Blooms in the Indian River Lagoon
(especially north and central)

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Water Management District

IRL has issues

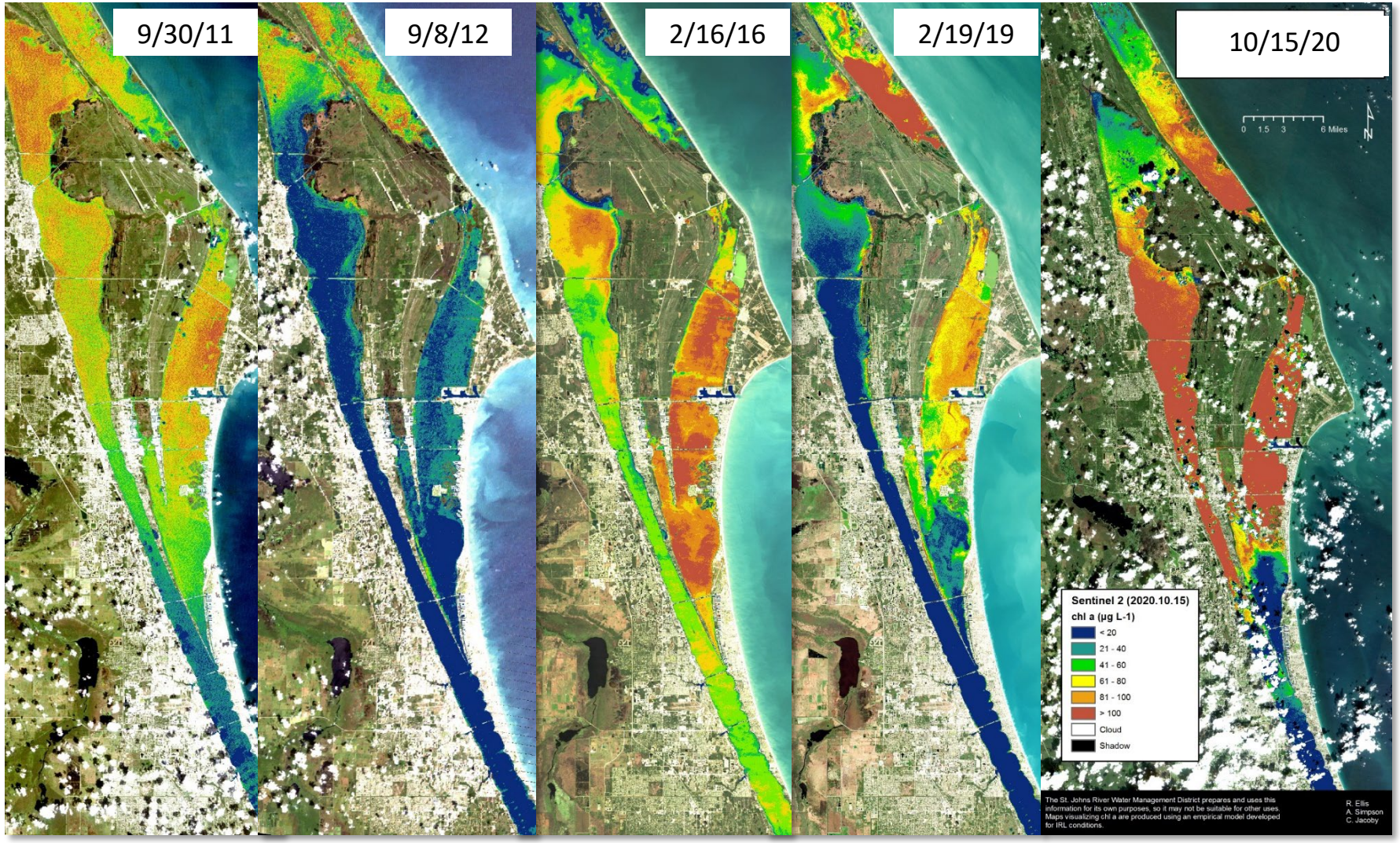
Indian River Advocate 1896

"The fish are dying by thousands on account of the gas which is rising from the mud in the bottom of the river, the water being low and of a red muddy color."

East Coast Advocate 1902

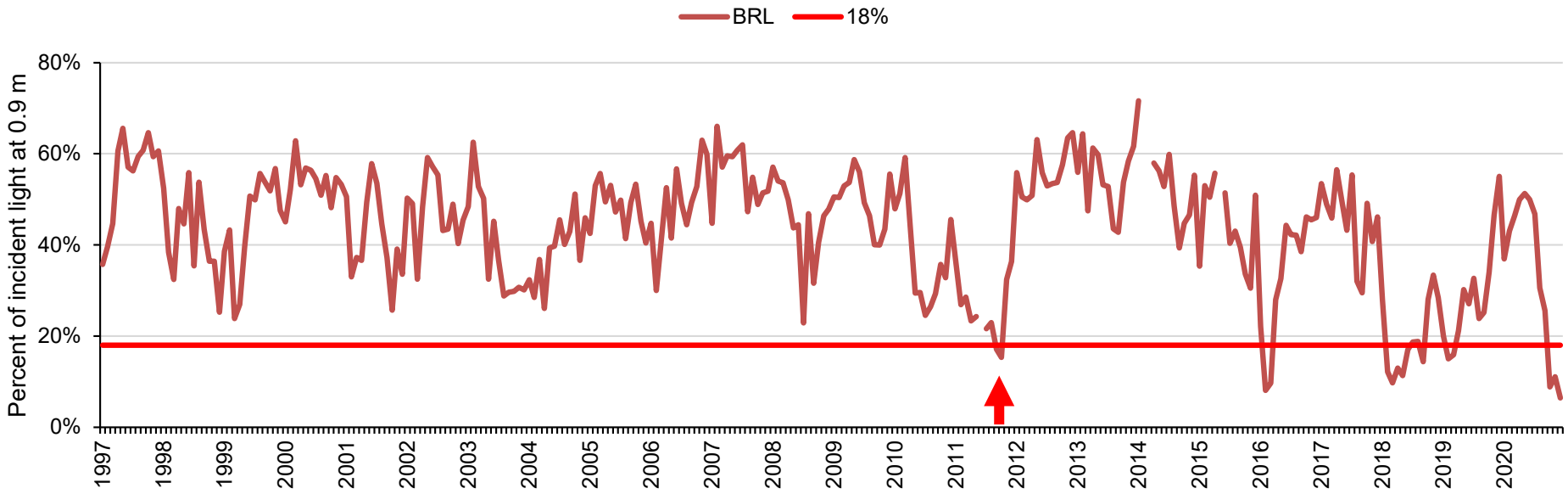
"For three or four weeks past it [the water] has been muddy, perfectly green for a time, now brown or reddish. The shore at places has been lined with dead fish, and the general condition does not seem to be understood by the citizens here."

