

# Leech Lake

ASSOCIATION



The Voice of Leech Lake

**Our Mission:** To be good stewards of Leech Lake and its environs, recognizing the vulnerability of the lake, and the need for citizens -- both individually and collectively -- to assume responsibility for its care.

April 12, 2021



Photo by Dave Laursen

Walker Bay looking north towards Breezy and Templar Points

*The lake is open, but who could tell?*

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**UPCOMING EVENTS**

**May 15th**

*Walleye/Northern/Bass Fishing Season Opener*

**June 17-19**

*Moondance Jammin Country*

**July 4**

*Fireworks – City Park*

**July 22-24**

*Moondance Jam*

**August 5**

*Walker Bay Days*

**August 6**

*Leech Lake Association Annual Meeting & Picnic*

**August 7-9**

*Leech Lake Regatta*

**August 14**

*Cajun Fest, Northern Lights Casino*

**September 10-12**

*Muskies Inc. Int'l Tournament*

**September 10**

*Ethnic Fest*

**September 16**

*Walker North Country Races*

**Letter from the President:**

As I look out my window this morning I see a lake free of ice and five inches of snow on the ground -- perhaps not surprising for Minnesota in April. But we can hope that this year's early ice out is a harbinger of an early spring, and good things to come: the end of the year-long lockdowns, and the resumption of normal life where we can see family and friends without fear, or restrictions. At least we can hope, and hope does indeed spring eternal -- particularly on the lake, in the spring.

Although we have not been able to meet in person this past year, the work of the Leech Lake Association has continued. Each month from May through September our volunteers collected water samples for analysis of water chemistry and phytoplankton populations. This is a multi-year study that will monitor the impact of zebra mussels and other invaders on Leech Lake over time. Their impact may or may not be severe, but could affect property values, fishing, and our important tourism industry. We believe it important that this information be collected and made available.

We also met during 2020 with the DNR and the Fisheries Input Group through zoom meetings to update the 2015-2020 Leech Lake Fisheries Management Plan which will be extended through 2025.

We continue to support the acquisition of sensitive lakeshore and off-shore spawning beds on Miller Bay (Whipholt area), which seems to be proceeding on schedule. This and other ongoing efforts are discussed in more detail in this newsletter.

During 2020, we obtained the necessary Tribal permits and had Ryan Bruns dredge the Roosevelt Canal to remove sand and rocks which were starting to clog the Traders Bay



Roosevelt Canal

*(letter from the president continued on page 2)*

*(Letter from the president continued from page 1)*

entrance. Ryan donated his time and equipment to do this. We also inspected the canal a few days ago and decided that the canal did not need to be dredged at this time, thanks in part to the recent rain and snow. However, we will continue to monitor the canal over the next few weeks and dredge if necessary.

The LLA Board intends to begin meeting in person the 3rd Monday of the month at the Cass County Courthouse as soon as it is safe to do, and the courthouse is open for meetings. We are not yet sure when this might be. Our Annual Meeting and Dinner, presently scheduled for August, also remains uncertain at this time. For information regarding future Leech Lake Association meetings, please contact our Secretary, Dave Laursen. We wish all of you a healthy and enjoyable summer.

*Robert Gísvold, President.*

## MILLER BAY ACQUISITION

For many years the Leech Lake Association has contributed time and dollars to the acquisition of sensitive shoreline areas and spawning beds on Leech Lake. One such project was the acquisition of sensitive shoreline on Five Mile Point to protect offshore spawning beds, for which we received a Governor's Habitat Conservation Award.

More recently, we have partnered with the DNR and the Northern Waters Land Trust to acquire and protect some six acres and 1300 feet of sensitive shoreline on Miller Bay off Rogers Point (see illustration). This shallow bay has been used for years by the DNR to trap spawning muskies and produce fingerlings for stocking elsewhere. A certain percentage of the fingerlings are also returned to Leech Lake.

The proposed acquisition is being pursued by the DNR and the Northern Waters Land Trust through two separate grants: one through RIM (Reinvest in Minnesota) and the other through a Conservation Partners Legacy Grant, plus private donations. As of this writing, land appraisals are being finalized and the opportunity to purchase this property from a willing seller appears to be moving forward. If the property is acquired, it will be conveyed to the DNR as a Leech Lake Aquatic Management Area (AMA).



## *Time to Get Those Docks in the Water...MN Fishing Opener May 15th*



# **m** DEPARTMENT OF NATURAL RESOURCES



## LEECH LAKE LOOKING AHEAD:

The 2021 fishing outlook on Leech Lake should be good. Walleye numbers were within management goals in the 2020 September survey with promising numbers of walleye that should be available for harvest for the opener. Walleye in the fall sample ranged in length from 6 to 27 inches, and again included a number of younger year classes large enough to harvest in the next year or two. The walleye regulation of 4 fish total with only 1 over 20.0 inches allowed in possession implemented in 2019 is showing early signs of being beneficial to walleye as well as the yellow perch population. We will continue to follow these trends with adjustments being made based on management plan objectives and action items.

New as of March 1, 2021 was the implementation of new sunfish and black crappie daily limits on Leech Lake. The previous limits of 20 sunfish and 10 crappie have been reduced to 5 sunfish and 5 crappie in an effort to protect the size quality of pan fish in the lake.

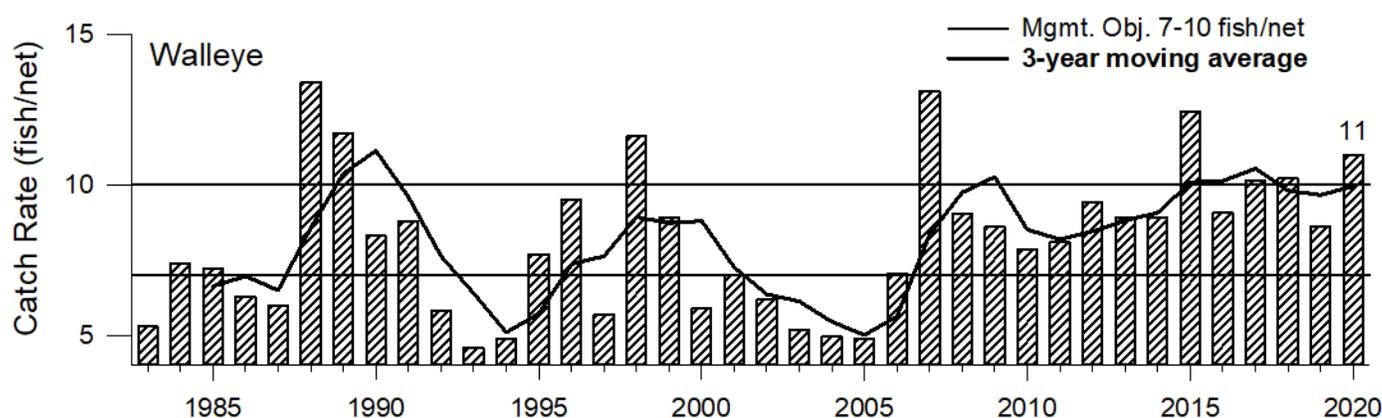
Northern pike catch rates were fairly consistent and within management objectives with 4.4 fish/net in the fall sample. Catch rates have historically ranged from 4 to 6 fish per net and the lower management goal is at least 4.2 fish/net. New northern pike zone regulations were put in place in 2018, and should benefit the northern pike population on Leech Lake.

