SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Ecological Conditions Update

Governing Board Meeting
February 11, 2021

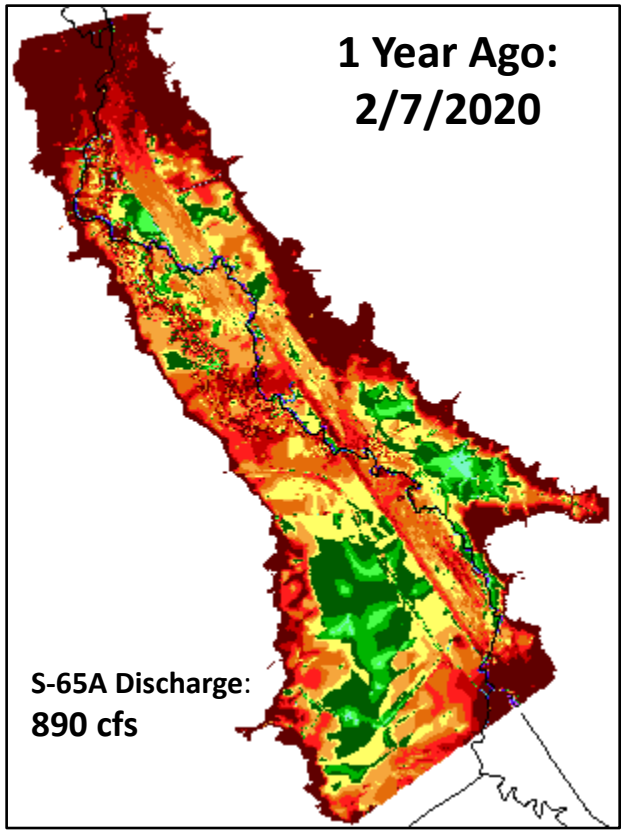


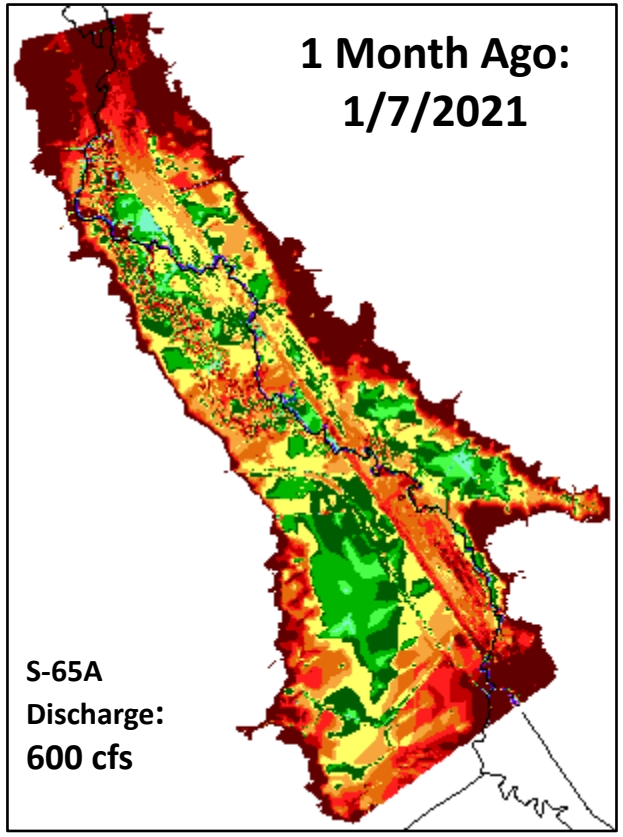
Lawrence Glenn
Division Director
Water Resources

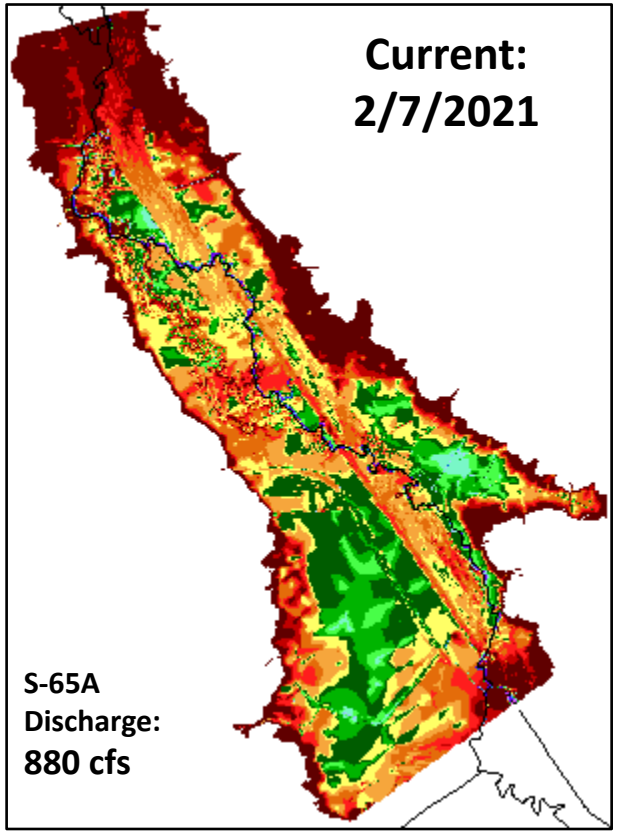
Kissimmee River Phase II Restoration Area
Photograph courtesy of Brent Anderson, SFWMD

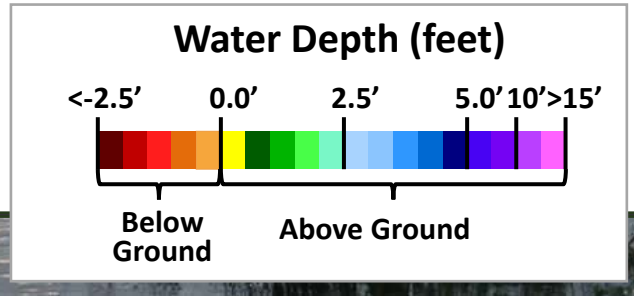
Kissimmee River Phase I Restoration Area

Water Depth Maps

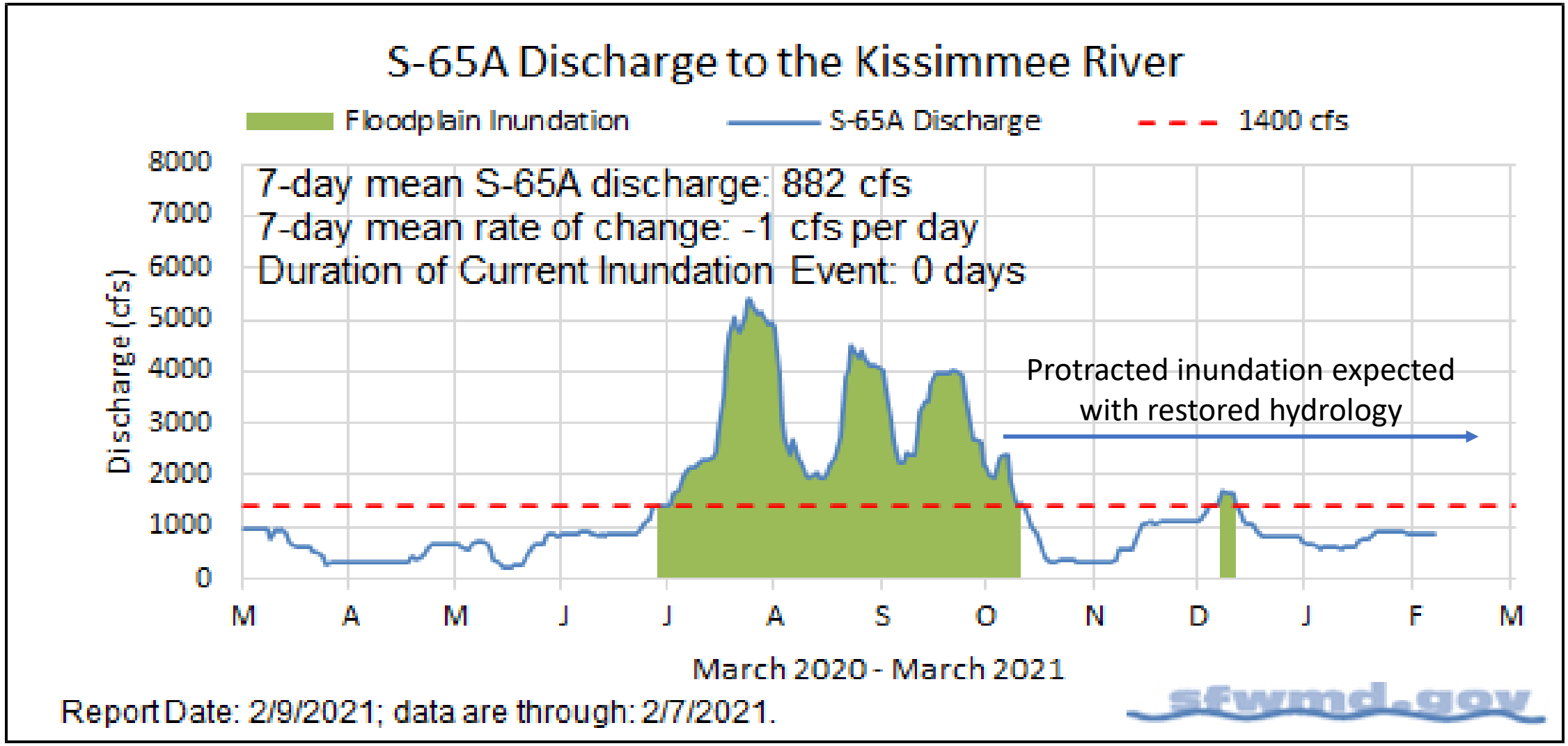






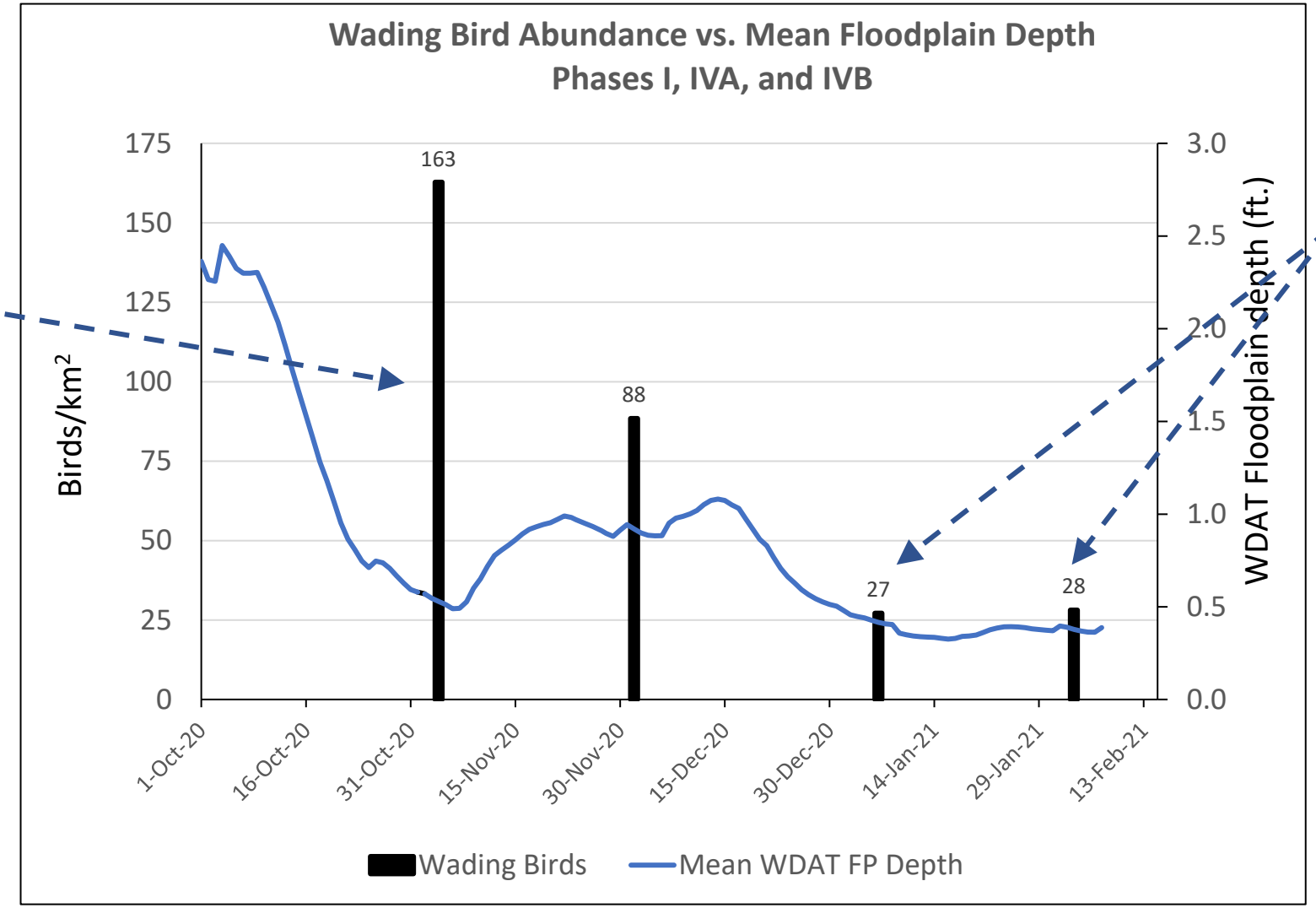


Kissimmee River Floodplain Inundation



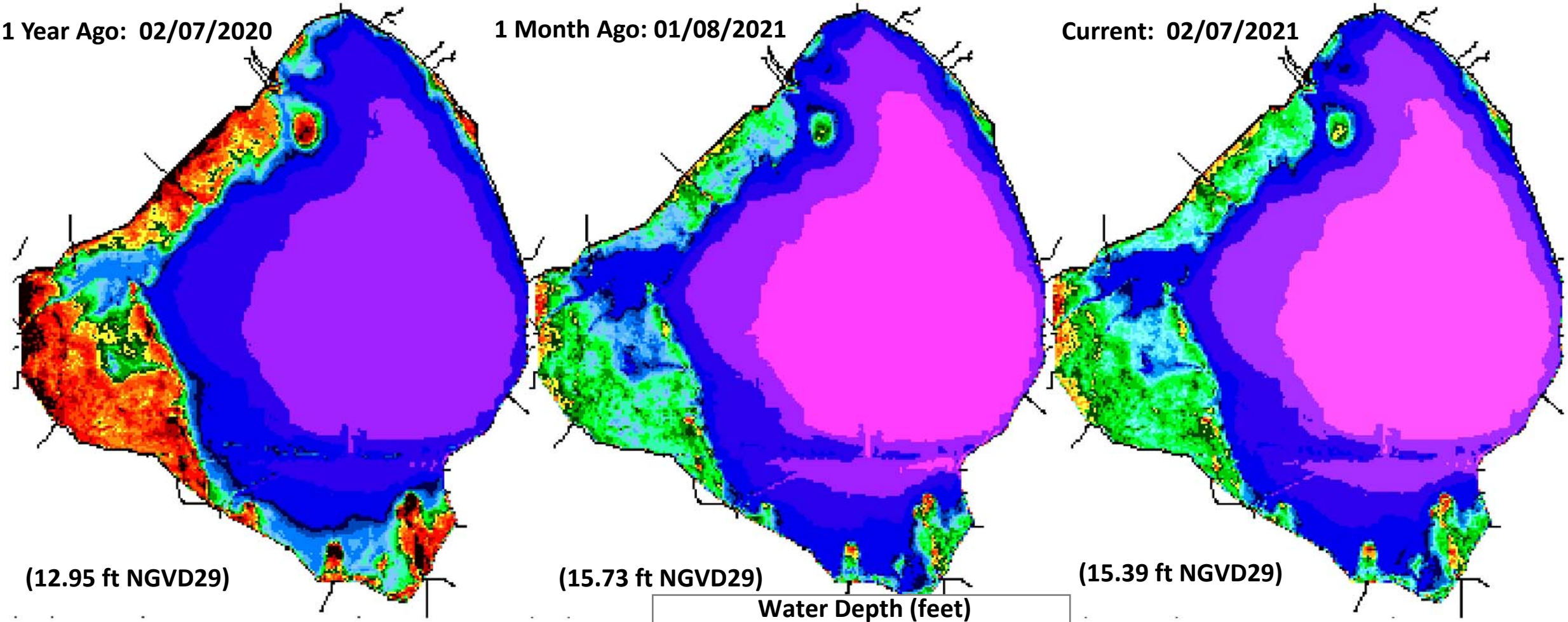
Kissimmee River Floodplain
Wading Bird Foraging Surveys

Rapid discharge reductions in Oct 2020 quickly reduced depths on the KR floodplain, which concentrated prey and resulted in a sudden "boom" in wading bird foraging, as seen in the Nov 2020 bird survey



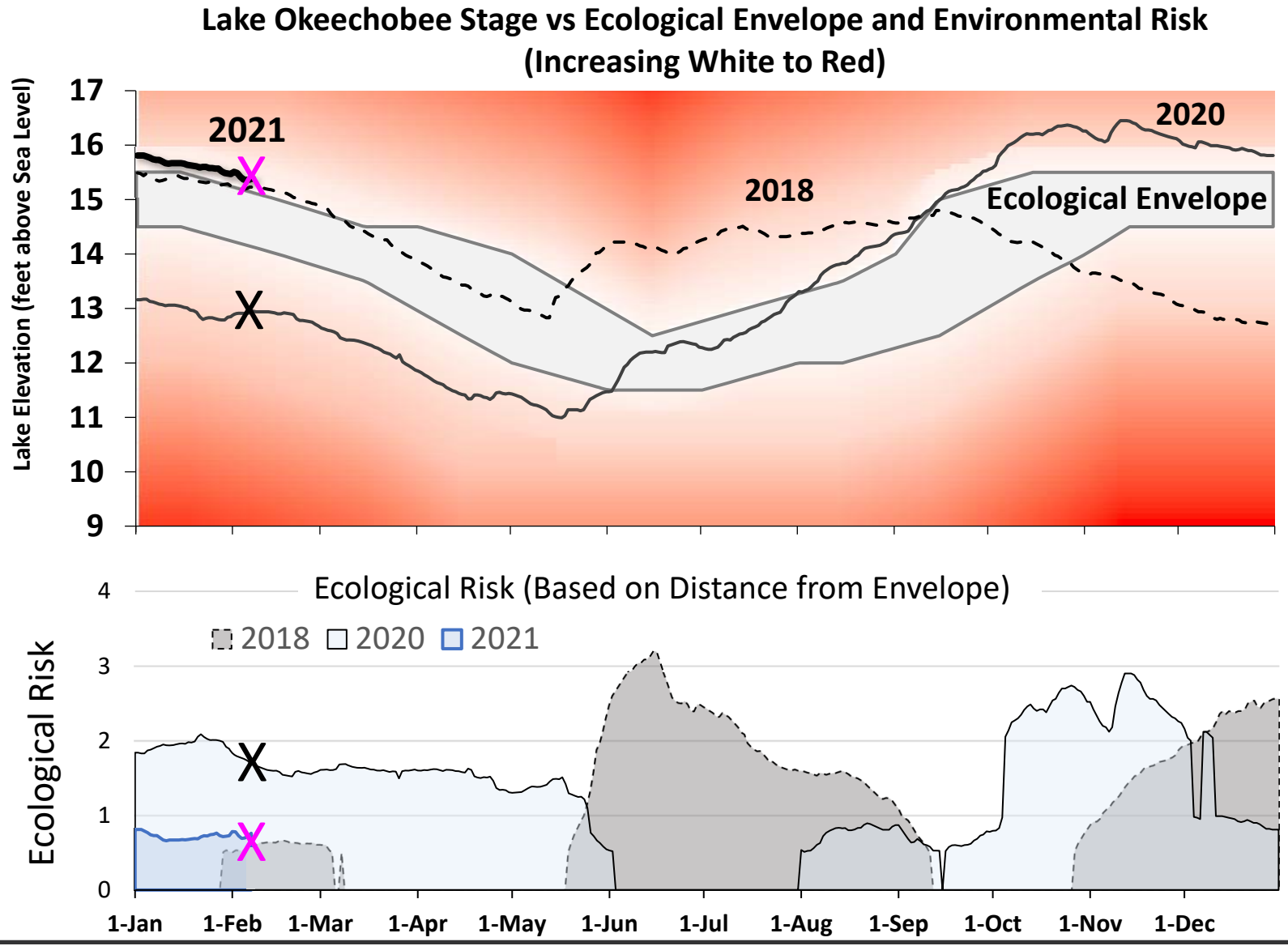
Reduction in prey and temporary increase in water depth was reflected in declining bird abundance in the Dec 2020 and Jan 2021 surveys

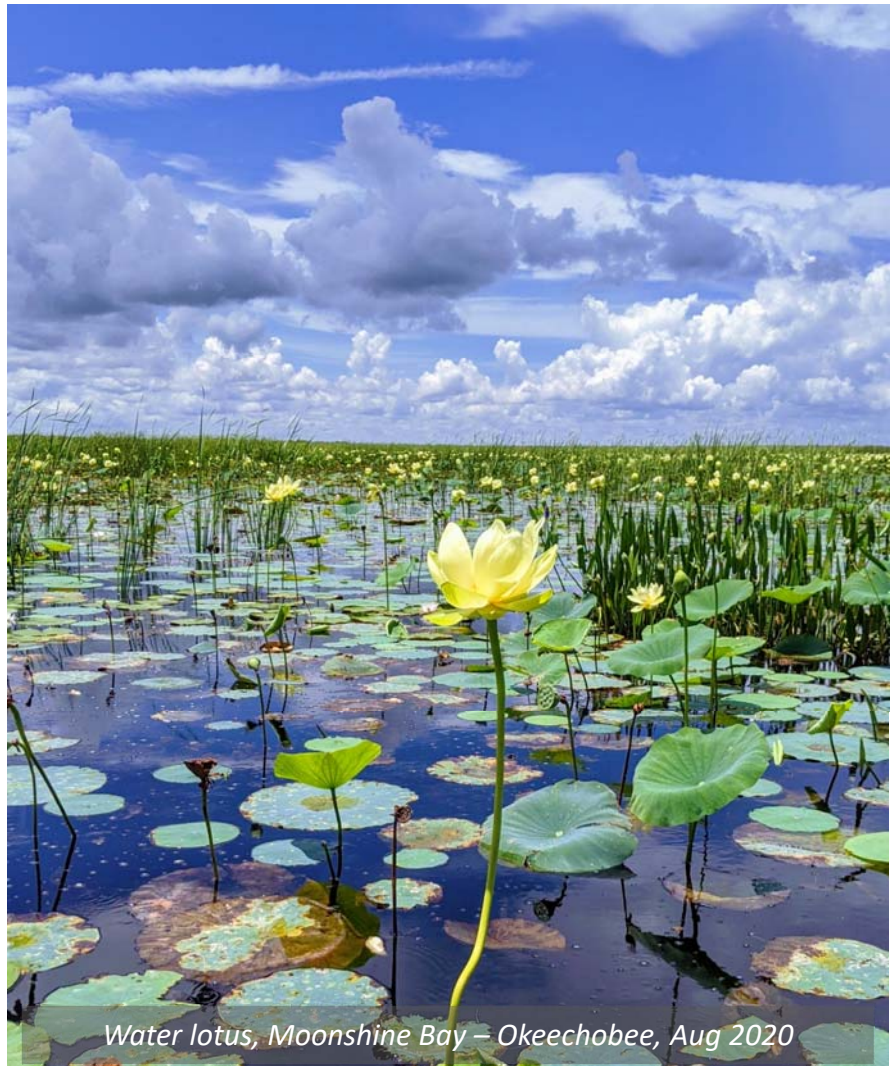
Lake Okeechobee Water Depth Maps



Source of Lake Graphic: Water Depth Assessment Tool (SFWDAT)
Source of Lake Stage Value: USACE/SFWMD Official Stage Value

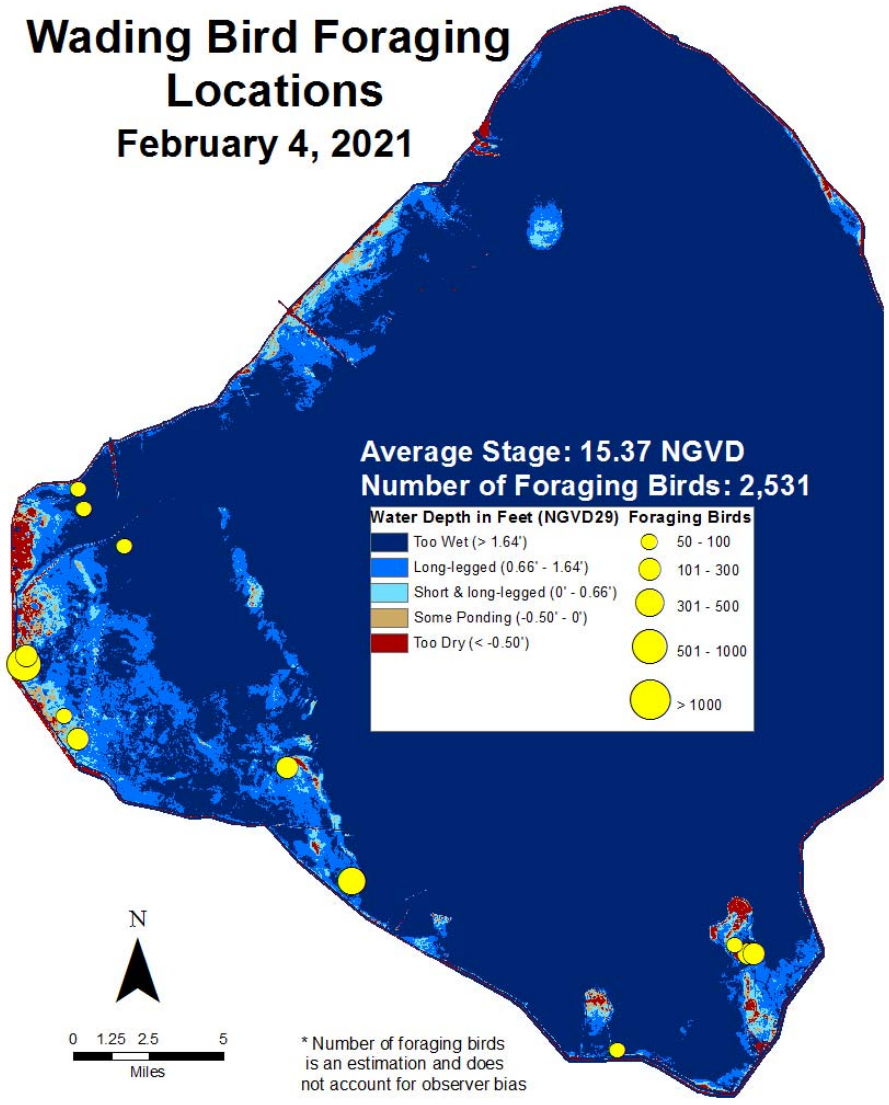
Lake Okeechobee Stages and Ecological Envelope

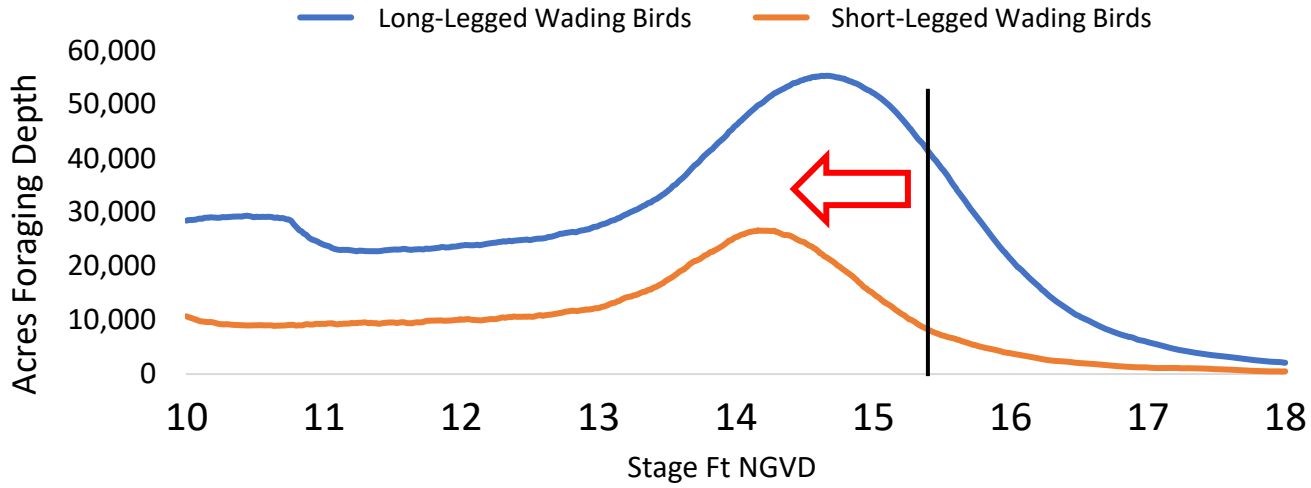


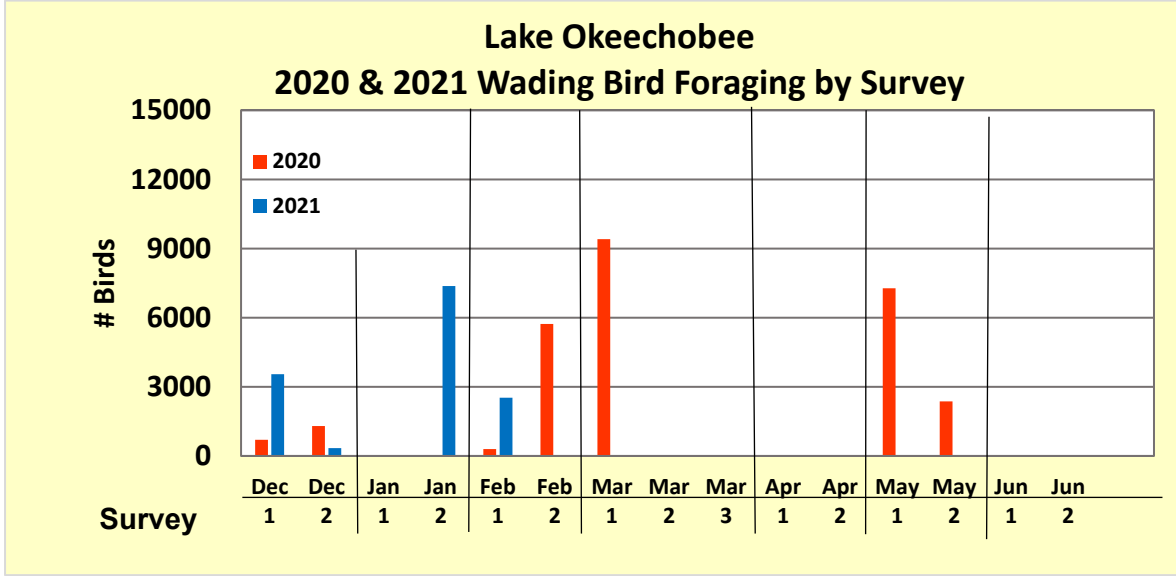

Water lotus, Moonshine Bay – Okeechobee, Aug 2020

Presenter: Lawrence Glenn

Lake Okeechobee
Foraging Wading Birds







Presenter: Lawrence Glenn

Snail Kite Nest Monitoring



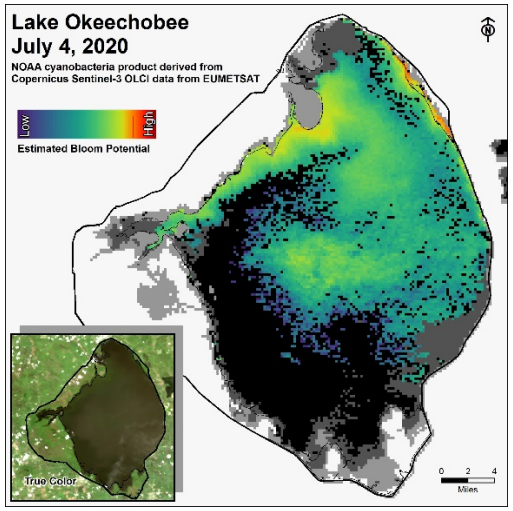
- 12 nests in Hicpochee Impoundment area, 4 fledglings already
- 7 nests in C-44 STA
- No other nesting observed in state yet

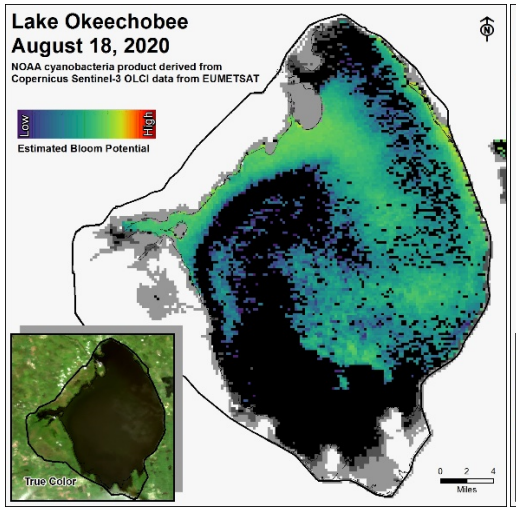

Snail Kite – Credit: Mike Tracy

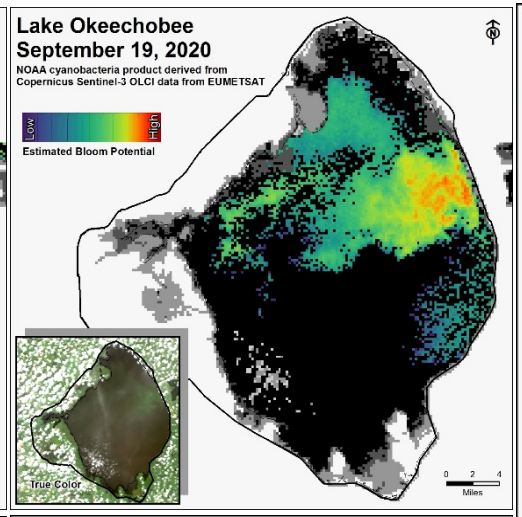

Snail Kite Nestlings
Credit: Jean Olbert

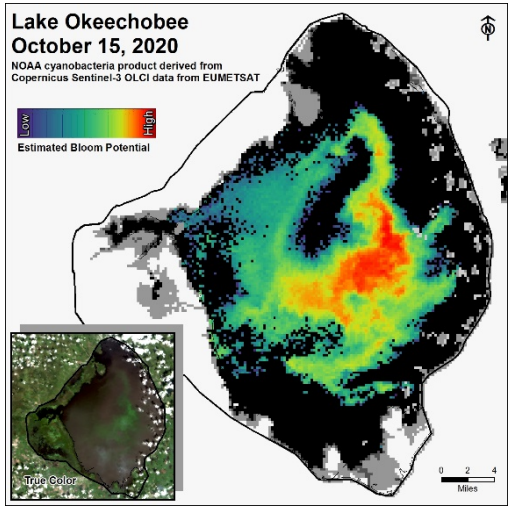
Presenter: Lawrence Glenn

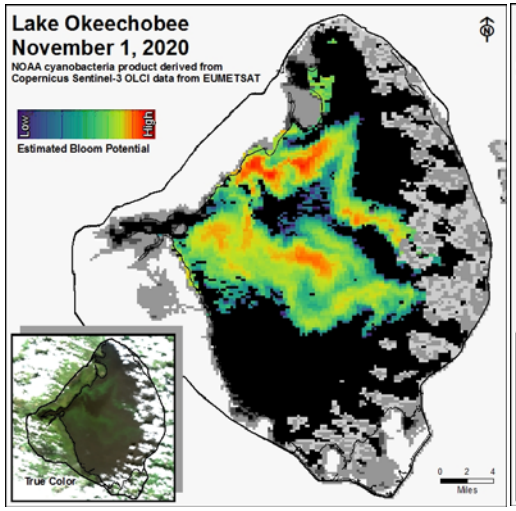
Lake Okeechobee
Cyanobacteria Bloom Potential

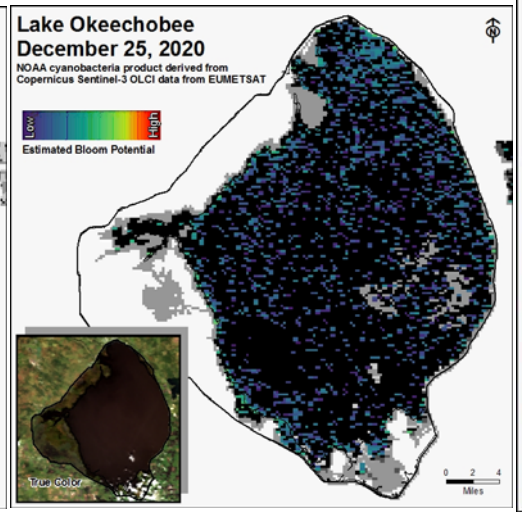


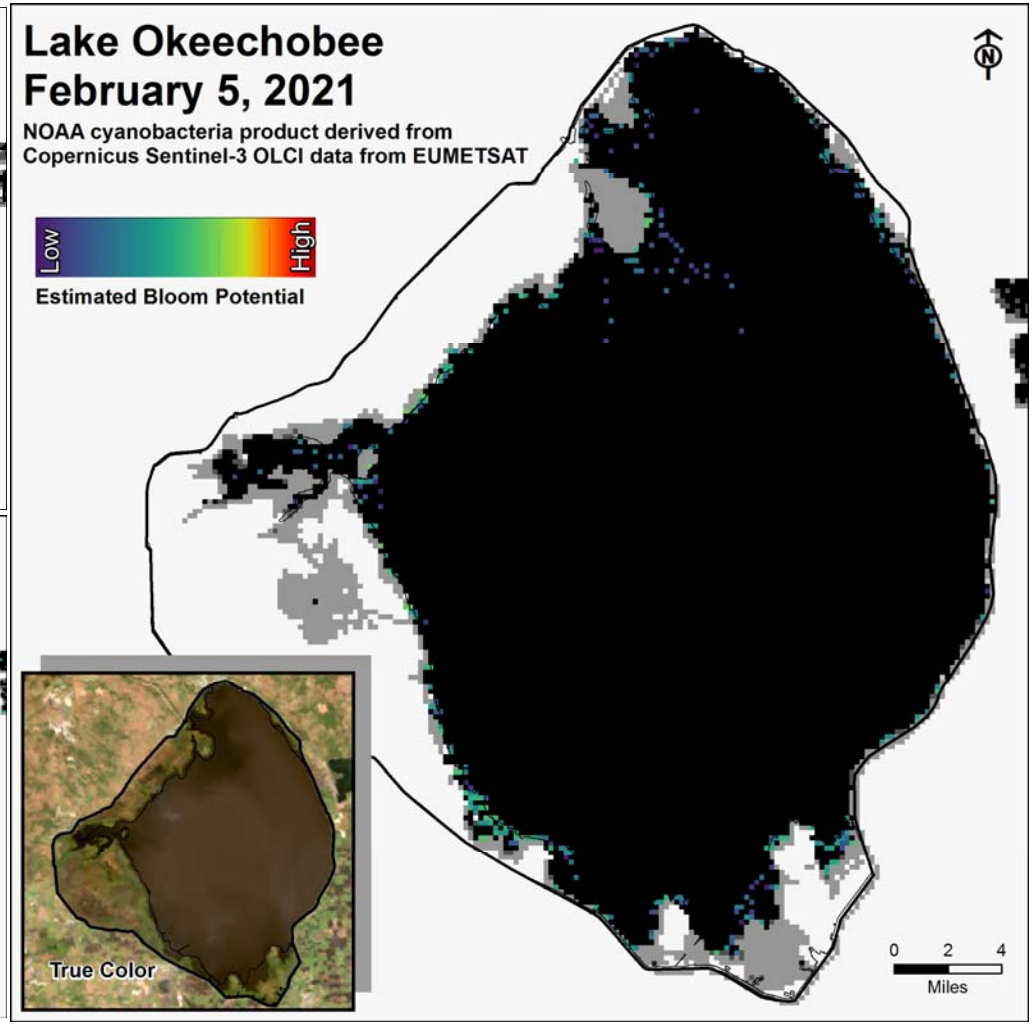












NOAA cyanobacteria product derived from Copernicus Sentinel-3 OLCI data from EUMETSAT

Lake Okeechobee Water Quality

Provisional Data

Collection Date: January 5-6, 2021

Station	CHL*a* (ug/L)	TOXIN (ug/L)	TAXA
FEBIN (1/4)	**29.9**		
FEBOUT (1/4)	**27.4**		
KISSR0.0	17.8	BDL	mixed
L005	5.9	BDL	mixed
LZ2	11.0	BDL	mixed
KBARSE	8.6		
RITTAE2	7.8	BDL	mixed
PELBAY3	5.5		
POLE3S	6.6		
LZ25A	6.7		
PALMOUT	19.5	BDL	mixed
PALMOUT1	7.0		
PALMOUT2	5.7		
PALMOUT3	5.3		
POLESOUT	**30.5**	BDL	mixed
POLESOUT1	15.8		
POLESOUT2	9.4		
POLESOUT3	8.4		
EASTSHORE	3.9		
NES135	4.1		
NES191	6.0		

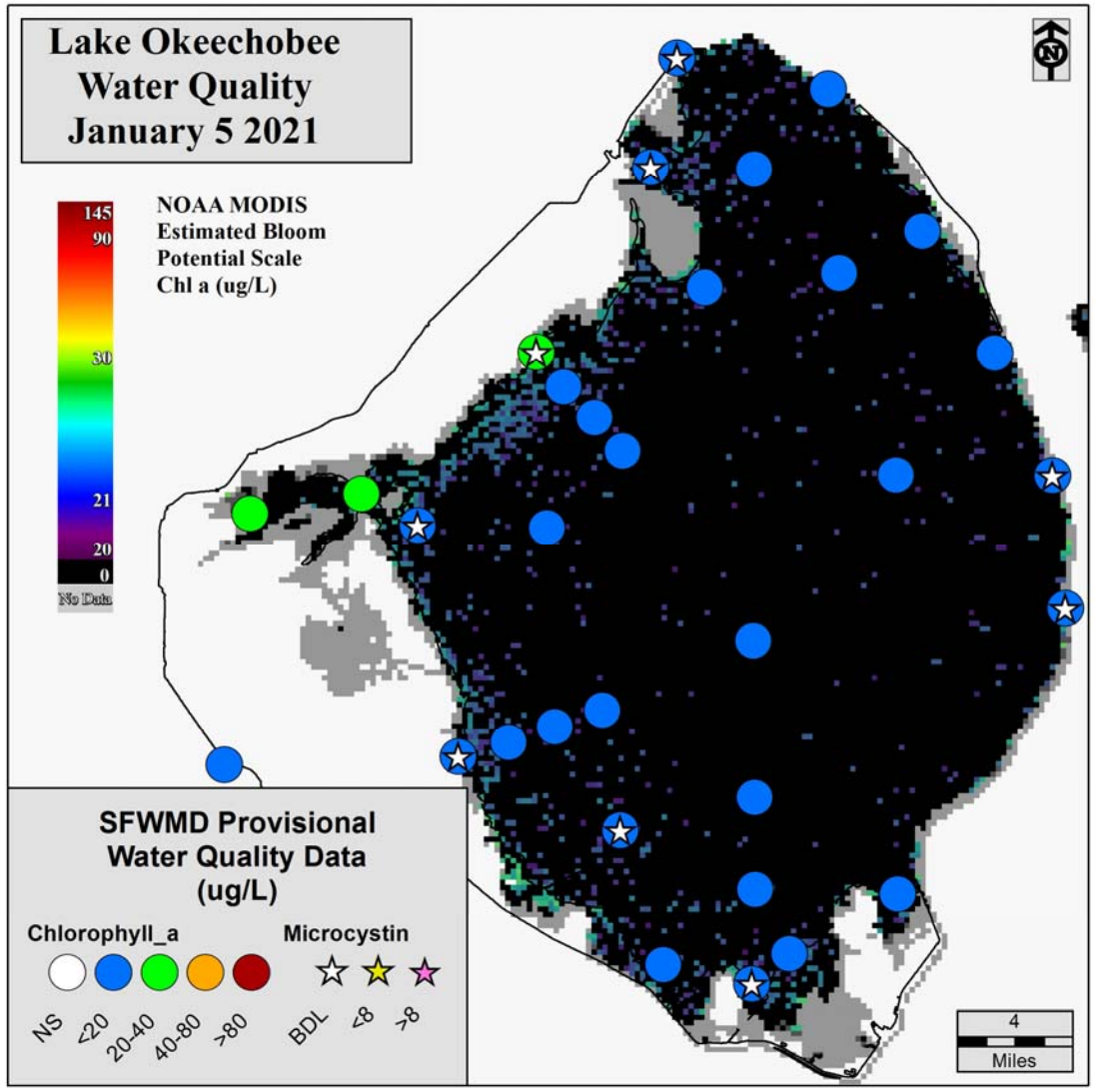
Station	CHL*a* (ug/L)	TOXIN (ug/L)	TAXA
L001	5.2		
L004	6.2		
L006	4.4		
L007	7.8		
L008	9.2		
LZ30	7.0	BDL	mixed
LZ40	4.5		
CLV10A	4.0	BDL	mixed
NCENTER	4.8		

Sampled 1/11

S308C	6.5	BDL	mixed
S77	5.2		

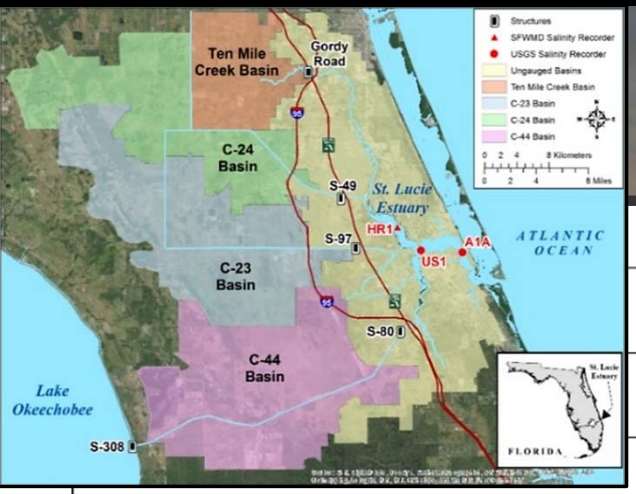
- SFWMD considers >40 µg/L Chlorophyll *a* (Chl*a*) an algal bloom
- BDL – Below Detectable Limit of **0.25** µg/L
- ND – No Dominant taxa
- P – Pending
- NS – Not Sampled
- Bold – crew observed possible BGA
- Chlorophyll *a* analyzed by SFWMD
- Toxin and Taxa analyzed by FDEP

  Cylindro = Cylindrospermopsis
  Planktol = Planktolyngbya
  Dolicho = Dolichospermum



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

St. Lucie Inflows and Salinity Conditions



Total Daily Inflow into the St. Lucie Estuary

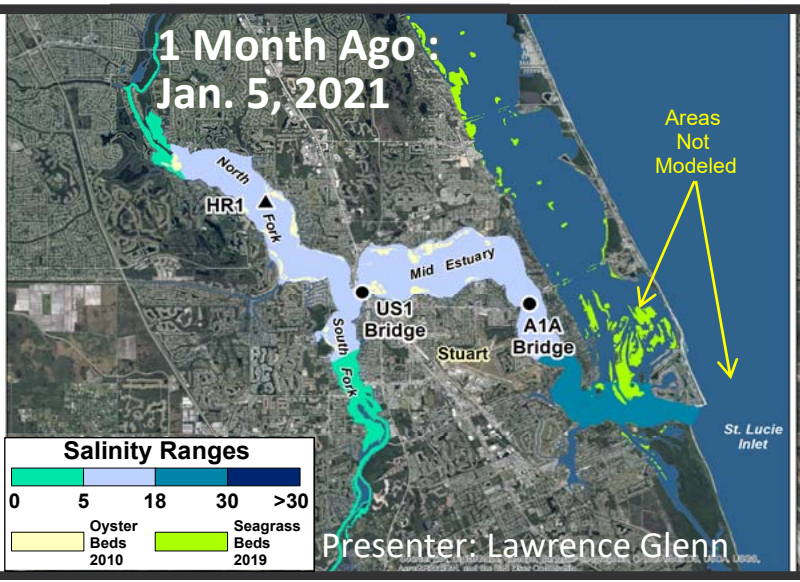
Data provisional and subject to change

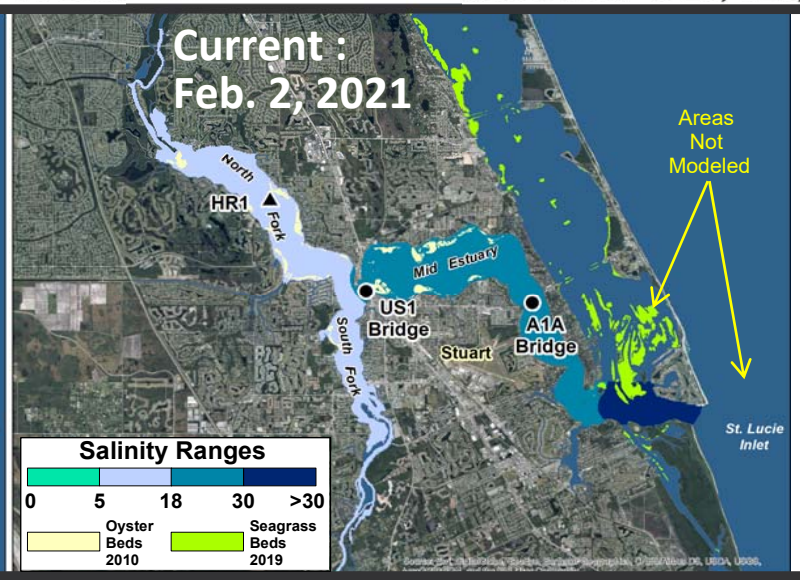
Weekly Average Inflow February 1 - 7, 2021	
Inflow from Lake	0 cfs
C-44 Basin Inflow	0 cfs
Ten Mile Creek	not reporting
C-23	32 cfs
C-24	276 cfs
Tidal Basin Inflow	115 cfs
Total	423 cfs

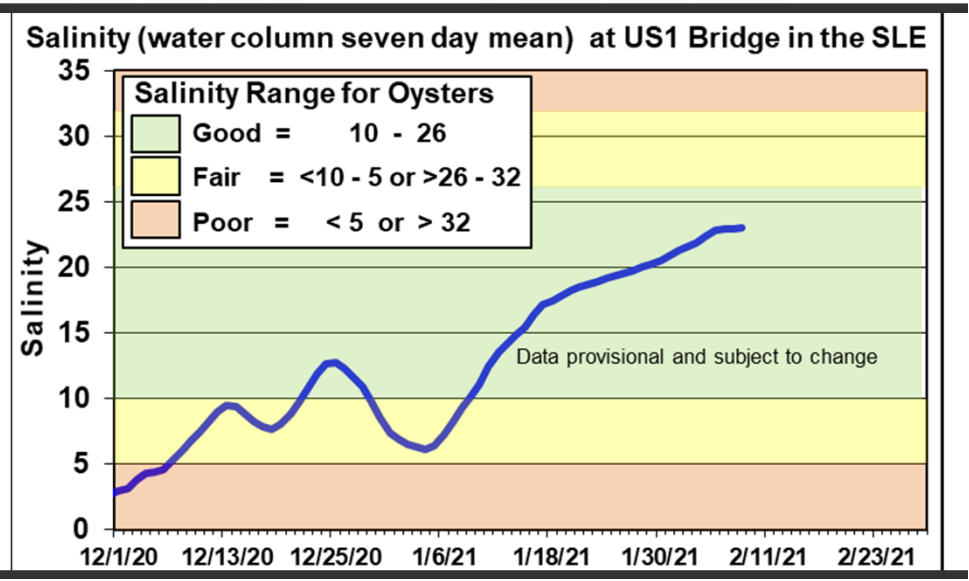
12,500
10,000
7,500
5,000
2,500
0
Total Flow (cfs)

Feb-20 Mar-20 Apr-20 May-20 Jun-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 Jan-21 Feb-21

Inflow from Lake | C-44 Basin Runoff | Inflow from C-24, C23, and Ten Mile Creek | Tidal Basin Inflow



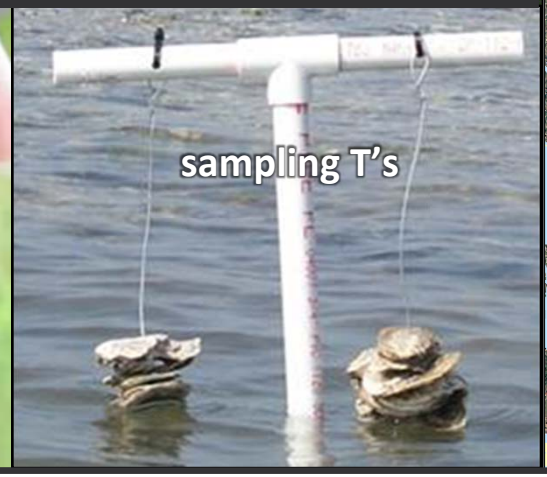


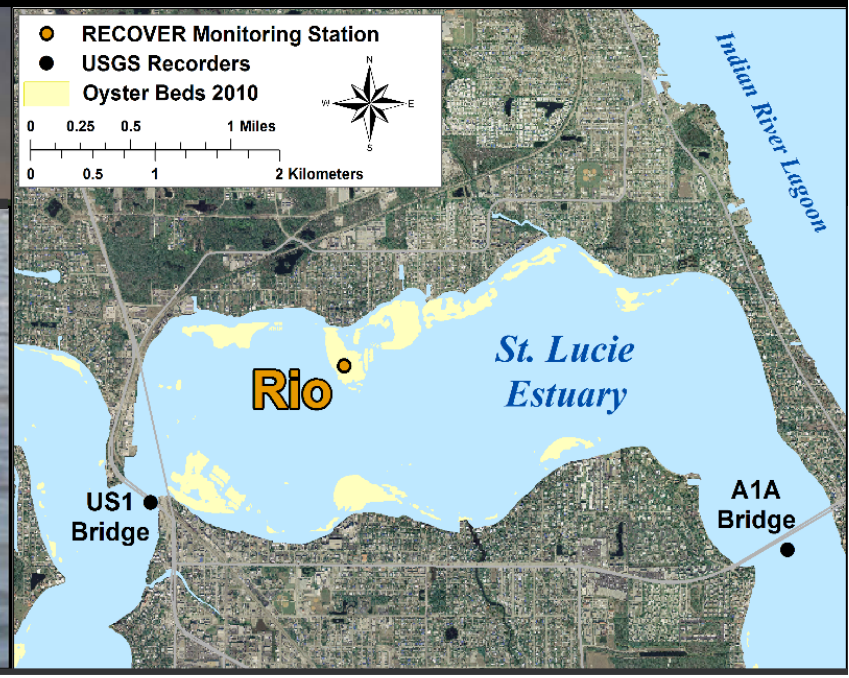


St. Lucie Estuary – Oysters at Rio Station

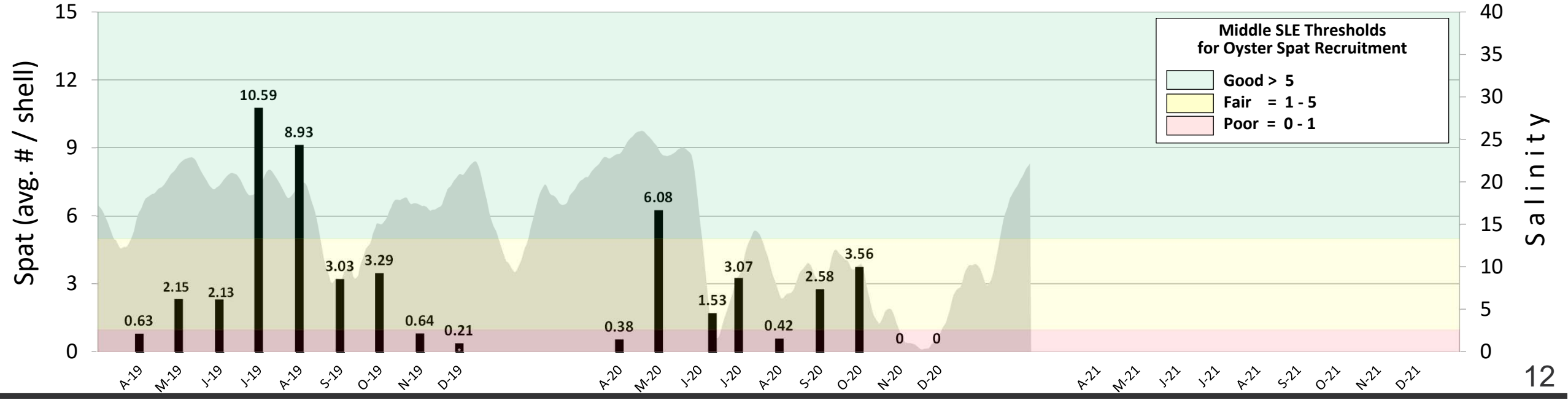








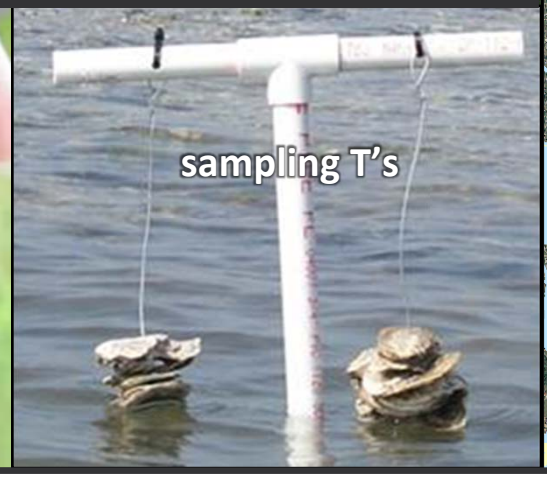
2019 - 2021 Rio Oyster Recruitment Season and 14 day mean Salinity at US1 Bridge

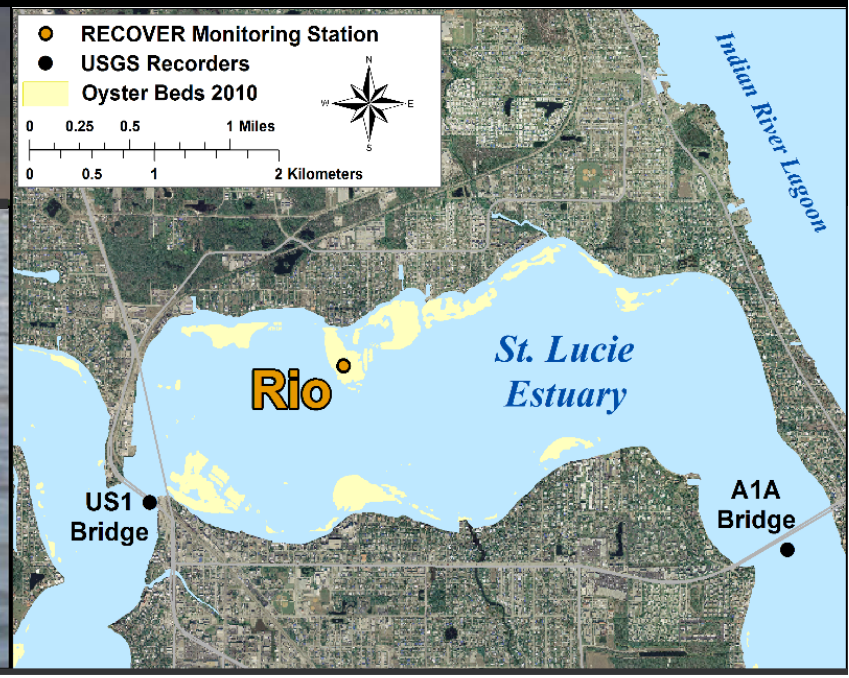


St. Lucie Estuary – Oysters at Rio Station

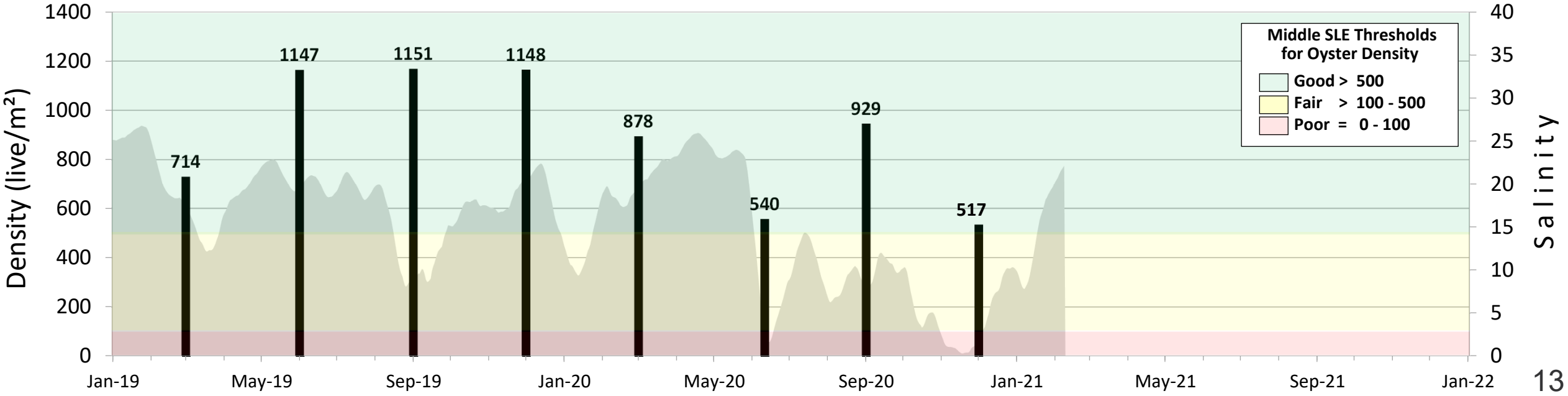




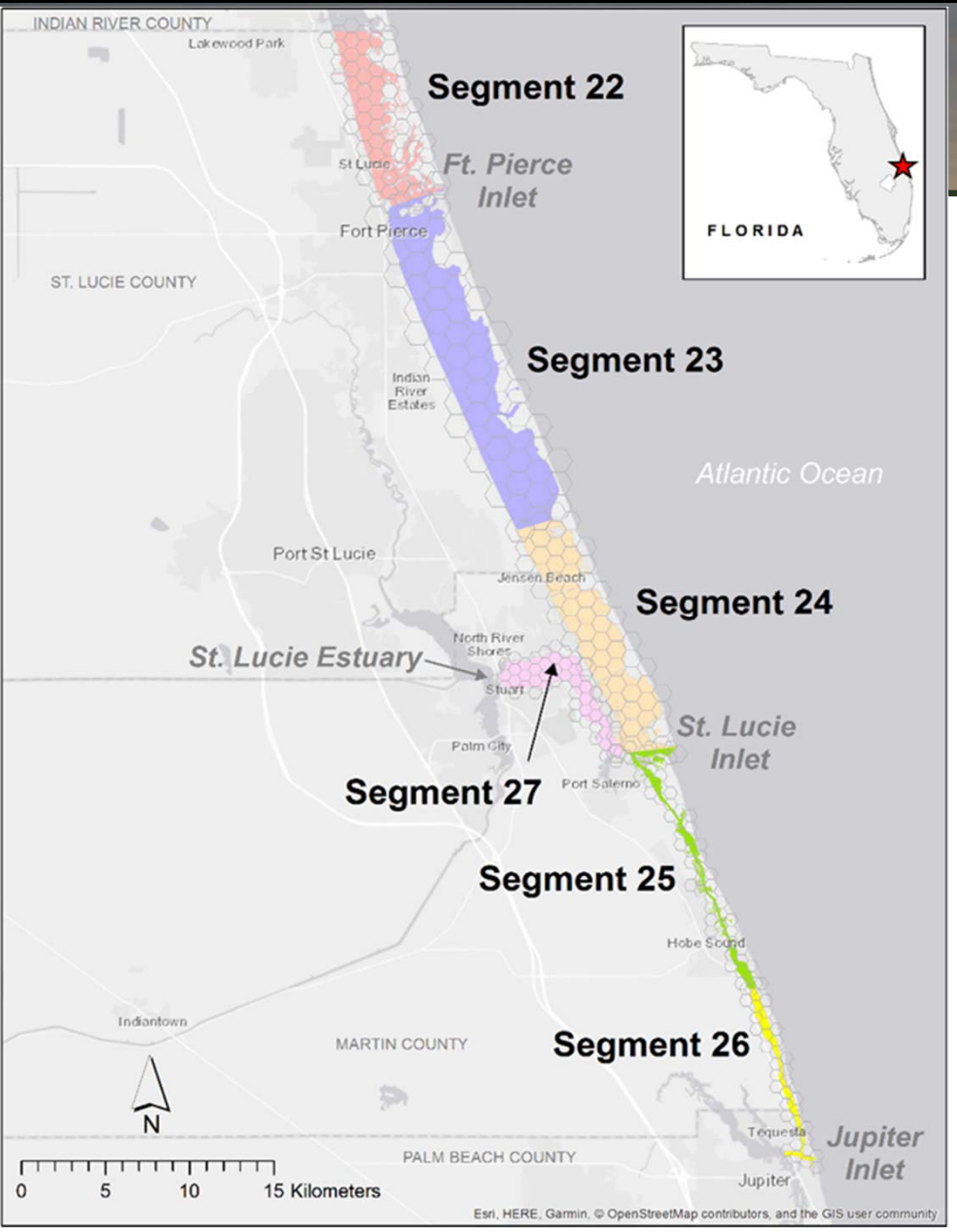


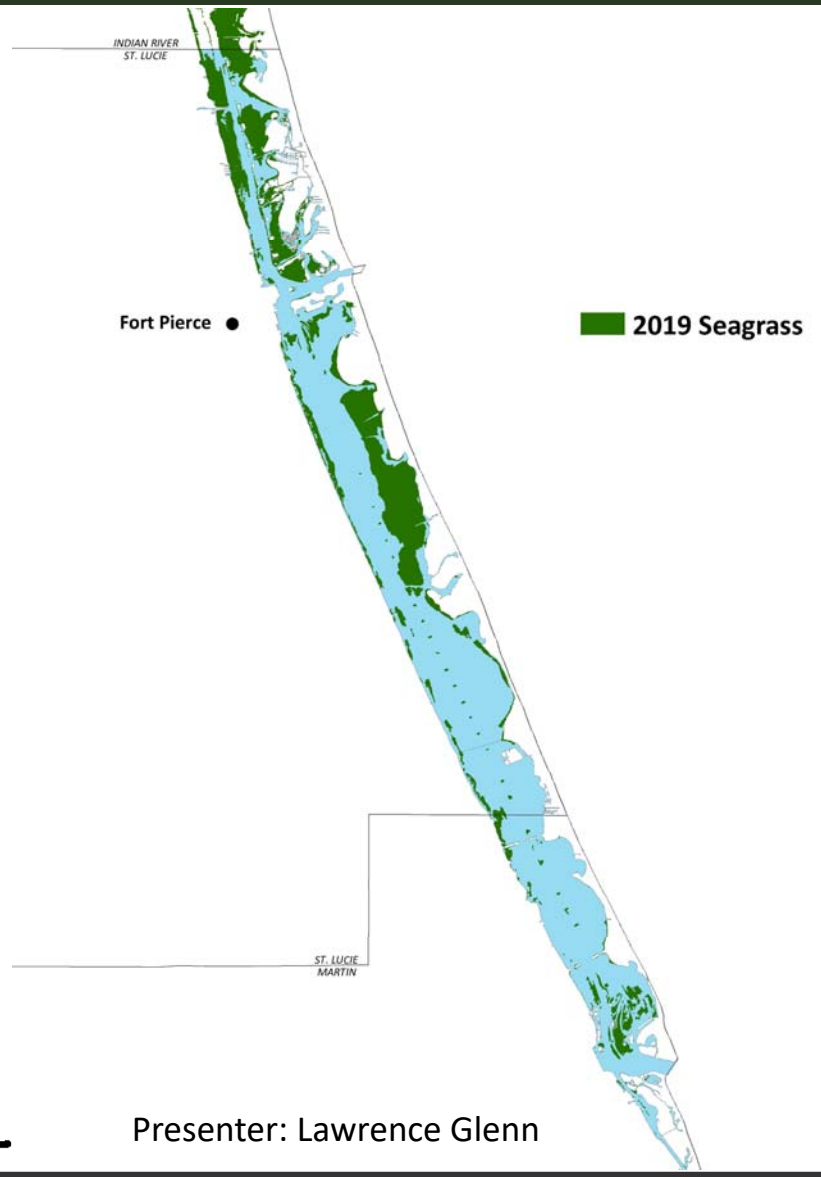


2019 - 2021 Rio Oyster Density and 14 day mean Salinity at US1 Bridge



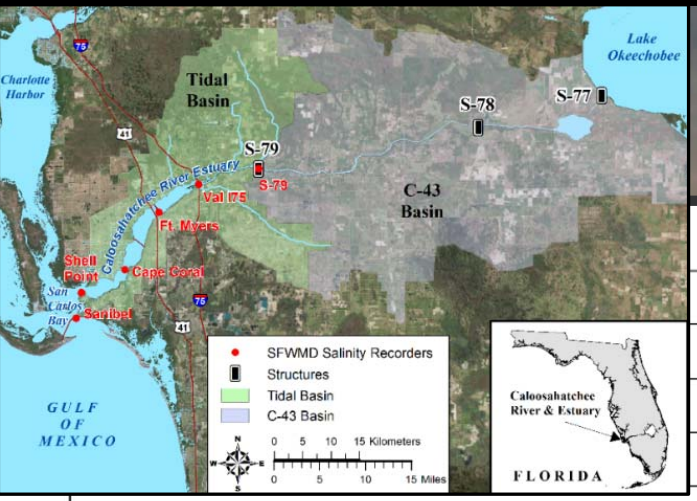
IRL Seagrass Acreage 1992-2019



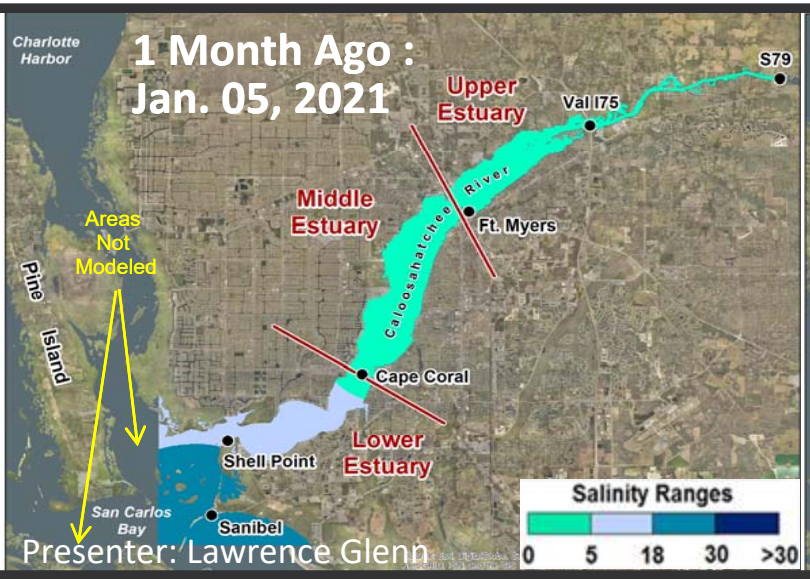


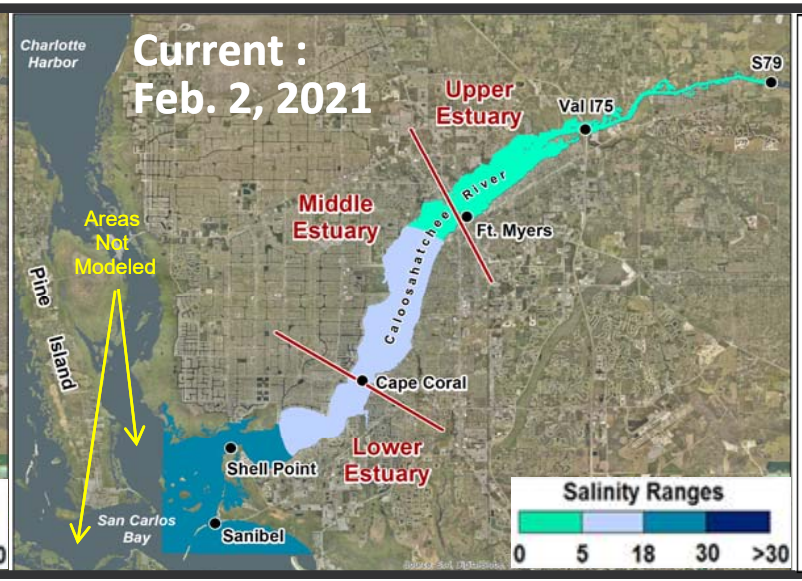
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

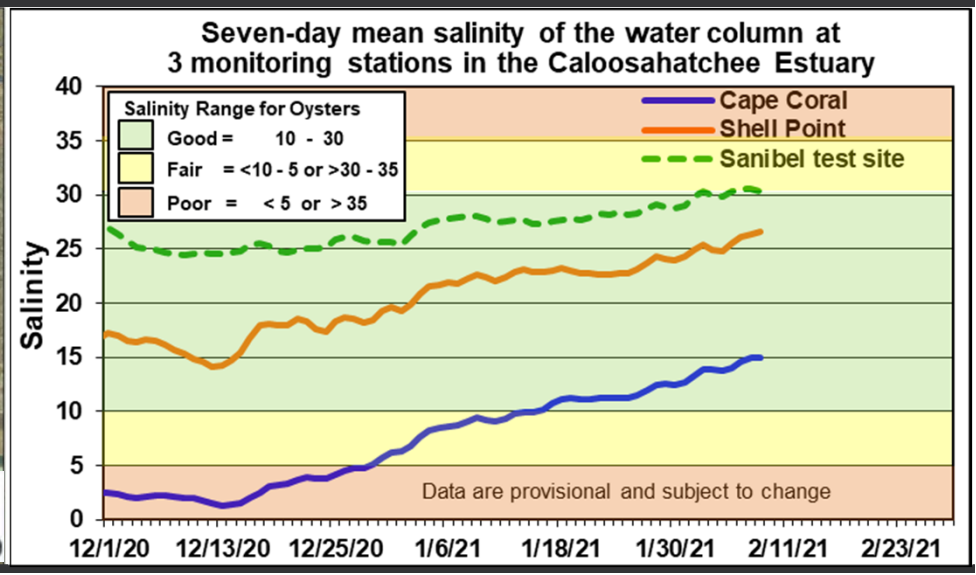
Caloosahatchee Inflows and Salinity Conditions



Total Daily Inflow into the Caloosahatchee Estuary

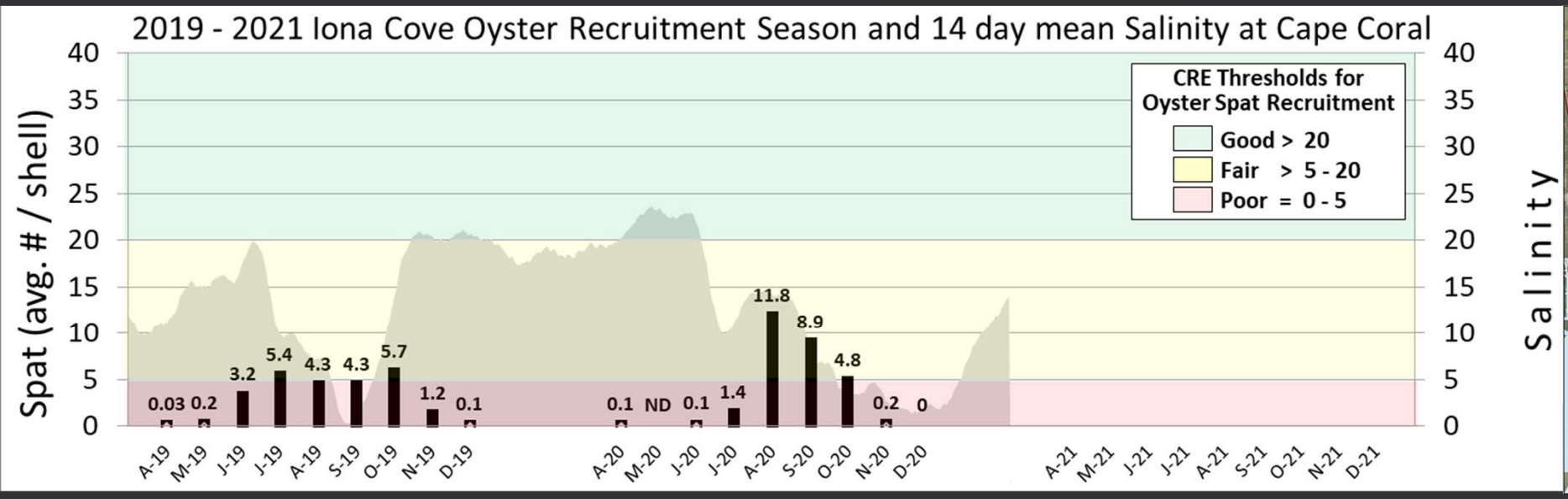


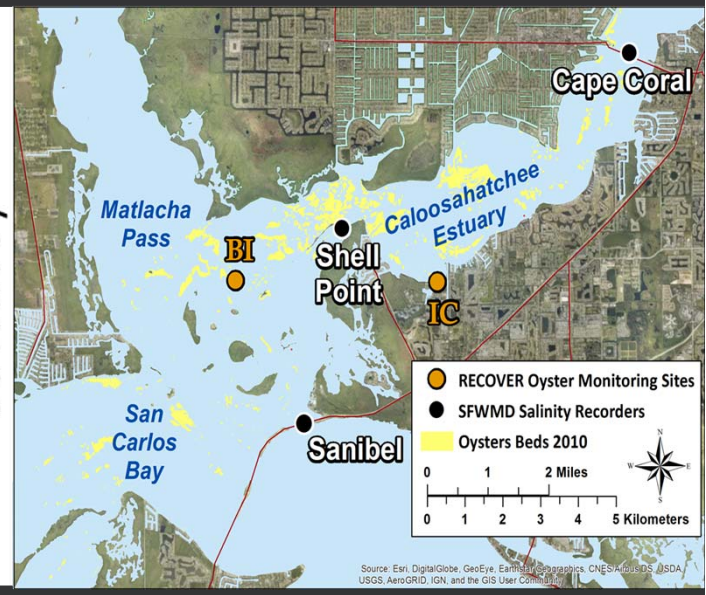


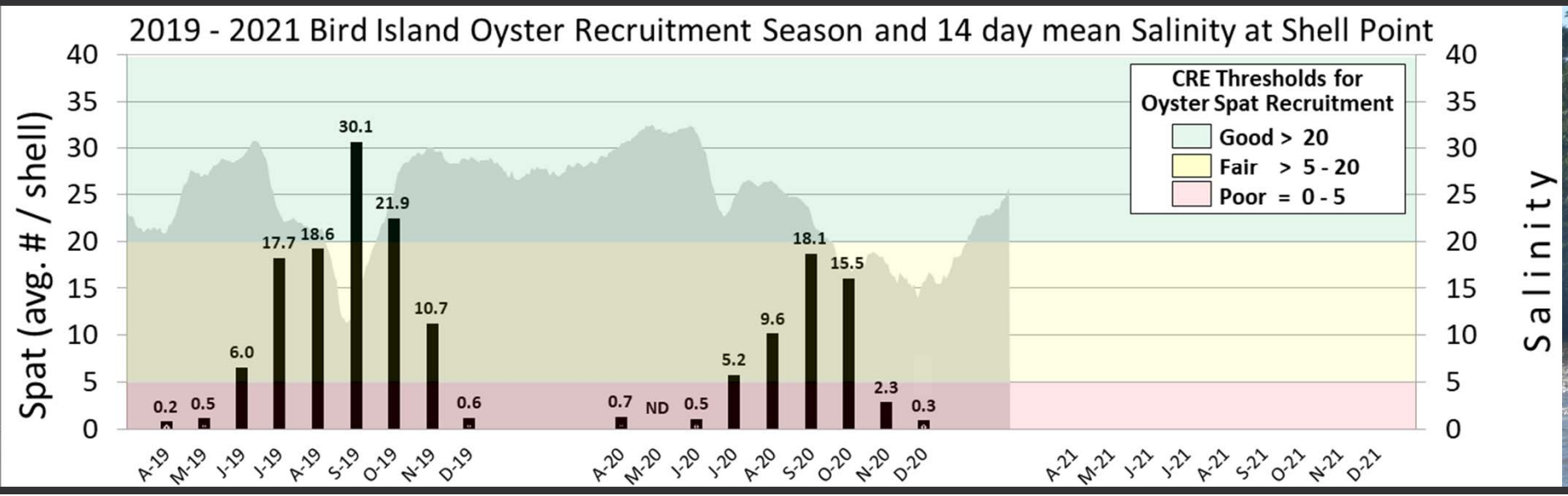


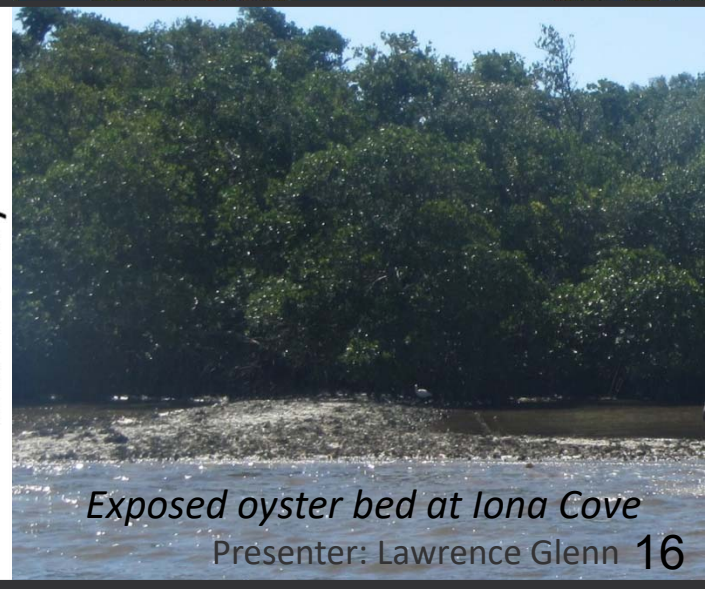
Presenter: Lawrence Glenn

Caloosahatchee Estuary - Oyster Recruitment



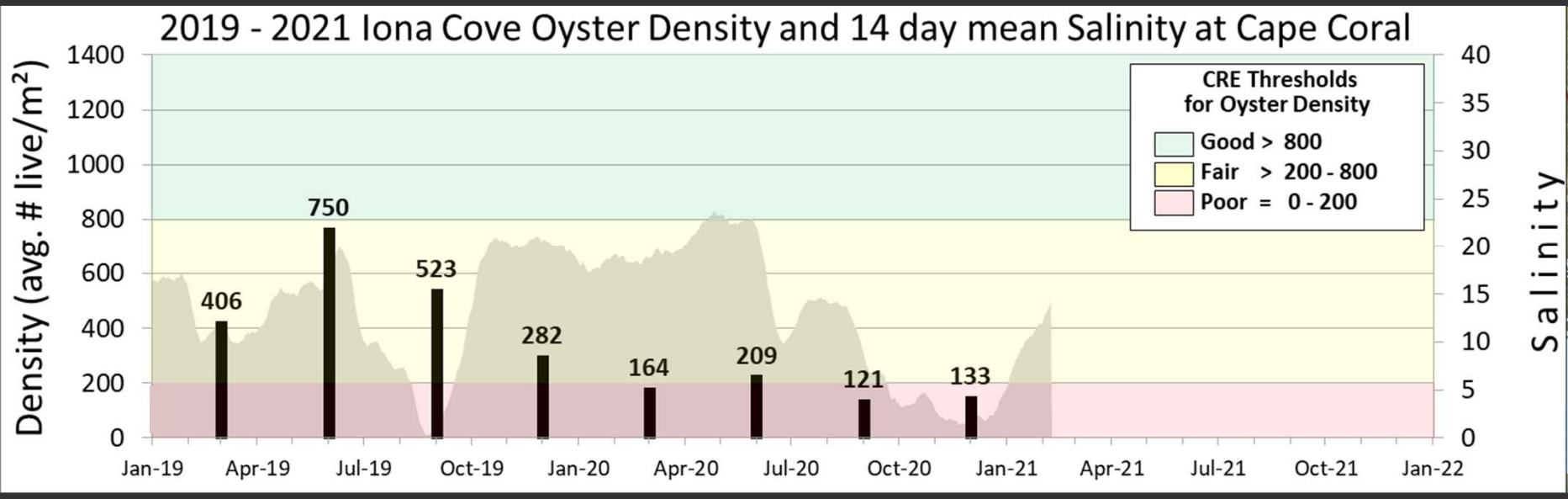


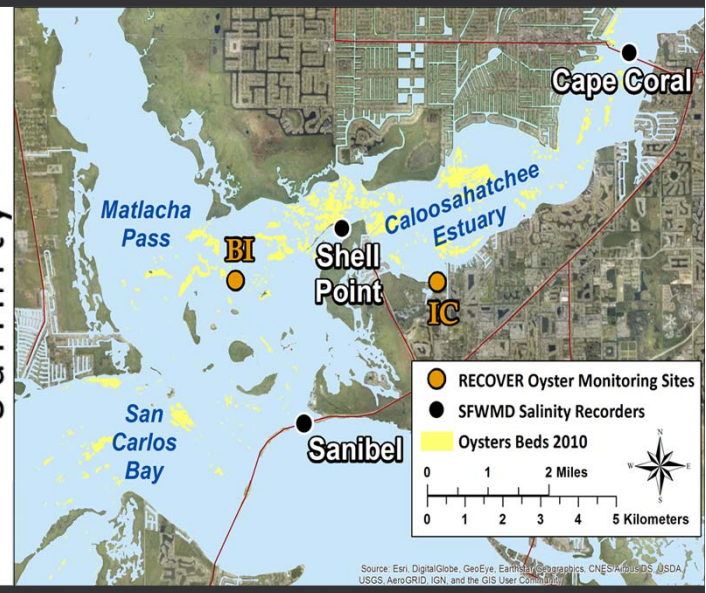


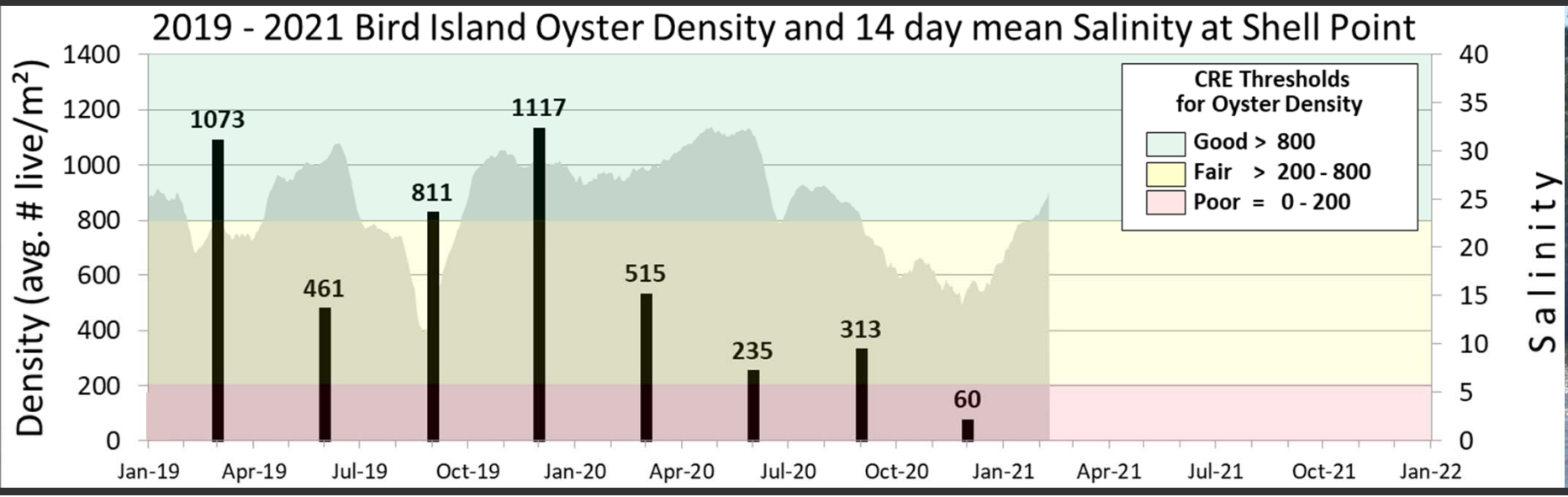


Exposed oyster bed at Iona Cove

Caloosahatchee Estuary - Oyster Density









Exposed oyster bed at Iona Cove

Presenter: Lawrence Glenn

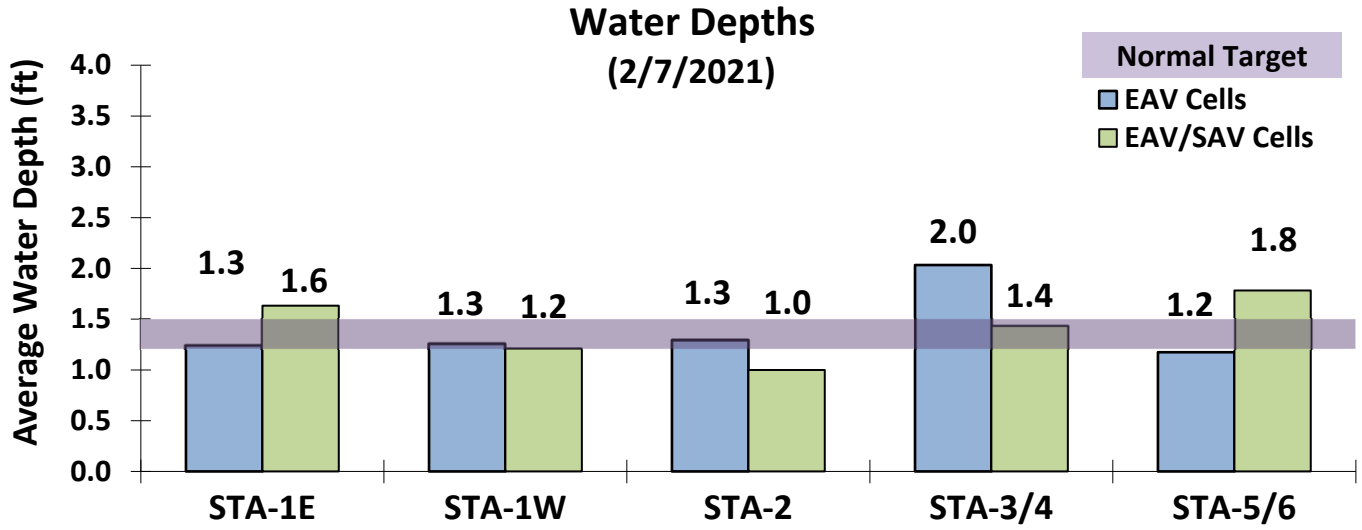
Everglades Stormwater Treatment Areas (STAs)

- STAs treated basin runoff and Lake releases in December and January
  - Total Inflows to STAs in WY2021 ~1,537,000 ac-ft
  - Lake Okeechobee releases to STAs in WY2021 ~98,400 ac-ft (6% 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

Water Year 2021
5/1/2020 to 2/7/2021

	STA-1E	STA-1W	STA-2	STA-3/4	STA-5/6
Inflow TP Concentration (ppb)	137	257	109	57	282
Outflow TP Concentration (ppb)	37	38	21	12	80
365-day Phosphorus Loading Rate ($g/m^2/yr$)	4.3	2.3	0.9	0.7	0.8
Inflow Volume (ac-ft)	308,300	186,300	371,600	540,900	129,500

Includes preliminary data; all concentrations are flow-weighted means

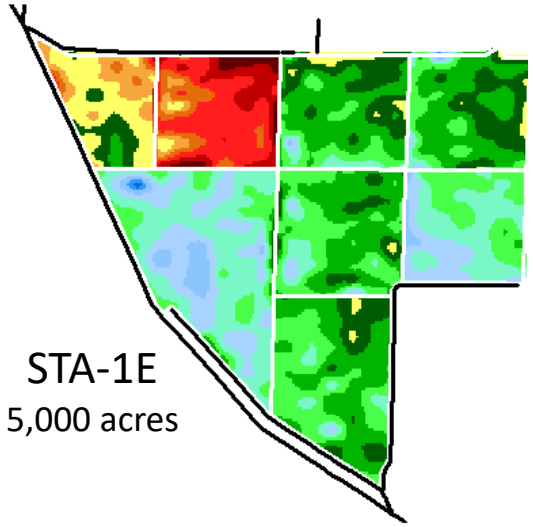


Includes preliminary data; Emergent Aquatic Vegetation (EAV); Submerged Aquatic Vegetation (SAV)

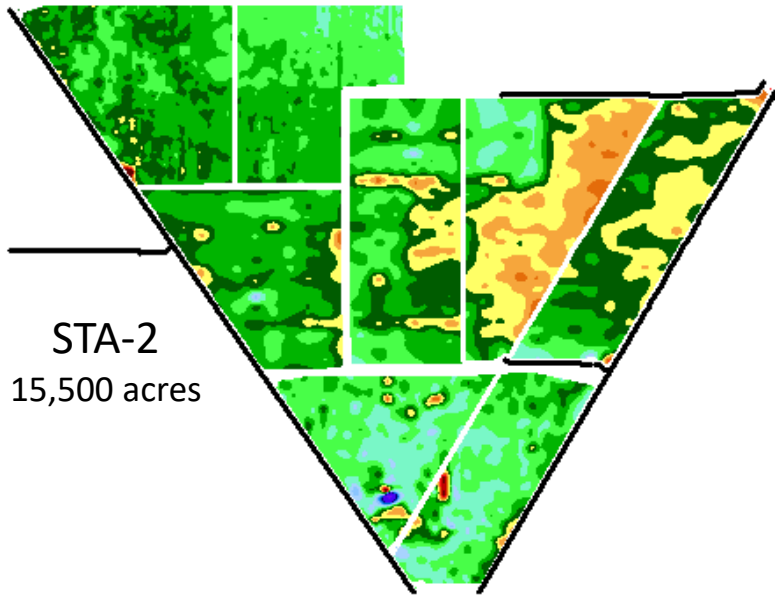
Presenter: Lawrence Glenn

Everglades Stormwater Treatment Areas

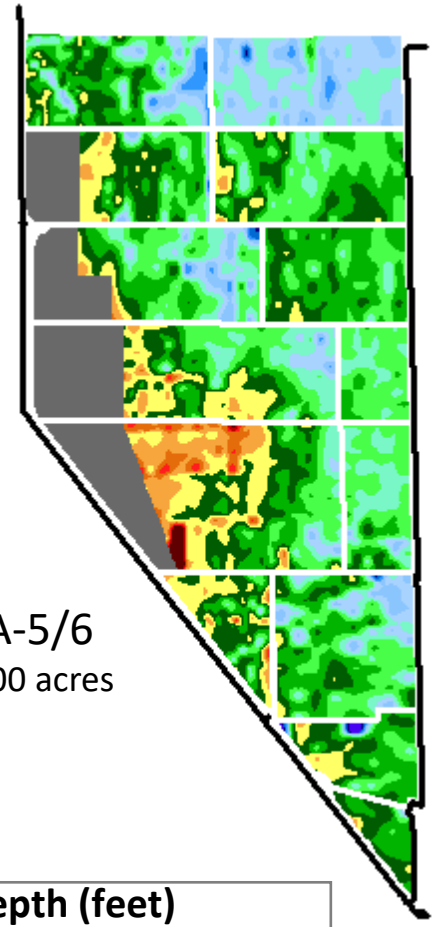
Daily Average Water Depths on 2/7/2021



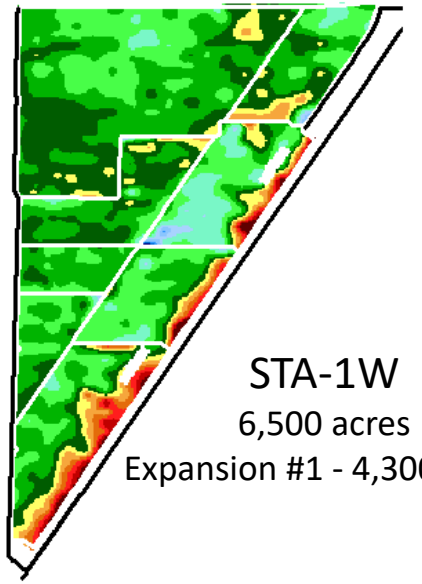
STA-1E
5,000 acres



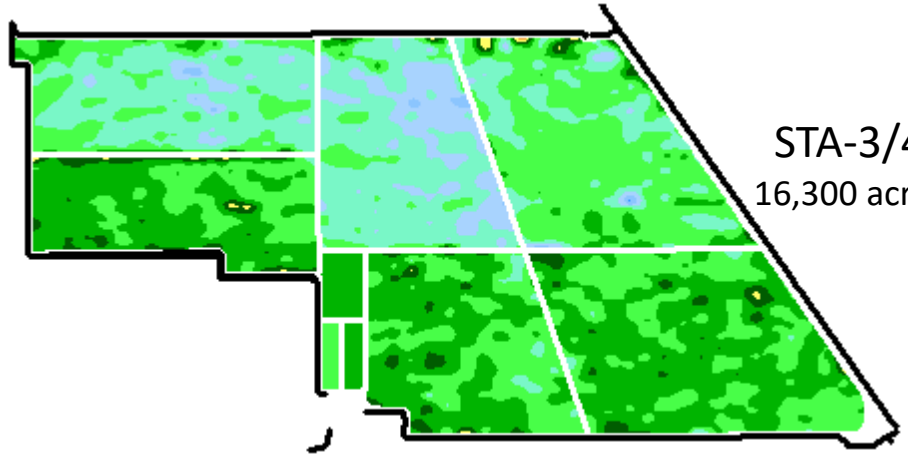
STA-2
15,500 acres



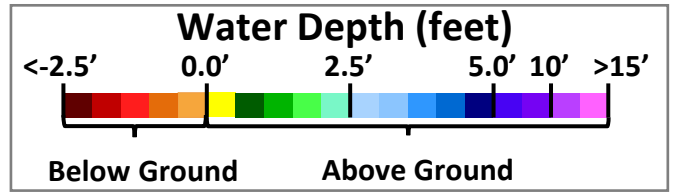
STA-5/6
13,700 acres



STA-1W
6,500 acres
Expansion #1 - 4,300 acres

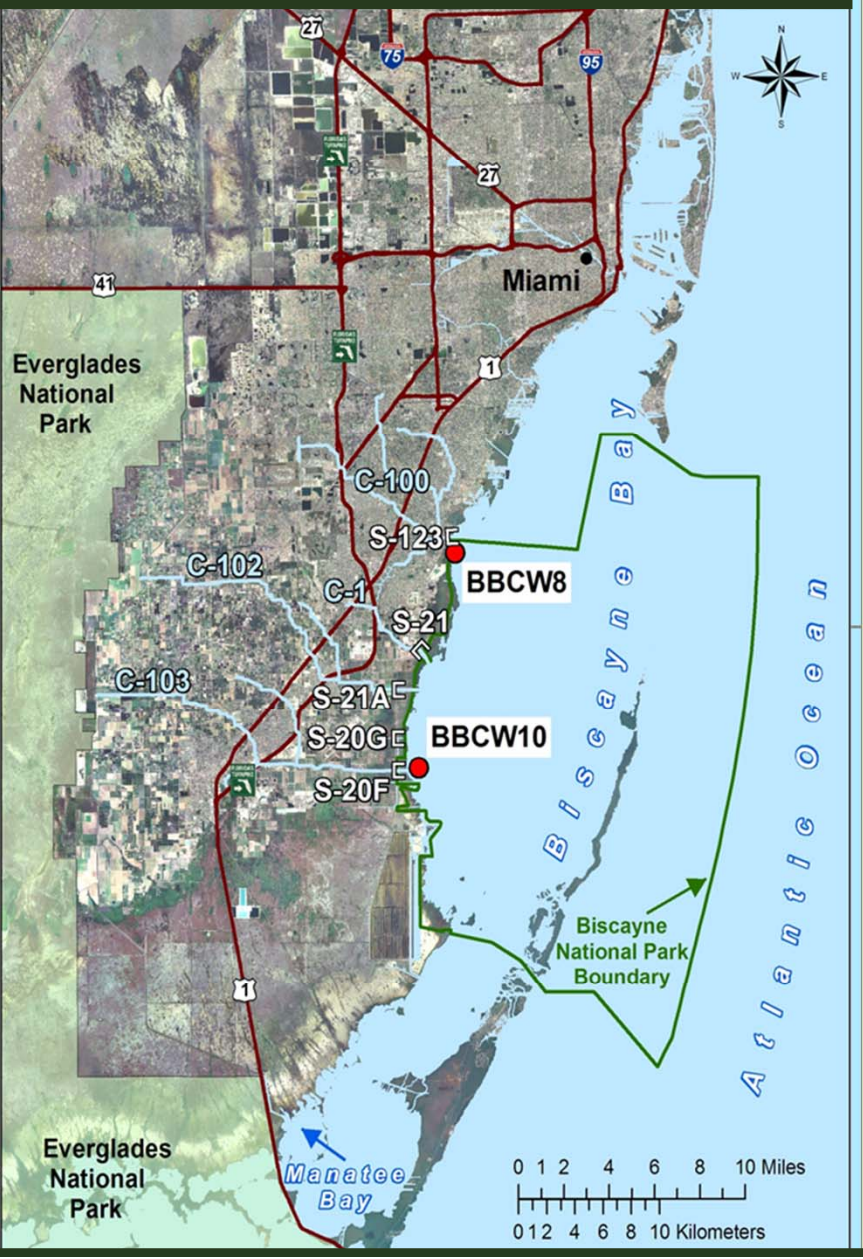


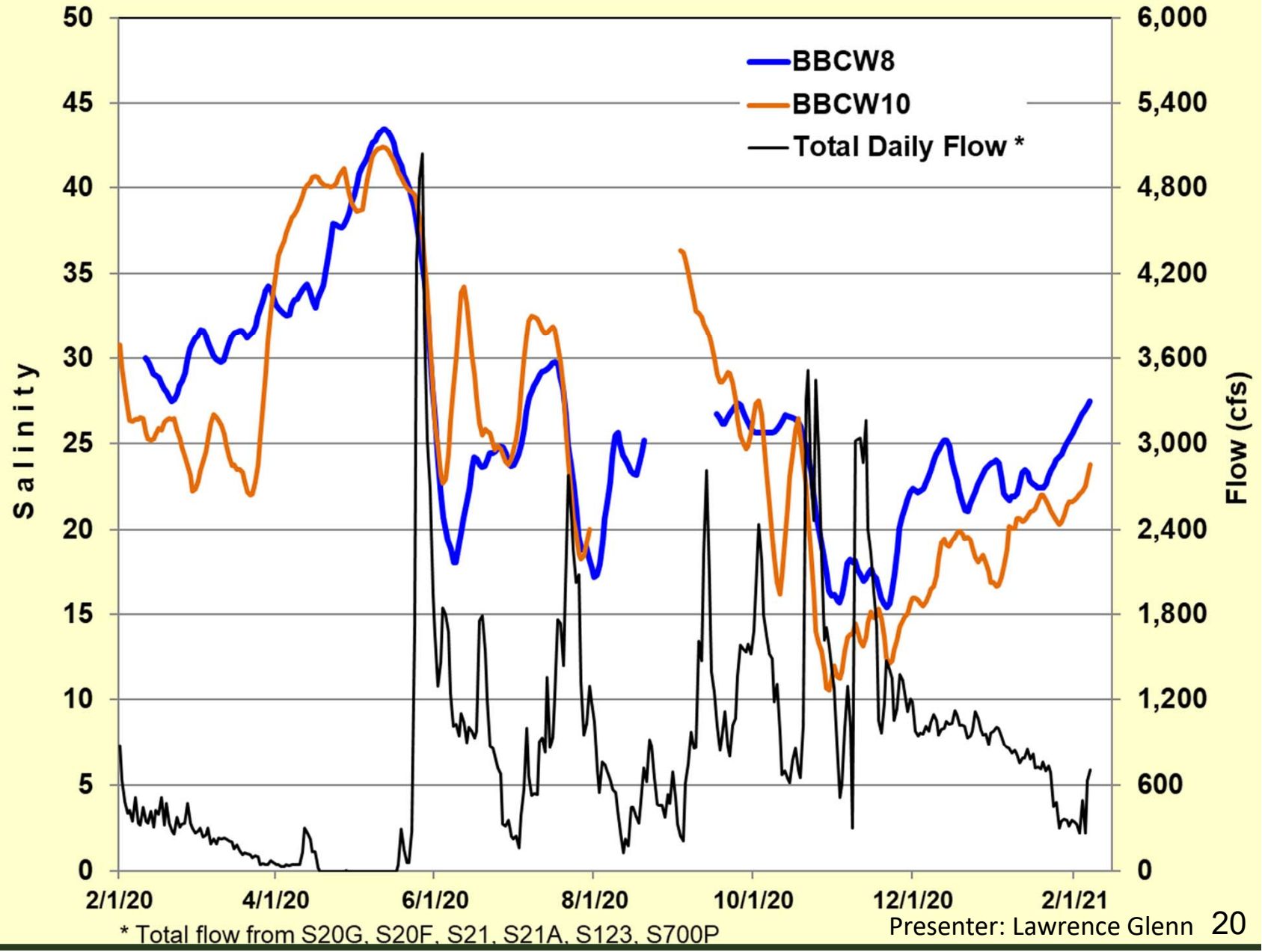
STA-3/4
16,300 acres



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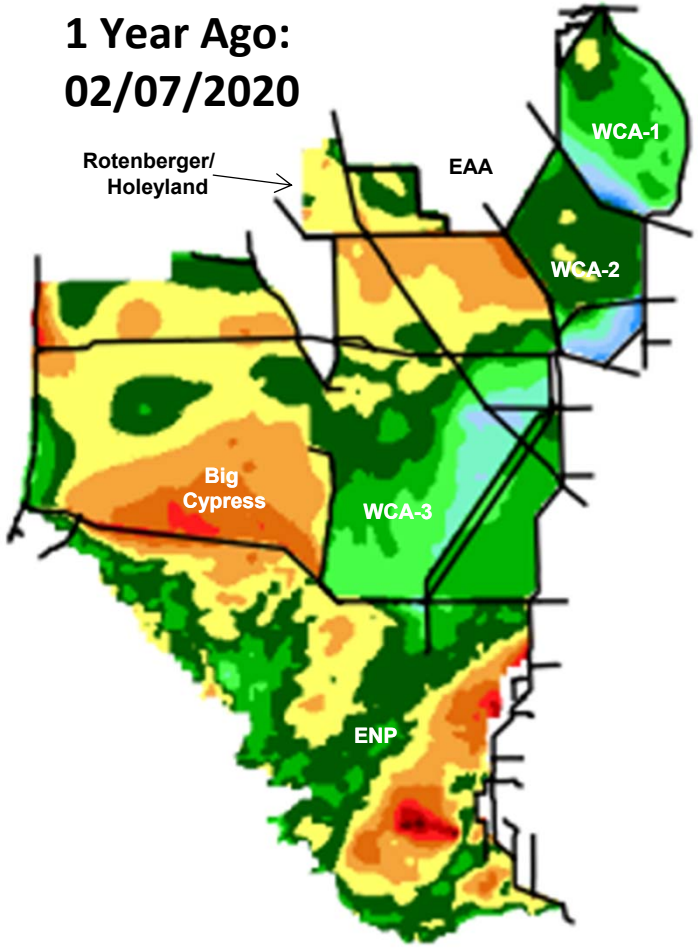
Biscayne Bay



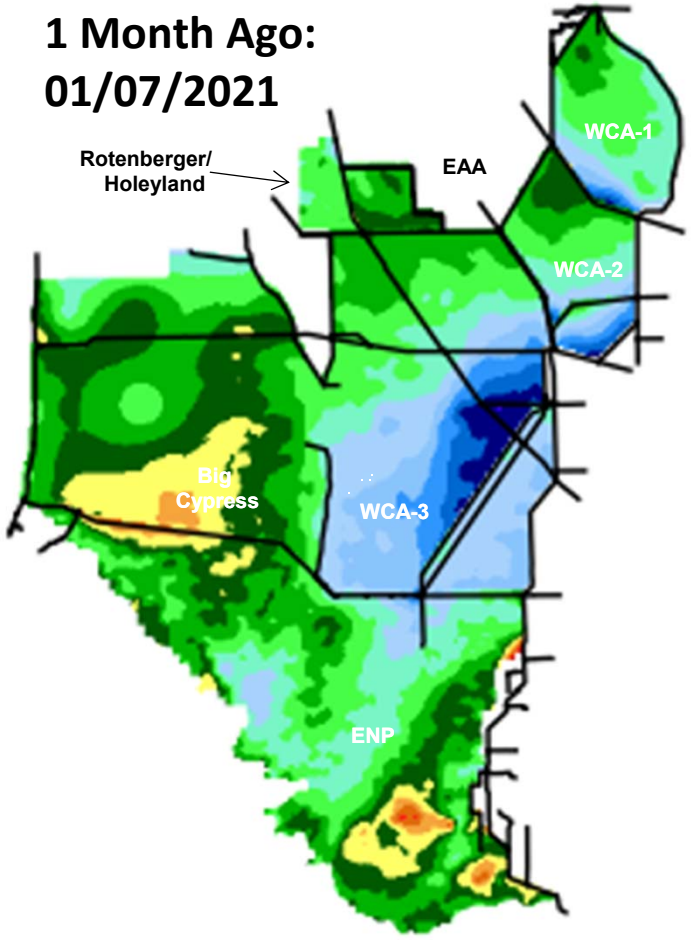


Everglades Water Depth Maps

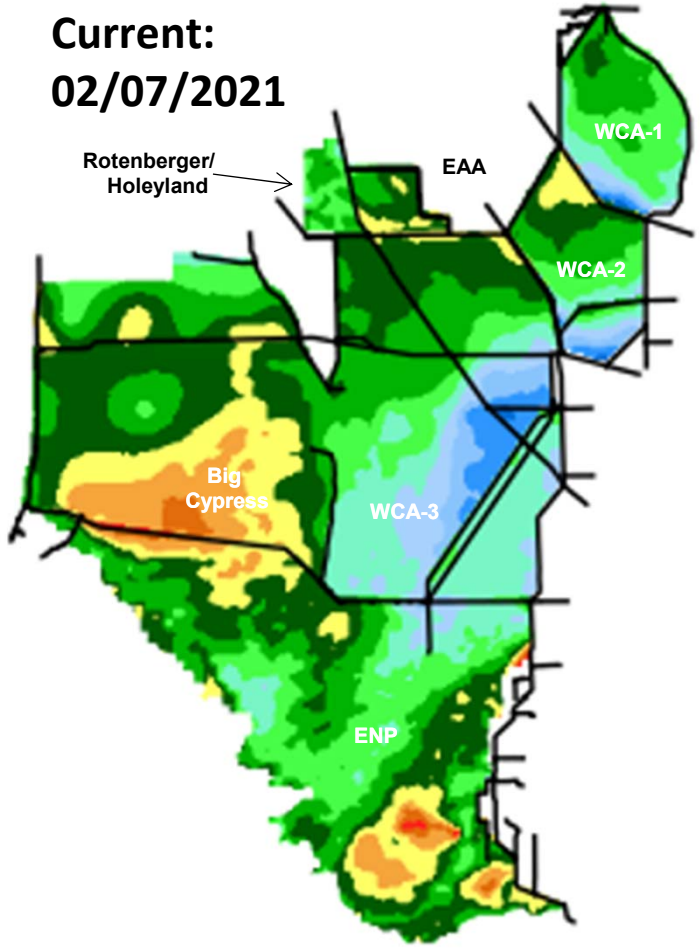
1 Year Ago:
02/07/2020

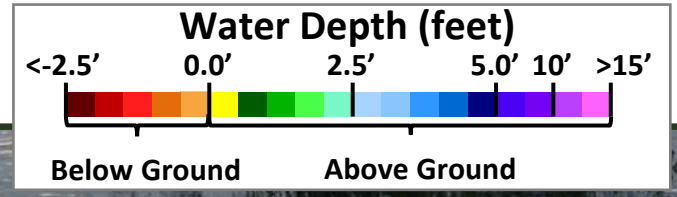


1 Month Ago:
01/07/2021



Current:
02/07/2021





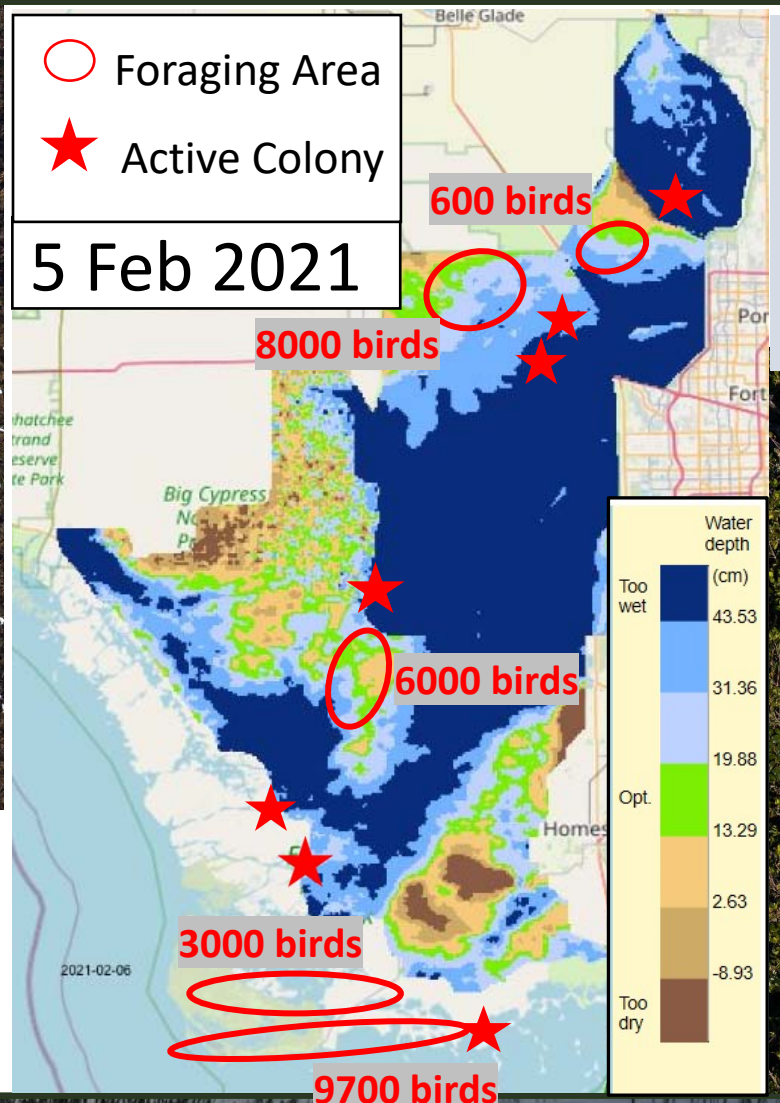
Everglades Wading Bird Foraging & Nesting



Foraging wading birds, WCA-3AN, on 3 Feb

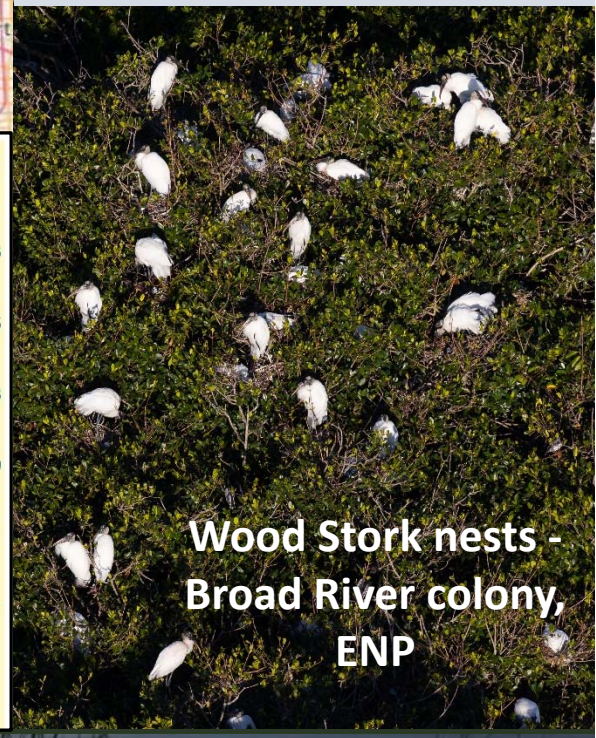
Foraging: Large numbers in coastal habitats, western marl prairies & the northern marshes of the WCAs.

Nesting: Recently started at multiple colonies (wood storks, roseate spoonbills and great egrets).



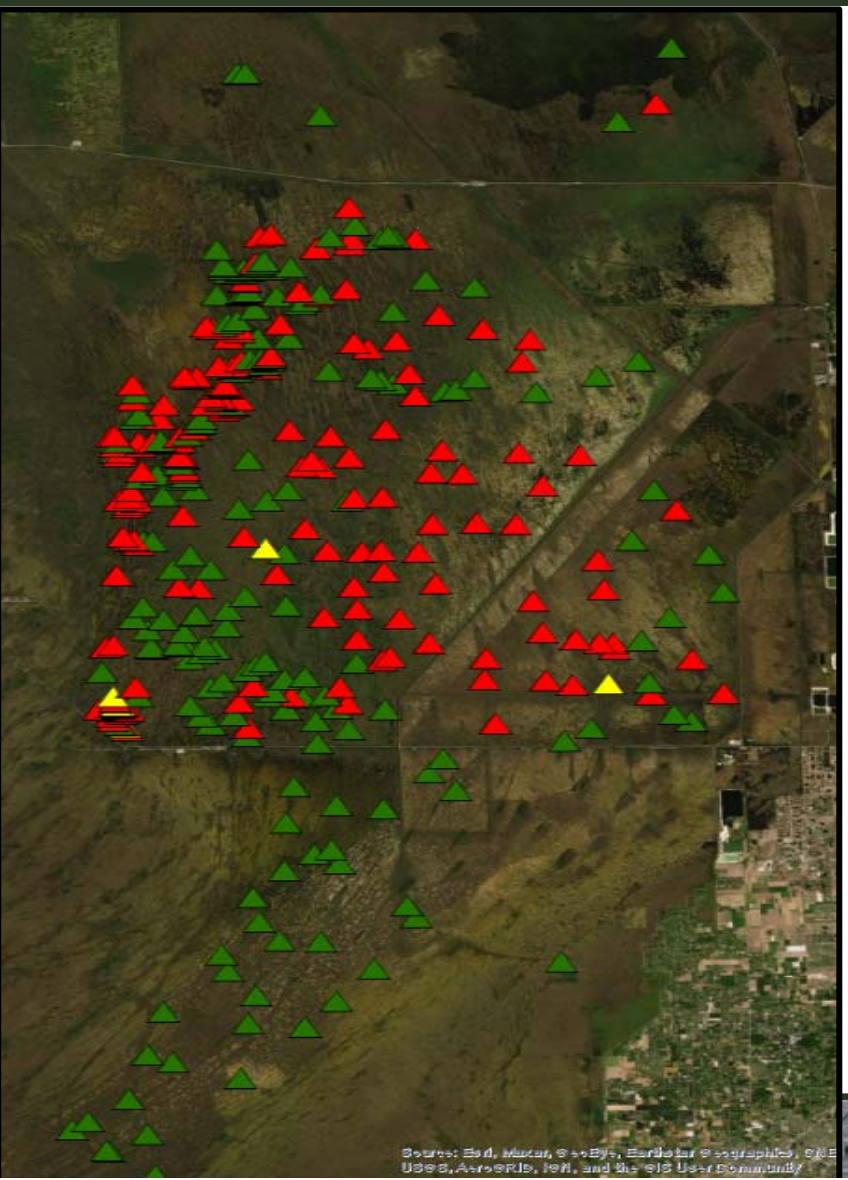
Habitat Suitability Map

Optimal forging depths for birds are shown as green or pale blue.



