

2014 MUSKOKA WATERSHED

REPORT CARD

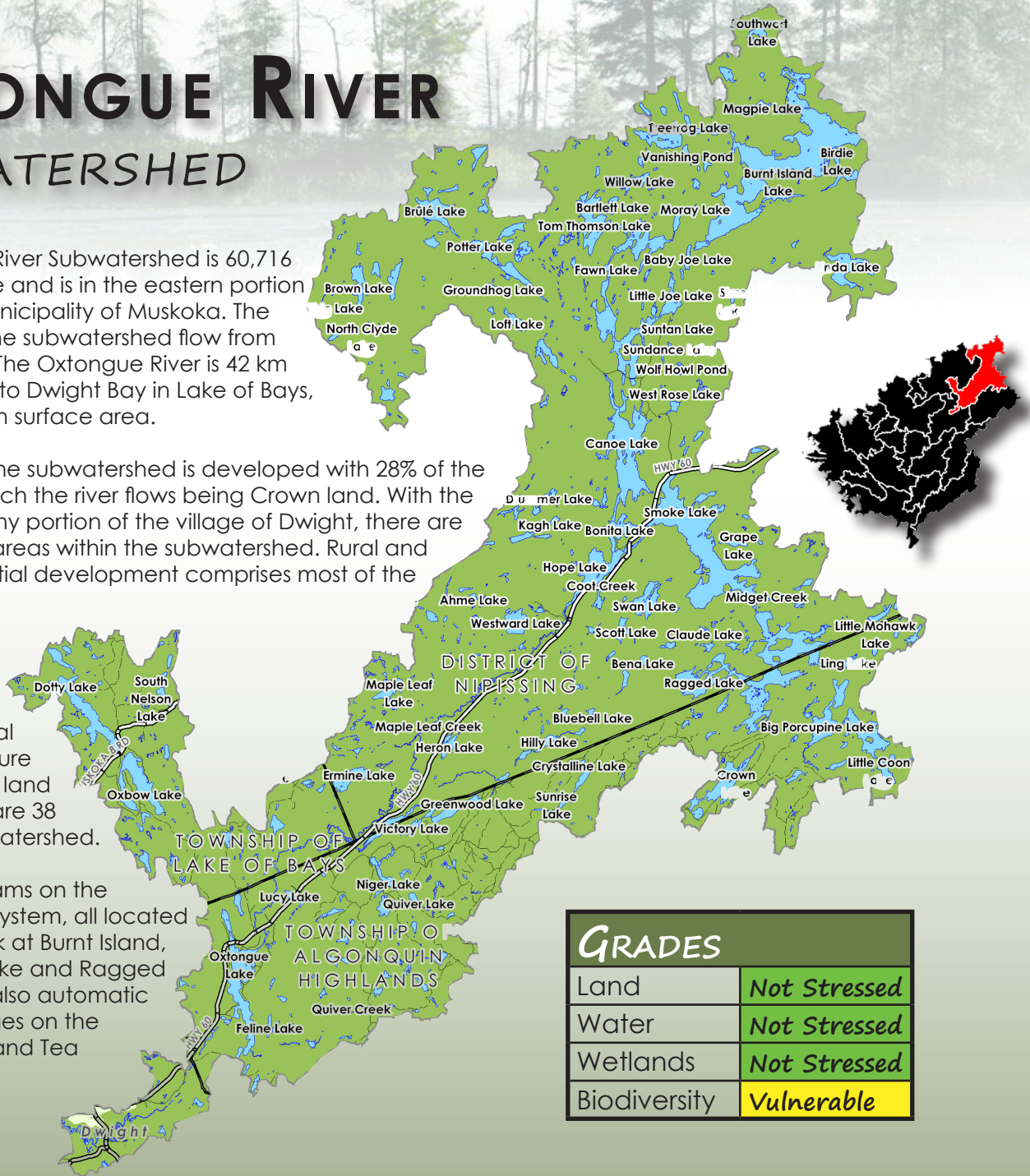
OXTONGUE RIVER SUBWATERSHED

The Oxtongue River Subwatershed is 60,716 hectares in size and is in the eastern portion of The District Municipality of Muskoka. The headwaters of the subwatershed flow from Algonquin Park. The Oxtongue River is 42 km long and flows into Dwight Bay in Lake of Bays, which is 2.2 km² in surface area.