Yellow perch numbers in the 2020 fall survey were just below management objectives but there were reports of anglers finding some larger fish during the winter season. Perch sampled ranged from 5 to 13 inches with 17 percent of fish over 8.0 inches.

A continued focus on Leech Lake is the impacts that zebra mussels will have in the future. Immature zebra mussel larvae, called veligers, were found in 2016. Adults have continued to be reported in various western bays in the summer of 2020. There are currently no known methods to control or reduce numbers of zebra mussels once they are found in natural systems. Aquatic invasive species (AIS) like zebra mussels are moved from infested to non-infested waters by anglers, boaters, and lake shore owners and can adversely impact lakes and fish populations. To avoid spreading AIS, lake users are required to remove all aquatic plants or animals from their watercraft and drain all water from their boat before leaving the access. Additional information on all of these topics can be found on the DNR website ([www.dnr.state.mn.us](http://www.dnr.state.mn.us)) or by contacting the Walker Area Fisheries office.

## 2020 SURVEY WORK – LEECH LAKE

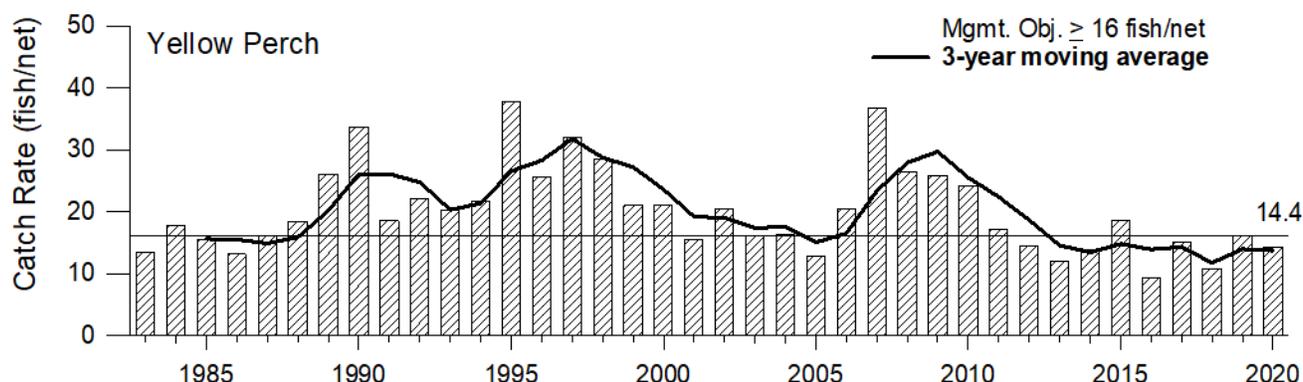
- **Walleye Abundance and Size Range:** The gill net catch rate of 11 fish/net was above the management objective range (7-10 fish/net) with very good reports from area anglers and guides in 2020. Lengths of Walleye sampled ranged from 6 to 27 inches and demonstrated a balanced size distribution.



*(DNR Report continued on page 4)*

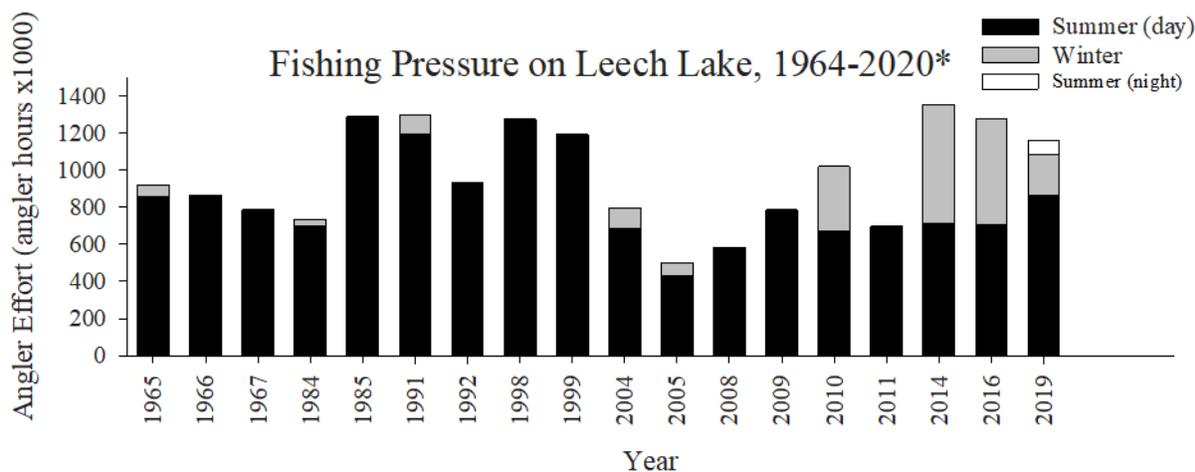
(DNR Report continued from page 3)

- **Yellow Perch Abundance and Size Range:** The gill net catch rate (14.4 fish/net) was just below the management plan objective of at least 16 perch per net. Perch up to 13 inches long were sampled.



If you have questions, comments or requests please contact:  
 Carl Pedersen, Large Lake Specialist ([carl.pedersen@state.mn.us](mailto:carl.pedersen@state.mn.us)) or  
 Doug Schultz, Area Fisheries Manager ([doug.w.schultz@state.mn.us](mailto:doug.w.schultz@state.mn.us))

- **Seasonal Angling Pressure:** Creel surveys conducted in 2019 and the winter of 2019-20 showed angling pressure was within historical averages. Additionally, a nighttime summer component was added to the 2019 summer creel survey to estimate the amount of angling that occurs in the first few hours after dark.



\*For years when a winter creel was conducted the year when the creel was initiated is indicated on the graph, even though they were conducted in portions of two calendar years.

## 2020 SURVEY WORK ON LEECH LAKE

- The COVID-19 pandemic had some effects on sampling on the lake in 2020 with staff needing to maintain social distancing. As a result some sampling activities were canceled and unfortunately we were unable to work with volunteers as we have in the past.
- A cooperative project in conjunction with the Leech Lake Association continued in 2020 to sample and track the phytoplankton (algae) composition in the lake. This is the base of the food chain and will provide valuable information as we continue to track the expansion of zebra mussels in the lake.
- Monthly sampling of zooplankton at five locations lake wide was initiated in 2012 and continued from mid-May through mid-September, zooplankton densities and biomass do not currently show impacts from zebra mussels with not all 2020 samples being analyzed yet.

