

G. SCORE THE SHORE

Introduction

Healthy shorelines are an important and valuable component of the lake ecosystem. The shoreline area is a transition zone between water and land, and is a very diverse environment that provides habitat for a great variety of fish, plants, birds, and other animals. A healthy shoreline area is also essential for maintaining water quality, slowing runoff, and limiting erosion.

However, Michigan's inland lake shorelines are threatened. Extensive development, often combined with poor shoreline management practices, can reduce or eliminate natural shoreline habitat and replace it with lawn and artificial erosion control such as seawalls and rock. As a result, shoreline vegetation is dramatically altered, habitat is lost, and water quality declines.

Therefore, the MiCorps Cooperative Lakes Monitoring Program has introduced a new monitoring program – Score the Shore – that enables volunteers to assess the quality of their lake's shoreline habitat.

Uses of the Data

The information gathered during this assessment will allow lake communities to identify high-quality areas that can be protected, as well as opportunities for improvement. Score the Shore data, combined with educational resources describing the value of healthy shorelines and how to restore and maintain them, can be incorporated into lake management planning and used for educating lakefront property owners. The Michigan Natural Shoreline Partnership (MNSP) is a collaboration of agencies and professionals that promotes natural shoreline practices to protect Michigan's inland lakes. The MNSP website (www.mishorelinepartnership.org) includes materials and information that can be used in educational efforts. MNSP also offers training for professional educators and landscape contractors, and maintains a list of trained educators who may be available to speak to your community about natural shorelines.

Score the Shore data, just like all CLMP data, is available to any interested parties through the MiCorps Data Exchange. State agency staff and researchers regularly access CLMP data to better understand and manage Michigan's inland lakes.

It is important to understand that Score the Shore is a descriptive process for assessing shoreline quality on Michigan's inland lakes. It is also a valuable educational tool. Score the Shore is not a regulatory program, nor is it intended to tell people what they can and cannot do on their property. The Michigan Department of Environment, Great Lakes, and Energy's Inland Lakes and Streams Program has responsibility for shoreline protection on public lakes. To learn about their shoreline protection program, including construction permitting and

recommendations for shoreline management, visit https://www.michigan.gov/egle/0,9429,7-135-3313_3681---,00.html.

Training

Training is required for this parameter. The CLMP leadership team will host annual training sessions. At this training, volunteers will receive training in how to conduct the Score the Shore survey, and have a chance to ask questions about shoreline monitoring and management with experts and volunteers from other lake communities.

Equipment Checklist

- ☐ Boat
- ☐ Boating safety equipment
- ☐ Copies of Data Forms
- ☐ Copy of these Procedures
- ☐ Pencils or waterproof pens
- ☐ Clipboard(s)
- ☐ GPS unit*
- ☐ Camera* (digital if possible)
- ☐ Binoculars*
- ☐ 2 tally counters*

*optional

Survey Procedure

1. Survey planning, frequency and timing

The time commitment required to complete the Score the Shore survey depends on the size of your lake. Before conducting the survey, time is needed to review the procedures and establish shoreline sections. Shoreline sections are approximately 1000' in length. You will complete a Data Form for each shoreline section. Score the Shore is most efficient when conducted by a team of volunteers (see below). When you begin, surveying a single section may take you 30 minutes or more. You'll get faster as you move around the lake and become familiar with the required observations.

The survey is best completed during the summer, when vegetation is abundant and easy to observe both in the water and on land. Making observations in the middle of the day can make it easier to view underwater vegetation. It is fine to conduct the survey over the course of several days or even weeks; just be sure to keep careful track of where you stop and start.

In most cases, it is not necessary to conduct a Score the Shore survey every year. Shoreline conditions on *most* lakes do not change dramatically from year to year. You may conduct the survey as frequently as you wish, perhaps once every three to five years.

To complete this survey, you will be boating near shore and making observations about shoreline properties. Remember to be a good neighbor, and respect the privacy of others on the lake while conducting the survey. It's a good practice to let your neighbors know that the survey will be conducted, and to respond to any questions or concerns. They may want to join you in your monitoring efforts!

