Harmful Algal Blooms

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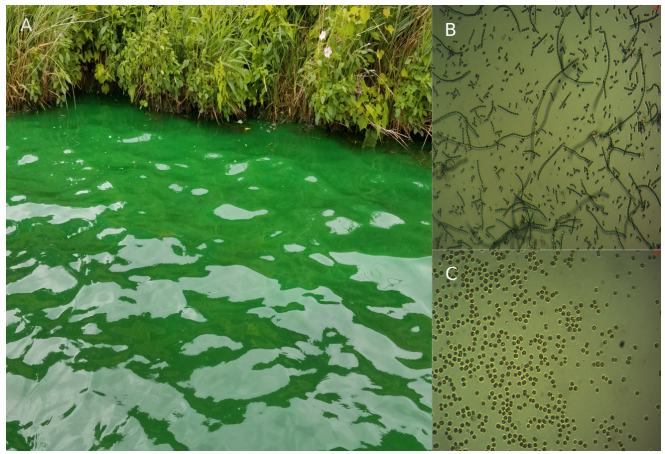
Outline

Harmful Algal Blooms

- Increase in primary productivity and
- growth of microspopic algae and cyanobacteria
- Toxin-producing genera
- Decrease biodiversity
- Anoxic environment



Toxicity

- Irritant
  - Lipolysacharides[1]
- Toxins
  - Microcystin and nodularin [1]
  - Cylindrospermopsin[2]
  - Anatoxin[3]
  - Saxitoxin [1]

[1] Moore, Richard and Ohtani, Ikuko, "Cyanobacterial Toxins".

[2] Dittmann, Fewer, and Neilan, "Cyanobacterial toxins".

[3] Codd et al., "Cyanobacterial toxins, exposure routes and human health".

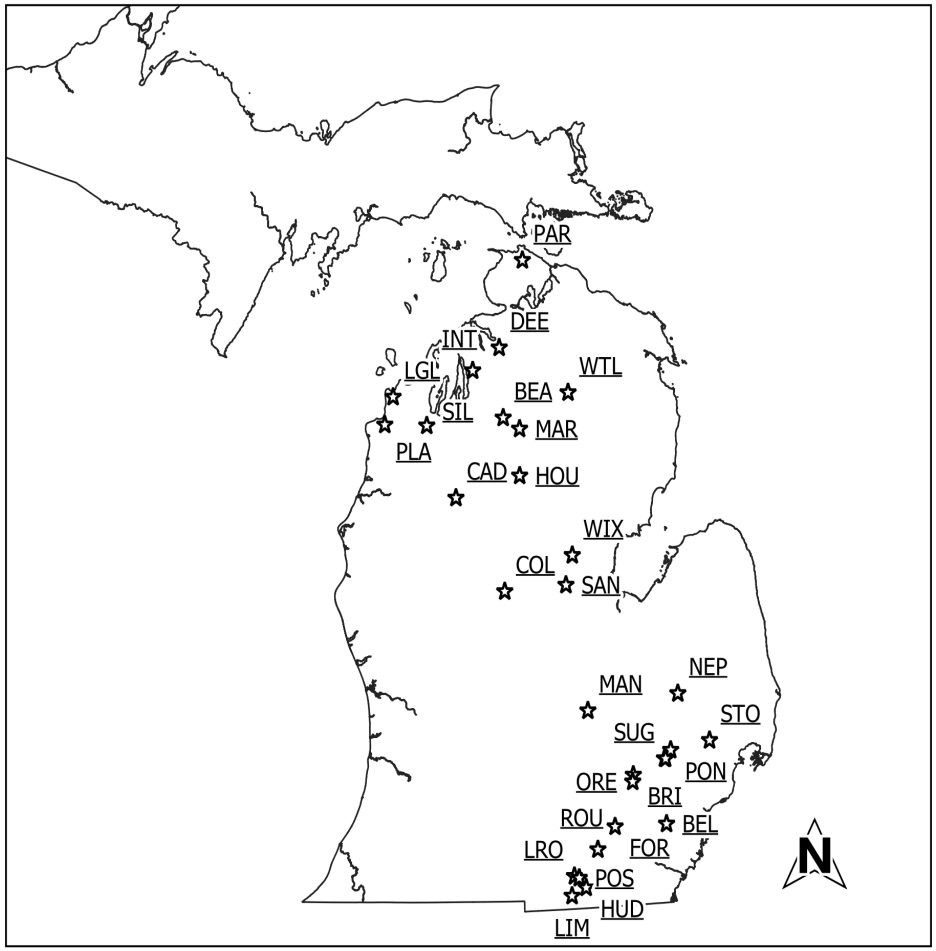
Law and Regulation

- Safe Drinking Water Act
- Maximum Contaminant Level
  - Regulated and enforced
- Contaminant Candidate List
  - “More like guidelines”

Objectives

- a
- b

Surveyed Lakes



Methods

Water Sampling

- Sampled each lake once a month
- Collected water
- Quickly transported back
- Analyzed ASAP

