

Population Demographics of *Xestospongia muta* on Ten Florida Keys Reefs from 2014 to 2024

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Giant barrel sponges, *Xestospongia muta*, are important components of Florida's Coral Reef (FCR), and provide essential functions like increased rugosity, habitat for other reef organisms, and water filtration. The Coral Reef Evaluation and Monitoring Project (CREMP) has assessed the trends and conditions of benthic reef organisms at 40 sites throughout the Florida Keys since 1996. Since 2014, *Xestospongia muta* surveys have been conducted at a subset of 10 deep forereef sites: Molasses, Conch, Alligator, Tennessee, Sombrero, Looe Key, Eastern Sambo, Western Sambo, Rock Key, and Sand Key. Demographic data collected within the two ~66m² survey transects at each site include size measurements and health condition metrics (e.g., the presence of disease, tissue loss, damage, predation, and other conditions) on each colony. This presentation will summarize 11 years of demographic data and enumerate changes in population size, including colony survival, growth, and recruitment between 2014 to 2024. During this timeframe, multiple disturbances have impacted FCR including the 2014/2015 thermal stress, Hurricane Irma in 2017, Hurricane Ian in 2022, and the 2023 marine heatwave. Like corals and octocorals, *X. muta* is vulnerable to many of these stressors but the *X. muta* community has demonstrated greater resiliency than their marine counterparts with the overall population surveyed within the CREMP transects being largely unchanged over the last decade.