

Governing Board Meeting
November 10, 2016

Ecological Conditions Update

Terrie Bates

Water Resources
Division Director

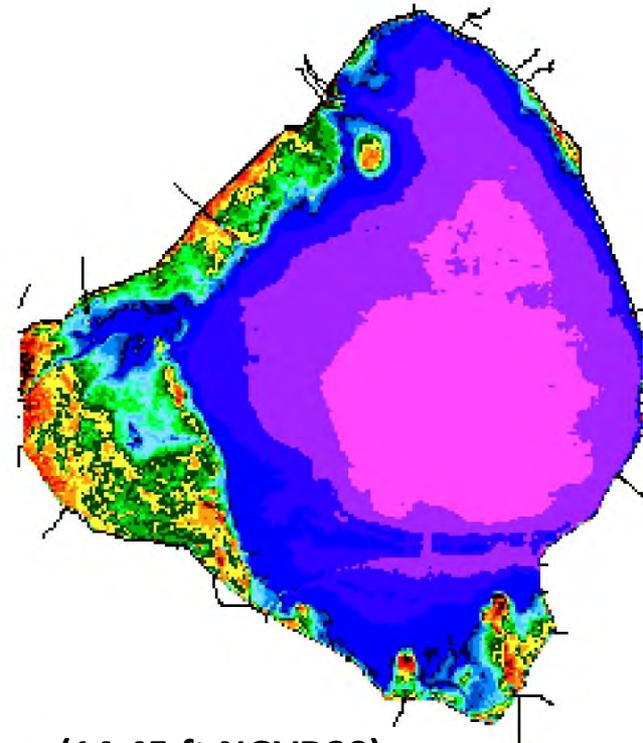
A Florida banded water snake peeks out from a hollow cypress knee on Marion Creek

Lake Okeechobee Water Depth Maps

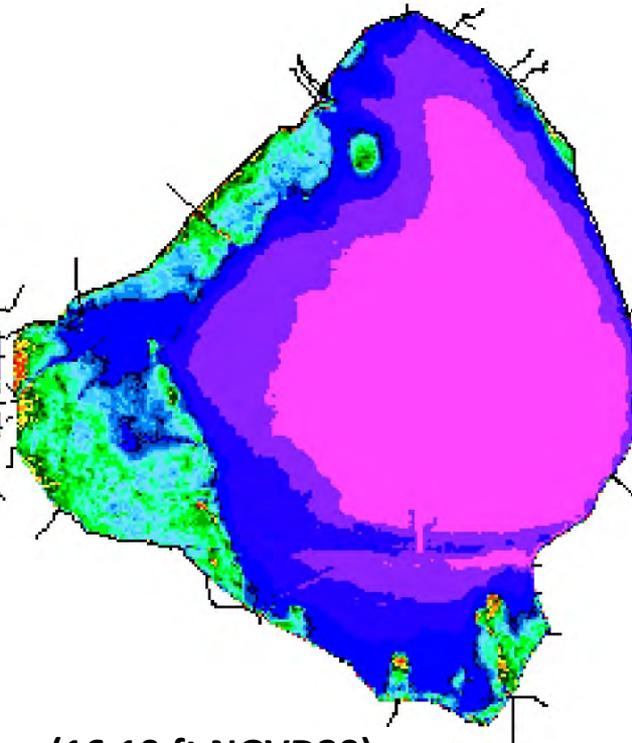
1 Year Ago: 11/7/2015

1 Month Ago: 10/8/2016

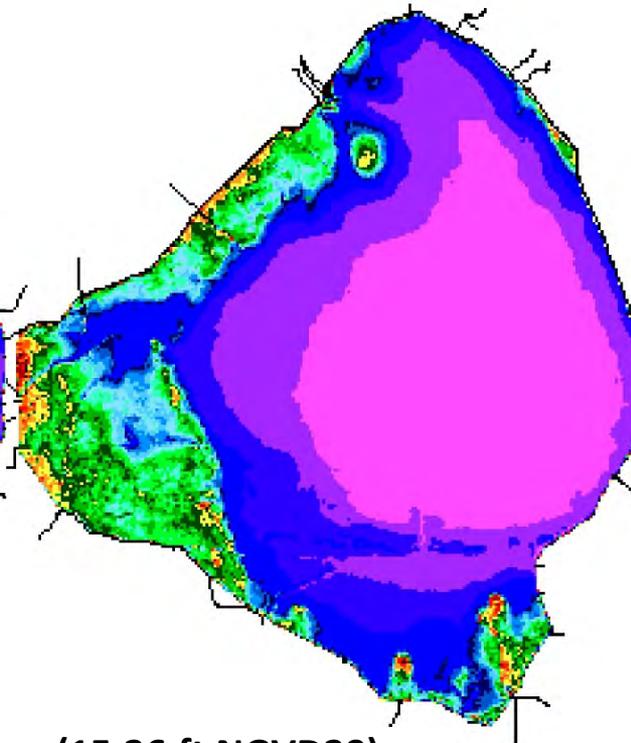
Current: 11/7/2016



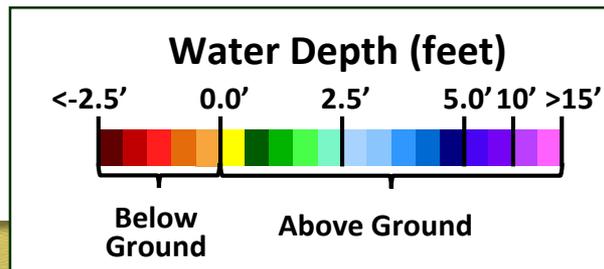
(14.45 ft NGVD29)



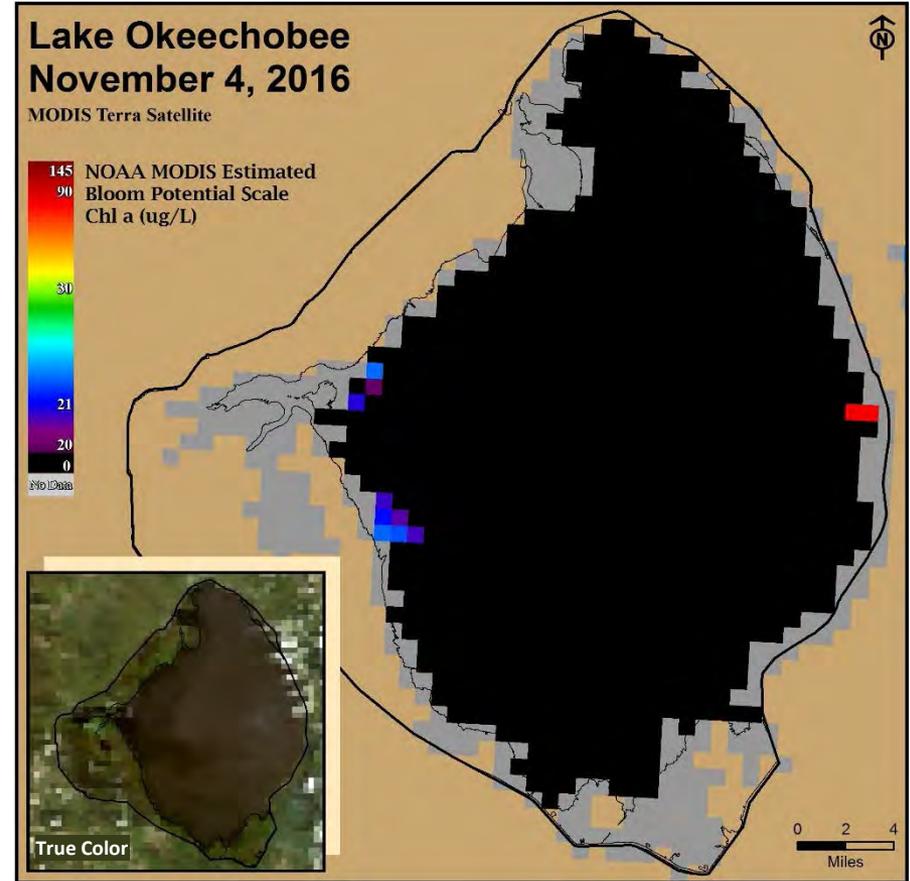
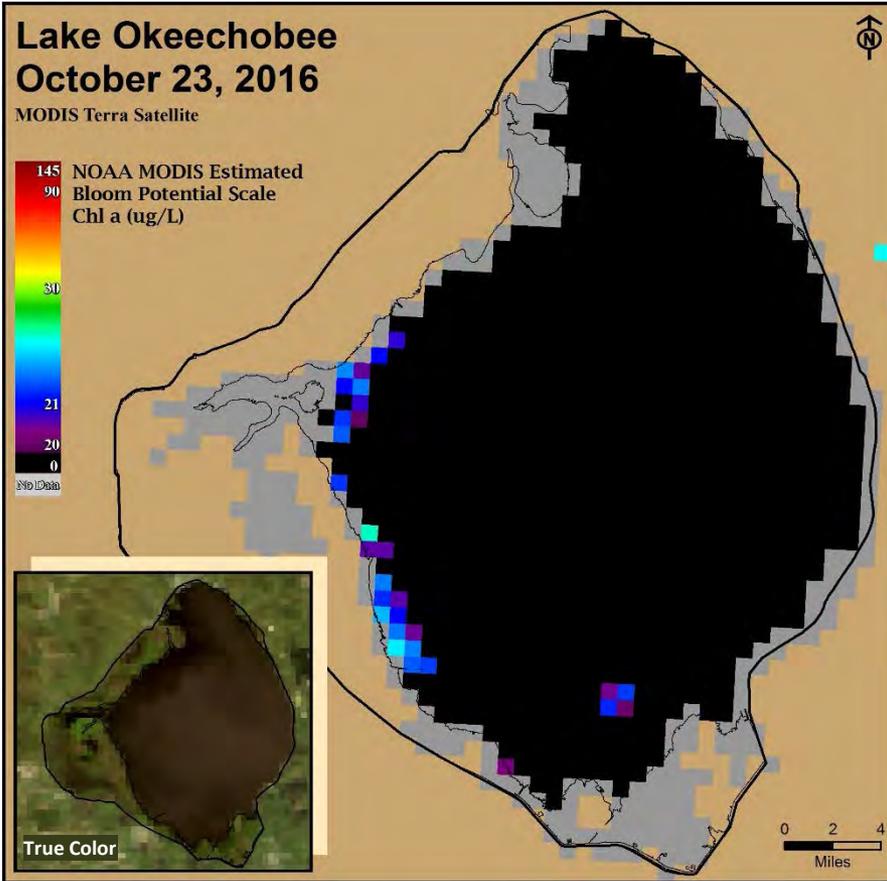
(16.10 ft NGVD29)



(15.26 ft NGVD29)

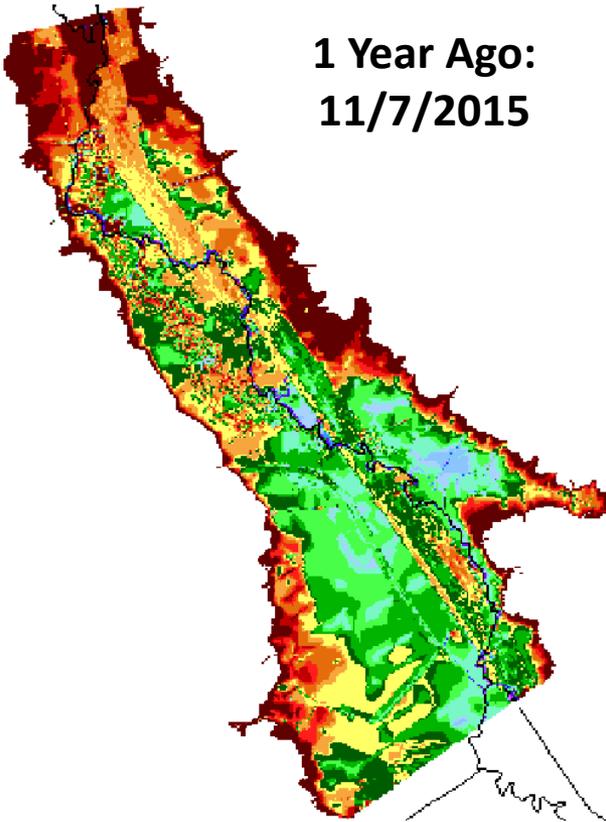


Lake Okeechobee Algal Blooms

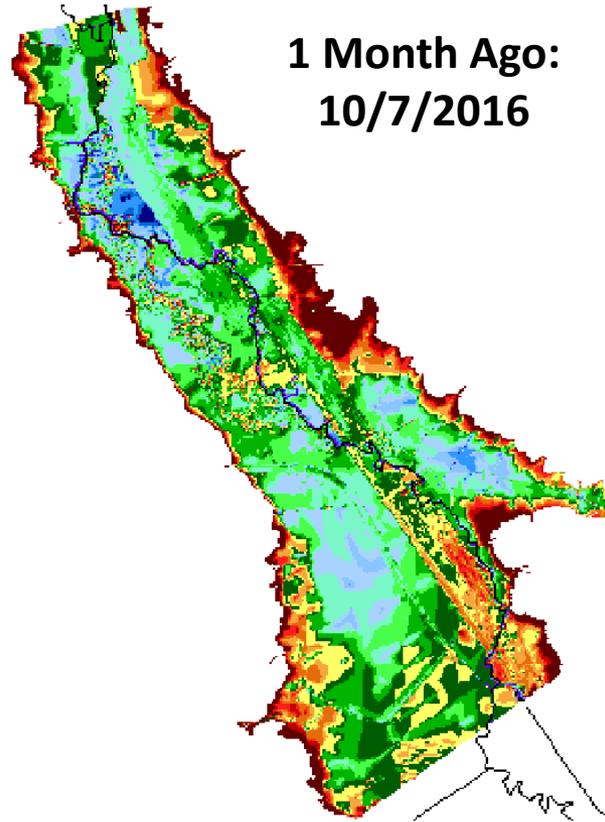


Kissimmee River Phase I Restoration Area Water Depth Maps

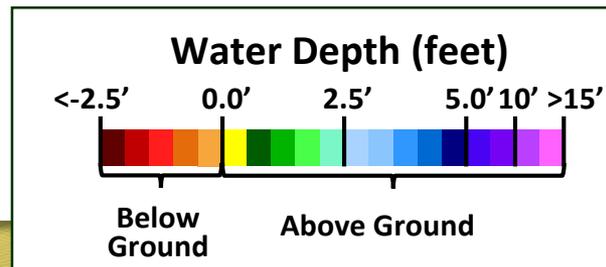
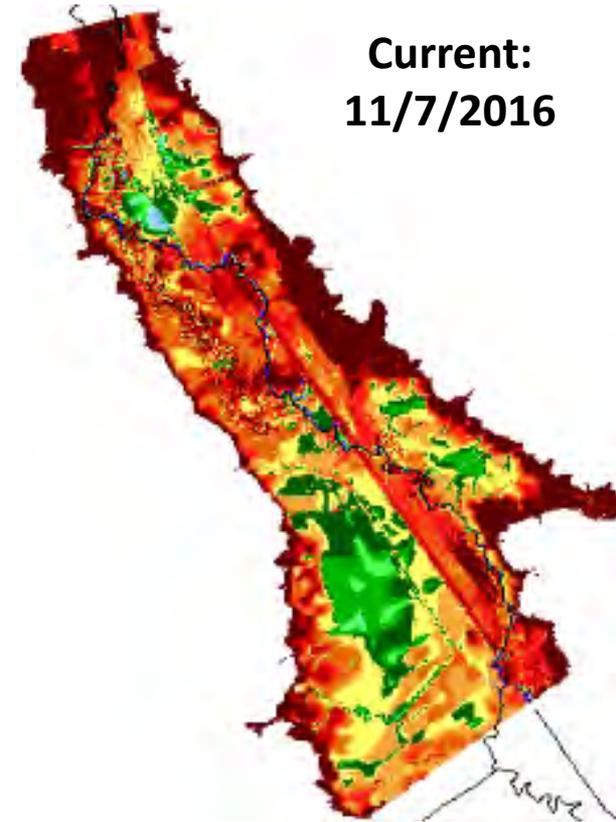
1 Year Ago:
11/7/2015



