



Guidelines for Monitoring Metaphyton

Background/Purpose:

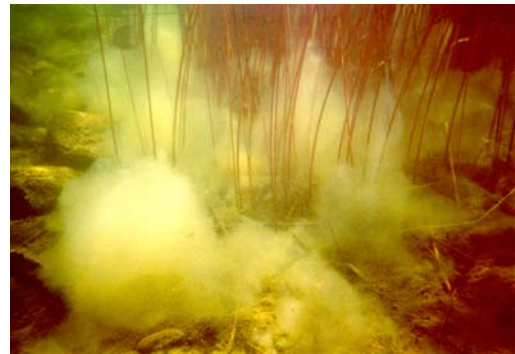
Metaphyton is a term used to collectively characterize filamentous (stringy) algae that grow predominantly in shallow (littoral) areas in lakes and ponds. Recent anecdotal information, casual observations and inquiries from both volunteers and professionals suggests that metaphyton growth may be increasing in some Maine lakes and ponds. Many have asked if an increase in this growth is an indication of a change in lake water quality. That question cannot be addressed until much more information is available about these little-studied algae, such as: 1) when is it appearing, 2) where is it growing, 3) how much is out there, and, 4) how persistent are the colonies?

The purpose of this survey is to initiate a pilot project to begin the process of long-term monitoring of this phenomenon. It is intended to provide volunteer monitors and others with a methodology that can be used to assess metaphyton growth in the lake(s) they monitor.

Definition of Metaphyton Colonies

For the purposes of this survey process, metaphyton colonies should meet the following descriptive criteria. The accompanying photo provides a visual reference.

1. Metaphyton are green or greenish/yellow, cotton candy-like, semi-transparent clouds in the water, ranging from a few inches to several feet or more in width, length or height.
2. Metaphyton have a filamentous or stringy texture when removed from the water.
3. Metaphyton colonies are found growing in shallow water where the bottom of the lake/pond is visible from the surface.
4. Metaphyton colonies (clouds) may be attached, floating or resting on the bottom.



For this survey, the term metaphyton does not include single strands/filaments attached to rooted plants or other structural debris in the water, nor are metaphyton rooted.

Volunteer Commitment:

Volunteers who participate in the survey should be prepared to take detailed observations and measurements a few to several times each summer, at one or more near-shore (or shallow) monitoring stations on their lake. If time is limited, the month of August may be the optimum period to survey for metaphyton. Careful documentation of the location of the observation area is particularly important, since it is possible that future volunteers will attempt to continue the process that you begin.

Equipment Needed:

The following equipment and materials are required for this process-

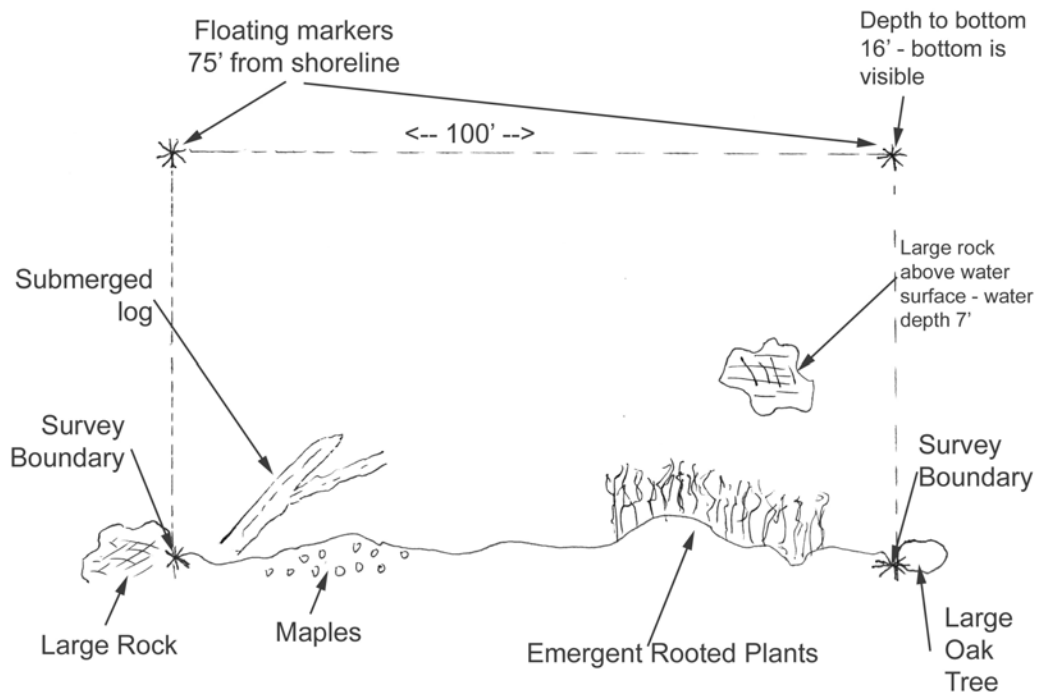
- Small, easily maneuvered, shallow draft boat (motors may disturb the survey area)
- Lake depth map (obtainable from the VLMP, or the PEARL website)
- Metaphyton data form; notepad, clipboard, pencils
- Secchi disk, or other device (such as a tape measure with a weight on the end) for measuring water depth
- Tape measure (for measuring the size of the survey plot(s) and other measurements)
- A paddle marked with length measurements to be used to estimate the sizes of colonies observed (width, height and length). A paddle is more useful than a tape measure for this purpose, because it is rigid and it will float on the water surface. Use the tape measure to mark the paddle with a waterproof pen.
- Viewing scope (Secchi scope or bucket scope used for aquatic plant surveys)
- Camera (helpful, but not essential, preferably digital, but film is OK)
- GPS receiver (helpful but not essential)
- Means to mark off-shore corners of plot (e.g., 2 painted 6-8" rocks, 2 milk jugs tethered to rocks/bricks)

