SEAFAN BleachWatch Observer Training

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Photo by Joe Marino

Training Overview

What is Coral Bleaching?

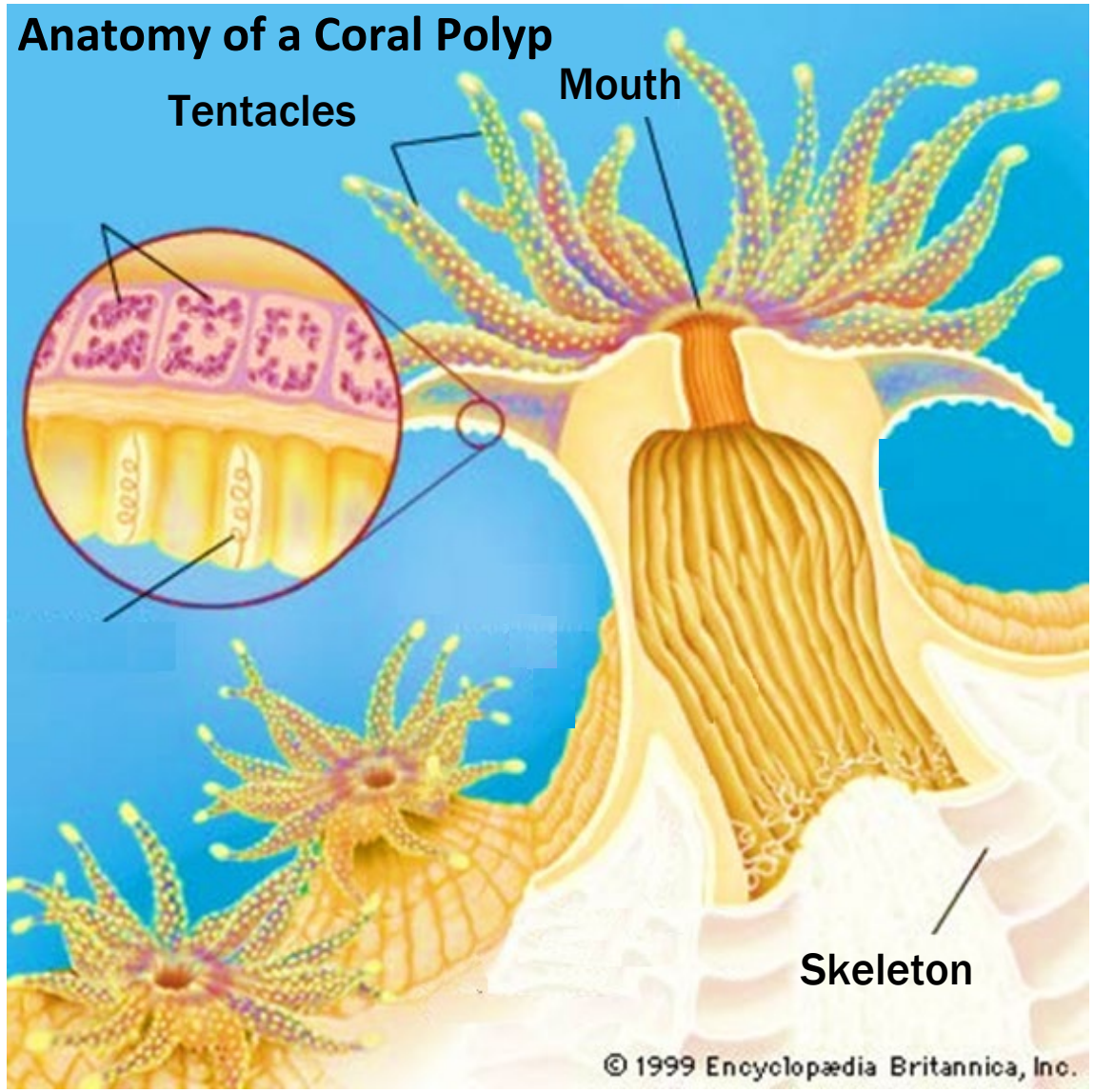
Coral Disease in Florida

SEAFAN & the BleachWatch Early Warning Program

Your Contribution

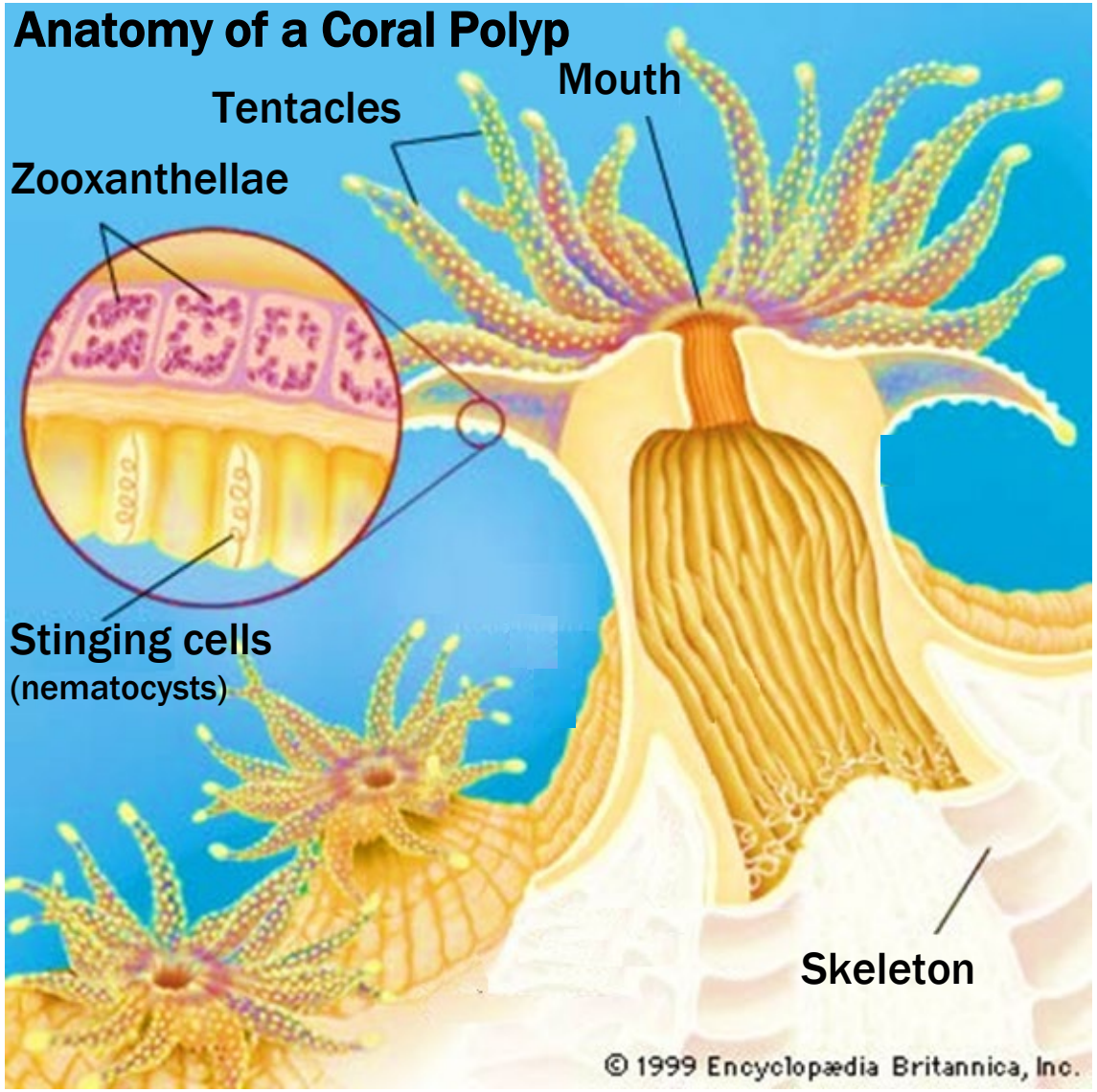
Coral Anatomy 101

Coral Anatomy 101



Variations Of Growth Forms

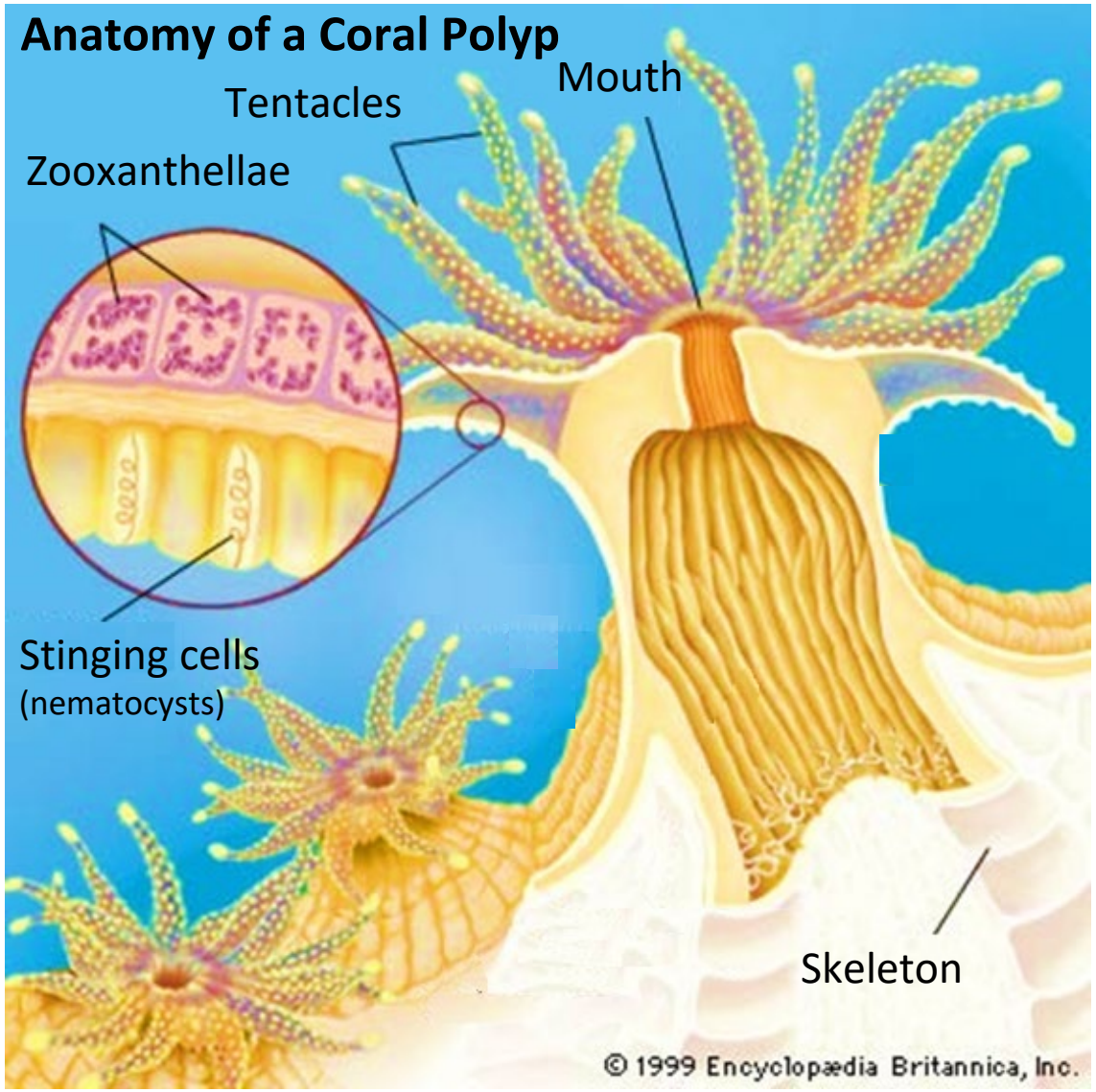
Coral Feeding



Two Methods:

1. Filter feeding (nematocysts)
2. Symbiotic relationship (zooxanthellae)

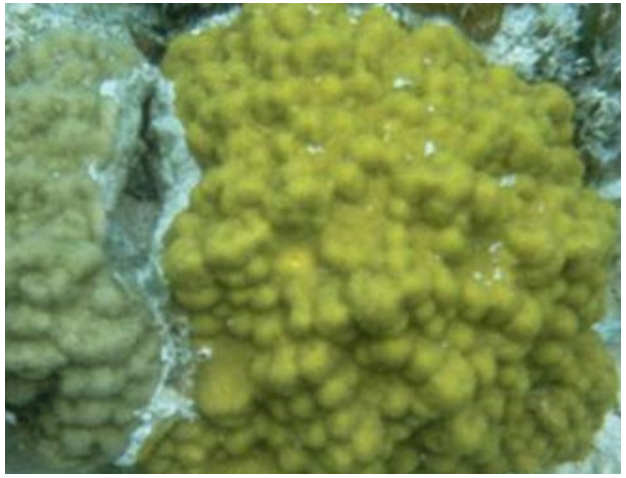
Coral Anatomy 101



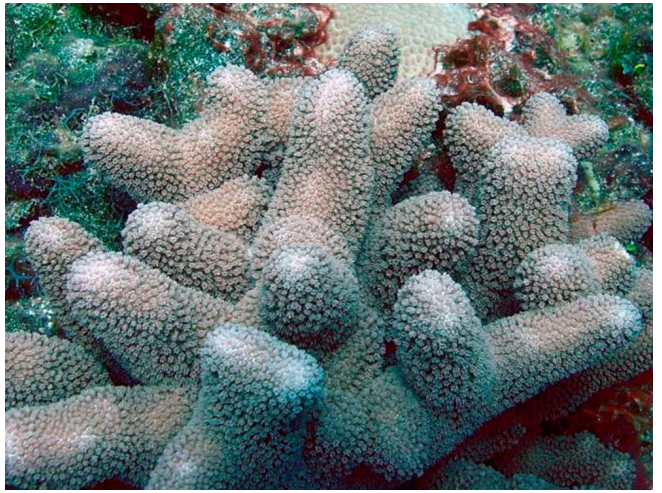
Zooxanthellae Provide:

- 90 – 95% of nutrients
- Normal "healthy" coloration of corals

Variations of Colors

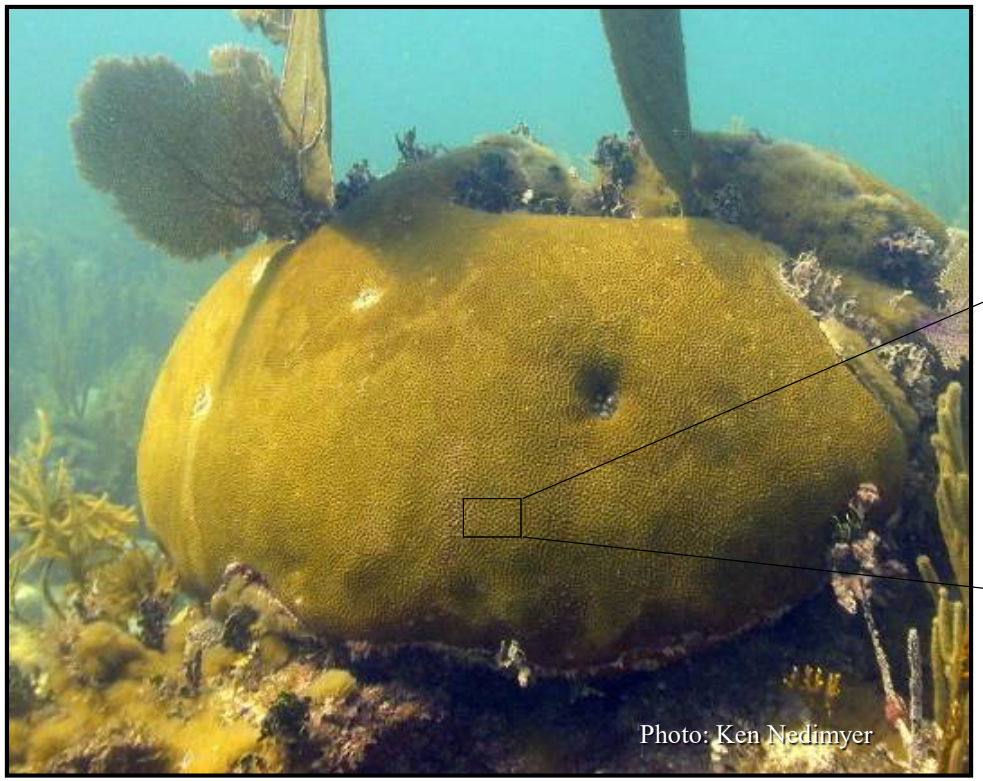


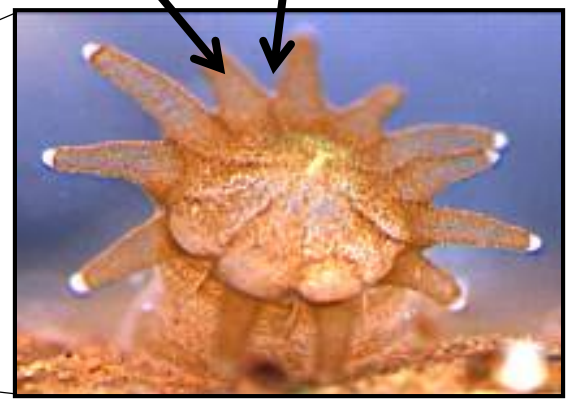


Zooxanthallae

What is Coral Bleaching?

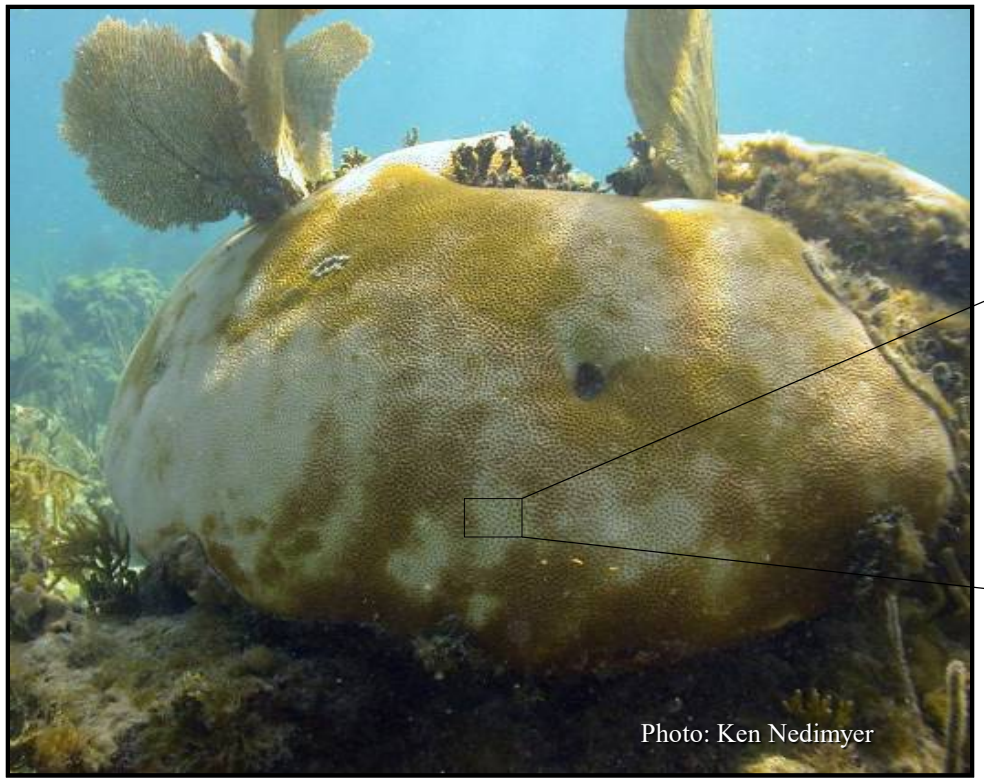


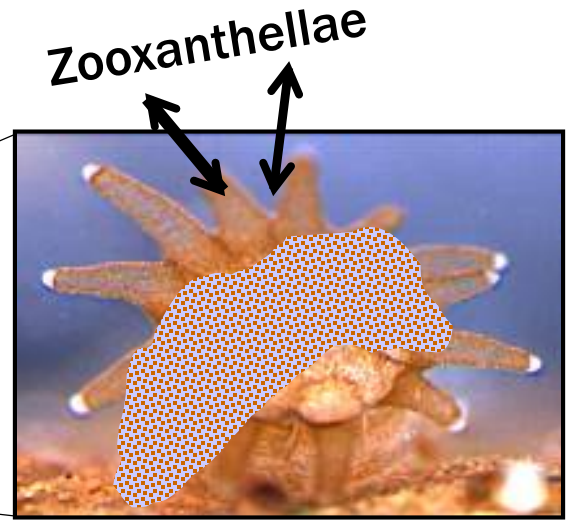


Stress

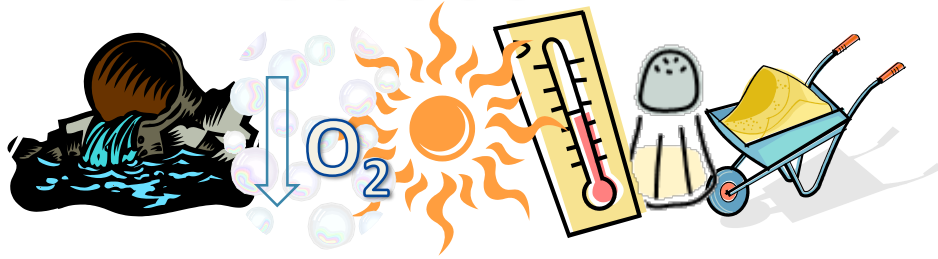
Healthy Coral

Coral Bleaching



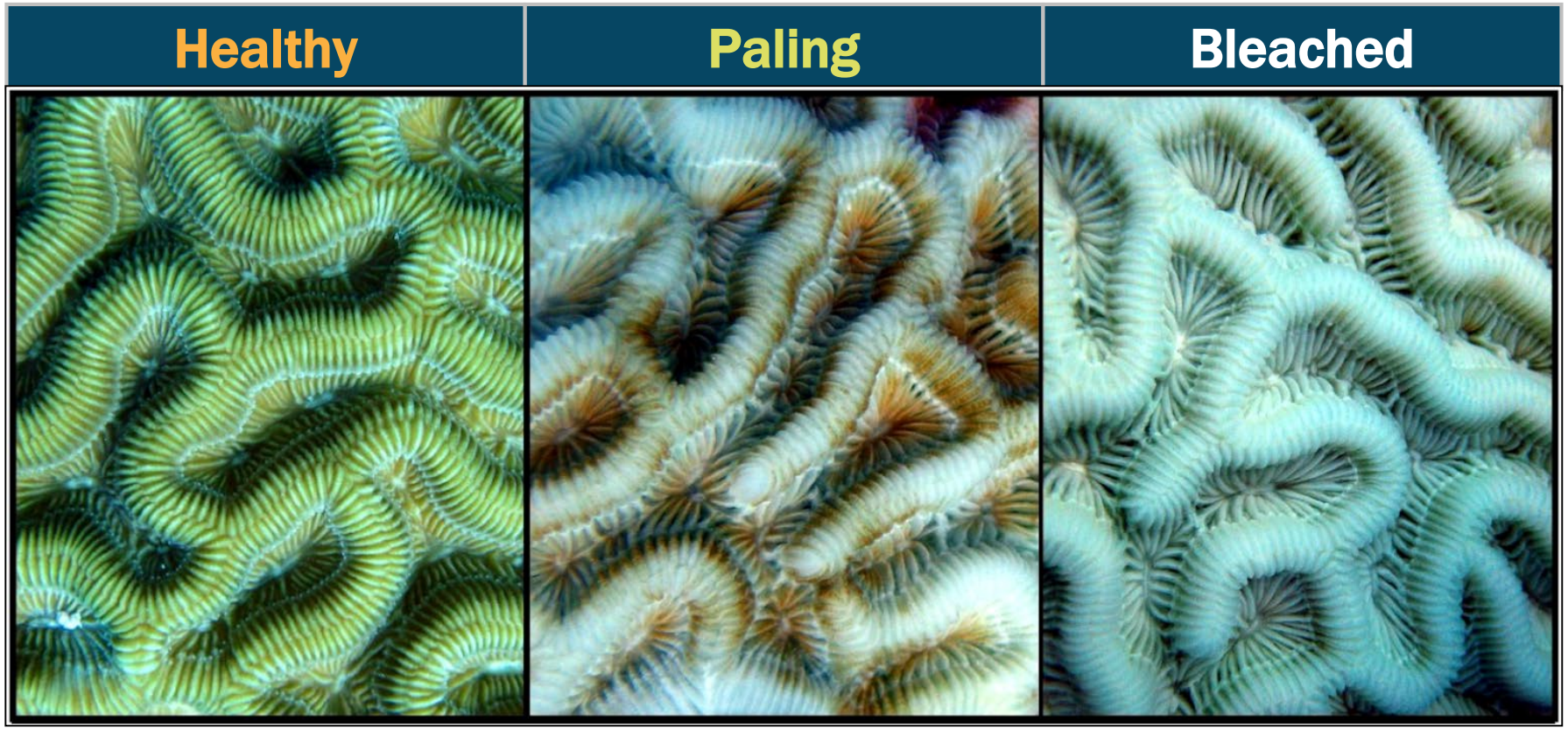


Stress



Bleached Coral

Coral Bleaching



Is a Bleached Coral a Dead Coral?

Bleached Coral

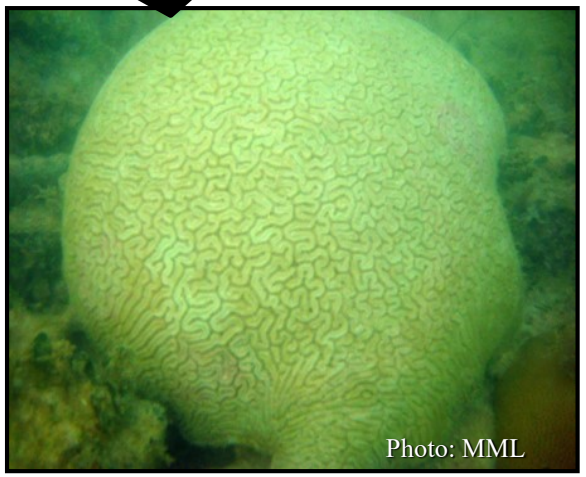
No!

Coral Bleaching

Water Temperature Increases → Prolonged Temperature Stress

Healthy Coral

Bleached Coral



Dead Coral

Water Temperature Returns to Normal

Coral Bleaching

Healthy Coral

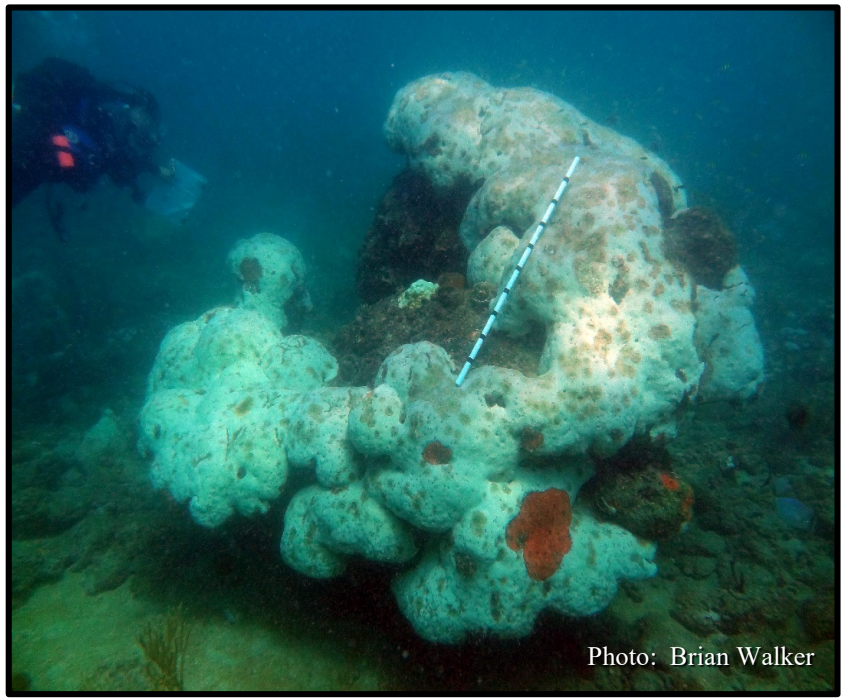
Bleached Coral

Dead Coral

Is the Coral Resilient?

