

THE FLORIDA KEYS NATIONAL MARINE SANCTUARY

# USING GEOSPATIAL INFORMATION TO SUPPORT RESOURCE MANAGEMENT



Photo: Shawn Verne









© STEPHEN R. SHELLEY























THE FLORIDA KEYS ARE THE

# SPORTFISHING CAPITAL OF THE COUNTRY



*Main Attraction*



*Angler's Journal*



THE FLORIDA KEYS HAVE WORLD FAMOUS

# SCUBA-DIVING AND YACHTING



Amoray Dive Resort

**DIVE IN**  
**FLORIDA'S FASCINATING REEFS**

Whether you enjoy snorkeling in shallow waters or prefer to dive deep into a scuba adventure, Florida has miles of breathtaking reefs for you to explore.

**500+** species of mollusks and other invertebrates

**5** species of sea turtles

**5** species of jellyfish

**100** species of corals and sponges

**55** species of crustaceans

**20** species of sharks

**1,000+** species of fish

**ARTIFICIAL REEFS PROGRAM**

**3,534** Artificial reefs in Florida

Estimated **500** shipwrecks off the Florida Keys

From **15ft** to over **130ft** diving depth ranges

**SOME TOP REEF DESTINATIONS:**

1. The Florida Reef Tract is the only extensive living coral reef in the United States and the third-largest barrier reef ecosystem in the world.
2. Pinellas #2 Reef, near the mouth of Tampa Bay, features multiple vessels, and a pile of culverts. It is considered one of the best West Central Florida wreck dive sites.
3. The USS Oriskany, a retired aircraft carrier, was intentionally sunk in 2006 just 22 miles south of Pensacola. It is the largest artificial reef in the world, with depths ranging from 80 to over 200 feet of water.
4. Jacksonville's reef system features vessels, planes and culverts placed along more than 40 miles of the continental shelf.
5. The southeast coast, from Miami to Jupiter, features dozens of artificial reef sites and historical shipwrecks.

Divers experience a close encounter with a goliath grouper near the Ana Cecilia artificial reef, a 170-foot cargo ship that was sunk 85 feet deep just one mile off West Palm Beach.

To learn more about Florida reefs and locations, visit [MyFWC.com/ArtificialReefs](http://MyFWC.com/ArtificialReefs).

Visit Florida



STRUCTURAL COMPLEXITY PROVIDED BY ELKHORN CORALS IS CRITICAL

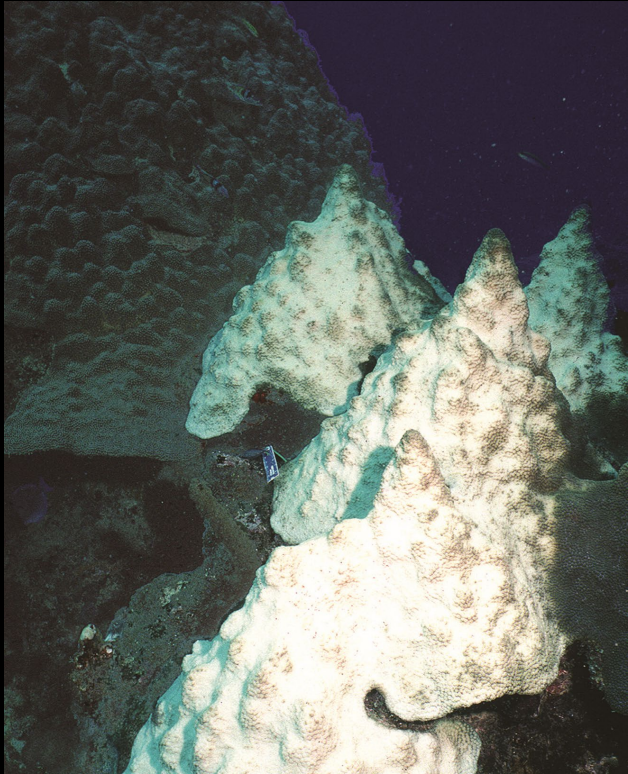
# HABITAT FOR FISH AND INVERTEBRATES





OUR REEFS HAVE BEEN SUFFERING FOR DECADES

# DUE TO A VARIETY OF THREATS





ADD TO HISTORIC FLORIDA REEF DECLINES:

# STONY CORAL TISSUE LOSS DISEASE



*Diploria labyrinthiformis*



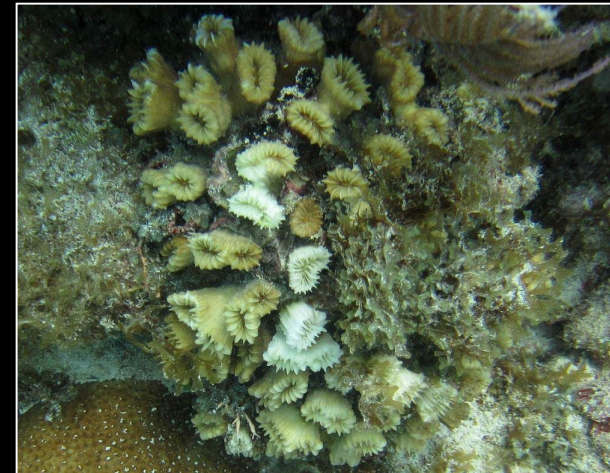
*Pseudodiploria strigosa*



*Dichocoenia stokesii*



*Meandrina meandrites*



*Eusmilia fastigiata*



# WHAT IS STONY CORAL TISSUE LOSS DISEASE AND WHY IS IT UNIQUE?



Number of species affected



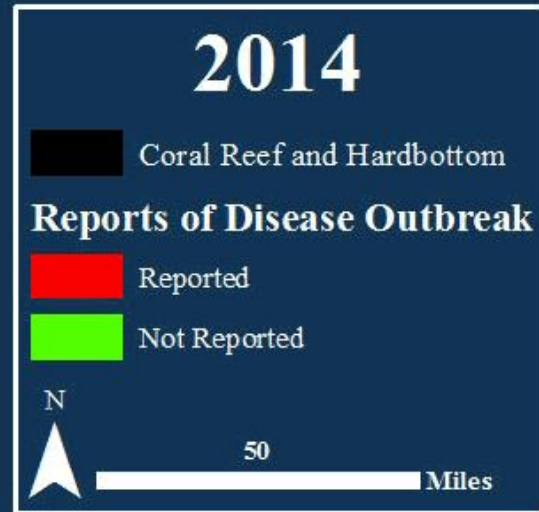
Rapid progression



High rates of mortality



