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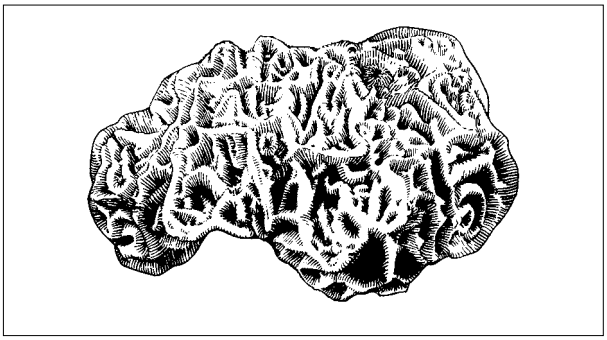
Scleractinia (Cnidaria) of the Gulf of Mexico

Stephen D. Cairns, Walter C. Jaap, and Judith C. Lang

The order Scleractinia, also known as the Madreporaria, consists of sedentary, colonial or solitary, exclusively polypoid hexacorallian Anthozoa, the polyps of which are supported by an external, aragonitic, calcium carbonate skeleton, called the corallum. Each polyp usually bears 6, or a multiple of 6, pairs of mesenteries, each pair enclosing a calcareous radial partition called a septum. Most scleractinian corals have 12, 24, 48, or 96 or more septa arranged in a radially hexameral plan. Common names applied to the Scleractinia include stony corals, true corals, and hard corals.

Scleractinians exhibit diploblastic (2 tissue layers: ectoderm and endoderm) tissue organization. The typical scleractinian polyp consists of a stoma (mouth), surrounded by a battery of tentacles; tentacles contain the cnidae or nematocysts, a structure containing a poison bladder and a hollow tubule that, when triggered, injects the toxin for prey capture and self defense.

Scleractinians, like Octocorallia, are exclusively marine, and occur from the Sub-Arctic to Antarctica, at depths from the intertidal to 6328 m (Cairns 2001a). Physiologically, ecologically, and roughly phylogenetically, the Scleractinia can be divided into 2 groups: those that contain zooxanthellae in their tissues (the zooxanthellate corals) and those that do not (the azooxanthellate corals). Worldwide, both groups have approximately the same number of species (Cairns, Hoeksema, and van der Land 1999). Zooxanthellate species (ZS) are restricted to the photic zone (their endodermic tissues contain zooxanthellae—dinoflagellate algae of the genus *Symbiodinium*),



Scleractinia. After Moore 1956, modified by F. Moretzsohn.

and are typically found in tropical-subtropical regions in depths that rarely exceed 70 to 80 m. The azooxanthellates are ubiquitous, but are most common in cooler, deep water (down to 6300 m) or cryptic, shallow-water environments, such as caves. The ZS include species attaining sizes exceeding 3 m in diameter and height. Most ZS species are colonial (with multiple polyps), and their morphology includes branching, columnar, encrusting, foliaceous, and massive skeletal structures. Within a ZS species, the morphology has great variability, reflecting local environmental conditions, many of which vary with depth; for example, ambient light, water movement, sedimentation, and temperature. Tissue color also has moderate to large ranges of variability governed by the local environment. Zooxanthellate corals are sometimes called hermatypic corals because they construct shallow-water coral reefs, whereas azooxanthellate corals, sometimes called ahermatypic corals, are usually solitary in habit

and thus do not form reefs. But there are many exceptions to these generalizations, one being that some deepwater azooxanthellate colonial corals, such as *Lophelia pertusa,* may form reefal structures at continental slope depths (Cairns 1979, Cairns and Stanley 1982).

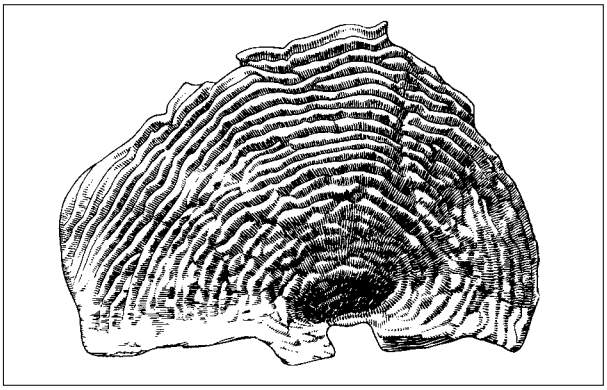
Worldwide, the order Scleractinia consists of about 1445 species (Cairns 1999, revised herein): 756 zooxanthellate and 689 azooxanthellate species. We report (see checklist) 94 azooxanthellate and 49 zooxanthellate species within the Gulf of Mexico, or a total of 141 scleractinian species, 2 of those being facultative (*Astrangia poculata* and *Madracis pharensis*).

Vaughan and Wells (1943) have presented considerable background information on the Scleractinia, along with a classification of the order based on skeletal structures; an excellent revision of the classification, morphology, and biology of the Scleractinia was published by Wells (1956). Alloiteau's (1952) classification is another revision based on skeletal morphology. Scleractinian taxonomy and phylogeny are in transition; traditional skeletal characters are being supplemented/replaced with characters based on microstructure, molecular genetics, and reproductive biology. New methods of character analyses are evolving to detect the differences and similarities in the genetic heritage of the taxa.

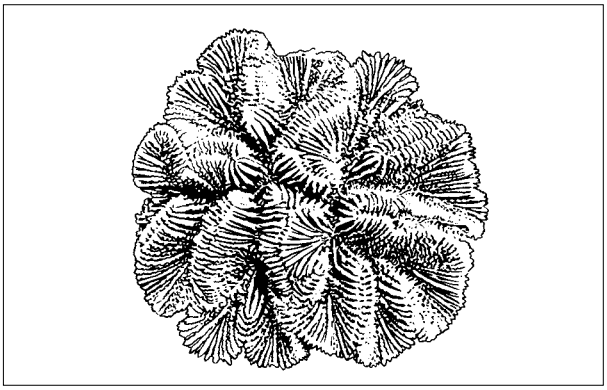
Azooxanthellate Corals

Stolarski (2000) has been used to update part of the Wells (1956) classification system. Other significant azooxanthellate references in the last 50 years include the revision of the eastern Atlantic azooxanthellate corals by Zibrowius (1980), which includes many of the species that occur in the Gulf, a generic revision and phylogenetic analysis of the families Turbinoliidae (Cairns 1997) and Dendrophylliidae (Cairns 2001b), and a listing of all 1314 species recognized in the order as of 1999 (Cairns, Hoeksema, and van der Land 1999).

