

Photographic Field Guide to the Marine Invertebrates of Dominica

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Abstract

Dominica, also known as the nature island, is home to a multitude of different species. While there are vast amounts of areas to explore on land a lot of the unseen treasures occur under the water along Dominica's coastline. Home to a variety of different corals, sponges, cnidarians, and echinoderms the reefs of Dominica are truly a sight to be seen.

Introduction

Located in the eastern Caribbean between the French islands of Guadalupe and Martinique lays the island of Dominica. Seeing the island from the sea or air is equally impressive. Jutting from the sea are mountains formed from millions of years of tectonic plate movement. With some of the peaks reaching an altitude of almost 5,000 feet above sea level they seem to scrape the sky and are frequently shrouded in clouds.

The awe-inspiring scenery continues under the crystal clear blue water surrounding the island. Rocky outcroppings and vertical walls plunging 6,000 feet to the ocean floor provide spectacular scenery to those who venture beneath the waves. The waters surrounding the island are teeming with life. Communities of pelagic fish, whales, squid, and dolphins

can be found as close as 5 miles off the coast. Closer to the shoreline various species of coral, sponges, and fish can be seen.

The west coast provides the best opportunity for diving and snorkeling. Calmer waters and underwater visibility ranging from 80-100 feet combined with an average water temperature that hovers between 24-27 degrees Celsius allows visitors to experience the underwater realm in greater comfort.

The majority of the photographs used for this field guide were obtained at Champagne reef, however several photographs were also taken at Soufriere and Scotts Head Marine Reserve. Champagne reef is located south of the capital Roseau and just north of Pointe Guignard. Covering an area roughly 300 square feet is a hot sub-aquatic freshwater spring that releases a multitude of small sulphur gas bubbles that rise to the surface from which the area gets its name. The actual reef, however, is much larger. Live coral cover is fairly non-existent around the spring area but venturing further away you can find around 20 different species of varying sizes and colors along with several types of sponges.

The Soufriere and Scotts Head Marine Reserve located at the southern tip of Dominica is purported to have some of the best diving on the island. Soufriere bay exists as the remains of an ancient caldera some

2,600 feet deep. The eastern edge of the volcano along with the rock known as Scotts Head separates the Atlantic Ocean from the Caribbean Sea. Surveys of the reef have identified a total of 28 species of hard corals and 10 species of soft corals. Sponges, particularly brown tube and orange elephant ear variations, are likely to be found inhabiting the walls of the reef.

Methods and Materials

The camera used for this photographic field guide was an Olympus Tough underwater camera that is waterproof to a depth of 33 feet. The photographs were stored on an internal 8 GB SD card. During the surveys of the reefs the use of a properly fitted mask and snorkel along with a sturdy pair of fins were of utmost importance. A mask that fit properly was necessary to maximize the time surveying and not clearing the mask of water. Diving fins were essential to photograph species at deeper depths. A wetsuit was not used due to the fact that the water was warm and the added buoyancy made diving to deeper depths more difficult and tiresome.

To measure the depth that photographs were taken a 15-meter tape was brought along. Before photographing a specific specimen the tape was used to determine depth and a photo was then taken of the tape itself to

use as a future reference. Subsequent photos on the internal memory card were at the depth previously specified. As the depth changed new measurements were taken and recorded.

A total of 4 trips were made to Champagne Reef and 1 trip was to Soufriere and Scotts Head Marine Reserve. At each site approximately an hour and a half to two hours were spent in the water observing the underwater life. Most of the excursions to the reefs were done in the morning hours, however on several occasions the trips were made after noon. Each of the surveys was conducted by swimming along the reef slowly enough to notice various organisms then diving down to take a photograph. Sometimes multiple photographs were needed in order to get the best shot possible. Due to depth limits of both the camera and human endurance some specimens could not be photographed. All photos were taken at depths of less than 30 feet.

Back at the station the photographs taken that day were uploaded onto a computer and then enhanced. The program used to enhance the photographs was Adobe Photoshop CS4. The primary method of correcting the photos was Photoshop's auto-levels function. Photos that were either blurry or did not capture the subject as intended were discarded. The remaining photos were backed up on both an 8 GB flash drive and multiple

computers. The original photographs were left on the camera in case the original image file was needed.

Results

Listed below are thirty-two different species photographed from the various trips to both Champagne Reef and Soufriere and Scotts Head Marine Reserve. A brief description of each organism is given, and if the species poses a risk to humans a special note is added. The depth at which the organism was found is also noted.

Class Hydrozoa

Hydrocorals

Family: Milliporidae

Genus/Species: Millepora complanata

Common Name: Blade Fire Coral

Description: Tan to mustard and brown colonies that produce thin, upright blades that protrudes from an encrusting base.

Danger to Humans: Will produce an intense but short-lived sting upon contact with bare skin. May also cause redness, welts, and rashes.

