

# Lake Luzerne CSLAP Restart: Challenges in Communicating the Implications of Data to our Community



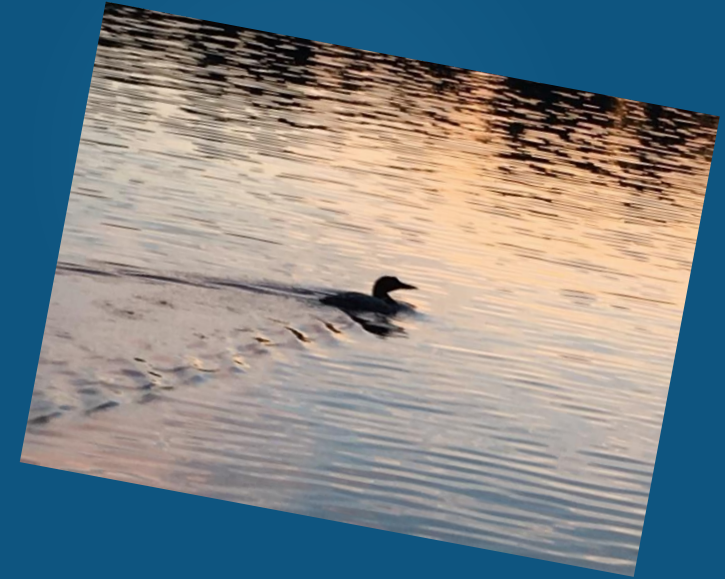
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# Welcome to Lake Luzerne

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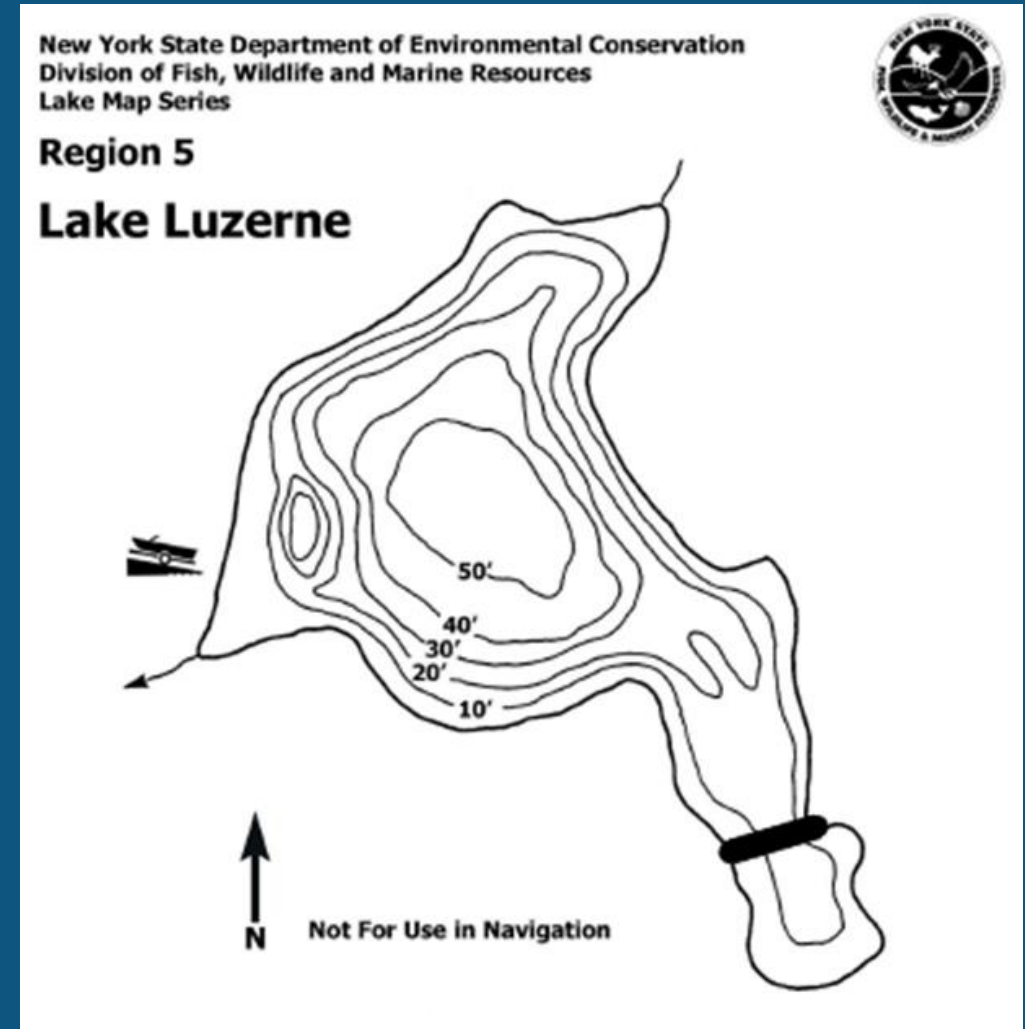
# Outline

