THE CHALLENGE OF THE MESOPHOTIC CORAL REEF SPONGES FROM CUBA: A STRATEGY FOR THE STUDY OF AN UNEXPLORED MULTISPECIFIC SPONGE AGGREGATION (2017-2018)

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In the Caribbean, sponges have been mostly studied at shallow coral reefs and mangroves. A handful of studies of mesophotic Caribbean reef formations (30-150 m) have revealed that these depths harbor unique sponge fauna. In 2017, a Cuba-U.S. expedition was conducted to characterize Cuban mesophotic reefs. During 42 ROV dives, 296 morphospecies of sponges were visually distinguished. Only 115 morphospecies were assigned a species name (39%), which leaves most sponges visually distinguished with an unknown identity (61%). We have proposed a strategy to handle this large diversity of sponge species: 1) visual characterization (photo album), 2) taxonomic evaluation (with potential new records and species, synonyms, or varieties of morphology), and 3) genetic evaluation to discern phylogenetic relationships, discover novel clades, and/or corroborate identifications. In the first stage, 205 morphospecies have been visually distinguished and validated after the photo album was developed. One interesting result of the second stage is that instead of a homogenization of morphological variants of the same species, we have discovered that multiple samples of one “morphospecies” might represent different species new to science (e.g., specimens of *Callyspongia* which represent two different undescribed species). The third step will be genetic barcoding of the samples/species collected and comparison with a subgroup of samples from Pulley Ridge, Florida, currently being studied, which will aid in the development of novel relationships and understanding of the evolutionary relationships and diversity within the sponges in this geographic region. Sponges were found to constitute one the most diverse and abundant macro-faunal components in the Cuban mesophotic reef ecosystem.