

THE CULLEN CURRENTS

Winter, 2018

Important notice to all Cullen Lakes property owners

Areas of the aquatic invasive species curly-leaf pondweed (CLP) will again be treated this spring in all three Cullen Lakes using the DNR approved herbicide Aquathol K. This will be the tenth consecutive year of CLP management.

If you DO NOT WANT this treatment to take place within 150 feet lakeward of your shoreline, YOU MUST NOTIFY the Cullen Lakes Association in writing via email (beaver@uslink.net) or U.S. mail (PO Box 466, Nisswa, MN 56468) no later than April 1, 2018.



Did j'a know?

Black-capped chickadees feed almost constantly during the day and are likely the most common visitor to a Minnesota bird feeder, even in the most severe winter weather. Just how

do they survive the frigid temperatures? They have dense winter feathers and they use carefully selected roost cavities. However, the most remarkable thing is the way they can go into a regulated hypothermia at night, reducing their body temperature by 12-15 degrees, thus allowing them to conserve almost 25% of their hourly metabolic expenditure. This gets them through the long winter nights until they can eat again the next day.

Ice ridges and you

Ice ridges are caused by the pushing action of a lake's ice sheet against the shore. Cracks form in the ice because of different contraction rates at the top and bottom of the ice sheet. Ice cracks also develop because the edges of the ice sheet are sometimes firmly attached to the shore. When water rises in the cracks and freezes, the ice sheet expands slightly. Rising air temperatures warm the ice, leading to additional expansion, which exerts a tremendous thrust against the shore. Alternate warming and cooling of the ice sheet leads to additional pushing action, causing the ice to creep shoreward and scrape, gouge, and push soil and rock into the mounds we call ice ridges.

Because ice ridges provide ecological benefits, the ideal reaction to their formation would be to do nothing. However, this is sometimes impractical. If circumstances make it necessary to remove or grade an ice ridge, to do so without a DNR permit the work must meet specific conditions, including but not limited to the following:

- *The ridge resulted from ice action within the last year.
- *Not more than 200 feet of shoreline is affected
- *All ice ridge material must be deposited and stabilized at an upland site above the ordinary high water level or, for sand and gravel only, it must be graded to conform to the original cross section and alignment of the lakebed.
- *No additional excavation or replacement fill material occurs on the site.
- *All exposed areas are immediately stabilized as needed to prevent erosion and sedimentation.

If you have an irrigation system for your yard that uses lake water, it would be wise to have it turned off until a week after the CLP treatment has taken place. The exact timing of the treatment is hard to predict, since it is dependent on spring ice out and the lake water warming into the 50s. When CLA learns of the intended treatment date, we will post it on the CLA web site: www.cullenlakesassoc.org.

Cullen Lakes water quality report

by Ann Beaver, Water Quality Committee chair

As many of you know (but it never hurts to be reminded), what we do on the land around a lake has a big effect on the water quality of the lake. I can't



emphasize enough how important it is to leave a buffer of natural vegetation to the greatest extent possible along your shoreline to

impede nutrient-rich run off into the lake and to leave or plant trees and shrubs along the shoreline to help prevent erosion of soil into the lake. It is also very important to ensure your septic system is functioning properly and to have it pumped by a septic company every 3-5 years, depending on its usage. If you have a lakeside fire pit, please remove its ashes once they're cold and deposit them well inland so the phosphorus they contain cannot wash into the lake and promote more growth of the aquatic vegetation off your shoreline.

The water quality of a lake is determined by sampling three parameters June through September: water clarity (Secchi disk reading), total phosphorus, and chlorophyll *a*. A lake is then categorized as oligotrophic (clear), mesotrophic (moderately clear), eutrophic (green), or hypereutrophic (very green). Most lakes in the Brainerd Lakes area fall into the mesotrophic category.

Over the last twenty years, Lower and Middle Cullen Lakes have consistently fallen into the mid mesotrophic range. Their water clarity is very good for this range of lakes, their total phosphorus is usually in the middle of the range, and their chlorophyll *a* is in the high part of this range. Over the last twenty years, Upper Cullen has fallen into the high mesotrophic range. Its water clarity is in the middle of the range, its total phosphorus is in the high part of the range, and its chlorophyll *a* is in the eutrophic range. Upper Cullen Lake is, for the most part, a shallow basin fed by a small stream and several sizable wetlands and thus it is quite different from the other two lakes. The difference in the nutrients flowing into Upper Cullen as opposed to the other two lakes is likely the cause of its higher chlorophyll *a* levels.

