Moose Pond Water Quality

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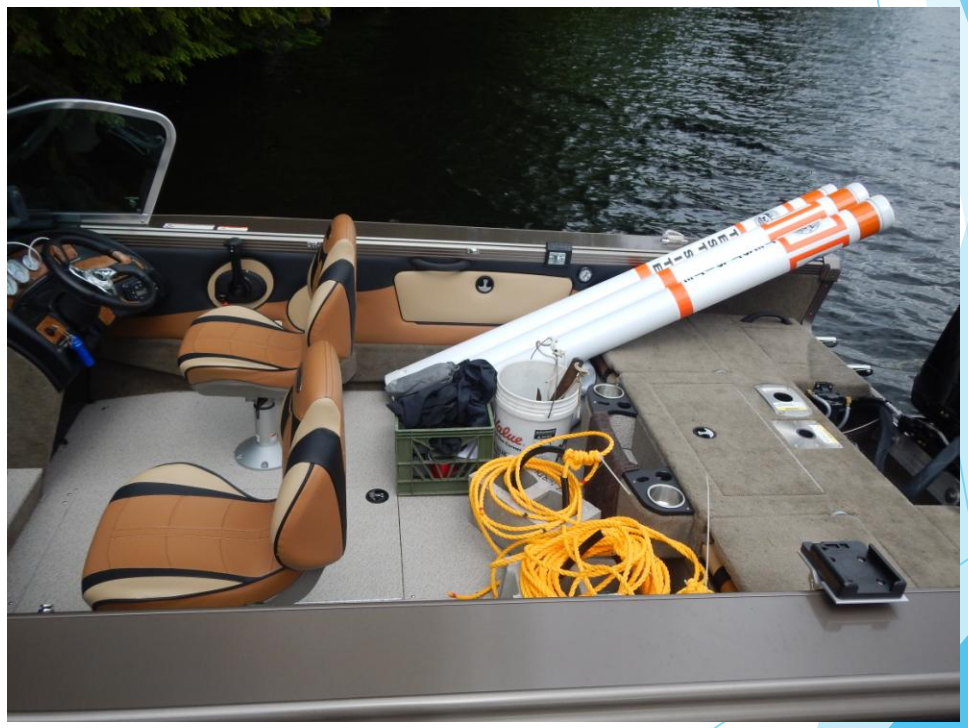
Lakes Environmental Association

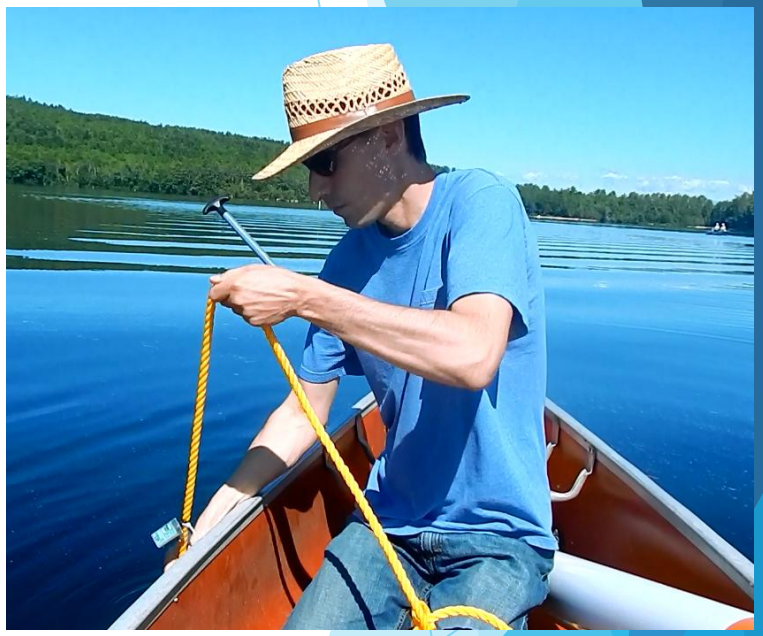
LEA's Monitoring Program

- Traditional Testing: every 2 weeks on three basins
  - Clarity
  - Temperature Profiles
  - Oxygen Profiles
  - Total Phosphorus
  - Chlorophyll
  - pH, conductivity, alkalinity, and color
- New/Advanced Testing
  - *Gloeotrichia echinulata*
  - Temperature sensor buoys
  - Total algae
  - Shallow sediment coring



Why?

