

Winter Newsletter

ALPOA | P.O. Box 184 | Lake Ann, Michigan 49650

Ann Lake Property Owner's Association President's Letter

Dear Ann Lake Residents,

Welcome to 2015, the 16th year of the Lake Association. I would like to thank our Board Members who have served us well and have left the Board. We greatly appreciate all they have done for the Association. We would like to thank Jane Bluhm, Ellie Flaherty, Dave Maxson, and Beth Noe for their years of service to the Association.



Photo Scott Hedberg

- ❖ **Jane Bluhm**, 4 yrs. Vice President, President, Board
- ❖ **Ellie Flaherty**, 7 yrs. Vice President, President, Event Board Chair
- ❖ **Dave Maxson** 9 yrs. Treasurer & Water Quality Board Chair
- ❖ **Beth Noe**, 7 yrs. Vice President, President, Newsletter Board Chair

A big thank you to **Kent Taylor** for a fine job he has done the last two years as ALPOA President. To all the volunteers that have given their time and energy this past year for both the big and small jobs, we couldn't do it without you! When we work together we not only get the job done, we draw closer together, and we have the opportunity to appreciate each other and the contributions everyone makes.

I'd like to urge you all to take advantage of the benefits of being a member and volunteering. Taking on a volunteer job gives you:

- ◆ The opportunity to use your skills to contribute to the group ... or learn new skills
- ◆ Make friends by working together – on a committee or part of an event
- ◆ The chance to make a difference with your talents.

It's great. I don't know about you, but feeling like I've made a positive difference makes me feel good. I feel as though I belong to the group, and that I receive more than I've given. By lending a hand, I have a stake in the success of the association.

If you haven't "joined" the association and collected on the benefits of volunteering, opportunities await you. We always have openings, whether it is helping with an event, working on a committee or being on the board. Your support and help is needed every year.

We have four Board Member opportunities coming up for 2016 Board at the June 27th Annual Meeting. By-Laws say you must be a current member at the meeting time to run / vote & only one vote per household.

Please contact me or any board member if you have a suggestion or would like to be on the Board or participate on any of the great committees listed on our website. www.AnnLake.org

Thank you,

Scott Hedberg, President of Ann Lake Property Owners Association
scott@AnnLake.org



REMEMBERING DALE

Dale Flaherty passed away very unexpectedly in December and wonderful memories of him will always linger for those that had the opportunity to know him. Dale contributed to the Ann Lake Property Owner's Association in many ways. He will always be here in spirit and as a lasting memorial, gifts in his name will go to the improvement of Burnett Park.

Village of Lake Ann
"Burnett Park Reconstruction Fund"
PO Box 61, Lake Ann, MI 49650.

A Memorial Service will be Saturday, June 13
at 2:00 p.m. Township Hall Village of Lake Ann.

2014 Invasive Species Committee Summary Report

Submitted by Kathy Garmes Taylor

This summer has been spent primarily on eradicating invasives. BUT... the invasives have been shoreline plants. The shoreline monitoring program found NO invasive phragmites but we did find two other plants which are invasive: Japanese Knotweed (which is one of the top 20 invasive plants in Michigan according to the Northwest Michigan Invasive Species Network) and Purple Loosestrife. The purple loosestrife was removed; this invasive can be easily pulled when single plants are found. We are still working on an eradication plan for Japanese Knotweed. A brief description of Japanese Knotweed is attached.

While the invasive committee is focused on aquatic plants, individuals on the committee have been involved in several other programs. There are two other invasive plants that are becoming prevalent in the area, white sweet clover and garlic mustard. Descriptions of these efforts are also attached.

The committee has continued working on its communication program. Flyers which summarized township ordinances relating to lake ownership were distributed to riparians who rent their homes. A copy of this summary flyer can be found on our website. We also created additional sets of invasive cards for distribution this year.

The committee did not complete an aquatic lake mapping in 2014. This mapping first occurred in 2012 and was repeated in 2013 with NO aquatic invasive plants found. We decided to complete this activity every two years so you will see us out there again this summer completing this task. If anyone would like to assist and learn more about invasive plants, please contact us at Kent@annlake.org. Kent Taylor will be taking over this committee for the year as I begin my term as ALPOA Treasurer.

Japanese Knotweed

Japanese knotweed is a non-native invasive plant that was introduced from Asia as an ornamental plant. Knotweed spreads vegetatively by rhizomes and also sprouts from fragments of root and stem material, which are dispersed by water, earth moving equipment or in fill. Knotweed can contribute both to stream bank erosion and to flooding, when its large, fibrous stems wash into the water during periods of peak flow. Its rhizomes and shoots can penetrate asphalt and cracks in concrete. It is most aggressive on sites with natural or human disturbance; stream and riverbanks, roadsides and construction sites. This plant has been found along the shoreline on Pleasant View Road. We're still working on an eradication plan for this invasive plant.



White Sweet Clover

White sweet clover is growing all along Reynolds Road, on both the east and west sides of the road and along both the north and south shores of the Platte River. Several volunteers pulled much of the plant after the Road Commission completed an initial cutting. We'll continue to work with the Road Commission in the spring to hopefully avoid this overgrowth this summer. Our concern is that this plant will spread along the banks of the Platte River.



Garlic Mustard

The Northwest Michigan Invasive Species Network is attempting to locate patches of garlic mustard in Benzie County. So far, they have checked along the south side of the lake and have found patches along Birch View Trail and at the end of Pleasant View Rd. (that was me pulling garlic mustard on Memorial Day). As spots are identified, we'll work with local residents to remove and monitor the infestation. Garlic mustard prefers shade, but can tolerate full sun. Look for it along trails and roadsides, at the forest edge, along stream banks, and where soil has been turned and disturbed like recent construction sites. This is a real threat! Garlic mustard can be low rosettes of rounded leaves or 6-40" tall stalks (pictured). Garlic mustard aggressively crowds out native wildflowers, like trillium and violets, and interferes with the growth of forest tree seedlings. Its roots release a chemical into the soil, which prevents seeds of other plants from sprouting. This photo on right is an infestation at Betsie Dunes Nature Preserve.



2014 Loon Summary

Submitted by Kathy Garmes Taylor

After such a successful 2013 with 2 chicks, 2014 proved to be a disappointment. Sometime during the evening of June 19, the nest was attacked. The next day, the loons abandoned the nest! Let's hope 2015 is another year like 2014 and we have 2 chicks to again enjoy.



The buoys will be installed this spring, once the loons return and start their nesting ritual. If the lake continues to be high, we'll put out the artificial nesting platform again. Last year, we replaced the plastic eagle guard with branches. We hoped this would make it more enticing to both the loons and less visible to nearby riparians. The natural foliage did quite well on the platform, so well, the platform started to sink. So we'll be replanting the platform this spring. If anyone puts a boat in the water early in the spring and would like to assist in launching the nesting platform, let us know at loons@annlake.org



ALPOA Report on Zebra Mussels and the future by, Scott Hedberg



Botulism bacteria was blamed for the death of this loon and hundreds of others like it in northern Lake Michigan last year and in eastern Lake Ontario this year. Photo by Lisa Borre

When an invasive species enters our ecosystem, we find out all too late the impact which is responsible for over 100,000 bird deaths on the Great Lakes since 1999. In 2012 alone it was estimated that 3,000 loons died because of their eating fish who had eaten toxic algae. What does toxic algae have to do with invasive mussels?

Two species of mussels, the quagga and zebra mussels, have spread to hundreds of lakes and rivers in 34 states and have done vast economic and ecological damage. They have disrupted the ecosystem by devouring phytoplankton, the foundation of the aquatic food web thus causing a proliferation of toxic blue-green algae. It is this toxic algae which causes e botulism.

Dr. Daniel P. Molloy, an emeritus biologist at the New York State Museum in Albany, NY has been working on the mussel invasion for the last ten years. There were no natural enemies to keep the mussels in check. Till now! Dr. Molloy lead a team at the museum's Cambridge Field Research Laboratory in upstate New York. He discovered a bacterium, *Pseudomonas fluorescens* strain CL145A, that kills the mussels but appears to have little or no effect on other organisms.

As a result, New York State has awarded a license to Marrone Bio Innovations, a company in Davis, Calif., to develop a commercial formulation of the bacterium. The product, Zequanox, has been undergoing tests for several years, with promising results. (Dr. Molloy has no financial ties to the company.)