Smith's (1954) account of the Scleractinia of the Gulf of Mexico cannot be used as a benchmark for the azooxanthellate species of that region because he only presented an uncritical listing of the 39 genera that were known from the entire West Indian region. At that time, knowledge of azooxanthellates from the Gulf, as well as most of the western Atlantic, relied on the 5 publications of L. F. Pourtalès between 1867 and 1880, in which 59 new species were described; Pourtalès' significant contributions are summarized by Cairns (2001a). Unlike the Octocorallia (Cairns and Bayer, chapter 13, this volume), the azooxanthellate Scleractinia from the Gulf have been the subject of at least 6 complete or partial (based on depth) enumerations, beginning in 1977 and extending to 2002. In the first account, which was based on specimens collected by the "Hourglass" cruises off western central Florida (northeast quadrant), Cairns (1977c) listed 36 azooxanthellate species for the Gulf. A second listing just a year later (Cairns 1978a) increased the total to 54 species and was based on material from Texas A&M University and the U.S. Fish and Wildlife Service vessels *Oregon* and *Silver Bay.* As part of a larger study on the deepwater Scleractinia of the western Atlantic (Cairns 1979: table 1), 40 deepwater (over 200 m) species were listed for the Gulf: 36 from the eastern half and 19 from the western. Although not a part of a list, numerous additional records and range extensions were added to the northwestern quadrant by Rezak, Bright, and McGrail (1985) and Viada and Cairns (1987). The fourth enumeration (Cairns et al. 1994), which included range extensions and 4 new records for the Gulf, listed 63 azooxanthellate species. A fifth partial listing, again part of a larger work on the shallow-water (less than 200 m) azooxanthellates from the western Atlantic (Cairns 2000: table 1), included 41 species from the Gulf: 41 from the eastern



Scleractinia. After Moore 1956, modified by F. Moretzsohn.



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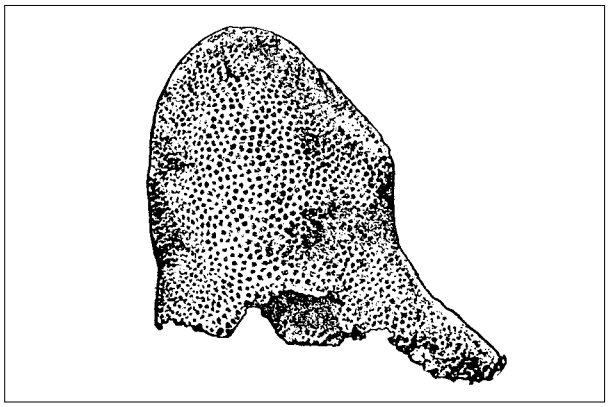
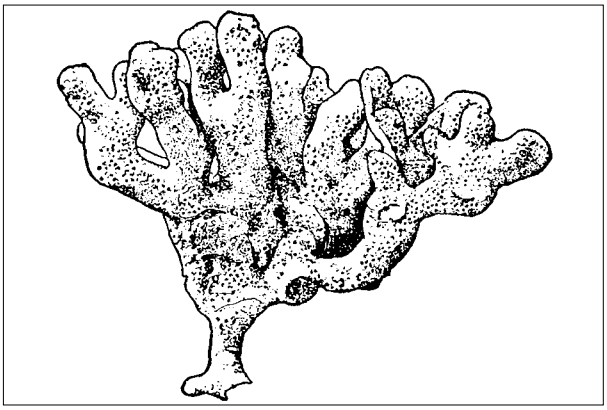


Scleractinia. After Pratt 1916.



Scleractinia. After Pratt 1916.

half and 33 from the western Gulf. The final, sixth partial enumeration (Cairns and Chapman 2002: table 3) listed the 52 deepwater (over 200 m) species from the Gulf: 45 from the eastern half and 36 from the western. Also of note was a listing of the 130 shallow-water (less than 200 m) scleractinian species from off North America (Cairns 2002). The current listing of 94 azooxanthellate species for the Gulf is a significant increase from previous lists, most of which is due to a more liberal interpretation of the eastern boundary of the southeastern quadrant, which herein is placed as an oblique line joining Punta Hicacos, Cuba (23°12′N, 81°08′W) to near South Sound Creek, Key Largo (25°06′N, 80°26′W), whereas in the previously discussed lists the eastern boundary was considered to be a north-south line at 81°48′W or 83°30′W.

One hundred twenty-nine azooxanthellate species occur in the western Atlantic (Cairns 2002), 94 of which also occur in the Gulf of Mexico; thus, 73% of the western Atlantic species and 13.6% of the worldwide azooxanthellate fauna occurs in the Gulf. As is common in azooxanthellate species, 82 of the 94 Gulf species (87%) are known to occur deeper than 200 m.

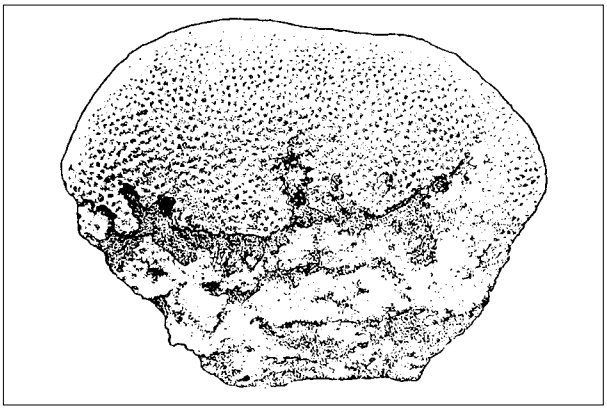
Among the 4 quadrants of the Gulf, azooxanthellate corals are by far most abundant in the southeast (84 species, 88%), the numbers decreasing in a counterclockwise fashion: northeast (57 species), northwest (32 species), and southwest (12 species). Six species are known from all 4 quadrants; 4 species are endemic to the Gulf, and one species, *Tubastraea coccinea,* was introduced (Cairns 2000, Fenner 2001, Fenner and Banks 2004).