- The more we know about the lake, the better equipped we are to respond to problems
- Policy change is driven by evidence
- Long-term records are essential for identifying water quality trends
- Lakes are very complex systems
- Collecting baselines from which to measure change
- Early detection of water quality threats



Traditional Testing: Results through 8/12

MAIN BASIN

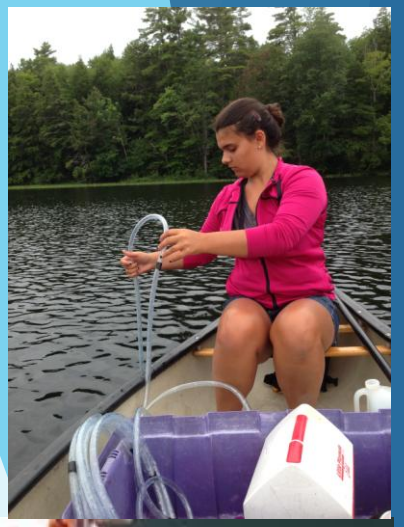
- Clarity: 7.9 meters
- Oxygen: 3 ppm @ 20 m
- Total Phosphorus: 4.3 ppb
- Chlorophyll: 2.5 ppb
- pH: 6.60
- Alkalinity: 7.0 ppm
- Conductivity: 40.9 µS
- Color: 24.3 SPU

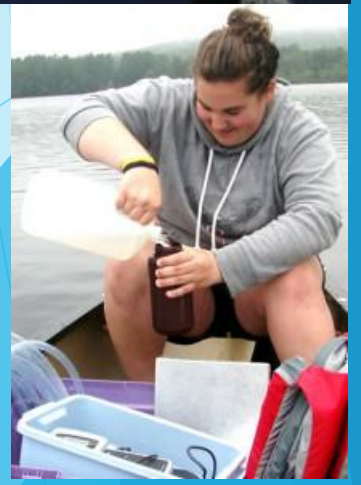
NORTH BASIN

- Clarity: 4.9 meters
- Oxygen: 0.3 ppm @ 6 m
- Total Phosphorus: 9 ppb
- Chlorophyll: 4.5 ppb
- pH: 6.68
- Alkalinity: 6.8 ppm
- Conductivity: 33.32 µS
- Color: 35 SPU

SOUTH BASIN

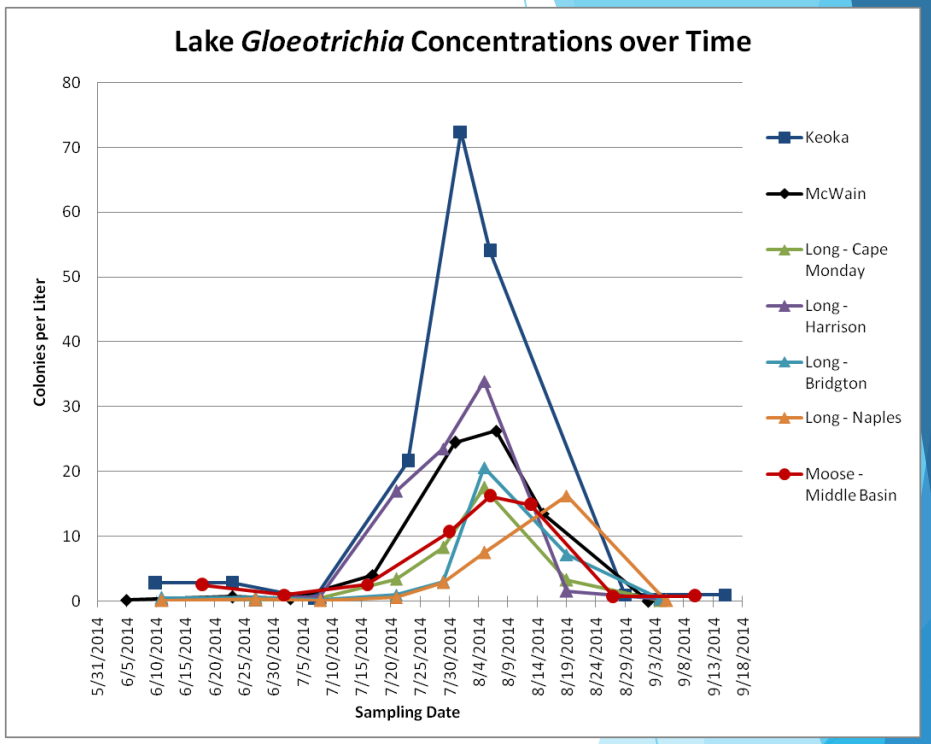
- Clarity: 7.0 meters
- Oxygen: 0.3 ppm @ 9 m
- Total Phosphorus: 6 ppb
- Chlorophyll: 2.3 ppb
- pH: 6.67
- Alkalinity: 7.8 ppm
- Conductivity: 39.93 µS
- Color: 23 SPU





