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# FLORIDA RED TIDE PANEL

## IMPACT, RESPONSE, AND LESSONS LEARNED FROM FOUR COASTAL COUNTIES

KELLI LEVY, PINELLAS COUNTY PUBLIC WORKS DEPARTMENT, CLEARWATER, FL

CHARLIE HUNSICKER, MANATEE COUNTY PARKS AND NATURAL RESOURCES DEPARTMENT, BRADENTON, FL

STEVE BOUTELLE, LEE COUNTY NATURAL RESOURCES DIVISION, FT. MYERS, FL

NICOLE SHARP, P.E., ENVIRONMENTAL PLANNING AND COMMUNITY RESILIENCE DIVISION, BROWARD COUNTY  
ENVIRONMENTAL PROTECTION AND GROWTH MANAGEMENT DEPARTMENT, FORT LAUDERDALE, FL



PINELLAS COUNTY

KELLI HAMMER LEVY, MS, MPA, DIRECTOR, PUBLIC WORKS



2020 NATIONAL CONFERENCE ON BEACH PRESERVATION TECHNOLOGY



# PINELLAS COUNTY RED TIDE 2018



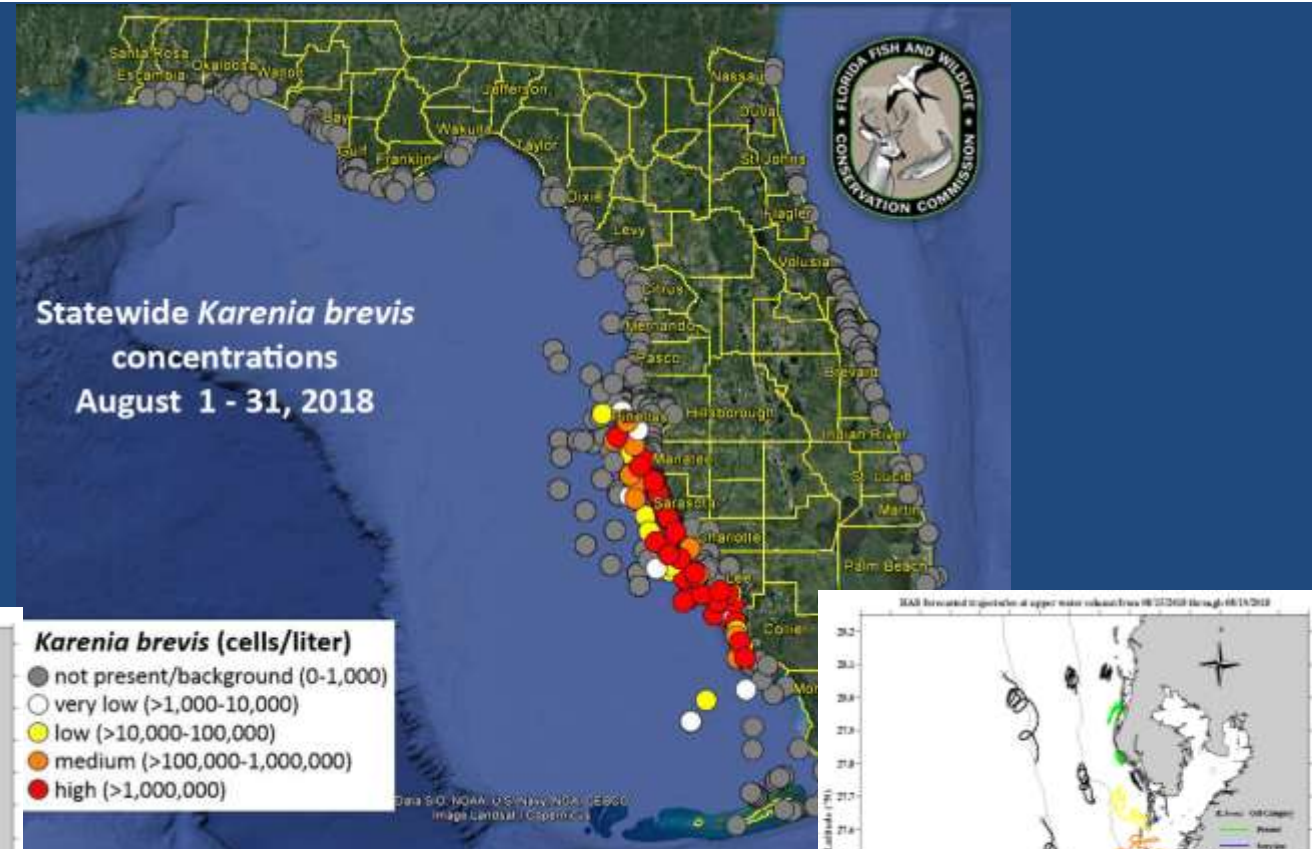
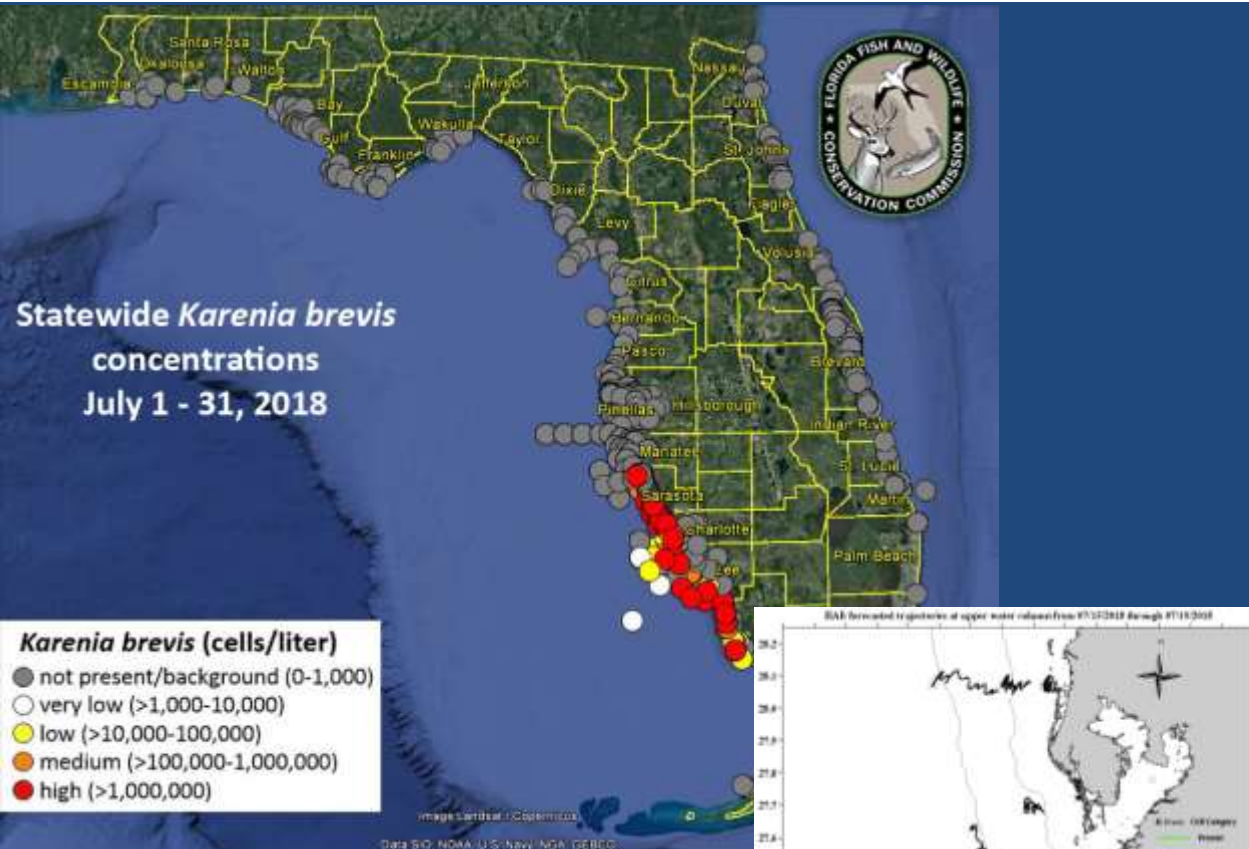
FSBPA National Conference on Beach Preservation Technology  
Friday, February 7, 2020

# OVERVIEW

- Why were red tide management efforts successful in Pinellas?
  - Use of early warning systems
  - Upfront planning
  - Effective implementation
  - Teamwork
- Event summary stats
- Looking forward



# EARLY WARNING SYSTEMS



# EARLY WARNING SYSTEMS

- Initial red tide monitoring
  - Daily August-September
  - Results available same day
  - Shared with partners and public
- Charter boat captain observations
- Pinellas County Sheriff and USCG flights



