

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: **February 23 – March 1, 2021**

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 **1,927 cfs at S-79 with a 7-day average of 1,403 cfs coming from the lake at S-77. The 14-day moving average flow at S-79 is 1,938 cfs within the optimum flow envelope (750 – 2,100 cfs; RECOVER 2020).** A patchy red tide bloom persists in Lee County with four samples collected by FWC containing bloom concentrations in the past week. CROW, the wildlife hospital on Sanibel continues to receive patients with toxicosis symptoms. A *Polysiphonia subtilissima* bloom in the mid estuary caused an isolated hypoxic event and turned the water black from decomposing matter and iron sulfide precipitation.

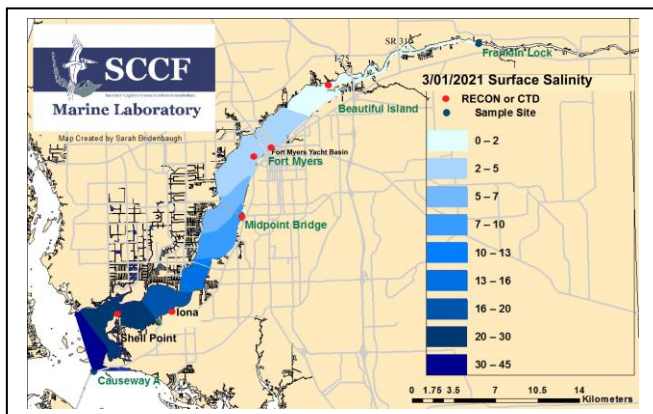
Recommendation: Since 2/9/21, the Caloosahatchee estuary stakeholders have recommended 2,000 cfs at S-79 to contribute to a reduction in Lake Okeechobee water levels with the long-term interest of preventing harmful discharges in the upcoming wet season despite the trade-off of high nutrient loads. However, the lake is still too high and recession rates are low, increasing the risk for damaging flows (>>2,100cfs) in the future. We **strongly encourage** the Corps to consider all alternative options in order to reduce lake levels and decrease the risk of harmful discharges to the Caloosahatchee in the future. **Furthermore, we request a reduction in flows to 1,000 cfs at S-79 to optimize salinity and hydrologic conditions for spring oyster spawning.**

USACE Action: On Saturday, 2/13/21 the USACE increased flow to the Caloosahatchee Estuary at a 7-day average targeted flow (constant) of 2,000 cfs as measured at the WP Franklin Lock & Dam (S-79). No scheduled lake releases are currently planned from the St. Lucie Lock and Dam (S-80).

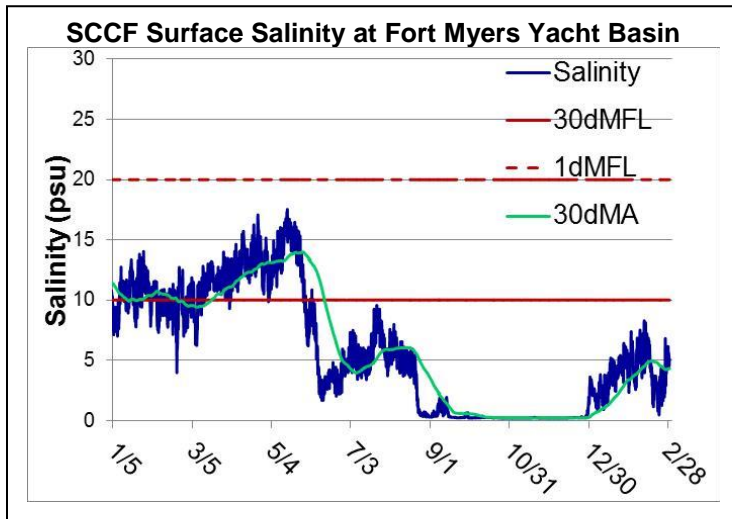
Lake Flows: In the past 7 days **39,552 AF** were discharged from Lake Okeechobee, with **19,681 AF (50%)** to the Caloosahatchee through **S-77, 2,009 AF (5%)** to the St. Lucie River through **S-308, 777 AF (2%)** through **S-310** in Clewiston, and **17,085 AF (43%)** to the EAA through **S-351, S-352, and S-354**. There was **NR*** through the **L-8 canal**. Water conservation areas received flows of **666 AF, 218 AF, and 10,530 AF** at **WCA1, WCA2, and WCA3**, respectively. Everglades National Park received **11,350 AF**.