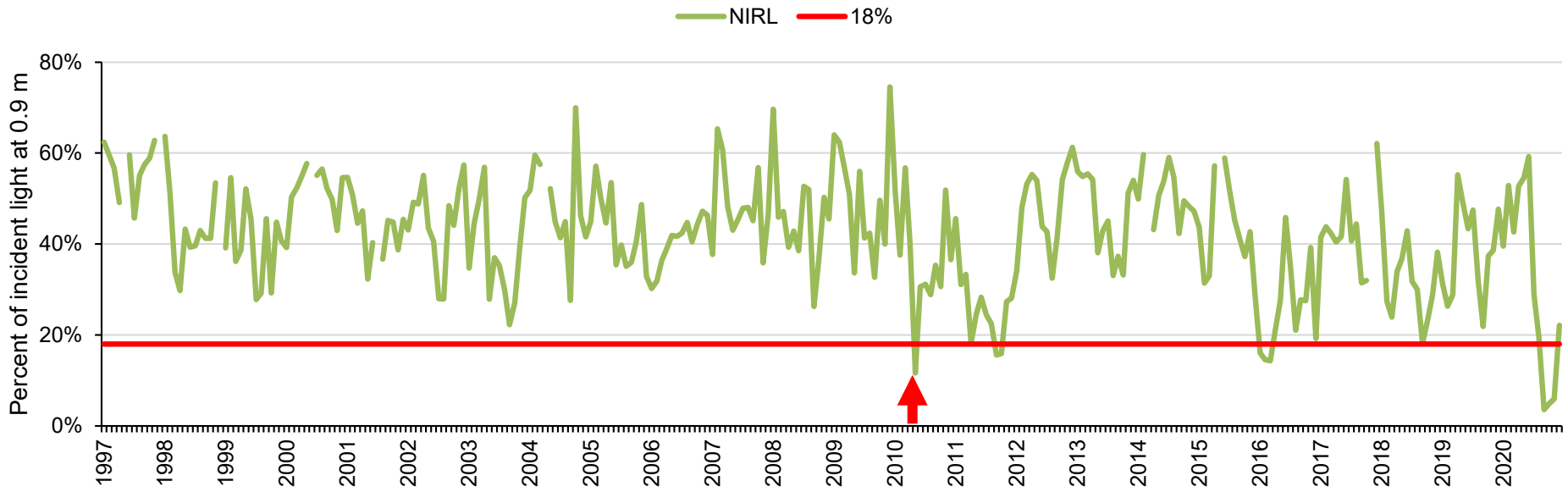
Intense, widespread, long-lasting blooms



No fish kill	No fish kill	Large fish kill	No fish kill	Small fish kill

Reduced light penetration





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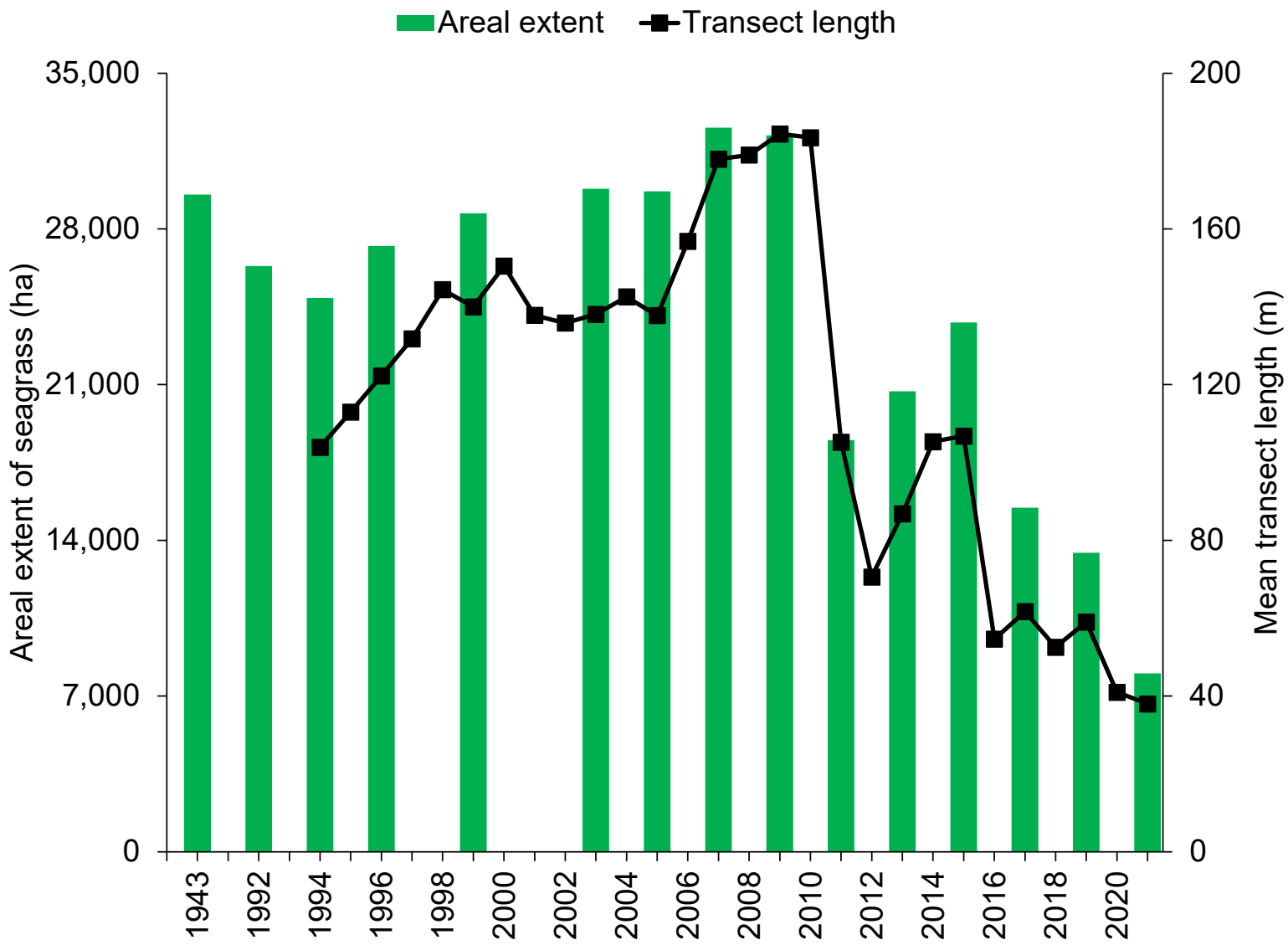
Loss of seagrass