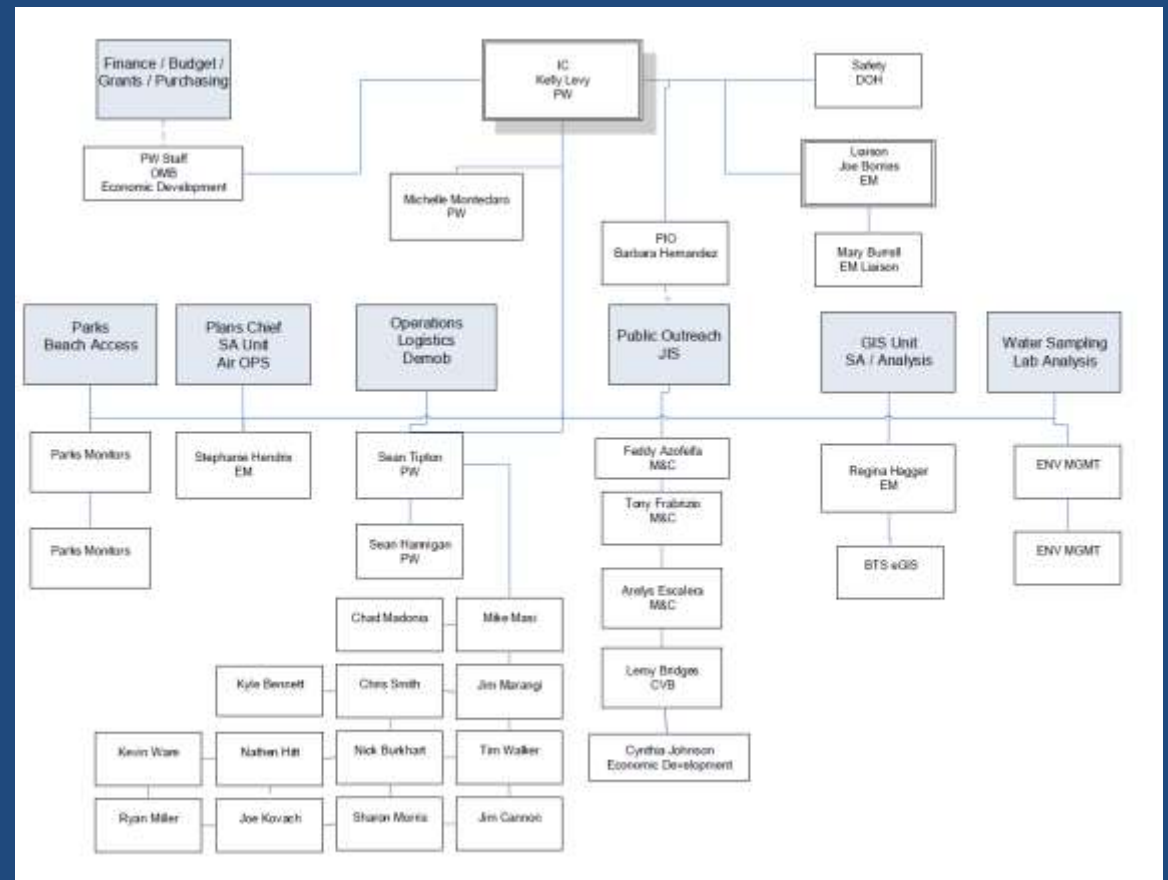
# UPFRONT PLANNING

- Red Tide Operational Plan
- Coordination with 11 beach cities
  - Right of Entry agreements
  - Beach accesses and staging areas
- Coordination with state agencies
  - Right of Entry agreements
  - FDOT permits
  - Health Department
  - FWC – red tide group, marine mammal rescue, fish kill reporting, sea turtle permitting/monitoring.



# UPFRONT PLANNING

- Red Tide Operational Plan
- Contractor agreement in place
  - Amendment to debris management contract
- Coordination with internal partners
  - Solid Waste, Parks, Emergency Management, GIS, Budget, and Public Works
  - Developed incident command staffing plan, assignments, and procedures
- ICS structure with assignments and tracking systems
- Executive Order 18-221
  - Initial funding agreement with state (FDEP)





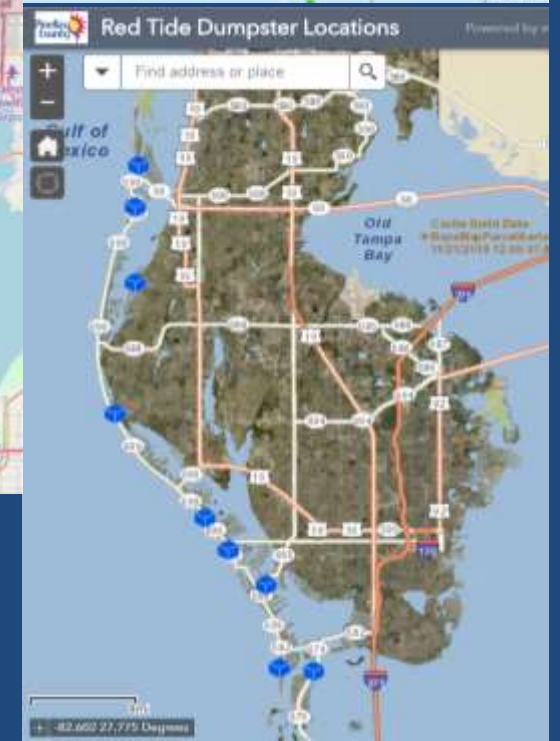
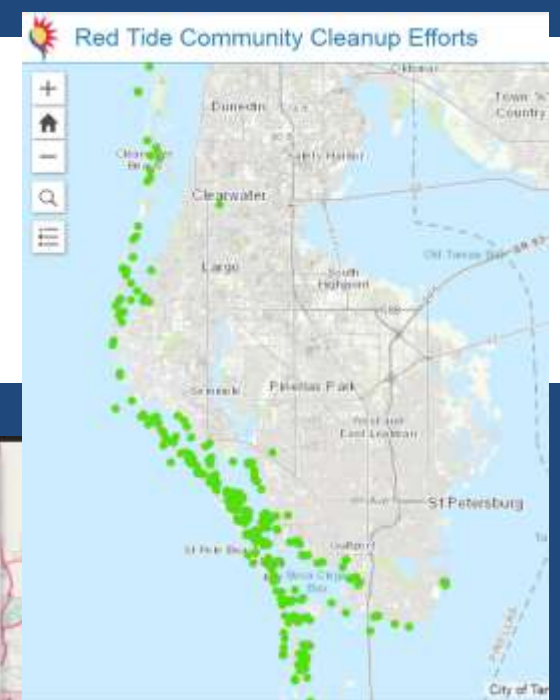
# EFFECTIVE IMPLEMENTATION

- Three strategies
  - Offshore harvesting
    - Prevent material from coming onshore
    - Avoid user/wildlife conflicts
    - Protects public health
    - Improves water quality conditions
  - Beaches
    - Hand crews and raking equipment
  - Nearshore, ICW and canals
    - Smaller vessels and support crews
    - Same benefits as offshore



# EFFECTIVE IMPLEMENTATION

- Daily reports to the public and media
  - Social media and website information
    - English and Spanish
  - Beach condition reports 2x daily
- Ongoing communications
  - Monitoring results
  - NOAA updates – satellite imagery
  - Disposal totals
  - Operations
- Reporting tool for clean up assistance
- Online dumpster locator
- Red tide respiratory forecast tool



# TEAMWORK

- City and County leaders and employees
- State partners
  - FDEP, FWC-FWRI
  - USF
- Federal partners
  - USCG
  - NOAA, GCOOS, NASA
- Others
  - Clearwater Marine Aquarium
  - Sea Turtle Trackers
  - Marine Turtle Beach
  - Birds In Helping Hands
- Contractors
  - DRC/LiIMo
  - WastePro
  - Local boat captains







# THANK YOU

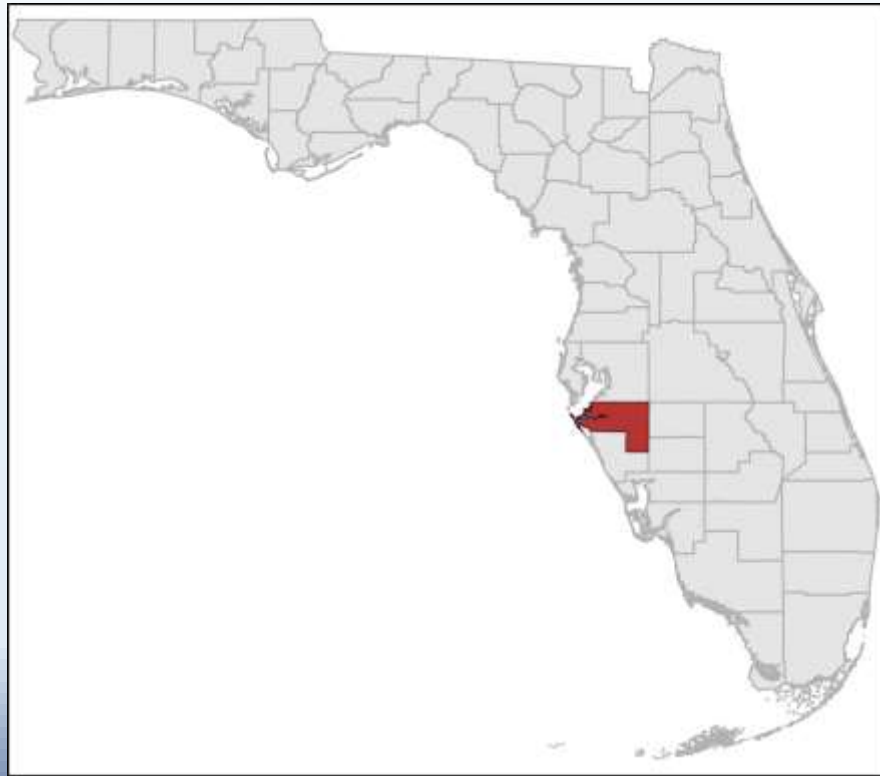
Kelli Hammer Levy, MS, MPA, Director, Public Works

[klevy@pinellascounty.org](mailto:klevy@pinellascounty.org)

<https://www.facebook.com/PinellasEnviroNews>



MANATEE COUNTY  
CHARLIE HUNSICKER, DIRECTOR, PARKS & NATURAL RESOURCES



# Manatee County Red Tide - 2018 Impact, Response, and Lessons Learned

Charlie H. Hunsicker, Director of Parks and Natural Resources  
February 7, 2020





# Location Map



# BACKGROUND - Impacted Areas

- Primarily South of Manatee River
- Residential Canals
- Miles of Natural Shoreline
- Barrier Island Beaches
- All of Sarasota Bay and associated creeks and bayous were heavily impacted



