

Another good dose of Bad Medicine - Fall 2019

The mission of the BMLAA newsletter is to provide lake area residents with information to build community. It is intended to present current lake issues and events in a non-controversial and positive format.

For suggestions or comments contact Jane Gudmundson edwardsgud2@yahoo.com

Bad Medicine Lake – State of the Union

We all know the natural wonder that is Bad Medicine Lake. We love it for its color and clarity, its magnificent shoreline and pristine beauty. It is a place of refuge, renewal, and recreation. It is a place for fellowship with family and friends. It is a place we go to soak up the spirit of the lake, to be with the people we love, and do the things we love to do. For generations, we have enjoyed and cared for this tremendous resource. And we will do the same for generations to come.

It is true, things change in time. We change, our neighbors change, and the lake we love changes too. Think high-tech fishing equipment, snowmobiles, ATV's, jet-skis, bigger boats and ever more powerful motors. Most recently, boats designed to create a surfing-like experience have arrived on Bad Medicine. With many shared values, we must acknowledge that some of us want speed, power and thrills, while others prefer solitude, stillness and nature. We carve through a course on skis, jump across wakes on boards, and surf behind cheers from family and friends. We troll still waters for trout, peer thru lenses at loons, and circle the shoreline before the setting sun. Our shared experience on BML is truly diverse and magnificent for all.

Inevitably, our recreational diversity will cause some conflict amongst this great community. Historically, we have been able to navigate these differences as an association of owners and neighbors. This summer, a new challenge presented itself for consideration. The BMLAA board has been active in discussions as we listen to concerns, consider our values, and work toward resolutions that protect our resource and respects the recreational diversity our members enjoy.

In the view of the BMLAA board, the community and the shared experience of the lake begins with the mutual adoption of common values:

1. We share a responsibility to bring residents of the lake together.
2. We share a responsibility to preserve and improve this natural resource.
3. We share a responsibility to enhance the area for the enjoyment of present and future generations.

Throughout the state of Minnesota, lakes are designated for public use – they are for all to enjoy. It is the view of the BMLAA board to honor this premise, acknowledge our bylaws, and build common ground between lake property owners and visitors.

At the first BMLAA board meeting of the season in May, the board was presented with the following set of concerns pertaining to the use of ballast-tank boats, aka. wake board boats or wake boats.

1. Threat or danger caused to others enjoying recreational activity on the lake

2. Shoreline and property damage
3. Increased Aquatic Invasive Species (AIS) contamination risks

The board understood that the township had requested BMLAA to circulate a survey of lake property owners and residents. The survey was intended to provide information to the township board, as they considered whether to propose an ordinance to regulate certain boating activity on Bad Medicine Lake. A series of survey revisions were prepared and considered by the interested parties but none were acceptable to all involved. As a result of the survey impasse, the board made the decision to suspend BMLAA's involvement pending an answer to the question of which organization had authority and responsibility for the survey.

At the 2019 Annual Meeting in June, it became clear to the board that some property owners were opposed to the consideration of a survey perceived to target their preferred form of recreation. The S.E.E Committee was announced and began its work of promoting safe boating, increasing awareness of and respect for all lake users and supporting the responsibility of all lake users to care for the lake.

At the July meeting of Forest Township, it was clarified by the town board that complete authority and responsibility for a survey of Bad Medicine Lake residents would be at the discretion of BMLAA, not the township.

In July, the BMLAA board met to continue discussions of these concerns. An association member urged the BMLAA board to adopt a boating survey he had prepared but the effort failed for lack of board support. Early evaluation of the work of the S.E.E Committee was encouraging with respect to the value of a voluntary, educational, persuasive approach to addressing boating problems on Bad Medicine Lake. At the same time, strong consensus was identified for additional measures to protect the lake from the ongoing risks of contamination by AIS.

Then in August, a long and intense discussion between the board and interested parties ended with unanimous board support to table any further consideration of a survey of lake property owners for one year. The work of the S.E.E. Committee continued to show indications of progress and the board was supportive of its positive impact on boater behavior, safety, and etiquette.

Finally, in September, the BMLAA board focused on our shared priority of protecting Bad Medicine Lake from AIS contamination. We are fortunate that all members of the Bad Medicine Lake community, regardless of their recreational preferences, share a deep personal commitment and investment in preserving the quality of the water and the health of the lake.

Looking ahead to 2020, the BMLAA board anticipates working with any and all interested parties on the following ideas and initiatives.

1. AIS decontamination unit – locally owned and operated at BML landing.
2. Wake protection for vulnerable parts of BML.
3. Starting to plant trees that, years from now, will replace the aging pine forest around the shores of Bad Medicine.

