

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: **September 25 - October 1, 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 blooms persist within Lake Okeechobee, the Caloosahatchee and estuary. The weekly average flow at S79 decreased to 2,970 cfs, (20 weeks = 140 days) over the high flow harm threshold. Red tide persists along the coast. Sea turtles continue to be heavily impacted by red tide.**

USACE Action: On 9/13/18 the U.S. Army Corps of Engineers maintained discharges from Lake Okeechobee at a constant **3,000 cfs** at WP Franklin Lock & Dam (**S-79**) and a 7 day pulse averaging **1,170 cfs** from the St. Lucie Lock & Dam (**S-80**) with no flows on Saturdays and Sundays.

Recommendation: We request the Corps reduce flows to the Caloosahatchee **to below the 2,800 cfs harm threshold at S-79**, as we transition to the dry season, to reduce significant damage in the estuary. We request the Corps and SFWMD use operational flexibility to maximize water levels in canals south of the lake and **continue to move water south. We encourage transitioning flows down slowly to 800 - 1,000 cfs into the dry season to accommodate strengthening el niño conditions this winter and spring.**

Lake Okeechobee Level: **14.50 ft. (Low Flow Sub-Band)**

Last week: 14.69 ft.

Lake Okeechobee Inflow: **2,212 cfs**

Lake Okeechobee Outflow: **5,504 cfs**

Weekly Rainfall: WP Franklin **0.80"** Ortona **0.72"**

Moore Haven **0.20"**

Salinity Beautiful Island: **0.2 - 0.2 psu** (SCCF RECON Marker 18)

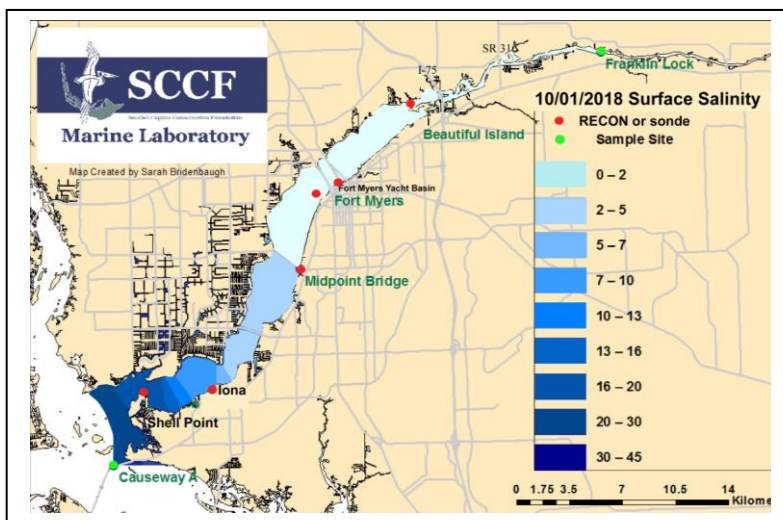
Previous week **0.2 - 0.2 psu**

Salinity Fort Myers: **0.2 - 0.3 psu** (SCCF RECON)

Previous week **0.2 - 0.6 psu**

Salinity Shell Point: **7.6 – 28 psu** (SCCF RECON)

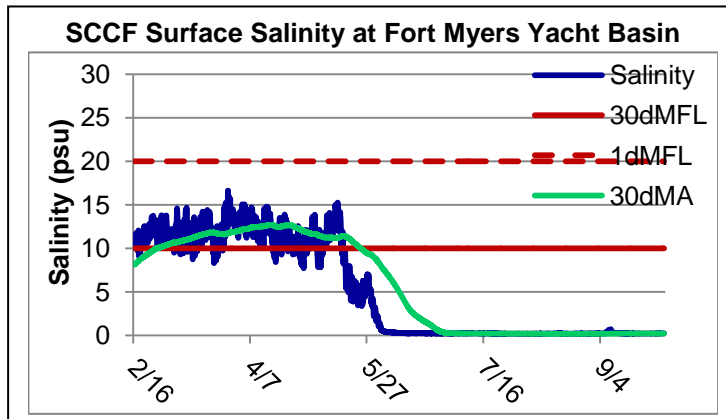
Previous week **7.5 – 28 psu**



Salinity (psu)			
	Current Value	Sustainable Range	High/Low
Beautiful Is	0.2 - 0.2	< 5 psu	In Range
Fort Myers	0.2 - 0.6	<10 psu	In Range
Shell Point	7.6 – 28	25 - 32 psu	Low
Light (25% I _z depth meters)			
Fort Myers	0.54	1 meter	Low
Shell Point	1.15	2.2 meters	Low
Causeway	1.66	2.2 meters	Low

