



Ice Cover Monitoring Procedures
Wisconsin Citizen Lake
Monitoring Network

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Many staff from UWSP Extension Lakes and the Wisconsin DNR who provided comments.

Front cover image: Allen Lake, Waupaca County by Paul Skawinski

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THE CITIZEN LAKE MONITORING NETWORK PARTNERSHIP

Volunteer citizen lake monitoring is a team effort with many players including citizen volunteers, Wisconsin DNR, and UW-Stevens Point Extension Lakes.

The citizen volunteer is the most important player in the lake monitoring network.

You know your lake on a day-to-day basis. You know the best spots to fish and which birds visit or nest on the lake. You know when the lake freezes over, when the ice goes out, and you know your neighbors and friends who love and use the lake. You volunteer to participate because of your genuine concern for the lake and your desire to learn more about it. Collecting water quality data is a step in the right direction to gaining a better understanding of your lake.

We depend on volunteers to share the information that they learn about their lakes with their Lake Association, Lake District, or other residents on the lake. Many volunteers share their lake monitoring summary report every year at annual meetings. Your CLMN regional coordinator or Wisconsin DNR lakes coordinator are available to assist you if you need help providing this information to your lake group.

Another member of the partnership is the Wisconsin DNR CLMN Regional Coordinator and local staff.

Local staff are located in several Wisconsin DNR regional offices around the state. As a citizen volunteer, you may already know them or may have worked with them in the past. If you have any questions about your lake and your monitoring duties, these are the first people you should contact to help answer your questions.

Wisconsin DNR CLMN staff located in Madison

Staff help maintain and analyze the volunteer data, keep track of awards, produce reports, and logistically keep the Network running smoothly.

By the conclusion of the sampling season you will receive an email reminding you that reports about your lake are available online at the Wisconsin DNR website. The reports summarize previous years' data collected on your lake and include text and graphs that help you understand how the data you collected in the past year relates to your lake.

Extension Lakes Staff

Extension Lakes staff ensure that trainers (Wisconsin DNR regional staff and outside agency trainers) follow the Network's protocols when volunteers are trained. This ensures statewide consistency in data collected. Extension Lakes staff also help with developing monitoring protocols & educational materials, volunteer support, and outreach.

Citizen volunteers receive *Lake Tides*, a quarterly newsletter published by the Wisconsin Lakes Partnership. The newsletter can also be viewed online at the Extension Lakes website.

The Lake Leaders Institute was established to assist citizens in developing and enhancing their technical skills to preserve and protect Wisconsin waters. To learn more, visit <https://www.uwsp.edu/uwexlakes/> and click on Lake Leaders.

What Types of Monitoring Can I Participate in?

If you have an interest in any of the following monitoring activities, please contact your regional coordinator.

Secchi

Father Pietro Angelo Secchi was an Italian astrophysicist and the scientific advisor to the Pope. In 1865, he was asked by the head of the Papal Navy to develop a way to measure transparency in the Mediterranean Sea. Secchi used white discs to measure the clarity of water. The Secchi disc was adopted for use by limnologists as a way to measure water clarity and to set a numerical value to water quality.

A Secchi depth reading is intended to give a general picture of your lake's water clarity. The sampling is easy to do and does not require sophisticated equipment nor demand a scientific background. One Secchi reading will not tell you a great deal about your lake but Secchi disc readings taken over a period of time will tell a story about your lake – is your water clarity improving, declining, or remaining the same?

Wisconsin CLMN uses a black and white, 8" diameter Secchi disc weighted with a stainless steel plate. CLMN protocols must be followed closely so that the data you collect can be compared to other lakes. The Secchi disc is lowered into the water on a marked rope until it just disappears from view - that point is marked with a clothespin at the water's surface. Then lower the disc a couple of feet further into the water, and slowly raise the disc until you can see it again. That point is also marked with a clothespin.

The average of these two measurements is recorded. Doing the two measurements using the "clothespin method" reduces potential error and gives a more accurate reading. Measuring the water clarity or transparency of lakes over time provides a "pulse" on the health of these lakes, and is a crucial record for long-range planning.

