Density of Bearded Fireworms in Dominica

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ABSTRACT

The density of bearded fireworms, *Hermodice carunculata,* was analyzed in three different areas at two different locations on the Caribbean side of Dominica. The areas consisted of three different marine environments. An algae-covered shoreline bottom, a rocky bottom and a pure coral face. The study showed that bearded fireworms preferred the ocean bottom, either algae covered or rocky, over the pure coral faces.

INTRODUCTION

Marine worms are part of the beauty and uniqueness that make coral reefs so interesting. There are many different species of marine worms and they vary greatly in morphology and ecology. This study focused on bearded fireworms, *Hermodice carunculata*, that are in the phylum Annelida, known as the segmented worms (Humann, 1992). Their class, Polychaeta, means many hairs and their family, Amphinomidae, means moving round about (Humann, 1992). Each segment of the worm has a pair of flattened, fleshy lobe like paddles called parapodia, which are used for swimming, burrowing and creating a feeding current (*H. carunculata*, 2006). Also on each segment there are bundles of tiny, white, sharp detachable bristles (Humann, 1992). These bristles are used as a defense mechanism for the bearded fireworms, when disturbed the bristles flare up and can easily penetrate the skin and break off, causing a painful, long-lasting irritation (Humann, 1992). This species is distinguishable by their large, pleated and branched (beard-like)

appendage of flesh on the head, called a cranucle (Humann, 1992). The color of the bearded fireworm varies from shades of red to green to brown (Humann, 1992). The colors observed off the coast of Dominica were light green to white with some brown and one that was a pinkish color. Fireworms are voracious predators that feed on soft and hard corals, anemones, and small crustaceans (*H. carunculata*). The worm will visit several branch tips, remaining 5-10 minutes at each, and causes the end of the branches to turn white (*H. carunculata*). This study was performed to determine the density of the bearded fireworms at two locations, Rodney's Rock and Champagne Bay, and it was predicted that they would be most dense on the coral surfaces. Also the study was to observe the bearded fireworms general behaviors.

MATERIALS AND METHODS

The two locations chosen for this study were Rodney's Rock and Champagne Bay. At each location bearded fireworm density was estimated in multiple environments. Within each of the three environments, random transects were chosen. Each transect was 40 kicks long, with fins, in one direction, which was approximately 30 meters. Using an underwater writing tablet, snorkel and mask, the number of bearded fireworms visible in each transect were counted. At Champagne Bay three environments were chosen: 1) the shoreline bottom, which was rocks covered with algae, 2) a rocky bottom that had sparse coral with some algae, and 3) a coral surface, which was a rock covered with coral. A total of eight transects were run in each one of the environments at Champagne Bay, split between the two days, of May 29th and June 2nd 2006. At Rodney's Rock, two environments were chosen, a rocky bottom that had sparse coral with some algae and two coral surfaces that are on the main structure of Rodney's Rock. A shoreline bottom like

the one found at Champagne Bay was not present at Rodney's so no data was collected for that category at Rodney's Rock. Due to weather conditions only six transects were run in each one of the environments at Rodney's Rock split between May 31st and June 4th 2006.

RESULTS

I observed the worms mainly crawling along the ocean bottom or on the rocks. I saw several on or next to species such as, brown tube sponge (*Agelas conifera*), wide-mesh sea fan (*Gorgonia ventalina*), massive starlet coral *(Siderastrea siderea*) and symmetrical brain coral (*Diploria strigosa*). The bearded fireworms seemed to be fairly spread out from each other, only one time did I see a group within a couple inches of one another. The species at these two locations ranged in size from about 2-10 inches. Also I observed them while fish were feeding around them and they didn't seem threatened by them. At Champagne Bay, bearded fireworms averaged 3.88 worms per transect in shoreline, 2.00 in coral and 2.75 in rocky floor (Figure 1). Densities were lower at Rodney's Rock, 1.00 worm's per transect in coral and 2.00 worms per transect in rocky floor (Figure 1).

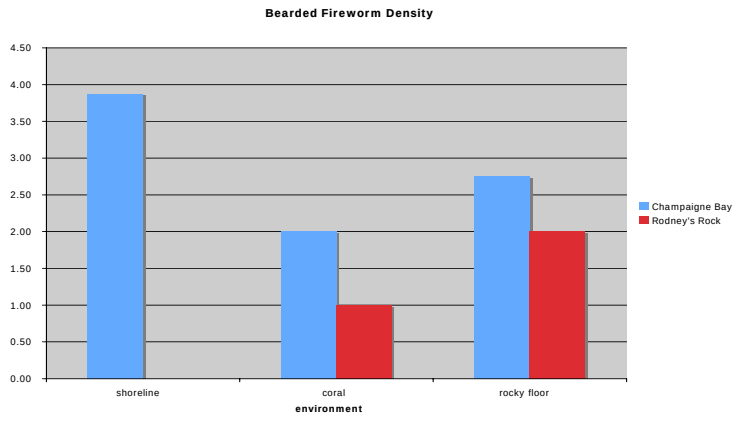

Figure 1. Density of bearded fireworm in transects in three environments at two locations.

DISCUSSION

The study shows that the bearded fireworms are denser in areas like the shoreline bottom and the rocky bottom, not on the coral surfaces. The results also show that the bearded fireworms are more prevalent at Champagne Bay than at Rodney's Rock. This could be because there is no shoreline type environment at Rodney's Rock, which is where they predominantly occur according to the data. The data is inconsistent with my initial hypothesis that the bearded fireworms would prefer the pure coral faces. This could be because of their lack of mobility; it is hard for them to stay on the rock faces covered in coral since they are at steep angles in the water. In the future, someone may want to try and count the total number of bearded fireworms in a total area and then find the densest environment. This experiment was very interesting to me and I learned a lot about an organism I never knew about.

ACKNOWLEDGEMENTS

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REFERENCES

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