STUDIES ON THE FAUNA OF CURAÇAO AND OTHER CARIBBEAN ISLANDS

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STUDIES ON THE FAUNA OF CURAÇAO AND OTHER CARIBBEAN ISLANDS: No. 180.

THE DEEP-WATER SCLERACTINIA OF THE CARIBBEAN SEA AND ADJACENT WATERS

by

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Anthemiphylliidae

Caryophylliidae

Flabellidae

Guyniidae

Dendrophylliidae

INTRODUCTION

Ahermatypic Scleractinia are very common throughout the tropical western Atlantic, both in number of species and individuals. Of the Scleractinia known from the western Atlantic, there are over twice as many species of ahermatypes (species that do not have symbiotic zooxanthellae) as hermatypes (the shallow-water "reef corals," all of which have zooxanthellae). This paper is a review of all known species of deep-water Scleractinia that occur in the Caribbean Sea and adjacent waters, all of which are ahermatypic. The term "deep-water" is used here to designate depths equal to or greater than 200 meters; the 88 species treated all have bathymetric ranges that exceed 200 meters at their deepest points. Another 27 ahermatypic species are confined to the shallow water (0–200 m) of the Caribbean, and two species are known from off tropical Brazil but not the Caribbean, resulting in 117 species of tropical western Atlantic ahermatypes.

The only person to have comprehensively studied the deep-water western Atlantic corals was POURTALÈS, whose last publication was in 1880. In the ensuing century, large collections have accumulated and Scleractinian classification has been greatly modified. This review is based primarily on the large collections at the University of Miami (RSMAS), USNM, and MCZ.

Historical Resume of the Tropical Western Atlantic Ahermatypic Scleractinia

The first ahermatypic coral to be described from the tropical western Atlantic was the shallow-water species *Astrangia solitaria* (Lesueur, 1817) from Guadeloupe. Later, in a series of six publications between 1848 and 1850, Milne Edwards & Haime described nine new shallow-water ahermatypes found in the West Indies; however, eight of these are cosmopolitan or amphi-Atlantic in distribution. Only *Oxysmilia rotundifolia,* endemic to the western Atlantic, was indicated as questionably having been collected in the western Atlantic: "habite les mers d'Amérique?" (Milne Edwards & Haime, 1848b: 247). Duchassaing (1850) reported on the first collection of deep-water corals from the Antilles and described one new species, *Caryophyllia berteriana.* Duchassaing & Michelotti (1860, 1864) reported 14 ahermatypic species from the Antilles, including three valid new species, as well as several poorly described, still undetermined species (original specimens lost). Later, Duchassaing (1870) reported six species of ahermatypes from the Antilles, including new species, but his descriptions are poor and his type-material is lost, making that paper of little value.

Pourtalès was partially responsible for, and participated in, the earliest systematic deep-water dredging beginning in May, 1867. His primary biological interest in the dredged material was the ahermatypic corals. Between 1867 and 1880 he published six papers, in which he described 59 new species and 10 new genera. Of these, 47 species and eight genera are still considered valid. Pourtalès created a firm foundation for the study of western Atlantic ahermatypic corals upon which all subsequent revisions must be based. His material is deposited primarily at the MCZ and partially at the USNM, BM, and YPM. Only three out of 59 types have been lost. Arango y Molina (1877) listed 15 ahermatypes from off the coasts of Cuba, all based on Pourtalès's earlier papers.

Verrill published ten short papers (1870 to 1908) listing or describing ahermatypic corals collected by the Fish Hawk, Blake, Albatross, and other vessels mainly in the temperate northwest Atlantic. Three new species were described but all are junior syn-

onyms. In a short note, PACKARD (1873) reported a *Deltocyathus* (unknown species) from off Cape Cod at 263 meters. In 1877, the Swedish naturalist LINDSTRÖM reported 17 ahermatypic species from the Virgin Islands and St.-Barthélemy, including two valid new species. Although LINDSTRÖM made a number of errors in his paper, he did not deserve DUNCAN'S (1883) overzealous criticism (*e.g.*, see Discussion of *P. stimpsonii*).

MOSELEY published the preliminary study of the Challenger deep-water corals in 1876 but his final report did not appear until 1881. The Challenger made 14 successful dredge hauls in the western Atlantic, from which MOSELEY reported 15 deep-water species, five of these new. In the same year, RIDLEY (1881) described *Madracis brueggemanni* from off Brazil (20°42'S, 37°27'W) and the West Indies (60 m).

VAUGHAN (1901) reported on the corals collected by the Fish Hawk (1898 to 1899) around Puerto Rico. He treated nine ahermatypic corals including one new species, *Cyathoceras portoricensis*, a junior synonym of *Oxysmilia rotundifolia*. VAUGHAN (1906) later described two new species of *Astrangia* from off Brazil.

The next half-century produced only two short notes regarding western Atlantic ahermatypic corals. BOONE (1928) reported two species collected by the Pawnee I off British Honduras, and WELLS (1947a) described *Coenocyathus bartschi* (= *Rhizosmilia maculata* (Pourtalès, 1874)) from the West Indies. Interest was renewed in western Atlantic ahermatypic corals when SQUIRES (1959) reported on the deep-sea corals collected by the Lamont Geological Observatory R/V Vema. He reported 10 species, one of them new, from five western Atlantic stations off Bermuda, the Straits of Florida, and off Rio de Janeiro. Unfortunately, the identifications in this paper are unreliable.

In the last 15 years a number of papers have included lists or reports of single species from various western Atlantic localities: 15 ahermatypic corals were reported from off Barbados (LEWIS, 1965); 14 from off Jamaica (GOREAU & WELLS, 1967); four from off Cabo Frio, Brazil (TOMMASI, 1970); 14 from off Brazil (LABOREL, 1970); one from off Surinam (BEST, 1970); three from Onslow Bay, North Carolina (MACINTYRE, 1970); four, including two new species, from

off Bermuda (WELLS, 1972); 16 from off the Caribbean coast of Panama (PORTER, 1972); and 15 from off Jamaica (WELLS & LANG, 1973). WELLS (1973) described another two shallow-water ahermatypic species from off Jamaica and wrote a short paper on *Guynia annulata* (1973a). KELLER (1975) reported 22 species of ahermatypic corals from 18 stations off the Cuban coasts and off the northern coast of the Yucatán Peninsula. Unfortunately, her identifications are not reliable and her specimens are poorly documented. ERHARDT (1976) reported *Stephanocyathus nobilis* (= *S. paliferus*) off Venezuela. Finally, in a series of five papers, CAIRNS (1977 to 1978) reviewed the western Atlantic species of several genera and listed the ahermatypic fauna of the Gulf of Mexico, resulting in the description of 10 new species.

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The greater part of this paper was presented to the Faculty of the University of Miami as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy. I am grateful to my committee members: Drs. F. M. BAYER, G. L. VOSS, D. R. MOORE, J. W. WELLS, and D. L. TAYLOR, for their critical review. This is a scientific contribution from the Rosenstiel School of Marine and Atmospheric Science, University of Miami.

MATERIAL AND METHODS

This study is based on the examination of 15,430 specimens divided into 2591 lots that were collected from 1160 stations throughout the Caribbean and adjacent waters. The largest single collection is a result of the trawling of the research vessels associated with the RSMAS, University of Miami, which, except for a reference collection, was transferred to the USNM. The USNM housed the second largest collection of western Atlantic ahermatypes, derived primarily from the collections of U.S. government research vessels and secondarily by gifts from other institutions. With the addition of the RSMAS collection, it is by far the largest depository of western Atlantic ahermatypes in the world.

Other major collections examined include the historically important Pourtalès collection and Cuban Atlantis material at the MCZ, and a large collection of Gulf of Mexico specimens from TAMU. Other sources of specimens, in decreasing order of size, are from: the University of Texas at Austin, through J. LANG (Eastward, Nekton); SME, through H. ZIBROWIUS (Calypso, Akaroa, WH); NMC (Hudson, Pocock); BLM material of Texas, Alabama, Florida, and Virginia; FDNR, through W. JAAP (Hourglass); University of São Paulo, through L. TOMMASI (Wladimir Besnard); miscellaneous lots at the YPM and BM (Rosaura, Blake); and several HUMMELINCK stations. A very large collection of eastern Atlantic ahermatypes was also examined at the SME.

The classification used is that of WELLS (1956), with some modi-

fications introduced by CHEVALIER (1961) and ZIBROWIUS (1974c). The terminology used in the species accounts is from WELLS (1956), CHEVALIER (1971: 15–22), and SQUIRES (1964). The term "principal septa" refers to the two S_1 aligned on the greater axis of the calice (CHEVALIER, 1961: 305).

Synonymies are complete unless otherwise indicated.

In the material examined sections, the numbers in parentheses indicate the number of specimens in that lot. Enumeration of specimens is not indicated for colonial species. Following the number, or station number for colonial species, is an indication of where the specimen is deposited. If no indication is given, it is at the USNM.

Holotypes are deposited at the USNM and MCZ. Most of the paratypes are at the USNM; others are at the MCZ and UMML.

In order to avoid possibly erroneous depth ranges resulting from bathymetrically wide-ranging trawls, a confirmed, or restricted, depth range is used. The stated bathymetric range extends from the deepest shallow to the shallowest deep component. Thus, if one specimen was collected from a station that was trawled from 18–500 m and a second from 450–600 m, the possible range is 18–600 m. The first station indicates that it does occur shallower than 501 m, the second that it does occur deeper than 449 m. The confirmed range is then 450–500 m.

Solitary corals are ideal subjects for stereophotography and many stereo pairs are provided in the plates. The stereo view allows a much more accurate interpretation of the spatial relationships among the septa, pali, and columella as well as the depth of the fossa. If a stereo viewer is not available, one can, with patience and practice, "fuse" the stereo pair by focusing beyond the plane of the paper. Some thin or glossy specimens have been coated with an opaque dye and recoated with a fine layer of NH_4Cl in order to improve their contrast for photography. These specimens are indicated in the plate captions.

The following abbreviations are used:

VESSELS

P – R/V Pillsbury.
G – R/V Gerda.
CI – R/V Columbus Iselin.
GS – R/V Gilliss.
GS (G) – R/V Gilliss (Geology).
O – M/V, R/V Oregon and R/V Oregon II.
SB – M/V, R/V Silver Bay.
BL – U.S. Coast Survey Steamer Blake.
Alb – U.S. Fish Commission Steamer Albatross.
FH – U.S. Fish Commission Steamer Fish Hawk.
Gos – R/V Gosnold.
E – R/V Eastward.
WH – Walther Herwig.
Atl – Atlantis and R/V Atlantis II.
WB – N/Oc Wladimir Besnard.
TAMU – Texas A & M University (R/V Aliminos).
SME – Station Marine d'Endoume (Calypso).
Chall – H. M. S. Challenger.

MUSEUMS

AHF – Allan Hancock Foundation, University of Southern California.
AMNH – American Museum of Natural History, New York.
BM – British Museum (Natural History), London.
FDNR – Florida Department of Natural Resources, St. Petersburg, Florida.
MCZ – Museum of Comparative Zoology, Harvard.
MIZS – Museo ed Istituto di Zoologia Sistematica, Torino.
MNHNP – Muséum National d'Histoire Naturelle, Paris.
MOM – Musée Océanographique, Monaco.
NMC – National Museum of Canada, Ottawa.
NRM – Naturhistoriska Riksmuseet, Stockholm.
RSMAS – Rosenstiel School of Marine and Atmospheric Science, University of Miami (Invertebrate Museum abbreviated UMML).
SME – Station Marine d'Endoume, Marseille.
UMML – University of Miami Marine Laboratory (now RSMAS), Miami, Florida.
USNM – United States National Museum, Washington, D.C.
YPM – Yale Peabody Museum, New Haven.
ZMA – Zoölogisch Museum, Amsterdam.

OTHER

BLM – Bureau of Land Management.
SEM – Scanning Electron Microscope.
cd – Calicular diameter.

