BIODIVERSITY AND CONNECTIVITY OF SPONGES FROM CUBA AND SOUTHWEST FLORIDA MESOPHOTIC CORAL ECOSYSTEMS

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Sponges are dominant, but poorly understood, components of mesophotic coral ecosystems (MCEs). There are 241 sponge species reported from MCEs of the greater Caribbean, however, preliminary results from the exploration of MCEs at 35 localities around Cuba showed 296 sponge taxa, indicating a gross underestimate of Porifera biodiversity. A recent review summarizing a decade of exploration of the Pulley Ridge MCE off the southwest Florida Shelf in the Gulf of Mexico revealed a similarly high diversity of sponges. Compared with analyses of photographic surveys, taxonomic evaluation of nearly 150 sponge samples resulted in identification of 102 species, increasing estimates of species richness at that location by at least 10%. This suggests that many sponge species in MCEs are little known or new to science. A central discussion about MCEs is their importance as refuges for shallow coral reef flora and fauna. Our current knowledge of coral reef sponges indicates that nearly half of MCE sponge species extend to shallow coral reefs in the tropical western Atlantic and Caribbean, suggesting an important connectivity between these two ecosystems. Current geographic, habitat, and sampling biases prevent a full understanding of MCE sponge biodiversity, ecological roles, and geographic connectivity. This work is part of an ongoing effort to discover and document sponge biodiversity and connectivity on MCEs and associated deep-water habitats in the Gulf of Mexico and the Caribbean.