
THE CULLEN CURRENTS

Winter, 2022



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 13th 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, 2022.

If you have an irrigation system for your yard that uses lake water, you should 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. You can also email Ann Beaver at the aforementioned address and ask her to email you the date when the treatment will take place.

CLA membership

by Carol Lindahl, Membership Committee chair

As of January 20, 2022 we have 174 paid members. Of these, 11 are associate members (former owners or family members of owners). We also have 5 complimentary members (new property owners). Membership letters for 2022 were mailed in early December to allow for those wanting to use a donation for 2021 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.

In addition, 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.

Important: 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 or by emailing the information to Ann Beaver or me (email addresses on the last page of this newsletter).

Curly leaf pondweed (CLP) management donations update

The CLA Board of Directors thanks all who have already contributed to the 2022 CLP treatment fund. The very positive response is impressive.

Here are some of the statistics as of January 20:

- *136 property owners and family members have made a CLP donation. There are 174 dues paying CLA members so far this year, so that's 78%!
- *62 contributed the \$250 suggested in the membership mailing.
- *30 contributed more than the suggested \$250.
- *Contributions have ranged from \$25 to \$2,000.
- *Contributions total \$31,250.

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.

Getting a handle on curly leaf pondweed

The Cullen Lakes Association started the treatment of nuisance areas of curly leaf pondweed (CLP) in the three Cullen Lakes in the spring of 2009. After a good first couple of years, we started to experience treatment and communication problems with the company we had hired to do the work. When our contract with that company expired, in the fall of 2012 we interviewed several other companies and decided to hire Clarke Aquatic Services on a one year trial basis. We were pleased with their work and the ease of communication with them and have been working with them ever since.

The data below shows the progress made in reducing the acres of nuisance CLP in each lake. As you can see, it took five years of treating much the same areas to noticeably reduce the success of the CLP turions (seeds) that remained in the lakebed each year to germinate.

There remain other areas in the lakes where CLP is growing, but they aren't of a size that can be effectively treated. They need to be large enough for the treatment chemical to stay in contact with the growing CLP long enough to have an effect.

<u>Year</u>	<u>U.C. acres</u>	<u>M.C. acres</u>	<u>L.C. acres</u>
2021	7.7	5.5	18.9
2020	10.81	13.18	22.05
2019	8.32	0	3.9
2018	0	0	0
2017	33.16	18.41	26.19
2016	44.16	18.92	26.08
2015	44.58	18.38	26.75
2014	44.75	18.99	26.64
2013	42.24	18.99	39.18

0 means none was allowed by the MN Department of Natural Resources that year.

One fishy art contest



Know any Minnesota K-12 students who love to draw fish? Encourage them to enter the Minnesota Fish Art Contest by March 31, 2022 for a chance to win state and national honors. This year's competition is hosted by Minnesota Conservation Volunteer (a DNR magazine) in partnership with the conservation nonprofit Wildlife Forever.

For more information visit tinyurl.com/FishArtContest.



Planning on renting out your lakeshore property?

For those of you thinking about or planning on renting out your lake property, remember that you are required to obtain an annual short-term rental license from Crow Wing County. (The County short-term rental ordinance covers the entire county, even its cities.)

This ordinance covers any home, cabin, etc. that is rented to the public on a nightly, weekly, or monthly (30 days or less) basis.

The purpose of the ordinance is to continue the allowed use of short-term rentals while mitigating possible adverse impacts to the health, safety, welfare, and quality of life of surrounding properties as well as to water and environmental quality. The ordinance outlines the owner's responsibilities to abide by rules concerning septic systems and solid waste, occupancy, noise, parking, and conformity with existing county and state requirements.

The full text of the ordinance can be found on the County's web site — www.co.crow-wing.mn.us.

Everyday conservation

Prune your oaks properly

from the Minnesota Conservation Volunteer

Editor's note: This topic was covered in the summer 2021 newsletter, but the information merits being repeated.

Oaks are a common tree across much of Minnesota and if you're a property owner with oaks on your land, you may want to occasionally prune dangerous or obstructive branches. But if you do so, take caution: pruning oaks at the wrong time can make them more susceptible to oak wilt, a deadly disease that is slowly spreading northward across the state.