STATION LIST

R/V PILLSBURY (P)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
105	30°58'	79°42'	388-403	27 July 1964
112	32 08	79 16	70-95	28 July 1964
120	31 48	76 38	2195-2377	29 July 1964
197	27 59	79 20	567-586	11 Aug. 1964
198	27 59	79 20	229-256	11 Aug. 1964
199	27 59	79 20	311-329	11 Aug. 1964
200	27 59	79 20	329-348	11 Aug. 1964
208	27 12	79 17	512	12 Aug. 1964
209	26 59	79 16	550	12 Aug. 1964
211	26 41	79 05	384-403	12 Aug. 1964
337	9 51	78 39	1846	9 July 1966
338	9 58	78 31	1822-1836	9 July 1966
340	9 14	77 46	304-362	9 July 1966
364	9 29	76 34	924-950	13 July 1966
374	9 52	76 11	373-434	14 July 1966
388	10 16	76 03	814-1050	15 July 1966
389	9 54	75 51	50-69	15 July 1966
391	10 03	76 27	1222-1748	16 July 1966
392	9 45	76 09	74-78	16 July 1966
394	9 29	76 26	416-634	16 July 1966
403	8 49	77 13	96-98	17 July 1966
405	8 49	77 21	90-92	17 July 1966
407	9°00'	77°25'	1158-1225	18 July 1966
413	9 01	76 53	952-1267	18 July 1966
420	9 31	78 26	50	19 July 1966
439	8 51	81 03	18-22	20 July 1966
445	9 02	81 24	338-342	21 July 1966
446	8 58	81 26	109-295	21 July 1966
448	9 10	80 56	869-952	21 July 1966
478	11 34	62 11	598	2 Aug. 1966
479	11 20	62 03	121-128	2 Aug. 1966
581	21 05	86 23	146-265	22 May 1967
584	21 01	86 24	347-353	23 May 1967
585	21 02	86 29	567-570	23 May 1967
586	23 32	82 33	1682-1737	24 May 1967
587	21 17	86 13	448-457	14 March 1968
595	21 09	86 27	33-586	15 March 1968
596	21 04	86 22	46-420	15 March 1968
600	20 29	87 06	439-463	16 March 1968
605	18 50	87 31	695-773	17 March 1968
606	18 45	87 33	467-649	17 March 1968
607	18 30	87 37	715-787	17 March 1968
610	17 02	87 38	297-329	18 March 1968
629	15 58	86 09	40	21 March 1968
630	15° 59'	86°02'	35-37	21 March 1968
634	23 33	82 47	1638-1757	25 March 1968
636	23 54	81 27	1003-1336	25 March 1968
639	11 39	12 45	210-232	6 April 1968
650	6 07	52 19	84-91	8 July 1968
672	7 37	55 22	1221-1336	11 July 1968
673	7 56	54 39	1042-1070	11 July 1968
675	8 26	54 17	1235-1272	12 July 1968
682	7 34	56 25	1318-1345	14 July 1968
689	8 14	57 38	1373-1446	15 July 1968
705	10 45	62 00	77-86	18 July 1968
707	11 21	62 21	78	19 July 1968
709	11 09	62 46	46	19 July 1968
722	11 04	64 04	91	21 July 1968
736	10 57	65 52	69-155	22 July 1968
737	10 44	66 07	60-73	22 July 1968
741	11 48	66 07	1052-1067	23 July 1968
747	11 46	67 06	1098-1175	24 July 1968
748	11 25	67 10	1784-1867	25 July 1968
749	10 37	67 58	59	25 July 1968
753	11 19	68 22	384-607	26 July 1968
754	11 37	68 42	684-1574	26 July 1968
755	11 44	69 03	796-1006	26 July 1968
757	11 40	69 22	161-187	27 July 1968
773	12°17'	72°15'	60-64	29 July 1968
775	12 05	72 39	78-82	29 July 1968
776	12 13	72 50	408-576	29 July 1968
781	11 30	73 27	531-567	30 July 1968
797	10 22	75 47	150-170	1 Aug. 1968
830	18 40	65 58	1446-1510	4 Feb. 1969
838	10 32	60 23	93-115	30 June 1969
846	11 38	60 37	659-1126	2 July 1969
848	11 22	61 26	146	2 July 1969
849	11 15	61 46	137-143	2 July 1969
850	11 46	61 30	800-924	3 July 1969
854	12 02	61 36	66-84	3 July 1969
861	12 42	61 06	18-744	4 July 1969
874	13 11	61 05	156-201	6 July 1969
875	13 10	61 06	108-183	6 July 1969
876	13 14	61 05	231-258	6 July 1969
877	13 17	61 06	329-467	6 July 1969
881	13 21	61 03	576-842	6 July 1969
889	14 04	60 51	371-403	7 July 1969
890	14 06	60 51	198-430	7 July 1969
891	14 05	60 50	265-567	7 July 1969
892	14 17	60 45	1116-1354	7 July 1969
901	13 38	60 56	256-344	9 July 1969
904	13 45	61 06	201-589	9 July 1969

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
905	13°46'	61°05'	384-963	9 July 1969
907	14 27	60 58	115-214	9 July 1969
910	14 33	61 06	51-82	10 July 1969
913	14 54	61 05	46-48	10 July 1969
918	16 04	61 26	399-497	11 July 1969
919	16 05	61 19	683-733	12 July 1969
920	16 06	61 19	531-733	12 July 1969
923	16 05	61 24	476-686	14 July 1969
929	15 30	61 12	457-503	15 July 1969
931	15 31	61 12	146-494	15 July 1969
943	16 26	61 37	274	17 July 1969
944	16 33	61 37	360-421	17 July 1969
948	16 51	62 03	733	17 July 1969
954	16 55	62 43	686-1043	18 July 1969
969	17 26	61 41	69-339	20 July 1969
984	18 26	63 13	393-451	22 July 1969
988	18 29	63 25	686-724	23 July 1969
991	18 47	64 47	205-380	23 July 1969
1138	20 52	74 22	2745-2751	12 Jan. 1970
1140	20 50	73 34	274-289	13 Jan. 1970
1143	20 55	73 28	110-220	13 Jan. 1970
1171	23 35	79 24	512-525	27 June 1970
1177	19 26	73 35	1528-1611	30 June 1970
1178	19114	73 14	1766-1903	30 June 1970

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1181	18°51'	74°30'	2489-2548	1 July 1970
1186	18 30	74 39	183	2 July 1970
1187	18 17	75 07	1034	2 July 1970
1197	17 34	76 09	1482-1504	3 July 1970
1224	17 31	77 49	878-906	6 July 1970
1225	17 43	77 58	457-558	6 July 1970
1232	17 56	78 00	210-265	7 July 1970
1238	18 16	78 31	1244-1830	8 July 1970
1255	17 18	78 32	622-823	14 July 1970
1256	17 27	78 10	521-658	14 July 1970
1261	17 13	77 50	595-824	15 July 1970
1262	17 21	77 35	805-1089	15 July 1970
1303	18 21	69 14	170-176	21 July 1970
1304	17 45	64 59	3477-3871	23 July 1970
1311	9 13	81 47	46	26 Jan. 1971
1354	14 21	81 55	192-263	31 Jan. 1971
1355	14 35	81 32	450-576	31 Jan. 1971
1356	14 54	81 23	296-375	31 Jan. 1971
1357	15 14	81 26	249-256	31 Jan. 1971
1384	19 45	67 00	7919-7954	6 July 1971
1386	18 21	69 06	148	9 July 1971
1387	18 21	69 09	165	9 July 1971
1393	18 22	69 18	150	10 July 1971
1395	18 21	69 13	167	10 July 1971

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1401	17°51'	65°04'	4226	12 July 1971
1410	20 11	68 53	180	17 July 1971
1411	20 18	69 13	27-183	18 July 1971
1429	21 19	73 46	2532	21 July 1971
1432	21 41	73 51	130	22 July 1971
1435	21 58	73 42	1650	22 July 1971
1444	22 32	75 24	2450	24 July 1971

R/V GERDA (G)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
19	25°46'	80°05'	92	31 May 1962
23	25 32	79 24	130-261	30 June 1962
56	25 31	79 20	458	28 Aug. 1962
93	25 03	79 45	733	19 April 1963
103	25 17	79 40	824	10 May 1963
109	25 03	79 45	824	24 May 1963
114	24 02	83 02	759-869	18 June 1963
118	23 54	82 58	961-1034	18 June 1963
130	23 59	81 10	1021	21 June 1963
131	24 11	80 57	733-787	21 June 1963
132	24 23	80 48	275-302	21 June 1963
134	24 29	80 58	191	21 June 1963
135	24 29	80 53	220	21 June 1963
143	24 28	80 12	805	22 June 1963
169	27 01	79 21	522-567	29 June 1963

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
179	27°41'	79°11'	549-567	1 July 1963
182	27 55	78 40	860-897	2 July 1963
187	27 14	77 47	715-796	3 July 1963
190	25 57	78 07	733-897	4 July 1963
251	27 25	78 41	293-311	5 Feb. 1964
254	27 34	78 49	488-516	6 Feb. 1964
256	27 37	78 56	467-494	6 Feb. 1964
261	27 20	79 22	494-512	7 Feb. 1964
270	25 30	79 21	311-329	30 March 1964
289	24 11	81 36	594-604	3 April 1964
293	25 05	79 21	840-842	4 April 1964
296	25 36	79 23	715	5 April 1964
298	25 55	79 27	650-677	5 April 1964
299	26 12	79 31	641	5 April 1964
300	26 16	79 30	640	5 April 1964

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
301	26°28'	79°26'	622-648	5 April 1964
304	25 26	79 33	796	23 May 1964
311	25 41	79 31	787-805	24 May 1964
372	23 51	81 02	1107-1162	16 Sept. 1964
375	23 54	81 27	1153-1190	17 Sept. 1964
386	27 09	79 18	604	19 Sept. 1964
403	27 49	78 50	824	20 Sept. 1964
405	27 48	79 00	522-549	21 Sept. 1964
448	23 54	82 21	620-647	1 Dec. 1964
480	24 30	80 57	192	26 Jan. 1965
493	26 32	78 55	183-549	3 Feb. 1965
503	26 31	78 51	366	4 Feb. 1965
509	26 07	79 11	311-329	2 March 1965
524	26 17	78 41	513-715	3 March 1965
526	26 28	78 40	278-329	3 March 1965
610	25 25	80 07	77-82	15 April 1965
636	24 06	79 13	46-128	30 June 1965
661	27 07	79 32	695-718	17 July 1965
663	27 30	79 22	569-576	17 July 1965
664	27 35	79 22	567	17 July 1965
666	27 48	79 15	522	17 July 1965
667	27 52	79 15	520-534	17 July 1965
672	27 53	79 03	796	18 July 1965
674	27 52	78 32	911	18 July 1965
676	26°25'	79°54'	190-200	19 July 1965
678	25 54	78 13	540-576	20 July 1965
681	25 52	77 54	198-223	20 July 1965
688	26 35	78 15	472-512	21 July 1965
691	26 35	78 24	333-375	21 July 1965
692	26 35	78 24	329-421	21 July 1965
694	26 28	78 40	622-695	21 July 1965
701	26 29	78 40	275-311	22 July 1965
702	26 29	78 40	73-220	22 July 1965
703	26 29	78 40	27-165	22 July 1965
706	26 27	78 43	489-522	22 July 1965
707	26 27	78 40	514-586	22 July 1965
708	26 27	78 46	650	22 July 1965
711	26 23	78 42	818-851	23 July 1965
715	26 04	79 24	512-549	2 Aug. 1965
719	26 16	79 14	404-412	3 Aug. 1965
720	26 22	79 11	476-500	3 Aug. 1965
721	26 23	79 04	487-494	3 Aug. 1965
723	26 10	78 41	512-751	3 Aug. 1965
725	26 01	79 10	143-210	3 Aug. 1965
817	23 50	79 30	508	22 June 1967
849	25 54	79 59	256	2 Aug. 1967
859	23 54	81 57	1143-1200	29 Aug. 1967
861	24 08	81 36	514-558	29 Aug. 1967
866	24°28'	81°29'	187	29 Aug. 1967
872	24 21	80 10	841-847	30 Aug. 1967
882	21 12	86 20	64-73	9 Sept. 1967
885	21 10	86 28	419-433	9 Sept. 1967
889	20 55	86 28	177-220	10 Sept. 1967
893	21 10	86 21	241-320	10 Sept. 1967
899	20 57	86 34	40-165	10 Sept. 1967
912	26 26	79 19	494-503	25 Sept. 1967
915	25 54	78 12	439	26 Sept. 1967
923	24 02	77 34	1554-1572	28 Sept. 1967
927	26 15	78 48	476	29 Sept. 1967
929	26 13	78 57	412-421	29 Sept. 1967
937	26 25	79 07	472-484	1 Oct. 1967
938	26 19	70 00	494-503	1 Oct. 1967
946	21 03	86 25	77-82	27 Jan. 1968
950	21 06	86 28	?	28 Jan. 1968
966	24 10	82 22	553-558	2 Feb. 1968
967	24 15	82 26	499-503	2 Feb. 1968
970	24 24	82 06	512	2 Feb. 1968
983	24 05	80 20	216	5 March 1968
984	24 05	80 20	155-230	5 March 1968
985	24 06	80 12	20-110	55 March 1968
986	24 05	80 19	75-132	5 March 1968
1011	23 43	79 32	291-311	14 June 1968
1012	23 35	79 33	508-530	14 June 1968
1015	23°34'	79°17'	516-525	15 June 1968
1016	23 34	79 12	529-543	15 June 1968
1017	23 58	79 17	554	15 June 1968
1029	24 17	81 11	293-302	25 Feb. 1969
1036	24 22	80 53	229-238	26 Feb. 1969
1102	24 15	81 34	247-284	29 April 1969
1111	23 52	80 42	1080-1089	30 April 1969
1125	26 45	79 05	494-531	13 June 1969
1270	21 05	86 31	318	20 Aug. 1970
1275	21 02	86 29	225-439	21 Aug. 1970
1312	26 38	79 02	505-527	31 March 1971
1322	26 36	79 04	613	9 Dec. 1971
1323	26 36	79 04	650	9 Dec. 1971
1327	25 59	78 33	421-426	11 Dec. 1971
1329	25 50	78 22	234-265	11 Dec. 1971