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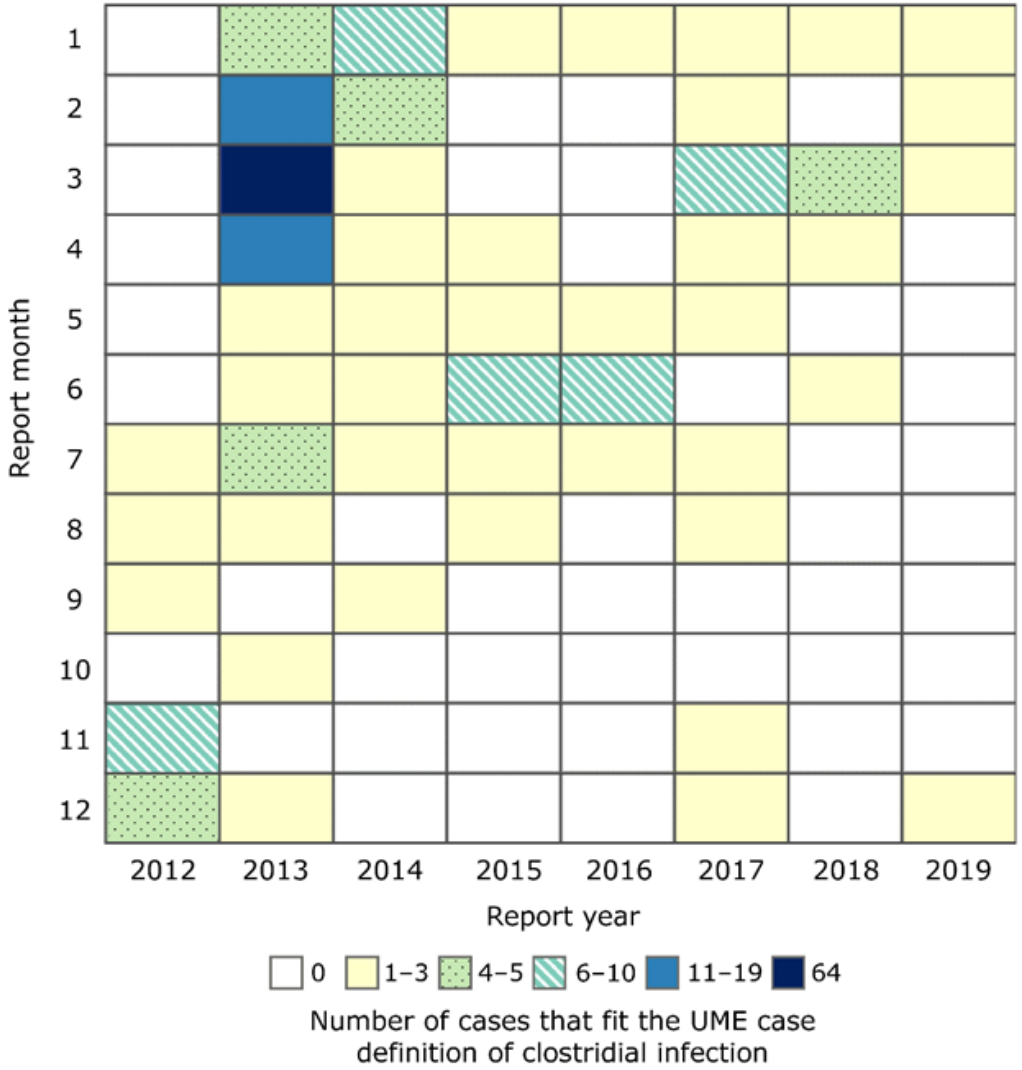
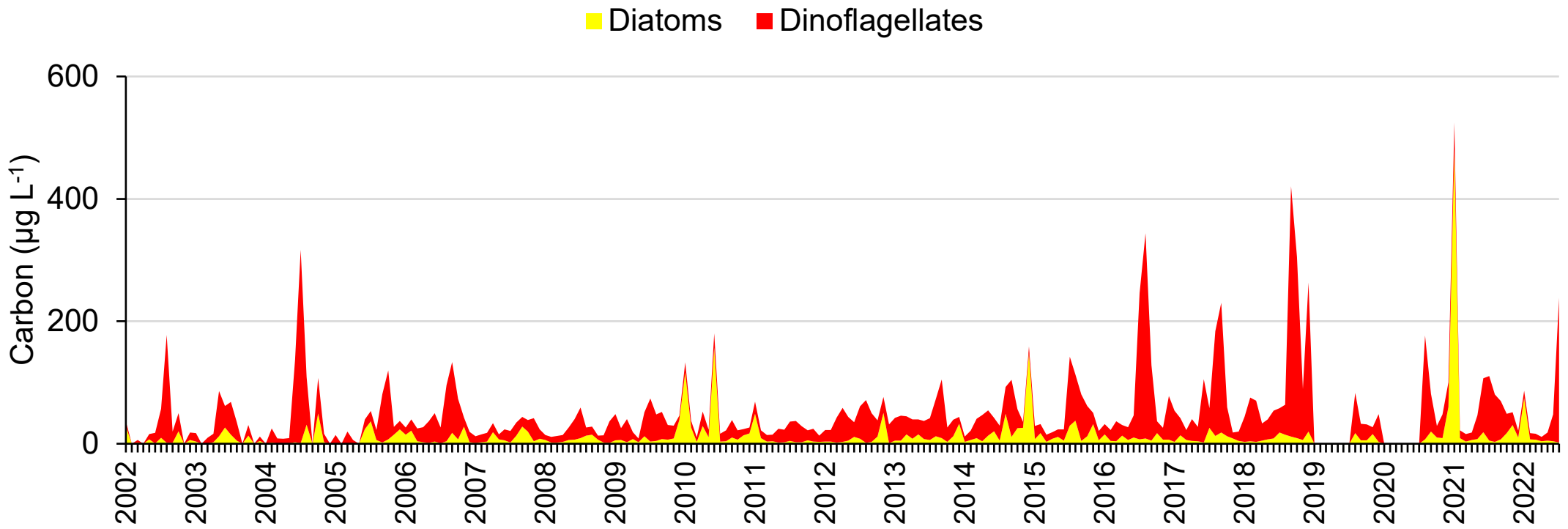
Additional events

