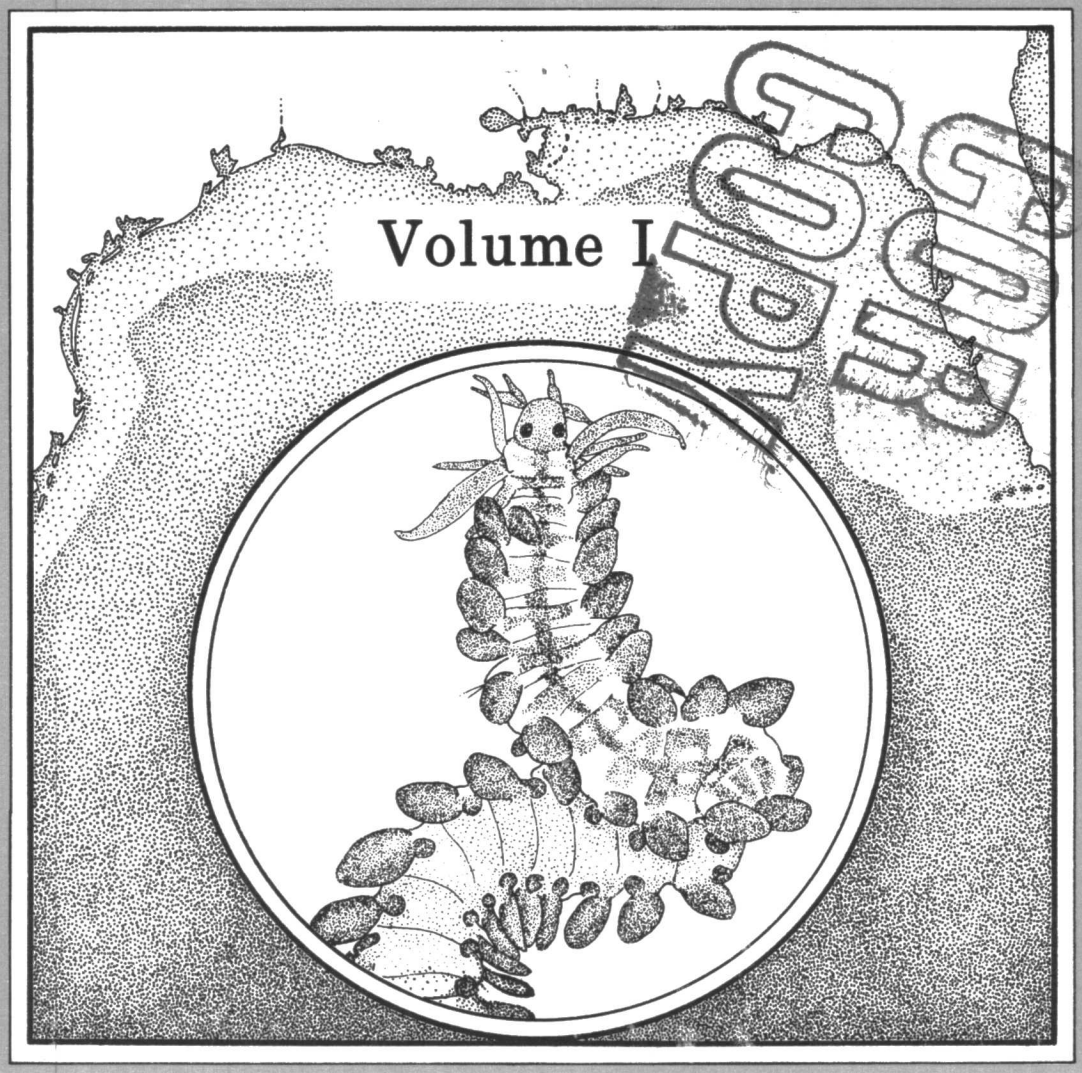
OCS STUDY
MMS 84-0049

TAXONOMIC GUIDE TO THE

POLYCHAETES OF THE NORTHERN GULF OF MEXICO



U.S. DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE

MMS 84-0049

TAXONOMIC GUIDE TO THE POLYCHAETES OF THE NORTHERN GULF OF MEXICO

Volume I

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Project Officer

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Abstract

Taxonomic standardization of Bureau of Land Management (BLM) collections of polychaetes from the outer continental shelf (OCS) of the northern Gulf of Mexico resulted in the identification of 593 species in 288 genera and 59 families. Forty-one percent of the polychaete fauna (226 species, 18 genera, and two families) are tentatively recognized as new, awaiting further taxonomic treatment for formal designation of new names.

All species identified from the BLM-OCS voucher collection are described and figured. Based on species occurrences in these collections, distributional maps and a summary of occurrence information for each species are also included. Keys to genera and species are provided to aid in future identification of polychaetes from the area.

Preface

The polychaetes have been the subject of intensive studies over the last several years and massive amounts of information about the systematics, ecology and biology of these animals are accumulating. Finally, information about polychaetes, which may make up as much as 50-60% of the standing crop of macroinvertebrates in soft substrates, is being included in the analysis of the benthic environment.

In general, the conditions for completing a successful benthic investigation include a well-planned sampling program with well-designed laboratory procedures, so that the basic material, the specimens, are in a condition that allow identification. Secondly, the laboratory in which the analysis is performed must be equipped in such a fashion that a study can be completed in a reasonable fashion. Thirdly, given all of these conditions, nothing can be done unless adequate identificatory aids, such as keys, handbooks and original papers are available.

The Gulf of Mexico polychaetes have been very poorly known. The number of comprehensive papers from this region are few and most are fairly old, so that up to now it has been impossible in a reasonable, economically feasible fashion to do a large-scale benthic study in the Gulf and include information of value about the polychaetes. The reasons for this lack of work on the polychaetes lie in the complex zoogeographical relations of the Gulf of Mexico and the general lack of work on polychaetes from the whole western Atlantic region, especially from its tropical parts.

This handbook should go a long way to fill this gap. It contains, as indicated, a review of the systematic treatment of the material collected over the last several years under the auspices of the Bureau of Land Management. One goal of the program was to standardize the scientific names applied to the Gulf polychaetes by various workers around the country. This goal is sure to be fulfilled: The handbook represents a truly comprehensive review of the material, and the quality of the treatment is high. The format did not allow the publication of new taxa, since a standard format was one of the goals of the project; a large number of new taxa will have to be published in greater detail elsewhere. Users of the handbook must keep this in mind and use the handbook as a date-line: They usually will not have to search a lot of the old literature which largely is unavailable anyway, but they will have to search for publications issued after the date of completion of the manuscript for this volume.

Another limitation to the volume is that it was based on the material collected during the BLM studies that was treated; a number of other taxa have been collected in the Gulf, especially from hard substrates, that are poorly represented in the BLM collections. Thus the handbook has limitations, and for that reason, must be used with some caution.

However, it represents an enormous advance in our knowledge of polychaetes of the Gulf of Mexico and the various authors of the chapters are to be congratulated on the thoroughness, and care in preparation of the reviews of each family. The editors, Joan Uebelacker Clarke and Paul G. Johnson, have done a masterful job in getting this

project completed. I am frankly very pleased to see this project successfully completed: I am sure that the publication of the volume will lead to greatly increased research on polychaetes in the region.

Washington, D.C. 15 November 1983

Kristian Fauchald

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A project of this size and scope is indeed a massive undertaking, and it is no understatement to say that it could not have been accomplished without the assistance, encouragement, advice, and cooperation of an unusually large number of people. The editors would first like to express their sincere appreciation to all contributing authors, for without their help this Guide would never have become a reality. Their dedication to the field of polychaete taxonomy motivated many to assume this responsibility above and beyond their regular professional and personal obligations. This dedication is clearly demonstrated in the chapters they produced.

Within the Minerals Management Services Gulf of Mexico OCS Regional Office, Dr. Richard E. Defenbaugh is especially acknowledged for his continual encouragement and support in the polychaete taxonomic standardization program. As the Contracting Officers Representative, he maintained a watchful eye over the development and progress of the study. His insight and guidance enhanced the ability of this document both to address the management goals of the Service, and to provide a definitive work for the scientific community at large. His assistance in administrative and contractual details and his faith in our ability to complete this massive work are especially appreciated.

The following individuals and institutions are acknowledged for their assistance in providing materials and collection information necessary to accurately describe and document the occurrence of polychaetes included in this study. Transfers of BLM-OCS voucher collections were made by Mr. Jay Leverone, Mote Marine Laboratory, Sarasota, Florida (SOFLA); Dr. Henry Kritzler, Florida State University, Tallahassee, Florida (MAFLA, in part); Dr. James Baker, Southwest Research Institute, Houston, Texas (CTGLF); Steve Rabalais and Lynn Tinnin, University of Texas, Marine Sciences Institute, Port Aransas, Texas (STOCS); and Dr. George S. Lewbell, LG&L, Ecological Research Associates, Bryan, Texas (IXTOC). Collection data for the above studies were provided by Dr. Keith MacDonald, Woodward-Clyde Consultants, San Diego, California (SOFLA); Craig Brandt, Science Applications, Inc., Oak Ridge, Tennessee (MAFLA); Ralph E. Childers, Childers and Associates, Inc., Houston, Texas (CTGLF); Dr. Warren R. Flint, University of Texas, Marine Sciences Institute, Port Aransas, Texas (STOCS); and Dr. Benny J. Gallaway, LG&L, Ecological Research Associates, Bryan, Texas (IXTOC). Supplementary material from a variety of sampling programs within the study area were also examined, compared, and included in certain family chapters. The following are acknowledged for providing this corroborative material and pertinent collection information: Andrew L. Lissner, Ocean Sciences Department, Interstate Electronics Corporation (IEC) (under Environmental Protection Agency Contract No. 68-01-461C for selection of ocean disposal sites); Dr. E. A. Kennedy, TerEco, Inc., College Station, Texas (under National Marine Fisheries Service Contract No. NA80-GA-C-0075 work Unit B-2 for Flower Garden Banks Assessment); Dr. Barry A. Vittor, as TechCon, Inc., Mobile, Alabama (under Mobil Oil Exploration Producing Southeast, Inc., Contract No. 519); and Barry A. Vittor & Associates, Inc., Mobile, Alabama (under U.S. Army Corps of Engineers Contract No. DACW01-80-C-0427 and LOOP, Inc., Contract No. C-12049).

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Ms. Dorothy Cotton was responsible for the typing and word processing of numerous drafts of all chapter manuscripts and all text in the completed Guide. This was not an easy task considering the number of authors and the often complex and confusing taxonomic jargon used in describing polychaetes. Ms. Cotton's skills and undying patience with editorial changes were invaluable in the completion of this project. Our sincere gratitude somehow does not seem enough.

Mr. Ben Jordan provided final rendering of nearly all figures, transforming the many crude and complex drawings provided by the individual authors into scientifically accurate and aesthetically pleasing illustrations. He was also responsible for final camera-ready preparation of all maps and figures. His insight and interest in the project from an artistic view is reflected in the outstanding quality and interpretability of his work.

Ms. Linda Lutz is recognized for her contribution in illustrating final drawings in the orbiniid chapter.

Finally, Mr. Jerry Gathof, Ms. Katherine Gilbert, and Mr. Paul Wolf are acknowledged for their essential contributions to the in-house review and editing procedures. Their persistence in the location and correction of errors, especially in the scientific content, has greatly enhanced the quality of the Guide. Paul Wolf in particular has worked closely with the editors in this respect, and deserves special credit for willingly accepting many assignments for which official recognition is lacking.

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INTRODUCTION

As part of the Outer Continental Shelf Lands Act (as amended), the Secretary of the Department of the Interior is responsible for developing policy for the orderly management of oil and natural gas resources of all submerged lands of the continental shelf seaward of the State boundaries. Pursuant to this Act, the Bureau of Land Management (BLM) was designated as the administrative agency responsible for leasing of these lands (according to the National Environmental Policy Act (NEPA) of 1969), and assessing the impacts of oil and gas exploration and development upon human, marine, and coastal environments. In order to streamline OCS management activities and facilitate the leasing process, OCS responsibilities previously dispersed among the BLM and the U. S. Geological Survey were recently (January 19, 1982) consolidated into the newly created Minerals Management Service (MMS). This new agency now carries prime responsibility for all aspects of OCS leasing and resource management.

The Environmental Studies Program, initiated in 1973, was implemented by the Secretary of the Interior through the BLM to provide the needed information in determining environmental impacts. Field investigations in the Gulf of Mexico followed in 1974 with the baseline investigation of the Mississippi-Alabama-Florida (MAFLA) Outer Continental Shelf Study and the South Texas Outer Continental Shelf Study (STOCS) in 1975. These baseline studies were multidisciplinary programs which documented biological communities, water quality characteristics, seafloor geology and geochemistry, as well as general environmental contamination by selected trace metals and hydrocarbons. In 1978, following review of the program by the National Academy of Sciences, the direction of the program changed from baseline studies to regionally planned, management-oriented studies. The Ecological Investigations of Petroleum Production Platforms in the Central Gulf (CTGLF), the IXTOC Oil Spill Assessment Study off southern Texas and the Southwest Florida Shelf Ecosystems Study (SOFLA) are examples of this regional approach.

Each of these studies programs provided extensive biological collections to determine the distribution and structure of biotic assemblages across the seafloor. A major component of the faunal analysis of these collections was the identification and enumeration of thousands of polychaetous annelids. These small worms were found to numerically dominate the majority of soft-bottom communities sampled in terms of both numbers of species and individuals represented, and where measured, comprised the majority of biomass as well.

Through investigations into their distributions and life histories, many polychaete species were found to be instrumental in delineating community assemblages along the shelf and in defining environmental parameters responsible for controlling their distributions. The high degree of sensitivity demonstrated by certain species to changes in the physico-chemical conditions of their sedimentary environment, make them ideal candidates as possible indicators for evaluation of environmental impacts associated with petroleum and minerals exploration and production activities on the shelf. Documentation of faunal changes necessary to ascertain impact, however, requires repeatability in the taxonomic characterization of an area through accurate and consistent identification to the species level.

In view of the difficulties encountered in the identification of these organisms, the scattered nature of the relevant taxonomic

literature, and the large number of previously undescribed species encountered during these offshore studies, it became desirable to standardize identifications of all polychaete species represented. This would allow for a more accurate inter-comparison of the results, and more importantly, allow for a comparison of future monitoring programs in certain lease areas. This was accomplished in the present study through the acquisition, re-examination, and verification of all polychaete taxa represented in the voucher collections of the above-mentioned BLM-OCS-funded programs.

The following chapters provide for the first time a comprehensive taxonomic guide to the benthic polychaetes of the northern Gulf of Mexico outer continental shelf. Examination of voucher material from the five BLM-OCS studies resulted in the inclusion of 593 polychaete species representing 288 genera and 59 families. An additional family--Arenicolidae--was also included although it was not represented in the BLM-OCS collections. This is a unique and hitherto poorly known fauna; 41% of the species have not been previously described. Thus, one can surmise that the level of consistency and accuracy in polychaete identifications necessary to provide meaningful ecological characterizations such as animal-sediment relationships has been virtually impossible to achieve for this region in the past. Some examples will serve to illustrate the kinds of difficulties encountered, and which use of this Guide will help researchers to avoid in the future.

The cossurid species Cossura delta was originally reported in all five BLM-OCS studies as a ubiquitous, fairly abundant component of the offshore shelf fauna. In fact, Baker et al. (1981) found it to be positively correlated with salinities off Louisiana. After close examination and comparison of BLM voucher material with museum material, it was determined that two species were present, but neither was Cossura delta. One species, Cossura soyeri, was indeed widespread along the offshore shelf. A new species, Cossura sp. A, was found at only one station on the shelf edge off Florida in sandy silt at 177 m depth. The true Cossura delta--originally described from and named for the type locality, the Mississippi delta--is a common inshore species which inhabits silts and clays throughout the north-central Gulf from Sabine, Texas to Mobile, Alabama in areas affected by high river discharge (Barry A. Vittor & Associates, Inc.; Unpublished data).

Two capitellid species, Mediomastus ambiseta and M. californiensis, are morphologically quite similar and difficult to separate. In past Gulf of Mexico studies, the two species have generally been lumped under the latter designation. However, M. ambiseta actually inhabits nearshore muddy sediments whereas M. californiensis is found farther offshore in sandy sediments. Thus, the considerable environmental and ecological information available for M. californiensis has often been erroneously incorporated into environmental reports when the species under consideration was in actuality M. ambiseta.

Another example of congeneric confusion involves several species of the pilargid genus Ancistrosyllis. Two species, A. papillosa and A. hartmanae, were difficult to separate consistently until problems with the original descriptions of the species were resolved by examination of type material. It is now apparent that A. papillosa occurs primarily in silty substrata while A. hartmanae is found primarily in coarse sand. Furthermore, A. papillosa often co-occurs with a third species, A. jonesi, but A. hartmanae is never found with A. jonesi.

From the above discussions, it is obvious that consistent and accurate identifications are the basis for meaningful characterizations of animal-sediment relationships and other ecological community parameters. For example, one would expect to find Ancistrosyllis papillosa in samples from nearshore muddy areas, along with A. jonesi, Mediomastus ambiseta, and Cossura delta. In slightly deeper areas Cossura soyeri would begin to replace C. delta. In areas of primarily sandy substrata, one would expect to find Mediomastus califoniensis and Ancistrosyllis hartmanae. However, due to the lack of standardized identifications in the past, species such as M. californiensis, C. delta, A. hartmanae and A. jonesi have been reported from both nearshore and offshore areas in both silty and sandy habitats.

Some geographic trends in species distributions and attendant problems which result from misidentifications have also become apparent during the course of this study. For example, the magelonid species Magelona phyllisae was considered a common, numerical dominant of the shallow to intermediate (10 to 49 m) shelf fauna throughout the western and central Gulf (STOCS, IXTOC and CTGLF final reports) and was reported to exhibit stable, dense populations throughout the STOCS/IXTOC studies. This species would suggest a good candidate for a possible indicator of environmental perturbation. The species, however, is in actuality not M. phyllisae but a new species designated herein as Magelona sp. H. East of Mobile Bay, this dominant species is replaced by a suite of similar species (all of them new) which represent different environmental requirements. These eastern Gulf species were previously reported under a variety of erroneous names. Without proper taxonomic distinction between these species, mistakes in ecological inferences could be made which would render meaningless impact assessments from the data base.

A faunal break appears to occur on the continental shelf near Mobile Bay. It separates a few common, western Gulf-restricted species such as Magelona sp. H and the ampharetid Sabellides sp. A from a number of common, eastern Gulf-restricted species, particularly syllids. Many other species seem to have a disjunct distribution--they are common in both the eastern and western Gulf but are absent in the north-central Gulf. The overall picture is one of highest diversity in the eastern Gulf, moderate diversity in the western Gulf and lowest diversity in the north-central Gulf. This reflects, at least in part, differences in habitat heterogeneity among the three regions. The substrates at SOFLA and MAFLA stations ranged through all sediment types from silty clay to coarse sand, gravel, shell hash and coral rubble. In addition, some samples included living substrates such as sponges and corals. STOCS/IXTOC stations ranged from silty clay to sand, whereas CTGLF stations were virtually all silty substrates. At the same time, however, many species' apparently disjunct distribution patterns are probably an artifact of the lack of standardized identification techniques among the various investigating laboratories. In particular, the failure to distinguish between morphologically similar species would result in the absence of some of those species from the BLM-OCS voucher collections and thus incorrectly reflect their geographic distributions.

Finally, this Guide should not be viewed as a completely accurate record of species distributions, nor as a compendium of all northern Gulf of Mexico polychaete species, since nearshore and estuarine species, abyssal species, hard-bottom species, and pelagic species are poorly represented or not included at all. Neither can the Guide correct inherent taxonomic problems in the BLM-OCS data bases unless large

numbers of specimens are reexamined. The true strength and utility of the Guide lies in its contribution to the attainment of accurate and consistent identifications of outer continental shelf polychaetes in future studies in the Gulf of Mexico and neighboring regions. It is hoped that it will also prove to be a stimulus to more detailed taxonomic treatment of the polychaetes included herein, as well as of other taxa which are valuable to our understanding of benthic ecology and marine environmental resource management.

Organization of the Guide.

The Guide comprises 60 family chapters produced using a common, comparable format. Chapters are arranged in phylogenetic order following Fauchald's (1977a) review of the class, with minor exceptions. A dichotomous key to families has been intentionally omitted from the Guide since such keys are readily available in the literature (see Berkeley and Berkeley, 1952; Ushakov, 1955; Day, 1967; Banse and Hobson, 1974; Fauchald, 1977a; Hobson and Banse, 1981). The novice taxonomist, if unfamiliar with polychaete morphology and terminology, may find these keys cumbersome. However, the above publications and other regional works on polychaetes (e.g., Hartman, 1951a; Day, 1973; Gardiner, 1976), along with the descriptions and figures in this Guide, should provide the novice with an adequate guide to family level recognition.

Each chapter is arranged into several sections providing background and taxonomic information for the family, along with keys and descriptions for all genera and species. The introductory section describes the general morphology and unique characteristics of the family. This section should be referred to frequently until the user is quite familar with family level recognition. A brief summary of major revisions within the family, along with references to pertinent taxonomic works, may also be included in this section, as well as an account of the numbers of species and genera currently recognized for the family. The number of genera and species encountered in the present study and the number of new taxa and species newly recorded from the Gulf are also listed.

Following the introduction, each chapter provides a discussion of the principal diagnostic characters used to separate genera and species within the family. Genera included in the Guide, and often other, closely related genera, are compared and contrasted with special reference to structures exhibited by species described and figured in the text. For certain families, special handling and microscopic techniques are discussed which might aid in the examination of the principal diagnostic characters. It is strongly recommended that the reader become familiar with the information and techniques reviewed in this section before proceeding with the keys and taxonomic descriptions for species identification.

A biological notes section provided in each chapter briefly summarizes available information on the life history of the family, including habitats and geographical distribution, feeding strategies, and reproduction. Examples of tube construction, locomotion, behavior, commensalism, parasitism, and larval development are given when possible.

The taxonomic section of each chapter includes a list of species covered in the chapter, a key to genera, generic diagnoses, keys to species, and the species descriptions. Each species description comprises a number of sections. All descriptions include a list of Gulf of Mexico BLM-OCS material examined, along with any supplementary material

from other projects or regions; the actual taxonomic description; a summary of Gulf of Mexico BLM-OCS occurrence information, including depth ranges and sediment types; a plate of figures illustrating the important diagnostic characters of the species; and a distributional map showing the Gulf of Mexico BLM-OCS stations. In many cases, the species occurrences plotted on the distributional maps were based only on voucher material examined. However, when previous identifications of a given species were judged to be consistent and reliable, all occurrences, including those of the non-voucher material not examined during this study, were plotted on the map. A remarks section discusses problems in the taxonomy or nomenclature of the species, affinities with other taxa, juvenile characteristics, range extensions, etc. Descriptions of previously known species also include a list of important references, previously reported maximum lengths and widths and habitat information, and worldwide distribution. In some cases the taxonomic assignments are tentative, and either a "cf." or a question mark designation has been used. The "cf." designation indicates that minor discrepancies were noted in comparing examined specimens with type material or with previous authoritative descriptions of the assigned species. However, the differences noted were not considered significant enough to justify erection of a new species. The question mark designation indicates that all characteristics of the examined specimens appeared to match those of the assigned species, but certain key features (e.g., the posterior end or the mouthparts) were missing and thus the identification could not be confirmed.

DESCRIPTION OF THE STUDY AREA

The geographical area of coverage for this Guide encompasses the continental shelf of the northern Gulf of Mexico from Brownsville, Texas to the Florida Keys and offshore to the 200 meter isobath (Figures 1-4). Collections of polychaetes from five previous or ongoing BLM-funded sampling programs (SOFLA, MAFLA, CTGLF, STOCS, IXTOC) were included in the taxonomic standardization process. Descriptions of the studies from which these collections originated and reference to the original data sources are provided in Table 1. The reader is referred to these original reports and publications for further details on sampling and overall results of each study. The coordinates, depth and sediment type for each sampling location are listed in Tables 2-6.

The Gulf of Mexico is a semi-enclosed basin covering about 1,700,000 sq. km and having a maximum depth of about 3,700 m (Uchupi, 1967). The total coastline is about 8,000 km, but in the United States alone the tidal shoreline of the northern Gulf is at least 27,200 km (Hedgepeth, 1953). Polyhaline bays and estuaries are numerous and cover about 52,000 sq. km. Along most of the coast the continental shelf slopes gradually seaward and covers an additional 343,200 sq. km to a depth of about 200 m (Carsey, 1950). Shelf width varies from about 30 to 260 km, and breaks occur at the Yucatan Strait where the sill depth is about 2,100 m and at the Florida Strait where the sill is about 1,000 m deep (Uchupi, 1967; Armstrong, 1969; Jacobs and Ewing, 1969; Nowlin, 1971).

Prominent topographical features in the Gulf include the Mississippi fan and trough, the Desoto Canyon, the Florida escarpment, and the Louisiana-Texas slope and plateau (Figure 5). The Mississippi fan is a continuous tongue of Pleistocene-Holocene sediment extending from the Mississippi Delta southeast across the shelf to the Straits of Florida and southwest to the Sigsbee Abyssal Plain. The fan was built and is maintained by the continuous deposition of sediments by the Mississippi River, which amounts to over 700 million metric tons per year (Gunter, 1967). This represents approximately 64.5% of the annual sediment load for the Gulf.

The Desoto Canyon is a roughly S-shaped submarine canyon approximately 41 km long with a maximum relief of about 200 m. The Canyon cuts across the shelf and effectively divides the eastern Gulf into a western clastic sedimentary province produced by terrigenous sediments deposited by the Mississippi, Mobile, and Apalachicola rivers, and an eastern carbonate province with sediments of biological origin. Southeast of the Desoto Canyon is the broad carbonate shelf of the Florida Platform.

Geologic History.

The Gulf of Mexico is a very old basin, and has undergone numerous changes in its depth, shoreline and connection with other bodies of water throughout geologic time. According to Murray (1961), the Gulf basin developed as a shallow trough during the Paleozoic era, and was first flooded by seawater in the Mesozoic about Jurassic time. This apparently occurred in conjunction with continental drift of the Americas from western Europe and Africa (Yarborough, 1967; Bullard, 1969). Since Tertiary time the Gulf of Mexico has probably been a deep sea (Galtsoff, 1954) and its water level and area have fluctuated periodically in response to sea level changes and peripheral tectonic activity (Rainwater, 1967).

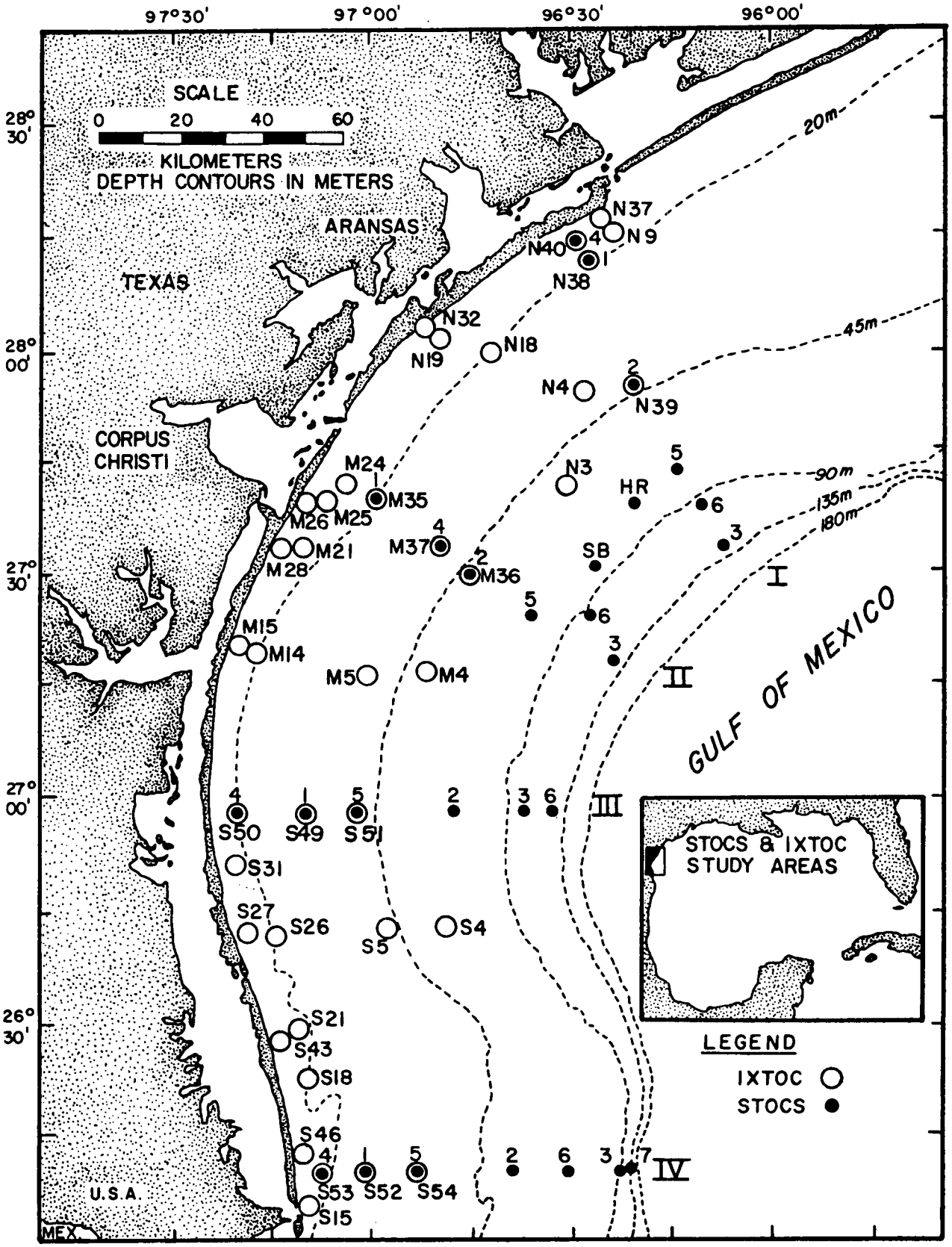

Figure 1. Map of the South Texas Outer Continental Shelf Study (STOCS) and IXTOC Oil Spill Assessment Study (IXTOC) sampling stations.

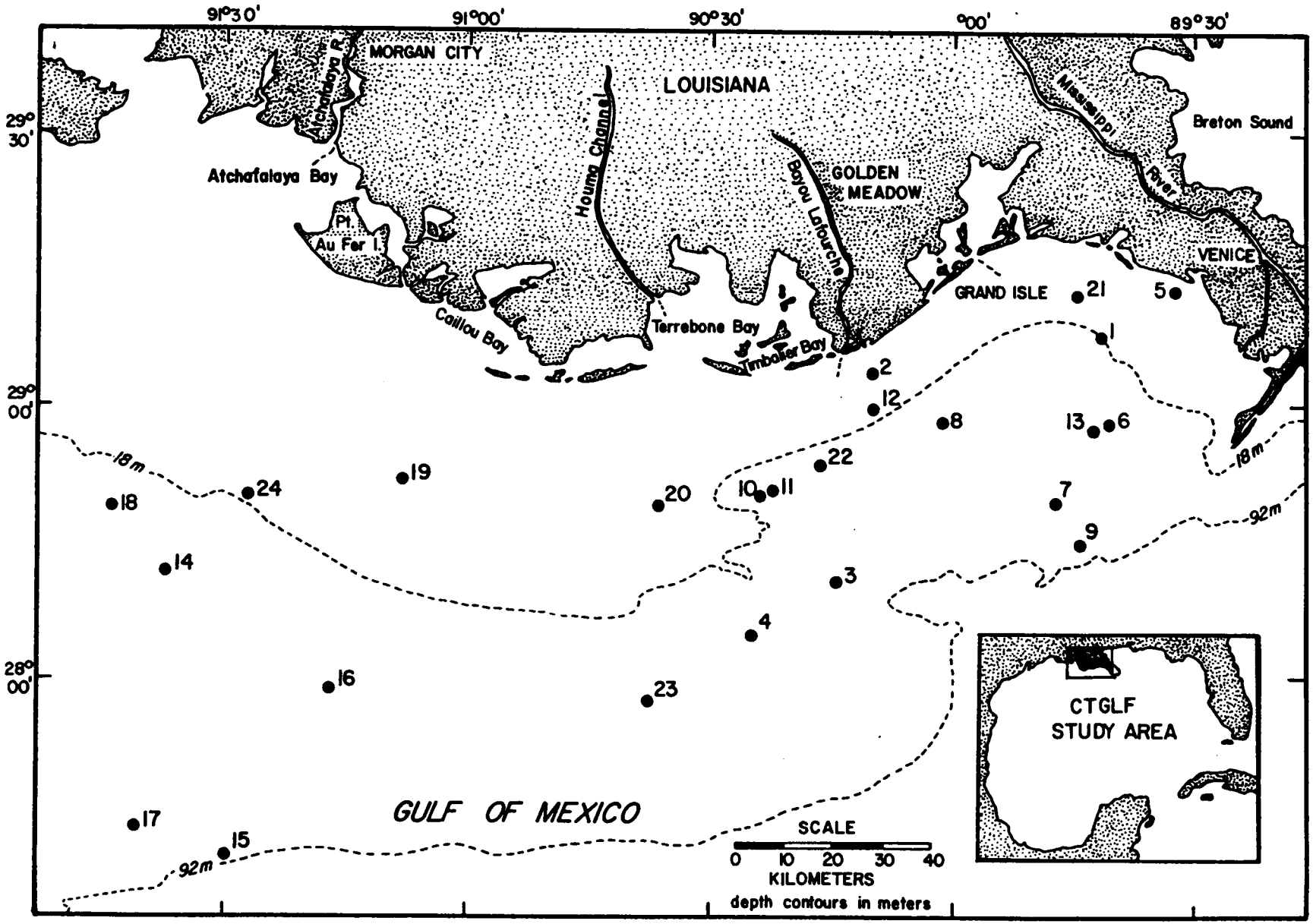

Figure 2. Map of the Ecological Investigations of Petroleum Production Platforms in the Central Gulf (CTGLF) sampling stations.

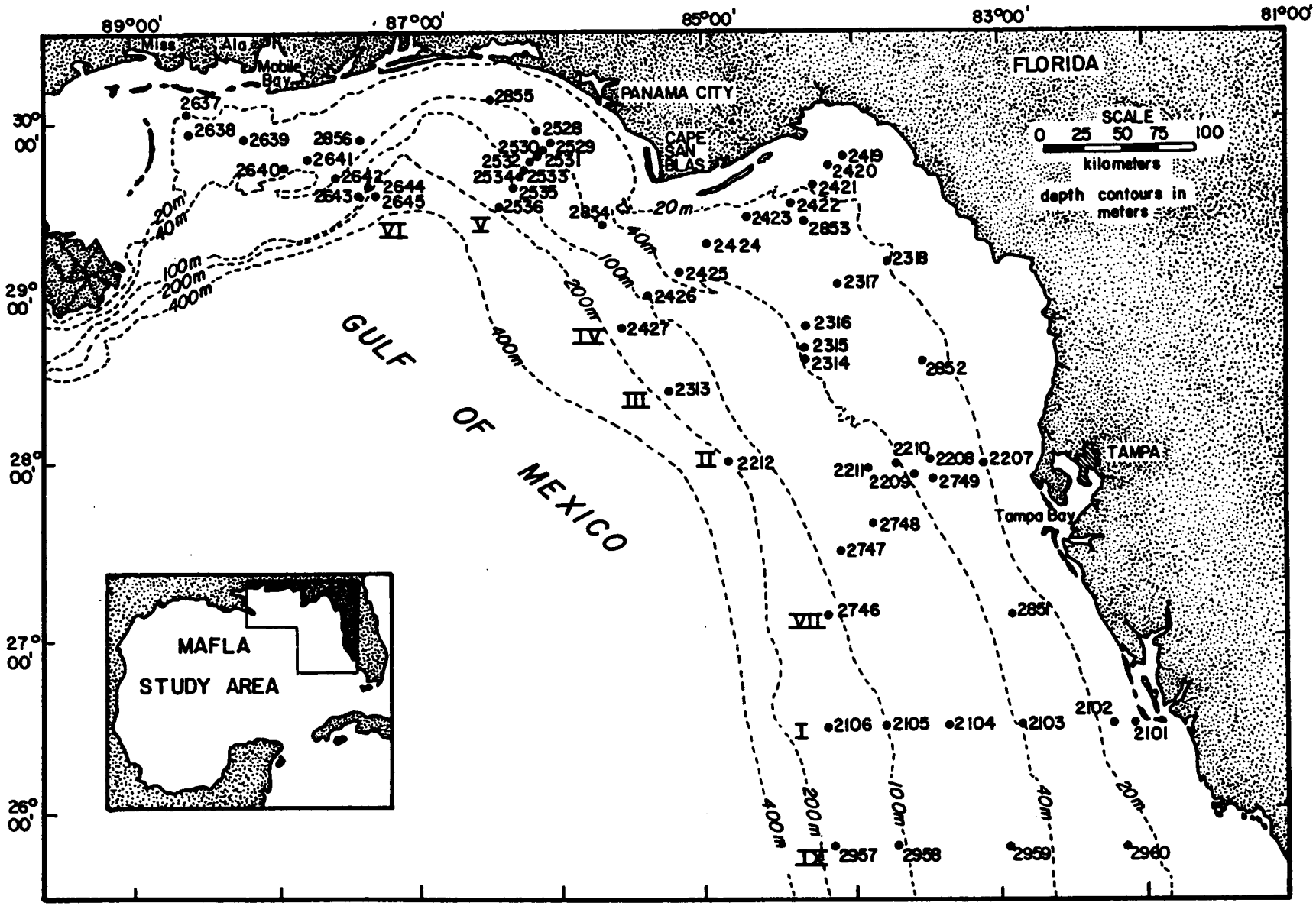

Figure 3. Map of the Mississippi-Alabama-Florida Outer Continental Shelf Study (MAFLA) sampling stations (1975-78).

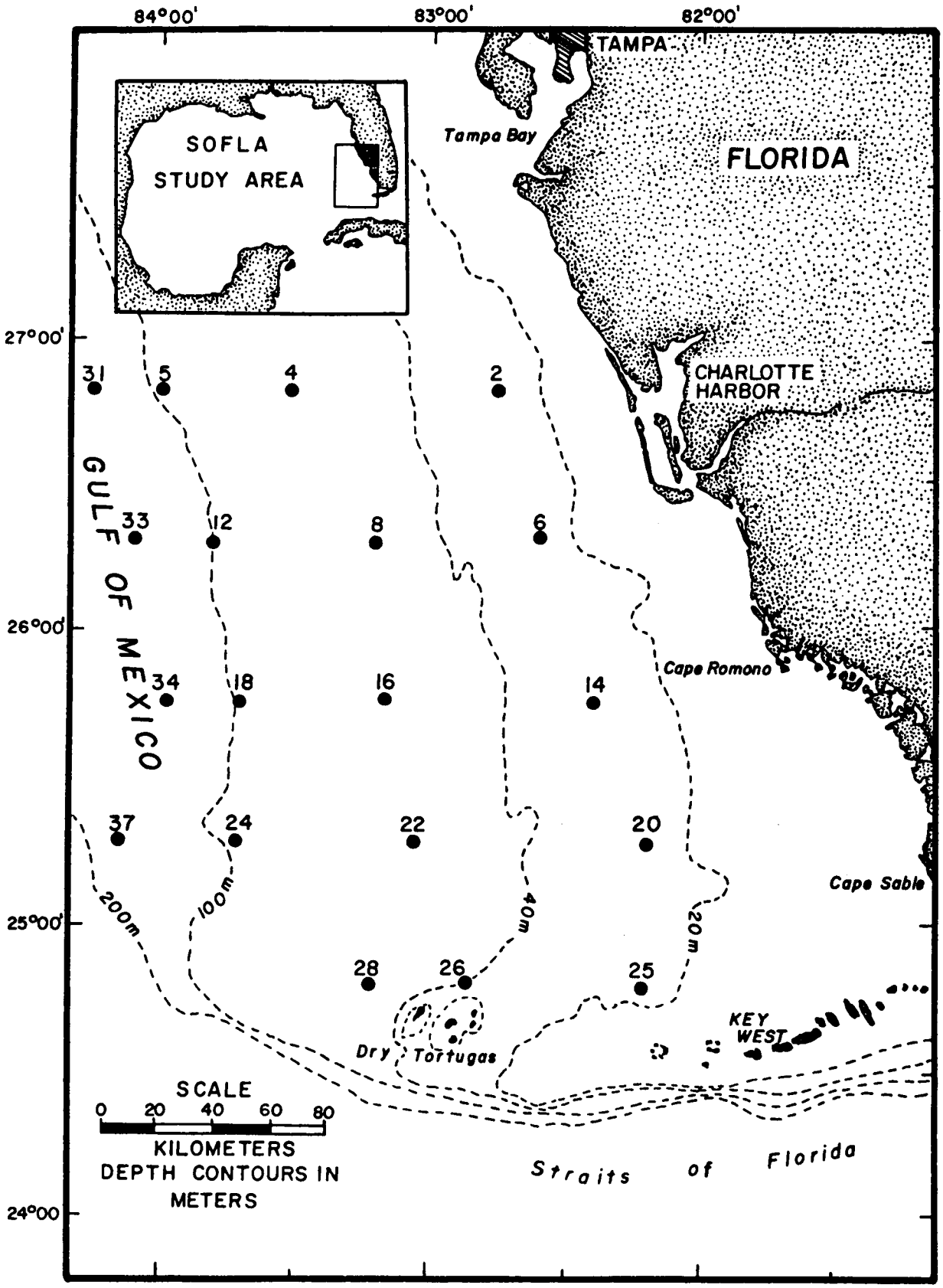

Figure 4. Map of the Southwest Florida Shelf Ecosystems Study (SOFLA) sampling stations.

Table 1. Major BLM-OCS Study Programs from which polychaete collections were examined.

	Study Title				
	MAFLA	SOFLA	CTGLF	STOCS	IXTOC
Coverage					
Geographic	Offshore Biloxi, MS southeast to Naples, FL	Offshore Charlotte Harbor south to Dry Tortugas	Offshore Louisiana west of the Mississippi Delta to 350 miles west to Vermillion Bay	Offshore Texas from Port O'Connor south to Port Isabel	Offshore Texas, roughly same area as occupied by STOCS
Depth	10-189 m	24-153 m	6-98 m	15-182 m	4.5-55 m
Sampling*					
Intensity	60 stations/roughly 8 transects (9 replicates)	19 stations/5 transects (5 replicates)	24 stations (4 platform, 4 control and 16 secondary) (6 replicates)	34 stations/ 4 transects (4-6 replicates)	12 stations (6 replicates); 38 stations (6 replicates)
Frequency/Duration	Eight seasonal collections between 1975-1978	Three seasons--Fall, 1980; Spring and Summer, 1981	Three seasonal collections--Spring, 1978; Summer/Fall, 1978; Winter, 1979	Six seasonal collections from 1975 to 1977	Nov. 1979 and Dec. 1980; Dec. 1980
Gear Type	Modified Reineck box core ($0.09m^2$)	Modified Reineck box core ($0.09m^2$)	Smith-McIntyre grab ($0.09m^2$)	Smith-McIntyre grab ($0.1m^2$)	Smith-McIntyre grab ($0.1m^2$)
Polychaetes Reported					
No. taxa**	586	250	158	312	103
No. families	58	46	56	44	36
Remarks & References	Largest collection available covering greatest variety of benthic habitats. Dames & Moore, 1979	Voucher material for first three sampling periods only available for study. Sampling still in progress. Woodward-Clyde, 1983; Continental Shelf & Assoc., 1983	Bedinger, 1981	Flint and Rabalais, 1980	Boehm, 1982

*Sieve size used in all sampling programs was 0.5 mm.

**Number of polychaete taxa presented in the above BLM-OCS studies varied substantially according to levels of identifications reported.

Table 2. Station locations, sediment type and water depth for the Southwest Florida Shelf Ecosystem Study (SOFLA).

STATION	COORDINATES LATITUDE	LONGITUDE	SEDIMENT TYPE	DEPTH (m)
2	26°45.84'N	82°45.18'W	Medium sand	24
4	26 45.81	83 32.12	Medium sand	56
5	26 45.70	84 00.13	Coarse sand	91
6	26 16.79	82 38.35	Very fine sand	26
8	26 16.72	83 12.81	Fine sand	48
12	26 16.72	83 47.67	Fine sand	90
14	25 46.01	82 23.82	Fine sand	26
16	25 45.70	83 11.07	Fine sand	54
18	25 45.37	83 42.22	Medium sand	87
20	25 17.34	82 09.73	Coarse sand	22
22	25 17.18	83 02.07	Fine sand	53
24	25 16.90	83 43.18	Medium sand	88
25	24 47.95	82 13.26	Silt/clay	24
26	24 47.82	82 52.07	Silt/clay	38
28	24 47.11	83 13.08	Fine sand	58
31	26 45.61	84 14.81	Fine sand	141
33	26 16.53	84 05.97	Fine sand	145
34	25 45.31	83 57.63	Medium sand	135
37	25 16.64	84 09.39	Medium sand	148

Table 3. Station locations, sediment type, and water depth for the Mississippi-Alabama-Florida (MAFLA) Outer Continental Shelf Study.

TRANSECT	STATION	COORDINATES LATITUDE	COORDINATES LONGITUDE	SEDIMENT TYPE	DEPTH (m)
I	2101	26°24'59.6"N	81°15'08.9"W	Fine-very fine sand	11
	2102	26 24 59.6	82 24 59.6	Fine sand	18
	2103*	26 25 00.0	82 57 59.7	Fine sand	33
	2104	26 25 00.0	83 23 00.8	Coarse sand	53
	2105*	26 24 59.5	83 49 57.6	Coarse sand	90
	2106	26 24 56.8	84 15 00.0	Silty, very fine sand	168
II	2207	27°57'00.4"N	83°09'00.3"W	Fine-very fine sand	19
	2208	27 56 00.5	83 27 29.6	Clayey, sandy silt	30
	2209	27 52 30.5	83 33 59.0	Clayey, sandy silt	34
	2210	27 57 28.8	83 42 29.2	Silty, very fine sand	37
	2211	27 56 29.5	83 52 59.5	Coarse sand	43
	2212	27 57 00.0	84 47 59.6	Silty, very fine sand	189
III	2313	28°23'59.3"N	85°15'03.0"W	Clayey, sandy silt	177
	2314	28 29	84 21	Medium coarse sand	29
	2315*	28 33 59.1	84 20 09.1	Silty fine sand	38
	2316	28 42 00.3	84 20 00.7	Silty fine sand	35
	2317*	28 56 00.3	84 05 59.9	Silty, very fine sand	29
	2318	29 05 00.8	83 45 00.5	Medium sand	20
IV	2419	29°46'59.8"N	84°05'00.2"W	Medium fine sand	10
	2420	29 42	84 11	Fine-very fine sand	14
	2421*	29 37 00.8	84 17 00.2	Silty fine sand	19
	2422	29 30	84 27	Medium fine sand	24

Table 3. (Continued)

	2423	29°37'00.8"N	84°17'00.2"W	Silty fine sand	19
	2424*	29 13 00.7	85 00 01.4	Medium sand	27
	2425	29 05	85 15	Medium sand	36
	2426	28 57 59.4	85 23 00.2	Fine sand	82
	2427	28 49 59.1	85 37 01.9	Clayey, sandy silt	175
V	2528	29°54'58.6"N	86°04'58.5"W	Coarse sand	37
	2529*	29 55 59.0	86 06 28.8	Coarse sand	38
	2530	29 51	86 06.5	Medium sand	41
	2531	29 47 58.9	86 09 28.9	Coarse sand	45
	2532	29 46	86 12.5	Coarse sand	52
	2533*	29 42 59.9	85 15 28.6	Coarse sand	67
	2534	29 40	86 17	Coarse sand	73
	2535*	29 37 00.3	86 19 59.8	Clayey silt	117
	2536	29 30 1.6	86 24 59.0	Clayey silt	189
VI	2637	30°02' N	88°37' W	Sandy silt	21
	2638	29 55 29.1	88 33 28.2	Sandy silt	24
	2639*	29 53 30.0	88 12 27.5	Sandy silt	32
	2640	29 43 29.3	87 54 30.3	Medium sand	35
	2641*	29 45 28.6	87 46 30.3	Fine sand	37
	2642	29 40.5	87 37	Medium sand	36
	2643*	29 36 31.0	87 27 00.8	Fine sand	69
	2644	29 36.2	87 23.5	Medium sand	75
	2645	29 35 00.5	87 20 02.2	Coarse sand	106
VII	2746	27°03.5' N	84°13.7' W	Silty, very fine sand	121
	2747	27 24.2	84 07.3	Medium fine sand	74
	2748	27 37.2	83 53.5	Coarse sand	50
	2749	27 51.9	83 27.2	Sandy silt	29

Table 3. (Continued)

Supplemental	2851	27°03'25.8"N	83°01'08.5"W	Fine sand	36
	2852	28 30 00.4	83 29 58.4	Medium sand	22
	2853	29 18 01.9	84 19 59.0	Coarse sand	29
	2854	29 24 00.1	85 42 02.0	Medium fine sand	42
	2855	30 08 02.1	86 30 00.0	Medium sand	40
	2856	29 54 01.3	87 24 00.2	Fine sand	30
IX	2957	25°40' N	84°15' W	Silty, very fine sand	180
	2958	25°40'	83°50'	Medium fine sand	120
	2959	25°40'	83°05'	Silty, very fine sand	60
	2960	25°40'	82°20'	Fine sand	27

*Secondary stations

Table 4. Station locations, sediment type, and water depth for the Ecological Investigations of Petroleum Production Platforms in the Central Gulf study (CTGLF).

SITE NUMBER	SITE TYPE	COORDINATES LATITUDE	COORDINATES LONGITUDE	SEDIMENT TYPE	DEPTH (m)
01	P	29°07'42"N	89°41'25"W	Sandy clayey silt	16
02	P	29 02 50	90 09 46	Sandy clayey silt	12
03	P	28 40 02	90 14 43	Silty clayey sand	30
04	P	28 34 09	90 24 32	Clayey silt	45
05	S	29 12 32	89 32 23	Sandy clayey silt	9
06	S	28 57 08	89 41 02	Clayey silt	52
07	S	28 48 34	89 47 17	Clayey silt	65
08	S	28 57 37	90 01 25	Clayey silt	27
09	S	28 44 04	89 44 07	Silt	85
10	S	28 49 53	90 23 18	Silty sand	20
11	S	28 49 33	90 22 36	Silty sand	20
12	S	28 59 07	90 09 41	Silt	17
13	S	28 56 48	89 42 23	Clayey silt	51
14	S	28 41 51	91 37 21	Sandy clayey silt	29
15	S	28 10 02	91 29 39	Silt	98
16	S	28 28 28	91 16 45	Silt	45
17	S	28 13 35	91 41 05	Clayey silt	75
18	S	28 48 50	91 44 20	Clayey silt	25
19	S	28 51 34	91 07 52	Sand	6
20	S	28 48 19	90 36 29	Sandy clayey silt	18
21	C	29 12	89 44	Sandy clayey silt	13
22	C	28 53	90 16	Sandy clayey silt	21
23	C	28 27	90 38	Clayey silt	37
24	C	28 50	91 27	Clayey silt	18

P - Primary S - Secondary C - Control

Table 5. Station locations, sediment type and water depth for the South Texas Outer Continental Shelf Study (STOCS).

TRANSECT	STATION	COORDINATES LATITUDE	COORDINATES LONGITUDE	SEDIMENT TYPE	DEPTH (m)
I	1	28°12'N	96°72'W	Silty clayey sand	18
	2	27 55	96 20	Sandy silty clay	42
	3	27 34	96 07	Silty clay	134
	4	28 14	96 29	Clayey sand	10
	5	27 44	96 14	Silty clay	82
	6	27 39	96 12	Silty clay	100
II	1	27°40'N	96°59'W	Sandy silty clay	22
	2	27 30	96 45	Silty clay	49
	3	27 18	96 23	Silty clay	131
	4	27 34	96 50	Silty clay	36
	5	27 24	96 36	Clayey silt	78
	6	27 24	96 29	Silty clay	98
III	1	26°58'N	97°11'W	Silty clay	25
	2	26 58	96 48	Silty clay	65
	3	26 58	96 33	Silty clay	106
	4	26 58	97 20	Sand	15
	5	26 58	97 02	Silty clay	40
	6	26 58	96 30	Silty clay	125

Table 5. (Continued)

IV	1	26°10'N	97°01'W	Clayey sand	27
	2	26 10	96 39	Sandy silty clay	47
	3	26 10	96 24	Clayey sand	91
	4	26 10	97 08	Sand	15
	5	26 10	96 54	Silty clayey sand	37
	6	26 10	96 31	Clayey sand	65
	7	26 10	96 20	Silty clay	130
HR	1	27°32'05"N	96°28'19"W		75
	2	27 32 46	96 27 25	Silty clay	72
	3	27 32 05	96 27 35		81
	4	27 33 02	96 29 03	Silty clay	76
SB	1	27°26'49"N	96°31'18"W		81
	2	27 26 14	96 31 02	Silty clay	82
	3	27 26 06	96 31 47		82
	4	27 26 14	96 32 07	Sandy silty clay	82

HR - Hospital Rock
SB - Southern Bank

Table 6. Station locations, sediment type and water depth for the IXTOC Oil Spill Assessment study (IXTOC).

IXTOC STATION	CORRESPONDING STOCS STATION	COORDINATES LATITUDE	COORDINATES LONGITUDE	SEDIMENT TYPE	DEPTH (m)
N-38	(I-1)	28°12'00"N	96°27'00"W	Sand-silt-clay	18
N-39	(I-2)	27 55 00	96 20 00	Sand-silt-clay to silty clay	42
N-40	(I-4)	28 14 00	96 29 00	Sand-silt-clay	10
M-35	(II-1)	27 40 00	96 59 00	Clayey silt to silty clay	22
M-36	(II-2)	27 30 00	96 45 00	Clayey silt to silty clay	49
M-37	(II-4)	27 34 00	96 50 00	Clay to silty clay	36
S-49	(III-1)	26 58 00	97 11 00	Silty clay to clayey silt	25
S-50	(III-4)	26 58 00	97 20 00	Sand	15
S-51	(III-5)	26 58 00	97 02 00	Silty clay	40
S-52	(IV-1)	26 10 00	97 01 00	Silty sand to clayey sand	27
S-53	(IV-4)	26 10 00	97 08 00	Silty sand to sand	15
S-54	(IV-5)	26 10 00	96 54 00	Silty clay to sand-silt-clay	37
S-4		26 39 12	96 48 48	Silty clay	55
S-5		26 39 00	97 00 00	Silty clay	37
S-15		26 03 12	97 08 00	Clayey sand	9
S-18		26 19 24	97 05 30	Sand	18
S-21		26 23 30	97 12 30	Sand	9
S-26		26 38 30	97 12 24	Sand-silt-clay	18
S-27		26 38 12	97 17 12	Sand	9
S-31		26 47 54	97 20 12	Sand	9
S-43		26 23 30	97 12 42	Sand	4.5
S-46		26 10 00	97 09 48	Sand	4.5

Table 6. (Continued)

M-14	27°18'18"N	97°15'00"W	Sand-silt-clay	18
M-15	27 18 18	97 19 42	Sand	9
M-21	27 32 24	97 13 30	Silty sand	9
M-4	27 17 00	96 48 42	Silty clay	55
M-5	27 17 12	96 59 00	Silty clay	37
M-24	27 40 48	97 02 24	Sand-silt-clay	18
M-25	27 41 24	97 08 12	Sand	9
M-26	27 41 24	97 08 30	Sand	4.5
M-28	27 32 24	97 13 54	Sand	4.5
N-3	27 41 12	96 30 30	Clayey silt	55
N-4	27 49 00	96 33 42	Silty clay	37
N-9	28 16 18	96 28 18	Sand-silt-clay	9
N-18	28 00 00	96 43 24	Sand-silt-clay	18
N-19	28 01 54	96 51 30	Sand	9
N-32	28 02 12	96 51 48	Sand	4.5
N-37	28 17 30	96 28 42	Sand	4.5

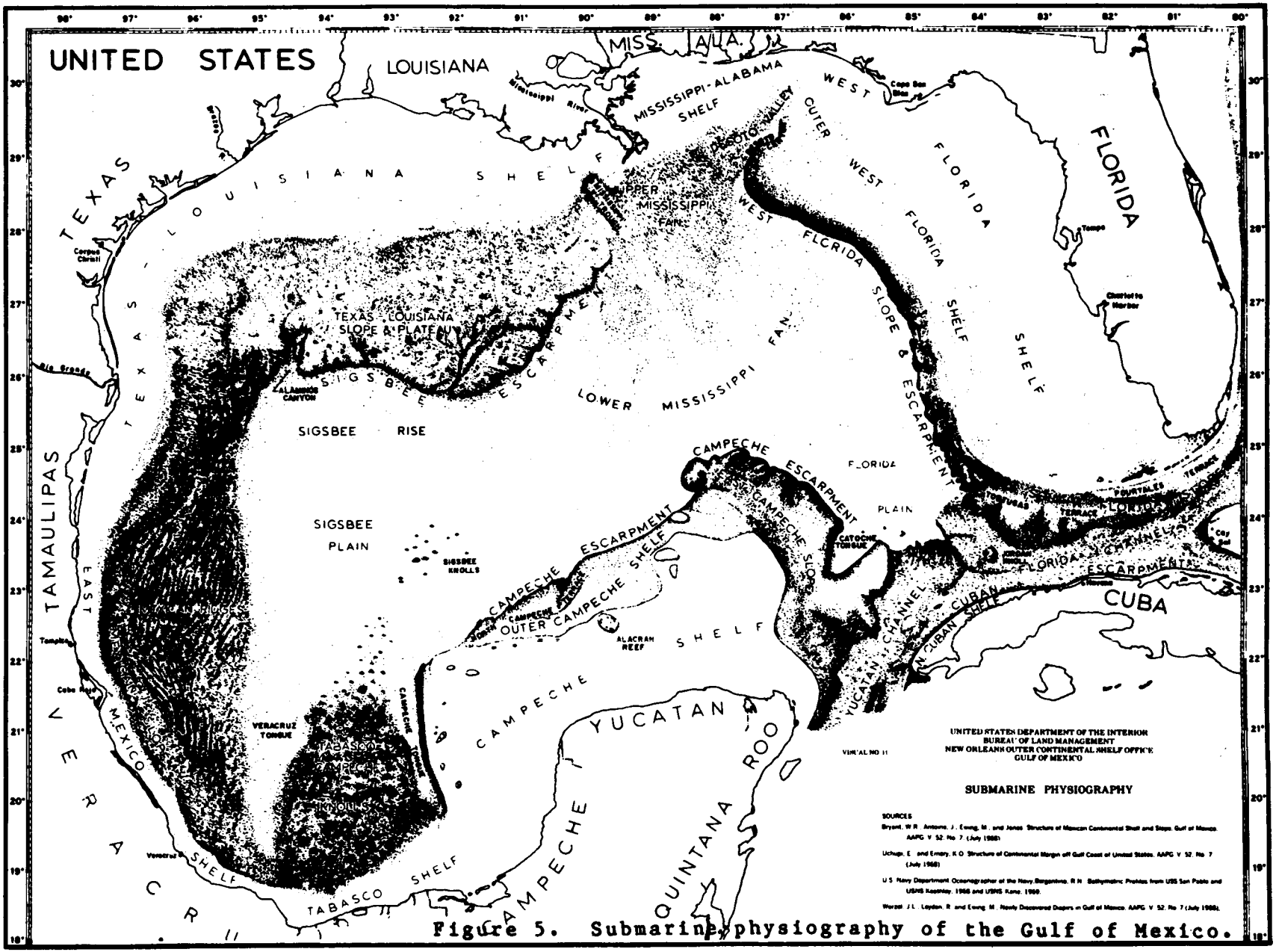

Figure 5. Submarine physiography of the Gulf of Mexico.

The Gulf and the Atlantic Ocean were confluent across what is now peninsular Florida and the South Atlantic coastal plain until the Miocene (Cook, 1945; Cheetham, 1963), approximately 25,000,000 years before present. This expansive Gulf-Atlantic connection allowed interchange of polychaetes and other neritic forms between the two seas, and has provided many authors (Hartman, 1951a; Hedgepeth, 1953; Galtsoff, 1954; Humm, 1969) a means of explaining the many disjunctive distributions among species that now inhabit the northern Gulf and the western Atlantic north of Cape Canaveral, Florida.

Several periods of Atlantic-Pacific connection have also occurred across Central America via the Caribbean Sea. Timing of these events has been placed during Jurassic, Cretaceous, mid-Tertiary, and Pliocene time (Eardley, 1951; Lloyd, 1963; Rubinoff, 1968). Consequently, many species now co-occur on both sides of Central America. Limited continental transmigration is still possible through the Panama Canal (Gilbert and Starks, 1904; Hildebrand, 1954; Rubinoff, 1968).

Polychaetes have always had access to the Gulf from the Caribbean Sea through the Yucatan Strait. There is also geological evidence that a past Gulf connection to the western Arctic through the Mississippi embayment may have been present during the Upper Cretaceous (Rainwater, 1967).

Circulation and Hydrography.

Sea water presently enters the Gulf of Mexico from the Caribbean through the Yucatan Strait as the Yucatan Current (Leipper, 1968). The Current extends from the surface down to the top of the sill, and consists of several tropical components near the surface, and colder, Antarctic-derived water masses below about 600-900 m (McLellan and Nowlin, 1963; Wust, 1964; Gordon, 1967; Nowlin, 1971, 1972; Schroeder et al., 1974). These water masses flow from several areas of the Atlantic and serve as the principal route for the introduction of polychaetes to the Gulf from adjacent seas (Sverdrup et al., 1942; Thorson, 1961).

The majority of water entering the Gulf from the Caribbean Sea travels in a clockwise loop in the eastern Gulf, then exits into the Atlantic through the Florida Strait to become the well-known Gulf Stream. This loop, called the Loop Current, is the main feature of the circulation pattern in the Gulf, and varies in path and volume both seasonally and yearly (Jones et al., 1973; Maul, 1977). Although this current is primarily centered and has its strongest influence on circulation in the open areas of the central and eastern Gulf, it often influences local circulation in shelf areas where it impinges up onto the continental shelf, primarily between the Mississippi Delta and Cape San Blas, Florida (Gaul, 1967; Jones et al., 1973), or where an eddy may form and wander off to the west, lasting several months before decaying (Leipper, 1970). The more localized circulation of the inshore shelf region is influenced by small diurnal tides (0.3-1.2 m), local winds, and freshwater inputs. Winter storms and hurricanes frequently cause moderately to extremely high winds, waves, and storm conditions which can significantly affect local circulation and hydrographic conditions on the shelf.

MATERIALS AND METHODS

As explained in the "INTRODUCTION," the main objective of this study was to re-examine, verify identifications of, and taxonomically describe all species of polychaetes represented in the collections of the above-mentioned studies. In each study, a voucher collection containing several specimens of each species identified during laboratory analysis, was prepared and maintained by the original contractor. Due to a lack of corroboration between investigators, however, numerous inconsistencies existed in the taxonomic nomenclature and characters used in recognizing and reporting species. This was especially true for the many new species represented in the collections. All of the voucher collections were therefore brought together to enable consistent treatment by the investigators herein. Collections were sorted and assembled by family and distributed to the taxonomic specialists chosen for authoring the individual family chapters. Taxonomists were selected according to their availability and desire to devote the necessary time to this project, as well as their previous experience in identifying and describing polychaetes within a particular family or family group. A number of individuals from throughout the United States and abroad participated in this program (see "List of Contributors"). The majority of taxonomic work, however, was performed by staff members of the taxonomic laboratory of Barry A. Vittor & Associates. Some of these individuals were responsible for, and therefore familiar with the original identifications of polychaetes in these collections.

Authors were responsible for examining and verifying identifications of all voucher specimens and for preparation of taxonomic illustrations, keys and descriptions used in the text. In some cases, supplementary material from other projects and various museum collections were examined and compared to better describe species which were poorly represented in the BLM-OCS voucher collections (see "Acknowledgments").

Microscopic Techniques.

All voucher material was fixed in formalin and then transferred to a 70% alcohol (isopropanol or denatured ethanol) solution for preservation. In many cases, particularly in the MAFLA study, specimens were seriously damaged during collection or subsequent processing, and were rendered unusable for this study.

Research quality microscopes were used during the preparation of chapters, including compound microscopes and variable-power dissecting microscopes. Specimens examined under the dissecting scopes were placed in petri dishes containing alcohol or tap water. The latter is preferable to minimize exposure of investigators to potentially harmful vapors. Deterioration of preserved specimens will not occur in water during short time periods (i.e., less than 24 hours). Staining of specimens with methyl green (see Banse, 1970:388) provided a useful diagnostic tool in some families.

Specimens examined under the compound microscopes were mounted on slides using alcohol or water for temporary mounts. The latter is again preferable as it does not evaporate as quickly as alcohol. Both, however, have good refractive qualities even at highest magnifications, and thickness of the mount is easily controlled. The less medium used, in most cases, the less distortion, especially when viewing setal characteristics at high magnifications. A thicker mount may be necessary when

viewing larger structures such as parapodia, cross-sections, and whole animals.

Some authors used Amman's lactophenol (100g phenol, 100 ml lactic acid, 200 ml glycerine, and 100 ml water) as a temporary mounting medium. The specimen is mounted in lactophenol, and then heated carefully to avoid bubbling. This procedure clears the tissue immediately, making chitinized internal structures such as jaws and acicula more visible. Hoyer's medium may also be used as a clearing agent (see Hobson and Banse, 1981:5). Clearing is fairly rapid and does not require heating. Specimens mounted in Hoyer's can be removed from the slide and returned to alcohol. The specimen then regains its original consistency and opacity. Hoyer's can be used as a semi-permanent mounting medium but shrinks as it dries; specimens also tend to become excessively cleared within a few weeks, making both soft and hard structures difficult to see.

A more desirable permanent mount can be obtained using CMC-10. Clearing is slower and less extensive than in Hoyer's. Both CMC-10 and Hoyer's contract while hardening, so that more medium must be added periodically to prevent the formation of bubbles. After a number of weeks, the cover slip can be ringed with lacquer for permanence.

Phase contrast or differential interference contrast microscopy may be used to elucidate the fine details of small structures such as setae. Scanning electron microscopy can also be useful, but is not readily available to most taxonomists.

Investigators generally agree that examination of setae under high magnification (usually oil immersion) is necessary for accurate identification (see Hobson and Banse, 1981:5). Often in the past, setae have not been examined or described in sufficient detail. Thus it may be difficult to compare specimens with previous descriptions to obtain confirmed identifications.

Figures were produced by the authors using drawing attachments with the microscopes. Inked renderings were provided by the staff illustrator at Vittor & Associates (see "Acknowledgments"). Figures were drawn from Gulf of Mexico BLM-OCS specimens unless otherwise indicated.

Length and width measurements were made using an ocular micrometer or, in the case of large specimens, a rule graduated in millimeters. Lengths were measured from the anterior margin of the prostomium to the posterior end of the worm. Widths were measured at the widest point of the body between the tips of opposing parapodia, and did not include setae. Only measurements of the largest worms represented in Gulf of Mexico BLM-OCS material are presented. Exceptions to length and width measurements are stated in individual chapters.

After examination and description of material, representative specimens of each species were deposited with the United States National Museum (USNM), Smithsonian Institution, Washington, D. C. The USNM numbers assigned to those specimens are included under "MATERIAL EXAMINED." Material not deposited at the USNM is archived in the museum of Barry A. Vittor & Associates.

