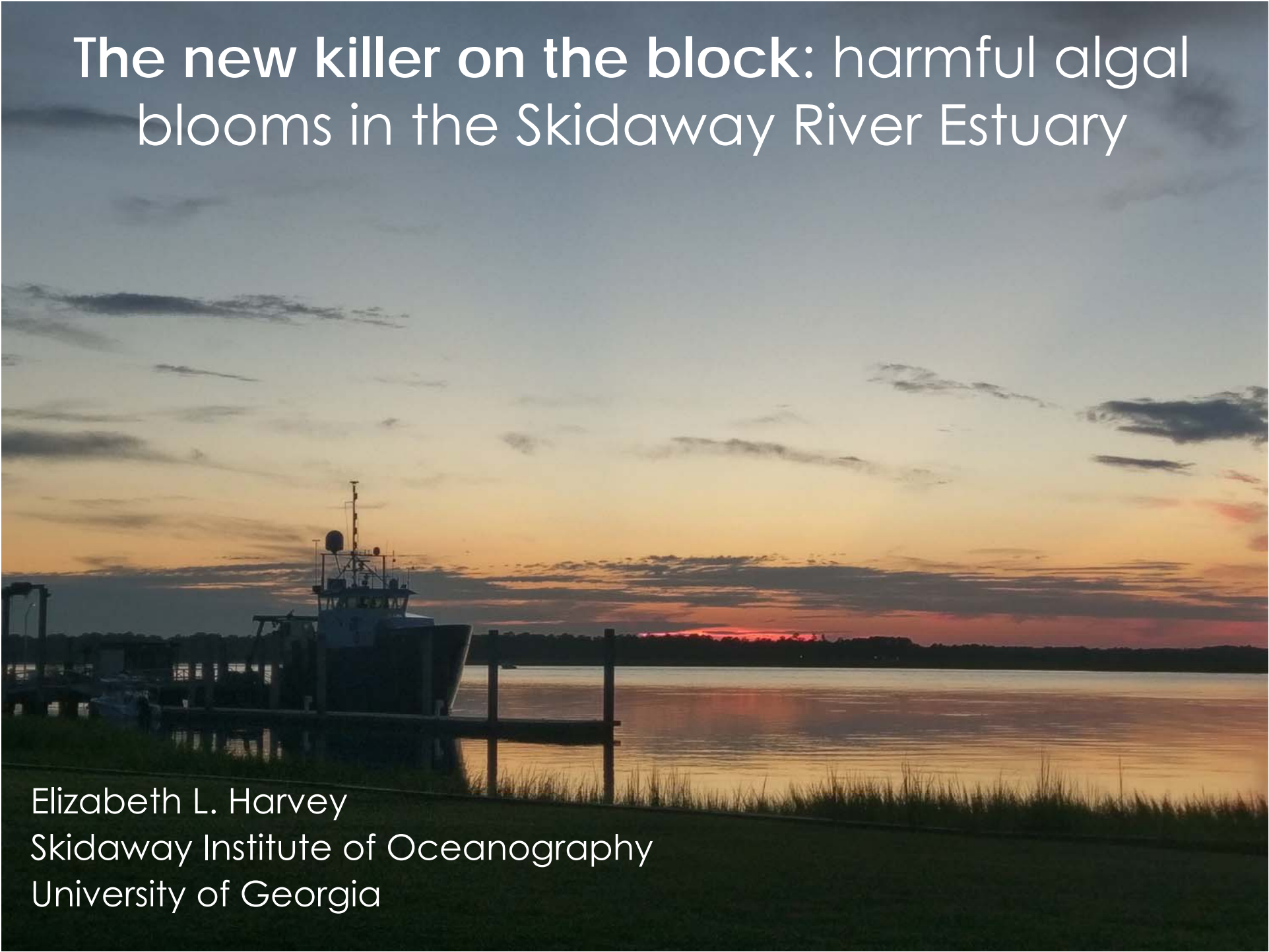


# The new killer on the block: harmful algal blooms in the Skidaway River Estuary



Elizabeth L. Harvey  
Skidaway Institute of Oceanography  
University of Georgia

If a HAB happens along the GA coast and no one is there to see it, did it happen?