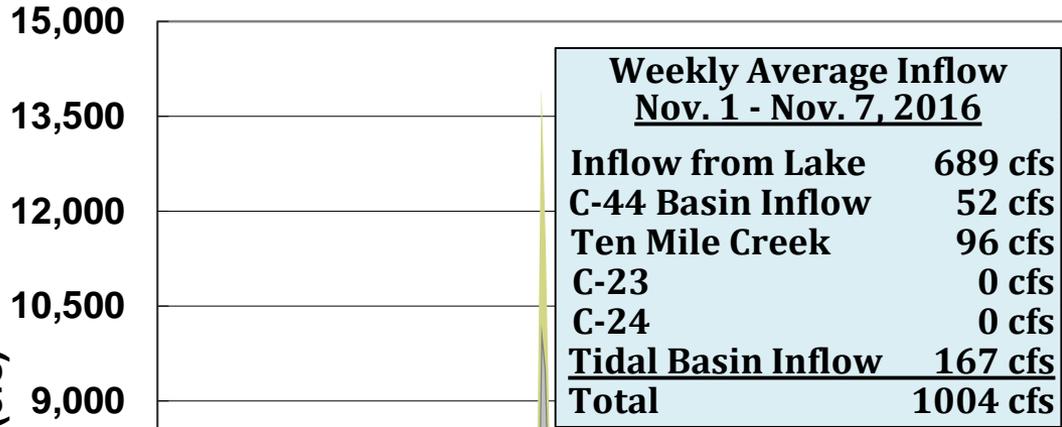
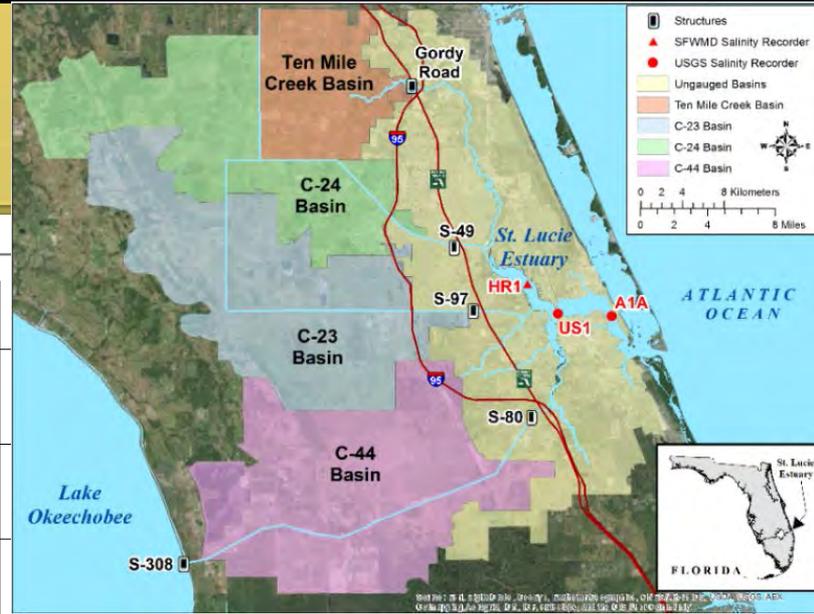
1 Month Ago:
10/7/2016



Current:
11/7/2016



St. Lucie Estuary



Total Flow (cfs)

Data provisional and subject to change

1-Nov 1-Dec 1-Jan 1-Feb 1-Mar 1-Apr 1-May 1-Jun 1-Jul 1-Aug 1-Sep 1-Oct 1-Nov

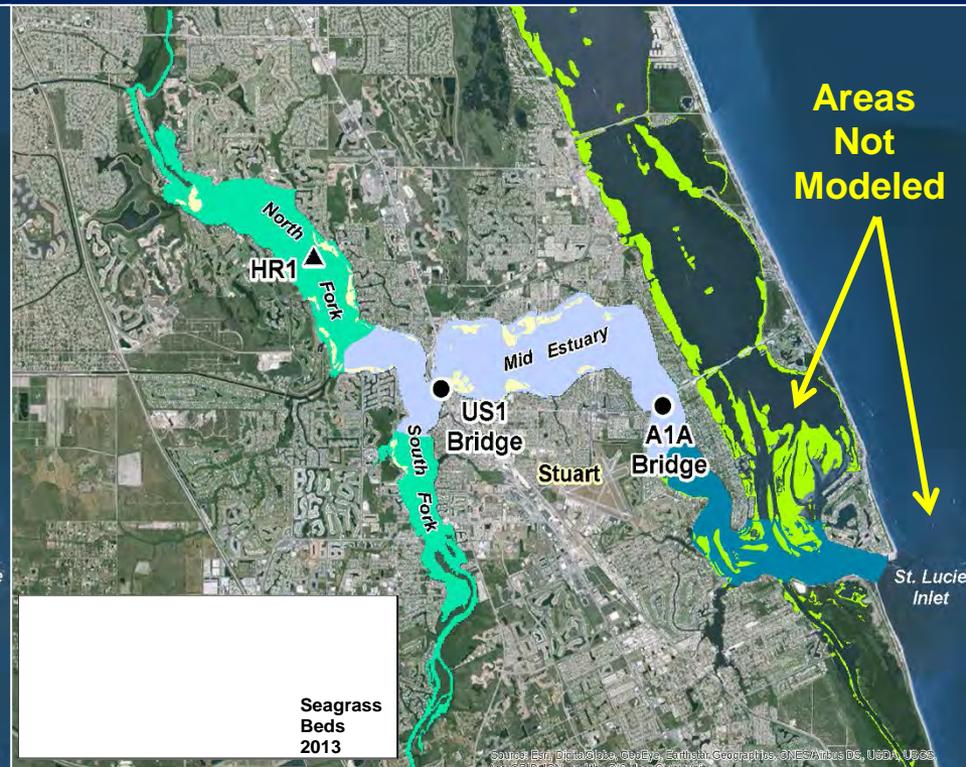
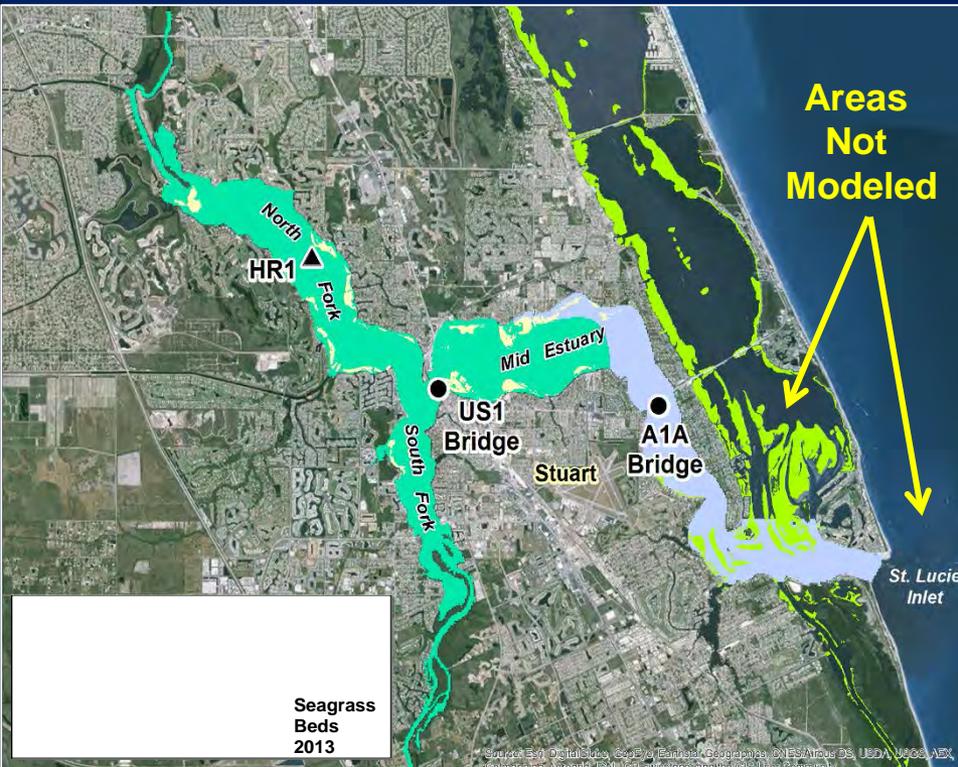
■ Inflow from Lake* (using downstream gauge)
 ■ C-44 Basin Runoff
 ■ Inflow from C-24, C23, and Ten Mile Creek
 ■ Tidal Basin Inflow

St. Lucie Estuary

Salinity Conditions

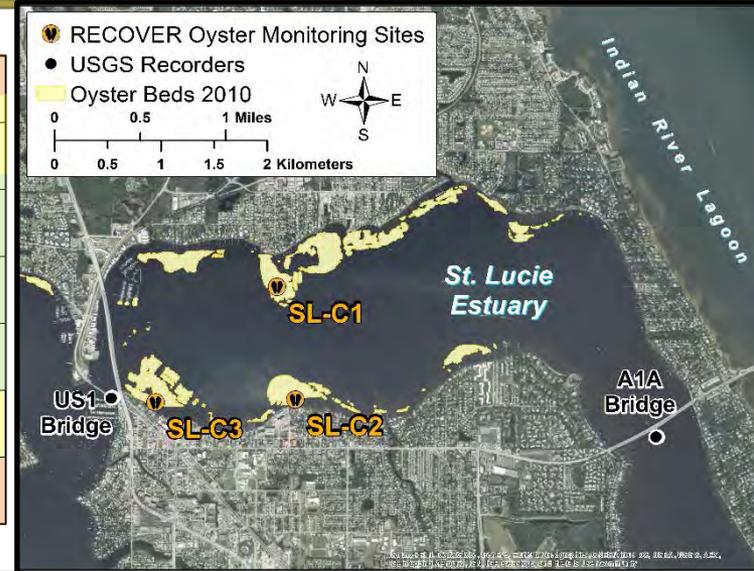
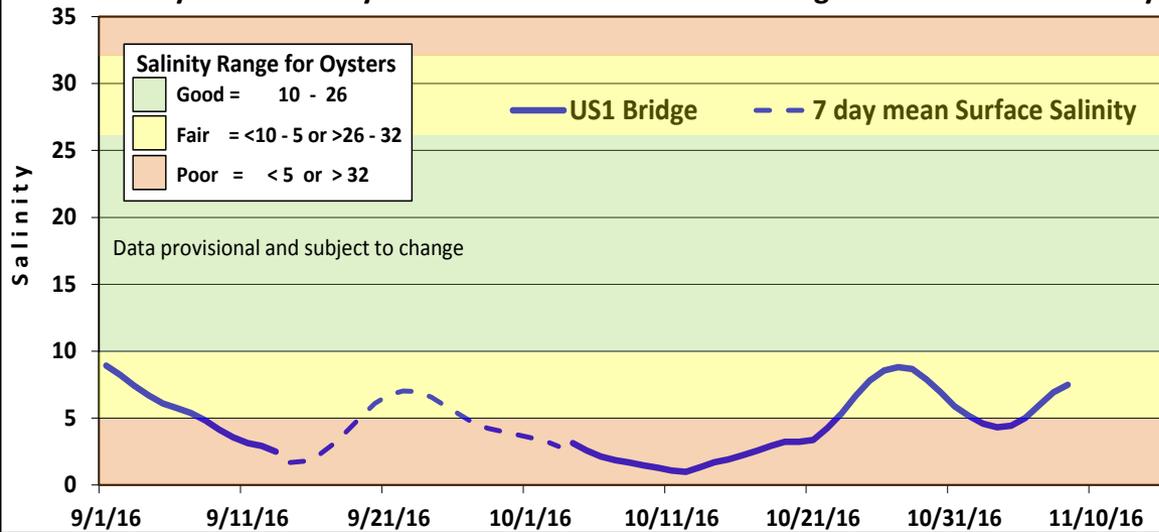
October 10, 2016

November 7, 2016

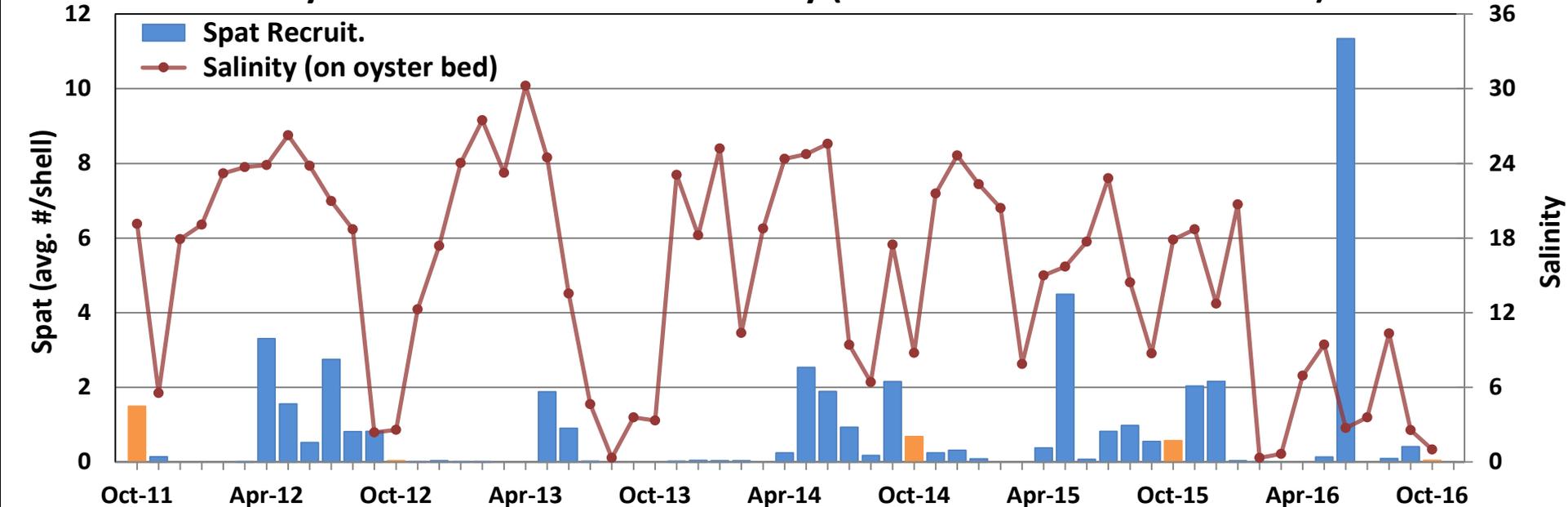


St. Lucie Estuary - Oyster Recruitment

7-day mean salinity of the water column at US1 Bridge in the St. Lucie Estuary



Oyster Recruitment - Mid Estuary (October 2011 - October 2016)



St. Lucie Estuary - Seagrass



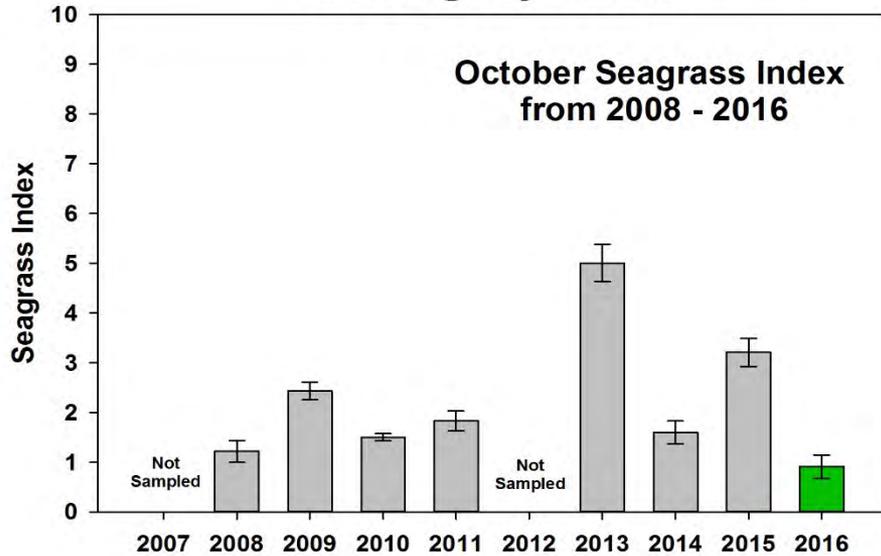
Willoughby Creek
Johnson's grass
& amphipod tubes