CHECKLIST OF SPECIES

ORBINIIDAE

Maineris sp. A
Maineris laevigata (Grube, 1856)
Maineris bicornis Hartman, 1951
Maineris sp. B
Maineris dendritica (Kinberg, 1867)
Maineris grubei (Gravier, 1909)
Proscoloplos sp. A
Leitoscoloplos robustus (Verrill, 1873)
Leitoscoloplos fragilis (Verrill, 1873)
Califia calida (Hartman, 1957)
Phylo felix Kinberg, 1866
Orbinia riseri (Pettibone, 1957)
Orbinia americana Day, 1973
Scoloplos rubra (Webster, 1879)
Scoloplos sp. A
Scoloplos texana Maciolek and Holland, 1978
Scoloplos sp. B
Scoloplos capensis (Day, 1961)
Scoloplos acmeceps Chamberlin, 1919

PARAONIDAE

Cirrophorus branchiatus Ehlers, 1908
Cirrophorus cf. forticirratus Strelzov, 1973
Cirrophorus americanus Strelzov, 1973
Aricidea (Aricidea) wassi Pettibone, 1965
Aricidea (Aricidea) cf. pseudoarticulata Hobson, 1972
Aricidea (Aricidea) fragilis Webster, 1879
Aricidea (Allia) cf. trilobata Imajima, 1973
Aricidea (Allia) suecica Eliason, 1920
Aricidea (Allia) quadrilobata Webster & Benedict, 1887
Aricidea (Allia) cf. alisdairi Hasan, 1960
Aricidea (Allia) sp. A
Aricidea (Acmira) sp. A
Aricidea (Acmira) sp. B
Aricidea (Acmira) taylori Pettibone, 1965
Aricidea (Acmira) lopezi Berkeley and Berkeley, 1956
Aricidea (Acmira) sp. C
Aricidea (Acmira) cerrutii Laubier, 1966
Aricidea (Acmira) cf. finitima Strelzov, 1973
Aricidea (Acmira) philbinae Brown, 1976
Aricidea (Acmira) simplex Day, 1963
Aricidea (Acmira) sp. D
Aricidea (Acmira) catherinae Laubier, 1967
Paraonis fulgens (Levinsen, 1884)
Paraonis pygoenigmatica Jones, 1968
Levinsenia reducta (Hartman, 1965)
Levinsenia gracilis (Tauber, 1879)

QUESTIDAE

Questa caudicirra Hartman, 1966
Novaquesta trifurcata Hobson, 1970
Genus A

COSSURIDAE

Cossura sp. A
Cossura soyeri Laubier, 1963

APISTOBRANCHIDAE

Apistobranchus sp. A

SPIONIDAE

Spiophanes bombyx (Claparède, 1870)
Spiophanes wigleyi Pettibone, 1962
Spiophanes sp. A
Spiophanes missionensis Hartman, 1941
Boccardiella sp. A
Boccardia sp. A
Polydora ligni Webster, 1879
Polydora cf. aggregata Blake, 1969
Polydora caulleryi Mesnil, 1897
Polydora socialis (Schmarda, 1861)
Polydora sp. A
Dispio uncinata Hartman, 1951
Scolelepis texana Foster, 1971
Scolelepis squamata (O.F. Müller, 1806)
Aonides mayaguezensis Foster, 1969
Aonides paucibranchiata Southern, 1914
Malacoceros vanderhorsti (Augener, 1927)
Paraprionospio pinnata (Ehlers, 1901)
Prionospio (Prionospio) steenstrupi Malmgren, 1867
Prionospio (Prionospio) fallax Söderström, 1920
Prionospio (Prionospio) cristata Foster, 1971
Prionospio (Minuspio) cirrifera Wirén, 1883
Prionospio (Minuspio) sp. A
Prionospio (Minuspio) cf. cirrobranchiata Day, 1961
Prionospio (Apoprionospio) dayi (Foster, 1969)
Prionospio (Apoprionospio) pygmaea (Hartman, 1961)
Spio pettiboneae Foster, 1971
Microspio pigmentata (Reish, 1959)
Laonice cirrata (Sars, 1851)

MAGELONIDAE

Magelona sp. A
Magelona sp. B
Magelona pettiboneae Jones, 1963
Magelona sp. C
Magelona sp. D
Magelona sp. E
Magelona sp. F
Magelona sp. G
Magelona sp. H
Magelona sp. I
Magelona sp. J
Magelona sp. K
Magelona sp. L

TROCHOCHAETIDAE

Trochochaeta sp. A

POECILOCHAETIDAE

Poecilochaetus johnsoni Hartman, 1939

Genus A

HETEROSPIONIDAE

Heterospio sp. A

Heterospio cf. longissima Ehlers, 1874

CHAETOPTERIDAE

Chaetopterus variopedatus (Renier, 1804)

Spiochaetopterus costarum (Claparède, 1868)

Mesochaetopterus capensis (McIntosh, 1885)

Mesochaetopterus taylori (Potts, 1914)

CIRRATULIDAE

Cirriformia sp. A

Cirriformia sp. B

Cirriformia sp. C

Tharyx cf. annulosus Hartman, 1965

Genus A

Genus B

Caulleriella cf. alata (Southern, 1914)

Caulleriella sp. A

Caulleriella sp. b

Caulleriella sp. C

Caulleriella cf. zetlandica (McIntosh, 1911)

Chaetozone sp. A

Chaetozone sp. D

Chaetozone sp. B

Chaetozone sp. C

Dodecaceria sp. A

ACROCIRRIDAE

Acrocirrus frontifilis (Grube, 1860)

Macrochaeta cf. clavicornis (Sars, 1835)

CAPITELLIDAE

Capitella capitata (Fabricius, 1780)

Decamastus ?gracilis Hartman, 1963

Decamastus sp. A

Peresiella sp. A

Mediomastus californiensis Hartman, 1944

Barantolla sp. A

Notomastus daueri Ewing, 1982

Notomastus lobatus Hartman, 1947

Notomastus lineatus Claparède, 1870

Notomastus latericeus Sars, 1851

Notomastus ?tenuis Moore, 1909

Notomastus hemipodus Hartman, 1945

Notomastus americanus Day, 1973

Notomastus sp. A

Mastobranchus sp. A

Dasybranchus lunulatus Ehlers, 1887

Dasybranchus lumbricoides Grube, 1878

Scyphoproctus ?platyproctus Jones, 1961

Leiocapitella sp. A

Leiocapitella glabra Hartman, 1947

Leiocapitella sp. B

MALDANIDAE

Petaloproctus indeterminable

Macroclymene indeterminable

Axiothella sp. A

Clymenella torquata (Leidy, 1855)

Euclymene sp. A

Euclymene sp. B

Asychis elongatus (Verrill, 1873)

Maldane sp. A

BOGUEIDAE

Bogues enigmatica Hartman, 1945

Bogues sp. A

Boguella sp. A

OPHELIIDAE

Travisia hobsonae Santos, 1977

Ophelia denticulata Verrill, 1875

Armandia maculata (Webster, 1884)

Armandia agilis (Andrews, 1891)

Ophelina cylindricaudata (Hansen, 1878)

Ophelina cf. acuminata Oersted, 1843

SCALIBREGMATIDAE

Asclerocheilus beringianus Ushakov, 1955

Asclerocheilus sp. A

Hyboscolex sp. A

Scalibregma inflatum Rathke, 1843

Sclerobregma stenocerum Bertelsen and Weston, 1980

Sclerocheilus sp. A

PHYLLODOCIDAE

Eteone heteropoda Hartman, 1951

Eteone lactea Claparède, 1868

Mystides borealis Théel, 1879

Hesionura sp. A

Eulalia bilineata (Johnston, 1840)

Pterocirrus macroceros (Grube, 1860)

Eumida sanguinea Oersted, 1843

Protomystides bidentata Langerhans, 1879

Paranaitis polynoides (Moore, 1909)

Paranaitis speciosa (Webster, 1880)

Nereiphylla fragilis Webster, 1879

Genetyllis sp. A

Genetyllis castanea (Marenzeller, 1879)

Anaitides mucosa Oersted, 1843

Anaitides groenlandica Oersted, 1843

Anaitides longipes Kinberg, 1866

Anaitides madeirensis Langerhans, 1880

Phyllodoce arenae Webster, 1880

APHRODITIDAE

Aphrogenia sp. A

Pontogenia sp. A
Pontogenia sp. B

POLYNOIDAE

Perolepis sp. A
Lepidasthenia sp. A
Lepidonotus sublevis Verrill, 1873
Genus A
Genus B
Genus C
Malmgreniella sp. A
Malmgreniella sp. B
Malmgreniella sp. C
Harmothoe sp. A
Harmothoe sp. B
Harmothoe sp. C

POLYODONTIDAE

Polyodontes sp. A
Polyodontes lupinus (Stimpson, 1856)
Eupanthalis sp. A

PHOLOIDIDAE

Pholoides bermudensis (Hartman and Fauchald, 1971)

EULEPETHIDAE

Mexieulepis weberi (Horst, 1922)
Grubeulepis sp. A
Grubeulepis cf. ecuadorensis Pettibone, 1969
Grubeulepis augeneri Pettibone, 1969
Grubeulepis mexicana (Berkeley and Berkeley, 1939)

SIGALIONIDAE

Pholoe sp. A
Pholoe sp. B
Pholoe sp. C
Genus A
Sigalion sp. A
Thalenessa sp. A (Berkeley and Berkeley, 1939)
Thalenessa cf. spinosa (Hartman, 1939)
Psammolyce ctenidophora Day, 1973
Psammolyce flava Kinberg, 1855
Sthenelanella sp. A
Fimbriosthenelais hobbsi Pettibone, 1971
Fimbriosthenelais sp. A
Fimbriosthenelais minor (Pruvot and Racovitza, 1895)
Sthenelais sp. A
Sthenolepis sp. A
Sthenolepis cf. grubei (Treadwell, 1901)
Ehlersileanira incisa (Grube, 1877)

CHRYSOPETALIDAE

Chrysopetalum occidentale Johnson, 1897
Paleanotus chrysolepis Schmarda, 1861
Paleanotus sp. A
Paleanotus heteroseta Hartman, 1945

PISIONIDAE

Pisione remota (Southern, 1914)
Pisione sp. A

HESIONIDAE

Genus A
Ophiodromus sp. A
Microphthalmus sp. A
Microphthalmus hamosus Westheide, 1982
Microphthalmus sp. C
Heteropodarke cf. heteromorpha Hartmann-Schröder, 1962
Heteropodarke sp. A
Podarke sp. A
Podarke obscura Verrill, 1873
Nereimyra sp. A
Nereimyra sp. B
Hesiospina sp. A
Gyptis brevipalpa (Hartmann-Schröder, 1959)
Gyptis vittata Webster and Benedict, 1887
Amphiduros sp. A
Amphiduros sp. B
Hesione ?picta Müller, 1858
Kefersteinia cirrata (Keferstein, 1862)

PILARGIDAE

Cabira incerta Webster, 1879
Sigambra wassi Pettibone, 1966
Sigambra tentaculata (Treadwell, 1941)
Sigambra bassi (Hartman, 1945)
Ancistrosyllis sp. A
Ancistrosyllis sp. B
Ancistrosyllis carolinensis Gardiner, 1976
Ancistrosyllis sp. C
Ancistrosyllis jonesi Pettibone, 1966
Ancistrosyllis papillosa Jones, 1961)
Ancistrosyllis hartmanae Pettibone, 1966
Pilargis berkeleyae Monro, 1933
Pilargis sp. A
Parandalia sp. A
Synelmis klatti (Friedrich, 1951)
Synelmis cf. albini (Langerhans, 1881)
Synelmis sp. A
Synelmis sp. B
Synelmis sp. C
Litocorsa sp. A

SYLLIDAE

?Procerastea cornuta (Agassiz, 1863)
Autolytus dentalius Imajima, 1966
Autolytus sp. A
Myrianida sp. A
Brania clavata (Claparède, 1863)
Brania sp. A
Brania wellfleetensis Pettibone, 1956
Brania swedmarki Gidholm, 1962

Sphaerosyllis longicauda Webster and Benedict, 1887
Sphaerosyllis aciculata Perkins, 1981
Sphaerosyllis taylori Perkins, 1981
Sphaerosyllis piriferopsis Perkins, 1981
Sphaerosyllis glandulata Perkins, 1981
Exogone atlantica Perkins, 1981
Exogone sp. A
Exogone sp. B
Exogone lourei Berkeley and Berkeley, 1938
Exogone dispar (Webster, 1879)
Syllides floridanus Perkins, 1981
Syllides bansei Perkins, 1981
Syllides fulvus (Marion and Bobretzky, 1875)
Syllides sp. A
Streptosyllis pettiboneae Perkins, 1981
Streptospinigera heteroseta Kudenov, 1983
Parapionosyllis sp. B
Parapionosyllis longicirrata (Webster and Benedict, 1884)
Parapionosyllis sp. A
Opisthodonta sp. A
Opisthodonta sp. B
Pionosyllis weismanni Langerhans, 1879
Pionosyllis sp. B
Pionosyllis gesae Perkins, 1981
Pionosyllis sp. A
Pionosyllis sp. C
Pionosyllis sp. D
Dioplosyllis cf. octodentata Perkins, 1981
?Eusyllis lamelligera Marion and Bobretzky, 1875
Odontosyllis enopla Verrill, 1900
Odontosyllis cf. octodentata Treadwell, 1917
Odontosyllis sp. A
Trypanosyllis vittigera Ehlers, 1887
Trypanosyllis sp. B
Trypanosyllis parvidentata Perkins, 1981
Trypanosyllis coeliaca Claparède, 1868
Trypanosyllis sp. C
Xenosyllis cf. scabra (Ehlers, 1864)
Eurysyllis tuberculata Ehlers, 1864
Plakosyllis quadrioculata Perkins, 1981
Opisthosyllis sp. A
Branchiosyllis exilis (Gravier, 1900)
Branchiosyllis oculata Ehlers, 1887
Haplosyllis spongicola (Grube, 1855)
Geminosyllis sp. A
Dentatisyllis carolinae (Day, 1973)
Dentatisyllis sp. A
Syllis (Syllis) gracilis Grube, 1840
Syllis (Ehlersia) cornuta Rathke, 1843
Syllis (Ehlersia) ferrugina (Langerhans, 1881)
Syllis (Ehlersia) sp. A
Syllis (Typosyllis) amica Quatrefages, 1865
Syllis (Typosyllis) armillaris (Müller, 1771 in Müller, 1776)
Syllis (Typosyllis) sp. G
Syllis (Typosyllis) sp. A
Syllis (Typosyllis) sp. C
Syllis (Typosyllis) cf. lutea (Hartmann-Schröder, 1960)
Syllis (Typosyllis) sp. F
Syllis (Typosyllis) sp. D
Syllis (Typosyllis) cf. alternata Moore, 1908
Syllis (Typosyllis) corallicoloides Augener, 1922
Syllis (Typosyllis) sp. E
Syllis (Typosyllis) gerlachi (Hartmann-Schröder, 1960)
Syllis (Typosyllis) sp. B
Syllis (Typosyllis) prolifera Krohn, 1852

NEREIDAE

Gymnonereis crosslandi (Monro, 1933)
Gymnonereis sp.
Ceratocephale oculata Banse, 1977
Genus A
Nicon moniloceras (Hartman, 1940)
Neanthes acuminata Ehlers, 1868
Neanthes micromma Harper, 1979
Neanthes succinea (Frey and Leuckart, 1847)
Websterinereis tridentata (Webster, 1880)
Rullierinereis sp. A
Platynereis dumerilii (Audouin and Milne Edwards, 1833)
Ceratonereis versipedata (Ehlers, 1887)
Ceratonereis irritabilis (Webster, 1879)
Ceratonereis mirabilis Kinberg, 1866
Ceratonereis longicirrata Perkins, 1980
Nereis lamellosa Ehlers, 1868
Nereis grayi Pettibone, 1956
Nereis riisei Grube, 1857
Nereis falsa Quatrefages, 1865
Nereis pelagica Linnaeus, 1758

GLYCERIDAE

Glycera sp. A
Glycera sp. B
Glycera papillosa Grube, 1857
Glycera sphyrabrancha Schmarda, 1861
Glycera dibranchiata Ehlers, 1868
Glycera americana Leidy, 1855
Glycera sp. C
Glycera sp. D
Glycera sp. E
Glycera robusta Ehlers, 1868
Glycera abranchiata Treadwell, 1901
Glycera sp. F

GONIADIDAE

Goniadella sp. A
Goniada teres Treadwell, 1931
Goniada littorea Hartman, 1950
Goniada maculata Oersted, 1843
Glycinde solitaria Webster, 1879

Glycinde nordmanni Malmgren, 1865
Goniadides carolinae Day, 1973
Ophioglycera sp. A

LACYDONIIDAE

Lacydonia miranda Marion and Bobretzky, 1875
Paralacydonia paradoxa Fauvel, 1913

NEPHTYIDAE

Micronephthys minuta (Théel, 1879)
Nephtys incisa Malmgren, 1865
Nephtys simoni Perkins, 1980
Nephtys squamosa Ehlers, 1887
Nephtys picta Ehlers, 1868
Aglaophamus verrilli (McIntosh, 1885)
Aglaophamus circinata (Verrill, 1874)
Inermonephtys inermis (Ehlers, 1887)

SPHAERODORIDAE

Sphaerephesia sp. A
Sphaerodoropsis sp. A
Clavodorum sp. A
Sphaerodoridium sp. A

AMPHINOMIDAE

Paramphinome sp. A
Paramphinome sp. B
Chloeia viridis Schmarda, 1861
Eurythoe sp. A
Eurythoe sp. B

EUPHROSINIDAE

Euphrosine sp. A
Euphrosine cf. triloba Ehlers, 1887
Euphrosine sp. B
Euphrosine sp. C
Euphrosine armadilloides Ehlers, 1900
Euphrosine sp. D

ONUPHIDAE

Diopatra cf. papillata Fauchald, 1968
Diopatra neotridens Hartman, 1944
Diopatra cuprea (Bosc, 1802)
Diopatra tridentata Hartman, 1944
Ramphobrachium atlanticum Day, 1973
Ramphobrachium sp. A
Ramphobrachium diversosetosum Moore, 1937
Nothria sp. A
Sarsonuphis hartmanae (Kirkegaard, 1980)
Mooreonuphis cf. nebulosa (Moore, 1911)
Mooreonuphis pallidula (Hartman, 1965)
Onuphis sp. A
Onuphis eremita oculata Hartman, 1951
Kinbergonuphis sp. A
Kinbergonuphis sp. B
Kinbergonuphis sp. C

EUNICIDAE

Nematonereis hebes Verrill, 1900
Lysidice ninetta Audouin and Milne Edwards, 1833
Marphysa cf. bellii (Audouin and Milne Edwards, 1833)
Marphysa sanguinea (Montagu, 1815)
Marphysa sp. B
Marphysa mortenseni Monro, 1928
Marphysa sp. A
Marphysa cf. conferta Moore, 1911
Eunice vittata (Delle Chiaje, 1828)
Eunice antennata (Savigny, 1820)
Eunice filamentosa Grube, 1856
Eunice websteri Fauchald, 1969
Eunice tenuis (Treadwell, 1921)
Euniphysa sp. A

LUMBRINERIDAE

Ninoe sp. A
Ninoe sp. B
Lumbrinerides sp. A
Lumbrinerides ?acuta (Verrill, 1875)
Lumbrinerides dayi Perkins, 1979
Lumbrineriopsis paradoxa (Saint Joseph, 1888)
Augeneria bidens (Ehlers, 1887)
Lumbrineris brevipes (McIntosh, 1903)
Lumbrineris candida (Treadwell, 1921)
Lumbrineris verrilli Perkins, 1979
Lumbrineris tenuis (Verrill, 1873)
Lumbrineris sp. A
Lumbrineris ernesti Perkins, 1979
Lumbrineris sp. B
Lumbrineris januarii (Grube, 1878)
Lumbrineris coccinea (Renier, 1804)
Lumbrineris inflata Moore, 1911
Lumbrineris latreilli (Audouin and Milne Edwards, 1834)
Lumbrineris sp. E
Lumbrineris sp. C
Lumbrineris sp. D

ARABELLIDAE

Arabella iricolor (Montagu, 1804)
Arabella mutans (Chamberlin, 1919)
Arabella multidentata (Ehlers, 1887)
Labrorostratus luteus Uebelacker, 1978
Drilonereis longa Webster, 1879
Drilonereis sp. A
Drilonereis magna Webster and Benedict, 1887
Drilonereis cf. debilis (Ehlers, 1887)
Drilonereis sp. B
Drilonereis sp. C
Drilonereis sp. E
Drilonereis sp. D
Drilonereis spatula (Treadwell, 1911)
Notocirrus sp. A

LYSARETIDAE

Oenone fulgida Savigny, 1818

Lysarete brasiliensis Kinberg, 1865

DORVILLEIDAE

Pettiboneia sp. A

Pettiboneia sp. B

Ophryotrocha sp. A

Protodorvillea kefersteini (McIntosh, 1869)

Schistomeringos sp. A

Schistomeringos sp. B

Schistomeringos pectinata Perkins, 1979

Schistomeringos cf. rudolphi (Delle Chiaje, 1828)

Dorvillea sociabilis (Webster, 1879)

Dorvillea sp. A

Genus A

Genus B

Genus C

Meiodorvillea sp. A

Meiodorvillea sp. B

STERNASPIDAE

Sternaspis scutata (Renier, 1807)

OWENIIDAE

Owenia sp. A

Myriowenia sp. A

Myriochele oculata Zaks, 1923

Myriochele sp. A

FLABELLIGERIDAE

Piromis roberti (Hartman, 1951)

Diplocirrus sp. A

Diplocirrus capensis Day, 1961

Pherusa inflata (Treadwell, 1914)

Brada villosa (Rathke, 1843)

?Pherusa

Therochaeta sp. A

FAUVELIOPSIDAE

Fauveliopsis sp. A

SABELLARIIDAE

Lygdamis indicus Kinberg, 1867

Sabellaria floridensis Hartman, 1944

Sabellaria sp. A

PECTINARIIDAE

Amphictene sp. A

Pectinaria regalis Verrill, 1901

Pectinaria gouldii (Verrill, 1873)

AMPHARETIDAE

Isolda pulchella F. Müller, 1858

Melinna cristata (Sars, 1851)

Melinna maculata Webster, 1879

Sosane sulcata Malmgren, 1865

Genus A

Amphicteis gunneri (Sars, 1835)

Amphicteis scaphobranchiata Moore, 1906

Sabellides octocirrata (Sars, 1835)

Sabellides sp. A

Ampharete sp. A

Ampharete parvidentata Day, 1973

Ampharete sp. B

Lysippe cf. annectens Moore, 1923

Genus B

TEREBELLIDAE

Hauchiella sp. A

Lysilla sp. A

Lysilla sp. B

Polycirrus plumosus (Wollebaek, 1912)

Polycirrus sp. A

Polycirrus cf. haematodes (Claparède, 1864)

Polycirrus sp. B

Polycirrus eximius dubius Day, 1973

Polycirrus cf. denticulatus Saint Joseph, 1894

Polycirrus cf. albicans (Malmgren, 1865)

Amaeana trilobata (Sars, 1863)

Lanassa sp. A

Genus B

Neoleprea sp. A

Neoleprea sp. B

Neoamphitrite edwardsi (Quatrefages, 1865)

Neoamphitrite sp. A

Terebella rubra (Verrill, 1873)

Pista fasciata (Grube, 1869)

Pista quadrilobata (Augener, 1918)

Pista sp. A

Pista cristata (Müller, 1776)

Pista sp. B

Pista palmata (Verrill, 1873)

Loimia medusa (Savigny, 1818)

Loimia viridis (Moore, 1903)

Eupolymnia nebulosa (Montagu, 1818)

Eupolymnia sp. A

Lanice conchilega (Pallas, 1766)

Genus A

Streblosoma verrilli Treadwell, 1911

Streblosoma hartmanae Kritzler, 1971

Euthelepus sp. A

Rhinothelepus sp. A

Telothelepus cf. capensis Day, 1955

TRICHOBRANCHIDAE

Trichobranchus glacialis Malmgren, 1865

Terebellides stroemi Sars, 1835

SABELLIDAE

Euchone cf. southerni Banse, 1970

Euchone cf. incolor Hartman, 1965

Euchone sp. A
Cnone cf. americana Day, 1973
Chone sp. A
Dialychone sp. A
Jasmineira cf. pacifica Annenkova, 1937
Fabriciola trilobata Fitzhugh, 1983
Fabricia sp. A
Hypsicomus phaeotaenia (Schmarda, 1861)
Megalomma bioculatum Ehlers, 1887
Megalomma sp. A
Megalomma sp. B
Potamethus sp. A
Potamilla cf. reniformis (Müller, 1771)
Sabella sp. A
Sabella microphthalma Verrill, 1873
Sabella melanostigma Schmarda, 1861

SERPULIDAE

Salmacina sp. A
Protula sp. A
Apomatus sp. A
Serpula sp. A
Crucigera websteri Benedict, 1887
Hydroides sp. A
Hydroides bispinosa Bush, 1910
Hydroides dianthus (Verrill, 1873)
Hydroides protulicola Benedict, 1887
Hydroides microtis Mörch, 1863
Filogranula sp. A
Pomatoceros americanus Day, 1973
Pseudovermilia occidentalis (McIntosh, 1885)
Vermiliopsis annulata (Schmarda, 1861)

SACCOCIRRIDAE

Saccocirrus sp. A

HARTMANIELLIDAE

Hartmaniella sp. A

FAMILY A

Aberranta sp. A

FAMILY B

Genus A

ABBREVIATIONS

The following provides an explanation of letter symbols used in the figures to denote morphological structures and body regions. Abbreviations and acronyms used in the text are also provided for museums, institutions, and sampling projects from which specimens were made available for examination during this study.

ab--abdomen
ac--aciculum
accBr--accessory branchiae
accC--accessory cirrus
ach--achaetous
acLam--accessory lamellae
acLo-acicular lobe
acNe--acicular neuroseta
acS--acicular seta or spine
aLam--anal lamella
alAn--anterolateral antenna
aLo--anal lobe
amp--ampulla
an--antenna
anC--anal cirrus
anD--anal depression
anG--antennal groove
anLam--anterior lamella
ant--anterior
anus--anus
aP--apical pore
ar--arista
atC--anterior tentacular cirrus
aTu--anal tube
aur--auricle

baS--bacillary setae
bK--basal knob
bL--basal lobe
bP--basal prow
bPl(infR)--basal plate (inferior row)
bPl(supR)--basal plate (superior row)
br--branchia
brB--branchial basis
brC--branchial cirrus
brF--branchial filament
brH--branchial heart
brL--branchial lobe
brP--branchial pore
brS--branchial sheath
brSc--branchial scar
bS--basal shaft
bSp--basal spine
buC--buccal cirrus
buD--buccal denticle
buS--buccal segment
buT--buccal tentacle
butt--button
bW--basal web

ca--capsule
car--caruncle
cauC--caudal cirrus
cauF--caudal filament
cauR--caudal rim
cb--cross bar
cC--cephalic cage
cer--ceratophore
cH--cephalic hood
ch--chevron
ciG--ciliated groove
cK--cephalic keel
cmS--companion seta
col--collar
colS--collar seta
cP--cephalic peak
cpd--compound
cph--cirrophore
cPl--cephalic plaque
cR--cephalic rim
cSh--cephalic shield
ct--ctenidium
cu--cupule
cV--cephalic veil

D--dorsal
dC--dorsal cirrus
dCph--dorsal cirrophore
dCr--dorsal crest
dLam--dorsal lamella
dlC--dorsolateral cirrus
dLo--dorsal lobe
dm--denticulate margin or rim
dMem--dorsal membrane
dml--dorsal medial lobe
dPap--dorsal papilla
dpLo--dorsal parapodial lobe
dR--dorsal ridge
dT--dorsal tubercle
dtC--dorsal tentacular cirrus
duct--duct
D1, D2, etc.--denticle 1, etc.

e--egg
el--elytron or scale
elph--elytrophore
ey--eye or eyespot

f--filament
fAn--frontal antenna
fD(infR)--free denticle (inferior row)
fD(supR)--free denticle (superior row)
fG--fecal groove
fH--frontal horn
fl--flange
fM--fusion mark
fTu--facial tubercle

genH--genital hook
genLo--genital lobe
genP--genital pore
genPch--genital pouch
genS--genital spine
gl--gland
glP--glandular pad
glR--glandular ring
gr--groove

h--hood
han--handle
hG--hyaline gland
hh--hooded hook
hk--hook
hr--hairs

infLAn--inferior lateral antenna
infS--inferior seta
intC--interramal cirrus
intGP--interramal genital pouches
intL--interlamella
intP--interramal papilla
intPo--intersegmental or interramal pore

j--jaw
juv--juvenile

lAn--lateral antenna
lC--lateral cirrus
lDc--lateral dorsal cirrus
lEx--lateral extension
lEy--lateral eyespot
li--ligule
lig--ligament
liM--limbate margin
lLam--lateral lamella
lLap--lateral lappet
lLo--lateral lobe
lNo--lateral notch
lo--lobe
loL--lower lip
lOrg--lateral organ
lP--lateral plate
lPal--lateral palea
lPou--lateral pouch
lPro--lateral process
lS--lateral support
lT--lateral tooth

m--mouth
maG--macrognath
majT--major tooth
mAn--median antenna
marPa--marginal papilla
maTu--macrotubercle
mC--maxillary carrier
md--mandible
medLAn--medial lateral antenna
mid--middle
midC--middorsal cirrus
midNo--middorsal notch
midT--middorsal tooth
miG--micrognath
minT--minor tooth
miTu--microtubercle
mK--medial knob
mLo--medial lobe
modS--modified spines
mPa--median papilla
mPal--medial palea
mR--maxillary ring
mT--medial tooth
mTe--median tentacle
mu--mucus
mv--midventral
mvCc--midventral caudal cirrus
M-I, M-II, etc.--maxilla I, etc.

naS--natatory seta
ne--neuropodium
neAc--neuroaciculum
neC--neuropodial cirrus
neLa--neuropodial lappet
neLi--neuropodial ligule
neLo--neuropodial lobe
nep--nephridial papilla,
aperture, etc.
nePi--neuropodial pinnule
neS--neuroseta
nk--neck
no--notopodium
noAc--notoacicula

noH--notopodial hook
noLa--notopodial lappet
noLi--notopodial ligule
noLo--notopodial lobe
noRu--notopodial rudiment
noS--notoseta
noSp--notopodial spine
nuE--nuchal epaulette
nuF--nuchal fold
nuH--nuchal hook
nuO--nuchal organ
nuPa--nuchal papilla
nuS--nuchal slit
nuSp--nuchal spine
nuT--nuchal tubercle, or tentacle

ocAn--occipital antenna, tentacle, or cirrus
oce--ocelli
ocP--occipital peduncle
oF--occipital flap
omph--ommatophore
op--operculum
opR--opercular rim
oR--oral ring
oS--oblique slit
oT--oral tube

pa--palp
paGl--parapodial gland
pal--palea
pap-papilla
par--paragnath
paSc--palpal scar
paSh--palpal sheath
paSt--palpostyle
pe--peristomium
peg--peg
peW--peristomial wings
ph--pharynx
phP--pharyngeal pad
pi--pinnule
Pig--pigment
pin--pinnae
pLa--posterior lamella
pode--palpode
poL--postsetal lobe or lip
poLam--postsetal lamella
poPap--postsetal papilla
pos--posterior
posLam--posterior lamella
pr--prostomium
preL(inf)--presetal lobe (inferior)
preL(sup)--presetal lobe (superior)
preLam--preacicular lamella
prL--presetal lobe or lip
prob--proboscis
probO--proboscidial organ
probP--proboscidial papilla
prot--protuberance
prov--proventricle
proxP--proximal papilla
pscp--pseudocompound
ptC--posterior tentacular cirrus
pyg--pygidium
pygR--pygidial ring

rad--radiole
reg--region
rO--rosette organ
rP--rostral point

saS--sabre setae
sc--scaphe
scH--scaphal hook
scr--scar
scS--scaphal seta
seBr--setal bract
senH--sensory hair
set--setigerous segment, setiger
setLo--setal (setigerous) lobe
sh--sheath
shaft--shaft
sLo--subpodal lobe
so--sensory organ
sp--spine
spG--spinning gland
spl--simple
spS--specialized or modified setae
srL--subrostral ligament
sS--swimming seta
st--style
sty--stylode
subF--subterminal filament
supLAn--superior lateral antenna
supP--supra-acicular process

tC--tentacular (peristomial) cirrus
tCr--tentacular crown
te--tentacle
terL--terminal lamella
tF--tentacular filament
tG--thread gland
th--thorax
thC--thoracic collar
thM--thoracic membrane
tLo--tentacular lobe
to--tooth

tPa--tentacular palp
tS--tentacular segment
tSc--tentacular scar
tub--tubercle

uC--unpaired carrier
uL--upper lip
unc--uncinus

v--ventral
vC--ventral cirrus
vCl--ventral cleft
ven--ventricle
vF--ventral fringe
vG--ventral groove
vLam--ventral lamella
vlAn--ventrolateral antenna
vLi--ventral lip
vLo--ventral lobe
vml--ventral medial lobe
vnl--ventral neuropodial lobe
vPap--ventral (stomach) papillae
vSetLo--ventral setigerous lobe
vSh--ventral shield
vT--ventral teeth
vtC--ventral tentacular cirrus

w--wings

1vR, 2vR, etc.--first ventral ridge, etc.

Museum Abbreviations

AHF--Allan Hancock Foundation
AM--Australian Museum
AMNH--American Museum of Natural History
BMNH--British Museum (Natural History)
FSBC--Florida Department of Natural Resources
MCZ--Museum of Comparative Zoology, Harvard University
MNHUB--Museum für Naturkunde der Humboldt Universität zu Berlin
PMNH--Peabody Museum of Natural History, Yale University
USNM--United States National Museum

Project Abbreviations

BLM--Bureau of Land Management
COE--Corps of Engineers (Mississippi Sound)
CTGLF--Central Gulf of Mexico Ecological Study of Petroleum Production Platforms
IEC--Interstate Electronics Corporation
IXTOC--Ixtoc Oil Spill Environmental Impact Study
LOOP--Louisiana Offshore Oil Pipeline
MAFLA--Mississippi, Alabama, Florida Outer Continental Shelf Baseline Environmental Study
MESC--Marine Environmental Sciences Consortium
MO--Mobil Oil Test Well Site
NMFS-FG--National Marine Fisheries Service, Texas Flower Gardens
OCS--Outer Continental Shelf
SOFLA--Southwest Florida Shelf Characterization Study
STOCS--South Texas Outer Continental Shelf Environmental Studies

GLOSSARY

abdomen--posterior part of the body, following the thorax.
abranchiate--without branchiae.
achaetous--without setae.
acicular--pertaining to or shaped like an aciculum.
aciculum(a)--stout supportive seta found internally, projecting into the parapodial ramus.
acuminate--tapering abruptly.
adhesive gland--gland which secretes glutinous adhesive substance(s).
aileron--accessory jaw support in glycerids.
aliform--wing-shaped.
ampulla--fluid-filled sac forming the terminus of the fluid-filled canal from each lateral tentacle in saccocirrids.
anal flap--fleshy or membranous lamella located above the anus and within the scaphe in amphictenids.
anal lamella--a fleshy, plate-like projection arising from the pygidium, as in some hesionids.
ankylose--having a fused joint as between the blade and shaft of some setae.
antennal groove--dorsal slit located behind the prostomium of some lysaretids in which the antennae lay when folded back.
apical pore--a distal pore on the proboscidial papillae of glycerids leading to canals within the papillae.
apodous--without parapodia.
arenicoliform--with a body shaped like an arenicolid polychaete (lugworm).
arista--a thread-like or hair-like appendage.
articulate--jointed.
asetigerous--without setae.
atoke--an asexual individual ("stock") which gives rise to gamete-bearing epitokes or stolons.
auricle--an ear-shaped lobe.
auricular--ear-shaped.
avicular--beaked; shaped like a bird's head.
bacillary setae--long, thin capillary setae emerging from interramal thread glands in certain spionids (supernumerary setae of Foster, 1971:41).
basal funnel--soft membranous funnel formed of fused radii, located beneath the chitinous spines of the operculum in the serpulid genus Hydroides.
basal peg--lowest tooth of the serpulid uncinus; usually blunt or bifurcate at its tip.
basal prow--the basal foward projection of an uncinus.
bayonet seta--a seta having a toothed tip shaped like a slender, knife-like extension as on a bayonet.
bayonet-type seta--kind of collar seta in serpulids which has a base of stout bosses from which a tapering blade emerges.
biarticulate--having two articles.
bidentate--having two teeth.
bifid (= bifurcate)--split into two prongs.
bilimbate--having two limbae or wings.
bipinnate--having two rows of pinnae.
biramous--with two branches; as in a parapodium having both noto- and neuropodia with each bearing an aciculum and setae.

boss--a small rounded projection.
bract--lip or membrane anterior and posterior to the setae on the parapodia of sigalionids.
branchia(ae)--gill.
branchial basis--place of attachment of the branchial lobes to the anterior end of the thorax in sabellids.
branchial crown--the modified anterior end consisting of the branchial lobes, as in sabellids and serpulids (= tentacular crown).
branchial hearts--vascular pouches located in the branchial lobes of some sabellids, supposedly capable of pumping blood.
branchial lobe--a lobe composed of branchial radioles and possibly a palp as in sabellids and serpulids.
branchial pore--pore on the posterior dorsal surface of the parapodia into which retractile branchiae are withdrawn in some glycerids.
branchial sheath--a membrane surrounding the introvert in flabelligerids.
buccal--pertaining to the mouth.
campanulate--bell-shaped.
canaliculate--with canals, as in canaliculate setae.
capillary(ies)--needle-shaped or hair-like simple seta.
caruncle--a sensory organ projecting posteriorly from the prostomium.
cauda--tail.
cephalic cage--long, anteriorly directed setae which form a protective cage surrounding the head in flabelligerids.
cephalic hood--tongue-shaped or semi-circular membrane arising dorsally from the peristomium, which bears the branchial filaments in flabelligerids.
cephalic keel--a middorsal longitudinal ridge on the prostomium and peristomium of maldanids.
cephalic plaque--a flattened plate formed by the fusion of the prostomium and peristomium, as in maldanids.
cephalic rim--a membranous flange surrounding the cephalic plaque.
cephalic shield--a hardened plaque of cemented sand grains located dorsally on the first few setigers in flabelligerids.
cephalic veil--a membranous, circular lamella that lies ventral to the paleae and dorsal to the palps in pectinariids.
ceratophore--the basal portion of an antenna.
chevron--a chitinous v-shaped structure on the proboscis of some goniadids.
cirriform--slender and cylindrical, shaped like a cirrus.
cirrophore--the basal portion of a cirrus.
cirrostyle--the distal portion of a cirrus.
cirrus(i)--a sensory appendage, usually slender and cylindrical, projecting from the peristomium (tentacular cirrus), from the superior part of the notopodium (dorsal cirrus), from the inferior part of the neuropodium (ventral cirrus), or from the pygidium (anal cirrus).
clavate--club-shaped.
collar seta--notoseta of the collar or first segment of serpulids and sabellids.
companion seta--modified seta accompanying the thoracic uncini of some sabellids.
coralliform--branching like a coral.
cordate--heart-shaped.
crenulate--notched or scalloped.

crossbarred--having transverse striations.
ctenidium--a small, ciliated, cushion-like organ, associated with respiration as in sigalionids.
cultriform--shaped like the blade of a knife, as in the cultriform seta of dorvilleids.
cupule--a cup-shaped structure of chaetopterids used for mucus ball consolidation when feeding.
dendritic--having a branching tree-like structure or pattern.
dentate--having a series of relatively large teeth.
denticulate--having a series of small, short teeth (denticles).
dichotomous--branching into two equal parts, or repeated forking.
digitate--having several finger-shaped lobes.
digitiform--finger-shaped.
dorsal medial lobe--a digitiform or papilliform process arising from the medial edge of the notopodium in magelonids.
dorsum--the dorsal surface of the body.
elytron(a)--a dorsal scale in members of the order Aphroditacea.
elytrophore--a stalk which bears an elytron.
endoparasitic--parasitic within the body cavity of another organism.
epitoke--(see stolon).
epitoky--formation of a sexual individual from an asexual individual by direct transformation or by budding, as in syllids.
Errantia--an artificial subdivision of the Polychaeta, which includes the families whose members are primarily motile, i.e., creeping, swimming or burrowing.
facial tubercle--a small, fleshy protuberance on the upper lip of the mouth below the prostomium.
falcate--having a hooked tip.
falciger--composite seta in which the tip of the blade is hooked.
falcigerous--referring to a falciger.
fascicle--a setal bundle.
filiform--long and slender; thread-like.
fimbriated--having a border or margin of slender processes.
fin-and-blade-type seta--kind of collar seta in serpulids which has a keel or fin-like base from which a tapering blade arises.
flange--an accessory rim or edge.
foliaceous--broadly flattened, leaf-like.
frontal horns--prominent digitiform lateral processes projecting from the anterior margin of the prostomium in certain spionids.
furcate--forked.
fusiform--having narrow tips and expanded middle; cigar-shaped.
geniculate--bent (like a knee).
granular--appearing as if made up of granules.
harpoon seta--stout pointed seta with barbs at the tip.
hemigomph--slightly asymmetrical joint at nearly right angles to the axis of the shaft.
heterogomph--asymmetrical joint at an oblique angle to the axis of the shaft.
hirsute--covered with fine hairs.
hispid--having stiff hairs, spines, or bristles.
homogomph--symmetrical joint at right angles to the axis of the shaft.
hooded--covered by a delicate transparent envelope or guard.
hook--general term usually referring to stout-shafted, distally curved, often dentate setae; smaller hooks arranged in single or double rows are often referred to as uncini.

horns--fleshy projections of the prostomial region.
imbricated--overlapping (like scales).
inferior--lowermost (as in a setal fascicle).
interlamella--a low postsetal ridge sometimes occurring on the setal lobes of anterior abdominal setigers in magelonids, between the medial lobes and lateral lamellae.
interparapodial pouches--lateral cup-like depressions or pouches formed by the outpocketing of a membrane connecting successive neuropodia in certain spionids.
interramal--between the rami.
interstitial--inhabiting the interstices of a substrate.
intrafascicular hook--thick hook running parallel with the acicula and emerging from the parapodial lobe of onuphids.
introvert--cephalic region capable of being retracted into the body.
lamellate--with a series of overlapping plates.
lamelliform--plate-shaped.
lanceolate--slightly broad or tapering at base, and tapering to point; lance-shaped.
lappets--lobe-like structures, as the lateral lappets of terebellids.
lateral lamellae--large, foliaceous lobes arising usually from the lateral edge of the thoracic notopodia and the abdominal noto- and neuropodia in magelonids.
lateral supports--slender plates which extend laterally along the outer edges of the maxillae in members of the order Eunicacea.
lecithotrophic--obtaining nourishment from internal yolk supply.
lenticular--lens-shaped.
lentigerous--lens-bearing.
ligule--tongue-shaped process on a parapodium.
limbate--having a flattened margin or wing, as in limbate setae.
limbus(ae)--a flattened margin or wing.
linguiform (ligulate)--tongue-shaped.
lingula--a tongue-shaped extension.
long-handled--used in reference to uncini, referring to the long basal rod supporting the crown of teeth.
lyrate--lyre-shaped.
macrognath--large dentate paragnath (denticle) located laterally or ventrolaterally at the distal end of the goniadid proboscis.
mandibles--the paired (or fused), ventralmost plates in the jaw apparatus of members of the order Eunicacea.
manubrium--a handle-like process; referring to the constriction and swelling seen on setal shafts of hooded hooks in certain spionids.
maxillae--the toothed plates, carriers and supports forming the dorsal portion of the jaw apparatus in members of the order Eunicacea.
maxillary carriers--flattened plates attached to the base of the first maxillae in members of the order Eunicacea.
mesotroch--ciliary band on trochophore larvae.
micrognaths--small denticles located dorsally and ventrally at the distal end of the goniadid proboscis.
mitraria--specialized type of trochophore larva found in oweniids and Polygordius.
moniliform--having distinct, rounded articles; beaded in appearance.
mucronate--having a short, acuminate tip or mucro.
natatory seta--long, filamentous or paddle-shaped notoseta of a reproductive individual, used for swimming.
neuropodium(a)--ventral branch (ramus) of a parapodium.

neuroseta(e)--seta of the neuropodium.
notopodium(a)--dorsal branch (ramus) of a parapodium.
notoseta(e)--seta of the notopodium.
nuchal--pertaining to the nape of the neck; used in reference to sensory organs found on the posterodorsal side of the head, variously developed as paired or single processes, pits, or grooves, sometimes as paired epaulettes stretching posterolaterally from the prostomium over one or more segments.
occipital flap--a thin, transparent flap extending forward from the peristomium to cover the posterodorsal portion of the prostomium.
occipital tentacle--a finger-like projection arising from the posterior region of the prostomium, usually around the level of the eyes in spionids.
ocular--pertaining to the eyes.
ommatophore--peduncle or stalk bearing a distal eye, as in the polyodontids.
opercular peduncles--a pair of lobes or stalks which bear the operculum (paleae), as in the sabellariids.
opercular rim--fleshy or membranous rim that surrounds the operculum in amphictenids.
opercular stalk--modified radiole bearing the operculum at its tip.
operculum(a)--modified head structure of some tubiculous polychaetes used to plug the tube opening when the occupant is retracted, as in sabellariids and serpulids.
ovoid--egg-shaped.
palea(ae)--a broad, usually flattened seta.
palmate--shaped like the fronds of a palm.
palpal sheath--thin membrane located at the base of a palp as in some spionids and sigalionids.
palpode--the prostomium proper of some maldanids, opheliids and capitellids.
palps--paired fleshy structures of the head, sensory in function and arising from the ventral surface of the prostomium in errant polychaetes; used in feeding and arising from the peristomium in sedentary polychaetes.
papilla(ae)--a small nipple-like protuberance.
papilliform--shaped like a papilla.
papillose--with papillae.
paragnath--chitinous denticle on the pharyngeal surface of nereids and goniadids.
parapodium(a)--segmental, foot-like projection bearing setae.
parathoracic--pertaining to the paleal-bearing, posterior thoracic segments in sabellariids.
pectinate--comb-like.
penicillate--tipped with hairs, like a camel hair paint brush.
pennoned--with a teardrop-shaped blade.
peristomial wings--posterodorsal prolongations of the peristomium in some spionids, projecting above and behind the prostomium.
pharyngeal bulb--the pharynx and associated jaw apparatus (if present) together with surrounding muscular tissue.
pharyngeal pad--internal muscular pad located below the pharynx in the anterior 2-4 setigers in saccocirrids.
pharynx(ges)--anterior part of the digestive tract; often eversible, modified for feeding, or also used in burrowing.

pinnate--feather-like, with a main stem and lateral branches (see bipinnate).

pinnule--a truncate, paddle-like neuropodium, often bearing uncini, as in the terebellids and ampharetids; also the small, finger-like projections arising from the radioles in sabellids and serpulids.

planktotrophic--feeding on plankton.

plumose--resembling down; hairy (see pinnate).

pluriarticulate--with many joints; multiarticulate, as in the setae of sigalionids.

poecilogony--plasticity in reproductive mode under different environmental conditions.

polybostrichus--the male epitoke of syllid species belonging to the subfamily Autolytinae.

polycuspid--having several small teeth or projections.

postectal--referring to the outer posterior region.

postsetal--posterior to the setae; used in reference to parapodial lobes or ligules.

presetal--anterior to the setae; used in reference to parapodial lobes or ligules.

proboscis--anterior part of the digestive tract which can be everted to project forward (see pharynx).

prostomium--anteriormost, pre-segmental part of the body anterior to the mouth; often bearing eyes and antennae.

proventricle--gizzard-like structure of the digestive tract of syllids, containing transverse rows of muscle cells, located between the pharynx and ventricle.

pseudoarticulate--having articles which are poorly defined or incompletely separated.

pseudocomposite--seta in which the blade is partially fused with the shaft, or completely fused but retaining a distinct suture line.

pseudopenicillate seta--simple seta with a distal tuft of long hairs that also continue along the setal shaft for a short distance.

pubescent--with numerous, irregularly arranged, fine hairs on the surface (not just margins) of certain setae.

pygidium--terminal, post-segmental part of the body bearing the anus.

pyriform--pear-shaped.

radiole--one of the main tentacles in the tentacular crown of sabellids and serpulids.

ramose--branched.

reniform--kidney-shaped.

rostral point--the median, tooth-like point of attachment below the column(s) of teeth of an uncinus.

rostrate--having an enlarged terminal tooth or main fang.

rugose--roughened, lumpy.

sabre setae--specialized setae of spionids found in the ventral portion of the neuropodial setal fascicle, used to elevate the body from the tube.

saccate--in the form of a sac, as the branchiae of some glycerids.

saccocirrus--the female epitoke of syllid species belonging to the subfamily Autolytinae.

scaphal seta--one of several acicular setae lying in an oblique series at the anterodorsal margin of the scaphe in pectinariids.

scaphe--cup-shaped abdominal appendage that bears the anus in pectinariids.

schizogamy--a form of asexual reproduction involving fission, resulting in two or more individuals.

secondary tooth--the second (subapical, subterminal) tooth, below the apical, terminal, or primary tooth.

Sedentaria--an artificial subdivision of the Polychaeta, which includes the families whose members are primarily sedentary, i.e., tube dwellers or non-motile burrowers.

seminal receptacle--sac used to store sperm in females of copulating polychaete species, as in pisionids and saccocirrids.

serrate--having a series of hair-like or saw-like teeth.

seta(ae)--a chitinous, bristle-like structure, projecting from the parapodium.

seta of Apomatus--see "sickle-shaped seta."

setal lobe (= setigerous lobe)--the lobe of the parapodium which bears the setae.

setiger--a segment with setae.

setigerous lobe--see setal lobe.

short-handled--used in reference to uncini lacking a long rod-shaped support, although fine supporting threads may be present.

sickle-shaped seta (= seta of Apomatus)--a simple seta that is curved like a sickle or sabre, and usually has a dentate blade.

sigmoid--S-shaped.

simple seta--an unjointed seta.

sinuous--shaped like a sine wave; snaking; S-shaped.

spatulate--blade-shaped, usually blunt-tipped and flattened or hollowed like a spatula.

spiniger--composite seta in which the blade is long and tapers to a fine point.

spinigerous--referring to a spiniger.

spinulose--bordered with fine hairs or spines.

spioniform--spionid-like, particularly with reference to palps.

statocyst--a gravity sensing organ.

stellate--star-shaped.

stolon--a gamete-bearing individual formed from the parent or stock individual by budding or by transformation of posterior segments, as in some syllids.

strobiliform--shaped like strobila or a chain of proglottides (as in tapeworms).

style (cirrostyle)--distal, filiform appendage or article arising from a cirrophore.

stylode--a digitiform projection associated with a parapodium, as in sigalionids, or a radiole, as in some sabellids; usually longer than wide.

subacicular--below or ventral to the aciculum.

subapical--below the tip.

subbiramous--with a well-developed neuropodium, and a reduced notopodium represented by an internal aciculum but without notosetae.

subrostral hairs--hair-like extensions from the setal shaft located below the main fang of the typical maldanid uncinus.

subspatulate--broad, flattened, and usually tapering abruptly to a long tip; intermediate in form between palear and limbate, as with the setae of some sabellids.

subterminal tooth--the tooth directly below the terminal tooth of a setal blade (see secondary tooth).

subulate--somewhat expanded basally, tapering gradually to a long tip.

subuluncinus(i)--a seta that is stout basally (acicular) and tapers abruptly to a slender tip.
superior--uppermost (as in a setal fascicle).
supra-acicular--above or dorsal to the aciculum.
supraparapodial glands--subepidermal glands located medial to the base of the parapodia.
tentacular cirrus (= peristomial cirrus)--a sensory projection arising either from the peristomium or from cephalized segments, usually of the anterior region.
tentacular (buccal) lobe--a flattened hood or collar-like structure over the buccal cavity, derived from the prostomium, possessing retractile (Ampharetidae) or non-retractile (Terebellidae) feeding tentacles.
tentaculophore--the basal joint of a tentacular cirrus.
terminal tooth--the distalmost tooth of a setal blade.
thoracic collar--a fleshy extension of the first segment, surrounding the branchial basis in sabellids and serpulids.
thoracic membrane--the fleshy dorsal posterior extension of the thoracic collar in serpulids.
thorax--the anterior region of the body, following the head.
thread glands--fibrous glands interramal in position on certain segments in some spionids which give rise to the supernumerary or bacillary setae.
torus(i)--a low, ridge-like parapodium, usually bearing uncini, as in the terebellids.
trepan--a series of chitinous teeth around the margin of the pharynx, as in some syllids.
trochophore--free-swimming pelagic larval stage found in many polychaete species.
trumpet-shaped seta--type of serpulid abdominal neuroseta that is flared distally and usually bears a comb-like row of minute teeth.
truncate--having a straight-edged or cut-off distal end.
unciniger--a segment bearing uncini.
uncinus(i)--a general term covering sharply dentate, deeply imbedded setae; may be square or oval plates with several curved teeth, or S-shaped with a distinct beak or main fang below a crest of denticles.
unidentate--having one tooth; distally entire.
uniramous--a parapodium with only one ramus (usually the neuropodium).
ventral medial lobe--a digitiform or papilliform process arising from the medial edge of the abdominal neuropodia in magelonids.
ventral neuropodial lobe--a digitiform presetal lobe arising from the thoracic neuropodia in magelonids.
ventral ridge--a raised, transverse ridge present ventrally on a few anterior segments in pectinariids.
ventral shields--glandular, rectangular areas along the ventrum of some sabellids.
ventricle--the muscular anterior portion of the intestine in syllids, located directly behind the proventricle.
ypsiloid--Y-shaped.

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CHAPTER 1

John L. Taylor

FAMILY ORBINIIDAE Hartman, 1942

INTRODUCTION

Orbiniids are moderately large-bodied worms, distinctly divided into two regions. The anterior thoracic region consists of relatively smooth, flattened segments. The long, tapering, abdominal region consists of numerous segments which appear ragged due to the dorsally projecting branchiae and parapodia. The prostomium is smooth, pointed to nearly square in front, without any sensory appendages or palps. Eyes are seldom present. The peristomium is also smooth and generally bears a pair of nuchal organs anterolaterally. The proboscis is unarmed and typically sac-like.

Parapodia are essentially biramous throughout, exhibiting a distinct transition in shape and position between body regions. Cirriform branchiae appear dorsal to the notopodia beginning on anterior or middle segments, and usually continue throughout the body. The postsetal notopodial lobes are short, finger-like projections anteriorly, becoming more ligulate in the abdominal region. The postsetal neuropodial lobes consist of a fleshy ridge that often possesses one or more papillae, particularly in the area of transition between body regions. Abdominal neuropodia appear longer and are often bilobed. Interramal cirri and subpodal processes may be present.

Notosetae are crenulate capillaries throughout; in addition, there may be a few lyrate or acicular setae posteriorly. Neurosetae consist of crenulate capillaries as well, and in most species also include one or more forms of hooks.

The pygidium bears one or two pairs of long to short caudal cirri.

Comprehensive studies of the family Orbiniidae include Hartman (1957), Pettibone (1957a), and Day (1973). According to Fauchald (1977a), 14 genera and 124 species are recognized for the family. Hartman (1951a) reported eight species of orbiniids from the Gulf of Mexico, two of which were new, and mentioned that additional species could be expected to occur. Nineteen species in seven genera are reported herein, five of which may be new to science.

PRINCIPAL DIAGNOSTIC CHARACTERS

The main morphological characters used in the identification of orbiniids are: 1) the shape of the prostomium; 2) the number of thoracic segments, 3) the segment on which the branchiae start; 4) the segment on which thoracic notopodia begin; 5) the shape of both the anterior and posterior neuropodial lobes; and 6) the morphology and distribution of the setae.

The Head.

The prostomium is triangular and rounded to sharply pointed anteriorly, except in the genus Naineris, in which it is blunt, slightly bilobed, or nearly square in front. Eyes are seldom present and never

number more than one pair. The peristomium is also smooth and generally bears a pair of nuchal organs anterolaterally. In the genus Proscoloplos, the segment following the peristomium is achaetous as well. The mouth is ventral. The pharynx is massive, unarmed, and either sac-like or branched.

The Thorax.

Thoracic segments are generally dorsoventrally flattened, with the parapodia arranged laterally. Notopodia are postsetal and appear as short papillae or somewhat longer, cirriform lobes. Neuropodia are also postsetal and consist of a fleshy ridge that often has one or more papillae, particularly in the posterior thorax. Additionally, some genera (e.g., Phylo and Orbinia) possess one or more pair of subpodal (stomach) papillae on several to many segments. These are best developed on the transitional segments between the thorax and abdomen, where they may form a continuous row of papillae across the ventrum. Paired, segmental, dorsal branchiae are usually present on some thoracic segments, but may not appear before the transitional or abdominal segments. The segment on which they begin is often of specific taxonomic importance. Notosetae of the thoracic region are crenulate capillaries and may include a few lyrate setae toward the rear. Neurosetae consist of crenulate capillaries, and in most genera, also include one or more forms of hooks. In the genus Phylo, one or more stout spines may also be found on the last few thoracic segments.

The Abdomen.

The abdominal region is generally marked by a shift of the parapodia from a lateral to a more dorsal position, and by a loss of most kinds of neuropodial hooks, if previously present in the thorax. Also, notopodial lobes become more ligulate, and neuropodial lobes appear longer and often bilobed. Interramal cirri may be present, as in certain species of Leitoscoloplos, and subpodal processes (ventral cirri) may be present. Crenulate capillary setae persist on the abdominal notopodia and may occur together with lyrate and acicular setae. Crenulate or smooth capillary setae are also present on the abdominal neuropodia, and ventral rami may also have acicular setae. In Scoloplos the stout acicular setae project out from the body surface.

On the pygidium there are usually one or two pairs of caudal cirri. These may be short and conical or long and thread-like.

Careful examination of parapodial and setal shapes should be made to establish proper division of thoracic and abdominal regions, due to the transitional nature of these structures in this area. Parapodia should be carefully excised from a variety of locations along the body and examined under the compound microscope. This should include at least one parapodium from the anterior thoracic region, one from the transitional area, and at least two parapodia from the abdominal region--one anteriorly and one posteriorly. In fragmented specimens, whole cross-sections of posterior segments may be mounted. Interramal cirri, thoracic ventral papillae, and abdominal ventral cirri may be difficult to distinguish from other parapodial structures. The reader is therefore advised to become familiar with the shape and position of these structures by referring to the illustrations provided in this and other taxonomic works, before attempting identifications.

BIOLOGICAL NOTES

The orbiniids are intermediate between the "errantiate" and "sedentariate" groups of polychaetes. They do not make permanent tubes, but rather are active burrowers in sand to sandy mud substrates. They use their pointed prostomium and flattened, muscular thorax to move through the sediment. Most authors consider the orbiniids to be non-selective deposit feeders which ingest particulate organic matter, as well as sand, using the eversible sac-like or dendritic proboscis.

Some orbiniids apparently are protandrous hermaphrodites (e.g., Naineris laevigata). Various species lay eggs in pear-shaped, gelatinous cocoons (e.g., Scoloplos armiger, Leitoscoloplos kerguelensis) or ribbon-shaped clusters (N. laevigata). L. fragilis forms cylindrical, gelatinous cocoons, whereas L. robustus (and in some locations, S. armiger) releases eggs directly into the water (Schroeder and Hermans, 1975). Larvae develop as planktonic trochophores or within the gelatinous egg capsules attached to the bottom.

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

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

1a. Prostomium broadly rounded (Figure 1-4a) to squared (Figure 1-8a) anteriorly. . . . . **Naineris, p. 1-4**

1b. Prostomium triangular, bluntly to sharply pointed anteriorly (Figure 1-32a). 2

2a. First post-peristomial segment asetigerous (Figure 1-14a); abdominal neuropodia with sigmoid hooks (Figure 1-14d) . . . . . .Proscoloplos, p. 1-14

2b. First post-peristomial segment setigerous; abdominal neuropodia with or without sigmoid hooks. 3

3a. Thoracic neurosetae all crenulate capillaries (Figure 1-18f) . . . . . .Leitoscoloplos, p. 1-17
3b. Thoracic neurosetae including other forms as well as crenulate capillaries. 4

4a. Thoracic neuropodia with brush-tipped setae on first few segments (Figure 1-20d). . . . . Califia, p. 1-21
4b. Thoracic neuropodia without brush-tipped setae 5

5a. Posterior thoracic neuropodia with several spear-shaped acicular setae (Figure 1-22e). . . . . Phylo, p. 1-23
5b. Posterior thoracic neuropodia without spear-shaped acicular setae 6

6a. Some posterior thoracic segments with more than four neuropodial and subpodal papillae in some combination (Figure 1-26b) . . . . . Orbinia, p. 1-25
6b. No posterior thoracic segments with more than four neuropodial and subpodal papillae combined. . . . . Scoloplos, p. 1-27

Genus Naineris Blainville, 1828

TYPE SPECIES: Nais quadricuspida Fabricius, 1780.
REFERENCES:
Hartman, 1957:296.
Fauchald, 1977a:16.
DIAGNOSIS: Prostomium broadly rounded to squared or slightly bilobed anteriorly. Branchiae first occurring between setigers 2 and 23. Posterior thoracic setigers with no more than two neuropodial papillae; subpodal papillae absent. Thoracic notosetae as crenulate capillaries. Thoracic neurosetae including crenulate capillaries, hooks, and intermediate forms. Abdominal notosetae including crenulate capillaries and sometimes lyrate setae. Abdominal neurosetae including crenulate capillaries, together with acicular hooks in some species.

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

1a. Thoracic neuropodia as smooth, fleshy ridges without prolongations (Figure 1-2b). . . . . .Naineris sp. A, p. 1-7
1b. Thoracic neuropodia as fleshy ridges with a papilliform prolongation on some setigers (Figure 1-6b). 2

2a. Thoracic notopodia first appearing on setiger 3 or 4 . . . . . Naineris laevigata, p. 1-7
2b. Thoracic notopodia first appearing on setiger 1. 3

3a. Abdominal neuropodia bilobed (Figure 1-6e) . . . . . .Naineris bicornis, p. 1-9
3b. Abdominal neuropodia not bilobed 4

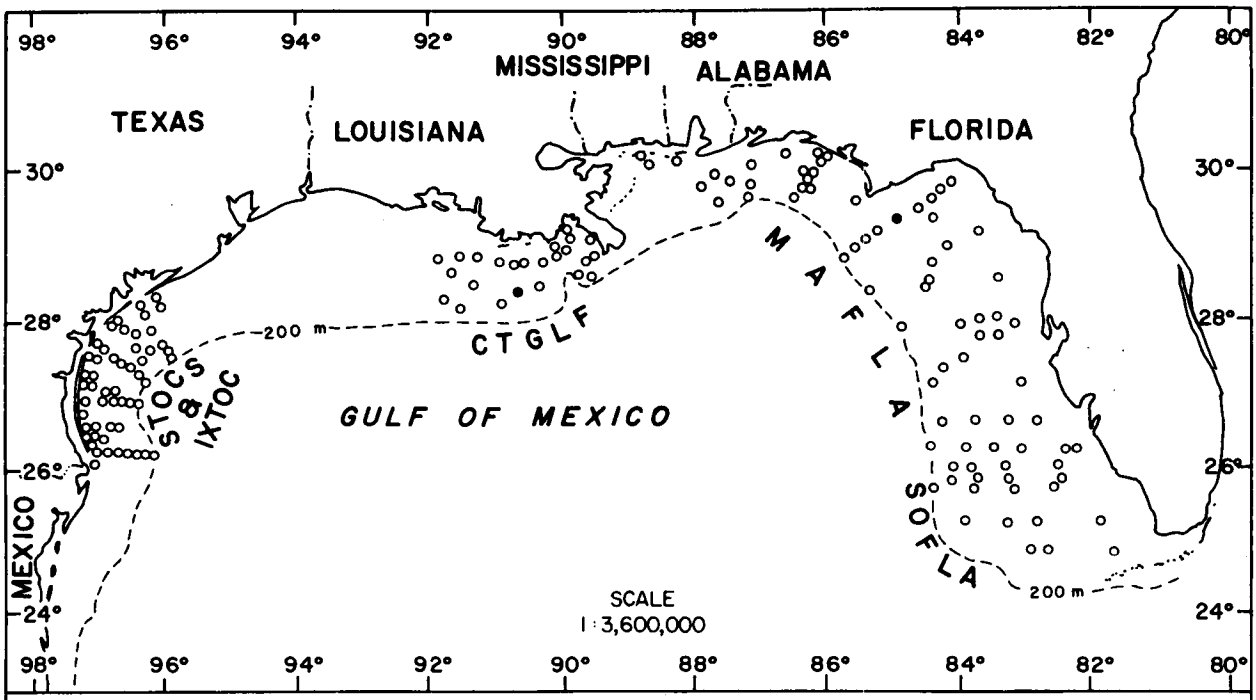

Figure 1-1. Distribution of Naineris sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

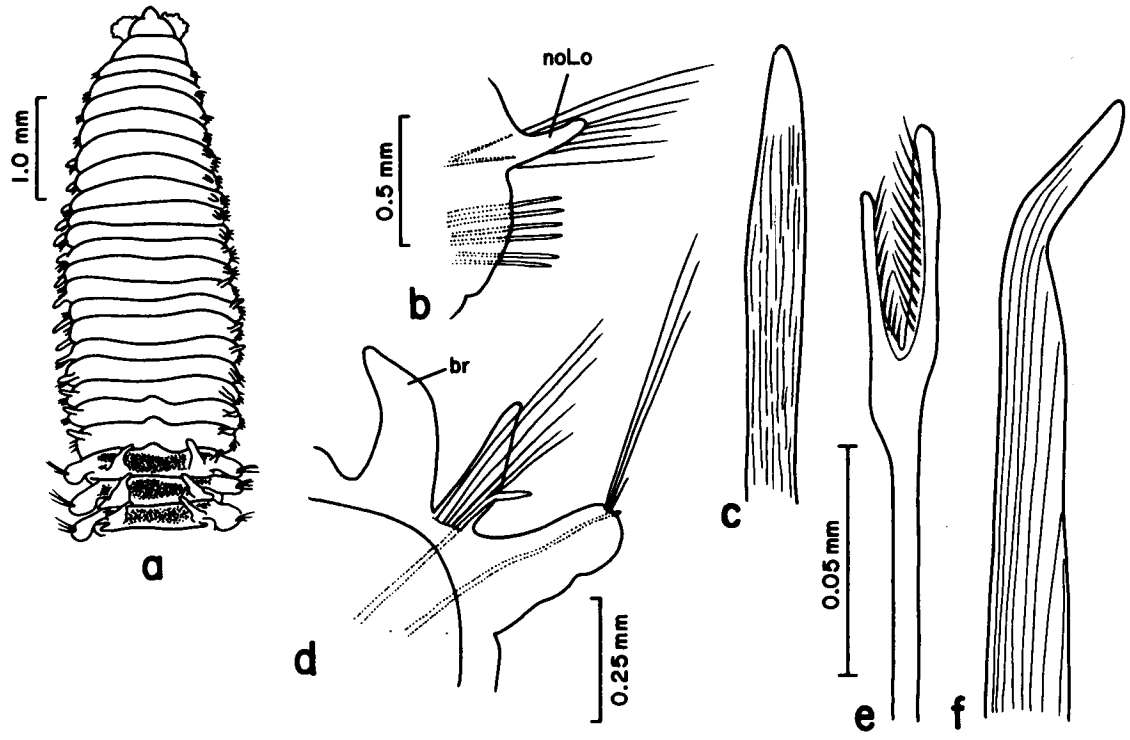

Figure 1-2. Naineris sp. A: a, anterior end, dorsal view; b, 13th thoracic parapodium; c, thoracic neuropodial spine; d, 7th abdominal parapodium; e, abdominal lyrate notoseta; f, exposed abdominal notoaciculum.

