistomeringos sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

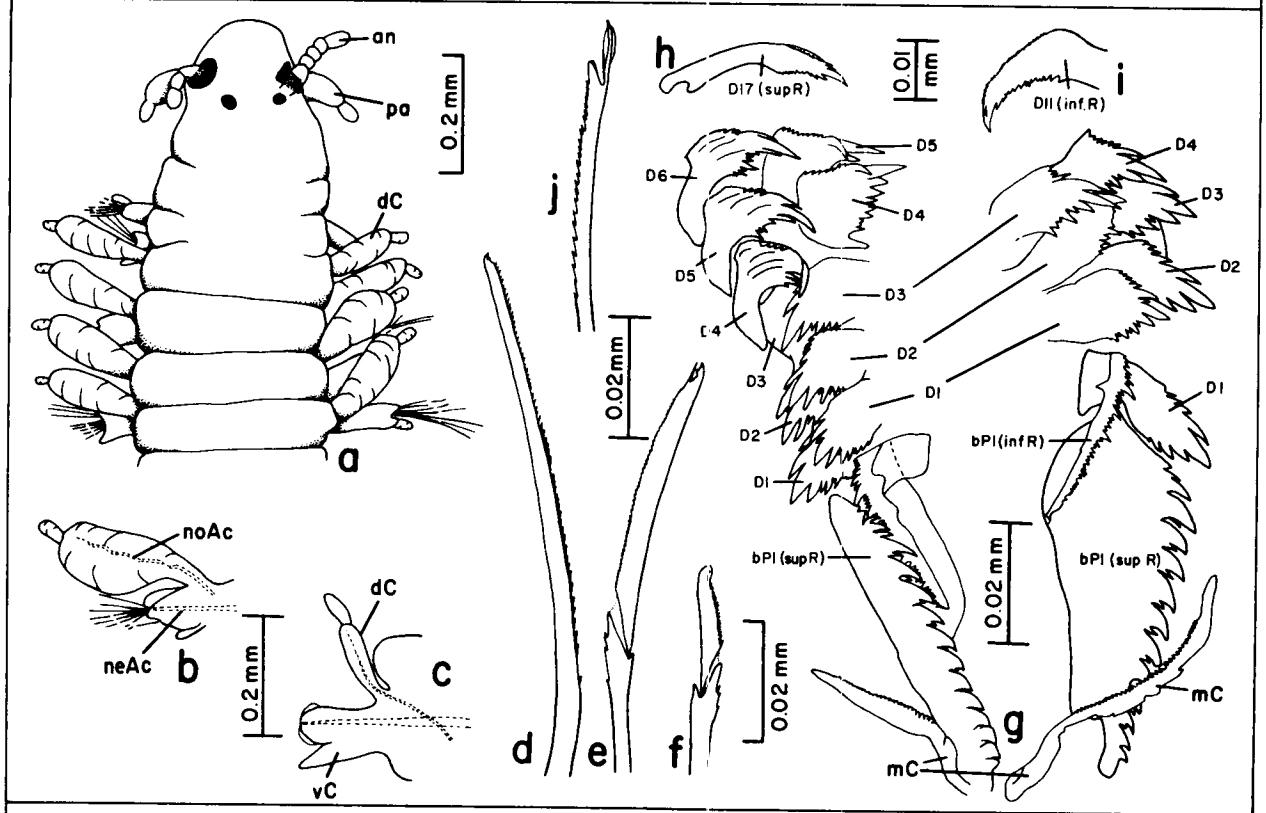

Figure 44-10. Schistomeringos sp. A: a, anterior end; b, anterior parapodium (posterior view); c, posterior parapodium (posterior view); d, supra-acicular cultriform seta; e, subacicular superior falciger; f, subacicular inferior falciger; g, posterior portion of maxillae (dorsal view); h, free denticle 17 from superior row; i, free denticle 11 from inferior row; j, furcate seta from juvenile specimen.

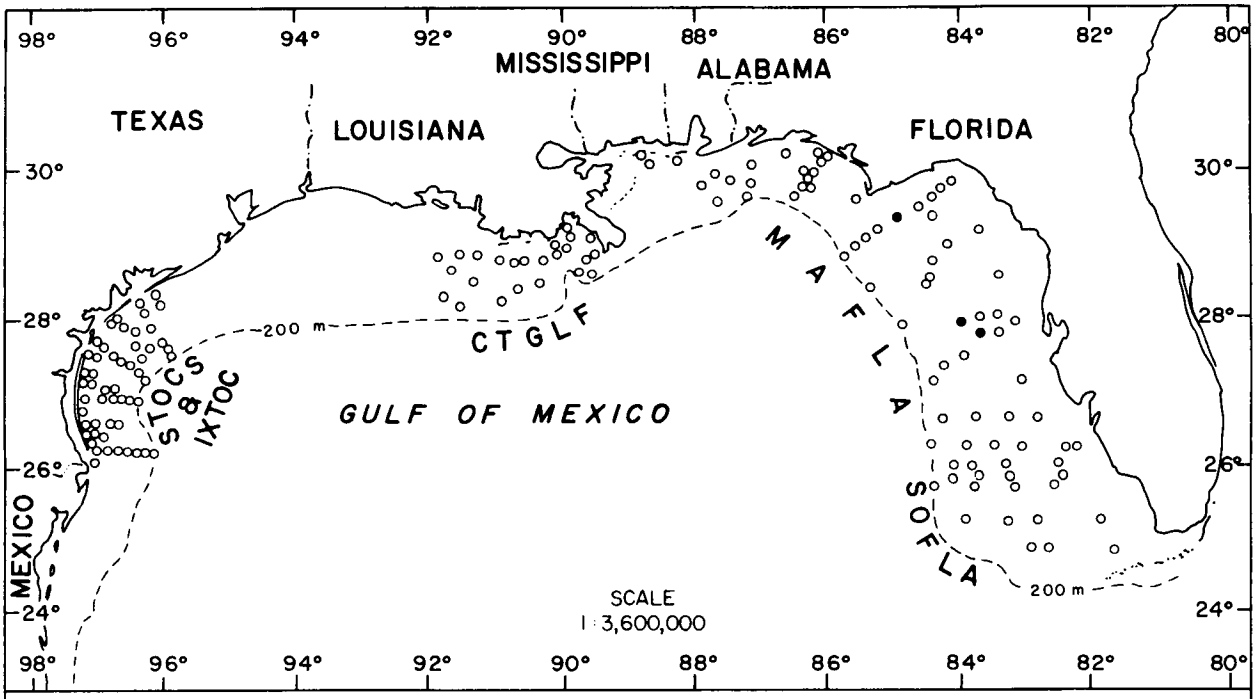

Figure 44-11. Distribution of Schistomeringos sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

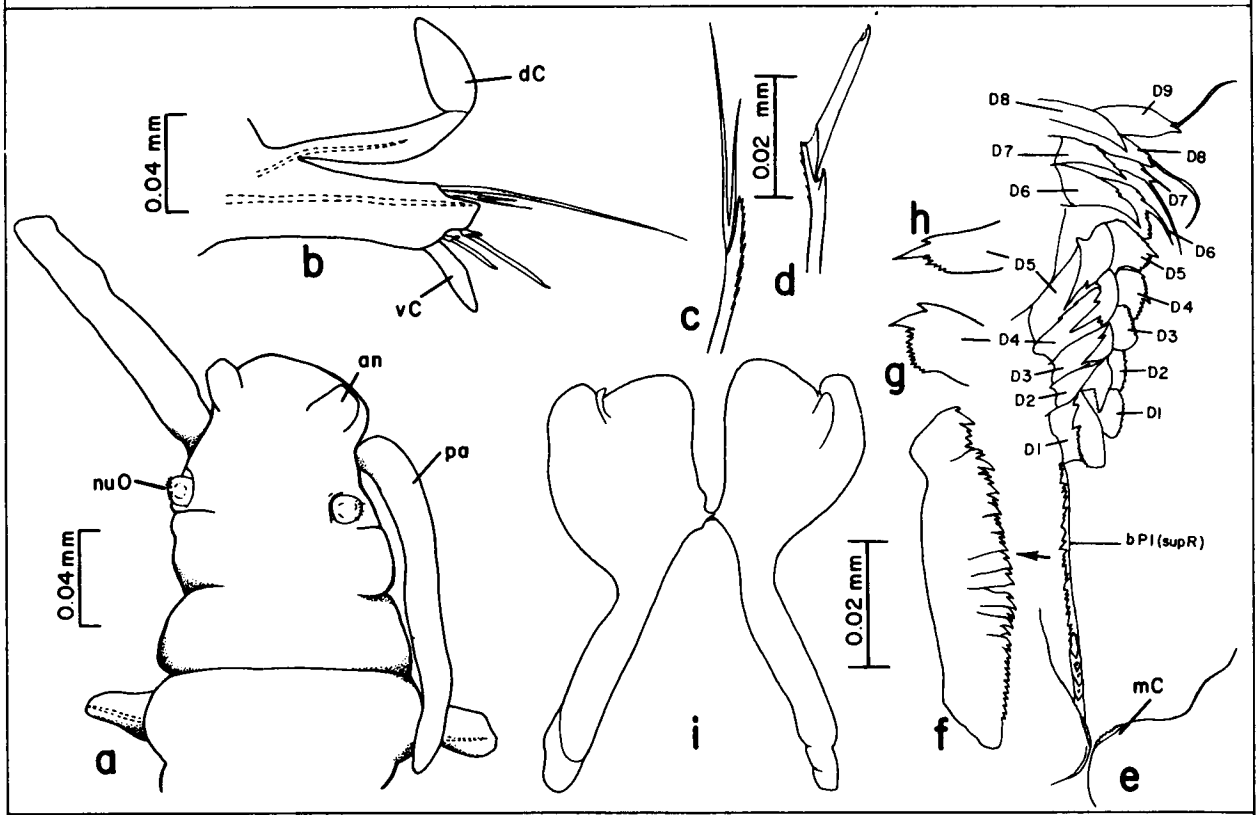

Figure 44-12. Schistomeringos sp. B: a, anterior end (antennae presumed broken); b, anterior parapodium (posterior view); c, furcate seta; d, middle compound falciger; e, entire left side of maxillae (dorsal view); f, left basal plate (lateral view); g, free denticle 4 from superior row; h, free denticle 5 from superior row; i, mandibles (dorsal view).

89562-4), 2852E-8/77 (1 spec., USNM 89565).
DESCRIPTION:
Length, to 6.0 mm; width, to 0.75 mm. Largest specimen complete with 58 setigers. Prostomium (Figure 44-10a) small, rounded, with two pairs of eyes, anterior pair larger. Antennae with up to five articles. Palps stout, with palpostyles; slightly shorter than antennae. Setiger 1 without dorsal cirri; ventral cirri large, digitiform. Anterior setigers with large, bulbous dorsal cirri bearing small cirrostyles (Figure 44-10a,b); dorsal cirrophores of posterior setigers digitiform (Figure 44-10c). Neuropodia of anterior setigers with large, rounded presetal lobe and small postsetal lobe (Figure 44-10b). Neuropodia of posterior setigers with two small, rounded presetal lobes and one large, rounded postsetal lobe (Figure 44-10c). Supra-acicular setae simple, narrow to cultriform (Figure 44-10d), serrate along margin. Subacicular compound falcigers with long to short bidentate blades (Figure 44-10e,f), having small subterminal guard. Furcate setae absent (but see "REMARKS"). Pygidium rounded posteriorly, with one pair of ventral subterminal cirri. Maxillary carriers asymmetrical, fused, serrate; right carrier slightly longer than left one (Figure 44-10g). Superior row basal plates with 12 large teeth, each large tooth with smaller subapical tooth; and 3-5 smaller teeth anteriorly; up to 25 free denticles present. D1 with one large tooth, four medial and four lateral teeth; subsequent denticles with increasing number of lateral and medial teeth as denticles become long and narrow (Figure 44-10h). Inferior row basal plates with numerous small teeth (Figure 44-10g), and up to 21 free denticles. D1 with large main tooth, seven medial and up to seven lateral teeth; subsequent denticles somewhat squared, then becoming longer with medial teeth becoming more numerous and lateral margin becoming serrate (Figure 44-10i).
REMARKS: One juvenile specimen of Schistomeringos sp. A differs from the other specimens examined only by the presence of furcate setae (Figure 44-10j) after setiger 15. All other morphological characters are identical including the maxillae.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 44-9); 19-38 m; medium to fine-very fine sand, silty fine sand.

Schistomeringos sp. B
Figures 44-11, 12a-i

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2209J-11/77 (1 spec., USNM 89566), 2211F-7/76 (1 spec.), 2211E-8/77 (1 spec., USNM 89567), 2423C-7/76 (1 spec., USNM 89568).
DESCRIPTION:
Length, to 2.25 mm; width, to 0.25 mm. Largest specimen complete with 36 setigers. Prostomium (Figure 44-12a) broadly rounded anteriorly, eyes absent. Antennae presumed broken. Palps long, extending to posterior margin of setiger 1, indistinctly biarticulate on some specimens. Single pair of nuchal organs present at posterior margin of prostomium. Dorsal cirri present from setiger 2. Parapodia (Figure 44-12b) without distinct pre- or postsetal lobes. Supra-acicular setae including long, simple, serrate setae tapering to fine tips, and pseudocompound furcate setae having long, thin tines, with distinct serrations below short tine (Figure 44-12c). Subacicular compound falcigers with long to short,

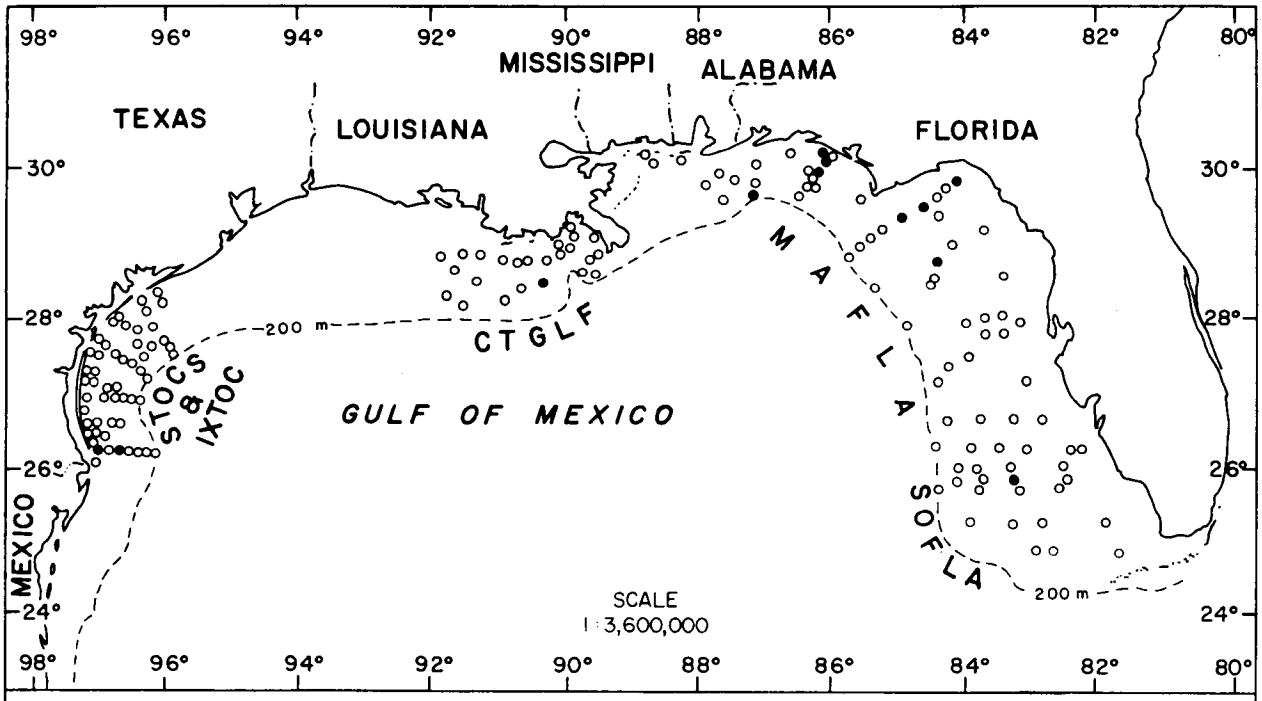

Figure 44-13. Distribution of Schistomeringos pectinata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

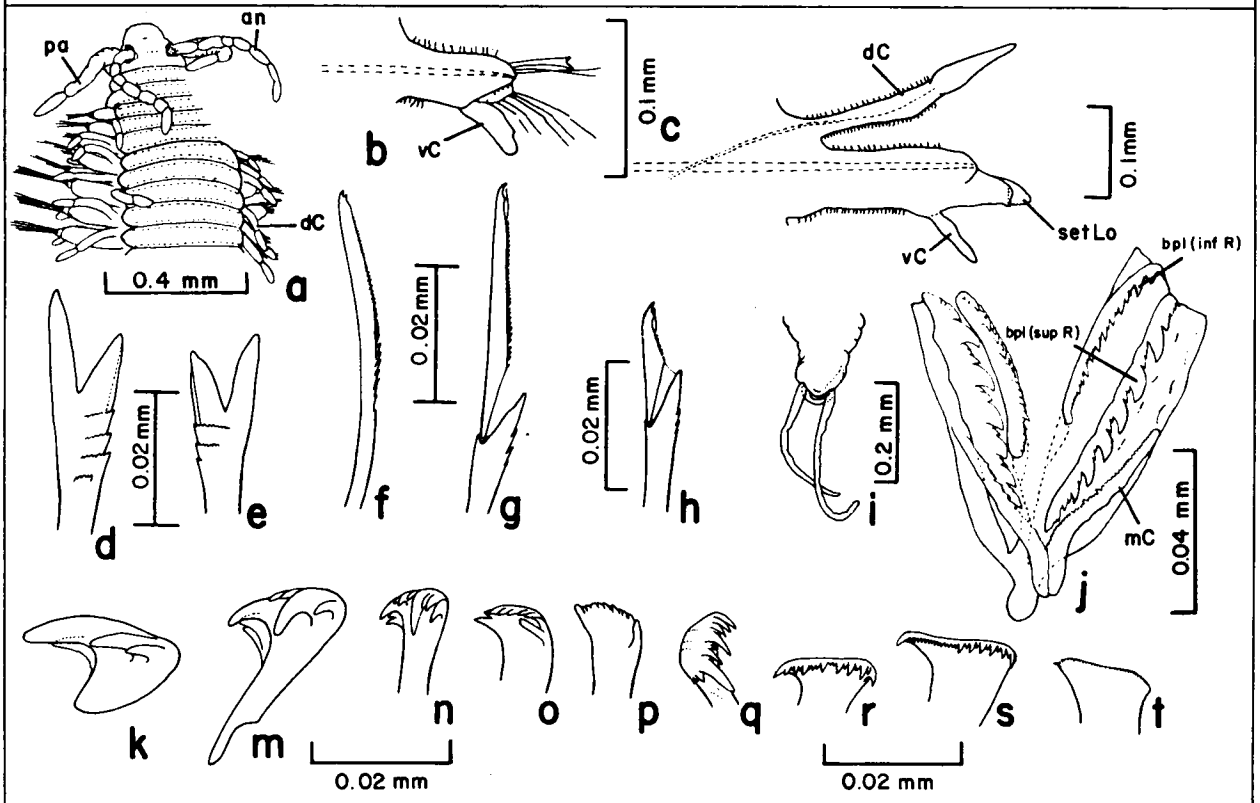

Figure 44-14. Schistomeringos pectinata: a, anterior end; b, parapodium from setiger 1 (posterior view); c, middle parapodium (posterior view); d, furcate seta; e, same (opposite view); f, cultriform seta from paratype (USNM 57475); g, upper compound falciger; h, lower compound falciger; i, posterior end (dorsal view); j, posterior portion of maxillae (dorsal view); k-p, free denticles of superior row: k, D1; m, D3; n, D7; o, D21; p, D24; q-t, free denticles of inferior row: q, D1; r, D4; s, D10; t, D28 (Figures a-e, i-t, from Perkins 1979, figs. 18a, 19a, 20a-c, 18d-n, respectively).

minutely bidentate blades (Figure 44-12d). Maxillae with weakly chitinized serrate maxillary carriers (Figure 44-12e) extending ventrolaterally as a weak ridge. Superior row basal plates (Figure 44-12f) with about 12 large teeth and 33 smaller teeth; up to nine free denticles present. Denticles with large main fang, numerous medial teeth and one lateral tooth (Figure 44-12g,h); anteriormost denticles long, sharply pointed. Inferior maxillary row without basal plates (Figure 44-12e); with up to nine free denticles. Denticles 1-3 oval, with broad cutting edge composed of numerous minute teeth. D4-6 with main fang elongating, becoming extremely long and thin on D7-9. Mandibles (Figure 44-12i) broad anteriorly, each side trilobed.

REMARKS: Schistomeringos sp. B is similar to a group of species described by Oug (1978), in lacking a basal plate in the inferior row of maxillae and in having poorly developed maxillary carriers. In his paper, Oug suggested that a new genus may need to be erected to contain that suite of species. To my knowledge, this has not been done; therefore, because the species described herein possesses furcate setae, it should at present be placed within Schistomeringos Jumars. Schistomeringos sp. B differs from other members of the genus which lack the basal plate in the inferior row of maxillae by having the main fang of the anteriormost inferior denticles modified into a long, aristate lateral process.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 44-11); 19-43 m; coarse sand, silty fine sand, clayey sandy silt.

Schistomeringos pectinata Perkins, 1979
Figures 44-13, 14a-t

Schistomeringos pectinata Perkins, 1979:456, figs. 18-20.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 16-5/81 (2 spec., USNM 89531-2); MAFLA 2316F-11/77 (1 spec.), 2419A-11/77 (1 spec.), 2422C-6/76 (3 spec.), 2423C-7/76 (2 spec.), 2528H-11/77 (1 spec.), 2530B-6/75 (3 spec.), 2531E-7/76 (1 spec.), 2531K-8/77 (1 spec.), 2531H-11/77 (1 spec.), 2645I-6/75 (1 spec., USNM 89537); CTGLF 03-5/78 (1 spec., USNM 89533); STOCS 4/IV-3 F/76 (1 spec., USNM 89534), 4/IV-4 W/76 (2 spec., USNM 89535); IXTOC S54-2 11/79 (1 spec., USNM 89536).
Supplementary Material:
Florida--Hutchinson Island, 27°21'23"N, 80°13'40"W, 10.9 m, Nov. 1972, T. H. Perkins ID. (1 paratype, USNM 57475).

DESCRIPTION:
Length, 13.0+ mm (previously reported to 15 mm); width, to 0.75 mm. Largest Gulf of Mexico BLM-OCS specimen incomplete with 82 setigers. Prostomium (Figure 44-14a) broadly rounded anteriorly, with 1-2 pairs of eyes. Antennae with up to nine articles. Palps slender, with palpostyles; similar in length to antennae. Setiger 1 without dorsal cirri; ventral cirri large, digitiform (Figure 44-14b). Subsequent parapodia with dorsal cirri (Figure 44-14c). Pre- and postsetal lobes small, rounded; ventral setigerous lobe elongate when extended (Figure 44-14c). Supra-acicular setae including 1-6 simple setae with serrate blades tapering to fine tips, and 1-2 furcate setae with tines of varying length. Long tine of furcate setae up to twice as long as short tine;

short tine with cusps, faintly limbate (Figure 44-14d,e). Furcate setae replaced on last few parapodia with 1-2 simple cultriform setae (Figure 44-14f). Subacicular compound falcigers with long to short bidentate blades having short subterminal guard (Figure 44-14g,h). Pygidium with one pair of long filiform cirri and one pair of shorter cirri (Figure 44-14i). Maxillary carriers fused basally, serrate along inner margins (Figure 44-14j). Superior row basal plates each with seven large teeth alternating with smaller teeth; with up to 27 free denticles. D1 with one large main tooth, two lateral and one medial teeth (Figure 44-14k); subsequent free denticles gradually becoming longer and more slender with numerous teeth atop broadly rounded margin (Figure 44-14m,n); anteriormost denticles becoming shorter and broader with numerous rounded teeth (Figure 44-14o,p). Inferior row basal plates each having up to 11 large teeth alternating with smaller teeth (Figure 44-14j); with up to 37 free denticles. D1 with one large tooth and several smaller teeth (Figure 44-14q); subsequent denticles becoming pectinate along broad margins (Figures 44-14r,s); anteriormost denticles appearing minutely serrate (Figure 44-14t).

REMARKS: Examination of several specimens from a wide area throughout the northern Gulf of Mexico has revealed variations in Schistomeringos pectinata. In particular, the long tine of the furcate setae ranges from slightly longer than to twice as long as the short tine. The dentition below the short tine varies from 2-7 cusps. Eyes may be absent or present; when present they are large or small and occur as one or two pairs. After considering these variations, it is obvious that S. pectinata is very similar to S. rudolphi (Delle Chiaje, 1828), particularly since the long tine/short tine ratio of the furcate setae is variable. The two species can be separated, however, by the morphology of the maxillae. S. rudolphi (and S. cf. rudolphi herein) have long, slender free denticles in the inferior row, whereas S. pectinata has broad, comb-like denticles in the inferior row. The morphology of the maxillae has been consistent throughout the material examined. Perkins (1979) alluded to the fact that S. pectinata lacks simple cultriform setae posteriorly; however, examination of one of the paratypes of S. pectinata (USNM 57475), as well as specimens from BLM-OCS collections revealed cultriform setae replacing the furcate setae on far posterior parapodia.

PREVIOUSLY REPORTED HABITAT: 7-11 m; medium to coarse calcareous sand.

GULF OF MEXICO BLM-OCS OCCURRENCE: From Florida to Texas (Figure 44-13); 10-106 m; coarse to fine sand, silty fine sand, silty clayey sand, sandy and silty clay.

DISTRIBUTION: East coast of Florida, Gulf of Mexico.

Schistomeringos cf. rudolphi (Delle Chiaje, 1828)
Figures 44-15, 16a-q

Dorvillea rudolphi--Fauchald, 1970:156, pl. 27, figs. a-j.
Schistomeringos rudolphi--Jumars, 1974:104, fig. 1a-c, table 2.
Schistomeringos rudolphi--Gardiner, 1976:216, fig. 29r-u.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 8-11/80 (4 spec., USNM 89538-9), 16-5/81 (1 spec., USNM 89540);
MAFLA 2209C-8/77 (1 spec.), 2210B-6/76 (2 spec.), 2210C-6/76 (1 spec.),

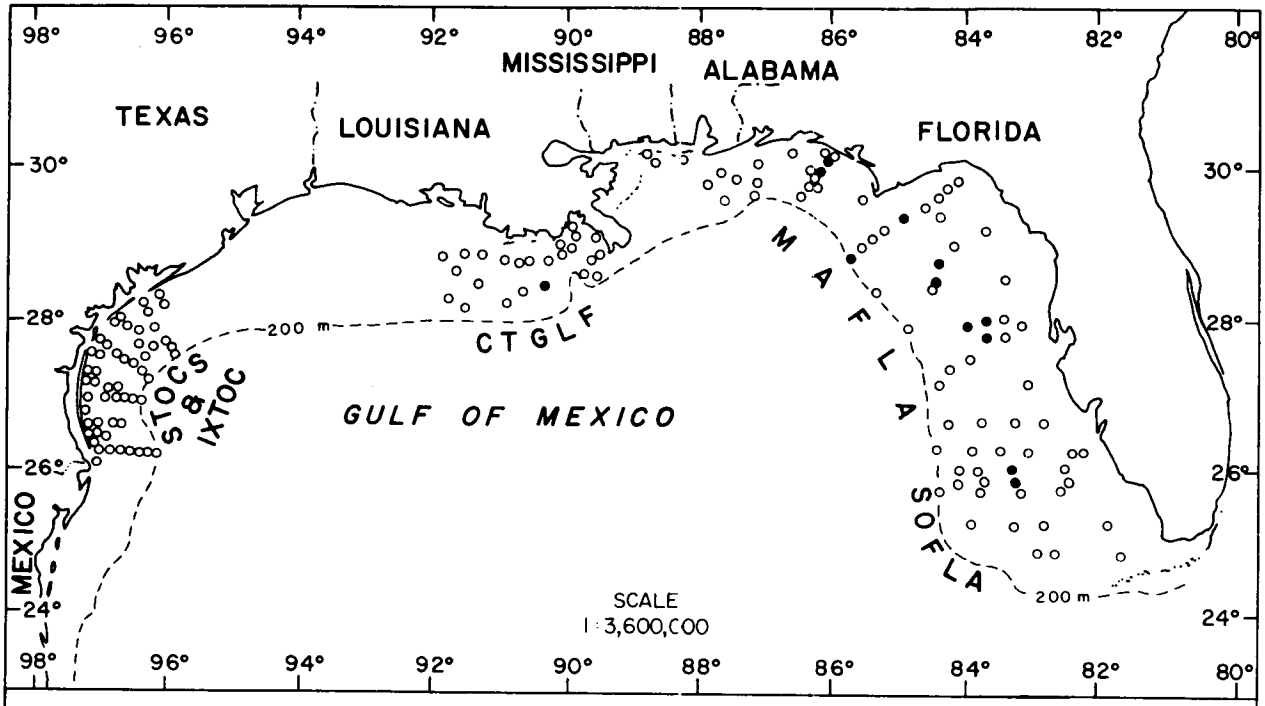

Figure 44-15. Distribution of Schistomeringos cf. rudolphi on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

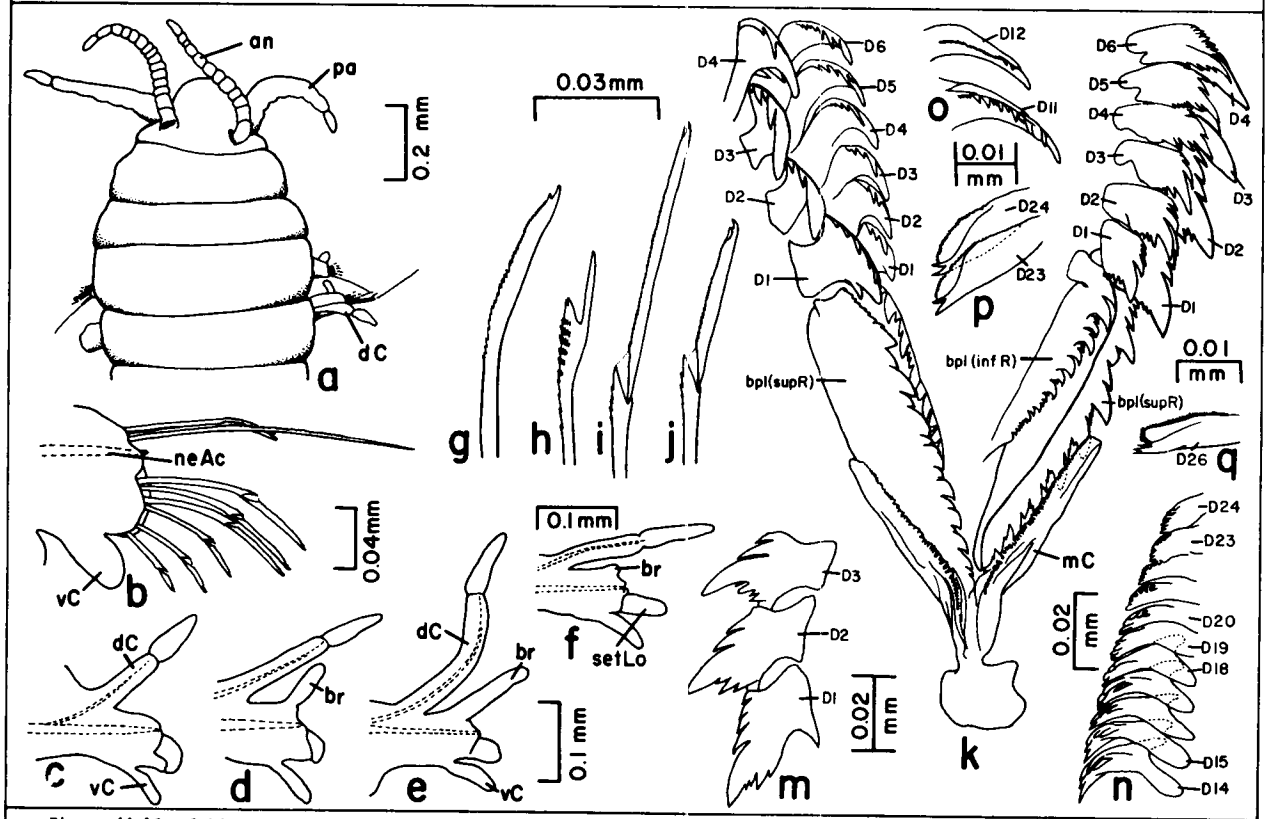

Figure 44-16. Schistomeringos cf. rudolphi: a, anterior end; b, parapodium from setiger 1 (posterior view); c, parapodium from setiger 4 (posterior view); d, parapodium from setiger 6 (posterior view); e, parapodium from setiger 9 (posterior view); f, parapodium from setiger 16 (posterior view); g, cultriform seta; h, furcate seta; i, upper compound falciger; j, lower compound falciger; k, posterior portion of maxillae (dorsal view); m, free denticles 1-3 from superior row; n, free denticles 14-24 from superior row; o, free denticles 11, 12 from inferior row; p, free denticles 23, 24 from inferior row; q, free denticle 26 from inferior row.