(DNR Report continued on page 5)

*(DNR Report continued from page 4)*

- Standard July shoreline beach seining was completed, no walleye were caught but yellow perch were sampled at each sampling site.
- Standard trawling that historically has been completed in August and has been used to get an idea on young walleye sizes was canceled in 2020 due to the inability to socially distance while conducting that sampling and the number of staff that this sampling requires.
- The annual gill net survey used to specifically target walleye, yellow perch and northern pike was completed from September 8-18. Catch rates were above management goals for walleye, within goal for pike and just below goals for yellow perch.
- Tullibee (Cisco) catch rates reversed a downward trend seen in the previous few years and were above average.
- Shoreline night time electrofishing for young-of-year walleye was completed from late September into October. The overall catch rate was below the long-term average but the average length was above the long-term average.
- Muskie egg take from Leech Lake is scheduled for the spring of 2021.

## **DNR LEECH LAKE MANAGEMENT PLAN UPDATED**

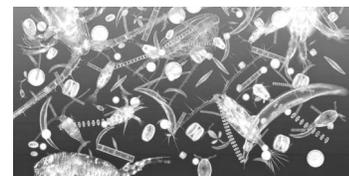
The Minnesota DNR met with the Leech Lake Fisheries Input Group (LLFIG) in November of 2020 to review the status of the Leech Lake fishery relative to the goals and objectives of the DNR's 2015-2020 Leech Lake Management Plan. Specifically, whether that plan needed major changes, or could, with minor revisions, form the basis for the 2021-2025 Lake Management Plan. The census of the group was that the prior plan was working well and should be continued.

While the five-year plans serve as a guide, they have always been flexible in the sense that changes will be made when warranted. As an example, the walleye slot was relaxed in 2014 (from 18-26 inches to 20-26 inches) and in 2020 regulations were changed to reduce the walleye possession limit to four, and to allow the harvest of one walleye over 20 inches to reduce predatory pressure on yellow perch.

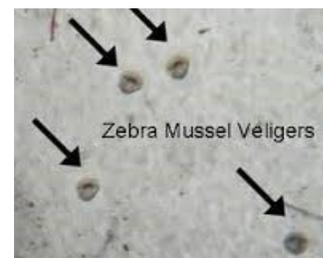
The Leech Lake Fisheries Input Group (LLFIG) was established in 2010 to assist the DNR in developing its 2011-2015 Lake Management Plan, and has been active since. The group provides diverse local and statewide perspectives and input on Leech Lake fisheries management. In 2020 the LLFIG worked to update and extend the 2015-2020 Lake Management Plan which will guide fisheries management of the lake through 2025. The plan is written for use by both the DNR and citizens who are interested in the management of the fishery resource. This plan is based on a fish community approach to fishery management. It builds on the successes of and knowledge gained from previous plans by recommending specific goals, objectives, and management actions aimed at preserving a high-quality, species-diverse fishery in Leech Lake.

## **ZEBRA MUSSEL VELIGER NUMBERS INCREASING**

The DNR collects zooplankton samples at five different locations on Leech Lake during the summer and fall. During 2019 and 2020 these samples were also counted for the number of immature Zebra Mussels (veligers) present in those samples. The table below shows that there was a significant increase in the number of veligers from 2019 to 2020, particularly in Agency Bay. The July/August sample period showed continued veliger presence at all five sites, with Agency, Portage, and Kabekona bays extending into the September period. This is to be expected since adult zebra mussels are now being found in different bays of the lake. The good news is that no Spiny Water Fleas were found in the samples, which are particularly destructive to the natural food chain.



*Zooplankton Samples*



*(Zebra Mussels continued on page 6)*

(Zebra Mussels continued from page 5)

#### Leech Lake veliger sample counts – 2020 zooplankton samples

	Walker Bay	Agency Bay	Portage Bay	Kabekona Bay	Stony Point
5/15/2020	0	0	0	0	0
6/4/2020	0	0	0	0	3
6/16/2020	9	0	0	0	0
7/10/2020	72	228	16	58	42
8/17/2020	9	64	24	18	30
9/15/2020	0	99	2	12	0
10/29/2020	0		0	3	0

#### Leech Lake veliger sample counts – 2019 zooplankton samples

	Walker Bay	Agency Bay	Portage Bay	Kabekona Bay	Stony Point
5/15/2019	0	0	0	0	0
6/3/2019	0	0	0	0	0
6/19/2019	0	0	0	0	0
7/15/2019	0	2	0	6	0
8/14/2019	1	0	0	0	0
9/16/2019	0	0	0	0	0
10/14/2019	0	0	0	0	3

(note – sample period 6/28/19 not in Table – no veligers counted)

## COLONIAL WATERBIRD UPDATE

There are six species of colonial waterbirds that nest on Leech Lake, including White Pelicans, Double-crested Cormorants, Herring Gulls, Ring-billed Gulls, Caspian Terns, and Common Terns. All of these species nest in mixed colonies on Gull and Pelican Islands. With the exception of Common Terns, all of these species are doing pretty well. Common terns have a difficult time as they are smaller and return to nest later so they have a hard time competing for the best nesting spots. In 2020, mainly due to high water, and competition from ring-billed gulls no young were fledged. Leech Lake is one of only four sites where this species nests in Minnesota. The Caspian Tern is the other species of tern that is now seen on Leech Lake. This is the only place in Minnesota where this species has been documented to successfully nest. In 2020 they fledged well over 300 young.

### Cormorant Management Plan -- 2021.

Diet sampling of cormorants was not conducted in 2020, but under a Scientific Collection Permit we were also able to take additional birds to get down to 500 reproducing pairs. A total of 1774 cormorants were taken under this permit. The reason we were able to get this permit was so we could collect additional data on bird/fish interactions on Leech Lake prior to anticipated changes in the lake due to zebra mussels.

The US Fish and Wildlife Service completed the environmental assessment work that would allow for the removal of cormorants over concerns for free swimming fish and we will be operating under this permit in 2021.

Back in 2019 we published a study that utilized artificial eggs as a means of limiting future cormorant population growth. This year we plan to utilize this technique on a larger scale to determine its effectiveness. It looks like an early ice out this year so we anticipate work on the islands to begin in mid-April. We will be once again be reducing the cormorants population down to 500 reproducing pairs.

Prepared by Steve Mortensen and Tanya Roerick, Biologists for the Leech Lake Reservation DRM.



