

The Effects of Substrate on the Growth and Survival of *Mactromeris polynyma*

Downeast Institute of Applied Marine Research and Education

Our OBSERVATION

While at DEI, we discovered that *Mactromeris polynyma*, the Arctic Surf Clam, grows in the hatchery to a certain size and then the survival rate starts to decrease. Cody Jourdet talked about this problem with us. Why is this happening? He wondered if the clam is using too much energy to keep its shells closed while in the hatchery tanks of seawater. We wondered if the survival rate and growth might change if we put *Mactromeris polynyma* in different substrates.

Our RESEARCH QUESTION

HOW DOES THE TYPE OF SUBSTRATE (bottom) AFFECT THE GROWTH/SURVIVAL OF 10 ARCTIC SURF CLAMS (*Mactromeris polynyma*) IN A CONTROLLED ENVIRONMENT OF UNIFORM TANK SIZE, OVER A FIXED TIME PERIOD?

If all other conditions remain the same, such as water, food, and temperature, what effect(s) if any, do different substrates have on the Arctic surf clam's growth and survival?

Our HYPOTHESES

If Arctic surf clams (*Mactromeris polynyma*) are placed in an environment, protected from predators, and all other variables remain the same, the growth rate and survival rate of the clams will be a) the same rate, a faster rate, or a lower rate than the clams in the control group, in a substrate of b) construction sand (control), driveway gravel, beach gravel; or red rock gravel. The control is the sand currently used by DEI



Our PROCEDURE

We started this project in mid-March, 2016: We used five substrates: packaged construction sand (control); fine sand from the shore at DEI; driveway gravel from DEI; beach gravel from the shore at DEI; red rock gravel from the shore at DEI.



We decided what type of substrate would be in our own tank. For each substrate, we set up at least 4 tanks containing 10 clams. We called the construction sand used at DEI our “Control Group”. We had a total of 38 tanks of clams.

We recorded the mass of the 10 clams in our tank and then placed them into the substrate. We fed the clams every other day as they sat in the big tank and cleaned the tanks each week.

Our DATA

At the end of May 2016, we recorded the mass of each tank of clams and counted each surviving clam. We have tabulated data, which we started to look at in June. We will review our data in the fall to make some **CONCLUSIONS**, and to decide what our **NEXT STEPS** will be.

