

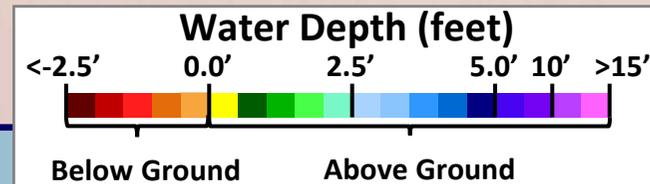
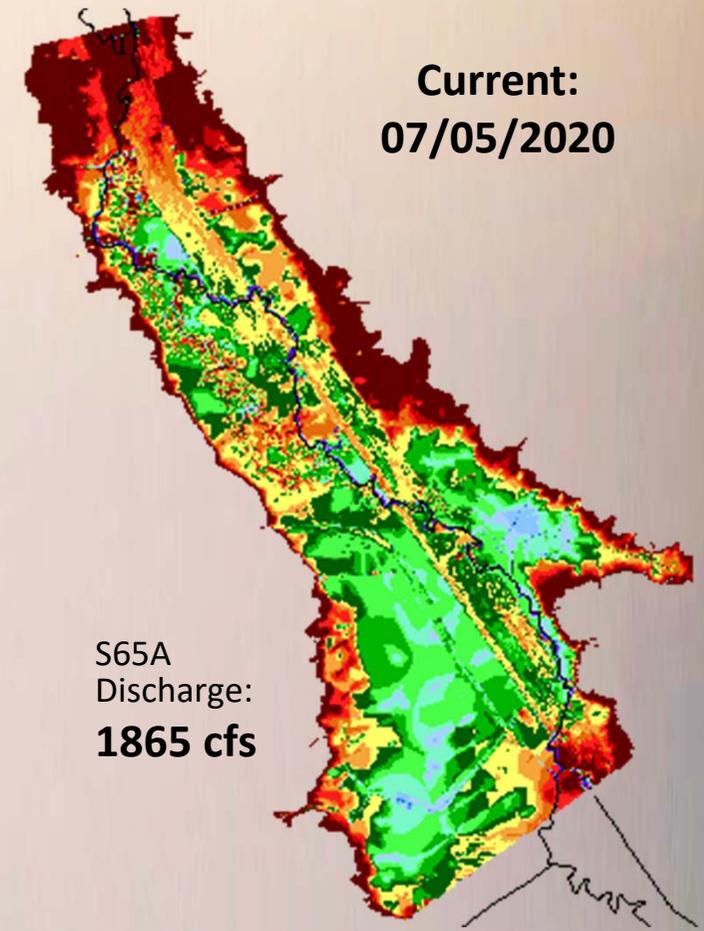
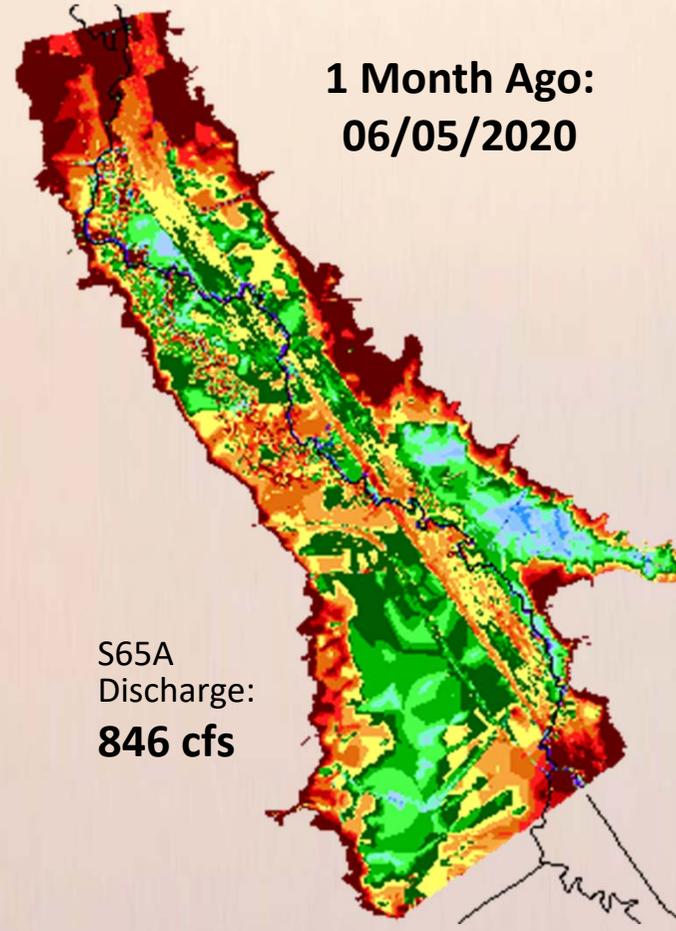
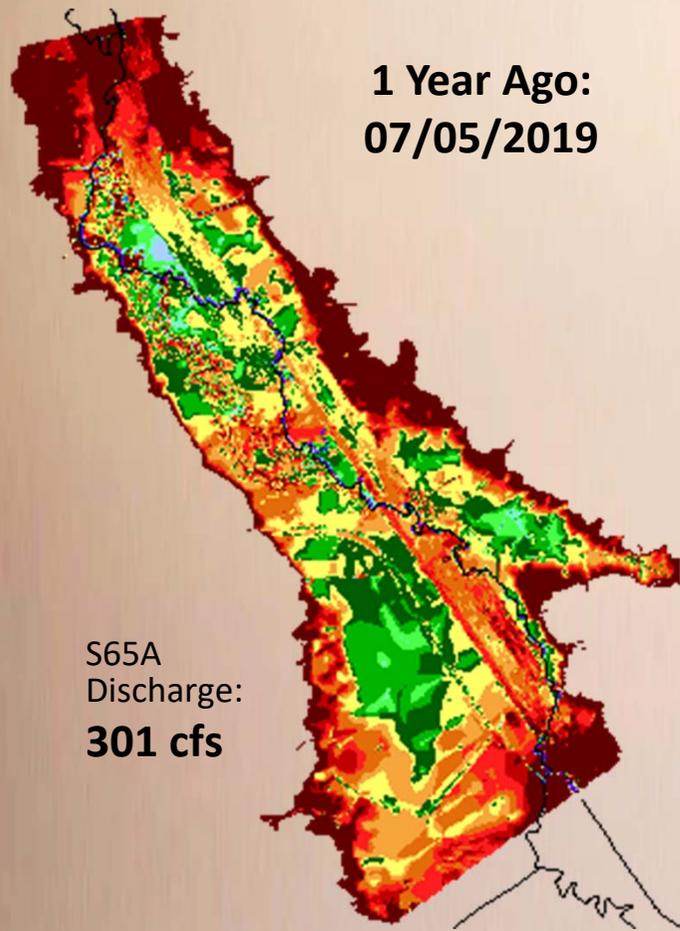
Governing Board Meeting  
July 9, 2019

# Ecological Conditions Update

**Lawrence Glenn**  
Water Resources  
Division Directory

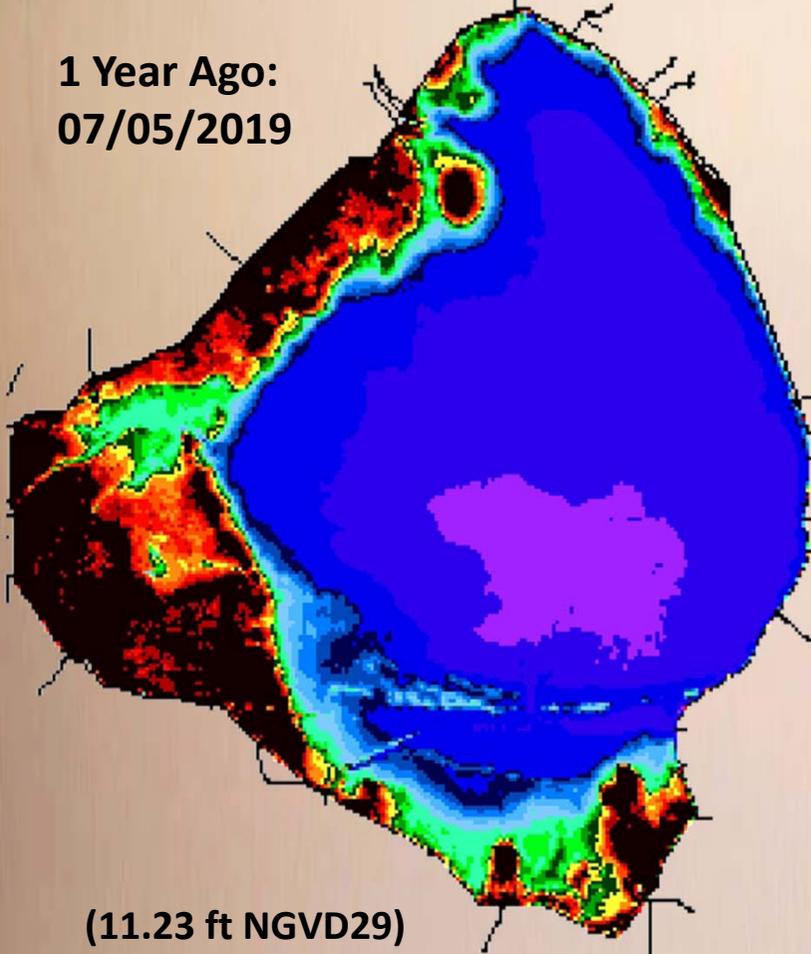
*Sunset  
Water Conservation Area 3B*

# Kissimmee River Phase I Restoration Area Water Depth Maps



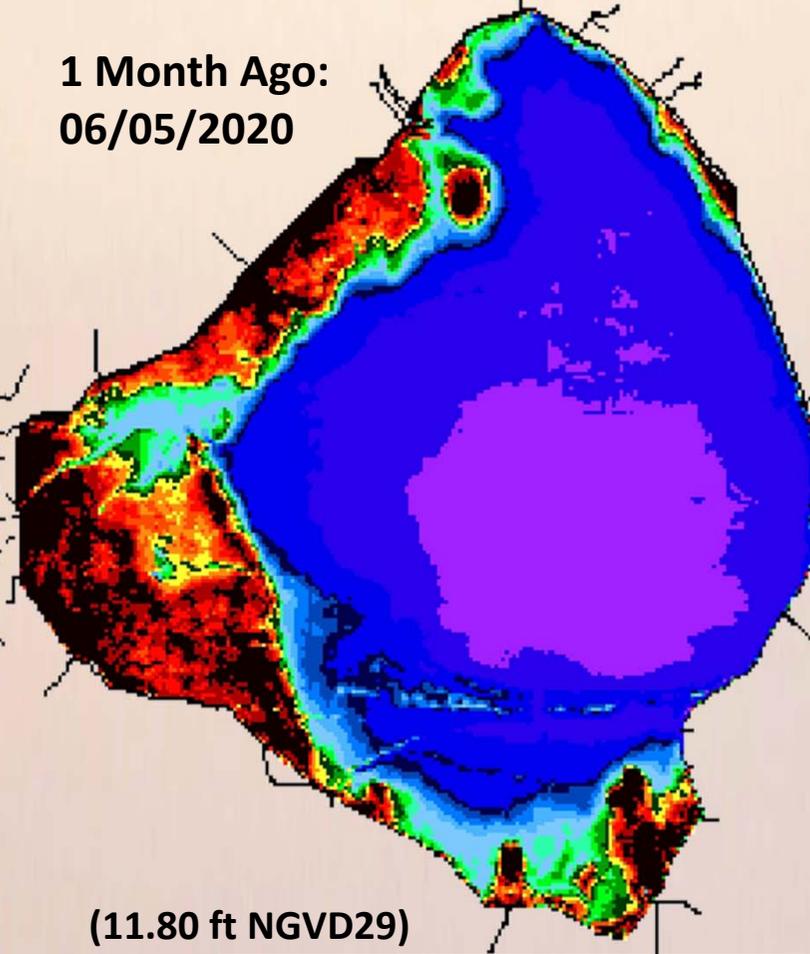
# Lake Okeechobee Water Depth Maps

1 Year Ago:  
07/05/2019



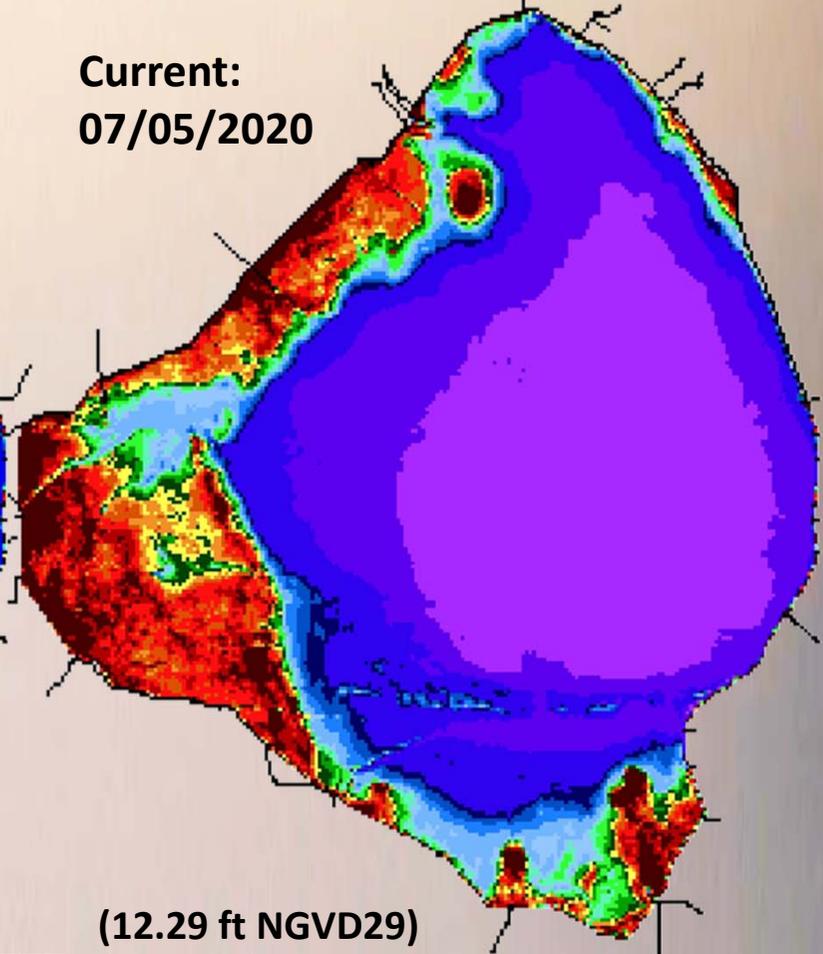
(11.23 ft NGVD29)

1 Month Ago:  
06/05/2020

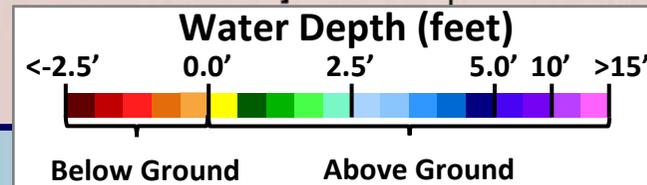


(11.80 ft NGVD29)

