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# A Report on Some Polychaetous Annelids from the Miami-Bimini Area

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Forty-seven species of annelids in 26 families and 42 genera were collected in the vicinity of Miami, along the Florida Keys, and at Bimini in the western Bahamas in January and February, 1954.

Most of the species are intertidal or shallow-water forms. They were collected from flats at low tide or on the outer reefs, either dug up from muddy sand with a shovel, or found under rocks or on old shells associated with ascidians, sea-urchin tests, aggregated clumps of sponges, and algae. Drifting logs, bridges, pier pilings, bottoms of boats, and large sponges, the latter mainly in Bimini, provided the author with a great number of specimens. Two samples were taken from plankton in the Florida Current. One belongs to the interstitial sand fauna.

It is interesting to note that many species belonging to the West Indian tropical fauna are represented together with species occurring farther to the north. Thus, as far as the annelids are concerned, the areas reported upon represent a region of overlap between these two faunal areas.

To our knowledge, little work has been done on the annelids of the Miami or Bimini areas. Although 47 species were recorded during the short time available, many more species undoubtedly are to be found in these areas.

All drawings are by the author from living or freshly preserved animals. The samples are deposited in the Museum of the Marine Laboratory, University of Miami.

I am indebted to the Smith-Mundt and Fulbright commissions for

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support during my stay in the United States, and to the University of Miami, Marine Laboratory, for material aid; to Dr. F. G. Walton Smith, Director of the Marine Laboratory, for placing the facilities of the latter institution at my disposal during my stay at the laboratory. I am particularly indebted to Dr. Gilbert L. Voss, Curator of Invertebrates at the Marine Laboratory, University of Miami, and to Dr. Olga Hartman who has read this manuscript.

I extend my grateful thanks to Dr. C. M. Breder, Jr., Director of the Lerner Marine Laboratory of the American Museum of Natural History, located in Bimini, British West Indies, for extending the facilities of this excellent seaside laboratory during the period of my stay and for help in publishing this paper, and also to the staff of this laboratory for their generous aid which made my stay so interesting.

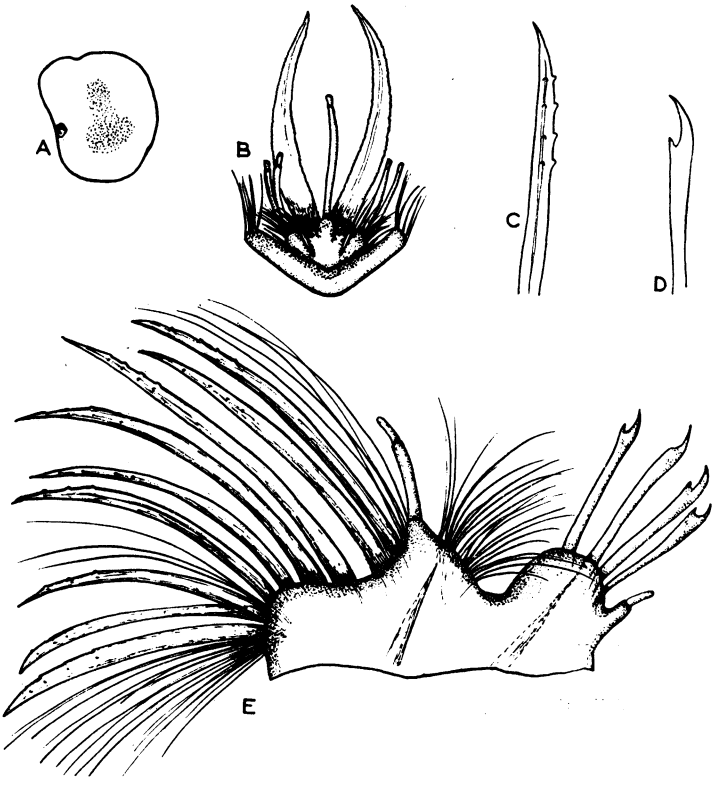


FIG. 1. *Pontogenia sericoma*. A. Elytra. B. Anterior end, dorsal view. C. Notoseta from medium parapodium, lateral view. D. Neuroseta from medium parapodium, lateral view. E. Medium parapodium, anterior view.

## FAMILY APHRODITIDAE

Body short and curved, segments few, and elytra usually number 15, eyes stalked. One median antenna and two long palps, two pairs of tentacular cirri with capillary setae, dorsal and short ventral cirri present. Notosetae of two kinds: long, heavy, and curved, or in tuft of fine capillary setae forming a felt-like coat over the elytra, neurosetae less numerous, shorter, simple or hooked.

### *Pontogenia sericoma* (Ehlers)

Figure 1

*Pontogenia sericoma* EHLERS, 1887, p. 46, figs. 1–5.

Body strongly curved, covered with felt; 15 pairs of elytra; eyes black and stalked. Two palps, median antenna shorter than the palps. Upper notosetae conspicuous, yellowish, strongly curved over the body; lower notosetae fine and capillary; neurosetae short and hooked.

Length 20 to 30 mm.; color yellowish. One specimen found in Biscayne Bay, Miami.

## FAMILY POLYNOIDAE

Body elongate, prostomium bilobate, four sessile eyes. One median antenna and two shorter lateral antennae. One pair of palps. Proboscis with a row of papillae and four chitinous jaws. Two pairs of tentacular cirri. Twelve, 18, or many pairs of elytra. Ventral cirri on every segment. Two anal cirri. All setae simple.

### *Lepidonotus variabilis* Webster

Figure 2

*Lepidonotus variabilis* WEBSTER, 1879, pp. 205–208, figs. 6–11, pl. 1. WARREN, 1942, p. 45. HARTMAN, 1945, p. 10. BEHRE, 1950, p. 11. HARTMAN, 1951, p. 18.

Body small, covered with 12 pairs of elytra which are easily detachable. Elytra spotted with gray and white, and fringed. Antennae subulate. Proboscis with four chitinous jaws and 18 papillae. Dorsal cirri much longer than the ventral ones. Notosetae spiny and much shorter than the neurosetae which are distally dentate and spinous.

Length 17 mm. Found associated with rocks and sponges on the western beach of North Bimini.

## FAMILY POLYODONTIDAE

Body long, bearing elytra that leave the back broadly exposed. Prostomium with four eyes; the anterior pair may be stalked. Two long palps.

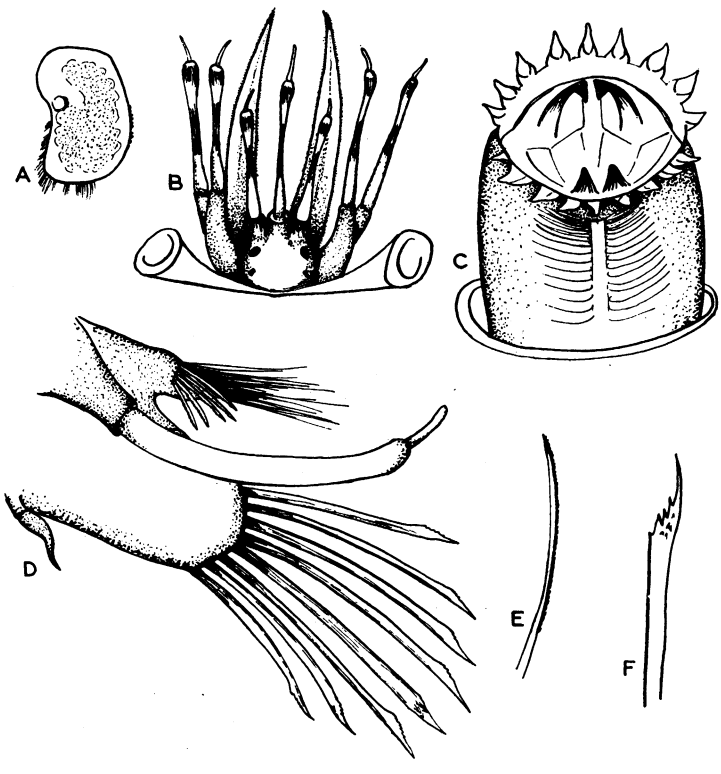


FIG. 2. *Lepidonotus variabilis*. A. Elytra. B. Anterior end, dorsal view. C. Everted proboscis, ventral view. D. Medium parapodium, anterior view. E. Notoseta, lateral view. F. Neuroseta, lateral view.

Two pairs of tentacular cirri. Elytra on every other two segments. Tubicolous, tube felt-like, made of fine sand and silt.

### *Panthalis pustulata* Treadwell

Figure 3

*Panthalis pustulata* TREADWELL, 1924, p. 18. HARTMAN, 1939, p. 87.

A single specimen was found at low tide at Bear Cut Point, Biscayne Key, Miami. Animal complete and found in its tube. Elytra occur on every other segment along entire length of body; anterior elytra suboval, remaining elytra laterally folded. Prostomium bears four eyes, anterior pair stalked and having conspicuous lenses. Median tentacle arises from the anterodorsal margin of the prostomium. Two pairs of tentacular cirri

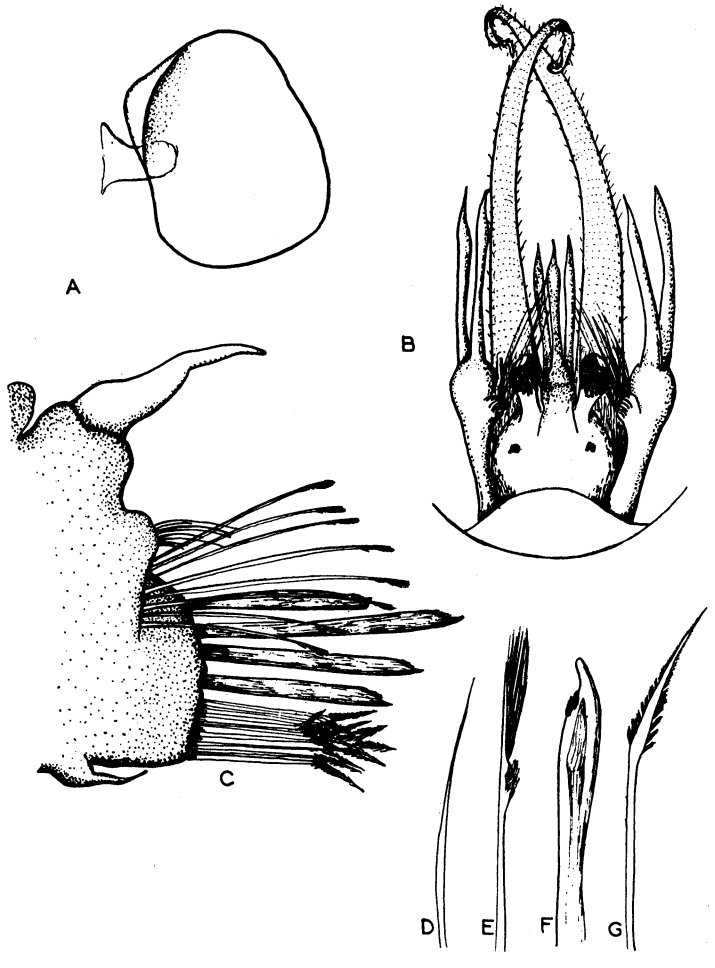


FIG. 3. *Panthalis pustulata.* A. Medium elytra. B. Anterior end, dorsal view. C. Medium parapodium, anterior view. D. Capillary notoseta. E. Notoseta, lateral view. F. Neuroseta, upper fascicle, lateral view. G. Neuroseta, lower fascicle, lateral view.

bear on their inner face, basically, a square protrusion directed towards the eyes and carrying a tuft of capillary setae. Palps long and slender, three times longer than the median tentacle. Branchial processes found on each side of dorsal cirri. Notosetae on two groups: either fine and capillary, or simple and tapering distally with two tufts of fine hairs. Upper neurosetae made of heavy rods distally bent and bearing a small tuft of short hairs. Lower neurosetae slender, curved, bearing two rows of spines. Pygidium with two long urites.

