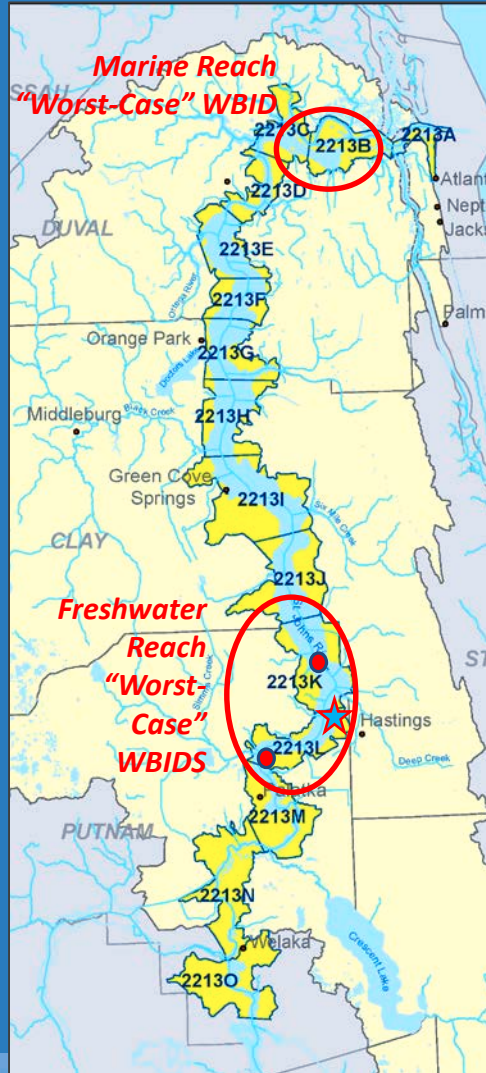
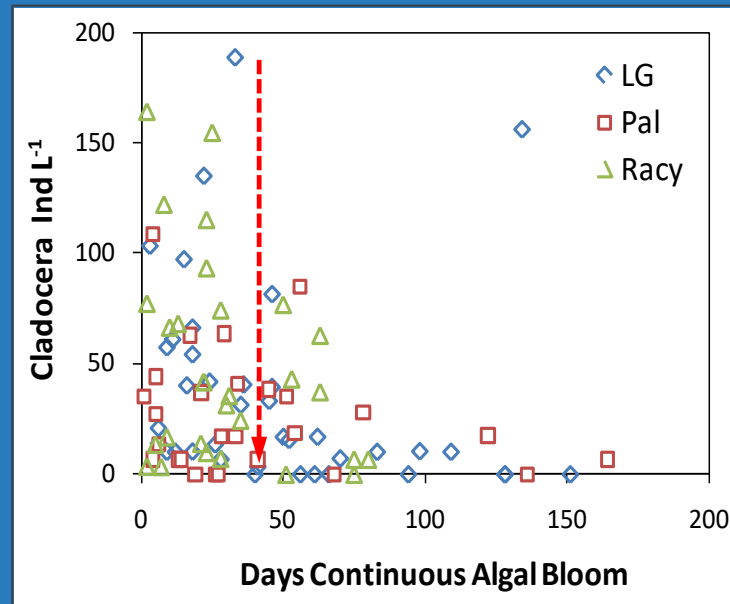


