

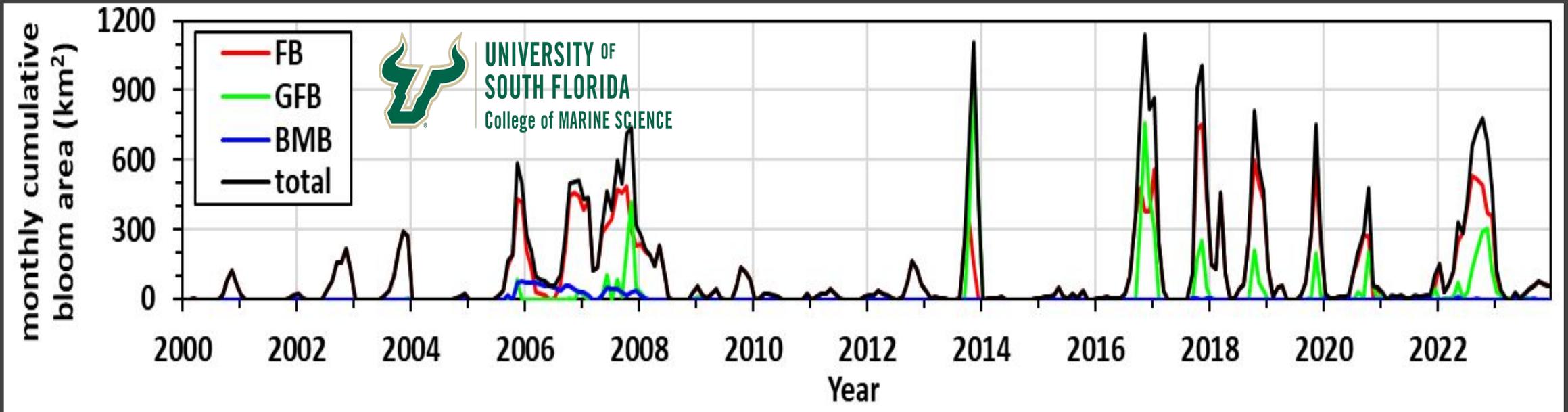
Florida Keys Harmful Algae Bloom Update

A presentation to the
Water Quality Protection Program Steering Committee



Thomas R. Matthews
Fish and Wildlife Research Institute
12 March 2025

Cyanobacteria Blooms in Florida Bay



**Bloom definition: Cyanobacterial Chl-a (Chl_{c1}; Cannizzaro et al., 2019) > 5 mg m⁻³

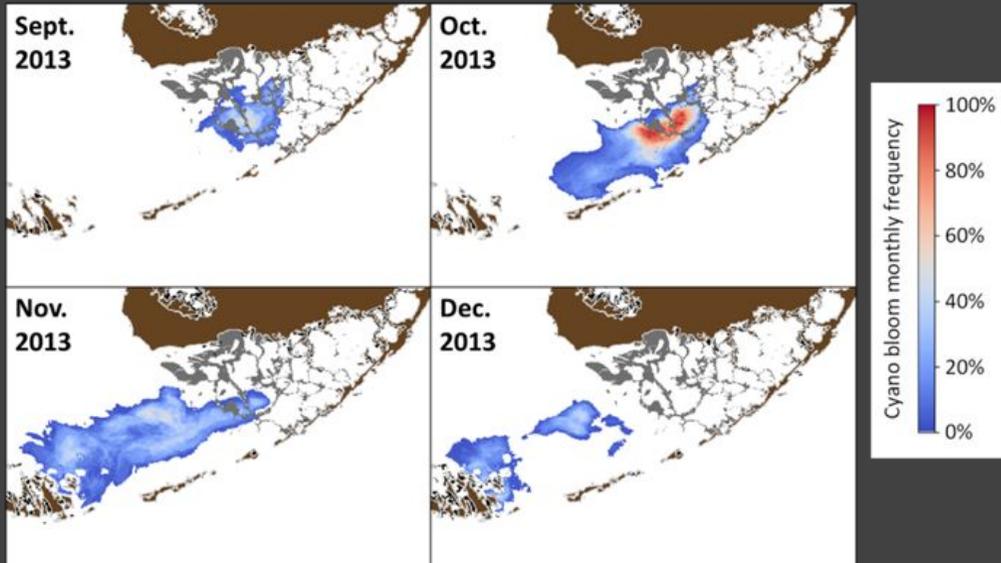
- Widespread and persistent Ecosystem Disruptive Algal Blooms commonly occur.
 - Picocyanobacteria blooms are dominated by *Synechococcus* sp.
 - Cascade of ecological disturbances beginning in the late 1991 caused declines in sponge populations
- Sponge biomass is the largest heterotrophic component of benthic biota



