

## **The effects of macrobiota exclusion on the composition of fouling communities in Castine Harbor, Maine**

Although there are several hypotheses, the mechanisms behind creating and maintaining species diversity are still not well understood. In this study, the effects of macrobiota exclusion on the composition and diversity of fouling communities is assessed by measuring percent coverage of certain phyla on fouling collection panels as well as the species diversity of each collection panel. Fifty Fouling collection panels (10cm by 10cm) were deployed on the Marcellino Fouling Collection Apparatus 2013 (MFCA 13) for an initial time period of sixteen weeks in Castine Harbor, Maine during the summer of 2013. After an initial assessment of percent coverage based off of phyla and species diversity, the panels were further placed into two treatment groups: partial macrobiota exclusion, and full macrobiota exclusion, twenty-five collection panels in each. The panels were redeployed on the MFCA 13 for another four weeks in the treatment groups and then were pulled out for the final assessment of percent coverage based off of phyla and species diversity. There was a significant difference in percent coverage of all phyla identified except for the phaeophyta between the initial treatment group and both the partially excluded and fully excluded treatment groups. There was also a significant difference in community diversity between all three treatment groups. The most interesting relationship shown by the results is that when arthropod abundance decreased, the algal diversity increased as well as the abundance of the total algae in the community. These results were found within the partially excluded treatment group, which means that something occurred that caused these changes. Species diversity was also highest in this treatment group. These results were not seen within the fully excluded treatment group, which would indicate that the presence of macrobiota could be the cause behind these changes. These results would support the predation hypothesis and intermediate disturbance hypothesis, and help us further understand the driving mechanisms behind species diversity. Further experimentation can be conducted to determine which species has the most influence on the community's species diversity, as this experiment can only conclude that there was a difference in species diversity between the three treatment groups.

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