2024 Springs Coast Seagrass Mapping Results

Springs Coast Management Committee Meeting
July 9, 2025

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Natural Systems and Restoration Bureau

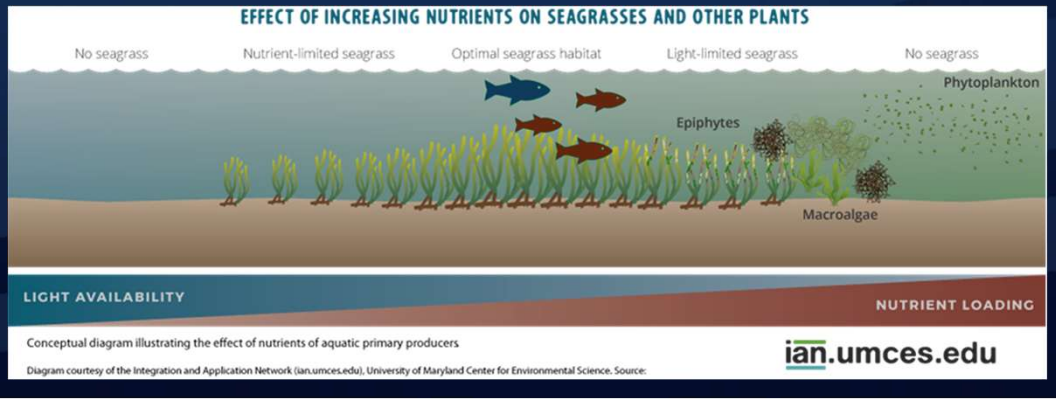
Surface Water Improvement and Management
SWIM
Southwest Florida
Water Management District

Presentation Outline

1. Importance of seagrasses
2. The mapping process
3. Suncoast results
4. Springs Coast results

Importance of Seagrass

- Ecologically and economically important
  - Provide habitat for fish and shellfish
  - Powerful carbon storage systems
  - Natural barriers against erosion
  - Stabilize sediment and reduce turbidity
  - Improve water quality
  - Sensitive to water quality changes



Why the District maps seagrass

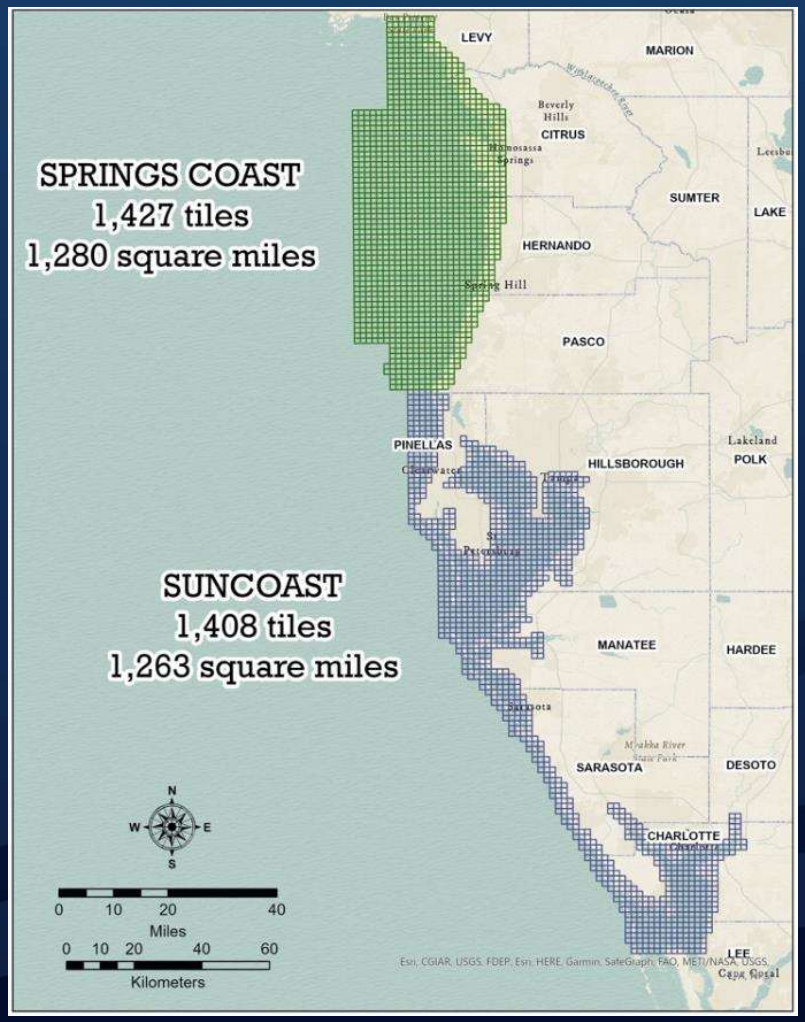
- Historical losses in Tampa Bay
- Primary indicator of long-term estuarine health
  - Canaries of the Estuary
- Used to track resource management success
- Entire region relies very heavily on these results

- District is the recognized leader in seagrass mapping
  - One of the longest running and comprehensive aerial seagrass mapping programs in the world
  - Collaborative, peer-reviewed process

Surface Water Improvement and Management
SWIM

District Seagrass Mapping Program

- Suncoast
  - 1988 – Present
  - Two-year cycle
- Springs Coast
  - 2007 – Present
  - Four-year cycle
- Methodology similar with other WMDs
  - SJRWMD – Indian River Lagoon
  - SFWMD – Estero Bay



SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Seagrass Mapping Process

Image Acquisition

Photointerpretation

Field Verification

Image Acquisition

- Aerial Imagery Acquisition
  - Leica Airborne Digital Sensor (ADS100)
  - 1-Foot Pixel Resolution (Springs Coast only)
  - Flight window (December – February)
  - Strict go-no-go criteria for flight

Map results represent pre-2024 hurricane season conditions

Go-no-go Criteria for Flight

Sun Angle

Between 25 and 45 degrees (1000-1430)

Tidal Condition

Within +/- 2hrs of low tide, no greater than mean tide level, special attention to outgoing and slack tides for inlets/passes

