

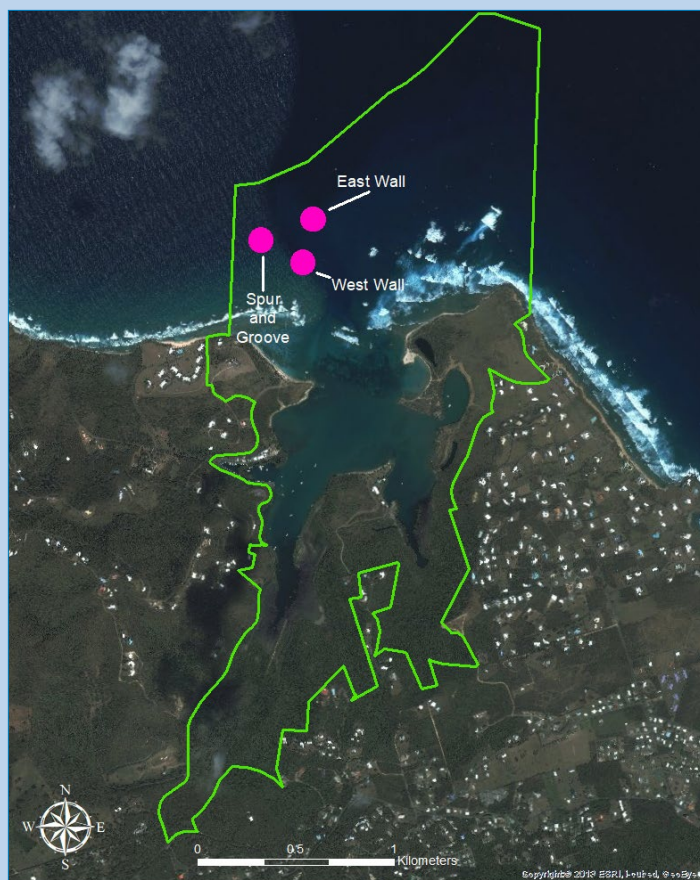


Marine Benthic Communities: Coral Reef Monitoring in Salt River Bay National Historical Park and Ecological Preserve, St. Croix, U. S. Virgin Islands

2019

Importance: *A critical resource for fisheries, tourism and marine biodiversity*

Coral reef communities within Salt River Bay NHP&EP consist of stony corals, octocorals, sponges, algae, and gorgonians (e.g., sea fans). Reefs support incredible marine biodiversity and provide habitat for a multitude of fish species, lobsters, sea turtles, and other creatures. Coral reefs also play a vital economic role by supporting fisheries, tourism, sand creation for beaches, pharmaceutical bio-prospecting, and providing shoreline protection. Coral reef monitoring was identified as a national priority in President Clinton's Executive Order 13089, establishing the Coral Reef Initiative. Coral reefs are negatively affected by events such as extreme water temperatures that cause "bleaching," vessel grounding and anchoring, major storms, coral disease, damaging fishing practices, sediment runoff, nutrient enrichment, contaminants, ocean acidification, and abrasion of the reef by debris or careless snorkelers and divers.



Above: Aerial image of monitoring sites in Salt River Bay NHP&EP.

Long-term Monitoring: *Site monitored annually since 2012*

The South Florida/Caribbean Network (SFCN) has annually monitored this site since in April 2012. The site is 26,437 square meters (6.5 acres) in area, and consists of 20 randomly-placed permanent transects, located within three sections; Canyon West Wall, Canyon East Wall, and Northwest Spur and



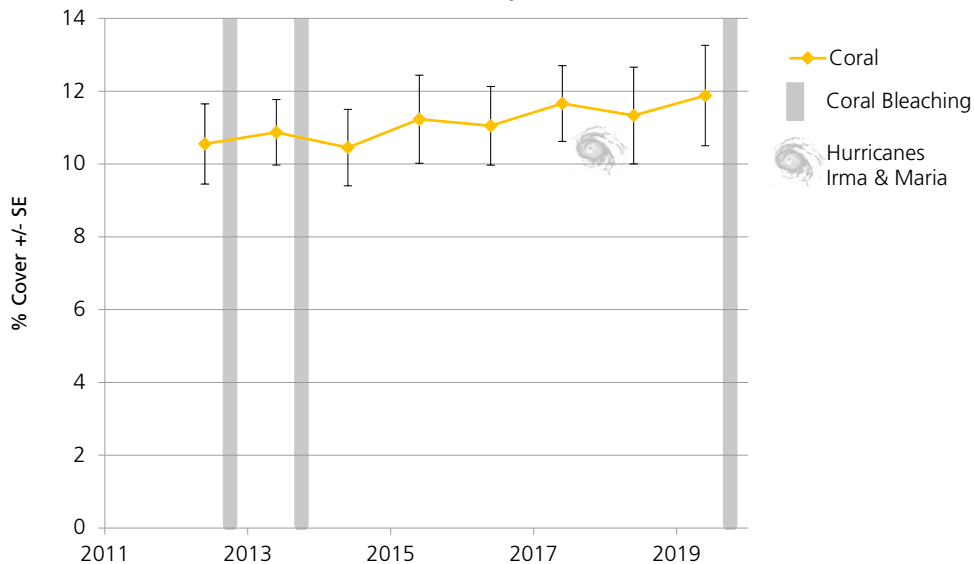
Above: Large plate corals (*Agaricia* and *Undaria* spp.) are found in Salt River Canyon. These areas were constrained to less than 33 meters (108.3 feet) depth and were chosen because of relatively high coral cover, reef complexity, and historical significance. The 10-meter (32.8-foot) transects are monitored annually using underwater video. Percent cover of living coral by species, macroalgae, turf and coralline algae, octocorals, and sponges are calculated. Data on coral disease, bleaching, water temperature, and long-spined sea urchins are also collected.

