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Research Article

Shallow Water Stony Corals (Scleractinia, Milleporidae, and Stylasteridae) from Utila and Cayos Cochinos, Honduras

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The coral reefs of Utila and Cayos Cochinos located in the western Caribbean region (Honduras) were studied in Summer 2010 in order to acquire information concerning their richness in stony corals (Scleractinia, Milleporidae, and Stylasteridae) down to 18 m depth. Ten sites in each location were visually surveyed. Fourty-six species and 12 forms of zooxanthellate scleractinian corals belonging to 21 genera were observed at Utila and 44 species and 12 forms belonging to 20 genera at Cayos Cochinos. At each site, 3 species of milleporids and one species of *Stylaster* (*S. roseus*) were also observed. Four forms of zooxanthellate scleractinian corals were new records from Honduras. Up to now, 53 species of scleractinian corals have been identified within the whole Honduran Caribbean coast. They belong to 24 genera. This number represents approximately 93% of all scleractinian coral species reported for the Caribbean.

1. Introduction

The Caribbean coastline of Honduras, Central America, represents the southern end of the Mesoamerican Barrier Reef System, although its marine resources are less extensive and studied than nearby Belize and Mexico [1]. However, the coastal zone contains mainland reef formations and a highly developed small island reef system which can be divided into three groups, the Bay Islands and Cayos Cochinos archipelago, the Mosquita cays and banks, and the small Swan Islands. The Bay Islands group has a number of smaller cays but is dominated by three major islands: Utila, Roatán, and Guanaja. These islands which rise up from deep water are relatively long and thin and oriented in a nearly east-west direction. Although small, they are surrounded by fringing reefs.

Data concerning zooxanthellate scleractinian diversity in Honduras are very scarce. Up to now, only a limited number of authors studied the scleractinian diversity in Honduras. Tortora and Keith [2] presented a checklist of 15 species that they collected in the Swan Islands (some 150 km northeast of the mainland) during the summer 1974. Fenner [3] found 35 zooxanthellate and 6 azooxanthellate species of scleractinian corals plus 3 species of hydrocorals off the northwestern Roatán Island in April 1987 to a depth of 30 m. More recently, Guzman [4] determined the diversity of the coral fauna in all habitats down to 35 m depth at the Reserva Biologica Cayos Cochinos from surveys conducted from August 1994 to June 1996. He reported 53 species of zooxanthellate scleractinian species plus three *Millepora*.

The objectives of this study were to obtain data about scleractinian diversity at Utila and to update the checklist of Guzman [4] from Cayos Cochinos in order to complete the systematic list of zooxanthellate scleractinian coral fauna of Honduras and to compare scleractinian diversity in different areas in Honduras and with other localities of the western Caribbean.

2. Material and Methods

2.1. Study Area. The study area included Utila island, one of the Bay Islands, and Cayos Cochinos archipelago. Utila, which has 13 cays, is the southernmost island in the Bay Islands group and is located 29 km off the coast of Honduras

