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

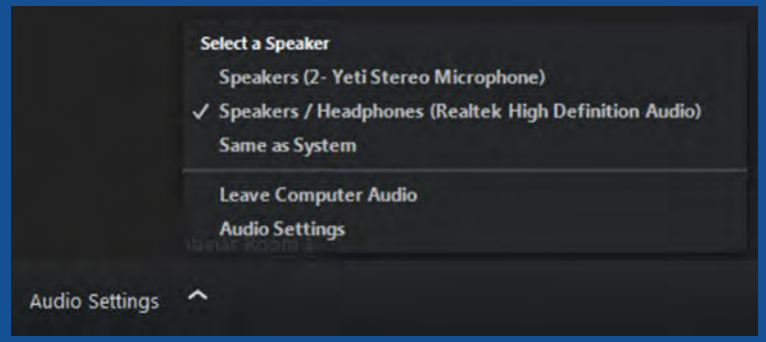
- For CLMP procedures and data forms please visit: micorps.net/lake-monitoring/clmp-documents/ and then click on the name of the parameter.

Today's Agenda:

9:00 AM – 9:30 AM	Welcome and Introduction to CLMP
9:30 – 10:00 AM	Secchi Disk
10:00 - 10:15 AM	BREAK
10:15 – 10:45 AM	Spring and Summer Phosphorus
10:45 AM – Noon	Dissolved Oxygen & Temperature
Noon – 1:00 PM	Lunch Break
1:00 – 2:00 PM	Score the Shore
2:00 – 3:00 PM	Chlorophyll-a
3:00 – 3:15 PM	BREAK
3:15 PM – 4:30 PM	Exotic Aquatic Plant Watch

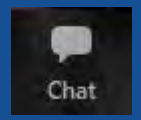
Getting Started

- 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 MSU Distance Learning Help Desk 844-678-6200 for technical support.

Dissolved Oxygen and Temperature

Tamara Lipsey

EGLE

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Tamara Lipsey
Aquatic Biologist
Water Resources Division
517-342-4372
lipseyt@michigan.gov

How is Dissolved Oxygen and Temperature Measured?