Length 21 cm., width 17 mm.; color yellowish gray. Soft tube of silt and mud.

### *Polyodontes lupina* (Stimpson)

*Acoetes lupina* STIMPSON, 1856, pp. 116–117. ANDREWS, 1891, p. 280.
*Polyodontes lupina*, HARTMAN, 1945, p. 10. BEHRE, 1950, p. 11. HARTMAN, 1951, p. 19.

An incomplete specimen measuring 70 mm., identified by Gilbert L. Voss, was collected in Key West. There is a single pair of large stalked eyes. Small elytra, dark brown and lined with white, leave the dorsal surface broadly exposed. The tube was not found.

## FAMILY SIGALIONIDAE

Body elongate and worm-like, covered with scales which entirely conceal the body. Elytra on every posterior segment. Prostomium with a median antenna inserted on a base with lateral processes (ctenidia). Cirrus-like branchiae on every parapodium except the first ones. Notosetae simple and spiny or capillary. Neurosetae multiarticulate.

### *Sthenelais boa* (Johnston)

Figure 4

*Sigalion boa* JOHNSTON, 1833, p. 322; 1865, p. 124, pl. 13, fig. 6.
*Sthenelais boa*, FAUVEL, 1923, p. 110, fig. 41. MONRO, 1933, p. 248.

Body elongate and rectilinear, covered with pairs of yellow, kidney-shaped, and fringed elytra. Prostomium red, bearing four small black eyes. Median antenna implanted on a large cirratophore which bears laterally two ctenidia. Two small lateral antennae above the palps are carried by the first setigerous segment which has two pairs of tentacular cirri, two pairs of ctenidia, one pair of ventral cirri, and two fascicles of simple setae. Parapodia with two or three ctenidia. Notosetae curved and finely denticulate. Superior simple neurosetae regularly spiny, inferior articulate ones spiny near the articulation and multiarticulate.

Length 60 mm. Dredged in shallow water (6 feet), in Biscayne Bay, Miami.

## FAMILY AMPHINOMIDAE

This tropical family is well represented in the Miami-Bimini area. It includes large, brilliantly colored, conspicuous species, which are often called fire-worms. Consult Hartman (1951) for keys, descriptions, and

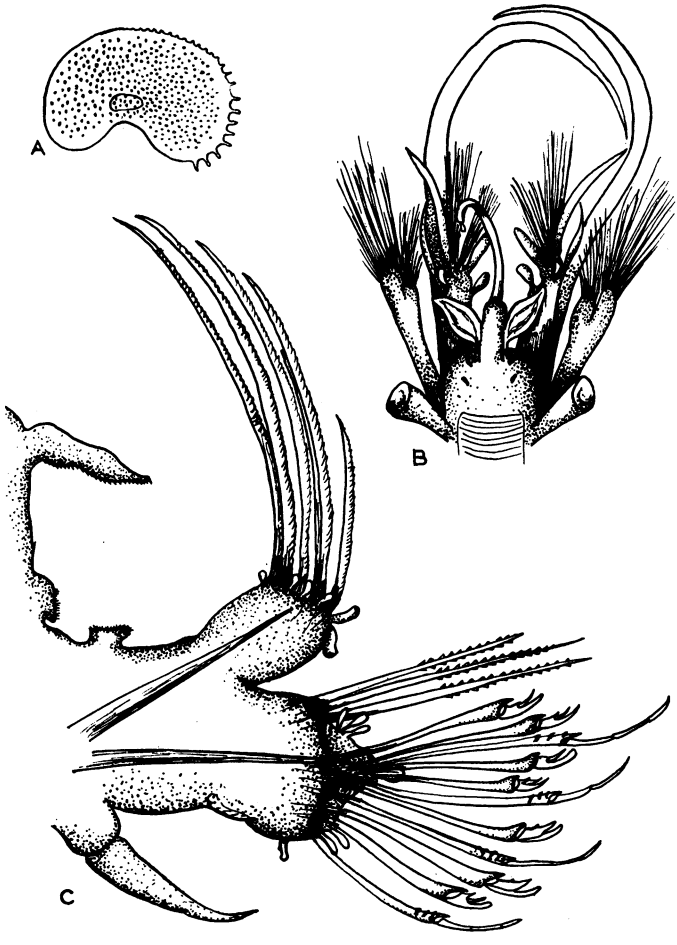


FIG. 4. *Sthenelais boa*. A. Elytra. B. Anterior end, dorsal view. C. Anterior view of medium parapodium.

excellent drawings of the species. The following species are recorded from the area studied.

### *Chloeia viridis* Schmarda

*Chloeia viridis* SCHMARDA, 1861, p. 144, figs. 295–305. HARTMAN, 1951, p. 29.
*Chloeia euglochis* EHLERS, 1887, pp. 18–24, pl. 1, fig. 12, pl. 2, figs. 1–8.

Easily distinguished by its short and heavy body, glistening with white bristles and red bars.

Length 17 cm. This species was found actively swimming (collector,

Gilbert L. Voss) in shallow water off Fort Lauderdale and in Biscayne Bay, Miami.

### *Eurythoe complanata* (Pallas)

*Aphrodita complanata* PALLAS, 1766, pp. 109–112, pl. 8, figs. 19–26.
*Eurythoe complanata* EHLERS, 1887, pp. 29–31. MONRO, 1933, p. 245. TREADWELL, 1939, p. 170, fig. 5. HARTMAN, 1940, pp. 202–203, pl. 31, figs. 1–4; 1951, p. 25, pl. 4, fig. 2.

Body elongate, rectangular in cross section. Prostomium bearing four small eyes, extends dorsally by the caruncle up to segments 3 and 4. Branchiae conspicuous.

Length 80 mm. Found on rocks at Bear Cut Point, Biscayne Key, Miami; on coral reefs off the Florida Keys (Molasses Reef, Bache Shoal).

### *Hermodice carunculata* (Pallas)

*Aphrodita carunculata* PALLAS, 1766, pp. 102–106, pl. 8, figs. 12–13.
*Hermodice carunculata*, KINBERG, 1857, p. 13. WEBSTER, 1884, p. 307. MCINTOSH, 1885, pp. 24–27, figs. 1–4, pls. 3a–5. MULLIN, 1923, pp. 44–45, figs. 2–3. MONRO, 1933, p. 245. TREADWELL, 1939, p. 173, fig. 8. HARTMAN, 1951, p. 22, pl. 5, fig. 1.

Body long, up to 25 cm., color in life brown to greenish with red branchiae. This species is found in calm water on the eastern shore of southern Florida. It occurs in great abundance on the flats in Bimini, hidden in *Strombus* shells from which its crawls out at night to feed.

### *Pareurythoe americana* Hartman

*?Eurythoe dubia* MONRO, 1933, pp. 5–6, fig. 1.
*Pareurythoe americana* HARTMAN, 1951, p. 25, pl. 6, figs. 1–4, pl. 7, figs. 1–4.

A much smaller specimen than the one described by Hartman (1951) was found in the intertidal zone on Virginia Key, Miami.

Length of the body only 78 mm. Prostomium and caruncle seen only after dissection, as they were considerably contracted.

## FAMILY CHRYSOPETALIDAE

Very minute annelids characterized by a fan of palae above the notopodia, dorsal cirri, and composite setae.

### *Paleonotus heteroseta* Hartman

Figure 5

*Paleonotus heteroseta* HARTMAN, 1945, p. 12, pl. 1, figs. 1–6.

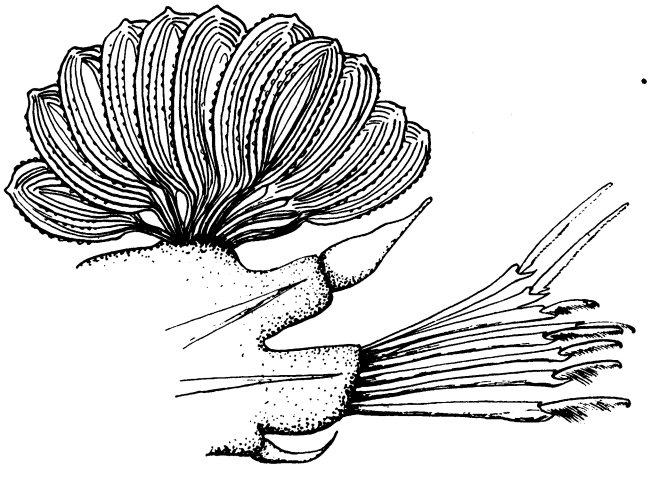

FIG. 5. *Paleonotus heteroseta*. Anterior view of medium parapodium.

A very small individual, 3 mm. in length, taken from an old shell on the west side of North Bimini. It corresponds to the description given by Hartman (1945); the palae do not seem to be of two different kinds, though the lateral ones are smaller. As in the type there are two kinds of setae: spinigerous composite setae in the upper part of the parapodia, and falcigerous ones in the lower part. Prostomium rectangular, with two large palps and four small eyes. Proboscis was not seen. Color whitish, with golden palae. Blood green.

## FAMILY PHYLLODOCIDAE

Body vermiform, thin, and long. Prostomium oval or heart-shaped, with two eyes and four or five antennae. Proboscis eversible but without jaws. Parapodia uniramous, dorsal and ventral cirri foliaceous. Setae composite. Proboscis and shape of parapodia are good characters in the identification of members of this difficult family. Color also is an important character. The following identifications were made from living specimens which had not yet lost their color in alcohol.

### *Nereiphylla fragilis* Webster

Figure 6

*Nereiphylla fragilis* WEBSTER, 1879, p. 214, figs. 32–37, pl. 3.