2211F-6/76 (1 spec.), 2315A-7/76 (1 spec.), 2316I-7/76 (4 spec., USNM 89541-2), 2316K-7/76 (2 spec.), 2423C-7/76 (1 spec.), 2427H-9/77 (1 spec.), 2530B-6/75 (1 spec.), 2531D-8/77 (1 spec.); CTGLF 03-9/79 (1 spec., USNM 89543).
Supplementary Material:
North Carolina--Cape Lookout, S. Gardiner ID, Aug. 1974 (1 spec., USNM 53047), Dec. 1974 (13 spec., USNM 53048).
DESCRIPTION:
Length, 16+ mm (previously reported to 45 mm); width, to 1.0 mm (previously reported to 2 mm). Largest specimen incomplete with 91 setigers. Prostomium (Figure 44-16a) broadly rounded anteriorly, with 0-2 pairs of eyes. Antennae with up to 15 articles. Palps long, with palpostyles, similar in length to antennae. Setiger 1 without dorsal cirri; ventral cirri large, digitiform (Figure 44-16b). Dorsal cirri present throughout from setiger 2 (Figure 44-16c). Branchiae, when present, beginning on setigers 5-7 and continuing to setigers 15-33 (Figure 44-16d-f). Supra-acicular setae of anterior 1-12 setigers including 1-2 long, slender, simple, serrate setae tapering to minute, uni- or bidentate tips; and 1-2 shorter, bidentate, cultriform setae (Figure 44-16g). Cultriform setae gradually replaced by 1-2 furcate setae (Figure 44-16h) with long tine 2-3 times as long as short tine. Subacicular compound falcigers with long to short bidentate blades having small subterminal guard (Figure 44-16i,j). Pygidium with 1-2 pairs of anal cirri. Maxillae in four rows (Figure 44-16k), with up to 35 free denticles in each of superior rows and up to 40 free denticles in each of inferior rows. Basal plates of superior row each with seven large teeth alternating with smaller teeth. D1 with large main tooth, four lateral teeth, and four medial teeth. Subsequent posterior free denticles with main fang becoming longer, lateral teeth fewer (Figure 44-16m); medial free denticles becoming narrower, elongate and cupped with teeth shorter, some rounded, others pointed (Figure 44-16n); anteriormost denticles short, broad. Basal plates of inferior row each with eight large teeth alternating with smaller teeth except on anterior portion which has about ten small teeth (Figure 44-16k). Posterior free denticles with large main fang and increasing numbers of lateral and medial teeth. Medial denticles (Figure 44-16o) long, narrow, with main fang and several small teeth along outer margin. Anteriormost free denticles with 1-4 apical teeth, distal margin serrate (Figure 44-16p,q). Superior maxillary carriers (Figure 44-16k) fused basally, serrate along inner margins.
REMARKS: All Gulf of Mexico BLM-OCS specimens of Schistomeringos cf. rudolphi appeared identical, with some slight variability, to S. rudolphi from North Carolina (USNM 53047-8) except for the presence of branchiae in all but five specimens. The development of branchiae may be merely an ecophenotypic variation, as appears to be the case for Pettiboneia sp. A described herein. Type material, as well as more material from widespread locations should be examined to confirm such variability, and consequently to confirm the presence of S. rudolphi in the Gulf of Mexico. Schistomeringos cf. rudolphi is similar to S. pectinata Perkins, 1979, differing primarily in the morphology of the maxillae (see "REMARKS" for S. pectinata).
PREVIOUSLY REPORTED HABITAT: Temperate and tropical seas; intertidal to 265 m.

GULF OF MEXICO BLM-OCS OCCURRENCE: Florida to Louisiana (Figure 44-15); 19-175 m; coarse to fine sand, silty fine to very fine sand, silty clayey sand, clayey sandy silt.
DISTRIBUTION: Mediterranean; Atlantic--Norway to South Africa and Massachusetts to West Indies; Gulf of Mexico; Pacific--British Columbia to Chile.

Genus Dorvillea Parfitt, 1866

TYPE SPECIES: Staurocephalus rubrovittatus Grube, 1855.
REFERENCES:
Hartman, 1944b:187.
Pettibone, 1961:182.
Fauchald, 1970:151.
Jumars, 1974:110.
DIAGNOSIS: Maxillae arranged in four rows, each having a prominent basal plate and several free denticles; posterior free denticles usually with large curved teeth flanked by smaller teeth; anterior free denticles usually long with more numerous but smaller teeth. Prostomium with well-developed palps usually having palpostyles; antennae articled, similar in length to palps. Dorsal cirri present from setiger 2, with acicula and cirrostyles. Furcate setae absent. Branchiae present or absent.

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

1a. Superior rows of maxillae each with 18-20 free denticles; palps without palpostyles (Figure 44-18a); parapodia with well-developed postsetal lobes (Figure 44-18b). . .**Dorvillea sociabilis**, p. 44-24
1b. Superior rows of maxillae each with up to 12 free denticles (Figure 44-20f); palps with palpostyles (Figure 44-20a); parapodia without well-developed postsetal lobes (Figure 44-20b,c) . . . . . .**Dorvillea sp. A**, p. 44-27

Dorvillea sociabilis (Webster, 1879)
Figures 44-17, 18a-h

Staurocephalus sociabilis Webster, 1879:243, pl. 7, figs. 89-91.
Dorvillea sociabilis--Hartman, 1945:27, pl. 5, figs. 1, 4, 5; 1951a:66, pl. 8, figs. 3, 5.
Dorvillea sociabilis--Gardiner, 1976:215, fig. 29 1-n.
Dorvillea sociabilis--Perkins, 1979:451, fig. 15a-r.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2853G-8/77 (1 spec., USNM 89544).
Supplementary Material:
North Carolina--Bogue Sound, Aug. 1974, S. Gardiner ID. (2 spec., USNM 53045).
Florida--Hutchinson Island, 27°22'08"N, 80°13'46"W, Nov. 1971, T. Perkins ID. (1 spec., USNM 54705).

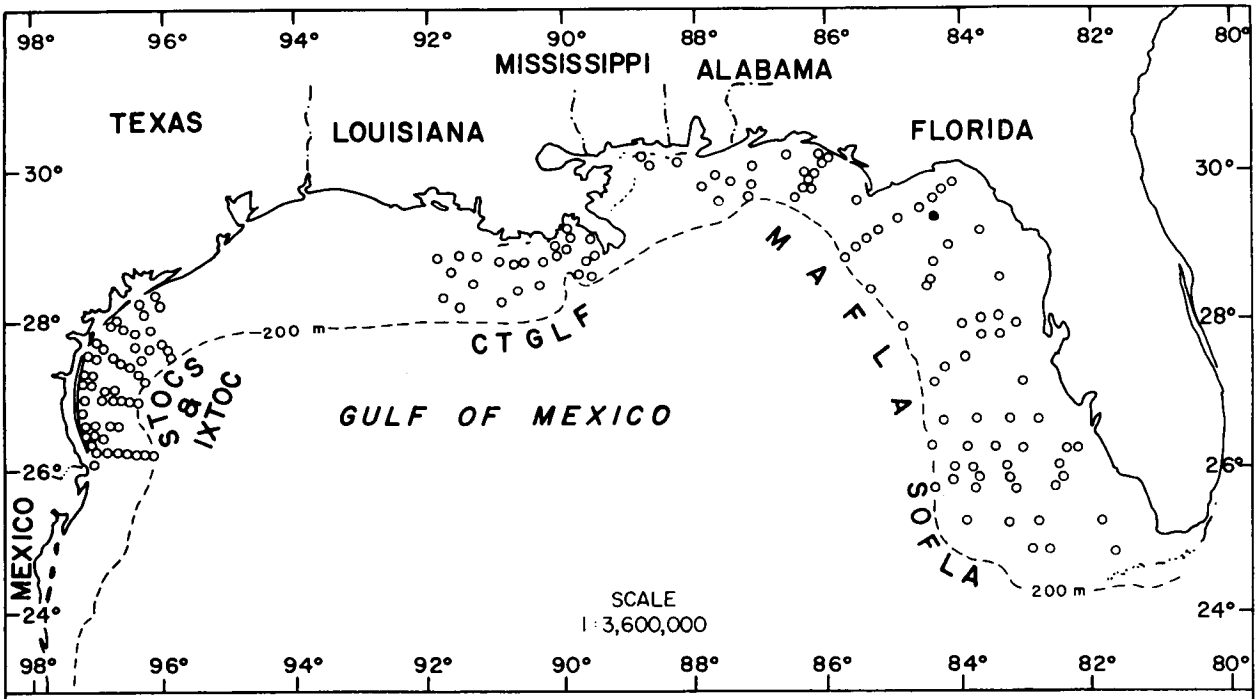

Figure 44-17. Distribution of Dorvillea sociabilis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

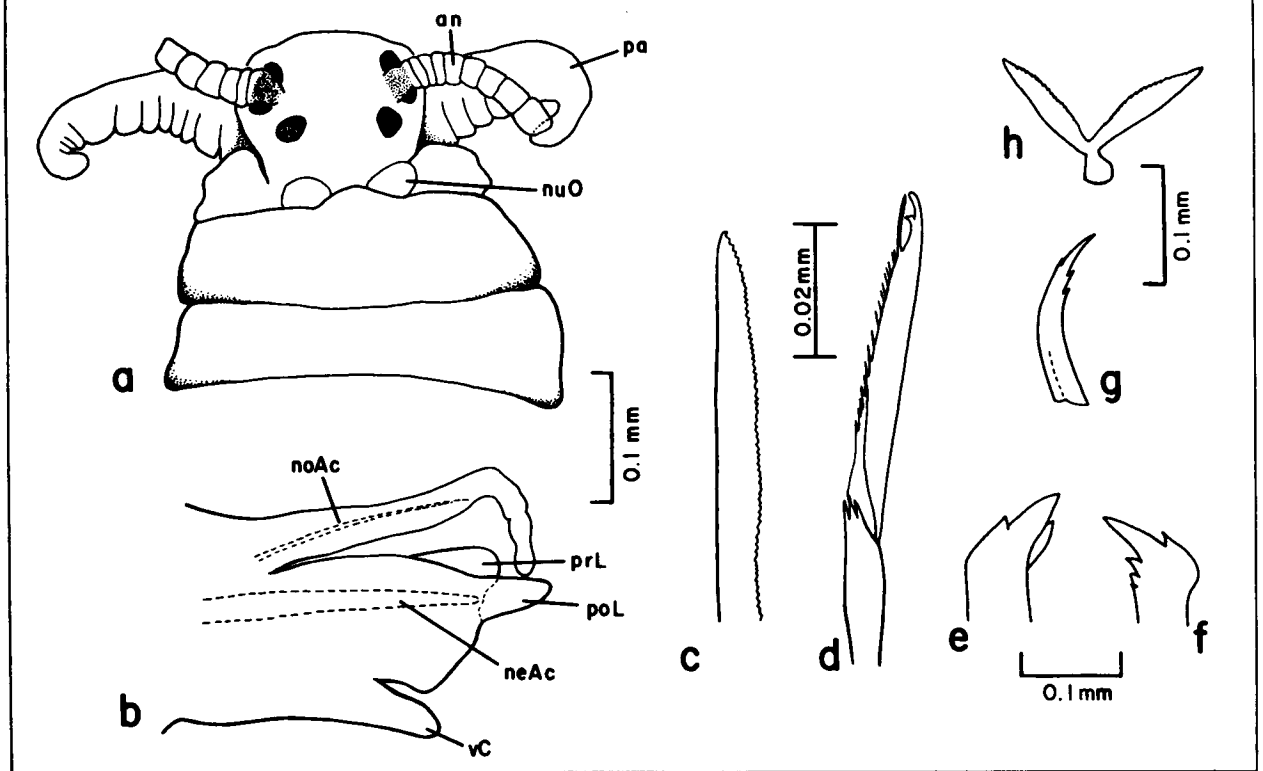

Figure 44-18. Dorvillea sociabilis: a, anterior end; b, anterior parapodium (posterior view); c, cultriform seta; d, middle compound falciger; e, free denticle 1 from superior row; f, free denticle 2 from superior row; g, free denticle 15 from superior row; h, maxillary carriers (Figures e-h from Perkins 1979, figs. 15e, g, j, b, respectively).

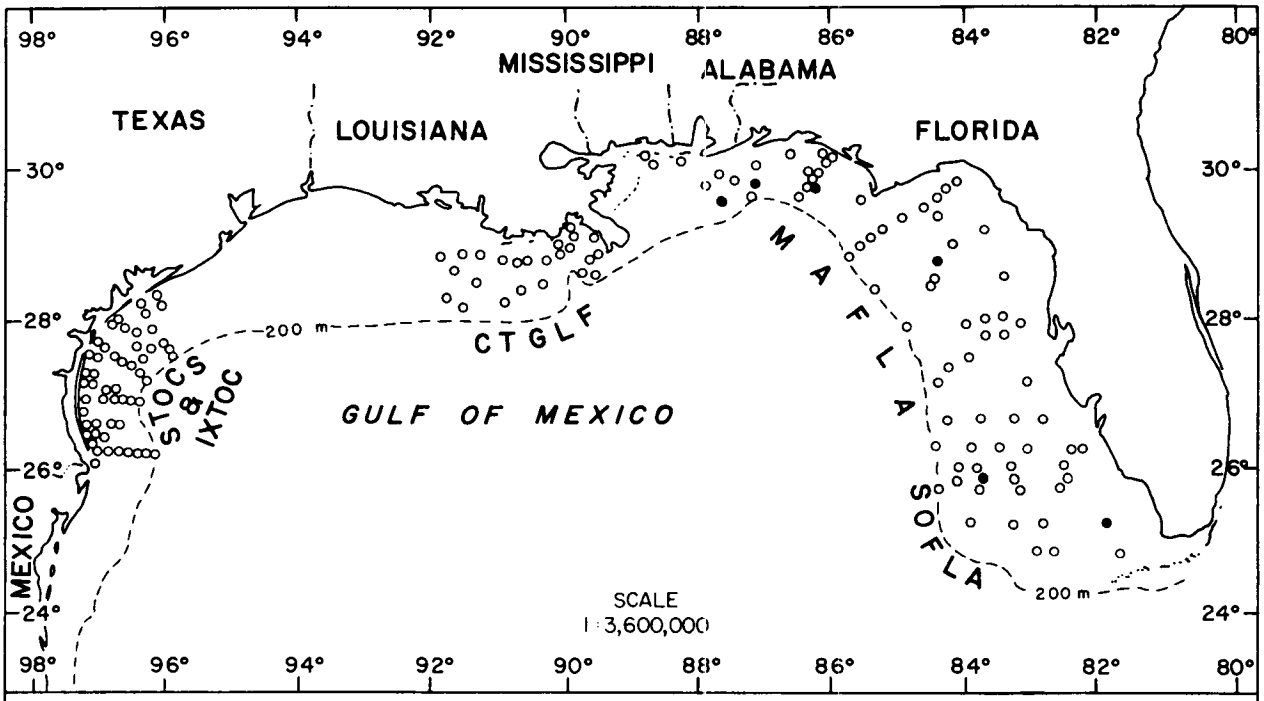

Figure 44-19. Distribution of Dorvillea sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

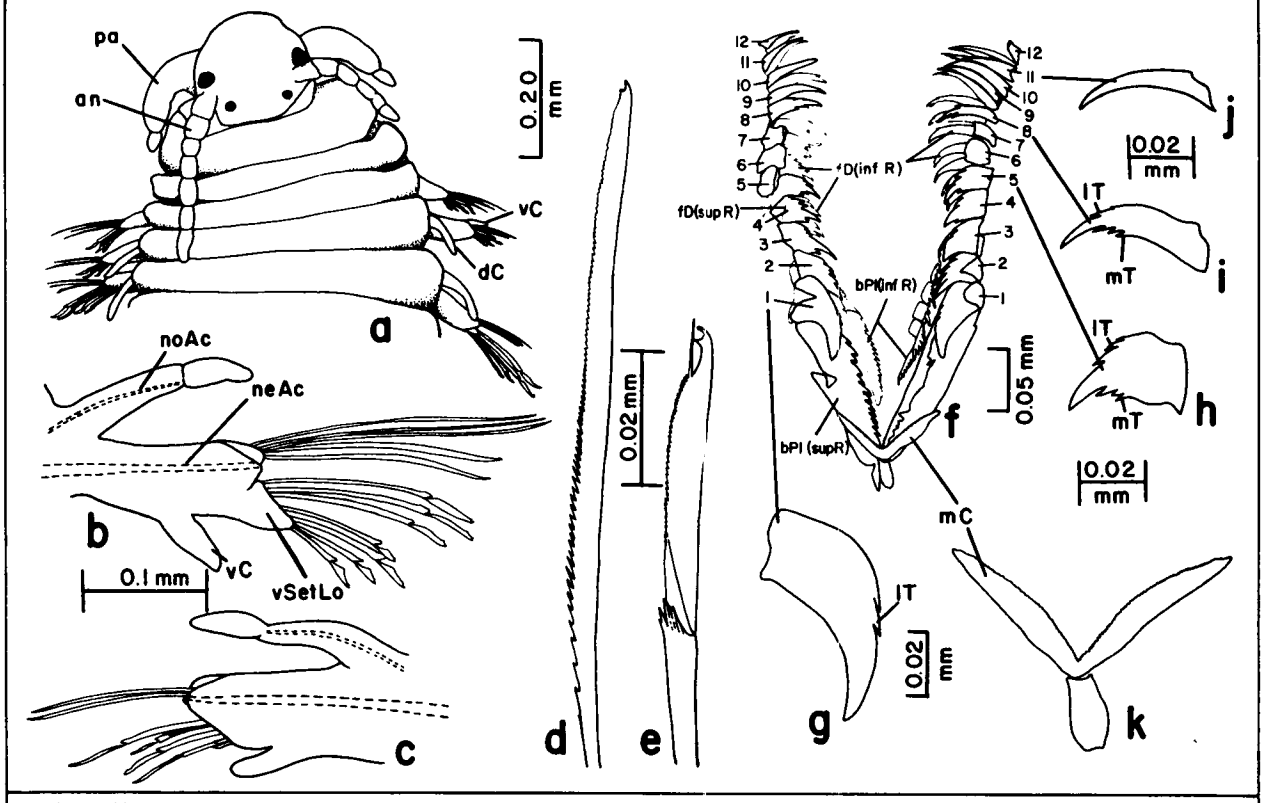

Figure 44-20. Dorvillea sp. A: a, anterior end; b, parapodium from setiger 4 (posterior view); c, parapodium from setiger 5 (posterior view); d, simple seta; e, compound falciger; f, entire maxillae (dorsal view); g, free denticle 1 (left side); h-j, free denticles from superior row (right side): h, D5; i, D8; j, D11; k, maxillary carriers.

DESCRIPTION:
Length, 4.0+ mm (previously reported to 20 mm); width, to 0.6 mm (previously reported to 2 mm). Single Gulf of Mexico specimen small, incomplete with about 15 setigers. Prostomium (Figure 44-18a) rounded with four eyes, anterior pair larger. Antennae with about seven articles. Palps thick, without palpostyles, shorter than antennae. Anterior margin of first achaetous ring with small middorsal projection flanked by pair of large nuchal organs. Dorsal cirri absent from setiger 1. Neuropodia with two conical presetal lobes (Figure 44-18b), and single postsetal lobe extending beyond presetal lobes. Supra-acicular neurosetae simple, serrate, minutely bidentate (Figure 44-18c). Subacicular compound falcigers with long to short bidentate blades having slender guard not extending beyond teeth (Figure 44-18d). Maxillae with 17-20 free denticles in superior row, 23-31 free denticles in inferior row. Superior row basal plates each with 9-10 teeth. D1 with large main fang, one lateral and one medial tooth (Figure 44-18e). D5 with large main fang, one lateral and three medial teeth (Figure 44-18f). D15 with sharply pointed tooth, one lateral and two medial teeth (Figure 44-18g). Inferior row basal plates each with 7-10 teeth. Superior maxillary carriers serrate along inner margins, fused and rounded basally (Figure 44-18h).
REMARKS: The single Gulf of Mexico BLM-OCS specimen agrees in all respects with specimens from North Carolina, and with the detailed description of the maxillae given by Perkins (1979:452).
PREVIOUSLY REPORTED HABITAT: Intertidal to 160 m, on pilings and retaining walls, sand overlaid with shell.
GULF OF MEXICO BLM-OCS OCCURRENCE: Single station off Florida (Figure 44-17); 29 m; coarse sand.
DISTRIBUTION: Virginia to Florida, Cuba, Gulf of Mexico.

Dorvillea sp. A
Figures 44-19, 20a-k

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 18A-4/81 (2 spec., USNM 89569-70), 20-11/80 (2 spec., USNM 89571-2); MAFLA 19G-5/74 (1 spec., USNM 89573; 2 spec.), 2316I-6/75 (1 spec.), 2534-6/75 (1 spec.), 2643-6/75 (1 spec.), 2644-6/75 (2 spec).
DESCRIPTION:
Length, to 7.0 mm; width, to 0.25 mm. Body small, slender, complete with up to 45 setigers. Prostomium (Figure 44-20a) rounded with four eyes, anterior pair larger than posterior pair. Antennae with about seven articles. Palps stout, biarticulate, shorter than antennae. Dorsal cirri absent from setiger 1. Neuropodia without distinct presetal lobes, with small postsetal lobes (Figure 44-20b,c). Ventral setigerous lobes elongate when everted (Figure 44-20b). Supra-acicular neurosetae simple, serrate, with bidentate tips (Figure 44-20d). Subacicular compound falcigers with long to short bidentate blades having thin guard extending slightly beyond teeth (Figure 44-20e). Pygidium damaged but apparently having one pair of short, smooth cirri. Maxillae (Figure 44-20f) with 12 free denticles in superior row, 15-17 free denticles in inferior row. Basal plates of superior row each with about 14 teeth (Figure 44-20f). D1 with large main fang and two lateral teeth (Figure 44-20g). D5 with large main fang, three lateral and three medial teeth

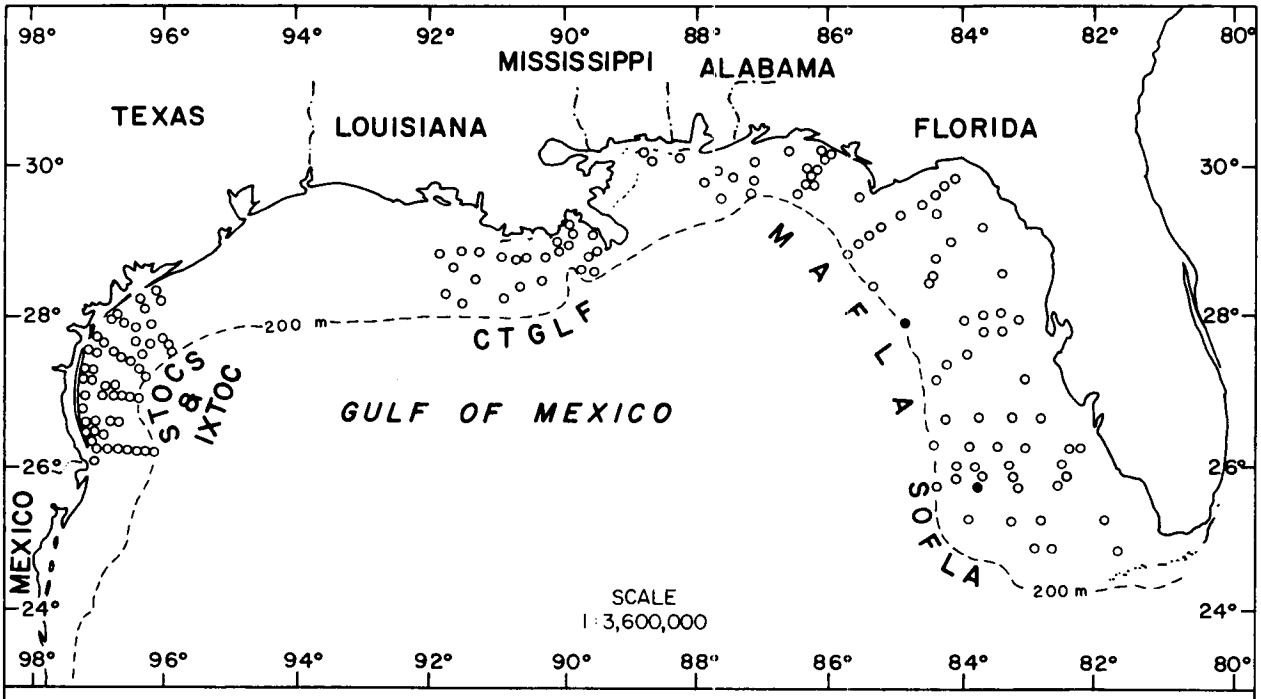

Figure 44-21. Distribution of dorvilleid Genus A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

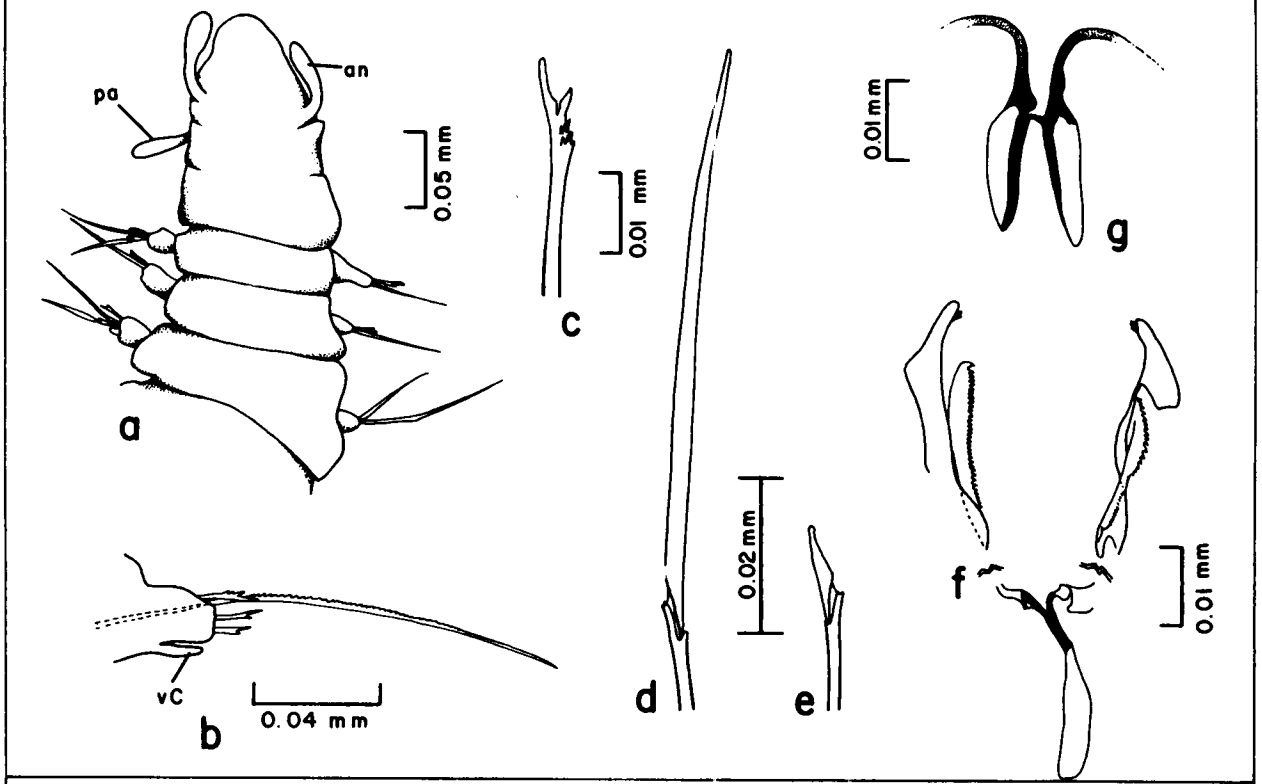

Figure 44-22. Genus A: a, anterior end; b, anterior parapodium (posterior view); c, furcate seta; d, upper compound seta; e, lower compound seta; f, entire maxillae (dorsal view, broken); g, mandibles (dorsal view).

(Figure 44-20h). D8 with sharply pointed main fang, one lateral and three medial teeth (Figure 44-20i). D11 sharply pointed, curved, without lateral or medial teeth (Figure 44-20j). Basal plates of inferior row each with about 16 teeth (Figure 44-20f). Posterior free denticles short, squared, with main fang flanked by 2-3 teeth on either side; anterior denticles becoming long and sharply pointed by D9-10. Superior maxillary carrier fused to oval-shaped base, serrate along anterior margins (Figure 44-20k).

REMARKS: Among the described species of the genus, Dorvillea sp. A closely resembles D. sociabilis (Webster, 1879). Dorvillea sp. A differs from the latter in having 12 instead of 17-20 free denticles in each superior row, 15-17 instead of 23-31 free denticles in each inferior row, D1 of each superior row lacking a medial tooth, and D5 of each superior row broader and with three instead of one lateral teeth. Also, Dorvillea sp. A has palpostyles, antennae longer than palps, and short postsetal lobes, all of which differ from D. sociabilis. There is a significant size difference, with Dorvillea sp. A up to 7 mm in length compared to 20 mm for D. sociabilis.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Alabama (Figure 44-19); 22-87 m; coarse to fine sand, silty fine sand.

