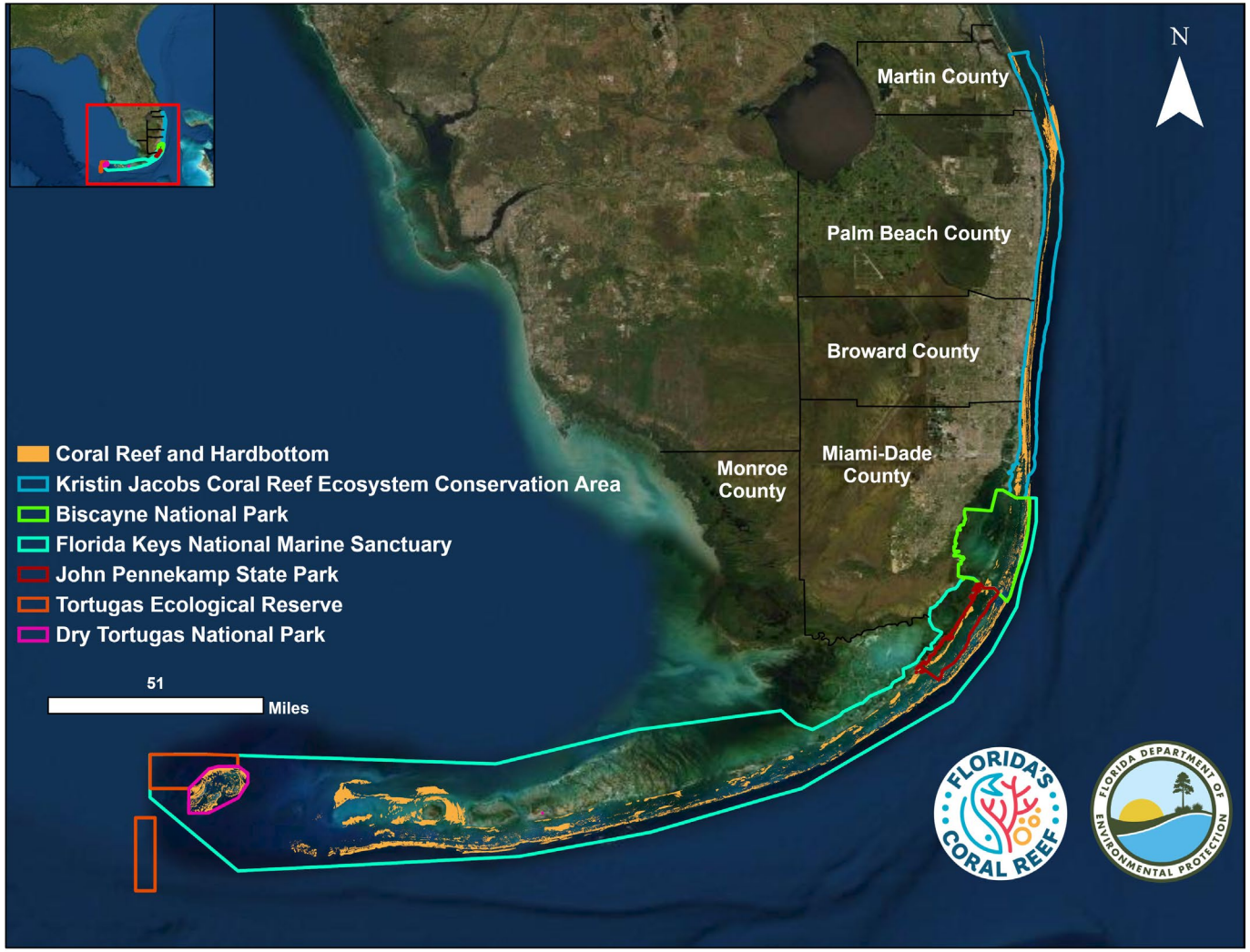
SEAFAN BleachWatch Observer Training

Taylor Tucker
Reef Resilience Coordinator - Coral Reef Conservation Program
Florida Department of Environmental Protection

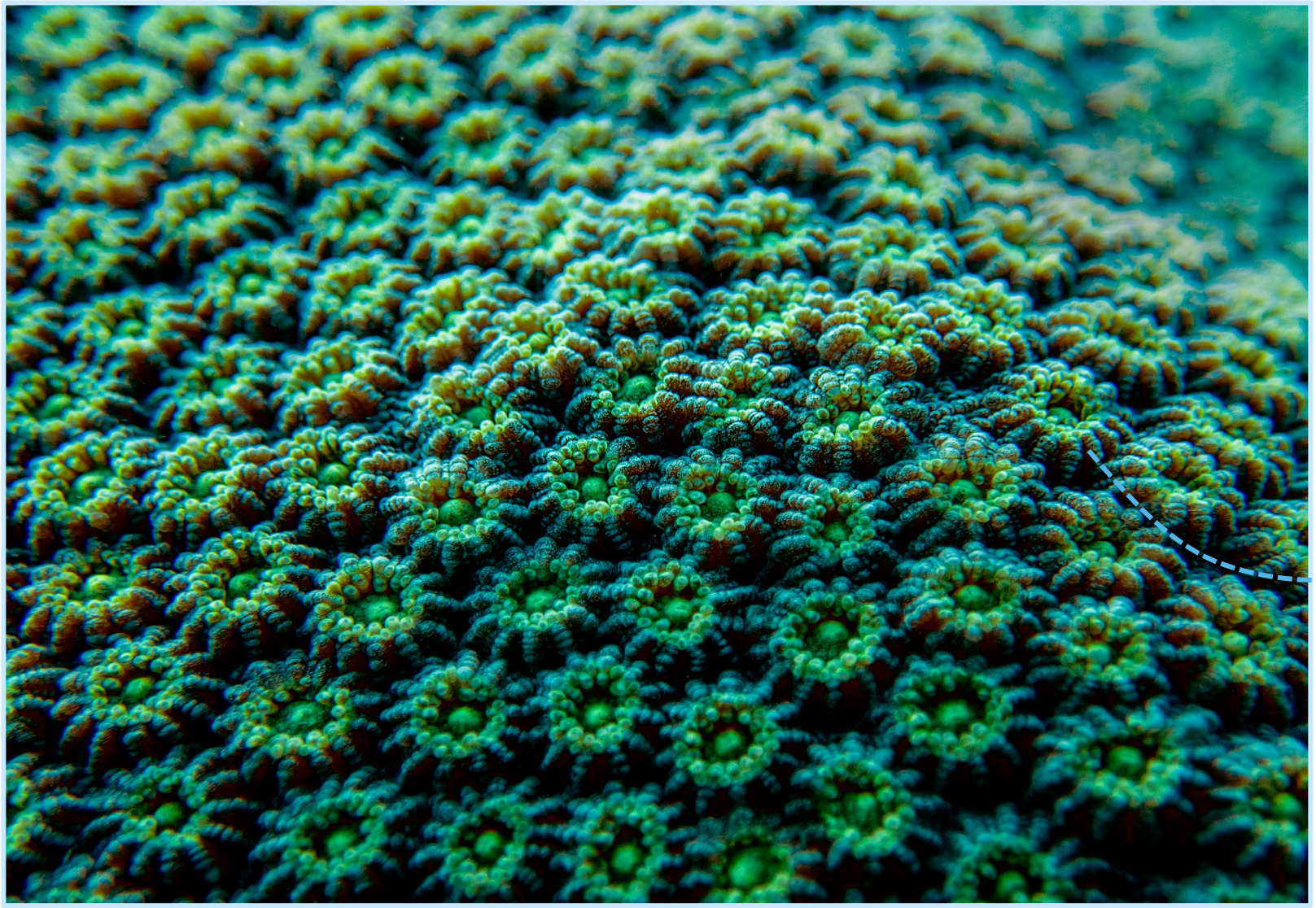
MANAGEMENT ZONE
FLORIDA'S CORAL REEF



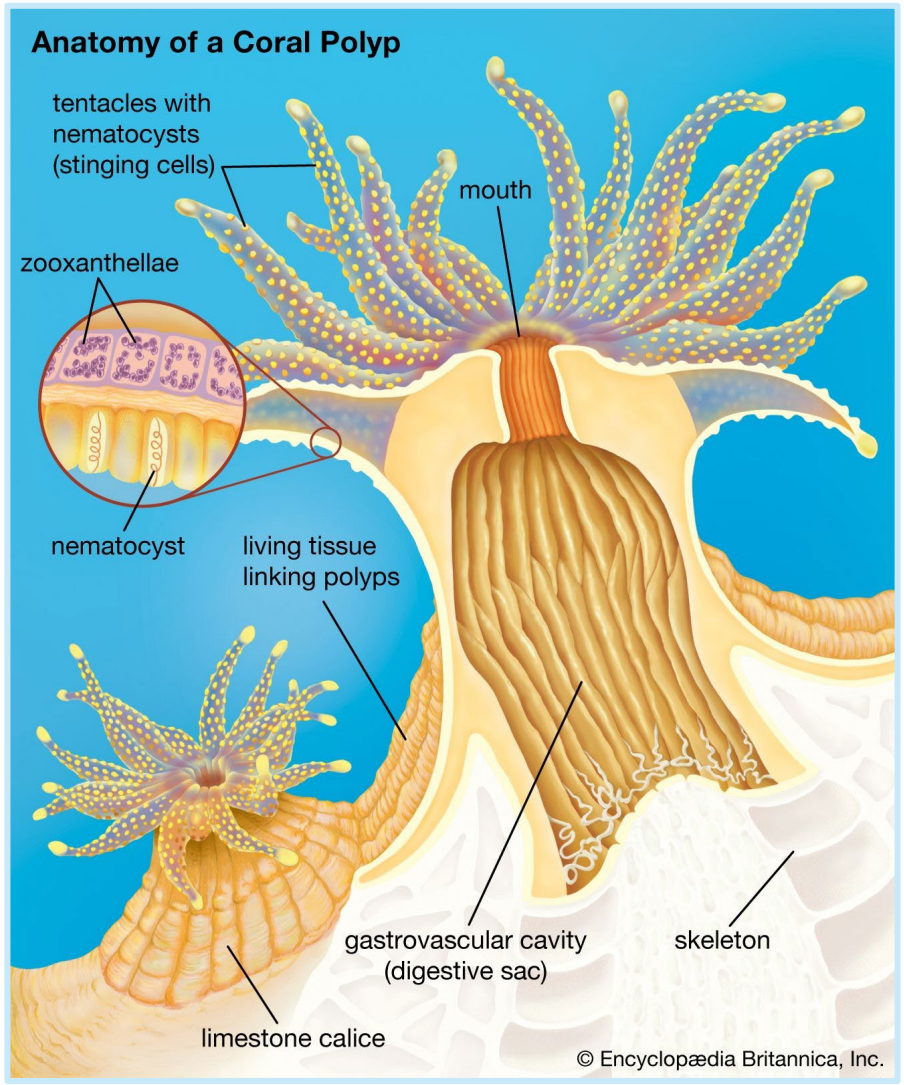
TRAINING OVERVIEW

- Coral Anatomy
- What Is Coral Bleaching?
- Coral Disease in Florida
- SEAFAN and the BleachWatch Early Warning Program
- Your Contribution

CORAL ANATOMY 101



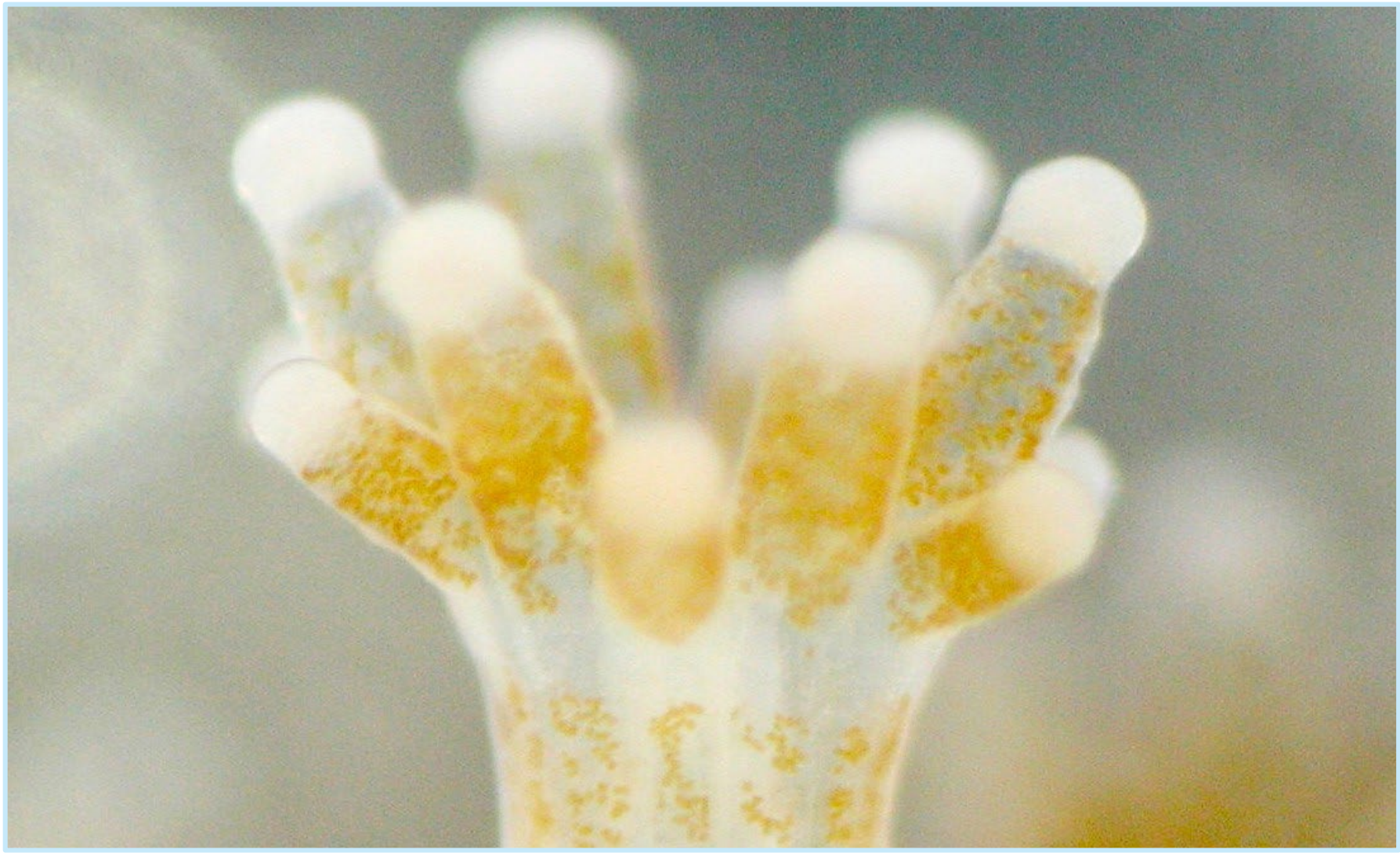
CORAL ANATOMY 101



Two Feeding Methods:

- Filter feeding (nematocysts).
- Symbiotic relationship (zooxanthellae).

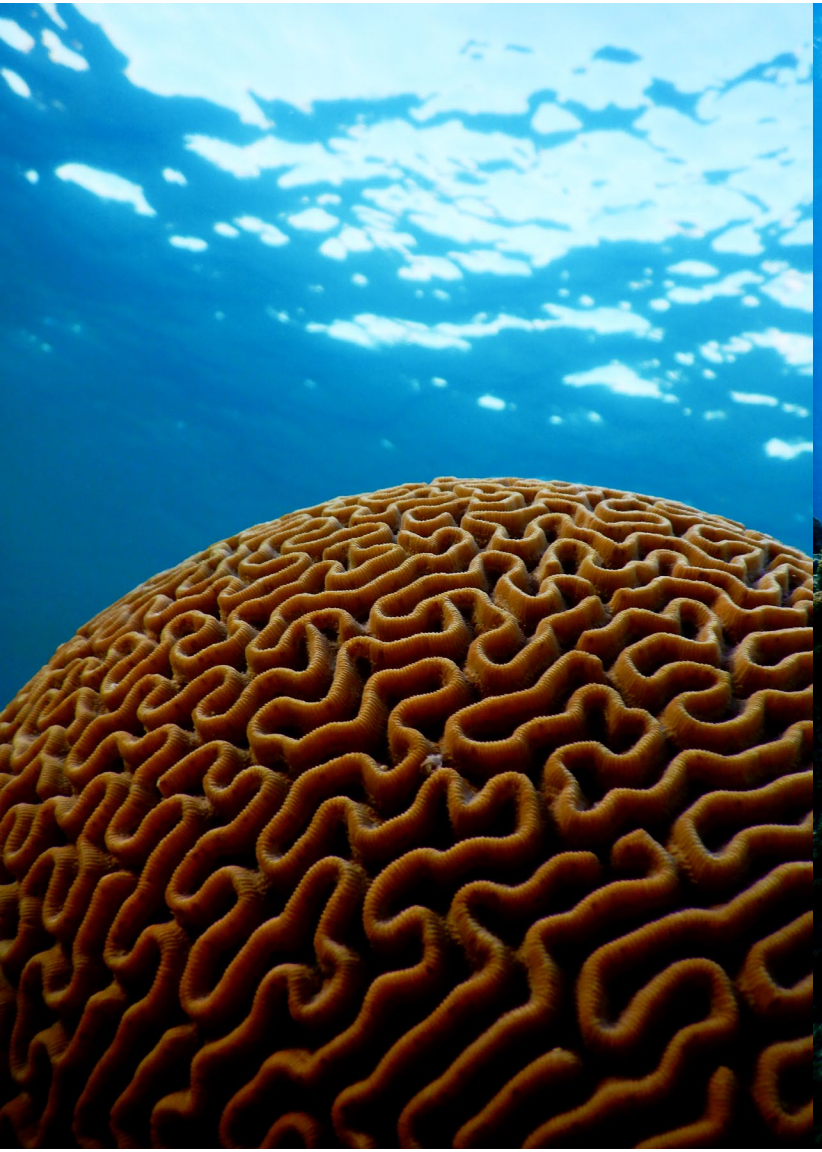
CORAL ANATOMY 101
ZOOXANTHELLAE

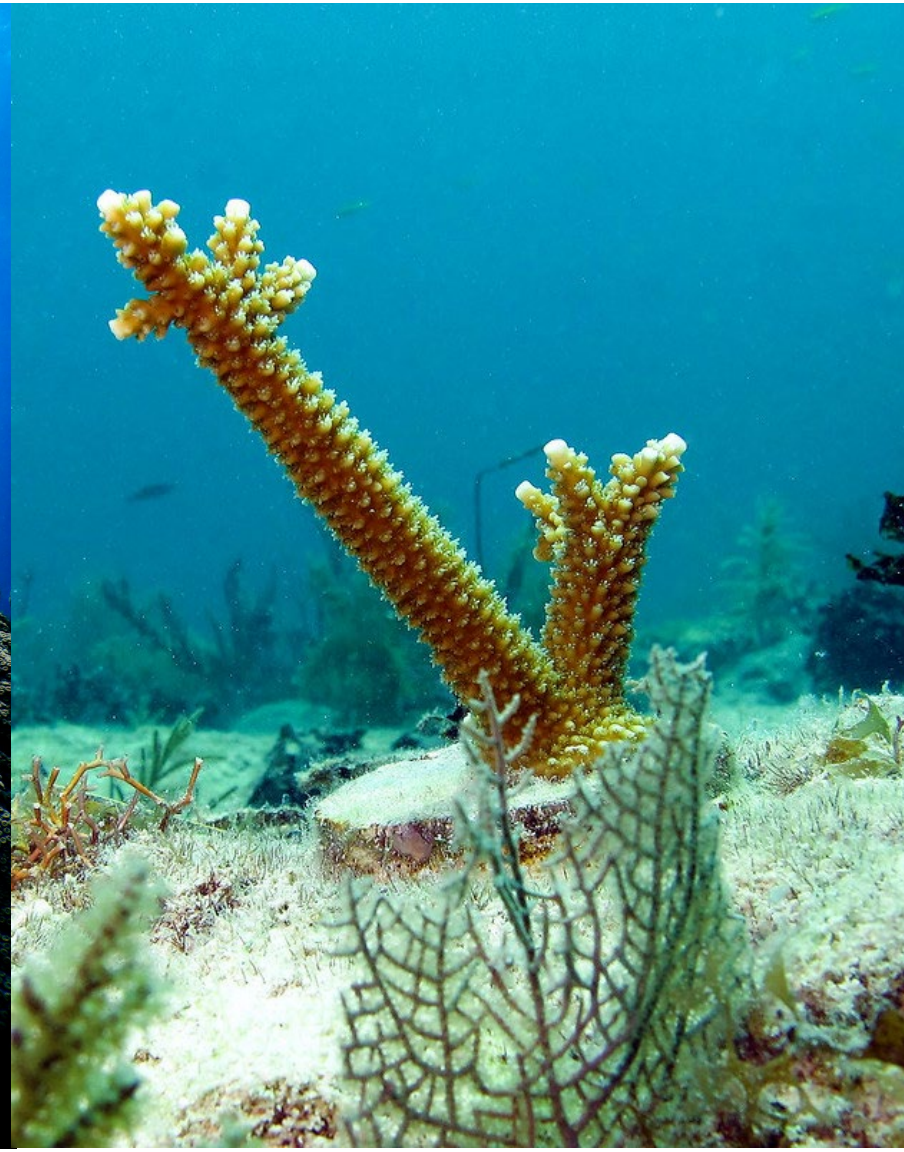


Zooxanthellae Provide:

- 90% – 95% of nutrients.
- Normal “healthy” coloration of corals.

CORAL ANATOMY 101
VARIATIONS OF GROWTH AND COLOR





TRAINING OVERVIEW

Coral Anatomy

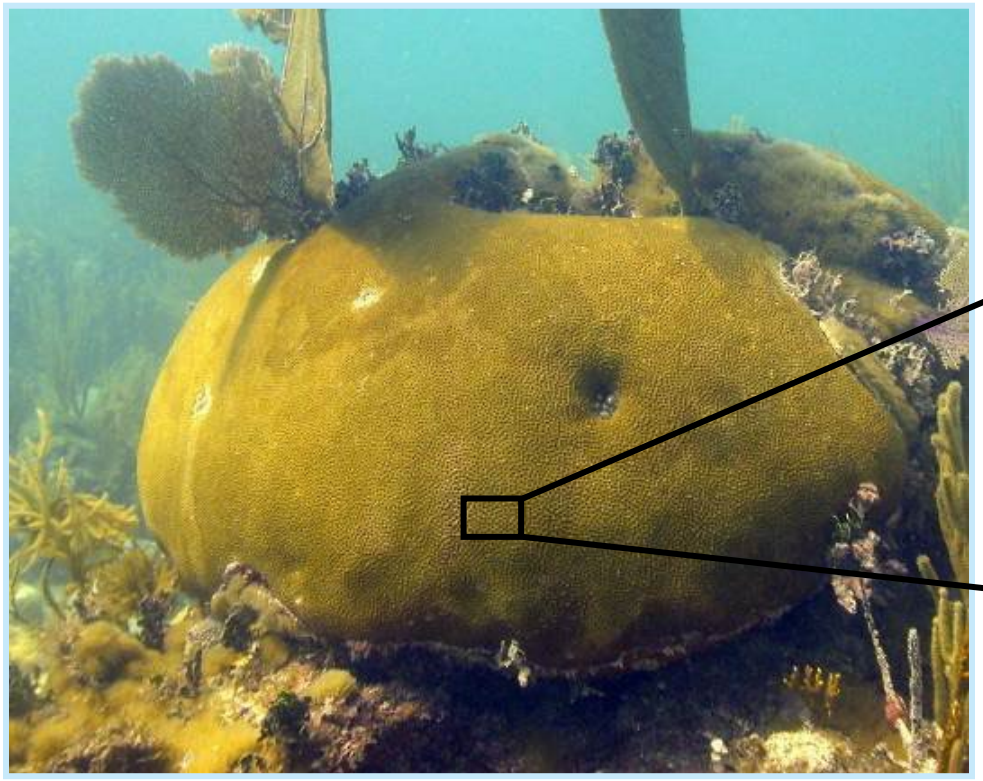
What Is Coral Bleaching?