Gloeotrichia echinulata Monitoring

- Sampling since 2013 (With support from MPA)
- Colonial cyanobacterium
- Bloom-forming species that grows on sediments
- Capable of producing toxins
- Blooms have occurred in Moose Pond since at least 2001

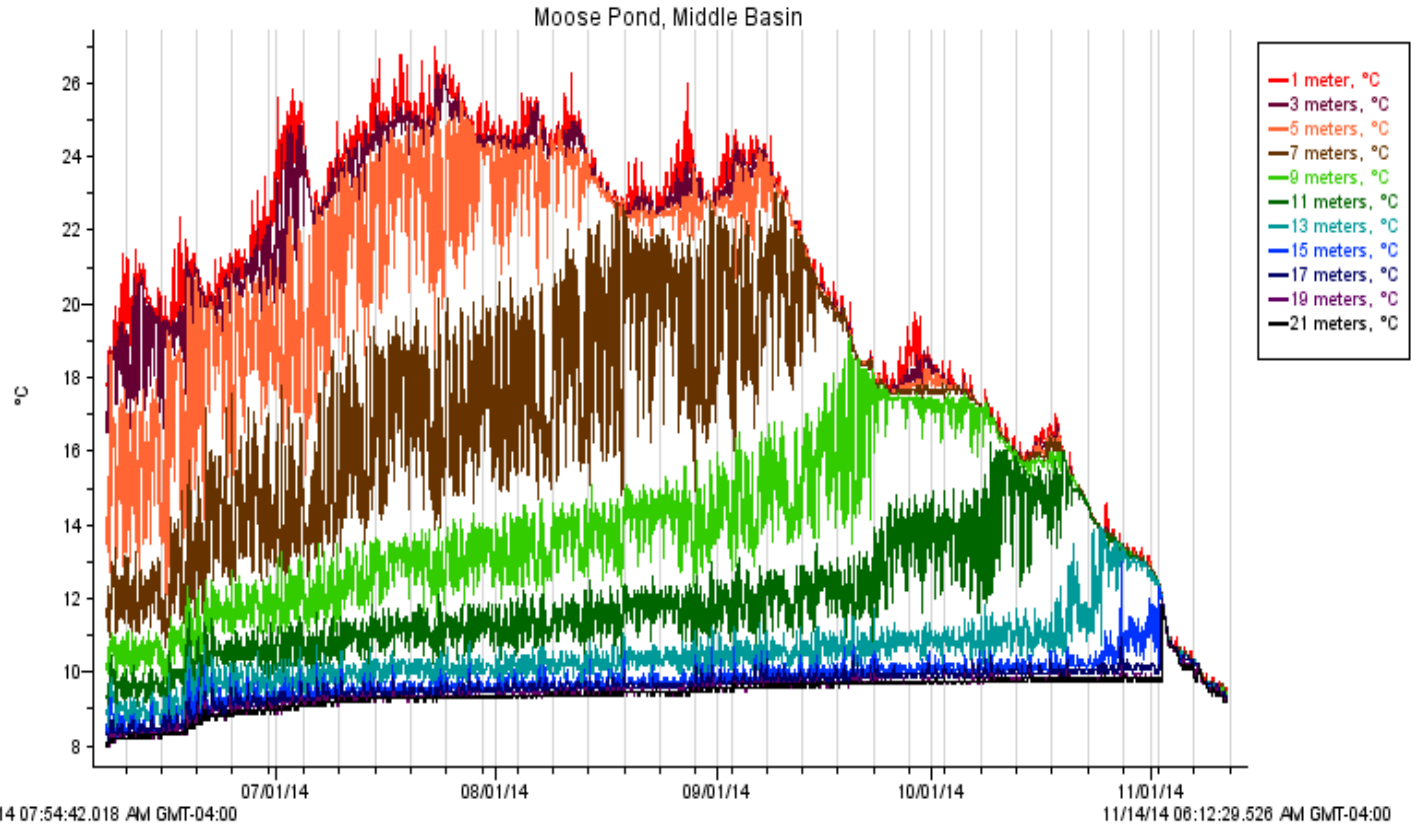


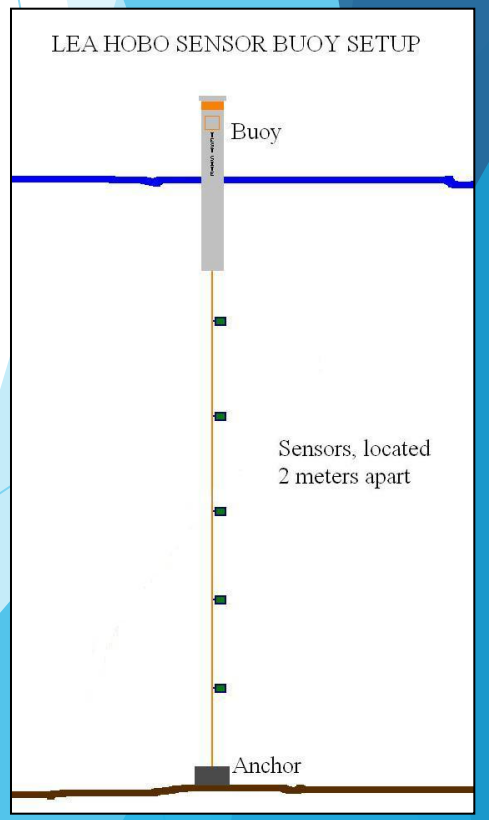
- 2013: 16.6 colonies/liter (highest)