Zequanox killed more than 90 percent of the mussels in a test using tanks of water from Lake Carlos in Minnesota, said James A. Luoma, a research biologist with the United States Geological Survey in La Crosse, Wis. A control group of freshwater mussels, unionids from the Black River in Wisconsin, were unharmed. Dr. Molloy explained, "A toxin in the strain's dead cells destroys the digestive system in a mussel." "Dead cells are equally lethal as live cells, providing clear evidence that the mussels die from an intoxicating natural product, not from infection."

The U.S. Environmental Protection Agency has approved on July 2014, Zequanox for open water use to combat invasive zebra and quagga mussels in lakes, rivers, recreation areas and other open bodies of water. Private waterfront owners and natural resource managers now have an effective solution to control existing populations of invasive mussels

See more at: <http://www.marronebioinnovations.com/products/brand/zequanox/>

ALPOA 2015 Membership Report**February 2015**

Hello fellow Ann Lake riparian owners. As I write this 2015 membership report I gaze out over our beautiful frozen Ann Lake. It is difficult to imagine that on this balmy -12 degree morning, in only a few short months we will be dipping our fishing lures and tentative toes into her clear and inviting water. I find the lake restorative and wonderful all times of the year but in mid-February I do long for the milder months ahead.

I now have a full year as Membership Committee Chair under my belt. I am pleased to report that 2014 was a successful year with outreach efforts for membership reaching 87. This figure is slightly shy of the 100+ goal but clearly within reach. I am delighted to work with membership committee members Scott Hedberg, Maggie Sowers, Cheryl Thompson, Kathy Taylor and we are very hopeful that 2015 will bring us to that mark and beyond.

This is where we ask for your assistance. As the weather warms and we all begin to venture outside to admire the warmer beauty of our lake we will see and visit our neighbors and friends. Please help us to inform and educate them about ALPOA and the benefits that we all enjoy. Ann Lake is currently the only Benzie County Lake to boast no invasive plants. Only education and careful monitoring will maintain this status and ALPOA can play a significant role. Membership dues cover the costs of weekly water quality monitoring, distribution of lake rules and regulations, up-to-date information on local and state issues affecting our lake and much, much more.

If you have not already visited the Ann Lake Association webpage I encourage you to do so at www.annlake.org Renewing or paying annual dues is fast, secure, and easy. We are able to accept payment in various forms including Paypal or simply printing a membership form and mailing it along with your payment to: ALPOA Membership Box 184 Lake Ann, MI 49650. Please note that membership dues are due January 1st each year, however our costs occur throughout the year so it's never too late to support ALPOA!

Please mark your calendar to join us at the annual Picnic Meeting held each fourth Saturday in June at the Almira Township Park Pavilion. The 2015 date is **June 27th 12-2:00pm**. This meeting is open to all current ALPOA members and is always informative, fun and has plenty of great food. Please bring a dish to pass; a main meat dish and place settings will be provided.

Please contact me if you have any concerns or questions,

Membership Committee Chair

Bethany Onthank 231-941-1990

Bethany@annlake.org

2014 End of Year Treasurers Report

Last year was a very good year for membership, and thus the treasury. We received dues payments for 86 memberships plus an additional 3 pre-payments for 2015. In addition, we received \$287 in donations over and above the dues. Thank you!!

We began the year with a balance of \$5,276.75 and received income totaling \$3,687 during the course of the year. We disbursed \$4,491.85 in expenses leaving a balance of \$6,324.19 (which includes \$1852.29 in reserves) at the end of the year.

A detailed report follows and is also published on the website at www.annlake.org.

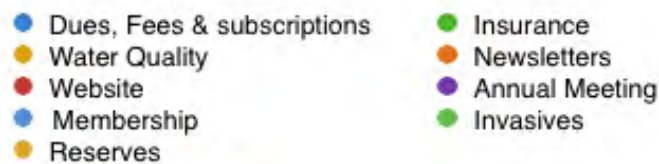
In the meantime, if you want to renew your membership for 2015, you'll find a printable membership form on page 12 of this Newsletter.

Your membership dues support water quality, health and safety, the ALPOA newsletter, loon preservation, the website, and invasive species protection and education.

2014 Expenses

44% Reserve Allocation, 13% Dues, Fees, Subscriptions, 10% Insurance, Water Quality, 8% Newsletters, 7% Membership, 3% Annual Meeting, Invasives & Website.

All Events were fee based and didn't cost the membership at large.



Ann Lake Property Owners Association			
TREASURER'S REPORT: December 15, 2014			
	Actual to date	Budget	
Beginning Balance January 1, 2014	5,276.75	5,276.75	
INCOME			
2014 membership dues paid (86)	2,520.00	2,340.00	
prepaid 2015 membership dues	90.00		
donations	287.00	400.00	
PPPR Income	790.00	950.00	
Total Income	3,687.00	3,690.00	
EXPENSES			
Michigan Lakes & Streams Association; annual dues	90.00	90.00	
Subscriptions to Michigan Riparian (for 2015)	336.00	420.00	
Liability insurance premium (annual)	389.88	400.00	
State filing fee	20.00	20.00	
PO box rent and misc postage	39.80	50.00	
PayPal Fees	12.60	25.00	
Water level gauge	50.45		
Water Quality:			
enrollment in CLMP (lake monitoring program)	212.00	212.00	
mileage to deliver samples for analysis	162.40	65.00	
Newsletters:			
Postage	126.00	200.00	
Printing/supplies	184.46	144.20	
Website maintenance		50.00	
Invasive Species:			
Sample shipping			
Communication and brochures	35.30	150.00	
Special Events:			
Annual meeting	112.14	205.00	
PPPR expenses (offset by income above)	732.22	950.00	
Membership:		550.00	
Letters and brochures	148.41		
follow-up mailing to non-members			
Health and Safety			
Brochure boxes at launch and campground	21.19		
Boating map/safety brochures (@ \$0.10)			
Allocations to reserves (unbudgeted, from undesignated Operating)			
Website hosting fees	119.00	119.00	
Invasive Species Reserve	1,000.00		
Legal Reserve	500.00		
Loon Reserve	150.00		
Sign Maintenance (@ boat landing)	50.00		
Total Expenses	4,491.85	3,650.20	
Ending Balance Operating Fund December 15, 2014	4,471.90	5,316.55	
Ann Lake Property Owners Association			
BALANCE SHEET			
December 15, 2014			
	Deposit Balances	Fund Balances	
Operating (Undesignated) Fund		4,471.90	
Designated Reserves:			
Invasive Species		1,000.00	
Website hosting fees		(2.64)	
Sign maintenance at boat landing		75.00	
Legal		600.00	
Loon		179.93	
Honor Bank checking	6,324.19		
PayPal	0.00		
Total Deposits	6,324.19	6,324.19	



ALPOA SPECIAL EVENTS 2015

MARK YOUR CALENDARS FOR:

1. **Saturday, June 27** for the **ANNUAL MEETING & PICNIC, 12:00 NOON TO 2:00 PM** at the Almira Township Park Main Pavilion on Ole White Drive. Entree, table ware and water provided. Please bring a side dish or dessert to share. **Please RSVP if you are coming** to Maggie Sowers (616-292-8364) so we know how many are coming.
2. **Saturday, July 4** for the **ANNUAL UNOFFICIAL BOAT PARADE**. Gather at the big sandbar in the middle of the lake at **1:00 PM**. Then follow the lead boat with "Support ALPOA" sign as we cruise around Ann Lake to salute our wonderful country.
3. **Saturday, August 1** for the **6th ANNUAL PADDLE, PEDAL, PADDLE, ROW AROUND ANN LAKE, 8:00 AM to 11:00 AM** followed by a **Pizza Party at 12:30 PM**. See registration form for complete information. REGISTRATION FORMS MUST BE RECEIVED BY JULY 15, 2015 so tee shirts can be ordered in time for the event.
4. **Sunday, September 6, 2:00 PM TO 4:00 PM** weather permitting. **LABOR DAY WEEKEND SUMMER SWAN SONG SOIREE**. Say goodbye to summer while socializing with fellow Riparians, friends and family. Raft your boat with others over Ann Lake's center sandbar. Bring your own snacks/beverages/boat bumpers bow and stern lines.
5. **ALPOA PHOTO GALLERY** is an ongoing year round event. See website www.annlake.org Photo Gallery for information and to view photos.