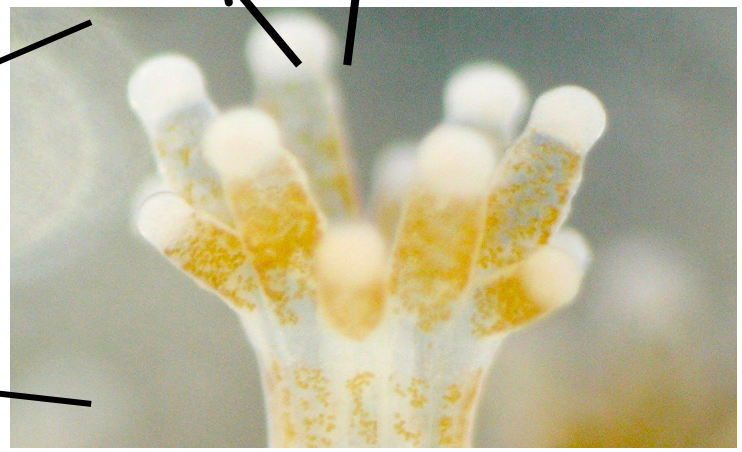
Coral Disease in Florida

SEAFAN and the
BleachWatch Early Warning Program

Your Contribution

CORAL BLEACHING

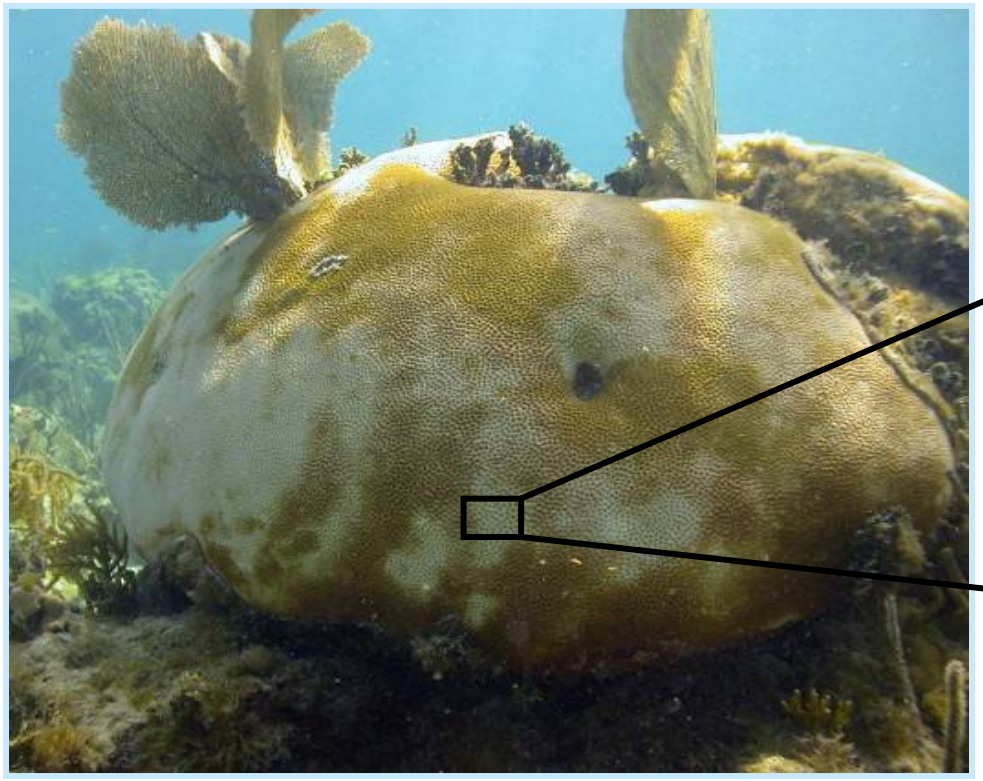


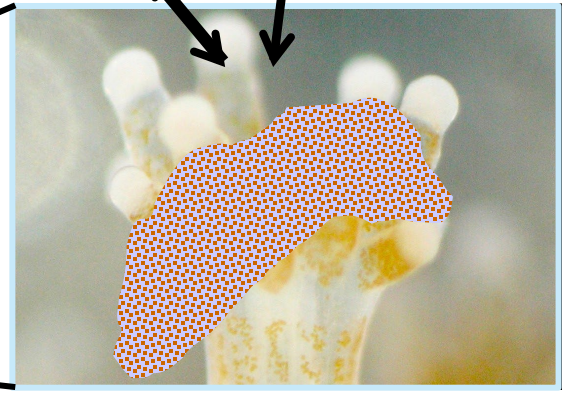


Stress

Healthy Coral

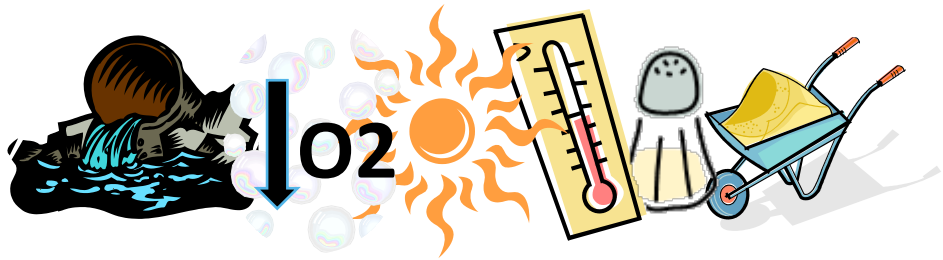
CORAL BLEACHING





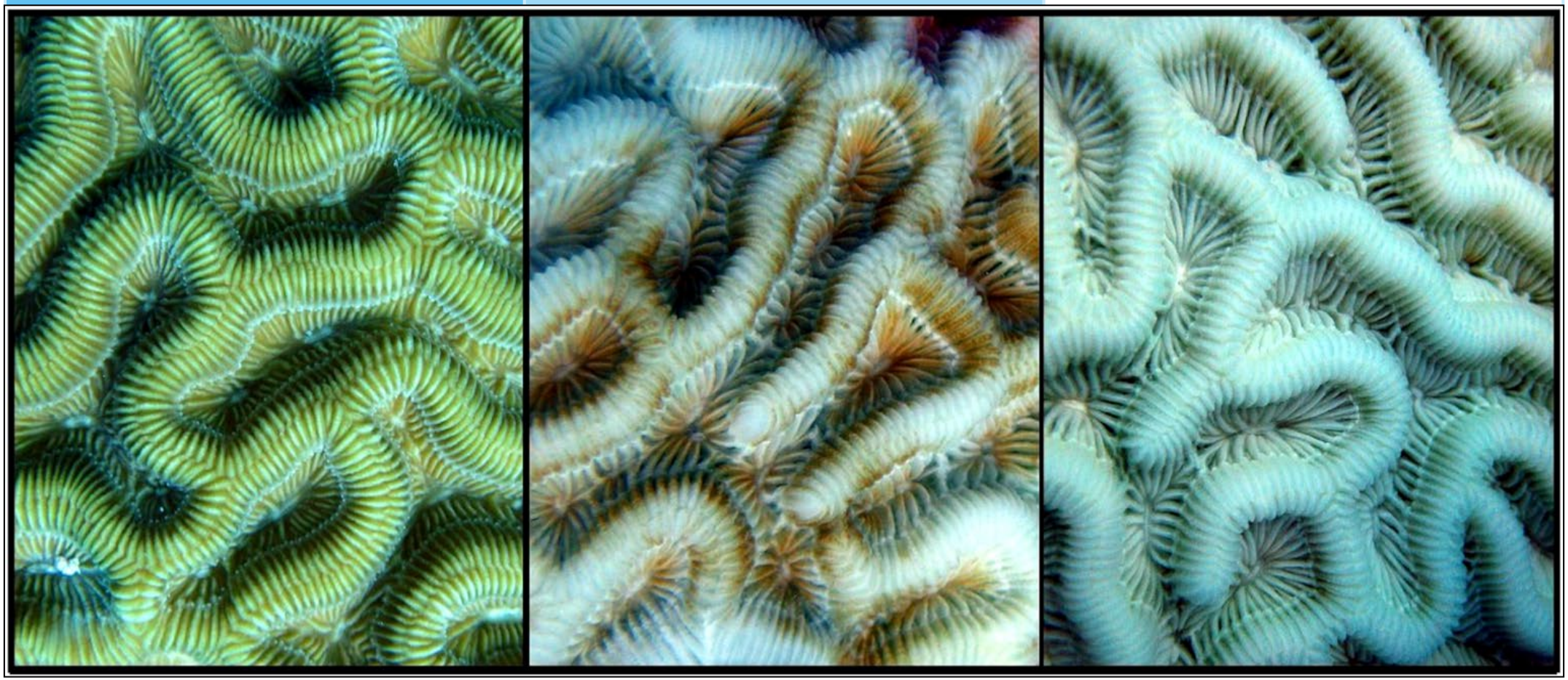
Bleached Coral

Stress



CORAL BLEACHING

Healthy	Paling	Bleached



CORAL BLEACHING
IS A BLEACHED CORAL DEAD?

No!

Bleached Coral

CORAL BLEACHING

Water Temperature Increases

Prolonged Temperature Stress

Healthy Coral

Bleached Coral

Dead Coral

Water Temperature Returns to Normal

CORAL BLEACHING

Healthy Coral

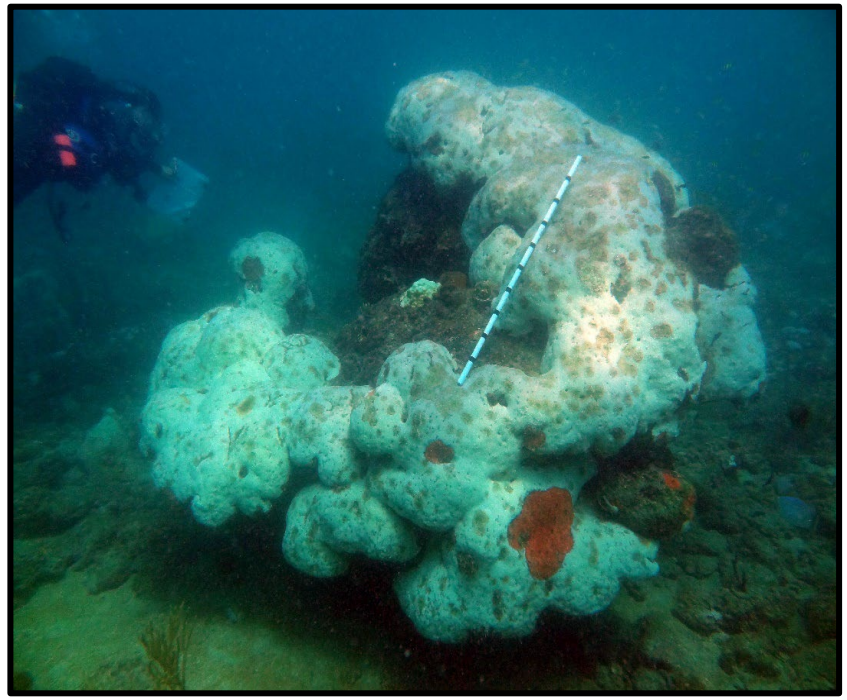
Bleached Coral

Dead Coral

Is the coral resilient?

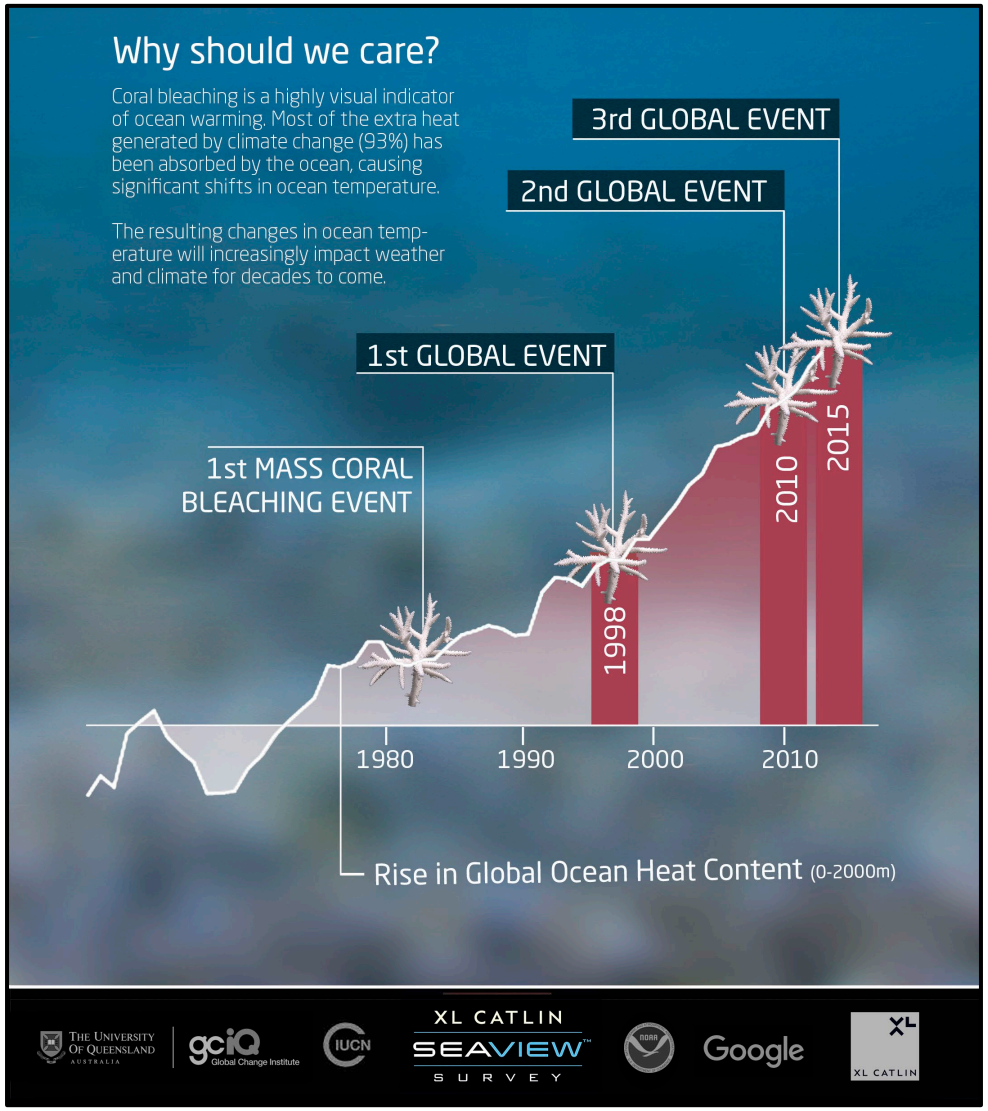
CORAL BLEACHING
LONG-TERM EFFECTS

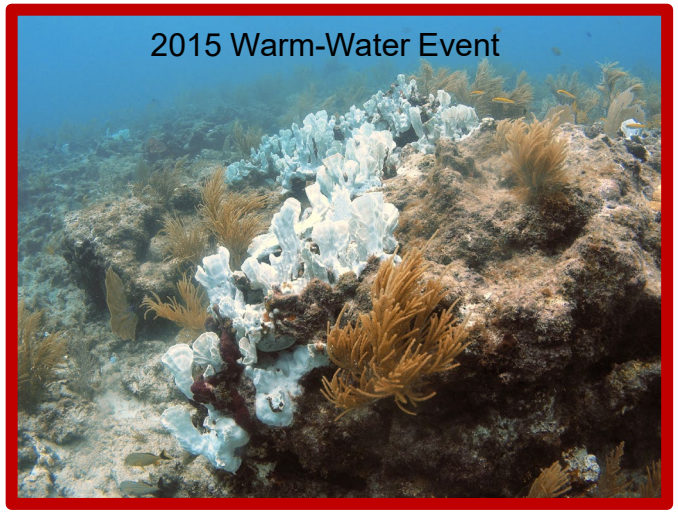
- ↓ Reproduction
- ↓ Coral growth
- Loss of habitat



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

CORAL BLEACHING
SEVERE MASS-SCALE EVENTS





CORAL BLEACHING ACROSS SPATIAL SCALES

Mound/Boulder Coral, Bleached

Mound/Boulder Coral, Bleached

Brain Coral, Paling

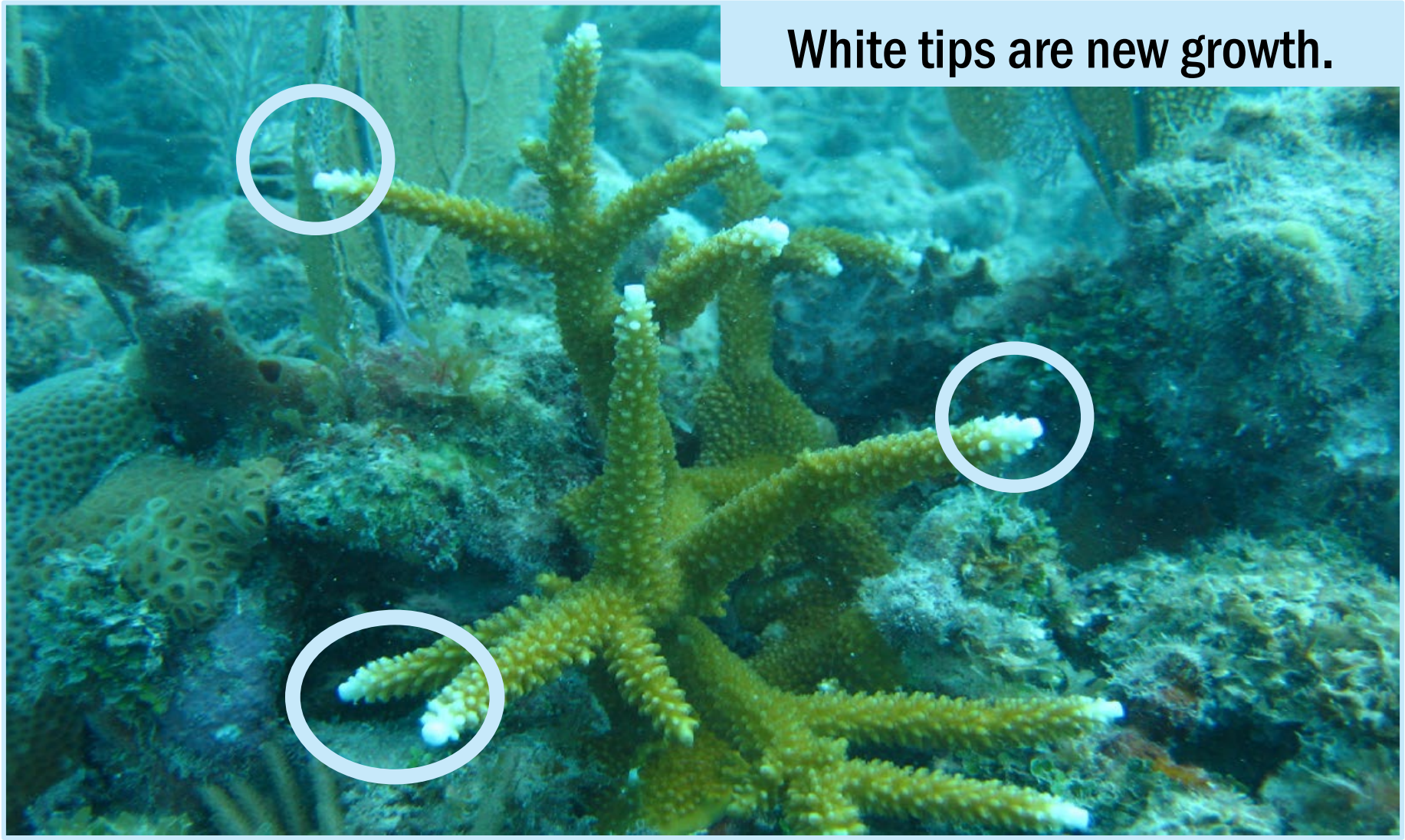
Mound/Boulder, Partial Bleaching

CORAL BLEACHING

Brain Coral

Mound/Boulder Coral, Bleached

CORAL BLEACHING
NOT BLEACHING



CORAL BLEACHING
LONG-TERM EFFECTS

QUIZ QUESTION #1
HOW DO CORALS FEED?

A. Using their tentacles.

B. Using their teeth.

C. Through a symbiotic relationship.

QUIZ QUESTION #1
T/F: A BLEACHED CORAL IS A DEAD?

A. True.

B. False.

QUIZ QUESTION #1
HOW DO STONY CORALS GET THEIR COLOR?

A. Genetic inheritance.

B. Zooxanthellae.

C. Light reflectance.

TRAINING OVERVIEW

Coral Anatomy

What Is Coral Bleaching?

Coral Disease in Florida

SEAFAN and the
BleachWatch Early Warning Program

Your Contribution

CORAL DISEASE
WHAT CAUSES IT?

Bacteria

Virus

Fungus

CORAL DISEASE IDENTIFICATION

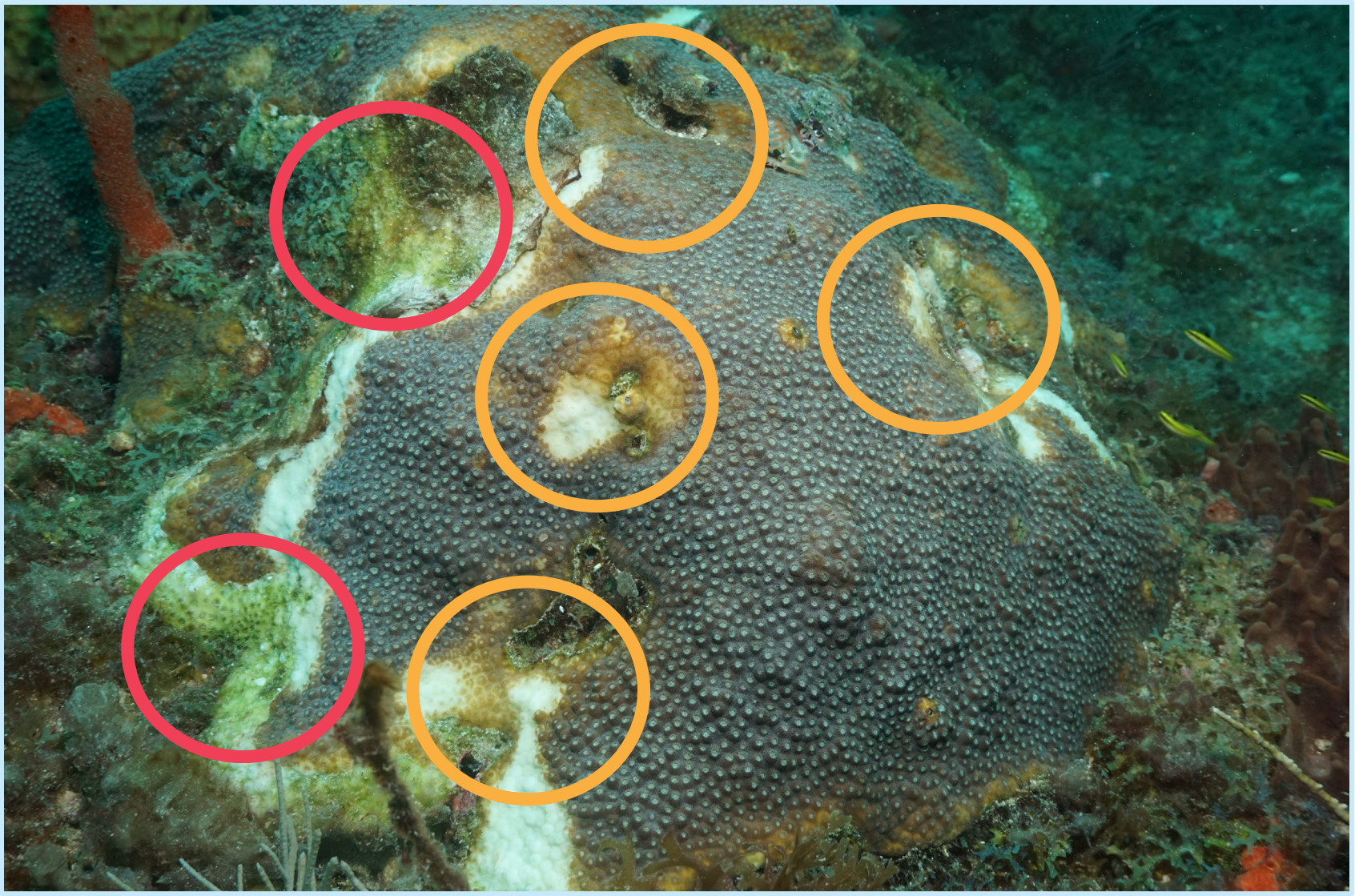
CORAL DISEASE
BLEACHING VS. DISEASE

Healthy

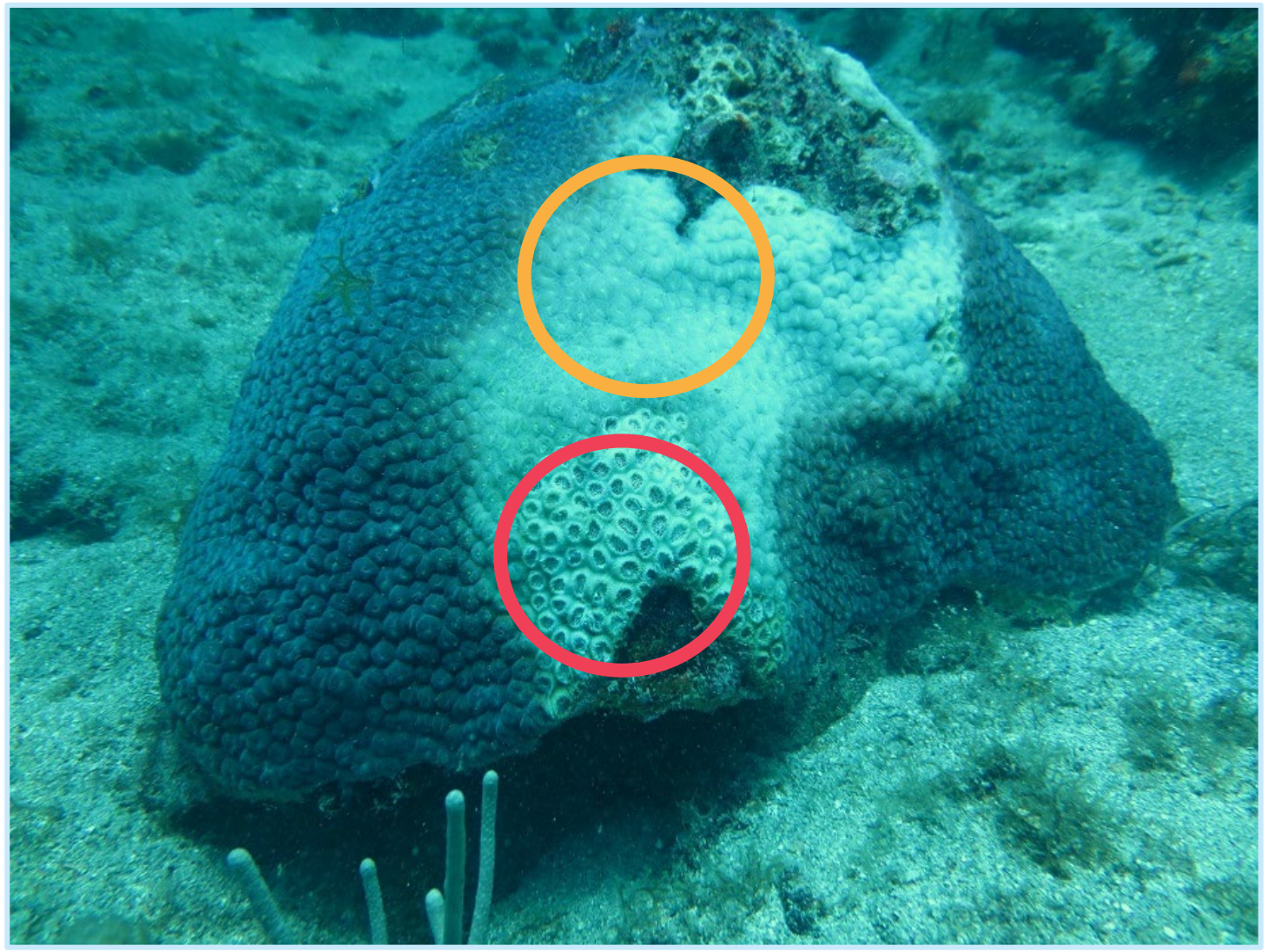
Bleaching

Tissue Loss

CORAL DISEASE
BLEACHING VS. DISEASE



CORAL DISEASE
BLEACHING VS. TISSUE LOSS

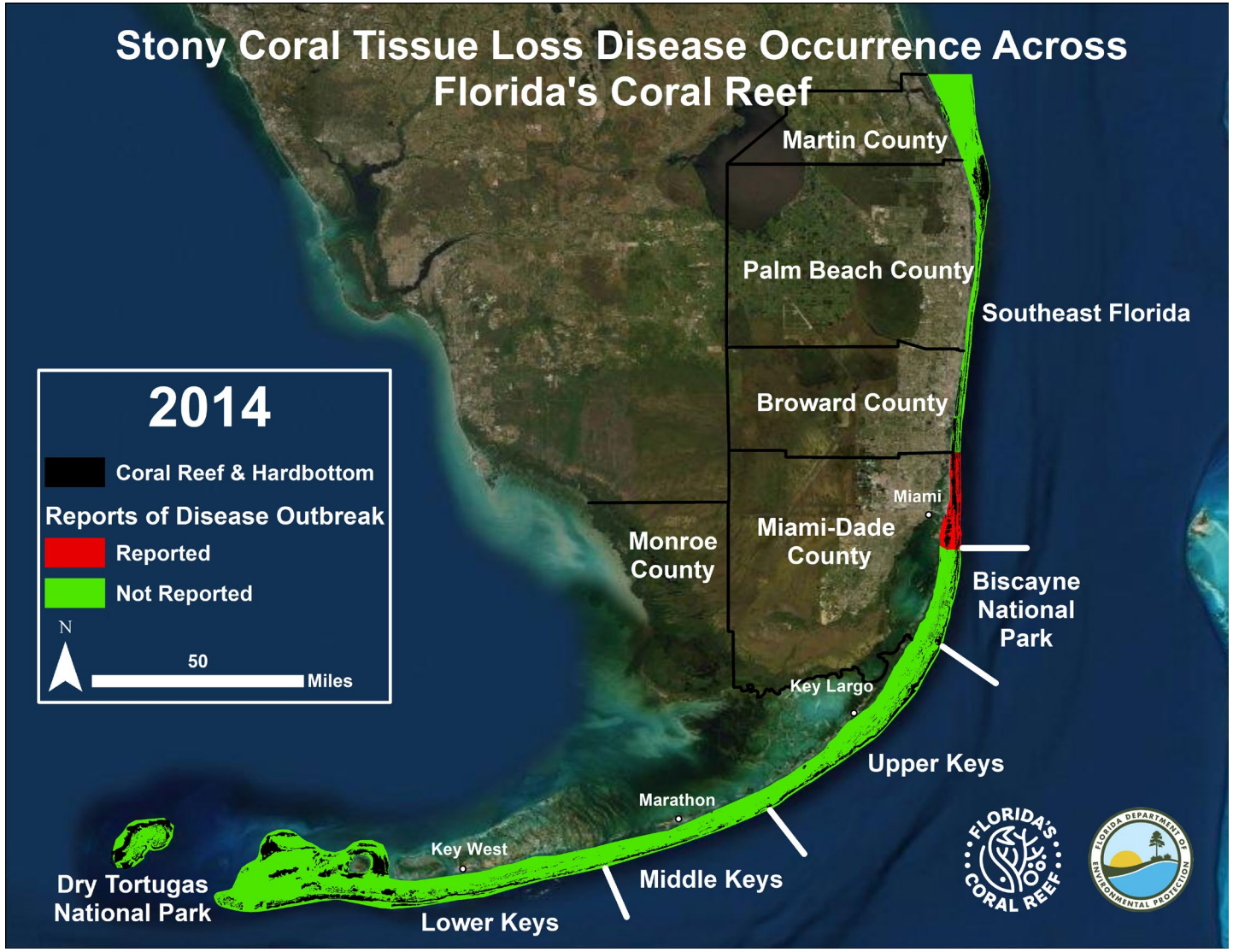


CORAL DISEASE
STONY CORAL TISSUE LOSS DISEASE (SCTLD)