You may find the data on the right interesting.

Water quality data, years monitored: 1998-2017 (desired numbers — Secchi high, TP & Chl. *a* low)

Lower Cullen Lake

Parameters	Historic	2017
Secchi depth mean (ft.)	12.7	12.6
Secchi depth min. (ft.)	6.5	9.5
Secchi depth max. (ft.)	22.0	15.0
Total phosphorus mean (ug/L)	16.2	13.0
Total phosphorus min. (ug/L)	<5.0	10.0
Total phosphorus max. (ug/L)	30.0	17.0
Chlorophyll <i>a</i> mean (ug/L)	6.1	4.8
Chlorophyll <i>a</i> min. (ug/L)	<1.0	3.0
Chlorophyll <i>a</i> max. (ug/L)	14.0	9.0

Middle Cullen Lake

Parameters	Historic	2017
Secchi depth mean (ft.)	13.0	13.0
Secchi depth min. (ft.)	7.0	10.0
Secchi depth max. (ft.)	19.0	14.0
Total phosphorus mean (ug/L)	15.4	13.8
Total phosphorus min. (ug/L)	5.0	<5.0
Total phosphorus max. (ug/L)	41.0	18.0
Chlorophyll <i>a</i> mean (ug/L)	5.4	4.3
Chlorophyll <i>a</i> min. (ug/L)	<1.0	3.0
Chlorophyll <i>a</i> max. (ug/L)	14.0	6.0

Upper Cullen Lake

Parameters	Historic	2017
Secchi depth mean (ft.)	9.1	6.4
Secchi depth min. (ft.)	4.0	4.5
Secchi depth max. (ft.)	17.0	9.5
Total phosphorus mean (ug/L)	23.2	16.0
Total phosphorus min. (ug/L)	<5.0	3.0
Total phosphorus max. (ug/L)	84.0	27.0
Chlorophyll <i>a</i> mean (ug/L)	9.6	5.0
Chlorophyll <i>a</i> min. (ug/L)	<1.0	3.0
Chlorophyll <i>a</i> max. (ug/L)	32.0	8.0

Save the date!

**2018 CLA Annual Meeting
Saturday morning, August 11**

CLA membership

by Carol Lindahl, Membership Committee chair

As of January 31, 2018 we have 180 paid members. Of these, 10 are associate members (former owners, family members of owners, or owners of property in the Cullen Lakes watershed). Membership letters for 2018 were mailed in early December to allow for those wanting to use a donation for 2017 tax purposes to do so.

If you haven't already sent in your \$25 membership dues (and hopefully a contribution towards the treatment of curly-leaf pondweed), please take the time now to write your check, make any necessary corrections to your personal data on the membership letter you received, and mail them both to CLA, PO Box 466, Nisswa, MN 56468.

Please help us keep our membership records current by sending the newsletter editor any changes in your mailing address, email address, or change in ownership of your property. We also encourage all co-owners of a property to become members of CLA. Doing so will ensure they are kept informed of all important news around the lakes.

Curly-leaf pondweed (CLP) management donations update

Again this year the CLA Board of Directors heartily thanks all who have already contributed to the 2018 CLP treatment fund. The very positive response is truly impressive.

Here are some of the statistics as of January 31:

- *142 property owners and family members (there are 180 CLA members so far this year, so that's 79%!) have made a CLP donation.
- *47 contributed the \$250 suggested in the membership mailing.
- *32 contributed more than the suggested \$250.
- *Contributions have ranged from \$10 to \$1,250.
- *Contributions total \$29,210.

We are thankful for all donations, no matter the amount! The Minnesota Department of Natural Resources (MN DNR) announced last fall that there would be no grant funds available in 2018 for the management of aquatic invasive species. Thus CLA will have to cover all the expenses (approximately \$43,000) for the second straight year. If it were not for the generous donations of our members each year, the lake association would quickly run out of funds for CLP management and the lakes would become less suitable for boating, fishing, and water sports. (Some of you may remember the many areas of CLP surface mats before we began management of this invasive species.)

Short-term property rentals

by Dawn Bittner, Pequot Lakes Zoning Specialist

This past summer, it was brought to our attention that numerous properties have rented their homes on VRBO, Airbnb, etc. The property owners were not aware that Pequot Lakes has an ordinance prohibiting more than four leases per dwelling per year, as noted in Chapter 17, Section 5-1, 6D of the Land Use Ordinance.