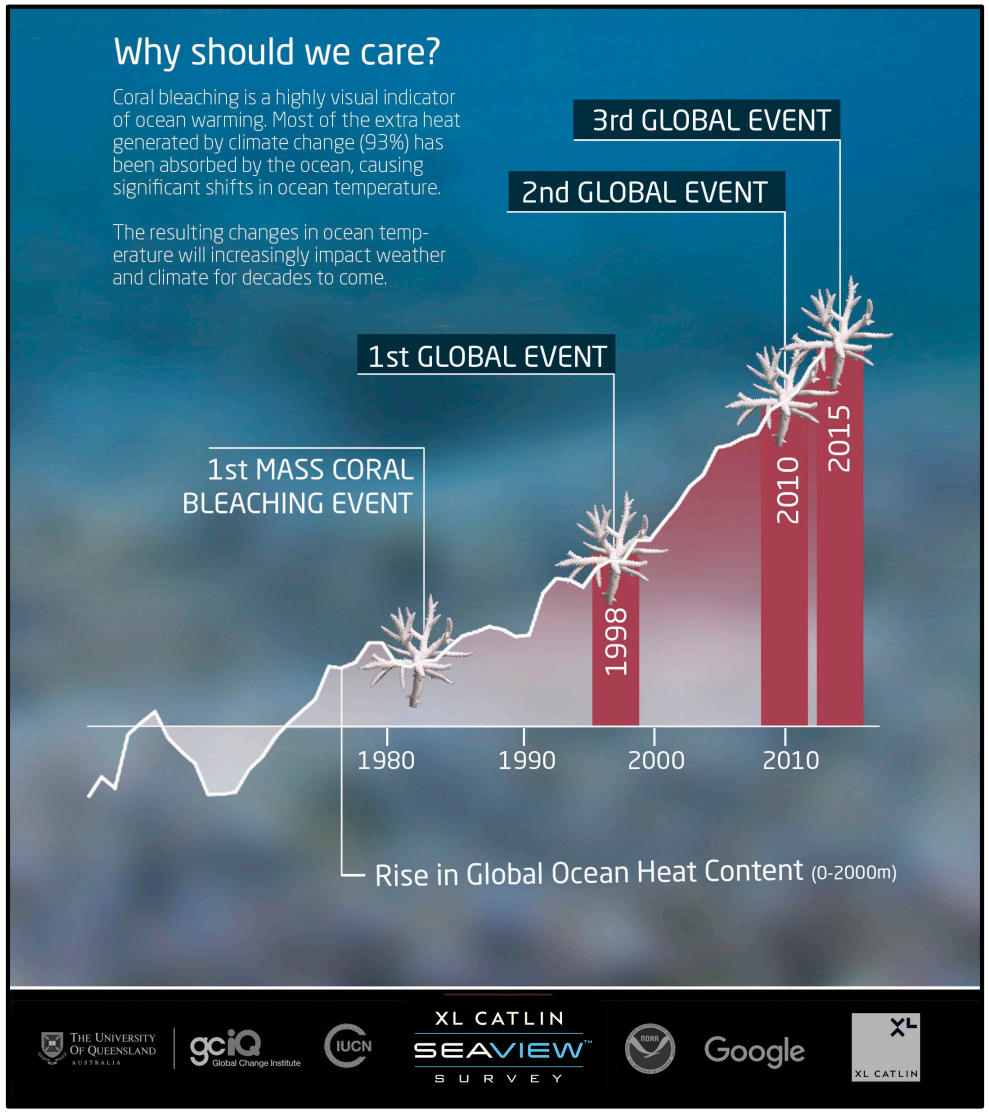
Coral Bleaching: Long-Term Effects

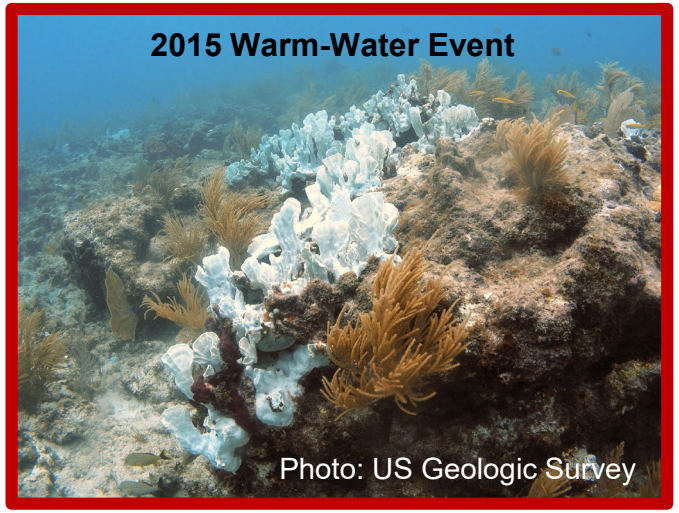
- ↓ Reproduction
- ↓ Coral growth
- Loss of habitat



- Susceptible to Disease
- Susceptible to Predation
- Susceptible to Death

Severe Mass-Scale Bleaching Events





Coral Bleaching Across Spatial Scales

Mound/Boulder Coral, Bleached

Mound/Boulder Coral, Bleached

Brain Coral, Paling

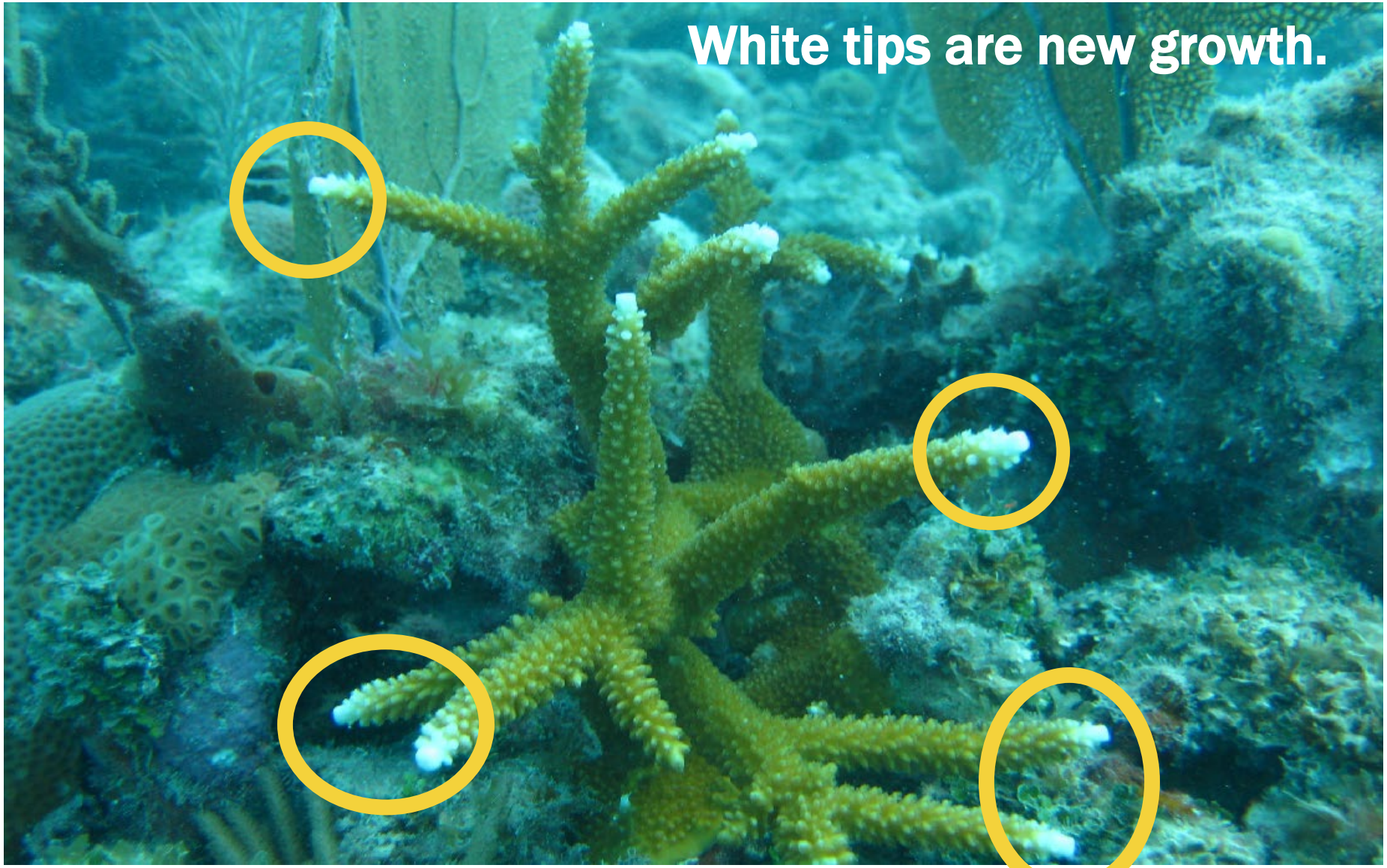
Mound/Boulder, Partial Bleaching

Coral Bleaching

Brain Coral

Mound/Boulder Coral, Bleached

NOT Bleaching!



Fish Bites/Predation

Training Overview

What is Coral Bleaching?

Coral Disease in Florida

SEAFAN & the BleachWatch Early Warning Program

Your Contribution

What Causes Coral Disease?

- Bacteria
- Virus
- Fungus

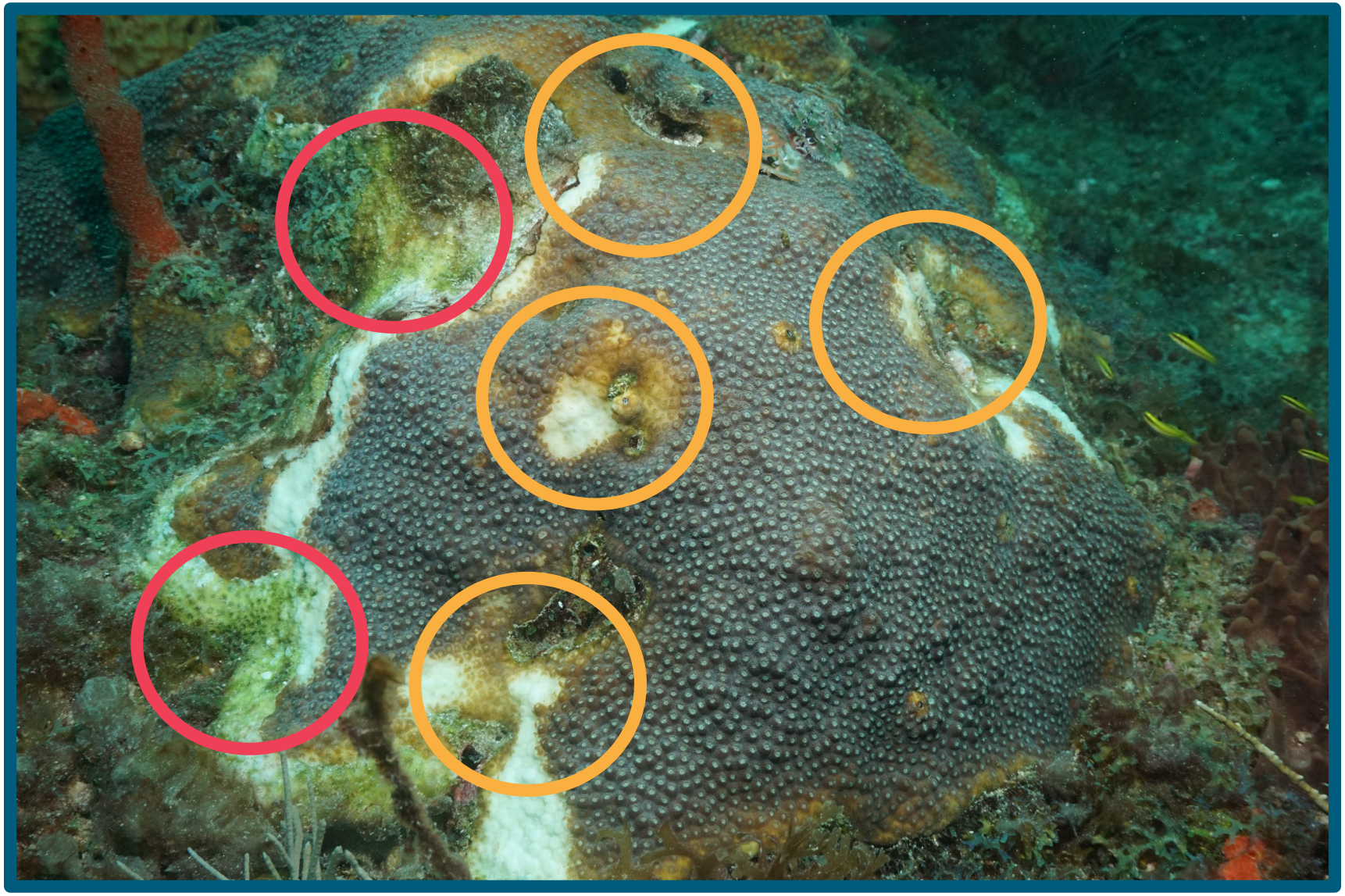
Identifying Coral Disease

Bleaching vs. Disease

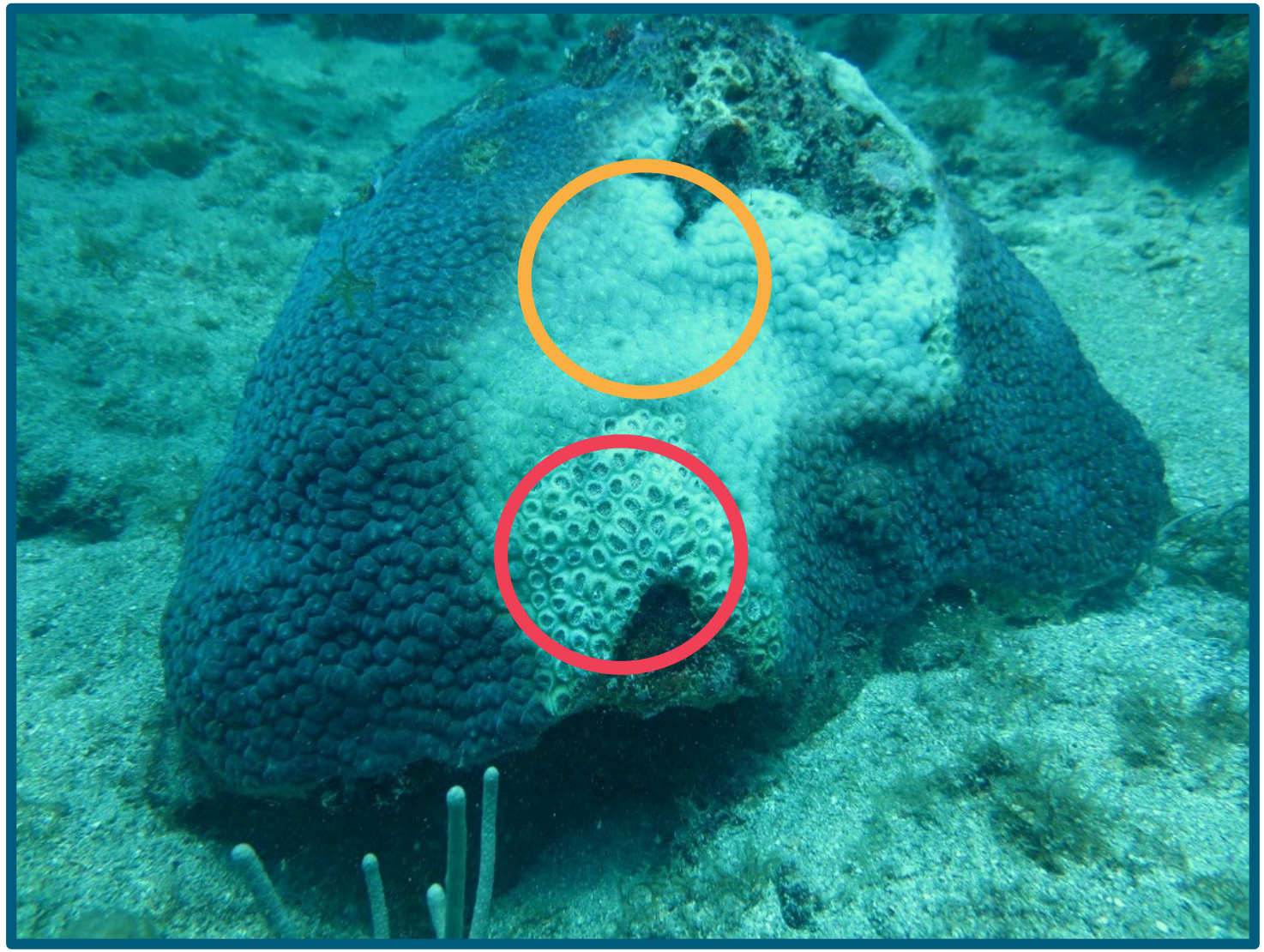
Healthy | Bleaching | Tissue Loss

Graphic: Travis Hartman/Reuters

Bleaching vs. Disease



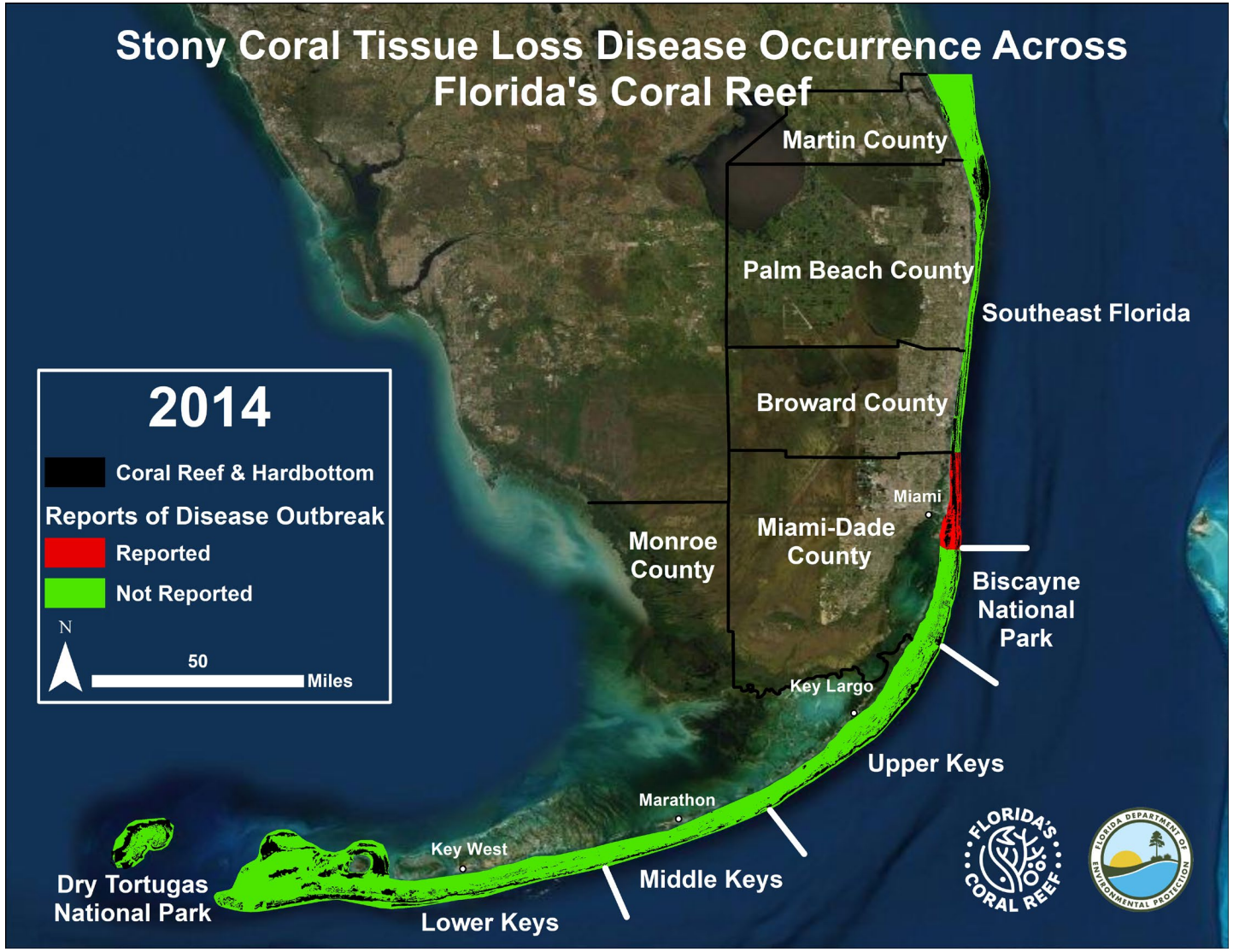
Bleaching vs. Tissue Loss



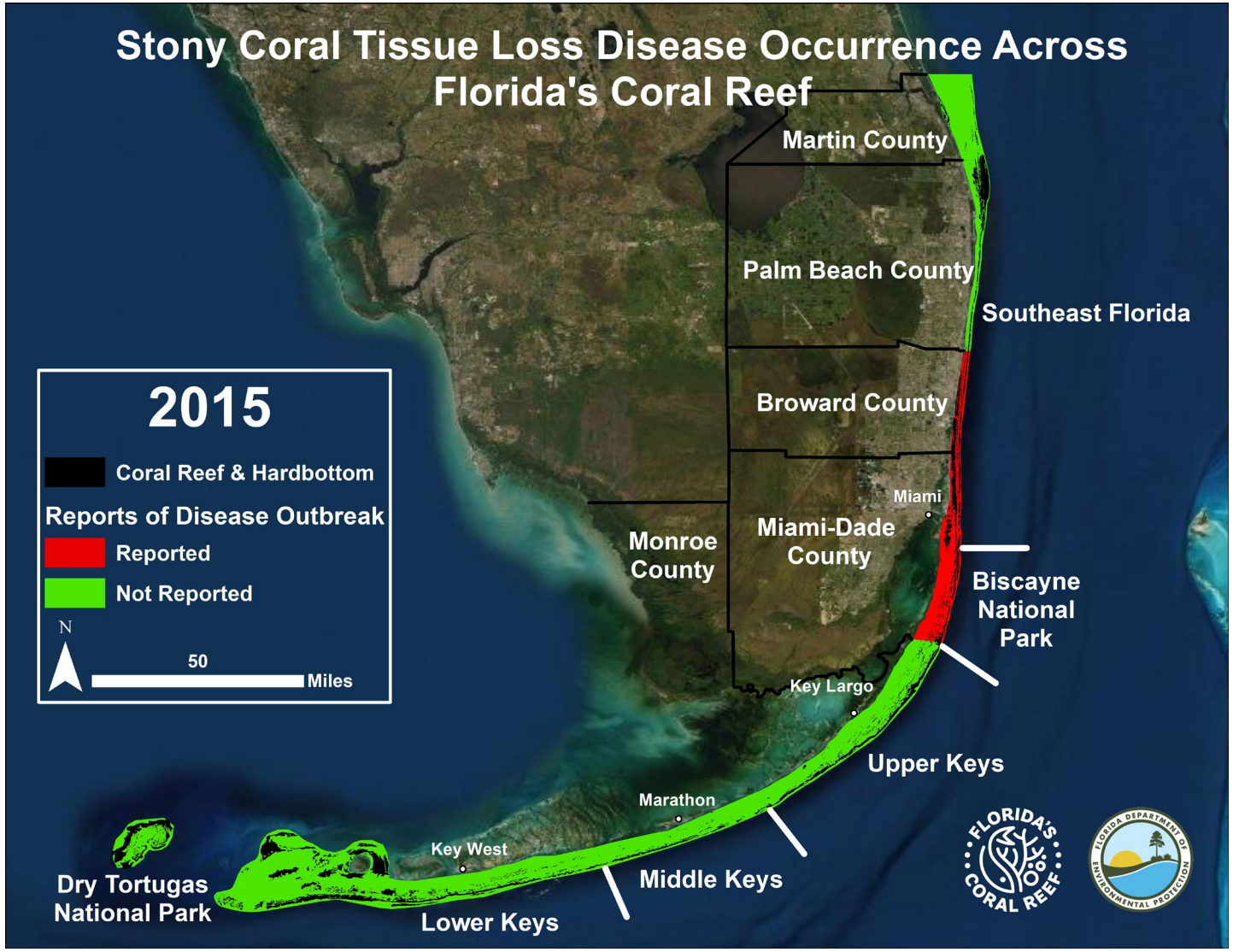
Stony Coral Tissue Loss Disease (SCTLD)

(2014 – Present)

