Cooperative Lakes Monitoring Program

2014 Data Report

for

Allen Lake, Lenawee County

Michigan Lakes– Ours to Protect

The CLMP is brought to you by:

Michigan Clean Water Corps

DEQ

Great Lakes Commission des Grands Lacs

Michigan Lake and Stream Associations

Michigan State University

Huron River Watershed Council

About this report:

This report is a summary of the data that have been collected through the Cooperative Lakes Monitoring Program. The contents have been customized for your lake. The first page is a summary of the Trophic Status Indicators of your lake (Secchi Disk Transparency, Chlorophyll-a, Spring Total Phosphorus, and Summer Total Phosphorus). Where data are available, they have been summarized for the past field season, the past five years, and since the first year your lake has been enrolled in the program.

If you did not take 8 or more Secchi disk measurements or 4 or more chlorophyll measurements, there will not be summary data calculated for these parameters. This is because missing measurements results in the data not being indicative of overall summer conditions.

If you enrolled in Dissolved Oxygen/Temperature, the summary page will have a graph of one of the profiles taken during the late summer (typically August or September). A late summer graph is used because dissolved oxygen is often depleted in the late summer, and identifying this condition and the depth at which it occurs is typically the most important use of dissolved oxygen measurements.

The back of the summary page will be the results of the Exotic Plant Watch or Full Plant Mapping, if you participated in that parameter.

The rest of the report will be larger graphs, including all Dissolved Oxygen/Temperature Profiles that you recorded. For Secchi Disk, Chlorophyll, and Phosphorus parameters, you need to have two years of data for a graph to make logical sense. Therefore if this is the first year you have enrolled in the CLMP, you will not receive a graph for these parameters.

To learn more about these parameters or get definitions to unknown terms, check out the CLMP Manual found at: http://www.micorps.net/documents/CLMP_Manual.pdf. [Please note: This is a new publication and a printed version will not be available until April 2015. The printed version will be available at the CLMP training held during annual MLSA Conference in early May.]

Thank you!

The CLMP leadership team would like to thank you for all of your efforts over the past year. The CLMP would not exist without dedicated and hardworking volunteers!

The CLMP Leadership Team is made of: Bill Dimond, Jean Roth, Jo Latimore, Paul Steen, Scott Brown, Laura Kaminski, and Anne Sturm

Questions?

If you have questions on this report or believe that the tabulated data for your lake in this report are in error please contact:

Paul Steen (psteen@hrwc.org), MiCorps Program Manager

Site Id: 460437

Allen Lake, Lenawee County,

2014 CLMP Results

Cooperative Lakes Monitoring Program

Secchi Disk Transparency (feet)

Year	# Readings	Min	Max	Average	Std. Dev	Carlson TSI
2014	9	10	19.5	15.4	3.3	38
2009-2013						
1974-2008						
2014 All CLMP	3050	2.0	50.0	13.1	2.1	41

No graph: Not enough data

Chlorophyll-a (parts per billion)

Allen Lake does not have Chlorophyll-a data available. Consider enrolling in this parameter next year.

Chlorophyll-a is the green photosynthetic pigment in the cells of plants. The amount of algae in a lake can be estimated by measuring the chlorophyll-a concentration in the water. As an algal productivity indicator, chlorophyll-a is often used to determine the trophic status of a lake.

Spring Total Phosphorus (parts per billion)

Allen Lake does not have spring total phosphorus data available. Consider enrolling in this parameter next year.

Phosphorus is one of several essential nutrients that algae need to grow and reproduce. An increase in phosphorus over time is a measure of nutrient enrichment in a lake. A surface water sample taken in the spring, shortly after spring turnover, will be a representative sample for estimating the total amount of phosphorus in the lake.

Summer Total Phosphorus (parts per billion)

Allen Lake does not have summer total phosphorus data available. Consider enrolling in this parameter next year.

Phosphorus is one of several essential nutrients that algae need to grow and reproduce. An increase in phosphorus over time is a measure of nutrient enrichment in a lake. A surface water sample taken in the summer (when many lakes are stratified) will be a representative sample for the upper layer of the lake, where most summer algal productivity occurs.

Dissolved Oxygen and Water Temperature Profile

Allen Lake does not have dissolved oxygen/water temperature data available. Consider enrolling in this parameter next year.

Fish, insects, mollusks, and crustaceans need dissolved oxygen to live in water. By late summer, many lakes stratify, with cold anoxic water on the bottom and warm, oxygen rich water on the surface. Anoxic water occurring too close to the surface is a sign of nutrient enrichment. Understanding the pattern of dissolved oxygen and water temperature in a lake is important for assessing nutrient problems as well as the health of the biological community.

Summary

Average TSI	2014	2009-2013	1974-2008
Allen Lake	38	NA	NA
All Lakes	40	NA	NA

With a TSI score of 38 based on Secchi transparency, Allen Lake is between the oligotrophic and mesotrophic lake classification.

Welcome to the program! We hope you enroll again next year and also enroll in the other parameters. By sampling year after year, we will be able to determine if and how your lake is changing.

Allen Lake, Lenawee County

2014 CLMP Aquatic Plant Results

Allen Lake does not have aquatic plant data available. Consider enrolling in an aquatic plant parameter next year.

Why is monitoring aquatic plants important?

A major component of the plant kingdom in lakes is the large, leafy, rooted plants. Compared to the microscopic algae the rooted plants are large. Sometimes they are collectively called the "macrophytes" ("macro" meaning large and "phyte" meaning plant). These macrophytes are the plants that people sometimes complain about and refer to as lake weeds.

Far from being weeds, macrophytes or rooted aquatic plants are a natural and essential part of the lake, just as grasses, shrubs and trees are a natural part of the land. Their roots are a fabric for holding sediments in place, reducing erosion and maintaining bottom stability. They provide habitat for fish, including structure for food organisms, nursery areas, foraging and predator avoidance. Waterfowl, shore birds and aquatic mammals use plants to forage on and within, and as nesting materials and cover.

Though plants are important to the lake, overabundant plants can negatively affect fish populations, fishing and the recreational activities of property owners. Rooted plant populations increase in abundance as nutrient concentrations increase in the lake. As lakes become more eutrophic rooted plant populations increase. They are rarely a problem in oligotrophic lakes, only occasionally a problem in mesotrophic lakes, sometimes a problem in eutrophic lakes, and often a problem in hypereutrophic lakes.

However, sometimes a lake is invaded by an aquatic plant species that is not native to Michigan. In these cases, even nutrient poor oligotrophic lakes can be threatened. Some of these exotic plants, like Curly-leaf Pondweed, Eurasian Milfoil, Starry Stonewort, and Hydrilla can be extremely disruptive to the lake's ecosystem and recreational activities.

To avoid a takeover by exotic plants, it is necessary to use Integrated Pest Management (IPM) strategies: monitoring, early detection, rapid response, maintenance control, and preventive management. For more information on these strategies, check out Integrated Pest Management for Nuisance Exotics in Michigan Inland Lakes (MSU Extension Water Quality Publication WQ-56, available at http://www.micorps.net/CLMPdocuments.html.

The CLMP offers two parameters on aquatic plants. In the exotic aquatic plant watch, volunteers concentrate on monitoring and early detection of exotic invasive plants only. In the full plant mapping program, volunteers identify all native and non-native plants. In both parameters, volunteers create lake maps or use digital tools to georeference where the plants are found.