6th ANNUAL PADDLE, PEDAL, PADDLE, ROW AROUND ANN LAKE

For kayaks, pedal boats, canoes, row boats, paddle boards ONLY . No motors, no sails. **THIS IS NOT A RACE.**

It is a slow, fun way to enjoy all the wonderful nooks and crannies and wild life around Ann Lake. And, you'll be able to brag, "I went all the way around Ann Lake under my own power!"

SATURDAY, AUGUST 1, 2015, 8:00AM TO 11:00 AM (no wake boating hours). SUNDAY, AUGUST 2 is the **alternate date**, if the weather/wind is unfavorable on August 1..

Committee docks or boats will be labeled A, B, C, D, E, F, and anchored around the lake in alphabetical order. You will check in at the Committee dock or boat closest to your launch area, then, move in a counter clockwise direction (the shore line always on your right) in alphabetical order, checking in at each Committee dock or boat. For instance, if you start at "D", then move to "E", "F", "A", "B", "C" and BACK to your launch site to complete your circumnavigation of Ann Lake.

Certificates of Accomplishment will be awarded to all who check in at all 6 check points thus completing the circumnavigation of Ann Lake. These people will also have their name put into a hat for a drawing for various prizes.

REGISTER NOW for the August 1, 2015 People Powered, Paddle, Pedal, Paddle, Row event. \$ 15.00 for each person participating covers the cost of a special tee shirt, plus water and snacks along the course, or \$5 with NO shirt.

PLUS, a Post Paddle, Pedal, Paddle, Row Pizza Party for Participants, Phamily, and Phriends.

What: Eat Pizza; maybe win a Prize Drawing; Reminisce about your Participation.

When: 12:30 PM after PPPR Event

Where: Burnett Park Pavilion, Downtown Lake Ann across from the LA Brewery

Cost: \$4.00 person over and above the PPPR registration fee

REGISTRATION FOR ALPOA PEOPLE POWERED EVENT AUGUST 1, 2015

Number Registering for PPPR Event WITH Shirt _____ @ \$ 15.00 per person. Amount Due _____

Number Registering for PPPR Event - NO Shirt _____ @ \$ 5.00 per person Amount Due _____

Number for Pizza Party _____ @ \$ 4.00 per person.....Amount Due _____

Total Amount Due _____

Name(s) of person(s) registering for PPPR Event _____
Please Print

Number of each shirt size needed: Adult: S ___ M ___ L ___ XL ___ XXL ___ 3XL ___ 4XL ___
Youth: S ___ M ___ L ___

Make check payable to Ann Lake Property Owners' Association

Send to: Treasurer,
Ann Lake Property Owners' Association
P.O. Box 184
Lake Ann, MI 49650

YOUR SUMMER ADDRESS

Name _____
Address _____

Email _____

REGISTRATION MUST BE IN BY JULY 15, 2015 so shirts can be ordered in time

NOTE: Tee shirts should be picked up Friday, July 31, between 5 - 6 pm at the Pavilion in the Lake Ann Village Park across from the LA Microbrewery.

ANN LAKE PROPERTY OWNERS ASSOCIATION



Annual Membership Application Jan. 1 to Dec. 31

Thank you for your continued support ! Dues and donations are not tax deductible. ALPOA is a 501c4 non-profit corporation and not a "charitable" organization.

Your contributions are used to protect the quality of our lake, protect the value of our properties and to promote social opportunities for our members.

Yearly Membership Dues \$ _____ \$30.00 ___ New ___ Renewal

Additional Donation \$ _____

Total Amount Paid \$ _____ For calendar year 20 _____

(Mail Check or go to website "Membership" pay online via PayPal link)

Please Enter Owner's Names:

Please Print Information:

Name/s: _____

Home Address: _____

City _____ State _____ Zip _____

Phone _____ Lake Phone _____

Summer Address: _____ Lake Ann, MI 49650

E-Mail Address: _____

I would like a subscription to the Michigan Riparian Magazine: Yes ___ No ___

(This costs the Association \$12 four issues, this is optional.)

I would like my Newsletter first class mailed to me: Yes ___ No ___ *(It will be emailed.)*

(Mailing costs the Association \$)

It can be accessed online as well.

I would like to volunteer to ALPOA: Yes ___ Committee: _____

Comments: _____

Scan completed form or print as a PDF and email to: Kathy@AnnLake.org

or

Mail to: P.O. Box 184 Lake Ann, MI 49650

www.annlake.org



2014 Data Report for Ann Lake, Benzie County

Michigan Lakes– Ours to Protect

The CLMP is brought to you by:



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

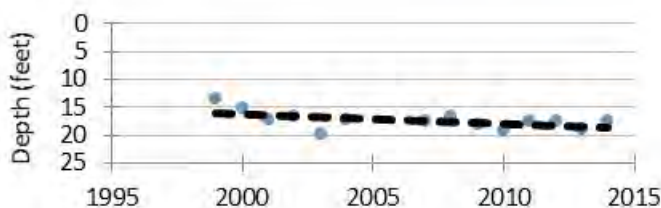
Ann Lake, Benzie County

2014 CLMP Results



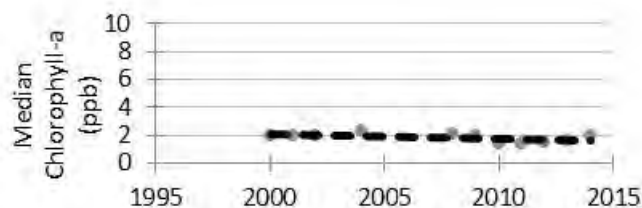
Secchi Disk Transparency (feet)

Year	# Readings	Min	Max	Average	Std. Dev	Carlson TSI
2014	17	13.0	25.0	17.5	3.4	36
2009-2013	86	7.0	31.5	18.2	5.2	35
1999-2008	123	8.0	30.0	16.7	4.9	37
2014 All CLMP	3050	2.0	50.0	13.1	2.1	41



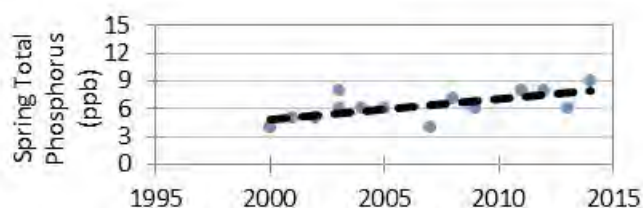
Chlorophyll-a (parts per billion)

Year	# Samples	Min	Max	Median	Std. Dev	Carlson TSI
2014	5	1.2	2.5	2.0	0.5	37
2009-2013	25	<1.0	2.5	1.5	0.4	35
2000-2008	24	<1.0	3.0	1.5	0.6	37
2014 All CLMP	583	<1.0	23.5	2.0	2.9	37



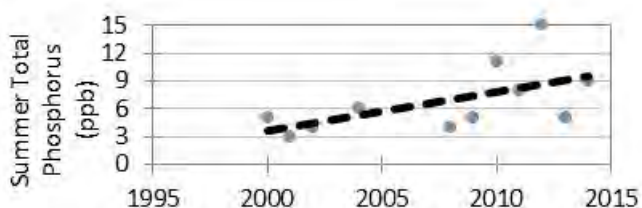
Spring Total Phosphorus (parts per billion)

Year	# Samples	Min	Max	Average	Std. Dev
2014	1	9	9	9.0	NA
2009-2013	4	6	8	7.0	1.2
2000-2008	10	<5 T	8	5.5	1.4
2014 All CLMP	164	3 W	77	13.2	11.1

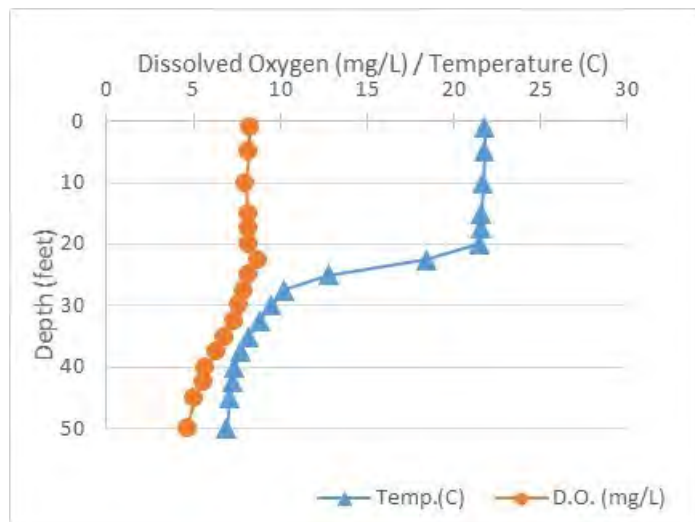


Summer Total Phosphorus (parts per billion)

Year	# Samples	Min	Max	Average	Std. Dev	Carlson TSI
2014	1	9	9	9.0	NA	36
2009-2013	5	5	15	8.8	4.3	34
2000-2008	5	<=3 W	6	4.4	1.1	<27
2014 All CLMP	180	4 T	62	13.5	7.9	41



Sept. Dissolved Oxygen and Water Temperature Profile



Summary

Average TSI	2014	2009-2013	1999-2008
Ann Lake	36	35	34
All Lakes	40	NA	NA

With an average TSI score of 36 based on Secchi transparency, Chlorophyll-a, and summer total phosphorus, Ann Lake is rated as between the oligotrophic and mesotrophic lake classification. The lake leans slightly more oligo than meso. The low level of nutrients in the lake results in dissolved oxygen being available throughout the water column for the entire summer.

