Welcome to YAHARA LAKES 101 LAKE SCIENCE CAFÉ

sponsored by

FirstWeber Group Foundation

The Edgewater

The Evjue Foundation

Isthmus
LakeForecast.org: All Eyes on Lake Water Quality

James Tye, CLA
Jordan Barrette, MIOsoft
Katie Nicholas, CLA
Thank You!

Lake Forecasting Stewards
Allen Arntsen, Claire and Ava
David Schroder
Dick Pearson
George Benton
Harmon & Nell Ray
Jacob Stampen
Jan Van Vleck
Joan Kirkhuff
John Tye
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Matt Melvin
Mel McCartney
Natalie Marshall
Rhonda Arries
Sarah Balz
Silke Schmidt & Dan Phaneuf
Woody Kneppreth
Zak Redding & Kirsten Johnson

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Partners
City of Madison
City of Monona
Dane County
MIOsoft
Public Health Madison & Dane County
UW-Madison Center for Limnology
UW-Madison Morgridge Center
Wisconsin DNR
Wisconsin State Laboratory of Hygiene

CLA Intern
Justin Chenevert
What’s our purpose?

- Fill monitoring gap
- Minimize risk
- Increase awareness
- Status of our lakes
Perception vs. Reality

Photo: UW SSEC and Wisconsin View
LakeForecast.org
Timeline of Release

- Save Our Lakes Community Breakfast
- Four TV News Stories
- Press
- Blog & Social Media Posts
Jordan Barrette
Chief Operating Officer
MIOsoft
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• Who is MIOSoft?
• Why LakeForecast.org?
• What data sources do we use?
• What data did we collect this year?
• What’s in the future?
Why LakeForecast.org?

It’s about the data!
Data Collection This Year

• Buoy Data
• Beach Closure Data
• Volunteer Observations
• Site Usage
Buoy Data

- 1 Buoy
- Record Every 30 Seconds
- Over 4 Million Values
- Wind, Temps, Chlorophyll, Dissolved Oxygen, etc.
Beach Closure Data

• Change In Status
• 232 Changes Recorded
• Spring Harbor Beach (20)
• Most Changes Happen in July
Volunteer Observations

• Over 2,300 Collections
• Over 25,000 Values
Public Usage

- 9,309 sessions
  - 5,848 new visitors
- 47,953 pageviews
What’s in the future?

- More data sources
- Community-sourced data
- Deeper analytics
New in 2015

- More sites
- New data sources
- New funding sources
- Targeted sampling
- Algae ID training
Program Impact

- 58 stations
- 1,376 samples
  - 118 *E. coli* samples
- Contest winner

![Near-shore Monitoring Stations](chart)
Beach Closure Days

Number of Closure Days

- Blue-green Algae & E. coli
- Blue-green Algae
- E. coli

2013
- Blue-green Algae & E. coli: 20
- Blue-green Algae: 10
- E. coli: 40

2014
- Blue-green Algae & E. coli: 20
- Blue-green Algae: 30
- E. coli: 70

2015
- Blue-green Algae & E. coli: 30
- Blue-green Algae: 60
- E. coli: 60
Volunteer Sites

# samples (# sites)

- 0 - 5 (7)
- 6 - 11 (16)
- 12 - 16 (18)
- 17 - 29 (9)
- 34 - 53 (5)
- 68 - 116 (5)
The water is so clear you can see the sand.
June 14, 2015

Volunteer Sites
- Clear
- Green Algae
- Blue-Green Algae

Beaches
- Open
- Closed
June 16, 2015

Volunteer Sites
- Clear
- Green Algae
- Blue-Green Algae

Beaches
- Open
- Closed
James Madison Beach 2014 *E. coli* Data

- **Date (m/dd/yy)**
- **E. coli Concentration (MPN/100 ml)**
- **Precipitation in 48 hours preceding sampling (ln)**

- **48 hr precip**
- **E. coli (MPN/100 ml)**
- **E. coli Beach Closure**
James Madison Beach 2015 E. coli Data

E. coli Concentration (MPN/100mL)

Date (m/dd/yy)

Precipitation in 48 hours preceding sampling (In)