*Missing data on 2/23/21 – 3/1/21 for L-8.

Lake Okeechobee Level: 15.32 ft (Low sub-band) **Last Week:** 15.41 ft
Lake Okeechobee Inflow: 1,199 cfs **Lake Okeechobee Outflow:** 3,016 cfs
Weekly Rainfall Total: WP Franklin **0.00"** Ortona **0.01"** Moore Haven **0.00"**



ACOE Daily Reports			
Date	S79 Flow (cfs)	S78 Flow (cfs)	S77 Flow (cfs)
2/23/2021	1890	1270	1424
2/24/2021	1988	1265	1524
2/25/2021	2044	1298	1766
2/26/2021	1918	1300	998
2/27/2021	1834	1271	1188
2/28/2021	1958	1292	1712
3/1/2021	1857	1123	1212
7-day avg	1927	1260	1403



Cyanobacteria Status: No report for 3/2/21.

Upstream of S-79/Franklin Conditions: On 3/2/21 the Olga Water Treatment plant reported chlorides of **56 mg/L**, apparent color **111 CU** and turbidity **4.14 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 4.3 psu, within the suitable range for tape grass. No hypoxia was recorded during the week at the RECON sites. Chlorophyll was spiking at the Fort Myers RECON and was elevated in between Fort Myers and Cape Coral bridges on 2/26/21 with *Skeletonema* as the dominant phytoplankton (images below).

Lower Estuary Conditions: The average salinity at Shell Point RECON was 27, within the suitable range for oysters and seagrass.

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	----- [-----]	-----	-----	2.9
Fort Myers Yacht Basin	1.3 – 6.8 [0.5 – 4.5]	5.6 – 8.7	270	12
Shell Point	17 – 32 [14 – 32]	5.6 – 6.9	99.2	3.0
McIntyre Creek	-----	-----	-----	-----
Tarpon Bay	28.4 – 33.0	5.5 – 7.6	4.7 – 11.1	0.8 – 2.0
Wildlife Drive	31.3 – 34.3	0.8 – 16.7	-----	1.0 – 20.1
Wulfert Flats	30.4 – 31.8	4.0 – 8.8	-----	2.4 – 67.0

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 2/26/21 [FWC](#) reported that the red tide organism, *Karenia brevis*, persists in Southwest Florida. Over the past week, *K. brevis* was detected in 28 samples. **Bloom concentrations (>100,000 cells/liter) were observed in four samples collected from Lee County.** Satellite imagery (2/25; NOAA, USF) indicates that chlorophyll patches persist along and offshore of Lee, Collier, and Monroe counties. In Southwest Florida over the past week, *K. brevis* was observed at background concentrations in Sarasota County, very low concentrations in Charlotte County, **background to medium concentrations in and/or offshore of Lee County**, and background to very low concentrations in Collier County.

Wildlife Impacts: In the past week, the CROW wildlife hospital on Sanibel **received 14 toxicosis patients:** 1 northern gannet (died), 8 double-crested cormorants (6 died, 2 still at CROW), 3 royal terns (1 died, 2 still at CROW), 1 herring gull (still at CROW), 1 loggerhead sea turtle (still at CROW).