Less than 2% of the subwatershed is developed with 28% of the land through which the river flows being Crown land. With the exception of a tiny portion of the village of Dwight, there are no major urban areas within the subwatershed. Rural and shoreline residential development comprises most of the land use.

69% of the subwatershed is protected through provincial parks, crown nature reserves, or local land trusts and there are 38 lakes in the subwatershed.

There are four dams on the Oxtongue River system, all located in Algonquin Park at Burnt Island, Joe Lake, Tea Lake and Ragged Lake. There are also automatic water level gauges on the Oxtongue River and Tea Lake.



GRADES	
Land	Not Stressed
Water	Not Stressed
Wetlands	Not Stressed
Biodiversity	Vulnerable

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

Stewardship Works!

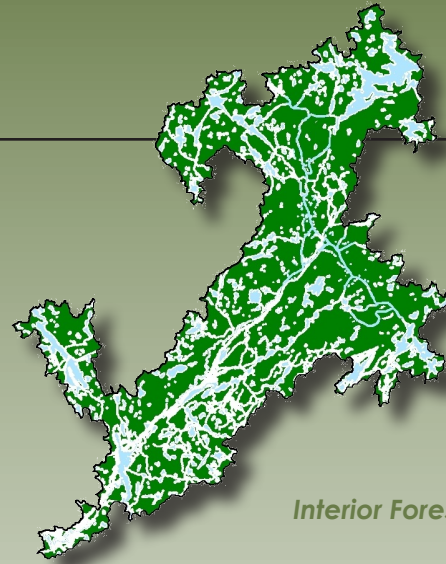


Muskoka
WATERSHED COUNCIL

Land:

- Not Stressed
- Vulnerable
- Stressed

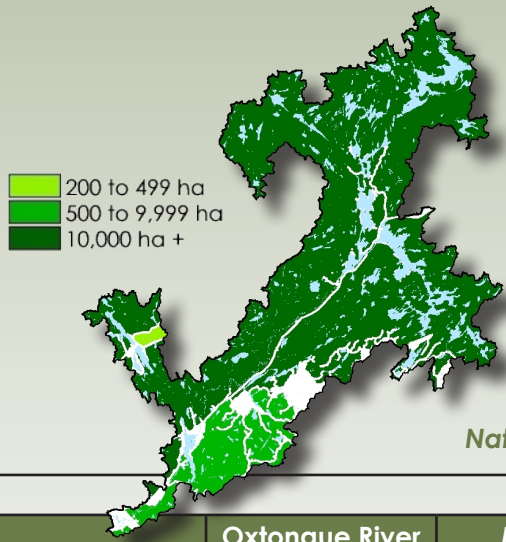
98% of the Oxtongue River Subwatershed is in natural cover. The subwatershed is relatively large and is dominated by the river itself with several small lakes feeding into it. Mixed forest dominates the subwatershed and development is focused on the Highway 60 corridor. The development pattern has resulted in a large undisturbed area off the highway corridor that supports many of the large mammals native to Muskoka/Haliburton, such as bear and moose. These natural areas are also important to support local biodiversity and to help purify the air, maintain good water quality and provide a carbon sink.



Interior Forests

40% of the subwatershed is privately owned and it will be important to maintain a strong private land stewardship program to ensure that the long-term health of the subwatershed is maintained as development occurs. Private land stewardship activities such as participation in MFTIP, CLTIP, and donations to land trusts is encouraged to maintain the values enjoyed in this subwatershed.

Both healthy riparian areas and interior forests are important to support local wildlife and maintain good water quality. Planting native species and renaturalizing shorelines are important stewardship activities in the subwatershed.



- 200 to 499 ha
- 500 to 9,999 ha
- 10,000 ha +

Size of Natural Areas

Indicator	Oxtongue River Subwatershed		Muskoka Watershed		Description
	Value	Grade	Value	Grade	
Size of Natural Areas	89%	Not Stressed	79%	Vulnerable	Areas of natural cover that are 200 ha or greater. Natural cover includes forest, lakes, rock barrens and wetlands.
200 - 499 ha	0%		7%		
500 - 9,999 ha	9%		52%		
10,000 ha +	80%		20%		
Interior Forest	68%	Not Stressed	58%	Not Stressed	Interior forest is a forested area with a 100-metre forested buffer surrounding it.
Road Density	0.05 km/km ²	Not Stressed	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	<2%	Not Stressed	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 lots/km	Not Stressed	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	75-85%	Vulnerable	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	Oxtongue River Subwatershed		Muskoka Watershed		Description
	# Lakes	Grade	# Lakes	Grade	
Total Phosphorus Concentration	4	Vulnerable	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%	3		73		
BG + 30% to BG + 50%	0		27		
> BG + 50%	1		29		
Algae		Not Stressed		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)	>90%	Not Stressed	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	37	Vulnerable	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	7		161		
1.5 - 2.0 mg/L	28		138		
> 2.0 mg/L	2		78		

