

No answers for toxic blue-green algae bloom on Mattatall Lake

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1 / 5 Bob MacLean takes his boat out on the lime-green water of Mattatall Lake. The lake has been inundated with a blue-green toxic algae bloom and the MacLeans and other residents are looking for a solution that will give them back their lake. (INGRID BULMER / Local Xpress)

MATTATALL LAKE -- Bob MacLean has reluctantly been learning a new language.

Words like cyanobacteria, neurotoxin and eutrophication don't roll effortlessly off the tongue but the substances they represent have rolled with unstoppable force into the once-pristine water of Mattatall Lake.

"We have been unable to stop the advance of it," said MacLean, who has a home on the freshwater lake about seven kilometres northeast of Wentworth.

MacLean describes the unstoppable force as a lime jello-like scum that annually pervades the five-kilometre-long lake, leading to warnings not to swim. And don't even think about drinking the water, because the blue-green algae produces neurotoxins that can be very harmful to humans and other animals if ingested.

"It's been green since a year and a half. The last two years it appeared in mid-September. This year it was early August. We're not scientists, we're not biologists and we're not getting a whole lot of answers from anybody."

MacLean is the chairman of a stewardship committee for the lake that washes up on shores in both Colchester and Cumberland counties. The group met recently with Environment Department officials in Truro but the fear is that the beautiful lake that drew MacLean to the area as a cottager 28 years ago and convinced him to become a full-time resident might be lost forever.

Wade Parker, a Colchester County councillor from Bible Hill, built a retirement home on the lake. He watched as the algae blooms turned the lake green in September in past years. Now, the algae bloom takes over the lake much earlier in the summer and even after the water freezes over in early winter, the greenish hue can still be seen under the ice.

"We were very concerned then because naturally this stuff supposedly dies when it gets cold but it didn't seem to," Parker said. "We've had several meetings with Environment and they just brush us off. They don't think they need to hire some expertise in the province, a lake manager or someone who they could get some advice from as to what direction we can go to help some of these lakes in Nova Scotia. We're not unique. This seems to be popping up more and more. They just want to put the onus back on the residents to do something. We sent them basically about \$150,000 worth of free research that a professor at Dalhousie did. Their answer back to that was, 'Thank you very much, what a great study, keep up the good work.'"

Water rendered undrinkable

The man responsible for the good work is Tri Nguyen-Quang, an agriculture engineering professor at the Dalhousie University agriculture campus in Bible Hill.

"I came there in October 2014," Nguyen-Quang said. "The weather was right cold but it was still blooming there. I took some samples and I did some tests and I found a toxic species there."

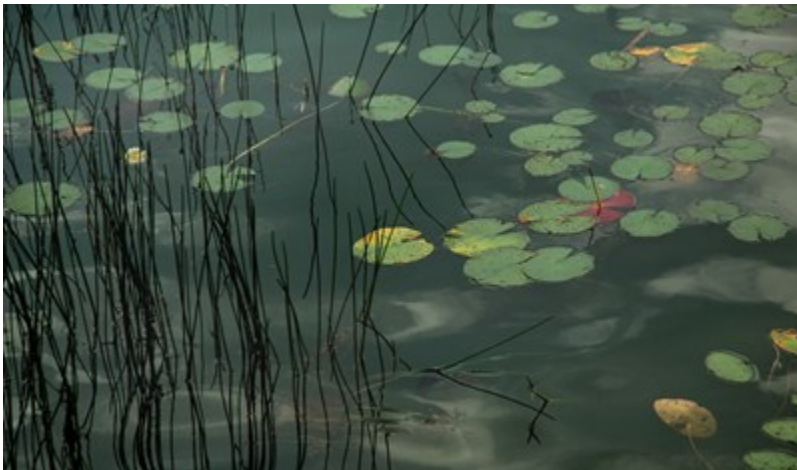
The professor returned in 2015 and took samples over a four-month period.

"I measured different levels of nutrients and I also saw a very strange pattern. We had some blooms coming very early in June and July but they were not toxic species right away. We had some kind of toxic blooms appearing later. The scientific term is algae blooms. In many lakes I've been working on before, they didn't have blooms remain until November or December. Mattatall Lake had different blooms."

Nguyen-Quang said the lake is so rich in nutrients that the water is rendered undrinkable and toxic. When the number of cyanobacteria cells or blue-green algae cells in the water exceeds 100,000 cells per millilitre, it would trigger a World Health Organization Level II alert. MacLean said Mattatall Lake tested in 2014 for 424,000 cells per millilitre and last year it dropped off to 224,000 cells per millilitre.

When the water is saturated with enough cyanobacteria cells to generate a Level II alert, Nguyen-Quang said WHO warns against drinking the water and to be very vigilant about recreational activities. People are advised to swim at their own risk and not to ingest the water.

"Nothing has bellied up the shore as of yet, no fish," MacLean said of the small-mouth bass and perch that populate the lake. But he said the lake, which is divided into three distinct sections, used to be home to three pairs of loons.



Lily pads survive in the lime-green water of Mattatall Lake but the loons that used to live there have disappeared.
(INGRID BULMER / Local Xpress)

"Each pair used to have one or two babies each year. We haven't had a baby loon survive in awhile. The lake is green, the loons can't see their food. The babies starve to death."