Zooxanthellate Corals

The ZS found in the Gulf of Mexico region were first reported and described in pioneering studies of Louis and Alexander Agassiz (1852, 1869, 1880, 1885), Pourtalès (1880), Heilprin (1890), Vaughan (1901a, b, 1911), and Verrill (1902). Following Smith's (1948, 1954) publications, understanding of the ZS in the Gulf of Mexico area has benefited greatly from work conducted in the Bahamas, Caribbean, Mexico, and Florida, which has included live appearances in underwater photographs, habitat information, bathymetric ranges, ecological relationships, and/or paleontological ranges.

Within the Gulf of Mexico region, most studies of ZS have focused on a reef, reef area, or region: for example, Campeche Bank, especially Arrecife Alacrán, Arrecife Triángulo, Cayo Arcas and Cayo Arenas (by Kornicker and Boyd 1962, Busby 1966, Logan, 1969, Farrell et al. 1983, Chávez et al. 1985, Román-Vives et al. 1989, Carricart-Ganivet and Beltrán-Torres 1997); between Veracruz and Antón Lizardo (by Heilprin 1890, Villalobos 1971, Kühlmann 1975, Tunnell 1988, and Vargas-Hernández and Román-Vives 2002); near Tuxpan at Isla de Lobos, Isla Enmedio, and La Blanquilla (Moore 1958, Rigby and McIntyre 1966, Chávez, Hidalgo, and Sevilla 1970, Rannefeld 1972, Santiago 1977, Horta-Puga and Carricart-Ganivet 1985, 1989, Vargas-Hernández and Román-Vives 2002); the northwestern Gulf banks, including the Flower Garden Banks (e.g., Parker 1960, Edwards 1971, Bright et al. 1974, Tresslar 1974, Bright 1977, Rezak, Bright, and McGrail 1985); Florida Middle Ground (Grimm and Hopkins 1977, Jaap et al. 1989, Coleman et al. 2005); Pulley Ridge (Halley et al. 2005), and Dry Tortugas (Brooks 1963, Davis 1979, 1982, Jaap et al. 1989); Florida Keys (Hoffmeister 1974, Wheaton and Jaap 1988, Jaap 1984, Jaap and Hallock 1990); and the northwestern coast of Cuba–Cayos Arcas to Rio Camarioca (Zlatarski and Estella 1982).

Field guides to shallow-water stony corals (*Millepora*



Scleractinia. After Pratt 1916.

and Scleractinia) of Florida and the Greater Caribbean, including the Gulf of Mexico, include Smith (1948, 1971), Zeiller (1974), Greenberg (1977), Colin (1978), Kaplan (1982), and Humann and DeLoach (2002). Additionally, Littler and Littler's (2000) field guide to Caribbean algae has numerous plates with ZS coral species identified.

Of the 49 ZS species here reported from the Gulf of Mexico, all are found in the southeastern quadrant, 36 in the southwestern, 24 in the northwestern, and 18 in the northeastern quadrant. Numerical differences reflect differences in climate and habitat. The ZS requirements for optimal success include temperatures that are greater than 18° C, low turbidity, oceanic salinity, and a solid substratum. The southeastern and southwestern portions of the Gulf of Mexico have more of these conditions in time and space than do the northeastern and northwestern areas of the Gulf. The only endemic ZS species, *Oculina robusta,* is limited to the eastern Gulf of Mexico (Florida Middle Ground to Dry Tortugas).

Using our adjusted numbers (see endnotes to the checklist), Gulf of Mexico areas that have the greatest species richness include Dry Tortugas (45) and Looe Key (38) (Wheaton and Jaap 1988). Mexican reefs range from 25 species in the Tuxpan region to 33 at Campeche Bank (Beltrán-Torres and Carricart-Ganivet 1999). For Cuba (Sancho Pardo to Rio Camarioca), ZS species richness ranges from 19 at Sancho Pardo and Punta Seboruco to 29 offshore of the Oceanographic Institute (Zlataski and Estalella 1982). Banks in the northwestern Gulf are most depauperate in ZS species; Geyer (2), McGrail (5), Sonnier (7), and Bright (9), although the Flower Garden Bank reports 23 ZS species (Flower Garden Banks National Marine Sanctuary faunal records). The Florida Middle Ground is known to have 19 ZS species (Grimm and Hopkins 1977, Jaap et al. 1989). Areas in temperate latitudes and deeper depths also have fewer ZS species. The eastern Gulf region from Tampa Bay to Sanibel Island (the "Hourglass" region) includes 14 ZS species (Jaap et al. 1989). The Florida Bay-Gulf of Mexico side of the Keys is relatively impoverished. There were 2 study sites in the Florida Keys National Marine Sanctuary coral reef monitoring program in the Gulf of Mexico: Content Keys and Smith Shoal; the greatest number of species seen at these sites was 12 at Content Key and 24 at Smith Shoal in 2000 (Florida Keys National Marine Sanctuary, Water Quality Protection Plan, Coral Reef Evaluation Monitoring Program database).

Abbreviations

The sequence of orders and families follows the phylogenetic arrangement of Wells (1956), as modified by Stolarski (2000) for the Guyniidae. The genera and species are arranged alphabetically within families. Under the heading of Habitat-Biology, the following depth indicators are used: itd = intertidal (0–2 m); bns = bay/inshore (0–50 m); crr = coral reef (0–50 m); ocs = outer continental shelf (50–200 m); and slp = slope (200–3000 m). Other abbreviations in that column include: ben = benthic; hsb = hard substrate; sft = soft substrate; dcrr = deep-reef; nid = non-indiginous to Gulf of Mexico; azo = azooxanthellate; zoo = zooxanthellate; and end = endemic. Depth ranges set in roman type are for Gulf records only; numbers set in italic refer to the entire western Atlantic range when that for the Gulf is unknown. Under the heading of Overall geographic range, the following designations are used: WW = worldwide or cosmopolitan (subsumes EA); EA = Eastern Atlantic; NEUS = northeast United States (cold temperate waters north of Cape Hatteras); SEUS = southeast United States (warm temperate waters south of Cape Hatteras to the St. Lucie Inlet: 27°10.0624′N); SEFLA = the region from 25°06′N, 80°26′W, a position south of South Sound Creek on Key Largo, Monroe County, Florida, to the St. Lucie Inlet (27°10.0624′N, 80°08.3750′W); Be = Bermuda; Ba = Bahamas; C = Caribbean; SA = eastern South America. Under the References heading, only post-1954 reports are cited. The following abbreviation is also used in the checklist: GMx = Gulf of Mexico.

