

# WDNR Monitoring Strategy & Citizen Monitoring

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WDNR

looking toward the future...





## 3 Themes

- Continue Long Term Trend Lakes Monitoring
- Recruit volunteers to monitor new lakes
- New parameters

# 62 Long Term Trend Lakes

## Goals:

monitor long-term trends in lakes  
provide context for other lake data

## Monitoring:

Spring and 3 X's in summer:

Secchi depth  
Temperature/D.O. profile  
Total Phosphorus  
Chlorophyll *a*  
Conductivity (optional)  
pH (optional)

1 X in summer:

Color  
NO<sub>2</sub>-NO<sub>3</sub>, TKN

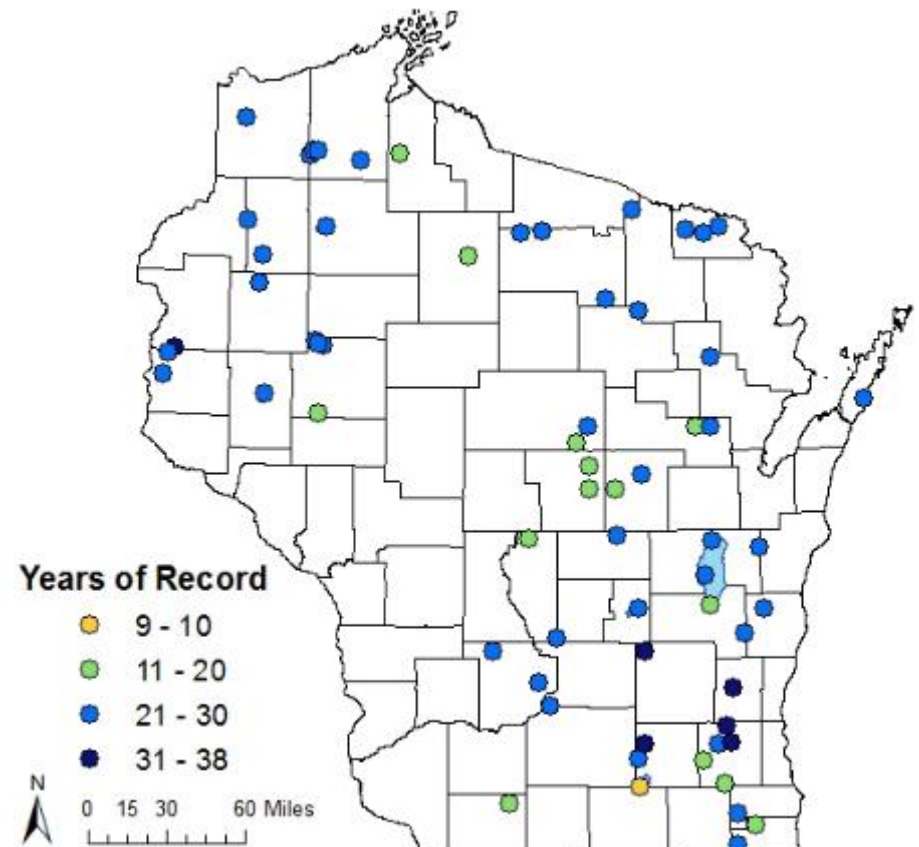
5 year cycle:

Ca  
Mg

## CLMN Role:

Monitor 2 X's in summer

In 2014, CLMN monitored  
34 of 62 LTT Lakes



# Lake Monitoring GAP



No monitoring plan  
for getting to “new”  
lakes across the state

# Directed Lakes

## Goals:

Obtain chemical, physical & biological data for assessment AND lake management on new lakes

## Monitoring:

- 1 Plant point-intercept survey
- 1 Shoreland Habitat survey
- 3 Water chemistry samples

## CLMN Role:

Collect chemistry data for assessment needs (6 samples in 2 years)

**Plant Point Intercept 1X**



**Shoreland Habitat 1X**



**Trophic Status 1X**

Temperature  
D.O.  
Conductivity  
TP  
Chl-a  
Secchi



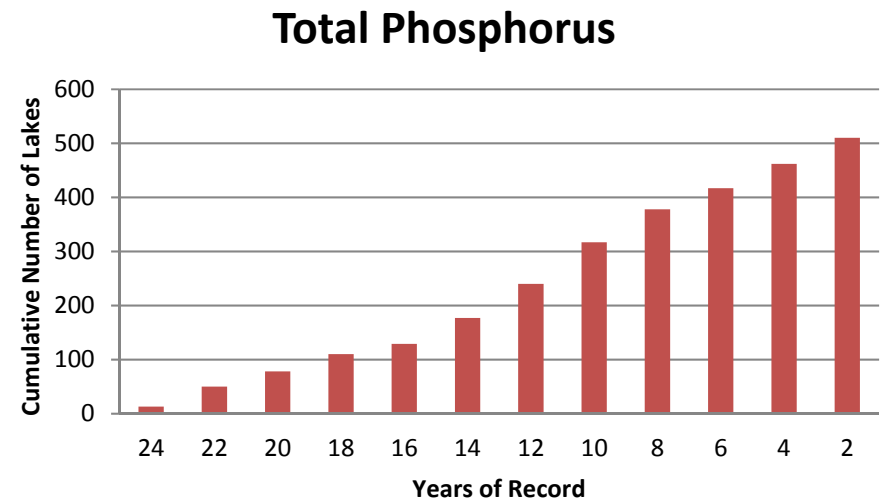
# Who can accomplish Directed Lakes Monitoring?

