

MEMORANDUM

To: USACE Colonel Andrew D. Kelly, LTC Jennifer A. Reynolds, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Ernie Marks, Terrie Bates, Susan Gray, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants
 Paul Tritaik - J.N. "Ding" Darling National Wildlife Refuge (NWR) Complex
 James Evans & Holly Milbrandt - City of Sanibel
 Keith Kibbey & Lesli Haynes - Lee County
 Rae Burns – Town of Fort Myers Beach
 Harry Phillips – City of Cape Coral
 Rae Ann Wessel & Rick Bartleson, Ph.D.-Sanibel Captiva Conservation Foundation

Subject: Caloosahatchee & Estuary Condition Report

Reporting Period: **November 27 - December 3, 2018**

This report provides a scientific assessment of Caloosahatchee River and Estuary conditions and how these conditions affect the health, productivity and function of the system.

Caloosahatchee Condition Summary: **Cyanobacteria persists in Lake Okeechobee and at Lee County sample sites along the Caloosahatchee and estuary.** The weekly average flow to the Caloosahatchee at S79 decreased to **919 cfs**. **Red tide persists along the SW coastline causing fish kills and respiratory irritation on area beaches.**

USACE Action: On 10/26/18 the U.S. Army Corps of Engineers initiated a 7-day average pulse release of 1,000 cfs measured at S-79, the WP Franklin Lock & Dam. No Lake releases are directed to the St. Lucie Lock & Dam at S-80.

Recommendation: With salinities stabilizing at Fort Myers, we recommend dry season flows to the Caloosahatchee be maintained between 800 - 1,000 CFS to prevent salinities above 10 PSU at the Fort Myers Yacht Basin. We encourage the Corps and SFWMD to allow the lake to drop lower than average by the start of the next rainy season to improve the ecology of the lake and protect the estuaries from harmful high-flow discharges associated with the impending el Niño.

Lake Okeechobee Level: 13.02 ft. (Base Flow Sub-Band) Last week: 13.22 ft.

