

Ecological Conditions Update

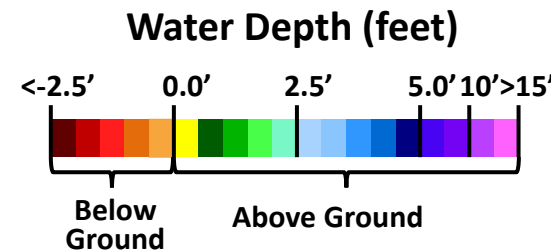
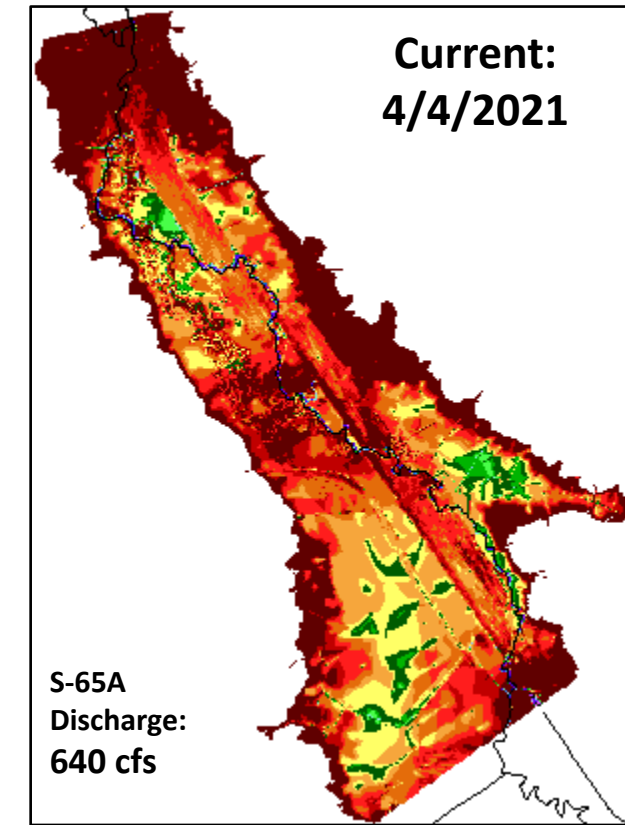
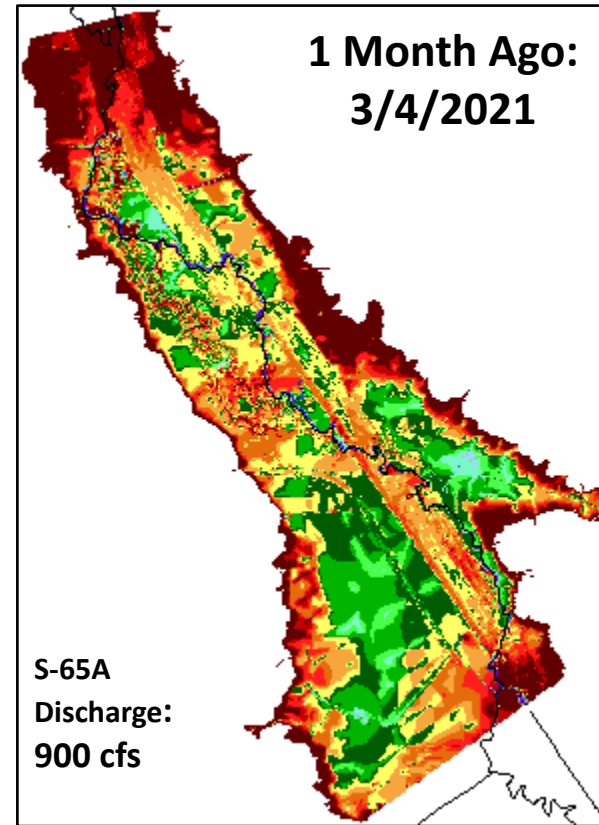
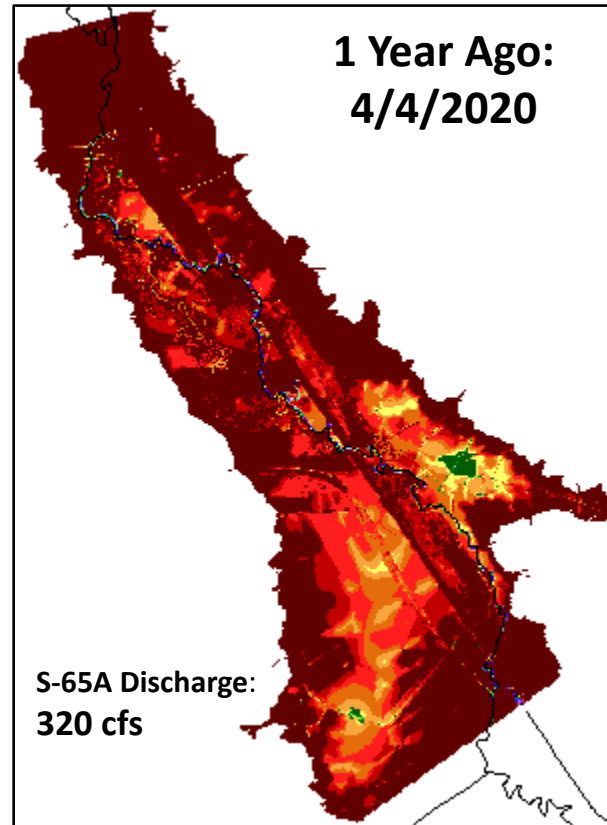
Governing Board Meeting
April 8, 2021



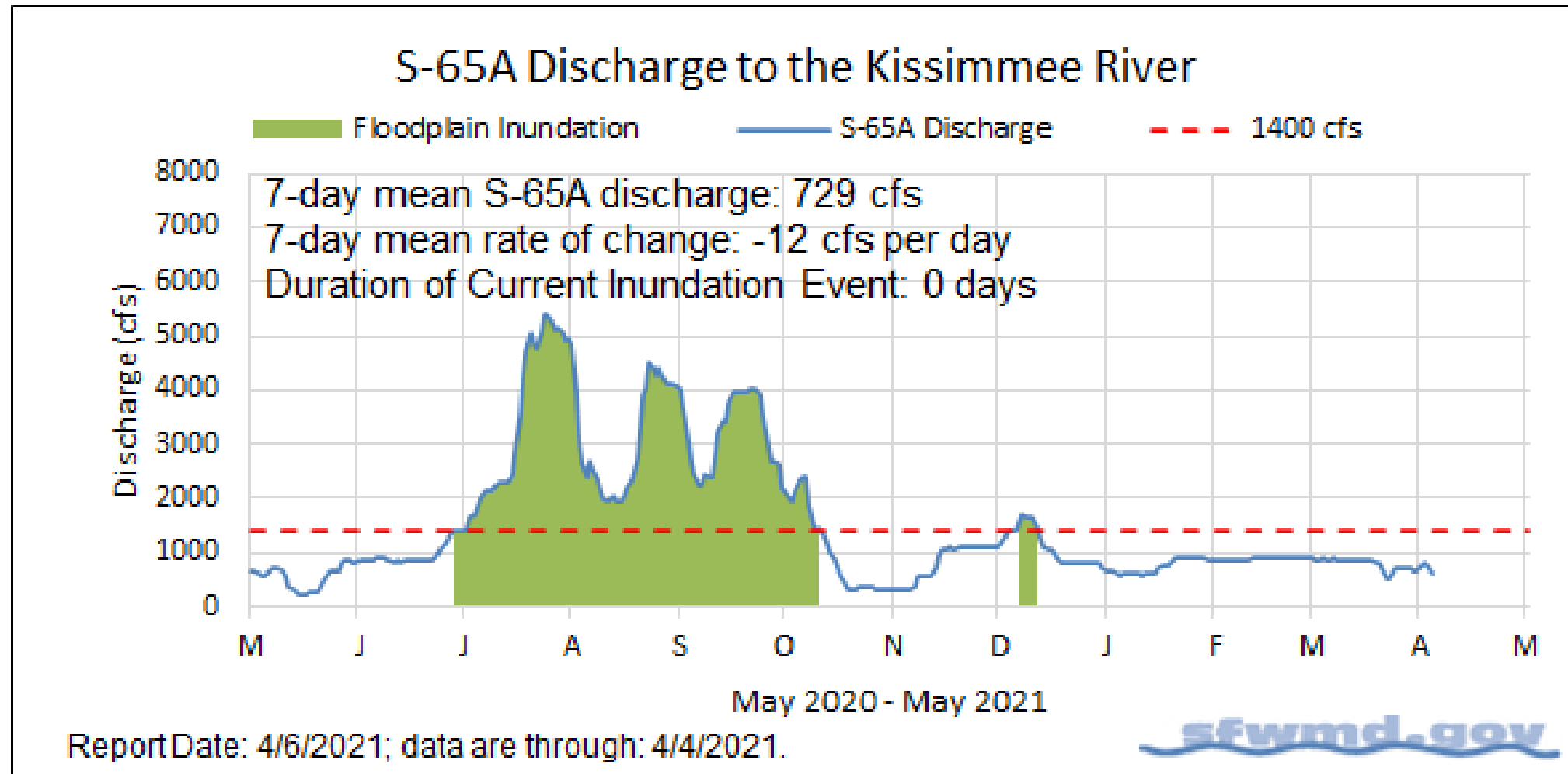
Lawrence Glenn
Division Director
Water Resources

*Phase II Restoration Area
Riverwoods Floodplain
January 28, 2021*

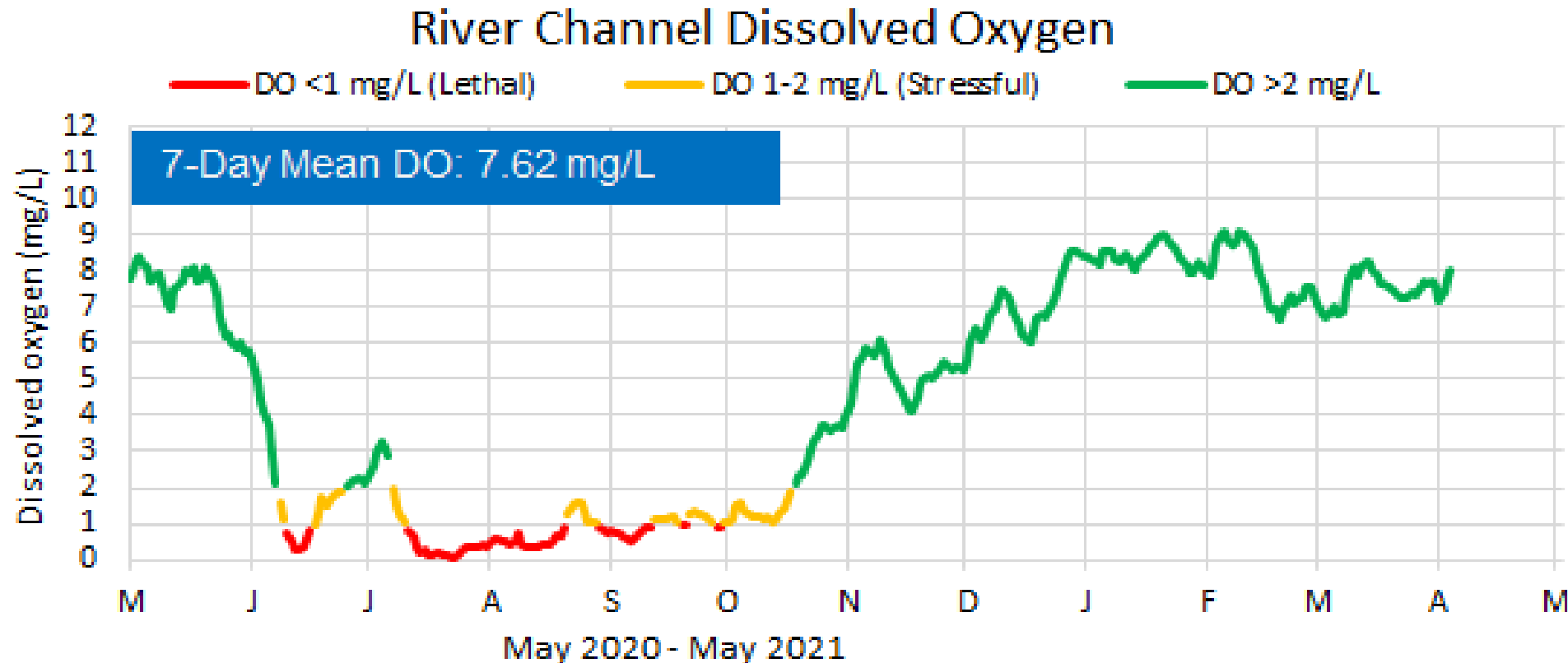
Kissimmee River Floodplain Water Depth Maps



Kissimmee River – S65A Discharges



Kissimmee River – Dissolved Oxygen



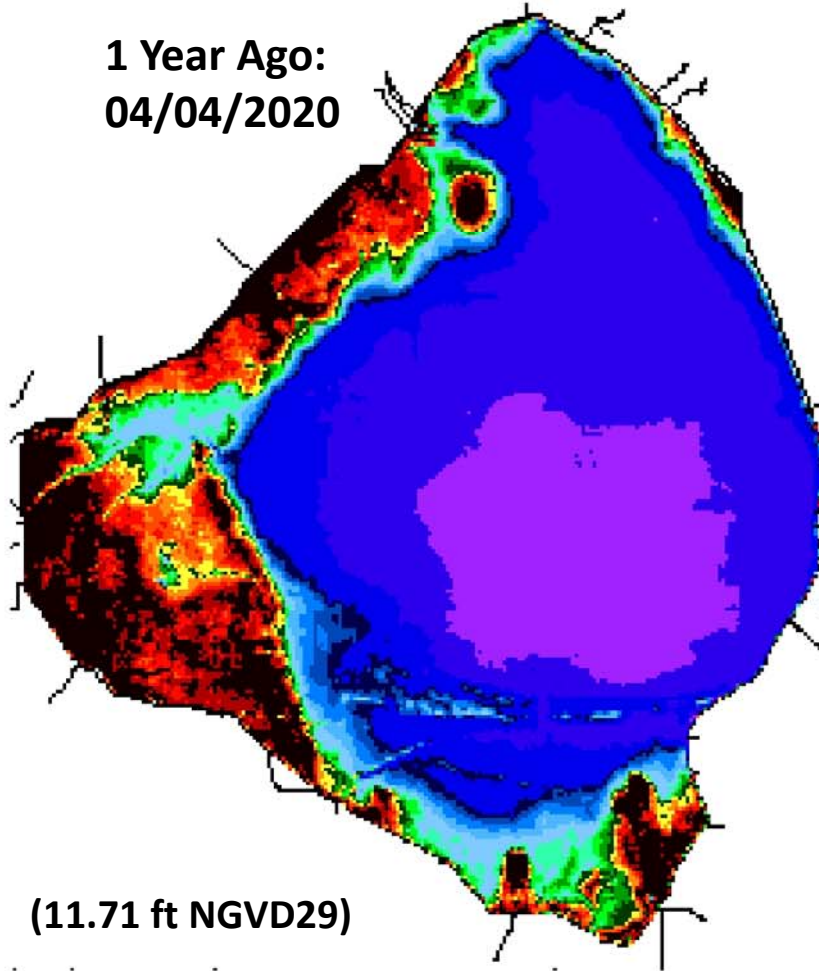
Data are averaged for PC62, KRBN, PC33, PD62R and PD42R with an average of 3 stations reporting this week.