- 2013 manatee unusual mortality event (UME)
- 2013 dolphin UME
- 2021 manatee UME
- Affect 70% of sportfish?

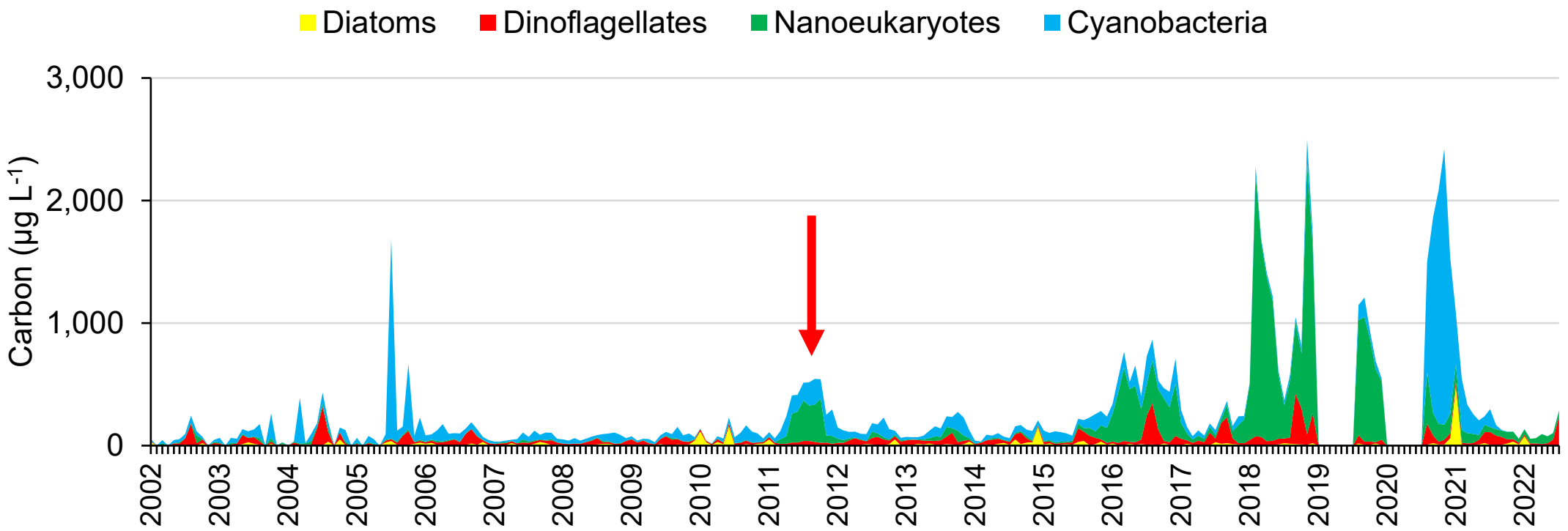


Dominants and biomass changed



Phlips UF

Dominants and biomass changed



Phlips UF

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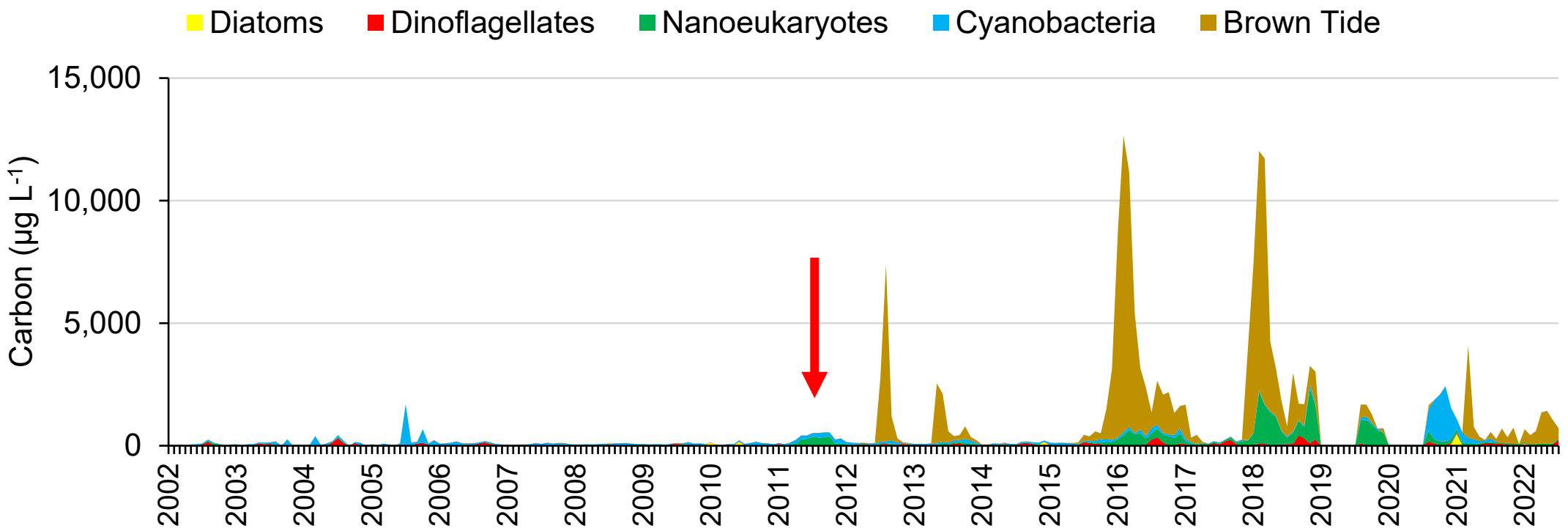
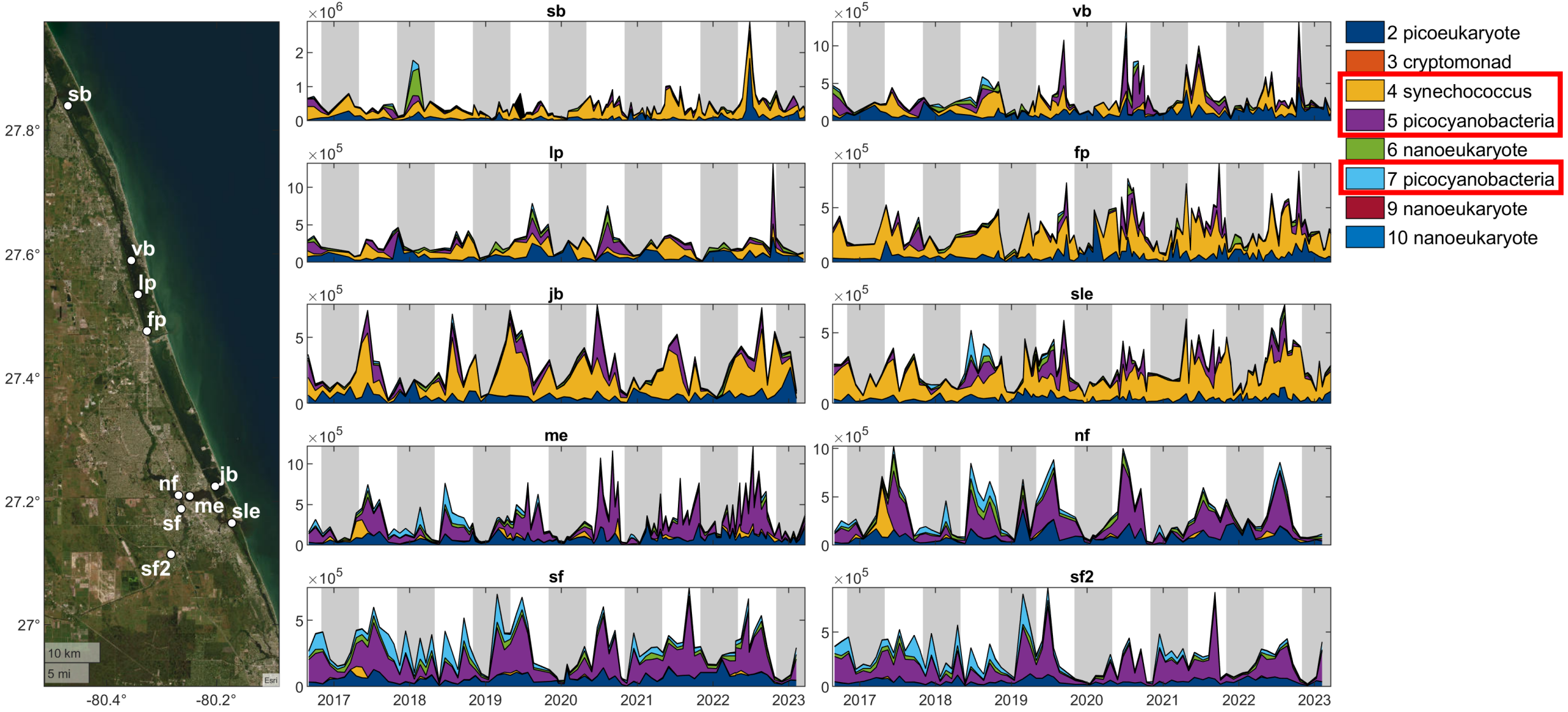


