

FLORIDA'S CORAL REEF



Taylor Tucker
Reef Resilience Coordinator
Florida Department of Environmental Protection

Tequesta Meeting | Aug. 14, 2024



LET'S DIVE IN!

FLORIDA'S CORAL REEF



Source: FDEP



ARE CORALS ANIMALS?

FLORIDA'S CORAL REEF

YES!





WHAT IS A CORAL?

FLORIDA'S CORAL REEF

Corals are invertebrates made up of **identical, interconnected polyps**. Polyps are **connected by tissues** over the skeleton.





WHAT IS A CORAL REEF?

FLORIDA'S CORAL REEF

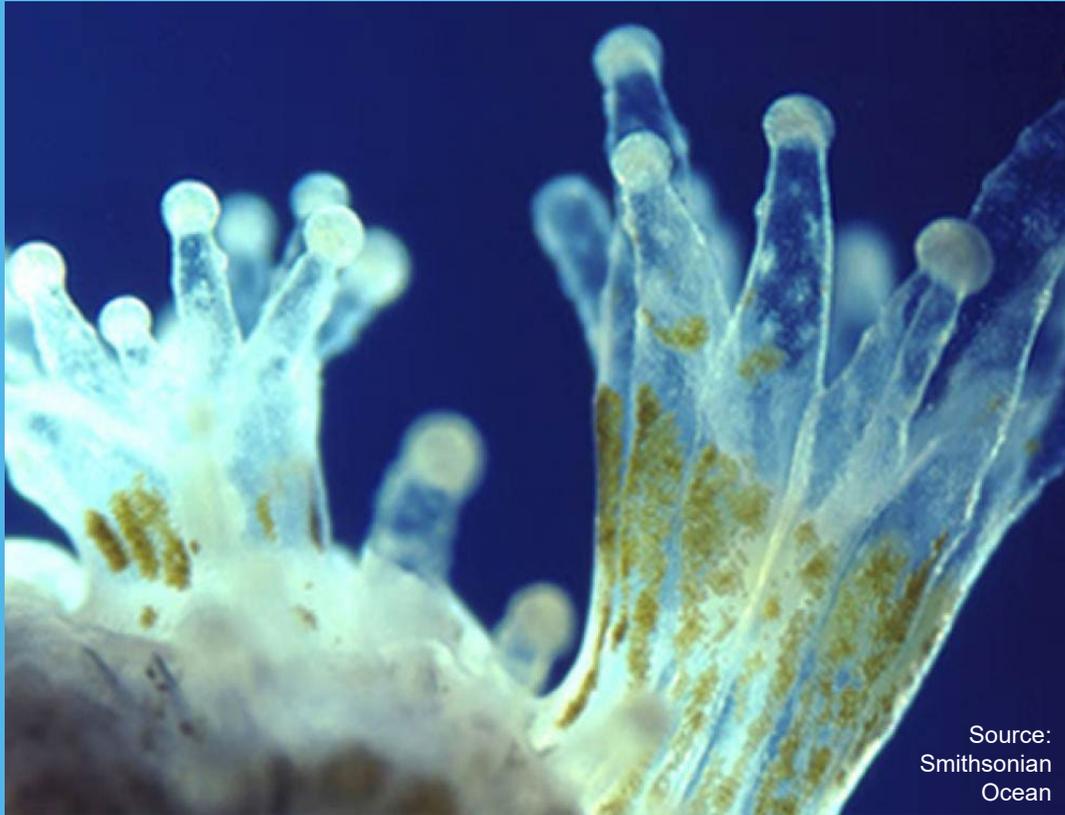
A coral reef is a **living structure** made of coral polyps, which are **tiny animals** that live together.





CORALS LIVE IN SYMBIOSIS

FLORIDA'S CORAL REEF



Source:
Smithsonian
Ocean

- **Zooxanthellae** are algae that get their energy (food) from the sun.
 - Pronounced zoo-zan-thelly.
- Algae are plants that **photosynthesize**.
- Corals **protect** zooxanthellae from predators.
- Zooxanthellae give the corals **nutrients and color**.



CORALS (AND REEFS) TAKE TIME TO GROW

FLORIDA'S CORAL REEF

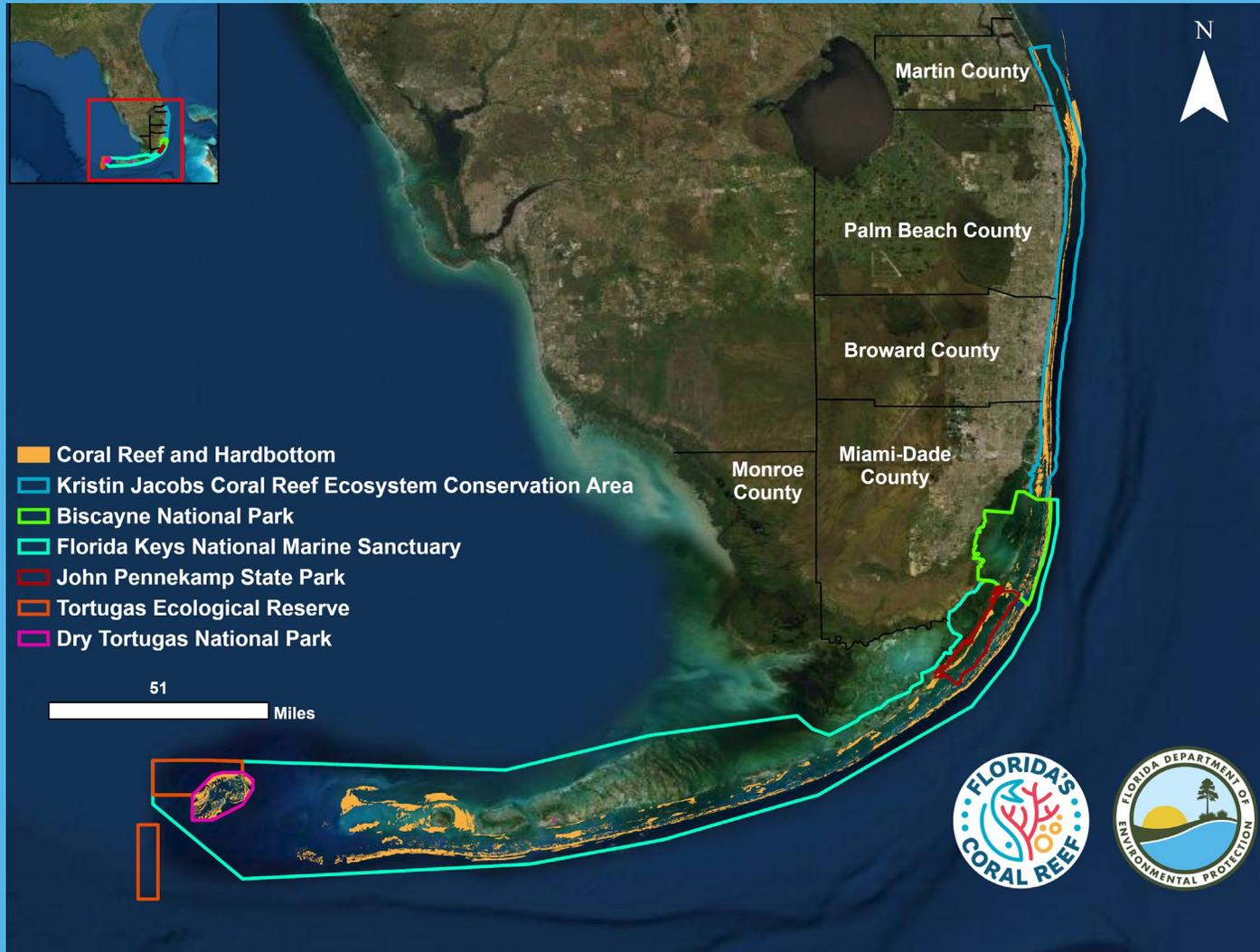
Florida's Coral Reef began forming **10,000 years ago** when sea levels rose after the last Ice Age. Boulder corals grow **0.3 - 2 centimeters per year** and branching corals up to **10 centimeters per year**.