Analysis

Coloremetric

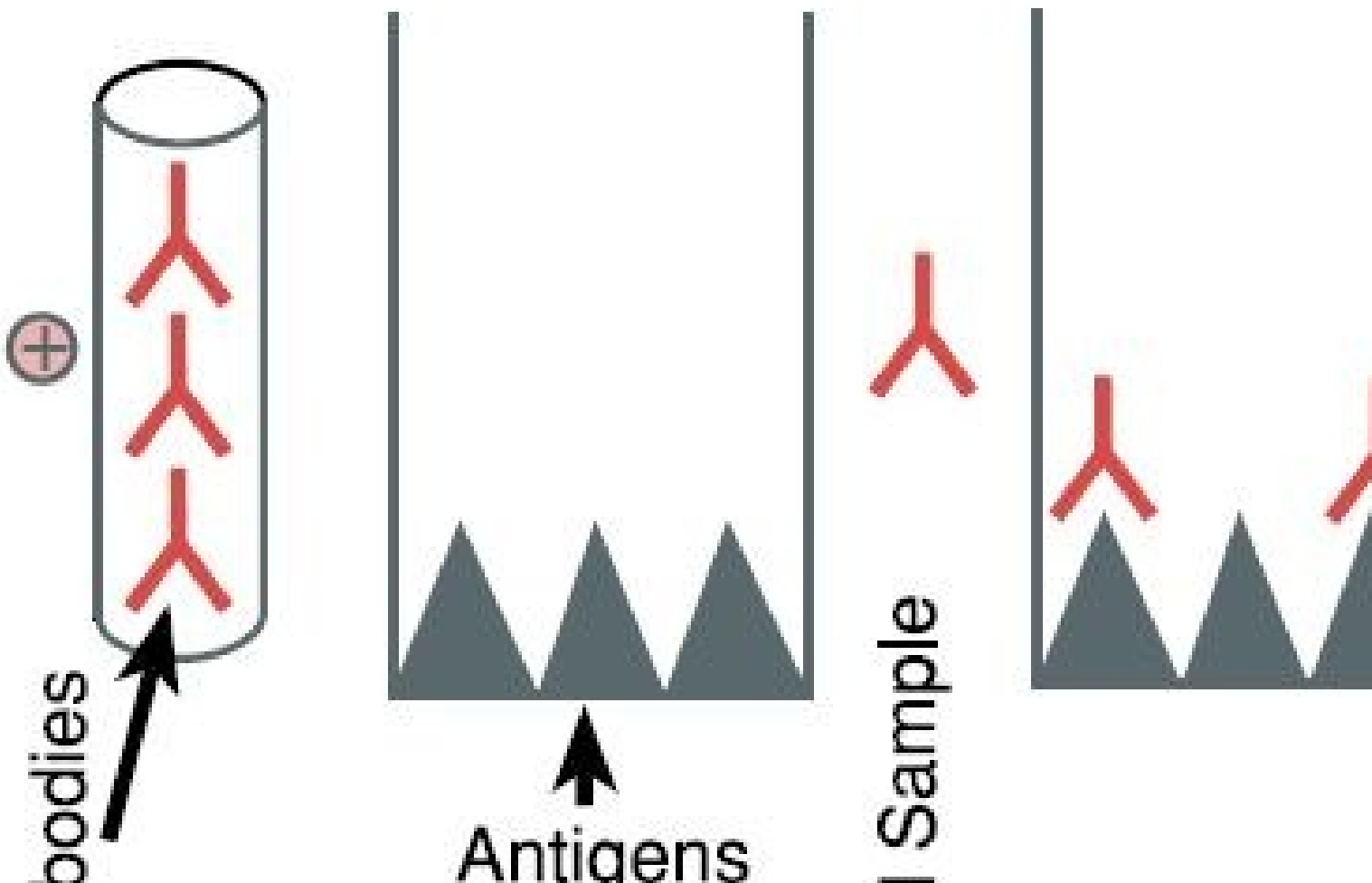
- jflsd

LC-MS/MS

- a

ELISA

- Enzyme-linked immunosorben assay



Geospatial Analysis

- a

Results

- a

Could we predict HABs?

- a
- a

Acknowledgment

- My lab partners Brian Spies and Andrew Herrpich
- Jason Sckrabulis, Ryan Mcwhinnie, Melissa Ostrowski
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References I

Codd, Geoffrey A. et al. "Cyanobacterial toxins, exposure routes and human health". In: *European Journal of Phycology* 34.4 (Oct. 1999), pp. 405–415. ISSN: 0967-0262.

Dittmann, Elke, David Fewer, and Brett Neilan. "Cyanobacterial toxins: Biosynthetic routes and evolutionary roots". In: *FEMS microbiology reviews* 37 (Sept. 2012). DOI: 10.1111/1574-6976.12000.

Moore, Richard and Ohtani, Ikuko. "Cyanobacterial Toxins". In: *Gazzetta chimica Italiana* 123.6 (1993), pp. 329–336.