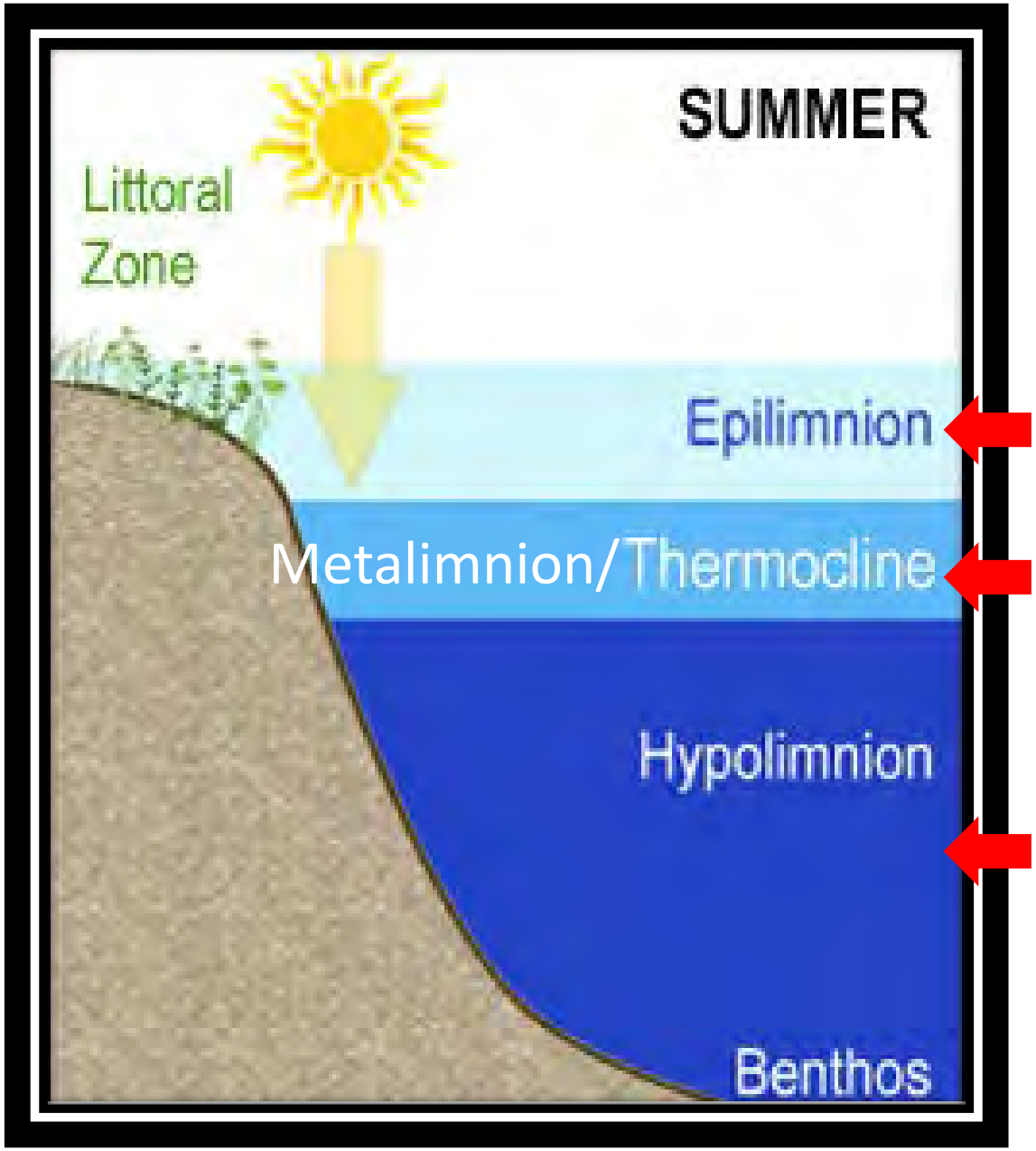
Dissolved Oxygen (DO) and Temperature

- What it is & Why Important.
- Program Overview
- Equipment
- Procedure
- End of Year

What D.O. and Temperature Measure?

How much oxygen is dissolved in the water and is available for aquatic organisms to use

