Michigan Clean Water Corps

Cooperative Lakes Monitoring Program

Welcome to MiCorps Cooperative Lakes Monitoring Program's Annual Training.

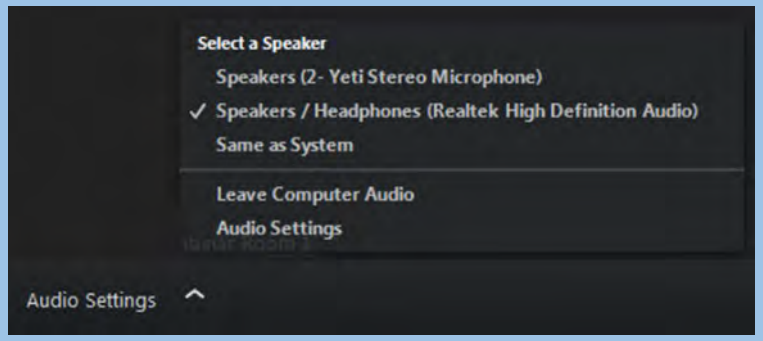
- For CLMP procedures and data forms please visit: micorps.net/lake-monitoring/clmp-documents/ and then click on the name of the parameter.

Today's Agenda:

9:00 AM – 9:15 AM	Welcome and CLMP Review
9:15 AM – 10:15 AM	Secchi Disk & Phosphorus
10:15 AM-10:30 AM	BREAK
10:30 AM – Noon	Chlorophyll-a (algae indicator)
Noon – 1:00 PM	LUNCH BREAK
1:00 PM – 2:00 PM	Dissolved Oxygen and Temperature
2:00 PM – 3:00 PM	Score the Shore
3:00 PM – 3:15 PM	BREAK
3:15 PM – 4:30 PM	Exotic Aquatic Plant Watch

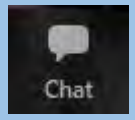
Getting Started

- Audio is through your computer speakers or headset: **You may not hear sound until training begins.**
- Use the **Audio Settings** option to do a sound check.
- During the webinar if you do not hear audio, make sure your sound is turned on then contact the **Help Desk.**



How to Ask Questions

1. Click on the Chat Icon to submit a question to the presenters.



Help Desk

Call the Distance Learning Help Desk (800) 500-1554 for technical support.

Cooperative Lakes Monitoring Program

Score the Shore

Michigan Clean Water Corps

EGLE

MICHIGAN STATE UNIVERSITY | Extension

Michigan Lakes and Streams Association

Huron River Watershed Council

Jo Latimore

- 517-432-1491
- latimor1@msu.edu

MICHIGAN STATE
UNIVERSITY

Healthy Shorelines

(Un)Healthy Shorelines


NATURAL SHORELINE (1938)
TO
DEVELOPED SHORELINE (2014)


NATURAL SHORELINE (1938)
TO
DEVELOPED SHORELINE (2014)


HISTORIC SHORELINE DEVELOPMENT (1938)

Score the Shore

What good is this information?