Genus A

Figures 44-21, 22a-g

MATERIAL EXAMINED:

Gulf of Mexico BLM-OCS:

MAFLA 2212C-6/76 (1 spec., USNM 89574), 2958I-8/77 (1 spec., USNM 89575).

DESCRIPTION:

Length, 3.5+ mm; width, to 0.2 mm. Larger specimen incomplete with about 43 setigers. Prostomium (Figure 44-22a) conical, rounded anteriorly. Eyes absent. Antennae and palps similar in length, smooth, filiform. Dorsal cirri completely absent. Parapodia (Figure 44-22b) without well-developed pre- and postsetal lobes. Supra-acicular setae including long, simple, serrate setae tapering to fine tips; and furcate setae (present only in one specimen). Furcate setae (Figure 44-22c) with long tine about twice as long as short tine, spines present below short tine; replaced by shorter simple seta in some fascicles. Subacicular compound falcigers with long to short unidentate blades; long extension of shaft-head bifid (Figure 44-22d,e). Maxillae in four rows, weakly chitinized (Figure 44-22f). Plates of superior row thin, clear, with rounded tooth anteriorly bearing minute, subterminal, brush-like denticles (Figure 44-22f). Plates of inferior row serrate. Free denticles absent. Maxillae fused posteriorly into long process. Mandibles (Figure 44-22g) flared posteriorly, produced into curved arms anteriorly.

REMARKS: Genus A is similar to Meiodorvillea Jumars, 1974, in lacking dorsal cirri while possessing head appendages. It differs from the latter in lacking maxillary carriers and in having four rather than two rows of maxillae. Genus A also differs from other members of the family in its unique maxillary morphology.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 44-21); deep water, 120-189 m; medium fine sand, silty very fine sand.

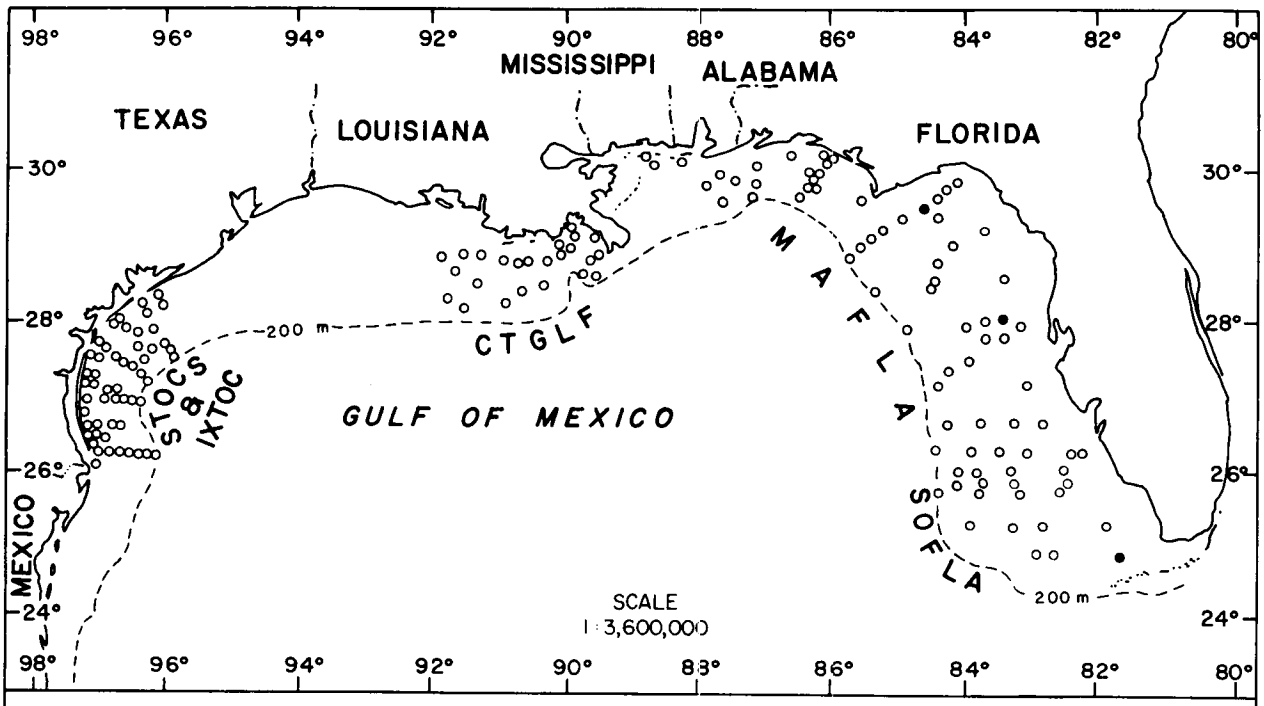

Figure 44-23. Distribution of dorvilleid Genus B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

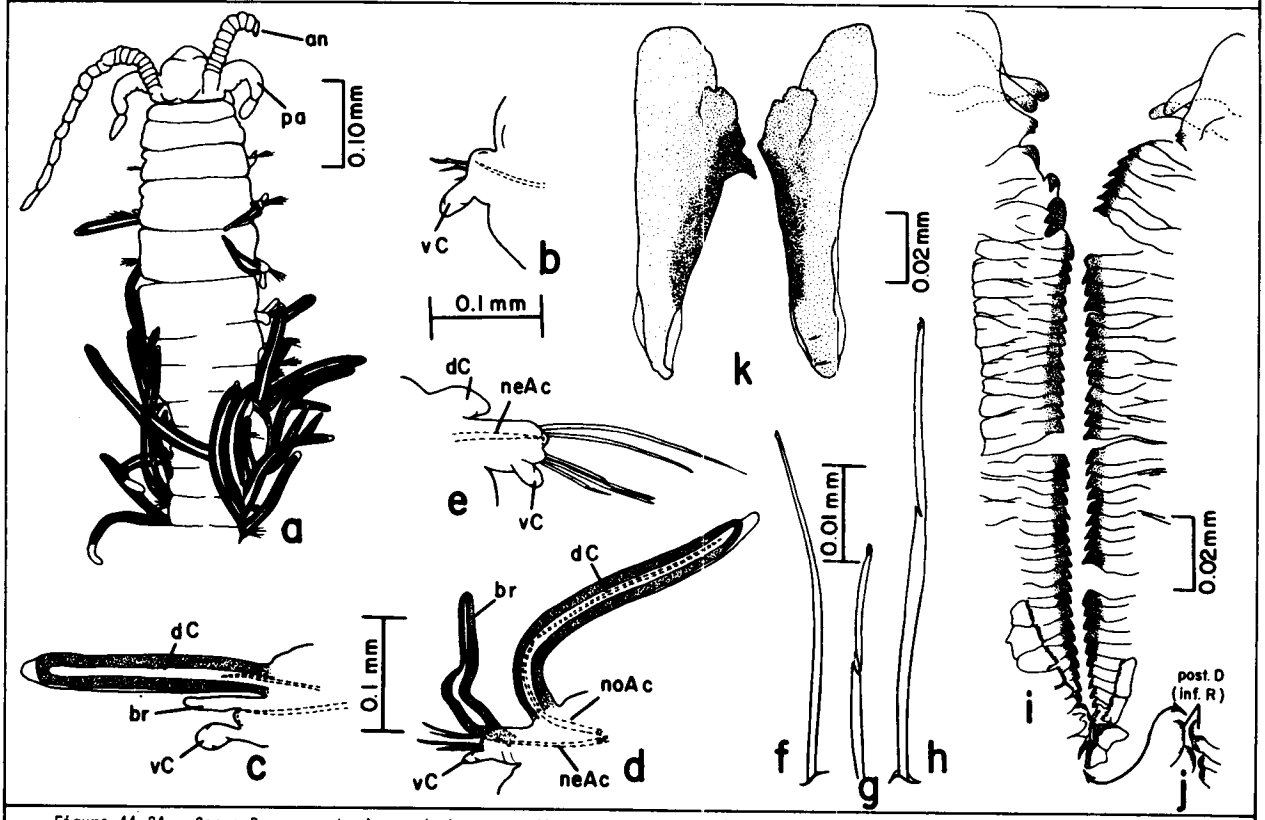

Figure 44-24. Genus B: a, anterior end; b, parapodium from setiger 1 (anterior view); c, parapodium from setiger 4 (anterior view); d, parapodium from mid-branchiate region (anterior view); e, posterior parapodium (posterior view); f, simple supra-acicular seta; g, subacicular compound falciger; h, subacicular pseudocompound falciger from far posterior region; i, entire maxillae (dorsal view); j, posteriormost denticles (inferior row); k, mandibles (dorsal view).

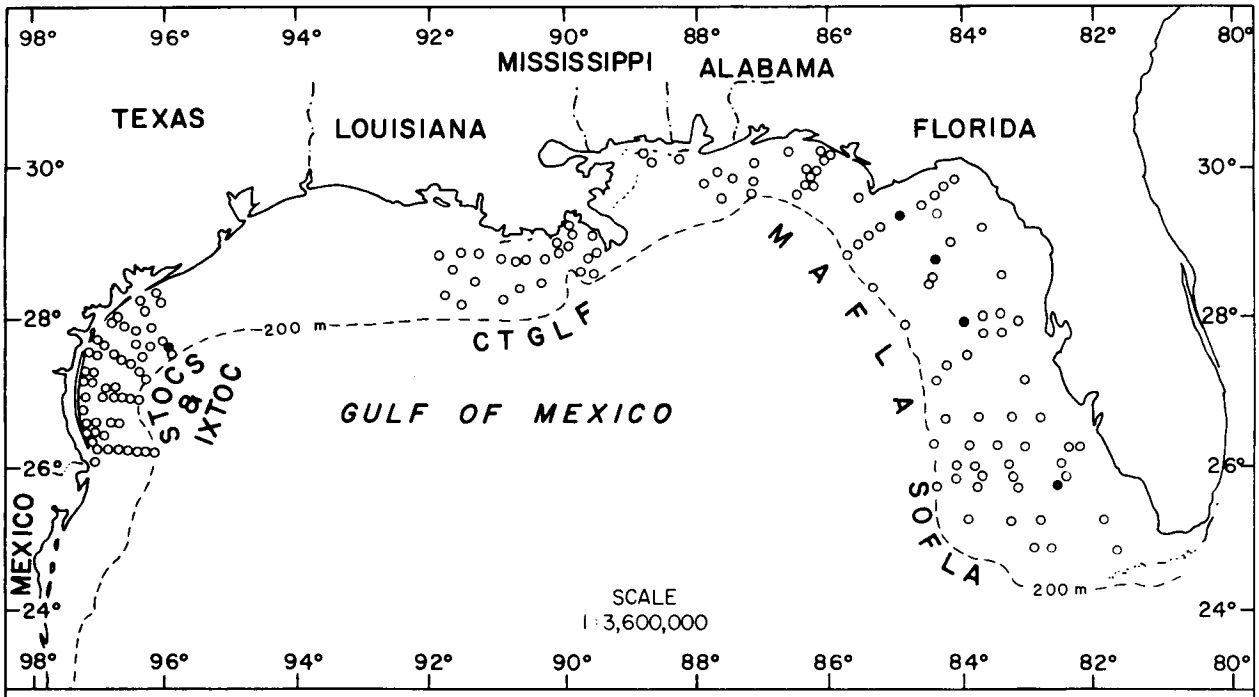

Figure 44-25. Distribution of dorvilleid Genus C on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

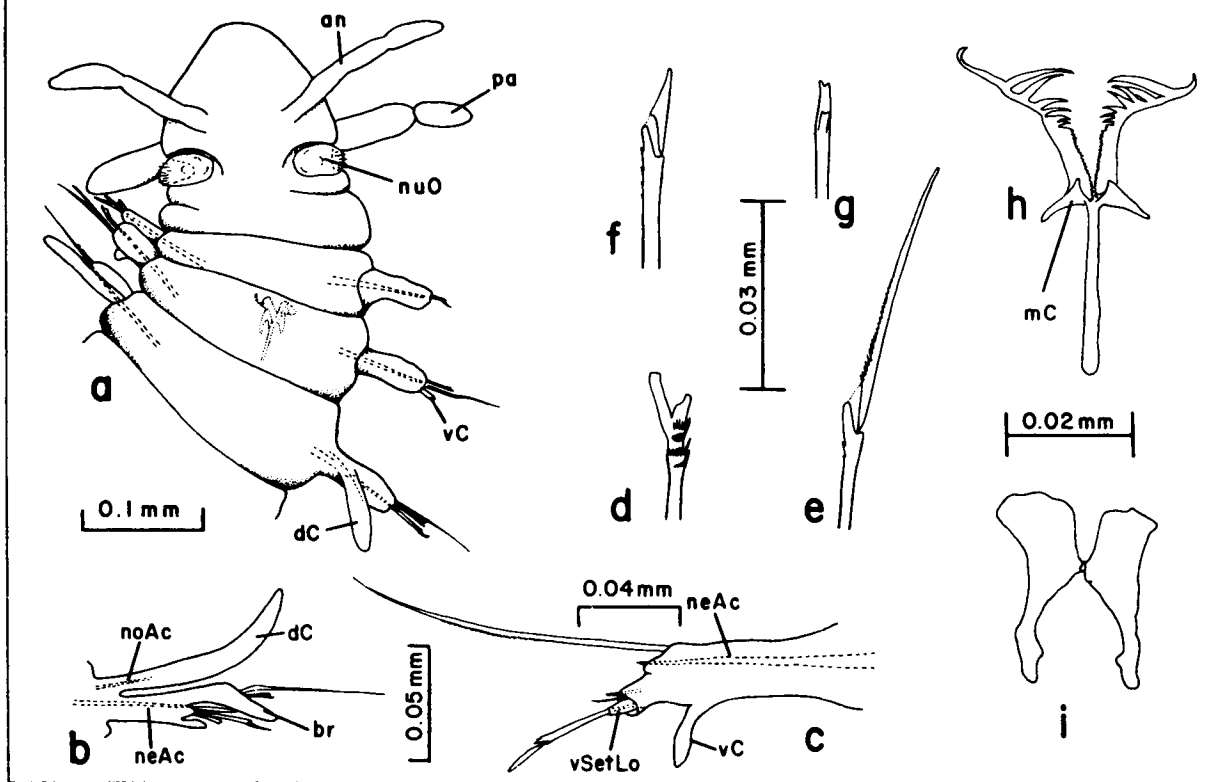

Figure 44-26. Genus C: a, anterior end; b, anterior parapodium (posterior view); c, posterior parapodium (posterior view); d, furcate seta; e, upper compound falciger; f, lower compound falciger; g, shaft of compound seta (edge-on view); h, entire maxillae (dorsal view); i, mandibles (dorsal view).

Genus B
Figures 44-23, 24a-k

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 25E-11/80 (1 spec., USNM 89577), 25D-7/81 (1 spec., USNM 89578); MAFLA 2208H-7/76 (1 spec.), 2208J-8/77 (1 spec., USNM 89576), 2422H-7/76 (1 spec.), 2422I-7/76 (1 spec.).
DESCRIPTION:
Length, 8.5+ mm; width, to 0.25 mm. Largest specimen incomplete with about 65 setigers. Prostomium (Figure 44-24a) conical, eyes absent. Antennae moniliform with up to 20 articles. Palps stout, with palpostyles, shorter than antennae. Setiger 1 without dorsal cirri; ventral cirri large, digitiform (Figure 44-24b). Dorsal cirri on setigers 2 to 18-20 long, digitiform, bearing long acicula and an obvious vascular loop (Figure 44-24c,d). Dorsal cirri posterior to setiger 20 as small mound-like lobes without acicula or obvious vascular loops (Figure 44-24e). Branchiae present from setigers 4 to 18-20, arising distally on dorsal side of neuropodia; beginning as small digitiform lobes without vascular loops (Figure 44-24c), becoming larger and obviously vascularized (Figure 44-24d). Neuropodia with one presetal lobe and one or two postsetal lobes depending on state of contraction. Supra-acicular neurosetae (Figure 44-24f) simple with small, bidentate tips and minute serrations. Subacicular compound falcigers (Figure 44-24g) with long to short bidentate blades, becoming pseudocompound on far posterior setigers (Figure 44-24h). Maxillae (Figure 44-24i) in four rows composed only of free denticles. Superior rows asymmetrical, left side with six dentate free denticles and one smooth denticle, right side with two dentate denticles and two smooth denticles. Inferior maxillary rows each composed of 30-40 beaked free denticles, each bearing one tooth; four anteriormost denticles digitiform, smooth to slightly dentate (broken?); 2-4 posteriormost denticles smooth (Figure 44-24j). Maxillary carriers and basal plates absent. Mandibles (Figure 44-24k) large, symmetrical, without teeth but with two notched inner processes.
REMARKS: Genus B differs from other dorvilleid genera in lacking maxillary carriers and basal plates, and in having dorsal cirri which are well-developed with acicula anteriorly, but reduced and without acicula posteriorly.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 44-23); 24-30 m; medium fine sand, clayey sandy silt, silt/clay.

Genus C
Figures 44-25, 26a-i

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211F-11/77 (1 spec.), 2316C-11/77 (1 spec., USNM 89581), 2423C-7/76 (1 spec.), 2960G-9/77 (1 spec., USNM 89579); STOCS 6/I-1 Sp/76 (1 spec., USNM 89580).
DESCRIPTION:
Length, 5.0+ mm; width, to 0.6 mm. Largest specimen incomplete with 87 setigers. Prostomium (Figure 44-26a) conical, rounded anteriorly, eyes absent. Antennae indistinctly articled. Palps smooth, biarticulate, similar in length to antennae. Single pair of large nuchal organs

present along posterior margin of prostomium. Dorsal cirri present on setigers 2-29; branchiae present on setigers 5-28 (Figure 44-26b). Posterior parapodia without dorsal cirri or branchiae (Figure 44-26c). Parapodia without distinct pre- or postsetal lobes, but with strongly eversible ventral setal lobe, especially in posterior body region (Figure 44-26c). Supra-acicular setae including simple serrate setae tapering to fine tips, and furcate setae having blunt tines with cusps below short tine (Figure 44-26d). Subacicular compound falcigers with long to short unidentate blades (Figure 44-26e,f); long extension of shaft-head bifid (Figure 44-26g). Maxillae (Figure 44-26h) in two rows, each bearing a single basally serrate plate with 6-7 long sharp teeth anteriorly. Anteriormost portion of maxillae sharply pointed, curved. Posteriorly, maxillae fused into long maxillary carriers. Mandibles (Figure 44-26i) aliform, weakly chitinized.

REMARKS: Genus C possesses maxillae similar to those of Ikosipodus Westheide, 1982a, a genus of small (less than 1 mm long), interstitial worms. In Ikosipodus, the maxillae are attached to two oval carrier plates instead of the smaller, narrow carriers of Genus C. Ikosipodus differs further in its habitus, size, and external morphology.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Texas (Figure 44-25); 19-100 m; coarse to fine sand, silty fine sand, silty clay.

Genus Meiodorvillea Jumars, 1974

TYPE SPECIES: Protodorvillea minuta Hartman, 1965.

REFERENCE:

Jumars, 1974:119.

DIAGNOSIS: Maxillae arranged in two rows; denticles free, fused, or both; anteriormost denticles usually specialized for grasping or rasping. Maxillary carriers present. Prostomium with or without palps; when present, palps either simple or biarticulate. Antennae small, clavate. Dorsal cirri small, knob-like, without acicula; or absent. Branchiae absent.

REMARKS: Meiodorvillea Jumars includes M. minuta, M. chilensis (Hartmann-Schröder, 1965), M. apalpata Jumars, 1974, and the species described herein. Of these, M. chilensis is questionable because its maxillae have never been examined. Meiodorvillea apalpata differs from others of the genus in apparently lacking free denticles, its maxillae being reduced to two dentate plates; however, Jumars' (1974:105) description is unclear on this point. The species described herein appear similar to M. minuta except that the maxillary rows are not fused posteriorly. At this time, this difference is not considered to be sufficient to erect a new genus.

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

1a. Palps present (Figure 44-28a); dorsal cirri absent; anterior furcate setae with broad tines (Figure 44-28c). . . . . .Meiodorvillea sp. A, p. 44-35

1b. Palps absent (Figure 44-30a); dorsal cirri present anteriorly (Figure 44-30b); anterior furcate setae with slender tines (Figure 44-30c) . . . . . .Meiodorvillea sp. B, p. 44-37

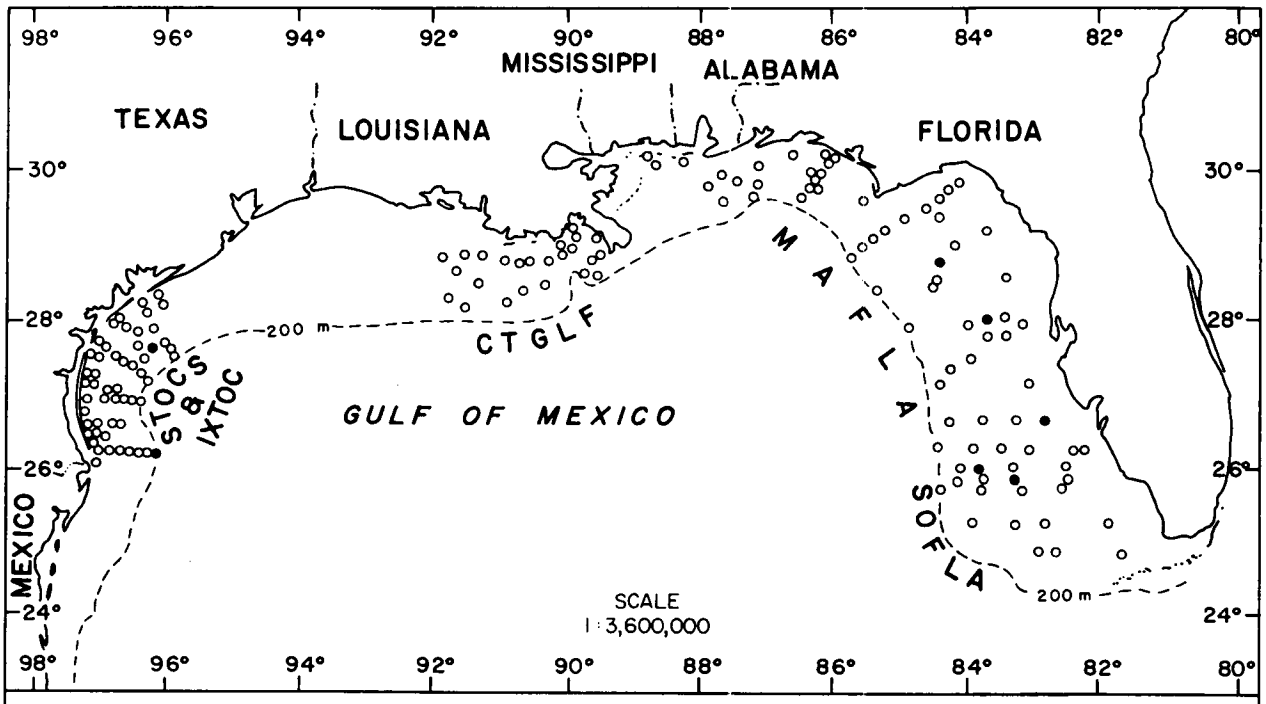

Figure 44-27. Distribution of Meiodorvillea sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

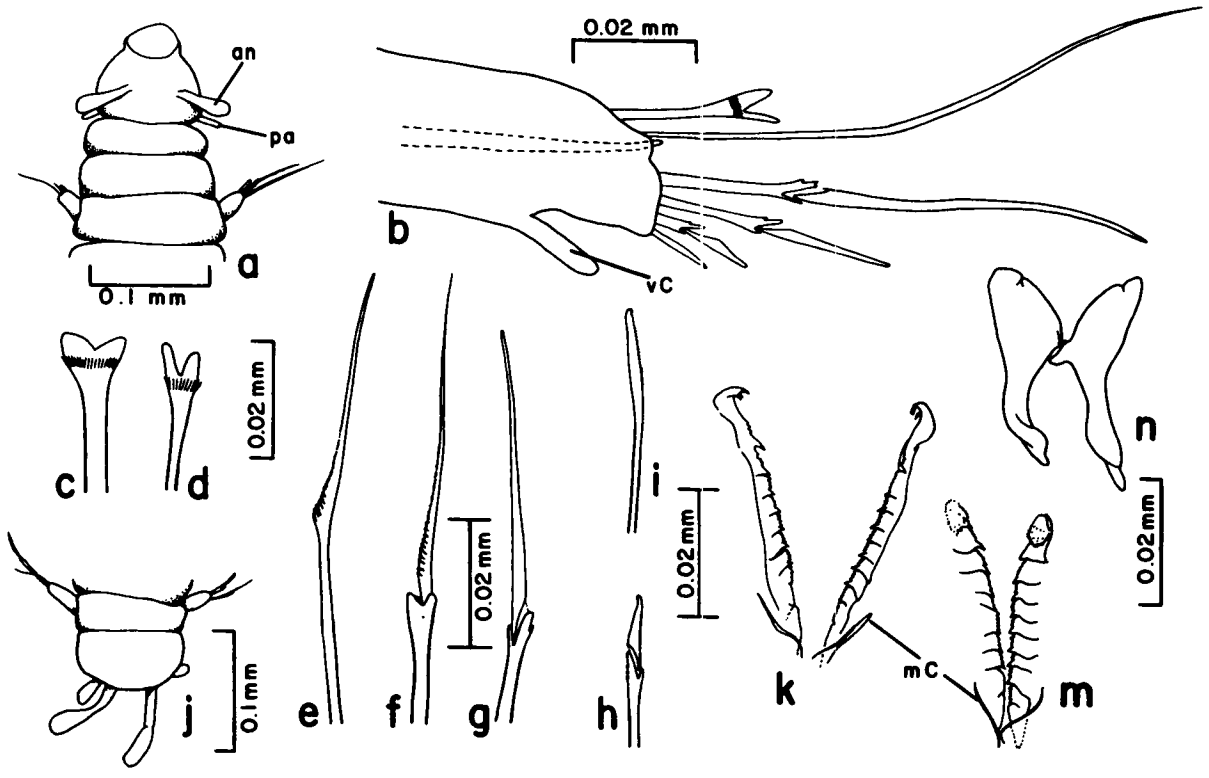

Figure 44-28. Meiodorvillea sp. A: a, anterior end; b, posterior setiger (posterior view); c, furcate seta from setiger 3; d, same, from setiger 15; e, geniculate seta; f, upper compound seta (edge-on view); g, same (lateral view); h, lower compound seta; i, inferior simple seta; j, posterior end (dorsal view); k, pincer-type maxillae (dorsal view); m, rasp-type maxillae (dorsal view); n, mandibles (dorsal view).