R/V COLUMBUS ISELIN (CI)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1	25°05'	77°22'	200	1 July 1972	92	24°43'	77°27'	805	11 March 1973
2	25 07	77 22	805	1 July 1972	93	24 42	77 26	603	11 March 1973
6	25 10	77 05	320	2 July 1972	140	26 24	79 36	738	28 Sept. 1973
7	25 08	77 28	329	2 July 1972	148	24 06	77 18	1379	3 Feb. 1974
12	23 32	76 55	1320	4 July 1972	158	23 30	76 56	1317	5 Feb. 1974
27	25 25	78 08	666	7 July 1972	210	24 05	81 22	858	20 Feb. 1974
37	25 08	77 12	512	9 July 1972	246	26 23	79 37	743-761	29 Oct. 1974
46	23 29	77 05	1234	24 Feb. 1973	401	24 39	76 26	1628	3-4 Sept. 1975
84	24 16	77 15	805	9 March 1973					

R/V GILLISS (GS)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
31	16°58'	79°28'	1088-1116	28 July 1972	44	12°58'	69°05'	1957-1993	8 Aug. 1972

R/V GILLISS (Geology) GS(G)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
71-6	24°41'	80°33'	155-188		13	27°24'	79°26'	622	
71-7	24 44	80 27	165-200		14	24 16	81 35	260	
5	24 22	80 50	247-265		15	24 19	81 42	211-222	
16	24°16'	81°50'	284-385		40	24°21'	80°39'	435-465	
19	24 19	81 57	220		42	24 25	80 43	385	
23	24 19	82 00	220		43	24 26	80 45	220-348	
25	24 21	81 40	190		44	24 26	80 45	145-266	
27	24 20	81 37	220		48	24 34	80 31	275	
39	24 17	80 48	460-623						

M/V, R/V OREGON and R/V OREGON II (O)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
450	23°10'	89°47'	229	28 Aug. 1951	1555	24°55'	84°17'	393	19 June 1956
489	27 44	85 09	465	29 Sept. 1951	1867	16 38	82 43	256	21 Aug. 1957
490	27 44	85 02	393	29 Sept. 1951	1884	16 53	81 22	412	23 Aug. 1957
534	27 32	93 02	732-823	11 April 1952	1887	16 55	81 10	549	23 Aug. 1957
1025	25 12	84 05	137	19 April 1954	1889	16 39	81 01	457	24 Aug. 1957
1251	29 16	87 49	366	26 Feb. 1955	1890	16 35	80 55	183	24 Aug. 1957
1302	28 53	87 58	1628	26 May 1955	1911	12 44	82 14	640	11 Sept. 1957
1320	24 51	84 09	338-348	7 July 1955	1916	13 18	82 12	640	12 Sept. 1957
1321	24 49	84 06	311-366	7 July 1955	1981	10 03	60 01	366	3 Nov. 1957
1348	24 29	81 50	274	18 July 1955	1982	10 00	59 59	457	3 Nov. 1957
1408	28 02	90 15	366	20 Sept. 1955	1984	9 45	59 45	366	3 Nov. 1957
1494	29 15	88 30	110	3 May 1956	1985	9 41	59 47	274	3 Nov. 1957

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1986	9°39'	59°47'	183	4 Nov. 1957
1989	9 45	59 45		4 Nov. 1957
1991	9 17	59 19	457	4 Nov. 1957
1993	9 03	59 00	137	4 Nov. 1957
2068	2 35	47 48	220	15 Nov. 1957
2080	2 04	47 00	229	17 Nov. 1957
2202	28 58	88 11	1143	26 June 1958
2286	7 26	54 49	192-220	8 Sept. 1958
2356	17 33	63 35	229-241	25 Sept. 1958
2575	27 06	89 13	2012-2195	29 July 1959
2603	18 30	65 59	421	25 Sept. 1959
2637	17 37	63 36	512	30 Sept. 1959
2655	18 26	67 11	229	6 Oct. 1959
2771	11 40	62 27	402	15 April 1960
2772	11 30	62 29	329	18 April 1960
2774	11 32	62 40	357-388	19 April 1960
2775	11 35	62 37	402-421	19 April 1960
2776	11 36	62 42	430	19 April 1960
2777	11 36	62 46		19 April 1960
2780	11 36	62 52	393-421	20 April 1960
2813	28 48	87 57	1829	13 July 1960
2814	28 53	87 47	1737-1920	13 July 1960

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
2820	28°23'	88°22'	1829	15 July 1960
3203	29 14	88 20	88	2 Feb. 1961
3252	29 07	88 05	732	27 April 1961
3550	17 47	77 51	430	16 May 1962
3553	17 18	78 18	439-457	17 May 1962
3554	17 17	78 29	146-183	17 May 1962
3559	16 37	80 15	146	18 May 1962
3560	16 35	80 10	576	18 May 1962
3562	16 38	79 53	914	18 May 1962
3568	14 14	81 59	183-220	21 May 1962
3573	14 18	81 44	750-768	22 May 1962
3584	9 13	81 30	366	25 May 1962
3601	9 07	81 10	732	31 May 1962
3603	12 16	82 54	27-37	2 June 1962
3621	16 00	81 09	220-238	6 June 1962
3627	16 50	81 21	366	7 June 1962
3651	29 12	88 03	457-549	25 July 1962
3659	29 11	87 57	1326	27 July 1962
3663	28 56	88 08	1463-1600	28 July 1962
3664	28 49	88 03	1554-1829	28 July 1962
3666	28 49	88 25	1051-1189	29 July 1962
3704	28 54	88 46	402	12 Aug. 1962

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
3953	26°35'	96°25'	137-165	27 Sept. 1962
3955	26 43	96 43	64	27 Sept. 1962
4148	29 10	87 54	878	17 Dec. 1962
4203	5 29	52 02	59	23 Feb. 1963
4225	0 18	44 23	183	9 March 1963
4226	0 18	44 17	274	9 March 1963
4297	7 46	54 17	640	22 March 1963
4301	7 34	54 13	366	24 March 1963
4302	7 35	54 25	274	24 March 1963
4304	7 30	55 00	183	24 March 1963
4377	24 12	83 46	1097	7 Aug. 1963
4398	12 46	70 41	201	26 Sept. 1963
4405	11 53	69 28	393	27 Sept. 1963
4412	11 49	69 24	549	3 Oct. 1963
4413	11 53	69 25	640	3 Oct. 1963
4421	11 49	69 24	366	4 Oct. 1963
4423	11 53	69 28	348	5 Oct. 1963
4430	11 46	68 48	1097	6 Oct. 1963
4459	10 50	66 58	97	13 Oct. 1963
4461	10 50	66 55	97	13 Oct. 1963
4569	23 18	86 33	914	7 Dec. 1963
4570	23 11	86 28	914	7 Dec. 1963
4605	27 45	94 11	329-366	18 Jan. 1964

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
4713	27°34'	92°10'	914	24 Feb. 1964
4807	23 30	97 11	732	10 April 1964
4832	14 16	80 27	220-238	12 May 1964
4833	14 16	80 26	82-155	12 May 1964
4834	14 14	80 29	274-293	12 May 1964
4840	11 09	74 28	366	16 May 1964
4841	11 10	74 29	412	17 May 1964
4882	10 16	75 54	549	25 May 1964
4903	10 04	76 06	183-220	28 May 1964
4904	10 00	76 05	146-183	28 May 1964
4907	10 04	75 56	320	28 May 1964
4911	11 50	73 05	320-348	31 May 1964
4913	12 09	72 47	183	1 June 1964
4928	14 05	81 21	183	8 June 1964
4931	16 01	81 09	220	9 June 1964
4932	16 06	81 11	165	9 June 1964
4938	20 31	86 12	274-300	11 June 1964
4939	20 25	86 13	274	11 June 1964
4940	20 30	86 14	311-329	12 June 1964
4954	35 48	74 28	1829	18 July 1964
5015	13 02	59 34	201-247	20 Sept. 1964
5016	13 05	59 40	146-183	20 Sept. 1964
5021	11 21	60 39	165-183	21 Sept. 1964

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
5028	11°30'	60°46'	366-439	22 Sept. 1964
5037	11 37	62 47	366-439	24 Sept. 1964
5419	20 50	73 29	311-329	25 May 1965
5430	20 44	70 44	512-585	28 May 1965
5432	20 48	70 46	384-430	28 May 1965
5629	10 52	67 58	284	28 Sept. 1965
5636	11 27	68 32	384	29 Sept. 1965
5639	11 44	68 43	1006	1 Oct. 1965
5645	12 26	69 59	177	2 Oct. 1965
5648	12 27	69 51	229	2 Oct. 1965
5682	12 32	71 39	124	9 Oct. 1965
5698	12 08	72 16	59	12 Oct. 1965
5733	8 50	77 25	128	18 Oct. 1965
5740	9 47	79 25	421	19 Oct. 1965
5755	29 24	79 50	732	19 Nov. 1965
5915	18 14	63 20	139	25 Feb. 1966
5925	15 38	61 15	448	4 March 1966
5929	15 39	61 10	649	5 March 1966
5930	15 38	61 07	809	5 March 1966
5933	15 25	61 12	110	5 March 1966
5934	15 31	61 12	357	5 March 1966
5954	13 42	60 53	97	10 March 1966
5955	13 41	50 53	165	10 March 1966

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
5956	13°40'	60°54'	229	10 March 1966
6435	12 38	82 20	152	6 Feb. 1967
6690	29 17	79 27	878	9 May 1967
6695	17 41	62 51	549-585	18 May 1967
6696	17 46	62 59	649-667	18 May 1967
6699	17 39	62 16	329-338	19 May 1967
6701	17 17	62 23	640-677	20 May 1967
6703	16 53	61 53	750-841	21 May 1967
6705	17 14	63 01	704-777	22 May 1967
6708	18 26	63 12	457-503	23 May 1967
6715	18 36	63 27	201-238	30 May 1967
6721	17 38	62 48	622-695	5 June 1967
6722	17 34	62 42	612-699	5 June 1967
10170	28°20'	85°40'	494	9 Sept. 1968
10173	28 07	85 56	732	10 Sept. 1968
10491	10 28	60 04	649	25 April 1969
10513	8 26	58 11	183	27 April 1969
10514	8 06	57 41	369	27 April 1969
10632	27 01	84 55	503	18 June 1969
10633	27 53	85 13	485	19 June 1969
10716	36 47	74 42	95	28 July 1969
10729	36 13	74 49	112	29 July 1969