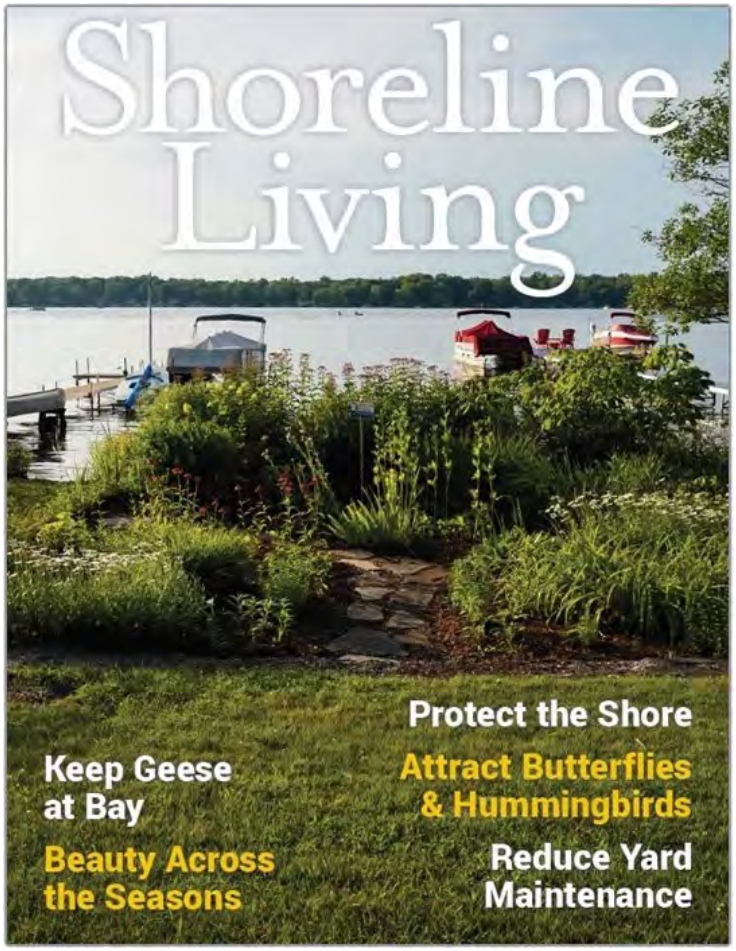
- Local – lake associations
  - Support educational efforts
  - Inform lake management planning
- Region/state
  - Assess health of Michigan's lakeshores
  - Research
  - Reporting

Shoreline Resources

MiShorelinePartnership.org

MiShorelandStewards.org

Shoreline Resources



MidwestGlacialLakes.org

The process in a nutshell

How to talk about the results

- The survey is a valuable educational tool
- The results are not regulatory

Prepare to Score the Shore!

Score the Shore Paperwork

- Score the Shore procedures
- Data Forms
  - Survey Cover Sheet (Only 1 needed)
  - Section data form
    - You will need to print/copy many of these
    - The digital version is be available at micorps.net/lake-monitoring/clmp-documents/

Equipment Checklist

- Boat
- Boating safety equipment
- Copies of Data Forms
- Copy of Procedure
- Pencils or waterproof pens
- Clipboard(s)
- GPS unit*
- Camera* (digital if possible)
- Binoculars*
- 2 Tally Counters*

*optional

Timing and effort

- No earlier than mid-June (need full leaf out, vegetative growth)
  - Northern lakes can begin later
- Length of time depends on the size of your lake (2 hours on a small lake; more on a big lake).
- 30-45 minutes per 1000-foot section while you are learning.
- 15-30 minutes per 1000-foot section once you get good at it.
- Repeat the survey every 3-5 years

Set up your shoreline sections ahead of time

- BEFORE you begin the survey
- 1. Use Google Maps to create approximate 1000 foot sections
- Google Maps can measure distance (right click on map, “measure distance”)

Set up your shoreline sections ahead of time

- 2. Ride around the lake to associate your map with GPS coordinates and/or shoreline landmarks.
- DON'T USE PEOPLE'S NAMES FOR LANDMARKS.

Set up your shoreline sections ahead of time

- Other methods are fine if you have different technology or different ideas…
- The important thing?
  Do it ahead of time!

The Scoring Process

General Process

- Your team: One driver, at least two others
- At least three passes of a 1000 foot section
  1. ~100 yards from shore
  2. ~20-30 yards from shore
  3. ~100 yards from shore
- Team answers questions on every pass
  - Every member gets data sheets
- Driver idles boat while team discusses questions and reaches consensus.
- One person records the final answers.
- Back at home, do the math to get your final scores.

SCORE THE SHORE

Data Form

Cooperative Lakes Monitoring Program

Michigan Clean Water Corps

Lake Name:_____ County:_____

Township:_____ Lake Sampling Site (Field ID) Number:_____

Volunteer Monitor Name(s):_____

Date(s) of Survey :_____

Lake Level during survey was:_____ Average/Normal _____ Low _____ High

Does the lake have a legal lake level? ____ Yes ____ No

If yes, indicate level gage reading at time of survey, if possible: _____

Did the lake level impact survey results? If so, how?

