Feb 7th, 10:15 AM - 11:15 AM

Undergraduate Research in Biology II: Aquatic Ecology

David Gauthier
Old Dominion University

10:15-11:15 AM (Room, 1310)
Undergraduate Research In Biology II - Aquatic Ecology
Chair: Dr. David Gauthier
Department of Biological Services

Similar Bleaching Tolerance of *Acropora aspera* and *A. Formosa* In Pools with High and Low Temperature Variability
By **David Jones** (Mentor: Dr. Dan Barshis)

Elevated temperatures can cause corals to expel their symbiotic algae, *Symbiodinium* sp., leaving behind colorless, "bleached" coral skeleton. Here, we compared *Acropora aspera* and *A. formosa* coral samples from two natural pools in America Samoa with high and low daily temperature variability to determine if previous exposure to broad temperature ranges affected coral bleaching tolerance. Samples from each pool were exposed to elevated temperatures in lab tanks and analyzed for *Symbiodinium* density. Surprisingly, no large differences were seen between corals from the different habitats, suggesting these species and populations may have a similar tolerance to bleaching.

The Effect of Sponge Restoration on Fish and Invertebrate Communities in the Florida Keys
By **Jessica Vincent**, **Mark J. Butler IV** (Mentor: Dr. Mark Butler)

Algal blooms have decimated hard-bottom sponge communities in the Florida Keys, FL. Among other impacts, this loss of sponges has critically affected the organisms that depend on them for nursery habitat and shelter. Experimental restoration of sponge communities is underway, but its effectiveness in reestablishing fish and macroinvertebrate abundance and biodiversity is unknown. To determine this, we used diver surveys and time-lapse videography to catalogue the abundance and diversity of macrofauna attracted to the restoration sites. Preliminary analysis of those data indicates that biodiversity is increased in restored areas, a trend suggesting that sponge restoration also benefits ecosystem function.

Salinity and temperature in relation to spatial and temporal distribution of dinoflagellates in Virginia estuaries
By **Michael Echevarria**, **Danielle Power, Charlotte Hauenstein** (Mentor: Dr. Todd Egerton)

Dinoflagellate blooms, including toxic species, occur throughout the year in tidal tributaries of Virginia. Presented here is a summary of dinoflagellate composition and environmental parameters over a five-year period (2010-2014). Nine dinoflagellate species were identified as producing annually reoccurring blooms in Virginia estuaries. *Heterocapsa rotundata, H. triquetra*, *Prorocentrum minimum* and *Karlodinium veneficum* had peak abundances during winter and spring months, with summer/fall blooms of *Gymnodinium* spp., *Scrippsiella trochoidea*, *Akashiwo sanguinea*, *Cochlodinium polykrikoides* and *Alexandrium monilatum*. While dinoflagellates did co-occur, blooms were largely separated temporally and/or spatially. Results support optimal temperature and salinity ranges as probable factors shaping seasonal succession patterns.

Effects of Risk Factors on Mycobacterial Infections in Striped Bass (*Morone saxatilis*)
By **Elizabeth Smith** (Mentor: Dr. David Gauthier)

Striped bass (*Morone saxatilis*) are a popular recreational sportfish. Ulcerous skin lesions and granulomas have been observed in wild-caught striped bass in the Chesapeake Bay caused by bacteria in the genus *Mycobacterium*. *Mycobacterium pseudoshottsii* and *Mycobacterium shottsii* seem to be major agents associated with this disease as well as *Mycobacterium marinum* and *Mycobacterium triplex*-like bacteria. The first evidence of mycobacteriosis associated mortality in striped bass was provided by a study that confirmed very high infection prevalence (greater than 50%) in some age groups in the Chesapeake Bay; however, the prevalence data was based on the presence of granulomas in the spleen. Because it is known that mycobacterial infections may not produce clinical signs, the current study uses Taqman qPCR to determine bacterial presence. Logistic regression was utilized to examine relationships between bacterial prevalence and risk factors, including age, year, season, and sex. *M. shottsii* was shown to have a positive association with age, and a negative association with year, while *M. pseudoshottsii* prevalence failed to have an association with the risk factors. Because striped bass are anadromous, older fish have migrated outside the Bay and along the East coast. The higher prevalence of *M. shottsii* occurring in older fish may reveal that striped bass contract *M. shottsii* outside the Bay. Fish-infecting mycobacteria are thought to be facultative pathogens, but because *M. shottsii* is shown to be primarily prevalent in older fish, this study provides further support that *M. shottsii* may be an obligate pathogen.