LSJR Freshwater Reach Target

Goal: *Healthy Pelagic Food Chain*



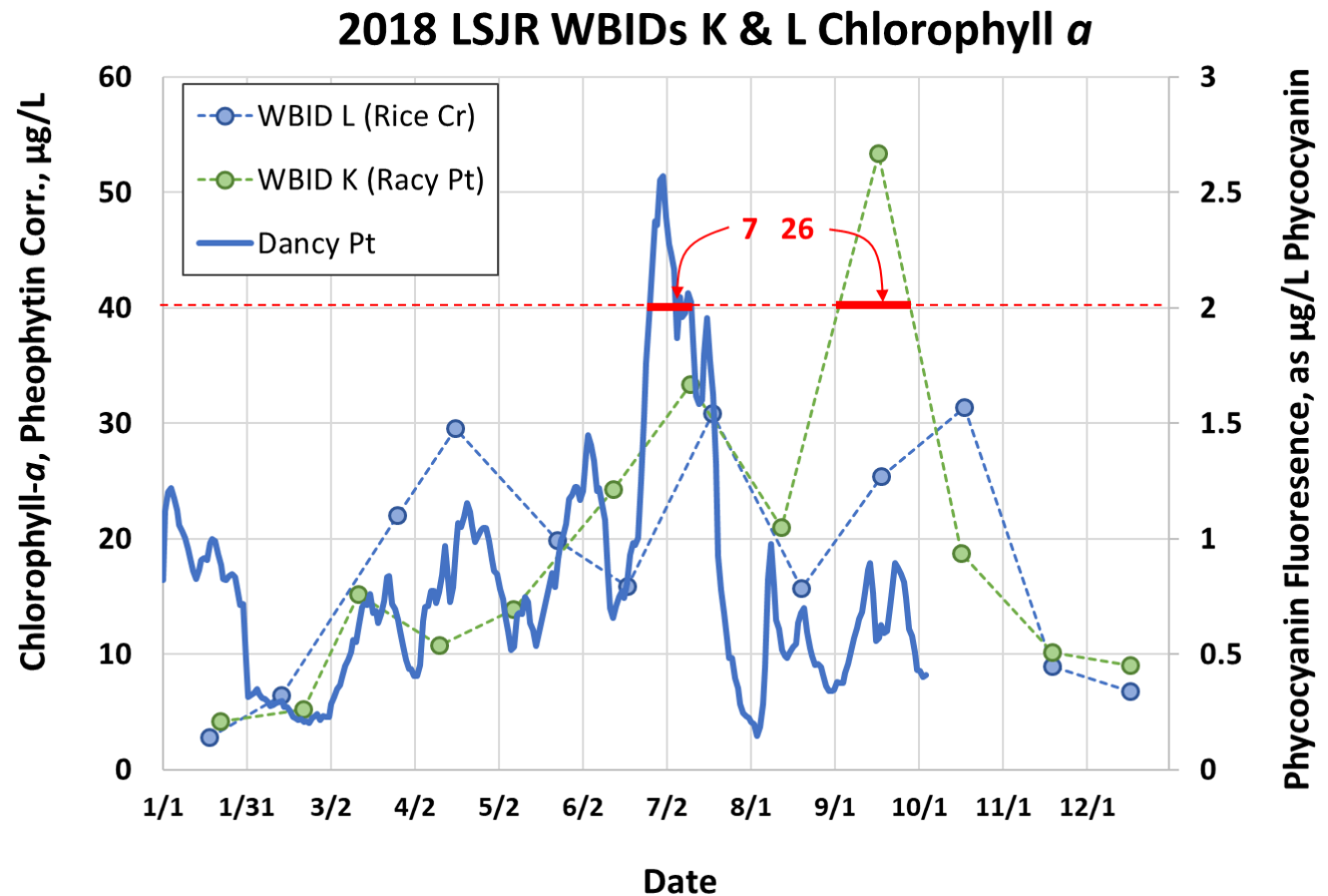
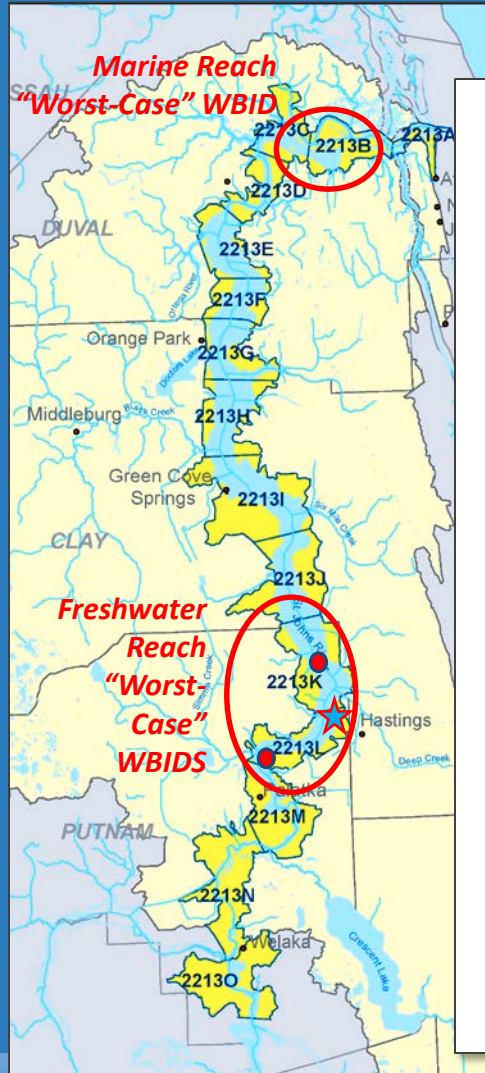
- When chlorophyll-a $> 40 \mu\text{g/L}$, blooms are cyanobacteria-dominated
- Cyanobacteria inedible, nutritionally poor, and potentially toxic to zooplankton