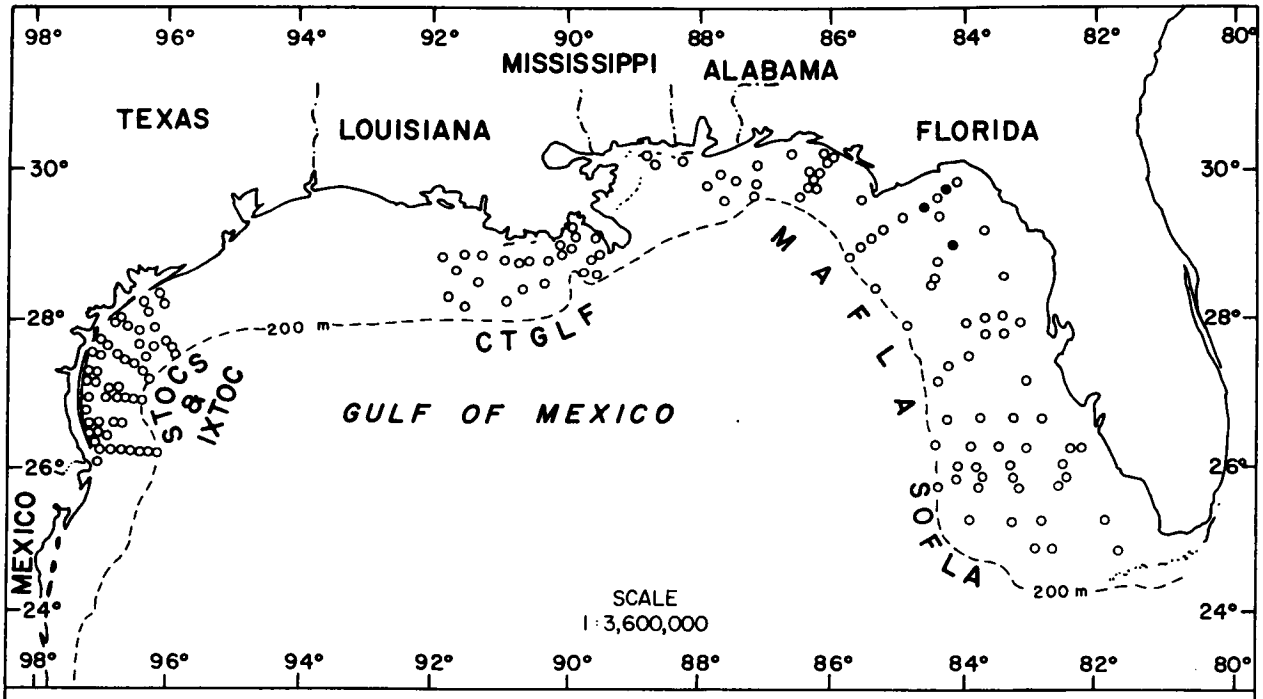

Figure 1-3. Distribution of Naineris laevigata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

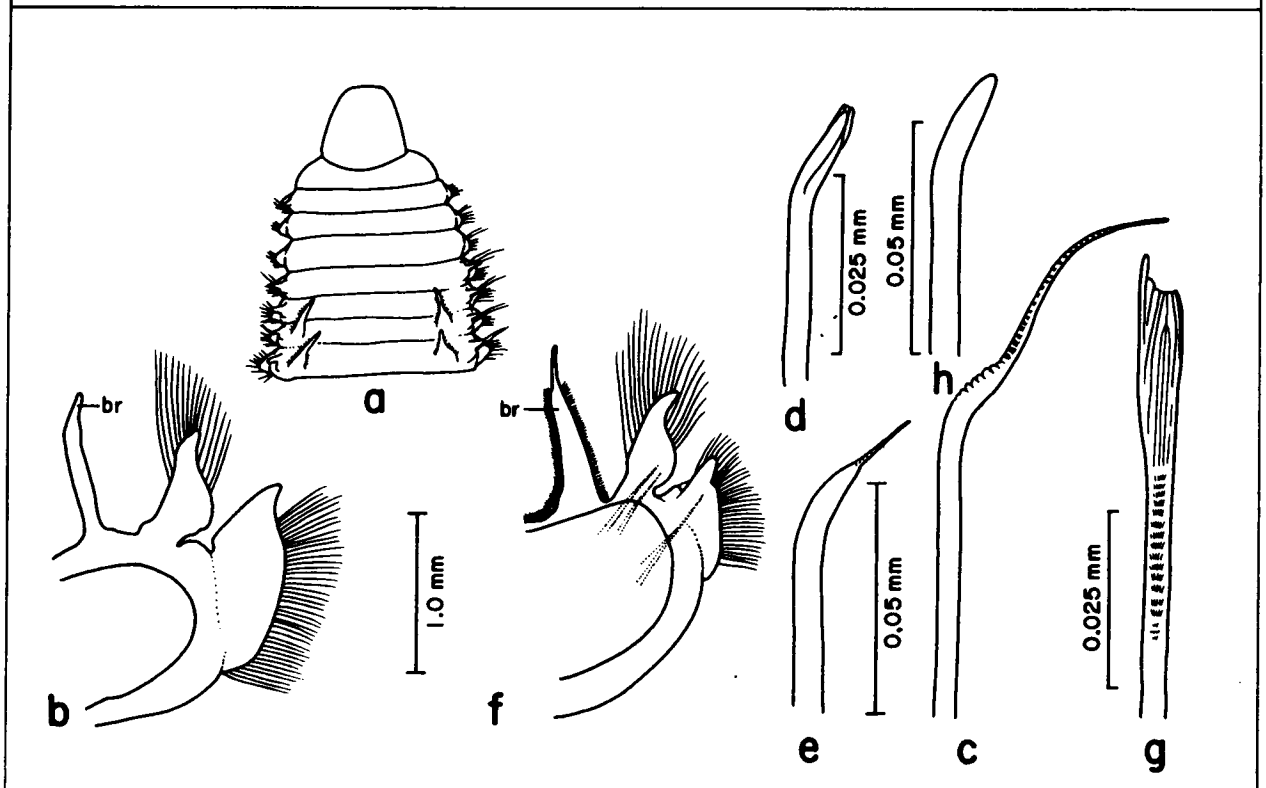

Figure 1-4. Naineris laevigata: a, anterior end, dorsal view; b, 14th thoracic parapodium; c, geniculate thoracic neuroseta; d, hooded acicular hook from thoracic neuropodium; e, transitional seta from same; f, median abdominal parapodium; g, abdominal lyrate notoseta; h, acicular hook from abdominal neuropodium.

4a. Thorax with 40 or more setigers. . . . . **Naineris sp. B, p. 1-12**
4b. Thorax with less than 40 setigers. 5

5a. Abdominal neuropodia flange-like, with short dorsal prolongation (Figure 1-10c). . . . . **Naineris dendritica, p. 1-12**
5b. Abdominal neuropodia triangular, with long dorsal prolongation (Figure 1-12d). . . . . **Naineris grubei, p. 1-14**

Naineris sp. A
Figures 1-1, 2a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2423C-7/76 (1 spec.); CTGLF 04-5/78 (1 spec.).
DESCRIPTION:
Length, to 20 mm; width, to 1.0 mm. Prostomium broadly conical (Figure 1-2a). Thorax with 14-19 segments. Branchiae first appearing on second or third abdominal segment. Thoracic notopodia with prolonged, cirriform lobe from setiger 4; neuropodia appearing as a raised, smooth, fleshy ridge (Figure 1-2b). Thoracic notosetae consisting of only crenulate capillaries; neurosetae including crenulate capillaries and smooth, nearly straight, blunt-tipped hooks (Figure 1-2c). Abdominal notopodia simple, tapered, cirriform. Abdominal branchiae slightly longer than notopodia and considerably broader where fully developed (Figure 1-2d). Abdominal neuropodia digitiform, broadly rounded distally. Abdominal notosetae including crenulate capillaries, lyrate setae (Figure 1-2e), and single acicular hooks (Figure 1-2f). Neurosetae including smooth capillaries and single acicular hooks.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Florida and one off Louisiana (Figure 1-1); 19-45 m; silty fine sand, clayey silt.

Naineris laevigata (Grube, 1855)
Figures 1-3, 4a-h

Aricia laevigata Grube, 1855:112, pl. 4, figs. 6-8.
Naineris laevigata--Fauvel, 1927:22, fig. 7a-l.
Naineris laevigata--Hartman, 1951a:70, pl. 18, figs. 1-8; 1957:297, pl. 35, figs. 1-8.
Naineris laevigata--Day, 1967:539, fig. 23.2.a-f.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2317-8/76 (1 spec.), 2420E-7/76 (1 spec.), 2422C-7/76 (1 spec.).
DESCRIPTION:
Length, to 20 mm (previously reported to 40 mm); width, to about 1 mm. Prostomium broad, bluntly rounded anteriorly (Figure 1-4a). Thorax with 15-30 segments. Paired branchiae first present by setiger 4, or not until setiger 12. Notopodia becoming evident by setiger 3 or 4 as simple cirriform lobes, with asymmetrical expansion on midlateral margin (Figure 1-4b). Thoracic neuropodia flange-like with triangular extension dorsally. Thoracic notosetae as crenulate capillaries anteriorly, sometimes accompanied by a few lyrate setae on transitional segments. Thoracic neurosetae including crenulate to geniculate capillaries

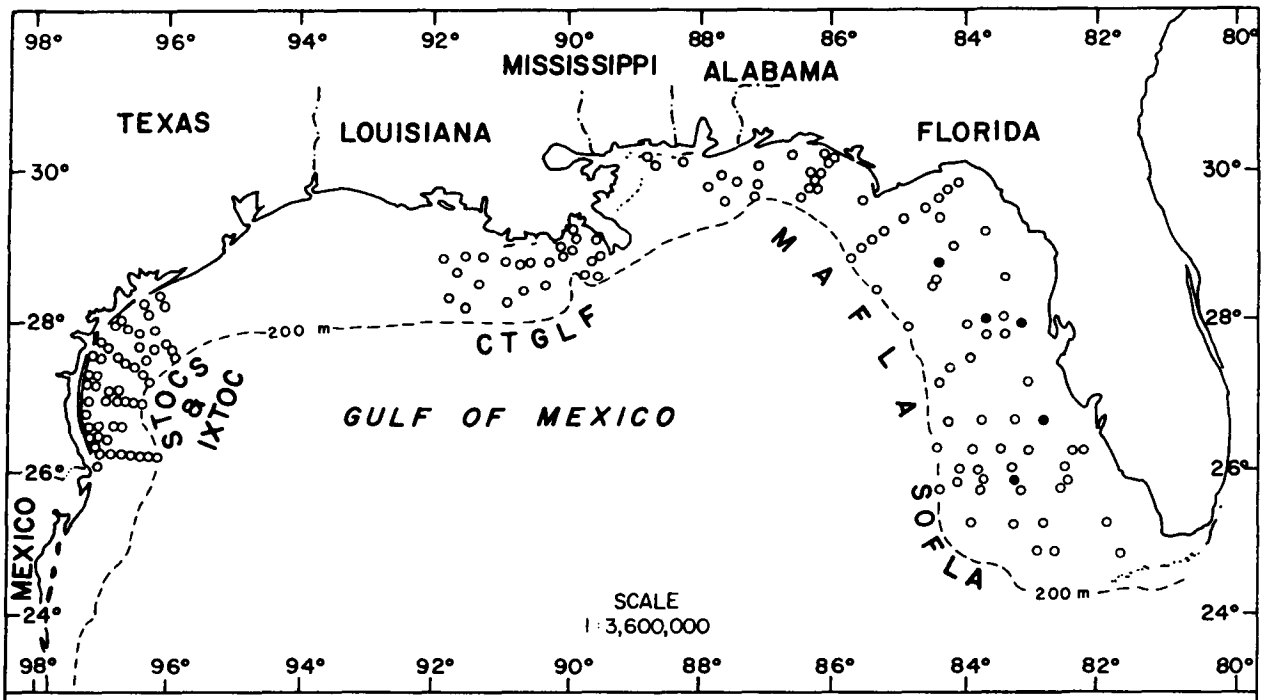

Figure 1-5. Distribution of Naineris bicornis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

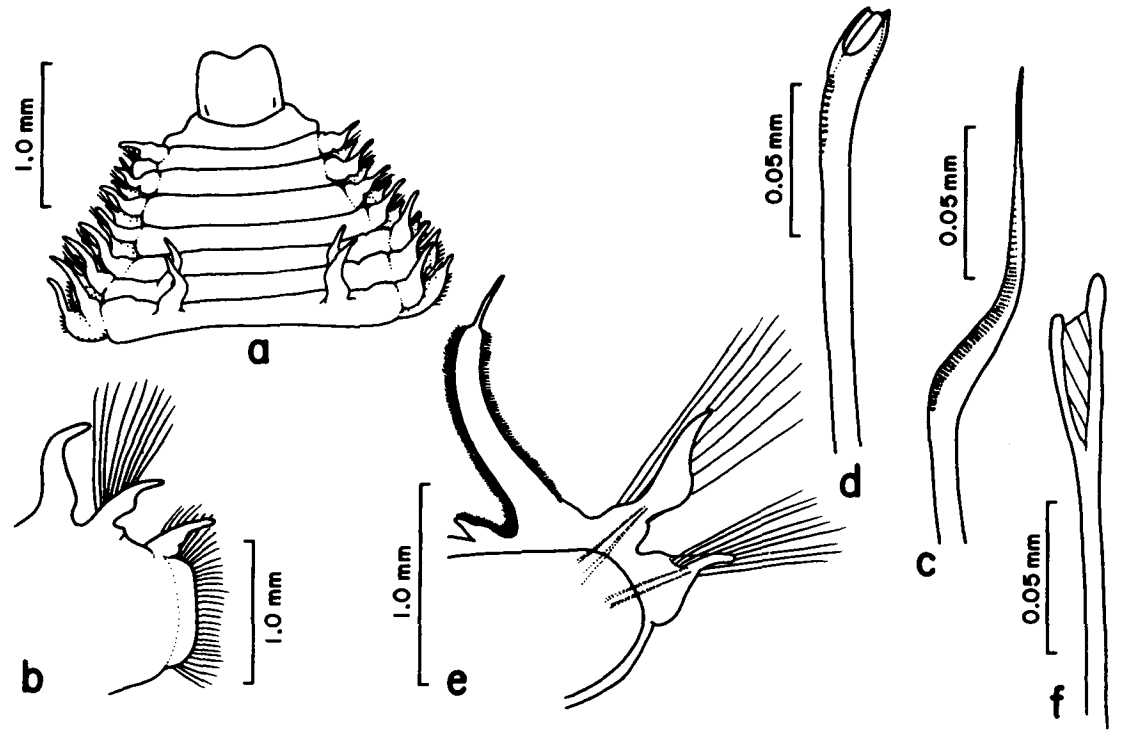

Figure 1-6. Naineris bicornis: a, anterior end, dorsal view; b, 27th thoracic parapodium; c, thoracic geniculate neuroseta; d, thoracic neuropodial hook; e, median abdominal parapodium; f, abdominal lyrate notoseta (All figures from Hartman 1951a, pl. 19, figs. 1-6).

(Figure 1-4c), smooth and grooved acicular hooks (Figure 1-4d), and intermediate forms (Figure 1-4e). Abdominal notopodia similar in appearance to those of thorax; neuropodia (Figure 1-4f) with short, triangular presetal lobe and longer postsetal lobe, without fleshy ridge of thoracic segments. Low, rounded interramal process present on abdominal parapodia. Abdominal notosetae including crenulate capillaries and few lyrate setae (Figure 1-4g). Abdominal neurosetae including capillary setae and few emergent hooks (Figure 1-4h). Pygidium with two pairs of short caudal cirri.
PREVIOUSLY REPORTED HABITAT: Generally in sandy sediments.
GULF OF MEXICO BLM-OCS OCCURRENCE: Few stations off northwestern Florida (Figure 1-3); shallow water, 14-29 m; medium-fine to fine-very fine sand, silty very fine sand.
DISTRIBUTION: Cosmopolitan in warm and temperate seas.

Naineris bicornis Hartman, 1951
Figures 1-5, 6a-f

Naineris bicornis Hartman, 1951a:72, pl. 19, figs. 1-6; 1957:304, pl. 40, figs. 1-6.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2B-5/81 (1 spec.), 16B-7/81 (1 spec.); MAFLA 2207J-8/77 (1 spec.), 2210C-6/75 (1 spec.), 2316E-11/77 (1 spec.).
DESCRIPTION:
Length, 30+ mm (previously reported to 30 mm); width, to 5 mm (previously reported to 5 mm). Body with 100+ segments. Prostomium square to slightly bilobed anteriorly (Figure 1-6a). Thorax with 45-50 segments. Branchiae cirriform beginning about setiger 6, increasing in size and becoming longer than notopodial ligules on abdominal segments. Notopodia cirriform, first appearing on setiger 1, lengthening toward abdomen, with median rounded expansion on lateral surface (Figure 1-6b). Neuropodia consisting of fleshy ridges prolonged dorsally as cirriform lobes. Thoracic notosetae all crenulate capillaries; neurosetae including geniculate (Figure 1-6c) and less strongly bent crenulate capillaries together with transversely grooved hooks (Figure 1-6d). Abdominal notopodia (Figure 1-6e) strap-like with slender tips and asymmetrically enlarged lateral margins. Abdominal neuropodia triangular with short presetal and longer postsetal lobes. Abdominal notosetae consisting of crenulate capillaries and few lyrate setae (Figure 1-6f). Abdominal neurosetae including crenulate capillaries and several slightly curved acicular hooks.
PREVIOUSLY REPORTED HABITAT: Intertidal sandy beaches.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off western Florida (Figure 1-5); 15-54 m; medium to fine-very fine sand, silty fine to very fine sand.
DISTRIBUTION: Northeastern Gulf of Mexico.

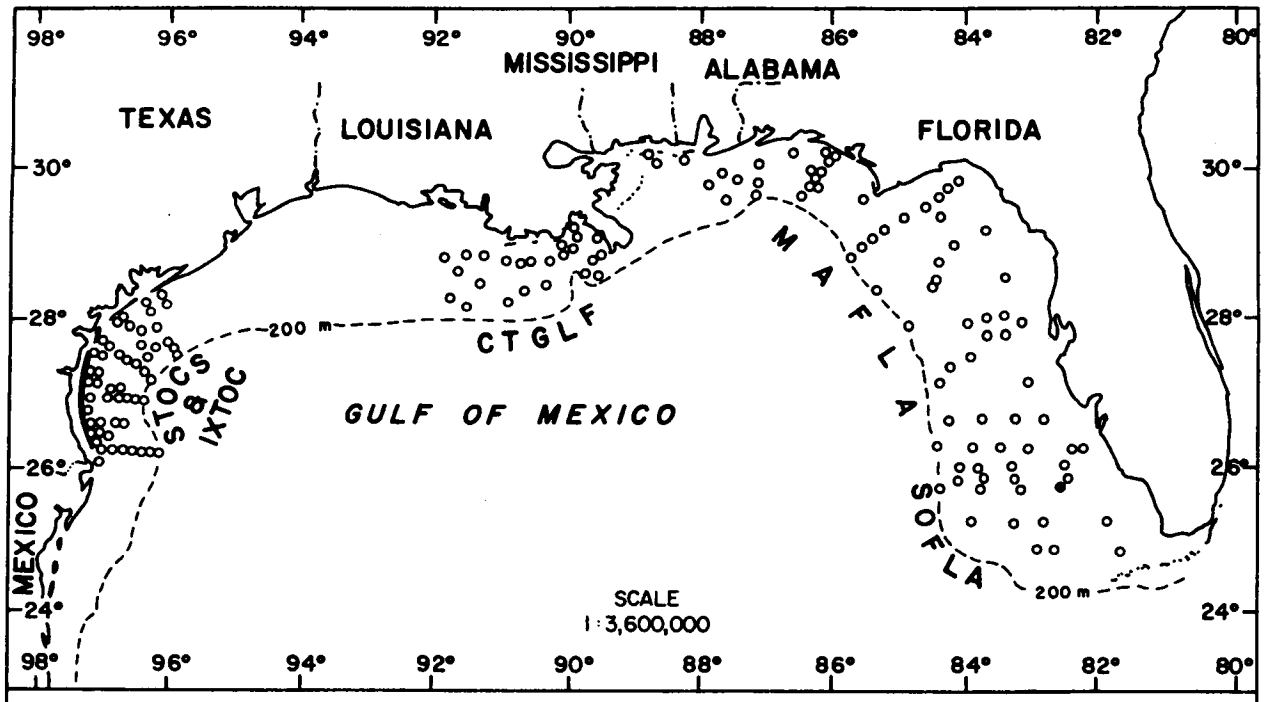

Figure 1-7. Distribution of Naineris sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

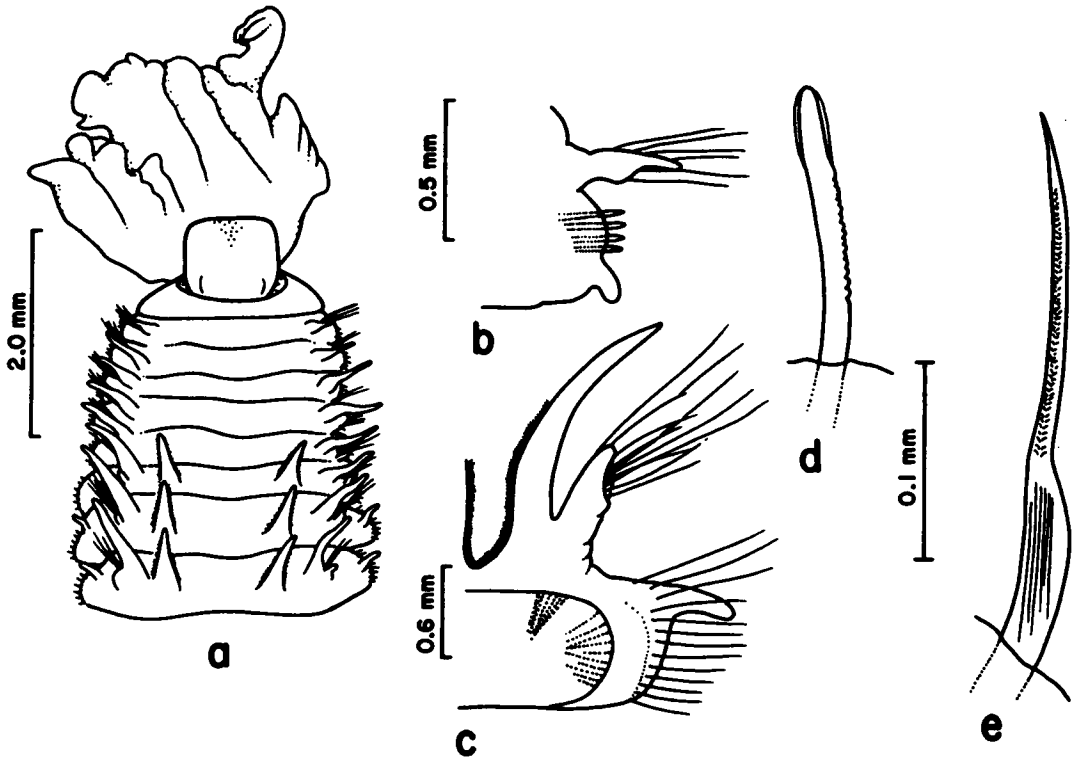

Figure 1-8. Naineris sp. B: a, anterior end, dorsal view; b, 5th thoracic parapodium; c, abdominal parapodium, 50th setiger; d, thoracic neuropodial hook, from setiger 5; e, abdominal neuroseta.

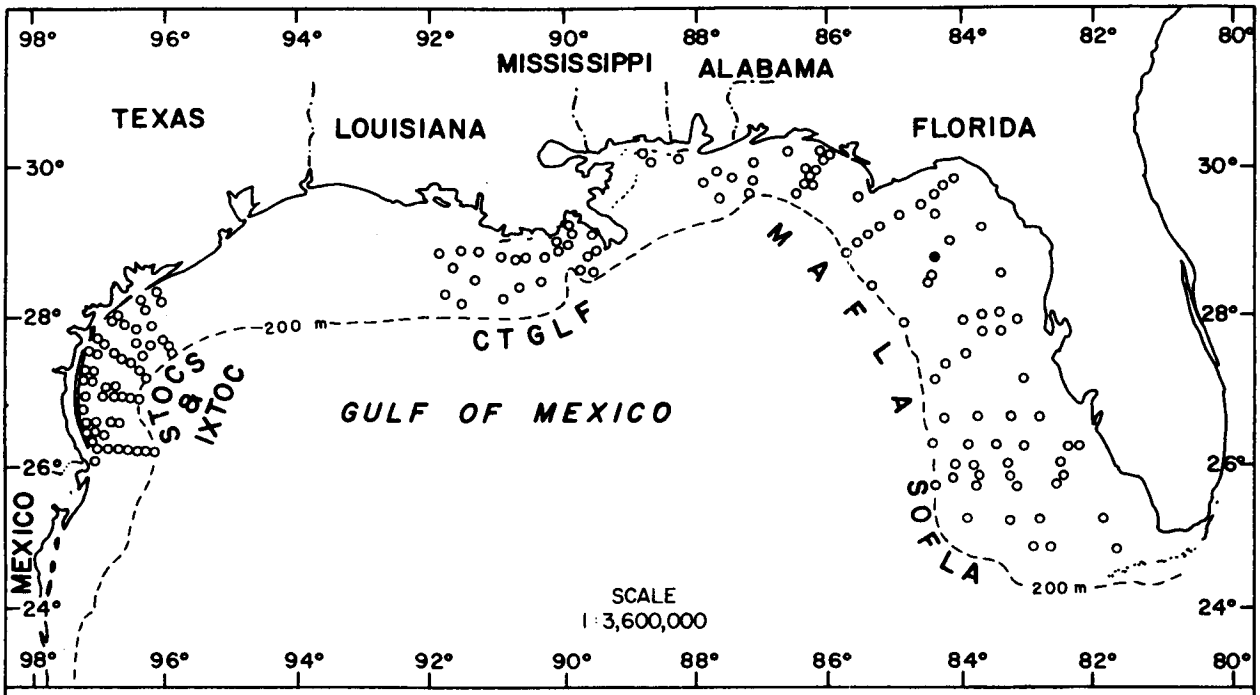

Figure 1-9. Distribution of Naineris dendritica on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

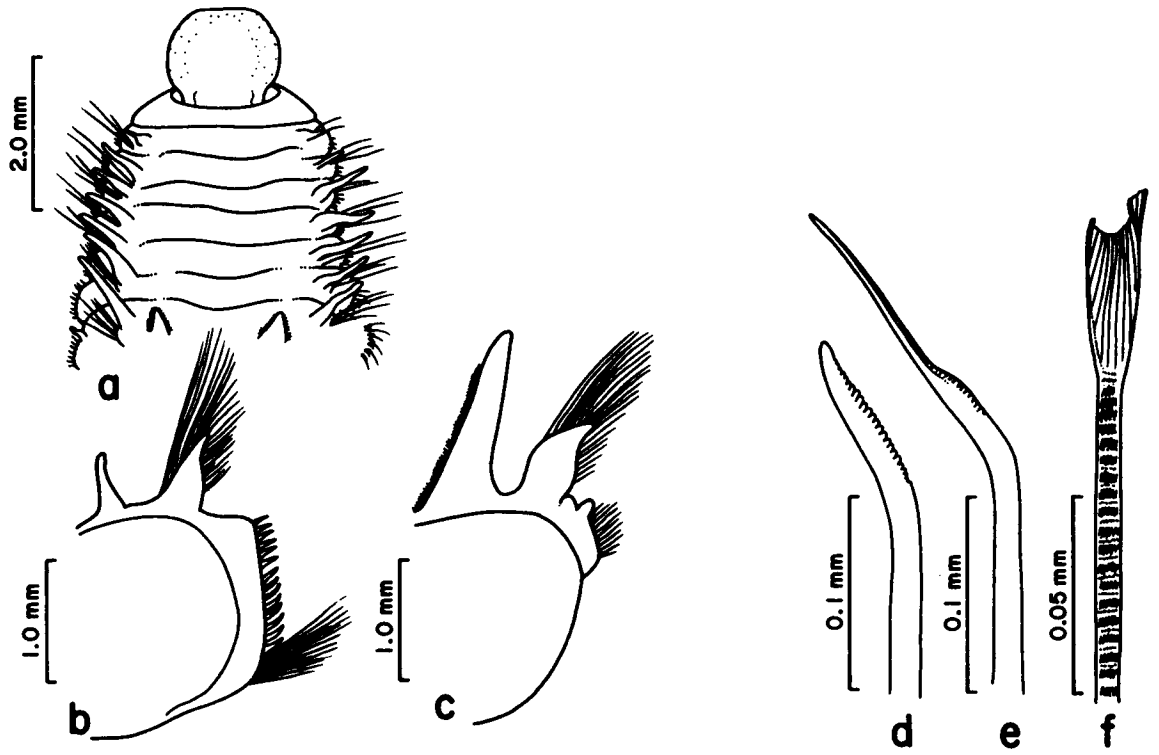

Figure 1-10. Naineris dendritica: a, anterior end, dorsal view; b, 12th thoracic parapodium; c, 27th abdominal parapodium; d, thoracic neuropodial hook; e, intermediate neuroseta from middle of thoracic fascicle; f, abdominal lyrate notoseta (Figures b-f from Hartman 1957, pl. 36, figs. 1-2, pl. 37, figs. 1, 4, 6).

Naineris sp. B
Figures 1-7, 8a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2960H-11/77 (1 spec.).
DESCRIPTION:
Length, 25 mm; width, 3.0 mm. Prostomium broad anteriorly, nearly square in outline (Figure 1-8a). Thorax with about 44 setigers; branchiae present from about setiger 6. Notopodia elongate, somewhat swollen along midlateral margin, present from setiger 1. Neuropodia appearing as a broad ridge bearing a short, bluntly rounded, ventral papilla (Figure 1-8b). Abdominal notopodia and neuropodia about same proportions as those of thoracic segments (Figure 1-8c). Notosetae as long to short crenulate capillaries throughout. Thoracic neuropodia with curved, crenulate capillaries and slightly curved, dorsally ridged hooks (Figure 1-8d). Transition from thorax to abdomen evidenced by change in composition of neurosetae. Abdominal neurosetae consisting solely of short, straight, nearly smooth capillaries (Figure 1-8e).
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off southwestern Florida (Figure 1-7); 27 m; fine sand.

Naineris dendritica (Kinberg, 1867)
Figures 1-9, 10a-f

Anthostoma dendriticum Kinberg, 1867:337.
Naineris dendritica--Hartman, 1948:102; 1957:299, pl. 36, figs. 1-3, pl. 37, figs. 1-7; 1969:25, figs. 1-8.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2316D-11/77 (1 spec.), 2316F-2/78 (1 spec.).
DESCRIPTION:
Length, 170+ mm (previously reported to 170 mm); width, to 4.0 mm (previously reported to 4.0 mm). Both specimens incomplete. Prostomium broadly rounded anteriorly (Figure 1-10a). Thorax with 20-30 segments; branchiae first appearing between segments 7 and 15. Notopodia consisting of a simple, cirriform postsetal process (Figure 1-10b), present from setiger 1. Thoracic neuropodia ridge-like anteriorly, with small dorsal expansion toward transitional segments. Abdominal notopodia simple, ligulate, asymmetrically expanded along lateral margin, somewhat shorter than branchiae (Figure 1-10c). Abdominal neuropodia broad, slightly prolonged dorsally, forming low triangular lobe. Thoracic notosetae all crenulate capillaries. Thoracic neurosetae including crenulate capillaries somewhat stouter and more strongly curved than those of notopodia, hooks (Figure 1-10d), and intermediate forms (Figure 1-10e). Abdominal notosetae including crenulate capillaries and lyrate setae (Figure 1-10f). Acicular hooks present on posterior abdominal neuropodia.
REMARKS: According to Hartman (1957:300), characters used in distinguishing Naineris dendritica from N. laevigata may be only of a subspecific or varietal nature. This is the first record of sympatric occurrence.

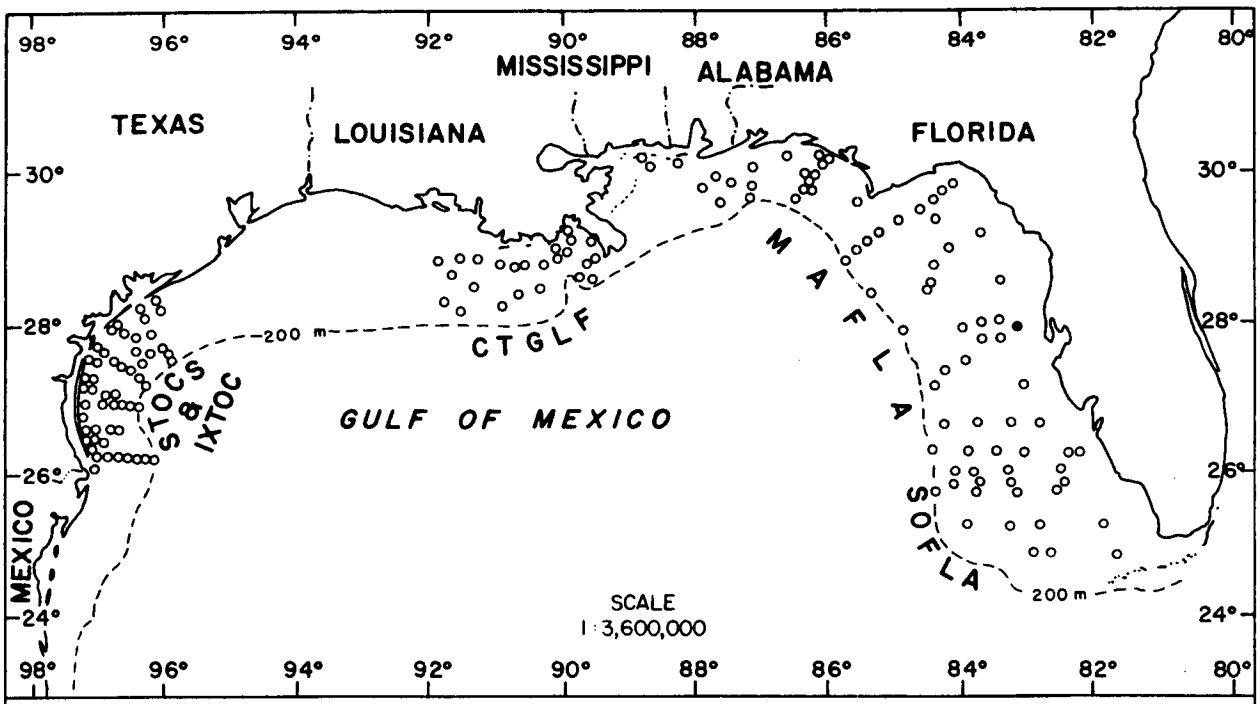

Figure 1-11. Distribution of Naineris grubei on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

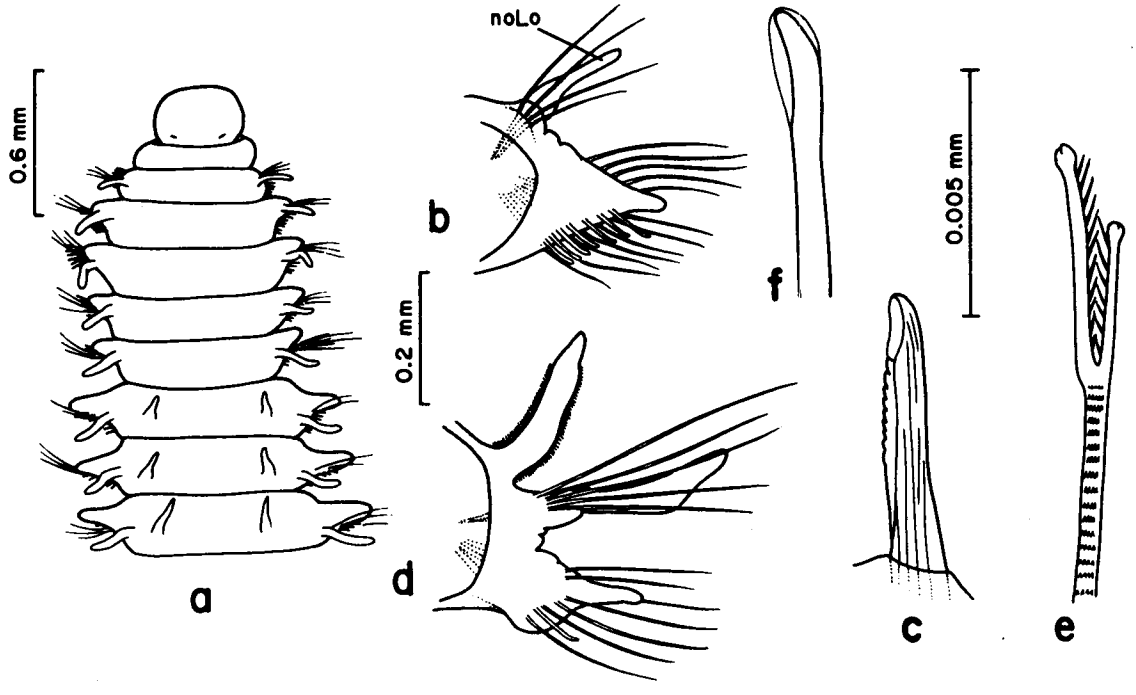

Figure 1-12. Naineris grubei: a, anterior end, dorsal view; b, 4th thoracic parapodium; c, thoracic neuropodial hook; d, 20th abdominal parapodium; e, abdominal lyrate notoseta; f, abdominal acicular notoseta.

PREVIOUSLY REPORTED HABITAT: Intertidal low littoral zones, sandy muds supporting abundant plant growth.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off western Florida (Figure 1-9); 35 m; silty fine sand.
DISTRIBUTION: Pacific Ocean from Alaska to southern California; northern Gulf of Mexico.

Naineris grubei (Gravier, 1909)
Figures 1-11, 12a-f

Scoloplos grubei Gravier, 1909:646, pl. 18, figs. 49-57.
Naineris grubei--Hartman, 1957:303.
Naineris grubei--Day, 1977:237.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207H-7/76 (1 spec.).
DESCRIPTION:
Length, 5+ mm (previously reported to 20 mm); width, less than 1 mm (previously reported to 1.5 mm). Only specimen incomplete. Prostomium blunt anteriorly, oval to nearly square in outline (Figure 1-12a). Thorax with 17-18 setigers; branchiae beginning on setiger 6. Thoracic notopodia long, cirriform, well-developed from setiger 1 (Figure 1-12b). Thoracic neuropodia similar in shape but shorter, extending from dorsal surface of well-defined postsetal ridge. Thoracic neurosetae including stout and slender crenulate capillaries, and curved hooks grooved along dorsal margin (Figure 1-12c). Abdominal notopodia broad basally, with long cirriform ligule distally (Figure 1-12d); neuropodia cirriform. Notosetae including crenulate capillaries throughout; few lyrate setae (Figure 1-12e) present in abdominal notopodia. Abdominal neurosetae including crenulate capillaries similar to notosetae but shorter, and 1-2 smooth, hooded acicular hooks (Figure 1-12f).
REMARKS: This species is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Coral.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off western Florida (Figure 1-11); 19 m; fine-very fine sand.
DISTRIBUTION: Western coast of South America, Lord Howe Island, Gulf of Mexico.

Genus Proscoloplos Day, 1954

TYPE SPECIES: Proscoloplos cygnochaetus Day, 1954.
REFERENCES:
Day, 1954:21.
Hartman, 1957:255.
Fauchald, 1977a:16.
DIAGNOSIS: Body small. Prostomium bluntly pointed anteriorly. Segment following peristomium apodous and achaetous. Branchiae beginning about setiger 8. Transition indistinct between thorax and abdomen. Setae of both rami consisting of crenulate capillaries; in addition, sigmoid hooks present on abdominal neuropodia.

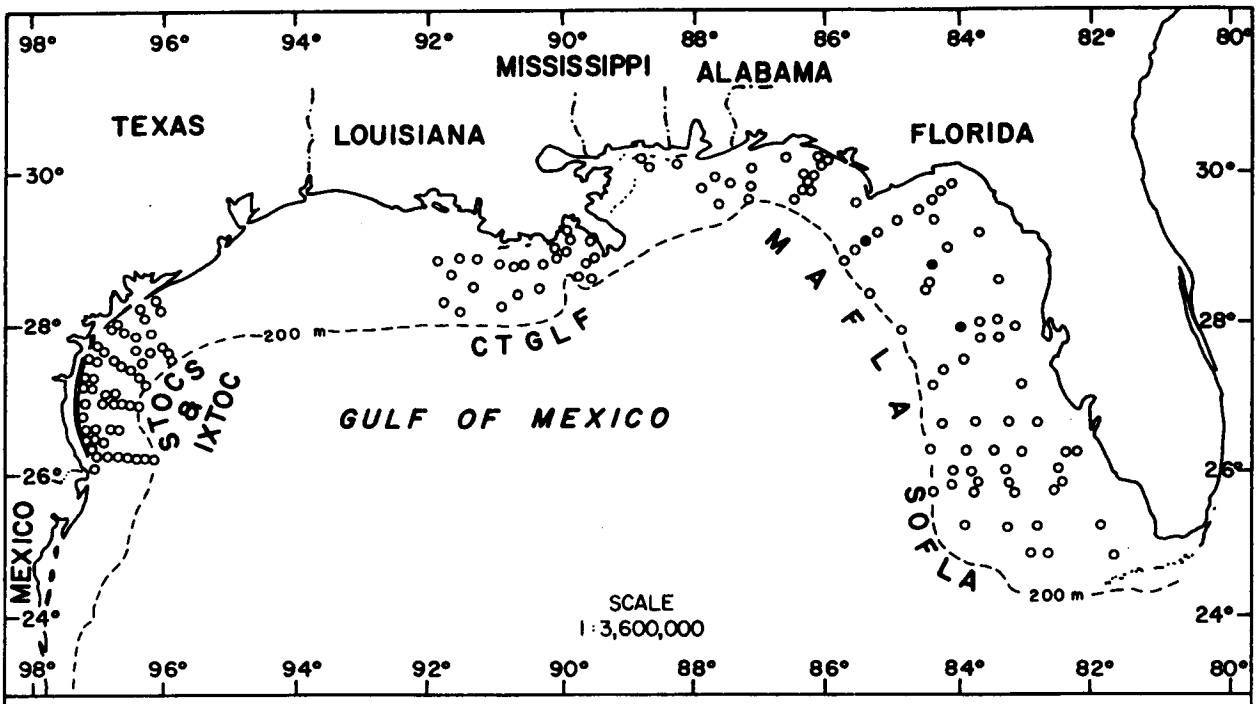

Figure 1-13. Distribution of Proscoloplos sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

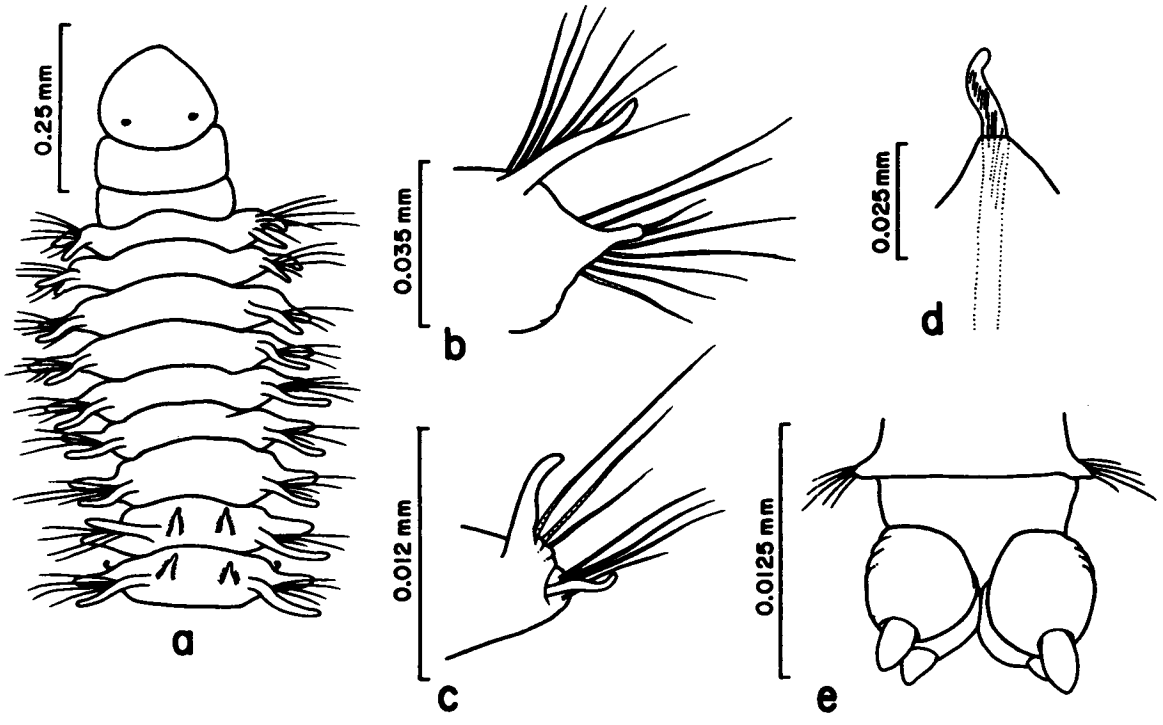

Figure 1-14. Proscoloplos sp. A: a, anterior end, dorsal view; b, 3rd thoracic parapodium; c, middle abdominal parapodium; d, abdominal neuropodial hook; e, pygidium.

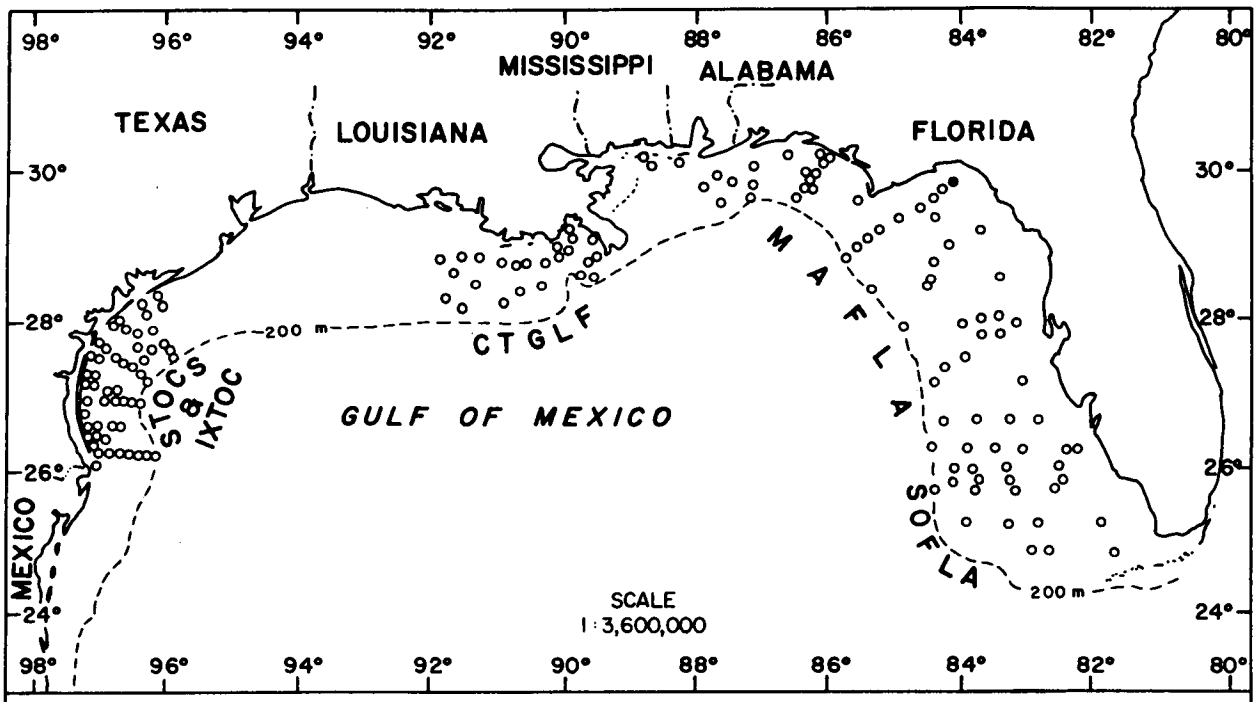

Figure 1-15. Distribution of Leitoscoloplos robustus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

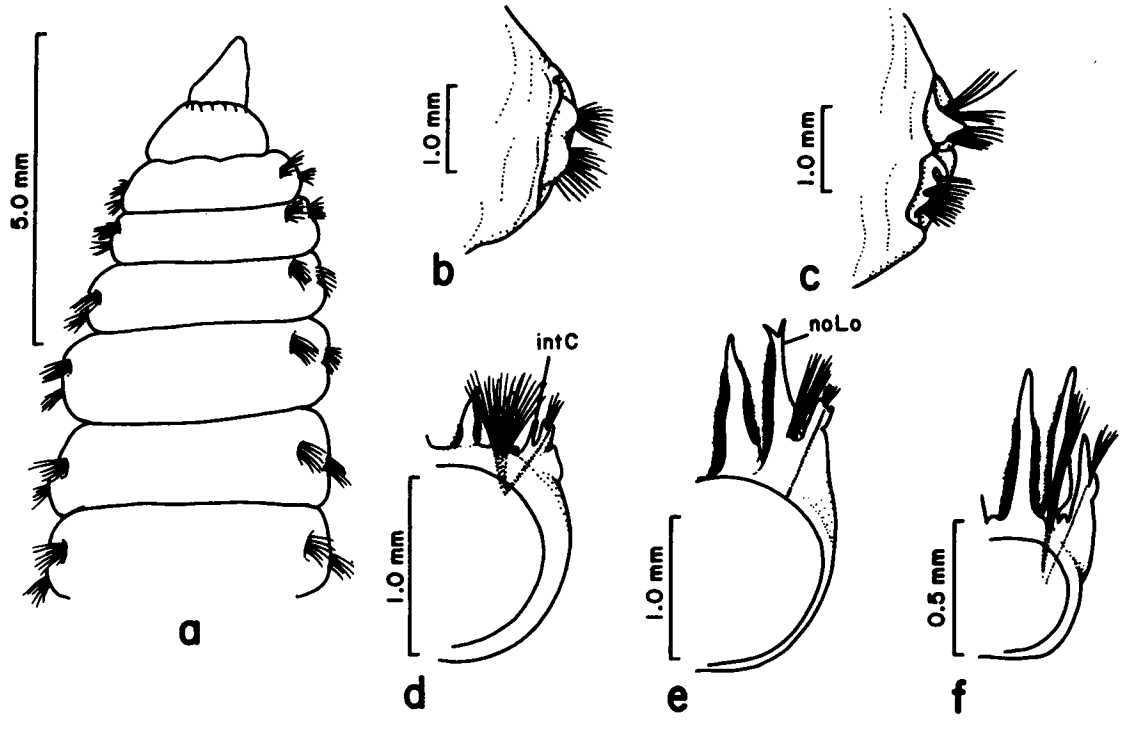

Figure 1-16. Leitoscoloplos robustus: a, anterior end, dorsal view; b, 3rd thoracic parapodium; c, last thoracic parapodium; d, anterior abdominal parapodium; e, median abdominal parapodium; f, posterior abdominal parapodium (Figures d-f from Hartman 1951a, pl. 21, figs. 4-6).

Proscoloplos sp. A
Figures 1-13, 14a-e

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211F-11/77 (1 spec.), 2316J-11/77 (2 spec.), 2425B-7/76 (1 spec.).
DESCRIPTION:
Length, to 10 mm; width, to 0.5 mm. Prostomium broad, about equal in length and width (Figure 1-14a). Thorax with ten setigers, branchiae from about setiger 8. Thoracic noto- and neuropodia cirriform (Figure 1-14b). All thoracic and abdominal parapodia with crenulate capillary setae; abdominal neuropodia with additional sigmoid hooks (Figure 1-14c,d). Pygidium (Figure 1-14e) with four short, stout cirri.
REMARKS: The genus Proscoloplos is newly reported from the Gulf of Mexico.
GULF OF MEXICO BLM-OCS OCCURRENCE: Three stations off western Florida (Figure 1-13); moderately shallow depths, 35-43 m; coarse to medium sand, silty fine sand.

Genus Leitoscoloplos Day, 1977

TYPE SPECIES: Haploscoloplos bifurcatus Hartman, 1957.
REFERENCE:
Day, 1977:218.
DIAGNOSIS: Prostomium long, acutely pointed to triangular. Branchiae first appearing on setiger 9 or thereafter. Posterior thoracic neuropodia with as many as two podal papillae, and at most two subpodal papillae. All neurosetae crenulate capillaries; notosetae including crenulate capillaries, and also lyrate setae on posterior thoracic and abdominal segments.

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

1a. Ventral neuropodial flange of posterior abdominal segments with smooth, undivided margin (Figure 1-16f). . . . . **Leitoscoloplos robustus**, p. 1-17

1b. Ventral neuropodial flange of posterior abdominal segments broadly bilobed (Figure 1-18d,e) . . . . .**Leitoscoloplos fragilis**, p. 1-19

Leitoscoloplos robustus (Verrill, 1873)
Figures 1-15, 16a-f

Scoloplos robustus--Verrill, 1881:301, 317.
Scoloplos robustus--Webster and Benedict, 1884:724.
Scoloplos bustorus--Hartman, 1942b:58, figs. 110-112.
Haploscoloplos bustorus--Hartman, 1945:30.
Haploscoloplos bustorus--Horn and Bookhout, 1950:1, pls. 1-4.
Haploscoloplos robustus--Hartman, 1951a:78, pl. 21, figs. 4-6; 1957:272, pl. 25, figs. 4-6.
Scoloplos (Scoloplos) robustus--Pettibone, 1963:288, fig. 76g.
Haploscoloplos robustus--Day, 1973:91.

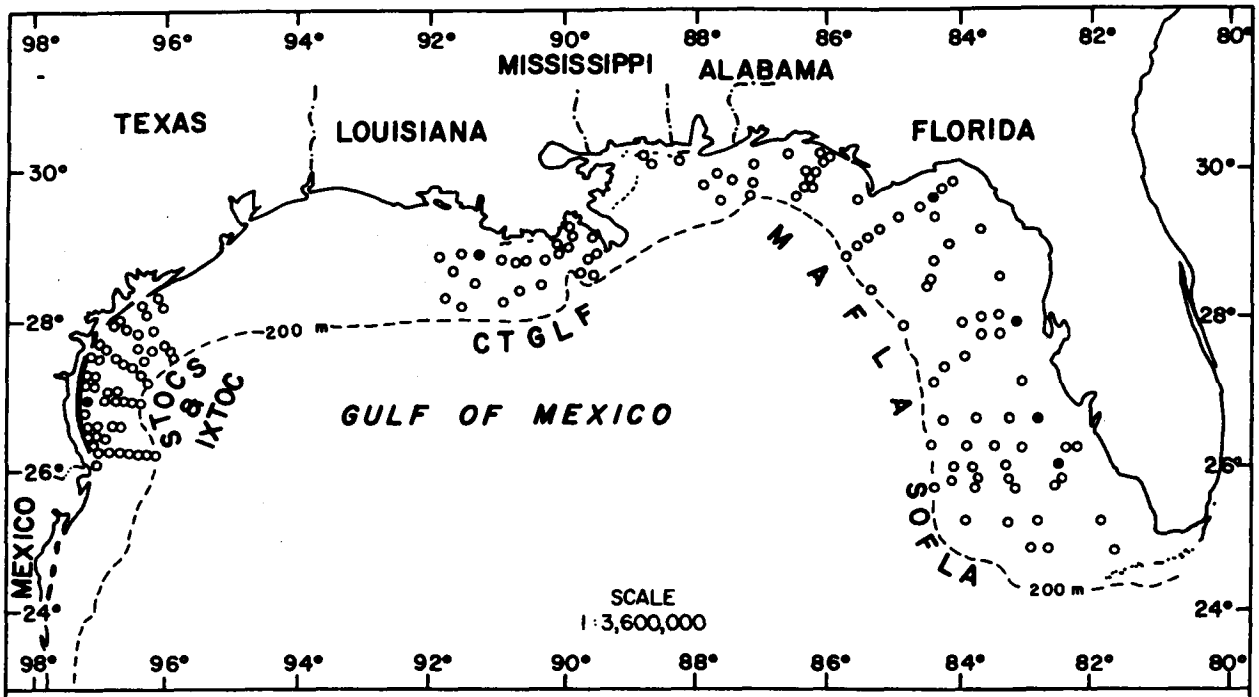

Figure 1-17. Distribution of Leitoscoloplos fragilis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

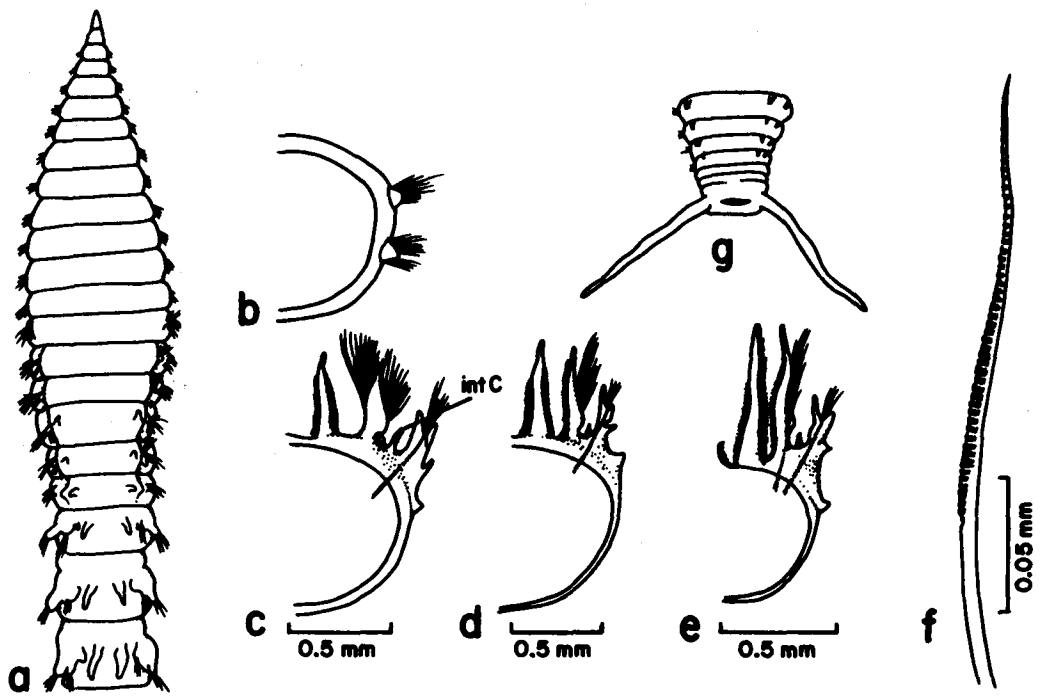

Figure 1-18. Leitoscoloplos fragilis: a, dorsal view of anterior end including thoracic region and first few abdominal segments; b, thoracic parapodium, posterior view; c, 22nd parapodium, anterior view; d, 69th parapodium, anterior view; e, far posterior parapodium, posterior view; f, crenulate capillary seta; g, pygidium (Figures a, b, g from Pettibone 1963, fig. 76a, b, e; figures c, d, e from Hartman 1951a, pl. 21, figs. 1-3).

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2419J-2/78 (1 spec.).
DESCRIPTION:
Length, 300+ mm (previously reported to 375 mm); width, to 10 mm (previously reported to 10 mm). Body with 300+ segments. Prostomium acutely pointed, slightly longer than wide (Figure 1-16a). Thoracic region with 15-33 setigers. Branchiae usually present by setiger 16, occasionally not appearing until abdominal region. Thoracic notopodia and neuropodia each with median papilla on postsetal ridge (Figure 1-16b). Posterior thoracic and first few abdominal setigers (Figure 1-16c) sometimes with 2-3 papillae on neuropodial ridge. Abdominal notopodia ligulate, resembling paired branchiae in length and width (Figure 1-16d), but possessing a bifid tip on median segments (Figure 1-16e). Anterior abdominal segments with interramal cirri arising from base of neuropodia (Figure 1-16d). Abdominal neuropodia with long dorsal lobe, shorter and more rounded lateral lobe, and large, undivided ventral flange (Figure 1-16f). All setae crenulate capillaries. Pygidium with pair of long, thread-like caudal cirri.
REMARKS: The number of thoracic setigers has been reported to increase with the size of the specimen.
PREVIOUSLY REPORTED HABITAT: Fine to coarse sediments; littoral zone to depths in excess of 50 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off northwestern Florida (Figure 1-15); 10 m; medium-fine sand.
DISTRIBUTION: New England to southern Florida, Gulf of Mexico.

Leitoscoloplos fragilis (Verrill, 1873)
Figures 1-17, 18a-g

Scoloplos fragilis Verrill, 1881:301, 309, 317, 322.
Haploscoloplos tortugaensis--Monro, 1933a:261, fig. 10.
Scoloplos rufa--Treadwell, 1941b:1, figs. 1-6.
Scoloplos fragilis--Hartman, 1942b:60, figs. 113-115.
Haploscoloplos fragilis--Hartman, 1944a:340, pl. 46, fig. 5; pl. 50, fig. 6; 1951a:76, pl. 21, figs. 1-3; 1957:279, pl. 25, figs. 1-3.
Scoloplos (Scoloplos) fragilis--Pettibone, 1963:290, fig. 76a-f.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 2A-5/81 (1 spec.), 6B-11/80 (1 spec.); MAFLA 2207C-7/76 (1 spec.), 2207D-2/78 (3 spec.), 2207E-8/77 (1 spec.), 2207K-8/77 (1 spec.), 2421E-7/76 (1 spec.), 2421A-11/77 (1 spec.); CTGLF 19-9/78 (1 spec.); IXTOC S50-2,4 11/79 (1 spec.).
DESCRIPTION:
Length, to 150 mm (previously reported to 150 mm); width, to 3 mm (previously reported to 3 mm). Body with up to 250 segments. Prostomium sharply pointed, slightly longer than wide (Figure 1-18a). Thorax with 15-30 setigers; branchiae arising near first abdominal setiger, remaining small for two or three segments. Thoracic notopodia and neuropodia (Figure 1-18b) with broad, fleshy ridges; neuropodia becoming bi- or trilobed posteriorly. Abdominal notopodia simple, ligulate, resembling branchiae (Figure 1-18c-e). Neuropodia with long dorsal lobe, shorter ventral lobe, and distinctly bilobed subpodal ridge;

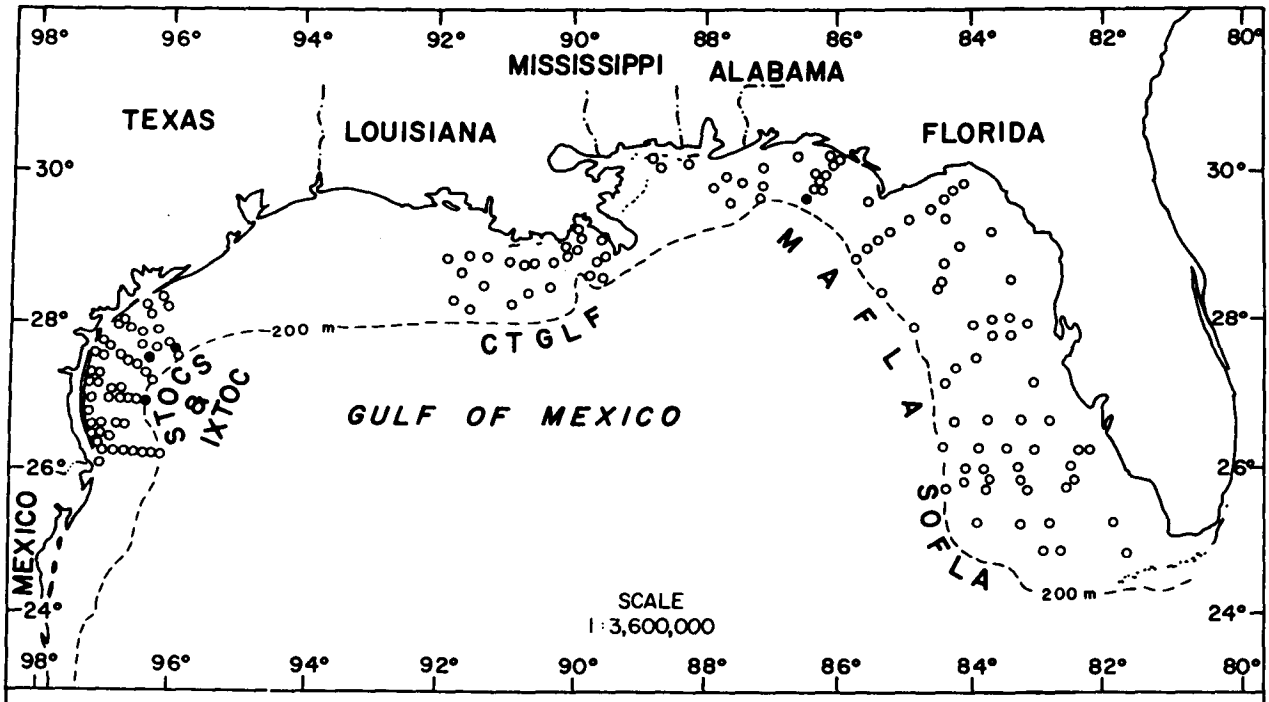

Figure 1-19. Distribution of Califia calida on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

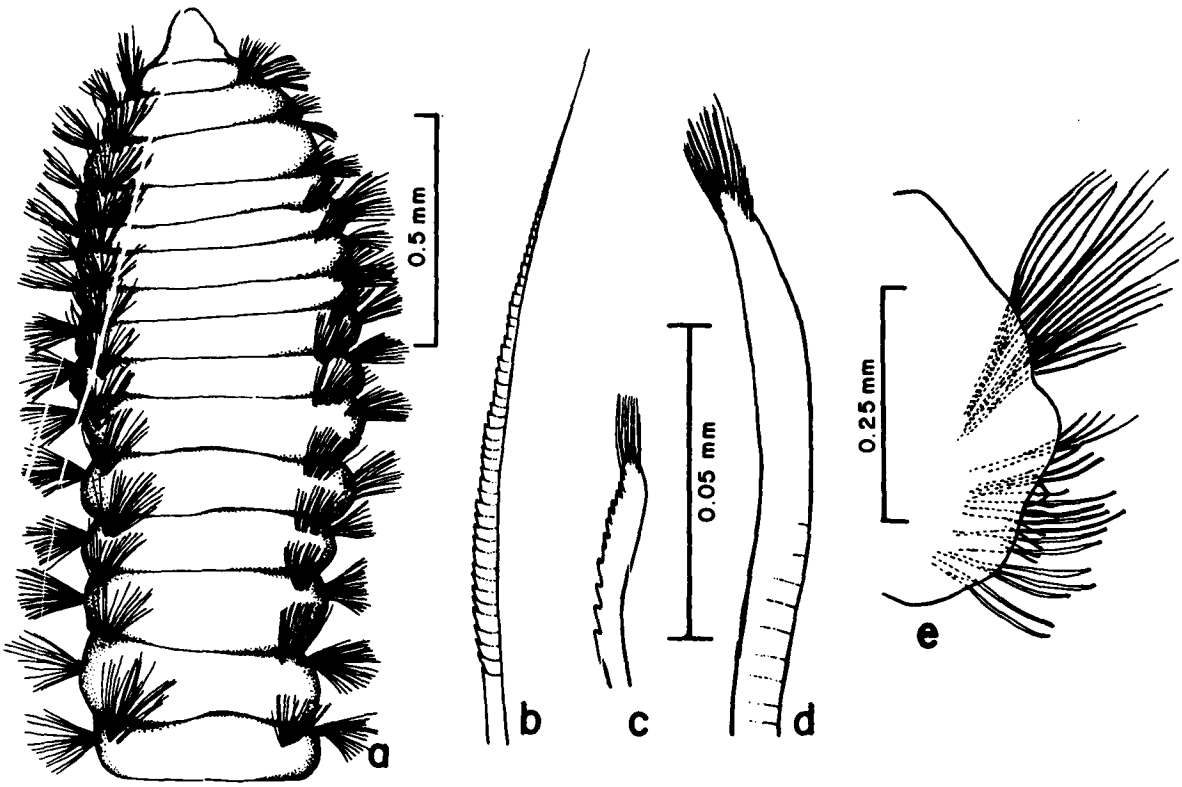

Figure 1-20. Califia calida: a, anterior end, dorsal view; b, serrate capillary notoseta; c, short thoracic neuropodial spine; d, long thoracic neuropodial spine; e, 3rd thoracic parapodium.

separated from notopodia by well-developed interramal cirrus. All setae as crenulate capillaries (Figure 1-18f). Pygidium with two long, thread-like caudal cirri (Figure 1-18g).
PREVIOUSLY REPORTED HABITAT: Variety of sediment types from mud to sand and shell; estuarine and coastal waters as well as offshore to depths of 100 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered across northern Gulf (Figure 1-17); shallow water, 6-26 m; medium to very fine sand.
DISTRIBUTION: Western North Atlantic, Gulf of Mexico, eastern South Atlantic.