Current:  
07/05/2020

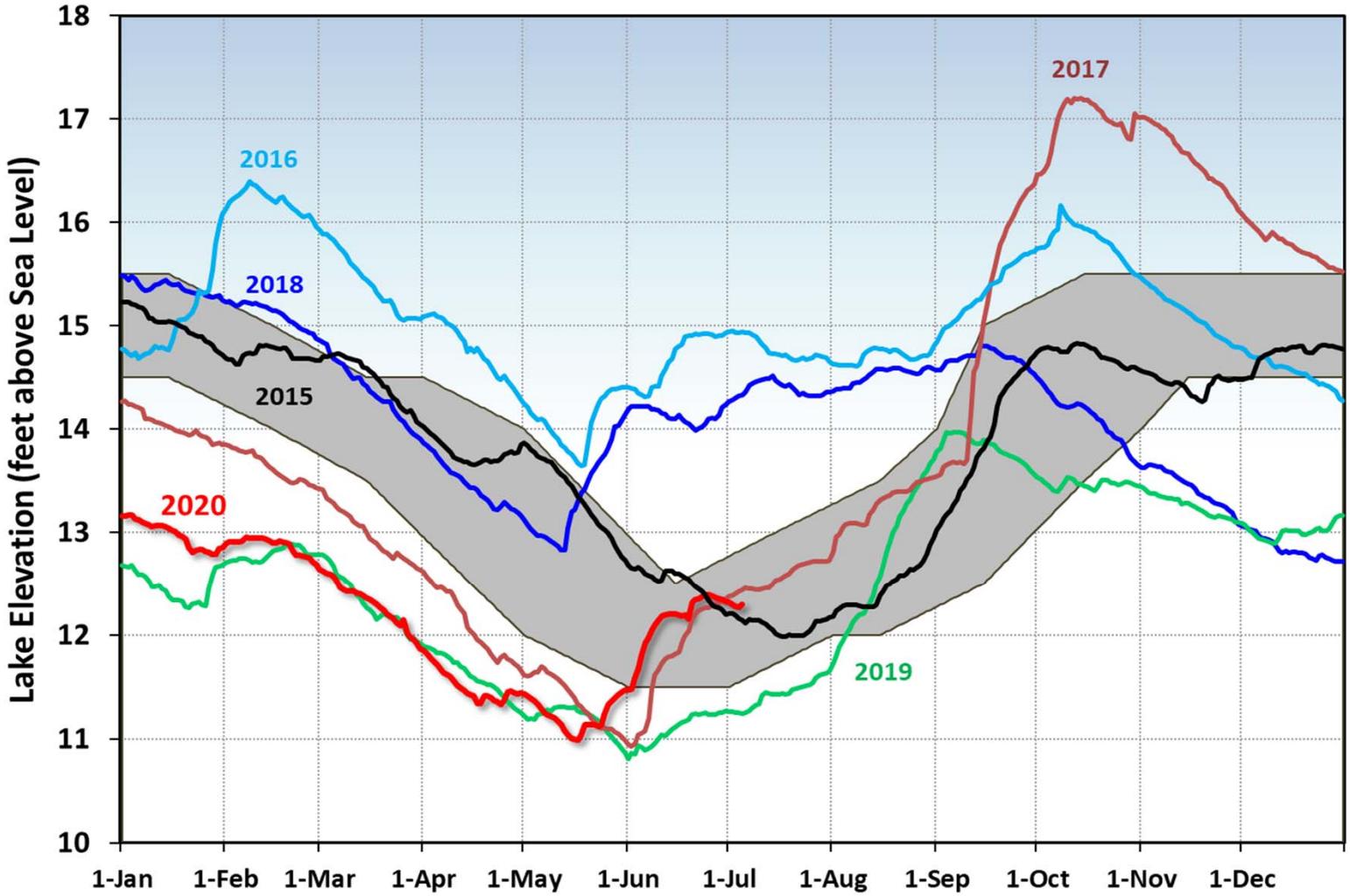


(12.29 ft NGVD29)



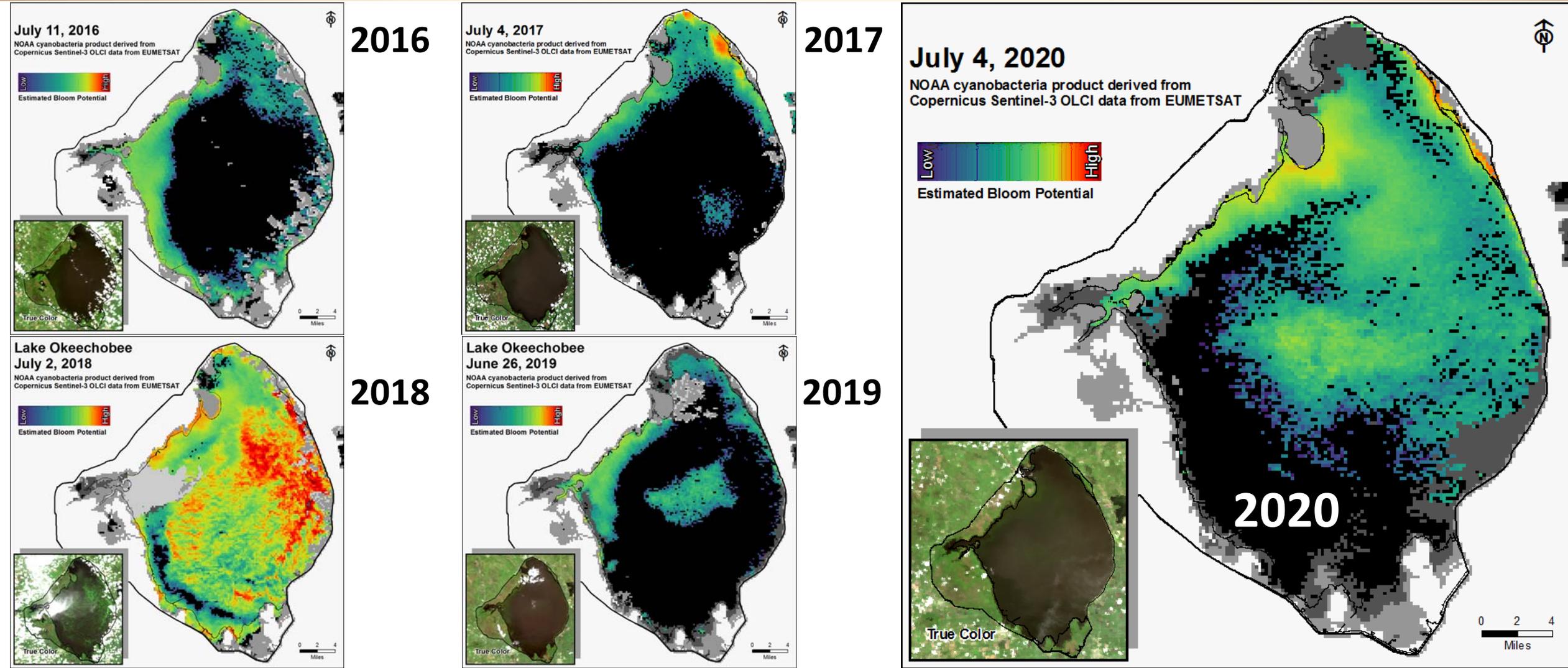
# Lake Okeechobee Stages and Ecological Envelope

Lake Okeechobee Stage vs Updated Ecological Envelope



*Vallisneria*, NW Shore 2020

# Lake Okeechobee Cyanobacteria Bloom Potential



# Lake Okeechobee Water Quality

\*Provisional Data\*

Samples collected on June 23- 24, 2020

Station	CHLa (ug/L)	TOXIN (ug/L)	TAXA
FEBIN			NS
FEBOUT			NS
KISSR0.0	13.2	BDL	mixed
L005	32.5	BDL	Cylindro
LZ2	85.1	BDL	mixed
KBARSE	26.2	0.3	Microcys
RITTAE2			NS
PELBAY3	6.5	BDL	mixed
POLE3S	3.4	BDL	mixed
LZ25A	6.8	BDL	mixed
PALMOUT	6.6	BDL	mixed
PALMOUT1	9.1	BDL	Microcys
PALMOUT2	15.5	0.9	Micro/Dolic
PALMOUT3	40.2	8.3	Microcys
POLESOUT	88.8	BDL	Micro/Cylin
POLESOUT1	89.5	BDL	Cylindro
POLESOUT2	125.0	BDL	Micro/Cylin
POLESOUT3	80.4	BDL	Micro/Cylin
EASTSHORE	23.2	BDL	Microcys
NES135	24.9	BDL	mixed
NES191	39.9	BDL	mixed

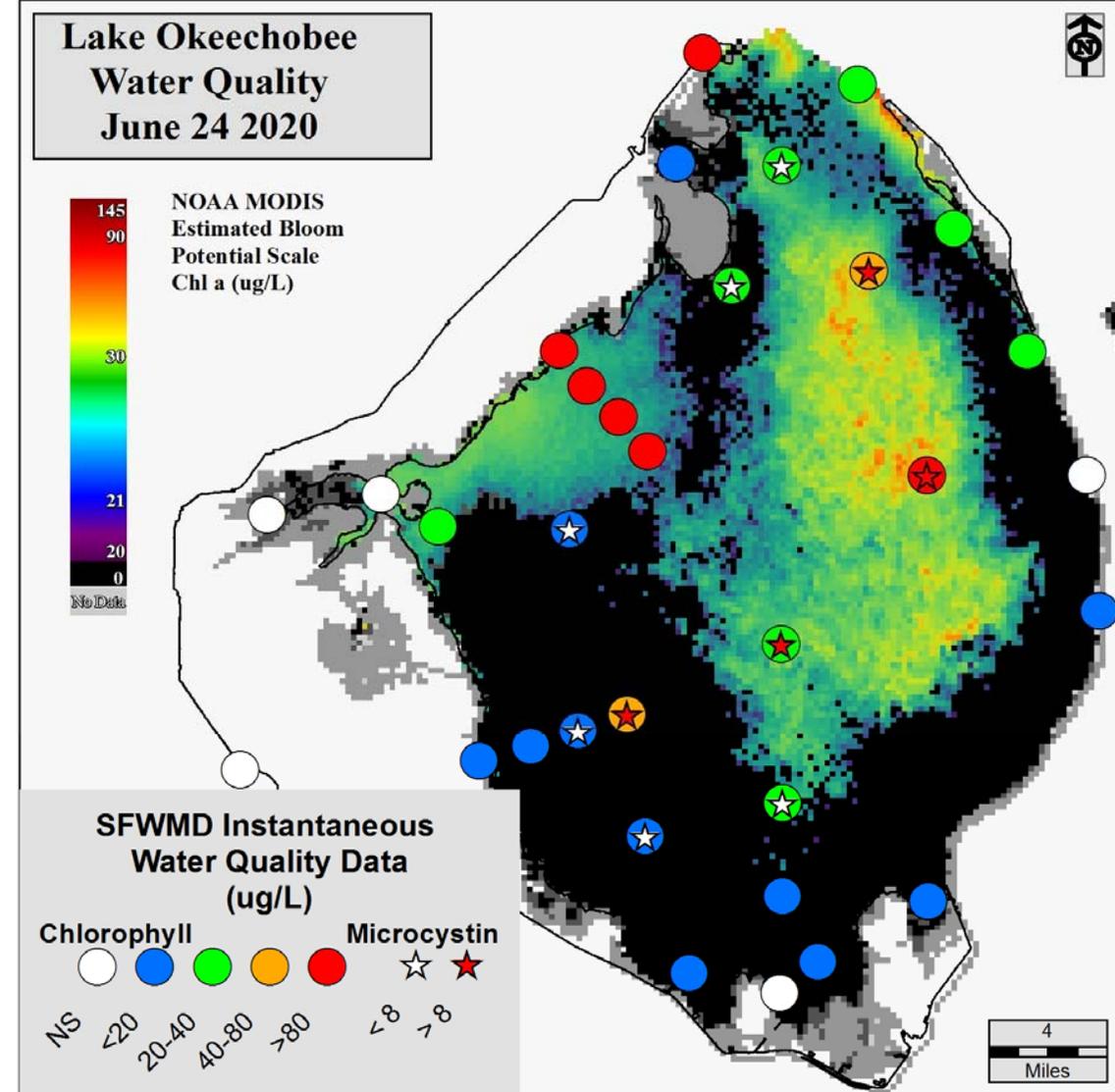
Station	CHLa (ug/L)	TOXIN (ug/L)	TAXA
L001	37.8	3.7	Microcys
L004	85.7	800	Microcys
L006	32.9	4.3	Microcys
L007	7.8	BDL	mixed
L008	18.4	1.1	Microcys
LZ30	12.8	0.3	Microcys
LZ40	32.3	290	Microcys
CLV10A	15.9	BDL	Microcys
NCENTER	61.2	10	Microcys