WHERE DO CORALS LIVE NEAR US?

FLORIDA'S CORAL REEF



- **350 miles** long.
- Next to **five counties** home to more than **six million people**, with **38 million visitors** each year.
- A few hundred feet or more than **5 miles** from shore.



REEF COMPOSITION: STONY CORALS

FLORIDA'S CORAL REEF

= “Reef building corals” whose polyps leave behind a dense network of hard skeletons.

Create habitats and massive structures over thousands of years.

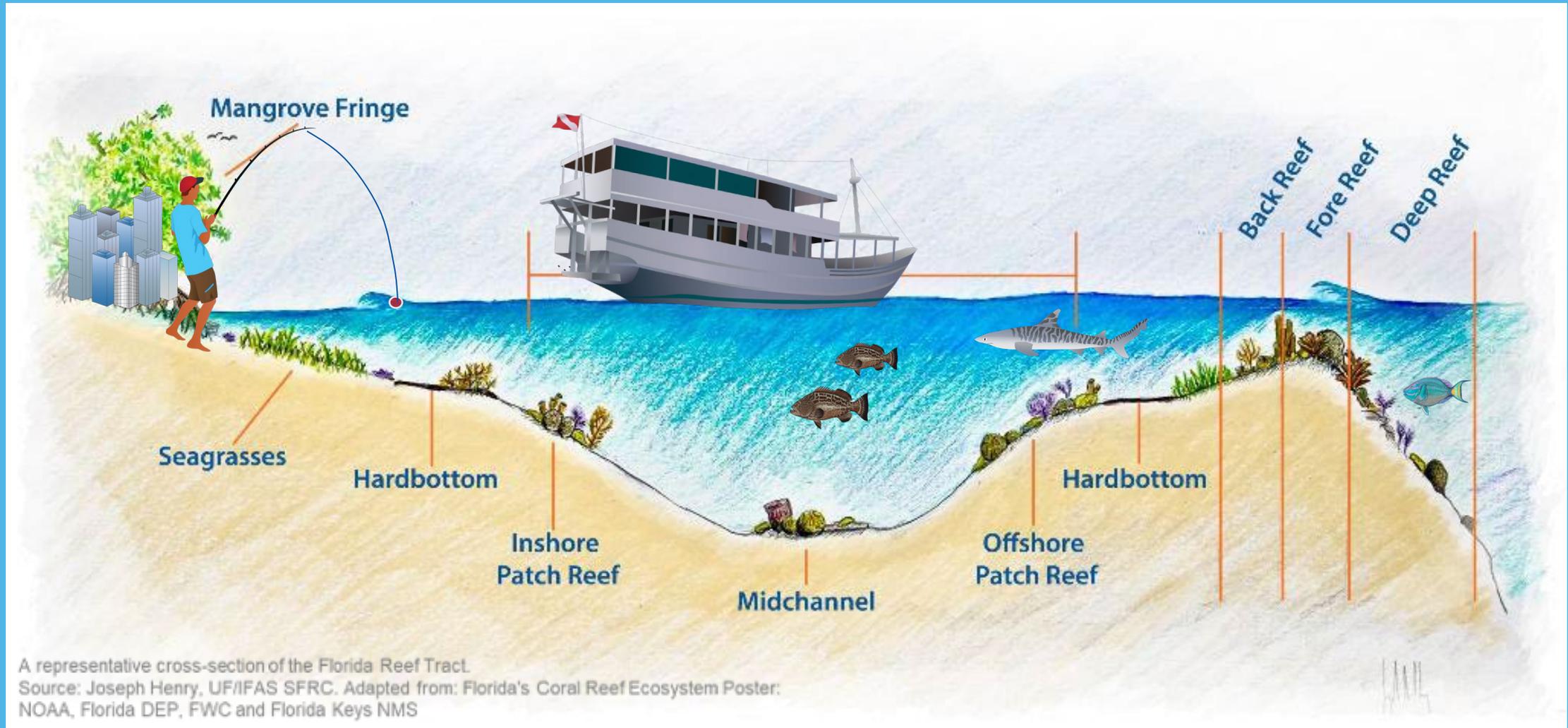
Guide to Common
Stony Corals of
Florida





CORAL REEFS ARE CENTRAL TO OUR LIVES

FLORIDA'S CORAL REEF

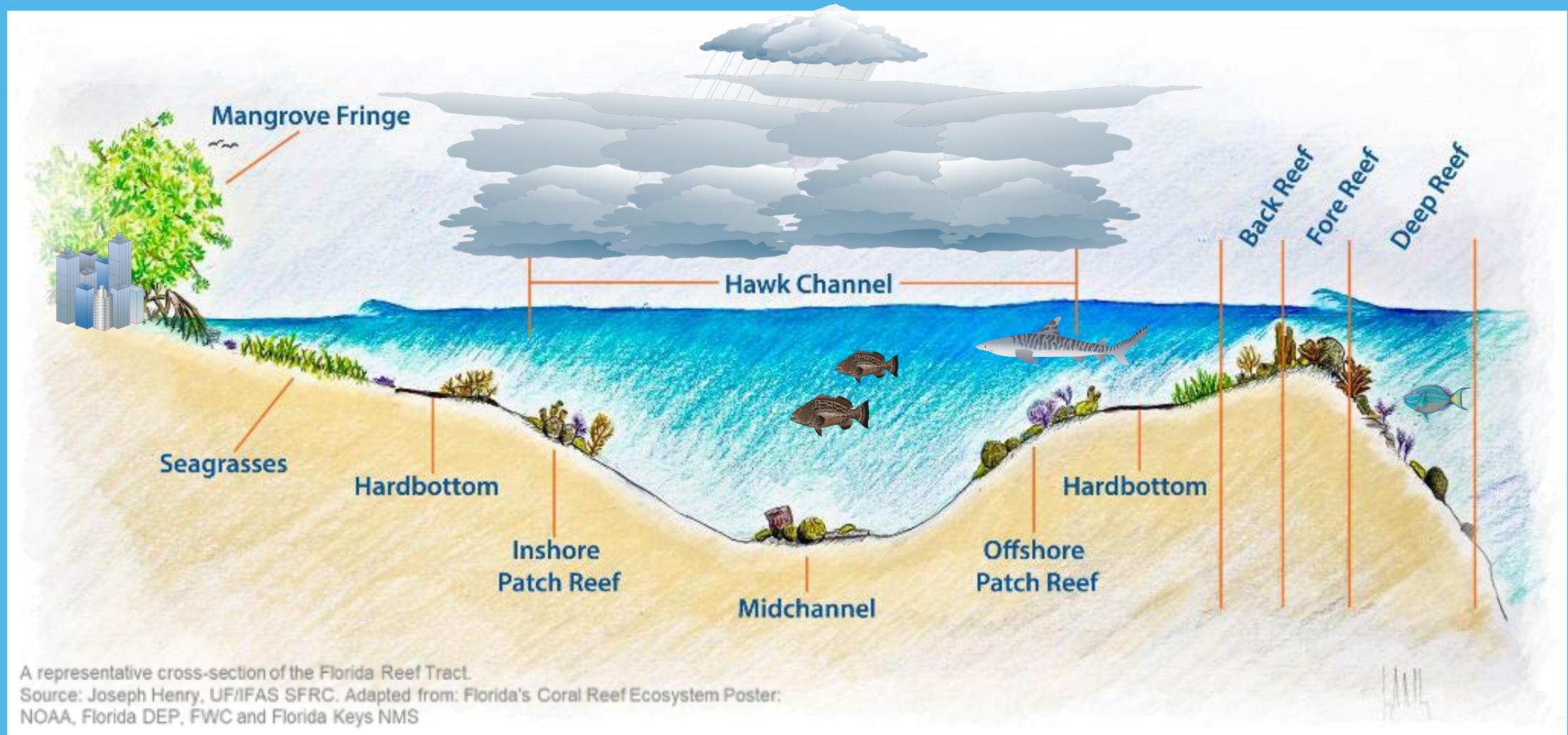


A representative cross-section of the Florida Reef Tract.
Source: Joseph Henry, UF/IFAS SFRC. Adapted from: Florida's Coral Reef Ecosystem Poster:
NOAA, Florida DEP, FWC and Florida Keys NMS