- ▶ Background on Lake Luzerne
- ▶ Current initiatives
- ▶ Challenges in interpreting CSLAP data with examples
- ▶ Summary
- ▶ Questions and Discussion



# Lake Luzerne Features

- ▶ Warren county, in the ADK Park
- ▶ 111 acres
- ▶ Depth: Average 7.5', max 52'
- ▶ Spring fed, 7.5 hp limit on motors
- ▶ Recreational use, 2 public beaches
- ▶ Final link in a chain of lakes
- ▶ Outflow to Hudson River
- ▶ Eurasian watermilfoil present



# A Brief History (~1990-Present)

- ▶ Hand harvesting by diving
- ▶ Benthic mats
- ▶ First permitted use of chemical control in ADK Park
  - ▶ Preparing permit took substantial time and effort
  - ▶ No leakage of chemical into another water body
- ▶ Ongoing efforts requiring annual support:
  - ▶ Milfoil managed by suction harvesting
  - ▶ Lake studies and surveys
  - ▶ Volunteer involvement



# Current Volunteer Initiatives

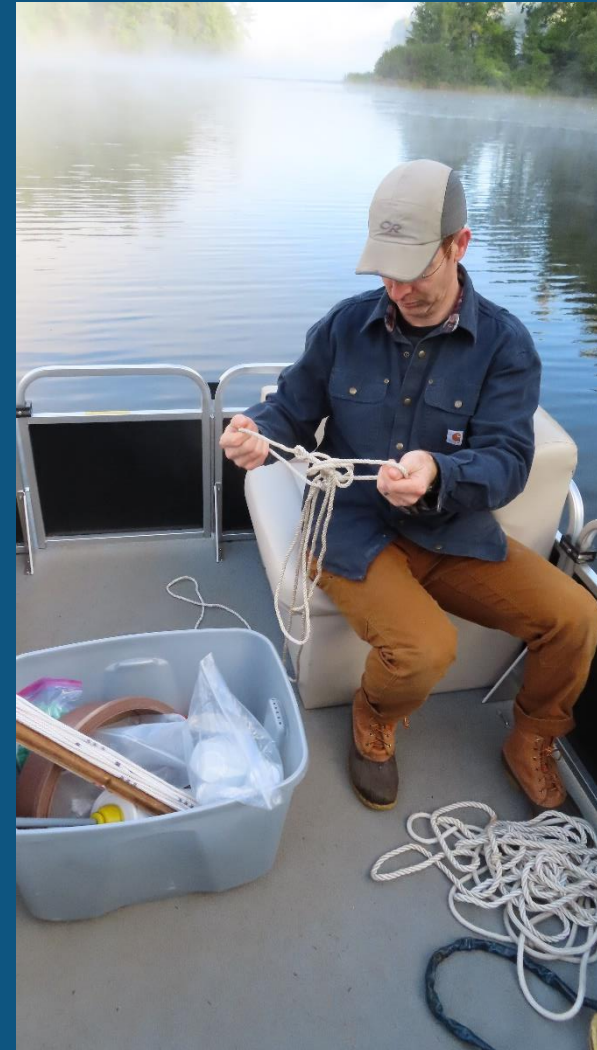
- ▶ Educating community
- ▶ Partnering with local government
- ▶ Ongoing research and study by volunteers and graduate students<sup>1</sup>
- ▶ Continuing CSLAP (after a 16 year hiatus)
- ▶ Identifying challenges in using our data to drive action

<sup>1</sup>Gajjar, A., J. Oppenlander, M. Schaffer, and E.K. TeKolste, "[Challenges and Successes Managing Eurasian Watermilfoil in Lake Luzerne: A 25 Year Citizen-Government Partnership,](#)" Adirondack Journal of Environmental Studies, 24:1, 2021.