Body small, having only 25 segments, prostomium oval-shaped, bearing two large dark eyes and four subequal tentacles. Four pairs of

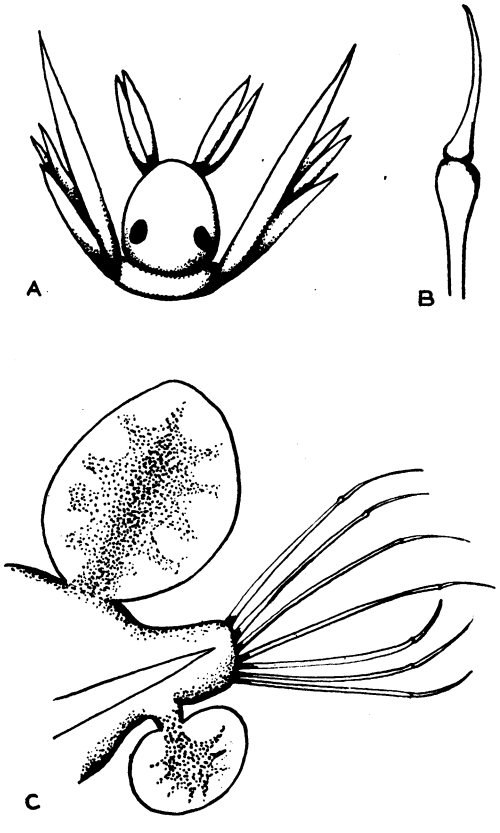


FIG. 6. *Nereiphylla fragilis*. A. Anterior end, dorsal view. B. Composite seta. C. Medium parapodium, anterior view.

tentacular cirri. Setae all composite and smooth, without visible spines. On the parapodia, both the dorsal and the much smaller ventral cirri are subspheric. Two long anal cirri.

Length 3 mm., width 0.4 mm.; color greenish yellow, with brown cirri. Found on algae among mangroves at Virginia Key, Miami.

### *Mystides elongata* Southern

*Mystides* (*Mesomystides*) *elongata* SOUTHERN, 1914, p. 74, pl. 5, fig. 12.
*Mystides* (*Pseudomystides*) *elongata*, FAUVEL, 1923, p. 182, fig. 66.

Prostomium two· times longer than wide, tapering distally, with rounded anterior end bearing four thin antennae. Two ocular spots laterally on posterior part of prostomium. First segment with one pair

of long tentacular cirri, second segment with two pairs of tentacular cirri, the dorsal ones much longer than the ventral ones. Third segment bears setae and ventral cirrus but no dorsal cirrus. On other setigerous segments: dorsal cirri oval, ventral cirri elongate. Simple setae are long and spiny, with an elongate spine on the side; composite setae are heavily striated.

Length 3 mm., width 0.3 mm.; color yellowish to green. Found between sand grains 40 cm. deep on the eastern beach, North Bimini.

## FAMILY NAIADIDAE

This family includes pelagic annelids with an elongate, transparent body. They are considered to be derived from the Phyllodocidae, adapted to pelagic life. Striking characters are the extremely developed large red eyes, and the anterior parapodia, often altered into voluminous sperm pouches in the female. The uniramous parapodia closely resemble those of the Phyllodocidae.

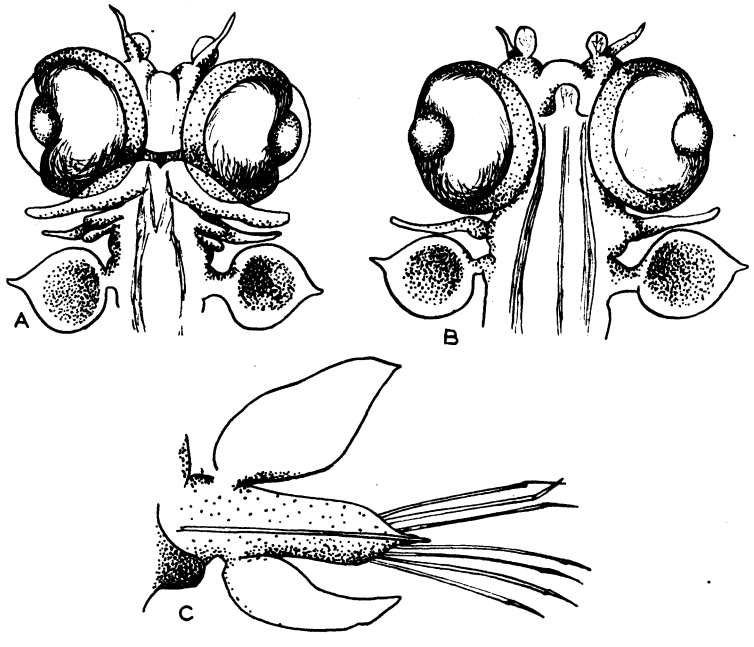


FIG. 7. *Vanadis crystallina.* A. Anterior end, dorsal view. B. Anterior end, ventral view. C. Medium parapodium, anterior view.

*Vanadis crystallina* Greeff

Figure 7

*Vanadis crystallina* GREEFF, 1876, p. 68, pl. 4, figs. 35–39. FAUVEL, 1923, p. 206, fig. 77.

Prostomium does not extend beyond the large red eyes. Median antennae ovoid-shaped. Of the two pairs of anterior antennae, one is twice as long as the other. Four pairs of tentacular cirri. In the female, first pair of parapodia modified into enormous sperm pouches. First five parapodia rudimentary, but after the sixth one they are composed of a foliaceous dorsal cirri, an oval ventral cirri, a dark protuberance, and a fascicle of long composite setae.

Length 50 mm., width 1.5 mm. One specimen taken in the Florida Current off Bimini at a depth of about 100 fathoms.

FAMILY SYLLIDAE

Body thin and of small size. Prostomium bearing two palps, three

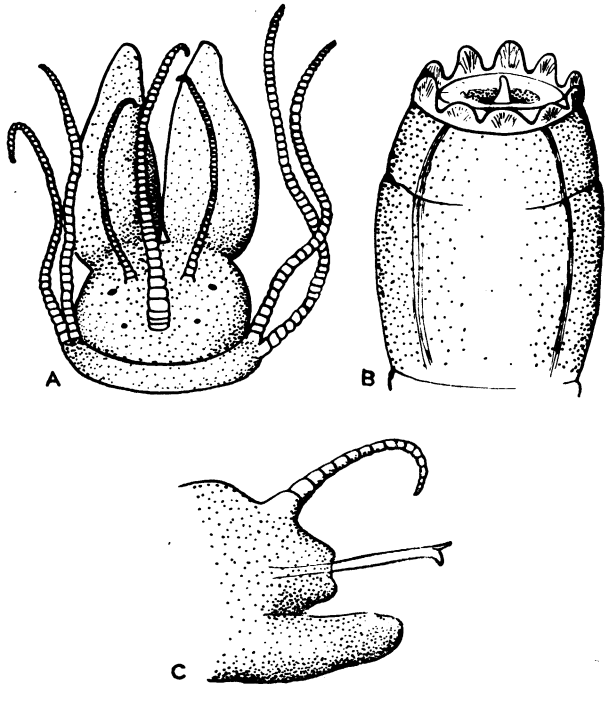


FIG. 8. *Haplosyllis spongicola.* A. Anterior end, dorsal view. B. Everted proboscis, ventral view. C. Medium parapodium, anterior view.

antennae, and two pairs of tentacular cirri. Eversible proboscis bearing one or several teeth. Uniramous parapodia usually bearing dorsal and ventral cirri. Setae simple or composite. Two anal cirri.

*Haplosyllis spongicola* (Grube)

Figure 8

*Syllis spongicola* GRUBE, 1855, p. 104, figs. 4, 4a.
*Haplosyllis* (*Syllis*) *spongicola*, FAUVEL, 1923, p. 257, fig. 95. HARTMAN, 1942, pp. 45–46, figs. 64–65; 1945, pp. 15–16; 1951, p. 41.

Prostomium with four small eyes and a pair of wide palps, which are not fused. Three tentacles and two pairs of multiarticulate tentacular cirri. The easily everted proboscis is barrel-shaped and shows distally a row of 10 papillae and one tooth. Parapodia with dorsal, mulitarticulate cirri and one or several simple heavy setae, distally bifid. Two short anal cirri.

Length 13 mm., width 1 mm. Individuals occurred in great numbers in sponges in North and South Bimini.

FAMILY NEREIDAE

Body elongate, with numerous segments. Prostomium with four eyes and two antennae. Four pairs of tentacular cirri. Everted proboscis provided with powerful chitinous jaws and paragnaths, the repartition of which is of great specific value. Areas in which they occur are numbered from I to VIII in figure 9. Parapodia are biramous, with dorsal and

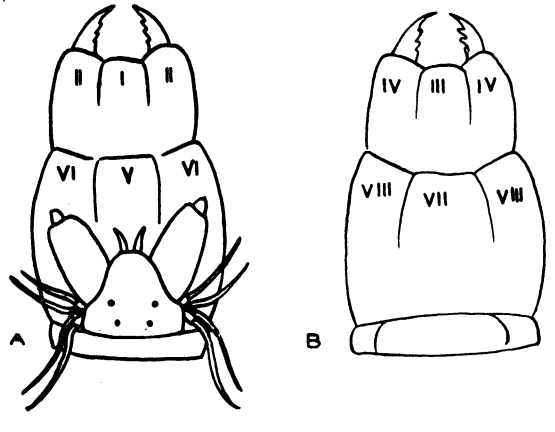


FIG. 9. Nereidae. Everted proboscis, showing order of numbered areas. A. Dorsal view. B. Ventral view.

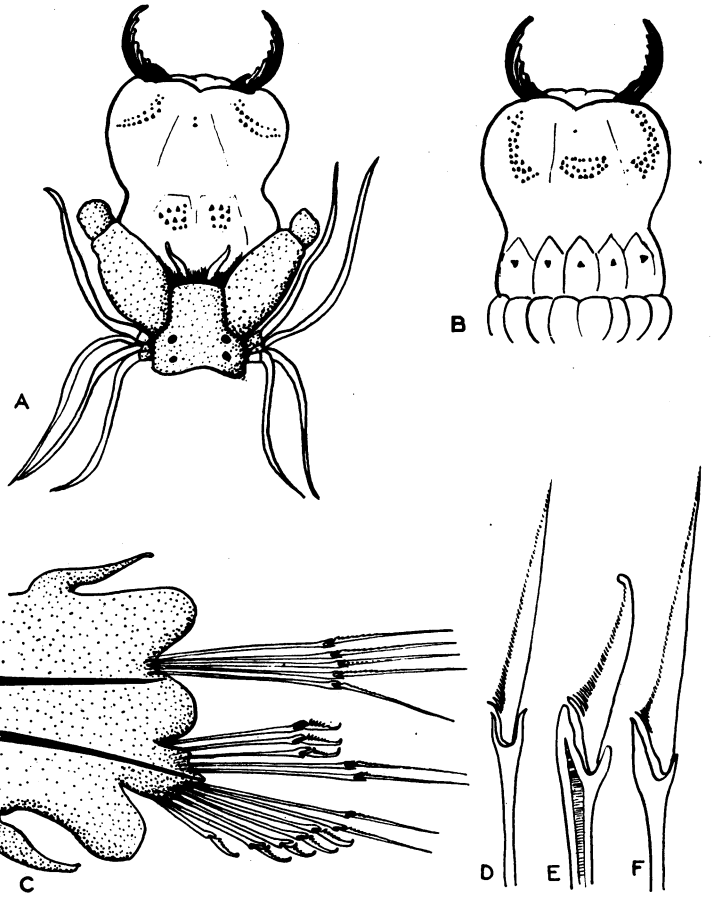


FIG. 10. *Nereis riisei*. A. Anterior end, everted proboscis, dorsal view. B. Everted proboscis, ventral view. C. Medium parapodium, anterior view. D. Homogomph spiniger, lateral view. E. Heterogomph falciger, lateral view. F. Heterogomph spiniger, lateral view.

ventral cirri. Composite setae are spinigerous or falcigerous, homogomph or heterogomph. This well-delimited family includes free-swimming and actively predaceous annelids.

