# COOPERATIVE LAKES MONITORING PROGRAM TRAINING FOR

# Dissolved Oxygen and Temperature



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# **Dissolved Oxygen and Temperature**

## What does this data tell you:

- Does my lake stratify (separate into layers in the summer?
- Is oxygen present at the bottom of my lake?
- At what depths will I find fish in my lake?
- What is my lake's trophic status?

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# Lake Temperature/Density Zones



Warm upper zone; light and nutrients

Metalimnion: rapid decrease in temperature and increase in water density

Cold bottom zone; low oxygen

http://rmbel.info/wp-content/uploads/2013/04/Lake\_layers\_summer.jpg

# How Does Wind Affect the Lake



# **Temperature Profiles**



http://wps.prenhall.com/wps/media/objects/3042/3116027/CH12/FG12\_15.JPG

# Lake Temperatures During the Seasons



Annual Pattern of Mixing from Young, M. (2004). Thermal Stratification in Lakes. Baylor College of Medicine, Center For Educational Outreach.

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# **Temperature Profiles - Seasonally**



# **Dissolved Oxygen Profiles - Seasonally**



https://www.fondriest.com/environmental-measurements/parameters/water-quality/dissolved-oxygen/

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## Lotus Lake, Oakland County



Summary			
Average TSI	2017	2014-2016	1994
Lotus Lake	33	35	41
All CLMP Lakes	40	40	43

With an average TSI score of 33 based on 2017 Secchi transparency, chlorophyll-a, and summer total phosphorus data, this lake is rated as an oligotrophic lake.

The lake keeps some dissolved oxygen in the bottom waters through mid-summer, but by late summer the lake has stratified and the bottom water is devoid of oxygen.

There is too little data to assess long term trends. CLMP recommends eight years of consistent monitoring in order to develop a strong data baseline.

## Lake Independence, Marquette Co.



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Higgins Lake, Roscommon County



# How Does the DO Program Work?

- You may get matched with 2-3 other groups to share a DO meter. We leave the sharing logistics to you.
- Some lake groups purchase their own meter; if interested talk to us so you know which type to get.
- How often to measure? Your goal should be twice a month May-September, as evenly divided as you can.

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# DO/Temperature Equipment Kit

- Oxygen Meter (550A or Pro-20)
- DO probe/cable (various lengths)
- Probe electrolyte solution bottle
- Probe membrane cap (in film canister)
- Quick-start calibration card
- Equipment storage box
- □ Spare batteries





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# Probe of Each Meter





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# **Prepare for Sampling**

- Turn on your meter and calibrate it
- Pack up your equipment
- Check for your data forms
- Bring boating safety equipment and a friend for data recording
- Calm and dry weather conditions



## 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
- Take the measurements and fill out the data form!



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		County:	Township:
ake Sampl	ling Site (Field ID)	Number:	(mark location on map below)
atitude:		Longitude:	
/olunteer I	Monitor Name(s):	:	
Date Samp	led:	Time:	
Weather C	onditions (sunny,	cloudy, windy, etc.):	
Unusual Co	nditions (heavy r	ain, boating, etc.):	
Sampling S	tation Depth (me	asured):	feet
DO/Temp.	Meter (circle one	): YSI Model 550A YSI Pro2	20
CLMP Mete	er ID# :		(If this is your meter, enter «Our Meter
Calibration	Values (For 550A	only; Pro20 does not give o	alibration values):
00:	% air satura	ition (Must be 93-103%; Trout	sleshoot if out-of-range)
Temperatu	re: °	C Lake Altitude Value:	(x100 ft.)
	below draw an ou ocation (this shou	utline of your lake (or attacl ald be the deepest basin in	n copy of lake map). Mark your DO/temper the lake) and write the total lake depth a
sampling k			
sampling k location.	North		
in the box sampling lo location.	North		
n the box ampling lo ocation.	North		

Surface Area:

Lake Name:\_

### https://www.mytopo.com/Michigan

#### Michigan Placenames by County

Find topographic maps, aerial photos, and satellite images for every place named by the US Geological Survey. Choose a county to see the full place name listings.