_____

Total number of 1000' sections surveyed: _____

(If the final section was substantially shorter than 1000', note its approximate length here: _____)

Were photographs taken as part of this survey? ____ Yes ____ No

Development Density		**Overall Shore Score**	
A. Total no. of all buildings/docks		A. Add all of the overall section scores:	
B. Total no. of sections:		B. Total no. of sections:	
Divide A by B for the avg. number of structures per 1000 feet		Divide A by B for the Shore Score for your lake: *(It is a 0-100 scale)*	

Section #: _____ Lake/County: _____ Date: _____

GPS/Landmark at Start of Section: _____

PASS 1 (Boat is 100 yards from shore):

Number of: Homes/Major Buildings: _____

Docks/Boatlifts: _____

PASS 2 (Boat is 20-30 yards from shore):

Littoral (Aquatic) Zone Characteristics and Shoreline Erosion: **Littoral Zone Raw Score:** ____

% Emergent/Floating Vegetation ___ None (0) ___ <10% (1) ___ 10-25% (2) ___ 25-75% (3) ___ >75% (4)

% Submerged Vegetation ___ None (0) ___ <10% (1) ___ 10-25% (2) ___ 25-75% (3) ___ >75% (4)

___ Unable to see

Is aquatic plant management evident/known? ___ No (0) ___ Minor (at docks, swim areas; -1) ___ Major (-2)

Amount of Downed Trees/Woody Debris: ___ None (0) ___ Few: 1-5 (1) ___ Several: 6-15 (2) ___ Many: 16+ (3)

Erosion along shoreline (check one): ___ None observed (0) ___ Minor (-1) ___ Moderate (-2) ___ Severe (-3)

PASS 3 (Boat back out to 100 yards from shore):

Riparian (Land Near Shore) Zone Characteristics: **Riparian Zone Raw Score:** ☐

% Maintained Lawn, Maintained/Artificial Beach, or Impervious (% of total section length):

_____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

% Unmowed Vegetation Belt (any vegetation other than lawn; % of total section length):

_____ None (0) _____ <10% (1) _____ 10-25% (2) _____ 25-75% (3) _____ >75% (4)

Average Unmowed Vegetation Belt Depth:

_____ None (0) _____ < 10 ft. (1) _____ 10-40 ft. (2) _____ > 40 ft. (3)

Shoreline Erosion Control Practices: **Erosion Control Raw Score:** ☐

Vertical Artificial: _____ None (0)_____ <10% (-1) ____ 10-25% (-2) ___ 25-75% (-3) ____ >75% (-4)

Types of Vertical Structure (check all that apply)_____ Seawall _____ Boulders /Rock Walls

_____Other - describe:

Sloped Artificial: _____ None (0)_____ <10% (-1) ____ 10-25% (-2) ___ 25-75% (-3) ____ >75% (-4)

Types of Sloped Artificial (check all that apply) _____Concrete _____ Rock/Riprap

_____ Other - describe:

Bioengineering (e.g. coir logs, branch bundles):

___ None (0) ___ <10% (-0.5) ___ 10-25% (-1) ___ 25-75%(-1.5) ____ >75% (-2)

GPS/Landmark at End of Section: _____

Final Scoring

These equations transform your raw scores into a 0-100 scale. You should round to the nearest whole number. Remember to multiply before you add.

Littoral Zone Raw Score (from other side): _____ x 6.2 + 31.3 = ☐ **Littoral Zone Final Score**

If "Unable to see" submerged vegetation use this: x 8.3 + 41.5 =

Riparian Zone Raw Score (from other side): _____ x 9.1 + 36.4 = ☐ **Riparian Zone Final Score**

Erosion Control Raw Score (from other side): _____ x 11.1 + 100 = ☐ **Erosion Control Final Score**

Add the Scores Above = ☐

Divide the Score Above by 3 = ☐ **OVERALL SECTION SCORE**

Comments or Concerns for this Section:

Docks

% Emergent/Floating Vegetation___ None (0) ____ <10% (1) ___ 10-25% (2)____ 25-75% (3) ____ >75% (4)