LSJR Freshwater Criteria:
Limit duration of chlorophyll-a $> 40 \mu\text{g/L}$ (i.e., bloom level) to less than 40 days

LSJR Freshwater Reach Target

Goal: *Healthy Pelagic Food Chain*

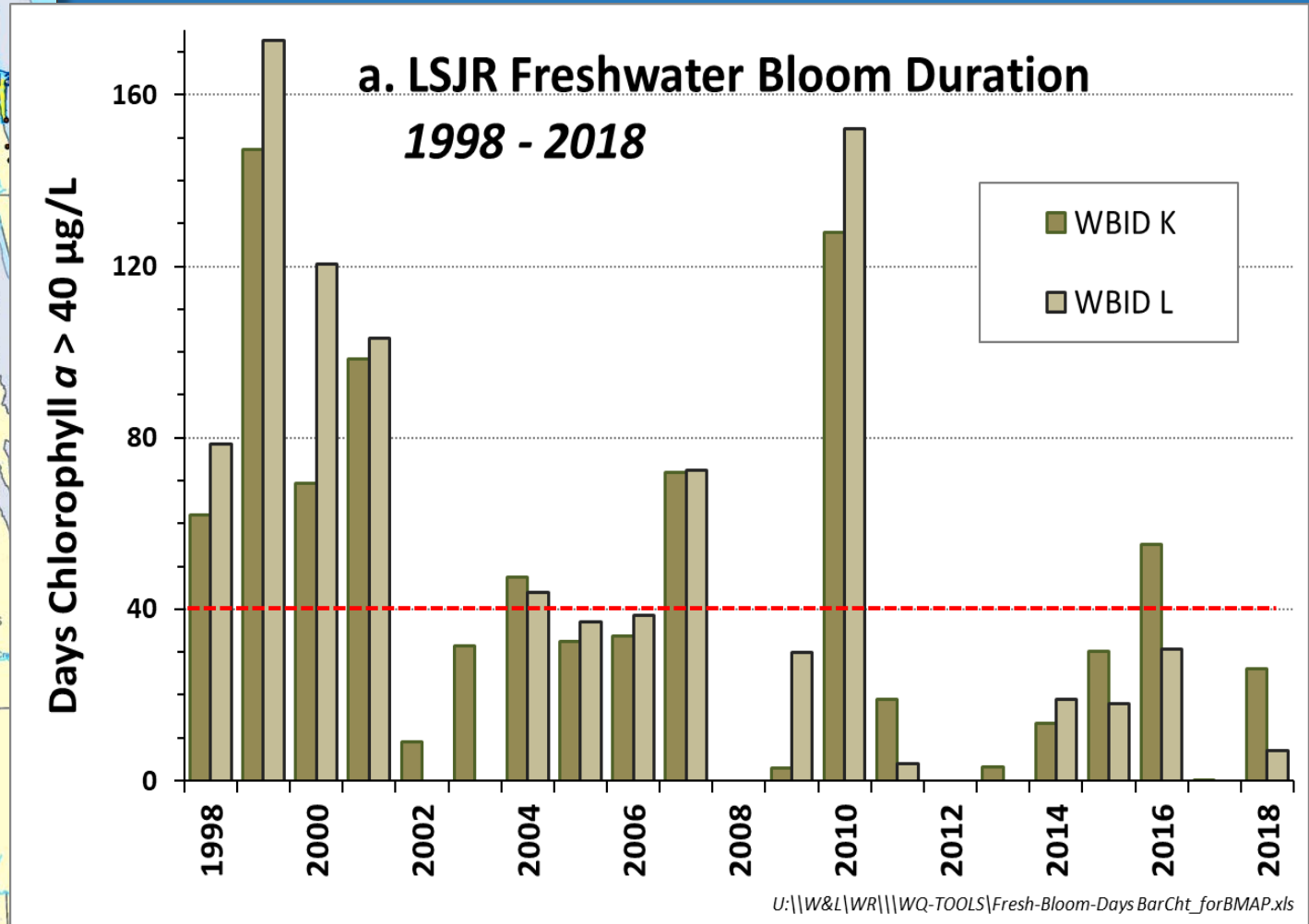
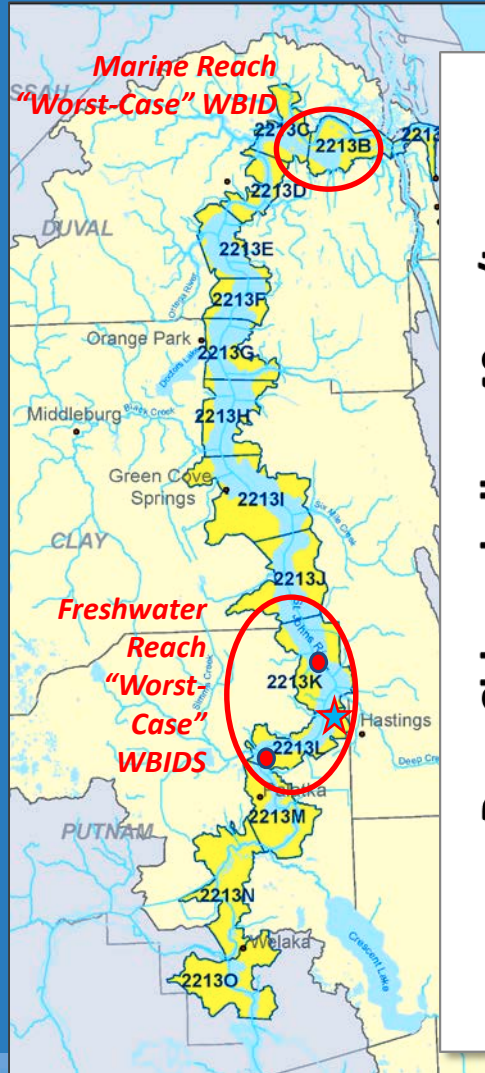