County     Usion Yacona     County     Usion Yacona     County     Usion Yacona     County     Usion Yacona     Yacona       Alona County     328 Jaces     Handa County     Op Jaces     Mathama     71 Jaces       Alona County     521 Jaces     Handa County     74 Jaces     Mathama County     29 Jaces       Alona County     347 Jaces     Handa County     74 Jaces     Handa County     102 Jaces       Alona County     347 Jaces     Iana County     488 Jaces     Dakad County     203 Jaces       Antra County     347 Jaces     Iana County     448 Jaces     Datas     203 Jaces       Antra County     347 Jaces     Iana County     439 Jaces     448 Jaces     Datas     448 Jaces       Barca County     347 Jaces     Iana County     439 Jaces     448 Jaces     448 Jaces       Barca County     347 Jaces     Iana County     439 Jaces     459 Jaces       Barca County     347 Jaces     Iadaa County     459 Jaces     339 Jaces       Barca County     347 Jaces     Iadaa County     459 Jaces     339						
Alcons Contry     328 places     Hillsdial Contry     602 places     Mattalin Contry     70 places       Alcons Contry     611 places     Hourn Contry     745 places     Mattalin Contry     79 places       Aldona Contry     1078 places     Human Contry     745 places     Mataboon Contry     930 places       Aldona Contry     347 places     Introdum Contry     745 places     Mataboon Contry     930 places       Altern Contry     455 places     Introdum Contry     410 places     Optimize     Optimize     430 places       Annas Country     453 places     Introdum Contry     741 places     Optimize     Optimize     430 places       Barry Country     639 places     Introdum Contry     731 places     Optimize     Optimize     Optimize     Optimize     Optimize     Optimize     Optimize     Optimize     Optimize     Also places     Disces     Optimize	County	USGS Placenames	County	USGS Placenames	County	USGS Placenames
Aber Contry     612 places     Haudhon Courty     794 places     Mattemano, Courty     930 places       Algean Courty     1028 places     Hun Courty     795 places     Mattemano, Courty     930 places       Algean Courty     437 places     Jonta Courty     480 places     Matemano, Courty     930 places       Admain Courty     457 places     Jonta Courty     480 places     Oxdana Courty     930 places       Admain Courty     337 places     Jona Courty     410 places     Oxdana Courty     400 places       Barry Courty     639 places     Labella Courty     410 places     Oxdana Courty     400 places       Barry Courty     639 places     Labella Courty     530 places     Oxdana Courty     450 places       Barry Courty     430 places     Labella Courty     350 places     Diaces     Diaces       Barry Courty     430 places     Matemano, Courty     350 places     Diaces     Diaces       Barry Courty     430 places     Matemano, Courty     350 places     Diaces     Diaces       Barry Courty     430 places     Labeano, Courty     <	Alcona County	328 places	Hillsdale County	602 places	Montcalm County	671 places
Alegan County     103 ploces     Hum County     75 ploces     Humksone County     812 ploces       Alegan County     450 places     Ion Lounty     480 ploces     Deata     2003 places       Alema County     450 places     Ion Lounty     480 ploces     Deata     County     430 places       Arma County     430 places     Ion County     480 ploces     Deata     County     430 places       Baraya County     437 places     Ions County     710 ploces     Deata     County     480 places       Baraya County     437 places     Ions County     710 places     Deata     County     410 places       Baraya County     450 places     Ions County     450 places     Deata     County     450 places       Baraya County     152 places     Iolabala County     450 places     Discola     County     430 places       Brann County     152 places     Kenternouty     570 places     Barayang County     330 places       Calibaran County     940 places     Lake County     730 places     Baraka County     130 places	Alger County	621 places	Houghton County	794 places	Montmorency County	299 places
Alexna Country     347 places     Ingham Country     489 places     Maxim Country     482 places     Ingham Country     488 places     Qualand Country     430 places       Antim Country     455 places     Joina Country     440 places     Qualand Country     430 places       Barra Country     233 places     Joina Country     440 places     Qualand Country     430 places       Barra Country     637 places     Joina Country     410 places     Openaw Country     460 places       Barra Country     639 places     Jackan Country     350 places     Openaw Country     450 places       Barra Country     630 places     Jackan Country     300 places     Openaw Country     450 places       Barra Country     450 places     Katala Country     250 places     Disaou Country     450 places       Barra Country     450 places     Katala Country     750 places     Disaou Country     130 places       Clanar Country     540 places     Labara Country     520 places     Disaou Country     30 places       Clanar Country     570 places     Labare Country     750 places     S	Allegan County	1028 places	Huron County	745 places	Muskegon County	930 places
