

A Snapshot of Changes in Seagrass Habitat Along the West Coast and the Caloosahatchee River Estuary, Florida

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and

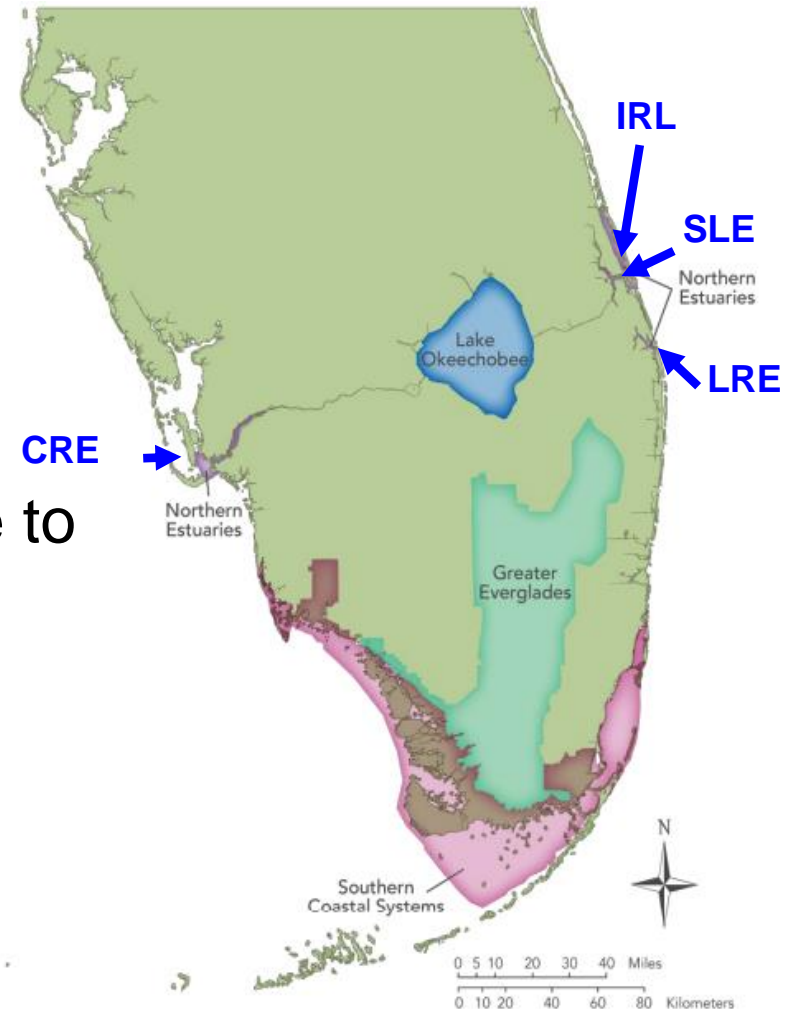
Barbara Welch, Environmental Scientist

Coastal Ecosystems Section, Applied Sciences Bureau

**Coastal & Heartland National Estuary
Partnership
2023 Watershed Summit**

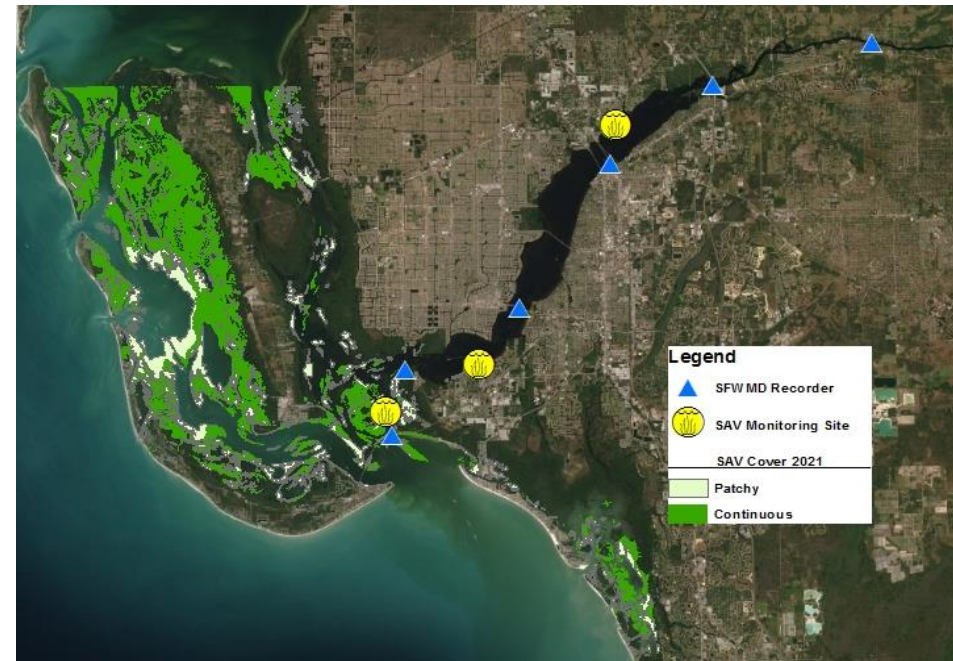
Submerged Aquatic Vegetation Monitoring

- REstoration COordination and VERification (RECOVER) Program
 - Establish pre-CERP baseline conditions in the SAV cover/abundance and diversity
 - Establish trends in SAV response to WQ parameters over time
 - Monitoring since 2008



Monitoring Approach

- Objective: Determine the cover/abundance and diversity of SAV throughout the Caloosahatchee River Estuary
- Scalar approach: large and small scales
 - Large scale: Aerial Mapping
 - Distribution (acreage) over time
 - Abundance (patchy vs continuous)
 - Small scale: Fixed Transects
 - Percent cover, species canopy height and shoot density



Large Scale Assessment

- **Seagrass Aerial Mapping**
 - Conducted ~ every 4-6 years
 - Imagery acquired during Dry Season (Nov–Mar)
 - Contracted with Dewberry Dec 2019
 - Weekly/Daily monitoring of WQ and weather conditions
 - Delayed 1-year due unfavorable water conditions
 - Imagery flown March 13 & 14, 2021