WHITE PELICAN



DOUBLE-CRESTED CORMORANTS



HERRING GULL



RING-BILLED GULL



COMMON TERNS



CASPIAN TERNS

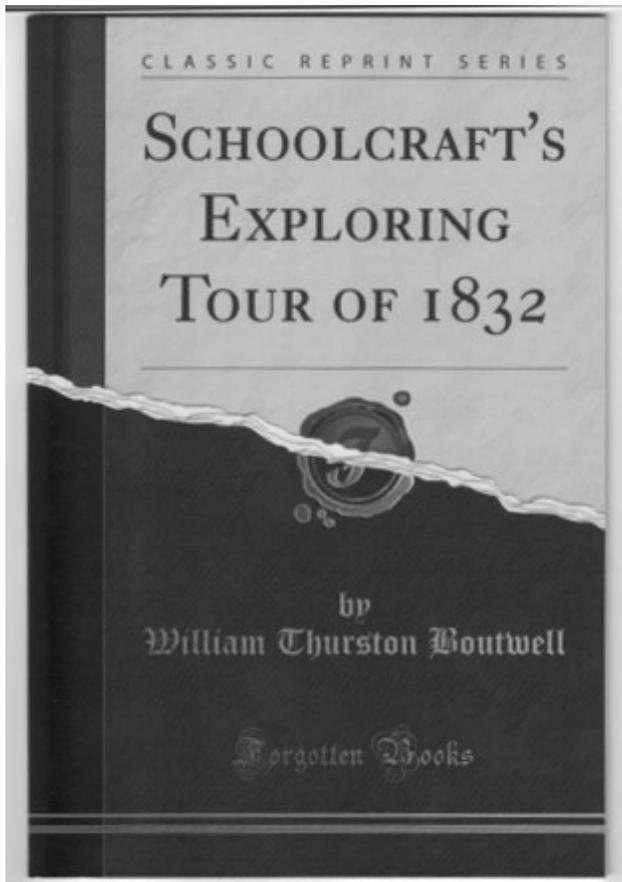
**LEECH LAKE IN ANTIQUITY**



Reverend William Boutwell accompanied Henry Schoolcraft on his 1832 journey in search of the source of the Mississippi River. Boutwell assisted Schoolcraft in coming up with a name for the lake (Lake Itasca) and also kept a detailed diary of their journey. The diary is very interesting for what it says about Leech Lake, where the Ojibwe and Sioux Indians were still at war, but also about the travails and hardships of the journey.

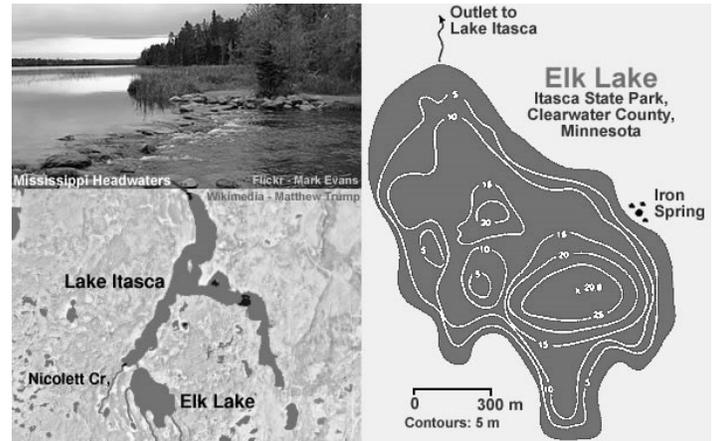
The exploring party has spent the night at an Indian encampment on Cass Lake, their slumbers disturbed by a victory dance by the Indians celebrating a successful foray against the Sioux where three scalps were taken. Today, they acquire some smaller canoes, which a smaller group will use in

their final assault on the Great River's source. Boutwell's diary continues:



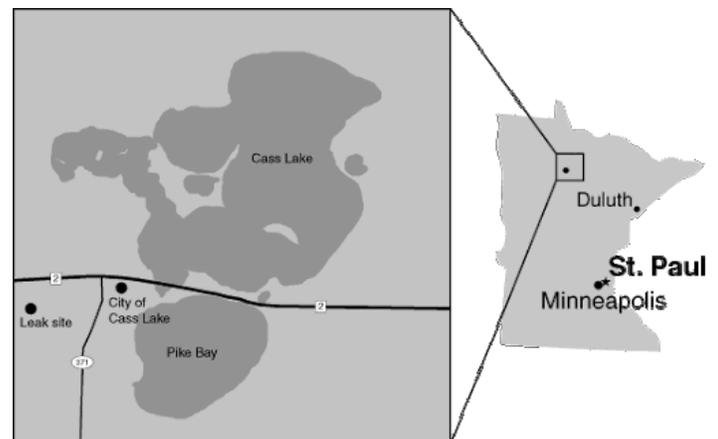
**JULY 13 - MARCH TO ELK LAKE (ITASCA).**

Continued our march this morning, at six, and continued till nine. The weather is warm and sultry, and the mosquitoes more numerous and savage than can be imagined. We now leave this branch of the Mississippi and make a portage of six miles, when I hope to see the highest source of the river. At eleven AM took our effects on our backs, and entered a swamp, leaving which, we came to a ridge of small grey pines which we followed most of the remainder of the distance, and at two PM reach Elk Lake (Itasca). This is a small but beautiful body of water,



*Elk Lake, Itasca State Park*

about eight miles in length and from half a mile to two miles in breadth. Its form is exceedingly irregular, from which the Indians gave it the name of Elk, in reference to its branching horns. The distance from upper Red Cedar Lake (Cass) by the southeast fork, is about one hundred and twenty miles.



*Formerly Red Cedar Lake (Cass Lake Present Day)*

*(Leech Lake in Antiquity continued on page 8)*

*(Leech Lake in Antiquity continued from page 7)*

## **JULY 14.**

Embarked at half past five AM , and descended two or three strong and difficult rapids. In one of them a canoe was capsized and all the men and their effects were thrown into the midst of the rapids. Hearing an outcry, I turned to see what was the matter, when the first I saw was a keg of pork, bounding down the rapids over the stones with one head out. The next was a loaf of bread, which the Indian in my canoe took in with his spear. Nothing can exceed the grandeur and pleasure of the scene, in descending a large stream in one of these small canoes, when the current is strong, and the water smooth. The canoe is borne on, not only with all the rapidity of the current, but when the paddles are applied, its speed is like that of a race horse.

This afternoon passed the Sioux embankment. This consists of two considerable cavities in the earth, sufficient to conceal thirty men. They are so situated on the bank of the river, as just to overlook a bend, which is the commencement of a considerable rapid. Here, I was informed, a party of Sioux once entrenched themselves, and killed a large number of the Ojibwas as they were descending the river. When they once entered the rapids, there was no escape.