Long term trends indicate that total phosphorus is increasing in the lake. This is happening fast enough to merit some amount of concern. It would be wise to make sure phosphorus reduction educational materials are released to lake residents.

*= No 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 = Chlorophyll-a: Sample value is less than limit of quantification (<1 ppb).

Ann Lake, Benzie County

2014 CLMP Aquatic Plant Results



Ann 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.

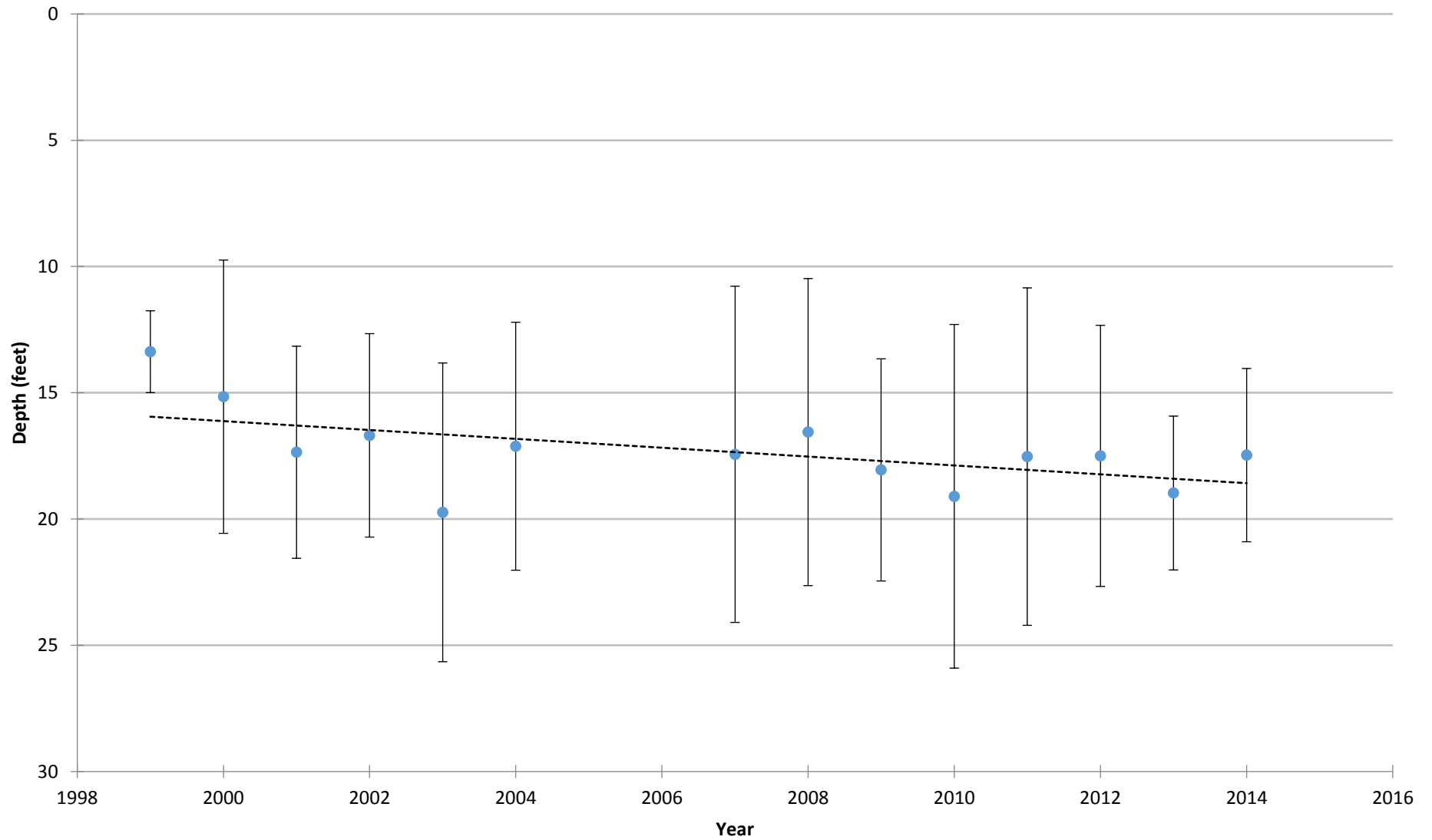
However, sometimes a lake is invaded by an aquatic plant species that is not native to Michigan. In these cases, even nutrient poor oligotrophic lakes can be threatened. Some of these exotic plants, like Curly-leaf Pondweed, Eurasian Milfoil, Starry Stonewort, and Hydrilla can be extremely disruptive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