Genus **Califia** Hartman, 1957

TYPE SPECIES: Califia calida Hartman, 1957.
REFERENCES:
Hartman, 1957:305.
Fauchald, 1977a:16.
DIAGNOSIS: Prostomium pointed. Branchiae first appearing on segment 8 or later. Thoracic neuropodia with no more than two podal papillae; subpodal papillae absent. Thoracic notosetae all crenulate capillaries; thoracic neurosetae including crenulate capillaries, brush-tipped hooks, and in some species blunt hooks. Abdominal setae as crenulate capillaries; lyrate notosetae occasionally present.

Califia calida Hartman, 1957
Figures 1-19, 20a-e

Califia calida Hartman, 1957:306, pl. 42, figs. 1-3.
Califia calida--Fauchald, 1972a:163.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2536K-2/78 (1 spec.); STOCS 6/I-4 Sp/77 (1 spec.), 6/III-2 W/77 (1 spec.), SB2-3 W/76 (1 spec.).
DESCRIPTION:
Length, to 10 mm (previously reported to 100 mm); width, to 1.5 mm (previously reported to 6.5 mm). Body elongate, widest about setiger 7; all specimens incomplete with up to 38 setigers. Prostomium triangular, distally blunt (Figure 1-20a); eyes absent. Peristomium achaetous; thorax consisting of 13 setigers. Setigers 1-3 with serrate capillary notosetae (Figure 1-20b). Neurosetae including short, coarsely serrate spines with hispid tips (Figure 1-20c); larger, faintly serrate spines with hispid tips (Figure 1-20d); and serrate capillary setae. Setiger 3 with slender, elongate postsetal lobe in notopodium and shorter, conical postsetal lobe in neuropodium (Figure 1-20e). Remaining thoracic setigers with capillary setae in both rami. Branchiae beginning on setiger 9. Abdominal notopodia with long postsetal lobes and serrate capillary setae. Neuropodia with bifid base extending beyond notopodia, and 2-3 serrate capillary setae.
REMARKS: The four specimens examined from the BLM-OCS program were represented by anterior fragments only. Furcate abdominal neurosetae were not observed, and the number of abdominal setigers with branchiae could not be established.

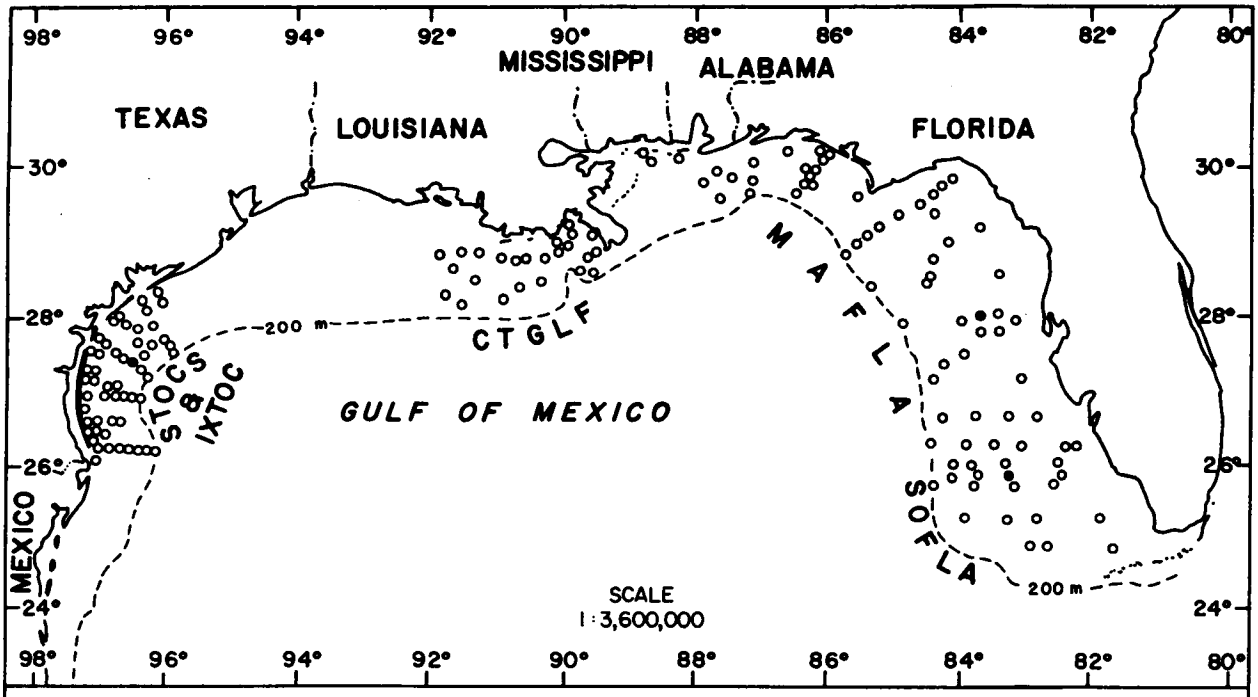

Figure 1-21. Distribution of Phylo felix on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

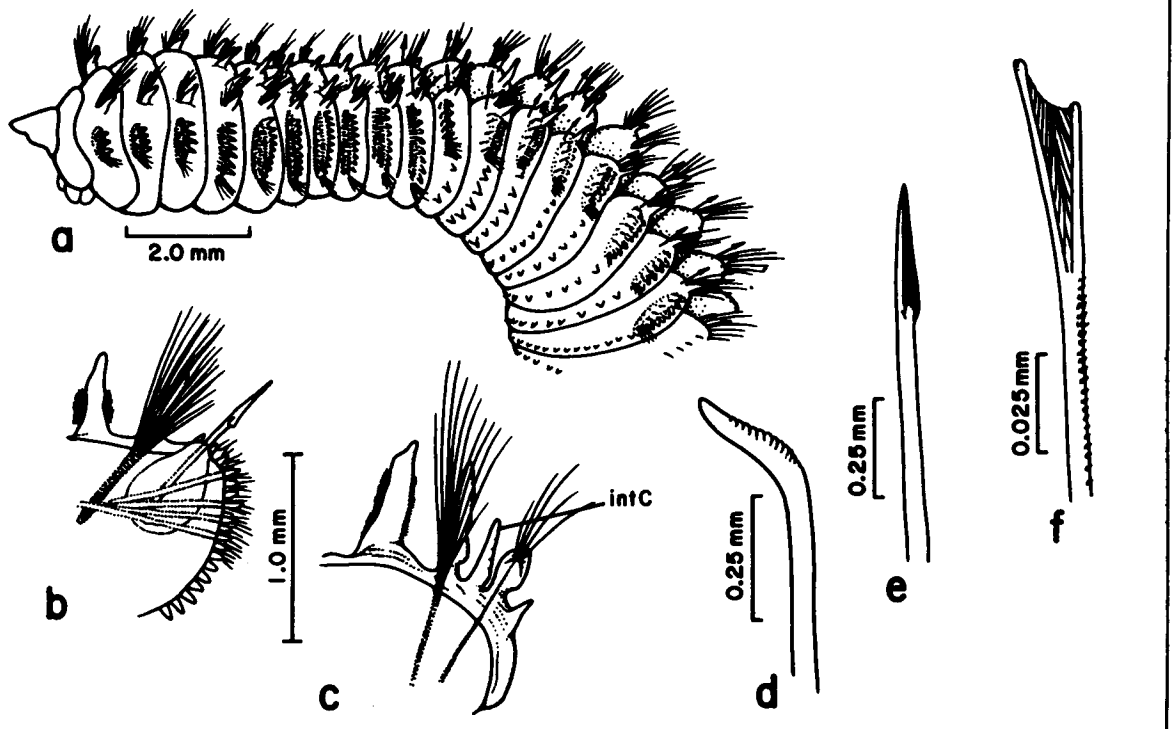

Figure 1-22. Phylo felix: a, anterior end, lateral view (proboscis slightly everted); b, 15th thoracic parapodium; c, median abdominal parapodium; d, thoracic neuropodial hook; e, spear-shaped seta from posterior thoracic segment; f, abdominal lyrate notoseta (All figures from Hartman 1957, pl. 23, figs. 1-4, 6, 7).

PREVIOUSLY REPORTED HABITAT: 470-826 m; green mud, associated with siliceous sponge.
GULF OF MEXICO BLM-OCS OCCURRENCE: One record off Florida and several off Texas (Figure 1-19); deep water, 82-189 m; clayey silt, silty clay.
DISTRIBUTION: Southern California, Gulf of Mexico.

Genus Phylo Kinberg, 1866

TYPE SPECIES: Phylo felix Kinberg, 1866.
REFERENCES:
Kinberg, 1866:251.
Hartman, 1957:260.
Fauchald, 1977a:16.
DIAGNOSIS: Prostomium pointed. Branchiae beginning on setigers 5-7. Posterior thoracic neuropodia with at least five pairs of neuropodial and subpodal papillae. Notosetae as crenulate capillaries; lyrate setae present on abdominal setigers. Thoracic neurosetae including crenulate capillaries; hooks; and stout, acicular, spear-shaped setae.

Phylo felix Kinberg, 1866
Figures 1-21, 22a-f

Phylo felix Kinberg, 1866:251.
Aricia michaelseni Ehlers, 1897:88, pl. 6, figs. 136-140.
Aricia formosa Hansen, 1882:18, pl. 5, figs. 23-27.
Phylo felix--Hartman, 1957:262, pl. 23, figs. 1-7; 1969:37, figs. 1-5.
Phylo felix--Day, 1973:89.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 16B-11/80 (1 spec.); MAFLA 2210A-11/77 (1 spec.); STOCS 5/II-S/77 (2 spec.).
DESCRIPTION:
Length, to 150 mm (previously reported to 150 mm); width, to 7 mm (previously reported to 5 mm). Prostomium short, triangular in outline, about as long as wide. First segment smaller than following segments (Figure 1-22a). Thorax with 16-18 segments; branchiae present from setiger 4 or 5. Thoracic notopodia cirriform, present from setiger 1. Thoracic neuropodia fringed by two or more papillae from setiger 1, with ten or more papillae on later segments (Figure 1-22b); subpodal papillae appearing about setiger 11, forming a complete fringe across ventrum (Figure 1-22a) where best developed. Abdominal notopodia simple, ligulate, separated from neuropodia by distinct interramal cirrus (Figure 1-22c). Abdominal neuropodia with low pre- and postsetal lobes, short ventral cirri, and broad, flange-like subpodal ridge. Thoracic notosetae all crenulate capillaries. Anterior thoracic neurosetae including crenulate capillaries and dorsally grooved, strongly curved hooks (Figure 1-22d). Neurosetae of some posterior thoracic setigers including several stout, acicular, spear-shaped setae (Figure 1-22e). Abdominal notosetae consisting of crenulate capillaries and lyrate setae (Figure 1-22f); neurosetae all crenulate capillaries. Acicular setae in both rami may be exposed in some specimens.
REMARKS: Phylo felix is newly reported from the Gulf of Mexico.

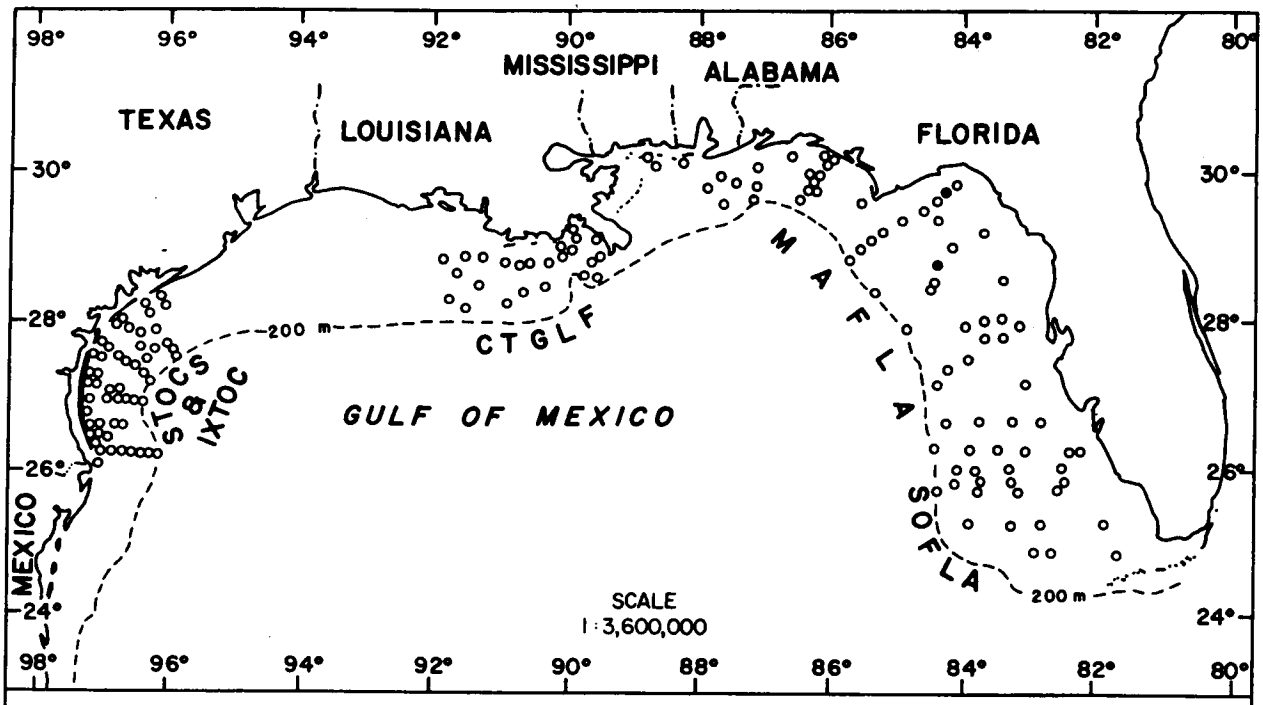

Figure 1-23. Distribution of Orbinia riseri on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

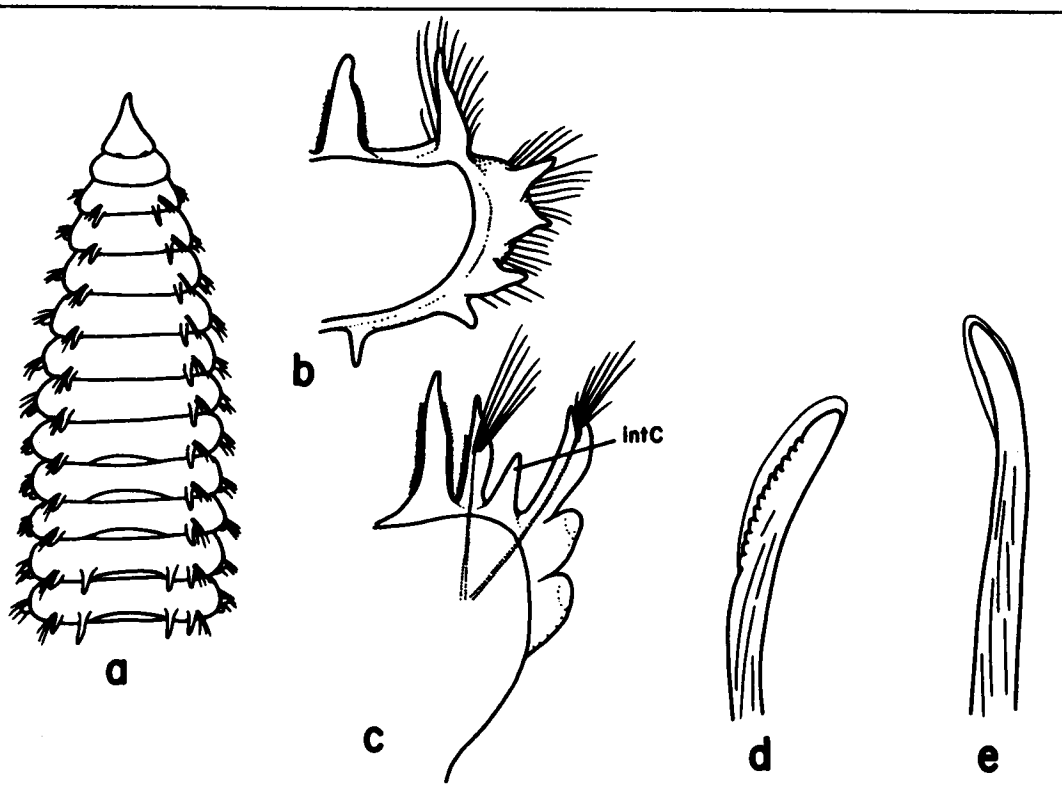

Figure 1-24. Orbinia riseri: a, anterior end, dorsal view; b, 18th thoracic parapodium in posterior view; c, posterior abdominal parapodium; d, thoracic neuropodial spine; e, abdominal neuropodial spine (Figures a-d from Day 1973, fig. 12h, j, l, j; no scale reported).

PREVIOUSLY REPORTED HABITAT: Coastal waters to depths of 200 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off Florida and one off Texas (Figure 1-21); 37-78 m; fine sand, silty sand.
DISTRIBUTION: East and west coasts of North and South America, Gulf of Mexico, Antarctica.

Genus Orbinia Quatrefages, 1865

TYPE SPECIES: Aricia cuvierii Audouin and Milne Edwards, 1833b.
REFERENCES:
Quatrefages, 1865:288.
Hartman, 1957:256.
Fauchald, 1977a:16.
DIAGNOSIS: Prostomium pointed. Branchiae first appearing on setiger 5 or on some later segment. Posterior thoracic segments with at least five neuropodial and subpodal papillae on each side. Thoracic notosetae all crenulate capillaries; abdominal notosetae including crenulate capillaries and lyrate setae. Thoracic neurosetae consisting of crenulate capillaries and hooks or intermediate forms; abdominal neurosetae consisting of one or more forms of crenulate capillaries.

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

1a. Branchiae beginning on setigers 8-10; interramal cirri present on abdominal segments (Figure 1-24c). . . . . **Orbinia riseri**, p. 1-25
1b. Branchiae beginning on setigers 5-6; interramal cirri absent from abdominal segments . . . . . .**Orbinia americana**, p. 1-27

Orbinia riseri (Pettibone, 1957)
Figures 1-23, 24a-e

Scoloplos (Scoloplos) riseri Pettibone, 1957a:163, fig. 2a-d; 1963:288, fig. 74e,f.
Orbinia riseri--Day, 1973:90, fig. 12h-l.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2316D-11/77 (1 spec.), 2420C-7/76 (1 spec.).
DESCRIPTION:
Length, to 50 mm (previously reported to 55 mm); width, to 4 mm (previously reported to 3 mm). Prostomium sharply pointed, longer than wide, with one pair of deeply set eyes posteriorly (Figure 1-24a). Thorax with 18-19 setigers; branchiae first appearing on setigers 8-10. Thoracic notopodial lobes cirriform, present from setiger 1. Thoracic neuropodia smooth, ridge-like anteriorly, possessing 2-3 papillae posteriorly (Figure 1-24b). Subpodal papillae present on posterior thoracic and anterior abdominal segments, numbering up to ten or more on each side. Abdominal notopodia ligulate (Figure 1-24c), same length as branchiae. Interramal cirri well-developed beginning on posterior thoracic or anterior abdominal setigers. Abdominal neuropodia bilobed, dorsal lobe slightly longer and more slender than ventral one; with two subpodal papillae. Notosetae primarily crenulate capillaries; lyrate

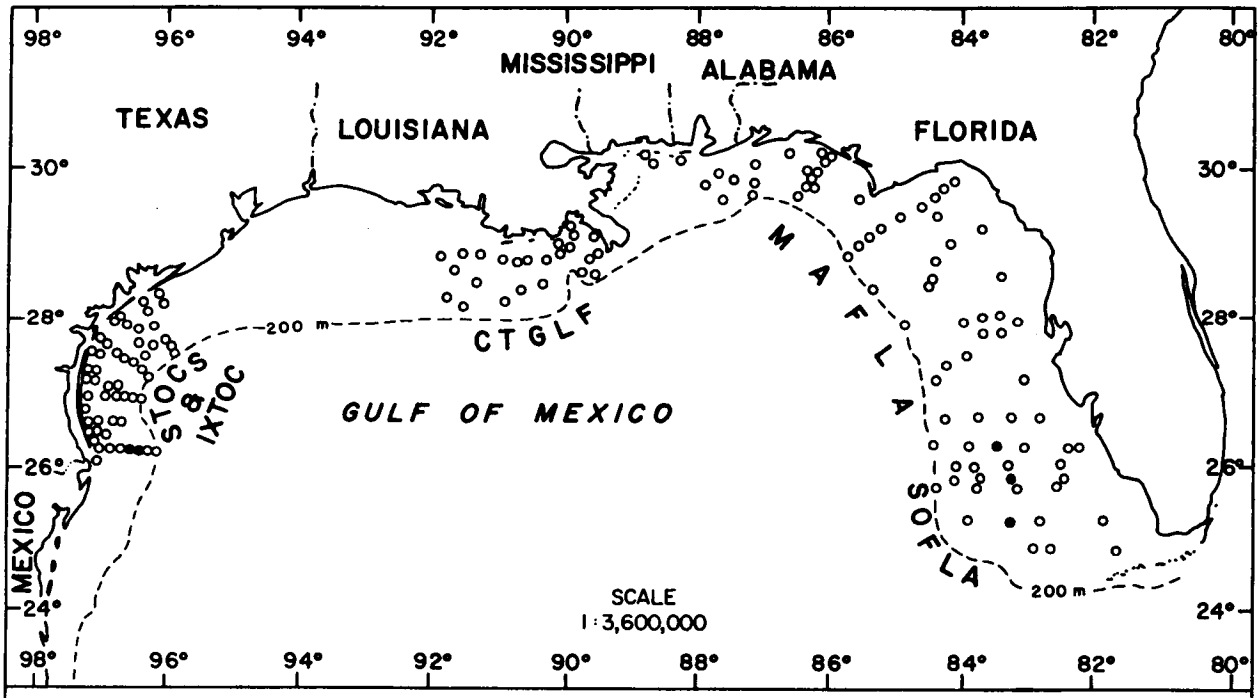

Figure 1-25. Distribution of Orbinia americana on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

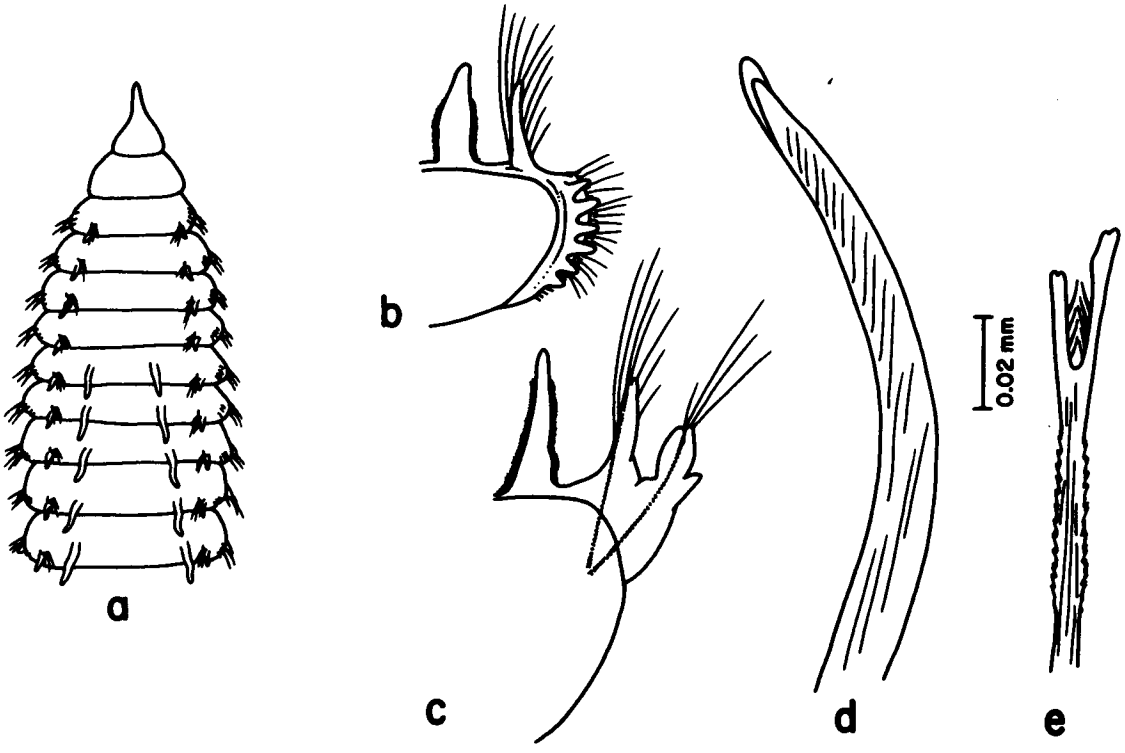

Figure 1-26. Orbinia americana: a, anterior end, dorsal view; b, 10th thoracic parapodium, posterior view; c, 6th abdominal parapodium; d, thoracic neuropodial hook; e, abdominal lyrate notoseta (Figures a-c from Day 1973, fig. 12c, d, g; no scale reported).

setae sometimes present on abdominal segments. Thoracic neurosetae including crenulate capillaries and gently curved, transversely grooved, hooded spines (Figure 1-24d). Abdominal neurosetae including crenulate capillaries and curved, smooth, hooded spines (Figure 1-24e).
PREVIOUSLY REPORTED HABITAT: Soft to firm sandy sediments; intertidal zone to depths of at least 160 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off western Florida (Figure 1-23); 14-35 m; fine-very fine sand, silty fine sand.
DISTRIBUTION: New England to North Carolina, Gulf of Mexico.

Orbinia americana Day, 1973
Figures 1-25, 26a-e

Orbinia americana Day, 1973:89, fig. 12c-g.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 16B-7/81 (1 spec.), 24B-7/81 (1 spec.); MAFLA 2104C-9/75 (1 spec.); STOCS 2/IV-4 S/77 (1 spec.), 6/IV-2 W/76 (1 spec.).
DESCRIPTION:
Length, 20+ mm (previously reported to 10 mm); width, to 4 mm. Body incomplete with up to 47 setigers. Prostomium narrow, pointed anteriorly, followed by abruptly wider peristomium (Figure 1-26a). Thorax with 18-21 setigers; broad strap-like branchiae beginning on setiger 5 or 6. Notopodial lobes cirriform, present by setiger 2. Neuropodia ridge-like on setiger 1, with submedial postsetal papilla on setiger 2, with up to 12 postsetal papillae by setiger 15 (Figure 1-26b). Abdominal notopodial lobes more slender and slightly shorter than adjacent branchiae (Figure 1-26c); neuropodia bilobed, inner lobe somewhat shorter, broader, and more rounded than outer lobe. Anterior parapodia to third abdominal segment with two or more ventral cirri; to about eighth abdominal segment with several subpodal papillae. Parapodia of abdominal segments 4-17 each with single ventral cirrus; thereafter, ventral cirri absent. Interramal cirri absent. Thoracic notosetae including crenulate capillaries and a few lyrate setae. Thoracic neurosetae including crenulate spines and nearly smooth, curved, blunt hooks (Figure 1-26d). Abdominal notopodia with crenulate capillaries and lyrate setae (Figure 1-26e); abdominal neuropodia with crenulate capillaries only. Acicula embedded or exposed.
REMARKS: Orbinia americana is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Medium sands; 122 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Several stations off southwestern Florida and southern Texas (Figure 1-25); intermediate depths, 47-88 m; coarse to fine sand, clayey sand, sandy silty clay.
DISTRIBUTION: North Carolina, Gulf of Mexico.

Genus Scoloplos Blainville, 1828

TYPE SPECIES: Lumbricus armiger O. F. Müller, 1776.
REFERENCES:
Hartman, 1957:229.
Fauchald, 1977a:17.

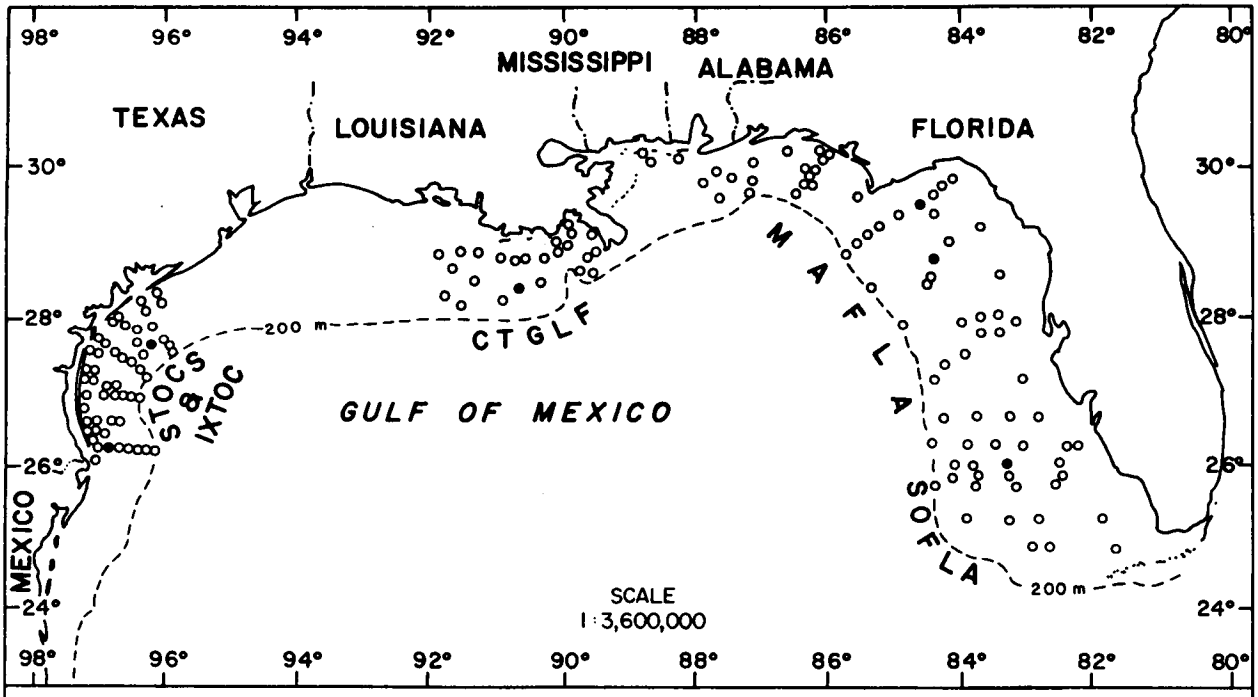

Figure 1-27. Distribution of Scoloplos rubra on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

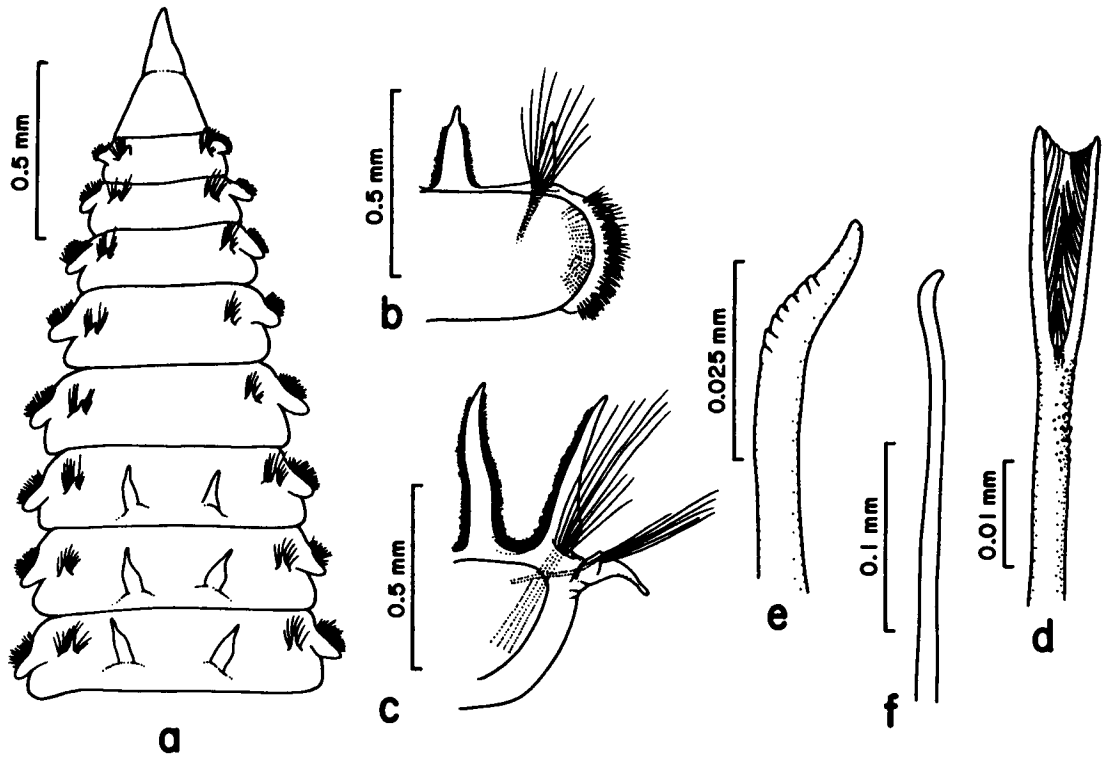

Figure 1-28. Scoloplos rubra: a, anterior end, dorsal view; b, 12th thoracic parapodium; c, posterior abdominal parapodium; d, abdominal lyrate notoseta; e, thoracic abdominal hooked seta; f, abdominal neuroacicular hook (All figures from Hartman 1951a, pl. 20, figs. 1-6).

DIAGNOSIS: Prostomium distinctly pointed. Branchiae first occurring on setiger 5 or later. Thoracic neuropodial and subpodal papillae, when present, totaling no more than four per side. Thoracic neurosetae including hooks. Abdominal notopodia including lyrate setae and sometimes hooks as well. Interramal cirri absent.

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

1a. Branchiae first present from thoracic setiger 5 or 6 2
1b. Branchiae first present posterior to setiger 6 3

2a. Abdominal setigers each with one pair of branchiae . . . . . Scoloplos rubra, p. 1-29
2b. Abdominal setigers each with more than one pair of branchiae (Figure 1-30c). . . . . Scoloplos sp. A, p. 1-31

3a. Abdominal neuropodia entire (Figure 1-32c) . . . . . .Scoloplos texana, p. 1-31
3b. Abdominal neuropodia bilobed (Figure 1-36c). 4

4a. Abdominal notopodia with lateral flange (Figure 1-34f) . . . . . Scoloplos sp. B, p. 1-34
4b. Abdominal notopodia entire, without lateral flange (Figure 1-38c) 5

5a. Thoracic notopodia prolonged and obvious from setiger 1 (Figure 1-36b); dorsum with brown pigment bands anteriorly; lyrate setae absent. . . . . .Scoloplos capensis, p. 1-37
5b. Thoracic notopodia reduced and inconspicuous anteriorly; dorsum unpigmented; lyrate setae present on abdominal segments. . . . . .Scoloplos acmeceps, p. 1-37

Scoloplos rubra (Webster, 1879)
Figures 1-27, 28a-f

Aricia rubra Webster, 1879:253, pl. 9, figs. 123-126.
Scoloplos (Leodamas) rubra--Hartman, 1945:28; 1951a:74, pl. 20, figs. 1-6; 1957:291, pl. 32, figs. 1-6.
Scoloplos rubra--Renaud, 1956:25, fig. 17a-f.
Scoloplos (Leodamas) rubra--Day, 1973:91.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 8B-11/80 (1 spec.); MAFLA 2316I-6/75 (1 spec.), 2422C-7/76 (1 spec.), 2422F-7/76 (1 spec.); CTGLF 04-5/78 (1 spec.); STOCS HR1-3 W/76 (1 spec.); HR1-3 F/76 (1 spec.); IXTOC S52-4 11/79 (1 spec.).
DESCRIPTION:
Length, to 70 mm (previously reported to 70 mm); width, to 1 mm (previously reported to 1 mm). Largest specimen complete with 350 segments. Prostomium acutely pointed, somewhat longer than wide. Thorax with 23-28 setigers; branchiae beginning on setiger 6 (Figure 1-28a). Notopodia cirriform, present from setiger 1. Thoracic neuropodia consisting of a fleshy postsetal ridge (Figure 1-28b), often bearing a single papilla on

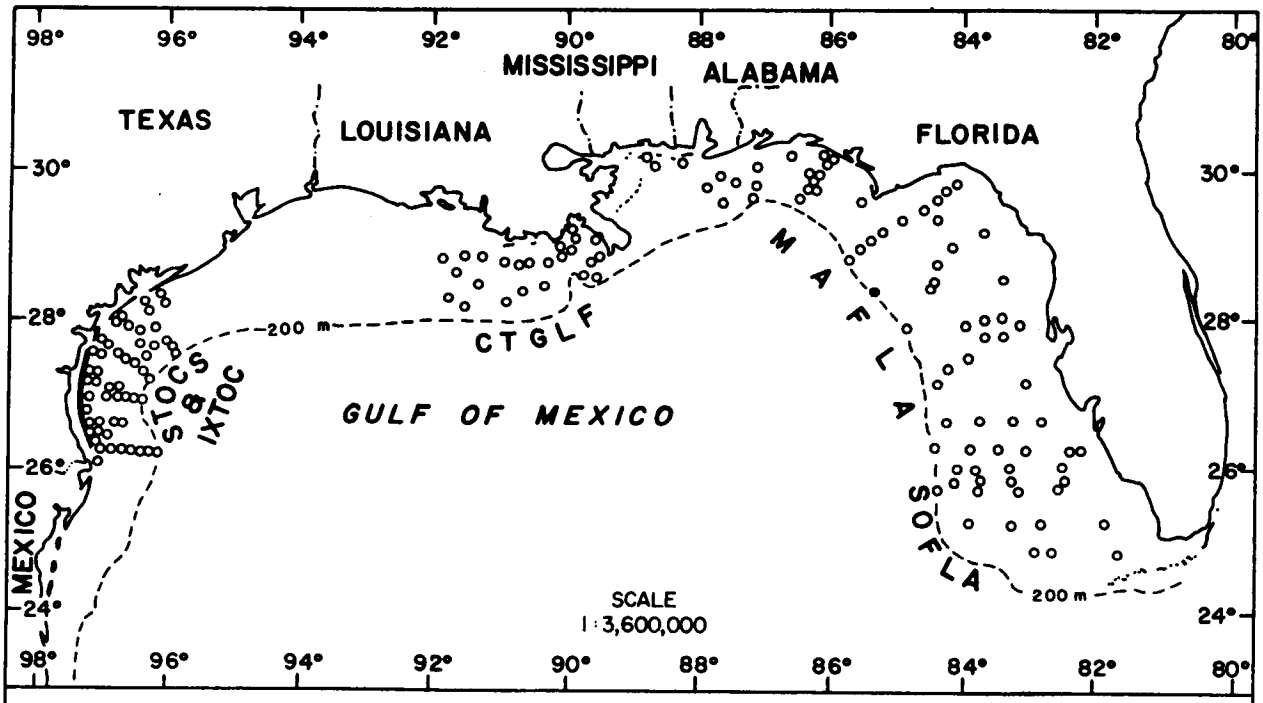

Figure 1-29. Distribution of Scoloplos sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

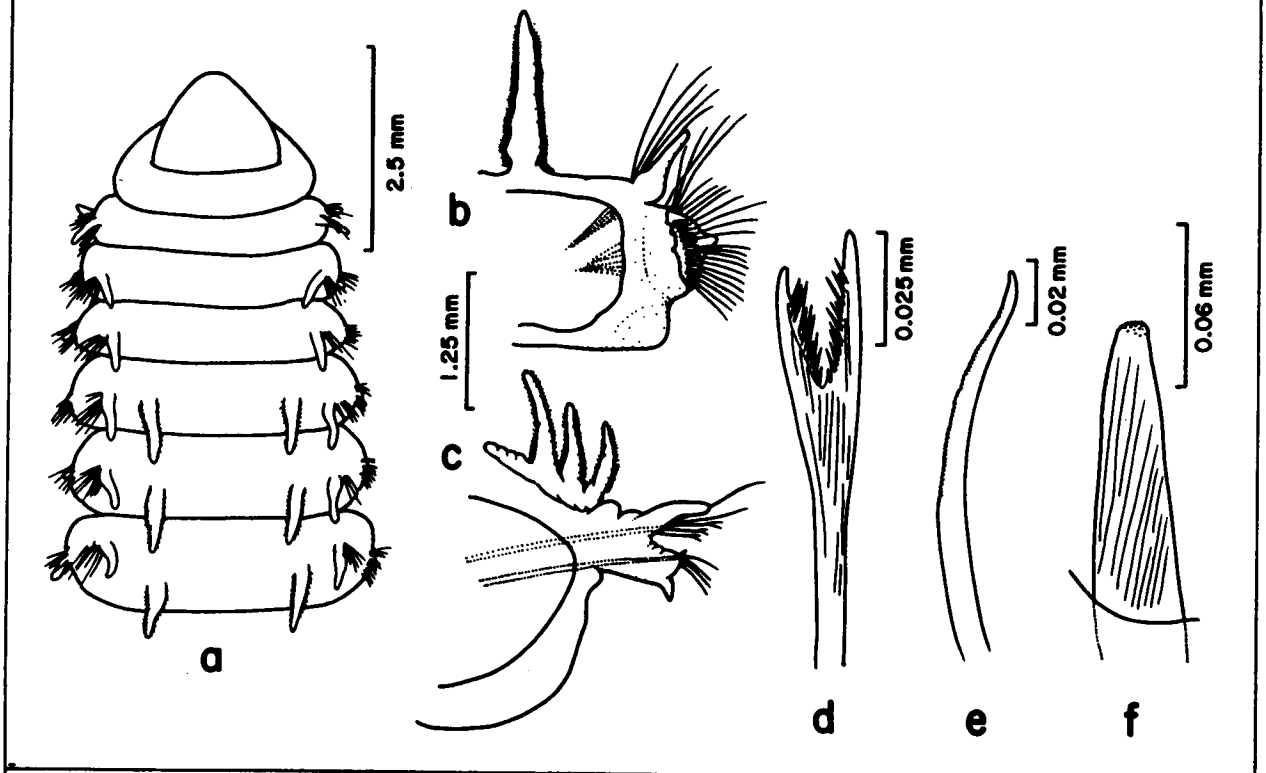

Figure 1-30. Scoloplos sp. A: a, anterior end, dorsal view; b, 5th thoracic parapodium; c, middle abdominal parapodium; d, abdominal lyrate notoseta; e, thoracic neuropodial hook; f, abdominal neuropodial acicular spine.

last few segments. Abdominal notopodia cirriform, similar in length and shape to branchiae (Figure 1-28c). Abdominal neuropodia with small, rounded, inconspicuous presetal lobe, and longer, tapered postsetal ligule. Thoracic notosetae all crenulate capillaries. Abdominal notosetae including lyrate forms (Figure 1-28d). Thoracic neurosetae including few superior, fine, crenulate capillaries and numerous inferior, curved, transversely grooved hooks (Figure 1-28e). Abdominal neurosetae including few crenulate capillaries and single, smooth, curved acicular hook (Figure 1-28f). Pygidium with four short, delicate cirri.
PREVIOUSLY REPORTED HABITAT: Soft to firm sediments with sand, shell, and gravel; intertidally and offshore to depths of 200 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records throughout northern Gulf (Figure 1-27); 24-75 m; medium-fine to fine sand, silty fine sand, clayey sand, clayey silt, silty clay.
DISTRIBUTION: Southeastern United States, Gulf of Mexico.

Scoloplos sp. A
Figures 1-29, 30a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2313G-2/78 (1 spec.).
DESCRIPTION:
Length, 70+ mm (only specimen incomplete); width, about 3 mm. Prostomium broadly triangular; about as wide as long (Figure 1-30a). Thorax with 16 setigers, branchiae present from setiger 5. Thoracic notopodia cirriform (Figure 1-30b), present from setiger 1. Thoracic neuropodia cirriform through first 8-10 setigers, thereafter becoming ridge-like with a small papilla on dorsal margin. Branchiae becoming more numerous in abdominal region (Figure 1-30c), up to four pairs per segment. Abdominal notopodia ligulate, asymmetrically enlarged along lateral margin. Abdominal neuropodia weakly bilobed, ventral lobe somewhat more prolonged and pointed. Thoracic notosetae consisting of crenulate capillaries throughout. Abdominal notopodia with lyrate setae (Figure 1-30d), and single, straight, smooth, exposed acicular spines. Thoracic neurosetae including straight to strongly curved crenulate capillaries; and long hooks (Figure 1-30e) having a crossbanded dorsal margin and slightly curved, smoothly rounded tips. Abdominal neurosetae less numerous, including both smooth and crenulate capillaries together with single, smooth, emergent acicular spines (Figure 1-30f).
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off western Florida (Figure 1-29); 177 m; clayey sandy silt.

Scoloplos texana Maciolek and Holland, 1978
Figures 1-31, 32a-e

Scoloplos texana Maciolek and Holland, 1978:161, figs. 1-4.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12B-11/80 (1 spec.); STOCS 1/IV-3 W/77 (1 spec.), 1/IV-6 F/77 (1 spec.), 2/IV-2 9/75 (1 spec.), 4/IV-3 F/76 (1 spec.).

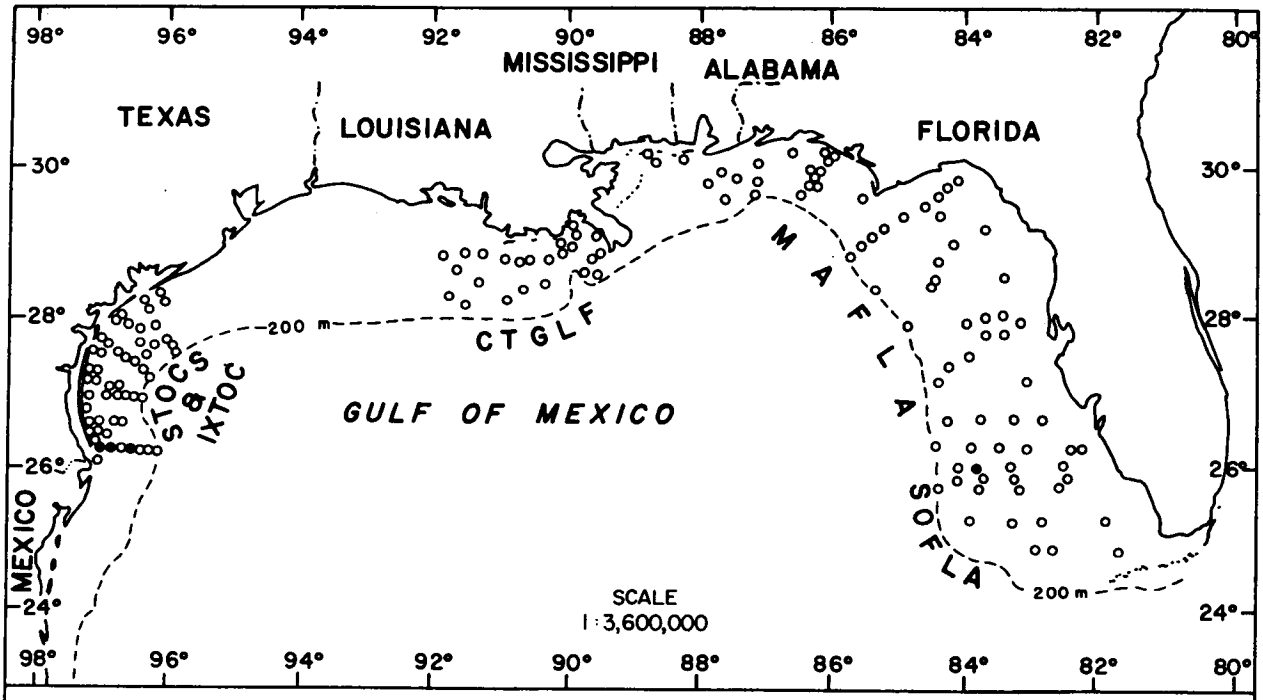

Figure 1-31. Distribution of Scoloplos texana on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

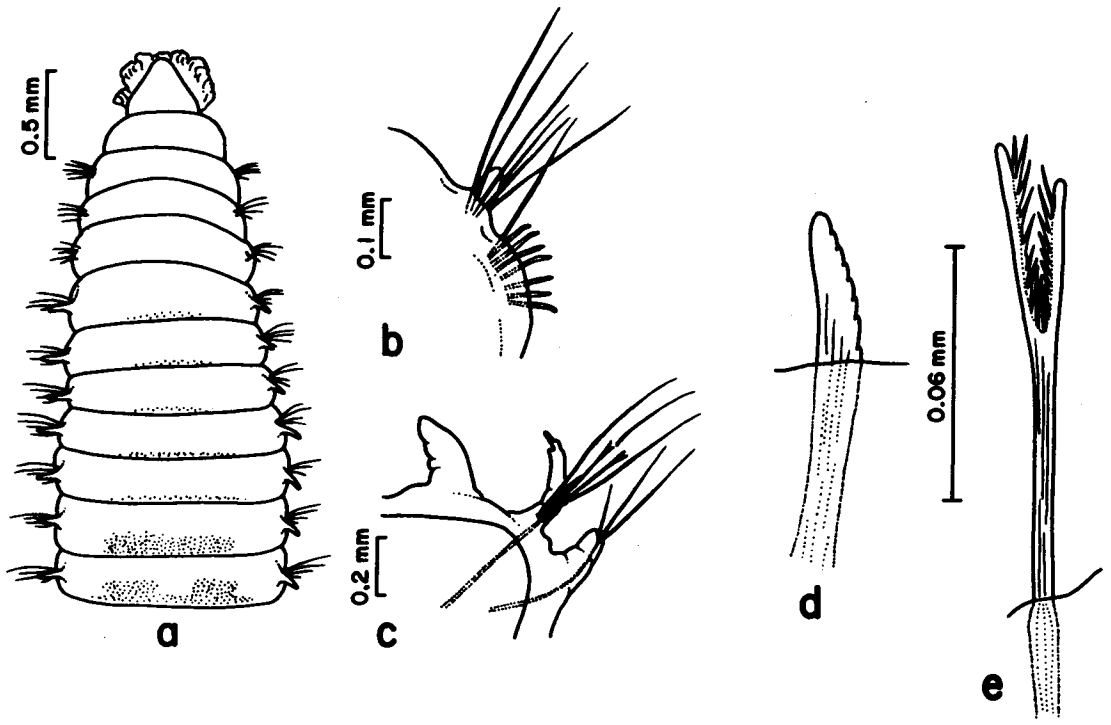

Figure 1-32. Scoloplos texana: a, anterior end, dorsal view; b, 10th thoracic parapodium; c, median abdominal parapodium; d, thoracic neuropodial spine; e, abdominal lyrate notoseta (Figures a-c from Maciolek and Holland 1978, figs. 2-4).

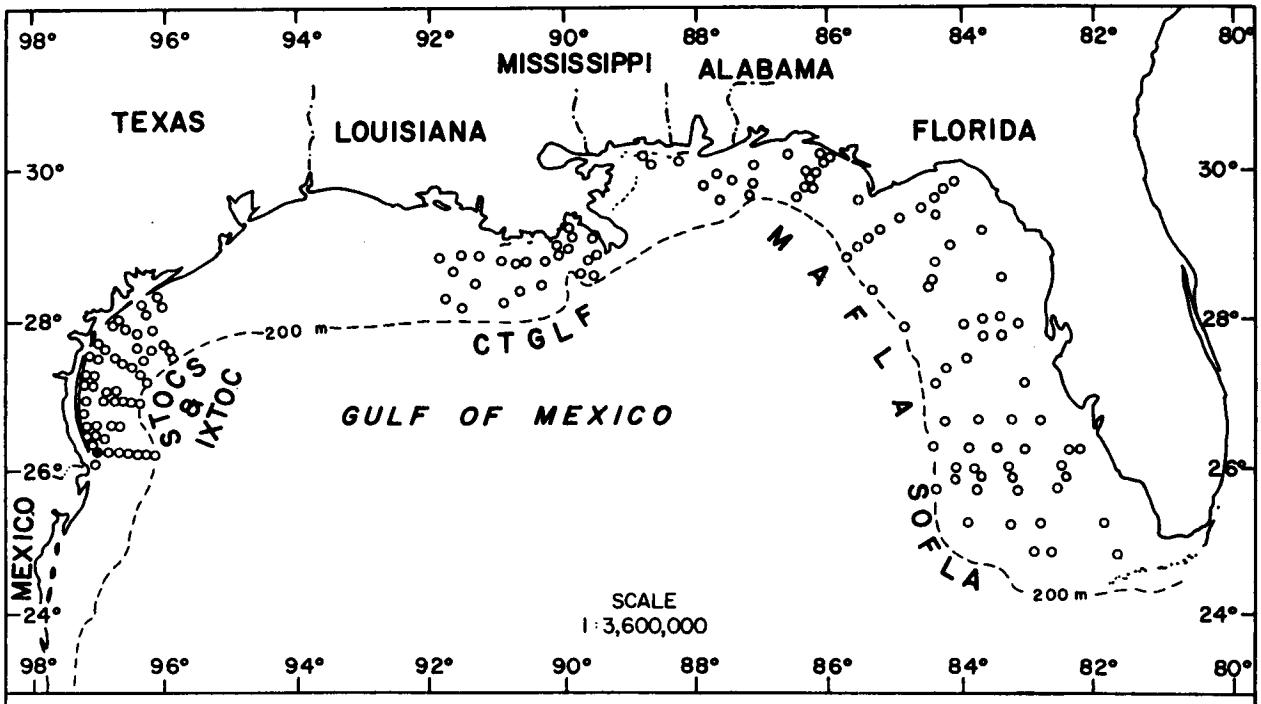

Figure 1-33. Distribution of Scoloplos sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

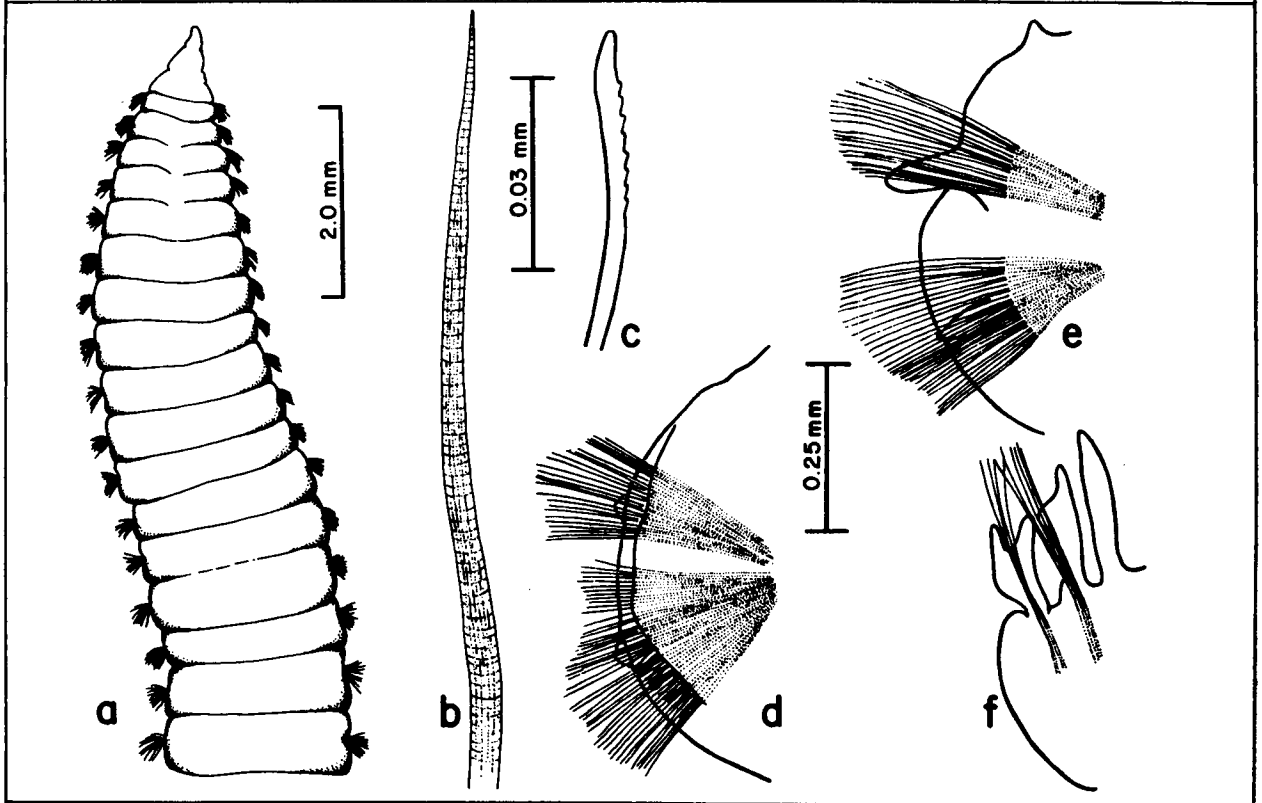

Figure 1-34. Scoloplos sp. B: a, anterior end, dorsal view; b, thoracic capillary notoseta; c, thoracic neuropodial spine; d, 5th thoracic parapodium; e, 16th thoracic parapodium; f, abdominal parapodium.

DESCRIPTION:
Length, to 10 mm (previously reported to 25 mm); width, to 1 mm (previously reported to 1.6 mm). Prostomium broadly triangular, bluntly rounded anteriorly (Figure 1-32a). Thorax more or less cylindrical, with 11-20 setigers. Branchiae first appearing on second to fourth abdominal setigers. Thoracic notopodia cirriform, becoming conspicuous about setiger 5. Thoracic neuropodia appearing as simple ridges without papillae (Figure 1-32b). Abdominal notopodia cirriform; interramal cirri absent. Abdominal neuropodia consisting of a single lobe (Figure 1-32c). Thoracic notosetae all crenulate capillaries. Thoracic neurosetae including crenulate capillaries and nearly straight, blunt, slightly ridged spines (Figure 1-32d). Abdominal notosetae including crenulate capillaries and lyrate forms (Figure 1-32e); neurosetae all crenulate capillaries. Pygidium with two terminal cirri.
REMARKS: Scoloplos texana is herein newly reported from the eastern Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Clay to muddy sands and shelly bottoms, subtidally from 1.6 to 5.0 m depth.
GULF OF MEXICO BLM-OCS OCCURRENCE: Several stations off southern Texas and one off southwestern Florida (Figure 1-31); 15-90 m; fine sand, clayey sand, silty clayey sand, sandy silty clay.
DISTRIBUTION: Gulf of Mexico.

Scoloplos sp. B
Figures 1-33, 34a-f

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
STOCS 4/IV-3 W/76 (1 spec.), 4/IV-5 W/76 (1 spec.); IXTOC S53-4 11/79 (1 spec.).
DESCRIPTION:
Length, to 32 mm; width, to 1.2 mm. Body elongate, widest at setiger 10; all specimens incomplete with up to 73 setigers. Prostomium triangular, pointed anteriorly (Figure 1-34a); eyes absent. Peristomium achaetous. Thorax consisting of 18-20 setigers. Setigers 1-11 with serrate capillary setae (Figure 1-34b) in the notopodia; and stout, serrate spines (Figure 1-34c) along with serrate capillary setae in the neuropodia (Figure 1-34d). Thoracic notopodia and neuropodia with small, rounded postsetal lobes. Branchiae beginning as small, pointed lobes on setiger 16 (Figure 1-34e). Abdominal neuropodia bilobed, with serrate capillary setae only. Abdominal notopodia with a lateral projection midway along its length (Figure 1-34f). Branchiae extending beyond notopodia on abdominal setigers.
REMARKS: Scoloplos sp. B superficially resembles Leitoscoloplos foliosus and was previously identified as such in BLM-OCS collections. It differs from L. foliosus in having stout, serrate spines in the neuropodia of the first 11 thoracic setigers, and a lateral projection on the notopodial lobes of abdominal setigers.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off southern Texas (Figure 1-33); 15 m; sand to silty sand.

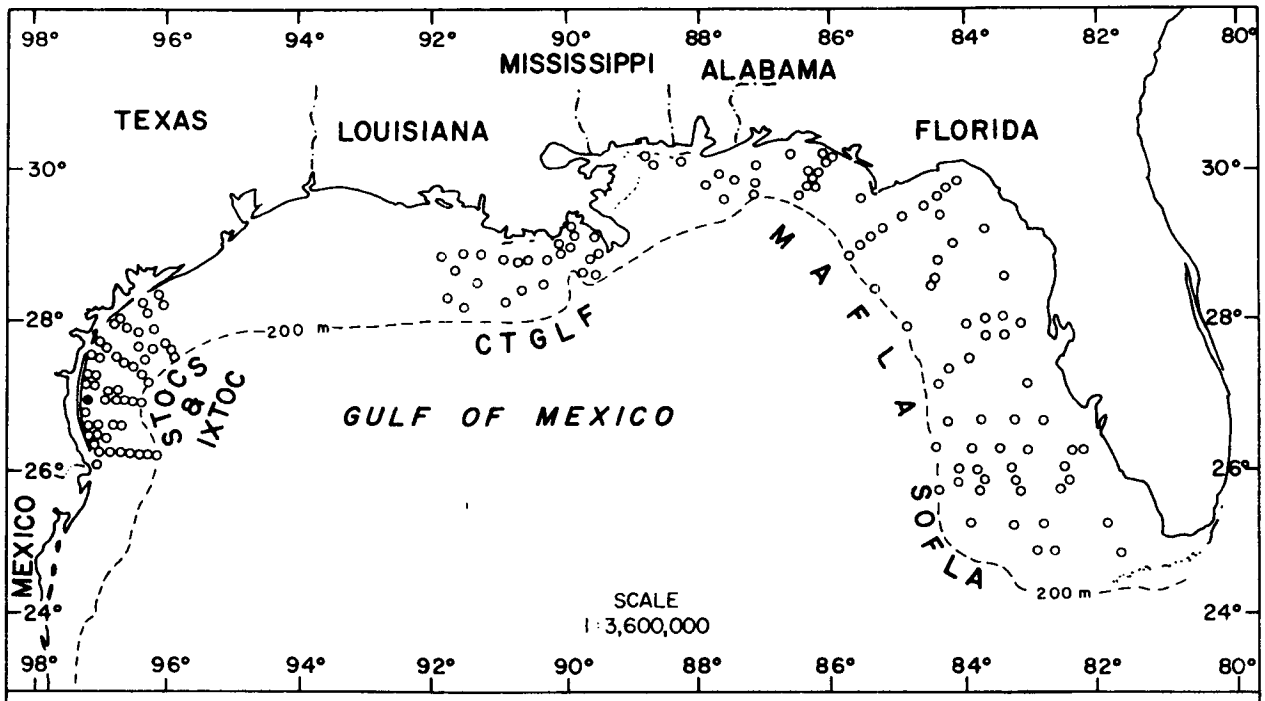

Figure 1-35. Distribution of Scoloplos capensis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

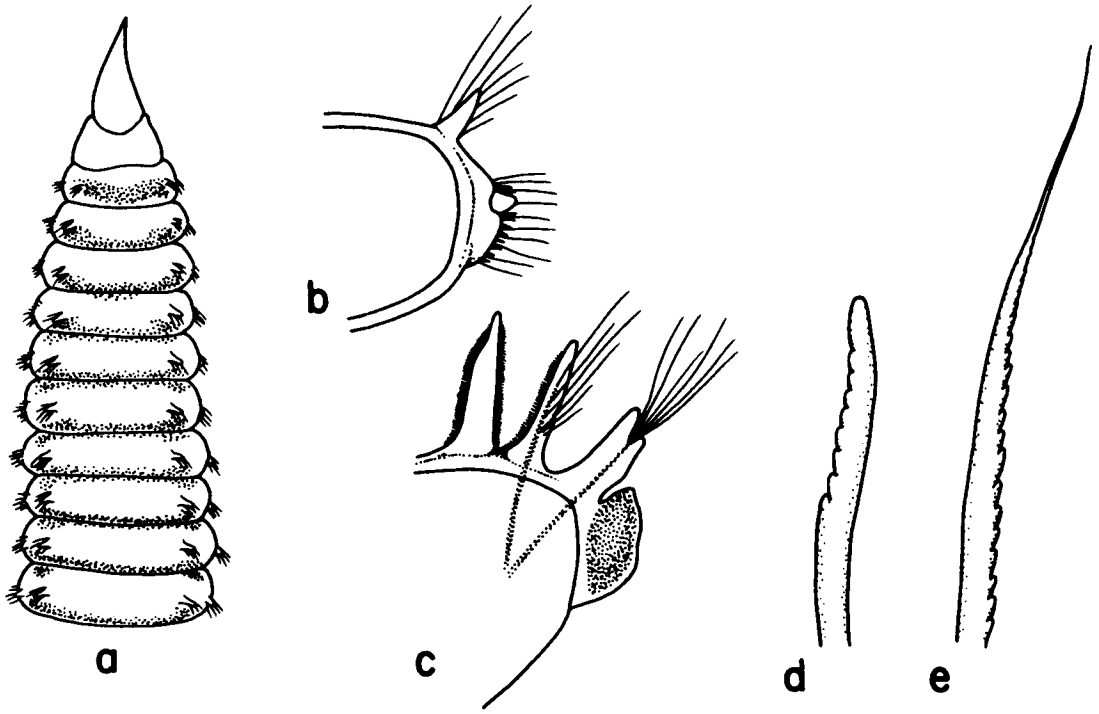

Figure 1-36. Scoloplos capensis: a, anterior end, dorsal view; b, 10th thoracic parapodium, posterior view; c, 5th abdominal parapodium, posterior view; d, thoracic neuropodial hook; e, stout crenulate abdominal neuroseta (All figures from Day 1973, fig. 12m-q; no scale reported).