Water Chemistry

After one year of water clarity (Secchi) monitoring, you may be eligible to participate in water chemistry monitoring. Chemistry volunteers, in addition to measuring water clarity and temperature, collect water samples for analysis for phosphorus and chlorophyll levels four times per year. Volunteer-collected samples are sent to the **State Laboratory of Hygiene (WSLH)** for analysis. The information volunteers collect when monitoring both Secchi and water chemistry is used to determine the **trophic state** of the lake. Training and equipment for chemistry monitoring are provided by the Wisconsin DNR. Secchi volunteers who are interested in chemistry monitoring should contact their CLMN regional coordinator. The number of chemistry lakes that are added each year is limited due to cost of equipment and cost of sample analysis. Because of budget limitations, lakes are prioritized according to the need for information.

Temperature and Dissolved Oxygen

Water temperature impacts many organisms living in the lake. Reproduction, metabolic rate, and survival of fish and other aquatic animals; plant and algal growth and biomass; and nutrient cycling are all driven by water temperature. Long-term data are needed to understand temperature trends.

DNR Fisheries Biologists and Lake Coordinators may ask you to collect a dissolved oxygen profile. Temperature and dissolved oxygen

profiles are collected at three-foot intervals at the deep hole of the lake.

A Van Dorn water sample bottle is used to collect the water sample from the various depths for dissolved oxygen (D.O.) testing. Your regional coordinator will determine the sampling method. D.O. titration kits are available through CLMN.

Dissolved oxygen meters are not available through CLMN but your CLMN Coordinator may know of meters that are available to the public.

Native Aquatic Plant Monitoring

Aquatic plants are a good indicator of lake health. Over time, the type of vegetation and size of plant beds may change and/or move in response to changes in water quality, invasives, and human activity. Aquatic plant monitoring is tailored to each volunteer's ability, interest, and time commitment and can vary from lake to lake. Some volunteers choose to identify and map plant beds on the lake, keeping track of beds based on whether the plants are submergent, emergent, or floating.

Other volunteers wish to have a more comprehensive list of the aquatic plants that are present on their lake. They identify, collect, and press their lake's aquatic plants and map the plants' location. All plants collected by volunteers are verified.

Aquatic Invasive Species (AIS) Monitoring

Citizen volunteer monitoring protocols for AIS can be found at the Extension Lakes website.

If you think you have found an invasive, please contact your local CLMN coordinator so they can verify the specimen. The DNR website lists the lakes that are known to contain invasive species.



AQUATIC INVASIVE SPECIES (AIS) • Refers to species of plant or animal that are not native to a particular region into which they have moved or invaded. Wisconsin law prohibits launching or transporting a boat if aquatic plants or animals are attached to the boat.

PUBLIC PERCEPTION OF WATER QUALITY

As part of your Secchi data collection, the Network is interested in your opinion of the lake's water quality when you are sampling. Using these observations, a public opinion assessment of water quality can be made. This information will help determine water quality standards for lakes. There is no right or wrong answer to these questions and your answer can change throughout the summer or in subsequent years. Specifically, citizen volunteers will be asked to note the algal content of the water. Is there so much algae that you want to shower after swimming? Do you not want to go swimming? In addition to the Secchi disc readings that you measure, the Network is concerned with your opinion of what constitutes good or poor water quality. The Network predicts that the public opinion question will reveal that people living in the same area of the state will have similar perceptions of what they consider to be acceptable water quality. The Network hopes to share this information with other states in anticipation of creating a regional map of public perceptions of water quality.



STATE LABORATORY OF HYGIENE (WSLH)

• The state of Wisconsin's public health and environmental laboratory.

TROPHIC STATE • The extent to which the process of eutrophication has occurred is reflected in a lake's trophic classification or state. The three major trophic states are oligotrophic, mesotrophic, and eutrophic.

pH • The measure of acidity or alkalinity of a solution. Neutral solutions are defined as having a pH of 7.0. Solutions which are known as acidic have a pH lower than 7. Solutions which are known as basic have a pH greater than 7.

