Climate change responses of the stony coral *Tubastrea* sp. and their bacterial symbionts

Climate change and ocean acidification are causing more corals to experience bleaching events and infection by pathogens. Even coral associated microbial populations change drastically when environmental conditions are altered. In this study we compared two azooxanthellate scleractinian coral, *Tubastrea coccinea* and *Tubastrea faulkneri* to heat stress and elevated pH conditions. Both of these species are endemic to the Indo-Pacific, however, *T. coccinea* is an invasive species to the Gulf of Mexico and potentially more resilient than its non-invasive congener. In this study, coral were incubated at a control temperature of 31°C and a control pH of 8.1 ± 0.05, and an elevated experimental 34°C temperature coupled with a pH of ± 0.05. Tissue loss and changes in bacterial mucosal communities were collected every 4 hrs. At 34°C, results significantly showed both species lost more tissue than at the control temperature (p<0.0001). However, *T. faulkneri* was more sensitive to pH at 31°C while *T. coccinea* was not significantly affected, suggesting the latter may be better adapted toward environmental invasions. Coral bacterial communities and densities varied considerably between coral types but no clear differences between temperature and pH could be inferred. This preliminary work provides a first step in revealing how adaptive invasive *Tubastrea* sp. may be and whom will survive decades of future global warming and increased ocean acidity.

Biography
Kevin B Strychar is an Associate Professor at the Anis Water Resources Institute – Grand Valley State University located in Muskegon, Michigan, USA. He has conducted research on coral reefs and marine ecosystems for ~13 years in the Caribbean and Great Barrier Reef, Australia. He has 34 publications and 83 conference presentations and serves as an adjunct professor at Michigan State University. He has also served as an Asst. Professor at Texas A&M University; Killam Postdoctoral Fellow, Dalhousie University (Canada); and Postdoctoral Fellow at the University of Connecticut. He is an Assoc. Editor for International Journal of Biology, the journal Water, and the International Journal of Water and Wastewater Treatment. His PhD is in Biology, with an emphasis in Marine Conservation.

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