



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

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, 2019 – November 1, 2019

Investigators: Cory Walter (Project Coordinator)

Deliverables: There were three BleachWatch training presentations organized to promote the BleachWatch project and train new volunteers throughout the Florida Keys as well as individual one on one training. Media provided advertisement of the program as needed to encourage continued community involvement. There have been seven 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 30 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 2019 BleachWatch Observer Network were conducted for interested parties twice 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. Due to the increase in coral disease reports over the past few years, the data sheet was revised to include more detailed observations of these diseases at the observers’ sites (Attachment 1).



Figure 1 - BleachWatch Observer

“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 eight Current Condition Reports produced for 2019, 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.

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

Education	15
Dive Industry	2
Resident	25
Research	445
TOTAL	487

Table 1 - BleachWatch Observer Categories (June 1-October 21, 2019)

There were a total of 487 BleachWatch observations submitted from June 1 through October 21, 2019 (Figure 2) from 31 trained observers. Individuals that reported were further classified into four categories to help focus training efforts in the future (Table 1). The scientific community accounted for the largest source of

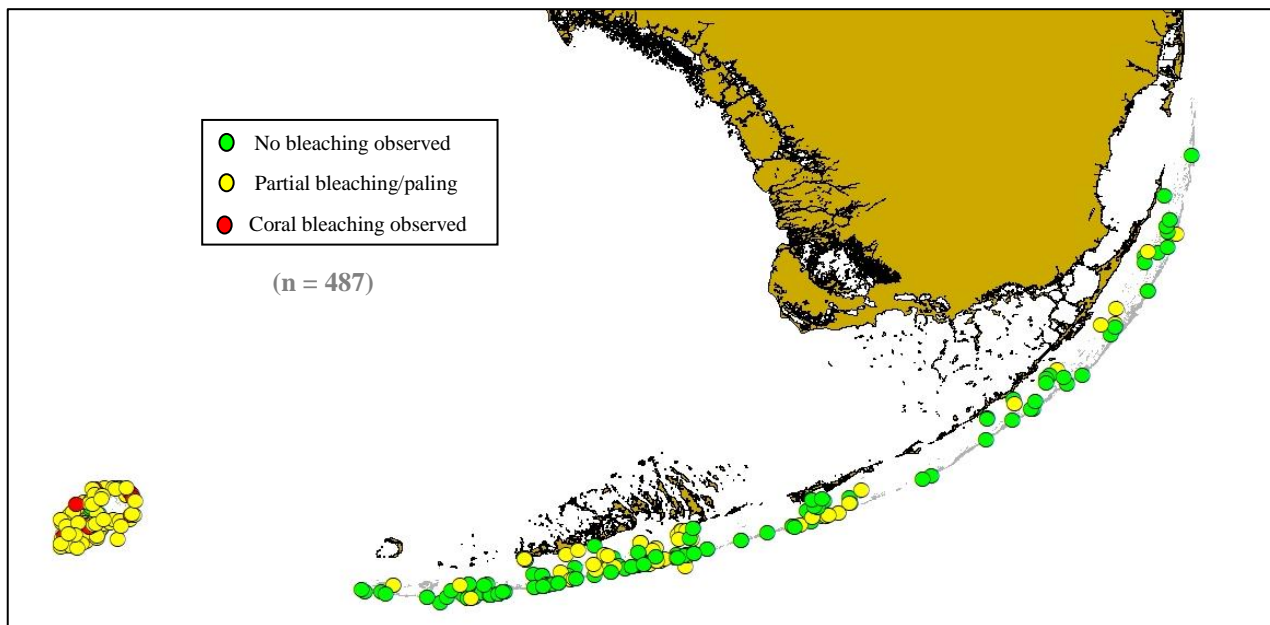


Figure 2 – Observations Reported (June 1 – October 21, 2019)

observations in 2019, including reports from researchers with the Florida Fish and Wildlife Research Institute (FWRI), FKNMS, 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 residents as well as environmental, educational, and community groups such as Key Largo MarineLab, Boy Scouts “Order of the Arrow”, Coral Restoration Foundation, and dive operations such as Captain Hooks Dive Centers. 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, fax, or using the online report form.