COOPERATIVE LAKES MONITORING PROGRAM
SUMMER MEAN TRANSPARENCY

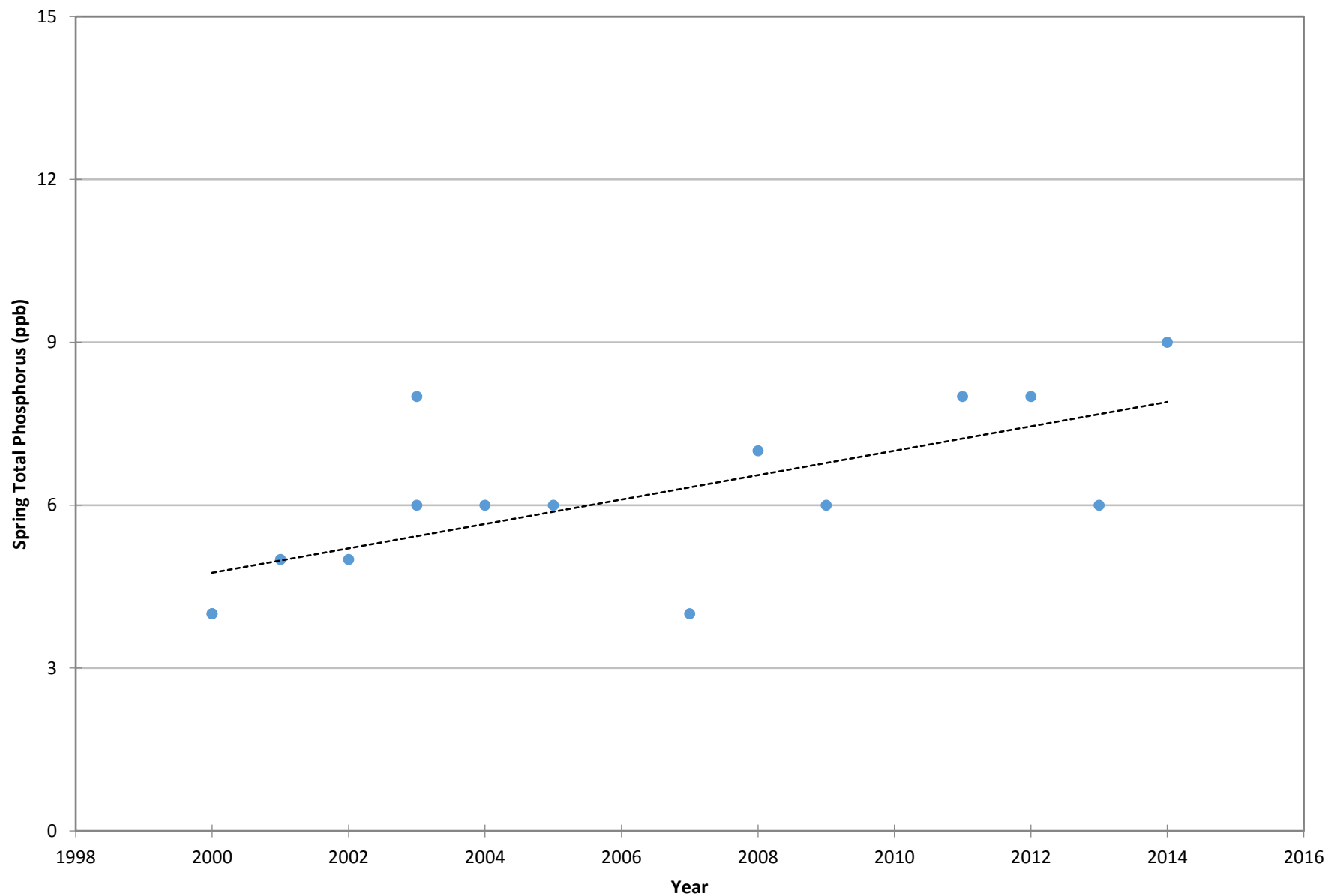
Ann Lake (Benzie Co.), 100082



Vertical bars indicate standard deviation

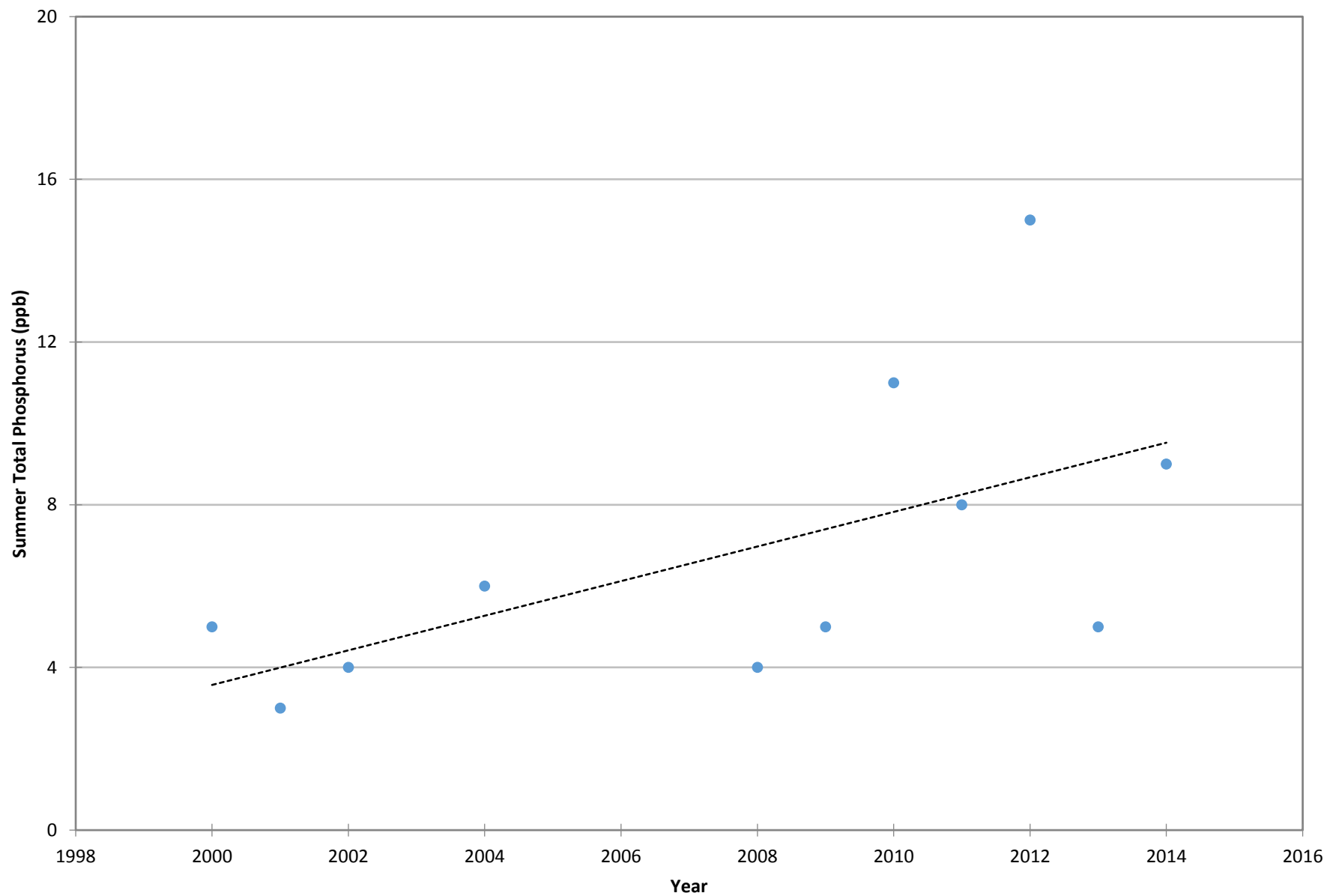
COOPERATIVE LAKES MONITORING PROGRAM
SPRING TOTAL PHOSPHORUS

Ann Lake (Benzie Co.), 100082



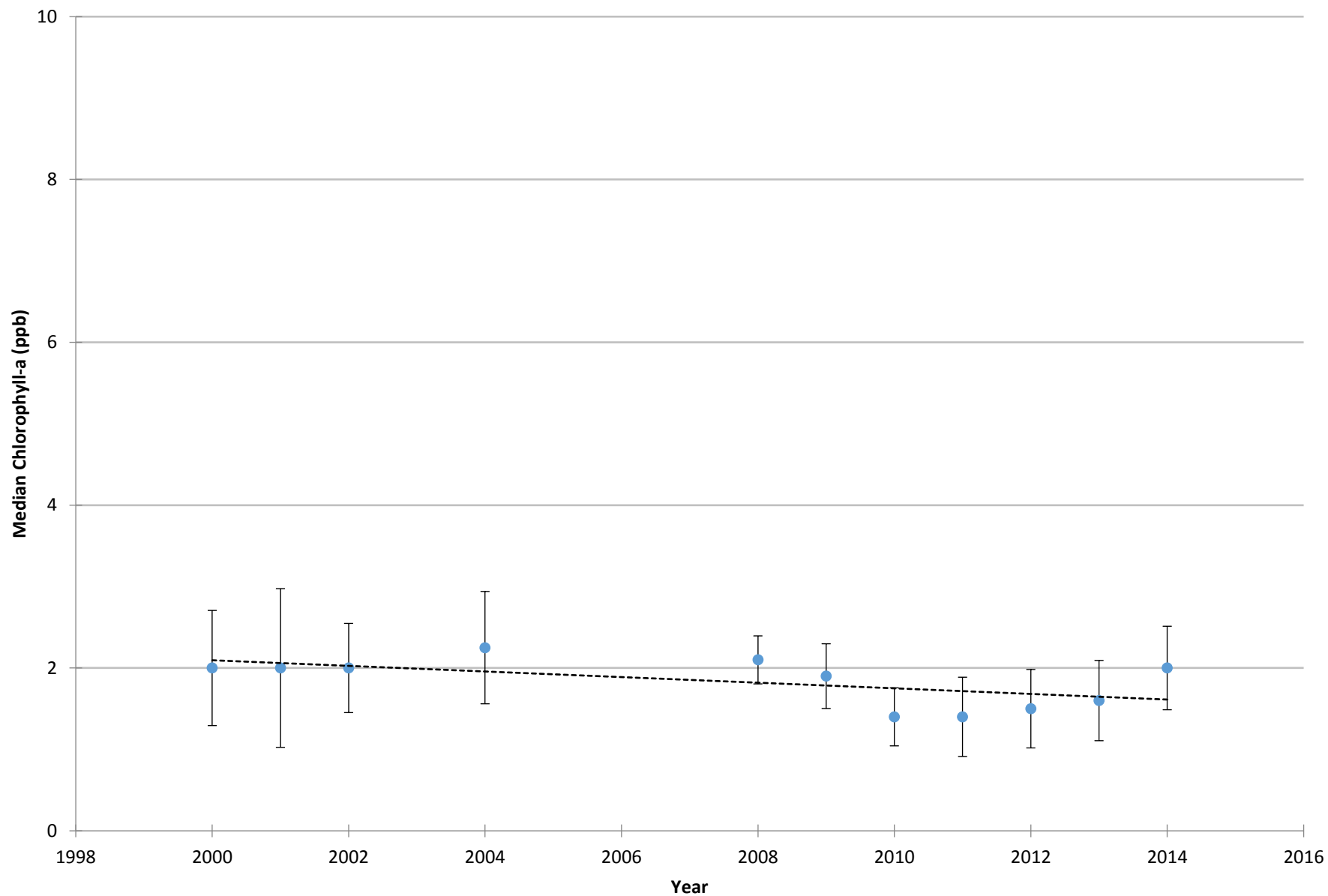
COOPERATIVE LAKES MONITORING PROGRAM
SUMMER TOTAL PHOSPHORUS

Ann Lake (Benzie Co.), 100082



COOPERATIVE LAKES MONITORING PROGRAM
SUMMER MEDIAN CHLOROPHYLL-A

Ann Lake (Benzie Co.), 100082



Vertical bars indicate standard deviation

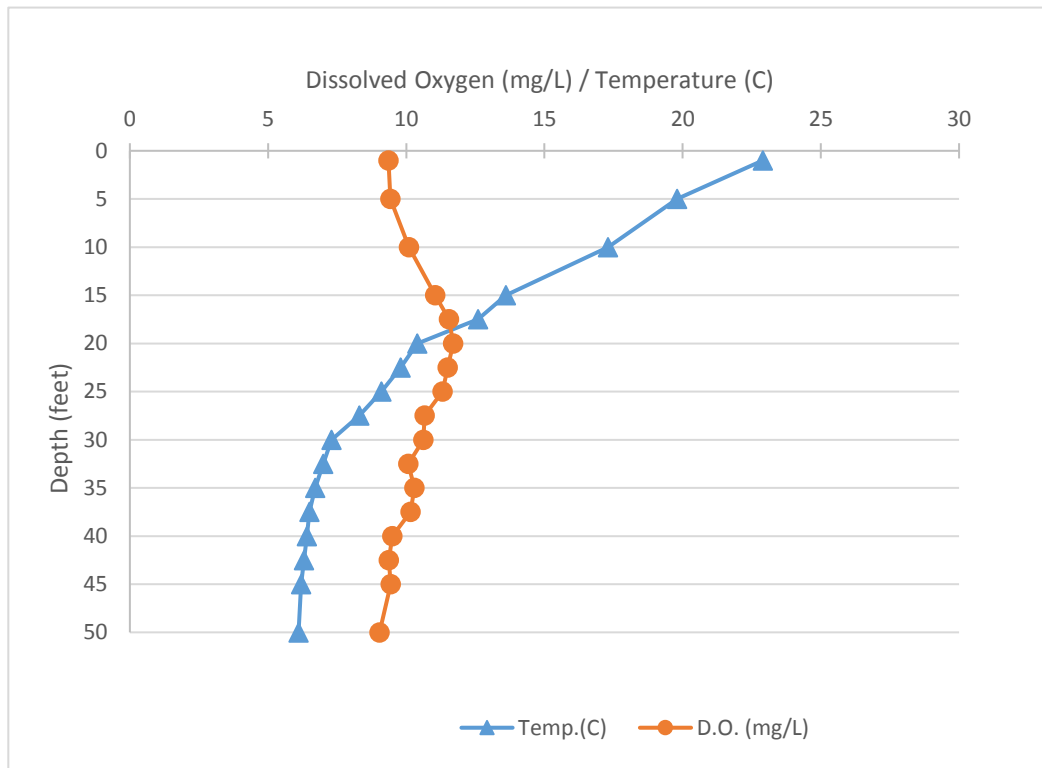
Name: Ann
County: Benzie
Site ID: 100082
Date: 5/29/2014

Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	22.9	9.36