Report Date: 4/6/2021; data are through: 4/4/2021

sfwmd.gov

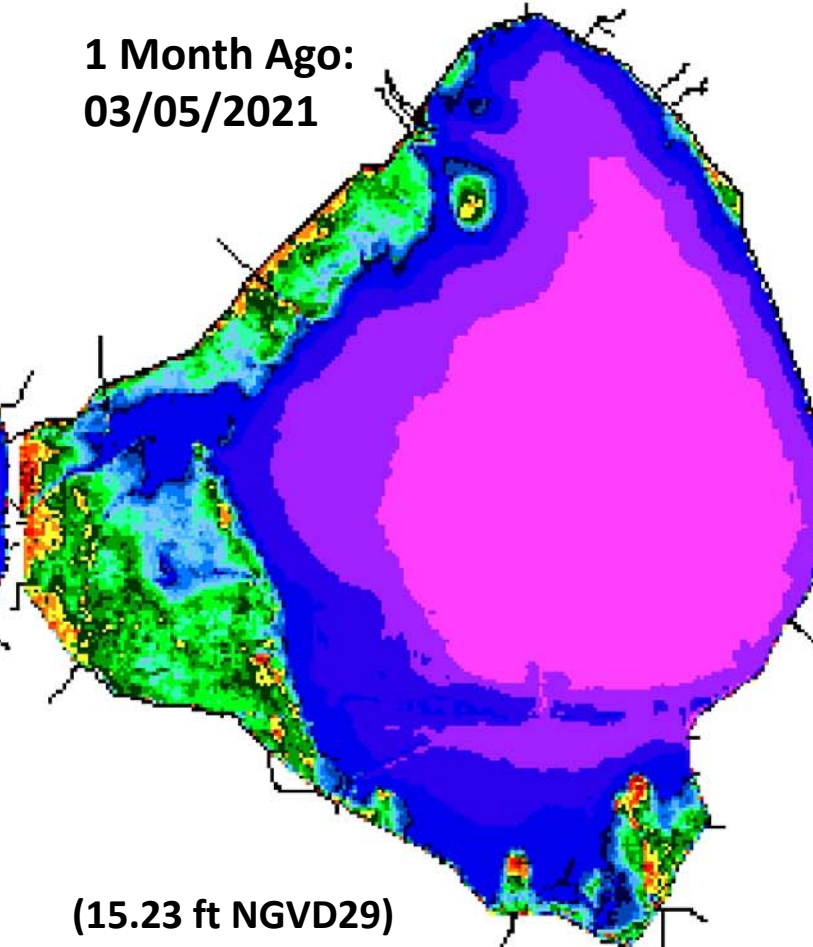
Lake Okeechobee Water Depth Maps

1 Year Ago:
04/04/2020



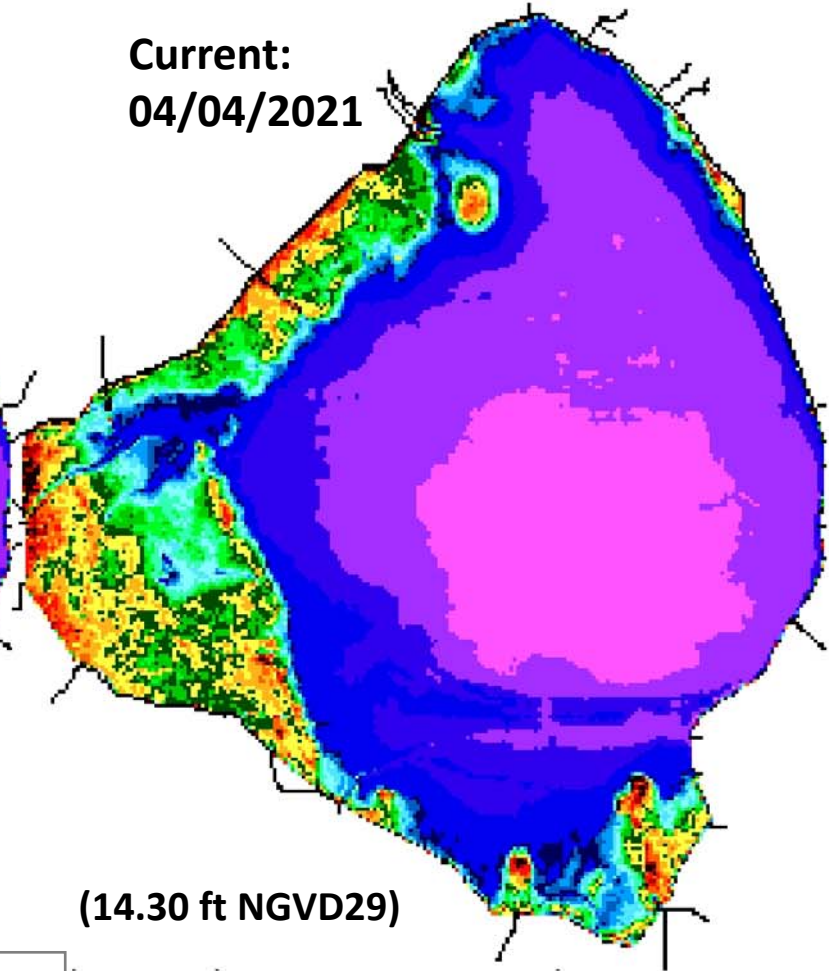
(11.71 ft NGVD29)

1 Month Ago:
03/05/2021

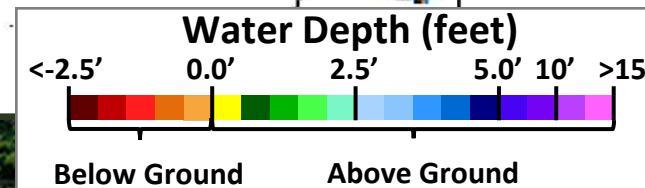


(15.23 ft NGVD29)

Current:
04/04/2021

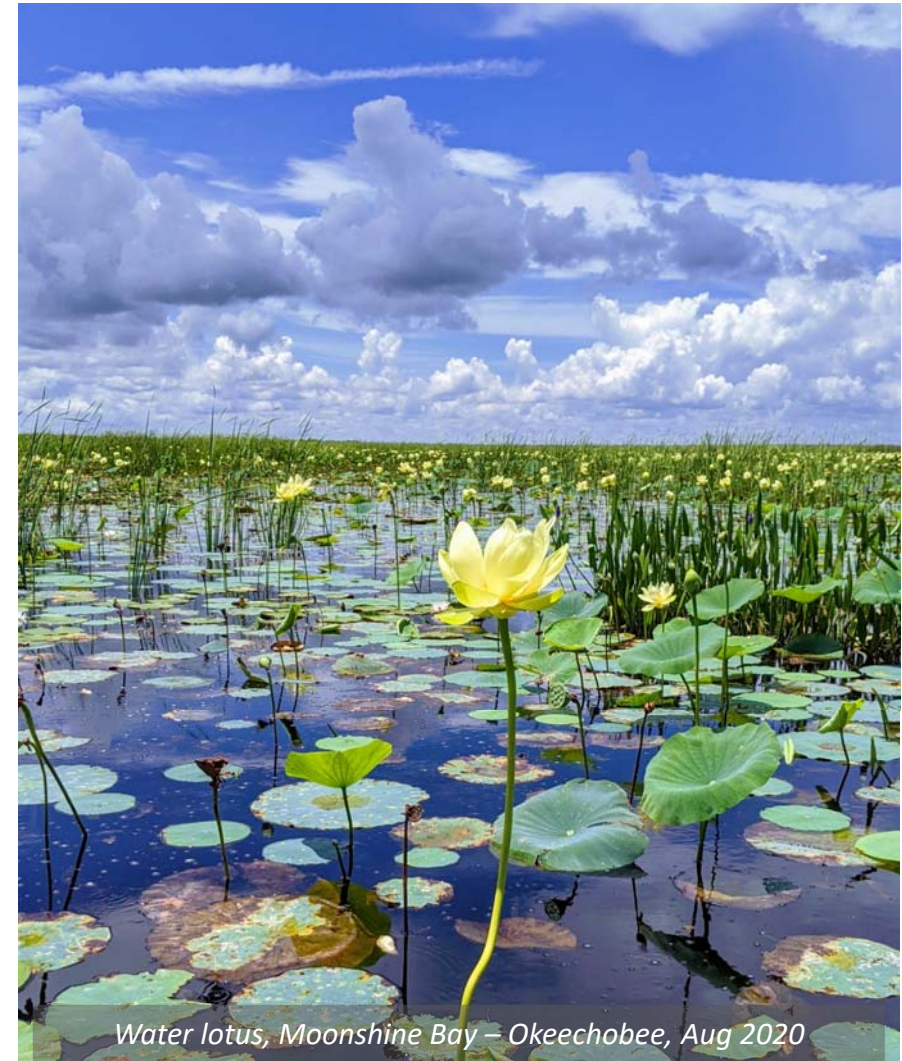
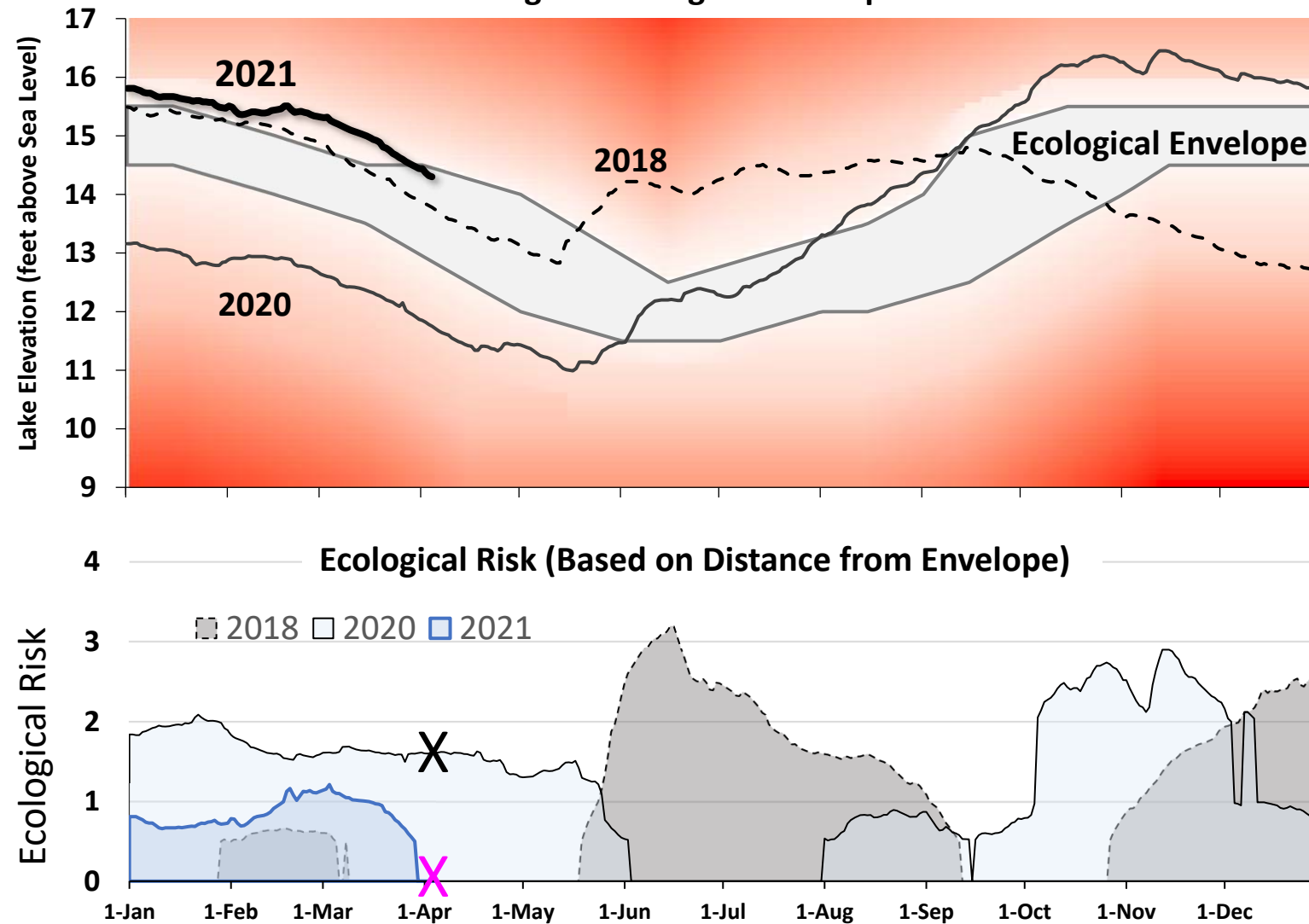


(14.30 ft NGVD29)



Lake Okeechobee Stages and Ecological Envelope

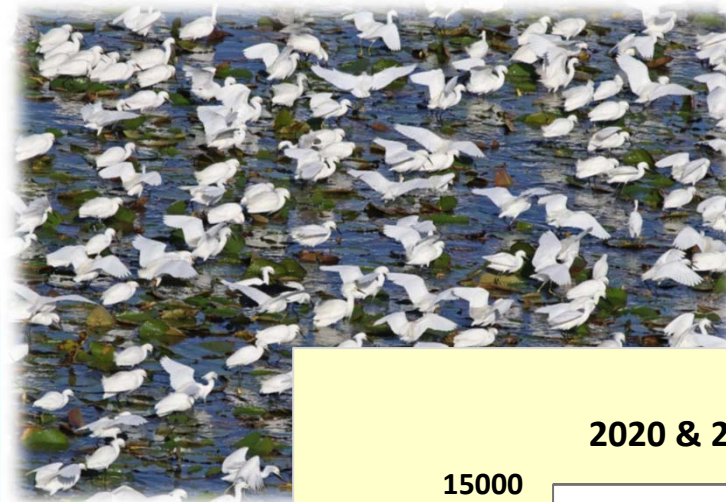
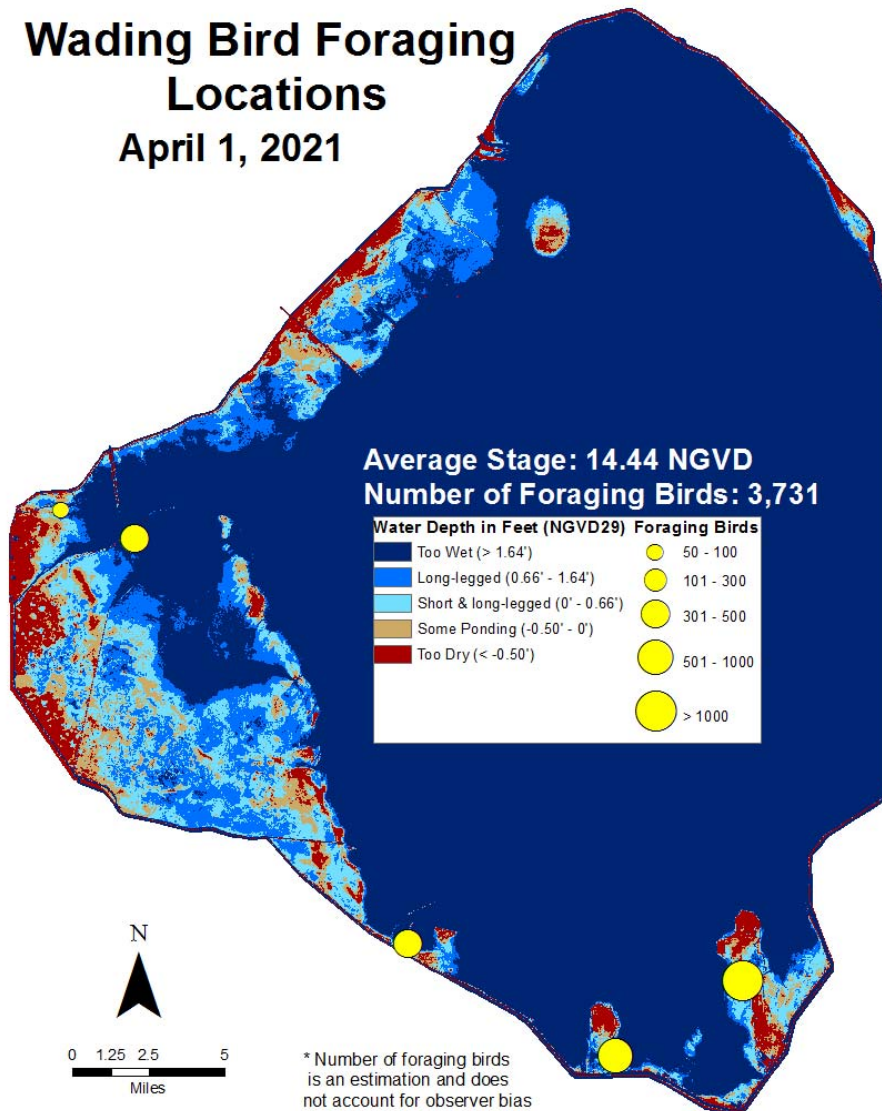
Lake Okeechobee Stage vs Ecological Envelope and Environmental Risk



