Moon Lake Riparian Association Newsletter

#145 **moonlake.org** **Spring 2024**

From the President

Steve Sunderland

Greetings,
After the incredible disappearing act of winter, we are now quickly moving into another summer on Moon Lake. Let's hope the weather will allow for all the fun activities we all enjoy in and around our beloved lake.
In this Spring newsletter you will find useful information on Moon Lake and surrounding area happenings, and check out the article written by our very own next generation Moon Lake resident currently enrolled at Michigan Tech University, Anne Matusiak. THANK YOU, Anne, for providing this article and for all your work and study to protect our natural environment.

I hope you all have a safe, enjoyable and healthy summer!

Steve Sunderland

In Memory of our Moon Lake Departed Residents:

Jerry Granat Oct 22, 2023

Judy Sick (past resident)
May 9, 2024

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-Mark Your Calendars-

The MLRA Annual Meeting and Social

Saturday, August 3, 2024

At the Land O' Lakes VFW
4pm Meeting
5pm Social
Bring a dish to pass. Cash Bar.

Our Watersmeet Trustee Yvonne Clark will attend with important updates on our township and take questions from the audience

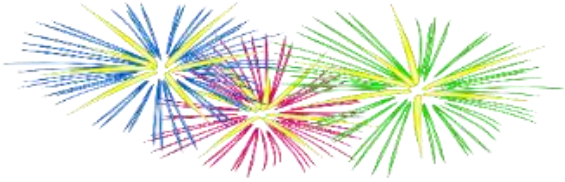
It's Time

2024 Moon Lake Riparian Association Dues $25

check made out to MLRA, or cash to Treasurer Eric Zorr or in-person at the Annual Meeting

Eric Zorr
PO Box 664
Land O' Lakes, WI 54540

Additional donations are welcome and go directly into our Moon Lake Invasive Species Mitigation fund. Thank you!



4th of July Moon Lake Boat Parade

Thursday July 4th at 7:00pm

Rain or shine! Everyone is welcome to join in the celebration by decorating your boat and/or dock/pier, or just join in as you are! See you on the lake.

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SOMETHING NEW IN TOWN!

LOL Farmer's Market has Farm Fresh Produce!

Thursdays 8am-1pm In lot behind the Gateway BP. Be sure to stop by and meet Andy from the new ***Mother Farmer*** stand, a no-till, certified naturally grown farm in Ewen, MI bringing seasonal produce, eggs, and lots more! Check out their website here at www.motherfarmerup.com

Also, a reminder…

Sundays 10**am-2pm** Watersmeet again has their craft and treasure market on the corner of Hwy 2 and 45

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Great Lakes Invasive Species Essay

By Anne Matusiak (Daughter of Moon Lake home owner & MLRA member Rob Matusiak)

December 5, 2023

The Chinese Mystery Snail

I've spent many summers in Watersmeet, Michigan. The region is populated with hundreds of lakes, and as time has passed, I've become accustomed to their ecosystems. Moon Lake, where I've spent the most of my time, is a fairly quiet lake. Overfished in years past, it is home mostly to pontoons and a few fishing and speed boats. When I was younger, I remember walking in the shallow parts of the lake with my friends, each of us carrying bucketfuls of snails. We showed them to our parents, proud to have so many. They were identified as Chinese Mystery Snails, an invasive species. We were told to throw them onto the beach whenever we saw them because of their harmful effects on the ecosystem. That was my first interaction with an invasive species, and since then I've been fascinated with the snails and enjoy keeping track of them on Moon Lake.

Cipangopaludina chinensis, more commonly known as the Chinese Mystery Snail, is native to Southeastern Asia in regions including Thailand, China, Korea, and Japan, and even reaches into parts of Russia as well (Kingsbury et al 2020). The Chinese Mystery Snail has

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often been confused with the Japanese Mystery Snail, Heterogen japonica, and there is some debate on whether they are the same species (Smithsonian Environmental Research Center, 2022). C.chinensis is a freshwater mollusk often found in rivers, lakes, and rice paddies. Ranging from two to three inches in size, these snails have fairly large spiral shells to fend off predators. They typically eat zooplankton and phytoplankton and have been found to both graze and filter feed. Chinese Mystery Snails are dioecious, having distinct male and female individuals. They are also viviparous, meaning they have live births in contrast to releasing eggs. The snails are known to contribute positively to their native ecosystem, but that may not be the case for the environments they have invaded (Kingsbury et al 2020).

