October 1, 2014

***Diadema antillarum* restoration**

Stacey M. Williams

Report 1

The main objective of this project is to restore populations of *Diadema antillarum* to reefs around Puerto Rico, in hopes to decrease algal abundance on a coral reef and increase settlement and survivorship of corals and other reef organisms. Ten mooring lines were placed at a shelf edge site, Old Buoy in La Parguera (Fig. 1) in the beginning of June 2014.

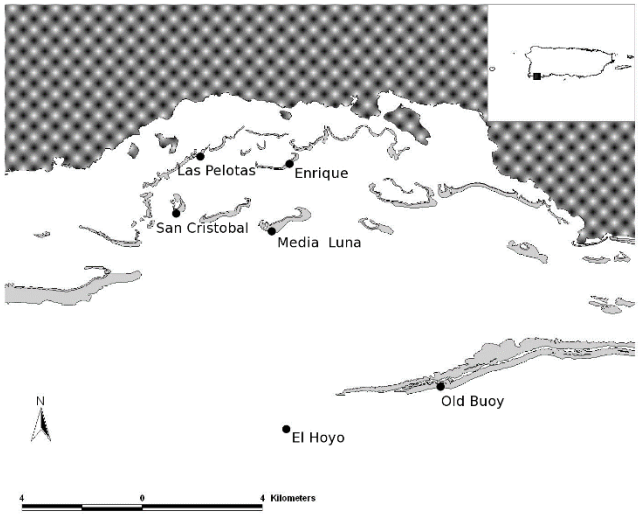
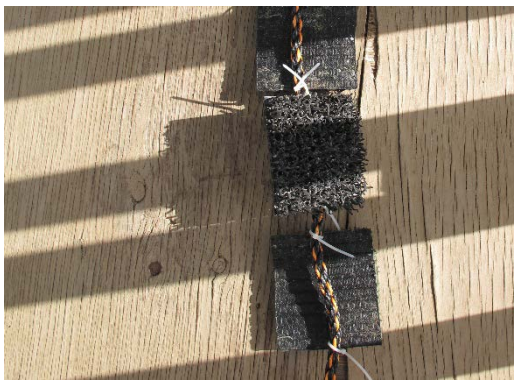


Fig. 1 Map of settlement site, Old Buoy in La Parguera, Puerto Rico.

Shelf edge sites, such as Old Buoy and El Hoyo are known "hot spots" of *Diadema* settlement (Williams et al. 2010, 2011). Astroturf or artificial turf was used for the settlement plates (Fig. 2). Twenty plates were attached on a 10-ft line (Fig. 2), and this line was attached to each



mooring line, giving a total of 200 plates at Old Buoy site.

Fig. 2 Astroturf or artificial turf used as settlement plates

The line with the plates were collected at the beginning of each month, from July 2014 to September 2014. Each line with the settlement plates were placed in a 20-l dry bag and were brought back to the laboratory at the Department of Marine Science, UPRM in order to analyze the plates. Plates were collected and analyzed on September 3, 2014. A total of 385 settlers were recorded in the laboratory. Settlers have a reddish body with banded spines (Fig. 3), with size ranging from 0.4 to 1 mm. Settlers were placed in a 10-gallon aquarium. The aquarium system was closed with a filter in order to limit amount of sediment and other organisms entering the aquarium. Aquariums were cleaned and one third of the water was changed ever three days. Every three days brown (*Padina* and *Stypopodium*) and red (*Gracilaria*) algae (food for *Diadema*) were collected and cleaned with fresh water to eliminated small microrganisms such as crabs, polychaetes, and shrimp and were placed in the aquariums. *Diadema* settlers will be transferred to wet tables when they reach a size of 5 mm. We are hoping to transfer most of the settlers by the end of October-November 2014. During May 2015, we will start transferring *Diadema* juveniles to designated reefs. Juveniles will be 3-4 cm in size.

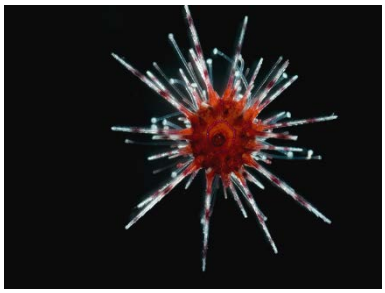


Fig. 3 *Diadema antillarum* settler

Diadema settlers ranging in size from 0.5 cm to 1 cm

Wet table setup at the Department of Marine Science, UPRM