How warm or cold the water is



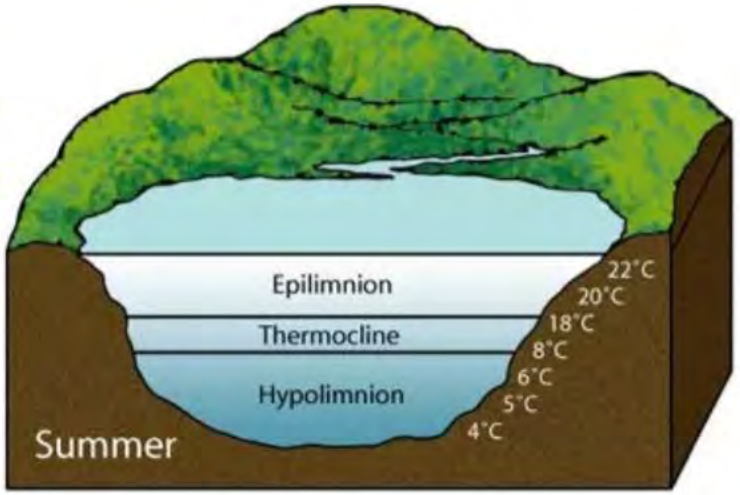
Thermal Stratification

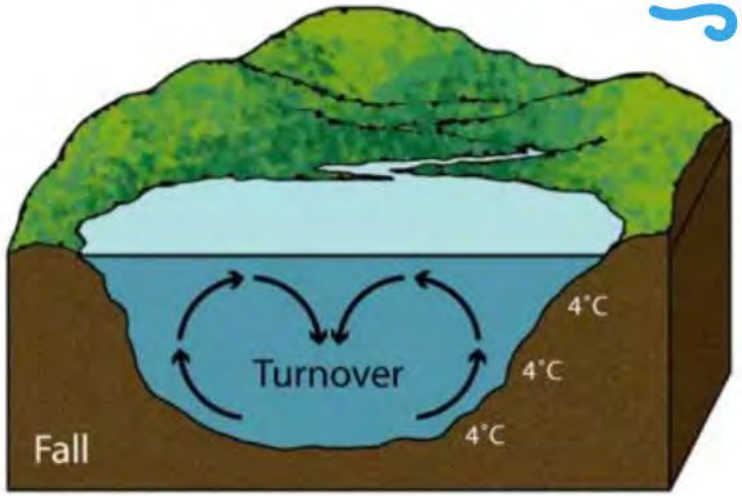
Lake Temperature/Density Zones

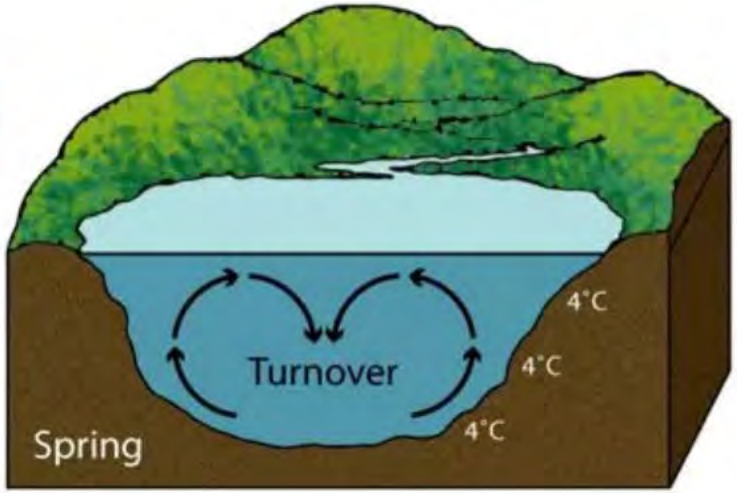
- Warm upper zone
- Metalimnion; rapid decrease in temperature and increase in water density (Thermocline)
- Cold bottom zone

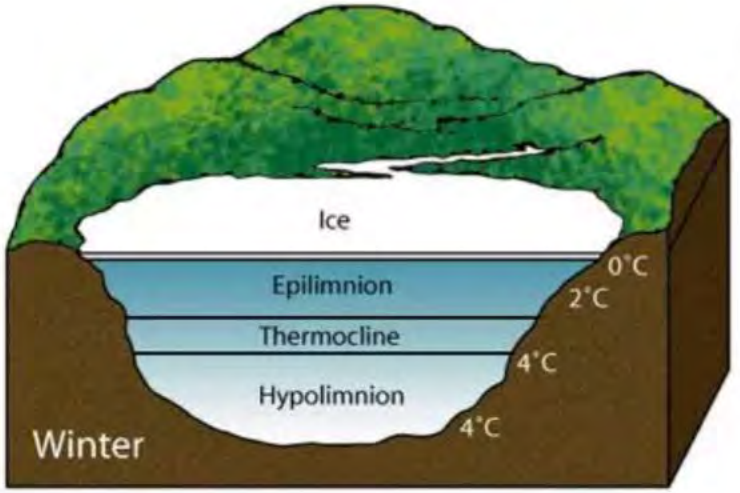
Define where thermal layers are and classify your lake as a warm or cold-water lake