Antmic Quarty     455 places     Join Courty     486 places     Qualand Courty     203 places       Arans, Courty     357 places     Joins, Courty     410 places     Qualand Courty     430 places       Barra, Courty     357 places     Long, Courty     410 places     Qualand Courty     430 places       Barra, Courty     357 places     Long, Courty     410 places     Quaras, Quarty     450 places       Barry, Courty     450 places     Jaakan, Courty     350 places     Quaras, 445 places       Barra, Courty     450 places     Jaakan, Courty     30 places     Quaras, 445 places       Barra, Courty     450 places     Long, Courty     450 places     400 places       Barra, Courty     450 places     Kanas, Courty     30 places     1019 places       Calaban, Courty     940 places     Lake, Courty     370 places     Barra, Courty     305 place       Calaban, Courty     570 places     Lake, Courty     370 places     Barra, Courty     305 place       Calaban, Courty     570 places     Lake, Courty     730 places     Barra, Courty     350 place </td <td>Alpena County</td> <td>347 places</td> <td>Ingham County</td> <td>1097 places</td> <td>Newaygo County</td> <td>812 places</td>	Alpena County	347 places	Ingham County	1097 places	Newaygo County	812 places
Artena Country     293 places     Jaco Country     410 places     Octama Country     440 places       Barry Country     57 places     Lion Country     741 places     Openany Country     440 places       Barry Country     650 places     Labella Country     535 places     Openany Country     460 places       Barry Country     680 places     Jackan Country     535 places     Openany Country     450 places       Barry Country     680 places     Jackan Country     506 places     Openany Country     450 places       Barry Country     152 places     Kalanazo Country     450 places     Discold Country     470 places       Brann Country     152 places     Kawesnaw Country     450 places     Discold Country     30 places       Calhon Country     570 places     Laber Country     750 places     Basing Country     170 places       Calabarcia Country     150 places     Laberana Country     170 places     Saning Country     150 places       Calabarcia Country     150 places     Laberana Country     170 places     Saning Country     150 places       Calabarcia Country	Antrim County	465 places	Ionia County	488 places	Oakland County	2503 places
Barrya County     397 places     Ion County     414 places     Openativ County     400 places       Barry County     659 places     Labella County     535 places     Octanayon County     455 places       Barry County     659 places     Labella County     535 places     Octanayon County     455 places       Barry County     450 places     Labella County     450 places     Octanayon County     450 places       Barria County     450 places     Kainazoo County     930 places     Octanayon County     450 places       Barria County     453 places     Kaina County     171 places     Places     Places       Clanan County     949 places     Laber County     750 places     Places     Splaces       Clanan County     570 places     Laber County     750 places     Splaces     Splaces       Clanarouty     700 places     Laber County     750 places     Splaces     Splaces       Clanarouty     700 places     Laber County     750 places     Splaces     Splaces       Clanarouty     700 places     Laber County     750 places	Arenac County	283 places	Iosco County	410 places	Oceana County	493 places
Barry County     639 places     Jabella County     533 places     Ontonagon County     616 places       Barr County     450 places     Jakason Conty     950 places     Occasid County     445 places       Barric County     450 places     Salmaso County     350 places     Occasid County     445 places       Barrin County     450 places     Salmaso County     300 places     Occasid County     403 places       Barrin County     453 places     Manaso County     305 places     Occasid County     403 places       Calanon County     403 places     Marci County     252 places     Presure Lounty     109 places       Calanon County     940 places     Marci County     250 places     Presure Lounty     330 places       Calanon County     570 places     Lake County     730 places     Salmason County     330 places       Calanowa County     570 places     Lake County     102 places     Salmason County     350 places       Calanowa County     120 places     Lakeniau County     102 places     Salmason County     550 places       Cansowa County     14 places <td>Baraga County</td> <td>397 places</td> <td>Iron County</td> <td>741 places</td> <td>Ogemaw County</td> <td>440 places</td>	Baraga County	397 places	Iron County	741 places	Ogemaw County	440 places