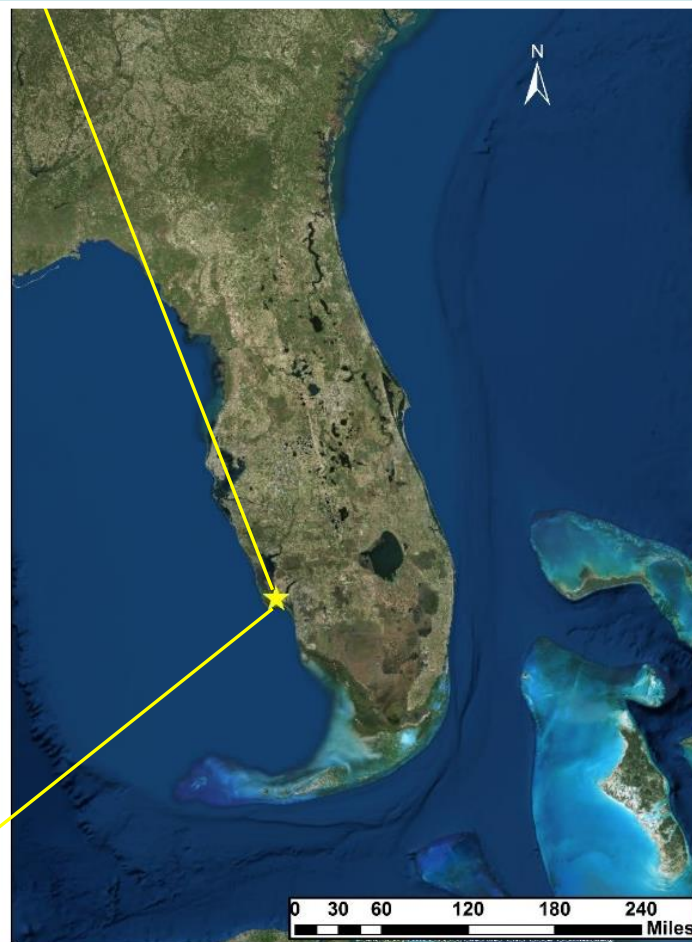
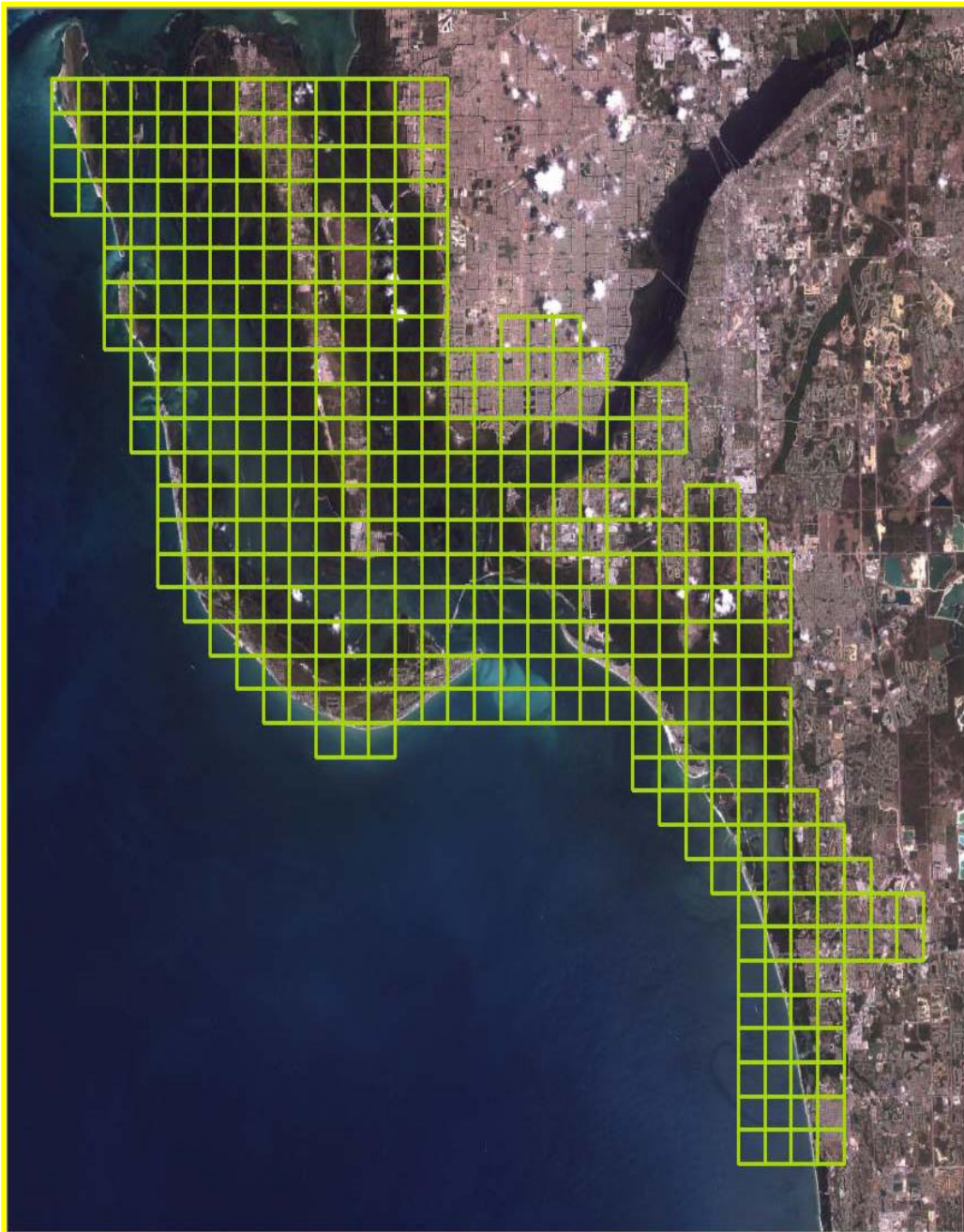


Thalassia testudinum
Turtle grass



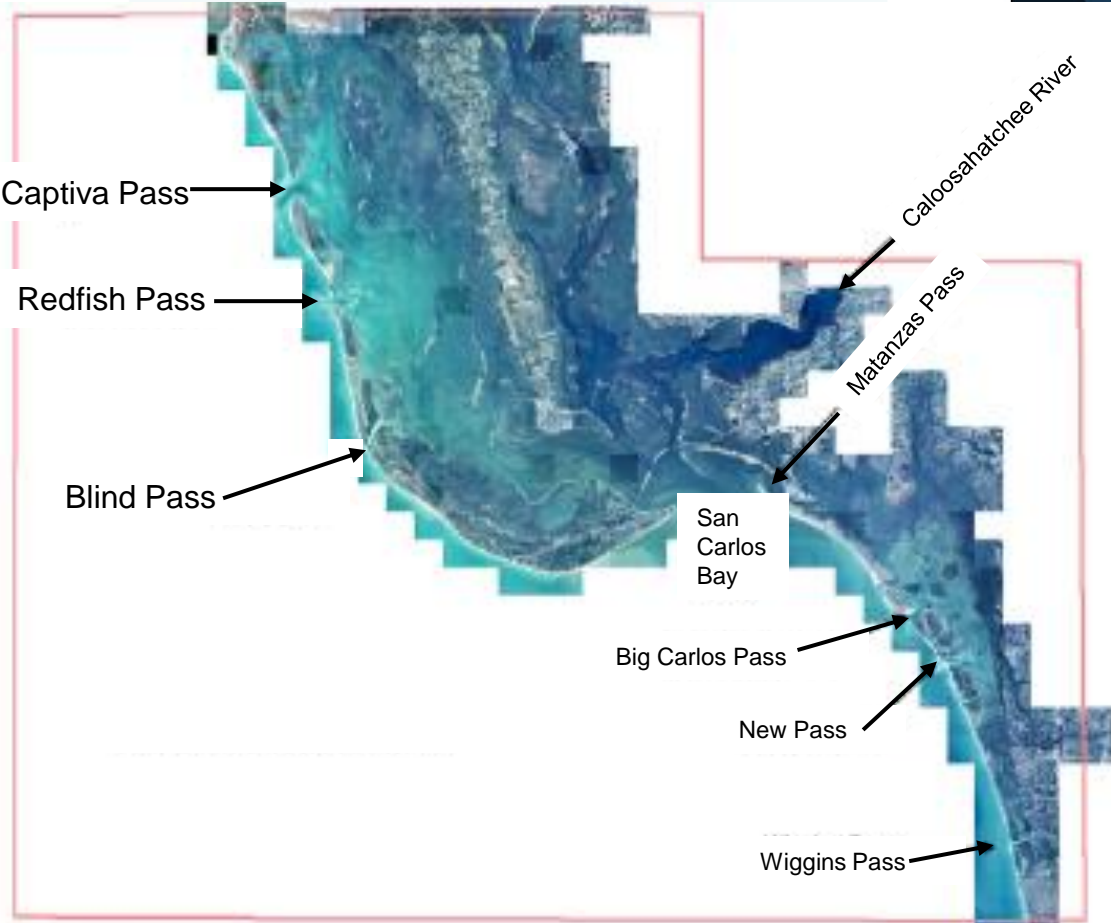
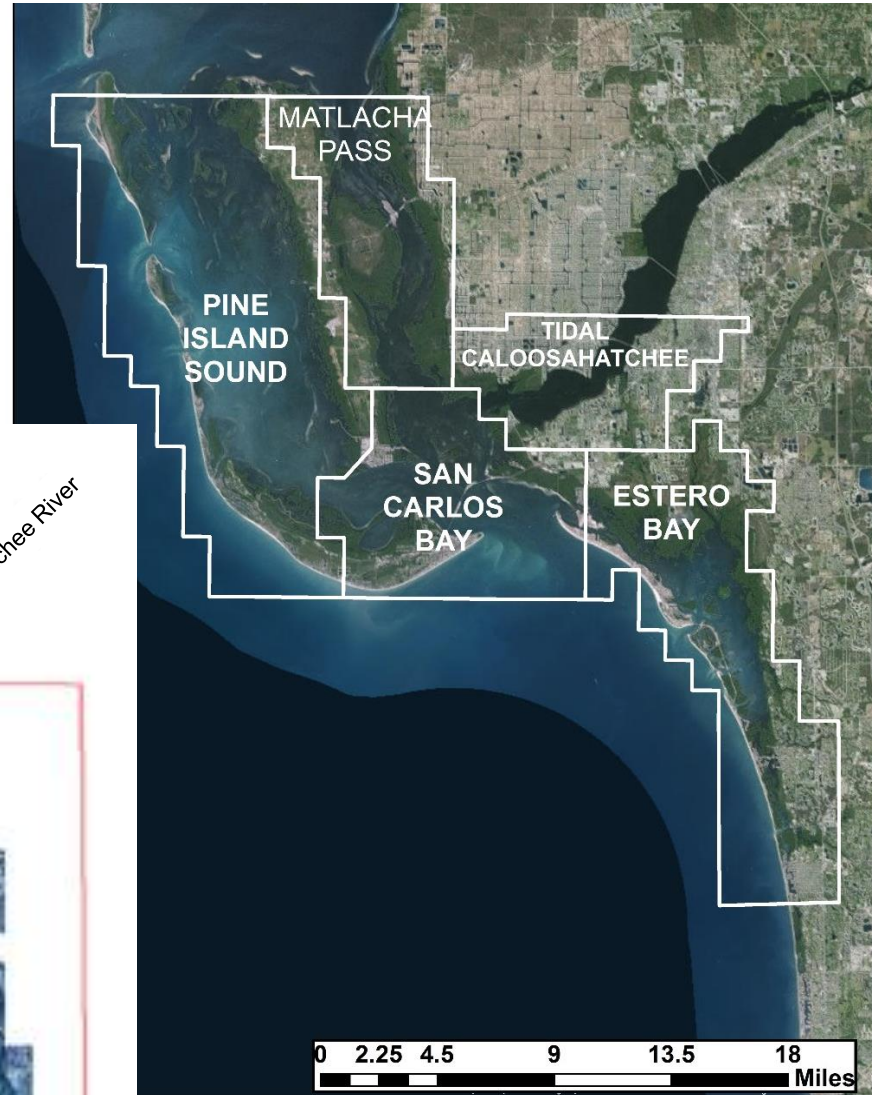
West Coast Mapping

