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Eastern Ontario Algae Partnership (or green slime monitoring): Preliminary results from 2010 monitoring

Lake Links 2010

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Parks Canada Parcs Canada

Canada

Background

- Increase (apparent?) of nuisance aquatic vegetation in lakes, streams, rivers and Rideau canal: Lots of complaints !
- RVCA organized a meeting of the various agencies in January 2010 to talk about green slime: Need to better identify the problem (what, where, how often etc.)
- Algae vs. macrophytes or weeds, cyanobacteria (blue-green algae) vs filamentous algae (cyanobacteria – public health implications)
- “Train-the-trainer” algae workshop held in April of 2010 – how to ID green slime
- Summer 2010 – collect green slime

Whose involved

- Conservation authorities (Rideau Valley Conservation Authority, Cataraqui River Conservation Authority, South Nation Conservation Authority)
- Ontario Ministry of Environment
- Leeds, Grenville & Lanark District Health Unit
- Universities (University of Ottawa, Université de Montréal)
- Parks Canada (Rideau Canal National Historic Site)

Ontario Ministry of Environment Bloom response

- Adoption of an Ontario Drinking Water Standard for microcystin-LR 0.0015 mg/L (O. Reg 169/03, schedule 2)
- As a result of concern of health risks to humans and animals, algal blooms became higher priority
- **Any cyanobacterial bloom is regarded as being potentially toxic**
- The Ministry has a comprehensive protocol for responding to occurrences of blooms of cyanobacteria

Take a cautious approach.

If you suspect a blue-green algae bloom, assume toxins are present and call the Ministry of the Environment Spills Action Centre at **1-800-268-6060**.

Reduce the likelihood of health risks by avoiding activities that increase exposure to these toxins during algae blooms; call the local Health Unit for information and follow their advice.

If you are unsure about the safety of water for drinking during an algae bloom, then use alternative water sources such as bottled, carted or tanked water.

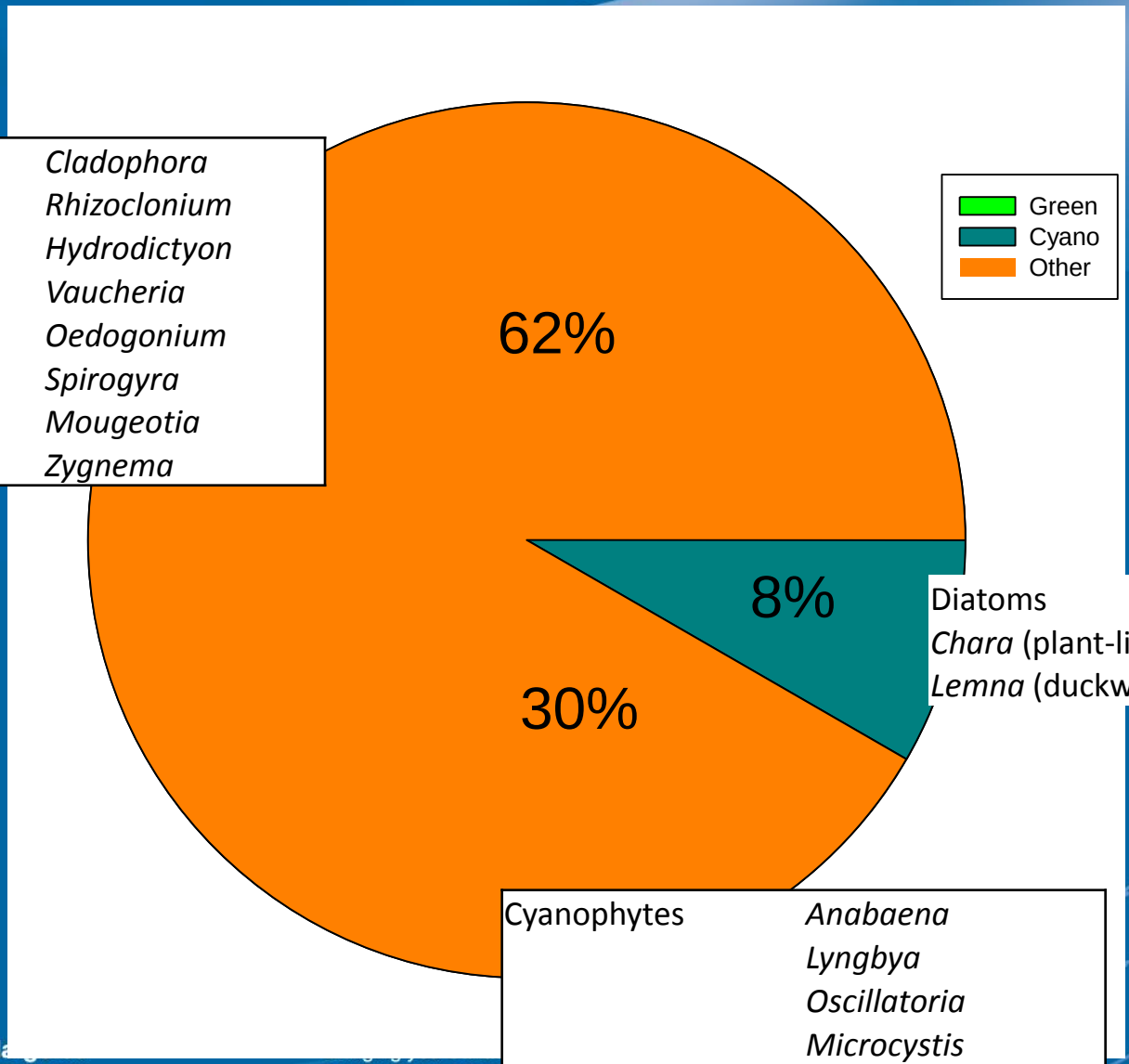
You can also call a water treatment service provider for help. A detailed list of service providers is on the Ministry of the Environment's Web site at:

www.ene.gov.on.ca/envision/gp/4222e_appendix.htm

Overview – summer 2010 monitoring

- Between May 26 – Aug 24, 48 samples submitted
- 34 locations (30 lakes, 18 river/streams)
- 16 genera (dominant species only)
- Collectors (Conservation Authorities ~54% of samples, Parks Canada ~35% residents ~11%)
- Some media attention (about the program, and cyanobacteria blooms in Cataraqui)