Bar County     668 places     Jackon County     679 places     Occesil County     459 places       Banzia County     430 places     Kalamazo Cuunty     450 places     Discola County     450 places       Banzia County     1322 places     Kalamazo Cuunty     460 places     Discola Cuunty     400 places       Branin County     1323 places     Kalamazo Cuunty     460 places     Discola Cuunty     400 places       Cahana Cuunty     430 places     Kanz County     750 places     Baco     Discola Cuunty     300 places       Cahana Cuunty     570 places     Lacenty     750 places     Baco     Discola Cuunty     300 places       Chabray Cuunty     570 places     Lacenty     750 places     Bacola Cuunty     600 places       Chabray Cuunty     170 places     Lacenty     700 places     Solation Cuunty     600 places       Chabray Cuunty     170 places     Lacenty Cuunty     170 places     Solation Cuunty     600 places       Chabray Cuunty     170 places     Lacenty     71 places     Solation Cuunty     600 places       Chabray Cuunty	Barry County	629 places	Isabella County	535 places	Ontonagon County	616 places
Barbaic County     430 places     Malamazon County     930 places     Octoda County     927 places       Barmin County     430 places     Malabaic County     450 places     Malabaic County     100 places     Malabaic County     100 places       Calhoan County     430 places     Malabaic County     520 places     Malabaic County     100 places       Calhoan County     430 places     Malabaic County     520 places     Persour Lisle County     30 places       Calhoan County     570 places     Lahae County     750 places     Barlos County     80 places       Chabryan County     570 places     Lahaes County     750 places     Salintary County     80 places       Chabryan County     570 places     Lahaes County     750 places     Salintary County     80 places       Chabryan County     570 places     Lahaes County     450 places     Salintary County     80 places       Chabryan County     570 places     Lahaes County     770 places     Salintary     80 places       Chardocunty     670 places     Lahaes County     770 places     Salintary     80 places	Bay County	688 places	Jackson County	959 places	Osceola County	445 places
Barrian County     122 plotes     Salkaka County     940 plotes     Mont     1010 plotes       Branch County     940 plotes     Mont     052 plotes     Prance Lounty     930 plotes       Calanan County     940 plotes     Mont     652 plotes     Prance Lounty     930 plotes       Calanan County     950 plotes     Lake County     952 plotes     Prance Lounty     930 plotes       Calanan County     570 plotes     Lake County     730 plotes     Software County     930 plotes       Calarevacturity     570 plotes     Later County     700 plotes     Software County     950 plotes       Calarevacturity     570 plotes     Later County     102 plotes     Software County     950 plotes       Calarevacturity     570 plotes     Later County     102 plotes     Software County     550 plotes       Calarevacturity     570 plotes     Later County     102 plotes     Software County     560 plotes       Calarevacturity     516 plotes     Later County     90 plotes     Software County     500 plotes       Calared County     141 plotes     Macinta Coun	Benzie County	430 places	Kalamazoo County	930 places	Oscoda County	257 places
Branch County     93 places     Kart County     912 places     Datasa Lalou     90 places       Calhoan County     90 places     Karte County     92 places     Basca Lalou     93 places       Calhoan County     93 places     Lalou     93 places     Basca Lalou     93 places       Calhoan County     95 places     Lalou     93 places     Basca Lalou     93 places       Calhoan County     95 places     Lalou     93 places     Basca Lalou     176 places       Calhoroxin County     150 places     Laedana County     95 places     Solalia County     80 places       Calane County     150 places     Laedana County     95 places     Solalia County     80 places       Calane County     150 places     Lanouto County     95 places     Solalia County     160 places       Candra County     144 places     Laiouto County     157 places     Solalia County     160 places       Diching County     141 places     Manite County     157 places     Manite County     160 places       Diching County     161 places     Manite County     164 place	Berrien County	1252 places	Kalkaska County	346 places	Otsego County	403 places
Cathoan County     94 places     Kennemary County     652 places     Persous lale County     933 places       Case County     659 places     Lake County     376 places     State County     186 places     State County     197 places     State County	Branch County	463 places	Kent County	2171 places	Ottawa County	1109 places