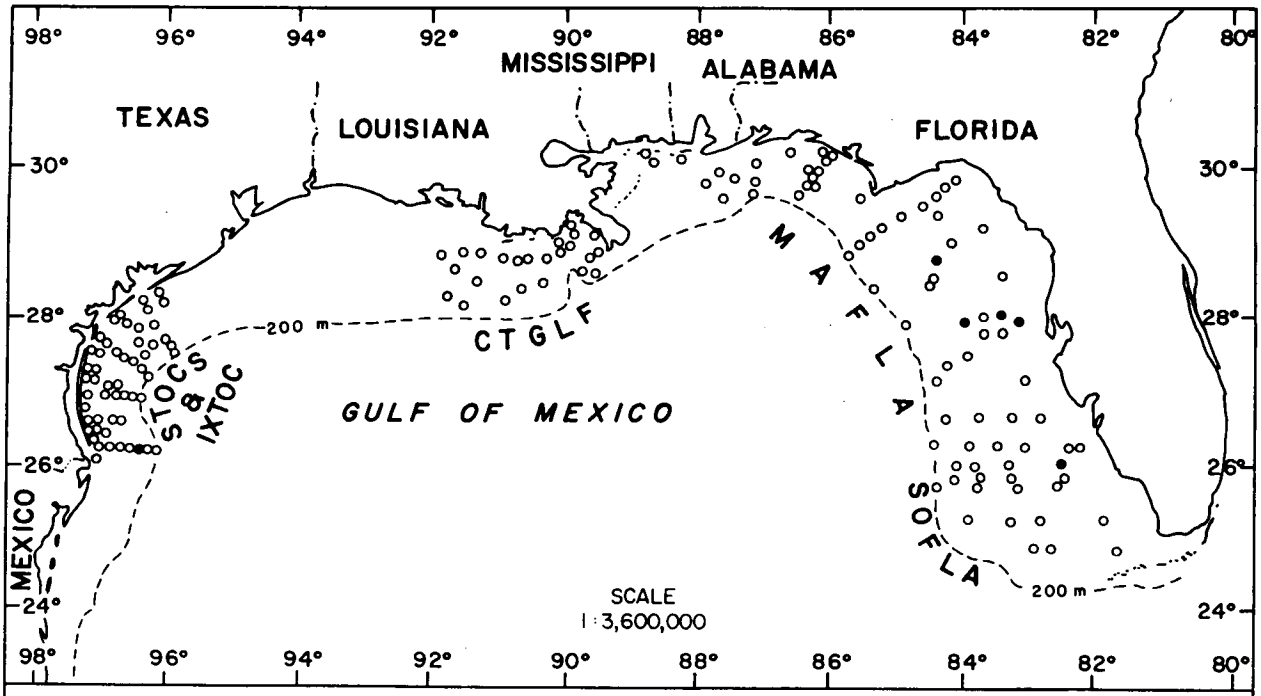

Figure 1-37. Distribution of Scoloplos acmeceps on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

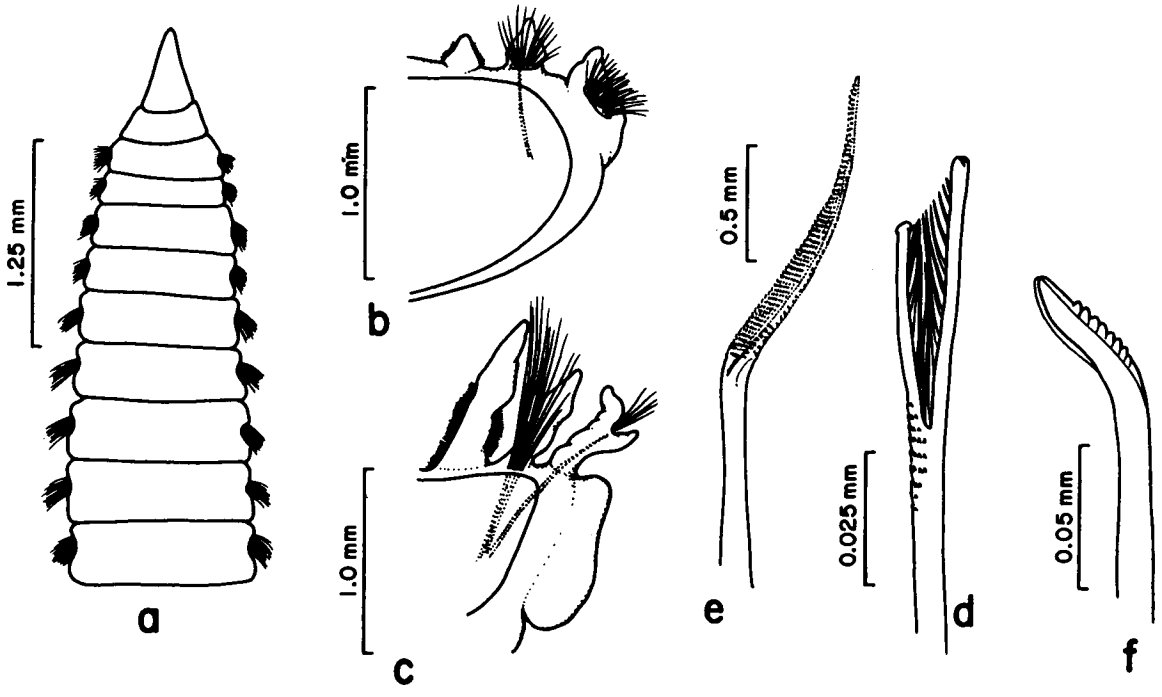

Figure 1-38. Scoloplos acmeceps: a, anterior end, dorsal view; b, 18th thoracic parapodium; c, posterior abdominal parapodium; d, abdominal lyrate notoseta; e, thoracic crenulate neuroseta; f, thoracic neuropodial hook (Figures b-f from Hartman 1957, pl. 30, figs. 1-3, 5, 6).

Scoloplos capensis (Day, 1961)
Figures 1-35, 36a-e

Scolaricia capensis Day, 1961:480, fig. 1p-s.
Scoloplos (Scoloplos) capensis--Day, 1973:90, fig. 12m-q.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
STOCS 4/III-1 W/77 (1 spec.), 4/III-2 W/77 (1 spec.).
DESCRIPTION:
Length, to 45 mm (previously reported to 25 mm); width, to 2 mm. Prostomium triangular in outline, acutely pointed, somewhat longer than wide. Thorax with 16-17 setigers, often with transverse bars of brown pigment across both dorsal and ventral surfaces (Figure 1-36a). Branchiae first appearing about setigers 14-15. Thoracic notopodia cirriform from setiger 1. Thoracic neuropodia smooth and ridge-like anteriorly, with a single papilla on median and posterior thoracic setigers (Figure 1-36b); papilla centrally located on ramus at first, becoming more dorsal in position on subsequent segments. Abdominal notopodia cirriform, shorter and more slender than branchiae. Abdominal neuropodia bilobed, with large, evenly rounded, heavily pigmented ventral flange (Figure 1-36c). Notosetae as crenulate capillaries throughout; lyrate and acicular setae absent. Thoracic neurosetae including crenulate capillaries and blunt, slightly curved, dorsally cross-ridged hooks (Figure 1-36d). Abdominal neurosetae consisting of fine to stout (Figure 1-36e) crenulate capillaries. Pygidium with single pair of long caudal cirri.
REMARKS: Scoloplos capensis is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Fine sand to sandy mud; 40-200 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: One station off southern Texas (Figure 1-35); 15 m; sand.
DISTRIBUTION: South Africa, North Carolina, Gulf of Mexico.

Scoloplos acmeceps Chamberlin, 1919
Figures 1-37, 38a-f

Scoloplos elongata Hilton, 1918:61.
Scoloplos acmeceps Chamberlin, 1919b:15.
Scoloplos acmeceps--Hartman, 1957:282, pl. 30, figs. 1-7; 1969:43, figs. 1-5.
Scoloplos (Scoloplos) cf. acmeceps--Day, 1973:91.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6A-11/80 (5 spec.); MAFLA 2207E-8/77 (1 spec.), 2208J-7/76 (1 spec.), 2211F-7/76 (2 spec.), 2316F-2/76 (1 spec.), 2316G-8/76 (1 spec.); STOCS 6/IV-3 F/76 (1 spec.).
DESCRIPTION:
Length, to 150 mm (previously reported to 20 mm); width, to 4 mm. Prostomium triangular in outline, sharply pointed, slightly longer than wide (Figure 1-38a). Thorax with 18-26 setigers; branchiae first present from setigers 14-25. Short cirriform notopodia present from setiger 1. Neuropodia present as low, fleshy ridges anteriorly, developing a dorsal lobe on median and posterior thoracic segments (Figure 1-38b).

Abdominal notopodia ligulate, somewhat shorter than branchiae. Abdominal neuropodia bilobed with large ventral flange (Figure 1-38c). Notosetae including crenulate capillaries throughout, and lyrate setae (Figure 1-38d) on abdominal segments. Thoracic neurosetae including crenulate capillaries (Figure 1-38e) and blunt, slightly curved, dorsally grooved hooded hooks (Figure 1-38f). Abdominal neuropodia with crenulate capillary setae only. Pygidium with a pair of long, thread-like caudal cirri.

REMARKS: Scoloplos acmeceps is newly reported from the Gulf of Mexico.

PREVIOUSLY REPORTED HABITAT: Sandy to sandy mud sediments; nearshore to 200 m; associated with holdfasts of algae and seagrasses in the littoral zone.

GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off western Florida and one station off southern Texas (Figure 1-37); 19-65 m; coarse to very fine sand, silty fine sand, clayey sand, clayey sandy silt.

DISTRIBUTION: Eastern Pacific between Alaska and Mexico; North Carolina, Gulf of Mexico.

CHAPTER 2

Gary R. Gaston

FAMILY PARAONIDAE Cerruti, 1909

INTRODUCTION

Paraonids are small (2-3 mm) to medium-sized (3 cm), slender-bodied polychaetes with numerous segments. The well-developed prostomium is rounded and usually bears eyes, an unpaired prostomial antenna, terminal sense organs, and paired nuchal organs. The buccal or peristomial segment is reduced and indistinctly separated from the prostomium. Parapodia are biramous, without acicula, each ramus slightly projecting from the surface of the body and bearing setae. Branchiae are simple, strap-like processes, arranged in pairs on the dorsal surface of a variable number of anterior setigers. Setae include simple capillary setae, and in most cases, some form of modified setae. Modified setae in the notopodia are variously shaped lyrate setae. Modified setae in the neuropodia may include a variety of forms. The pygidium usually consists of a dorsally slanted anal lobe bearing 2-3 anal cirri.

Strelzov (1973) has provided the most extensive work to date on the Paraonidae. He reclassified the family into seven genera: Aricidea, Paraonis, Tauberia, Sabidius, Cirrophorus, Aparaonis, and Paraonella. In 1977, Fauchald elevated Strelzov's subgenera of Aricidea to genera: Aricidea s. str., Allia, Acesta, and Aedicira. A recent decision by the International Commission on Zoological Nomenclature (Melville, 1979) elevated Levinsenia to a senior synonym of Tauberia. In 1981, Hartley (p. 135) replaced the subgenus Acesta with Acmira, since Acesta is preoccupied in the Mollusca. The taxonomic scheme used herein retains Aricidea s. str., Allia, Acmira and Aedicira at the subgenus level. Other useful reviews of the family may be found in Cerruti (1909) and Hartman (1957).

About 60 species of paraonids have been described worldwide. Twenty-six species have been identified from the Gulf of Mexico BLM-OCS monitoring programs, representing four of the seven recognized genera, and three subgenera of Aricidea. Of these species, four may be new to science, five are close to or deviate in some minor way from known species as previously described, and 11 of the known species are newly reported from the Gulf of Mexico.

PRINCIPAL DIAGNOSTIC CHARACTERS

The principal diagnostic characters used for identification of paraonids include: 1) the presence and form of the unpaired prostomial antenna; 2) the location of nuchal organs on the anterior end; 3) the presence and distribution of branchiae; 4) the presence and form of dorsal and ventral parapodial lobes along the body; 5) the presence and form of lyrate setae in the notopodia; and 6) the presence and form of modified setae in the neuropodia. Whole specimens of paraonids are rare; thus the anal region is not known in all species, and is therefore of little practical use in diagnosis.

Unpaired Prostomial Antenna.

The unpaired prostomial, or median, antenna (Figure 2-2a) is present on the dorsal surface of the prostomium of Aricidea and some specimens of Cirrophorus. Its presence in the latter genus is subject to age-related variability (Strelzov, 1973). Its form may vary from a microscopic lobe to an elongate whip-like structure. The median antenna is often deciduous, and therefore is an unreliable character.

Nuchal Organs.

The nuchal organs (Figure 2-2a) are sensory structures located on the dorsal portion of the prostomium or peristomium. They are usually kidney-shaped and covered with cilia (Strelzov, 1973).

Branchiae.

Branchiae in the paraonids are simple elongate lobes of various forms. They are restricted to the anterior region of the body and may extend across the dorsum (Figure 2-2a). The segments on which they occur are often of taxonomic value; however, their number may increase with age of the individual (Strelzov, 1968a).

Dorsal and Ventral Parapodial Lobes.

Dorsal and ventral parapodial lobes (Figure 2-2b) are oval to elongate protuberances, postsetal in position on segments of some species. Their relative lengths and distributions have been used as diagnostic features in Cirrophorus by Strelzov (1973), and have been adopted here for a variety of species.

Lyrate Setae.

Lyrate setae are present only in the notopodia of some genera (e.g., Cirrophorus). Their form varies from acicular with a subterminal spine (Figure 2-2c), to delicate, truly lyre-shaped modifications of capillary setae (Figure 2-4c).

Other Modified Setae.

The modified setae of the neuropodia are highly variable. In Aricidea (Aricidea) they are pseudocompound (Figure 2-12c), or hooked with a subterminal arista (Figure 2-8c). In Aricidea (Allia) they are thickened, with tapering points (Figure 2-16c) having or lacking an arista.

BIOLOGICAL NOTES

The paraonids are typically marine, primarily stenohaline worms inhabiting the surface layer of soft bottom sediments from intertidal to abyssal depths. Most forms probably inhabit spiral burrows as suggested by the corkscrew shape of their body when preserved. They are found to occur in a range of sediment types from pure sands to silty muds where they presumably feed on foraminifera, diatoms, and possibly detritus, or sediment as well (Fauchald and Jumars, 1979). Very little is known regarding their reproduction and development (Strelzov, 1973). Their role as indicators of specific benthic environmental conditions is confused due to the questionable state of previous species identifications.

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

Key to the Genera of Paraonidae from the Gulf of Mexico BLM-OCS Programs (adapted from Fauchald, 1977a)

1a. Setae present from segment 1. . . . . **Aparaonis***
1b. Setae present from segment 2. 2

2a. Modified setae notopodial, lyrate (Figures 2-2c, 4c) . . . . . **Cirrophorus**, p. 2-4
2b. Modified setae, if present, neuropodial, not lyrate. 3

3a. Prostomium with unpaired median antenna (may be lost). 4
3b. Prostomium without unpaired median antenna 7

4a. Modified setae absent. . . . . **Aricidea (Aedicira)***
4b. Modified setae present 5

5a. Modified setae either pseudocompound (Figure 2-12c), or curved with a subterminal spine on concave side of shaft (Figure 2-8c). . . . . **Aricidea (Aricidea)**, p. 2-10
5b. Modified setae otherwise 6

6a. Modified setae resembling stout capillary setae abruptly tapering to an elongate, thin terminal arista (Figure 2-16c-e). . . . . .Aricidea (Allia), p. 2-16

6b. Modified setae as stout hooks, with or without an accessory spine, arista, or pubescence (Figures 2-24c, 26c, 28c, 30c) . . . . . Aricidea (Acmira), p. 2-26

7a. Nuchal organs located on posterior part of prostomium; prostomium with several transverse ciliary bands (Figure 2-46a) . . . . . .Paraonis, p. 2-47

7b. Nuchal organs located on reduced peristomium; prostomium with a single preoral ciliary band or without ciliary bands 8

8a. Modified setae absent. . . . . Paraonella*

8b. Modified setae present 9

9a. Three prebranchial setigers; terminal prostomial sense organs absent. . . . . .Sabidius*

9b. More than three prebranchial setigers; terminal prostomial sense organs present (Figures 2-50a, 52a). . . . . Levinsenia, p. 2-49

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

Genus Cirrophorus Ehlers, 1908

TYPE SPECIES: Cirrophorus branchiatus Ehlers, 1908.
REFERENCES:
Cerruti, 1909:493 (as Paraonides).
Strelzov, 1973:107.
Fauchald, 1977a:18.
DIAGNOSIS: Body width up to 1.0 mm. Lyrate setae or lyrate spines present in notopodia. Median antenna present or absent. Nuchal slits separated from posterior margin of prostomium by rudimentary peristomial segment. Eyes present or absent. Posterior lip of mouth on setiger 1. Prebranchial segments numbering 3-4. Notopodial postsetal lobes present on all setigers. Neuropodial postsetal lobes minute or absent. Pygidium rounded, with three anal cirri.

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

1a. Modified setae acicular with subterminal spine (Figure 2-2c) . . . . . .Cirrophorus branchiatus, p. 2-6

1b. Modified setae lyrate (Figures 2-4c, 6c). 2

2a. Dorsal postsetal lobes uniform in length in branchial region . . 3

2b. Dorsal postsetal lobes gradually increasing in length through branchial region. . . . . .Cirrophorus cf. forticirratus, p. 2-8

3a. Modified setae beginning on setigers 2-3. 4

3b. Modified setae beginning on setigers 4-8. . . . .Cirrophorus lyra*

4a. Dorsal postsetal lobes of postbranchial region about same length as those of branchial region . . . .Cirrophorus americanus, p. 2-8

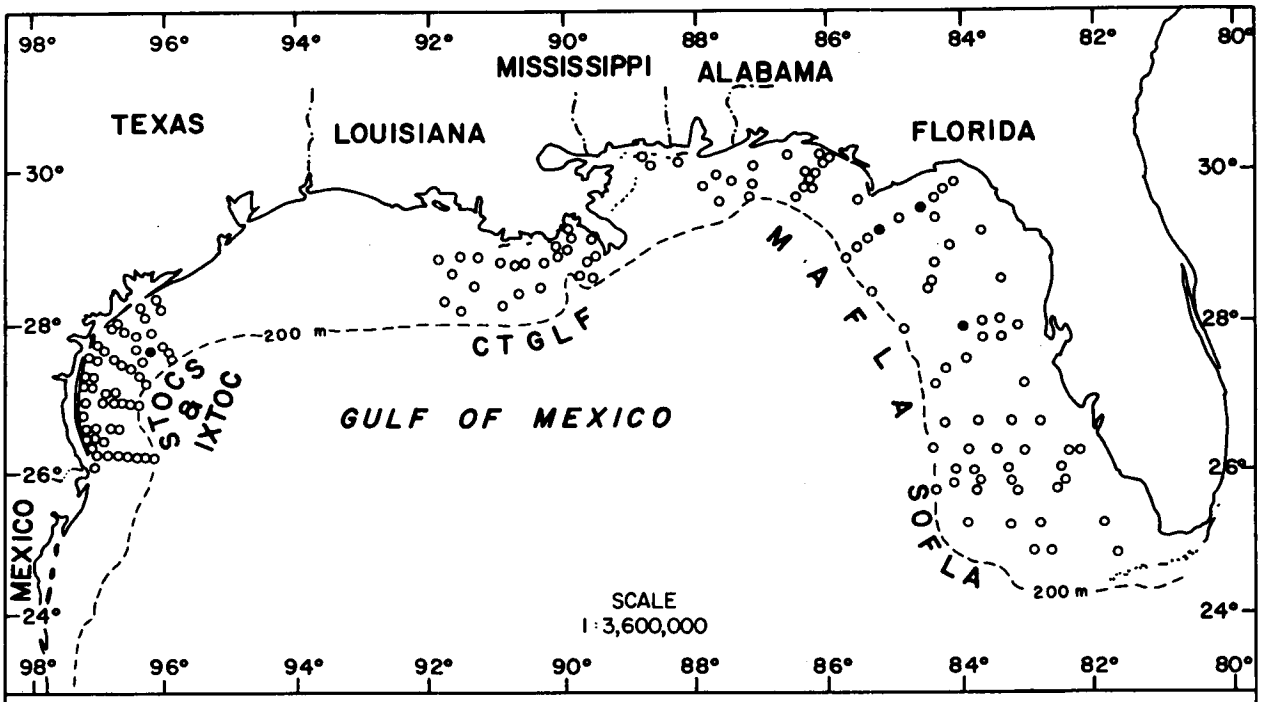

Figure 2-1. Distribution of Cirrophorus branchiatus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

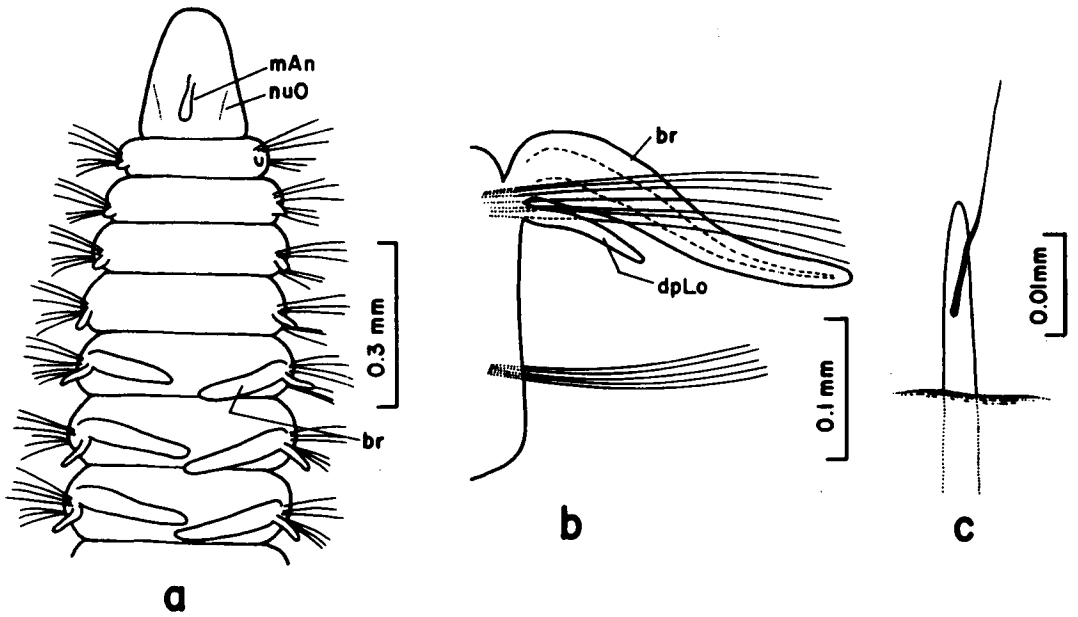

Figure 2-2. Cirrophorus branchiatus: a, anterior end, dorsal view; b, right parapodium from setiger 10, posterior view; c, modified notoseta.

4b. Dorsal postsetal lobes of postbranchial region shorter than those of branchial region. . . . . **Cirrophorus furcatus***

*Not represented in Gulf of Mexico BLM-OCS voucher collections, but previously reported from the Gulf (Taylor, 1971).

Cirrophorus branchiatus Ehlers, 1908
Figures 2-1, 2a-c

Cirrophorus branchiatus Ehlers, 1908:124, pl. 17, figs. 5-9.
Cirrophorus branchiatus--Laubier, 1965:469, figs. 1, 2.
Cirrophorus branchiatus--Day, 1973:93.
Cirrophorus branchiatus--Strelzov, 1973:108 [synonymy], figs. 15, 3, 46.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211I-8/77 (1 spec., USNM 90299), 2422C-7/76 (2 spec., USNM 90300), 2424A-11/77 (2 spec., USNM 90301); STOCS HRI-6 2/76 (3 spec., USNM 90302), HR1-1 F/76 (1 spec., USNM 90303), HR1-5 11/77 (1 spec., USNM 90304).
Supplementary Material:
South Carolina--32°50'N, 79°04'W, May 1977, S. A. McVay and G. R. Gaston ID. (1 spec., USNM 56898).
DESCRIPTION:
Length, to 15 mm (previously reported to 25 mm); width, to 0.7 mm. Body dorsally flattened in branchial and anterior postbranchial regions, cylindrical posteriorly. Prostomium bluntly conical, longer than wide (Figure 2-2a); eyes absent (may be present in juveniles). Nuchal slits distinct, anterolaterally directed. Median antenna cirriform, extending about to posterior margin of prostomium. Branchiae beginning on setiger 5, numbering 9-14 pairs (increasing with size of specimen); slender, foliaceous, gradually tapering to blunt tips; overlapping across dorsum; first branchial pair short; middle pairs longest. Notopodial postsetal lobes broad, tuberculate on setigers 1-2; short, cirriform on setigers 3-4; long, cirriform in branchial region (Figure 2-2b); short, tuberculate in postbranchial region. Capillary neurosetae long. Notosetae including long capillary setae and 1-2 stout, acicular, modified setae having long subterminal spine present about midway-up shaft (Figure 2-2c).
REMARKS: Cirrophorus branchiatus was possibly confused with C. cf. forticirratus in CTGLF collections. C. branchiatus is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Muddy to fine sandy sediments; 25-276 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Few occurrences off Florida and Texas (Figure 2-1); 24-75 m; coarse to medium-fine sand, silty clay.
DISTRIBUTION: Barents Sea, Irish Sea, Mediterranean Sea, Red Sea, northern coast of S. America, S. Africa, Pacific coast of Canada, southern California, Sea of Okhotsk, Tater Strait, Sea of Japan, Yellow Sea, Kuril Basin, Gulf of Mexico, North Carolina.

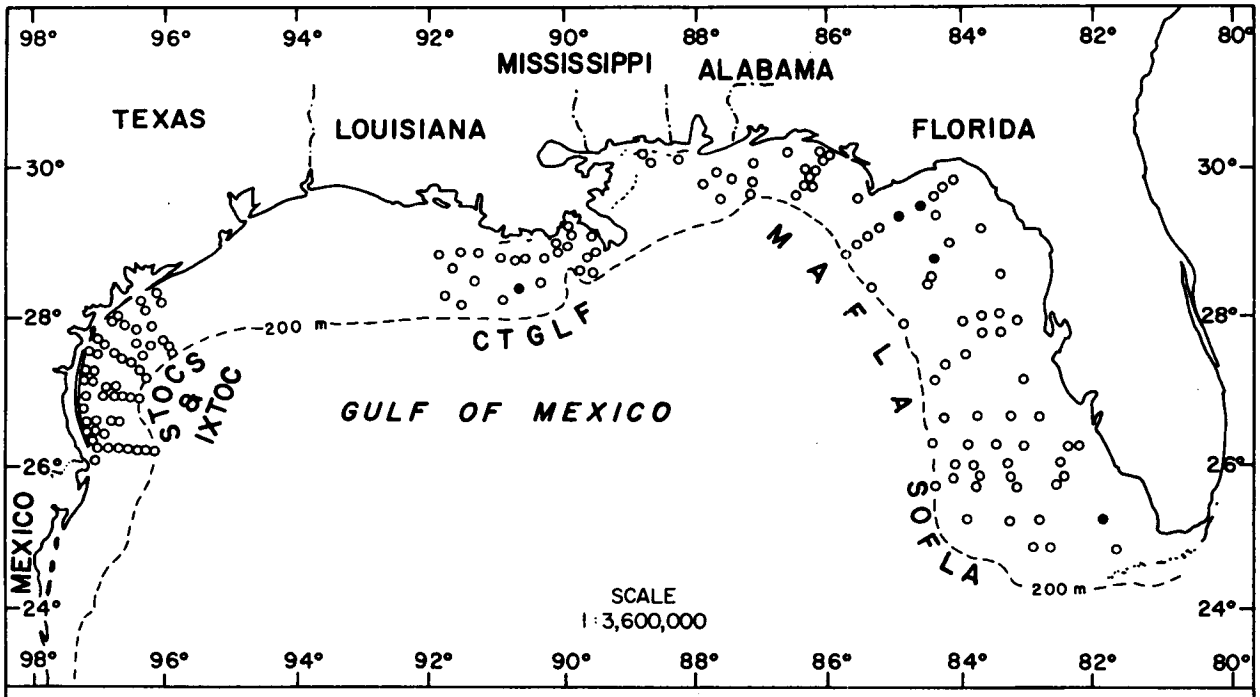

Figure 2-3. Distribution of Cirrophorus cf. forticirratus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

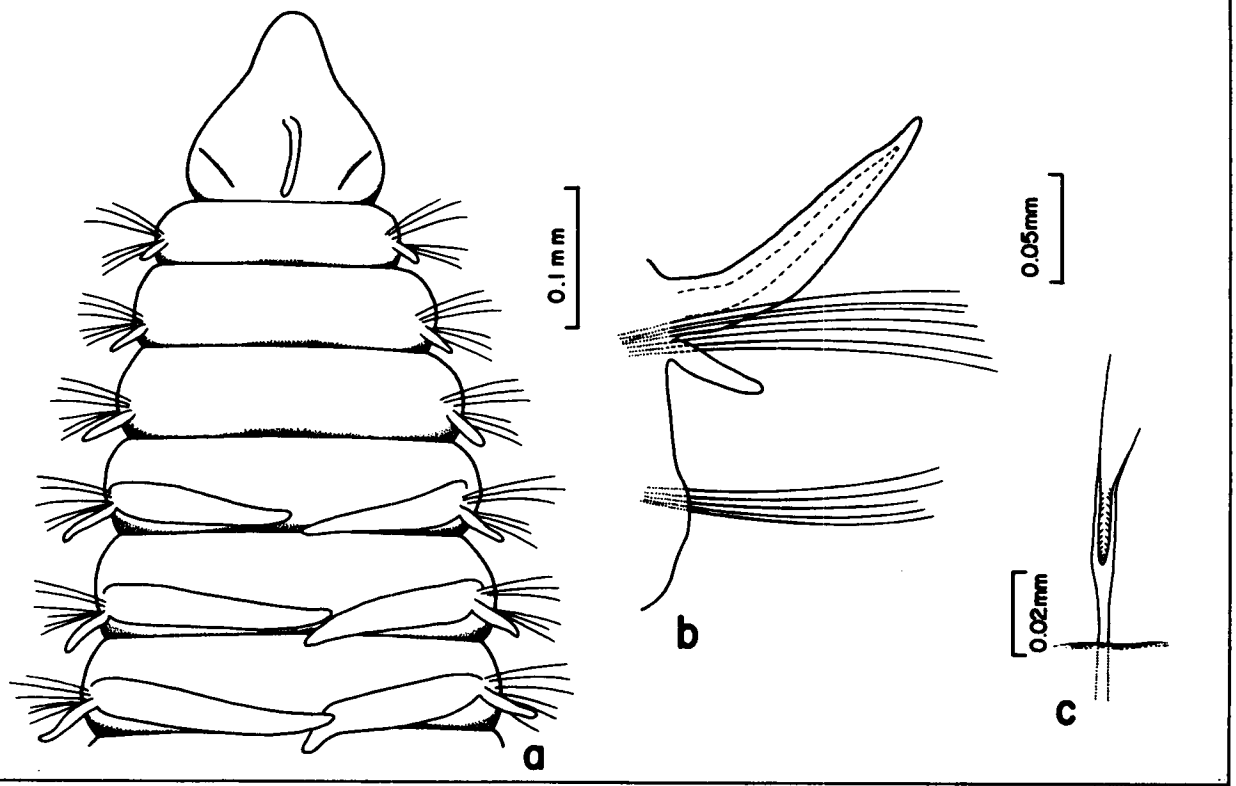

Figure 2-4. Cirrophorus cf. forticirratus: a, anterior end, dorsal view; b, right parapodium from setiger 11, posterior view; c, lyrate seta from postbranchial region (setiger 40).

Cirrophorus cf. forticirratus Strelzov, 1973
Figures 2-3, 4a-c

Cirrophorus forticirratus Strelzov, 1973:122, figs. 18, 6, 52.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 20A-7/81 (4 spec.); MAFLA 2316H-11/77 (1 spec.), 2422C-7/76 (6 spec., USNM 90317; 2 spec., USNM 90319; 2 spec., USNM 90320), 2423D-7/76 (3 spec., USNM 90316); CTGLF 04-5/78 (1 spec., USNM 90318).
DESCRIPTION:
Length, to 13 mm; width, to 0.30 mm (previously reported to 0.8 mm). Body dorsally flattened in branchial and anterior postbranchial regions, cylindrical posteriorly. Prostomium triangular, about as long as wide (Figure 2-4a); eyes absent. Nuchal slits directed anterolaterally. Median antenna cirriform, extending to posterior margin of prostomium. Branchiae slender, foliaceous, gradually tapering to a point. Branchiae overlapping across dorsum except for first pair beginning on setiger 4; numbering 15-26 pairs; longest in midbranchial region, shorter anteriorly and posteriorly, last branchial pairs shorter than first pairs. Notopodial postsetal lobes short, cirriform in prebranchial region, becoming progressively longer through branchial region (Figure 2-4b), then shorter in postbranchial region. Neurosetae all capillary. Notosetae including capillary setae, and 1-2 lyrate setae (Figure 2-4c) per fascicle from setiger 3. Shafts of lyrate setae short.
REMARKS: These specimens closely resemble C. forticirratus Strelzov, 1973, in the form of the dorsal postsetal lobes and lyrate setae; however, the latter is much larger and lacks a median antenna. Cirrophorus cf. forticirratus was confused with C. lyriformis in both MAFLA and CTGLF voucher material.
PREVIOUSLY REPORTED HABITAT: 40-3260 m; mud, muddy sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off Florida and Louisiana (Figure 2-3); 19-45 m; coarse to medium-fine sand, silty fine sand, clayey silt.
DISTRIBUTION: California, South Vietnam, Japan, Kuril Islands, slope of Kuril basin, ?Gulf of Mexico.

Cirrophorus americanus Strelzov, 1973
Figures 2-5, 6a-c

Cirrophorus americanus Strelzov, 1973:120, figs. 15, 5, 50F-J, 51.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211D-11/77 (1 spec., USNM 90312), 2211G-11/77 (1 spec., USNM 90313), 2422C-7/76 (3 spec., USNM 90306), 2422H-7/76 (1 spec., USNM 90307), 2423D-7/76 (6 spec., USNM 90305); STOCS 4/II-5 5/76 (1 spec., USNM 90308), 6/II-5 4/76 (2 spec., USNM 90311), 5/III-4 F/76 (2 spec., USNM 90309), 6/III-F/77 (2 spec.), 6/IV-F/76 (2 spec., USNM 90310); IXTOC S50-11/79 (1 spec., USNM 90314).
DESCRIPTION:
Length, to 6.5 mm; width, to 0.33 mm. Body dorsally flattened in branchial region, cylindrical in postbranchial region. Prostomium triangular, about as long as wide; eyes absent. Nuchal slits directed

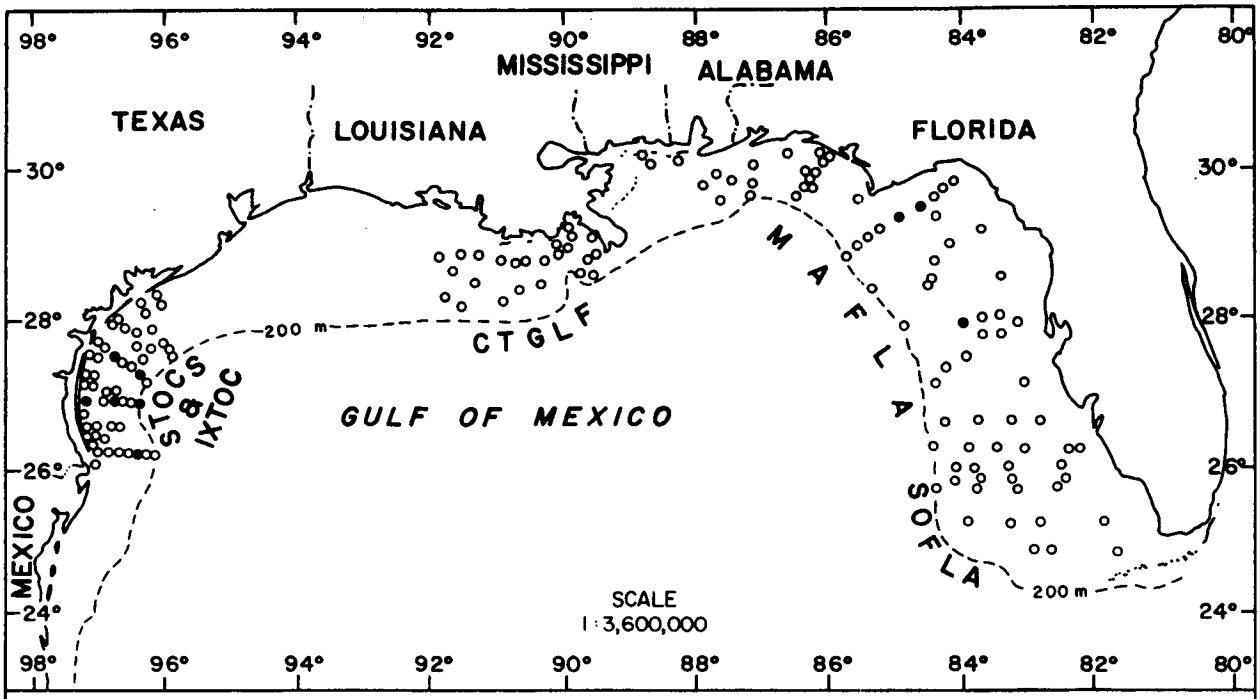

Figure 2-5. Distribution of Cirrophorus americanus on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

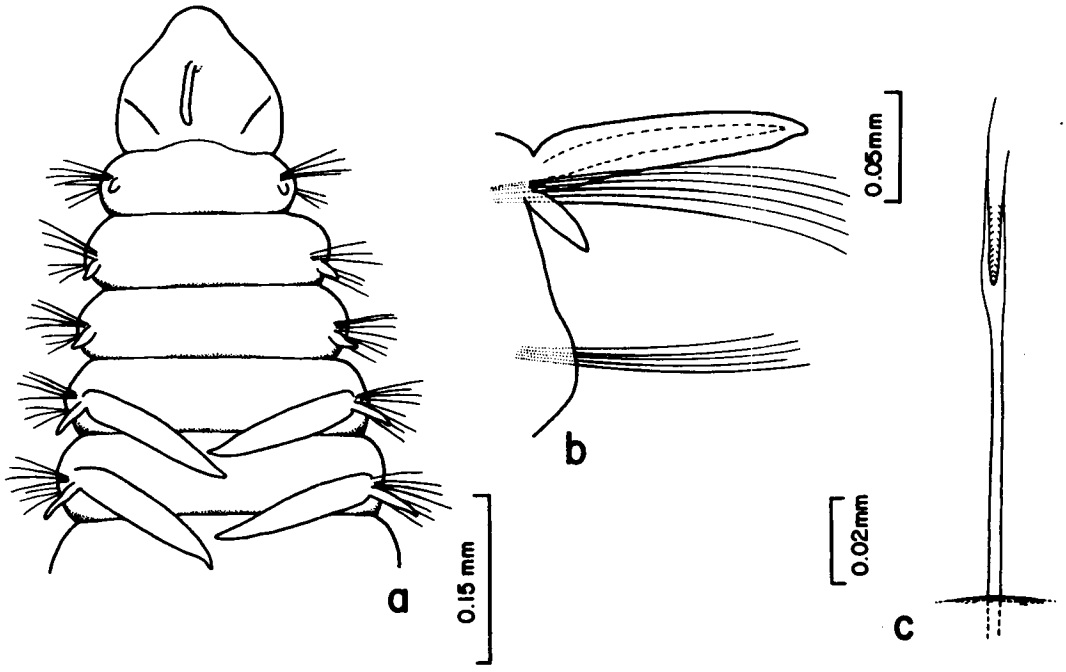

Figure 2-6. Cirrophorus americanus: a, anterior end, dorsal view; b, right parapodium from setiger 4, posterior view; c, lyrate seta from postbranchial region (setiger 56).

anterolaterally. Median antenna cirriform, extending to near posterior margin of prostomium. Branchiae slender, flat in anterior branchial region (Figure 2-6a), cirriform in posterior branchial region, longest medially; beginning on setiger 4, numbering up to 46 pairs (29 pairs on largest Gulf specimens). Notopodial postsetal lobes short in prebranchial region (Figure 2-6b), gradually becoming longer through branchial region, and remaining about same length in postbranchial region. Lyrate notosetae with long shafts (Figure 2-6c), present from setiger 3.
REMARKS: Cirrophorus americanus was previously identified as C. lyriformis and Paraonides lyra in MAFLA and STOCS collections. C. americanus is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Sand, muddy sand, with shell; 28-508 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered occurrences in northeastern Gulf and off Texas (Figure 2-5); 15-125 m; coarse to medium-fine sand, silty fine sand, silty clay to clayey sand.
DISTRIBUTION: Atlantic coast of N. and S. America, Gulf of Mexico.

Genus Aricidea Webster, 1879

TYPE SPECIES: Aricidea fragilis Webster, 1879.
REFERENCES:
Pettibone, 1965:127.
Strelzov, 1973:57.
Fauchald, 1977a:18.
DIAGNOSIS: Body width up to 2.2 mm. Prostomium triangular to nearly conical. Nuchal slits joining posterior margin of prostomium. Median antenna present. Three prebranchial segments. Shape and number of branchiae variable. Notopodial postsetal lobes present on all setigers. Neuropodial postsetal lobes present or absent. Capillary setae present in both rami on all segments. Modified setae present in neuropodia of postbranchial segments. Pygidium rounded, with three anal cirri.

Subgenus Aricidea Strelzov, 1973

TYPE SPECIES: Aricidea fragilis Webster, 1879.
REFERENCE:
Strelzov, 1973:57.
DIAGNOSIS: Prostomium long; median antenna cirriform, occasionally articulate. Modified setae geniculate, pseudocompound, or hooked with subterminal spine.

Key to the Gulf of Mexico BLM-OCS Species of Aricidea (Aricidea)

1a. Median antenna pseudoarticulate (Figure 2-8a); modified setae strongly curved with subterminal spines on concave side of shaft (Figure 2-8c) . . . . . **Aricidea (Aricidea) wassi, p. 2-13**
1b. Median antenna not pseudoarticulate; modified setae pseudocompound or geniculate, without subterminal spines. 2

2a. Median antenna short, flask-shaped (Figure 2-10a). . . . . **. . . . . .Aricidea (Aricidea) cf. pseudoarticulata, p. 2-13**

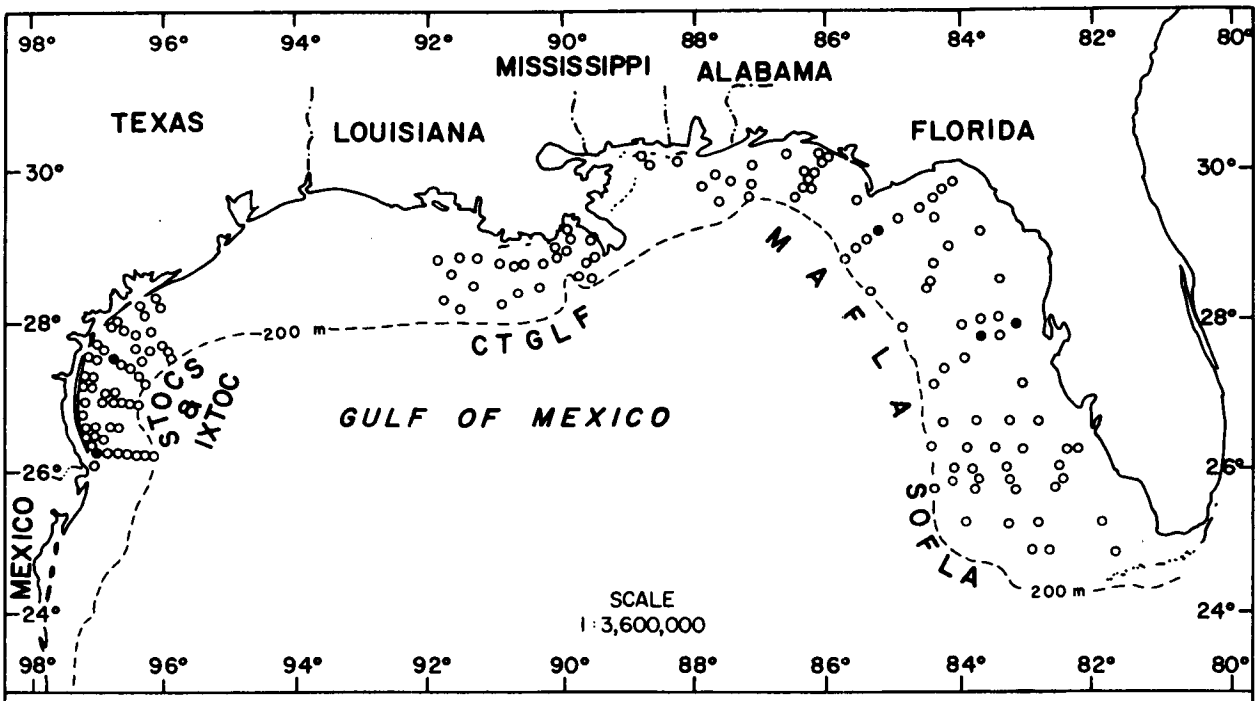

Figure 2-7. Distribution of Aricidea (Aricidea) wassi on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

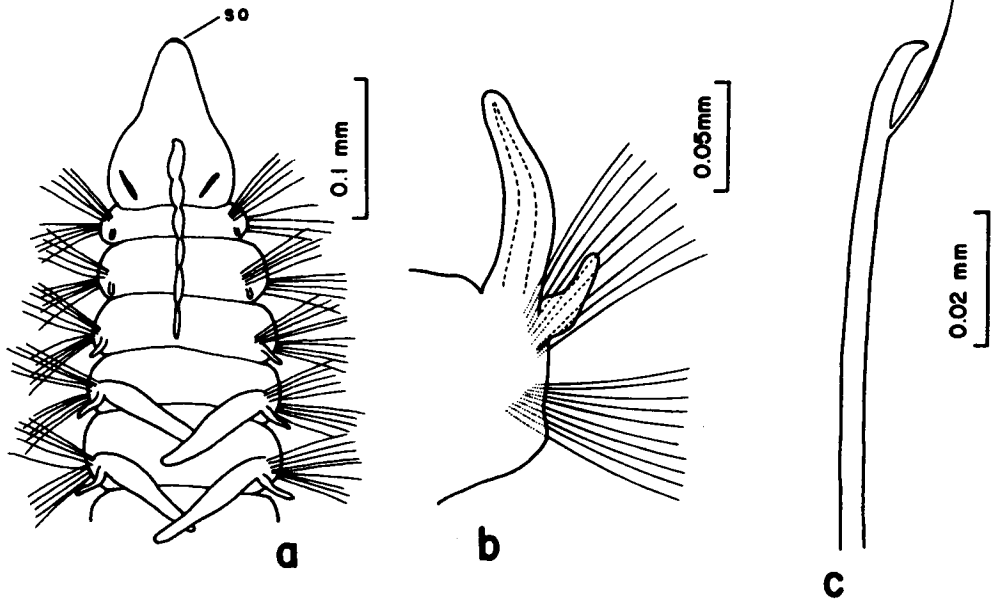

Figure 2-8. Aricidea (Aricidea) wassi: a, anterior end, dorsal view; b, right parapodium from setiger 6, posterior view; c, modified postbranchial neuroseta.

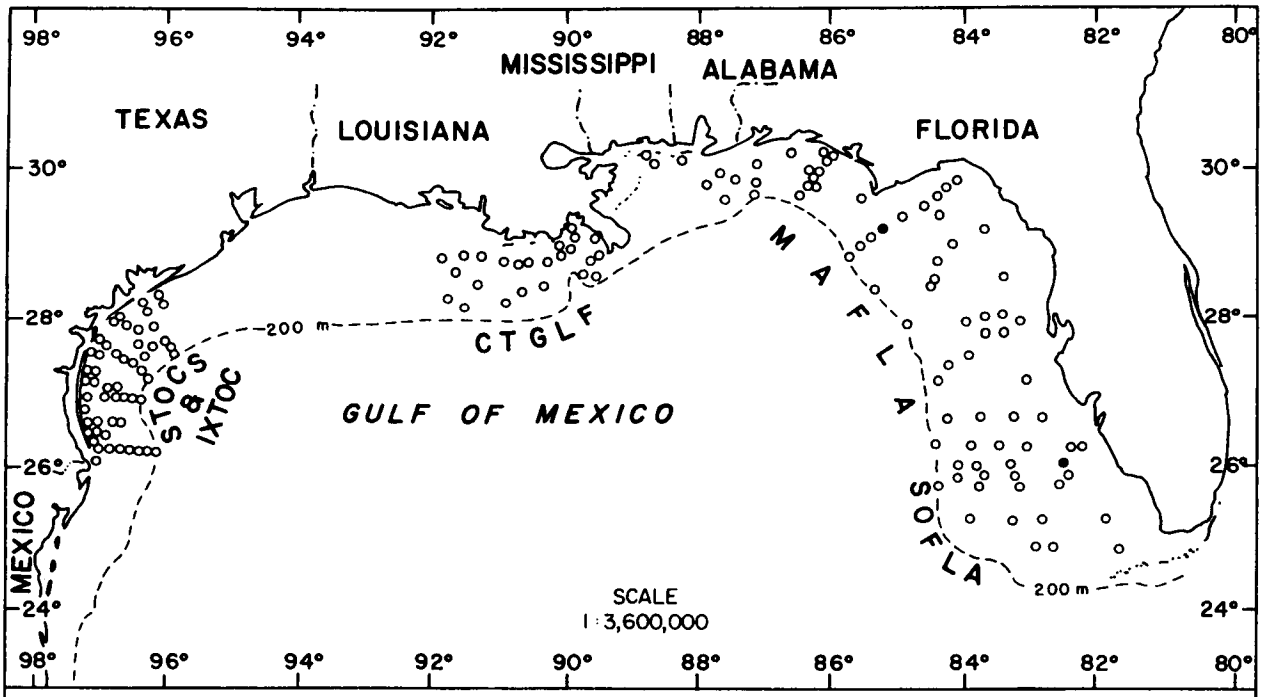

Figure 2-9. Distribution of Aricidea (Aricidea) cf. pseudoarticulata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

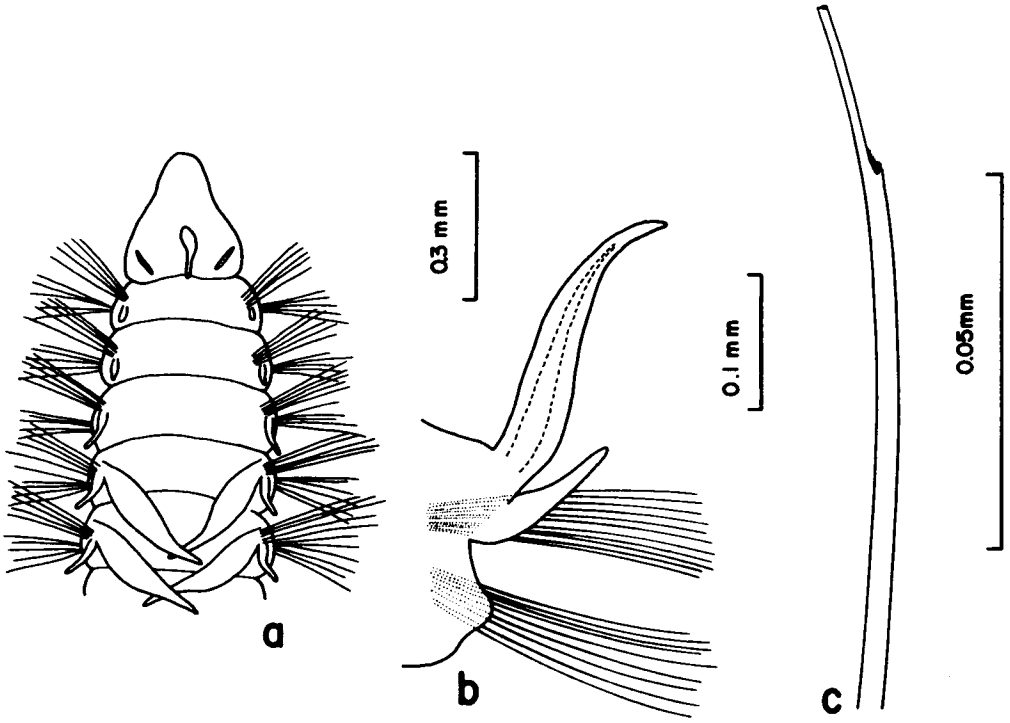

Figure 2-10. Aricidea (Aricidea) cf. pseudoarticulata: a, anterior end, dorsal view; b, right parapodium from setiger 9, posterior view; c, pseudocompound postbranchial neuroseta (tip not shown).

2b. Median antenna long, slender (Figure 2-12a). . . . . .
. . . . . .Aricidea (Aricidea) fragilis, p. 2-15

Aricidea (Aricidea) wassi Pettibone, 1965
Figures 2-7, 8a-c

Aricidea (Aricidea) wassi Pettibone, 1965:135, figs. 9a-d, 10a-d, 11a-c.
Aricidea wassi--Hobson, 1971:247.
Aricidea wassi--Imajima, 1973:265, fig. 6a-i.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207J-8/77 (5 spec.), 2207E-11/77 (2 spec.), 2207G-11/77 (2 spec.), 2209F-7/76 (1 spec., USNM 90225), 2424B-7/76 (2 spec., USNM 90224); STOCS 4/II-W/76 (1 spec.), 4/IV-F/76 (1 spec.).
DESCRIPTION:
Length, to 30 mm; width, to 0.50 mm. Body dorsally flattened in branchial region, cylindrical in postbranchial regions. Prostomium triangular, bluntly pointed anteriorly (Figure 2-8a); eyes present (faded in alcohol); terminal sensory organ present anteriorly. Nuchal slits directed anterolaterally. Median antenna pseudoarticulate, elongate, extending to setigers 2-4. Branchiae beginning on setiger 4, nearly cylindrical in form; numbering about ten pairs. Notopodial postsetal lobes short on first two setigers, elongate from setiger 3 (Figure 2-8b). Notosetae all capillary. Neuropodia with 4-6 strongly curved, modified setae having subterminal spine on concave side of shaft (Figure 2-8c).
REMARKS: A. (Aricidea) wassi is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Silt and sand with shells; 10-45 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Predominately in shallow water in northeastern Gulf and off Texas (Figure 2-7); 15-36 m; medium to fine-very fine sand, silty clay, clayey sandy silt.
DISTRIBUTION: Virginia, Gulf of Mexico, southern California, Japan.

Aricidea (Aricidea) cf. pseudoarticulata Hobson, 1972
Figures 2-9, 10a-c

Aricidea pseudoarticulata Hobson, 1972:550, fig. 16h.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6A-11/80 (6 spec., USNM 90172); MAFLA 2424G-7/76 (2 spec., USNM 90171).
DESCRIPTION:
Length, to 10 mm; width, to 0.35 mm. Body cylindrical, with flattened dorsum in branchial region. Prostomium triangular, slightly longer than wide, bluntly pointed anteriorly. Nuchal slits conspicuous, directed anterolaterally. Median antenna flask-shaped, extending to anterior margin of setiger 1 (Figure 2-10a). Branchiae beginning on setiger 4, numbering 11-15 pairs; broad basally, tapering to blunt, slender tips, overlapping across dorsum. Notopodial postsetal lobes short on setigers 1-2, more elongate from setiger 3 (Figure 2-10b). Neuropodial postsetal

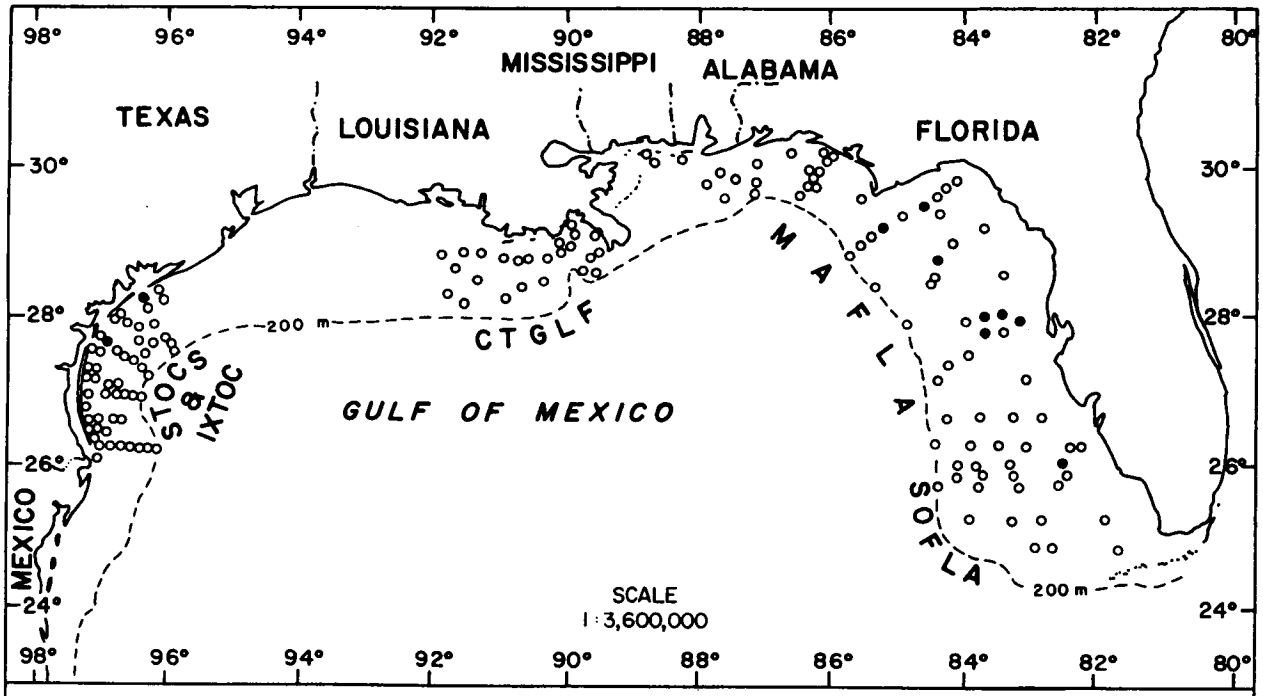

Figure 2-11. Distribution of Aricidea (Aricidea) fragilis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

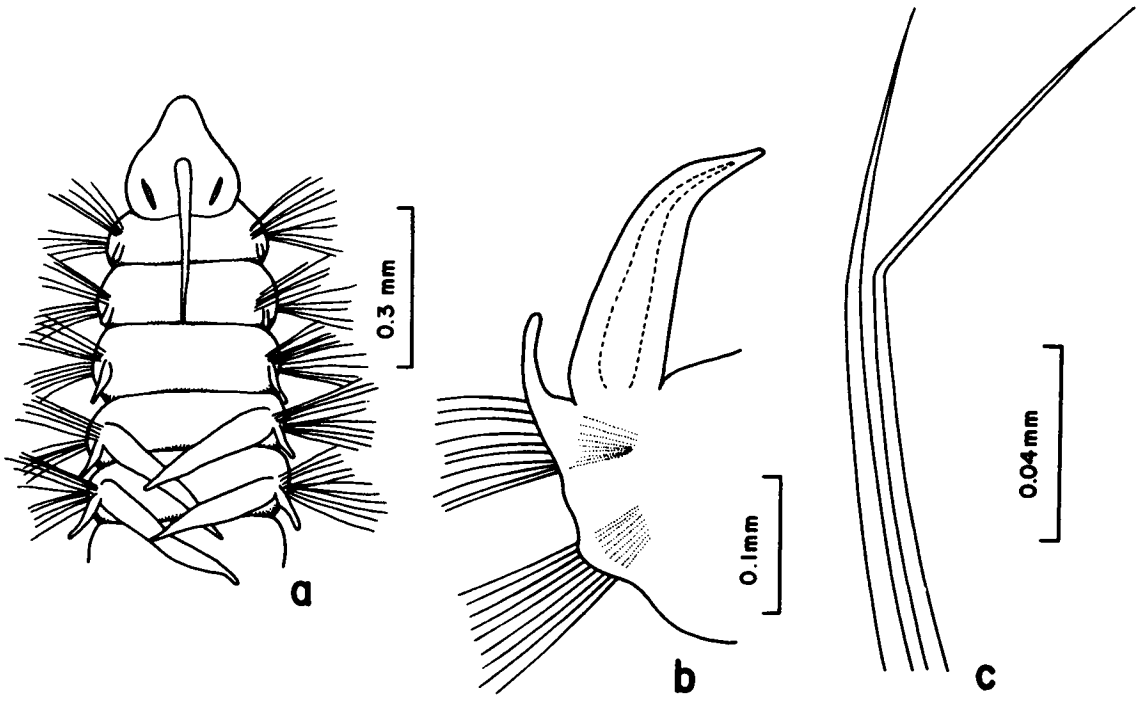

Figure 2-12. Aricidea (Aricidea) fragilis: a, anterior end, dorsal view; b, left parapodium from setiger 6, posterior view; c, geniculate postbranchial neurosetae.

lobes also present. All notosetae capillary. Each postbranchial fascicle with several pseudocompound neurosetae (Figure 2-10c).
REMARKS: A. (Aricidea) cf. pseudoarticulata resembles A. (Aricidea) fragilis Webster in having pseudocompound setae and similar noto- and neuropodial postsetal lobes. It may be distinguished from the latter by the shape of the median antenna, shape and number of branchiae, and the form of the nuchal slits. Gulf of Mexico BLM-OCS specimens differ from the original description of A. (Aricidea) pseudoarticulata in having a longer prostomium, a single kind of modified neurosetae, branchiae with slender tips, and conspicuous nuchal slits.
PREVIOUSLY REPORTED HABITAT: 80 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two records off Florida (Figure 2-9); 26-27 m; medium to very fine sand.
DISTRIBUTION: Southern California, ?Gulf of Mexico.

Aricidea (Aricidea) fragilis Webster, 1879
Figures 2-11, 12a-c

Aricidea fragilis Webster, 1879:55, pl. 9, figs. 127-132.
Aricidea fragiis--Mesnil and Caullery, 1898:128, 138, 146, fig. 11.
Aricidea fragilis--Cerruti, 1909:464, fig. B.
Aricidea fragilis--Hartman, 1944d:315, pl. 27, figs. 4, 5; 1945:8, 30, pl. 6, fig. 3; 1957:317, pl. 43, fig. 3.
Aricidea (Aricidea) fragilis--Pettibone, 1965:129, figs. 1a-g, 2a-e, 3a-c.
Aricidea (Aricidea) fragilis--Strelzov, 1973:57, figs. 16, 1, 21.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6A-11/80 (1 spec., USNM 90183), 6D-11/80 (5 spec., USNM 90184); MAFLA 2207E-8/77 (2 spec., USNM 90179), 2208E-8/77 (15 spec., USNM 90185), 2209C-8/77 (1 spec., USNM 90186), 2210B-7/76 (3 spec., USNM 90180), 2316K-7/76 (1 spec., USNM 90187), 2422I-7/76 (1 spec., USNM 90188); 2424H-7/76 (1 spec., USNM 90182); STOCS 4/I-F/76 (1 spec., USNM 90181); IXTOC M35-11/79 (1 spec., USNM 90189).
Supplementary Material:
Florida--off east coast, 30°32'N, 80°10'W, 147 m, Sept. 1977, G. R. Gaston ID. (1 spec., USNM 56893).
DESCRIPTION:
Length, to 70 mm (previously reported to 100 mm); width, to 1.50 mm (previously reported to 2 mm). Body dorsally flattened in branchial region, becoming more cylindrical in postbranchial region. Prostomium about as wide as long, rounded anteriorly; eyes present (faded in alcohol). Nuchal slits directed anteriorly. Median antenna slender, extending to setigers 2-3 (Figure 2-12a). Branchiae slender, long anteriorly, wide on posterior branchial segments, last two branchial pairs slightly shorter; beginning on setiger 4; numbering 25-30 pairs (increasing with body size); often overlapping across dorsum. Noto- and neuropodial postsetal lobes present from setiger 1. Notopodial postsetal lobes short on setigers 1-2, long after setiger 3 (Figure 2-12b). Neuropodial postsetal lobes tuberculate. Notosetae slender, capillary. Neuropodial modified setae geniculate (Figure 2-12c).
PREVIOUSLY REPORTED HABITAT: Silty substrates; littoral zone to 54 m.

GULF OF MEXICO BLM-OCS OCCURRENCE: Widespread in northeastern Gulf and off Texas (Figure 2-11); 10-37 m; medium to very fine sand, silty very fine sand, clayey sand, clayey sandy silt, silty clay.
DISTRIBUTION: Atlantic coasts of United States and Africa, Gulf of Mexico, Adriatic Sea, S. China Sea, Yellow Sea.

Subgenus Allia Strelzov, 1973

TYPE SPECIES: Aricidea albatrossae Pettibone, 1957b.
REFERENCE:
Strelzov, 1973:68.
DIAGNOSIS: Prostomium with rounded anterior end; median antenna smooth, not articulate. Neurosetae of postbranchial region thicker than corresponding notosetae. Modified neurosetae stout, capillary, with acuminate tips.

Key to the Gulf of Mexico BLM-OCS Species of Aricidea (Allia)

1a. Prostomium trilobed anteriorly (Figure 2-14a). . . . . .Aricidea (Allia) cf. trilobata, p. 2-16
1b. Prostomium rounded, not trilobed anteriorly 2

2a. Modified setae tapering abruptly, with terminal arista in posterior segments (Figure 2-16e) . . Aricidea (Allia) suecica, p. 2-18
2b. Modified setae tapering gradually, without terminal arista. . . 3

3a. Median antenna long, extending beyond posterior margin of prostomium 4
3b. Median antenna short, not extending beyond posterior margin of prostomium. 5

4a. Neuropodial postsetal lobes of setigers 1-3 long, distinct; modified neurosetae of postbranchial setigers more slender than other setae of same fascicle . . .Aricidea (Allia) quadrilobata, p. 2-20
4b. Neuropodial postsetal lobes of setigers 1-3 tuberculate, indistinct; modified neurosetae of postbranchial setigers same thickness as other setae of same fascicle . . . . . .Aricidea (Allia) cf. alisdairi, p. 2-23

5a. Median antenna flask-shaped (Figure 2-22a); neuropodial postsetal lobes of anterior setigers low, truncate, indistinct. . . . . .Aricidea (Allia) sp. A, p. 2-25
5b. Median antenna subulate; neuropodial postsetal lobes of anterior setigers elongate, distinct. . . . . Aricidea (Allia) albatrossae*

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

Aricidea (Allia) cf. trilobata Imajima, 1973
Figures 2-13, 14a-c

Aricidea trilobata Imajima, 1973:267, fig. 7a-h.