# Data Challenge Examples

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- ▶ Overall condition
- ▶ Lake perception
- ▶ Anomalies
- ▶ Trending
- ▶ Interpretation



# Challenge #1: Overall Condition

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- ▶ Is it possible to summarize the CSLAP data to give us an overall assessment of the health of the lake?

Excerpt from Lake Luzerne – 2020 Lake Summary

## **Q. What is the condition of the lake?**

*A. Lake Luzerne continues to be mesoligotrophic, or moderately unproductive, based on moderate water clarity, moderate algae levels (chlorophyll a), and low nutrient (phosphorous) levels. Soluble nutrients were analyzed in 2020. Most of the phosphorus in the lake is soluble, indicating a high potential for more algae growth. Most of the nitrogen in the lake is soluble. The waterbody is slightly alkaline or basic, with intermediate hardness water, moderately low water color, and low nitrogen levels.*



# Challenge #2: Lake Perception

How do our lake perception ratings between 1 and 2 translate into ratings of Fair and Poor?

## Lake Luzerne – Lake Scorecard

Water Quality Indicators	Average Year	2020
Phosphorus	Oligotrophic	Oligotrophic
Chlorophyll A	Mesotrophic	Oligotrophic
Secchi	Mesotrophic	Oligotrophic
Lake Perception	Poor	Fair
Harmful Algal Blooms	Good	Good
Open Water Algae Levels	Good	Good
Aquatic Invasive Species	Present	

# Challenge #2 – cont.

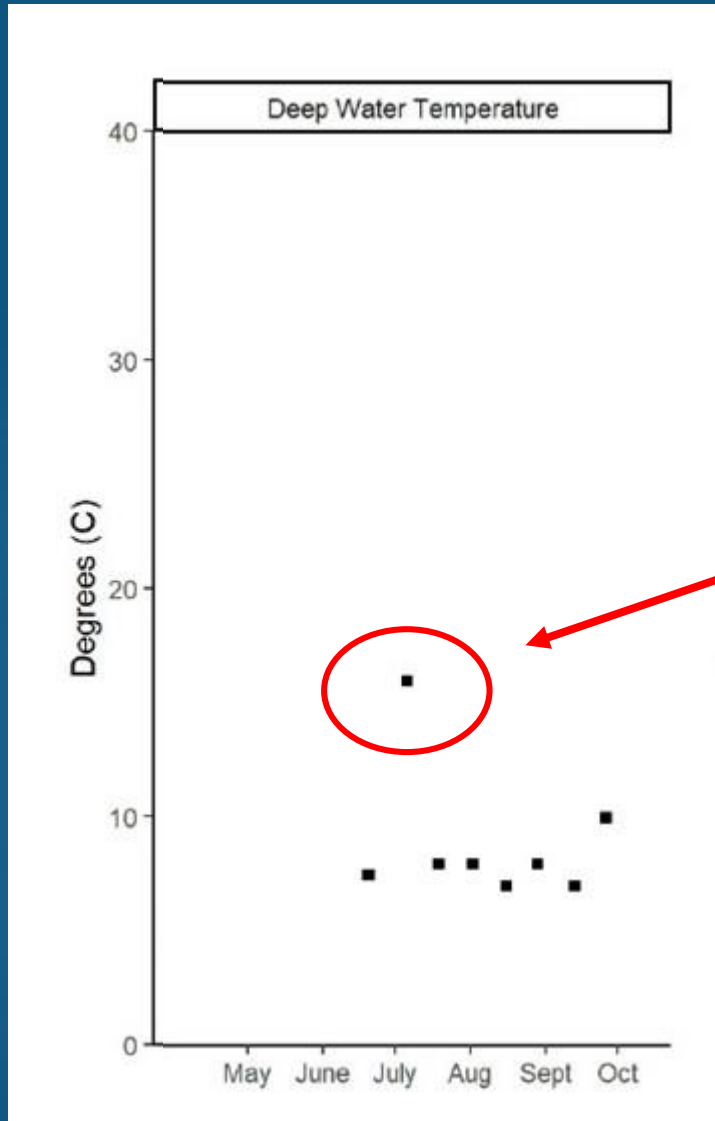
## An inquiry to NYSFOLA yielded the explanation:

*Lake Perception is a combination of the responses to QA and QC on the user perception survey:*

- ▶ *If more than 50% of all responses (within a year or across all years) to either question are greater than the response 2, indicating a response 3 or higher, then the score is translated to Poor. As a reminder, these responses (3-5) are associated with a definite algal greenness or worse for QA and some plants grow to the lake surface or worse for QC.*
- ▶ *If between 10% and 50% of the responses (within a year or across all years) for either of those questions are greater than a response of 2, then the score is translated to Fair.*
- ▶ *If less than 10% of the responses (within a year or across all years) for either of those questions are greater than a response of 2, then the score is translated to Good.*

# Challenge #3: Anomalies?

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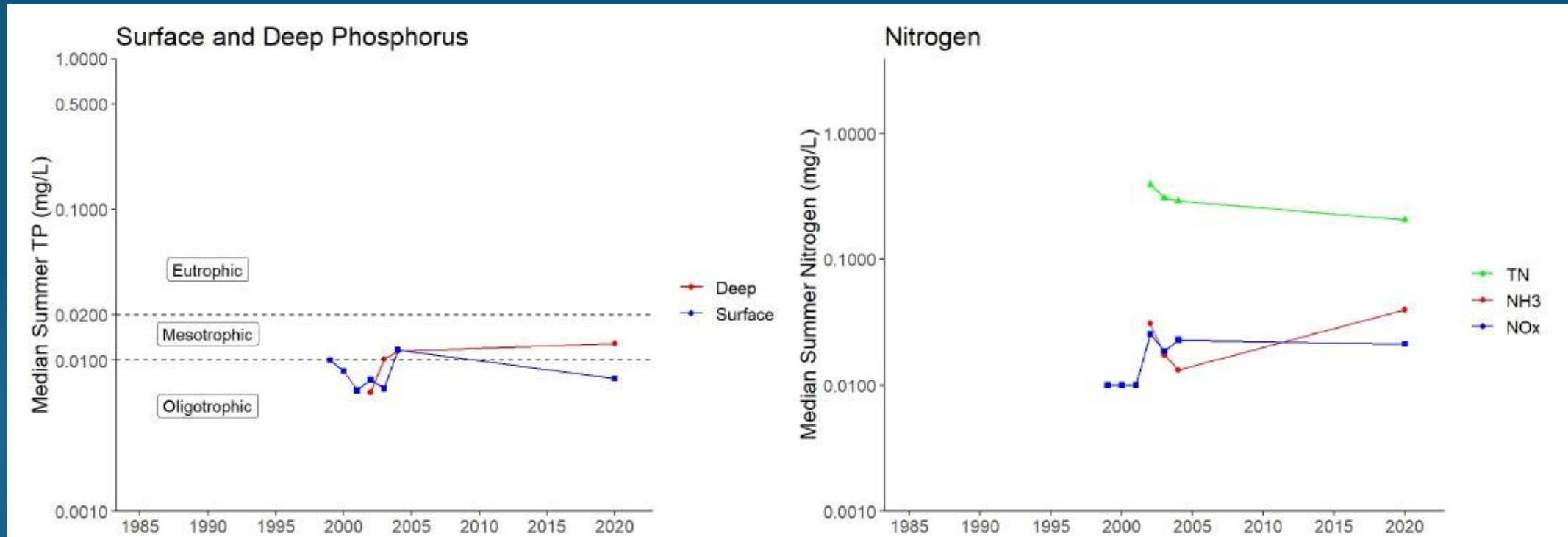


Is this an anomaly or natural fluctuation?