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Checklist of Scleractinia from the Gulf of Mexico.

Taxon	Habitat-Biology	Depth (m)	Overall geographic range	GMx range	References/ Endnotes
Phylum: Cnidaria					
Class: Anthozoa					
Subclass: Hexacorallia					
Order: Scleractinia					
Suborder: Astrocoeniina					
Family: Astroceniidae					
Stephanocoenia intersepta (Lamarck, 1816)	ben, zoo, hsb, crr	*1–95+*	Be, SEFLA, Ba, C, SA	entire	*6*[1]
Family: Pocilloporidae					
Madracis asperula Milne Edwards & Haime, 1849	ben, azo, hsb, ocs	*24–311*	EA, C, SA	se, ne, nw	23, 62, 69
Madracis brueggemanni (Ridley, 1881)	ben, azo, hsb, ocs	*51–130*	C, SA	ne, nw	*23, 69*
Madracis decactis (Lyman, 1859)	ben, zoo, hsb, crr	*2–70*	EA, Be, SEFLA, Ba, C, SA	entire	*6, 54*
Madracis formosa Wells, 1973	ben, zoo, hsb, crr	*15–95*	Be, C, Ba	se	*6*
Madracis mirabilis, sensu Wells, 1973	ben, zoo, hsb, crr	*3–60*	Be, SEFLA, Ba, C	se, nw	*6, 54*
Madracis myriaster (Milne Edwards & Haime, 1849)	ben, azo, hsb, ocs	*20–1220*	SEFLA, Be, C, SA	se, ne, nw	*19, 69*
Madracis pharensis luciphila Wells, 1973	ben, zoo, hsb, crr	*2–75*	Ba, C	se	*54*[2]
Madracis pharensis pharensis (Heller, 1868)	ben, azo, hsb	*11–333*	EA, Ba, C, SA	se, ne	*23, 29*
Family: Acroporidae					
Acropora cervicornis (Lamarck, 1816)	ben, zoo, hsb, crr	*1–50*	SEFLA, Ba, C	se, sw	*6, 54*
Acropora palmata (Lamarck, 1816)	ben, zoo, hsb, crr	*1–30*	SEFLA, Ba, C	se, sw, nw	*6, 54*
Acropora prolifera (Lamarck, 1816)	ben, zoo, hsb, crr	*1–30*	SEFLA, Ba, C	se, sw	*6, 54*[3]
Suborder: Fungiina					
Family: Agariciidae					
Agaricia agaricites (Linnaeus, 1758)	ben, zoo, hsb, crr	*1–75*	SEFLA, Ba, C	entire	*6, 54*[4]
Agaricia fragilis Dana, 1846	ben, zoo, hsb, crr	*1–80*	Be, SEFLA, Ba, C, SA	entire	*6, 45*
Agaricia humilis Verrill, 1901	ben, zoo, hsb, crr	*1–70+*	SEFLA, Ba, C, SA	se	*54*[4]
Agaricia lamarcki Milne Edwards & Haime, 1851	ben, zoo, hsb, crr	*5–80*	SEFLA, Ba, C	se, sw, nw	*6, 54*
Agaricia tenuifolia Dana, 1848	ben, zoo, hsb, crr	1–5	Ba, C	se	*6*[4]
Agaricia undata (Ellis & Solander, 1786)	ben, zoo, hsb, crr	*15–80*	Ba, C	se, nw	*6, 54*
Leptoseris cucullata (Ellis & Solander, 1786)	ben, zoo, hsb, crr	*3–90*	SEFLA, Ba, C	se, sw, nw	*6*[5]
Family: Siderastreidae					
Siderastrea radians (Pallas, 1766)	ben, zoo, hsb, crr	*1–30*	EA, Be, SEFLA, Ba, C	entire	*6, 54*
Siderastrea siderea (Ellis & Solander, 1786)	ben, zoo, hsb, crr	*2–70*	Be, SEFLA, Ba, C	se, sw, nw	*6, 54*
Family: Fungiacyathidae					
Fungiacyathus symmetricus (Pourtalès, 1871)	ben, azo, sft, slp	*183–1664*	SEFLA, C	se	*19*
Family: Poritidae					
Porites astreoides Lamarck, 1816	ben, zoo, hsb, crr	*1–70+*	EA, Be, SEFLA, Ba, C, SA	entire	*6, 54*
Porites branneri Rathbun, 1888	ben, zoo, hsb, crr	*1–30*	Ba, C, SA	se, sw, ne	*6, 54*
Porites porites f. *divaricata* Lesueur, 1820	ben, zoo, hsb, crr	*1–47*	SEFLA, Ba, C	se, sw, ne	*6, 97*[6]
Porites porites f. *furcata* Lamarck, 1816	ben, zoo, hsb, crr	*1–50*	SEFLA, Ba, C	se, sw, nw	*6, 97*[6]
Porites porites f. *porites* (Pallas, 1766)	ben, zoo, hsb, crr	*1–25*	EA, Be, SEFLA, Ba, C	se, sw	*6, 97*[6]
Suborder: Faviina					
Family: Faviidae					
Colpophyllia natans (Houttuyn, 1772)	ben, zoo, hsb, crr	*1–55*	SEFLA, Ba, C	se, sw, nw	*6, 54*[7]
Diploria clivosa (Ellis & Solander, 1786)	ben, zoo, hsb, crr	*1–40*	SEFLA, Ba, C	se, sw	*6, 54*

Checklist of Scleractinia from the Gulf of Mexico. (*continued*)