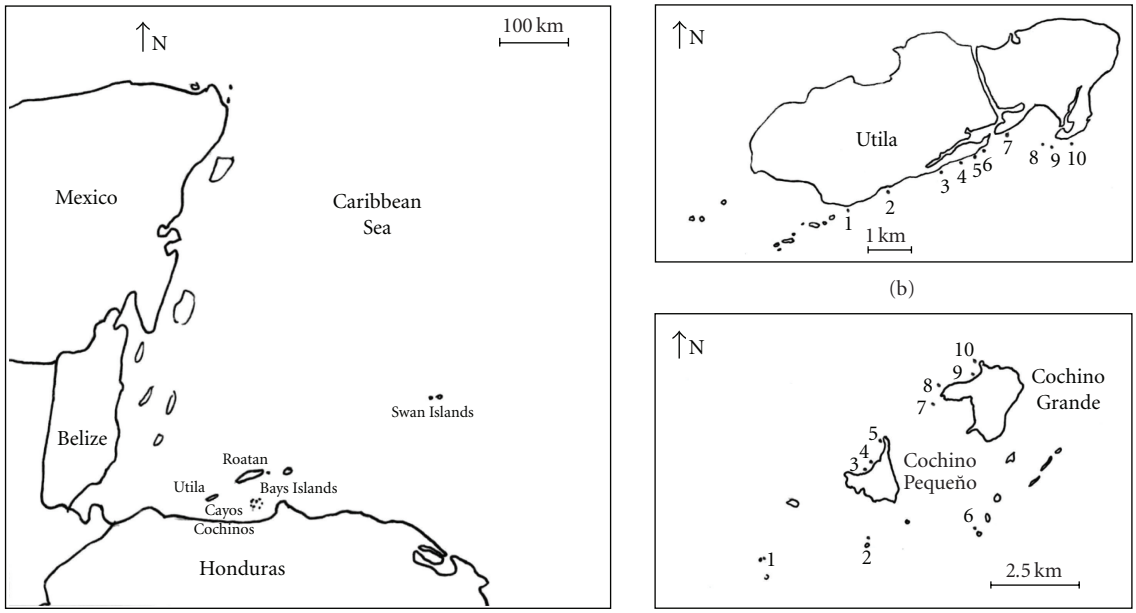


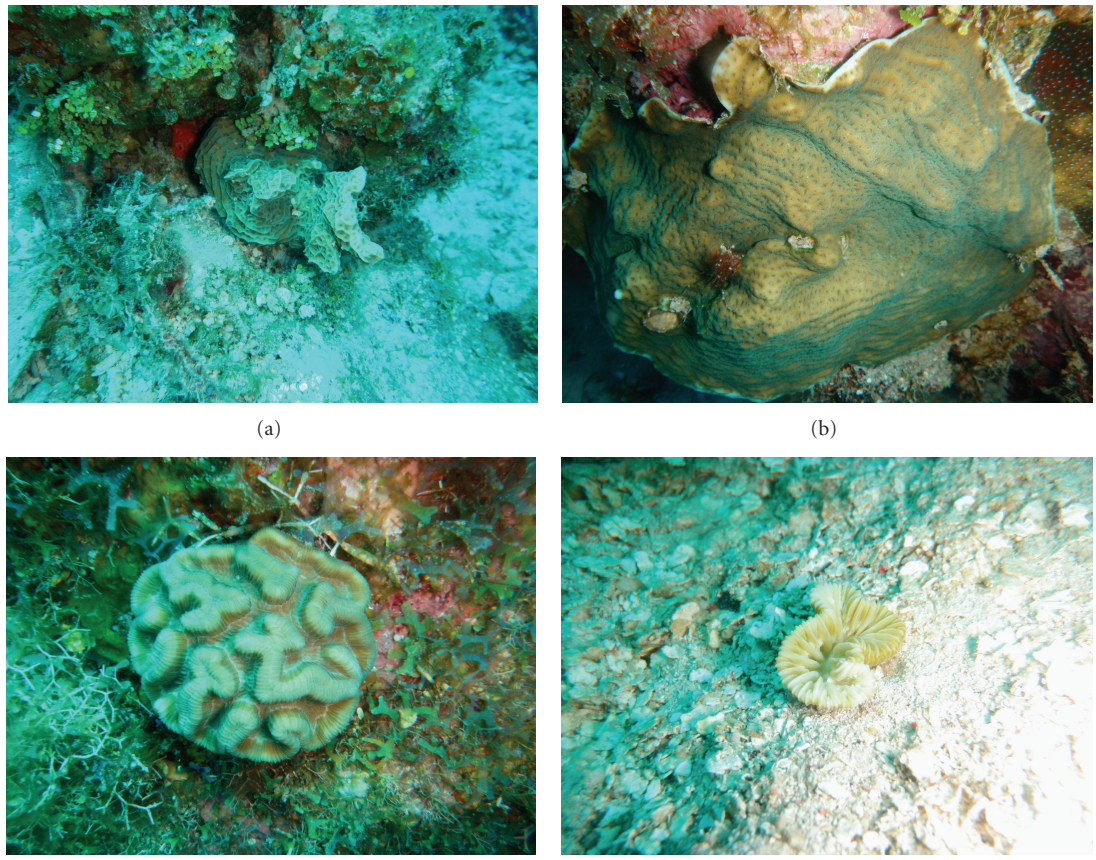
Figure 1: (a) Map of Caribbean showing location of Utila and Cayos Cochinos. (b) Utila dive sites: (1) Sting Ray Point; (2) Jack Neil Beach; (3) Little Bight; (4) Pretty Bush; (5) Silver Gardens; (6) Black Coral Wall; (7) House Reef; (8) Lighthouse Reef; (9) Ron's Wreck; (10) Moon Hole. (c) Cayos cochinos dive sites: (1) Timon; (2) Paloma: (3) Jena's Cove: (4) Punto del Alex; (5) Menor West; (6) El Avion; (7) Aggressor Mooring; (8) Pelican Point; (9) Lions Head; and (10) Lions Paw.

