Separating Human Induced and Natural Impacts on Butterfield Lake, NY

David Andrews[1], Dan Stich[1], Matt Albright[1]: NYSFOLA Annual Meeting
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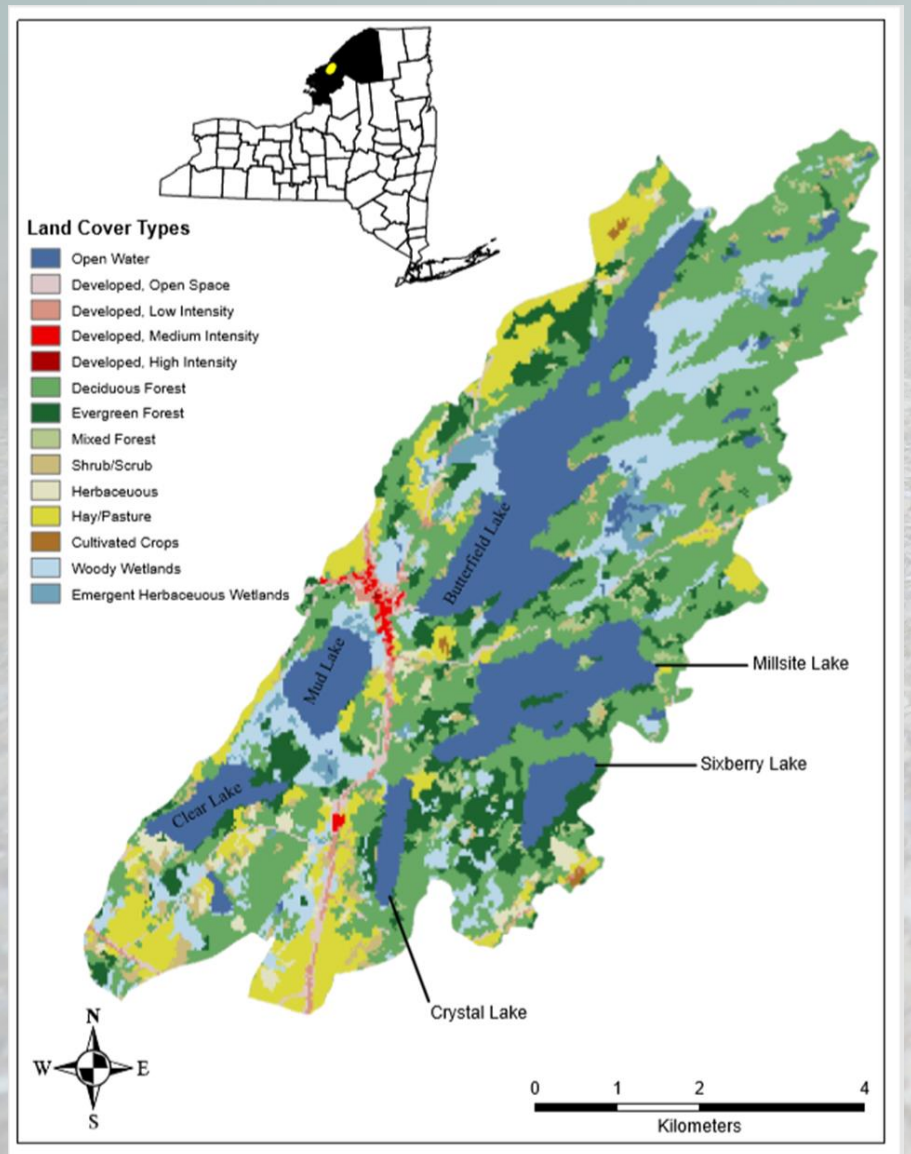
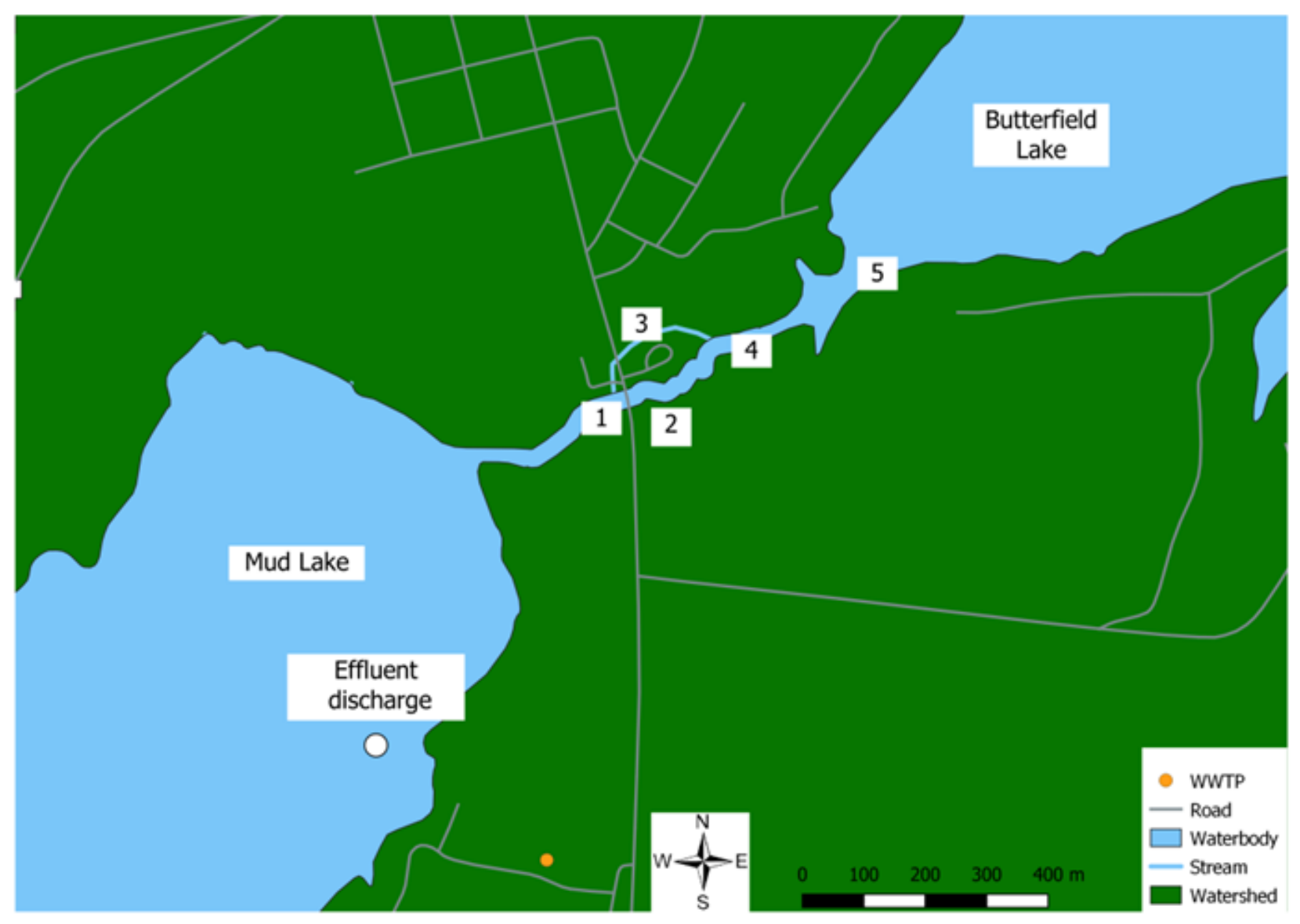
[1] SUNY Oneonta Biological Field Station