Casa: Country     539 places     Lake Country     579 places     Bascommon Country     336 places       Charlewood Country     570 places     Laneart Country     700 places     Softwark Country     110 places       Charlewood Country     570 places     Laneart Country     500 places     Softwark Country     110 places       Charlewood Country     570 places     Laneares Country     500 places     Softwark Country     500 places       Charlewood Country     520 places     Laneares Country     520 places     Softwarkse Country     550 places       Charlewood Country     520 places     Laneares Country     570 places     Softwarkse Country     550 places       Charlewood Country     514 places     Laneares Country     570 places     Softwarkse Country     500 places       Charlewood Country     514 places     Lacean Country     500 places     Softwarkse Country     500 places       Charlewood Country     571 places     Macharle Country     571 places     Macharle Country     540 places       Charlewood Country     571 places     Macharle Country     1244 places     Varine Country     310 p	Calhoun County	994 places	Keweenaw County	652 places	Presque Isle County	393 places
Charlevolk County     557 places     Lanear County     760 places     Statistic County     1176 places       Chebryon County     570 places     Leefanau County     450 places     Sinalas County     450 places       Chebryon County     1266 places     Leefanau County     570 places     Sinalas County     555 places       Clance County     1266 places     Leefanau County     752 places     Sinalas County     555 places       Clance County     446 places     Lung County     371 places     Sinasassea County     556 places       Clance County     344 places     Lung County     371 places     Si. Clant County     506 places       Clanta County     314 places     Manomb County     517 places     Si. Clant County     506 places       Clanta County     314 places     Manomb County     517 places     Jung County     70 places       Dichanson County     416 places     Manomb County     517 places     Jung County     138 places       Dichanson County     576 places     Manomb County     572 places     Jung County     139 places       Endon County     578 p	Cass County	639 places	Lake County	378 places	Roscommon County	336 places
Cataborgin County     570 places     Lesinau County     450 places     Sinilar County     600 places       Chinoewa, County     1050 places     Lamaves, County     1027 places     Schooltraft, County     655 places       Clare, County     446 places     Lamaves, County     727 places     Schooltraft, County     656 places       Clare, County     656 places     Lamouto, County     721 places     Sc. Clarety     1046 places       Crandrout, County     314 places     Macinas, County     807 places     Sc. Josseth County     90 places       Dada, Gounty     121 places     Macrinas, County     807 places     Sc. Josseth County     90 places       Edinas, County     131 places     Macrinas, County     804 places     Sc. Josseth County     720 places       Edinas, County     678 places     Macrinas, County     124 places     Varian Ecounty     136 places       Emmet, County     536 places     Macrinas, County     424 places     Varian Ecounty     387 places       Emmet, County     356 places     Macrinas, County     556 places     Varian Ecounty     137 places       <	Charlevoix County	567 places	Lapeer County	763 places	Saginaw County	1176 places
Chipocessa County     1206 places     Lansarese County     525 places     Schoolarzaf County     555 places       Clare County     448 places     Lukington County     72 places     Schoolarzaf County     565 places       Clare County     626 places     Lucit County     77 places     Schoolarzaf County     500 places       Clare County     314 places     Lucit County     77 places     Schoolarzaf County     500 places       Candrod County     71 places     Macionar County     600 places     Schoolar County     700 places       Data County     71 places     Macroinar County     157 places     Mana Burne County     150 places       Eden County     678 places     Manon County     154 places     Marchine County     152 places       Emmet County     558 places     Manon County     52 places     Warne County     379 places       Gandom County     359 places     Manon County     52 places     Warne County     379 places       Gandom County     359 places     Manon County     52 places     Warne County     379 places	Cheboygan County	570 places	Leelanau County	450 places	Sanilac County	800 places
Claims Country     448 places     Lukingstan Country     752 places     Shamassee Country     566 places       Claims Country     636 places     Luking Country     371 places     Sc. Claim Country     506 places       Claims Country     314 places     Marines Country     906 places     Sc. Claim Country     500 places       Dallas Country     314 places     Marines Country     157 places     Sc. Claim Country     500 places       Dallas Country     71 places     Marines Country     157 places     Toxicala Country     720 places       Daldas Country     678 places     Marines Country     494 places     Vaim Burene Country     158 places       Emmet Country     558 places     Mason Country     452 places     Varma Country     379 places       Emmet Country     358 places     Mason Country     452 places     Varma Country     379 places       Gandon Country     358 places     Mason Country     358 places     Varma Country     452 places	Chippewa County	1206 places	Lenawee County	1027 places	Schoolcraft County	565 places