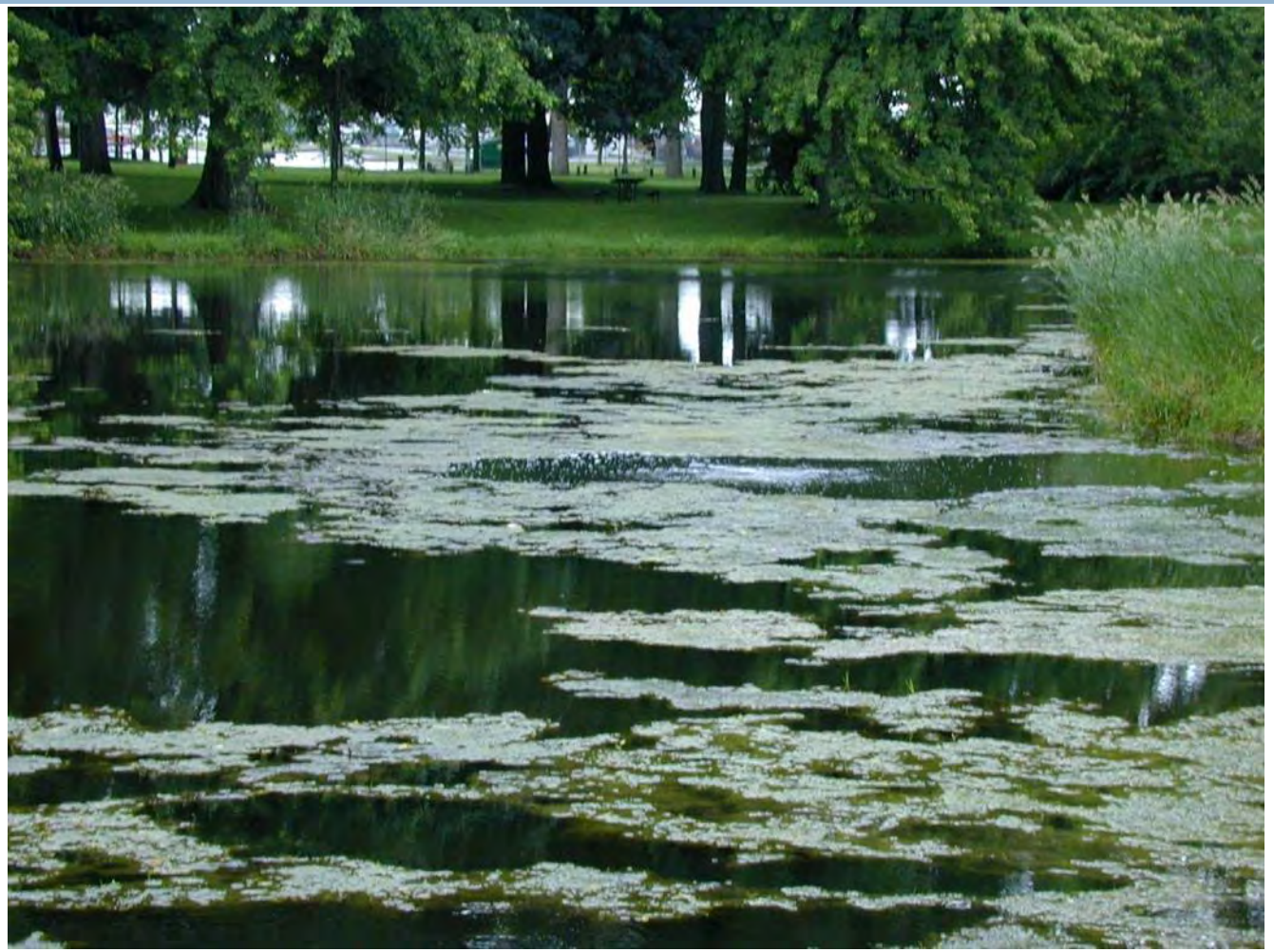
Emergent/Floating Vegetation

% Emergent/Floating Vegetation___ None (0) ____ <10% (1) ___ 10-25% (2)____ 25-75% (3) ____ >75% (4)

Emergent/Floating Vegetation

% Emergent/Floating Vegetation___ None (0) ____ <10% (1) ___ 10-25% (2)____ 25-75% (3) ____ >75% (4)