Status and Trends: *Stable coral cover since monitoring began.*

Despite the passing of two Category 5 Hurricanes (Irma and Maria) in September 2017, live stony coral cover has remained stable between 10–12% during this seven-year monitoring period (see figure, top of page 2). Sponges and gorgonians have shown vulnerability to the effects of hurricanes in Virgin Islands National Park. Although sponge cover has remained stable, averaging about 6% since monitoring began in 2012, gorgonians have shown a moderate decrease since 2014 (see figure, middle of page 2). Network data also shows macroalgae cover decreasing from a high of 36.1% in 2015 to 20.7% in 2018; the lowest value recorded during this seven-year monitoring period. Notably, macroalgae was not listed as a benthic component in any historical report for Salt River. The canyon in Salt River contains the some of the largest plate corals (*Agaricia* and *Undaria* spp.) found in any SFCN monitoring sites (see picture this page). Monitoring data shows the cover of these corals has remained constant through the study period. Despite a spike in 2017, the number of coral disease lesions and area killed by disease is relatively low at Salt River, and within the range observed at other NPS monitoring sites within Buck Island Reef National Monument.



Coral Cover at Salt River Bay NHP&EP



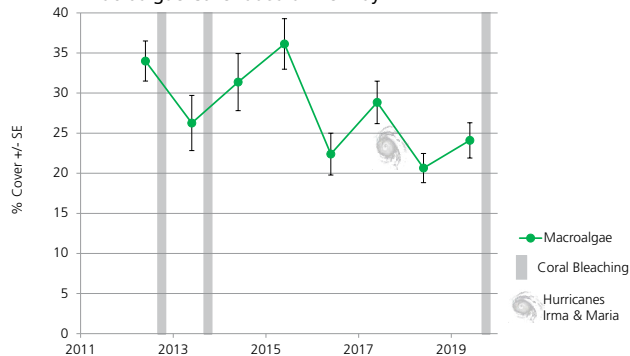
Trends in live stony coral, macroalgae, sponge and octocoral cover at Salt River.

Left: Coral cover has remained stable throughout monitoring.

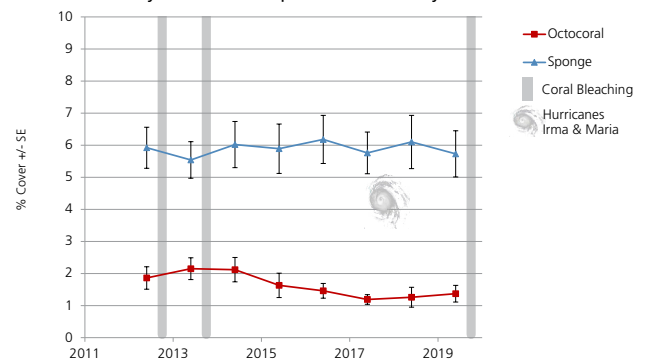
Below left: Macroalgae cover has shown a modest decline in recent years.

Below right: Sponge cover has remained stable throughout monitoring. Octocorals showed a decrease from 2014-2017, but the decline appears to be leveling.

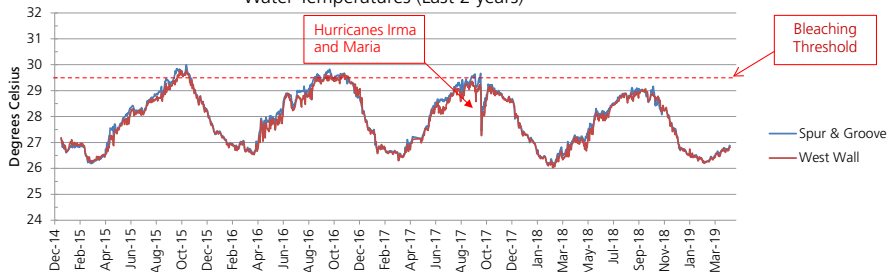
Macroalgae Cover at Salt River Bay NHPEP



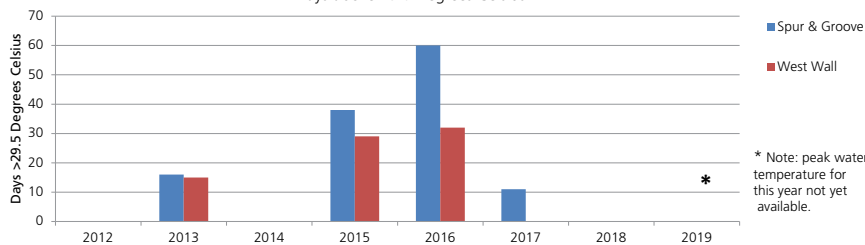
Cover by Selected Groups at Salt River Bay NHPEP



Water Temperatures (Last 2 years)



Days above 29.5 Degrees Celsius



Left: Salt River Bay NHP&EP water temperature summary graphs showing data from the two coral monitoring sites since 2012. A bleaching stress threshold of 29.5°C is shown (top) and days above that threshold are quantified (bottom). Note that data shown do not include 2019 season of thermal maximum (August–October).