Taxon	Habitat-Biology	Depth (m)	Overall geographic range	GMx range	References/ Endnotes
Diploria labyrinythiformis (Linneaus, 1758)	ben, zoo, hsb, crr	*1–45*	Be, SEFLA, Ba, C	se, sw	*6, 54*[8]
Diploria strigosa (Dana, 1846)	ben, zoo, hsb, crr	*1–40*	Be, SEFLA, Ba, C	se, sw, nw	*6, 54, 79*
Favia fragum (Esper, 1793)	ben, zoo, hsb, crr	*1–30*	Be, SEFLA, Ba, C	se, sw	*6, 54*[9]
Manicina areolata (Linnaeus, 1758)	ben, zoo, hsb, crr	*1–65*	SEFLA, Ba, C	se, sw, ne	*6, 45, 54*[10]
Montastraea annularis (Ellis & Solander, 1786)	ben, zoo, hsb, crr	*1–50*	SEFLA, Ba, C	se, sw, nw	*6, 54, 79*[11]
Montastraea cavernosa (Linnaeus, 1767)	ben, zoo, hsb, crr	*1–90*	EA, Be, SEFLA, Ba, C, SA	se, sw, nw	*6, 54, 79*
Montastraea faveolata (Ellis & Solander, 1786)	ben, zoo, hsb, crr	*2–40*	SEFLA, Ba, C	se, sw, nw	*6*[11]
Montastraea franksi (Gregory, 1895)	ben, zoo, hsb, crr	*5–45*	Be, SEFLA, Ba, C	se, sw, nw	*6*[11]
Solenastrea bournoni Milne Edwards & Haime, 1849	ben, zoo, hsb, crr	*1–35*	SEFLA, Ba, C	se, sw	*6, 97*
Solenastrea hyades (Dana, 1846)	ben, zoo, hsb, crr	*1–30*	SEFLA, SEUS, C	se, ne	*6, 45, 54*
Family: Rhizangiidae					
Astrangia poculata (Ellis & Solander, 1786)	ben, azo, zoo, hsb, bns	*0–263*	NEUS, SEFLA, SEUS	entire	*23, 66*
Astrangia solitaria (Lesueur, 1817)	ben, azo, hsb, bns	*0–51*	Be, SEFLA, C, SA	se, ne, sw	*29, 100*
Family: Oculinidae					
Madrepora carolina (Pourtalès, 1871)	ben, azo, hsb, slp	*53–1003*	SEFLA, SEUS, Be, C	se, ne, nw	*19, 62, 69*[12]
Madrepora oculata Linnaeus, 1758	ben, azo, hsb, slp	*80–1500*	EA, SEFLA, SEUS, C, SA	se, ne, nw	*19*
Oculina diffusa Lamarck, 1816	ben, zoo, hsb, crr	*1–30*	Be, SEFLA, Ba, C	entire	*6, 45, 54*
Oculina robusta Pourtalès, 1871	ben, zoo, hsb, end	10–30	Gulf of Mexico endemic	ne, se	*45*
Oculina tenella Pourtalès, 1871	ben, azo, hsb, ocs	25–159	SEFLA, SEUS	se, ne	*23*
Oculina valenciennesi Milne Edwards & Haime, 1848	ben, zoo, hsb, crr	*1–20*	Be, C	sw	*6*
Family Meandrinidae					
Dendrogyra cylindrus Ehrenburg, 1834	ben, zoo, hsb, crr	*1–20*	SEFLA, Ba, C	se	*54, 100*
Dichocoenia stokesi Milne Edwards & Haime, 1848	ben, zoo, hsb, crr	*1–60*	Be, SEFLA, Ba, C	entire	*6, 45, 54*
Meandrina meandrites (Linnaeus, 1758)	ben, zoo, hsb, crr	*1–75*	Be, SEFLA, Ba, C	se, sw, ne	*6, 54, 97*[8,13]
Family: Mussidae					
Isophyllastraea rigida (Dana, 1846)	ben, zoo, hsb, crr	*1–35*	SEFLA, Ba, C	se	*6, 54*
Isophyllia sinuosa (Ellis & Solander, 1786)	ben, zoo, hsb, crr	*1–35*	Be, SEFLA, Ba, C	se, ne	*6, 45, 54*
Mussa angulosa (Pallas, 1766)	ben, zoo, hsb, crr	*1–55*	SEFLA, Ba, C	entire	*6, 54*
Mycetophyllia aliciae Wells, 1973	ben, zoo, hsb, crr	*3–73*	SEFLA, Ba, C	se, sw	*6, 54*[8]
Mycetophyllia ferox Wells, 1973	ben, zoo, hsb, crr	*2–40*	SEFLA, Ba, C	se, sw	*6, 54*
Mycetophyllia lamarckiana Milne Edwards & Haime, 1848	ben, zoo, hsb, crr	*2–58*	SEFLA, Ba, C	se, sw	*6, 54*[14]
Scolymia cubensis Milne Edwards & Haime, 1849	ben, zoo, hsb, crr	*1–80*	Be, SEFLA, Ba, C	entire	*6, 54*[15]
Scolymia lacera (Pallas, 1766)	ben, zoo, hsb, crr	*3–80*	SEFLA, Ba, C	se, sw, ne	*6, 54*
Family: Anthemiphylliidae					
Anthemiphyllia patera patera Pourtalès, 1878	ben, azo, sft, slp	*500–700*	SEUS, C	se	*19*
Suborder: Caryophylliina					
Superfamily: Caryophyllioidea					
Family: Caryophylliidae					
Anomocora fecunda (Pourtalès, 1871)	ben, azo, hsb, slp	*37–640*	EA, Ba, C	se, ne	*19, 62, 89*
Anomocora marchadi (Chevalier, 1966)	ben, azo, hsb, ocs	*35–229*	EA, SEFLA, SEUS, C	ne	*23, 29*

(*continued*)

Checklist of Scleractinia from the Gulf of Mexico. (*continued*)