(Figure 1(a)). Cayos Cochinos is located on the continental shelf approximately 16 km off the coast of mainland Honduras and 46 km south-east of Utila in the western Caribbean Sea (Figure 1(a)). A deep trough (>400 m) separates Cayos Cochinos and Utila. Fringing coral reefs line the coasts of Utila, providing protection from storms. The Cayos Cochinos are comprised of two small hilly islands (Cochino Pequeño and Cochino Grande) and 13 tiny coral cays. Tropical forests cover both Cochino Pequeño and Cochino Grande, while most of the cays are sandbars. Reefs at Cayos Cochinos are a combination of fringing reefs around the cays and barrier reef mounts.

Though the reef of Utila and Cayos Cochinos share many similarities, they have important differences. Historically, Utila has been bathed in clear water (>30 m visibility), which is a result of relatively strong oceanic currents that sweep past the island. However, during the past decade, poor land-use practices and development have resulted in increased runoff and sediment deposition on the reefs. Cayos Cochinos, on the other hand, is located on the shallow continental shelf and is permanently influenced by runoff from mainland rivers that result in salinity, temperature, turbidity, and water-quality fluctuations. Land clearing and deforestation on the Honduran mainland has probably accelerated sediment loading, nutrient content, and frequency of flood events that eventually impact the marine environment around Cayos Cochinos, and to a minor extent, other Bay Islands. The Cayos Cochinos archipelago has been shown to be within reach of local sediment plumes following the severe impacts of Huricane Mitch in 1998 [6].

In 1997, legislation was passed declaring most of the Bay Islands as a marine park with varying levels of restrictions on resource use. However, although the whole perimeter of Roatan and Guannaja and parts of Utila were included, enforcement is limited and the forestry department, which is responsible for protected areas, has virtually no capacity on the islands [1]. On the contrary, the reefs of Cayos Cochinos were established as a Biological Reserve in November 1993 and banned all commercial harvest (nonartisanal) of marine life within a 489 km^2 area [7].

2.2. Methods. Observations were carried out in the field by diving during the summer of 2010. 10 stations were surveyed at Utila and Cayos Cochinos, respectively. Stations were chosen on the basis of accessibility and a need for a representative spread around the islands. In Utila, diving was mostly done on the south side of the island (Figure 1(b)). Diving was done on the north-west sides of Cochino Pequeño and Cochino Grande; a few dives also took place on barely emergent reefs elsewhere (Figure 1(c)). Maximum depth (18 m) and maximum dive times (45 minutes) were in compliance with the standards of Operation Wallacea. The basic method consisted of underwater observations. The name of each species identified underwater was marked on a plastic sheet on which species names were preprinted. Dives consisted generally of a slow ascent along the reef in a zigzag path to the shallowest points. Sample areas of all habitats encountered were surveyed, including sandy areas, walls, overhangs, slopes, and shallow reefs. Areas typically hosting few or no corals, such as seagrass beds and mangroves, were



(a) (b) (c) (d)

Figure 2: New forms of zooxanthellate scleractinian corals for Honduras. (a) *Agaricia agaricites* forma *carinata* (Wells, 1973). (b) *Agaricia fragilis* forma *contracta* (Wells, 1973). (c) *Manicia areolata* forma *mayori* (Wells, 1943). (d) *Meandrina meandrites* forma *danai* (Linnaeus, 1758).

not surveyed. All the species and forms encountered during this study were photographed in the field by the first author.

The stony corals recorded included the zooxanthellate scleractinian corals and a small number of zooxanthellate and azooxanthellate nonscleractinian corals (e.g., *Millepora* and *Stylaster* "fire coral" and "lace coral"). All produce calcium carbonate skeletons that contribute to reef building to some degree. Stony coral species were identified visually according to Almy and Carrion-Torres [8], Wells [9], Cairns [10], Zlatarski and Estelella [11], de Weerdt [12], Fenner [5], and Human and Deloach [13]. Due to the different criteria used by the authors to define the dates and names of the describers of the species, we used the most recent publications. Collections were not made due to the conservation nature of the Operation Wallacea program. The coral taxonomy used was that of Wells and Lang [14], with modifications from Cairns [10], Van Moorsel [15], de Weerdt [12], Zlatarski [16], Weil [17], Fenner [5, 18], Weil and Knowlton [19], Vermeij et al. [20], and Locke et al. [21].

Relative abundances are listed as *abundant* where they are found at each dive site and predominant by numbers or coverage of substratum; *common* are found at each dive site but are not predominant species; *uncommon* are not found at each dive site but observed regularly; those listed as *rare* were not found at each dive site and observed irregularly. Our estimates of species richness of Honduras were complemented with data from other sources [2–4].