Results: Dominant genera of each sample

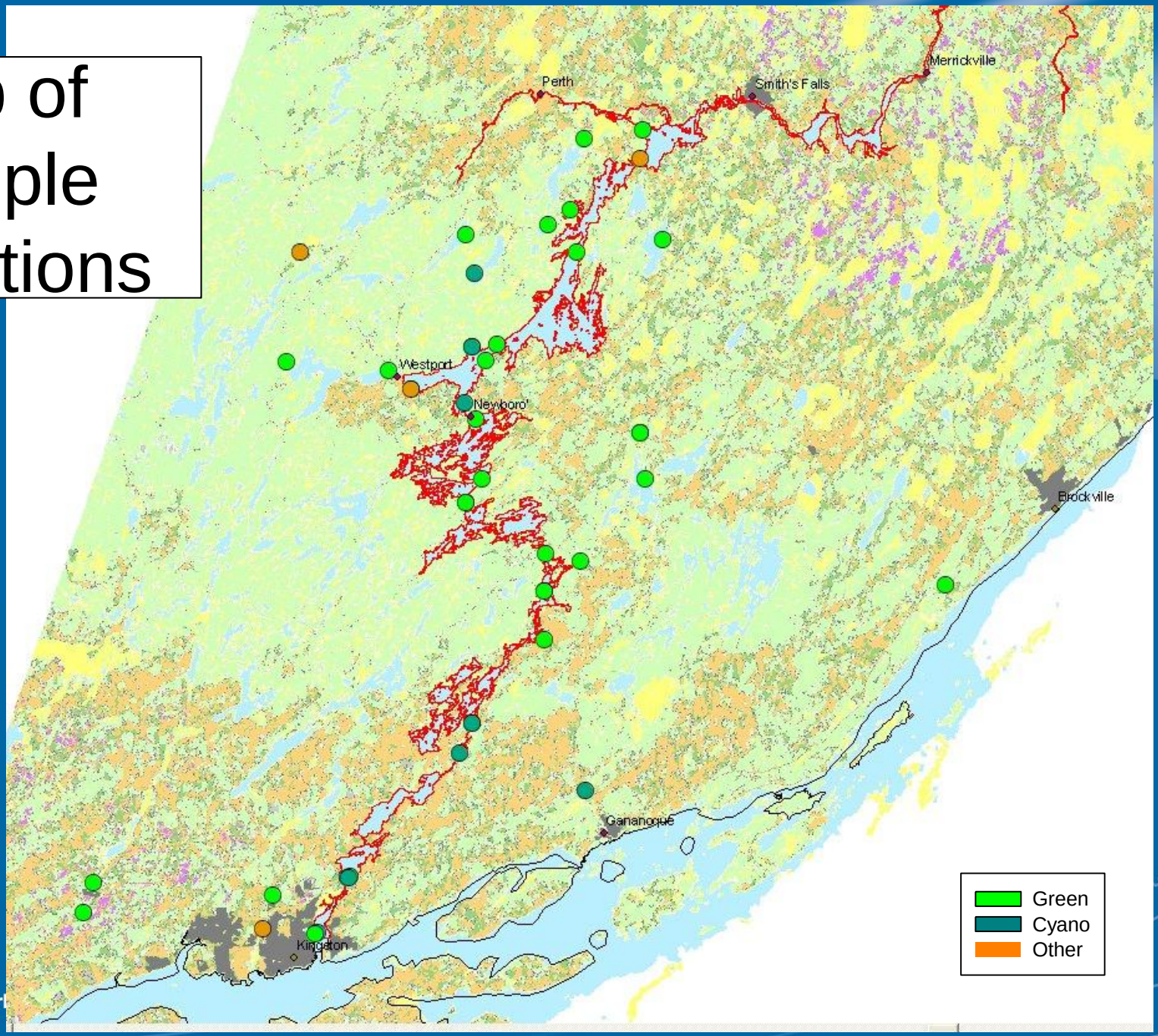


Chlorophytes
Cladophora
Rhizoclonium
Hydrodictyon
Vaucheria
Oedogonium
Spirogyra
Mougeotia
Zygnema