Meiodorvillea sp. A
Figures 44-27, 28a-n

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2B-11/80 (2 spec., USNM 89586-7), 12-11/80 (3 spec., USNM 89585, 89589), 16C-8/81 (4 spec., USNM 89555, 89588); MAFLA 2210B-6/76 (1 spec., USNM 89554), 2210H-6/76 (1 spec.), 2316C-7/76 (1 spec., USNM 89551), 2316F-7/76 (1 spec.); STOCS 7/IV-6 W/77 (3 spec., USNM 89552), HR1-5 11/76 (1 spec., USNM 89553).
DESCRIPTION:
Length, to 3.7 mm; width, to 0.25 mm. Largest specimen complete with 43 setigers. Prostomium (Figure 44-28a) small, rounded anteriorly; some specimens with a dorsal transverse collar or fold. Eyes absent. Antennae clavate. Palps small, clavate. Dorsal cirri absent. Parapodia without well-developed pre- and postsetal lobes (Figure 44-28b). Furcate setae of two forms: large, with shallow notch and expanded tines (Figure 44-28c), present on setiger 1 only (STOCS specimens only) or on setigers 1 to 8 or 9; and smaller, with deeper notch and more slender tines (Figure 44-28d), present on few to all parapodia from setiger 9 or 10. Furcate setae accompanied by 1-2 serrate simple setae. Beginning on setiger 2 (STOCS specimens only) or setigers 9-10, all parapodia lacking furcate setae have serrate geniculate setae instead (Figure 44-28e). Subacicular compound setae with long, serrate, tapering blades superiorly (Figure 44-28f), and graded smooth blades inferiorly (Figure 44-28g,h). Some middle and posterior setigers with inferior simple setae having slightly hooked unidentate tips and minute serrations along one margin (Figure 44-28i). Pygidium rounded, with one pair of long, clavate dorsal cirri and one pair of shorter ventral cirri (Figure 44-28j). Two rows of maxillae present in one of two forms. Both jaw-types with 10-12 denticles per maxillary row, each denticle bearing minute teeth. Maxillary rows not fused basally. Two posterior basal plates without teeth on left side, one plate without teeth on right side. Anteriormost denticles of one jaw-type pincer-like with 2-3 teeth (Figure 44-28k). Anteriormost denticles of other jaw-type rasp-like, small, rounded, with numerous minute teeth (Figure 44-28m). Maxillary carriers of both jaw-types slender, weakly chitinized, not fused. Mandibles (Figure 44-28n) weakly chitinized, notched anteriorly.
REMARKS: Meiodorvillea sp. A exhibits considerable variability, with different individuals possessing different mosaics of characters. The most common jaw-type is that with the rasp-like anterior denticles (Figure 44-28m) except in the material from southern Florida (SOFLA) where the pincer-type jaws were found (Figure 44-28k). Two specimens from SOFLA had pincer-jaws and did not have any geniculate setae; all posterior parapodia had furcate setae instead. One specimen from the same sample had the rasping type anterior denticles but also lacked geniculate setae. Other specimens from SOFLA, MAFLA, and STOCS had only rasp-like jaws, but had none to many posterior setigers with furcate setae. Those setigers without furcate setae had the geniculate setae instead. It is possible that Meiodorvillea sp. A has P-type (juvenile) maxillae and K-type (adult) maxillae as shown for Ophryotrocha lobifera Oug, 1978, for example. Howeyer, the change in jaw-types may not be correlated only with maturity for O. lobifera (Oug, 1978:301) or for Meiodorvillea sp. A. Indeed, from the specimens of Meiodorvillea sp. A available for examination, it is not possible to identify either

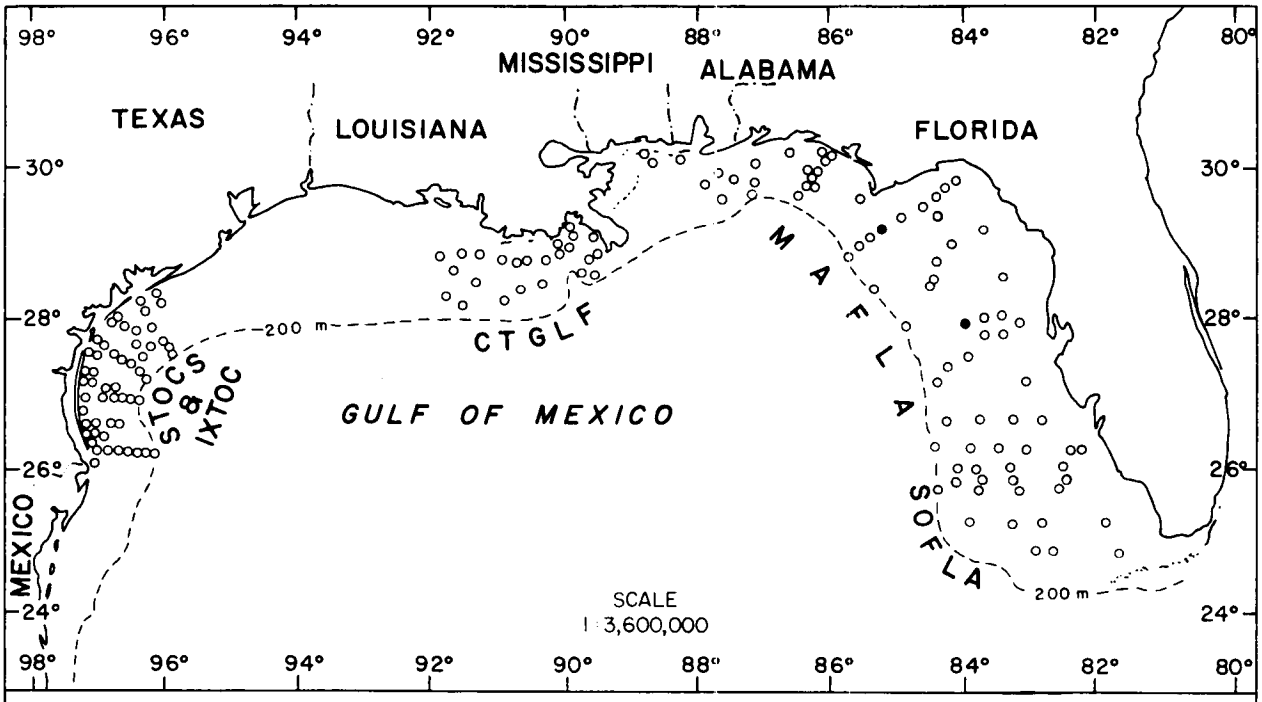

Figure 44-29. Distribution of Meiodorvillea sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

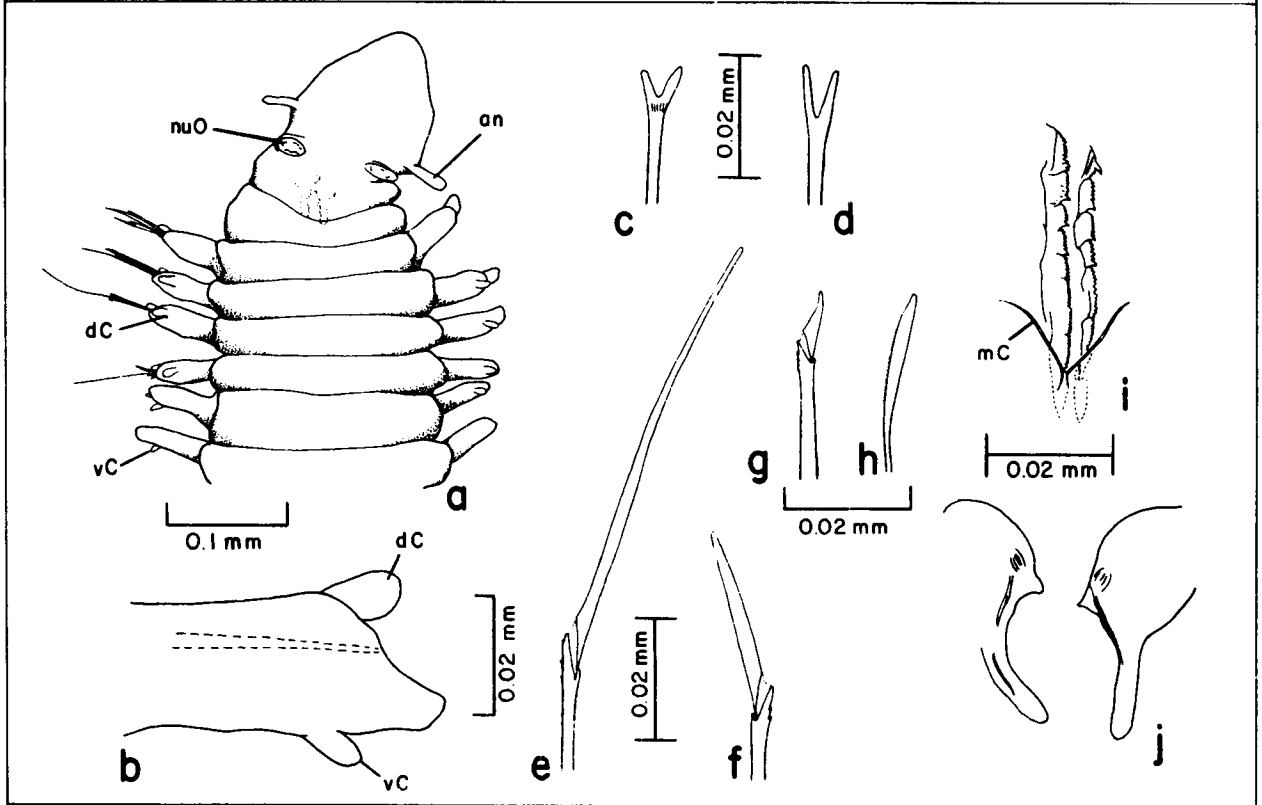

Figure 44-30. Meiodorvillea sp. B: a, anterior end; b, parapodium from setiger 2 (posterior view); c, furcate seta from setiger 3; d, same, from posterior setiger; e, upper compound seta; f, middle compound seta; g, lower compound seta; h, inferior simple seta; i, entire maxillae (dorsal view); j, mandibles (dorsal view).

jaw-type as being K- or P-type. Some specimens of Meiodorvillea sp. A contained large eggs and also possessed 2-6 long natatory setae on middle and posterior setigers. Meiodorvillea sp. A differs from other species of the genus in having two kinds of furcate setae, only 10-12 denticles per maxillary row, and the maxillary rows free, rather than fused, posteriorly.
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida and Texas (Figure 44-27); 24-130 m; medium to fine sand, silty fine to very fine sand, silty clay.

Meiodorvillea sp. B
Figures 44-29, 30a-j

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211D-8/77 (1 spec., USNM 89591), 2211K-2/78 (1 spec., USNM 89590), 2424I-7/76 (1 spec., USNM 89592).
DESCRIPTION:
Length, to 3.3 mm; width, to 0.40 mm. Largest specimen complete with 26 setigers. Prostomium (Figure 44-30a) broadly rounded anteriorly, eyes absent. Antennae small, digitiform, without articles. Palps absent. Large nuchal organs present along posterior margin of prostomium. Parapodia without well-developed pre- and postsetal lobes. Dorsal cirri small, mound-like, present on setigers 2 to 4 or 5 (Figure 44-30b). Furcate setae with shorter, more divergent tines anteriorly (Figure 44-30c); with longer, less divergent tines posteriorly (Figure 44-30d). Furcate setae present on all parapodia, accompanied by 1-2 simple serrate setae. Subacicular setae compound, with long to short blades (Figure 44-30e-g). Simple inferior neuroseta (Figure 44-30h) present on middle and posterior setigers. Maxillae (Figure 44-30i) with two rows of up to nine free denticles, each denticle having toothed margin. Anteriormost denticle of each row also with few irregularly placed minute teeth. Maxillary rows not fused posteriorly. Maxillary carriers smooth, slender, not fused. Mandibles (Figure 44-30j) weakly chitinized, especially at outer margins; not fused.
REMARKS: Meiodorvillea sp. B resembles Meiodorvillea sp. A (described herein) in having similar denticles in the maxillae, which are not fused posteriorly; and M. apalpata Jumars, 1974, in lacking palps. Meiodorvillea sp. B differs from all species of the genus in having dorsal cirri on setigers 2-4 or 5 instead of completely absent as in M. apalpata or present throughout most of the body as in M. minuta (Hartman, 1965).
GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 44-29); 27-43 m; coarse to medium sand.

CHAPTER 45

Katherine M. Gilbert

FAMILY STERNASPIDAE Carus, 1863

INTRODUCTION

Sternaspids are bizarre-looking worms with short, inflated bodies rarely over 30 segments (32 mm) long (Imajima and Hartman, 1964). Their appearance is variable as the anterior seven segments (the "introvert") may be extended, displaying two distinct body regions (Figure 45-2a), or withdrawn into the inflated posterior region giving a rounded appearance (Figure 45-2b). The prostomium is small and simple, without appendages. All setigers have single bundles or rows of setae without parapodial lobes. Anteriorly, the first few setigers bear smooth acicular setae arranged in lateral, semicircular rows. The midbody region appears achaetous but possesses small fascicles of fine setae. Posteriorly, a pair of characteristic chitinized shields are positioned ventrally, just anterior to the terminal anus. Fascicles of setae radiate from beneath the shield margins. Filiform branchiae surround the anus. A pair of distinctive genital lobes appear on the seventh segment.

Fauchald (1977a) reported the Sternaspidae as a monogeneric family represented by Sternaspis Otto, 1821. Currently, ten species are recognized. Only one, Sternaspis scutata, has been found in the Gulf of Mexico BLM-OCS collections.

PRINCIPAL DIAGNOSTIC CHARACTERS

Primarily, the general body appearance and the posteroventral chitinized shield are distinctive for the family. The setal arrangements about the bulbous ends are also quite characteristic. On the specific level, the morphology, arrangement and number of setae are important. Segment counts and the arrangement of papillae are also used to separate species.

BIOLOGICAL NOTES

Sternaspids are found in sand and mud habitats at depths of 3-140 m (Pettibone, 1954). They are motile, subsurface deposit-feeders, utilizing their anterior introvert region and accompanying acicular setae to burrow head first into the substratum to feed on organic matter. While inverted, the chitinized shield serves to cover the burrow entrance (Day, 1963). For respiration, the anal gills are extended into the water column.

When extracted from the substrate, the major portion of the body remains covered with sediment particles attached to the bases of the filiform papillae and covering, sometimes obscuring, the ventral shield.

Little has been reported on reproduction in this family. Child (1900) studied life history and development in Sternaspis.

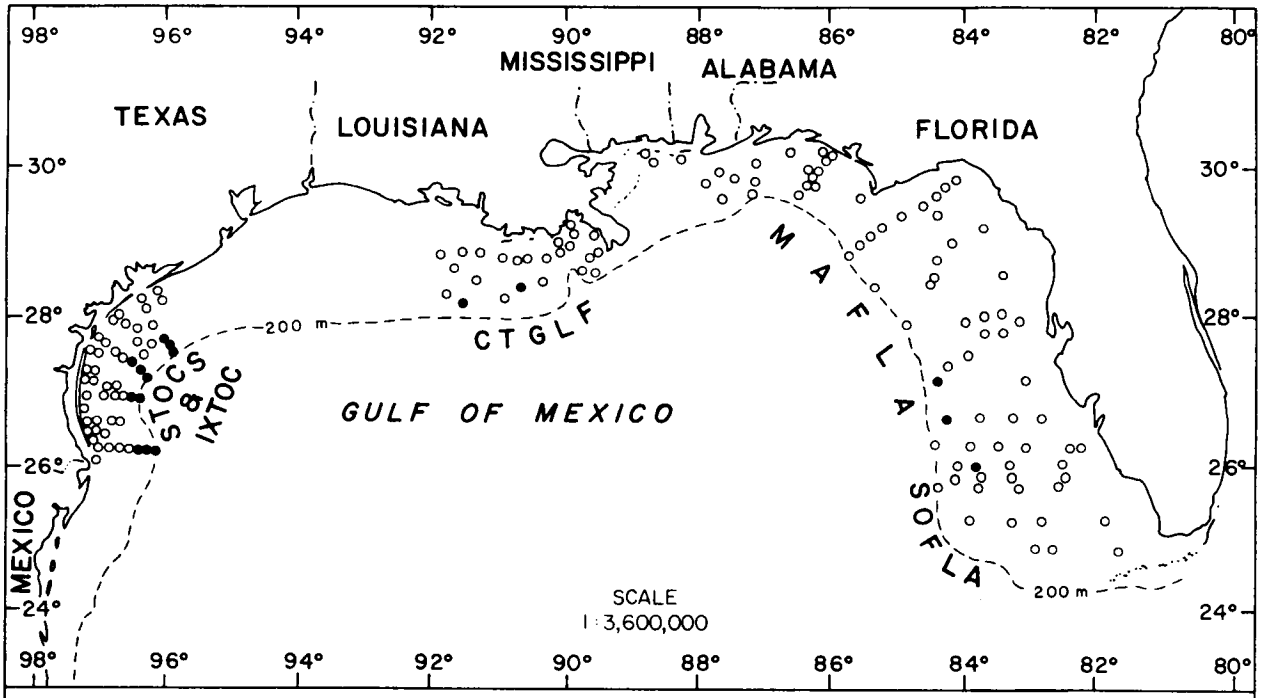

Figure 45-1. Distribution of Sternaspis scutata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

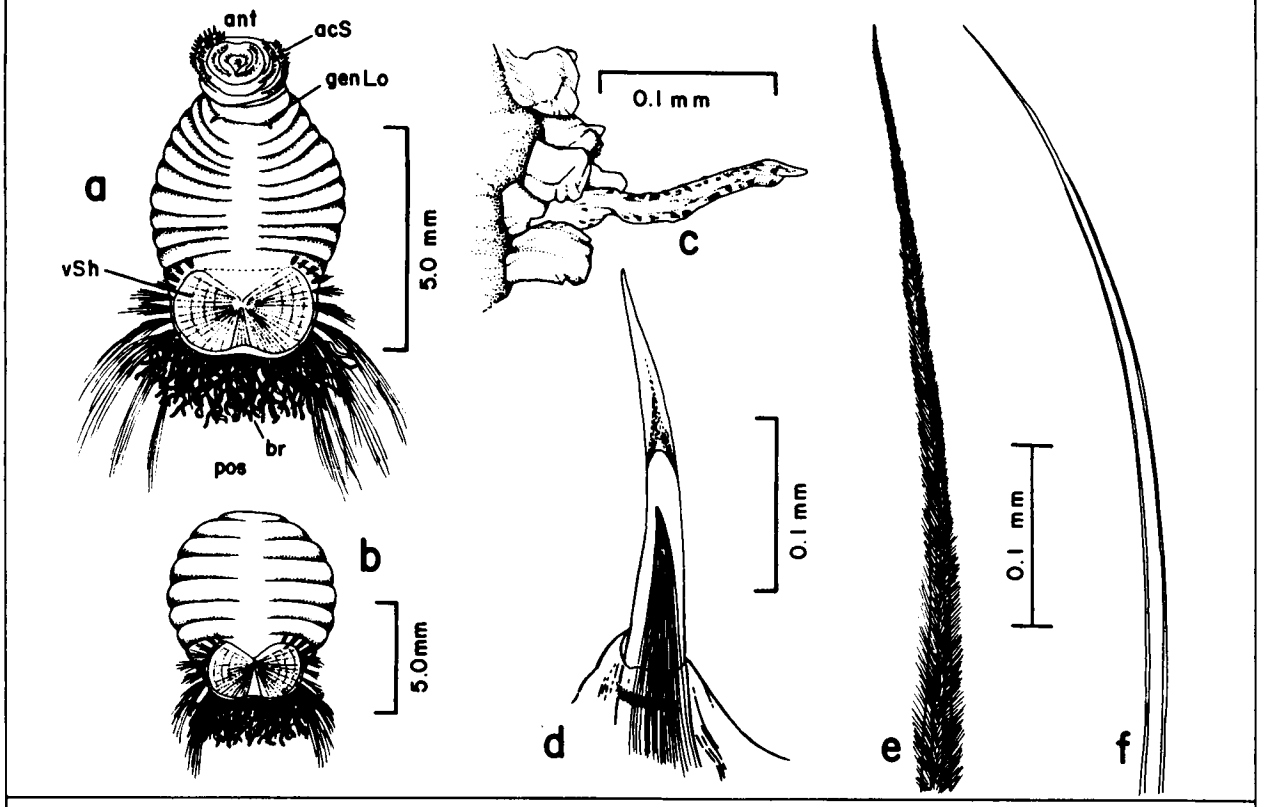

Figure 45-2. Sternaspis scutata: a, whole worm, ventral view, anterior end extended (from Fauchald 1977a, fig. 33d); b, same, anterior end retracted; c, filiform papilla surrounded by sediment granules; d, acicular seta; e, hirsute seta; f, smooth capillary seta.

Genus Sternaspis Otto, 1821

TYPE SPECIES: Echinorhynchus scutatus Renier, 1807.
REFERENCES:
Fauvel, 1927:216.
Day, 1967:648.
Fauchald, 1977a:114.
DIAGNOSIS: Body short, bulbous, often with midanterior constriction. Prostomium small, without appendages. Anterior region forming an introvert with some segments bearing acicular setae. Posterior segments having a ventral pair of chitinized plates with radiating fascicles of setae. Anus terminal, surrounded by filiform branchiae.

Sternaspis scutata (Renier, 1807)
Figures 45-1, 2a-f

Sternaspis scutata--Fauvel, 1927:216, fig. 76a-g.
Sternaspis scutata--Pettibone, 1954:309, fig. 35a,b.
Sternaspis scutata--Day, 1967:648, fig. 31.1.a-d.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12D-11/80(1 spec., USNM 89598), 31C-8/81 (1 spec., USNM 89599); STOCS 5/I-F/76 (2 spec., USNM 89600; 1 spec., USNM 89601), 6/II-2 3/76 (1 spec., USNM 89602), 6/II-3 3/76 (1 spec., USNM 89603), 6/II-6 3/76 (1 spec., USNM 89604), 3/IV-1 S/76 (3 spec., USNM 89605), 3/IV-3 S/76 (2 spec., USNM 89606), 3/IV-6 S/76 (1 spec., USNM 89607).
Supplementary Material:
Gulf of Mexico--Mobile Bay, Mobil Oil Sta. 051D-11/78, 6.2 m, clayey sand (1 spec.), 158B-7/78, 5.5 m, sandy clay (6 spec.), 052C-7/78, 6.5 m, sandy clay (5 spec.), 158A-7/78, 5.5 m, sandy clay (2 spec.), 052A-7/78 (5 spec.); Texas, Flower Gardens, NMFS-FG EFG VI-3-1 (2 spec.), PLB-VI-3-1 (2 spec.), PLB-VI-3-1 (1 spec.), PLB-VI-6-1 (1 spec.), PLB-VI-7-4 (1 spec.), WFG-VI-4-4 (1 spec.).
DESCRIPTION:
Length, to 11.0 mm (previously reported to 31 mm); width, to 4.0 mm (previously reported to 14 mm). Body short with 20-22 segments (Figure 45-2a,b), inflated anteriorly and posteriorly with constriction at segment 7. Integument anterior to constriction with blunt papillae; posterior integument with evenly distributed filiform papillae (Figure 45-2c). Segments 2-4 with lateral semicircular rows of 9-18 acicular setae having transparent tips (Figure 45-2d), setae decreasing in size ventrally. Genital lobes paired, situated ventrally on segment 7 (Figure 45-2a). Segments 8-16 with fine capillary setae, numbering 6-8 per fascicle, barely projecting from the body wall. Posterior ventral shield formed by two adjacent chitinized plates, each plate with 12-15 laterally radiating fascicles of hirsute setae (Figure 45-2e) and smooth capillary setae (Figure 45-2f). Branchiae long, filiform, often tightly coiled and densely matted, surrounding terminal anus. Ventral shield along with several branchiae sometimes rust-colored and obscured by sediment granules. Sediment granules also adhering to bases of papillae.
REMARKS: Smooth capillary setae and genital lobes were not observed on juveniles (specimens 3.0 mm or less in length). Most authors refer to

the lobes on the seventh segment as "genital papillae," although Hartman (1969) referred to them as "nephridial papillae." Moore (1923), Pettibone (1954) and Imajima and Hartman (1964) reported Sternaspis scutata with 16 pairs of ventral shield setal fascicles; Fauvel (1927) and Ushakov (1955) reported up to 17 fascicles. The number of shield fascicle pairs described for Sternaspis fossor Stimpson, 1854, is the same reported for S. scutata (Moore, 1923; Imajima and Hartman, 1964; Fauchald, 1972b). According to Fauchald (1972b), the two species differ in that S. fossor has 28 segments and the papillae of the posterior segments occur in rows. Hartman (1969) also described S. fossor as having 28 segments but included a statement on the possibility of synonymy between the two species.

PREVIOUSLY REPORTED HABITAT: 3-140 m, sand and mud.

GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records along southern Florida, Louisiana, and southern Texas shelf (Figure 45-1); 45-153 m; primarily in silty clay, also in clayey sand, fine sand, silty very fine sand, and silt.

DISTRIBUTION: Cosmopolitan from Arctic to Antarctic.

CHAPTER 46

Michael R. Milligan

FAMILY OWENIIDAE Rioja, 1917

INTRODUCTION

Oweniids are characteristically long, thread-like worms often referred to as "sand worms" because of the sand tubes in which they live. The body is divided into a head or buccal area composed of the prostomium and achaetous peristomium, a thorax formed by the first 1-3 setigers lacking uncini, and an abdomen with about 20-30 setigers having uncini. The prostomium may be entire or may terminate in a multi-lobed branchial crown or pair of branchial palps. Anterior and middle abdominal setigers are often long, whereas those near the posterior end sometimes become increasingly shorter. Notosetae are all spinous capillaries that usually emerge directly from the body wall but occasionally are inserted on short notopodial lobes. Neurosetae generally begin on setiger 3 or 4 as minute, long-shafted, bidentate uncini arranged in dense ventrolateral pads. The anus is terminal and often is surrounded by a variable number of lobes.

Five genera (Owenia, Myriowenia, Myrioglobula, Myriochele, and Galathowenia) and 27 species were recognized for the family by Fauchald (1977a). Blake and Dean (1973), however, synonymized the monospecific genus Galathowenia with Owenia. Three genera, including four species, are represented in the BLM-OCS collections. Of these, three species are potentially new to science.

PRINCIPAL DIAGNOSTIC CHARACTERS

Genera and species within the family are generally distinguished on the basis of head structures, number of thoracic setigers, shape and dentition of the uncini, and shape and number of pygidial lobes.

Specimens of oweniids commonly remain intact within their sand-encrusted tube and must be carefully removed for proper examination and identification. This is sometimes difficult, due to the tough nature of the lining of the tube, and is best accomplished under a dissection microscope by gently teasing the tube away from the worm with a pair of fine forceps. Once removed, most oweniids from the Gulf of Mexico are small enough to mount whole on microscope slides. Observations of the uncini are best made under oil immersion at high magnification to discern the shape and orientation of the teeth. In cases where specimens are too large to mount whole, a ventral pad of neurosetae may be dissected and mounted separately to observe the uncini.

The Head.

Structures of taxonomic value associated with the head region include the presence of a tentacular crown or palps, ventrolateral eyespots, and a thin membranous collar separating the prostomium from the achaetous peristomium. The prostomium of Myriochele is a smooth, collar-shaped lobe (Figures 46-6b,c; 8b,d), incised midventrally, with or without eyes and pigmentation. Myriowenia possess a pair of long,

grooved palps arising dorsally from a terminally bilobed prostomium (Figure 46-4b,c). The prostomium of Owenia is anteriorly produced into a multilobed tentacular crown (Figure 46-2b), with the degree of branching size-dependent. Small individuals may have only a few lateral, nonbranching stalks, whereas larger specimens have multibranched stalks, each terminating in numerous digitate lobes.

The presence of a thin, membranous collar between the prostomium and the achaetous peristomium (Figures 46-2b, 4b), has frequently been used as a specific or subspecific character in Owenia and Myriowenia (see Hartman, 1955). However, this author feels that studies of many specimens and more adequate species descriptions are needed before the collar can definitively be shown as a viable diagnostic character.

Thoracic Setigers.

The number of thoracic setigers is often used to separate genera and some species of oweniids. Individuals of Myrioglobula, a monospecific genus, have only one thoracic setiger; some species of Myriochele have two, whereas most other oweniids have three. The respective length of each thoracic setiger and placement of the notosetal fascicles is fairly constant within a species, and in some cases may be used as a secondary specific character.

Neurosetal Uncini.

Uncini in oweniids are long-shafted, uni- or bidentate hooks densely arranged in ventrolateral pads beginning on setiger 2, 3, or 4. The apical teeth are generally perpendicular to the shaft and may be lateral to one another with one tooth slightly offset (Figures 46-2d; 6e,f; 8f), or one tooth may surmount the other (Figure 46-4e,f). Thomassin and Picard (1972) did extensive work on the microstructure of Owenia and Myriochele uncini using scanning electron microscopy (SEM). They demonstrated that small differences in the arrangement of the apical teeth existed between Mediterranean and other populations. Little or no intraspecific variation in neurosetal shape could be observed in Gulf of Mexico BLM-OCS material.

Pygidium.

Most species have a simple pygidium that is either entire or consists of two low, rounded, lateral lobes (Figure 46-2e). Other species possess elongate anal cirri as in Myriowenia gosnoldi Hartman, 1965, or multiple (6-9) digitiform lobes which surround the anus as in Myriochele sp. A (Figure 46-8g). Because of the tubicolous and fragile nature of these worms, the pygidium is often lost.

BIOLOGICAL NOTES

All known oweniids are tubicolous, living within tubes that consist of imbricating sand particles, shell fragments or tests of small marine organisms. Within a given geographical area, each species is selective with respect to the particle size and materials used in tube construction, depending on the major constituents of the surrounding substratum. Hartman and Fauchald (1971) related tube construction to depth, noting that the composition of some tubes changed from sand grains in shallow areas to orbicular foraminiferan tests in abyssal areas. Oweniids have occasionally been found inhabiting abandoned gastropod shells (Hartman,

1951a). The majority of species live from the intertidal zone to about 200 m (Day, 1973; Fauchald, 1977a). Some species, however, have been found at abyssal depths (Fauchald, 1972a).

Feeding mechanisms have not been investigated for the majority of species. The most comprehensive work available concerns Owenia fusiformis because of its ubiquitous occurrence and unique prostomial appendages. The tentacular crown of O. fusiformis is well-vascularized and probably plays a role in respiration as well as feeding (Dales, 1957a; Hartmann-Schröder, 1971; Fauchald and Jumars, 1979; Gardiner, pers. comm.). The tentacles may be used for suspension-feeding by creating a downward ciliary current towards the mouth, or they may selectively sort through sediment particles taken directly from the substratum. Fauchald and Jumars (1979) suggested that individuals of Myriowenia use their prostomial palps to select food particles from the surrounding sediment. Members of Myriochele, lacking prostomial appendages, may selectively deposit-feed, using the lips formed by the midventral incision to pick up sediment particles (Dales, 1957a; Fauchald and Jumars, 1979).

Sexes are separate in oweniids, and fertilization occurs externally (Pettibone, 1982:33). Male Owenia fusiformis have been observed waving their tails from side to side in order to disperse gametes during spawning. This dispersive behavior was not observed in spawning females (Watson, 1901; Schroeder and Hermans, 1975:107). The larvae are a rather peculiar type of trochophore termed "mitraria." The mitraria larva is pelagic but its differentiation into an adult is accomplished gradually within the trochophore. The trochophore is then demolished during a rather sudden metamorphosis (Dales, 1963:171), following which the post-larva settles to the bottom. Wilson (1932) provided an excellent account of the development of the mitraria larva of Owenia fusiformis. Oweniid larvae can remain in the plankton for up to four weeks (Pettibone, 1982:33).

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

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

1a. Prostomium with multilobed branchial membrane (Figure 46-2b) . . . . . .Owenia, p. 46-5

1b. Prostomium without multilobed branchial membrane, with only a midventral incision (Figure 46-6b), or a pair of long grooved palps (Figure 46-4a-c). 2

2a. Prostomium with a pair of long grooved palps (often missing); uncini with distal tooth surmounting main fang (Figure 46-4e,f). . . . . .Myriowenia, p. 46-7

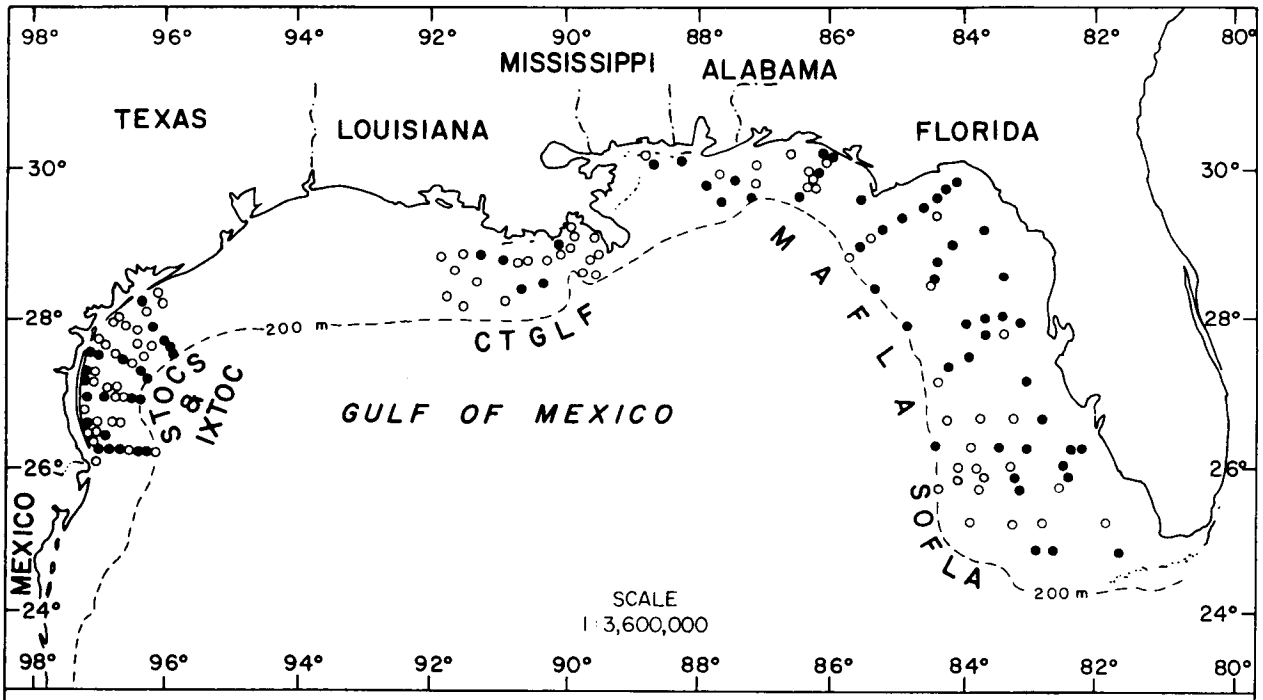

Figure 46-1. Distribution of Owenia sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

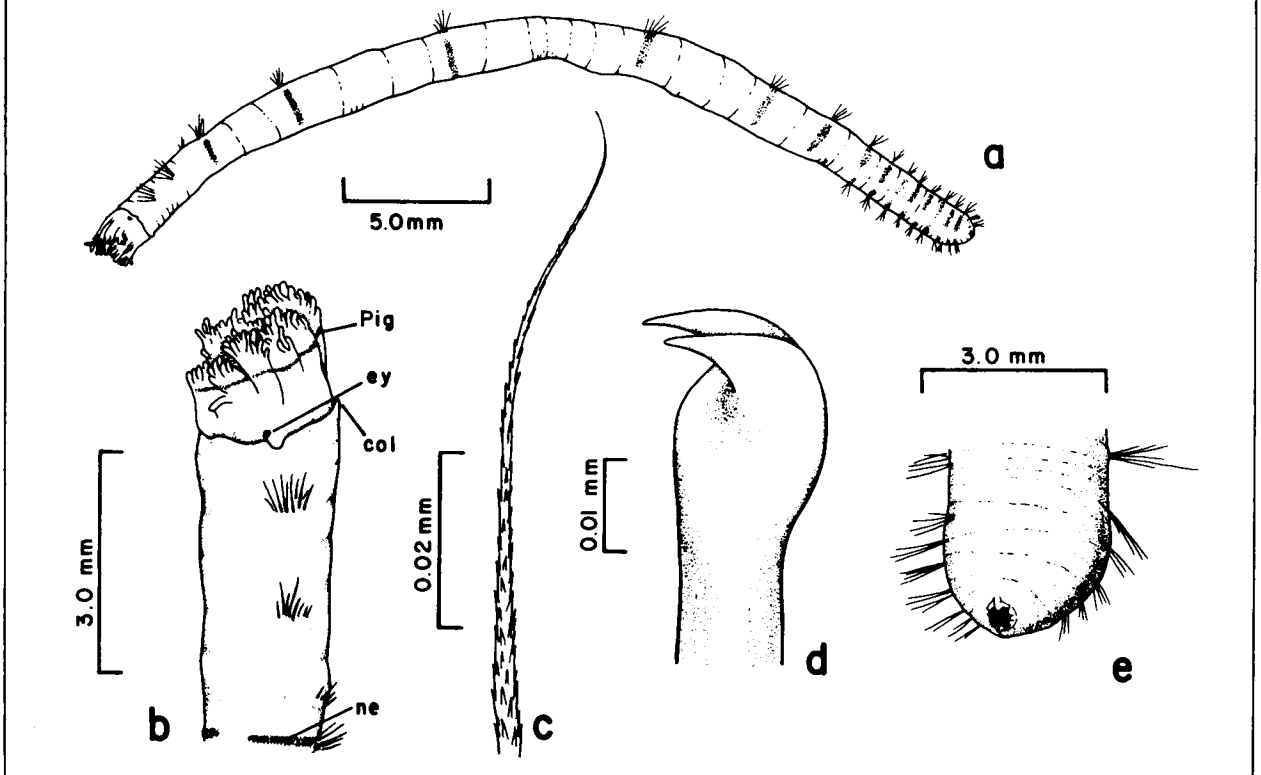

Figure 46-2. Owenia sp. A: a, whole worm, lateral view; b, anterior end, lateral view; c, notoseta; d, uncinus, lateral view; e, posterior end, dorsal view.