Bloom-Associated Mortality of Sponges

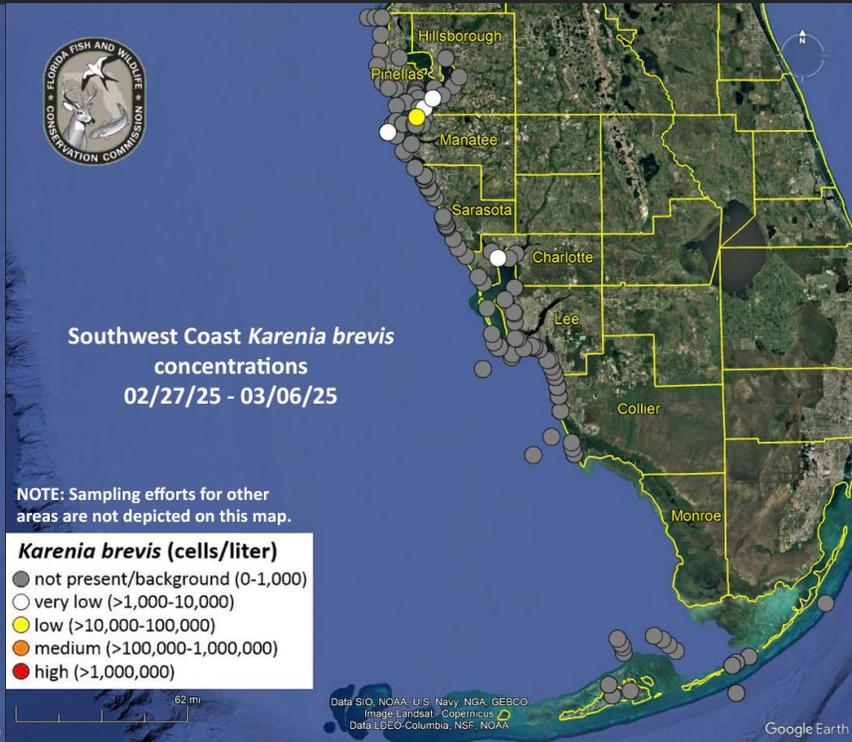
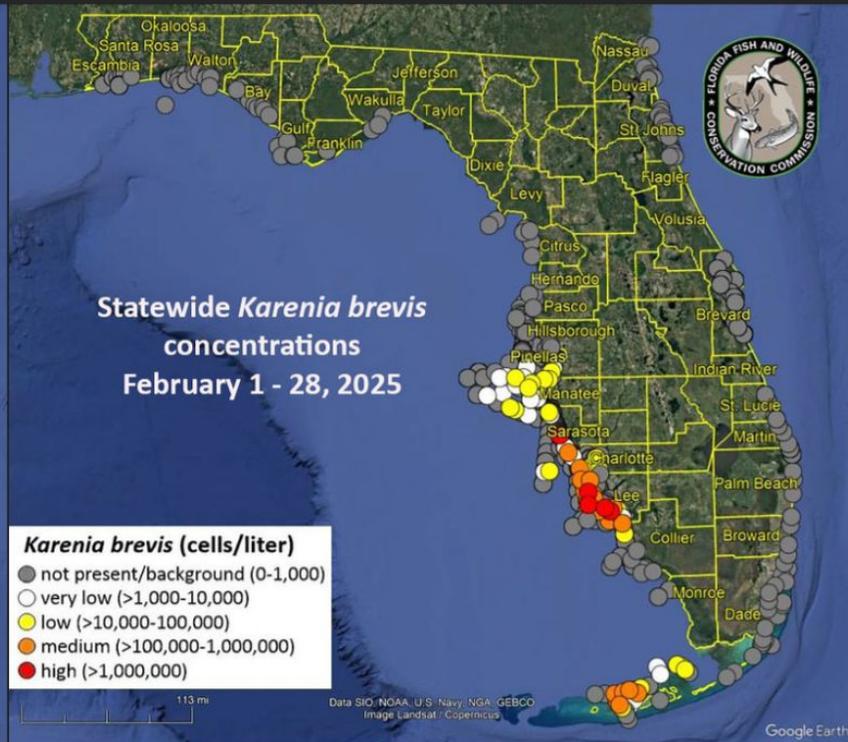
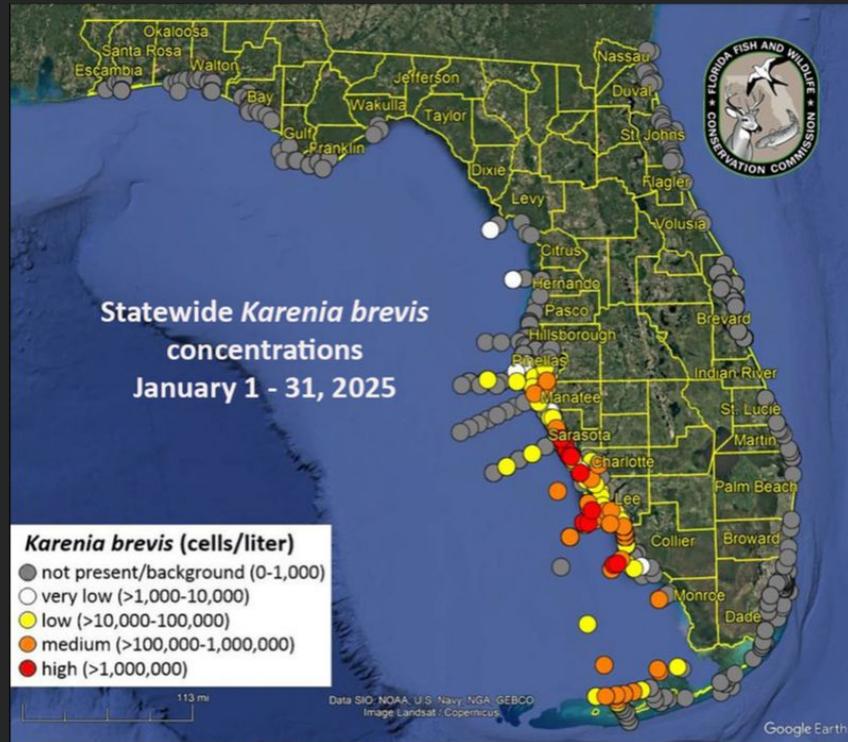
2013

“Mystery Basin” in Central Florida Bay



- Loss of all Large Structure-Forming Sponge Species
- Pre-Bloom Biomass: 176 kg/site
- Post-Bloom Biomass: ~0.3 kg/site

Red Tide Winter 2025 Florida Keys



Fish Kills Red Tide Winter 2025 Florida Keys

Species Affected included: Atlantic Spadefish, Barracuda, Bonefish, Cowfish, boxfish, Filefish, Gray Snapper, Grunt, Hogfish, Jack Crevalle, Lane Snapper, Lookdown, Mutton Snapper, Parrotfish, Pinfish, Puddingwife, Pufferfish, Snook, White Grunt, and Yellow Jack.