U://W&L/WR///USGS/Dancy-Daily-Phycocyanin_2017-18.xls



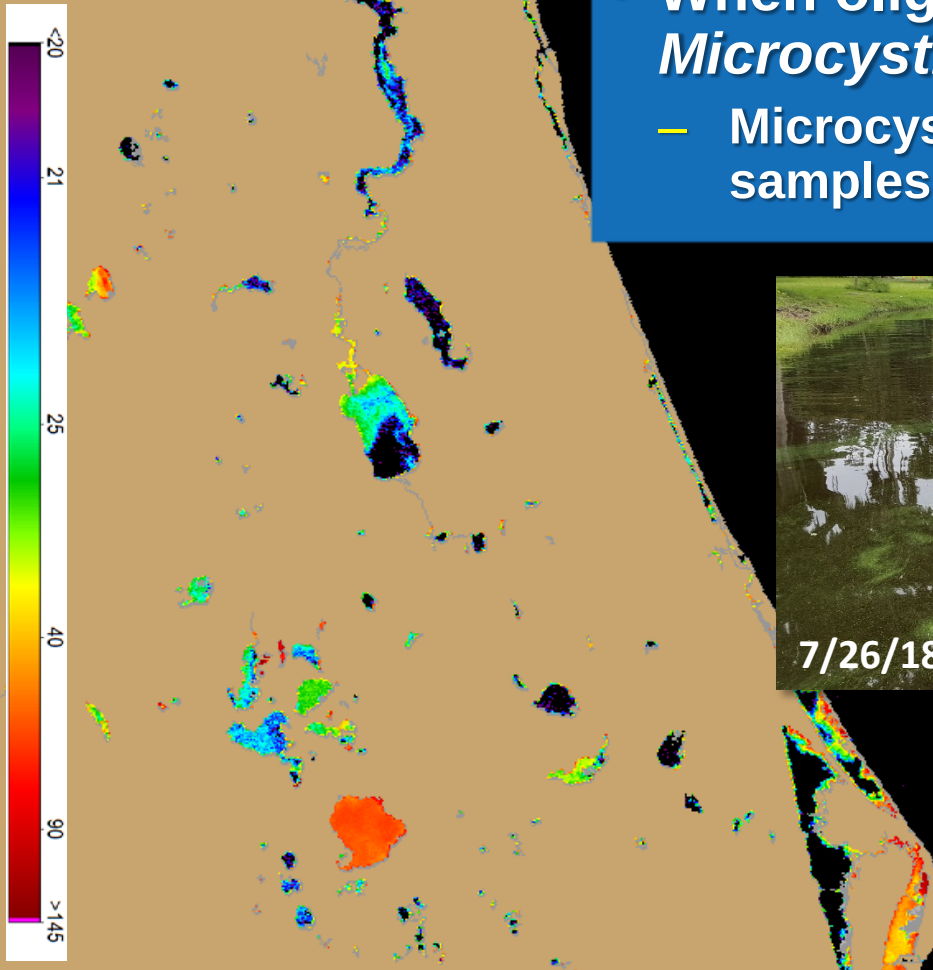
LSJR Freshwater Reach Target

Goal: *Healthy Pelagic Food Chain*



HABs 2018

NOAA Sentinel-3
Ocean Land Color
Instrument
July 15, 2019



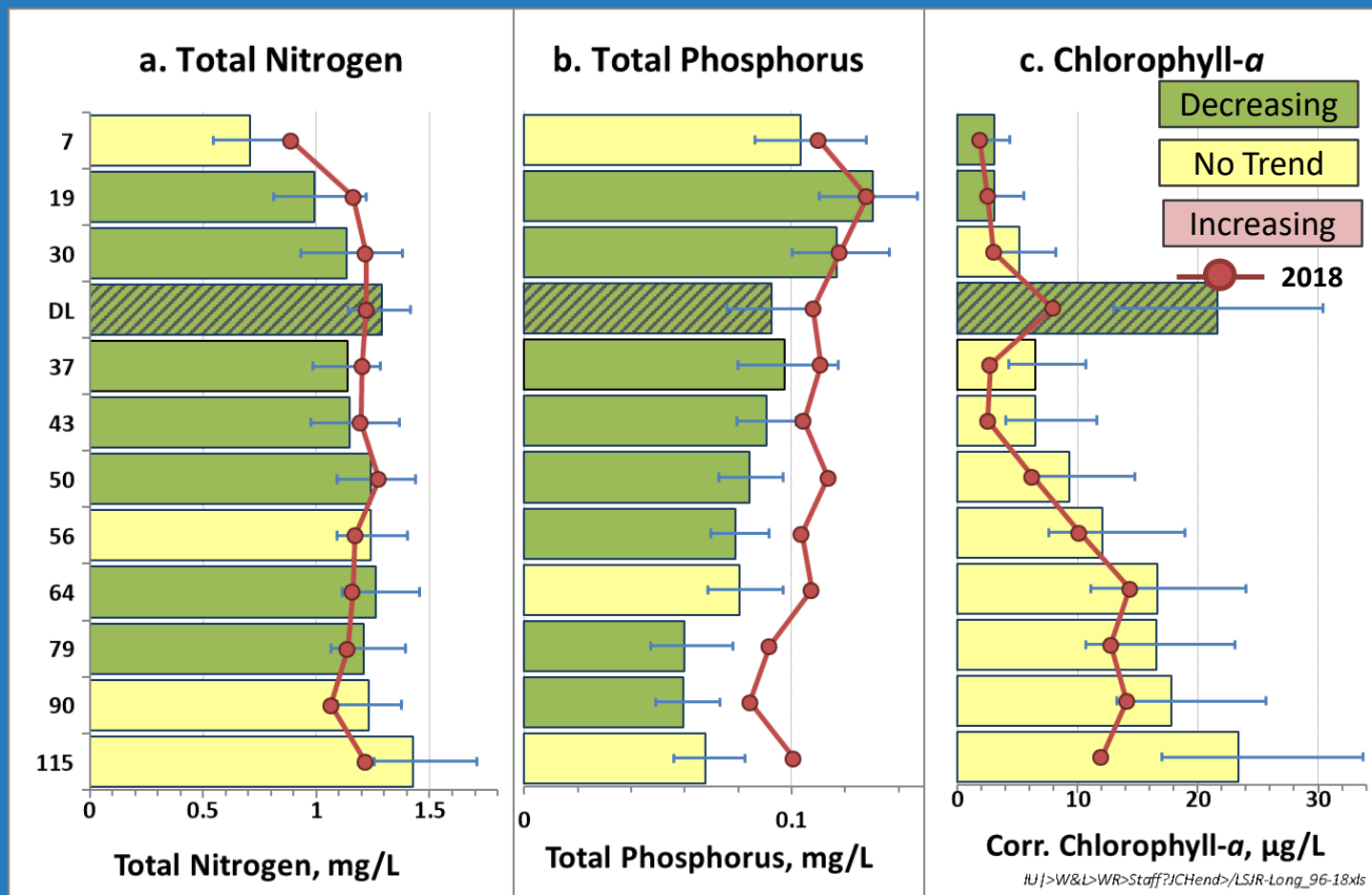