Lake Turnover



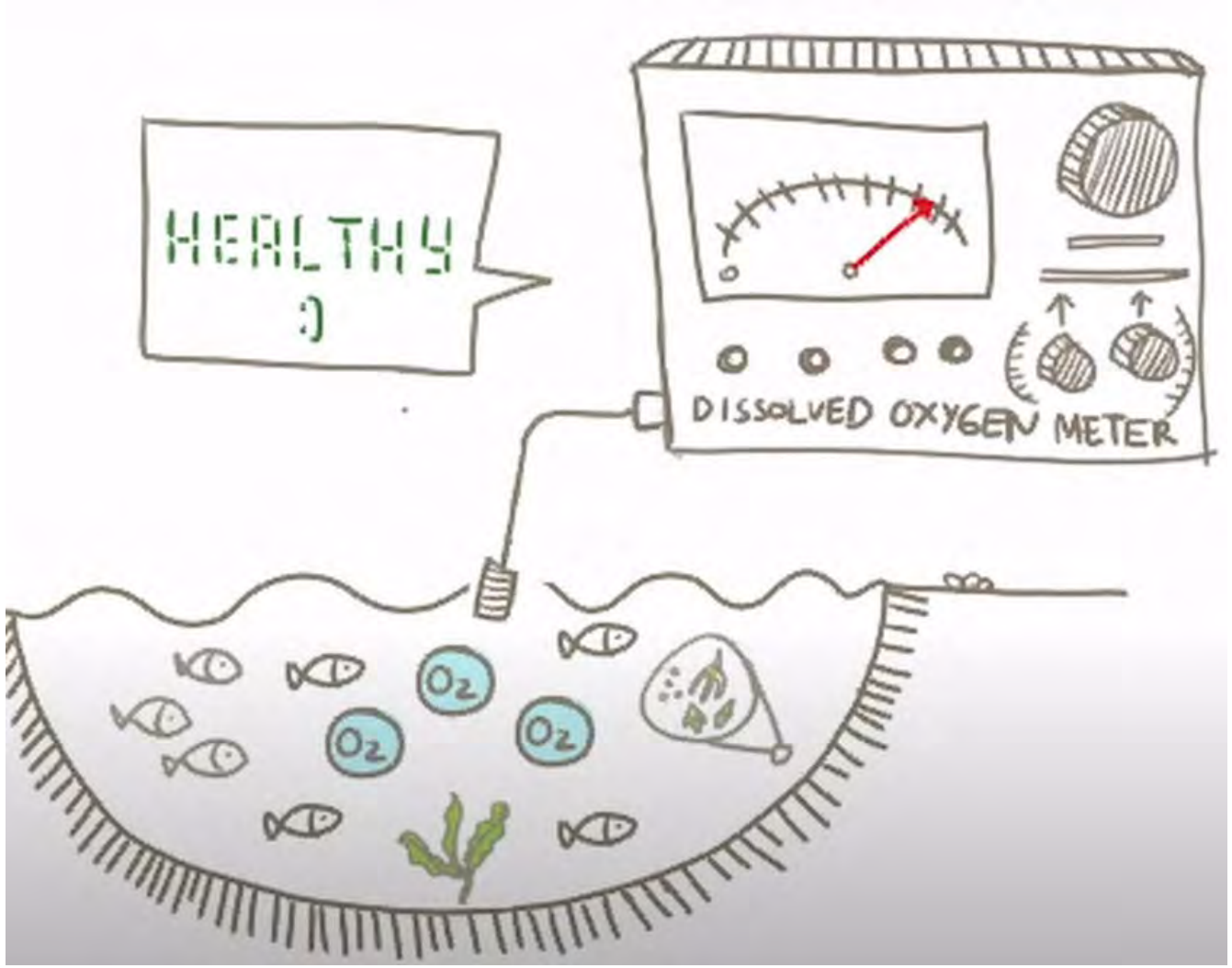






Https:// media.nationalgeographic.org/assets/photos/000/292/29293.jpg

Dissolved Oxygen http://k12videos.mit.edu/

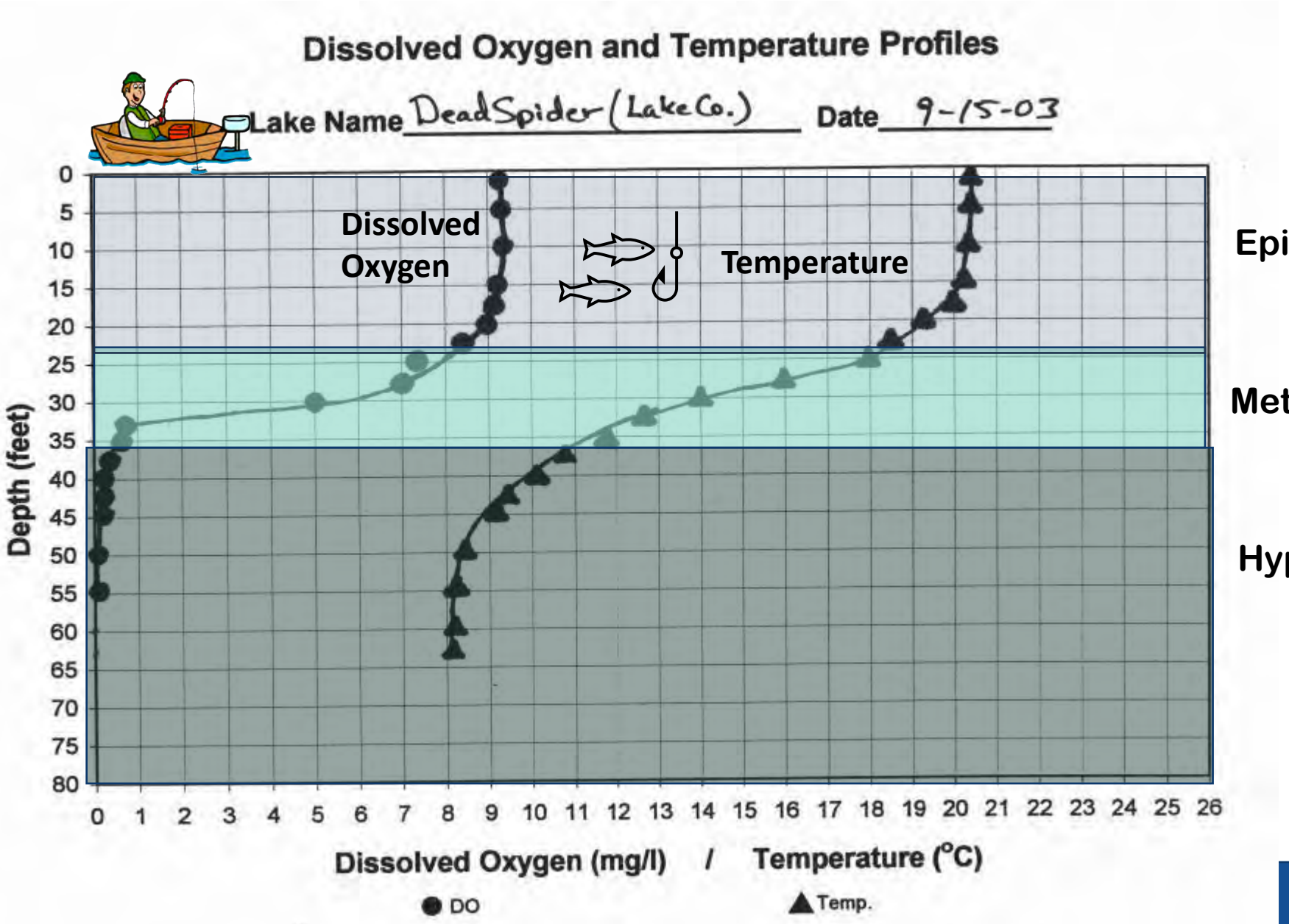


Dissolved Oxygen Take Home Points

- The amount of salt and the temperature of the water impact the amount of DO in the water
- Oxygen enters the water through the air or by photosynthesis from plants and algae
- Too much algae/cyano bacteria leads to low DO when they die