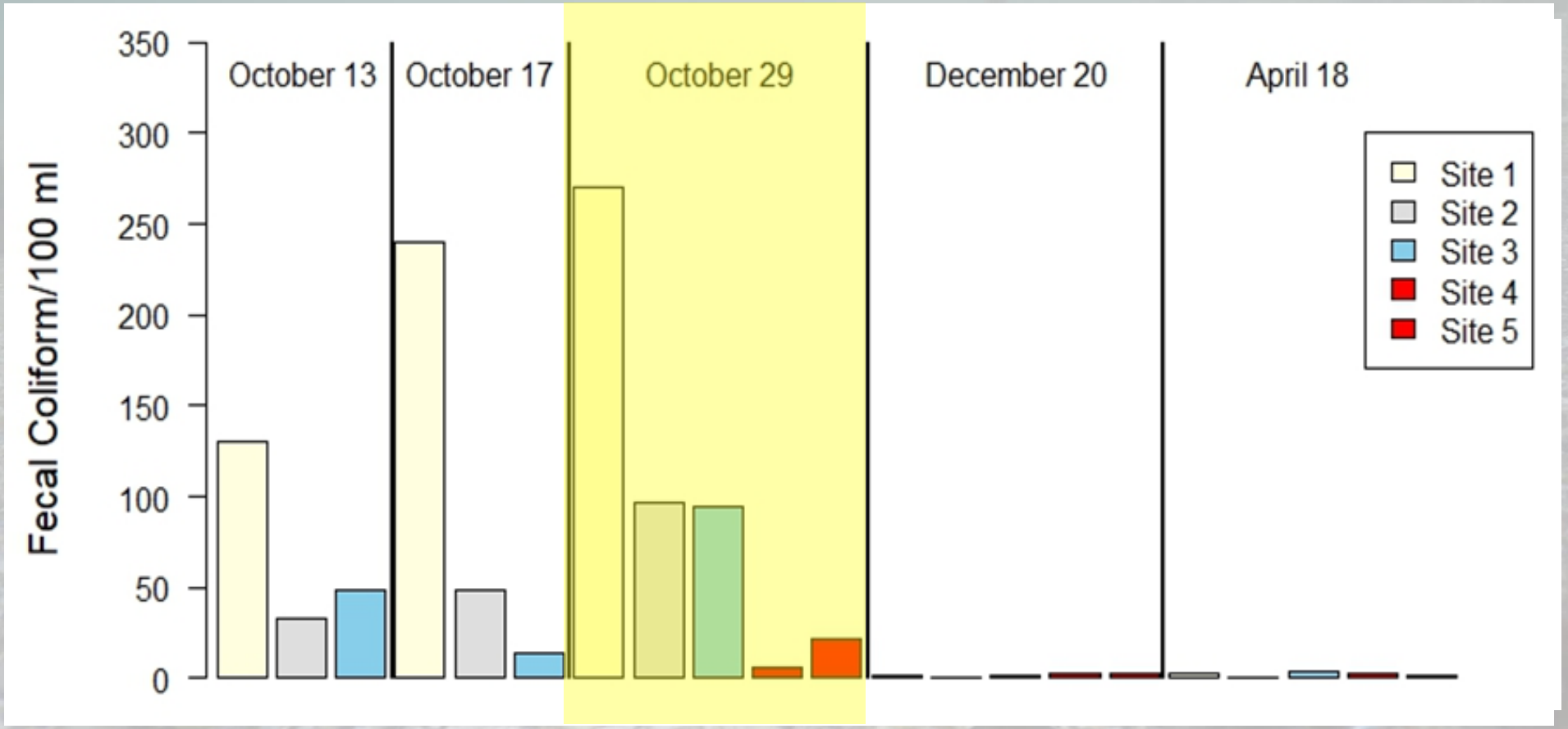
Butterfield Lake Background



Sampling Design: Water Quality

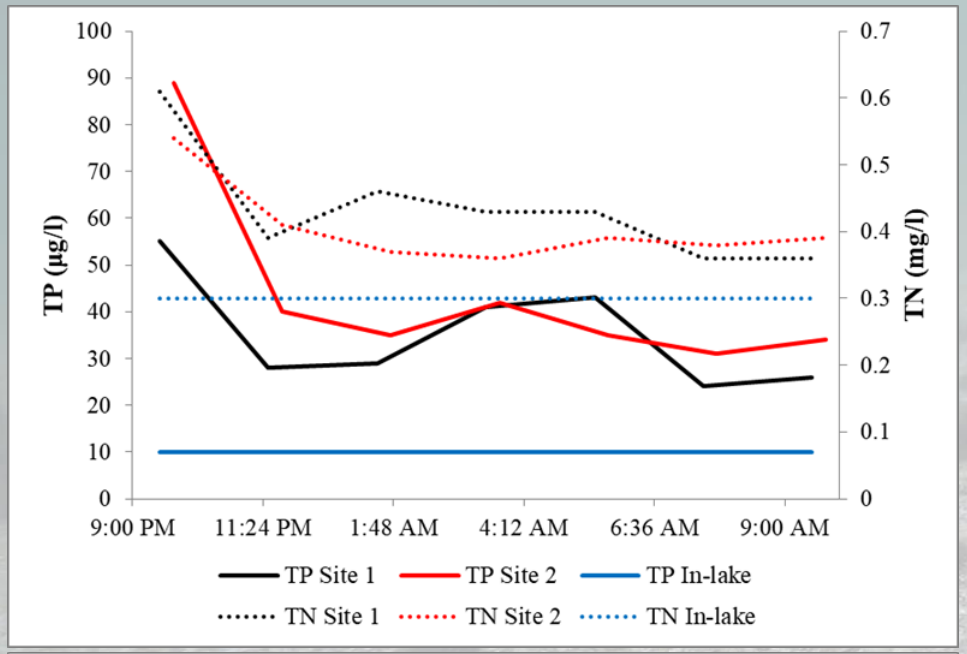


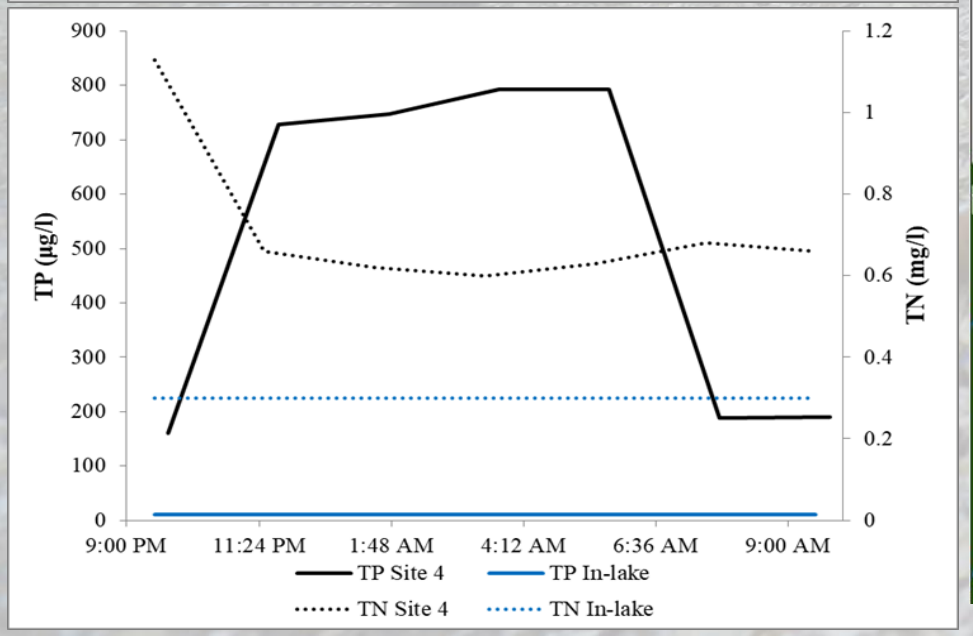