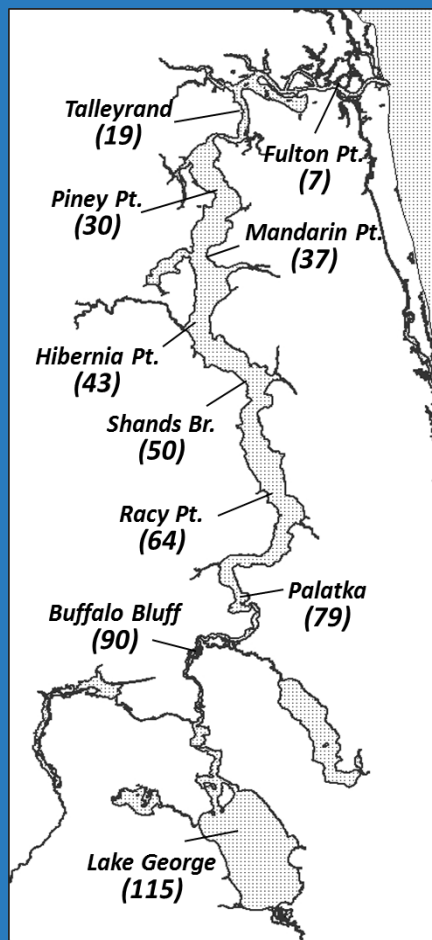
- High flow, short residence time = low algal biomass
- When oligohaline predominantly fresh, *Microcystis spp.* dominant species
 - Microcystin detected in 19 of 29 algal toxin samples; max in Doctors L. (41 ppb 7/24/18)