Sky Condition

0% - District discretion if clouds over land

Wave Height

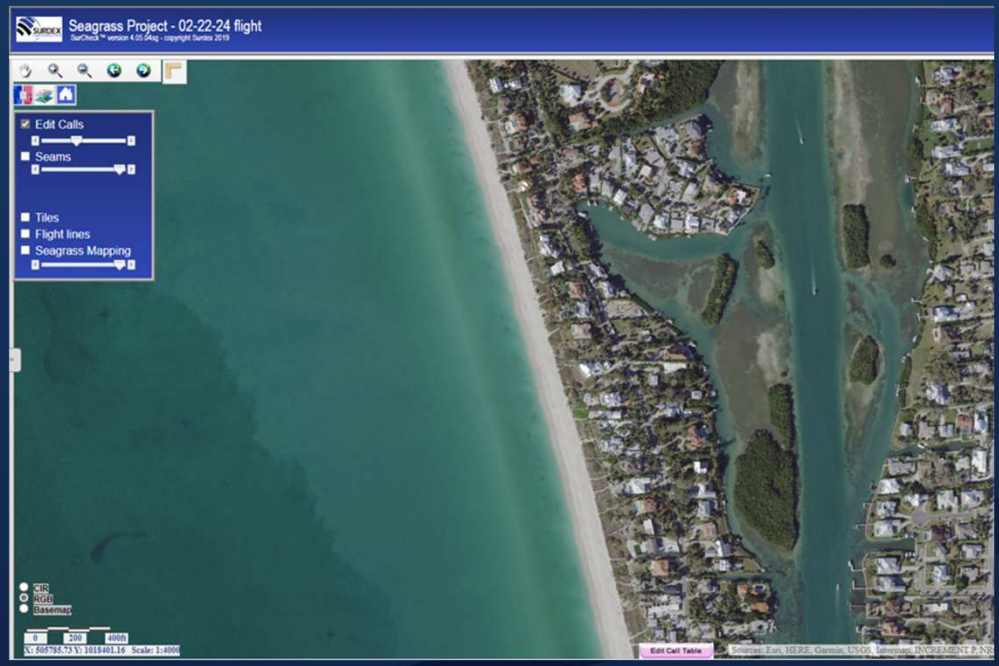
Less than 2 feet

Wind Condition

Sustained winds <10 mph within preceding 48 hours minimum

Image Acquisition

- Post-processing
  - District photogrammetric requirements
  - Secondary imagery from re-flights
  - Ground control survey for horizontal accuracy
  - Color balance, pixel stretching, edge matching
  - Mosaic creation

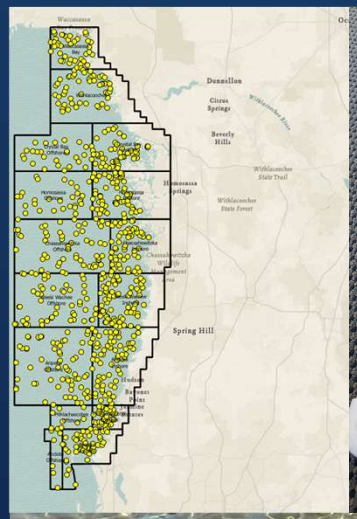


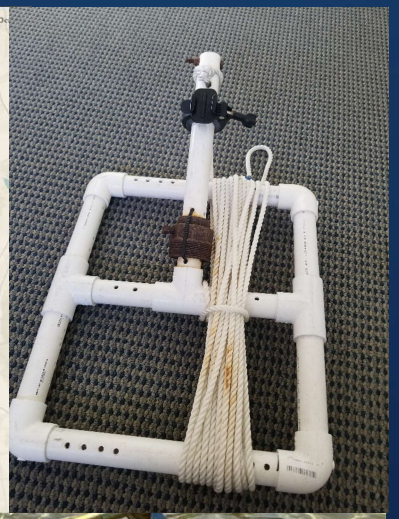
Final imagery approval by District Survey Supervisor

Field Verification

- Accuracy Assessment
  - Independent contractor
  - Must achieve 90% accuracy
- Photo-Interpreter Field Checks
- Draft Map QC Checks

- Innovative and Technological Advances
  - Video-based point attribution
  - Over 2,000 field verification points collected



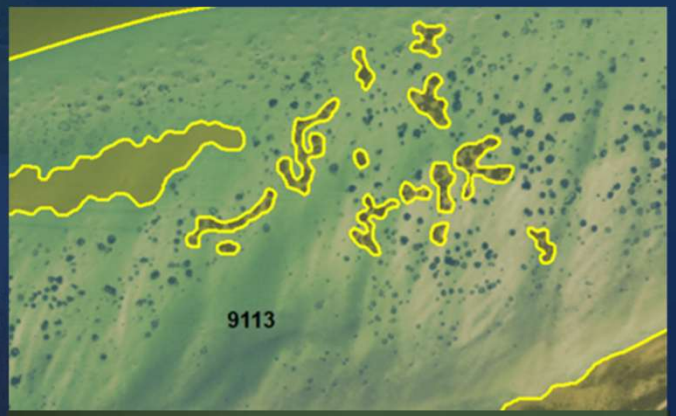


Photointerpretation

- Maps only represent the spatial distribution of seagrass - Not species or condition

Continuous (9116)

Patchy (9113)

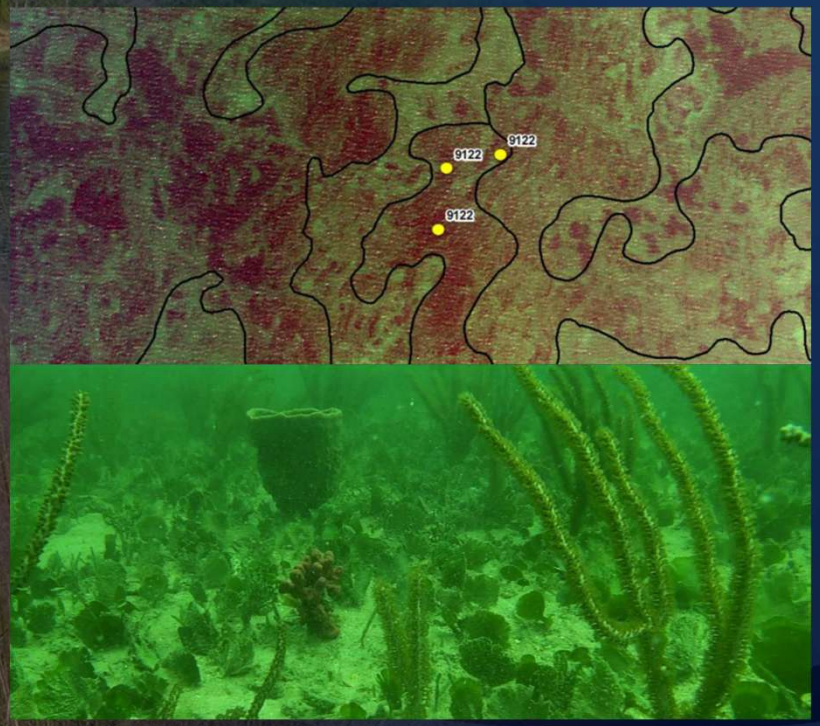


Composite Colonized Seagrass (9115)

Photointerpretation

- By convention, drift algae are not mapped but are recorded in field data/videos