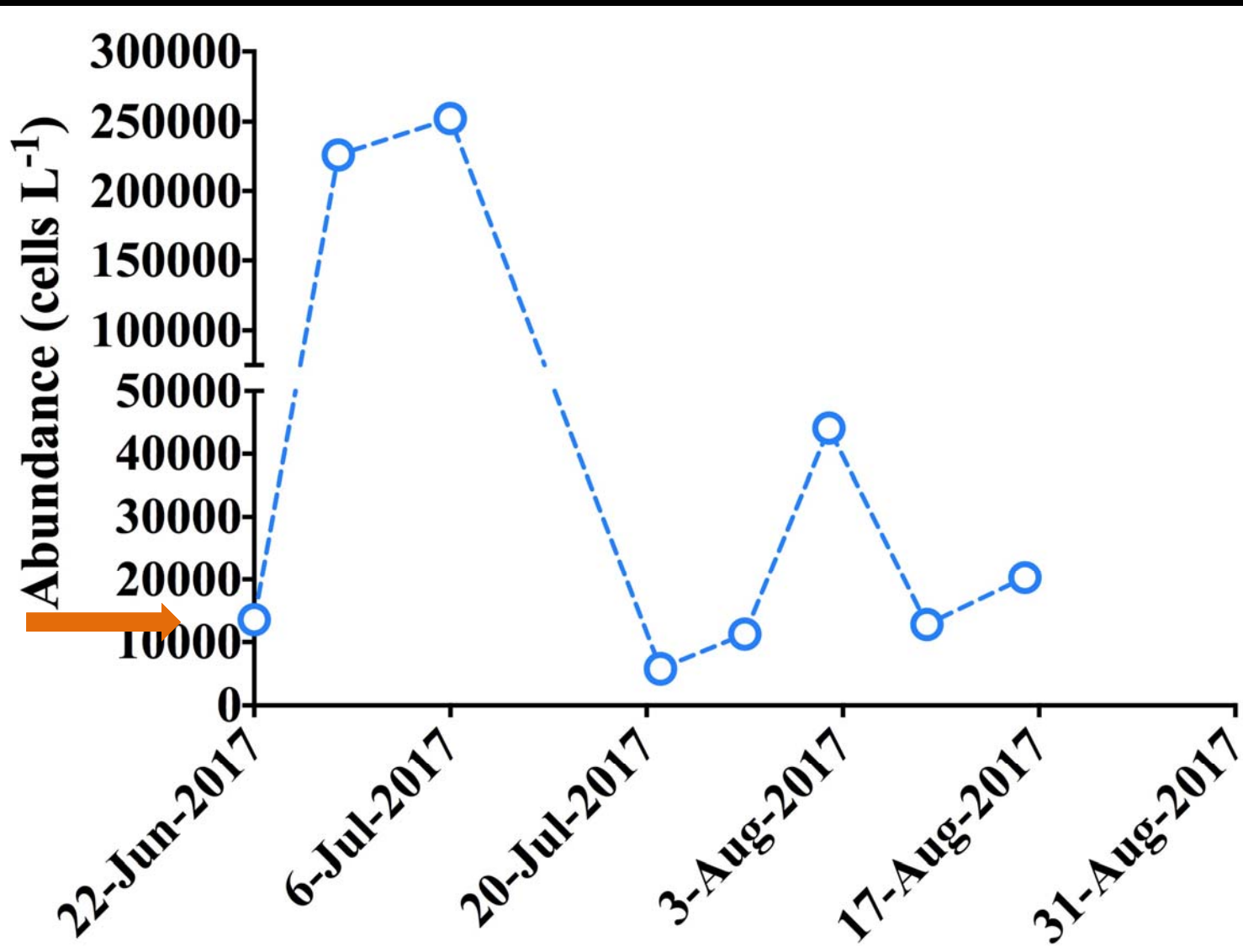
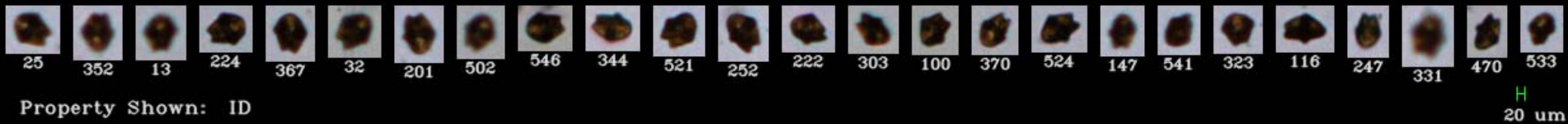