Samples collected June 29

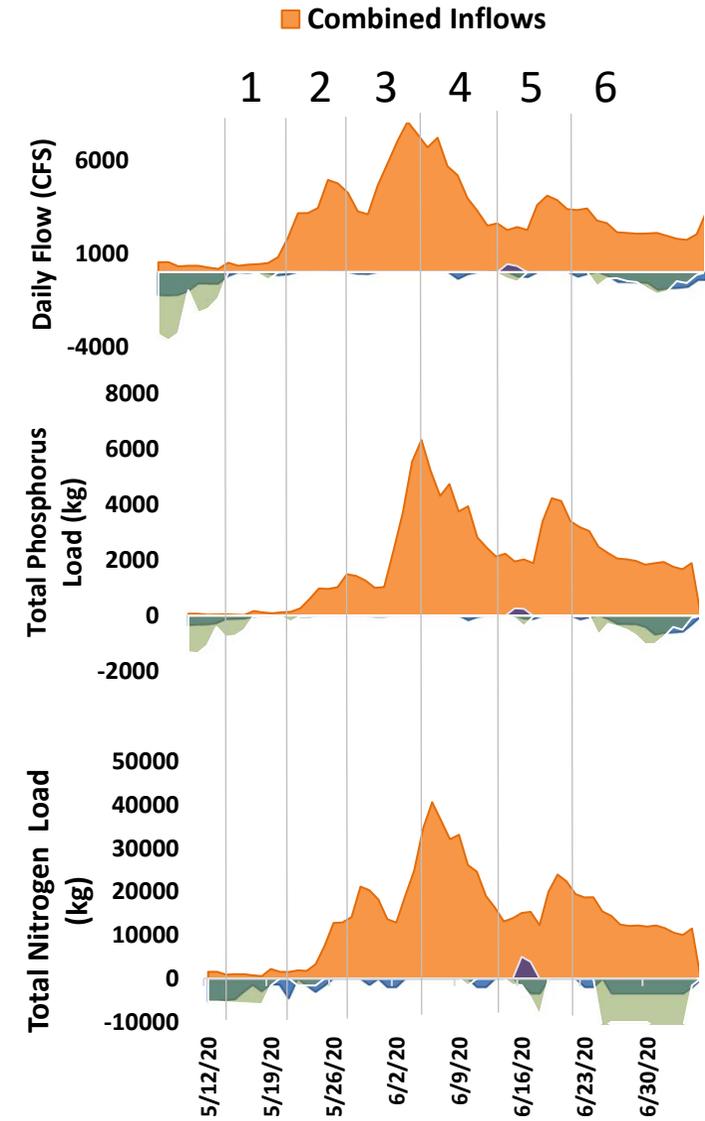
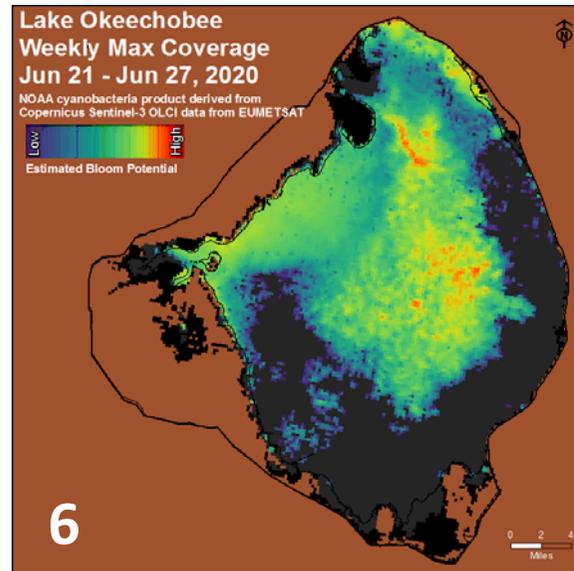
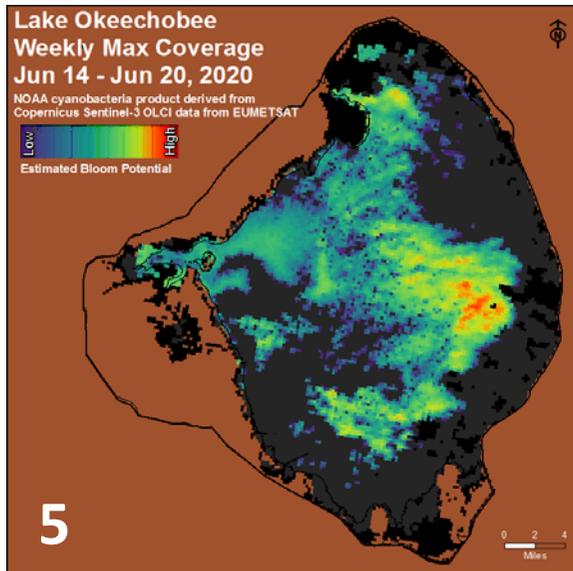
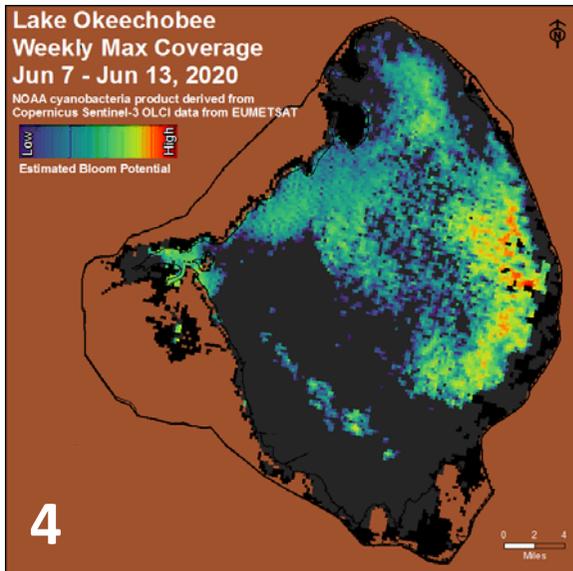
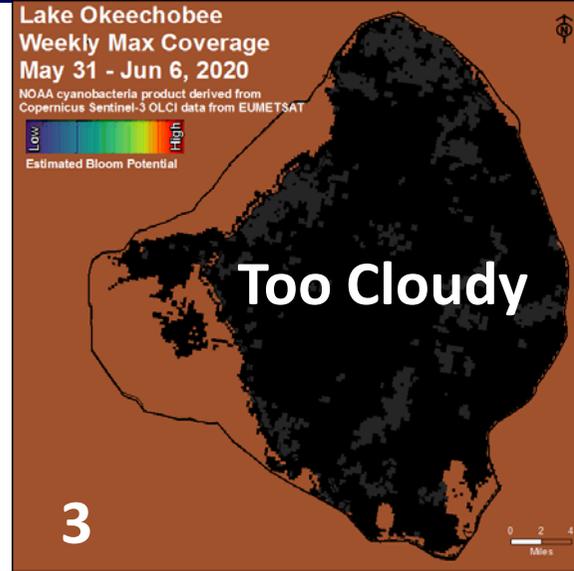
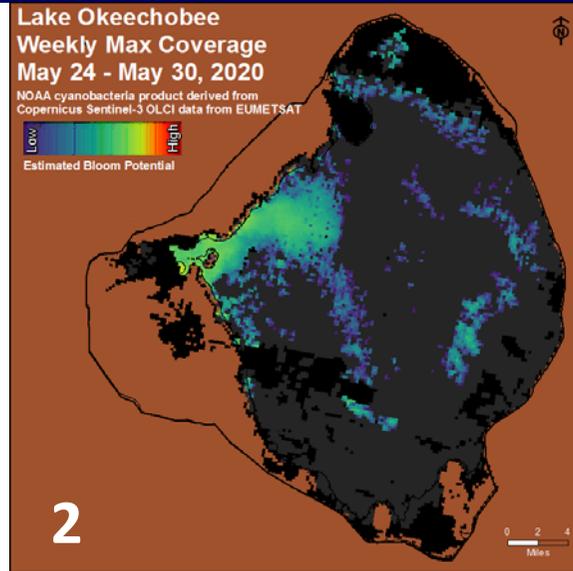
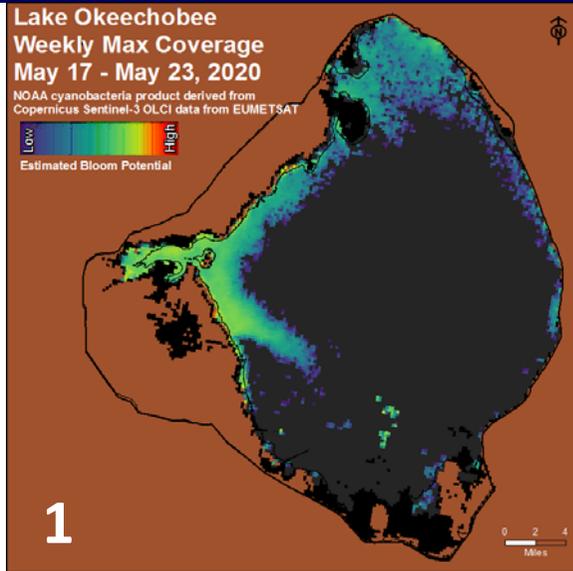
S-308	P	BDL	Microcys
S-77	P	BDL	mixed

- SFWMD: >40 µg/L Chlorophyll *a* (Chla) an algal bloom
- BDL – Below Detectable Limit of 0.25 µg/L
- Mixed – No Dominant taxa
- P – Pending
- NS – Not Sampled
- Chlorophyll *a* analyzed by SFWMD
- Toxin and Taxa analyzed by FDEP

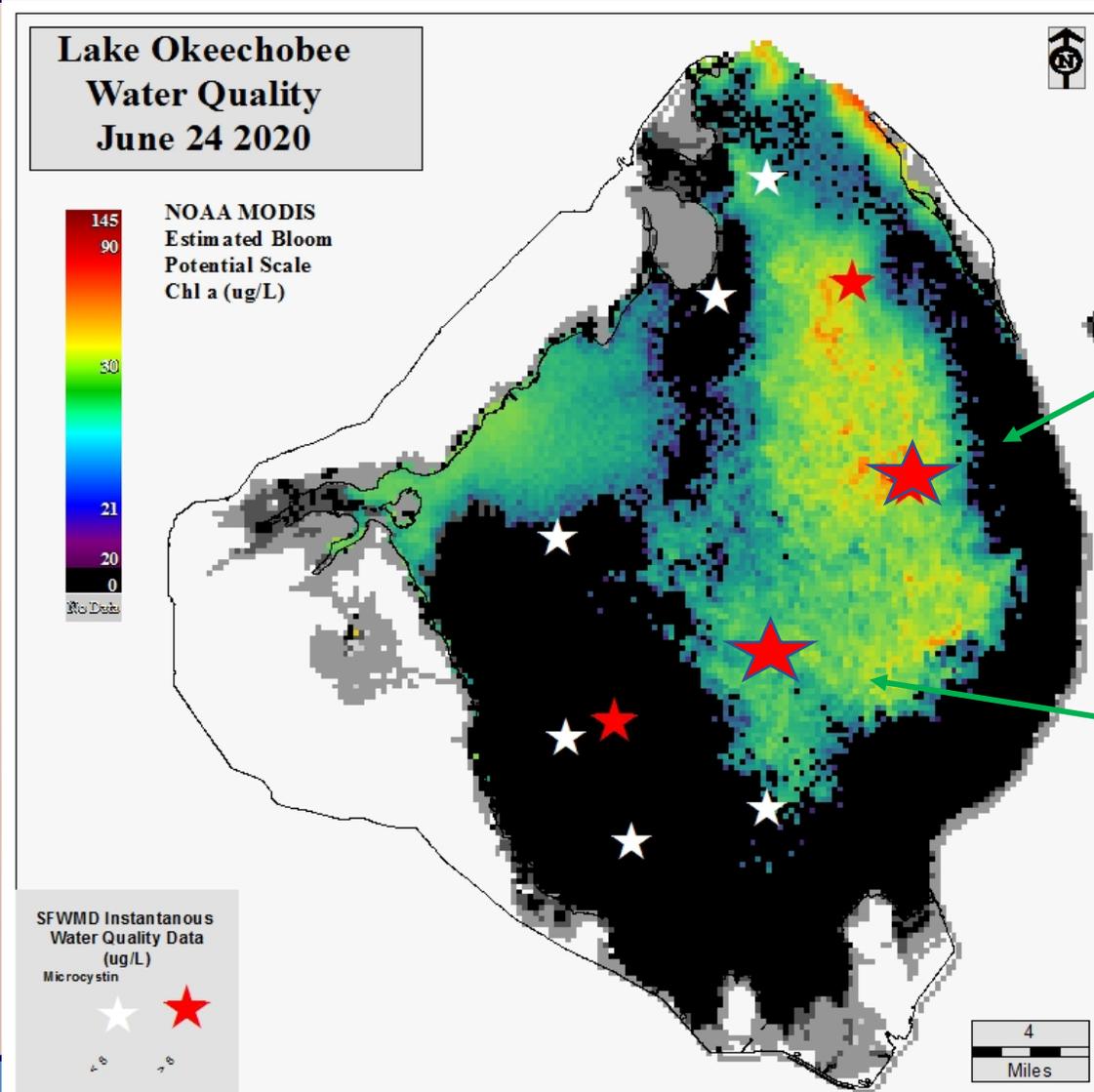
*Cylindro* = *Cylindrospermopsis*  
*Planktol* = *Planktolyngbya*  
*Dolicho* = *Dolichospermum*



# Lake Okeechobee Cyanobacteria Bloom Potential and Recent Inflows



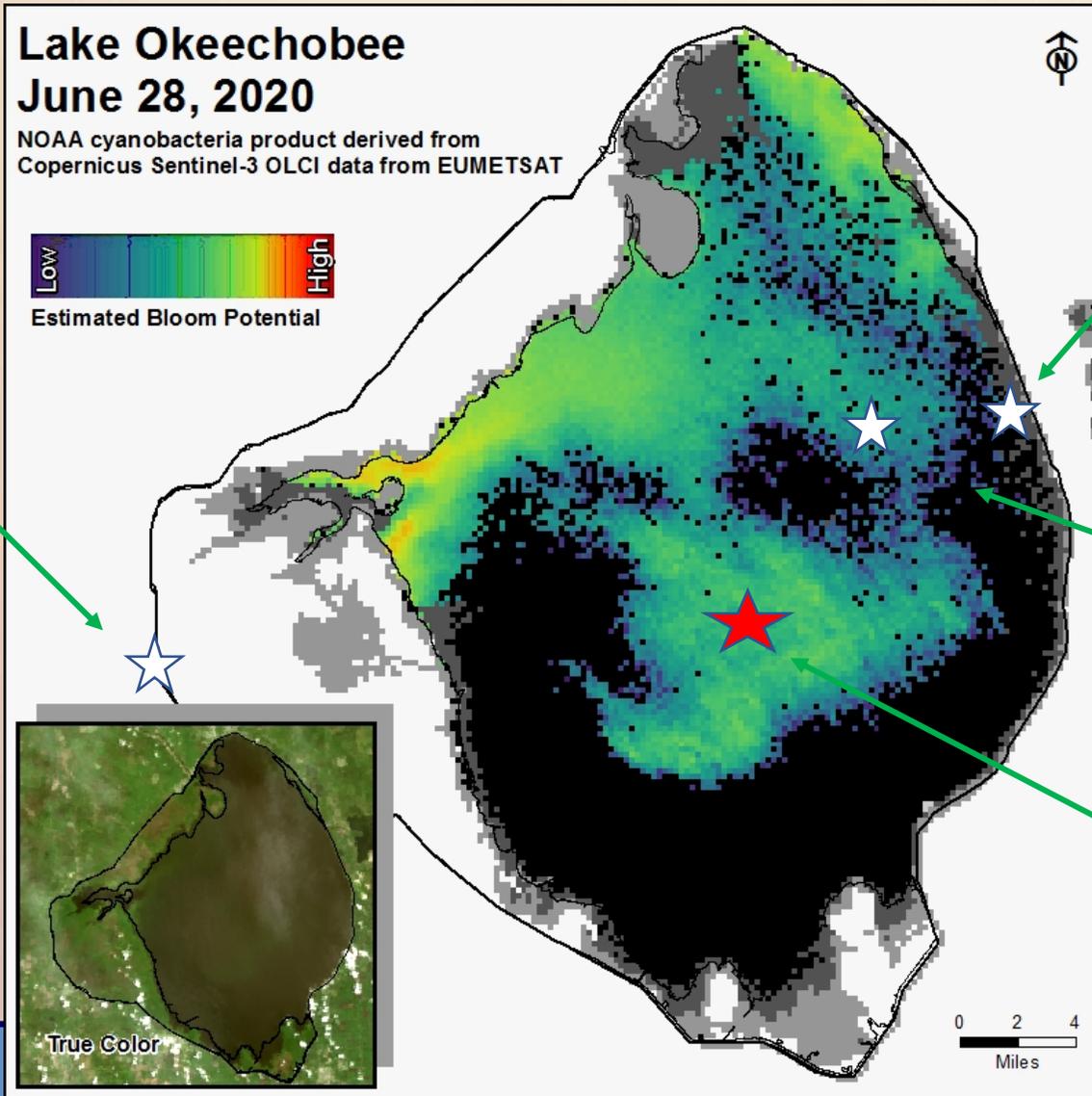
# Lake Okeechobee Cyanobacteria Bloom Potential