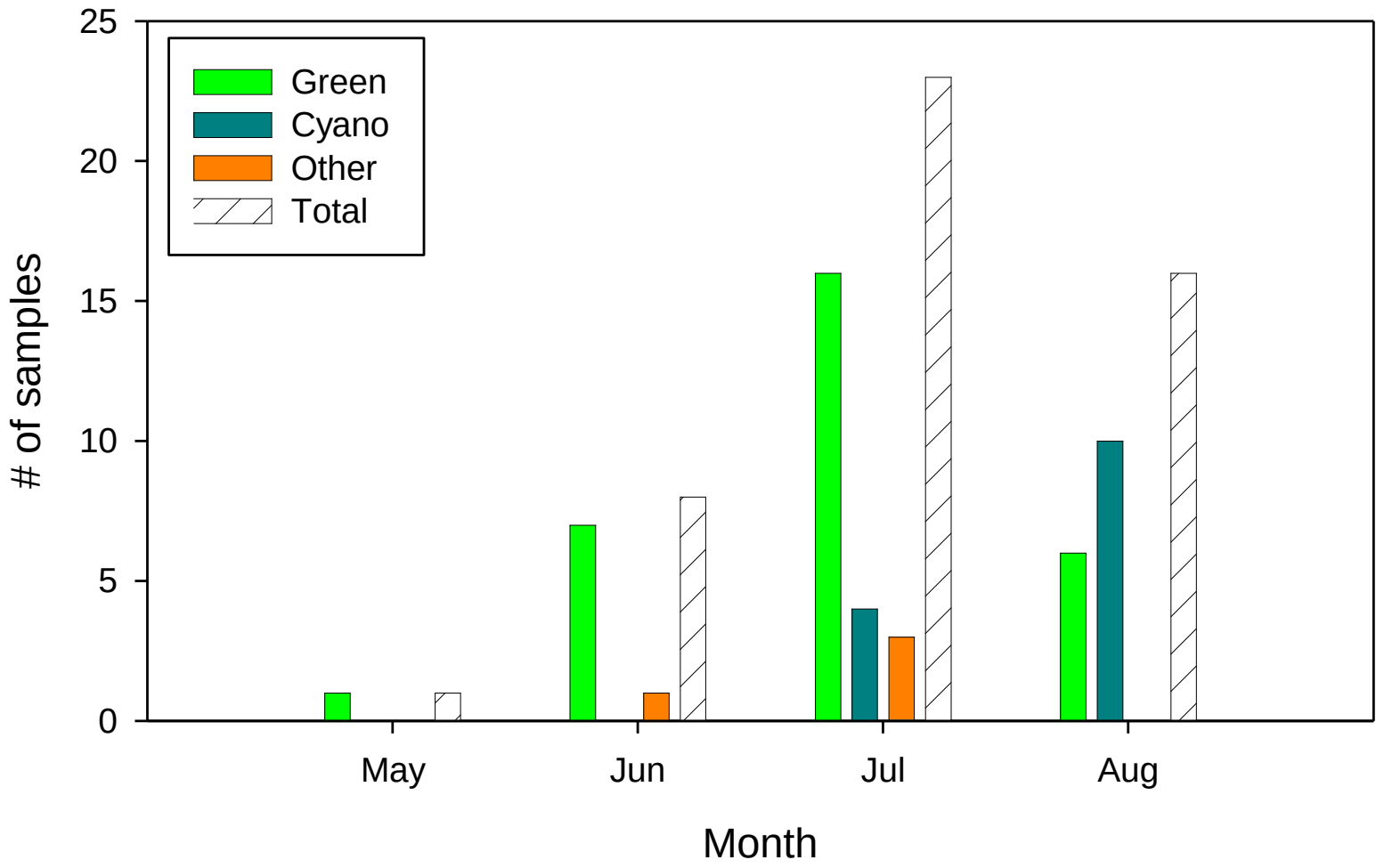
Diatoms
Chara (plant-like algae)
Lemna (duckweed)