Boy Scout Island
Johnson's grass

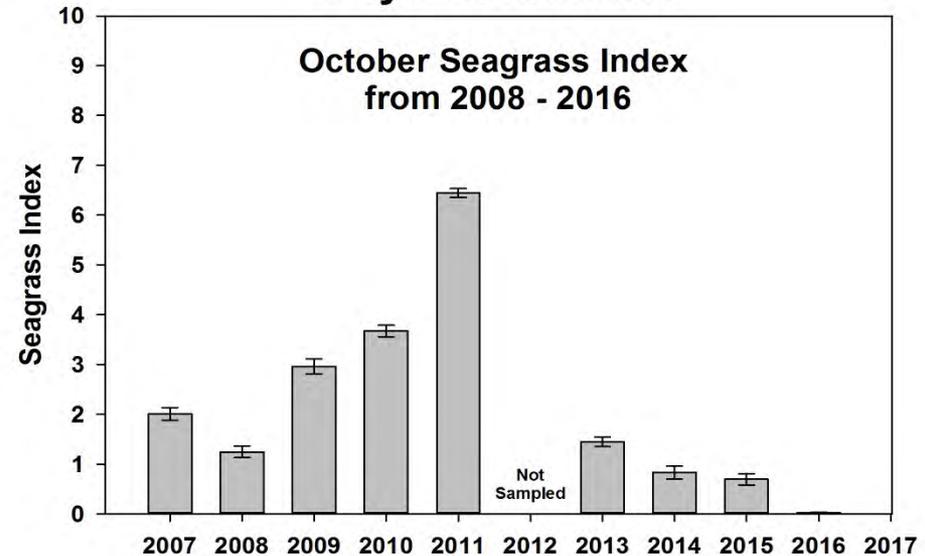
October 19, 2016

October 19, 2016

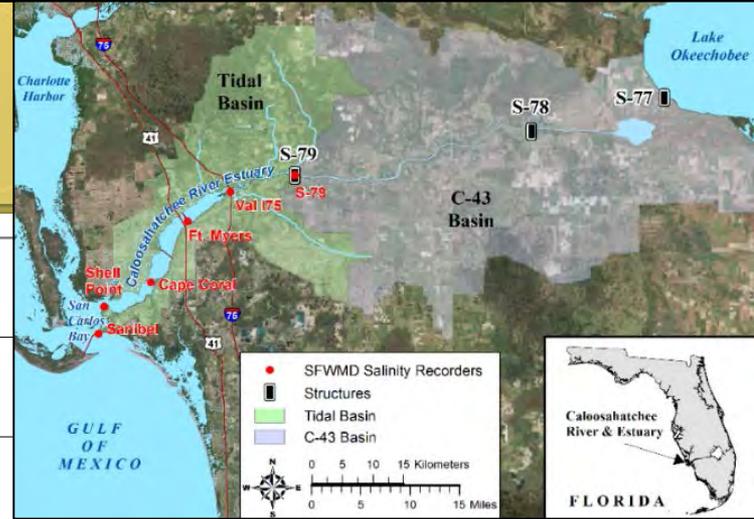
Willoughby Creek



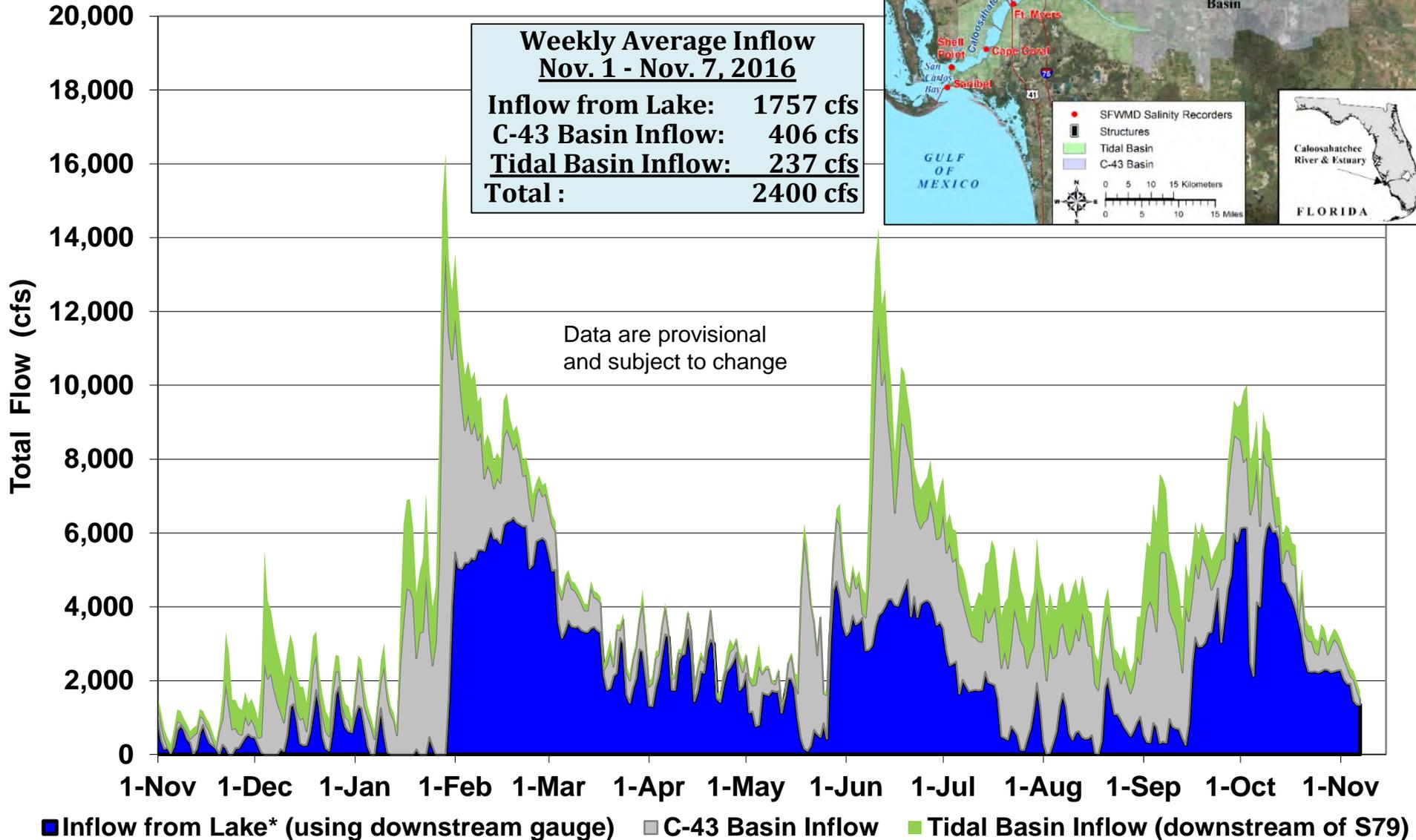
Boy Scout Island



Caloosahatchee Estuary



Weekly Average Inflow Nov. 1 - Nov. 7, 2016	
Inflow from Lake:	1757 cfs
C-43 Basin Inflow:	406 cfs
Tidal Basin Inflow:	237 cfs
Total :	2400 cfs

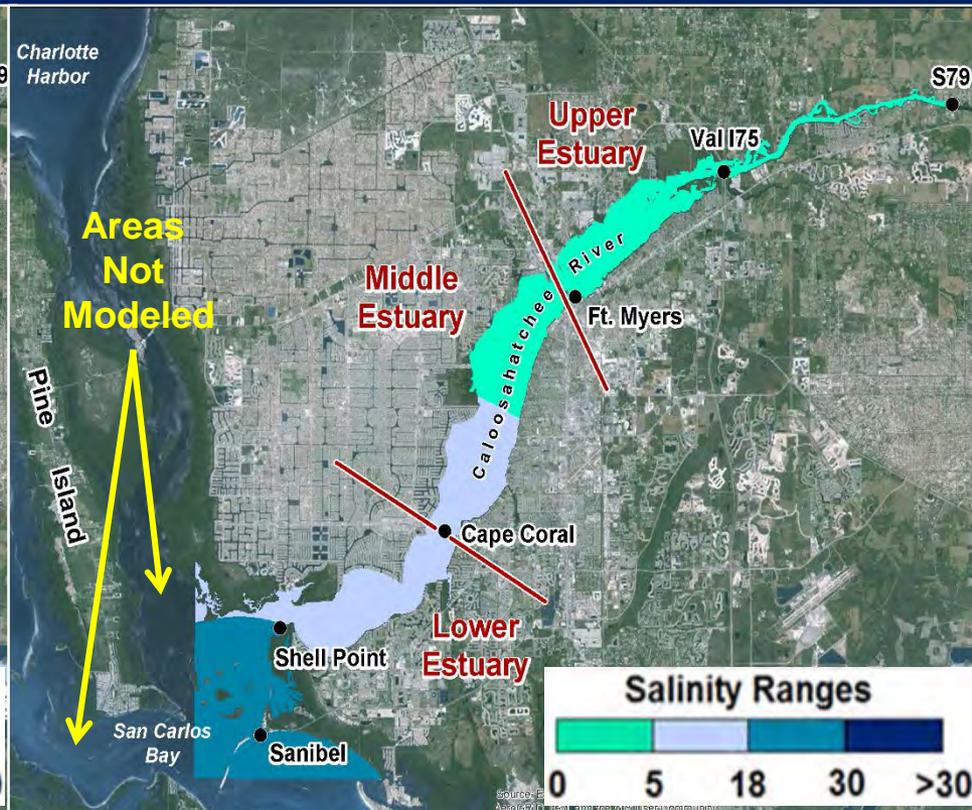
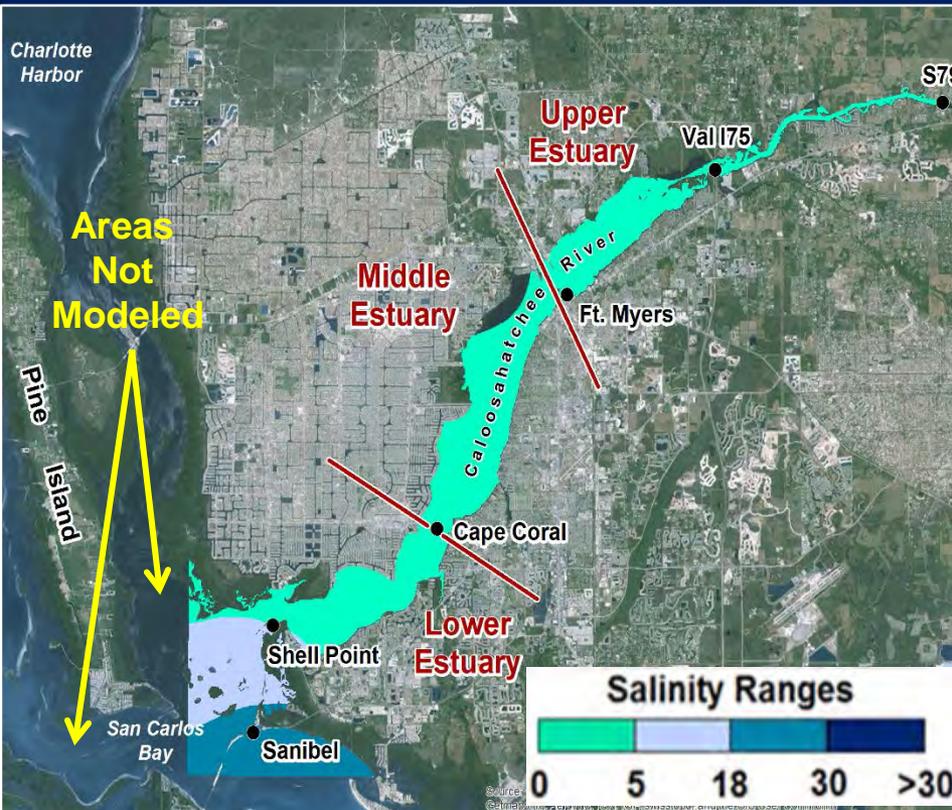


Caloosahatchee Estuary

Salinity Conditions

October 10, 2016

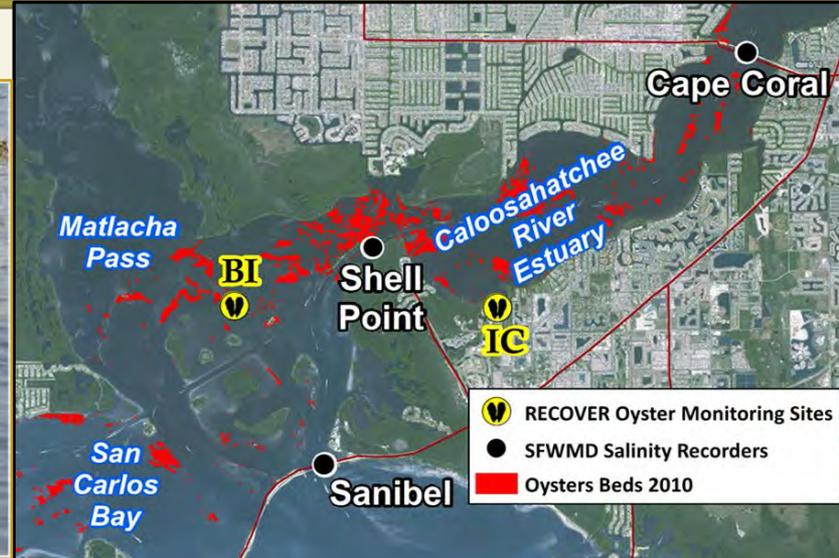
November 7, 2016



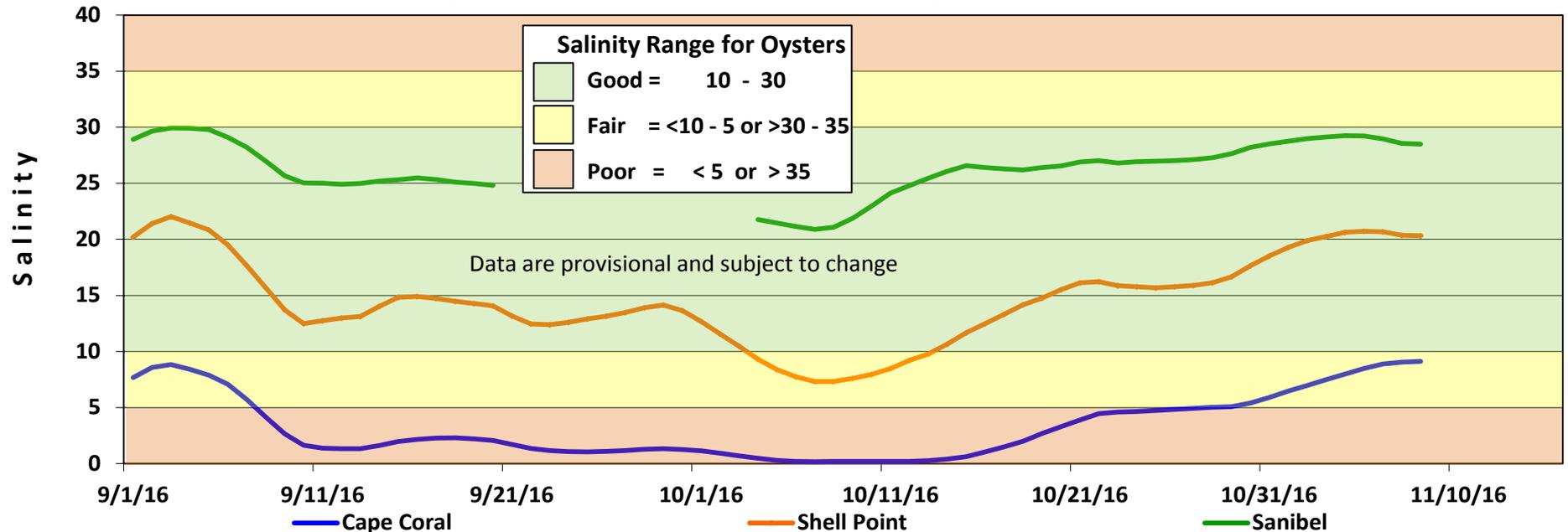
Caloosahatchee Estuary - Oysters



Each month 10 new oyster shells are hung from sampling T's

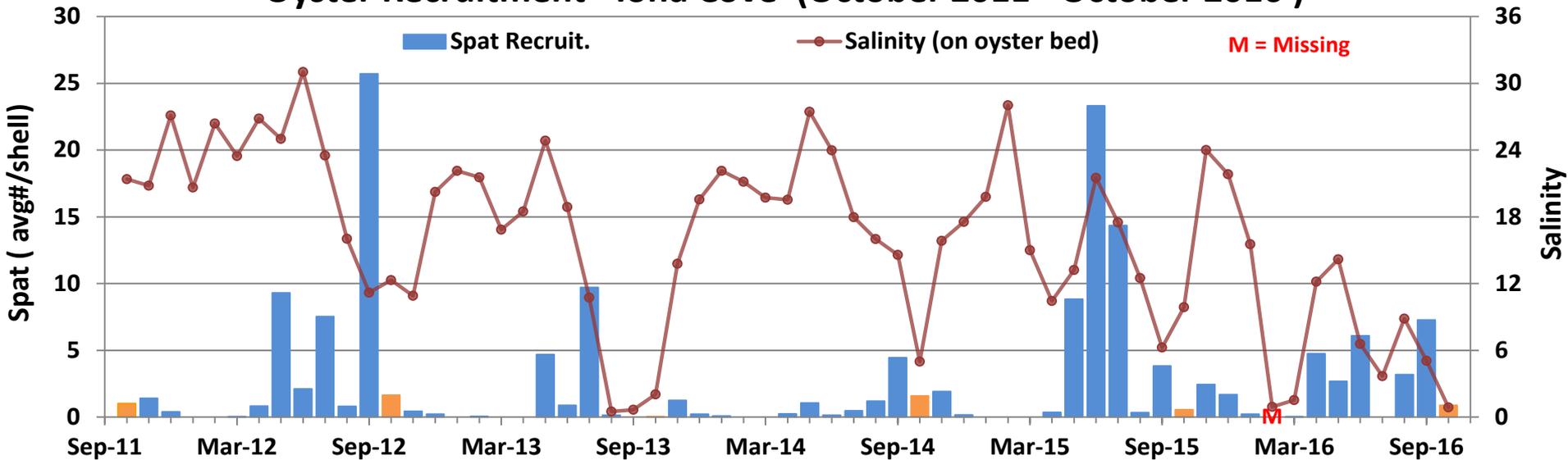


Seven day mean salinity of the water column at 3 monitoring stations in the Caloosahatchee Estuary