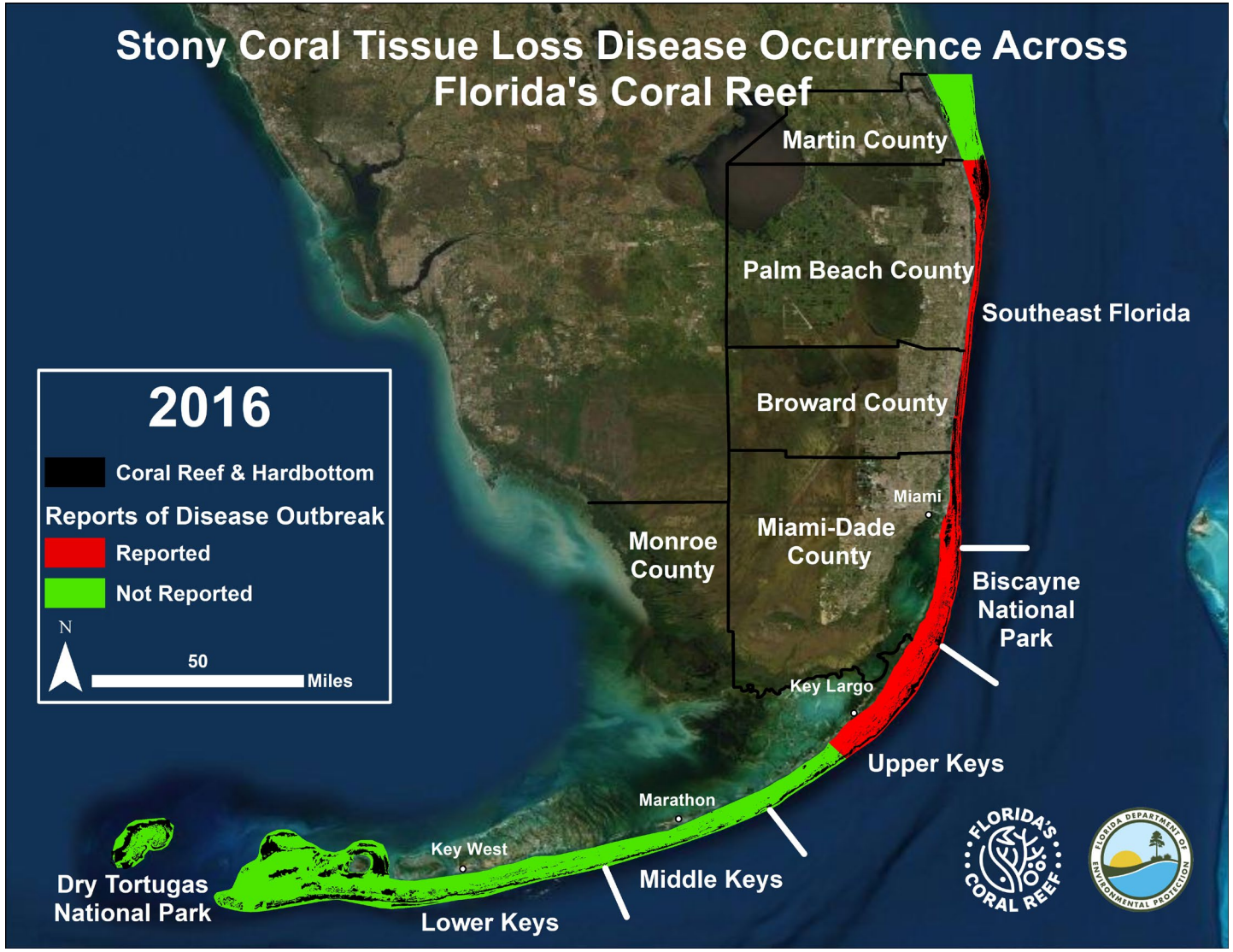
Disease Progression through Time



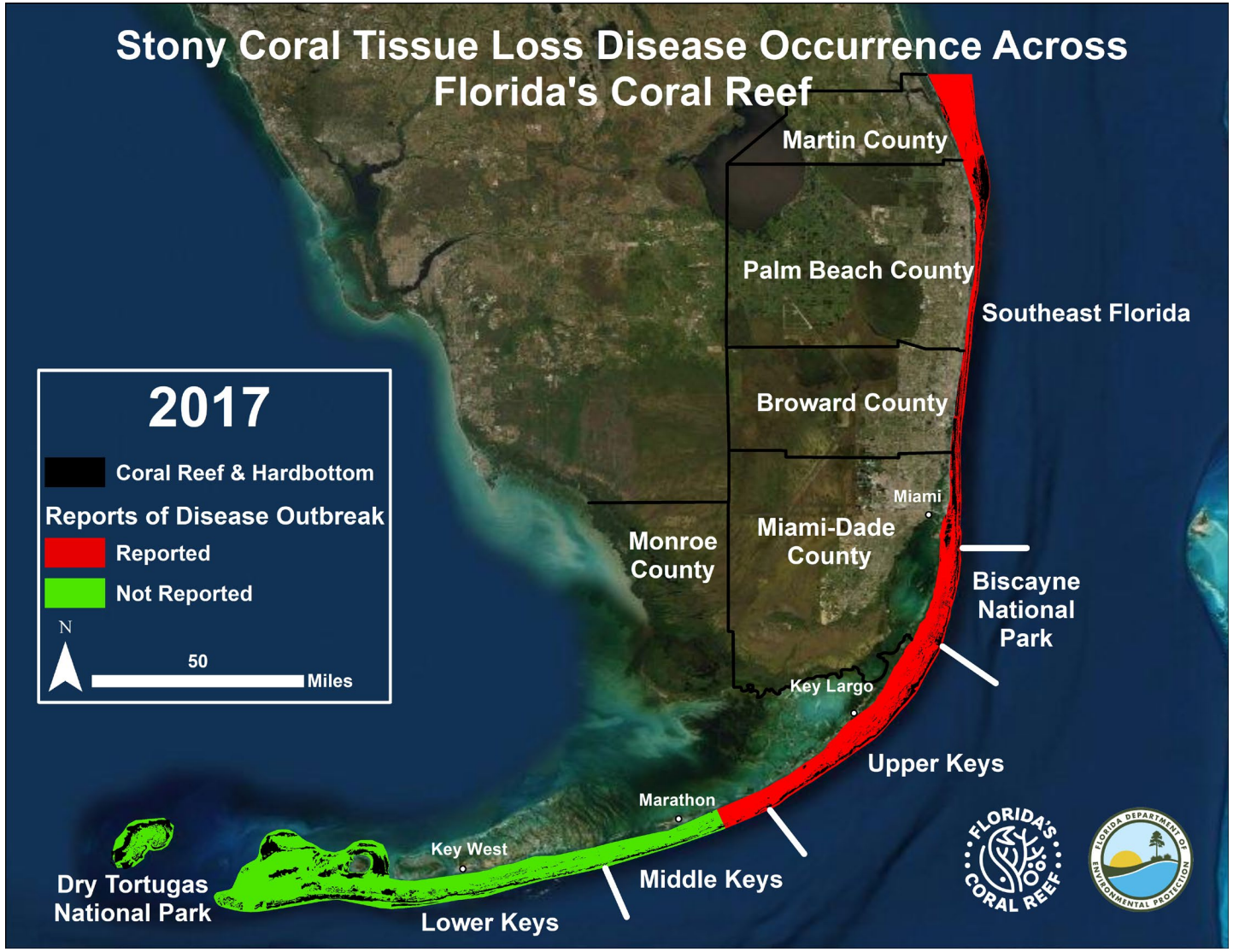
Disease Progression through Time



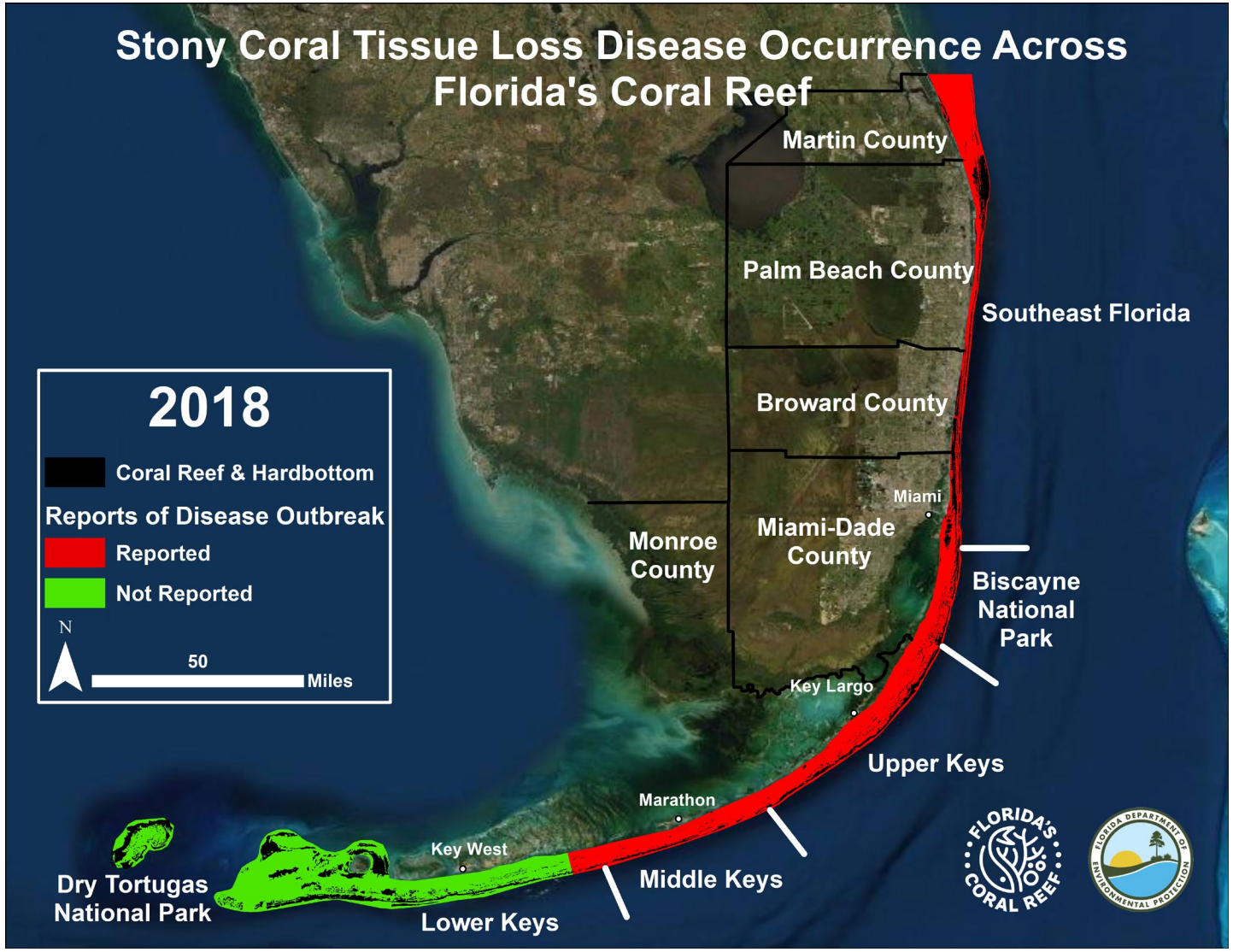
Disease Progression through Time



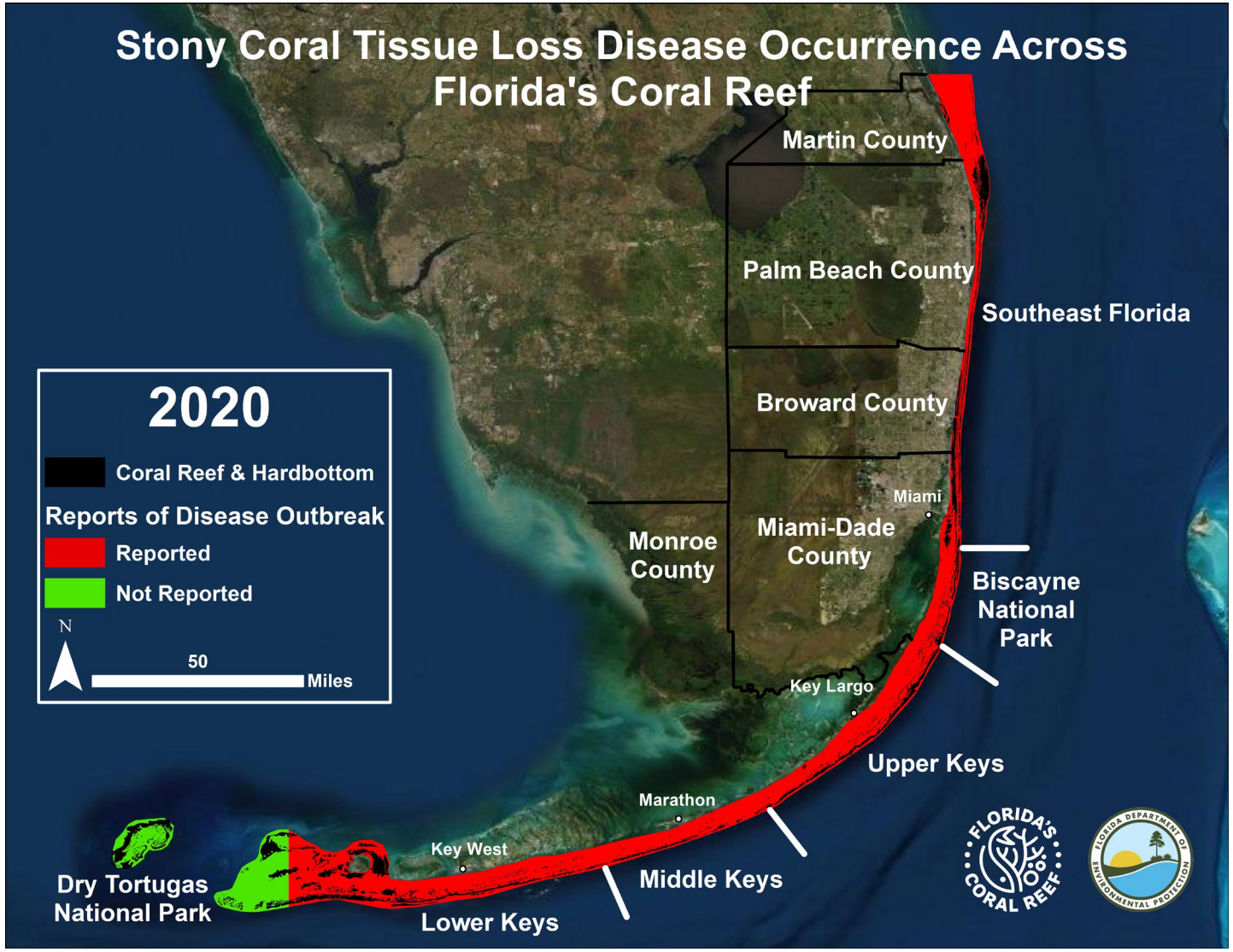
Disease Progression through Time



Disease Progression through Time

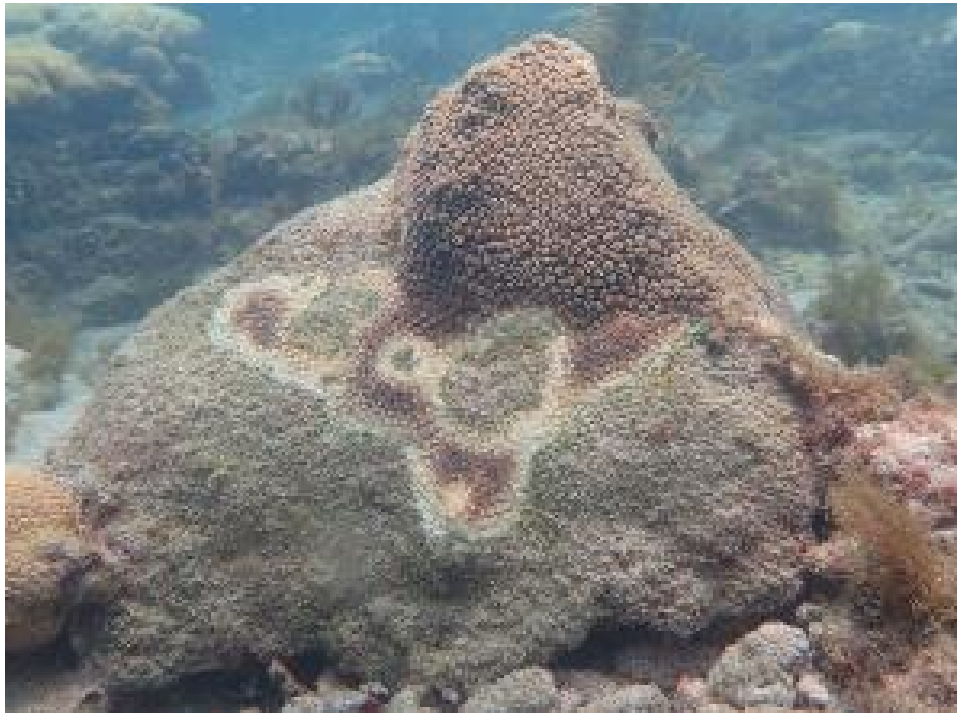


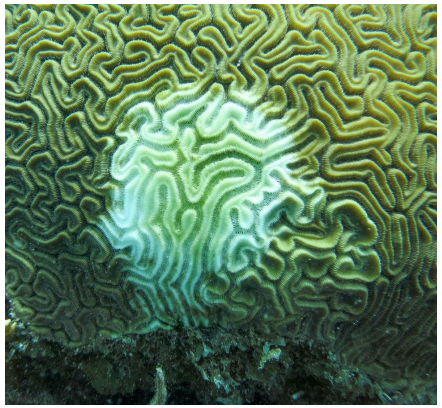
Disease Progression through Time

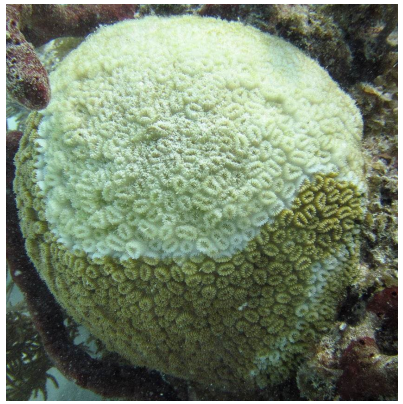


Caribbean Coral Disease Outbreak

Stony Coral Tissue Loss Disease (SCTLD)







Photos: NSU CRRAM, FWC, MDC, DEP

Background Level of Coral Disease

Florida's "Normal" Prevalence of Disease:

2-3%

Current Disease Outbreak Level

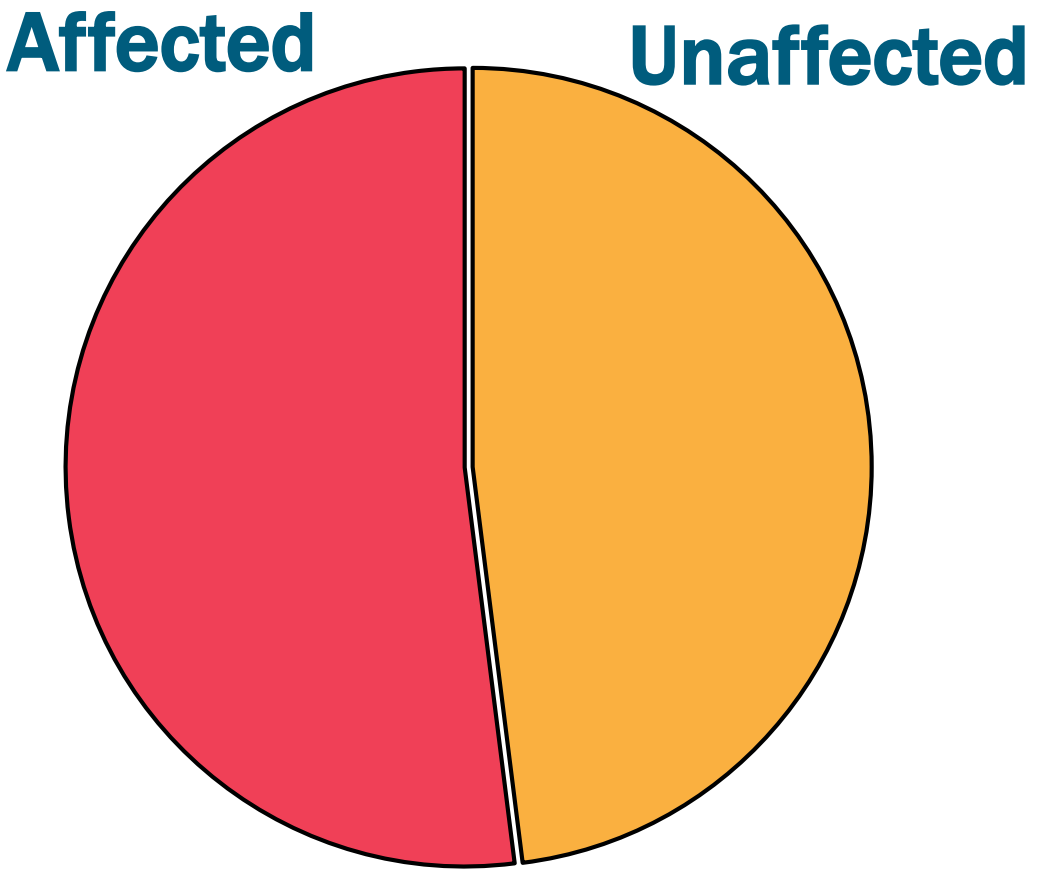
Very High =

66-100%

(in certain species)

Stony Coral Tissue Loss Disease (SCTLD)

More than half of Florida's reef-building coral species are susceptible



Stony Coral Tissue Loss Disease (SCTLD)

PROGRESSES RAPIDLY!

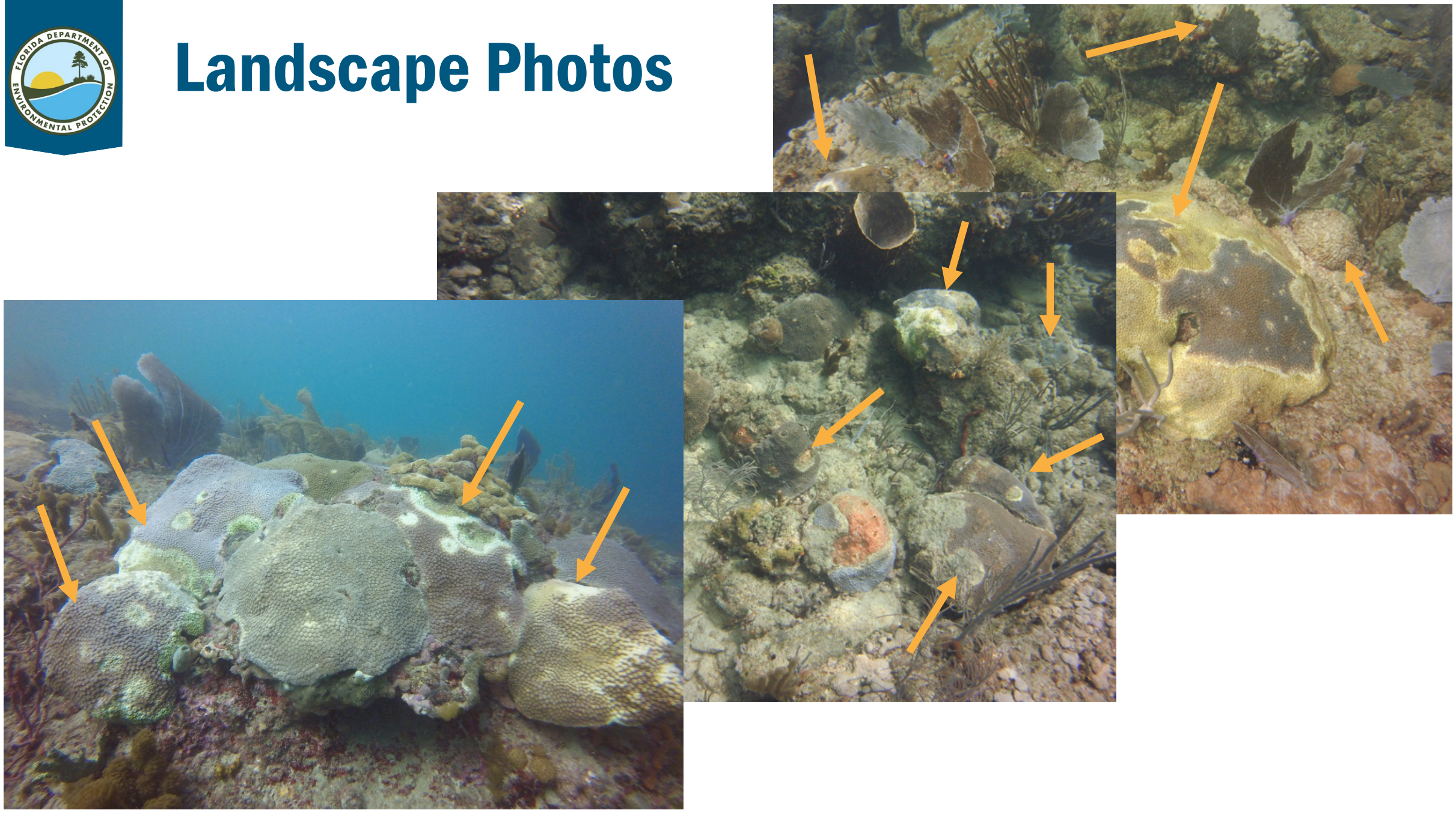
HIGH LIKELIHOOD OF COMPLETE MORTALITY

Photos: FWC

Most Impacted Species: Pillar Coral

95% loss of <u>known</u> populations

Landscape Photos



Disease Response Partners

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Smithsonian
NSF
US Army Corps of Engineers®
USGS
UNITED STATES COAST GUARD 1790
COUNTY OF MARTIN STATE OF FLORIDA
PALM BEACH COUNTY FLORIDA
BROWARD COUNTY FLORIDA
MIAMI-DADE COUNTY
MONROE COUNTY

THE FLORIDA AQUARIUM
Sea Grant Florida
CORE BLUE
AGRRA
Ocean Alchemists
KML Keys Marine Lab, Florida Keys
NSU NOVA SOUTHEASTERN UNIVERSITY
OSU Oregon State University
FLORIDA ATLANTIC UNIVERSITY EST. 1961
UNIVERSITY OF HAWAI'I
FLORIDA INSTITUTE OF TECHNOLOGY

The Nature Conservancy
MOTE MARINE LABORATORY
core Rx Development at Our Core
FROST SCIENCE
Coral Disease & Health Consortium
UNIVERSITY OF MIAMI ROSENSTIEL SCHOOL of MARINE & ATMOSPHERIC SCIENCE
FIU FLORIDA INTERNATIONAL UNIVERSITY

NFWF
SeaWorld
ASSOCIATION OF ZOOS & AQUARIUMS
Callaway Marine Technologies, Inc.
Disney's ANIMALS, SCIENCE and ENVIRONMENT
CORAL RESTORATION FOUNDATION
Friends of OUR FLORIDA REEFS FloridaReef.org

SFRPC South Florida Regional Planning Council
TREASURE COAST TCRPC REGIONAL PLANNING COUNCIL
NATIONAL MISSISSIPPI RIVER MUSEUM & AQUARIUM
RIVERBANKS ZOO & GARDEN columbia south carolina
ADVENTURE AQUARIUM
MOODY GARDENS GALVESTON ISLAND

UF UNIVERSITY of FLORIDA
GEORGE MASON UNIVERSITY
جامعة قطر QATAR UNIVERSITY
USF UNIVERSITY OF SOUTH FLORIDA
fkcc Florida Keys Community College

Training Overview

What is Coral Bleaching?

Coral Disease in Florida

SEAFAN & the BleachWatch Early Warning Program

Your Contribution

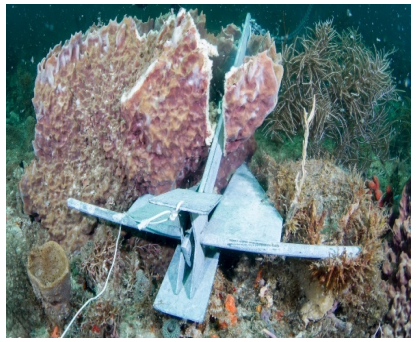
Southeast Florida Action Network (SEAFAN)

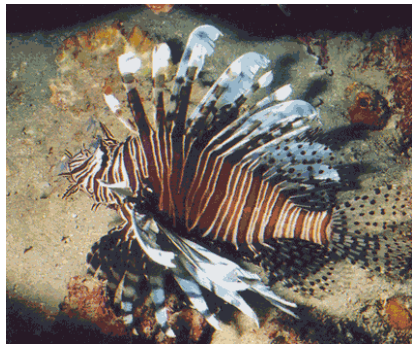
SEAFAN

Southeast Florida Action Network

We're All Connected ~ Keep It Protected

A community-based reporting and response program for marine incidents affecting southeast Florida's coral reef ecosystem.



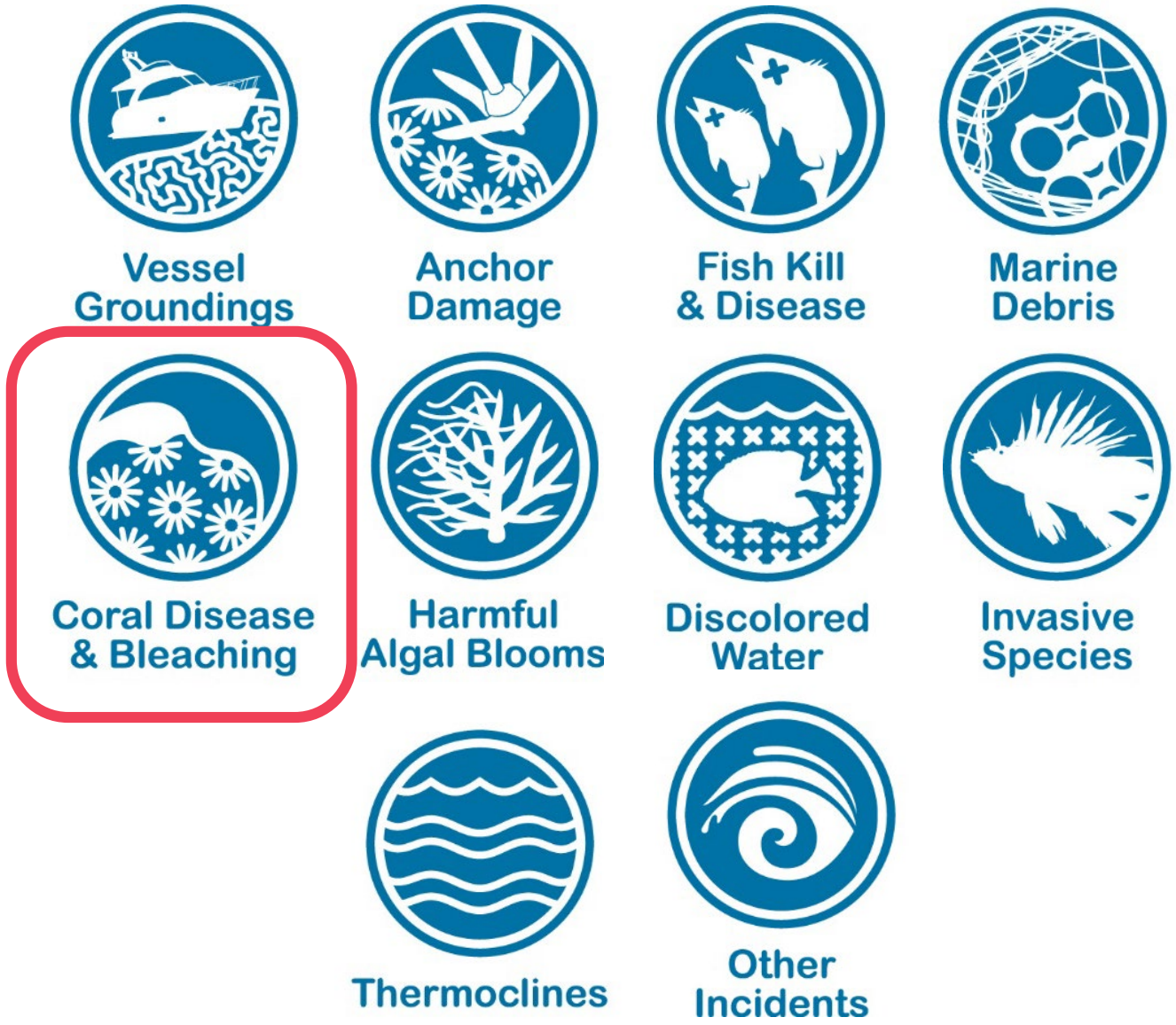


SEAFAN

See a Marine Incident ?
REPORT IT !

www.SEAFAN.net

1-866-770-SEFL
(7335)