Ice Monitoring – Wisconsin Citizen Lake Monitoring Network (CLMN)

Ice cover monitoring allows us to track trends in the duration of ice cover over time. The length of time that a lake is covered in ice has important effects on the water below, including dissolved oxygen concentrations, fish health, growth of aquatic plants and algae, and more. Tracking these trends in ice cover helps to understand changes in a lake that may also require changes to lake management strategies.

Monitoring the ice cover on your lake is very simple. The first step is to create a username and password for the SWIMS database so you can enter your data. If you already have a username from another Citizen Lake Monitoring Network project, you can skip this step. If not, go to <https://on.wisconsin.gov> and click on **Self-Registration** to create a new username and password. Then email Paul Skawinski, CLMN Statewide Educator at pskawins@uwsp.edu and include the following in your message:

1. Your first and last name
2. The lake that you will be monitoring
3. The county that your lake is in
4. Your username

If you need any help with this process, we have a variety of helpful resources on the Citizen Lake Monitoring Network website, including PDF guides and walkthrough videos. To access our website:

1. Go to www.uwsp.edu/uwexplakes
2. Click on the **Citizen Lake Monitoring Network** button
3. Click on the **Data Entry** button
4. Browse the PDF documents and video links for help

Reporting “Ice-on”

An “Ice-on” event is when the lake is completely frozen over. You should wait one full day to report an ice-on event to make sure that the ice doesn’t melt that same day.

Some lakes have inlet streams or active springs that may keep a small, nearshore area open for days or weeks after the rest of the lake freezes over. In these cases, we consider “Ice-on” to be when at least 90% of the lake, including the deepest part of the lake, is frozen over.

It is possible for a lake to have more than one “Ice-on” event in a single winter season if the weather gets warm, melts the ice, and then it re-freezes again later. In this case, you should report multiple “Ice-on” and “Ice-off” events.

Reporting “Ice-off”

An “Ice-off” event is when the lake has completely thawed. In other words, you could take a boat to the deep hole of the lake from any point along the shoreline without encountering ice. This may happen only once in the spring, or it may happen multiple times over the season if warm temperatures completely melt the ice cover. Some piles of snow and ice may still remain along the shoreline at the time of ice-off.

How to Access the SWIMS Database

To log into the SWIMS database, click the SWIMS database link on the Citizen Lake Monitoring Network Data Entry Resources page:

1. Go to www.uwsp.edu/uwexplakes
2. Click on the **Citizen Lake Monitoring Network** button
3. Click on the **Data Entry** button
4. Find and click the line that says “**CLICK HERE to go to the SWIMS Database**”
5. Bookmark this page so you can return to it quickly in the future

OR go directly to the database login page at <https://apps.dnr.wi.gov/swims>

How to Report Ice-on and Ice-off events

We recommend viewing the short **How to Report Ice Monitoring Data** video on the Citizen Lake Monitoring Network website for a step-by-step walkthrough of how to enter ice monitoring data.

1. Log into the database using your username and password. Be sure to check the “**External Users and Volunteers (WAMS)**” box.