CORAL REEFS PROTECT US

FLORIDA'S CORAL REEF



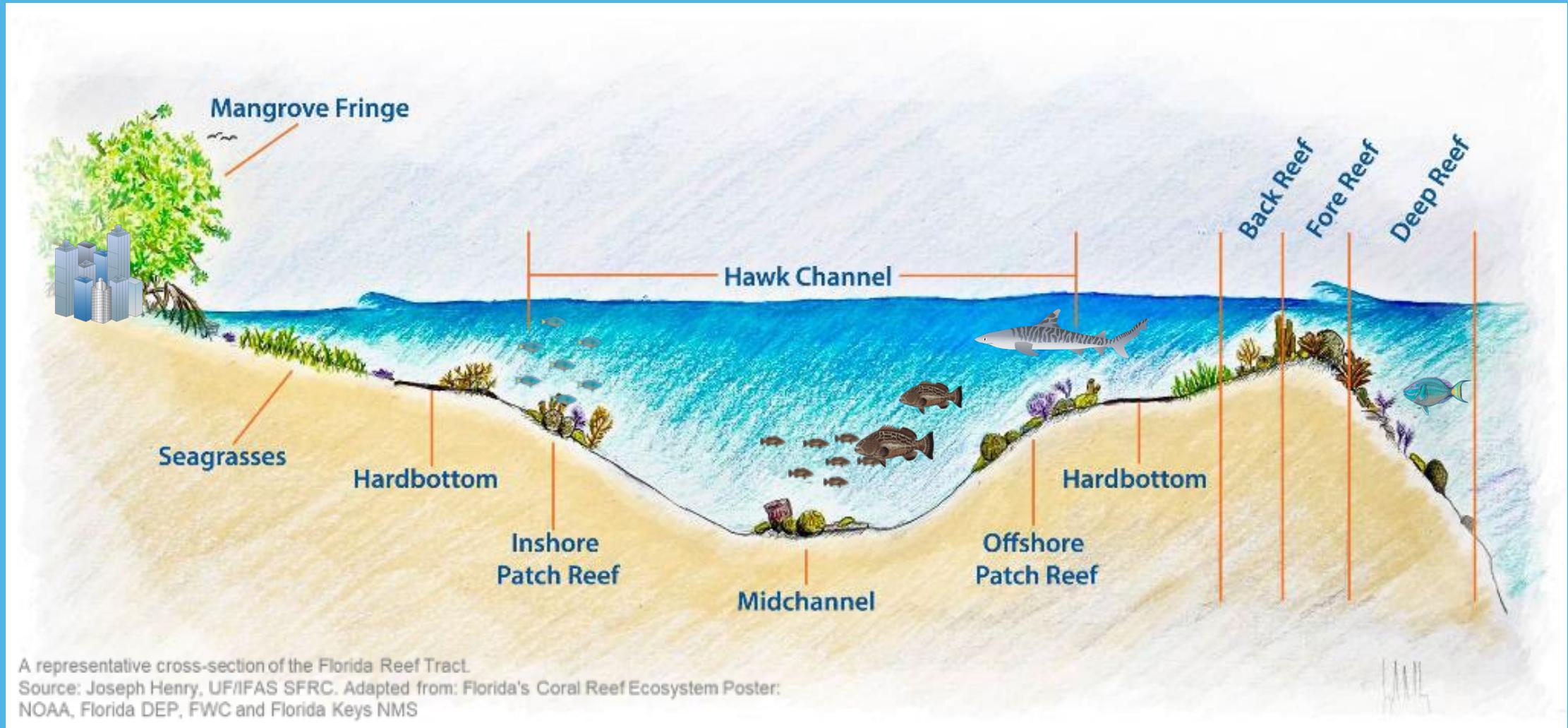
A representative cross-section of the Florida Reef Tract.

Source: Joseph Henry, UF/IFAS SFRC. Adapted from: Florida's Coral Reef Ecosystem Poster: NOAA, Florida DEP, FWC and Florida Keys NMS



CORAL REEFS PROVIDE ESSENTIAL HABITAT

FLORIDA'S CORAL REEF



A representative cross-section of the Florida Reef Tract.
Source: Joseph Henry, UF/IFAS SFRC. Adapted from: Florida's Coral Reef Ecosystem Poster:
NOAA, Florida DEP, FWC and Florida Keys NMS



ESSENTIAL HABITATS

FLORIDA'S CORAL REEF

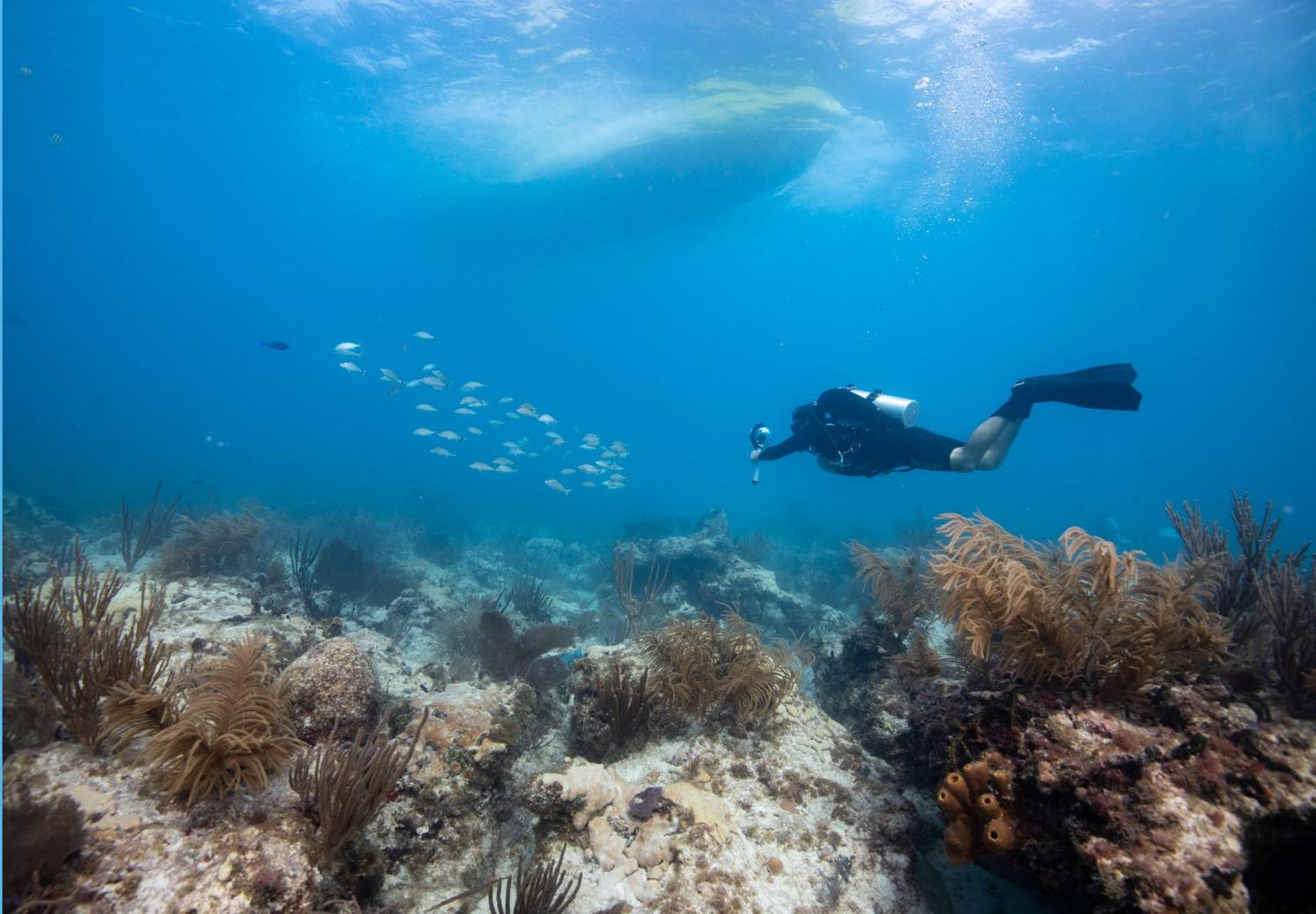
517 fishes, 600+ invertebrates, 43+ stony corals, 70+ sponges