In their native environment in Asia, C. chinensis are often preyed on by ducks, carp, and turtles. They are also harvested as feed for fisheries and are even consumed by humans. They are known to provide nutrients for their environment and positively impact rice production (Kingsbury et al 2020). Chinese Mystery Snails first arrived in North America as a delicacy for an Asian food market in San Francisco, California in the 1890s. They spread across the continent as a food item, in garden ponds, and eventually between lakes through boats. In North America, C. chinensis has been established in 27 states and parts of Quebec (Solomon et al 2009). They have infested lakes across the country, including Lake Michigan, Lake Erie, and Lake Ontario, possibly being introduced to the Great Lakes system through an aquarium dumped in the Niagara River (Kipp et al 2023). Though there is not much recorded about the effect C. chinensis has on the Great Lakes themselves, there is some research that has been conducted on smaller lakes within the Great Lakes watershed, specifically the Northern Highlands Lake District in Wisconsin (Solomon et al 2009). The research conducted in this area evaluated the location, quantity, and impact of the snails in this region. Forty-four lakes were studied in total, and half of those lakes were found to have established populations of C. chinensis (Solomon et al 2009). The snails were found most densely near boat launches, suggesting they had been introduced to the lakes through traveling boats. In the lakes where Chinese Mystery Snails were present, there were statistically less native snails present, suggesting they have negatively impacted ecosystems (Solomon et al 2009).

C. chinensis competes for resources with native mussels. The invasive snails have many advantages over indigenous mollusks, including their ability to both filter feed and graze through sediment using their radula. Most freshwater mollusks, on the other hand, either filter feed or graze, limiting their food options (Kingsbury at al 2020). North American predators of C. chinensis include largemouth bass, pumpkinseed, and crayfish. Because of their large and pointed shells, however, native snails are often preferred over the Chinese Mystery Snails. As a result of this and the ability for C. chinensis to consume in a variety of ways, native mussel populations have been in decline (Kingsbury at al 2020). In addition, Chinese mystery snails produce a large amount of fecal matter, which alters the nitrogen and phosphorus cycles in the ecosystem. Even with this information in mind, scientists are unsure if the overall effect of the Chinese Mystery Snails is harmful (Kingsbury at al 2020). Though evidence suggests they outcompete native species, nothing drastic has been observed yet as a result of their presence. However, when combined with other invasive species, the results can sometimes be detrimental. For example, an indigenous mollusk species, L. Stagnalis, had a 90% population decrease as a result of the effects of both the rusty crayfish and the Chinese Mystery Snail (Smithsonian Environmental Research Center, 2022).

Because there is not much research on C. chinensis in North America, information is not conclusive on whether the species is an active threat on the Great Lakes' environment. While Chinese Mystery Snails do have invasive tendencies, their effects pale in comparison to what zebra and quagga mussels have done.

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Both have been recorded to clog pipes, but zebra mussels are overall far more populous and have overtaken far greater areas (Kingsbury at al 2020). Despite this, the information gathered does reveal that Chinese Mystery Snails tend to outcompete native mollusks, which means that over time, native species will likely continue to decline. Especially with other invasive species involved, this could be detrimental to the native ecosystem.

Management of the Chinese Mystery Snail is not an easy task. Molluscicides like copper sulfate and rotenone are not only ineffective against the snails but are also harmful to other species (Kingsbury at al 2020). They can also survive up to 9 weeks exposed to air, meaning they can easily be transferred from one lake to another via boat, even if it was left to dry for a significant period of time. Simply extracting them from an ecosystem is also inefficient, not only for the sake of time but because the younger snails often burrow under rocks and sediment, making them difficult to find (Kingsbury et al 2020).

A possible strategy to manage the C. chinensis could be to introduce predator turtles and fishes to their environment (Kipp et al 2023). Even though the Chinese Mystery Snail may not be an obvious threat now, it is possible they could become one in the future. Reducing the spread of the species through careful cleaning of boats may be one way to mitigate the potential issue, as well as closely monitoring their presence (University of Illinois 2023).

The Chinese Mystery Snail has established itself across North America as an invasive species, altering the ecosystems of smaller lakes among Great Lakes basins. As a result of their introduction, C. chinensis has reduced resources for indigenous mollusks, therefore reducing native populations, especially when combined with other invasive species. The effects of the Chinese Mystery Snail are not as drastic as other invasive species, especially among the Great Lakes themselves, meaning not much research has been done to mitigate their population.
Despite this, it is still important to monitor the relationship between C. chinensis and its environment to ensure that nothing drastic does occur. As seen when in combination with invasives like the rusty crayfish, excessive damage is possible. In the future, the Chinese Mystery Snail could grow to become a greater issue for the Great Lakes, so preventing as much
spread of the species as possible would likely be the best strategy to protect the ecosystems of North America.