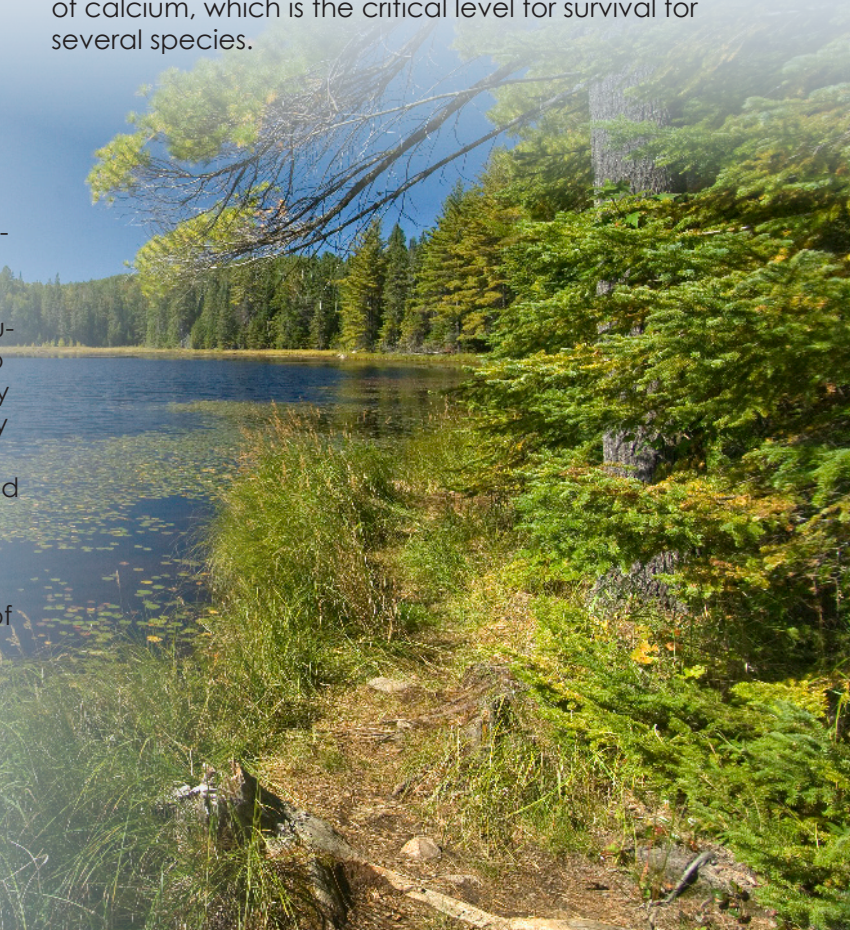
The Oxtongue River Subwatershed flows from the highlands in Algonquin Park to Lake of Bays south of Dwight.

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. One lake (Brooks Lake) is Over Threshold in the Oxtongue River 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. Almost all of the shorelines of the lakes and rivers in the Oxtongue River Subwatershed are in a natural state.

As a result of acid deposition, calcium has leached out of many lakes across Muskoka. In the Oxtongue River Subwatershed, 7 lakes have less than 1.5 mg/L of calcium, which is the critical level for survival for several species.