Please share your thoughts with BMLAA board members on these and any other matters of interest. We hope you had a great summer season on Bad Medicine!

BMLAA Board of Directors

The S.E.E Committee

What?

At the June BMLAA Board meeting the Bad Medicine Safety, Education & Etiquette(SEE) Committee was launched. The goal of the SEE Committee is *'To have Safety, Education & Etiquette be on the top of the mind as far as awareness and to bring lake lovers together, not drive them apart.'*

- a. **Safety** – Updates will include topics related to continuing Bad Medicine's strong safety record in recent history. Topics will include life vest usage, boat/PWC safety, dock safety, etc... Anything the BMLAA feels others should know to help keep everyone safe.
- b. **Education** – We fear what we don't understand, education can help with this. Most issues can be solved with simple communication. The goal is to not let conflict govern our lake, but to work together to understand the many, many different types of recreation on the lake.
- c. **Etiquette** – There are many things which are not illegal, but certainly not necessary. The goal here is to reduce these instances as much as possible, while keeping in mind everyone makes mistakes from time to time.

When?

Updates will be sent 2-3 times per year based on the amount of feedback/content accumulated. Much of the information will be the same from year-to-year but reminders are good for all of us.

Where?

Updates will be sent out via the BMLAA Directory email address list.

Who?

The current volunteer committee consists of Sue Shannon, Steve Lindow, William Herauf, Curt Halbakken, Barb Christiansen and Matt Hanson. Anyone is welcome to join!

What can we do?

1. As you are out enjoying the lake, do your best to be aware of your surroundings. Where are other boats? Is someone working in the water near where you are? Is someone swimming? Are your lights on? Etc...
2. Assume Goodwill – Very simply this means to think in the 'What is the best reason something happened?' Most times people aren't trying to do something to drive you crazy. Often they either don't know or are trying to avoid making someone else crazy.
3. Any suggestions can be emailed to seebadmed@gmail.com. This email will house ideas for future updates.

Summary: Surely there is no lake which lives in pure harmony but if the community works together we can all make it a little bit better.

To access volumes 1 and 2 of the S.E.E. Committee updates
contact seebadmed@gmail.com

Water Quality and Biotic Assessment (2017-2019): Brief summary of findings. Richard W. Koch, PhD Bemidji State University

Introduction:

We are conducting a comprehensive assessment of water quality and biology of Bad Medicine Lake, Becker County, MN. Results from this study will provide a baseline with which to compare future data, and can be compared with the (limited) data previously collected as a means to assess recent changes in lake quality.

Bad Medicine Lake is of particular interest because of its susceptibility to water quality changes. As a spring fed lake, water levels fluctuate with regional water tables and the lake traps nutrients and other chemicals that enter. As a deep, cold water lake, a 2-tiered food web culminating in cold water bottom fishery (Rainbow trout, cisco) and warmer water surface fish (walleye, bass, perch) makes this particular lake quite distinct from other lakes in the surrounding region.

Bad Medicine Lake remains an oligotrophic lake (i.e. low algal production and high water transparency) despite undergoing significant changes in its ecology in recent decades... the full extent of which are not yet known. Dramatic increase in native crayfish reduced aquatic plant populations in early 1970s, decreasing fish habitat, and increased nutrients resulting in more algal growth. Annual stocking of rainbow trout (1977 to present) and more recent stockings of walleye by MnDNR creating important game fisheries have likely impacted lake ecology further. Significant rising of lake levels in 1990s and subsequent slow declines have altered nutrient loading (especially of phosphorus) and changed patterns of water clarity and plankton communities in ways not yet determined.

Project overview:

Water quality assessment occurred during ice-free season in 2017, 2018 and 2019 at time intervals of 1-2 weeks. Sampling occurred at deepest points in the 3 main basins (South Basin, Central Basin, and North Basin) and the eastern bay. Though wind driven water exchange occurs to some extent throughout the lake, the North Basin is somewhat isolated due to an island with shallow, narrow passages on either side separating it from the Central Basin. Physical (water temperature, transparency), chemical (nitrogen and phosphorus content) and biological (algae and zooplankton) were assessed biweekly during the ice-free periods (May-November).

Summary of Findings:

All of our findings suggest that Bad Medicine Lake is a healthy, clear water, oligotrophic lake.

Nutrient concentrations ranged from <1–3 ug phosphate L⁻¹ and 90–270 ug nitrate L⁻¹. Seasonal and spatial variations suggest that the system is responsive to even

minor and localized fluctuations in nutrient availability. Efforts should be made to maintain low nutrient inputs into these waters, especially in regards to phosphorus.