- 2014: 16.2 colonies/liter (Keoka Lake, at 72 col/liter, was the highest)
- 2015: 20.1 colonies/liter (as of 7/29)

- Best way to control: reduce phosphorus input into lake

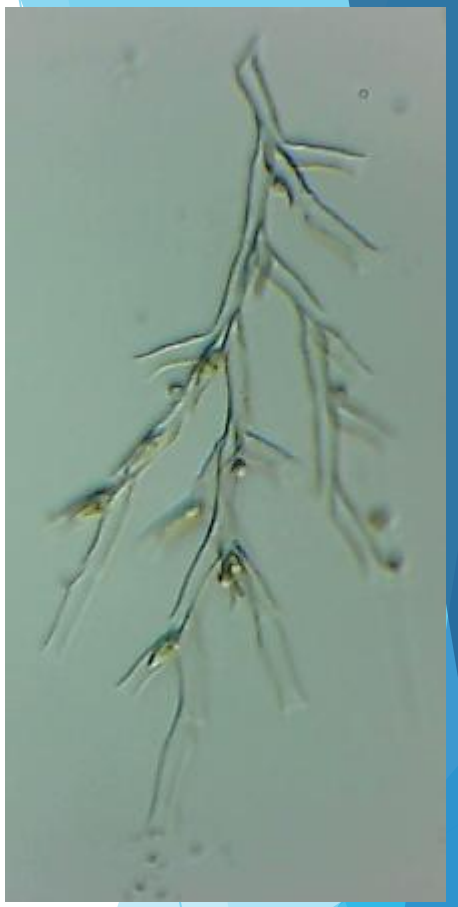
HOBO Digital Temperature Sensors

- Measure temperature every 15 minutes on 3 basins of Moose Pond
- In the lake from May – November
- Possible through MPA support