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
10825	15°42'	61°08'	640	1 Dec. 1969
10827	15 40	61 09	622	1 Dec. 1969
10828	15 42	61 18	677	2 Dec. 1969
10831	17 38	63 48	651	3 Dec. 1969
10832	17 42	63 58	741	3 Dec. 1969
10833	17 42	63 43	786	3 Dec. 1969
10843	17 06	62 17	589	8 Dec. 1969
10845	17 33	62 46	667	9 Dec. 1969
10847	18 18	63 24	658	10 Dec. 1969
10875	28 42	87 18	1207	15 Jan. 1970
10876	28 55	87 23	1463	15 Jan. 1970
10877	28 34	87 26	1646	16 Jan. 1970
10878	28 54	87 29	1829	16 Jan. 1970
10897	28 45	88 13	1646	28 Jan. 1970
10901	29 11	87 09	896	5 Feb. 1970
11218	16 32	83 24	914	24 Oct. 1970
11225	12 35	82 16	549	27 Oct. 1970
11226	12 19	82 22	585	27 Oct. 1970
11227	9 12	81 11	575	28 Oct. 1970
11228	9 05	81 18	594	29 Oct. 1970
11240	9 58	76 29	1271	4 Nov. 1970
11244	10 00	76 10	549	6 Nov. 1970

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
11284	11 12	74 24	567	16 Nov. 1970
11290	12 18	72 41	375	21 Nov. 1970
11301	12 50	70 43	521	24 Nov. 1970
11302	12 52	70 24	603	24 Nov. 1970
11303	12 54	70 39	603	25 Nov. 1970
11307	12 55	70 16	622	26 Nov. 1970
11310	12 54	70 39	612	26 Nov. 1970
11703	30 28	79 51	494	19 Jan. 1972
11705	30 26	79 44	640	19 Jan. 1972
11716	30 52	79 39	576	21 Jan. 1972
11718	30 52	79 32	750	21 Jan. 1972
11722	31 46	79 15	402	22 Jan. 1972
11725	31 44	79 02	543	22 Jan. 1972
11726	31 42	78 53	512	22 Jan. 1972

M/V, R/V SILVER BAY (SB)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
50	28°58'	85°20'	70-81	15 July 1957
206	28 00	94 48	86-91	1 Oct. 1957
332	29 17	88 16	84	26 March 1958
446	28 25	78 24	1079	10 June 1958
450	28 52	79 46	640	11 June 1958
453	29 38	78 26	878	12 June 1958
1125	20 04	91 50	48	23 April 1959
1182	29 02	88 09	1097	3 June 1959
1694	33 36	76 44	190	29 Feb. 1960
1788	32 01	79 24	64-82	14 March 1960
1789	32 02	79 15	101-128	14 March 1960
2263	34 37	76 27	14	25 July 1960
2416	24 18	81 29	229	28 Oct. 1960
2418	24 15	81 24	265-293	28 Oct. 1960
2420	24 15	81 25	457	28 Oct. 1960
2424	24 15	81 27	274	29 Oct. 1960
2425	24 24	81 59	137	29 Oct. 1960
2427	24 20	82 04	220	29 Oct. 1960
2443	24 08	80 09	329-366	3 Nov. 1960
2445	24 08	80 08	252	3 Nov. 1960
2449	23 55	80 34	494	3 Nov. 1960
2460	23 35	79 35	183-238	6 Nov. 1960
2474	24 56	79 18	549	7 Nov. 1960
2475	24 48	79 17	549	8 Nov. 1960
2484	26 39	79 30	732	10 Nov. 1960
2488	25°41'	79°20'	82-210	10 Nov. 1960
2523	28 53	80 05	90	15 Nov. 1960
2547	33 11	77 26	49-104	7 Dec. 1960
2813	34 35	75 53	44	1 March 1961
2863	36 04	74 49	110	4 March 1961
3339	33 56	76 27	82-113	15 Aug. 1961
3407	27 52	80 07	37	22 Sept. 1961
3467	27 27	79 00	229-274	25 Oct. 1961
3471	27 23	78 26	388-412	25 Oct. 1961
3472	27 20	78 19	457-622	25 Oct. 1961
3474	27 08	77 52	274-302	25 Oct. 1961
3476	26 49	77 01	137-274	26 Oct. 1961
3483	25 10	77 16	183	27 Oct. 1961
3494	23 36	75 25	183-366	3 Nov. 1961
3495	23 00	75 00	91-457	3 Nov. 1961
3496	20 53	73 42	183	4 Nov. 1961
3513	23 26	79 24	549-594	8 Nov. 1961
3514	23 30	79 27	549	8 Nov. 1961
3515	24 03	79 31	576	8 Nov. 1961
3520	25 11	80 08	137	9 Nov. 1961
3704	28 30	80 02	68-75	25 Jan. 1962
5142	19 52	71 59	640	12 Oct. 1963
5144	19 56	72 00	732-860	13 Oct. 1963
5168	19 47	70 22	640-732	15 Oct. 1963

U.S. COAST SURVEY STEAMER BLAKE (BL)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
2	23°14'	82°25'	1472	1877-1878
5	24 15	82 13	278-419	1877-1878
15	23 14	82 25	1435	1877-1878
16	23 11	82 23	534	1877-1878
19	23 03	83 11	567	1877-1878
20	23 03	83 11	402	1877-1878
21	23 02	83 13	525	1877-1878
22	23 01	83 14	183	1877-1878
23	23 01	83 14	348	1877-1878
32	23 32	88 05	174	1877-1878
36	23 13	89 16	154	1877-1878
44	25 33	84 35	986	1877-1878
45	25 33	84 21	185	1877-1878
46	25 43	84 48	1624	1877-1878
50	26 31	85 53	218	1877-1878
51	23 11	82 21	444-823	1877-1878
56	23 09	82 22	320	1877-1878
57	23 09	82 21	324	1877-1878
58	23 10	82 12	443	1877-1878
59	Off Havana		289	1877-1878
62	Off Havana		146	1877-1878
68	Off Havana		444-838	1877-1878
69	Off Havana		183	1877-1878
76	Off Havana		282	1877-1878
100	Off Havana		457-732	Dec. 1878
101	Off Havana		320-457	Dec. 1878
108	21°44'	76°36'	1817	17 Dec. 1878
109	21 02	74 45	2842	18 Dec. 1878
111	19 06	74 49	2195	19 Dec. 1878
117	SW P.	Rico	1598	28 Dec. 1878
124	17 48	64 54	1061	3 Jan. 1879
128	17 43	64 54	329	4 Jan. 1879
129	17 43	64 54	574	4 Jan. 1879
130	17 43	64 55	825	4 Jan. 1879
132	17 38	64 54	214	5 Jan. 1879
133	17 39	64 56	81	5 Jan. 1879
134	17 37	64 48	454	5 Jan. 1879
135	17 44	64 56	823	6 Jan. 1879
139	17 47	64 49	399	7 Jan. 1879
141	18 19	64 26	1575	8 Jan. 1879
143	17 30	63 43	274	13 Jan. 1879
145	17 21	62 56	494	14 Jan. 1879
153	16 44	62 16	553	16 Jan. 1879
154	16 41	62 15	545	16 Jan. 1879
155	16 42	62 13	161	16 Jan. 1879
156	16 42	62 13	161	16 Jan. 1879

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
157	Off Montserrat		220	17 Jan. 1879
158	Off Montserrat		271	17 Jan. 1879
161	16°02'	61°49'	1066	19 Jan. 1879
162	16 03	61 50	1342	19 Jan. 1879
163	16 03	61 52	1406-1604	20 Jan. 1879
164	15 56	61 42	276	21 Jan. 1879
166	15 56	61 37	274	21 Jan. 1879
167	16 10	61 29	320	21 Jan. 1879
171	15 58	61 43	335	22 Jan. 1879
173	Off Guadeloupe		1342	23 Jan. 1879
175	15 32	61 32	1111	24 Jan. 1879
176	15 32	61 31	715'	24 Jan. 1879
177	15 32	61 30	216	24 Jan. 1879
185	15 25	61 27	609	27 Jan. 1879
189	15 18	61 24	154	29 Jan. 1879
195	14 43	61 13	916	5 Feb. 1879
203	14 29	64 05	176	10 Feb. 1879
206	14 26	60 55	311	10 Feb. 1879
208	14 25	60 55	390	11 Feb. 1879
210	14 29	61 06	349	12 Feb. 1879
211	14 29	61 06	653	12 Feb. 1879
213	Off Martinique		653	12 Feb. 1879
214	14 31	61 08	1632	12 Feb. 1879
218	13°49'	61°05'	300	15 Feb. 1879
220	13 50	61 04	212	16 Feb. 1879
224	13 07	61 13	209	18 Feb. 1879
226	13 09	61 16	775	19 Feb. 1879
227	13 10	61 18	1046	19 Feb. 1879
230	13 13	61 19	848	20 Feb. 1879
231	13 12	61 17	174	20 Feb. 1879
233	13 07	61 06	318	21 Feb. 1879
238	12 46	61 24	230	23 Feb. 1879
239	12 46	61 25	618	23 Feb. 1879
240	12 33	61 29	300	23 Feb. 1879
244	12 12	61 45	1449	24 Feb. 1879
246	12 06	61 46	282	25 Feb. 1879
247	12 05	61 47	311	25 Feb. 1879
253	11 25	62 04	176	27 Feb. 1879
254	11 27	62 11	300	27 Feb. 1879
256	12 07	61 47	677	28 Feb. 1879
258	12 03	61 46	291	28 Feb. 1879
259	12 03	61 46	291	28 Feb. 1879
260	12 03	61 47	532	28 Feb. 1879
261	Off Grenada		622	
262	12 02	61 47	168	1 March 1879
266	12 05	61 50	843	2 March 1879
269	13°08'	61°06'	227	3 March 1879
271	13 05	61 13	838	3 March 1879
272	13 04	59 37	139	5 March 1879
273	13 03	59 36	188	5 March 1879
274	13 01	59 36	382	5 March 1879
276	13 04	59 37	172	5 March 1879
277	13 04	59 38	194	5 March 1879
278	13 05	59 38	126	6 March 1879
280	12 58	59 37	404	6 March 1879
281	12 55	59 37	527	6 March 1879
288	13°11'	59°46'	730	8 March 1879
290	13 12	59 39	134	9 March 1879
292	13 14	59 39	102	9 March 1879
293	13 14	59 39	148	9 March 1879
294	13 14	59 40	249	9 March 1879
298	13 03	59 38	220	10 March 1879
300	13 07	59 39	150	10 March 1879
316	32 07	78 38	419	12 July 1880
318	31 49	77 52	616	12 July 1880

U.S. COAST SURVEY STEAMER BIBB

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
22	24°14'	81°00'	592	4 May 1868
31	24 25	81 27	183	6 May 1868
95	24 49	84 01	227	17 Jan. 1869
135	24 21	81 59	229	17 Feb. 1869
136	24 17	81 59	252	17 Feb. 1869
141	23 58	80 29	576	10 March 1869
187	24°47	80 33	145	8 May 1869
191	24°43'	80°29'	207	8 May 1869
194	24 40	80 23	269	8 May 1869
201	24 53	80 24	110	11 May 1869
203	24 52	80 20	214	11 May 1869
215	25 25	79 58	518	13 May 1869
216	25 27	79 57	525	13 May 1869