## DNR Lake Staff

- Build capacity for new monitoring workload
- Trainings for plant PI surveys
- Trainings for shoreland habitat surveys
- Equipment

## Citizens

- Initiate “short-term” citizen monitoring for water chemistry

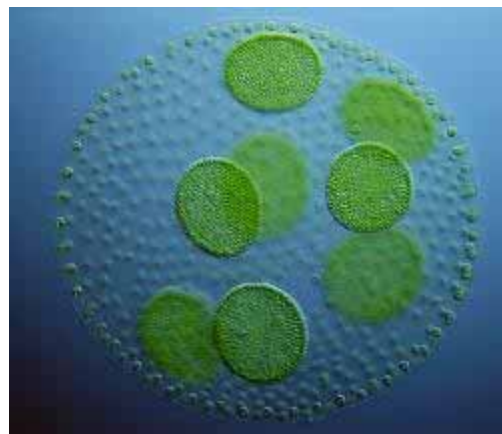


**Trend Lakes:** keep 277 lakes with  $\geq 10$  years of data

**“Condition” Lakes:** 233 lakes with  $< 10$  years of data

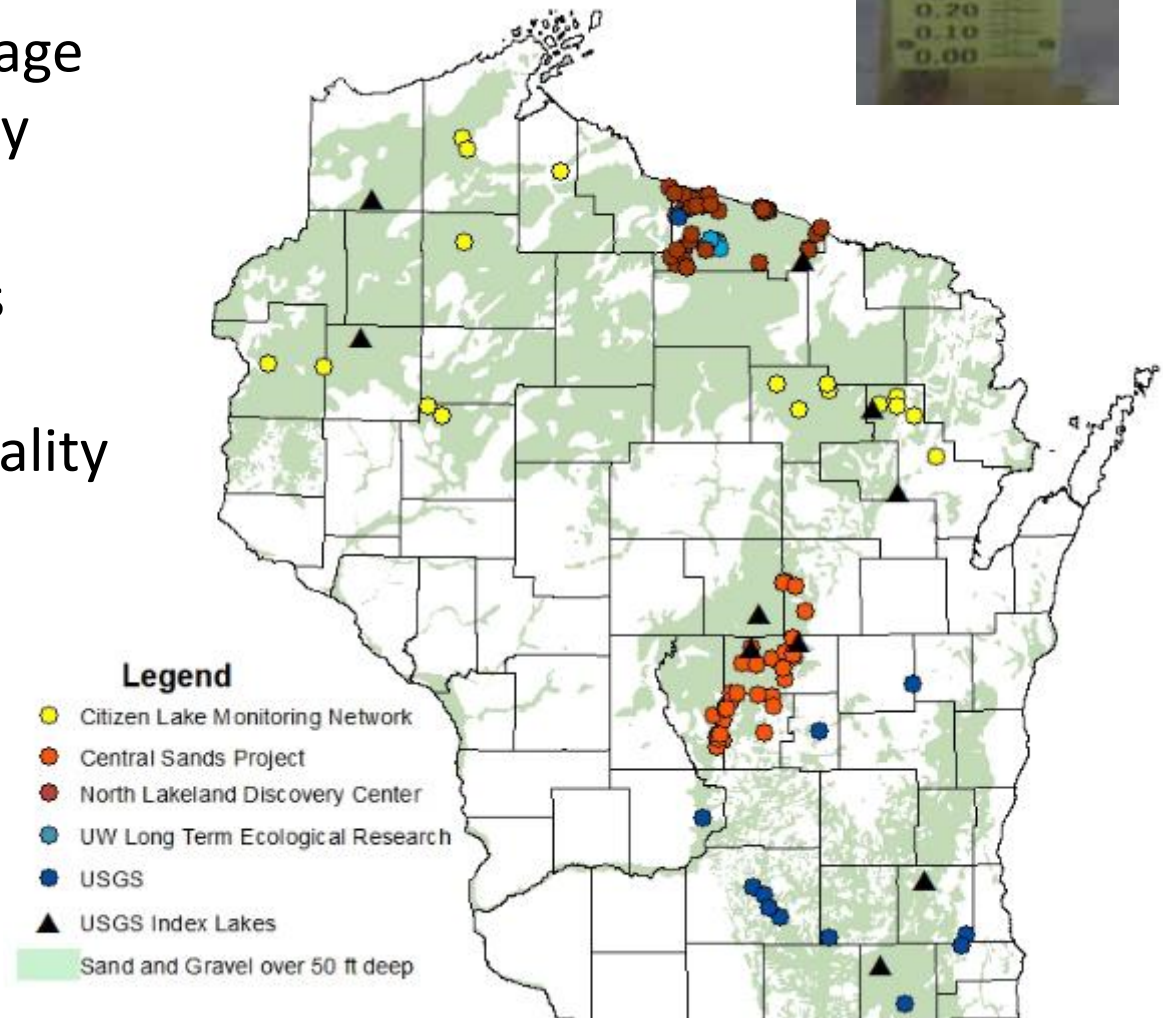
# Potential New CLMN Parameters

- lake levels
- temperature loggers
- blue-green algae
- aquatic plant surveys
- nearshore water transparency & chemistry



# Lake Level Monitoring

- Staff install and survey gages in spring and fall
- Volunteer reads staff gage at least monthly (ideally weekly)
- Volunteer coordinators work with volunteers: training, data entry, quality assurance





# Temperature Loggers

## Goals:

Obtain continuous temperature data on lakes to improve thermal models and to monitor climate change

## Monitoring:

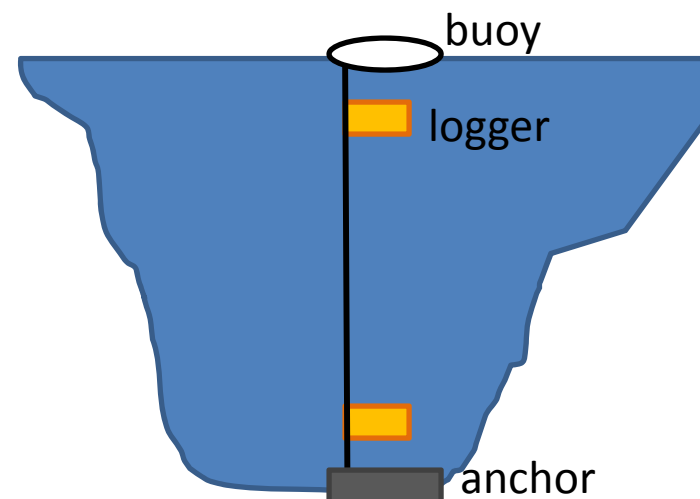
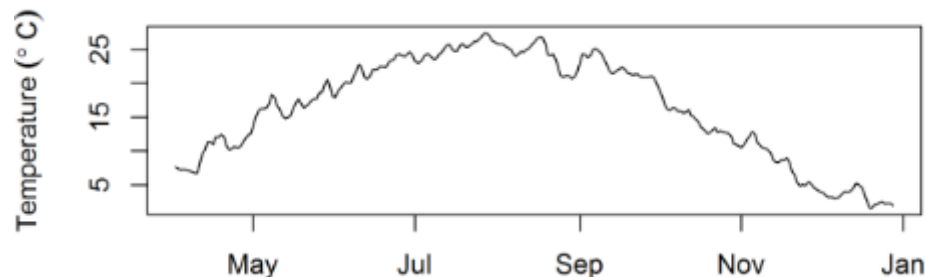
Field season 2015: logger attached to a pier on 30 lakes (Gretchen Hansen)

Future efforts: 1 logger near surface & 1 near sediment at deepest spot or buoy with temperature loggers at 1-m intervals

## CLMN Role:

Deploy, check on, and retrieve loggers

New lakes to calibrate thermal models