Flow & Water Quality: Flows to the Caloosahatchee Estuary at S-79 during the **past seven days** averaged **2,970 cfs** with **66%** from Lake Okeechobee discharges. Over the past **7 days** **64,256 AF** of water was discharged from Lake Okeechobee: **42%** to the Caloosahatchee at **S-77**, **23%** to the **St Lucie** at **S-80**, **34%** was discharged south to the **EAA**, **386 AF** was discharged to **S-310**. A net **12 AF** was discharged through the **L8**.

ACOE Daily Reports			
Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
9/25/2018	2924	1603	2202
9/26/2018	2956	1605	2151
9/27/2018	3253	1259	1414
9/28/2018	2529	1735	1404
9/29/2018	3214	1761	2220
9/30/2018	2981	1686	2160
10/1/2018	2936	1896	2142
7 day Avg	2970	1649	1956



Cyanobacteria bloom: On 10/2/18 the Lee County Environmental Lab documented sparse cyano presence of *Dolichospermum* at the Alva boat ramp and *Dolichospermum*, *Aphanizomenon* and *Microcystis* upstream of the Franklin locks upstream.

Upstream of S-79/Franklin Conditions: On 10/2/18 the Olga Water Treatment plant reported chlorides of **45 mg/l**, apparent color **227 CU** and turbidity **4.28 NTU**. No visible algae at the plant intake. The plant remains off line for maintenance.

Upper Estuary Conditions: The weekly average salinity at the Fort Myers Yacht Basin was **0.2 psu**, in the suitable range for tape grass growing between the Caloosahatchee US 41 Bridges and Beautiful Island. **The average dissolved oxygen was below 4 mg/L at Beautiful Island.**

Lower Estuary Conditions: The average salinity at Shell Point was **19 psu**, in the suitable range for oysters. **Hypoxia was recorded at Shell Point with readings as low as 2.2 mg L⁻¹. Light levels are too low for submersed plants growing at depth in the river and around the Causeway.**

J.N. "Ding" Darling NWR:

Monitor Site	Salinity (psu)	Diss O ₂ (mg/L)	FDOM (qsde)	Chlorophyll (µg/L)
McIntyre Creek	-----	1.2 – 9.3	17.4 – 21.3	2.2 – 6.8
Tarpon Bay	22.1 – 27.7	3.5 – 6.1	13.9 – 20.5	3.1 – 19.7

Red Tide: On 9/28/18 the Florida Fish and Wildlife Conservation Commission reported a bloom of the Florida red tide organism, *Karenia brevis*, persists in Southwest Florida along ~130 miles of coastline, from northern Pinellas to southern Lee counties extending offshore 10 miles or more. **High concentrations were measured in or offshore Lee County the past week.** SCCF's samples from offshore of Sanibel ranged to **over 47 million *Karenia* cells/L on 9/26/18**, though on average, concentrations around Sanibel were lower offshore and on the southeastern beaches which had medium concentrations. The surf zone at Bowman's beach was brownish-red from high concentrations of **46 million cells/L of *Peridinium* on 9/27/18.** **Black water was reported near Boca Grande Pass. With anoxic water upwelling near shore, sulfate reducers producing hydrogen sulfide can result in iron sulfide precipitates.**

Wildlife Impacts: The past week SCCF recovered **12 dead sea turtles; 11 Kemp's ridley from Sanibel beaches and 1 loggerhead on Captiva.** CROW, the wildlife hospital on Sanibel treated **17 new patients** with red tide symptoms; **6 double crested cormorants, 3 ruddy turnstones, 2 red knots, 1 american oystercatcher, 1 laughing gull, 1 spotted sandpiper, 1 tri-colored heron, 1 osprey and 1 muscovy duck.**

Caloosahatchee Stations	Chlorophyll (µg/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	6.5	334	2.7	0.54
Shell Point	4.2	121	1.4	1.15
Causeway	2.9	55	2.6	1.66

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