# Keeping our "Eyes on Seagrass" in Charlotte Harbor

Kate Rose, M.S.

EYES ON SEAGRASS

UF/IFAS Extension Charlotte County
Florida Sea Grant

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# FLORIDA SEA GRANT

## SCIENCE SERVING FLORIDA'S COASTS

1862- Land Grant University system established

- University of Florida Institute of Food and Agricultural Sciences (IFAS)

1966- Sea Grant

- 35 Programs in Coastal States and the Great Lakes
  - Including Puerto Rico

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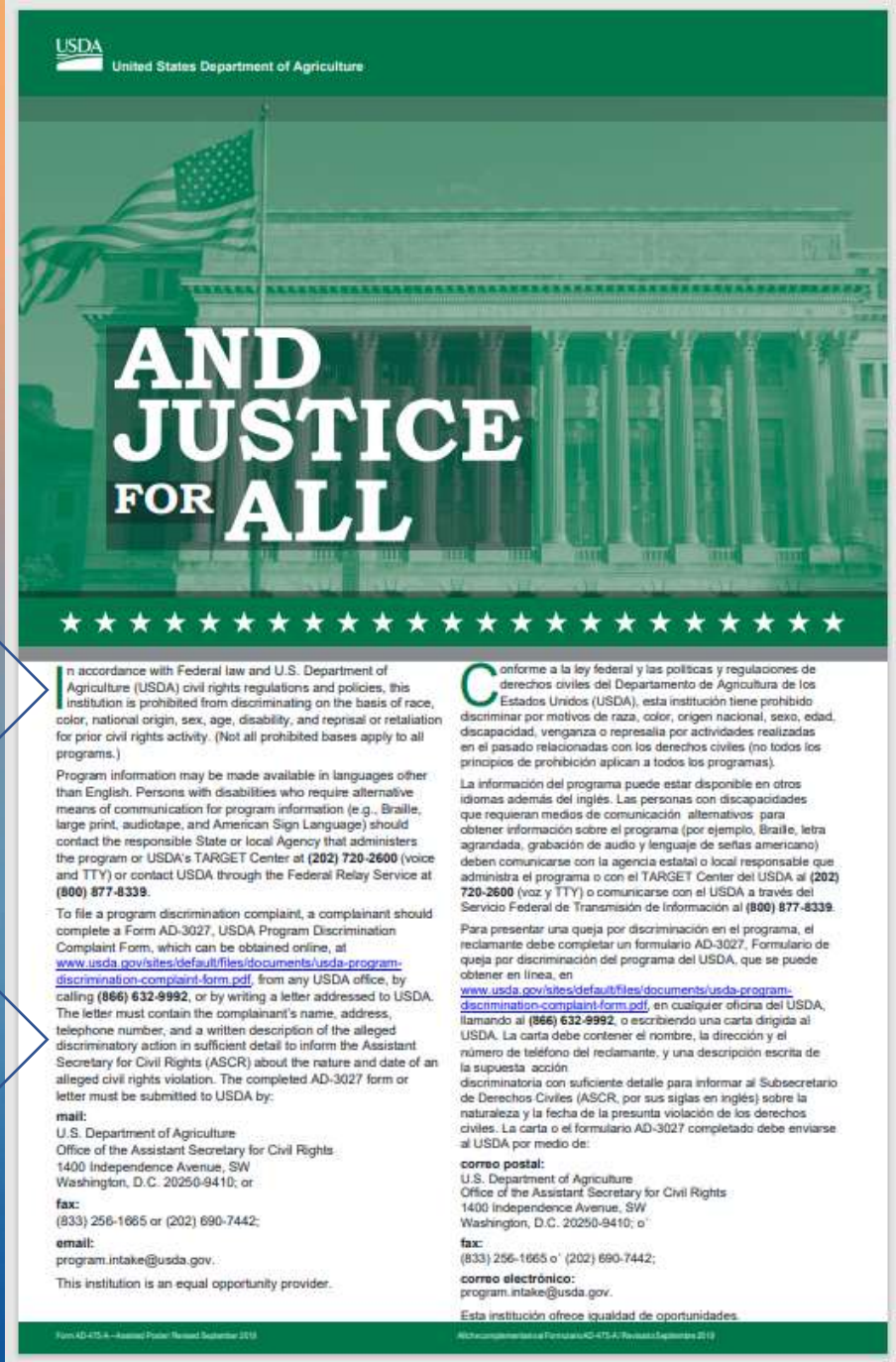
To file a program discrimination complaint, a complainant should complete a Form AD 3027, USDA Program Discrimination Complaint Form

- Email program.intake@usda.gov
- Call 866-632-9992
- Mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue SW, Washington, D.C. 20250-9410

USDA Discrimination Complaint Form


USDA
United States Department of Agriculture

AND JUSTICE FOR ALL

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To file a program discrimination complaint, a complainant should complete a Form AD-3027, USDA Program Discrimination Complaint Form, which can be obtained online, at www.usda.gov/sites/default/files/documents/usda-program-discrimination-complaint-form.pdf, from any USDA office, by calling **(866) 632-9992**, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number, and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation. The completed AD-3027 form or letter must be submitted to USDA by:

**mail:**
U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; or

**fax:**
(833) 256-1665 or (202) 690-7442;

**email:**
program.intake@usda.gov.

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Para presentar una queja por discriminación en el programa, el reclamante debe completar un formulario AD-3027, Formulario de queja por discriminación del programa del USDA, que se puede obtener en línea, en www.usda.gov/sites/default/files/documents/usda-program-discrimination-complaint-form.pdf, en cualquier oficina del USDA, llamando al **(866) 632-9992**, o escribiendo una carta dirigida al USDA. La carta debe contener el nombre, la dirección y el número de teléfono del reclamante, y una descripción escrita de la supuesta acción
discriminatoria con suficiente detalle para informar al Subsecretario de Derechos Civiles (ASCR, por sus siglas en inglés) sobre la naturaleza y la fecha de la presunta violación de los derechos civiles. La carta o el formulario AD-3027 completado debe enviarse al USDA por medio de:

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**correo electrónico:**
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Esta institución ofrece igualdad de oportunidades.

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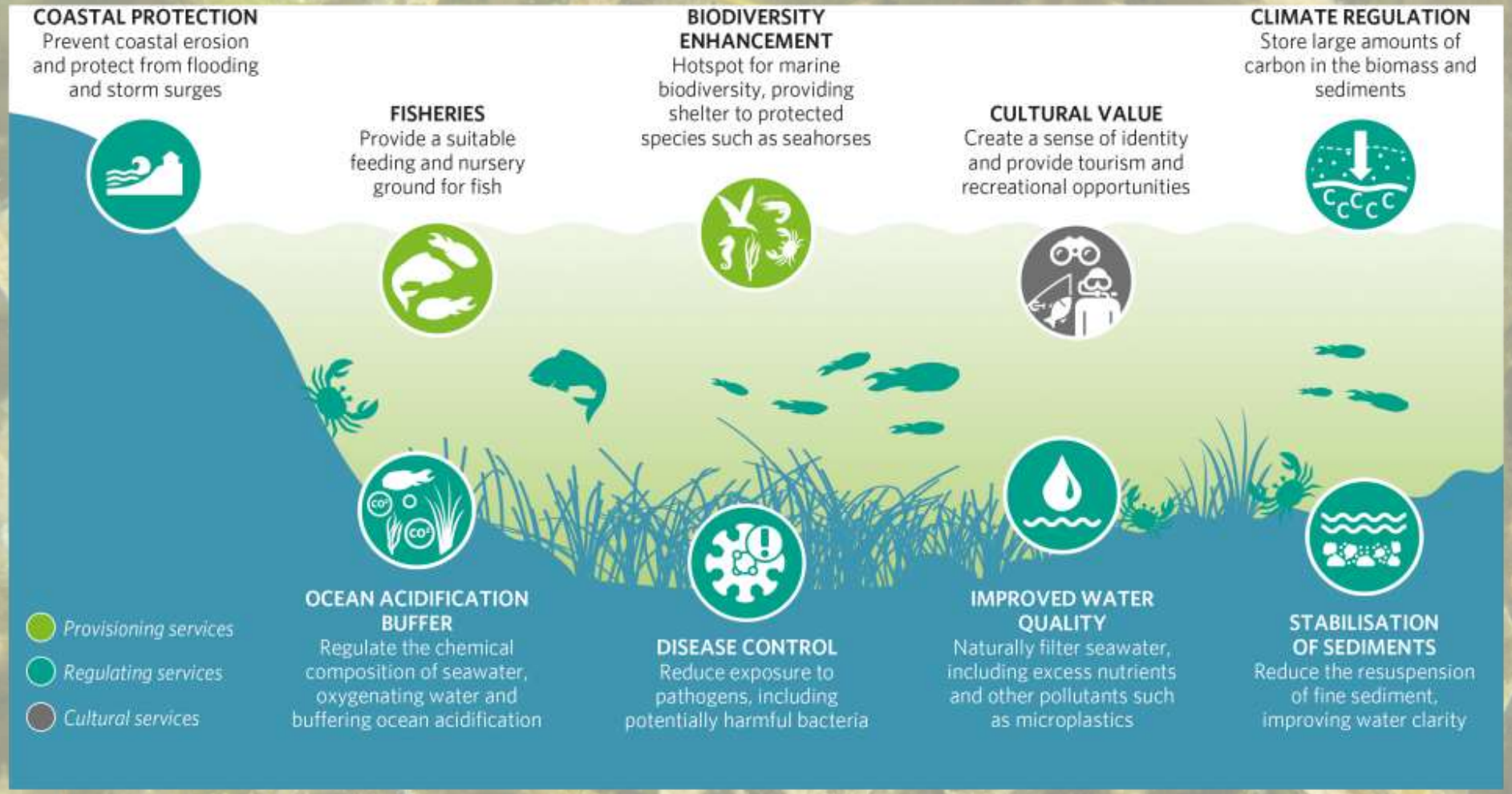
# Ecosystem Services Provided by Seagrass Beds