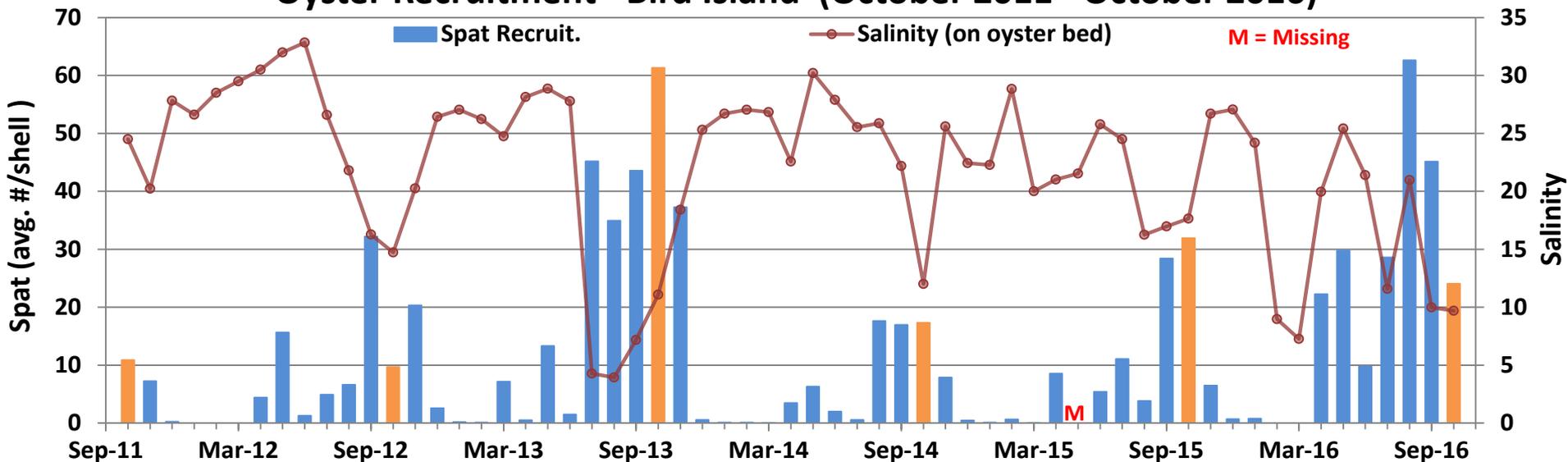


Caloosahatchee Estuary Oyster Recruitment

Oyster Recruitment - Iona Cove (October 2011 - October 2016)



Oyster Recruitment - Bird Island (October 2011 - October 2016)

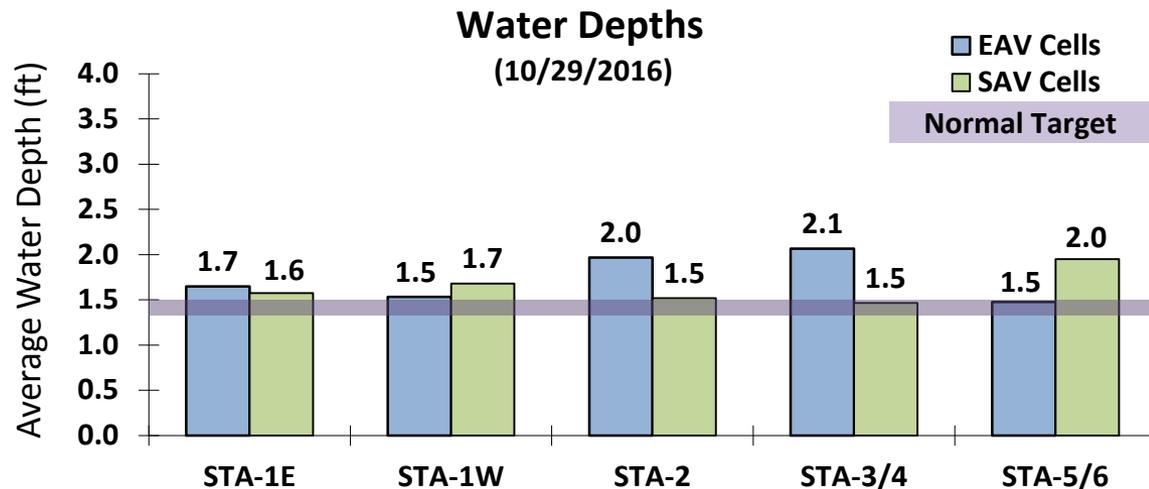


Everglades Stormwater Treatment Areas Current Conditions

- STAs and A-1 FEB received runoff throughout October
 - Lake releases were sent south to A-1 FEB and STAs when conditions allowed
 - Total Lake regulatory releases to FEBs/STAs in WY2017 (since May 1) ~80,000 ac-ft
- STA water depths have declined since last month's highs and most cells are close to target depth

Water Year 2017 5/1/16 to 10/30/16						
	STA-1E	STA-1W	STA-2	STA-3/4	STA-5/6	All STAs combined
Inflow Flow-weighted Mean TP Concentration (ppb)	135	145	89	36	170	90
Outflow Flow-weighted Mean TP Concentration (ppb)	22	22	14	11	17	15
Inflow Volume (ac-ft)	110,121	67,257	249,640	315,850	103,120	845,988

Includes preliminary data



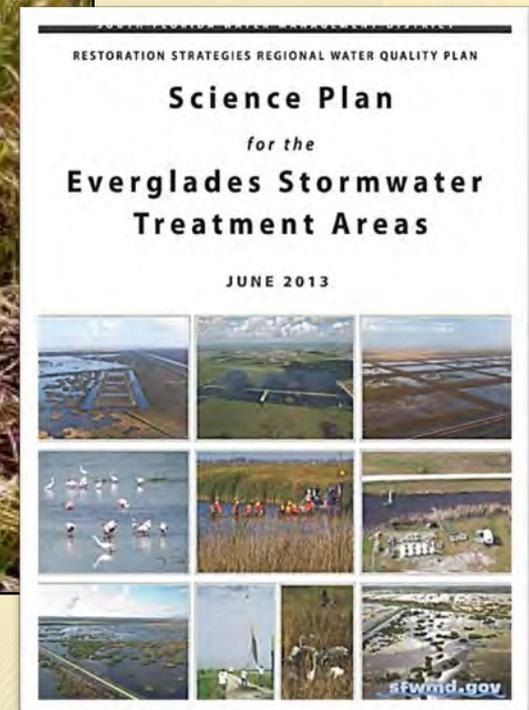
Includes preliminary data

Everglades Stormwater Treatment Areas Current Conditions

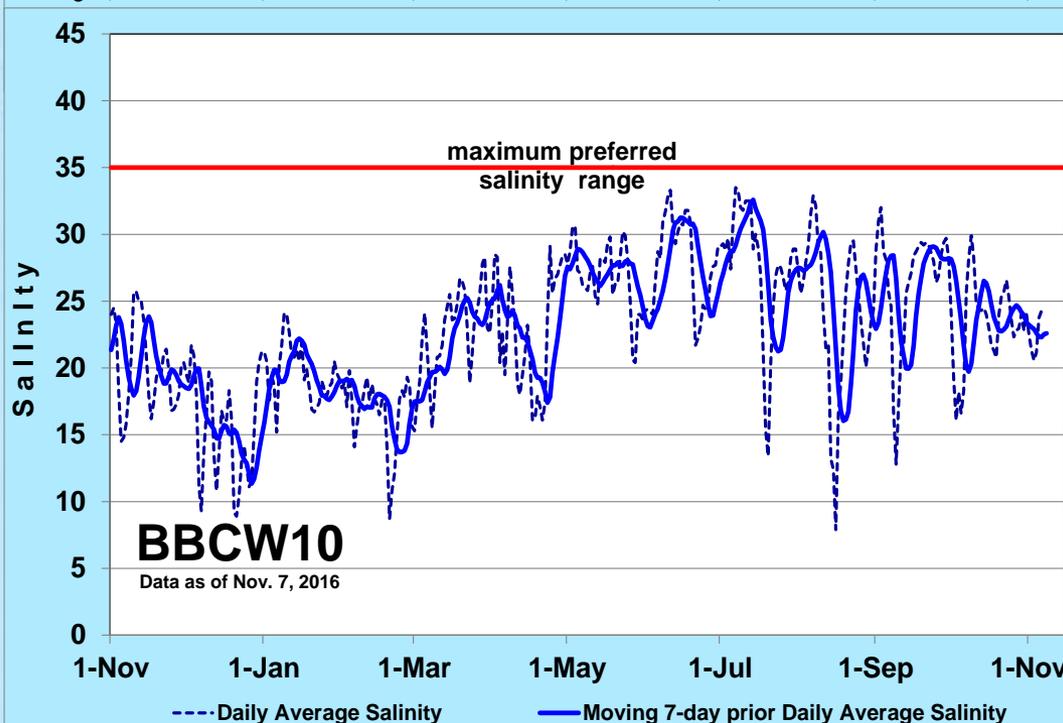
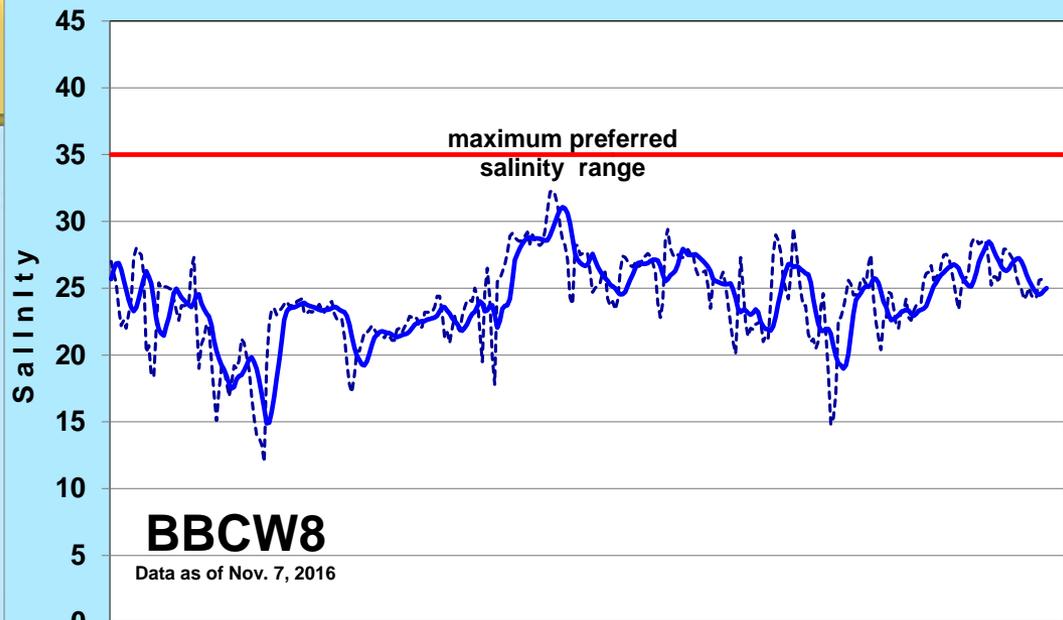
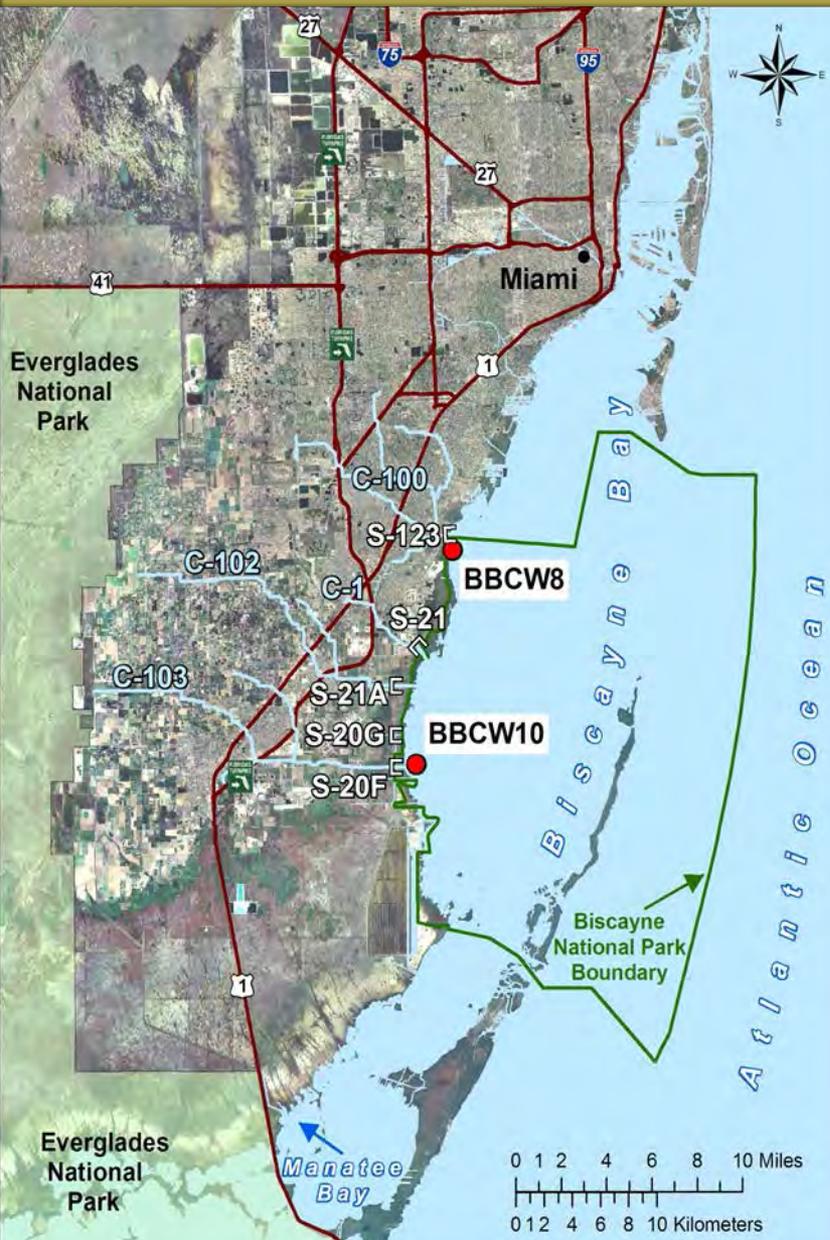
Recent observed impacts of extended deep water conditions on STA vegetation health and sustainability