5	19.8	9.42
10	17.3	10.1
15	13.6	11.05
17.5	12.6	11.54
20	10.4	11.7
22.5	9.8	11.5
25	9.1	11.31
27.5	8.3	10.66
30	7.3	10.62
32.5	7	10.07
35	6.7	10.29
37.5	6.5	10.15
40	6.4	9.5
42.5	6.3	9.37
45	6.2	9.44
50	6.1	9.03
55	6	9.04
60	6	9.24
65	5.9	8.97

Lake: Ann (Benzie Co.)

5/29/2014



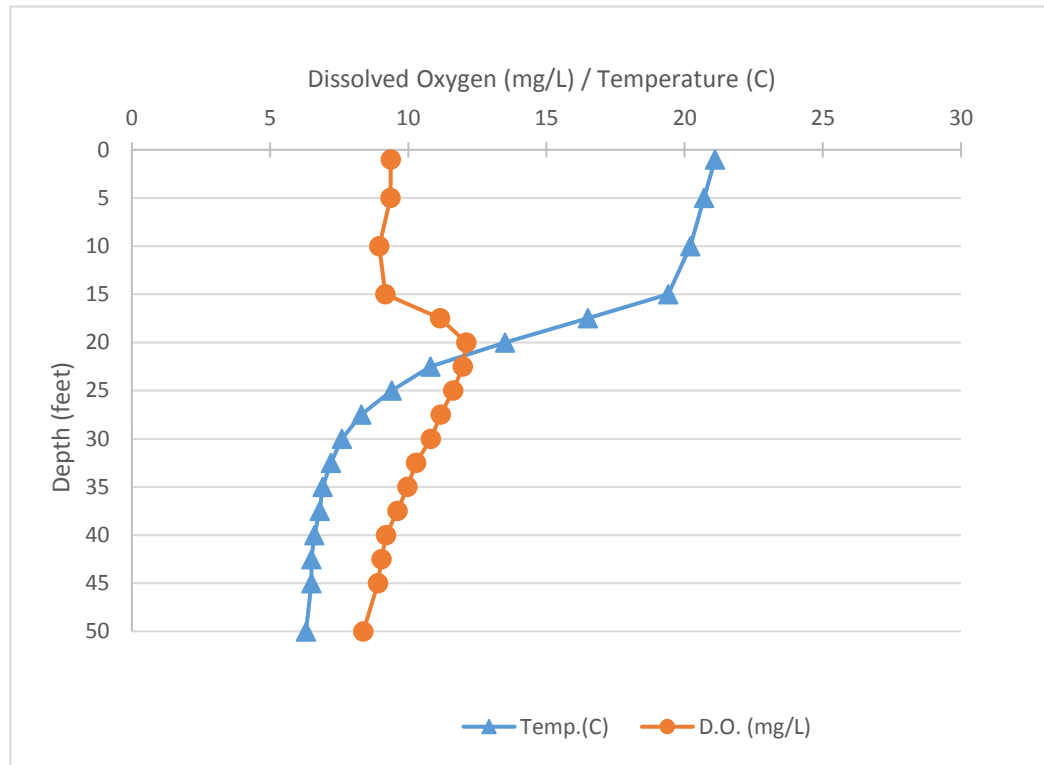
Name: Ann
County: Benzie
Site ID: 100082
Date: 6/21/2014

Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	21.1	9.37
5	20.7	9.36
10	20.2	8.95
15	19.4	9.17
17.5	16.5	11.15
20	13.5	12.1
22.5	10.8	11.97
25	9.4	11.62
27.5	8.3	11.17
30	7.6	10.81
32.5	7.2	10.28
35	6.9	9.97
37.5	6.8	9.61
40	6.6	9.19
42.5	6.5	9.03
45	6.5	8.9
50	6.3	8.37
55	6.2	8.06
60	6.2	7.34
65	6.1	6.4

Lake: Ann (Benzie Co.)