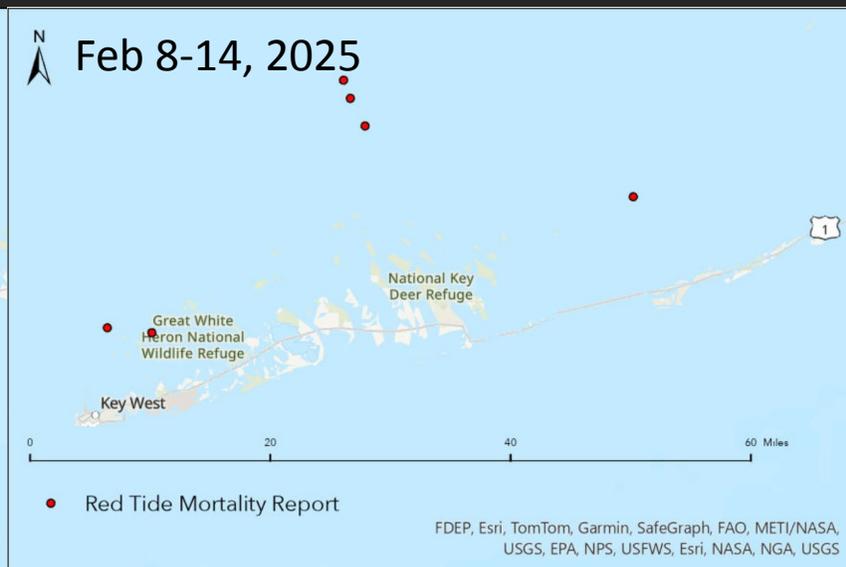
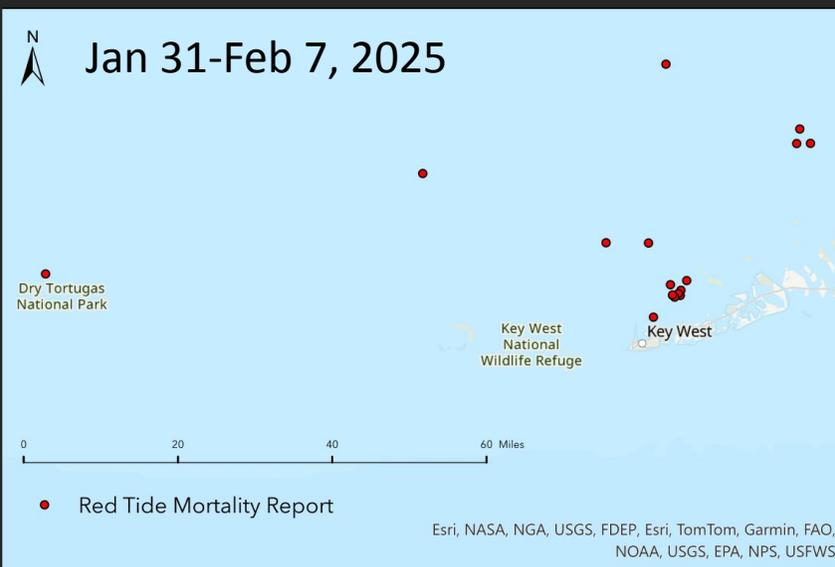