2. Prepare for the survey

Step 1 - Establish your survey sections in advance. You will assess the entire shoreline of your lake, in 1000-foot sections. **It is not critical that the sections be exactly 1000 feet long. Do not worry about following every curve in the shoreline.**

To establish the sections in advance, using one of the following methods:

1. Using a lake map, mark off sections of shoreline that are approximately 1000 feet long. This will serve as a general guide. Then, boat around the lake (prior to conducting the survey) to identify landmarks (houses, docks, trees, etc.) or record GPS coordinates (latitude and longitude) that establish the start and endpoints of each section. A GPS-enabled device is not required for this method.
2. Travel around the lake by boat with a GPS-enabled device that tells you when you have traveled 1000 feet. Pick landmarks, or GPS coordinates a set distance from shore, to define the sections.

Number the sections sequentially (1, 2, 3...) and record the appropriate section number on your Data Forms while conducting the survey.

Note – Canals and Channels: In general, narrow canals and channels that provide access to the lake experience different conditions, and are maintained differently, than the lake itself, and typically should not be included in the Score the Shore survey.

Step 2 – Review the Helpful Hints on Navigation, Estimating Percentages, and Teamwork, below, before conducting the survey.

Helpful Hint: Navigation

This survey is designed to be conducted by boat. Plan to survey on a relatively calm day(s), with limited boat traffic, so you can easily navigate your boat around the shoreline of your lake.

You may find that it is easiest to make more than one pass with your boat along the length of the 1000' section to make your observations. For example, estimating what percentage of the 1000' section is covered with a seawall may be easier at a distance (perhaps 100 yards from shore), while observing downed trees and vegetation is easier from a closer proximity (perhaps 20-30 yards from shore). Remember to navigate safely and be aware of obstacles! Binoculars may come in handy.

The Data Form is organized so you can easily observe all required characteristics in three passes. You do not have to collect the data in this order, but we recommend giving it a try!

Helpful Hint: Estimating Percentages

The Data Form frequently asks you to categorize shoreline characteristics as a percentage of the length of the 1000' foot section, like this:

_____ None _____ <10% _____ 10-25% _____ 25-75% _____ >75%

These are broad categories (especially 25-75%) but were chosen carefully to (1) effectively reflect each characteristic's impact on shoreline habitat quality, and (2) keep the survey process efficient and time-effective. With a bit of practice, you should become comfortable with estimating these categories fairly quickly as you move around the lake.

Helpful Hint: Teamwork

Score the Shore is most efficient when conducted by a team of volunteers. Be sure everyone is familiar with these procedures and the forms before you begin. The boat driver will need to focus on locating the start point of each segment and navigating the boat so the observers can see the shoreline features easily. Make sure all observers agree on start and end of section before observations begin. The observers on the boat may want to divide up features to observe, and the team should work together to agree on their answers on the Data Form. To maintain consistency, the same team of observers should conduct the entire survey if possible. Upon reaching the end of the section, the driver should idle the boat until all observers reach consensus on the answers to each question on the Data Form. Make sure one person is designated to record the final, agreed-upon answers.

3. Conducting the Survey

Navigate to the beginning of your first 1000' section to begin the survey. At the top of your Data Form, record the section number, lake name/county, and date, as well as the GPS coordinates of your boat's location OR a landmark on shore at the start of the section. Navigate the length of the section and complete the Data Form as described below.

Homes/Major Buildings: the number of homes or other significant structures (restaurants, yacht clubs, etc.) visible from the water within the section. Do not count

small sheds or other minor structures. The optional tally counters, or “clickers”, can help with counting these and other features during your survey.

Docks/Boatlifts: A dock with a boatlift counts as one.

Littoral (Aquatic) Zone Characteristics and Shoreline Erosion: For the purposes of this survey, the littoral zone is the aquatic zone between your boat and the shore when you are making these observations (approximately 20-30 yards from shore). If the lake bottom drops off quickly, you may make the observations closer to shore. If the lake level is low, and there are exposed areas along the shoreline that are at least sometimes under water, include this drawdown area in your littoral zone assessment.

% Emergent/Floating vegetation (Fig. 1): Emergent vegetation includes plants that grow up out of the water, like cattails and pickerelweed. Floating vegetation includes plants like water lilies and duckweed. Estimate the percent coverage in this section.