Lake water temperature changes slowly with the seasons. Bad Medicine Lake exhibits a pattern of stratification (temperature layering) typical to deep lakes of the region. Warming water during summer creates an increasingly warmer (up to ~75°F) layer of surface water (epilimnion) over colder (~40°F) deeper water (hypolimnion). The layer of transition (thermocline) becomes very pronounced at 9-12 meters depth as summer progresses.

Dissolved oxygen concentrations in Bad Medicine Lake ranged from 0 (near bottom) to ~15 mg/L (above thermocline). The epilimnion (surface layer) remained well oxygenated throughout the years, with highest DO readings from just above the thermoclines (super saturated on most dates), suggesting healthy levels of algal production. Water below the thermocline had lower oxygen levels throughout the sampling periods. Anoxic conditions were confined to near sediment waters in May, but rose to within 13m of the surface as summer progressed. Oxygen stress to biota is evident in deeper waters of Bad Medicine by late summer/fall, especially in the North Basin. Fish likely respond by shifting to shallower positions. Cold water fish like cisco and trout become constrained between low oxygen levels in deep water and warmer temperatures in surface water. Longer ice-free seasons will worsen this scenario. Lake turnover, occurring in late November, resets higher oxygen levels in deeper waters.

Water transparency (secchi disc) in Bad Medicine Lake ranged from 3.2-8.0 m (10-26 ft) and tended to be greatest in June and lowest in early August. Photosynthesis is supported to depths of 10-25 m (33-82 ft), suggesting that a significant part of the lake has potential for periphyton (attached algae) and macrophyte growth, though these also remain nutrient limited under current conditions. Algal biomass ranged from 0.1 to 25 ug chlorophyll L⁻¹ and are typical for oligotrophic (low nutrient), clear water lakes. Diatoms dominate the algal community, especially in spring and fall, with episodic risings of green algae and blue-green at some areas of the lake. Temporary blooms of blue-green algae have occurred lake wide during each of our sampling years as phosphate is released from deeper water, but such cycles are natural, and their extent create no negative impact. In an oligotrophic lake like Bad Medicine, phytoplankton would likely respond fast to any increases in nutrient availability. No apparent concerns were found with our sampling, though the fragility of the system is apparent.

Zooplankton communities in Bad Medicine are productive and support a strong fishery. Daphnia, in particular predominate and are a favored food resource for many fish, including Rainbow trout. Daily vertical migration of zooplankton is being assessed this year (2019) through 24-hours each month and suggest active movement in communities driven by predation pressure from fish. This is especially prevalent in large zooplankton which hide in deep waters during the day, moving to near surface waters to graze overnight.

Kudos to Steve and Randy

Thanks to longtime lake resident and volunteer, Steve Lindow, and to Randy Snyder who has been employed for the last couple of years to check boats going into Bad Medicine lake to ensure that they were free from AIS contamination. Their contribution to the health of the lake is admirable. Going forward, Steve has decided not to continue his volunteer work. We certainly hope that Randy will work again next year, but if you know of anyone who would be interested in volunteering or being hired to work at the access next summer, please contact Scott Bentson: sbentson@gmail.com for information.

The 2019 BMLAA Directory is now available free to association members and to non-members for \$15.

Contact Scott Bentson for more details: sbentson@gmail.com

Burbot Acoustic Telemetry Research – Bad Medicine Lake

Beginning in March of 2019, Bad Medicine lake's Burbot, *Lota lota*, became the center of a new fisheries research project. With the help of the Minnesota Department of Natural Resources, researchers at Bemidji State University want to find out more about the impressive Burbot population in Bad Medicine Lake.

Burbot, North America's only freshwater cod species, are known to be a bottom dwelling fish typically found in clear and clean ecosystems. Their mottled coloring is aggressively displayed in the fish coming from Bad Medicine. The tiger like stripes of yellow and brown make this fish unique compared to walleye, panfish and pike that are typically found in much of Minnesota's lakes. Burbot's poor eyesight forces them to utilize other senses to find food. Their food source has typically been found to be crayfish and other species of fish, putting them as one of the top predators in the food chain.

However, the knowledge of Burbot in Minnesota and in the world is lacking. Few studies have been performed on this species and movement studies are severely lacking, which are the main reasons behind the MNDNR's interest in this project. In the end, we hope to have a better understanding of the yearly movements of Burbot throughout Bad Medicine Lake. We also hope to see unique movement patterns of the population in relation to light availability, dissolved oxygen levels and temperature of the water as the seasons change. Analyzing these variables should lead to predicting the preferred habitat range of Burbot in Minnesota.