The majority of BleachWatch reports received indicated no paling or bleaching, comprising 263 out of the total 487 reports submitted June-October 2019 (Figure 3), however, the remaining reports indicated “paling or partial bleaching” with the overall percentage of corals exhibiting signs of stress was mostly 1-10%. A few deep and inshore sites, as well as a few sites in the Dry Tortugas 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 near the Marquesas. 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.

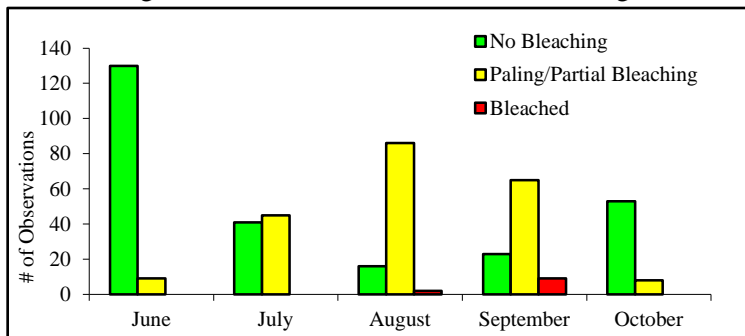


Figure 3 – Number of Observation by Severity of Bleaching Observed (June 1- October 21, 2019)

Recent Current Conditions Reports, archived reports from 2005-2018, 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.

Attachment 1



Mote Marine Laboratory / Florida Keys National Marine Sanctuary Florida Keys BleachWatch Program BLEACHWATCH DATA FORM



Online Forms: www.mote.org/bleachwatch

A. OBSERVER INFORMATION:		Date of Visit: _____	Time: _____
Name: _____	Phone: _____	Email: _____	
Address: _____			
(please circle): Resident Visitor Tourism Industry Commercial Research Education Other			
Vessel/Organization (if applicable): _____			

B. SITE INFORMATION:		Latitude: _____	Longitude: _____
Location/Site Name: _____		Max. Depth: _____	Buoy #/ Area of Reef: _____
Environmental Conditions: (Optional)			
Wind Speed: _____	Air Temp: _____	Water Surface Temp: _____	Water Bottom Temp: _____
Cloud Cover (circle):	<u>Clear</u>	<u>Partly Cloudy</u>	<u>Mostly Cloudy</u> <u>Overcast</u>

Did You Observe Signs of BLEACHING?	
<input type="checkbox"/> YES—Continue with Section C & D	<input type="checkbox"/> No

Did You Observe Signs of DISEASE?	
<input type="checkbox"/> YES—Continue with Section D	<input type="checkbox"/> No

C. OVERALL BLEACHING AT SITE	
<i>In general, how severe was the bleaching over entire site? Please Check</i>	
<input type="checkbox"/> Bleached only on upper surface	<input type="checkbox"/> Pale (very light) <input type="checkbox"/> Bleached White <input type="checkbox"/> Bleached Coral with Algae
<i>Percent of live coral bleached at entire site? (Circle One)</i>	
0%	1-10% 11-30% 31-50% 51-75% 76-100%

D. BLEACHING AND DISEASE OBSERVATIONS		Single (S) -1	Few (F) -2-5	Many (M) -5+
	Bleaching:	Disease:		
	No Stress Paling Partial Bleaching Bleached	BlackBand Disease	SCTLD (white)	Other...
		Other Disease or Unusual Observation:		
Brain	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Branching	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Fleshy	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Flowering/Cups	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Leaf/Plate /Sheet	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Mound/Boulder	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		

E. NOTES (note bleaching of fire coral, Palythoa, and Gorgonians, or other unusual observations.)
Remember: If there is no bleaching, we still need to know regularly about your site.

The National Marine Sanctuary values your time and assistance.

Please direct any questions to:
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