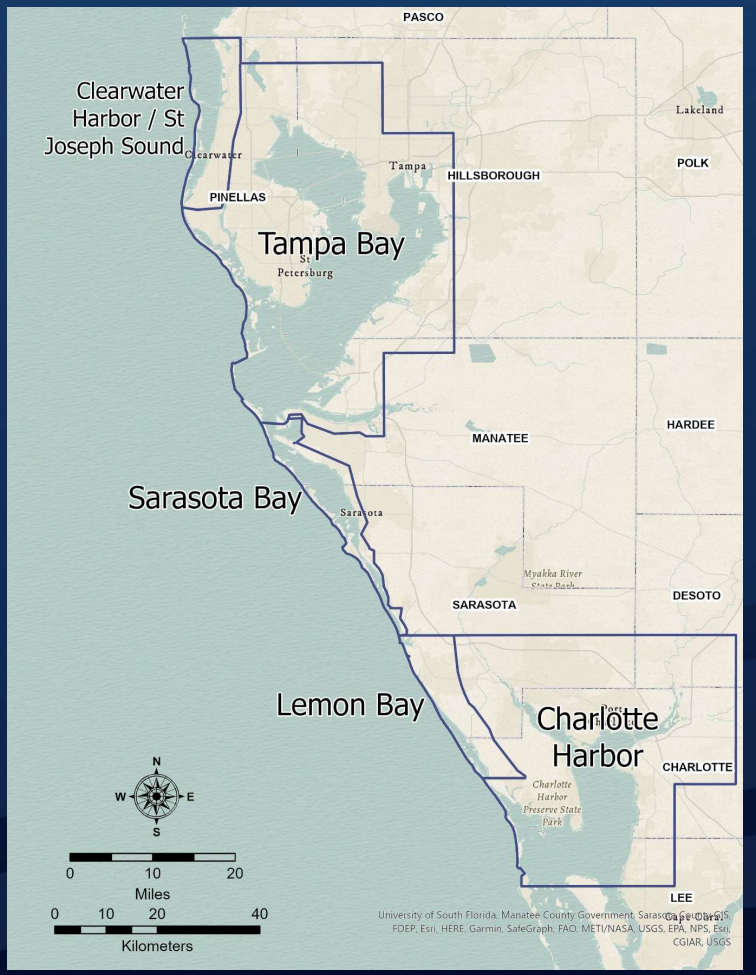
Composite Colonized Algae (9122)



Attached Algae (9121)

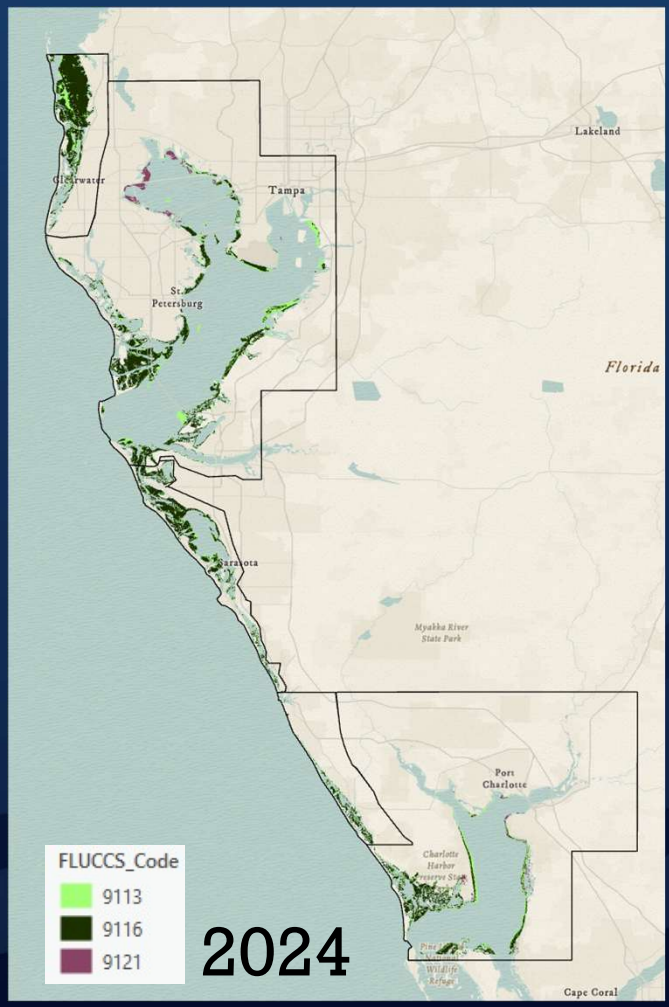
Suncoast Results

- St. Joseph Sound/Clearwater Harbor
- Tampa Bay
- Sarasota Bay
- Lemon Bay
- Charlotte Harbor



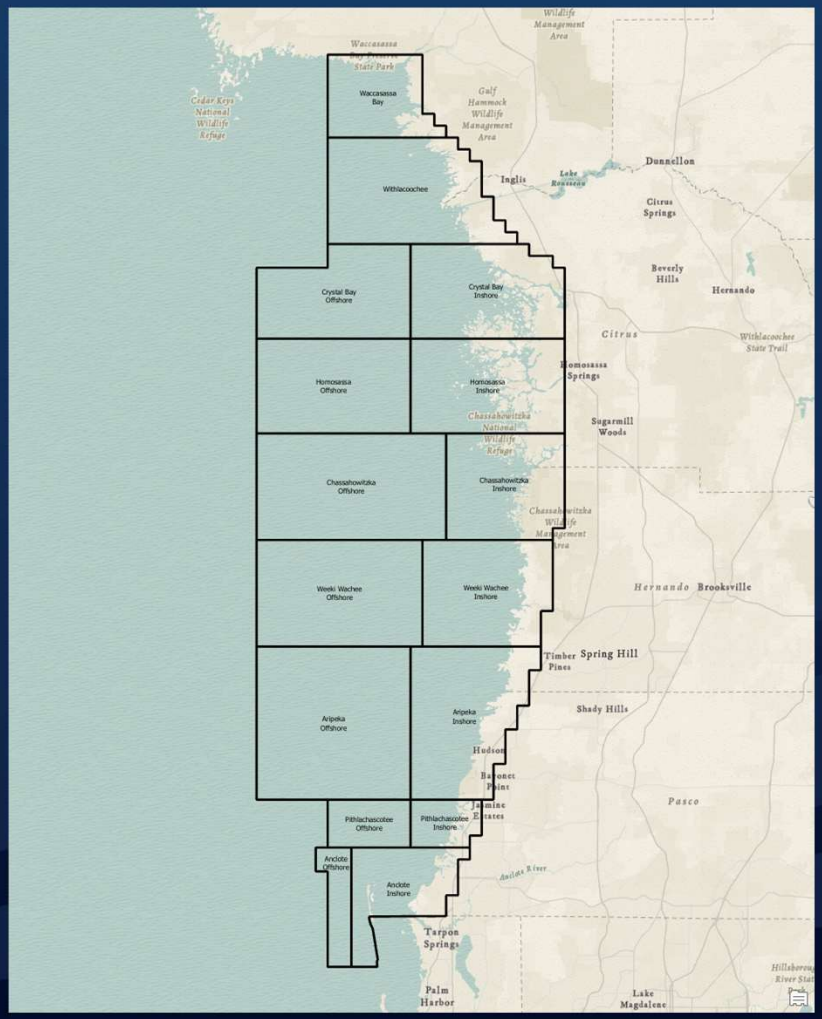
Suncoast Results

Estuary	2022 *(acres)*	2024 *(acres)*	Acreage Change	% Change
St Joseph Sound/ Clearwater Harbor	17,815	18,007	192	+1%
Tampa Bay	30,135	31,562	1,427	+5%
Sarasota Bay	9,963	11,876	1,913	+19%
Lemon Bay	2,427	2,417	-10	<1%
Charlotte Harbor	14,913	14,020	-893	-6%
Grand Total	75,253	77,882	2,629	+3%



Springs Coast Results

- Waccasassa Bay
- Withlacoochee
- Crystal Bay
- Homosassa
- Chassahowitzka
- Weeki Wachee
- Aripeka River
- Pithlachascotee
- Anclote River