Please Log in

User ID

Password

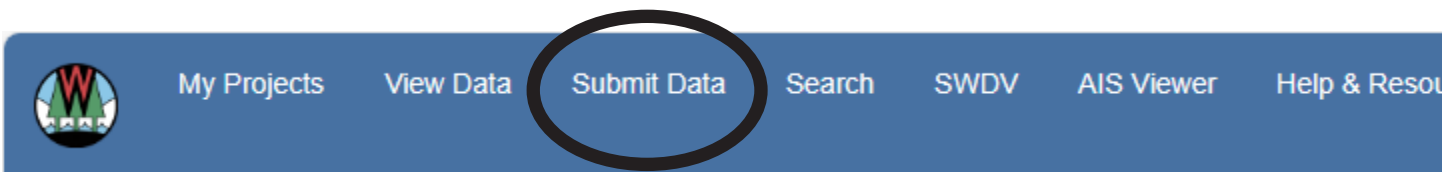
Internal DNR Users (Active Directory) ⓘ

External Users and Volunteers (WAMS) ⓘ

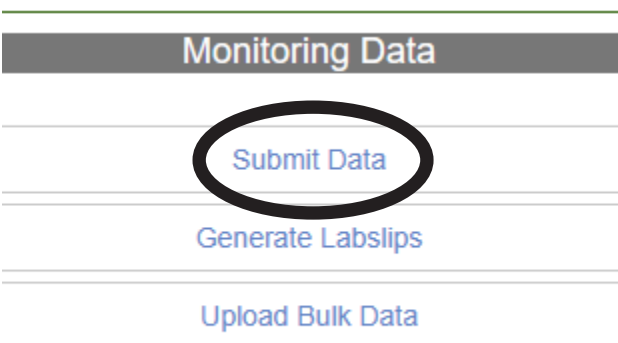
Log in →

Clear

2. Click on the **Submit Data** button.



3. Click on **Submit Data** again.



4. Enter your monitoring data into the form below. Once you select your ice monitoring project, the boxes for **Data Collectors**, **Station**, and **Form** should fill in automatically to correspond with the selected project. If not, use the dropdown arrows next to each box to make a selection. You can leave the **Document** box blank, and the **Fieldwork Comment** box is optional if you would like to record any notes you made regarding recent weather, current conditions, or anything else of interest. When you are finished, click the **Next** button near the top of the form.

The screenshot shows a web form titled "Create Monitoring Data". At the top left is a logo with a stylized 'W' and 'M' and the letters 'WMA' below it. At the top right is a hamburger menu icon. Below the title bar are three buttons: "← Back" (blue), "Save" (green), and "Next" (orange, circled in black). The form contains several sections:

- Project*:** A dropdown menu showing "Ice Observations on Porters Lake, Wa" and a "Find Project" button.
- Data Collectors*:** A dropdown menu showing "Example Volunteer" and a "Find Data Collector" button.
- Station*:** A dropdown menu showing "10007457 - Porters Lake" and a "Find Station" button.
- Start Date*:** A text input field containing "11/09/2023".
- Start Time (HH:MM AM/PM)*:** Three dropdown menus showing "12", "00", and "PM".
- Form*:** A dropdown menu showing "Ice Observation Report - 'Ice On'" and a "Find Form" button.
- End Date*:** A text input field containing "11/09/2023".
- End Time (HH:MM AM/PM)*:** Three dropdown menus showing "12", "30", and "PM".
- Document:** A text input field, a "Find Document" button, and a "Create Document" button.
- I want to enter latitude and longitude on the next page (optional)**
- Fieldwork Comment:** A large text input area at the bottom.

5. The form will now ask you to describe where you made your observation of the ice cover, and which part / how much of the lake you can see. The last three lines are where you record the official date of "Ice-on". This date should match the **Start Date** and **End Date** on the previous page.

Fieldwork Event and Result Form

Fields denoted with an asterisk (*) are REQUIRED.

Fieldwork event data can be corrected later after submitting parameter results below.

You Are Entering Data For:

Save and Edit Header

Project: Ice Observations on Porters Lake, Waushara County

Start Date Time: 11/09/2023

Station: Porters Lake

Form Code: ICE

Parameter	Result	Unit	Method
Describe your observation point	NE corner of lake		
Portion of lake you can see from observation point	northern two thirds of lake		
If other method used, please describe			
Month of "Ice On"	11-November ▾		
Date of "Ice On"	09 ▾		
Year of "Ice On"	2023 ▾		

Save

Save and Return

6. Click the **Save and Return** button to save your data entry and return to a list of your recently entered data.

7. Log out of the database by clicking the arrow on the top right of your screen. If you are using a phone or tablet to enter data, first click the button with three lines and then click on the arrow to log out.



OR



If you need to edit any data submitted to the database, or have any other questions, please reach out to your local Citizen Lake Monitoring Network Coordinator, or contact the Statewide Educator at pskawins@uwsp.edu.