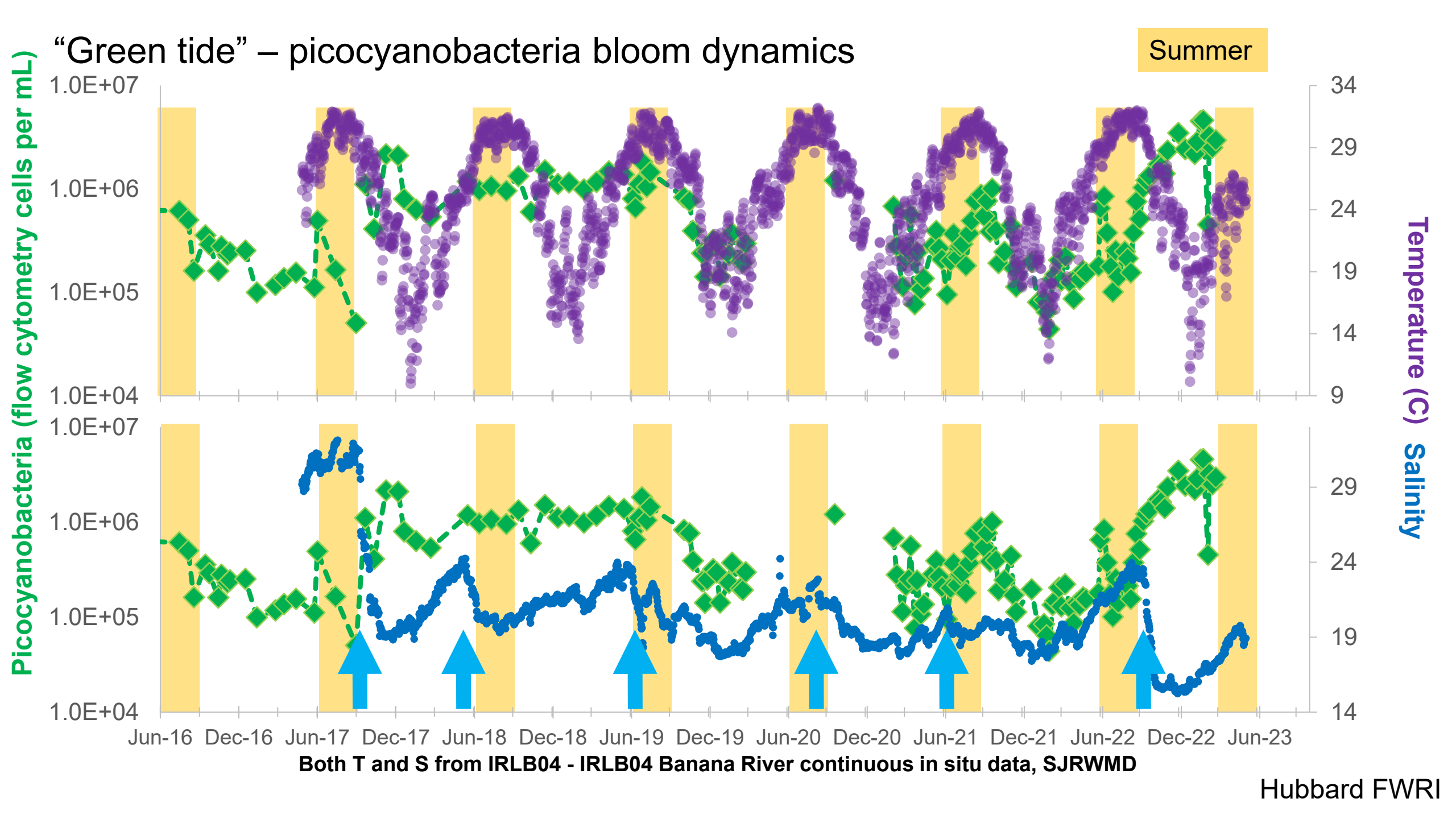
Phlips UF

Small phytoplankton also in the south (cells/mL)