Redwood WWTP

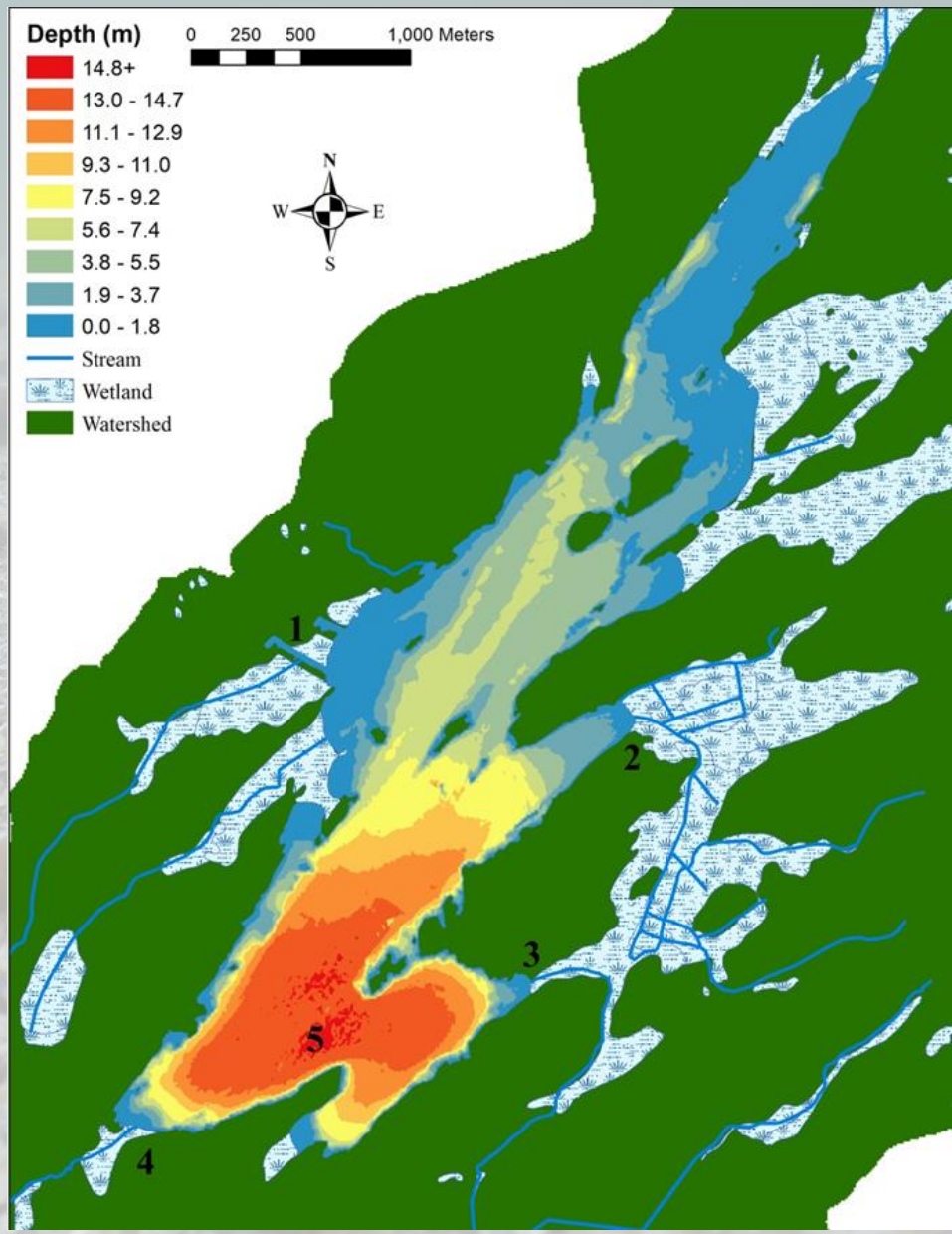


Redwood WWTP

In-lake Monitoring: Tributaries

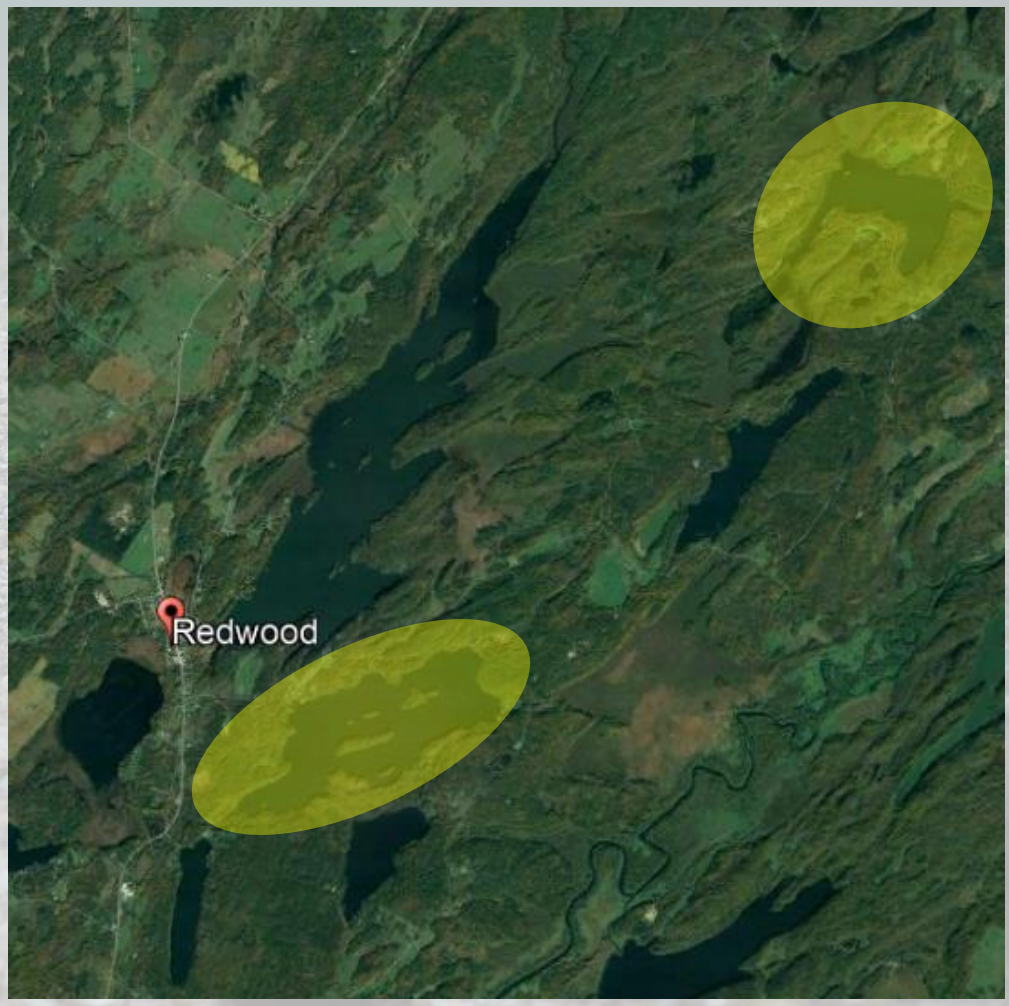