### *Nereis riisei* Grube

Figure 10

*Nereis glandulata*, HOAGLAND, 1919, p. 575, pl. 30, figs. 1–6.

*Nereis riisei* GRUBE, 1856b, p. 162. AUGENER, 1922a, p. 42. MONRO, 1933, p. 256. HARTMAN, 1951, p. 46.

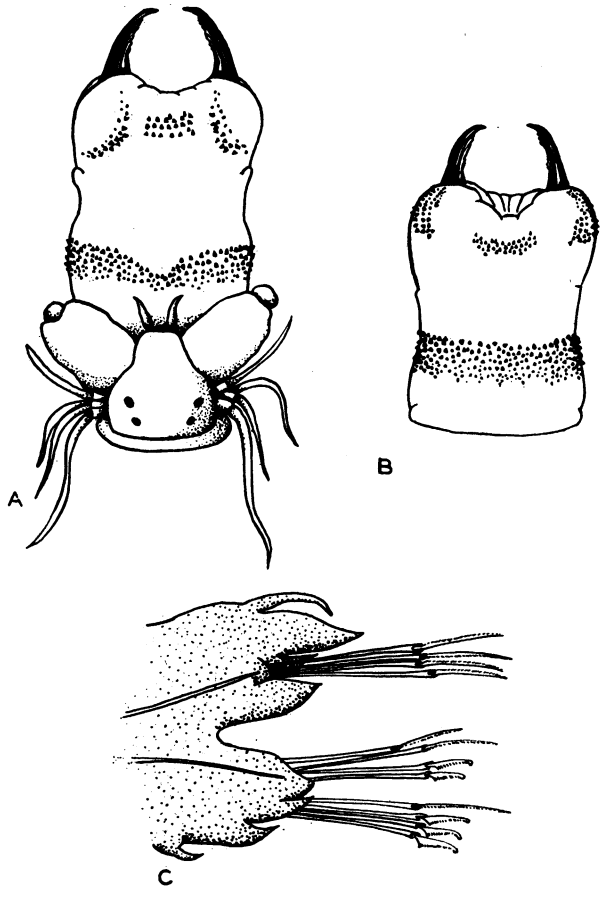


FIG. 11. *Neanthes caudata.* A. Anterior end with everted proboscis, dorsal view. B. Everted proboscis in ventral view. C. Medium parapodium, anterior view.

Proboscis bears on area I one or two paragnaths, on area II around 20 paragnaths on a curve, on area III and IV around 30 on a curve, on area V one or two, on area VI nine in a heap, and areas VII and VIII together bear a total of only five big cones. Parapodia biramous. Notopodia: all homogomphs spinigers. Neuropodia: upper fascicle: heterogomph falcigers; lower fascicle: both heterogomph spinigers and heterogomph falcigers.

Length 20 to 80 mm. Found associated with algae among mangroves or on drifting logs at Virginia Key, Miami.

*Neanthes caudata* (Delle Chiaje)

Figure 11

*Spio caudatus* DELLE CHIAJE, 1841, vol. 3, p. 67.
*Nereis acuminata* EHLERS, 1864, vol. 2, p. 552, pl. 22, figs. 23–28.
*Neanthes bolivari* RIOJA, 1919, p. 67, fig. 16.
*Neanthes caudata*, FAUVEL, 1913, p. 60, fig. 11; 1923, p. 347, fig. 135.

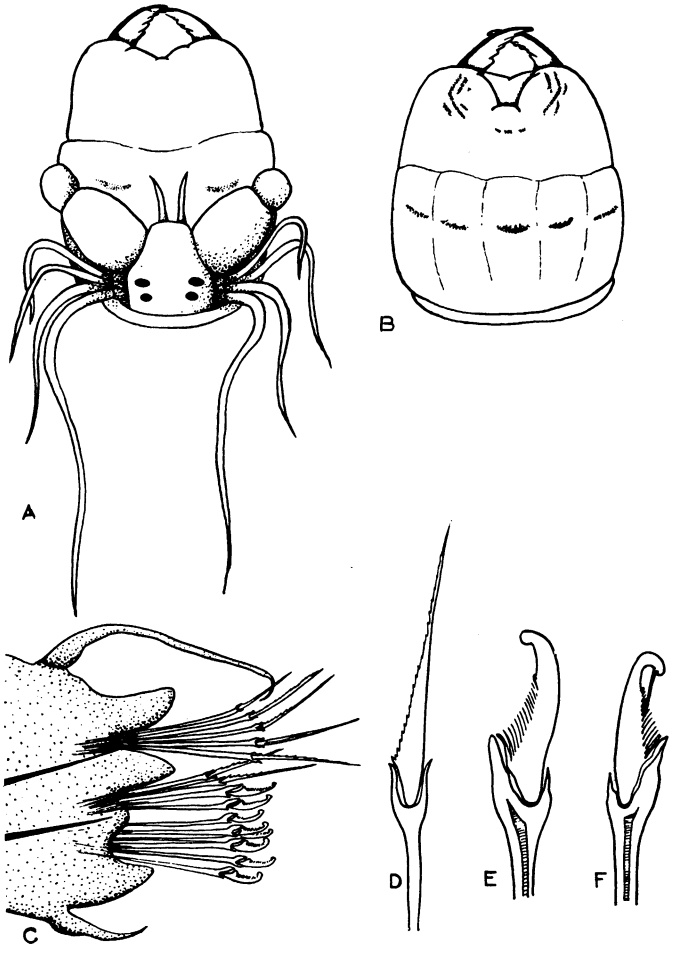


FIG. 12. *Platynereis dumerili.* A. Anterior end with everted proboscis, dorsal view. B. Everted proboscis, ventral view. C. Medium parapodium, anterior view. D. Homogomph spiniger, lateral view. E. Heterogomph falciger, lateral view. F. Heterogomph falciger from posterior segments, lateral view.

Proboscis bears in areas I and III numerous paragnaths in three rows; on areas II and IV numerous paragnaths on a curve. Areas V, VI, VII, and VIII form a continuous belt of numerous paragnaths in eight to seven rows. Parapodia with small dorsal and ventral cirri. Notosetae are all homogomph spinigers. Neurosetae are homogomph spinigers and heterogomph falcigers in the upper and lower fascicles.

Length 30 mm., width 2.5 mm. Found on drifting algae, Virginia Key, Miami.

### *Platynereis dumerili* (Audouin and Milne-Edwards)

Figure 12

*Nereis dumerilii* AUDOUIN AND MILNE-EDWARDS, 1834, p. 184.
*Platynereis dumerili*, FAUVEL, 1923, pp. 359–360, fig. 141. MONRO, 1933, p. 257. HARTMAN, 1945, p. 22. BEHRE, 1950, p. 12. HARTMAN, 1951, p. 47.

Prostomium with four eyes and four pairs of tentacular cirri which are very long and reach to the tenth setigerous segment. Proboscis provided with rows of very small, inconspicuous, pectinate paragnaths which are missing on areas I, II, and V. Parapodia with a dorsal cirrus twice as long as the ventral one. Notosetae are all homogomph spinigers, upper neurosetae are homogomph spinigers and hererogomph falcigers, lower neurosetae are all heterogomph falcigers. Two long anal cirri.

Length 40 to 50 mm., width 2 mm. Associated with *Sargassum* in Biscayne Bay, Miami, and North Bimini.

### *Ceratonereis mirabilis* (Kinberg)

Figure 13

*Nereis mirabilis* KINBERG, 1865, p. 170.
*Nereis gracilis* WEBSTER, 1884, pp. 313–314, pl. 9, figs. 29–35.
*Ceratonereis tentaculata*, MONRO, 1933, p. 256.
*Ceratonereis mirabilis*, EHLERS, 1887, pp. 117–120, pl. 37, figs. 1–6. HARTMAN, 1951, p. 48.

Prostomium deeply incised into two lobes, bearing four pairs of tentacular cirri, the dorsoposterior ones reaching up to the thirtieth somite. Paragnaths occur only on maxillary areas and are present in small numbers on areas I, II, III, and IV. Parapodia with long, dorsal, thread-like cirri. Notosetae and neurosetae are homogomph spinigers and homogomph falcigers, the later being distally bifid.

Length 40 to 50 mm., width 2 mm. One specimen comes from Key West.

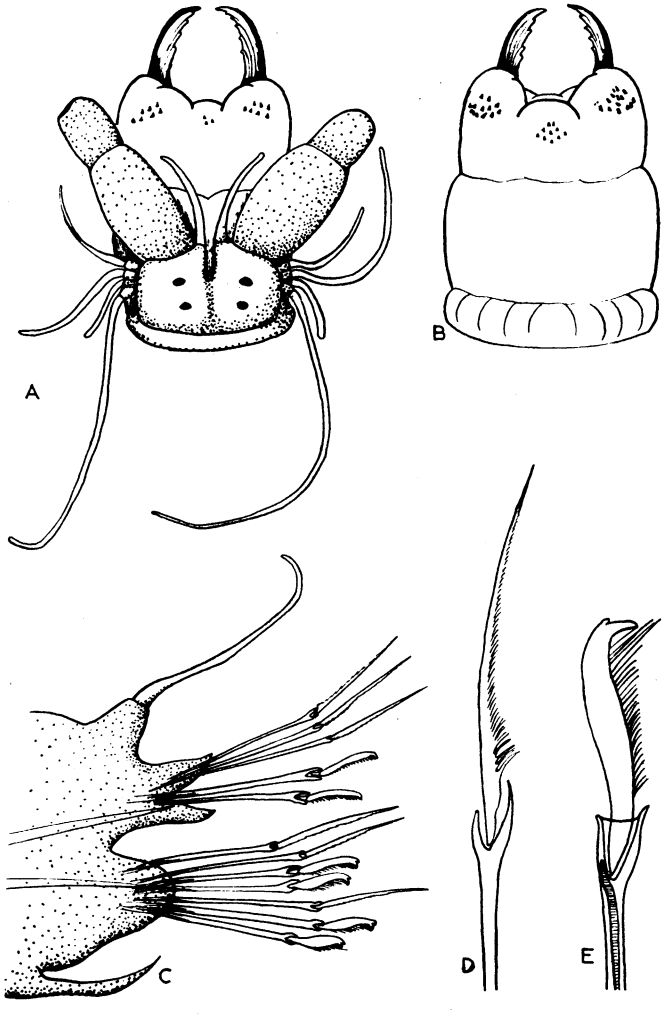


FIG. 13. *Ceratonereis mirabilis*. A. Anterior end with everted proboscis, dorsal view. B. Everted proboscis, ventral view. C. Medium parapodium, anterior view. D. Homogomph spiniger, lateral view. E. Homogomph falciger, lateral view.