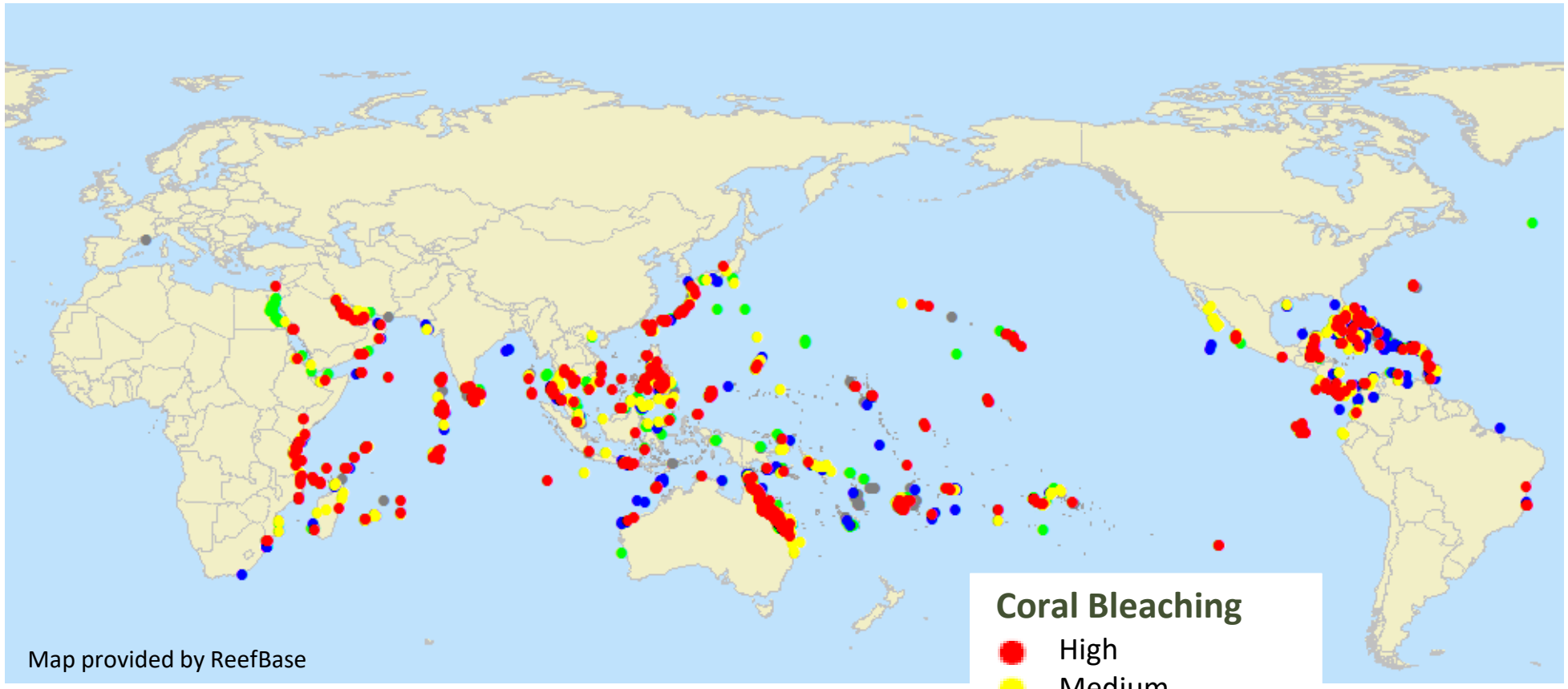


SEAFAN BleachWatch

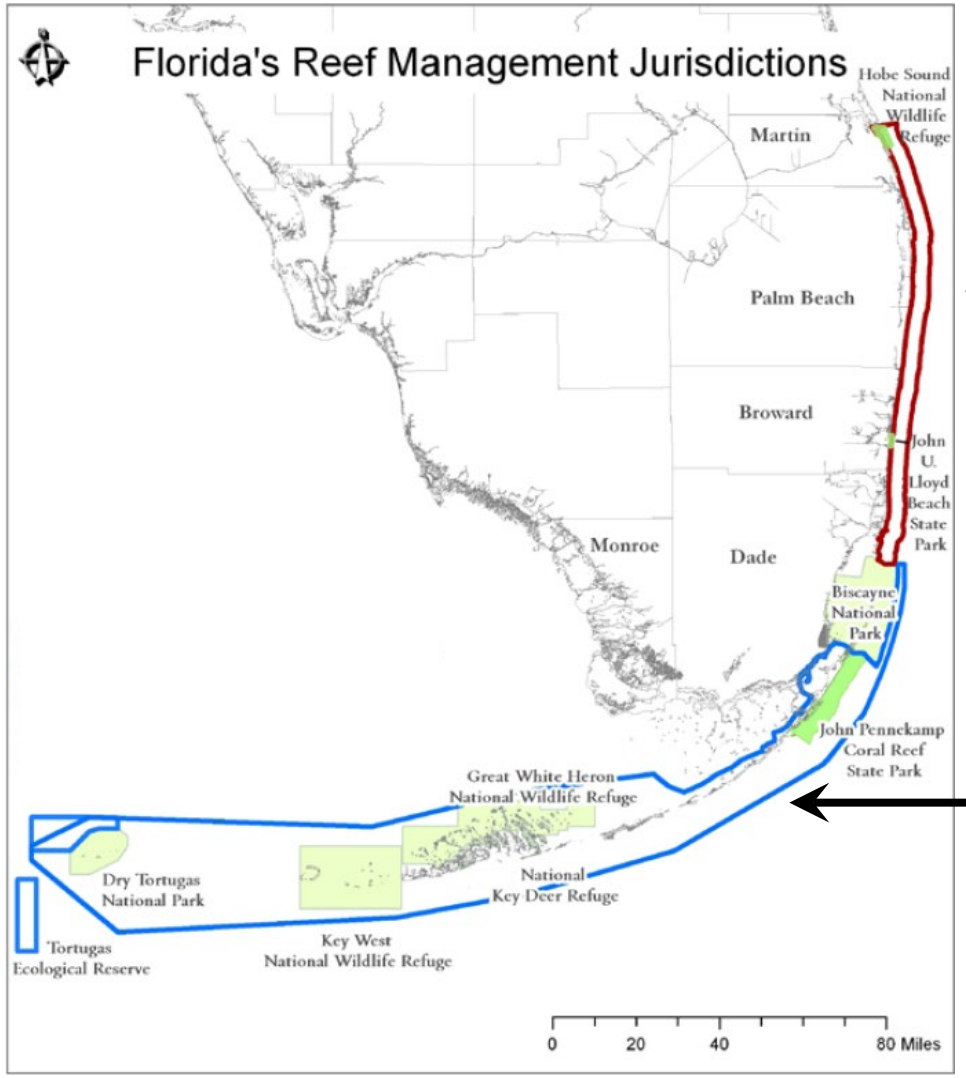
BleachWatch is an early warning system for coral bleaching in southeast Florida.

Coral Disease & Bleaching

Coral Bleaching, 1980-2010



SEAFAN BleachWatch



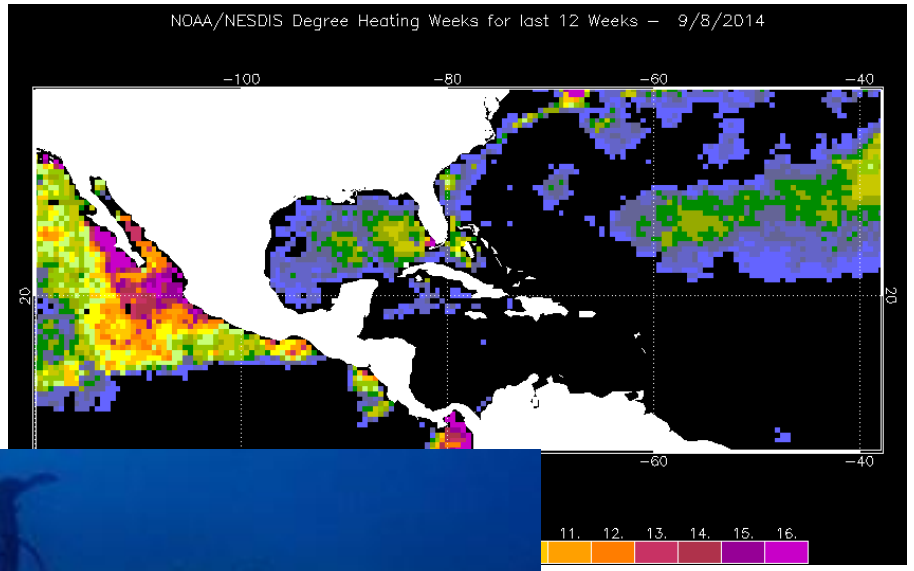
DEP Coral Reef Conservation Program Area
Florida Keys National Marine Sanctuary
Federal Park or Refuge
State Park

SEAFAN BleachWatch

Florida Keys BleachWatch

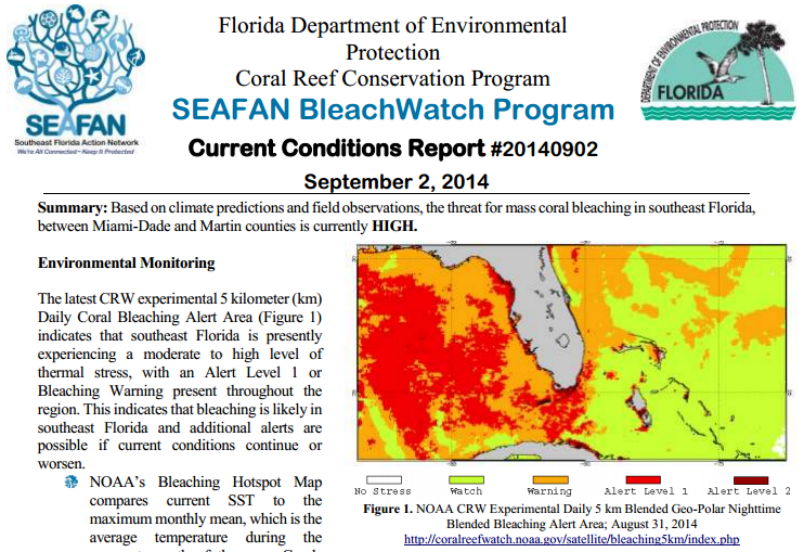
BleachWatch Objectives

Environmental Monitoring



Involve Citizen Scientists

Issue "Current Conditions" reports



Florida Department of Environmental Protection
Coral Reef Conservation Program
SEAFAN BleachWatch Program

Current Conditions Report #20140902

September 2, 2014

Summary: Based on climate predictions and field observations, the threat for mass coral bleaching in southeast Florida, between Miami-Dade and Martin counties is currently **HIGH.**

Environmental Monitoring

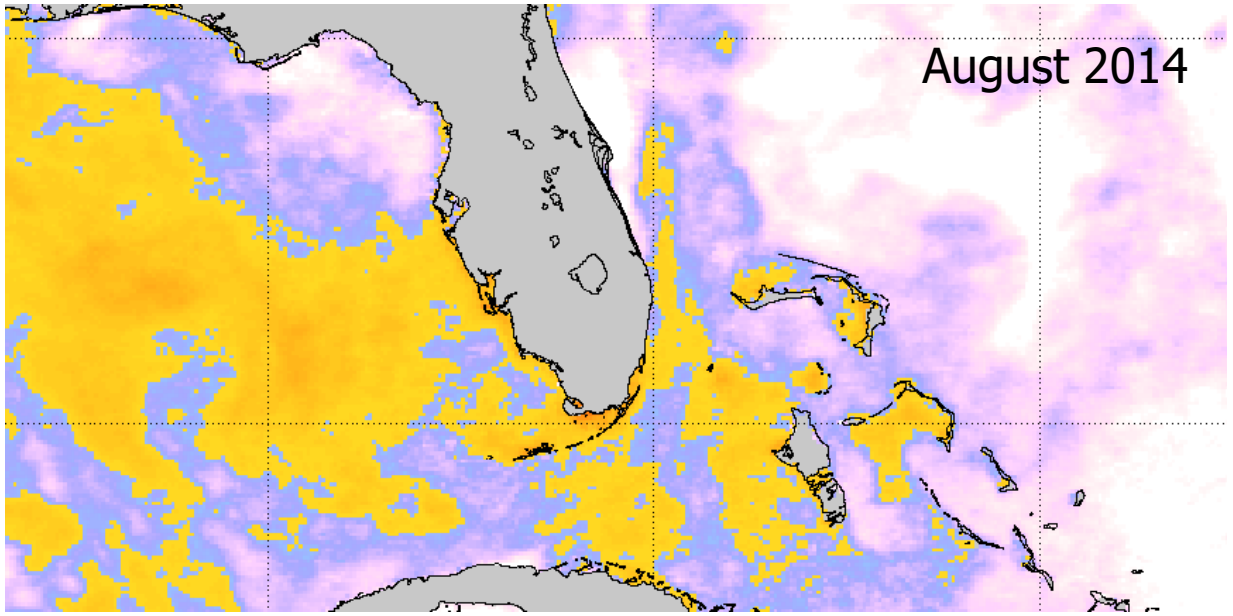
The latest CRW experimental 5 kilometer (km) Daily Coral Bleaching Alert Area (Figure 1) indicates that southeast Florida is presently experiencing a moderate to high level of thermal stress, with an Alert Level 1 or Bleaching Warning present throughout the region. This indicates that bleaching is likely in southeast Florida and additional alerts are possible if current conditions continue or worsen.

- NOAA's Bleaching Hotspot Map compares current SST to the maximum monthly mean, which is the average temperature during the

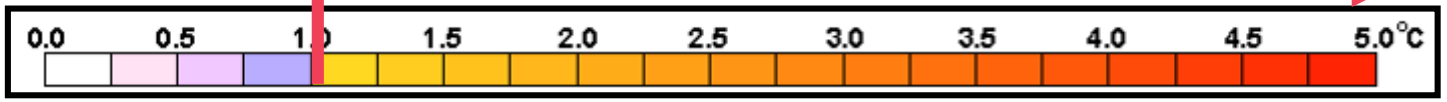
Figure 1. NOAA CRW Experimental Daily 5 km Blended Geo-Polar Nighttime Blended Bleaching Alert Area; August 31, 2014
http://coralreefwatch.noaa.gov/satellite/bleaching5km/index.php

Environmental Monitoring

High Temperatures (Hot Spots)

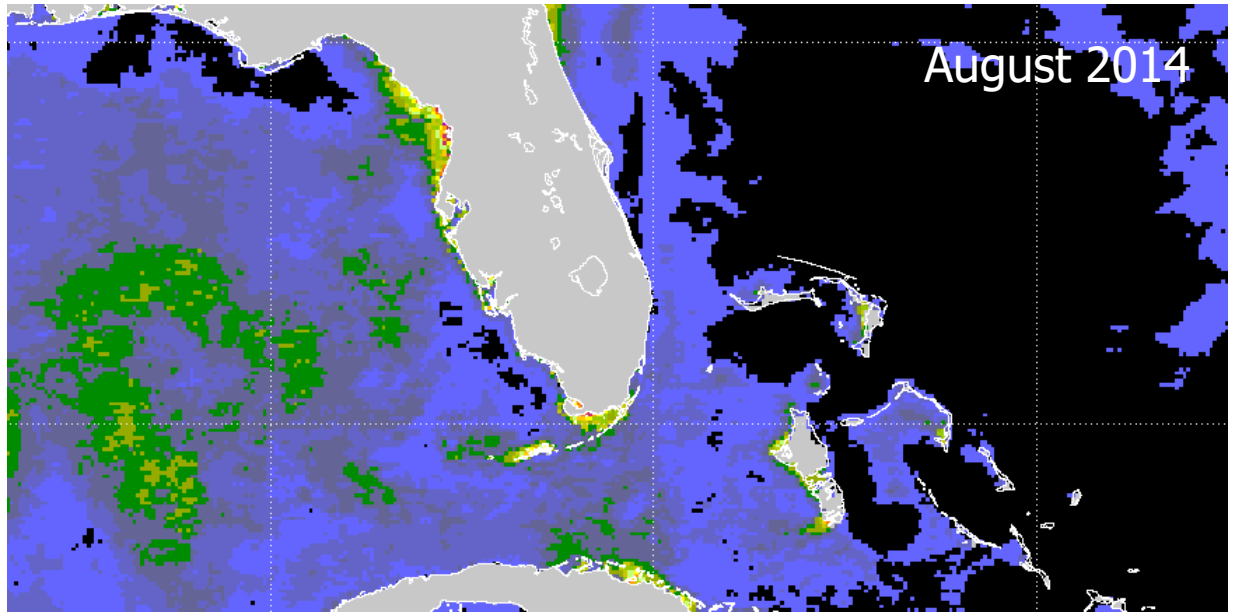


Corals start to become stressed



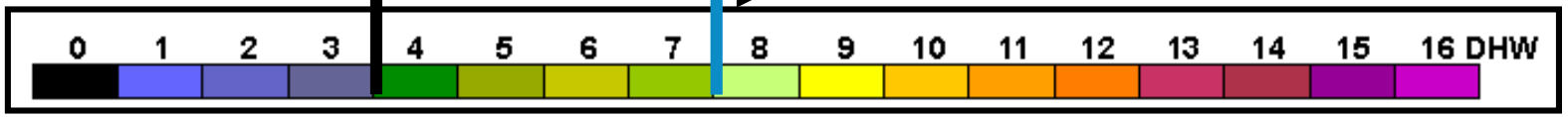
Environmental Monitoring

Extended Time
(Degree Heating Weeks)



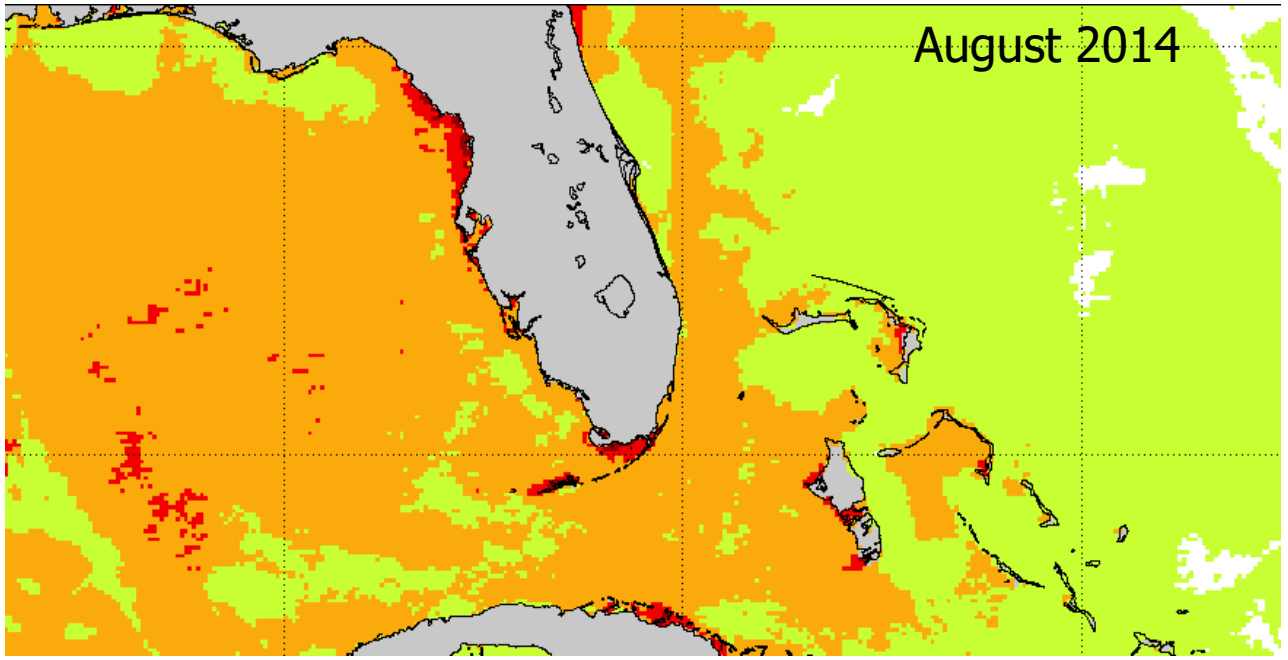
Significant coral bleaching likely

Widespread bleaching and mortality



Environmental Monitoring

High Temperatures (Hot Spots) + **Extended Time (Degree Heating Weeks)** = **Bleaching Alerts**



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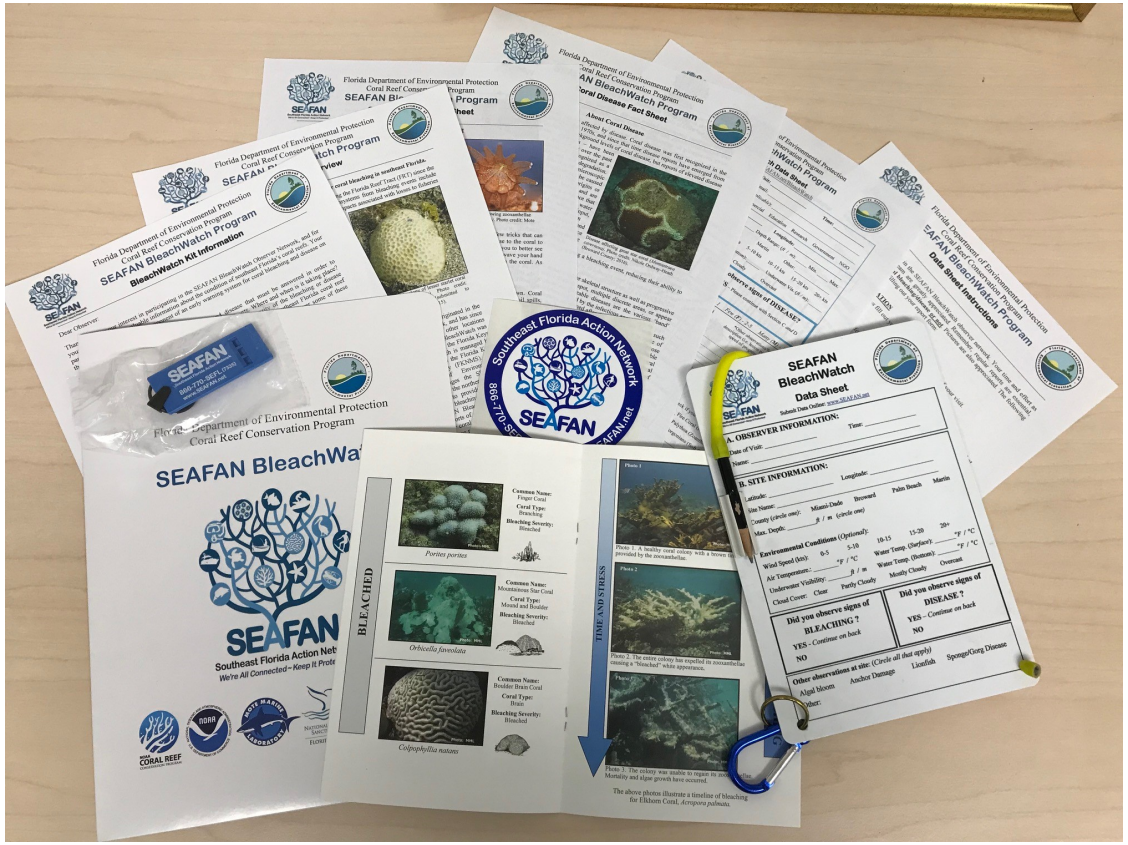
Training Materials



All Available Online!!

1. Program Overview
2. Bleaching Fact Sheet
3. Disease Fact Sheet
4. ***Datasheet***
5. Datasheet Instructions
6. Coral Condition ID Guide *(booklet)*
7. Coral Cheat Sheet (*beginner level)*

www.SEAFAN.net/BleachWatch

Observer Details

Florida Department of Environmental Protection
Coral Reef Conservation Program

SEAFAN BleachWatch Program

BleachWatch Data Sheet

Online Forms: www.SEAFAN.net/BleachWatch

A. OBSERVER INFORMATION: **Date of Visit:** _____ **Time:** _____

Name: _____ Email: _____

Phone: _____ Organization (*if applicable*): _____

Observer Category (*circle*): Resident Visitor Tourism Commercial Education Research Government NGO

Site Information

B. SITE INFORMATION: **Latitude:** N 25 40.450 **Longitude:** W 80 5.920

Site Name/Location: Emerald Reef Depth Range: (*ft* / *m*): 20 Min. 25 Max.

County (*circle*): Miami-Dade **Broward** Palm Beach Martin Other: _____

Environmental Conditions (*Optional*): Wind Speed (*circle*): **0–5 kts** 5–10 kts 10–15 kts 15–20 kts 20+ kts

Air Temp.: 95 Water Temp. (*Surface*): 84 Water Temp. (*Bottom*): 87 Underwater Vis. (*ft* / *m*): 30

Cloud cover (*circle*): **Clear** Partly Cloudy Mostly Cloudy Overcast

Did You Observe Signs of Coral Bleaching or Disease?

Did you observe signs of BLEACHING?	Did you observe signs of DISEASE?
☐ YES – Please continue with Section C *and* D ☐ NO	☐ YES – Please continue with Section D ☐ NO

Continue Next Section

Finished!

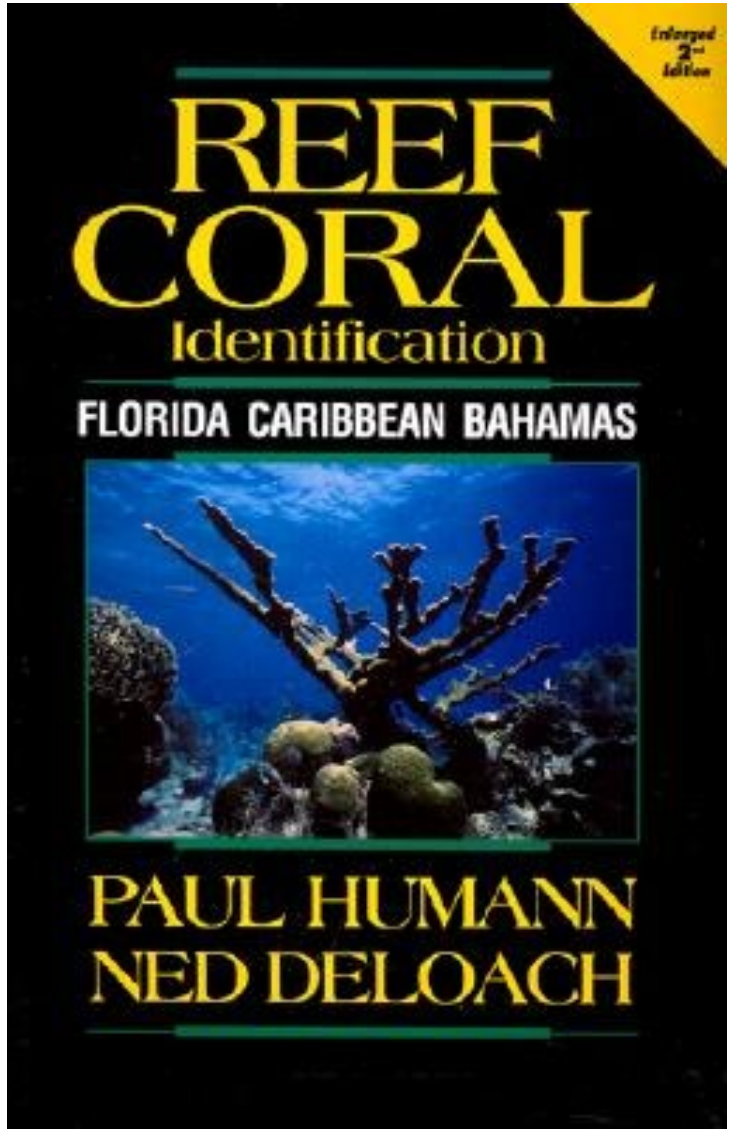
Bleaching and Disease Observations

TYPES OF CORALS

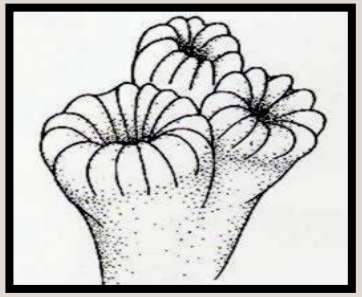
C. BLEACHING AND DISEASE OBSERVATIONS: *Single (S) - 1 Few (F) - 2-5 Many (M) - 5+*

	Bleaching:				**Disease:**				
	No Stress	Paling	Partial Bleaching	Bleached	Black Band	Tissue Loss (white)	Growth Anomaly	Other*	*Other observations/further description (i.e. lesion pattern, color, speed of progression, etc.)
Brain	☐	☐	☐	☐	☐	☐	☐	☐	
Branching	☐	☐	☐	☐	☐	☐	☐	☐	
Fleshy	☐	☐	☐	☐	☐	☐	☐	☐	
Flowering/Cup	☐	☐	☐	☐	☐	☐	☐	☐	
Leaf/Plate/Sheet	☐	☐	☐	☐	☐	☐	☐	☐	
Mound/Boulder	☐	☐	☐	☐	☐	☐	☐	☐	