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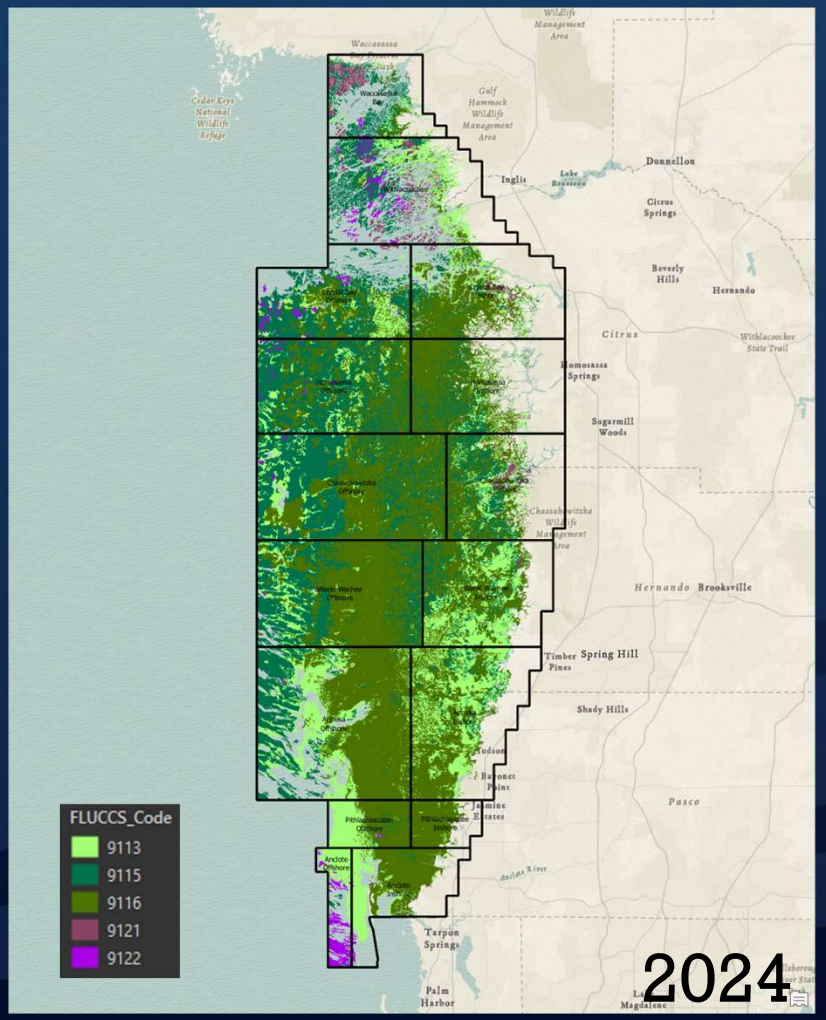
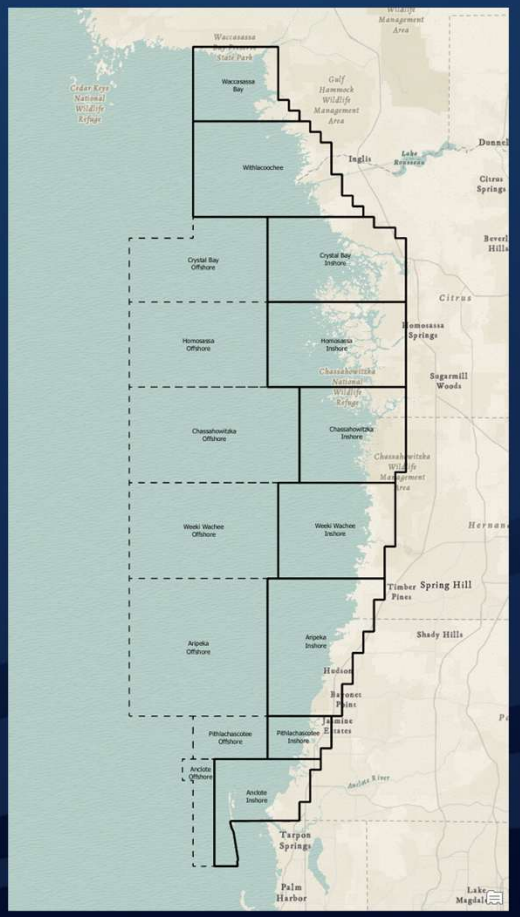
2020 *(acres)*	2024 *(acres)*
586,511	580,857