Depth- 2 Meters



Class: Anthozoa

Subclass: Octocorallia

Order: Gorgonacea

Suborder: Holaxonia

Genus/Species: Gorgonia ventalina

Common Name: Common Sea Fan

Description: Colonies produce large fans that grow in single planes and are comprised of interconnected networks of branches that are rounded or slightly flattened on the outer surface.

Depth- 2 Meters



Class: Anthozoa

Subclass: Octocorallia

Order: Gorgonacea

Suborder: Holaxonia

Genus/Species: Gorgonia flabellum

Common Name: Venus Sea Fan

Description: Most often yellow in color. Similar to common sea fan except the branches inner edges are distinctly flattened at right angles to the fans' surfaces.

Depth- 2 meters



Class: Anthozoa

Subclass: Octocorallia

Order: Gorgonacea

Suborder: Holaxonia

Genus/Species: Pseudopterogorgia sp.

Common Name: Sea Plumes

Description: Polyps occur in rows, series, or even bands. Color is usually purple or grey but can also be yellow or yellow-brown. Secondary branches occur in single planes and extend from the main branches.

Depth- 4 meters



Class: Anthozoa

Subclass: Octocorallia

Order: Gorgonacea

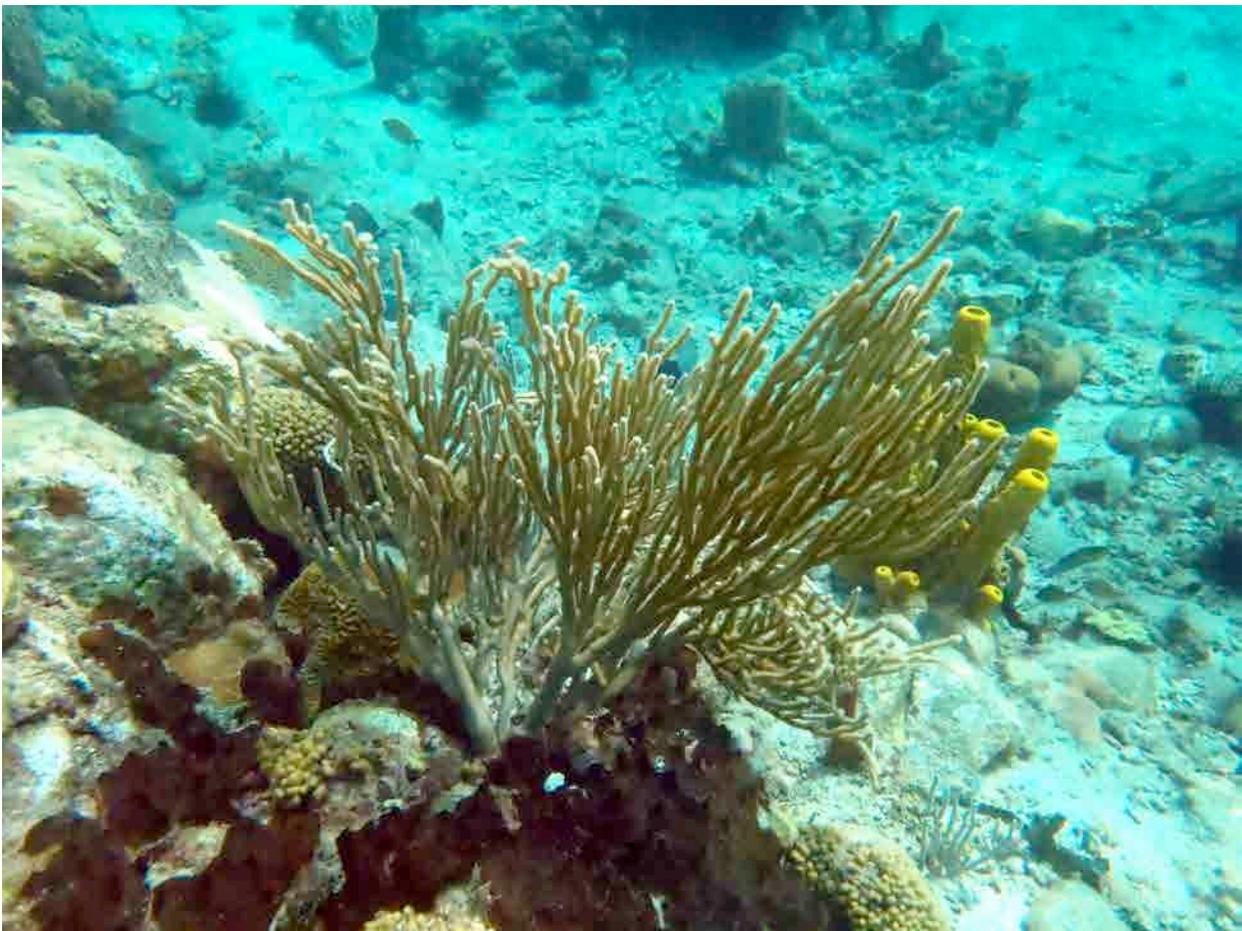
Suborder: Holaxonia

Genus/Species: Pterogorgia anceps

Common Name: Angular Sea Whip

Description: Color ranges from olive to brown to gray. Colonies form large and bushy X or Y shaped branches that taper from bases towards the terminal end and may twist.