L004 – 6/23/2020  
BGA Observed  
*M.aeruginosa*  
MC @ **800** µg/L

LZ40 – 6/24/2020  
BGA Observed  
*M.aeruginosa*  
MC @ **290** µg/L

# Lake Okeechobee Cyanobacteria Bloom Potential



S-77 – 6/29/2020  
No bloom observed  
*No dominant taxa*  
MC = BDL

S308C – 6/29/2020  
No bloom observed  
*M. aeruginosa*  
MC = BDL

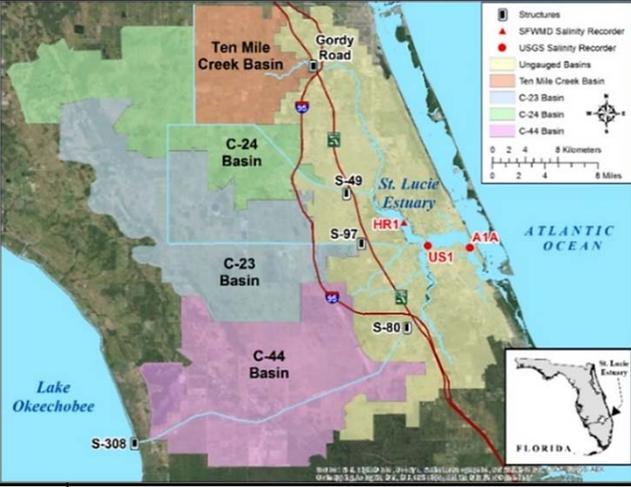
L004 – 6/30/2020  
BGA Observed  
*M. aeruginosa*  
MC @ 1.3 µg/L

L004 – 6/23/2020  
BGA Observed  
*M. aeruginosa*  
MC @ 800 µg/L

LZ40 – 6/30/2020  
BGA Observed  
*M. aeruginosa*  
MC @ 99 µg/L

LZ40 – 6/24/2020  
BGA Observed  
*M. aeruginosa*  
MC @ 290 µg/L

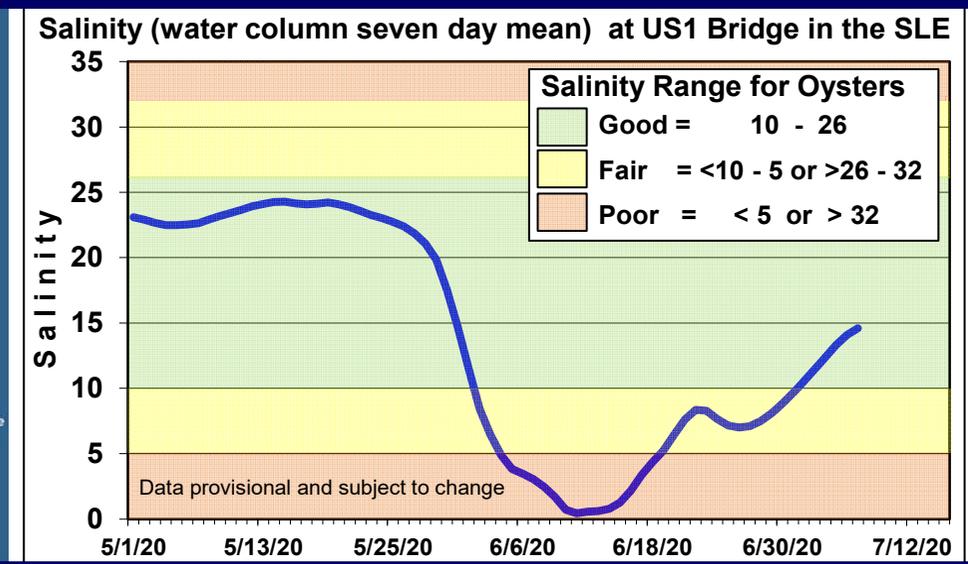
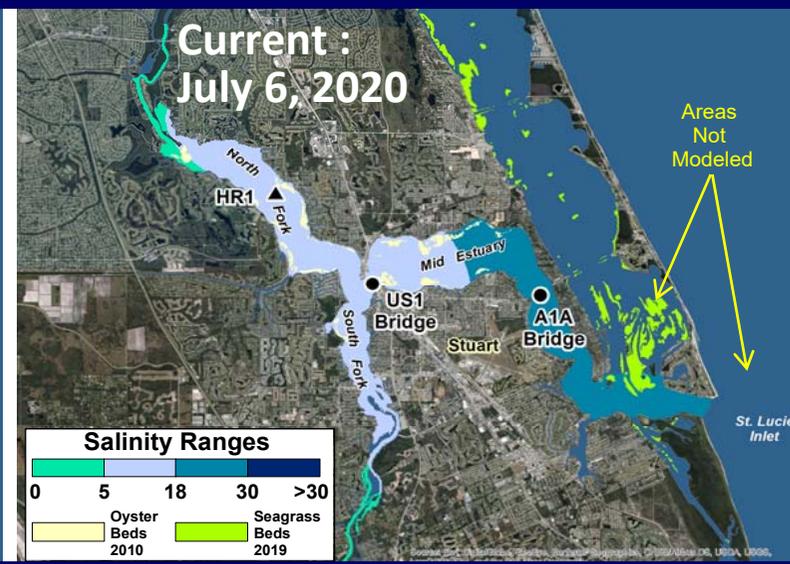
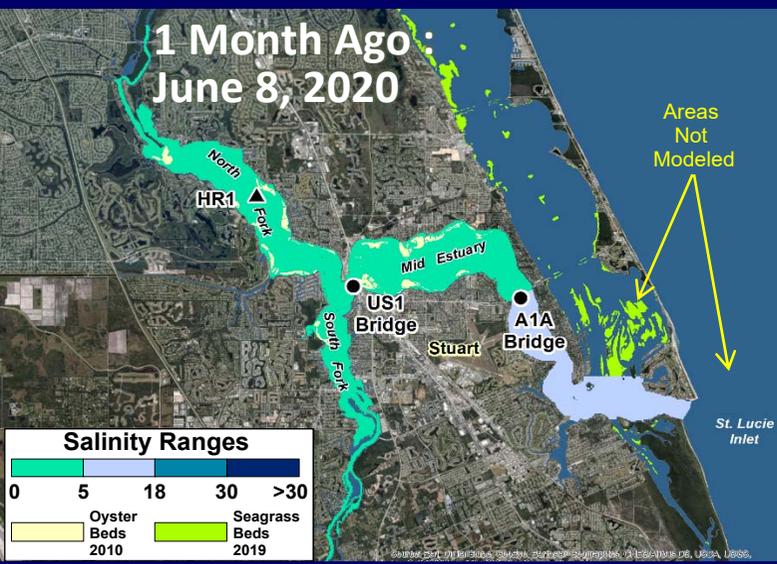
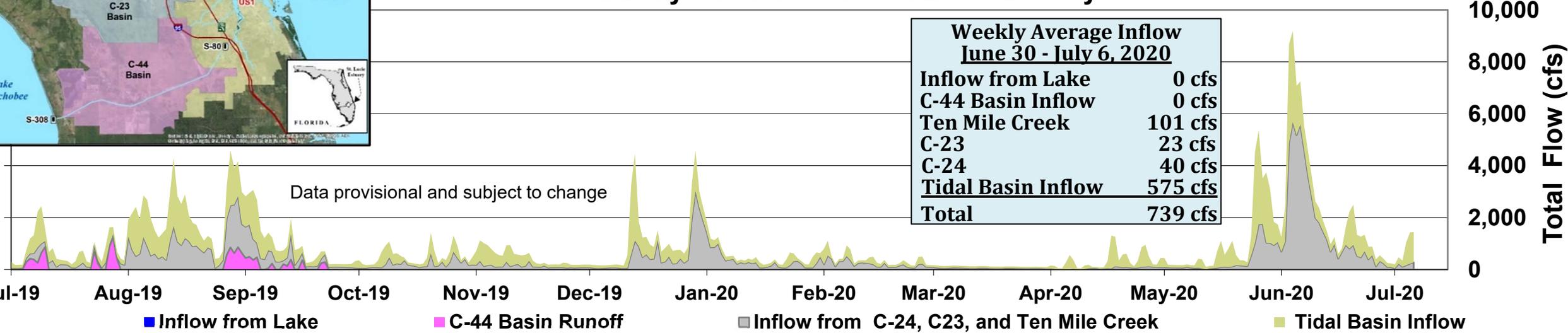
# St. Lucie Inflows and Salinity Conditions



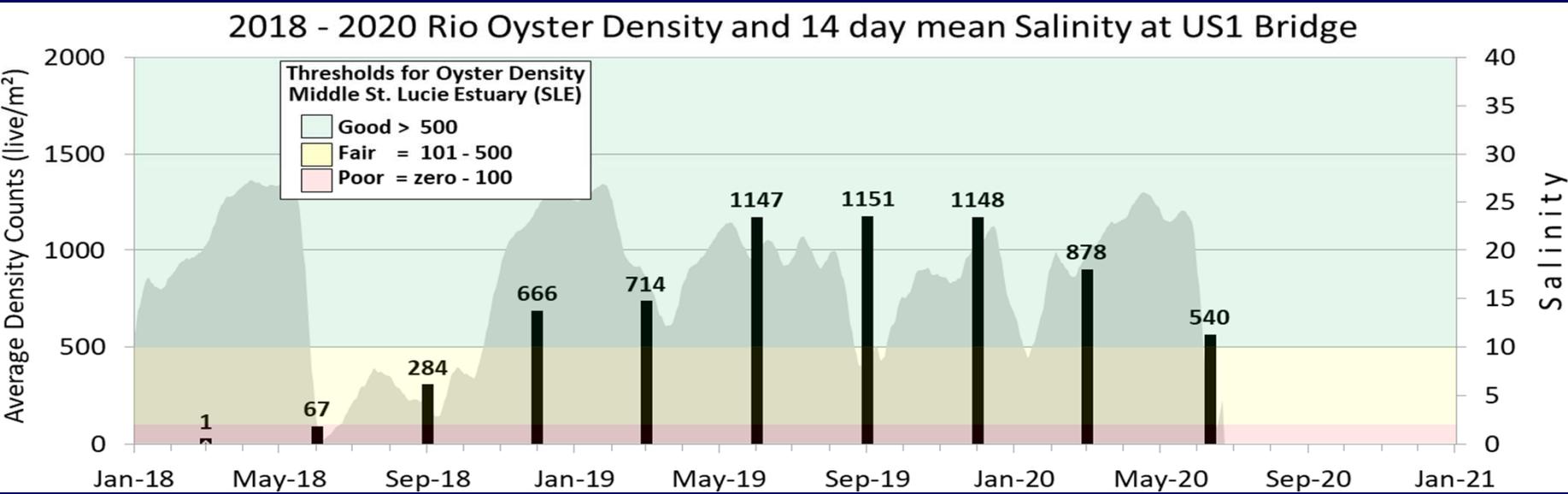
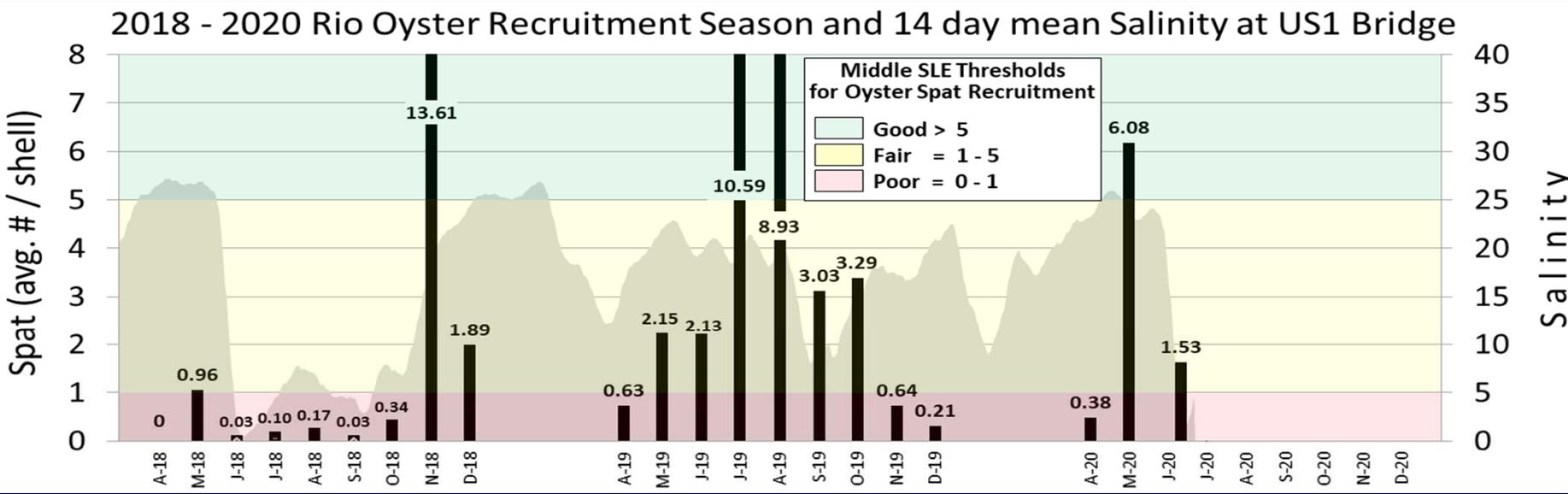
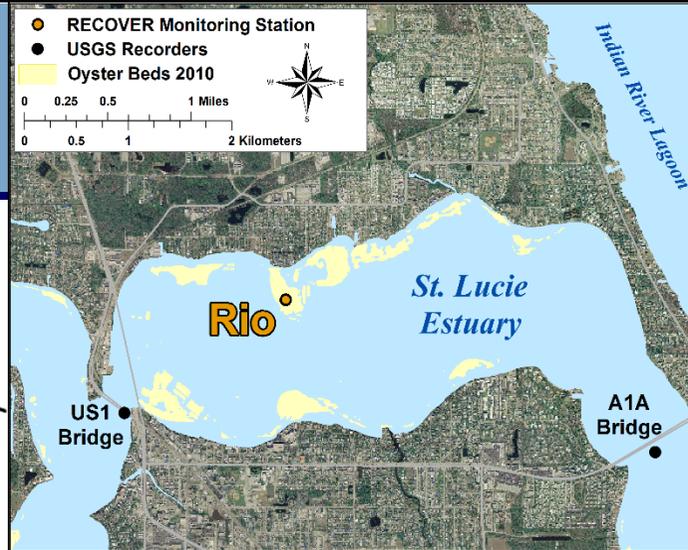
Total Daily Inflow into the St. Lucie Estuary

**Weekly Average Inflow  
June 30 - July 6, 2020**

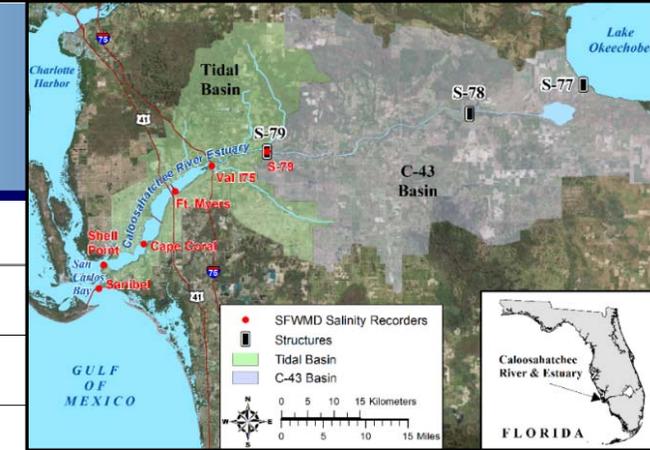
Inflow from Lake	0 cfs
C-44 Basin Inflow	0 cfs
Ten Mile Creek	101 cfs
C-23	23 cfs
C-24	40 cfs
<b>Tidal Basin Inflow</b>	<b>575 cfs</b>
<b>Total</b>	<b>739 cfs</b>



