To Tree or Not to Tree: Tracking Survival and Growth of Pocillopora acuta Spat on Coral Restoration Trees vs. Direct Reef Placement

Quinn, Mariko (School: James B. Castle High School)

Coral trees are tall PVC structures used to outplant small coral fragments. Coral fragments are suspended from the branch of the structure to prevent sediment from smothering fragments and reduce competition from algae. This gives them the opportunity to grow to larger sizes before they are put back out on the reef to aid in restoration efforts. This technique has not been tested with sexually reproduced specimens, however. Coral spat and larvae have a high mortality rate, and keeping them in tanks is cost- and labor-intensive. As such, methods need to be developed that protect coral polyps as they grow to larger sizes. It was hypothesized that coral spat on coral trees will be more successful than those directly on the reef, as they are suspended in the water column, protected from many dangers. P.acuta larvae were settled on tiles which were placed onto a coral tree and on trays on the reef flat. Tiles were left in the field for 6 months and growth and mortality were measured for both experimental conditions for assessment. The survival rate of corals on the reef was 9% which is significantly higher than the 3% of corals on the coral trees ($p<0.0001$). A low survival rate is to be expected with any restoration experiment. The average percent growth of corals on the trees was slightly higher than that of tiles on the reef. Therefore, the hypothesis was partially supported as the trees were only more successful in growth, not survival.