
THE CULLEN CURRENTS



Winter, 2020

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 eleventh 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, 2019.

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.

CLA membership

by Carol Lindahl, Membership Committee chair

As of February 13, 2020 we have 187 paid members. Of these, 11 are associate members (former owners or family members of owners). We also have five complimentary members (new property owners). Membership letters for 2020 were mailed in late November to allow for those wanting to use a donation for 2019 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 any changes in your mailing address, email address, or change in ownership of your property to me in care of the CLA PO box. We 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

The CLA Board of Directors heartily thanks all who have already contributed to the 2020 CLP treatment fund. The very positive response is truly impressive.

Here are some of the statistics as of February 13:

141 property owners and family members (there are 187 dues paying CLA members so far this year, so that's 75%!) have made a CLP donation.

*71 contributed the \$250 suggested in the membership mailing.

*23 contributed more than the suggested \$250.

*Contributions have ranged from \$25 to \$975.

*Contributions total \$30,980.

We are thankful for all donations, no matter the amount! 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.

"The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased, and not impaired, in value."

Theodore Roosevelt
(1858-1919)

Effort aims to persuade Minnesota anglers to go lead-free for loons

Lead poisoning is a leading cause of death for Minnesota loons.

from an article written by Kirsti Marohn / MPR News, and printed in the Brainerd Dispatch

This summer, Minnesota's beloved state bird will be at the center of a new public awareness campaign aimed at anglers and their fishing tackle -- and created in the aftermath of a devastating oil spill in the Gulf of Mexico.



The Minnesota Pollution Control Agency is planning to launch the new program focused on encouraging anglers to voluntarily switch to lead-free fishing tackle as a way to help save the common loon. Lead poisoning is a leading cause of death for Minnesota loons. The program will be funded by the federal government's settlement with BP over the 2010 Deepwater Horizon oil spill. The U.S. Fish and Wildlife Service awarded Minnesota agencies more than \$6 million from the BP settlement to help support its loon population. About \$1.2 million of that settlement money will be designated over the next three years for the MPCA program, which the agency is calling "Get the Lead Out."

Impact on Minnesota loons

The Deepwater Horizon disaster dumped nearly 5 million barrels of oil in the Gulf of Mexico, where many of Minnesota's loons spend their winters. Carrol Henderson, who retired in 2018 after a long career heading the nongame wildlife program at the state Department of Natural Resources, led a seven-year study to determine whether Minnesota's loons had been affected by the oil spill.

Researchers used radio implants and geolocators to track loons' movements and how deeply they dove into the water in search of food. They found traces of oil and the chemicals used to disperse the spill in the birds' feathers, eggs and blood. "They were bringing them back to Minnesota and they were actually passing these contaminants on in the eggs that they laid," Henderson said. Henderson helped put together a plan to use BP settlement dollars to help the loons. Most of the more than \$6 million Minnesota was awarded was reserved for the DNR's efforts at protecting and restoring loon habitat, including conservation easements and nesting platforms.

Urging anglers to ditch lead

About \$1.2 million of the settlement money was designated to address a common cause of loon mortality: lead poisoning. Loons are especially susceptible to lead poisoning because they swallow pebbles at the bottom of a lake to help them grind up their food. "When they accidentally pick up a lead jig or sinker off the bottom, all it takes is one split shot or one jig to kill the loon from lead poisoning," Henderson said. Lead is toxic for loons and other waterfowl. The MPCA estimates that lead poisoning causes about 14 percent of Minnesota loon deaths. "It's something that's totally avoidable if people simply learn to shop for nontoxic jigs and sinkers," Henderson said.

Lead-free alternatives made from materials like tin, steel, bismuth or tungsten sometimes can be hard to find in sporting goods stores, Henderson said. He said consumers can help change that. "This is a growing portion of the retail market for angling," he said. "But it needs a little bit of a push to get people to ask for it. Otherwise, the market doesn't grow." Some states, including New Hampshire, Vermont, New York and Massachusetts, have total or partial bans on the use of lead sinkers and jigs. Minnesota's lead-free campaign is voluntary. To date, efforts to prohibit lead tackle and ammunition in the state have been unsuccessful.

