2014 MUSKOKA WATERSHED

REPORT CARD

North Muskoka River

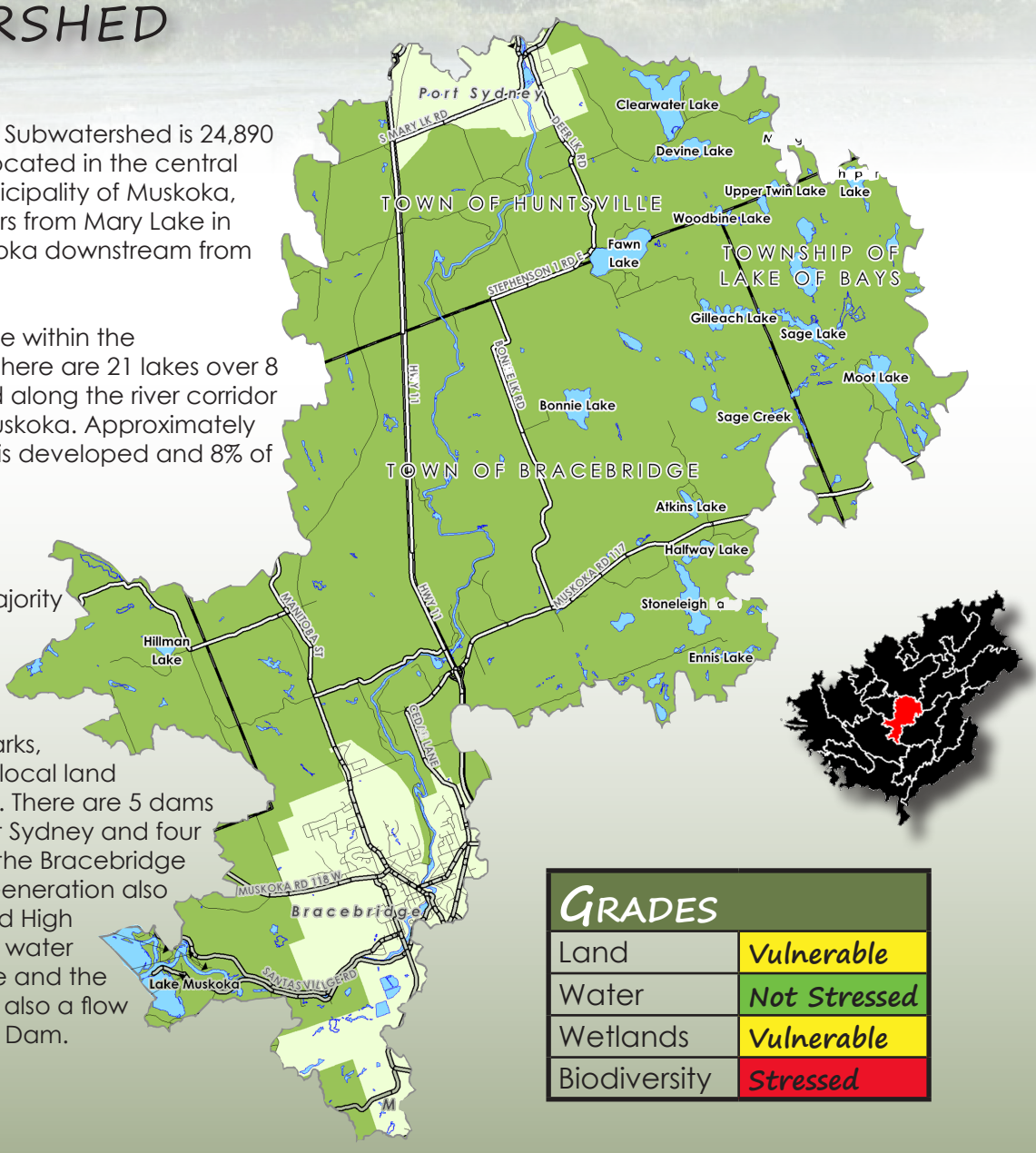
Subwatershed

The North Muskoka River Subwatershed is 24,890 hectares in size and is located in the central portion of The District Municipality of Muskoka, flowing about 28 kilometers from Mary Lake in Port Sydney to Lake Muskoka downstream from Bracebridge.

There is no single large lake within the subwatershed; however, there are 21 lakes over 8 hectares in size distributed along the river corridor as it flows toward Lake Muskoka. Approximately 14% of the subwatershed is developed and 8% of the land is Crown land.

Bracebridge is the major settlement in the subwatershed with the majority of other development being rural and shoreline residential.