Photograph taken on October 13, 2016



Biscayne Bay Salinity

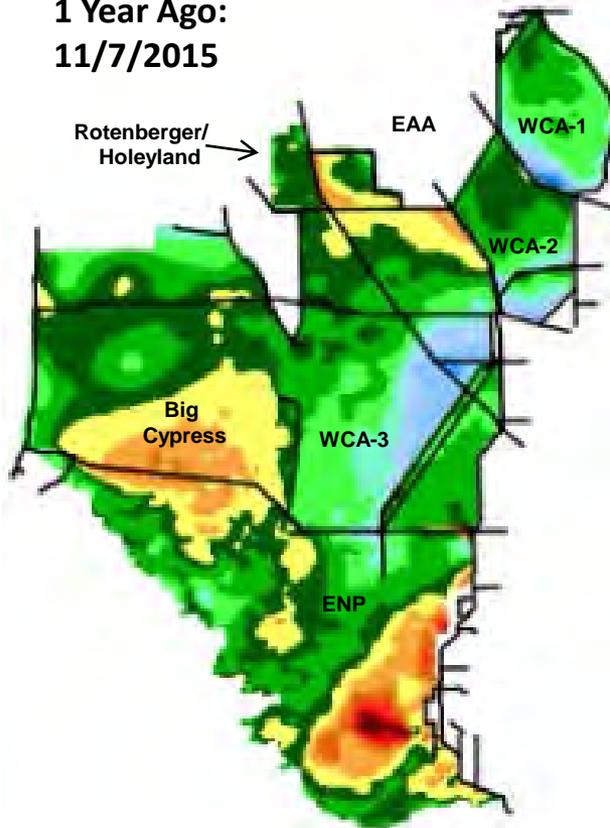


--- Daily Average Salinity

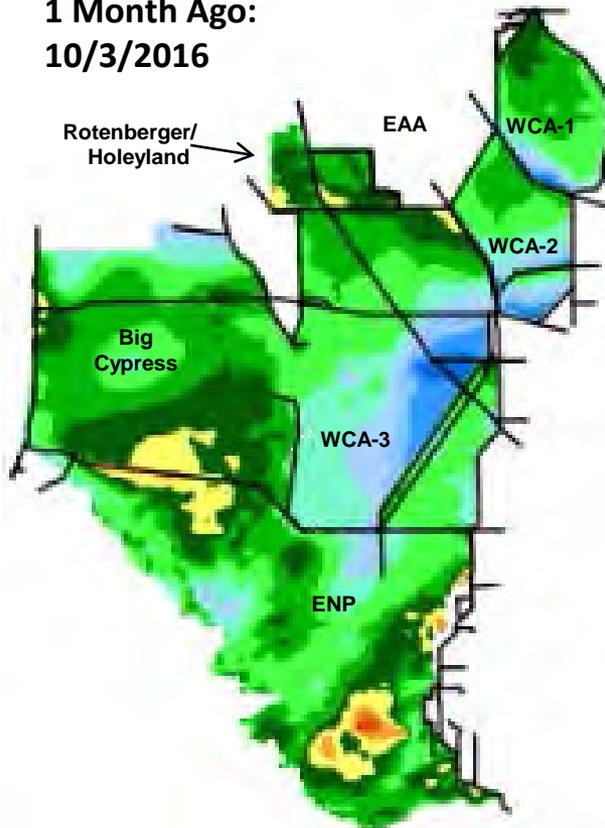
— Moving 7-day prior Daily Average Salinity

Everglades Water Depth Maps

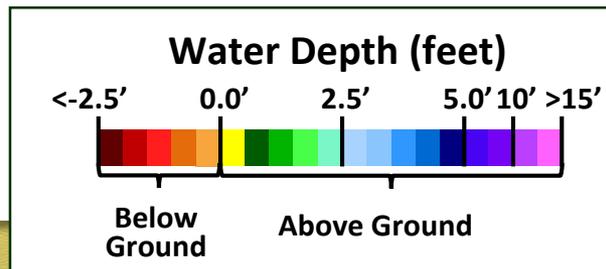
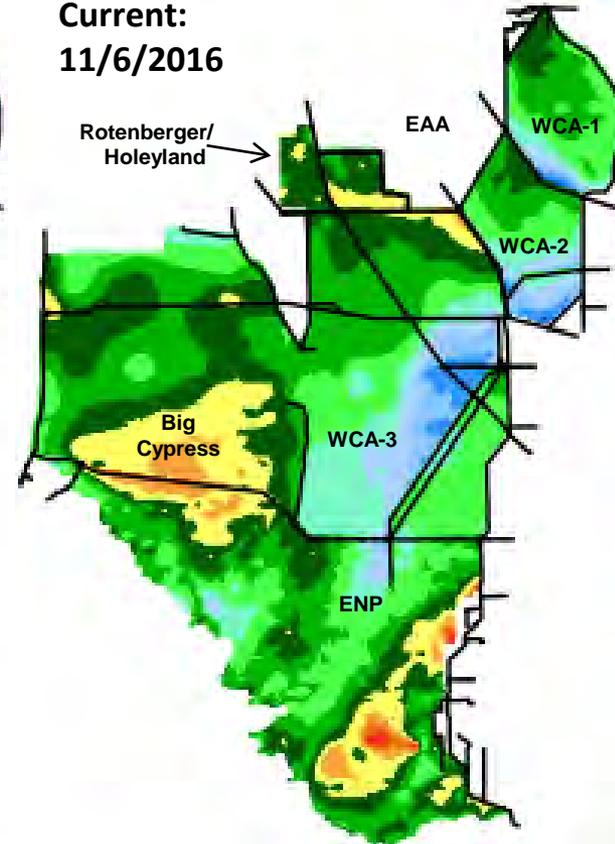
1 Year Ago:
11/7/2015



1 Month Ago:
10/3/2016

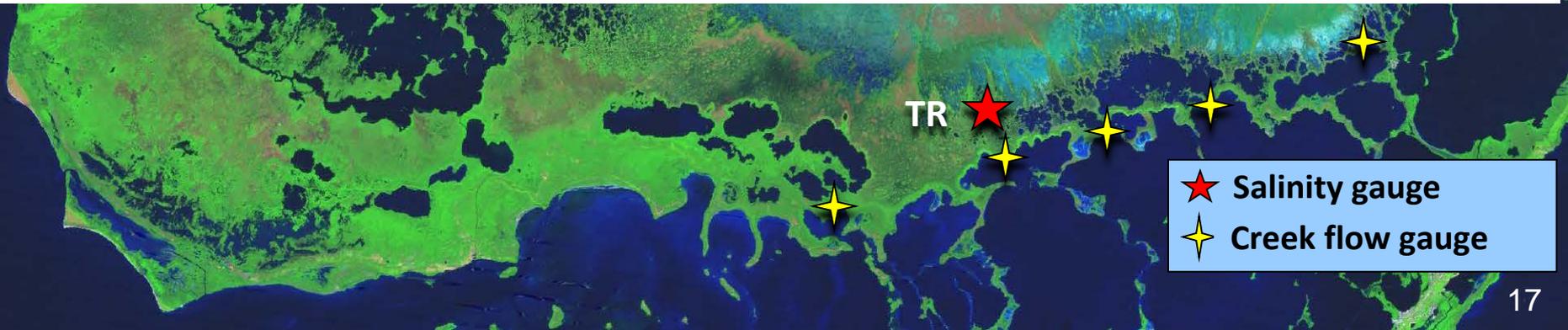
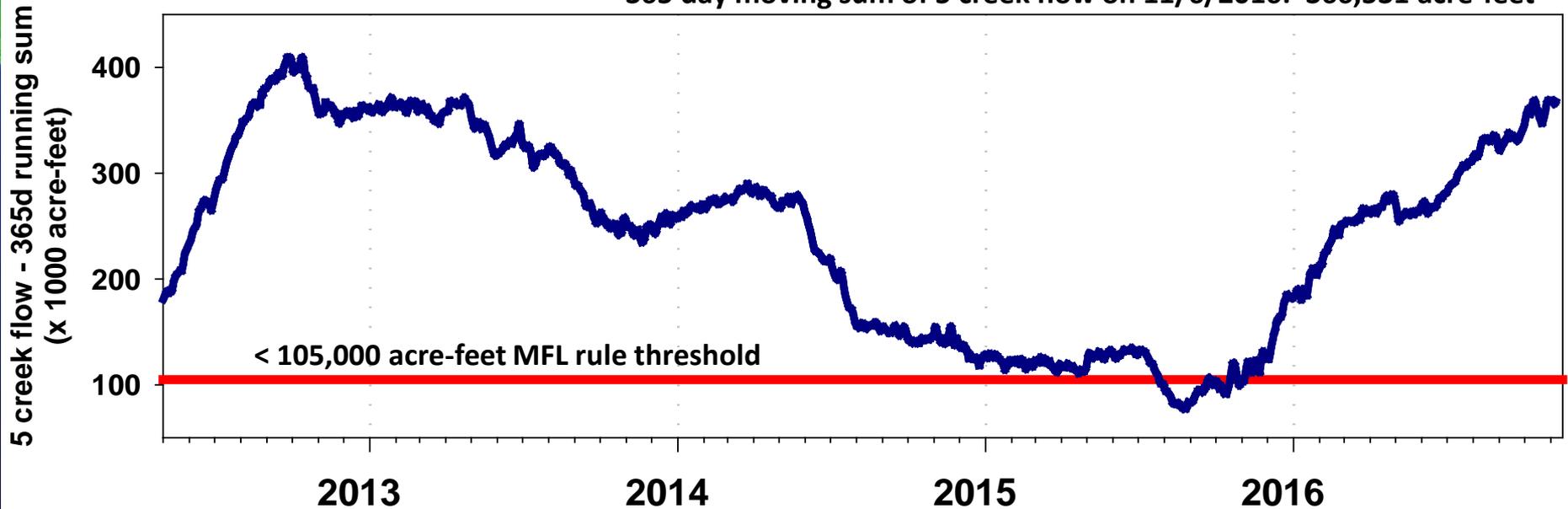


Current:
11/6/2016

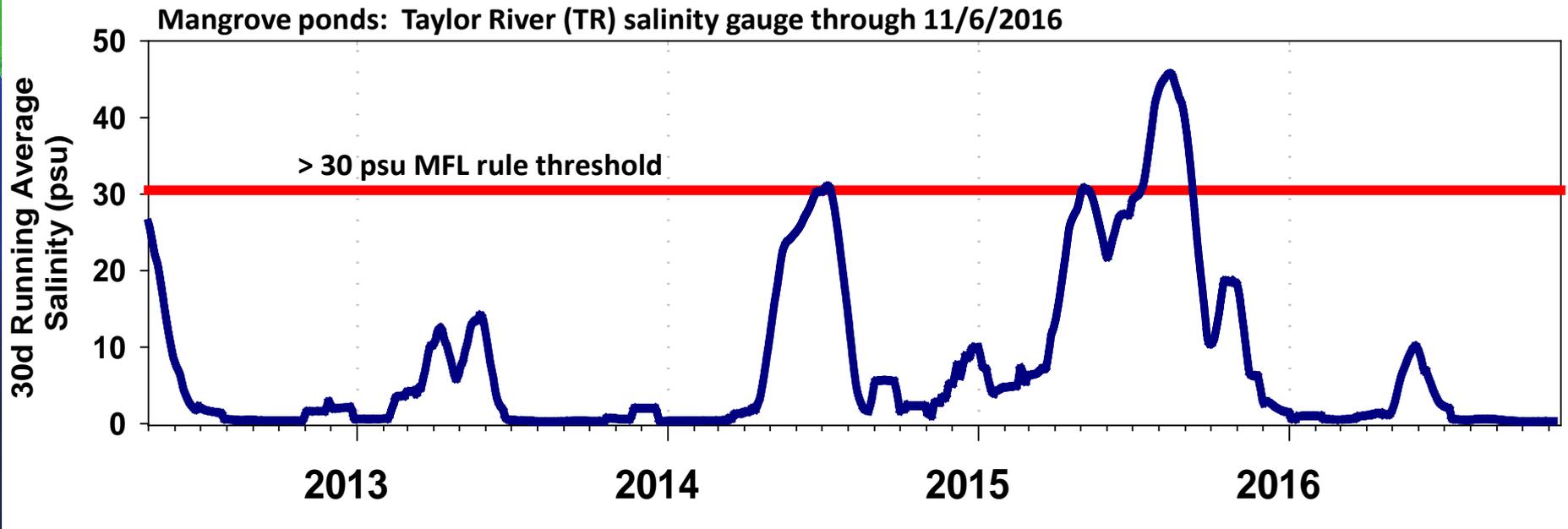


Florida Bay Flow Update

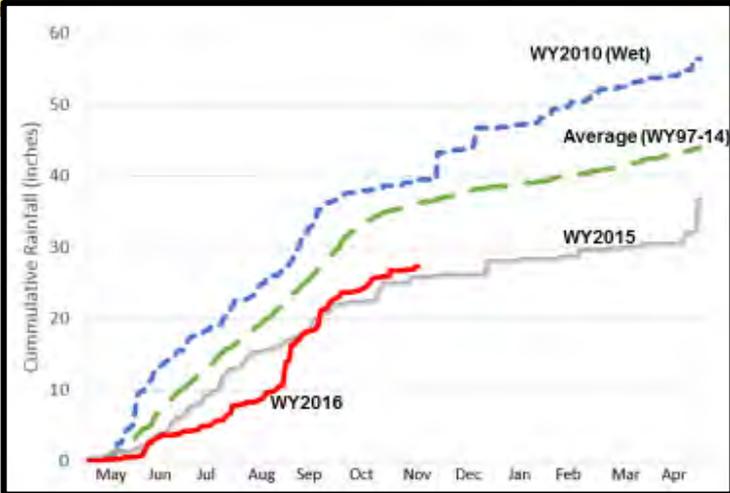
365 day moving sum of 5 creek flow on 11/6/2016: 366,531 acre-feet



Florida Bay Salinity Update

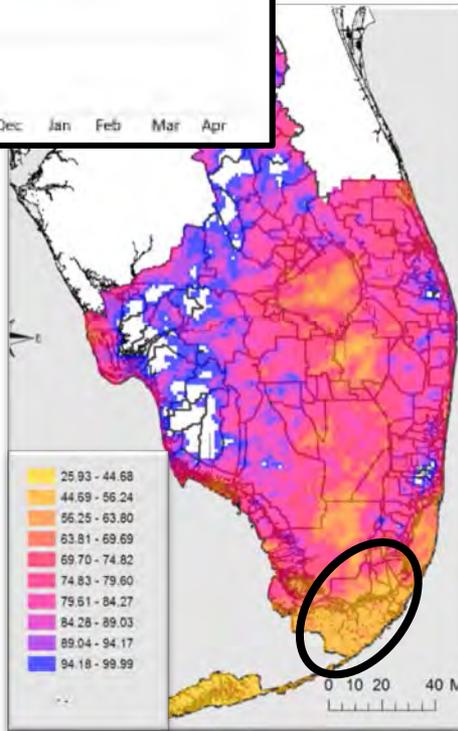


Central Florida Bay

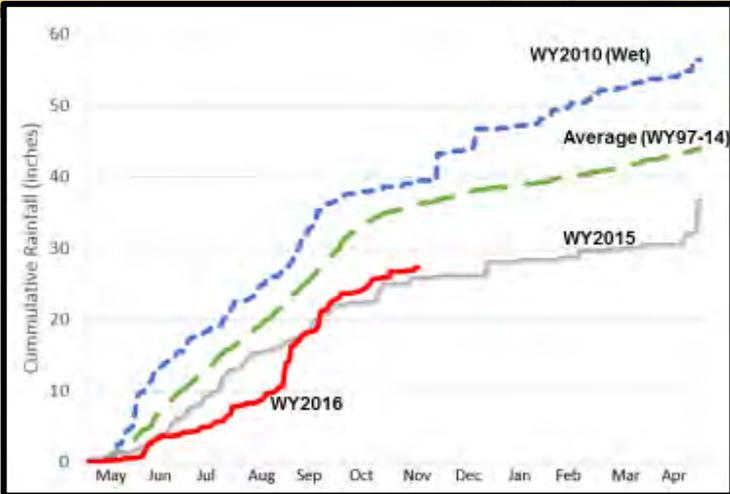


May 2014- Oct 2015

18 consecutive months of well below average rainfall across southern Everglades and Florida Bay

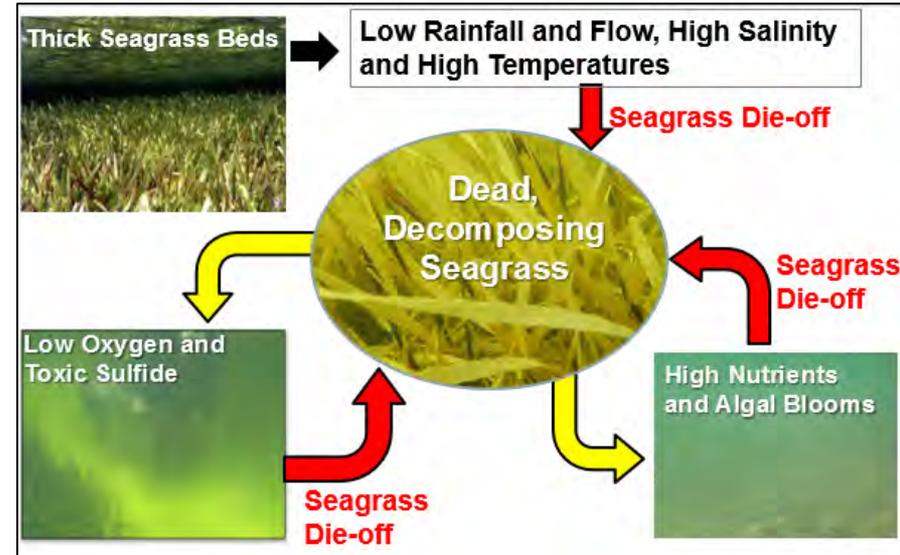
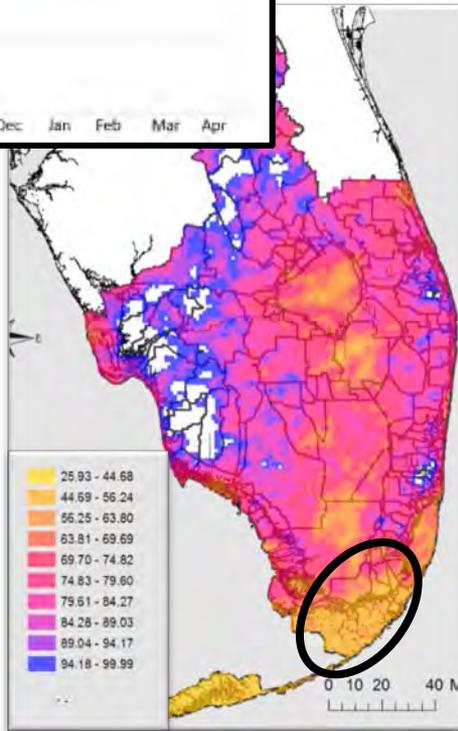


