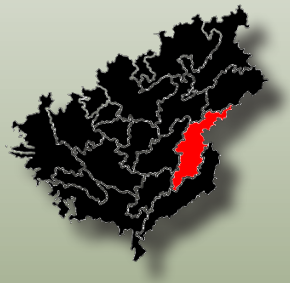
2014 MUSKOKA WATERSHED

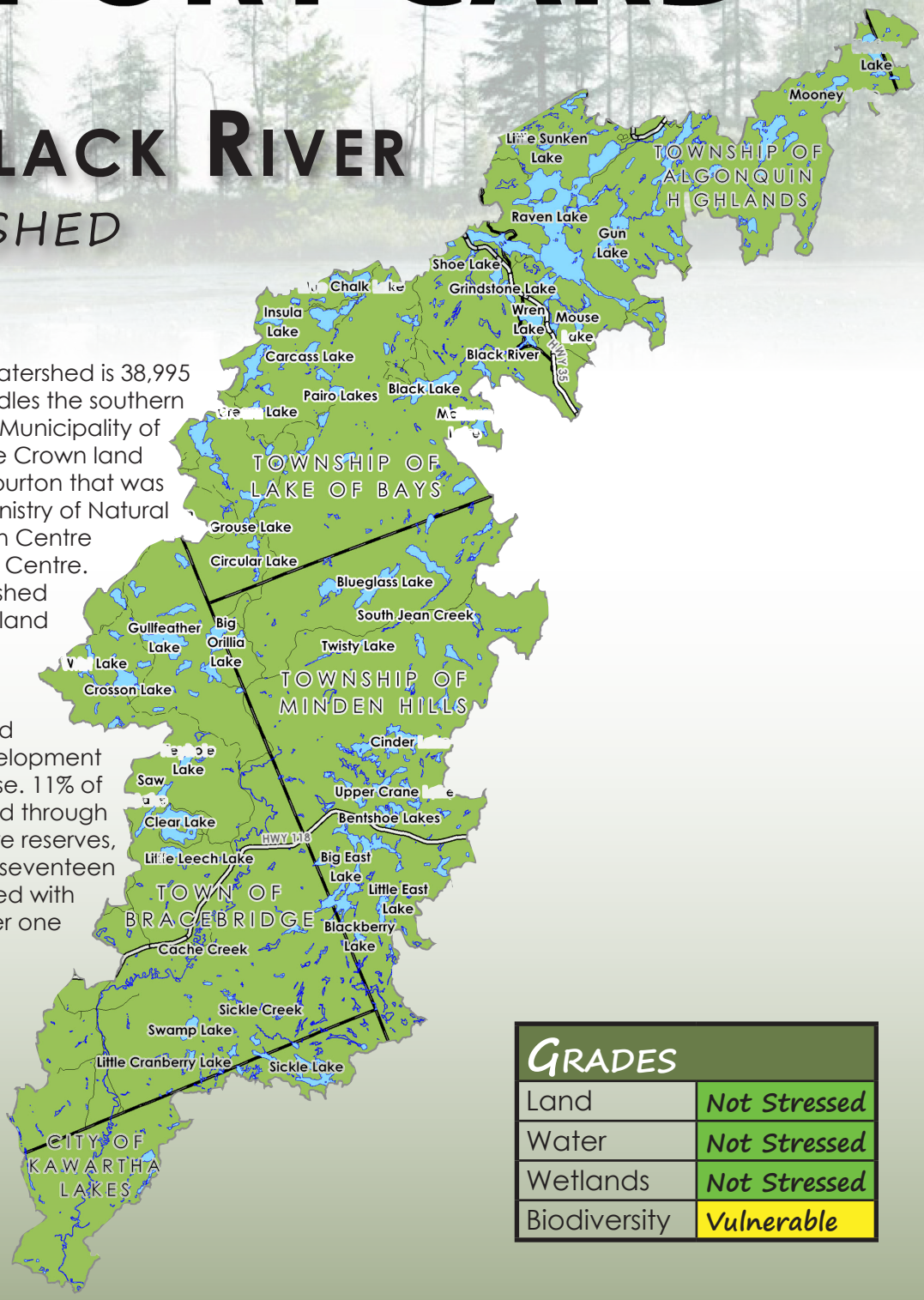
REPORT CARD

Upper Black River Subwatershed

The Upper Black River Subwatershed is 38,995 hectares in area and straddles the southern eastern border of The District Municipality of Muskoka. The river starts in the Crown land portion of the County of Haliburton that was originally managed as the Ministry of Natural Resources Outdoor Education Centre known and the Leslie M. Frost Centre. Less than 2% of the subwatershed is developed with 76% of the land being Crown land.