Wood Stork nests - Broad River colony, ENP

Tree Island Inundation (days)

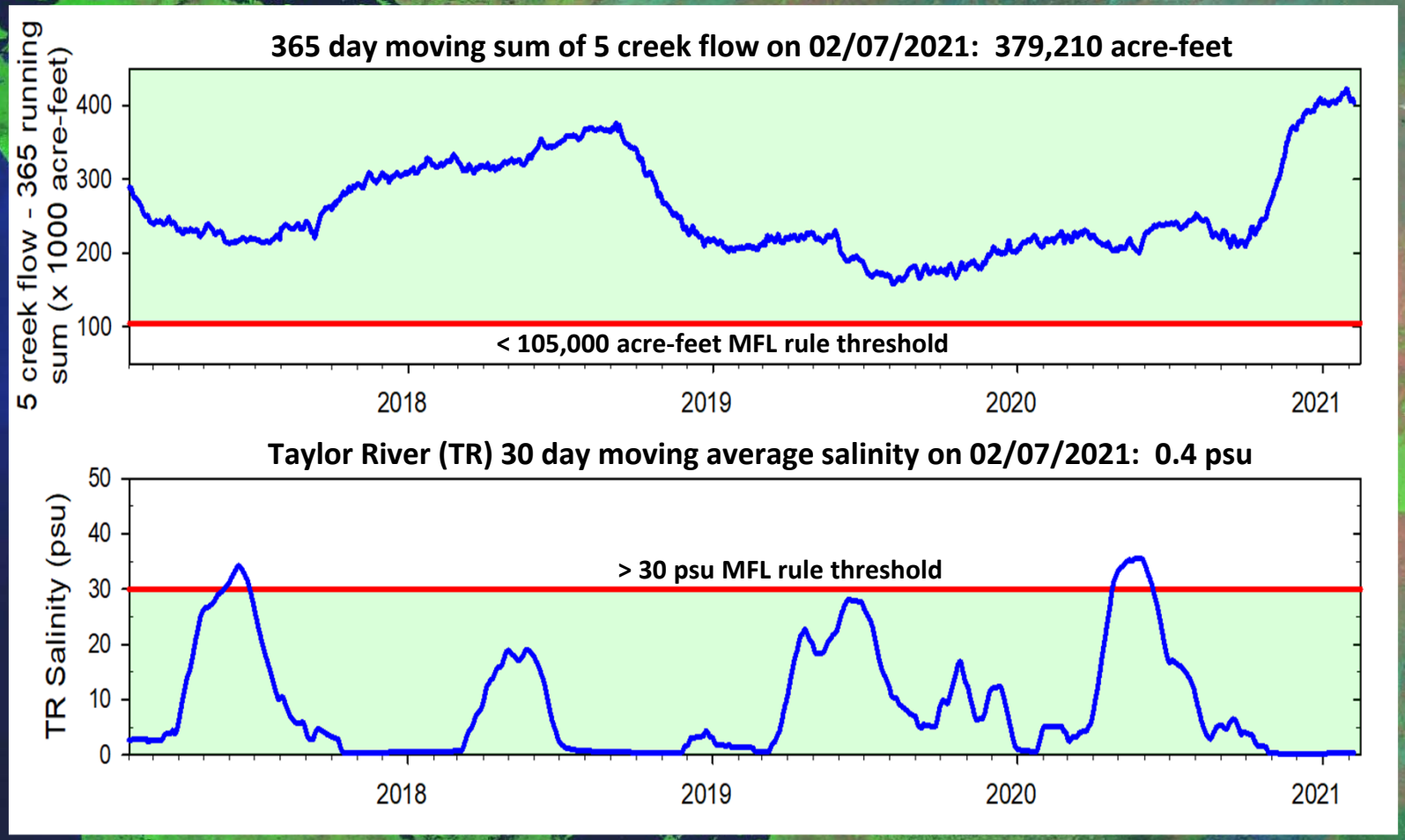


- Not inundated
- 0 to 90 days inundated
- More than 90 days
- More than 120 days

- Current preliminary estimates using WDAT indicate that **46% or 173** of the tree islands are currently inundated, down from 56% the week prior.
- Initial islands inundated beginning 5/24/20, longest duration of continuous inundation is **240** 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 (now **45%** of islands).
- In comparison on 1/25/18: 94 islands, 242 days, 13%.

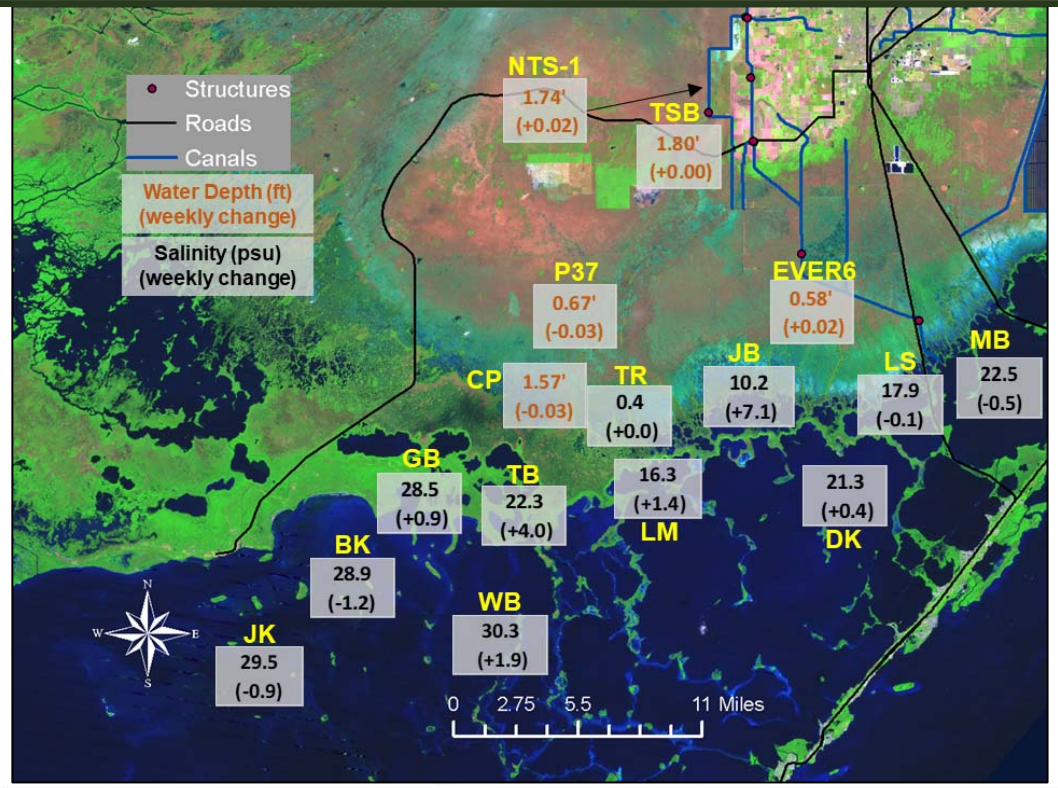
Presenter: Lawrence Glenn

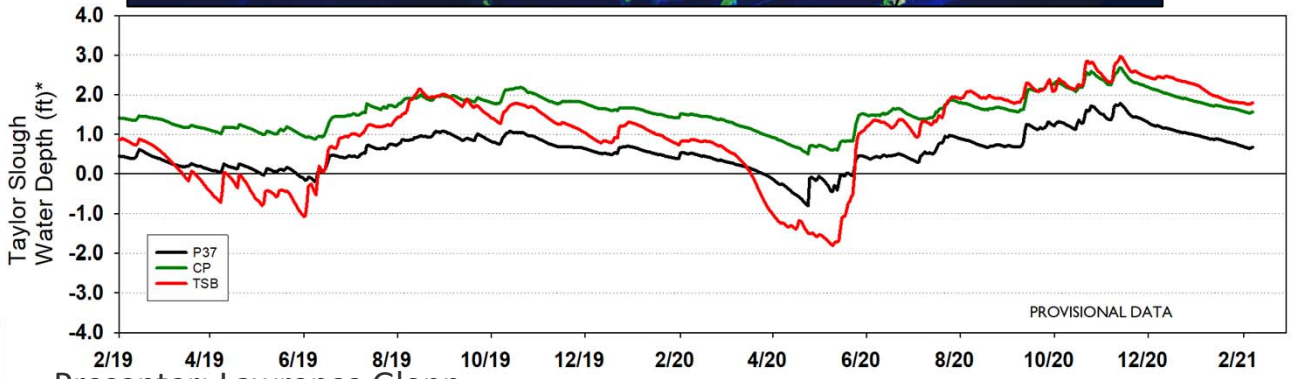
Northeast Florida Bay MFL

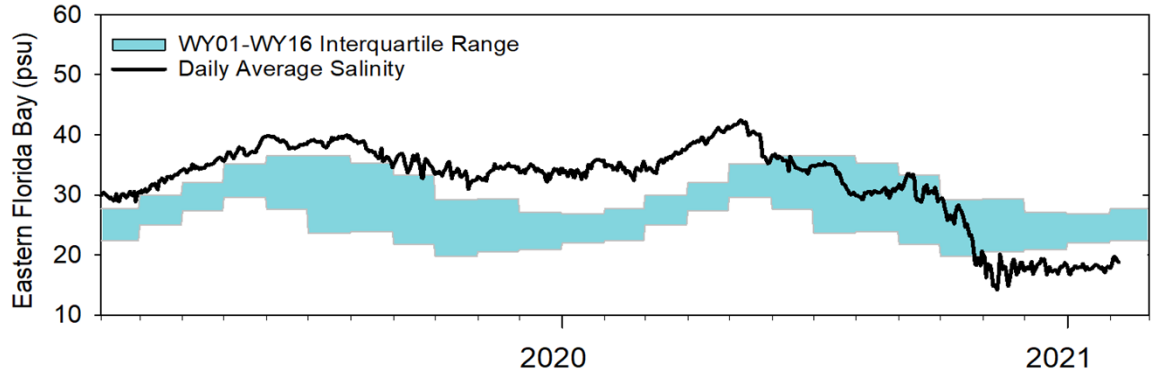


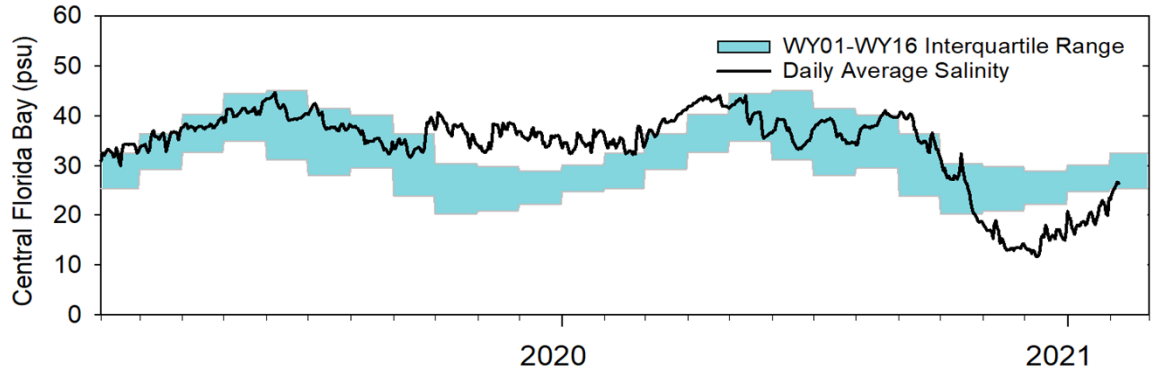


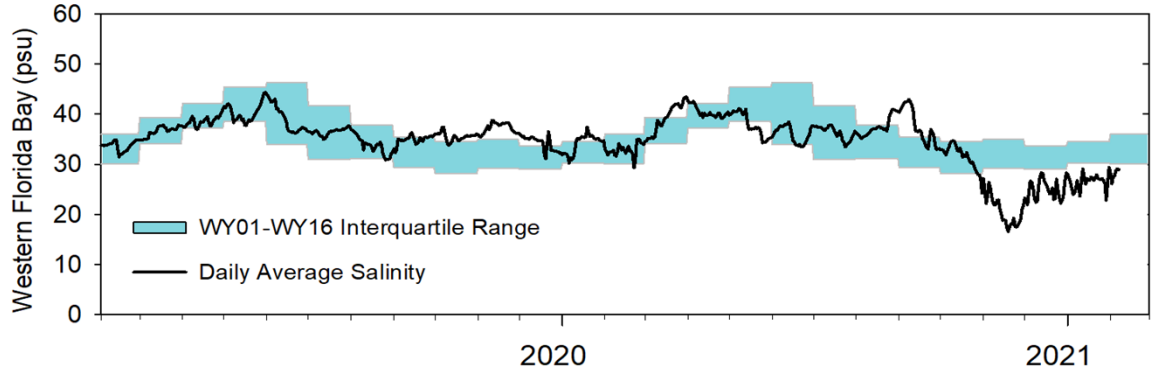
Taylor Slough Stages and Florida Bay Salinity





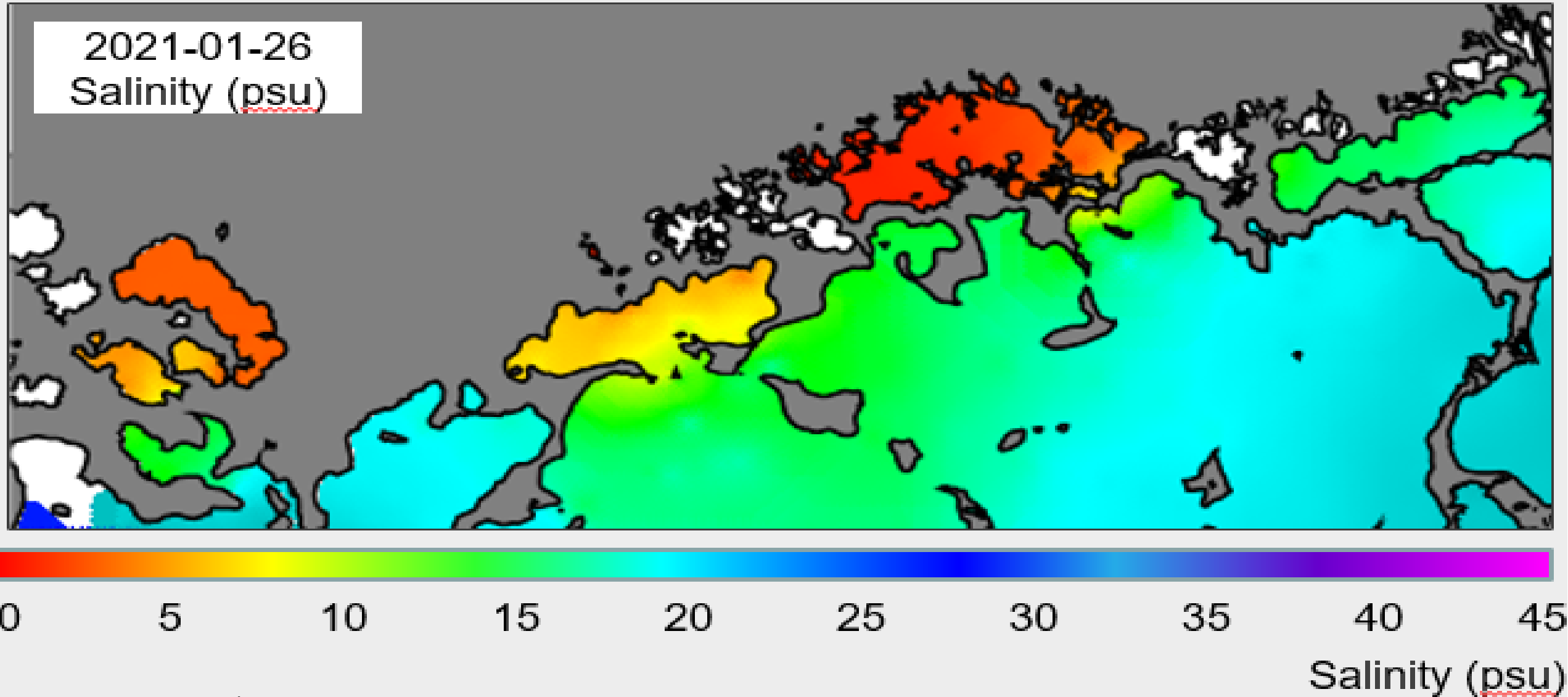






Presenter: Lawrence Glenn

Florida Bay Salinity



Presenter: Lawrence Glenn

Florida Bay Water Clarity



Seagrass in Whipray Basin



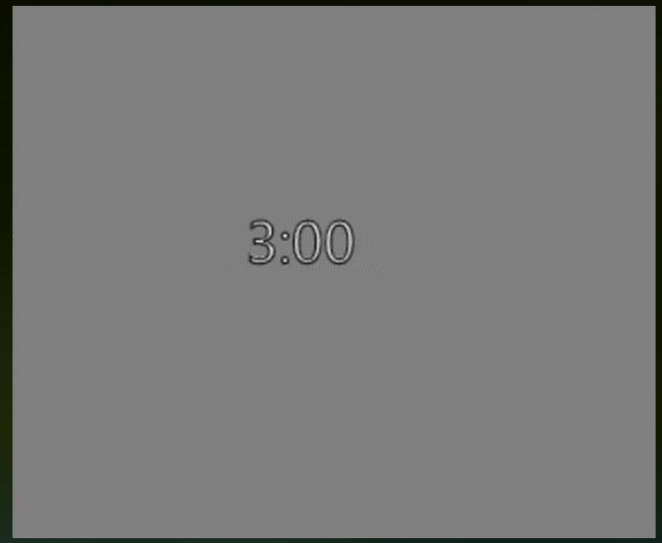
Juvenile bull shark in Rankin Bight

Presenter: Lawrence Glenn

Public Comment on Technical Reports

If you're participating via Zoom – use the Raise Hand feature

If you're participating via Phone –
*9 Raises Hand
*6 Mutes/Unmutes



Questions



Snail Kite in the Kissimmee Phase II Restoration Area
Photograph courtesy of Brent Anderson, SFWMD