- Nutrients speed up growth of plants and algae and the Eutrophication process

Understanding DO levels in your lake, is one more tool to understanding the health of your lake.

https://micorps.net/wp-content/uploads/CLMP-DO-Temp-DataPlottingForm.pdf



Epilimnion

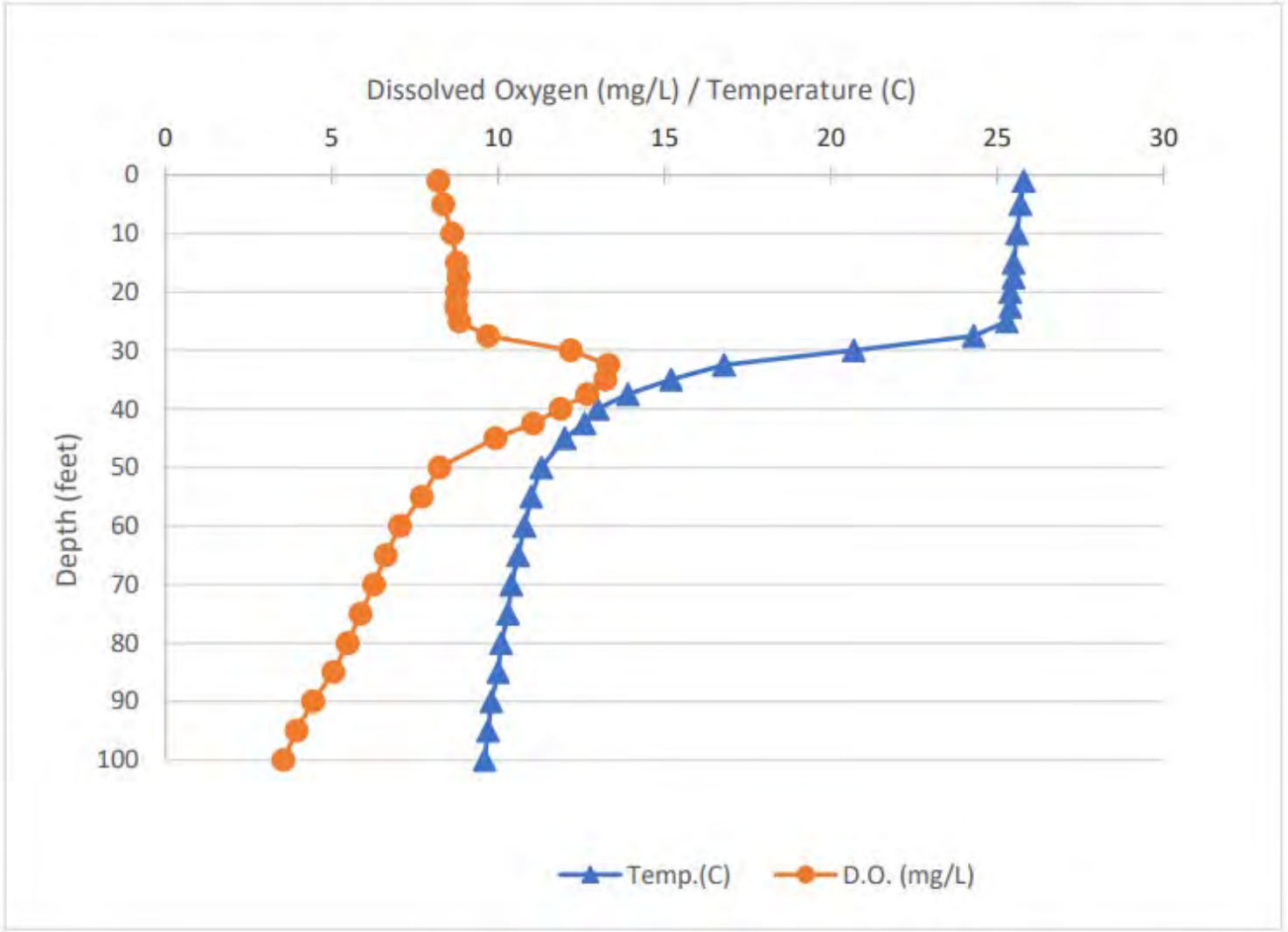
Metalimnion/Thermocline

Hypolimnion

Cooperative Lakes Monitoring Program

The power of photosynthesis

Lake: Gull Lake (Kalamazoo Co.) **8/10/2021**



Slide Credit: E. Elgin

Michigan Clean Water Corps

Cooperative Lakes Monitoring Program


Brain Break!!

