

VA HAB Task Force Meeting Smith Lab Recap 2020

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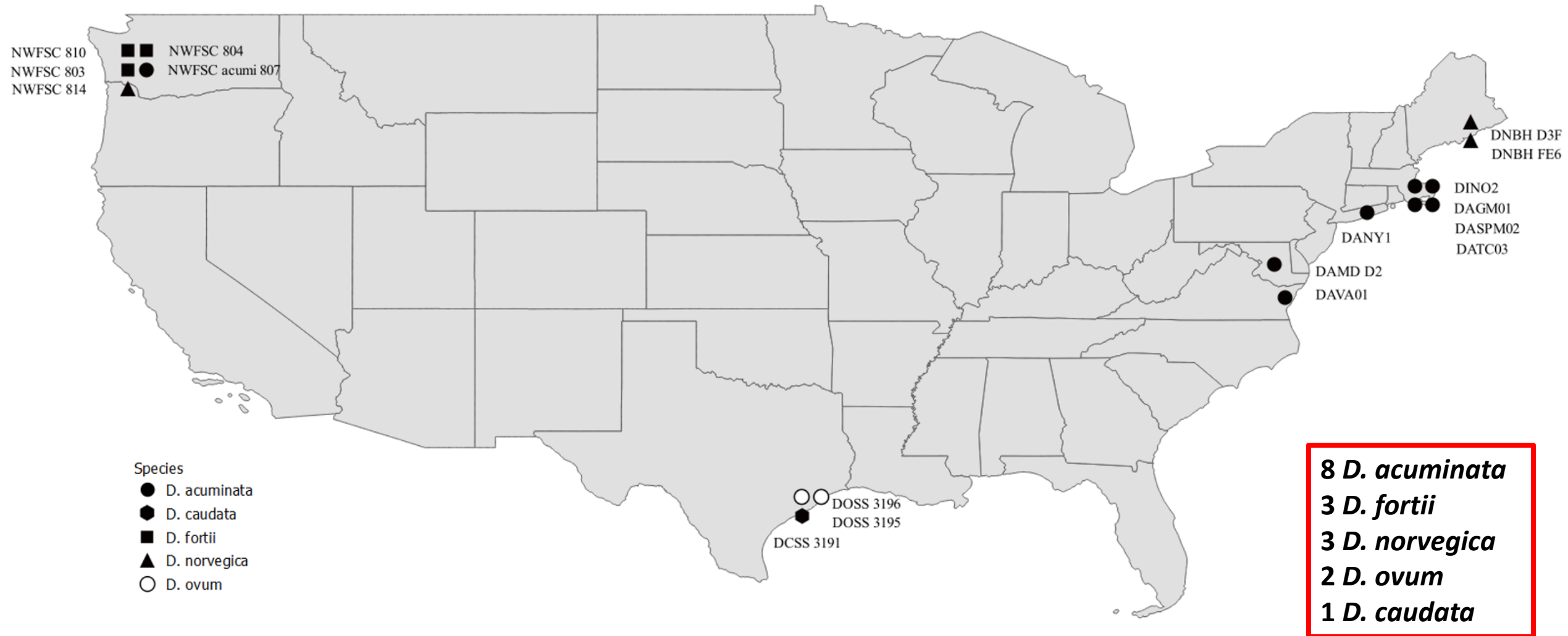
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Smith Lab Recap 2020

