

2014 MUSKOKA WATERSHED

REPORT CARD

LAKE MUSKOKA SUBWATERSHED

GRADES

Land	Vulnerable
Water	Vulnerable
Wetlands	Vulnerable
Biodiversity	Stressed

The Lake Muskoka Subwatershed is 47,039 hectares in area and is located in the central portion of The District Municipality of Muskoka. It is comprised of the lakes and streams that flow directly into Lake Muskoka. The lake itself is approximately 100 km².

Lake Muskoka flows into the Moon River at Bala. Approximately 10% of the subwatershed is developed with 6% of the land being Crown land. 6% of the subwatershed is protected through provincial parks, crown nature reserves, or local land trusts.

Urban areas include both Bala and Port Carling with a significant portion of the population being rural and shoreline residential. There are 30 lakes over 8 hectares in size in the subwatershed and the dam at Bala controls the water level of the lake as well as generates power. There is also a water control structure and a set of locks on the Indian River between Lake Rosseau and Lake Muskoka in Port Carling.

This report card describes the health of the land, water, wetlands and biodiversity of the Lake Muskoka Subwatershed and is part of the **2014 Muskoka Watershed Report Card** available at www.muskokawatershed.org.

Stewardship Works!



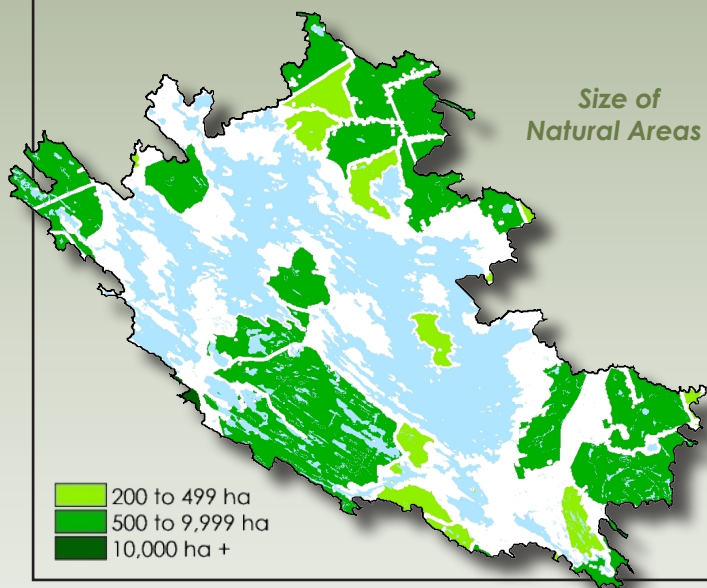
Muskoka
WATERSHED COUNCIL

Land:

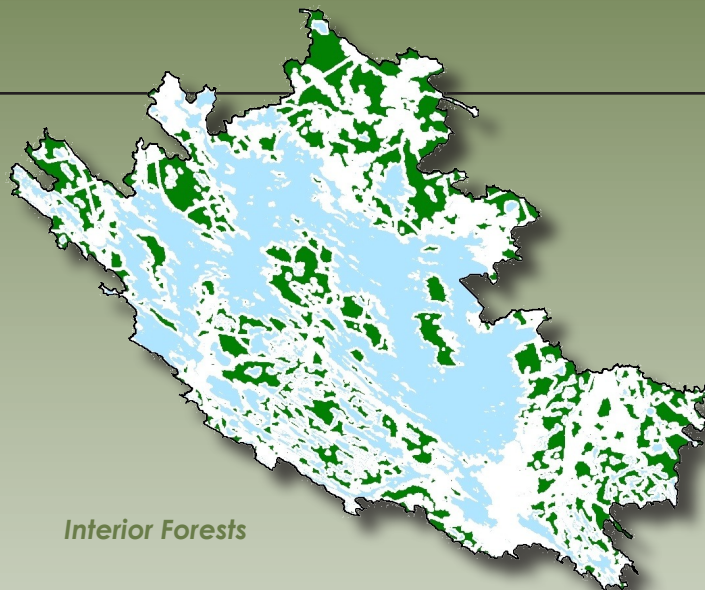
- Not Stressed
- ✓ Vulnerable
- Stressed

90% of the Lake Muskoka Subwatershed is in natural habitat. The lake itself dominates the subwatershed and is surrounded by mixed forest vegetation. The Lake Muskoka Subwatershed was one of the first areas within the larger Muskoka River Watershed that was developed. Historic development patterns have resulted in a higher density of development, especially along the shoreline, and a more fragmented landscape with roads and other service corridors.

Size of Natural Areas



Interior Forests



88% of the subwatershed is privately owned and it will be important to maintain a strong private land stewardship program to ensure that long term health of the subwatershed is maintained as development occurs. Although only 4% of the land is currently under active private land stewardship, there has been an increase in participation in MFTIP, CLTIP, and Environmental Farm Plans.

Both healthy riparian areas and interior forests are important to support local wildlife and maintain good water quality.

Indicator	Lake Muskoka Subwatershed		Muskoka Watershed		Description
	Value	Grade	Value	Grade	
Size of Natural Areas	51%	Vulnerable	79%	Vulnerable	Areas of natural cover that are 200 ha or greater. Natural cover includes forest, lakes, rock barrens and wetlands.
200 - 499 ha	8%		7%		
500 - 9,999 ha	43%		52%		
10,000 ha +	0%		20%		
Interior Forest	28%	Vulnerable	58%	Not Stressed	Interior forest is a forested area with a 100-metre forested buffer surrounding it.
Road Density	0.85 km/km ²	Vulnerable	0.51 km/km ²	Vulnerable	Road density is a measure of the degree of fragmentation of the landscape. Roads are a primary cause of death of many species, especially turtles and snakes.
Level of Development	10%	Vulnerable	5.4%	Vulnerable	Level of development is the percent of the watershed in urban or rural development. When more than 10% of a watershed is developed, lake and stream health may be impacted.
Shoreline Density	13-16 lots/km	Vulnerable	N/A	N/A	Shoreline density is an indicator of the human stress on a water body. This stress includes nutrient loading, crowding, aesthetic appeal, and habitat impacts.
Shoreline Buffer	<75%	Stressed	75%	Vulnerable	Shoreline buffer is the percent of unaltered lot area from the water's edge 20 metres inland. The shoreline buffer is the last line of defense against the forces that may otherwise damage a healthy lake.

Water:

- ☐ Not Stressed
- ☒ Vulnerable
- ☐ Stressed

Indicator	Lake Muskoka Subwatershed		Muskoka Watershed		Description
	# Lakes	Grade	# Lakes	Grade	
Total Phosphorus Concentration	21	Stressed	129	Vulnerable	The amount of total phosphorus in a lake is a measure of recreational water quality as phosphorus is generally the limiting nutrient in algae production.
< BG + 30%	7		73		
BG + 30% to BG + 50%	5		27		
> BG + 50%	9		29		
Algae		Vulnerable		Not Stressed	The propensity for algal blooms is the percentage of lakes with TP greater than 15 µg/L and are over threshold.
Fish Habitat (% Unaltered)	75-90%	Vulnerable	91	Not Stressed	This is a measure of fish habitat. Many fish species require the overhanging vegetation, rock shoals, and aquatic vegetation generally found in undisturbed sites.
Calcium Levels	34	Not Stressed	377	Vulnerable	Calcium is an important nutrient for the development of bones and exoskeletons. As a result of acid precipitation, calcium has been leached out of the forest soils and is now also in decline in many of the lakes in the watershed threatening the continued presence of important lake species.
< 1.5 mg/L	3		161		
1.5 - 2.0 mg/L	7		138		
> 2.0 mg/L	24		78		

