

MEMORANDUM

To: USACE Colonel Andrew D. Kelly, LTC Todd F. Polk, Richard McMillen, Kim Taplin, SFWMD Governing Board, Executive Director Drew Bartlett, Jennifer Reynolds, Lawrence Glenn, DEP Secretary Noah Valenstein

From: Periodic Scientists Conference Call Participants
 Kevin Godsea & Jeremy Conrad - J.N. "Ding" Darling National Wildlife Refuge (NWR) Complex
 Holly Milbrandt & Dana Dettmar - City of Sanibel
 Lesli Haynes & Lisa Kreiger - Lee County
 Harry Phillips & Maya Robert - City of Cape Coral
 James Evans, Leah Reidenbach, & Rick Bartleson PhD - SCCF (Sanibel-Captiva Conservation Foundation)

Subject: Caloosahatchee & Estuary Conditions Report

Reporting Period: **December 1 – 7, 2020**

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: Flows to the Caloosahatchee estuary had a 7-day average of **4,934 cfs at S-79** with a 7-day average of **3,636 cfs** coming from the lake at S-77. The 14-day moving average flow at S-79 is **4,942 cfs** and has been in the **damaging flow envelope (>2,600 cfs; RECOVER 2020)** for the past **87 days**. With sustained flows >2,600 cfs at S-79, we expect low salinities to cause harm to marine organisms in the lower estuary. Throughout the week, the concentration of the harmful alga *Karenia brevis* has ranged from zero to high (>1,000,000 cells per liter) around Sanibel and Captiva.

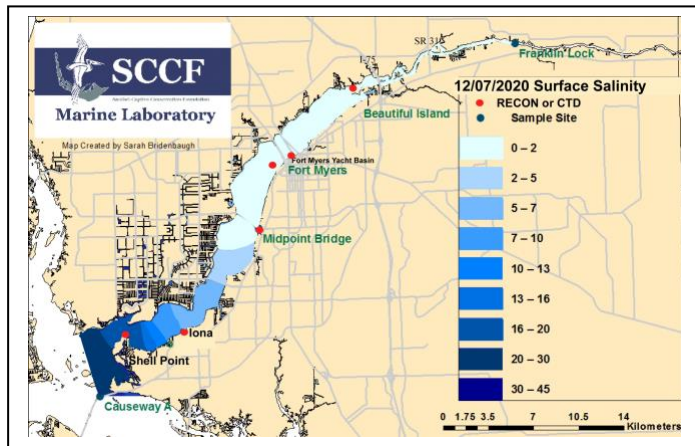
Recommendation: We recognize that the Corps is starting a phased reduction of flows to the estuary. **For optimal ecological conditions** in the Caloosahatchee estuary, the RECOVER 2020 performance measure for salinity recommends **flows be maintained between 750 – 2,100 cfs at S-79**. We request that that flows at S-77 are reduced so that flows as measured at S-79 are reduced to 2,100 as soon as possible.

USACE Action: On Saturday 12/05/20 the USACE started the transition to dry season operations on Lake Okeechobee by implementing a 7-day release with a reduced average target flow for the Caloosahatchee Estuary of 3,000 cubic feet per second (cfs) as measured at the Moore Haven Lock & Dam (S-77). At the same time, the Corps will implement a multi-week release pattern for the St. Lucie Estuary, starting with a 5-day pause to allow for recovery of estuary health, followed by a 7-day average release of 1,500 cfs as measured at St. Lucie Lock & Dam (S-80) near Stuart.