Modified from UNEP (2020) and Potouroglou, M., Westerveld, L. and Fylakis, G. (2020).


©2021, Seagrass Restoration Handbook - UK & Ireland, Zoological Society of London and University of Portsmouth.

# THREATS TO SEAGRASS

It is estimated that we lose an estimated 7% of seagrass every year. Loss of seagrass habitats means losses in marine ecosystem productivity as well as extinction of species that depend on seagrass for survival.

## What contributes to this decline?

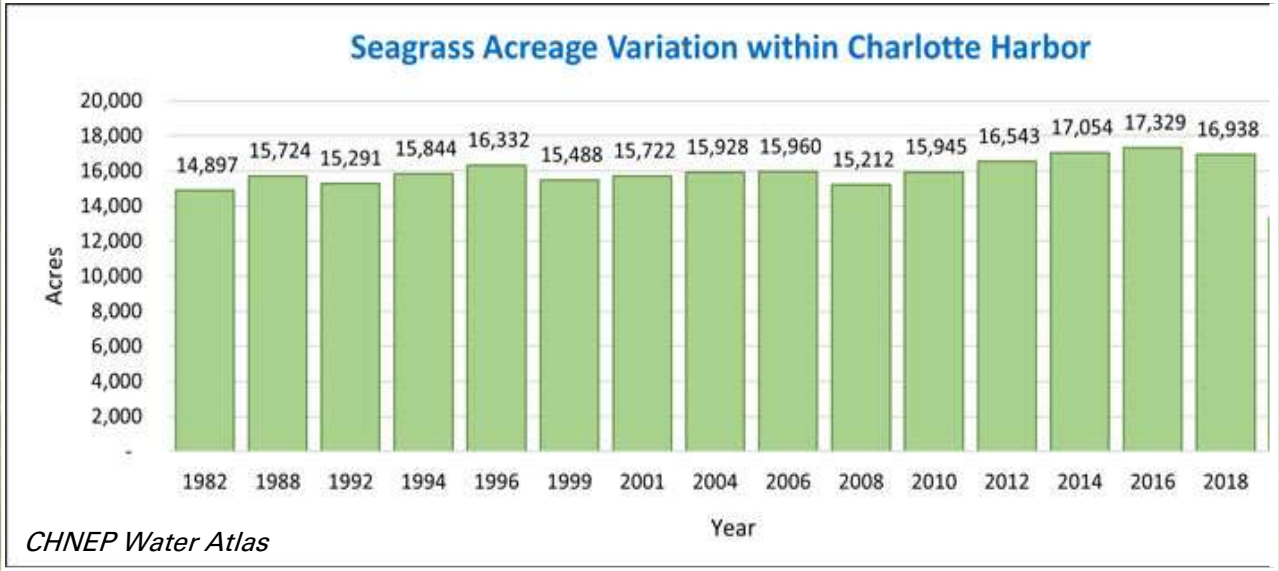
- Coastal development.
- Damage by boat propellers.
- Destructive fishing practices such as trawling and mooring.
- Ripped up to make navigation channels or docks.
- Pollution and poor sewage treatment.
- Buried by sediment or nutrient runoff.
- Degraded by the effects of climate change.

Learn why seagrass matter and how you can implement successful seagrass restoration project in our new ***Guidelines on Seagrass Ecosystem Restoration for the Western Indian Ocean Region***.
Visit: **nairobiconvention.org.**

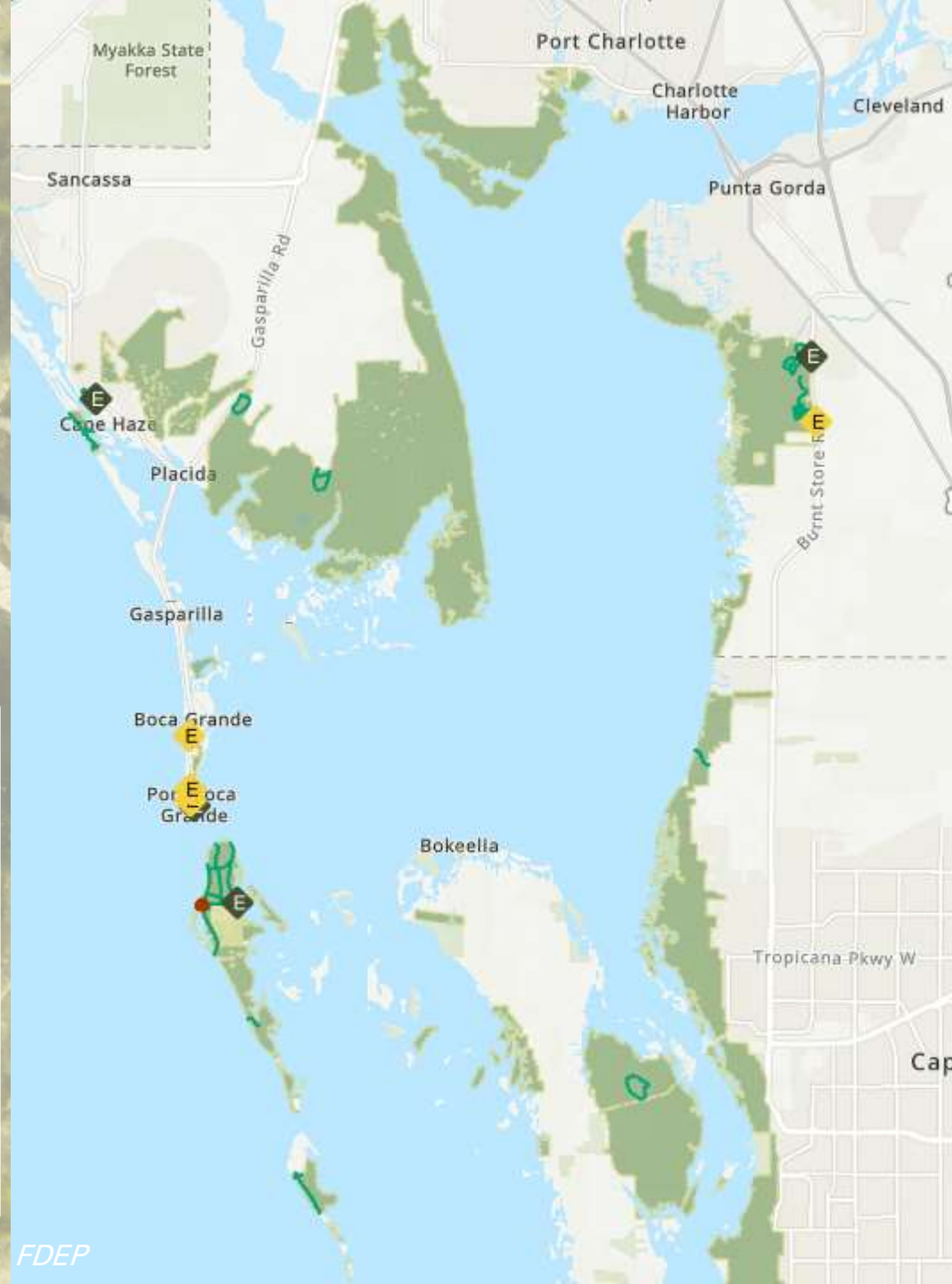
UN environment programme · Nairobi Convention · WIOMSA · Universidade Eduardo Mondlane · gef