U.S. FISH COMMISSION STEAMER ALBATROSS (A1b)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
2117	15°25'	63°32'	1230	27 Jan. 1884
2135	19 56	75 47	457	27 Feb. 1884
2143	9 31	76 26	284	23 March 1884
2150	13 35	81 21	699	9 April 1884
2152	4 km NW of Havana		708	30 April 1884
2153	23 11	82 23	518	30 April 1884
2157	23 10	82 21	53	30 April 1884
2159	23 11	82 20	179	30 April 1884
2166	23 11	82 21	358	1 May 1884
2167	23 11	82 21	368	1 May 1884
2316	24 26	81 48	91	15 Jan. 1885
2318	24 26	81 46	82	15 Jan. 1885
2319	23 11	82 21	262	17 Jan. 1885
2320	23 11	82 19	238	17 Jan. 1885
2321	23 11	82 18	421	17 Jan. 1885
2322	23 11	82 18	210	17 Jan. 1885
2323	23 11	82 20	298	17 Jan. 1885
2324	23 10	82 20	60	17 Jan. 1885
2326	23 12	82 19	355	17 Jan. 1885
2327	23 12	82 18	333	17 Jan. 1885
2332	23 11	82 20	285	19 Jan. 1885
2334	23°11'	82°18'	123	19 Jan. 1885
2336	23 11	82 19	287	19 Jan. 1885
2338	23 11	82 20	346	19 Jan. 1885
2342	23 11	82 20	368	19 Jan. 1885
2343	23 12	82 19	510	19 Jan. 1885
2345	23 11	82 20	337	20 Jan. 1885
2346	23 11	82 20	366	20 Jan. 1885
2347	23 11	82 20	395	20 Jan. 1885
2351	22 41	84 17	772	21 Jan. 1885
2353	20 59	86 23	305	22 Jan. 1885
2354	21 00	86 24	238	22 Jan. 1885
2384	28 45	88 16	1719	3 March 1885
2385	28 51	88 18	1335	3 March 1885
2392	28 48	87 27	1324	13 March 1885
2393	28 43	87 15	960	13 March 1885
2394	28 39	87 02	768	13 March 1885
2399	28 44	86 18	358	14 March 1885
2407	28 48	84 37	44	15 March 1885
2415	30 44	79 26	805	1 April 1885
2416	31 26	79 07	505	1 April 1885
2529	41 04	66 14	1211	14 July 1885
2530	40 54	66 24	1748	14 July 1885
2596	35°09'	75°10'	90	17 Oct. 1885
2601	34 39	75 34	196	18 Oct. 1885
2625	32 35	77 30	452	21 Oct. 1885
2639	25 05	80 15	102	9 April 1886
2655	27 22	78 08	618	2 May 1886
2656	27 59	78 24	1046	3 May 1886
2657	28 08	78 28	988	3 May 1886
2658	28 21	78 33	940	3 May 1886
2659	28 32	78 42	931	3 May 1886
2660	28 40	78 46	921	3 May 1886
2661	29 17	79 37	801	4 May 1886
2662	29 25	79 43	793	4 May 1886
2663	29 39	79 49	770	4 May 1886
2664	29 41	79 55	683	4 May 1886
2665	29 47	80 06	481	4 May 1886
2666	30 48	79 49	494	5 May 1886
2667	30°53'	79°43'	499	5 May 1886
2668	30 59	79 39	538	5 May 1886
2669	31 09	79 34	644	5 May 1886
2671	31 20	79 22	512	5 May 1886
2672	31 31	79 05	507	5 May 1886
2676	32 30	77 01	745	6 May 1886
2678	32 40	76 41	1337	6 May 1886
2750	18 30	63 31	907	27 Nov. 1887
2751	16 54	63 12	1257	28 Nov. 1887
2753	13 34	61 03	514	4 Dec. 1887
2754	11 40	58 33	1609	5 Dec. 1887
2756	3 22S	37 49	763	14 Dec. 1887
2760	12 07S	37 17	1864	18 Dec. 1887
2761	15 39S	38 33	1496	26 Dec. 1887
2763	24 17S	42 49	1227	30 Dec. 1887
4397	33 10	121 42	4016	1 April 1904

U.S. FISH COMMISSION STEAMER FISH HAWK (FH)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
889	37°22'	74°29'	105	16 Nov. 1880
940	39 54	69 52	245	4 Aug. 1881
949	40 03	70 31	183	23 Aug. 1881
1040	40 00	70 06	170	21 Sept. 1881
7283	24°18'	81°54'	232	19 Feb. 1902
7286	24 18	81 48	243	19 Feb. 1902
7296	24 22	81 48	223	26 Feb. 1902

M/V COMBAT

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
45	29°46'	80°11'	329	17 Aug. 1956	436	24°13'	81°42'	549	21 July 1957
164	32 12	79 07	91	1 Nov. 1956	447	25 07	79 15	549	23 July 1957
165	32 16	79 05	73	1 Nov. 1956	449	24 05	79 46	640	24 July 1957
238	27 30	78 52	421	3 Feb. 1957	450	23 59	79 43	640	24 July 1957
308	31 04	79 42	366	23 April 1957	452	24 35	79 58	1033	25 July 1957
412	34 26	75 42	393	22 June 1957	457	25 16	80 07	119	26 July 1957

R/V GOSNOLD (Gos)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1533	28°21'	80°01'	78	24 May 1964	1638	28 41'	79°50'	406	5 June 1964
1564	25 09	80 12	105	28 May 1964	1639	28 52	79 52	435	5 June 1964
1580	24 10	81 22	631	1 June 1964	1641	28 52	79 24	777	5 June 1964
1584	24 33	80 57	204	1 June 1964	1642	28 59	79 31	752	5 June 1964
1590	24 35	80 28	284	2 June 1964	1643	29 01	79 40	822	5 June 1964
1591	24 46	80 24	199	2 June 1964	1644	29 10	79 44	802	5 June 1964
1595	24 55	80 04	500	2 June 1964	1645	29 21	79 44	712	5 June 1964
1606	25 57	79 48	465	3 June 1964	1650	30 01	79 31	779	6 June 1964
1607	26 08	79 54	284	3 June 1964	1653	30 23	79 27	835	6 June 1964
1615	26 56	79 37	669	3 June 1964	1656	30 40	79 44	579	6 June 1964
1632	28 07	79 44	479	4 June 1964	1657	30 40	80 00	244	6 June 1964

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1723	29°10'	79°55'	494	14 June 1964	1796	32 39	78 00	248	21 June 1964
1729	30 00	79 50	504	14 June 1964	1811	33°01'	77°16'	320	22 June 1964
1731	30 11	79 53	534	14 June 1964	1824	33 10	77 01	339	23 June 1964
1735	30 21	79 53	534	14 June 1964	1827	32 44	76 51	692	24 June 1964
1737	30 30	80 02	284	14 June 1964	1842	33 39	76 45	130	25 June 1964
1738	30 31	79 52	480	14 June 1964	1860	34 37	75 44	66	26 June 1964
1739	30 31	79 42	639	14 June 1964	1863	34 51	75 31	86	26 June 1964
1742	30 45	79 19	752	14 June 1964	2150	39 47	69 44	1675	18 Aug. 1964
1743	30 51	79 24	802	14 June 1964	2191	40 42	66 45	690	27 Aug. 1964
1748	31 11	79 29	524	16 June 1964	2468	29 25	79 39	780	
1749	31 21	79 29	484	16 June 1964	2609	39 22	72 04	1450	12 Aug. 1966
1750	31 18	79 46	144	16 June 1964	39	Off Pt. Morant, Jamaica		200-300	18 March 1967
1764	31 41	79 15	504	17 June 1964	112/26	17 50	76 05	540-600	13 Feb. 1968
1766	31 49	79 00	450	17 June 1964	112/27	17 55	76 05	400-480	13 Feb. 1968
1767	31 50	78 46	455	17 June 1964	112/76	17 38	78 00	800	23 Feb. 1968
1768	31 54	78 30	534	17 June 1964	112/78	17 21	78 19	700	23 Feb. 1968
1784	32 34	78 15	244	21 June 1964	112/79	17 37	78 29	1000-1100	23 Feb. 1968
1785	32 41	78 14	190	21 June 1964	112/86	17 29	77 48	1090-1100	25 Feb. 1968

YACHT CAROLINE, JOHNSON-SMITHSONIAN DEEP-SEA EXPEDITION

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1	18°34'	66°15'	658-1097	30 Jan. 1933
12	18 31	66 00	366-549	2 Feb. 1933
13	18 31	66 02	366-549	2 Feb. 1933
17	18 30	66 11	84-165	3 Feb. 1933
23	18 32	66 18	476-658	4 Feb. 1933
25	18 32	66 22	439-549	7 Feb. 1933
32	18 26	67 15	366-512	9 Feb. 1933
37	18 14	67 39	293-366	10 Feb. 1933
38	18 12	67 43	439-476	10 Feb. 1933
49	18°16'	67°31'	329	13 Feb. 1933
67	18 30	65 46	329-512	23 Feb. 1933
81	18 30	65 26	366-732	26 Feb. 1933
84	18 33	65 19	549-640	26 Feb. 1933
93	18 38	65 10	640-732	2 March 1933
94	18 38	65 05	549-860	2 March 1933
99	18 40	64 56	329-366	3 March 1933
102	18 51	64 43	165-914	4 March 1933

R/V EASTWARD (E)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
43	Off Southeast Jamaica		450-525	
9541	33°52'	76°29'	70-104	
14449	34 18	75 47	450	
26004	26 08	79 33	785-830	Nov. 1974
26017	26 39	79 33	770-785	Nov. 1974
26019	27 17	79 25	665-685	Nov. 1974
26023	27 32	79 22	685-705	Nov. 1974
26028	27°10'	79°25'	635-700	Nov. 1974
26031	27 00	79 24	645-690	Nov. 1974
26034	27 50	79 20	635-670	Nov. 1974
26037	26 29	79 06	560-640	Nov. 1974
26052	25 43	79 48	660-770	Nov. 1974
26052	25 43	79 48	660-770	Nov. 1974
26538	27 13	79 14	420	March 1975
26542	27 14	79 14	440	March 1975
26547	27°18'	79°17'	520	March 1975
26549	27 18	79 13	370	March 1975
30150	19 22	81 05	775-800	7 July 1976
30158	19 22	81 13	875-900	8 July 1976
30159	19 23	81 13	1575-1600	8 July 1976
30175	19 24	81 18	600-1125	10 July 1976
30176	19 24	81 17	600-1250	10 July 1976
30178	19 25	81 23	585-600	11 July 1976
30179	19 18	81 25	610-730	11 July 1976

WALTHER HERWIG (WH)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
44/68	33°42'S	51°00'	200	25 Feb. 1968
83/68	25 24S	44 54	500	1 March 1968
89/68	24 17S	43 50	300	2 March 1968
90/68	24 21S	43 54	500	2 March 1968
91/68	24°28'S	43°43'	800	2 March 1968
104/68	22 30S	40 07	800	9 March 1968
127/68	30 59S	49 51	130	14 March 1968

BLM - ALABAMA

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
22-VI-B	29°33'	87°24'	91	18 Oct. 1975
33-I-C	26 27	84 19	183	27 Feb. 1976
33-III-C	28°34'	85°16'	183	26 Feb. 1976
33-IV-B	28 58	85 24	91	26 Feb. 1976

MAFLA

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1974-18	29°35'	87°25'	?	1974	2212	27°57'	84°48'	189	1 July 1976
1974-33	30 10	86 12	?	1974	2645	29 35	87 20	107	?
					2746	27 04	84 14	121	28 June 1976
2106	26 26	84 15	168	28 June 1976	2957	25 30	84 14	155	20 Aug. 1977

ATLANTIS AND R/V ATLANTIS II (At1)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
2950	26°14'	78°43'	521	3 Feb. 1938	2999	23°10'	81°29'	265-512	17 March 1938
2980B	22 44	78 48	402-412	10 March 1938	3313	22 03	85 06	1006	25 March 1939
2985	23 23	79 17	457	12 March 1938	3332	22 10	81 11	320-412	5 April 1939
2987A	23 22	79 56	521-549	13 March 1938	3336	22 12	81 12	366-439	6 April 1939
2987D	23 21	79 58	576	13 March 1938	3341	21 59	81 20	567-777	7 April 1939
2989	23 10	80 04	658	14 March 1938	3344	21 32	80 12	2633	8 April 1939
2990B	23 17	80 12	759	14 March 1938	3345	21 08	79 57	1262-1280	8 April 1939
2991	23 21	80 23	869	14 March 1938	3355	19 50	75 00	1957	15 April 1939
2991A	23 23	80 21	869	14 March 1938	3363	20 49	74 56	1518	19 April 1939
2992A	23 26	80 35	1015	15 March 1938	3366	20 46	74 59	1143	19 April 1939
2994	23 24	80 50	1033-1070	15 March 1938	3367	20 46	75 02	1170	19 April 1939
2995	23 24	81 01	677-1106	16 March 1938	3369	20 49	75 08	1097	20 April 1939
3370	20°47'	75°11'	823	20 April 1939	3459	23°21'	80°36'	914	4 May 1939
3371	20 46	75 13	540	20 April 1939	3469	23 12	81 22	777	9 May 1939
3374	20 45	75 19	549	20 April 1939	3470	23 24	80 59	1116	10 May 1939
3375	20 45	75 20	421	20 April 1939	3472	23 21	80 55	933	10 May 1939
3379	21 49	76 43	1664	25 April 1939	3474	23 18	80 46	896	10 May 1939
3392	22 35	78 16	412	27 April 1939	3478	23 09	81 28	439	11 May 1939
3396	22 34	78 15	329	28 April 1939	3482	23 09	81 28	348	11 May 1939
3397	22 35	78 16	329	28 April 1939	260	33 36	62 25	1383	18 Oct. 1960
3400	22 35	78 19	329	28 April 1939	266-4	31 56	77 26	768	26 June 1961
3416	22 50	78 55	366	30 April 1939	266-6	31 55	77 23	785	27 June 1961
3423	22 50	79 08	448	30 April 1939	266-7	31 53	77 23	750	28 June 1961
3451	23 20	79 59	741	3 May 1939	280-3	38 54	61 01	1171-1595	24 Sept. 1962
3454	23 24	80 36	1097	4 May 1939	280-14	38 34	62 09	1902-2560	14 June 1962
3457	23 23	80 36	1006	4 May 1939	280-16	38 31	63 13	1646	21 June 1962