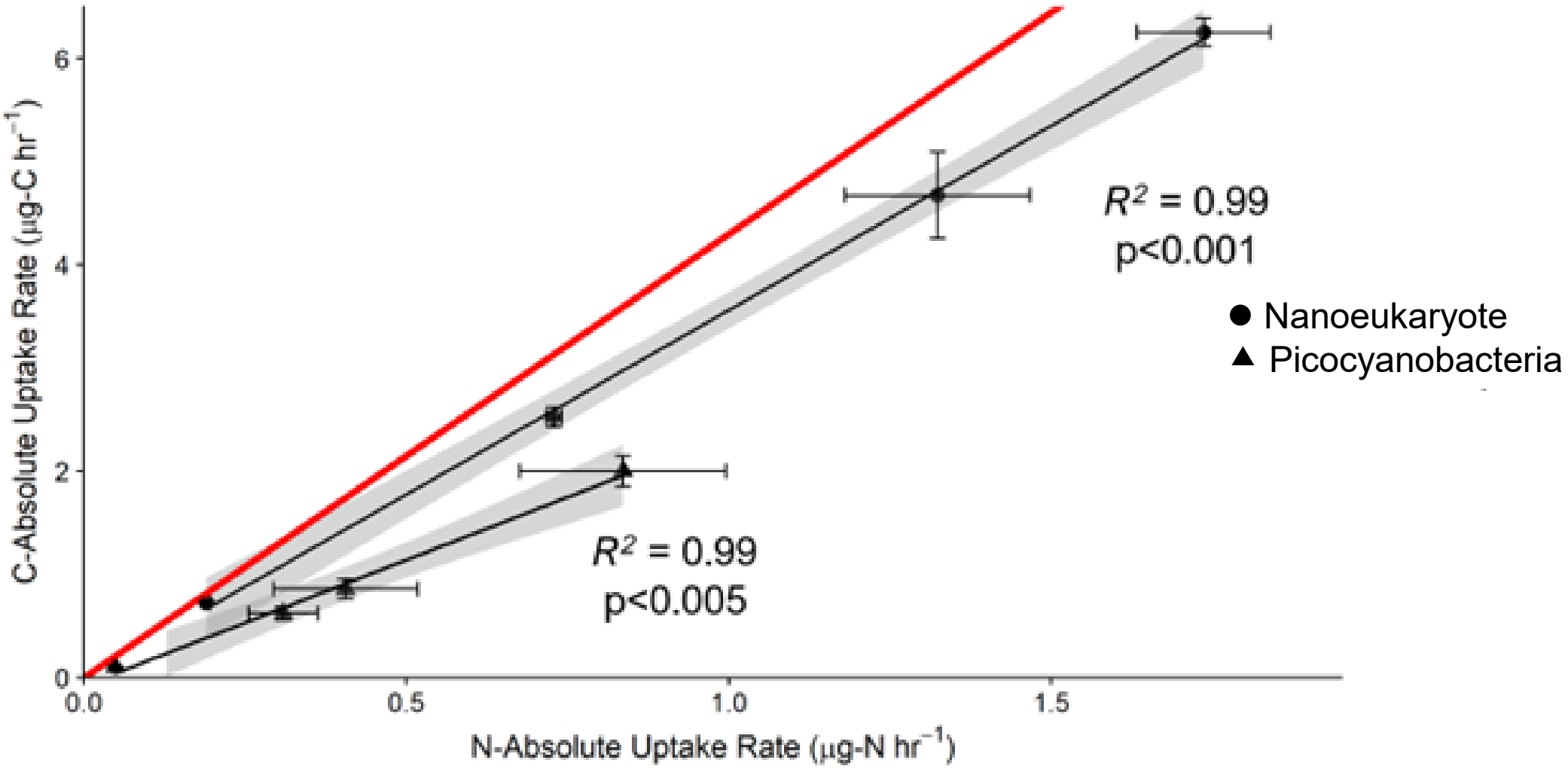
McFarland HBOI

“Green tide” – picocyanobacteria bloom dynamics