Ice ridges and you

Property owners often return to their lake property in the spring or early summer to discover they are dealing with the shoreline phenomenon of an ice ridge. If it is an ice ridge that formed during the past winter, they are allowed to "repair" the shoreline. If it is an increase in what is called a historic ice ridge (formed over more than one winter), they are not allowed to alter it.

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. They also develop because the edges of the ice sheet are sometimes firmly attached to the shore. Alternate warming and cooling of the ice sheet can lead to severe pushing action causing the ice to creep shoreward and scrape, gouge, and push soil and rock into mounds.

Ice ridges are natural berms that have formed around Minnesota's lakes over thousands of years. These mounds of material provide the lake with ecological benefits by creating a barrier to nutrient loading. Nutrients collect on the landward side of the mound, producing fertile soil where plants and trees thrive. The root systems of this near-shore plant community help to protect the shore from erosion and soak up additional nutrients. Thus ice ridges work to protect the shore from the lake itself.

If you return to a shoreline with an ice ridge, try to repair only that part of it that is needed for lake access.

CLA 2019 fiscal year end report (9/30/19)

by Carol Lindahl, treasurer

Cullen Lakes water quality report

by Ann Beaver, Water Quality Committee chair

Note: This report covers financial activity from 1/1/19 to 9/30/19. In 2018 the Board changed the fiscal year from the calendar year to October 1 - September 30.

INCOME

CLP Donations	\$36,900.00
Membership Dues	6,225.00
Interest	978.66
General Support Donations	25.00
Merchandise Sales	125.00
Legacy Fund Donations	175.00

TOTAL INCOME \$44,428.66

EXPENSES

Administration Committee

Annual Meetings/Supplies	\$515.04
LARA Membership	75.00
Soteroplos Scholarship	250.00
Subtotal	\$840.04

CLP Treatment (surveys only) \$11,734.53

Water Quality Monitoring \$645.00

Education

Guide/Map Update / Web Site	\$146.48
Newsletter Postage	453.80
Newsletter Printing	828.63
Web Site Management	266.20
Subtotal	\$1,695.11

Membership \$538.99

Other

Board Liability Insurance	\$873.00
Misc.: Postage, PO box	56.00
Subtotal	\$929.00

TOTAL EXPENSES \$16,382.67

CURRENT ASSETS

Checking Account	\$ 1,472.43
Business MM — Legacy Fund	48,226.84
Business Money Management	136,143.55
TOTAL	\$185,842.82

As most of you know by now, 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 plus 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 same time period, 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.

This year's water testing results were fairly consistent with those of past years. The table below shows this year's data as well as the average over the last ten years. For Secchi disk readings a high number is desirable. For Chl. *a* and TP a low number is wanted. Lower Cullen's extremely high TP number in August was either a fluke of nature or contamination of the water sample. However, the lake did experience a very unusual mid summer algae bloom that may have been the cause. There are a lot of factors and variables that affect water quality, however, so what we look for over the years are any trends that become evident.

The typical range for each parameter in our ecosystem is:
Secchi — 8-15 ft. Chl. *a* — max of 14.5 TP — 14-17

<u>Upper</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>10 yr. aver.</u>
Secchi (ft.)	8	14.5	11.5	8.5	7.5	10
Chl. <i>a</i> (ug/L)	15	4	10	4	7	6.5
TP (ug/L)	22	14	17	12	14	18.1

<u>Middle</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>10 yr. aver.</u>
Secchi (ft.)	9	13.5	13.5	13	9.5	9.8
Chl. <i>a</i> (ug/L)	11	6	4	5	13	7.1
TP (ug/L)	16	19	11	9	22	17.2

