

Grantee: Cory Walter, Mote Marine Laboratory, Summerland Key, FL

Contract Number: 1305M218PNCND0237

Project Title: Florida Keys BleachWatch. Community based reporting of coral bleaching and data integration with existing NOAA remote sensing and coral bleaching early warning products.

Report Period: May 1 – October 31, 2022

Investigators: Cory Walter (Project Coordinator)

Deliverables: There were two BleachWatch training presentations organized to promote the BleachWatch project and train new volunteers throughout the Florida Keys as well as individual and online training. A training is being planned for a few Upper Keys FKNMS BlueStar participants. Media provided advertisement of the program as needed to encourage continued community involvement. There have been nine Current Coral Bleaching Conditions Reports produced and updated on the BleachWatch website (www.mote.org/bleachwatch) as well as distributed to resource managers and the volunteer observers.

Accomplishments: The Florida Keys BleachWatch program is designed to train and coordinate volunteers who regularly report on the occurrence, or absence, of coral bleaching, as well as basic environmental conditions from the reef (Figure 1). After a short training session on coral bleaching observations, each individual receives a packet containing information on the project and FAQ's on coral bleaching, report forms complete with detailed instructions, and an underwater visual aid in the form of a wristband. Observers are made to understand that observations of no bleaching are equally important as bleaching, and are asked to report regularly. Training workshops for the 2022 BleachWatch Observer Network were conducted for interested parties once at Mote Marine Laboratory (MML), Boy Scouts "Order of the Arrow" in Summerland Key, along with one-on-one and specialty group training sessions throughout the season. The online training module was utilized by several dive industry professionals. A training for a few Upper Keys FKNMS's BlueStar participants is being scheduled for December 2022 to help get more dive operations reporting on coral bleaching.



Figure 1 - BleachWatch Observer

The Project Coordinator also routinely reviews NOAA's "Coral Reef Watch" and "Coral Health and Monitoring" programs which have already developed remote sensing analysis and real-time monitoring data products that have proven to be extremely useful in monitoring and predicting when conditions are favorable for coral bleaching throughout the world. The observational data from BleachWatch volunteers is then synthesized with existing NOAA remote sensing and environmental monitoring data to provide the Florida Keys National Marine Sanctuary (FKNMS) with a summary of "current conditions" throughout the summer months. Current Condition Reports include a summary of relevant weather information, NOAA "hotspot" and "degree heating weeks" (DHW) analysis, and updated Integrated Coral Observing Network (ICON) *in-situ* sea temperature and wind data, all of which is combined with BleachWatch observer reports and photographs for each region during a given period. These reports are generated according to current conditions and the potential risk for coral bleaching. There have been nine Current Condition Reports produced for 2022, all of which are available online at www.mote.org/bleachwatch. These reports also helped trigger response efforts for researchers conducting more detailed surveys to assess coral bleaching, such as The Florida Fish and Wildlife's Florida Reef Resilience Program (FRRP) Disturbance Response Monitoring.

Education	25
Dive Industry	2
Resident	2
Research	198
Total	227

Table 1 - BleachWatch Observer Categories
(June 1–October 31, 2022)

There was a total of 227 BleachWatch observations submitted from June 1 through October 31, 2022 (Figure 2) from 27 trained observers. Individuals that reported were further classified into four categories to help focus