## FAMILY GLYCERIDAE

Body elongate, with numerous bi-annulated segments. Slender prostomium tapers and ends in four small antennae. Proboscis long and subcylindrical, bearing four horny jaws. Setae simple and composite. Branchiae composite, simple, or absent. Presence or absence of branchiae is a very important specific character.

## *Glycera tesselata* Grube

Figure 14

*Glycera tesselata* GRUBE, 1863, p. 41, pl. 4, fig. 4. AUGENER, 1922b, p. 205. FAUVEL, 1923, p. 387, fig. 152.

Slender and conical prostomium bearing four tiny tentacles in a cross. Everted proboscis three times longer than prostomium, covered with fine papillae, and bearing distally four black hooks. Parapodia lack branchial processes but protrude noticeably from the body and bear a short, rounded, dorsal cirrus and a bigger, thicker ventral one. Notosetae are

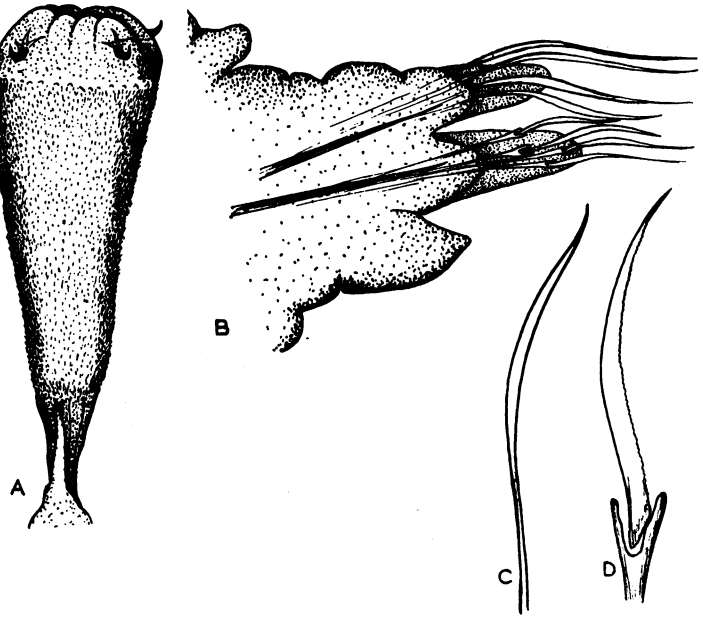


FIG. 14. *Glycera tesselata*. A. Anterior end with everted proboscis, dorsal view. B. Medium parapodium, anterior view. C. Capillary notoseta. D. Composite neuroseta.

simple and curved; neurosetae are composite and denticulate on their concave margin.

Length 70 to 80 mm., width 2 mm.; color flesh-pink. Occurs in muddy flats around Tokas Cay, Bimini.

## *Glycera dibranchiata* Ehlers

Figure 15

*Glycera dibranchiata* EHLERS, 1864, vol. 2, pp. 670–672, pl. 24, figs. 3–4, 10–28. *Euglycera dibranchiata*, ANDREWS, 1891, p. 288. HARTMAN, 1945, p. 23; 1951, p. 50.

Prostomium annulated and provided with four small antennae. Proboscis covered with conspicuous, sharp papillae and ends in four black chitinous jaws. Parapodia long and bearing a round dorsal cirrus and a triangular ventral one. Notosetae and neurosetae composite and finely denticulated. Posterior part of body tapering into a small pygidium bearing two long anal cirri.

Length 60 to 100 mm., width 3 mm.; color reddish to pink. Dredged in shallow, polluted water in Biscayne Bay, Miami.

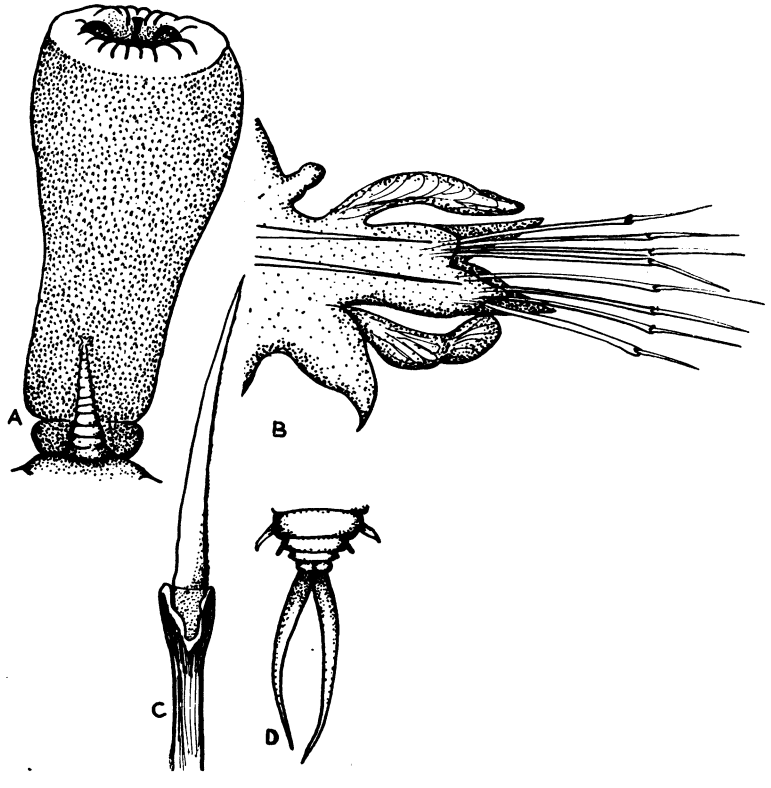


FIG. 15. *Glycera dibranchiata.* A. Anterior end with everted proboscis, dorsal view. B. Medium parapodium, anterior view. C. Composite seta. D. Posterior end, including last few segments and pygidium in dorsal view.

## SUPERFAMILY EUNICAE

Superfamily clearly distinguished from others by strong jaw structure consisting of mandibles or paired ventral plates, paired or unpaired dorsal maxillae, with basal plates or carriers and falcate forceps. Most

of the species of this superfamily have been recorded by Treadwell (1921). Descriptions and drawings are given in his paper. This superfamily includes the families Onuphidae, Eunicidae, and Lumbrinereidae.

## FAMILY ONUPHIDAE

Characterized by a prostomium with five antennae carried by annulated cirratophores. Two small frontal antennae. First parapodia more or less modified for crawling in a tube. Branchiae simple, pectinate, or spiraled. Compound setae on first setigerous segments only.

### *Diopatra cuprea* (Bosc)

Figure 16

*Nereis cuprea* Bosc, 1802, p. 142, pl. 5, figs. 1–4.
*Diopatra cuprea*, Ehlers, 1864, vol. 1, p. 285, figs. 6–20.
*Diopatra spiribranchia* Augener, 1906, pp. 145–148, pl. 5, figs. 88–96.
*Diopatra neapolitana*, Fauvel, 1923, p. 419, fig. 166.
*Diopatra cuprea*, Warren, 1942, p. 44. Hartman, 1944a, p. 54, pl. 1, figs. 9–14; 1945, p. 26. Behre, 1950, p. 2. Hartman, 1951, p. 51.

Prostomium with two occular spots and five occipital antennae with annulated cirratophores and two small frontal antennae. One pair of small tentacular cirri. First four parapodia extend on the ventral face and are strongly modified for tube dwelling. Long-spiraled branchiae occur on the fifth segment up to the sixtieth. Setae simple and limbate in the first five segments. Bidentate or tridentate setae with pseudo-articulate hooded hooks in the median segments, with some pectinate ones. In the posterior segments heavy acicular setae, hooded and distally bifid.

Length 50 mm.; color yellowish to green. Living in a coarse tube covered with shells and debris, deeply burrowed in the sand in Biscayne Bay, Miami.

### *Onuphis magna* (Andrews)

*Diopatra magna* Andrews, 1891, pp. 286–287, pl. 14, figs. 14–20.
*Onuphis magna*, Treadwell, 1921, p. 78, text figs. 280–287, pl. 7, figs. 1–5. Monro, 1933, p. 257. Hartman, 1945, p. 26; 1951, p. 52.

Consult Treadwell (1921) for description and color plates. One specimen comes from the lower part of Upper Matecombe Key, deeply burrowed in fine sand and mud.

## FAMILY EUNICIDAE

Samples of this warm-water family are expected to be found in abundance in the Miami-Bimini area. They differ from the Onuphidae

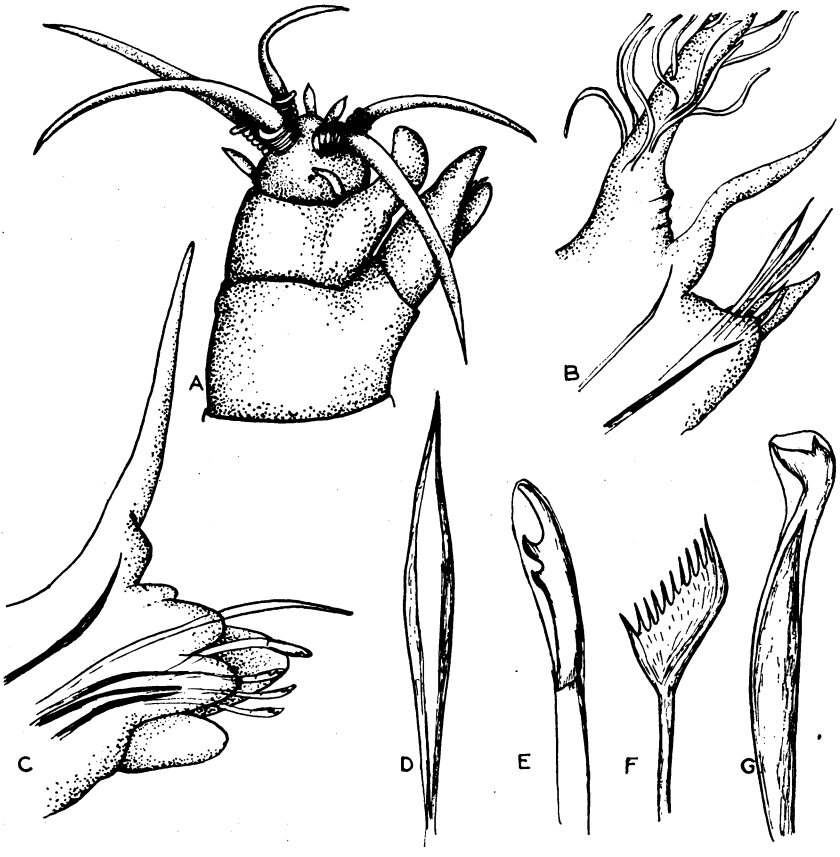


FIG. 16. *Diopatra cuprea*. A. Anterior view, right lateral view, showing modified parapodia. B. Sixth parapodium, anterior view. C. Seventieth parapodium, anterior view. D. Limbate seta, from anterior segment. E. Hooded hook from medium segment, lateral view. F. Pectinate seta, from median segment. G. Hooded acicular seta from posterior segment, lateral side.

by lacking the annulated cirratophore and the small paired antennae. Some specimens attain a large size.