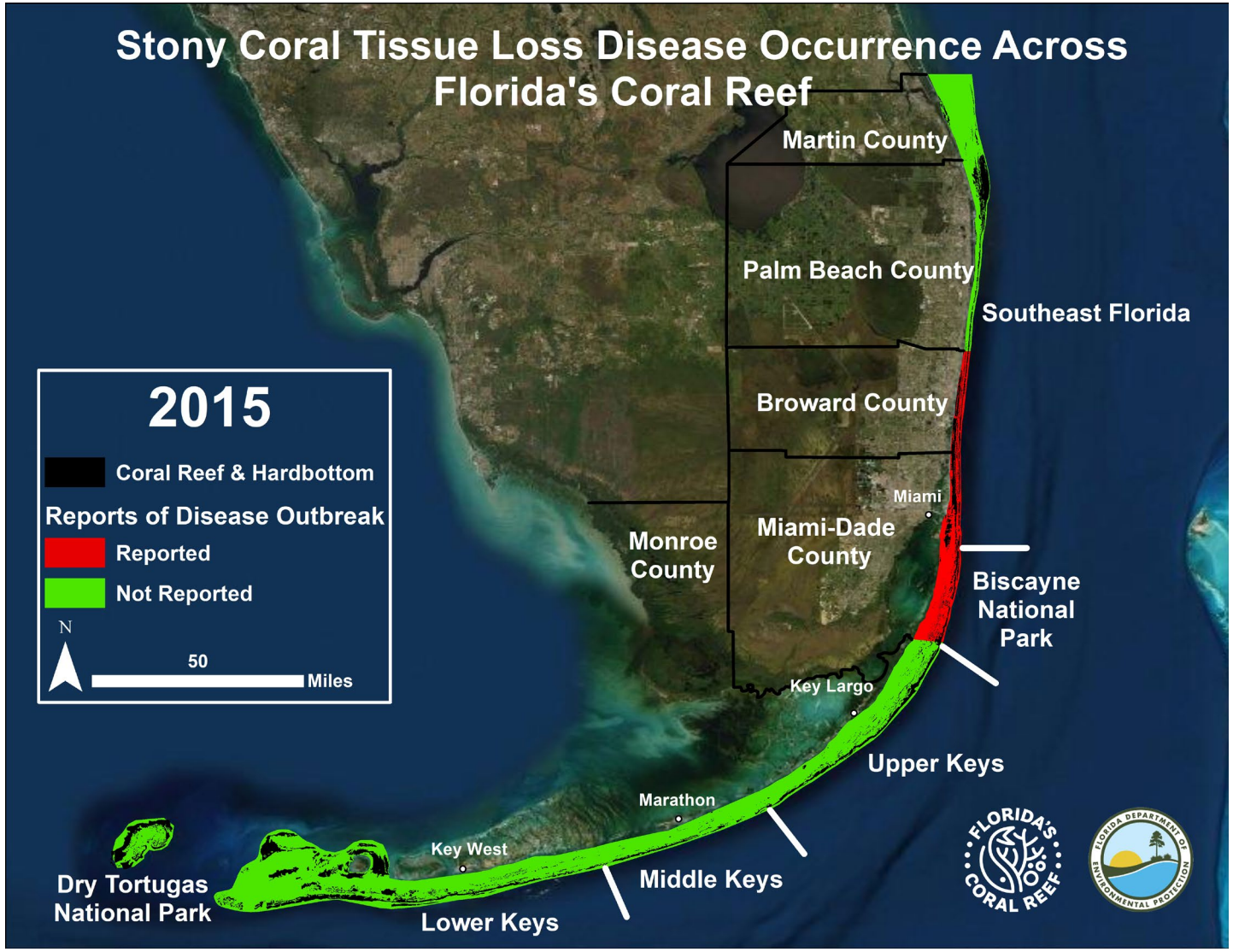
Stony Coral
Tissue Loss
Disease Outbreak

2014 – Present

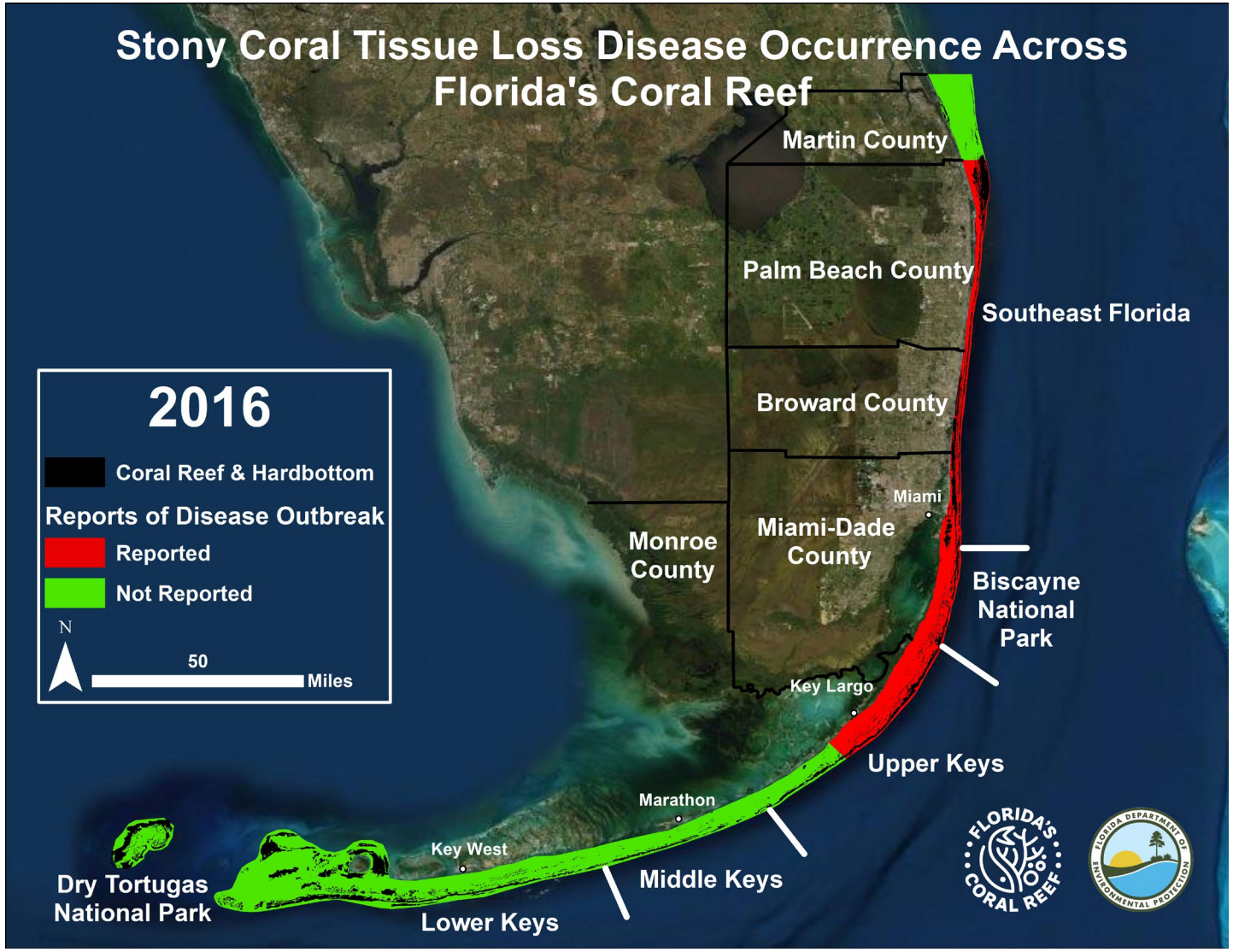
CORAL DISEASE
DISEASE PROGRESSION THROUGH TIME



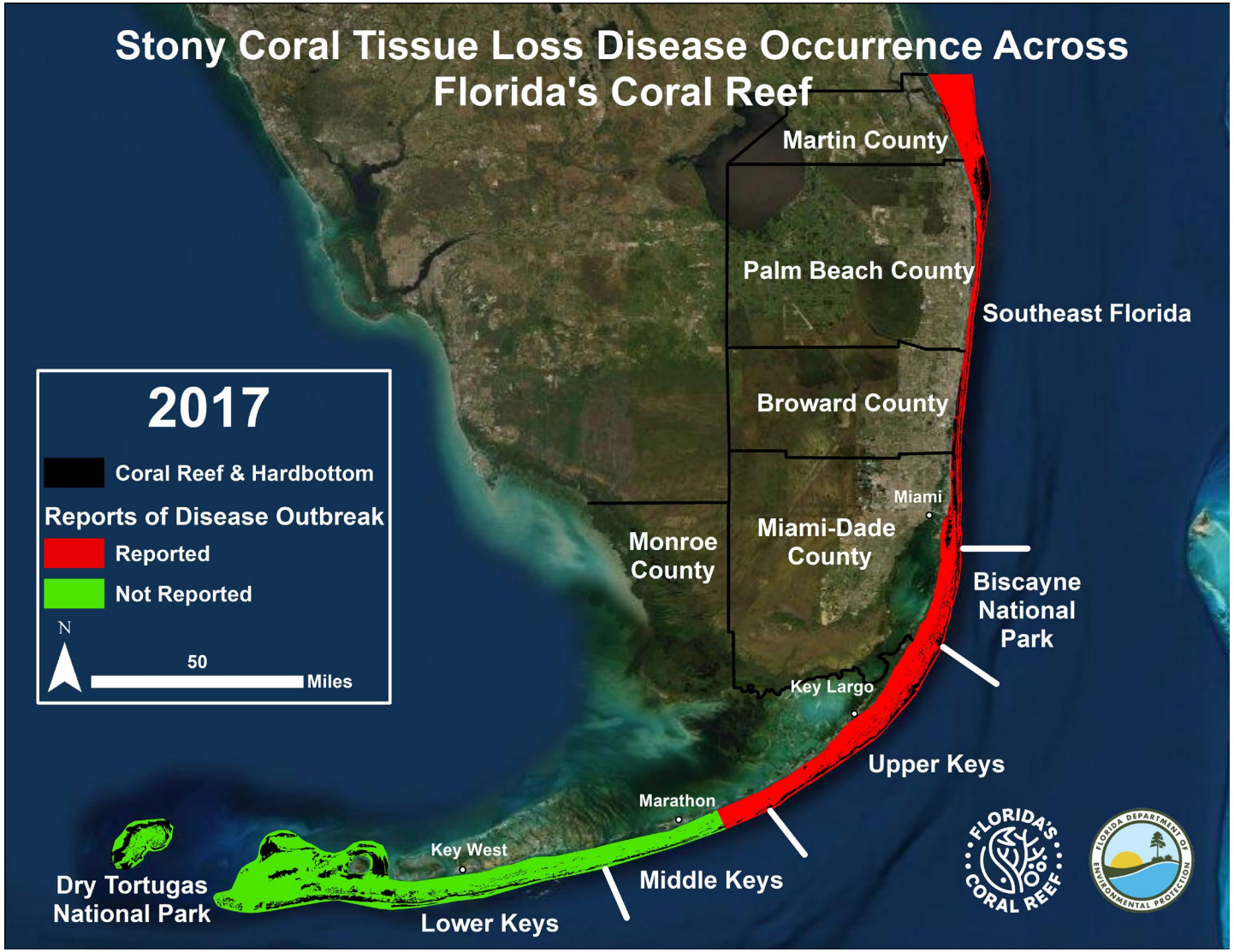
CORAL DISEASE
DISEASE PROGRESSION THROUGH TIME



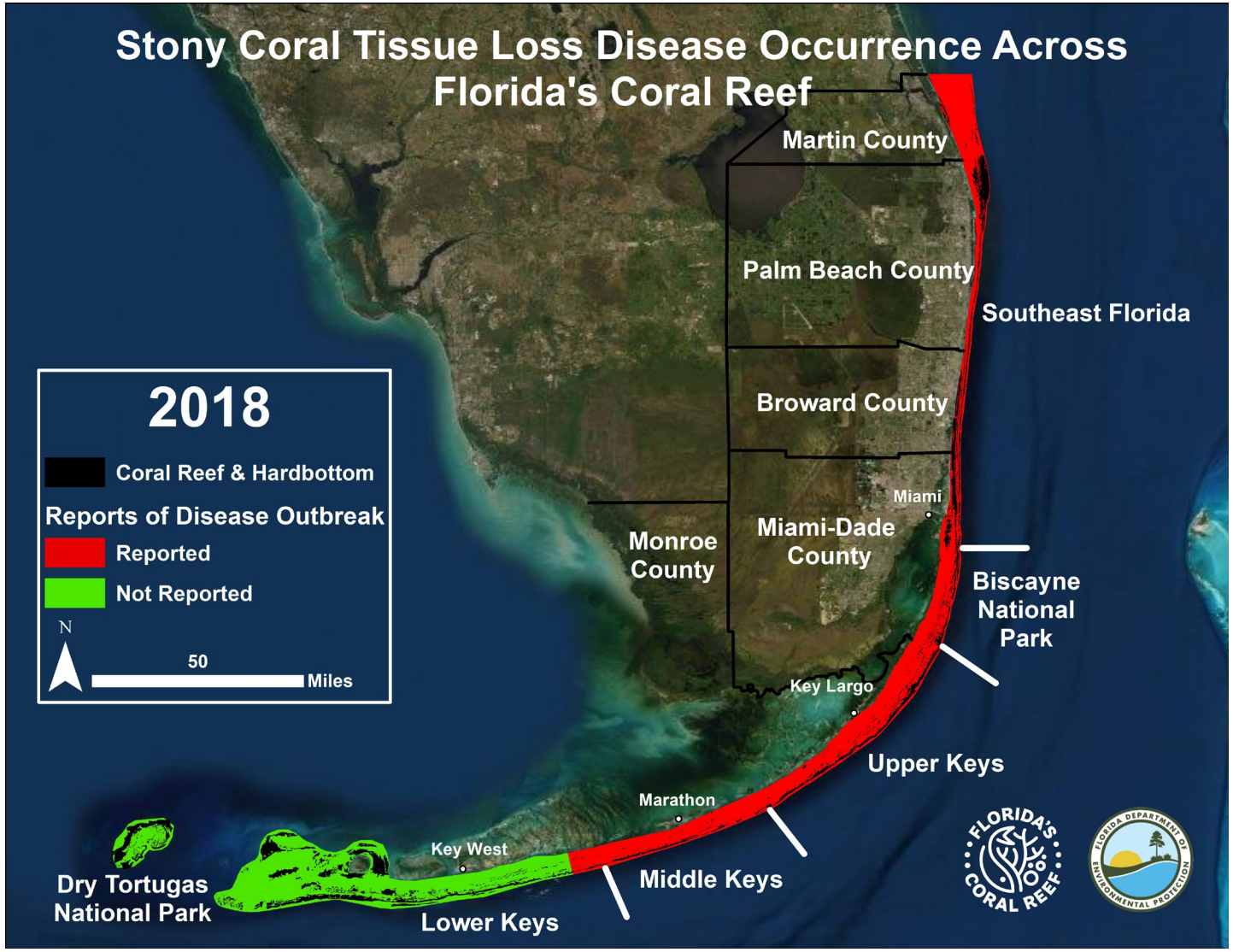
CORAL DISEASE
DISEASE PROGRESSION THROUGH TIME



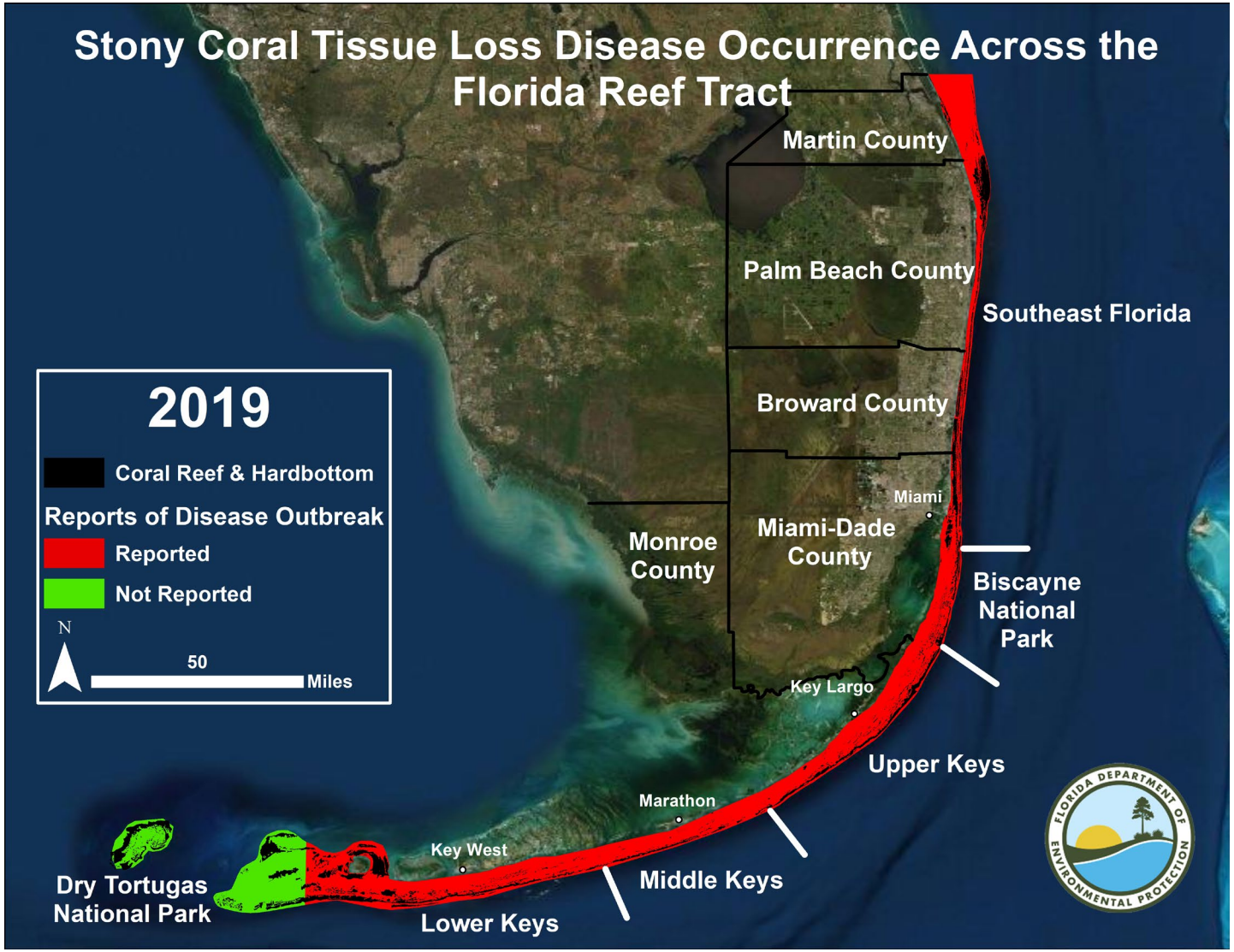
CORAL DISEASE
DISEASE PROGRESSION THROUGH TIME



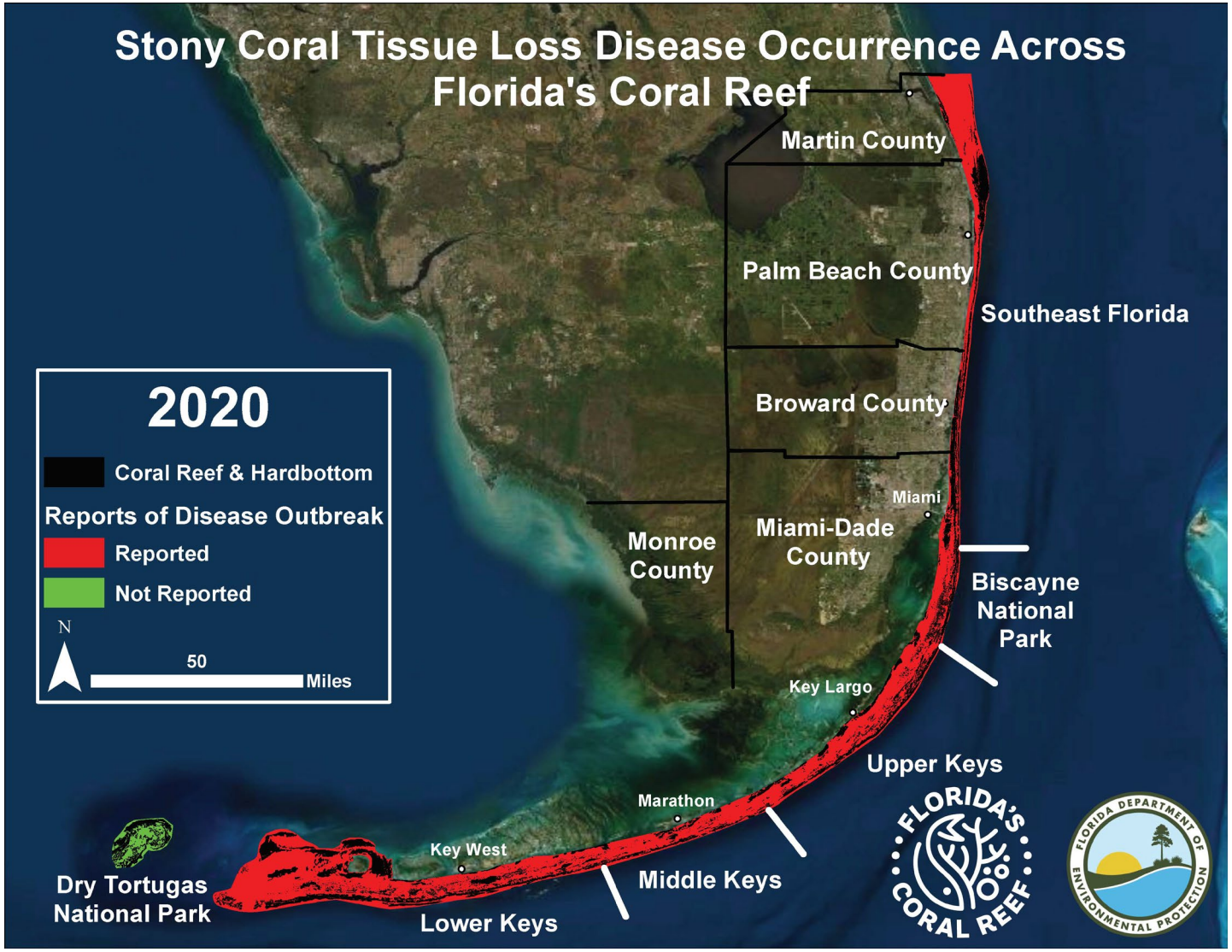
CORAL DISEASE
DISEASE PROGRESSION THROUGH TIME



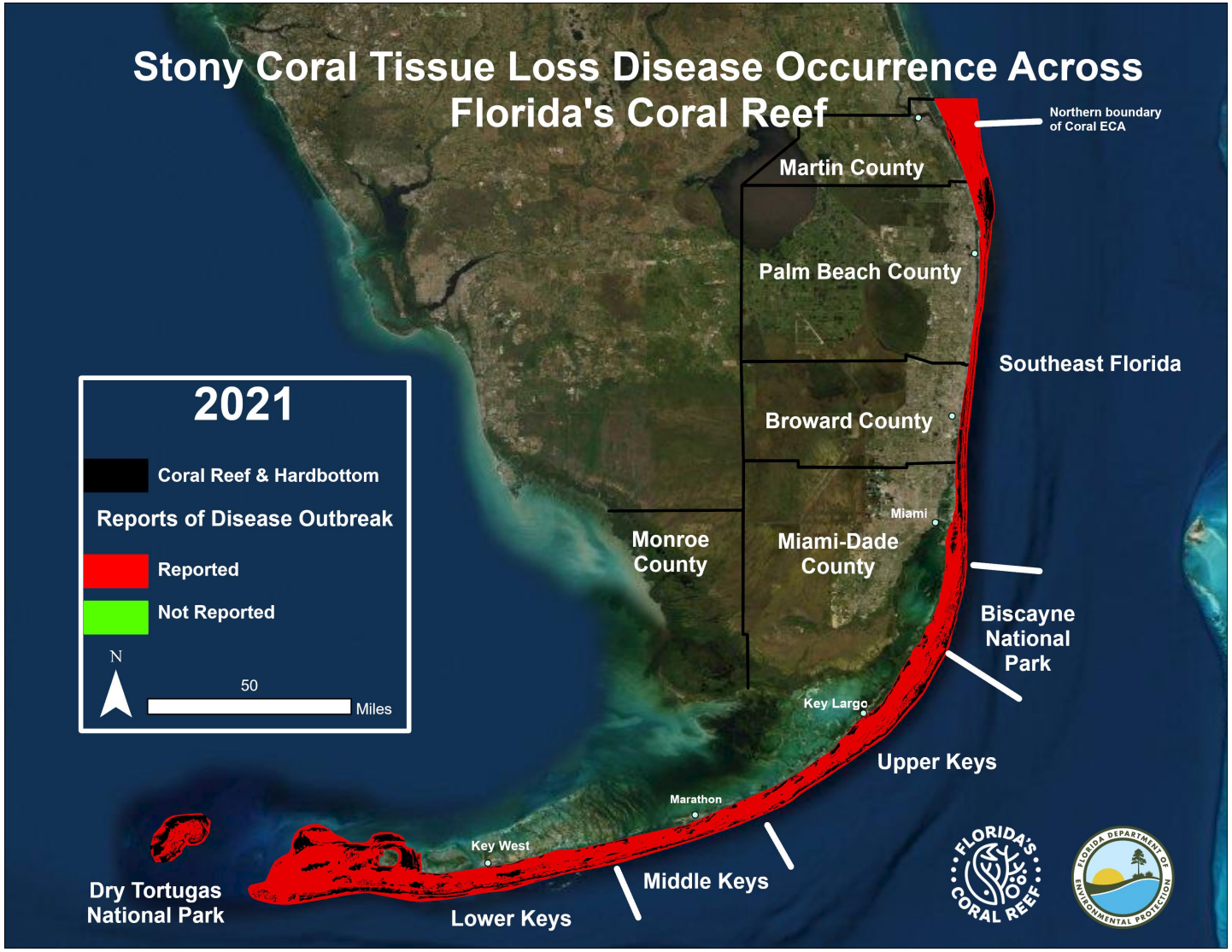
CORAL DISEASE
DISEASE PROGRESSION THROUGH TIME



CORAL DISEASE
DISEASE PROGRESSION THROUGH TIME



CORAL DISEASE
DISEASE PROGRESSION THROUGH TIME



CORAL DISEASE
CARIBBEAN CORAL DISEASE OUTBREAK

CORAL DISEASE
STONY CORAL TISSUE LOSS DISEASE (SCTLD)

CORAL DISEASE BACKGROUND LEVEL

Florida's "Normal" prevalence of disease is

2%-3%

CORAL DISEASE BACKGROUND LEVEL

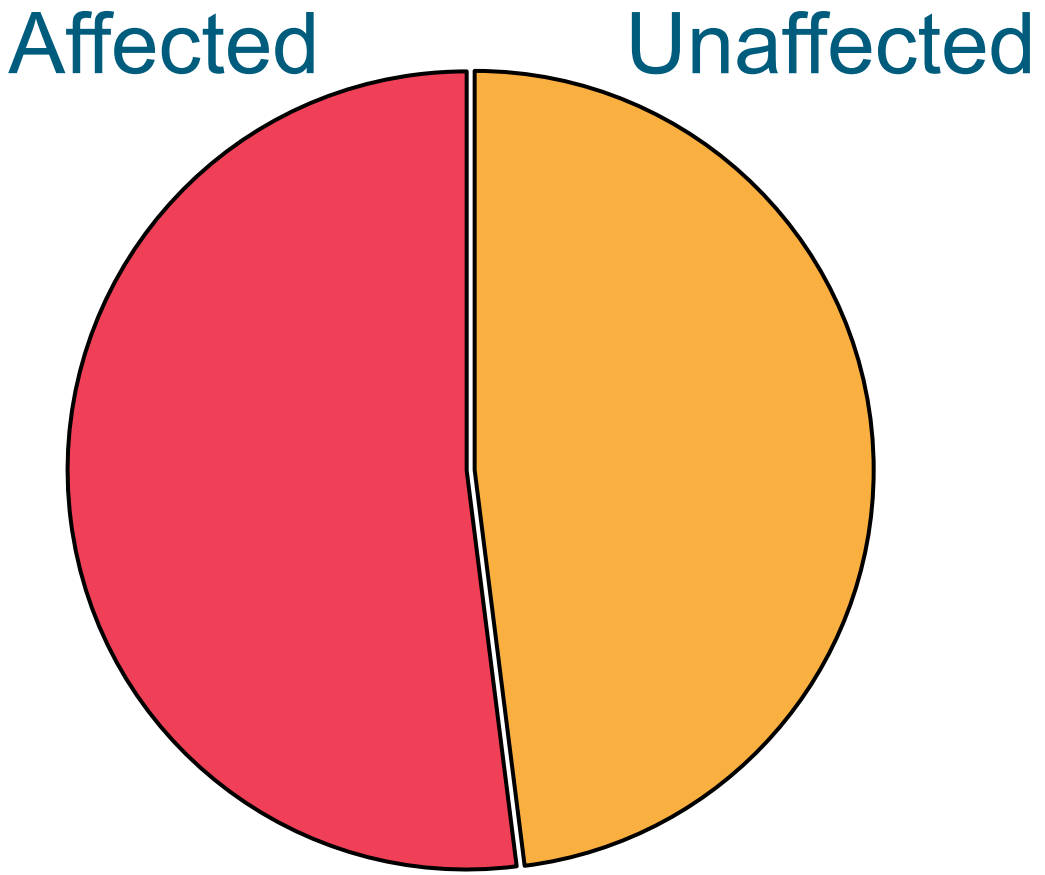
Very High =

66%-100%

(in susceptible species)

CORAL DISEASE
DISEASE PROGRESSION THROUGH TIME

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



CORAL DISEASE
STONY CORAL TISSUE LOSS DISEASE (SCTLD)

Progresses Rapidly!