2b. Prostomium collar-like, without palps, with midventral incision; uncini with teeth lateral to each other (Figures 46-6f, 8f) . . . . . .Myriochele, p. 46-8

Genus Owenia Delle Chiaje, 1841

TYPE SPECIES: Owenia fusiformis Delle Chiaje, 1841.
REFERENCES:
Fauvel, 1927:202.
Ushakov, 1955:346.
Day, 1967:649.
Fauchald, 1977a:114.
DIAGNOSIS: Prostomium formed by anteriorly directed, multilobed branchial membrane. Mouth terminal. Eyes usually present. Achaetous buccal segment fused to prostomium. Thorax formed by setigers 1 and 2 (Wilson, 1932:305; Gardiner, pers. comm.). Notosetae all spinous capillaries. Uncini present from setiger 4, as long-shafted falcate hooks. Anus terminal, often surrounded by variable number of lobes.
REMARKS: Owenia is separated from other genera by the multilobed branchial membrane. Juveniles generally exhibit only gross lobation, whereas adults have more delicately defined lobes.

Owenia sp. A
Figures 46-1, 2a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 14B-8/81 (3 spec., USNM 89651); MAFLA 2207B-6/76 (5 spec., USNM 89654), 2207C-6/76 (3 spec.), 2207G-6/76 (8 spec.), 2207H-6/76 (12 spec., USNM 89652), 2207J-6/76 (8 spec., USNM 89653), 2207C-8/77 (1 spec.), 2209I-8/77 (1 spec.), 2209K-8/77 (2 spec.), 2316I-8/76 (4 spec.), 2317G-7/76 (6 spec.), 2422C-6/76 (1 spec.), 2422J-6/76 (2 spec.), 2423E-7/76 (1 spec.), 2423H-7/76 (1 spec.), 2423J-7/76 (1 spec.), 2424J-7/76 (1 spec.), 2528D-9/77 (1 spec.), 2640C-11/77 (1 spec.); STOCS 4/I-Sp/76 (13 spec., USNM 89656), 4/III-Sp/76 (10+ spec., USNM 89655), 4/IV-W/76 (3 spec., USNM 89657).
DESCRIPTION:
Length, to 35 mm; width, to 2 mm. Body relatively long, cylindrical (Figure 46-2a); largest specimen complete with 23 segments. Tube constructed of sand and shell fragments loosely cemented to a transparent sheath. Tentacular crown formed by three main stalks variously divided into multiple lobes, terminating in numerous digitate processes (Figure 46-2b); often with median brown pigment band across lobes. One pair of small eyes usually present ventrolaterally at base of tentacular crown. Thin membranous collar separating crown from first thoracic segment. Notosetae all spinous capillaries (Figure 46-2c), arising ventrolaterally on first two setigers, dorsally on following setigers. Uncini as numerous, long-shafted, bidentate hooks with teeth nearly lateral to each other (Figure 46-2d), arranged in compact pads. First three setigers relatively short, wider than long. Next five setigers up to six times longer than wide (Figure 46-2a); posterior setigers again becoming much shorter. Anus terminal; bordered by two minute lateral lobes (Figure 46-2e).

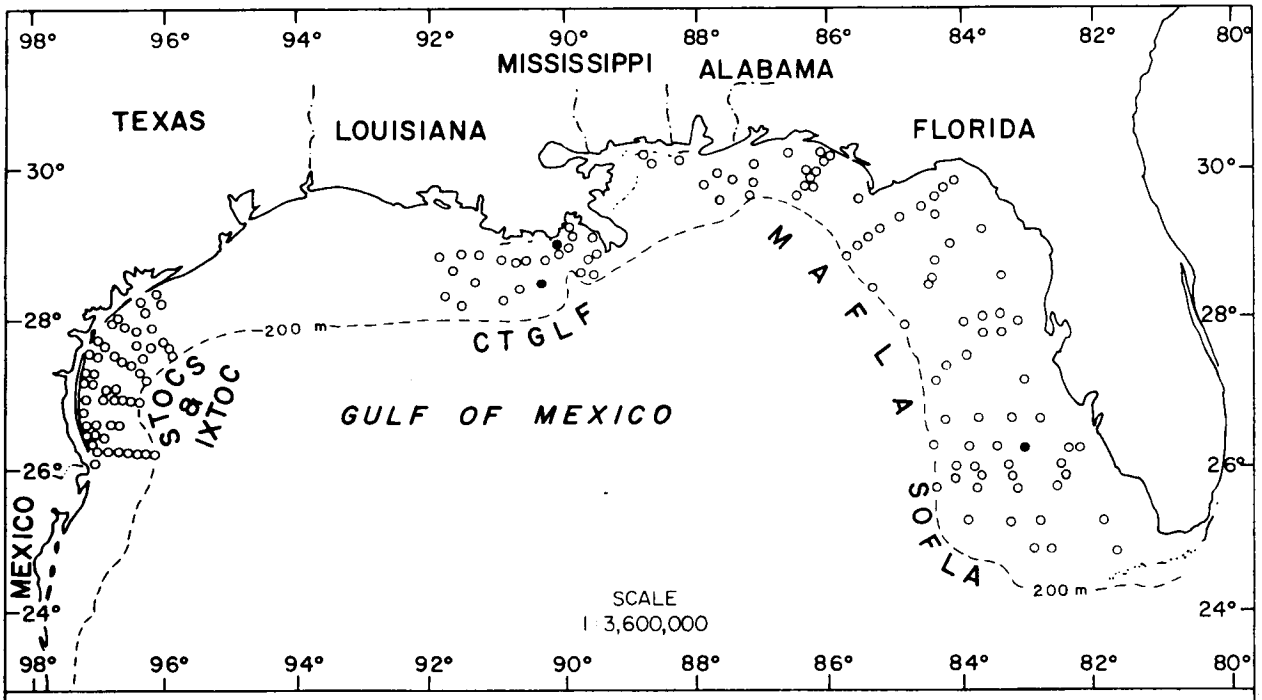

Figure 46-3. Distribution of Myriowenia sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

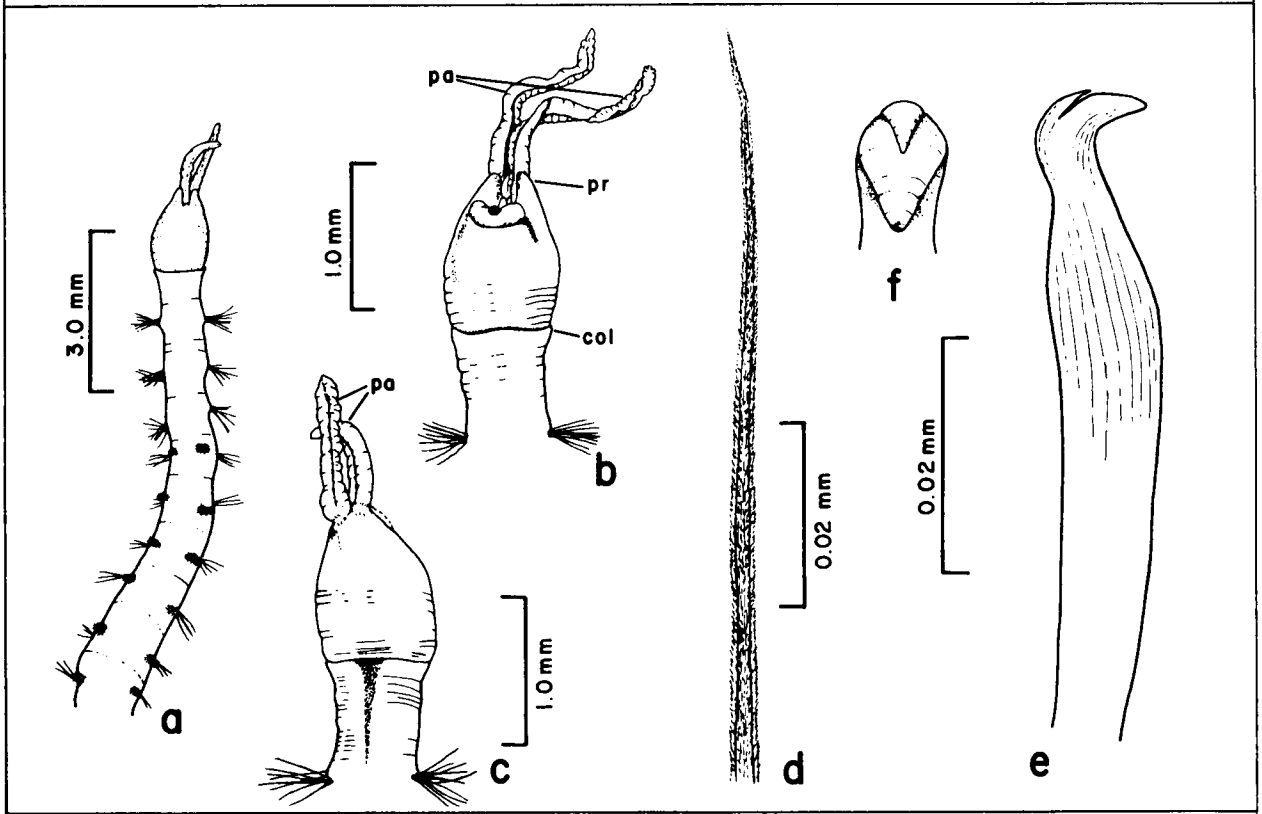

Figure 46-4. Myriowenia sp. A: a, anterior end, ventral view; b, prostomium, ventral view; c, same, dorsal view; d, notoseta; e, uncinus, lateral view; f, same, frontal view.

REMARKS: Owenia sp. A is most similr to O. aedificator (Andrews, 1891) in possessing a collar on the anterior margin of setiger 1. Hartman (1945:42) considered O. aedificator to be a junior synonym of O. fusiformis Delle Chiaje, 1841; however, the latter is described as lacking the membranous collar. Indeed, Hartman (1955:46) erected Owenia fusiformis collaris, stating that it differed from the stem species in possessing a collar. Hartman (1969:493) then raised O. f. collaris to specific rank, again clearly stating that O. fusiformis lacks a collar. This statement would seem to negate her synonymy of O. aedificator with O. fusiformis; however, she still considered the two species synonymous in her catalog of polychaetous annelids (Hartman, 1959b:468). It is likely that Owenia sp. A herein is the same as O. aedificator. The Gulf of Mexico BLM-OCS specimens possess a well-defined collar dorsally, but ventrally the collar may be less well-developed. When the collar of Owenia sp. A is well-defined ventrally it is not notched ventrolaterally as in O. collaris. It is clear, then, that many problems exist with respect to the identity of species of Owenia and can only be resolved by reexamination of type material or comparisons of material from type localities.
GULF OF MEXICO BLM-OCS OCCURRENCE: Common throughout northern Gulf (Figure 46-1); 45-189 m; coarse to very fine sand, silty very fine sand, clayey silt, clayey sandy silt.

Genus Myriowenia Hartman, 1960

TYPE SPECIES: Myriowenia californiensis Hartman, 1960.
REFERENCES:
Hartman, 1960:151; 1965:209; 1969:491.
Fauchald, 1977a:114.
DIAGNOSIS: Prostomium bilobed anteriorly, with one pair of palps. Mouth anteroventral. Thorax consisting of three setigers with spinous capillary notosetae only. Uncini from setiger 4, as uni- or bidentate falcate hooks.

Myriowenia sp. A
Figures 46-3, 4a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
CTGLF 02-5/78 (2 spec., USNM 89658).
Supplementary Material:
Gulf of Mexico--Mobile Bay, 30°15'13"N, 88°03'08"W, Mobil Oil Sta. 051E-11/78, 6.2 m, clayey sand (1 spec.), 051D-4/79 (1 spec.), 051F-11/78 (1 spec.), 051D-7/79 (1 spec.), 058B-8/78, 6 m, coarse sand (1 spec.); Mississippi Sound, COE Sta. 582-2-10/80, 30°12.68'N, 88°11.24'W, 11.3 m, clayey silt (1 spec.), 582-4-10/80 (1 spec.).
DESCRIPTION:
Length, 29+ mm; width, to 1.0 mm. Body long, slender, cylindrical (Figure 46-4a), inhabiting unconsolidated tube; largest specimen incomplete with 32 segments. Prostomium bilobed anteriorly (Figure 46-4b), each lobe with long palp inserted dorsally (Figure 46-4c). Inside margin of palps flattened into a thin membrane. Buccal region may be slightly inflated (Figure 46-4a-c) or cylindrical. Segment 2 longer

than wide, with anterior margin developed into a short collar (Figure 46-4b). First three setigers with up to 35 notosetae inserted on small notopodial lobes. Notosetae all spinous capillaries (Figure 46-4d). Neurosetae arranged in densely packed pads composed of numerous, bidentate, long-shafted uncini (Figure 46-4e) having main fang surmounted by smaller tooth (Figure 46-4f). Neuropodia distinctly separated from notopodia. Setigers short, mostly of equal length, slightly more crowded posteriorly.
REMARKS: Myriowenia sp. A is similar to M. gosnoldi Hartman, 1965, in possessing a collar on the anterior margin of segment 2, but the former differs in having shorter, more numerous segments. Myriowenia sp. A is also similar to M. califoniensis Hartman, 1960, from which it differs in having a collar.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two records off Louisiana and one off southern Florida (Figure 46-3); shallow water, 12-33 m; fine sand, sandy clayey silt.

Genus Myriochele Malmgren, 1867

TYPE SPECIES: Myriochele heeri Malmgren, 1867.
REFERENCES:
Malmgren, 1867b:211.
Fauvel, 1927:204.
Ushakov, 1955:348.
Fauchald, 1977a:115.
DIAGNOSIS: Prostomium collar-like with midventral incision, without terminal appendages. Mouth ventral. Eyes present or absent. Thorax consisting of two or three segments with notosetae only. Notosetae all spinous capillaries. Neurosetae present from setiger 3 or 4 as long-shafted, uni- or bidentate uncini. Pygidium variable.

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

1a. Eyes present; anus bordered by two rounded lobes (Figure 46-6g). . . . . .Myriochele oculata, p. 46-8
1b. Eyes absent; anus bordered by 6-7 digitate lobes (Figure 46-8g) . . . . . Myriochele sp. A, p. 46-11

Myriochele oculata Zaks, 1923
Figures 46-5, 6a-g

Myriochele oculata Zaks, 1923:171, figs. 1-3.
Myriochele oculata--Blake and Dean, 1973:35, fig. 1a-e.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 14A-8/81 (3 spec., USNM 89659), 14D-8/81 (4 spec., USNM 89660); MAFLA 2207H-6/76 (1 spec.), 2207J-6/76 (2 spec., USNM 89661), 2209C-6/76 (1 spec.), 2420E-6/75 (1 spec.), 2422D-11/77 (3 spec., USNM 89663), 2423B-7/76 (1 spec.), 2423D-7/76 (2 spec.), 2423H-7/76 (1 spec.), 2423J-7/76 (3 spec., USNM 89662), 2423J-8/77 (1 spec.), 2424I-7/76 (1 spec.), 2853F-8/77 (1 spec.).

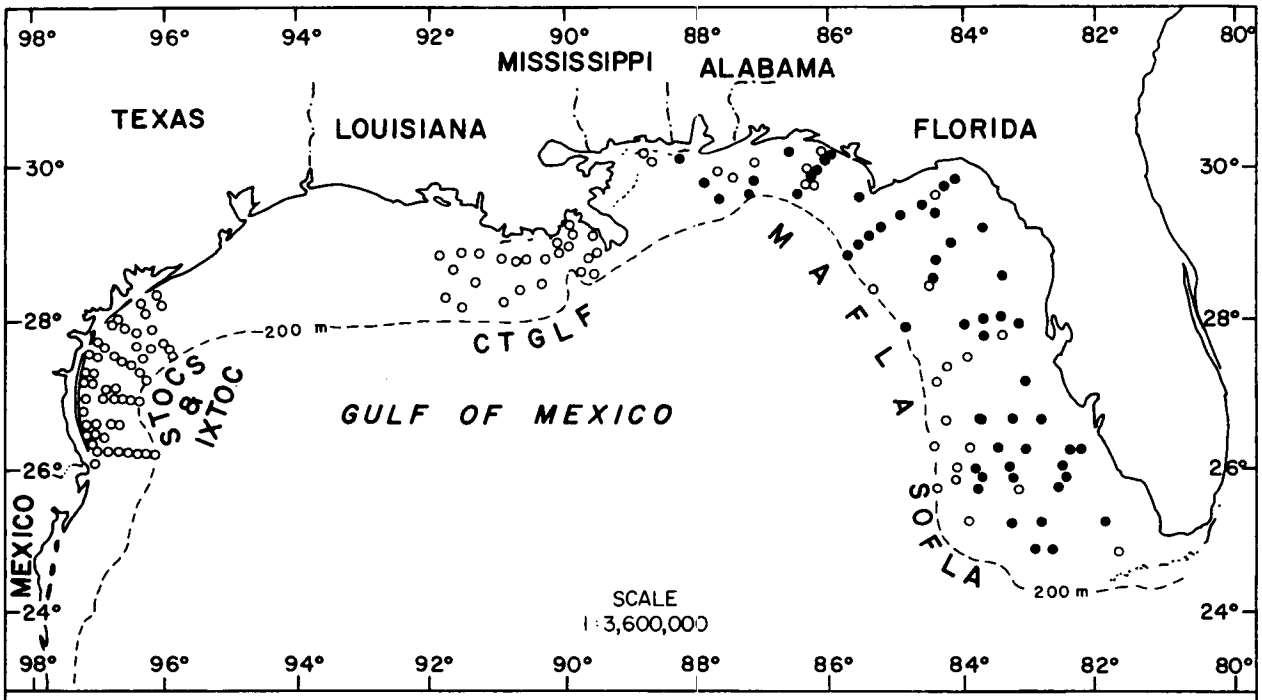

Figure 46-5. Distribution of Myriochele oculata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring program.

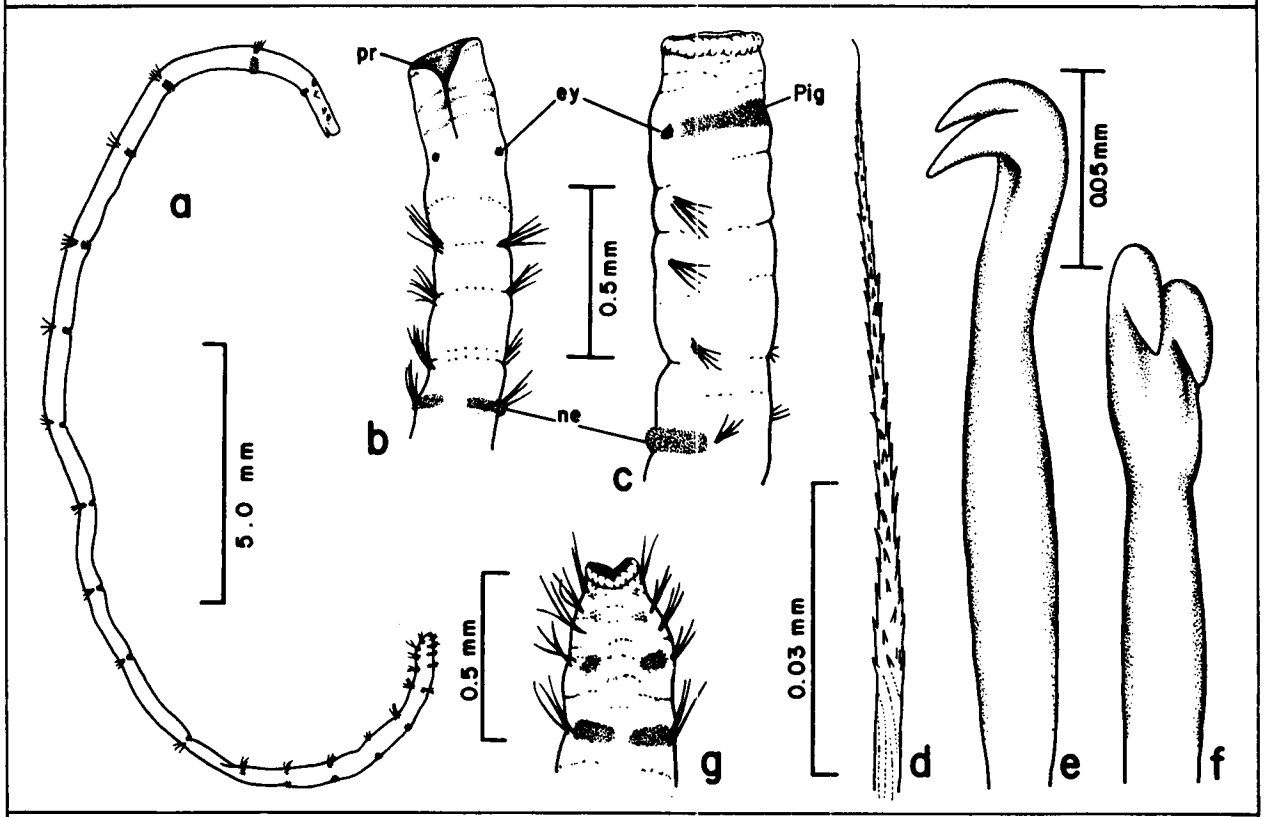

Figure 46-6. Myriochele oculata: a, whole worm, lateral view; b, anterior end, ventral view; c, same, lateral view; d, notoseta; e, uncinus, lateral view; f, same, frontal view; g, posterior end, ventral view (Figures e, f from Blake and Dean 1973, fig. 1d, e).

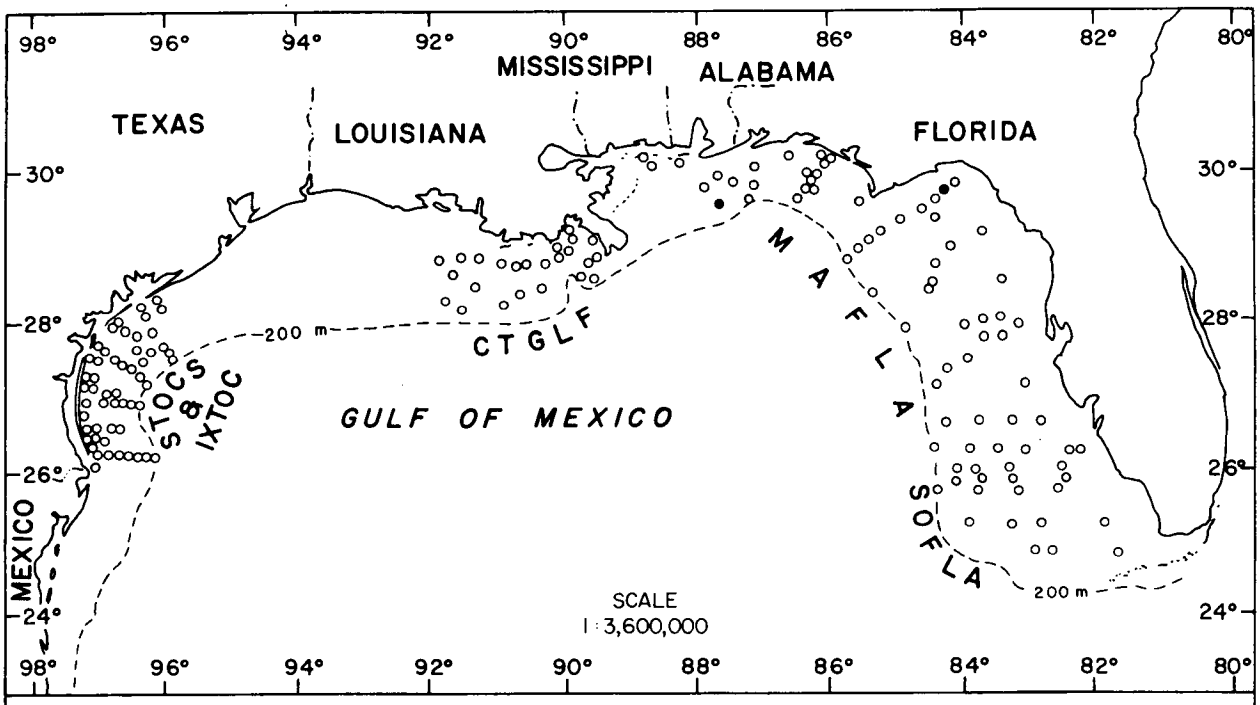

Figure 46-7. Distribution of Myriochele sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

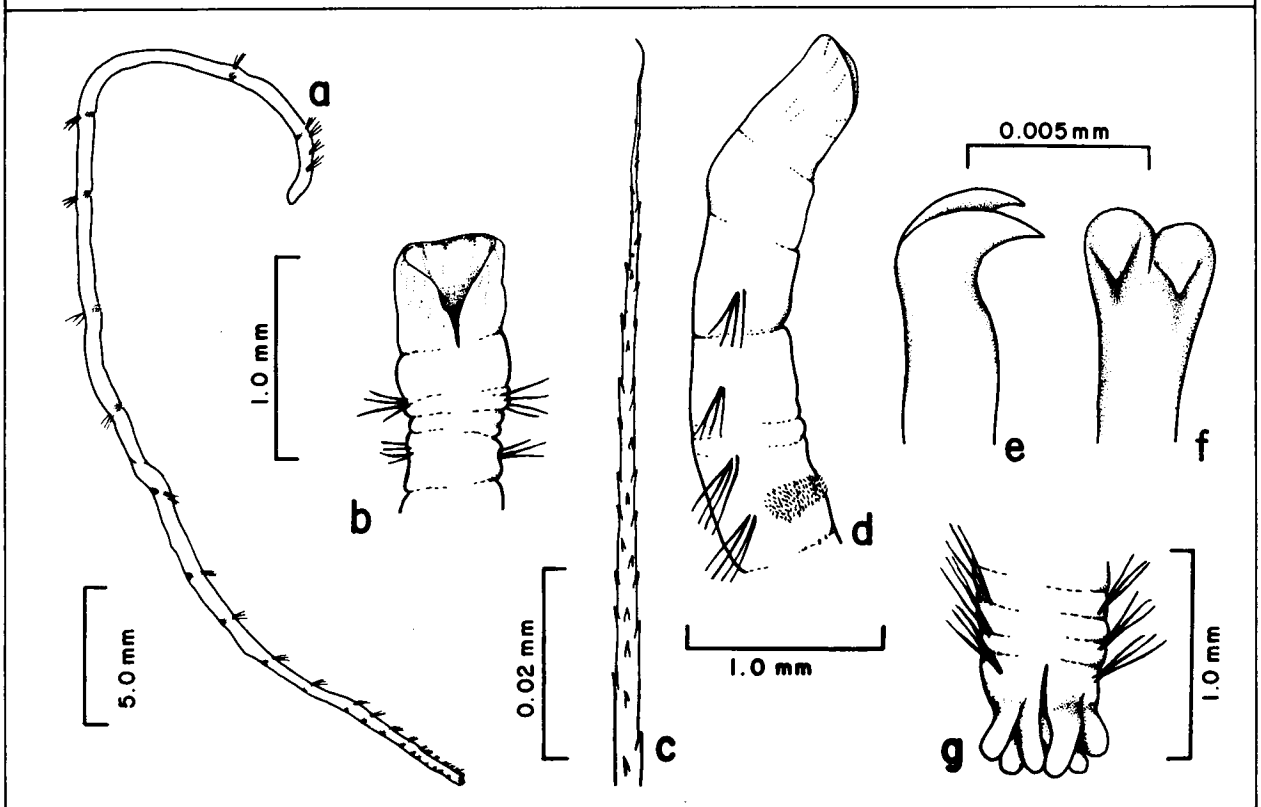

Figure 46-8. Myriochele sp. A: a, whole worm, lateral view; b, anterior end, ventral view; c, notoseta; d, anterior end, lateral view; e, uncinus, lateral view; f, same, frontal view; g, posterior end, dorsal view.