- ▶ Misread thermometer
- ▶ Data entry error
- ▶ Lake turned over
- ▶ It's normal

# Challenge #4: Trending

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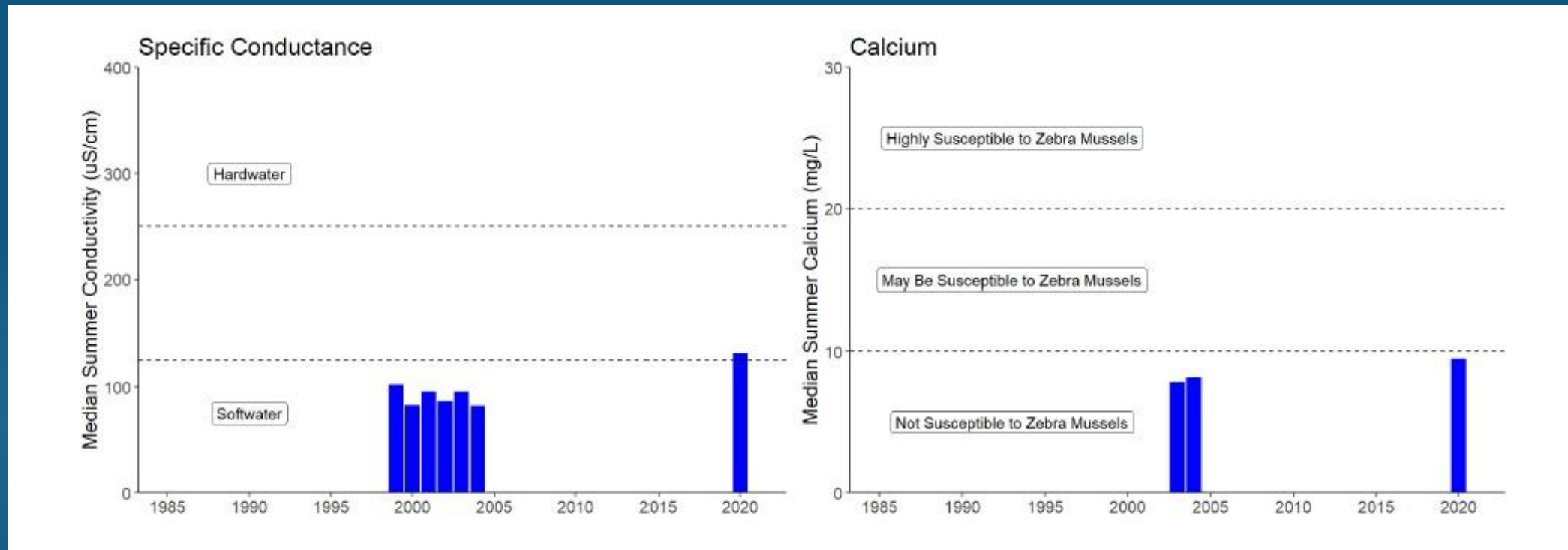
The TN trend is **statistically** significant ( $p < 0.01$ ).

Is this **practically** significant? Actionable?



# Challenge #5: Interpretation

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- ▶ What data is associated with potential threats?
- ▶ What are the key variables to monitor?

# In Summary

- ▶ For the part time citizen scientist it is often
  - ▶ Challenging to read the raw data intelligently
  - ▶ Difficult to translate the results into proposals for action to get funding and/or volunteers
  - ▶ Maintain enthusiasm for the data collection effort

# The Many Roles of a Citizen Scientist

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- ▶ CSLAP does an excellent job in training volunteers to collect samples
- ▶ Volunteers do much more than collect samples
  - ▶ Obtain funding for CSLAP fees
  - ▶ Present results to other stakeholders
  - ▶ Educate the community
  - ▶ Ask for funds to address water quality problems

# Lay Summary of Significant Results

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- ▶ What actions need to be taken?
  - ▶ Preventative
  - ▶ Remedial
  - ▶ Critical
- ▶ How urgent are they?
- ▶ What are the alternatives?



# Solutions?

- ▶ Study more?
  - ▶ I get more out of the reports each time I reread them
  - ▶ *Diet for a Small Lake* is a wonderful resource
  - ▶ Other videos and books could help
- ▶ Get more help?
  - ▶ Hire a lake management consultant for our lake?
  - ▶ Add lay summaries to CSLAP reports?

# Discussion Questions

- ▶ Have you had some of the same problems that we've described in making conclusions accessible to decision makers?
- ▶ How have you used CSLAP data to initiate or continue water quality measures for your lake?