# Coral Disease Outbreak Extent Across the Florida Reef Tract



Dry Tortugas  
National Park

Key West

Lower Keys

Middle Keys

Upper Keys

Biscayne  
National  
Park

Miami-Dade  
County

Monroe  
County

Broward County

Palm Beach County

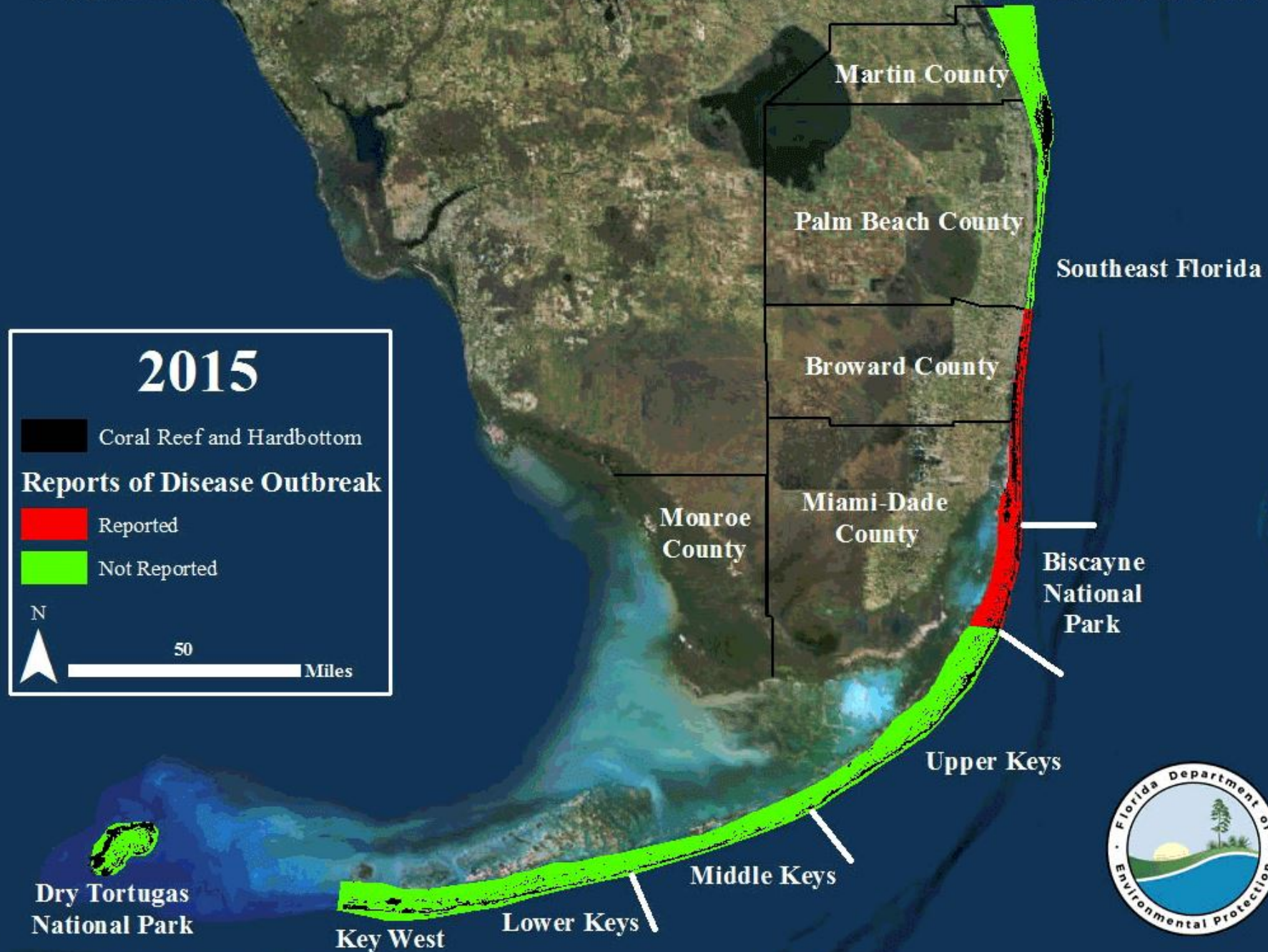
Martin County

Southeast Florida



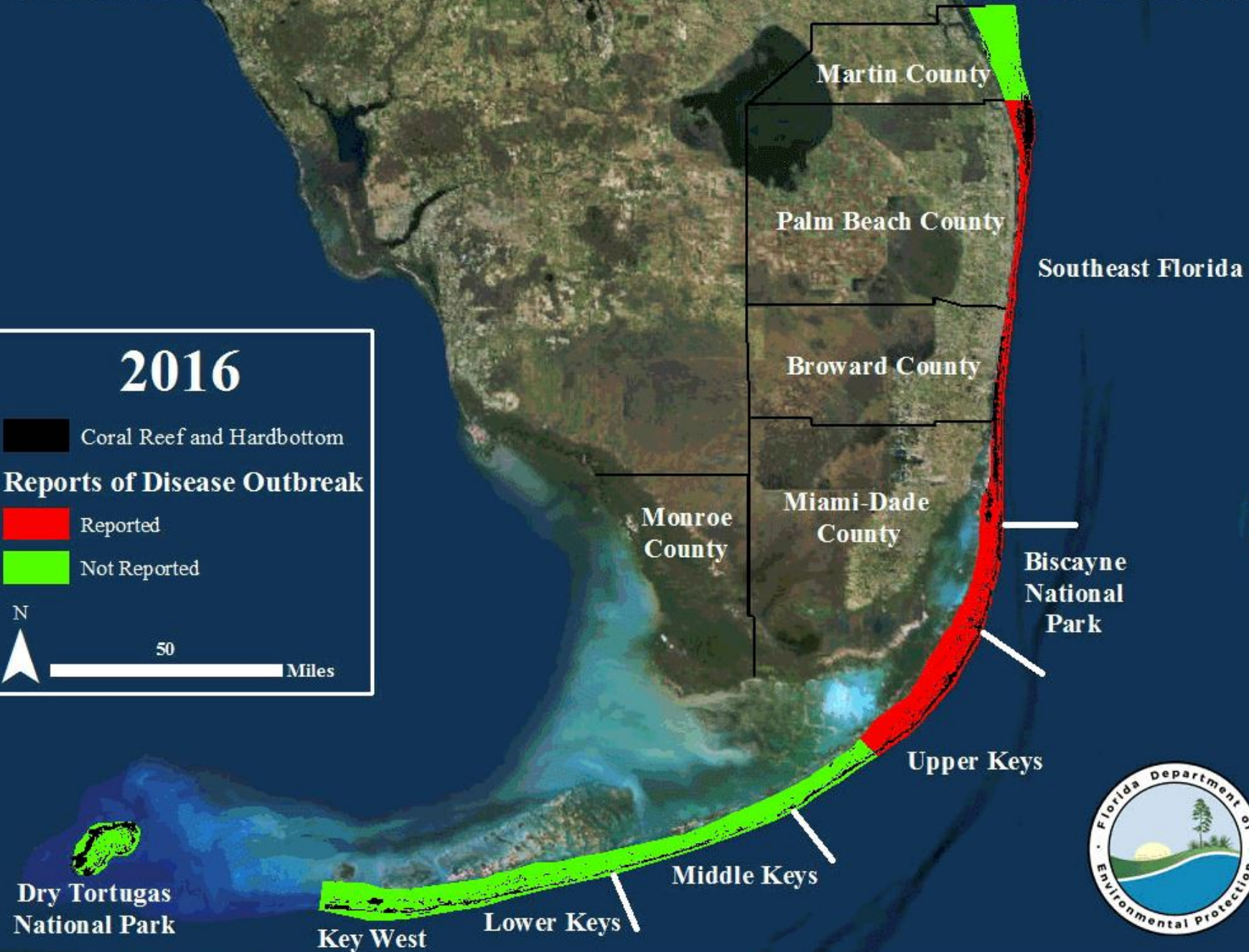
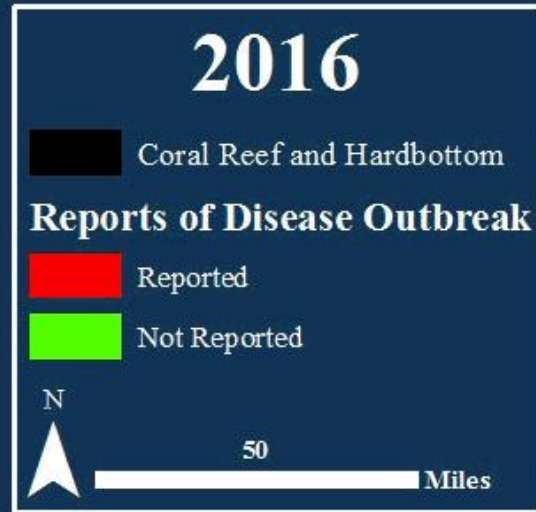