Supplementary Material:
Gulf of Mexico--off Tampa Bay, Florida, IEC-723TB Sta. 001-006, 27°37.6'N, 82°54.5'W, 13 m, Jan. 1980 (1 spec.); off Mississippi, COE Sta. 027-1, 30°18.28'N, 88°43.06'W, 2.6 m, sand-silt-clay, Oct. 1980 (3 spec.).
DESCRIPTION:
Length, to 21 mm (previously reported to 35 mm); width, to 0.25 mm (previously reported to 0.25 mm). Body long, thread-like (Figure 46-6a); largest specimen complete with 25 segments. Tube constructed of small overlapping sand grains or shell. Prostomium long, anteriorly truncate with midventral incision (Figure 46-6b). One pair of distinct, brownish eyespots located ventrolaterally on buccal segment (Figure 46-6b,c). Dark pigment bands often extending across buccal segment dorsal to eyespots (Figure 46-6c), and nearly encircling setigers 4 and 5. Thoracic region with three short setigers (Figure 46-6b,c). Abdominal segments long anteriorly, gradually diminishing in length posteriorly (Figure 46-6a). Notosetae all spinous capillaries (Figure 46-6d), numbering 3-10 per fascicle. Neurosetae present from setiger 4, arranged in compact pads of numerous, small, bidentate, long-shafted uncini (Figure 46-6e); teeth of equal length, one tooth set slightly higher than the other (Figure 46-6f). Anus terminal, bordered by two rounded lobes (Figure 46-6g).
REMARKS: Except for the eyespots, pigmentation is frequently lacking in preserved specimens from the Gulf of Mexico. The presence of eyespots, structure of the buccal and anal segments, and shape of the uncini distinguishes this species from all other known species of Myriochele. Blake and Dean (1973) synonymized the monospecific genus Galathowenia Kirkegaard, 1959, with M. oculata, because they felt that pigmentation was not sufficient as a criterion for erecting a new genus or species. Specimens of M. oculata may have been confused with juvenile specimens of Owenia sp. A in some BLM-OCS collections. Myriochele oculata is herein newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 2-680 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Numerous records throughout eastern Gulf (Figure 46-5); absence from central and western Gulf most likely reflects misidentification (see "REMARKS"); 11-189 m; coarse to very fine sand, silty fine sand, silty clay, clayey sandy silt.
DISTRIBUTION: Sea of Japan; Bering Sea; Chuckchee, Kara, Barents, and White Seas; Gulf of Mexico.

Myriochele sp. A
Figures 46-7, 8a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2426D-2/78 (1 spec., USNM 89664), 2643B-7/76 (1 spec.), 2643E-7/76 (1 spec.).
Supplementary Material:
Texas--Flower Gardens, NMFS Sta. EFG-IV-6-3, 27°53.63'N, 93°39.10'W, 102 m, silty sand, July 1981 (1 spec.).
DESCRIPTION:
Length, to 39 mm; width, to 0.5 mm. Body long, slender (Figure 46-8a); largest complete specimen with 30 segments. Tube constructed of shell fragments, sponge spicules, echinoderm spines and foraminiferan tests.

Prostomium long, anteriorly truncate, with deep midventral incision (Figure 46-8b). Eyespots and body pigmentation absent. Thorax formed by setigers 1-3, with notosetae only. Setigers 3 and 4 closely spaced; following setigers long, but diminishing in length toward posterior end where segments are crowded (Figure 46-8a,g). Notosetae all spinous capillaries (Figure 46-8c), numbering up to 20 per fascicle. Neurosetae present from setiger 4 (Figure 46-8d), as numerous, densely packed, bidentate uncini; teeth short, lateral to each other (Figure 46-8e,f). Anus surrounded by 6-7 digitate lobes (Figure 46-8g).

REMARKS: Myriochele sp. A is similar to M. pygidialis Hartman, 1960, in having the anus surrounded by digitate lobes; however, the former differs from the latter in having a longer prostomium, with a deeper midventral slit. Also, the prostomium of M. pygidialis is produced distally into a rounded, thickened and flaring lip, whereas the prostomium of Myriochele sp. A is equally thin and membranous throughout its length and does not flare distally.

GULF OF MEXICO BLM-OCS OCCURRENCE: Two records off Alabama and northwestern Florida (Figure 46-7); 14-69 m; fine to very fine sand.

CHAPTER 47

Michael R. Milligan

FAMILY FLABELLIGERIDAE Saint Joseph, 1894

INTRODUCTION

Flabelligerids have commonly been referred to as "bristle-cage worms" because of the characteristic "cage" of long setae surrounding the head region. The body is generally fusiform and often decorated with short to long mucus-secreting epithelial papillae. Silt and sand particles often adhere to the mucoid secretions, giving flabelligerids a grainy appearance. Some species, however, may only secrete a translucent mucilaginous sheath. The prostomium and peristomium make up the introvert, and are retractile into the oral cavity. The prostomium is indistinct, appearing as a central ridge directly above the mouth. Two pairs of eyespots are often present on the central ridge, and two large, grooved palps lie posterolateral to it. The peristomium bears eight or more branchial filaments arising from a dorsal branchial membrane or cephalic hood. Parapodia are quite small and may only be represented by bundles of noto- and neurosetae. Notosetae are all capillary with intermittent transverse bars along their length. Those of setigers 1-6 are often elongated anteriorly to form the cephalic cage. Neurosetae are quite variable and may include stout crossbarred capillary setae, simple or bidentate hooks, compound and pseudocompound hooks, or a combination of these.

Fauchald (1977a) listed 14 genera comprising 126 species worldwide in the family Flabelligeridae. Five genera are represented in the Gulf of Mexico BLM-OCS collections. These genera include three species previously known from the Gulf, one species never before reported from the Gulf, and two species that may be new to science.

PRINCIPAL DIAGNOSTIC CHARACTERS

Principal diagnostic characters used to distinguish genera and species within the Flabelligeridae include: 1) presence of a mucoid or sand grain sheath covering the body; 2) shape and distribution of epithelial papillae; 3) size, number and arrangement of branchial filaments on the peristomium; 4) degree of development and number of setigers forming the cephalic cage; and 5) shape and structure of the noto- and neurosetae.

The body covering, epithelial papillae, and cephalic cage may be observed by viewing whole specimens with the aid of a variable power dissecting microscope. The branchial apparatus is frequently retracted within the body cavity, necessitating dissection which is best accomplished by making a ventral incision from the oral cavity to about the seventh setiger. Care must be taken not to cut too deeply or the branchial apparatus may be damaged. The prostomium and peristomium with the associated branchial apparatus may then be removed by gently cutting the connective tissue which holds it in place. Total removal is often necessary to facilitate adequate viewing of the introvert. Removal of a palp and the branchiae from one side of the peristomium is often

beneficial in determining the underlying structures. Because the branchial arrangement is symmetrical, counting the branchiae on the undamaged side and doubling that number will give an accurate figure.

Flabelligerids from the Gulf of Mexico are generally small enough to mount whole on microscope slides to observe the shape and structure of the setae under high magnification. Members of some genera, such as Pherusa and Piromis, are often too large to mount; therefore, individual parapodia must be removed and mounted to adequately view the setae.

Body Covering.

Flabelligerids produce a variety of mucilaginous secretions associated with the epithelium (Day, 1967). Individuals of Pherusa and Piromis are often enveloped within a thickened sheath consisting of large sand grains. Some species of the former genus may also have a characteristic hardened cephalic shield of cemented sand grains (Figure 47-8a). Diplocirrus and Brada lack a well-formed sheath, but adherent sand grains and debris coat the body surface. Adherent sand grains are generally lacking in Therochaeta; however, the body is often dusted with a layer of fine silt particles. Flabelligera is distinguished from other genera by the presence of a hardened, translucent, mucilaginous sheath devoid of silt, sand, or debris.

Epithelial Papillae.

The shape and distribution of papillae varies from one species to another, and for some species, from one body region to another. Therochaeta, for example, has long parapodial papillae on the cage-forming setigers (Figure 47-14a); the remainder of the body may be densely covered with small, distally swollen papillae, or may have a few large, irregularly scattered papillae. Piromis roberti and Pherusa inflata have a papillose tentacular process on the anterior dorsal margin of setiger 1. The former species displays a distinctive papillary arrangement of two longitudinal rows dorsally and four ventrally (Figure 47-2a), whereas in the latter, the papillae are arranged in transverse rows anteriorly, but are randomly distributed posteriorly (Figure 47-8a). Some species of Brada are devoid of papillae, whereas others may appear shaggy due to long, densely packed papillae (Figure 47-10b). Papillation is also related to the relative size of an individual, with smaller individuals possessing generally longer and more sparsely arranged papillae.

Branchiae.

Most genera are distinguished by the number and arrangement of branchiae. The branchiae are situated on a cephalic hood which lies on the dorsum of the peristomium (Figure 47-2d). When retracted, the prostomium and peristomium along with the branchiae and palps are encased in a thin, membranous branchial sheath. The branchial sheath of Therochaeta may be thickened and elongated to form an oral tube projecting from the oral cavity (Figure 47-14a). Available literature describing the shape and arrangement of branchiae for this genus is very limited. Diplocirrus has the fewest branchiae, totaling not more than ten, arranged in two rows, with the inner row usually more slender and filamentous. Pherusa has a single row of branchiae along the margin of the cephalic hood, with the lateralmost edges frequently rolled into a scroll-like arrangement. The cephalic hood of Piromis is formed into a long, tongue-like branchial membrane with several irregular rows of

branchial filaments. Brada and Flabelligera have numerous rows of slender branchial filaments randomly distributed across the surface of a short, thickened cephalic hood. Early descriptions of new species often omitted this structure, later necessitating the redesignation of many taxa. Therefore, branchial descriptions have not been referred to in the keys but are provided in the generic diagnoses.

Cephalic Cage.

The cephalic cage is formed by the long, anteriorly directed capillary noto- and neurosetae of a variable number of anterior setigers (Figure 47-8a). Setal fascicles on the remaining body segments are distinguished from the cage-forming fascicles in having fewer, shorter, more widely separated and laterally directed setae. In addition, neurosetae posterior to the cage-forming setigers are usually modified into various forms other than slender capillary setae. The majority of genera have a well-developed cephalic cage. However, species of Brada, and some species of Diplocirrus, have a poorly developed cephalic cage (Figures 47-10a, 4a) or lack one altogether. The cephalic cage is most highly developed in Pherusa (Figure 47-8a) and Piromis (Figure 47-2a). Cage setae of these genera are frequently longer than half the body length. The number of cage-forming setigers is constant within each species, and may range from one in species of Flabelligera to as many as six in species of Pherusa. Because cage setae are numerous and closely packed together, an accurate count of segments forming the cephalic cage is difficult to obtain. The easiest method of enumerating these setigers is to look ventrally on the largest available specimens and count the neuropodial fascicles involved.

Noto- and Neurosetae Posterior to the Cephalic Cage.

Notopodial fascicles of flabelligerids are typically composed of crossbarred capillary setae drawn into fine, hair-like tips (Figure 47-2b). Neurosetae may exhibit a variety of shapes. Neurosetae and notosetae of Diplocirrus are distinctly articulate (Figure 47-6f); the neurosetae are stouter than the notosetae and may possess bluntly hooked tips (Figure 47-6d). Neurosetae and notosetae of Brada are also similar, but the former are somewhat broader with the crossbars often absent in the distal third (Figure 47-10d).

Compound or pseudocompound neurosetae are present in many genera. Piromis has uni- or bidentate falcigers which Day (1967) referred to as pseudocompound; however, upon close examination, the neurosetae bear crossbars proximally, which become distinctly articulate distally (Figure 47-2c). Pherusa and Therochaeta typically have simple unidentate falcigers posteriorly. The former genus frequently has approximately three setigers immediately following the cage setae. These setigers have neurosetae intermediate in shape between capillary setae and simple falcigers. Intermediate setae may appear pseudocompound (Figure 47-8k). Each species of Therochaeta has a specific number of setigers with distinctly pseudocompound setae (Figure 47-14e) between the cage-forming setigers and the simple falcigers.

BIOLOGICAL NOTES

Flabelligerids were generally considered by Fauchald and Jumars (1979) to be non-tubicolous worms; however, Day (1967) mentioned that

some genera may form tubes. Some species crawl over the surface, while others may live in U-shaped burrows, or exploit abandoned burrows of rock-boring molluscs. This family has been recovered from all types of substrates ranging from clay and mud to the crevices of shell masses and rocks. One species, Flabelliderma commensalis, has even been found living commensally with sea urchins and other polychaetes (Light, 1978a). Flabelligerids have been collected from the intertidal zone to abyssal depths.

Species living in sandy habitats often develop a sandy crust over their surface, speculatively suggesting protection from small predators (Day, 1967). The cephalic cage may act to protect the delicate branchial apparatus when exposed. Those worms living in relatively unprotected habitats, such as sandy littoral areas, seem to have a more highly developed cephalic cage than species commonly occurring in rock crevices.

Flabelligerids are surface deposit feeders, collecting food from the surrounding sediments with their palps. Some investigators (Fauchald and Jumars, 1979) suggested that the beating cilia on the branchiae create a current, driving suspended particles toward the mouth where they are ingested, indicating a degree of suspension feeding. Gut analyses indicate that these worms selectively feed on diatoms, Radiolaria, Foraminifera, Porifera, unicellular algae, fragments of multicellular algae, and detritus.

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

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

1a. Neurosetae bidentate posterior to cephalic cage (Figure 47-2e) . . . . . **Piromis**, p. 47-5

1b. Neurosetae all unidentate 2

2a. Neurosetae distinctly articulate posterior to cephalic cage (Figure 47-6f). . . . . **Diplocirrus**, p. 47-7

2b. Neurosetae all non-articulate and crossbarred (Figure 47-10d). . 3

3a. Papillae arranged in transverse rows across anterior margins of anterior segments; cephalic shield of sand grains on dorsum of setigers 1-4 (Figure 47-8a). . . . . **Pherusa**, p. 47-11

3b. Papillae randomly distributed on anterior segments (Figure 47-14a); cephalic shield absent. 4

4a. Neurosetae of all setigers simple 5
4b. Neurosetae of at least some setigers posterior to cephalic cage pseudocompound (Figure 47-14e). 6

5a. Crossbars of notosetae close together (Figure 47-10c). . . . . .**Brada**, p. 47-13
5b. Crossbars of notosetae widely separated (Figure 47-12c). . . . . ?**Pherusa**, p. 47-17

6a. Neurosetae of posterior setigers simple (Figure 47-14g). . . . . .**Therochaeta**, p. 47-17
6b. Neurosetae of posterior setigers pseudocompound. . . **Flabelligera***

*Common on the east and west coasts of the United States, but not found in Gulf of Mexico BLM-OCS collections.

Genus **Piromis** Kinberg, 1867

TYPE SPECIES: Piromis arenosus Kinberg, 1867.
REFERENCES:
Chamberlin, 1919b:396.
Day, 1967:663; 1973:108.
Fauchald, 1972a:214; 1977a:116.
DIAGNOSIS: Body fusiform, sand-encrusted; epithelial papillation variable. Branchiae numerous, inserted on long, tongue-like, single or double branchial membrane. Two pairs of prominent eyes. Cephalic cage well-developed. Notosetae all crossbarred capillaries. Neurosetae crossbarred capillaries on several anterior setigers, uni- or bidentate simple falcigers posteriorly.
REMARKS: Chamberlin (1919b) separated this genus into Piromis and Semiodera depending on whether the branchial membrane was single or double. Hartman (1961) recombined these genera back to Piromis. Species are generally separated on the basis of papillary arrangement and shape of the neurosetae.

Piromis roberti (Hartman, 1951)
Figures 47-1, 2a-e

Semiodera roberti Hartman, 1951a:99, pl. 26, figs. 1-4.
Piromis roberti--Hartman, 1961:123.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2427E-9/77 (1 spec.), 2536G-2/78 (1 spec., USNM 89701); STOCS 4/I-6 F/76 (1 spec., USNM 89702), 6/III-2 F/76 (1 spec., USNM 89705), 1/IV-1 F/76 (1 spec., USNM 89703), 1/IV-5 F/76 (1 spec., USNM 89704).
Supplementary Material:
Gulf of Mexico--Alabama, 30°15'13"N, 88°03'08"W, Mobil Oil Sta. 001A-12/78, 4.9 m, coarse sand (1 spec.), 051D,F-8/78, 6.2 m, clayey sand (3 spec.), 052A,C-8/78, 6.5 m, sandy clay (3 spec.), 6.5 m, sandy clay, 052C-1/79, 6.5 m, sandy clay (2 spec.), 054D,F-8/78, 5.0 m, coarse sand (2 spec.); Mississippi, COE Sta. 013-3-3/81, 30°14.47'N, 89°00.05'W, 5.2 m, sand (1 spec.), 019-2-10/80, 30°14.40'N, 88°55.38'W, 5.3 m, sand (1

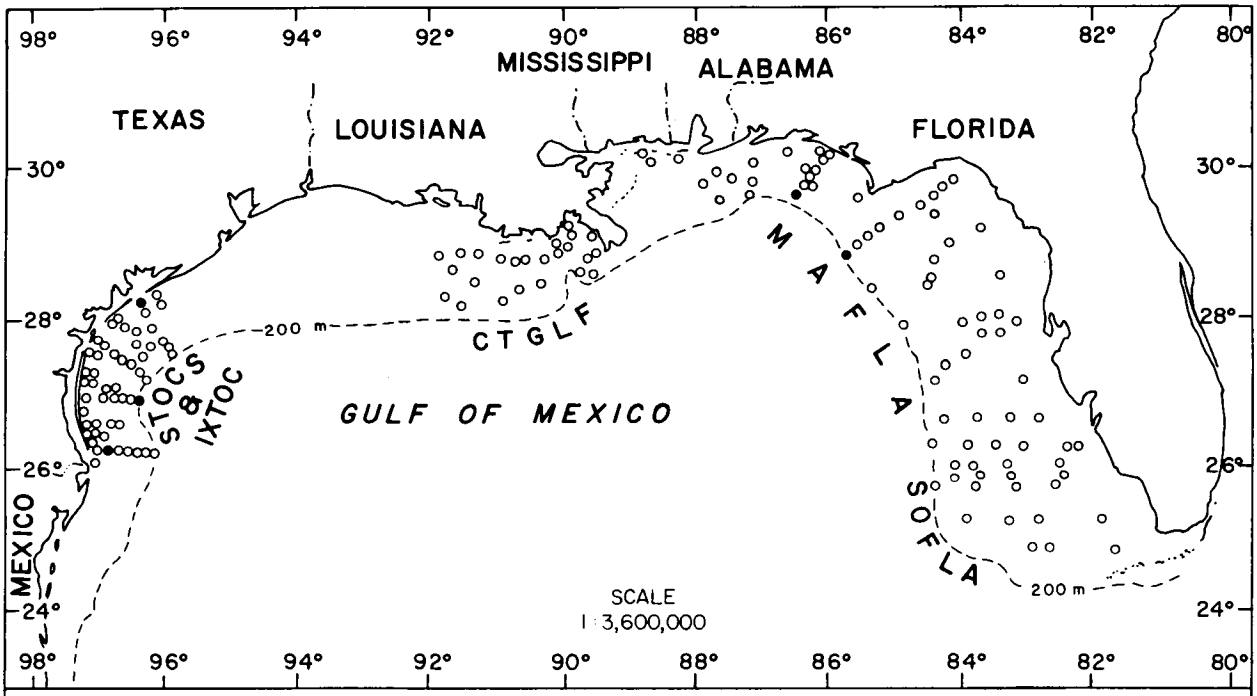

Figure 47-1. Distribution of Piromis roberti on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

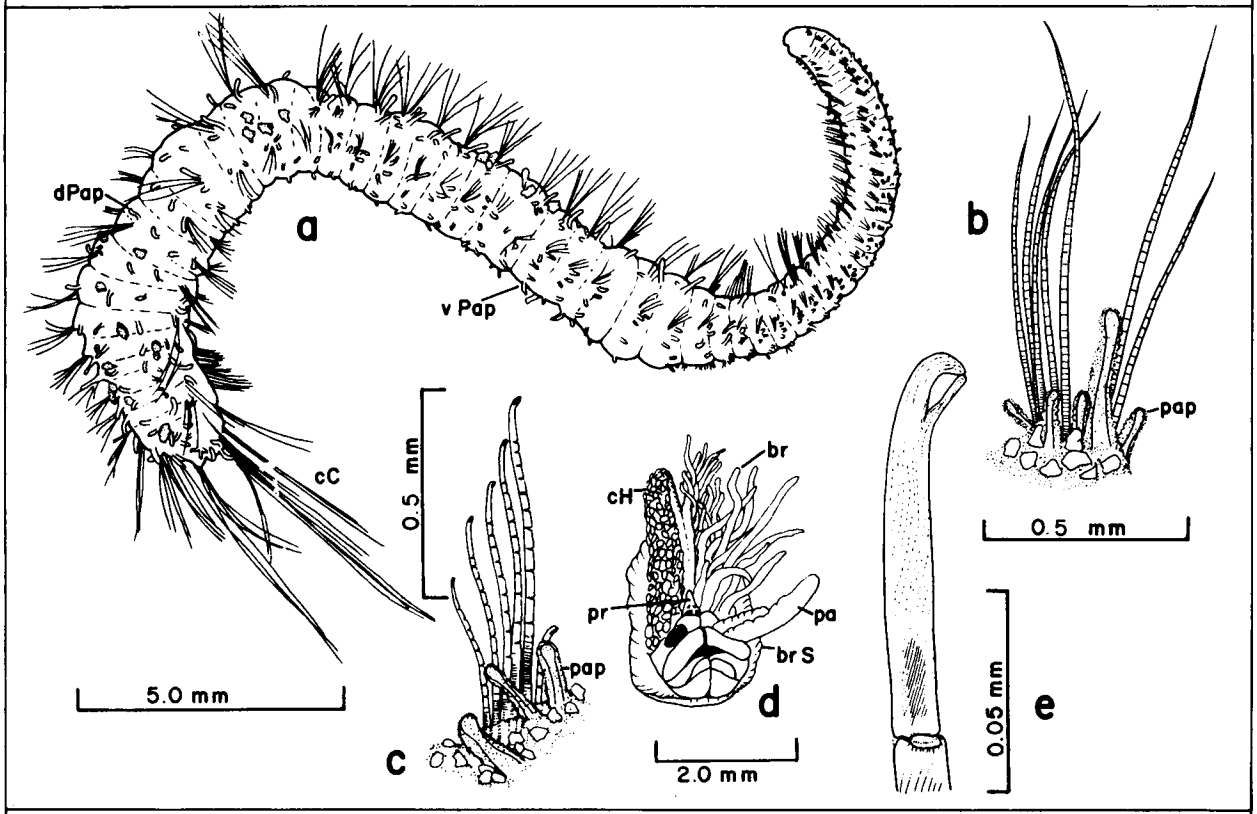

Figure 47-2. Piromis roberti: a, whole worm; b, notopodium from setiger 20; c, posterior neuropodium; d, introvert (branchiae and palp from left side removed); e, distal end of neuroseta.

spec.), 022-2-10/80, 30°17.76'N, 88°49.67'W, 4.3 m, sand-silt-clay (1 spec.), 043-1-3/81 30°14.48'N, 88°25.63'W, 5.6 m, sand-silt-clay (1 spec.); Louisiana, LOOP Sta. 422-8/81, 29°06'16"N, 90°06'47"W, 8.8 m (1 spec.), Grand Terre, holotype (AHF 0526).

DESCRIPTION:

Length, to 53 m (previously reported to 68 mm); width, to 5.0 mm. Body large, slightly tapering posteriorly; enshrouded in sand-encrusted mucus sheath, sand more closely packed dorsally. Largest complete specimen with 90 setigers. Setiger 1 with middorsal tentacular process, variable in shape, composed of 6-9 long papillae. Each segment with two large papillae dorsally (Figure 47-2a) and four ventrally. Postsetal notopodial lobes of anterior setigers composed of two large dorsal and ventral papillae, separated by 0-2 shorter papillae; presetal papillae short, numbering 0-3. From about setiger 6, notosetae encircled by one large and 4-8 small papillae (Figure 47-2b); neurosetae encircled by 6-8 short papillae (Figure 47-2c). Anterior neuropodia with three large postsetal and a few short presetal papillae. Introvert surrounded by transparent branchial sheath (Figure 47-2d). Numerous branchiae of variable length inserted ventrally on long, tongue-like branchial membrane divided in half by longitudinal membrane. Two pairs of eyes present between grooved palps ventral to branchial lobe. Cephalic cage well-developed, consisting of longer, crossbarred capillary setae of first three setigers. Posterior to setiger 3 all notosetae as shorter capillaries, numbering 6-11 per fascicle (Figure 47-2b); neurosetae bidentate, closely crossbarred proximally, articulate distally, numbering 4-7 per fascicle (Figure 47-2c,e).

REMARKS: Small individuals often have much longer papillae than illustrated here and frequently lack the small papillae between the major dorsal and ventral papillations. P. roberti is separated from two similar species, P. arenosus and P. eruca, by the presence of two dorsal, four ventral, and one long notopodial papillae per segment. P. arenosus has four longitudinal rows of papillae dorsally and ventrally; P. eruca has two dorsal and two ventral rows. P. roberti is the only flabelligerid with bidentate neurosetae presently known from the Gulf of Mexico.

PREVIOUSLY REPORTED HABITAT: None reported.

GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in western and northeastern Gulf (Figure 47-1); 10-189 m; clayey sand, clayey and sandy silt, silty clay.

DISTRIBUTION: Gulf of Mexico.

Genus Diplocirrus Haase, 1915

TYPE SPECIES: Trophonia glauca Malmgren, 1867.

REFERENCES:

Fauvel, 1927:120.
Ushakov, 1955:306.
Day, 1961:509.
Fauchald, 1972a:217; 1977a:116.

DIAGNOSIS: Body fusiform, well-papillated. Four pairs of branchiae. Eyes often present. Cephalic cage poorly developed or lacking. Noto- and neurosetae articulate. Neurosetae stouter than notosetae, occasionally hooked distally. Nephridial papillae may be present on setiger 5.

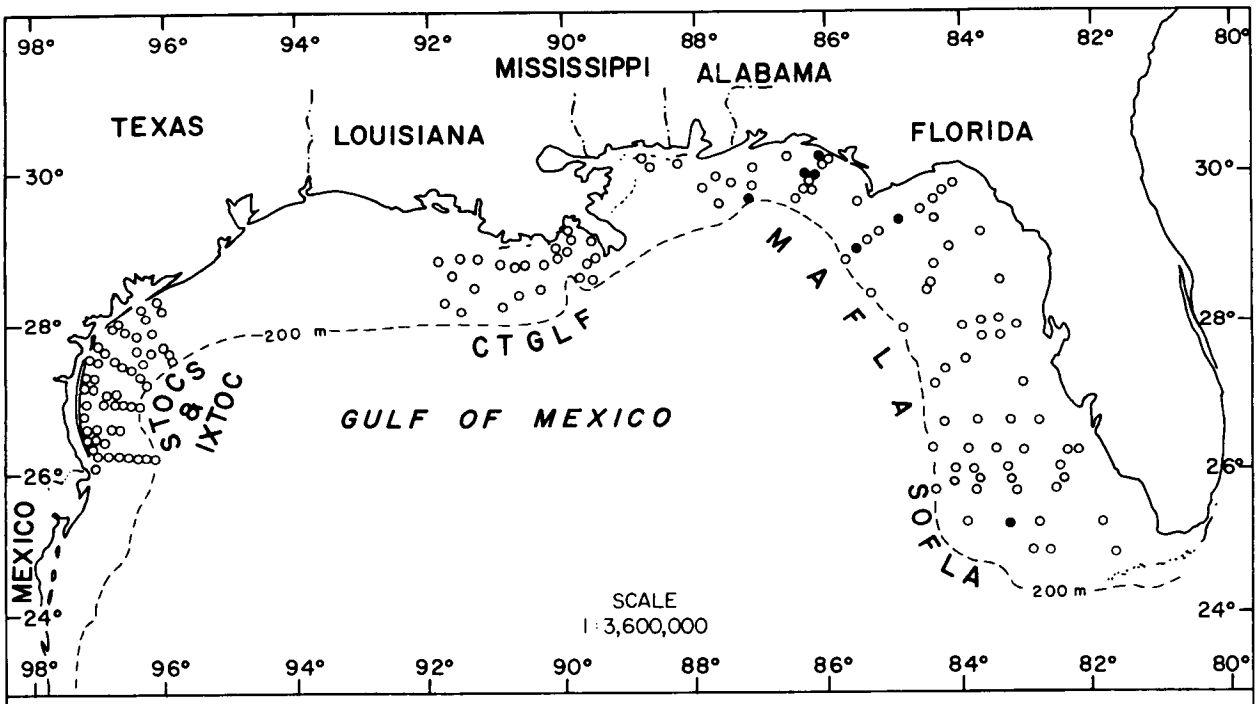

Figure 47-3. Distribution of Diplocirrus sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

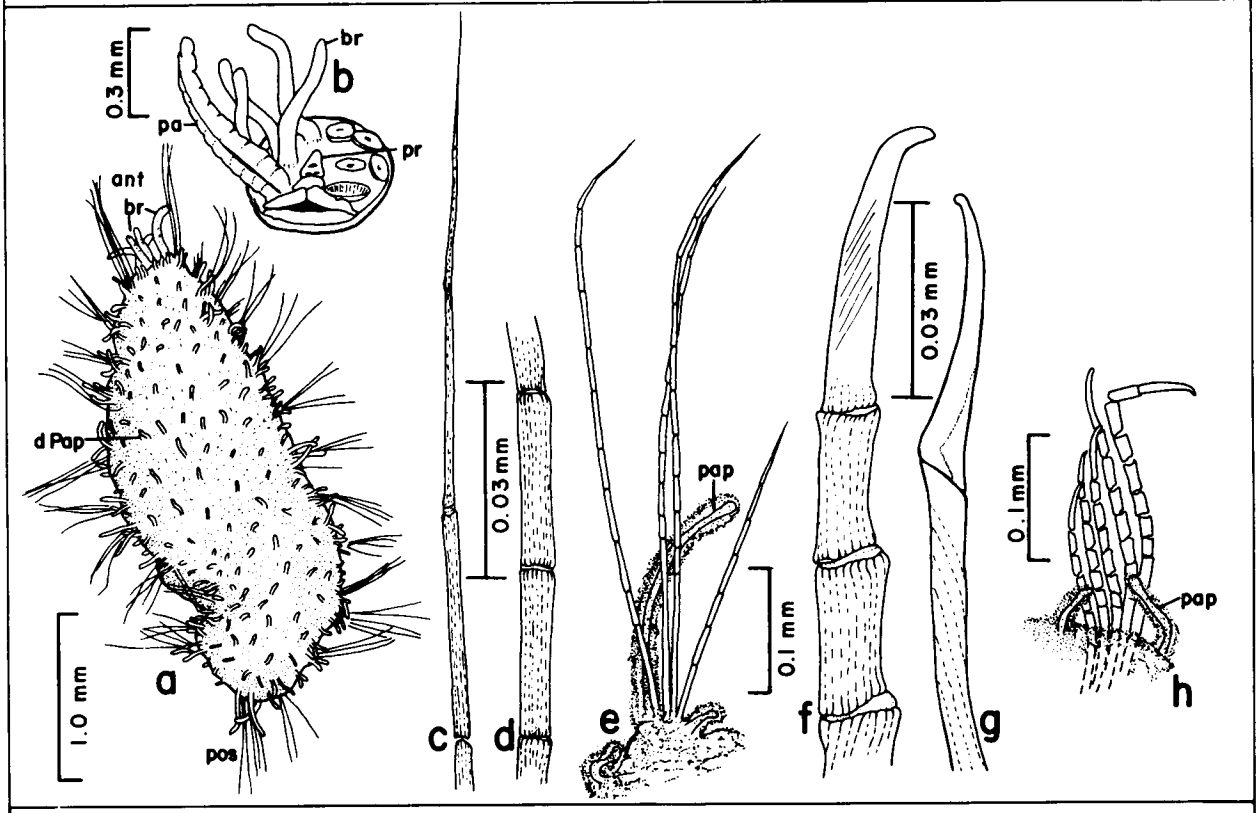

Figure 47-4. Diplocirrus sp. A: a, whole worm (dorsal view); b, introvert (branchiae and palp from right side removed); c, distal end of notoseta; d, median section of notoseta; e, notopodium from setiger 10; f, distal end of neuroseta; g, pseudocompound falciger from last neuropodium; h, neuropodium from setiger 10.