Method/Procedure:

Step 1 - Identify the area to be surveyed. Select a location where metaphyton has been observed in the past. If you are not aware of such a location, choose a section of littoral area close to the shoreline, away from the disruptive effects of strong wave action and/or heavy recreational activity, such as powerboat paths or swimming areas. Use shoreline references to define the boundaries of the survey area. Record as much specific information about the area as possible on the survey form. Include a sketch on the back of the survey form, showing obvious landmarks, such as large trees and rocks. A photo of the shoreline will also be helpful for future reference.

The shape of the shoreline and the depth contours may influence the size of the survey area and its dimensions. One way to determine the survey plot is to measure 100 feet (straight line) along the shoreline. Note landmarks at the ends on your sketch and set temporary stakes or position flagging to mark boundaries. If a long tape measure is not available, use a known length of clothesline (inexpensive and comes in sufficient lengths). Measure 100' out into the water perpendicular to each shoreline end. Connect the two end points (should be 100' between these two parallel to the shoreline) to complete the plot. You may want to drop a 6-8" painted rock (white or fluorescent color) to relocate these corners in the future, or use another suitable method

(e.g., milk jug buoys). If you can't see the bottom at 100' from shore, record the distance from shore where the bottom is barely visible at each line perpendicular to the shore boundaries. Choose the smaller of the two distances as the width of your rectangular plot and mark both corners. For example, if the bottom is barely visible at 85' from shore on one side and 70' on the other side, mark both corners 70' from shore. This allows easy calculation of the area you survey and will assure that you can see the bottom across the entire plot. Record the final distances and means used to mark the corners on your sketch.



Shoreline survey plot, showing shoreline characteristics and simple reference points