High Likelihood of Complete Mortality

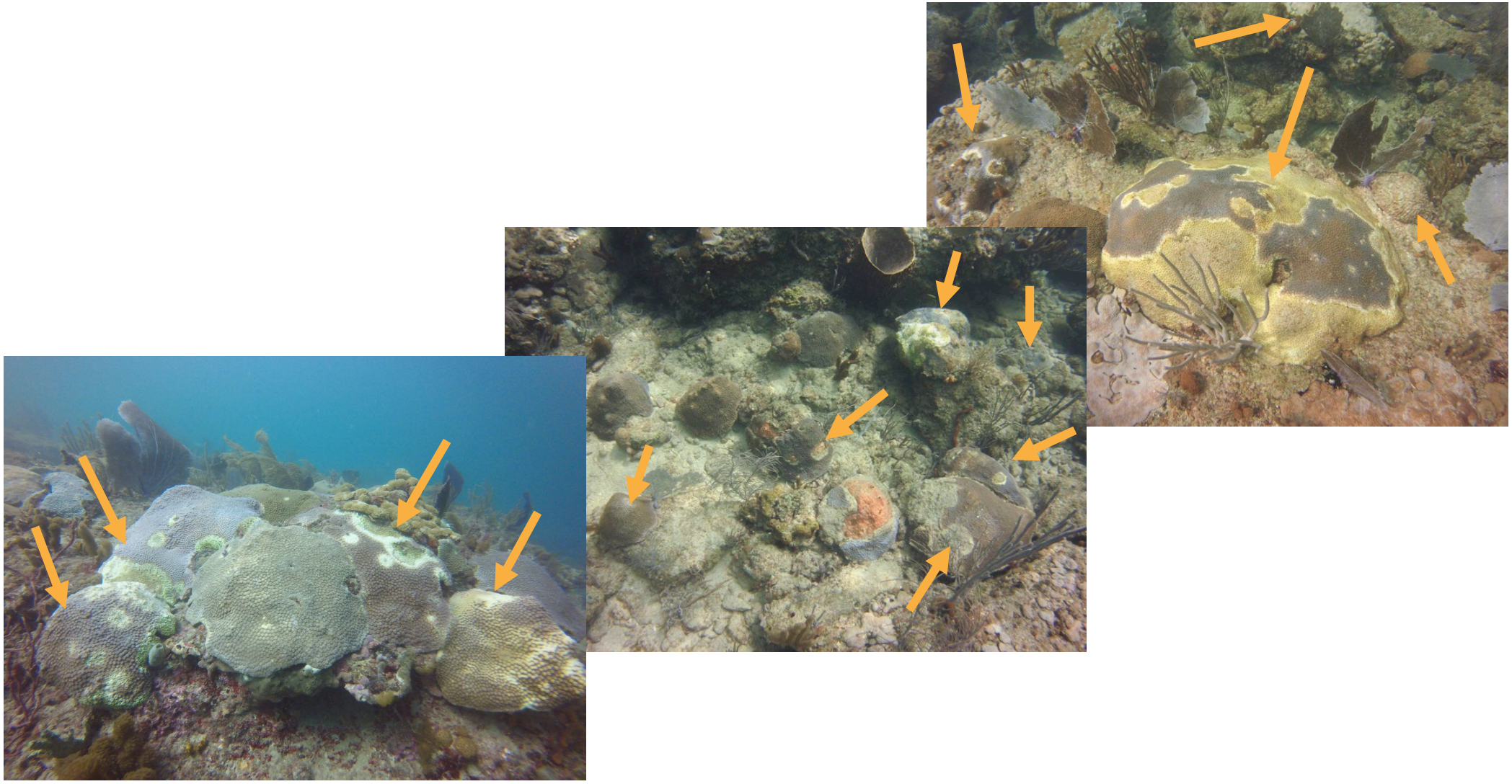
CORAL DISEASE
MOST IMPACTED SPECIES: PILLAR CORAL

95% loss of
known populations.

CORAL DISEASE

MOST IMPACTED SPECIES: MOUNTAINOUS STAR CORAL

CORAL DISEASE LANDSCAPE PHOTOS



CORAL DISEASE
DISEASE REPONSE PARTNERS

QUIZ QUESTION #4

WHAT FEATURES SEPARATE BLEACHING FROM DISEASE?

A. Presence of live tissue.

B. The color white.

C. Sharp, defined line.

D. Both A and C.

E. All the above.

TRAINING OVERVIEW

- Coral Anatomy
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SOUTHEAST FLORIDA ACTION NETWORK
SEAFAN

SEAFAN

Southeast Florida Action Network

We're All Connected ~ Keep It Protected

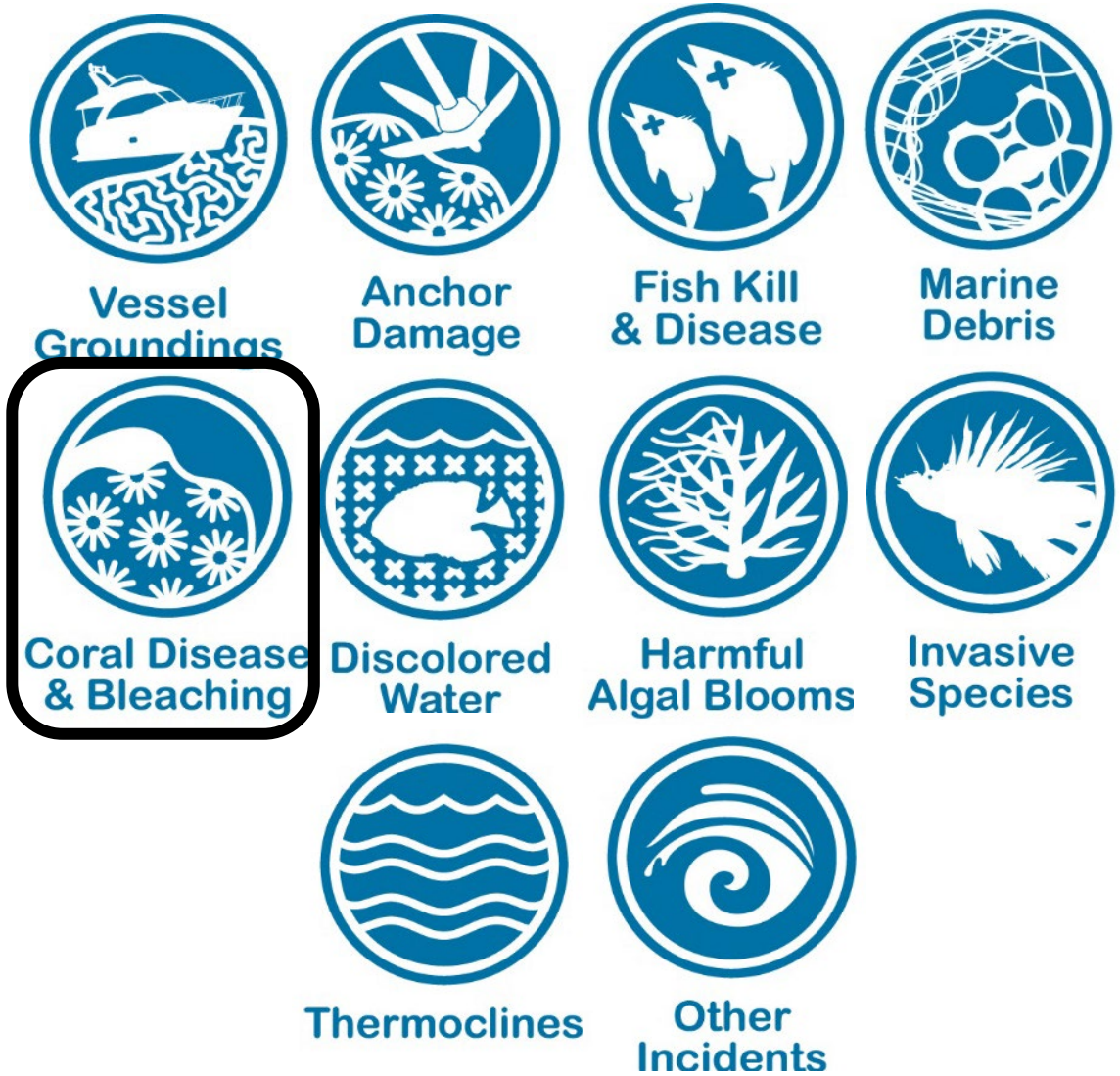
A community-based reporting and response program for marine incidents affecting southeast Florida's coral reef ecosystem.

SEAFAN

See a marine incident ?
REPORT IT !

www.SEAFAN.net/report

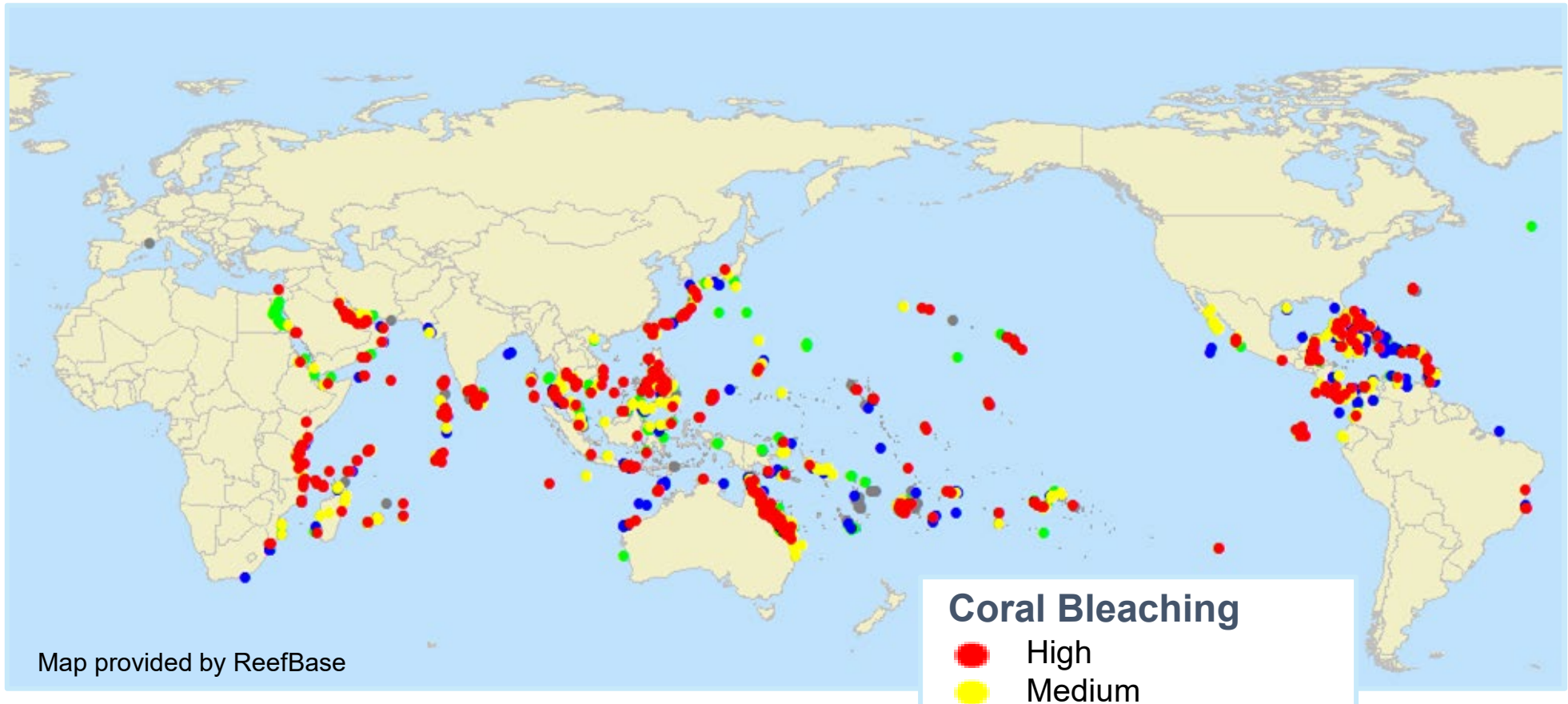
1-866-770-SEFL (7335)



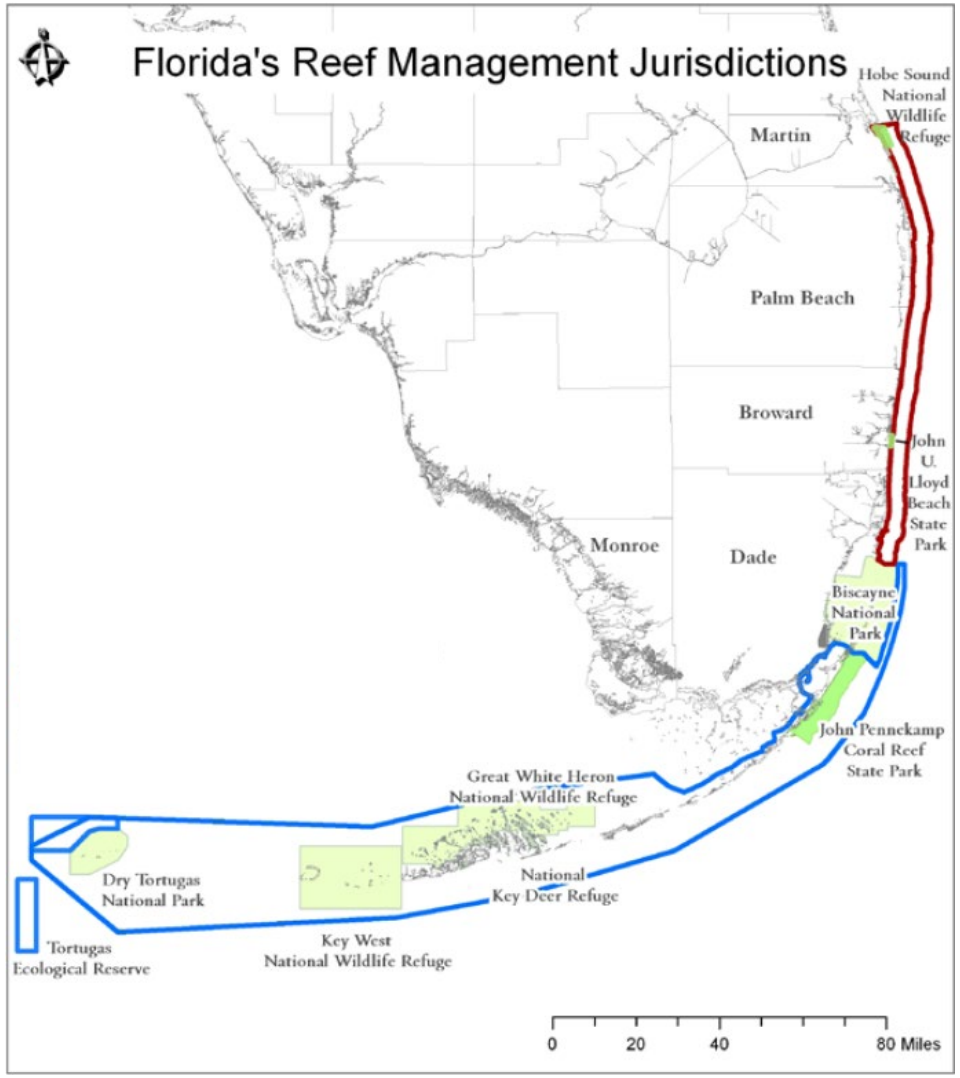
SEAFAN BLEACHWATCH

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

BLEACHWATCH
CORAL BLEACHING FROM 1980-2010



BLEACHWATCH



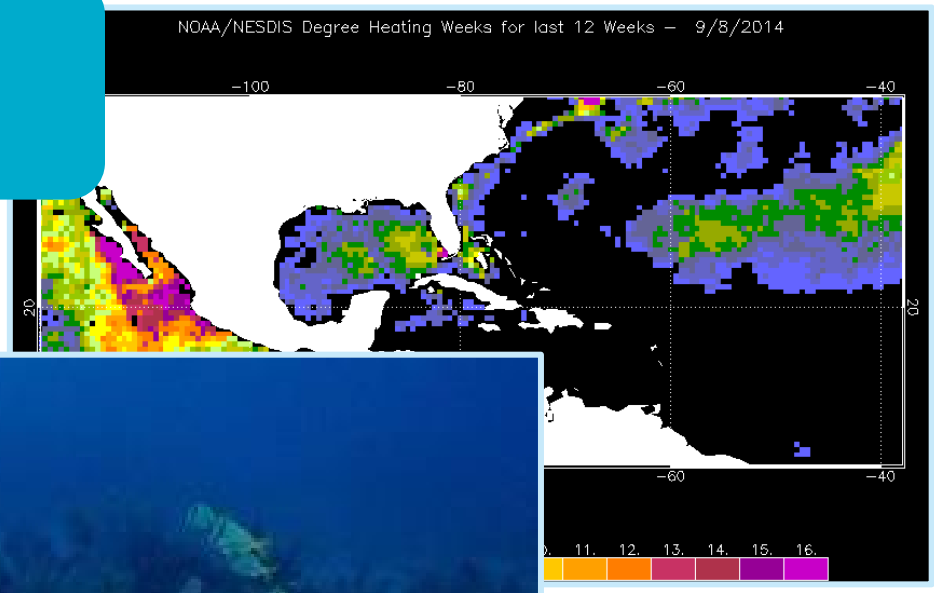
Kristin Jacobs Coral Reef Ecosystem Conservation Area
Florida Keys National Marine Sanctuary
Federal Park or Refuge
State Park

SEAFAN BleachWatch

Florida Keys BleachWatch

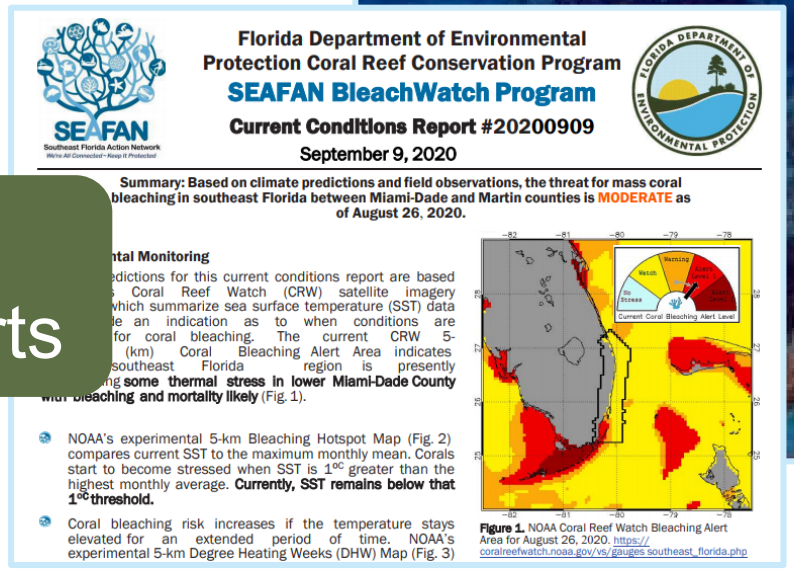
BLEACHWATCH PROGRAM OBJECTIVES

Environmental Monitoring



Involve Citizen Scientists

Issue “Current Conditions” Reports



Florida Department of Environmental Protection Coral Reef Conservation Program

SEAFAN BleachWatch Program

Current Conditions Report #20200909

September 9, 2020

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 26, 2020.

ntal Monitoring

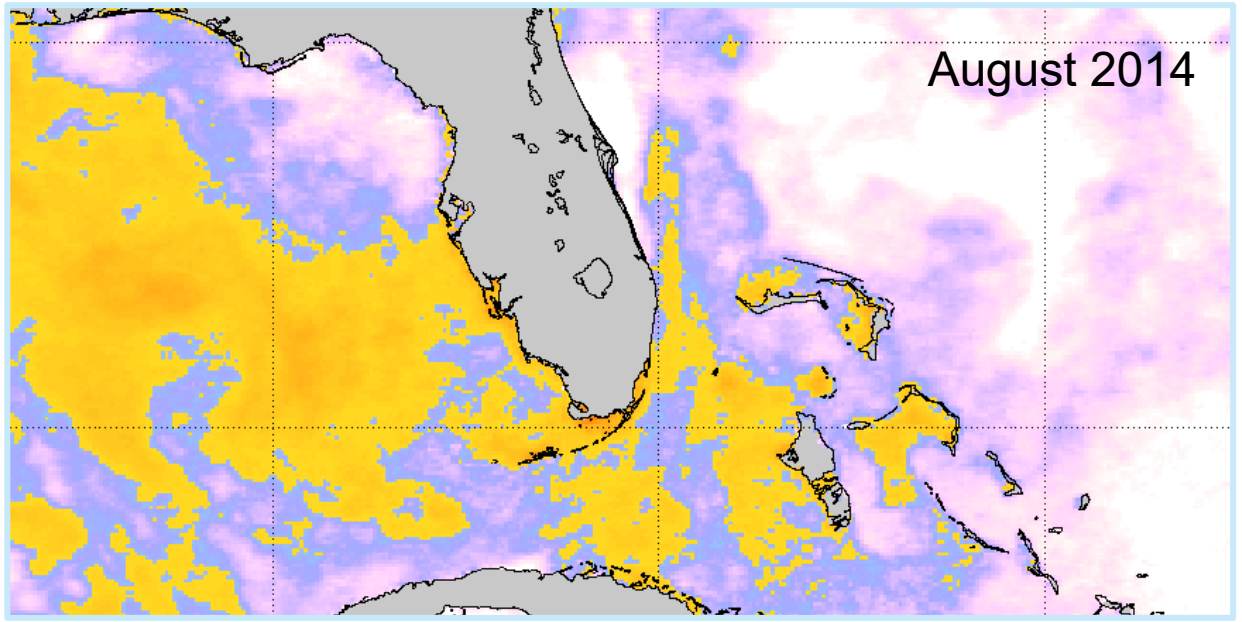
edictions for this current conditions report are based Coral Reef Watch (CRW) satellite imagery which summarize sea surface temperature (SST) data le an indication as to when conditions are for coral bleaching. The current CRW 5-(km) Coral Bleaching Alert Area indicates southeast Florida region is presently ng **some thermal stress in lower Miami-Dade County with bleaching and mortality likely** (Fig. 1).