% Submerged vegetation (Fig. 2): These are plants that grow completely under the water (perhaps except for the tips/flowers), including milfoil, coontail, and pondweeds. Estimate the percent coverage in this section. Glare, turbidity, or low light can make observations of submerged vegetation difficult. Conducting the survey mid-day make it easier. If you cannot see to observe submerged vegetation, indicate this on the Data Form.



Fig. 1. Emergent and floating vegetation

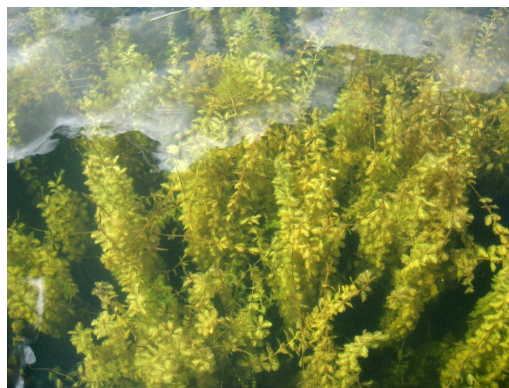


Fig. 2. Submerged vegetation

Is aquatic plant management evident/known?: If you know that plants are being controlled (sprayed, harvested, etc.), you can note that here, even if you can't see evidence at the time of the survey. If you don't know, it's not evident – so check “No”. “Minor” plant management is limited weed treatment or removal, for example, just around docks or small swimming areas. “Major” management is removal of most or all aquatic plants in a large area.

Amount of Downed Trees/Woody Debris: Estimate the total number of submerged or partially submerged fallen trees, branches, and logs in the entire section. Focus your

estimate on wood at least 3" in diameter.

Erosion along shoreline (Figs. 3-4): Do you see any? If so, how would you characterize it? Sand beaches are not necessarily active erosion sites; include them only if there is evidence that the sand is actively eroding into the lake. Include erosion caused by natural action of wind, waves, or ice, as well as erosion caused by human activity (e.g., boat wakes, soil disturbance).



Fig. 3. Moderate erosion, due to extent along quite a bit of shoreline



Fig. 4. Severe, localized erosion

Riparian (Land Near Shore) Zone Characteristics: The riparian zone is the area of land closest to the water.

% Maintained lawn, Maintained/Artificial Beach, or Impervious: Estimate the percentage of the total section length. If you are working on a sand-bottom lake, do not include natural beaches in this estimate. "Impervious" refers to artificial surfaces like pavement, compacted gravel, and other surfaces which water cannot penetrate.

% Unmowed Vegetation Belt (Fig. 5): Estimate the percentage of the total section length that is covered by vegetation other than lawn.

Average Unmowed Vegetation Belt Depth (Fig. 6): How far upland from the water's edge does unmowed vegetation extend?



Fig. 5. Narrow, unmowed vegetation belt, above



Fig. 6. If unmowed vegetation is so dense you

sloped artificial erosion control

can't tell how far it goes back, choose >40 feet.

Shoreline Erosion Control Practices:

Vertical Artificial (Fig. 7): Estimate the percentage of the section length covered by vertical, artificial erosion control structures. Check each type of structure you observe (seawall, boulders/rock walls, other) that are clearly vertical (or nearly so).

Sloped Artificial (Fig. 8): Estimate the percentage of the section length covered by sloped, artificial erosion control structures. Check each type of structure you observe (concrete, riprap, other) that are not clearly vertical.



Fig. 7. Vertical artificial erosion control includes seawalls, boulders, and rock walls.



Fig. 8. Sloped artificial erosion control includes rock and riprap, even in minor amounts.

Bioengineering (Figs. 9-10): This is the intentional use of natural materials to combat erosion, including intentionally placed stumps, branch bundles, and coir (coconut fiber) rolls. Estimate the percentage of the section length covered by bioengineering.