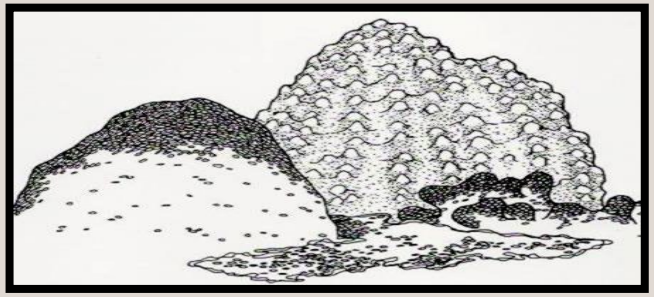
Types of Coral



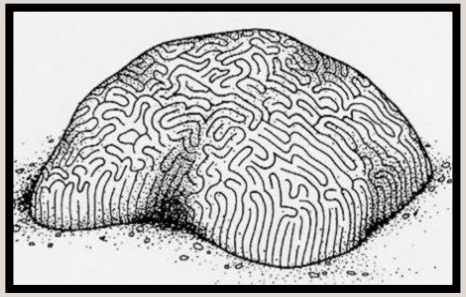
Types of Coral



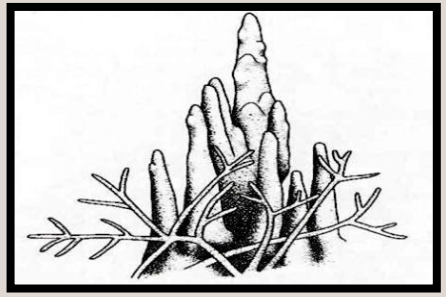
Flowering & Cup



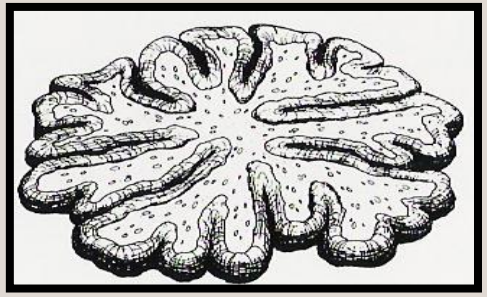
Mound, Boulder & Encrusting



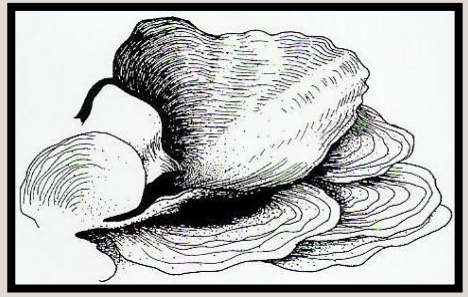
Brain Corals



Branching & Pillar



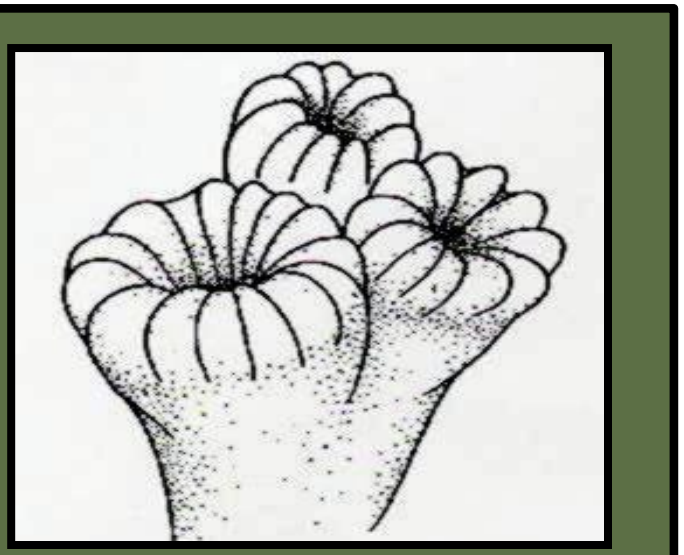
Fleshy Corals



Plate, Leaf & Sheet

Drawings courtesy of Reef Coral Identification

Types of Coral



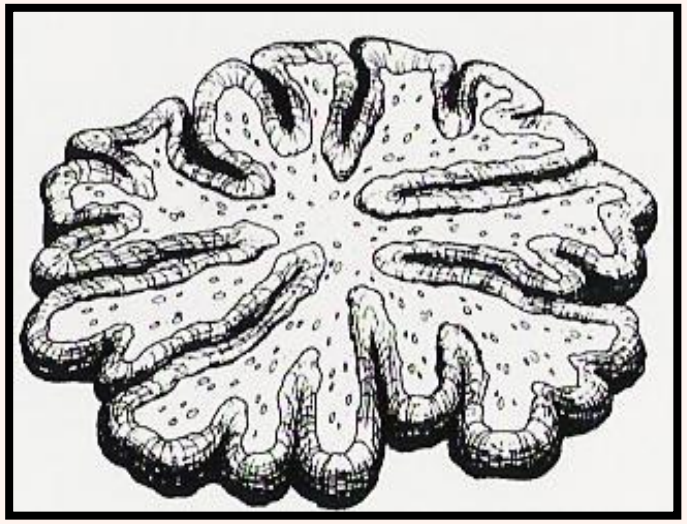
Flowering & Cup

Smooth Flower Coral

Photo: Coral Reef ID

Smooth Flower Coral

Types of Coral



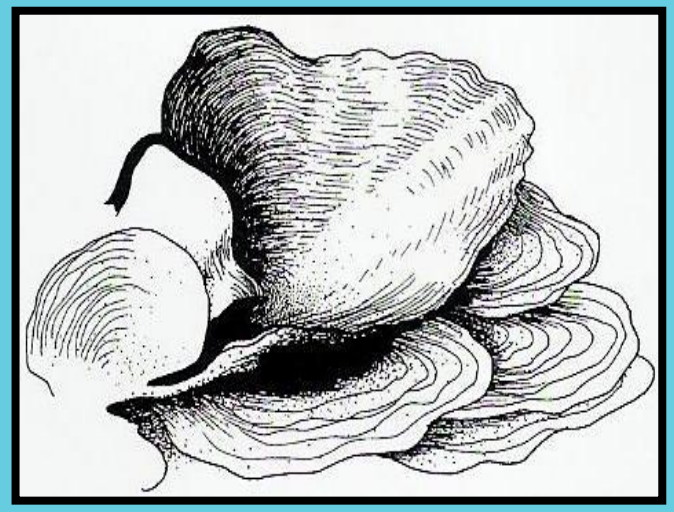
Fleshy Corals

Cactus Coral

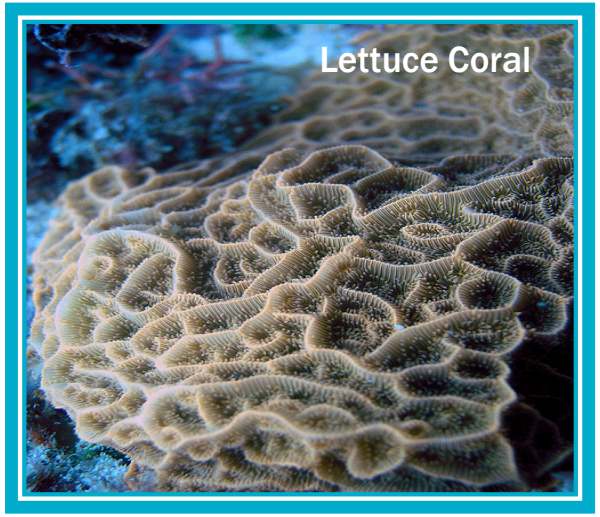
Mushroom Coral

Spiny Flower Coral

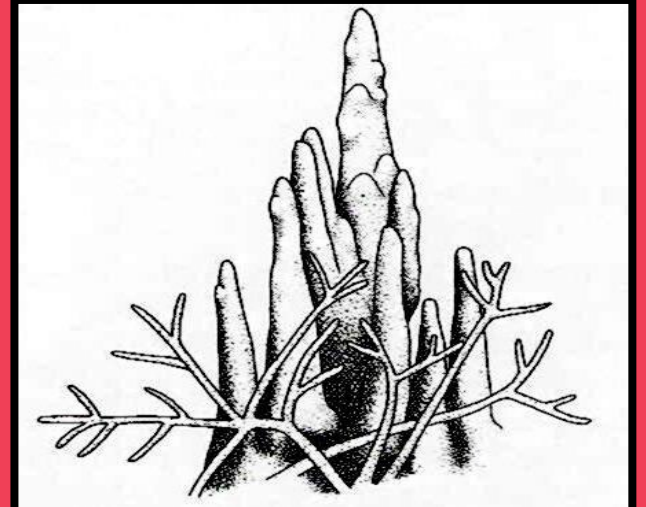
Types of Coral



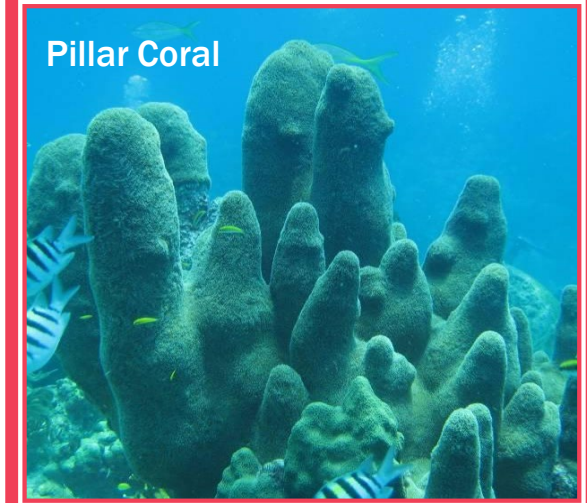
Plate, Leaf & Sheet



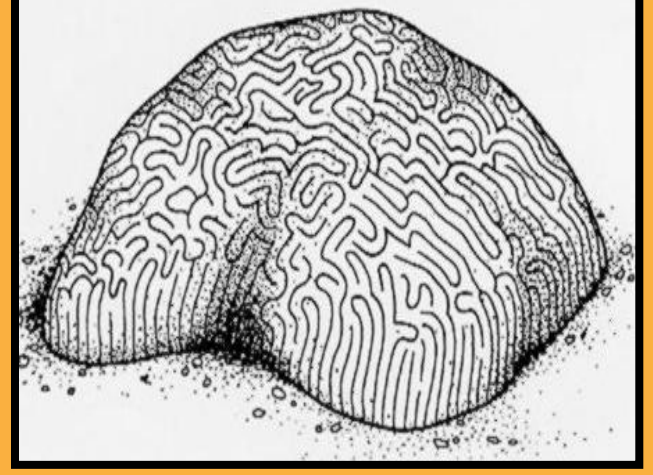
Types of Coral



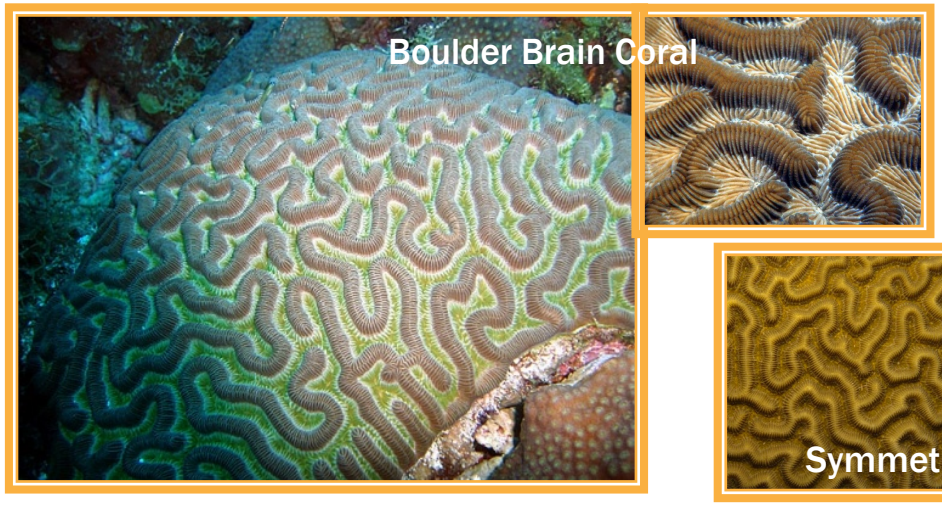
Branching & Pillar

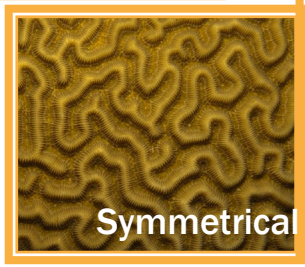


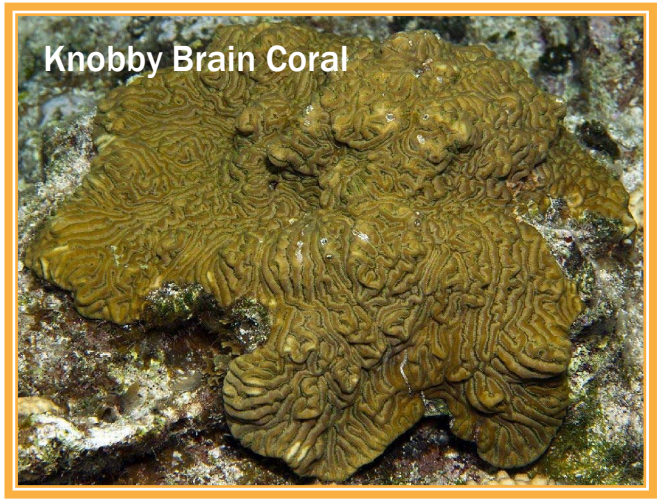
Types of Coral



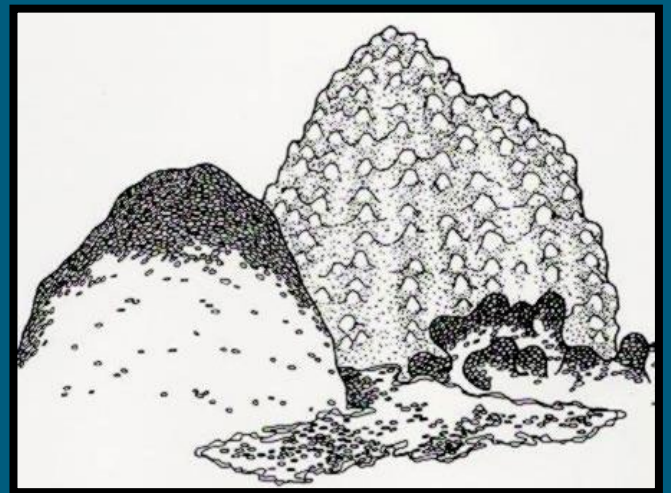
Brain Corals



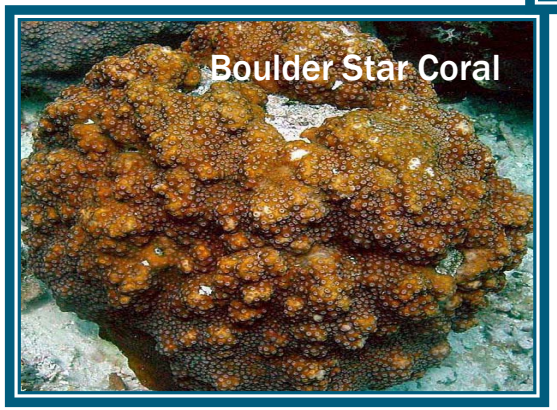




Types of Coral



Mound, Boulder & Encrusting



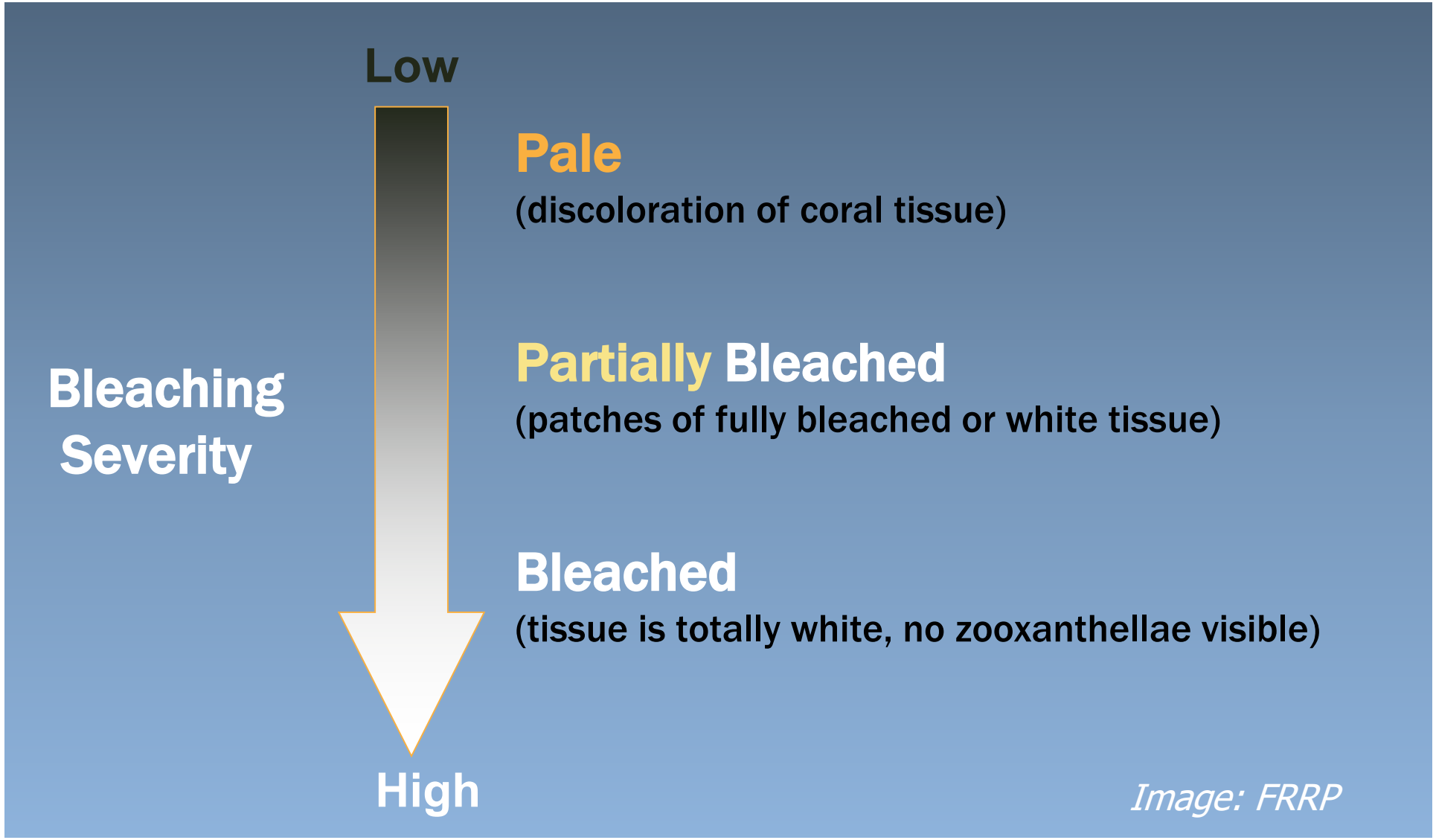
Bleaching and Disease Observations

BLEACHING

C. BLEACHING AND DISEASE OBSERVATIONS: *Single (S) - 1 Few (F) - 2-5 Many (M) - 5+*

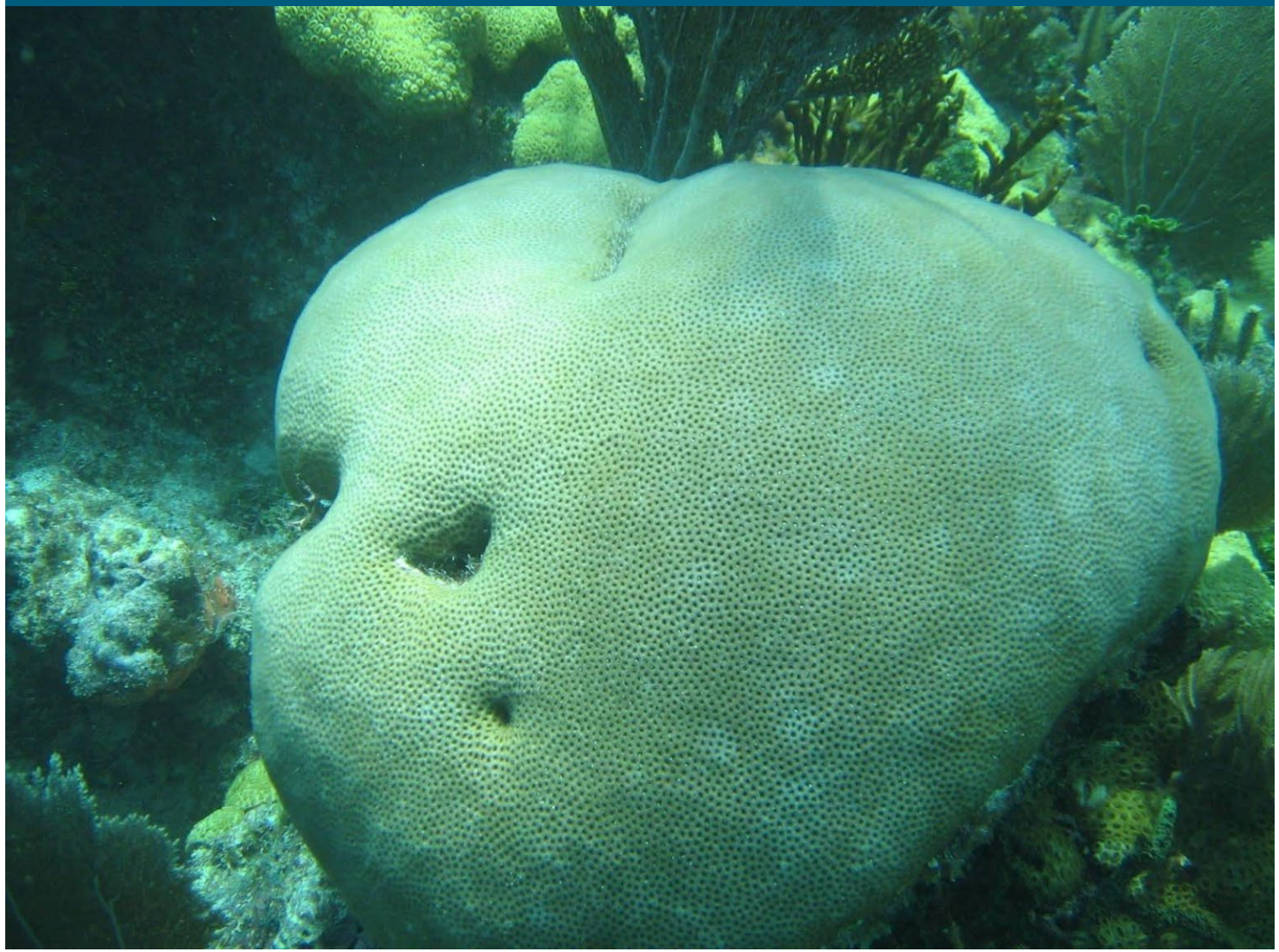
	Bleaching:				**Disease:**				
	No Stress	*Paling*	*Partial Bleaching*	*Bleached*	*Black Band*	*Tissue Loss (white)*	*Growth Anomaly*	*Other**	*Other observations/further description (i.e. lesion pattern, color, speed of progression, etc.)
Brain	☐	☐	☐	☐	☐	☐	☐	☐	
Branching	☐	☐	☐	☐	☐	☐	☐	☐	
Fleshy	☐	☐	☐	☐	☐	☐	☐	☐	
Flowering/Cup	☐	☐	☐	☐	☐	☐	☐	☐	
Leaf/Plate/Sheet	☐	☐	☐	☐	☐	☐	☐	☐	
Mound/Boulder	☐	☐	☐	☐	☐	☐	☐	☐	