## **JULY 15 - RETURN TO RED CEDAR LAKE (CASS)**

**SABATH.** Reached the island early this morning., having marched all night. Find all our men well, and much recruited by resting four days, during our absence. The party that have accompanied us, are so much fatigued by our tour to Elk lake, that it is thought best to defer our (Sunday) service in English, while I devote what time and strength I have to the Indians. Retired in the morning with the three pious soldiers, and spent an hour in prayer and conversation. I find them all much depressed. I read to some of the Indians who came to our tent this forenoon. In the afternoon collected about seventy Indians or more, all of whom listened with apparent interest and good attention to the word of God and most of them for the first time. Our place of assembling was near the graves, before mentioned, on the ground where the horrid scalp-dance `is often exhibited. Never did i witness a more interesting, respectful, and attentive Indian audience. Mr J read to them the account of the creation and flood, after which I read the ten commandments from which I made some remarks, and informed them of the object of my visit.

The inquiry was put to the principal man, the chief being absent. "Would you like to have a missionary come and live with you, instruct your children, and tell you about God?" To which he replied, "Neither myself nor any one present can answer the inquiry, as the chief is absent, and many of the young men are very vicious."

As we assembled for our worship, five or six Indians were sitting near, engaged in a game of platter, which was soon left. Not long after our meeting closed, dance began and continued without cessation, till eleven o'clock. I learned from some of the men who remained, that the Indians danced almost day and night during our absence. I am also informed that three canoes from Leech lake passed here yesterday, on their way to Red lake, to carry the wampum and the pipe to invite that band to join them in another war party, to revenge the death of the Indian who was killed in their late excursion.

*Editor's Note: Boutwell was apparently undeterred by the warning that the "young men are very vicious", for he returned a year later with his bride to take up residence as a missionary to the Leech Lake tribe.*

*(to be continued)*



**US Army Corps of Engineers**

**US ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT, LEECH LAKE**

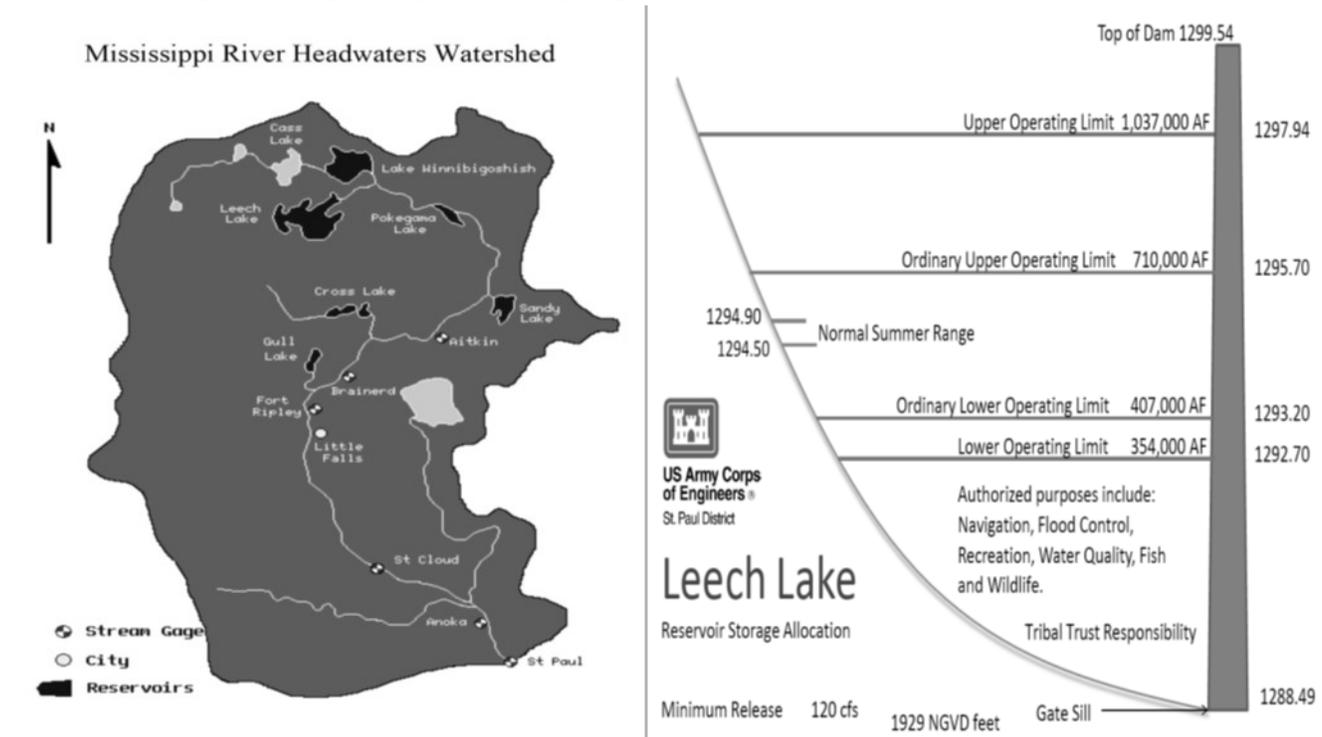
All elevations are referenced in 1929 NGVD.

This newsletter article was written on 4/19/2021 with information available at that time.

On April 19th, 2021, the water elevation (level) on Leech Lake is 1294.74 Ft. which is centered within the normal summer range. The current discharge of Leech Lake Dam (LLD) is 300 cubic feet per second (CFS).



Leech Lake Dam (LLD) is one of six dams operated by the US Army Corps of Engineers within the Mississippi Headwaters Project. Water levels are governed by a congressionally approved water control plan that coordinates the operation of each reservoir as needed to achieve water control plan targets throughout varying seasons and weather conditions. Local conditions are considered as much as possible but downstream flood damage reduction can become priority when warranted. For example, during wet cycles the Mississippi River in and around the Aitkin area often is forecasted or actually within flood stages that impact the operational decisions of Pokegama, Leech, and Winnie dams to assist with minimizing downstream flood damages. Another example that may impact operational decisions is the Mississippi River channel capacity in the Ball Club/Deer River area of only about 2200 cfs. See the following two images to get a better glimpse:



**Looking Back:**

Summer-Fall 2019 and early winter 2020 delivered excessive amounts of precipitation. In fact, going into February 2020 it looked as though there was going to be widespread spring flooding throughout Minnesota but then our weather changed. No one knew it at the time but in hindsight we now know that it was the beginning of a dry spring 2020. Leech Lake reached the lower portion of the desirable summer range in May 2020 but then bounced around below that range most of the summer. The low water level attained during summer 2020 was about 1294.30 Ft. that occurred on 7/13 and again on 8/7. July through October 2020 delivered significant amounts of rain resulting in Leech Lake water levels bouncing up in the fall to the normal summer range of 1294.50 -1294.90 Ft. but little good that was since most of the 2020 boating season was already past. April 2021 has provided enough rain to raise