# Charlotte Harbor Estuary

- Charlotte Harbor Aquatic Preserves
- Seagrass Loss Holdout




*CHNEP Water Atlas*

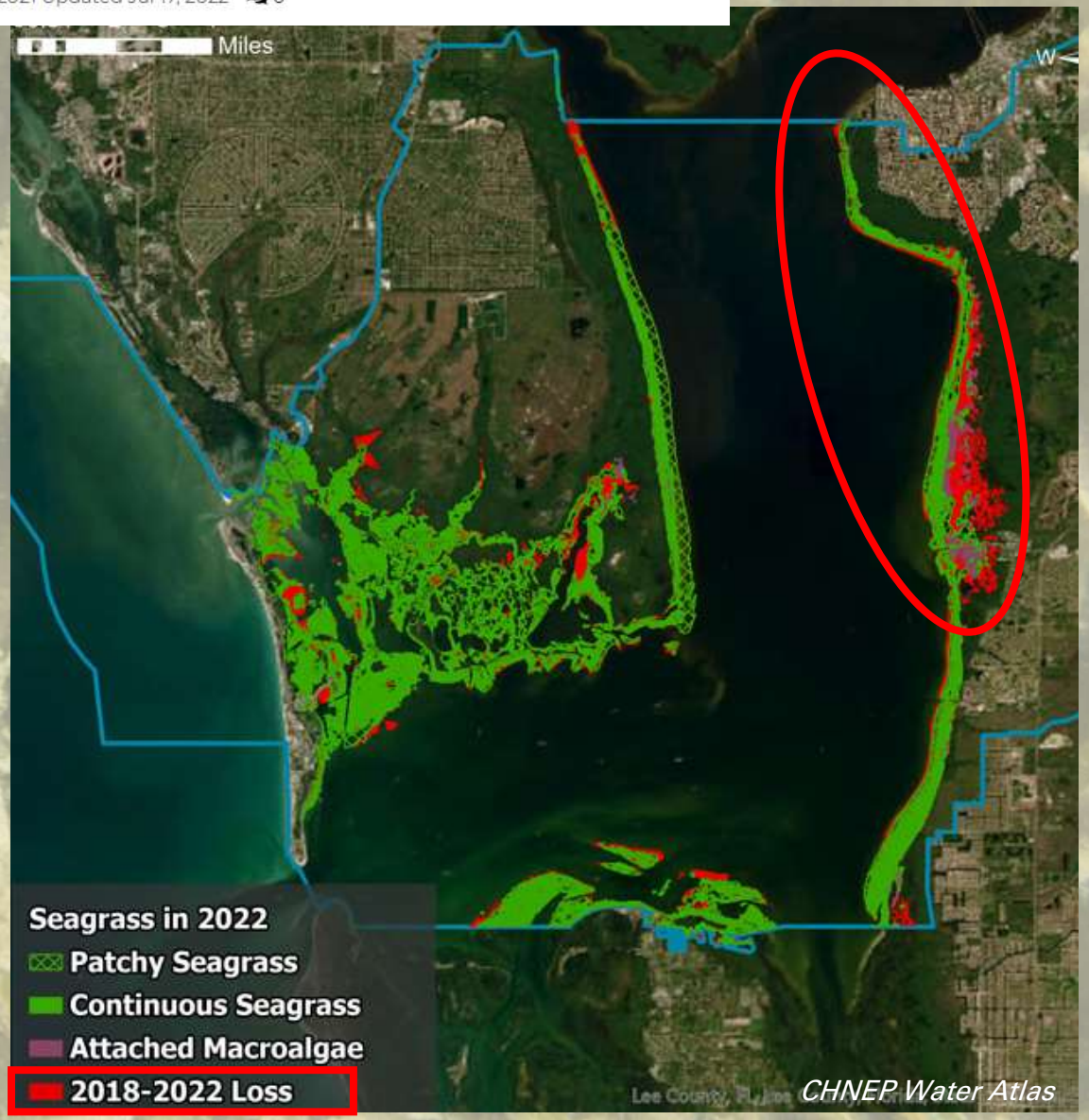



*FDEP*

# Thousands of acres of seagrass gone in Charlotte Harbor

By BETSY CALVERT Staff Writer Jun 11, 2021 Updated Jul 17, 2022 0

*Anastasiou, C. (2022). The Hangover Effect: Seagrass Loss and Macroalgal Growth in Charlotte Harbor Following the 2017-2018 Red Tide Event*