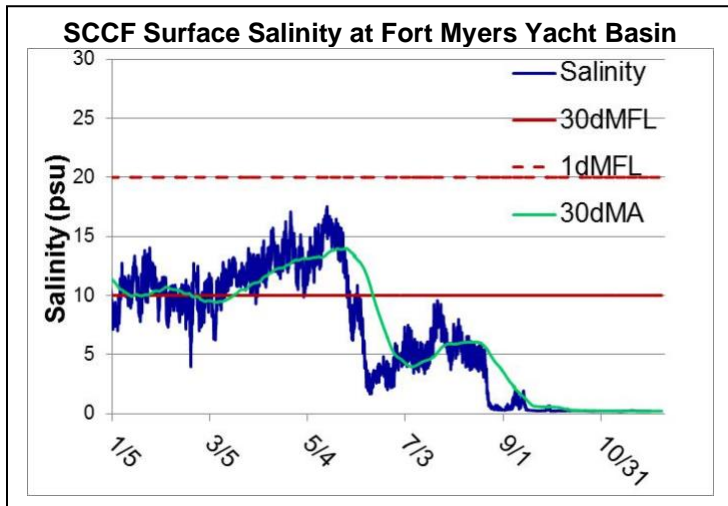
Lake Flows: In the past 7 days, **67,229 AF** were discharged from Lake Okeechobee, with **50,516 AF (75%)** to the Caloosahatchee through **S-77**, **14,023 AF (21%)** to the St. Lucie River through **S-308**, **1,493 AF (2%)** through **S-310**, and **1197 AF (2%)** to the **EAA** through **S-351, S-352, and S-354**. There was a net flow of **12 AF** at the **L-8 canal**. Water conservation areas received flows of **787 AF, 14,019 AF, and 0 AF** at **WCA1, WCA2, and WCA3**, respectively. Everglades National Park received **48,292 AF on 12/05 -12/06***.

*data missing on 12/01/20 – 12/04/20 and 12/07/20

Lake Okeechobee Level: 16.06 ft (Low sub-band) **Last Week:** 16.12 ft
Lake Okeechobee Inflow: 4,233 cfs **Lake Okeechobee Outflow:** 3,062 cfs
Weekly Rainfall Total: WP Franklin 1.30" Ortona 1.50" Moore Haven 0.17"



ACOE Daily Reports			
Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
12/01/2020	4591	3542	3984
12/02/2020	4780	3635	3972
12/03/2020	5127	3687	3972
12/04/2020	4806	3689	3951
12/05/2020	4557	3362	3384
12/06/2020	4427	3258	3130
12/07/2020	6247	3827	3058
7 day avg	4934	3571	3636



Site	Light Penetration		Turbidity	
	25% I _z meters	Target Values	NTU	Target Values
Fort Myers	0.70	> 1	5.0	< 18
Shell Point	1.09	>2.2	1.6	< 18
Causeway	1.47	> 2.2	3.2	< 5

25% I_z is the depth (z) where irradiance (I) is 25% of surface irradiance. Target values indicate the depth of light penetration needed for healthy seagrass.

Cyanobacteria Status: On 12/08/20, sampling by the Lee County Environmental Lab reported the presence of sparse specks of *Microcystis*, *Aphanocapsa*, and *Dolichospermum* visible on the surface upstream of the Franklin Locks (S-79) with a slight accumulation along the locks and shore.

Upstream of S-79/Franklin Conditions: On 12/08/20 the Olga Water Treatment plant reported chlorides of **52 mg/L**, apparent color **170 CU** and turbidity **2.37 NTU**. No visible algae were reported at the plant intake the past week. The plant is online at **1800 GPM**.

Upper Estuary Conditions: The 30-day average surface salinity at the Fort Myers Yacht Basin was **0.2 psu**, within the suitable range for tape grass. No hypoxia was recorded during the week at the RECON sites.

Lower Estuary Conditions: Light levels were very low near the Causeway in San Carlos Bay due to dissolved organic matter. The average salinity at Shell Point RECON was 17, within the suitable range for oysters.

Water Quality Conditions:

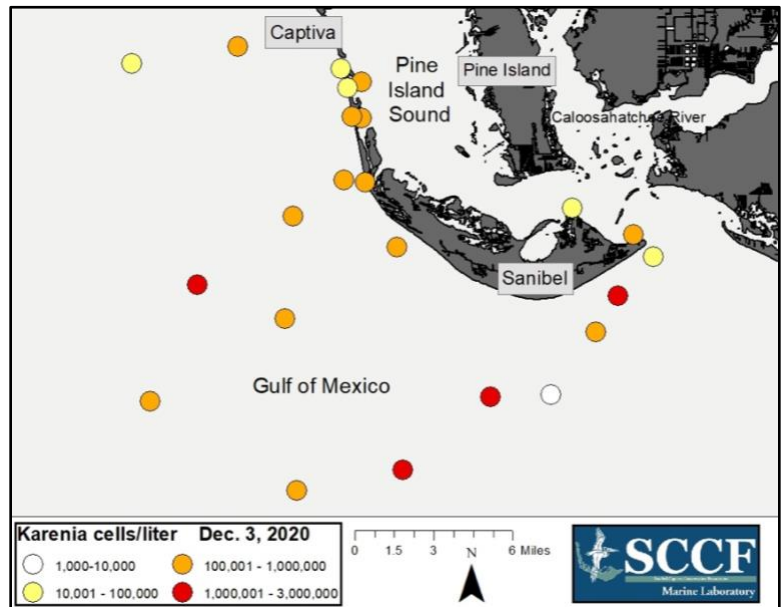
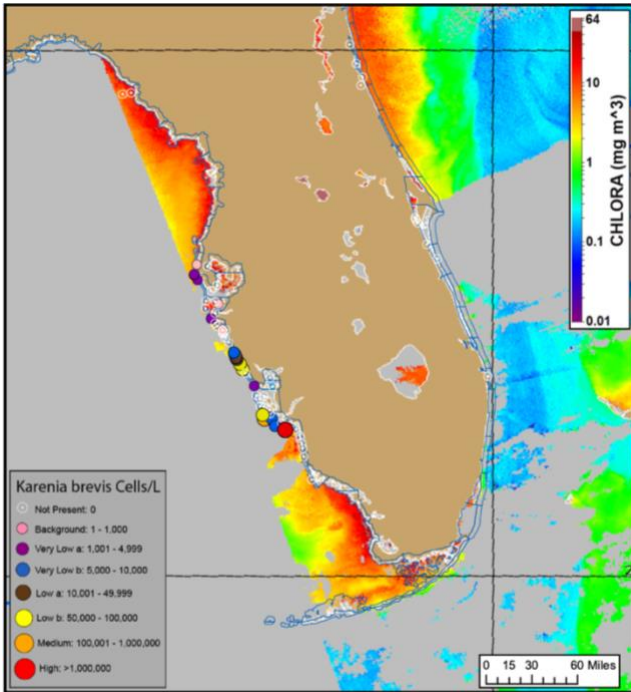
Monitor Site	Salinity (psu) ^a [previous week]	Diss O ₂ (mg/L) ^b	FDOM (qsde) ^c	Chlorophyll (µg/L) ^d
Beautiful Island	0.2 – 0.2 [0.2 – 0.2]	4.3 – 5.4	-----	-----
Fort Myers Yacht Basin	0.2 – 0.2 [0.2 – 0.2]	6.1 – 8.4	445	8.3
Shell Point	3.3 – 28 [5.8 – 30.2]	5.3 – 8.0	255	5.3
McIntyre Creek	22.0 – 26.3	5.5 – 10.3	8.8 – 13.3	1.9 – 5.2
Tarpon Bay	19.9 – 28.3	5.2 – 7.5	-----	0.9 – 8.5
Wildlife Drive	14.7 – 26.5	1.6 – 14.4	-----	0.9 – 4.6
Wulfert Flats	23.6 – 30.3	5.8 – 9.2	-----	5.3 – 58.7

Red values are outside of the preferred range.
^a Salinity target values: BI < 5, FM < 10, SP = 25 – 32
^b Dissolved O₂ target values: all sites > 4
^c FDOM target values: BI < 70, FM < 70, SP < 11
^d Chlorophyll target values: BI < 11, FM < 11, SP < 11

Red Tide: On 12/04/20 [FWC](#) reported that the red tide organism, *Karenia brevis*, was observed at background to very low concentrations in Pinellas and Manatee counties, background to low concentrations in Sarasota County, very low concentrations in Charlotte County, and very low to medium concentrations in Lee County. On 12/05/20 [NOAA satellite imagery](#) observed patches of elevated to very high chlorophyll (2 to >20 µg/L) with the optical characteristics of *K. brevis* present along- and offshore from central Lee to Collier counties.