D.O./Temperature Program Overview

- Borrow a Meter
- May purchase own meter**
- Meters will be distributed by mid-May
- Measure 2 X per month May-September

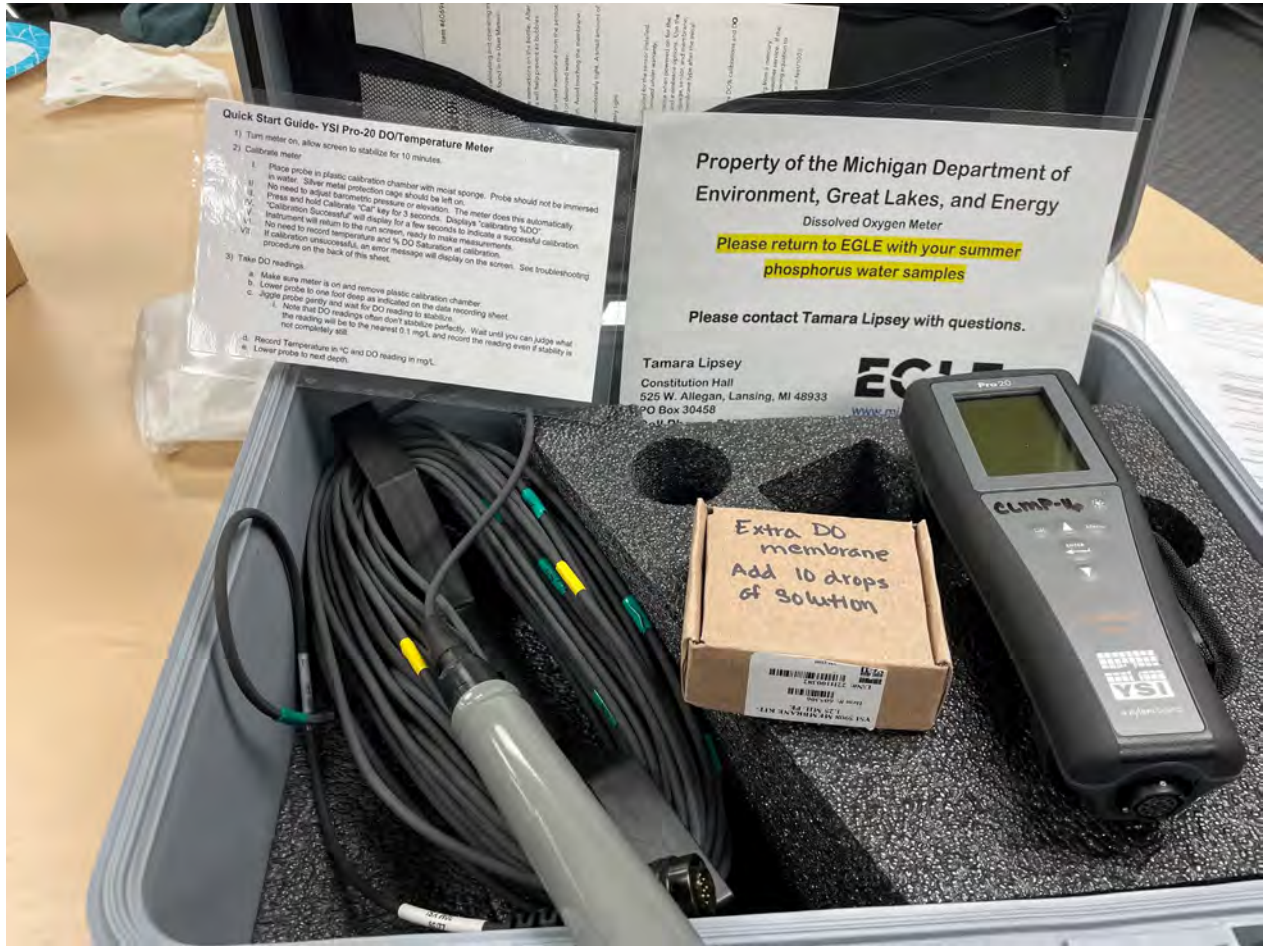
DO/Temperature Equipment
YSI Oxygen Meter (550A or Pro-20)

No longer sold, parts will not be available in the future.