# Impacted Areas - Residences & Natural Shore



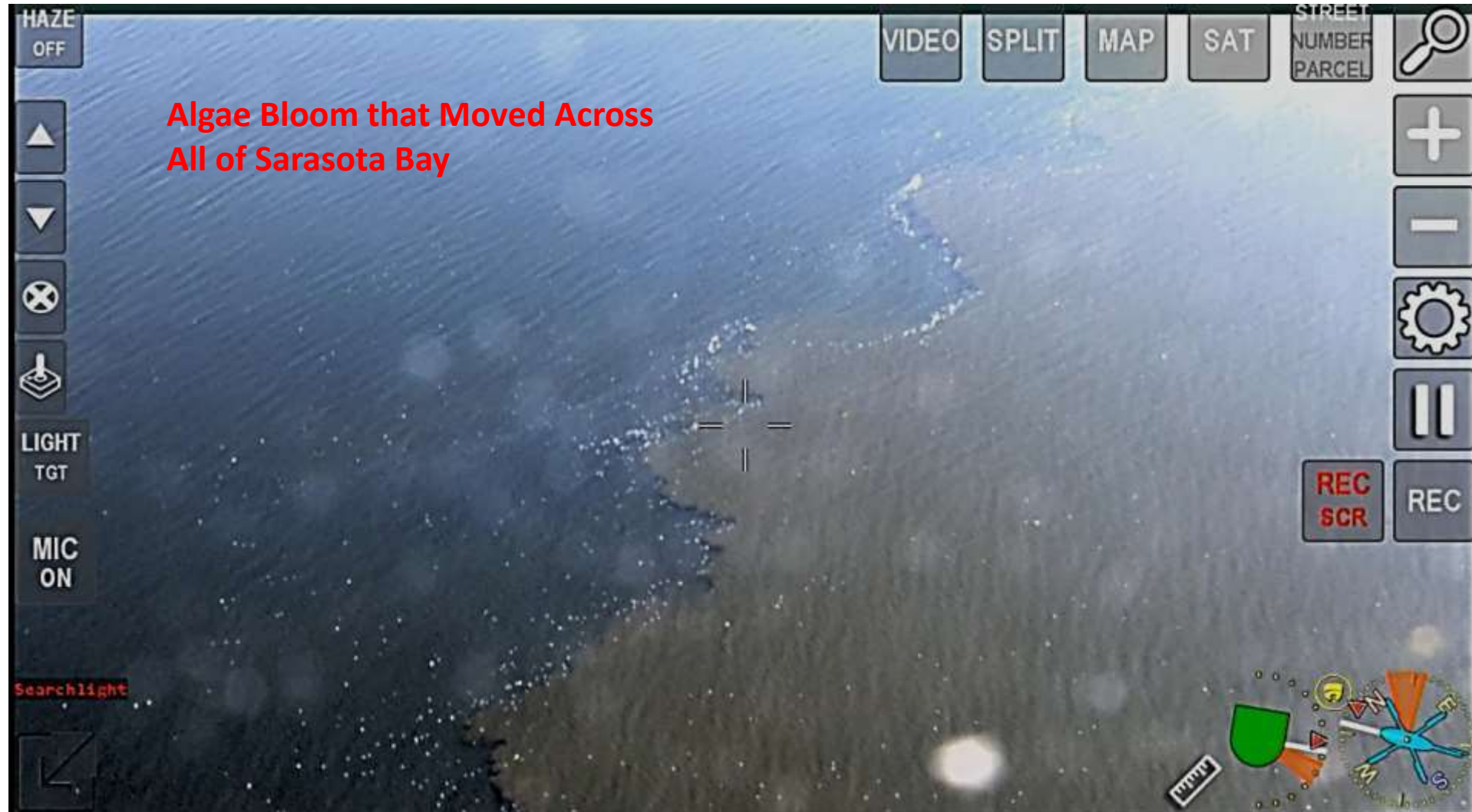
# Impacted Areas - Shallow Depth Shorelines



# Impacted Areas - Island Beaches



# Impacted Areas - All of Sarasota Bay!



# RESPONSE - Team Effort

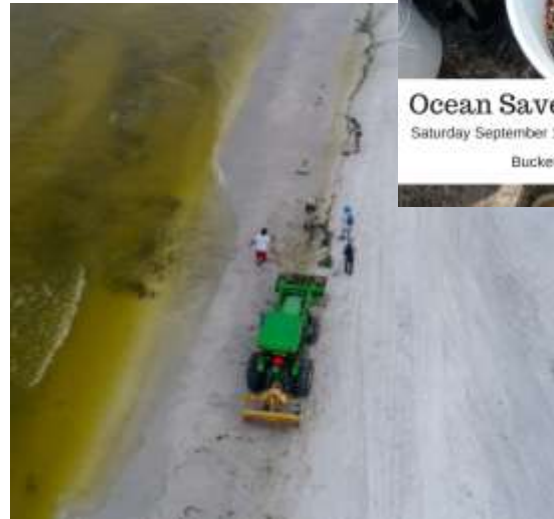
## PRIMARY ROLES

- County Administration - Oversight
- Parks & Natural Resources Dept. – Volunteer Management & Contractor Management
- Property Management Dept.– Staff Response, Beach Raking, Public Dumpster Mobilization
- Other Various Tasks by Utilities, Public Works, Financial Management, Information Outreach, and Municipalities.



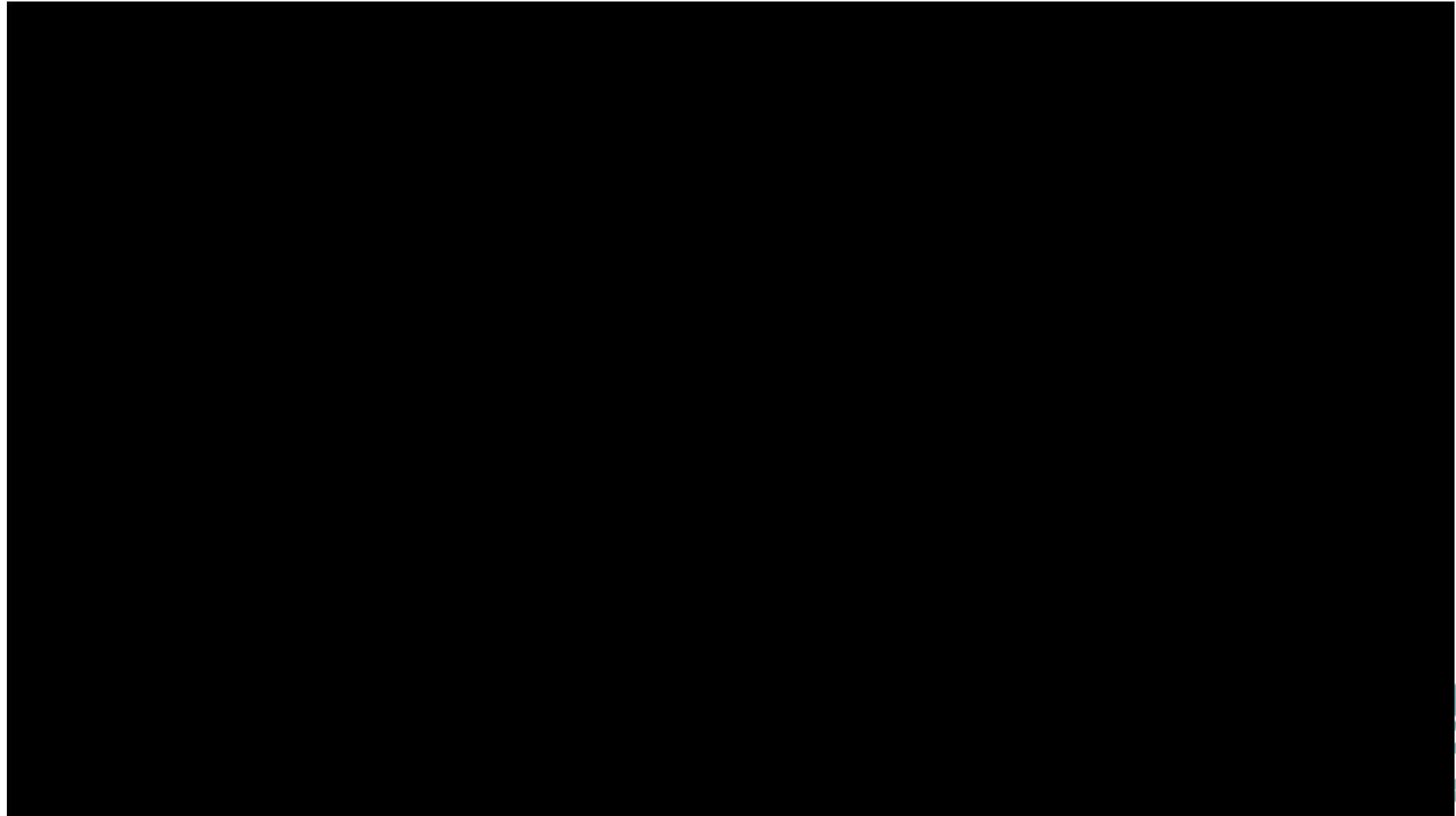
# COMMUNITY ENGAGEMENT

- Red Tide Web Portal – Up-to-Date Beach Conditions
- Public Cleanups
- Dumpsters and Cleanup Tools for Residents
- Coordination with Local Municipalities





# COMMUNITY ENGAGEMENT



# IMPACTS

- Estimated \$4.4 Million Loss in immediate Direct Visitor Spending
- 328 Tons of Red Tide Debris to County Landfill
- Unquantifiable Cumulative Natural Resources Impacts
- PEOPLE ARE PAYING ATTENTION TO WATER QUALITY ISSUES NOW



# RECOVERY

- Partnership with Coastal Conservation Association Florida (CCA Florida), Duke Energy and Florida Fish and Wildlife Conservation Commission (FWC)
- 2,000+ Redfish Released at Robinson Preserve in February 2019
- Part of Gulf Coast Response to Release 16,000 Redfish



