

Prospective Plans for VIMS FlowCam

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VA HAB Task Force Meeting

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What is a FlowCam?

Prospective Uses

Enhanced HAB Monitoring

Phytoplankton
Community Analysis

Lab-based Analyses

What is a FlowCam?

- Alternative to manual microscopy for phytoplankton monitoring
- Combines imaging flow cytometry, microscopy, and digital imaging into a single machine
- **FlowCam 8400 + 532nm laser:** Allows for fluorescence analysis, digital images, physical measurements, biovolume calculations, robust statistical analysis, semi-automated classification of particles.



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- Enhanced HAB monitoring
- Phytoplankton community analyses
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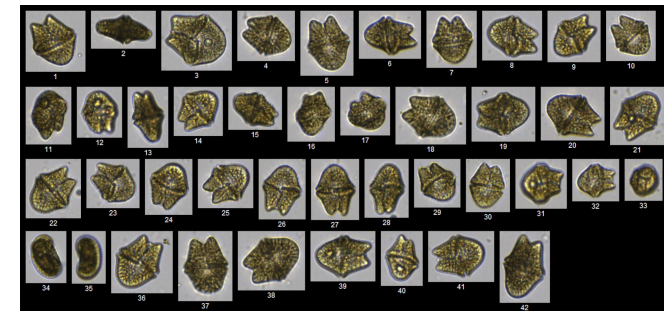
Lab-based Analyses

Enhanced HAB Monitoring

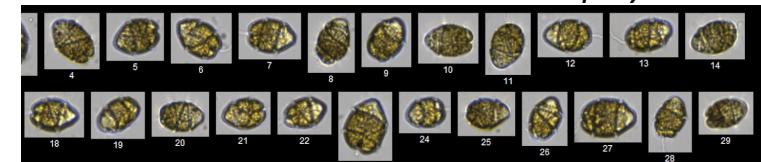
- Create classification libraries of York River phytoplankton taxa
 - Special focus on HAB species
 - Year-round (Starting 2022)
- Share amongst FlowCam users in lower Chesapeake Bay labs
 - Upload to shared drive, database
- Streamlined detection and quantification
 - Improved datasharing across labs and management agencies

FlowCam library examples:

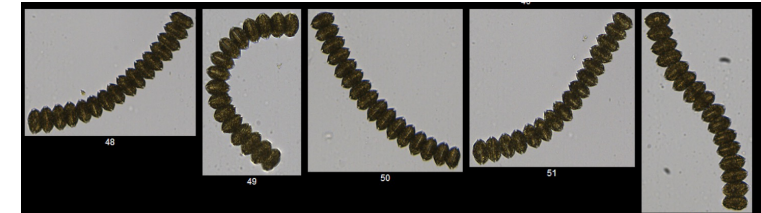
A. sanguinea



M. polykrikoides



A. monilatum



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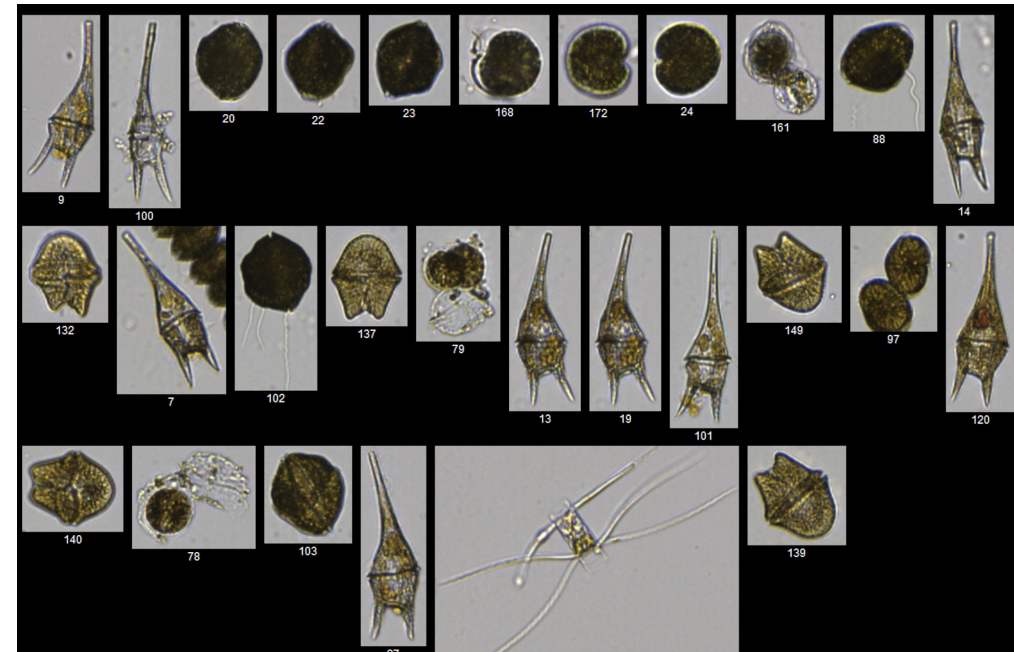
Phytoplankton
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Lab-based Analyses

Phytoplankton Community Analysis

- Routine quantification and biovolume analyses
- Visualize community composition
 - Co-occurrence of dominant phytoplankton
 - Parasitic interactions
 - Bloom sequence via life cycle stages

End of Alex bloom sample 2020:



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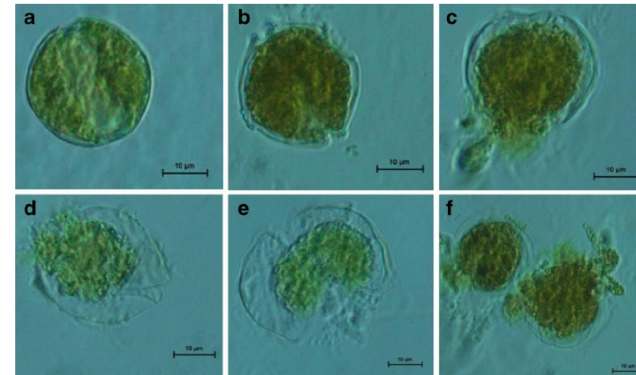
Phytoplankton
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Lab-based Analyses

Laboratory-Based Analyses

- Life cycle studies
- Cell lysis assays; cell quantification
- Cell quantification for qPCR standards

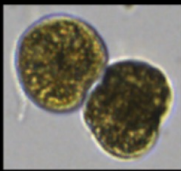
Cell Lysis of *A. tamarensis*



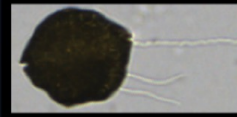
Li, Yi, et al. 2014

FlowCam Images of *A. monilatum*

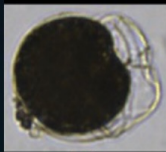
Paired, fusing gametes



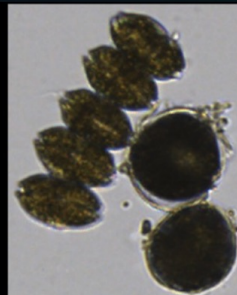
Planozygote



Hypnozygote (Cyst)



“Short” chain and hypnozygotes size comparison



Thank you! Questions?

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