N/Oc WLADIMIR BESNARD (WB)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1	24°16'S	43°55'	220	22 July 1969	322	25°06'S	43°44'	2040-2150	9 Feb. 1969
2	24 09S	43 59	160	22 July 1969	391	24 43S	43 44	1500	24 July 1969
318	25 15S	44 00	180	7 Feb. 1969	413	33 40S	51 46	78	31 Oct. 1968

TEXAS A&M UNIVERSITY, R/V ALAMINOS (TAMU)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
65A9-4	24°00'	83°11'	975	3 July 1965
65A9-7D	22 00	85 30	2076	5 July 1965
65A9-11	20 17	86 17	1134	8 July 1965
65A9-14	22 43	86 13	1033	10 July 1965
65A9-15	23 10	86 30	759-969	11 July 1965
65A9-15A	23 05	87 05	183-366	11 July 1965
65A9-20	25 00	84 00	128	14 July 1965
65A9-21	24 58	84 17	399	14 July 1965
65A14-9	20 58	92 28	77	7 Oct. 1965
66A5-4	28 20	87 03	1097-1189	3 April 1966
67A5-1A	28 13	89 27	997	9 July 1967
67A5-4G	28 18	87 21	2587	14 July 1967
67A5-5D	28 32	87 23	1463	15 July 1967
67A5-6B	28 48	87 03	732	16 July 1967
67A5-7E	29 13	87 00	836	17 July 1967
67A5-8B	28°55'	87°24'	1454	18 July 1967
67A5-9E	29 30	86 57	622	20 July 1967
67A5-10B	29 05	86 14	91	20 July 1967
67A5-11C	29 25	86 21	183	21 July 1967
67A5-13B	29 30	8652	366	22 July 1967
67A5-13E	29 39	86 54	366-384	22 July 1967
68A3-9A	21 44	92 34	914-1006	21 March 1968
68A7-1A	28 51	88 48	864-529	25 July 1968
68A7-2B	28 53	88 38	549-585	26 July 1968
68A7-7B	28 00	86 08	1097	1 Aug. 1968
68A7-9A	29 28	86 46	366	4 Aug. 1968
68A7-12B	29 14	87 00	878	6 Aug. 1968
68A7-13A	29 03	87 15	1061	7 Aug. 1968
68A7-13B	29 00	87 21	1408	7 Aug. 1968
68A7-13D	28°59'	87°23'	1463	7 Aug. 1968
68A7-15D	29 10	87 32	1097	9 Aug. 1968
68A7-15H	29 10	87 16	914	9 Aug. 1968
68A7-17B	29 10	87 02	878	11 Aug. 1968
68A13-12A	25 31	95 51	1061-1317	17 Nov. 1968
68A13-23	27 35	95 23	732	20 Nov. 1968
69A13-16	24 38	88 14	1646	7 Oct. 1969
70A10-35	11 29	73 33	476	17 July 1970
70A10-39	12°14'	72°31'	205	18 July 1970
70A10-41	12 53	69 38	1006-1116	17 July 1970
70A10-42	12 39	69 41	795	17 July 1970
71A8-29	23 55	97 00	937	4 Aug. 1971
71A8-47	21 35	96 55	914	8 Aug. 1971
71A8-71	19 49	92 21	229-342	14 Aug. 1971
72F1-48	29 34	86 30	183	29 June 1972

EXPLORER

Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1a	16°35'	82°47'	183	11 March 1960
1b	16 39	82 50	274	11 March 1960
1c	16°40'	82°52'	366	11 March 1960
4	25 41	84 20	157-159	30 March 1960

STATION MARINE D'ENDOUME, CALYPSO (SME)

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1758	32°50'S	50°00'	1050	13 Jan. 1962	1776	24°54'S	44°26'	1000	25 Jan. 1962
1761	27 34S	47 01	1000	17 Jan. 1962	1777	24 49S	44 32	575-535	25 Jan. 1962
1763	27 38S	47 13	250	17 Jan. 1962	1778	24 53S	44 38	250	25 Jan. 1962
1764	27 33S	47 33	120	17 Jan. 1962	171	37 36S	54 46	740	29 Dec. 1961
1775	27 05S	46 54	252	19 Jan. 1962					

AKAROA

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
5	9°01'	34°51'	46	10 Sept. 1965	5c	9°01'	34°51'	370	10 Sept. 1965
5b	9 01	34 51	560	10 Sept. 1965	185	10 44	36 21	540	4 Dec. 1965

R/V CHAIN, CRUISE 35

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
15	Off St. Paul Rocks		291	13 April 1963	36	8°11'	57°40'	104	28 April 1963
16	Off St. Paul Rocks		110-146	13 April 1963	38	8 08	57 53	110	28 April 1963
					39	8 08	57 52	101	28 April 1963
35	Off Guyana			27 April 1963	43	8 53	59 04		29 April 1963

CSS HUDSON

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
3A	12°29'	61°13'	439-549	17 March 1968	4B	12°23'	61°20'	297-423	17 March 1968
3B	12 29	61 13	497-549	17 March 1968					

HUMMELINCK STATION

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
1442	Off Barbados		100	19 Feb. 1964	1443	Off Barbados		200	19 Feb. 1964

MISCELLANEOUS

Station Number	°N Latitude	°W Longitude	Depth (m)	Date	Station Number	°N Latitude	°W Longitude	Depth (m)	Date
Pocock-IV	Off Barbados		187-205	10 July 1965	IOSP-2	Off San Paulo, Brazil		110	19 June 1962
Rosaura-34	12°05'	61°49'	720-800	27 Nov. 1937	Nekton beta-563	24° 02'	77°11'	130	12 Jan. 1976
Anton Bruun-831	22 50	85 58	1000	16 Oct. 1966					
N/oc Almirante Saldanha-2803	25 18S	44 45	440	7 Jan. 1972	Nekton gamma-244	Discovery Bay, Jamaica		274	4 Sept. 1972
					Nekton gamma-232	Discovery Bay, Jamaica		166	
IOSP-1	24 20S	44 40	130m	19 June 1962					

SPECIES ACCOUNT

Order **SCLERACTINIA**

Suborder ASTROCOENIINA Vaughan & Wells, 1943

Family **POCILLOPORIDAE** Gray, 1840

Genus **Madracis** Milne Edwards & Haime, 1849

Diagnosis. – Colonial, extratentacular budding producing massive or ramose corallum. Coenosteum solid. Septa arranged in groups of six, eight, or ten, but rarely in more than two cycles. Columella styliform, prominent. No pali.
Type-species: *Madracis asperula* Milne Edwards & Haime, 1849, by monotypy.

1. **Madracis myriaster** (Milne Edwards & Haime, 1849)

Plate I, figures 1–2, 4–5

Axhelia myriaster MILNE EDWARDS & HAIME, 1849: 69; 1850: xxi; 1850a: 92, pl. 4, figs. 6, 6a; 1857: 126–127. – ROOS, 1971: 52, pls. 6–7.
Stylophora mirabilis DUCHASSAING & MICHELOTTI, 1860: 62, pl. 9, fig. 6.
Madracis myriaster: POURTALÈS, 1871: 27–28. – WELLS, 1973: 19. – LANG, 1974: 277–278. – BRIGHT, *et al.*, 1974: 33–34. – CAIRNS, 1977b: 5; 1978: 10.
Axohelia myriaster: POURTALÈS, 1874: 41, pl. 8, fig. 3.
Axohelia (*Stylophora*) *dumetosa*: POURTALÈS, 1874: 40, pl. 8, fig. 1.
Axohelia schrammii POURTALÈS, 1874: 41, pl. 8, fig. 2. – VERRILL, 1901: 110, pl. 18, figs. 3–4.
Not *Axohelia schrammi*: LINDSTRÖM, 1877: 14 (= *M. asperula*).
Axohelia dumetosa: POURTALÈS, 1878: 204. –? MOSELEY, 1881: 182 (specimen missing).
Axohelia mirabilis: POURTALÈS, 1880: 107–108.
Axhelia mirabilis: VAUGHAN, 1901: 295, pl. 1, figs. 3, 3a.
?*Madracis mirabilis*: KELLER, 1975: 181.

Description. – Colonies are rarely dredged intact. Judging from the numerous broken branches and basal fragments, this species seems to produce a broad, bushy colony measuring 30–40 cm in height, with irregular branching. Planar colonies with anastomosing branches also occur. The basal main branch measures up to 25 mm in diameter and is firmly attached by an encrusting base, which bears calices. The diameters of terminal branches are 3–4 mm. The calices near the base are round, about 1.5 mm in diameter, and widely separated from one another by one-three calicular diameters. At the branch tips the calices are elongated in the axis of the branch, about 2.0 × 1.5 mm in diameter, and close-set (separated by only one-fourth to one-half their calicular diameter). The corallites are usually flush with the surface of the branch or sometimes raised on mounds; however, the exsert septa project well above the coenosteum. The coenosteum, especially on the encrusting base and thick basal branches, is prominently striate with anastomosing ridges. In some cases, the striae form very high, thin ridges, which bear a single row of pointed spines, but usually the ridges are much less conspicuous. On medium diameter branches (5–6 mm) and especially toward the branch tips the striae are often lacking, replaced by close-set, large, rounded granules.

Each corallite has 10 highly exsert primary septa, which extend about one-third of the distance to the center of the calice. Occasionally larger corallites up to 3 mm in calicular diameter occur with 16–20 septa. The inner edges of the septa are vertical, straight, and entire. Their faces are smooth or covered with slender, pointed granules, producing a "hirsute" appearance. Ten rudimentary secondary septa are also present, each of which is composed of a row of low spines. The inner edges of the primary septa are united by a large, low, solid columella, which fills in most of the fossa. A tall, compressed style, aligned with the two septa in the plane of the branch, projects from the center of the columella. Sometimes the style is absent.

Discussion. – Both *Axhelia* and *Madracis* were originally described in the same paper (MILNE EDWARDS & HAIME, 1849); *myriaster* was designated the type of *Axhelia* on page 69 and *asperula* was designated the type of *Madracis* on page 70. In both cases the

authors provided a combined description of genus and species (see *International Code of Zoological Nomenclature*, Article 16 a vi). POURTALÈS (1871: 27), as first reviser, clearly designated *Madracis* as the senior synonym.