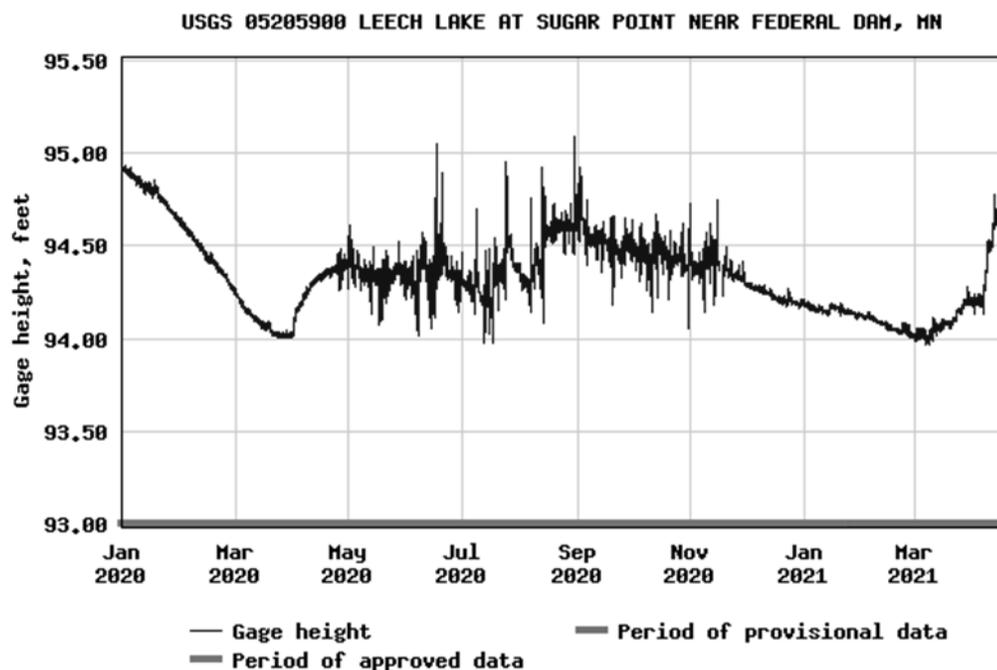
*(US Army Corps of Engineers continued on page 10)*

*(US Army Corps of Engineers continued from page 9)*

Leech Lake squarely into the desirable summer range so let's hope for a good lake level year ahead for 2021. See below for monthly precipitation amounts from 1/1/2020 through 4/19/2021:

Month	Actual	Normal	Historical Ave. Evaporation (1916-1980 Meyer Model)
Jan 2020	2.48"	0.76"	0.30"
Feb 2020	0.20"	0.50"	0.50"
Mar 2020	0.37"	1.06"	0.90"
Apr 2020	1.06"	1.57"	1.30"
May 2020	0.89"	2.71"	3.20"
Jun 2020	3.30"	3.87"	5.00"
Jul 2020	7.75"	4.40"	5.40"
Aug 2020	6.04"	3.76"	4.70"
Sep 2020	2.12"	2.82"	3.60"
Oct 2020	2.36"	2.50"	2.50"
Rain transitions to snow. We measure "Snow Water Equivalent" (SWE) during winter months.			
Nov 2020	0.72"	1.19"	2.20"
Dec 2020	0.61"	0.71"	0.40"
Jan 2021	0.48"	0.76"	0.30"
Feb 2021	0.13"	0.50"	0.50"
Mar 2021	1.04"	1.06"	0.90"
Apr 2021	3.13"	1.57"	(as of 4/19/2021).

### Leech Lake Hydrograph, Sugar Point, MN 1/1/2020 to 4/20/2021:



### Operation Summary Correlating to the above Leech Lake Water Level Hydrograph:

- Jan – Mar 2020: Draw-down occurring. Normal moisture amounts in snowpack (SWE).
- Mar – April 2020: Outflow reduced to store snow melt runoff to begin filling Leech Lake back to desirable summer range.
- May 2020: Outflow reduced to the congressionally approved water control plan minimum to sustain Leech Lake water levels. Leech Lake reaches 1294.50 (desirable summer range on 5/2/2020).

*(US Army Corps of Engineers continued on page 11)*

(US Army Corps of Engineers continued from page 10)

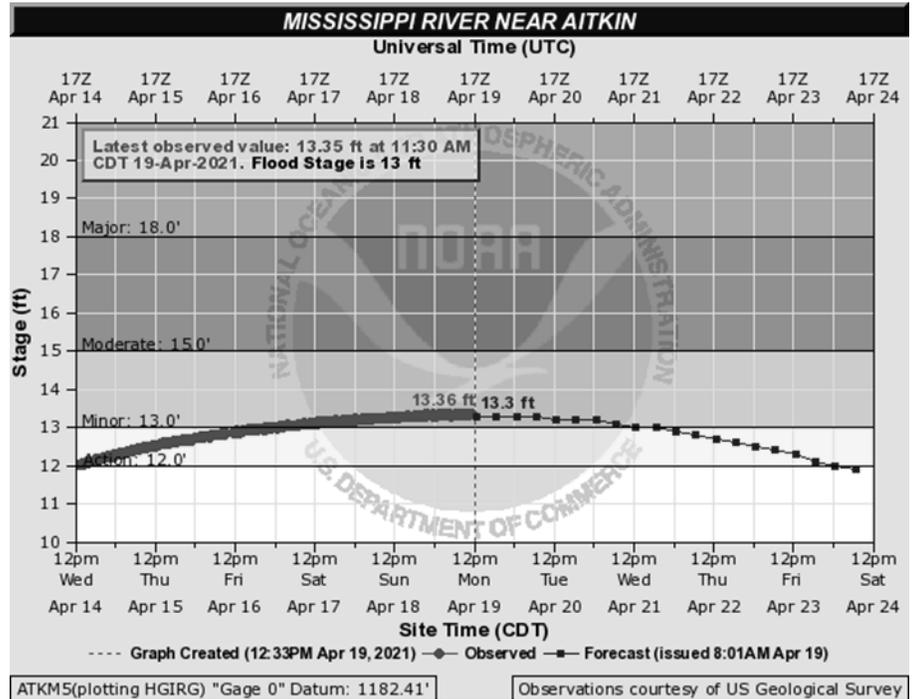
- May-Aug 2020: Leech Lake elevation remains below bottom of desirable summer range due to below normal precipitation. 8/15/2020: Leech Lake returns to the normal summer range due to above normal rain in July and August.
- Oct 2020-Mar 2021: Draw down occurring. Outflow gradually reduced due to limited moisture in snowpack (SWE). Drawdown concludes on 3/7/2021 at 1294.00.
- Apr 2021: Official ice-out date on Leech Lake was 4/9/2021. April showers return Leech Lake to desirable summer range on 4/10/2021.

**Where we stand now:**

During summer 2019 there were many reports of erosion, dock/boat lift damages, and other problems associated with high water and ice damage. Summer 2020 was dominated by lower than normal levels causing boat access issues. 2021 has begun very favorably. The National Weather Service Advanced Hydrologic Prediction Service, Duluth Office provided the following official flood forecast for Aitkin due to recent rains; updated on 4/19/2021 that illustrates the relevance of Leech Lake drawdowns for flood management but current forecasts should not impact Leech Lake.