# Coral Disease Outbreak Extent Across the Florida Reef Tract



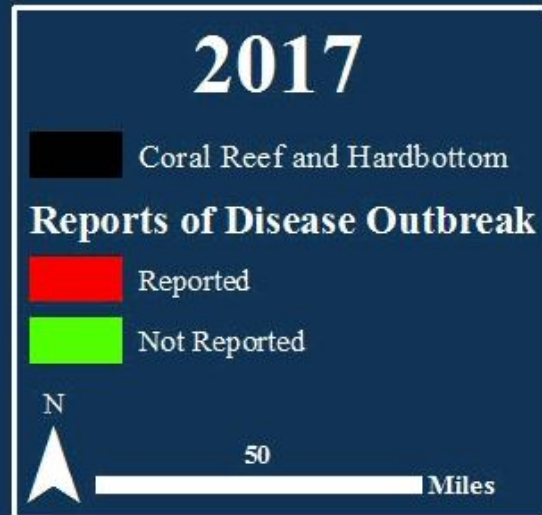


# Coral Disease Outbreak Extent Across the Florida Reef Tract





# Coral Disease Outbreak Extent Across the Florida Reef Tract



Dry Tortugas  
National Park

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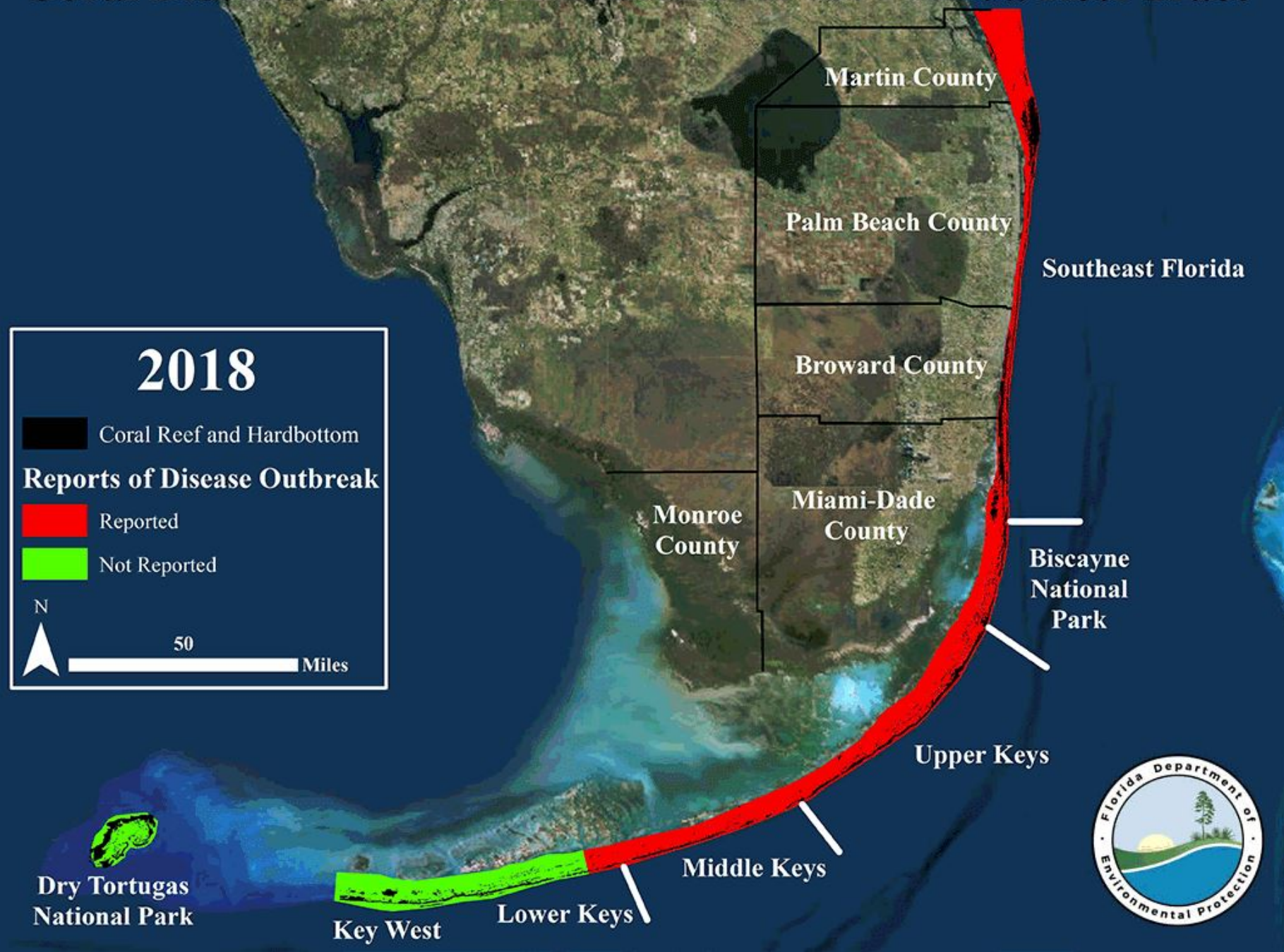
Martin County