There are no major urban areas within the subwatershed and shoreline residential development comprises most of the land use. 11% of the subwatershed is protected through provincial parks, Crown nature reserves, or local land trusts. There are seventeen small lakes in the subwatershed with the largest one being just over one square kilometer in size.





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 Upper Black River Subwatershed and is part of the **2014 Muskoka Watershed Report Card** available at www.muskokawatershed.org.*

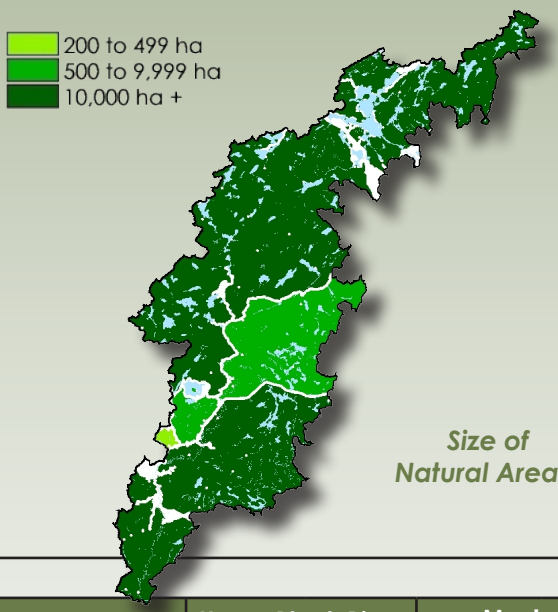
Stewardship Works!

Muskoka Watershed Council

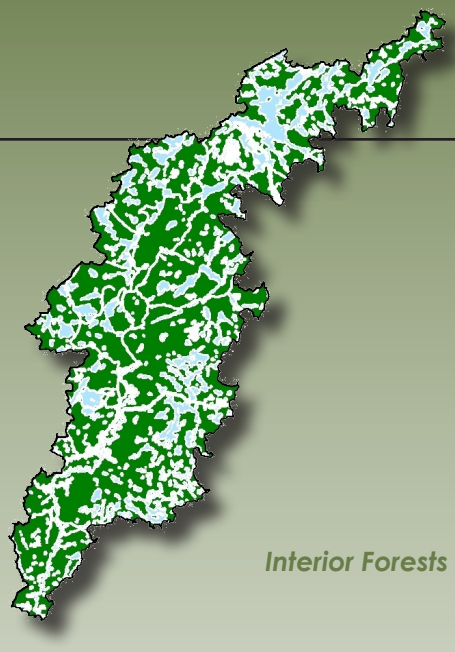
Land:

- ✓ Not Stressed
- ○ Vulnerable
- ○ Stressed

99% of the Upper Black River Subwatershed is in natural habitat. The subwatershed is of a moderate size and dominated by the river itself. It has mixed forest vegetation with little development. The development pattern has resulted in a large undisturbed area that supports many of the large mammals native to the southern Canadian shield region. These natural areas are important to help maintain local biodiversity, purify the air, maintain good water quality and provide a carbon sink.



Size of Natural Areas



Interior Forests

24% of the subwatershed is privately owned and strong private land stewardship programs are important to compliment the Crown land management in the area. Currently only 3% of the land is under active private land stewardship, such as participation in MFTIP, CLTIP, and land trusts activites.

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.

Indicator	Upper Black River Subwatershed		Muskoka Watershed		Description
	Value	Grade	Value	Grade	
Size of Natural Areas	92%	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	15%		52%		
10,000 ha +	77%		20%		
Interior Forest	59%	Not Stressed	58%	Not Stressed	Interior forest is a forested area with a 100-metre forested buffer surrounding it.
Road Density	0.12 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	>85%	Not 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	Upper Black 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%	7		73		
BG + 30% to BG + 50%	0		27		
> BG + 50%	2		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	4	Vulnerable	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	0		138		
> 2.0 mg/L	2		78		