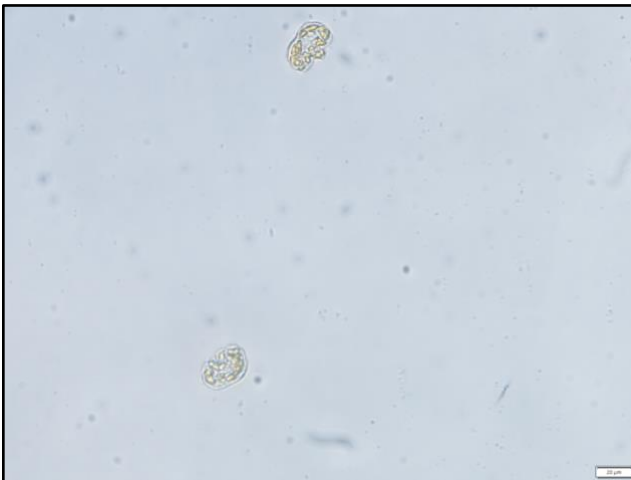
Shellfish Advisory: Shellfish harvest area #6212 Pine Island Sound Section 1 Shellfish Harvest Area is **CLOSED (Aquaculture Use Zones and Leases remain open)** by the Florida Department of Agriculture and Consumer Services (FDACS) as of 12/02/20 due to presence of *Karenia brevis*, shellfish meat results and conditions defined in The Biotxin Management Plan.

Wildlife Impacts: The past week, the CROW wildlife hospital on Sanibel received **12 brevetoxicosis patients:** 7 double-crested cormorants (3 died, 4 still at CROW), 3 laughing gulls (3 still at CROW), and 2 brown pelicans (1 died, 1 still at CROW).

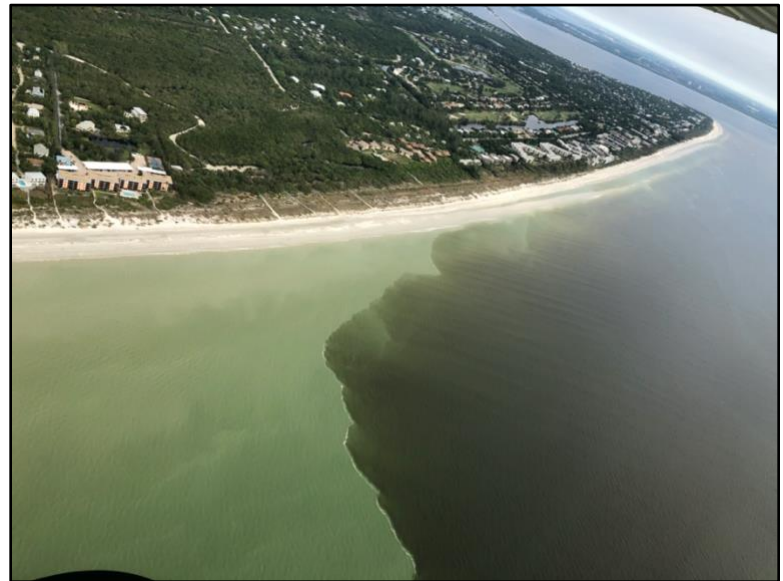


Water samples collected by SCCF Marine Laboratory researchers on 12/03/20 found concentrations of *Karenia brevis* at medium to high levels around Sanibel, Captiva, and in the Gulf of Mexico.

NOAA satellite imagery (VIIRS) on 12/05/20. Patches of elevated to very high chlorophyll (2 to >20 µg/L) with the optical characteristics of *Karenia brevis* are present along- and offshore from central Lee to Collier counties. Water samples from 11/27 – 12/03 contained *K. brevis* ranging from not present to high.



A micrograph (600x) of *Karenia brevis* from samples collected on 12/03/20 by SCCF scientists approximately 10 miles offshore of Sanibel.



On Sunday 12/06/20 a patch of brown water moved west along the beach on Sanibel. Water samples collected by SCCF on the leading edge of the dark colored patch contained a high concentration of *Karenia brevis* (~10,000,000 cells per liter). The patch graded into dark colored, fresher river water to the east. Photo: Curt Brown.