

# **Diversity of Shallow Reef Fish at Rodney's Rock**

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## ABSTRACT

The objective of this research was to survey shallow reef fish species at the north side of Rodney's Rock. The three most abundant fish were the Surgeonfish (*Acanthurus bahianus*), the Dusky damselfish (*Stegastes diencaeus*), and the Slippery Dick (*Halichoeres bivittatus*).

## INTRODUCTION

One of Dominica's most well known reefs is Rodney's Rock. This reef is a rocky point along the west coast that is composed of fractured volcanic lava erupted from the Trois Pitons volcano (Delphis Ltd. 1997-2005). The objective of this survey is to study the diversity and relative abundance of fishes in shallow water on the north side of Rodney's Rock. A previous study was completed by Hoffman et al (2001) surveying all fish around Rodney's Rock, including reef and open water species. However, their study did not provide data on relative abundance of the various species.

## MATERIALS AND METHODS

The first day at the location was used to explore Rodney's Rock and choose a suitable area for the transect line. Underwater slates were used to record data and underwater field guides were used to facilitate identification. All fish identifications were ultimately check using Humann (1999). A few things to consider when placing a transect line are depth of reef, strength of current, distance from sea urchins, and visibility.

Precautions were also taken to avoid coming into contact with scorpion fish and stinging corals.

Once the location was selected, a transect line, made by tying weights to the ends of a twelve meter length of string, was gently placed across the chosen area. Preliminary runs were completed on May 27 to ensure safety, adequate visibility, and proper snorkeling techniques.

Fish were surveyed on June 1-3 and prior to each day's survey, fish most commonly seen during the preliminary runs were recorded on the underwater slates to facilitate counting. The survey was conducted by having two members of the group start out at opposite ends of the transect line at the same time, with both of them swimming down and back along the line to complete a single transect. All fishes within the field of vision along the line were recorded. For each transect, the numbers recorded were divided in half. The number of transects taken during the course of this survey were as follows; 10 lines on June 1, 10 lines on June 2, and 8 lines on June 3.

## RESULTS

The ten most abundant species of fish on the shallow side of the reef are listed in Table 1. Summary data for all fish are provided in Table 2, including daily means. Figure 1 is a comparison of the ten most abundant species in the shallow reef with the results from the survey of Cotton et al. (2005) on a deeper reef at Rodney's Rock.

## DISCUSSION

During the course of the survey, many species of fish were noted. The ten most abundant species are listed in descending order beginning with the most abundant, together with the characteristics that were most useful in the identification of these species.

**Family:** Acanthuridae

**Scientific Name:** *Acanthurus bahianus*

**Common Name:** Ocean Surgeonfish

**Description:** Coloration varies from blueish gray to dark brown. May have markings radiating from the eyes. The body is oval shaped, typically with a white flag on the base of the tail.

**Size:** 6 to 12 inches with a maximum of 15 inches.

**Family:** Pomacentridae

**Scientific Name:** *Stegastes diencaeus*

**Common Name:** Dusky Damselfish

**Description:** Dark, dull blueish-black color and will be oval shaped with rounded dorsal and anal fins which rarely extend beyond the base of the tail.

**Size:** 3 to 5 inches with a maximum of 6 inches.

**Family:** Labridae

**Scientific Name:** *Halichoeres bivittatus*

**Common Name:** Slippery Dick

**Description:** Elongated body with dorsal fin extending from head to tail. Body is striped and ranges from shades of green to medium brown.

**Size:** 5 to 7 inches with a maximum of 9 inches.

**Family:** Chaetodontidae

**Scientific Name:** *Chaetodon striatus*

**Common Name:** Banded Butterfly

**Description:** Silver to white disk shaped body with two black mid-body bands and a black bar across the eyes.

**Size:** 3 to 5 inches with a maximum of 6 inches.

**Family:** Pomacentridae

**Scientific Name:** *Stegastes partitus*

**Common Name:** Bicolor Damselfish

**Description:** Small oval shape with a dark head to mid-body and white tail.

**Size:** 2 to 3.5 inches with a maximum of 4 inches.

**Family:** Haemulidae

**Scientific Name:** *Haemulon* spp

**Common Name:** Grunt\*

**Description:** Sloping head to a tapered body. Silver to white in color and often have yellow to gold bands along body.

