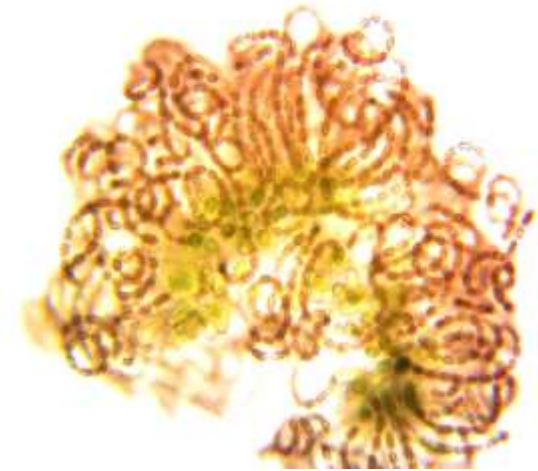
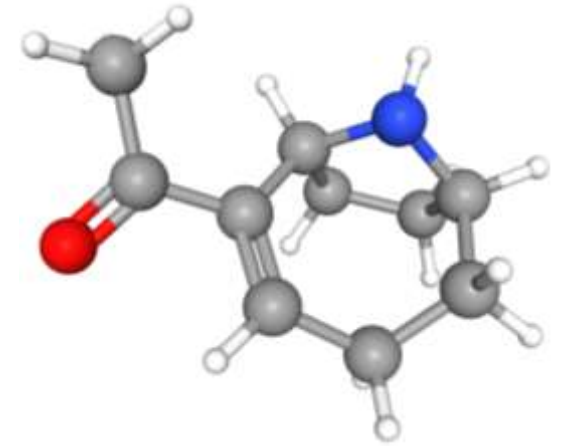


Anatoxin-a in Select HABs on Cayuga Lake

Noah Mark

Anatoxin-a at a Glance

- Second in priority (behind microcystin)
- “Very Fast Death Factor”
- 2020 dog deaths on Little York Lake (Cortland, NY)
 - Autopsy showed ingestion of cyanotoxin
 - “From the start of her symptoms to her dying it was probably 45 minutes”
–Spectrum News
- Known to be produced by a variety of cyanobacteria



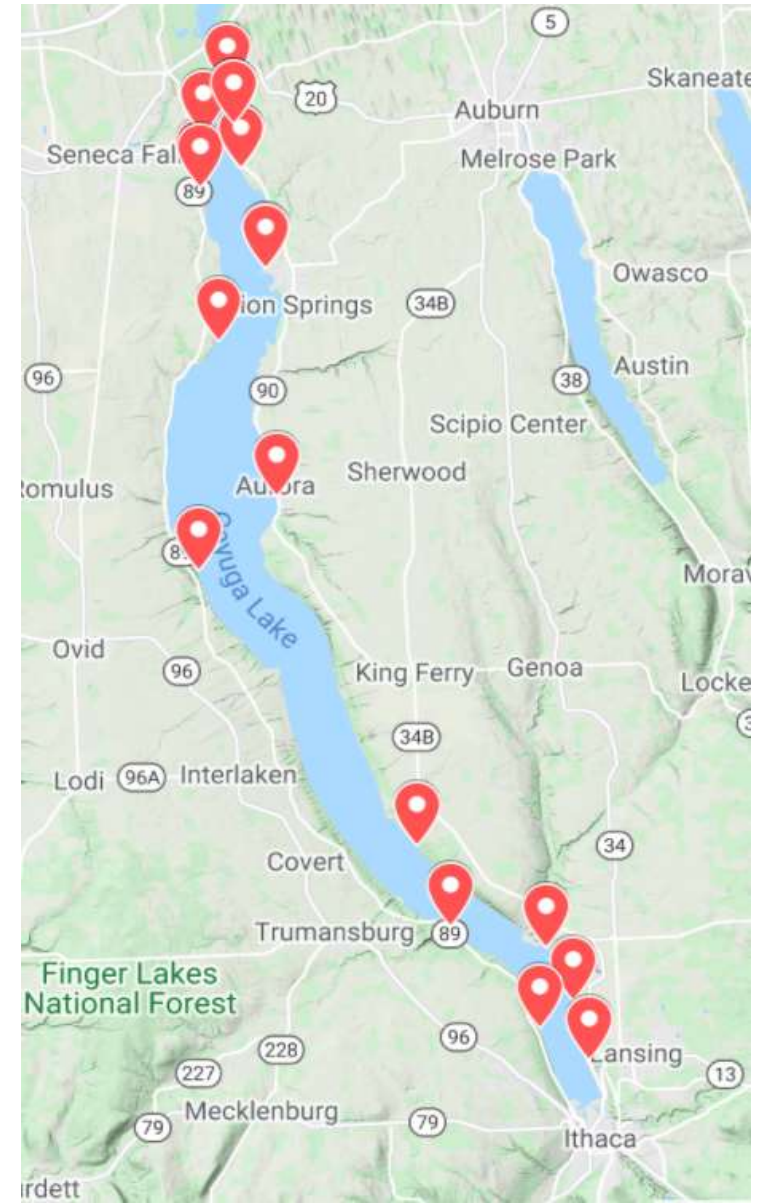
Method and Results

Sample Collection

- All samples preserved in the field
 - Degrades rapidly in direct sunlight at high pH
- July – September (19 samples)
- Capture a variety of bloom compositions

Results

- ELISA (Enzyme-Linked Immunosorbent Assay)
- Range: 0.176 $\mu\text{g/L}$ to 1.339 $\mu\text{g/L}$
- Median: 0.417 $\mu\text{g/L}$
- Presence of anatoxin-a doesn't appear to be associated with just one genus



Google map of anatoxin-a sampling locations for 2020 season

Interpreting Anatoxin-a Concentration

- Low compared to bloom concentrations of microcystin
- “Dangerous” levels of anatoxin-a varies greatly by agency
- Avoidance strategy still applies
- Going forward, CSI may continue to sample and test anatoxin-a in future seasons

| Regulatory Body | Guidance for Anatoxin-a in Ambient Water |
|------------------------|---|
| EPA | Not set |
| New York | Not set |
| Ohio | 300 µg/L |
| Virginia | 1.0 µg/L |
| WHO | 59 µg/L |

Amount of anatoxin-a that constitutes a threat to ambient/recreational waters.

References

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