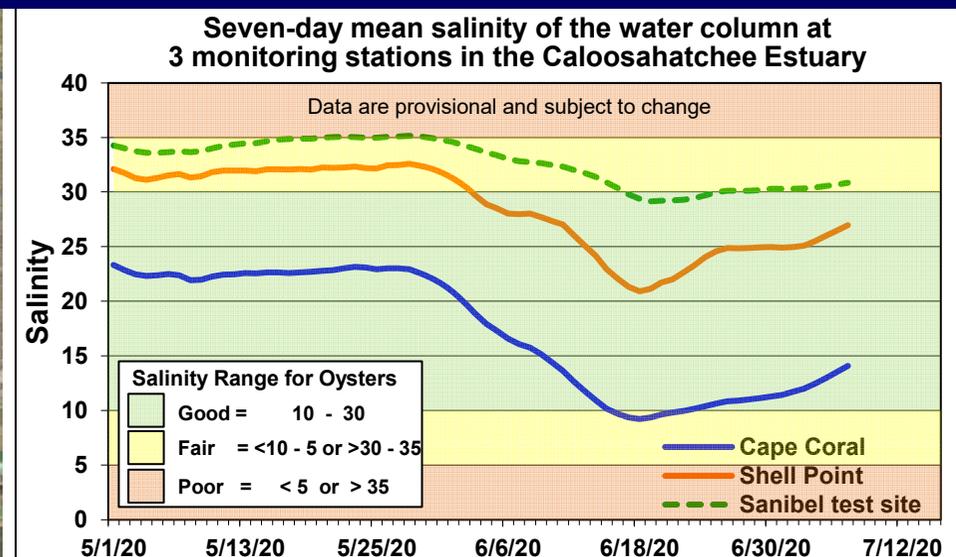
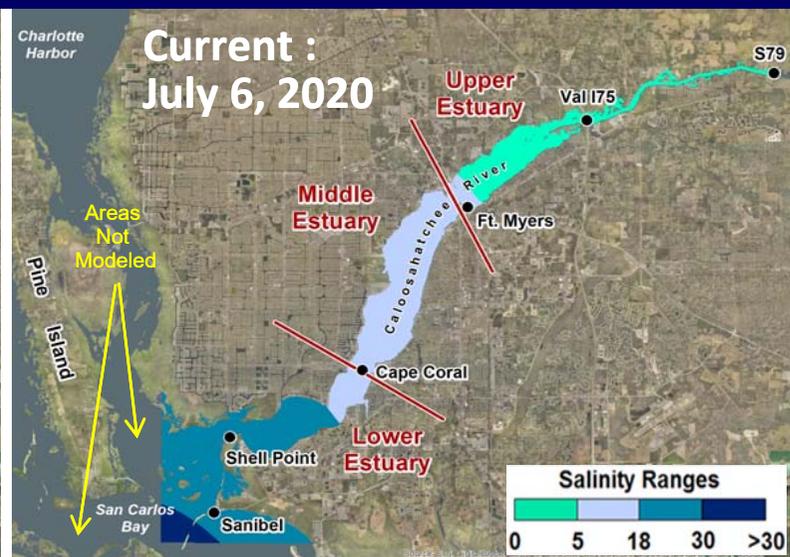
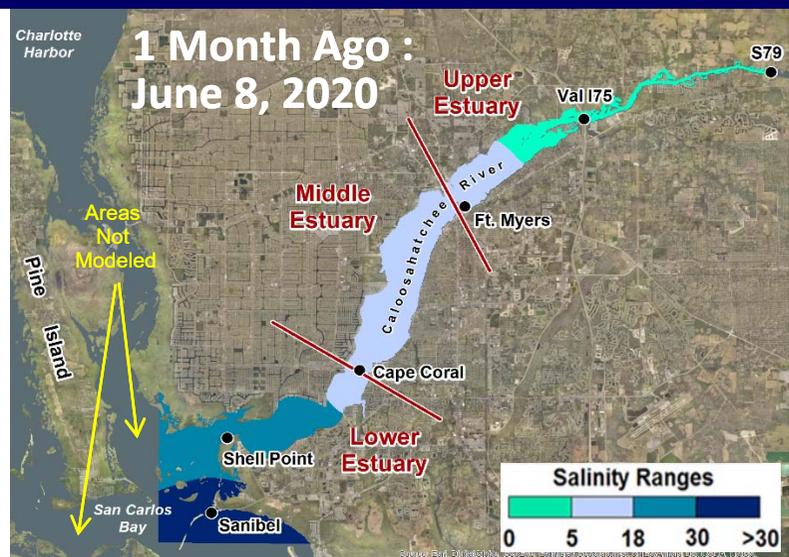
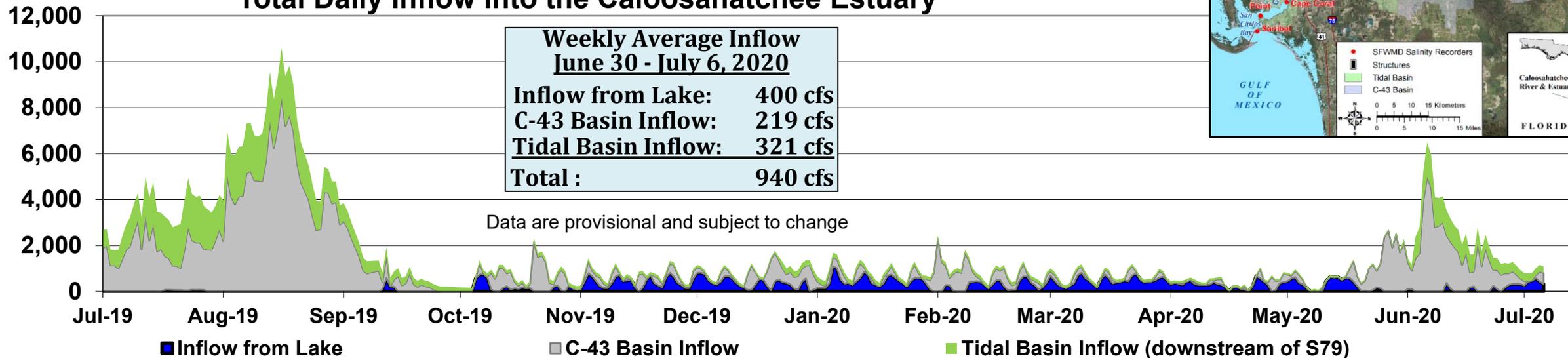
# St. Lucie Estuary - Oysters at Rio Station



# Caloosahatchee Inflows and Salinity Conditions

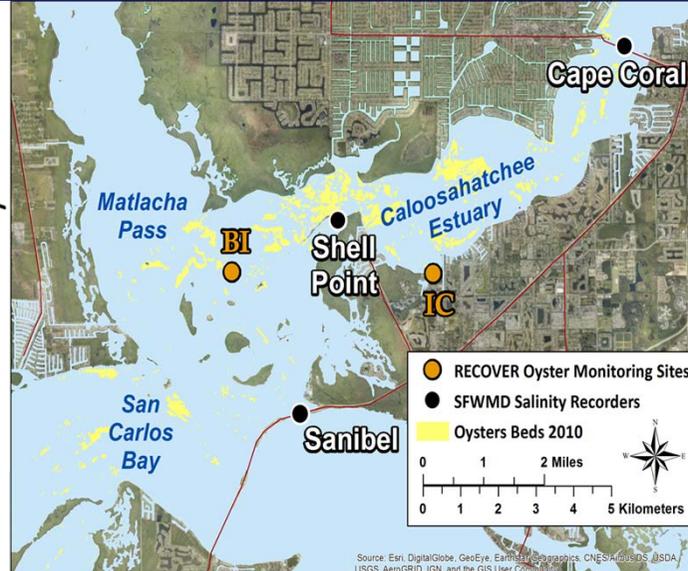
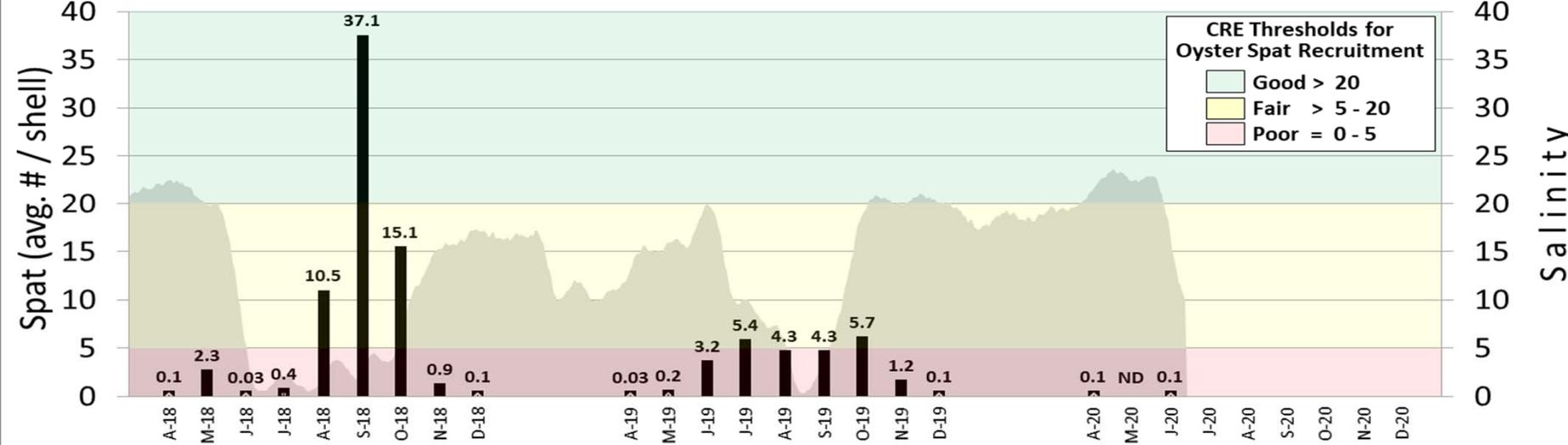


## Total Daily Inflow into the Caloosahatchee Estuary

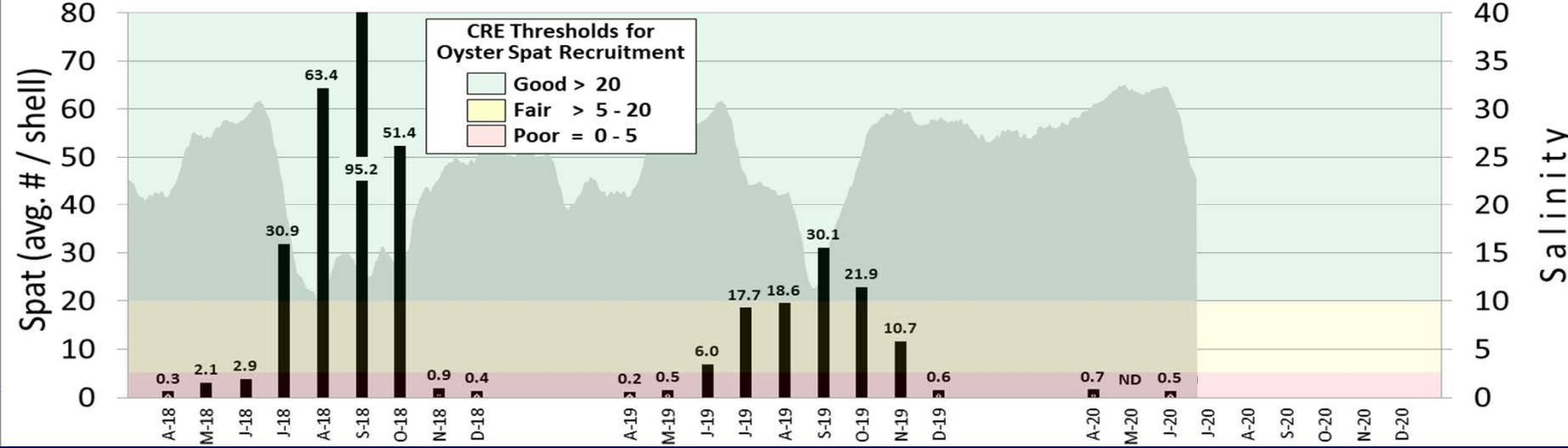


# Caloosahatchee Estuary - Oyster Recruitment

2018 - 2020 Iona Cove Oyster Recruitment Season and 14 day mean Salinity at Cape Coral

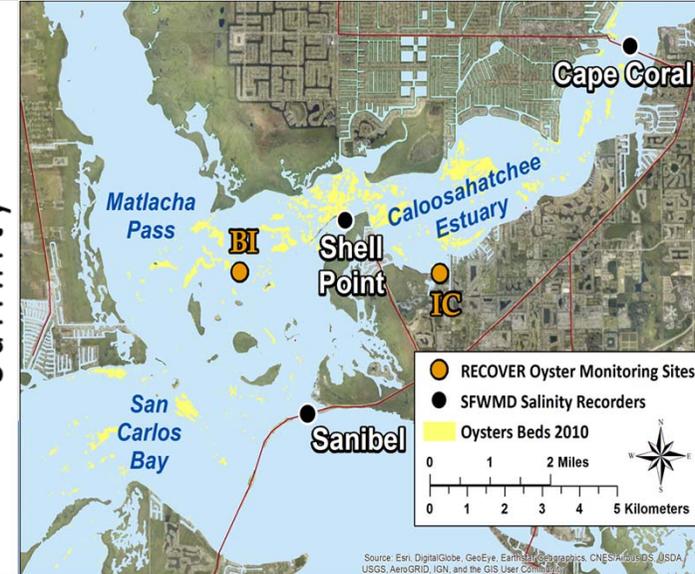
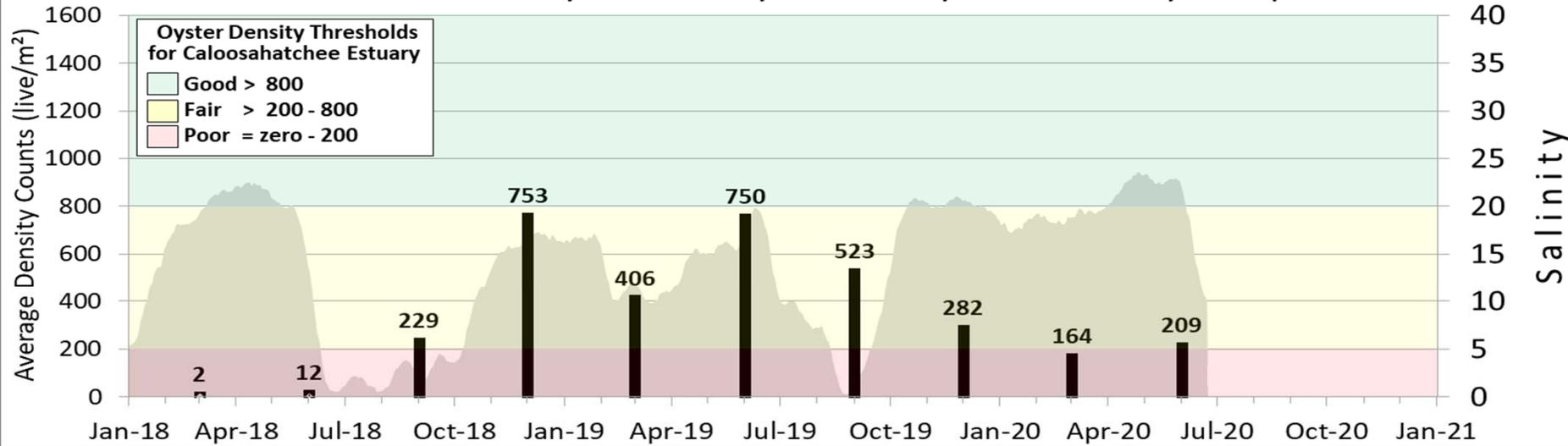