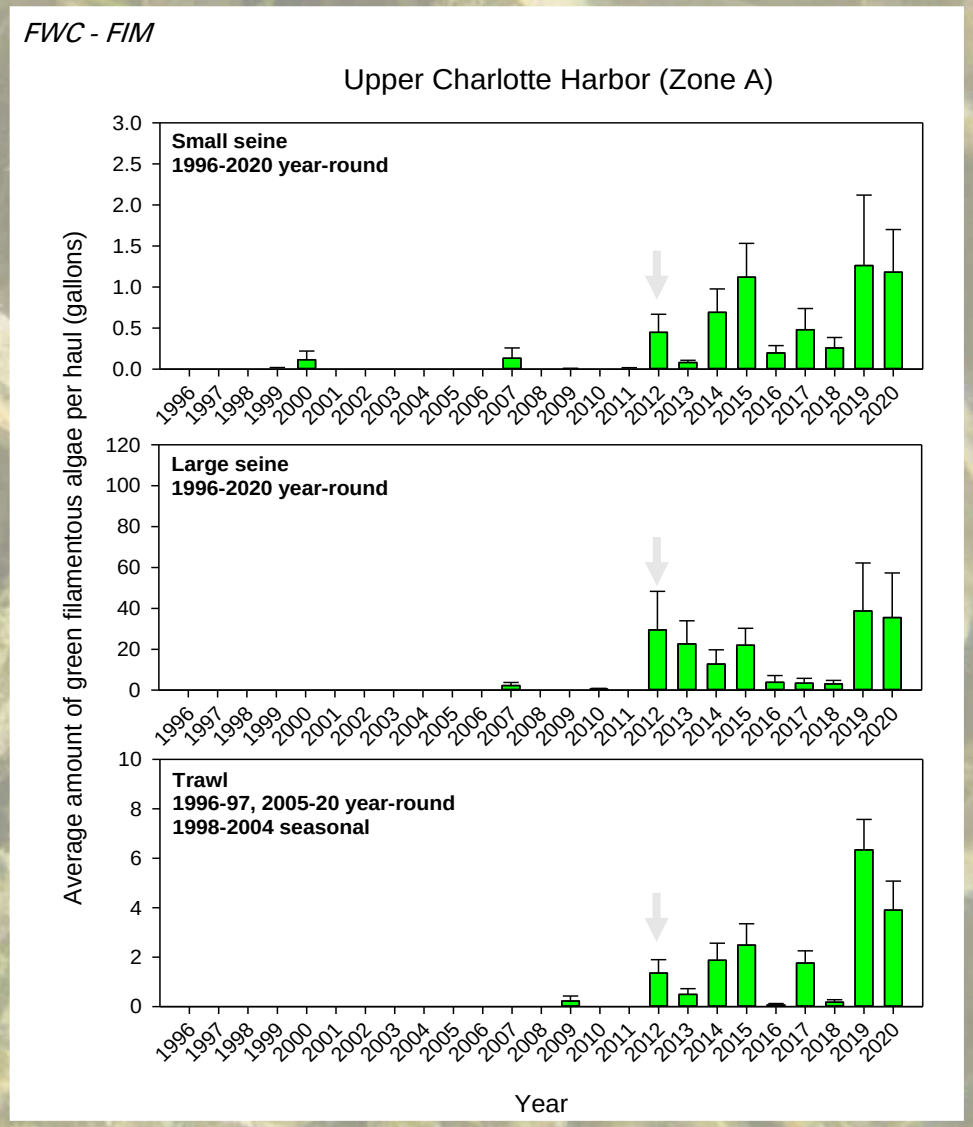



*CHNEP Water Atlas*

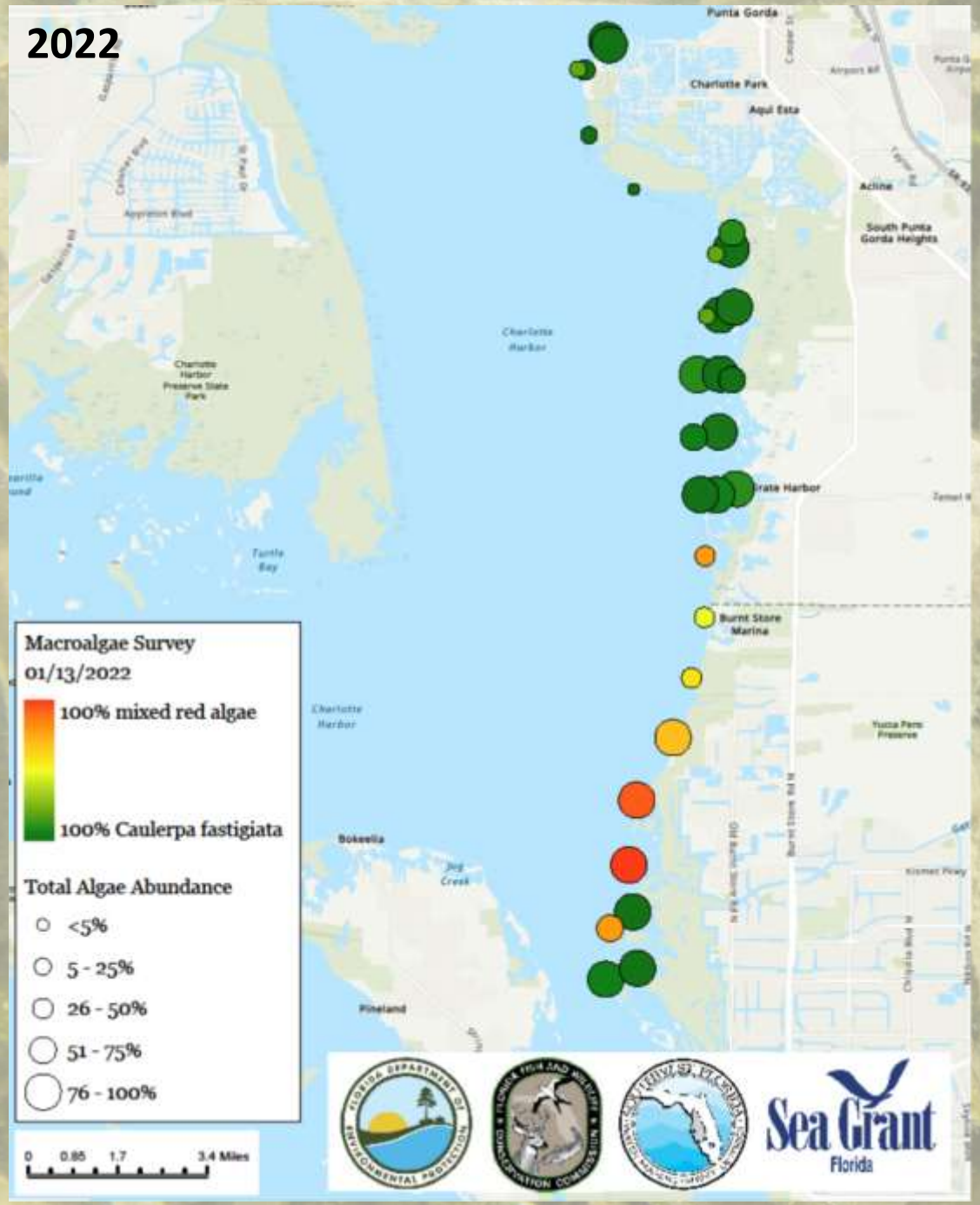
# Thousands of acres of seagrass gone in Charlotte Harbor

By BETSY CALVERT Staff Writer Jun 11, 2021 Updated Jul 17, 2022 0

- Shift from West Wall to East Wall
  - 2012-2014 West Wall Blooms
  - 2016-2021 East Wall Blooms