Depth- 3 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Astrocoeniina

Family: Acroporidae

Genus/Species: Acropora cervicornis

Common Name: Staghorn Coral

Description: Fragile colonies that form cylindrical branches that resemble antlers.

Surfaces contain small, protuberant, tubular corallites.

Depth- 3 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Astrocoeniina

Family: Acroporidae

Genus/Species: Acropora palmata

Common Name: Elkhorn Coral

Description: Similar to staghorn coral. Branches are flattened and look like moose or elk horns. Edges of outer branches have a white outline.

Depth- 2 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Fungiida

Family: Poritidae

Genus/Species: Porites furcata

Common Name: Finger Coral

Description: Corallites are embedded in these colonies. Branches are smooth. Several forms exist. This form has finger-like branches that are tightly compacted. This form is fragile.

Depth- 5 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Astrocoeniina

Family: Pocilloporidae

Genus/Species: Madracis mirabilis

Common Name: Yellow Pencil Coral

Description: These colonies arrange themselves in dense clumps and have pencil shaped branches that end bluntly. These creamy to bright yellow colonies are fragile.

Depth- 5 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Astrocoeniina

Family: Pocilloporidae

Genus/Species: Madracis luciphila

Common Name: Encrusting Star Coral

Description: There are two forms of encrusting star coral. This form is thickly encrusting and can be green to brown or gray. It may also have a smooth or somewhat lumpy surface.