Southeast Florida



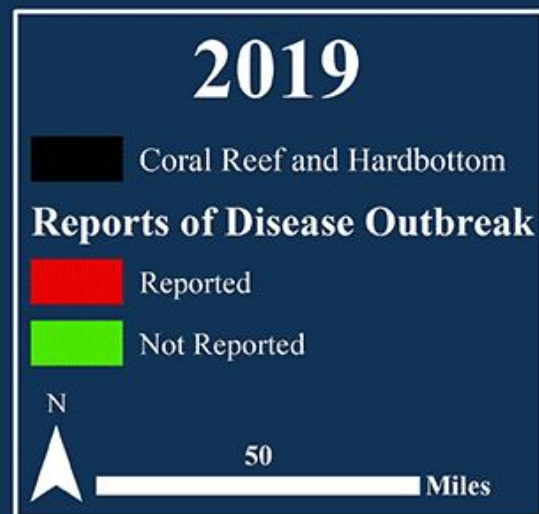


# Coral Disease Outbreak Extent Across the Florida Reef Tract





# Coral Disease Outbreak Extent Across the Florida Reef Tract



Dry Tortugas  
National Park

Key West  
Lower Keys

Marathon

Middle Keys

Upper Keys



Martin County

Palm Beach County

Southeast Florida

Broward County

Monroe  
County

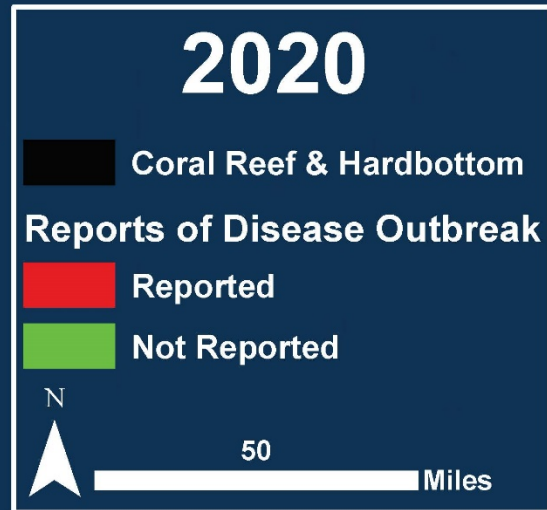
Miami-Dade  
County

Biscayne  
National  
Park

Key Largo



# Stony Coral Tissue Loss Disease Occurrence Across Florida's Coral Reef



Dry Tortugas  
National Park

Lower Keys

Middle Keys

Marathon

Key West

Key Largo

Miami-Dade  
County

Miami

Broward County

Palm Beach County

Martin County

Southeast Florida

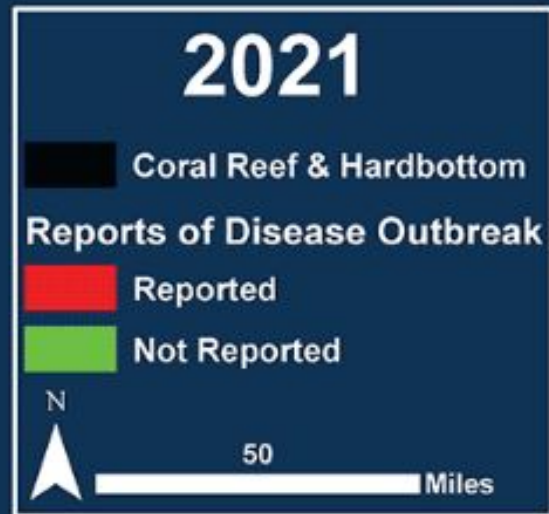
Biscayne  
National  
Park

Upper Keys





# Stony Coral Tissue Loss Disease Occurrence Across Florida's Coral Reef



Dry Tortugas  
National Park

Lower Keys

Middle Keys

Upper Keys



Martin County

Palm Beach County

Southeast Florida

Broward County

Miami

Miami-Dade  
County

Biscayne  
National  
Park

Monroe  
County

Key Largo

Marathon

Key West



# Stony Coral Tissue Loss Disease (SCTLD) Outbreak in the Caribbean

Last Updated: August 31st, 2021



Earthstar Geographics | Esri, Garmin, CIA World Factbook | Created by the Florida Fish and Wildlife Conservation Commission - Fish and Wildlife Research Institute

Powered by Esri



CORAL REEF RESTORATION GOT ITS START 15 YEARS AGO IN THE

# FLORIDA KEYS







## RESTORING SEVEN ICONIC REEFS: A MISSION TO RECOVER THE CORAL REEFS OF THE FLORIDA KEYS



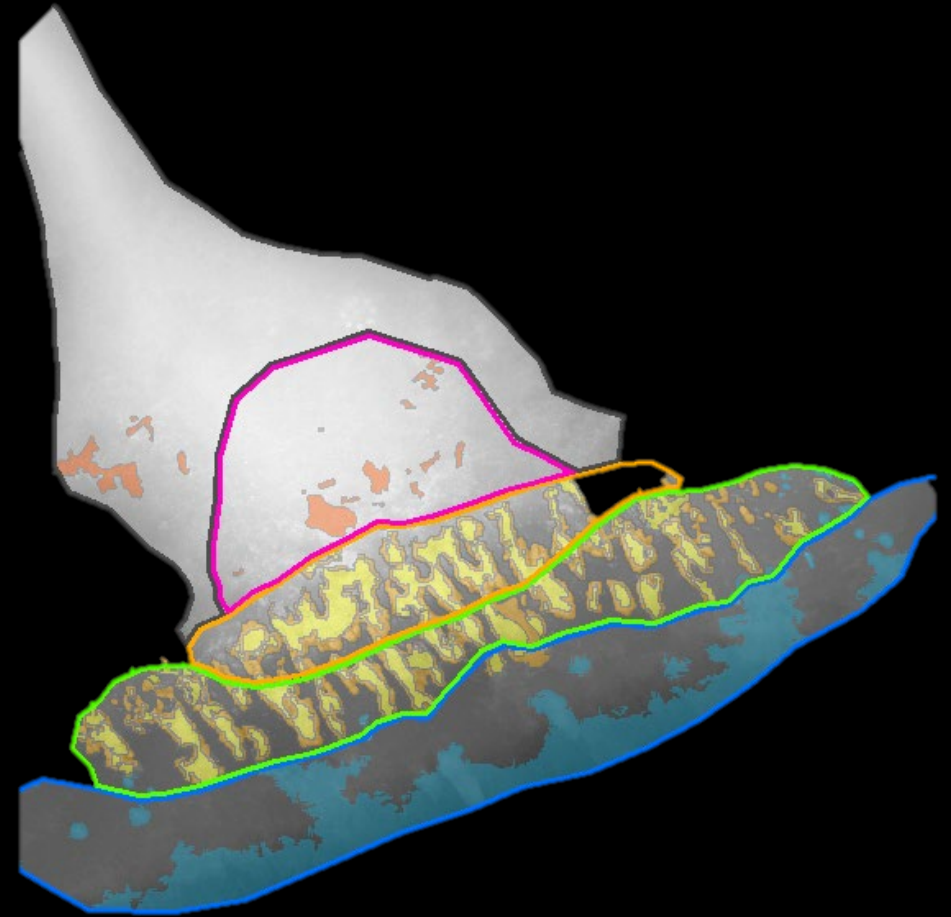
### SUMMARY

|                |                   |
|----------------|-------------------|
| CARYSFORT REEF | NEWFOUND HARBOR   |
| HORSESHOE REEF | LOOE KEY REEF     |
| CHEECA ROCKS   | EASTERN DRY ROCKS |
| SOMBRERO REEF  |                   |