**Size:** 6 to 12 inches.

\*Since species are similar, all grunts were placed in a single category.

**Family:** Labridae

**Scientific Name:** *Thalassoma bifasciatum*

**Common Name:** Bluehead Wrasse

**Description:** Blue head with two dark bars behind the head separated by a white bar.

Rear of body is green to blue in color. Body is long and straight.

**Size:** 4 to 5 inches, with a maximum of 6 inches.

**Family:** Tetraodontidae

**Scientific Name:** *Canthigaster rostrata*

**Common Name:** Sharpnose Puffer

**Description:** Head has a pointed snout with a dark olive brown upper body with white below. Deep mid body with shallow rear body before caudal fin. Blue lines and dots cover the head and body.

**Size:** 2 to 3.5 inches with a maximum of 4.5 inches.

**Family:** Mullidae

**Scientific Name:** *Pseudupeneus maculatus*

**Common Name:** Spotted Goatfish

**Description:** Two barbells under tip of chin with sloped head. Three rectangular body blotches on a white body. It can dramatically change to mottled red when inactive.

**Size:** 5 to 8 inches with a maximum of 11 inches.

**Family:** Pomacentridae

**Scientific Name:** *Chromis multilineata*

**Common Name:** Brown Chromis

**Description:** Brown body with yellow tipped fins. Small oval shape with a black dot behind pectoral fin.

**Size:** 3 to 5.5 inches with a maximum of 6.5 inches

All of the ten most abundant fish in the shallow reef were also found by Hoffman et al. (2001). Cotton et al. (2005) simultaneously surveyed the deep reef on the north side of Rodney's Rock. While some similarities existed in the ten most abundant species, it was noted that there were differences between the survey at hand and that by Cotton et al. Some of the differences include three species of fish found in the shallow reef which are not found in the deep reef. The fish found in the deep reef were also often larger than the ones noted in the shallow side. Refer to Figure 1 for observed differences in fish abundances.

## REFERENCES

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Table 1. Ten most abundant species seen on a shallow reef at Rodney's Rock, Dominica.

M = mean abundance per transect (N = 28).

Species	M
Surgeonfish	3.56
Dusky Damselfish	3.03
Slippery Dick	2.36
Banded Butterfly	1.26
Bicolor Damselfish	1.01
Grunt	0.83
Bluehead Wrasse	0.72
Sharpnose Puffer	0.68
Spotted Goatfish	0.53
Yellowtail Damselfish	0.32

Table 2. Mean abundance of all fish species by day and summary statistics. TNTC: too numerous to count.

Fish Species	Shallow				
	day 1	day 2	day 3	total avg	std dev
Surgeonfish	1.75	4.69	4.24	3.56	0.57
Dusky Damselfish	2.18	2	4.93	3.03	1.48
Slippery Dick	1.21	1.98	3.87	2.36	1
Banded Butterfly	0.69	1.34	1.75	1.26	0.26
Grunt	0.4	0.69	1.93	1.01	0.64
Spotted Goatfish	0.68	0.68	1.13	0.83	0.23
Bluehead Wrasse	0.3	0.86	1	0.72	0.14
Sharpnose Puffer	0.35	0.95	0.75	0.68	0.14
Brown Chromis	0.1	0.95	TNTC	0.53	0.3
Yellowtail Damselfish	0.31	0.3	0.36	0.32	0.03
Trumpetfish	0.11	0	0.57	0.23	0.28
Bicolor Damselfish	0	0.33	0.29	0.21	0.06
Stoplight Parrotfish	0.31	0	0.05	0.12	0.06

Yellow Goatfish	0.2	0.1	0	0.1	0.06
Striped Parrotfish	0	0	0.3	0.1	0.15
Sergeant Major	0	0	0.15	0.05	0.08
Queen Parrotfish	0	0	0.05	0.02	0.03

Figure 1. Species abundance comparison of deep and shallow reefs on the north side of Rodney's Rock, Dominica.

