

A Survey of Fish on Rock Bob

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*Bob, the final frontier.*

*These are the voyages of the snorkler, Bill.*

*His three day mission, to seek out new fish and new jellyfish stings*

*To boldly go where no flippers have gone before.....*

## **Abstract**

In order to set up a baseline for a long-term study we conducted a survey of the most populous fish on rock *Bob*. We found the average number of resident fish of nine selected species to guide future studies.

## **Introduction**

When looking at population dynamics within any community one of the most basic decisions is the choice of which species to use for a baseline. The 2001 study abroad group project identified which species of fish were present, but failed to recognize the relative abundance of the fish (Hoffman, et al. 2001). The focus of our study is to quantify the most abundant species on *Bob*.

For the purposes of this investigation, the most common and readily identifiable species of fishes were counted and observed for three days. We chose a partially submerged rock off Champagne Beach, part of the Soufriere Scotts Head Marine Reserve on Dominica, as a readily identifiable geographic marker from which to take a transect. This investigation is the initial step in a long term survey of populations in the area.

## **Methods and Materials**

Five researchers outfitted with snorkeling gear and underwater slates performed circuits of rock *Bob* (Fig. 1). *Bob* is the giant, partially submerged boulder three hundred feet south from the beach entrance and fifty feet offshore, at low tide. In order to increase efficiency, each team member was assigned one or more species of fish to survey. Fishes were identified using Humann (1994). To improve accuracy, we took the average counts (means) from three circuits as the daily tally on May 28<sup>th</sup>, 30<sup>th</sup>, and June 2<sup>nd</sup>. Results were then collected and analyzed across the three days.

## Results

The quantitative results are summarized in Tables 1-4. Qualitatively, French Grunts, Parrotfish, and Surgeonfish were abundant in adjacent areas, but not in the surveyed area. There were additional species commonly seen around *Bob*, which we did not survey. Fish that were hard to identify visually were not included in our results due to the inexperience of the divers. Another reason we did not survey specific species of fish was their evasive behavior (i.e., some hid in crevices or left the rock when snorklers were present).

## Discussion

Results showed a remarkable uniformity over all samples. This is interesting considering the variant environmental conditions encountered. The first day was optimal for observation. On the second day, visibility was very poor, affecting the fish's position on *Bob* but not their abundance. On the third day, strong currents forced the fish to abandon the windward side of *Bob* in favor of the leeward side. Also, the abundance of jellyfish challenged the researchers.

To minimize variability, surveys were conducted at the same point in the tidal cycle and at approximately the same time of day. Some of the individual species, such as the Sergeant Majors, displayed timid behavior and avoided snorklers, which affected the ability to count some of the fish. The Redlip Blennies were very sedentary, which made them easy to count repeatedly. Most of the species showed a definite preference for one area of *Bob*, which could be further investigated in the future.

The Brown Chromis and juvenile Bluehead Wrasse were both present in large numbers. The most populous fish on *Bob* was the Brown Chromis, followed by the juvenile Bluehead Wrasses. The abundance of Brown Chromis could be due to their tendency to live in large, loose schools (Humann 124). They also could use *Bob* as a source of protection from strong currents or predators. The Bluehead Wrasse appears to utilize *Bob* as a spawning ground, as suggested by the large juvenile population in relation to the adults. *Bob*'s crevices and coral formations provide adequate protection

and food resources for developing fish, which explains the large numbers of juvenile Bluehead Wrasses.

This investigation successfully examined a representative segment of the fish population as a microcosm within the area. This establishes a base of repeated fish presence for behavioral, density, and population dynamics as part of a long term study of reef fish in the Soufriere Scotts Head Marine Reserve.

### **References**

- Hoffman, J.; Leathers, D.; Martin, C.; Quick, B.; Roberts, M. "A Field Guide to the Reef Fish of Tarou Point." Texas A&M University Study Abroad Program, Dominica. 2001.
- Humann, Paul. Reef Fish Identification Second Edition. New World Publications, Inc; Jacksonville. 1994.

## Tables and Figures

Table 1: Day 1 Fish Counts (May 28, 2003)

Species Name	Day 1a	Day 1b	Day 1c	Average	Standard Deviation
<b>Brown Chromis</b>	555	575	535	555.00	16.33
<b>Bluehead Wrasse (Juv)</b>	135	125	113	124.33	8.99
<b>Redlip Blenny</b>	31	32	34	32.33	1.25
<b>Sgt. Major Damselfish</b>	20	13	19	17.33	3.09
<b>Bicolor Damselfish</b>	10	7	7	8.00	1.41
<b>Yellowtail Damselfish</b>	7	6	7	6.67	0.47
<b>Longspine Squirrelfish</b>	6	8	4	6.00	1.63
<b>Bluehead Wrasse (Adult)</b>	4	6	6	5.33	0.94
<b>Dusky Damselfish</b>	4	5	7	5.33	1.25

Table 2: Day 2 Fish Counts (May 30, 2003)

Species Name	Day 2a	Day 2b	Day 2c	Average	Standard Deviation
<b>Brown Chromis</b>	570	600	585	585.00	12.25
<b>Bluehead Wrasse (Juv)</b>	174	167	173	171.33	3.09
<b>Redlip Blenny</b>	34	34	34	34.00	0.00
<b>Bicolor Damselfish</b>	12	15	10	12.33	2.05
<b>Sgt. Major Damselfish</b>	16	11	10	12.33	2.62
<b>Longspine Squirrelfish</b>	6	10	9	8.33	1.70
<b>Yellowtail Damselfish</b>	7	8	7	7.33	0.47
<b>Dusky Damselfish</b>	6	5	7	6.00	0.82
<b>Bluehead Wrasse (Adult)</b>	6	5	4	5.00	0.82

Table 3: Day 3 Fish Counts (June 2, 2003)

Species Name	Day 3a	Day 3b	Day 3c	Average	Standard Deviation
Brown Chromis	550	555	580	561.67	13.12
Bluehead Wrasse (Juv)	132	133	132	132.33	0.47
Redlip Blenny	34	31	31	32.00	1.41
Sgt. Major Damselfish	19	14	17	16.67	2.05
Bicolor Damselfish	12	10	13	11.67	1.25
Longspine Squirrelfish	13	11	10	11.33	1.25
Yellowtail Damselfish	8	9	7	8.00	0.82
Bluehead Wrasse (Adult)	5	5	6	5.33	0.47
Dusky Damselfish	4	4	6	4.67	0.94

Table 4: Overall Average

Species Name	Day 1	Day 2	Day 3	Average	Standard Deviation
Brown Chromis	555	585	561.67	567.22	12.86
Bluehead Wrasse (Juv)	124.33	171.33	132.33	142.66	20.53
Redlip Blenny	32.33	34	32	32.78	0.88
Sgt. Major Damselfish	17.33	12.33	16.67	15.44	2.22
Bicolor Damselfish	8	12.33	11.67	10.67	1.90
Longspine Squirrelfish	6	8.33	11.33	8.55	2.18
Yellowtail Damselfish	6.67	7.33	8	7.33	0.54
Dusky Damselfish	5.33	6	4.67	5.33	0.54
Bluehead Wrasse (Adult)	5.33	5	5.33	5.22	0.16

Figure 1: Rock *Bob*