In 2018, the City will remain diligent in enforcing the Land Use Ordinance regarding these types of violations that are brought to our attention. The Enforcement Section is available for review on the City's website at www.pequotlakes-mn.gov on the City Code & Policies sidebar under Chapter 17, Section 12.

Property owners need to be aware of the ordinance and its enforcement before accepting deposits for future rentals. These short-term rentals did become an issue in 2017 due to noise, increased boat traffic, etc. The City wants everyone to enjoy our beautiful lakes, but not at another's expense. Please feel to contact me with any questions: dbittner@pequotlakes-mn.gov or 218-568-6699.

Editor's note: Nisswa has and Crow Wing County may have restrictions on the rental of private homes. Be sure to check before committing to rentals.

language fun

English is easy?

Can you read these right the first time?

- *The bandage was wound around the wound.
- *The farm was used to produce produce.
- *The dump was so full that it had to refuse more refuse.
- *We must polish the Polish furniture.
- *He could lead if he would get the lead out.
- *The soldier decided to desert his dessert in the desert.
- *Since there is no time like the present, he thought it was time to present the present.
- *A bass was painted on the head of the bass drum.
- *When shot at, the dove dove into the bushes.
- *I did not object to the object.
- *The insurance was invalid for the invalid.
- *There was a row among the oarsmen about how to row.
- *They were too close to the door to close it.
- *The buck does funny things when the does are present.
- *A seamstress and a sewer fell down into a sewer line.
- *To help with planting, the farmer taught his sow to sow.
- *The wind was too strong to wind the sail.
- *Upon seeing the tear in the painting I shed a tear.
- *I had to subject the subject to a series of tests.

Soteroplos Scholarship recipient sends CLA his thanks

The Ted Soteroplos Memorial Scholarship was set up at Central Lakes College (CLC) in the late 1990s with memorial funds the Soteroplos family gave to the Cullen Lakes Association. Each year CLA adds a set amount to the principal and the interest earned is used to help with the expenses (usually books) of a CLC student majoring in an environmental science. CLA recently received the following note from this year's scholarship recipient.

"Thank you for selecting me for the Ted Soteroplos Memorial Scholarship. I am currently a 2nd year student at Central Lakes College and enrolled in the Natural Resources program. Some of my extracurricular activities include being in the Natural Resources Club and being a pitcher on the Central Lakes College Baseball Team. These activities have helped me grow as an individual and working as a team while being involved in the community. The baseball team this fall was involved in a Fall Baseball clinic with the local Brainerd youth and I enjoyed volunteering my time.

"I will be using the awarded money to purchase my books for my Natural Resources studies. The extra monetary help will allow me to focus on my studies.

"My long term goals include graduating in the spring at Central Lakes College, interning with the local Department of Natural Resources and from there continuing my education at a 4 year college.

"Again thank you for your support and continued generosity to our environmental programs."

Alex Guggisberg

CLA retires from MnDOT's highway pick up program

After 26 years of picking up litter along the two mile stretch of Highway 371 from Wilderness Road to Nisswa Avenue (no pick up was done in 2016 or 2017 due to the



h i g h w a y construction), the CLA board of directors voted last fall to retire from the Minnesota Department of Transportation's Adopt-a Highway program.

In the years immediately preceding the highway expansion construction, the volunteers doing the pick up were mainly CLA board members and the turn out even among them was diminishing. In view of the limited number of volunteers and the newly expanded four lane divided highway with a speed limit of 65 mph (meaning most traffic would be traveling 70), board members felt it was time to let someone else take on the task.

Good Ol' Days Resort expansion approved by City

At its December 12, 2017 meeting the Nisswa Planning Commission voted to recommend to the City Council the rezoning of the 1.54 acre tract of property then belonging to James Benedict from shoreline residential to commercial waterfront, thus enabling the expansion of Good Ol' Days Resort to the north across Cullen Creek. The City Council later approved the rezoning.

The Planning Commission then approved a conditional use permit application to construct four duplex cottages and ancillary recreational amenities on the property as a common interest community resort development, with the following conditions (*list not complete due to space constraints*):

*The applicant shall replace the 25 trees cut down in the development of the cottage units with 25 coniferous trees having a minimum height of 8 feet.

*Each unit shall provide the planting of two 8 foot trees on the subject lot between the unit and the lake.

*The applicant shall receive DNR approval, before proceeding with the installation of the docking system, of the docking exhibit and number of docking spaces.

*There is to be a 37 1/2 foot no mow zone along Cullen Creek.