Doctors
Lake



Lower St. Johns River TN and TP Status and Trends*



*SJRWMD 2017 Status and Trends Assessment

SAV Assessment 2018

Objectives:

- Monitor cover, composition of littoral plants in the LSJR
- Characterize long-term trends

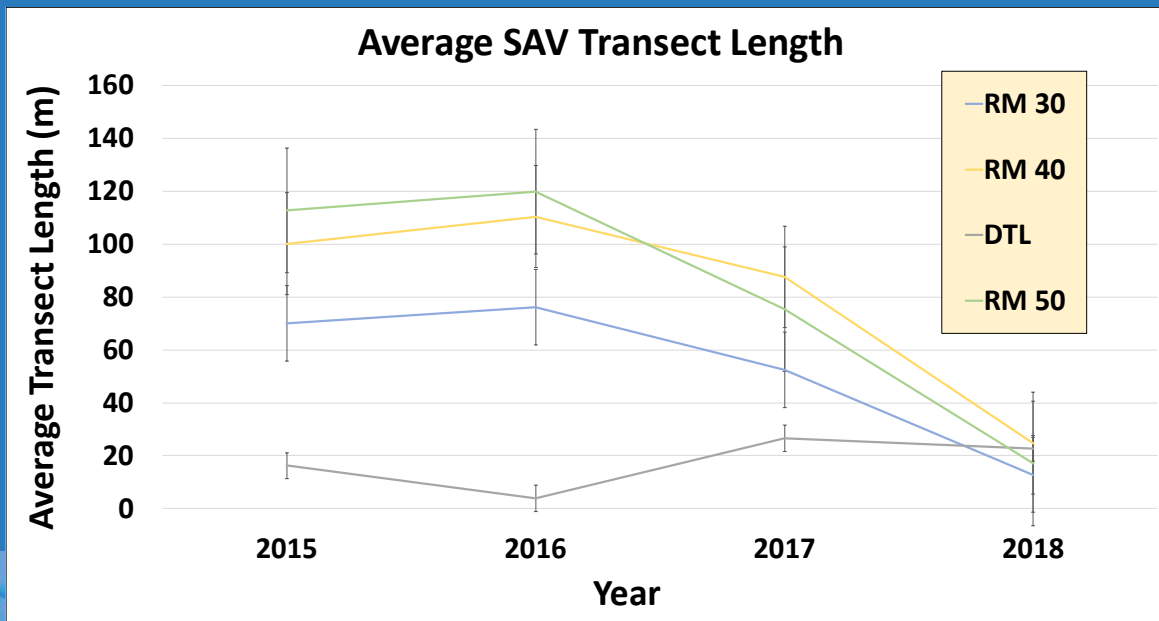
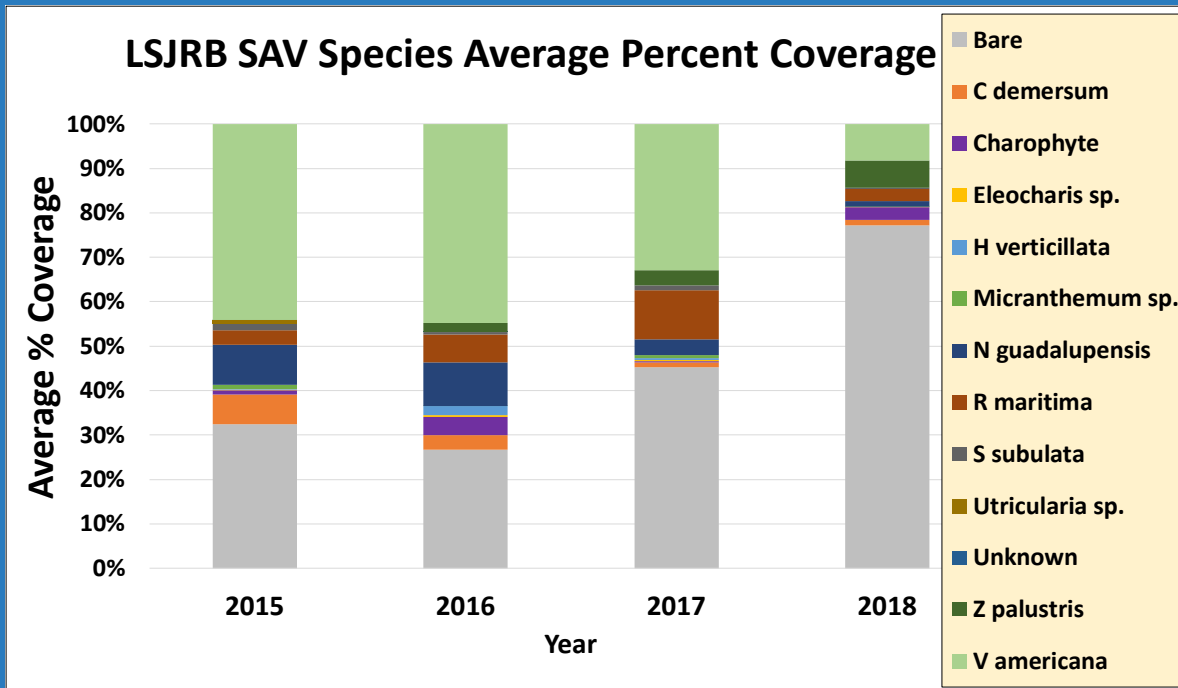


2018 LSJR Monitoring Results:

- SAV percent cover and bed length reduced
- Doctors Lake cover, bed length increasing
- Declines consistent with other monitoring*; attributed to hurricane uprooting, prolonged high color

*Final Annual Report SAV and Freshwater Wetlands Monitoring (Yr 2) in for Jacksonville Harbor Project Wood Environment & Infrastructure Solutions, Inc.

*SAV Within the Lower St. Johns River Basin: Representative Reports 1998-2007. Prepared by Jennifer J. Sagan BCI Engineers and Scientists, Inc



Lower St. Johns TMDL Compliance 2018 Summary

- Nitrogen declining or stable in LSJR segments
 - Increasing dissolved oxygen concentration consistent with associated decline in marine reach algal biomass
- Freshwater reach phosphorus elevated from high runoff, residual effects from Hurricane Irma
- Freshwater chlorophyll target achieved, in part due to high discharge/short residence time
 - Freshwater conditions in estuary conducive to *Microcystis* dominance
- SAV cover, extent reduced from hurricane disturbance and reduced underwater light



Thank you . . .
Questions?