In order to conduct this research, we tagged a total of 66 Burbot of varying length, sex and locations throughout the lake. Each fish had an acoustic tag surgically implanted into their abdominal region. Each tag is equipped with temperature and pressure sensors that records the depth of the fish at every other transmission. The

tags will last roughly 14 months. In order to retrieve the data, 38 receivers were placed throughout the lake. These receivers detect the pings given off by the tags in the fish and save each ping as a unique detection. Partnering with the fish detection data, three temperature chains are placed in each predetermined basin. These set ups have temperature loggers placed every meter to assess the lake temperature throughout the year. In addition, we have been going to the lake every other week to measure dissolved oxygen and light levels in the water column in each basin.

We will continue to monitor Burbot movement through July 2020. We also will continue assessing temperature, dissolved oxygen, and light levels in the water column throughout July 2020. We are looking forward to receiving some results of our study this winter and hope to give an update to the lake association at a future meeting.

Tyler J. Robinson, BSU graduate student

Forest Township News

As summer winds down, we hope you have all had a fun and safe summer. Things are pretty quiet at the township level at this time. The weeds are starting to die off, the trees are starting to change colors, amnesty days are over and hopefully the storms are too.

This last storm brought down some trees onto our township roads. If you come across a downed tree on any township maintained road, please contact Barb at (218) 573-3931 and the township will get it removed.

Thank you to everyone for keeping our dump area clean. It doesn't appear that the bears can tip over the larger dumpsters so we may be getting rid of the three smaller dumpsters. As you know, the township can no longer take any hazardous materials. Your dump gate key will no longer work in the shed that was used for florescent bulbs. These bulbs are now considered hazardous waste. You can bring these bulbs along with any other hazardous waste to the Becker Co. Transfer Stations in Osage or Detroit Lakes. If you need more information on times and locations, call Osage (218) 573-3534) or DL (218) 847-6382.

When we have our amnesty days, it is very important to read the signs on the dumpsters and put your items in the correct dumpsters. We have hired someone to work during these days to assist you but if no one is there, please follow the directions on the signs. If items are put in the wrong dumpsters, the township is charged a significantly higher rate. These dumpsters are for Forest Township residents so please don't tell others that they can bring items for amnesty days.

If you plan on any building, make sure you follow the proper procedures. Your first stop is at Becker County Planning and Zoning. You should complete a county permit application. If your construction is within 267 feet from the ordinary high water level you do not need a township permit. If your new construction falls beyond 267 feet from the ordinary high water level, you will need to apply for a township permit along with a county permit. If you have any questions, please contact Lynn at (218) 573-3765. Forms can be obtained on the township website: foresttownshipmn.net.

Finally, the township planning commission is currently reviewing our township ordinances and there will be a meeting on Oct. 15th at 6 PM at the town hall to discuss/recommend any changes to the ordinance. This meeting, as well as all our meetings, are open to the public. The town board meets the second Tuesday of each month if you would like to attend any meetings. If you ever have any questions, please contact one of the township supervisors; Tim Holzkamm (218) 573-3442, Barb Christiansen (218) 573-3931 or Lynn Lindow (218) 573-3765.

Hope you have a safe and short winter wherever you may be.
Forest Township Board Members

BMLA Board Member Contact Information

	Term ends
Scott Bentson President 218-684-1234 sbentson@gmail.com	6/2022
Marc Shannon VP 218-573-2637 marc@shannonengr.com	6/2020
Marge Lorentzsen Treasurer 701-261-1832 mlorentzsen@cablone.net	6/2020
Matt Hanson Secretary matthewhanson11@gmail.com	6/2022
Paul Stadem Director 218-573-3886 pstadem@hotmail.com	6/2020
Linda Bentson Director 218-684-1234 lbentson23@gmail.com	6/2020
DeDe Krieg Director 701-261-9331 deKrieg@aol.com	6/2021
Jane Gudmundson Director 218-573-3474 edwardsgud2@yahoo.com	6/2021
Justin Johnson Director 701-330-0725 johnson58201@gmail.com	6/2022

Bad Medicine Lake Area Association

Jane Gudmundson

39058 Horseshoe Road

Ponsford, MN 56575

2020 BMLAA Annual Membership Form - Dues \$15 per person

Name #1: _____ Name # 2: _____

Mailing Address: _____

Lake Address: _____

Home Phone #: _____ Lake Phone #: _____

Cell Phone # 1: _____ Email Address #1: _____

Cell Phone # 2: _____ Email Address #2: _____

Please send 2020 membership dues to:

**BMLAA Treasurer
39100 Horseshoe Road
Ponsford, MN 56575**