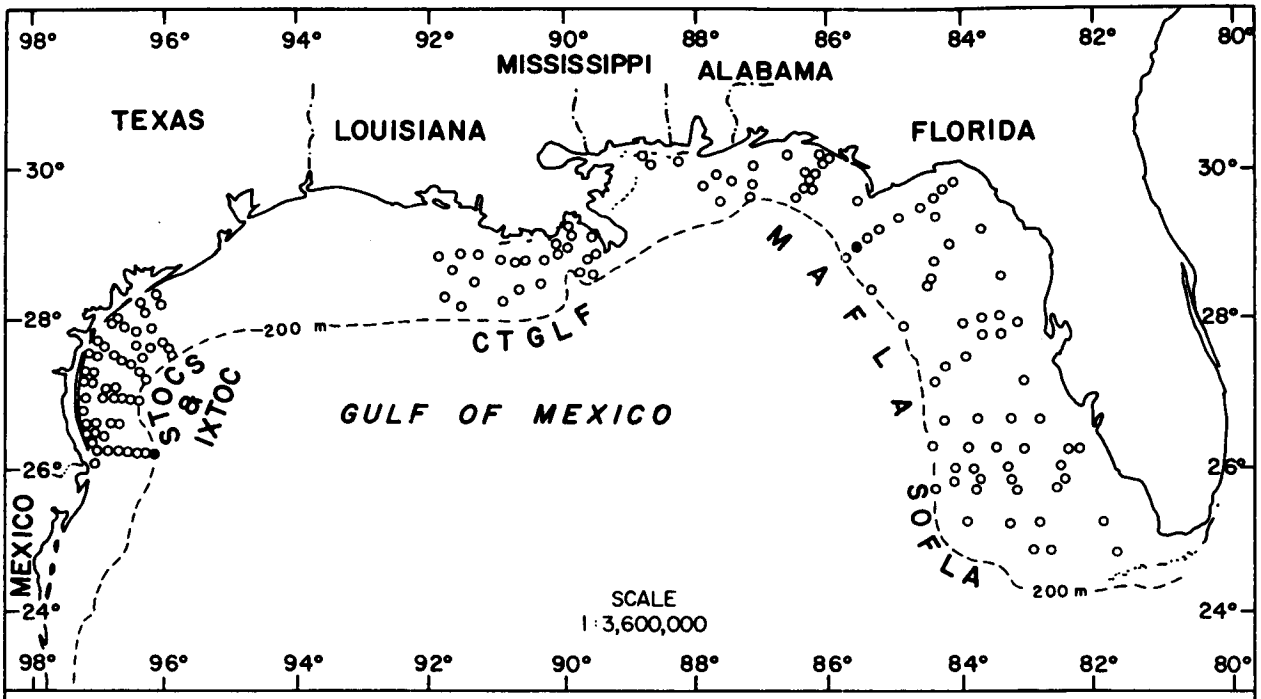

Figure 2-13. Distribution of Aricidea (Allia) cf. trilobata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

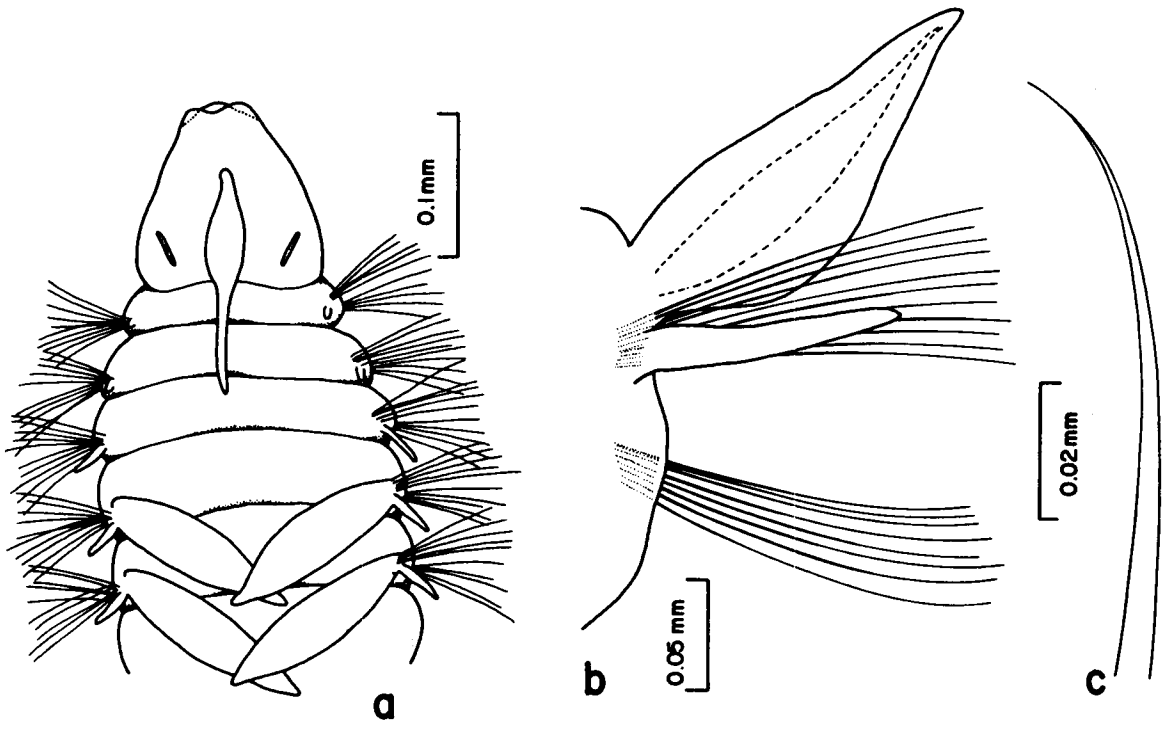

Figure 2-14. Aricidea (Allia) cf. trilobata: a, anterior end, dorsal view; b, right parapodium from setiger 8, posterior view; c, modified postbranchial neuroseta.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2426E-2/78 (1 spec.); STOCS 7/IV-Sp/77 (1 spec., USNM 90264).
DESCRIPTION:
Length, to 2 mm (previously reported to 6.5 mm); width, to 0.25 mm (previously reported to 0.3 mm). Body cylindrical, dorsally flattened in branchial region. Prostomium triangular, about as long as wide, anteriorly terminating in three small lobes (Figure 2-14a), two dorsal and one ventral. Nuchal slits indistinct, directed anterolaterally. Median antenna long. Branchiae beginning on setiger 4, numbering about 16 pairs (some lost); clavate. Branchiae broad and flat basally, tapering rapidly near terminus to a point. Notopodial postsetal lobes tuberculate on setigers 1-2, long from setiger 3; basally swollen in branchial region (Figure 2-14b), slender in postbranchial region. Neuropodial postsetal lobes lacking. Notosetae all capillary. Neurosetae thicker than notosetae. Modified neurosetae similarly thick, tapering rapidly to a fine point (Figure 2-14c).
REMARKS: The anteroventral prostomial lobe may be a terminal sensory organ. Both specimens closely resemble Aricidea trilobata Imajima, 1973, in the shape of the branchiae, prostomium, and dorsal postsetal lobes, but differ from the latter in having a clavate median antenna and in apparently lacking unidentate hooks. The latter distinguishing characteristic remains uncertain without complete specimens. The specimens are also similar to the description of A. trilobata by Laubier and Ramos (1974), in the shape of the prostomium and median antenna. However, the five specimens examined by Laubier and Ramos lacked branchiae and modified setae.
PREVIOUSLY REPORTED HABITAT: 60 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two records off Cape San Blas, Florida, and off Port Isabel, Texas (Figure 2-13); 82-130 m; fine sand, silty clay.
DISTRIBUTION: Gulf of Mexico.

Aricidea (Allia) suecica Eliason, 1920
Figures 2-15, 16a-e

Aricidea suecica Eliason, 1920:52, figs. 14, 15; 1962:46.
Aricidea suecica--Wesenberg-Lund, 1950:32; 1951:73, pl. 8, fig. 35; 1953:60.
Aricidea suecica--Hartman, 1957:318; 1965:137; 1969:65, figs. 1-5.
Aricidea suecica--Pettibone, 1963:307, fig. 80f,g.
Aricidea suecica--Strelzov, 1968a:82.
Aricidea suecica--Hartman and Fauchald, 1971:97.
Aricidea suecica--Day, 1973:93.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6A-11/80 (1 spec., USNM 90233), 6E-11/80 (14 spec., USNM 90232), 8A-11/80 (2 spec.), 16A-7/81 (1 spec., USNM 90234); MAFLA 2208G-7/76 (1 spec., USNM 90231), 2208G-8/77 (1 spec., USNM 90226), 2210B-7/76 (1 spec., USNM 90227), 2210F-7/76 (1 spec., USNM 90228), 2316E-7/76 (1 spec., USNM 90229), 2422F-7/76 (1 spec., USNM 90235), 2641A-11/77 (1 spec., USNM 90230); STOCS 4/IV-W/76 (1 spec.).

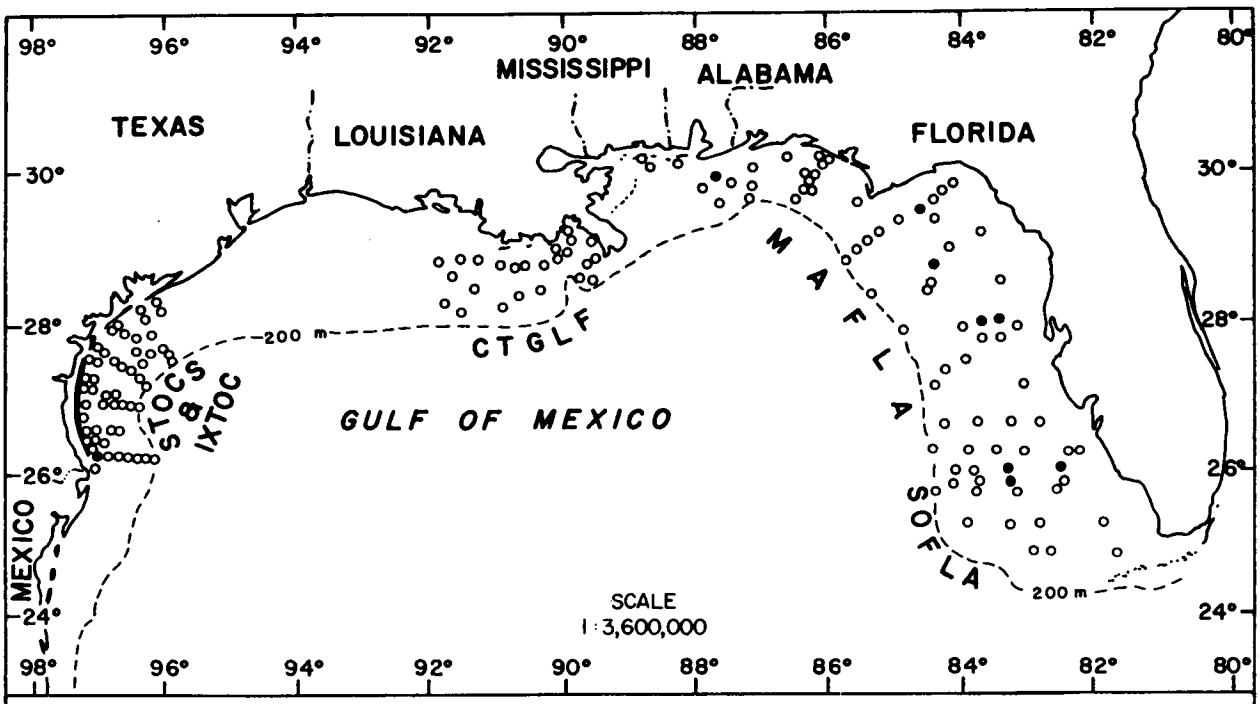

Figure 2-15. Distribution of Aricidea (Allia) suecica on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

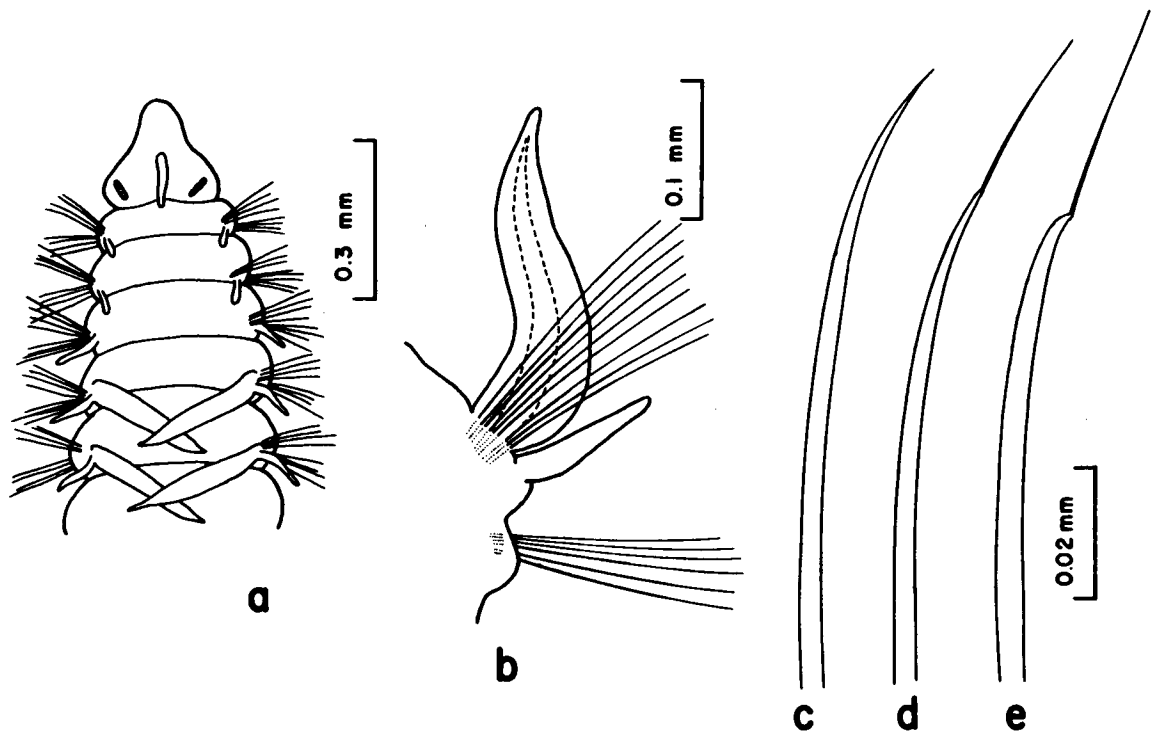

Figure 2-16. Aricidea (Allia) suecica: a, anterior end, dorsal view; b, right parapodium from setiger 7, posterior view; c, modified neuroseta from setiger 28 (2nd postbranchial setiger); d, modified neuroseta from setiger 36; e, modified neuroseta from setiger 55.

Supplementary Material:
Canada--Resolute, Cornwallis Isl., 74°39.1'N, 94°15.7'W, 15 m, Aug. 1962, E. H. Grainger coll., M. H. Pettibone ID. (1 spec., USNM 31508); Hudson Bay, 60°44'N, 78°27'W, 7 m, Sept. 1958, E. H. Grainger coll., M. H. Pettibone ID. (1 spec., USNM 54340).
Maine--Hbr., Southport Isl., 20 ft., Aug. 1955, M. Pettibone ID. (5 spec., USNM 31507).
DESCRIPTION:
Length, 1.0+ mm (previously reported to 20 mm); width, to 1.0 mm. Body cylindrical, dorsally flattened in branchial region. Prostomium triangular, about as wide as long; eyes present (faded in alcohol). Nuchal slits indistinct, directed anterolaterally. Median antenna cylindrical, extending to anterior margin of setiger 1 (reported to setiger 4). Branchiae beginning on setiger 4, numbering about 27 pairs (varying with body size); broad and flat basally, gradually tapering to a point; nearly equaling body width, broadly overlapping (Figure 2-16a); more slender basally in posterior branchial region. Notopodial postsetal lobes long from setiger 1, gradually increasing in length throughout branchial region, shorter in postbranchial region. Neuropodial postsetal lobes ovate (Figure 2-16b), indistinct. Notosetae all slender, capillary. Neuropodial capillary setae stouter. Modified setae numbering 4-6 per fascicle; beginning in postbranchial region (setigers 25-30) as broad capillary setae tapering to fine points (Figure 2-16c); becoming more abruptly tapered with slender capillary tips on setigers 30-37 (Figure 2-16d); appearing as hooks without sheath, with terminal arista (may be lost) posteriorly, after setigers 37-40 (Figure 2-16e).
REMARKS: Aricidea suecica Eliason, 1920, was synonymized with Aricidea nolani Webster and Benedict, 1887, by Strelzov (1973). However, Dr. M. H. Pettibone (pers. comm.) found A. nolani to be an indeterminable species of Aricidea following examination of type material in the USNM. Aricidea (Allia) suecica Eliason is thus revived. Specimens from STOCS and MAFLA were previously identified as Aricidea jeffreysii. A. (Allia) suecica is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Confused in the literature.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered occurrences in northeastern Gulf and off Texas (Figure 2-15); 15-54 m; medium-fine to very fine sand, silty fine to very fine sand, clayey sandy silt.
DISTRIBUTION: British Isles, Iceland, Greenland, New England, North Carolina, Gulf of Mexico, southern California, Alaska, Bering Sea, Arctic, Sea of Japan.

Aricidea (Allia) quadrilobata Webster and Benedict, 1887
Figures 2-17, 18a-e

Aricidea quadrilobata Webster and Benedict, 1887:739, pl. 7, figs. 93-96.
Aricidea quadrilobata--Strelzov, 1968a:84, fig. 5A-D; 1973:88 [synonymy], figs. 13, 37.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 31A-7/81 (1 spec., USNM 90213), 33C-2/81 (1 spec., USNM 90214); MAFLA 2210A-2/78 (1 spec.), 2212F-11/77 (1 spec.), 2639C-9/75 (1 spec.,

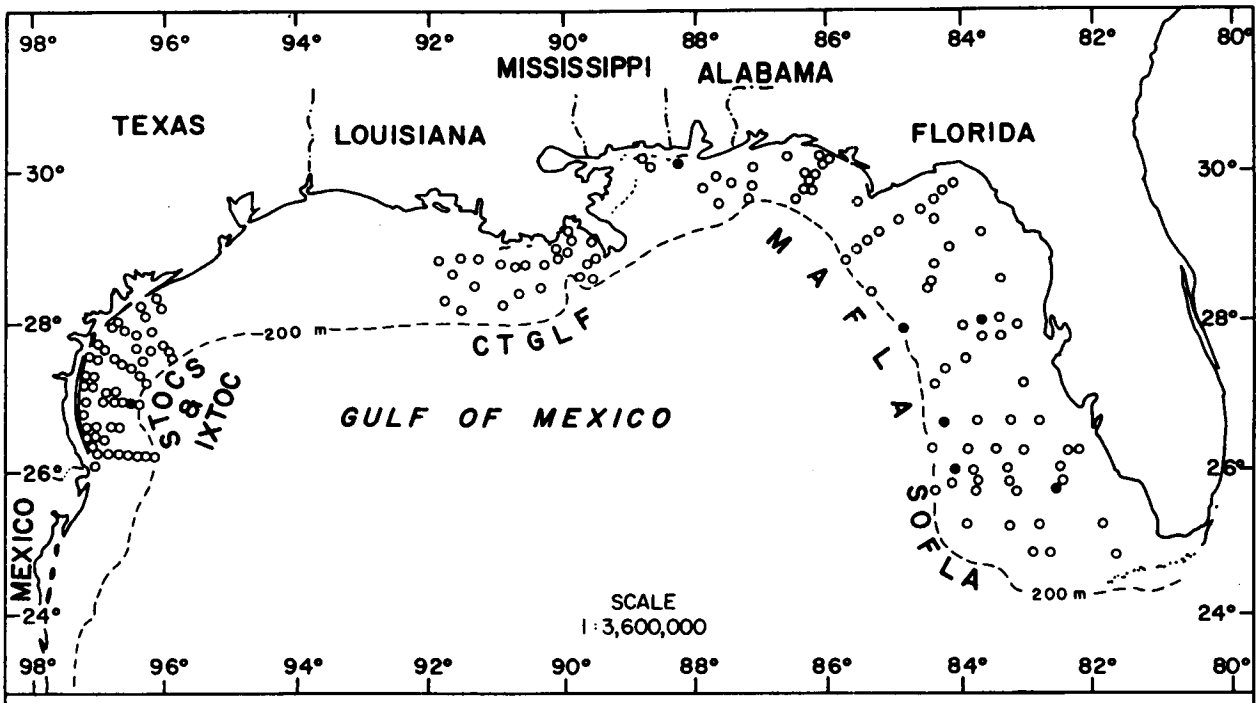

Figure 2-17. Distribution of Aricidea (Allia) quadrilobata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

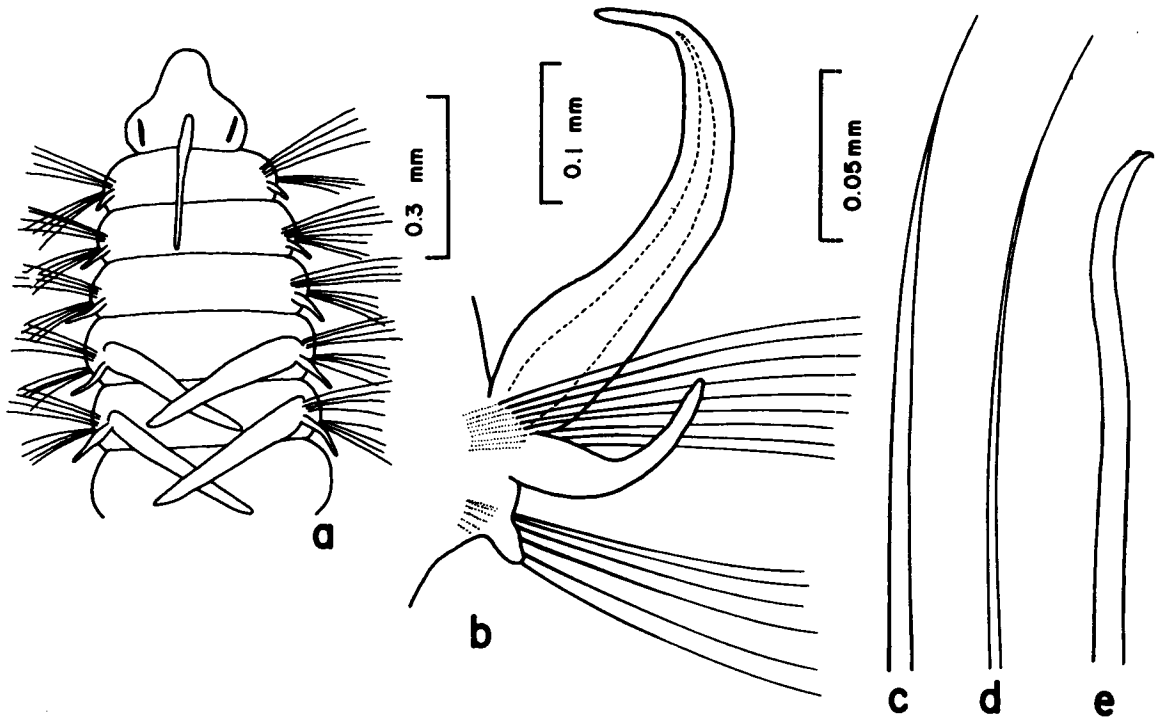

Figure 2-18. Aricidea (Allia) quadrilobata: a, anterior end, dorsal view; b, right parapodium from setiger 12, posterior view; c, capillary neuroseta from postbranchial region; d, modified neuroseta from setiger 35 (3rd postbranchial setiger); e, modified neuroseta from far posterior region.

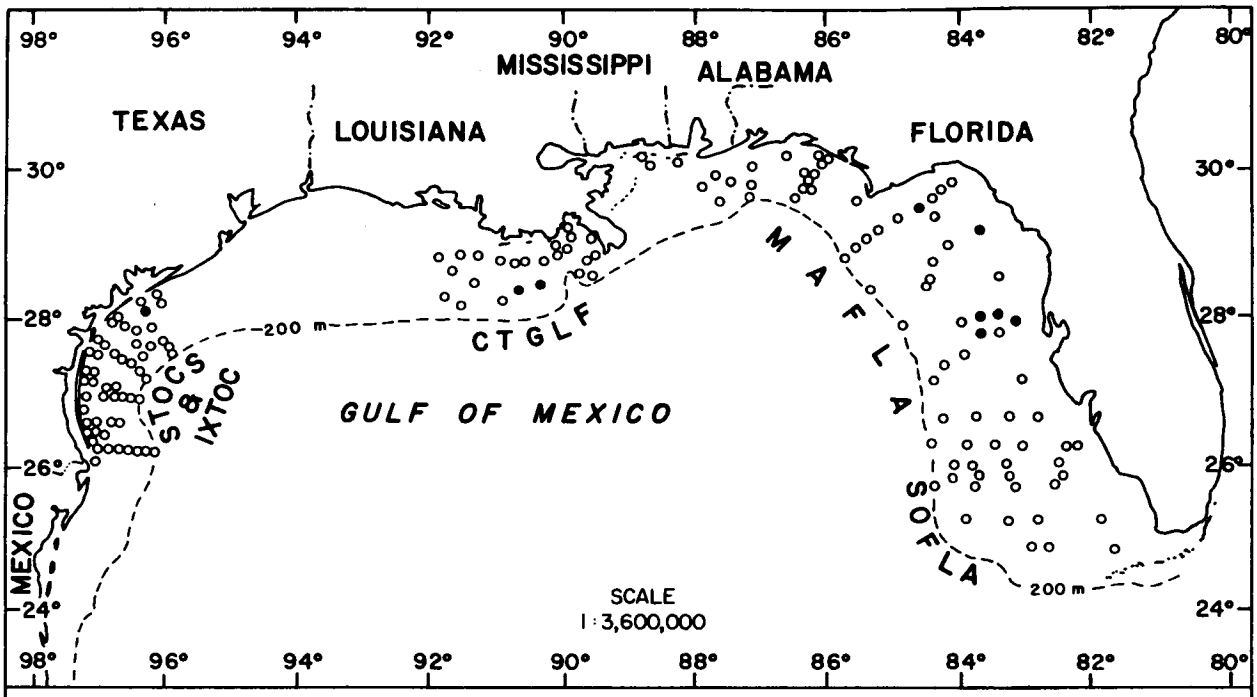

Figure 2-19. Distribution of Aricidea (Allia) cf. alisdairi on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

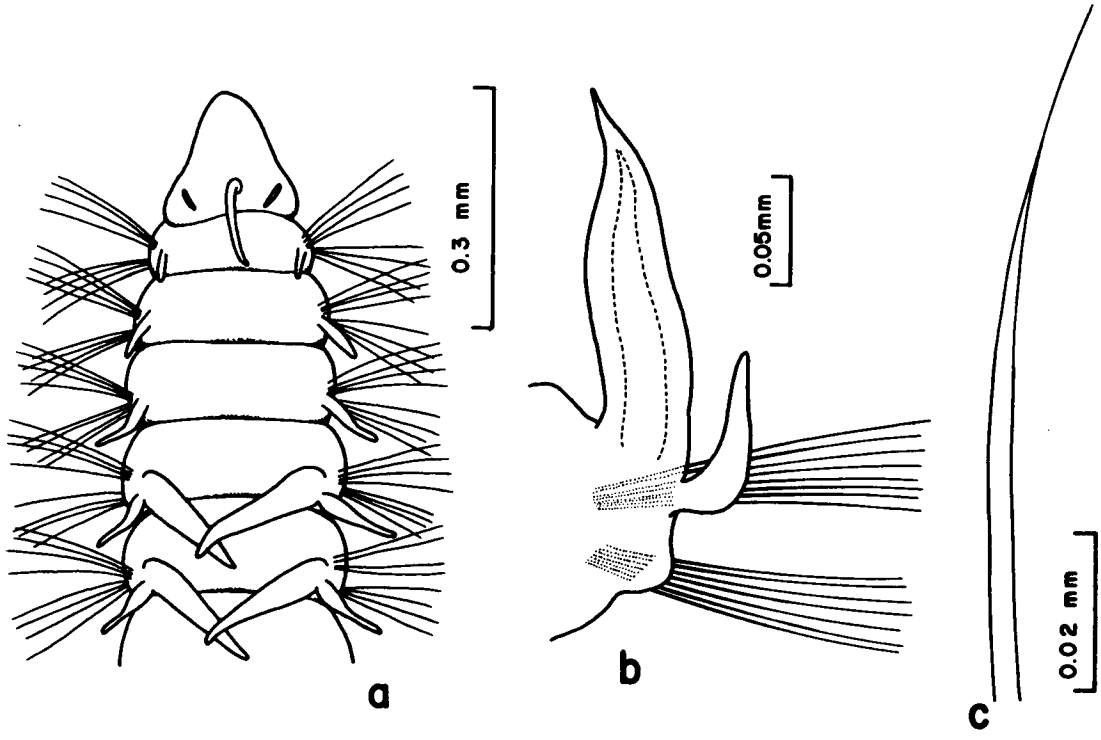

Figure 2-20. Aricidea (Allia) cf. alisdairi: a, anterior end, dorsal view; b, right parapodium from setiger 10, posterior view; c, modified postbranchial neuroseta.

USNM 90210), 2960E-11/77 (1 spec., USNM 90211); STOCS 3/III-Sp/77 (1 spec., USNM 90212).
Supplementary Material:
Mid-Atlantic--39°06.1'N, 72°40.3'W, 445 m, Aug. 1977, G. R. Gaston ID. (2 spec., USNM 56896).
DESCRIPTION:
Length, to 8 mm; width, to 2.1 mm. Body broad, flattened dorsally in branchial region, more cylindrical in postbranchial region. Prostomium broadly rounded anteriorly, wider than long; brown pigment spots sometimes present; eyes present (faded in alcohol). Nuchal slits distinct, directed anterolaterally. Median antenna slender, cirriform, extending to setigers 2-9 (Figure 2-18a). Branchiae beginning on setiger 4, numbering up to 29 pairs; slender, flat, with pointed tips; overlapping across dorsum. Notopodial postsetal lobes long from setiger 1, gradually increasing in length throughout branchial region (Figure 2-18b); becoming slender, shorter in postbranchial region. Neuropodial postsetal lobes tuberculate on setigers 1-3, longer in branchial region. Notosetae all capillary. Neuropodial capillary setae stouter (Figure 2-18c). Modified setae on first few postbranchial neuropodia with slender shafts gradually tapering to fine points (Figure 2-18d); becoming more rapidly tapered with shorter points on postbranchial segments 13-28, numbering 1-2 per fascicle; becoming hooked, without pubescence, on far posterior segments (Figure 2-18e), numbering 2-3 per fascicle.
REMARKS: Gulf of Mexico STOCS and MAFLA specimens were previously identified as Aricidea cf. uschakovi and Aricidea annae. A. (Allia) quadrilobata is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Sandy to muddy substrates; 5-5680 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in northeastern Gulf and off southern Texas (Figure 2-17); 27-189 m; fine sand, silty very fine sand, sandy silt, silty clay.
DISTRIBUTION: Atlantic coastal waters of North America, Gulf of Mexico, Barents Sea, Mediterranean Sea, Uruguay shelf, Antarctica, Chuckchi Sea, Sea of Okhotsk, Tartar Strait, Sea of Japan, New Guinea.

Aricidea (Allia) cf. alisdairi Hasan, 1960
Figures 2-19, 20a-c

Aricidea (Allia) alisdairi--Strelzov, 1973:71, figs. 16, 2, 97.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207C-7/76 (1 spec., USNM 90223), 2208I-8/77 (1 spec., USNM 90216), 2209C-8/77 (1 spec., USNM 90217), 2210H-7/76 (1 spec., USNM 90218), 2318G-7/76 (1 spec., USNM 90215), 2422J-7/76 (1 spec., USNM 90219); CTGLF 03-5/78 (1 spec., USNM 90221), 04-5/78 (1 spec., USNM 90222); STOCS 1/I-F/76 (1 spec., USNM 90220).
DESCRIPTION:
Length, to 20 mm; width, to 0.50 mm (previously reported to 0.8 mm). Body dorsally flattened in branchial region, cylindrical in postbranchial region. Prostomium triangular, bluntly pointed anteriorly, slightly longer than wide (Figure 2-20a). Nuchal slits slender, inconspicuous, directed anterolaterally. Median antenna cirriform, extending to setigers 1-2 (occasionally to setiger 6). Branchiae beginning on setiger 4, numbering 22-28 pairs; broad basally, tapering to slender,

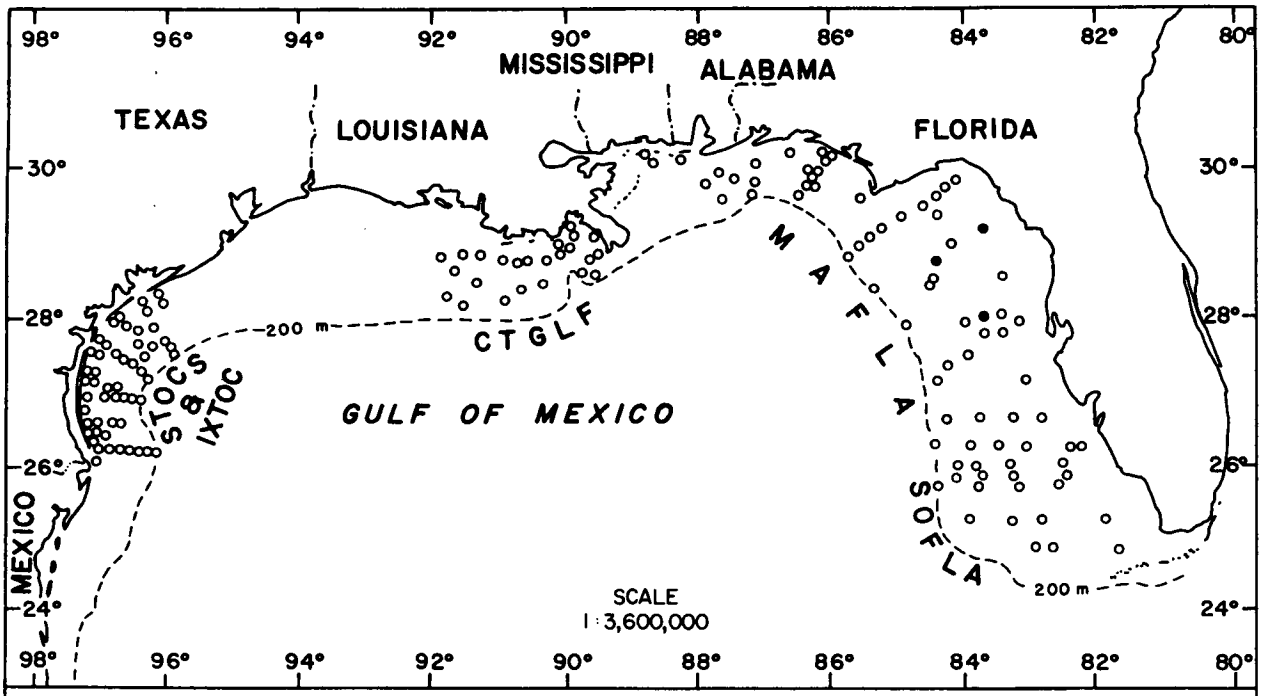

Figure 2-21. Distribution of Aricidea (Allia) sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

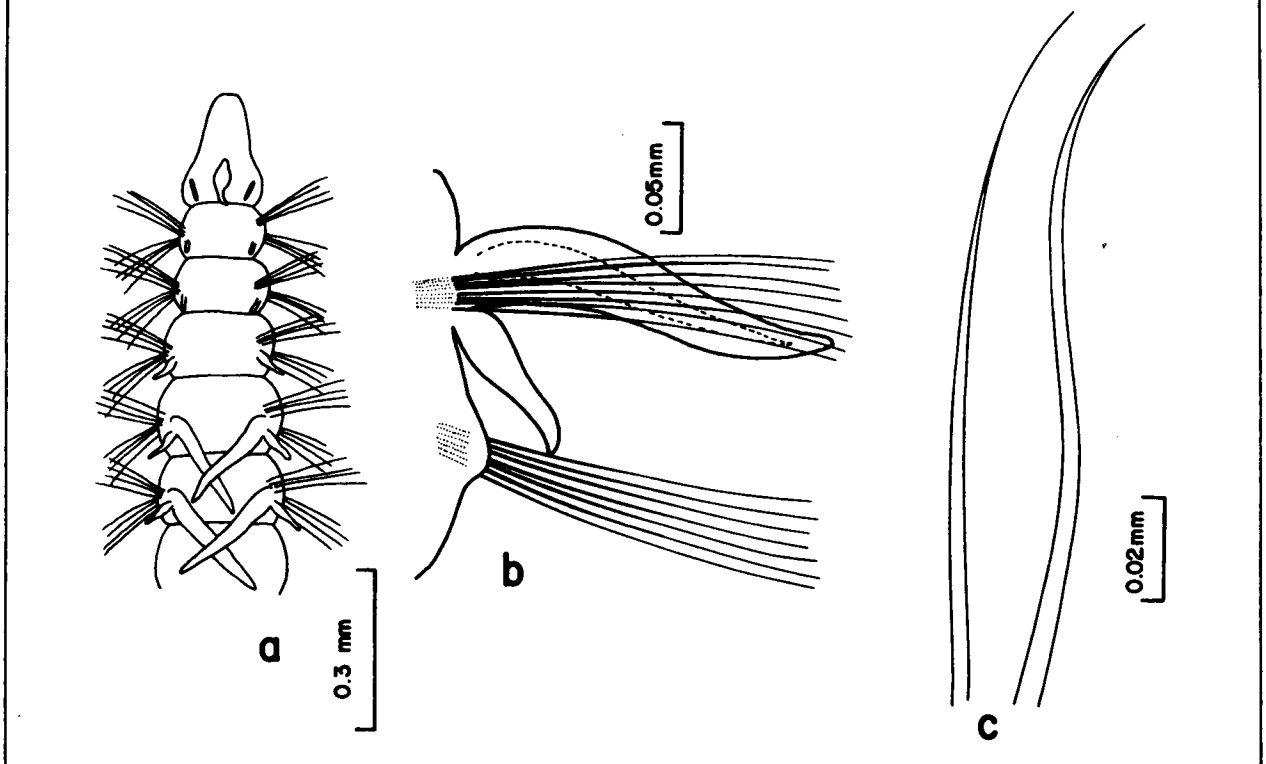

Figure 2-22. Aricidea (Allia) sp. A: a, anterior end, dorsal view; b, right parapodium from setiger 11, posterior view; c, modified postbranchial neurosetae.

bluntly pointed terminus; overlapping across dorsum. Notopodial postsetal lobes elongate from setiger 1, becoming longer after setiger 3 (Figure 2-20b). Neuropodial postsetal lobes as minute tubercles on setiger 1. Neuropodial capillary setae stouter than notopodial ones. Modified neurosetae with broad shafts rapidly tapering distally to slender, elongate points (Figure 2-20c).
REMARKS: Gulf of Mexico BLM-OCS specimens resemble A. alisdairi in the shapes of the notopodial postsetal lobes, antenna, and setae; but differ from the latter in having neuropodial postsetal lobes, and in the shapes of the branchiae and prostomium. These specimens are distinguished from A. quadrilobata in lacking long postsetal lobes on anterior segments and in the shape of the prostomium.
PREVIOUSLY REPORTED HABITAT: Littoral zone, fine sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Widespread in northeastern and central Gulf and one occurrence off Matagorda Isl., Texas (Figure 2-19); shallow water, 18-45 m; medium to fine-very fine sand, silty very fine sand, silty clayey sand, clayey silt, clayey sandy silt.
DISTRIBUTION: Karachi, ?Gulf of Mexico.

Aricidea (Allia) sp. A
Figures 2-21, 22a-c

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2210F-7/76 (1 spec., USNM 90265), 2316H-7/76 (1 spec., USNM 90266), 2318G-7/76 (1 spec., USNM 90267).
DESCRIPTION:
Length, to 7 mm; width, to 0.25 mm. Body dorsally flattened in branchial and anterior postbranchial regions, becoming more cylindrical posteriorly. Prostomium triangular, rounded anteriorly, about as wide as long, eyes absent. Nuchal slits directed anterolaterally. Median antenna basally inflated, tapering abruptly to rounded tip, extending nearly to anterior margin of setiger 1 (Figure 2-22a). Branchiae beginning on setiger 4, numbering 18 pairs; foliaceous, elongate, gradually tapering to a point; distal quarter overlapping across dorsum; becoming progressively longer posteriorly, except for last two pairs. Notopodial postsetal lobes long from setiger 1, slender, cirriform; basally inflated, tapering to blunt points from setiger 3 through branchial region (Figure 2-22b); becoming cirriform, without basal inflation in postbranchial region. Neuropodial postsetal lobes low, truncate. Notosetae all capillary. Neuropodial capillary setae slender. Modified setae numbering 1-2 per fascicle, beginning on fifteenth postbranchial setiger; wide basally, gradually tapering to fine points (Figure 2-22c); tapering more abruptly to fine points near posterior end of body.
REMARKS: A. (Allia) sp. A closely resembles Aricidea pseudoarticulata Hobson, 1972, in the shapes of the median antenna, postsetal lobes, and some neurosetae. Aricidea (Allia) sp. A is distinguished from other species of the subgenus by the shape of the branchiae and lack of pseudoarticulate modified setae.
GULF OF MEXICO BLM-OCS OCCURRENCE: Three stations off Florida (Figure 2-21); 20-37 m; medium sand, silty fine to very fine sand.

Subgenus Acmira Hartley, 1981

TYPE SPECIES: Aricidea catherinae Laubier, 1967a.
REFERENCES:
Strelzov, 1973:91 (as Acesta).
Hartley, 1981:140.
DIAGNOSIS: Prostomium rounded anteriorly; median antenna smooth, not articulate. Neurosetae of postbranchial region including modified hooked setae. Neuropodial capillary setae of postbranchial region of same thickness as corresponding notopodial capillary setae.

Key to the Gulf of Mexico BLM-OCS Species of Aricidea (Acmira)

1a. Modified setae bidentate (Figures 2-24c, 26c, 28c, 30c). 2
1b. Modified setae unidentate (Figures 2-32c, 34c, 36c, 38c, 40c, 42c, 44b) 5

2a. Modified setae with distal hood and arista (Figure 2-24c). . . . . Aricidea (Acmira) sp. A, p. 2-29
2b. Modified setae without hood, with or without arista. 3

3a. Median antenna small, indistinct (Figure 2-26a); modified setae without arista (Figure 2-26c). . .Aricidea (Acmira) sp. B, p. 2-29
3b. Median antenna larger, distinct; modified setae with arista. . . 4

4a. Median antenna clavate (Figure 2-28a); teeth of modified setae parallel to each other (Figure 2-28c). . . . . Aricidea (Acmira) taylori, p. 2-31
4b. Median antenna subulate (Figure 2-30a); teeth of modified setae perpendicular to each other (Figure 2-30c) . . . . . .Aricidea (Acmira) lopezi, p. 2-31

5a. Modified setae with distinct distal hood (Figure 2-34c). 6
5b. Modified setae without distinct distal hood. 7

6a. Modified setae with terminal arista (Figure 2-32c) . . . . . Aricidea (Acmira) sp. C, p. 2-34
6b. Modified setae without terminal arista (Figure 2-34c). . . . . .Aricidea (Acmira) cerrutii, p. 2-36

7a. Modified setae with long, subterminal pubescence (Figure 2-36c). . . . . .Aricidea (Acmira) cf. finitima, p. 2-39
7b. Modified setae without long, subterminal pubescence. 8

8a. Median antenna bifid (Figure 2-38a). . . . . Aricidea (Acmira) philbinae, p. 2-39
8b. Median antenna entire. 9

9a. Modified setae with faint distal hood. 10
9b. Modified setae without distal hood (Figure 2-40c). . . . . Aricidea (Acmira) simplex, p. 2-41

10a. Modified setae with subterminal arista (Figure 2-42c). . . . . Aricidea (Acmira) sp. D, p. 2-43

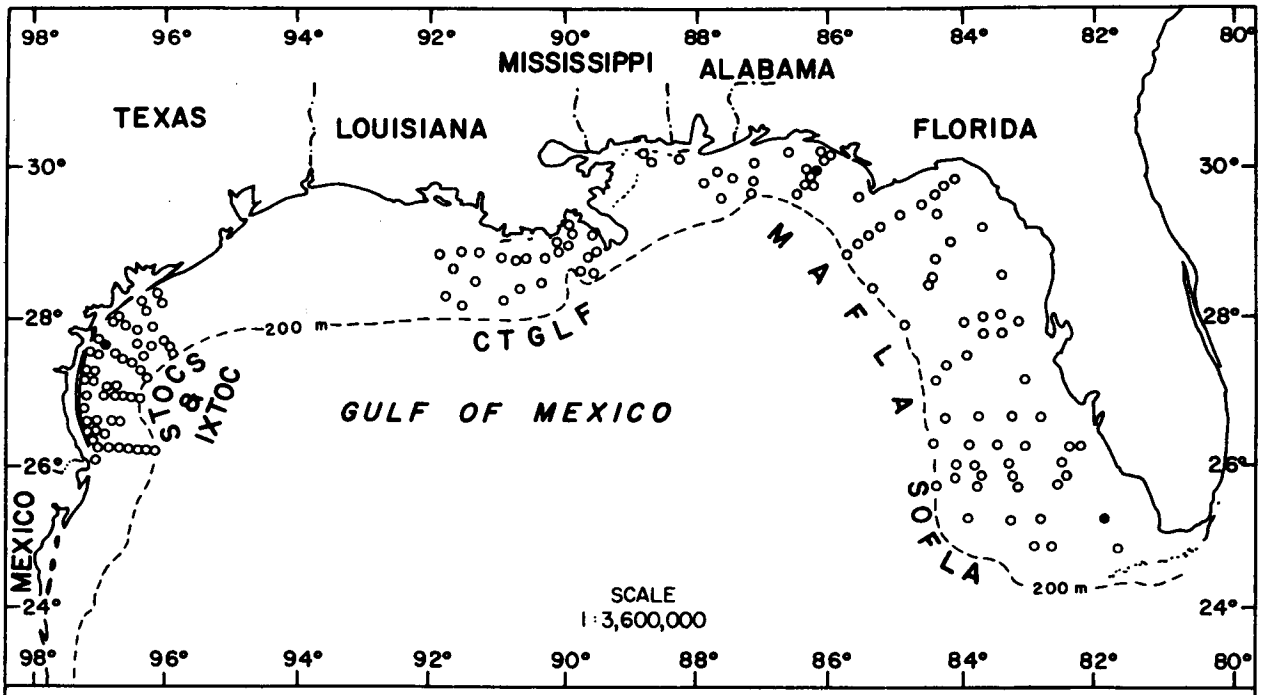

Figure 2-23. Distribution of Aricidea (Acmira) sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

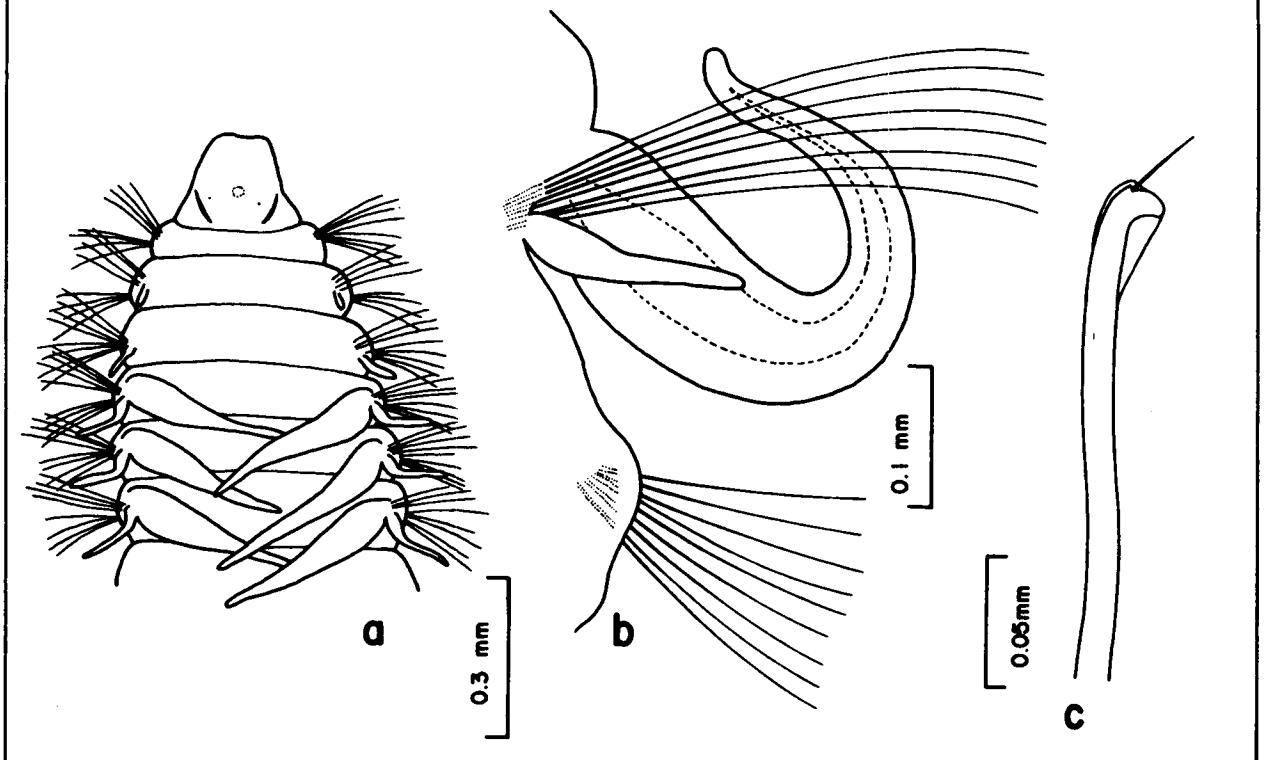

Figure 2-24. Aricidea (Acmira) sp. A: a, anterior end, dorsal view; b, right parapodium from setiger 10, posterior view; c, modified postbranchial neuroseta.

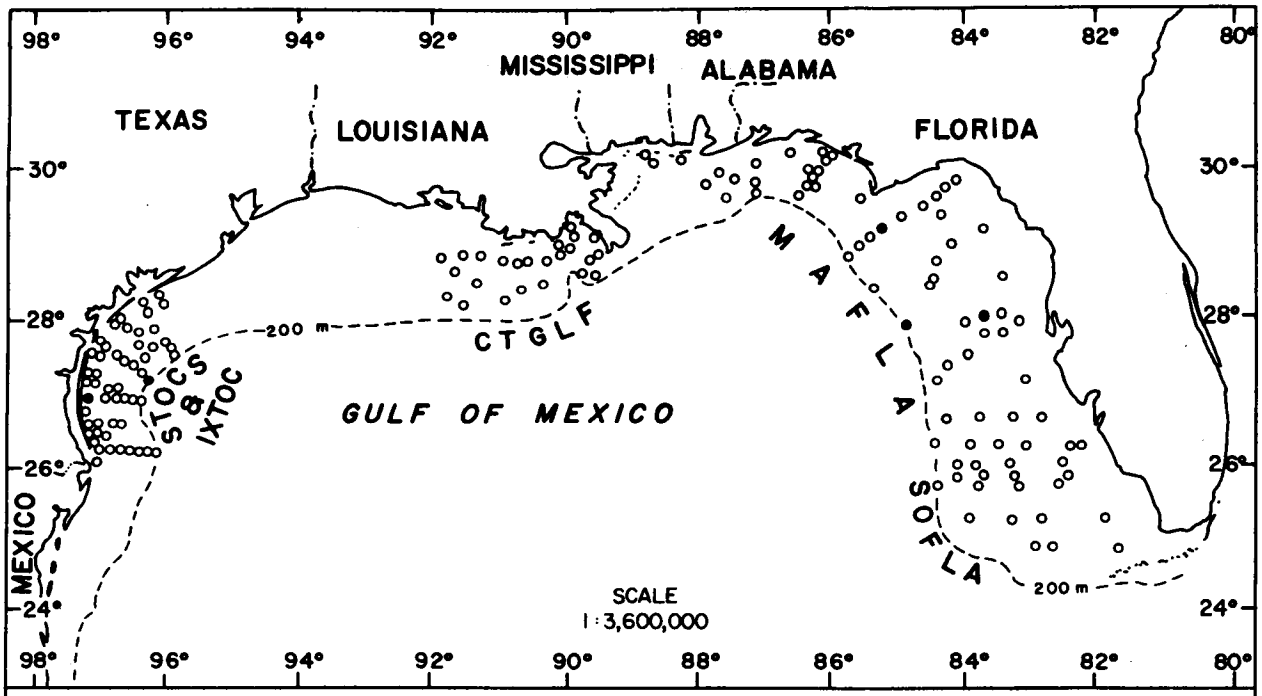

Figure 2-25. Distribution of Aricidea (Acmira) sp. B on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

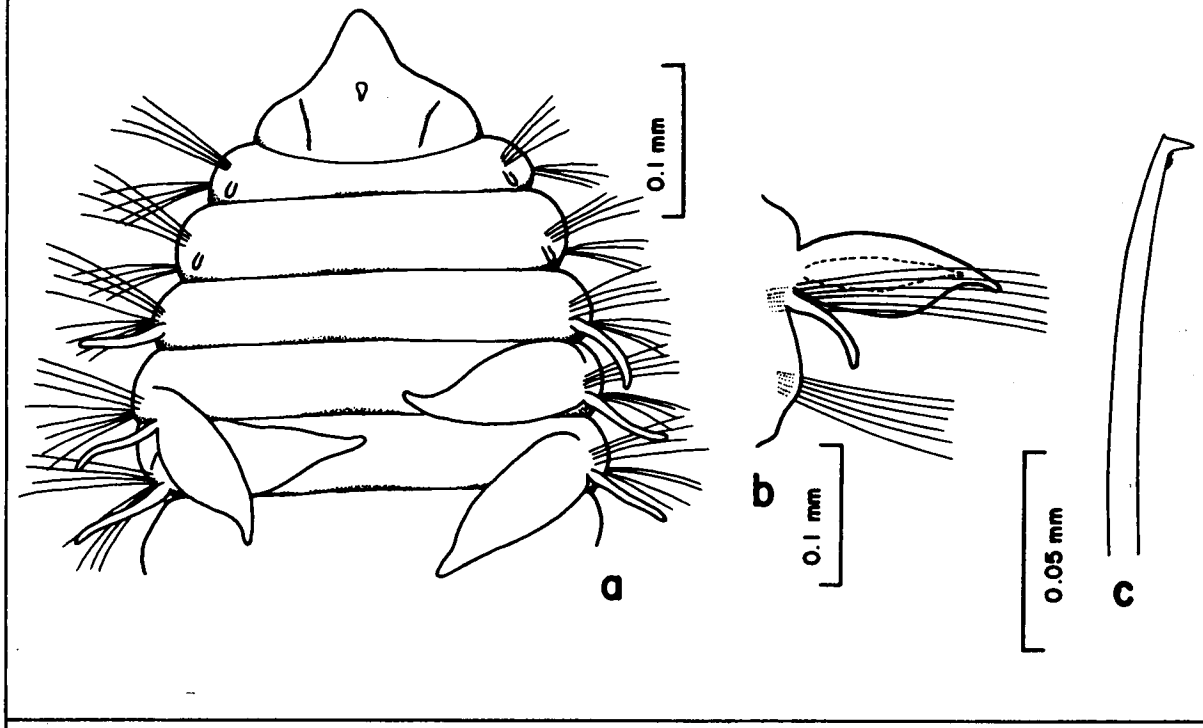

Figure 2-26. Aricidea (Acmira) sp. B: a, anterior end, dorsal view; b, right parapodium from setiger 7, posterior view; c, modified postbranchial neuroseta.

10b. Modified setae with terminal arista (Figure 2-44c) (may be lost) . . . . . .Aricidea (Acmira) catherinae, p. 2-43

Aricidea (Acmira) sp. A
Figures 2-23, 24a-c

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 20B-7/81 (1 spec., USNM 90256); MAFLA 2531H-2/78 (1 spec.); STOCS 1/II-1 2/76 (1 spec., USNM 90255).
DESCRIPTION:
Length, 4.0 mm; width, to 0.5 mm. Body robust, dorsally flattened in branchial and anterior postbranchial regions, cylindrical posteriorly. Prostomium slightly longer than wide, incised ventrally, broadly rounded dorsally (Figure 2-24a); eyes present. Nuchal slits directed anterolaterally. Median antenna lost. Branchiae beginning on setiger 4, numbering about 32 pairs (some lost); long, slender, gradually tapering to blunt points; overlapping across dorsum. Notopodial postsetal lobes lacking on setiger 1; long from setiger 2; cirriform, slightly swollen basally in branchial region (Figure 2-24b); slender in postbranchial region. Neuropodial postsetal lobes low, truncate. Notosetae all capillary. Neurosetae including capillary setae and stout modified setae (Figure 2-24c). Modified setae with slightly curved shafts, hooked and sheathed distally; subterminal spine located on convex side of hook, arista arising from base of spine.
REMARKS: A. (Acmira) sp. A resembles Aricidea simplex Day, 1963, in the general prostomium shape and body form, but differs radically from the latter in the form of the modified setae. It resembles Aricidea cerrutii Laubier, 1966, in having a sheath over the hooked modified setae; however, the latter species lacks a subterminal spine and arista.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two records off Florida and one off Texas (Figure 2-23); 22-45 m; coarse sand, sandy silty clay.

Aricidea (Acmira) sp. B
Figures 2-25, 26a-c

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2210A-2/78 (1 spec., USNM 90205), 2212F-11/77 (1 spec., USNM 90204), 2424F-7/76 (2 spec., USNM 90203); STOCS 3/II-3 12/76 (1 spec., USNM 90206), 4/III-4 W/76 (1 spec., USNM 90207).
DESCRIPTION:
Length, 5.0 mm; width, 0.3 mm. Body dorsally flattened in prebranchial and branchial regions, cylindrical in postbranchial region. Prostomium acutely triangular, bluntly pointed anteriorly (Figure 2-26a); eyes absent. Nuchal slits indistinct. Median antenna present as a short tubercle. Branchiae beginning on setiger 4, numbering 10 pairs; longest on fifth branchial segment (setiger 8), shorter posteriorly, last pair very short, almost tuberculate. Notopodial postsetal lobes cirriform; short on setigers 1-2, long from setiger 3, longest on setiger 8 (Figure 2-26b), gradually becoming shorter posteriorly throughout postbranchial region. Neuropodial postsetal lobes long from setiger 1. Notosetae all capillary. Neurosetae including capillary setae and 2-3 modified setae

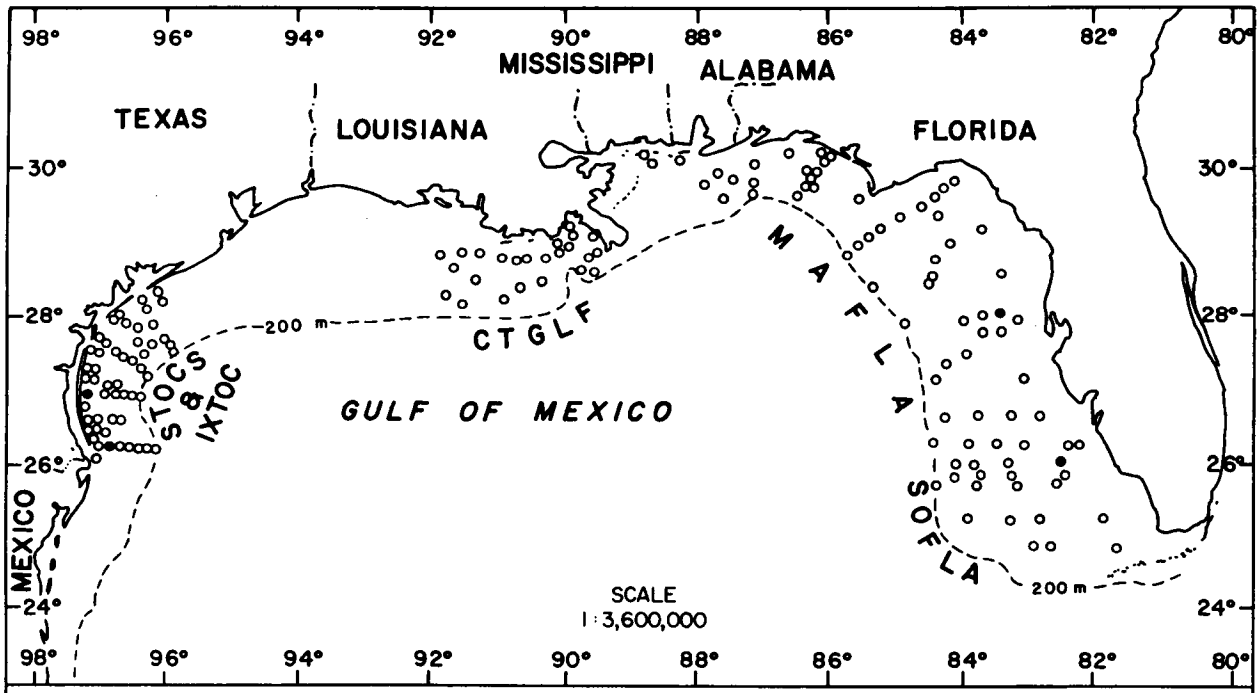

Figure 2-27. Distribution of Aricidea (Acmira) taylori on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

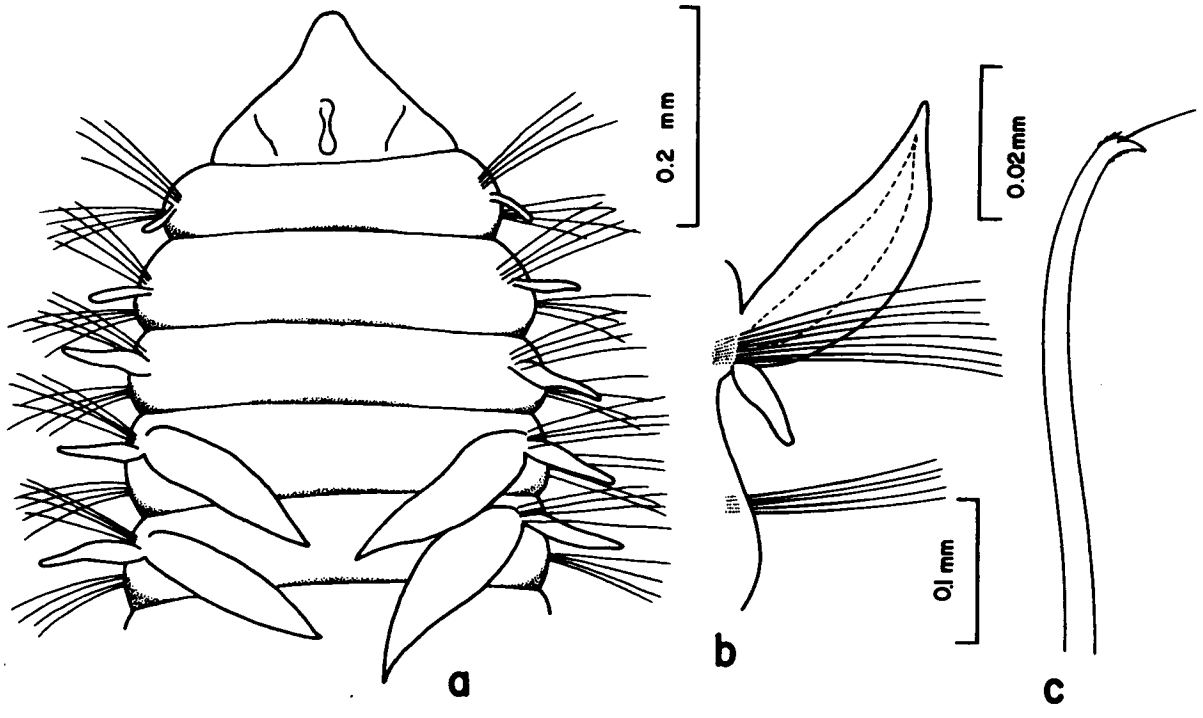

Figure 2-28. Aricidea (Acmira) taylori: a, anterior end, dorsal view; b, right parapodium from setiger 12, posterior view; c, modified postbranchial neuroseta.

per fascicle. Modified setae with slightly curved shafts, tips strongly hooked with subterminal spine on convex side (Figure 2-26c), pubescence present distally on both sides of hook.
REMARKS: A. (Acmira) sp. B may be distinguished from all other Gulf of Mexico species by the form of the median antenna and unique modified setae.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered occurrences in eastern and western Gulf (Figure 2-25); 15-89 m; medium sand, silty very fine sand, silty clay.

Aricidea (Acmira) taylori Pettibone, 1965
Figures 2-27, 28a-c

Aricidea (Aricidea) taylori Pettibone, 1965:131, figs. 4a-c, 5a-c.
Aricidea (Acesta) taylori--Strelzov, 1973:98, figs. 16, 3, 42.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6B-11/80 (1 spec., USNM 90258), 6D-11/80 (2 spec., USNM 90259), 6E-11/80 (2 spec., USNM 90260); MAFLA 2208K-8/77 (10 spec., USNM 90261); STOCS 4/III-5 W/76 (4 spec., USNM 90257); IXTOC S52-11/79 (1 spec., USNM 90262), S52-12/79 (1 spec., USNM 90263).
Supplementary Material:
North Carolina--33°47'N, 78°20.5'W, Nov. 1977, G. R. Gaston ID. (1 spec., USNM 56897).
DESCRIPTION:
Length, to 8 mm (previously reported to 30 mm); width, to 0.5 mm. Body dorsally flattened in branchial region, cylindrical in postbranchial region. Prostomium triangular, rounded anteriorly, about as long as wide (Figure 2-28a). Nuchal slits indistinct, directed anterolaterally. Median antenna short, clavate, not extending to posterior margin of prostomium. Branchiae beginning on setiger 4, numbering 15-29 pairs; wide and foliaceous proximally, gradually tapering to a point; overlapping on dorsum. Notopodial postsetal lobes well-developed on setigers 1-2, longer from setiger 3, cirriform in branchial region (Figure 2-28b). Notosetae all capillary. Neurosetae including both capillary setae and modified forms. Modified setae as distally pointed hooks, with subterminal spine on convex side (Figure 2-28c), and faint arista arising from base of subterminal spine; pubescence present subdistally. Hooks numbering 4-6 per fascicle.
PREVIOUSLY REPORTED HABITAT: Silty sand; lower littoral zone.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off southern Texas and two off west coast of Florida (Figure 2-27); shallow water, 15-30 m; fine sand, silty sand to clayey sand, clayey sandy silt.
DISTRIBUTION: Gulf of Mexico.

Aricidea (Acmira) lopezi Berkeley and Berkeley, 1956
Figures 2-29, 30a-c

Aricidea lopezi Berkeley and Berkeley, 1956:542, figs. 1-3.
Aricidea lopezi--Hartman, 1957:318; 1969:59, figs. 1-3.
Aricidea lopezi--Pettibone, 1967:10.

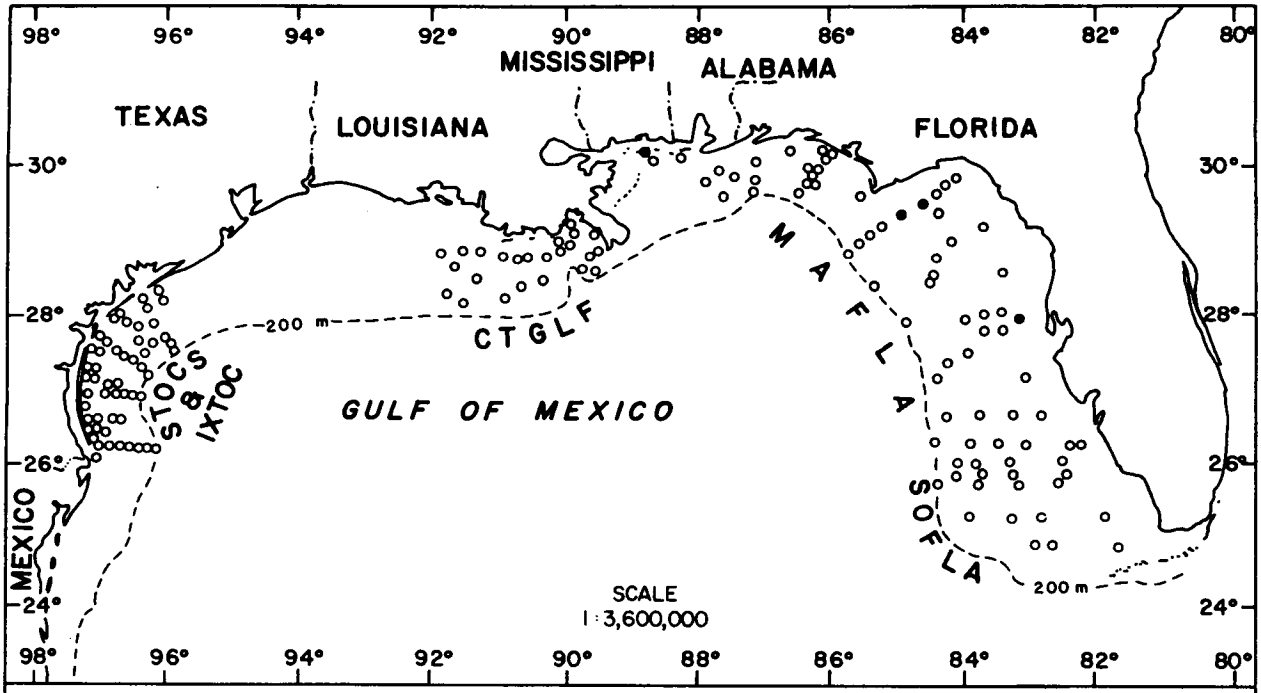

Figure 2-29. Distribution of Aricidea (Acmira) lopezi on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

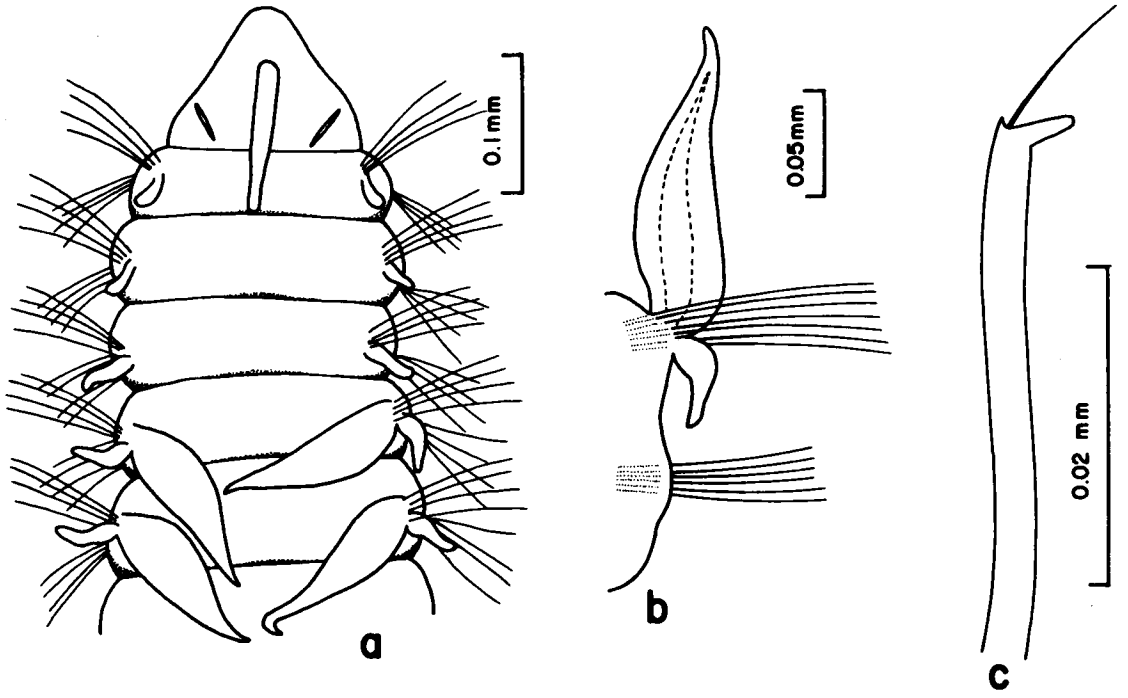

Figure 2-30. Aricidea (Acmira) lopezi: a, anterior end, dorsal view; b, right parapodium from setiger 8, posterior view; c, modified postbranchial neuroseta.