Burn or Bury your Chinese Mystery Snails!

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Moon Lake Water Quality Report
Steve Lapalio

Click on the following link to see the Cooperative Lakes Monitoring Program 2023 report. Moon Lake continues to be oligotrophic.
CLMP Gogebic 2023

Water level was 8.4 ft at ice out (level at ice-over last fall was 8.8 ft), as measured at the gauge set up in the West Bay. Measurements are taken three times a year – at ice out, Aug, and ice over.

2024 Moon Lake Ice-Out Date

April 15th - almost a month earlier than last year. Thanks to Frank Kuchevar for reporting.

Lake Trout in Moon Lake?

Yes, the rumor is true. Last fall, 95 adult Lake Trout were stocked in Moon Lake. They came from the Marquette State Fish Hatchery and were 28 inches on average in length. The Michigan DNR prescription for Moon Lake, through 2032, is to incorporate 100 retired lake trout broodstock annually when they are available. Thanks to Steve Lapalio for coordinating this program.

Here is a recent catch by CJ Reiels, son of Mike and Julie.

There's a New Ranger in Town!

Thank you to Carol Youman for her love and diligence of loon monitoring these past several years. Upon her retirement as Loon Ranger, Steve Sunderland has taken on the role. Please do continue to share any noteworthy loon activity on the lake.

Here's an update on the loons this season:

- Our Moon Lake loon pair arrived back to the lake on April 11th
- They started nesting May 21st in the West Bay so we could perhaps see a baby around June 20th
- The buoys have been deployed on the West Bay to discourage boats from entering during the nesting season
- An eagle has been seen flying over the lake almost daily. Our loons will make a wavering call called a tremolo as they will feel threatened by it. This call is also known as the "crazy laugh" or "laughing call"

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The Moon Lake "Ladies of the Lake"

(and friends) continue to be an active group! Above are the ladies gathered in March to say goodbye to Elaine Granat who recently moved to the Chicago area. The group plans to meet monthly so watch for email invitations.

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Let's Keep Light Pollution in Mind this Summer…

We touched on this a bit last fall, but is worth the reminder as we enter upon our busiest time of year on Moon Lake. Lights on at night, whether yard, house or dock lights, do interfere not only with neighbors enjoying the night sky, but the nocturnal habitat. If you do need to use lighting at night, please consider up/down lighting and/or motion lights. Thank you from the MLRA Board.

Friends of Land O' Lakes Library is hosting their annual Book Sale and Silent Auction:

Mark your calendars!

Saturday, July 27th
9am-2pm
(Auction closes at 1pm)
Land O'Lakes Library

AND...Raffle tickets also available at the library now thru July 27th.

3 Great Prizes: River Table, 2-person Kayak, $100 Kwik Trip Gas Cards
See displays in Library

Some Northwoods Humor… …On Hiking

Various authors

"I chose the road less traveled and now I don't know where I am."

"Always hike with someone in worse shape than you. The bears out there will know."

"I don't get it. The trail looked so flat on the map."

"Going on a hike is like having your car break down but on purpose."

"Everywhere is within walking distance if you have the time."

Have a great summer!
Respectfully Submitted,
Steve and Carleen Sunderland

Flourless Sea Salt Brownies

I made this in a round cake pan for my last birthday – what a hit with a scoop of vanilla bean ice-cream!

2 large egg whites
1 c. finely ground almond meal, such as Bob's Red Mill
½ c. unsweetened cocoa powder
1 tsp baking soda
½ c. honey
¾ c. chocolate chips
¼ tsp flaky sea salt

325 Oven. Spray 8x8 pan with oil. Place a sheet of parchment paper to hang over sides (to form a sling so you can easily remove the brownies once baked. Wisk egg whites. In a separate bowl, whisk together almond meal, cocoa powder, baking soda and ¼ tsp salt. Add egg whites and stir. Add 6 tbsp. water and honey, stir and fold in chocolate chips. Scrape batter into prepared pan.

Bake 30-35 min until toothpick comes out clean. Immediately sprinkle with sea salt. Let cool, then refrigerate until firm, cut and serve. Enjoy!
Carleen