Southern Charlotte Harbor at Boca Grande to Southern Estero Bay at Wiggins Pass

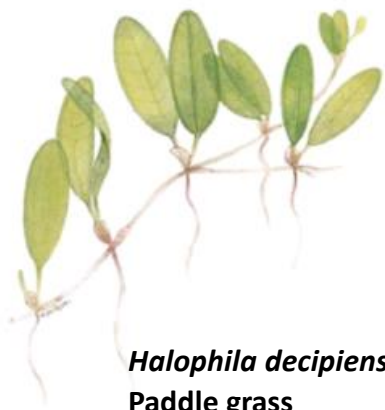
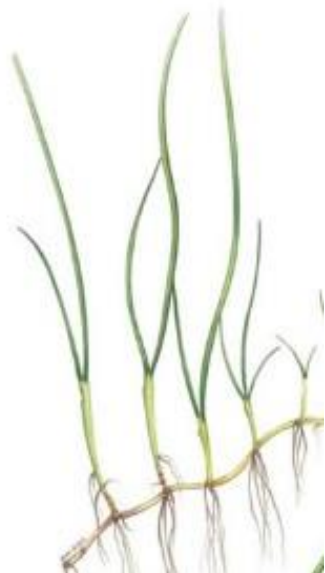


SOUTH FLORIDA WATER MANAGEMENT DISTRICT

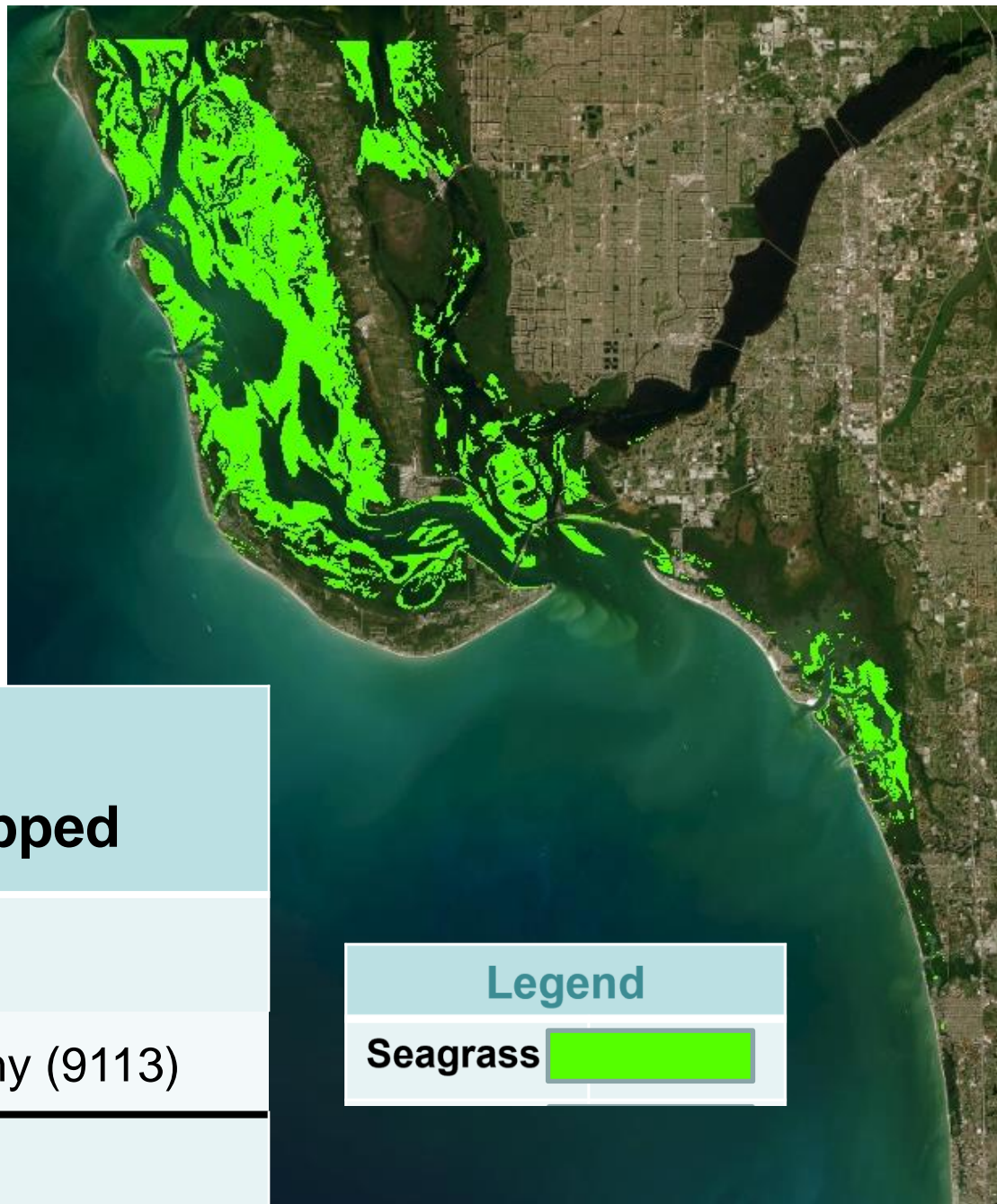
Segments	Length (mi.)
Matlacha Pass	12.5
Pine Island Sound	16.4
San Carlos Bay	9.8
Tidal Caloosahatchee	8.0
Estero Bay	<u>17.0</u>
Total	63.7



Syringodium filiforme
Manatee grass



Halophila decipiens
Paddle grass




2021 Total Seagrass Mapped

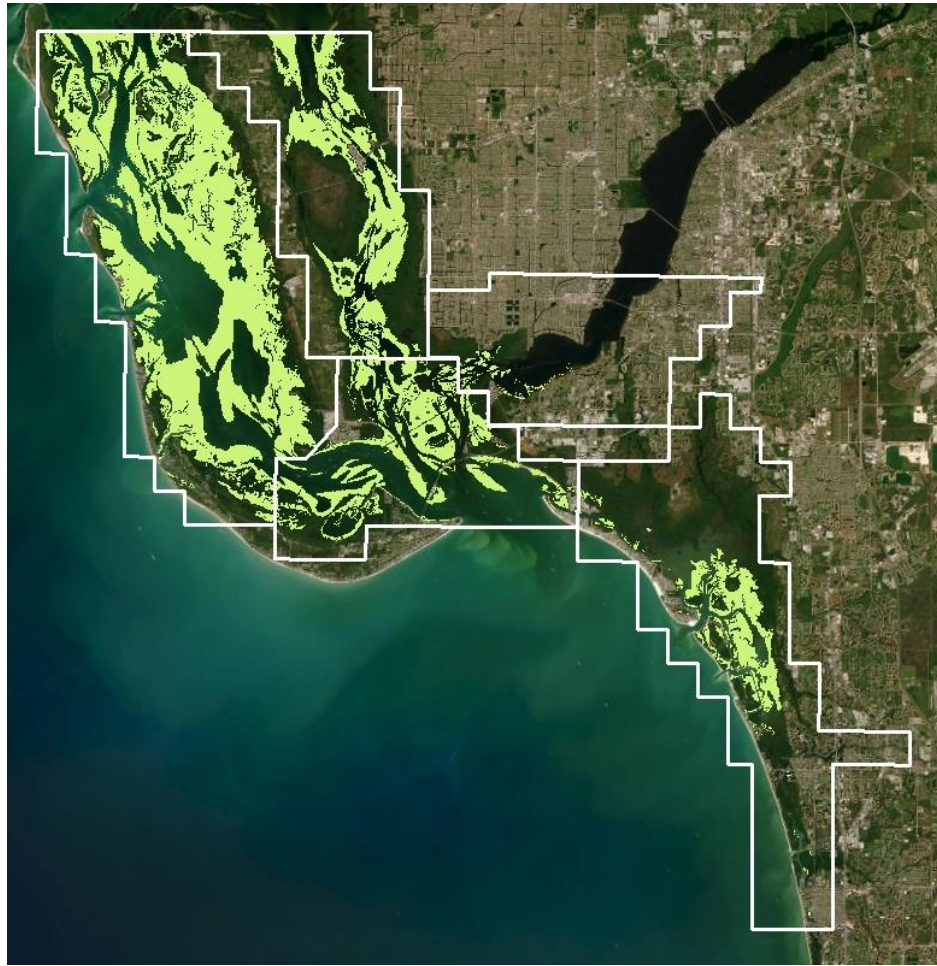
Overall Coverage

Continuous (9116) & Patchy (9113)