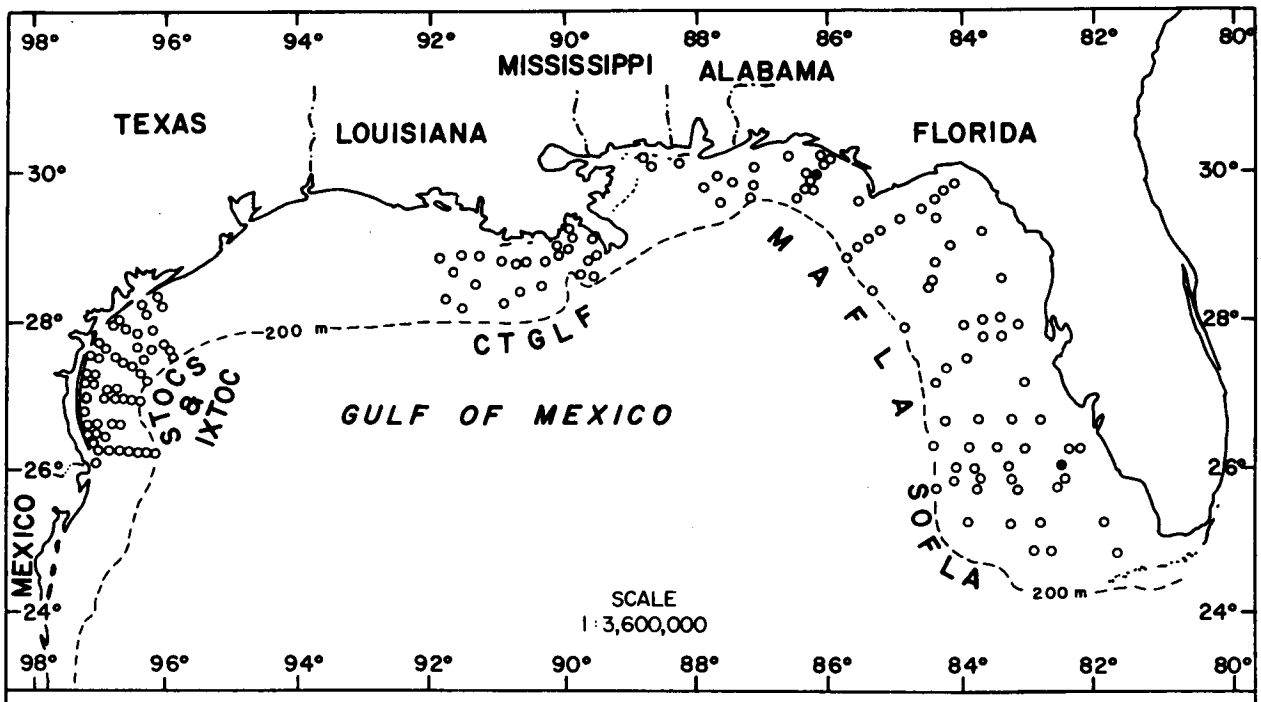

Figure 2-31. Distribution of Aricidea (Acmira) sp. C on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

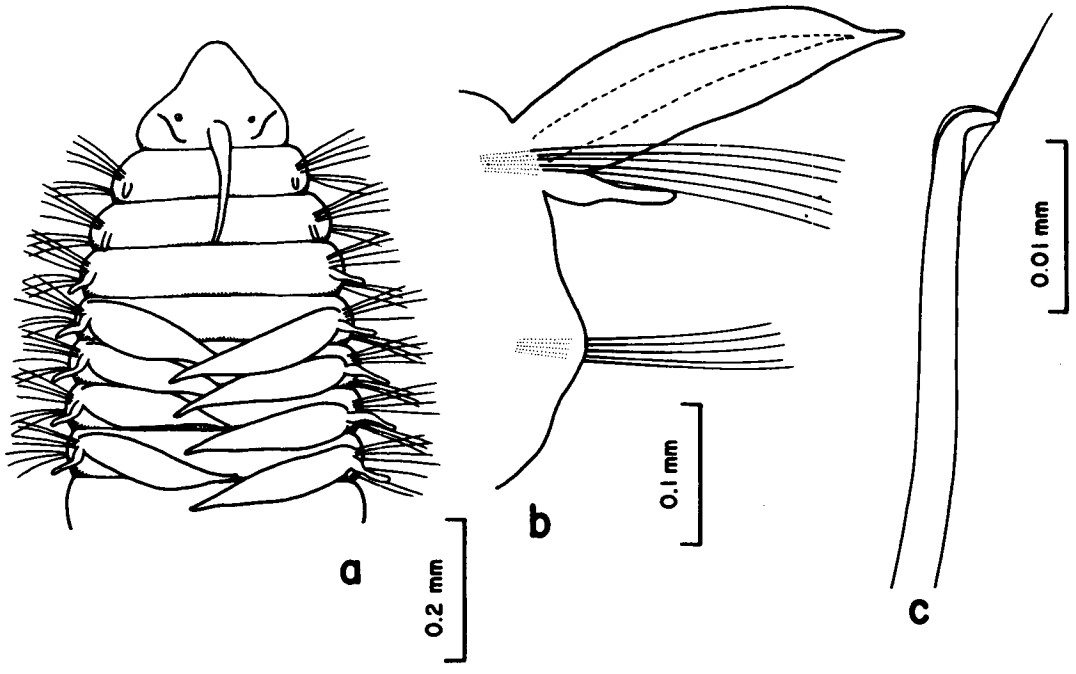

Figure 2-32. Aricidea (Acmira) sp. C: a, anterior end, dorsal view; b, right parapodium from setiger 10, posterior view; c, modified postbranchial neuroseta.

Aricidea (Acesta) lopezi--Strelzov, 1973:102 [synonymy], figs. 15, 2, 44.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207K-8/77 (5 spec., USNM 90178), 2207E-11/77 (2 spec., USNM 90177), 2207I-11/77 (1 spec., USNM 90176), 2422J-7/76 (8 spec., USNM 90173), 2423D-7/76 (6 spec., USNM 90175), 2637H-6/75 (4 spec., USNM 90174).
DESCRIPTION:
Length, to 4.0 mm (previously reported to 10.0 mm); width, to 2.0 mm (previously reported to 0.5 mm). Body long, slender, cylindrical, slightly flattened dorsally in branchial region. Prostomium triangular, slightly longer than wide (Figure 2-30a), eyes present (faded in alcohol). Nuchal slits directed anterolaterally. Median antenna subulate, extending maximally to anterior margin of setiger 2. Branchiae beginning on setiger 4, numbering 10-16 pairs; long, slender, gradually tapering to a point; overlapping across dorsum, gradually becoming longer posteriorly, last pair shorter. Notopodial postsetal lobes long from setiger 1; becoming longer in branchial region (Figure 2-30b), proximally inflated, tapering gradually to blunt tips. Notosetae all slender, capillary. Neurosetae including slender capillary setae and 4-8 modified setae per fascicle. Modified setae with slightly bent shafts, sharply hooked distally; subterminal spine located on convex side of terminus (Figure 2-30c), arista arising from base of subterminal spine.
REMARKS: BLM-MAFLA specimens were previously identified as Aricidea fauveli. A. (Acmira) lopezi is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Muddy bottoms with admixture of sand and shells, 9-1100 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Four stations in northeastern Gulf (Figure 2-29); 19-24 m; medium-fine to fine-very fine sand, silty fine sand, sandy silt.
DISTRIBUTION: Mediterranean Sea, Morocco, South Africa, North Carolina, Gulf of Mexico, British Columbia, Sea of Japan.

Aricidea (Acmira) sp. C
Figures 2-31, 32a-c

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6D-11/80 (1 spec., USNM 90209); MAFLA 2531H-2/78 (1 spec., USNM 90208).
DESCRIPTION:
Length, to 16 mm; width, to 1.2 mm. Body dorsoventrally flattened, broad in branchial region, cylindrical in postbranchial region. Prostomium triangular, about as long as wide, bluntly pointed anteriorly (Figure 2-32a), eyes present. Nuchal slits directed anterolaterally. Median antenna basally inflated, gradually tapering to blunt tip, extending to anterior margin of setiger 3. Branchiae beginning on setiger 4, numbering 14-15 pairs; broad, tapering abruptly to blunt tips. Notopodial postsetal lobes short on setigers 1-2, longer from setiger 3; proximally inflated, gradually tapering to blunt tips in branchial region (Figure 2-32b); cirriform in postbranchial region. Neuropodial

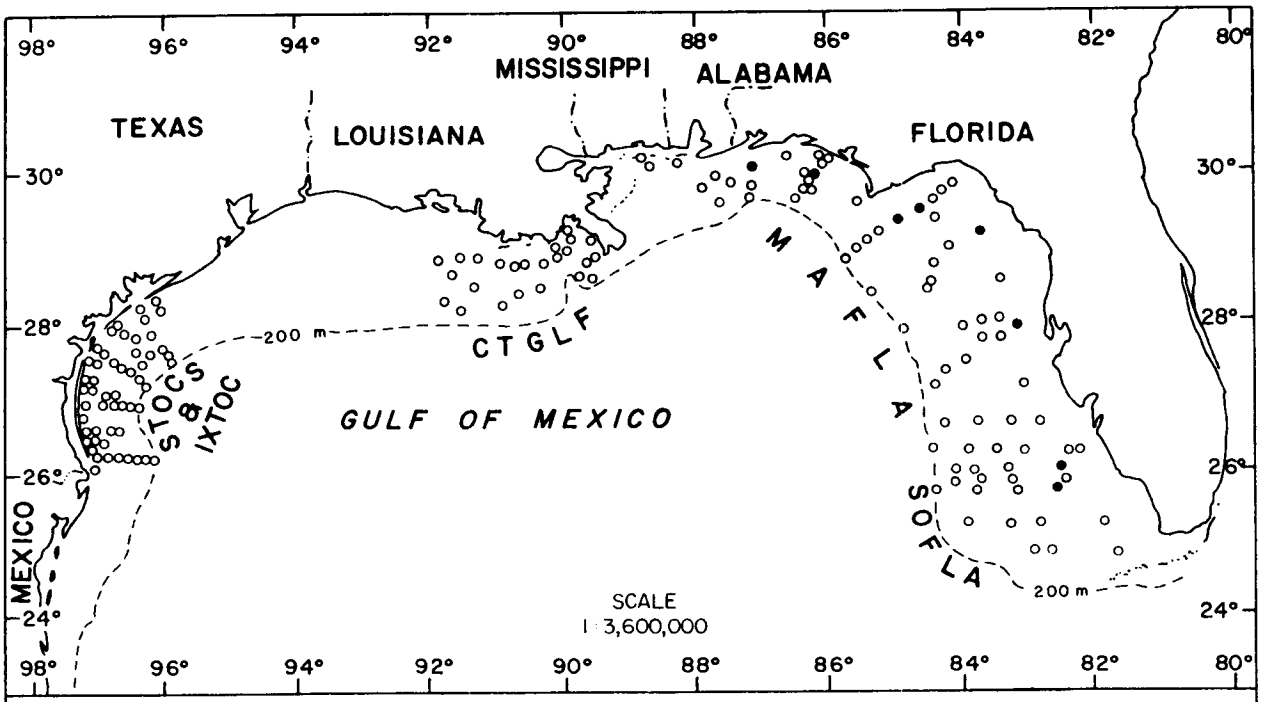

Figure 2-33. Distribution of Aricidea (Acmira) cerrutii on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

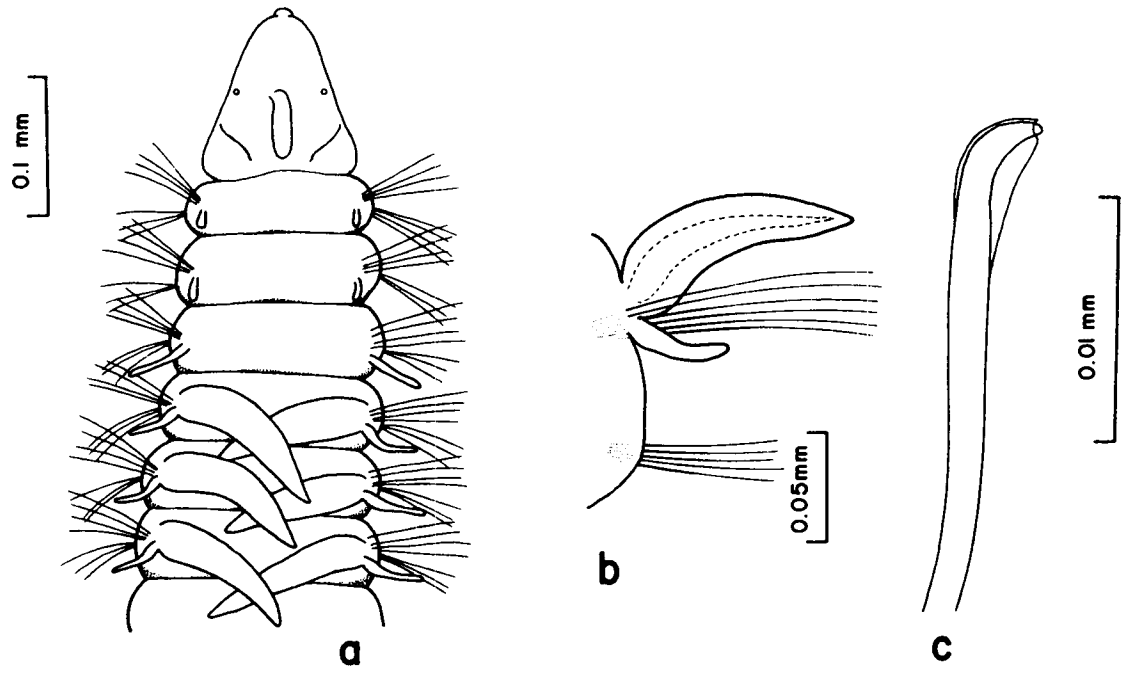

Figure 2-34. Aricidea (Acmira) cerrutii: a, anterior end, dorsal view; b, right parapodium from setiger 10, posterior view; c, modified postbranchial neuroseta.

postsetal lobes low, truncate, more pronounced on setigers 7-10, becoming indistinct posteriorly. Notosetae all capillary. Neurosetae including slender capillary setae and 2-3 modified setae per fascicle. Modified setae with slightly curved shafts, strongly hooked and covered by thin sheath distally (Figure 2-32c); arista arising from tip of hook.
REMARKS: A. (Acmira) sp. C resembles Aricidea cerrutii Laubier, 1966, in having a sheath over the modified setae, but is distinguished from the latter in having a terminal arista on the modified setae, a long median antenna, and a broad branchial region. The STOCS specimens were initially identified as Aricidea jeffreysii.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off Florida (Figure 2-31); 26-45 m; coarse to very fine sand.

Aricidea (Acmira) cerrutii Laubier, 1966
Figures 2-33, 34a-c

Aricidea cerrutii Laubier, 1966:257; 1967a:102, fig. 1A-E.
Aricidea cerrutii--Day, 1973:93, fig. 13b.
Aricidea (Acesta) cerrutii--Strelzov, 1973:105 [synonymy], figs. 16, 9, 45D-I.
Aricidea cerrutii--Laubier and Ramos, 1974:1113.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6C-11/80 (1 spec., USNM 90254); MAFLA 2207K-8/77 (1 spec., USNM 90253), 2318K-7/76 (1 spec., USNM 90248), 2422E-7/76 (1 spec., USNM 90249), 2423B-7/76 (4 spec., USNM 90250), 2531H-2/78 (1 spec.), 2856D-8/77 (1 spec., USNM 90251), 2960C-11/77 (1 spec., USNM 90252).
Supplementary Material:
Mid-Atlantic States--39°29.9'N, 73°10.1'W, 40 m, June 1977, G. R. Gaston ID. (2 spec., USNM 56892).
DESCRIPTION:
Length, 8.5+ mm; width, to 0.7 mm. Body dorsally flattened in branchial region, cylindrical in postbranchial region. Prostomium triangular, longer than wide; with eyes (faded in alcohol) and terminal sense organ (Figure 2-34a). Brown pigment spots present on prostomium and first few segments. Nuchal slits directed anterolaterally, oval on small specimens. Median antenna short, clavate, extending maximally to anterior margin of setiger 1. Branchiae beginning on setiger 4, numbering 9-22 pairs; slender, gradually tapering to a point (Figure 2-34b), 3.5 times as long as wide. Notosetae all slender, capillary. Neurosetae including slender capillary setae, and 3-5 modified setae per fascicle from postbranchial region. Modified setae hooked with terminal sheath (Figure 2-34c), faint aristae rarely present.
REMARKS: The presence of a terminal sheath on the modified neurosetae can be confirmed by scanning electron microscopy (SEM). Some MAFLA specimens were originally referred to Aricidea catherinae and A. neosuecica.
PREVIOUSLY REPORTED HABITAT: Littoral to 531 m, generally on sandy bottoms.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered throughout northeastern Gulf (Figure 2-33); shallow water, 19-45 m; coarse to fine-very fine sand, silty fine sand.

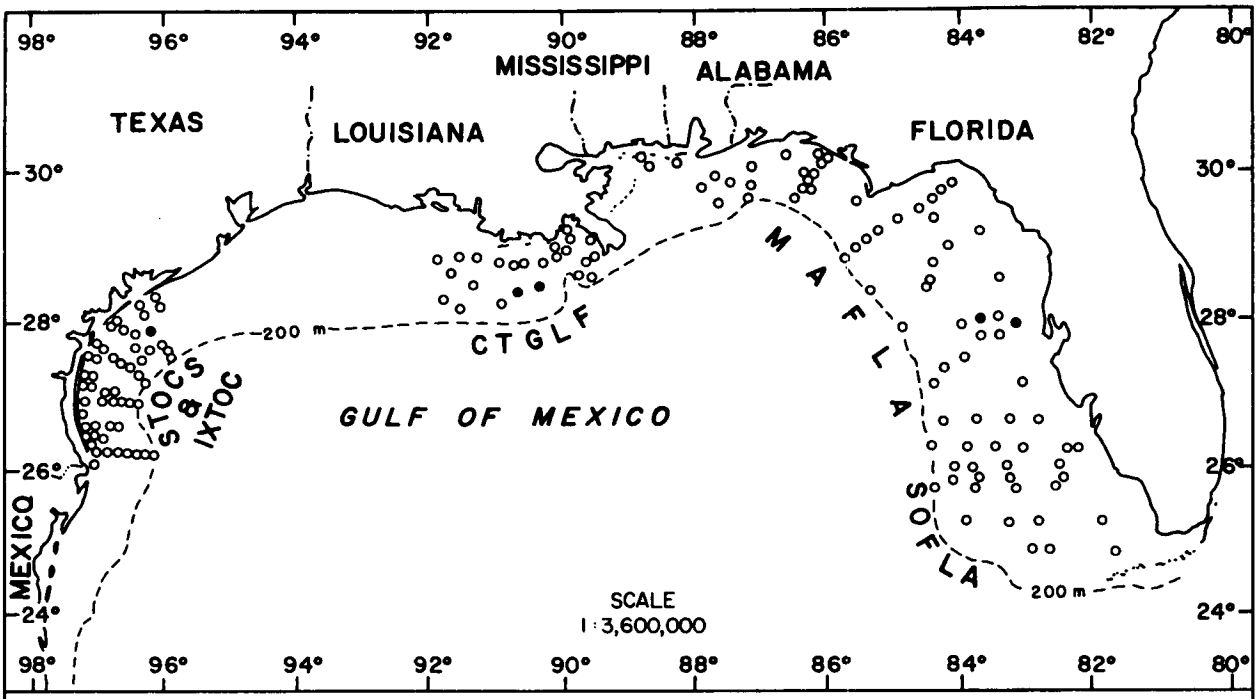

Figure 2-35. Distribution of Aricidea (Acmira) cf. finitima on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

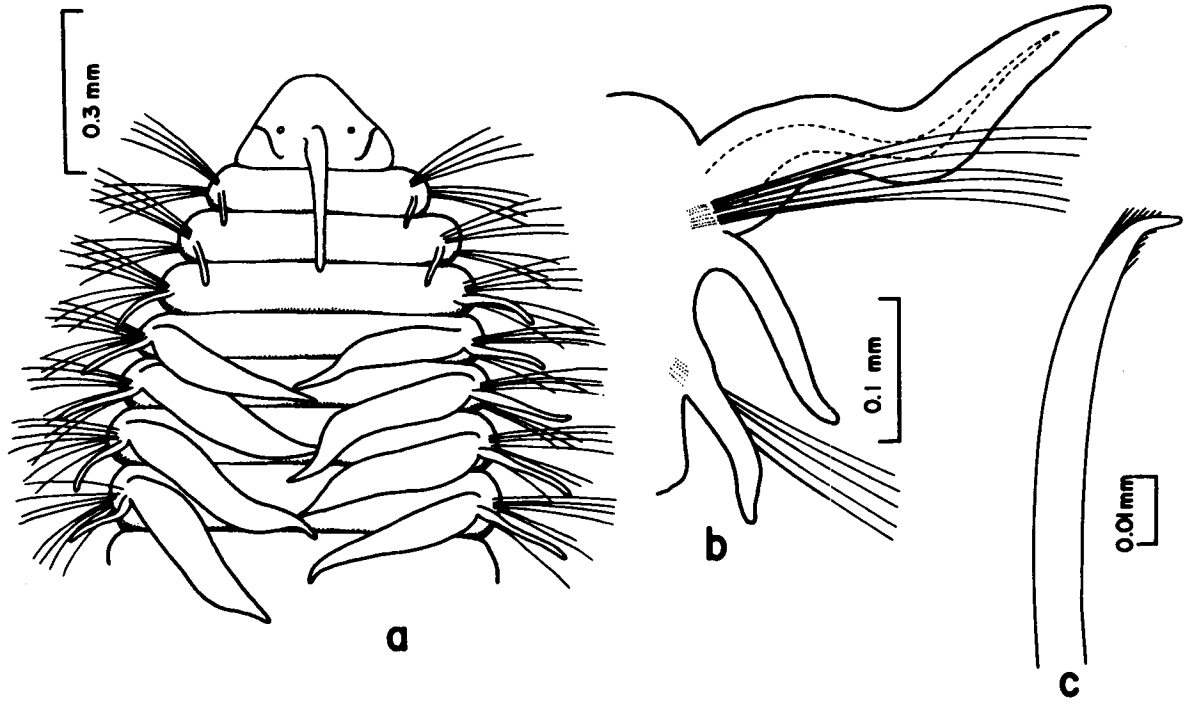

Figure 2-36. Aricidea (Acmira) cf. finitima: a, anterior end, dorsal view; b, right parapodium from setiger 6, posterior view; c, modified postbranchial neuroseta.

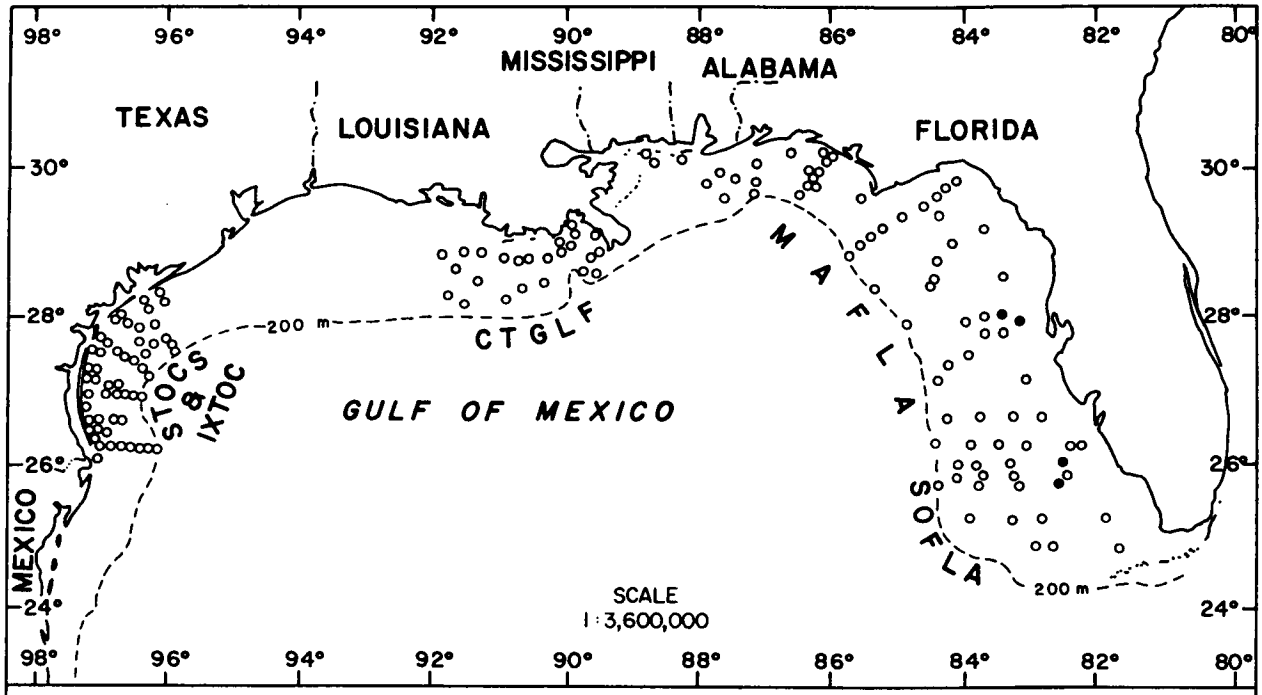

Figure 2-37. Distribution of Aricidea (Acmira) philbinae on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

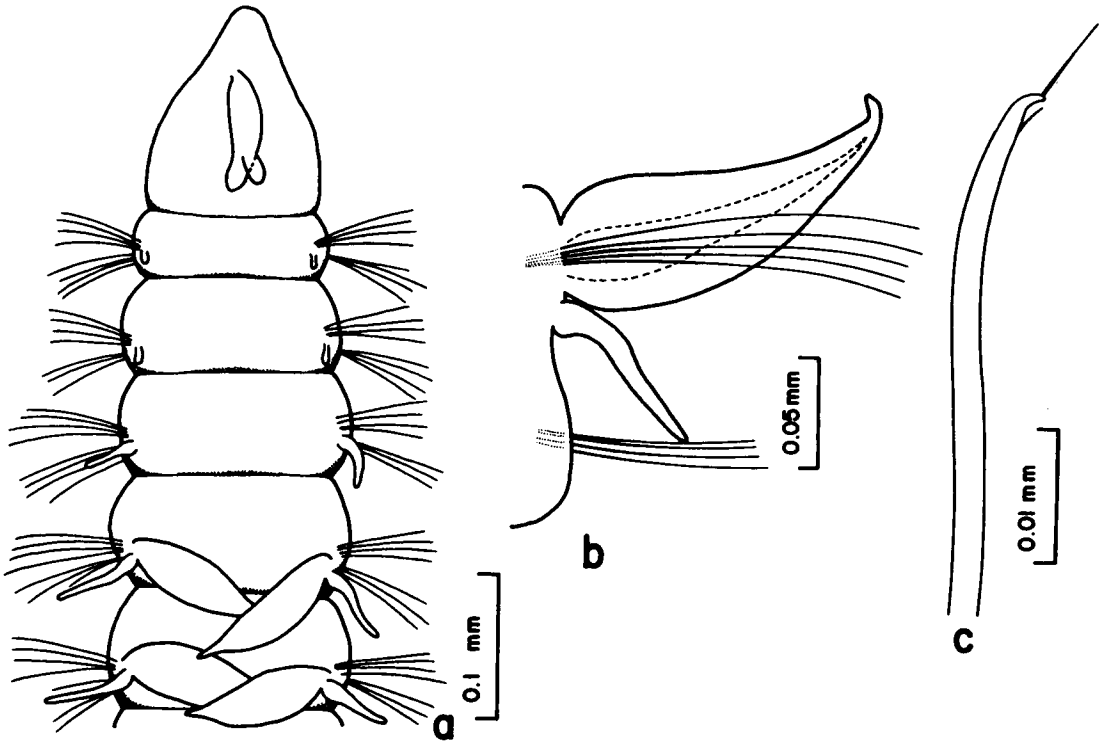

Figure 2-38. Aricidea (Acmira) philbinae: a, anterior end, dorsal view; b, right parapodium from setiger 12, posterior view; c, modified postbranchial neuroseta.

DISTRIBUTION: East coast of North America, Gulf of Mexico, Scandinavia, Ireland, North Sea, Mediterranean Sea, Red Sea, South Africa.

Aricidea (Acmira) cf. finitima Strelzov, 1973
Figures 2-35, 36a-c

Aricidea (Acesta) finitima Strelzov, 1973:95, figs. 12, 4, 40, 41.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207J-8/77 (1 spec., USNM 90246), 2210F-7/76 (1 spec., USNM 90247); CTGLF 03-5/78 (3 spec., USNM 90244), 04-5/78 (1 spec., USNM 90243); STOCS 2/I-6 F/77 (1 spec., USNM 90245).
DESCRIPTION:
Length, to 5.0 mm; width, to 0.5 mm (previously reported to 1.0 mm). Prostomium triangular, about as wide as long (Figure 2-36a); eyes present. Nuchal slits directed anterolaterally. Median antenna cirriform, extending to anterior margin of setiger 3 or 4. Branchiae beginning on setiger 4, numbering 20-28 pairs; long, slender, overlapping across dorsum. Notopodial postsetal lobes long from setiger 1, becoming longer in branchial region. Neuropodial postsetal lobes present from setiger 1, nearly as long as notopodial ones (Figure 2-36b). Notosetae all slender, capillary. Neurosetae including both slender capillary setae and modified setae. Modified setae beginning on first postbranchial segment; with slightly curved shafts and hooked tips (Figure 2-36c), pubescence present near tips.
REMARKS: These specimens resemble A. finitima as originally described, in the form of the median antenna, branchiae, and modified setae; but differ from the latter in lacking papillae-like processes on some branchial segments.
PREVIOUSLY REPORTED HABITAT: 27-3860 m; mud to sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered occurrences off Florida, Louisiana and Texas (Figure 2-35); 19-45 m; fine-very fine sand, silty very fine sand, silty clayey sand, clayey silt, sandy silty clay.
DISTRIBUTION: South Africa, Uruguay shelf, southern California, Japan, ?Gulf of Mexico.

Aricidea (Acmira) philbinae Brown, 1976
Figures 2-37, 38a-c

Aricidea philbinae Brown, 1976:433, fig. 1a-e.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6A-11/80 (5 spec., USNM 90192), 6D-11/80 (3 spec., USNM 90193); MAFLA 2207J-8/77 (3 spec., USNM 90190), 2207K-8/77 (2 spec., USNM 90191), 2208E-8/77 (1 spec., USNM 90194), 2960E-8/77 (5 spec., USNM 90195).
DESCRIPTION:
Length, to 12 mm; width, to 0.5 mm. Body dorsally flattened in branchial region, more cylindrical in postbranchial region. Prostomium triangular, longer than wide, rounded anteriorly; eyes present (faded in alcohol). Median antenna short, clavate; with two blunt, unequal lobes

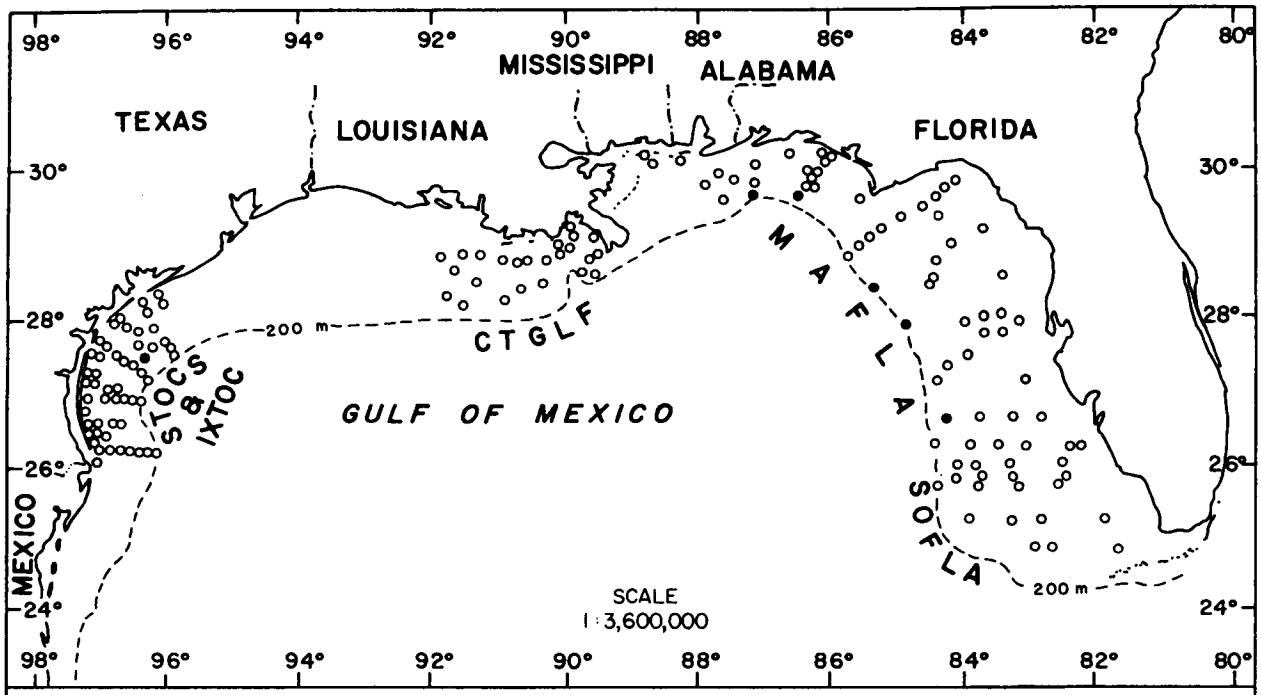

Figure 2-39. Distribution of Aricidea (Acmira) simplex on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

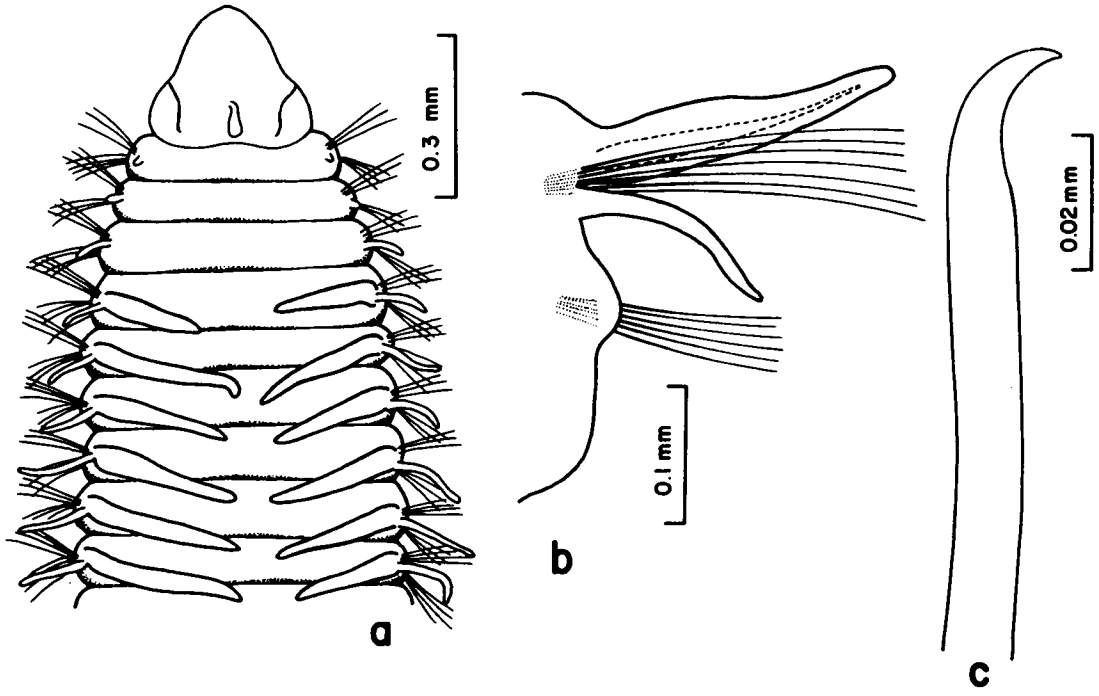

Figure 2-40. Aricidea (Acmira) simplex: a, anterior end, dorsal view; b, right parapodium from setiger 12, posterior view; c, modified postbranchial neuroseta.

distally, subterminal lobe usually smaller, more slender; extending maximally to anterior margin of setigers 1-2 (Figure 2-38a). Branchiae beginning on setiger 4, numbering 13-16 pairs; basally inflated, gradually tapering to a blunt point, overlapping across dorsum. Notopodial postsetal lobes tuberculate on setigers 1-2; elongate from setiger 3; subulate in branchial region (Figure 2-38b); slender, cirriform in postbranchial region. Neuropodial postsetal lobes lacking. Notosetae all capillary. Neurosetae including slender capillary setae, and modified setae (Figure 2-38c) in postbranchial region. Modified setae distally hooked with slightly curved shafts, terminal arista (may be lost), and faint hood(?) or subterminal spine(?) on concave side of hook. Two anal cirri present.
REMARKS: The terminal structures of the modified setae may be similar to those of A. (Acmira) catherinae (see "REMARKS" under A. catherinae). Observations under scanning electron microscopy (SEM) are necessary to resolve questions concerning the morphology of the modified setae.
PREVIOUSLY REPORTED HABITAT: Halodule wrightii grassflats, intertidal to 1 m, in muddy sand.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off Florida (Figure 2-37); shallow water, 19-30 m; fine to very fine sand, clayey sandy silt.
DISTRIBUTION: East coast of Florida, Gulf of Mexico.

Aricidea (Acmira) simplex Day, 1963
Figures 2-39, 40a-c

Aricidea suecica simplex Day, 1963:364, fig. 3a,b; 1967:558, fig. 24.1.f-i.
Aricidea uschakowi--Levenstein, 1966:39.
Aricidea (Acesta) simplex--Strelzov, 1973:99, figs. 12, 5, 43A,B.
(?)Aricidea neosuecica Hartman, 1965:137.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 31A-7/81 (1 spec., USNM 90241); MAFLA 2212D-11/77 (2 spec., USNM 90236), 2313J-7/76 (3 spec., USNM 90237), 2313F-7/78 (1 spec., USNM 90242), 2536C-6/75 (2 spec., USNM 90238), 2645C-11/77 (3 spec., USNM 90239); STOCS SB2-6 No date (1 spec., USNM 90240).
Supplementary Material:
Maryland--38°42.8'N, 73°24.3'W, 80 m, June 1977, G. R. Gaston ID. (1 spec., USNM 56894).
DESCRIPTION:
Length, to 7 mm (previously reported to 8.0 mm); width, to 2.0 mm (previously reported to 1.0 mm). Body dorsally flattened in branchial region, cylindrical in postbranchial region. Prostomium triangular, broadly rounded anteriorly, swollen posteriorly (Figure 2-40a), eyes absent. Nuchal grooves distinct, directed anteriorly. Median antenna short, clavate. Branchiae beginning on setiger 4, numbering 9-24 pairs; slender, short, not overlapping or only slightly overlapping on dorsum; first pair short, small; second pair longest; becoming shorter and smaller posteriorly. Notopodial postsetal lobes tuberculate on setiger 1, elongate from setiger 2 (Figure 2-40b). Neuropodial postsetal lobes tuberculate. Notosetae all capillary. Neurosetae including capillary

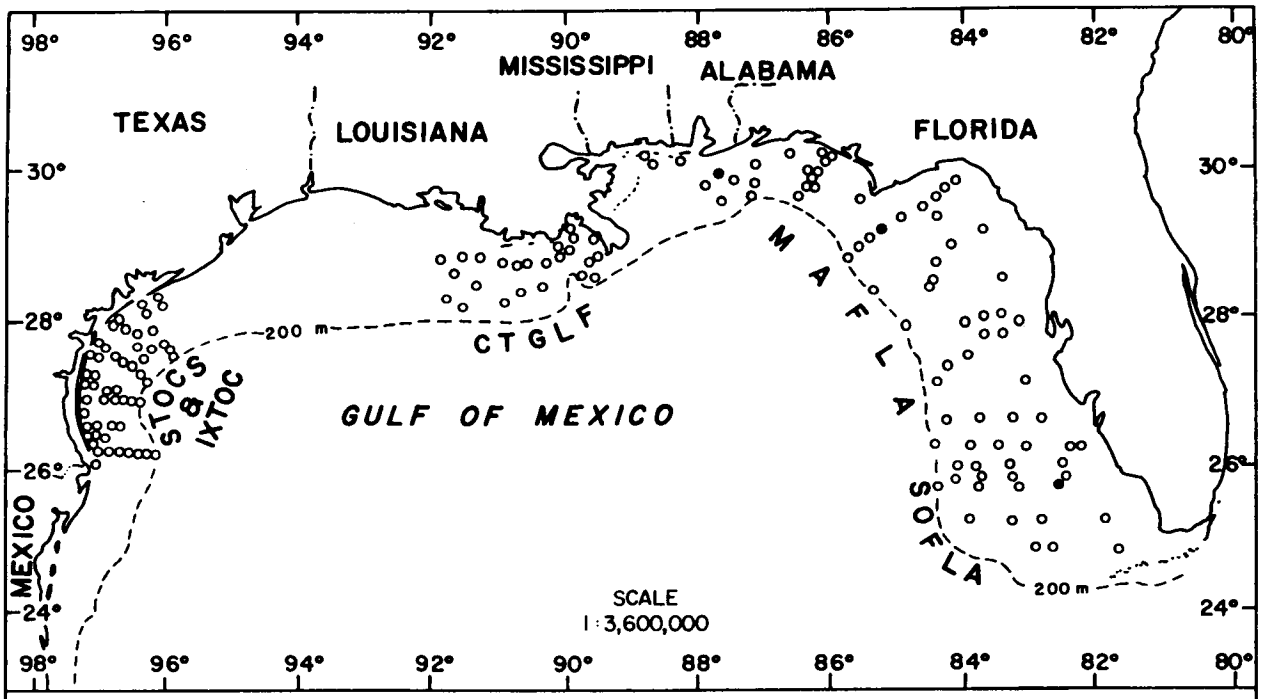

Figure 2-41. Distribution of Aricidea (Acmira) sp. D on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

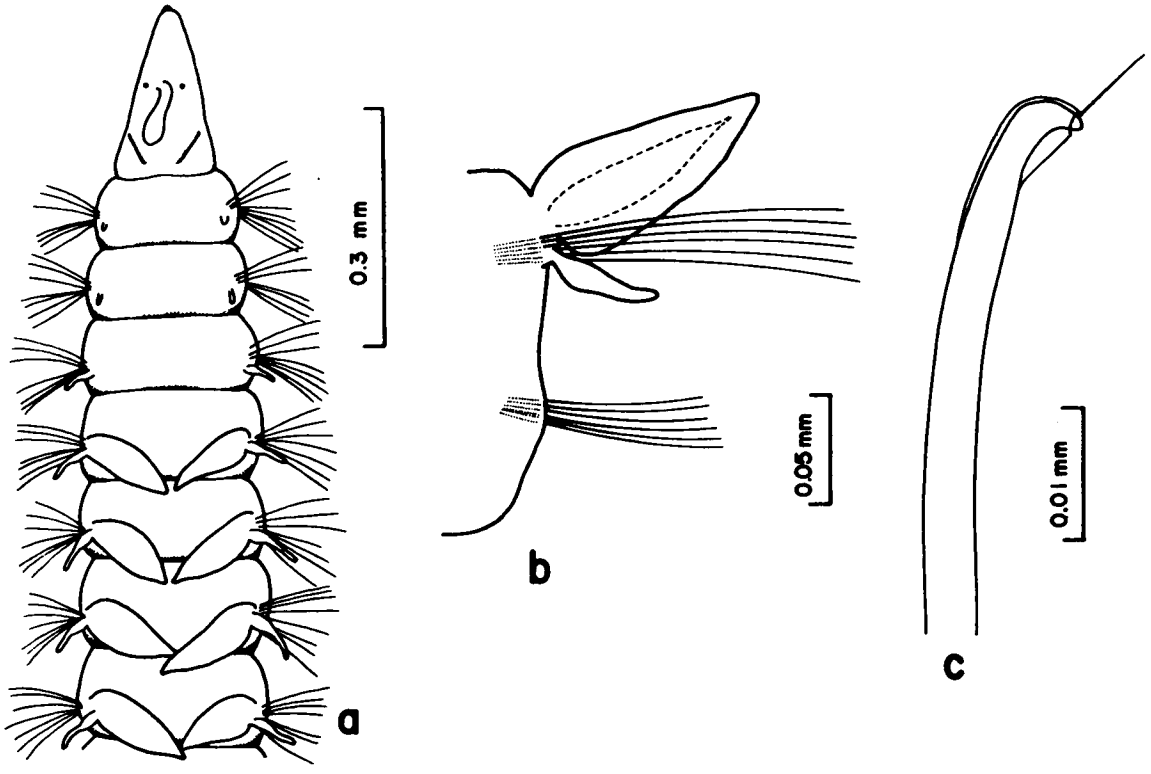

Figure 2-42. Aricidea (Acmira) sp. D: a, anterior end, dorsal view; b, right parapodium from setiger 10, posterior view; c, modified postbranchial neuroseta.

setae; and thick hooks with slightly curved shafts (Figure 2-40c), numbering 4-8 per fascicle.
REMARKS: A. (Acmira) simplex closely resembles Aricidea neosuecica Hartman, for which only a brief description exists. The two are distinguished by the number of pairs of branchiae and by the relative thickness of the neurosetae (Strelzov, 1973). Specimens were previously identified in both STOCS and MAFLA collections as A. neosuecica. A. (Acmira) simplex is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Sandy to muddy bottoms; 35-1072 m depth.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered throughout northeastern Gulf and one record off southern Texas (Figure 2-39); deep water, 82-189 m; coarse to fine sand, silty very fine sand, clayey and sandy silt, silty clay.
DISTRIBUTION: S. Africa, Uruguay, Patagonia, Scotia Sea, Antarctica, Kerguelan-Hausberg submarine ridge, New Zealand, Bering Sea, Kuril Basin, Sea of Japan, east coast of Japan, Caroline Islands, Gulf of Mexico.

Aricidea (Acmira) sp. D
Figures 2-41, 42a-c

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2424F-7/76 (1 spec.), 2641A-11/77 (1 spec.), 2960C-11/77 (1 spec.).
DESCRIPTION:
Width, to 0.35 mm. Body dorsally flattened in branchial region, cylindrical in postbranchial region. Prostomium conical, longer than wide, bluntly pointed anteriorly (Figure 2-42a), with eyes and terminal sense organ. Nuchal slits directed anterolaterally. Median antenna short, clavate, not extending to posterior margin of prostomium. Branchiae beginning on setiger 4, numbering 14-16 pairs; foliaceous, ovate, tapering to a point; overlapping across dorsum. Notopodial postsetal lobes short, tuberculate on setigers 1-2; elongate, proximally swollen, subulate from setiger 3 (Figure 2-42b). Neuropodial postsetal lobes low, truncate. Notosetae all capillary. Neurosetae including capillary setae; and modified hooks with slightly curved shaft, thin sheath over distal end, and arista arising from convex side of hook (Figure 2-42c).
REMARKS: A. (Acmira) sp. D closely resembles Aricidea cerrutii Laubier, 1966, in the presence of a sheath over the distal end of the modified setae, the shape of the median antenna, and form of the noto- and neuropodial postsetal lobes. The two may be distinguished by the shape and number of branchiae, and by the presence of an arista on the modified setae of the former.
GULF OF MEXICO BLM-OCS OCCURRENCE: Three stations in northeastern Gulf (Figure 2-41); 27-37 m; medium to fine sand.

Aricidea (Acmira) catherinae Laubier, 1967
Figures 2-43, 44a-c

Aricidea jeffreysii--Pettibone, 1963:305, fig. 80a-e; 1965:134, fig. 7a-c.

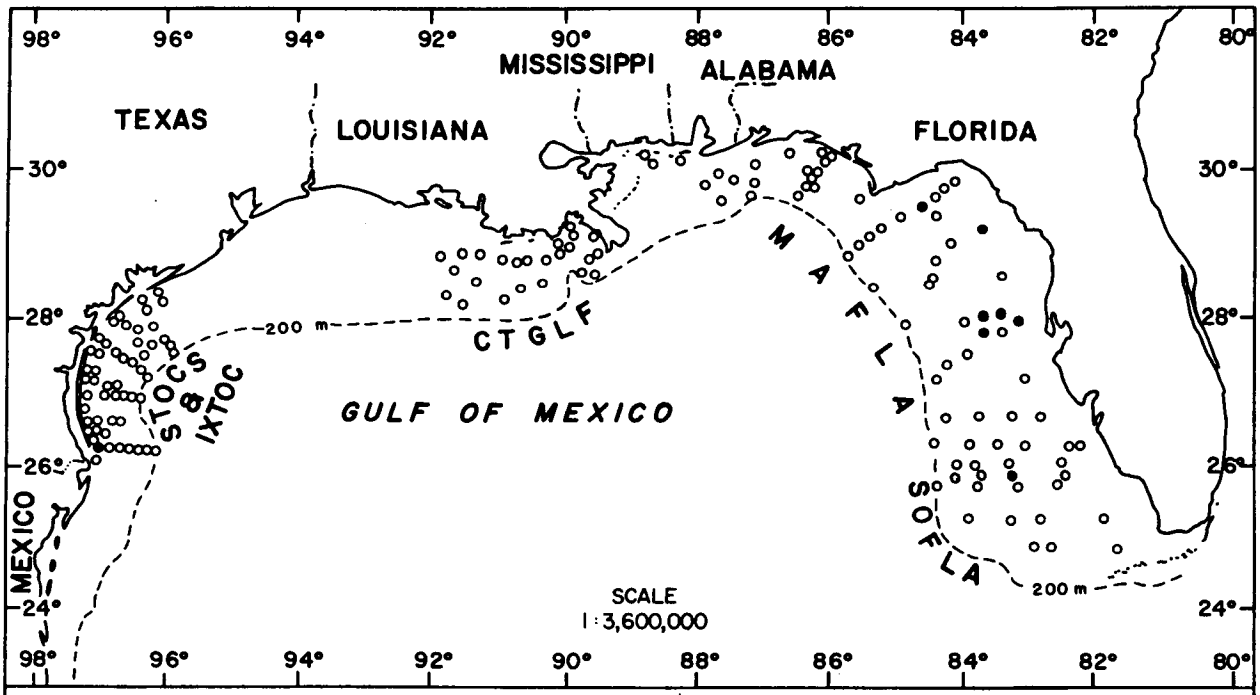

Figure 2-43. Distribution of Aricidea (Acmira) catherinae on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

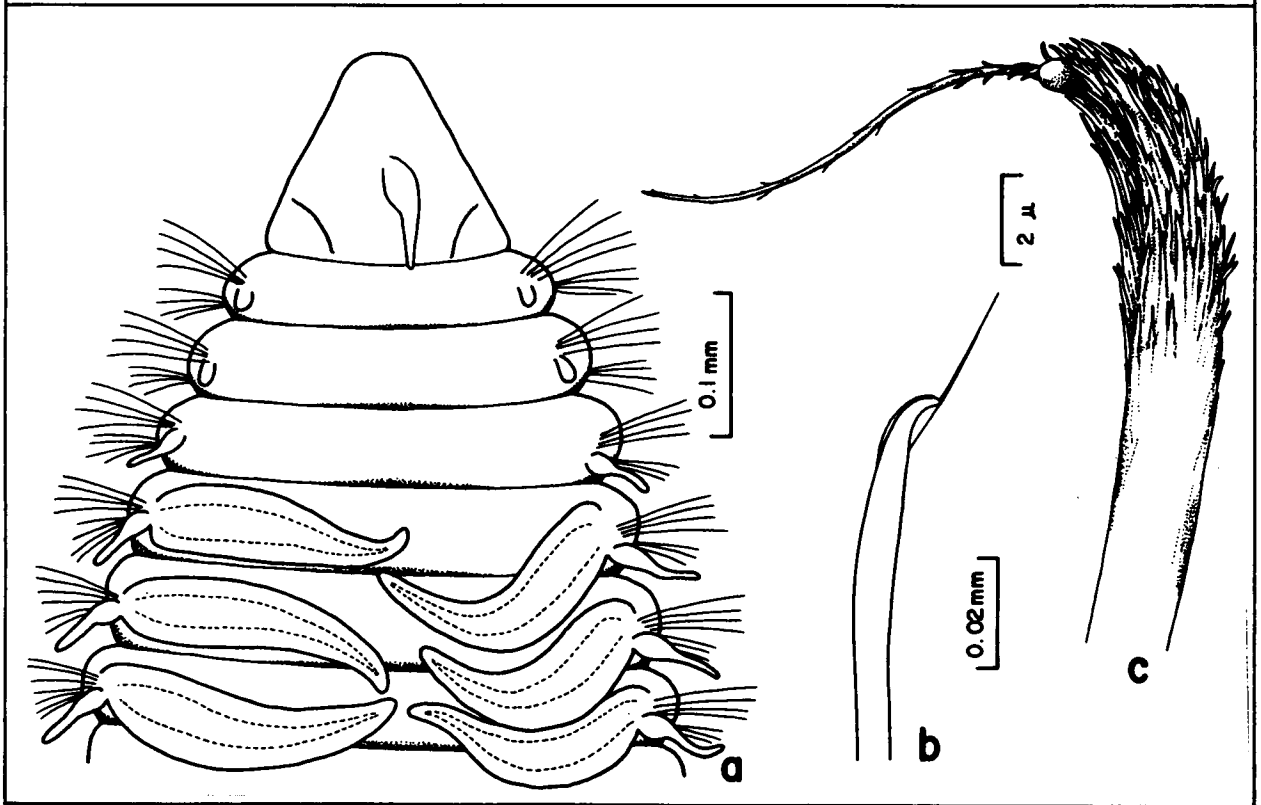

Figure 2-44. Aricidea (Acmira) catherinae: a, anterior end, dorsal view; b, modified postbranchial neuroseta; c, same, redrawn from scanning election microscopy photographs.

Aricidea lopezi--Hartman, 1963:38.
Aricidea catherinae Laubier, 1967a:112, figs. 4A-E, 5A-D.
Aricidea zelenzovi--Strelzov, 1968a:86.
Aricidea catherinae--Laubier and Ramos, 1973:1112.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 16B-7/81 (1 spec.); MAFLA 2207E-8/77 (1 spec., USNM 90199), 2207K-8/77 (1 spec., USNM 90200), 2208K-8/77 (1 spec., USNM 90201), 2209C-7/76 (1 spec., USNM 90196), 2210E-7/76 (1 spec., USNM 90197), 2318K-7/76 (1 spec.), 2422C-7/76 (1 spec., USNM 90202); STOCS 4/IV-6 W/76 (2 spec., USNM 90198).
Supplementary Material:
France--Banyuls sul Mer, Pyr. Orles, 35 m, mud, 1963-64, L. Laubier ID. (USNM 35914, 3 paratypes).
Virginia--37°10'N, 74°55'W, 24 fms., May 1963, M. Pettibone ID., as A. jeffreysii (2 spec., USNM 31499); Hampton Bar, James River, 5 fms., silt, May 1963, M. Pettibone ID., as A. jeffreysii (1 spec., USNM 31500).
DESCRIPTION:
Length, to 7 mm (previously reported to 15.0 mm); width, to 0.3 mm (previously reported to 1.5 mm). Body long, dorsally flattened in branchial region, cylindrical in postbranchial region. Prostomium triangular, about as wide as long (Figure 2-44a); eyes present (faded in alcohol). Brown pigment spots present on prostomium and anterior segments. Nuchal slits directed anterolaterally. Median antenna proximally inflated, tapering to blunt point, usually extending to setiger 1; occasionally longer and slender; multiple (2-3) median antennae also observed. Branchiae beginning on setiger 4, numbering 17-25 pairs; foliaceous, basally inflated, gradually tapering to a point. Notopodial postsetal lobes short on setigers 1-2, longer and basally inflated from setiger 3. Notosetae all slender, capillary. Neurosetae including slender capillary setae and 3-10 modified setae per fascicle. Modified setae (Figure 2-44b) appearing as slender hooks with faint hood and terminal arista (may be lost).
REMARKS: Descriptions of the modified setae of this species are very confused. Laubier (1967a) reported a faint sheath. Strelzov (1973) described a "short, slender subterminal extension." The nature of the shaft terminus is difficult to discern under light microscopy. Observations under scanning electron microscopy (SEM) of specimens collected off Connecticut reveal a blunt shaft surrounded by scale-like structures (Figure 2-44c) which give various false impressions under light microscopy. The arista is attached to the shaft terminally, but is easily lost. Specimens were originally identified in MAFLA collections as Aricidea cf. ramosa, and in STOCS collections as Aricidea jeffreyii. A. (Acmira) catherinae is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Coarse to fine sand, muddy ooze and mud with shell fragments; 1-2000+ m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records off Florida and one off Port Isabel, Texas (Figure 2-43); 15-54 m; medium to fine-very fine sand, silty very fine sand, clayey sandy silt.
DISTRIBUTION: Atlantic coast of North America, Gulf of Mexico, Uruguay, Mediterranean Sea, Barents Sea, southern California, Kuril Islands.

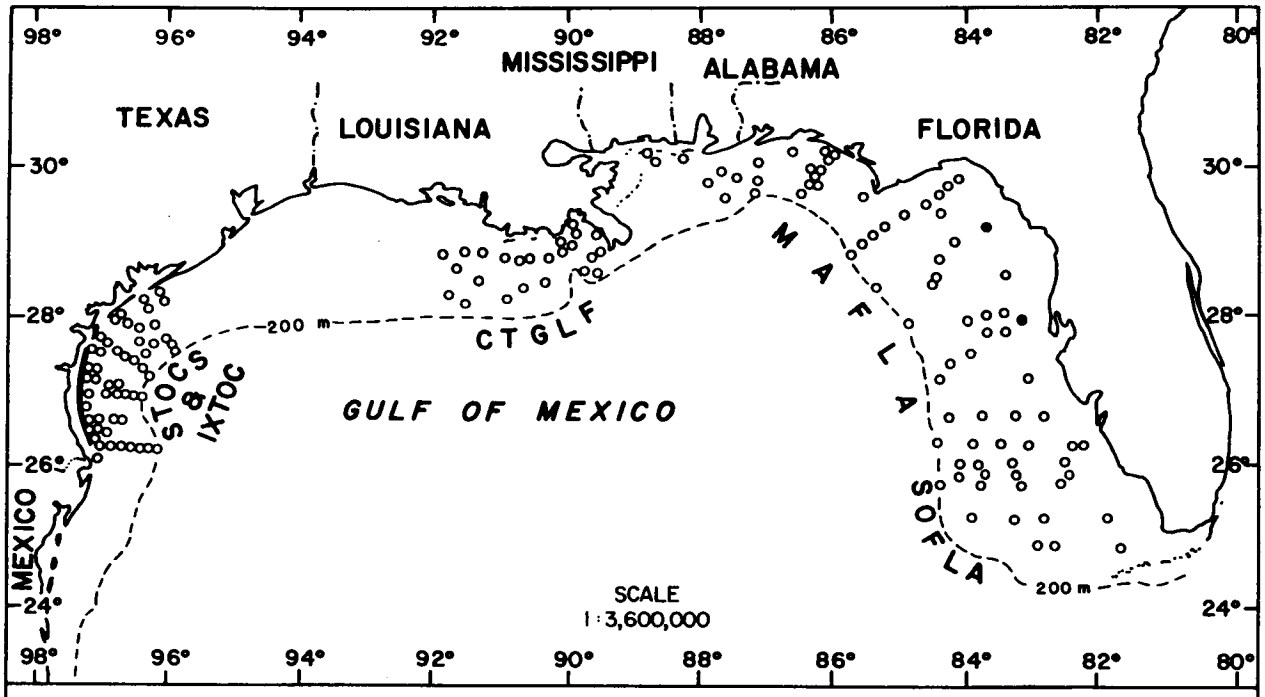

Figure 2-45. Distribution of Paraonis fulgens on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

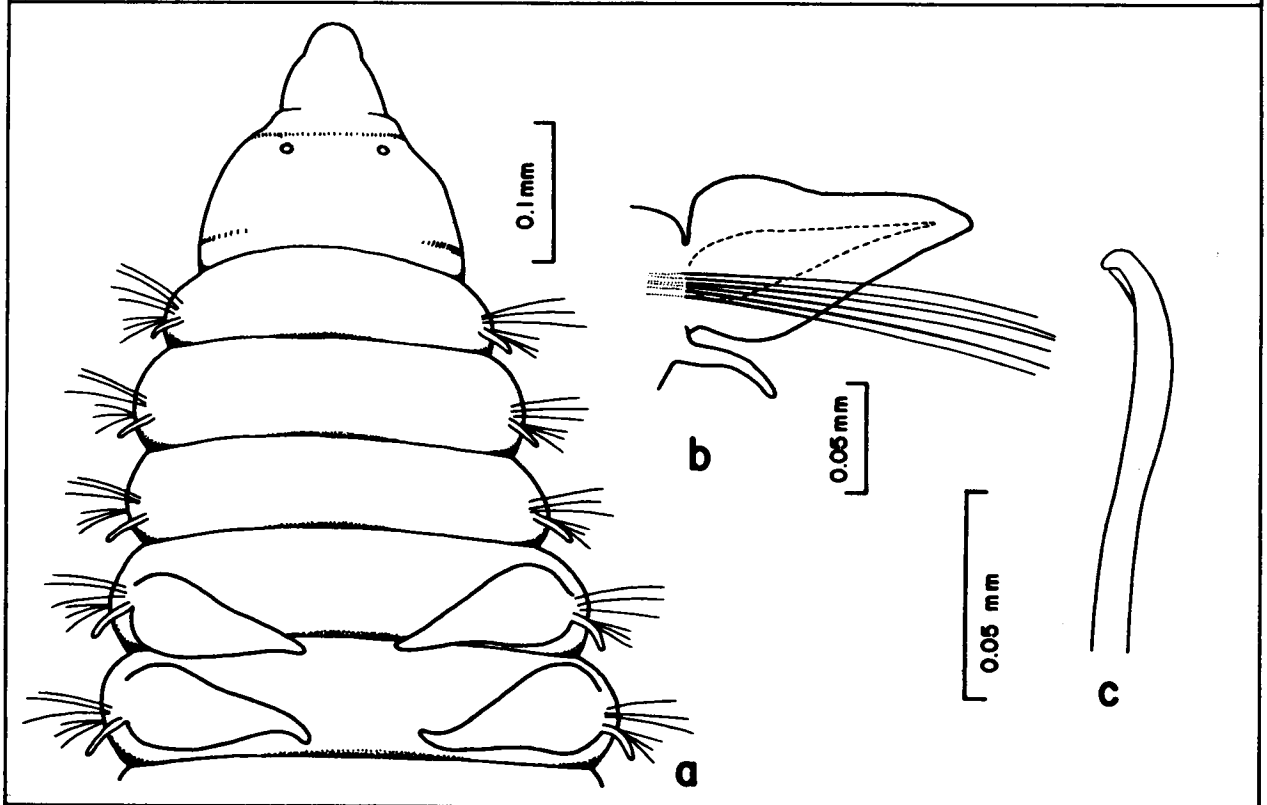

Figure 2-46. Paraonis fulgens: a, anterior end, dorsal view; b, right notopodium from setiger 15, posterior view; c, modified postbranchial neuroseta.

Genus Paraonis Cerruti, 1909

TYPE SPECIES: Aonides fulgens Levinsen, 1884.
REFERENCE:
Mesnil, 1897a:93 (as Levinsenia).
DIAGNOSIS: Body slender, less than 1.0 mm in width. Median antenna absent. Prostomium with terminal sensory organ, eyes, and bands of cilia. Nuchal organs adjoining posterior margin of prostomium. Prostomium with bands of cilia. Notopodial postsetal lobes absent on first 2-5 setigers. Neuropodial postsetal lobes small or absent. Modified setae of various forms. Pygidium rounded, with three anal cirri, two dorsolateral and one ventral.