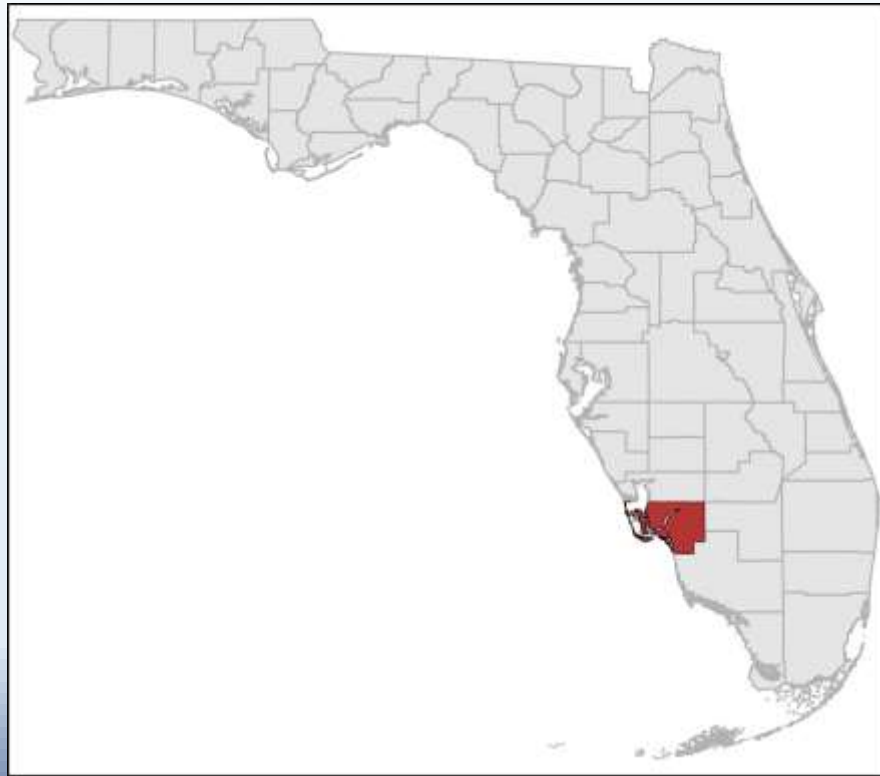
# LESSONS/ADVICE

- Beach Raking Was Most Effective for Removal & Public Perception
- In Water Removal by Boats In Bay Systems Was of Little Overall Value Due to Scale of Issue Compared to Feasibility of Resources Available
- Volunteers and Citizen Empowerment By Placing Dumpsters and Providing Tools was Helpful on a Very Small Scale
- Area Fishermen Privately Hired by Neighborhood Associations to Clean Shorelines (Not Public Beaches)
- Have a Data Collection Plan in Place, Get Real Time Aerial Imagery, and BE ADAPTIVE



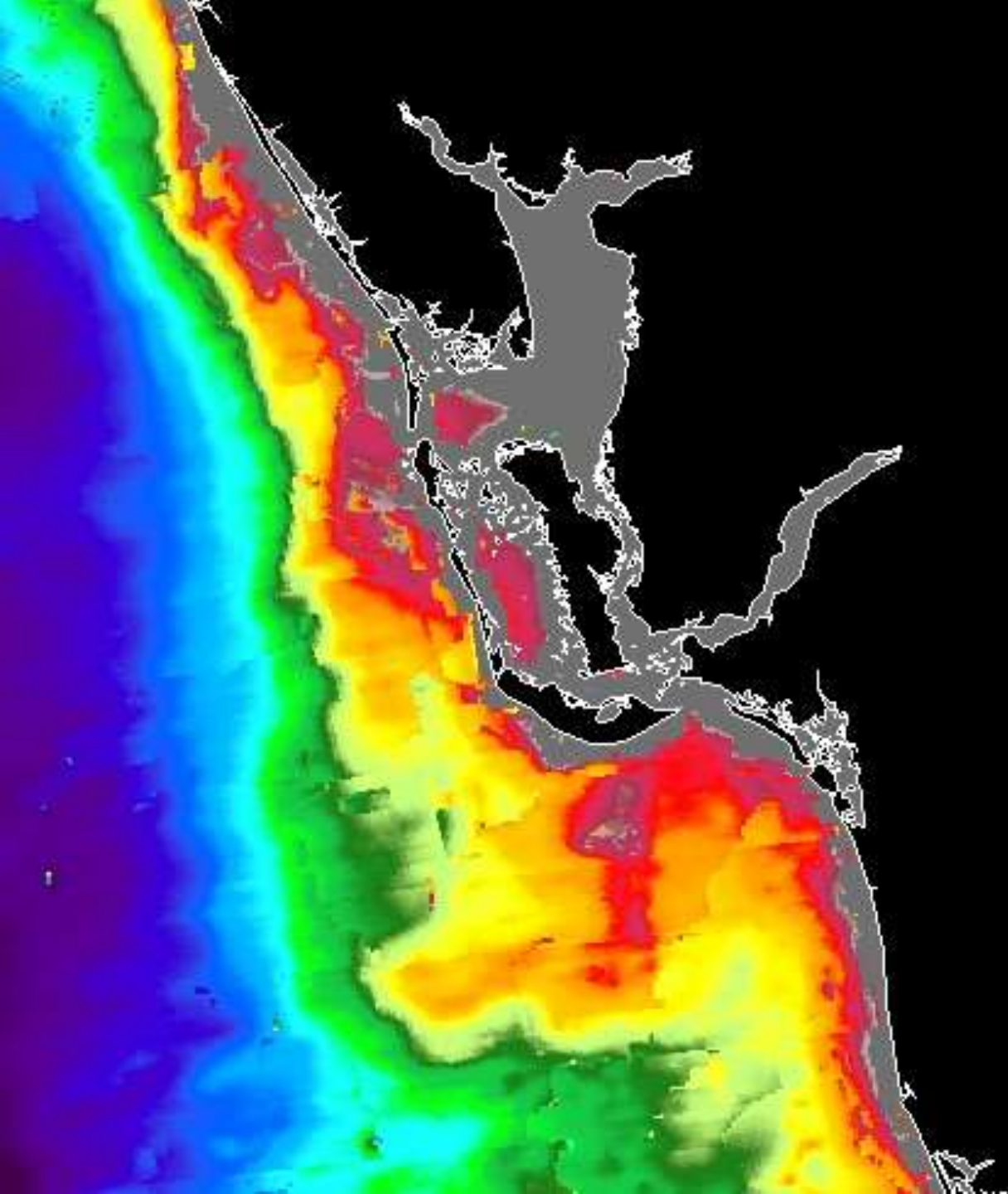
LEE COUNTY

STEVE BOUTELLE, MARINE OPERATIONS MANAGER,  
NATURAL RESOURCES DIVISION



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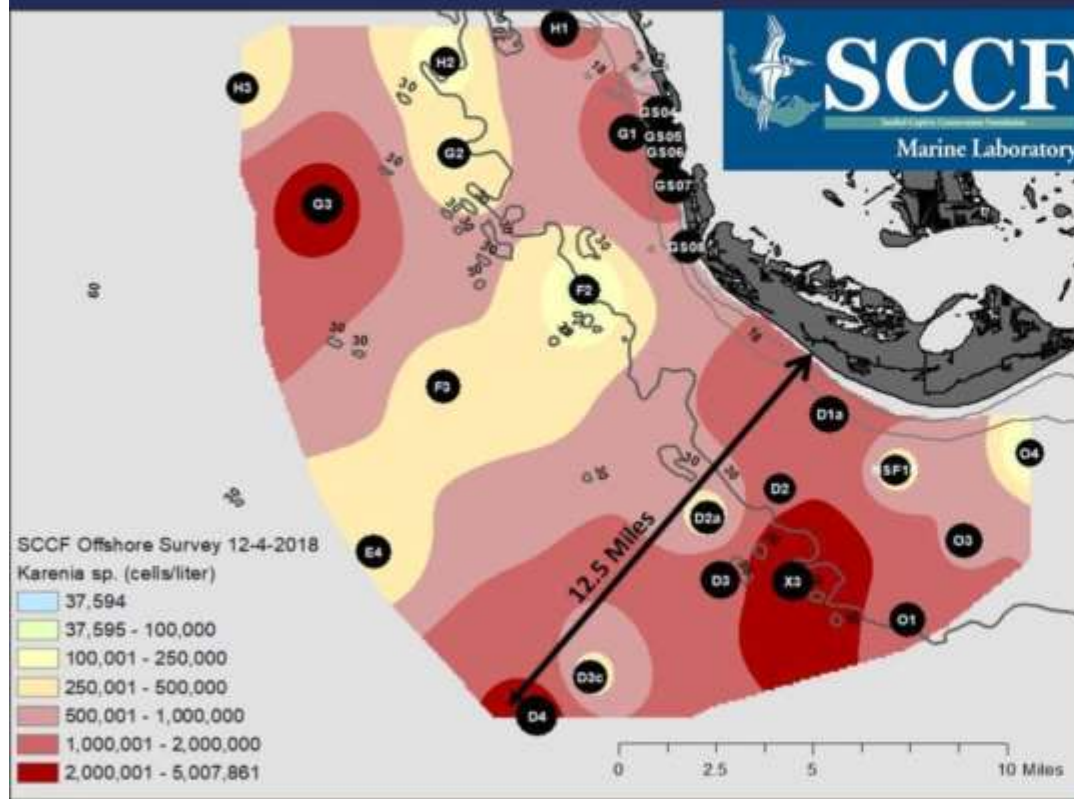


# Lee County Bloom Conditions

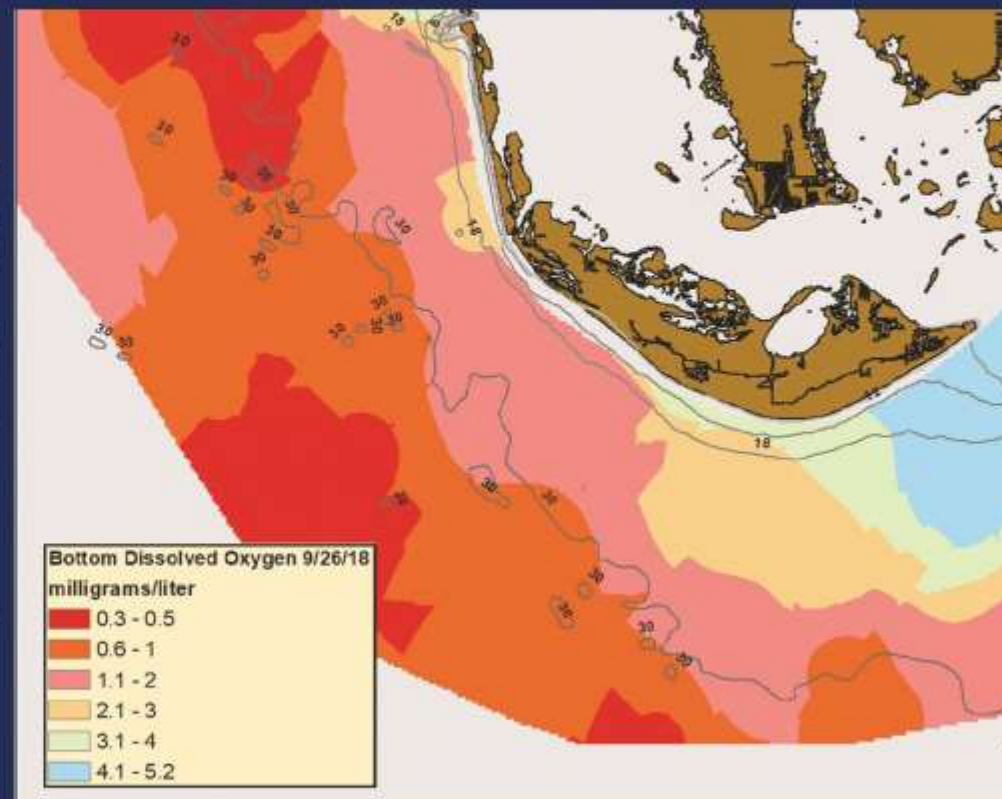
- Oct 2017 –Feb 2019
- Peaked around August 2018
- Concentrations as high as 200 million cells/L
- Aerosolized toxin up to 1 mile inland