2022




Macroalgae Survey
01/04/2024

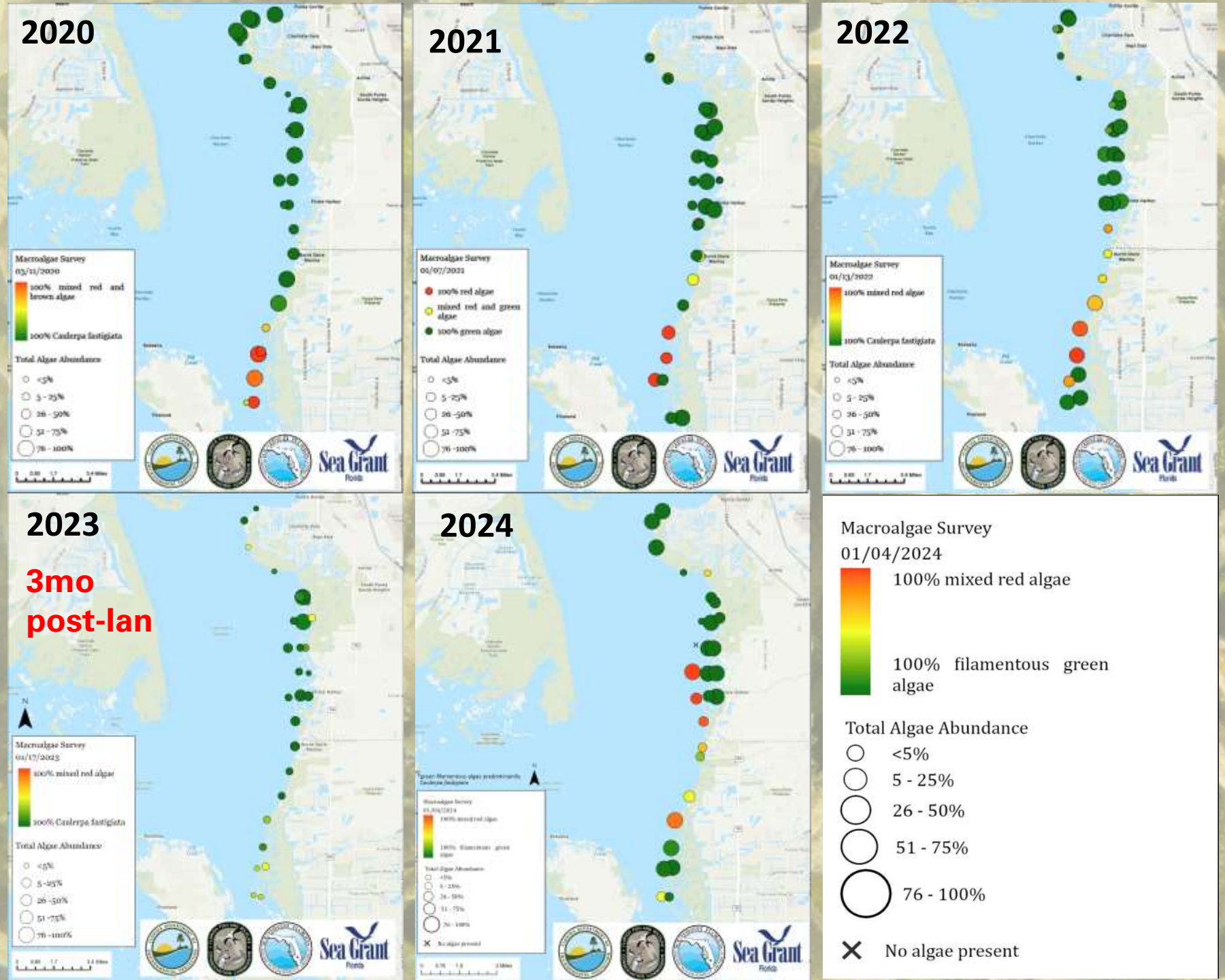
100% mixed red algae

100% filamentous green algae

Total Algae Abundance

- <5%
- 5 - 25%
- 26 - 50%
- 51 - 75%
- 76 - 100%

✕ No algae present

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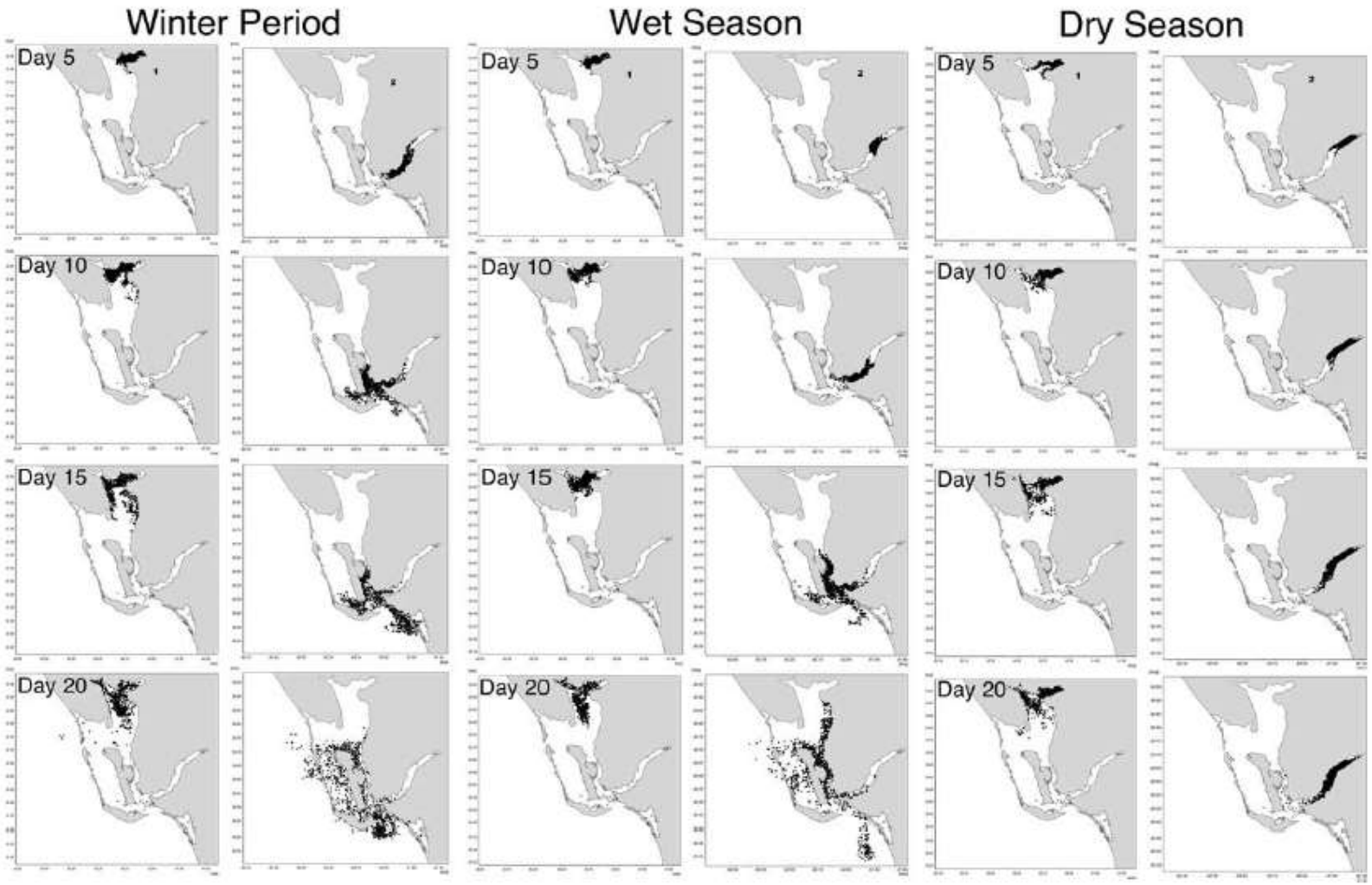
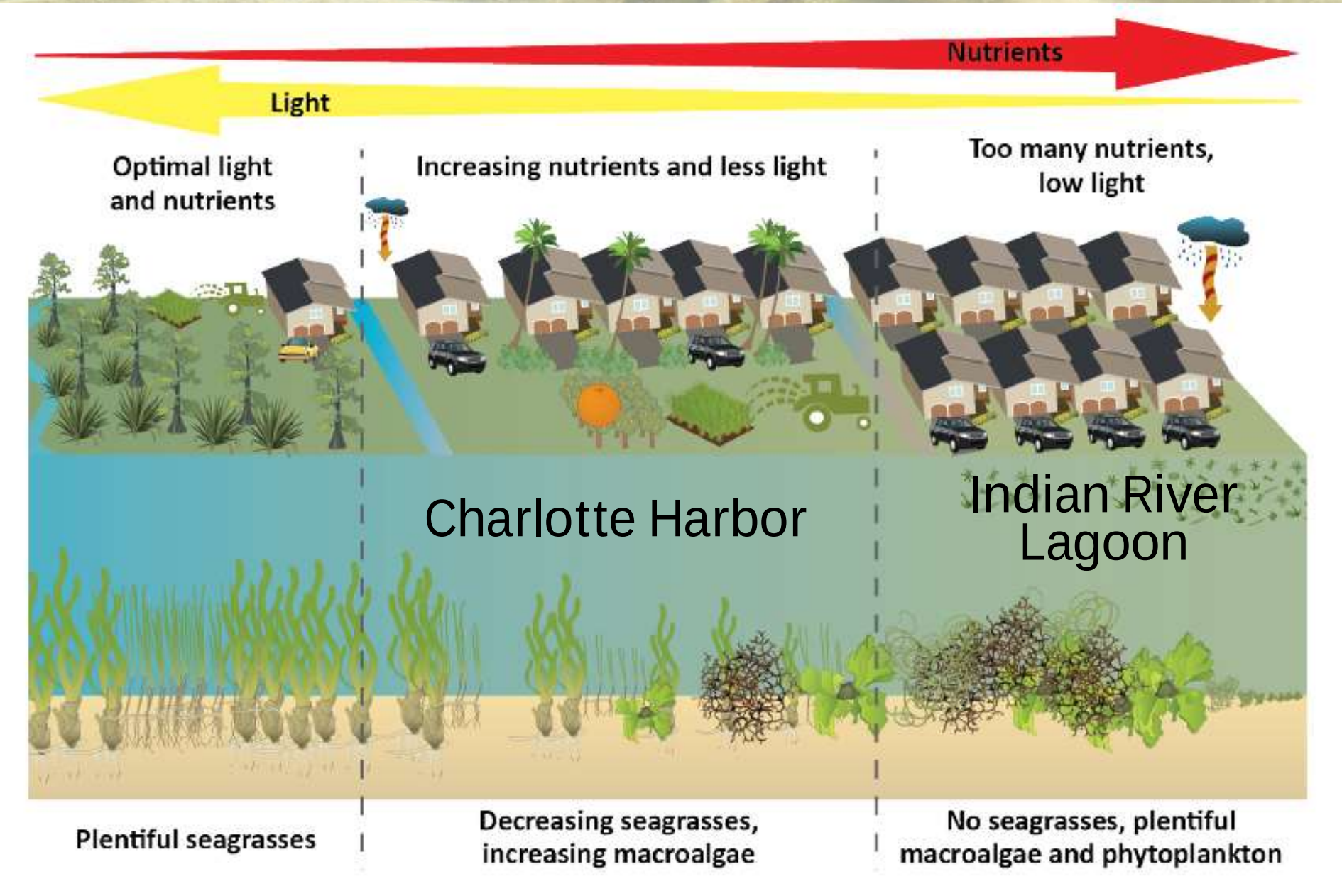



Figure 9. Spatiotemporal distribution of neutrally buoyant particles released into the estuarine system from Peace River and Caloosahatchee River for the three seasons representing three contrasting hydrologic conditions. Panels on the left represent Peace River simulations; panels on the right represent Caloosahatchee River simulations.

**Bass Dye, Felix Jose, and Mohammad Nabi Allahdadi "Circulation Dynamics and Seasonal Variability for the Charlotte Harbor Estuary, Southwest Florida Coast," *Journal of Coastal Research* 36(2), 276-288, (2 December 2019).**




FSG Macroalgae Report, 2021

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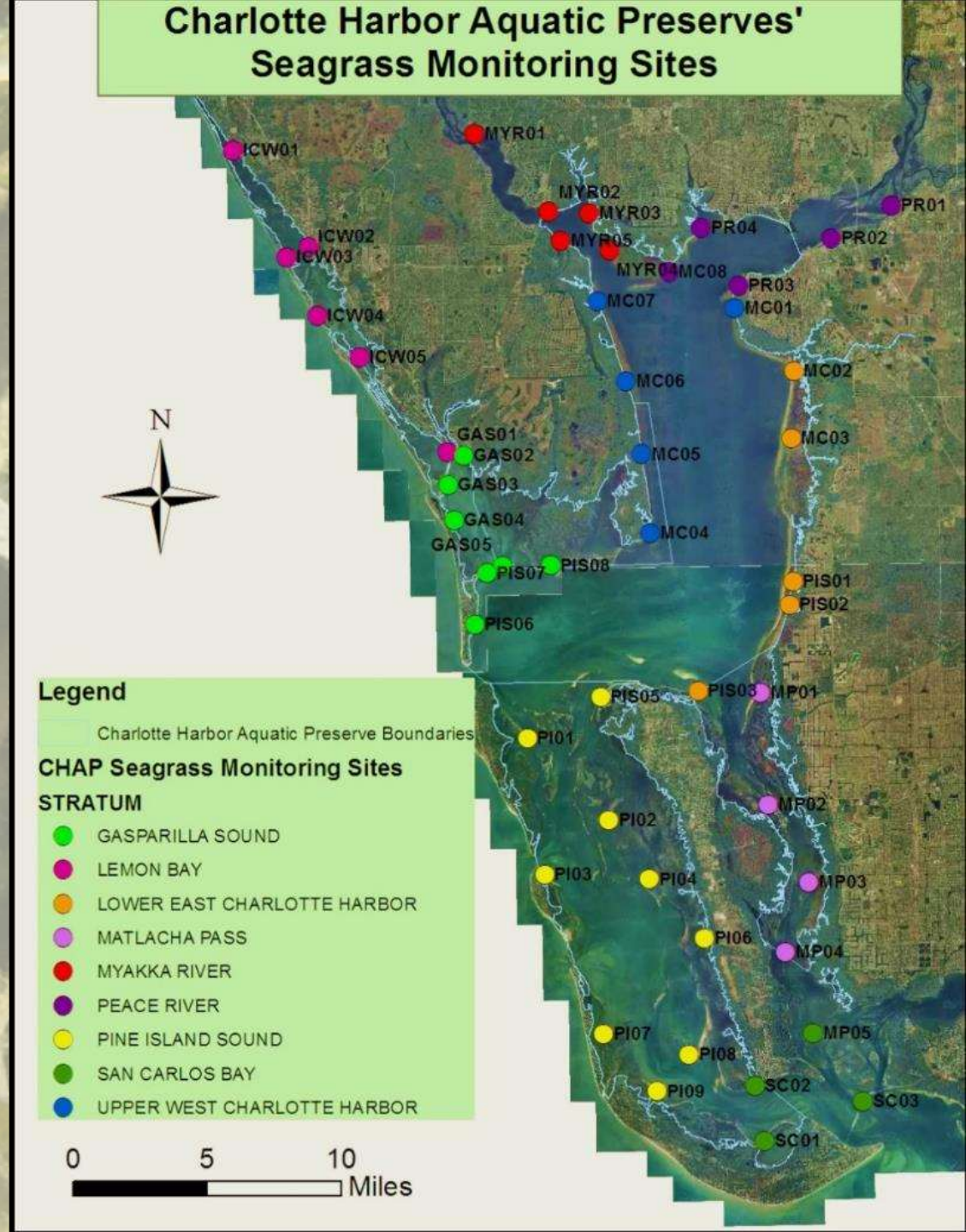
# Monitoring