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

1a. Modified neurosetae of postbranchial region hooked (Figure 2-46c); three prebranchial setigers. . . . . **Paraonis fulgens**, p. 2-47

1b. Modified neurosetae of postbranchial region limbate with long basal spine (Figure 2-48c); five prebranchial setigers. . . . . **Paraonis pygoenigmatica**, p. 2-49

Paraonis fulgens (Levinsen, 1884)
Figures 2-45, 46a-c

Aonides fulgens Levinsen, 1884:102.
Paraonis fulgens--Cerruti, 1909:468.
Paraonis fulgens--Fauvel, 1927:71, fig. 24g-l.
Paraonis fulgens--Pettibone, 1963:302, fig. 79e,f.
Paraonis fulgens--Strelzov, 1973:51, figs. 18, 1, 20A-E.
Paraonis fulgens--Day, 1973:94.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2207I-11/77 (1 spec., USNM 90284), 2318I-11/77 (1 spec., USNM 90285).
Supplementary Material:
Virginia--off eastern shore, June 1977, G. R. Gaston ID. (1 spec., USNM 56903).
DESCRIPTION:
Length, to 6 mm (previously reported to 30.0 mm); width, to 0.5 mm (previously reported to 1.0 mm). Body long, nearly cylindrical, slightly flattened dorsally in branchial region. Lateral bands of pigment across each anterior segment. Prostomium longer than wide, divided into anterior and posterior regions (Figure 2-46a); anterior portion conical, overlapped slightly by posterior region. Nuchal slits directed anterolaterally. Branchiae beginning on setiger 4, numbering up to 25 pairs; foliaceous, ovate, not overlapping or only slightly overlapping across dorsum. Notopodial postsetal lobes short, slender, cirriform on anterior setigers; gradually becoming longer, stouter through branchial region (Figure 2-46b); slender in postbranchial region. Neuropodial postsetal lobes tuberculate. Notosetae all capillary. Neurosetae including capillary setae and 2-3 modified setae per fascicle. Modified setae with thick shafts, distally hooked (Figure 2-46c); distinct distal

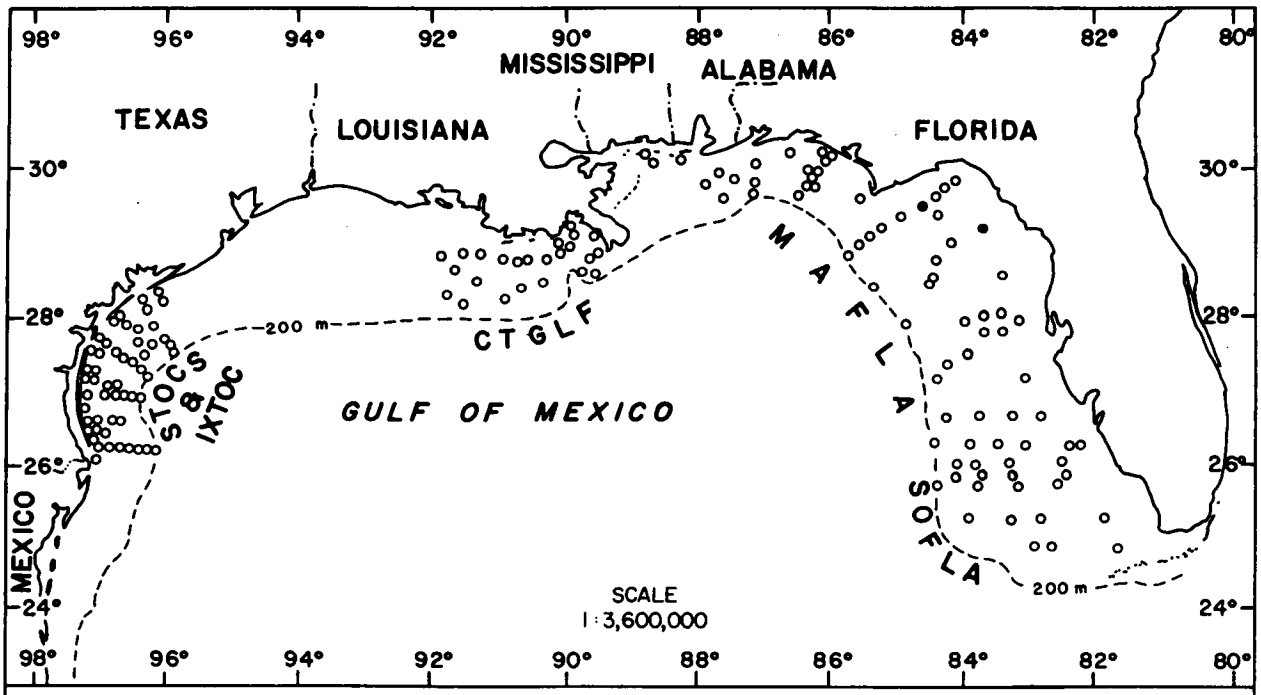

Figure 2-47. Distribution of Paraonis pygoenigmatica on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

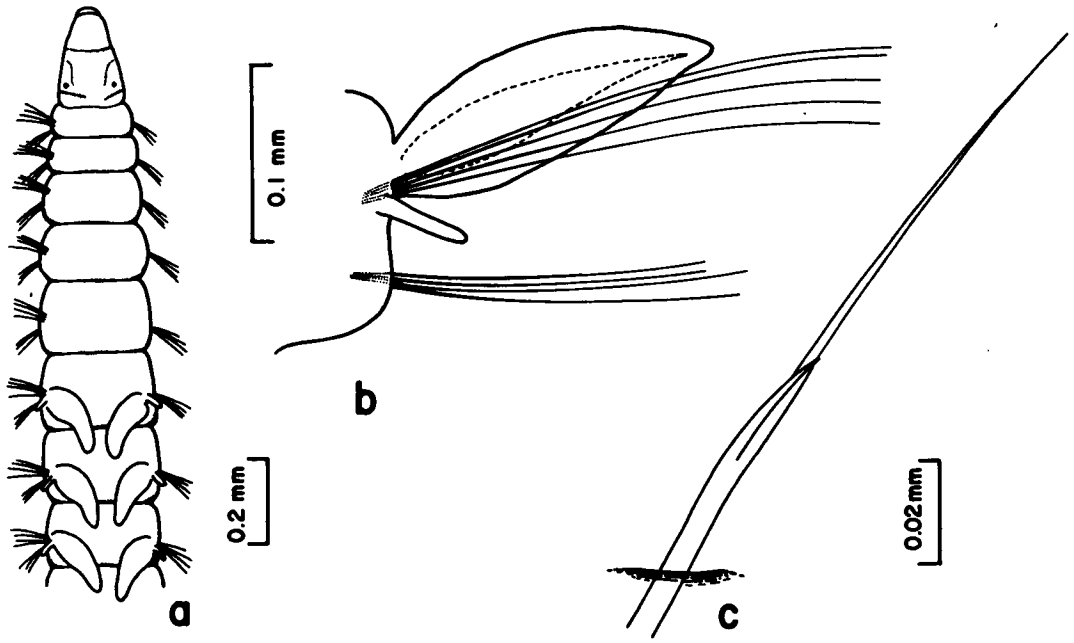

Figure 2-48. Paraonis pygoenigmatica: a, anterior end, dorsal view; b, right parapodium from setiger 8, posterior view; c, modified postbranchial neuroseta.

pubescence present, sometimes appearing as single subterminal spine on concave side of hook.
PREVIOUSLY REPORTED HABITAT: Sandy sediments in littoral zone.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two stations off western Florida (Figure 2-45); 19-20 m; medium to fine-very fine sand.
DISTRIBUTION: Straits of Oresund, English Channel, Irish Sea, North Sea, Kiel Bay, Atlantic coastal waters of North America (Maine to Florida), Gulf of Mexico.

Paraonis pygoenigmatica Jones, 1968
Figures 2-47, 48a-c

Paraonis pygoenigmatica Jones, 1968a:323, figs. 1-23.
Paraonis pygoenigmatica--Strelzov, 1973:54, figs. 18, 2, 20F-J.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2318C-2/78 (5 spec., USNM 90286), 2422C-7/76 (1 spec.).
Supplementary Material:
Mid-Atlantic States--39°23.3'N, 73°00.6'W, 61 m, June 1977, G. R. Gaston ID. (1 spec., USNM 56906).
DESCRIPTION:
Length, to 5 mm (previously reported to 18 mm); width, to 0.35 mm (previously reported to 0.33 mm). Body dorsoventrally compressed in prebranchial and branchial regions; to lesser extent similarly compressed posteriorly. Brown pigment spots scattered across most segments, most heavily concentrated on dorsum of anterior region. Prostomium conical, with deep transverse furrow separating anterior and posterior regions (Figure 2-48a). Branchiae beginning on setiger 6, numbering 15-19 pairs; lanceolate, overlapping slightly across dorsum; last pair slightly smaller. Notopodial postsetal lobes cirriform (Figure 2-48b) from setiger 6. Noto- and neurosetae capillary or limbate in prebranchial and branchial regions. Modified setae and some capillary and limbate setae present in both noto- and neuropodia of anterior postbranchial region. Modified setae limbate with long basal spine (Figure 2-48c). Only modified setae present in far posterior region.
REMARKS: P. pygoenigmatica is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Compact sandy substrate, 6-13 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Two records off north central Florida (Figure 2-47); 20-24 m; medium to medium-fine sand.
DISTRIBUTION: Atlantic coastal waters of North America (Cape Cod to Virginia), Gulf of Mexico.

Genus Levinsenia Mesnil, 1897a

TYPE SPECIES: Aonides gracilis Tauber, 1879.
REFERENCES:
Strelzov, 1973:126 (as Tauberia).
Fauchald, 1977a:18 (as Tauberia).
DIAGNOSIS: Body width up to 1.6 mm. Median antenna absent. Terminal sensory organ present on prostomium. Nuchal slits separated from posterior margin of prostomium by small buccal segment. Prostomium without ciliated bands. More than three prebranchial segments. Notopodial

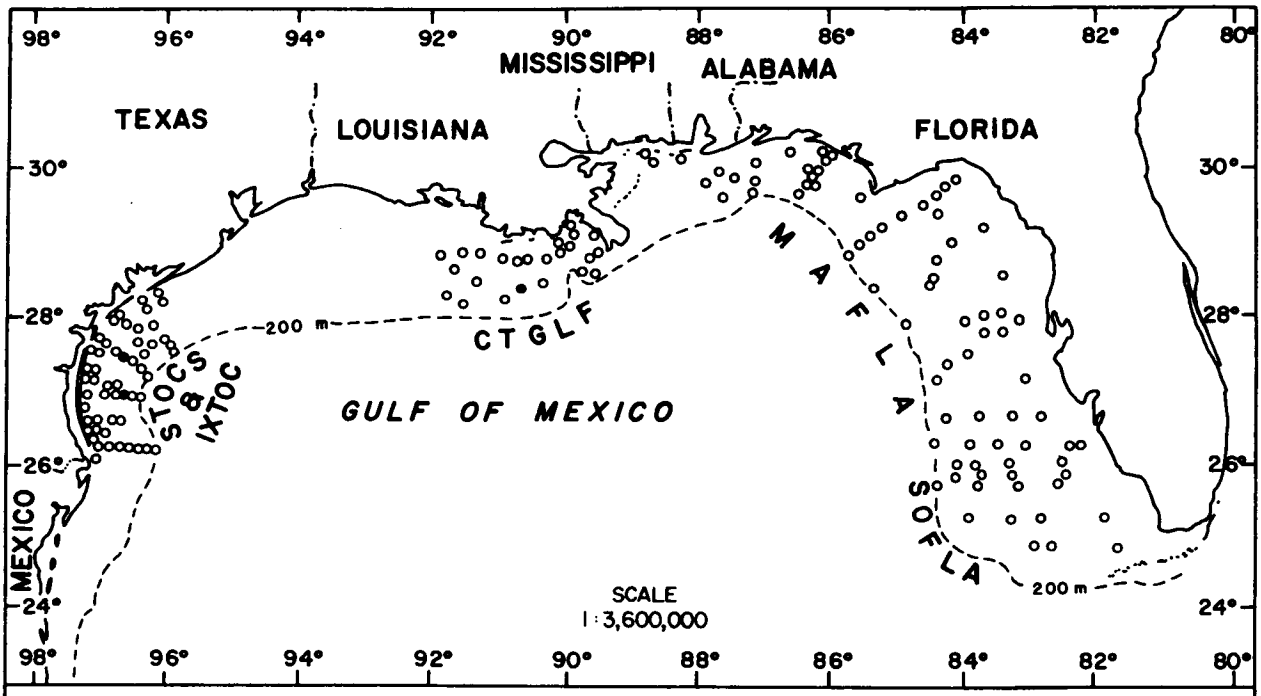

Figure 2-49. Distribution of Levinsenia reducta on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

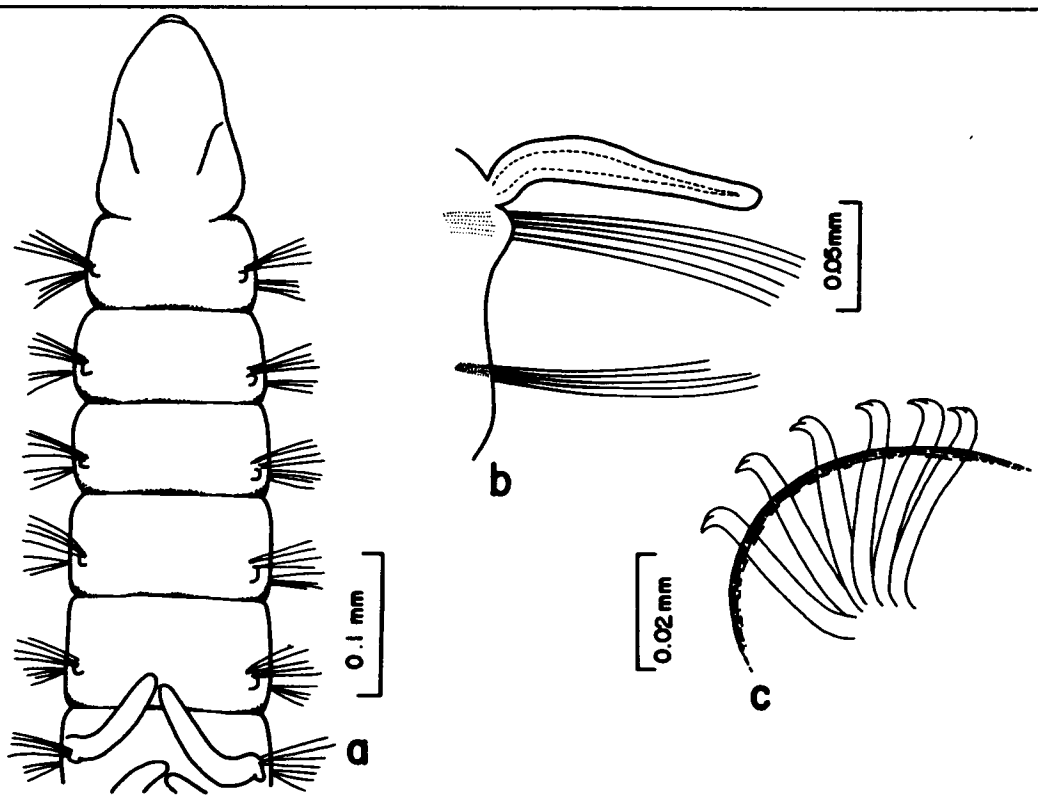

Figure 2-50. Levinsenia reducta: a, anterior end, dorsal view; b, right parapodium from setiger 8, posterior view; c, modified postbranchial neurosetae.

postsetal lobes present on all setigers; neuropodial postsetal lobes absent. Notosetae all slender, capillary. Neurosetae including modified forms of thick hooks. Pygidium tapering with two anal cirri.
REMARKS: By designation of the International Commission on Zoological Nomenclature (ICZN), the genus Tauberia Strelzov, 1973 (type species Aonides gracilis Tauber, 1879) became a junior synonym of the genus Levinsenia (see Melville, 1979).

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

1a. Modified setae strongly hooked, bidentate (Figure 2-50c), barely protruding from body wall. . . . . Levinsenia reducta, p. 2-51
1b. Modified setae weakly hooked, unidentate (Figure 2-52c), strongly protruding from body wall. . Levinsenia gracilis, p. 2-51

Levinsenia reducta (Hartman, 1965)
Figures 2-49, 50a-c

Paraonis reductus Hartman, 1965:142.
Paraonis reductus--Hartman and Fauchald, 1971:103.
Tauberia reducta--Strelzov, 1973:138, figs. 11, 3, 62.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
CTGLF 04-5/78 (1 spec., USNM 90296); STOCS 2/II-No date (1 spec., USNM 90298), 2/III-W/76 (1 spec., USNM 90297).
DESCRIPTION:
Length, to 5 mm (previously reported to 20.0 mm); width, to 0.175 mm (previously reported to 1.6 mm). Body long, slender, dorsally flattened in branchial region, cylindrical posteriorly. Prostomium nearly conical, slightly compressed dorsoventrally, longer than wide (Figure 2-50a); eyes absent. Nuchal slits indistinct, directed anterolaterally. Branchiae beginning on setiger 6, numbering 6-10 pairs; slender, nearly cirriform, of similar length throughout except last pair shorter; broadly overlapping across dorsum. Notopodial postsetal lobes low, tuberculate on all setigers (Figure 2-50b). Neurosetae including capillary setae; and short, stout, bidentate hooks (Figure 2-50c), numbering 2-6 per fascicle.
REMARKS: L. reducta is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 520-1500 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Three stations off Texas and Louisiana (Figure 2-49); 45-65 m; clayey silt, silty clay.
DISTRIBUTION: Atlantic coastal waters of S. America, Gulf of Mexico.

Levinsenia gracilis (Tauber, 1879)
Figures 2-51, 52a-c

Aonides gracilis Tauber, 1879:115.
Levinsenia gracilis--Mesnil, 1897a:93.
Paraonis (Paraonis) gracilis--Cerruti, 1909:468, 498, 504.
Paraonis gracilis--Eliason, 1920:55, fig. 16a-e.
Paraonis gracilis--Hartman, 1957:330, pl. 44, figs. 4, 5.

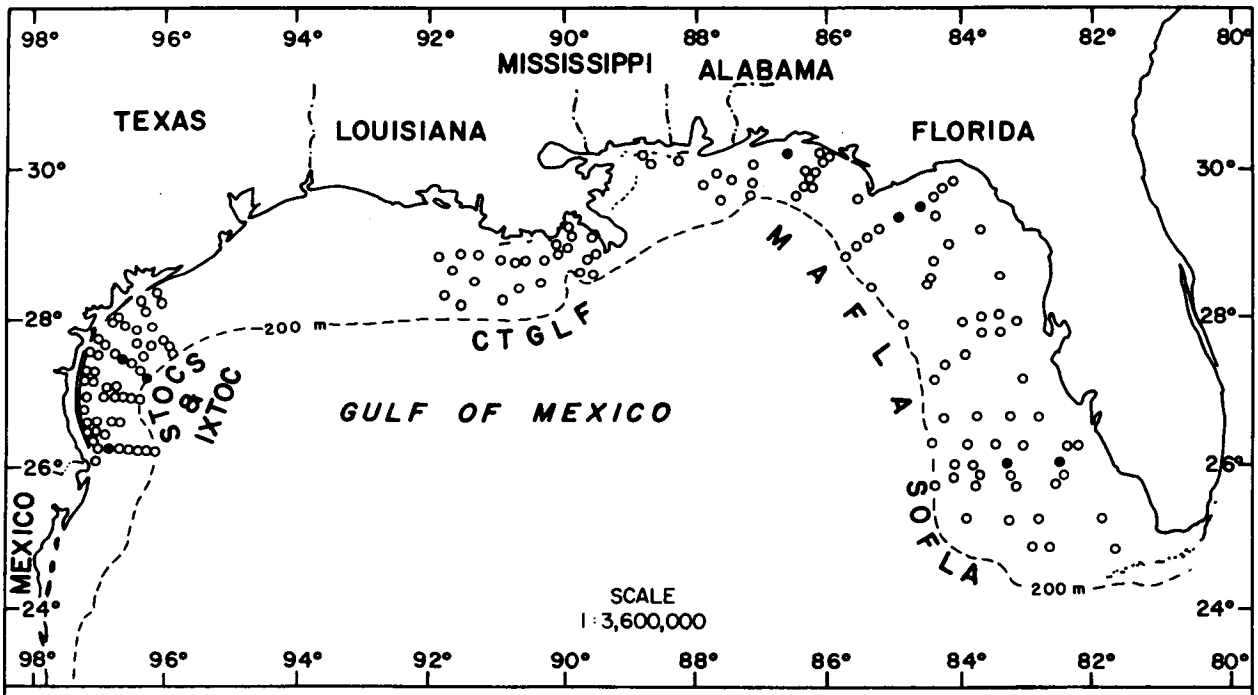

Figure 2-51. Distribution of Levinsenia gracilis on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

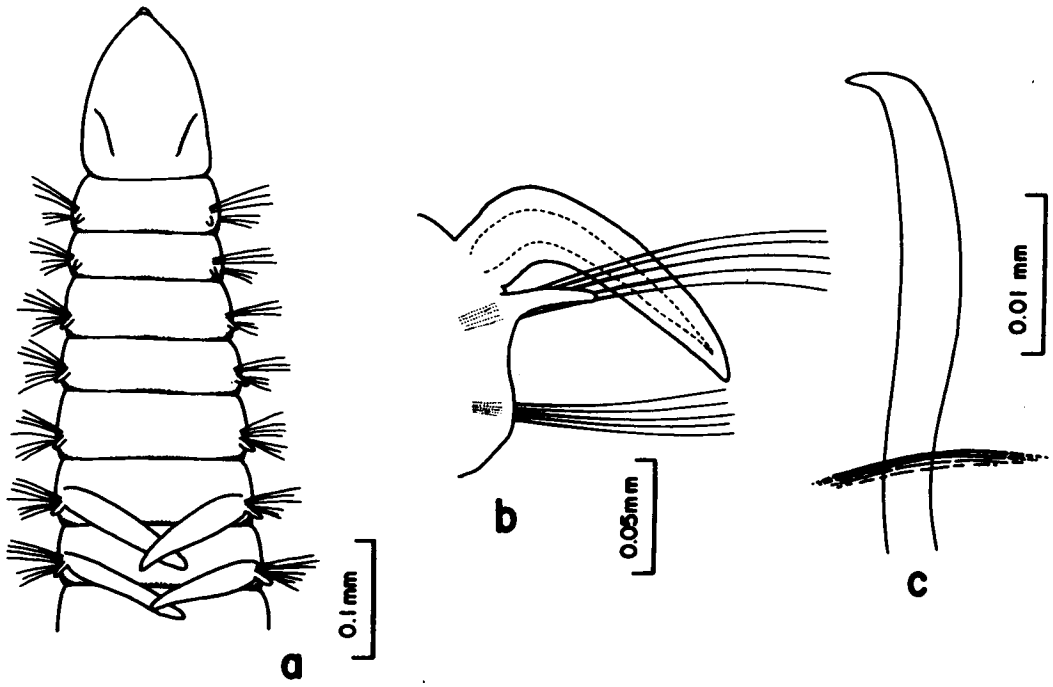

Figure 2-52. Levinsenia gracilis: a, anterior end, dorsal view; b, right parapodium from setiger 10, posterior view; c, modified postbranchial neuroseta.

Paraonis gracilis--Ushakov, 1955:286, fig. 203A,B.
Paraonis (Paraonis) gracilis--Pettibone, 1963:301, fig. 79a-d.
Paraonis gracilis--Day, 1973:94.
Tauberia gracilis--Strelzov, 1973:127, figs. 14, 54-57.
Levinsenia gracilis--Hartley, 1981:146.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 6B-11/80 (1 spec., USNM 90293), 8A-11/80 (1 spec., USNM 90294); MAFLA 2422C-7/76 (1 spec., USNM 90287), 2422E-7/76 (1 spec., USNM 90288), 2423D-7/76 (1 spec.), 2855F-8/77 (1 spec., USNM 90289); STOCS 2/II-7/76 (1 spec., USNM 90290), 3/II-7/76 (1 spec., USNM 90291); IXTOC S52-4 11/79 (1 spec., USNM 90292).
DESCRIPTION:
Length, to 7 mm (previously reported to 25.0 mm); width, to 0.20 mm (previously reported to 0.5 mm). Body slender, dorsally flattened in branchial region, cylindrical posteriorly. Prostomium triangular, nearly conical, longer than wide, with terminal sensory lobe (Figure 2-52a); eyes absent. Nuchal slits directed anterolaterally. Branchiae beginning on setigers 6-8, numbering 11-15 pairs (increasing with size of specimen); slender, foliaceous; length greatest in midbranchial region, gradually becoming shorter posteriorly; broadly overlapping across dorsum. Notopodial postsetal lobes short in prebranchial region, longer and stouter in branchial region (Figure 2-52b), shorter and more slender in postbranchial region. Neurosetae including capillary setae; and modified hooks in postbranchial region, numbering 2-6 per fascicle, having thick shafts (Figure 2-52c). Faint pubescence sometimes present on convex side of shaft, absent from tip.
REMARKS: L. gracilis is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Eurybathic, a few meters to abyssal regions in a variety of sediment types.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered records in northeastern Gulf and off southern Texas (Figure 2-51); 19-131 m; medium to very fine sand, silty fine sand, silty clay.
DISTRIBUTION: Atlantic, Gulf of Mexico, Pacific, Indian and Arctic Oceans, Black Sea, Red Sea, Mediterranean Sea.

CHAPTER 3

John L. Taylor and Jerry M. Gathof

FAMILY QUESTIDAE Hartman, 1966a

INTRODUCTION

Questids are small, slender-bodied worms, usually measuring less than 10 mm in length. The prostomium lacks appendages and may appear either triangular or broadly rounded anteriorly, depending upon the state of contraction. The peristomial segment also lacks appendages and may appear smooth or biannulate. The proboscis is present ventrally as an unarmed, muscular pad. Segments that follow have inconspicuous, biramous parapodia with serrate capillary setae. In addition, some anterior noto- and neuropodia may have trifurcate setae; both rami of most parapodia also have simple, stout, hooded, bifid hooks. Cirriform branchiae, when present, are as paired dorsal filaments in the posterior region. The pygidium is either bilobed or rounded, and may have two or four anal cirri.

Questids exhibit certain internal and external characters which closely associate them with the oligochaetes. This family is presently represented by two monospecific genera. Both have been collected in BLM-OCS material, and represent new records for these species in the northern Gulf of Mexico. Another species, possibly new to science, is included herein, and may be an intermediate form between the two existing genera.

PRINCIPAL DIAGNOSTIC CHARACTERS

The principal diagnostic characters used in the separation and identification of questids are the presence of trifurcate setae and the presence of branchiae and anal cirri.

Questids most closely resemble the orbiniids and paraonids which together make up the order Orbiniida (Fauchald, 1977a). The questids may be distinguished from these related families by their small size and shape, and by the nature of their bifid hooks.

BIOLOGICAL NOTES

Little is known of the biology of this small family of worms. Specimens of both of the currently known species have been collected from coarse, coral rubble bottoms, or shelly sediments. Questids appear to be burrowing deposit feeders, as described for the paraonids and orbiniids.

Due to the small size of these worms and their superficial resemblance to oligochaetes, many specimens have undoubtedly been overlooked or misidentified in benthic surveys. This may account for the few records of their occurrence.

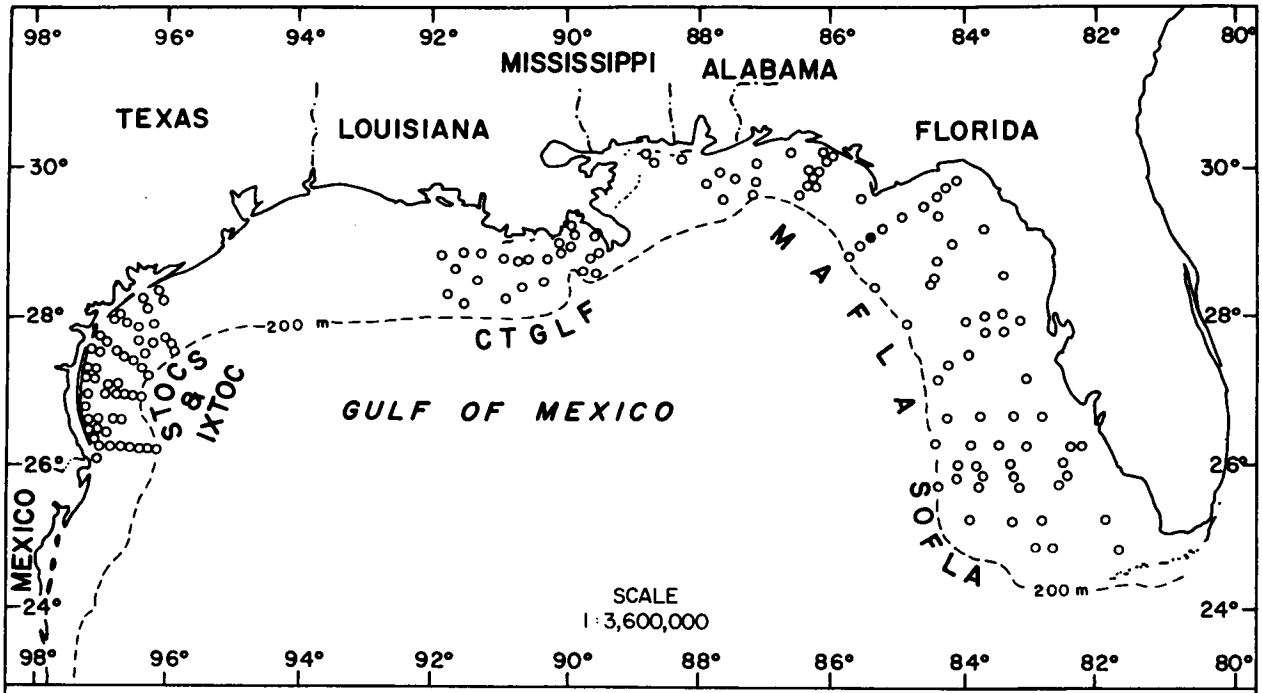

Figure 3-1. Distribution of Questa caudicirra on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

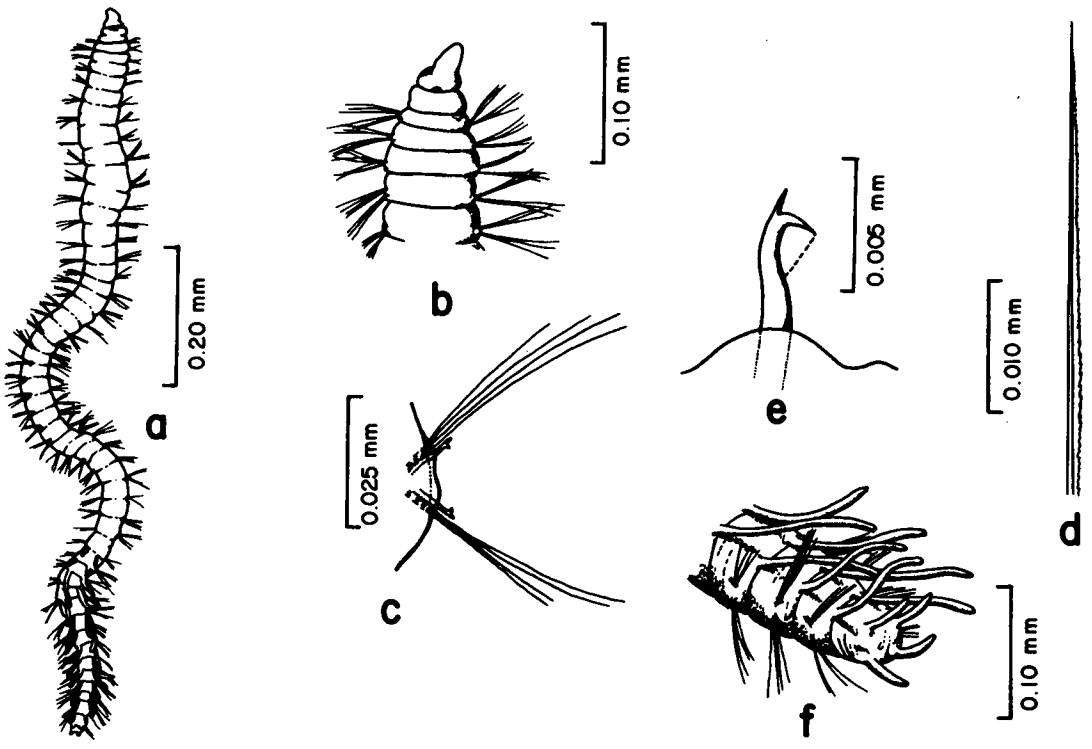

Figure 3-2. Questa caudicirra: a, entire worm, dorsal view; b, anterior end, dorsal view; c, anteromedian parapodium; d, capillary seta; e, bidentate hook; f, posterior end, dorsal view (all figures from Hartman 1966, pl. 4, figs. 1-6).

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

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

1a. Trifurcate setae (Figure 3-4e) present anteriorly. 2
1b. Trifurcate setae absent. . . . . .**Questa**, p. 3-3

2a. Trifurcate setae beginning on setiger 1; branchiae and anal cirri absent. . . . . **Novaquesta**, p. 3-5
2b. Trifurcate setae beginning on setiger 2; branchiae and anal cirri present (Figure 3-6d). . . . . **Genus A**, p. 3-7

Genus Questa Hartman, 1966

TYPE SPECIES: Questa caudicirra Hartman, 1966a.
REFERENCES:
Hartman, 1966a:197.
Fauchald, 1977a:19.
DIAGNOSIS: Prostomium rounded to triangular. Peristomium sometimes appearing biannulate. Parapodia small, inconspicuous. Setae including serrate or smooth capillary setae, and simple, bifid hooks. Branchiae and caudal cirri present posteriorly.

Questa caudicirra Hartman, 1966
Figures 3-1, 2a-f

Questa caudicirra Hartman, 1966a:197, pl. 4, figs. 1-6; 1969:81, figs. 1-4.
Questa caudicirra--Hobson, 1976:594, figs. 2a-e.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2425B-7/76 (2 spec., USNM 55888).
Supplementary Material:
California--Santa Catalina Island, 32-138 m, white calcareous ooze, O. Hartman coll./ID. (AHF-0645, 20+ paratypes).
DESCRIPTION:
Length, to 8.0 mm (previously reported to 10 mm); width, to 0.5 mm (previously reported to 0.3 mm). Body long, slender (Figure 3-2a). Prostomium triangular anteriorly; prostomium and peristomium weakly biannulate (Figure 3-2b). Parapodia small (Figure 3-2c); noto- and neuropodia each with 4-5 serrate capillary setae (Figure 3-2d), and stout, hooded, bifid hooks (Figure 3-2e) present anteriorly from setiger 1. Posterior rami each with two serrate capillary setae, and 1-2 stout, hooded, bifid hooks. Cirriform branchiae restricted to posterior

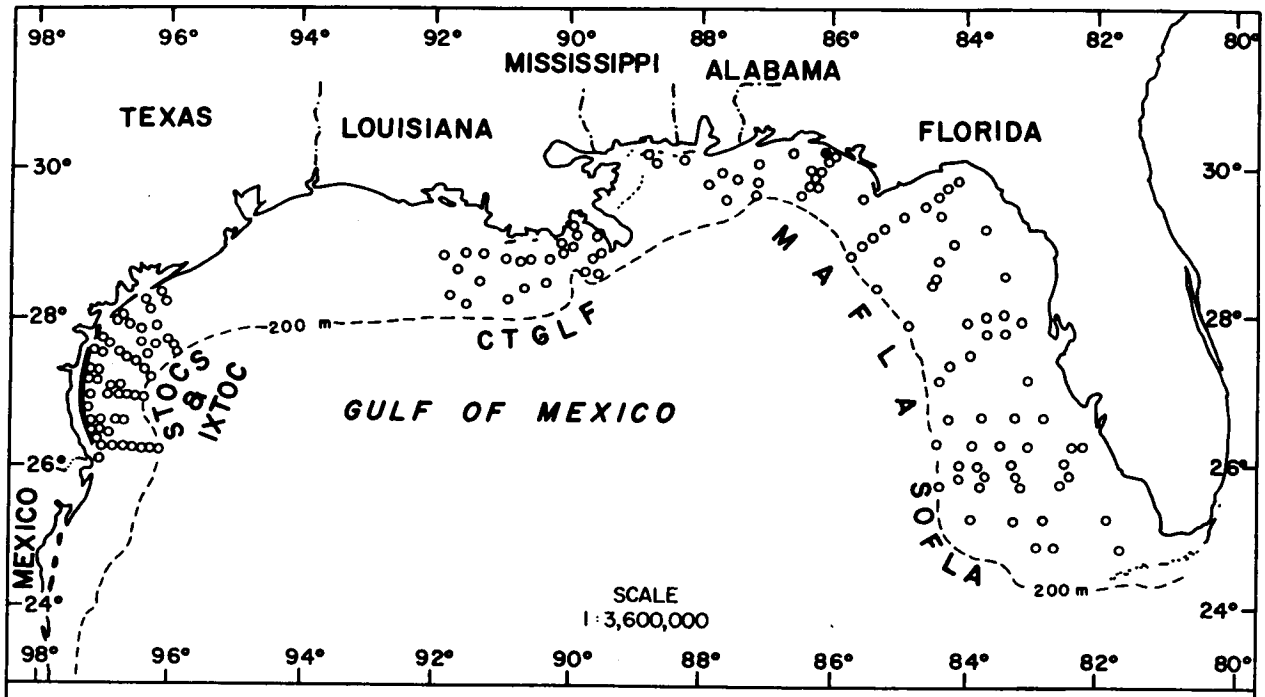

Figure 3-3. Distribution of Novaquesta trifurcata on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

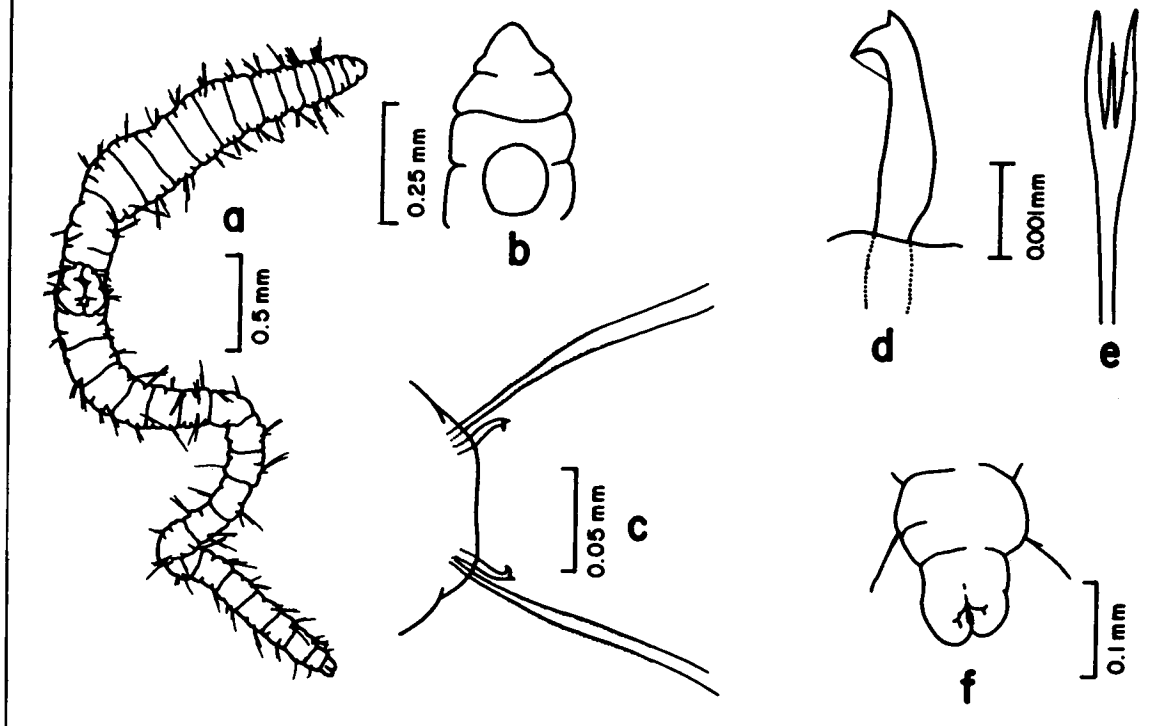

Figure 3-4. Novaquesta trifurcata: a, entire worm, dorsal view; b, anterior end, dorsal view; c, posterior parapodium; d, bidentate hook from median setiger; e, trifurcate notoseta from setiger 3; f, pygidium, posteroventral view (figures a,c,f from Hobson 1970, fig. 1a,b,e).

segments (Figure 3-2a). Pygidium smoothly rounded, bearing two dorsolateral and two ventrolateral cirri (Figure 3-2f).
REMARKS: Examination of Hartman's paratypes (AHF-0645) reveals stout, hooded, bifid hooks present from setiger 1 rather than from setiger 4 as reported in the original description (Hartman, 1966:198). Questa caudicirra is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Collected with coralline nodules, and on shelly to coarse sand bottoms; 7-124 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Single occurrence off Florida (Figure 3-1); 36 m; medium sand.
DISTRIBUTION: British Columbia, southern California, Gulf of Mexico.

Genus Novaquesta Hobson, 1970

TYPE SPECIES: Novaquesta trifurcata Hobson, 1970.
REFERENCES:
Hobson, 1970:191.
Fauchald, 1977a:19.
DIAGNOSIS: Prostomium rounded to triangular, without eyes or appendages; peristomium sometimes appearing biannulate. Parapodia inconspicuous throughout, possessing serrate capillary setae and simple, bifid, hooded hooks; simple, trifurcate setae present anteriorly. Branchiae and anal cirri absent.

Novaquesta trifurcata Hobson, 1970
Figures 3-3, 4a-f

Novaquesta trifurcata Hobson, 1970:191, fig. 1a-e.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2528F-9/77 (1 spec.).
Supplementary Material:
Massachusetts--Cape Cod Bay, June 1968, sandy sediment, 17 m (AHF-0643, 3 paratypes).
DESCRIPTION:
Length, 10 mm (previously reported to 6 mm); width, 0.5 mm (previously reported to 0.4 mm). Body long, slender (Figure 3-4a). Prostomium broadly triangular, appearing biannulate; peristomium also biannulate (Figure 3-4b). Parapodial lobes minute (Figure 3-4c); setigers biramous throughout except last several. Both rami with serrate capillary setae and simple, bifid hooks (Figure 3-4d); trifurcate setae (Figure 3-4e) present in first 5-8 setigers. Pygidium (Figure 3-4f) bilobed.
REMARKS: Novaquesta trifurcata is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: Coarse sediments; about 200 m.
GULF OF MEXICO BLM-OCS OCCURRENCE: Single occurrence off Florida (Figure 3-3); 37 m; coarse sand.
DISTRIBUTION: Massachusetts, Gulf of Mexico.

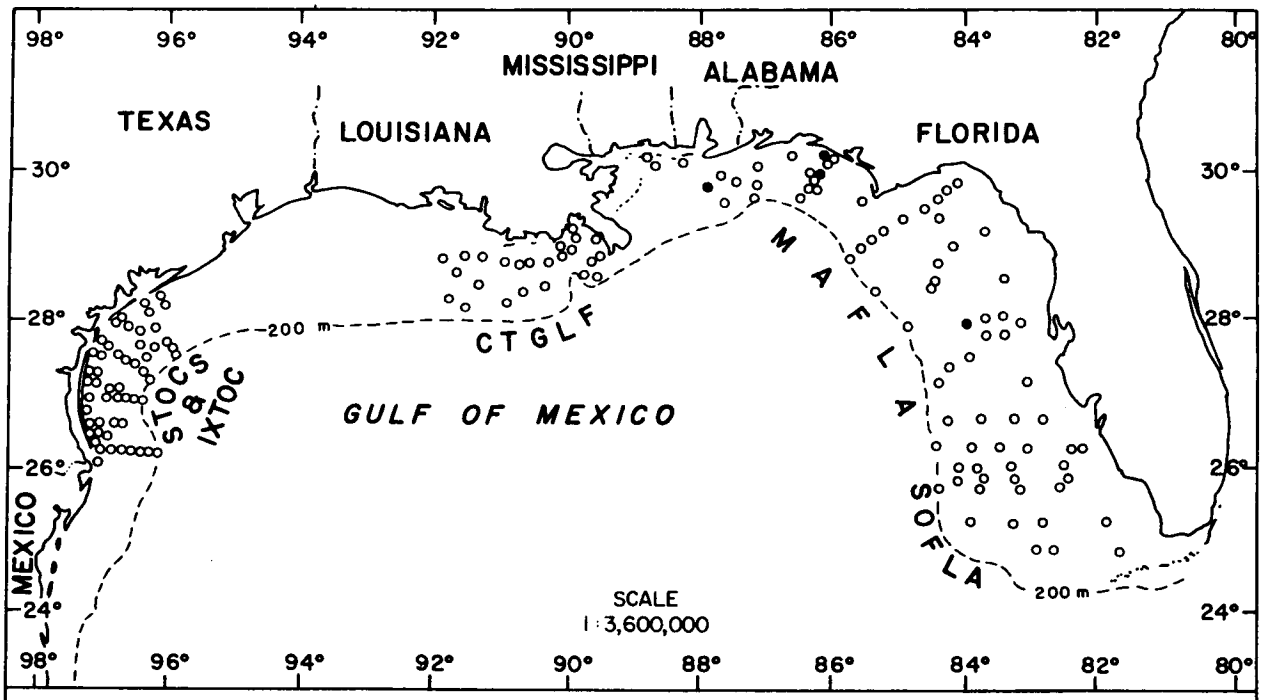

Figure 3-5. Distribution of questid Genus A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

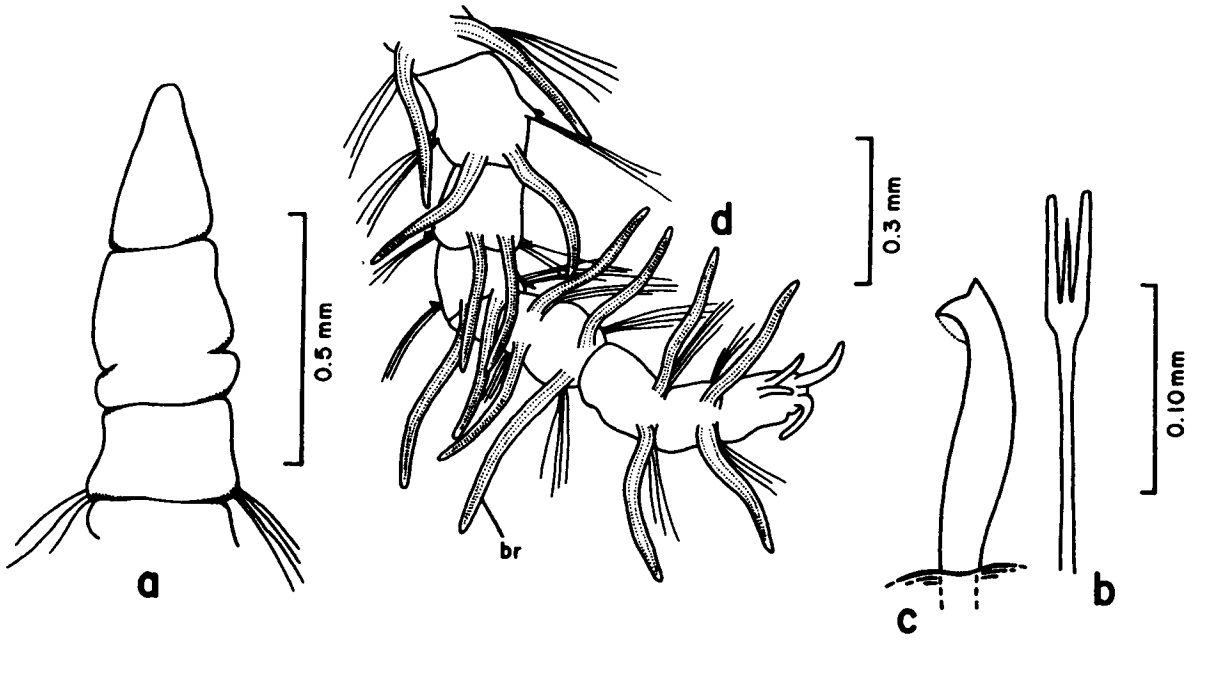

Figure 3-6. Genus A: a, anterior end, dorsal view; b, trifurcate notoseta from setiger 5; c, bidentate hook; d, posterior end.

Genus A
Figures 3-5, 6a-d

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2211J-7/76 (1 spec.), 2211K-8/77 (3 spec.), 2211H-11/77 (1 spec.), 2528K-8/77 (1 spec.), 2531F-7/77 (1 spec.), 2640D-2/78 (1 spec.).
DESCRIPTION:
Length, to 10 mm; width, to 0.5 mm. Prostomium triangular, bluntly pointed anteriorly; complete specimens with up to 40 setigers. Peristomium biannulate, equal in length to prostomium (Figure 3-6a). Parapodia small. Setiger 1 with 3-5 serrate capillary setae in each ramus. Setigers 2-5 with one or two trifurcate setae (Figure 3-6b), one bidentate hook (Figure 3-6c) and 4-5 serrate capillary setae in notopodia; neuropodia with four serrate capillary setae and single bidentate hook. Remaining setigers with 2-3 serrate capillary setae and 1-2 bidentate hooks in each ramus. Paired strap-like branchiae beginning on setigers 16-20, continuing to posterior end (Figure 3-6d). Pygidium terminal with two pairs of anal cirri, dorsal pair half length of ventral pair.
REMARKS: Questidae Genus A possesses morphological characters of both Novaquesta (trifurcate setae) and Questa (branchiae and anal cirri). Thus, these specimens represent an intermediate form between the two monotypic genera, and indicate that a revision of the family is needed.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered occurrences off Alabama and Florida (Figure 3-5); 35-45 m; coarse to medium sand.

CHAPTER 4

R. Michael Ewing

FAMILY COSSURIDAE Day, 1963

INTRODUCTION

Cossurids are small (up to 15 mm), cylindrical polychaetes with numerous similar segments. The prostomium is conical or rounded and lacks appendages. Eyespots are usually absent. Eversible nuchal organs, if present, are positioned near the posterolateral margin of the prostomium. One or two achaetous peristomial segments follow the prostomium. The eversible pharynx is soft, unarmed, and lobed. Parapodia are often uniramous on one or more anterior segments, but may be entirely biramous. A single long, cylindrical tentacle (questionably a branchia) originates from the middorsum of an anterior setiger and is characteristic of the family. All setae are simple and arranged in 1-2 vertical rows on short, usually inconspicuous parapodia. Setae are smooth or have spinulose outer margins. Acicular spines may be present on posterior segments of some forms. Branchiae are absent. The pygidium has caudal cirri.

The cossurids were originally placed in the Cirratulidae by Webster and Benedict (1887). Day (1963) erected the family Cossuridae which presently includes two genera and about 15 species. Gardiner and Wilson (1979) synonymized the monospecific genus Heterocossura with Cossurella. Keys to the family were provided by Laubier (1963), Fauchald (1972a), and Orensanz (1976). Two species in the genus Cossura are represented in the Gulf of Mexico BLM-OCS collections. Of these, one may be new to science and the other, a previously described species, is newly reported from the region.

PRINCIPAL DIAGNOSTIC CHARACTERS

The primary character used to identify the two currently recognized cossurid genera is the delineation of body regions based on major setal changes in the midabdominal region. Principal specific characters include the number of achaetous peristomial segments, segment of insertion of the middorsal tentacle, number of uniramous anterior setigers, and the kinds of setae.

Peristomium.

The peristomium (Figure 4-2a) consists of one or two achaetous segments. Segmentation may be incomplete dorsally or ventrally and the segmental line may be obscured ventrally by the mouth or everted pharynx. The use of a clearing agent such as Hoyer's solution or Amman's lactophenol may be used to observe the internal septa and is recommended to confirm the presence or absence of a second peristomial segment. The length of the peristomial segment(s) relative to the prostomium is occasionally used as a secondary specific character.

Median Tentacle.

The single median tentacle must be observed in both dorsal and lateral views (Figures 4-2a, 4a) to determine the segment of origin. The precise position of origin of this structure is often difficult to confirm as its leading edge is generally inserted at the posterior margin of a given segment. At least two workers, Laubier (1963) and Orensanz (1976), have noted the difficulty in determining the point of tentacle origin.

Setal Morphology.

Spinulose setae (Figure 4-2b), referred to in the literature as limbate, bilimbate, coarse, slender, coarsely serrated, pubescent, and spinous, are the most common form found in the Cossuridae. These setae are bordered along one or both margins with one to several dense rows of fine hairs, often giving the false impression of a limbate condition. The degree of marginal setation, overall size, and location (i.e., notopodial and/or neuropodial) of spinulose setae are important specific characters. Smooth capillary setae are present in some taxa and may accompany acicular spines on posterior segments of Cossurella species.

BIOLOGICAL NOTES

Few generalizations may be made about the biology of cossurids. These polychaetes are common in a wide variety of habitats from shallow, estuarine areas to abyssal depths. The cossurids are considered motile burrowers (Fauchald and Jumars, 1979) and probably feed on detritus (Fauchald, 1977a; Orensanz, 1976). Reproductive biology of the Cossuridae is not known; however, gravid individuals of two species, Cossura soyeri and C. delta, were collected in the northern Gulf of Mexico in mid-fall (Vittor & Assoc., unpubl. data).

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

Key to the Genera of Cossuridae

1a. Body divided into two regions, parapodia of posterior region with single acicular seta in each ramus. . . . . .**Cossurella***

1b. Body not divided into two regions; posterior parapodia without acicular setae. . . . . .**Cossura**, p. 4-4

*Not represented in Gulf of Mexico BLM-OCS collections but known to occur in the Texas Flower Garden area of the northwestern Gulf (Vittor & Assoc., unpubl. data).

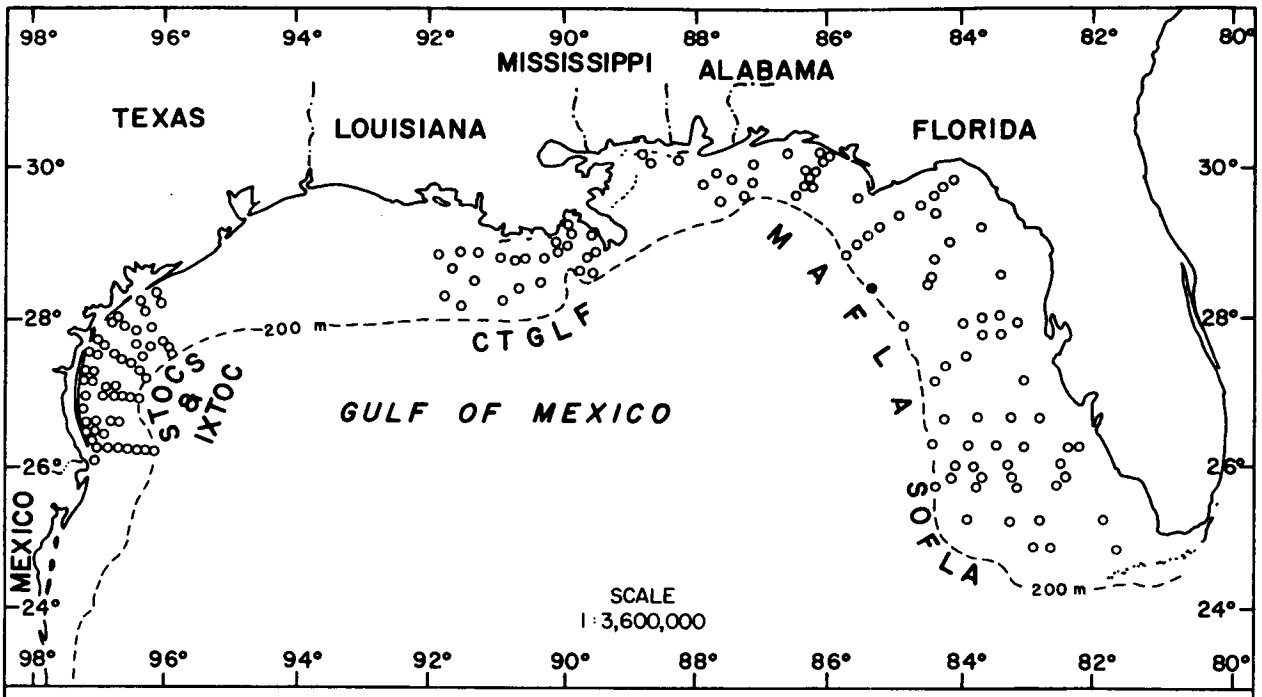

Figure 4-1. Distribution of Cossura sp. A on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

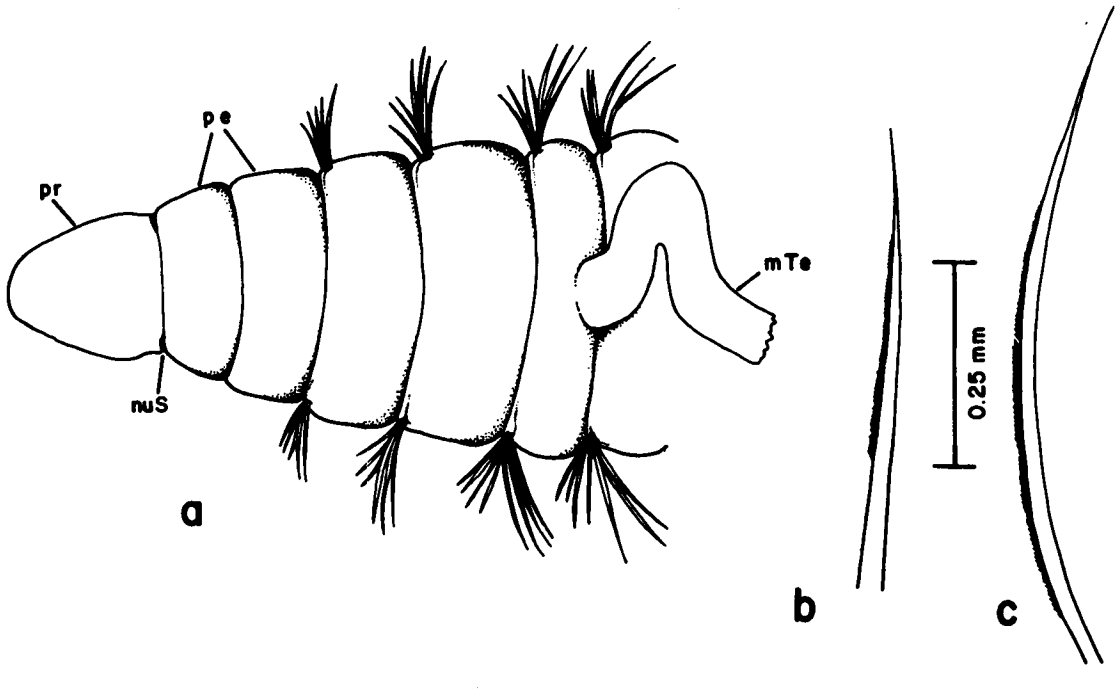

Figure 4-2. Cossura sp. A: a, dorsal view of anterior end; b, spinulose seta from anterior row of setiger 10; c, spinulose seta from posterior row of setiger 10.

Genus Cossura Webster and Benedict, 1887

TYPE SPECIES: Cossura longocirrata Webster and Benedict, 1887.
REFERENCES:
Webster and Benedict, 1887:743.
Fauchald, 1977a:21.
DIAGNOSIS: Prostomium conical or rounded, with or without eyespots. Nuchal organs present or absent. One or two achaetous peristomial segments. Single tentacle inserted on middorsum of one anterior setiger. Parapodia uniramous on one or more anterior segments, or entirely biramous. Capillary setae spinulose or smooth. Pygidium with caudal cirri.

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

1a. Middorsal tentacle inserted at posterior margin of setiger 2 (Figure 4-4a). 2
1b. Middorsal tentacle inserted at posterior margin of setiger 3 (Figure 4-2a). . . . . Cossura sp. A, p. 4-4

2a. Anterior neuropodia with stout, sabre-like setae (Figure 4-4e), and slender, spinulose setae. . . . . Cossura delta*
2b. Anterior neurosetae including slender, spinulose setae only (Figure 4-4b,c). . . . . .Cossura soyeri, p. 4-6

*Not represented in BLM-OCS collections but known to occur in estuarine areas in the northern Gulf of Mexico (Reish, 1958; Vittor, unpubl. reports).

Cossura sp. A
Figures 4-1, 2a-c

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
MAFLA 2313I-11/77 (1 spec., USNM 89498).
DESCRIPTION:
Length, 6.5 mm; width, 0.7 mm. Body incomplete with 33 setigers. Prostomium conical, broadly rounded at tip, without eyespots; nuchal organs present. Two achaetous peristomial segments following prostomium (Figure 4-2a). Parapodia uniramous on setiger 1, thereafter biramous. Median tentacle inserted at posterior margin of setiger 3. Setal fascicles positioned near anterior margin of each segment. Setae of two slightly different kinds, arranged in two vertical rows in all parapodia. Setae of anterior row (Figure 4-2b) shorter and slightly wider than those of posterior row (Figure 4-2c); all setae finely spinulose along one margin, distally pointed.
REMARKS: This species differs from Cossura soyeri in possessing a median tentacle inserted at the posterior margin of setiger 3 instead of setiger 2.
GULF OF MEXICO BLM-OCS OCCURRENCE: Single occurrence off Florida (Figure 4-1); 177 m; clayey sandy silt.

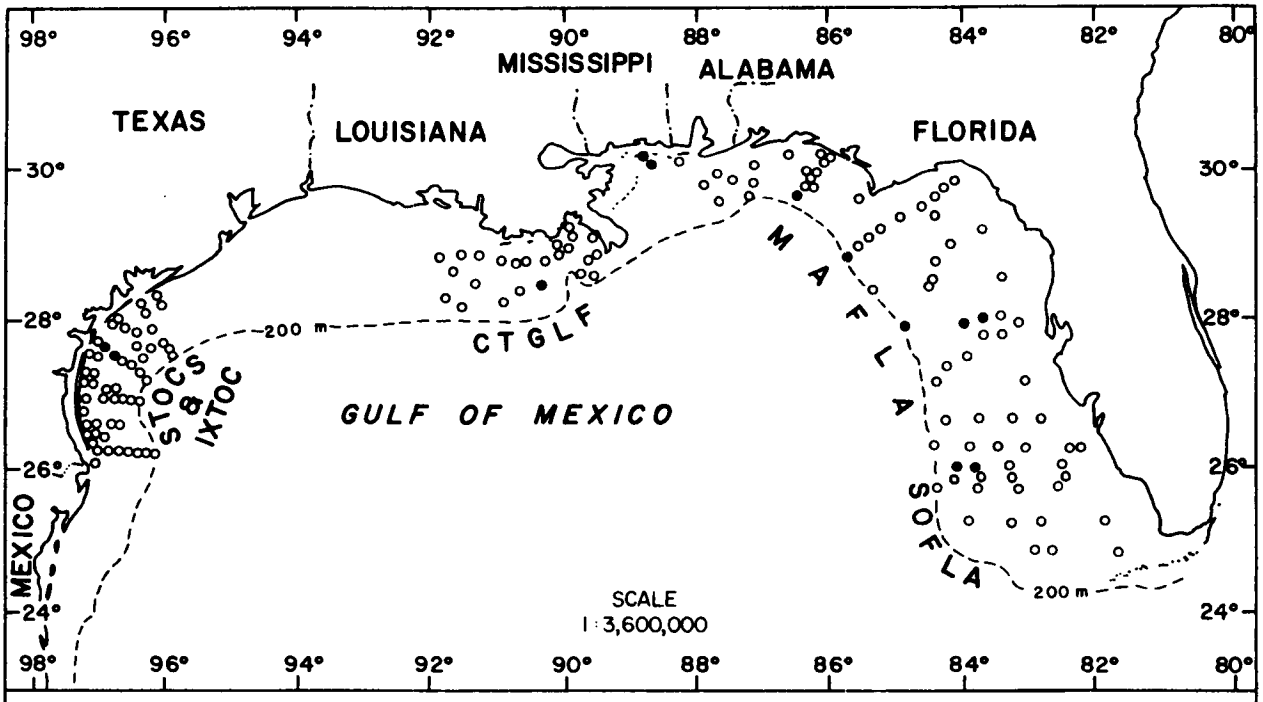

Figure 4-3. Distribution of Cossura soyeri on the outer continental shelf of the northern Gulf of Mexico based on its occurrence (●) in BLM-OCS monitoring programs.

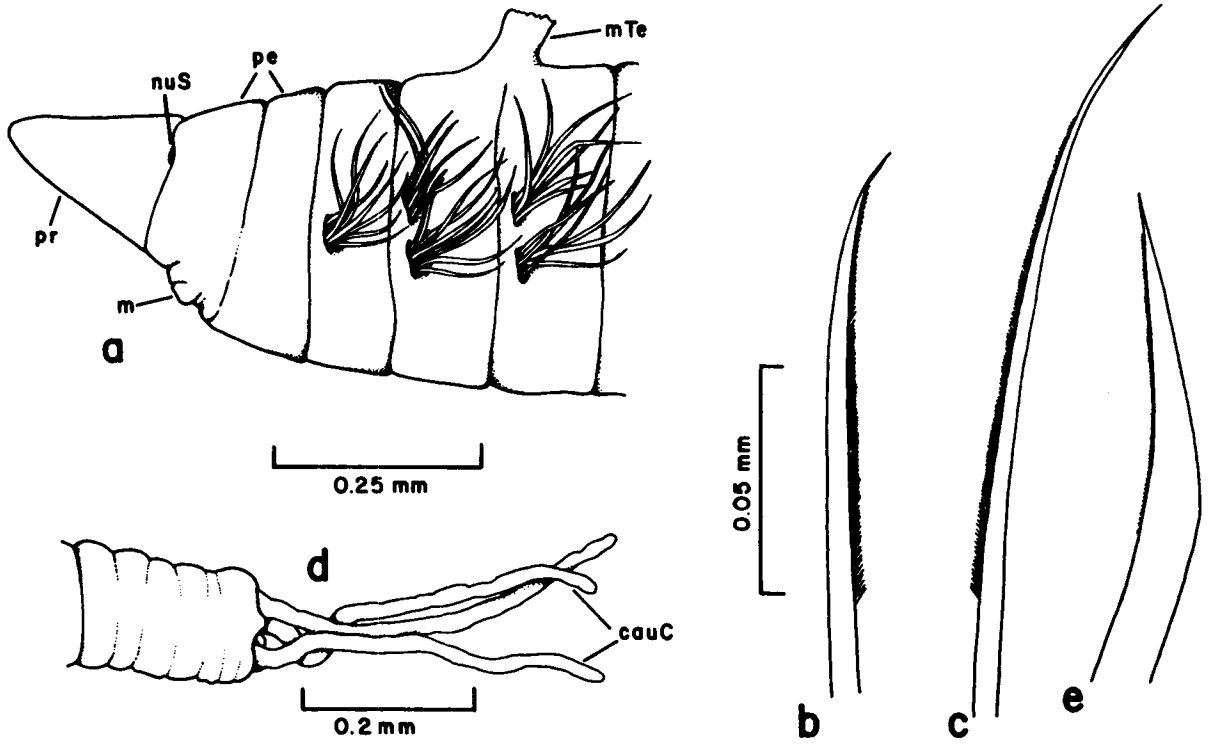

Figure 4-4. Cossura soyeri: a, lateral view of anterior end; b, spinulose seta from anterior row of setiger 10; c, spinulose seta from posterior row of setiger 10; d, dorsal view of pygidium; e, spinulose sabre seta from tenth neuropodium of Cossura delta.

Cossura soyeri Laubier, 1963
Figures 4-3, 4a-d

Cossura soyeri Laubier, 1963:833, fig. 1a-h.
Cossura soyeri--Gardiner and Wilson, 1979:169, fig. 4a-c.

MATERIAL EXAMINED:
Gulf of Mexico BLM-OCS:
SOFLA 12A-11/80 (4 spec., USNM 89499), 33A-7/81 (1 spec., USNM 89500); MAFLA 2210C-7/76 (1 spec.), 2211I-7/76 (1 spec.), 2212H-7/76 (2 spec.), 2427K-2/78 (2 spec.), 2536-11/77 (1 spec.), 2637F-6/75 (3 spec.), 2637H-6/75 (3 spec.), 2638G-6/75 (3 spec., USNM 75148); CTGLF 03-1/79 (1 spec., USNM 89504); STOCS 1/II-4 11/76 (3 spec., USNM 89501), 1/II-6 12/76 (3 spec., USNM 89502), 4/II-2 11/76 (2 spec., USNM 89503).
Supplementary Material:
Gulf of Mexico--off Alabama, COE Sta. 050-10/80, 30°18'27"N, 88°18'49"W, 4.1 m, muddy sand (2 spec., 1 gravid); off Louisiana, LOOP Sta. 468-1/80, 29°05'59"N, 90°07'18"W, 9.8 m, clayey silt (1 spec.), LOOP Sta. 479-11/79, 28°56'12"N, 90°04'07"W, 27.7 m, silty clay (6 spec.); off Mississippi, IEC Sta. 741 GO 009-11/80, 19°32'26"N, 89°08'48"W, 6.0 m, sandy mud (2 spec.).
DESCRIPTION:
Length, to 6.5 mm (previously reported to 4.8 mm); width, to 0.5 mm (previously reported to 0.4 mm). Largest specimen incomplete with 33 setigers. Prostomium conical, anteriorly rounded, without eyespots; nuchal organs present. Two achaetous peristomial segments following prostomium. Parapodia uniramous on setiger 1, thereafter biramous. Median tentacle inserted at posterior margin of setiger 2 (Figure 4-4a). Setal fascicles positioned near anterior margin of each segment. Noto- and neuropodia with spinulose setae arranged in two vertical rows. Setae of anterior row (Figure 4-4b) shorter and slightly wider than those of posterior row (Figure 4-4c). Pygidium with three filamentous caudal cirri (Figure 4-4d).
REMARKS: Several BLM-OCS specimens were originally identified as Cossura delta Reish, 1958. However, they lack the stout, sabre-like neurosetae (Figure 4-4e) characteristic of C. delta. C. soyeri is newly reported from the Gulf of Mexico.
PREVIOUSLY REPORTED HABITAT: 3-35 m; black silt.
GULF OF MEXICO BLM-OCS OCCURRENCE: Scattered occurrences throughout northern Gulf (Figure 4-3); 21-189 m; coarse to very fine sand, silty sand, sandy silt, sandy silty clay, silty clay.
DISTRIBUTION: Mediterranean Sea, North Carolina, Gulf of Mexico.

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.