Emergent/Floating Vegetation? - YES



% Submerged Vegetation ___ None (0) ____ <10% (1) ___ 10-25% (2) ____ 25-75% (3) ____ >75% (4)
_____ Unable to see

Submerged Vegetation

% Submerged Vegetation ___ None (0) ____ <10% (1) ___ 10-25% (2) ____ 25-75% (3) ____ >75% (4)
_____ Unable to see

Submerged Vegetation

Is aquatic plant management evident/known? ____ No (0) ____ Minor (at docks, swim areas; -1) ____ Major (-2)

Aquatic plant management

Is aquatic plant management evident/known? ____ No (0) ____ Minor (at docks, swim areas; -1) ____ Major (-2)

Aquatic plant management

Is aquatic plant management evident/known? ____ No (0) ____ Minor (at docks, swim areas; -1) ____ Major (-2)

Aquatic plant management

Amount of Downed Trees/Woody Debris: ___ None (0) ___ Few: 1-5 (1) ___ Several: 6-15 (2) ___ Many: 16+ (3)

Woody Debris

Amount of Downed Trees/Woody Debris: ___ None (0) ___ Few: 1-5 (1) ___ Several: 6-15 (2) ___ Many: 16+ (3)

Woody Debris

Amount of Downed Trees/Woody Debris: ___ None (0) ___ Few: 1-5 (1) ___ Several: 6-15 (2) ___ Many: 16+ (3)

Woody Debris

Amount of Downed Trees/Woody Debris: ____ None (0) ____ Few: 1-5 (1) ____ Several: 6-15 (2) ___ Many: 16+ (3)

Woody Debris

Erosion along shoreline (check one):___ None observed (0) ____ Minor (-1) ___ Moderate (-2)____ Severe (-3)

Erosion

Erosion along shoreline (check one):___ None observed (0) ____ Minor (-1) ___ Moderate (-2)____ Severe (-3)

Erosion

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Erosion

Erosion along shoreline (check one):___ None observed (0) ____ Minor (-1) ___ Moderate (-2)____ Severe (-3)

Erosion

Does a beach count as “Erosion”?

% Maintained Lawn, Maintained/Artificial Beach, or Impervious (% of total section length):

_____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Maintained Lawn

% Maintained Lawn, Maintained/Artificial Beach, or Impervious (% of total section length):

_____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Impervious/Maintained Lawn

% Maintained Lawn, Maintained/Artificial Beach, or Impervious (% of total section length):

_____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Impervious/Maintained Lawn

% Maintained Lawn, Maintained/Artificial Beach, or Impervious (% of total section length):

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Impervious

% Maintained Lawn, Maintained/Artificial Beach, or Impervious (% of total section length):

_____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Impervious

Maintained Lawn/Beach

% Maintained Lawn, Maintained/Artificial Beach, or Impervious (% of total section length):

_____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Maintained Lawn/Beach

% Unmowed Vegetation Belt (any vegetation other than lawn; % of total section length):

_____ None (0) _____ <10% (1) _____ 10-25% (2) _____ 25-75% (3) _____ >75% (4)

Unmowed Vegetation Belt

Average Unmowed Vegetation Belt Depth:

_____ None (0) _____ < 10 ft. (1) _____ 10-40 ft. (2) _____ > 40 ft. (3)

% Unmowed Vegetation Belt (any vegetation other than lawn; % of total section length):

_____ None (0) _____ <10% (1) _____ 10-25% (2) _____ 25-75% (3) _____ >75% (4)

Unmowed Vegetation Belt

Average Unmowed Vegetation Belt Depth:

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% Unmowed Vegetation Belt (any vegetation other than lawn; % of total section length):

_____ None (0) _____ <10% (1) _____ 10-25% (2) _____ 25-75% (3) _____ >75% (4)

Unmowed Vegetation

Average Unmowed Vegetation Belt Depth:

_____ None (0) _____ < 10 ft. (1) _____ 10-40 ft. (2) _____ > 40 ft. (3)

% Unmowed Vegetation Belt (any vegetation other than lawn; % of total section length):