PROTECTIONS FOR THE REEF

FLORIDA'S CORAL REEF



- All of Florida's Coral Reef is protected by the **Florida Coral Reef Protection Act** (68B-42.009, F.A.C.):
 - **All stony corals, octocorals, black corals and fire corals within Florida waters are protected** from take/attempted take, destruction, sale and possession.
- The **US Restoring Resilient Reefs Act** supports conservation and research.
- The **US Endangered Species Act** protects species at risk of extinction.



REEF RESILIENCE

FLORIDA'S CORAL REEF

The ability of a coral reef to **maintain key functions** when it is stressed or under pressure, occurs by either **withstanding an impact** or **recovering** from one when it happens.

Resilient corals must be able to survive and thrive!





GLOBAL STRESSORS

FLORIDA'S CORAL REEF



Increased frequency and severity of **extreme weather events** +

Marine **heatwaves** +

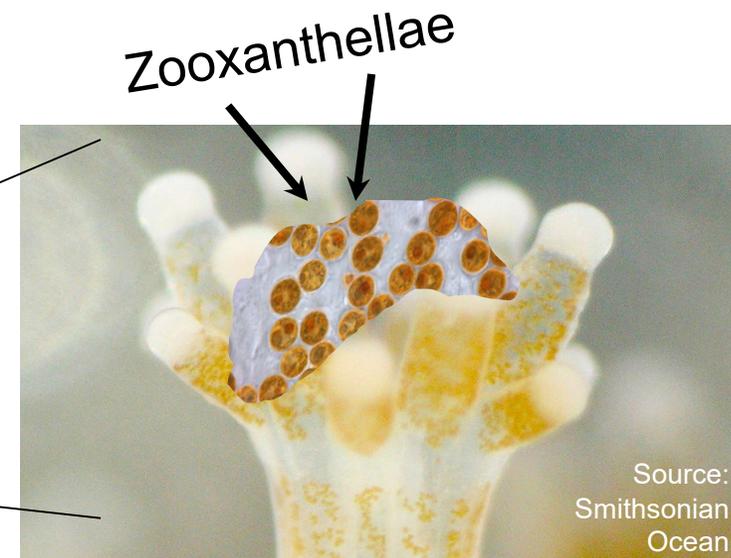
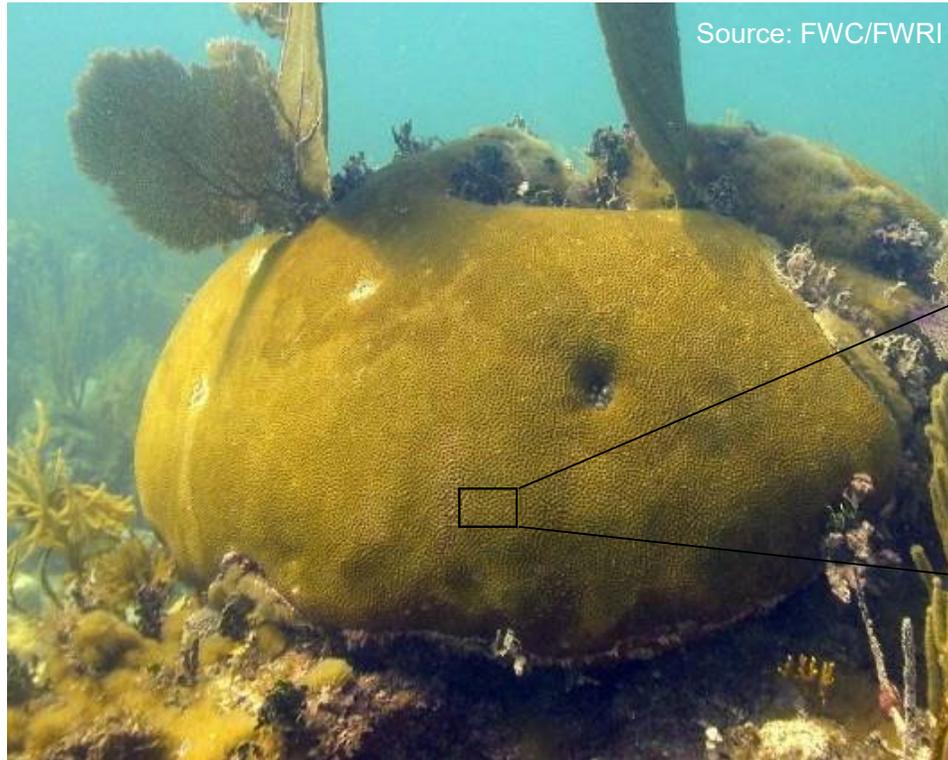
Ocean **warming** and **acidification** +

= Coral stress and bleaching.