Central Florida Bay



May 2014- Oct 2015

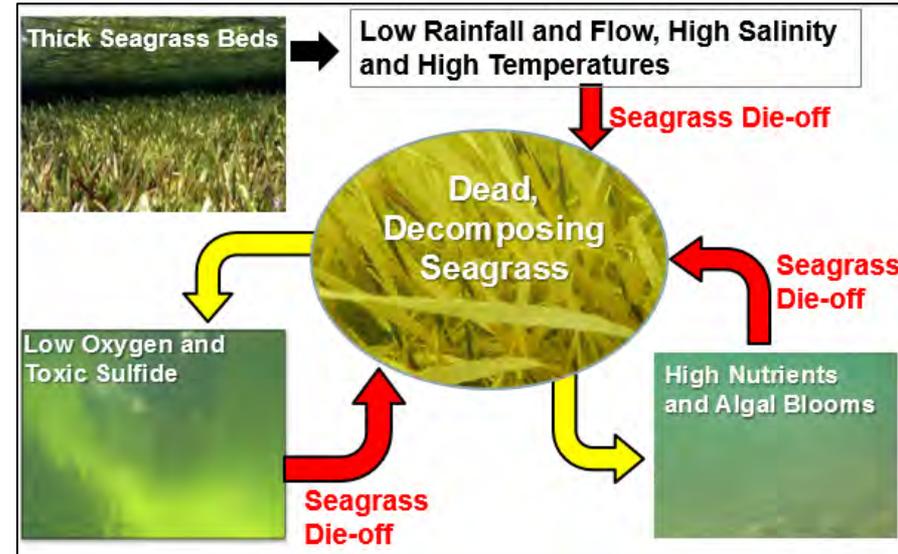
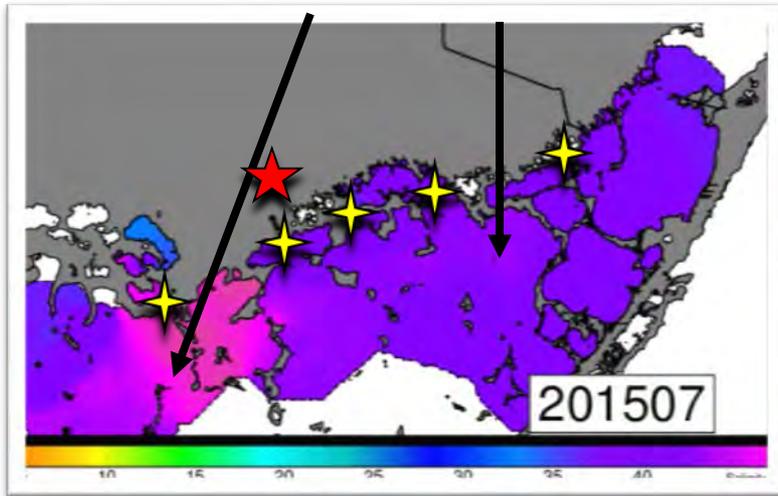
18 consecutive months of well below average rainfall across southern Everglades and Florida Bay



'Cascading Effects' Loop

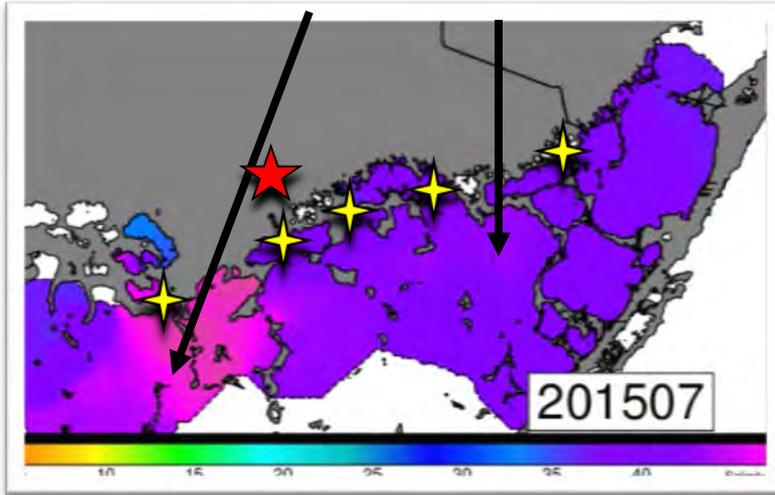
Central Florida Bay

Hypersalinity in Central & Northeastern Bay

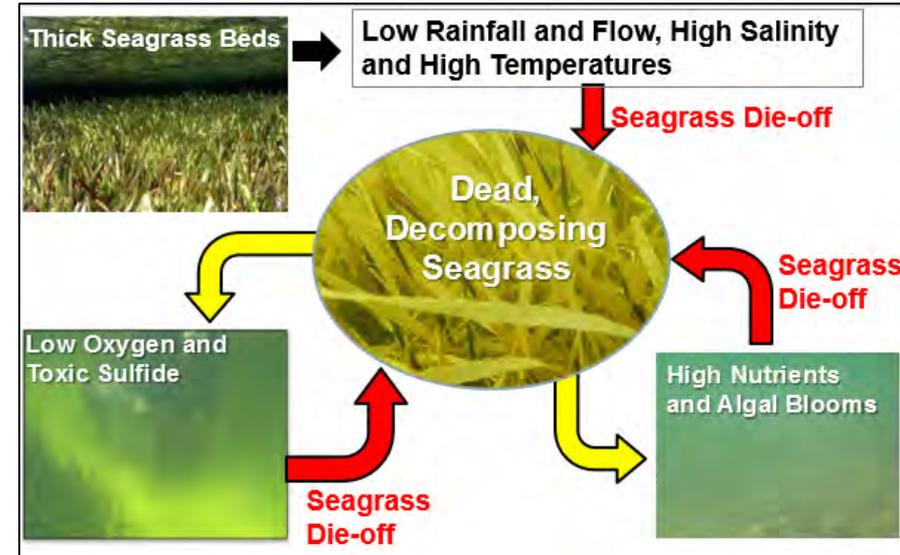
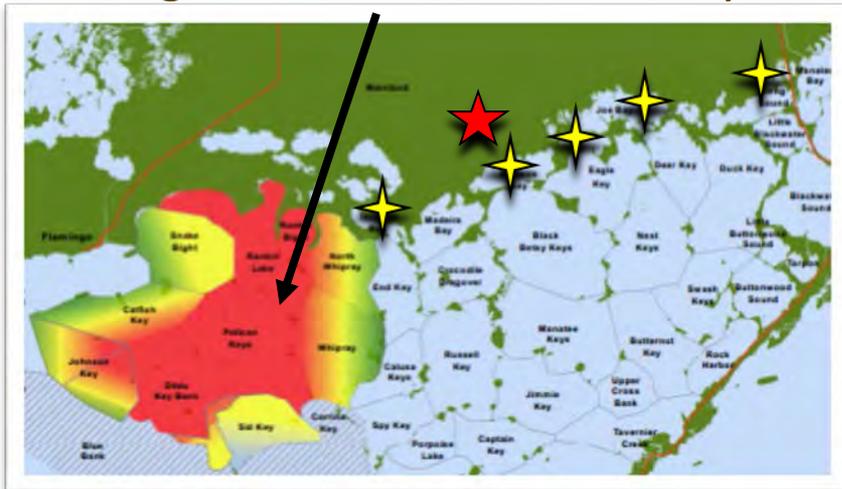


Central Florida Bay

Hypersalinity in Central & Northeastern Bay

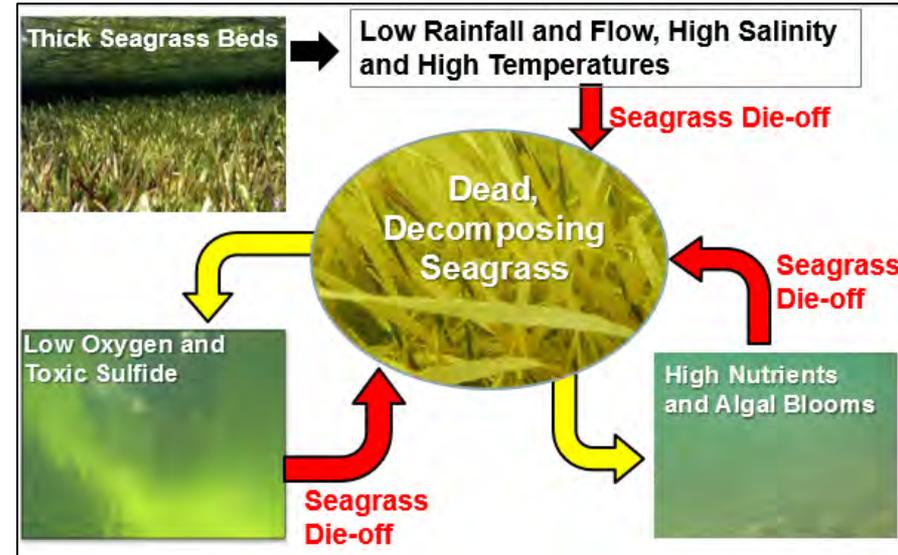
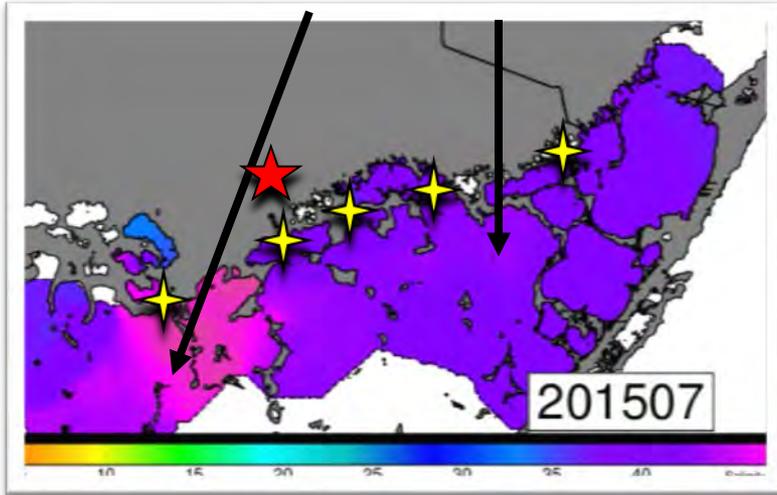


Seagrass Die-off in Central Bay

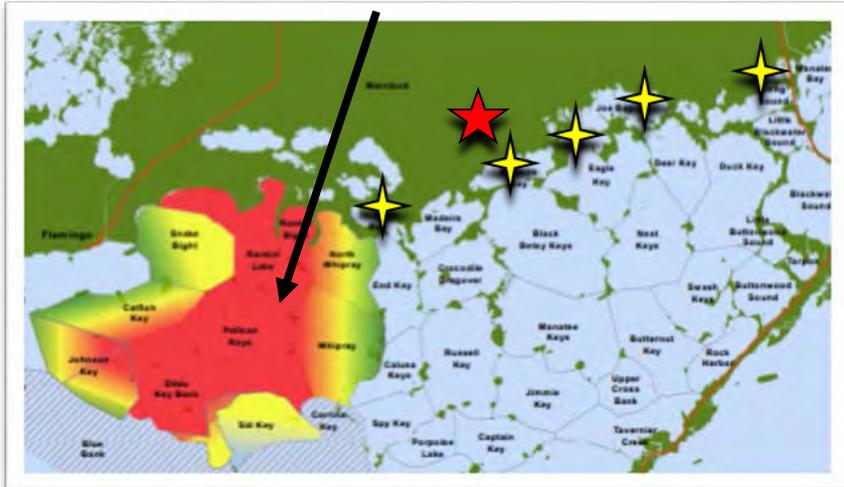


Central Florida Bay

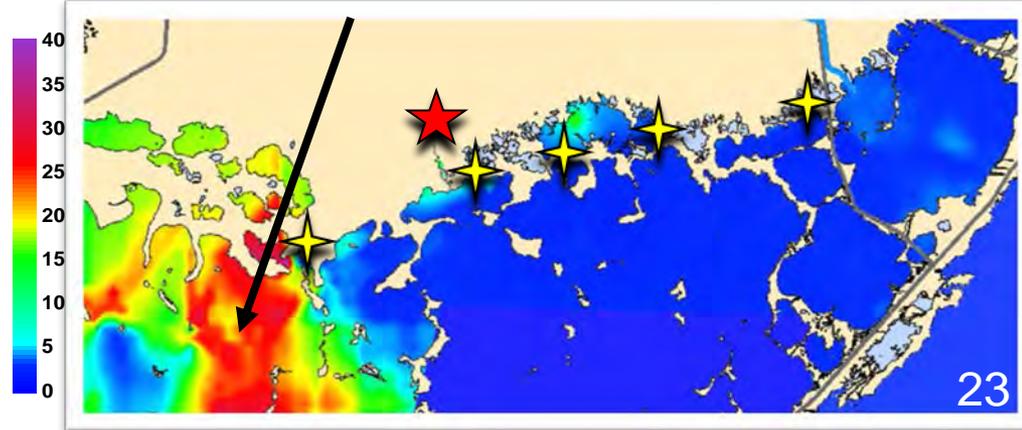
Hypersalinity in Central & Northeastern Bay



Seagrass Die-off in Central Bay



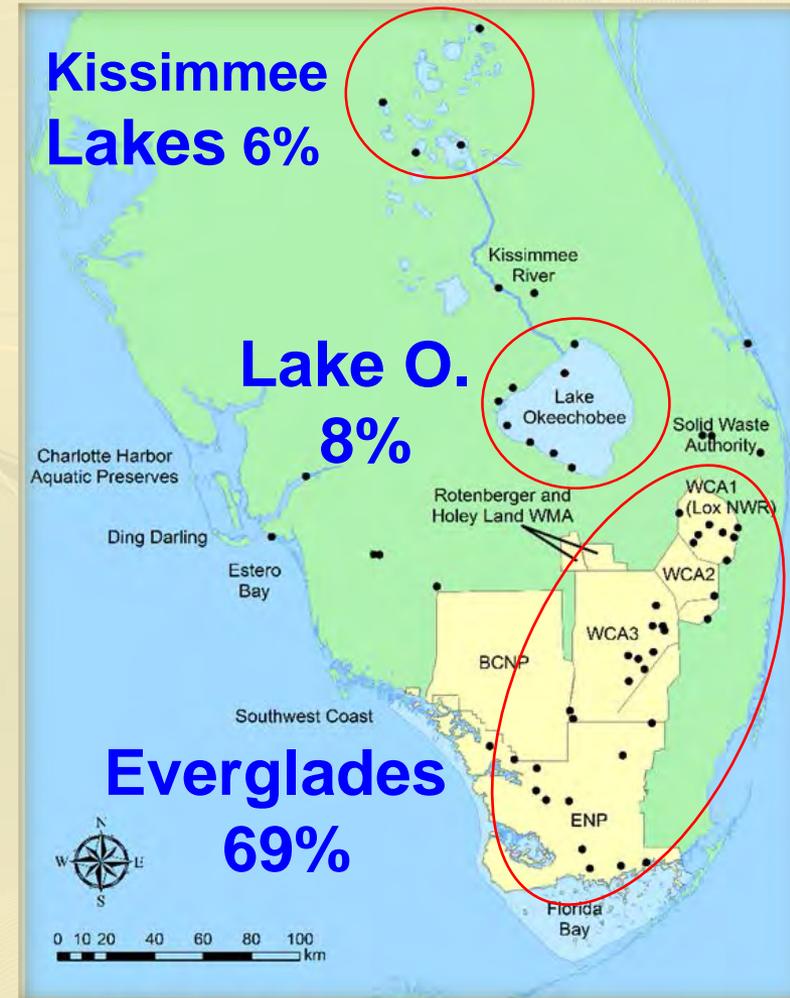
Algal Bloom in Central Bay (Chlorophyll a ug/l)