Hatchery Manager: Justin Manley

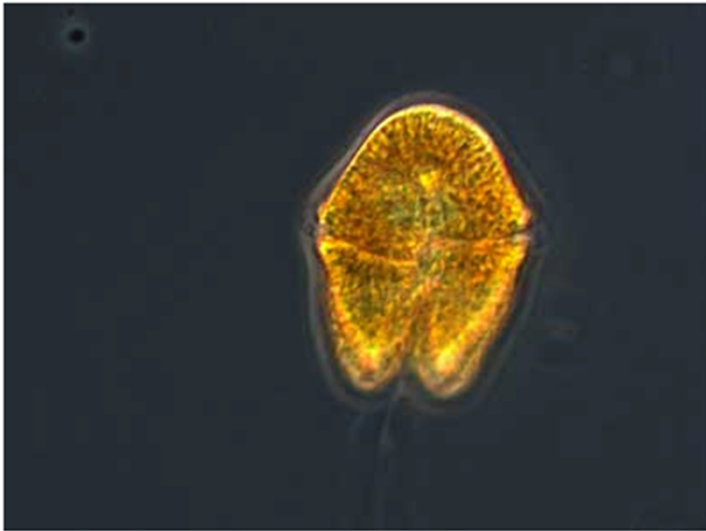
A screenshot of the Georgia Sea Grant website. The header features the logos for 'Marine Extension and Georgia Sea Grant UNIVERSITY OF GEORGIA' and 'Sea Grant'. A navigation menu includes 'Home', 'About', 'Research', 'Outreach', 'Education', and 'UGA Aquarium'. Below the menu, a breadcrumb trail reads 'Home | Outreach | Programs | Oyster Hatchery'. The main heading is 'Oyster Hatchery'. A sub-headline states: 'UGA Marine Extension and Georgia Sea Grant have opened the state's first oyster hatchery, which is expected to revive the once-thriving oyster industry in Georgia.' Below the text is a photograph of a person's hands holding several fresh oysters.

Yearly spat production worth \$1.6 million

# Large bloom of *Akashiwo sanguinea* in 2017



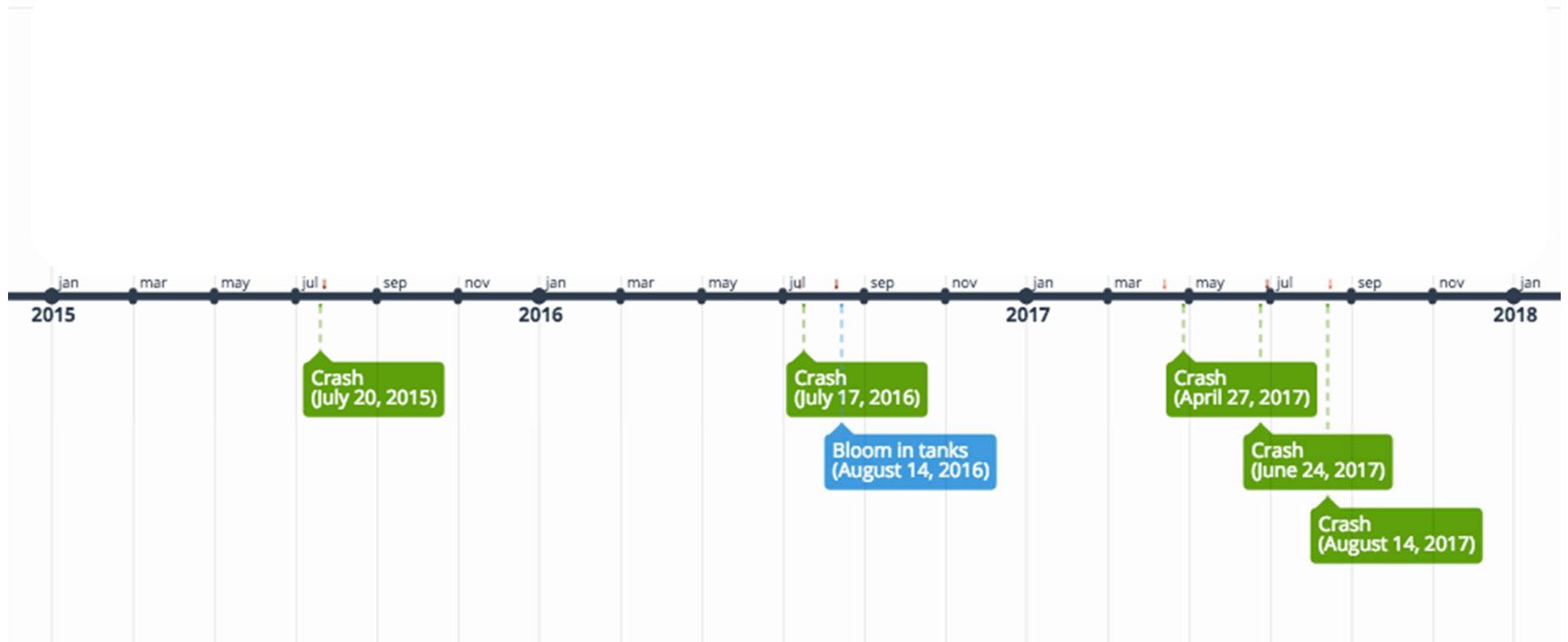
*Akashiwo sanguinea* (*Gymnodinium sanguineum*,  
*Gymnodinium splendens*)