There are no provincial parks, crown nature reserves, or local land trusts in the subwatershed. There are 5 dams on the system: one at Port Sydney and four along the river ending at the Bracebridge Falls generating station. Generation also occurs at Wilson's Falls and High Falls. There are automatic water level gauges at Mary Lake and the Port Sydney Dam. There is also a flow gauge at the Port Sydney Dam.



Grades	
Land	Vulnerable
Water	Not Stressed
Wetlands	Vulnerable
Biodiversity	Stressed

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

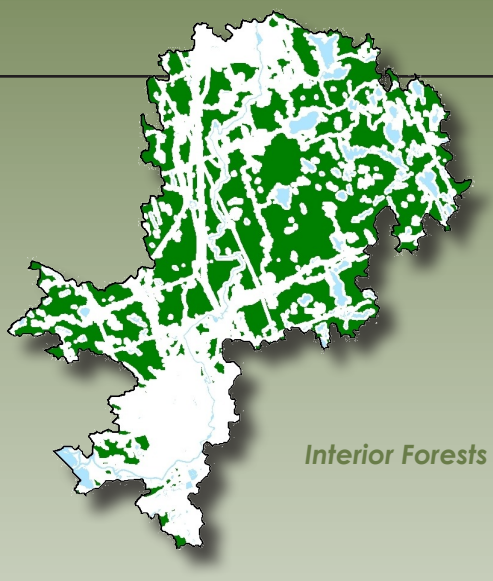
Stewardship Works!

Muskoka Watershed Council

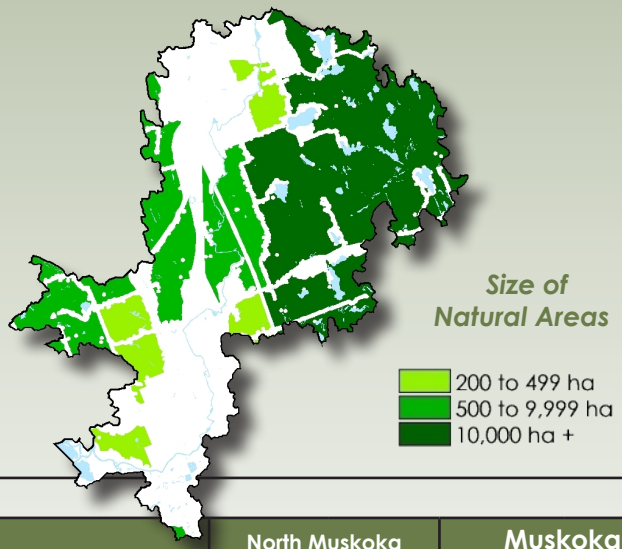
Land:

- ○ Not Stressed
- ✓ Vulnerable
- ○ Stressed

The North Muskoka River Subwatershed is moderately sized and has several small lakes that flow into the Muskoka River. Mixed forest dominates the subwatershed with development focused in the rural area and along the river's shoreline. Highway 11 is a significant linear barrier that runs through the subwatershed. The development pattern has resulted in a fragmented landscape with reduced interior forest habitat, which is an important landscape feature that supports local biodiversity. Natural areas are also important to help support local biodiversity, purify the air, maintain good water quality and provide a carbon sink.



Interior Forests



85% of the subwatershed is privately owned and it is important to encourage 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 are 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.

Indicator	North Muskoka River Subwatershed		Muskoka Watershed		Description
	Value	Grade	Value	Grade	
Size of Natural Areas	56%	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	7%		7%		
500 - 9,999 ha	16%		52%		
10,000 ha +	33%		20%		
Interior Forest	42%	Vulnerable	58%	Not Stressed	Interior forest is a forested area with a 100-metre forested buffer surrounding it.
Road Density	1.29 km/km^2	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	14%	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

