



SOUTHEAST FLORIDA CORAL REEF EVALUATION AND MONITORING PROJECT VISUAL SUMMARY

STATUS AND TRENDS

2025





Kristin Jacobs Coral Aquatic Preserve (KJCAP) protects the northernmost portion of Florida’s Coral Reef.

Long-term coral reef monitoring provides critical insight into the KJCAP’s health and condition.

- The Southeast Florida Coral Reef Evaluation and Monitoring Project (SECREMP) was established in 2003 to provide local, state, and federal resource managers with annual reports on the reef condition in KJCAP, which spans Martin, Palm Beach, Broward, and Miami-Dade Counties.
- Each year, SCUBA divers survey 22 permanent sites throughout the region. For more information on how these surveys are conducted, visit www.myfwc.com/research/habitat/coral/cremp/methodology/ or read our 2024 comprehensive report!
- This visual summary presents short-term and long-term trends of important benthic (bottom-dwelling) organisms within KJCAP.

Benthic cover on coral reefs	3
Stony coral cover trends	4
Octocoral cover trends	5
Sponge cover trends	6
Macroalgae cover trends	7
Site-specific trends	8
Coral colony density	9
Temperature trends	10



BENTHIC COVER ON CORAL REEFS

Coral reefs are complex ecosystems, with a myriad of benthic organisms competing for space. Their relative abundance and composition can influence reef function and habitat complexity, and monitoring how these groups change over time is critical for assessing reef health and, ultimately, guiding management and restoration efforts.

KEY BENTHIC GROUPS

Stony corals

Stony corals are the dominant structural framework builders on coral reefs. These slow-growing, long-lived organisms are fundamental to coral reef ecosystems, providing habitat, shelter, food, and breeding grounds for a vast array of marine life. The reefs they build also play a key role in coastal protection by buffering wave action and storm surge, and the biodiversity they support benefits humans by acting as a source for fisheries, recreation, ecotourism, and medicinal compounds. Stony corals are threatened by a variety of acute and chronic disturbances, including heat stress, disease, pollution, and overfishing.



Octocorals

Octocorals are an important and abundant component of Florida's benthic communities. Although octocorals do not build rigid frameworks like stony corals, their tall, flexible bodies create a "canopy" above the reef and provide shelter and food for other reef organisms. Some octocoral species can grow and reproduce very quickly, allowing them to recover rapidly after disturbances and giving them a competitive advantage over stony corals. They also provide natural compounds used by humans, notably in cosmetics.



Sponges

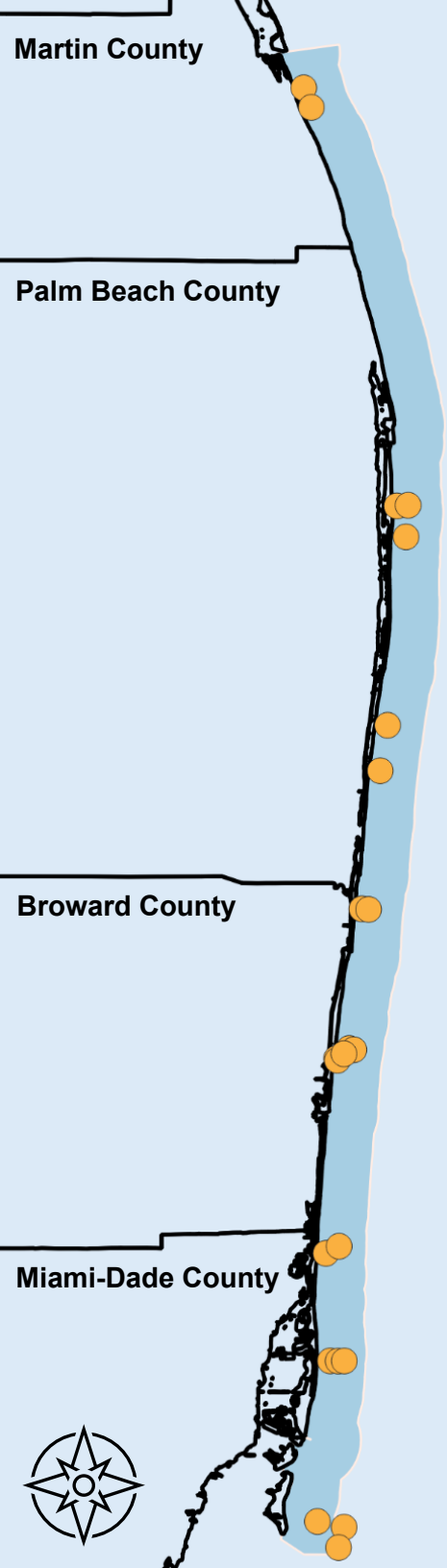
Sponges play important roles on Florida's Coral Reef, including filtering bacteria and nutrients from the water column, binding corals to the substrate, and providing food for other organisms. Large individuals, such as barrel sponges, can also provide habitat and contribute to reef structural complexity. Sponges are also major space competitors on the reef that can sometimes overgrow corals.