# Blue Green Algae

## **Goals:**

1. Blue green algae surveillance
2. Algal species composition, including blue green algae
3. Frequency of blue green algae blooms

## **Monitoring:**

1. Citizens look for blooms and send in photos
2. Volunteers collect a water sample below surface at deep point of lake and send in for cell counts, density, and algal identification
3. Volunteers collect water samples as in #2, but only look for blue green algae (~\$150/sample)

## **CLMN Role:**

Volunteers collect data

# Aquatic Plant Rapid Assessment

**Goal:** Assess lake health

- Transects at 10 stations
- Identify Growth Form



compact

bladderwort

fine

wide

submersed



emergent

floating

free floating



- Rake Fullness



# Near-shore Water Quality

## **Goals:**

Obtain water quality information near-shore on large lakes that may be heterogeneous. Ultimate uses are for forecasts and water quality reports for public beaches, etc.

## **Monitoring:**

Water Clarity

Nutrients

Chlorophyll a

Monitor on beaches or piers

## **CLMN Role:**

Monitor clarity, collect water samples



Clean Lakes Alliance



# Future Citizen Monitoring

- Short-term Chemistry
- New parameters
  - lake levels
  - temperature loggers
  - blue-green algae
  - aquatic plant surveys
  - nearshore water transparency & chemistry
- Training
- Reports
- New opportunities
- Improvements