### *Eunice rubra* Grube

*Eunice rubra* GRUBE, 1856a, p. 59.
*Eunice ornata* ANDREWS, 1891, pp. 284–285, pl. 13, figs. 6–13.
*Eunice rubra*, MONRO, 1933, p. 251. HARTMAN, 1945, p. 24; 1951, p. 55.
*Leodice rubra*, TREADWELL, 1921, p. 15, figs. 13–20, pl. 2, figs. 1–4.

Found on sponges and in crevices of coral rocks, this species is distinguished by its conspicuously articulate prostomial antenna (see Tread-

well, 1921). Common on the rocky shores of Bimini associated with sponges and ascidians.

### *Eunice longicirrata* Webster

*Eunice longicirrata* WEBSTER, 1884, pp. 318–319, figs. 75–80.
*Eunice articulata* EHLERS, 1897, p. 83, pl. 24, figs. 8–10.
*Leodice longicirrata*, TREADWELL, 1921, pp. 11–14, text figs. 3–13, pl. 1, figs. 1–4.

A small specimen (30 mm.) acquired in the Florida Current off Bimini. Prostomial antennae long and multiarticulate, with brown bands in their constrictions. Over entire body very striking arrangement of brownish pigment on a white background (see Treadwell, 1921).

### *Eunice denticulata* Webster

*Eunice denticulata* WEBSTER, 1884, p. 316, pl. 10, figs. 41–45.
*Leodice denticulata*, VERRILL, 1873, p. 639. TREADWELL, 1921, pp. 22–25, text figs. 41–45, pl. 3, figs. 1–4.

Many large specimens come from Bimini flats from inside the dark, massive sponge *Spheciospongia vesparia,* where they live in parchment-like tubes with numerous branchings and dead ends. Specimens can attain 40 cm., are dark reddish or brown in color in the anterior part of the body, the posterior part being often of a light flesh color (see Treadwell, 1921).

### *Eunice floridana* (de Pourtalès)

*Marphysa floridana* DE POURTALÈS, 1869, p. 108.
*Eunice floridana*, EHLERS, 1887, pp. 88–90, pl. 22, figs. 1–7. TREADWELL, 1921, p. 33, figs. 77–84. FAUVEL, 1914a, p. 149, pl. 1, figs. 5, 8, 11. HARTMAN, 1951, p. 56.

One individual, without its tube, measuring 11 cm. was dredged from Biscayne Flats, Miami. Smooth prostomial antennae extend beyond the first five segments and are not articulate (see Treadwell, 1921).

### *Eunice binominata* de Quatrefages

*Eunice binominata* DE QUATREFAGES, 1865, p. 327. AUGENER, 1906, p. 132, pl. 4, figs. 60–63.
*Leodice binominata*, TREADWELL, 1921, p. 36, text figs. 95–106, pl. 3, figs. 9–12.

One specimen measuring 50 mm. in length comes from quicksand, west of Key West. Its white spots and fewer gills distinguish it from *Eunice longicirrata* and *Eunice rubra* (see Treadwell, 1921).

### *Nicidion kinbergi* Webster

*Nicidion kinbergii* WEBSTER, 1884, pp. 320–321, pl. 12, figs. 81–88. TREADWELL, 1921, p. 91, text figs. 324–332, pl. 6, figs. 5–8.
*Eunice cariboa kinbergii*, MONRO, 1933, p. 257.
*Eunice* (*Nicidion*) *kinbergi*, HARTMAN, 1944a, p. 124 (with synonymy); 1951, p. 57.

Because of its small size (50 mm. in length and 2 mm. in width) and the fact that it lacks branchiae completely, this species could be confused with young of *Eunice* sp., but it can be distinguished by its short parapodia (see Treadwell, 1921). One specimen comes from coral reef, North Bimini.

## FAMILY LUMBRINEREIDAE

Individuals from this family differ from the Eunicidae by lacking prostomial appendages, gills, or parapodial cirri which gives them the appearance of arabellids. They are mud and sand dwellers.

### *Lumbrinereis branchiata* Treadwell

*Lumbrinereis branchiata* TREADWELL, 1921, pp. 94–95, text figs. 333–343, pl. 8, figs. 5–6.

One long and slender specimen collected from intertidal sand in Florida Bay. Some flattened extensions on the lower part of parapodia distinguish this species from *Lumbrinereis alata* Hartman, which carries rounded lobes on lower part of parapodia (see Treadwell, 1921).

### *Lumbrinereis maculata* (Treadwell)

*Lumbriconereis maculata* TREADWELL, 1910, p. 198, figs. 42–44.
*Lumbrinereis maculata*, TREADWELL, 1921, p. 103, pl. 8, figs. 378–385.

A specimen lacking posterior segments was dredged from Biscayne Bay, west of Dodge Island, Miami. Prostomium sugarloaf shaped and pigment spotted. Parapodia large, extending widely on each side of the body. Hooded setae distally toothed.

## FAMILY ORBINIIDAE

Long, worm-like body separated into two distinct areas. Thorax flat and depressed, abdomen much longer and round. Prostomium conical and acutely pointed, without antennae or eyes. Dorsal branchiae heavily ciliated. Setae all simple, hooked, lanceolate, forked, or furcate. Sand dwellers.

## *Scoloplos rubra* (Webster)

Figure 17

*Aricia rubra* WEBSTER, 1879, pp. 253–255, pl. 9, figs. 123–126. ANDREWS, 1891, p. 292.

*Scoloplos* (*Leodamas*) *rubra*, HARTMAN, 1945, p. 28; 1951, p. 74, pl. 20, figs. 1–6.

Body thin and elongate, prostomium without eyes or antennae, tapering into an acute end. Branchiae begin at the sixth setigerous segment. Thoracic segments lack ventral cirri, but have a few rows of strong uncinal hooks. Notopodia with long, denticulate, capillary setae. In ab-

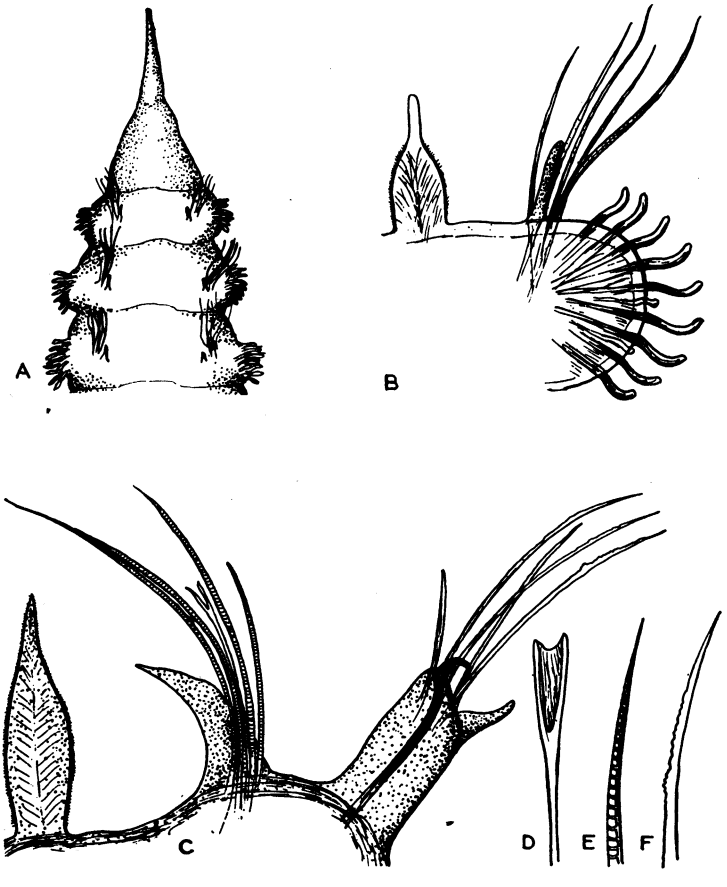


FIG. 17. *Scoloplos rubra*. A. Anterior end, dorsal view. B. Half cross section of tenth segment. C. Posterior parapodium, anterior view. D. Furcate notoseta from abdominal region. E. Abdominal notoseta. F. Abdominal neuroseta.

dominal segments, which are conspicuously biramous, ventral and dorsal cirri are present. Notosetae are slender and striated, or furcate. Neuropodia bear two or three embedded heavy aciculae and slender pointed spines.

Length 55 mm., width 1 mm.; color yellowish to orange. Living in quicksand at Key West.

## FAMILY PARAONIDAE

Elongate worms with numerous segments and a prostomium ending in a sensorial papilla. One median antenna, usually two eyes. Branchiae beginning on the fourth to seventh segment. Biramous parapodia with dorsal cirri, and no ventral cirri. Setae all simple, posterior setae with hooks. Three anal cirri.

### *Aricidea jeffreysi* McIntosh

Figure 18

*Aricidea jeffreysii* McIntosh, 1878, p. 506, pl. 65, figs. 13–14.
*Aricidea fragilis*, Webster, 1879, p. 255, pl. 9, figs. 127–132.
*Aricidea jeffreysii*, Fauvel, 1927, p. 74, fig. 25.
*Aricidea fragilis*, Hartman, 1944b, p. 315, pl. 27, figs. 4–5.

Prostomium posteriorly rounded, with a sensorial papilla, a short median antenna, two small eyes, and two nuchal organs. First three segments with capillary and limbate setae. Sixteen pairs of branchiae beginning at the fourth setigerous segment. Posterior segments with a few hooded hooks, bearing one tooth distally. Pygidium bears two long anal cirri and a short median one.

Length 10 mm., width 0.5 mm.; color yellowish, turning green in posterior segments. One specimen from intertidal sand in Florida Bay.

## FAMILY CIRRATULIDAE

Body thick and cylindrical, with numerous segments. Prostomium with or without eyes and without appendages. Tentacular filaments and branchiae very long, arising on dorsal side and contractile. All setae simple, capillary, or in the shape of heavy uncinal hooks. No dorsal or ventral cirri.

### *Cirriformia filigera* (Delle Chiaje)

Figure 19

*Cirriatulus filigerus* Delle Chiaje, 1841, vol. 3, p. 85, pl. 41, fig. 1.
*Audouinia filigera*, Fauvel, 1927, pp. 92–93, fig. 32.
*Cirriformia filigera*, Hartman, 1945, p. 35; 1951, p. 94.