Macroalgae

Macroalgae are plant-like marine organisms that compete with corals for space, light, and nutrients. In a balanced system, macroalgae contribute to reef primary production and provide food and habitat for other organisms. Under certain environmental conditions, such as high nutrient concentrations, macroalgae exhibit rapid growth and can overgrow the reef, reducing coral growth and successful coral reproduction. Excess nutrient concentrations and low rates of herbivory have contributed to the proliferation of macroalgae within KJCAP.





STONY CORAL BENTHIC COVER TRENDS

Percentage of sites experiencing an increase, decrease, or no change in stony coral benthic cover between 2024 and 2025. Sites on map are colored according to trend. Blue shaded area on map delineates the KJCAP boundary.

**Kristin Jacobs Coral
Aquatic Preserve**
22 SITES



100%

Martin County
2 SITES



100%

Palm Beach County
5 SITES



100%

Broward County
7 SITES



100%

Miami-Dade County
8 SITES

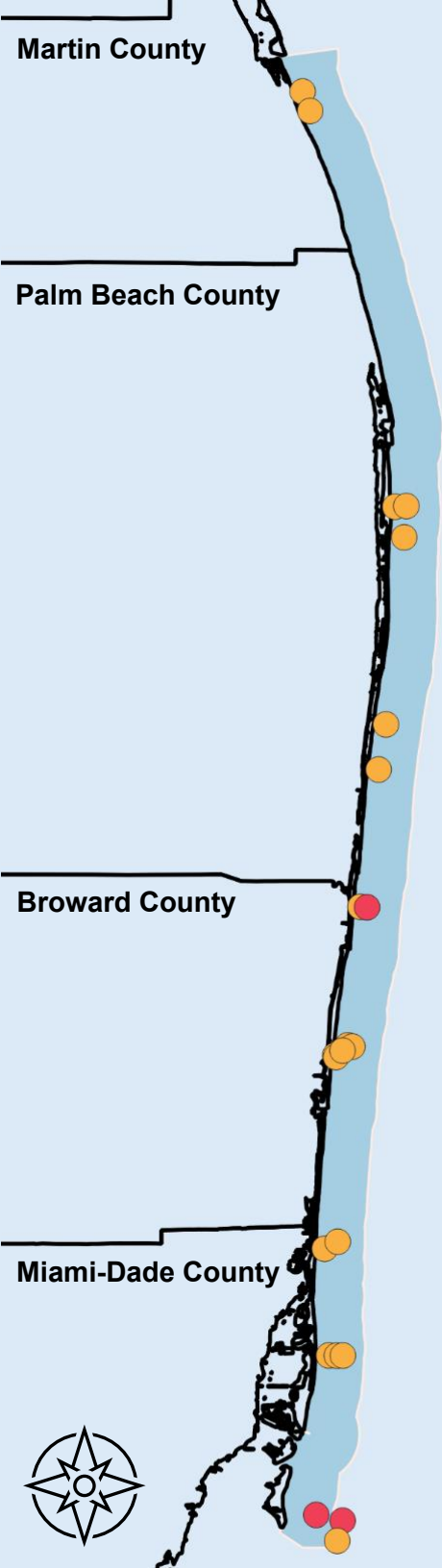


100%


**Decreasing
trend**


**No
significant
change**

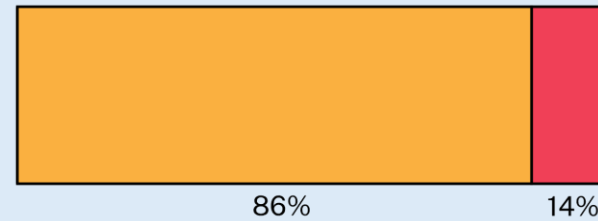

**Increasing
trend**



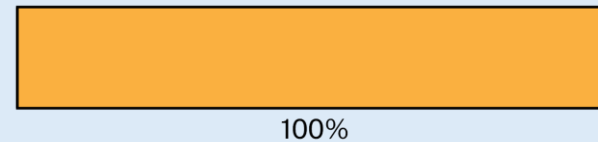
OCTOCORAL BENTHIC COVER TRENDS

Percentage of sites experiencing an increase, decrease, or no change in octocoral benthic cover between 2024 and 2025. Sites on map are colored according to trend. Blue shaded area on map delineates the KJCAP boundary.

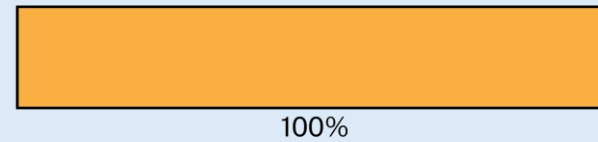
**Kristin Jacobs Coral
Aquatic Preserve**
22 SITES



