

Marine Farming Association - February Monthly Update - for Industry Advisory Group

In February we performed our first check on the deployed mussels. During this 1-month post-deployment check we looked at mussel survival and the bed dynamics. To estimate survival at each site we used a quadrat method adapted from Wilcox and Jeffs (2017) where divers randomly placed a .25 m x .25 m quadrat 3 times into a treatment plot, avoiding .5 m from any edge, and counted how many mussels were alive or dead. We can then use this information to estimate densities within the entire plot and based on this design we have seen very high survival across all treatment plots!



Figure 1: Top: Close-up image of a treatment plot at our Skiddaw location. Bottom: Treatment plot T1 at our Grant Bay Site, this is the same plot that has been modeled below in Figure 2.

In order to understand how the mussel plots change over time, we looked at the bed dynamics. We were able to map our sites in two ways, first by using photo quadrats where a diver took still images of both the treatment plots and the controls at each site, and second by using a Boxfish ROV (Remotely operated underwater vehicle) to take videos of the treatment plots. Using the still images, with our original orange 3 m² PVC pipe quadrat placed down, we can look at the spread of the mussels since the deployment (See Figure 2B), which we also recorded via scuba as a comparison. Additionally, by using the video recording from the Boxfish we can create 3D models of the plots (See Figure 2A & 2C). I am working to compare the two methods and use them to primarily understand how the mussel beds change over time, but also with more training, to possibly use the 3D model to determine mussel densities, survival, and predation.

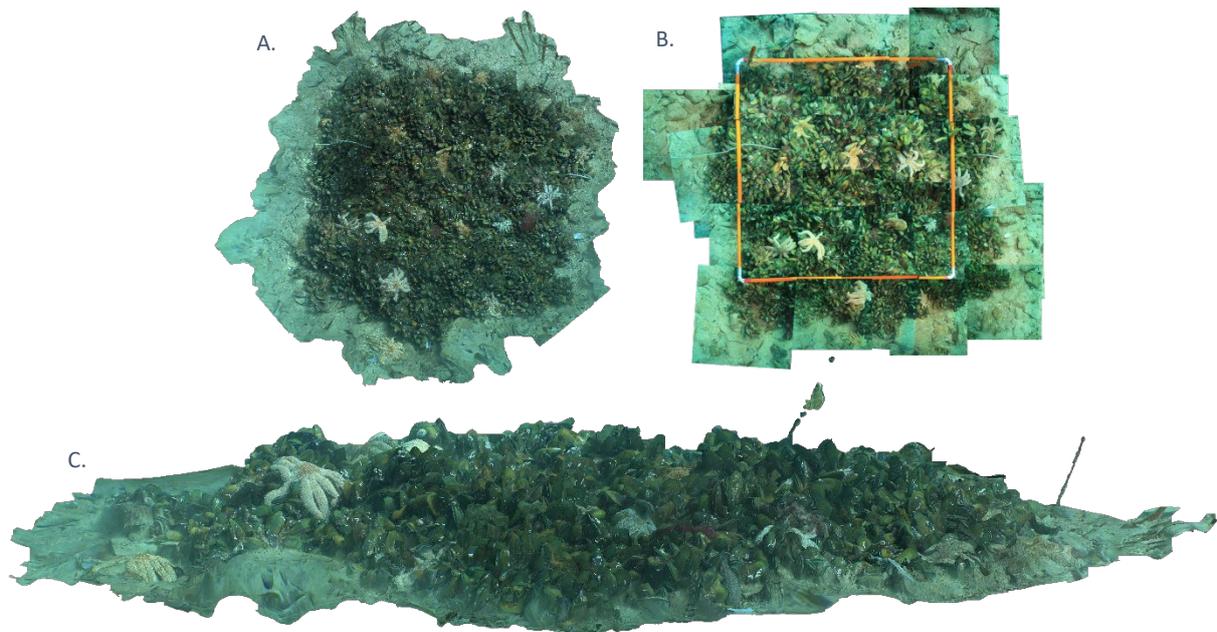
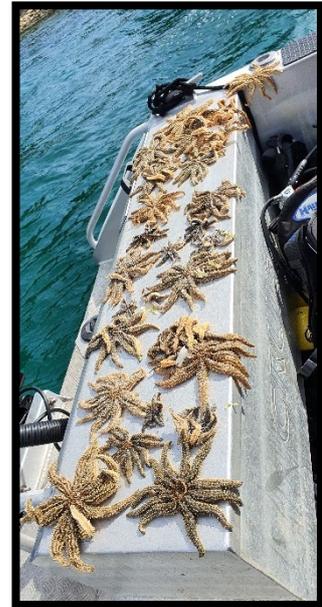


Figure 2: All images are of treatment Plot T1 at our Grant Bay Site (A,B,C). Images taken at different angles of a 3D model that has been created from the Boxfish video recordings (A,C). A composition of individual photos that were taken by Scuba Divers (B).

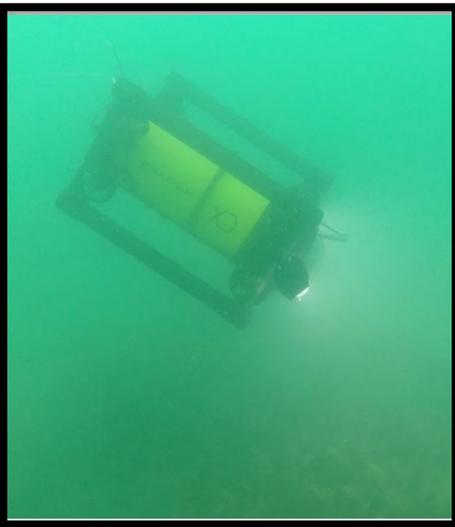
Photos from February 2020



Photo taken with the Boxfish of Sean and Emilee counting and measuring the mussels in one of the treatment plots at our Skiddaw site.



11- Arm starfish collected at our Grant Bay Site. This site had the most starfish collected.



The Boxfish in action recording one of the treatment plots at our Skiddaw site.



Sean taking photos of a control plot at our Skiddaw site.



Sean experiencing heavy splashing while Emilee dries off after the survival check was completed. 😊



Lou Olsen flying the Boxfish to take underwater videos of each site.