On a warm summer afternoon, MacLean and his wife Marilyn take grandchildren Emma and Mya, along with Jake, the family's trusted and drooling 195-pound St. Bernard dog who now has to be

restrained for dipping into the toxic water, for a quick boat tour of the lake. He said you can only see about a foot into the water now because it is so green.

Resident blames clearcutting, erosion

There are about 80 full-time and cottage residents on the lake, which has resulted in considerable land development. It was originally believed that sewage could have been the algae culprit, but that was ruled out with E. coli testing. And because the lake is so shallow, increased boat activity stirs up nutrients on its floor. Still, MacLean, 67, lays blame at the amount of clearcutting and herbicide spraying around the lake in recent years, much of it done by private woodlot owners.

“We don’t want any more cutting in our area. We’ve already had 60 per cent of our watershed area clearcut over the last 16 years. From everything we’ve read, that is a detriment to the watershed and the health of the lake. We don’t want any more. Environment says they can’t stop it.”

It has been recommended that no more than 30 per cent of watershed areas be clearcut. The result of clearcutting can lead to an excess of nutrients and phosphates leaching into the lake. The concentration of phosphates and nutrients in the lake generate the growth of algae and plants.

“Angevine Lake is the same size as this lake,” MacLean said of the sister lake that lies just northwest of Mattatall. “It has the same average depth, a little more flowage. It doesn’t have the green algae in it. It does have something that we don’t have. It doesn’t have the clearcutting around it. I don’t know what else. It’s the same soil, a silt that migrates very easily. Silt when it migrates brings the phosphorous into the lake. Last year, there was a clearcut on the east end of this lake. That was 300 acres. This lake is only 300 acres.”

MacLean said 14 small streams are connected to Mattatall Lake, one of which is Mattatall Brook. The brook joins the French River near Tatamagouche and the river is the source of drinking water for Tatamagouche residents.

“There has to be some consideration for that,” he said. “We met with Environment recently and they suggested we talk to the county in order to subdue some of the activities in the watershed area through land-use bylaws.”

But MacLean said when he approached Colchester County council, “they looked at me like I had two heads.

"They said, 'We can't do that.' Left hand, right hand, two different levels of government and there is no level of understanding between the two."

Environment Minister Margaret Miller said her department is well aware of the lake problems.

"We know that the blue-green algae is not something that people want to be drinking," she said of the Tatamagouche water supply. "There is concern with that. Any drinking water sources in the province would have to be monitored on a regular basis. I expect that they are going to be watching that very carefully to make sure that there is going to be no impact to their drinking water."

The minister said there have been ongoing talks with the Mattatall Lake group.

"I met with them earlier in the year and we talked about their concerns of last year and it looks like we do have an algae bloom again. Last year we gave them, I believe, \$10,000 toward the problem. They were investigating the problem and we gave them the money to go toward research to look into what is causing this. This could be a growing problem right across the province and it may have a lot to do with climate change and the way our summer has been. We can look at all kinds of factors. Water sources are fed in many different ways."

'We have no authority'

MacLean said the Environment Department lacks expertise and that a province with the number of lakes and waterways that exist in Nova Scotia should have a limnologist and lake manager on staff.

The department has suggested that MacLean and his group call a meeting and invite all the lake stakeholders, including landowners, forestry companies, municipal governments, provincial government departments and Nova Scotia Power.

"Environment wants no part of facilitating it, but they will participate," MacLean said of a meeting of about 15 people tentatively set for later this month. "We want to bring all these people together and deal with things in a transparent way. Hopefully it will work but we have no authority. It's the only thing we have going for us right now."



Another thing the group could have going for it is the product Phoslock, an application that



The blue-green toxic algae bloom that has inundated Mattatall Lake can be seen in this aerial shot. Residents suspect clearcutting near the lake is responsible. (Contributed)

absorbs nutrients and algae, sinks it to the bottom of the lake and smothers it there. MacLean said Lac Bromont, a lake three times the size of Mattatall in southern Quebec, plans to go forward with a \$650,000 application of Phoslock to restore water quality in its lake.

MacLean estimates that Phoslock could be applied at Mattatall for \$200,000, approximately \$2,500 per property owner.

"We're having a hard time getting \$200 out of everybody to do testing, \$2,500, it would be impossible."

Parker thinks its time for the province to take charge by pumping some money into the cleanup and by banning any further clearcutting and herbicide spraying.

"If they want to keep dumping this fuel into the lake, when do they expect they are going to have to do something about it. They are killing it, that's what they are doing. Is it going to take fish kill to wake them up or is it going to take some human being to go into the water, to get this neurotoxin type poisoning from it and die? What will it take?"

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Stephen Logan

The same thing happened to Lovett's Lake in Beechville when the developer built Beechville Estates, they made them put down bales of hay, but the damage was all ready done.

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Alan Hunt · Works at The Shaw Group

I heard someone else mention about sewage leaking into the lake, its just hear say, but could this be a possible cause. Also, this summer has been exceptionally dry, would this possibly cause an issue with the algae forming earlier in the summer?

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