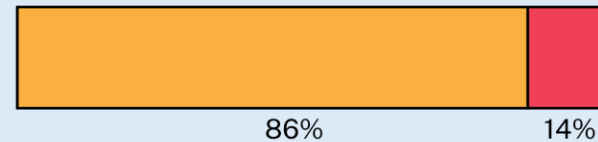
Martin County
2 SITES



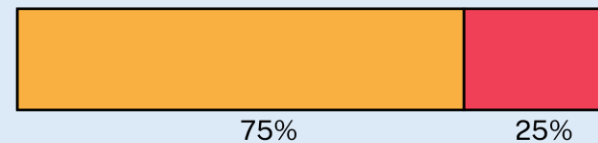
Palm Beach County
5 SITES



Broward County
7 SITES



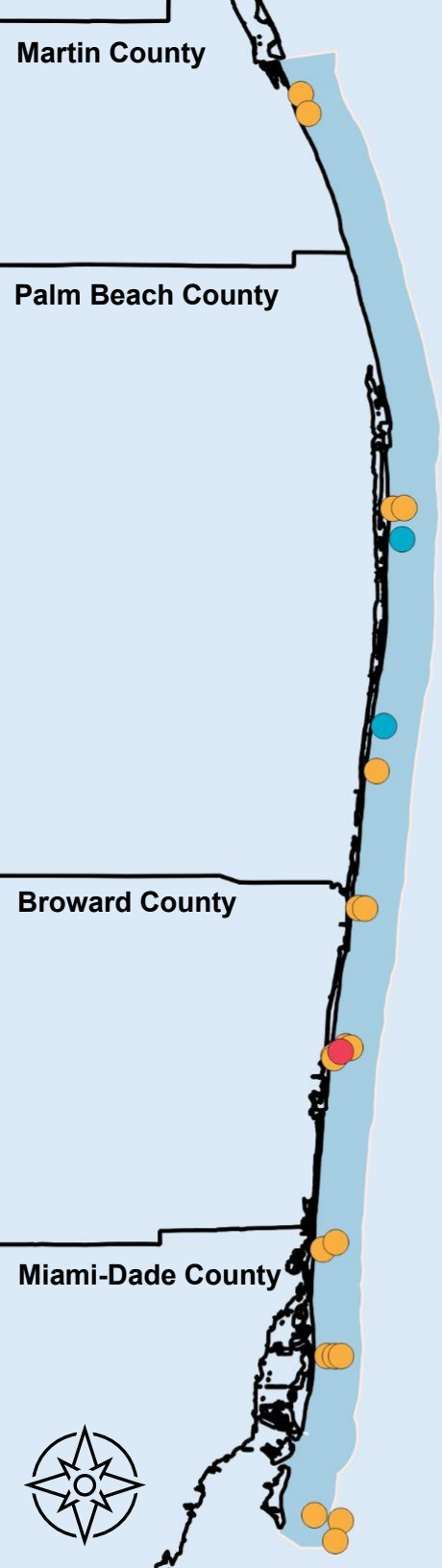
Miami-Dade County
8 SITES



 Decreasing trend

 No significant change

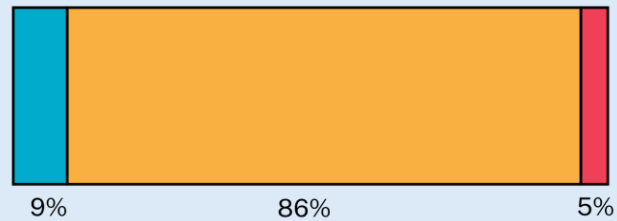
 Increasing trend



SPONGE BENTHIC COVER TRENDS

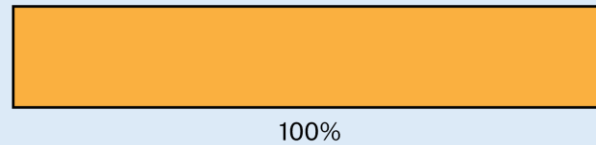
Percentage of sites experiencing an increase, decrease, or no change in sponge benthic cover between 2024 and 2025. Sites on map are colored according to trend. Blue shaded area on map delineates the KJCAP boundary.