The Planning Commission also approved the preliminary plat application with the conditions of a personal use limitation and the submittal of an annual rental report to the City.

Currents On the Cullens

New Owners

Eric Boberg, Middle & Upper Cullen (M68, U1)
David & Julie Kadrie, Upper Cullen (U21)
Susan & Erik Meints, Upper Cullen (U17,22)
Tanya & Tyler Nelson, Upper Cullen (U16)
Austin Omodt & Kelsey Burns, Middle Cullen (M116)

Deaths

Arlene Klucas, Lower Cullen (L95)

Lake Learning

Global warming translates to shorter lake ice cover

by Moriya Rufer, RMB Environmental Laboratories

Many of us Minnesotans enjoy winter on the lakes as much as summer. There are so many possible activities such as ice-fishing, snowmobiling, cross country skiing and snowshoeing. So how will we react when the duration of ice cover on our lakes declines due to global warming? In addition, how will a shorter ice cover affect our lakes and their fish communities?

Researchers at the St. Anthony Falls Laboratory of the University of Minnesota have been studying these effects for the past decade. They studied 143 North American Lakes, half of them from Minnesota, and found depending on how much the yearly average air temperature increases, yearly ice cover can reduce by as much as 11-25 days. Reducing ice cover by 11 days doesn't sound like much, but our winter ice season will actually be shortened by more than 11 days because of the decline in duration of "safe ice" conditions.

First of all, a shorter "safe ice" season will shorten our winter lake activity season. We'll have to wait longer in late fall to get out on the ice and we'll have to be off the ice earlier in the spring. This will be tough!

A longer ice-free season for the lake translates to a longer growing season for algae. We might be happier about a longer growing season for our gardens, but we probably won't be as excited about more algae. The lakes will also get warmer overall because of the extra days of exposure to the sun, which will increase evaporation from lakes and cause lake levels to decline.

For fishing, global warming effects could be good or bad, depending on what fish you like to catch and what lakes you fish on. Individual fish actively select and rapidly change living areas based on suitable temperatures, oxygen concentrations, and food availability. As water temperatures in the region increase, cold-water species such as lake trout, brook trout, and whitefish may decline dramatically, as cool-water species such as muskie and walleye, along with warm-water species, such as bluegill and smallmouth bass, expand their ranges northward.

As a result of these changes, anglers may lose their preferred catch or have to travel farther north to fish certain species.

A shorter ice cover will decrease the likelihood of a winter fish kill, shortening the time when the lake is cut off from outside sources of oxygen. However, in turn a longer summer season will increase the likelihood of a summer fish kill in shallow lakes, due to less oxygen at the bottom of the lake for a longer period of time.

Native species of plants, fish, frogs, insects and other aquatic organisms could be lost due to the inability to adapt to warmer temperatures. Invasive species, which can adapt to a wider range of habitat conditions, could come in and take the place of native species.

Researchers continue to find new changes and effects to our ecosystems due to climate change. Only time will tell how fast and how severe these effects will occur. To read more about this topic, you can visit: <http://www.ucsusa.org/greatlakes/glregionmin.html>.

CLA treasurer's 2017 year end report

by Jack McNamara

2017 Income

CLP Donations	\$31,160.00
Membership Dues	2,230.00
General Support Donations	2,048.66
DNR Grants	0.00
TOTAL INCOME	\$35,438.66

2017 Expenses

Administration Committee	
Meetings/Supplies	\$498.18
LARA Membership	75.00
Subtotal	\$573.18
Education Committee	
Guide/Map Update	\$150.57
Newsletter Postage	713.59
Newsletter Printing	819.78
Web Site	271.77
Subtotal	\$1,955.71
Invasive Species Committee	
CLP Treatment	\$41,139.73
Membership Committee	
Mailings	\$841.79
Water Quality Committee	
Laboratory Analysis	\$645.00
Other	
Board Liability Insurance	\$975.00
Miscellaneous (postage, etc.)	201.23
Subtotal	\$1,176.23
TOTAL EXPENSES	\$46,331.64

BALANCE SHEET Current Assets

Checking Account	\$29,231.15
Business MM — Legacy Fund	47,371.00
Business Money Management	65,422.32
TOTAL	\$142,024.47

CULLEN LAKES ASSOCIATION
P.O. BOX 466
NISSWA, MN 56468

To protect, preserve, and enhance the three Cullen Lakes and their environs in order to ensure the continued vitality of the lakes, high quality fish and wildlife habitat, safe and healthful family living, and the survival of these natural gifts for future generations.

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