# Hypoxia in the Gulf

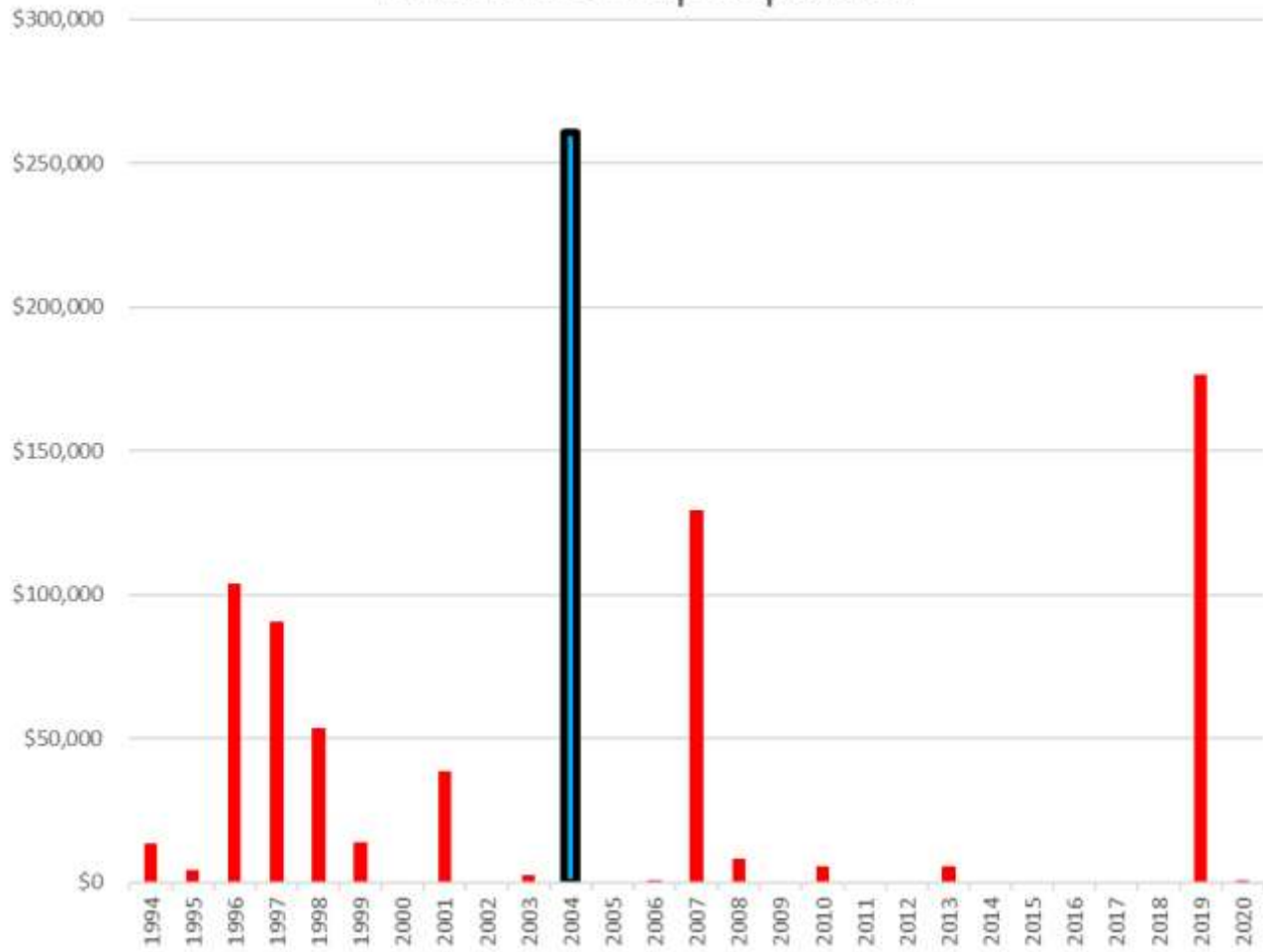
## *Karenia* concentrations



## Dissolved oxygen

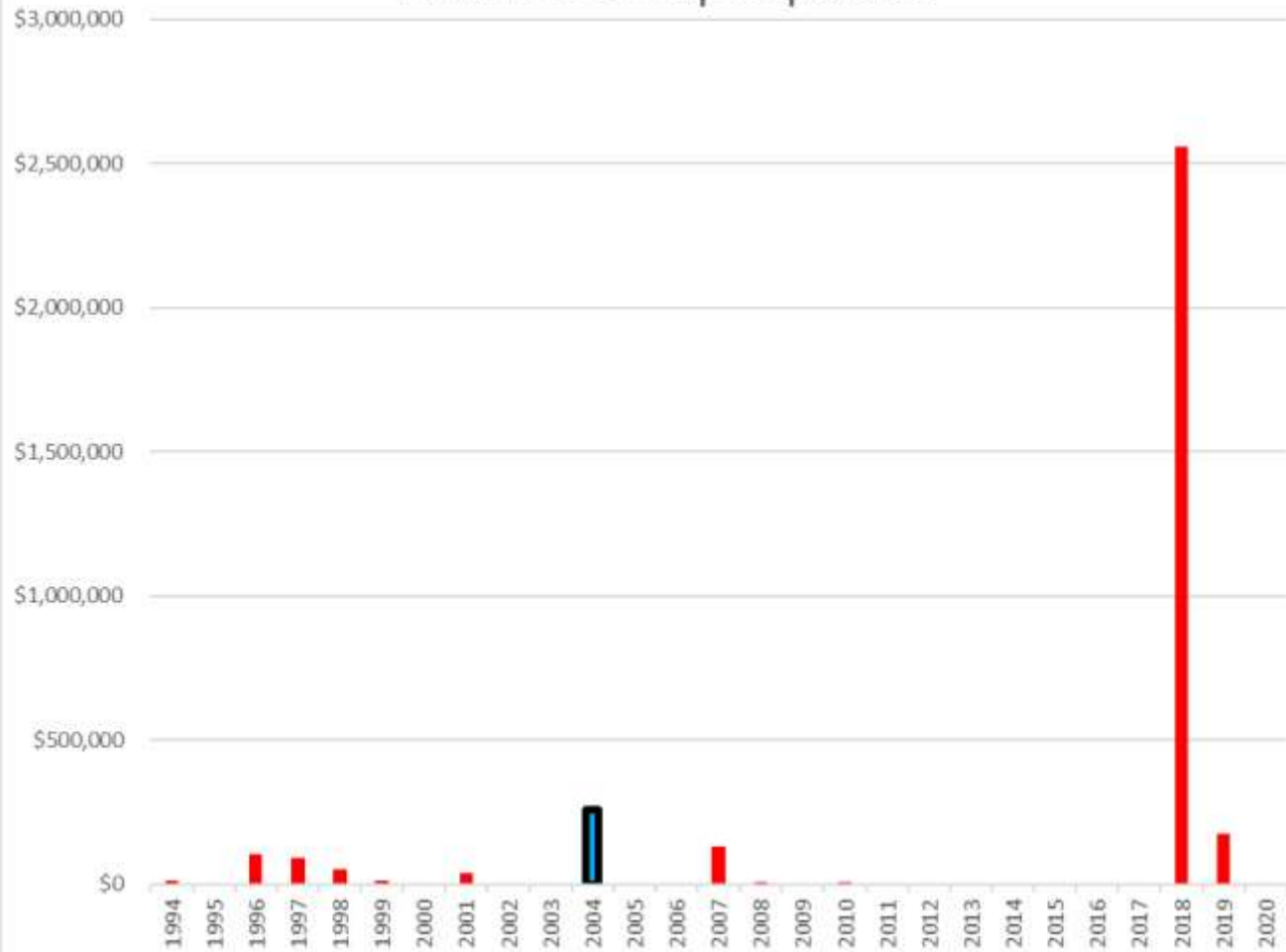


## Beach Cleanup Expenses

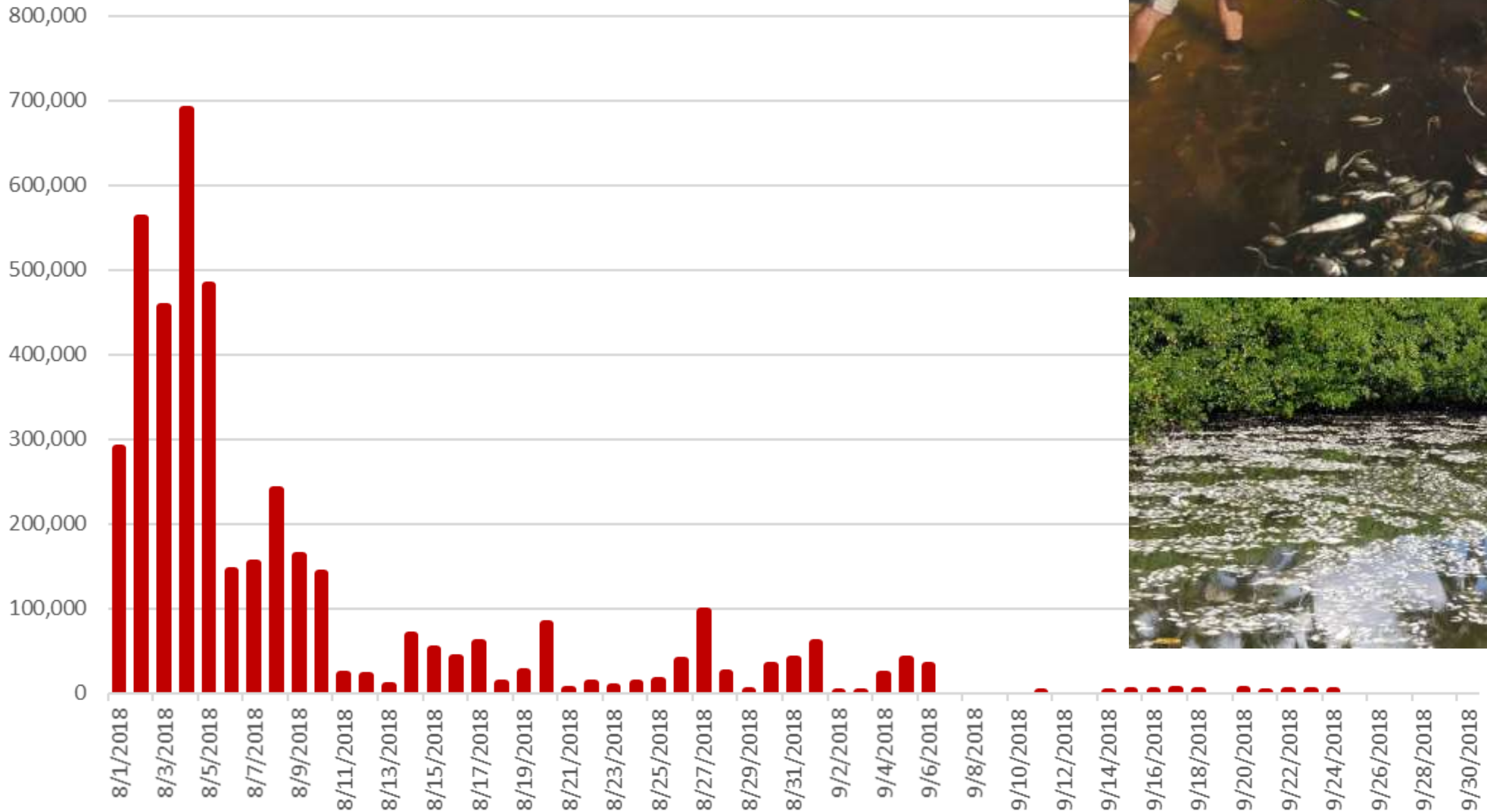




## Beach Cleanup Expenses

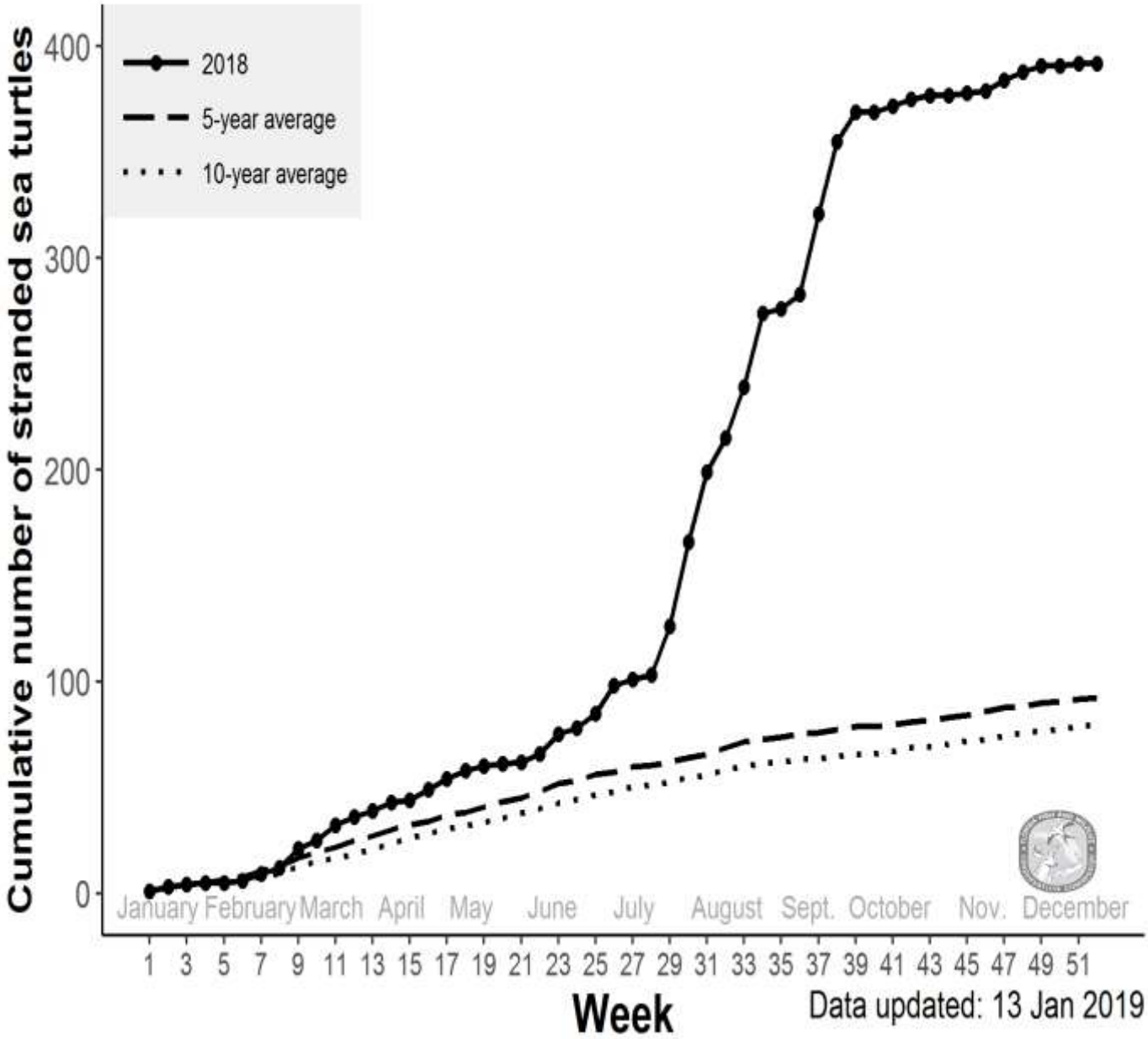