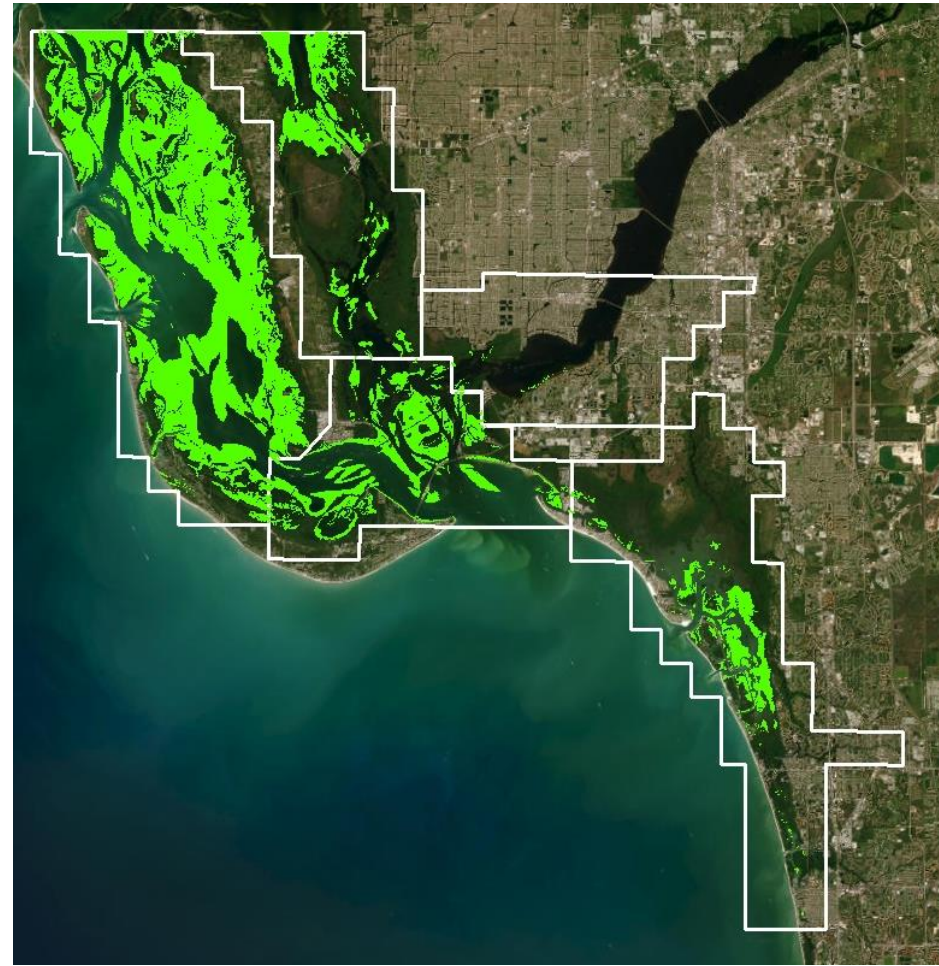
43,861 Acres

Legend

Seagrass 



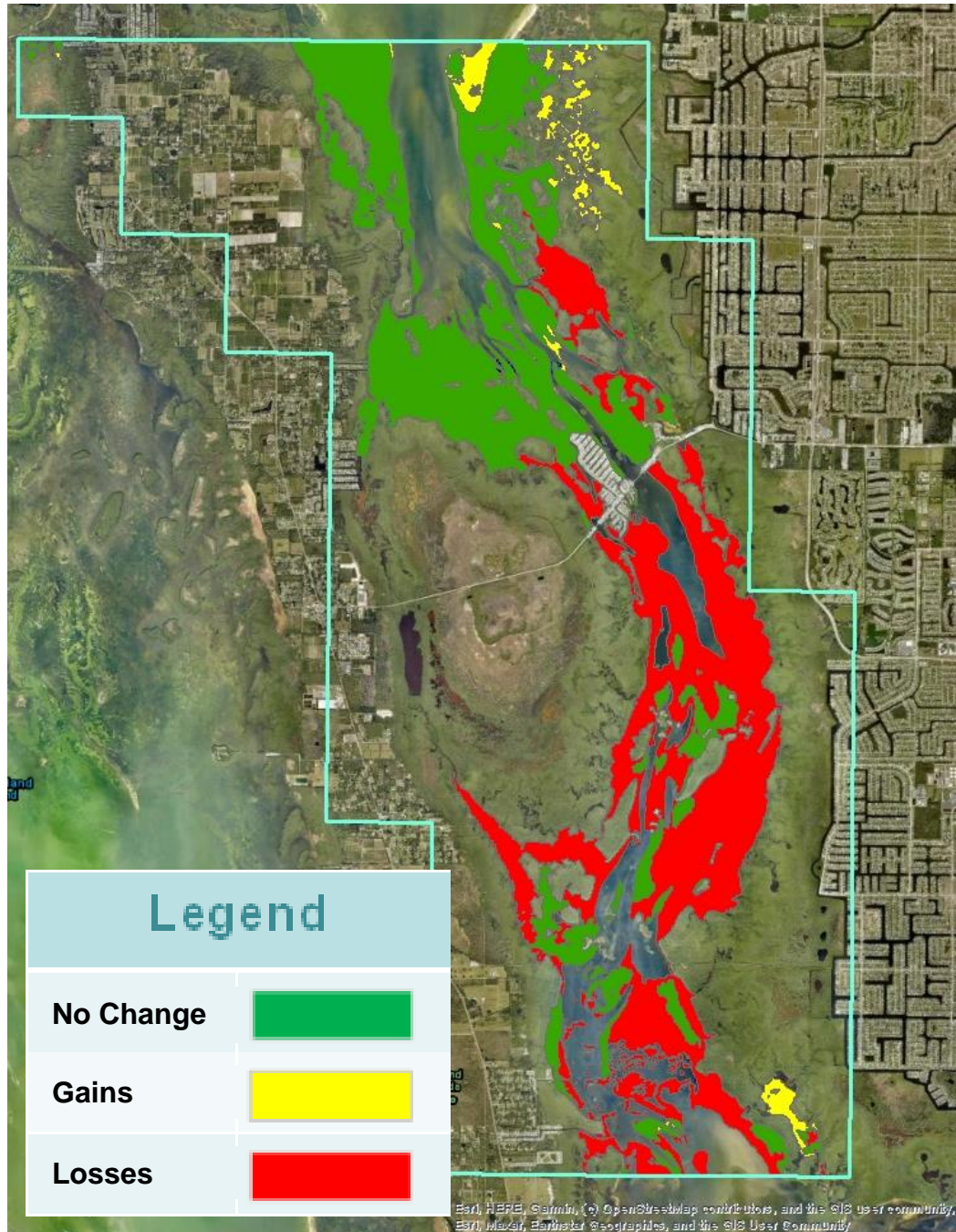
2014



2021

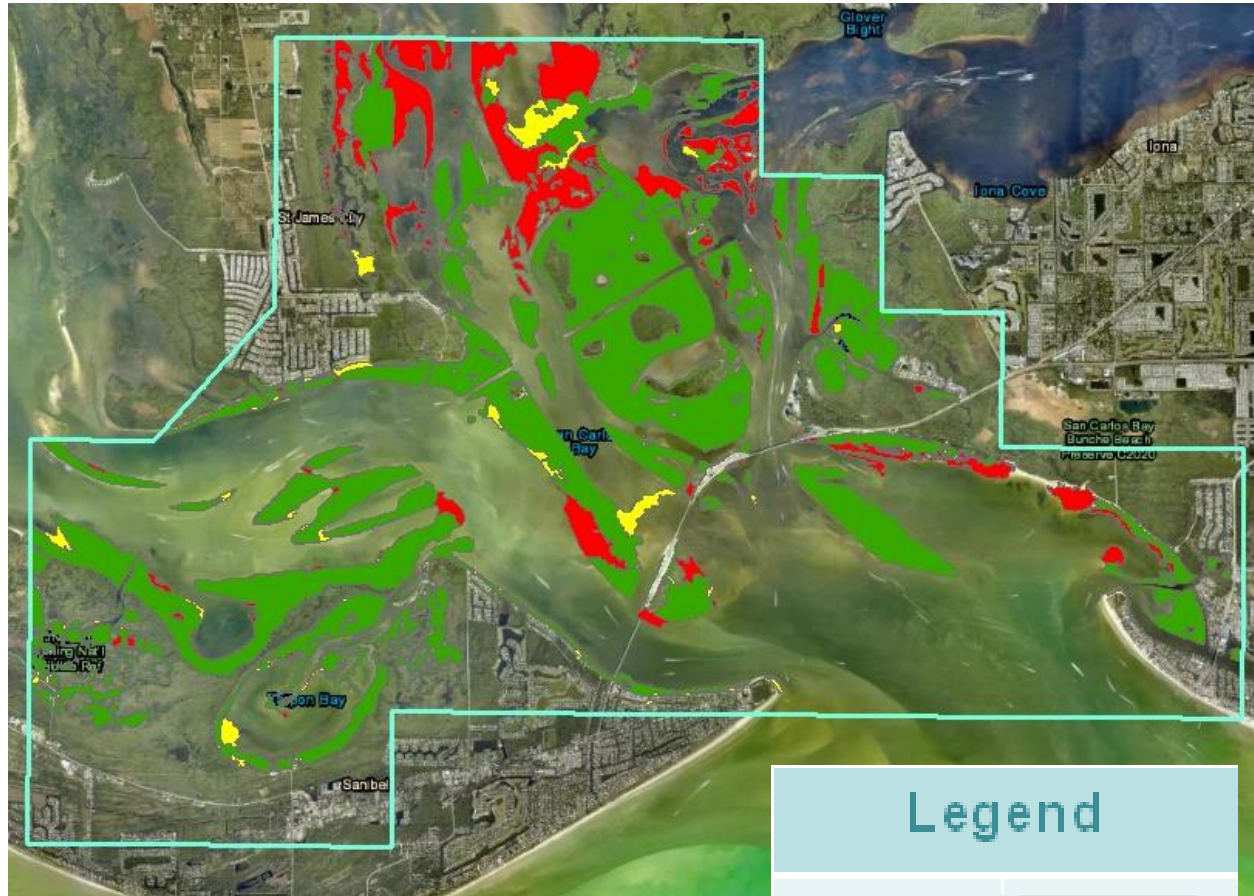
Matlacha Pass

<u>Results</u>	<u>Acres</u>
2014 Seagrass	8,272
2021 Seagrass	4,510
Net Change	- 3,769
Changes 2014 – 2021	
No Change	4,101
Gains	410
Losses	4,178



Basemap: HERE, Garmin, © OpenStreetMap contributors, and the GIS user community; Imagery: Esri, Maxar, Earthstar Geographics, and the GIS User Community

San Carlos Bay



Legend	
No Change	
Gains	
Losses	

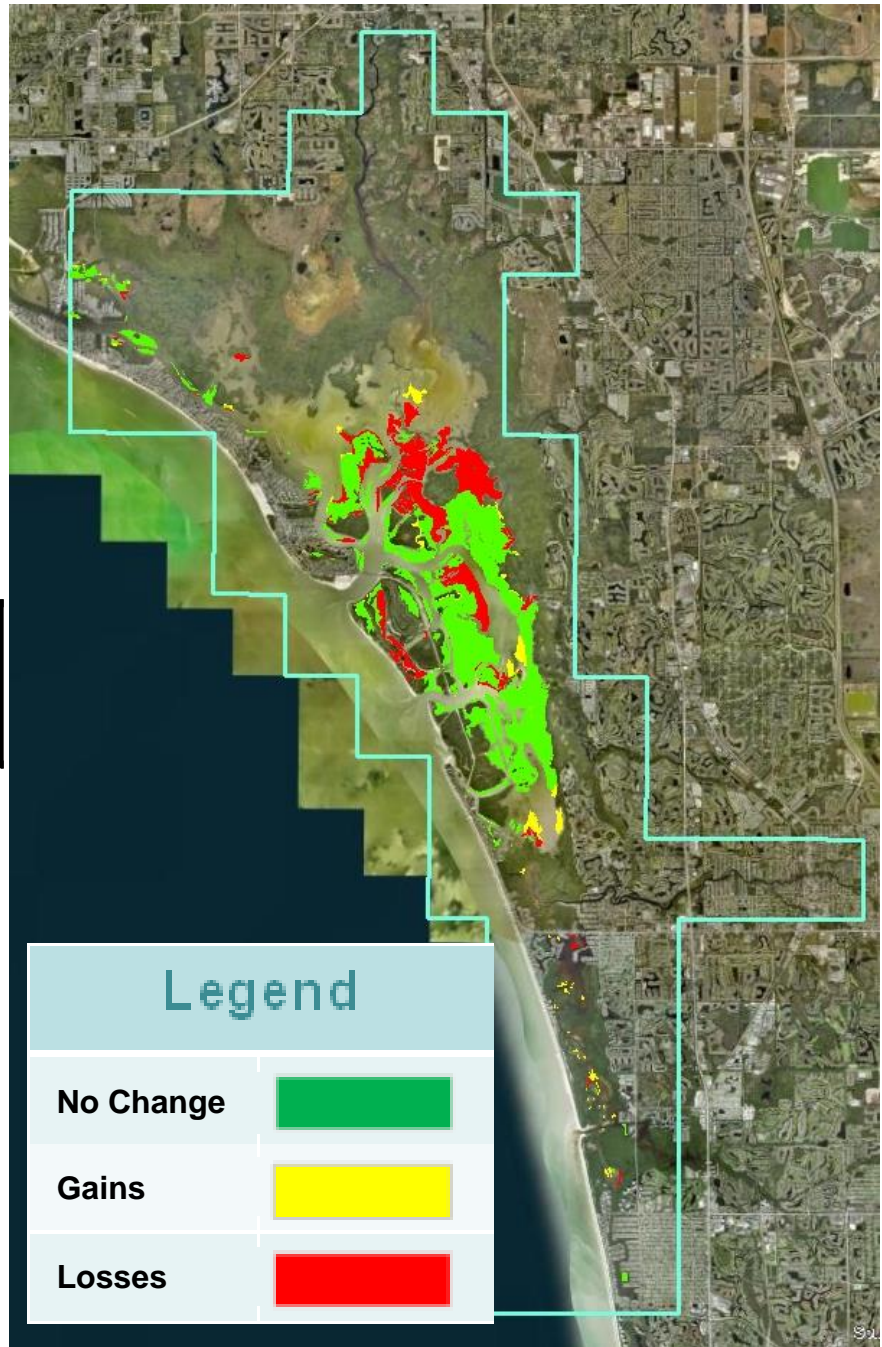
<u>Results</u>	<u>Acres</u>
2014 Seagrass	7,167
2021 Seagrass	6,127
Net Change	- 1,041