Kristin Jacobs Coral Aquatic Preserve 22 SITES



Decreasing trend

Martin County 2 SITES

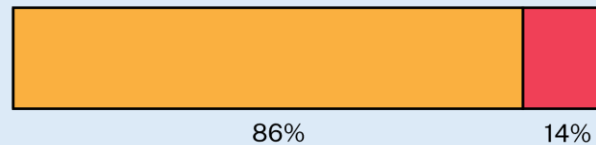


No significant change

Palm Beach County 5 SITES

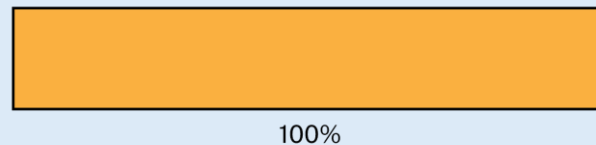


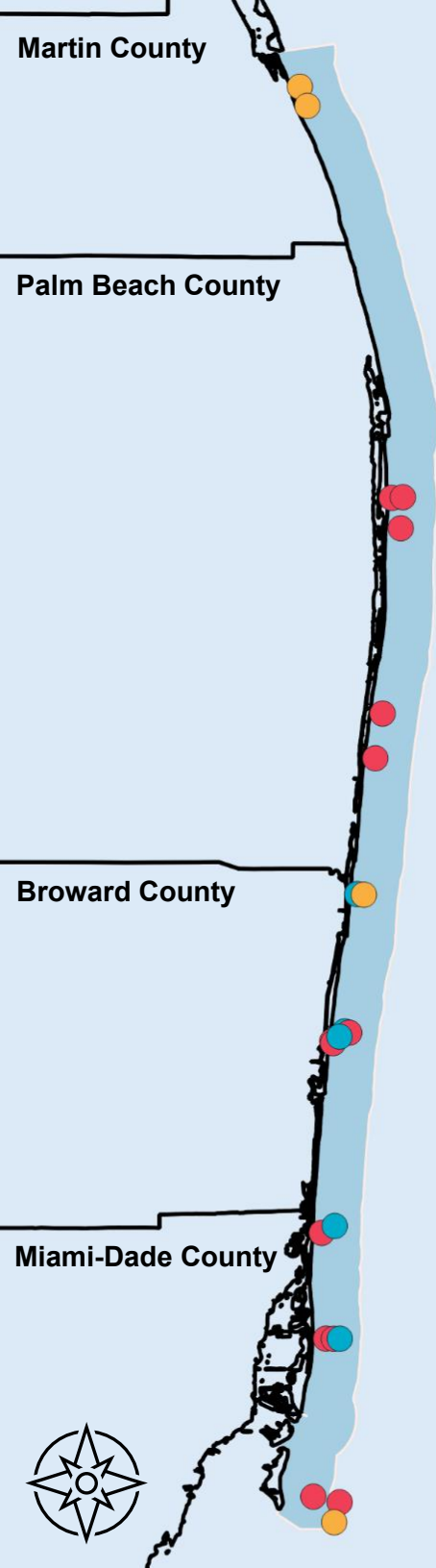
Broward County 7 SITES



Increasing trend

Miami-Dade County 8 SITES

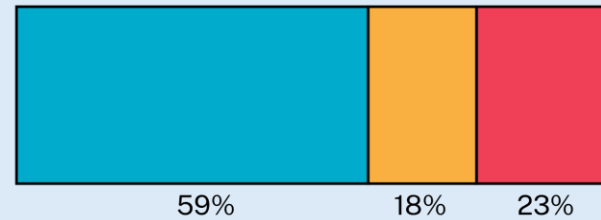




MACROALGAE BENTHIC COVER TRENDS

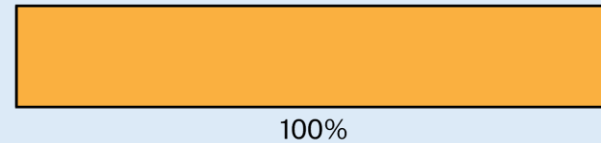
Percentage of sites experiencing an increase, decrease, or no change in macroalgae benthic cover between 2024 and 2025. Sites on map are colored according to trend. Blue shaded area on map delineates the KJCAP boundary.

**Kristin Jacobs Coral
Aquatic Preserve**
22 SITES



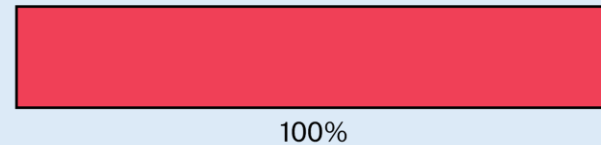
Decreasing
trend

Martin County
2 SITES

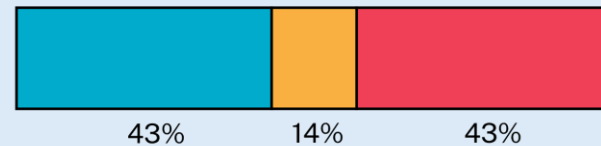


No
significant
change

Palm Beach County
5 SITES

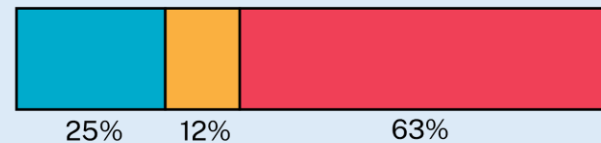


Broward County
7 SITES



Increasing
trend

Miami-Dade County
8 SITES



SITE-SPECIFIC TRENDS

Long-term trends compare 2013 survey data, collected prior to the outbreak of stony coral tissue loss disease (SCTLD), to 2025 survey data. Short-term trends compare 2024 survey data to 2025 survey data.

Site	Reef Habitat	Coral Density (corals/m²)*		Stony Coral % Cover		Octocoral % Cover		Sponge % Cover		Macroalgae % Cover	
		Long	Short	Long	Short	Long	Short	Long	Short	Long	Short
Martin County											
MC1	Nearshore										
MC2	Nearshore										
Palm Beach County											
PB1	Nearshore										
PB2	Outer reef										
PB3	Outer reef										
PB4	Outer reef										
PB5	Outer reef										
Broward County											
BC1	Nearshore										
BC2	Middle reef										
BC3	Outer reef										
BC4	Inner reef										
BC5	Middle reef										
BC6	Outer reef										
BCA	Nearshore										
Miami-Dade County											
DC1	Inner reef										
DC2	Middle reef										
DC3	Outer reef										
DC4	Outer reef										
DC5	Inner reef										
DC6	Nearshore										
DC7	Middle reef										
DC8	Nearshore										

* Density measurement only includes adult corals ≥4 cm.