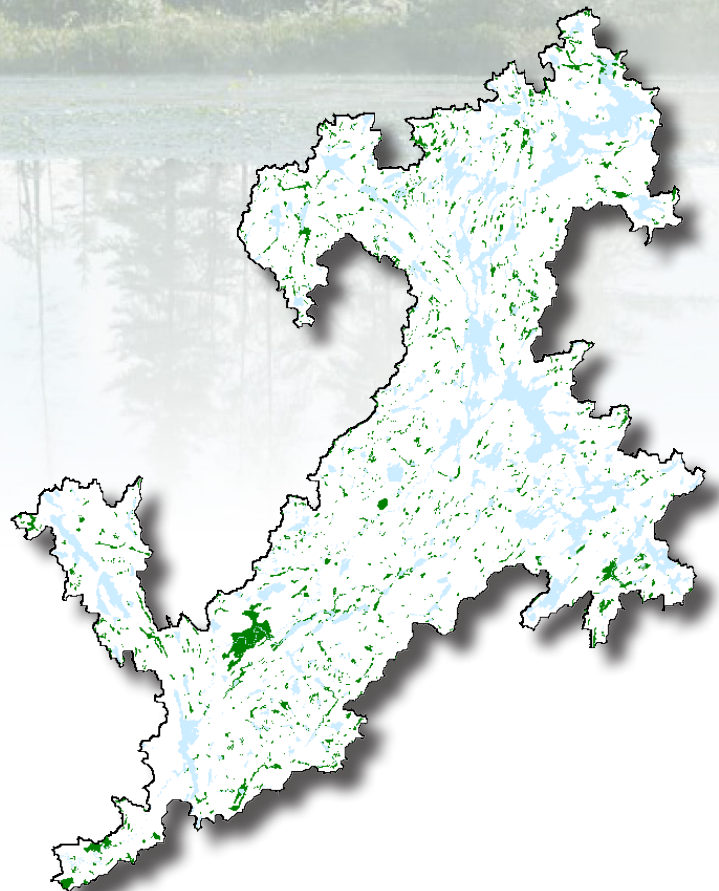
Wetlands:

- Not Stressed
- Vulnerable
- Stressed

The Oxtongue River Subwatershed is comprised of just under 5% wetland area. 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 recharge 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
Oxtongue River	4.84	The Oxtongue River Subwatershed is approximately 97% Crown and protected lands with less than 2% development. It is not close to a developing community and significant development is not planned for the area. Wetlands in this subwatershed are in good condition.	<i>Not Stressed</i>

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	Oxtongue River Subwatershed		Muskoka Watershed		Description
	# Species	Grade	# Species	Grade	
Species at Risk Habitat	17	Not 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.
<i>Endangered</i>	3		5		
<i>Threatened</i>	5		7		
<i>Species Concern</i>	9		10		
Alien Invasive Species*	2	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.

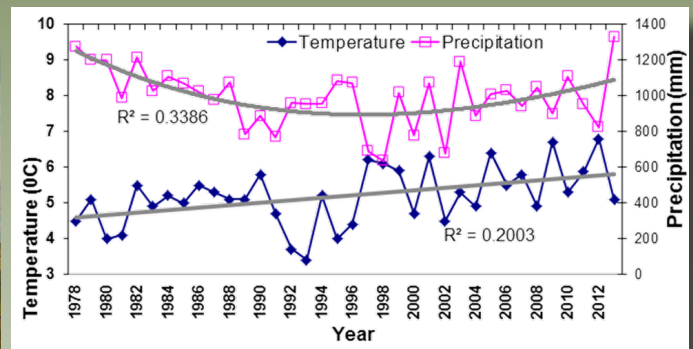
* Includes the Spiny Water Flea in the large recreational lakes. Spiny Water Flea will collapse the biodiversity of a lake.



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)

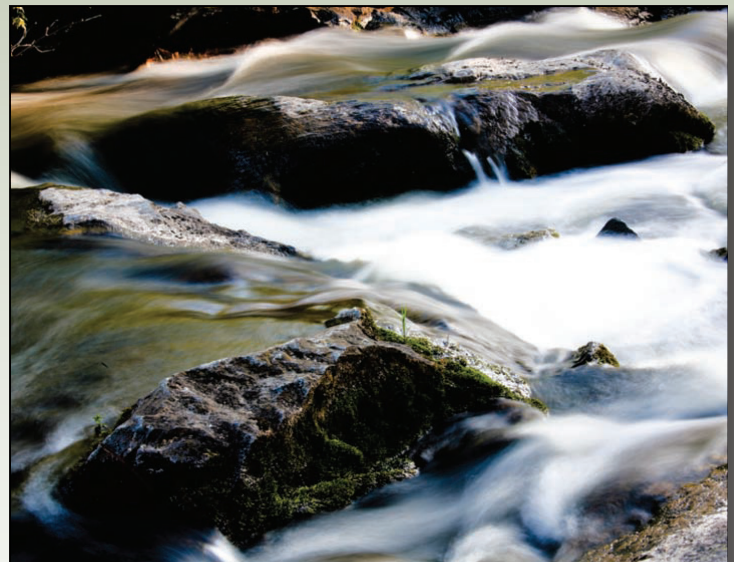


Stewardship Works: help protect the watershed

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.