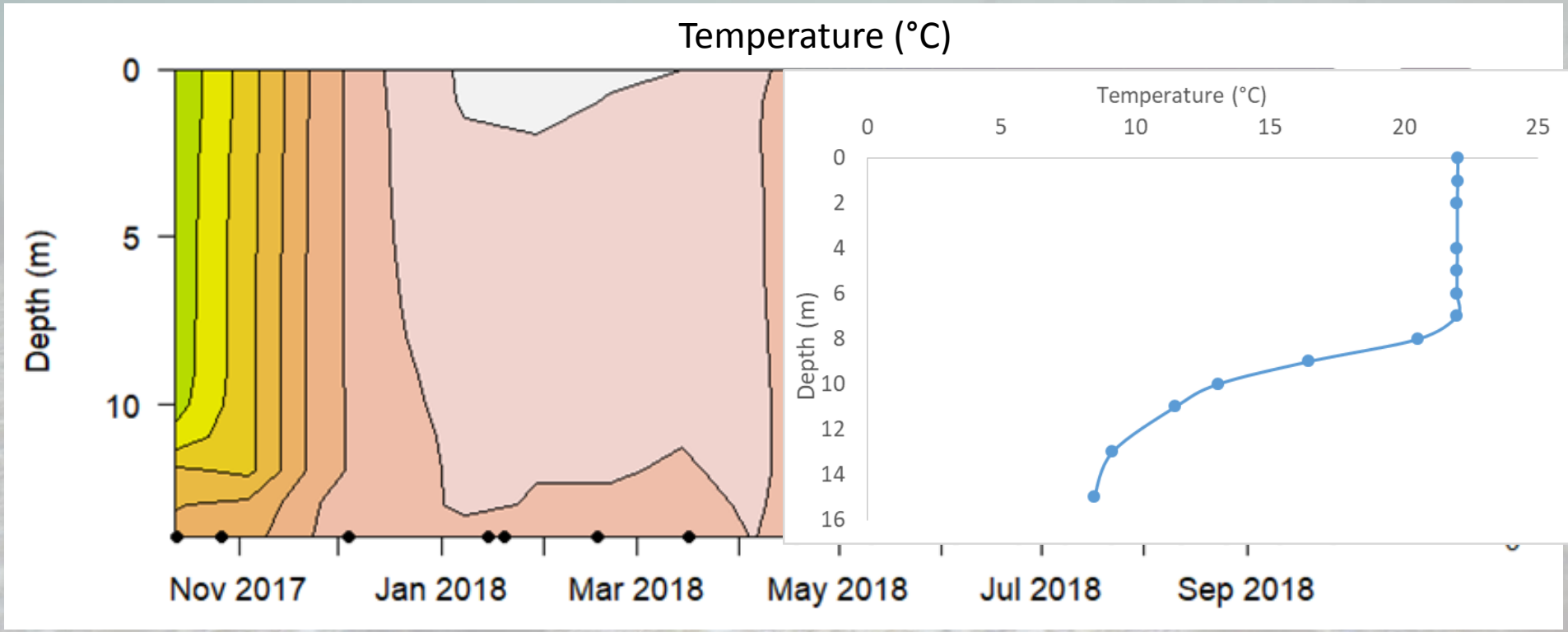


Millsite and Grass Lake

- Also have elevated nutrients in inflowing waters (Zaengle 2015, Gervase 2018)
- Cooperative management possibility