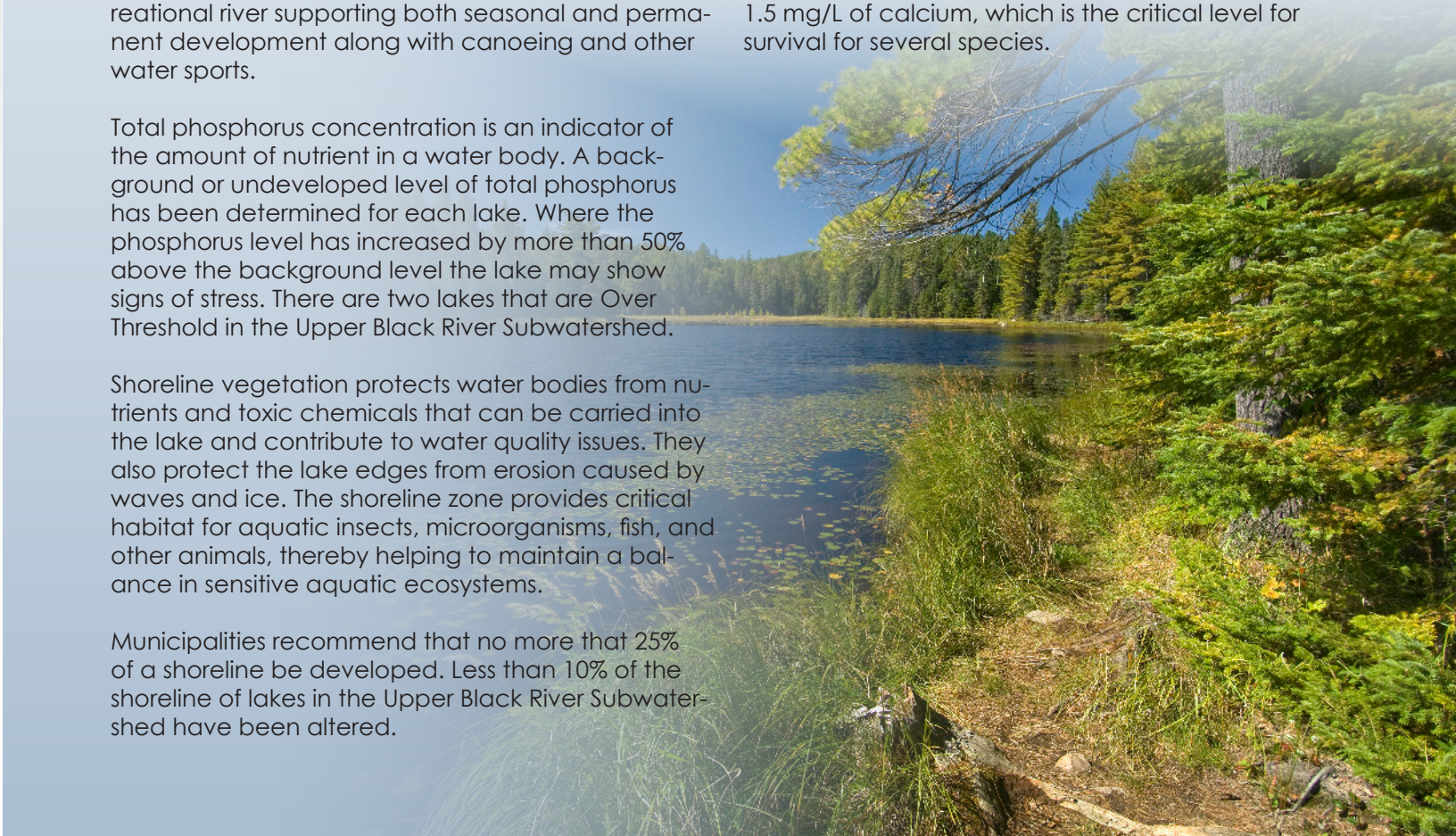
The Upper Black River Subwatershed flows through the less populated southeastern region of Muskoka, Haliburton and Simcoe County. It is a popular recreational river supporting both seasonal and permanent development along with canoeing and other water sports.

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 two lakes that are Over Threshold in the Upper Black 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 that 25% of a shoreline be developed. Less than 10% of the shoreline of lakes in the Upper Black River Subwatershed have been altered.