3. Results

Table 1 lists the stony corals (Scleractinia, Milleporidae, and Stylasteridae) that were observed at Utila and Cayos Cochinos in July 2010 in the shallower (<18 m) zones of the reefs. Coral species richness appeared quite similar at the two locations although some differences were notable. At Utila 46, species and 12 forms of zooxanthellate scleractinian corals belonging to 21 genera were observed compared to 44 species and 12 forms belonging to 20 genera at Cayos Cochinos. At each site, 4 species of hydrozoans (three *Millepora* and *Stylaster roseus*) were also observed. The agaricid *Agaricia undata* and the mussid *Isophyllastrea rigida* were not observed at Cayos Cochinos while they were classified as rare at Utila. An average of 37.1 species of zooxanthellate scleractinian corals was found per site at Utila and 33.4 at Cayos Cochinos.

Table 1: Stony corals (Scleractinia, Milleporidae, and Stylasteridae) of Utila and Cayos Cochinos, Honduras. Abundant: species observed at each dive site and predominant by numbers or coverage of substratum; common: species observed at each dive site but not a predominant species; uncommon: species not observed at each dive but observed regularly; rare: species not observed at each dive and observed irregularly.

Species	Utila	Cayos cochinos
CLASS HYDROZOA (Owen, 1843)		
ORDER ATHECATAE (Hincks, 1868)		
FAMILLY MILLEPORIDAE (Fleming, 1901)		
(1) *Millepora alcicornis* (Linnaeus, 1758)	Common	Common
(2) *Millepora complanata* (Lamarck, 1816)	Common	Common
(3) *Millepora squarosa* (Lamarck, 1816)	Uncommon	Uncommon
FAMILLY STYLASTERIDAE (Gray, 1847)		
(4) *Stylaster roseus** (Pallas, 1766)	Uncommon	Uncommon
CLASS ANTHOZOA (Ehrtenberg, 1834)		
ORDER SCLERACTINIA (Bourne, 1900)		
SUBORDER ASTROCOENIINA (Vaughan & Wells, 1943)		
FAMILLY ASTROCOENIIDAE (Koby, 1890)		
(1) *Stephanocoenia intersepta* (Lamarck, 1816)[a]	Common	Common
FAMILLY POCILLOPORIDAE (Gray, 1842)		
(2) *Madracis auretenra* (Loche, Weil & Coates, 2007)[b]	Abundant	Common
(3) *Madracis decactis* (Lyman, 1859)	Common	Common
(4) *Madracis formosa* (Wells, 1973)	Rare	Rare
(5) *Madracis pharensis* forma *luciphila* (Wells, 1973)	Uncommon	Uncommon
Madracis pharensis forma *pharensis** (Heller, 1868)	Uncommon	Uncommon
FAMILLY ACROPORIDAE (Verrill, 1902)		
(6) *Acropora cervicornis* (Lamarck, 1816)	Uncommon	Uncommon
(7) *Acropora palmata* (Lamarck, 1816)	Uncommon	Uncommon
(8) *Acropora prolifera* (Lamarck, 1816)	Rare	Rare
SUBORDER FUNGIINA (Verrill, 1865)		
SUPERFAMILLY AGARICIICAE (Gray, 1847)		
FAMILLY AGARICIIDAE (Gray, 1847)		
(9) *Agaricia agaricites* forma *agaricites* (Linnaeus, 1758)	Abundant	Abundant
Agaricia agaricites forma *carinata* (Wells, 1973)	Common	Common
Agaricia agaricites forma *danai* (Milne Edwards & Haime, 1860)	Common	Common
Agaricia agaricites forma *purpurea* (Lesueur, 1821)	Rare	Rare
(10) *Agaricia fragilis* forma *contracta* (Wells, 1973)	Rare	Rare
Agaricia fragilis forma *fragilis* (Dana, 1846)	Common	Common
(11) *Agaricia grahamae* (Wells, 1973)	Rare	Rare
(12) *Agaricia humilis* (Verrill, 1901)	Common	Common
(13) *Agaricia lamarcki* (Milne-Edwards & Haime, 1851)	Common	Uncommon
(14) *Agaricia tenuifolia* (Dana, 1846)	Common	Common
(15) *Agaricia undata* (Ellis & Solander, 1786)	Rare	Not observed
(16) *Leptoseris cucullata* (Ellis & Solander, 1786)	Common	Common
FAMILLY SIDERASTREIDAE (Vaughan & Wells, 1943)		
(17) *Siderastrea radians* (Pallas, 1766)	Common	Common
(18) *Siderastrea siderea* (Ellis & Solander, 1786)	Abundant	Abundant
SUPERFAMILLY PORITICAE (Gray, 1842)		
FAMILLY PORITIDAE (Gray, 1842)		
(19) *Porites astreoides* (Lamarck, 1816)	Abundant	Abundant
(20) *Porites colonensis* (Zlatarski, 1990)	Uncommon	Rare
(21) *Porites divaricata* (Lesueur, 1821)	Uncommon	Uncommon
(22) *Porites furcata* (Lamarck, 1816)	Abundant	Abundant
(23) *Porites porites* (Pallas, 1766)	Abundant	Abundant

Table 1: Continued.