- NOAA's experimental 5-km Bleaching Hotspot Map (Fig. 2) compares current SST to the maximum monthly mean. Corals start to become stressed when SST is 1°C greater than the highest monthly average. **Currently, SST remains below that 1°C threshold.**
- 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 (Fig. 3)

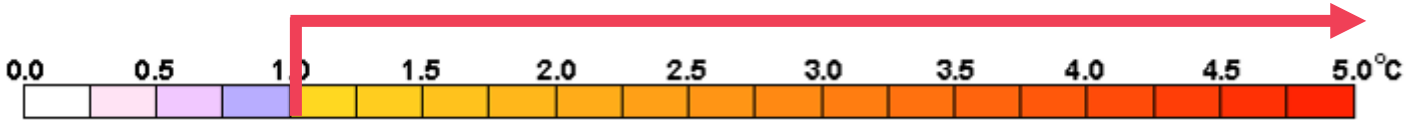
Figure 1. NOAA Coral Reef Watch Bleaching Alert Area for August 26, 2020. https://coralreefwatch.noaa.gov/vs/gauges/southeast_florida.php

BLEACHWATCH ENVIRONMENTAL MONITORING

High Temperatures *(Hot Spots)*

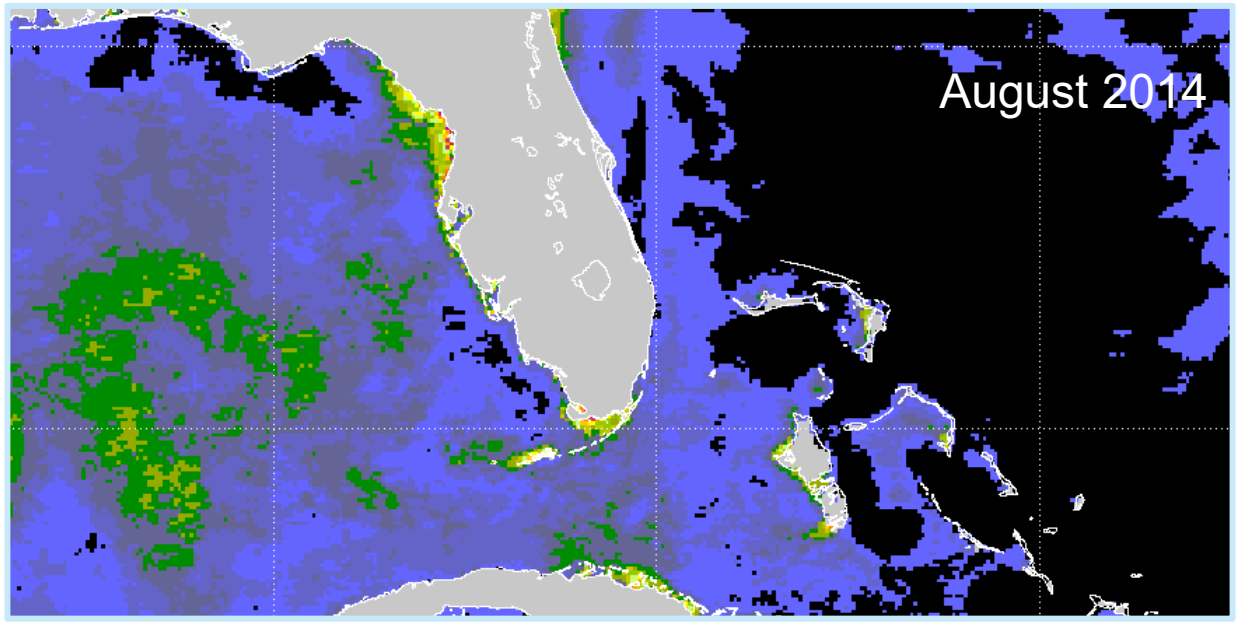


Corals start to become stressed



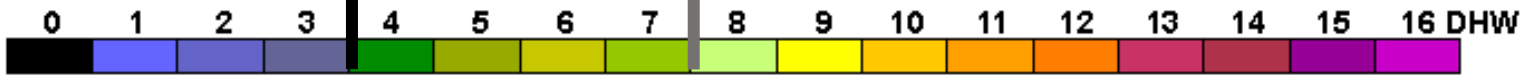
BLEACHWATCH ENVIRONMENTAL MONITORING

Extended Time
(Degree Heating Weeks)



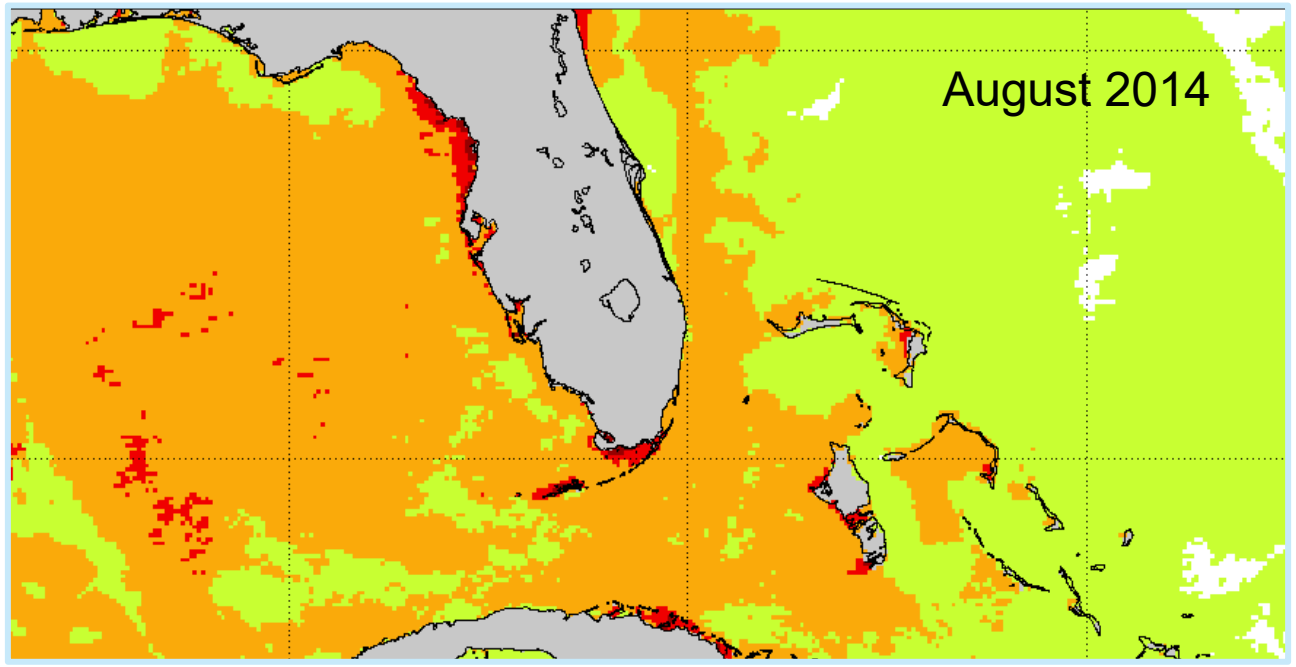
Significant coral bleaching likely

Widespread bleaching and mortality



SEAFAN BLEACHWATCH

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



TRAINING OVERVIEW

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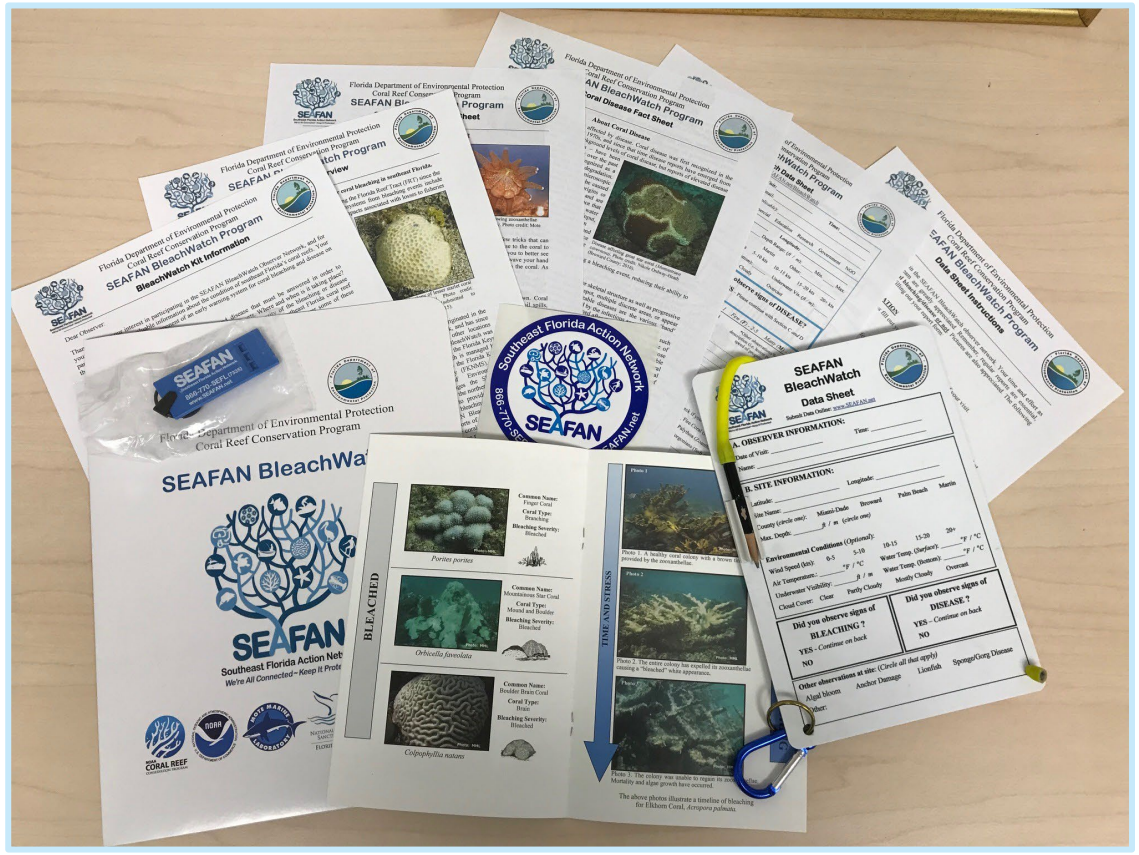
TRAINING MATERIALS



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

OBSERVER DETAILS
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 To Next Section

Finished!

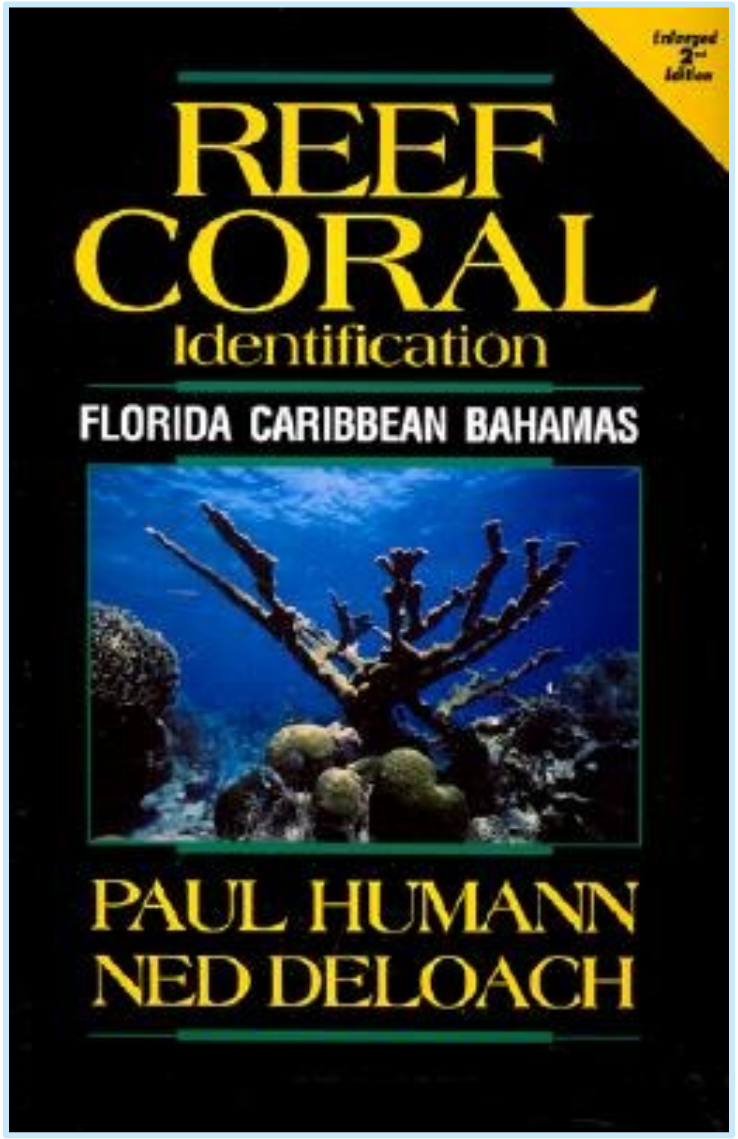
OBSERVER DETAILS
BLEACHING OR DISEASE?

Types of Corals

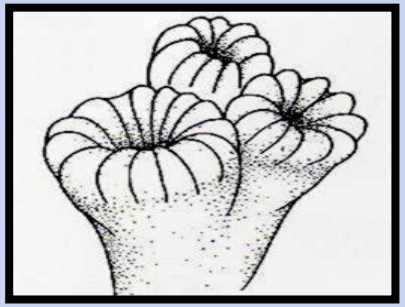
C. BLEACHING AND DISEASE OBSERVATIONS: *Single (S) - 1 Few (F) - 2-5 Many (M) - 5+*

	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	☐	☐	☐	☐	☐	☐	☐	☐	

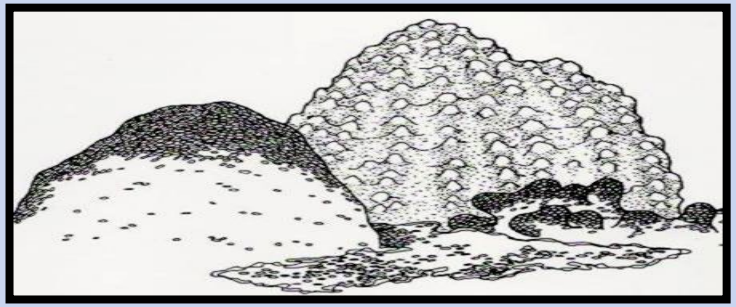
TYPES OF CORAL



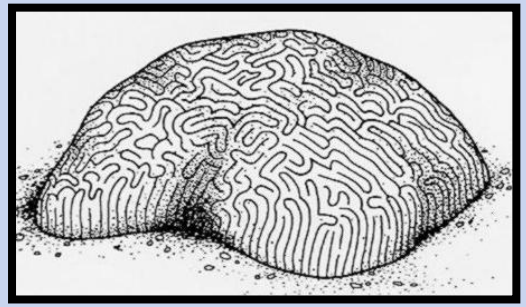
TYPES OF CORAL
CORAL MORPHOLOGIES



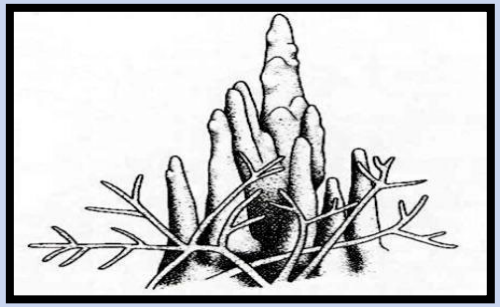
Flowering and Cup



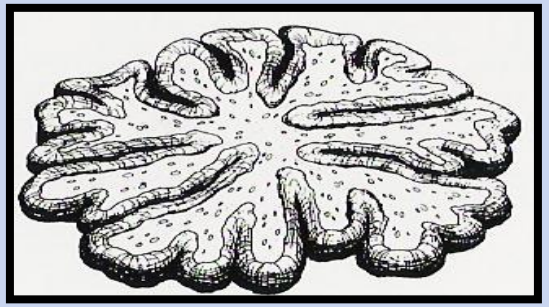
Mound, Boulder and Encrusting



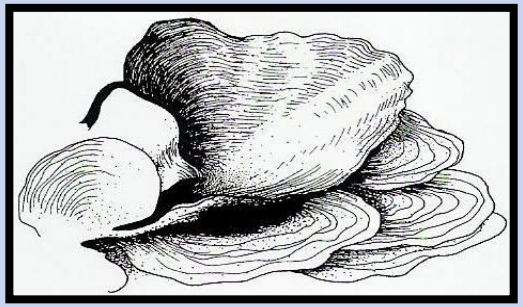
Brain Corals



Branching and Pillar

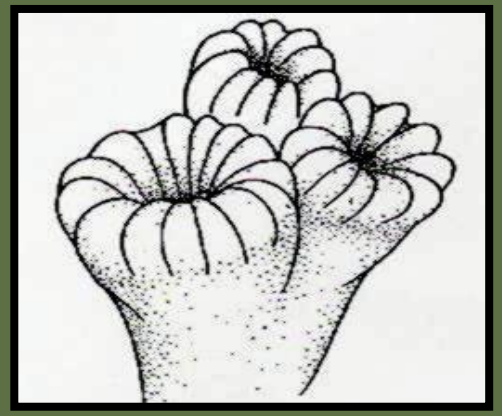


Fleshy Corals



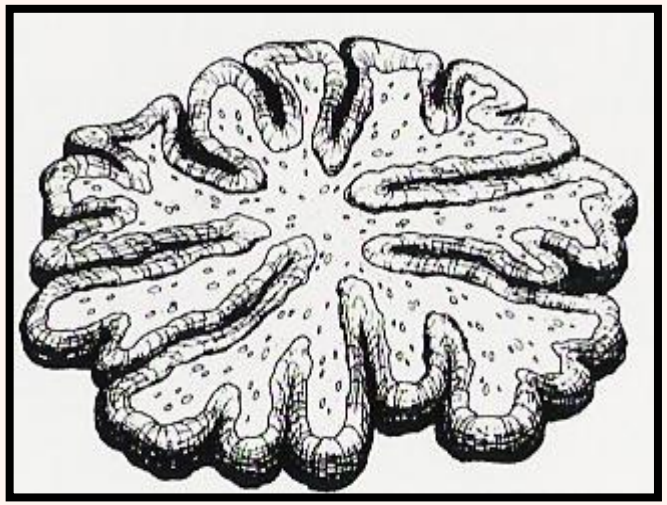
Plate, Leaf and Sheet

TYPES OF CORAL
FLOWERING AND CUP

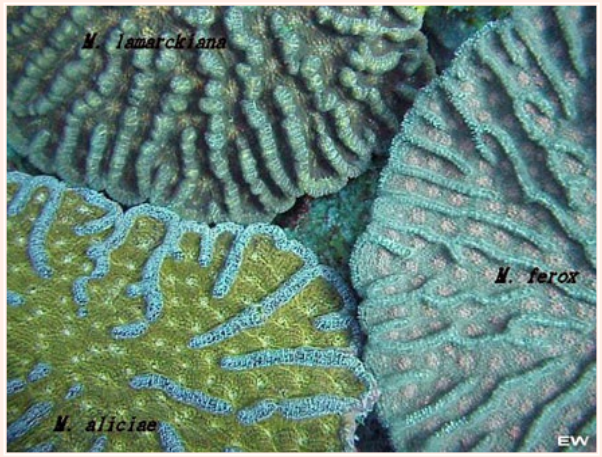


Flowering and Cup

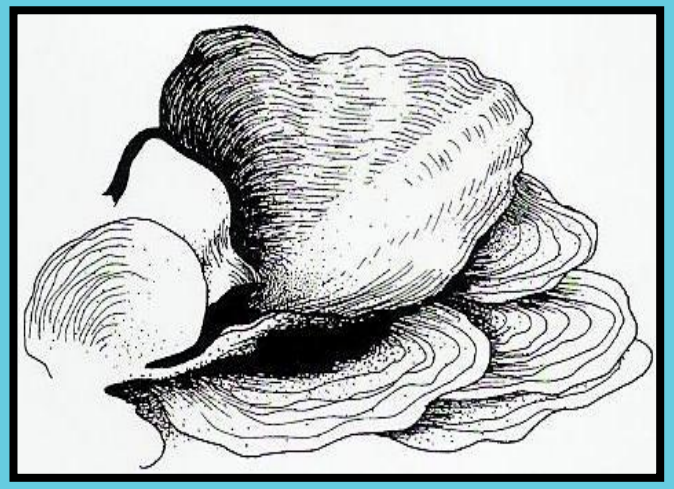
TYPES OF CORAL
FLESHY



Fleshy Corals

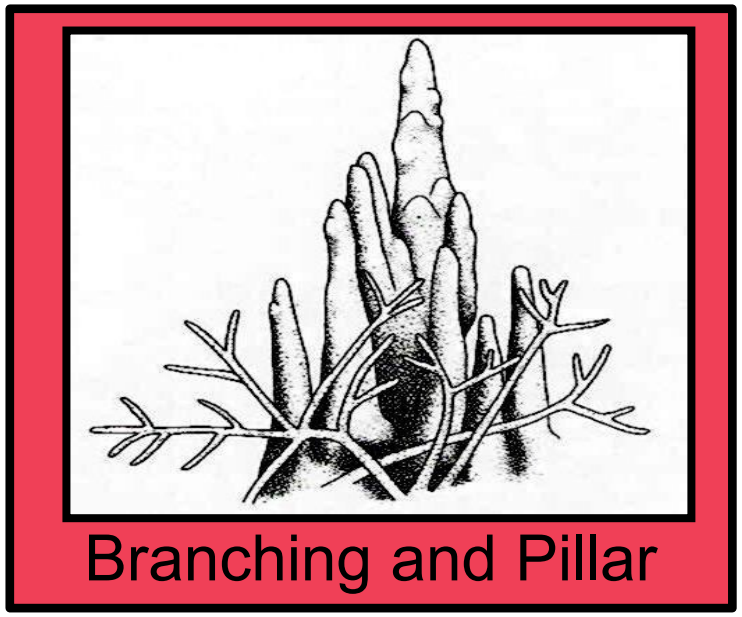


TYPES OF CORAL
PLATE, LEAF AND SHEET

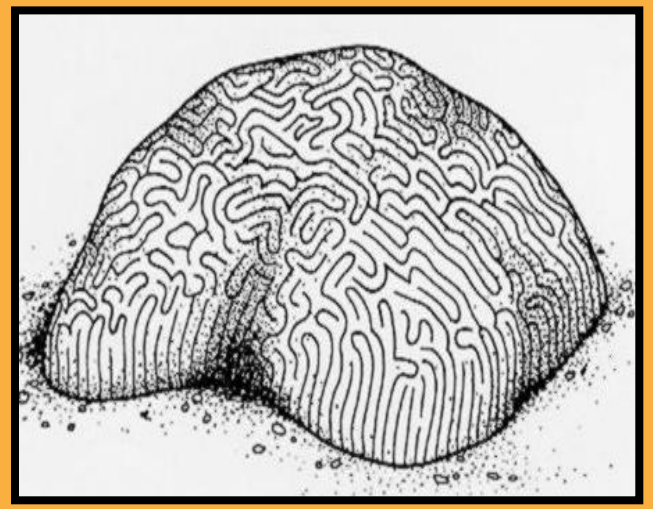


Plate, Leaf & Sheet

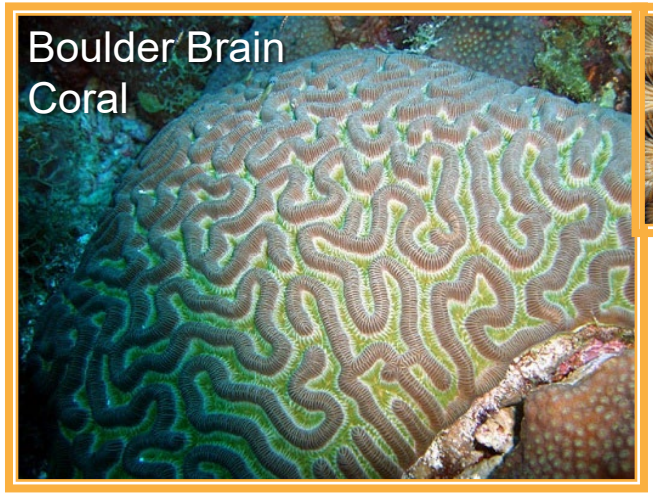
TYPES OF CORAL
BRANCHING AND PILLAR

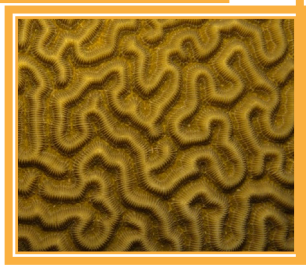

Branching and Pillar

TYPES OF CORAL
BRAIN

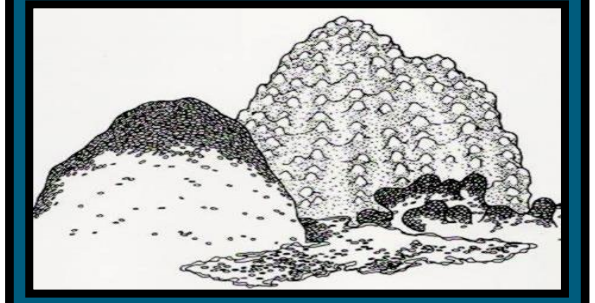


Brain Corals





TYPES OF CORAL
MOUND, BOULDER AND ENCRUSTING



Mound, Boulder and Encrusting

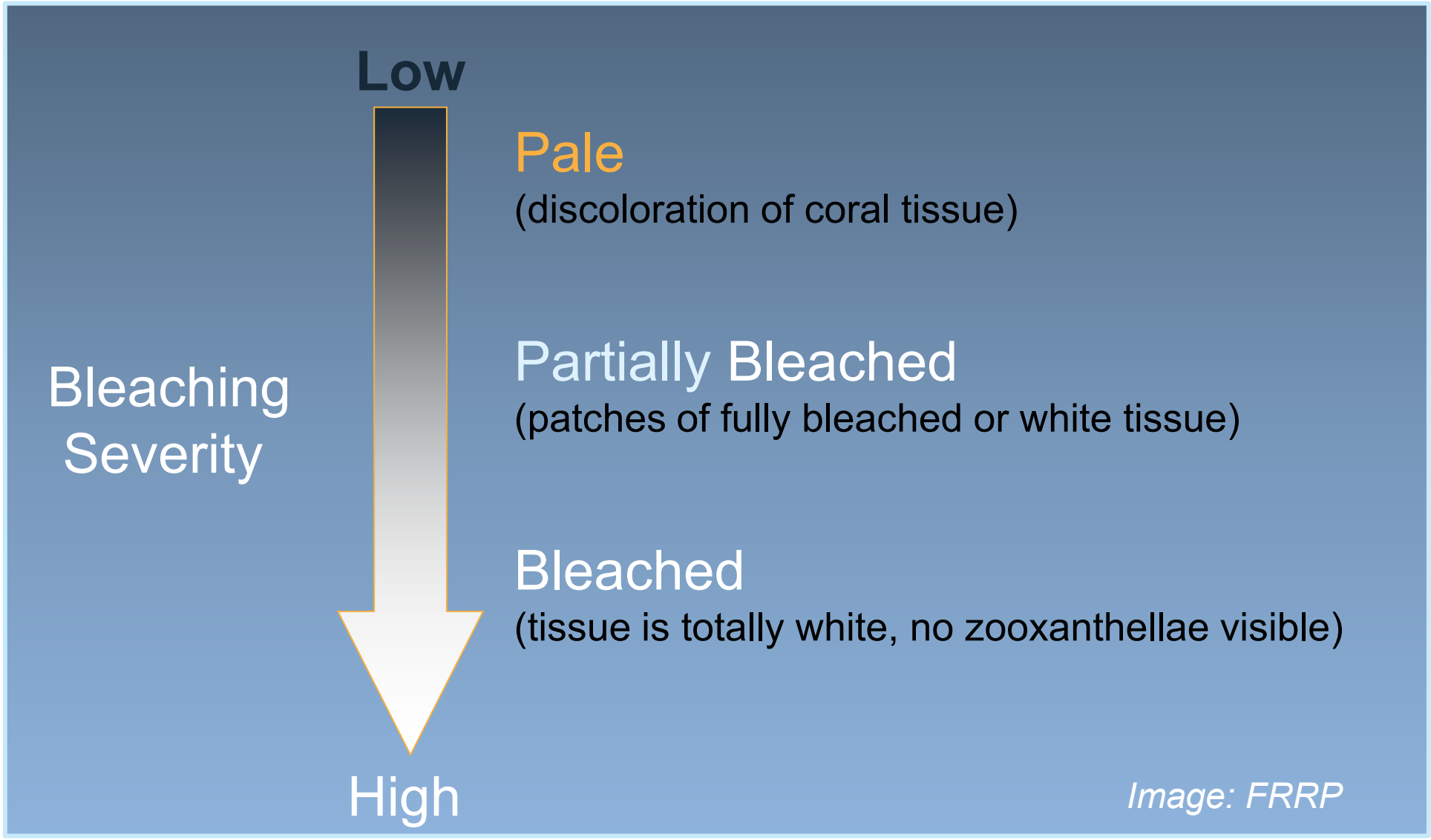
BLEACHING AND DISEASE OBSERVATIONS

BLEACHING

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

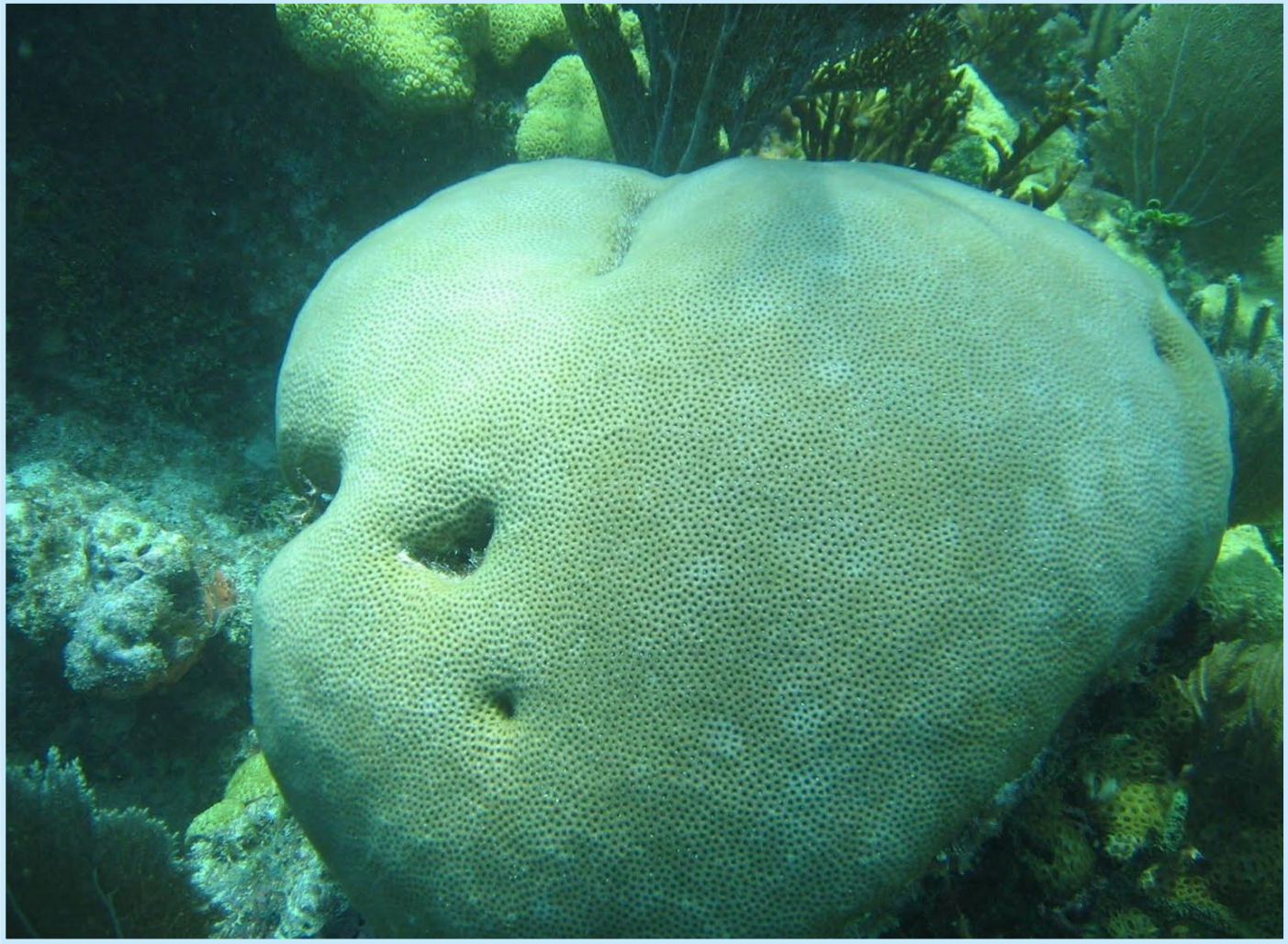
	Bleaching:				**Disease:**				
	No Stress	Paling	Partial Bleaching	Bleached	Black Band	Tissue Loss (white)	Growth Anomaly	Other*	*Other observations/further description (i.e. lesion pattern, color, speed of progression, etc.)
Brain	☐	☐	☐	☐	☐	☐	☐	☐	
Branching	☐	☐	☐	☐	☐	☐	☐	☐	
Fleshy	☐	☐	☐	☐	☐	☐	☐	☐	
Flowering/Cup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