<u>Lower</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>10 yr. aver.</u>
Secchi (ft.)	11.5	15	13.5	8.5	8.5	12
Chl. <i>a</i> (ug/L)	5	4	3	5	4	5.2
TP (ug/L)	14	12	11	53	21	13.8

I want to thank our water quality monitors (and the family members who often assist them) for their dedication to the job: Denny Opsahl, Upper Cullen; Debi Oliverius, Middle Cullen; and Jim Burrell, Lower Cullen. The Burrells will be moving off lake; Denise and Eric Whitson have agreed to take over the Lower Cullen water testing in 2020.

2019 Minnesota Aquatic Invasive Species Research Center Showcase

from an article by Chuck Herrig, Gull Chain of
Lakes Association

Each September, the University of Minnesota Aquatic Invasive Species Research Center (MAISRC) holds a full day showcase event. The Research Center has 52 research projects currently underway. Here is a brief summary on some of the topics which were covered at last September's event.

The role of baitfish in the spread of AIS

The sale of minnows is a 2.4 million dollar industry in Minnesota. The illegal release of baitfish into waters has been verified as a pathway for introducing AIS to new waters. MAISRC examined golden shiner minnows at bait shops and found bacteria, disease and parasites present in those minnows. Surveys conducted by the Research Center found 20% of fishermen release minnows into the water when done fishing. This is a violation of state law. At our public accesses are trash containers near the boat ramps specifically for discarding live bait. A big opportunity is increasing awareness and marketing communication on the proper disposal of bait. The current DNR marketing campaign, Clean Drain Dry does not speak to bait disposal and probably needs to be looked at.

Starry Stonewort in Minnesota Lakes

This is a timely topic as starry stonewort has only recently been discovered in Minnesota Lakes (2015). Starry stonewort is spreading rapidly and is now found in 14 lakes in Minnesota. Unfortunately, little is known about this plant or how to control its spread. MAISRC conducted a study to examine starry stonewort's impact on native vegetation and how fast it spreads once it invades a lake. While research is still underway, findings so far indicate starry stonewort spreads incredibly fast and crowds out all native vegetation. Early detection is critical in order to control starry stonewort from widespread coverage. This invasive species warrants high priority for research to further determine options to best control or better yet eliminate it.

Impact of Zebra Mussels and Spiny Water Fleas on Walleye Survival

Zebra mussels and spiny water fleas both eat zoo plankton, which is also what newly hatched fish fry require as a food source. This research project is still underway and findings so far have been inconclusive. The questions the researchers want to answer are:

*Are first year walleye and perch survival rates impacted by reduced zoo plankton where these invasive species are present?

*Do these invasive species influence the location and food sources of sport fish?

*Is there reduced growth of sport fish when these invasive species are present?

The research thus far has been conducted in the top nine walleye lakes in Minnesota. Findings in these lakes indicate growth of first year walleyes is impacted when zebra mussels or spiny water fleas are present. However, there may be factors other than reduced zoo plankton affecting sport fish growth rates.

Aquatic Invasive Species Perceptions and Willingness for Water Users to Pay

This is a survey being conducted by MAISRC of lakeshore property owners, recreational lake users (at public accesses) and the general population. The goal of this survey is to determine public values and attitudes, awareness and risk perception, perceptions on AIS management, and willingness to pay (fee based public accesses, such as the U.S. Army Corps of Engineers Government Point landing on Gull Lake). Every year lake associations across Minnesota designate significant funding to manage and monitor AIS, so this survey can provide valuable insights on the public's point of view and support for what we do.

Lake user surveys were conducted last summer at public accesses on the Gull Lake chain and of Lakes Minnewashka, Koronis, and Pokegama. One thousand recreational users took the survey, including 274 users on the Gull Lake chain. The survey took about 10 minutes to complete. Findings from those surveyed include:

*AIS presence is not a factor when deciding which lake to go to.