Seagrasses

- Mapped by SWFWMD every 2 – 3 years by plane
- Monitored by FDEP Charlotte Harbor Aquatic Preserves every fall since 1998
- EYES ON SEAGRASS

Algae

- Annual Macroalgae Surveys (FDEP, FWC, SWFWMD, FSG)
- EYES ON SEAGRASS



# Eyes on Seagrass

## Charlotte County, FL

Depth
Sediment Type
Algae Cover
Seagrass Cover
Seagrass species
Canopy height
Secchi Depth
**Algae Biomass**
**Algae Sample**

EYES ON SEAGRASS

# Methods

## Eyes on Seagrass

*Est. 2019*

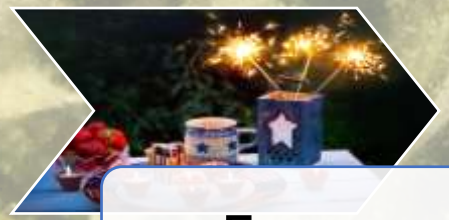
- "Random" transects
- ½ $m^2$ quadrat
- 50m transect
- Algae coverage & biomass

## FDEP Charlotte Harbor Aquatic Preserves

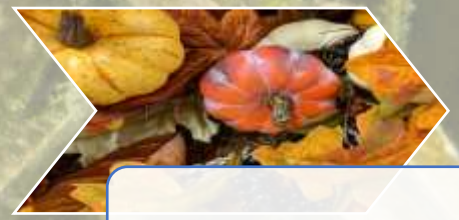
*Est. 1999*

- Fixed Transects
- 1 $m^2$ quadrat
- Survey to deep edge
- Algae coverage

Eyes on Seagrass



Eyes on Seagrass



FDEP/CHAP

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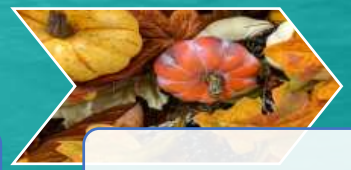
# Eyes on Seagrass

## *Citizen Science*

Eyes on Seagrass

Eyes on Seagrass



FDEP/CHAP

45 sites for 4 years

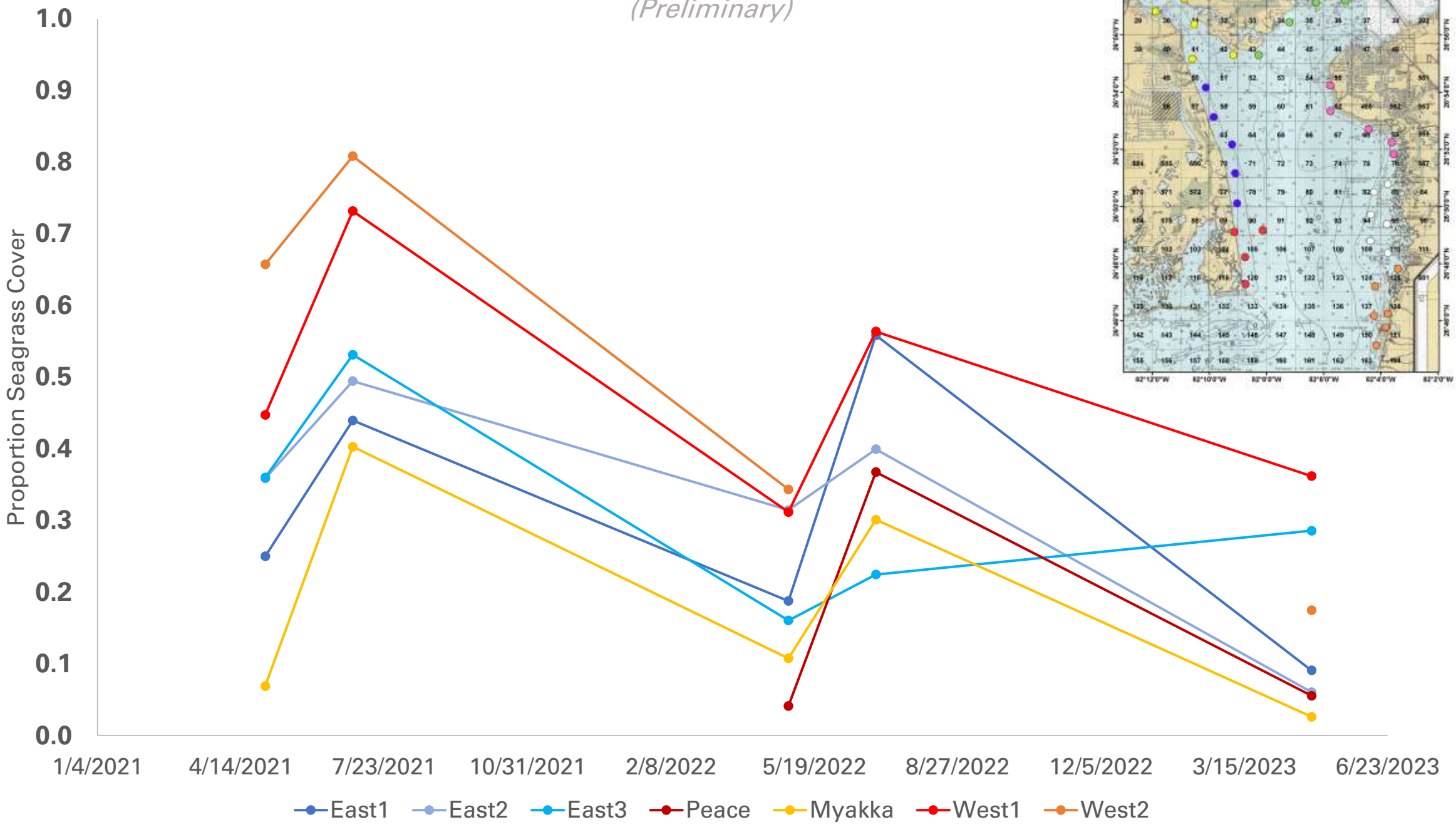
- Close to 2,000 quadrats since 2019

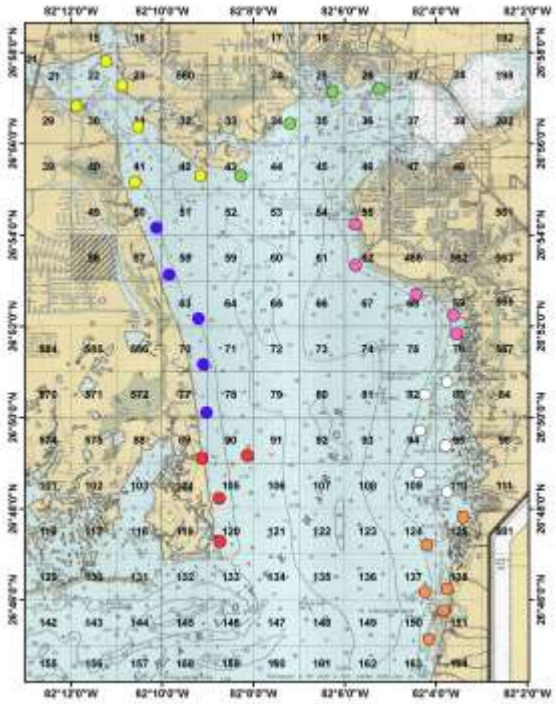
Volunteer time and resources > $110,000

- Skilled volunteer value = $29.41/hr (Florida Independent Sector)