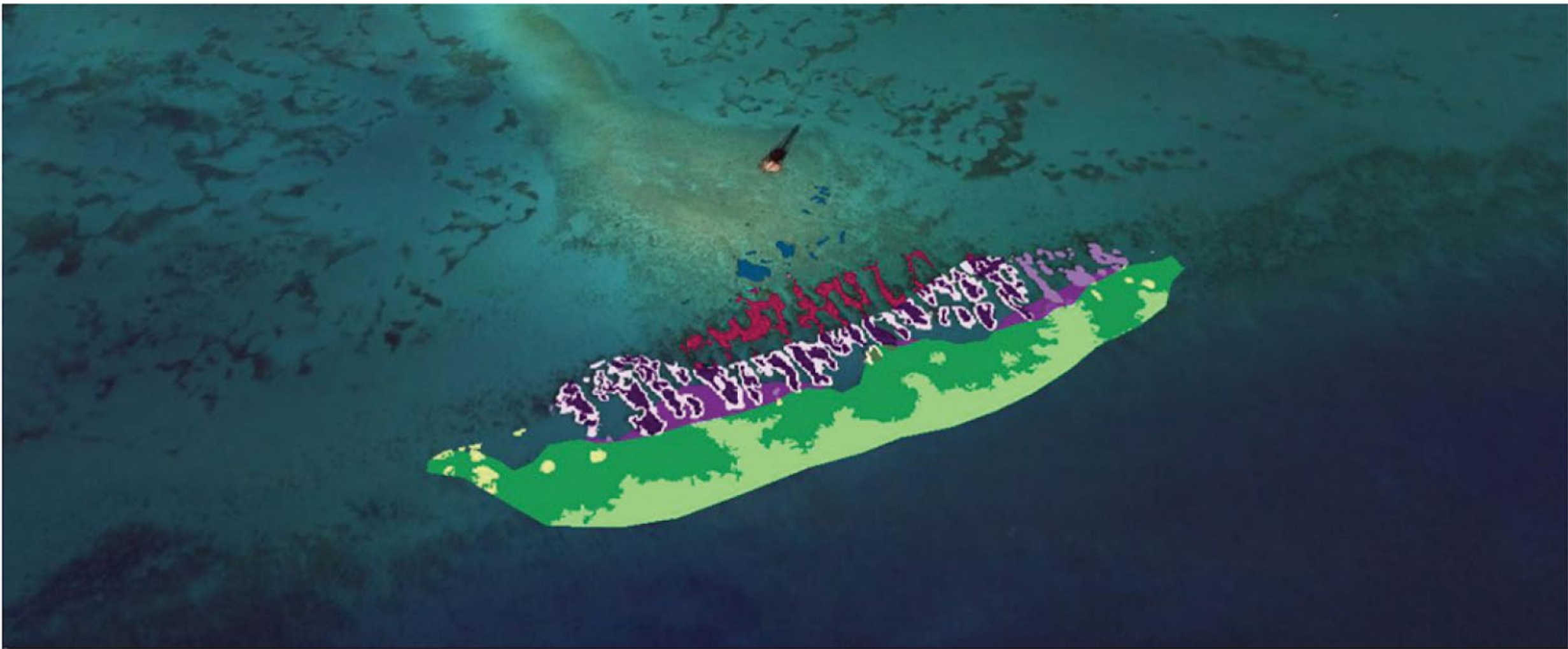


CLEARLY IT WAS TIME FOR A COMPREHENSIVE

# STRATEGY TO REVERSE COURSE







Sombrero Reef - Zone Mapping

## RESTORING SEVEN ICONIC REEFS: A MISSION TO RECOVER THE CORAL REEFS OF THE FLORIDA KEYS



|                           |            |
|---------------------------|------------|
| SHALLOW REEF CREST        | 230 SQ M   |
| REEF CREST (PALMATA ZONE) | 2,536 SQ M |
| SPUR AND GROOVE TOP       | 4,586 SQ M |
| SPUR AND GROOVE SIDES     | 2,680 SQ M |
| FOREREEF TERRACE          | 2,765 SQ M |



**SHALLOW REEF CREST**  
**TARGET COVER = 11%**  
 ELKHORN CORAL = 11%

**FOREREEF TERRACE**  
**TARGET COVER = 15%**  
 STAR CORAL = 1%  
 BRAIN CORAL = 0.5%  
 STAGHORN CORAL = 13%  
 SMALL STONY CORAL = 0.50%

**REEF CREST**  
**TARGET COVER = 35%**  
 ELKHORN CORAL = 27.5%  
 BRAIN CORAL = 1%  
 STAGHORN CORAL = 5%  
 SMALL STONY CORAL = 0.5%  
 BLADE CORAL = 1%

**SPUR AND GROOVE**  
**TARGET COVER = 20%**  
 ELKHORN CORAL = 9%  
 STAR CORAL = 2%  
 BRAIN CORAL = 1%  
 PILLAR CORAL = 0.25%  
 STAGHORN CORAL = 6%  
 SMALL STONY CORAL = 1.50%