Decreasing trend

No significant change

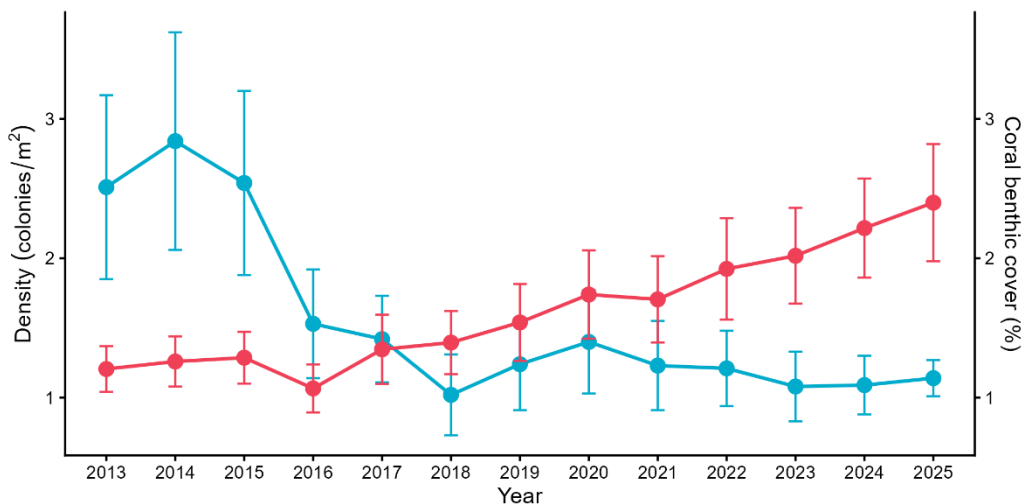


Increasing trend

SPOTLIGHT STORY: CORAL COLONY DENSITY



Despite decreasing coral cover, coral colony density is increasing within KJCAP.



Coral colony density and coral benthic cover over time across all 22 SECREMP sites within KJCAP. Points represent the average colony density (left axis, pink line) or coral benthic percent cover (right axis, blue line) per site each year; bars represent the standard error around the average. Coral colony density measurements only include adults with a diameter ≥ 4 cm.

Stony coral benthic percent cover in KJCAP has declined in recent years, largely as a result of the 2014-2018 stony coral tissue loss disease (SCTLD) outbreak. Between 2013 and 2025, stony coral percent cover has dropped by approximately 55%. Although coral cover has struggled to recover to pre-SCTLD levels, coral colony density, the number of coral colonies existing in a given area, has exploded. Following an initial decline in 2016 during the SCTLD event, coral density across KJCAP has increased by about 125%, reaching its highest recorded level in 2025.

This increase in colony density is a promising sign that, even in the face of chronic stressors, some corals are successfully reproducing. However, the trend is driven mainly by reproductive booms from the weedy, generalist species *Siderastrea siderea* and *Porites astreoides*. Although they are reef-building corals, they are considered to be low-relief species within KJCAP, meaning that even if given enough time under optimal conditions, they generally do not form large colonies. Major reef-builders, like *Montastraea cavernosa*, *Orbicella faveolata*, and the brain corals, have shown few increases and are the subjects of restoration efforts throughout the region.