Cintron Country     526 places     Luce Country     571 places     51. Clait Country     1046 places       Crandrod Country     314 places     Matcinas Country     809 places     52. Joszeth Country     500 places       Data Country     711 places     Matomic Country     1571 places     Size Clait Country     500 places       Data Country     451 places     Matomic Country     194 places     Vanability     194 places       Exton Country     451 places     Matomic Country     144 places     Vanability     1363 places       Exton Country     558 places     Matomic Country     452 places     Vanhenaver Country     1383 places       Gametee Country     358 places     Matomic Country     52 places     Varing Country     427 places	Clare County	448 places	Livingston County	752 places	Shiawassee County	586 places
Craniford County     314 places     Mackinas County     890 places     SL. Joseph County     590 places       Delta County     712 places     Macom County     1572 places     Tuscola County     720 places       Didatason County     451 places     Manistera County     494 places     Van Buten County     1962 places       Enon County     678 places     Manistera County     494 places     Van Buten County     1963 places       Emmet County     558 places     Manos County     452 places     Vanne County     387 places       Gameser County     358 places     Macon County     550 places     Vanne County     427 places       Gameser County     358 places     Macon County     50 places     Vanne County     427 places	Clinton County	626 places	Luce County	371 places	St. Clair County	1046 places
Dalka County     721 places     Marcomb County     1571 places     Tuscola County     720 places       Dickinson County     401 places     Manitate County     404 places     Van Burren County     489 places       Editor County     578 places     Marcinitate County     494 places     Van Burren County     489 places       Emmet County     578 places     Marcinitate County     494 places     Vanthe County     391 places       Emmet County     588 places     Mason County     452 places     Vanne County     379 places       Granemet County     197 places     Mason County     452 places     Vanne County     427 places       Granemet County     358 places     Mason County     50 places     Vanthe County     427 places	Crawford County	314 places	Mackinac County	809 places	St. Joseph County	590 places
Dickinson County     451 places     Manistee County     494 places     Van Buren County     848 places       Eaton County     676 places     Marouetin County     1244 places     Van Buren County     1363 places       Emmed County     558 places     Marouetin County     452 places     Warne County     1387 places       Generace County     147 places     Macosta County     516 places     Warne County     427 places       Generace County     358 places     Merosta County     562 places     Vane County     427 places	Delta County	721 places	Macomb County	1571 places	Tuscola County	720 places
Eaton County     578 places     Marcuatte County     1244 places     Wanhtenner County     1353 places       Emmet County     558 places     Mason County     452 places     Warne County     3879 places       Generate County     1477 places     Mesotat County     516 places     Warne County     427 places       Generate County     1379 places     Mesotat County     516 places     Wardord County     427 places	Dickinson County	461 places	Manistee County	494 places	Van Buren County	848 places
Emmit County     558 places     Maron County     452 places     Warm County     387 places       Generace County     1477 places     Macota County     516 places     Warford County     427 places       Galown County     328 places     Maronemes County     550 places     Warford County     427 places	Eaton County	678 places	Marguette County	1244 places	Washtenaw County	1363 places
Genesee County     1477 places     Mecosta County     516 places     Wexford County     427 places       Gladwin County     338 places     Menominee County     562 places       427 places	Emmet County	558 places	Mason County	452 places	Wayne County	3879 places
Gladwin County 358 places Menominee County 562 places	Genesee County	1477 places	Mecosta County	516 places	Wexford County	427 places
	Gladwin County	358 places	Menominee County	562 places		
Gogebic County 865 places Midland County 556 places	Gogebic County	865 places	Midland County	556 places		
Grand Traverse County 654 places Missaukee County 273 places	Grand Traverse County	654 places	Missaukee County	273 places		
Gratiot County 423 places Monroe County 977 places	Gratiot County	423 places	Monroe County	977 places		