Taxon	Habitat-Biology	Depth (m)	Overall geographic range	GMx range	References/ Endnotes
Anomocora prolifera (Pourtalès, 1871)	ben, azo, hsb, ocs	*30–329*	EA, Ba, C	ne, sw	*19*
Caryophyllia ambrosia caribbeana Cairns, 1979	ben, azo, sft, slp	*183–2360*	Be, C, SA	entire	*19*
Caryophyllia antillarum Pourtalès, 1874	ben, azo, hsb, slp	*150–730*	Ba, C	se	*19*
Caryophyllia barbadensis Cairns, 1979	ben, azo, hsb, slp	*109–249*	C	nw	*23*
Caryophyllia berteriana Duchassaing, 1850	ben, azo, hsb, slp	*99–1033*	Ba, C, SA	se, ne, nw	*19, 89*
Caryophyllia corrugata Cairns, 1979	ben, azo, hsb, slp	*183–380*	Ba, C	se	*19*
Caryophyllia crypta Cairns, 2000	ben, azo, hsb, ocs	*12–183*	C	se	*23*
Caryophyllia horologium Cairns, 1977	ben, azo, hsb, end	55–175	Gulf of Mexico endemic	ne, nw	*16, 23*
Caryophyllia polygona Pourtalès, 1878	ben, azo, hsb, slp	*310–1817*	SEFLA, C	se, ne	*19*[16]
Caryophyllia zopyros Cairns, 1979	ben, azo, hsb, slp	*73–618*	C	se	*19*
Cladocora arbuscula (Lesueur, 1820)	ben, zoo, hsb, crr	*1–20*	SEFLA, SEUS, Be, Ba, C	se, ne	*54*
Cladocora debilis Milne Edwards & Haime, 1849	ben, azo, hsb, bns	*11–400*	EA, SEFLA, SEUS, C, SA	se, ne	*23, 29*
Coenocyathus caribbeana Cairns, 2000	ben, azo, hsb, ocs	*5–100*	Ba, C	se	*23*
Coenocyathus parvulus (Cairns, 1979)	ben, azo, hsb, slp	*97–399*	C	se, ne, nw	*19, 29, 69*
Coenosmilia arbuscula Pourtalès, 1874	ben, azo, hsb, slp	*74–622*	Ba, C	se, ne, nw	*19, 69*
Concentrotheca laevigata (Pourtalès, 1871)	ben, azo, hsb, slp	*183–576*	EA, SEFLA, NEUS, SEUS, C	se, ne	*19*
Dasmosmilia lymani (Pourtalès, 1871)	ben, azo, sft, slp	*37–366*	EA, SEFLA, NEUS, SEUS, C, SA	se, ne	*16, 19*
Dasmosmilia variegata (Pourtalès, 1871)	ben, azo, sft, slp	*110–421*	EA, C	se, ne	*19*
Deltocyathus agassizii Pourtalès, 1867	ben, azo, sft, slp	*494–1115*	Ba, C	se	*19*
Deltocyathus calcar (Pourtalès, 1874)	ben, azo, sft, slp	*81–675*	SEFLA, SEUS, Be, C, SA	se, ne, nw	*19, 89*
Deltocyathus eccentricus Cairns, 1979	ben, azo, sft, slp	*183–910*	EA, SEFLA, SEUS, Be, C, SA	se, ne, sw	*19*
Deltocyathus italicus (Michelotti, 1838)	ben, azo, sft, slp	*403–2634*	EA, Be, C, SA	entire	*19, 89*
Deltocyathus moseleyi Cairns, 1979	ben, azo, sft, slp	*201–777*	SEFLA, EA, SEUS, Be, C	se	*19*
Deltocyathus pourtalesi Cairns, 1979	ben, azo, sft, slp	*311–567*	SEUS, C	se	*19*
Desmophyllum dianthus (Esper, 1794)	ben, azo, hsb, dcrr	*183–2250*	WW, SEFLA, SEUS, Be, C	se, ne	*19*[17,18]
Desmophyllum striatum Cairns, 1979	ben, azo, hsb, slp	*277–823*	Ba, C	se	*19*
Eusmilia fastigiata (Pallas, 1766)	ben, zoo, hsb, crr	*2–60*	SEFLA, Ba, C	se, sw	*6, 54, 97*[8]
Labyrinthocyathus facetus Cairns, 1979	ben, azo, hsb, slp	*385–402*	SEUS	se	*19*
Labyrinthocyathus langae Cairns, 1979	ben, azo, hsb, slp	*506-810*	SEFLA, SEUS, C	nw	*19*[19]
Lophelia pertusa (Linnaeus, 1758)	ben, azo, hsb, dcrr	*146–1200*	WW, SEFLA, SEUS, Be, C	se, ne, nw	*19, 29, 64, 73*[20]
Oxysmilia rotundifolia (Milne Edwards & Haime, 1849)	ben, azo, hsb, slp	*46–640*	C, SA	se, ne, nw	*19, 29, 69*
Paracyathus pulchellus (Philippi, 1842)	ben, azo, hsb, ocs	*17–250*	EA, SEFLA, SEUS, Ba, C, SA	entire	*16, 19, 69*
Phacelocyathus flos (Pourtalès, 1878)	ben, azo, hsb, slp	*20–560*	Ba, C	se, ne	*19*
Phyllangia americana americana Milne Edwards & Haime, 1849	ben, azo, hsb, bns	*0–53*	SEFLA, SEUS, Be, C, SA	se, ne, nw	*23, 100*
Phyllangia pequegnatae Cairns, 2000	ben, azo, hsb, ocs	*48–112*	SEUS	ne, nw, sw	*23*
Polycyathus mayae Cairns, 2000	ben, azo, hsb, slp	*127–309*	Ba, C	se	*23*
Polycyathus senegalensis Chevalier, 1966	ben, azo, hsb, ocs	*12–143*	SEUS, C, SA	ne	*23, 29*
Pourtalosmilia conferta Cairns, 1978	ben, azo, hsb, dcrr	*55–191*	SEFLA, SEUS, SA	ne, nw	*17, 23, 29, 62*[21]

Checklist of Scleractinia from the Gulf of Mexico. (*continued*)