BLEACHING SEVERITY



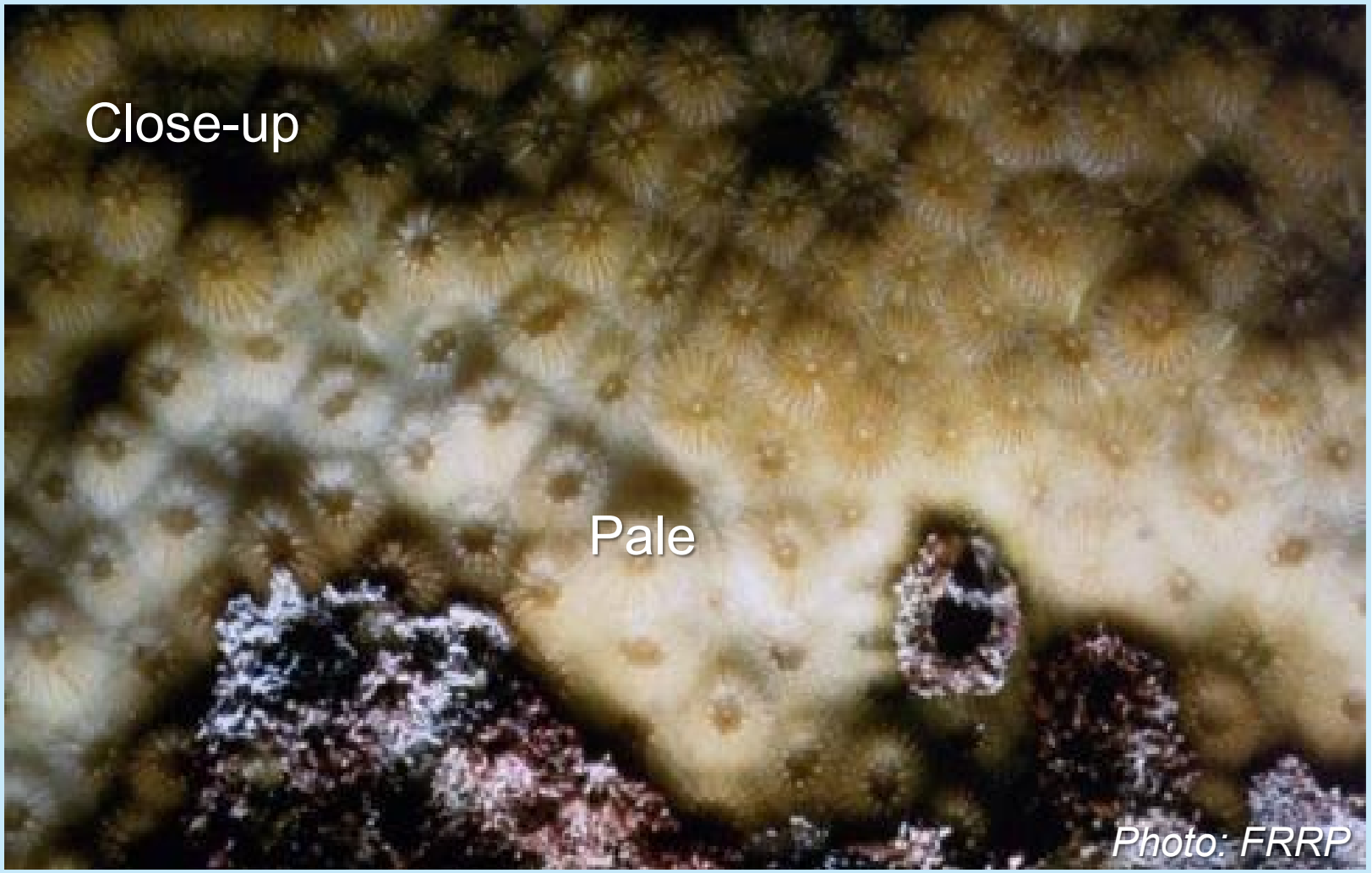
BLEACHING
PALING

Mound/Boulder/Encrusting Coral



BLEACHING
PALING

Mound/Boulder/Encrusting Coral



BLEACHING
PARTIALLY BLEACHED

Mound/Boulder/Encrusting Coral

Leaf/Plate/Sheet Coral

Brain Coral

BLEACHING
PARTIALLY BLEACHED

Brain Coral

Mound/Boulder/Encrusting Coral

Mound/Boulder/Encrusting Coral

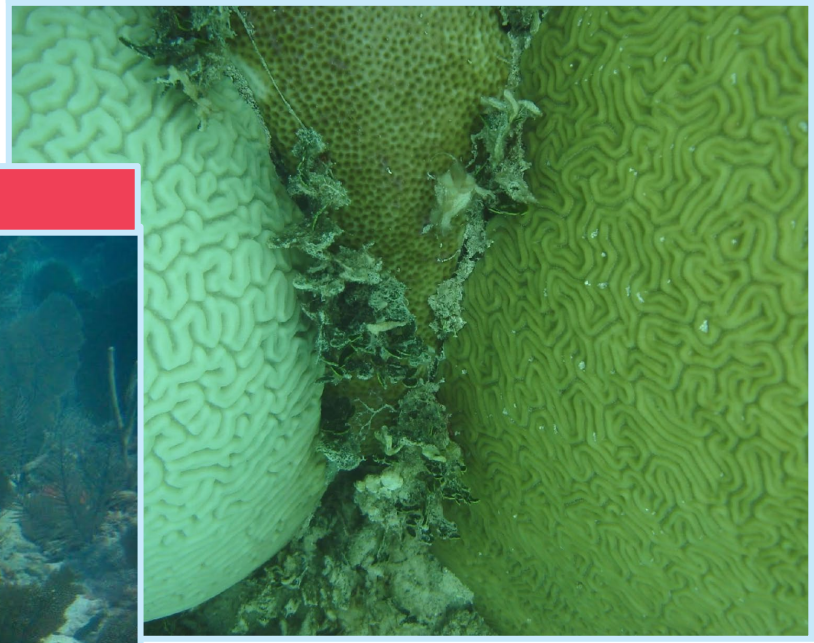
BLEACHING
FULLY BLEACHED

Brain Coral

Brain Coral

BLEACHING
FULLY BLEACHED

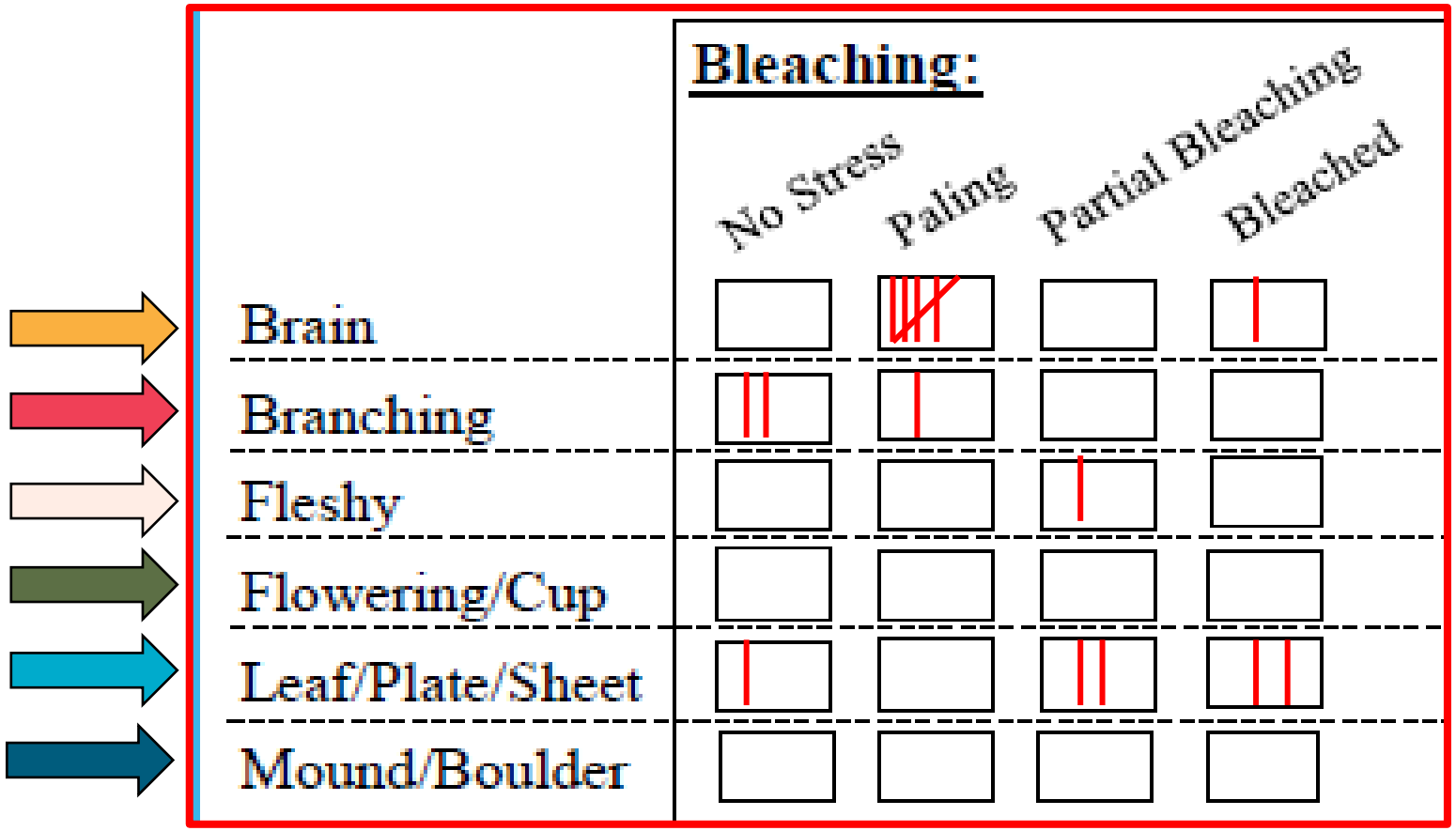
Brain Coral



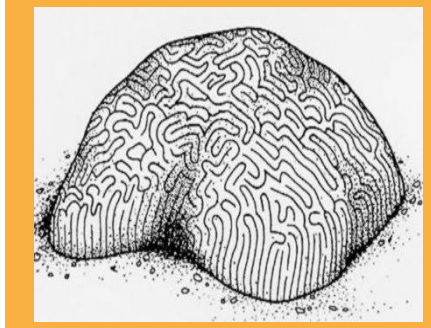
Branching and Pillar Coral

Branching and Pillar Coral

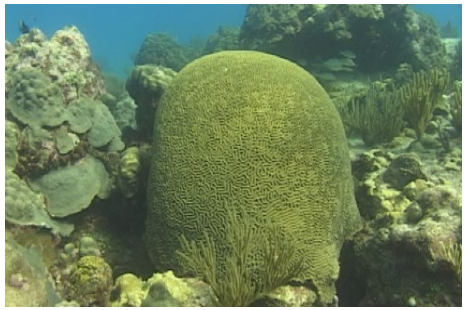
BLEACHING OBSERVATIONS



BLEACHING OBSERVATIONS



Brain Corals



No stress (Healthy)

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

Paling

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

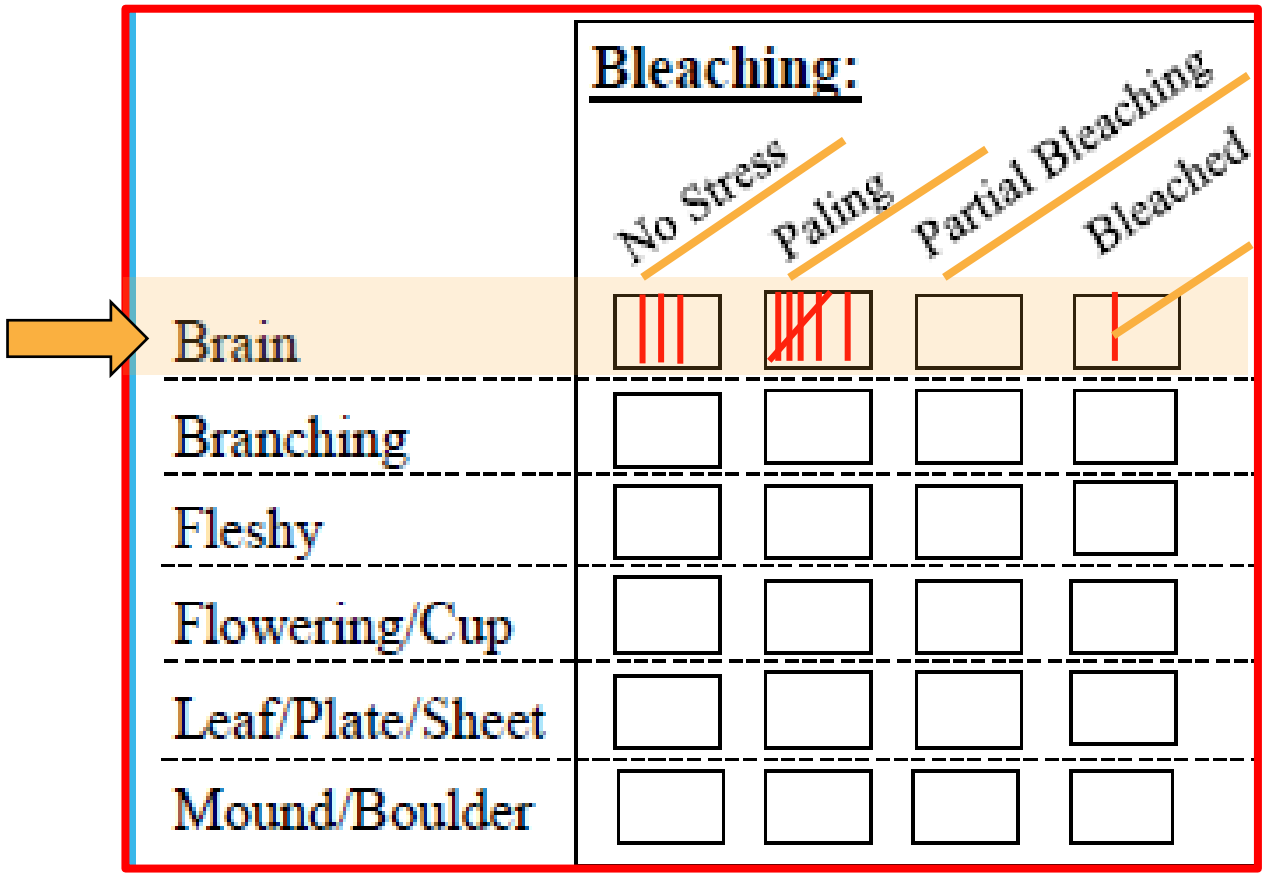
Partially Bleached

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

Bleached

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

BLEACHING OBSERVATIONS



No stress (Healthy)

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

Paling

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

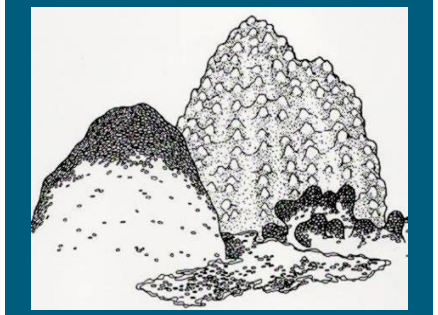
Partially Bleached

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

Bleached

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

BLEACHING OBSERVATIONS



Mound, Boulder and Encrusting

No stress (Healthy)

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

Paling

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

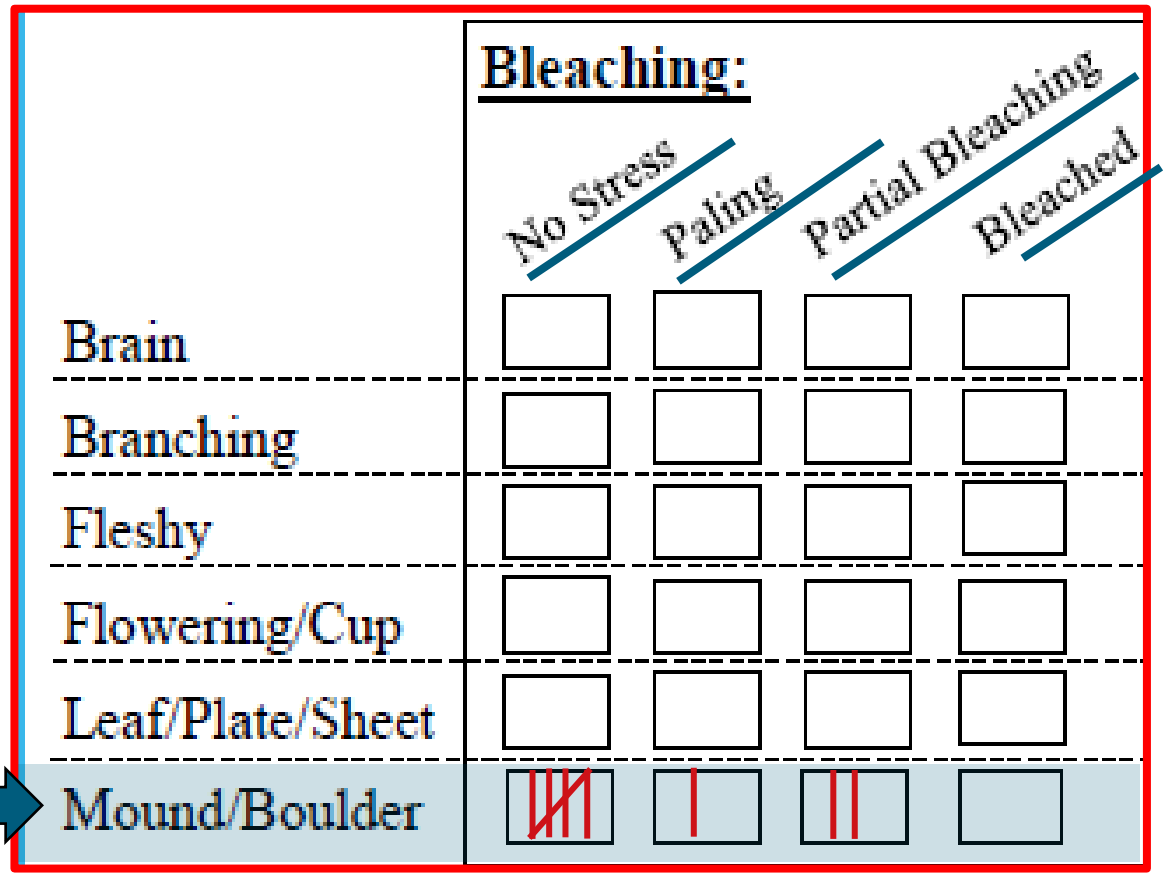
Partially Bleached

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

Bleached

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

BLEACHING OBSERVATIONS



No stress (Healthy)

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

Paling

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

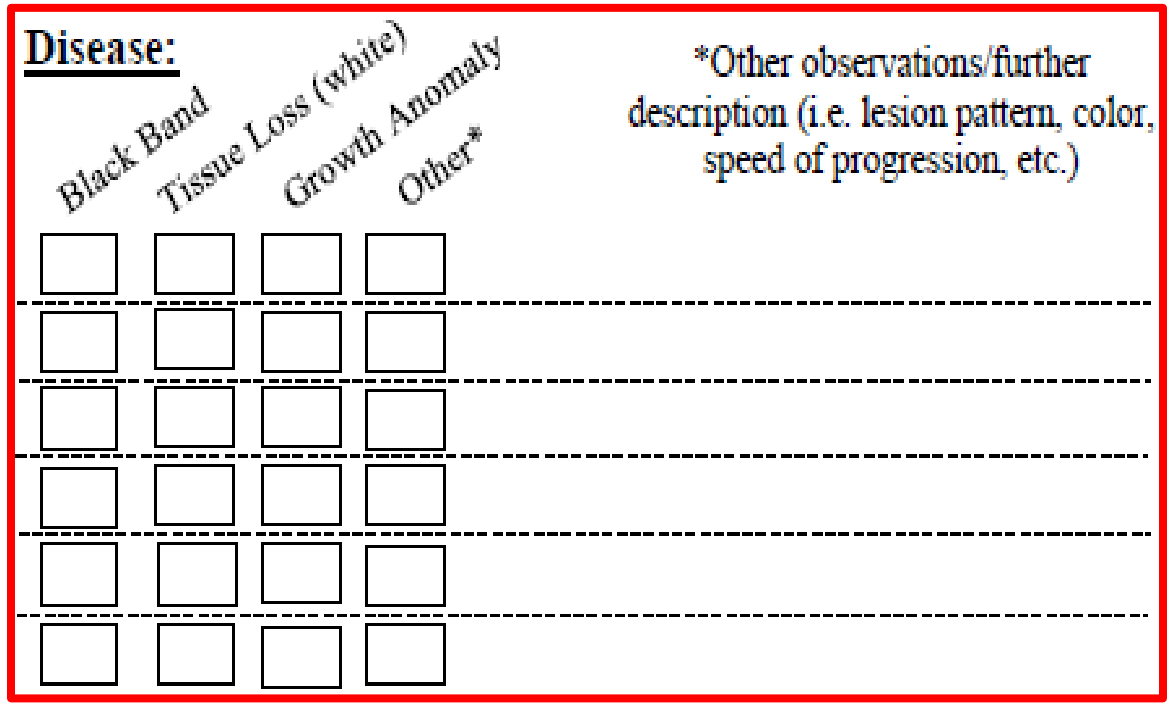
Partially Bleached

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

Bleached

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

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

DISEASE TYPES

Black Band Disease

Tissue Loss (White)

DISEASE TYPES

Growth Anomaly

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	☐	☐	☐	☐	
Branching	☐	☐	☐	☐	
Fleshy	☐	☐	☐	☐	
Flowering/Cup	☐	☐	☐	☐	
Leaf/Plate/Sheet	☐	☐	☐	☐	
Mound/Boulder	☐	☐	☐	☐	

Black Band

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

Tissue Loss (White)

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

Growth Anomaly

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

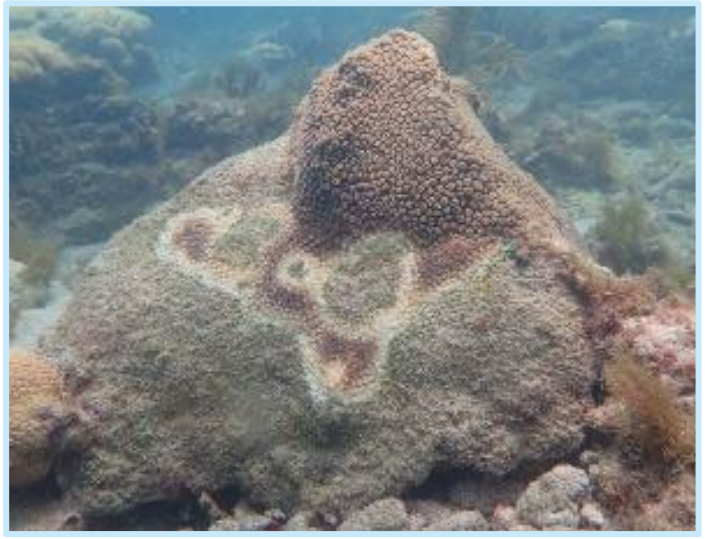
Other

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

DISEASE LESION PATTERN

Single

Multiple



DISEASE
LESION SHAPE

Linear

Irregular

Circular

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

OVERALL OBSERVATIONS
DEAD WITH ALGAE

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)

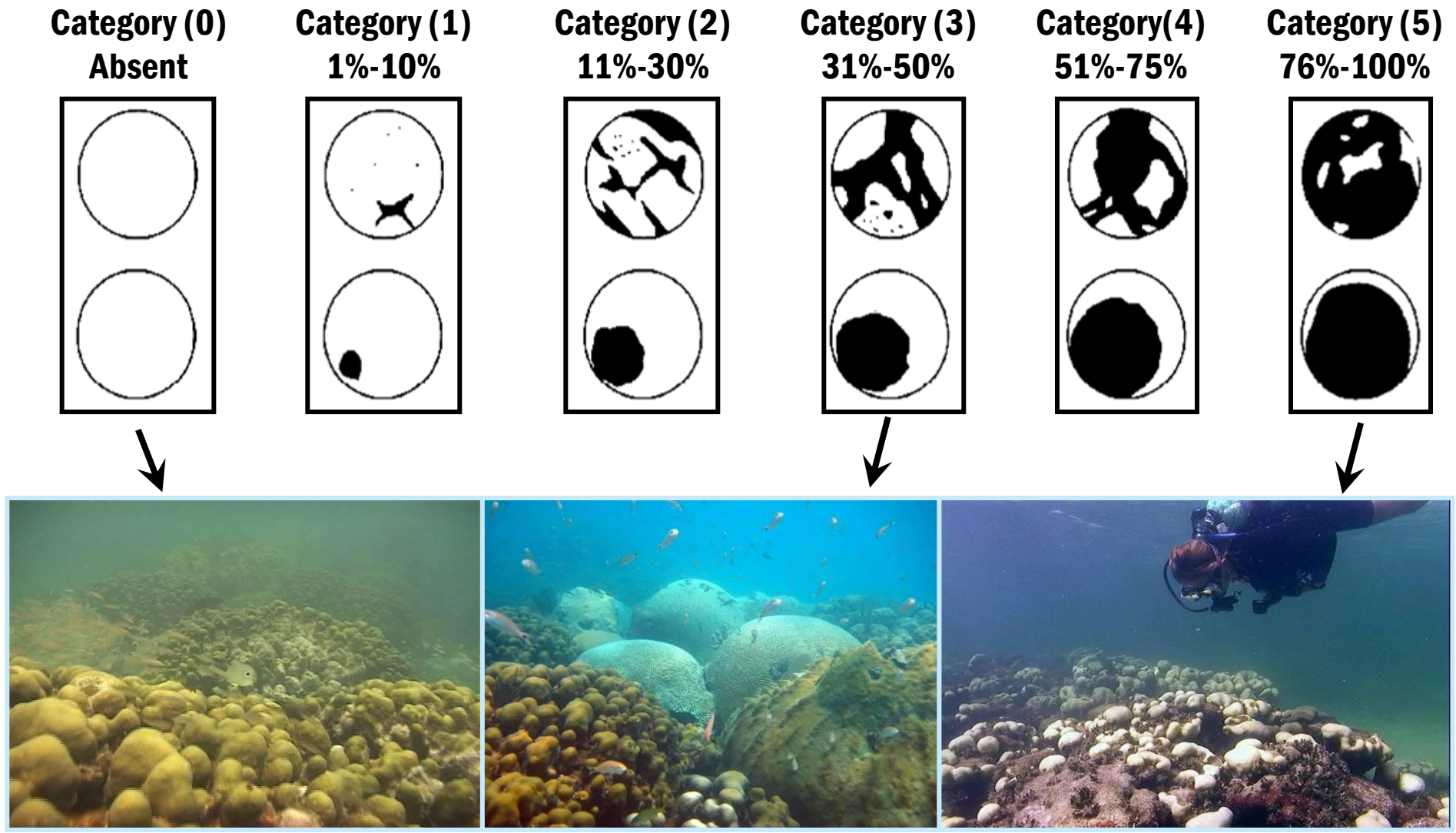
____ Palythoa (Zoanthids)

____Gorgonians (Soft Coral)

% of Live Coral Bleached

*Select *one* response

OVERALL OBSERVATIONS
% 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)

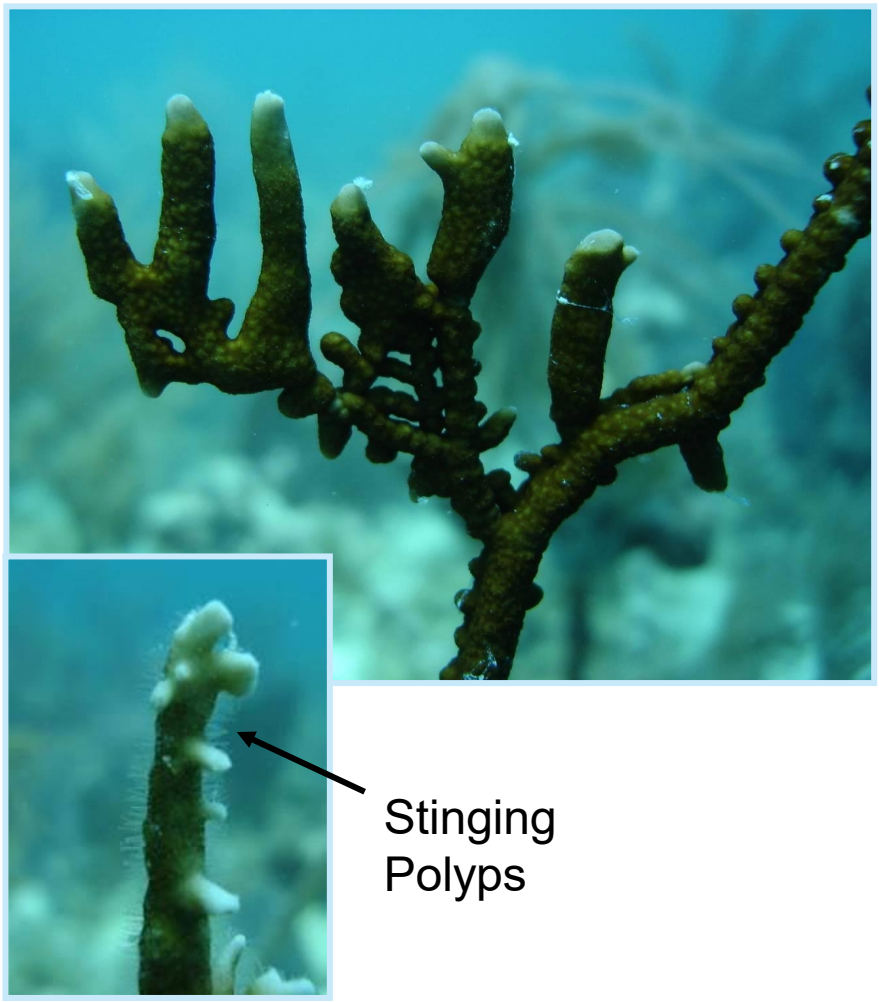
Other Bleaching Indicators: Non-Stony Corals

*Multiple responses.