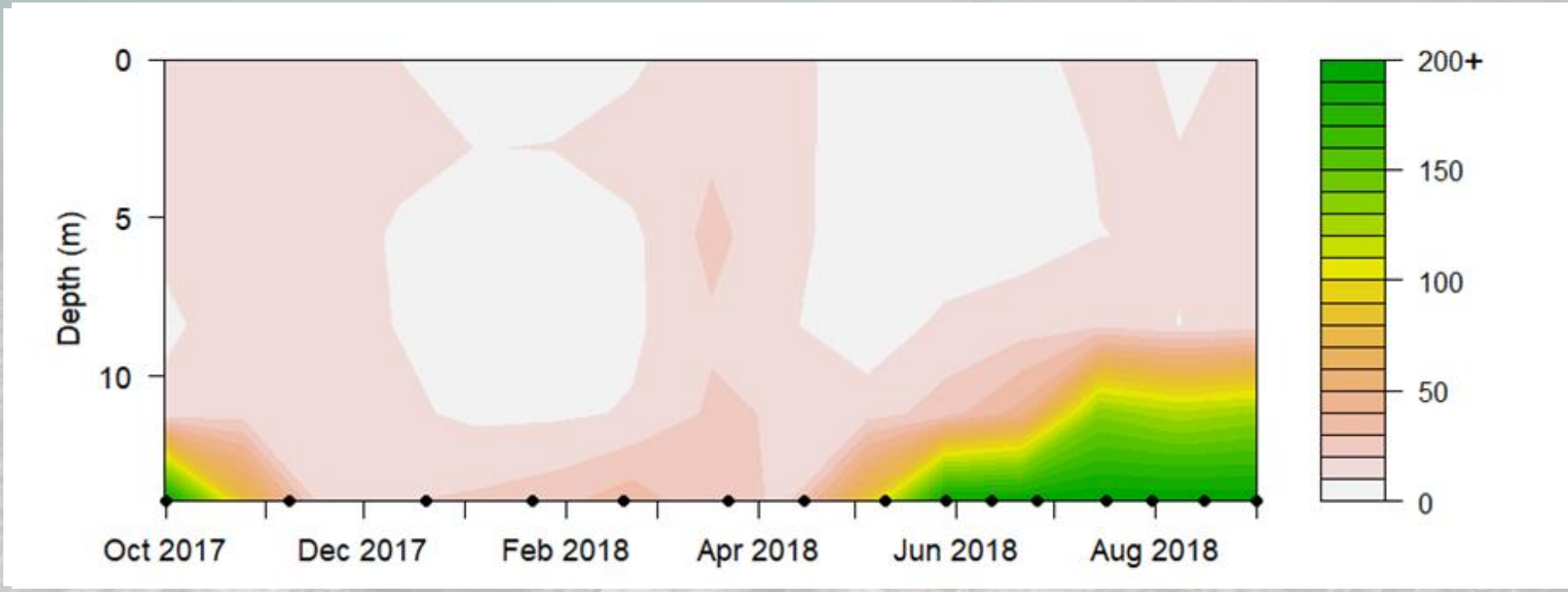
In-lake Monitoring



In-lake Monitoring

Total Phosphorus

Dissolved Oxygen

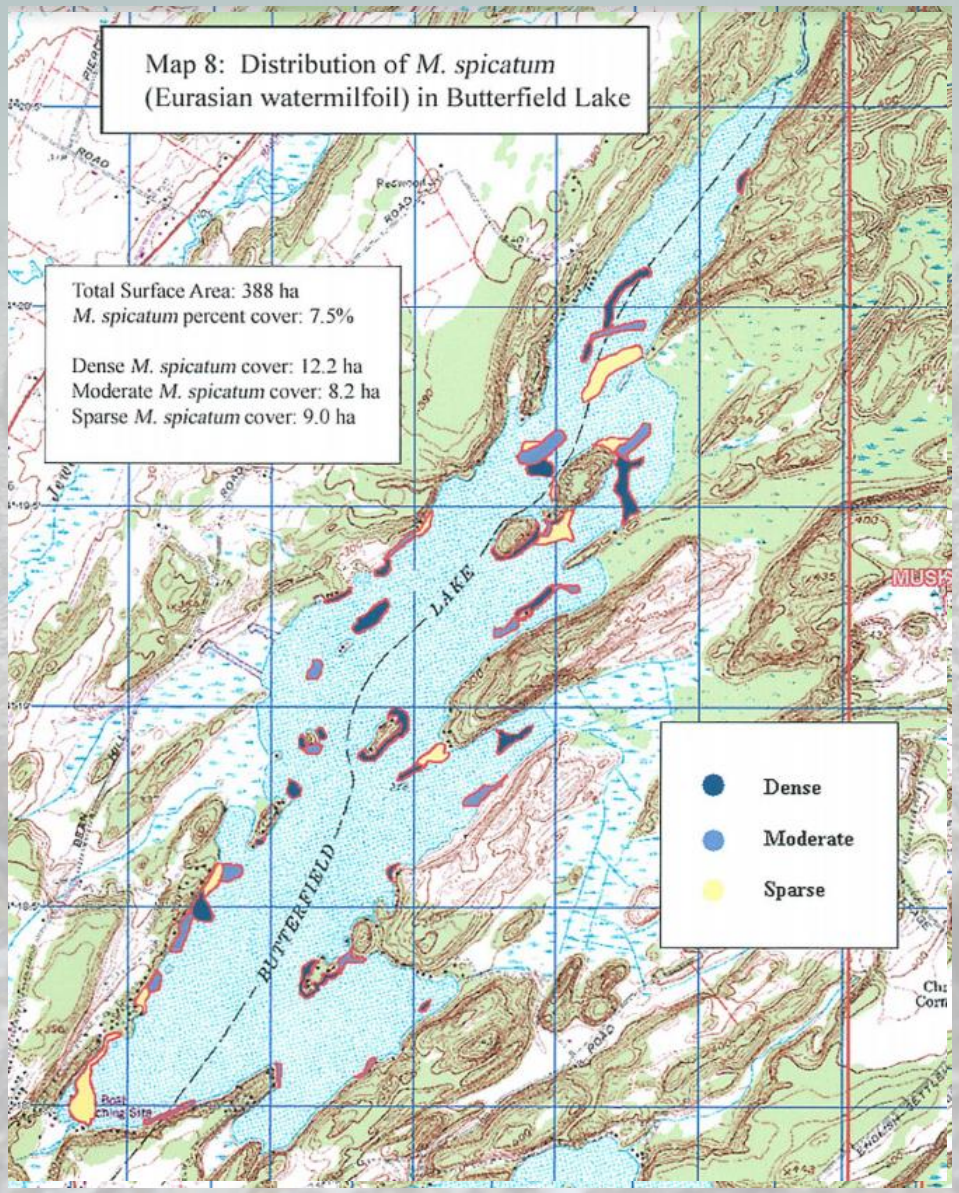


Wrap up/Conclusions

- Butterfield Lake is naturally mesotrophic and should be managed with realistic goals in mind
- Impacts from invasive species are the most prevalent issues facing the lake
- Although wastewater treatment was not shown to be a major issue, continued effort will only improve water quality in the region.

