How Temperature Affects Growth of Pacific Blue Mussels (Mytilus trossulus)

Seid, Aidan

Undurraga, Ben

To determine how temperature affects the growth of Pacific blue mussels (Mytilus trossulus), we grew eighty mussels for two months at four different temperatures. After growing the mussels, we extracted their adductor muscles for sampling. Finally, we performed RNA/DNA analysis on our samples. We failed to reject the null hypothesis that the growing temperature would not affect mussel growth. The mussels that grew the most were at 12° C, then 16° C, then 8° C, and the least at 4° C. The growth in mass (g) per day at 12° C was 0.0471%, 16° C was 0.0307 %, 8° C was 0.0286 %, and 4° C was 0.0207 %. Despite this pattern, we are not confident that we have detected an effect of growing temperature on mussel growth ($p=0.331$). The results for the RNA/DNA analysis showed that the RNA/DNA ratio in mussels decreased as the temperature increased. For 40C, the fluorescence ratio was 4.14, for 8° C it was 3.80, for 12° C it was 3.45, and for 16° C, it was 2.94 ($r2>0.95$). We conclude that there is less RNA in mussels when they are grown at higher temperatures, but we are not confident in our growth data so we cannot compare it with our RNA/DNA data. Mussels are used to monitor pollution levels on beaches so it is important to understand their physiology. If people want to use growth as an indicator of stress then our data show they need to account for temperature.

Awards Won: