Phosphorus and Algae

Let's Starve Otty of Phosphorus
It will help reduce algae at the lake

In the last several years there has been an increased amount of blooms of green algae at Otty Lake. Periodic sampling of these algae shows that they are a green filamentous type predominately of the two species, Spirogyra and Mougeotia. These green algae are not harmful to humans. It is unclear why there has been a noticeable increase in profuse algal blooms at Otty and other local lakes in recent years and steps are being undertaken by the responsible government authorities to initiate research into this matter. However, there is meaningful action that Otty Lake cottagers and residents can take to control algal blooms.

Why control nutrients, such as phosphorus, from entering Otty?

All lake bodies have natural sources of nutrients such as phosphorus and nitrogen. In fact a moderate amount is essential to support the food chain in the lake. Without these nutrients there would be no algae at the bottom of the food chain and hence no fish (or loons) at the top.

However, the addition of man-made sources of nutrients adds to the nutrient load. Also, the removal of vegetation and hardening of the surfaces of a shoreline property facilitate the movement of nutrients into the lake. Excessive nutrients promote the growth of algal blooms and/or profuse aquatic plants. Furthermore, as these algae and aquatic vegetation die and subsequently decompose, they consume dissolved oxygen in the lake water, reducing its supply for fish and other aquatic species.

Both nitrogen and phosphorus are essential nutrients for the growth of algae or aquatic plants. However in Otty Lake, phosphorus is the nutrient that is less plentiful and hence limiting its supply will directly control the amount of algae and aquatic plants in the lake.

Man-made sources of nutrients – Let's try to reduce these

Septic systems

Recent research done for the Ontario Ministry of the Environment shows that properly functioning and appropriately located septic systems are effective in reducing the nutrients from human waste. However, leaking or otherwise malfunctioning septic systems will be a major source of phosphorus, as well as pathogens, entering the lake. Visually inspect the ground around your septic system periodically for signs of a malfunction and support your Township's septic reinspection program.

Fertilizers

Much of the fertilizer applied to a lawn or garden on a shoreline property will eventually enter the lake. For example the Lake Simcoe Phosphorus Reduction Strategy Report assumes that fertilizing a 30m x 30 m lawn once a year will add about 2 kg of phosphorus to the treated area. On a shoreline property, a large portion of this can be washed into the waterbody depending on rainfall, the distance to the

shoreline and the nature of the terrain in the down-slope to the shoreline. Do not use fertilizers on your shoreline property.

Wood ashes

Wood ashes from burning firewood contain phosphorus and have often been used as fertilizers. The wood ash from a cord of hardwood contains about 1/2 kg of phosphorus. Wood ash is very fine and can be readily transported to the lake by rain runoff. Dump your wood ash as far away from the shoreline as feasible.

Vegetated Buffers – the last line of defense

Why they are important? A large impact on the increase in phosphorus entering lakes such as Otty is the result of the replacement of the natural vegetation of two hundred years ago with cleared land, hardened surfaces and buildings. Soil particles contain a number of components including phosphorus. With the clearing of land and the addition of hardened surfaces these soil particles and also organic particles can be readily transported to the lake with the runoff from rain and snow melt adding additional phosphorus to the lake. Also man-made sources of phosphorus will similarly be transported to the lake.

What you can do

There is a concrete action that you can take to counter this transport of phosphorus to Otty and it has nothing to do with cement. Develop or enlarge a vegetated buffer strip along your shoreline. Vegetated buffers serve to reduce phosphorus entering the lake by spreading rain runoff through a vegetated area rather than flowing in a direct stream to the lake. The vegetated buffer slows the speed of the runoff allowing the soil and organic particles in the runoff to settle. Some of this phosphorus will subsequently be utilized by the plants, shrubs and trees of the vegetated buffer. Vegetated buffers also help to stabilize shorelines reducing erosion, further reducing the amount of sediment entering the lake.

Another benefit

We can “own” our lakeside cottage or home property but we should also share the property with the wildlife. A vegetated shoreline buffer will increase the habitat for a wide variety of species of animals, birds and aquatic insects.

How to construct a vegetated buffer - Put away your lawnmower!

Seriously that is a good starting point. This will allow native plants to colonize the area. Using native plants is important as they are better adapted to the local climate and terrain, more resistant to disease, and will not require much effort on your part. Check out the Otty Lake Association’s annual sale of shoreline plants to get a head start on a vegetated buffer. The Rideau Valley Conservation Authority’s Shoreline Naturalization Program can also assist with advice and direct support.

How deep should the vegetated buffer be?

Researchers have offered many answers to this question. To some extent it depends on the circumstances – steep slopes require deeper buffers to slow the runoff. Much of the research points to the use of buffers of 15 m or more depth for a major reduction in the transport of phosphorus to a lake. However, any size of vegetated buffer will help. We also recognize that you need access to your waterfront. Try to choose a corridor to your shoreline that will channel rain runoff into the vegetated buffer.

What else can be done?

Hardened surfaces on your shoreline property accelerate the runoff of precipitation to the lake compared to the use of porous materials like gravel and especially vegetation. Consider this impact before paving your driveway or laying concrete or other impervious materials.

Looking ahead

Some of the phosphorus entering the lake will be stored in the lake bottom sediment and can be reintroduced to the lake water column during the lake turnover each spring. It will thus take some years to see the benefits of reducing phosphorus inputs to Otty. However, we need to take action now to enjoy improvements in the future. Let’s starve the lake of phosphorus!

More OLA Environment

Keep informed about ticks

Updates and information on ticks and lyme disease from the Government of Ontario.

Read about it >>>

Otty Lake Shoreline Handbook

The Otty Lake Shoreline Handbook provides practical, environmentally friendly resource information on topics such as erosion, shoreline buffers, water sources, septic systems, docks, lawns, shoreline access and more. Updated April 2017.

The Handbook >>

Complete info on Septic Tanks

Everthing you need to know about septic tanks installed near Otty Lake.

Septic Tank Info