South Florida Wading Bird Report 2016

27,051 nests in South Florida in 2016

- Relatively poor nesting season
- 37% fewer nests than 10-yr average
- Second lowest count since 2000
- All species exhibited reduced nesting effort
- Most nesting (18,637 nests) occurred in the Everglades Protection Area



Distribution of nests in 2016

Nesting Effort in the Everglades

Annual Total Number of Nests for the CERP Indicator Species in the Everglades



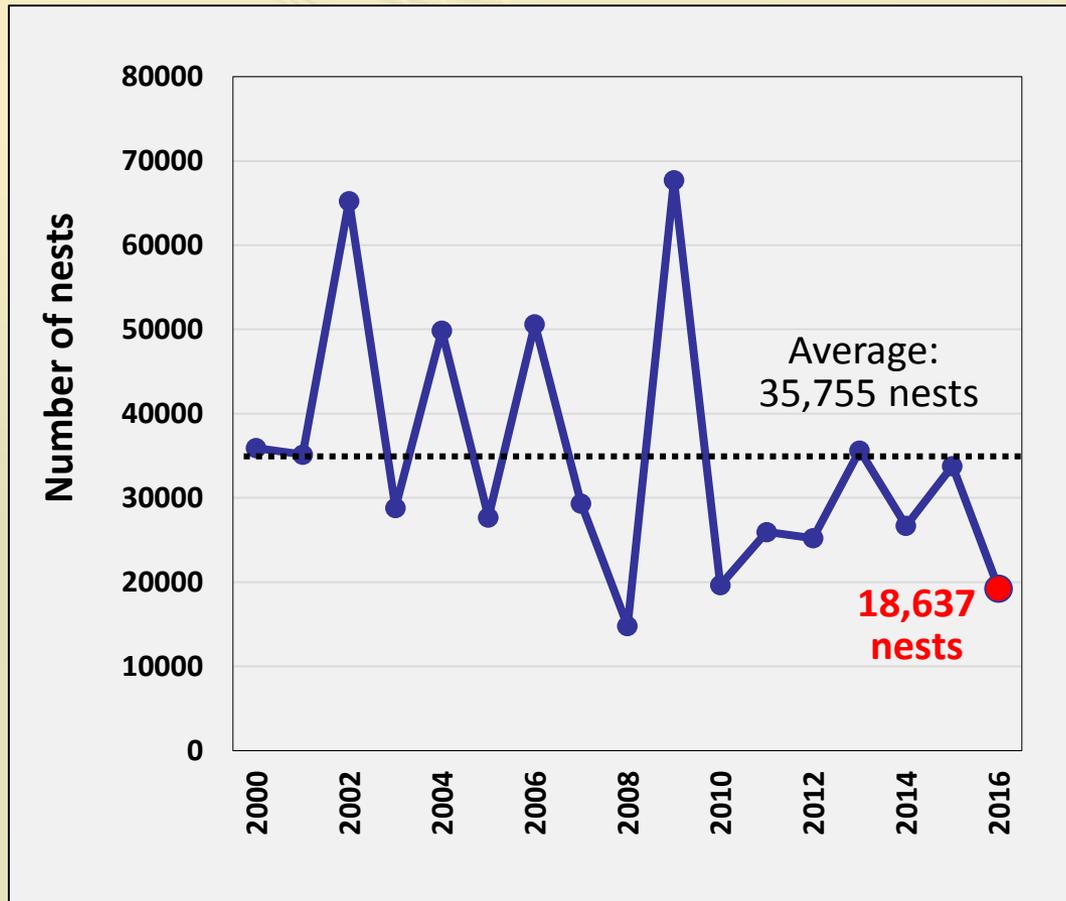
White Ibis



Great Egret



Wood Stork

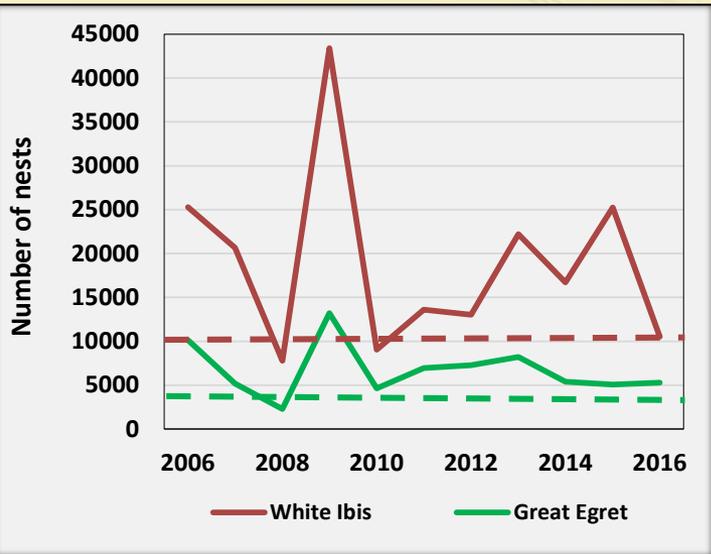


Snowy Egret



Tricolored Heron

Individual Species Trends in the Everglades



2016 v. 10-yr average

-47%



Long-term trend and CERP status

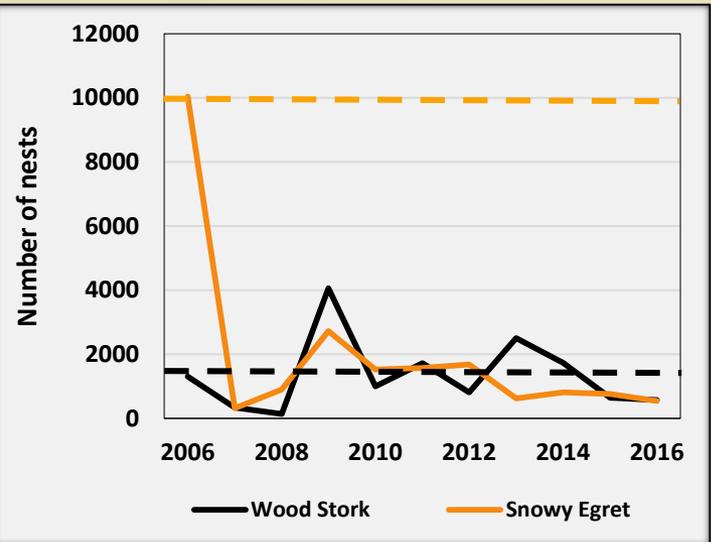
Stable, meeting target



-23%



Stable, meeting target



-60%



Stable, meeting target

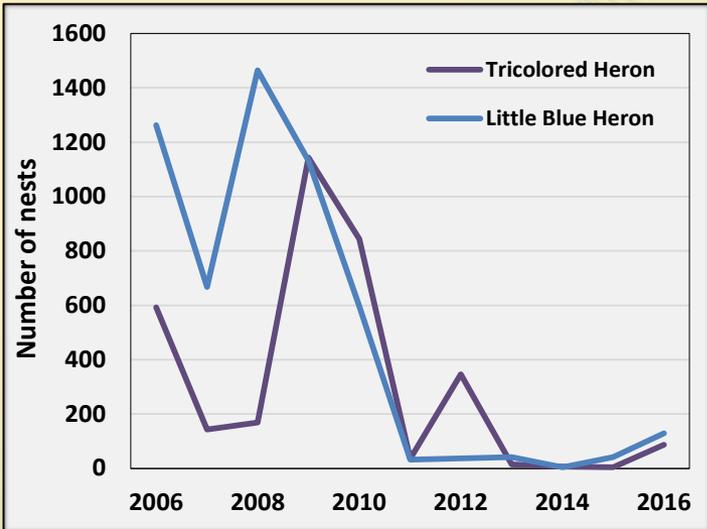


-74%



Declining, not meeting target

Nesting Effort Trends in the Everglades



2016 v. 10-yr average

-74%



Long-term trend and CERP status

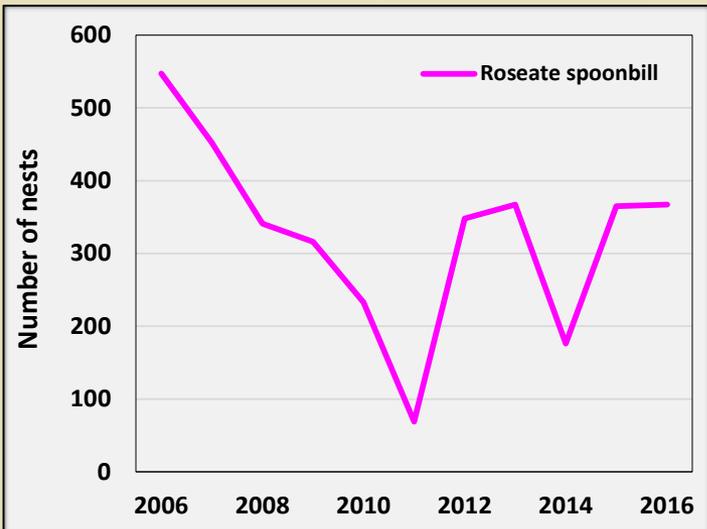
Declining, not meeting target (10,000 nests)



-77%



Declining



8%



Stable, not meeting target in Florida Bay (1258 nests)

2016 Snail Kite Nesting Highlights*

Snail Kite counts & reproductive indices highest on record since standardized monitoring started in 1992

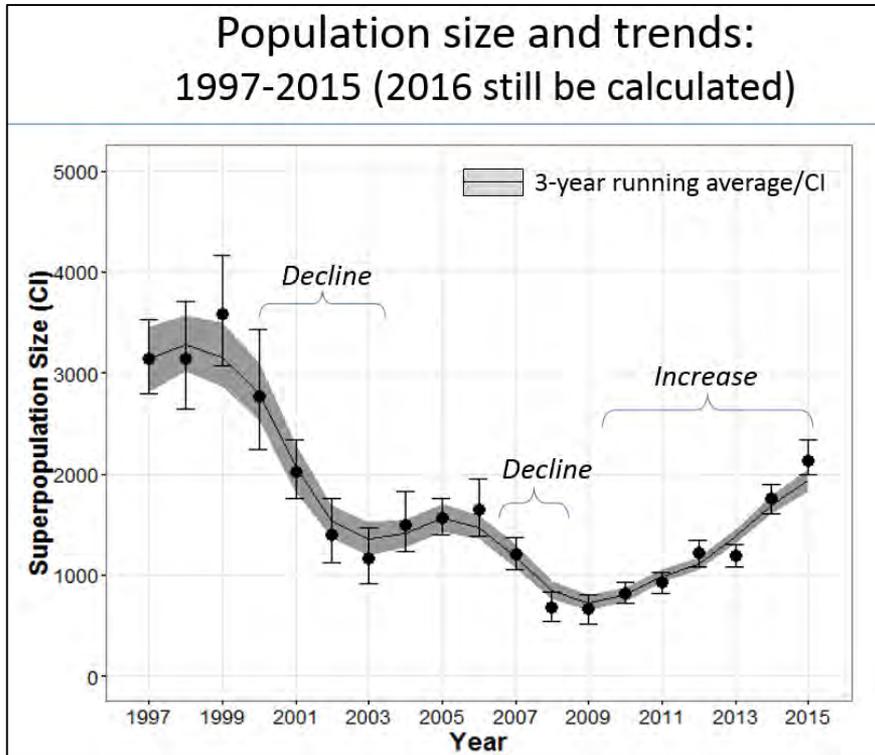


Photo Credit:
R.E. Fletcher

- More birds counted during surveys
- More birds re-sighted
- More nests found
- More fledglings produced
- More birds banded

*Fletcher, R.E. et al. 2016 Update on Snail Kite Nesting Population Monitoring. Florida Cooperative Fish & Wildlife Research Unit, Univ of Florida. Snail Kite Coordinating Committee Meeting 10/2016

Population & Nesting Trends*



Foraging Snail Kite

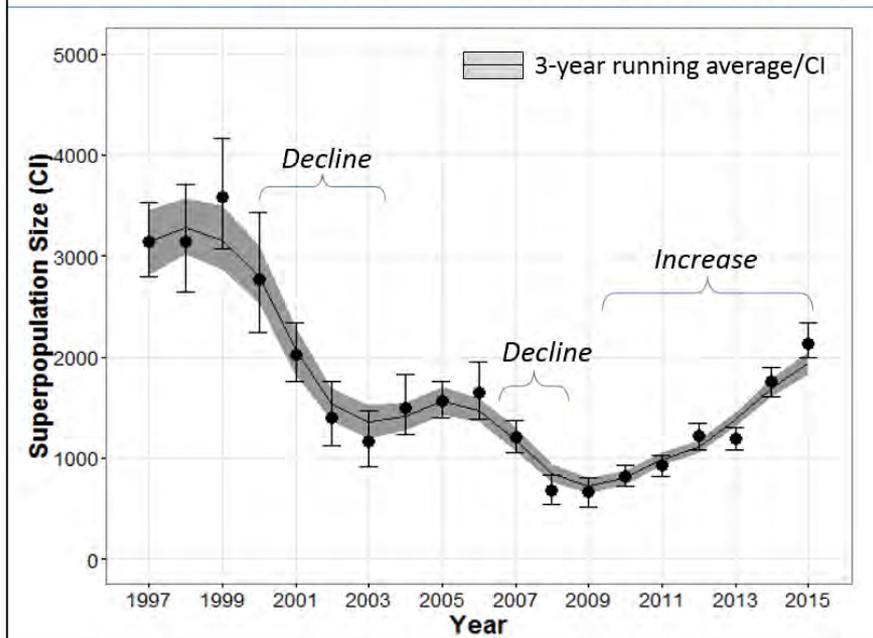


Exotic Apple Snail Shells

*Fletcher, R.E. et al. 2016 Update on Snail Kite Nesting Population Monitoring. Florida Cooperative Fish & Wildlife Research Unit, Univ of Florida. Snail Kite Coordinating Committee Meeting 10/2016

Population & Nesting Trends*

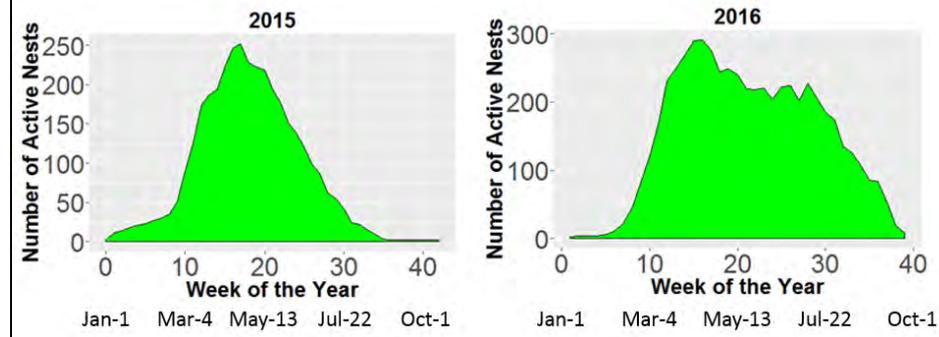
Population size and trends:
1997-2015 (2016 still be calculated)



Trends in nesting:

Longer breeding season in 2016 in comparison to the past few years

Number of active nests throughout the year

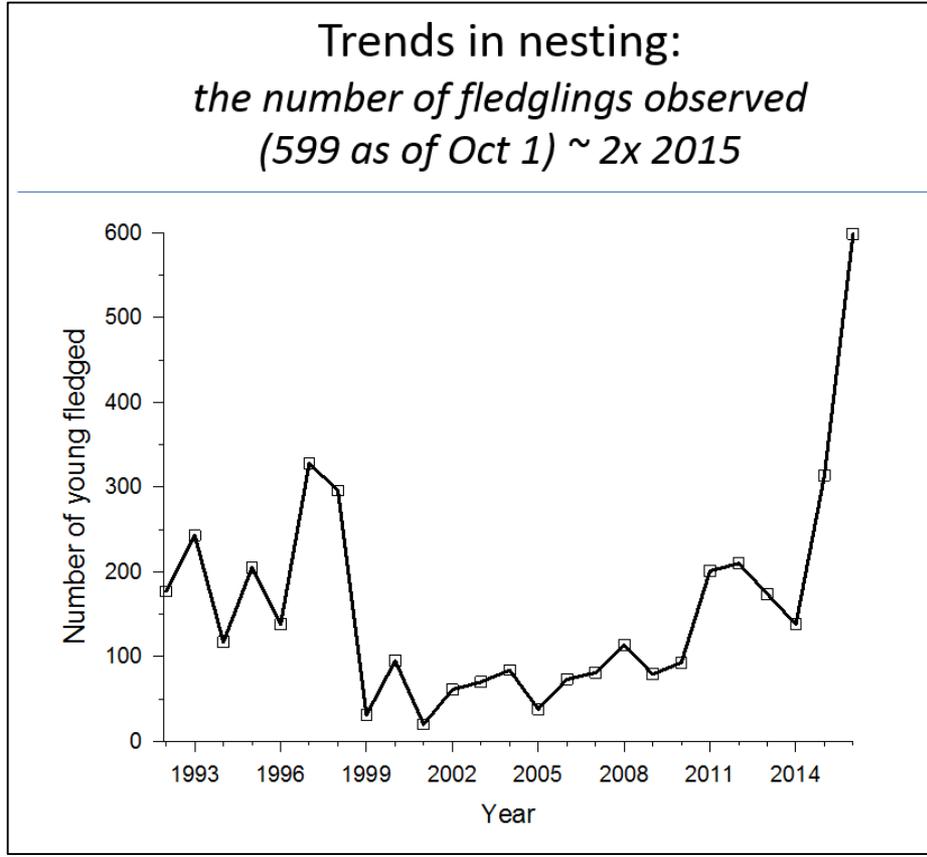
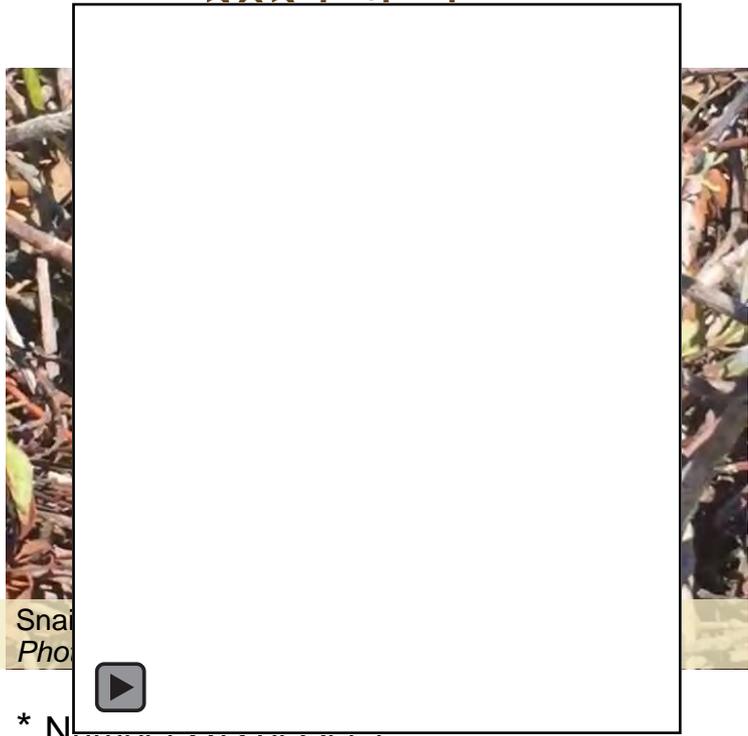


Exotic Apple Snail Shells

*Fletcher, R.E. et al. 2016 Update on Snail Kite Nesting Population Monitoring. Florida Cooperative Fish & Wildlife Research Unit, Univ of Florida. Snail Kite Coordinating Committee Meeting 10/2016

Nesting Success & Fledglings

- 771 active nests monitored*
- 700 with known fates:
 - 307 successful
 - 393 failed

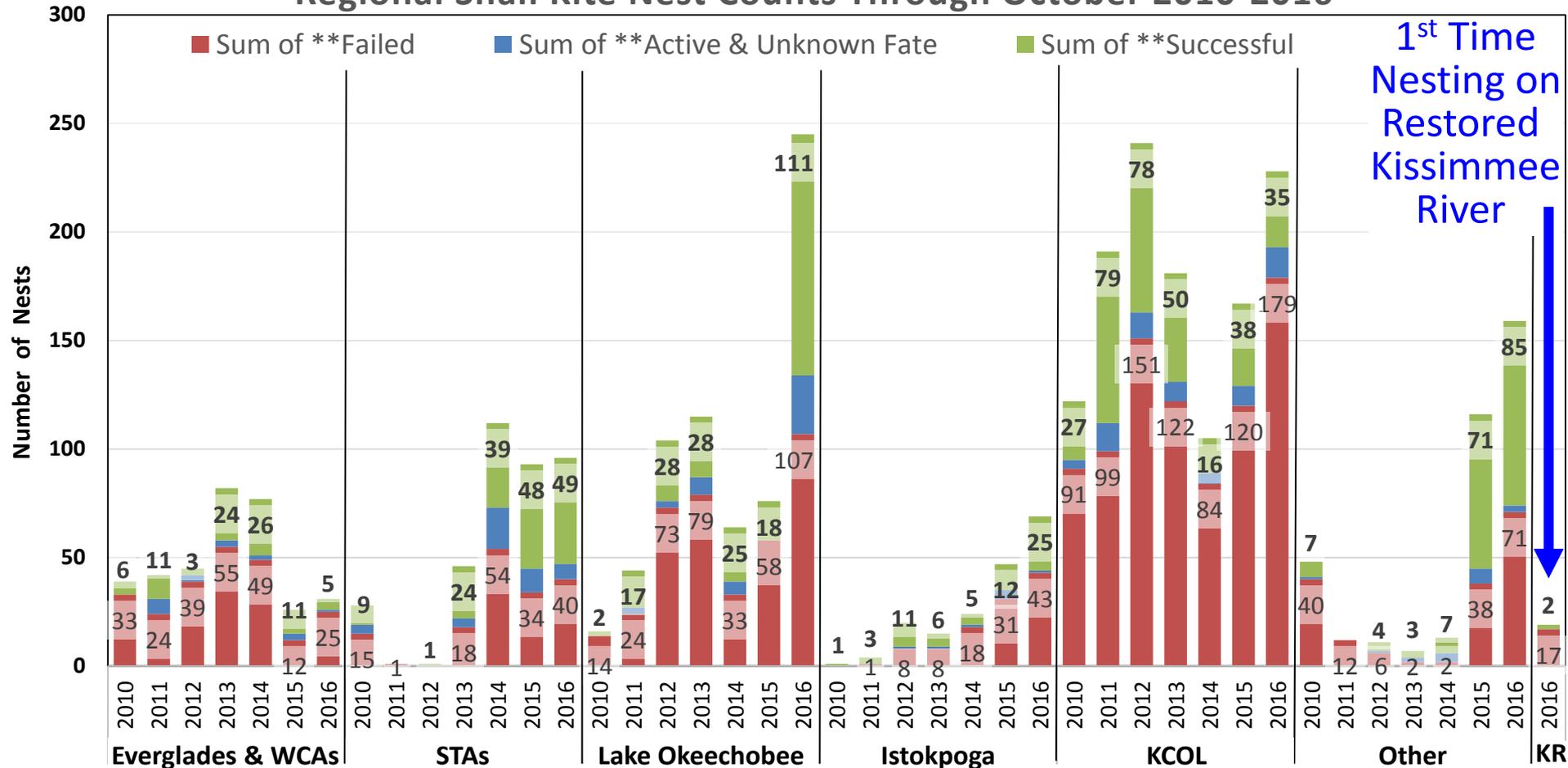


*Fletcher, R.E. et al. 2016 Update on Snail Kite Nesting Population Monitoring. Florida Cooperative Fish & Wildlife Research Unit, Univ of Florida. Snail Kite Coordinating Committee Meeting 10/2016

* Numbers as of Oct 1
Still active nest sites being monitored

Regional Snail Kite Nest Counts

Regional Snail Kite Nest Counts Through October 2010-2016



1st Time Nesting on Restored Kissimmee River

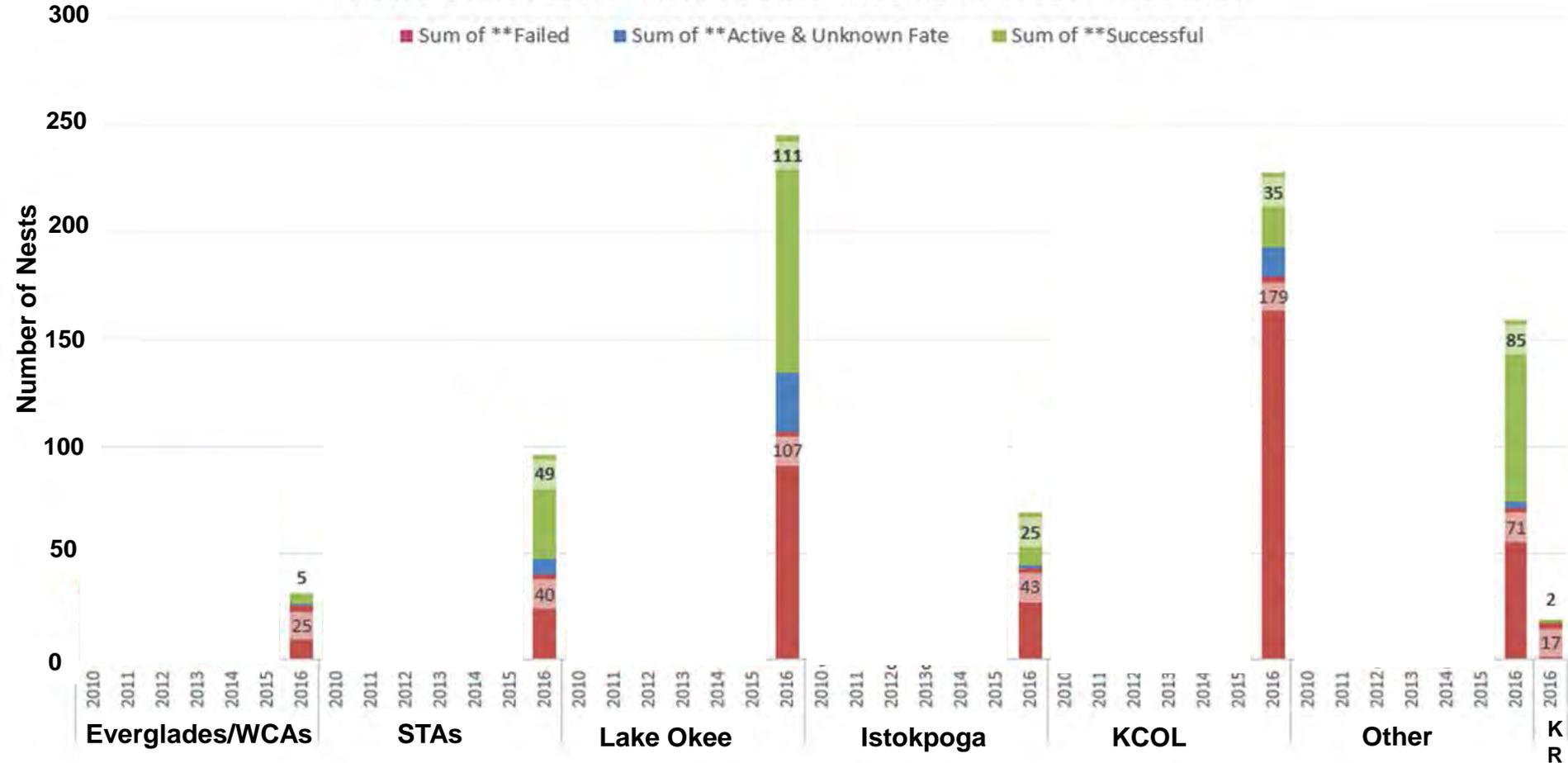
*STAs includes Ten Mile Creek

*Other: St. Johns Marshes (Mary A, Fellsmere Lake, Blue Cypress Marshes), Hungryland WMA, Grassy Waters, Harnes Marsh, Misc small lakes

Regional Snail Kite Nest Counts

REGIONAL SNAIL KITE NEST COUNTS THROUGH OCTOBER 2016

Sum of **Failed Sum of **Active & Unknown Fate Sum of **Successful



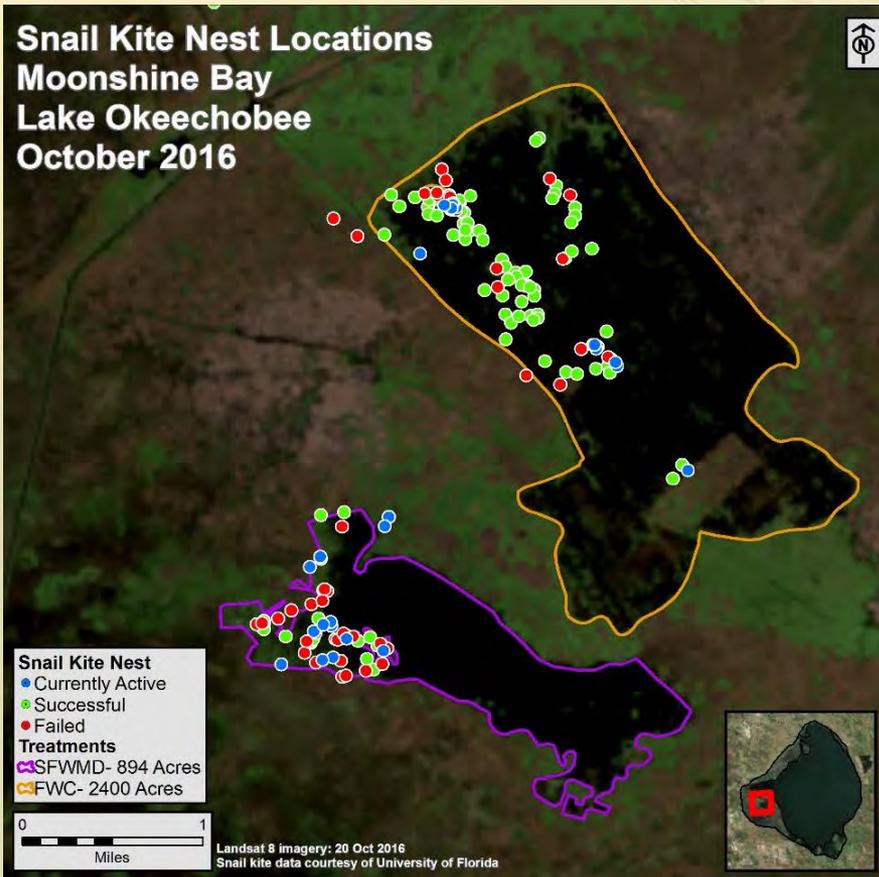
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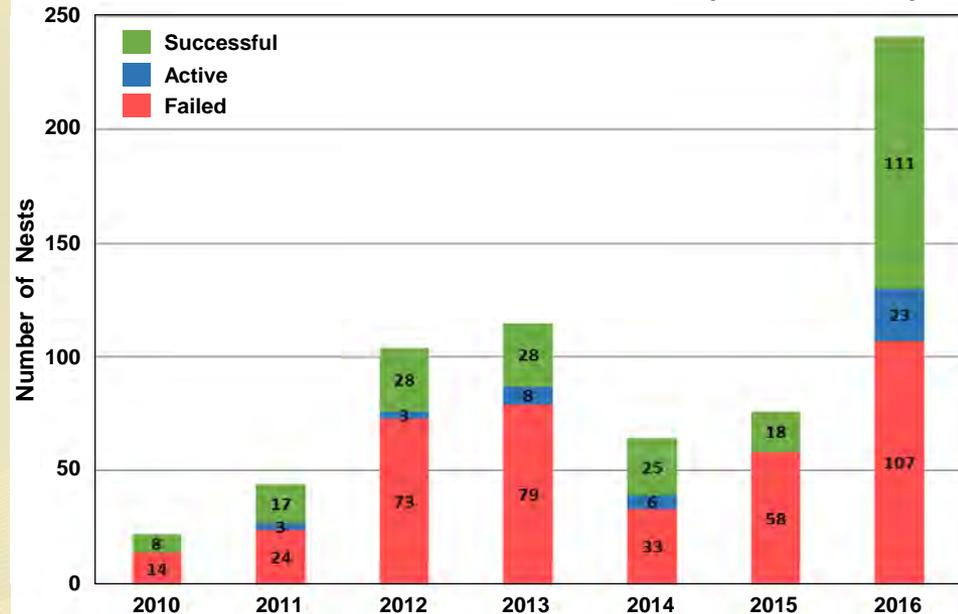
Lake Okeechobee Snail Kites

October Survey

- Total Nests – 245
- Successful – 111
- Still Active – 23
- Failed – 107 (+4 unknown)



Lake Okeechobee Snail Kite Nests (2010 – 2016)





Questions?