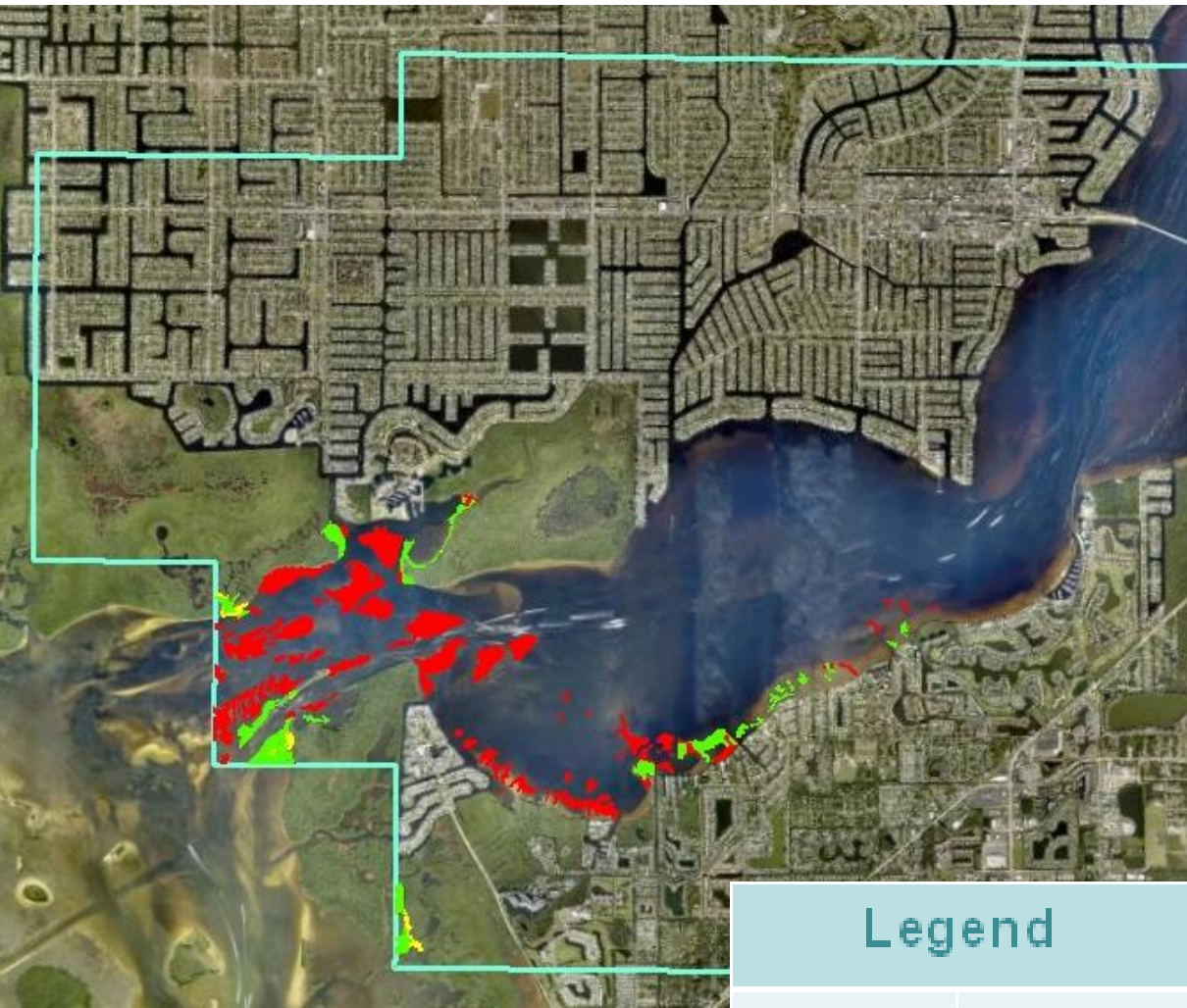
Changes 2014 – 2021	
No Change	5,757
Gains	370
Losses	1,412




Estero Bay

<u>Results</u>	<u>Acres</u>
2014 Seagrass	3,683
2021 Seagrass	2,867
Net Change	- 816