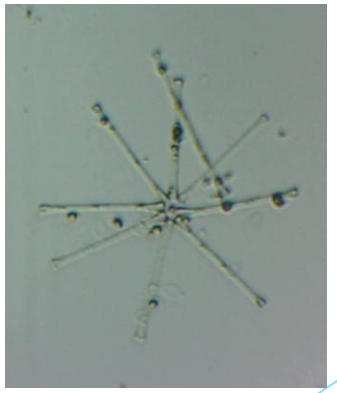




Total Algae Monitoring

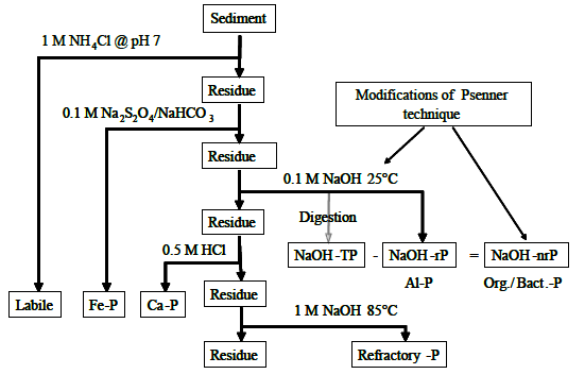


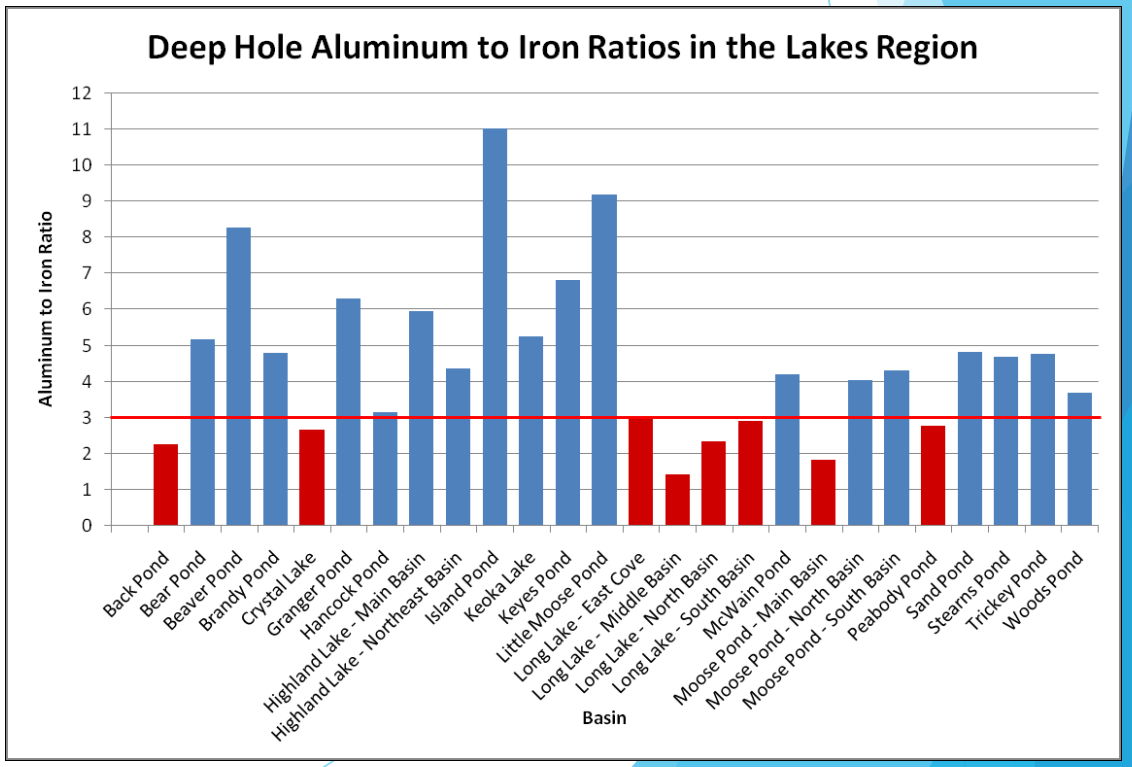
- 4 samples from the North Basin & Middle Basin (partially funded by MPA)
- Algae populations respond quickly to water quality changes
- Certain types of algae are associated with specific environmental conditions