Taxon	Habitat-Biology	Depth (m)	Overall geographic range	GMx range	References/ Endnotes
Premocyathus cornuformis (Pourtalès, 1868)	ben, azo, sft, slp	*137–931*	EA, SEFLA, SEUS, C	se, ne	*19*[22]
Rhizosmilia gerdae Cairns, 1978	ben, azo, hsb, slp	*123–549*	SEUS	se	*18, 19*
Rhizosmilia maculata (Pourtalès, 1874)	ben, azo, hsb, slp	*1–508*	Ba, C, SA	se, ne	*16, 23*
Solensmilia variabilis Duncan, 1873	ben, azo, hsb, dcrr	*220–1383*	WW, NEUS, SEFLA, SEUS, Be, C, SA	se	*19*
Stephanocyathus (Odontocyathus) coronatus (Pourtalès, 1867)	ben, azo, sft, slp	*543–1250*	Ba, C	se, ne	*15, 19*
Stephanocyathus (Stephanocyathus) diadema (Moseley, 1876)	ben, azo, sft, slp	*795–2553*	SEUS, Ba, C, SA	se, ne	*15, 19*
Stephanocyathus (Stephanocyathus) laevifundus Cairns, 1977	ben, azo, sft, slp	*300–1158*	SEFLA, C	se	*19*
Stephanocyathus (*Stephanocyathus*) *paliferus* Cairns, 1977	ben, azo, sft, slp	*220–715*	SEUS, C, SA	se, ne, sw	*15, 19*
Tethocyathus cylindraceus (Pourtalès, 1868)	ben, azo, hsb, slp	*183–649*	Ba, C	se, nw	*19*[23]
Tethocyathus recurvatus (Pourtalès, 1878)	ben, azo, hsb, slp	*320–569*	EA, Ba, C	se	*19*
Tethocyathus variabilis Cairns, 1979	ben, azo, hsb, slp	*250–576*	EA, Ba, C	se	*19*
Thalamophyllia gombergi Cairns, 1979	ben, azo, hsb, end	188–220	Gulf of Mexico endemic	se	*19*
Thalamophyllia riisei (Duchassaing & Michelotti, 1860)	ben, azo, hsb, slp	*4–914*	Ba, C, SA	se, nw, sw	*19, 21, 89*
Trochocyathus rawsonii Pourtalès, 1874	ben, azo, hsb, slp	*55–700*	SEUS, C, SA	se, ne	*19*
Family: Turbinoliidae					
Deltocyathoides stimpsonii (Pourtalès, 1871)	ben, azo, sft, slp	*110–553*	EA, SEUS, C	se	*19*[24]
Peponocyathus folliculus (Pourtalès, 1868)	ben, azo, sft, slp	*284–457*	C, EA	se	*19*
Sphenotrochus andrewianus moorei Cairns, 2000	ben, azo, sft, bns	*9–42*	SEFLA, SEUS	ne	*23*
Trematotrochus corbicula (Pourtalès, 1878)	ben, azo, sft, end	400–576	Gulf of Mexico endemic	se	*19*
Family: Stenocyathidae					
Stenocyathus vermiformis (Pourtalès, 1868)	ben, azo, hsb, slp	*165–835*	WW, SEFLA, SEUS, C	se, ne, nw	*19, 21*
Superfamily: Flabellioidea					
Family: Flabellidae					
Flabellum atlanticum Cairns, 1979	ben, azo, sft, slp	*357–618*	Ba, C	se	*19*
Flabellum floridanum Cairns, 1991	ben, azo, hsb, end	80–366	Gulf of Mexico endemic	se, ne	*16, 19*[25]
Flabellum moseleyi Pourtalès, 1880	ben, azo, sft, slp	*216–1097*	SEUS, C, SA	se, ne	*19*
Javania cailleti (Duchassaing & Michelotti, 1864)	ben, azo, hsb, slp	*30–1809*	WW, SEFLA, SEUS, Ba, C, SA	se, ne, nw	*19, 62, 69*
Polymyces fragilis (Pourtalès, 1868)	ben, azo, hsb, slp	*75–822*	SEUS, C	entire	*19, 21*
Family: Gardineriidae					
Gardineria minor Wells, 1973	ben, azo, hsb, ocs	*2–146*	C	se	*19, 100*
Gardineria paradoxa (Pourtalès, 1868)	ben, azo, hsb, slp	*91–700*	C	se	*19*
Gardineria simplex (Pourtalès, 1878)	ben, azo, hsb, ocs	*46–241*	Ba, C	se	*23*
Superfamily: Volzeioidea					
Family: Guyniidae					
Guynia annulata Duncan, 1872	ben, azo, hsb, slp	*30–653*	WW, Be, C	entire	*19, 69*
Pourtalocyathus hispidus (Pourtalès, 1878)	ben, azo, hsb, slp	*349–1006*	SEUS, C	se	*19*

(*continued*)

Checklist of Scleractinia from the Gulf of Mexico. (*continued*)

Taxon	Habitat-Biology	Depth (m)	Overall geographic range	GMx range	References/ Endnotes
Family: Schizocyathidae					
Schizocyathus fissilis Pourtalès, 1874	ben, azo, hsb, slp	*88–640*	EA, SEUS, Ba, C	se, ne, nw	*16, 97*
Suborder: Dendrophylliina					
Family: Dendrophylliidae					
Balanophyllia cyathoides (Pourtalès, 1871)	ben, azo, hsb, slp	*45–494*	Ba, C	se	*14, 19*
Balanophyllia floridana Pourtalès, 1868	ben, azo, hsb, ocs	*13–220*	EA, SEFLA, SEUS, C	se, ne	*14, 16, 23*
Balanophyllia palifera Pourtalès, 1878	ben, azo, hsb, slp	*53–708*	Ba, C	se, nw	*14, 19, 89*
Bathypsammia fallosocialis Squires, 1959	ben, azo, hsb, slp	*213–805*	SEFLA, SEUS, C	se	*19*
Bathypsammia tintinnabulum (Pourtalès, 1868)	ben, azo, hsb, slp	*210–1115*	SEFLA, SEUS	se, ne	*19*
Cladopsammia manuelensis Chevalier, 1966	ben, azo, hsb, ocs	*70–366*	EA, Ba, C	se, ne, nw	*19*[26]
Dendrophyllia alternata Pourtalès, 1880	ben, azo, hsb, slp	*276–900*	EA, NEUS, Ba, C, SA	nw	*19*
Eguchipsammia cornucopia (Pourtalès, 1871)	ben, azo, hsb, slp	*91–300*	EA, Ba, C	se, ne	*19, 89*
Eguchipsammia gaditana (Duncan, 1873)	ben, azo, hsb, slp	*97–505*	WW, SEUS, C, SA	se	*23*
Enallopsammia profunda (Pourtalès, 1867)	ben, azo, hsb, dcrr	*403–1748*	SEUS, C	se, ne	*19*
Enallopsammia rostrata (Pourtalès, 1878)	ben, azo, hsb, dcrr	*300–1646*	WW, Be, Ba, C	se	*19*
Rhizopsammia goesi (Lindström, 1877)	ben, azo, hsb, ocs	*5–119*	Ba, C, SA	se, ne	*14, 23*[27]
Thecopsammia socialis Pourtalès, 1868	ben, azo, hsb, slp	*214–878*	SEFLA, SEUS	se	*19*
Trochopsammia infundibulum Pourtalès, 1878	ben, azo, hsb, slp	*532–1472*	C	se	*19*
Tubastraea coccinea Lesson, 1829	ben, azo, hsb, nid	*1–37*	WW, EA, SEFLA, Ba, C, SA	entire	*42*

