# Cooperative Lakes Monitoring Program

Michigan Lakes– Ours to Protect

# 2016 Data Report
# for

# Pleasant Lake, Washtenaw County

Site ID: 810264

42.200559°N, 83.945281°W

**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 most recent field season, five years prior to the most recent field season, 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. These numbers of measurements are required to ensure that the results are 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). If your lake stratifies, we will use a graph showing the earliest time of stratification, becauuse identifying the timing of 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. If you enrolled in the Score the Shore Parameter, a summary will be found after the plant page.

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.

Remember that some lakes see a lot of fluctuation in these parameters from year to year. Until you have eight years worth of data, consider all trends to be preliminary.

To learn more about the CLMP monitoring parameters or get definitions to unknown terms, check out the CLMP Manual, found at: **https://micorps.net/wp-content/uploads/CLMP-Manual.pdf**

**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: Marcy Knoll Wilmes, Jean Roth, Jo Latimore, Paul Steen, Scott Brown, Laura Kaminski, and Michele Leduc-Lapierre

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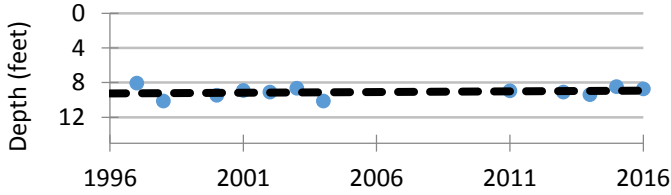**Paul Steen (psteen@hrwc.org), MiCorps Program Manager**

# Pleasant Lake, Washtenaw County
# 2016 CLMP Results

Cooperative Lakes
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## Secchi Disk Transparency (feet)

| Year | # Readings | Min | Max | Average | Std. Dev | Carlson TSI |
|---|---|---|---|---|---|---|
| 2016 | 17 | 7.0 | 11.0 | 8.7 | 1.4 | 46 |
| 2011-2015 | 76 | 6.5 | 10.5 | 9.0 | 0.8 | 46 |
| 1996-2010 | 135 | 6.0 | 15.0 | 9.2 | 1.6 | 45 |
| 2016 All CLMP Lakes | 3116 | 1.0 | 56.0 | 12.9 | 2.8 | 41 |



## Chlorophyll-a (parts per billion)

| Year | # Samples | Min | Max | Median | Std. Dev | Carlson TSI |
|---|---|---|---|---|---|---|
| 2016 | 1* | 2.1 | 2.1 | | | |
| 2016 All CLMP Lakes | 628 | < 1.0 | 28.0 | 1.8 | 4.3 | 36 |

No graph: Not enough data

## Spring Phosphorus (parts per billion)

Pleasant 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 Phosphorus (parts per billion)

| Year | # Samples | Min | Max | Average | Std. Dev | Carlson TSI |
|---|---|---|---|---|---|---|
| 2015 | 1 | 16.0 | 16.0 | 16.0 | NA | 44 |
| 2010-2014 | 2 | 17.0 | 18.0 | 17.5 | 0.7 | 45 |
| 1998 | 1 | 22.0 | 22.0 | 22.0 | NA | 49 |
| 2016 All CLMP Lakes | 173 | <= 3 | 250.0 | 15.1 | 21.7 | 43 |
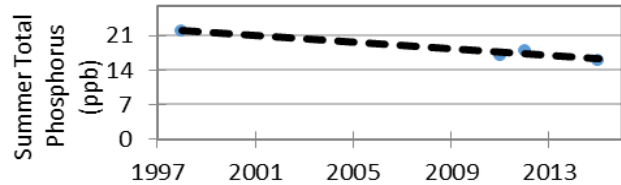


## Dissolved Oxygen and Temperature Profile

This lake does not have recent (within 5 years) 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 (oxygen-depleted) 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 | 2016 | 2011-2015 | 1996-2010 |
|---|---|---|---|
| Pleasant | 46 | 46 | 47 |
| All CLMP Lakes | 40 | 40 | 41 |

With an average TSI score of 46 based on 2016 Secchi transparency, this lake is rated between the mesotrophic and eutrophic lake classification. The lake leans slightly more mesotrophic than eutrotrophic.

Long term trends indicate that the trophic status parameters have not changed beyond minor year-to year variation since monitoring began.

*\* = Only June sample received  W= Value is less than the detection limit (<3 ppb)  T= Value reported is less than the reporting limit (5 ppb). Result is estimated.*
*<1.0 = Chlorophyll-a: Sample value is less than limit of quantification (<1 ppb).*

# Pleasant Lake, Washtenaw County
# 2016 CLMP Aquatic Plant Results

Cooperative Lakes
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Pleasant Lake does not have aquatic plant data available for 2016.  Consider enrolling in an aquatic plant parameter next year.