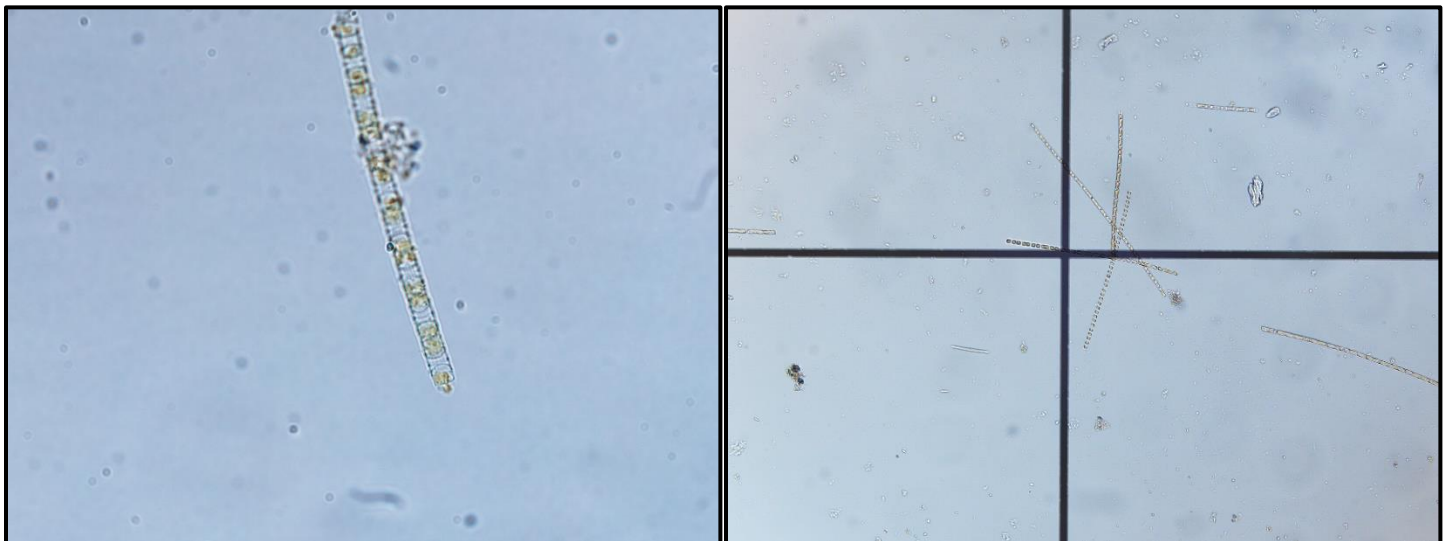
Light Penetration

Site	25% I _z	Target Values	Turbidity	Target Values
	meters		NTU	
Fort Myers	0.93	> 1	5.2	< 18
Shell Point	1.62	>2.2	3.2	< 18
Causeway	1.78	> 2.2	13	< 5

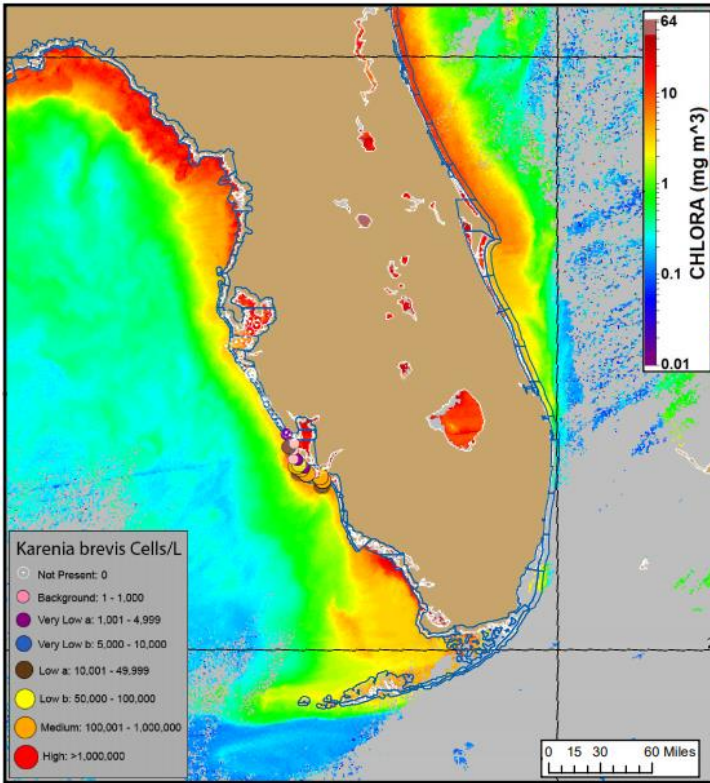
25% I_z is the depth (z) where irradiance (I) is 25% of surface irradiance. Target values indicate the depth of light penetration needed for healthy seagrass.



