

The Southeast Florida Coral Reef Evaluation and Monitoring Project (SECREMP) provides local, state, and federal resource managers with an annual coral reef status report for the Kristin Jacobs Coral Aquatic Preserve (KJCAP).

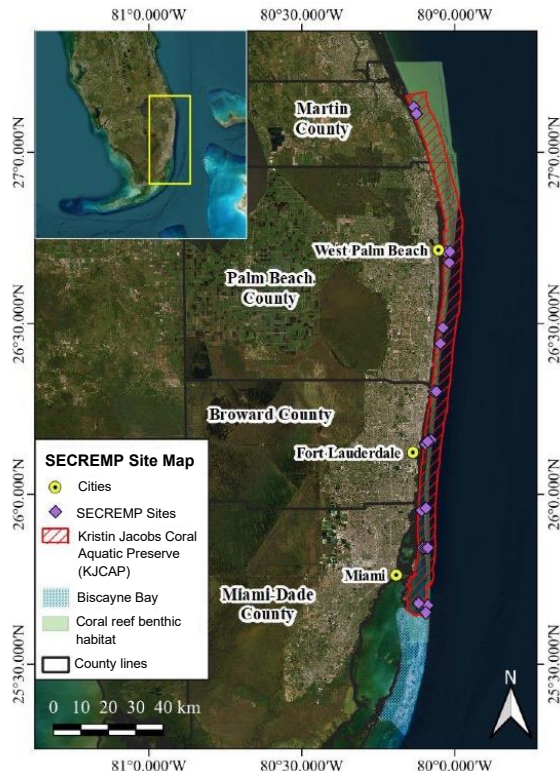


Figure 1. Map of the 22 SECREMP sites.

SECREMP was established in 2003 as an expansion of the Florida Fish and Wildlife Conservation Commission (FWC)-managed Coral Reef Evaluation and Monitoring Project (CREMP) in the Florida Keys. SECREMP provides local, state, and federal resource managers with annual reports on the status and condition within the KJCAP coral reef system (which spans Miami-Dade, Broward, Palm Beach, and Martin counties), as well as information on temporal changes in resource condition. Survey methods of the 22 sites (Figure 1) include photographic transects to quantify percent cover of major benthic taxa (stony corals, sponges, octocorals, macroalgae, etc.) and demographic surveys to quantify abundance, size distribution, and overall health condition of stony corals, octocorals, and giant barrel sponges. SECREMP is a partnership between DEP, FWC, and NSU that facilitates collaboration and knowledge sharing, benefiting coral reef ecosystems nationwide.

The KJCAP experienced significant stony coral assemblage declines between 2015 and 2018, largely as a result of a stony coral tissue loss disease (SCTLD) epidemic that occurred from 2014 to 2018 in the region. Significant decreases in coral percent cover, live tissue area (LTA), and density were observed during this time, especially among species considered highly and intermediately susceptible to SCTLD. Although SCTLD still currently occurs within the KJCAP, the regional disease prevalence has remained below 1% since 2018 and no further major losses in the aforementioned coral metrics have been detected.

Changes in coral colony size distribution have also been observed within the region over the last decade. In 2013, prior to the onset of SCTLD, the KJCAP maintained a broad distribution of colony sizes composed of many small (4-10 cm in diameter) colonies living alongside a meaningful proportion of medium- and large-sized colonies, especially massive coral species such as *Orbicella faveolata*, *Montastraea cavernosa*, and the brain corals *Colpophyllia natans* and *Pseudodiploria strigosa* and *P. clivosa*. Adult colonies of generalist species, including the common species *Siderastrea siderea* and *Porites astreoides*, ranged in diameter from 4 cm to 65 cm, with median and average diameters of 9 and 10 cm, respectively. Susceptible species, which include

those species considered highly SCTLD-susceptible plus the major reef-builders *Montastraea cavernosa* and *Orbicella* spp., were markedly larger, ranging in diameter from 4 to 160 cm and having median and average diameters of 20 and 26 cm, respectively (Figure 2). The SCTLD outbreak altered these size distributions through both size- and species-selective mortality: highly SCTLD-susceptible and large- and medium-sized colonies (>40 cm) were more likely to be affected and thus experienced the greatest losses.