Reef Cross-Section by Zone and Target

# RESTORING SEVEN ICONIC REEFS: A MISSION TO RECOVER THE CORAL REEFS OF THE FLORIDA KEYS



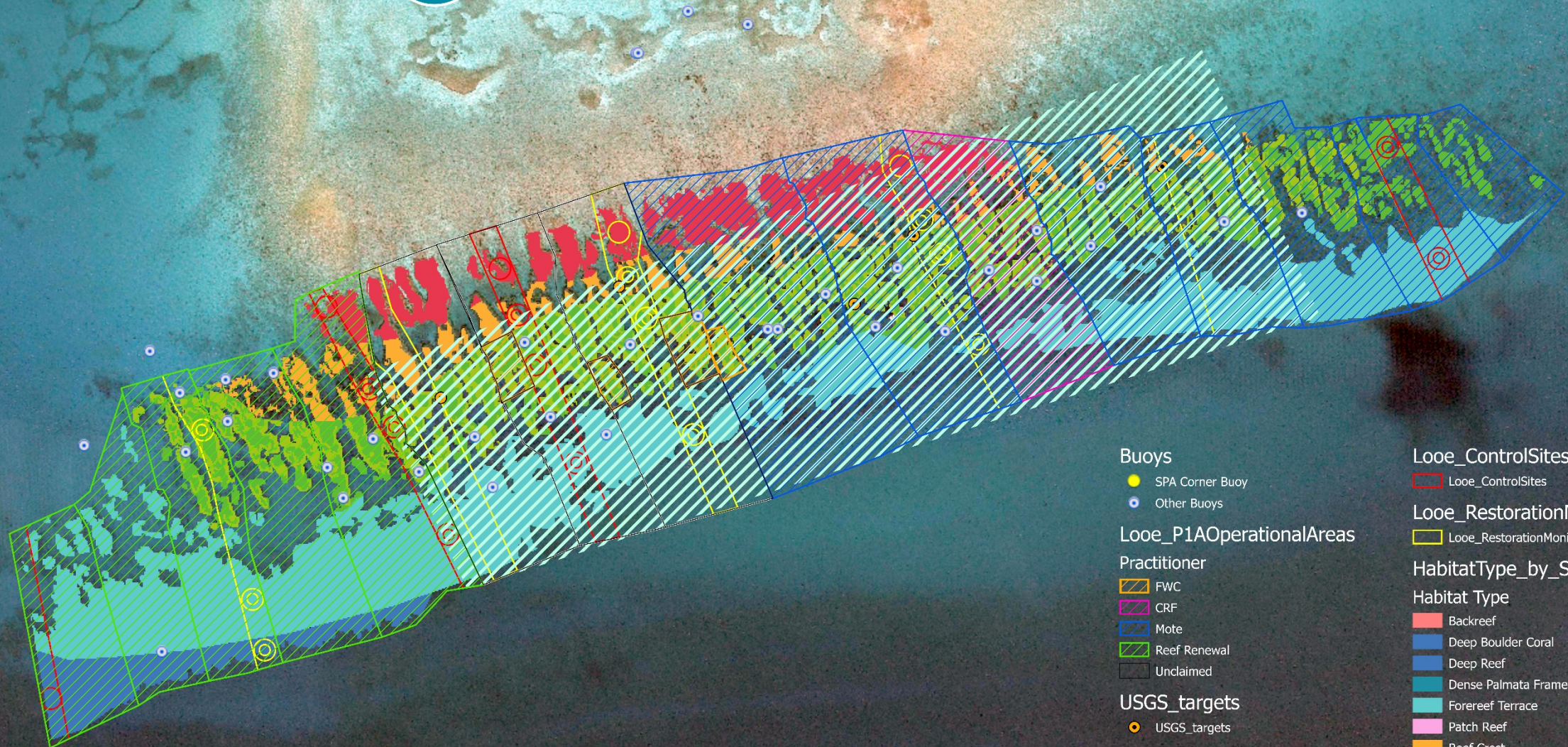
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NATIONAL MARINE  
SANCTUARY