_____ None (0) _____ <10% (1) _____ 10-25% (2) _____ 25-75% (3) _____ >75% (4)

Unmowed Vegetation Belt

Average Unmowed Vegetation Belt Depth:

_____ None (0) _____ < 10 ft. (1) _____ 10-40 ft. (2) _____ > 40 ft. (3)

% Unmowed Vegetation Belt (any vegetation other than lawn; % of total section length):

_____ None (0) _____ <10% (1) _____ 10-25% (2) _____ 25-75% (3) _____ >75% (4)

Unmowed Vegetation Belt

Average Unmowed Vegetation Belt Depth:

_____ None (0) _____ < 10 ft. (1) _____ 10-40 ft. (2) _____ > 40 ft. (3)

Seawall

Vertical Artificial: _____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Types of Vertical Structure (check all that apply) _____ Seawall _____ Boulders /Rock Walls

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Vertical Artificial: _____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

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Types of Vertical Structure (check all that apply) _____ Seawall _____ Boulders /Rock Walls

Boulders

Vertical Artificial: _____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

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Boulders

Vertical Artificial: _____ None (0) _____ <10% (-1) ____ 10-25% (-2) ___ 25-75% (-3) ____ >75% (-4)

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Boulders

Vertical Artificial: _____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Types of Vertical Structure (check all that apply) _____ Seawall _____ Boulders /Rock Walls

Riprap

Sloped Artificial: _____ None (0) _____ <10% (-1) _____ 10-25% (-2) ____ 25-75% (-3) _____ >75% (-4)

Types of Sloped Artificial (check all that apply) _____ Concrete _____ Rock/Riprap

_____ Other - describe:

Sloped Artificial - Concrete

Sloped Artificial: _____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Types of Sloped Artificial (check all that apply) _____ Concrete _____ Rock/Riprap

_____ Other - describe:

Riprap

Sloped Artificial: _____ None (0) _____ <10% (-1) _____ 10-25% (-2) ____ 25-75% (-3) _____ >75% (-4)

Types of Sloped Artificial (check all that apply) _____ Concrete _____ Rock/Riprap

_____ Other - describe:

Rock/Riprap

Sloped Artificial: _____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Types of Sloped Artificial (check all that apply) _____ Concrete _____ Rock/Riprap

_____ Other - describe:

Rock/Riprap

Sloped Artificial: _____ None (0) _____ <10% (-1) _____ 10-25% (-2) _____ 25-75% (-3) _____ >75% (-4)

Types of Sloped Artificial (check all that apply) _____ Concrete _____ Rock/Riprap

_____ Other - describe:

Rock/Riprap

Sloped or Vertical?

Sloped Artificial: _____ None (0) _____ <10% (-1) ____ 10-25% (-2) ___ 25-75% (-3) ____ >75% (-4)

Types of Sloped Artificial (check all that apply) _____ Concrete _____ Rock/Riprap

_____ Other - describe:

Seawall or riprap?

Seawall or Riprap?

Bioengineering - Coir Logs

Bioengineering (e.g. coir logs, branch bundles):

___ None (0) ___ <10% (-0.5) ___ 10-25% (-1) ___ 25-75%b(-1.5) ____ >75% (-2)

Bioengineering – Coir Logs

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Bioengineering – Coir Logs

Bioengineering (e.g. coir logs, branch bundles):

___ None (0) ___ <10% (-0.5) ___ 10-25% (-1) ___ 25-75%b(-1.5) ____ >75% (-2)

Placed Stumps and Branch Bundles

What about stuff like this?

What about stuff like this?

Take useful photos

- TAKE lots of pictures
  - Be aware you can only upload 3 per section to the MDE
- Delete blurry photos
- Location is essential
  - Label with section number

Submit Your Data

- Enter your data into the MDE
  - Follow the instructions for data submission on our website, www.micorps.net
  - Because of programming limitations– you need to enter all your lake sections at once. **DO NOT** close your browser until it is done.
  - You can upload 3 photographs from each section– each one no bigger than 5 MB.