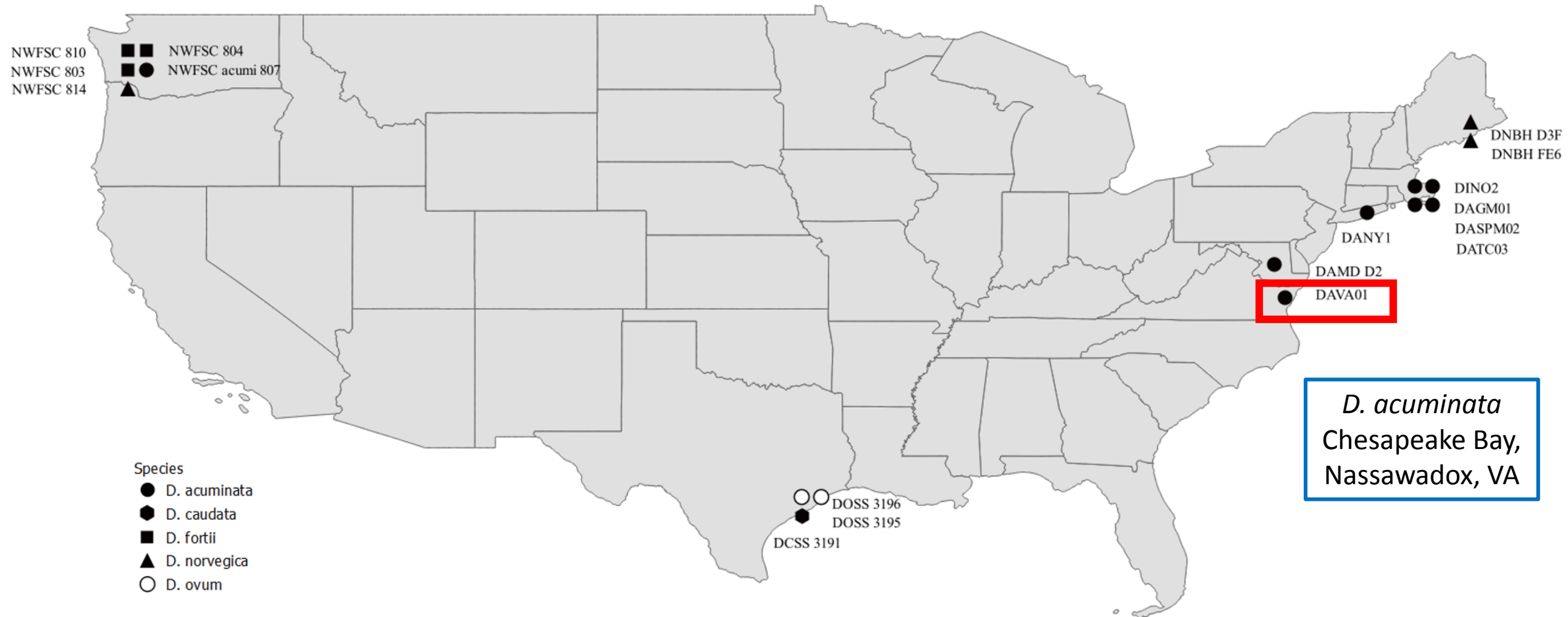
- *Dinophysis acuminata* strain isolate from the Chesapeake bay
- ✓ **Toxin Profile:**
 - particulate and dissolved
- ✓ **Optimal culture conditions**
- ✓ **Comparison with other US *Dinophysis* isolates**

- **New blooms near Vims pier**
- ✓ **Presence of *Alexandrium minutum* cells**

Characterization of 17 toxin-producing *Dinophysis* strains isolated from US coastal waters



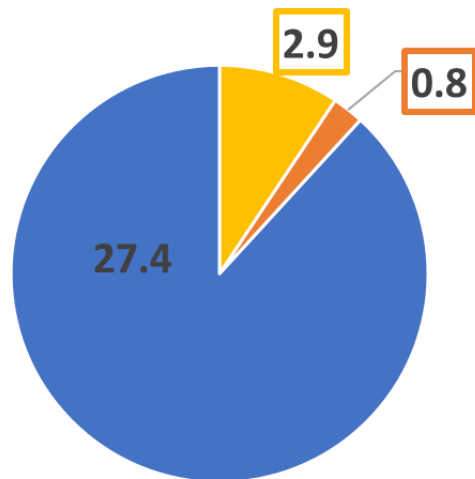
Characterization of 17 toxin-producing *Dinophysis* strains isolated from US coastal waters



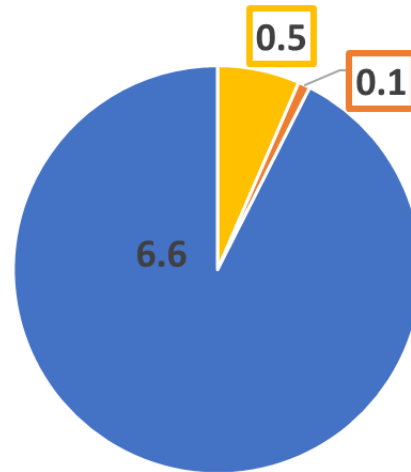
Morphological and toxin profiling of *D. acuminata* strain isolated from the Chesapeake Bay, Nassawadox, VA