Acreage Change	% Change
-5,654	-1%

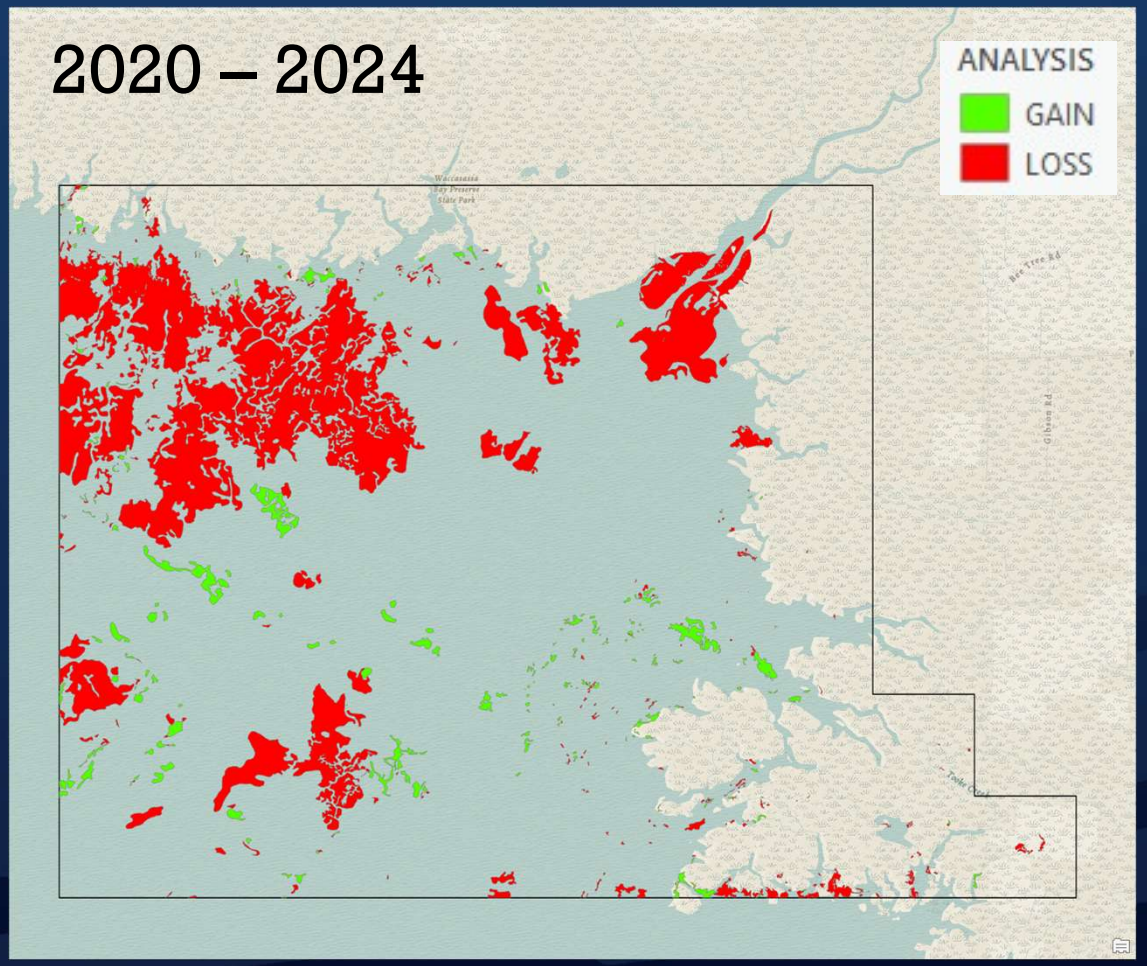


Springs Coast Results - Inshore

Segment	2020 *(acres)*	2024 *(acres)*	Acreage Change	% Change
Waccasassa Bay	12,807	9,201	-3,606	-28%
Withlacoochee	24,369	22,914	-1,455	-6%
Crystal Bay	27,223	26,381	-842	-3%
Homosassa	32,408	32,389	-19	<1%
Chassahowitzka	29,163	29,214	51	<1%
Weeki Wachee	42,249	42,206	-43	<1%
Aripeka	46,651	46,674	23	<1%
Pithlachascotee	8,427	8,444	16	<1%
Anclote	17,912	19,084	1,172	+7%
Inshore Total	241,209	236,507	-4,702	-2%



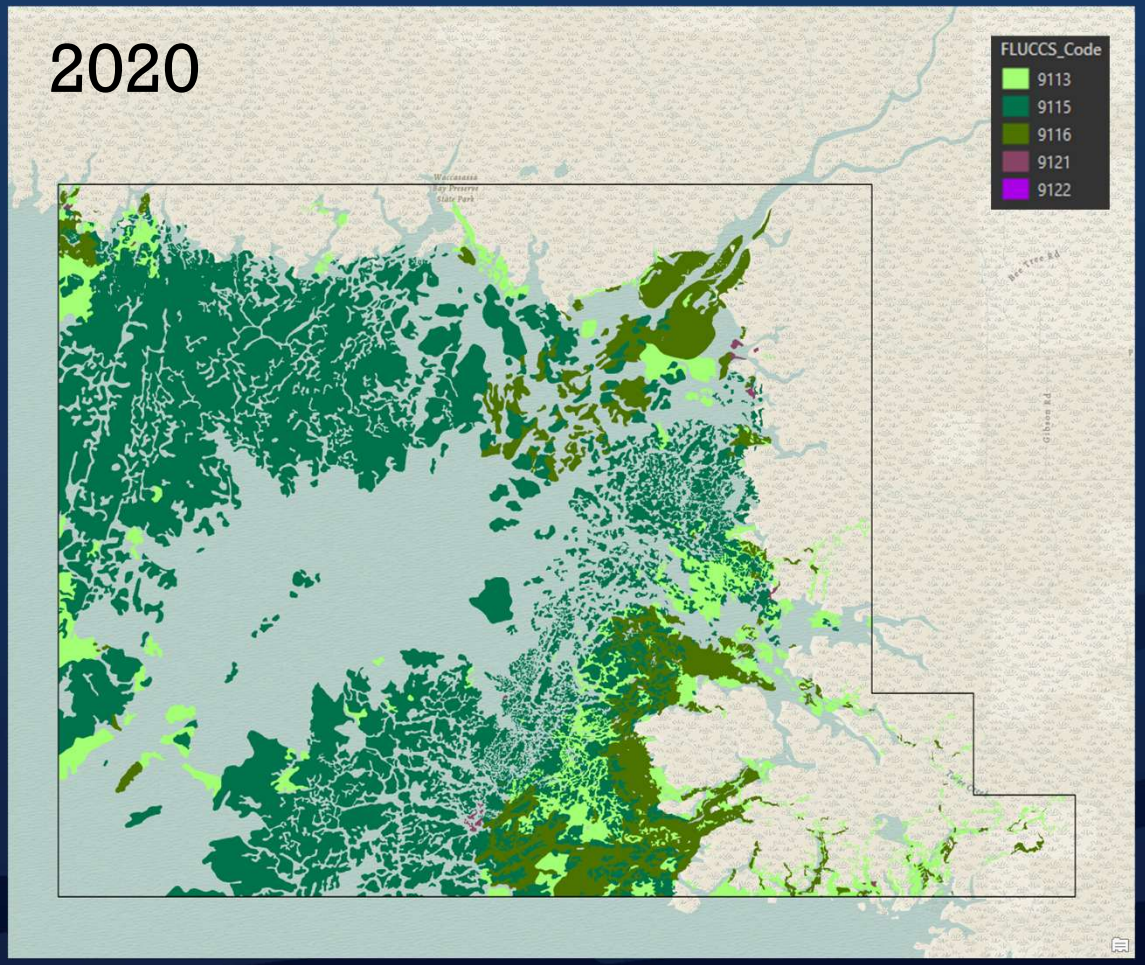
Waccasassa Bay



Waccasassa Bay

	2020 *(acres)*
Continuous / Sparse / Composite Colonized Seagrass	12,807
Composite Colonized Algae / Attached Algae	27

Composite Colonized Seagrass (9115)