REMARKS: Originally this genus included only those species with two kinds of branchiae. Day (1961) emended Diplocirrus to include D. capensis which has all uniform branchiae. Consequently, Ilyophagus is now synonymized with this genus.

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

1a. Distal segment of neurosetae longer than other segments (Figure 47-4f); last pair of neuropodia each with one pseudocompound falciger (Figure 47-4g). . . . . .**Diplocirrus sp. A**, p. 47-9

1b. Distal segment of neurosetae equal to other segments (Figure 47-6d,f); last pair of neuropodia without pseudocompound falcigers. . . . . .**Diplocirrus capensis**, p. 47-9

Diplocirrus sp. A
Figures 47-3, 4a-h

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 24E-11/80 (1 spec.); MAFLA 2423D-9/77 (1 spec.), 2426K-8/77 (1 spec.), 2528I-8/77 (1 spec., USNM 89706), 2528J-8/77 (1 spec.), 2531G-6/75 (1 spec.), 2531H-2/78 (1 spec.), 2532F-1/76 (1 spec., USNM 89707), 2645C-9/77 (1 spec.).
DESCRIPTION:
Length, to 4 mm; width, to 1 mm. Body short, cylindrical, slightly tapering posteriorly; evenly covered with mucus and fine sand particles (Figure 47-4a). Largest complete specimen with 20 segments. Epithelial papillae long and thin dorsally, shorter ventrally, distributed randomly over entire surface. Parapodial papillae as long as neurosetae. Introvert with eight digitiform branchiae of uniform size (Figure 47-4b). Eyes present. Cephalic cage poorly developed. Notosetae articulate with hair-like tips (Figure 47-4c,d); numbering 3-6 per fascicle (Figure 47-4e); longest on setiger 1. Neurosetae of setiger 1 as crossbarred capillaries with fine tips; less than half length of notosetae. Posterior to setiger 1, all neurosetae distinctly articulate, tips bluntly hooked (Figure 47-4f); terminal article twice as long as preceding ones. Articulations indistinct on proximal third of each seta. Last pair of neuropodia with articulate neurosetae and single pseudocompound falciger lacking crossbars (Figure 47-4g). All neuropodia with 2-5 setae per fascicle (Figure 47-4h).
REMARKS: Diplocirrus sp. A differs from D. capensis in having a long terminal segment on each neuroseta, crossbars of the notosetae more widely separated, capillary neurosetae on setiger 1, and a pseudocompound falciger on the last pair of neuropodia.
GULF OF MEXICO BLM-OCS OCCURRENCE: Several stations in northeastern Gulf (Figure 47-3); 19-106 m; coarse to fine sand, silty fine sand.

Diplocirrus capensis Day, 1961
Figures 47-5, 6a-f

Diplocirrus capensis Day, 1961:509, fig. 9a-f; 1967:666, fig. 32.4.e-j; 1973:105.

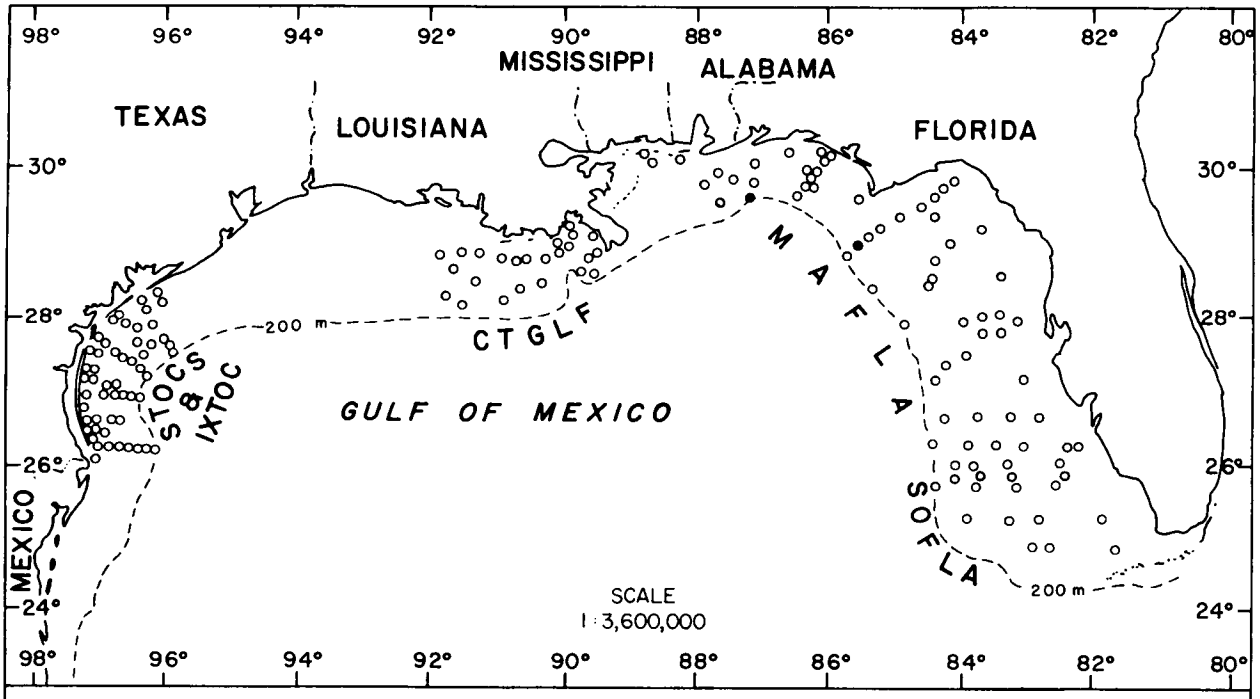

Figure 47-5. Distribution of Diplocirrus capensis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

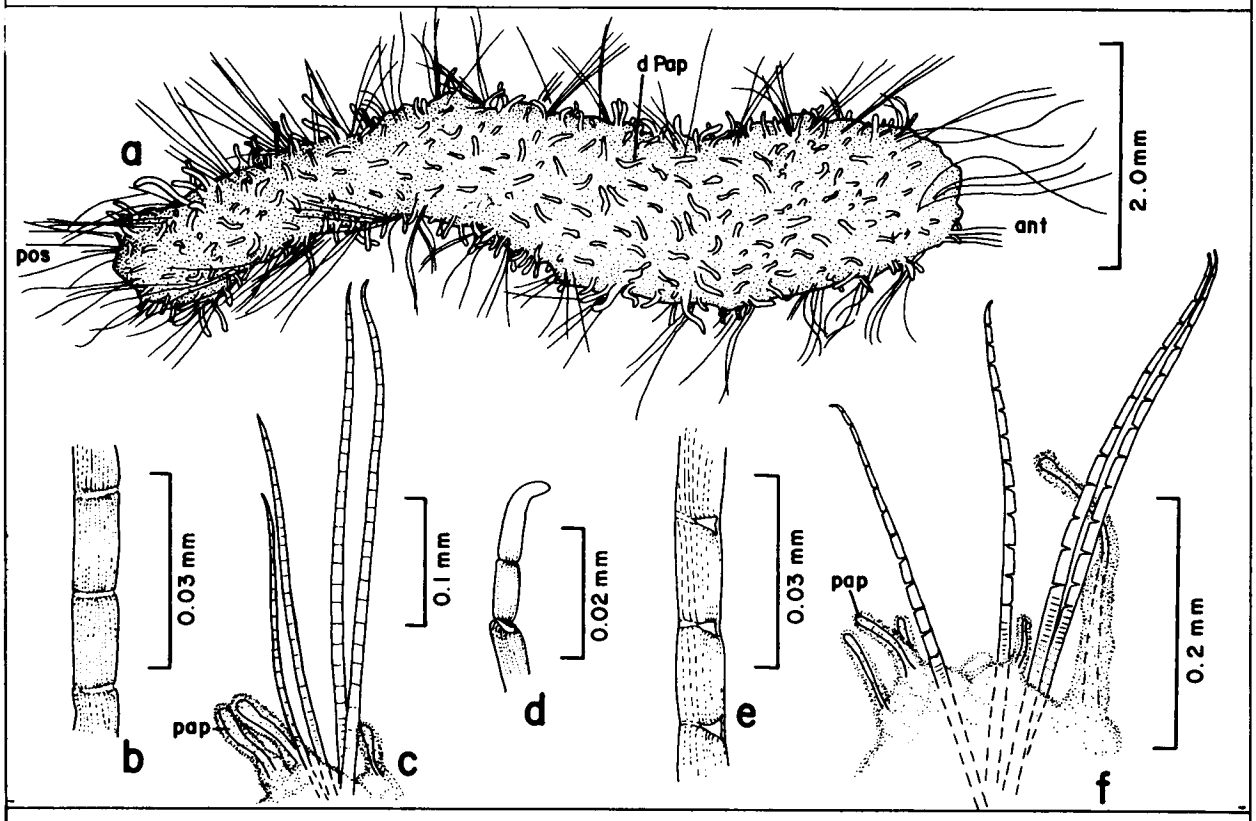

Figure 47-6. Diplocirrus capensis: a, whole worm (dorsal view); b, median section of notoseta; c, notopodium from setiger 6; d, distal end of neuroseta; e, median section of neuroseta; f, neuropodium from setiger 6.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2426D-6/75 (1 spec.), 2426G-7/76 (1 spec., USNM 89708), 2426H-7/76 (1 spec.), 2645G-7/76 (1 spec., USNM 89709), 2645J-2/78 (1 spec.).
DESCRIPTION:
Length, to 4 mm (previously reported to 12 mm); width, to 1 mm. Body short, fusiform, entire surface coated in thin mucus sheath dusted with fine sand grains. Largest complete specimen with 20 setigers. Epithelial papillae increasing in length posteriorly, shortest ventrally; those associated with parapodia longest (Figure 47-6a). All papillae cirriform with slight distal swelling, covered by thin mucus sheath. Introvert with eight digitiform branchiae, all similar in length to two grooved palps located ventrally. Eyes as indistinct pigmentation between palps. Cephalic cage rudimentary. Notosetae articulate (Figure 47-6b), numbering 4-6 per fascicle (Figure 47-6c); longest on setiger 1. Neurosetae stouter, increasing in length posteriorly, terminating distally in a blunt hook (Figure 47-6d). All neurosetae uniformly articulate (Figure 47-6e); numbering 4-6 per fascicle (Figure 47-6f).
REMARKS: This species is distinguished from other flabelligerids by its similar noto- and neurosetae, and the bluntly hooked tips of the latter. Unlike most members of this genus, all branchiae are of uniform size.
PREVIOUSLY REPORTED HABITAT: 11-200 m; shell and rock.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations in northeastern Gulf (Figure 47-5); 82-106 m; coarse to fine sand.
DISTRIBUTION: North Carolina, Gulf of Mexico, South Africa.

Genus **Pherusa** Oken, 1807

TYPE SPECIES: Amphitrite plumosa O. F. Müller, 1776.
REFERENCES:
Day, 1967:658; 1973:108.
Fauchald, 1972a:225; 1977a:116.
DIAGNOSIS: Body inflated anteriorly. Epithelial papillae usually present. Caphalic cage well-developed, formed by noto- and neurosetae of first 1-6 setigers. Notosetae all crossbarred capillaries. Neurosetae as unidentate or bidentate simple hooks following cage-forming setae. Branchiae variable in number, arranged in semicircular arc on cephalic hood of peristomium. Lateral margins of branchial arc often rolled into a scroll.
REMARKS: Papillation in Pherusa is extremely variable and may be worn away or absent in some individuals. Shape and position of the neurosetae in addition to the branchial arrangement prove to be the most reliable specific characteristics.

Pherusa inflata (Treadwell, 1914)
Figures 47-7, 8a-m

Trophonia inflata Treadwell, 1914:213, pl. 12, fig. 33.
Stylariodes inflata--Hartman, 1951a:98; 1952a:71.
Pherusa inflata--Hartman, 1969:297, figs. 1-5.

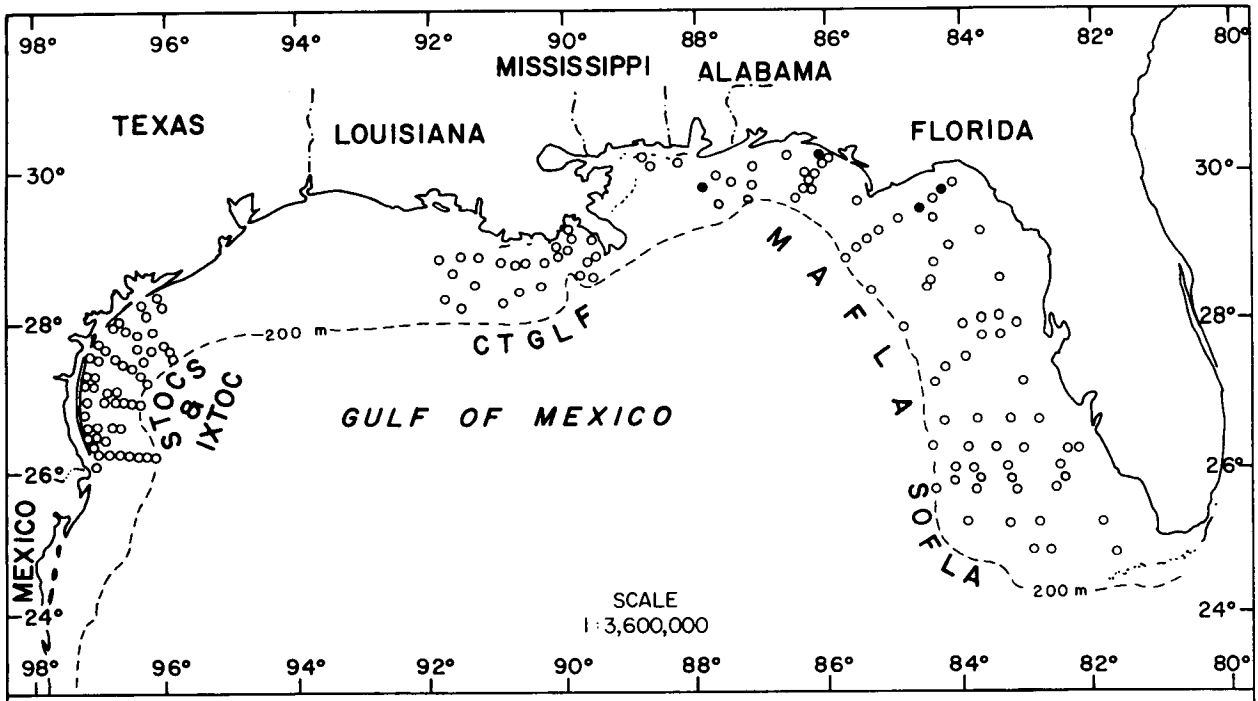

Figure 47-7. Distribution of Pherusa inflata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

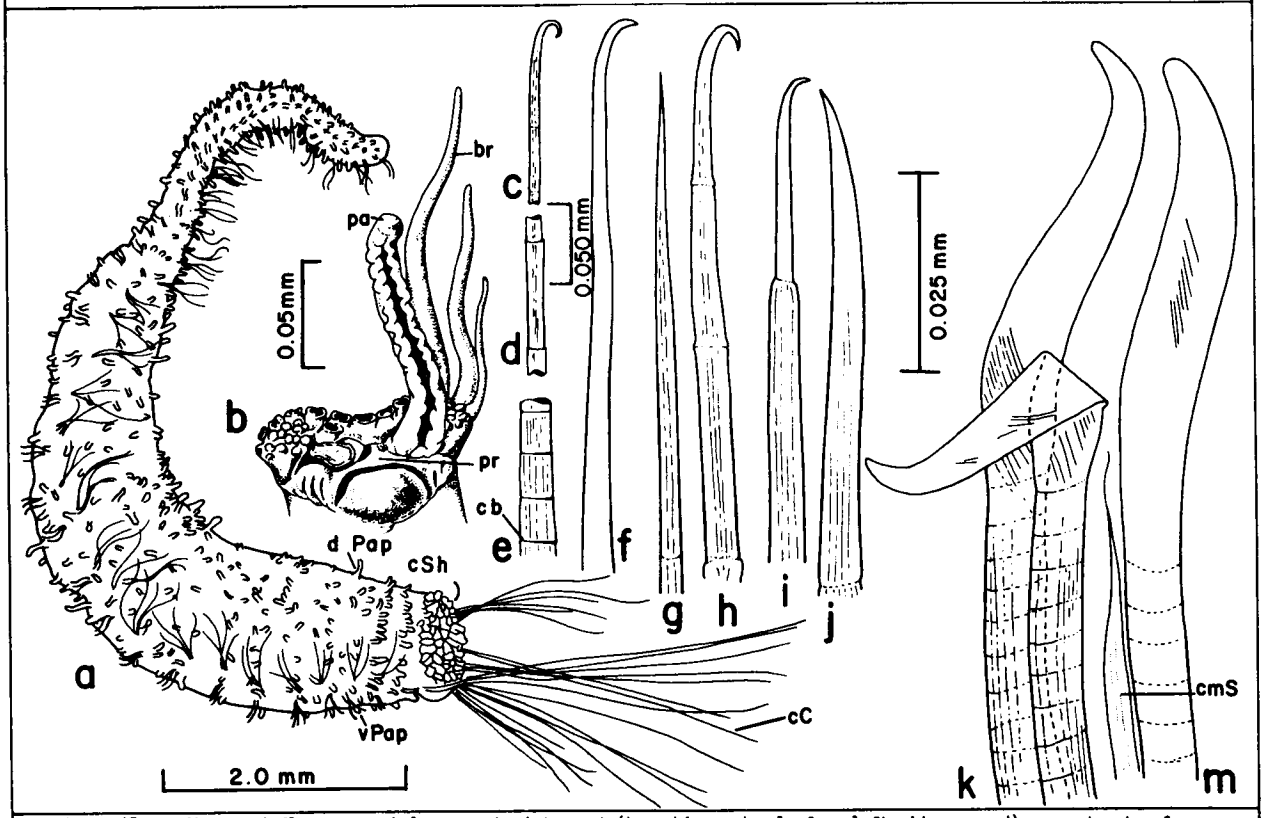

Figure 47-8. Pherusa inflata: a, whole worm; b, introvert (branchiae and palp from left side removed); c, notoseta of setiger 1, distal end; d, median section of same; e, basal end of same; f, notoseta of setiger 2, distal end; g, notoseta of setiger 3, distal end; h, neuroseta of setiger 1, distal end; i, neuroseta of setiger 2, distal end; j, neuroseta of setiger 3; distal end; k, neurosetae of setiger 4; m, neurosetae of setiger 6 (Figure b from Hartman 1969, fig. 2).

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2420K-2/78 (1 spec., USNM 89710), 2422G-8/77 (1 spec.), 2528J-2/78 (1 spec., USNM 89711), 2640I-9/77 (1 spec.), 2640G-2/78 (1 spec.).
Supplementary Material:
Gulf of Mexico--Tampa Bay, IEC Sta. 723TB 002-009, 27°38.1'N, 82°54.0'W, 12 m, Jan. 1980 (1 spec.); southwestern Florida, paratype (AHF 1732).
DESCRIPTION:
Length, to 14 mm (previously reported to 60 mm); width, to 2 mm (previously reported to 5 mm). Body short, anterior two-thirds (approximately 20 setigers) inflated (Figure 47-8a), with thin layer of fine sand grains. Largest complete specimen with 50 setigers. Hardened cephalic shield of cemented sand grains covering dorsum of first four setigers. Two to four long papillae on ventral margin and two along dorsal margin of oral cavity. A transverse row of 8-14 short papillae along frontal margin of anterior setigers; posteriorly, papillae arranged irregularly and varying in length. Introvert with 9-12 large branchiae arranged in semicircular pattern, with 8-12 pairs of much finer branchial filaments arising from lateral margins (Figure 47-8b). Two pairs of large eyes. Cephalic cage well-developed (approximately half length of body), formed by noto- and neurosetae of first four setigers. Posterior to cage setae, noto- and neuropodia distinctly separated by at least two interramal papillae. Notopodia of setiger 1 each with about seven crossbarred setae having distinctly hooked, fine tips (Figure 47-8c); distance between crossbars decreasing proximally (Figure 47-8d,e). Notosetae of setiger 2 shorter with tips less hooked (Figure 47-8f). All notosetae posterior to setiger 2 shorter and similar in structure (Figure 47-8g), numbering about four per fascicle. Neurosetae of setigers 1 (Figure 47-8h) and 2 (Figure 47-8i) similar in number, length, and shape to accompanying notosetae (Figure 47-8c-f); neurosetae becoming stouter on setiger 3 (Figure 47-8j). Neurosetae of setigers 4-6 as stout falcate hooks with crossbars on embedded proximal half (Figure 47-8k); often medially bent or broken, appearing pseudocompound. Posterior neurosetae without crossbars, accompanied by short, finely tipped companion setae (Figure 47-8m). Falcate hooks decreasing in number from four per fascicle in the inflated region to two posteriorly.
REMARKS: This species is most easily separated from other species of Pherusa by the anterior transverse papillation, the branchial organization, the extremely long cephalic cage setae, and the cephalic shield. Ventral papillae are often broken off or absent, but the anterior dorsal papillae are usually intact.
PREVIOUSLY REPORTED HABITAT: Intertidal to 50 m, under rocks and associated with shell masses.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in northeastern Gulf (Figure 47-7); 14-37 m; coarse to fine-very fine sand.
DISTRIBUTION: Oregon to western Mexico, North Carolina to Florida, Gulf of Mexico.

Genus **Brada** Stimpson, 1854

TYPE SPECIES: Siphonostoma villosum Rathke, 1843.
REFERENCES:
Fauvel, 1927:121.
Ushakov, 1955:309.

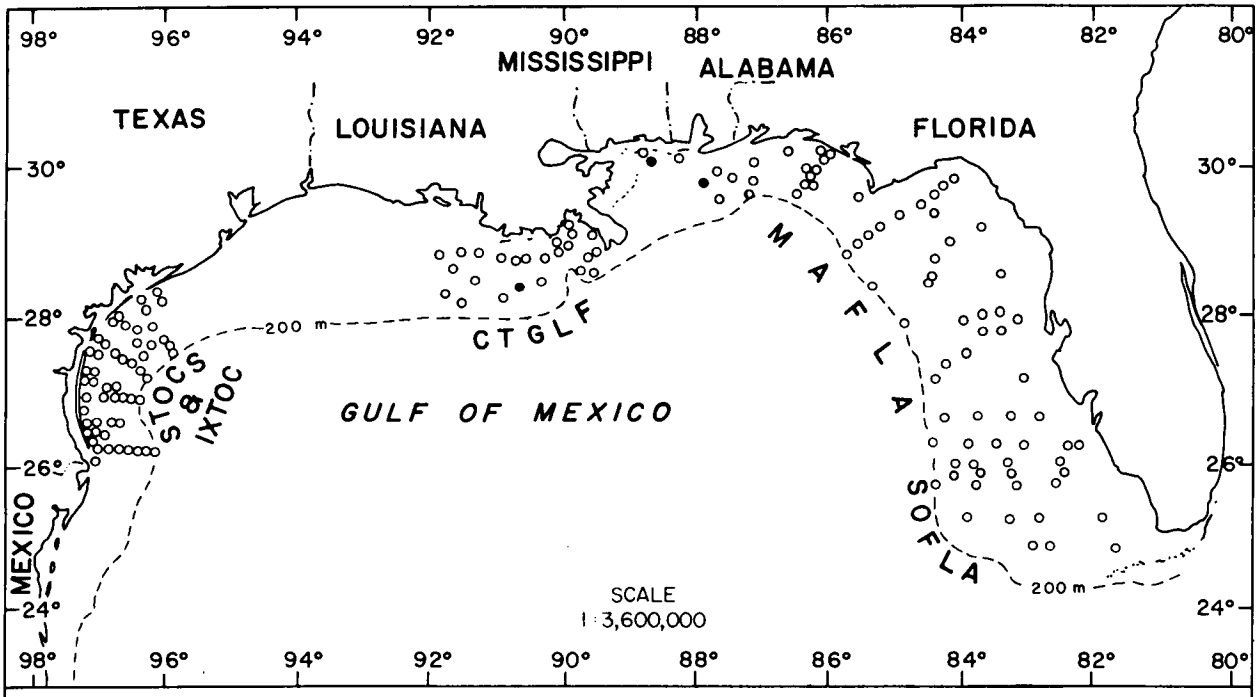

Figure 47-9. Distribution of Brada villosa on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

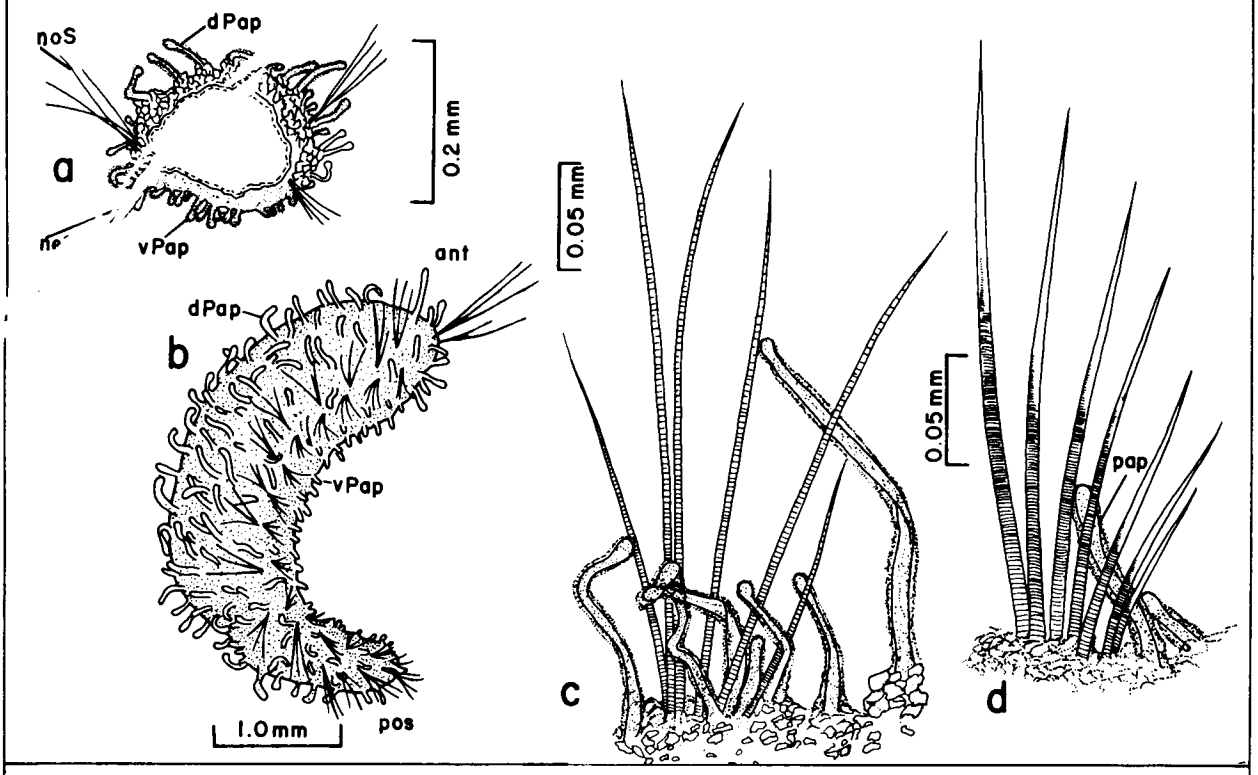

Figure 47-10. Brada villosa: a, cross-section of median setiger; b, whole worm; c, notopodium from setiger 12; d, neuropodium from setiger 18.

Day, 1967:656.
Fauchald, 1977a:116.
DIAGNOSIS: Body short, tapering posteriorly, with relatively few segments. Epithelial papillae present; density and shape of papillation variable. Some degree of sand or mucus encrustation usually present. Cephalic cage weakly developed or absent. All notosetae as crossbarred capillaries. Neurosetae as crossbarred capillaries, shorter and stouter than notosetae. Branchial filaments numerous, filiform, arranged in two lateral groups. Nephridial papillae present ventrally on setigers 3, 4 or 5.
REMARKS: Although this genus lacks a well-formed cephalic cage, the notosetae on setiger 1 are frequently longer than on subsequent setigers.