The history of the synonymy of *M. myriaster* is complicated. Shortly after MILNE EDWARDS & HAIME's (1849) description of *M. myriaster*, DUCHASSAING & MICHELOTTI (1860) described *Stylophora mirabilis* and later DUCHASSAING (1870) described *Stylophora dumetosa*, both from the Lesser Antilles. The former is a junior synonym of *M. myriaster* and I consider the latter a *species dubia*, since: (1) no illustration was provided, (2) the short description does not differentiate it from other western Atlantic *Madracis*, and (3) the holotype is lost. Four years later, POURTALÈS (1874) provisionally identified specimens as *A. myriaster* and *A. dumetosa* and described a new species, *A. schrammii*. All are *M. myriaster*. He carefully noted, however, that comparisons to type-material, which he did not perform, were essential for correct identification. By 1880 POURTALÈS admitted that what he identified as *A. myriaster* and *A. dumetosa* were identical, but he provisionally chose the name *A. mirabilis*, instead of *A. myriaster*, since he considered *A. myriaster* an East Indian species; otherwise he stated, "I cannot tell in what way they differ" (POURTALÈS, 1880: 107). (A type-locality for *A. myriaster* was not given in the original description. Only in 1850 did MILNE EDWARDS & HAIME (1850 a) mention the imprecise location of "mers des Indes.") POURTALÈS was correct in his synonymy of *A. myriaster* and *A. mirabilis*; however, *A. myriaster* is not known from the East Indies. Only recently was POURTALÈS proven correct when I examined the holotype of *M. mirabilis* at the MIZS and confirmed that it is the striate *M. myriaster*. Therefore, the common, shallow-water, nonstriate species, known today as *M. mirabilis sensu* Wells, 1973, requires a new name. Oddly enough. POURTALÈS never realized that his own *A. schrammii* was also *M. myriaster*. It was not until 1901 that two authors simultaneously published remarks concerning *A. schrammii*: VERRILL (1901) implied that *A. schrammii* and *A. myriaster* were the same, and VAUGHAN (1901) correctly synonymized *A. schrammi* with *M. mirabilis*. MOSELEY's (1881) specimen from Bermuda, identified as *A. dumetosa*, is lost.

M. myriaster could be confused with both *M. asperula* and *M. mirabilis sensu* Wells, 1973, two shallow-water western Atlantic species. Sometimes *M. asperula* also bears faint intercalicular striae but can be distinguished from *M. myriaster* by its thinner branch tips (2–3 mm in diameter) and even more elongate calices at the branch tip. *M. mirabilis sensu* Wells, a hermatypic coral, has thicker branches (up to 10 mm in diameter) and blunt branch tips (not attenuated as in *M. myriaster* and *M. asperula*).

Remarks. – Calcareous worm tubes secondarily covered by coenosteum often thread between the calices, indicating that the worm and coral were at one time symbiotic.

Material. – P-705 (USNM 45779); P-854 (USNM 45788); P-875 (UMML 8: 223); P-907 (USNM 45789); P-910 (USNM 45786); P-991 (USNM 45780, UMML 8: 330); P-1140 (USNM 45776); P-1186 (USNM 45787); P-1303 (USNM 45784); P-1387 (USNM 45778); P-1393 (USNM 45781); P-1395 (USNM 45782); P-1410 (USNM 45785); G-134 (USNM 45793); G-251 (USNM 45791); G-270 (USNM 45792); G-493 (USNM 45790); G-691 (USNM 45777, UMML 8: 329); CI-1 (USNM 45794); O-1494; O-2603; O-3554; O-3559; O-3603; O-3955; O-4297; O-4398; O-4832; O-4928; O-4932; O-4938; O-5016; O-5419; O-5432; O-5933; O-6715; SB-3467; SB-3494; SB-3495; SB-3496; BL-45 (MCZ); BL-62 (MCZ); BL-269 (MCZ); BL-293 (USNM); undetermined Hassler station off Barbados, 183 m (MCZ); Alb-2152 (USNM 16153); Alb-2157 (USNM 36509); Alb-2159 (USNM 16151); Alb-2166; Alb-2319 (USNM 16146); Alb-2321 (USNM 36507); Alb-2323 (USNM 10121); Alb-2324 (USNM 10866); Alb-2334; Alb-2336 (USNM 10210); Alb-2338 (USNM 10223); Alb-2353 (USNM 10279); Caroline-49; E-30175; E-30178; Chain-36; Hummelinck-1443; south shore of Bermuda, 160 m. – Holotype of *S. mirabilis*; syntype of *A. schrammii*; Lindström's (1877) *A. schrammi* (NRM); Vaughan's (1901) *A. mirabilis* (USNM 36534).

Types. – The type of *Axhelia myriaster* could not be found at the MNHNP in 1975; it is presumed lost. The holotype of *Stylophora mirabilis*, collected at St. Thomas, Virgin Islands, is deposited at the MIZS (Coel. 358). The figured branch of Pourtalès's *Axohelia schrammii* from Guadeloupe, Lesser Antilles, is deposited at the MCZ (2765). It has been broken into five pieces.
Type-Locality. – "Mers des Indes" (Milne Edwards & Haime, 1850a).

Distribution. – Common throughout the Caribbean and Gulf of Mexico, ranging from off Florida to off Surinam; however, present off northern coast of South America only off Leeward Group; Bermuda (Map 1). 37–708 m. 9–26°C, based on eight records.

Suborder FUNGIINA Verrill, 1865

Family **FUNGIIDAE** Dana, 1846

Genus **Fungiacyathus** Sars, 1872

Diagnosis. – Solitary, cupolate, free. Septotheca thin; costae thin and spinose. Septa irregularly dentate, laterally braced by thin ribbons extending from the septotheca and by thin septal striae. Columella feeble. Paliform lobes sometimes present. Type-species: *Fungiacyathus fragilis*, Sars, 1872, by monotypy.

2. **Fungiacyathus pusillus** (Pourtalès, 1868), new comb.

Plate II, figures 2–3, 5

Diaseris pusilla POURTALÈS, 1868: 139; 1871: 47, pl. 2, figs. 6–8; 1880: 97.

Description. – The corallum rests on a flat to slightly concave, round base, which measures 16.8 mm in diameter in the largest specimen examined. The entire corallum is very fragile and is often collected in fragments or with incipient fracture lines. Narrow, ridged costae alternate in size, with the C_5 smaller than the others. The costae have dentate margins and are most highly ridged toward the outer edge. All costae reach the center of the base except the C_5, which extend only three-fourths as far.

Septa are arranged in six systems and five complete cycles. S_1 are independent and each bears a high, rounded lobe on its outer edge. The lobe bears eight–ten distinct carinae on each side, which degenerate into rows of granules toward the base. Toward the center of the calice the S_1 bear three–five long, slender spines, which also bear lateral carinae. S_2 are smaller but also have outer lobes with six–eight vertical carinae. Their inner edges have four–seven large spines, also ridged. S_3 and S_4 are progressively smaller with smaller, ridged outer lobes. The S_3 join the S_2 about halfway to the center

and the S_5 join the S_4 about one-third of the distance to the center. S_5 are always very small (each septum composed of only several spines), but are present even in a specimen measuring 6.5 mm in diameter. The edges of all septa are straight. Synapticulae bridging adjacent septa and every other septum (crossing over the rudimentary S_5) are frequent.

A rudimentary columella is formed by the intermingling of the innermost septal spines of the S_1 and S_2.

Discussion. – There are six Recent nominal species of *Fungiacyathus* with five cycles of septa: *F. fragilis* Sars, *F. stephanus* (Alcock), *F. paliferus* (Alcock), *F. sibogae* (Alcock), *F. hawaiiensis* (Vaughan), and *F. pusillus*. The latter is easily distinguished from *F. fragilis*, the only other Atlantic representative, by its smaller size and straight septal margins. However, *F. pusillus* is extremely similar to *F. stephanus* (Indian Ocean) in morphology, differing only in size (one-half as large) and its shallower bathymetric range.

Material. – P-587 (16) USNM 45833; P-600 (1) USNM 45834; P-861 (1) USNM 45835; G-1102 (1) USNM 45832. – Syntypes of *D. pusilla*.

Types. – Two lots of syntypes are present at the MCZ. One contains 10 fragments (5596) and the second contains one whole specimen (5619). It is impossible to determine at which Bibb station(s) they were collected.
Type-Locality. – Off Sand Key, Florida; 218–262 m.

Distribution. – Florida Keys; Arrowsmith Bank, Yucatan; off the Grenadines, Lesser Antilles (Map 2). 285–439 m.

3. **Fungiacyathus symmetricus** (Pourtalès, 1871)

Plate I, figures 7–8; Plate II, figure 1; Plate III, figure 1

Fungia symmetrica Pourtalès, 1871: 46, pl. 7, figs. 5–6; 1874: 43. – Moseley, 1876: 548, 562–563 (in part: Chall-24, 36, 56, 181). – Pourtalès, 1878: 208. – Agassiz, 1888: 153, fig. 476.
Not *Fungia symmetrica*: Duncan, 1873: 334, pl. 49, figs. 16–19 (= *F. marenzelleri*). – ?Studer, 1878: 651. – Thomson, 1878: 132, fig. 33.
Diaseris crispa Pourtalès, 1871: 47–48 (in part: see Types of *F. crispus*).
Bathyactis symmetrica: Pourtalès, 1880: 97, 112. – Moseley, 1881: 186–190 (in

part: Chall-24, 36, 56, 181), pl. 11, figs. 8, 8a, 9, 9a. – VAUGHAN, 1901: 311, pl. 1, figs. 7a–b. – LEWIS, 1965: 1063.

Not *Bathyactis symmetrica*: VERRILL, 1882: 313 (= *F. fragilis*); 1883: 65 (= *F. fragilis*). – ?JOURDAN, 1895: 28. – ?ALCOCK, 1898: 28; ?1902: 37. – MARENZELLER, 1904: 312–313, pl. 18, fig. 25; 1904a: 76 (= *F. marenzelleri*). – GRAVIER, 1915: 3, 1920: 97–98 (= *F. fragilis* and *F. marenzelleri*), pl. 10, figs. 165–166. – THOMPSON, 1931: 9 (= *F. fragilis*). – GARDINER & WAUGH, 1939: 230–231 (? *F. marenzelleri*). – ?YABE & EGUCHI, 1942: 137. – TIZARD, *et al.*, 1885: fig. 287.

Not *Fungiacyathus symmetrica*: DURHAM & BARNARD, 1952: 11. – ?KIKUCHI, 1968: 11.

?*Fungiacyathus symmetricus*: WELLS, 1958: 262, 267, pl. 2, figs. 1–2. – SQUIRES, 1961: 18. – UTINOMI, 1965: 248–249. – SQUIRES, 1969: 17, map 2.

Fungiacyathus symmetricus: LABOREL, 1970: 153, 155. – KELLER, 1975: 174–175.

Description. – The corallum rests on a flat or slightly concave, horizontal base. The average diameter of the round base is about 10 mm, although the largest specimen examined measures 14.1 mm. The height of the highest septal spines from the base is between 4–5 mm. Ridged costae corresponding to all septa are present on the base. C_1 are most highly ridged and, like the C_2, reach the center of the base. C_3 and C_4 are progressively less prominent and do not reach the center. The costae bear serrate teeth, which gradually decrease in size to small granules toward the center of the base. Granules are also present in the intercostal spaces. In well-preserved specimens, lines of fine perforations occur in the intercostal spaces (Pl. II 1).

The septa are arranged in six systems and four complete cycles. S_1, the only independent septa, are the largest, highest septa and meet in the center. On their upper margins, extending from the external edge to the columella, each septum bears 12–15 extremely high spines, which are compressed in the plane of the septum. Each spine bears a prominent vertical carina on either side, which gradually degenerates to a row of granules about halfway to the base. These granules are usually small and pointed but may be large (two-three times the width of a septum) and blunt. The slightly smaller S_2 also meet in the center but are joined by the S_3 near the columella. The S_4 are joined to the S_3 about halfway to the center. All septa bear high, delicately ridged spines as described for the S_1. Each septum is united to its adjacent septa by six-seven broad

synapticulae, which are also in contact with the base. Toward the center of the calice, often a columella is formed as a small, circular platform pierced by the innermost spines of the S_1 and S_2. Sometimes there is no distinct columella but simply an intermingling of the long, innermost spines, which are round in cross-section near the center of the calice.

Discussion. – *F. symmetricus* has been reported in all three oceans and generally has been considered a cosmopolitan species with a great depth range (59–5872 m). This misconception originated with MOSELEY (1881), who reported this species, originally described by POURTALÈS from the western Atlantic, to be cosmopolitan at shallow and great depths. A re-examination of MOSELEY's Challenger records showed that specimens from only four stations (24, 36, 56, and 181) out of 19 are *F. symmetricus*; the other are large specimens belonging to other species. Three of these four stations are western Atlantic, whereas the fourth (Chall-181) is from off northeast New Guinea at 4462 m. This latter record greatly exceeds the typical depth and geographic range of this species and is probably a labelling error. Many authors after MOSELEY uncritically accepted his redescription and therefore frequently reported it. I have not verified all of the Indo-Pacific records of *F. symmetricus*, but I strongly question its existence outside the western Atlantic. *F. marenzelleri* Vaughan, on the other hand, does have a cosmopolitan distribution and may be the species so often referred to as *F. symmetricus*. Among the four new subspecies of *F. symmetricus* treated by KELLER (1976), there is little doubt that the nominal subspecies is the species described here. A worldwide revision of all *Fungiacyathus* is needed.