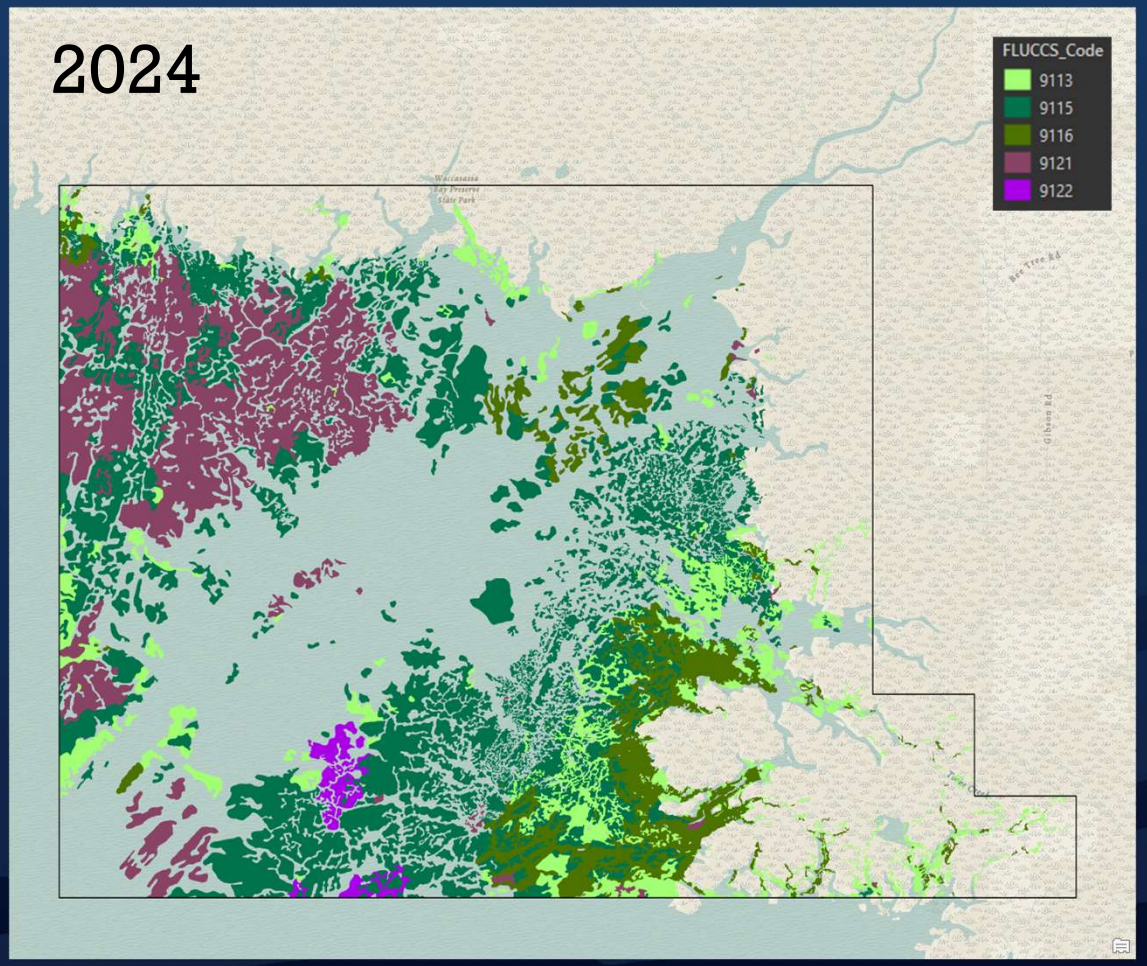


Waccasassa Bay

	2020 *(acres)*	2024 *(acres)*	Acreage Change
Continuous / Sparse / Composite Colonized Seagrass	12,807	9,201	-3,606
Composite Colonized Algae / Attached Algae	27	2,939	2,912

Composite Colonized Algae (9122)

Attached Algae (9121)



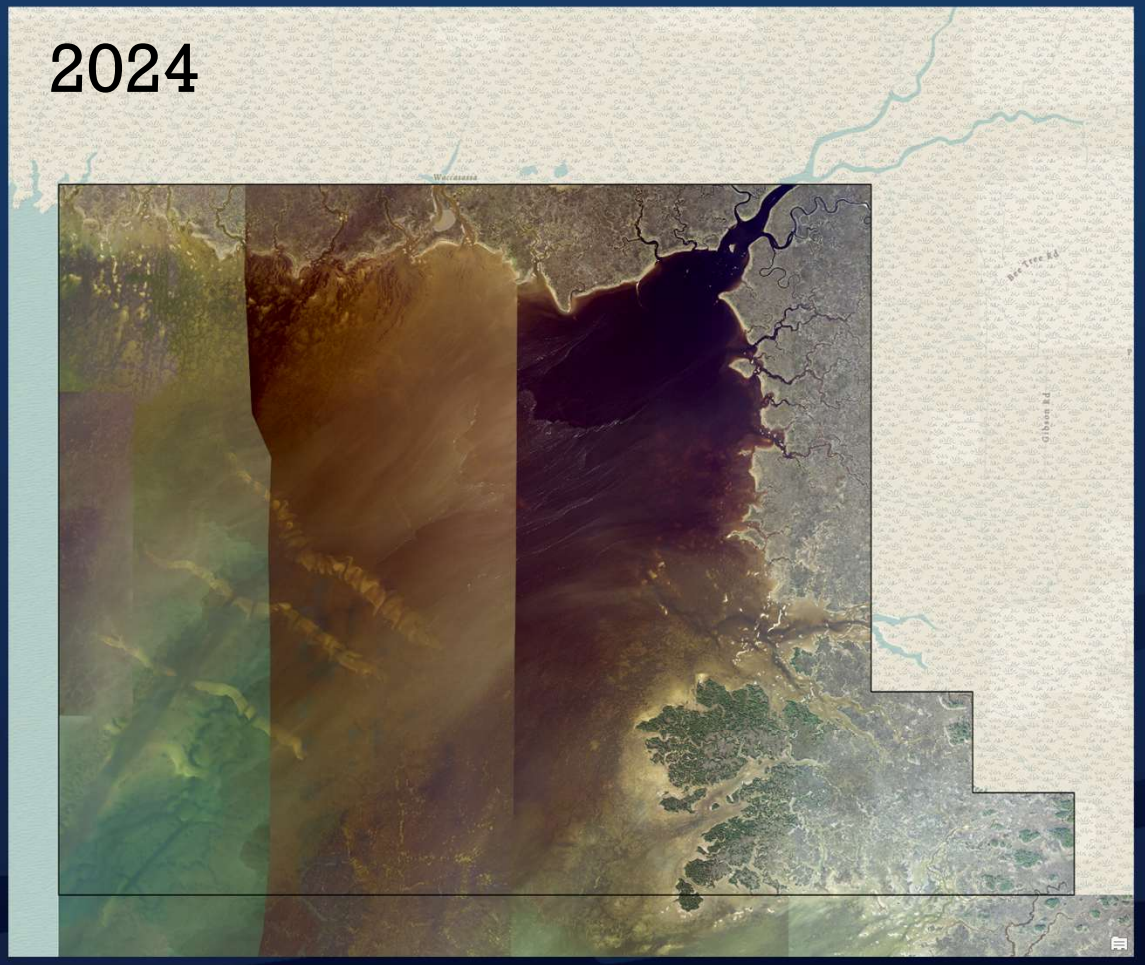
Waccasassa Bay

	2020 *(acres)*	2024 *(acres)*	Acreage Change
Continuous / Sparse / Composite Colonized Seagrass	12,807	9,201	-3,606
Composite Colonized Algae / Attached Algae	27	2,939	2,912

Composite Colonized Algae (9122)

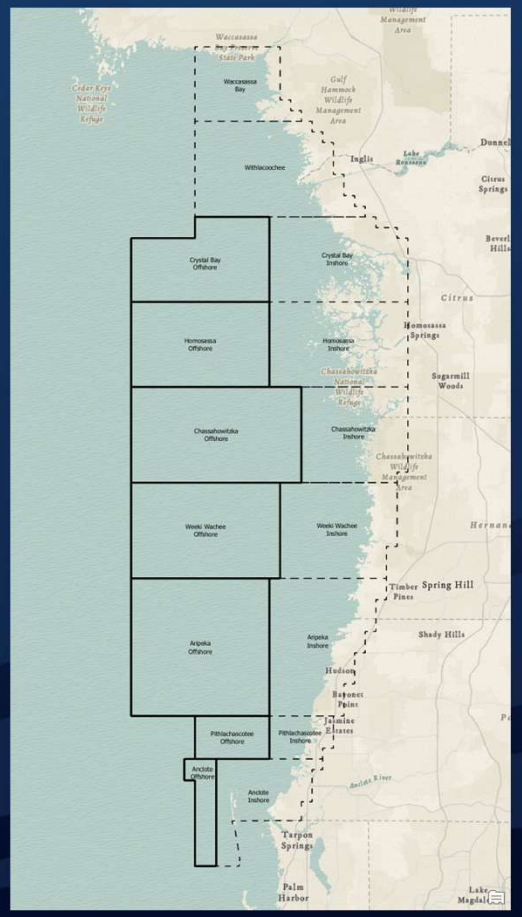
Attached Algae (9121)