Depth- 3 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Faviida

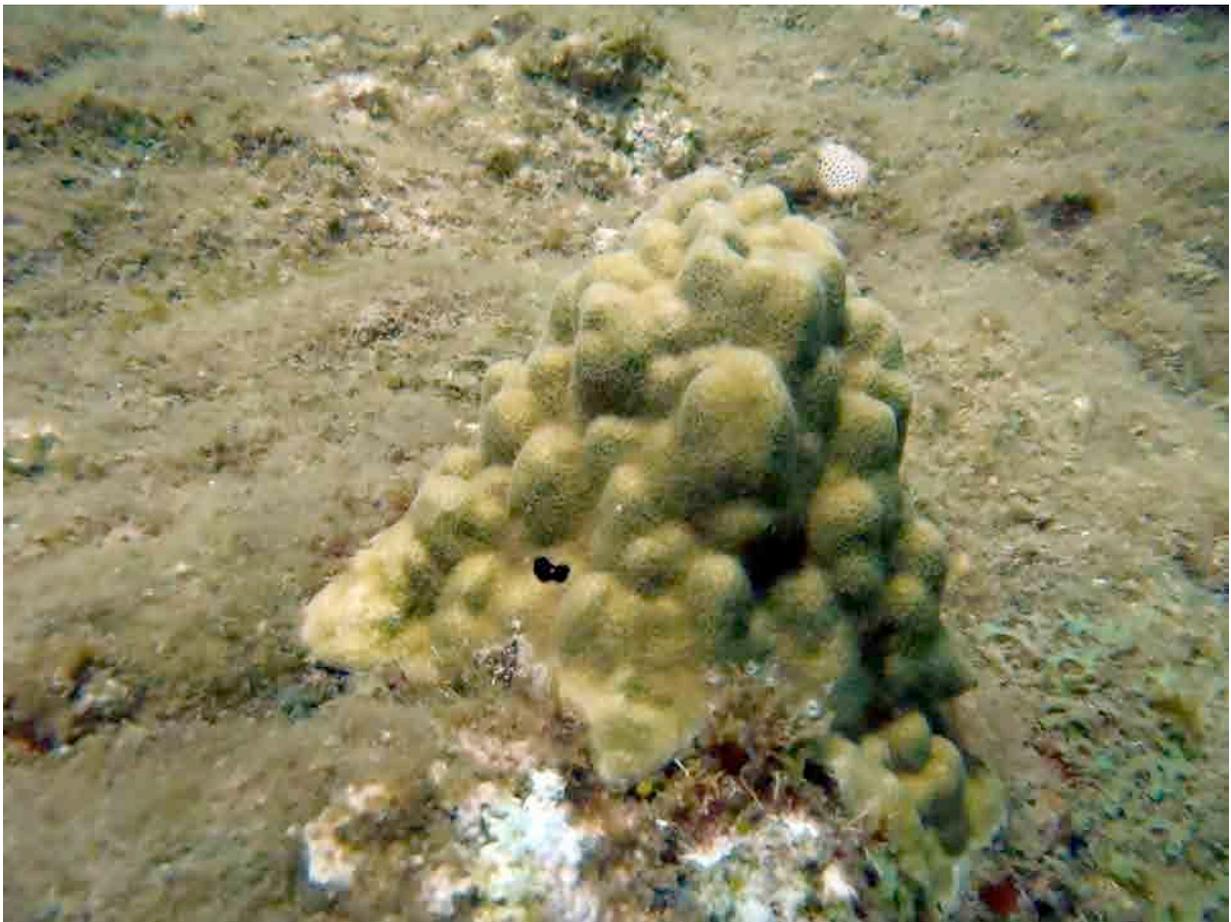
Family: Faviidae

Genus/Species: Solenastrea hyades

Common Name: Knobby Star Coral

Description: Colonies have lobed head and have irregular bulges on the surface. Colors are normally yellow-brown but can also be cream to tan.

Depth- 4 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Faviida

Family: Meandrinidae

Genus/Species: Dichocoenia stokesii

Common Name: Elliptical Star Coral

Description: Corallites on these colonies protrude up to ¼ inch and are normally elliptical, circular, or less frequently Y-shaped. Colors vary from cream to yellow to brown.

Depth- 4 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Fungiida

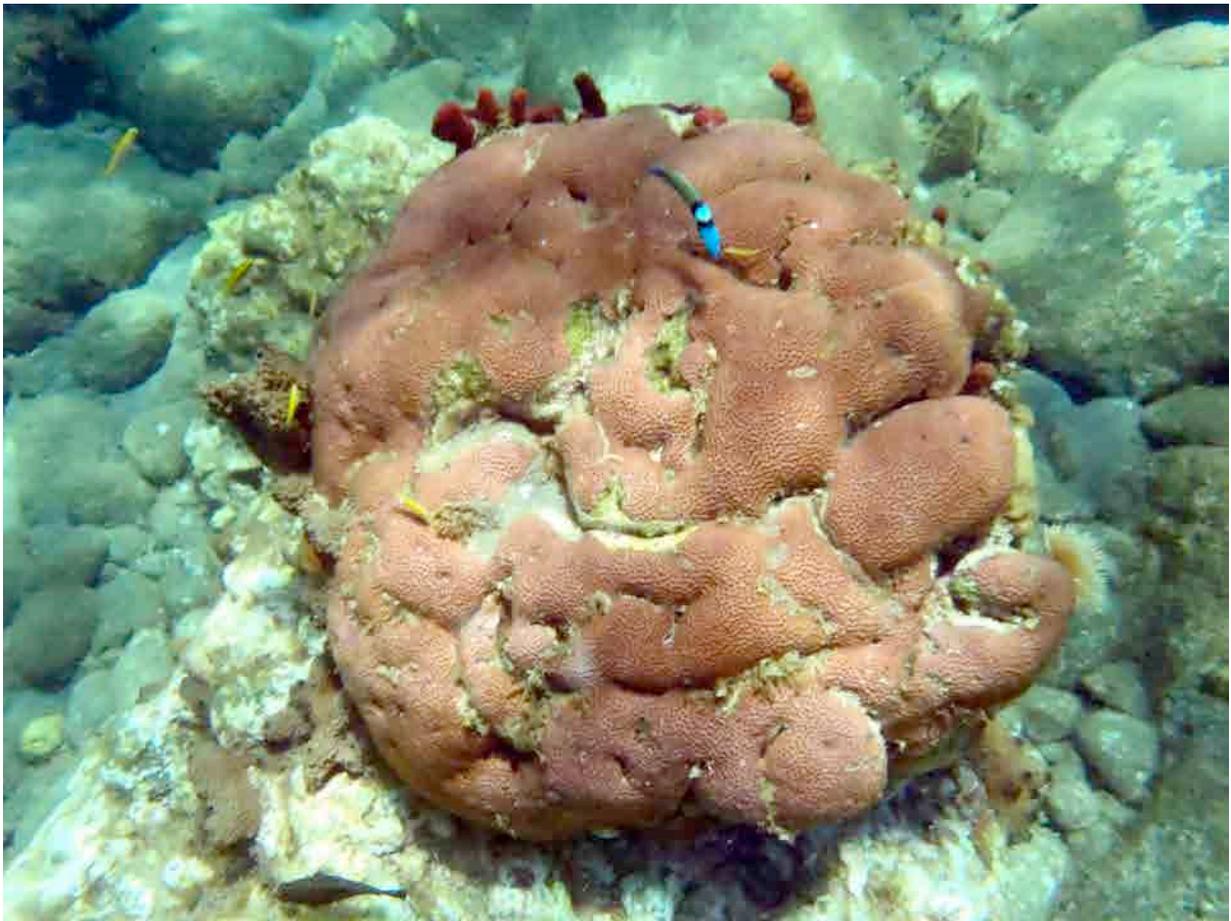
Family: Siderastreidae

Genus/Species: Siderastrea siderea

Common Name: Massive Starlet Coral

Description: Colonies build rounded heads, boulders, or domes. Corallites are symmetrical round, and pitted. Color is uniform and ranges from light gray to golden-brown and brown.