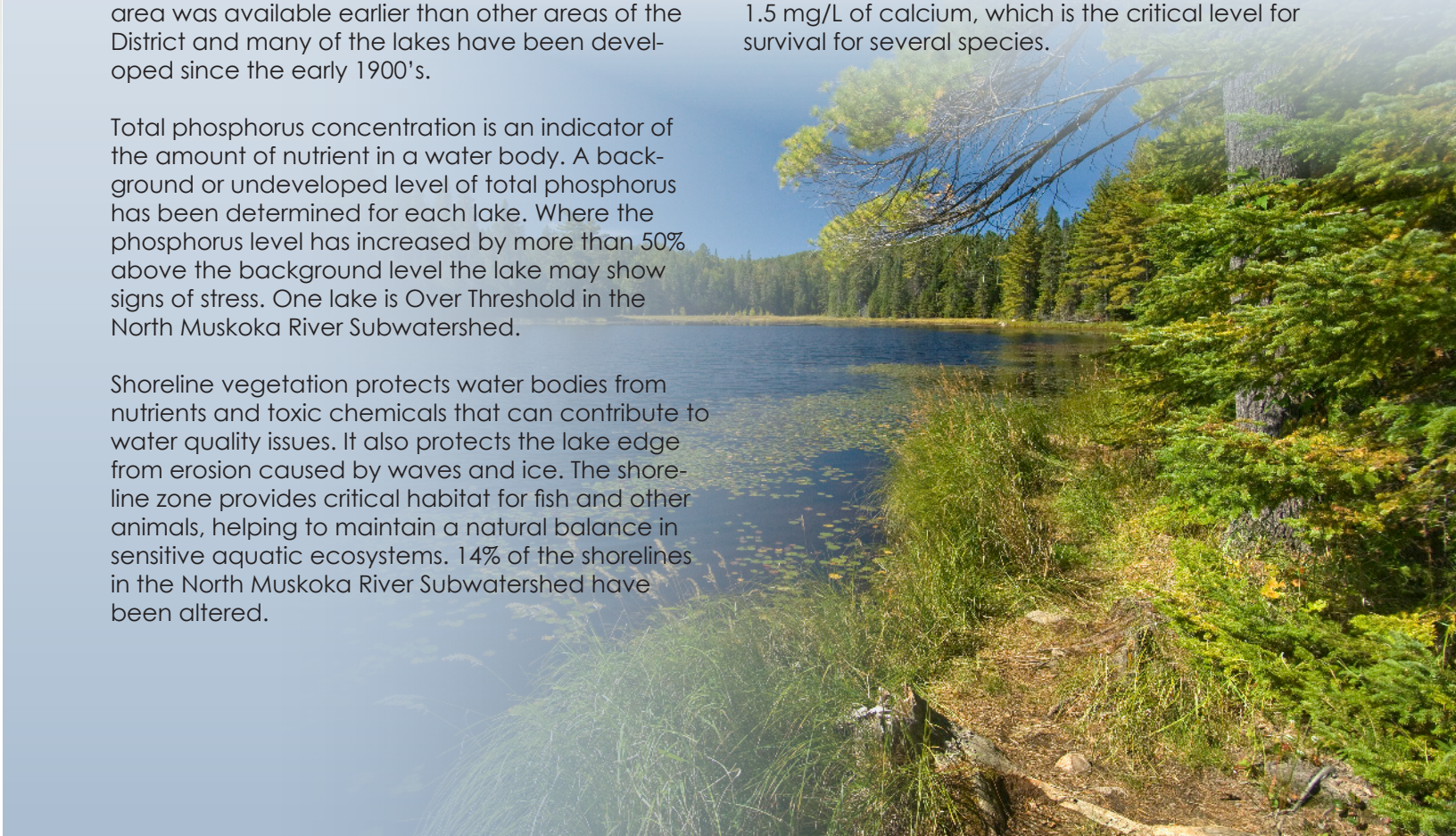
Indicator	North Muskoka River Subwatershed		Muskoka Watershed		Description
	# Lakes	Grade	# Lakes	Grade	
Total Phosphorus Concentration	9	Not Stressed	129	Vulnerable	The amount of total phosphorus in a lake is a measure of recreational water quality as phosphorus is generally the limiting nutrient in algae production.
< BG + 30%	8		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)	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	11	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 leeched 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	2		161		
1.5 - 2.0 mg/L	3		138		
> 2.0 mg/L	6		78		

The North Muskoka River is located in the heart of Muskoka and was an important navigation corridor during the logging era of the 1800's. Access to the area was available earlier than other areas of the District and many of the lakes have been developed since the early 1900's.

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 is Over Threshold in the North Muskoka River Subwatershed.