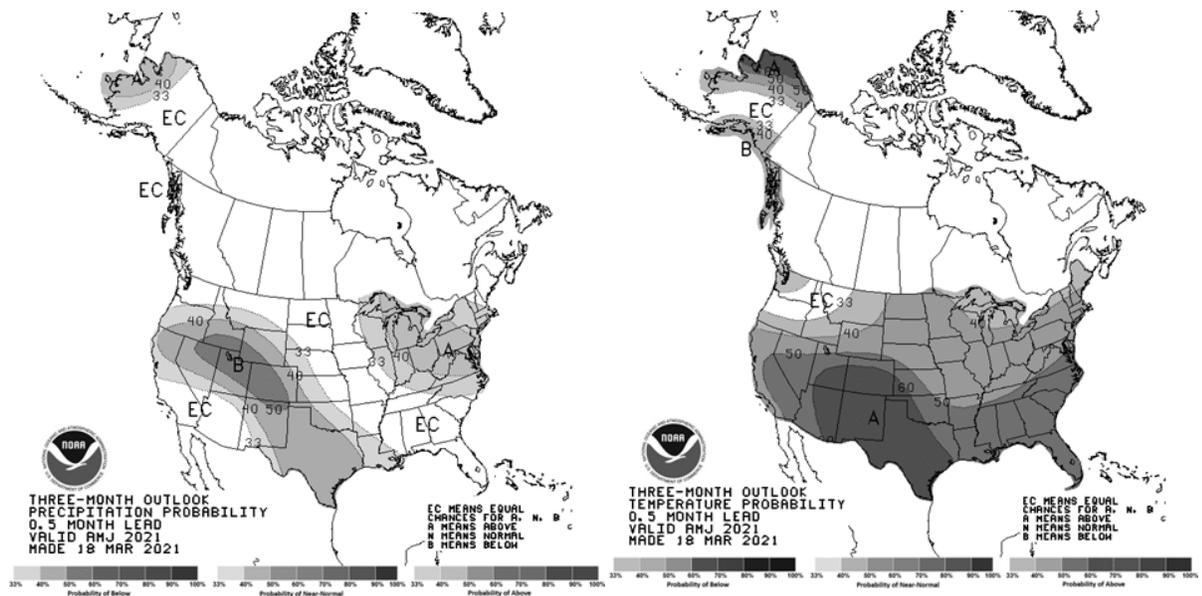
**Looking Forward:**

The CLIMATE PREDICTION CENTER/NCEP/NWS and the International Research Institute for Climate and Society is stating on 11 March 2021 that the current ENSO Alert System Status is La Nina.



**Synopsis:** There is a ~60% chance of a transition from La Nina to ENSO-Neutral during the Northern Hemisphere spring 2021. The 90-day outlook is forecasting equal chances of above, normal, or below precipitation and slightly above normal temperatures.

For Leech Lake this means that we are starting out the open water season exactly where we should. Going forward; the USACE will manage Leech Lake Dam outflows to keep Leech Lake within its desirable summer range, for recreation, environmental stewardship, Tribal Trust, Etc. but those goals will be challenged if actual weather conditions are too much outside of norms.



(US Army Corps of Engineers continued on page 12)

*(US Army Corps of Engineers continued from page 11)*

## LEECH LAKE DAM

Leech Lake Dam is located on the North East corner of Portage Bay and forms the Leech Lake River. The Leech flows into the Mississippi south of US HWY 2 downstream of the MN DNR Mud/Goose Wildlife Management Area. The Corps of Engineers provides recreation facilities such as boat ramps, campgrounds, picnic areas, trails and other services within the grounds at Leech Lake Dam. Check us out and click on “recreation” at [www.mvp.usace.army.mil](http://www.mvp.usace.army.mil)

## DO YOU KNOW?

Leech Lake median ice out date is April 28. Earliest ice out date was April 2, 2012. Latest ice out date was May 23, 1950. (Source: MN DNR Ice Out Index).



## MORE INFORMATION

Please visit these web sites:

<https://www.dnr.state.mn.us/waters/csg/index.html>

[https://waterdata.usgs.gov/mn/nwis/uv/?site\\_no=05205900&PARAMeter\\_cd=00065,00060](https://waterdata.usgs.gov/mn/nwis/uv/?site_no=05205900&PARAMeter_cd=00065,00060)

For questions or if you would like to comment regarding how lake levels are affecting you please email: [tim.v.rennecke@usace.army.mil](mailto:tim.v.rennecke@usace.army.mil)



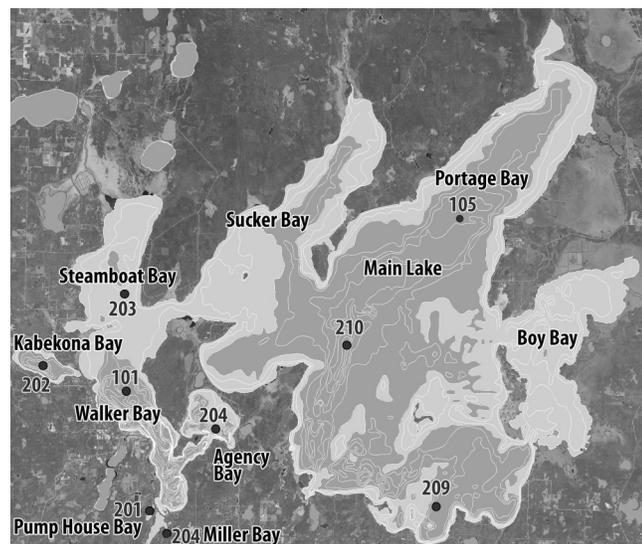
## LEECH LAKE WATER MONITORING CONTINUES

This summer, Leech Lake Association volunteers will continue to collect water samples and take Secchi Disc readings monthly from 4 sites: the main basin north of Stony Point, Agency Bay, Walker Bay and Kabekona Bay. These samples will be sent to RMB Laboratories in Detroit Lakes for analysis of water chemistry. Another set of samples will be sent to a Michigan laboratory to test for phytoplankton (algal) populations.

The Leech Lake Association has employed RMB Labs for the past five years to conduct water chemistry testing on Leech Lake. They have been doing similar analyses for over 20 years on some 500 lakes. All of this information goes into a common MPCA database for use in state, county, and local decision-making.

### The RMB Lab analyses include:

- TP or Total Phosphorous: A nutrient needed for plant growth. Phosphorus can enter the lake during run-off from manure or fertilizer or through seepage from leaking septic and holding tanks.
- Chia or Chlorophyll-a: The pigment that makes plants and algae green. Chlorophyll-a is measured in lakes to determine algae concentration, or in other words, how green the water is.