# Looe Key Reef



## Buoys

- SPA Corner Buoy
- Other Buoys

## Looe\_P1AOperationalAreas

### Practitioner

- FWC
- CRF
- Mote
- Reef Renewal
- Unclaimed

## USGS\_targets

- USGS\_targets

## USGS Survey Operational Area

- USGS Survey Operational Area

## Looe\_ControlSites

- Looe\_ControlSites

## Looe\_RestorationMonitoringSites

- Looe\_RestorationMonitoringSites

## HabitatType\_by\_Site

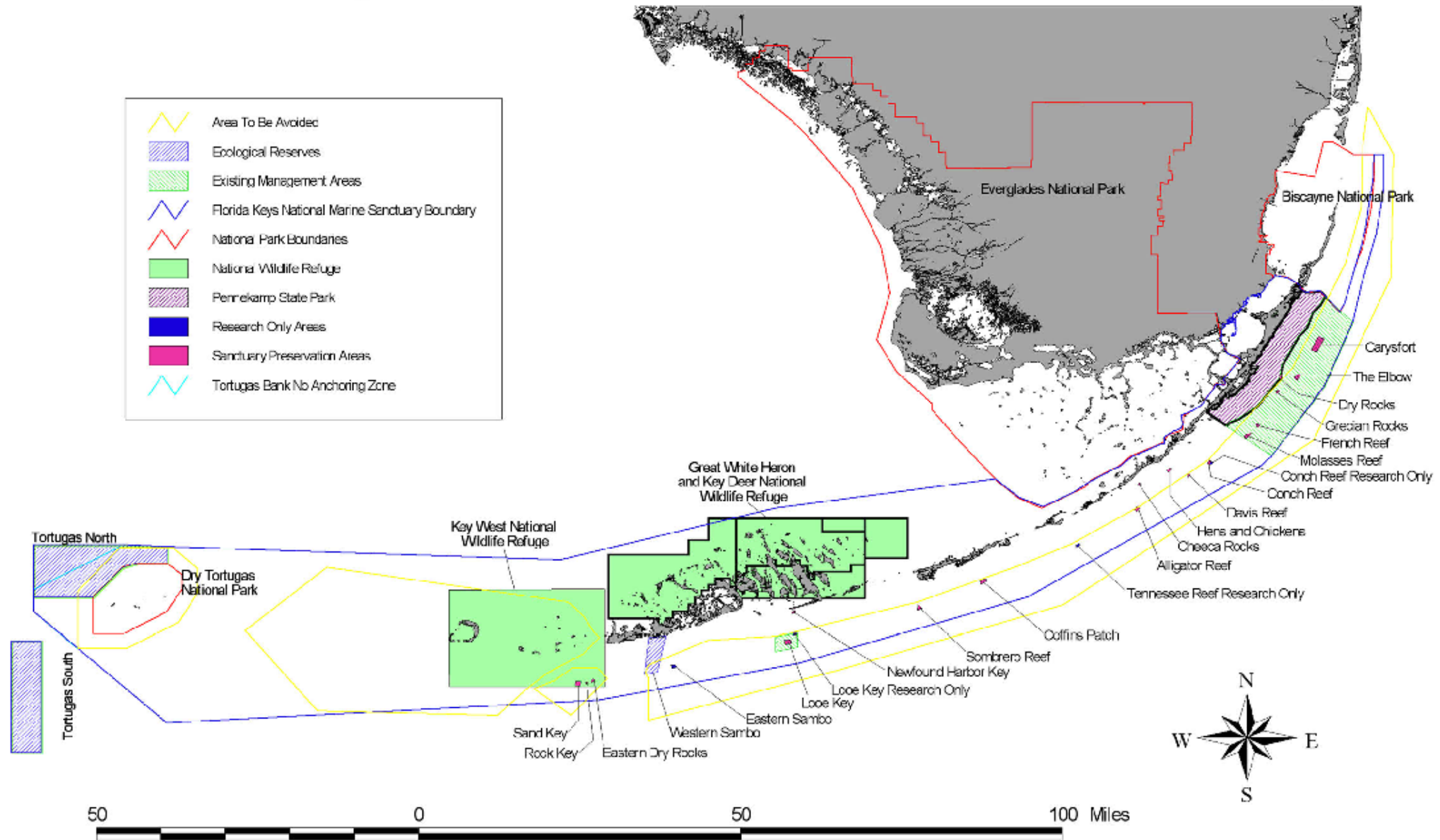
### Habitat Type

- Backreef
- Deep Boulder Coral
- Deep Reef
- Dense Palmata Framework
- Forereef Terrace
- Patch Reef
- Reef Crest
- Shallow Boulder Coral
- Shallow Reef Crest
- Spur and Groove - Sides
- Spur and Groove - Top

0 125 250 500 Meters



# Florida Keys National Marine Sanctuary





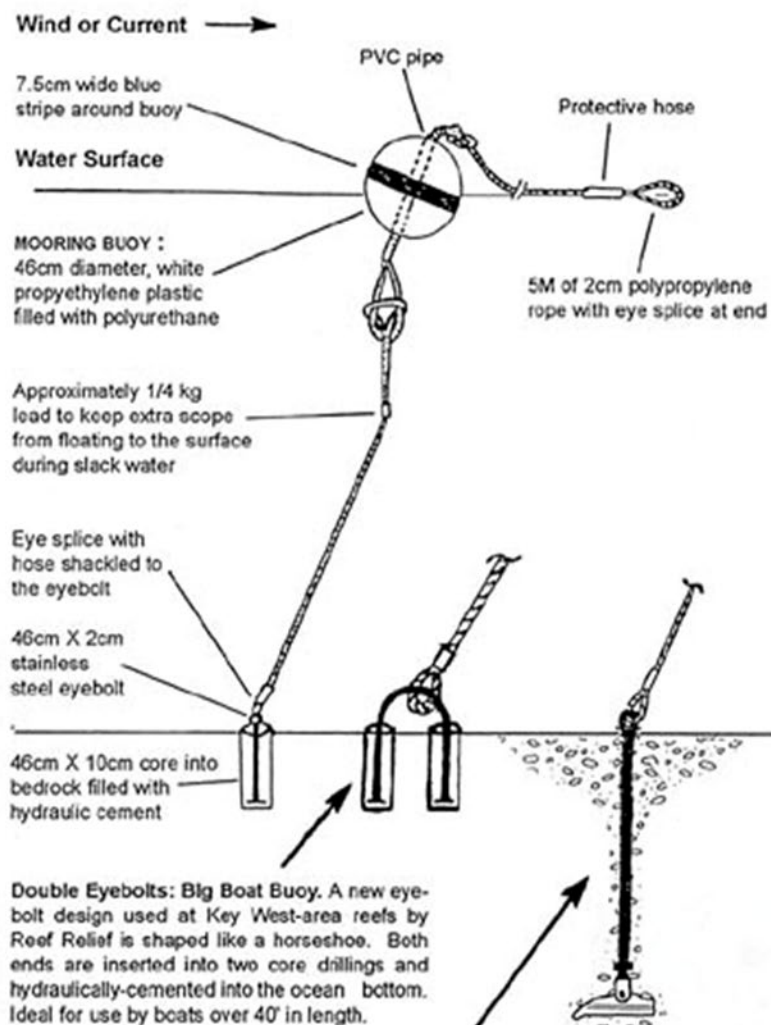
# FLORIDA KEYS MOORING BUOY PROGRAM







## Reef Mooring Buoy Designs In Use In The Florida Keys







# THANK YOU

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Photo: Greg McFall