6/21/2014



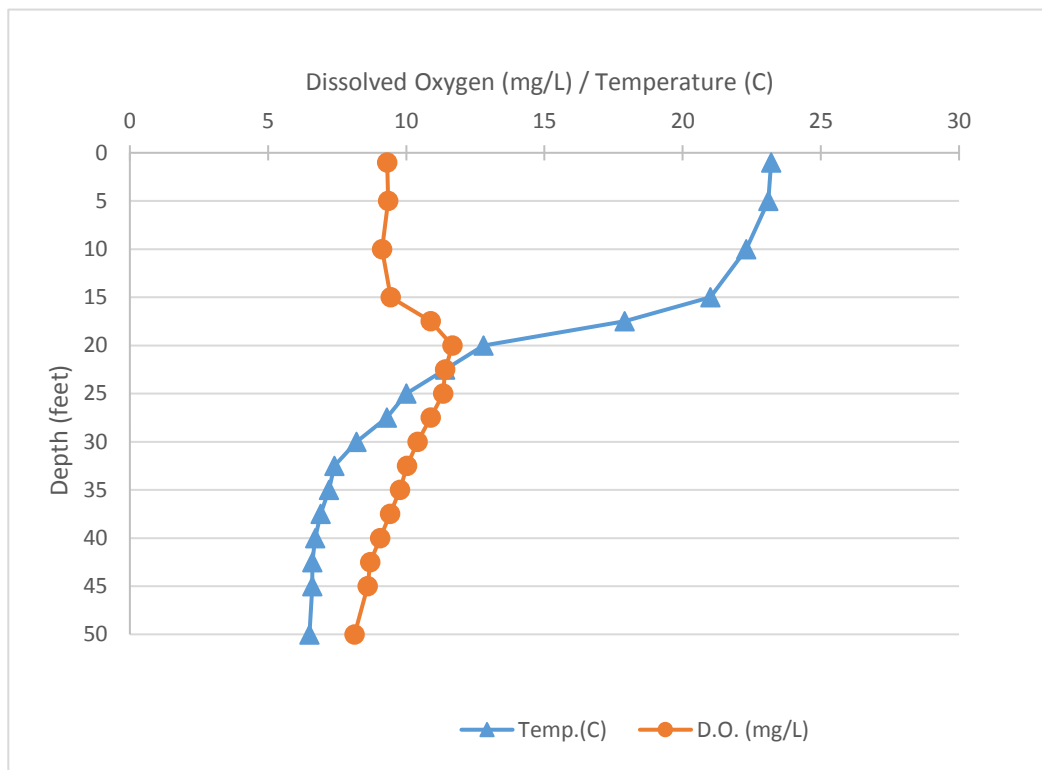
Name: Ann
County: Benzie
Site ID: 100082
Date: 7/5/2014

Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	23.2	9.31
5	23.1	9.35
10	22.3	9.13
15	21	9.44
17.5	17.9	10.89
20	12.8	11.67
22.5	11.4	11.4
25	10	11.34
27.5	9.3	10.88
30	8.2	10.41
32.5	7.4	10.03
35	7.2	9.77
37.5	6.9	9.41
40	6.7	9.05
42.5	6.6	8.7
45	6.6	8.6
50	6.5	8.13
55	6.3	7.71
60	6.2	6.57
65	6.1	4.69

Lake: Ann (Benzie Co.)

7/5/2014



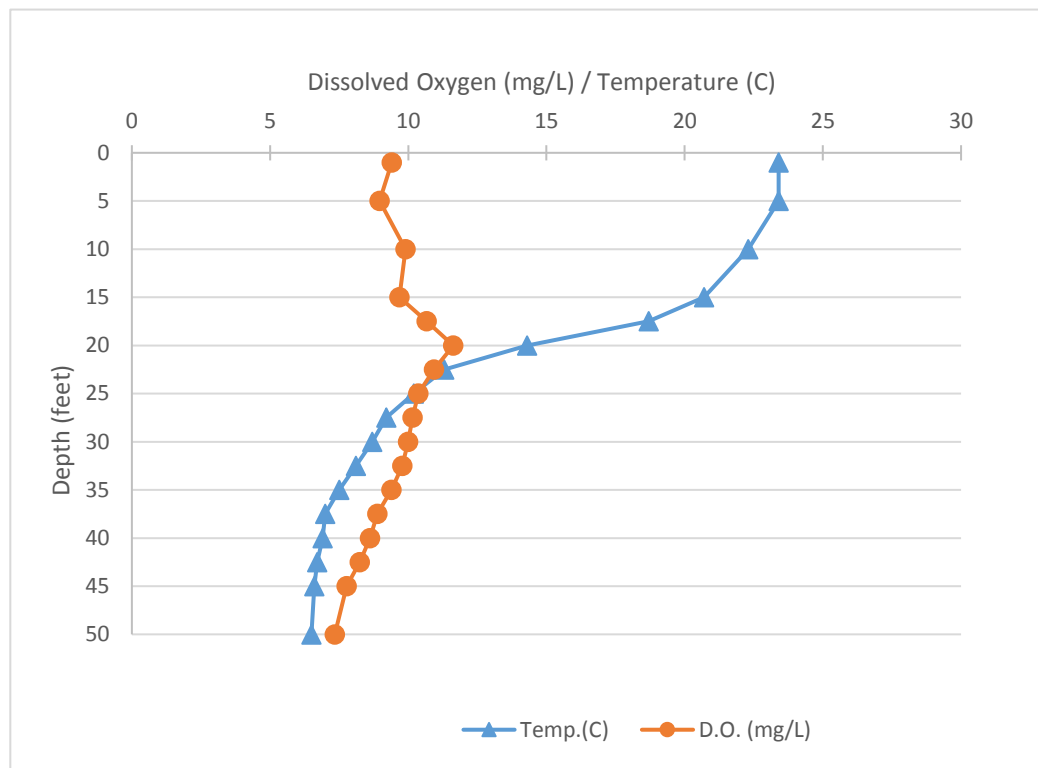
Name: Ann
County: Benzie
Site ID: 100082
Date: 7/20/2014

Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	23.4	9.4
5	23.4	8.96
10	22.3	9.9
15	20.7	9.68
17.5	18.7	10.67
20	14.3	11.63
22.5	11.3	10.93
25	10.2	10.36
27.5	9.2	10.16
30	8.7	9.99
32.5	8.1	9.79
35	7.5	9.39
37.5	7	8.88
40	6.9	8.62
42.5	6.7	8.24
45	6.6	7.77
50	6.5	7.34
55	6.4	6.66
60	6.3	4.3
65	6.2	3.54

Lake: Ann (Benzie Co.)

7/20/2014



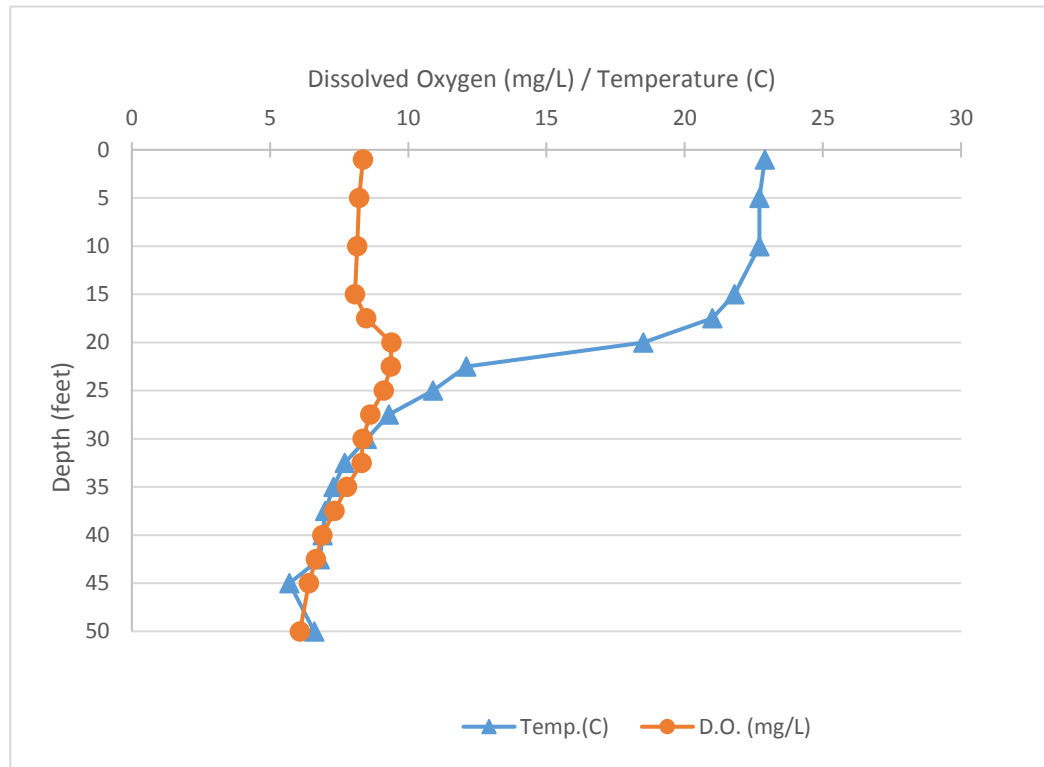
Name: Ann
County: Benzie
Site ID: 100082
Date: 7/31/2014

Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	22.9	8.36
5	22.7	8.22
10	22.7	8.15
15	21.8	8.07
17.5	21	8.48
20	18.5	9.39
22.5	12.1	9.37
25	10.9	9.11
27.5	9.3	8.63
30	8.5	8.35
32.5	7.7	8.31
35	7.3	7.78
37.5	7	7.33
40	6.9	6.89
42.5	6.8	6.66
45	5.7	6.4
50	6.6	6.08
55	6.5	5.15
60	6.3	3.34
65	6.2	0.87

Lake: Ann (Benzie Co.)