2018 - 2020 Bird Island Oyster Recruitment Season and 14 day mean Salinity at Shell Point

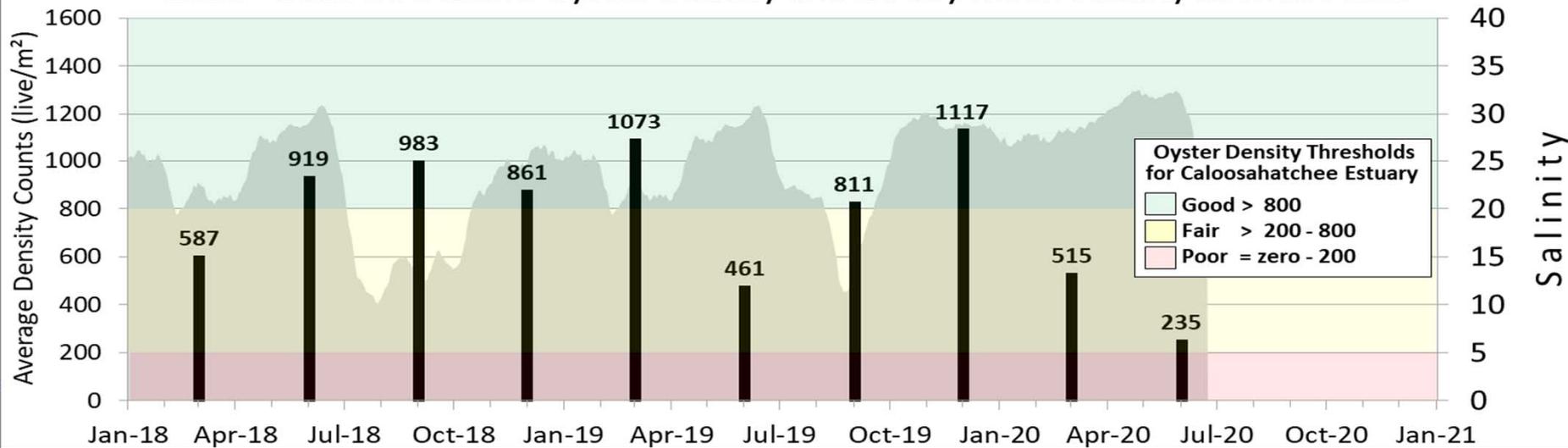


# Caloosahatchee Estuary - Oyster Density

2018 - 2020 Iona Cove Oyster Density and 14 day mean Salinity at Cape Coral



2018 - 2020 Bird Island Oyster Density and 14 day mean Salinity at Shell Point



# Everglades Stormwater Treatment Areas (STAs)

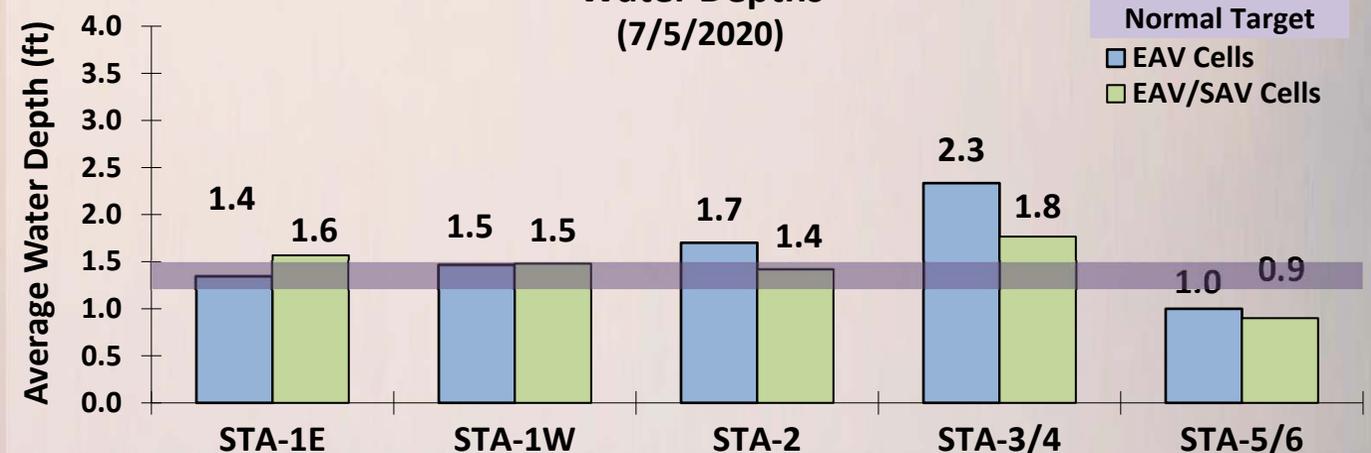
- STAs treated high inflow volumes from basin runoff in June
- Total Inflows to STAs in WY2021 ~309,000 ac-ft
- Lake Okeechobee releases to STAs in WY2021 ~ 10,000 ac-ft (3% of total)
- Extensive vegetation management activities underway to address stressed and highly stressed vegetation especially in EAV cells
- Most treatment cells are at or above target depth; STA-5/6 has rehydrated following extended dry-out period

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

	STA-1E	STA-1W	STA-2	STA-3/4	STA-5/6
Inflow TP Concentration (ppb)	136	265	130	74	311
Outflow TP Concentration (ppb)	18	31	19	12	180
365-day Phosphorus Loading Rate (g/m <sup>2</sup> /yr)	1.6	1.6	0.5	0.4	0.7
Inflow Volume (ac-ft)	44,400	58,900	80,500	110,600	14,900

*Includes preliminary data; all concentrations are flow-weighted means*

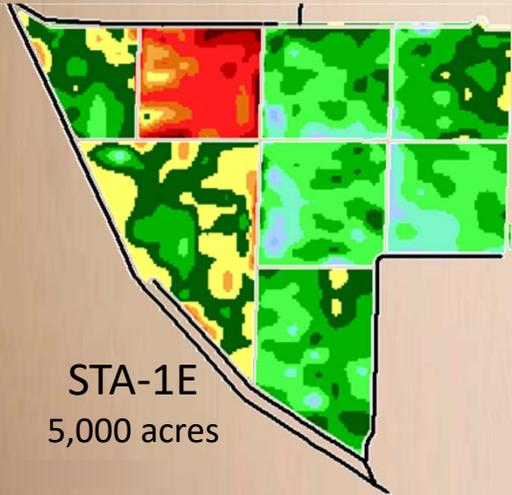
Water Depths  
(7/5/2020)



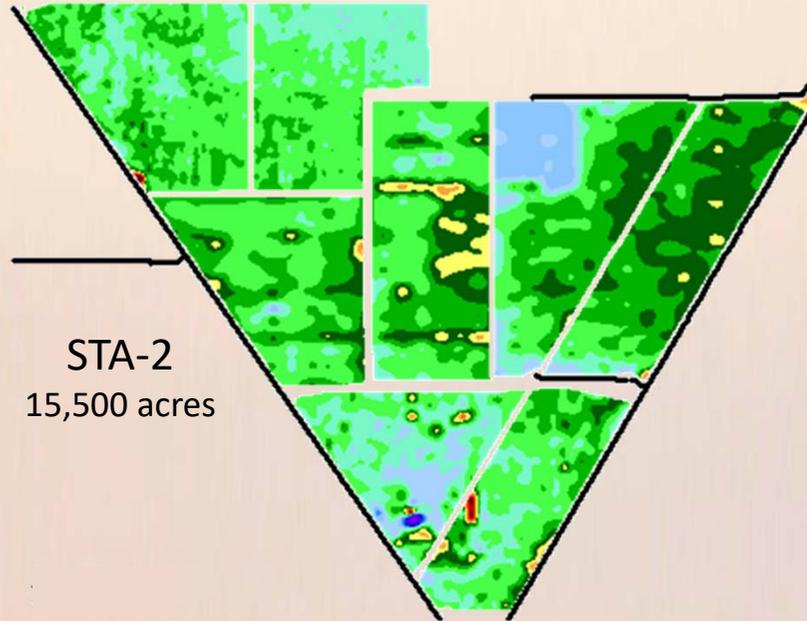
*Includes preliminary data; Emergent Aquatic Vegetation (EAV); Submerged Aquatic Vegetation (SAV)*

# Everglades Stormwater Treatment Areas

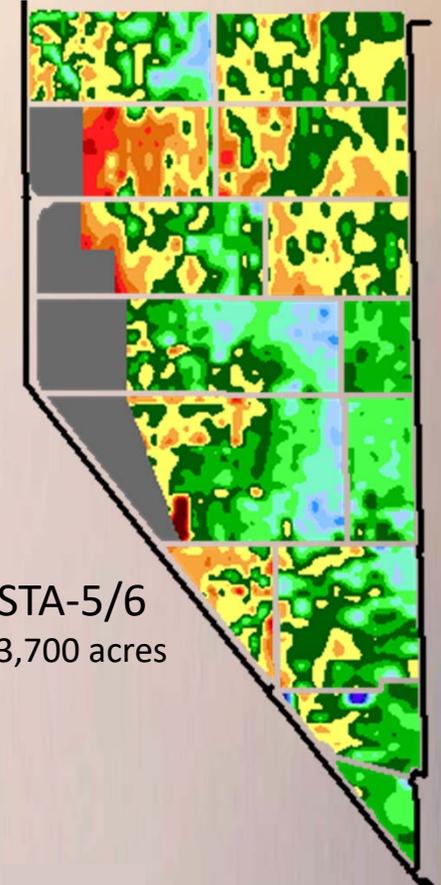
Daily Average Water Depths on 7/5/2020



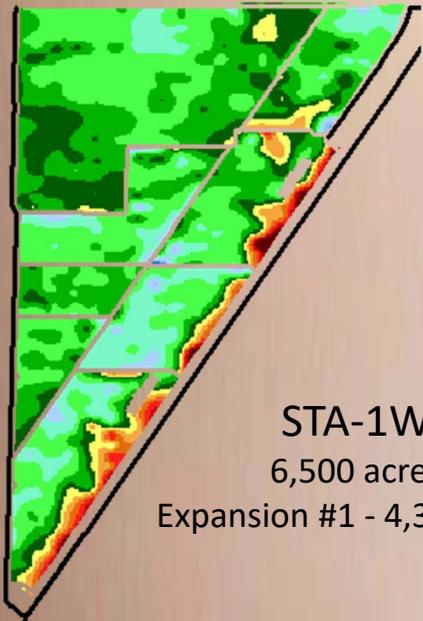
STA-1E  
5,000 acres



STA-2  
15,500 acres



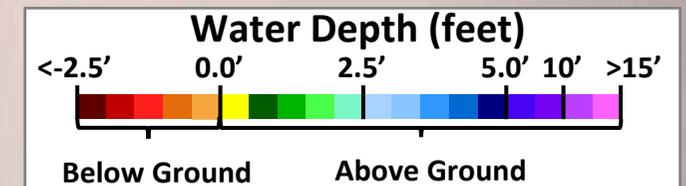
STA-5/6  
13,700 acres



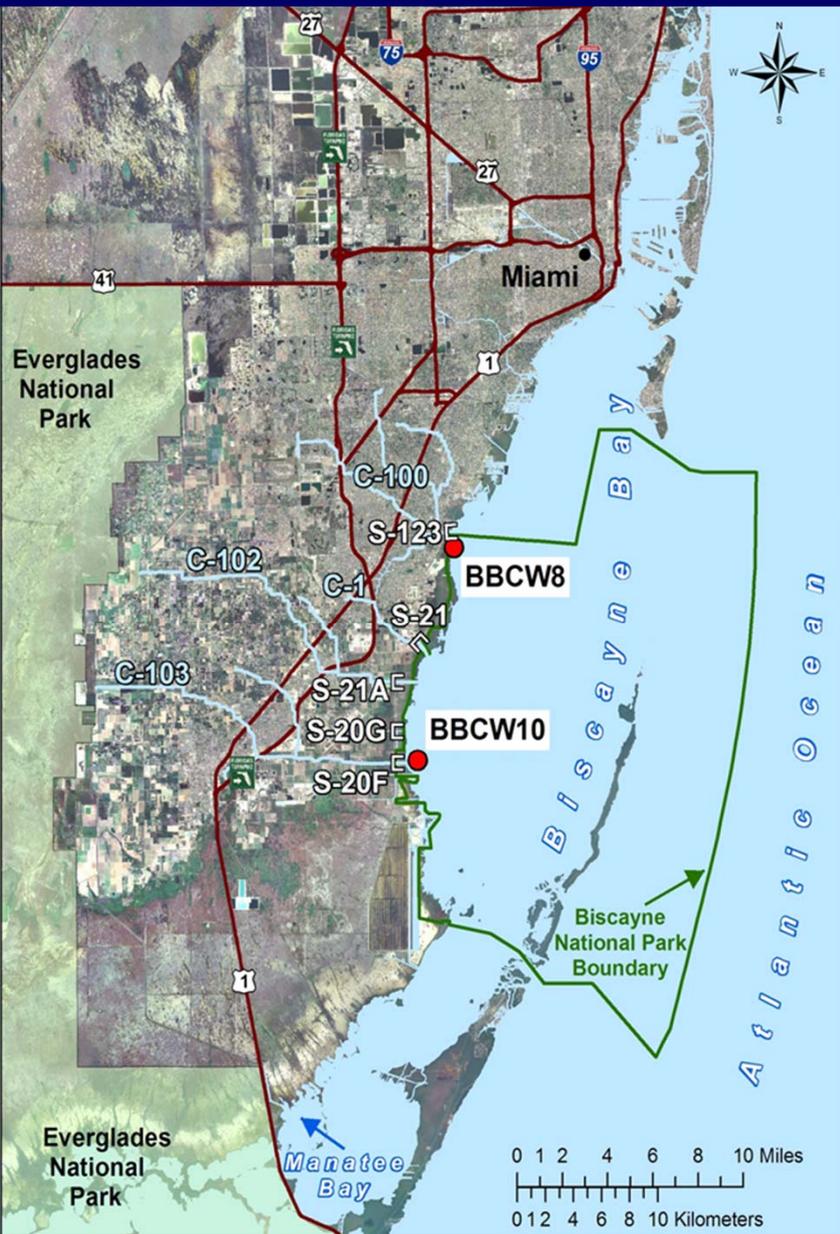
STA-1W  
6,500 acres  
Expansion #1 - 4,300 acres