- **DAVA01:** Diarrhetic Shellfish Toxins (DSTs)

Particulate DSTs content pg cell⁻¹

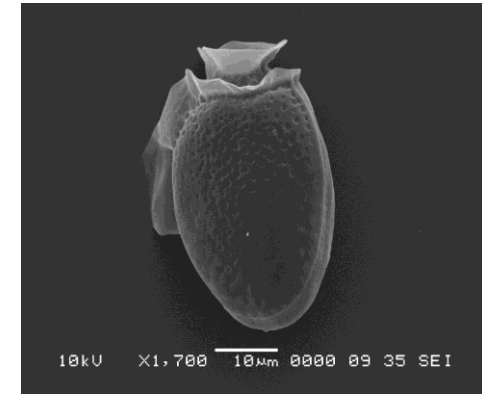


Dissolved DSTs content ng ml⁻¹



● PTX2
● DTX1
● OA

D. acuminata DAVA01



- **Regulated toxins in the US:**

Okadaic acid (OA) and DTX1 → accumulate in shellfish
 Diarrhetic shellfish poisoning (DSP) → **Human health**

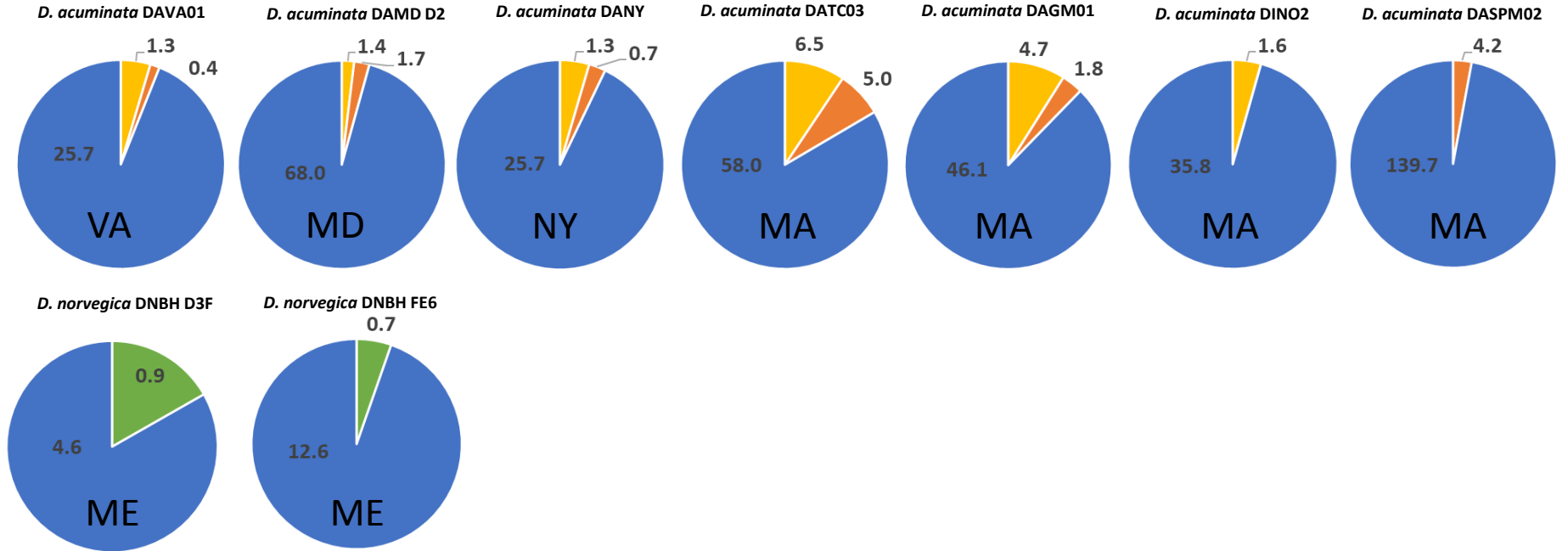
- **Regulated toxin in EU:**

Pectenotoxin (PTX2) → **shellfish health**

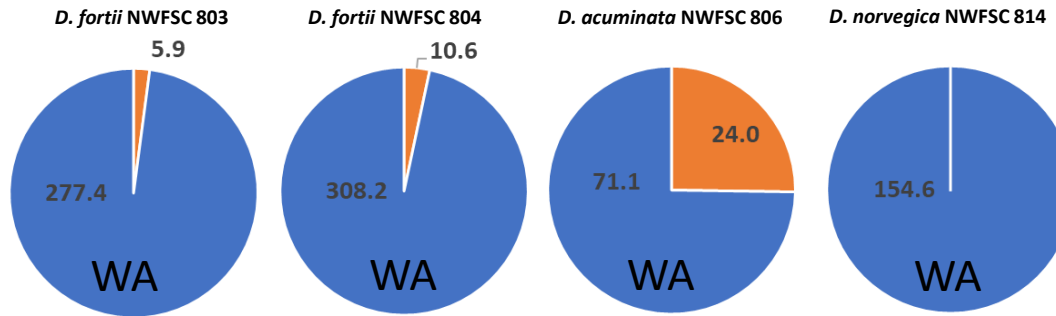
- ❑ **Culture conditions:** salinity 25, T° 15°C, light intensity 100 µmol.photon.s⁻¹.m²
- ❑ **Lab experiment:** effect of light intensity on growth, photosynthetic efficiency and toxin production
- ❑ **Similar morphology and toxin profile** as other mid- Atlantic and east cost *D. acuminata*

➤ Particulate DSPs content pg cell⁻¹

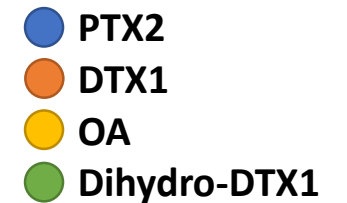
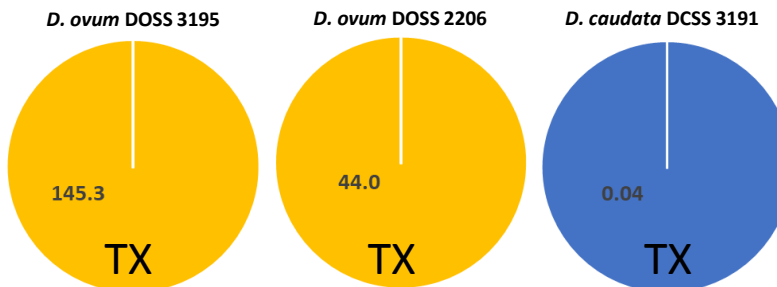
1- US east coast