*The survey results from all four lakes were surprisingly similar.

*54% of users surveyed would be willing to pay a user fee at the public access for AIS management.

*Those recreational users willing to pay a fee were generally higher income and more likely female. Those surveyed users less likely to pay a fee were fishermen, people who lived in close proximity to the public access, or were frequent visitors.

*Those not willing to pay a user fee gave the following reasons: 1) Already pay enough taxes, 2) Would never support making lake access fee-based, regardless of the reason.

The next steps are to analyze the survey results from lakeshore property owners and the general population. Those results should be ready in early 2020.

Save the Date!
CLA Annual Meeting
Saturday, August 8

There's a big change to the trails between Upper and Middle Cullen Lakes

by Tom Beaver

In the 2018 summer CLA newsletter Patty Hicks wrote about the changes in the hiking vistas that resulted from the logging of parts of the Upper Cullen Memorial Forest. The forested vistas that had existed along the trails maintained in this area by Cullen Lakes volunteers and used in all seasons by area resident, lake property owners, and visitors had become wide open vistas with rolling hills — still a good hike by any means, just different than what they were.

Patti also described the trailhead which begins off Wilderness road and has a parking lot and posted map of the area: “The trail winds through the woods past a wetland area ...” Well, it doesn't anymore.

The trail from the parking area has taken on a new look!



Last fall the west entrance to the trails was clear cut eastward from the trailhead parking lot for about half a mile. While the trails still remain and are usable, the vista in all directions is wide open and fairly flat.

It's a given that Crow Wing County and the DNR are going to log their mature forests and it's something we have to adapt to and live with. But that doesn't mean we have to like it. Once you get past the recently logged area the trails and vistas have not been changed since the last logging event. So, don't despair. The area still remains a good hike with varying scenery. And this winter you don't have to stick to a trail for snowshoeing, you can meander pretty much wherever you like for the first half mile or so.

Meanwhile, with this latest logging activity and my advancing age (85), I will no longer be maintaining a groomed cross country skiing and snowshoe trail. You can still use the trails for those winter activities, you'll just have to break trail yourself unless someone else has beat you to it.

As CO2 goes, so goes temperature

from *Minnesota Environment*, a former MPCA publication

Paleoclimatology is the study of past climate, for times prior to instrumental weather measurements. Paleoclimatologists use information from tree rings, ice cores, cave stalactites, fossils, ancient pollen, corals, and ocean and lake sediments that record variation in past climate. Information about past climate from these sources is important because instrumental records of climate are limited in many parts of the world to the past 100 years.

Paleoclimatology helps us to better understand the roles of natural climate variability and human-induced climate change. It also tells us how much temperature change occurred in the past when carbon dioxide levels were different. Studies show that the reduction in CO2 during the last glacial period was accompanied by a 3 degree Celsius cooling in the western tropical oceans. Changes at higher latitudes (like Minnesota) were much larger and included the growth of large ice sheets.

Earth has experienced other warm times in the past. Although these warm periods were due to complex causes, it is clear that Earth's temperatures correlate with the amount of CO2 in the atmosphere.

Help wanted!

The Cullen Lakes Association sends new lakeshore property owners a welcome letter and a new owner's packet containing many informative and helpful brochures and handy AIS identification cards, as well as the most recent newsletter and property owner map/guide.

Sometimes we don't learn of a change in property ownership for several months. Please help us by letting us know if you sell your property and who the new owners are. If a new neighbor moves in near you, introduce yourself and let CLA know who they are.

Thanks!

Currents On the Cullens

New Owners

Michael & Lorrie Rode, Middle Cullen (M41)

Deaths

Tom Fleck, Middle Cullen (M17)

Donna Galles, Upper Cullen (U8)

John O'Shea, Lower Cullen (L99)

Doug Woog, Middle Cullen (M36)

Al Zarrella, Upper Cullen (U12)