Changes 2014 – 2021	
No Change	2,654
Gains	214
Losses	1,029





Legend	
No Change	
Gains	
Losses	

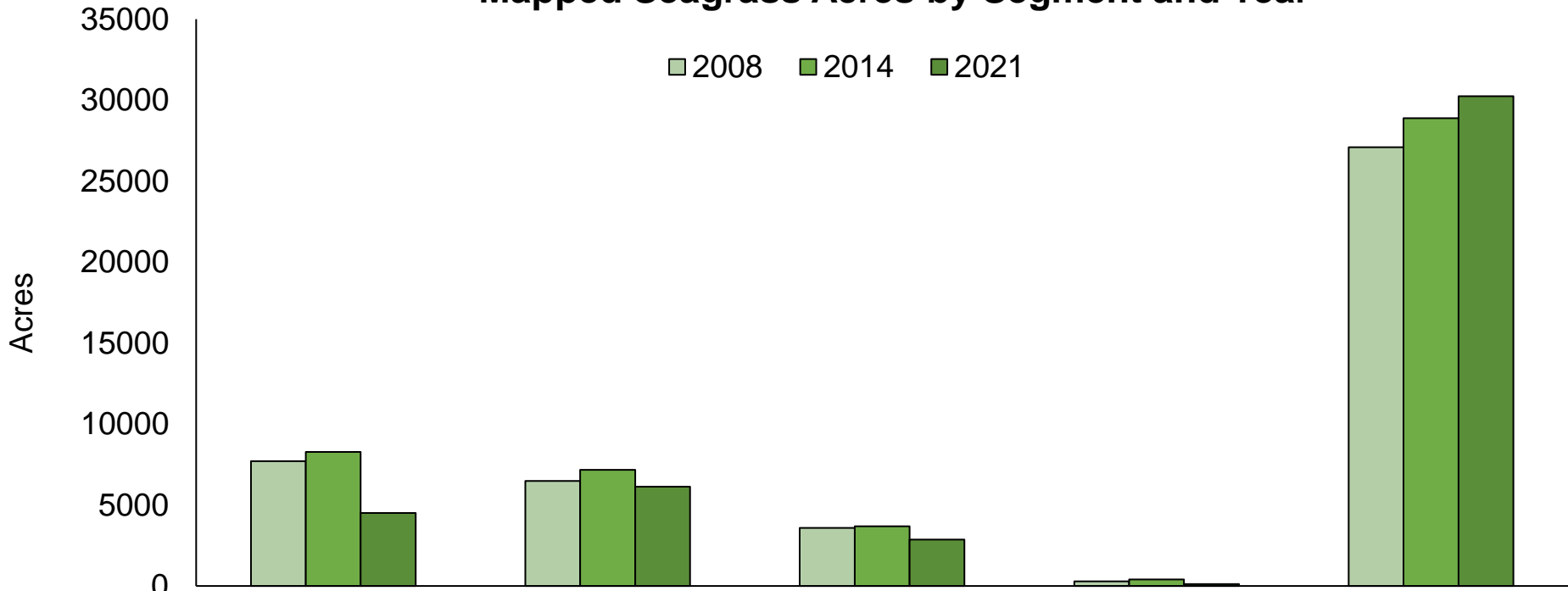
Tidal Caloosahatchee

<u>Results</u>	<u>Acres</u>
2014 Seagrass	411
2021 Seagrass	114
Net Change	- 297

Changes 2014 – 2021	
No Change	102
Gains	12
Losses	309

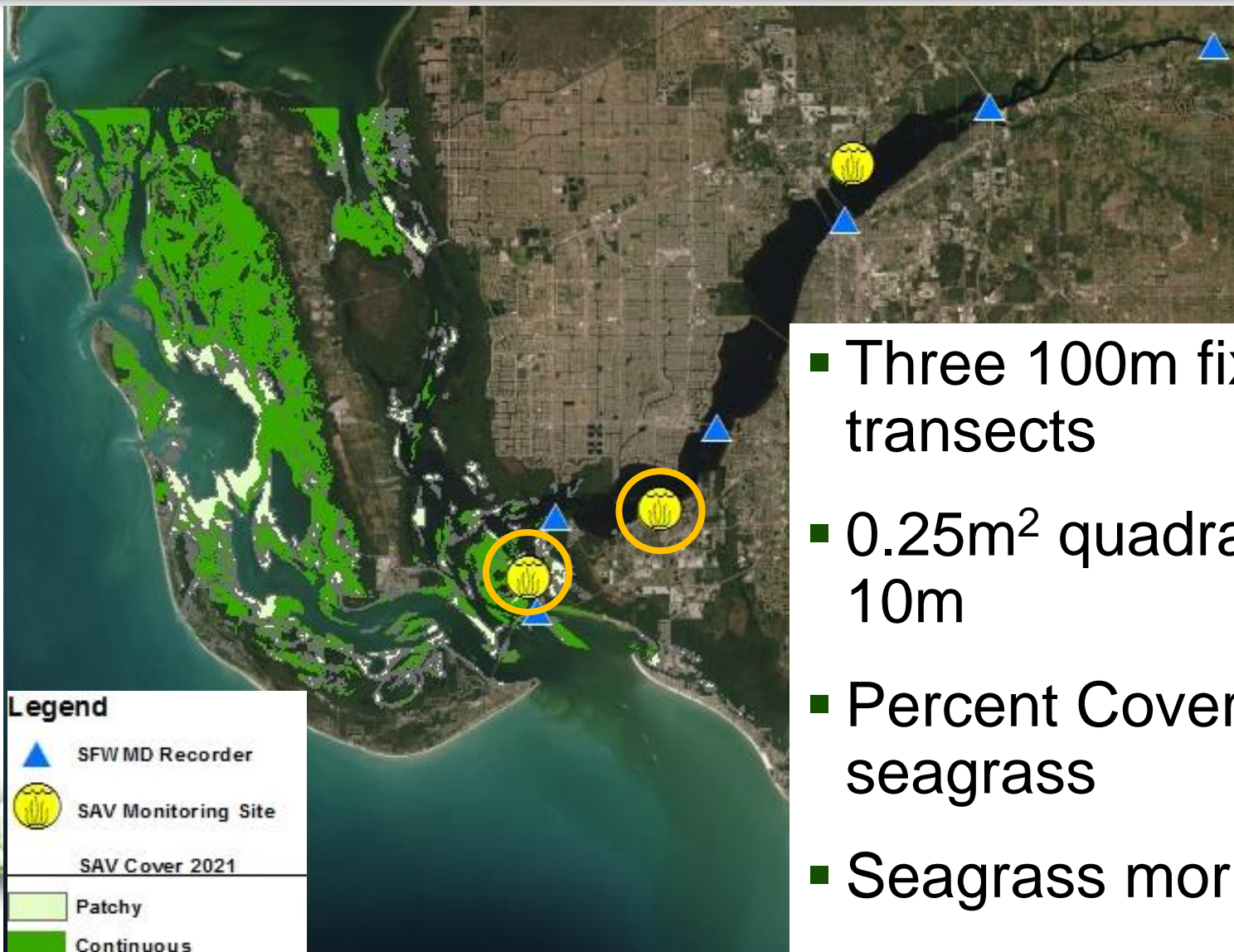
Key Mapping Results by Segments

Mapped Seagrass Acres by Segment and Year

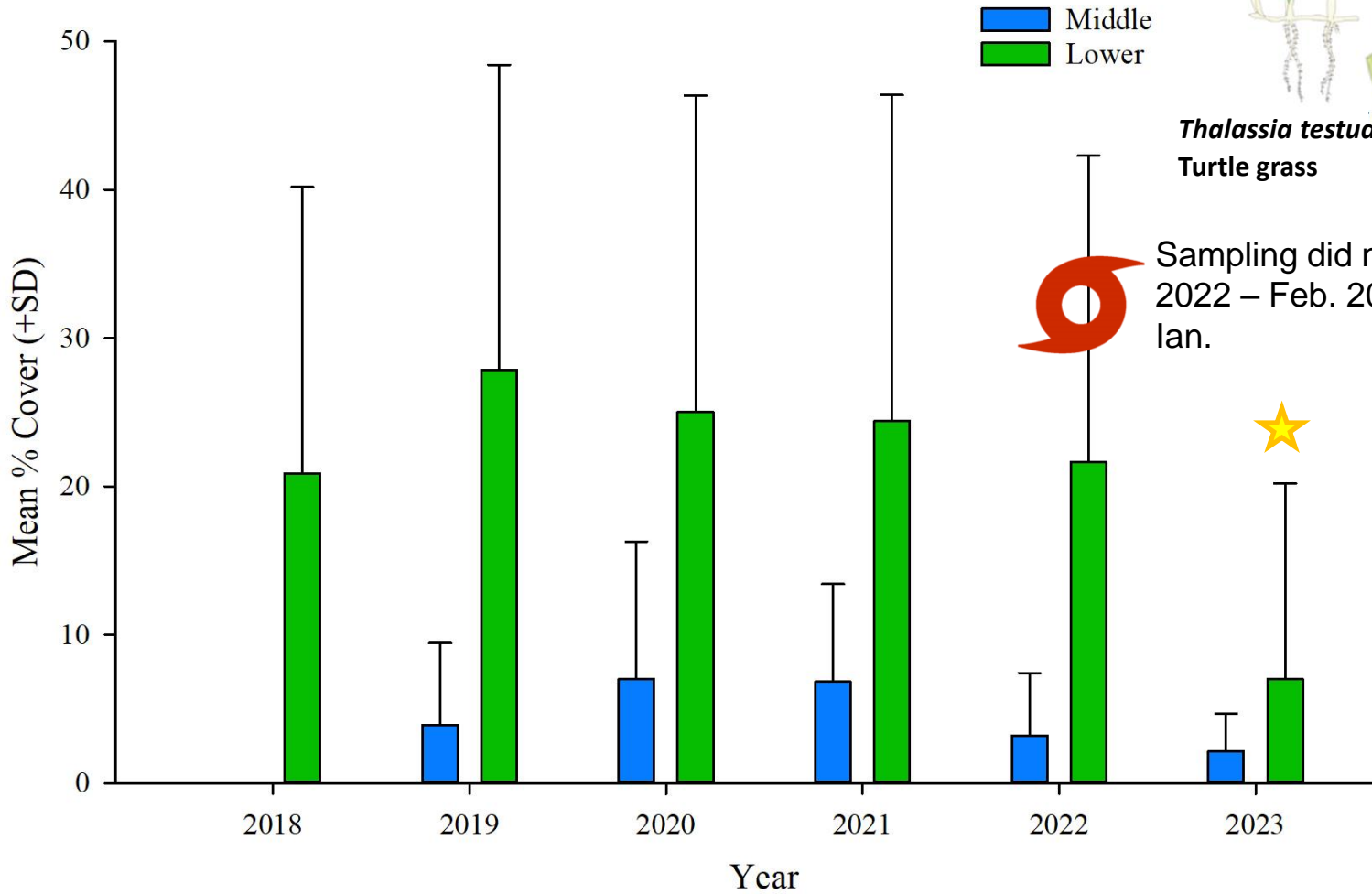


	Matlacha Pass	San Carlos Bay	Estero Bay	Tidal Caloosahatchee	Pine Island Sound