*(Leech Lake Monitoring continued on page 13)*

*(Leech Lake Monitoring continued from page 12)*

- **Secchi Disc:** A measure of water clarity that can indicate the overall health of a lake. A white metal disc is lowered into the water on a segmented rope until it can't be seen anymore and raised to the point where it can be seen. The depth of the disk to the surface of the water is the Secchi Depth.
- **TSI or Trophic State Index:** A measurement of overall lake productivity (nutrient enrichment). The overall TSI of a lake is the average of the TSI for phosphorus, chlorophyll-a and Secchi Disc.

### Secchi Disc Readings on Leech Lake

The Secchi Disc readings taken by Leech Lake Association volunteers from May through September of 2020 averaged as follows, along with comments:

**MAIN BASIN:** Average Secchi Disc reading was 10.7 feet, based on four rather than five readings. The September reading was cancelled due to strong winds. Readings are taken on specific days regardless of the weather. The 2019 average was 8.5 feet, probably due to wind effect.

**WALKER BAY:** Average Secchi Disc reading was 9.9 feet, almost identical to 2019 readings.

**AGENCY BAY:** Average reading was 11.4 feet. This is slightly clearer than 2019 readings, probably due to less wind disturbance. However, zebra mussels have increased in Agency Bay, whose long-term effect will be clearer water.

**KABEKONA BAY:** Average reading was 11.1 feet, the same as 2019.

### Trophic State Index of Leech Lake

The Trophic State Index (TSI) can be thought of as the lake condition taking into account phosphorus, chlorophyll-a, and Secchi disc. Trophic States are deemed divisions of a continuum in phosphorus and algal concentration. TSI ranges from 0 to 100, where 0-30 represents very deep, cold water, with oxygen throughout the year to the bottom of the lake. Phosphorus is low and algal scarce (a typical trout lake). A TSI of 30 to 50 is an in-between stage, where the number of aquatic plants algae increase due to more available phosphorus. Leech Lake fits within this range, though the TSI may vary some between basins. Agency Bay, for example, had an annual mean of 40.3 in 2008, and 41.4 in 2020. This shows that the lake has not changed much since 2008. But changes are likely on the horizon.



With zebra mussels established now in Leech Lake, water clarity will increase. The long-term effect on fish populations is less well known, though studies by the Minnesota AIS Research Center found that walleye in lakes infested with zebra mussels are 10 percent smaller after the first growing season, and less likely to survive to year 2. First year growth rates of Leech Lake walleyes are still good, though the zebra mussel infestation here is just beginning. First year growth rates are also affected by other factors, including weather and water temperature, and also the kinds of food are available. This is why the phytoplankton studies are so important and why we want to track the kind and abundance of this critical food source over time.

Starting in 2017, the Leech Lake Association agreed to collect water samples and fund the analysis of the phytoplankton population in Leech Lake. In 2019, 2020 and again in 2021, we partnered with the DNR to successfully apply for a Cass County Partnership Grant to cover the cost of both water chemistry testing at RMB labs and algal analysis at a Michigan laboratory. Continuing these studies over the next few years will provide the DNR with the information it needs to monitor the food chain and its effect on the Leech Lake fishery as the lake reacts to zebra mussels and possibly other aquatic invasive species (AIS).

Leech Lake Association volunteers will continue to collect the water samples in 2021 and beyond. We thank Doug Schultz and Carl Pederson at the local DNR Fishery Office for their help in obtaining the Cass County Partnership grants mentioned above.

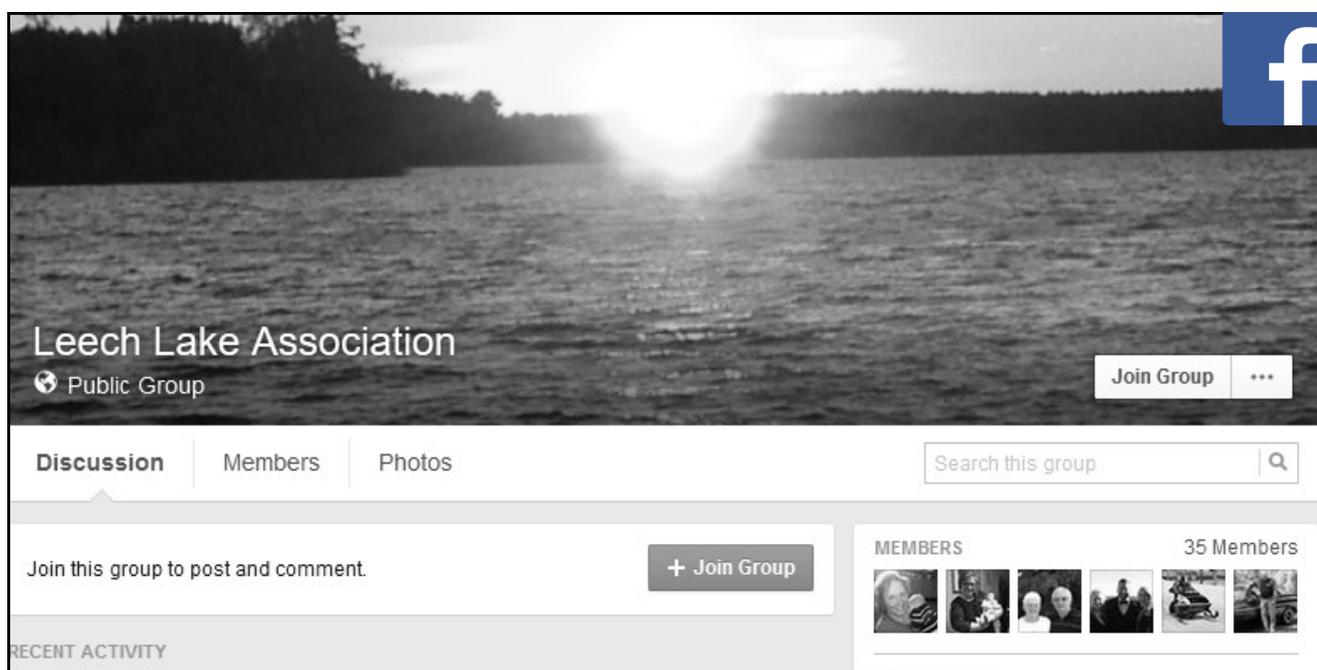


**Secchi Disc Testing**



For updates, check out our website where we are able to share our mission, committee reports, area calendar of events, current news, membership information, our history, photo's, area maps, links, meeting minutes, feedback and contact information. In the future, we will be adding fishing reports and other valuable area information.

As part of the Association's efforts to communicate to our members we have also created a Facebook site. For those of you using Facebook you can go to <https://www.facebook.com/groups/LeechLakeAssociation/> and request to join. As soon as you are approved you will have full access to the site. We look forward to seeing you there!





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For more information go to <http://www.environment-green.com/>



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# Leech Lake

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A special welcome to all our new members, and to all of you who have continued to support us over the years as the walleye fishery has recovered.



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