Species	Utila	Cayos cochinos
SUBORDER FAVIINA (Vaughan & Wells, 1943)		
FAMILLY FAVIIDAE (Gregory, 1900)		
SUBFAMILLY FAVIINAE (Gregory, 1900)		
(24) *Colpophyllia natans* forma *breviserialis* (Milne-Edwards & Haime, 1849)	Rare	Rare
Colpophyllia natans forma *natans* (Houttuyn, 1772)	Common	Common
(25) *Diploria clivosa* (Ellis & Solander, 1786)	Uncommon	Uncommon
(26) *Diploria labyrinthiformis* (Linnaeus, 1758)	Common	Common
(27) *Diploria strigosa* (Dana, 1846)	Common	Common
(28) *Favia fragum* (Esper, 1795)	Uncommon	Uncommon
(29) *Manicia areolata* forma *areolata* (Linnaeus, 1758)	Uncommon	Common
Manicia areolata forma *mayori* (Wells, 1936)	Rare	Rare
SUBFAMILLY MONTASTREINAE (Vaughan & Wells, 1943)		
(30) *Montastrea annularis* (Ellis & Solander, 1786)	Abundant	Abundant
(31) *Montastrea cavernosa* (Linnaeus, 1766)	Common	Common
(32) *Montastrea faveolata* (Ellis & Solander, 1786)	Abundant	Abundant
(33) *Montastrea franksi* (Gregory, 1895)	Abundant	Abundant
FAMILLY MEANDRINIDAE (Gray, 1847)		
SUBFAMILLY MEANDRININAE (Gray, 1847)		
(34) *Meandrina meandrites* forma *brasiliensis* (Milne-Edwards & Haime, 1848)	Rare	Rare
Meandrina meandrites forma *danai* (Linnaeus, 1758)	Common	Common
Meandrina meandrites forma *meandrites* (Linnaeus, 1758)	Common	Common
Meandrina meandrites forma *memorialis* (Wells, 1973)	Uncommon	Uncommon
SUBFAMILLY DICHOCOENIINAE (Vaughan & Wells, 1943)		
(35) *Dendrogyra cylindrus* (Ehrenberg, 1834)	Uncommon	Rare
(36) *Dichoecoenia stokesi* forma *stellaris* (Milne-Edwards & Haime, 1849)	Rare	Rare
Dichoecoenia stokesi forma *stokesi* (Milne-Edwards & Haime, 1848)	Uncommon	Uncommon
FAMILLY MUSSIDAE (Ortman, 1890)		
(37) *Isophyllastrea rigida* (Dana, 1846)	Rare	Not observed
(38) *Isophyllia sinuosa* forma *multiflora* (Verrill, 1902)	Uncommon	Uncommon
Isophyllia sinuosa forma *sinuosa* (Ellis & Solander, 1786)	Uncommon	Uncommon
(39) *Mussa angulosa* (Pallas, 1766)	Uncommon	Uncommon
(40) *Mycetophyllia aliciae* (Wells, 1973)	Common	Common
(41) *Mycetophyllia danaana* (Milne-Edwards & Haime, 1849)	Common	Common
(42) *Mycetophyllia ferox* (Wells, 1973)	Common	Common
(43) *Mycetophyllia lamarckiana* (Milne-Edwards & Haime, 1848)	Common	Common
(44) *Scolymia cubensis* (Milne-Edwards & Haime, 1849)	Uncommon	Uncommon
(45) *Scolymia lacera* (Pallas, 1766)	Uncommon	Uncommon
SUBORDER CARYOPHYLLINA (Vaughan & Wells, 1943)		
FAMILLY CARYOPHYLLIIDAE (Gray, 1847)		
(46) *Eusmilia fastigiata* forma *fastigiata* (Pallas, 1766)	Common	Common

[a] Previously reported as *Stephanocoenia michelinii* (Milne Edwards and Haime, 1848).
[b] Previously reported as *Madracis mirabilis* (Duchassaing and Michelotti, 1860).
* Ahermatypic.