2024



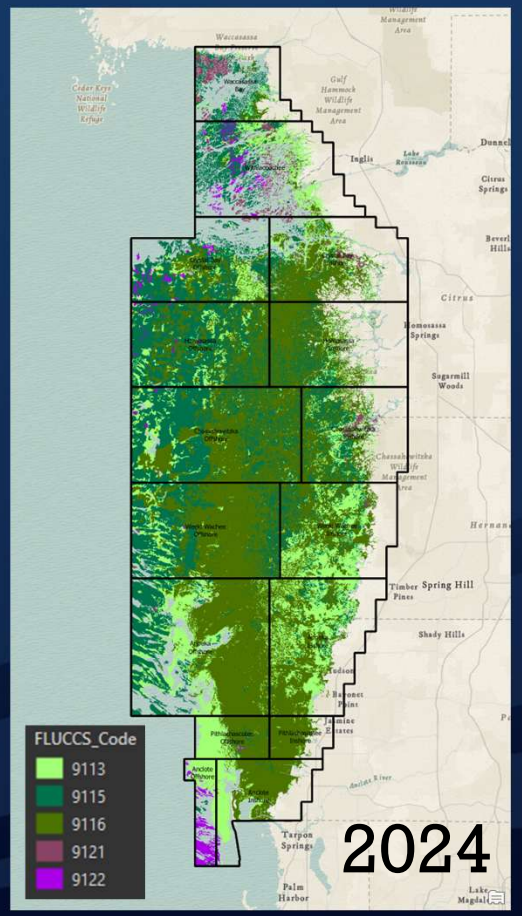
Springs Coast Results - Offshore

Segment	2020 *(acres)*	2024 *(acres)*	Acreage Change	% Change
Crystal Bay	33,780	34,233	453	+1%
Homosassa	58,639	58,997	359	+1%
Chassahowitzka	81,501	81,402	-98	<1%
Weeki Wachee	70,658	70,714	56	<1%
Aripeka	79,028	79,292	266	<1%
Pithlachascotee	15,213	15,243	30	<1%
Anclote	6,483	4,467	-2,015	-31%
Offshore Total	345,302	344,349	-953	<1%