2- US west coast



3- Gulf of Mexico

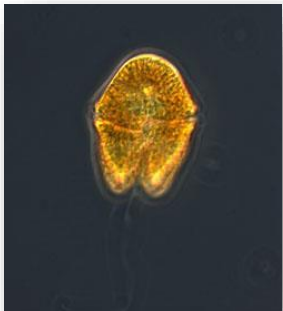


Foam forming bloom near Vims pier during Nov/Dec 2020



1- *Akashiwo sanguinea*

- Dinoflagellate foam forming HAB
- Produce surfactant-like proteins
- **Mass mortality** of marine birds

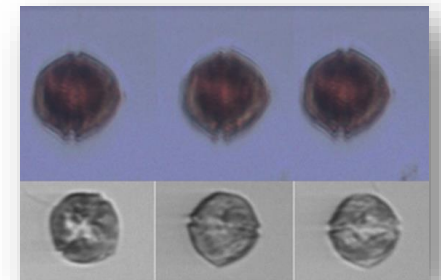


Akashiwo sanguinea
(R. Kudela)



2- *Alexandrium minutum* (183 cells/L)

- **Toxic** dinoflagellate produce **paralytic shellfish toxins (PST)**
- **Measured on the IFCB and microscope** (~20 μ m)
- **Isolation attempt**, in well plate
- **Goal:** confirm PST production in cultures



Alexandrium minutum
(I-Shuo Wade Huang)

Acknowledgments



Smith lab

Juliette Smith, Marta Sanderson, Wade Huang, Sarah Pease and Vanessa Strohm



ECO HAB 19



Vera Trainer and Brain Bill



Dave Kulis and Victoria Uva



Christopher Gobler and Rebecca Rogers



Lisa Campbell and James Fiorendino



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