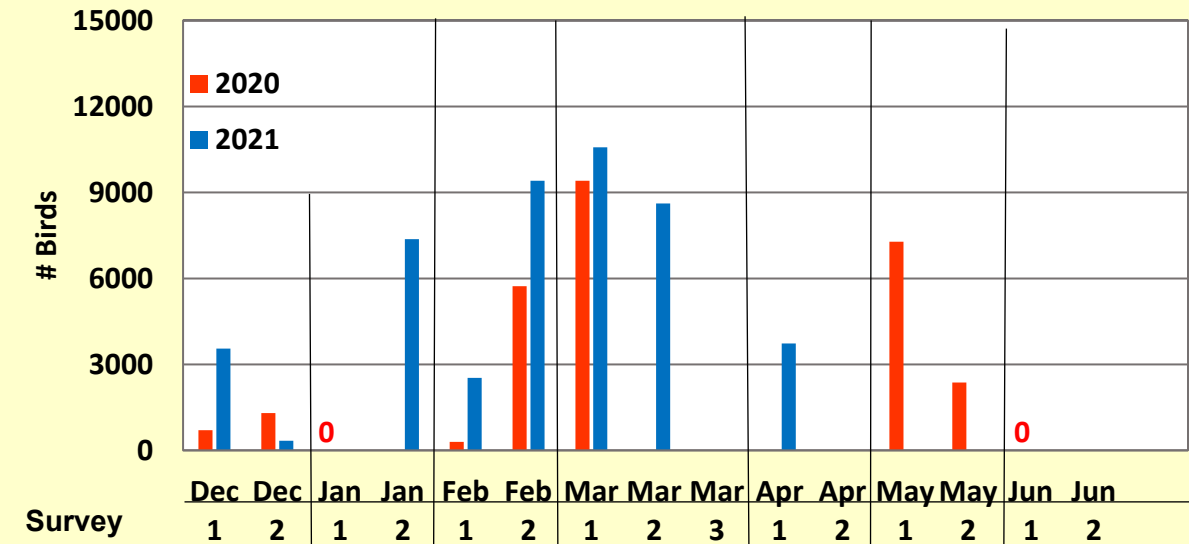
Lake Okeechobee

Foraging Wading Birds

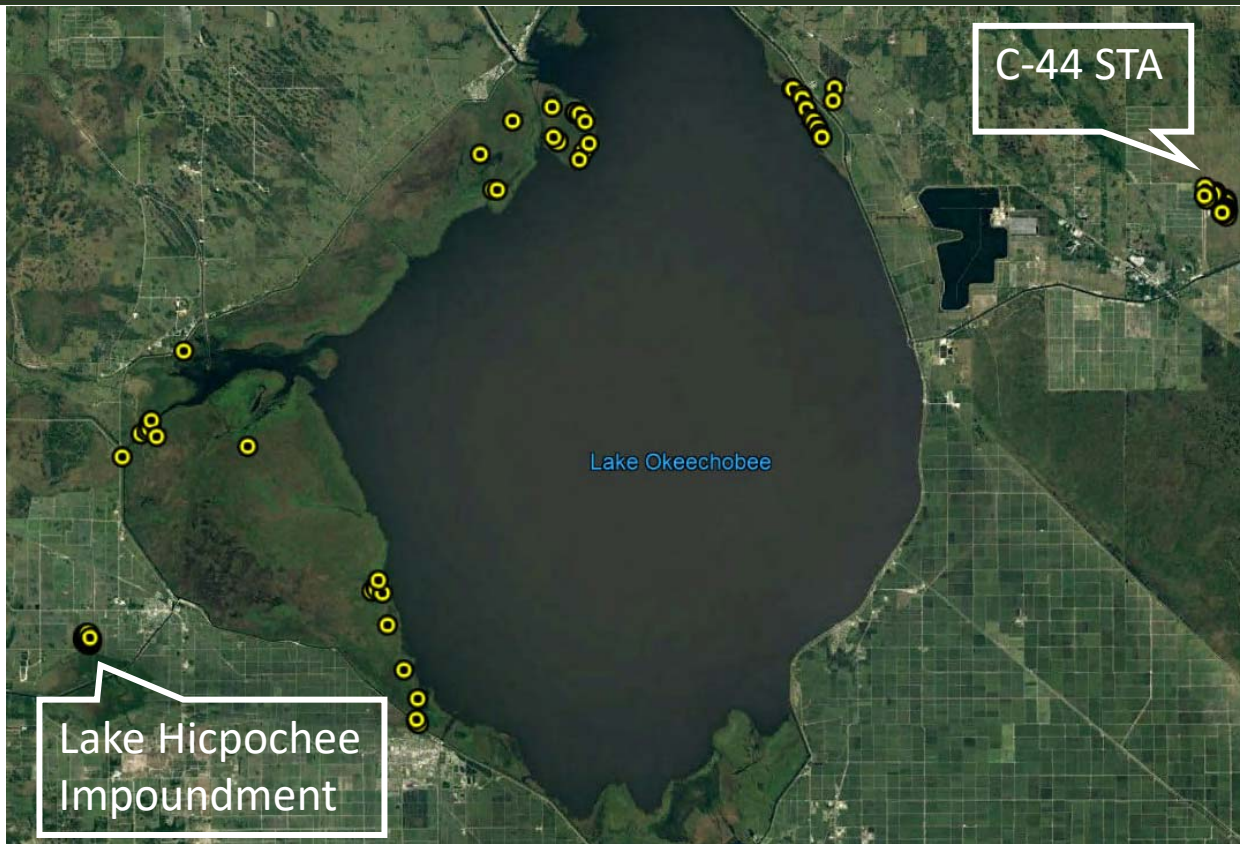
Wading Bird Foraging Locations April 1, 2021



Lake Okeechobee 2020 & 2021 Wading Bird Foraging by Survey



Snail Kite Nest Monitoring



- 50 nests on Lake Okeechobee, 2 in Lakeside Ranch STA
- 37 in C-44 STA
- 28 nests in Hicpochee Impoundment area
- 76% of currently known nests in state are in these 4 locations, 32% on Okeechobee



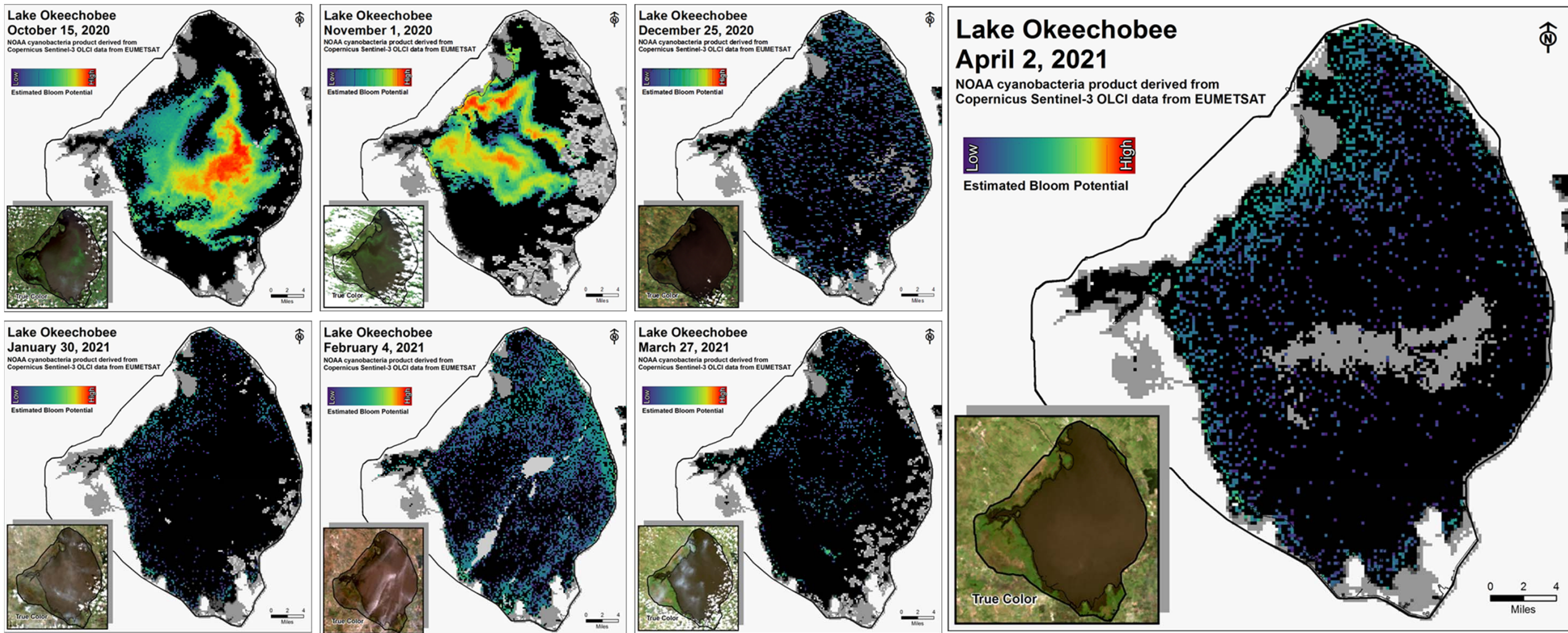
Snail Kite – Credit: Mike Tracy



Snail Kite Nestling
Credit: Jean Olbert

Lake Okeechobee

Cyanobacteria Bloom Potential



NOAA cyanobacteria product derived from Copernicus Sentinel-3 OLCI data from EUMETSAT

Lake Okeechobee Water Quality

Provisional Data

Collection Date: March 9-11, 2021

Station	CHL _a (ug/L)	TOXIN (ug/L)	TAXA
FEBIN (3/1)	42.1		
FEBOU (3/1)	38.1		
KISSR0.0	23.9	BDL	mixed
L005	11.4	BDL	mixed
LZ2	9.0	BDL	mixed
KBARSE	11.3		
RITTAE2	7.2	BDL	mixed
PELBAY3	3.2		
POLE3S	6.3		
LZ25A	5.2		
PALMOUT	13.9	BDL	mixed
PALMOUT1	11.5		
PALMOUT2	9.6		
PALMOUT3	10.2		
POLESOUT	21.9	BDL	mixed
POLESOUT1	13.7		
POLESOUT2	15.3		
POLESOUT3	12.3		
EASTSHORE	7.5		
NES135	7.5		
NES191	8.7		

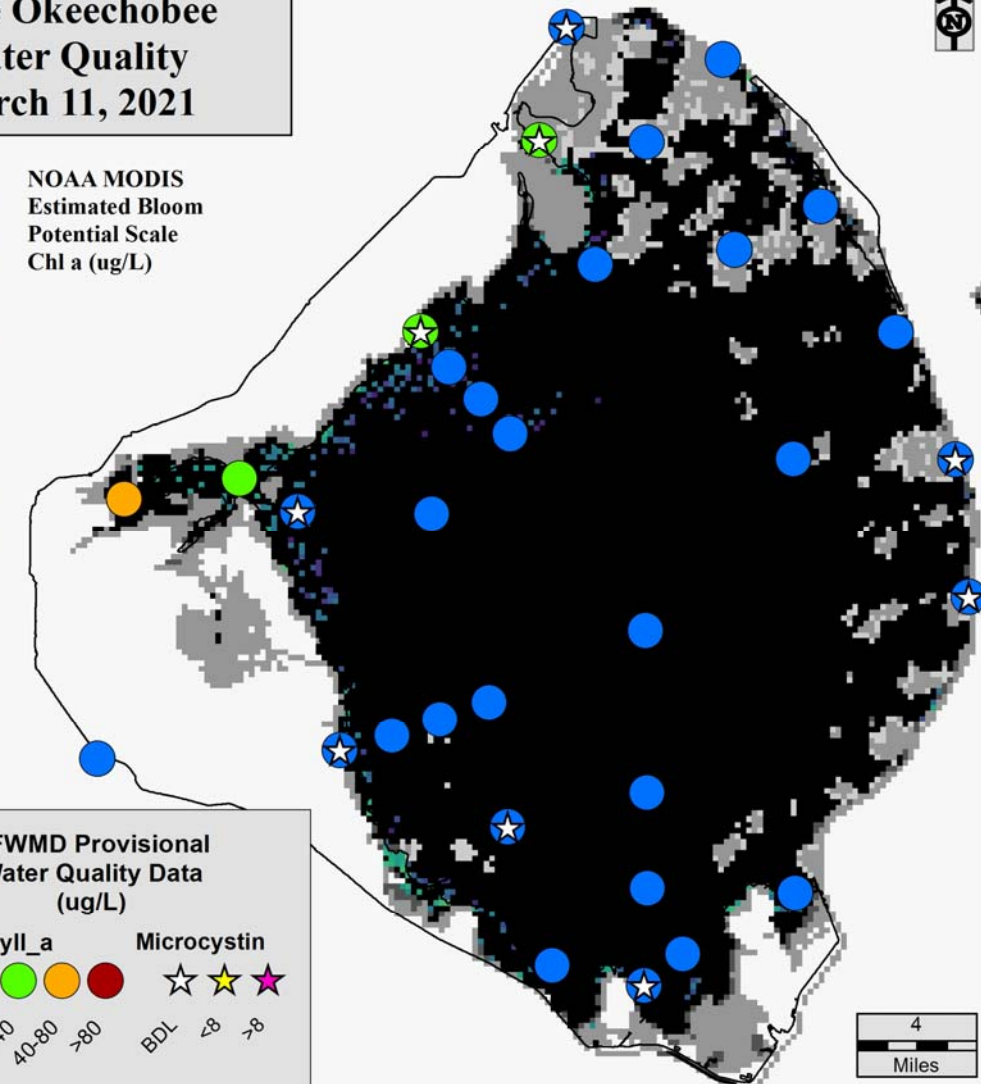
Station	CHL _a (ug/L)	TOXIN (ug/L)	TAXA
L001	9.3		
L004	6.7		
L006	5.0		
L007	6.6		
L008	8.1		
LZ30	8.4	BDL	mixed
LZ40	5.8		
CLV10A	4.7	BDL	mixed
NCENTER	7.5		

S308C	16.0	BDL	mixed
S77	12.0		

- SFWMD considers >40 µg/L Chlorophyll *a* (Chl_a) an algal bloom
- BDL – Below Detectable Limit of **0.25** µg/L
- ND – No Dominant taxa
- P – Pending
- NS – Not Sampled
- Bold – crew observed possible BGA
- Chlorophyll *a* analyzed by SFWMD
- Toxin and Taxa analyzed by FDEP

Cylindro = *Cylindrospermopsis**Planktol* = *Planktolyngbya**Dolicho* = *Dolichospermum*

Lake Okeechobee
Water Quality
March 11, 2021



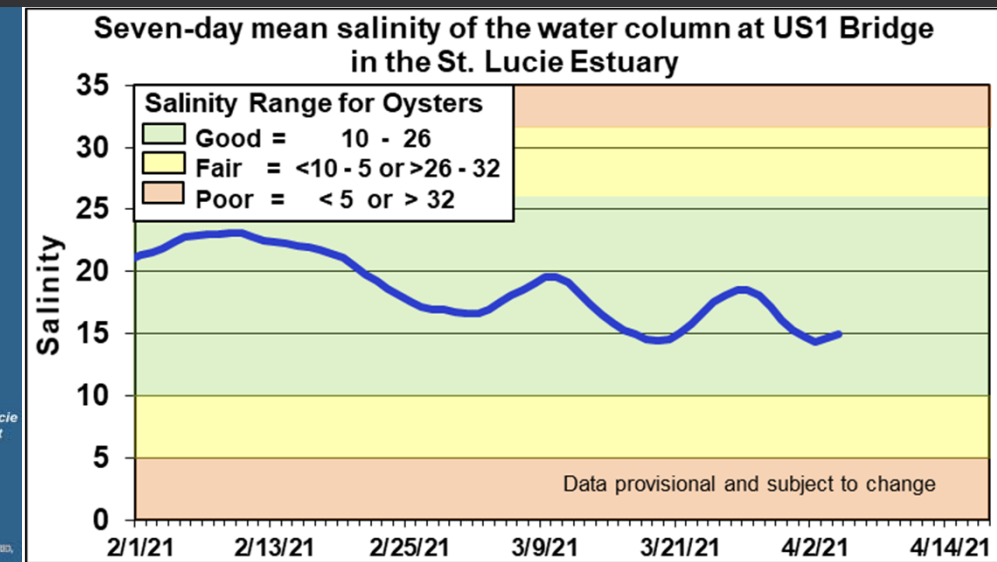
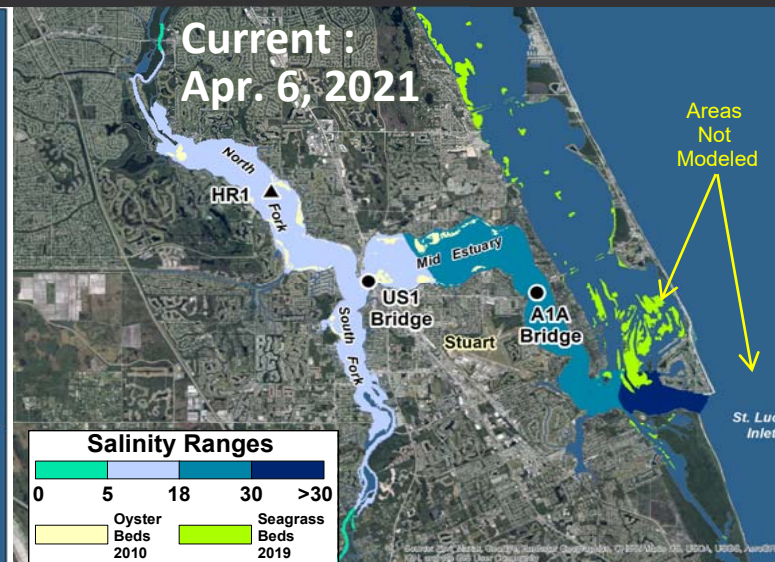
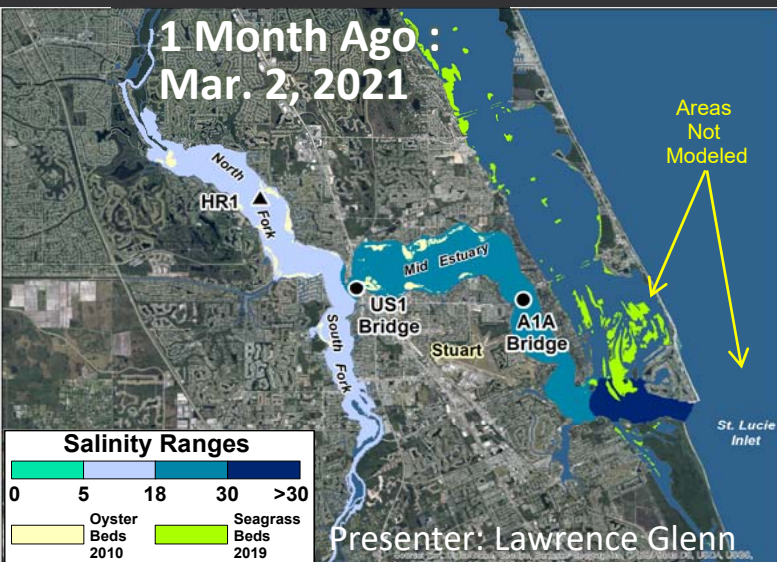
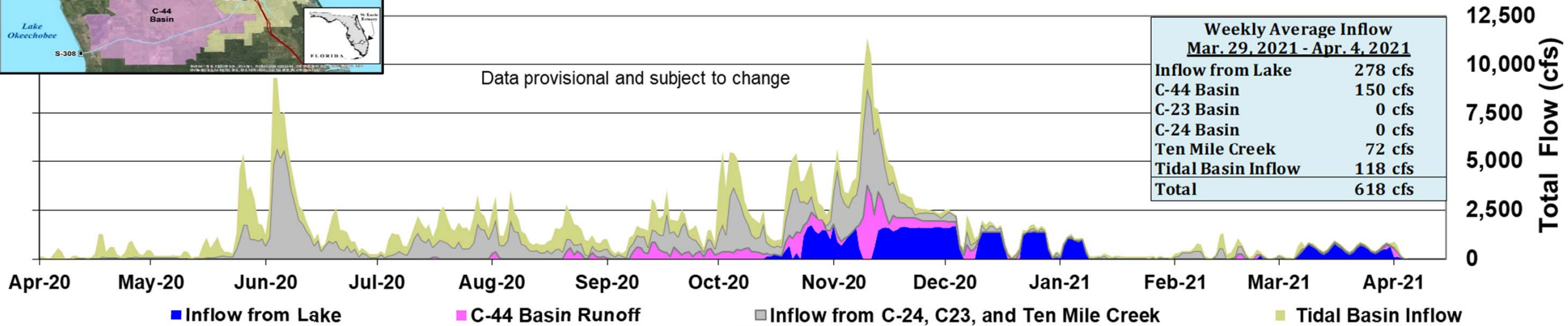
SFWMD Provisional
Water Quality Data
(ug/L)



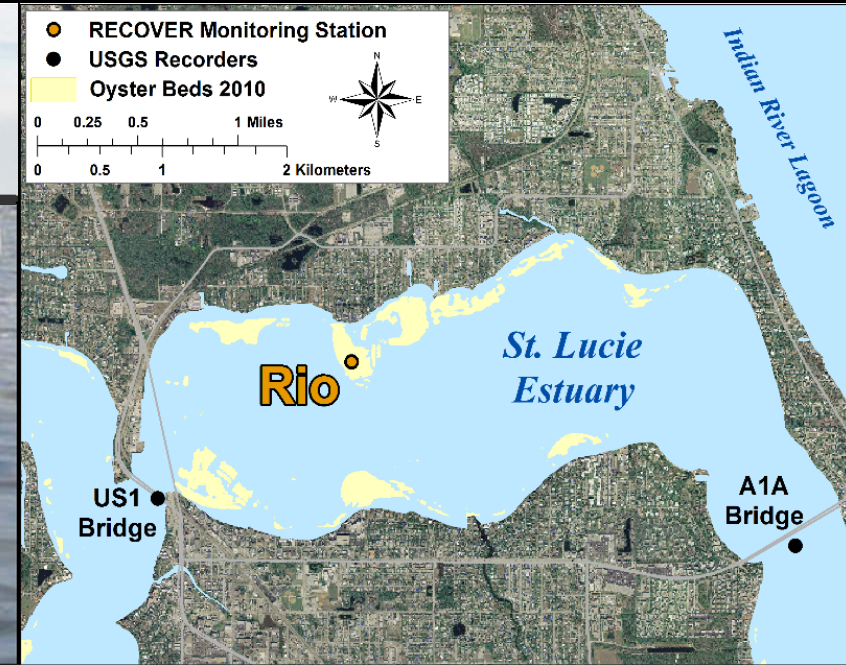
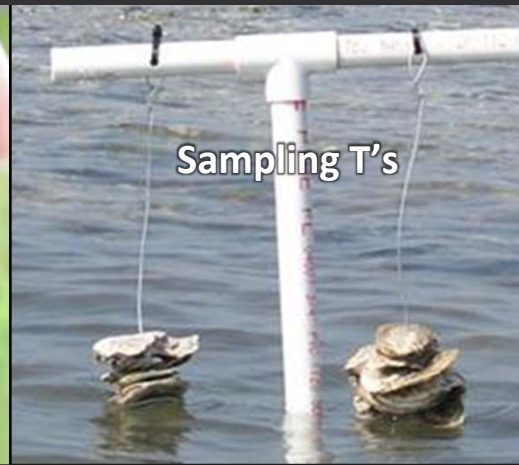
St. Lucie Inflows and Salinity Conditions



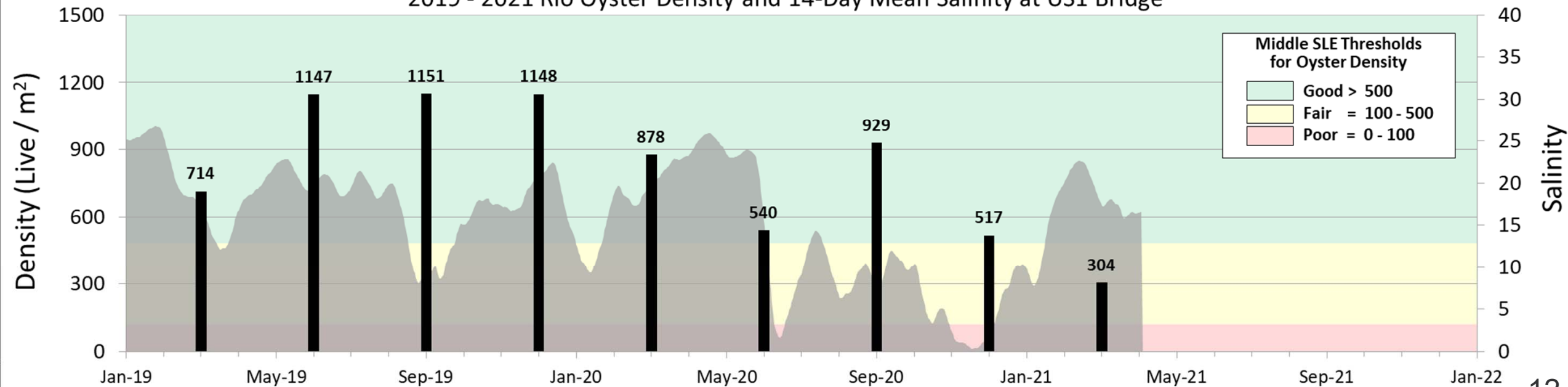
Total Daily Inflow into the St. Lucie Estuary



St. Lucie Estuary – Oysters at Rio Station



2019 - 2021 Rio Oyster Density and 14-Day Mean Salinity at US1 Bridge

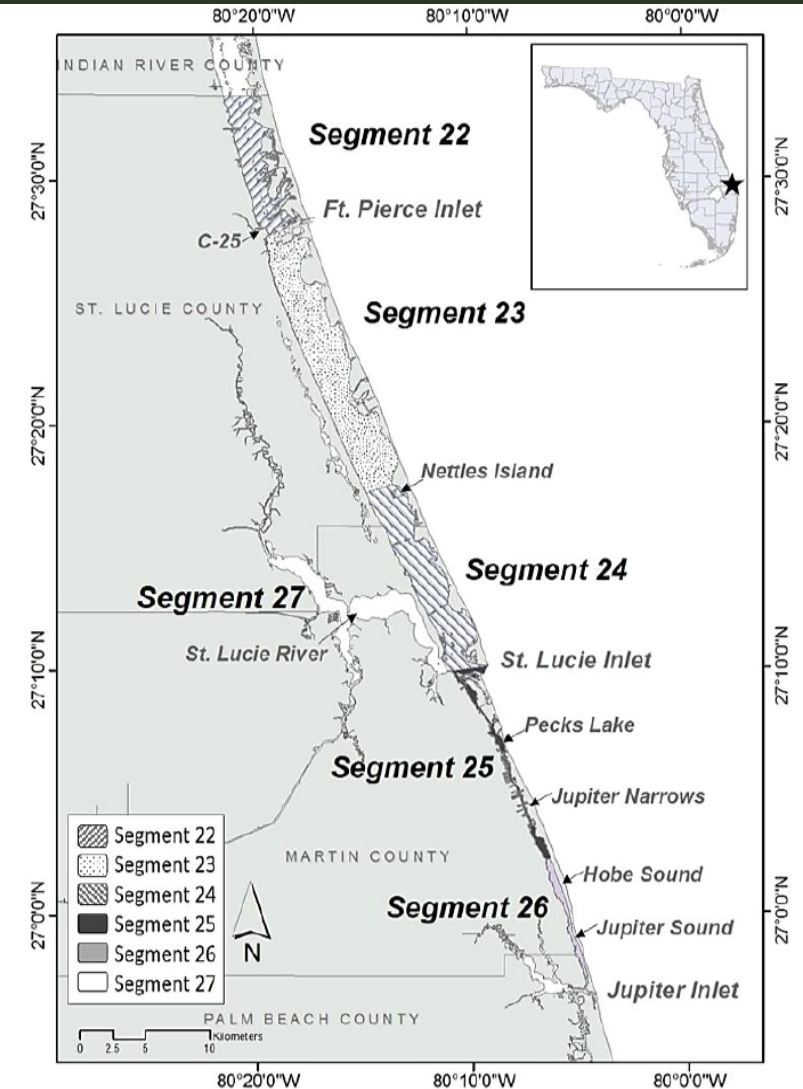


Southern IRL Seagrass Update

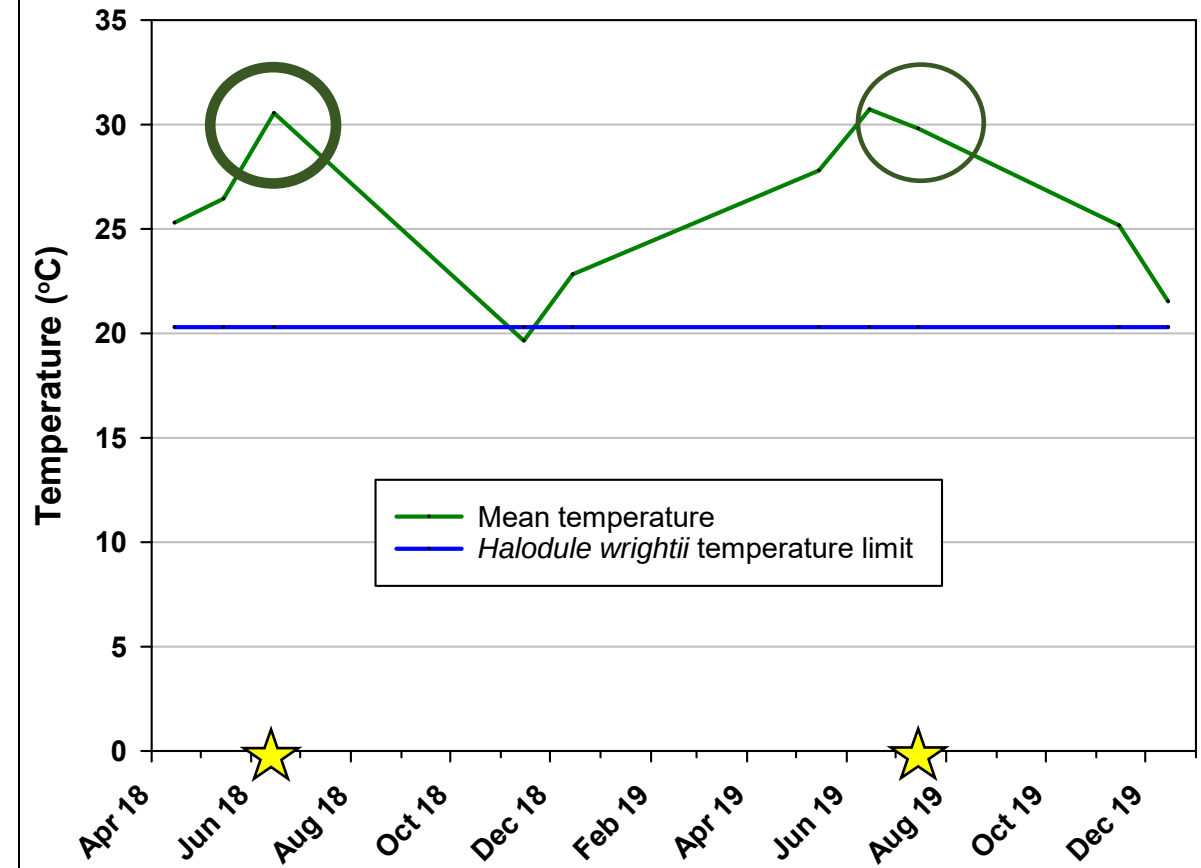
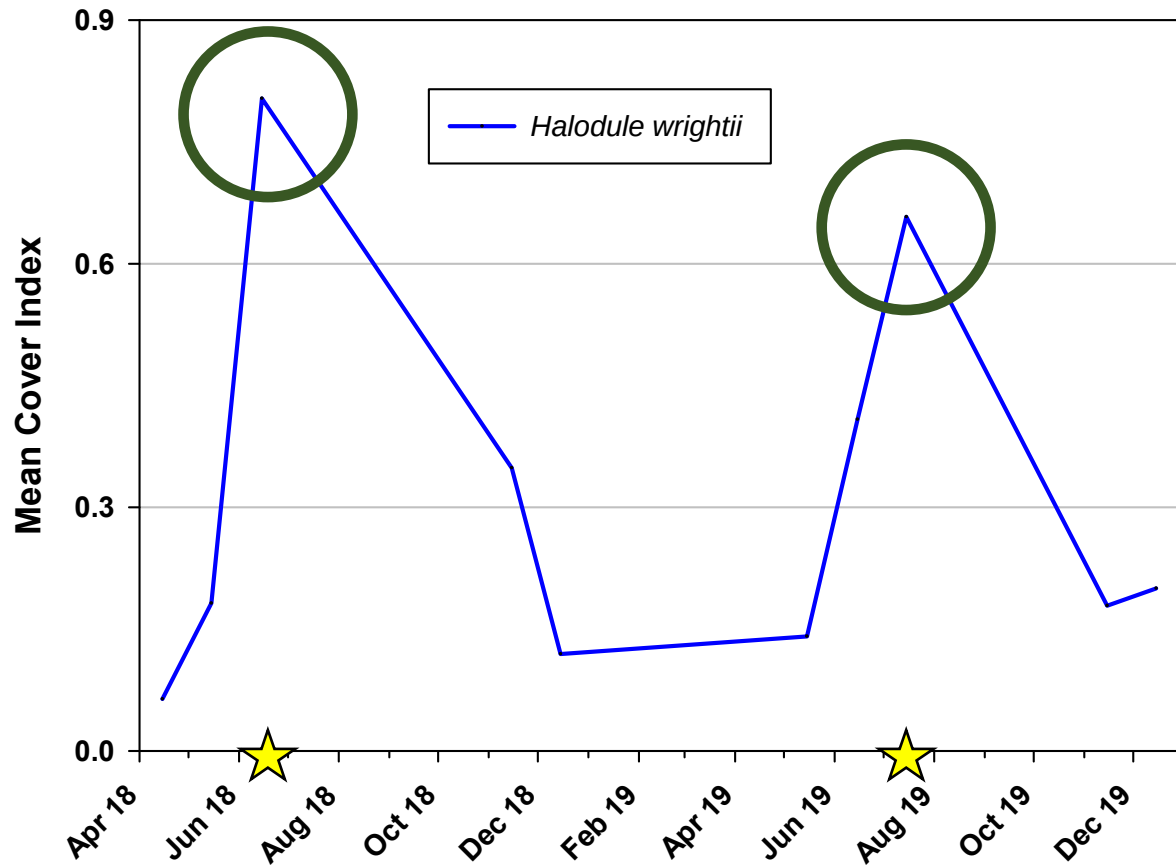
- Collaboration with partners at  St. Johns River Water Management District – Dr. Charles Jacoby
- Previously showed cover & abundance of SAV within each Segment
- Six seagrass species in the lagoon system:

<i>Halodule wrightii</i>	<i>Halophila decipiens</i>
<i>Syringodium filiforme</i>	<i>Halophila johnsonii</i>
<i>Thalassia testudinum</i>	<i>Halophila engelmannii</i>
- Current data analysis combines all Segments to look at trends for *Halodule wrightii* in 2018 & 2019:

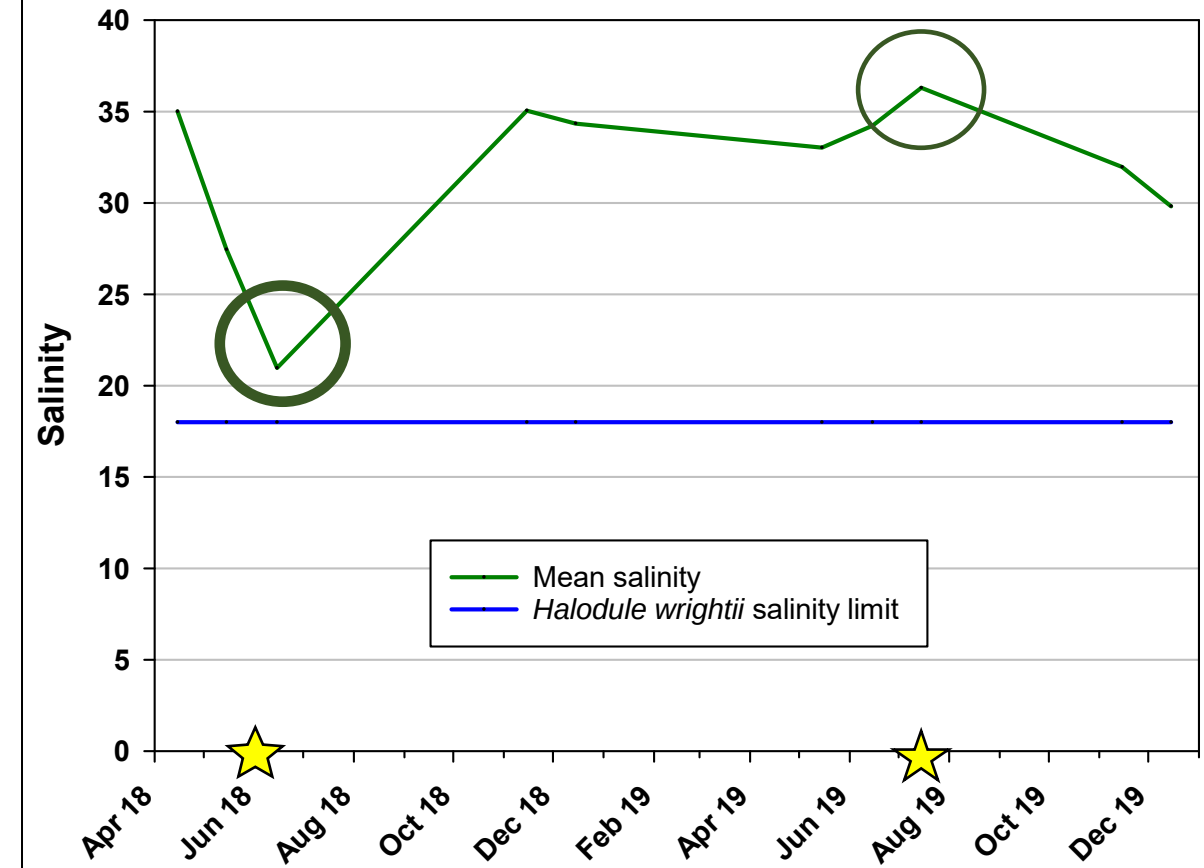
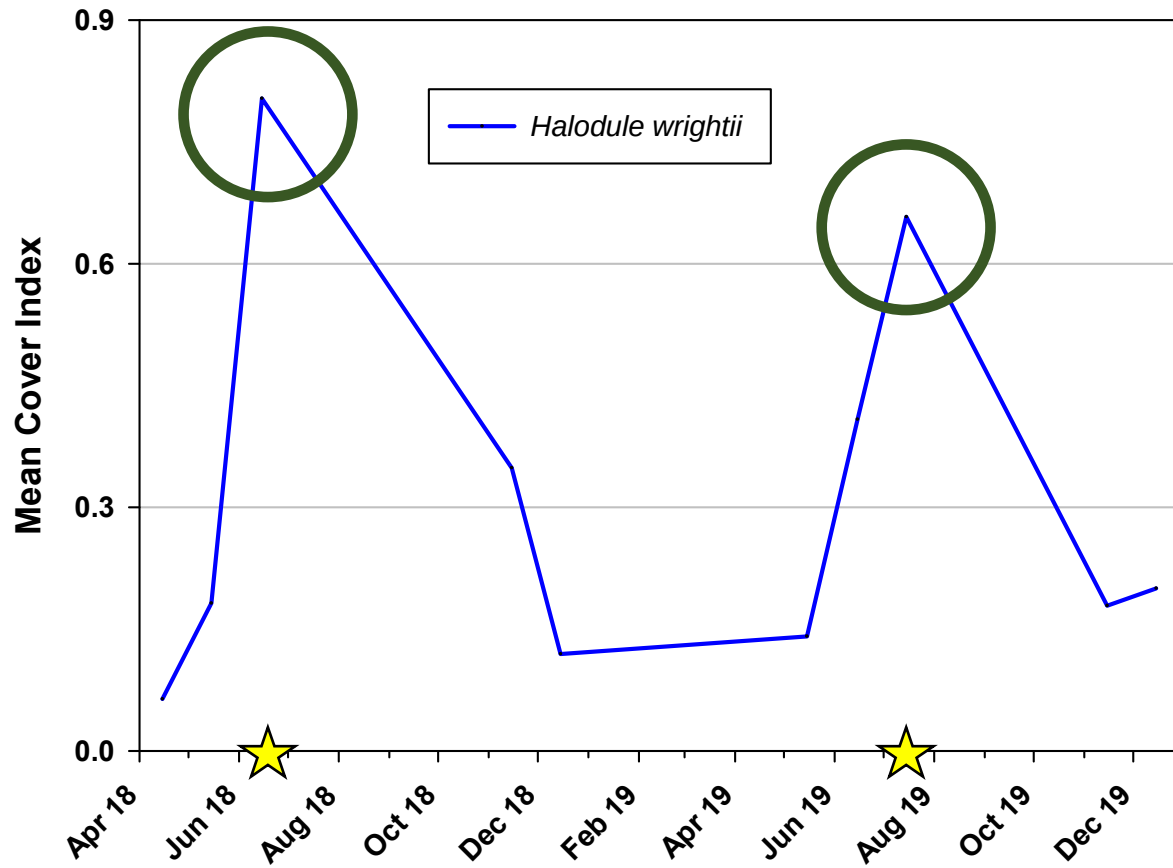
- **What factors drive changes in seagrass cover?**
Temperature, Salinity, or Light Availability



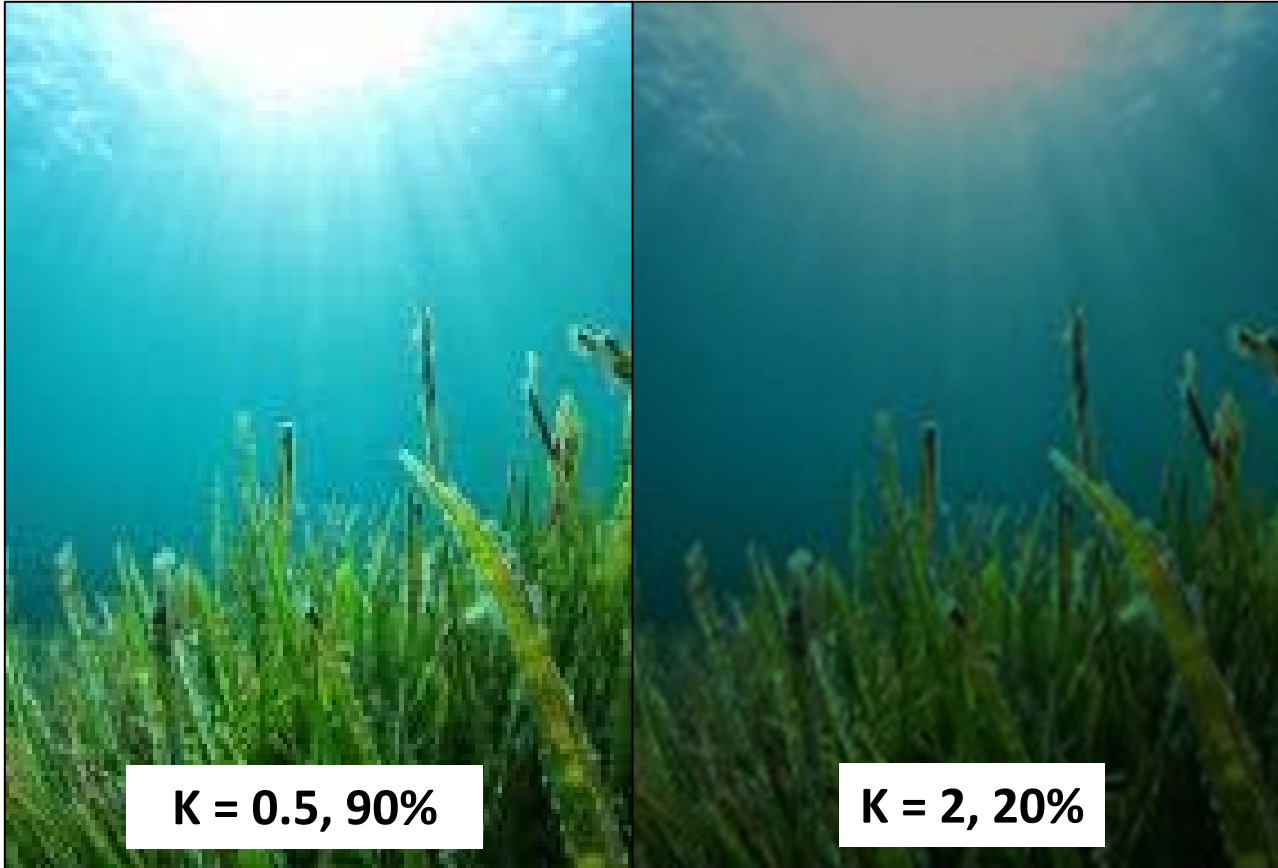
Temperature



Salinity

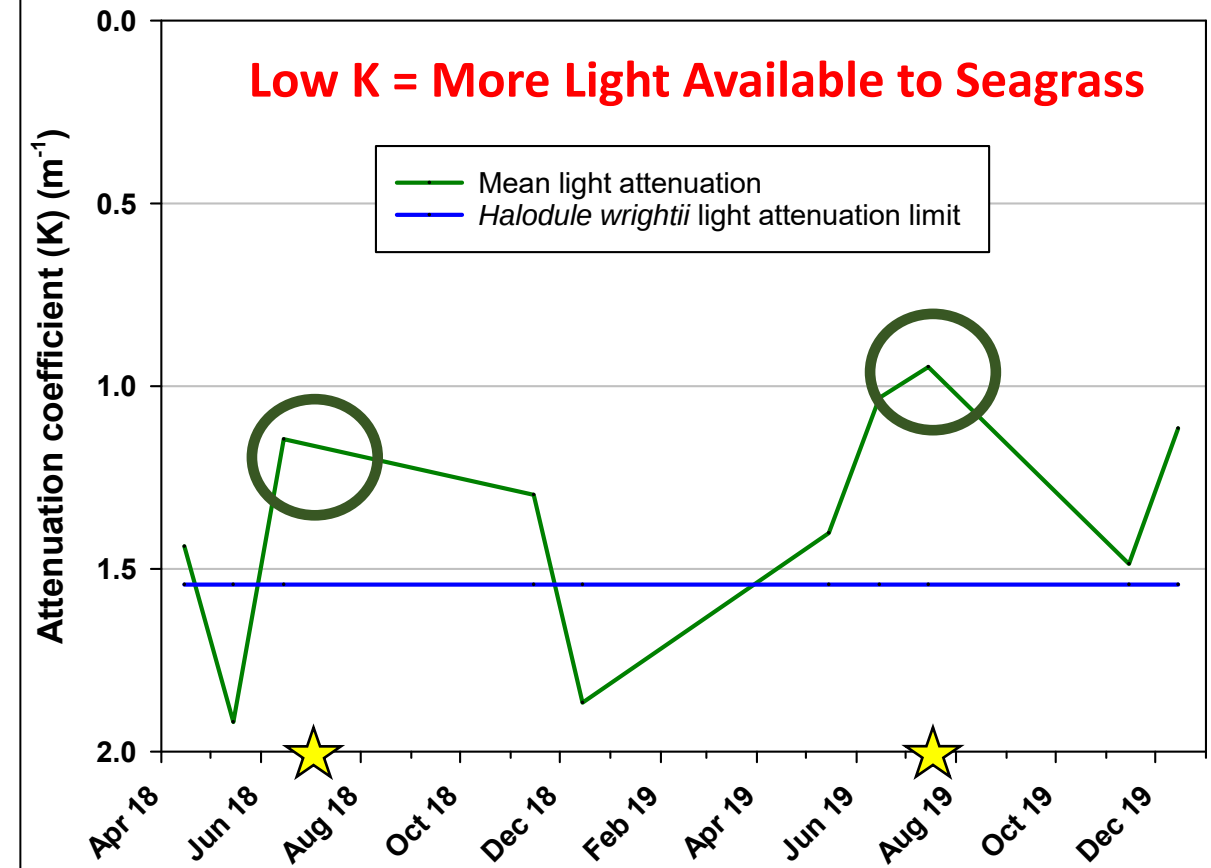
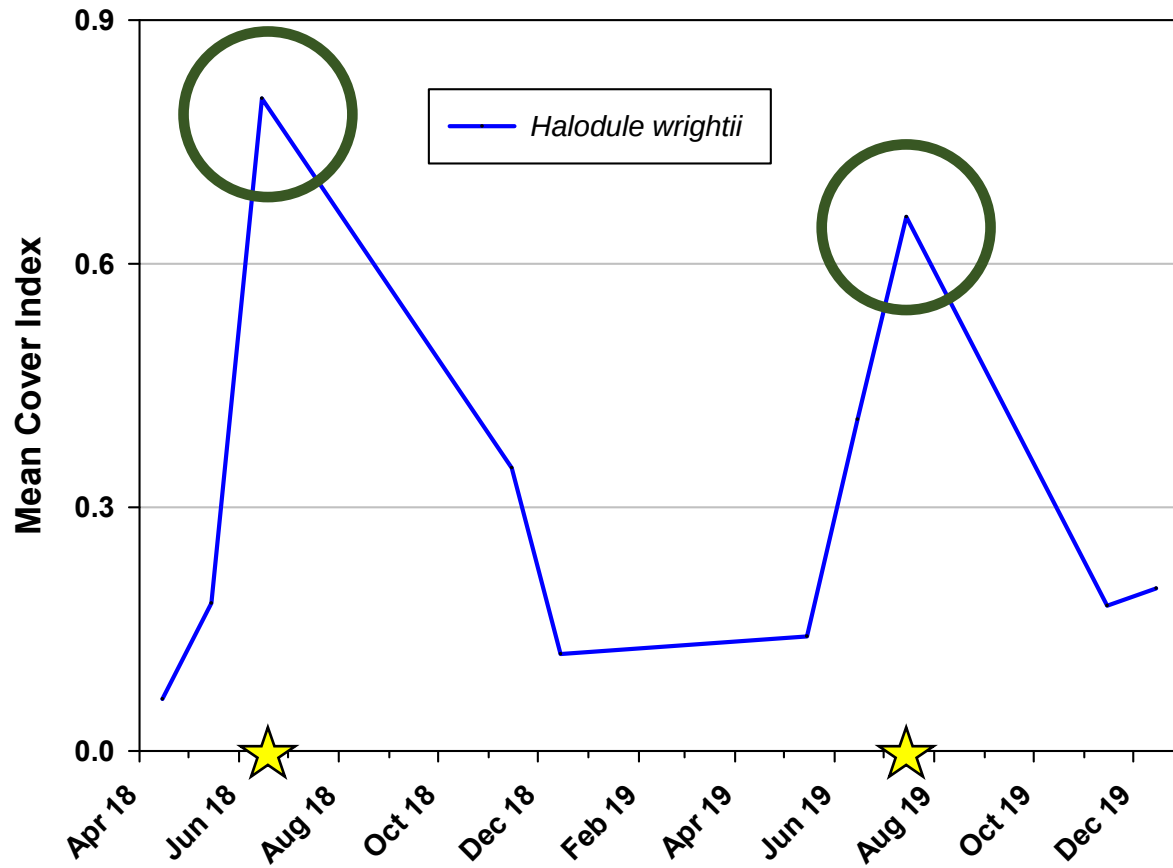


Seagrass and Light Availability



- Light attenuation (**K**) is the amount of light being absorbed as it passes through the water column
- **↑ K value = ↓ % total light** from the surface is reaching the bottom
- **↓ K value = ↑ % total light** from the surface is reaching the bottom

Light



Results

- *Halodule wrightii* seagrass responsive to changes in Temperature, Salinity and Light Availability in 2018 & 2019
- 2018 Trends
 - Peak in June-July
High Temperatures ($>30^{\circ}\text{C}$), Low Salinity, **High Light Available**
- 2019 Trends
 - Peak in July-August
Decreasing Temperatures ($<30^{\circ}\text{C}$), High Salinity, **High Light Available**

Next Steps...

- Continue collaboration with



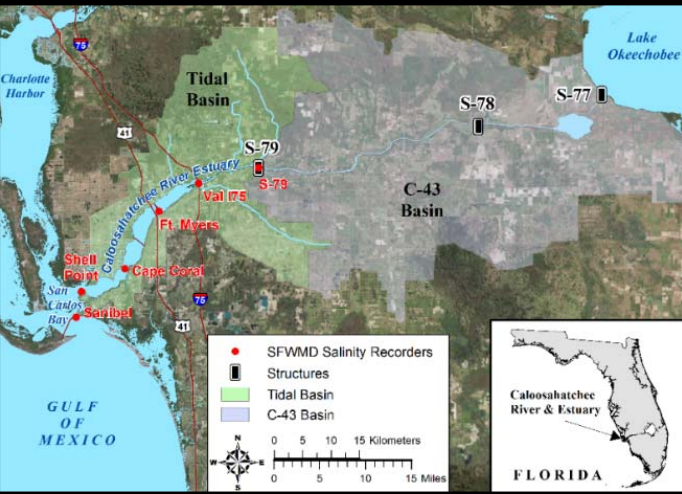
St. Johns River
Water Management District

- Complete similar analyses for SAV in the Caloosahatchee River Estuary
- Look more closely at other potential drivers for SAV cover, such as water quality and hydrologic conditions



Caloosahatchee Inflows and Salinity Conditions

Total Daily Inflow into the Caloosahatchee Estuary

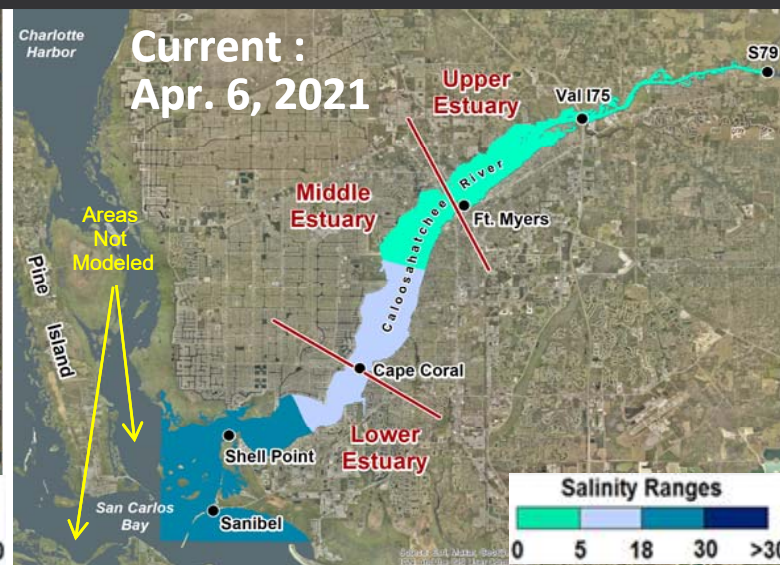
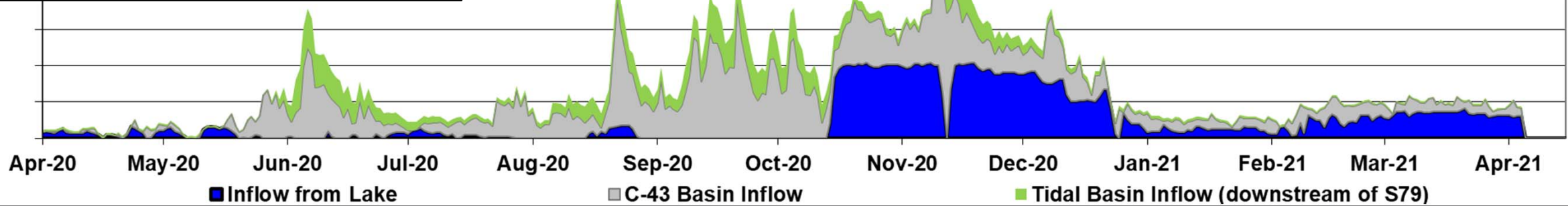


Data are provisional and subject to change

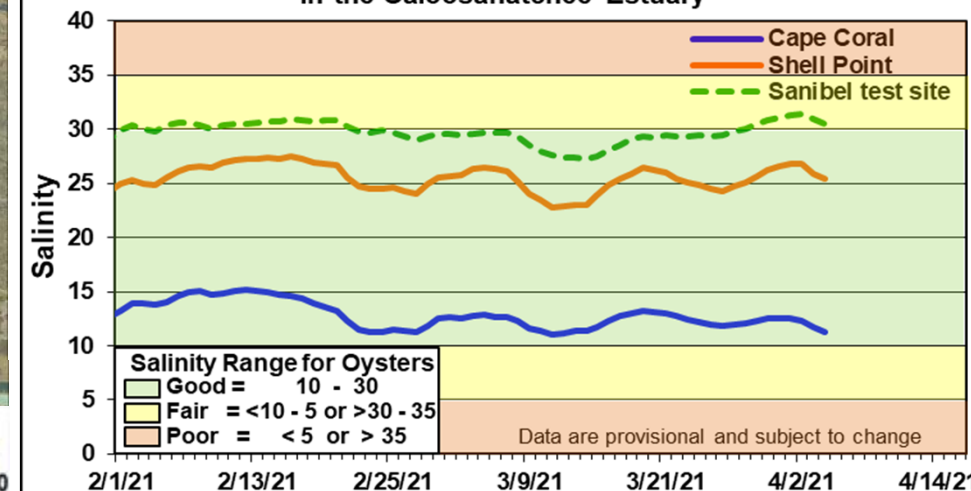
Weekly Average Inflow Mar. 29, 2021 - Apr. 4, 2021	
Inflow from Lake	1255 cfs
C-43 Basin Inflow	471 cfs
Tidal Basin Inflow	61 cfs
Total	1,787 cfs

16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0

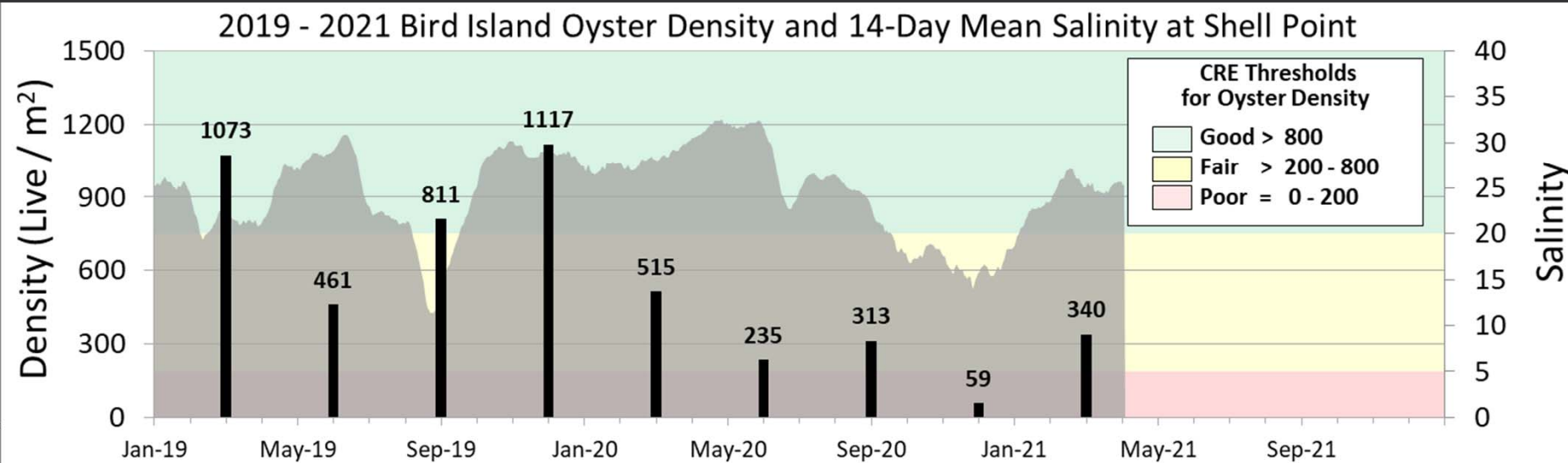
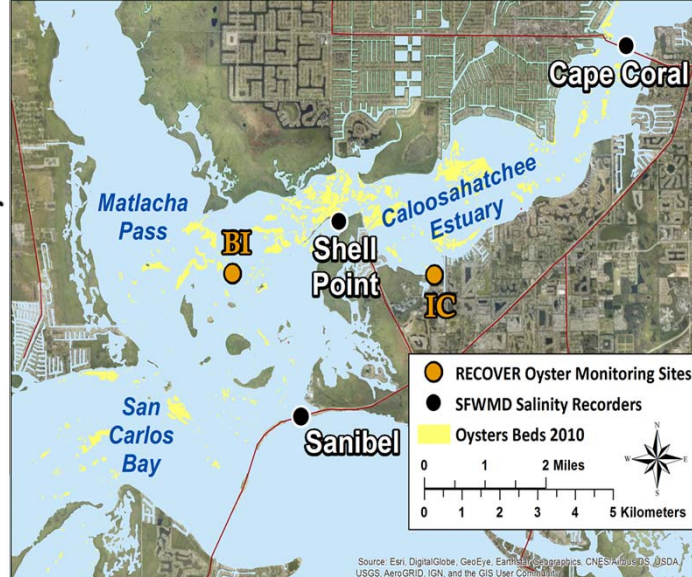
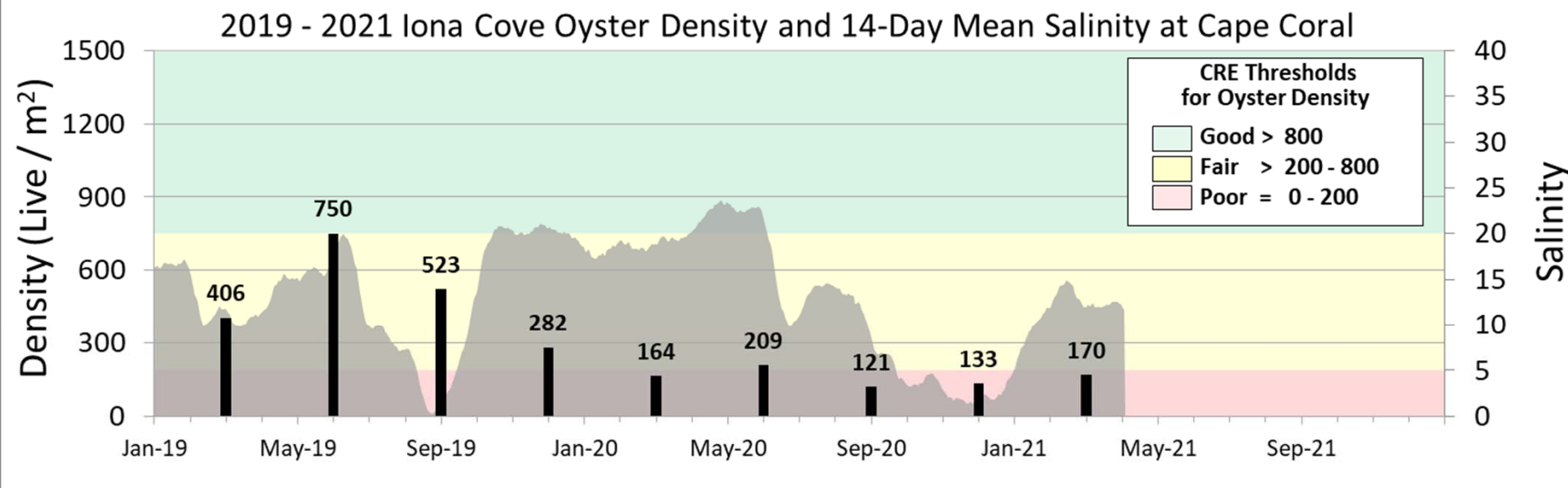
Total Flow (cfs)



Seven-day mean salinity of the water column at 3 monitoring stations in the Caloosahatchee Estuary



Caloosahatchee Estuary - Oyster Density



Everglades Stormwater Treatment Areas (STAs)

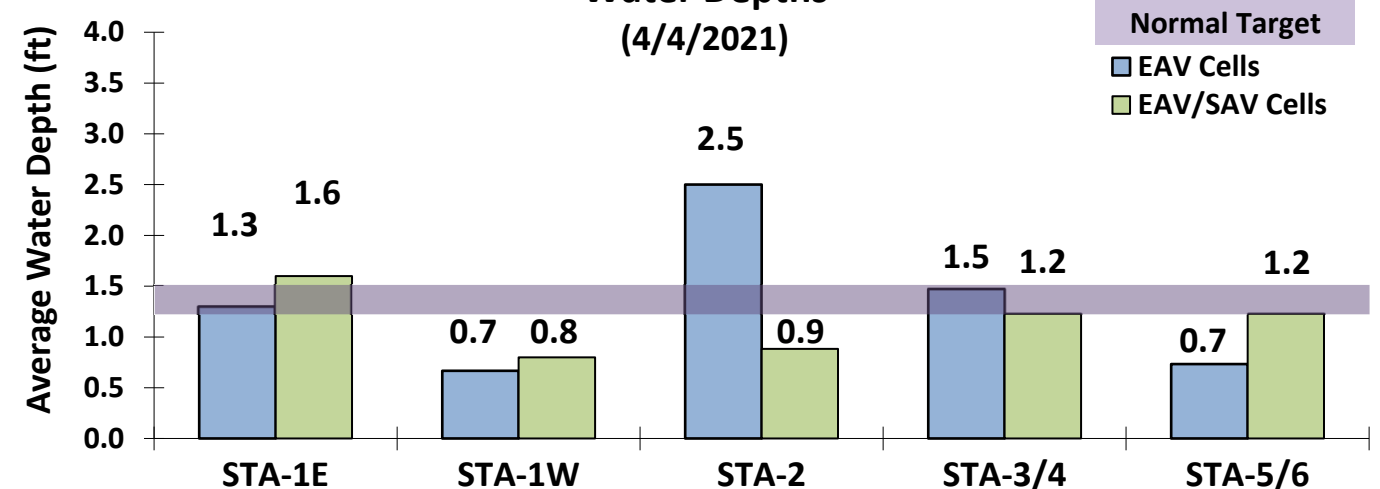
- STAs treated basin runoff and Lake releases in March
 - Total Inflows to STAs in WY2021 ~1,588,000 ac-ft
 - Lake Okeechobee releases to STAs in WY2021 ~137,000 ac-ft (9% of total)
- Extensive vegetation management activities underway to address stressed and highly stressed vegetation especially in EAV cells
- Most treatment cells are near target depth except STA-1W and STA-5/6 EAV cells

Water Year 2021
5/1/2020 to 4/4/2021

	STA-1E	STA-1W	STA-2	STA-3/4	STA-5/6
Inflow TP Concentration (ppb)	137	257	103	57	281
Outflow TP Concentration (ppb)	37	38	21	12	79
365-day Phosphorus Loading Rate (g/m ² /yr)	4.4	2.3	0.9	0.6	0.8
Inflow Volume (ac-ft)	314,700	186,300	412,000	545,000	130,100

Includes preliminary data; all concentrations are flow-weighted means

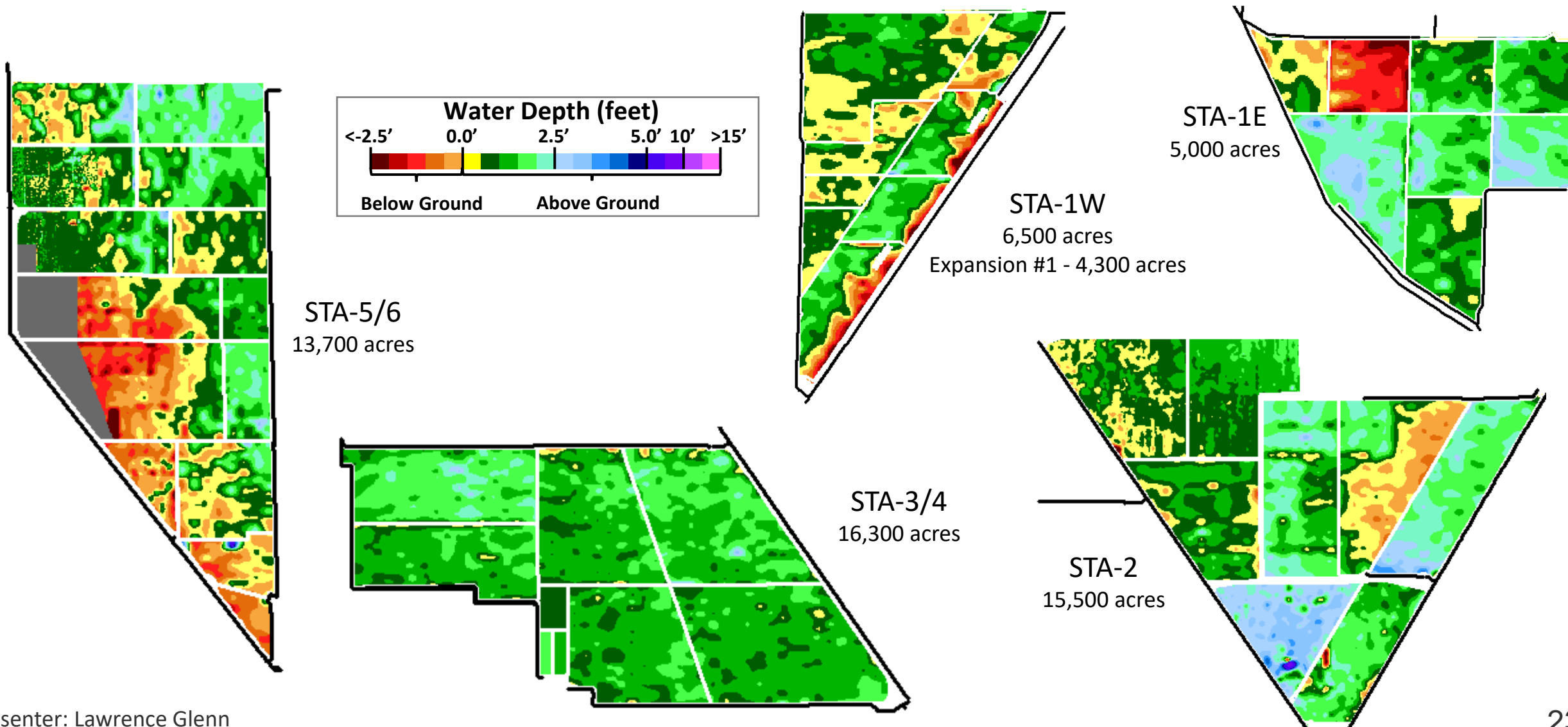
Water Depths
(4/4/2021)



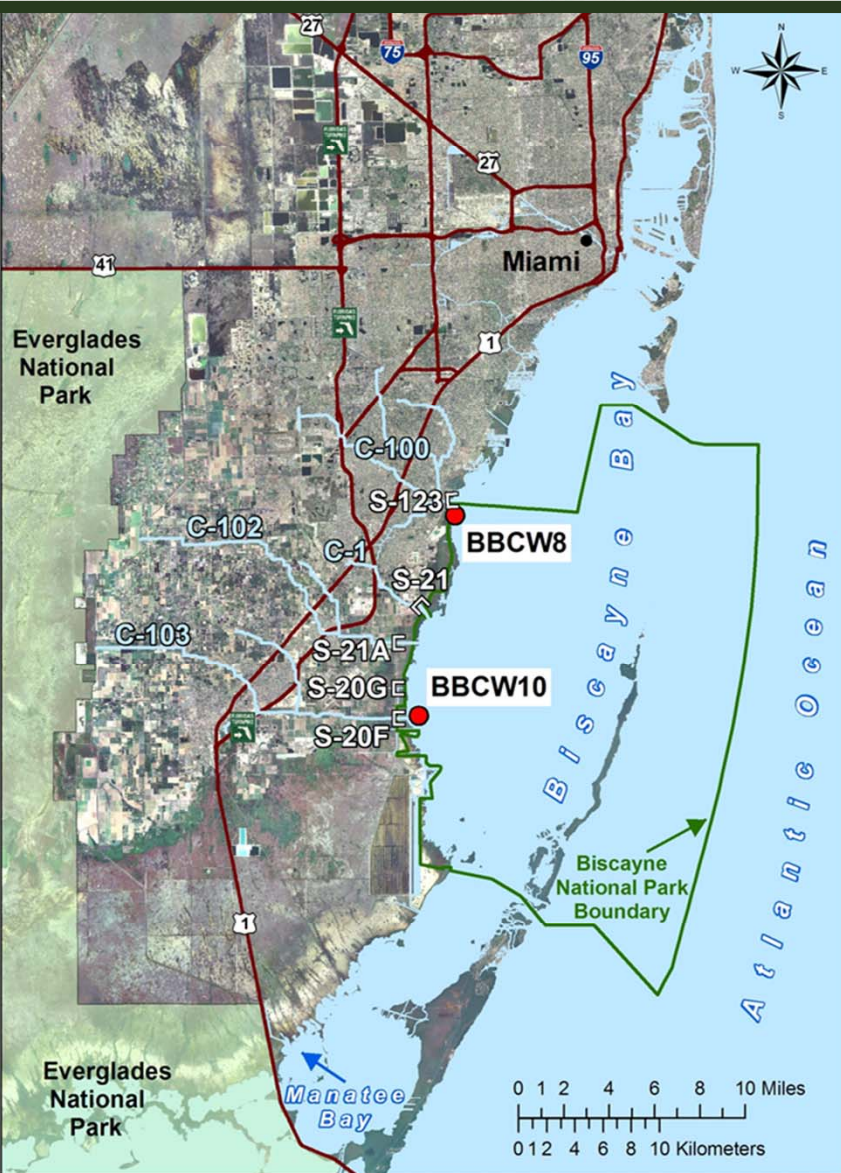
Includes preliminary data; Emergent Aquatic Vegetation (EAV); Submerged Aquatic Vegetation (SAV)

Everglades Stormwater Treatment Areas

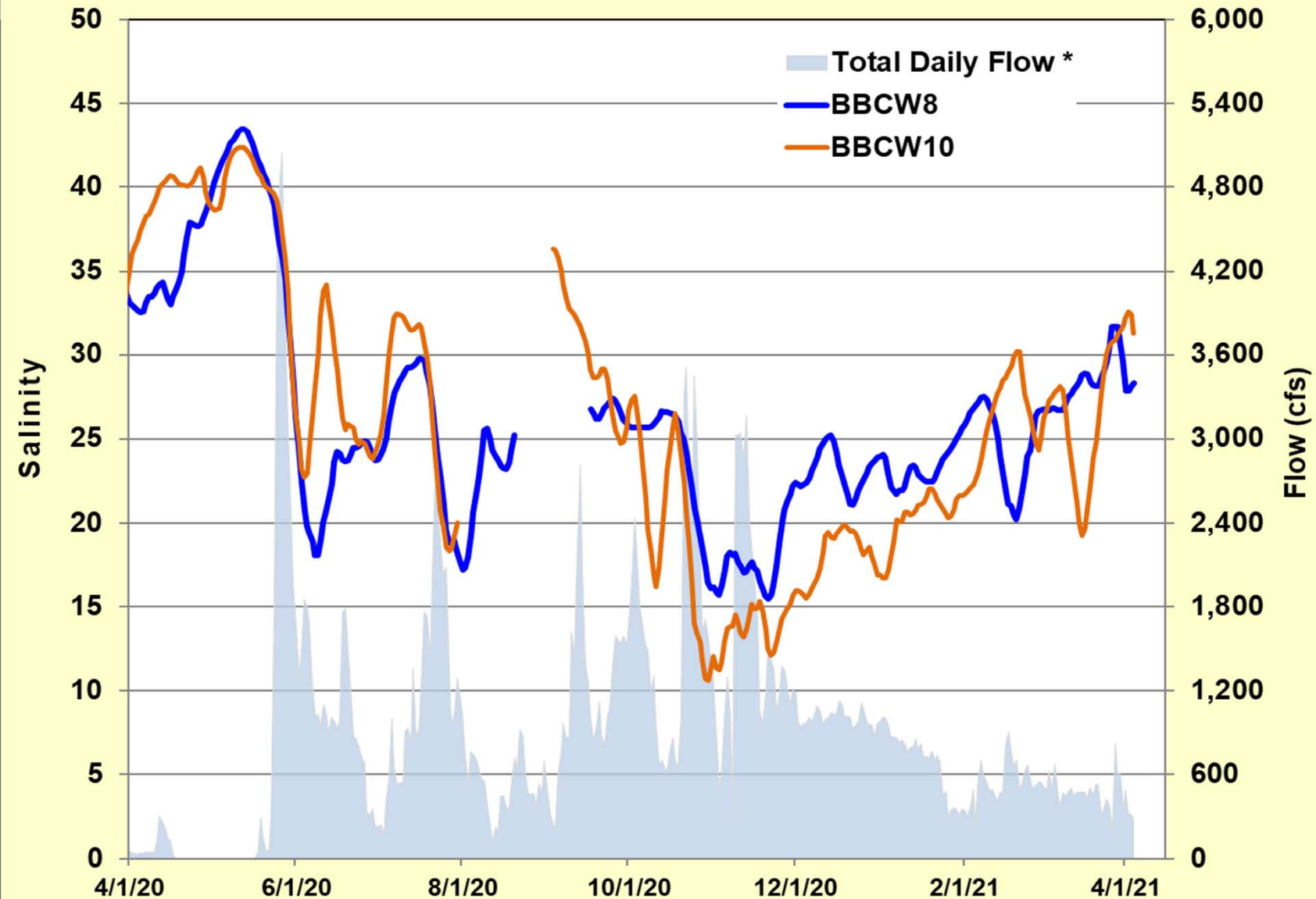
Daily Average Water Depths on 4/4/2021



Biscayne Bay



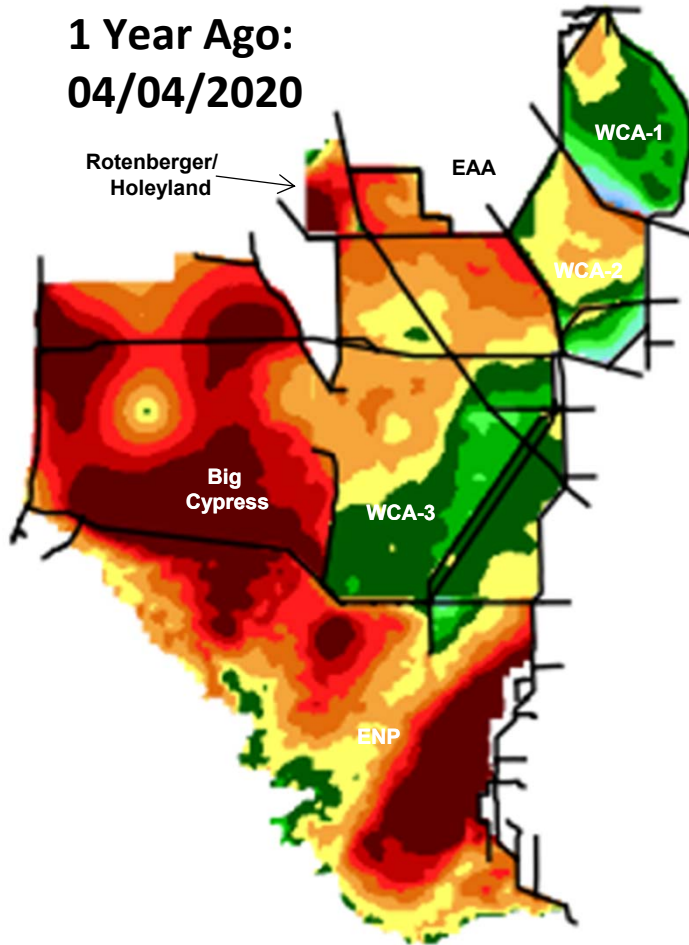
Seven Day Mean Salinity (BBCW8 & BBCW10) & Total Daily Flow



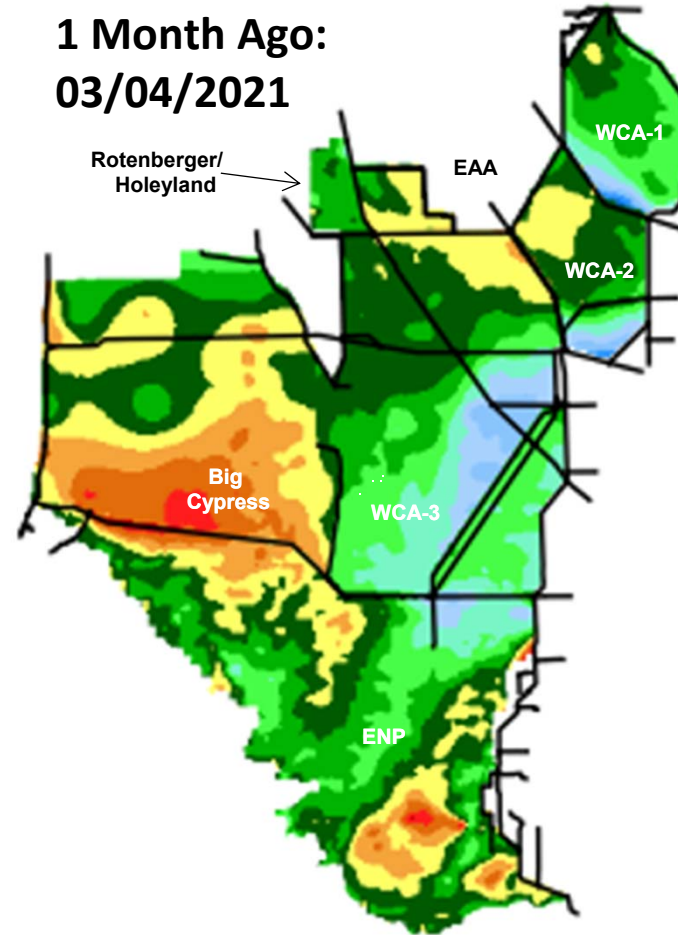
* Total flow from S20G, S20F, S21, S21A, S123, S700P

Everglades Water Depth Maps

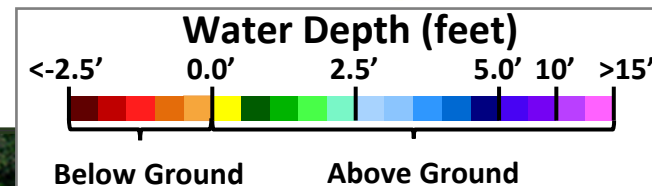
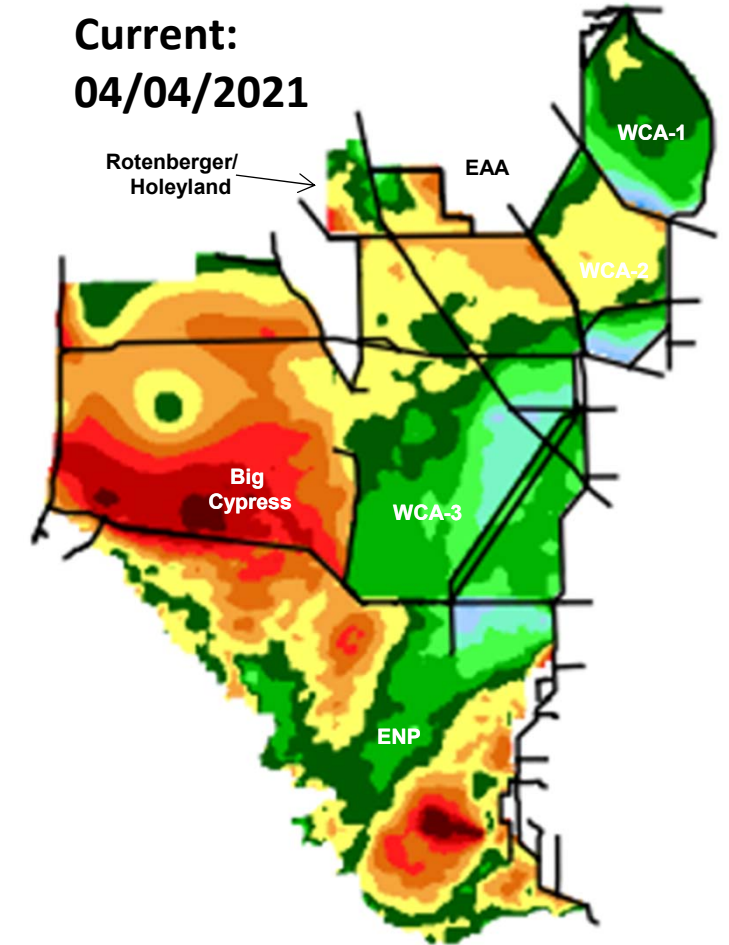
1 Year Ago:
04/04/2020



1 Month Ago:
03/04/2021



Current:
04/04/2021



Wading bird foraging & nesting in the Everglades (April 2021)