CORAL BLEACHING

FLORIDA'S CORAL REEF

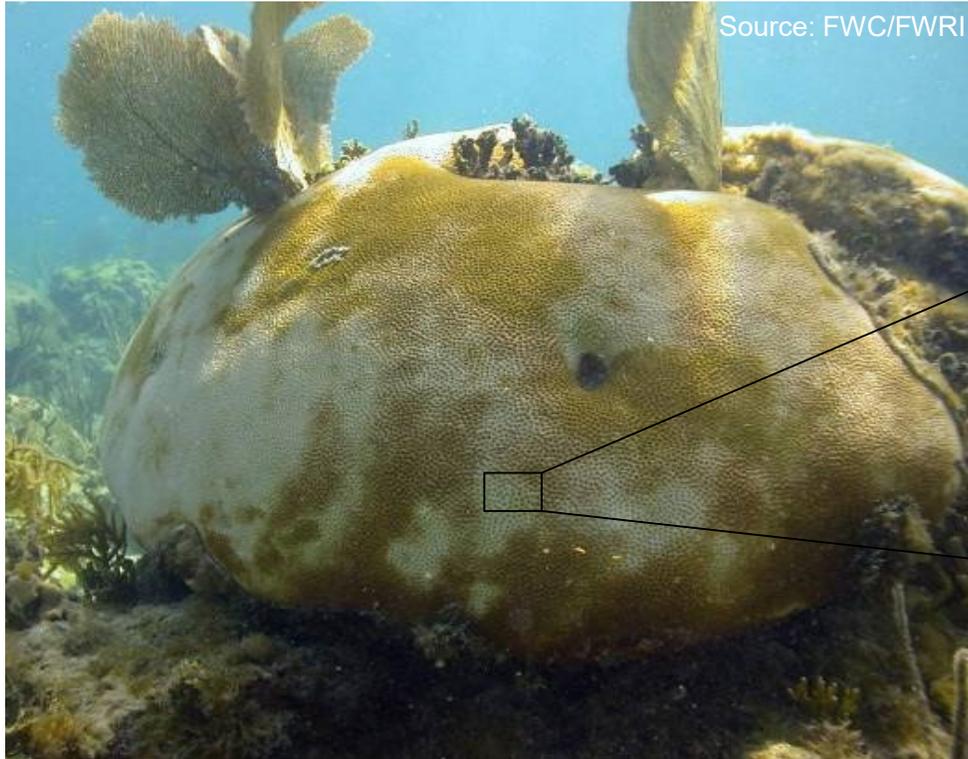


Healthy Coral

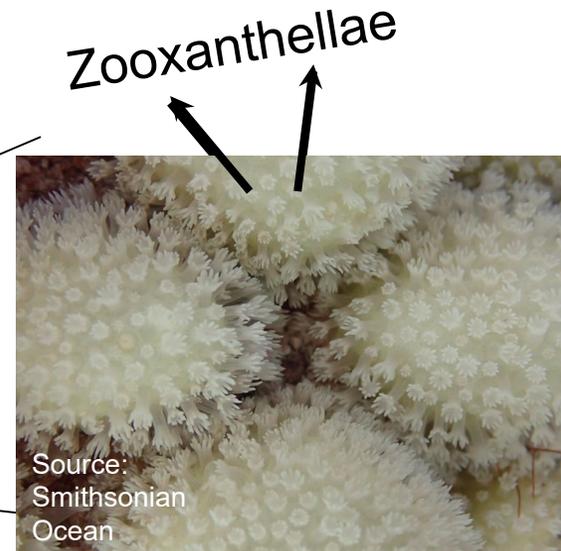


CORAL BLEACHING

FLORIDA'S CORAL REEF



Partially Bleached Coral



Stress

Pollution, Low Oxygen, Salinity,
Sedimentation, Disease,
Temperature



CORAL BLEACHING

FLORIDA'S CORAL REEF

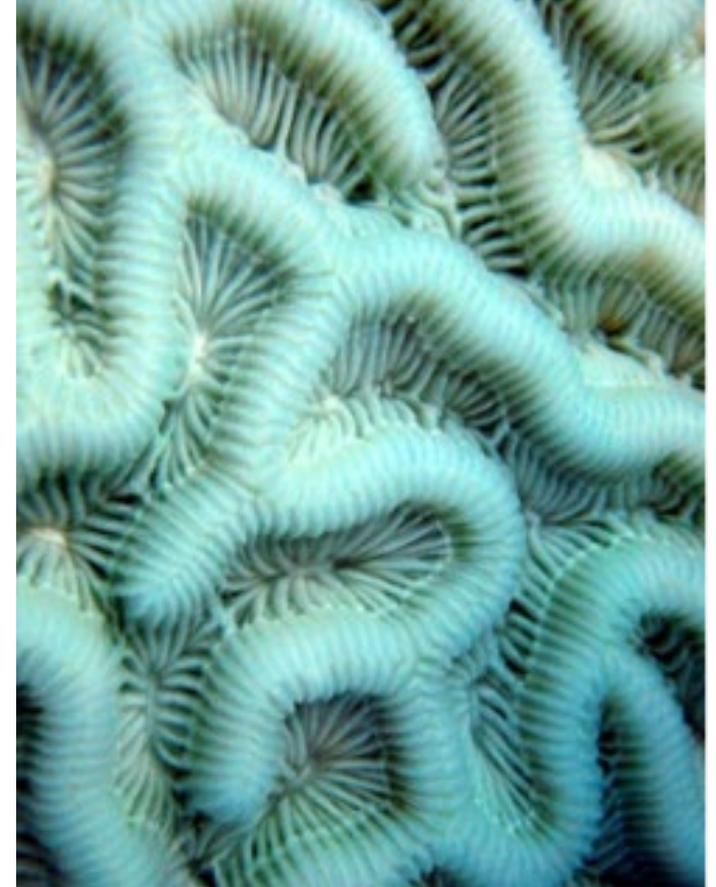
Healthy



Pale/Partially Bleached



Fully Bleached



Source: Mote Marine Laboratory



CORAL BLEACHING

IS A BLEACHED CORAL DEAD?



Bleached Coral

No.
A bleached coral is
still alive.



CORAL BLEACHING

FLORIDA'S CORAL REEF

Water Temperature Increases

Prolonged Temperature Stress



Healthy Coral



Bleached Coral



Dead Coral

Water Temperature Returns to Normal



CORAL BLEACHING

LONG-TERM EFFECTS

↓
Reproduction

↓
Coral growth

Loss of habitat



Susceptible to
Disease

Susceptible to
Predation

Susceptible to
Death



CORAL BLEACHING

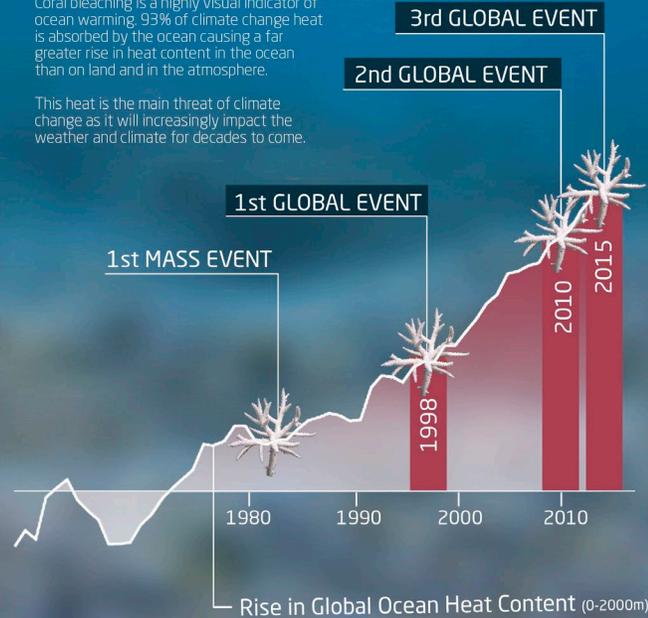
NOAA-DESIGNATED BLEACHING EVENTS

The history of global CORAL BLEACHING EVENTS

Why should we care?

Coral bleaching is a highly visual indicator of ocean warming. 93% of climate change heat is absorbed by the ocean causing a far greater rise in heat content in the ocean than on land and in the atmosphere.

This heat is the main threat of climate change as it will increasingly impact the weather and climate for decades to come.