The weedy generalist *Porites astreoides*



The brain coral *Pseudodiploria strigosa*

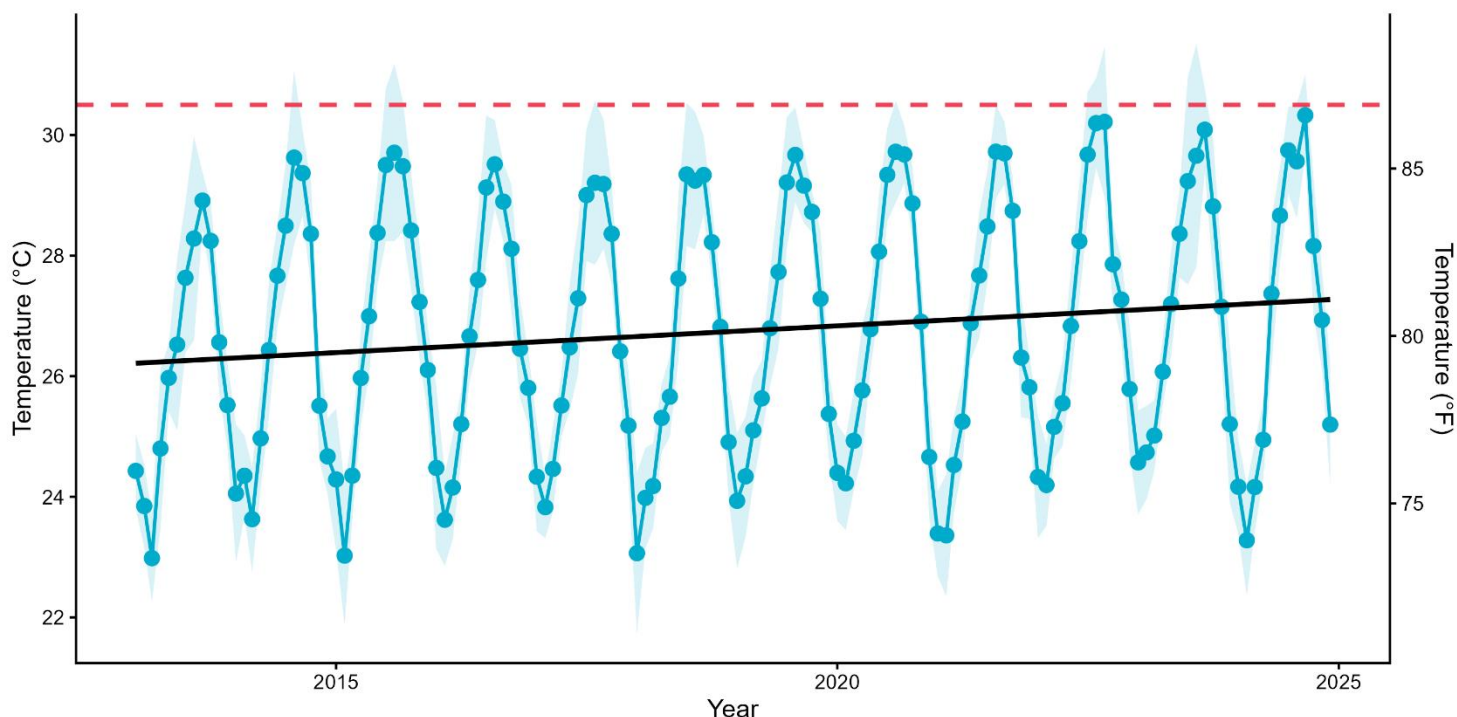


WATER TEMPERATURE

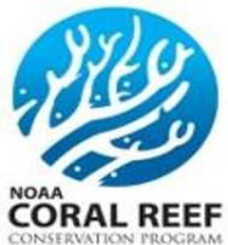
Water temperature is one of the most important environmental factors on coral reefs because corals survive and grow optimally within a narrow temperature range. When water temperature becomes too warm ($>30.5^{\circ}\text{C}$) or too cold ($<16^{\circ}\text{C}$) for an extended period of time, corals may experience bleaching from thermal stress. Bleaching is the breakdown in the relationship between corals and their symbiotic algae, which can ultimately slow coral growth or lead to mortality.

Water temperature is automatically recorded every two hours with *in situ* temperature loggers at each SECREMP site. The waters of KJCAP experience pronounced seasonal variability, with summers having significantly warmer temperatures than winters. Over the last decade, there has been a gradual increase in water temperature across the region, although the actual magnitude at each site varies based on site latitude and depth.

Since 2013, the **average water temperature has increased** by about 0.06°C (0.11°F) per year within KJCAP.



Monthly average water temperature of all 22 SECREMP sites from January 2013 to December 2024. Blue shading represents the standard error around the averages. Black line represents the trendline of monthly water temperatures. Dashed pink line at 30.5°C (86.9°F) represents the putative bleaching threshold for corals in Florida².



Works Cited:

- ¹ Leinbach SE, Gilliam DS, Ruzicka R, Colella M. 2025. Southeast Florida Coral Reef Evaluation and Monitoring Project 2024 Year 22 Final Report. Florida DEP & FWC. Miami Beach, FL. Pp. 95.
- ² Manzello DP, Berkelmans R, Hendee JC. 2007. Coral bleaching indices and thresholds for the Florida Reef Tract, Bahamas, and St. Croix, US Virgin Islands. *Mar Pollut Bull* 54(12): 1923-1931.

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