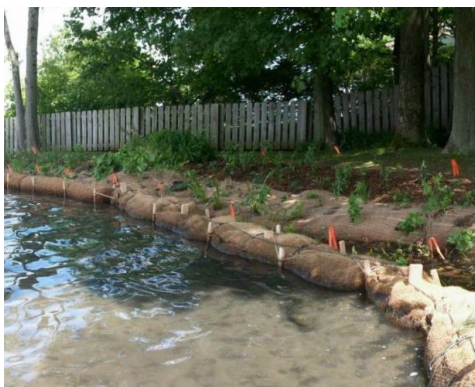


Fig. 9. Coir (coconut fiber) logs are a type of bioengineered erosion control.

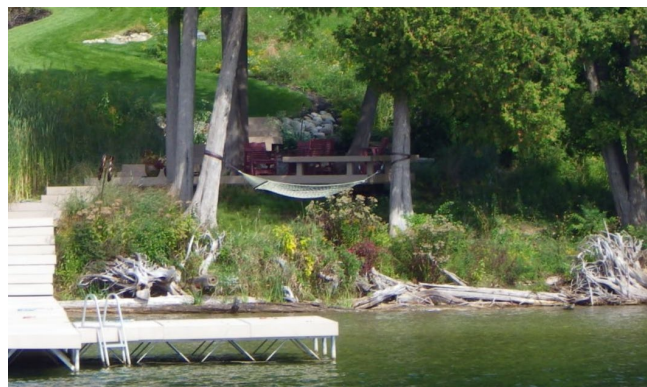


Fig. 10. Intentionally placed stumps and brush bundles are also used for bioengineered erosion control.

Record the GPS coordinates or landmark at the end of this section.

Comments or Concerns: There is room on the back of the page to include any notes about unusual observations, observations that were difficult to make or estimate, photos taken, or

any other comments or concerns about this section.

Before moving on to the next shoreline section, take a moment to make sure everyone agrees on the answers recorded on the Data Form.

4. Scoring

Many of the items on the Data Form include a point value, in parentheses, that ranges from 4 to -4. After completing a Data Form, tally the points that apply to the observations you made. There are boxes for the subtotals for the three main parts of the Data Form (Littoral Zone, Riparian Zone, and Erosion Control). On the back of each Data Form, there are instructions for converting these subtotals to a 0-100 scale. This bit of additional math will make your scores easier for others to interpret.

When the survey is complete, calculate the Development Density and Overall Shore Score for your lake by following the instructions on the Survey Cover Sheet. Development Density and Overall Shore Score are often related.

5. Completing the Report

A complete Score the Shore report includes the following elements:

1. Survey Cover Sheet:

The Survey Cover Sheet should be completed at the end of the survey, and should accompany your set of Data Forms for submission to MiCorps (see Reporting Your Results, below).

Your Lake Sampling Site (Field ID) Number will be provided to you by the CLMP; if you have not received a number for your lake, leave this blank, and contact CLMP staff for assistance.

2. Set of all Data Forms, one for each shoreline section.

3. Survey Map

Include a map that indicates the general locations of the numbered shoreline sections in your survey. The map may be hand-drawn or computer-generated.

4. Photographs (optional)

Photographs are an excellent way to document shoreline conditions. You may submit copies of photographs with your report. Be sure to label the photos in a manner that

indicates both the shoreline section where they were taken, and the date.

Quality Assurance/Quality Control

As part of the quality assurance/quality control (QA/QC) process for the CLMP, MiCorps staff may coordinate with you to conduct side-by-side scoring on your lake. If your lake is selected for the QA/QC process, you will be contacted directly.

Reporting Your Results

Volunteers are able to enter their data into the MiCorps Data Exchange, like all parameters. You can also submit electronic pictures, but please be sure to follow the directions given on the Data Exchange. Also, because of technical limitations at this time, all of the sections must be entered in a single session.

Whether you enter data or not: Send a paper copy to the address given on the data sheet, or provide an electronic copy via email to the address below on this page. Be sure to keep a complete copy of the report for your own records!

All data must be entered and the copies received **no later than October 31th**. Information received after this date may not be included in your lake's CLMP Annual Report.

Technical Support and Contact Information

Should you have any questions or comments about the Score the Shore procedures or forms, or have problems during the scoring process, please contact:

Dr. Jo Latimore
latimor1@msu.edu