Loss/Gain	- 3,769	- 1,041	- 816	- 297	+ 1,355
% Change	↓ 46 %	↓ 15 %	↓ 22 %	↓ 72 %	↑ 4 %

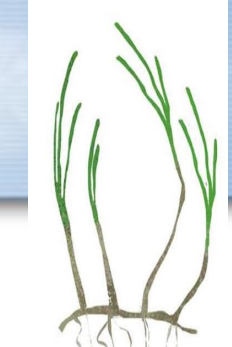
Small Scale Assessment



Total SAV Coverage



Thalassia testudinum
Turtle grass



Halodule wrightii
Shoal grass

Sampling did not occur between Oct. 2022 – Feb. 2023 due to Hurricane Ian.



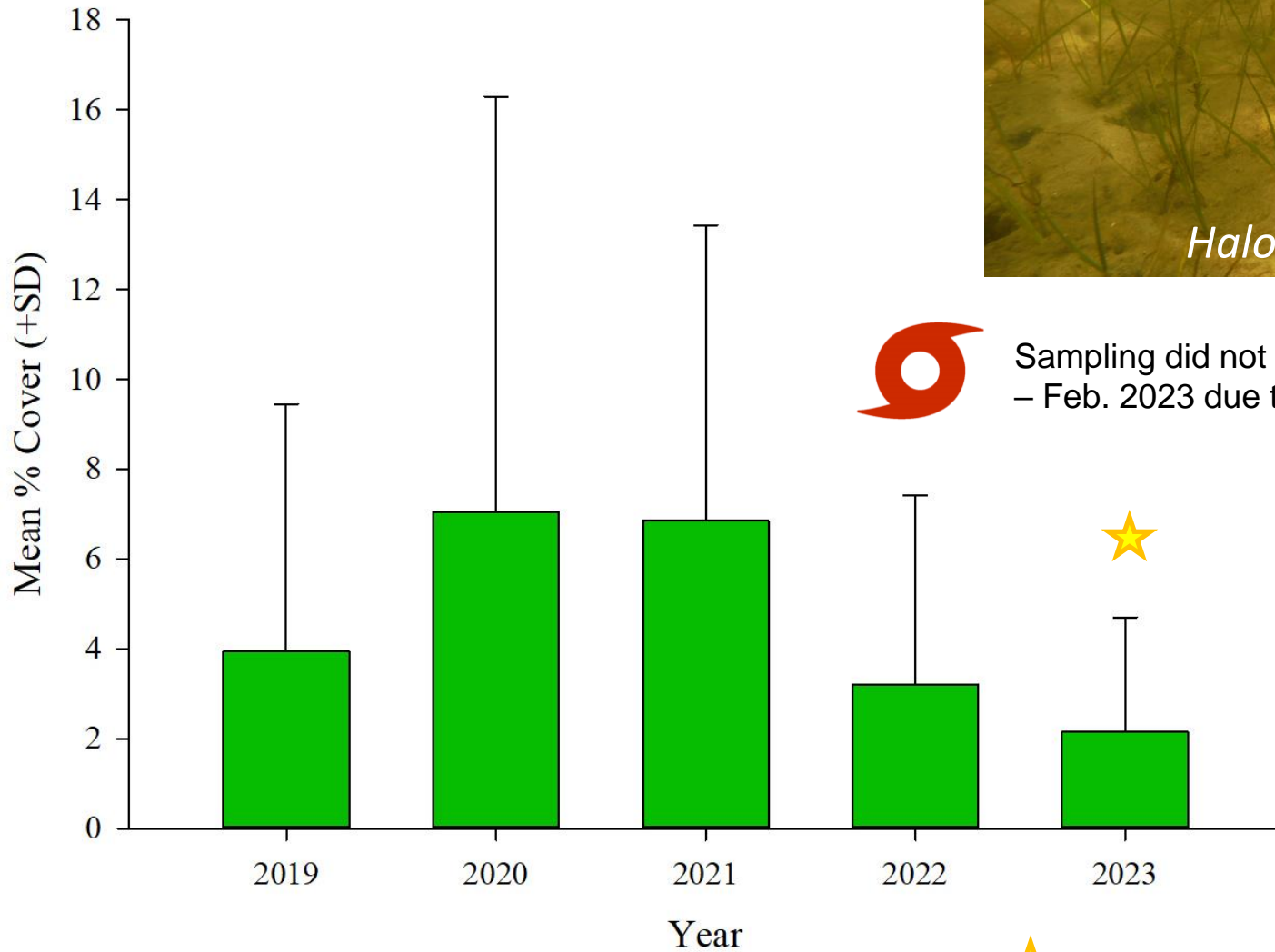
Halophila decipiens
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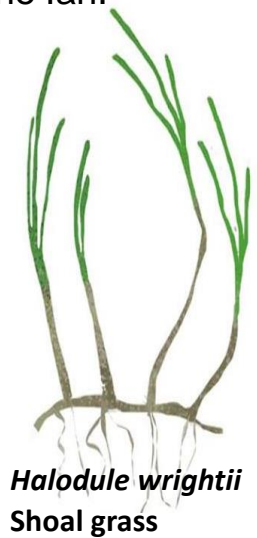
Syringodium filiforme
Manatee grass