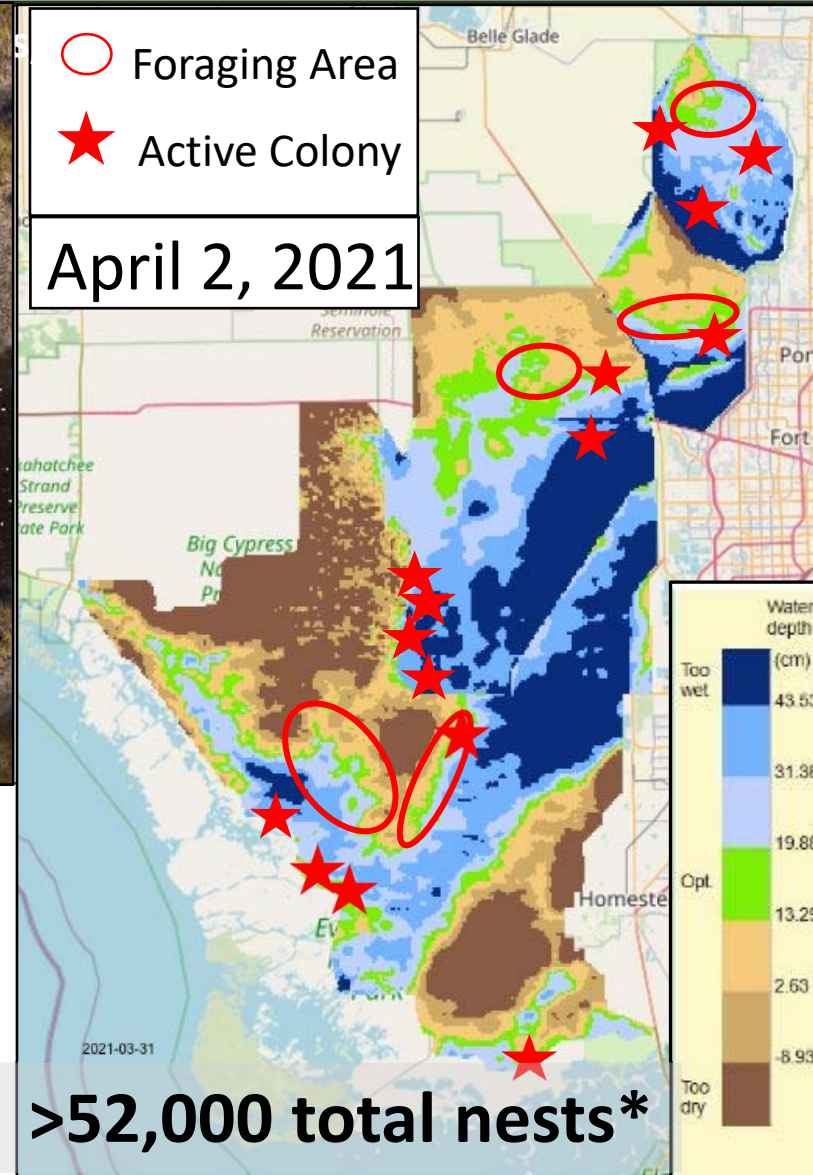
Foraging birds in WCA-2A



Foraging conditions are generally excellent but WCAs-2A & -3AN are drying too rapidly to support optimal & sustained foraging.

○ Foraging Area
★ Active Colony

April 2, 2021



Nest Numbers by Region*

WCA-1

4,320 White Ibis
1,030 Great Egret

WCA-2

350 Great Egret

WCA-3

28,000 White Ibis
1,920 Great Egret
800 Wood Stork

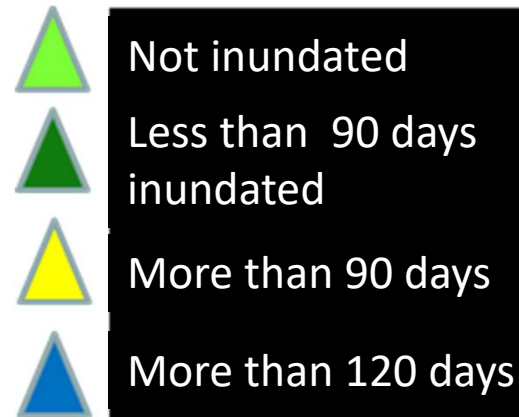
ENP

11,000 White Ibis
3,610 Great Egret
1,139 Wood Stork

* Provisional estimates

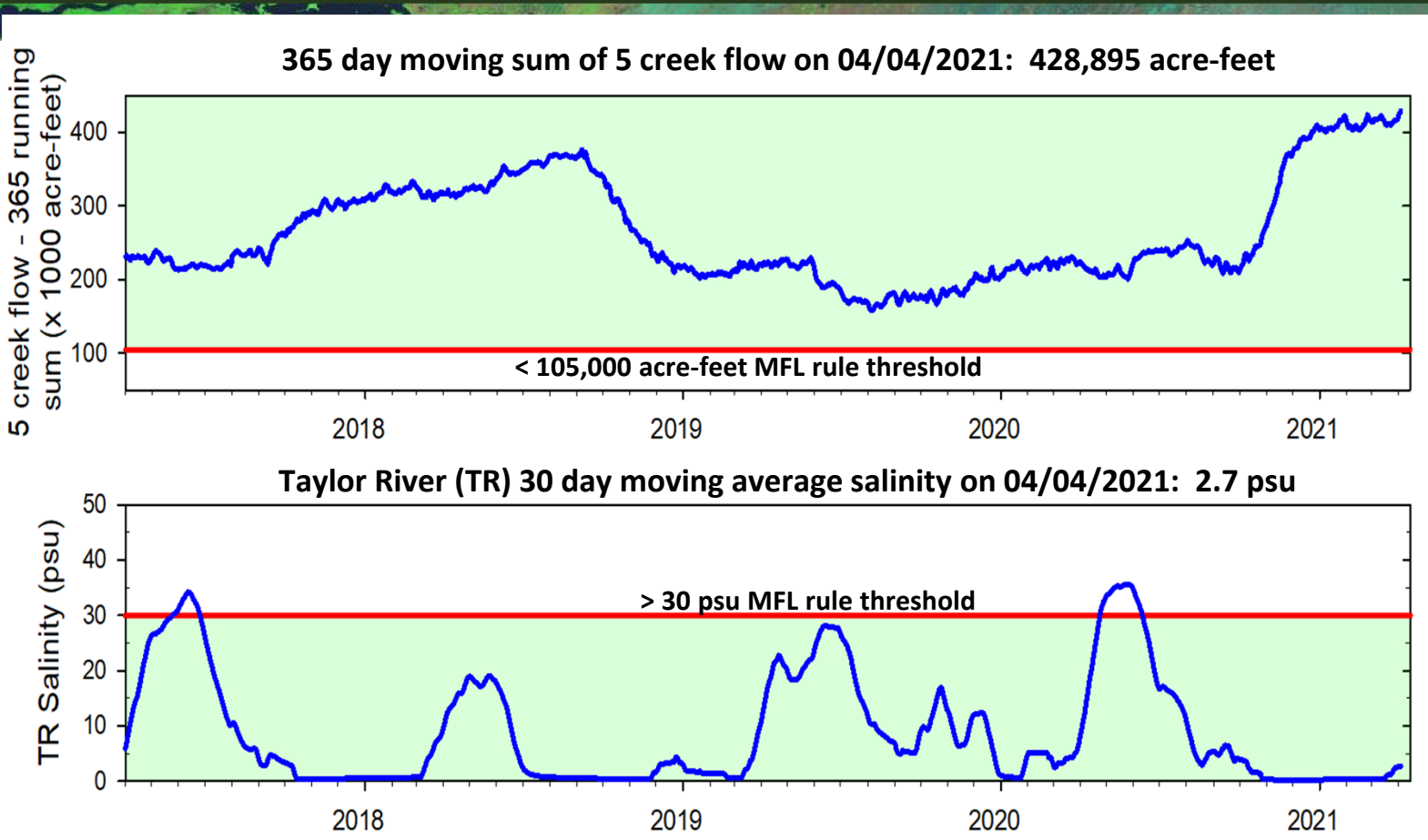
>52,000 total nests*

Tree Island Inundation (days)



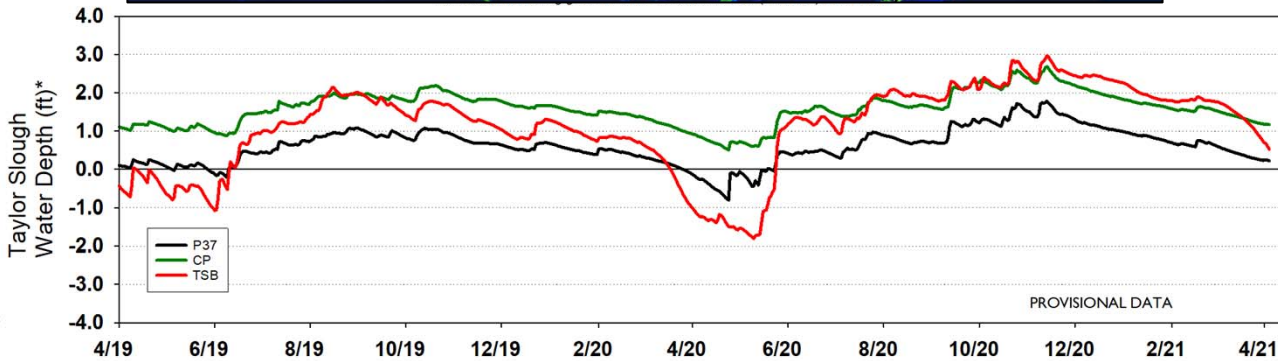
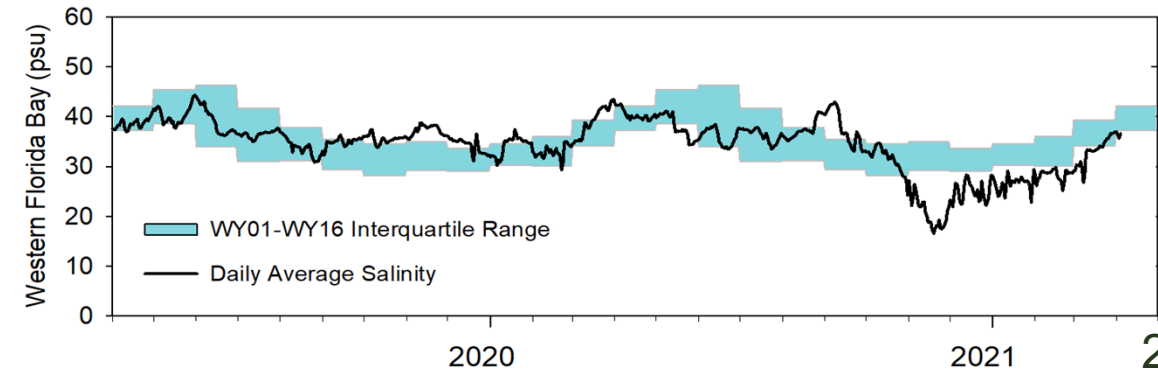
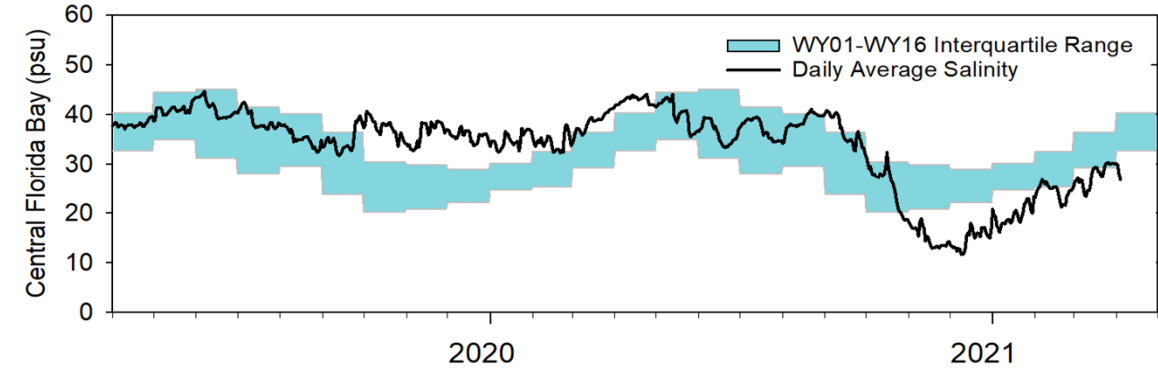
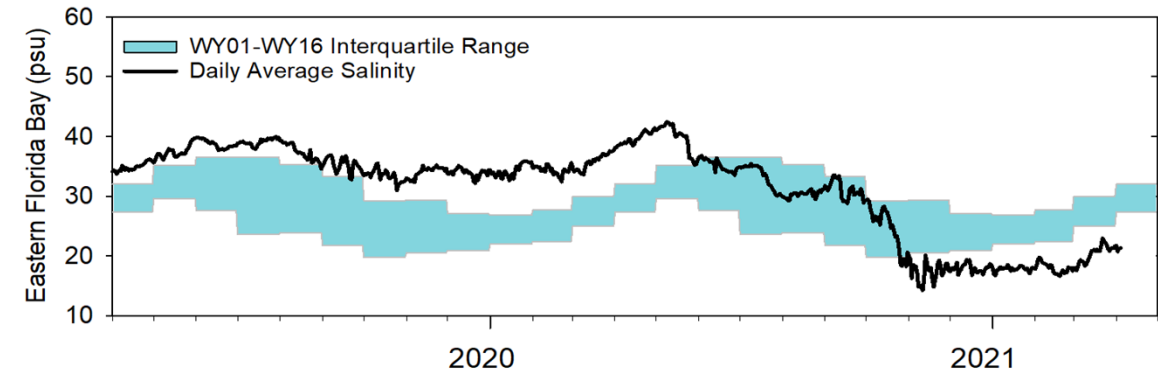
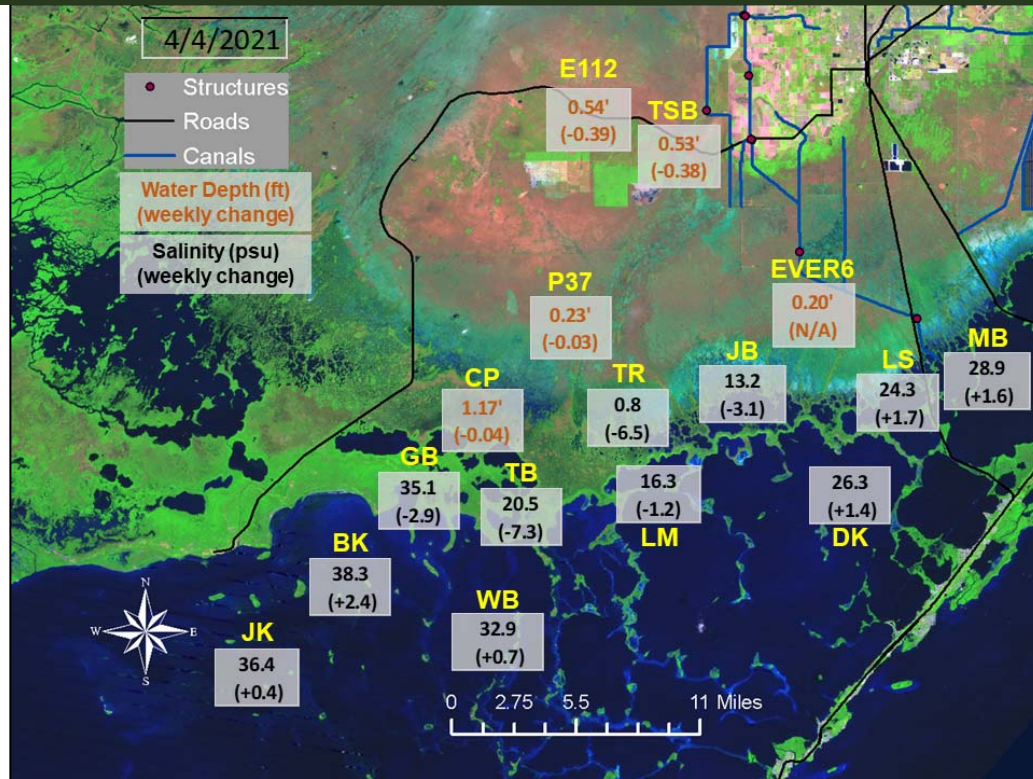
- Current preliminary estimates using WDAT indicate that 8% or 30 of the tree islands are currently inundated, down from 11% the week prior.
- Initial islands inundated beginning 5/26/20, longest duration of continuous inundation is 300 days. Inundation for more than 90 days has the potential for ecological harm. Inundation for more than 120 days will cause ecological harm to sensitive islands (11% of islands).
- In comparison on 4/4/18: 3 islands, 303 days, 1%.

Northeast Florida Bay MFL



- ★ Salinity gauge
- ★ Creek flow gauge

Taylor Slough Stages and Florida Bay Salinity



Questions



*Eastern Cottontail
Photograph courtesy of SFWMD staff*