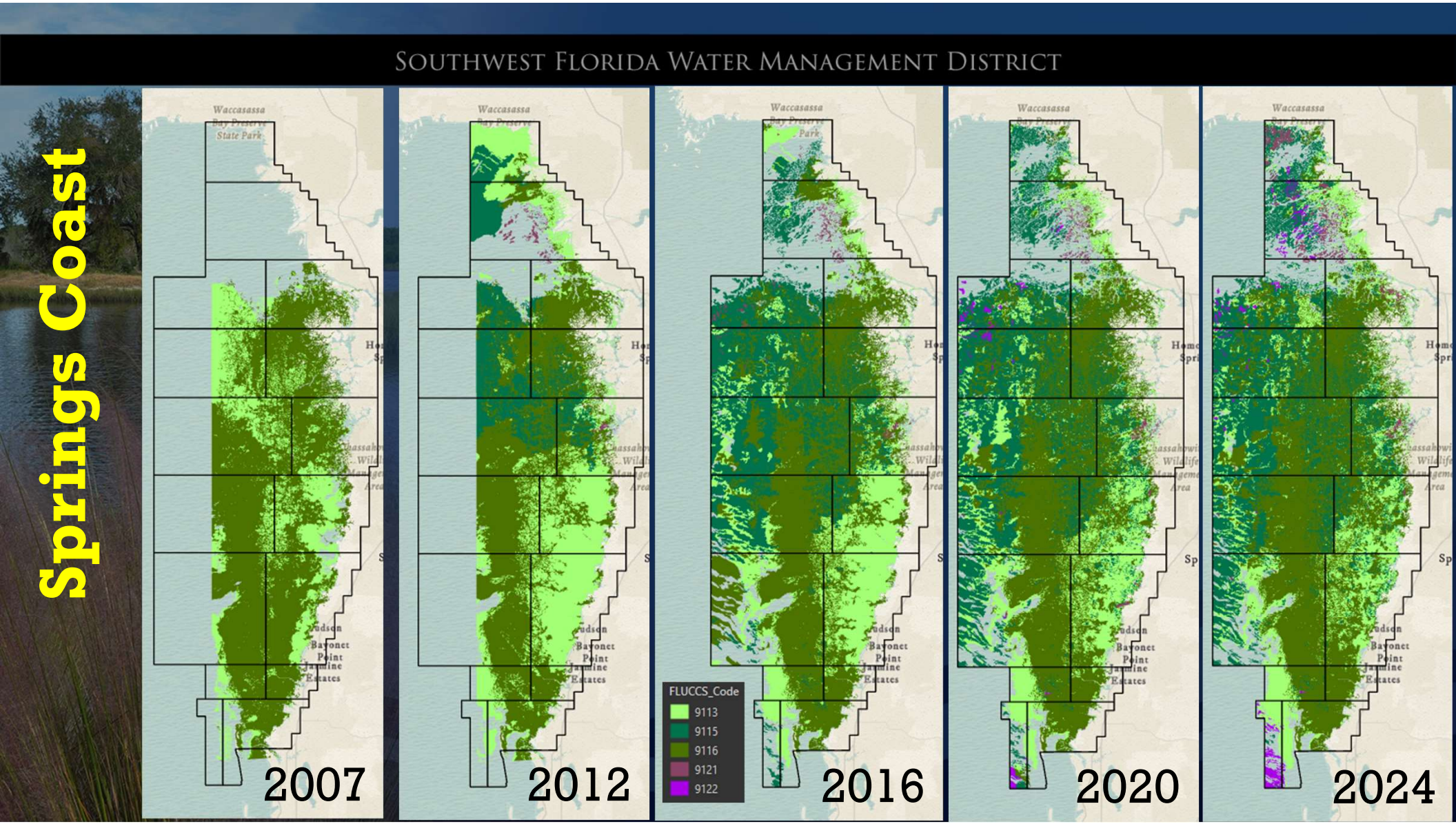
Springs Coast Results - Total

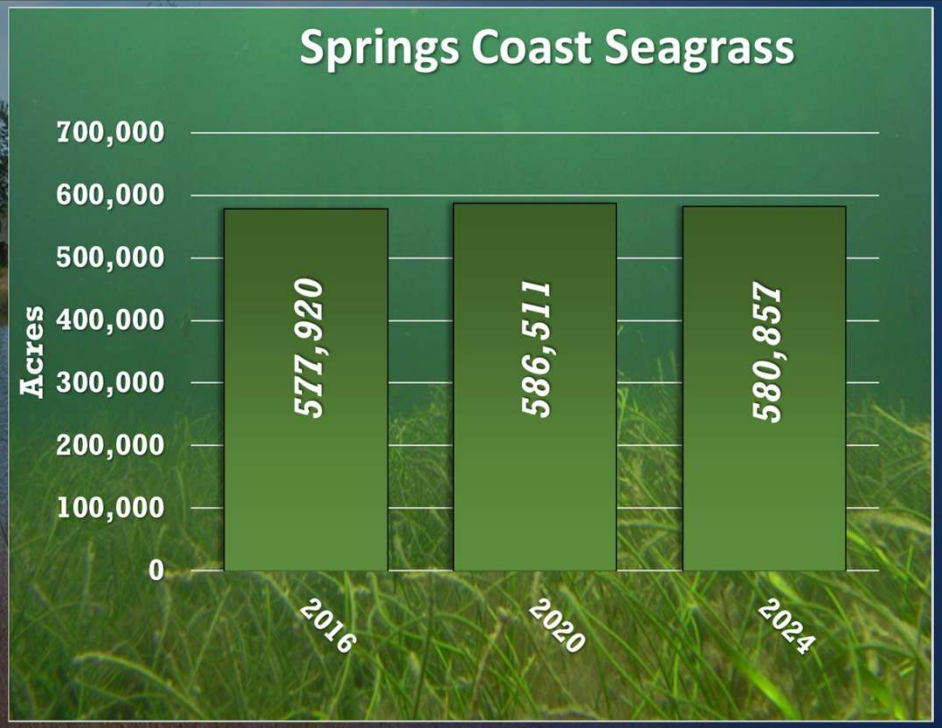
Segment	2020 *(acres)*	2024 *(acres)*	Acreage Change	% Change
Offshore Total	345,302	344,349	-953	<1%
Inshore Total	241,209	236,507	-4,702	-2%
Grand Total	586,511	580,857	-5,654	-1%



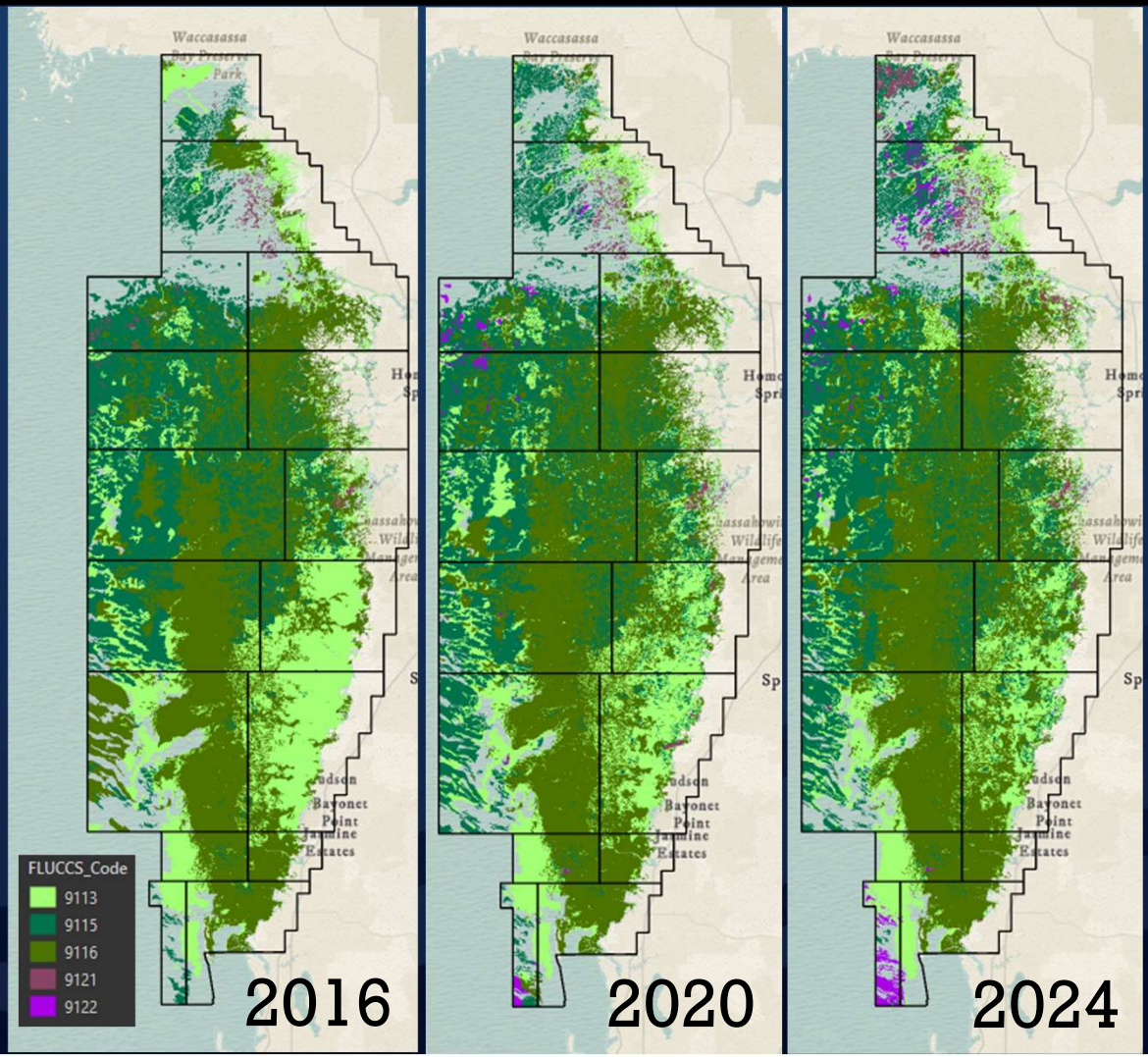
Springs Coast

Southwest Florida Water Management District





- Dominant signature is seagrass
  - Can include sponges, corals, attached algae, hard bottom
- Stable and resilient over time



Key Takeaways

Springs Coast

- Overall, little change since 2016
- Anclote Inshore seagrass gains
- Anclote Offshore and Waccasassa Bay transition from seagrass to composite colonized and attached algae
- Closely monitor changes

Grimmelbein, L.J., S.C. Barry, S. Casebolt, K. Cummings, A. Hyman, T.K. Frazer, and M. Kowalewski. 2025. Mollusk shell assemblages as a historical tool for identifying unaltered seagrass beds. *Marine Ecology Progress Series 760: 71-86.*

Thank you!

Seagrass Data

https://data-swfwmd.opendata.arcgis.com/

Download complete seagrass shapefile data. All years can be found on this page. Zip file names are abbreviated to 'sg' for seagrass and the two digit year. The files are compressed .zip files.

No subsets of this dataset are available.

Suncoast Seagrass - St. Joseph Sound/Clearwater Harbor, Tampa Bay, Sarasota Bay, Lemon Bay and Charlotte Harbor

2024 Seagrass File	2022 Seagrass File	2020 Seagrass File	2018 Seagrass File	2016 Seagrass File
2014 Seagrass File	2012 Seagrass File	2010 Seagrass File	2008 Seagrass File	2006 Seagrass File
2004 Seagrass File	2001 Seagrass File	1999 Seagrass File	1996 Seagrass File	1994 Seagrass File
1992 Seagrass File	1990 Seagrass File	1988 Seagrass File	1982 Seagrass File	

Springs Coast Seagrass - Pasco, Hernando, Citrus and parts of Levy county

2024 Seagrass File	2020 Seagrass File	2016 Seagrass File	2012 Seagrass File	2007 Seagrass File

Surface Water Improvement and Management SWIM

Southwest Florida Water Management District

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