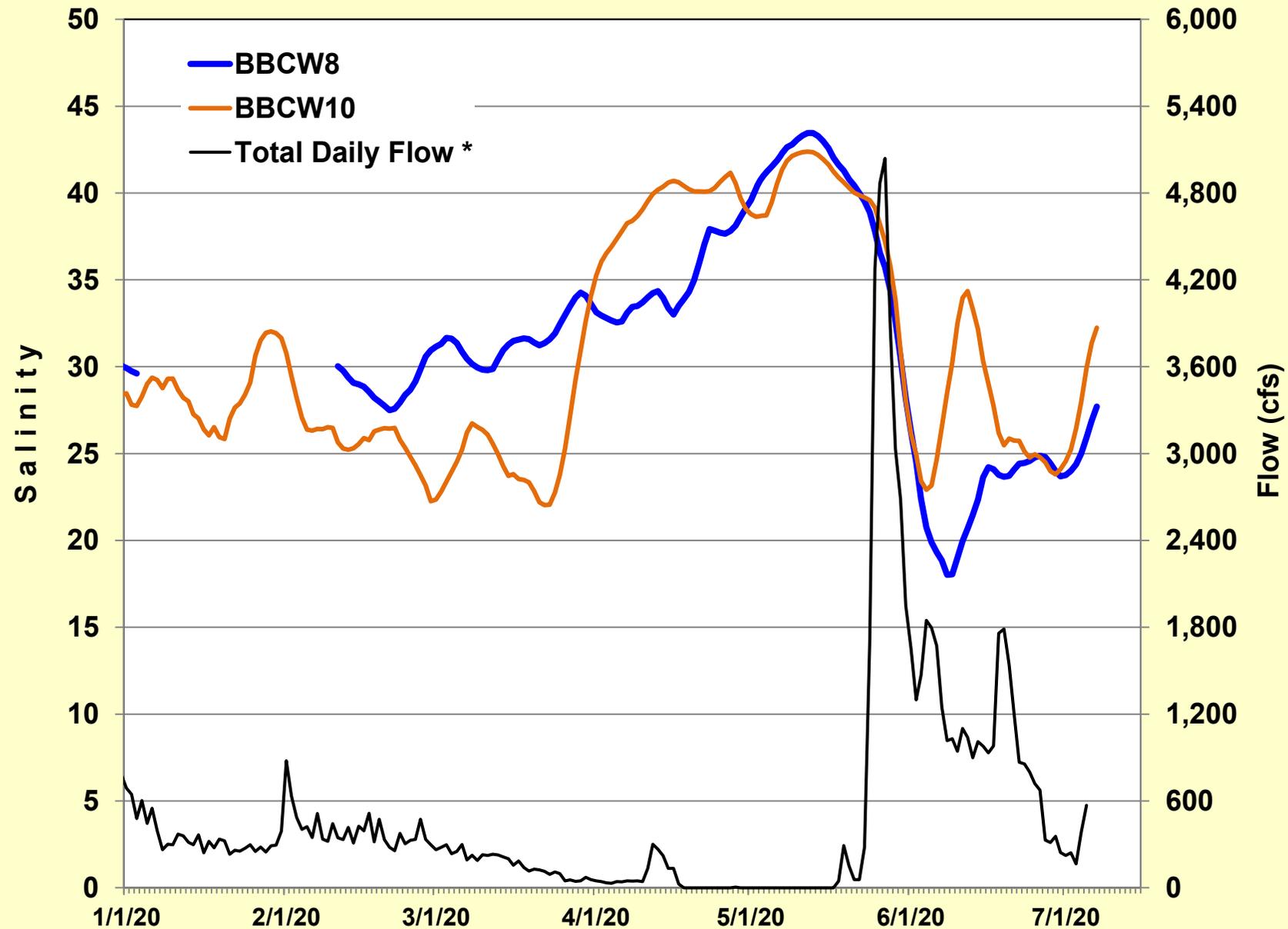
STA-3/4  
16,300 acres



# Biscayne Bay



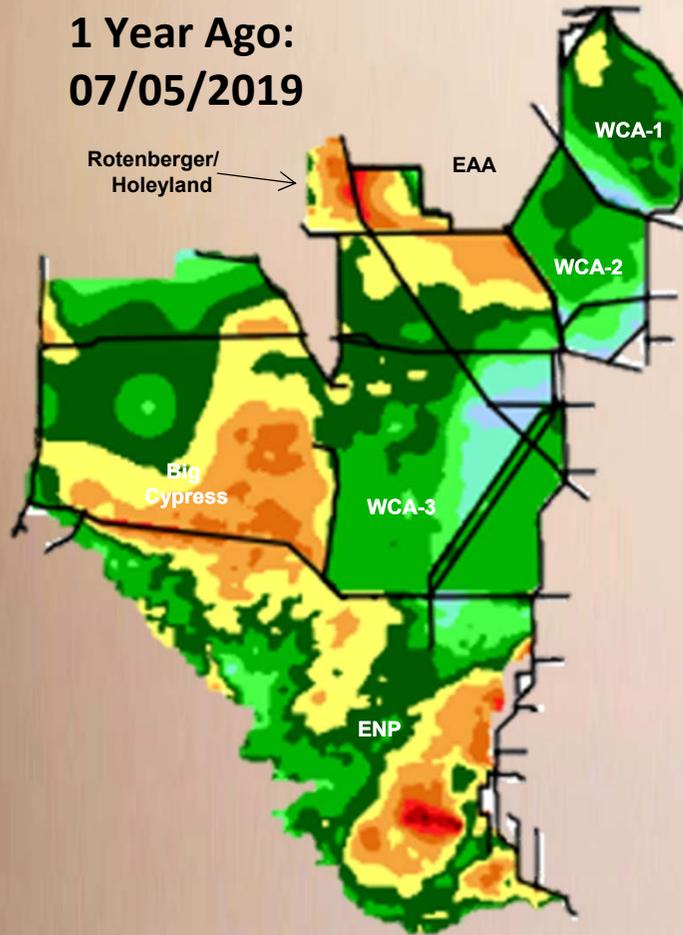
Seven Day Mean Salinity (BBCW8 & BBCW10) & Total Daily Flow



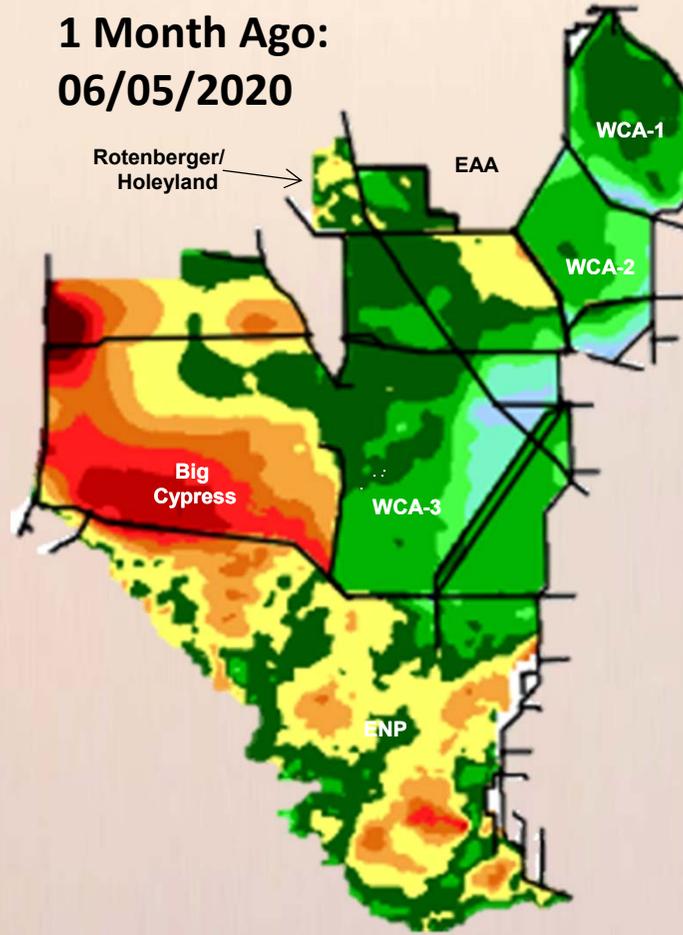
\* Total flow from S20G, S20F, S21, S21A, S123, S700P

# Everglades Water Depth Maps

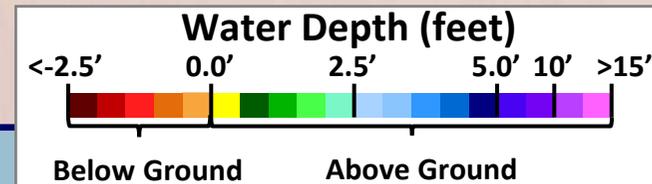
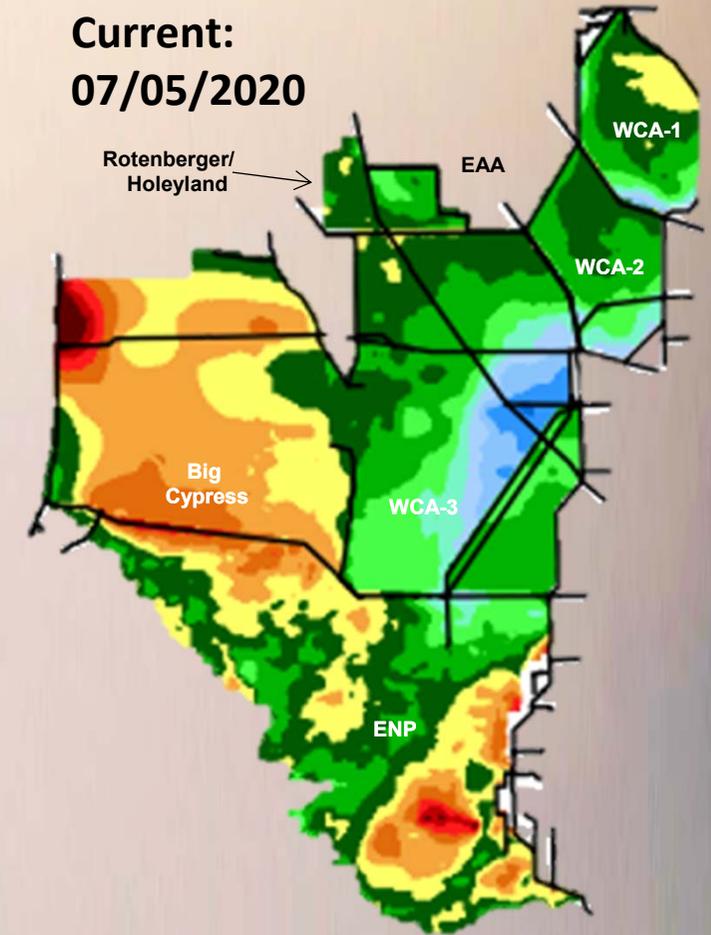
1 Year Ago:  
07/05/2019



1 Month Ago:  
06/05/2020



Current:  
07/05/2020

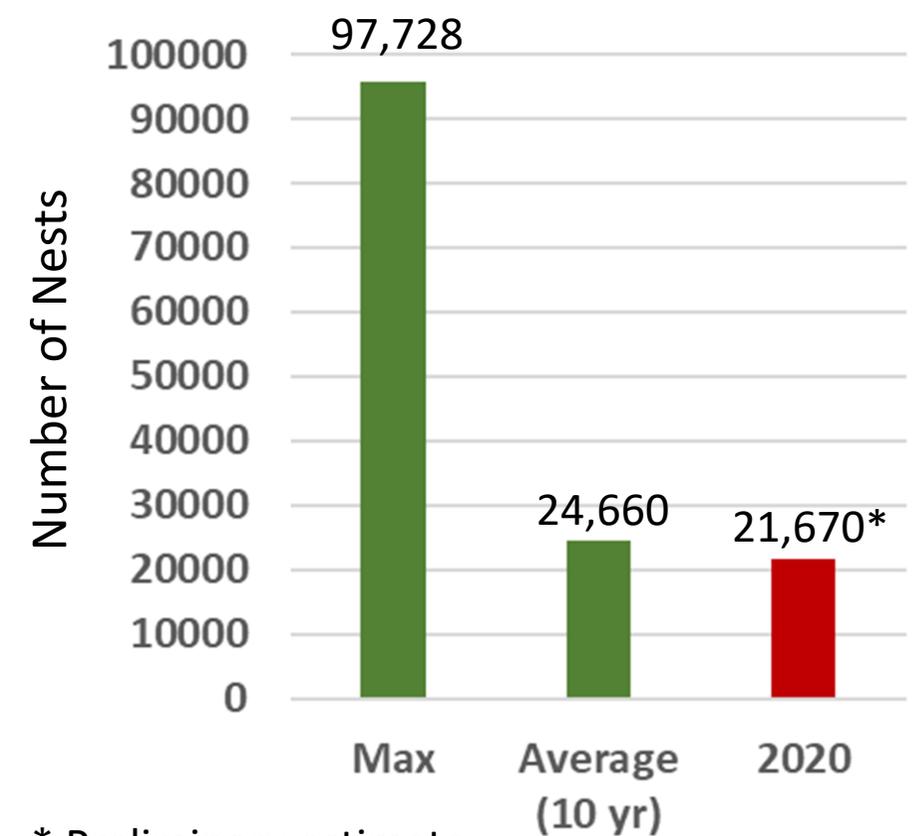


# Everglades: White Ibis Nesting 2020



MARK COOK

White Ibis nesting effort in 2020 compared to the 10-yr annual average & peak year (2018)



\* Preliminary estimate



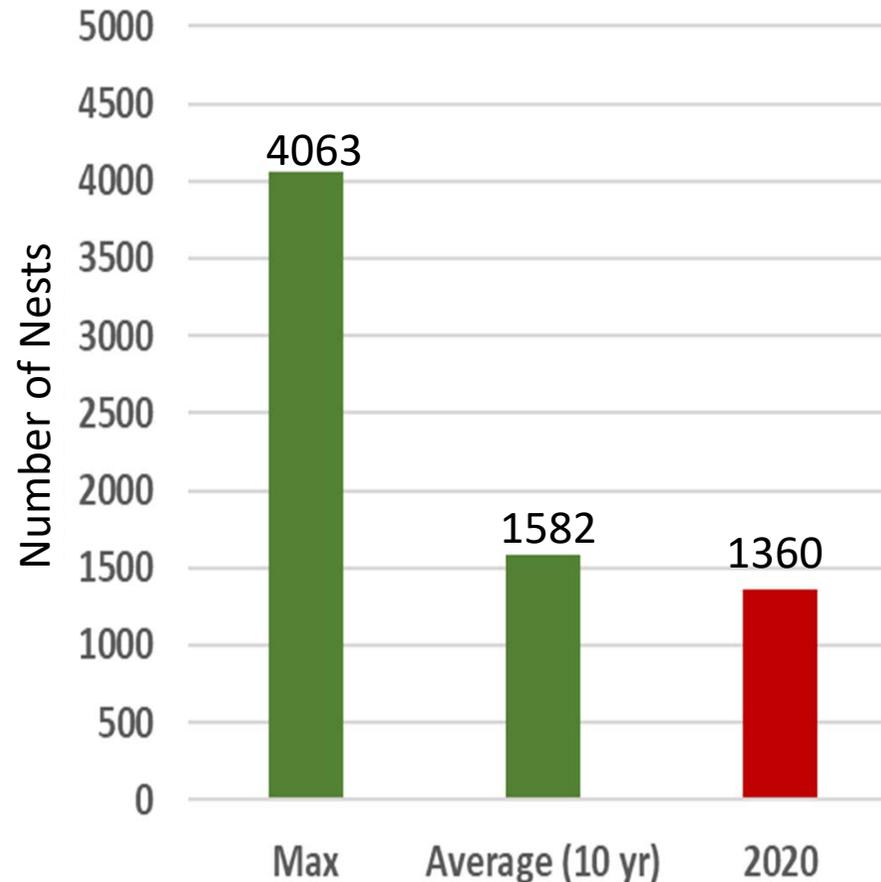
MARK COOK

- Moderate nesting effort in 2020
- Very poor nesting success: ~84% of nests failed