Cyanophytes
Anabaena
Lyngbya
Oscillatoria
Microcystis
Calothrix

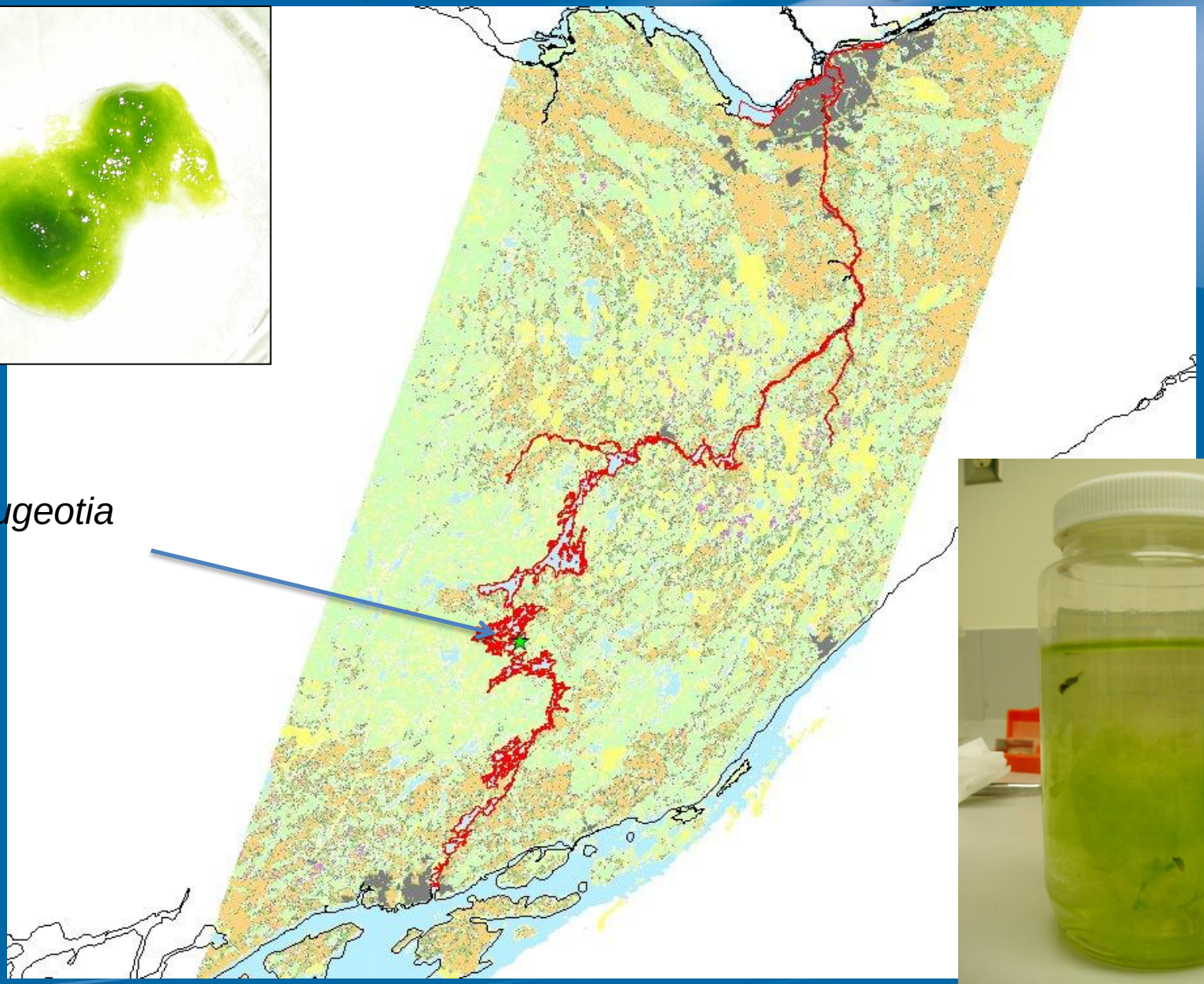
Map of sample locations



Results: Seasonal variation in dominant groups

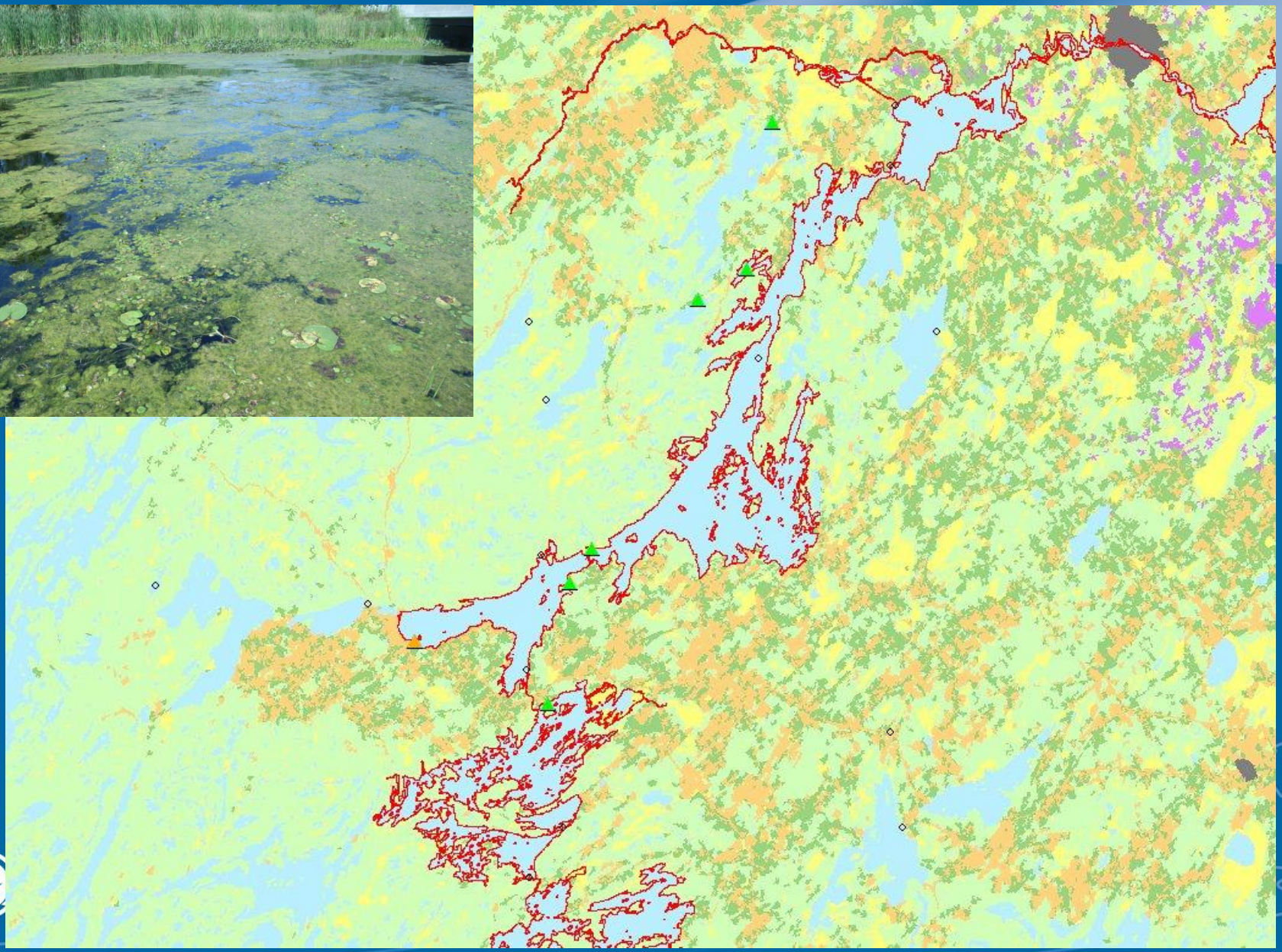