# Shoreline Cleanup Weight, Pounds





# Lee County





Tourism Impacts – Summer Quarter 2018

TDT -9.6% = \$593,563

Spending -3.4% = \$17.3 million

133 Manatees

127 Dolphins

1 Whale shark



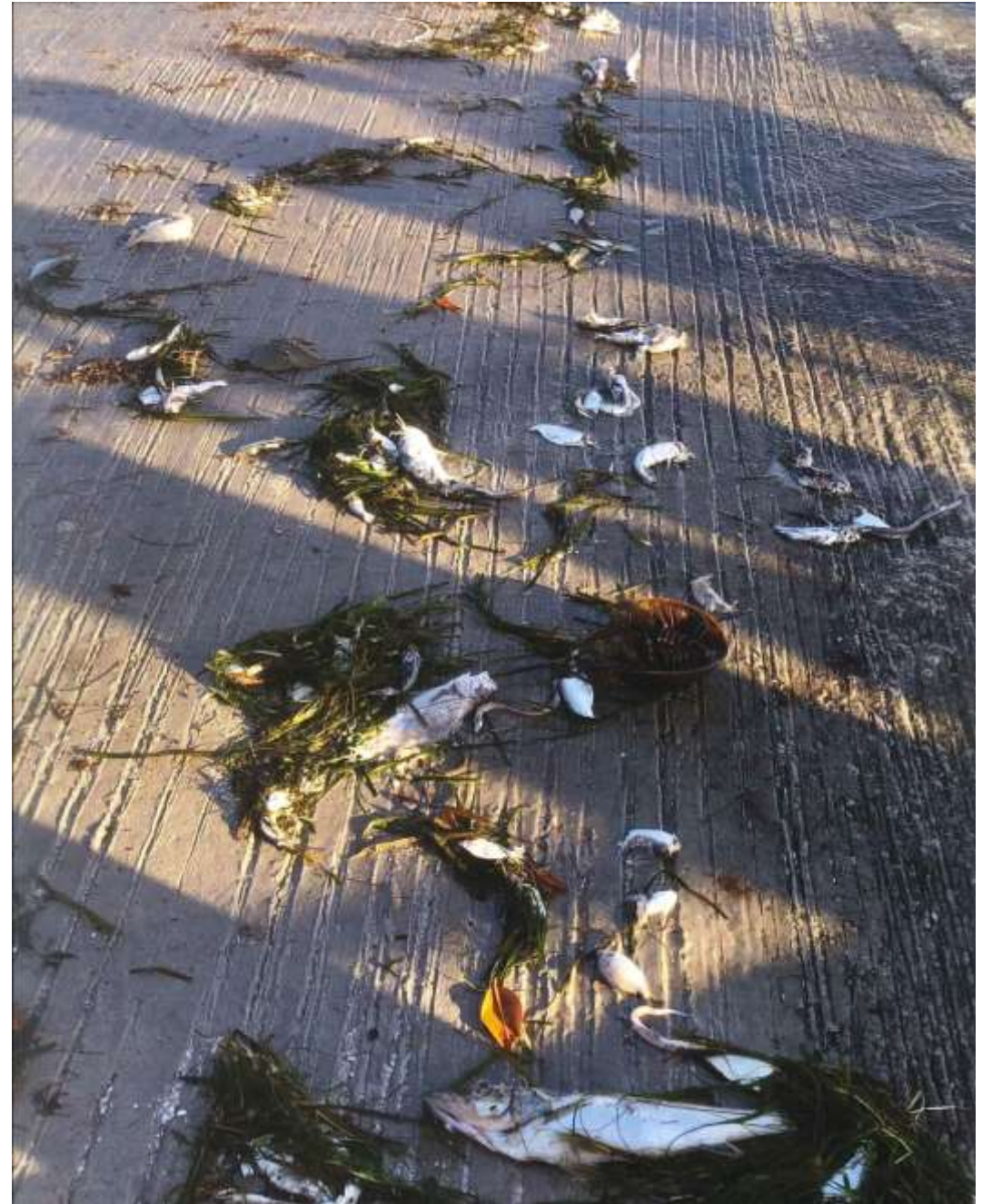
# Lessons Learned

- Not business as usual
- Clean it up
  - In house
  - Temporary help
  - New tools
  - Beach contractors
  - In water contractors