Depth- 3 meters



Closeup:



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Faviida

Family: Faviidae

Genus/Species: Diploria strigosa

Common Name: Symmetrical Brain Coral

Description: Colonies construct smooth contoured plates or hemispherical domes. Valleys are regularly connected and ordinarily convoluted except near colony's edge.

Colors can be green, brown, yellow-brown, or bluish gray.

Depth- 2 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Faviida

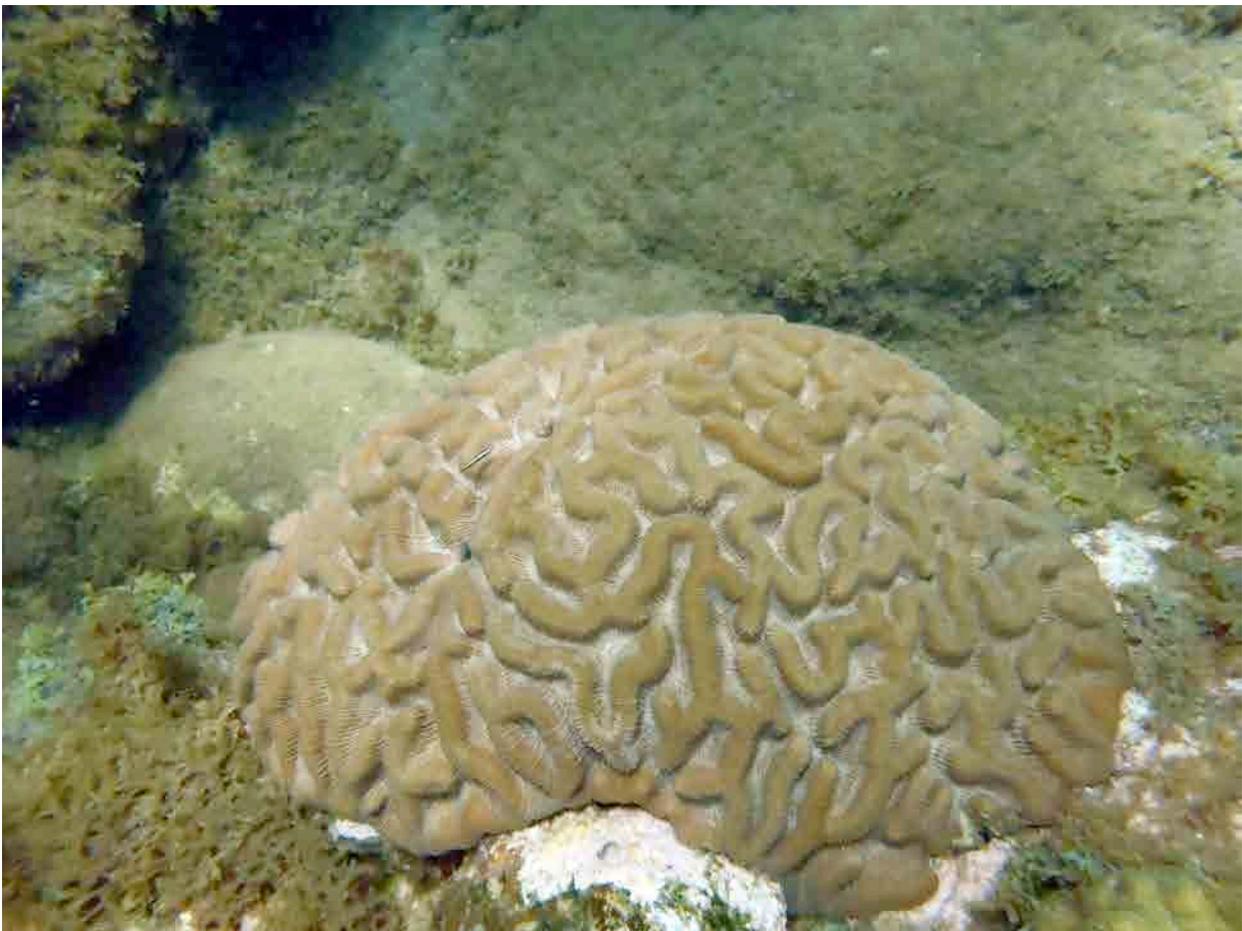
Family: Faviidae

Genus/Species: Diploria labyrinthiformis

Common Name: Grooved Brain Coral

Description: Polyp bearing valleys are deep and frequently narrow and are separated by wide, trough-like grooves. The width and depth of the grooves varies between colonies.

