

Effects of temperature increase on the production of byssal threads in the blue mussel, *Mytilus edulis*

It is now well known that climate change is causing many changes to the world's oceans and their natural functions. Species who habituate the rocky intertidal shores of Maine are often accustomed to variable environments. However, they are not accustomed to the changes that are quickly occurring due to climate change. In this study the relationship between temperature increases and byssal thread growth in the blue mussel *Mytilus edulis* were examined. It was hypothesized that under the threat of increased temperature byssal growth would decrease in terms of amount, length, and tensile strength. These variables were tested in a wet lab setting in which the warmed treatment mussels were subjected to water temperatures of 20° Celsius, and ambient treatment mussels were housed in water that was pulled directly from Castine Harbor in Maine. After acclimation byssal threads were counted, measured, and tested for tensile strength six times. The data were analyzed in SPSS, yielding results that did not support the hypothesis. Although there was a significant difference in the temperature between the two treatments, there was no significant relationship in treatment and byssal number or length. These findings suggest that climate change has no impact on the ability for *Mytilus edulis* to attach to their substrate.

Advisor: Ann Cleveland