OTHER BLEACHING INDICATORS

Fire Coral (*Millepora spp.)*

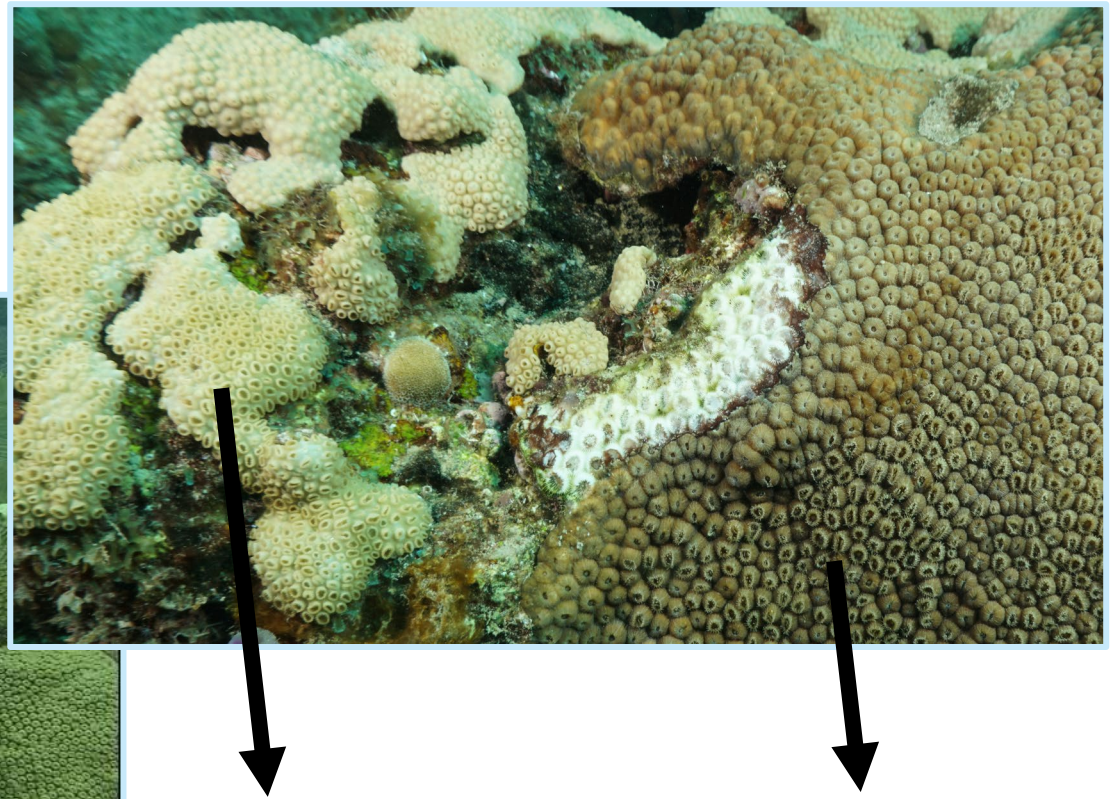
- Hydrocoral (not a stony coral).
- Has stinging polyps.
- Encrusting.



OTHER BLEACHING INDICATORS

Zoanthid (*Palythoa spp.)*

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



OTHER BLEACHING INDICATORS

Zoanthid (*Palythoa spp.*)

OTHER BLEACHING INDICATORS

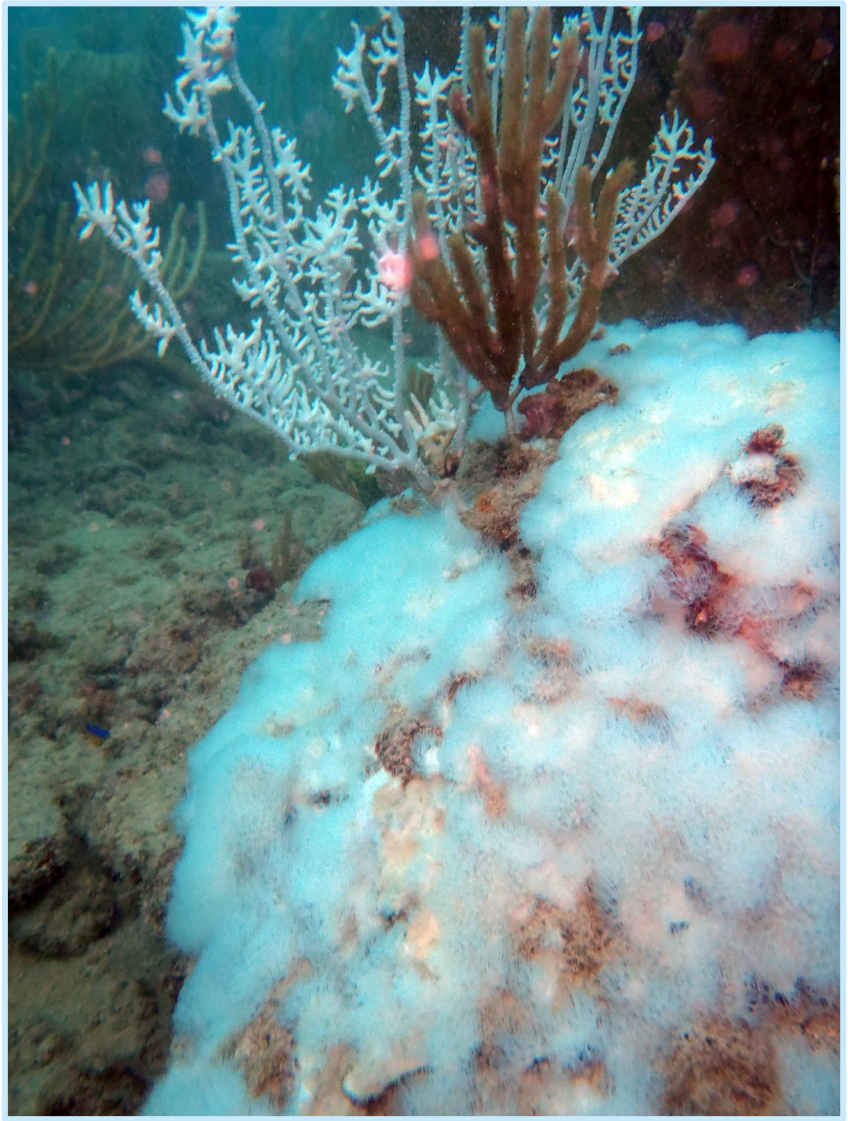
Gorgonians

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

- Octocoral (not a stony coral).
- Branching OR encrusting.
- MANY different species.


Photo: Ken Nedimyer


Photo: Ken Nedimyer



OTHER BLEACHING INDICATORS

Gorgonians

OVERALL OBSERVATIONS

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.)

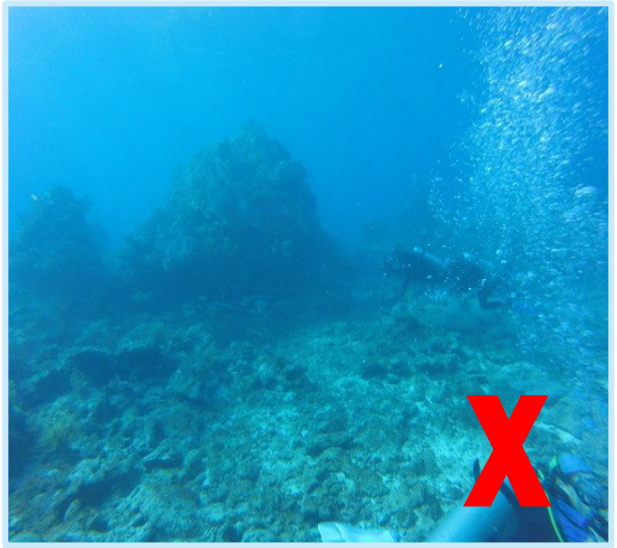
SEND IN YOUR DATA!

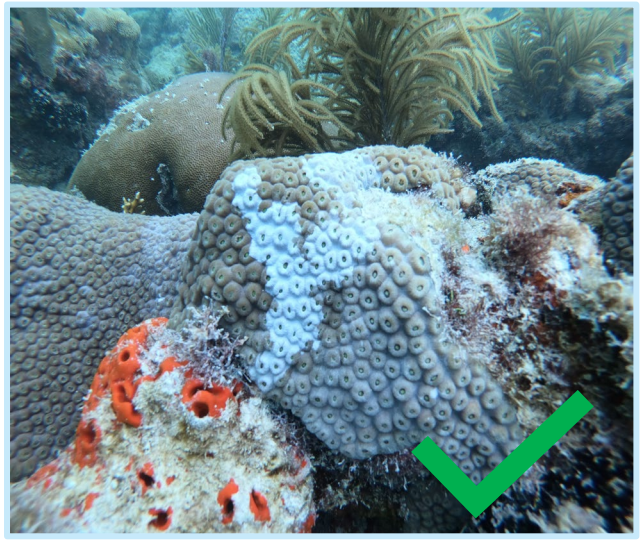
Remember to submit reports, even if there is NO bleaching or disease at your dive site.

- ONLINE: www.SEAFAN.net/BleachWatch
- Scan/Take Picture and email datasheet/slate to: Coral@FloridaDEP.gov.

SEND IN YOUR PHOTOS!

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

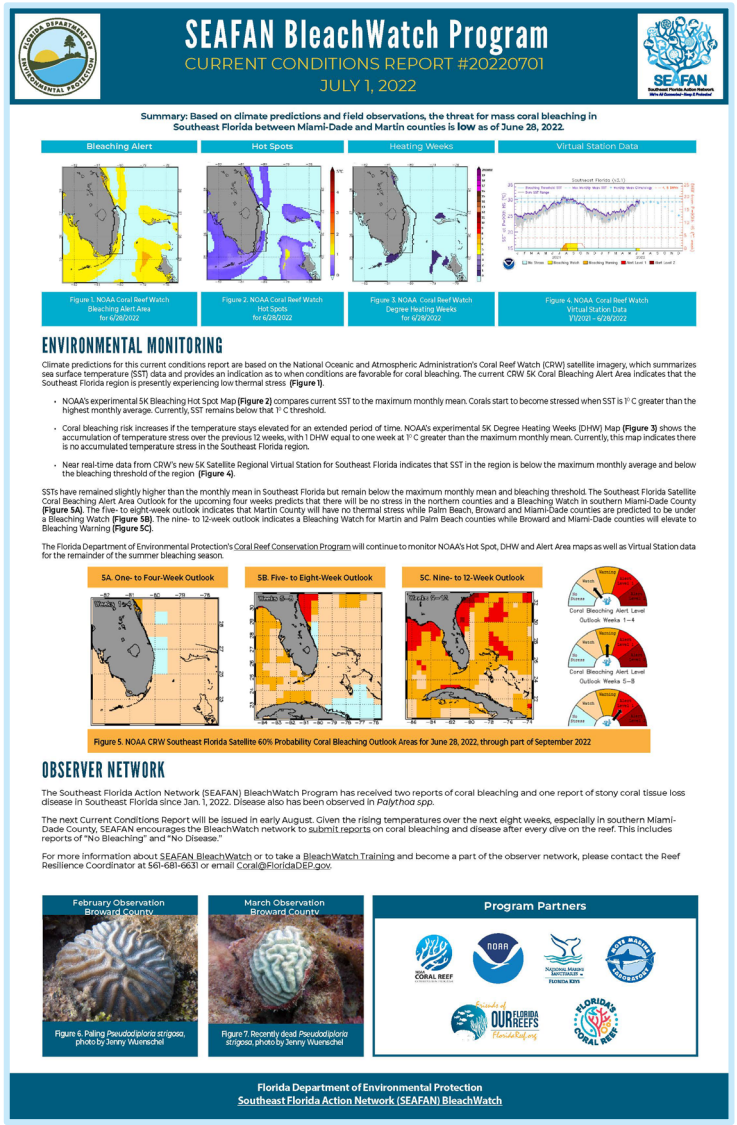




CURRENT CONDITIONS REPORT

Available online at
www.SEAFAN.net/BleachWatch

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



SEAFAN BleachWatch Program
CURRENT CONDITIONS REPORT #20220701
JULY 1, 2022

Summary: Based on climate predictions and field observations, the threat for mass coral bleaching in Southeast Florida between Miami-Dade and Martin counties is **low** as of June 28, 2022.

Bleaching Alert | Hot Spots | Heating Weeks | Virtual Station Data

Figure 1. NOAA Coral Reef Watch Bleaching Alert Area for 6/28/2022
Figure 2. NOAA Coral Reef Watch Hot Spots for 6/28/2022
Figure 3. NOAA Coral Reef Watch Degree Heating Weeks for 6/28/2022
Figure 4. NOAA Coral Reef Watch Virtual Station Data 1/1/2021 – 6/28/2022

ENVIRONMENTAL MONITORING

Climate predictions for this current conditions report are based on the National Oceanic and Atmospheric Administration's Coral Reef Watch (CRW) satellite imagery, which summarizes sea surface temperature (SST) data and provides an indication as to when conditions are favorable for coral bleaching. The current CRW 5K Coral Bleaching Alert Area indicates that the Southeast Florida region is presently experiencing low thermal stress **(Figure 1)**.

- NOAA's experimental 5K Bleaching Hot Spot Map **(Figure 2)** compares current SST to the maximum monthly mean. Corals start to become stressed when SST is 1° C greater than the highest monthly average. Currently, SST remains below that 1° C threshold.
- Coral bleaching risk increases if the temperature stays elevated for an extended period of time. NOAA's experimental 5K 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 there is no accumulated temperature stress in the Southeast Florida region.
- Near real-time data from CRW's new 5K Satellite Regional Virtual Station for Southeast Florida indicates that SST in the region is below the maximum monthly average and below the bleaching threshold of the region **(Figure 4)**.

SSTs have remained slightly higher than the monthly mean in Southeast Florida but remain below the maximum monthly mean and bleaching threshold. The Southeast Florida Satellite Coral Beaching Alert Area Outlook for the upcoming four weeks predicts that there will be no stress in the northern counties and a Bleaching Watch in southern Miami-Dade County **(Figure 5A)**. The five- to eight-week outlook indicates that Martin County will have no thermal stress while Palm Beach, Broward and Miami-Dade counties are predicted to be under a Bleaching Watch **(Figure 5B)**. The nine- to 12-week outlook indicates a Bleaching Watch for Martin and Palm Beach counties while Broward and Miami-Dade counties will elevate to Bleaching Warning **(Figure 5C)**.

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

5A. One- to Four-Week Outlook | 5B. Five- to Eight-Week Outlook | 5C. Nine- to 12-Week Outlook

Figure 5. NOAA CRW Southeast Florida Satellite 60% Probability Coral Bleaching Outlook Areas for June 28, 2022, through part of September 2022

OBSERVER NETWORK

The Southeast Florida Action Network (SEAFAN) BleachWatch Program has received two reports of coral bleaching and one report of stony coral tissue loss disease in Southeast Florida since Jan. 1, 2022. Disease also has been observed in *Polythoa spp.*

The next Current Conditions Report will be issued in early August. Given the rising temperatures over the next eight weeks, especially in southern Miami-Dade County, SEAFAN encourages the BleachWatch network to submit reports on coral bleaching and disease after every dive on the reef. This includes reports of "No Bleaching" and "No Disease."

For more information about SEAFAN BleachWatch or to take a BleachWatch Training and become a part of the observer network, please contact the Reef Resilience Coordinator at 561-681-6631 or email Coral@FloridaDEP.gov.

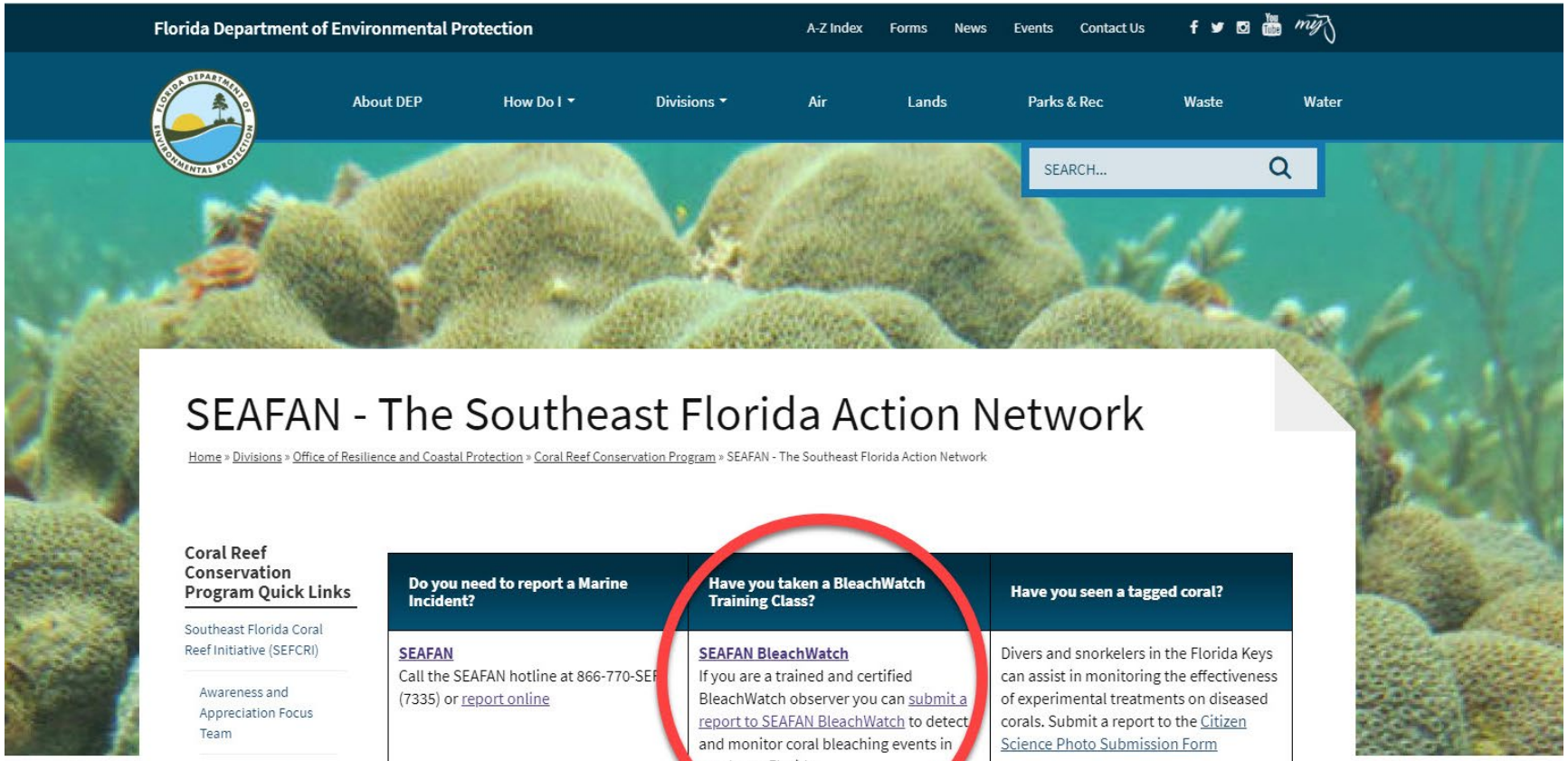
February Observation Broward County
Figure 6. Paling *Pseudodiploria strigosa*, photo by Jenny Wuerschel

March Observation Broward County
Figure 7. Recently dead *Pseudodiploria strigosa*, photo by Jenny Wuerschel

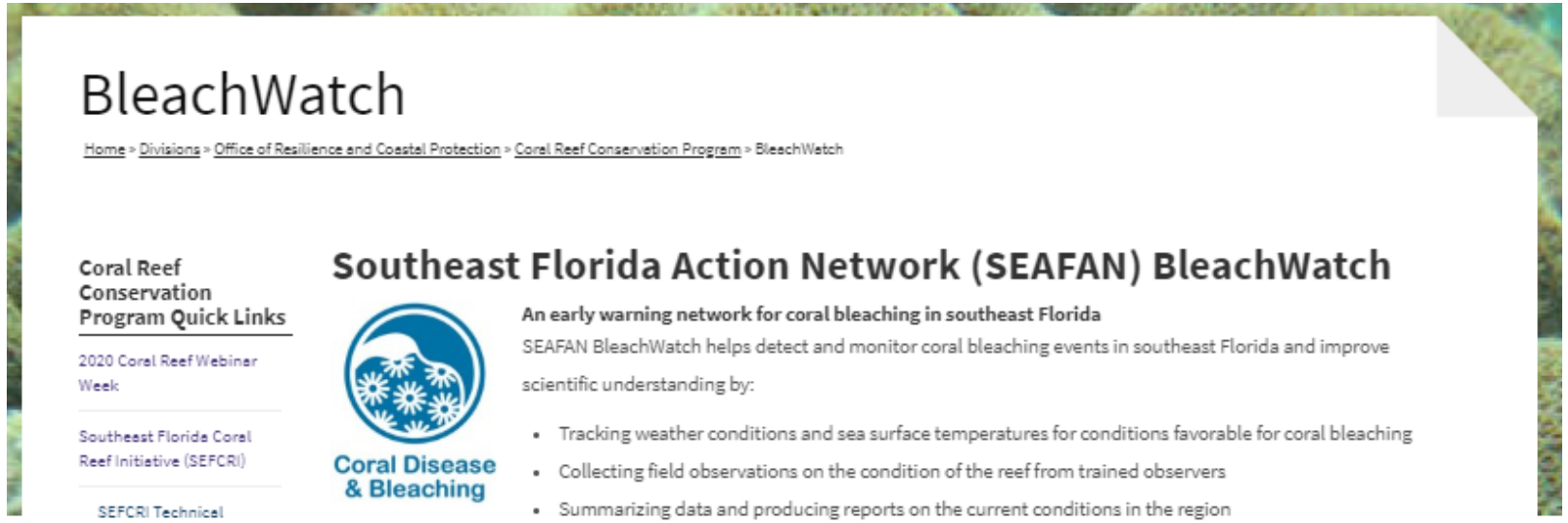
Program Partners

Florida Department of Environmental Protection
Southeast Florida Action Network (SEAFAN) BleachWatch

CHECK US OUT ONLINE!
www.SEAFAN.net/BleachWatch



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

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).

FLORIDA'S CORAL REEF

Florida's Coral Reef
SEAFAN PSA
Be a Coral Champion
Coral City Camera

TRAINING OVERVIEW

Coral Review Questions

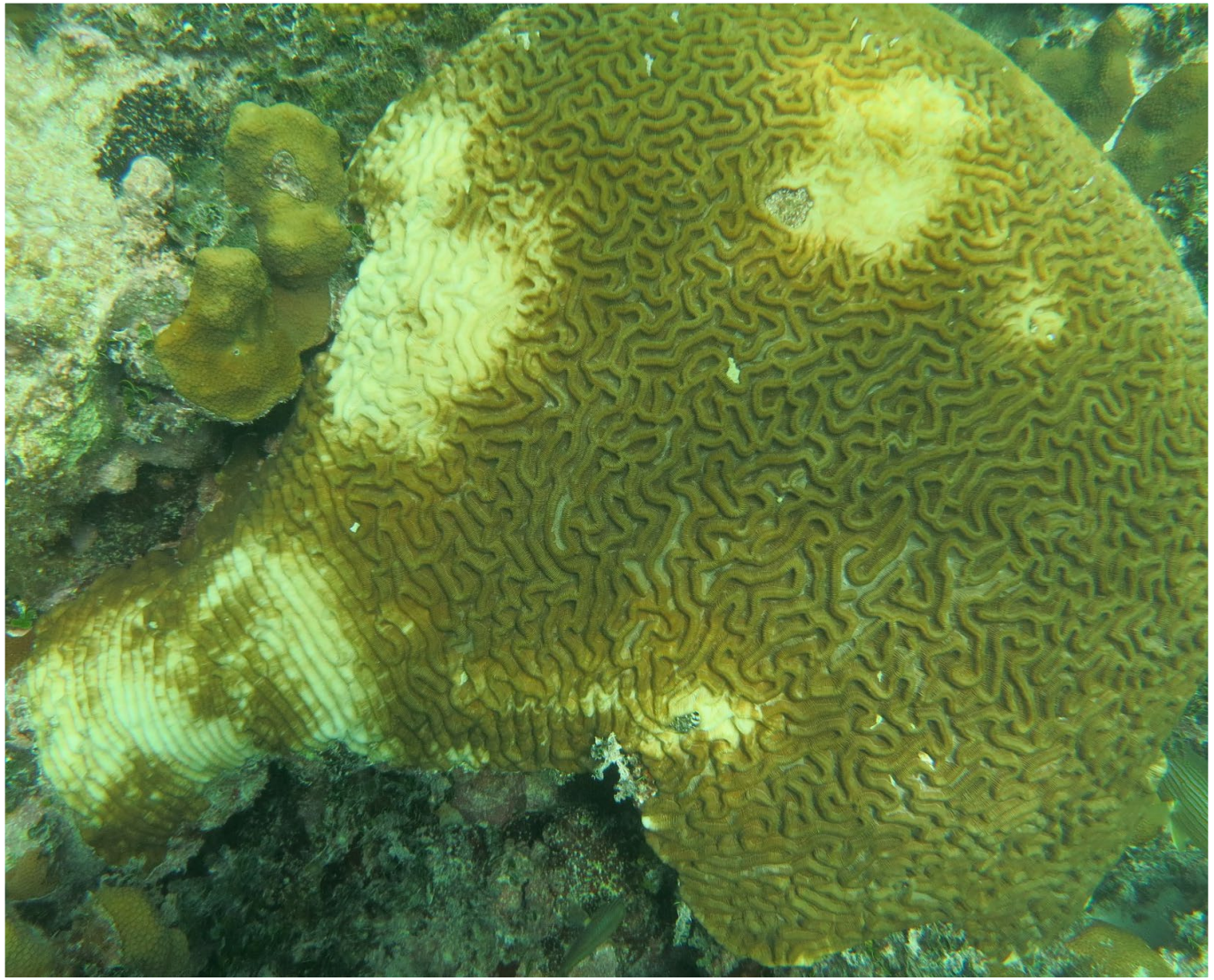
REVIEW

For each review picture, please note:

1. **TYPE OF CORAL** (e.g., Brain, Branching, Leaf/Plate/Sheet, Fleshy, Flowering/Cup, Mound/Boulder)
2. **CONDITION** (bleaching severity, disease type, etc.)