**Why is monitoring aquatic plants important?**

A major component of the plant community 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 other recreational activities.  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 https://micorps.net/lake-monitoring/clmp-documents/)

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 Aquatic Plant Identification and Mapping, 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.

# Pleasant Lake, Washtenaw County
# 2016 Score the Shore Results

**Cooperative Lakes**
**Monitoring Program**

The Score the Shore Habitat Assessment was conducted on Pleasant Lake in 2015.

This assessment involves rating 1000 foot sections of shoreline for aquatic vegetation, shoreline vegetation, erosion, and erosion control practices (like sea walls). Each shoreline section is given three scores ranging from 0-100 for the categories of Littoral, Riparian, and Erosion Management. The three scores are averaged to produce a average section score. Then a total score is given to the entire lake by averaging all of the average section scores. A score of 0 indicates a shoreline that has been extremely disturbed by human impacts and no natural shoreline remains. A score of 100 indicates a shoreline that is nearly pristine.

### How does your lake compare to others in the program?
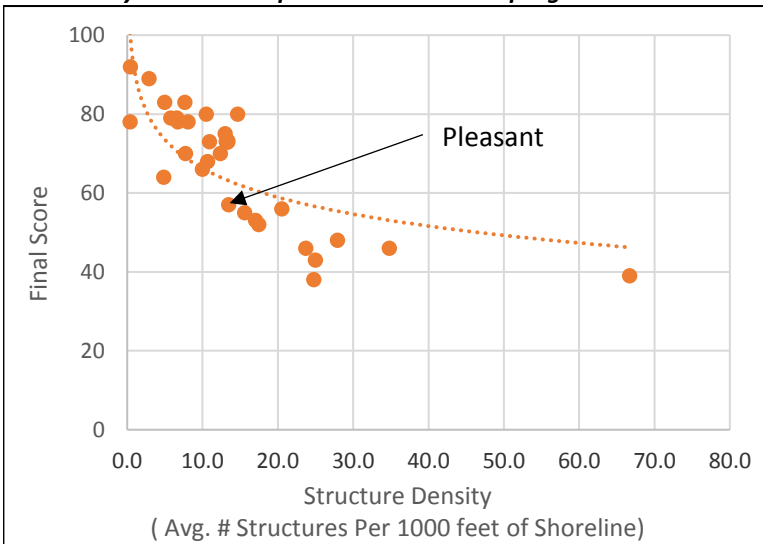


| Pleasant Lake: | |
| --- | --- |
| Number of Sections: | 15 |
| Number of Structures: | 202 |
| Structure Density: | 13.5 |
| Final Score: | 57 |

| All 31 Participating Lakes in 2015 and 2016: | |
| --- | --- |
| Avg. Number of Sections: | 16 |
| Avg. Number of Structures: | 233 |
| Avg. Structure Density: | 14.6 |
| Avg. Final Score: | 66 |

There is a very tight relationship between Final Score and Structure Density. It will be interesting to see if and how this changes as more lakes go through this scoring process.

### Analysis specific to Pleasant Lake:

Pleasant Lake scored well in the erosion management score, meaning that there was a low amount of sea walls and other shoreline erosion structures.

Both the riparian score and the littoral score fall in the low end of the "Fair" range, meaning that these would be places to make improvements. Reducing the amount of mowed grass and increasing the amount of unmowed vegetation would be the primary way to boost the riparian score, while increasing aquatic vegetation, allowing fallen trees to remain in the water, and reducing shoreline erosion would be the way to boost the littoral score.

The health of the shoreline habitat varies greatly from place to place in Pleasant Lake. One section is considered good, 8 are fair, and 6 are poor. The worst scoring section was section 1, which had a total score of 38 (littoral score of 31, riparian score of 27, and shoreline management score of 56).
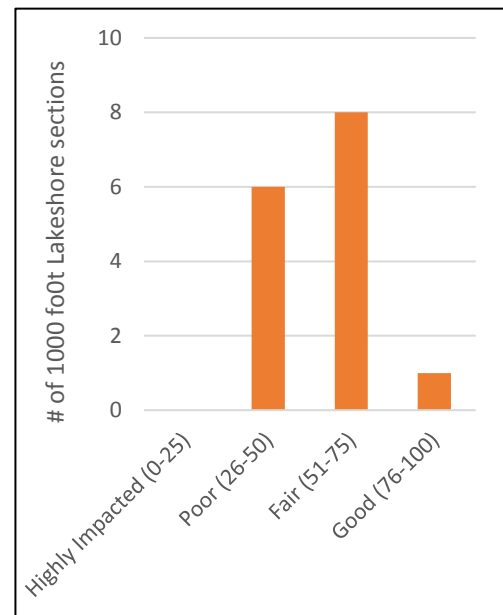
COOPERATIVE LAKES MONITORING PROGRAM
SUMMER MEAN TRANSPARENCY