Seasonal and spatial variation in algae : MAY

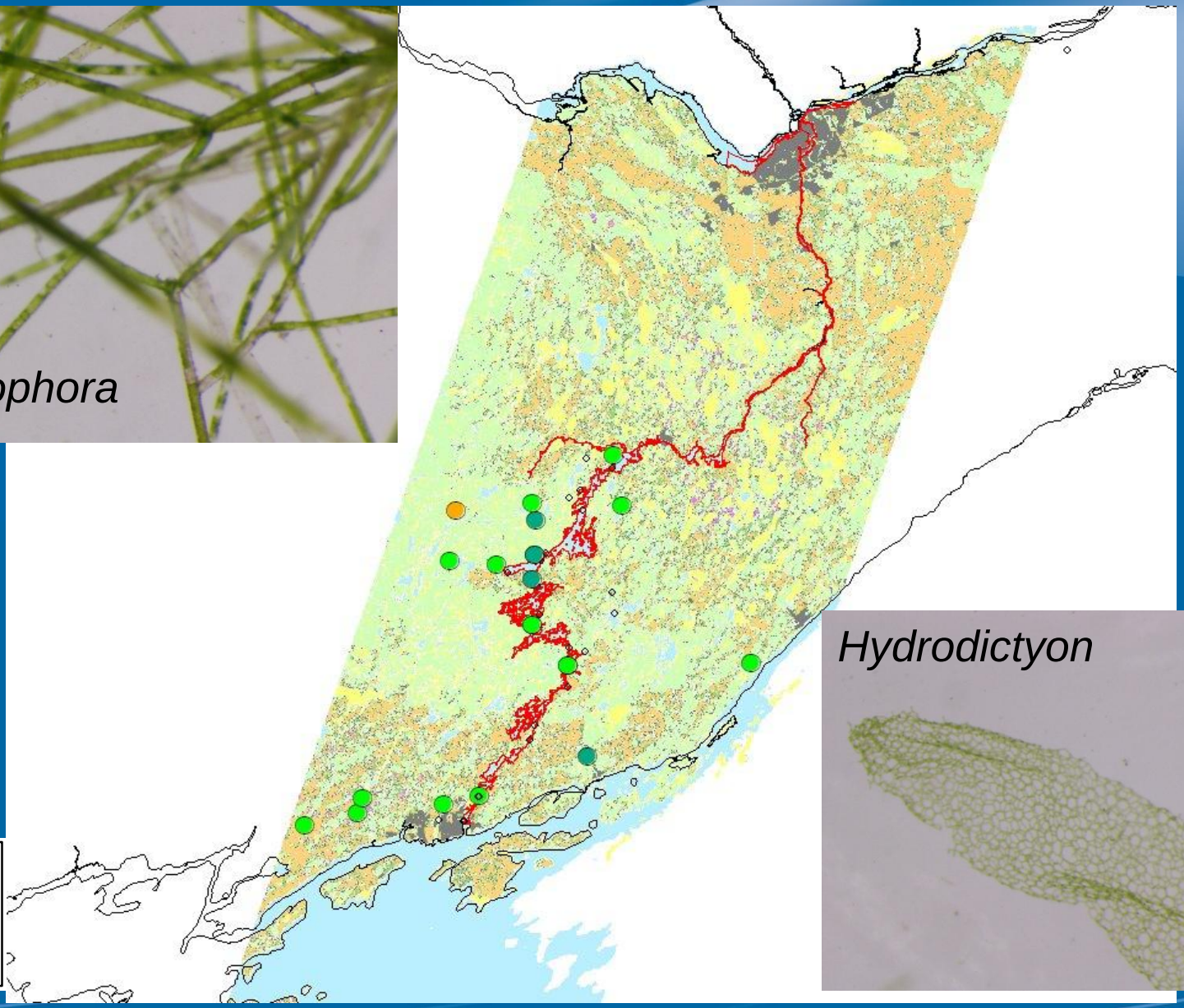


Mougeotia

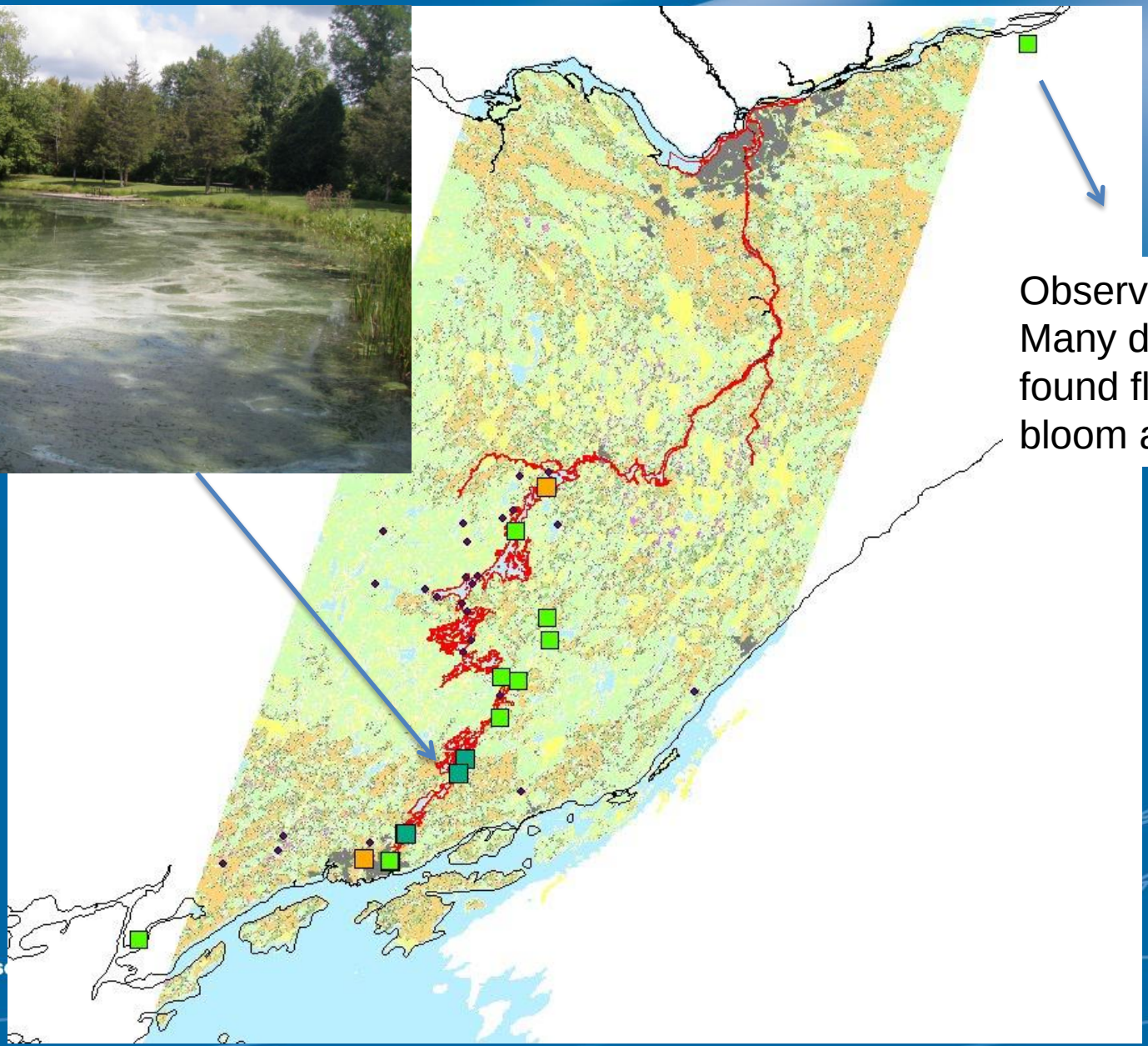
Seasonal and spatial variation in algae - JUNE