Lake Okeechobee Inflow: 280 cfs

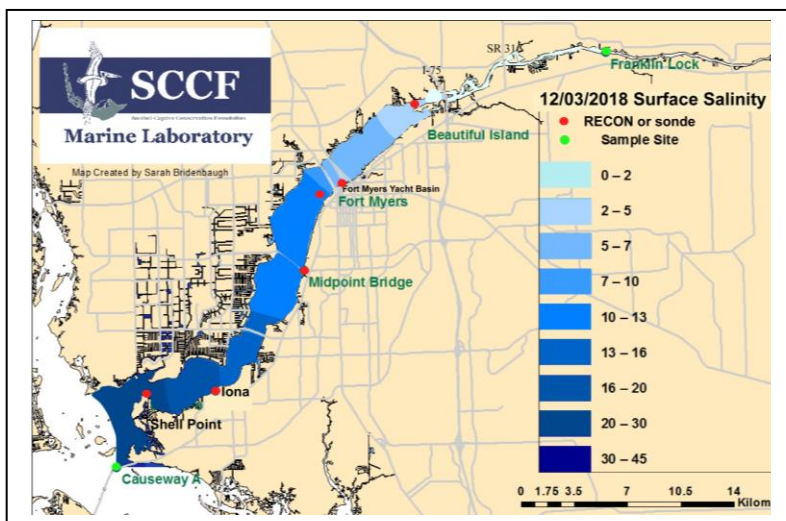
Lake Okeechobee Outflow: 3,156 cfs

Weekly Rainfall: WP Franklin **0"** Ortona **0"** Moore Haven **0"**

Salinity Beautiful Island: ND (SCCF RECON Marker 18) **Previous week ND**

Salinity Fort Myers: 6.5 – 15 psu (SCCF RECON) **Previous week 9.0 – 15 psu**

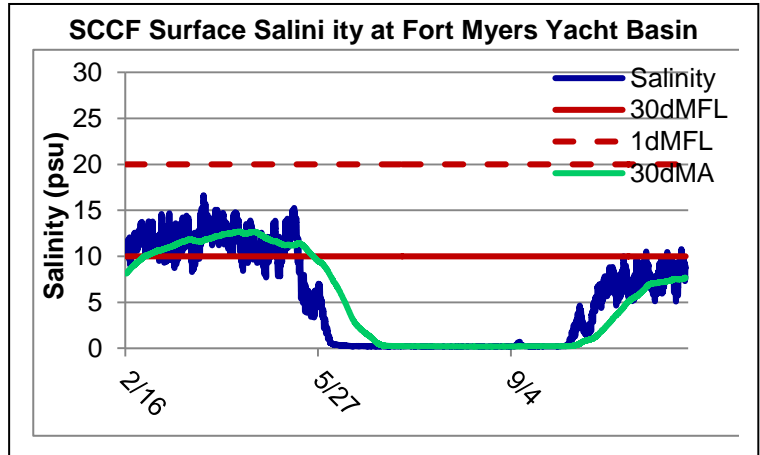
Salinity Shell Point: 19 – 33 psu (SCCF RECON) **Previous week 20 – 33 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	ND	< 5 psu	In Range
Fort Myers	6.5 - 15	<10 psu	In Range
Shell Point	19 – 33	25 - 32 psu	In Range
Light (25% I _z depth meters)			
Fort Myers	0.69	1 meter	Low
Shell Point	1.59	2.2 meters	Low
Causeway	2.00	2.2 meters	Low

Flow & Water Quality: Over the past 7 days **45,155 AF** of water was discharged from Lake Okeechobee; **37%** to the Caloosahatchee at **S-77**, - **554 AF** from the St Lucie at **S-80**, **55%** was discharged south to the **EAA**, **6%** was discharged through the **L8** and **2%** was discharged through **S-310**.

ACOE Daily Reports			
Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
11/27/2018	768	737	976
11/28/2018	538	733	1120
11/29/2018	110	236	880
11/30/2018	1106	717	849
12/1/2018	1478	1019	1522
12/2/2018	1333	1036	1554
12/3/2018	1201	988	1485
7 day Avg	919	781	1198



Cyanobacteria bloom: On 12/3/18 the Lee County Environmental Lab found **cyanobacteria blooms of *Microcystis*, *Dolichospermum* and *Planktothrix*** at the **Alva Boat ramp** and ***Microcystis* presence** at the **Davis Boat Ramp**. Sample sent to DEP.

Upstream of S-79/Franklin Conditions: On 11/27/18 the Olga Water Treatment plant reported chlorides of **55 mg/l**, apparent color **92 CU** and turbidity **2.87 NTU**. Trace of algae visible at the plant intake. Plant is online at 2,000 GPM.

Upper Estuary Conditions: The weekly average salinity at the Fort Myers Yacht Basin was **8.1 psu**, in the suitable range for tape grass growing between the Caloosahatchee US 41 Bridges and Beautiful Island.

Lower Estuary Conditions: The average salinity at Shell Point was **29 psu**, in the suitable range for oysters and seagrasses. **Hypoxia was recorded at Shell Point twice during the week.**

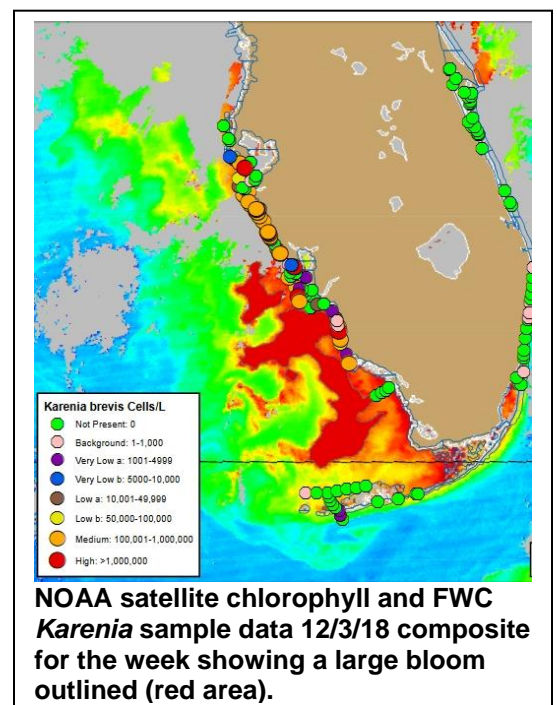
J.N. "Ding" Darling NWR:

Monitor Site	Salinity (psu)	Diss O ₂ (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	31.2 – 33.5	3.8 – 10.2	5.6 – 14.7	1.6 – 3.4
Tarpon Bay	29.6 – 34.1	4.4 – 7.8	7.8 – 33.9	1.7 – 4.9

Red Tide: On 11/30/18 the Florida Fish and Wildlife Conservation Commission reported **patchy blooms of the Florida red tide organism, *Karenia brevis***, on Florida's Southwest coast. High concentrations, **>1,000,000 cells/liter** were recorded in **Pinellas, Sarasota, Charlotte and Lee counties** and medium concentrations in **Manatee and Collier counties**. Sanibel Sea School and SCCF found low and medium concentrations at Sanibel's Lighthouse, Donax, Bowman's and Tarpon Beaches. A NOAA satellite image shows a large area of *Karenia* offshore of Southwest Florida.

Wildlife Impacts: **The past week SCCF recovered 1 dead loggerhead on Captiva. CROW**, the wildlife hospital on Sanibel treated **25 new patients with red tide symptoms; 6 double crested cormorants, 6 laughing gulls, 6 royal terns, 2 brown pelicans, 2 black scoters, 1 white pelican, 1 osprey and 1 lesser scaup. Twelve died.**

Shellfish Harvesting: Closed on 11/20/18: **#6222 Pine Island Sound Section 2 (Matlacha Pass) Shellfish Harvest Area**, due to red tide.



Caloosahatchee Stations	Chlorophyll ($\mu\text{g/L}$)	fDOM (qse)	Turbidity (NTU)	25% lo depth (meters)
Target Values	< 11	CE <70 SCB <11	CE < 18 SCB < 5	CE = 1 m SCB = 2.2m
Fort Myers	15.1	225	3.3	0.69
Shell Point	3.2	66.5	1.4	1.59
Causeway	3.2	36.1	1.5	2.00

Target light penetration: CE- Caloosahatchee Estuary = 1 m
 SCB- San Carlos Bay = 2.2 meters
 Definition of 25% I_z: z where I is 25% of surface I.
 I = irradiance, z = depth

Dead wildlife: Caloosahatchee, estuary, canals, back bays, Sanibel, Fort Myers beaches & Islands

Lee County has removed 2,200 tons of dead marine life. Sanibel = 425 tons

Ongoing list not comprehensive **Endangered/Threatened Species**

American eels	Grunt sp.	Red snapper
American oystercatcher	Hardhead catfish	Remora
Anchovies	Horseshoe crabs	Reticulate moray
Angel fish	Jack fish sp.	Royal tern
Anhinga	Kemps ridley sea turtle	Sand dollar
Atlantic needlefish	Kingfish	Sanderling
Atlantic spadefish	Lane snapper	Sand Trout
Batfish	Laughing gull	Scaled sardine
Black drum	Lesser scaup	Sheepshead
Black scoter	Loggerhead sea turtle	Seahorses
Black tip shark	Lookdown fish	Shame- faced crab
Blenny	Mackerel	Snook
Blue crabs	Manatees	Snowy plover
Bottlenose dolphin	Mallard ducks	Starfish
Brown pelican	Mangrove snapper	Southern puffer
Bull shark	Mantis shrimp	Southern stargazer
Calico crab	Menhaden	Spanish mackerel
Catfish sp.	Minnows	Spotted eels
Cobia	Moray Eel	Spotted seatrout
Common tern	Muscovy duck	Sting rays sp
Coquina	Mullet sp.	Stone crab
Cowfish	Ornate diamondback terrapin	Striped burr fish
Crevalle jack	Osprey	Threadfin herring
Double crested cormorant	Pale spotted eels	Tarpon
Flounder	Parchment worms	Toadfish
Gafftopsail catfish	Permit	Tri-colored Heron
Goby	Pig fish	Tripletail
Goliath grouper	Pinfish	Whale shark
Green sea turtle	Florida Pompano	Whiting
Grey triggerfish	Red drum/ Redfish	Yellow snake eel
Grouper sp.	Red knot	