<https://myfwc.com/research/redtide/statewide/>



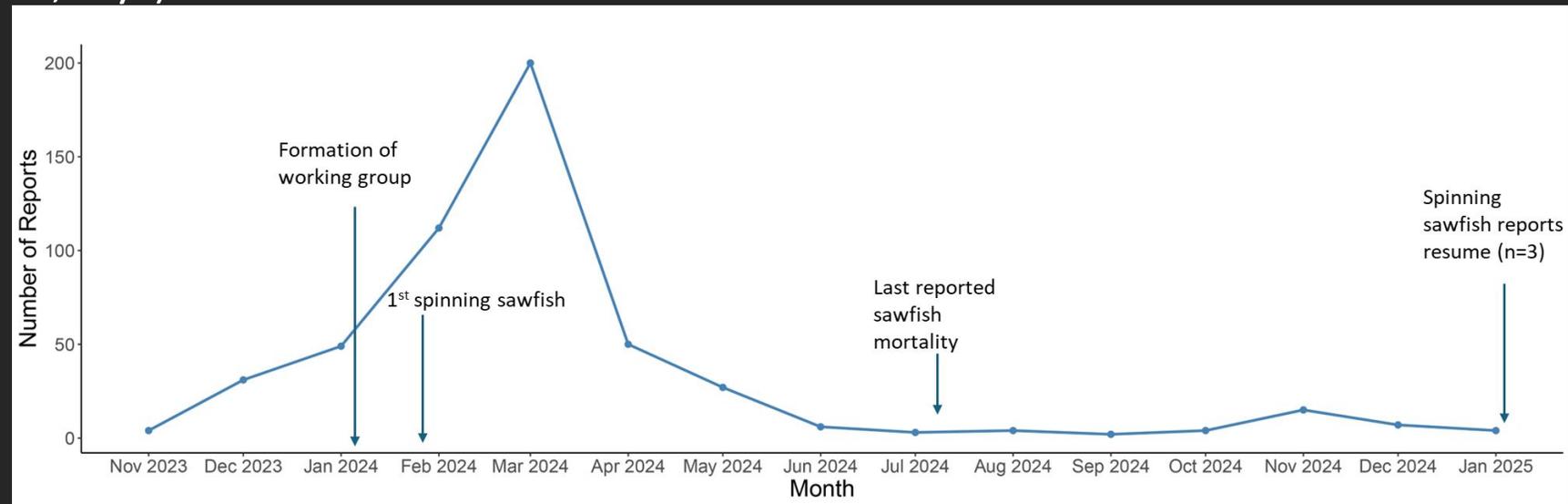
Fish Kills Red Tide Winter 2025 Florida Keys

- Since January 31, 2025, the FWC Fish Kill Hotline received 37 reports of fish kills
- Twenty-six of those reports noted small scale mortalities of less than 100 fish affected
- Six reports noted hundreds of dead fish.
- The remaining reports did not specify the magnitude of the event.