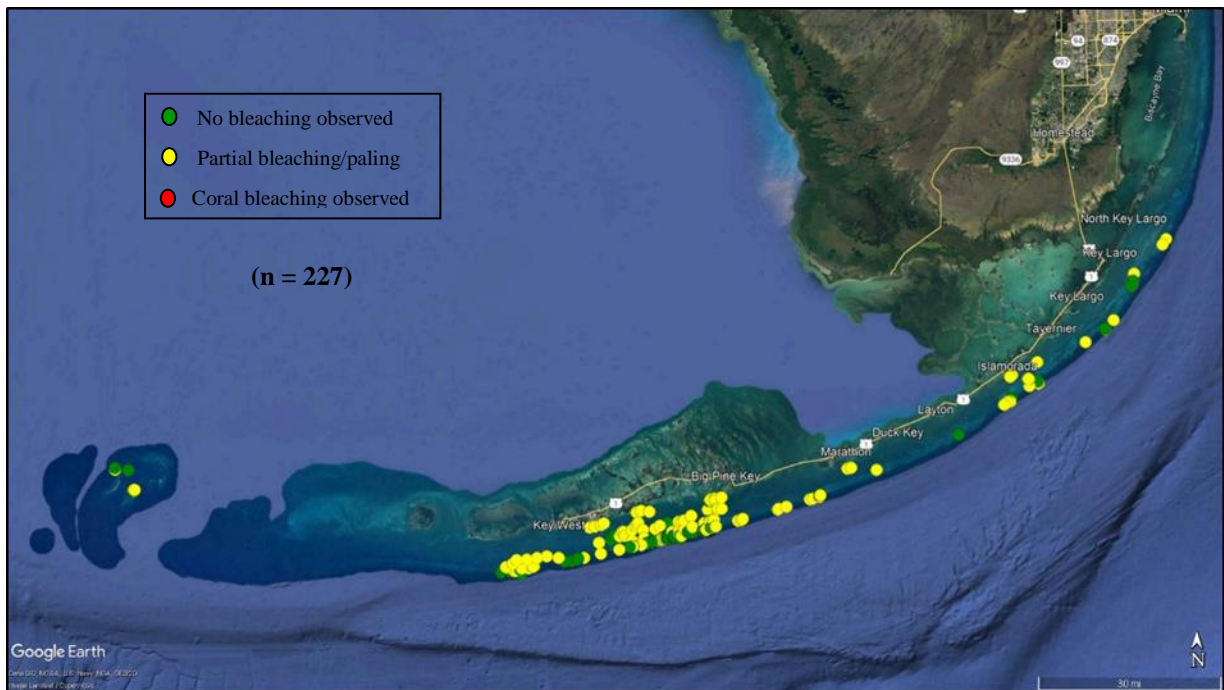


Figure 2 – Observations Reported (June 1 – October 31, 2022)

training efforts in the future (Table 1). The scientific community accounted for the largest source of observations in 2022, including reports from researchers with the Florida Fish and Wildlife Research Institute (FWRI), Nova Southeastern University, Mote Marine Laboratory, Keys Marine Laboratory, The Nature Conservancy, Dry Tortugas National Park, and other State, Federal, and academic programs. However, a significant contribution was also made by local environmental, educational, and community groups such as Islamorada Conservation and Restoration Education (I. CARE), Key Largo MarineLab, Boy Scouts “Order of the Arrow”, and dive operations such as Captain Hooks Dive Centers and Key Dives. All of these participants submitted numerous reports throughout the season, and we congratulate them for their efforts.

BleachWatch data forms were originally designed to gather as much relevant information as possible while minimizing the time and effort required. To further reduce the effort and increase the frequency of reporting, forms were designed to be submitted electronically, either by email or using the online report form. The majority of BleachWatch reports received indicated paling or partial bleaching, comprising 138 out of the total 227 reports submitted June-October 2022 (Figure 3); with the overall percentage of corals exhibiting signs of stress was mostly 1-30%. A few deep and inshore sites noted over 50% of corals affected. Observations of “paling” or “partially bleached” corals were observed throughout all of the FKNMS and surrounding water and across all habitat types, including inshore, mid-channel, offshore, and intermediate and deep reefs. Coral disease is still running rampant throughout the FKNMS with the disease front now located in the Dry Tortugas National Park. Even after the BleachWatch season is complete, Mote will encourage volunteers to continue to report on disease or no disease at their sites if possible.

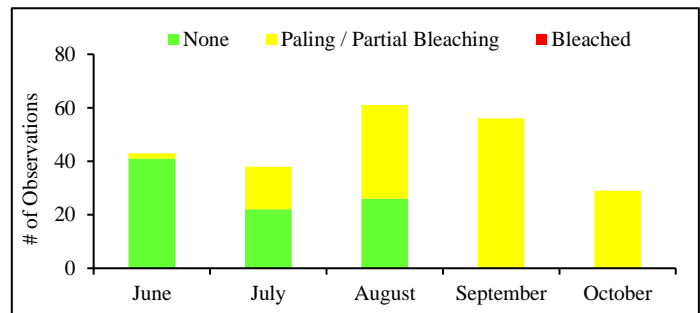


Figure 3 – Number of Observation by Severity of Bleaching Observed (June 1- October 31, 2022)

Recent Current Conditions Reports, archived reports from 2005-2021, online report forms, and information related to coral bleaching as well as how to become a BleachWatch Observer can all be found at www.mote.org/bleachwatch.