Source: XL CATLIN





CORAL BLEACHING ACROSS SPATIAL SCALES





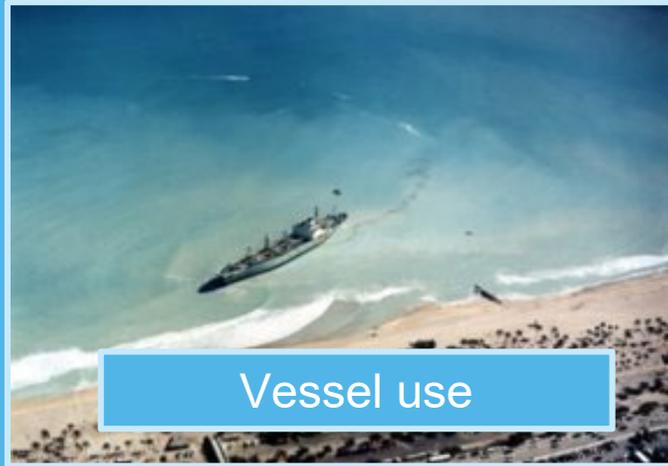
LOCAL STRESSORS

FLORIDA'S CORAL REEF

Source: Jennifer Podis

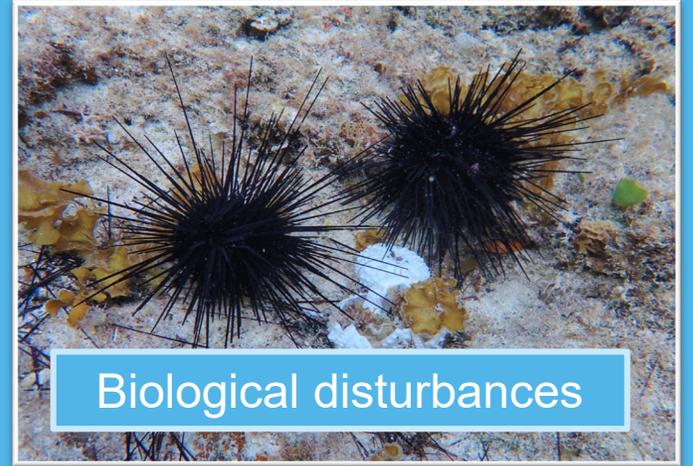


Recreational diving



Vessel use

Source: Atlantic and Gulf Rapid Reef Assessment



Biological disturbances

Source: National Oceanic and Atmospheric Administration

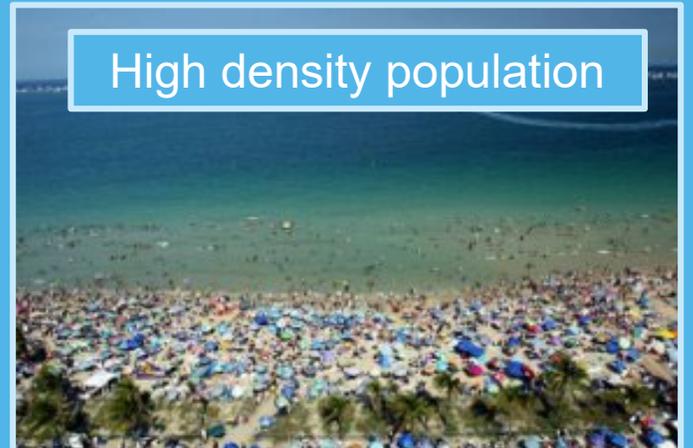


Coastal construction

Source: Christopher Boykin



Pollution and runoff



High density population



CORAL REEF CONSERVATION PROGRAM

FLORIDA'S CORAL REEF

Focusing on five key threats to our reefs:



Maritime industry and coastal construction



Lack of awareness and appreciation



Land-based sources of pollution



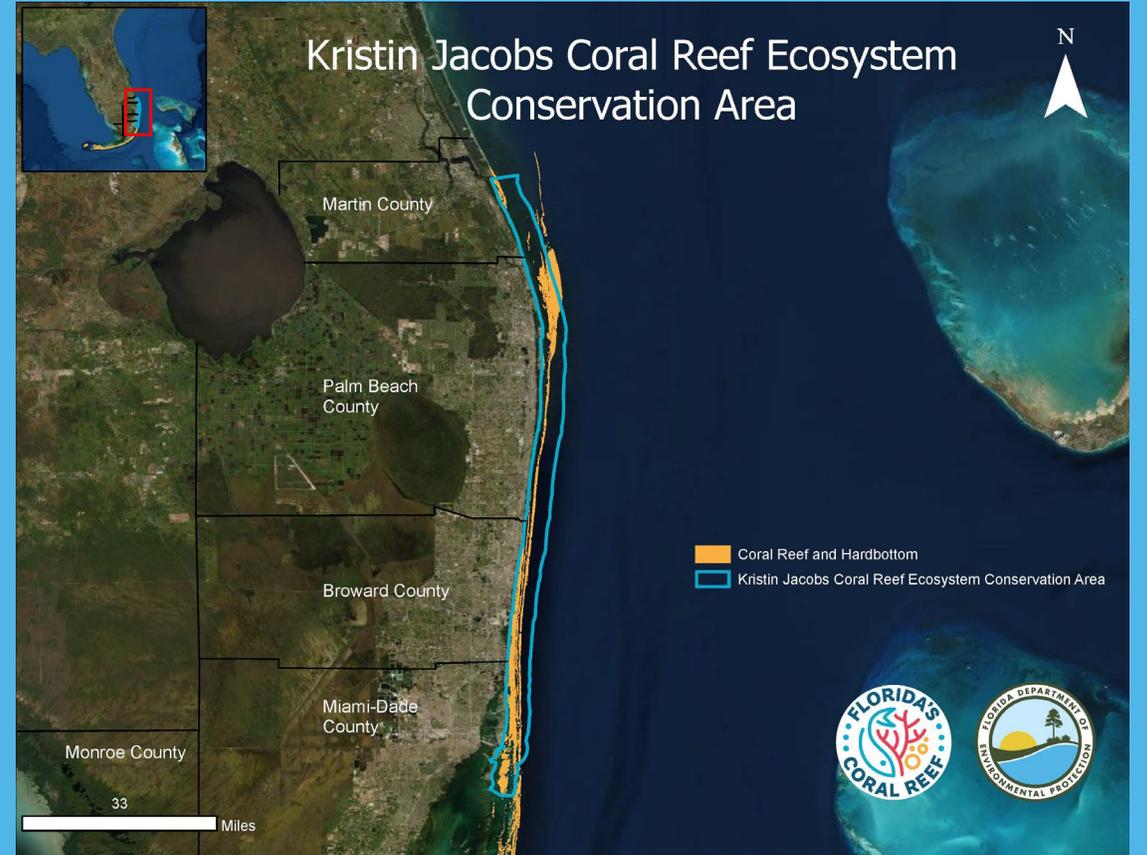
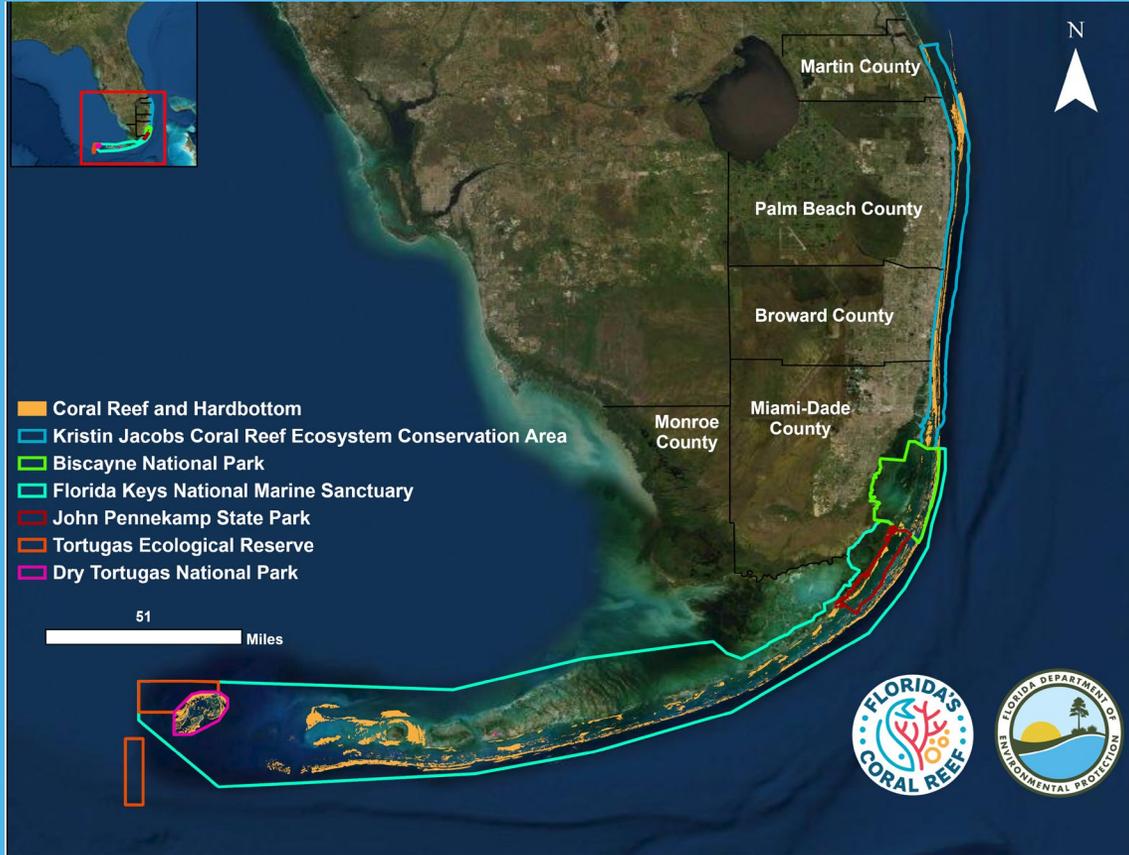
Fishing, diving and other uses