Probe of Each Meter

Pro-20 Dissolved Oxygen and Temperature Probe

Example of Do/Temperature Meter Kit



New for 2024-Stainless Steel Weights


OXYGEN PROBE E
FILL TO NECK
DISTILLED WATE
SHAKE UNTIL CRYST
TO MAKE ELECTROLY
Contents:
YSI incorporated
Yellow Springs,Ohio 45387 U.S.A.

Video: How to Change a Membrane Available Online-under Lake Training

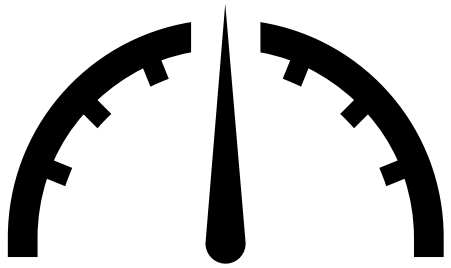
Prepare for Sampling

- Make sure you have calm and dry weather conditions
- Safety equipment and a friend to help with data recording
- Check the Quick Reference Procedure Checklist
- Make sure you have your data forms
- Turn on your meter for 15 minutes and Calibrate Meter

How to calibrate a Pro-20 meter.

Calibration and DO membrane change

- Videos Available Online
  - https://micorps.net/lake-monitoring/lake-training/
- Remember to turn on to warm up prior to calibrating
  - 5-10 minutes Pro-20
  - 15 minutes 550A
- Card available inside tub for reminders
- Calibrate EVERYTIME you sample!!!!



Michigan Clean Water Corps

DISSOLVED OXYGEN AND TEMPERATURE

2024 Data Form

Cooperative Lakes Monitoring Program

Lake Name: _____ County: _____ Township: _____

Lake Sampling Site (Field ID) Number: _____ (mark location on map below)

Latitude: _____ Longitude: _____

Volunteer Monitor Name(s): _____

Date Sampled: _____ Time: _____

Weather Conditions (sunny, cloudy, windy, etc.): _____

Unusual Conditions (heavy rain, boating, etc.): _____

Sampling Station Depth (make sure to measure before you begin sampling): _____ feet

Page 1 Data Sheet

Page 1 Datasheet Continued:

DO/Temp. Meter (circle one): YSI Model 550A YSI Pro20

Calibration Values (Only for 550A; Skip if using a Pro20):

DO: _____% air saturation (Must be 93-103%; Troubleshoot if out-of-range)

Lake Elevation Value: _____ (x100 ft.)

In the box below draw an outline of your lake (or attach a copy of a lake map). Mark your DO/temperature sampling location (this should be at the deepest location in your lake) and write the total lake depth.

Surface Area :_____(acres)

Proceed to Sampling Location

- Anchor just upwind of deep basin and drift back over deepest spot, as with other parameters
- Check for actual basin depth with depth finder or weighted line or secchi disk
- Turn on the meter, calibrate if you did not do on shore.
- Take the Cap off. Leave the guard.
- Add weight if needed

Cooperative Lakes Monitoring Program

Taking a measurement

- Start at 1 foot deep
- Make sure in mg/L
- Move probe with slight jigging motion
- The DO reading will drift-judge the nearest .5 mg/l.
- Go to the next depth on your data sheet.
- Stop about 2-3 feet above bottom sediment to protect probe

** REMEMBER** make sure you are measuring oxygen in **mg/l** before making oxygen measurements.**

Depth (ft.)	Temp (°C)	DO (mg/l)	Depth (ft.)	Temp (°C)	DO (mg/l)
1			55		
5			60		
10			65		
15			70		
17½			75		
20			80		
22½			85		
25			90		
27½			95		
30			100		
32½			105		
35			110		
37½			115		
40			120		
42½			125		
45			130		
50			**Note**: Take last measurement 2½-3 ft. above bottom sediments of the lake.		

Data Sheet Page 2.

Note: You can enter additional depths if needed

Cooperative Lakes Monitoring Program

www.micorps.net

DATA ENTRY

If you can, please enter your data into the MiCorps Data Exchange by October 31st.