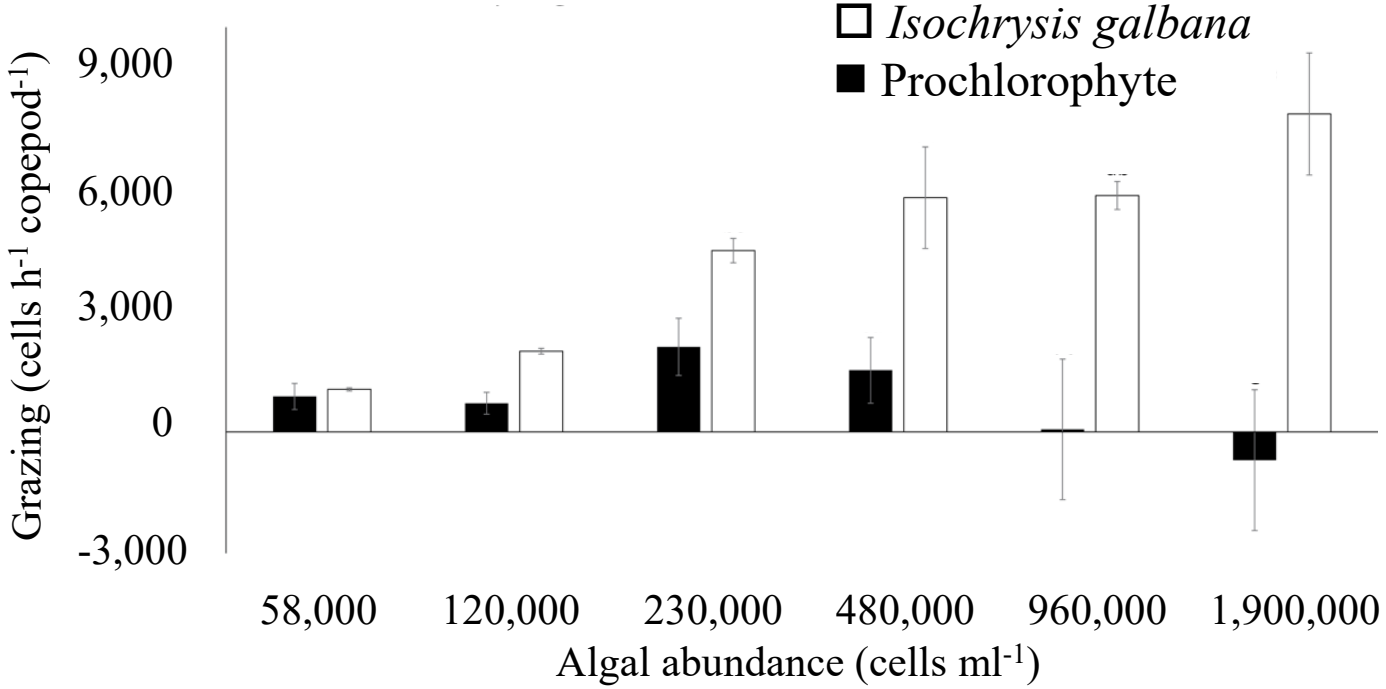
Hubbard FWRI

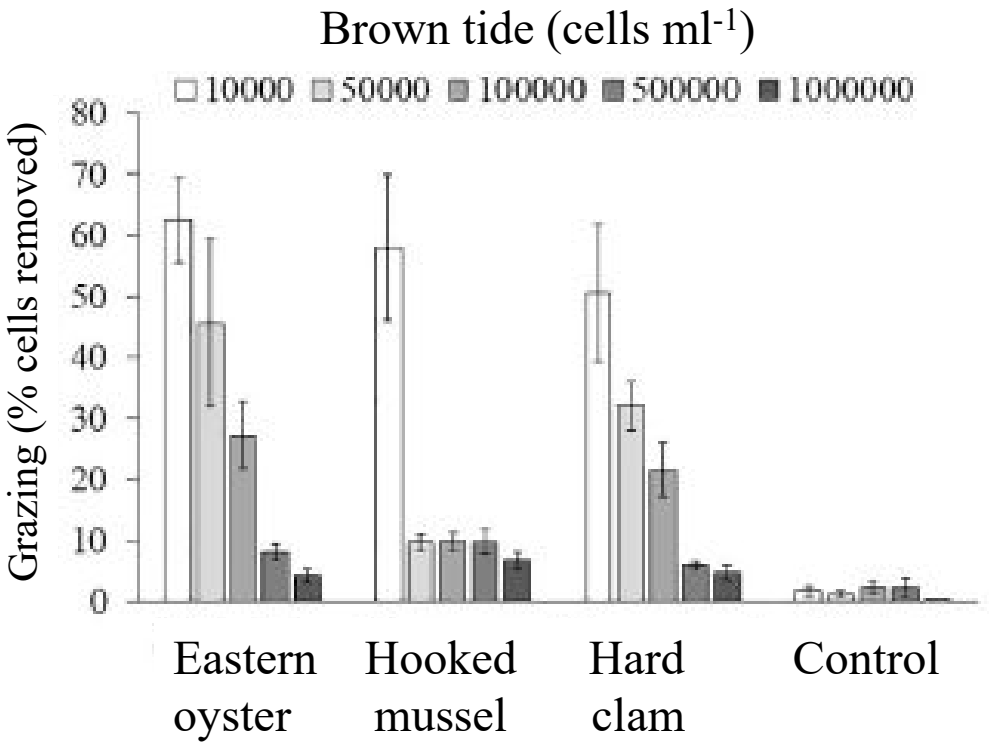
Use organic compounds(amino acids)



