

Anna Bigney

Lane Lab, University of Rhode Island

June-August 2014

Visit Narrative

For my EDEN undergraduate summer internship I worked in Dr. Lane's lab at the University of Rhode Island, in conjunction with Dr. Schneider's lab at Trinity College and the Institut de Systematique, Evolution, Biodiversite at the Museum National d'Histoire Naturelle in Paris, France. I worked to classify and describe different species in the genus *Lobophora* in the Caribbean.

Lobophora is a genus of Brown Algae that is represented by twelve species worldwide. Species-level taxonomic studies were initially conducted in the Pacific. However, *Lobophora* is especially common in the Western Atlantic, in particular around Bermuda. A significant portion of the algal biodiversity around Bermuda has been historically misnamed using European heterospecifics (Schutz et al, 2014). The research I helped to complete will help correctly identify *Lobophora* species in the Western Atlantic.

Lobophora variegata is the only species of *Lobophora* previously identified in the Caribbean. Since the original description of *L. variegata* was very broad, multiple phenotypes have come to represent it. The work being done at Trinity College seeks to classify the genus based on its morphological characteristics.

I worked on gathering the molecular data for the project. I extracted the DNA from the algal samples, ran PCR, purified the DNA, prepared the samples for Sanger Sequencing, aligned the sequence data, and identified it using BLAST and BOLD. A neighbor-join clustering analysis of COI-5P and Cox3 sequences for each sample revealed five species of the genus in the Western Atlantic. The discovery of the new species allowed *L. variegata* to be defined by distinct morphological and molecular characteristics.

Overall, this project was very successful. Most of the samples worked well on the first try. I was able to see clear differentiations between the sequences as they ran through BLAST. Distinct groups of the sequences would have the same percent

identification match with *L. variegata*. Additionally, a few of the samples had already been started when I arrived and I was able to seamlessly continue with the previous person's work.

However, this project had a few problems. The samples were stored in several different locations in three states making it hard for me to find a specific sample. If I was to do this project again, I would make sure that all of the samples and their back-ups were stored in the same location. Additionally, some of the DNA was from 2010 and was so degraded that it was difficult to get any results from. Next time, I would ensure that the samples were used while they were new so that the samples didn't have time to degrade. I would make sure every sample had a back-up, so that the samples that didn't work could be repeated with fresh material.

Literature Cited

Schultz et al (2014). *A Morphological and Molecular Study of the Genus Lobophora (Dictyotales, Phaeophyceae) in the Western Atlantic Ocean, Including a Clarification of L. variegata*. Unpublished Manuscript