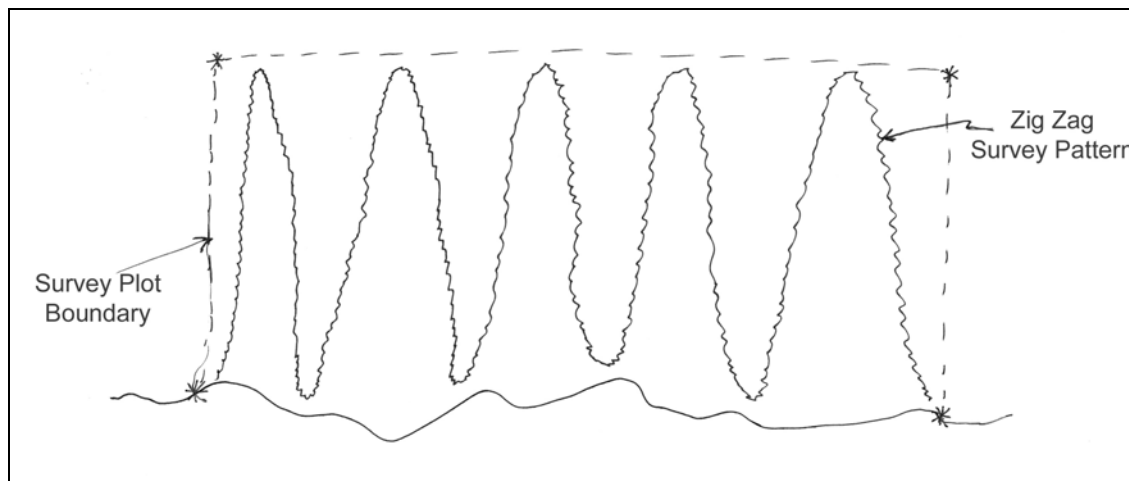
Record information about the site: width, length, maximum water depth, shoreline characteristics (including land use in the shoreland zone), bottom composition (rocky, sandy, muck), and exposure to wind and waves (fetch). Refer to the survey form for descriptor options. Indicate the location of permanent submerged items observed on your sketch (boulders, sunken trees, etc.). It may be useful to have your site sketch photocopied onto the back of a few survey forms on which to make notations during future visits.

You may choose more than one location/monitoring area, but monitoring one or two carefully chosen sites could be of greater value than multiple sites for which insufficient time has been allocated to do the job! Additional survey plots may be added in the future. If you survey more than one location, clearly name all data collected from each plot with a unique plot label (Plot A, B, C... or "North of Foster Point, behind Two-tree Island").

Step 2 - Survey the area for metaphyton colonies. Calm weather conditions, when the bottom can be clearly seen from the boat, provide the best opportunity for observing metaphyton

colonies. Visibility is generally good in the morning, when winds are calm or light, and the angle of the sun is low.

Survey the area by boat, using a zigzag pattern. Begin at one shoreline corner and move to the outer boundary of the area, then return to the shoreline. Length and width of zigzag patterns will vary within individual survey areas, depending on depth and water clarity. Cover the entire area as thoroughly as possible by spacing your boat tracks evenly. Having two surveyors allows one person to observe while the other navigates.



Simple zigzag survey pattern

Step 3 - Describe any colonies observed. Include the number of colonies; the range of sizes (length, width, height); the shapes of colonies; whether or not they are attached, floating or resting on the bottom; depth of occurrence and the color (refer to survey form).

Step 4 - Send data forms directly to the VLMP. Forms should be sent by July 15, for data collected in early to mid summer, and no later than October 30 for late summer observations. Please be sure to include information about the location and condition of site(s) where the data were collected. Details of the site (including any photos) do not need to be sent in every year, unless the location changes.

Additional Considerations:

If you find a site where metaphyton is abundant, please call the VLMP office and speak with staff about the location. We are looking for a few sites to track over the next few years, and would like the opportunity to collect/preserve some samples for identification.

For those who are conducting invasive aquatic plant surveys, notes regarding metaphyton abundance would be helpful, as well.

Thanks for your help with this new effort. You are truly on the cutting edge of 'citizen scientist' research in the country!

Maine Volunteer Lake Monitoring Program
METAPHYTON SURVEY FORM

LAKE _____ TOWN _____

COUNTY _____ MIDAS _____

SURVEYORS: 1 _____ Cert # _____

2 _____ Cert # _____

METAPHYTON STATION#: M- _____

DATE _____ TIME _____

WIND VELOCITY _____ WIND DIRECTION _____ Bright/Cloudy Br/Ocast

SURVEY AREA LOCATION

SURVEY AREA DESCRIPTION: Length (ft) _____ Width (ft) _____

SURVEY BOUNDARIES MARKED? Yes No HOW? _____

Photos attached of (circle): Survey area Metaphyton colonies (blooms)

NOTE: Please attach lake depth map showing approximate location of survey area

DESCRIPTION OF METAPHYTON COLONIES OBSERVED

Number of colonies in survey area _____

Largest colony: Length _____ Width _____

Smallest colony: Length _____ Width _____

Colony shape (circle all that apply): Spherical Oblong Pillow Other

Colonies are (circle all that apply): Attached Floating On bottom

Colonies color: _____

Additional comments: _____

Signature: _____