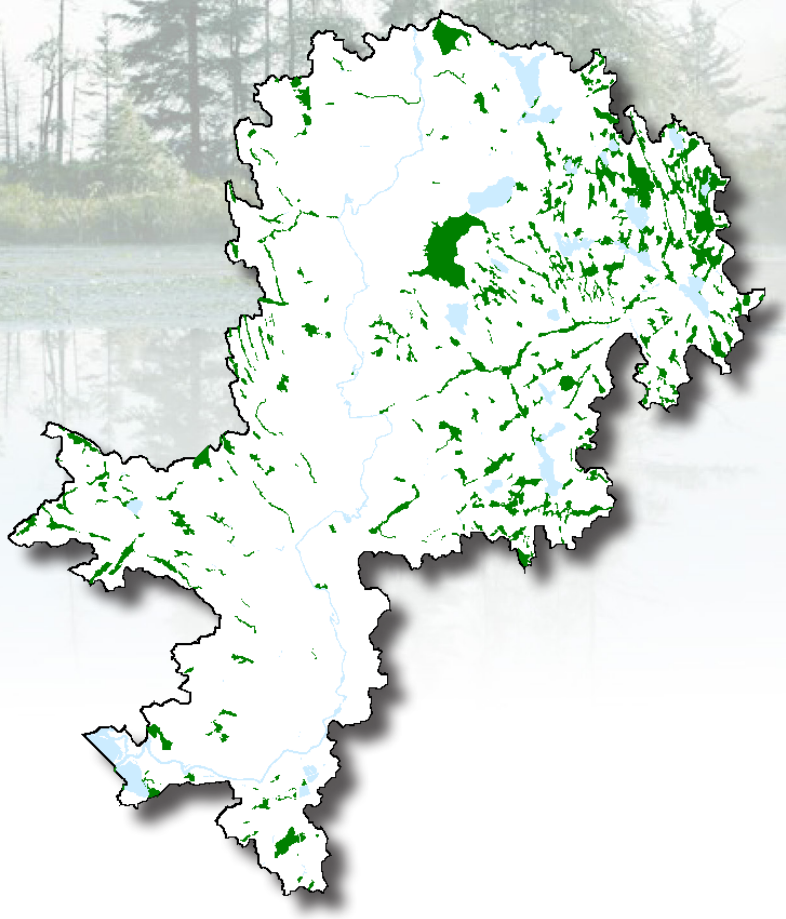
Shoreline vegetation protects water bodies from nutrients and toxic chemicals that can contribute to water quality issues. It also protects the lake edge from erosion caused by waves and ice. The shoreline zone provides critical habitat for fish and other animals, helping to maintain a natural balance in sensitive aquatic ecosystems. 14% of the shorelines in the North Muskoka River Subwatershed have been altered.

As a result of acid deposition, calcium has leached out of many lakes across Muskoka. In the North Muskoka River Subwatershed 2 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 North Muskoka River Subwatershed comprises over 8% 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 watercourses;
- 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
North Muskoka River	8.69	The North Muskoka River Subwatershed is approximately 8% Crown and protected lands with 14% developed area. The urban area of Bracebridge is within this subwatershed. Although the wetlands in the large rural area do not appear to be under significant development pressure, areas adjacent to roads are vulnerable to filling in the margins of wetlands. The wetland complex south of Bracebridge and terminating at Henry's marsh has a major development approved for the area that will likely impact a series of wetlands that flow from Highway 11 to the Muskoka River. If this area is eventually developed, steps to protect the functionality of the wetland are required. Wetlands in this subwatershed are in fair condition.	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.

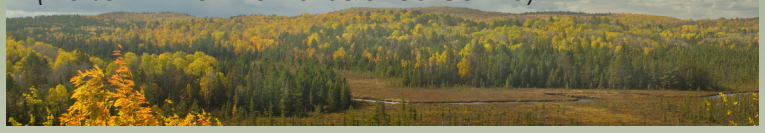
Muskoka is blessed with a rich biodiversity primarily because of the extensiveness of its natural ecosystems. This biodiversity provides the resilience necessary to withstand environmental change and to continue to function normally and provide the environmental goods and services on which we and other species depend.

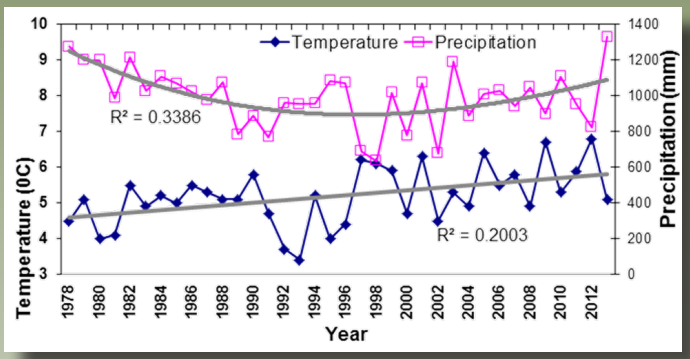
Indicator	North Muskoka River Subwatershed		Muskoka Watershed		Description
	# Species	Grade	# Species	Grade	
Species at Risk Habitat	21	Stressed	22	Vulnerable	The number of different types of species at risk habitat in the subwatershed. Subwatersheds with habitat for more types of species at risk are more vulnerable to development or other stressors.
Endangered	4		5		
Threatened	8		7		
Species Concern	10		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 mini- mize 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.