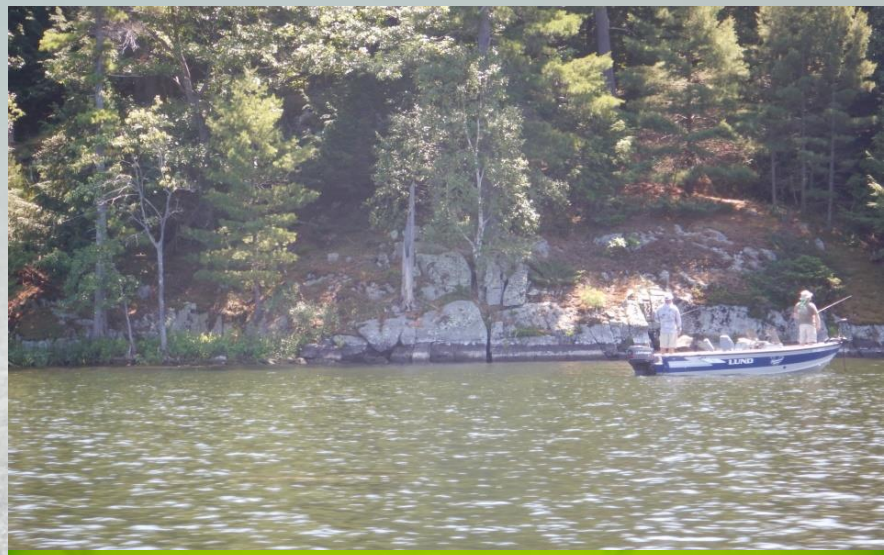
Questions?

Defining Issues: Historical Macrophyte Data

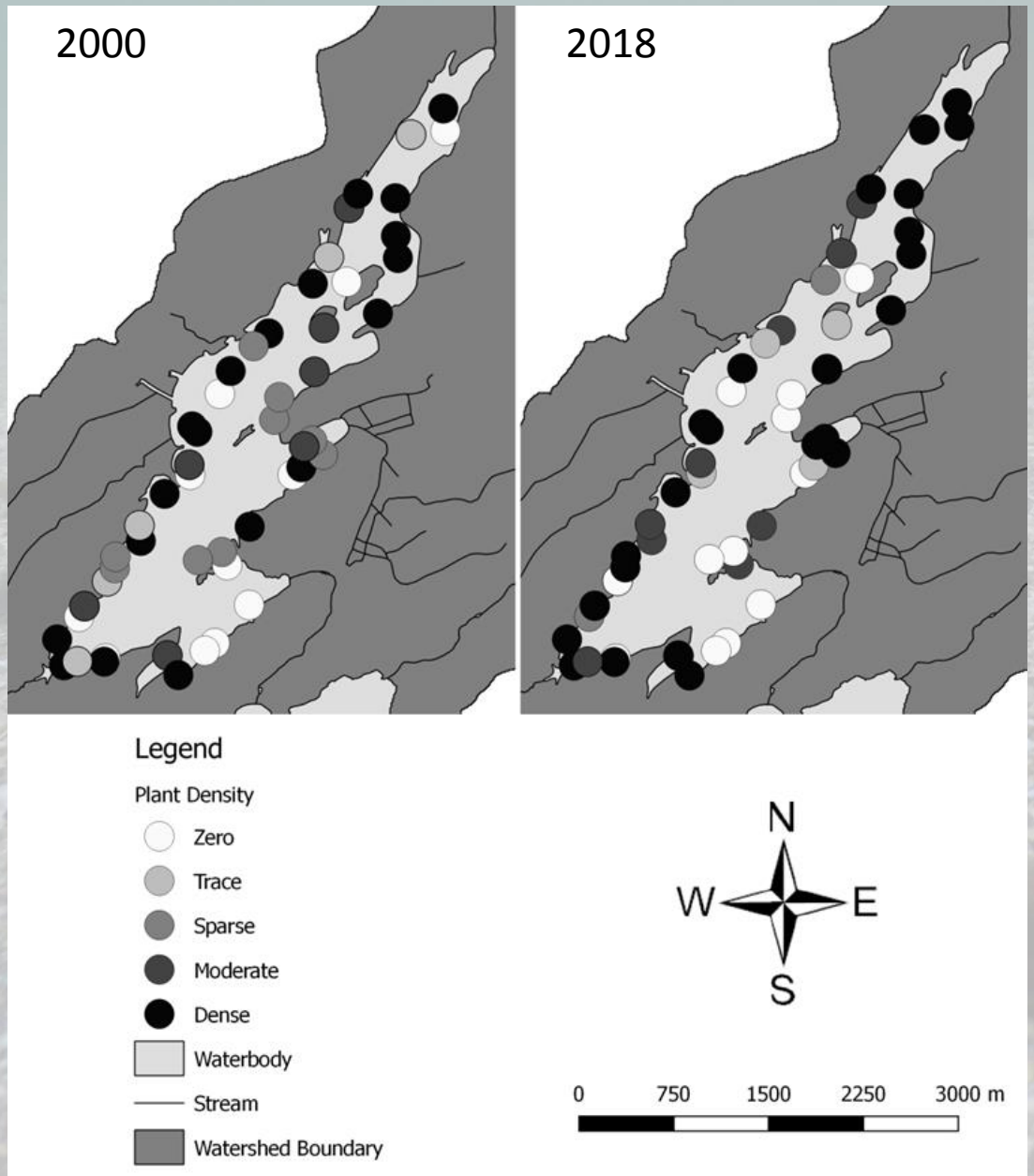


Plant Ecology

- EWM (*M. spicatum*)*:*
  - Bio-control already assessed as not feasible (Johnson and Belinsky 2001)
  - Completely submersed, generally up to 15 ft (but can create dense canopy at surface)
  - Spread via fragmentation