MATERIAL. – P-585 (6) USNM 45821; P-605 (1) USNM 45822; P-606 (1) USNM 45823; P-607 (4) USNM 45824; P-861 (27) USNM 45825; P-881 (108) USNM 45772, (1) UMML 8: 228; P-891 (1) USNM 45771; P-904 (9) USNM 45826; P-919 (3) USNM 45774; P-943 (18) USNM 45827; P-944 (1) USNM 45828; P-984 (1) USNM 45829; P-988 (2) USNM 45773; P-1261 (1) USNM 45830; 73 specimens from 30 Gerda stations in the Straits of Florida; SB-2443 (1); BL-2 (3) MCZ; BL-21 (2) MCZ; BL-57 (1) MCZ; BL-59 (1) MCZ; BL-68 (20) MCZ; BL-100 (3) MCZ; BL-128 (2) MCZ; BL-134 (3) MCZ; BL-164 (2) MCZ; BL-167 (2) MCZ; BL-210 (1) MCZ; Alb-2150 (1) USNM 7592; Alb-2342 (3) USNM 16095; Alb-2750 (22) USNM 36448;

Combat-447 (4); Caroline-25 (4); Caroline-32 (5); Caroline-38 (1); Caroline-93 (2); Atl-2999 (3) MCZ; Atl-3375 (1) MCZ; Atl-3379 (1) MCZ; Atl-3392 (2) MCZ; Atl-3396 (3) MCZ; WB-1 (1) USNM 45831; SME-1763 (1) SME; SME-1764 (1) SME; Akaroa-5 (1) SME. – Syntype of *F. symmetrica* (Bibb-157); Moseley's (1881) specimens (Chall-24, 36, 56, 181); Vaughan's (1901) specimens (USNM 22094, 22088); Marenzeller's (1904) specimens (USNM); Verrill's (1882, 1883) specimens (YPM).

Types. – The original description was based on two specimens (syntypes): one was collected off Carysfort Reef, Florida (Bibb-157) and is deposited at the MCZ (2767); the other specimen, from off Cojima, Cuba (Bibb-139), is presumed lost.
Type-Locality. – Straits of Florida; 640–823 m.

Distribution. – Antillean distribution and western Caribbean (not off northern coast of South America); Bermuda; off Brazil from Recife to 27°33'S (Map 2). 183–1664 m; MOSELEY's (1881) record of 59 m (Chall-36) is discounted as a labelling error. 6–12°C, based on three records.

4. **Fungiacyathus crispus** (Pourtalès, 1871)

Plate I, figures 3, 6; Plate II, figures 4, 7

Diaseris crispa POURTALÈS, 1871: 47–48, pl. 5, figs. 1–2; 1874: 44. – LINDSTRÖM, 1877: 23, pl. 3, fig. 39. – POURTALÈS, 1878: 209; 1880: 97. – AGASSIZ, 1888: 153, fig. 477.
Fungiacyathus crispus: ZIBROWIUS, 1976: 85–86, pl. 42, figs. A-L. – CAIRNS, 1977b: 5; 1978: 10.

Description. – The corallum is very irregular in shape, most often collected as wedge-shaped pieces that have fractured from a larger corallum. One of the few whole specimens known (Pl. II 4) has regenerated an entire calice from an original segment consisting of seven septa. Its calicular diameter is 5.4 mm but the extrapolated diameter of the parent sector is 9.0 mm. The base is flat and bears an irregular granulation. Costae are difficult to distinguish. If a fragment has more than five or six septa, usually incipient fracture lines are present, originating at the outer edge and usually occurring between every three-four septa. Specimens probably fracture along these lines when being collected.

Discrete systems and cycles of septa are not apparent because of the incomplete nature of most specimens or irregularities due to

regeneration from a smaller fragment. Four cycles of septa (48) appear to be arranged in the same manner as in *F. symmetricus*. The larger septa bear 16–18 tall, slender, pointed spines, shaped and laterally carinate as in *F. symmetricus*. The septal granules, a continuation of the lateral carinae, are extremely high (two-three times the thickness of a septum) and are often clavate or bifurcate. The presence of a columella is impossible to determine since this area of the corallum is invariably missing.

Discussion. – This species is distinctive because of its high degree of schizoparity. It is very similar to *F. symmetricus* but differs with regard to its smaller size, greater number of spines per septum, and its tendency to fracture.

Material. – P-1401 (1) USNM 45836; O-1251 (5); O-1867 (4); O-4226 (9); Hassler, off Barbados, 183 m (26) MCZ; Caroline-93 (3); Hudson-4B (4) NMC; off Anna Maria Key, Florida, 366–487 m (1) USNM 45837. – Syntypes of *D. crispa*; Lindström's (1877) specimens from Anguilla (10) NRM.

Types. – Eight lots of syntypes are deposited at the MCZ. The three lots labelled "Boschma" 1, 2, and 3 are *F. symmetricus*. The other five lots are labelled: "Boschma" 4, MCZ 5593 (two fragments); "Boschma" 5, MCZ 5593 (one regenerated corallum); "Boschma" 4 and 5, MCZ 5593 (ten fragments); "Florida, 120–150 fms.", MCZ 5593 (one fragment); and "Florida, 120–180 fms.", MCZ 5618 (nine fragments). My illustrated fragment (Pl. I 3, 6) from lot MCZ 5618 is designated lectotype; the other 22 pieces are designated paralectotypes.
Type-Locality. – POURTALÈS did not give a definite location for his type-material in his text or with the specimens; however, he did imply that they were taken from Alligator and Tennessee Reefs and off Sand Key, Florida; 220–329 m.

Distribution. – Western Atlantic: Antillean distribution; eastern Gulf of Mexico; off Honduras; off the Amazon, Brazil (Map 3). 183–640 m. – Eastern Atlantic: area bounded by Portugal, Madeira, and the Azores. 340–1010 m.

5. **Fungiacyathus marenzelleri** (Vaughan, 1906)

Plate II, figures 8–9; Plate III, figures 3, 8

Bathyactis symmetrica: MARENZELLER, 1904a: 76. – GRAVIER, 1920: 97 (in part: Sta. 698, 738, 1150, 1331, 1334), pl. 10, figs. 165–166.

Bathyactis marenzelleri VAUGHAN, 1906a: 66, pl. 4, figs. 1, 1a–b.
Fungia symmetrica: DUNCAN, 1873: 334, pl. 49, figs. 16–19.
Fungiacyathus marenzelleri: ZIBROWIUS, 1976: 83–85, pl. 40, figs. A–M, pl. 41, figs. A–K.

Description. – The corallum rests on a flat to very slightly concave base, which is very thin and fragile, sometimes porous. Its edges are sometimes regularly scalloped in groups of one-three septa. The diameters of the round bases of the western Atlantic specimens never exceed 22 mm. A thin, ridged costa, more prominent toward the calicular edge, corresponds to each septum. C_{1-3} may extend to the center of the base; C_4 are usually smaller, often consisting of a row of several spines, reaching only one-half to three-fourths of the distance to the center. All costae are dentate and slightly sinuous.

Septa are arranged in six systems and four complete cycles. The S_1 are the largest and only independent septa. Each S_1 bears nine–ten laterally ridged spines. The two innermost spines are small, thin, and rod-like, and are part of the columella. The intermediate three–four spines are larger, higher, and also stand alone; however, the outer four–five spines are much larger and fused together, forming a serrate lobe, projecting considerably beyond the basal diameter. The carinae on the lobe are directed obliquely toward the columella, becoming horizontal at the outer edge of the septum near the base. They become rows of granules toward the base. S_2 and S_3 are similar in shape and ornamentation, but the S_4 are quite small, consisting of only three–four fused spines. The higher cycle septa are joined to one another in a manner typical for the genus. At the junction there is a thin calcareous deposit uniting the septa. Adjacent septa are united by thin synapticulae. The synapticulae begin as small bridges originating from the side of a septum and grow toward the base. The adjacent septa produce similar, narrow bridges in the same area, which fuse with one another, forming the connection.

A thin, round columella is present in the center and is usually pierced by the inner spines of the S_1 and S_2.

Discussion. – *F. marenzelleri* is distinguished from the other two Atlantic species of *Fungiacyathus* that have only four cycles of

septa, *F. symmetricus* and *F. crispus*, by its larger size and greater depth range. ZIBROWIUS (1976) hypothesized that *F. marenzelleri*, not *F. symmetricus*, is the cosmopolitan species implied by MOSELEY (1881) and VAUGHAN & WELLS (1943).

Material. – P-1138 (34) USNM 45838; P-1429 (32) USNM 45839, (1) UMML 8: 230; P-1444 (1) USNM 45840; CI-401 (1) USNM 45841. – Holotype of *B. marenzelleri* (USNM), paratypes (MCZ); Marenzeller's (1904a) specimens; Moseley's (1881) specimens.

Types. – Holotype: Albatross-4721 (USNM). – Paratypes: Albatross-4670 (MCZ, three specimens).
Type-Locality. – 8°07.5'S, 104°10.5'W (off Peru); 3820 m.

Distribution. – Western Atlantic: Bahamas (first record in western Atlantic) (Map 3). 2450–2745 m. – Off Greenland (Labrador Sea). – Elsewhere: eastern Atlantic from off England to Morocco; off Cape Verde Islands; off Azores; off Angola; ?Indian Ocean; off Peru and California. 1805–5870 m.

Family **MICRABACIIDAE** Vaughan, 1905

Genus **Leptopenus** Moseley, 1881

Diagnosis. – Solitary, cupolate, free. No wall, costae alternating in position with septa. Costae and septa united by simple synapticulae producing a very porous, delicate corallum. Columella trabecular. Type-species: *Leptopenus discus* Moseley, 1881, by subsequent designation (WELLS, 1936).

6. **Leptopenus discus** Moseley, 1881

Plate III, figures 4–7

Leptopenus discus MOSELEY, 1881: 205–208, pl. 14, figs. 1–4, pl. 16, figs. 1–7. – WELLS, 1958: 262; 1964: 109. – SQUIRES, 1965: 878–879, fig. 1; 1967: 505.
Not *Leptopenus discus*: DENNANT, 1906: 162 (? *Letepsammia*).
Leptonemus discus: AGASSIZ, 1888: 154, fig. 479 (taken from MOSELEY, 1881, pl. 14, fig. 1).

Discussion. – A description of this species is not given for the following reasons: (1) I have examined no new material, (2) MOSELEY's original description and figures are excellent, and (3) AGASSIZ's specimen, which was never described, is in very poor condition and cannot add to MOSELEY's description.

Leptopenus discus is known from only six specimens: four syntypes from the Challenger, one central fragment collected by the Galathea (SQUIRES, 1965), and one fragmented, central piece collected by the Blake (AGASSIZ, 1888). It is odd that POURTALÈS did not report the Blake specimen in 1878 with his account of the Scleractinia of that cruise. AGASSIZ's delayed record is confusing because he reported an incorrect locality and depth, and used a slightly restored and rotated copy of MOSELEY's figured syntype to illustrate his own specimen. The Blake specimen (BL-109) that formed the basis of AGASSIZ's record was rediscovered at the USNM with the MCZ catalog number of 5631. The corallum, which is only a central piece measuring about 12 mm in diameter, is highly fragmented and held together by the dry tissue mentioned by AGASSIZ (1888) and SQUIRES (1967).

Material. – BL-109 (1) USNM 46916. – Syntype of *L. discus*, Challenger-147 (BM 1880.11.25.159).

Types. – The original description was based on four syntypes collected from Challenger stations 147, 157, and 323, all at the BM.
Type-Locality. – South Indian Ocean, southwest Atlantic; 2926–3566 m.

Distribution. – Western Atlantic: off northeastern Cuba; off Rio de la Plata, Argentina (Map 4). 2842–3475 m. – Elsewhere: southern Indian Ocean; Makassar Strait, Indonesia. 2000–3566 m.