**Pleasant (Washtenaw Co.), 810264**

Depth (feet)

Year
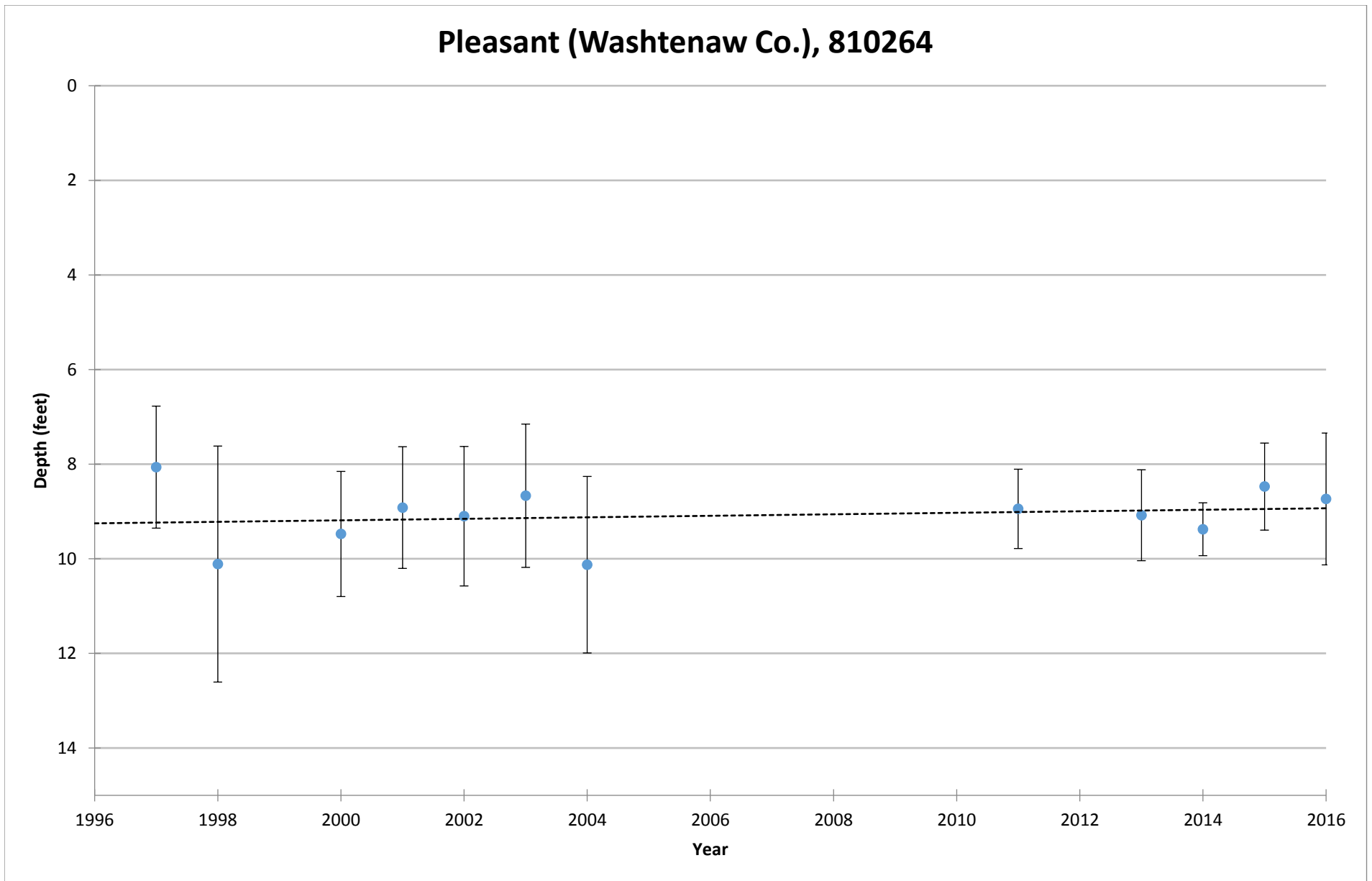
Vertical bars indicate standard deviation

# Pleasant (Washtenaw Co.), 810264