Reef resilience



KRISTIN JACOBS ECOSYSTEM CONSERVATION AREA FLORIDA'S CORAL REEF





CORAL REEF CONSERVATION PROGRAM

FLORIDA'S CORAL REEF

Source: Don Shetterly



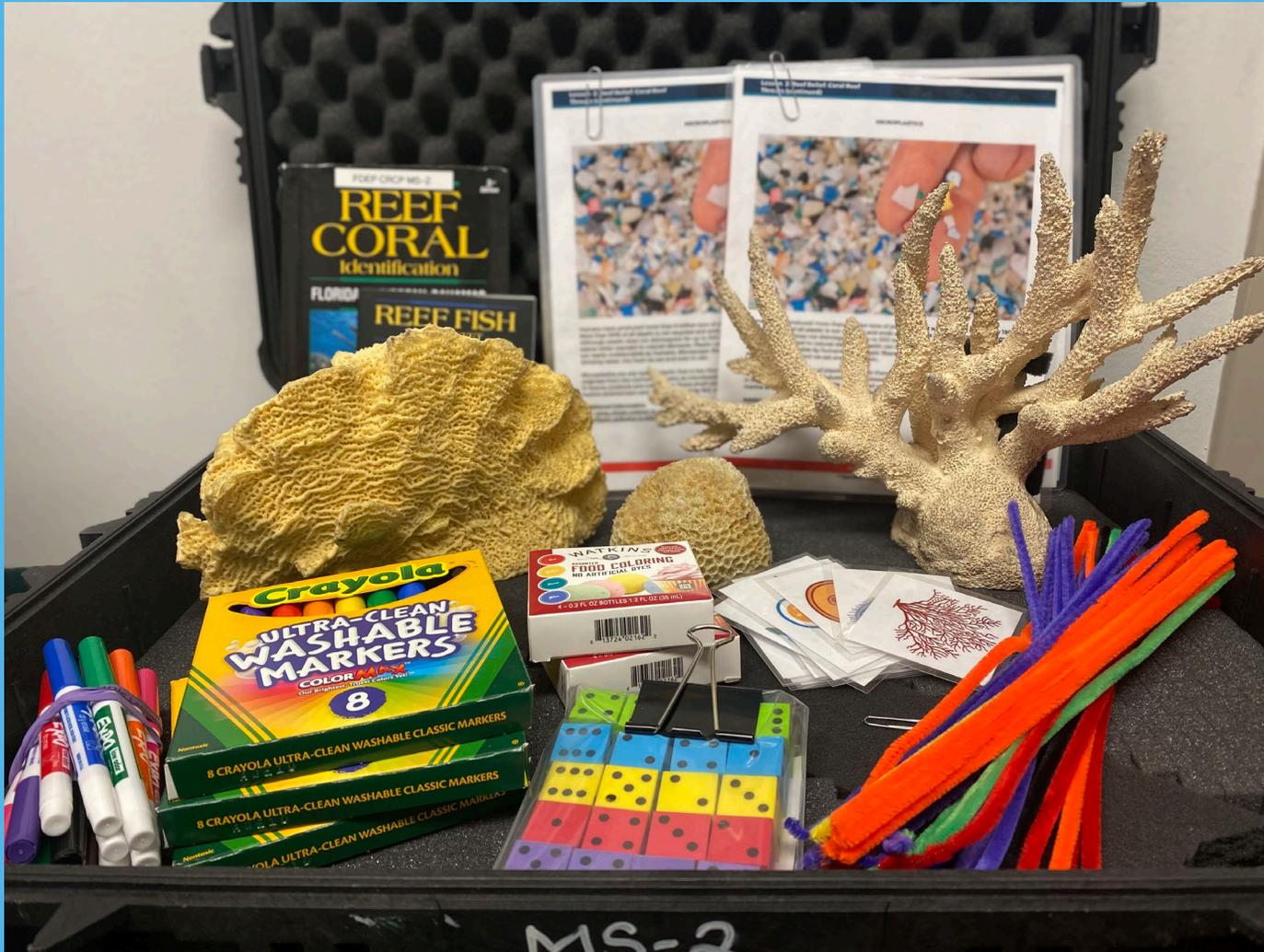
Focusing on five key threats to our reefs:

- **Maritime industry and coastal construction impacts.**
- Lack of awareness and appreciation.
- Land-based sources of pollution.
- Fishing, diving and other uses.
- Reef resilience.



CORAL REEF CONSERVATION PROGRAM

FLORIDA'S CORAL REEF



Focusing on five key threats to our reefs:

- Maritime industry and coastal construction impacts.
- **Lack of awareness and appreciation.**
- Land-based sources of pollution.
- Fishing, diving and other uses.
- Reef resilience.



CORAL REEF CONSERVATION PROGRAM

FLORIDA'S CORAL REEF



Focusing on five key threats to our reefs:

- Maritime industry and coastal construction impacts.
- Lack of awareness and appreciation.
- **Land-based sources of pollution.**
- Fishing, diving and other uses.
- Reef resilience.



CORAL REEF CONSERVATION PROGRAM

FLORIDA'S CORAL REEF



Source: FWC/FWRI

Focusing on five key threats to our reefs:

- Maritime industry and coastal construction impacts.
- Lack of awareness and appreciation.
- Land-based sources of pollution.
- **Fishing, diving and other uses.**
- Reef resilience.



CORAL REEF CONSERVATION PROGRAM

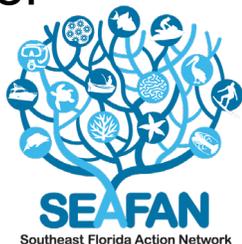
FLORIDA'S CORAL REEF



Source: FWC/FWRI

Focusing on five key threats to our reefs:

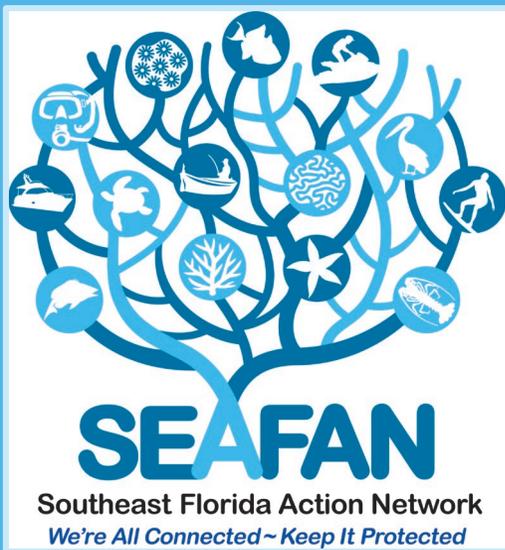
- Maritime industry and coastal construction impacts.
- Lack of awareness and appreciation.
- Land-based sources of pollution.
- Fishing, diving and other uses.
- **Reef resilience.**





CORAL REEF CONSERVATION PROGRAM

FLORIDA'S CORAL REEF



See a marine incident?
REPORT IT!

SEAFAN.net / 1-866-770-SEFL



Source: Kimani Kitson-Walters



Source: Katy Cummings



SEAFAN

Coral Disease
& Bleaching



CORAL REEF CONSERVATION PROGRAM

FLORIDA'S CORAL REEF

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

The program helps to detect and monitor coral bleaching events in Southeast Florida and improve scientific understanding.