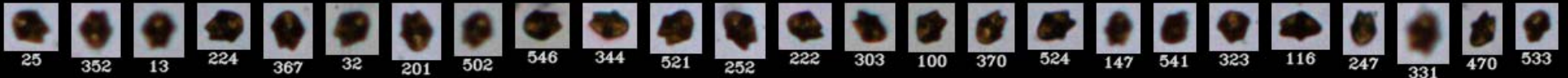
- Size: 40 – 80  $\mu\text{m}$
- Distribution: cosmopolitan in temperate to tropical coastal and estuarine waters
- Can form extensive blooms and are associated with fish and seabird kills (Jessup et al. 2009)
- Toxic to oysters (Cardwell et al. 1979)
- Forms resting cysts (Tang and Gobler 2015)
- Susceptible to parasite *Amoebophyra* sp. (Coats and Park 2002)

# Pattern of mortality in the Shellfish Hatchery and elevated concentrations of *A. sanguinea*

(Thank you Phytoplankton Monitoring Network)

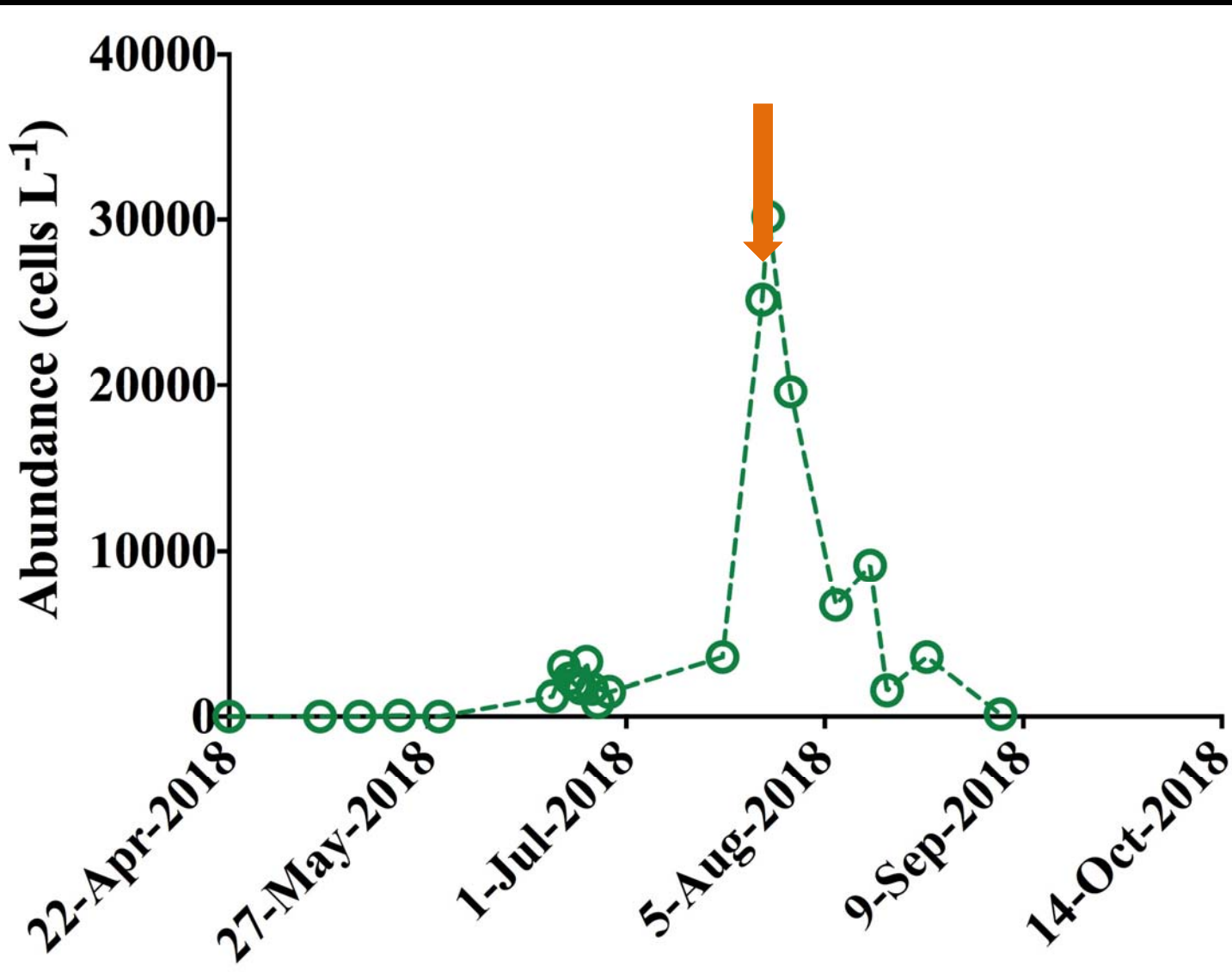


# Closer monitoring in 2018 – no July bloom

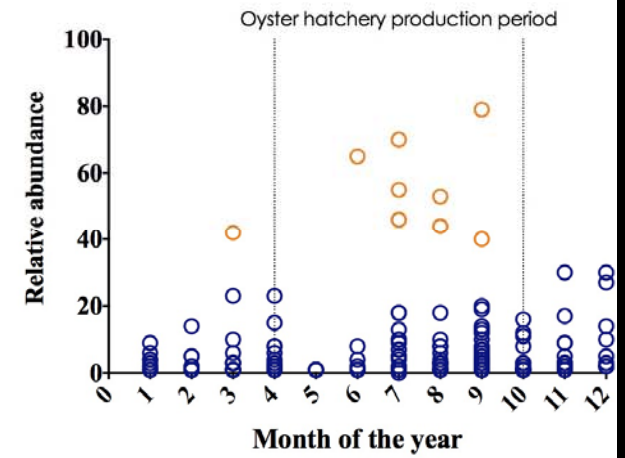
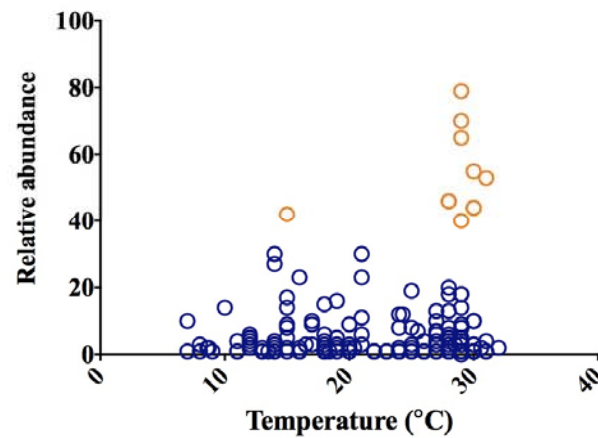
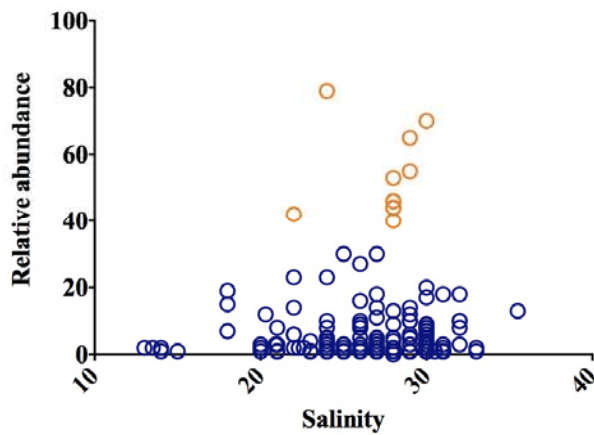


