The Effects of the Burrowing Anemone, Cerianthopsis americanus, on Invertebrate Diversity and Abundance at Leo-15, Station 30
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Introduction

The Order Ceriantharia, contains exclusively tube-dwelling, infaunal anemones. Their tubes are composed of a type of cnida, mucus, and sediment, and can extend more than 30cm into the sediment. The felt-like material can provide structure and habitat in an otherwise sandy bottom, as well as create a collection area for detritus. The tubes themselves may house a great number of bacteria, which may be a food source for other animals. There are documented examples of other invertebrates living commensally within the anemones tubes (Phoronids). It is known that C. americanus prey on settling larvae and copepods, but what else do they affect? If the tubes of Cerianthids enhance bottom habitats, thereby increasing diversity and abundance of invertebrates, it could mean that they indirectly affect survival of large animals, like economically important fishes, that prey on species that could potentially benefit from C. americanus tubes and the habitat they create.

Methods

Core samples were obtained by two divers on SCUBA at approximately 60 ft depth. Following a real tape measure, they searched the bottom for an area appropriate for collection. A 25 cm x 25 cm plot was placed over the tube to count epifauna around the tube (data not used). A 60cm sediment syringe was taken at base of the tube, and then the core was taken with the anemone in the middle. The depth core was approximately 12 cm into the sand. No anemones were actually collected as their tubes extended deeper into the sand. A comparison core was taken at least 30 cm away from the tube core on bare sand. A sediment syringe was also taken alongside the sand core. The samples were preserved with a 10% formalin and Rose Bengal solution (Rose Bengal stains all protein pink, which makes the animals easier to see when sorting). After sitting for at least five hrs, the samples were washed with water and the liquid was replaced with a 95% ethanol solution. Samples were then sorted under a dissecting microscope and identified down to the most specific level possible. The tubes were measured, sectioned and cut in half to ensure that any interstitial animals were not overlooked. After identifying and counting, Mann-Whitney U tests were used to establish significant differences. The abundance of C. americanus was determined by counting the number of tubes per square meter. The dried sample was set aside to be superheated at 500° C to calculate percent organic material lost during heating.

Results & Discussion

The statistics tests indicate that while invertebrate taxa richness is enhanced by the presence of the anemone tubes, abundance shows no difference when the tubes are present. The P-values for the Mann-Whitney U tests showed that the average for tubes are higher; it could be that the small sample size has produced large standard deviations in the abundance test, and that it would otherwise come back as significant if these relationships were examined more extensively (i.e. more samples). When looking at the production of the area the new habitat could be better compared to areas around, as different types of animals can prey on the animals there.

Cerianthopsis americanus

References Available Upon Request

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