# Lessons Learned

- Not business as usual
- Clean it up
- Clean it up again



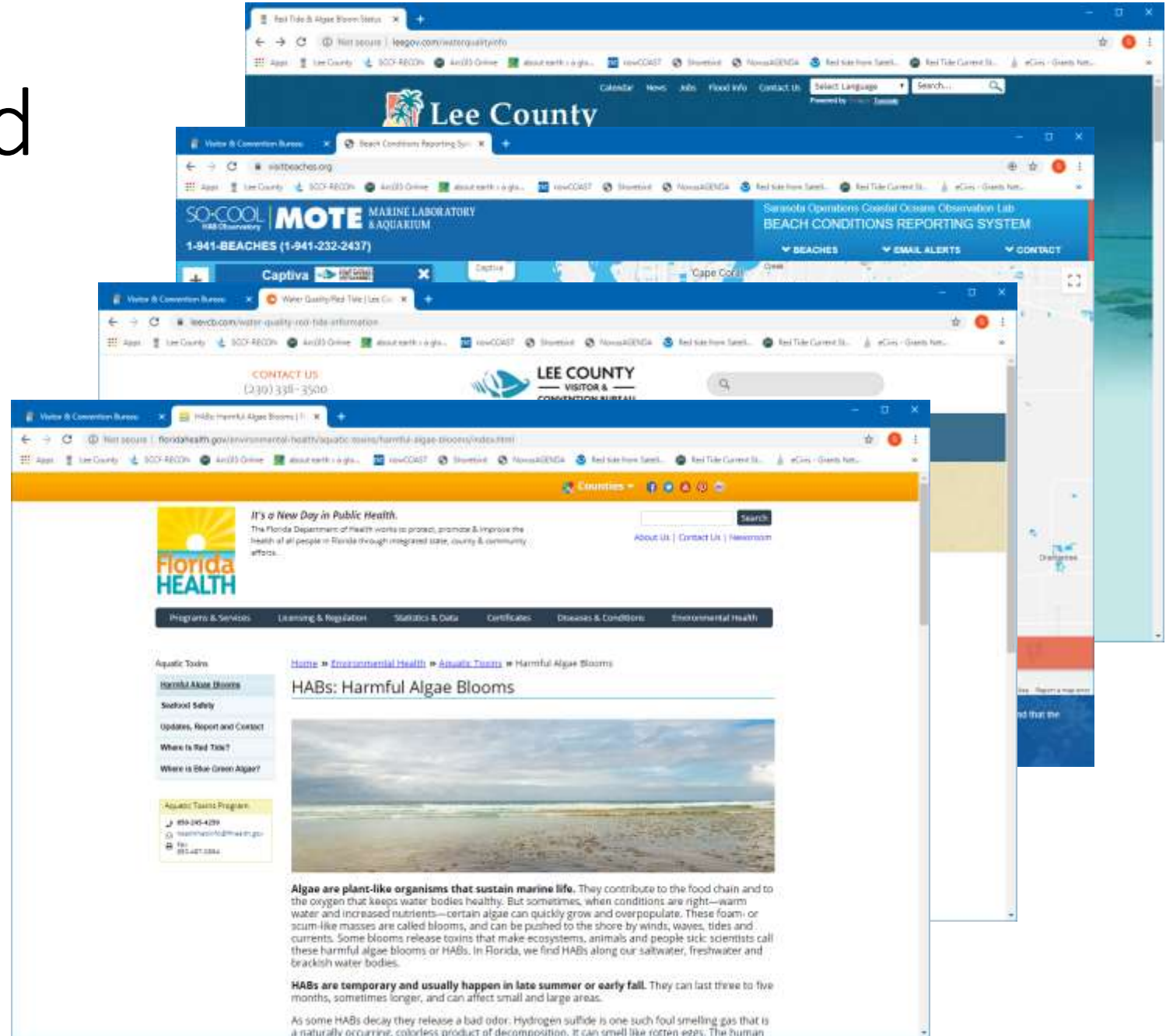
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- Not business as usual
- Clean it up
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- Funding



# Lessons Learned

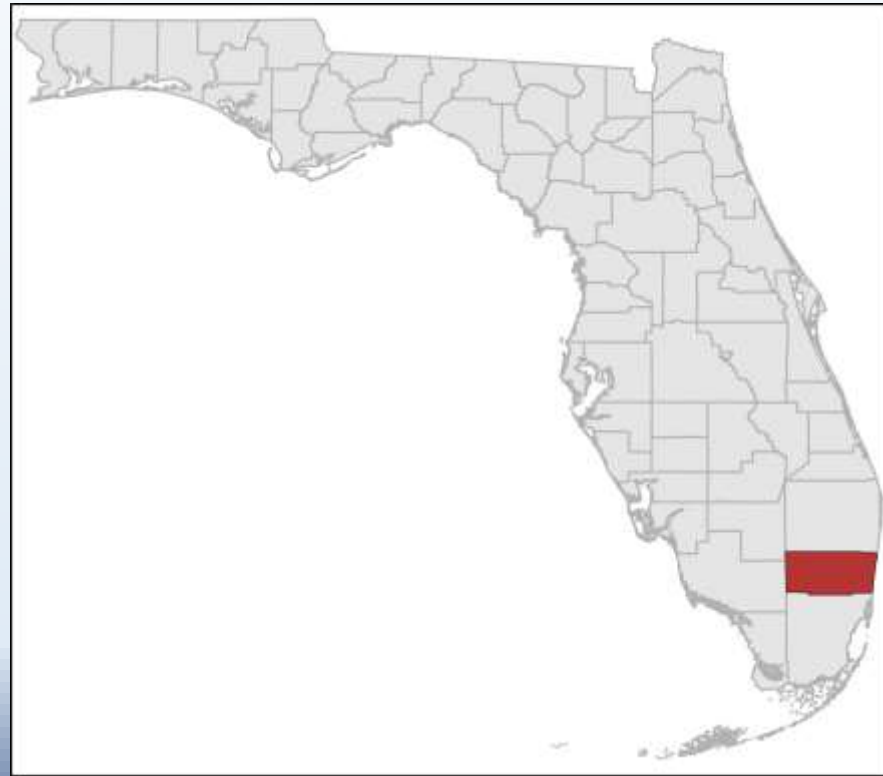
- Not business as usual
- Clean it up
- Clean it up again
- Funding
- Communication





BROWARD COUNTY

NICOLE S. SHARP, P.E., NATURAL RESOURCES ADMINISTRATOR,  
ENVIRONMENTAL PLANNING AND COMMUNITY RESILIENCE DIVISION



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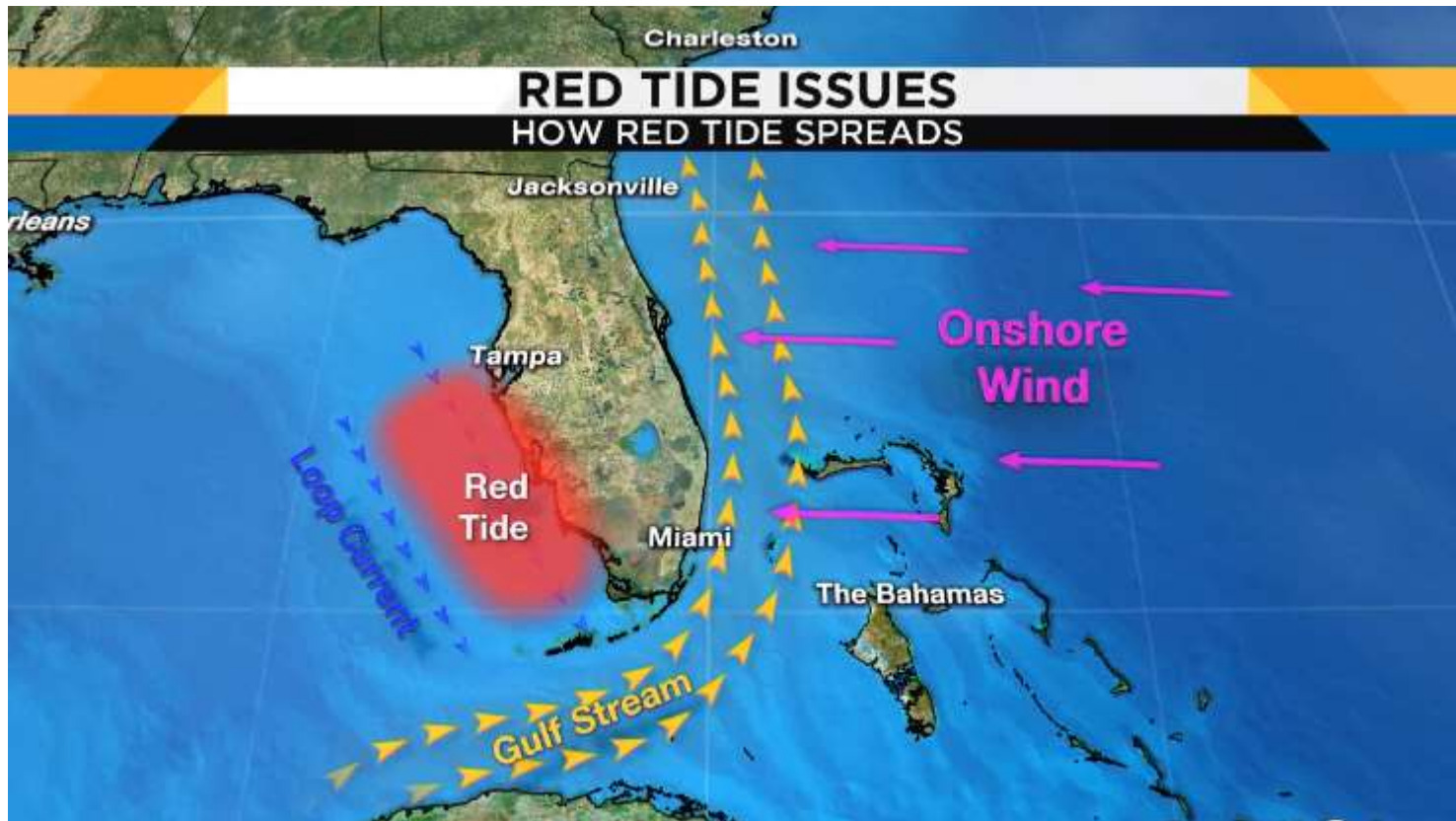