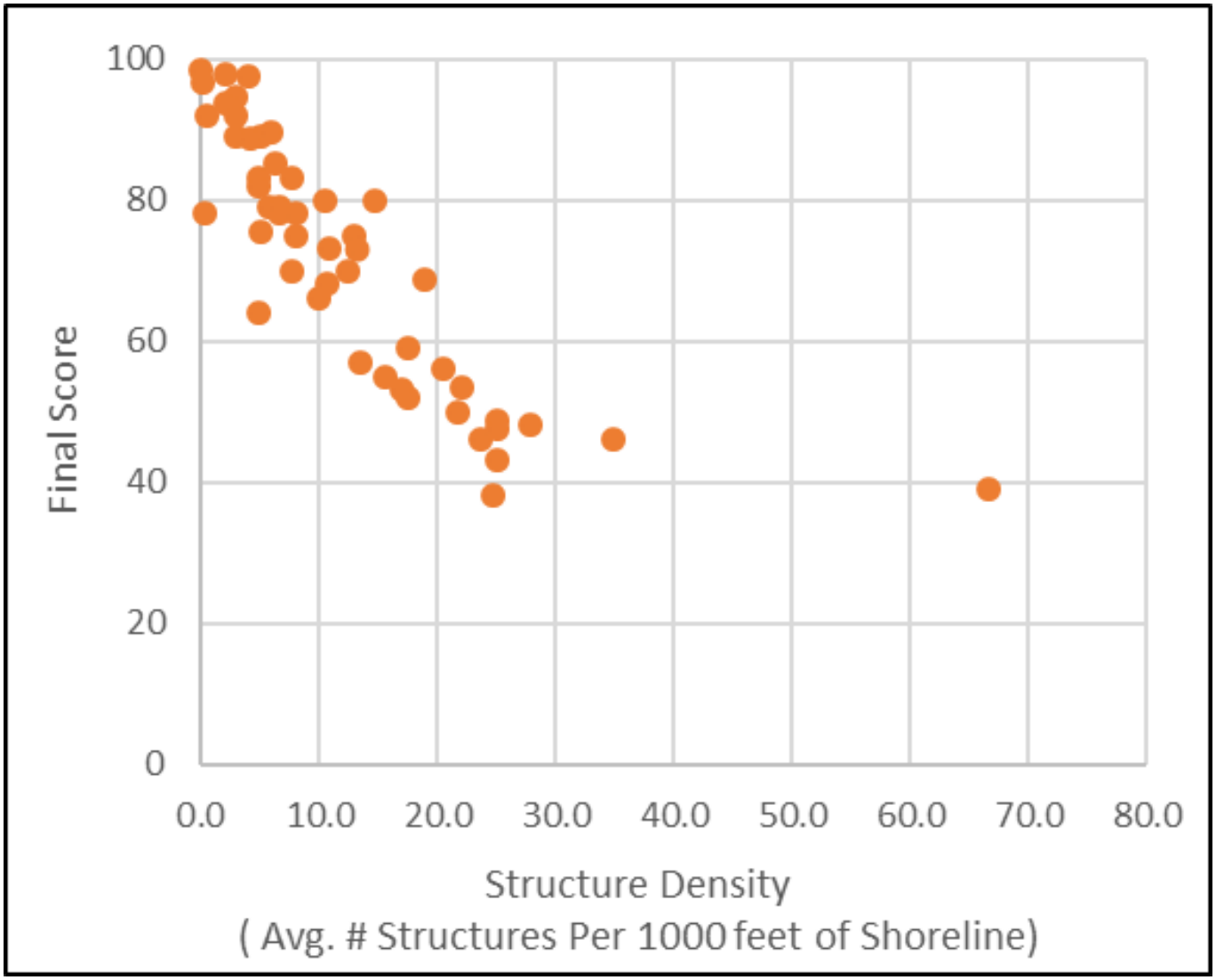
Submitting Your Data

Whether you enter data into MDE or not, be sure to:

Send complete report to MiCorps, either through mail (copies) or email (pdf). Addresses are on data form.

- Survey Cover Sheet
- All Data Forms
- Survey Map
- No Photographs- if you want these included in the long term record, you need to enter them yourself into the MDE

Shore Score vs. Structure density



Time for Questions