Severity of Bleaching

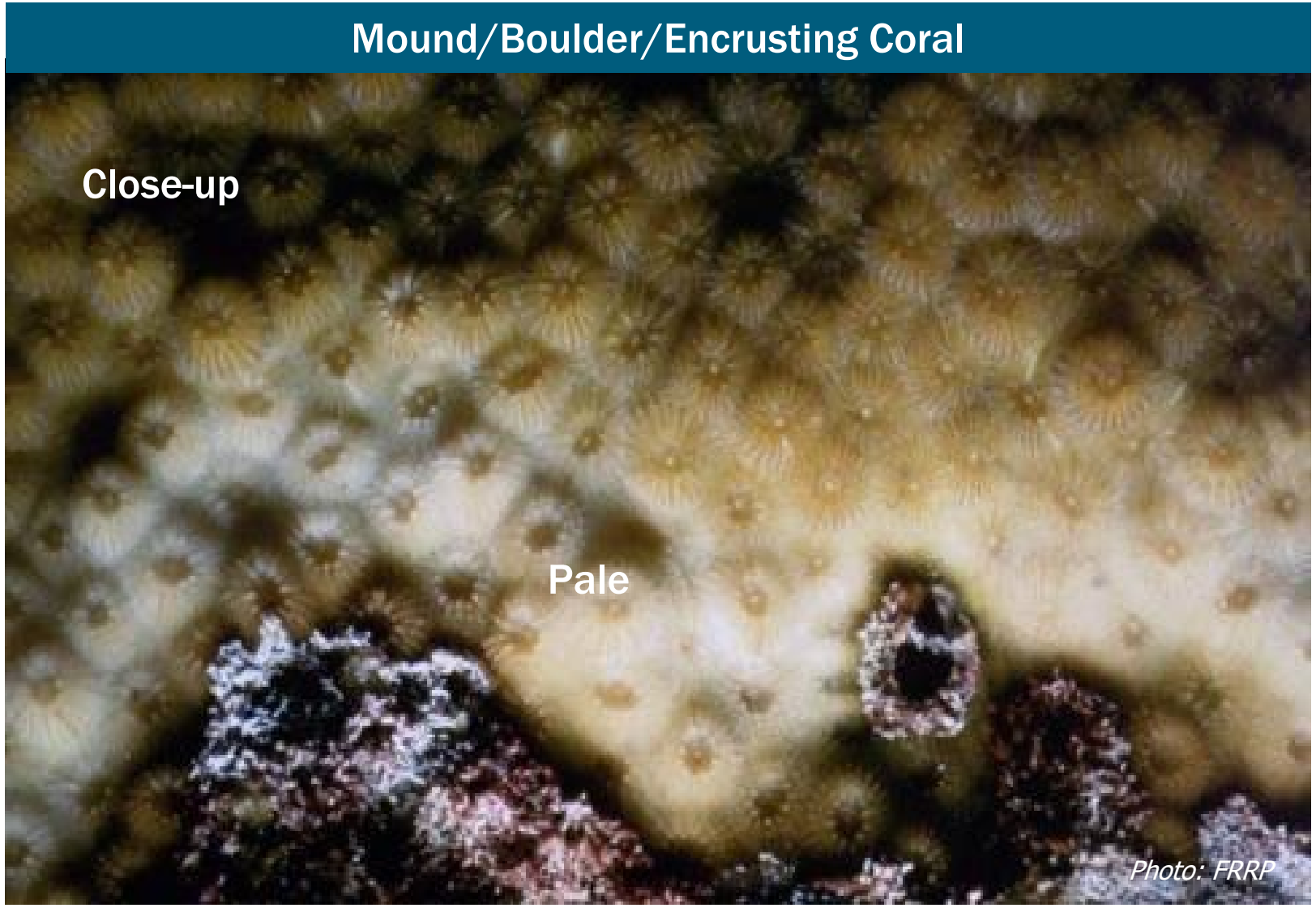


Paling

Mound/Boulder/Encrusting Coral



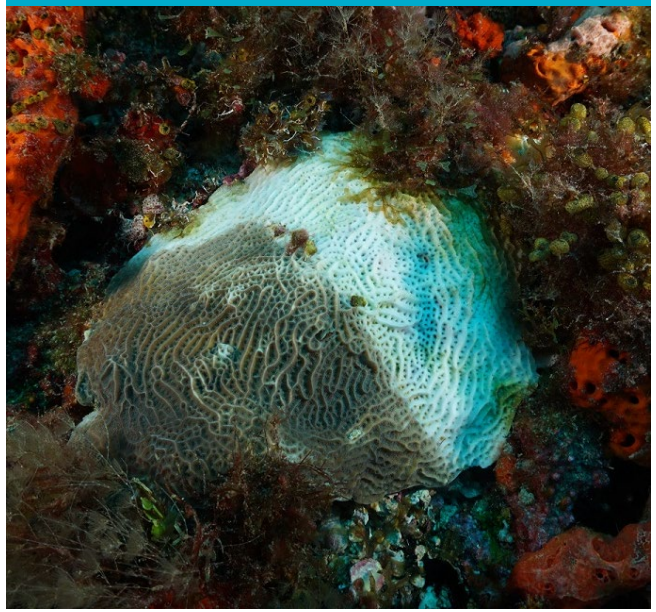
Paling



Partially Bleached

Mound/Boulder/Encrusting Coral

Leaf/Plate/Sheet Coral



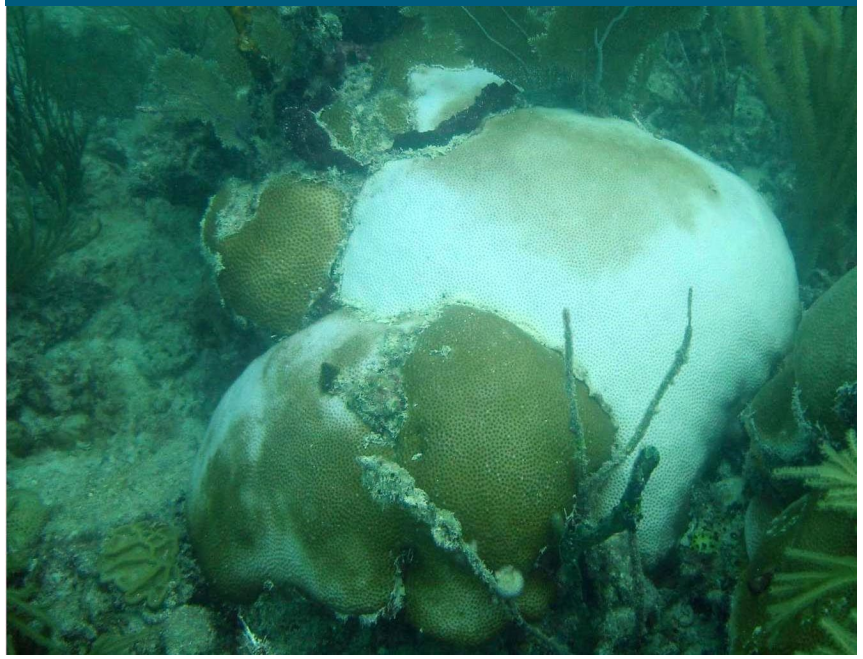
Brain Coral

Partially Bleached

Brain Coral

Mound/Boulder/Encrusting Coral

Mound/Boulder/Encrusting Coral



Fully Bleached

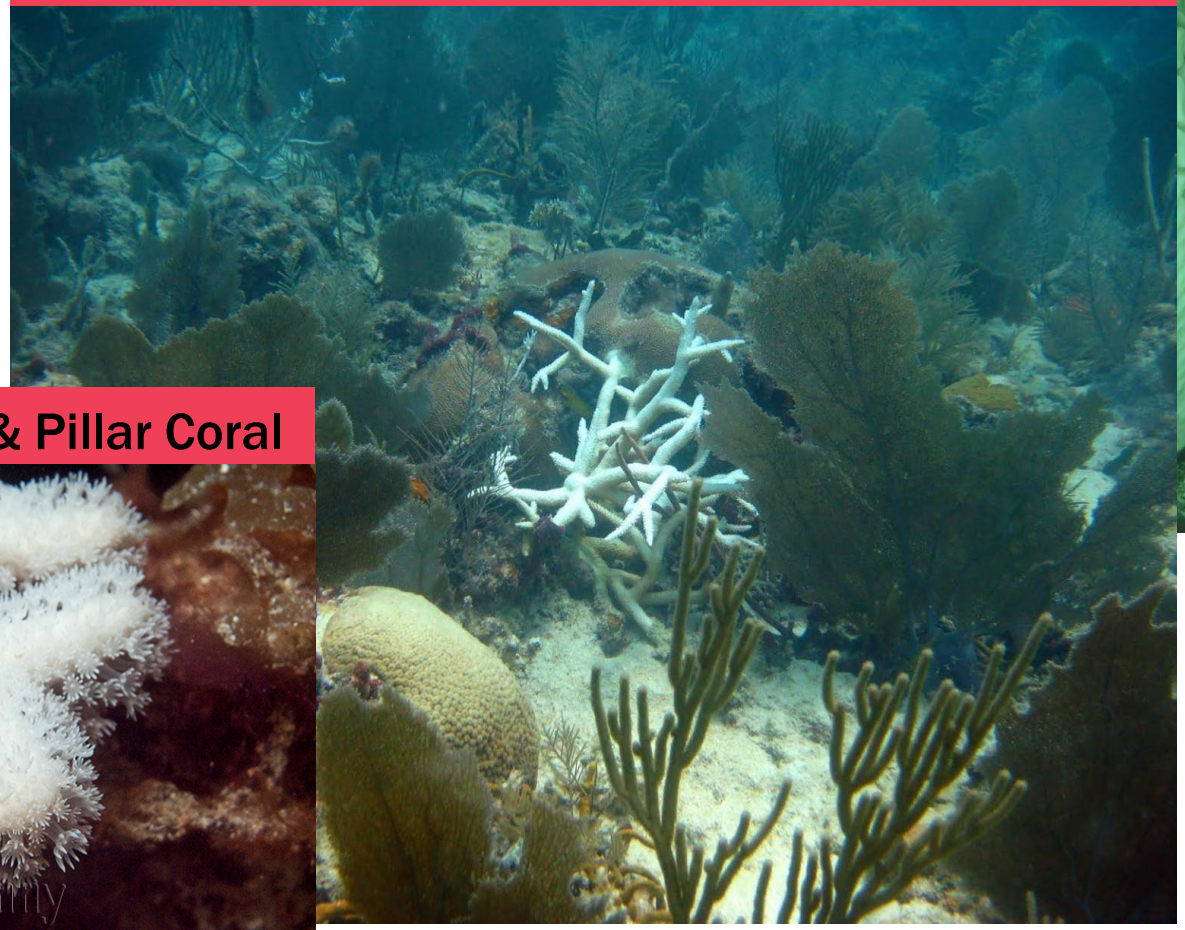
Brain Coral

Brain Coral

Fully Bleached

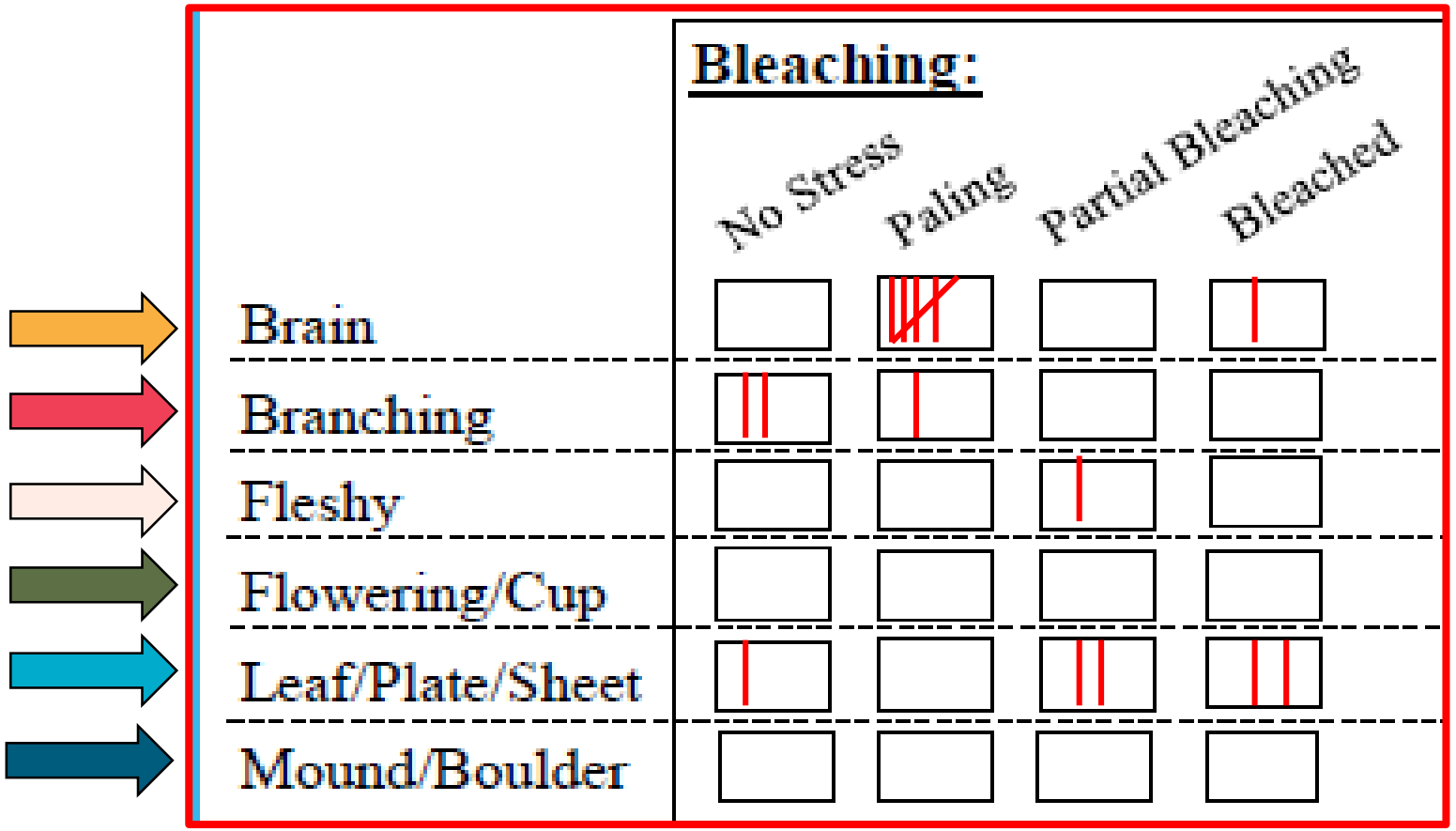
Brain Coral

Branching & Pillar Coral

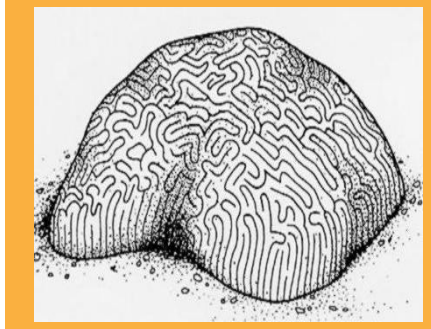


Branching & Pillar Coral

Bleaching Observations



Online Reporting



Brain Corals

No stress (Healthy)

None (0) | Single (1) | Few (2-4) | Many (5+)

Paling

None (0) | Single (1) | Few (2-4) | Many (5+)

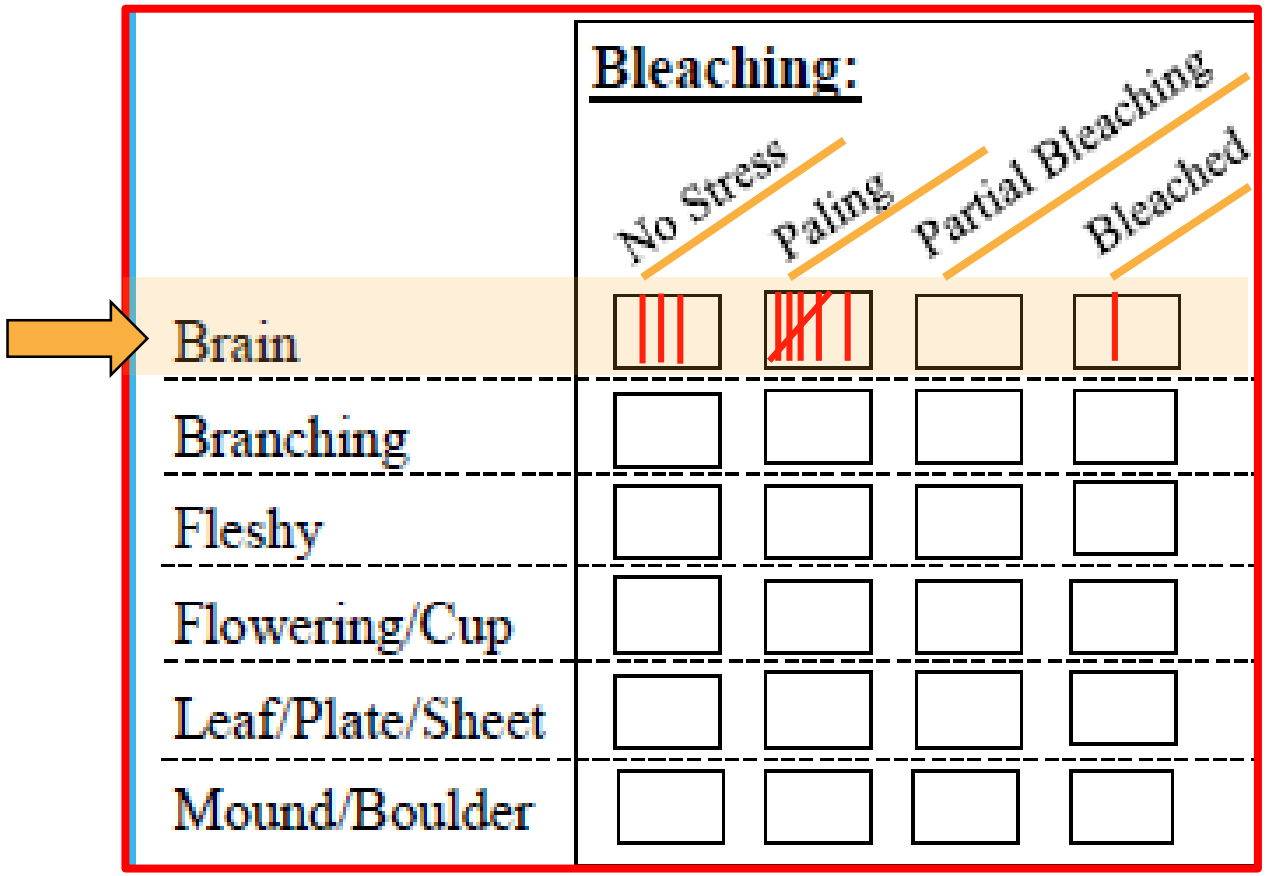
Partially Bleached

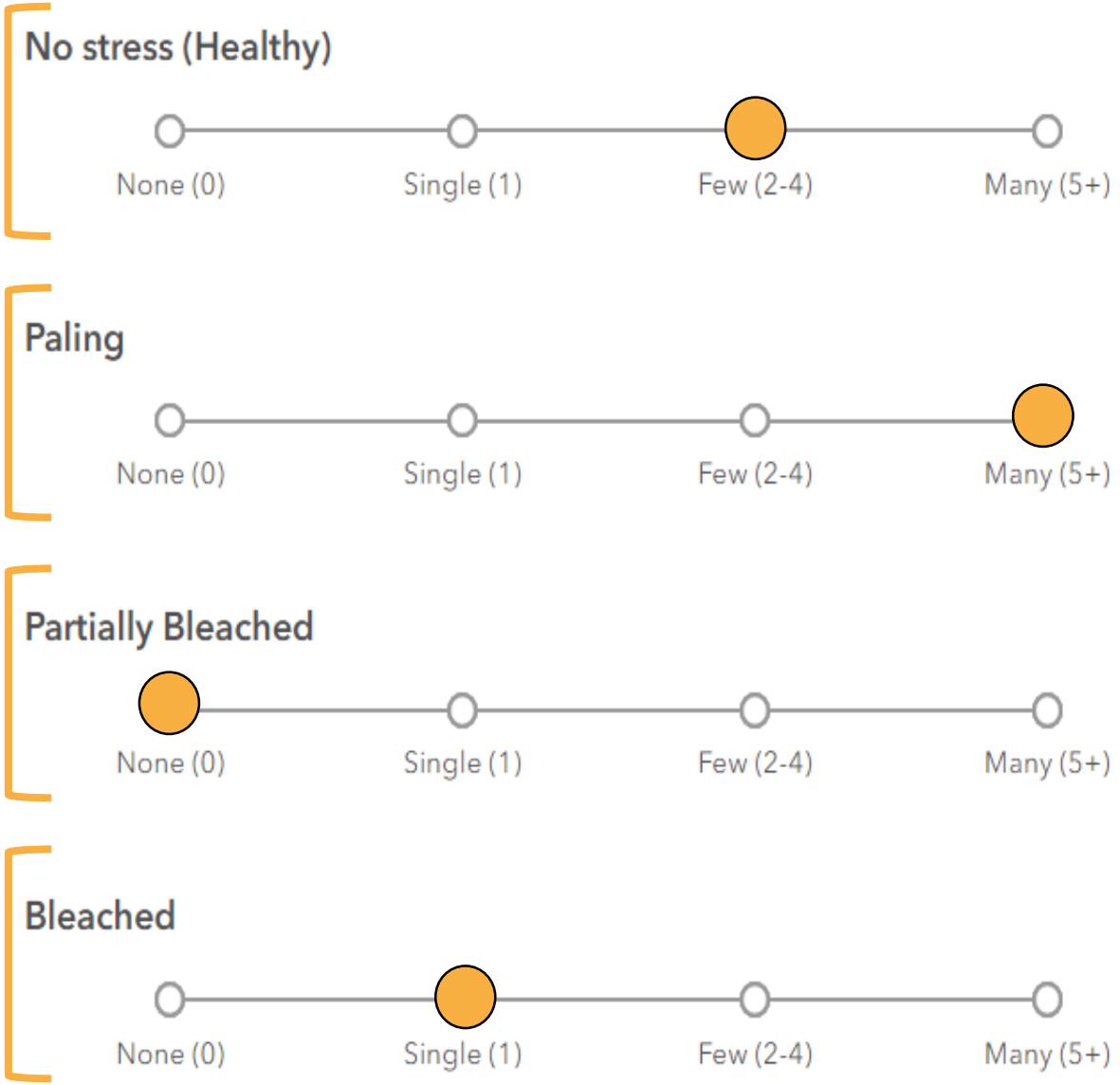
None (0) | Single (1) | Few (2-4) | Many (5+)

Bleached

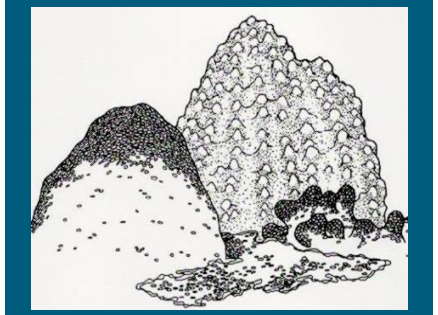
None (0) | Single (1) | Few (2-4) | Many (5+)

Online Reporting





Online Reporting



Mound, Boulder & Encrusting

No stress (Healthy)

None (0) | Single (1) | Few (2-4) | Many (5+)

Paling

None (0) | Single (1) | Few (2-4) | Many (5+)

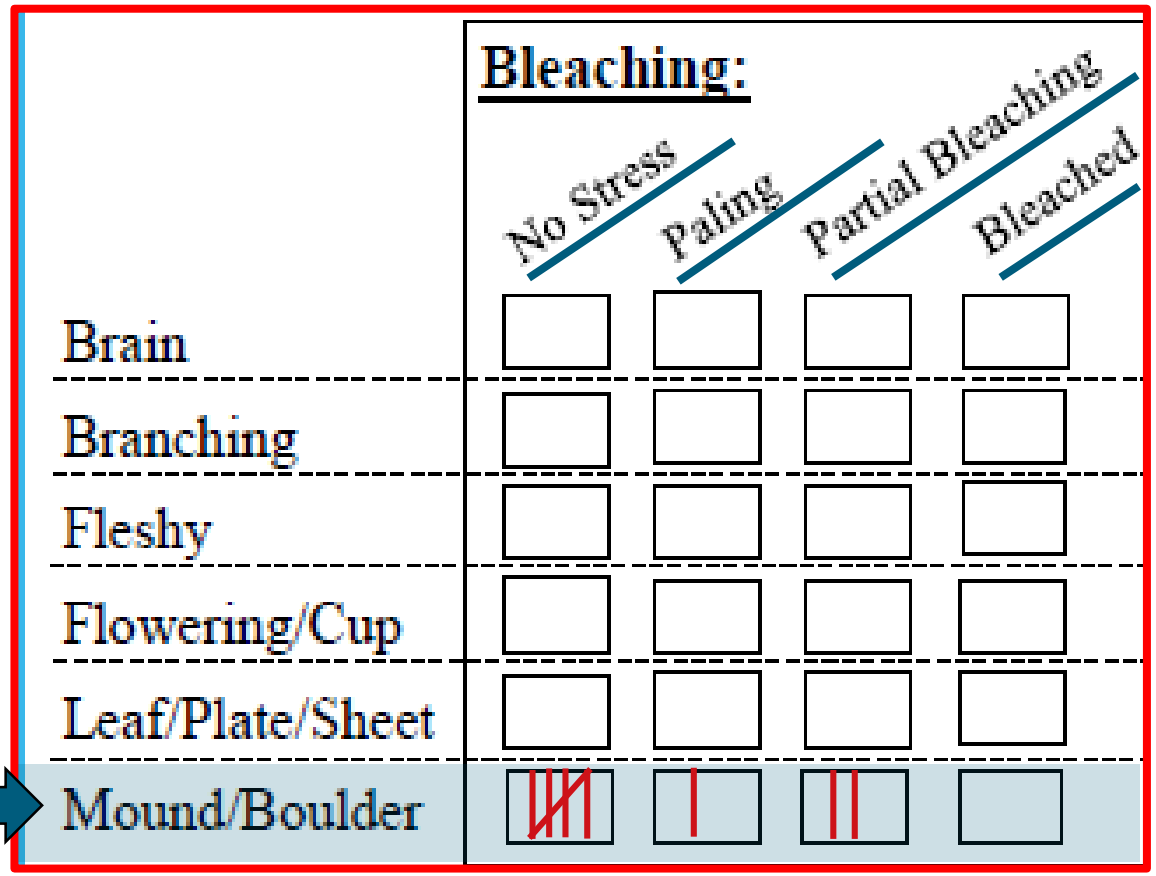
Partially Bleached

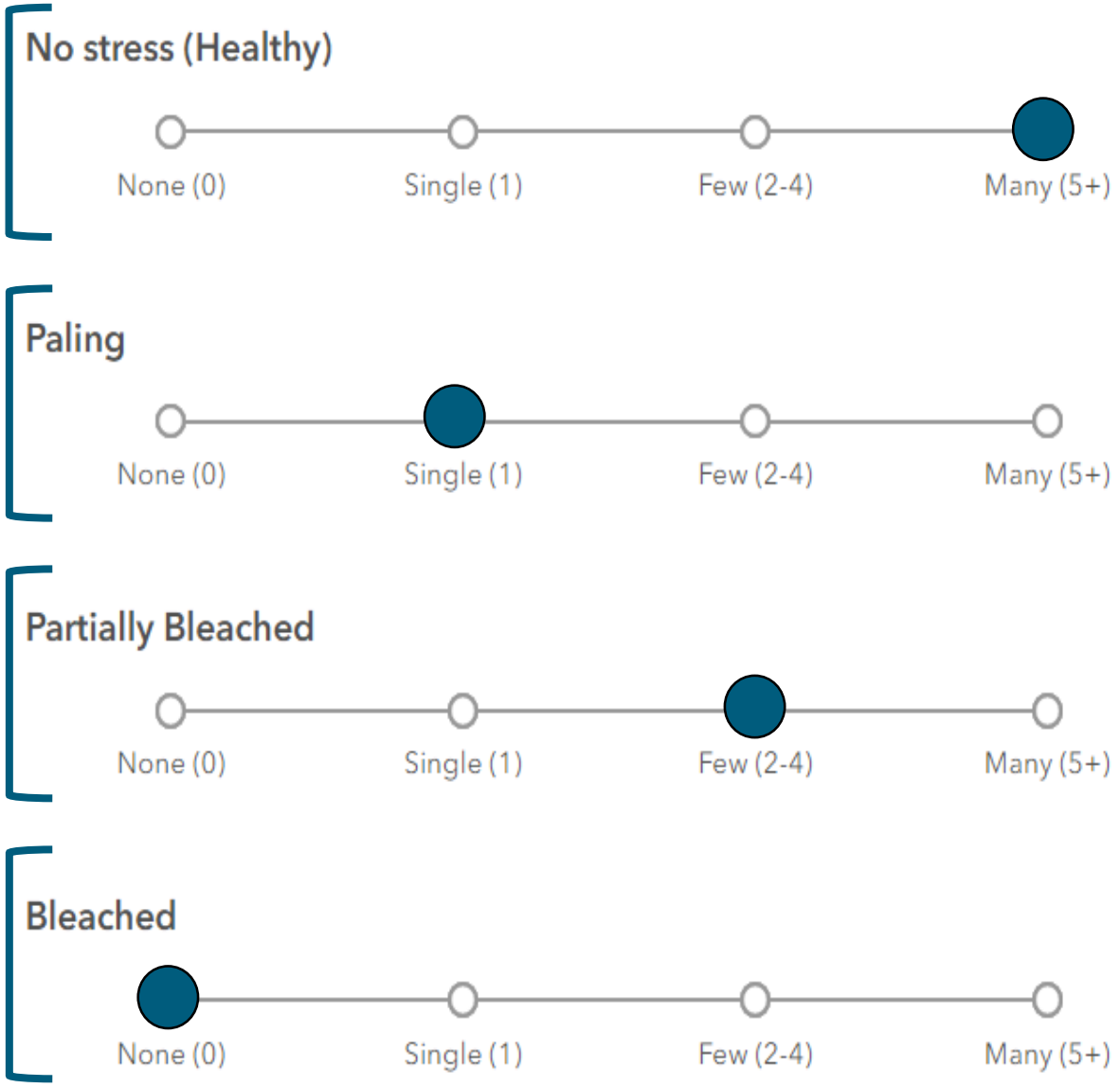
None (0) | Single (1) | Few (2-4) | Many (5+)

Bleached

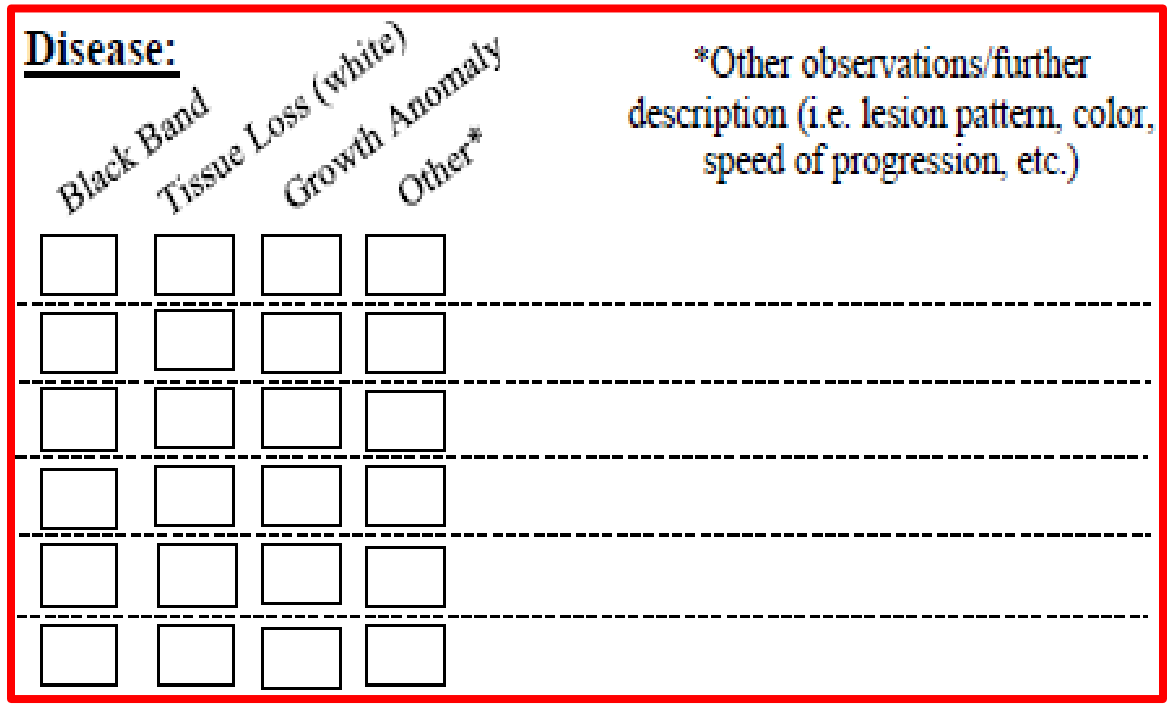
None (0) | Single (1) | Few (2-4) | Many (5+)

Online Reporting





Disease Observations



Disease: Black Band	Tissue Loss (white)	Growth Anomaly	Other*	*Other observations/further description (i.e. lesion pattern, color, speed of progression, etc.)
☐	☐	☐	☐	
☐	☐	☐	☐	
☐	☐	☐	☐	
☐	☐	☐	☐	
☐	☐	☐	☐	
☐	☐	☐	☐	

Black Band Disease

Tissue Loss (White)

Growth Anomaly

Other/Unknown

Types of Disease

Black Band Disease

Types of Disease

Tissue Loss (White)

Types of Disease

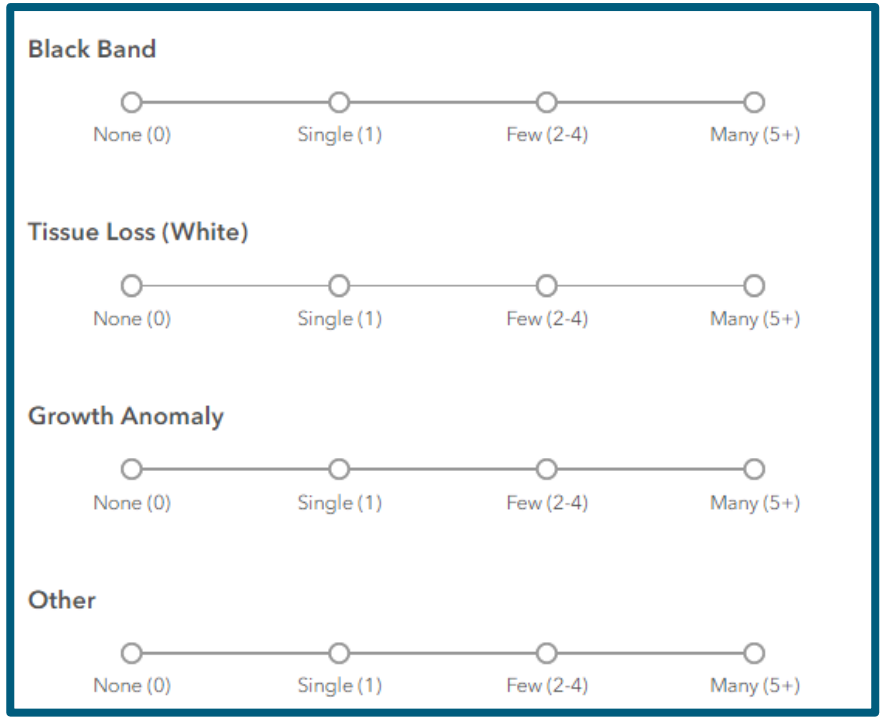
Growth Anomaly

Types of Disease

Other/Unknown

Disease Observations

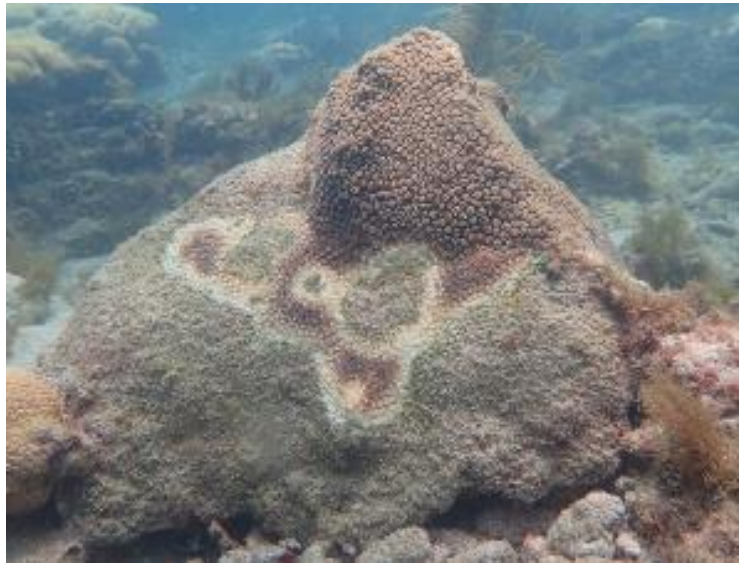
Disease:	Black Band	Tissue Loss (white)	Growth Anomaly	Other*	*Other observations/further description (i.e. lesion pattern, color, speed of progression, etc.)
Brain					Multiple circular white lesions
Branching					
Fleshy					
Flowering/Cup					
Leaf/Plate/Sheet					
Mound/Boulder					Black singular linear lesion