Keys Spinning Fish Event

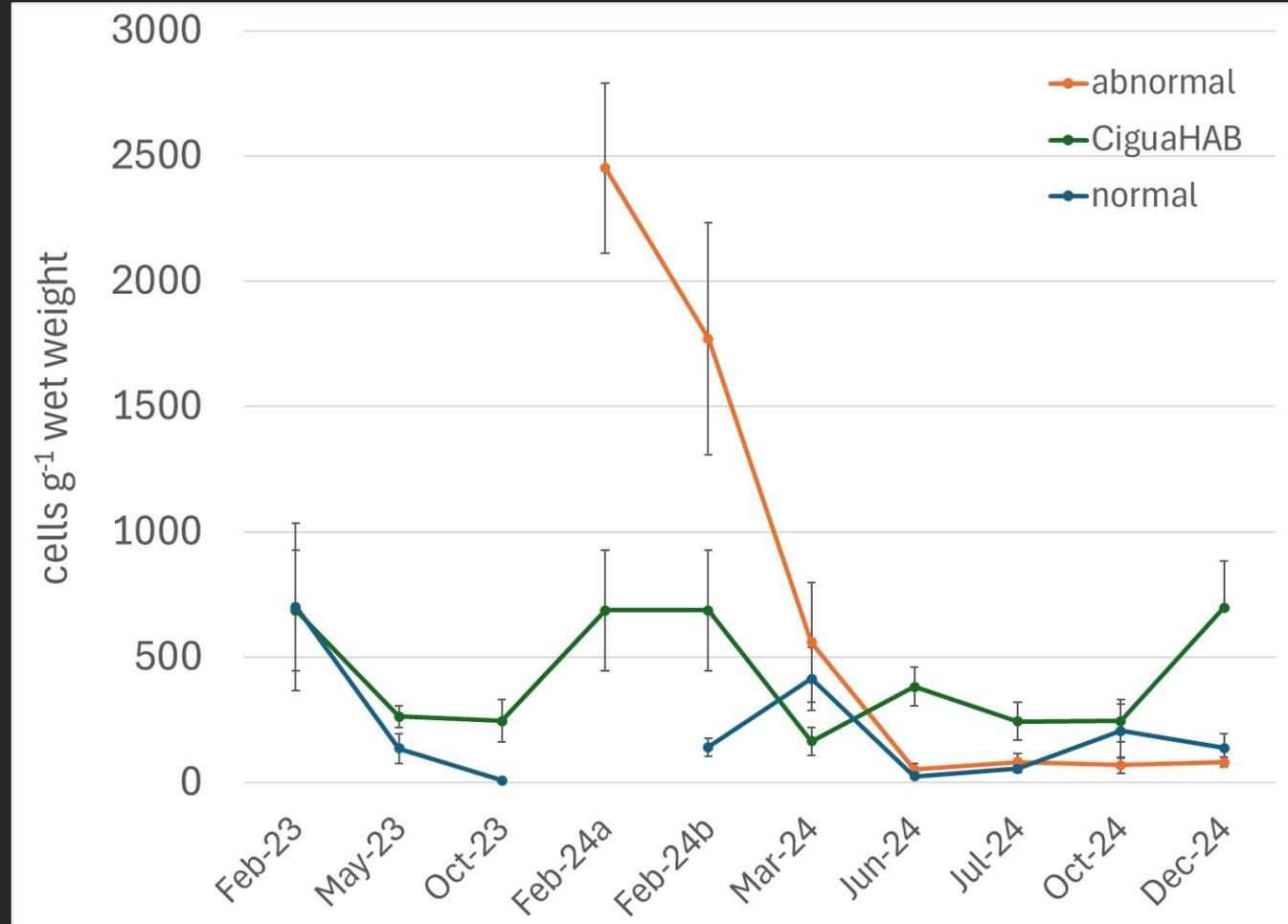
- Fish exhibited neurological signs of disease
 - ❖ Lethargy
 - ❖ Abnormal swimming (“Spinning”)
- Fish otherwise appeared healthy
- Very low density of fish mortalities
- Geographical area largely limited to the FL Keys
- Over 80 species affected
 - ❖ Teleosts (bony fish) n=70
 - ❖ Elasmobranchs (sawfish, sharks, rays) n=10
 - ❖ Few crustaceans



Keys Spinning Fish Event

Average *Gambierdiscus* cell densities
(± 1 standard error)

- Lower Keys sampling sites exhibiting abnormal fish behavior (abnormal) versus
- Middle keys sites where abnormal behavior was not observed (normal)
- monthly-averaged baseline established in earlier studies (CiguaHAB, Feb 2023 to Dec 2024)