Following the end of the epidemic stage in southeast Florida in 2018, colony size structure has not recovered to a pre-SCTLD state. As of 2025, the distribution of generalist species remained relatively unchanged compared to 2013, albeit with slight declines in median and average colony diameters (7 and 8 cm, respectively). This is largely due to recent recruitment booms, resulting in a higher abundance of small colonies. Susceptible species, in contrast, have exhibited an approximately 50% decrease in median and average colony diameters, which are down to 7 and 14 cm, respectively (Figure 2). Together, the loss of many large colonies from disease and the recent influx of new recruits, especially of *Montastraea cavernosa*, have driven declines in average colony diameter for this group.

Reefs within the KJCAP are now characterized by smaller colony sizes and a higher abundance of generalist species, which only minimally contribute to reef structural complexity and rarely attain large sizes even under optimal conditions. This shift in coral assemblage composition will likely have lasting impacts, both in terms of reef recovery and the ecosystem services the reef is able to provide, as large colonies contribute disproportionately to reef framework building, habitat provisioning, and reproductive output. Although successful reproduction is occurring, as seen by the increase in small colonies of both generalist and some SCTLD-susceptible species, growth appears to be limited by partial colony mortality and chronic environmental pressures. Because of the significant economic value of reefs within the KJCAP and the chronic nature of disturbances to them, comprehensive long-term monitoring to quantify change and help identify threats to the ecosystem is essential. This report highlights the value of long-term, region-wide monitoring programs, which will be vital in focusing future restoration efforts and monitoring the potential recovery trajectory of this resource.

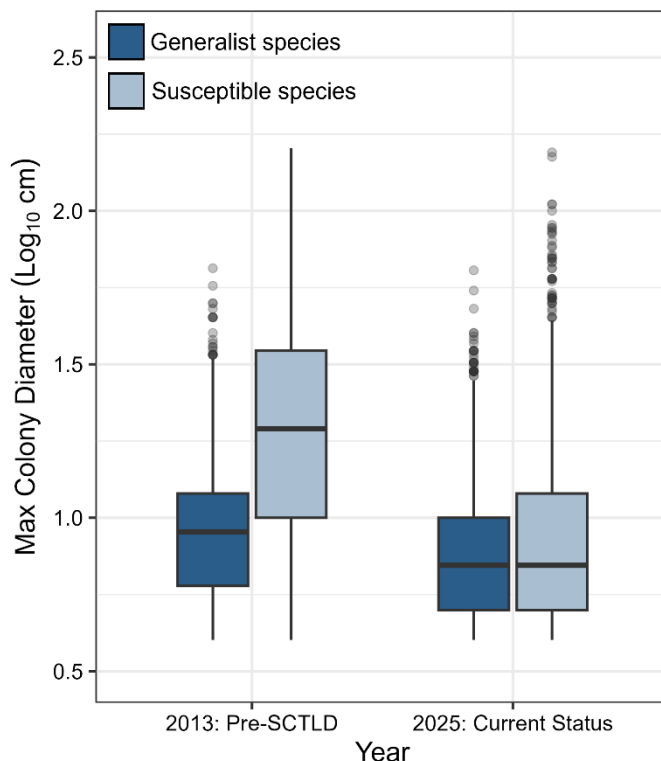


Figure 2. Adult coral colony (≥ 4 cm diameter) size distribution for generalist and SCTLD-susceptible species in 2013 and 2025. The middle bar in the boxplot represents the median colony diameter; the boxes below and above the median represent the 1st and 3rd quartiles, respectively. The upper and lower whiskers extend from the hinge to the largest and smallest value, respectively, no further than 1.5 times the inter-quartile range. Points beyond the ends of the whiskers are considered outliers. Each point represents one colony. “Generalist species” includes *Agaricia* spp., *Porites* spp., *Siderastrea* spp., and *Stephanocoenia intersepta*. “Susceptible species” includes all NOAA-defined highly and intermediately SCTLD-susceptible species, barring those included within “generalists.” All other species were excluded due to low abundance in the survey area.