Lesion Pattern

Single

Multiple



Lesion Shape

Linear

Circular

Irregular

Overall Observations

D. OVERALL OBSERVATIONS:

What was the overall severity of bleaching over the entire site? *(Please check one)*

___ Pale (light color) ___ Partially bleached ___ Fully Bleached ___ Dead with algae

What percent of overall coral cover was **BLEACHED** at the site? *(Please check one)*

___1 – 10% ___11 – 30% ___ 31 - 50% ___51 – 75% ___76 – 100%

What percent of overall coral cover was **DISEASED** at the site? *(Please check one)*

___ 1 – 10% ___11 – 30% ___ 31 - 50% ___51 – 75% ___76 – 100%

Check if you saw bleaching on:

____ Fire Coral (Hydrocoral)

____ Palythoa (Zoanthids)

____Gorgonians (Soft Coral)

Overall Severity of Bleaching

*Select *one* response

Dead with Algae

Brain Coral, Dead

Overall Observations

D. OVERALL OBSERVATIONS:

What was the overall severity of bleaching over the entire site? *(Please check one)*

___ Pale (light color) ___ Partially bleached ___ Fully Bleached ___ Dead with algae

What percent of overall coral cover was **BLEACHED** at the site? *(Please check one)*

___1 – 10% ___11 – 30% ___ 31 – 50% ___51 – 75% ___76 – 100%

What percent of overall coral cover was **DISEASED** at the site? *(Please check one)*

___ 1 – 10% ___11 – 30% ___ 31 – 50% ___51 – 75% ___76 – 100%

Check if you saw bleaching on:

____ Fire Coral (Hydrocoral)

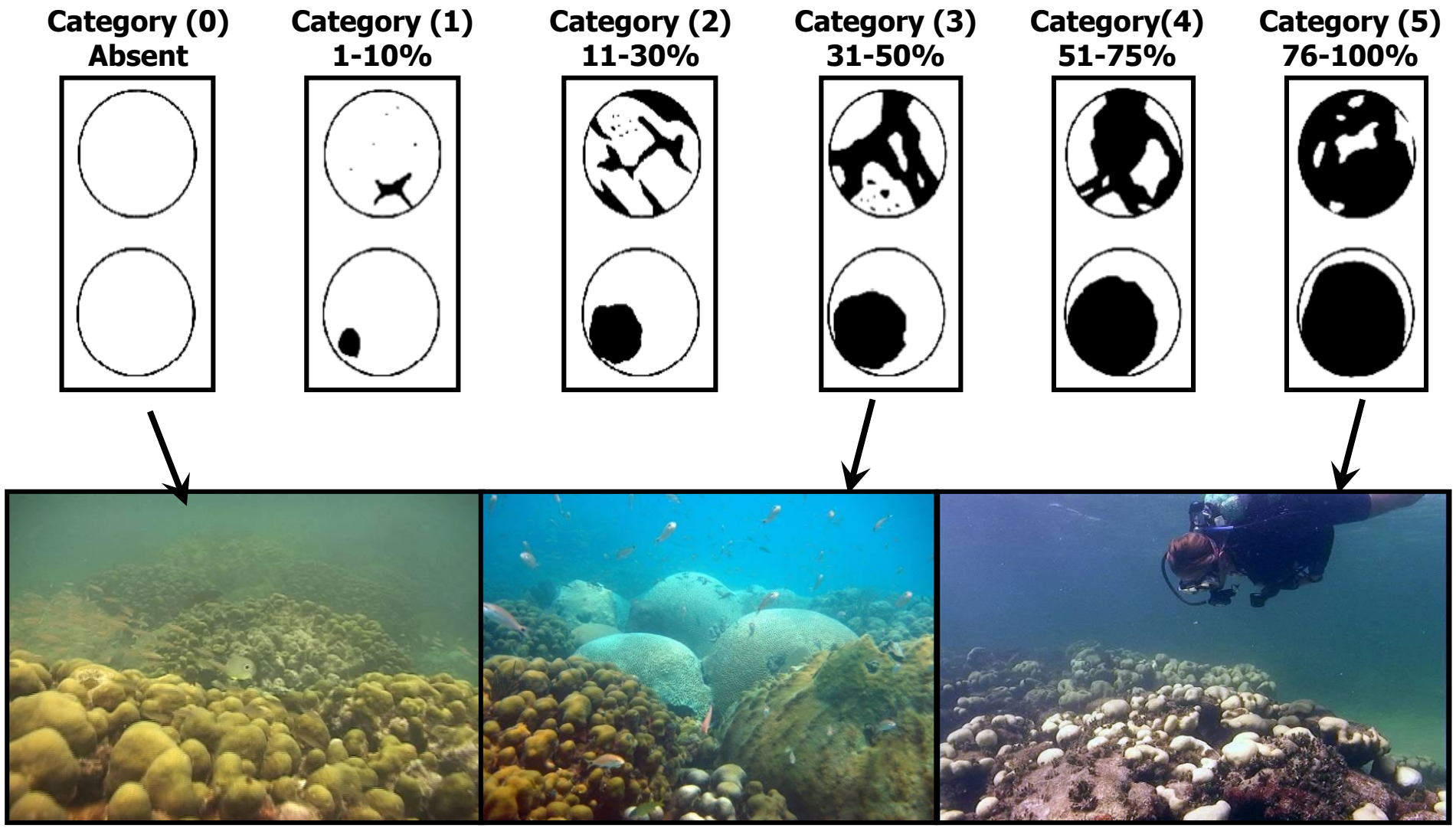
____ Palythoa (Zoanthids)

____Gorgonians (Soft Coral)

% Of Live Coral Bleached

*Select *one* response

% of Live Coral Bleached



Overall Observations

D. OVERALL OBSERVATIONS:

What was the overall severity of bleaching over the entire site? *(Please check one)*

___ Pale (light color) ___ Partially bleached ___ Fully Bleached ___ Dead with algae

What percent of overall coral cover was **BLEACHED** at the site? *(Please check one)*

___1 – 10% ___11 – 30% ___ 31 – 50% ___51 – 75% ___76 – 100%

What percent of overall coral cover was **DISEASED** at the site? *(Please check one)*

___ 1 – 10% ___11 – 30% ___ 31 – 50% ___51 – 75% ___76 – 100%

Check if you saw bleaching on:

____ Fire Coral (Hydrocoral)

____ Palythoa (Zoanthids)

____Gorgonians (Soft Coral)

% Of Live Coral Diseased

*Select *one* response

Overall Observations

D. OVERALL OBSERVATIONS:

What was the overall severity of bleaching over the entire site? *(Please check one)*

___ Pale (light color) ___ Partially bleached ___ Fully Bleached ___ Dead with algae

What percent of overall coral cover was **BLEACHED** at the site? *(Please check one)*

___1 – 10% ___11 – 30% ___ 31 – 50% ___51 – 75% ___76 – 100%

What percent of overall coral cover was **DISEASED** at the site? *(Please check one)*

___ 1 – 10% ___11 – 30% ___ 31 – 50% ___51 – 75% ___76 – 100%

Check if you saw bleaching on:

__X__ Fire Coral (Hydrocoral)

____ Palythoa (Zoanthids)

__X__ Gorgonians (Soft Coral)

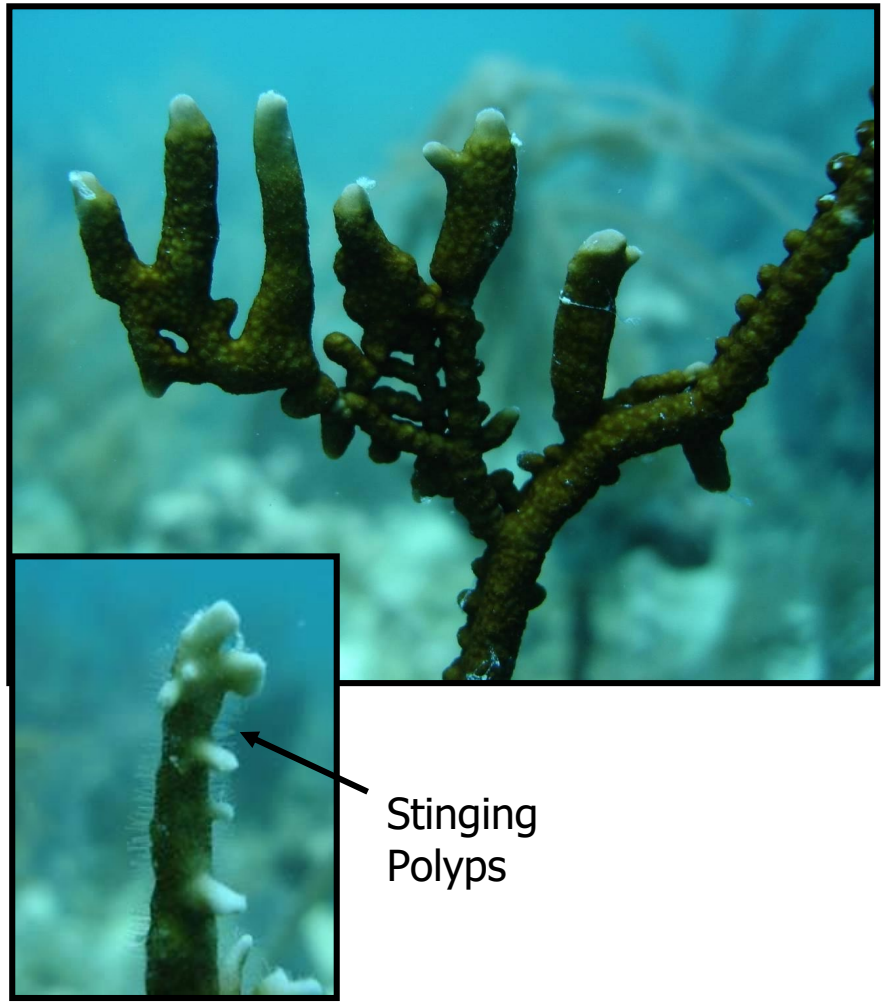
Other Bleaching Indicators: Non-Stony Corals

*Multiple responses

Other Bleaching Indicators

Fire Coral (*Millepora spp.*)

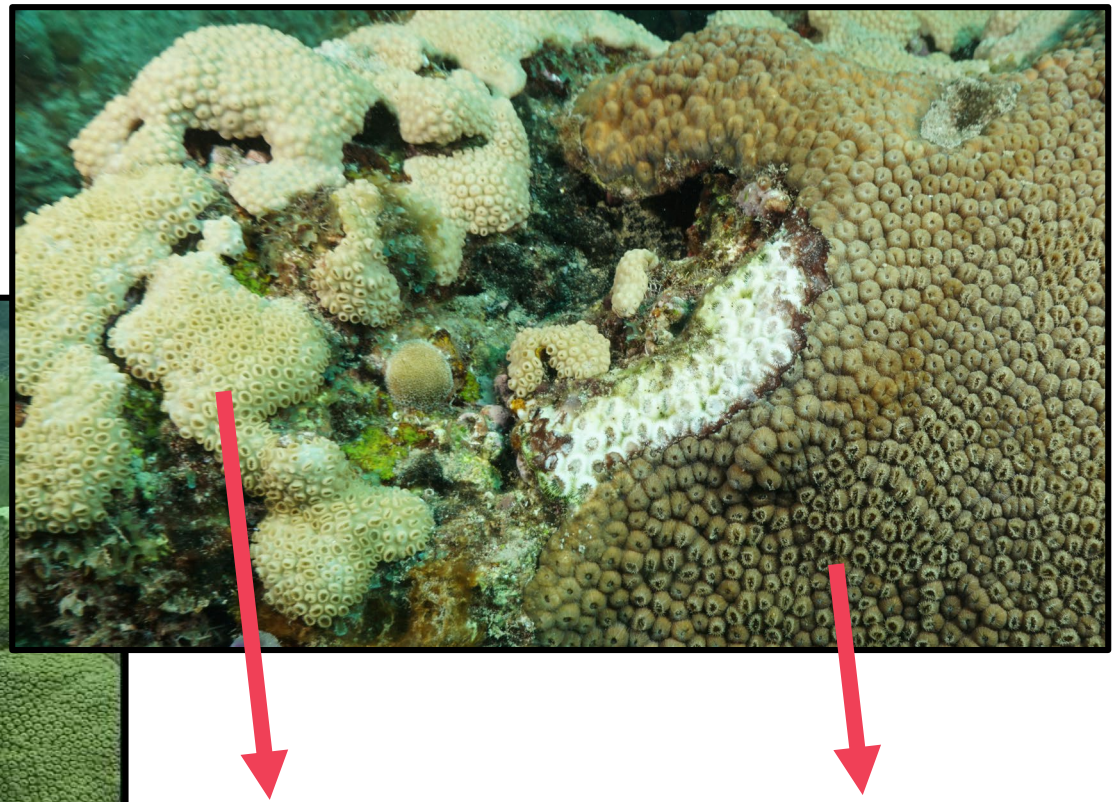
- Hydrocoral (not a stony coral)
- Has stinging polyps
- Encrusting



Other Bleaching Indicators

Zoanthid (*Palythoa spp.*)

- Zoanthid (not a stony coral)
- Similar to anemones
- Encrusting



Other Bleaching Indicators

Zoanthid (*Palythoa spp.)*

Palythoa sp, bleached

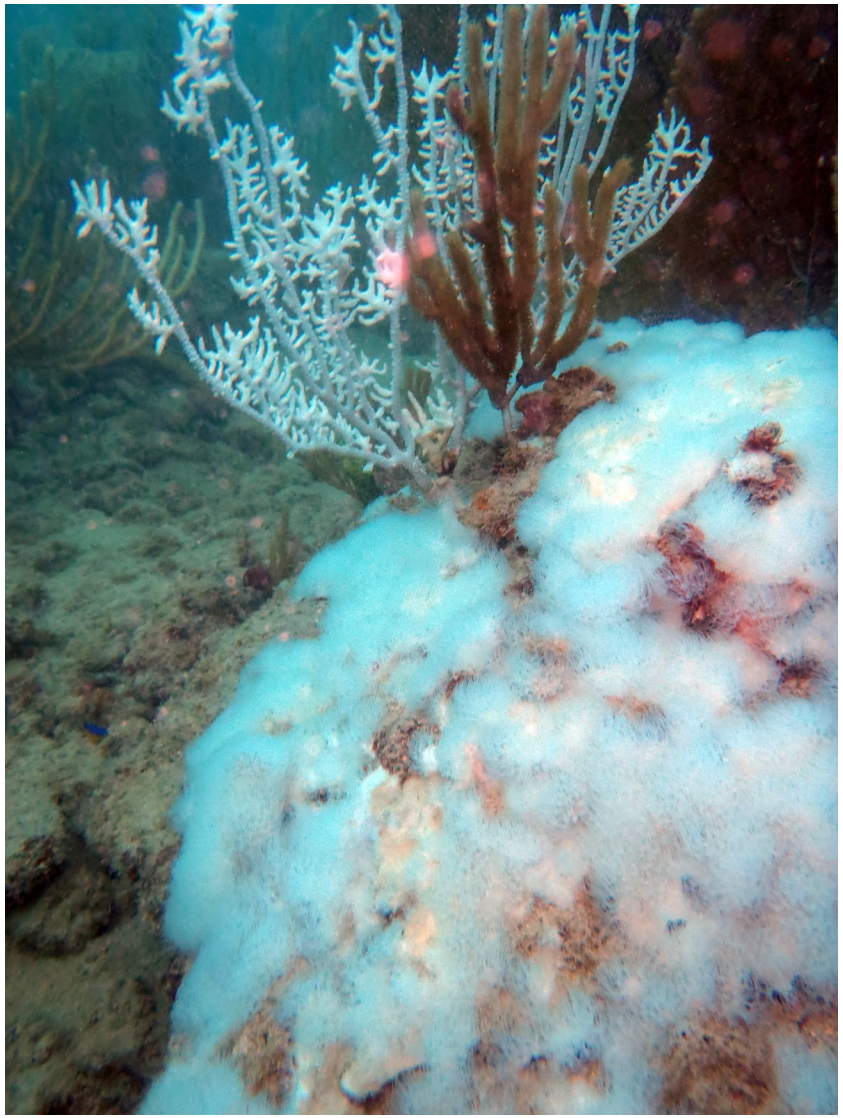
Photo: Kim Porter

Other Bleaching Indicators

GORGONIANS

(Sea fans, sea rods, sea whips, etc.)

- Octocoral (Not a stony coral)
- Branching OR Encrusting
- MANY different species



Other Bleaching Indicators

Gorgonians

Notes

E. NOTES: *(Specific species of coral affected, other observations about the site)*

- Specific species of coral (e.g. Great Star Coral)
- Any details describing photos
- Disease descriptions
- Other SEAFAN observations (e.g. marine debris, lionfish, etc.

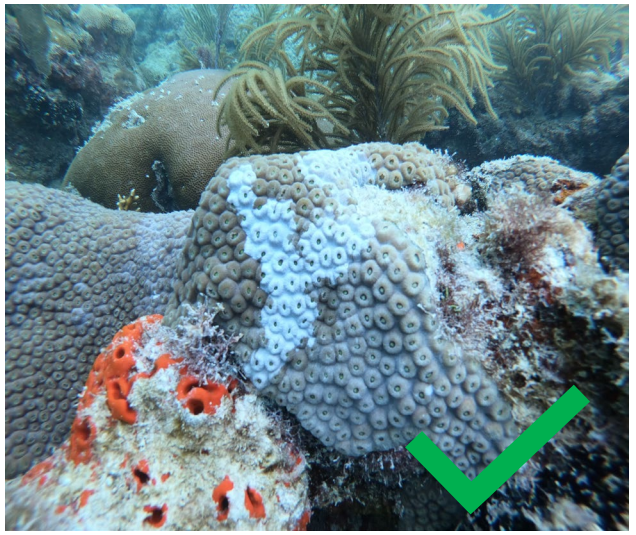
Send in your data!

Remember to submit reports, even if there is NO bleaching or disease at your dive site

1. ONLINE: www.SEAFAN.net/BleachWatch
2. Scan/Take Picture and email datasheet/slate to: Coral@FloridaDEP.gov
3. Fold the data sheet, tape it, place a postage stamp, and mail to the address on the back

Photos Are Encouraged!

- Sharp and in-focus
- White-balanced
- 1 photo of colony and 1 close-up of polyps/lesion (not of the entire reef)
- Max. 10 photos per report

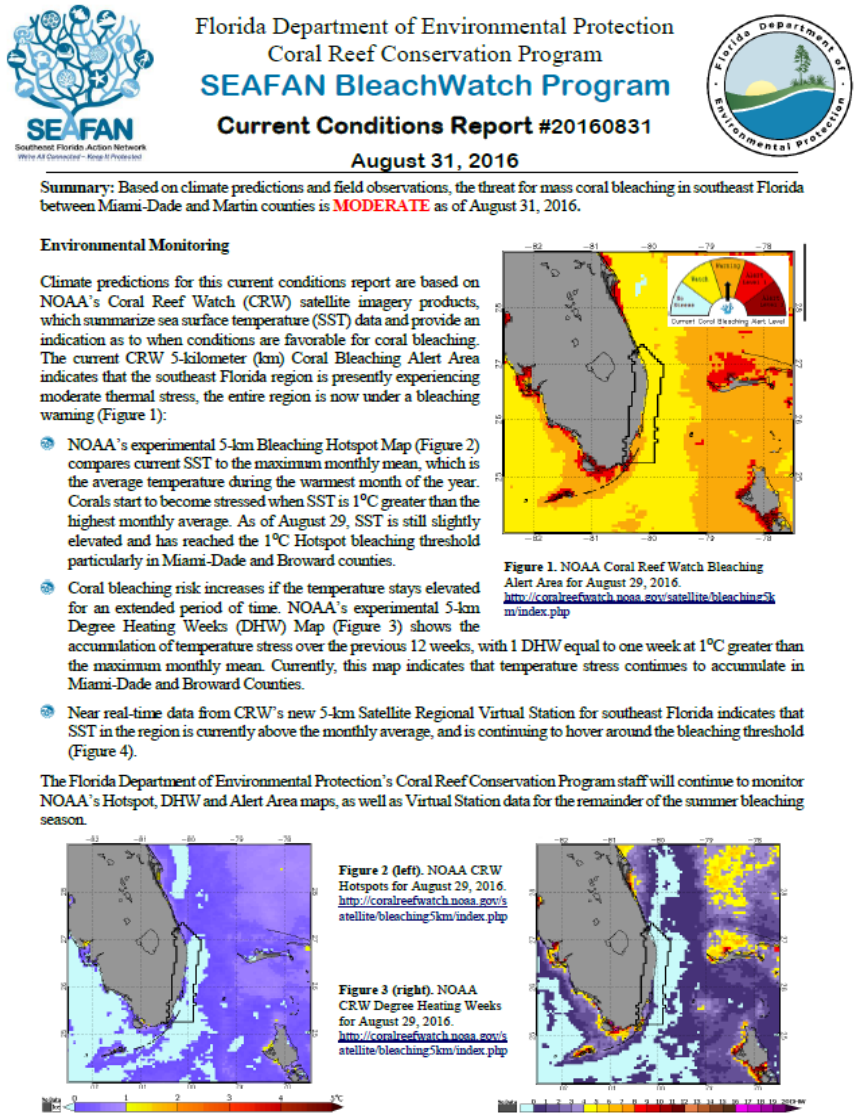


Current Conditions Report

Available online:

www.SEAFAN.net/BleachWatch

- Updated according to environmental conditions
- Provide outlook for future bleaching events
- Include NOAA's HotSpot and Degree Heating Week Maps
- Summary of Field Data from Observers
- **PHOTOS!**



Florida Department of Environmental Protection
Coral Reef Conservation Program
SEAFAN BleachWatch Program
Current Conditions Report #20160831
August 31, 2016

Summary: Based on climate predictions and field observations, the threat for mass coral bleaching in southeast Florida between Miami-Dade and Martin counties is MODERATE as of August 31, 2016.

Environmental Monitoring

Climate predictions for this current conditions report are based on NOAA's Coral Reef Watch (CRW) satellite imagery products, which summarize sea surface temperature (SST) data and provide an indication as to when conditions are favorable for coral bleaching. The current CRW 5-kilometer (km) Coral Bleaching Alert Area indicates that the southeast Florida region is presently experiencing moderate thermal stress, the entire region is now under a bleaching warning (Figure 1):

- NOAA's experimental 5-km Bleaching Hotspot Map (Figure 2) compares current SST to the maximum monthly mean, which is the average temperature during the warmest month of the year. Corals start to become stressed when SST is 1°C greater than the highest monthly average. As of August 29, SST is still slightly elevated and has reached the 1°C Hotspot bleaching threshold particularly in Miami-Dade and Broward counties.
- Coral bleaching risk increases if the temperature stays elevated for an extended period of time. NOAA's experimental 5-km Degree Heating Weeks (DHW) Map (Figure 3) shows the accumulation of temperature stress over the previous 12 weeks, with 1 DHW equal to one week at 1°C greater than the maximum monthly mean. Currently, this map indicates that temperature stress continues to accumulate in Miami-Dade and Broward Counties.
- Near real-time data from CRW's new 5-km Satellite Regional Virtual Station for southeast Florida indicates that SST in the region is currently above the monthly average, and is continuing to hover around the bleaching threshold (Figure 4).

Figure 1. NOAA Coral Reef Watch Bleaching Alert Area for August 29, 2016. http://coralreefwatch.noaa.gov/satellite/bleaching5km/index.php

The Florida Department of Environmental Protection's Coral Reef Conservation Program staff will continue to monitor NOAA's Hotspot, DHW and Alert Area maps, as well as Virtual Station data for the remainder of the summer bleaching season.

Figure 2 (left). NOAA CRW Hotspots for August 29, 2016. http://coralreefwatch.noaa.gov/satellite/bleaching5km/index.php

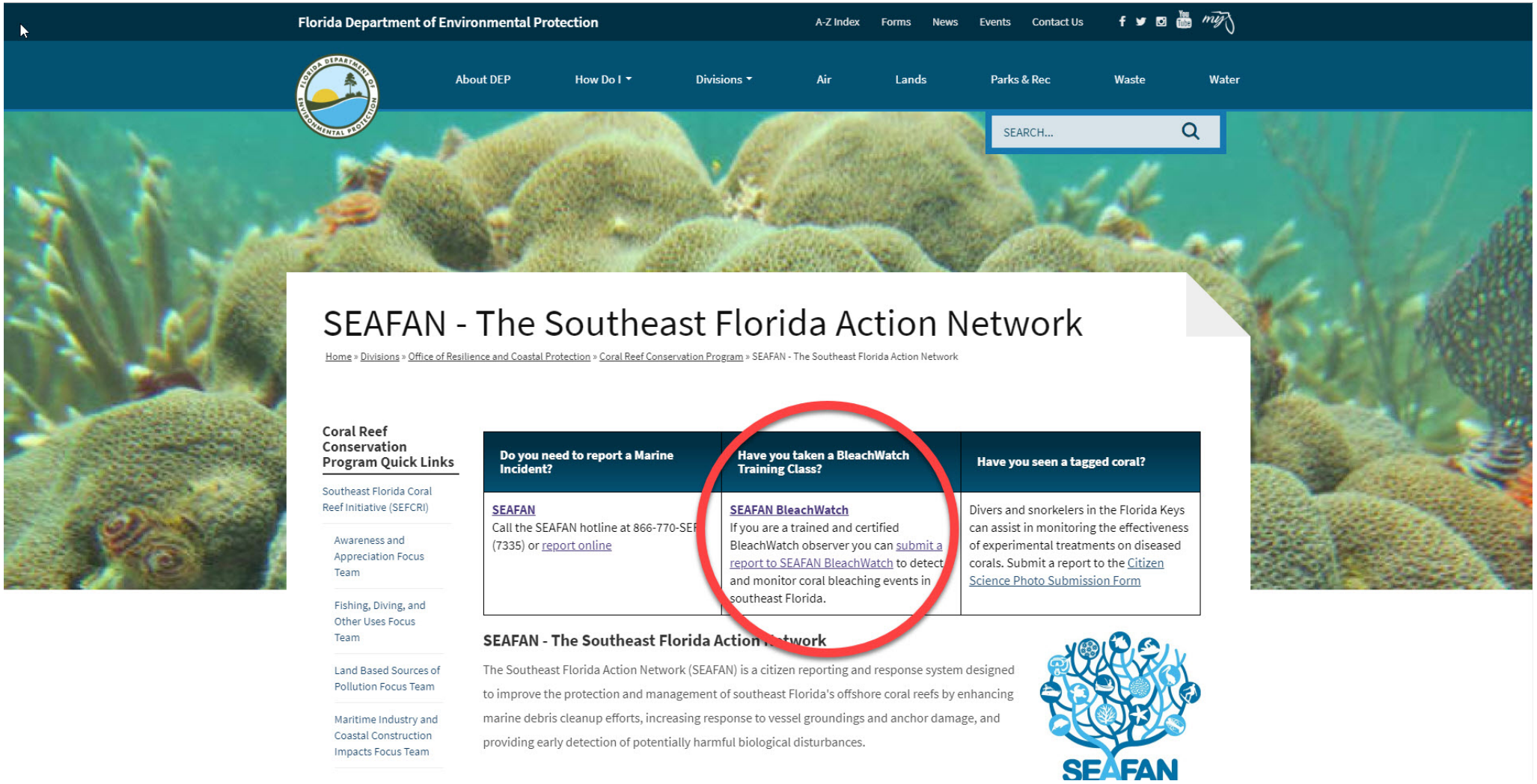
Figure 3 (right). NOAA CRW Degree Heating Weeks for August 29, 2016. http://coralreefwatch.noaa.gov/satellite/bleaching5km/index.php

Current Conditions Report

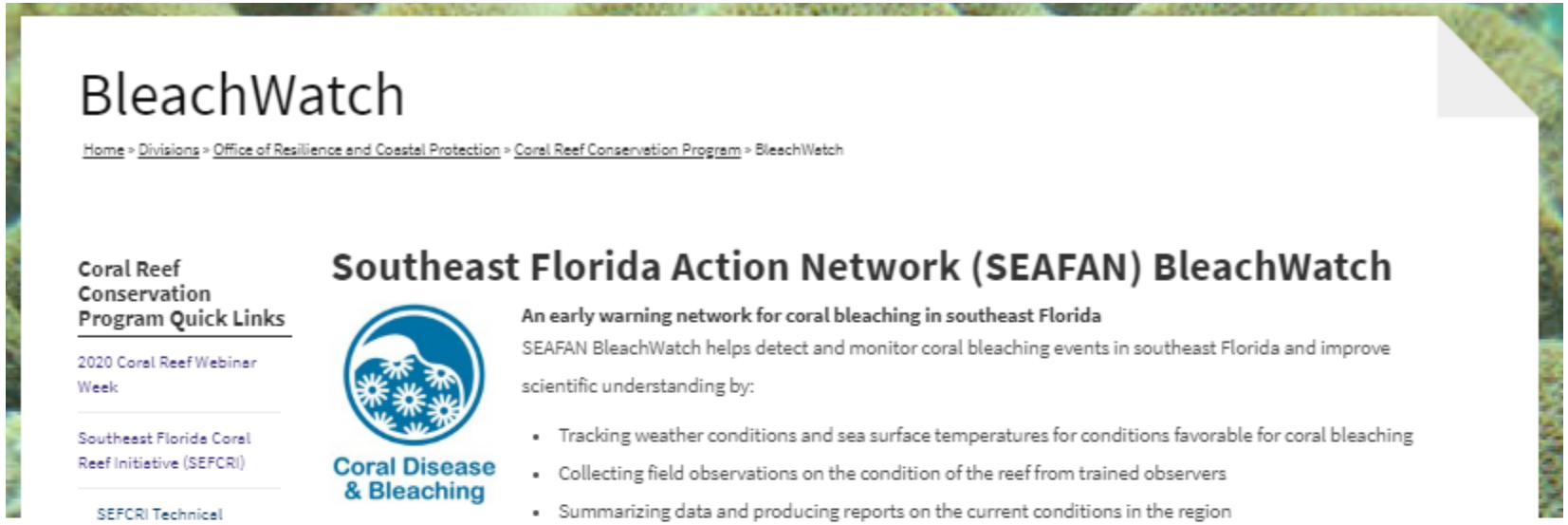
Conditions	Frequency of Update
Environmental conditions suggest low risk of mass coral bleaching	Monthly
Climate or sea temperatures are elevated above normal	Every two weeks
Sea temperature stress has accumulated to levels associated with a moderate risk of bleaching	Weekly
Sea temperature stress has accumulated to levels associated with a high risk of bleaching and/or reports of mild bleaching are reported by volunteers	Twice per week
Mass coral bleaching is being widely reported by volunteers	Twice per week

Check Us Out Online!

www.SEAFAN.net



Check Us Out Online!