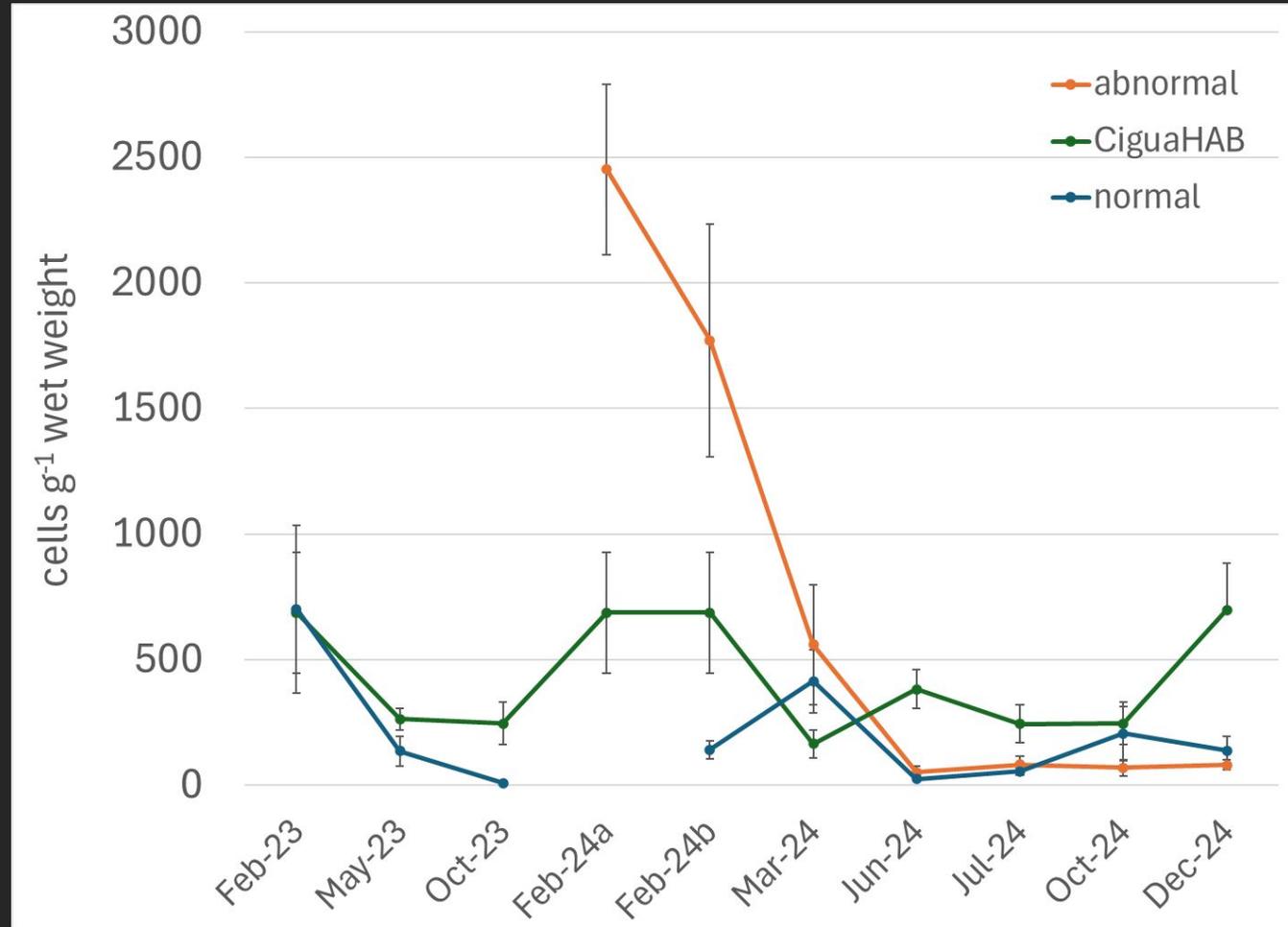


Michael L. Parsons
Professor of Marine Science
Director, Vester Field Station
The Water School
Florida Gulf Coast University

Keys Spinning Fish Event

Average *Gambierdiscus* cell densities
(± 1 standard error)

- January, *G. spp.* levels are still low. Including near Channel 2 and 5 where some reports of spinning fish were noted by BTT
- February samples remain to be processed.



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Keys Spinning Fish Event, Winter 2025

Since December 2024,

- FWC received 44 reports of fish spinning behavior to the **Fish Kill Hotline**,
- including many relayed by Bonefish & Tarpon Trust and the Lower Keys Guide Association
- Affected fish have been observed primarily in the Middle and Lower Keys.
- 22 reports of sawfish behaving abnormally in the greater Keys area
- During this time, there have been six sawfish mortalities
- 62 total confirmed sawfish mortalities since December 2023.

- **Fish Kill Hotline (FKH)**

- Abnormal fish behavior, fish disease, fish kills
- Web form ([MyFWC.com/ReportFishKill](https://myfwc.com/ReportFishKill)) or by phone (800-636-0511)
- Monday – Friday, 9-5



Contributors to this Presentation and Research Partners

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