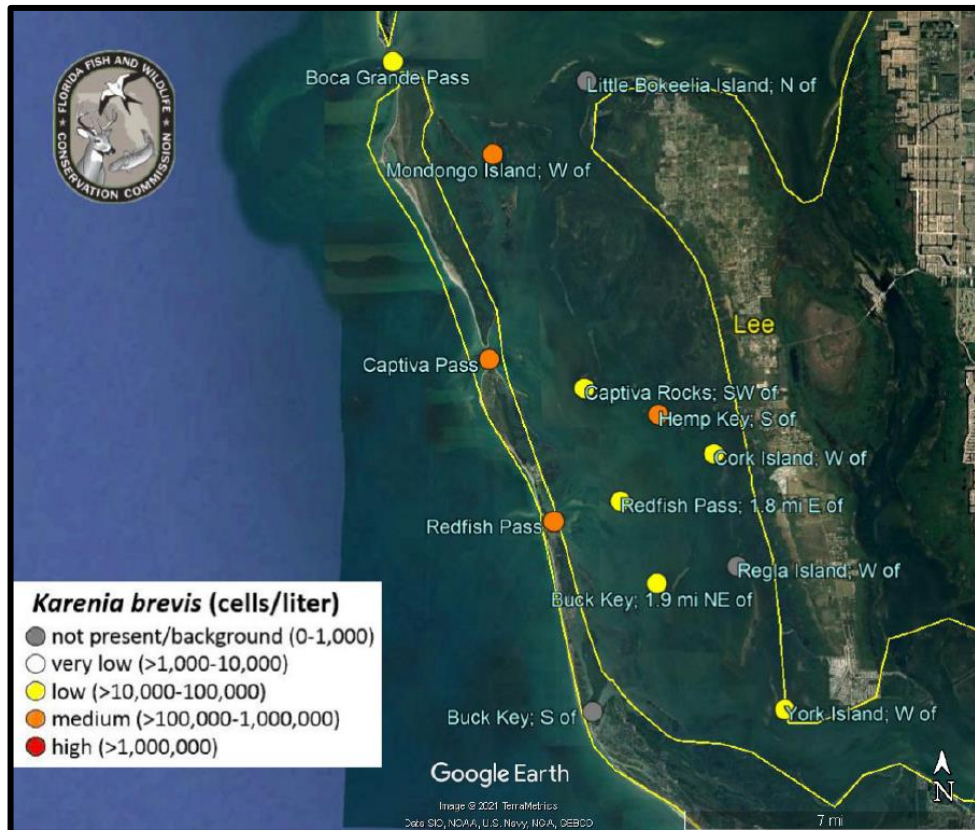
Polysiphonia subtilissima stranding with localized hypoxia mid estuary on 2/26/21. The dissolved oxygen next to shore was 0.45 mg/L and hypoxia extended 3 meters from shore. Arrows are pointing toward black and grey hypoxic water which is caused by decaying particulate matter and iron sulfide precipitate. Photo: SCCF.



Microscopic images of *Skeletonema costatum* (left: 600x) and *Skeletonema* (not identified to species, right: 100x) from in between Fort Myers and Cape Coral bridges on 2/26/21. Photo: SCCF.



[Satellite imagery](#) (VIIRS, 2/27), shows patches of elevated chlorophyll (2 to 9 $\mu\text{g/L}$) present at the coast of southwest Florida. A patch of elevated chlorophyll (7 to 9 $\mu\text{g/L}$) with some of the optical characteristics of *K. brevis* is present alongshore central Lee County where bloom concentrations remain present. The patch of elevated chlorophyll (3 to 4 $\mu\text{g/L}$) off shore Monroe County and northwest of Big Pine Key in the lower Florida Keys retains some of the optical characteristics of *K. brevis* but continues to decrease in size and density. *K. brevis* cell concentration sampling data from: 2/19/21 – 2/26/21. Cell count data are provided by Florida FWC Fish and Wildlife Research Institute.



The abundance of *Karenia brevis* in water samples collected from Lee County on Monday, 3/1/21. Background to medium concentrations of *K. brevis* were detected at 12 locations. Source: Florida FWC Fish and Wildlife Research Institute.