Abundances of stony corals appeared quite similar at the two locations (Table 1). Most of the reefs were dominated by *Montastrea annularis*, *M. faveolata*, *M. franksi*, *Porites astreoides*, *P. porites*, *P. furcata*, *Siderea sidereal*, and *Agaricia agaricites*. Subtle differences in species occurrence were observed in *Agaricia lamarcki* commonly found at Utila, yet uncommon at Cayos Cochinos. Alternatively, *Manicia areolata* forma *mayori* was commonly found at Cayos Cochinos but uncommon at Utila. *Madracis auretenra* was abundant at Utila and commonly seen at Cayos Cochinos, and *Porites colonensis* and *Dendrogyra cylindrus* were uncommon at Utila and rare at Cayos Cochinos.

During this study, we did not encounter some species (*Madracis senaria*, *Agaricia undata*, *Porites branneri*, *Cladocora arbuscula*, *Solenastrea bournoni*, *Solenastrea hyades*, *Oculina diffusa*, *Isophyllia rigida*, and *Mycetophyllia reesi*) and

Table 2: Stony corals (Scleractinia, Milleporidae, and Stylasteridae) species presence-absence list for Honduras.

Species	1	2	3	4	5
CLASS HYDROZOA (Owen, 1843)					
ORDER ATHECATAE (Hincks, 1868)					
FAMILLY MILLEPORIDAE (Fleming, 1901)					
(1) *Millepora alcicornis* (Linnaeus, 1758)	−	+	+	+	+
(2) *Millepora complanata* (Lamarck, 1816)	−	+	+	+	+
(3) *Millepora squarosa* (Lamarck, 1816)	−	−	+	+	+
ORDER STYLASTERINA (Hickson & England, 1905)					
FAMILLY STYLASTERIDAE (Gray, 1847)					
(4) *Stylaster roseus** (Pallas, 1766)	−	+	−	+	+
CLASS ANTHOZOA (Ehrtenberg, 1834)					
ORDER SCLERACTINIA (Bourne, 1900)					
SUBORDER ASTROCOENIINA (Vaughan & Wells, 1943)					
FAMILLY ASTROCOENIIDAE (Koby, 1890)					
(1) *Stephanocoenia intersepta* (Lamarck, 1816)[a]	−	+	+	+	+
FAMILLY POCILLOPORIDAE (Gray, 1842)					
(2) *Madracis auretenra* (Loche, Weil & Coates, 2007)[b]	−	+	+	+	+
(3) *Madracis decactis* (Lyman, 1859)	−	+	+	+	+
(4) *Madracis formosa* (Wells, 1973)	−	−	+	+	+
(5) *Madracis pharensis* forma *luciphila* (Wells, 1973)	−	−	+	+	+
Madracis pharensis forma *pharensis** (Heller, 1868)	−	+	+	+	+
(6) *Madracis senaria* (Wells, 1973)	−	−	+	−	−
FAMILLY ACROPORIDAE (Verrill, 1902)					
(7) *Acropora cervicornis* (Lamarck, 1816)	+	+	+	+	+
(8) *Acropora palmata* (Lamarck, 1816)	+	+	+	+	+
(9) *Acropora prolifera* (Lamarck, 1816)	−	−	+	+	+
SUBORDER FUNGIINA (Verrill, 1865)					
SUPERFAMILLY AGARICIICAE (Gray, 1847)					
FAMILLY AGARICIIDAE (Gray, 1847)					
(10) *Agaricia agaricites* forma *agaricites* (Linnaeus, 1758)	+	+	+	+	+
Agaricia agaricites forma *carinata* (Wells, 1973)	−	−	−	+	+
Agaricia agaricites forma *danai* (Milne Edwards & Haime, 1860)	+	−	+	+	+
Agaricia agaricites forma *purpurea* (Lesueur, 1821)	−	−	+	+	+
(11) *Agaricia fragilis* forma *contracta* (Wells, 1973)	−	−	−	+	+
Agaricia fragilis forma *fragilis* (Dana, 1846)	−	−	+	+	+
(12) *Agaricia grahamae* (Wells, 1973)	−	−	+	+	+
(13) *Agaricia humilis* (Verrill, 1901)	−	−	+	+	+
(14) *Agaricia lamarcki* (Milne-Edwards & Haime, 1851)	−	+	+	+	+
(15) *Agaricia tenuifolia* (Dana, 1846)	−	+	+	+	+
(16) *Agaricia undata* (Ellis & Solander, 1786)	−	−	+	−	+
(17) *Leptoseris cucullata* (Ellis & Solander, 1786)	−	+	+	+	+
FAMILLY SIDERASTREIDAE (Vaughan & Wells, 1943)					
(18) *Siderastrea radians* (Pallas, 1766)	−	+	+	+	+
(19) *Siderastrea siderea* (Ellis & Solander, 1786)	+	+	+	+	+
SUPERFAMILLY PORITICAE (Gray, 1842)					
FAMILLY PORITIDAE (Gray, 1842)					
(20) *Porites astreoides* (Lamarck, 1816)	+	+	+	+	+
(21) *Porites branneri* (Rathbun, 1887)	−	−	+	−	−
(22) *Porites colonensis* (Zlatarski, 1990)	−	−	+	+	+

Table 2: Continued.