[1] Often incorrectly referred to as *Stephanocoenia michelinii* (=*S. michelini*), as noted by Zlatarski (1982) and Budd (1987).

[2] Considered genetically similar to *M. decactis* by Diekmann et al. (2001).

[3] Hybrid of *Acropora cervicornis* and *A. palmata* (van Oppen et al. 2000, Vollmer and Palumbi 2002).

[4] Referred to as *Undaria agaricites* by Budd, Stemann, and Johnson (1994); *A. agaricites* occurs as many morphological forms, one of which, *A. agaricites* f. *humilis,* exhibits different reproductive patterns and is now treated as a separate species (Van Moorsel 1983).

[5] Listed as *Helioseris cucullata* in Jaap et al. (1989) and Budd, Stemann, and Johnson (1994).

[6] Ramose *Porites* are a taxonomic challenge. As in Vaughan (1901a), Squires (1958), Brakel (1997), Cairns (1982), and Jaap (1984) and others, 3 forms of *P. porites* are recognized, but the taxa are treated as separate species [*Porites divaricata* Leseur, 1920, *P. furcata* Lamarck, 1816, and *P. porites* (Pallas, 1766)] by Wells and Lang (1973), Budd, Stemann, and Johnson (1994), Weil (1992), Jameson (1997), and Beltrán-Torres and Carricart-Ganivet (1999). All 3 were reported to occur in the Mexican Gulf of Mexico reefs by Beltrán-Torres and Carricart-Ganivet (1999); *P. furcata* was the only taxon listed in the Flower Gardens Banks by Rezak, Bright, and McGrail (1985).

[7] *Colpophyllia amaranthus* (Houttuyn, 1772) and *C. breviserialis* Milne Edwards and Haime, 1849, are considered to be junior synonyms by Zlatarski (1982) and Cairns (2002). Beltrán-Torres and Carricart-Ganivet (1999) listed *C. breviserialis* from the northern coast of the Yucatán Peninsula; Rezak, Bright, and McGrail (1985) reported *C. amaranthus* in the Flower Gardens Bank.

[8] Has not been reported for the Veracruz-area reefs (e.g., Beltrán-Torres and Carricart-Ganivet 1999).

[9] *Favia conferta* Vaughan, 1901a, and *F. gravida* Verrill, 1868, are here considered to be junior synonyms. Beltrán-Torres and Carricart-Ganivet (1999) listed *F. conferta* in the Veracruz-area reefs.

[10] Includes *Manicina areolata* f. *areolata* and *M. areolata* f. *mayori* (Wells, 1936). Budd, Stemann, and Johnson (1994) consider *M. mayori* (Wells, 1936) to be a distinct species.

[11] Weil and Knowlton (1994) partitioned the *M. annularis* complex into 3 species: *M. annularis, M. faveolata,* and *M. franksi,* yet overlapping morphologies occur in the northern areas of the wider Caribbean, including Florida and the Flower Garden Banks. Recent genetic and morphological data are evidence of a north-to-south hybridization gradient with geographic differences in species boundaries (Fukami et al. 2004).

[12] Referred to as *Oculina disticha* by Ludwick and Walton (1957).

[13] Here considered to include 3 forms: *M. meandrites* f. *brasiliensis* (Milne Edwards & Haime, 1848), *M. meandrites* f. *meandrites,* and *M. meandrites* f. *memoralis* (Wells, 1973).

Checklist of Scleractinia from the Gulf of Mexico. (*continued*)

[14] The genus *Mycetophyllia* shows considerable geographic differentiation in traits (Lang 1984). *Mycetophyllia danaana* Milne Edwards & Haime, 1849 is here considered to be a junior synonym of *M. lamarckiana* (as in Zlatarski 1982, and Cairns et al. 2000). Beltrán-Torres and Carricart-Ganivet (1999) reported *M. danaana* in the Campeche Bank and Verazcruz-area reefs.

[15] Not listed for the Campeche Bank area of the SE GMx by Beltrán-Torres and Carricart-Ganivet (1999).

[16] New record for northeastern GMx (Mississippi Canyon), 310 m, JSL-I-4738, 25 July 2004: USNM 1071928.

[17] Often incorrectly cited as *Desmophyllum cristagalli.*

[18] New record for northeastern GMx (Mississippi Canyon), 634 m, JSL-I-4738, 25 July 2004: USNM 1071863.

[19] New record for northwestern GMx (Green Canyon), 506 m, JSL-I-4740, 26 July 2004: USNM 1071870.

[20] Often incorrectly cited as *Lophelia prolifera*.

[21] Referred to as *Bathycyathus* sp. by Ludwick and Walton (1957).

[22] Previously referred to as *Caryophyllia cornuformis.*

[23] New record for northwestern GMx (Green Canyon), 506 m, JSL-I-4740, 26 July 2004: USNM 1071872.

[24] Referred to as *Peponocyathus stimpsonii.*

[25] Replacement name for *Flabellum fragile* Cairns, 1977.

[26] Referred to as *Rhizopsammia manuelensis.*

[27] Referred to as *Balanophyllia goesi.*