Help keep oak wilt away by doing these things:

*Limit oak pruning to August through March, when the risk of oak wilt transmission is low. If you must prune from April through July, paint the wound right away with a pruning paint that will prevent oak wilt infection.

*If a tree becomes infected with oak wilt and dies, the wood is at risk of spreading spores that could infect other oaks. Follow DNR guidelines for properly handling infected wood.

*Consider hiring a contractor to address oak wilt if you find it on your property.

Learn more about oak wilt and how to manage it at mndnr.gov/treecare/forest_health/oakwilt.

Nongame Wildlife Success Stories

from the MN DNR website

Osprey

One of nature's most proficient anglers, ospreys were originally found throughout Minnesota. But they disappeared from the Twin Cities area after World War II due to habitat loss, human persecution, and other factors. In

1984, the DNR Nongame Wildlife Program, Three Rivers Park District, and other conservation partners worked together to restore Minnesota's osprey population. Nest platforms were built to promote nesting in the Twin Cities area and more than 100 osprey chicks were bred in captivity and released into the wild. This restoration work was a resounding success: 2013 surveys estimated the population in Minnesota was more than 1,100 osprey with trends for a steady or increasing population. Osprey were removed from the state list of Special Concern Species in 1996 and removed from the Species of Greatest Conservation Need list in 2015.

Trumpeter Swans

The trumpeter swan's graceful figure and distinctive call may be a common sight now, but at one point there were only 69 swans in the lower 48 states. By 1930, America's trumpeter swan population was almost extinct. But thanks to initiatives by the Minnesota Nongame

Wildlife Program, the Red Rock Lakes National Wildlife Refuge, Hennepin County Park Reserve District (now Three Rivers Park District), and many other organizations and agencies, Minnesota is now home to more than 30,000 swans!

By restoring habitats and carefully breeding and releasing swans, we've helped make it possible for current and future generations of Minnesotans to enjoy the sight and sounds of this beautiful bird.



Eastern Bluebird

Minnesota's bluebird population declined dramatically during the 1930s-1960s due to loss of habitat and competition from other cavity-nesting birds, like starlings and house sparrows. The Nongame Wildlife Program partnered with the Bluebird Recovery Program of the Minneapolis Chapter of National



Audubon to sponsor workshops, publish education materials, and promote the placement of bluebird houses to bring back this songbird. Restoration efforts paid off and Minnesota now has one of the most successful bluebird recoveries in the nation. 2019 reports show that there were more than 10,000 fledged bluebirds!

Bald Eagle

Once pushed to the brink of extinction, the recovery of the bald eagle population continues to amaze both casual birdwatchers and professional biologists. Wanton killing, habitat loss, and the use of pesticides all dramatically reduced the bald eagle population in America to a point where they were listed as an endangered species. Thanks to the work of the Nongame Wildlife Program, the Raptor Center, and many other individuals and agencies, the bald eagle has not only survived, but thrived. By passing laws against lead shot for all waterfowl hunting in Minnesota, preparing individual nest management plans for bald eagles, and conducting surveys, we have helped to dramatically increase the bald eagle population. In 1980, there were only 181 active nesting territories in Minnesota, but in 2019 it was estimated that there are more than 1,600 nesting pairs!



Currents On the Cullens

New Owners

Richard & Heidi Bell, Lower Cullen (L70)
Amy Brugen, Lower Cullen (L70)
Glenn & Natalie Elliott, Lower Cullen (L69)
Michelle Reed, Middle Cullen (M115)
Steven Woog, Middle Cullen (M24)

Deaths

Joe Boston, Lower Cullen (L68)
Doug Theis, Lower Cullen (L55)

Cullen Lakes water quality report

by Ann Beaver, Water Quality Committee chair

As I explain each year, the water quality of a lake is determined by sampling three parameters May through September: water clarity (Secchi disk reading), total phosphorus (TP), 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 lakes in this area, their total phosphorus is usually in the low to middle of the range, and their chlorophyll *a* is usually in the low part of this range. Over the same time period, **Upper Cullen** has fallen into the high mesotrophic range. Its water clarity is in the low to middle part of the range, its total phosphorus is usually in the middle of the range, and its chlorophyll *a* is usually in the high part of the 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*. 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.

