

## 2007 Ohio Student Research Forum

Wright State University  
Dayton, OH

## RESEARCH ABSTRACT FORM

**TITLE:** Chlorophyll Concentration from Bleached and Healthy Hawaiian Corals**AUTHOR:** Frances N. Lugo**MENTOR(S):** Dr. Andrea Grottoli**DEPARTMENT(s):** Earth Science**INSTITUTION:** Ohio State University (Universidad del Este)

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The bleaching phenomenon in corals is attributed to the loss of endosymbiotic algae (commonly called zooxanthellae) caused by elevated seawater temperature stress. Chlorophyll *a* is the pigment within the zooxanthellae where photosynthesis takes place. The vast majority of photosynthetically fixed carbon is translocated to the coral animal host, providing the host with up to 100% of its daily metabolic energy. When bleached, decreases in Chl *a* result in decreases in photosynthesis, and dramatic shifts in the coral energy balance. The purpose of this study was to measure the chlorophyll *a* and *c<sub>2</sub>* concentrations in bleached and non-bleached corals after 0, 4 weeks and 4 months of recovery. Two species of Hawaiian corals, *Porites compressa* and *Montipora capitata*, were sampled in 2006 and early 2007. Chlorophyll *a* was extracted by grinding whole coral samples in 100% acetone and reading the absorbance at 630 and 663 nm. *P. compressa* had very low concentration of chlorophyll when bleached. Chl *a* levels began to increase after 4 weeks of recovery, and had fully recovered after 4 months of recovery. This recovery rate is much faster than that observed in a similar study in 2003 (Rodrigues & Grottoli 2007). Differences in the time of recovery may be because seawater conditions were more favorable for recovery in 2007, or because the bleaching stress was not as intense in the 2006-2007 study. Measurements for the *M. capitata* samples are still in progress.