5/19/15 6/8/15 6/28/15 7/18/15 8/7/15 8/27/15

48 hr precip E. coli E. coli Beach Closure

10000 1000 100 10 1
Warner Beach 2015 *E. coli* Data

- **48 hr precip**
- **E. Coli**
- **E. coli Beach Closure**

**E. coli Concentration (MPN/100mL)**

**Date (m/dd/yy)**: 5/19/15, 6/8/15, 6/28/15, 7/18/15, 8/7/15, 8/27/15

**Precipitation in 48 hours preceding sampling (In)**

**E. coli Beach Closure**
Olbrich Beach 2015 E. coli Data

Date (m/dd/yy)

E. coli Concentration (MPN/100mL)

Precipitation in 48 hours preceding sampling (In)

48 hr precip
E. Coli
E. coli Beach Closure
Esther Beach 2015 E. coli Data

- 48 hr precip
- E. Coli
- E. coli Beach Closure

Date (m/dd/yy):
- 5/19/15
- 6/8/15
- 6/28/15
- 7/18/15
- 8/7/15
- 8/27/15

Precipitation in 48 hours preceding sampling (ln)
Goodland County Beach 2015 *E. coli* Data

**Graph:**
- **E. coli Concentration (MPN/100mL)**
- **48 hr precip**
- **E. Coli**
- **E. coli Beach Closure**

**Dates:**
- 5/19/15
- 6/8/15
- 6/28/15
- 7/18/15
- 8/7/15
- 8/27/15

**Legend:**
- E. coli Concentration (MPN/100mL)
- 48 hr precip
- E. Coli
- E. coli Beach Closure
Post-Rain Monitoring Blitz: July 13, 2015

- 24 samples collected
- 19 > EPA advisory threshold
- 14 closures
Post-Rain Monitoring Blitz: July 29, 2015

- 24 samples collected
- 17 > EPA advisory threshold
- 11 closures
Water Clarity

HELP US MONITOR MENDOTA: IS CLEAR-WATER PHASE A MEMORY?

© MAY 20, 2015  ADAM HINTERTHUER  9 COMMENTS

by Jake Walsh

We’ve written before about how an invasive zooplankton called Bythotrophes longimanus, or “the spiny water flea” (SWF) is eating our native algae-grazing friends, the tiny crustaceans called Daphnia.

Spiny water flea under the microscope. Photo: Jake Walsh

Source: limnology.wisc.edu
2015 Yahara Lakes Near-shore Clarity

- Lake Mendota
- Lake Monona
- Lake Waubesa
- Lake Kegonsa
- Lake Wingra

Water Clarity (cm)

Clear-water phase

Month:
- May
- June
- July
- August
- September
Lake Mendota Water Clarity - Summer of 2015

Buoy Clarity (m) vs. Turbidity Tube Clarity (cm)

- Good
- Fair
- Poor

Date (m/dd/yy)

5/26/15 to 9/3/15
Plans for Future

• Beaches
  – Targeted bacteria sampling
  – Determine bacteria sources
  – Lifeguard monitoring

• Volunteer sites
  – Phosphorus sampling
    • Assist FLAMe research

Photo credit: Jeff Miller
How to participate

Lake Forecasting Steward Donation

$135.00

As a Lake Forecasting Steward, you will be taking lake samples on a regular basis as well as picking up the cost of our fixed supplies needed to run the program. This monitoring effort is part of one of our key objectives, which is to report progress. This program is extensive and the cost to run it greatly exceeds the fixed supplies cost, including staff time and resource allocation.

$57.50: Turbidity Tube
$30.75: Thermometer
$11.75: Office expenses and supplies
$35: Friend of Clean Lakes
$135 = Lake Forecasting Steward Donation

Thank You!

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Figure 14: Madison-Area Beach Closures by Year
Source: Madison and Dane County Public Health data.

Beach Closings Take-Away
Beach closings have declined in the last 5 years, although 44 beach closings in 2013 is still cause for concern.
Figure 15: Closures by Beach 1996—2014

Source: Madison and Dane County Public Health data.
Perceptions vs. Reality