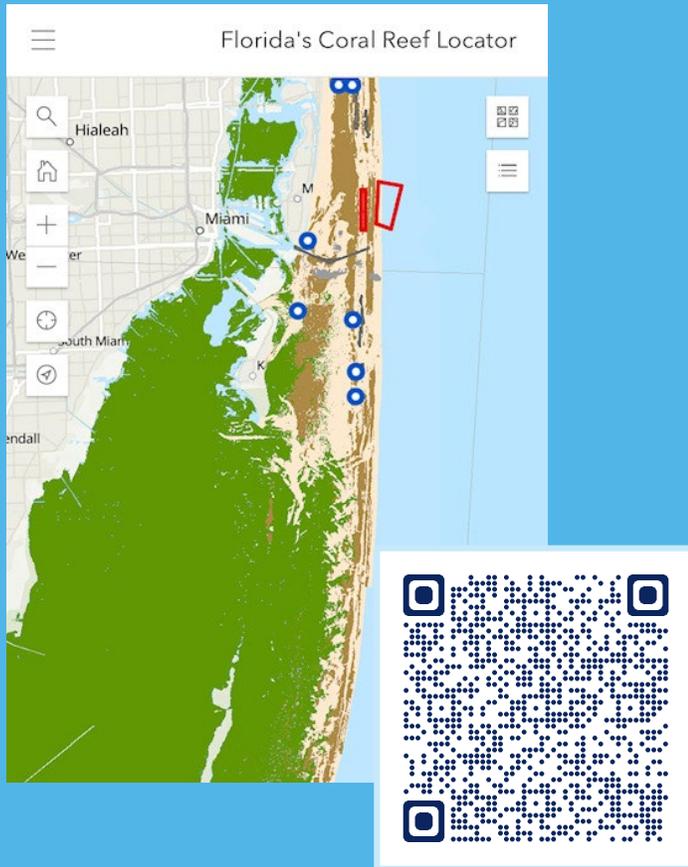
HOW CAN YOU PROTECT FLORIDA'S CORAL REEFS?



ON THE WATER

FLORIDA'S CORAL REEF

Scan the Arc GIS Coral Reef Locator code

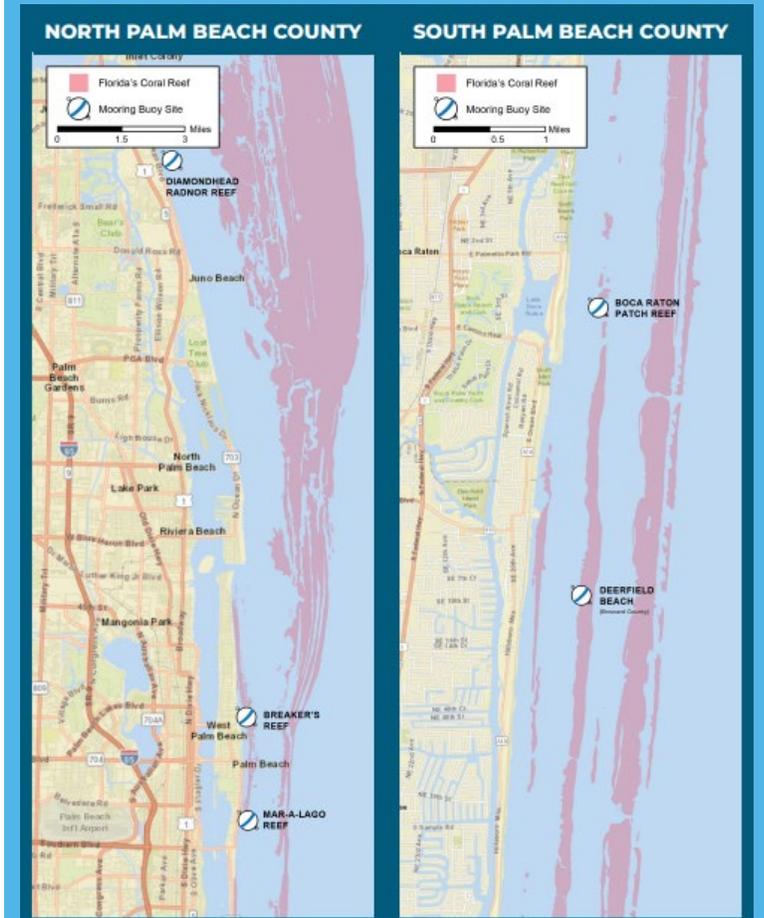


FloridaDEP.gov/CoralReefLocator

Anchor in sand



Use mooring buoys





IN THE WATER

FLORIDA'S CORAL REEF

Become a **BleachWatch** observer



Coral Disease & Bleaching



Invasive Species



Marine Debris



Other Incidents

SEAFAN Report Form

Florida Department of Environmental Protection
Coral Reef Conservation Program

SEAFAN Marine Incident Report Form



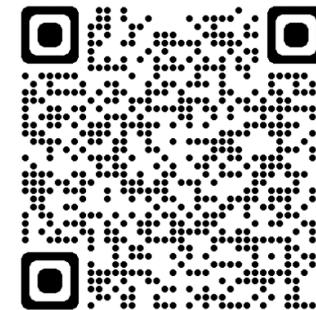
Report marine incidents observed in
Miami-Dade, Broward, Palm Beach, and Martin Counties
to Southeast Florida Action Network (SEAFAN).

Find more information at
www.SEAFAN.net
We're All Connected ~ Keep It Protected

1. Site Information

What type of incident did you observe?*

-Please Select-



SEAFAN.net/report



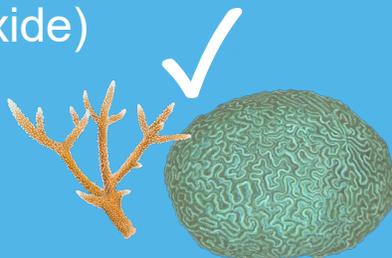
EVERYWHERE FLORIDA'S CORAL REEF

The sunscreen you apply may not stay on your skin.



When we swim or shower, sunscreen may wash off and enter our waterways.

Reef-safe ingredients:
Non-nano mineral UV blockers (zinc oxide or titanium dioxide)



Source: NOAA Coral Reef Conservation Program

Time any fertilizing around rainfall and watering



Source: Center for Disease Control

Remember that 99% of insects and spiders are either beneficial, harmless or do not significantly damage plants!



Source: Karl Callwood

Join cleanups and support reusable alternatives to single-use plastics.



Source: Brian Yurasits

Look for sustainable seafood at seafoodwatch.org

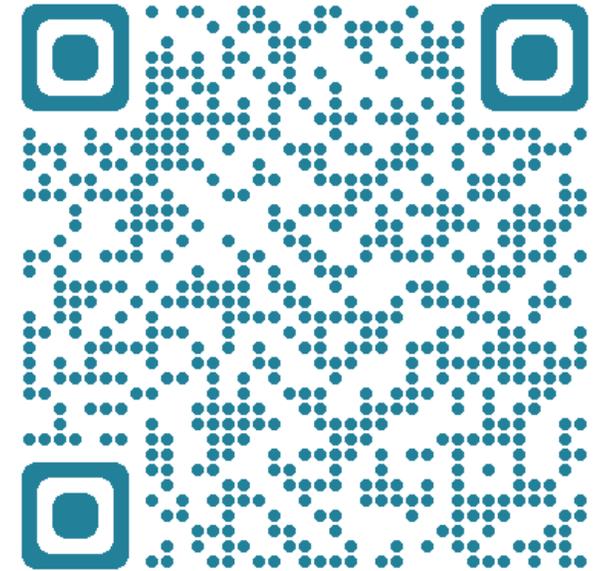


U.S. fisheries are among the world's largest and most sustainable

Source: Monterey Bay Aquarium



VISIT FLORIDASCORALREEF.ORG





THANK YOU

Taylor Tucker

Coral Reef Conservation Program
Florida Department of Environmental Protection

Contact Information:

Taylor.Tucker@FloridaDEP.gov

561-681-6609

FloridasCoralReef.org