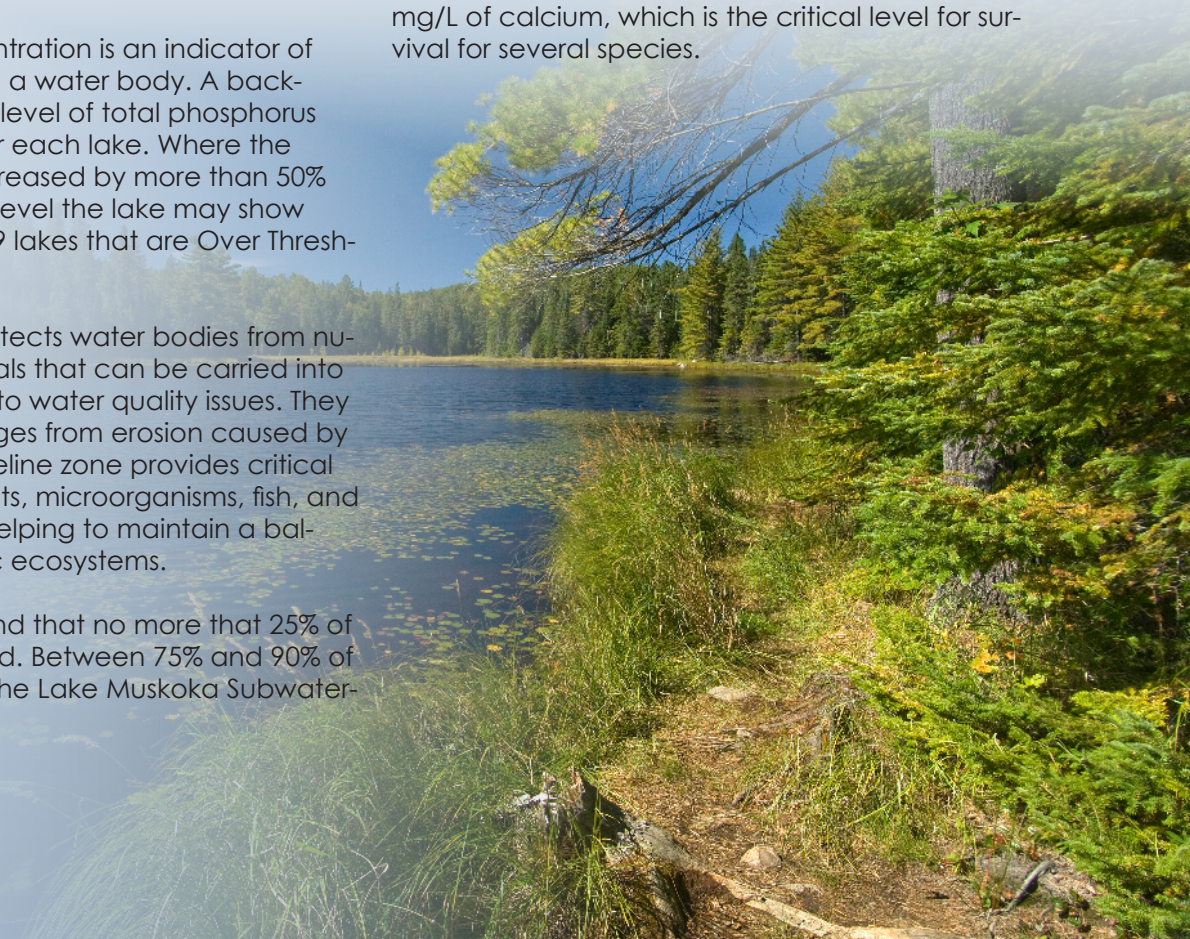
The Lake Muskoka Subwatershed is dominated by Lake Muskoka. The lake flows into the Moon River at Bala and from there into Georgian Bay.

Total phosphorus concentration is an indicator of the amount of nutrient in a water body. A background or undeveloped level of total phosphorus has been determined for each lake. Where the phosphorus level has increased by more than 50% above the background level the lake may show signs of stress. There are 9 lakes that are Over Threshold in the subwatershed.

Shoreline vegetation protects water bodies from nutrients and toxic chemicals that can be carried into the lake and contribute to water quality issues. They also protect the lake edges from erosion caused by waves and ice. The shoreline zone provides critical habitat for aquatic insects, microorganisms, fish, and other animals, thereby helping to maintain a balance in sensitive aquatic ecosystems.

Municipalities recommend that no more than 25% of a shoreline be developed. Between 75% and 90% of the shoreline of lakes in the Lake Muskoka Subwatershed has been altered.

As a result of acid deposition, calcium has leached out of many lakes across Muskoka. In the Lake Muskoka Subwatershed 3 lakes have less than 1.5 mg/L of calcium, which is the critical level for survival for several species.