Thompsonville (Crystal Mountain) area is 794 feet

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<b>+</b>	**CAUTION: Re	member to switc	h to mg/l mode be	fore making oxyg	en measurements,	<b></b>
	Depth (ft.)	Temp (ºC)	DO (mg/l)	Depth (ft.)	Temp (ºC)	DO (mg/l)
	1			37½		
	5			40		
	10			421⁄2		
	15			45		
	17½			50		
	20			55		
	221⁄2			60		
	25			65		
	27½			70		
	30			75		
	321/2			80		
	35			Note: Take la bottom sedime	st measurement nts of the lake.	2½-3 ft. above

<u>Graphing:</u> If you want to graph your data, you can print the graph from this website: https://micorps.net/wp-content/uploads/CLMP-DO-Temp-DataPlottingForm.pdf



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

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### Data Entry and Data Turn in

#### DATA ENTRY

Check ONE box:

A volunteer has entered the field notes into the MiCorps Data Exchange (before October 30!)
Volunteer Name \_\_\_\_\_\_Date entered \_\_\_\_\_\_.

The field notes have not been entered into the MiCorps Data Exchange.

#### DATA SHEET TURN IN

No matter what box you check above, please do the following: Make a copy for your records, and mail data form(s) by October 30 to: MLSA, P.O. Box 303, Long Lake, MI 48743

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### End of the year- returning the meters

- Please return the meter directly to Marcy Knoll Wilmes (EGLE-Lansing), or to an EGLE District Office.
- Contact me at (517) 342-4348 or <u>knollm@michigan.gov</u> to arrange the drop-off
- Please be sure to have the meter returned by the end of October
- Upon returning it, just have the calibration chamber sponge damp-no pooled water in the chamber, please.

# Calibration Step by Step

Pro20



550A



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# **Pro20** Calibration



Turn On the Meter



Panel When On – Let Meter Stabilize for 5 Minutes



Push Calibrate Button – Hold 3 Seconds

# Pro20 Calibration



Screen Will Show "Calibrating %DO"



If the Meter Calibrated Properly, Screen Will Show "Calibration Successful"

If the Meter Does Not Show Previous Screen, Allow More Time to Stabilize and Retry Calibration

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# 550A Calibration



Panel When On – Let Meter Stabilize for 10 Minutes

To Calibrate – Push the Up and Down Buttons at the Same Time

# **550A** Calibration



"CAL" Will Appear on the Screen, Hit Enter



Adjust the Elevation Based on Your Location Using the Up and Down Arrow Keys and Hit Enter (9 would be appropriate for an area of 900 ft in elevation)



The Percent Air Saturation Needs to Display 93-103%. If it is, Press Enter. If Over or Under, turn the Meter Off and On and Allow it to Re-Stabilize

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# **550A** Calibration



The Salinity Should Always Read 0.0 Since We Only Sample Freshwater. Hit Enter.



The Display Will Show % Saturation, Hit the Mode Button to Show mg/L



Display Screen Showing mg/L. Your Dissolved Oxygen Readings Should be Recorded in mg/L

# Let's Calibrate our Meters

- □ We'll separate by DO meter type
  - **□**550A
  - ■Pro20
- Follow along using laminated calibration card

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# Take a practice measurement!

- Set the meter on mg/L
- Try it out in a bucket lake
- Remember to use a slight jigging motion.
- Fill out an evaluation and leave when you are ready!