

How Citizen Lake Monitoring Data Are Used

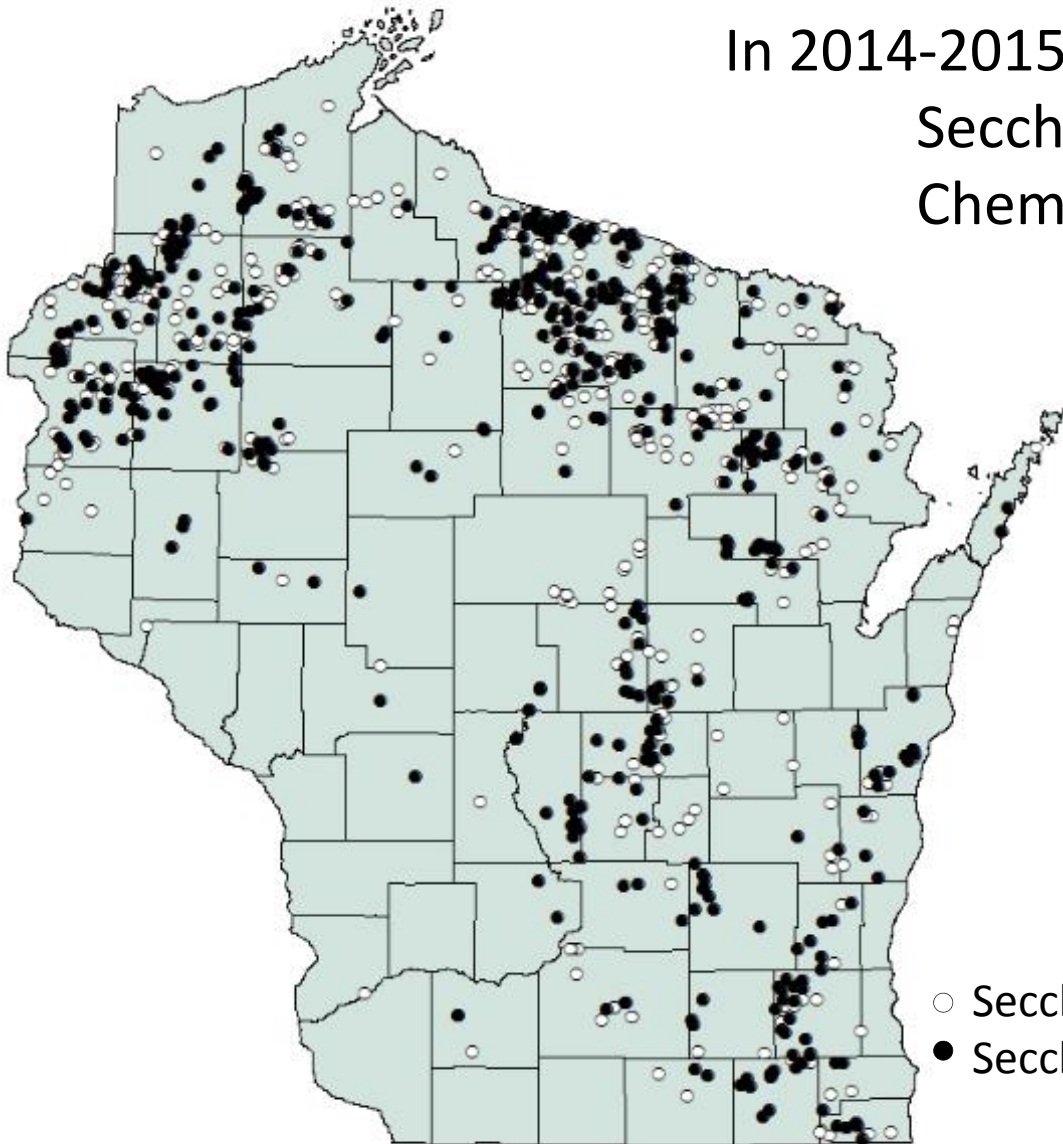


Katie Hein

Wisconsin Department of Natural Resources

Citizen Lake Monitoring Network

In 2014-2015, citizens monitored:
Secchi depth on 1006 lakes
Chemistry on 542 lakes



Bimonthly:
Secchi depth



Spring and 3 X's in summer:
Total Phosphorus
Chlorophyll *a*

- Secchi only
- Secchi, Chl-*a*, TP

Uses of Citizen Monitoring Data

- Policy

Developing nutrient standards

- Assessment

How healthy are Wisconsin lakes?

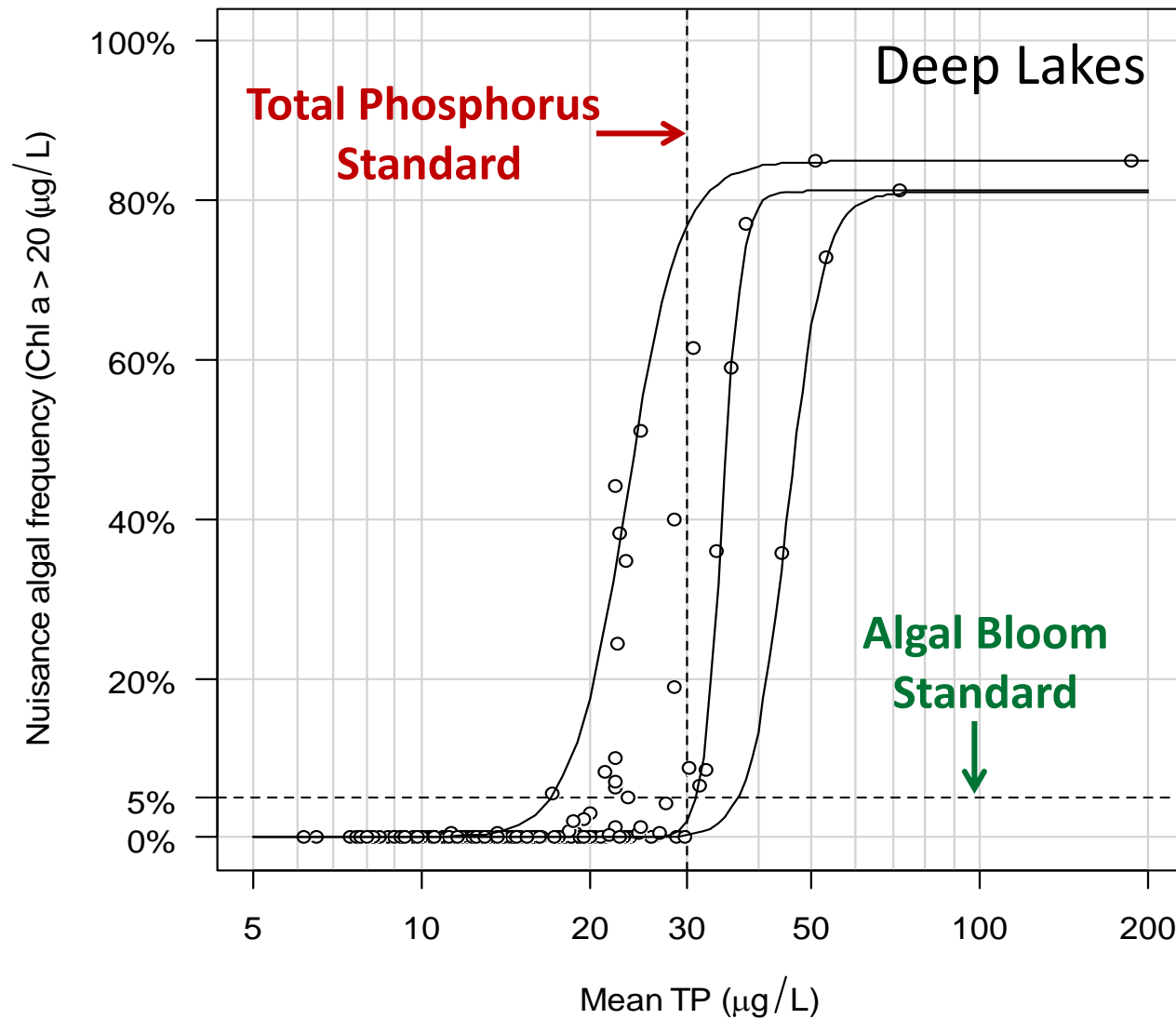
- Management

How should we manage Wisconsin lakes?

- Research

What can we learn about Wisconsin lakes?

Recreational Lake Water Quality Standards



Graph from Matt Diebel

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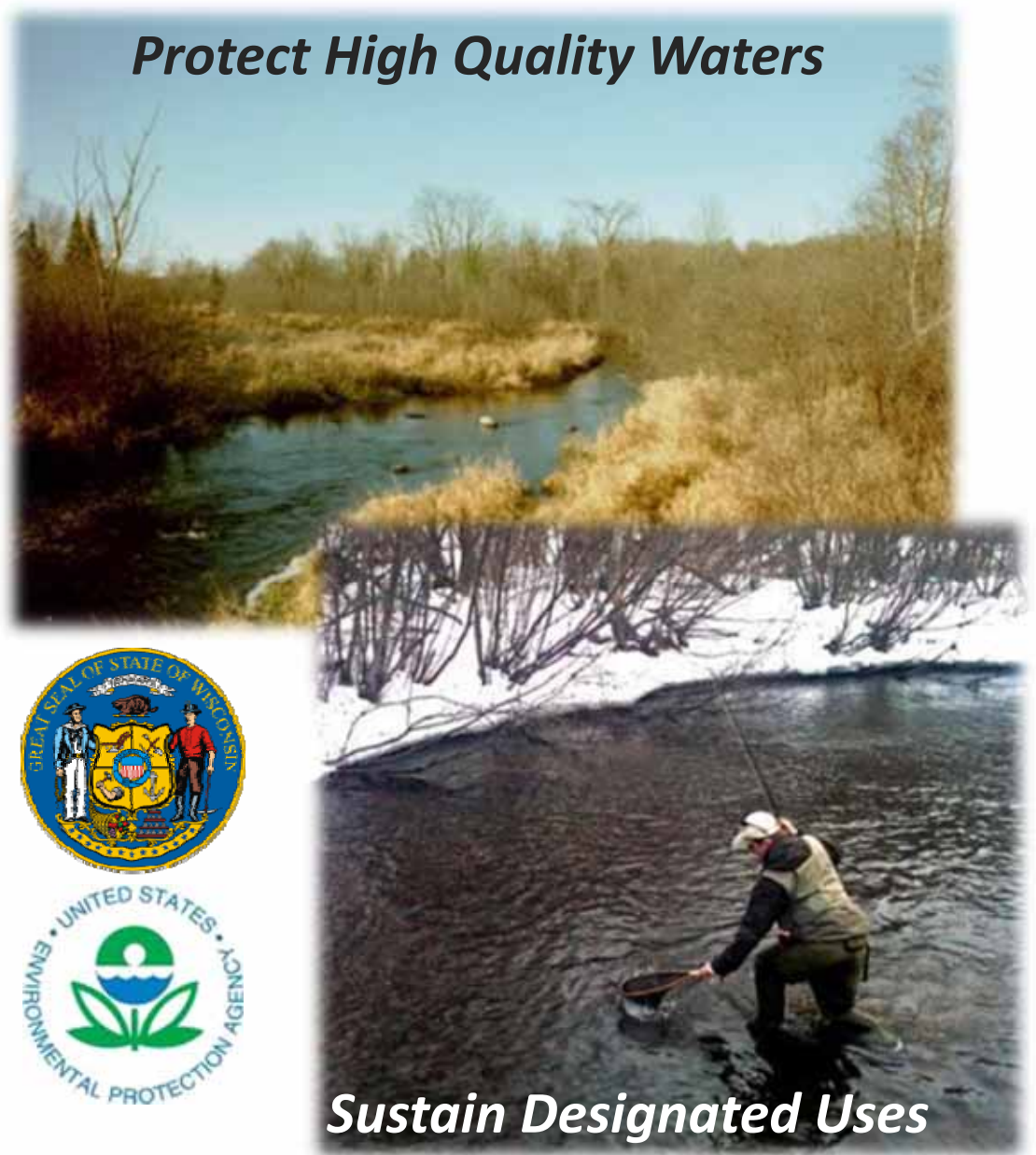
Clean Water Act Goals

Restore Impaired Waters



Compliance

Protect High Quality Waters

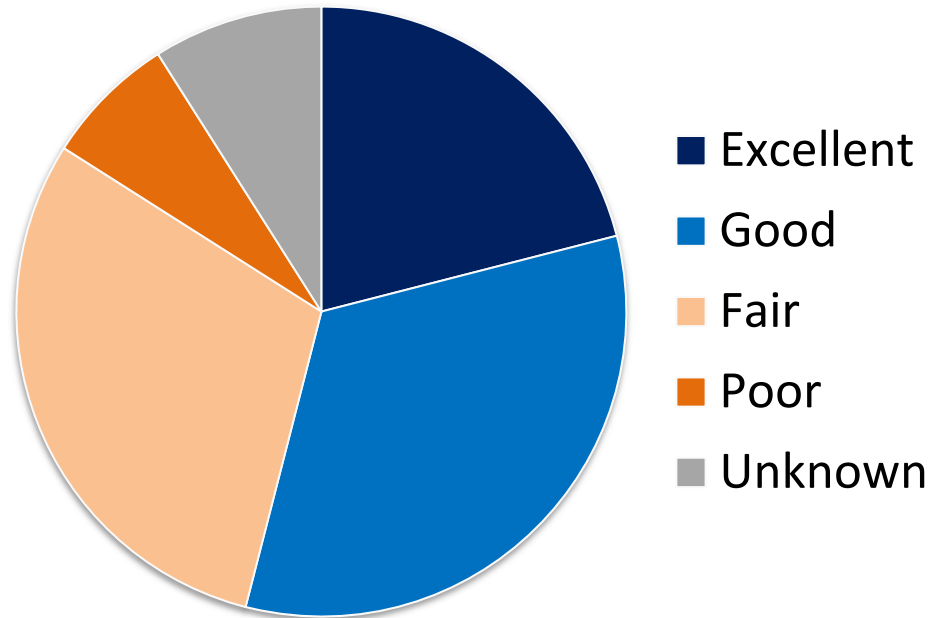


Sustain Designated Uses

How healthy are Wisconsin lakes?

Water Quality Report to Congress

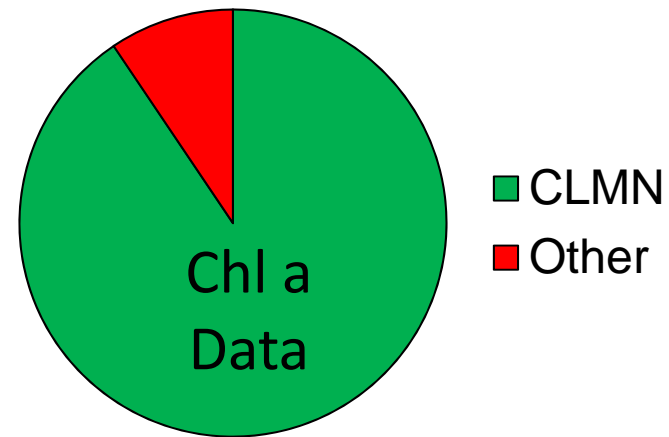
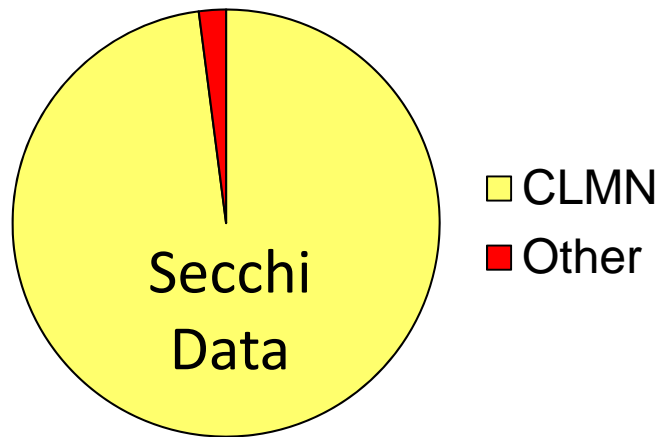
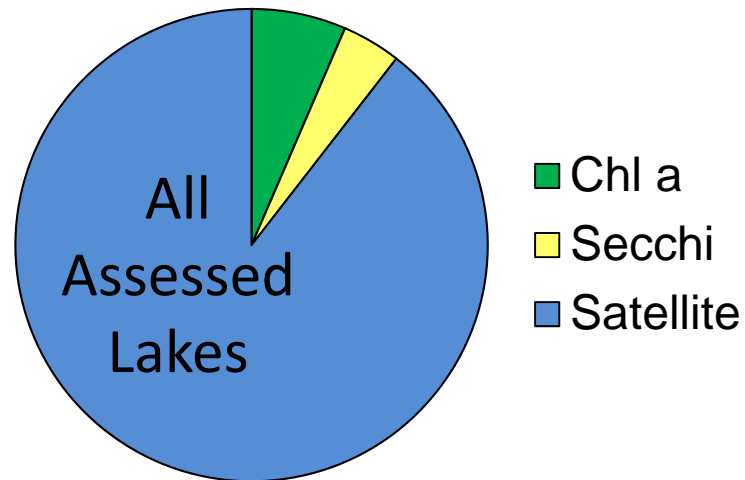
Water Quality According to Lake Trophic Status



4506 lakes assessed with data through 2014

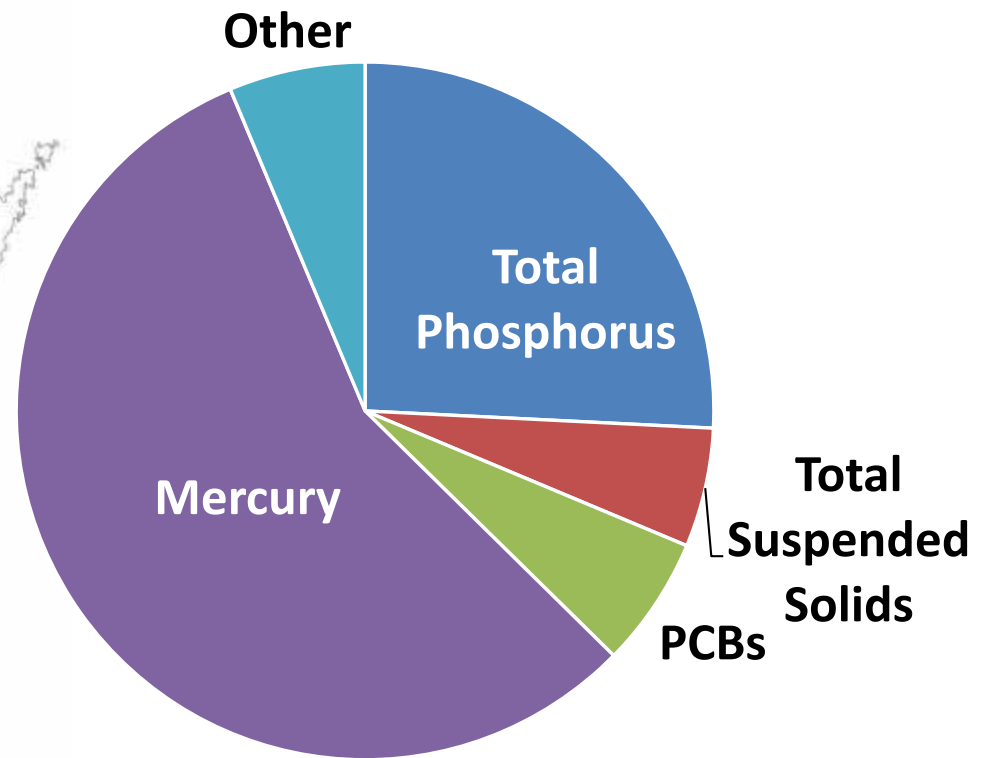
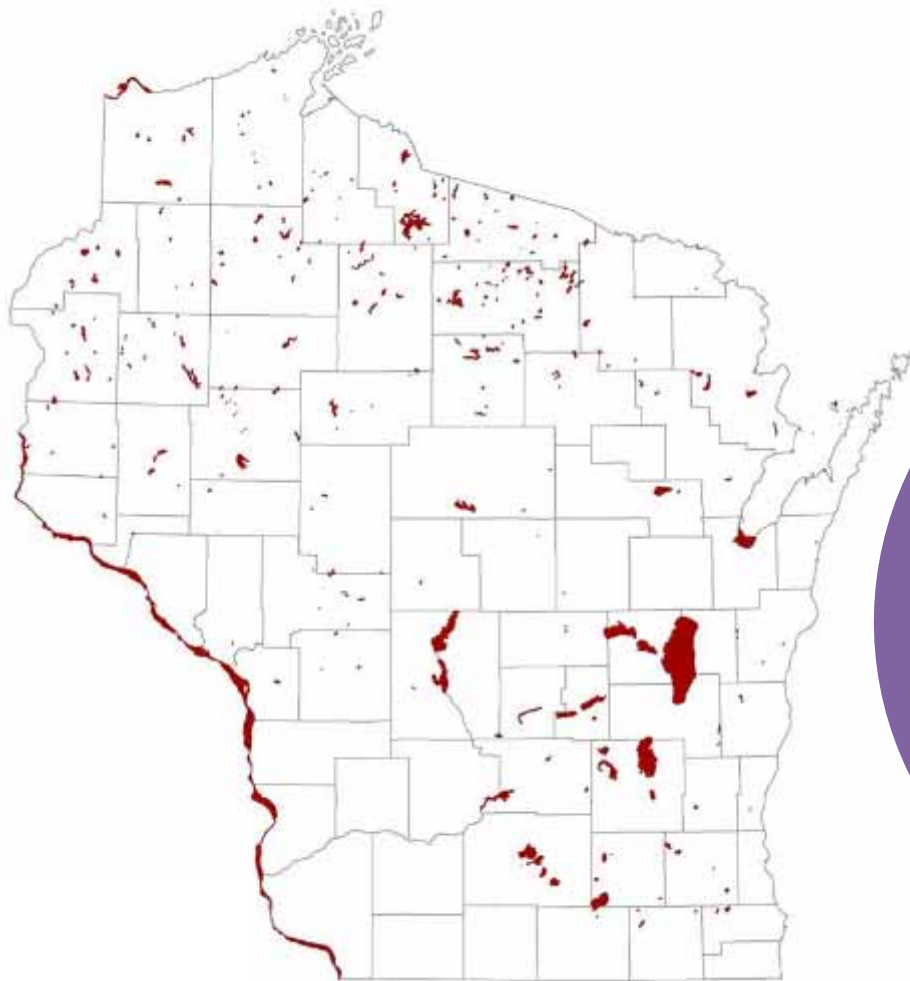
Citizens Provided Most of the Secchi and Chlorophyll Data

Assessed 6054 lakes through 2012



Impaired Waters List

Volunteers monitored 70 of 87 lakes listed for TP or Chl-a in 2014



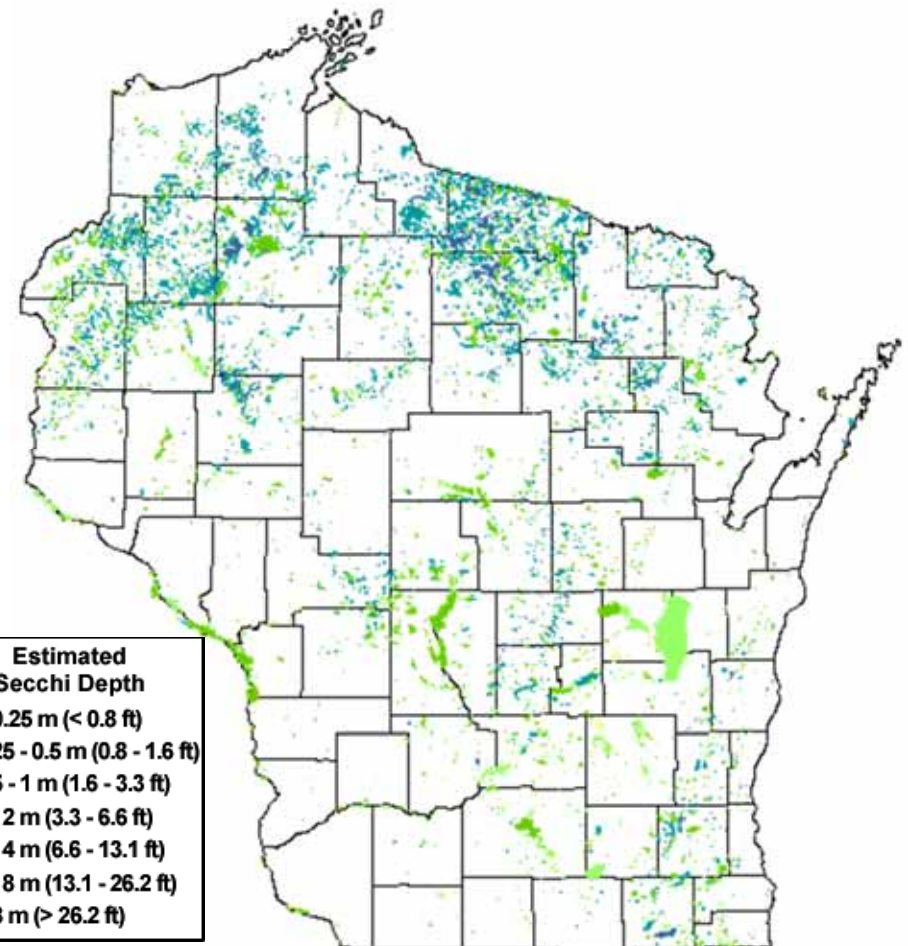
Satellite Secchi Depth

Goal:

Use satellite data to assess lake water quality

Citizen Role:

Calibrate the models by taking Secchi depth on the same day as the satellite passes overhead



Refining Satellite Tools

Is water clarity low because the lake is green with algae or is the lake naturally stained?



Thursday 2:05 – Daniela Gurlin & Steve Greb

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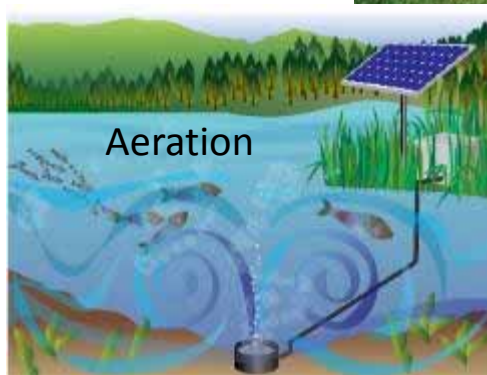
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- Research

What can we learn about Wisconsin lakes?

How Citizen Data Aids Management

Nutrients



Invasive Species



Thursday 11:00 – citizen panel on water quality

Friday 8:00 – citizen panel on Invasive Species

Friday 10:30 – Jo Latimore, MI volunteer coordinator

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Lake Suitability for Aquatic Invasive Species

The Invasive Species

<http://www.aissmartprevention.wisc.edu/mappingtool.php>



Back to the Smart Prevention HomePage

Legend: (Turn on and off layers with checkbox)

Select a Species: Rainbow Smelt

Lake Suitability for Rainbow Smelt

Methods

- Suitable
- Not Suitable
- Data Not Available

2009 Rainbow Smelt Records


Lakes

Base Map:

Bing Base Map

Bing Aerial Map

This site was made possible by:




Vander Zanden Lab
University of Wisconsin-Madison
Center for Limnology
WI Sea Grant

IRA AND INEVA KELLY BALDWIN
WISCONSIN IDEA ENDOWMENT

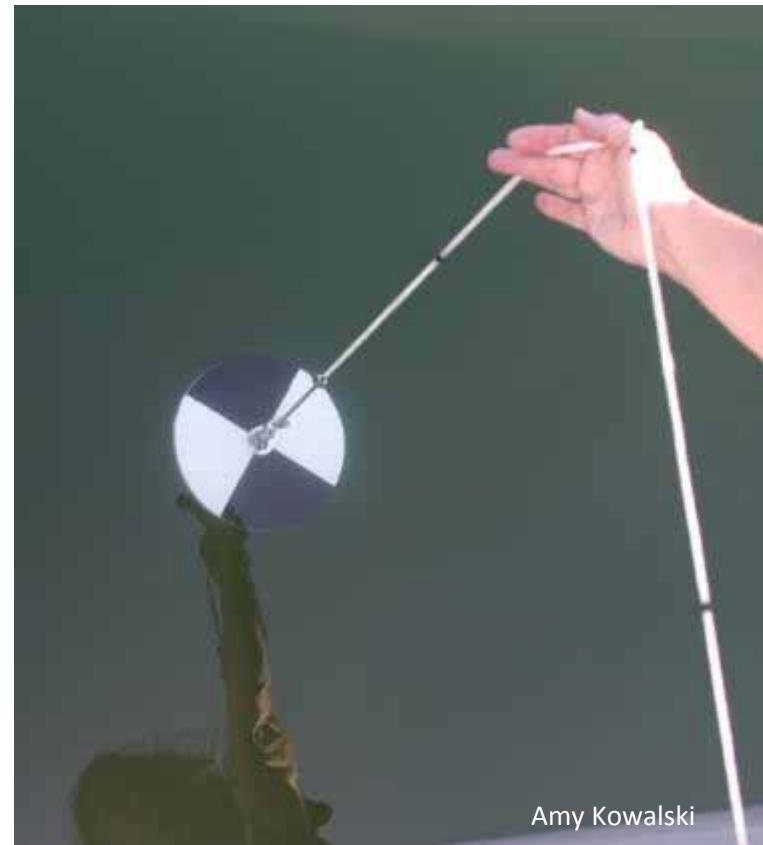
Sea Grant
University of Wisconsin

Rainbow Smelt



Jake Vander Zanden

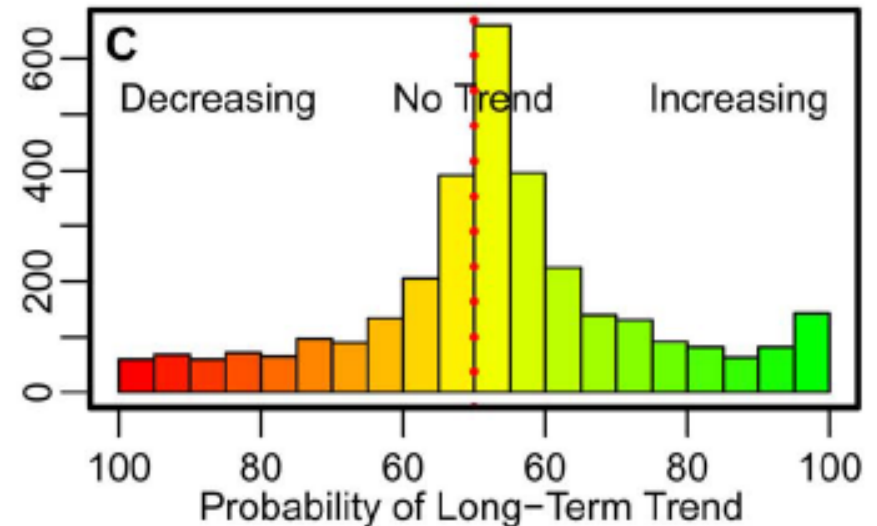
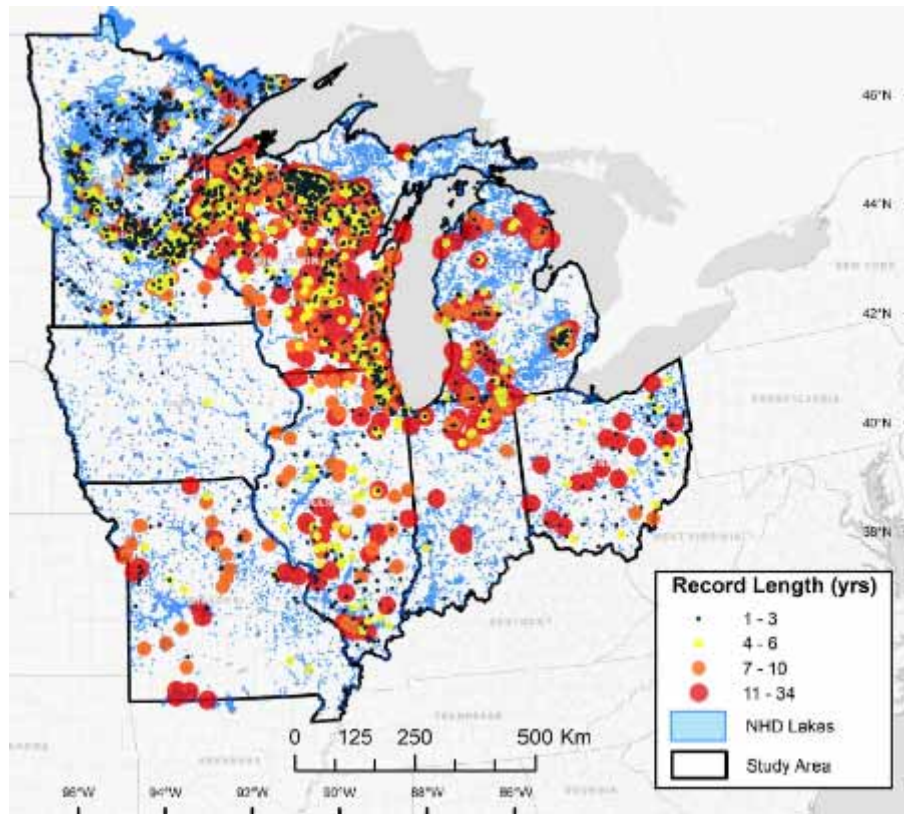
Changes in water clarity after zebra mussel invasion



Marianne Geisler – Master's Student at University of Manitoba

Long-Term Citizen-Collected Data Reveal Geographical Patterns and Temporal Trends in Lake Water Clarity

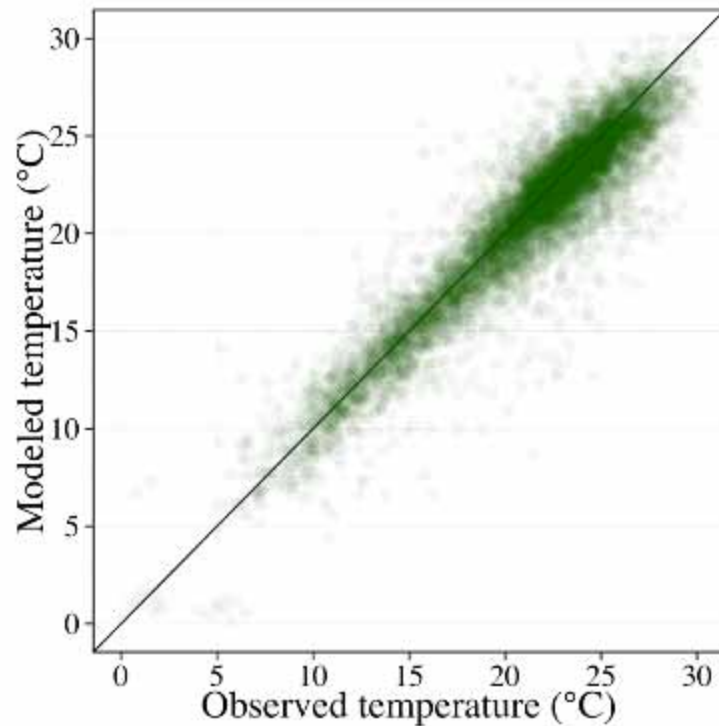
Noah R. Lottig^{1*}, Tyler Wagner², Emily Norton Henry^{3,4}, Kendra Spence Cheruvilil^{3,5}, Katherine E. Webster⁶, John A. Downing⁷, Craig A. Stow⁸



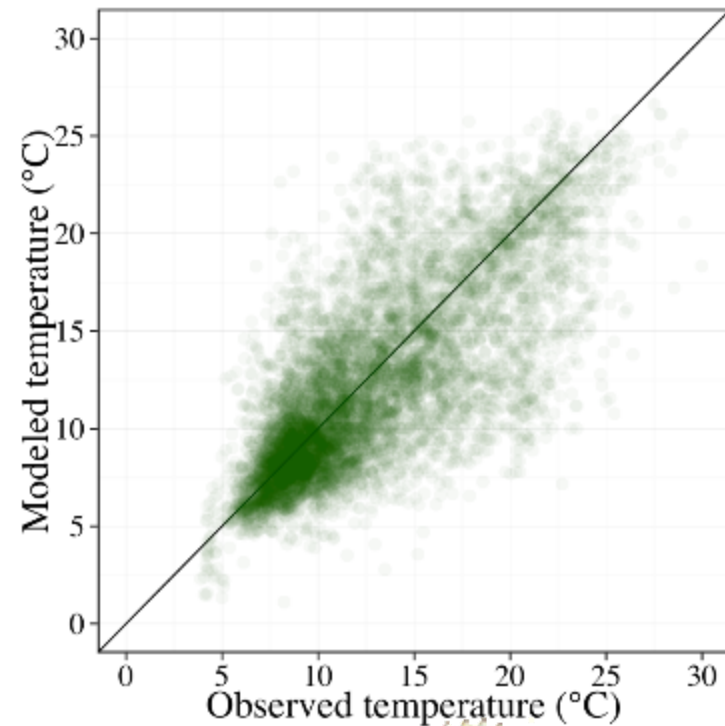
Thursday 1:45 – Noah Lottig

Modeling lake temperature and effects on walleye

Epilimnion temperatures



Hypolimnion temperatures



Thursday 2:55 – Gretchen Hansen



Emerging Issues

Divisive mine plan draws challengers to usually uncontested Iron County Board races



FEBRUARY 09, 2014 6:45 AM • BY [STEVEN VERBURG](#) | [WISCONSIN STATE JOURNAL](#)

A divisive proposal for a huge open pit mine in the Penoque Hills of northern Wisconsin has helped spur a surprising number of challengers to run against Iron County Board members in

Frac sand mines credited for rising, dropping property values



MARCH 30, 2014 6:00 AM • [ALISON DIRR](#) | [WISCONSIN CENTER FOR INVESTIGATIVE JOURNALISM](#)

TUNNEL CITY— Perry Schmitt describes himself as pro-mining but blames the frac sand mine

time we had even one Board supervisor,” served as county clerk



High-capacity wells possibly lowering some lake levels




JULY 22, 2013 5:30 AM • BY [MARK PITSCH](#) | [WISCONSIN STATE JOURNAL](#)

PLAINFIELD — Long Lake has lost its shoreline. Dock after dock dead-ends in the weeds. It looks more like an unmowed lawn with a pond in the middle than a place where families used to water ski and fish.

Once up to 12 feet deep, the lake is now closer to three, having bounced back slightly since 2006 when the lake dried up completely.

Friday 9:10 – Jessica Haucke on stream flow & lake levels

A photograph of a sunset over a lake. The sky is a mix of dark blue and orange, with the sun low on the horizon. In the foreground, a boat with a canopy is docked at a wooden pier. A person is standing on the pier, looking out at the water. The water reflects the colors of the sunset.

Citizen Data Advances Lake Policy, Management, and Science!