Depth- 4 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Faviida

Family: Meandrinidae

Genus/Species: Meandrina meandrites

Common Name: Maze Coral

Description: This coral species arranges themselves as both hemispherical heads and flattened plates. Colors can be tan, yellow-brown, or brown. There is a thin line along the ridgetops where plates merge.

Depth- 3 meters



Class: Anthozoa

Subclass: Hexacorallia

Order: Scleractinia

Suborder: Faviida

Family: Mussidae

Genus/Species: Mussa angulosa

Common Name: Spiny Flower Coral

Description: This species has a rough, blemished texture. Name is derived from the numerous sharp spiked septa comprising the polyps' skeleton. These colonies may fluoresce a reddish orange or pink color although more frequently they are shades of gray. There may also be tints of green or blue.

Depth- 3 meters



Phylum Porifera

Class: Sponges, Demospongiae

Genus/Species: Pseudoceratina crassa

Common Name: Branching Tube Sponge

Description: Color is variable and may include yellow, purple, orange, or olive green.

This species has a mottled exterior and forms copious numbers of branching tubes that extend from a base mass.

Depth- 5 meters



Phylum Porifera

Class: Sponges, Demospongiae

Genus/Species: Niphates digitalis

Common Name: Pink Vase Sponge

Description: Name results from the vase or bowl shape that this species forms. A nearly transparent membrane adjoins the edges. Colors vary and can include pink, lavender, blue, greenish-gray, or gray.

Depth- 2 meters



Phylum Porifera

Class: Sponges, Demospongiae

Genus/Species: *Verongula gigantea*

Common Name: Netted Barrel Sponge

Description: These large organisms have a diameter that is about half its height. The exterior appears to have a rubbery, net-like texture. The inside walls are a light yellow color and have many round pitted pores.

Depth- 4 meters



Phylum Porifera

Class: Sponges, Demospongiae

Genus/Species: Xestospongia muta

Common Name: Giant Barrel Sponge

Description: This species is notable because of its barrel-like appearance. The outer surface is coarse and stone hard. These sponges are often found in colors of gray, brown, or red-brown. More often than not these are solitary individuals.