REVIEW #1

REVIEW #2

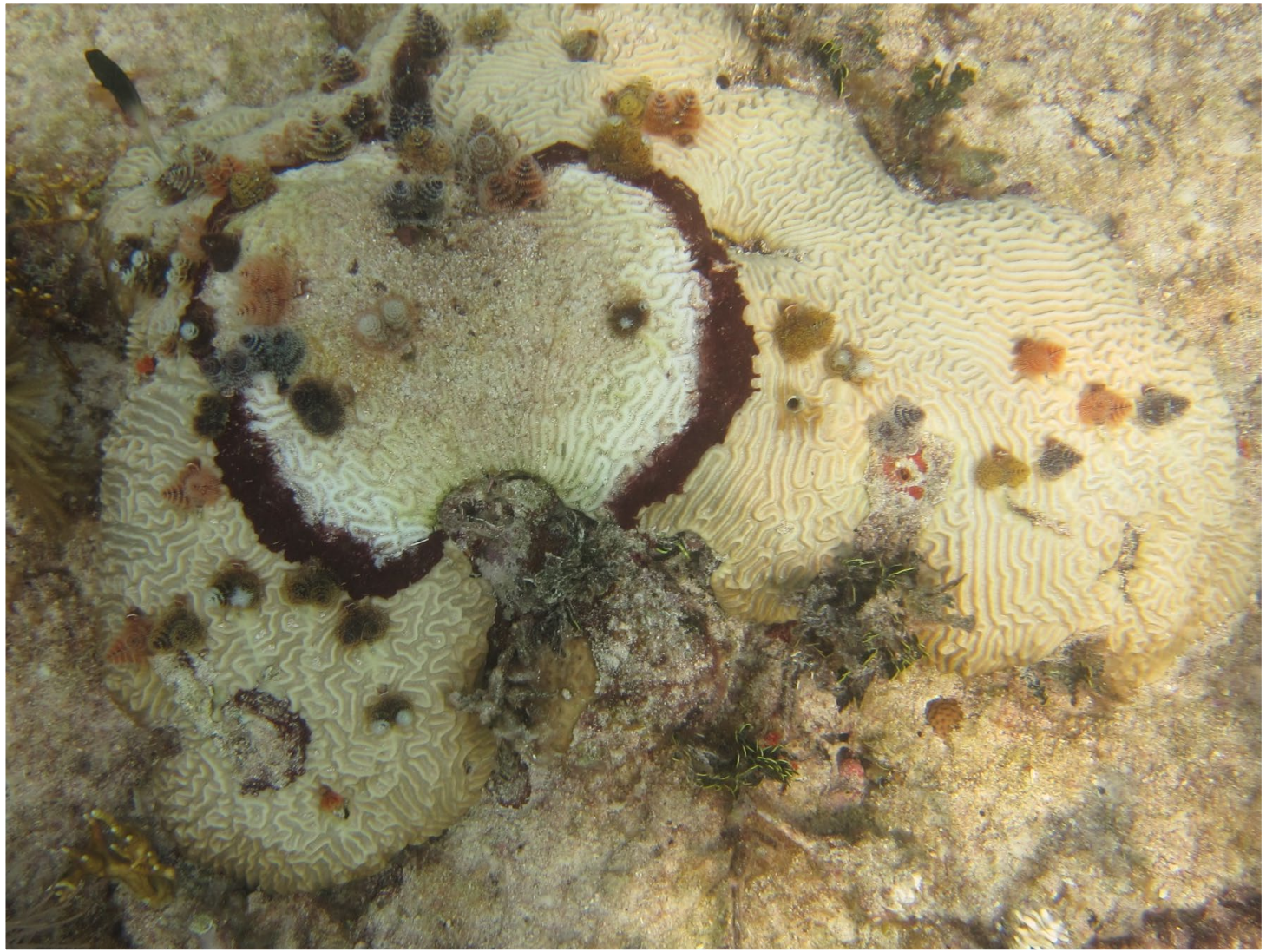


REVIEW #3

REVIEW #4

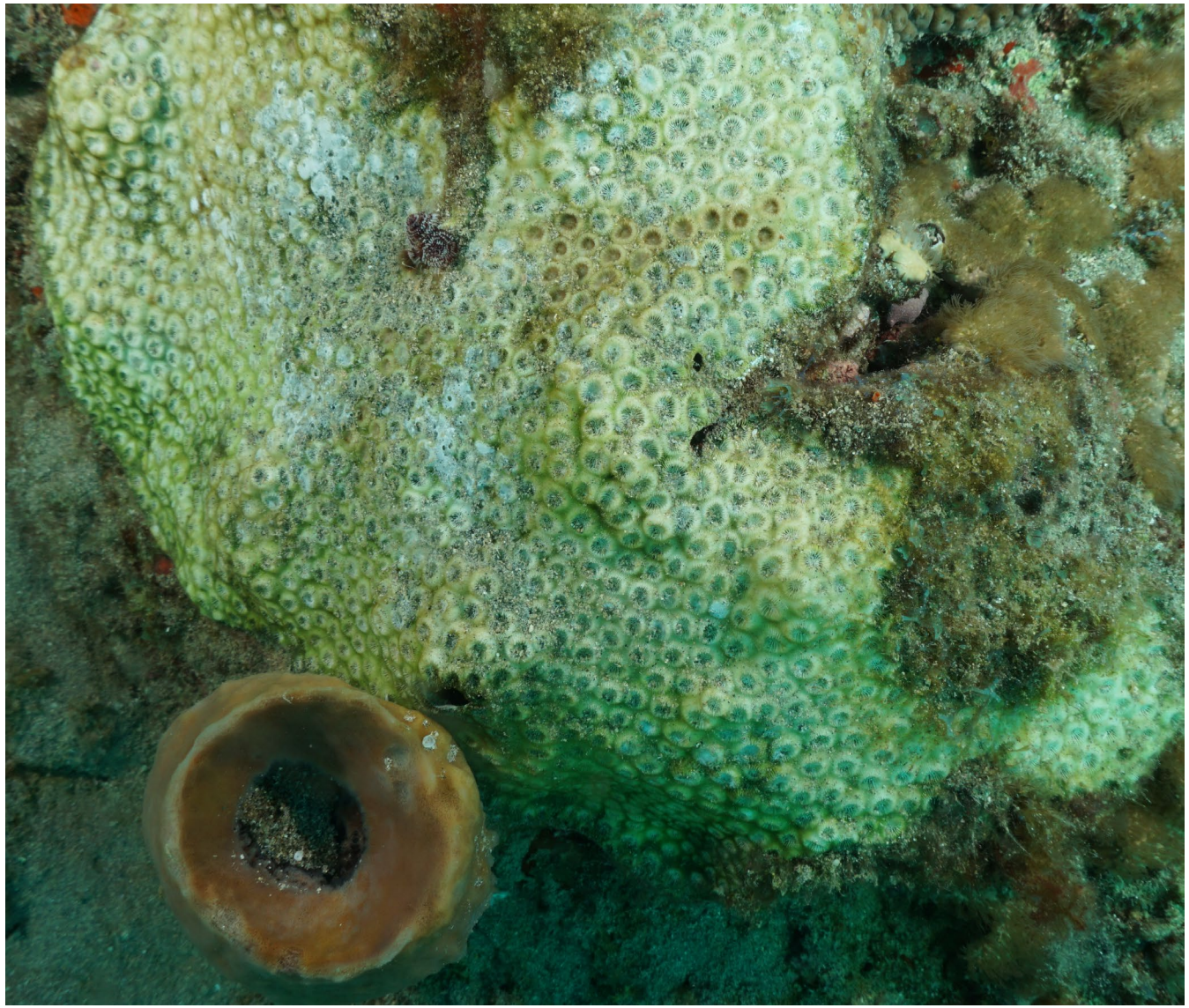
REVIEW #5

REVIEW #6



REVIEW #7

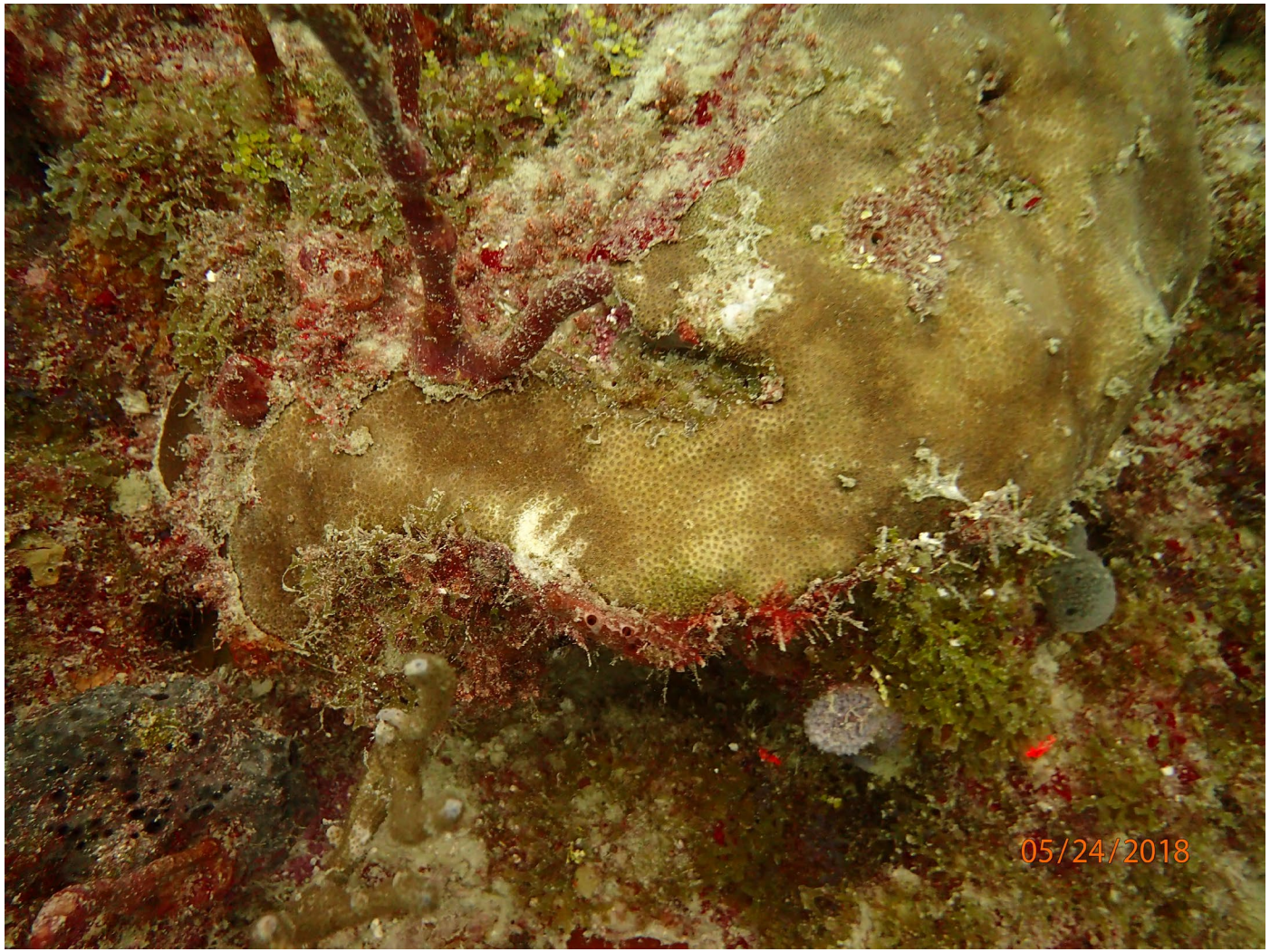
REVIEW #8



REVIEW #9

REVIEW #10

REVIEW #11



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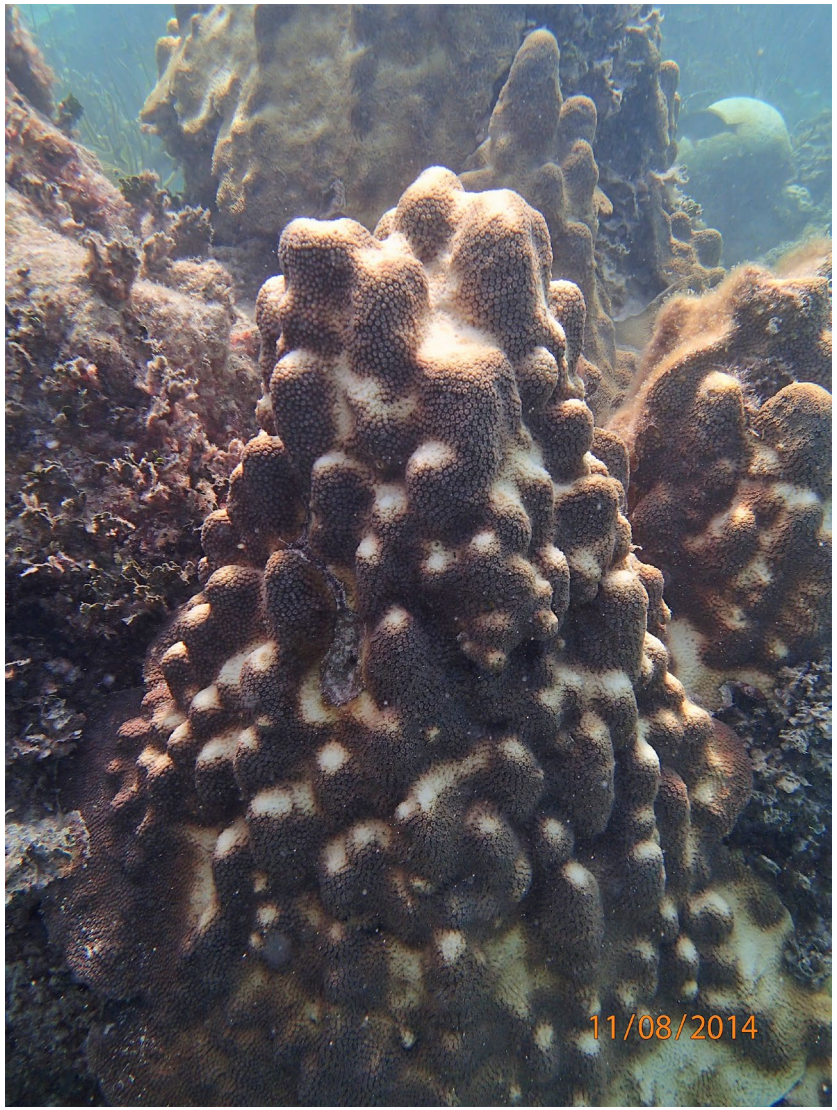
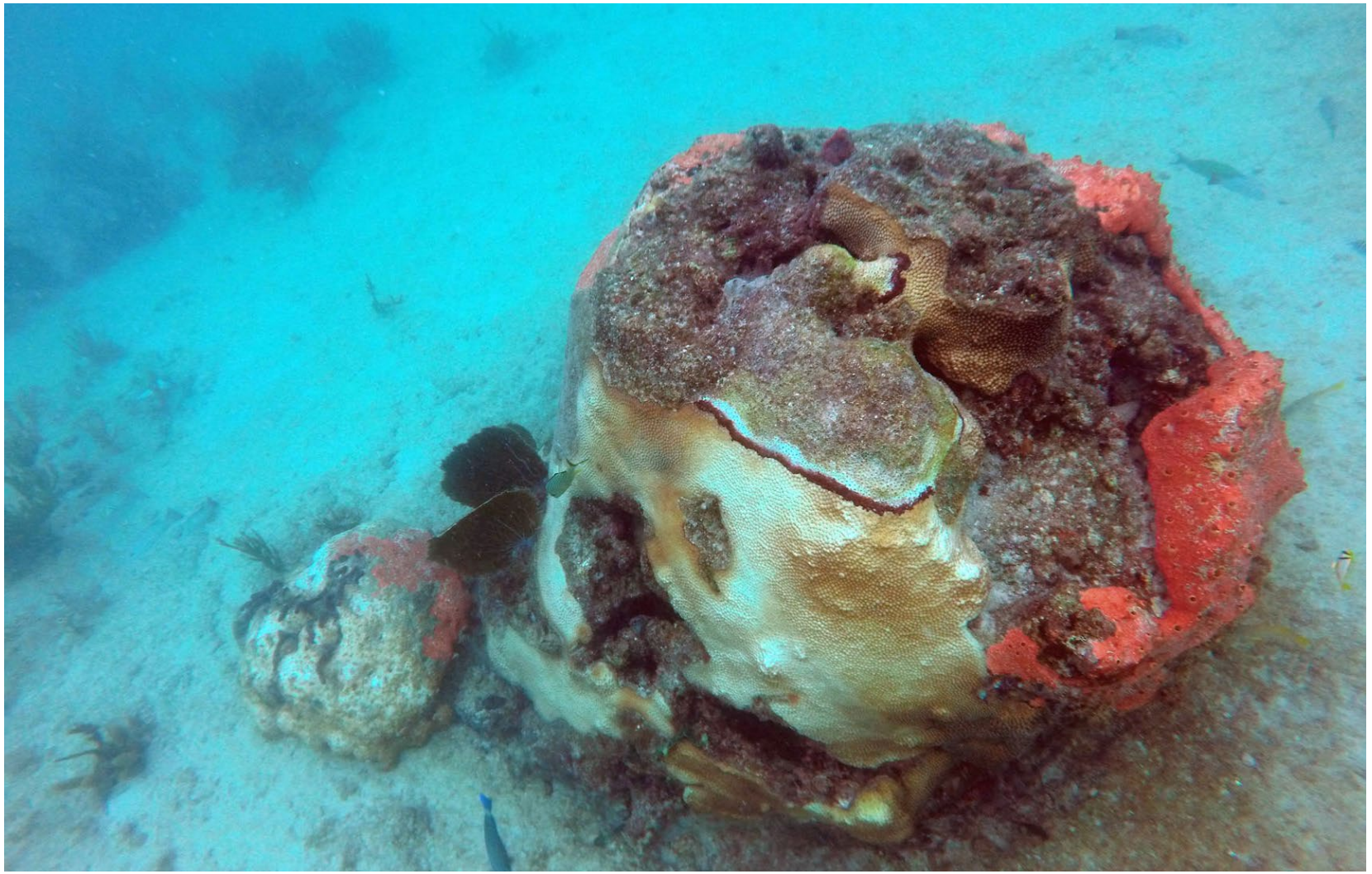


REVIEW #13

REVIEW #14

REVIEW #15



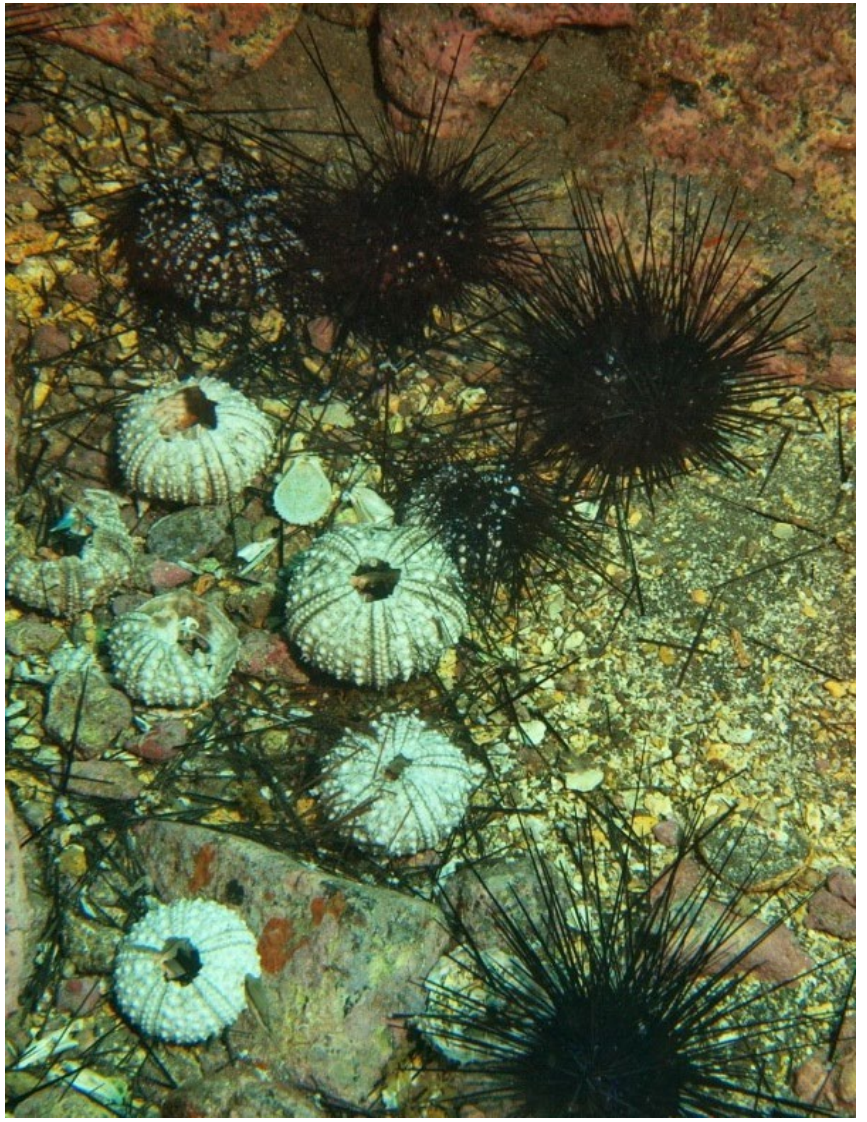
DIADEMA DISEASE OUTBREAK

Diadema antillarum (long-spined sea urchin).

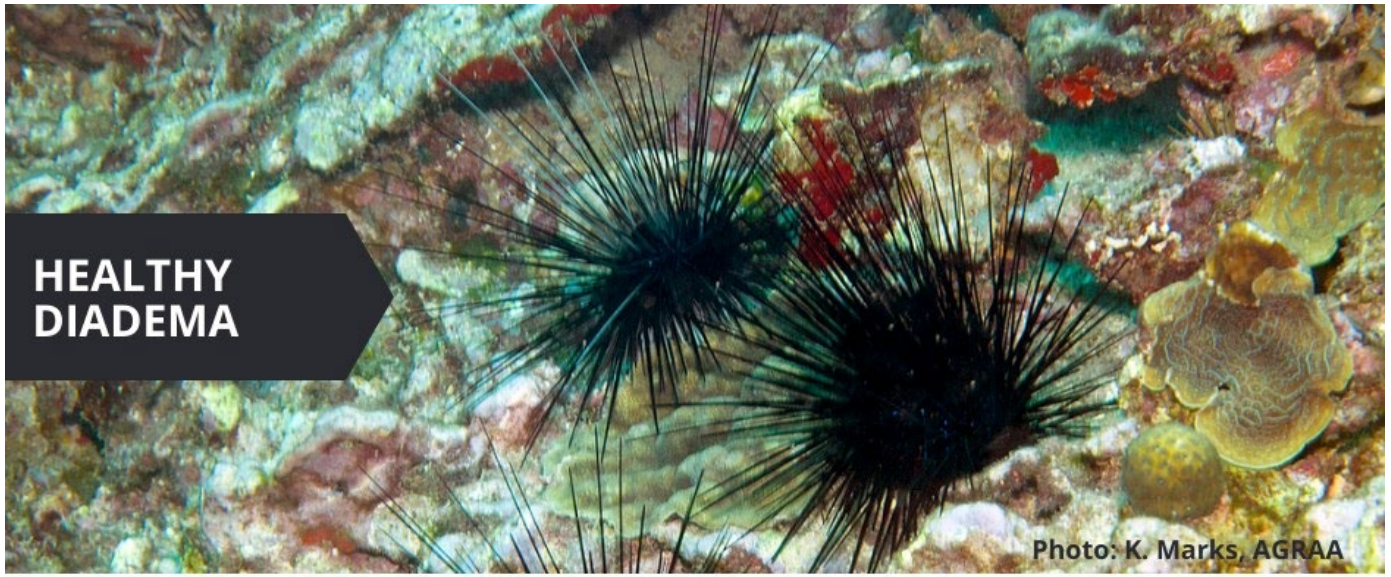
Extensive die-off of *Diadema antillarum* was recorded in St. Thomas, U.S. Virgin Islands.

By March, additional mortality events had been independently observed elsewhere in the Caribbean and was spreading quickly.

There have been recent reports of dying and sick Diadema in Florida. However, it has not yet been positively confirmed as the same event as the Caribbean die-off.



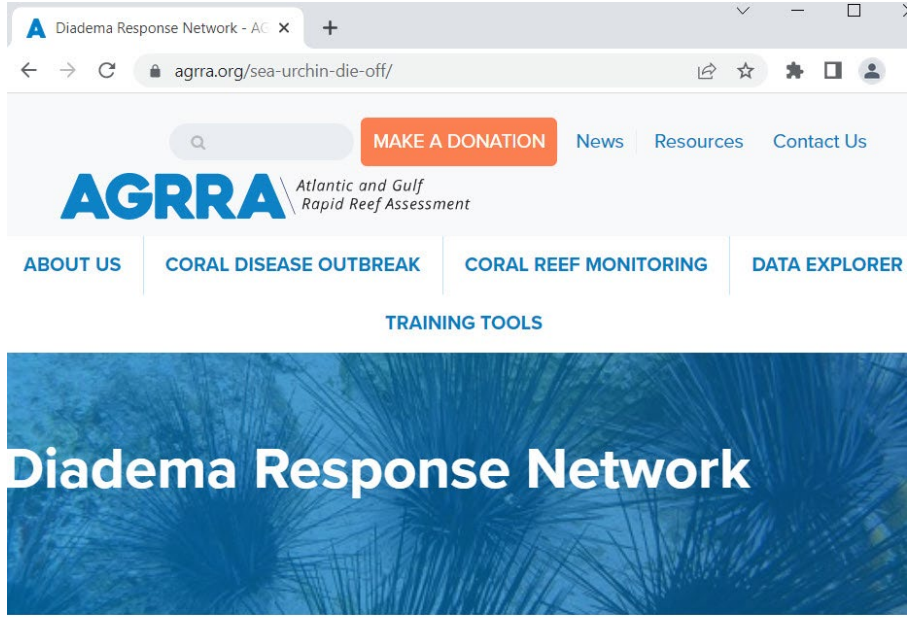
DIADEMA DISEASE OUTBREAK



DIADEMA DISEASE OUTBREAK

You can submit reports of diseased *Diadema antillarum* (long-spined sea urchin) to the Diadema Response Network hosted by the Atlantic and Gulf Rapid Reef Assessment (AGRRA).

Please visit their website to submit a report: https://www.agrra.org/sea-urchin-die-off/.



Diadema
Response Network

THANK YOU

Taylor Tucker
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Coral Reef Conservation Program
Florida Department of Environmental Protection

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