★ 2023 only includes March 2023 sampling.

Middle Estuary

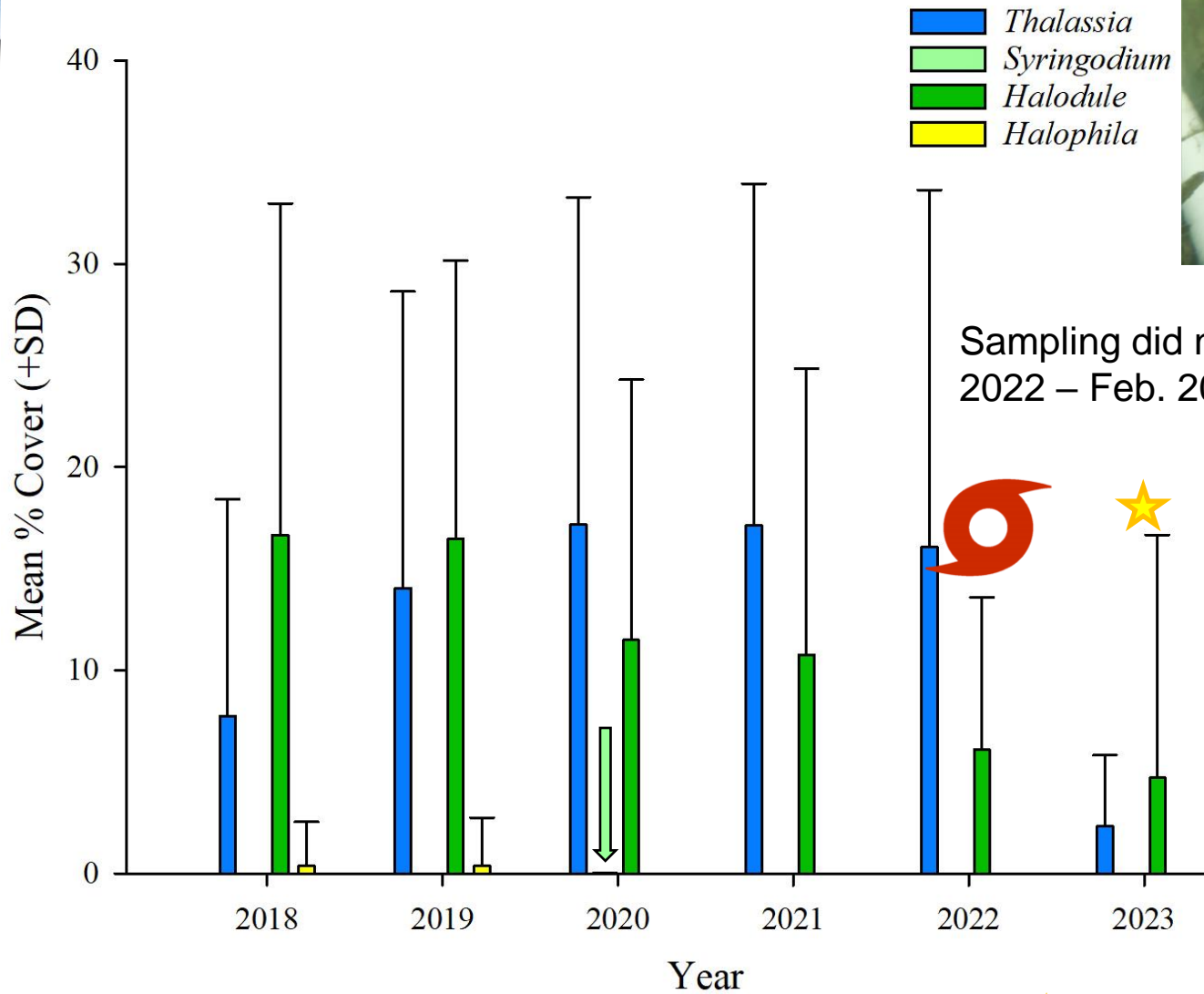
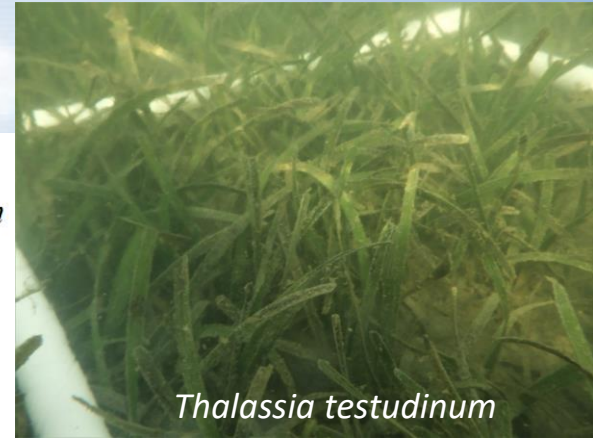


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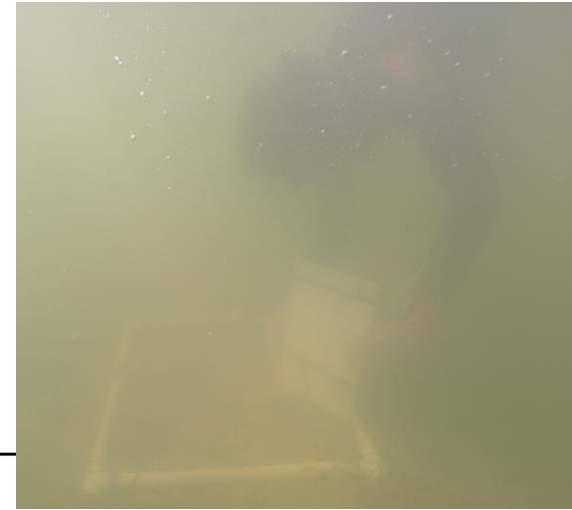


★ 2023 only includes March 2023 sampling.

Lower Estuary



Sampling did not occur between Oct. 2022 – Feb. 2023 due to Hurricane Ian.



★ 2023 only includes March 2023 sampling.

Overall Results & Future Monitoring

- Significant loss in seagrass acreage 2014 – 2021
- *Thalassia* & *Halodule* are the most abundant species
- Mean Percent Cover remains < 20 %

- Continued & Future Monitoring
 - Assess relationship between environmental conditions and seagrass coverage
 - Assess long-term data
 - Investigate relationships between seagrass & WQ
 - Increase aerial mapping to every 2 years

Acknowledgements

- Aerial mapping & pre-flight conditions monitoring made possible by:



Lee County
Southwest Florida

- Seagrass monitoring data would not be available without the hard work of the SFWMD staff, both past and present.