Upper	May	June	July	Aug.	Sept.	2021 aver.	10 yr. aver.	Typical for ecosystem
Secchi (ft.)	14.5	13.5	12	7	6.5	10.7	9.2	8 to 15
Chl. <i>a</i> (ug/L)	4.8	2.7	3.2	11	13	6.9	9.6	max. of 14.5
TP (ug/L)	21	<5	18	31	28	20.6	20.7	14 to 27
Middle	May	June	July	Aug.	Sept.	2021 aver.	10 yr. aver.	Typical for ecosystem
Secchi (ft.)	13.5	15	15.5	15.5	13	14.5	12.1	8 to 15
Chl. <i>a</i> (ug/L)	3.2	1.6	2.1	2.7	4.3	2.8	5.9	max. of 14.5
TP (ug/L)	18	19	13	18	13	16.2	14.8	14 to 27
Lower	May	June	July	Aug.	Sept.	2021 aver.	10 yr. aver.	Typical for ecosystem
Secchi (ft.)	17.5	17.5	18	15.5	13.5	16.4	12.4	8 to 15
Chl. <i>a</i> (ug/L)	1.6	2.7	1.6	2.1	3.7	2.3	5.2	max. of 14.5
TP (ug/L)	15	15	16	19	15	16	14.9	14 to 27

I want to thank our water quality monitors (and family members who often help them) for their dedication to the job: Denny Opsahl, Upper Cullen; Debi Oliverius, Middle Cullen; and Denise and Eric Whitson, Lower Cullen.

SWCD holds its 24th annual tree and plant sale

The Crow Wing Soil and Water Conservation District (SWCD) is offering high quality native trees, shrubs, flowers and grasses for sale. The deadline for ordering is February 25.

Native trees for sale include white pine, white spruce, American wild plum, paper birch, red oak and more. To order and for pictures and descriptions of all the trees, plants and seed mixes, visit www.cwswcd.org.

The trees and plants will be available for pickup from 8 a.m. to 5 p.m. May 12 and 13 at the Crow Wing County Fairgrounds, curling building, at 2000 SE 13th St. in Brainerd.

Save the Date!
CLA Annual Meeting
Saturday, August 13

meeting format
to be determined by the
status of the COVID-19 pandemic

Climate change translates to shorter lake ice cover

by Moriya Rufer
RMB Environmental Laboratories

Many of us northern 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 climate change? 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.

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, climate change 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.

Field notes on ice

from Minnesota Conservation Volunteer, Jan.-Feb. 2022

Ice is an amazing substance. Unlike most other common chemicals, water is less dense after it solidifies than it was just before. So ice floats and lakes freeze from the top down instead of the bottom up.

Thin Spots. Ice isn't the same thickness everywhere. Springs, streams, and plants can all create thin spots. So can cracks and snow cover.

Freeze. Shallow water cools faster than deep water, so ice tends to form along shorelines first. Once the whole lake drops to 39 degrees, ice can form anywhere. In calm spots, ice may form thin, clear sheets. In turbulent water, it may freeze into every-which-way crystals known as frazil ice.

Frigid Fractures. The density difference means that as temperatures change, ice contracts and expands. This can cause cracks — and loud, booming sounds as they form.

Autumn Cool-Down. Water is most dense at 39 degrees Fahrenheit. That means that in the fall, as temperatures drop, the water at the surface sinks. Once the entire lake is at 39 degrees, the surface water continues to cool, but it doesn't sink. At about 32 degrees, it turns into ice.

Life Under Ice. The almost-frozen water under the ice provides habitat that allows lake-dwellers to avoid freezing in the winter.

*Turtles burrow into the sediments at the bottom. They absorb oxygen from the water through their skin and change their metabolism so they can get by with less.

*Aquatic frogs hibernate on, not in, the sediments.

*Fish continue swimming, though very slowly, in the chilly water beneath the ice, water which remains at 39 degrees.