Depth- 4 meters



Phylum Porifera

Class: Sponges, Demospongiae

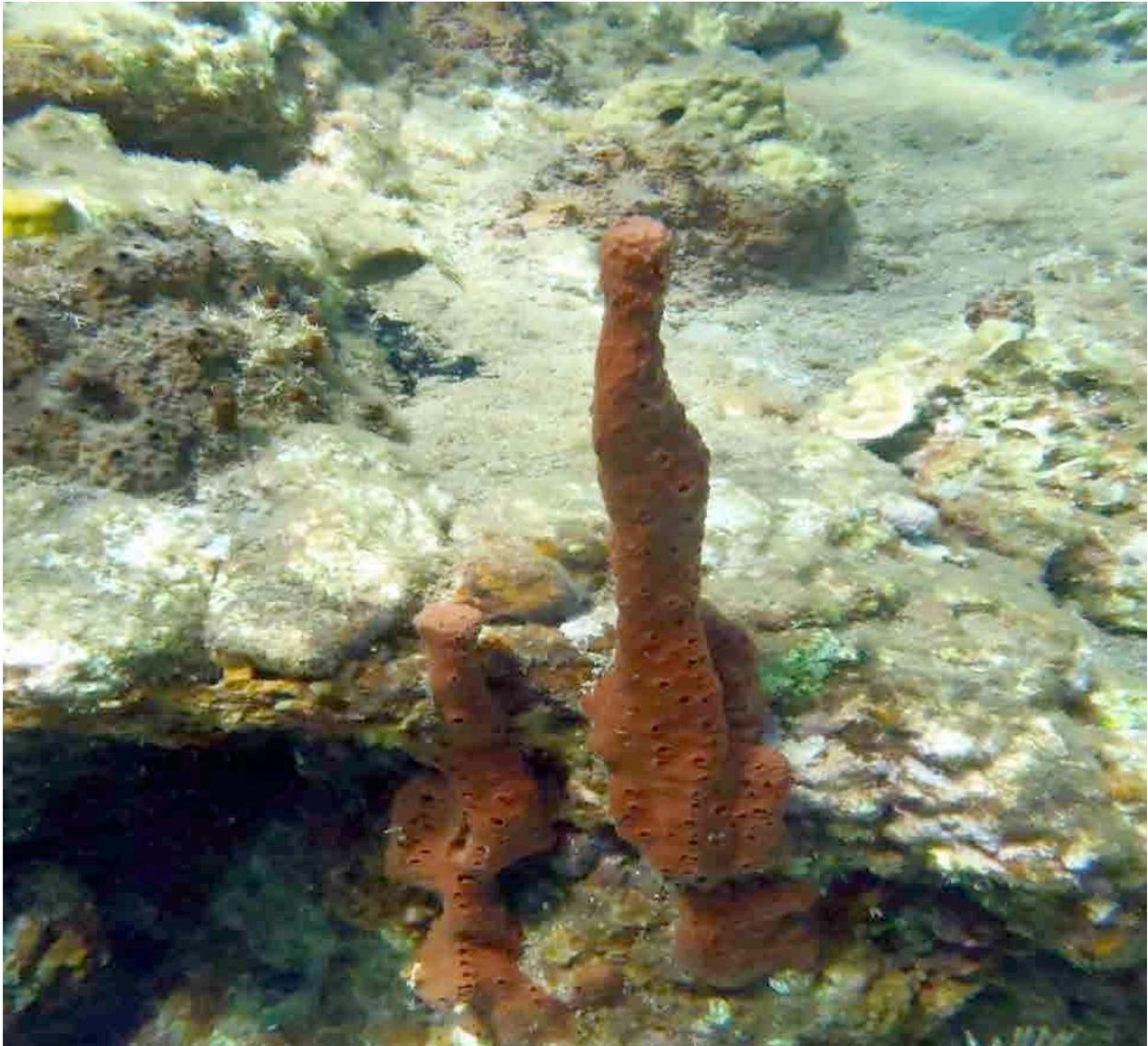
Genus/Species: Amphimedon compressa

Common Name: Erect Rope Sponge

Description: This species is commonly bright red, but can also be maroon or burgundy.

Grows vertically from the substrate and has a porous surface.

Depth- 2 meters



Phylum: Cnidaria

Class: Anthozoa

Subclass: Hexacorallia

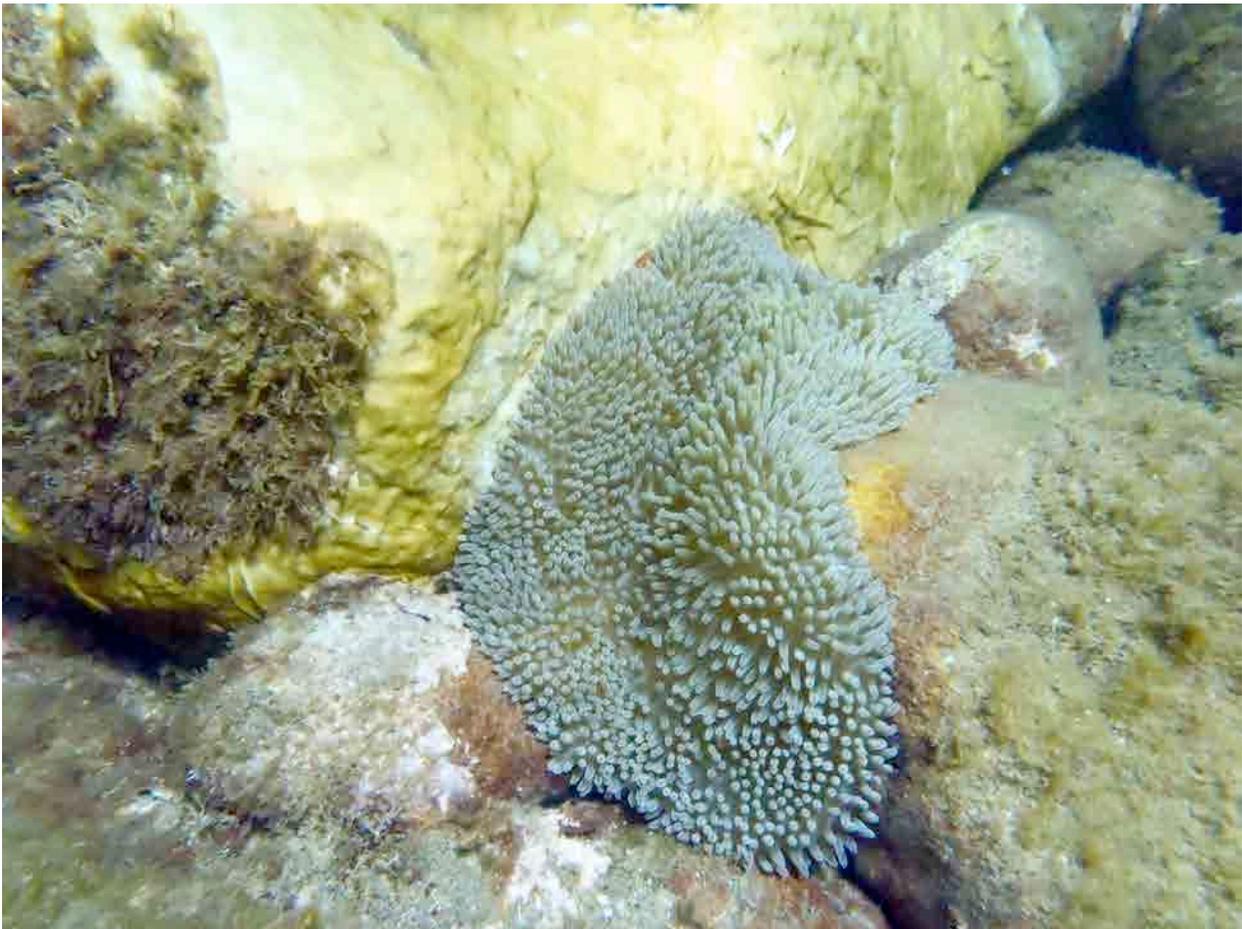
Order: Actiniaria

Genus/Species: Stichodactyla helianthus

Common Name: Sun Anemone

Description: Colors of the tentacles and oral disc are green to brown. Tentacles are short, thick and have rounded tips that cover the oral disc.