Seasonal and spatial variation in algae - JULY



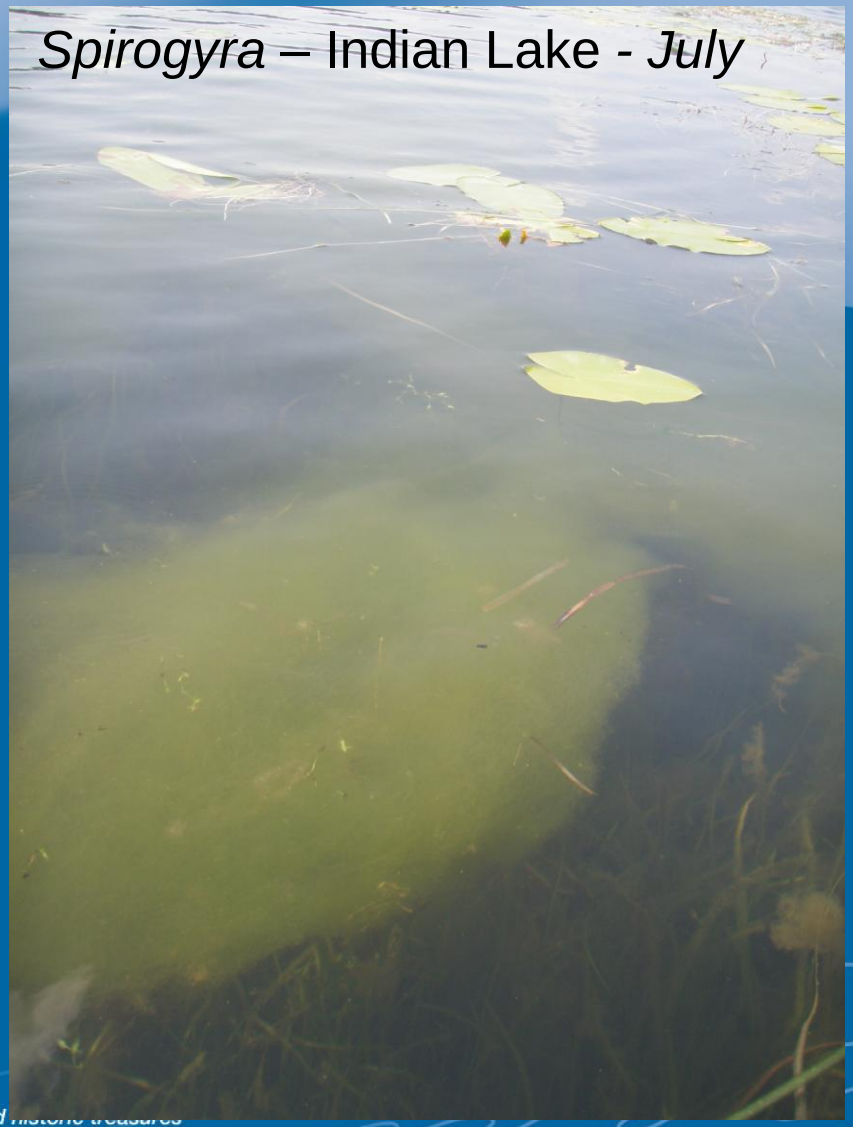
Seasonal and spatial variation in algae - AUGUST