Species	1	2	3	4	5
(23) *Porites divaricata* (Lesueur, 1821)	−	+	+	+	+
(24) *Porites furcata* (Lamarck, 1816)	+	+	+	+	+
(25) *Porites porites* (Pallas, 1766)	+	+	+	+	+
SUBORDER FAVIINA (Vaughan & Wells, 1943)					
FAMILLY FAVIIDAE (Gregory, 1900)					
SUBFAMILLY FAVIINAE (Gregory, 1900)					
(26) *Colpophyllia natans* forma *breviserialis* (Milne-Edwards & Haime, 1849)	+	+	+	+	+
Colpophyllia natans forma *natans* (Houttuyn, 1772)	−	+	+	+	+
(27) *Diploria clivosa* (Ellis & Solander, 1786)	+	+	+	+	+
(28) *Diploria labyrinthiformis* (Linnaeus, 1758)	−	+	+	+	+
(29) *Diploria strigosa* (Dana, 1846)	−	+	+	+	+
(30) *Favia fragum* (Esper, 1795)	+	+	+	+	+
(31) *Manicia areolata* forma *areolata* (Linnaeus, 1758)	−	+	+	+	+
Manicia areolata forma *mayor*i (Wells, 1936)	−	−	−	+	+
SUBFAMILLY MONTASTREINAE (Vaughan & Wells, 1943)					
(32) *Cladocora arbuscula* (Lesueur, 1821)	−	−	+	−	−
(33) *Montastrea annularis* (Ellis & Solander, 1786)	+	+	+	+	+
(34) *Montastrea cavernosa* (Linnaeus, 1766)	+	+	+	+	+
(35) *Montastrea faveolata* (Ellis & Solander, 1786)	−	−	+	+	+
(36) *Montastrea franksi* (Gregory, 1895)	−	−	+	+	+
(37) *Solenastrea bournoni* (Milne Edwards & Haime, 1849)	−	−	+	−	−
(38) *Solenastrea hyades* (Dana, 1846)	−	−	+	−	−
FAMILLY OCULINIDAE (Gray, 1847)					
(39) *Oculina diffusa* (Lamarck, 1816)	−	−	+	−	−
FAMILLY MEANDRINIDAE (Gray, 1847)					
SUBFAMILLY MEANDRININAE (Gray, 1847)					
(40) *Meandrina meandrites* forma *brasiliensis* (Milne-Edwards & Haime, 1848)	−	−	+	+	+
Meandrina meandrites forma *danai* (Linnaeus, 1758)	−	−	−	+	+
Meandrina meandrites forma *meandrites* (Linnaeus, 1758)	−	+	+	+	+
Meandrina meandrites forma *memorialis* (Wells, 1973)	−	−	+	+	+
SUBFAMILLY DICHOCOENIINAE (Vaughan & Wells, 1943)					
(41) *Dendrogyra cylindrus* (Ehrenberg, 1834)	−	+	+	+	+
(42) *Dichoecoenia stokesi* forma *stellaris* (Milne-Edwards & Haime, 1849)	−	−	+	+	+
Dichoecoenia stokesi forma *stokesi* (Milne-Edwards & Haime, 1848)	−	+	+	+	+
FAMILLY MUSSIDAE (Ortman, 1890)					
(43) *Isophyllastrea rigida* (Dana, 1846)	+	+	+	−	+
(44) *Isophyllia sinuosa forma multiflora* (Verrill, 1902)	+	+	+	+	+
Isophyllia sinuosa forma sinuosa (Ellis & Solander, 1786)	+	−	+	+	+
(45) *Mussa angulosa* (Pallas, 1766)	−	+	+	+	+
(46) *Mycetophyllia aliciae* (Wells, 1973)	−	+	+	+	+
(47) *Mycetophyllia danaana* (Milne-Edwards & Haime, 1849)	−	+	+	+	+
(48) *Mycetophyllia ferox* (Wells, 1973)	+	+	+	+	+
(49) *Mycetophyllia lamarckiana* (Milne-Edwards & Haime, 1848)	−	+	+	+	+
(50) *Mycetophyllia reesi* (Wells, 1973)	−	−	+	−	−
(51) *Scolymia cubensis* (Milne-Edwards & Haime, 1849)	−	+	+	+	+
(52) *Scolymia lacera* (Pallas, 1766)	−	−	+	+	+

Table 2: Continued.