Depth- 2 meters



Phylum: Cnidaria

Class: Anthozoa

Subclass: Hexacorallia

Order: Actiniaria

Genus/Species: Condylactis gigantea

Common Name: Giant Anemone

Description: This species is the largest of all Caribbean anemones. The tentacles are long with enlarged tips that vary in color from pink, lavender, yellow, chartreuse, or white.

Depth- 2 meters



Phylum: Annelida

Class: Polychaeta

Subclass: Errantia

Family: Amphinomidae

Genus/Species: Hermodice caruncula

Common Name: Bearded Fireworm

Description: This species gets its name from the large, pleated, and branched appendages on its head also known as a carnucle. The different segments have white bristles and red branched-gill filaments. They may be found in colors of red, green, or brown.

Depth- 2 meters



Phylum: Annelida

Class: Polychaeta

Subclass: Sedentaria

Family: Sabellidae

Genus/Species: Sabellastarte magnifica

Common Name: Magnificent Feather Duster

Description: Identifiable features include a large crown of radioles that arrange themselves in a double circular pattern. These are the largest of Caribbean feather dusters and come in shades of brown, brownish-red, reddish-purple, gold, tan, and white.

Depth- 2 meters



Phylum: Mollusca

Class: Cephalopoda

Suborder: Teuthoidea

Genus/Species: Sepioteuthis sepiodea

Common Name: Caribbean Reef Squid

Description: This species has an elongated thin fin that runs the entire length of the body and terminates in a point at the rear. Colors vary depending on the time of day. During the day they often exhibit shades of gray with white spots on the back. At night colors are mottled and come in shades of white, brown, green, and lavender.

Depth- 3 meters



Phylum: Echinodermata

Class: Crinoidea

Genus/Species: Davidaster rubiginosa

Common Name: Golden Crinoid

Description: Twenty arms that are normally orange, but may periodically be greenish or black with yellow or orange tipped side branches identify this species.

Depth- 7 meters



Phylum: Echinodermata

Class: Echinoidea

Genus/Species: Diadema antillarum

Common Name: Long-Spined Urchin

Description: Adult specimens are all generally all black but sometimes have grayish-white spines. Juveniles have black and white banded spines.

Danger to Humans: Spines can puncture skin and break off leaving a aching wound.

Although spines will dissolve within days there is a possibility of infection.

Depth- 2 meters



Phylum: Echinodermata

Class: Echinoidea

Genus/Species: Tripneustes ventricosus

Common Name: West Indian Sea Egg

Description: Normally black body is covered with short, white spines. Other color variations can include dark purple or reddish brown.

Depth- 5 meters



Phylum: Echinodermata

Class: Holothuroidea

Genus/Species: Isostichopus badionotus

Common Name: Three-Rowed Sea Cucumber

Description: Species has earth tone colors and its patterns can be vastly variable. Three rows of podia are found on the sole and its center row is wide and split by a seam. Dorsal podia are small and knob-like and frequently a contrasting shade or color.

Depth- 5 meters



Phylum: Echinodermata

Class: Holothuroidea

Genus/Species: *Holothuria mexicana*

Common Name: Donkey Dung Sea Cucumber

Description: Colors are usually dark gray to black and have deep prominent creases. The sole is rose to white colored and scattered with small brown podia.

Depth- 6 meters



Discussion

During the course of this project a total of thirty-two different species were photographed clearly. Overall there was over a hundred photos taken during the visits to Champagne and Scotts Head. A majority of these photos were duplicates of the same species. Some photographs came out too blurry to be used for identification purposes. There was also several species that could not be identified based on the reference books available.

The inspiration for this project was a previous field guide to the coral species of Scotts Head and Champagne reef done by Megan Meyers in the 2002 study abroad trip. This report expanded her project to include all the marine invertebrates that were accessible with the use of snorkeling equipment. However, further projects can be done to make a more complete field guide.

In order to get a better representation of the various species inhabiting the reefs of Dominica SCUBA diving would be ideal. The depth limits of the camera and human endurance restricted the number of organisms that could be clearly photographed. More time at each reef would have also provided the opportunity to observe and photograph different species. In addition a faster Internet connection would facilitate the use of online sources to identify species not found in the books available.

Works Cited

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