Observation:
Many dead fish found floating in bloom area

True “green” slime - Chlorophytes

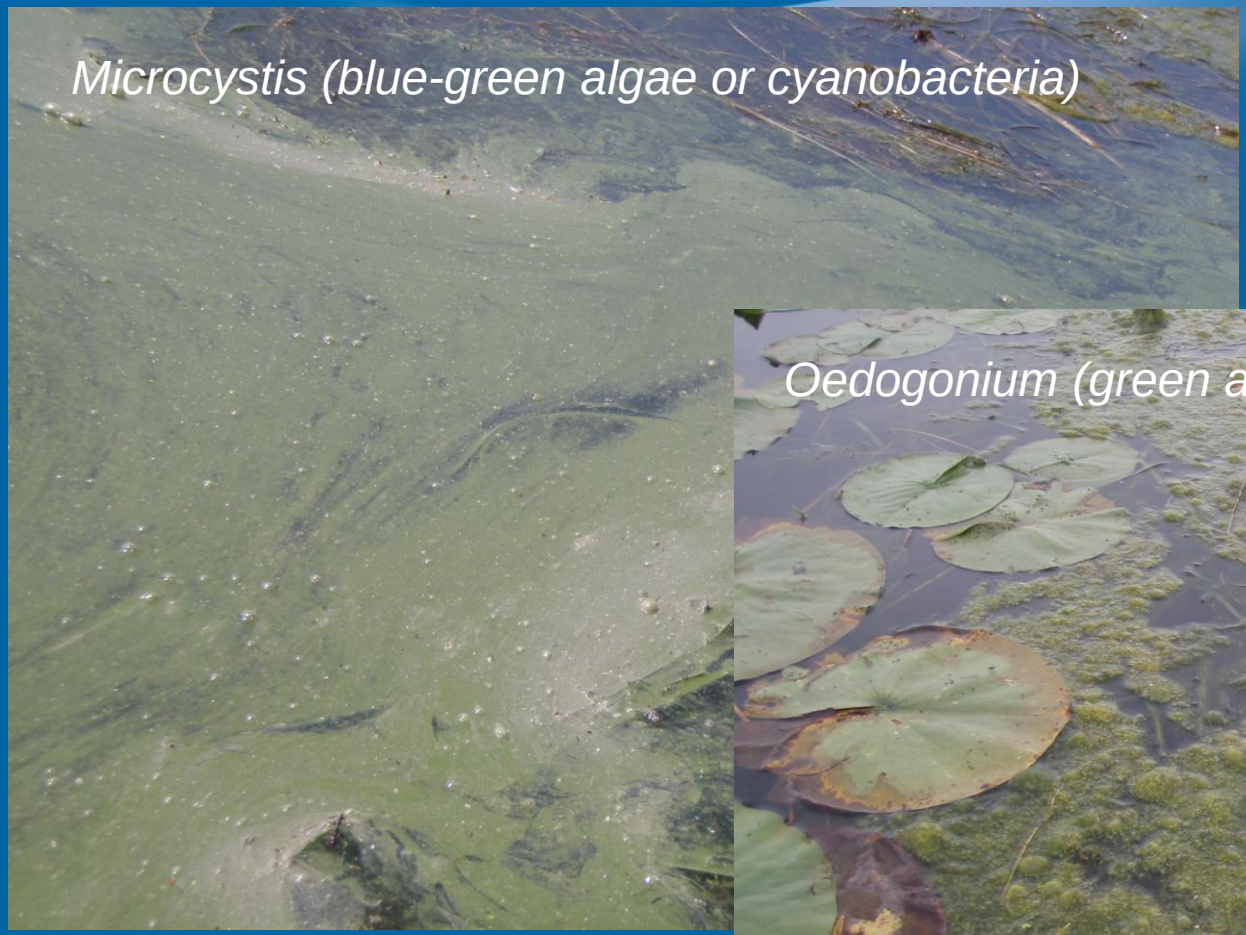
Oedogonium – Indian Lake - *July*



Spirogyra – Indian Lake - *July*

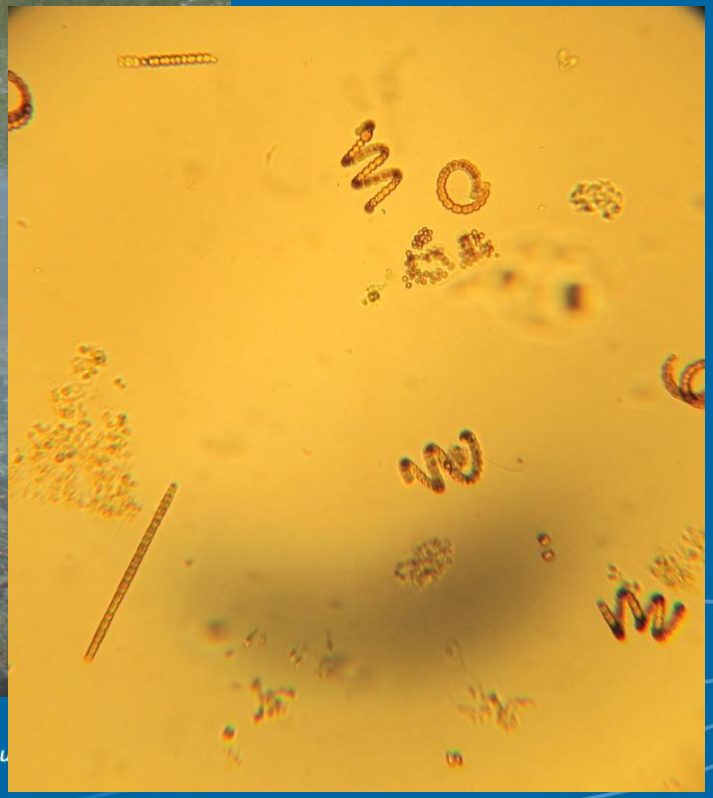

Rhizoclonium & Oedogonium – Seeley's Bay- *August*

Kingston Inner Harbour – August

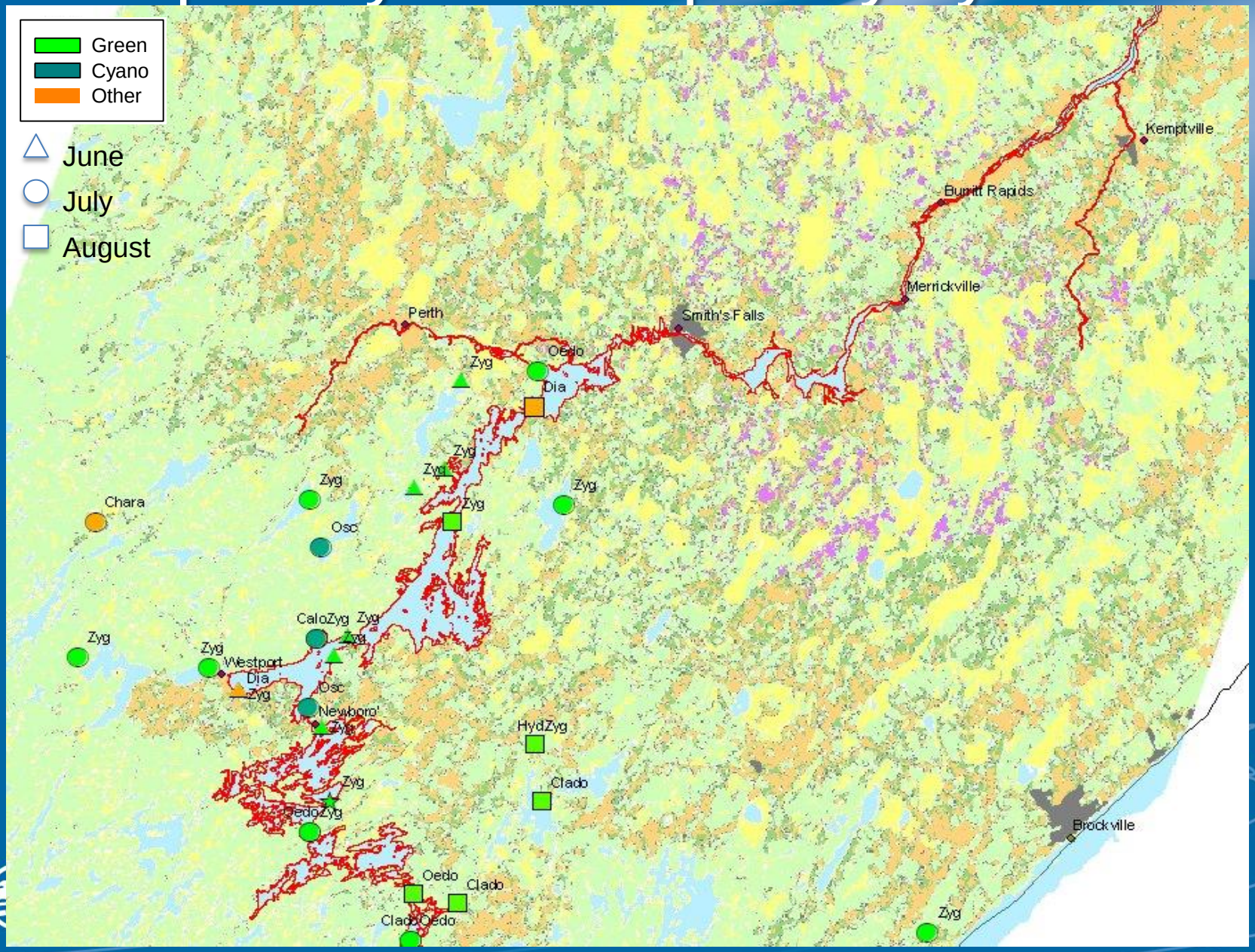



Anabaena & Microcystis - Kingston Mills Lockstation - August

Cyanobacteria

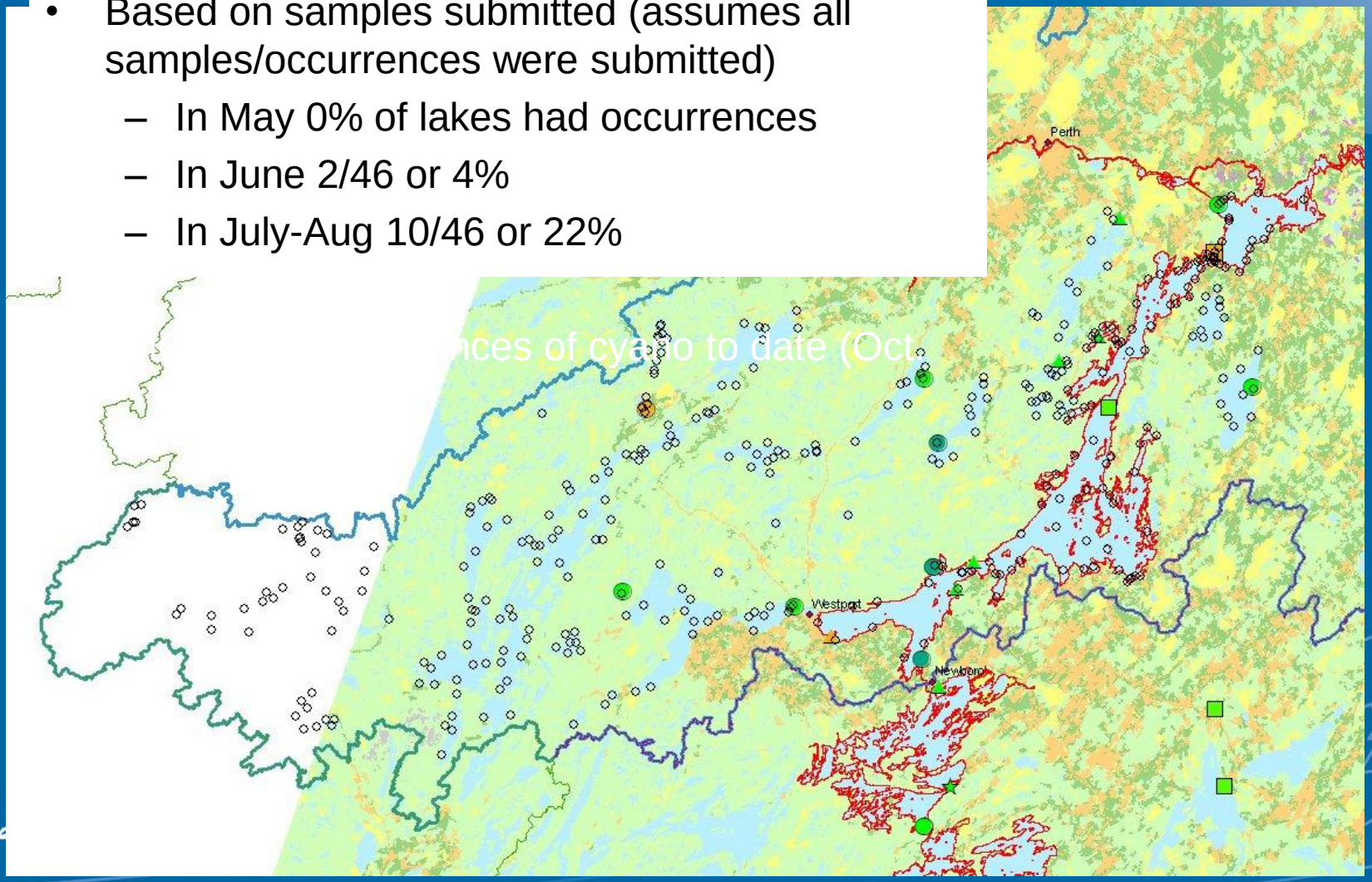


Spatially and temporally dynamic



Occurrences compared to visits

- 46 lakes visited in May, June, July-Aug as part of Watershed Watch program – RVCA
- Based on samples submitted (assumes all samples/occurrences were submitted)
  - In May 0% of lakes had occurrences
  - In June 2/46 or 4%
  - In July-Aug 10/46 or 22%



Next steps – discussion

- More data next year
- Try to include area north of Smith Falls
- What happens after the bloom? Persist in water column? sink?, wash up on shores? moves downstream?

- Ecological effects of various blooms - fish and wildlife habitat (dissolved oxygen), interactions with rooted vascular plants
- Nutrient sources? Riparian zones? Sediments?