# Charlotte Harbor Seagrass Coverage

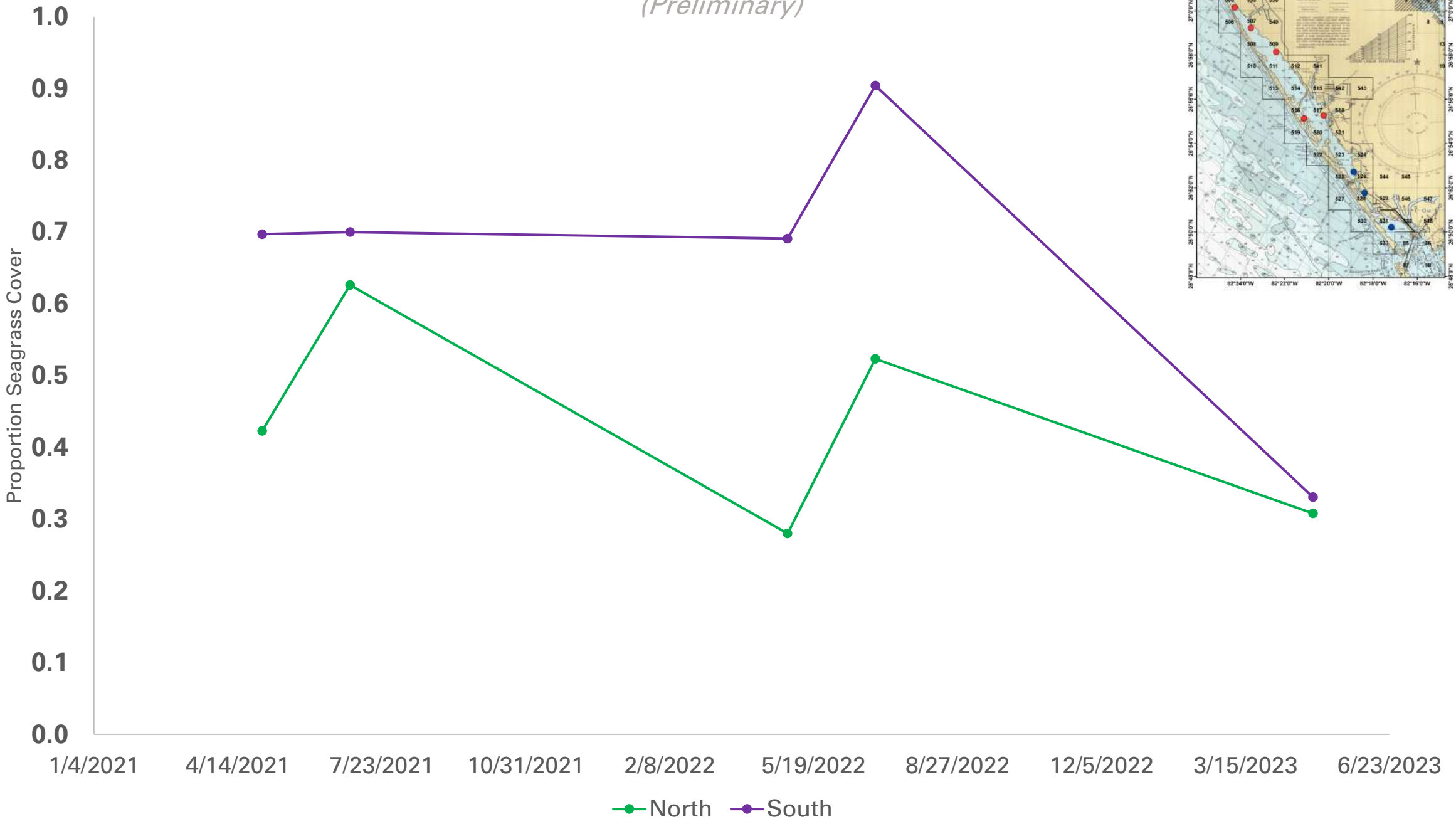
*(Preliminary)*

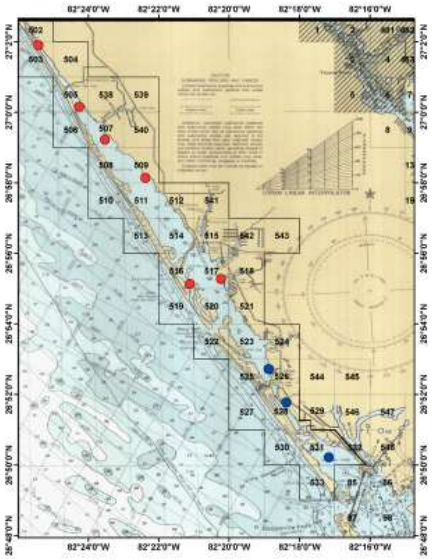


# Lemon Bay Seagrass Coverage

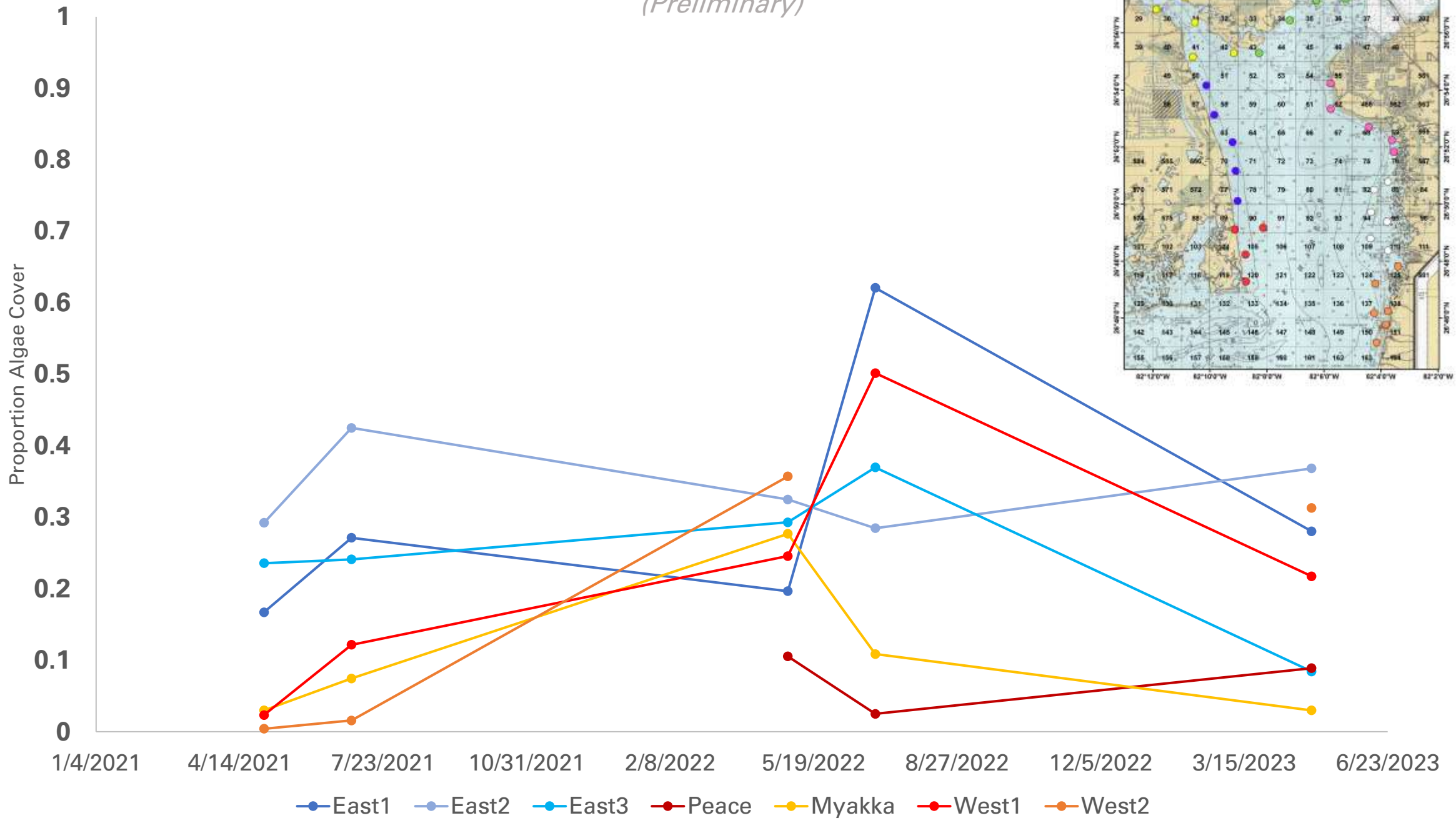
*(Preliminary)*

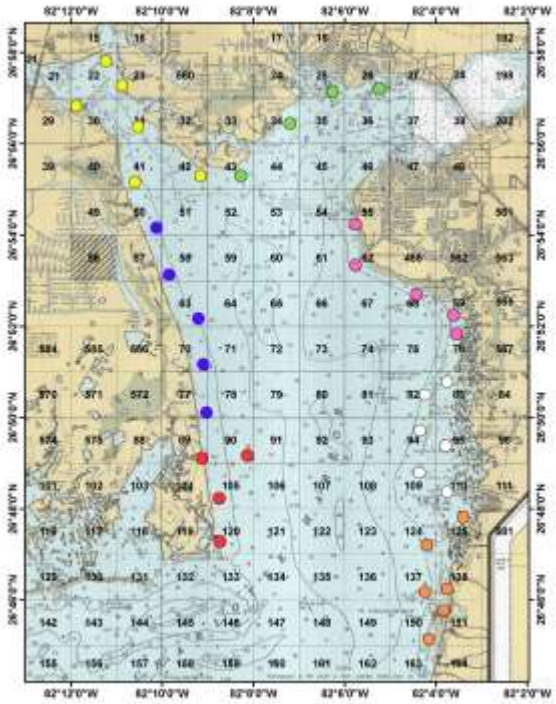


# Charlotte Harbor Macroalgae Coverage

*(Preliminary)*



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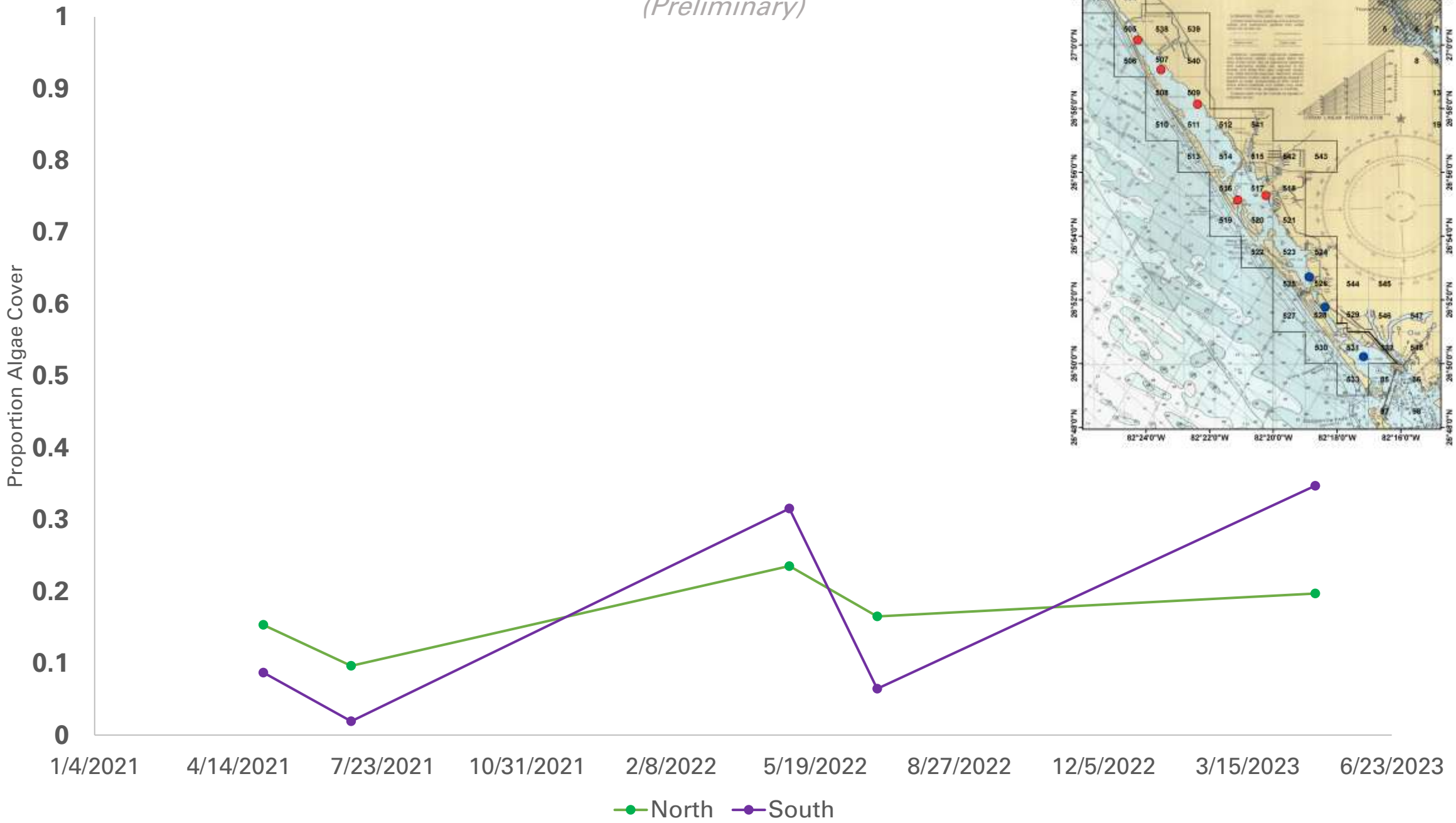
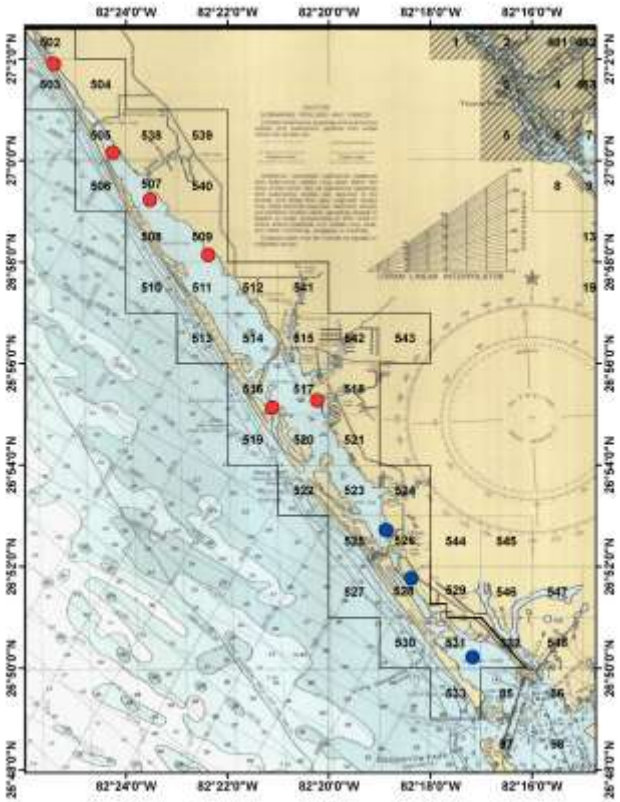
*(Preliminary)*



# Eyes on Seagrass

***Citizen Science***

Creating Environmental Stewards

- 91% of 2023 volunteers made at least one change to improve conditions for Seagrass

Scientific Impact

- Data presented at the CHNEP Watershed Summit & Benthic Ecology Meeting
- Working with Seagrass Biologists to create database

# Eyes on the Future

- E-learning training option
- Automated database & dashboard
- Study comparing professionally collected & volunteer data