Brada villosa (Rathke, 1843)
Figures 47-9, 10a-d

Brada villosa--Fauvel, 1927:121, fig. 43e-1.
Brada villosa--Pettibone, 1954:290.
Brada villosa--Ushakov, 1955:310, fig. 115D-H.
Brada villosa--Imajima and Hartman, 1964:302.
Brada villosa--Hartman, 1965:174; 1966c:33, pl. 9, figs. 5, 6; 1969:281, figs. 1-5.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 8C-5/74 (1 spec., USNM 89712), 2638I-7/76 (1 spec., USNM 89713); CTGLF 04-1/79 (1 spec., USNM 89714).
Supplementary Material:
Gulf of Mexico--Louisiana, 28°56'10"N, 90°01'30"W, LOOP Sta. 480-1-4/80 (7 spec.), 480-7-5/81, 26.5 m (2 spec.), 28°56'06"N, 90°01'30"W, 481-3-4/80, 33.5 m (2 spec.).
Massachusetts--WHOI Station C_1, 40°20'30"N, 70°47'W, 97 m (10 spec.).
DESCRIPTION:
Length, to 10 mm (previously reported to 30 mm); width, to 2.0 mm (previously reported to 5 mm). Body short, cylindrical, slightly flattened ventrally (Figure 47-10a); largest complete specimen with 25 setigers. Dorsal surface encrusted with sand grains; ventral surface covered by mucus only. Papillae cirriform, swollen distally, enshrouded in thin mucus sheath; long and densely distributed over dorsum presenting shaggy appearance (Figure 47-10b). Ventral papillae similar in shape but much shorter and less dense. Introvert with about 40 filiform branchiae arranged in two distinct lateral groups forming arc dorsal to two thick grooved palps; branchial filaments similar in length to palps. Eyes absent. Setae of setiger 1 close together, appearing as single group, longer than on subsequent setigers; neurosetae slightly shorter than, but otherwise similar to notosetae. All notosetae crossbarred along entire length; numbering 4-6 per fascicle (Figure 47-10c). Posterior to setiger 1, all neurosetae amber basally, transparent distally; crossbars close together, widest at base, indistinct in distal third of setae (Figure 47-10d). Large, conical nephridial papillae present on anteroventral margin of fifth parapodia.
REMARKS: Brada villosa is best recognized by the shape and arrangement of neurosetae, poorly developed cephalic cage, and number and

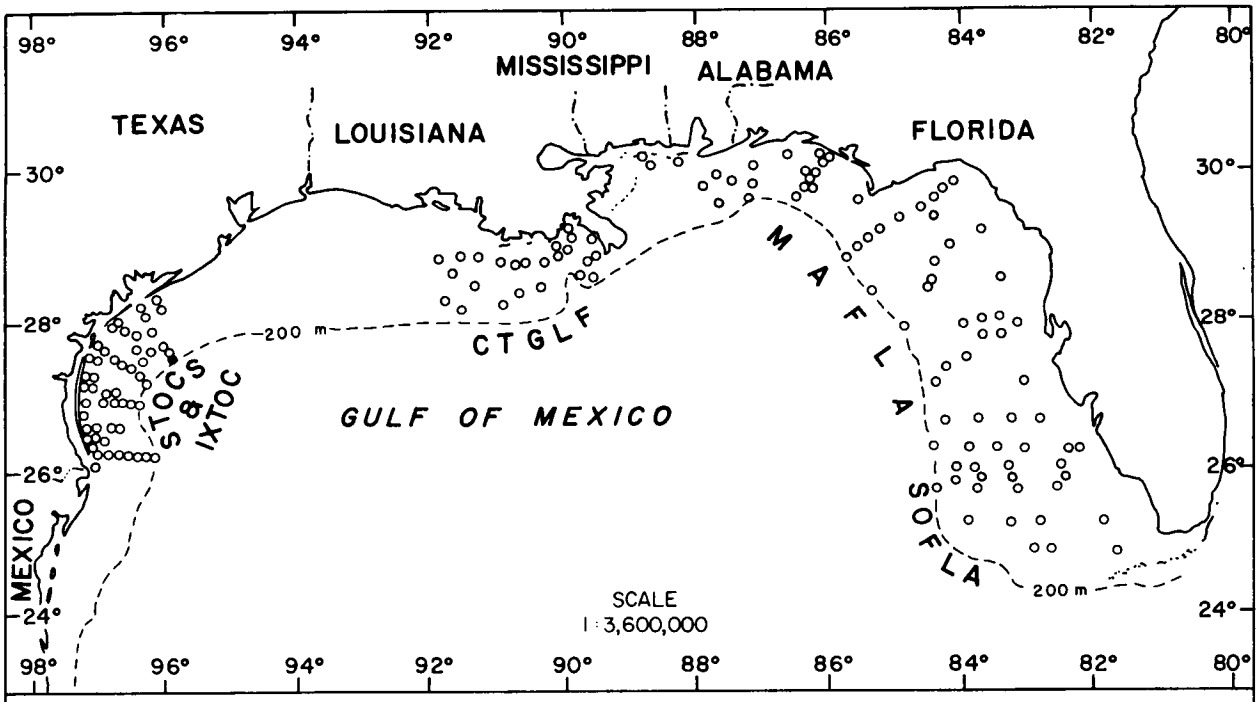

Figure 47-11. Distribution of ?Pherusa on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

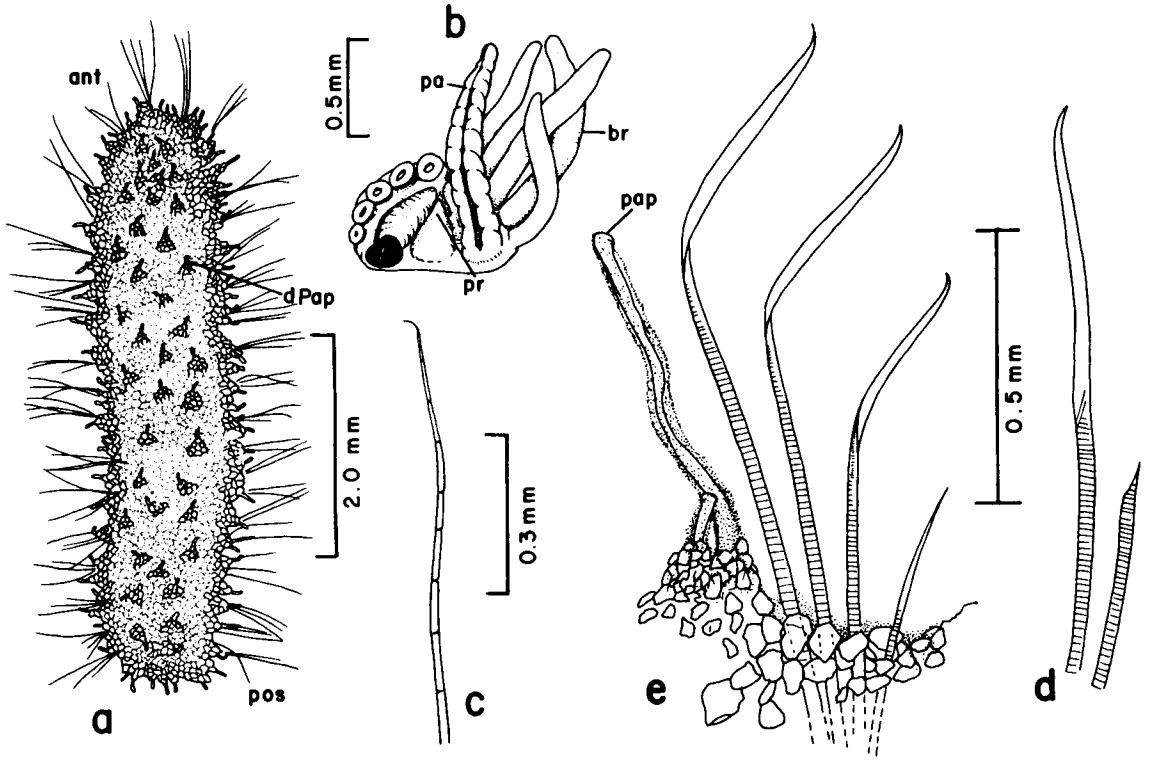

Figure 47-12. ?Pherusa: a, whole worm (dorsal view); b, introvert (branchiae and palp from left side removed); c, notoseta of setiger 12; d, complete and broken neurosetae; e, neuropodium from setiger 11.

distribution of branchial filaments. The degree of papillation and sand encrustation was found to be an extremely variable character. Papillae are frequently broken off and the sand worn away. Sand covering in smaller individuals may be less dense or absent. Nephridial papillae between the fourth and fifth setigers, often used as a diagnostic character, may be indistinct on smaller specimens.
PREVIOUSLY REPORTED HABITAT: Mud, gravel, stone, sand, and rocks; low water to 2000 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Few records in northern Gulf (Figure 47-9); 24-45 m; coarse sand, sandy silt, clayey silt.
DISTRIBUTION: Cosmopolitan.

?Pherusa
Figures 47-11, 12a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
STOCS 3/I-6 F/77 (2 spec., USNM 89715).
DESCRIPTION:
Length, to 5 mm; width, to 2 mm. Body short, convex dorsally, flattened ventrally; complete with 20 setigers. Dorsal surface encrusted with sand, sand encrustation less dense ventrally. Epithelial papillae swollen distally, scattered irregularly over entire surface (Figure 47-12a). Ventral papillae shorter than dorsal ones, often indistinct. Longest papillae associated with notopodia. Introvert with single row of nine large, digitiform branchiae arranged in semicircular arc dorsal to slightly larger, grooved palps (Figure 47-12b). Eyes indistinct. Cephalic cage absent. All notosetae as articulated capillaries (Figure 47-12c), numbering about three per fascicle; longest on setiger 1. Neurosetae of setigers 1 and 2 similar to, but stouter than, notosetae. Posterior to setiger 2, neurosetae flattened, proximally amber with crossbars close together, distally transparent, without crossbars (Figure 47-12d); length of neurosetae decreasing from superior to inferior positions within each fascicle; inferior seta very short (Figure 47-12e).
REMARKS: The specimens examined closely resemble Pherusa plumosa (O. F. Müller, 1776) in the size, number and arrangement of the branchiae, the shape and number of posterior neurosetae, and the presence of a small companion-like seta in each neuropodium. The main difference between ?Pherusa and P. plumosa is that the former lacks a cephalic cage, and the flattened neurosetae begin on setiger 3 instead of 4. Although the presence of a cephalic cage is generally regarded as a generic characteristic for Pherusa, most literature has allowed the branchial arrangement to take precedence in the generic subdivisions of the flabelligerids.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station in western Gulf (Figure 47-11); 134 m; silty clay.

Genus Therochaeta Chamberlin, 1919b

TYPE SPECIES: Stylariodes collarifera Ehlers, 1887.
REFERENCES:
Chamberlin, 1919b:397.

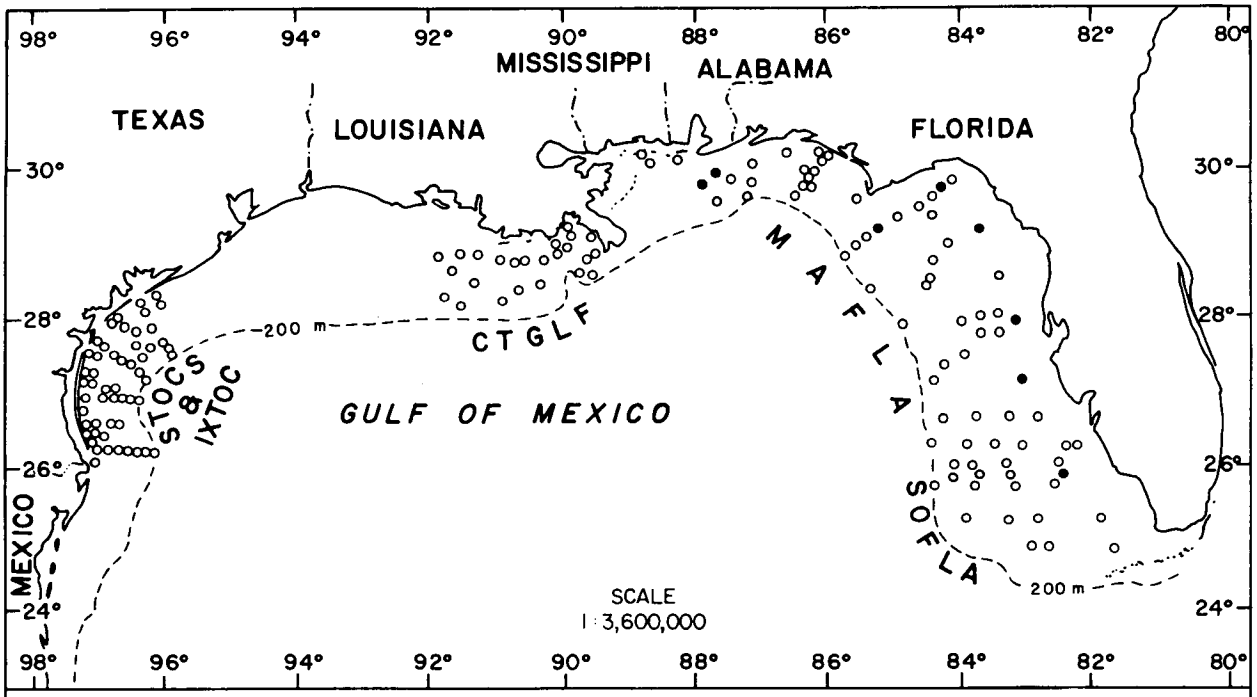

Figure 47-13. Distribution of Therochaeta sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

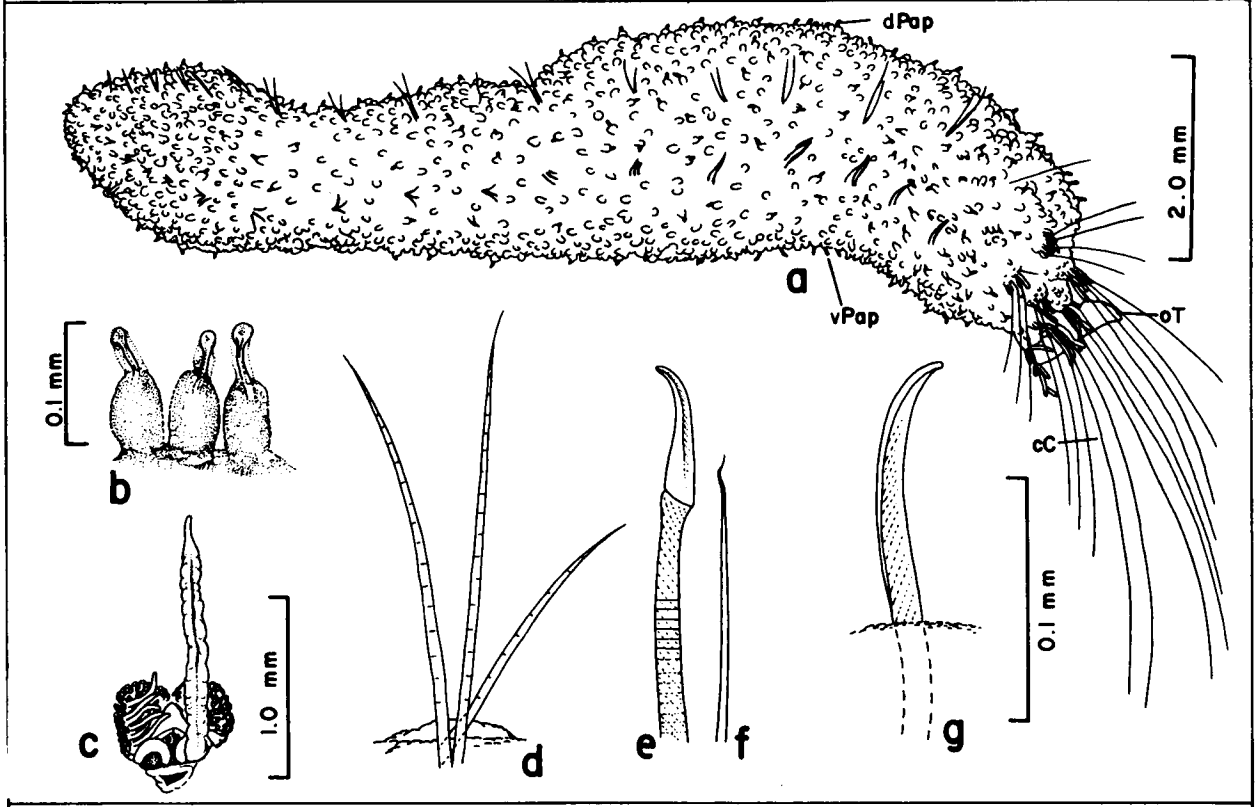

Figure 47-14. Therochaeta sp. A: a, whole worm; b, epithelial papillae; c, introvert (palp from left side and branchiae from right side removed); d, notopodium from setiger 10; e, pseudocompound neuropodial falciger; f, companion seta; g, neuroseta from setiger 10.

Hartman, 1965:179.
Fauchald, 1972a:231.
DIAGNOSIS: Body short. Papillae often dense, longest on cage-forming setigers. Oral tube formed by elongate branchial sheath. Branchial apparatus variable. Eyes present or absent. Cephalic cage well-developed. Notosetae all simple capillaries. Neurosetae of cage-forming setigers all capillaries followed by compound or pseudocompound falcigers for variable number of setigers prior to replacement by simple hooks.
REMARKS: The branchial apparatus of most species within this genus has been poorly described. Specific distinctions are based primarily on the shape of the papillae, the number of cage-forming setigers, and the number of setigers with compound or pseudocompound setae. Originally, this genus was separated on the basis of a conspicuous constriction between setigers 2 and 3 (Chamberlin, 1919b). Recent species descriptions (Hartman, 1965), however, have shown that this character may not be evident in all species of Therochaeta.

Therochaeta sp. A
Figures 47-13, 14a-g

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 14D-7/81 (1 spec.); MAFLA 2207E-6/76 (1 spec.), 2318K-11/77 (1 spec.), 2420E,F,G,I-7/76 (21 spec.), 2424K-7/76 (4 spec.), 2424A-11/77 (3 spec.), 2640I-5/75 (1 spec.), 2640G-6/75 (1 spec.), 2640H-2/76 (1 spec.), 2640E-7/76 (1 spec.), 2641D-6/75 (1 spec., USNM 89717), 2642I-6/75 (1 spec., USNM 89718), 2851C-7/76 (1 spec., USNM 89716).
Supplementary Material:
Gulf of Mexico--Alabama, 30°03.23'N, 87°55.86'W, COE Sta. 693-2-11/80, 16.2 m, sand (1 spec.), 30°01.35'N, 87°54.27'W, 695-1-11/80, 22.4 m, sand (1 spec.).
DESCRIPTION:
Length, to 10 mm; width, to 2 mm. Body short, slightly inflated posteriorly (Figure 47-14a), with fine silt particles adhering to surface. Largest complete specimen with 25 setigers. Papillation dense; each papilla with thick mucus secretion basally, swollen distally (Figure 47-14b). Anterodorsal and ventral margins of setiger 1 with numerous long papillae. Four or five long papillae inserted posteriorly on fascicles of setigers 1-3. Prostomial lobe with four prominent eyes. Branchial sheath long, forming an oral tube extending anteriorly, through which the branchial apparatus may be retracted. Palps distally attenuated, inserted ventral to cephalic hood. Cephalic hood low, bilobed, tongue-like, with numerous short, filiform branchial tentacles (Figure 47-14c). Cephalic cage well-developed, composed of noto- and neurosetae of setigers 1-2. Parapodial lobes of setigers 1-2 prominent, thereafter indistinct. Notopodia of cephalic cage with distinctly crossbarred capillary setae, numbering five per fascicle. Posterior to setiger 2, notosetae becoming short and fine with widely spaced, indistinct crossbars (Figure 47-14d); numbering 2-3 per fascicle. Neuropodia of setigers 1-3 with long, crossbarred capillary setae slightly shorter than notosetae; numbering five per fascicle. Neurosetae of setigers 4-7 as pseudocompound falcigers (Figure 47-14e), numbering two per fascicle, with 2-4 small companion setae (Figure 47-14f) embedded in the epithelium. Posterior

to setiger 7, all neurosetae as short simple falcigers without crossbars (Figure 47-14g), numbering 2-4 per fascicle.

REMARKS: Specimens examined most closely resemble Therochaeta flabellata (Sars, 1872) as described by Fauvel (1927). The primary difference is in the number of setigers forming the cephalic cage. According to Fauvel (1927), only the first setiger forms the cephalic cage in T. flabellata, as opposed to the first two setigers in Therochaeta sp. A. This species differs from other flabelligerids in the Gulf of Mexico by the presence of an oral tube, the basally enlarged papillae, and the distinctly pseudocompound neurosetae of setigers 4-7.

GULF OF MEXICO BLM-OCS OCCURRENCE: Several stations in northeastern Gulf (Figure 47-13); shallow water, 14-37 m; medium to fine-very fine sand.

CHAPTER 48

Paul S. Wolf

FAMILY FAUVELIOPSIDAE Hartman, 1971

INTRODUCTION

The fauveliopsids are flabelligerid-like worms with a truncate anterior end and a small, rounded posterior end. Members of the family have a fused prostomium and peristomium that is usually withdrawn into the first one or two anterior setigers. They do not have a cephalic cage or palps and oral tentacles as do the Flabelligeridae (Chapter 47). Fauveliopsids have relatively few segments with poorly developed parapodia, lacking dorsal or ventral cirri. The integument may be smooth, rugose, or sparsely papillose, but never densely papillose or with a mucoid sheath as in the flabelligerids. An interramal papilla is present on each parapodium (Figure 48-2a,c). Noto- and neurosetae usually consist of inner acicular setae and outer simple setae arranged in some species so that the noto- and neuropodia are mirror images of each other (Figure 48-2c). In most species the neuro- and/or notosetae are modified on anterior setigers (Figure 48-2a), presumably for grasping. The pygidium is simple, with a terminal anus, and lacks cirri but may be papillose (Figure 48-2b).

The fauveliopsids were erected as a separate family by Hartman (1971) for Fauveliopsis, Flabelligella Hartman, 1965, Flota Hartman, 1967, and Bruunilla Hartman, 1971. All the above genera were previously placed within the Flabelligeridae. Flabelligella was later reassigned to the Acrocirridae by Orensanz (1974b). Bruunilla was transferred to the Polynoidae by Pettibone (1979). Flota is, to this author's knowledge, still considered as in Fauchald (1977a:118) to be "Incertae sedis," without obvious family affiliation. This has left the Fauveliopsidae with one genus, Fauveliopsis, having about 11 described species (Pettibone, 1982:30). One species, probably new to science, is recorded from Gulf of Mexico BLM-OCS material.

PRINCIPAL DIAGNOSTIC CHARACTERS

The primary characters separating species of Fauveliopsis appear to be the shape and size of the body as well as the texture of the integument. The body may be short and linear as in F. brevis (Hartman, 1965) and Fauveliopsis sp. A, longer and linear as in F. glabra (Hartman, 1960), or anteriorly or medially inflated as in F. scabra Hartman and Fauchald, 1971, and F. challengeriae McIntosh, 1922b, respectively. The integument may be smooth (F. brevis, F. challengeriae, and F. glabra), sparsely papillose (Fauveliopsis sp. A, F. rugosa Fauchald, 1972b), or scabrous (i.e., scaly or ridged as in F. scabra).

Setal morphology among fauveliopsids is relatively homogeneous. All have noto- and neuropodia with inner acicular spines and outer simple setae (Figure 48-2a,c). Differences exist, however, in the number of anterior setigers with enlarged or modified setae. F. brevis and Fauveliopsis sp. A both have large curved hooks on anterior neuropodia, but the former has them only on the first setiger, whereas the

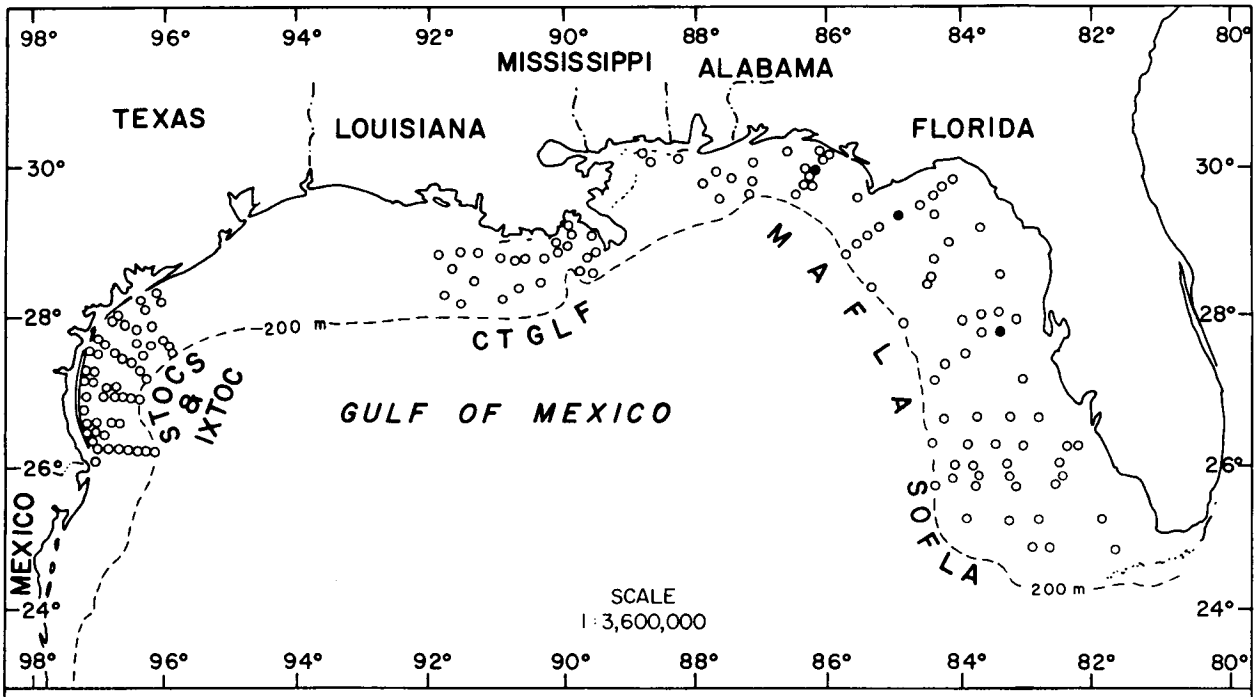

Figure 48-1. Distribution of Fauveliopsis sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

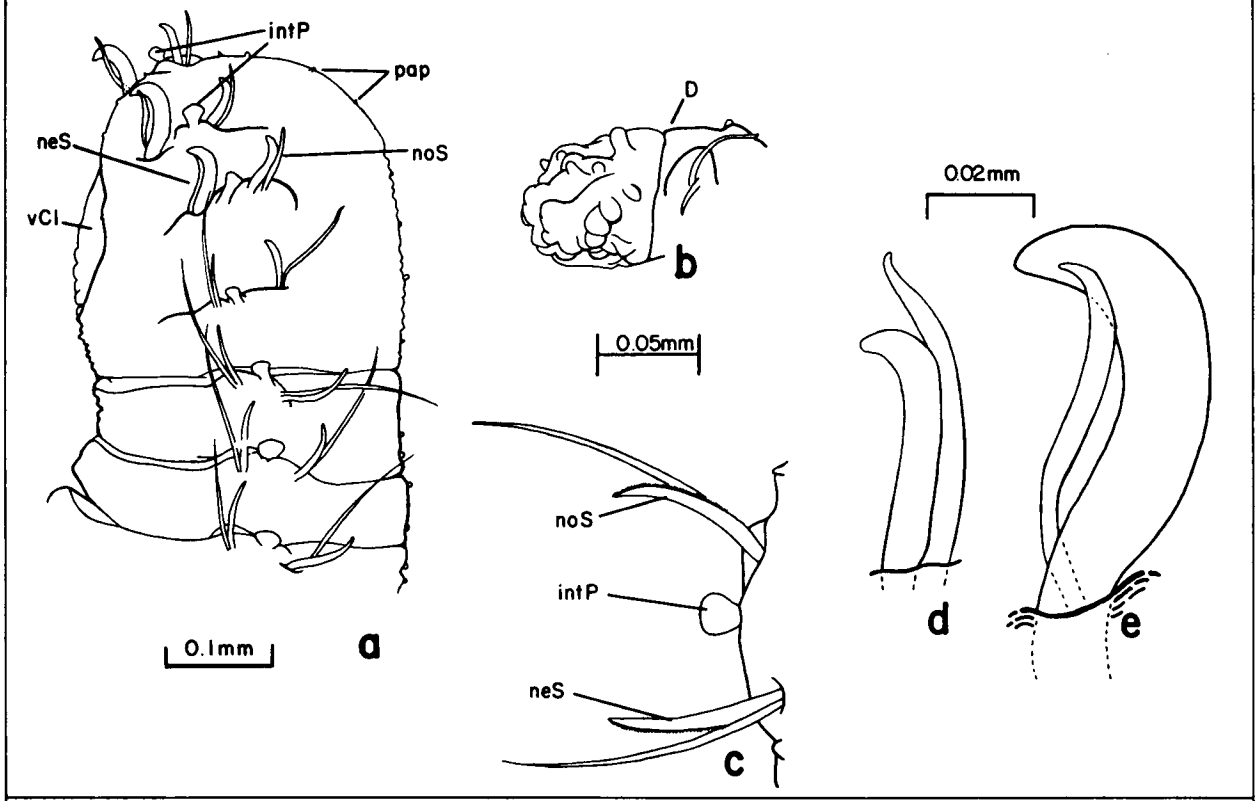

Figure 48-2. Fauveliopsis sp. A: a, anterior end, lateral view; b, posterior end, lateral view; c, middle parapodium, posterior view; d, notosetae from setiger 2; e, neurosetae from same.

latter has them on setigers 1-3. F. challengeriae has longer acicular spines on setigers 1-5, but they are not as strongly hooked as in F. brevis or Fauveliopsis sp. A. F. scabra lacks anterior modified setae entirely; however, some posterior acicular setae are larger than those of preceding setigers.

BIOLOGICAL NOTES

Fauveliopsids are burrowing polychaetes with some species living in tubes of cemented sand grains. A few species have been found inhabiting abandoned pelecypod and gastropod shells. Almost all fauveliopsids are found in bathyal and abyssal zones; however, Katzmann and Laubier (1974) have described some shallow water species from the Mediterranean. Fauveliopsis sp. A, described herein, occurs at depths of only 19-45 m.

No information could be gleaned from the extant literature or from specimens examined herein concerning the reproductive biology of this family.

Genus **Fauveliopsis** McIntosh, 1922

TYPE SPECIES: Fauveliopsis challengeriae McIntosh, 1922.
REFERENCES:
McIntosh, 1922b:4.
Hartman, 1971:1411.
Hartman and Fauchald, 1971:114.
Fauchald, 1977a:117.
DIAGNOSIS: Prostomium rudimentary, rounded or cleft anteriorly, somewhat retractile, without appendages or eyes. Parapodia biramous throughout. Dorsal and ventral cirri absent. Interramal papillae present. Notosetae including simple setae and stout spines or hooks. Neurosetae generally identical to notosetae but sometimes including enlarged hooks on first few segments.

Fauveliopsis sp. A
Figures 48-1, 2a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 18C-4/81 (1 spec., USNM 86830); MAFLA 2423K-8/77 (1 spec.), 2531I-9/75 (2 spec., USNM 86831), 2749E-11/77 (1 spec.).
DESCRIPTION:
Length, to 3.0 mm; width, to 0.3 mm. Body short, maggot-like, with rounded anterior end (Figure 48-2a) and papillose posterior end (Figure 48-2b); complete specimens with 18-30 setigers. Prostomium rudimentary, anterior end slightly cleft dorsally, moreso ventrally with cleft extending back to setiger 4 (Figure 48-2a). Prostomium retracted slightly, not visible laterally. Integument with few minute papillae. Parapodia as small elevations with prominent interramal papilla (Figure 48-2a,c). Each notopodium with one superior simple seta and one stout inferior acicular seta (Figure 48-2a); acicular setae curving ventrally throughout. Superior simple notosetae of setigers 1-3 short with slightly hooked tips (Figure 48-2d), becoming long with fine tips by

setiger 4 (Figure 48-2a,c). Inferior acicular notosetae of setigers 1-3 as large hooks with smooth margins (Figure 48-2d), becoming gently curved with pointed tips and minutely hispid convex margins (Figure 48-2c) by setiger 5. Each neuropodium with one superior acicular seta and one inferior simple seta (Figure 48-2a). Superior acicular setae curving ventrally on setigers 1-3, dorsally thereafter. Superior acicular neurosetae of setigers 1-3 greatly enlarged and curved (Figure 48-2a,e), becoming slender and gently curved with minutely hispid convex margins from setiger 4 (Figure 48-2c). Inferior neurosetae of setigers 1-3 short with hooked tips (Figure 48-2a,e), becoming long with fine tips by setiger 4 (Figure 48-2a,c). Pygidium bilobed with numerous papillae (Figure 48-2b).

REMARKS: Fauveliopsis sp. A differs from all other described members of the genus in having enlarged, curved hooks in the neuropodia of setigers 1-3.

GULF OF MEXICO BLM-OCS OCCURRENCE: Off Florida (Figure 48-1); 19-45 m; coarse to medium sand, silty fine sand, sandy silt.

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.