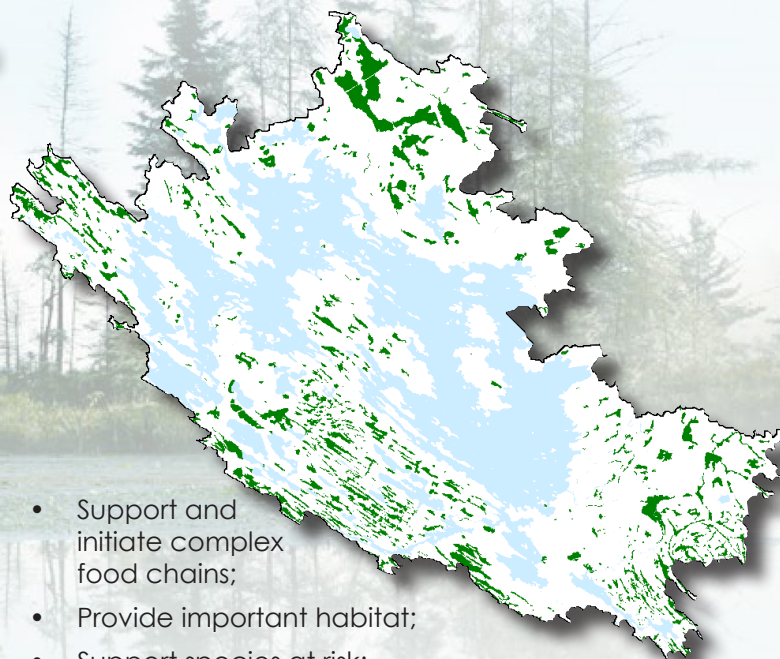
Wetlands:

- ☐ Not Stressed
- ☒ Vulnerable
- ☐ Stressed

The Lake Muskoka Subwatershed has just over 8% wetlands. Wetlands are recognized by all levels of government as important components of a healthy environment. Wetlands and the area that surrounds them provide continuous, sustainable environmental, economic and social benefits that contribute to the high quality of life in Muskoka. Most species at risk native to Muskoka rely on wetlands for all or a portion of their life cycles.

Wetland Values

- Control and storage of surface water and re-charge groundwater;
- Maintain and improve water quality, aid in flood control, and protect shorelines from erosion;
- Trap sediments which would otherwise fill water-courses;
- Support and initiate complex food chains;
- Provide important habitat;
- Support species at risk;
- Provide fish populations; and
- Provide active and passive recreational opportunities, including canoeing, bird watching, hunting and fishing



Subwatershed Name	% Wetlands	Comment	Grade
Lake Muskoka	8.04	<p>The Lake Muskoka Subwatershed is limited to that area that flows directly into Lake Muskoka. It includes part of the urban areas of Gravenhurst, Port Carling, MacTier, and Bala. This central part of Muskoka is the oldest settled area of the District; as a result, many wetlands would have been impacted by development at the time of first settlement.</p> <p>Today, as in the past, as development occurs wetlands tend to get filled in, especially along the edges of the wetland. Port Carling is restricted in the area it has to develop by both roads and lakes. Wetlands in the area are particularly at risk because of the potential conflict in use. For example, recent observations note that fill has been added to several wetland areas along Highway 118 on the west side of the community. Fill has also been added to lots along Foreman Road as development proceeds.</p> <p>Golf course development in the last twenty years in Port Carling has also resulted in the filling and manipulation of wetlands.</p> <p>In MacTier the railway was built through a swamp and several pockets of wetland area continue to exist between the railway and roads. Many of these pocket wetlands get filled as the community continues to grow. In addition, filling has occurred in the Conger Marsh at the edge of the built up area.</p> <p>Cranberry development in the Bala area also impacts wetlands. Although the area remains wet, many of the hydrological and ecological functions of the wetland have been lost. As a key economic generator in the area, a balance between cranberry production and wetland function is required.</p> <p>The Lake Muskoka Subwatershed continues to experience an elevated level of development pressure. Once again, in the Port Carling area, several new developments have been approved in areas that are bordering on or encompass wetlands. Wetlands in this subwatershed are vulnerable as there is constant pressure to develop.</p>	Vulnerable

Biodiversity:

- ☐ Not Stressed
- ☐ Vulnerable
- ☒ Stressed



Biodiversity refers to the richness of life in the environment – the number of different species, their genetic variability, and the extent to which different groups of species occur from one place to another within the region.

Muskoka is blessed with a rich biodiversity primarily because of the extensiveness of its natural ecosystems. This biodiversity provides the resilience necessary to withstand environmental change and to continue to function

normally and provide the environmental goods and services on which we and other species depend.