# Everglades: Wood Stork Nesting 2020



Wood Stork nesting effort in 2020 compared to 10-yr average & peak year (2009)



- Nesting started late (February)
- Moderate nesting effort
- Extremely poor nesting success: ~98.5% of nests failed

# Everglades Tree Island Condition

## Water Depth

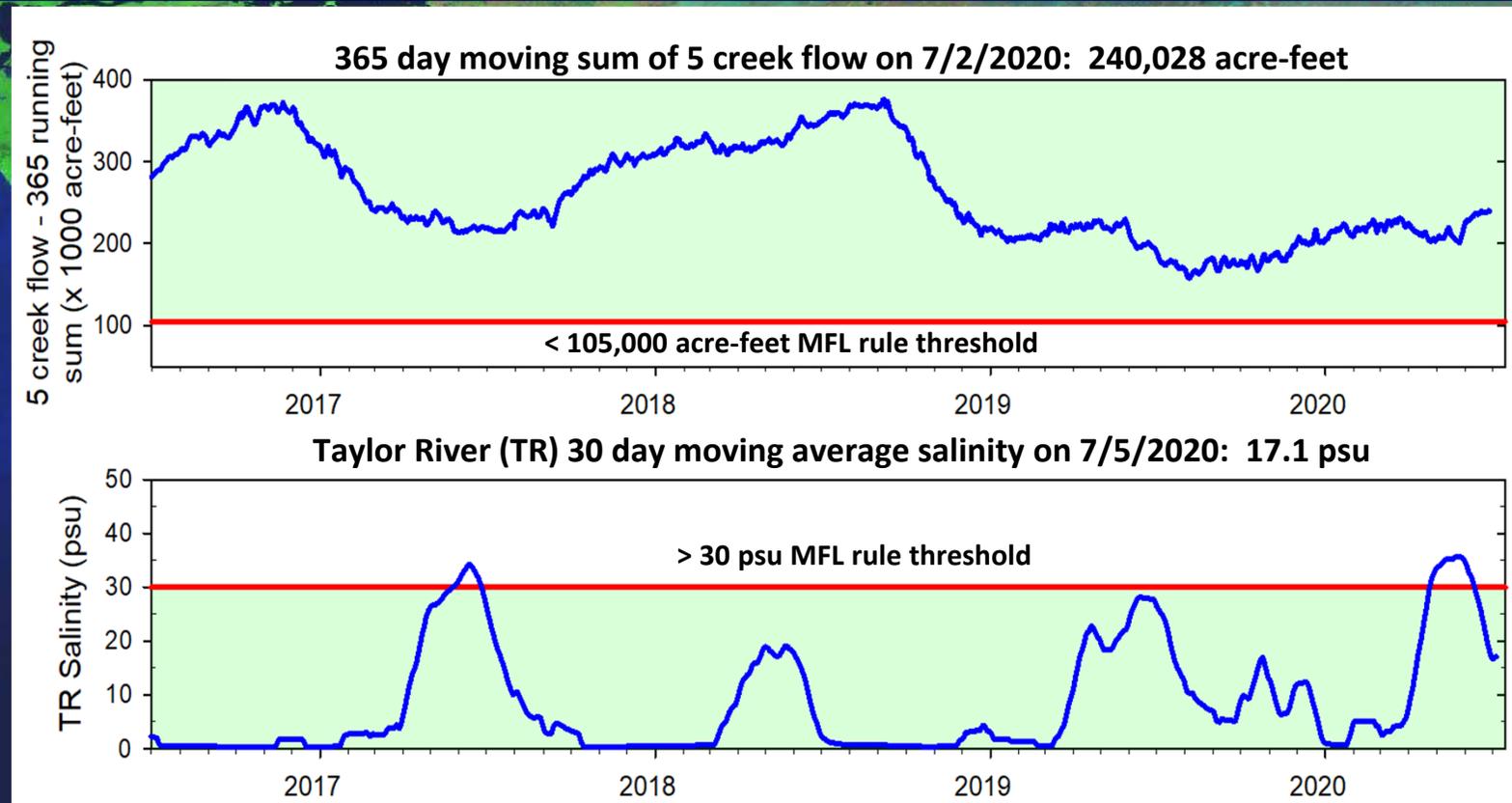


## Inundation Period



- 371 tree islands with known elevation
  - WCA 3 A&B, Shark Slough
- 66 (18%) inundated currently
- Longest period of continuous inundation is 40 days (5/24/20)
  - 90-120 days = concern
- Maximum water depth relative to tree island head is 1.18 feet

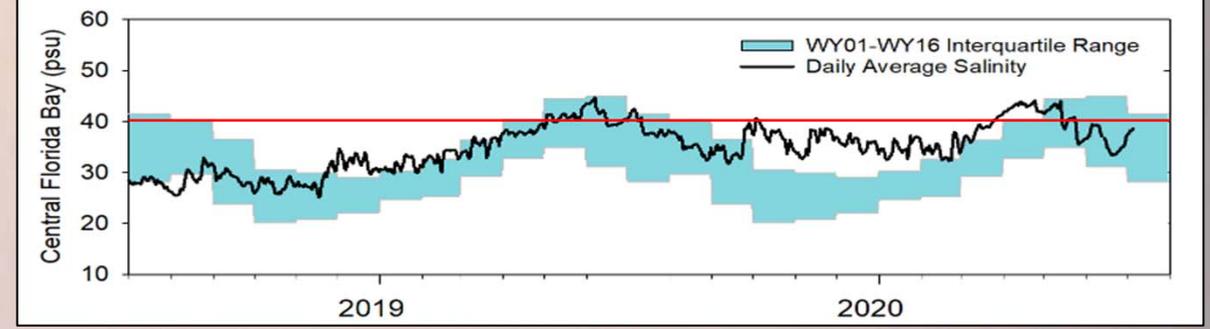
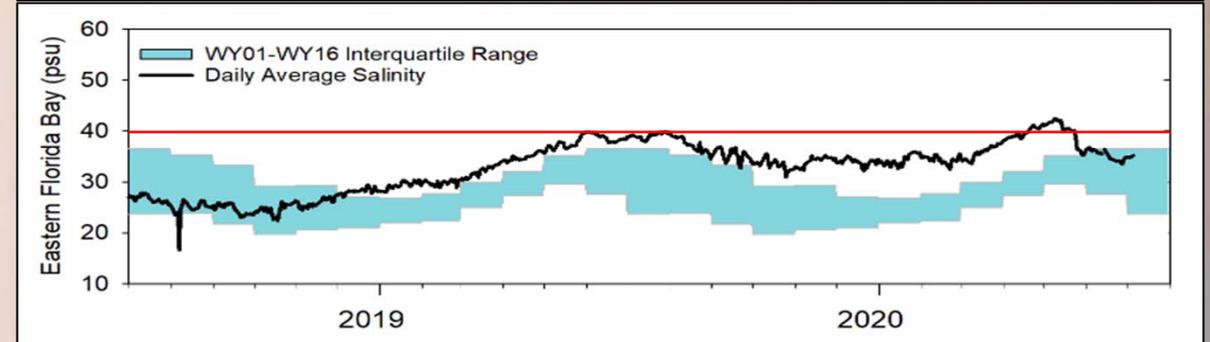
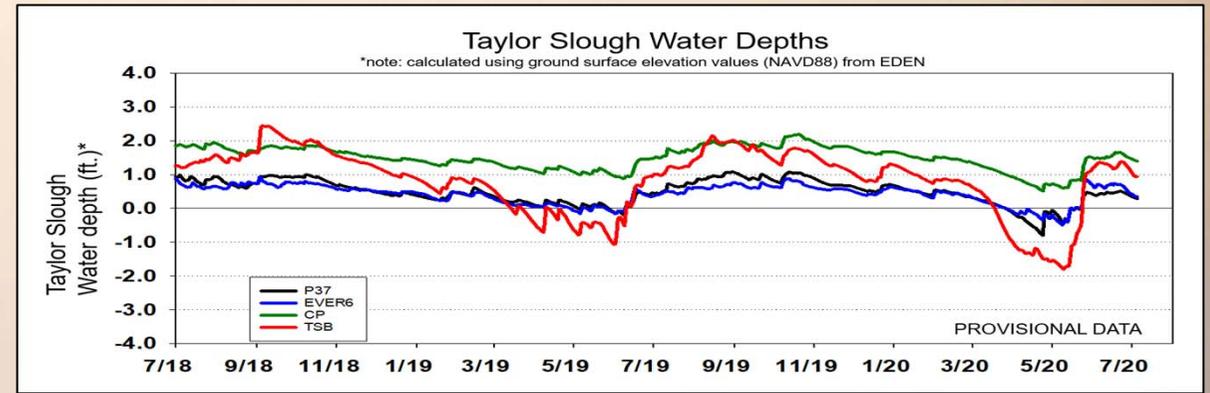
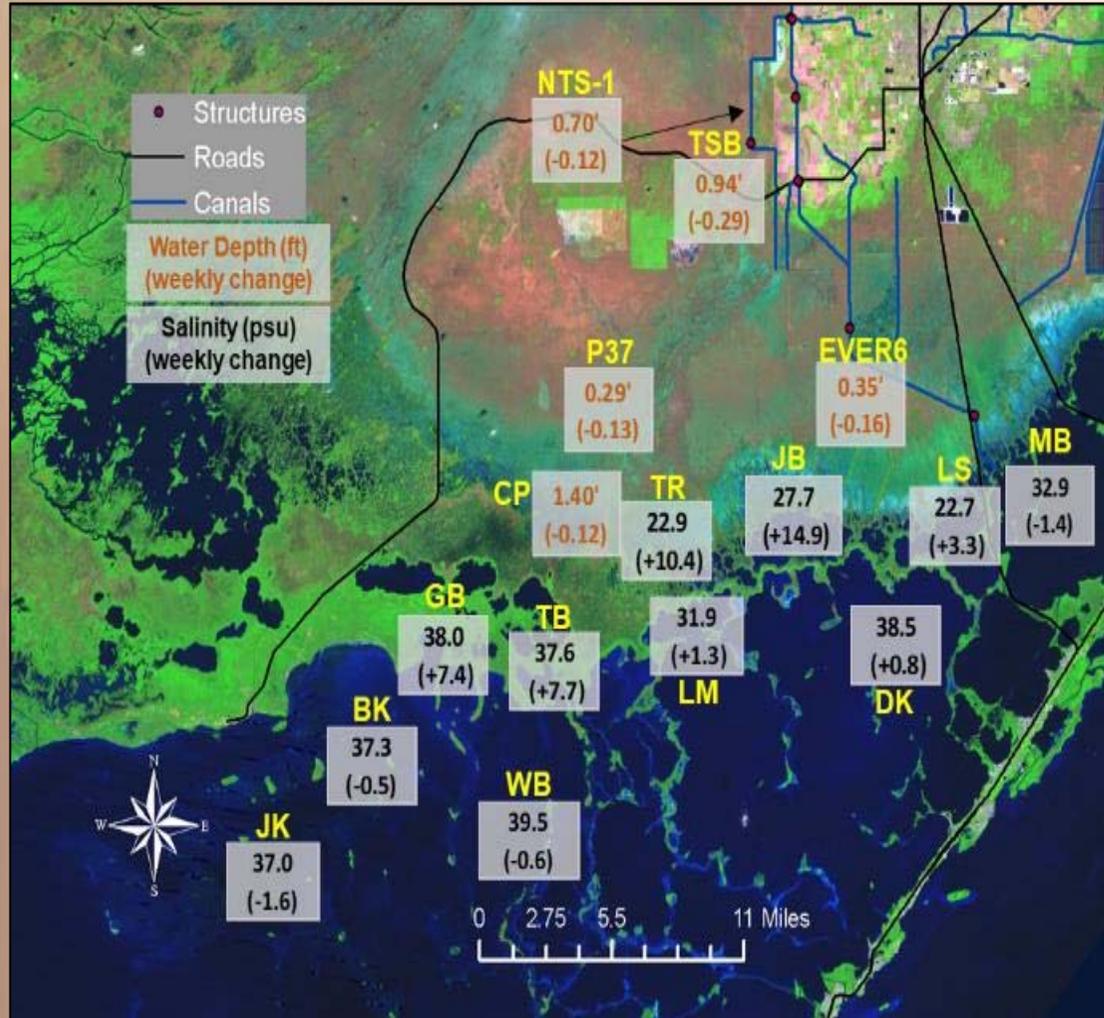
# Northeast Florida Bay MFL



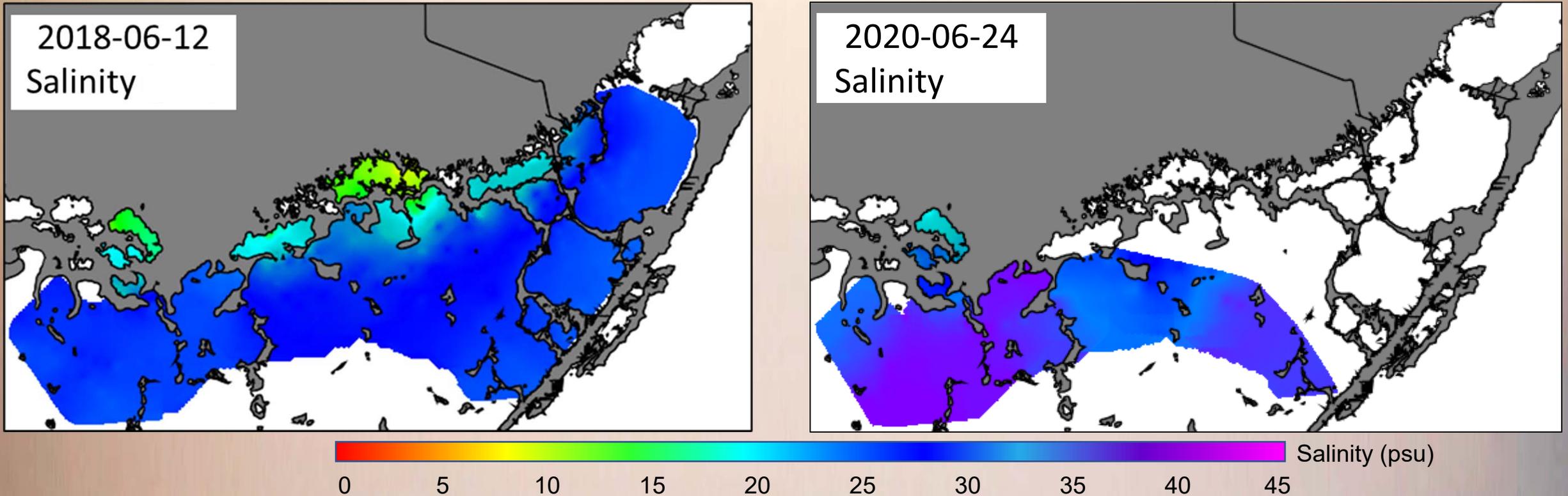
- ★ Salinity gauge
- ★ Creek flow gauge

TR

# Taylor Slough Stages and Florida Bay Salinity



# Florida Bay Salinity Map



- Equipment difficulties only allowed sampling of the Central Florida Bay region where salinities continue to be elevated (map on right)
- Typical pattern for this time of year has evidence of freshwater inputs with lower salinities along the northern shoreline as shown in the map from 2018 (left)

# Questions?



*Bald Eagle in flight over Water Conservation Area 1  
Photograph courtesy of Mark Cook, SFWMD*