DATA SHEET TURN IN PROTOCOL

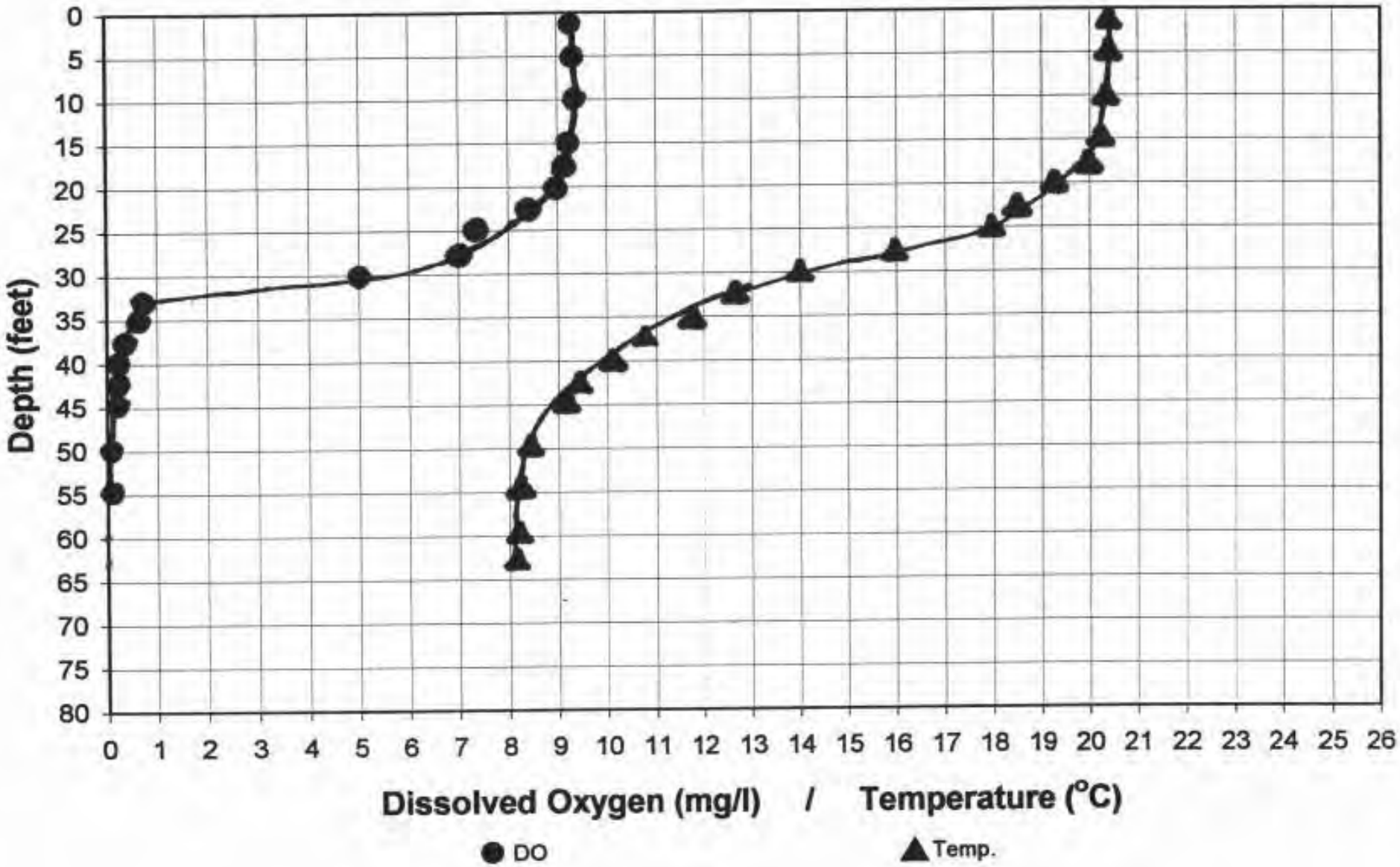
Please do the following:

(1) Make a copy of your field data sheets to keep for your records,

(2) Mail one copy by October 31st to: **MLSA, P.O. Box 303, Long Lake, MI 48743**

Dissolved Oxygen and Temperature Profiles

Lake Name Dead Spider (Lake Co.) Date 9-15-03



End of the year- Don't Forget-Return the Meters

- With last water chemistry sample drop off date
- If forget? Need more time? Contact Tamara to make arrangements.
- Damp Sponge-No pooled water
- Meter disconnected from cable
- Case is completely dry

Equipment Care

Keep meter in case until it is time to monitor

Do not kink cable. Disconnect meter from cable when not in use and take care when rolling up cable.

Keep meter case dry. Dry out before storing.

Tamara Lipsey

Aquatic Biologist

Water Resources Division

lipseyt@michigan.gov

517-342-4372

EGLE

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Questions?

To learn more about the Cooperative Lakes Monitoring Program, visit:

MiCorps.net

EGLE
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

MICHIGAN STATE UNIVERSITY | Extension

Huron River Watershed Council

MICHIGAN LAKES AND STREAMS ASSOCIATION