PapacekUF

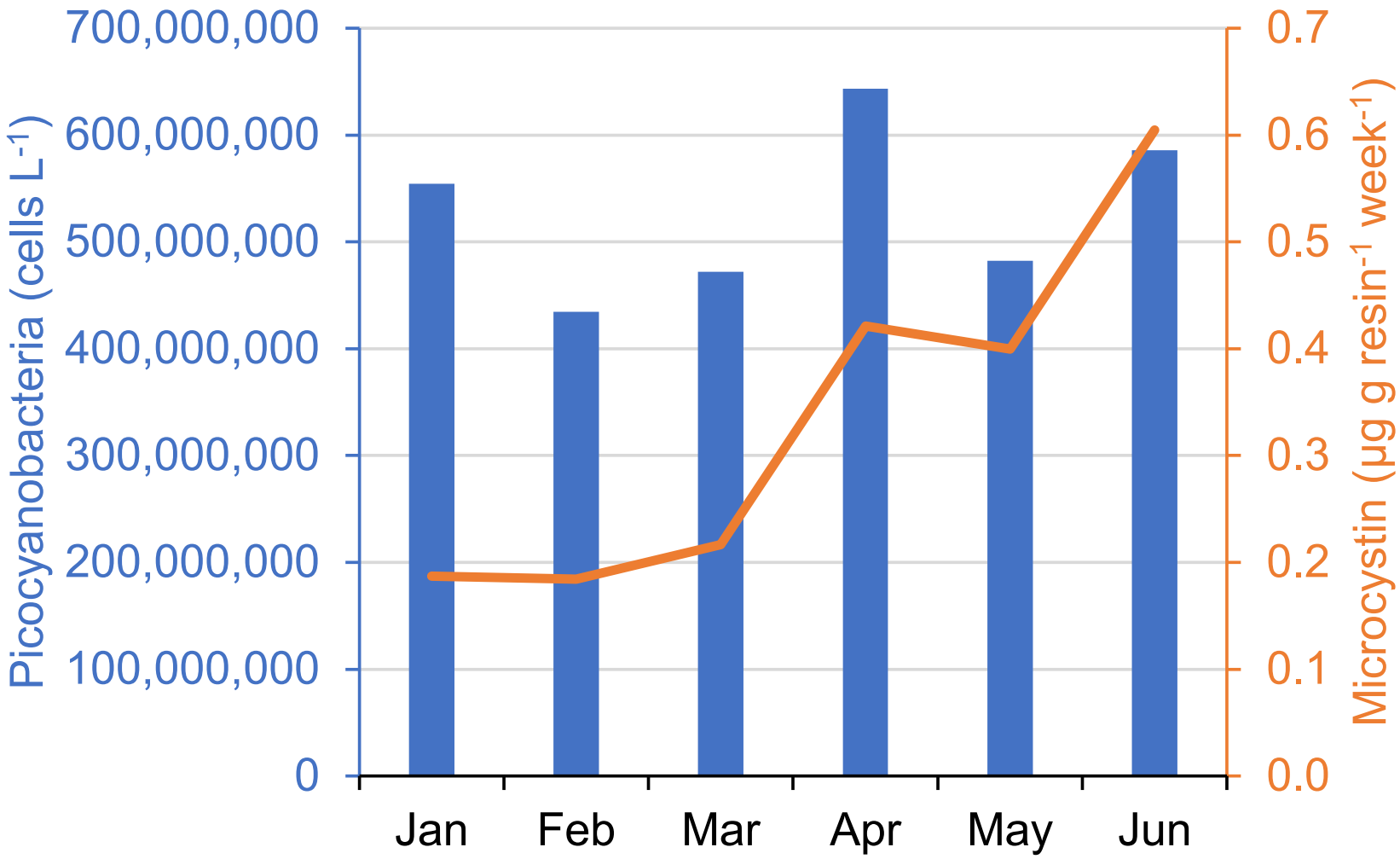
Avoid predation



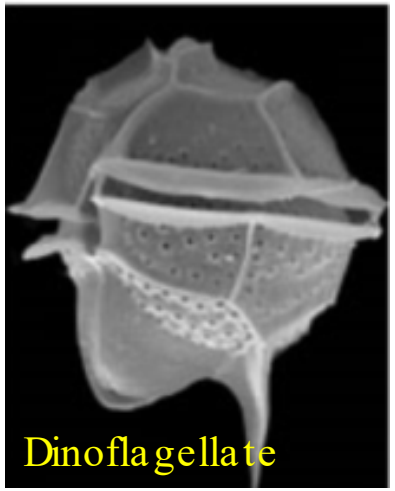


Ma FIT, Galimany SMS

Potential toxin production

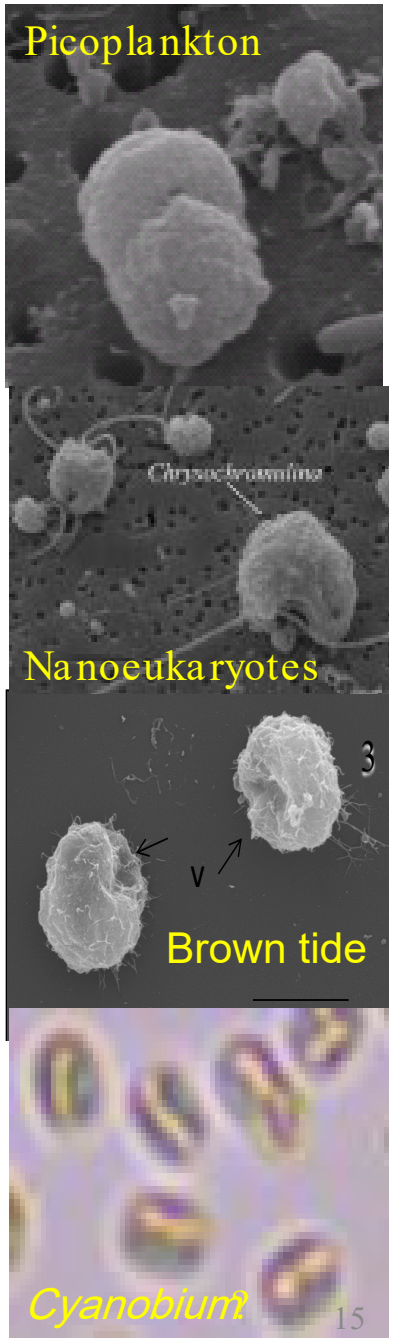


Laureano-Rosario HBOI



Issues to explore

- Identity (e.g., *Cyanobium*)
- Dynamics and drivers
  (smaller [2–20 μm in diameter] so divide faster)
- Bottom-up and top-down control
  - Win the competition for nutrients
  - Avoid being eaten
- Toxicity (timing and cause)
- Ecological effects



Thank you

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