7/31/2014



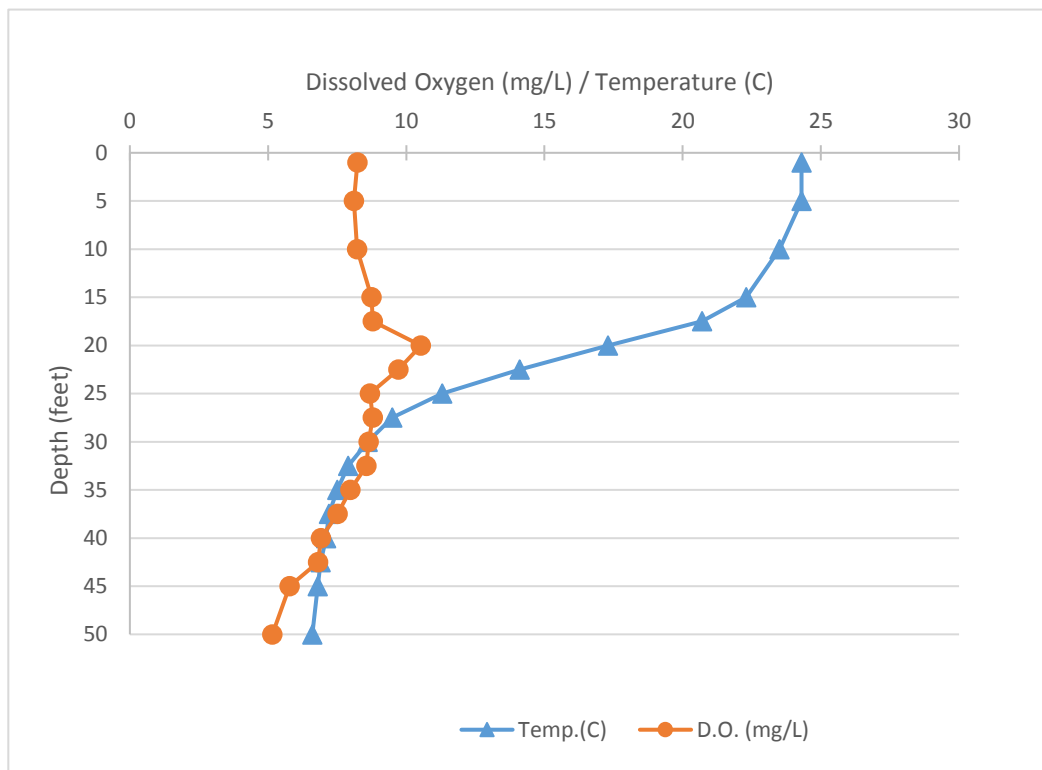
Name: Ann
County: Benzie
Site ID: 100082
Date: 8/11/2014

Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	24.3	8.23
5	24.3	8.11
10	23.5	8.22
15	22.3	8.74
17.5	20.7	8.79
20	17.3	10.53
22.5	14.1	9.72
25	11.3	8.69
27.5	9.5	8.79
30	8.6	8.64
32.5	7.9	8.56
35	7.5	7.98
37.5	7.2	7.52
40	7.1	6.91
42.5	6.9	6.81
45	6.8	5.78
50	6.6	5.15
55	6.5	4.58
60	6.4	3.71
65	6.3	1.08

Lake: Ann (Benzie Co.)

8/11/2014



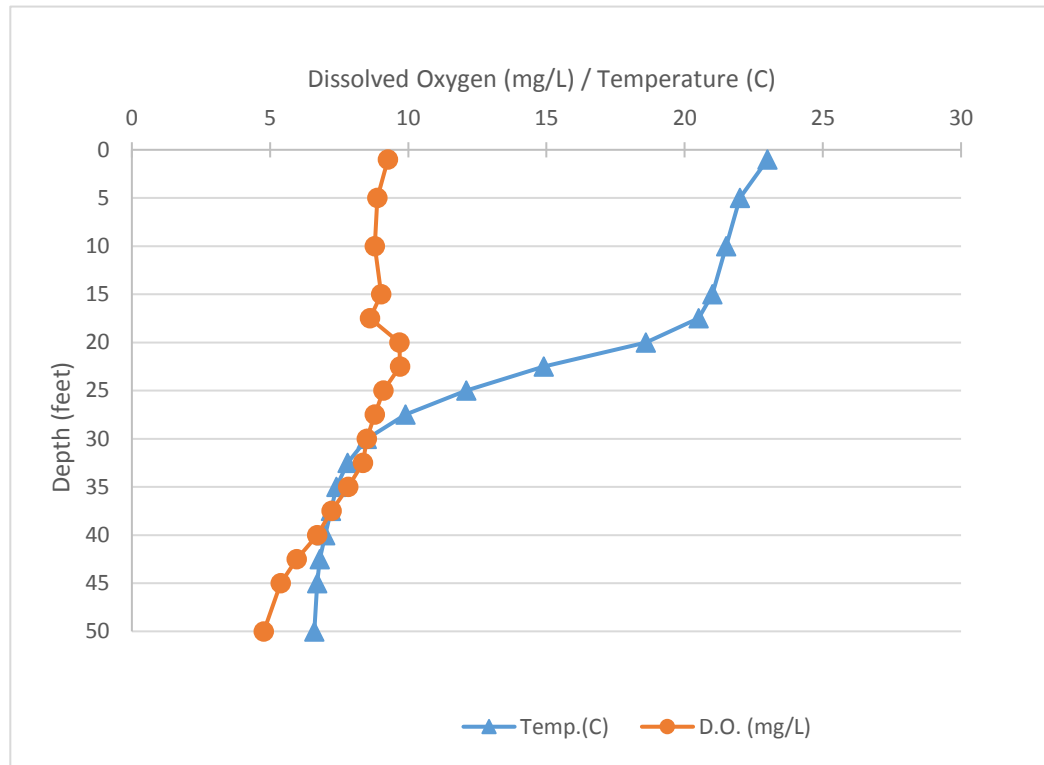
Name: Ann
County: Benzie
Site ID: 100082
Date: 8/23/2014

Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	23	9.26
5	22	8.88
10	21.5	8.79
15	21	9.02
17.5	20.5	8.61
20	18.6	9.68
22.5	14.9	9.7
25	12.1	9.1
27.5	9.9	8.79
30	8.5	8.5
32.5	7.8	8.36
35	7.4	7.83
37.5	7.2	7.23
40	7	6.7
42.5	6.8	5.96
45	6.7	5.39
50	6.6	4.77
55	6.5	3.38
60	6.4	1.79
65	6.3	0.26

Lake: Ann (Benzie Co.)

8/23/2014



Name: Ann
County: Benzie
Site ID: 100082
Date: 9/6/2014

Dissolved Oxygen and Temperature Profile

Depth (ft)	Temp.(C)	D.O. (mg/L)
1	21.8	8.27
5	21.8	8.22
10	21.7	8.04
15	21.6	8.17
17.5	21.6	8.18
20	21.5	8.16
22.5	18.4	8.74
25	12.8	8.23
27.5	10.2	7.9
30	9.5	7.6
32.5	8.8	7.36
35	8.2	6.76
37.5	7.7	6.38
40	7.4	5.72
42.5	7.3	5.63
45	7.1	5.05
50	6.9	4.67
55	6.8	4.08
60	6.6	2.66
65	6.5	1.54

Lake: Ann (Benzie Co.)

9/6/2014