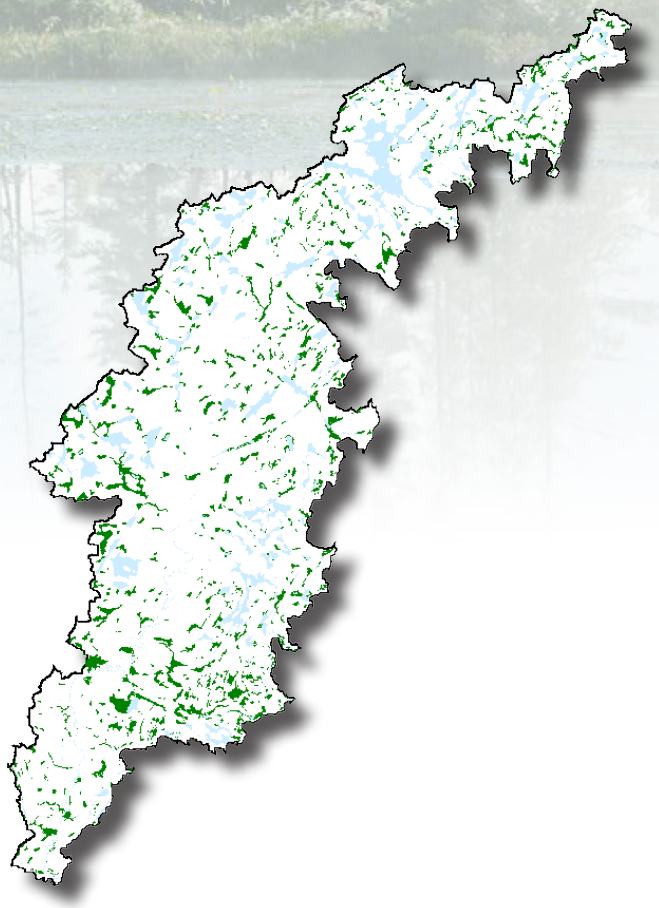
As a result of acid deposition, calcium has leached out of many lakes across Muskoka. In the Upper Black River Subwatershed, two lakes have less than 1.5 mg/L of calcium, which is the critical level for survival for several species.



Wetlands:

- ✓ Not Stressed
- ○ Vulnerable
- ○ Stressed

The Upper Black River Subwatershed is comprised of over 7% 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 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 op-portunities, including canoeing, bird watching, hunting and fishing

Subwatershed Name	% Wetlands	Comment	Grade
Upper Black River	7.40	The Upper Black River Subwatershed is approximately 87% 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.	*Not Stressed*

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.

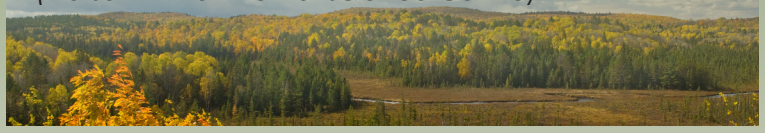
Muskoka is blessed with a rich biodiversity primarily because of the extensiveness of its natural ecosystems. This biodiversity provides the resilience necessary to withstand environmental change and to continue to function normally and provide the environmental goods and services on which we and other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

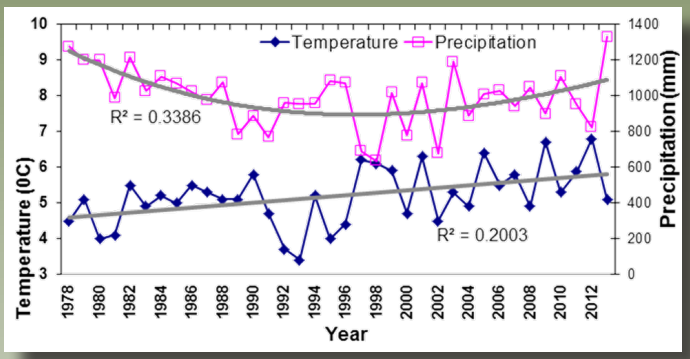
Indicator	Upper Black River Subwatershed		Muskoka Watershed		Description
	# Species	Grade	# Species	Grade	
Species at Risk Habitat	19	Vulnerable	22	Vulnerable	The number of different types of species at risk habitat in the subwatershed. Subwatersheds with habitat for more types of species at risk are more vulnerable to development or other stressors.
Endangered	4		5		
Threatened	5		7		
Species Concern	10		10		
Alien Invasive Species*	1	Vulnerable	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.