Sampling Aquatic Plants



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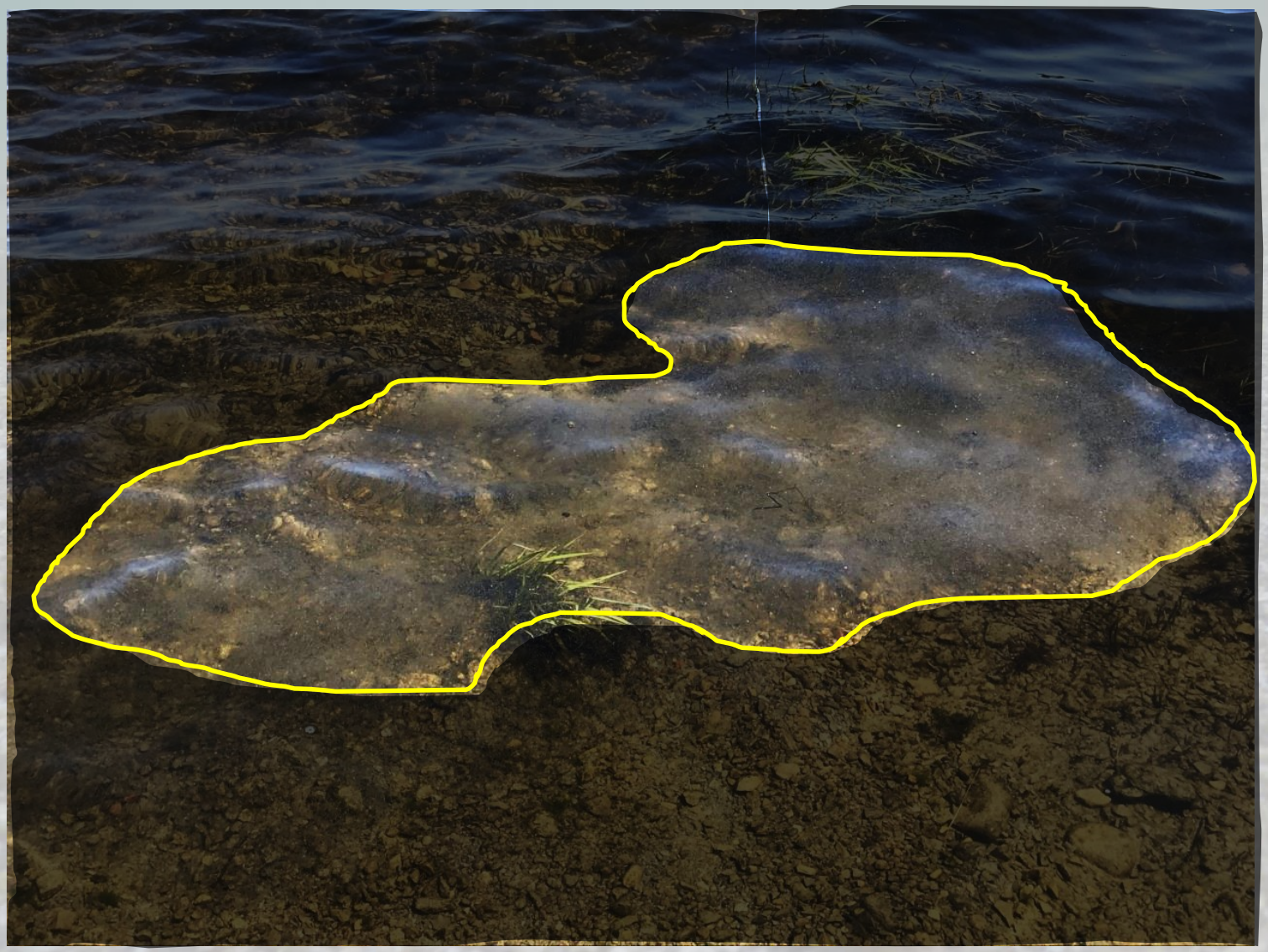
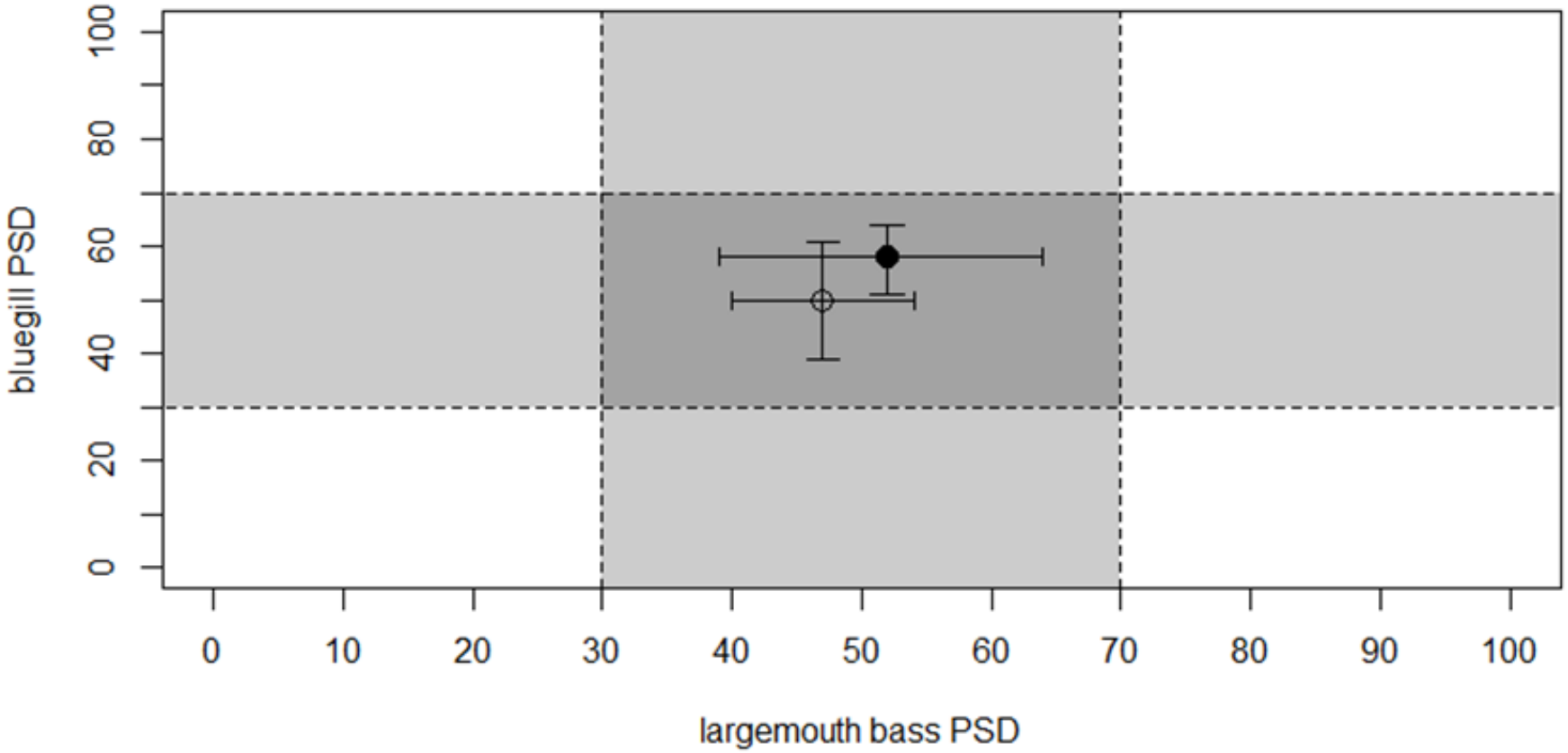
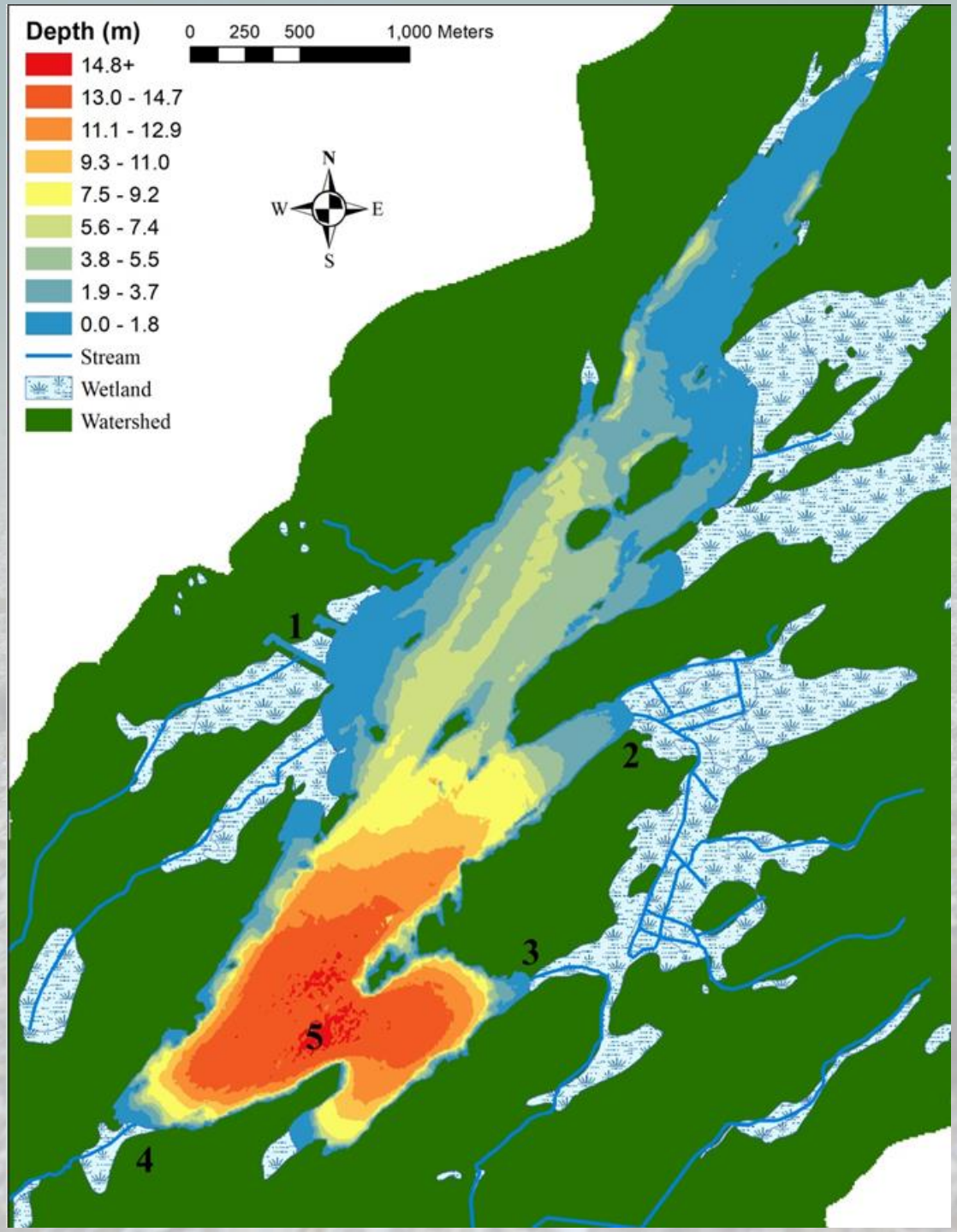
Defining Issues: Historical Fisheries Data



c/o Wylie Huffman

Fishery Size Structure




Depth (m)
0 250 500 1,000 Meters
14.8+
13.0 - 14.7
11.1 - 12.9
9.3 - 11.0
7.5 - 9.2
5.6 - 7.4
3.8 - 5.5
1.9 - 3.7
0.0 - 1.8
Stream
Wetland
Watershed
N
W
E
S
1
2
3
4
5