- Restoration applications

FDEP 2014

# Monitoring Gear

- ❑ Dive Flag
- ❑ Transect line with two carabiners
- ❑ Quadrat
- ❑ Depth Pole
- ❑ Mesh bag
- ❑ Zipties
- ❑ Spring scale
- ❑ Secchi disk
- ❑ Clipboard
- ❑ Pencils
- ❑ Field Packet

# Methods

| 0 m | 10 m | 20 m | 30 m | 40 m | 50 m |
|---|---|---|---|---|---|
| ✓ Depth<br>✓ Sediment<br>✓ Algae Thickness<br>✓ Seagrass thickness<br>✓ Seagrass species<br>✓ Blade height | ✓ Depth<br>✓ Sediment<br>✓ Algae Thickness<br>✓ Seagrass thickness<br>✓ Seagrass species<br>✓ Blade height | + Algae Biomass | ✓ Depth<br>✓ Sediment<br>✓ Algae Thickness<br>✓ Seagrass thickness<br>✓ Seagrass species<br>✓ Blade height | ✓ Depth<br>✓ Sediment<br>✓ Algae Thickness<br>✓ Seagrass thickness<br>✓ Seagrass species<br>✓ Blade height | ✓ Depth<br>✓ Sediment<br>✓ Algae Thickness<br>✓ Seagrass thickness<br>✓ Seagrass species<br>✓ Blade height |

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