# BROWARD COUNTY 2018 RED TIDE ACTIVITY AND RESPONSE

FSBPA National Conference on Beach Preservation Technology  
Friday, February 7, 2020

# EVENT BACKGROUND



- First reports of symptoms the last weekend of September
- Introduced via currents
- Conditions exacerbated by onshore winds
- Rare event on East Coast
  - 8 times since 1957

# RED TIDE IN THE MEDIA

BROWARD

## Tourists believe effects of red tide are being felt in Broward County

Water testing results to be completed this week in Broward, Miami-Dade





## Broward beaches test positive for low levels of red tide

Some beaches in Miami-Dade, Palm Beach counties reopen Friday



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Red tide just spread to Florida's Atlantic coast, choking some the most popular beaches

# PUBLIC PERCEPTION

- Many misconceptions
- Beaches are closed!
  - Is it safe to swim?
  - What are the impacts to me?
- My vacation is ruined!
- Is this caused by the blue-green algae?



# LOCAL GOVERNMENT RESPONSE

- Organized effort needed to provide accurate information to residents and tourists
- Coordination between State, County, local municipalities, Convention and Visitors Bureau (CVB)
  - 10 coastal municipalities, Department of Health (DOH), Florida Fish and Wildlife Conservation Commission (FWC), Department of Environmental Protection (DEP)
- Daily coordination calls between all parties until event calmed
- Utilization of Emergency Operations Center (EOC)

# REGIONAL COORDINATION

- FWC facilitated a multi-County weekly coordination phone call
  - Miami-Dade, Broward, Palm Beach, Martin, St. Lucie Counties
  - FWC
  - Loxahatchee River District
- Allowed for local observations, findings, and sampling to be discussed at a regional level
- Compact Coordination
  - Initiated at the first reports of red tide regionally
    - Committed network on environmental issues
    - Individual responses discussed
  - Aided with regional response and overall marketing of the issue at hand

# FLORIDA RED TIDE

May cause eye, throat or skin irritation

May cause coughing or sneezing

Avoid the beach if you have asthma or a respiratory condition

Onshore winds and rough surf worsen its effects

Red Tide is caused by naturally occurring algae.

Can kill fish and other sea animals

Do not swim near dead fish or touch them

Wear shoes to prevent injuries from stepping on bones of dead fish

Keep pets away from water, sea foam and dead fish



DANIA BEACH  
SEA IT LIVE IT LOVE IT



## CONDITIONS AT SELECT BEACHES:

More Information: [mote.org/beaches](http://mote.org/beaches) or 941 BEACHES

Statewide Red Tide Status Update: [myfwc.com/redtidestatus](http://myfwc.com/redtidestatus)

Questions/health concerns: 954-924-6808 x3754 (weekdays only)

To report a fish kill: 800-636-0511

# PUBLIC OUTREACH



Approximately 72 complaints from public were received during event



# PUBLIC OUTREACH



GREATER  
FORT LAUDERDALE

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BEACHES & BEYOND | THINGS TO DO | EVENTS | DINING & NIGHTLIFE | PLACES TO STAY | PLAN YOUR TRIP

SHARE

## BROWARD COUNTY BEACH CONDITIONS

The Florida Fish and Wildlife Conservation Commission (FWC) has confirmed the presence of red tide in the coastal waters of Broward County at undetectable to low concentrations. The results indicated the following:

- **Low:** Dania Beach and Hallandale Beach
- **Very Low:** Pompano Beach interior waterway and Fort Lauderdale Beach;
- **Non-detect or background:** All remaining Broward County sites

In coordination with FWC and our local municipal partners, county-wide water quality sampling will continue to be performed until there is no detectable presence of red tide. Currently, sampling is scheduled to occur multiple times weekly within the County, and those results will be posted as soon as they are available. The FWC's statewide red tide map is currently being updated daily. [Click here to view a map with the latest status on red tide throughout the state.](#)

The red tide is produced by the algae *Karenia Brevis*, naturally occurring in the saline waters of the Gulf of Mexico. This algae is rare on the east coast as it prefers the calmer waters of the Gulf. However, of the 57 occurrences of red tide in the Gulf of Mexico since 1953, eight of these events have brought the red tide organism to the east coast of Florida via the Loop Current and Gulf Stream. None of these events resulted in large-scale blooms.

Local municipalities are being proactive with the posting of cautionary signage informing the public about the potential presence of red tide. The FWC advises beachgoers to use their best judgment when visiting a beach impacted by red tide. According to State Health officials, low and moderate concentrations can produce allergy-like symptoms, such as scratchy throat or watery eyes. Individuals with respiratory conditions, such as asthma or COPD, should take measures to reduce exposure.

Historical data shows that red tide occurrences in the Atlantic are typically transient in nature and not as severe as those that occur in the Gulf. Based on experience, we anticipate that the dynamic conditions of the east coast will limit the presence, persistence, and concentration of the organism. The duration of the red tide depends on multiple environmental conditions that influence its growth and persistence, including sunlight, nutrients and salinity, as well as the speed and direction of wind and water currents.

# SAMPLING

- Conducted at various locations throughout the County
- Beach (outside surf zone), 500 feet and 1 nautical mile offshore
- Intracoastal sampling
  - Coincided with the peak of King Tides
- Samples taken every other day, Monday through Friday
- Overnighted to FWC for analyses
- Results turnaround in 1-2 days





Broward

***Karenia brevis* (cells/liter)**

- not present/background (0-1,000)
- very low (>1,000-10,000)
- low (>10,000-100,000)
- medium (>100,000-1,000,000)
- high (>1,000,000)

October 11, 2018

6.92 mi

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

North City Beach Park; E of North City Beach Park; 1.2 mi E of

Google Earth

Deerfield Beach Fishing Pier; S of Deerfield Beach Fishing Pier; 1.1 mi E of



Hillsboro Inlet Lighthouse; E of Hillsboro Inlet Lighthouse; 1.3 mi E of

Pompano Beach; E of Pompano Beach; 1.3 mi E of

Anglin's Fishing Pier; S of Anglin's Fishing Pier; 1.1 mi E of

DC Alexander Park; NE of DC Alexander Park; 1.3 mi E of

College of Natural Sciences and Oceanography; NW of (Lake Mabel)

Dania Beach Pier; N of Dania Beach Pier; 1.1 mi E of

Hollywood North Beach Park; E of Hollywood North Beach Park; 1.2 mi E of

# BEACH CLEANUP

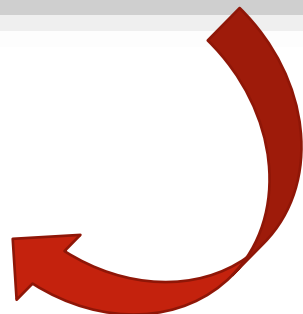
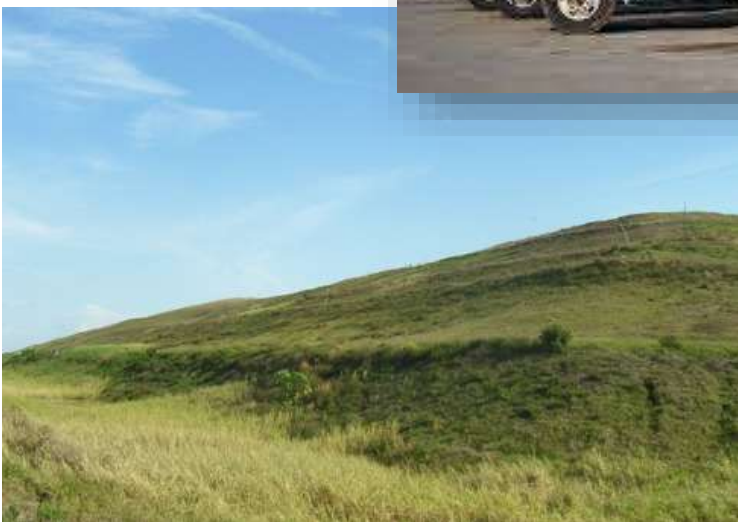


- Occurred during sea turtle nesting season
- Required DEP Beach Cleaning Permit or compliance with FWC issued BMP's
- Confined to daylight hours
- Done via mechanical or hand raking
- Approximately 3275 fish removed from beach

# DISPOSAL OPERATIONS



- Fish were double bagged and segregated from other wastes
- Required either transport to a transfer facility or direct transport to an approved disposal facility
- \$3M grant from FDEP
  - Grant administered by County with pass through to the municipalities
  - Required detailed tracking of clean-up and disposal costs
  - Reimbursable after the fact



# EMERGENCY OPERATIONS CENTER



- Provided services in a Level 3 monitoring and assessing phase with non-activation
- 24/7 on-call duty officer
- Streamlined process
- Web based reporting portal for municipalities
  - Complaints
  - Fish Kills
  - Beach conditions

# MOVING FORWARD...

- Reduced testing when concentrations are consistently low/not detectable
- Better understanding and Standard Operating Protocol in place for next event





# QUESTIONS/CONTACT:

Nicole S. Sharp, P.E.

[nsharp@broward.org](mailto:nsharp@broward.org)