Indicator	Lake Muskoka Subwatershed		Muskoka Watershed		Description
	# Species	Grade	# Species	Grade	
Species at Risk Habitat	21	Stressed	22	Vulnerable	The number of different types of species at risk habitat in the subwatershed. Subwatersheds with habitat for more types of species at risk are more vulnerable to development or other stressors.
Endangered	4		5		
Threatened	7		7		
Species Concern	10		10		
Alien Invasive Species*	3	Stressed	10	Stressed	Maintaining the diversity of native species is important to a healthy watershed. Invasive species often out-compete native species and significantly reduce the biodiversity of an area.

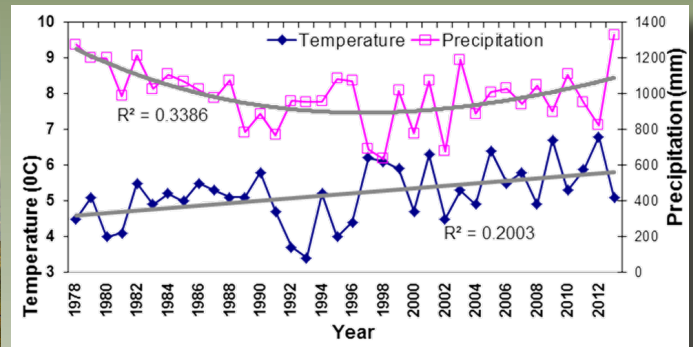
* Includes the Spiny Water Flea in the large recreational lakes. Spiny Water Flea will collapse the biodiversity of a lake.



Changing climate: temperatures continue to rise

The mean temperature showed a clear and moderate increase or warming over 1978 to 2013, about 0.35 degree increase per 10 years, or a warming of 1 degree within 30 years. The annual precipitation had a significant decrease during 1978-1998 and then a weak increase during 1999-2013.

(Dorset Environmental Science Centre)

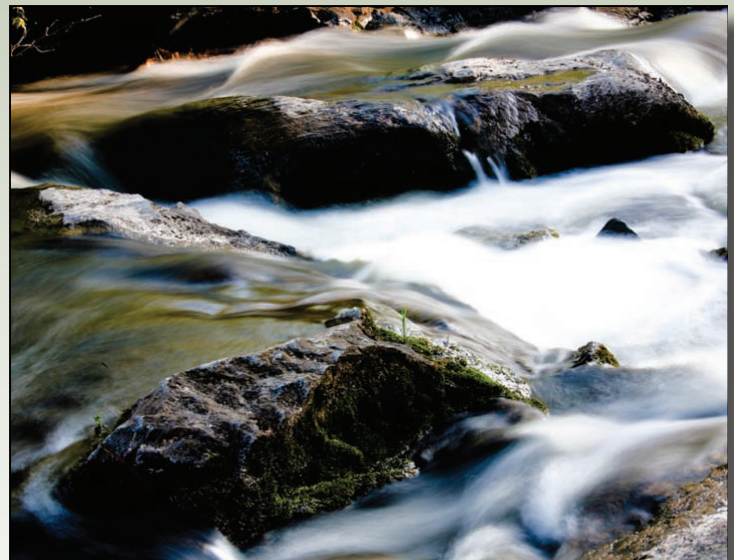


Stewardship Works: help protect the watershed

When all is said and done, the fate of sustainable management of Muskoka's watersheds lies in large part in the hands of local residents as they go about their day-to-day lives. It is the citizens of Muskoka who must generate the interest and enthusiasm to create, continue and expand local projects which lead to positive actions and results.

Stop the spread of invasive species

- Purchase non-invasive or native plants from a reputable dealer.
- Never dispose of domestic plants or animals into the wild.
- Inspect and wash your boat, ATV and other equipment and let dry for at least 6 hours before moving to a new lake or area.
- Do not move species from one area to another.



Retain buffers and leave shorelines in a natural state

- Maintain a wide buffer of native plants and trees around shorelines of lakes and rivers.
- Minimize boat speed (eliminate wake) in all near-shore areas and particularly in areas with known loon nests.
- Avoid grassed lawns in the waterfront area and minimize use of fertilizers.

Protect wetlands

- Leave wetlands alone.
- Keep recreational vehicles out of wetlands. Explore by kayak or canoe instead.

Maintain natural areas

- Limit cleared areas in the rural and waterfront area.
- Do not create new roads.

Reduce your personal impact

- Reduce your use of electricity and fossil fuels.
- Maintain your septic system.
- Improve the energy efficiency of your home and vehicle. Treat electricity as a luxury.
- Reduce waste by reusing, reducing, composting and refusing to buy items with excess packaging.