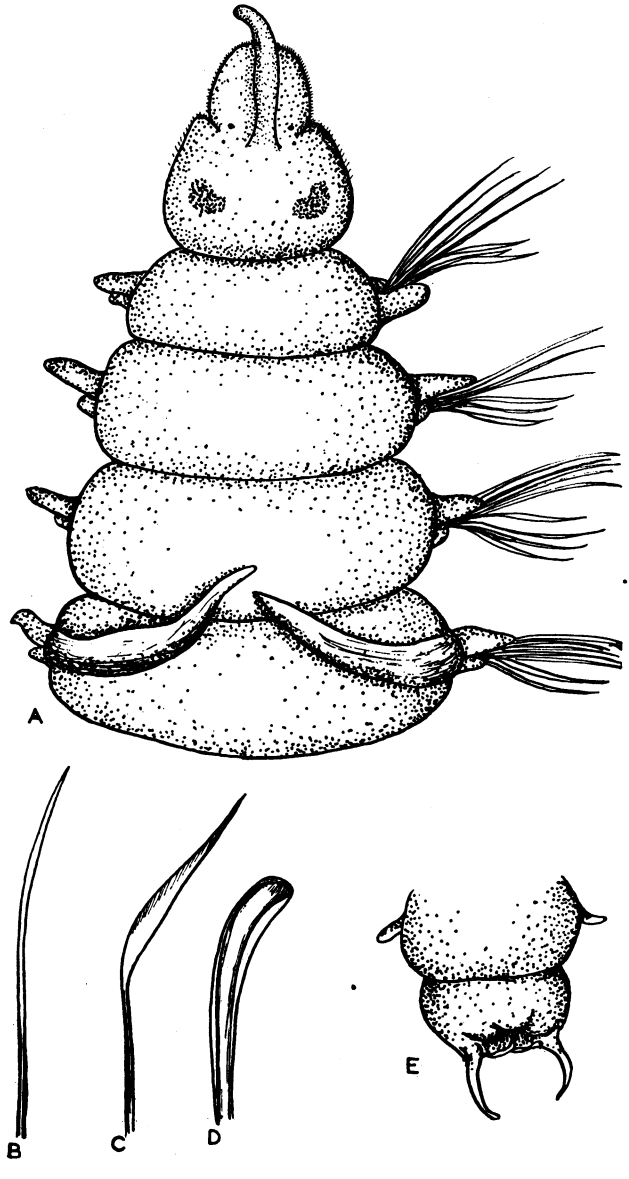


FIG. 18. *Aricidea jeffreysi.* A. Anterior end in dorsal view, with four setigerous segments. B. Capillary seta of anterior segment. C. Limbate seta of anterior segment. D. Hooded hooks from posterior segment, lateral view. E. Pygidium.

Conical prostomium and two first segments without appendages. Branchiae and tentacles so numerous that they conceal the body. They are contractile and arise from the middorsal surface. Setae all capillary in anterior region. On posterior segments uncinal hooks bigger ventrally than dorsally. Anus dorsal and subterminal.

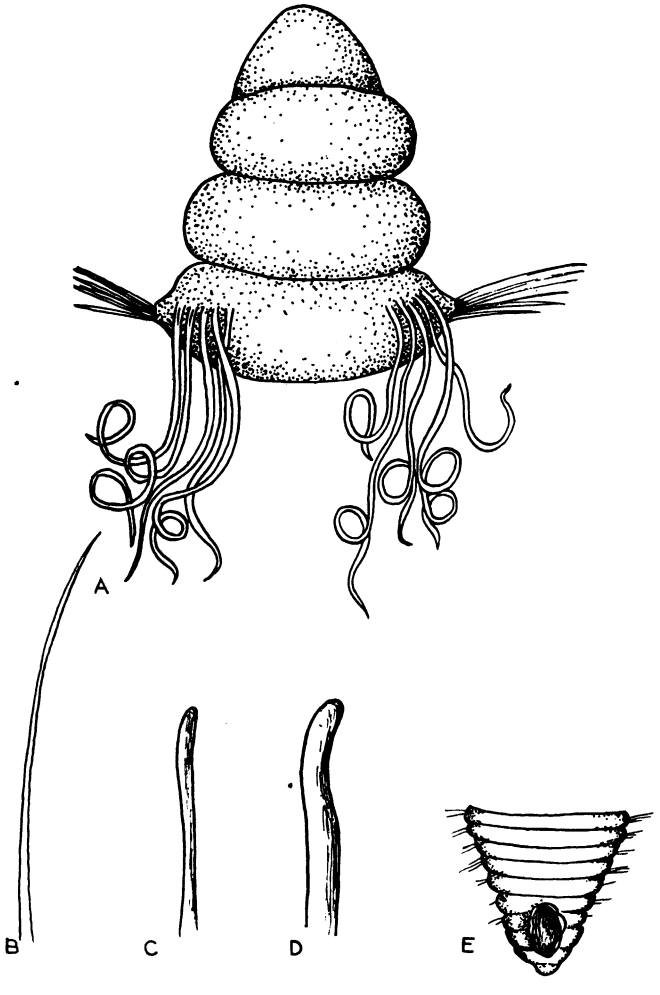


FIG. 19. *Cirriformia filigera*. A. Anterior end, dorsal view. B. Capillary seta of anterior region. C. Dorsal hook from posterior segment. D. Ventral hook from posterior segment. E. Posterior end including last few segments, anus, and pygidium, dorsal view.

Length 70 mm., width 7 mm.; color bright red to orange (completely lost in alcohol). On aggregated coral rocks, Tokas Cay, Bimini.

## FAMILY CTENODRILIDAE

Body short, with a maximum of 15 segments, without branchiae. Prostomium heavily ciliated on ventral face, all setae simple.

### *Ctenodrilus serratus* (Schmidt)

*Parthenope serrata* SCHMIDT, 1857, p. 363, pl. 5, fig. 13.
*Ctenodrilus serratus*, CAULLERY AND MESNIL, 1898, p. 132, pl. 2, fig. 13, pl. 3, fig. 1. MONTICELLI, 1910, p. 429. FAUVEL, 1927, p. 108, fig. 38. MONRO, 1933, p. 263.

Body of 14 segments, slightly marked. Prostomium bearing three to four triangular teeth distally.

Length 4 mm. to 8 mm.; color greenish spotted with dark pigment, intestine bright red. Numerous inconspicuous specimens live in mud and among algae in sea-water aquarium in Virginia Key, Miami, and at Bimini.

## FAMILY ARENICOLIDAE

Cylindrical body strongly annulated. Prostomium small. Proboscis covered with papillae. Abdominal area with dendritically branched branchiae. Notosetae capillary and spiny. Neurosetae with heavy uncinal hooks.

### *Arenicola cristata* Stimpson

*Arenicola cristata* STIMPSON, 1856, p. 114. ASHWORTH, 1912, pp. 105–111, pls. 5, 8, 10, 13. FAUVEL, 1927, pp. 163–164, fig. 57. WARREN, 1942, p. 45. HARTMAN, 1945, p. 37. BEHRE, 1950, p. 13. HARTMAN, 1951, p. 95.

Collected in Biscayne Bay, Miami, and identified by Gilbert L. Voss, this lug-worm is distinguished by its 11 segments bearing branchiae. Six first setigerous segments without branchiae, caudal region without branchiae or setae.

Length 22 cm., width 2 cm.; color brownish to dark green. Lives deep in the sand, in a U-shaped burrow.

## FAMILY OPHELIIDAE

Body short, dorsally convex, ventrally depressed in a groove. Prostomium conical, without appendages. Parapodia small and biramous, bearing simple capillary setae. Anal funnel with long papillae.

*Armandia agilis* (Andrews)

Figure 20

*Ophelina agilis* ANDREWS, 1891, p. 289, pl. 15, figs. 21, 26, 28.
*Armandia agilis*, HARTMAN, 1945, p. 37; 1951, p. 97.

Elongate prostomium with two evaginable nuchal organs. Strong muscular bands of this fast burrower divide the body in a mid-ventral groove. Between segments 6 and 7 to segment 27 extend 21 pairs of lateral eyes.

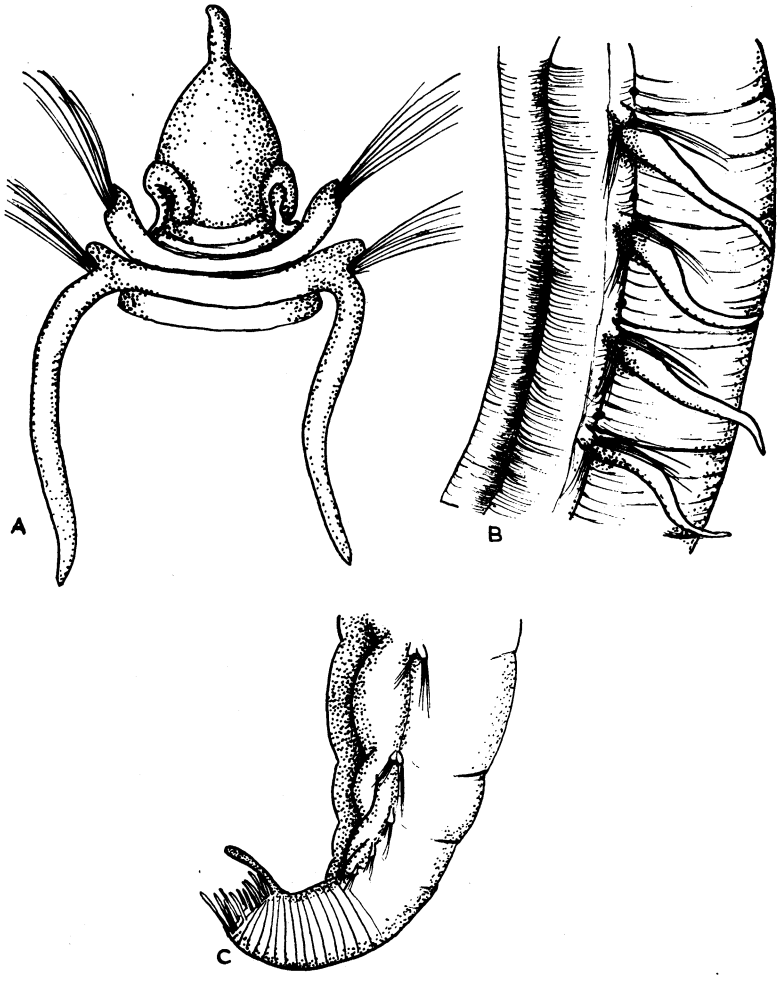


FIG. 20. *Armandia agilis*. A. Anterior end, dorsal view. B. Median area, left lateral view. C. Posterior end with pygidium and anus, left lateral view.

All parapodia except the two first have cirriform branchiae. Capillary setae on each setigerous parapodia, arranged into two fascicles. Pygidium bears a ventral median cirrus and 12 elongate papillae.

Length 30 to 60 mm., width 2.5 to 2 mm.; color flesh-pink. One sample comes from sandy flats at Bimini and several others come from quicksand west of Key West.