Species	1	2	3	4	5
SUBORDER CARYOPHYLLINA (Vaughan & Wells, 1943)					
FAMILLY CARYOPHYLLIIDAE (Gray, 1847)					
(53) *Eusmilia fastigiata* forma *fastigiata* (Pallas, 1766)	−	+	+	+	+
Eusmilia fastigiata forma *flabellata* (Wells, 1973)	−	−	+	−	−

[a] Previously reported as *Stephanocoenia michelinii* (Milne Edwards and Haime, 1848).
[b] Previously reported as *Madracis mirabilis* (Duchassaing and Michelotti, 1860).
*Ahermatypic.
(1) Swan Islands [2]; (2) Roatan Island [3, 5]; (3) Cayos Cochinos [4]; (4) Cayos Cochinos (this study); and (5) Utila Island (this study).

forms (*Eusmilia fastigiata* forma *flabellata*) reported found at Cayos Cochinos by Guzman [4] (Table 2). Four forms of zooxanthellate scleractinian corals observed during this study (*Agaricia agaricites* forma *carinata*, *Agaricia fragilis* forma *contracta*, *Manicia areolata* forma *mayori,* and *Meandrina meandrites* forma *danai*) have not been reported for Honduras in the published literature [2–4] (Table 2). These forms are illustrated in Figure 2.

4. Discussion

The comparison of shallow water stony corals between Utila and Cayos Cochinos reveals no significant differences in important reef building species. Throughout the study area, the stony coral species richness and abundance were uniform. Two species were not found at Cayos Cochinos (*Agaricia undata* and *Isophyllastrea rigida*) but they were also rarely observed at Utila. The only differences in abundances of zooxanthellate scleractinian corals between the two sites concern *Madracis auretenra*, *Agaricia lamarcki*, *Porites colonensis*, and *Dendrogyra cylindrus* which were less common at Cayos Cochinos than at Utila and *Manicia areolata* forma *mayori* which was more common at Cayos Cochinos than at Utila. The coral reefs of Utila and Cayos Cochinos currently support diverse and abundant populations of stony corals and appear to be typical of that of many other areas in the Caribbean in that they include many of the species common elsewhere. Most of the reefs at Utila and Cayos Cochinos were dominated by *Montastrea annularis*, *M. faveolata*, *M. franksi*, *Porites astreoides*, *P. porites*, *P. furcata*, *Siderea sidereal*, and *Agaricia agaricites*. Many of these species are dominant in Caribbean reef systems.

We observed much more species of zooxanthellate scleractinian species at Utila (46 species) and Cayos Cochinos (44 species) than Tortora and Keith [2] in the Swan Islands (only 15 species) and that Fenner [3] off the northwestern Roatán (35 species) which is another island of the Bay Islands group. Nevertheless, we found less zooxanthellate scleractinian species in Cayos Cochinos than previously reported by Guzman [4] (44 versus 53). This is not surprising because the study of Guzman lasted longer (from August 1994 to June 1996) and extended to deeper areas (down to 35 m depth) than our study. Unfortunately, Guzman did not give information about species relative abundances. It can be assumed that the species we have not observed during this study have been rarely observed by Guzman and that these species can be considered rare in Honduras. Nevertheless, we reported for the first time four new forms of zooxanthellate scleractinian corals not observed by Guzman at Cayos Cochinos.

A complete list of stony corals species observed at Honduras is given including our own results as well as documented records published by previous authors (Table 2). This list includes various formae and ecomorphs which are considered to be separated species by some researchers. The list comprises 53 species and 13 forms of zooxanthellate scleractinian corals, 3 species of *Millepora*, and one species of *Stylaster* (*S. roseus*). The number of zooxanthellate scleractinian species found at Honduras is slightly higher than those reported from other western Caribbean reefs at Belize (51 species and 8 forms) and Cozumel Mexico (49 species and 8 forms) [18]. Thus, the number of zooxanthellate scleractinian corals reported indicate that the reefs of Honduras are well within the range reported for other western Caribbean reefs.

The 53 species of zooxanthellate scleractinian corals known from Honduras represent 93% of the approximately 57 zooxanthellate species known from the Caribbean. This is consistent with the view that most zooxanthellate scleractinian corals range throughout the Caribbean [3, 18, 22, 23]. In that sense, Chiappone et al. [24] showed that the diversity of hermatypic scleractinian corals is probably similar and evenly distributed in the central and western regions of the Caribbean.

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