Shallow Sediment Coring

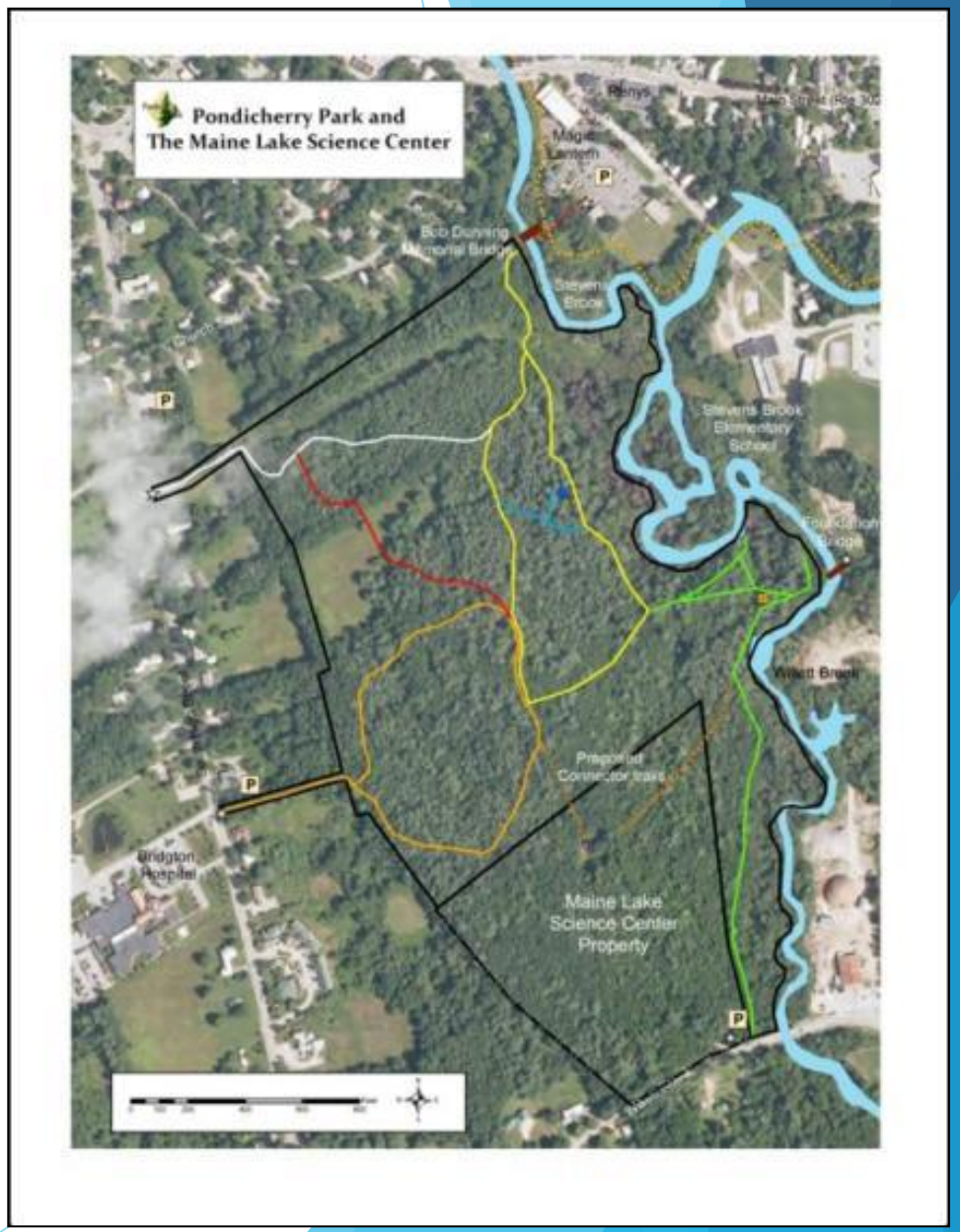
- 2013: Took samples from North, Middle, and South Basin
- Look at the relative amount of aluminum, iron and phosphorus
- Al:Fe ratio of 3:1 or greater is good
- Al:P ratio of 25:1 or greater is good
- Middle Basin had a ratio of 1.8:1





Maine Lake Science Center

- Encourage more research on lakes, since we don't have the resources to do all of the testing & research we would like
- Housing for visiting researchers, conference room, offices, education & lab space
- Partnerships with Universities, Science Advisory Board



What Can You Do?

- Get a free Clean Lake Check Up from LEA
- Maintain roads and driveways
- Know the shoreland zoning laws and follow them
- Don’t use fertilizer or chemicals on your property
- Plant a buffer between your property & the lake
- Support MPA and LEA

Questions or Comments are Welcome!