## FAMILY CAPITELLIDAE

Body red and cylindrical, divided into thorax and abdomen, thoracic part being wider. Prostomium small and conical, without appendages. Proboscis large and soft. Parapodia without cirri, but usually with segmented branchiae. Setae simple, capillary, or uncinal hooded hooks. Living in mucous tubes in fine mud or ooze.

### *Capitellides giardi* Mesnil

*Capitellides giardi* MESNIL, 1897, p. 442. FAUVEL, 1927, p. 157, fig. 56.

Prostomium short and triangular, with two ocular spots. Proboscis was not everted. First six setigerous segments with limbate setae. Segments 7, 8, and 9 with hooded hooks distally denticulate. On both segments 8 and 9 there are two strong genital hooks forming the copulatory apparatus. Abdominal segments with hooded hooks. Abdominal segments more elongate than the thoracic ones. Eggs present in the anterior part of the abdomen.

Length 7 mm.; color reddish. Abundant in algal mat in Snake Creek, Plantation Key.

## FAMILY PECTINARIIDAE

Gold-crown worms living in a tube made of one layer of sand and open at both ends. Body fundamentally divided into three parts: thoracic with branchiae, abdominal with biramous parapodia, and caudal or "scaphe" with heavy hooks.

### *Cistenides gouldi* Verrill

Figure 21

*Cistenides gouldi* VERRILL, 1873, p. 610, pl. 117; figs. 87–87a. HARTMAN, 1942, p. 71, figs. 130, 135, 138; 1945, p. 43. BEHRE, 1950, p. 13. HARTMAN, 1951, p. 107. *Pectinaria gouldii*, TREADWELL, 1939, p. 288, fig. 103.

Eleven pairs of yellow, golden palae in two groups, anterior to the antennular membrane which bears a fringe of numerous cirrus-like lobes.

Thoracic setae limbate and finely spined. Pectinate uncini with eight to nine teeth. Scaphal hooks are characteristic and are arranged in two curved rows of 16 on each side. They bear distally a lateral boss. Tube slightly curved, ranging from 20 to 40 mm.

Length 20 to 40 mm. All specimens were dredged from shallow water in Biscayne Bay, Miami.

## FAMILY SABELLARIIDAE

Annelids building heavy sand tubes aggregated in considerable mass and forming long, reef-like beds.

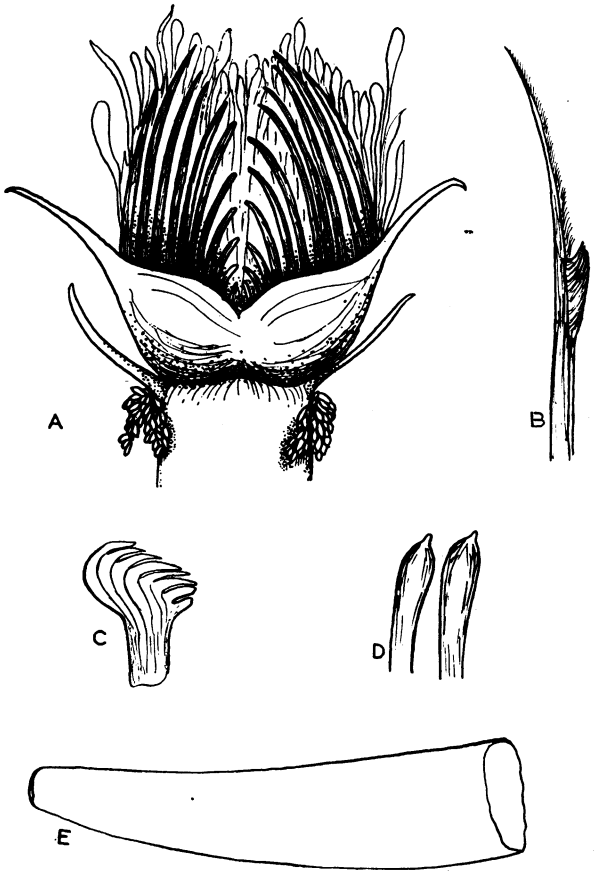


FIG. 21. *Cistenides gouldi.* A. Anterior end. B. Thoracic seta, lateral view. C. Uncinus. D. Scaphal spines. E. Outline of tube.

### *Phragmatopoma lapidosa* Kinberg

*Phragmatopoma lapidosa* KINBERG, 1866, p. 349. HARTMAN, 1944b, p. 348, pl. 35, figs. 73–75, pl. 36, fig. 79, pl. 40, figs. 102–103.
*Sabellaria castelnaui*, GRUBE, 1870, p. 69. AUGENER, 1926, pp. 214–216.

I have not reëxamined the numerous specimens coming from the Miami area, which have been identified by Hartman. These animals form large reef-like beds at Jupiter Beach and agglomerate in considerable numbers on pilings at Miami Beach, Bear Cut, Biscayne Key, Miami.

## FAMILY TEREBELLIDAE

Easily identified by their long filamentous tentacles and bush of branchiae, these annelids live in a tube burrowed in the sand. Body divided into two distinct regions: thorax with tufts of capillary setae and usually with lateral lappets carrying uncini, abdomen with uncini only. Buccal segment not setigerous. Branchiae number one, two, or three pairs on segments 2, 3, or 4. Tube made of mucus, sand or shell aggregate.

### *Loimia medusa* (de Savigny)

*Terebella medusa* DE SAVIGNY, 1820, p. 85, pl. 7, figs. 3, 4.
*Loimia turgida*, ANDREWS, 1891, p. 298, figs. 46, 49.
*Loimia medusa*, HARTMAN, 1945, p. 46, pl. 10, figs. 2–3; 1951, p. 111.

One specimen dredged from Biscayne Bay had lost its tentacles, and the tube was lacking. Its three pairs of branchiae, its 17 thoracic segments bearing two pairs of lateral lappets in the anterior part, and its pectinate uncini with five teeth on the thorax and four on the abdomen distinguish it from *Loimia viridis*.

Length 35 mm., width 3 mm.

### *Polymnia nebulosa* (Montagu)

*Terebella nebulosa* MONTAGU, 1818, p. 343, pl. 12, fig. 1.
*Polymnia nebulosa*, FAUVEL, 1927, p. 257, fig. 89.

Body thick and cylindrical, tapering in the posterior region. Seventeen thoracic segments. Prostomium with numerous small eyes. Tentacles easily breakable and checkered with chalky white bands. Three pairs of branchiae dendritically branched, third pair much the smallest. Notosetae capillary and smooth. Uncini with two big teeth and five distal denticulations.

Length 14 cm., width 10 mm.; color flesh-pink, with white spots. Tube fragile and made of sand. One specimen found at low tide at Tokas Cay, Bimini (collector Gilbert L. Voss).

*Pista palmata* (Verrill)

*Scionopsis palmata* VERRILL, 1873, p. 614, pl. 111, fig. 3.
*Pista palmata*, BEHRE, 1950, p. 13. HARTMAN, 1951, p. 112.

Two individuals collected from Biscayne Bay. Tubes were not found. Two pairs of dendritically branched branchiae with a short basal stalk. First pair of lateral lappets extends in large lobes. Thoracic hooks in the first setigerous segments with long handles. Notosetae capillary and smooth.

Length 30 mm., width 5 mm.

FAMILY SABELLIDAE

Body elongate, slightly depressed, bearing a crown of branched tentacles, sometimes with eyes of lateral processes. No operculum. Thoracic area much shorter than abdominal one. Uncini avicular. Notosetae capillary. Tube membranous, cylindrical, covered with fine sand and silt.

*Sabella melanostigma* Schmarda

*Sabella melanostigma* SCHMARDA, 1861, p. 36. EHLERS, 1887, pp. 263–266. MONRO, 1933, p. 267. HARTMAN, 1951, p. 116.

Easily identified by tentacular radioles having "eyes regularly paired and widely spaced from one another. Tube covered with fine silt and mud over a thin membranous layer" (Hartman).

Length 10 to 12 cm., width 10 mm.; color purplish. Numerous specimens (collector Gilbert L. Voss) come from Tokas Cay, Bimini, associated with coral rocks.

*Brianchiomma nigromaculata* (Baird)

*Sabella nigromaculata* BAIRD, 1865, p. 159, pl. 5, figs. 5, 6.
*Dasychone conspersa*, EHLERS, 1887, pp. 266–270, pl. 54, figs. 1–6.
*Branchiomma nigromaculata*, HARTMAN, 1945, p. 51; 1951, p. 114.

Paired eye spots and paired processes along the 21 pairs of tentacular radioles. Parapodia biramous, with black spots between each.

Length 30 mm., one specimen from intertidal sand, Key West.

FAMILY SERPULIDAE

Annelids living in calcareous tubes, cylindrical or polygonal in section, usually striated and strongly fixed to the substratum. Body divided into two areas: thoracic with a few segments, simple notosetae, and ventral uncinal plates; and abdominal with numerous setigerous segments, dor-

sal uncini, and simple neurosetae. Branchial filaments surround the mouth and dorsally a horny, calcareous, or membranous operculum is found. The shape of the operculum is an important specific character.

### *Hydroides norvegica* (Gunner)

*Nereis norvegica* GUNNER, 1768, p. 53, pl. 2.
*Hydroides norvegica*, FAUVEL, 1914b, p. 324, pl. 31, fig. 25; 1927, p. 356, fig. 122.

Operculum characteristic in having 12 to 14 processes with three to five lateral spines and a bigger distal spine. Tube small, cylindrical, slightly wrinkled, irregularly erect.

Length 15 to 30 mm., width 1 mm.; color of body reddish, color of tube white. Numerous individuals have been taken from the bottom of the Marine Laboratory R/V "Physalia" which is operated in southern Florida.

### *Salmacina dysteri* (Huxley)

*Protula dysteri* HUXLEY, 1855, p. 113, figs. 1–11.
*Salmacina dysteri*, FAUVEL, 1927, p. 377, fig. 129. RIOJA, 1946a, p. 202. HARTMAN, 1951, p. 120.

Tube lacks an operculum. Four pairs of branchial radioles. Eight thoracic segments. First setigerous segment bears limbate and geniculate setae with fine teeth. On other thoracic segments notosetae are limbate, neurosetae curved and slightly denticulate. Abdomen with pectinate uncini and geniculate neurosetae.

Length 4 mm.; color of body bright red, color of tube whitish. Numerous colonial intermingled tubes come from Rebecca Shoal, off the Florida Keys.

### *Dexiospira spirillum* (Linné)

*Serpula spirillum* LINNÉ, 1758, p. 786.
*Spirorbis (Dexiospira) spirillum*, FAUVEL, 1927, p. 392. HARTMAN, 1951, p. 121.

Tiny tube, spiraled and dextrally apertured, with a white median line, entirely attached to the substratum on one side. Body with three thoracic segments. Thoracic notosetae denticulate and finely pointed distally. Uncini rectangular and pectinate. Operculum made of a concave plate and a short stalk.

Length of body 1.5 mm.; color of body red, color of tube whitish. Tubes occur in great numbers on turtle grass in Florida Bay.

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