Citizen Lake Monitoring Network Statewide Educator

Paul Skawinski

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715-346-4853

Extension Lakes - UWSP

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Personally identifiable information collected on this form will be incorporated into the DNR lakes database. It is not intended to be used for any other purposes, but may be made available to requesters under Wisconsin's Open Records laws, s. 19.32 - 19.39, Wis. Stats.

Primary Data Collector		
Name	Phone Number	Email
Additional Data Collector Names		
Monitoring Location		
Waterbody Name	Township Name	County
Describe your observation point		
Describe portion of waterbody you can see from your observation point		
Date and Time of Monitoring		
Start Date	Start Time	
<i>Start Date = Date you observed "ice on".</i>		
Monitoring Results		
"Ice On" = A lake is considered ice covered when the deepest part of the lake is ice covered.		
If you or past observers on your lake have always used another method to judge ice-on and ice-off, please describe the method		
Date of First "Ice On" (When lake was first observed to be closed in the fall)		
Comments		

Personally identifiable information collected on this form will be incorporated into the DNR lakes database. It is not intended to be used for any other purposes, but may be made available to requesters under Wisconsin's Open Records laws, s. 19.32 - 19.39, Wis. Stats.

Primary Data Collector

Name	Phone Number	Email
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Additional Data Collector Names

Monitoring Location

Waterbody Name	Township Name	County
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Describe your observation point

Describe portion of waterbody you can see from your observation point

Date and Time of Monitoring

Start Date	Start Time
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Start Date = Date you observed "Ice Off"

Monitoring Results

"Ice Off" = The lake is considered thawed when it is possible to boat from any shore to the deepest part of the lake without encountering ice.

If you or past observers on your lake have always used another method to judge ice-on and ice-off, please describe the method

Date First "Ice Off" (When lake was first observed to be open in the spring)

Ice Duration (Total number of days frozen) [provide only if lake was observed daily]

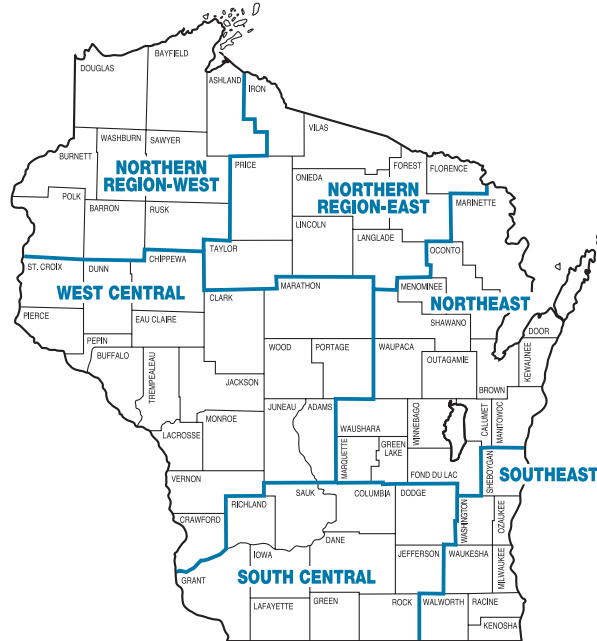
Comments

Need Answers to Your Questions?

When questions arise please contact the appropriate Citizen Lake Monitoring Network numbers listed below. There are two websites that may help you with questions: <https://dnr.wisconsin.gov/topic/lakes/clmn> or

www.uwsp.edu/uwexlakes.

If you are interested in becoming a citizen lake monitoring volunteer, or have questions about training, data entry, refresher courses, annual reports, or other monitoring opportunities, please contact Paul Skawinski, Citizen Lake Monitoring Network Educator, at (715) 346-4853 or by email Paul.Skawinski@uwsp.edu.



For questions about equipment, sampling procedures, or interpreting your water quality data, please contact your regional coordinator. You can visit <https://dnr.wisconsin.gov/topic/lakes/clmn> for a current listing of Citizen Lake Monitoring Network coordinators or call the number below.

Location	Phone Number
Northern Region-West	715-919-7838
Northern Region-East	715-365-8951
Northeast Region	920-360-3167
West Central Region	715-491-4131
Southeast Region & South Central Region	414-507-1413