Property Shown: ID

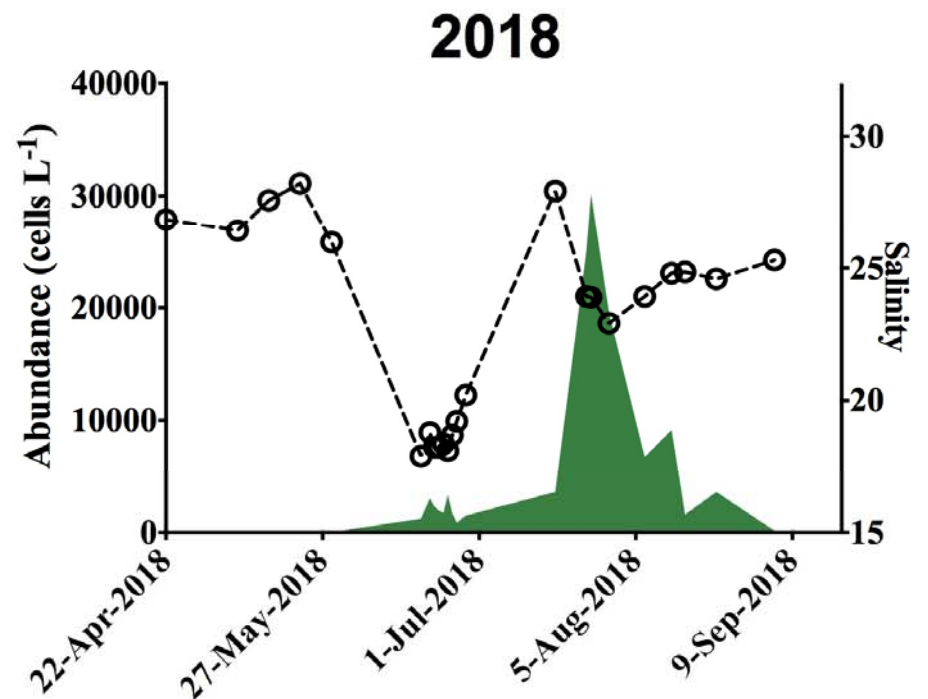
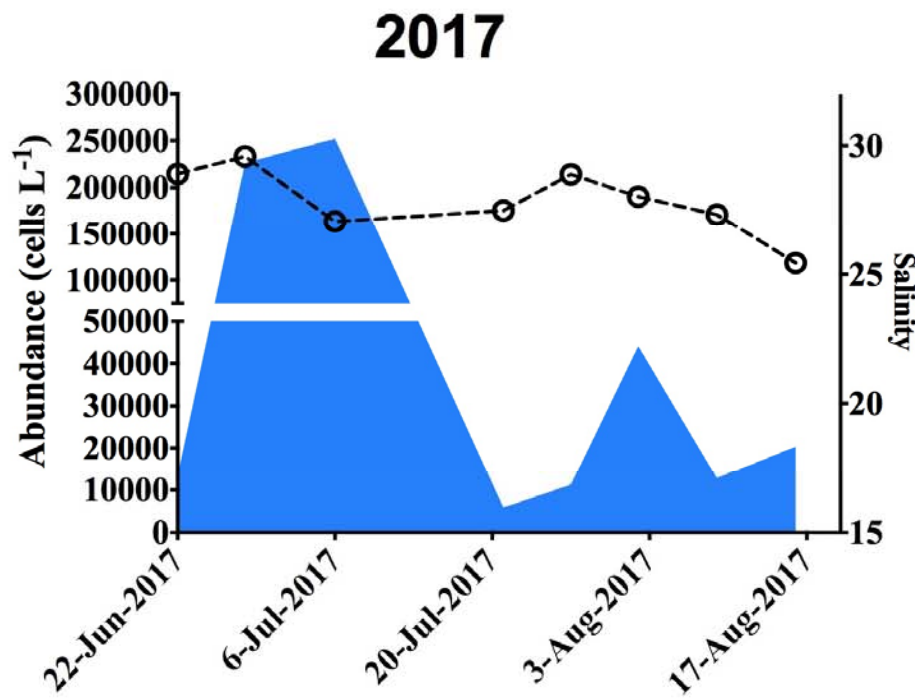
20  $\mu\text{m}$



Blooms seem to occur in the summer, higher temperatures, and salinities above 25  
(Phytoplankton Monitoring Network)



# Low salinity in 2018 cause of no huge bloom?





# Far more questions than answers!

- Bloom perspective
  - How far does the bloom extend?
  - Triggers for bloom formation?
  - Benthic cysts provide seed population for future blooms?
  - What terminates the bloom?
- Oyster perspective
  - What is the mechanisms for toxicity for oyster larvae (toxin vs. nutrition vs. TEP)?
  - Do these blooms influence natural oyster populations?
  - Time of exposure matter?
- Hatchery perspective
  - Can we predict bloom events?
  - Can we modify water preparations in order to decrease mortality?

# Maybe not just SkIO dock?