BleachWatch

Home » Divisions » Office of Resilience and Coastal Protection » Coral Reef Conservation Program » BleachWatch

Coral Reef Conservation Program Quick Links

- 2020 Coral Reef Webinar Week
- Southeast Florida Coral Reef Initiative (SEFCRI)
  - SEFCRI Technical Advisory Committee
  - Awareness and Appreciation Focus Area
  - Fishing, Diving, and Other Uses Focus Area
  - Land Based Sources of Pollution Focus Area
  - Maritime Industry and Coastal Construction Impacts Focus Area
  - Reef Resilience Focus Area
- Reef Injury Prevention and Response Program
- Southeast Florida Action

Southeast Florida Action Network (SEAFAN) BleachWatch

Coral Disease & Bleaching

An early warning network for coral bleaching in southeast Florida

SEAFAN BleachWatch helps detect and monitor coral bleaching events in southeast Florida and improve scientific understanding by:

- Tracking weather conditions and sea surface temperatures for conditions favorable for coral bleaching
- Collecting field observations on the condition of the reef from trained observers
- Summarizing data and producing reports on the current conditions in the region

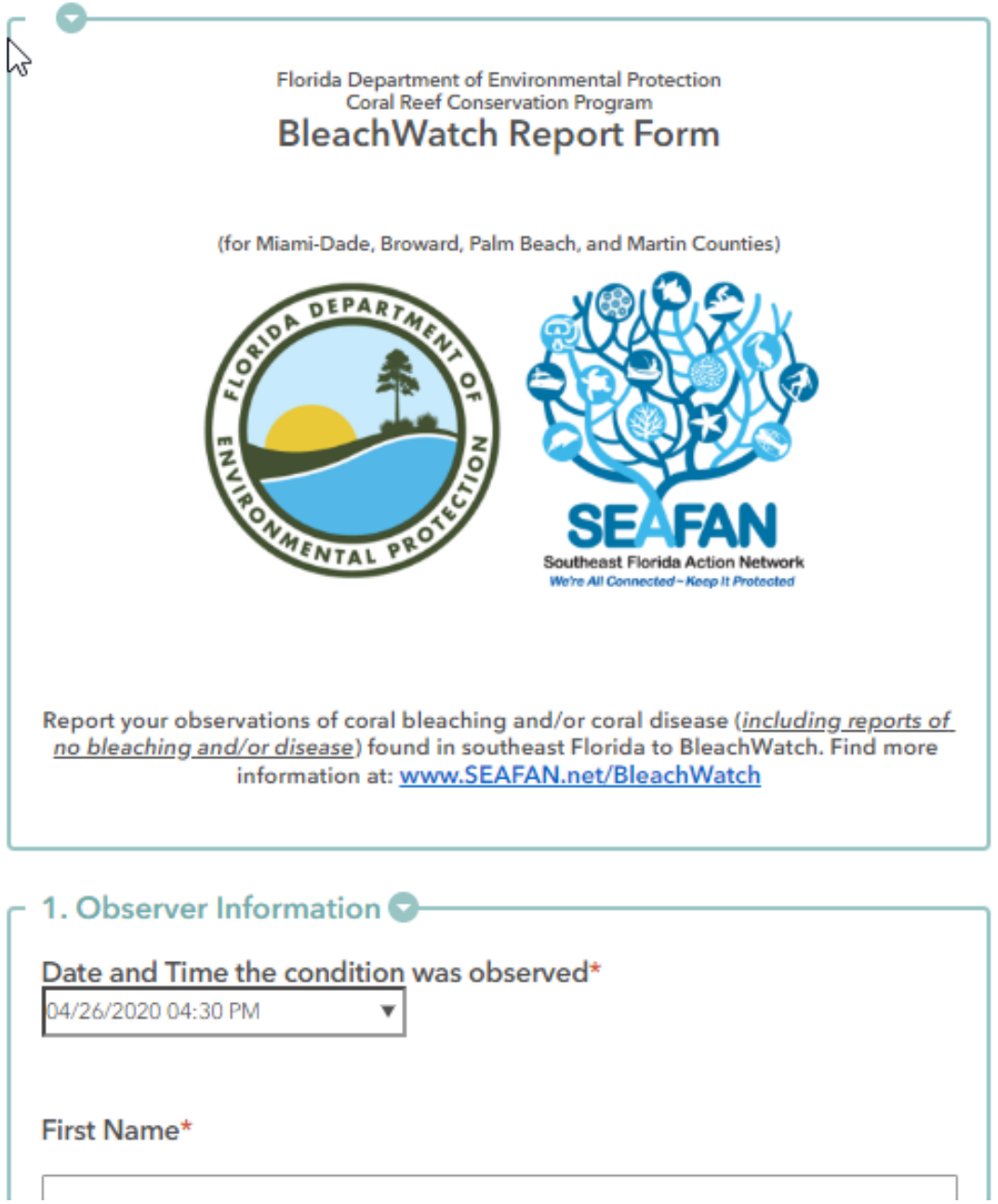
Submit a report!

Program Documents

1. BleachWatch Program Overview
2. Bleaching Fact Sheet
3. Disease Fact Sheet
4. Datasheet
5. Datasheet Instructions
6. Coral Condition ID Guide *(booklet)*
7. Coral Cheat Sheet *(beginner level)*
8. BleachWatch PowerPoint Presentation*
   - *For a 508-compliant version, please email us at Coral@FloridaDEP.gov

Online Report Form

NEW LOOK!!!



Other Training Opportunities

IN-WATER TRAINING

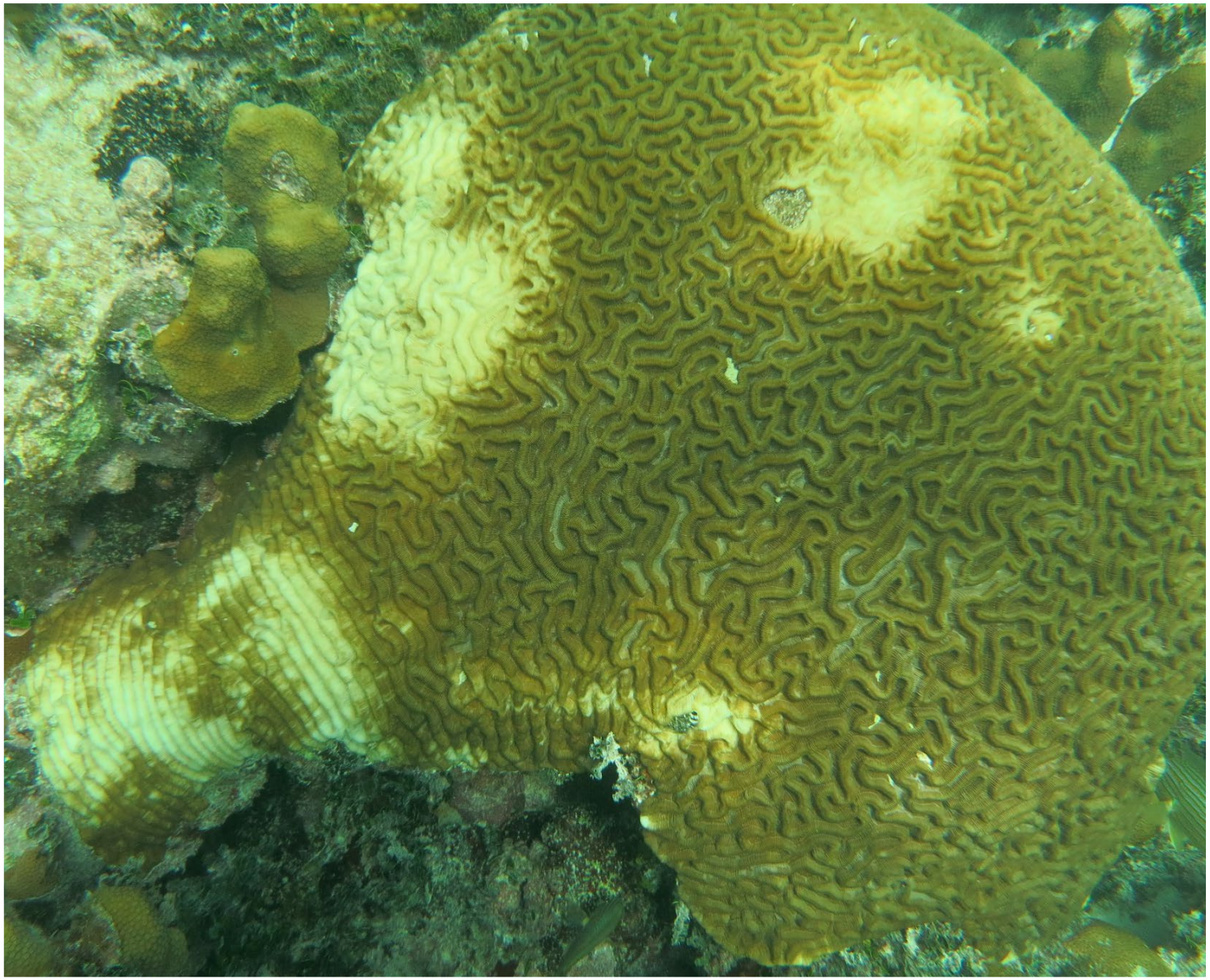
- AM: Classroom (free)
- PM: In-Water (2-tank dive; charter fees apply)

INSTRUCTOR WORKSHOP

- Day 1: Classroom
- Day 2: In-Water (2-tank dive)

Review #1

Review #2

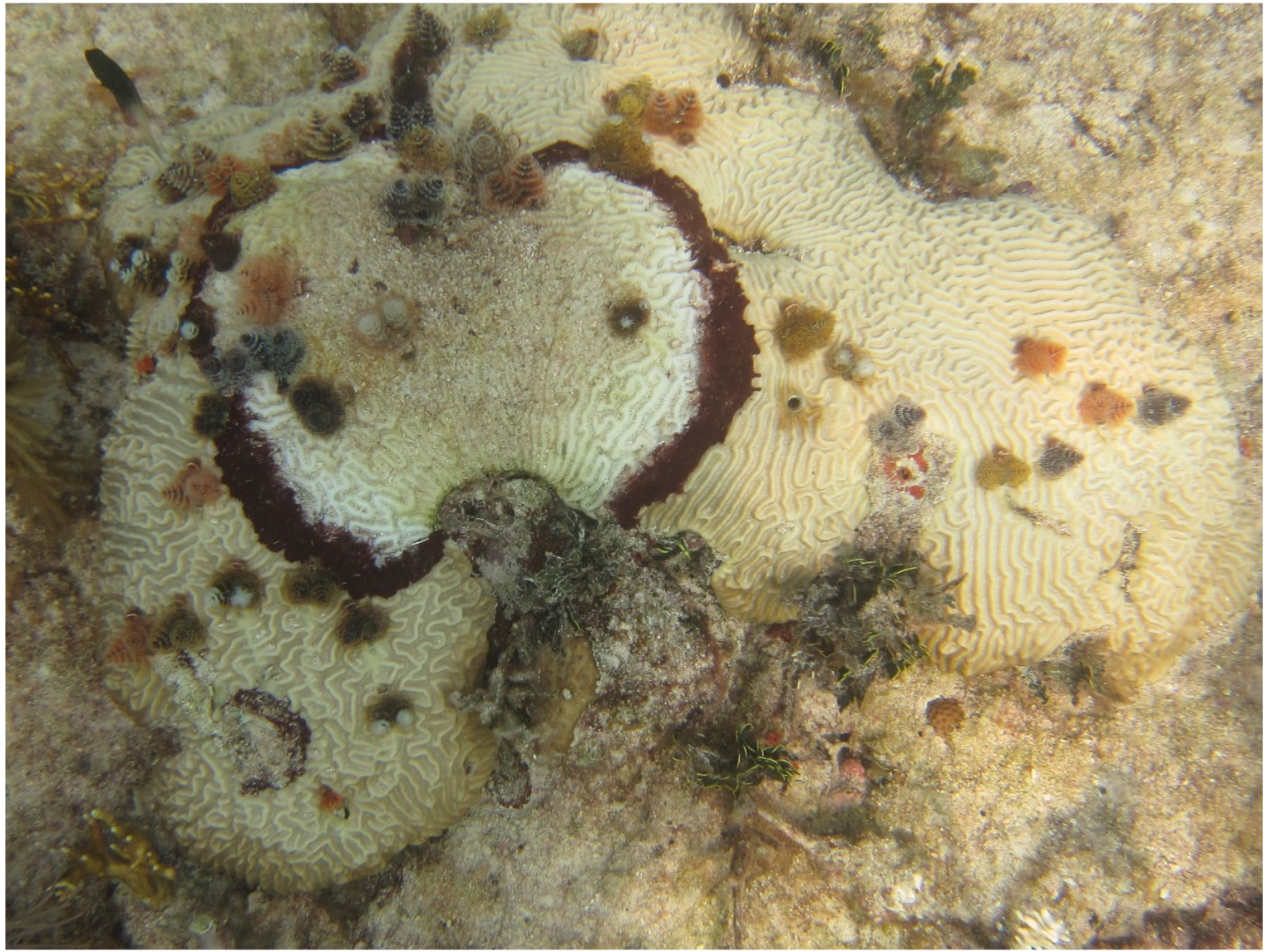


Review #3

Review #4

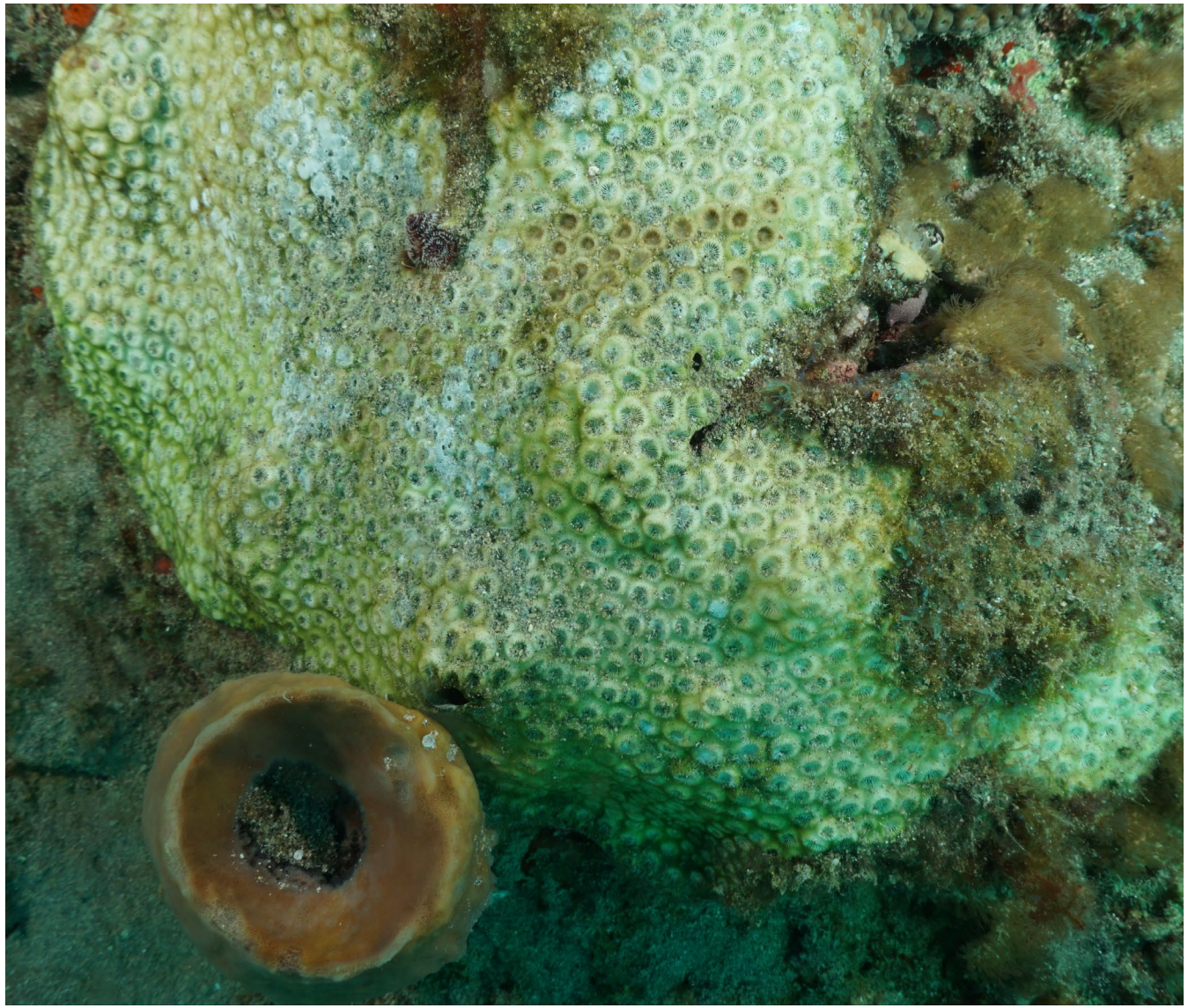
Review #5

Review #6

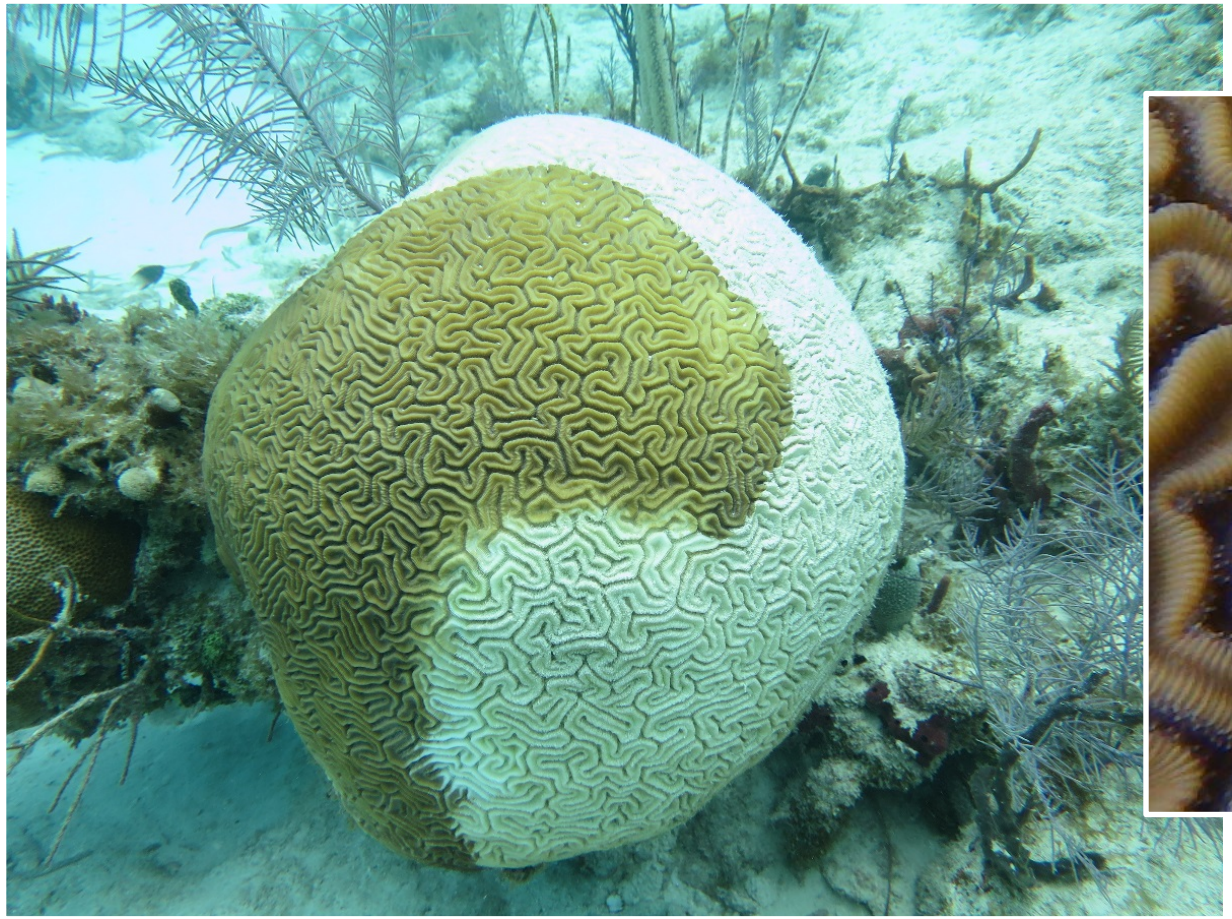


Review #7

Review #8



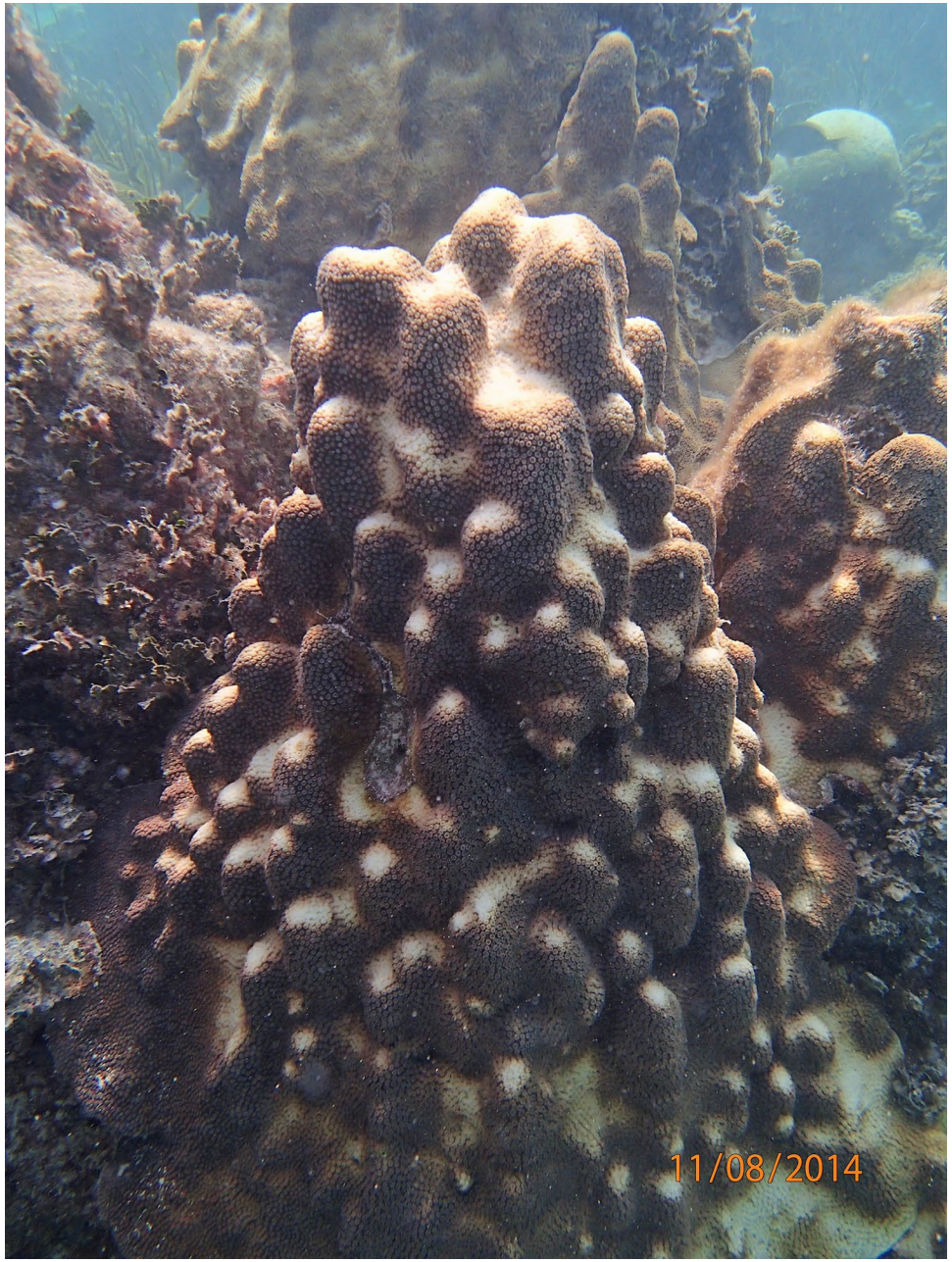
Review #9



Review #10

Review #11

Review #12



Review #13

Review #14

Review #15

#	Coral / Organism	Coral Type	Condition
1	Smooth Star Coral (*Solenastrea bournoni*)	Mound/Boulder	Paling
2	Boulder Brain Coral (*Colpophylia natans)*	Brain	Partially Bleached
3	Great Star Coral (*Montastraea cavernosa)*	Mound/Boulder	Tissue Loss (White) Disease
4	Palythoa spp.	Not a stony coral	Bleached
5	Smooth Flower Coral (*Eusmilia fastigiata)*	Flowering/Cup	Healthy
6	Knobby Brain Coral *(Pseudodiploria clivosa)*	Brain	Black Band Disease
7 (L)	Massive Starlet Coral (*Siderastrea siderea)*	Mound/Boulder	Partially Bleached
7 (R)	Lettuce Coral (*Agaricia agaricites)*	Leaf/Plate/Sheet	Bleached
8	Great Star Coral (*Montastraea cavernosa)*	Mound/Boulder	Dead with Algae
9	Grooved Brain Coral (*Diploria labyrinthiformis)*	Brain	Tissue Loss (White) Disease
10	Mountainous Star Coral (*Orbicella faveolata)*	Mound/Boulder	Healthy
11	Blushing Star Coral	Mound/Boulder	Predation
12	Mountainous Star Coral (*Orbicella faveolata)*	Mound/Boulder	Partially Bleached
13	Pillar Coral *(Dendrogyra cylindrus)*	Branching	Tissue Loss (White)
14	Massive Starlet Coral (*Siderastrea siderea)*	Mound/Boulder	Disease – Other (Dark Spots)
15	Lobed Star Coral (*Orbicella annularis)*	Mound/Boulder	Black Band Disease

THANK YOU!

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Florida Department of Environmental Protection

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Photo by Joe Marino