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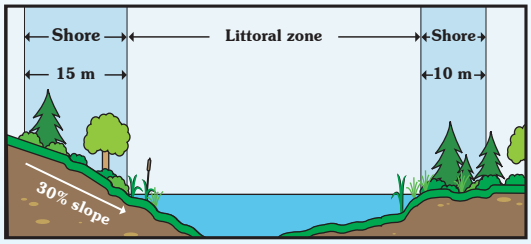
The Shoreline : The Lake's Natural Shield!



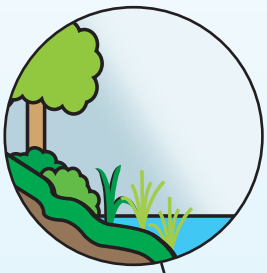
The width of the natural shoreline is determined by the slope of the bank.

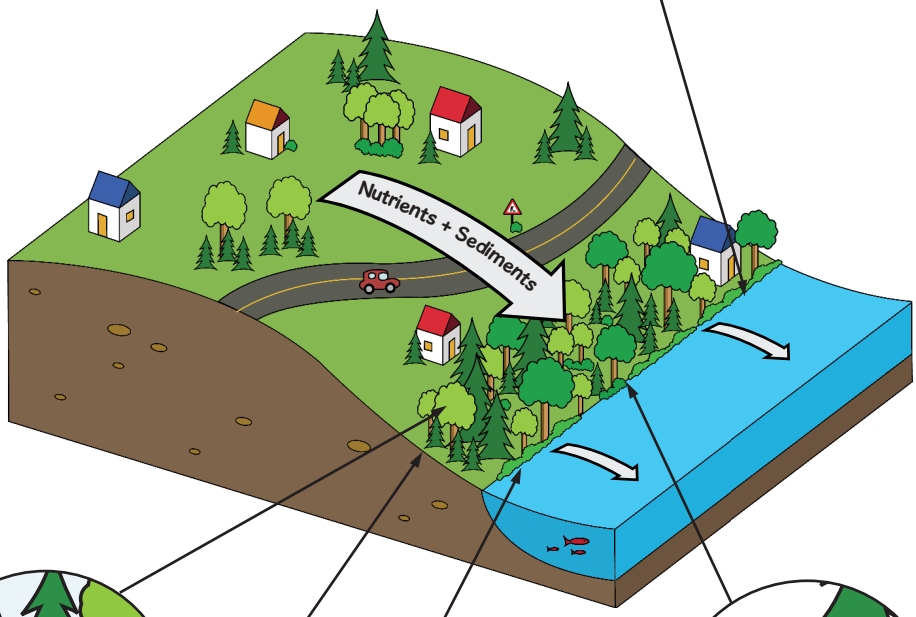
The shoreline is a 10 metre-wide strip of natural vegetation or 15 metres-wide if the slope is equal to or greater than 30%. It represents the transition between the aquatic and land environments and is ideally composed of indigenous herbaceous plants, shrubs and trees.

Shorelines are regulated by the *Politique de protection des rives, du littoral et des plaines inondables*, consequently, any changes must comply with your municipal regulations.

Shade

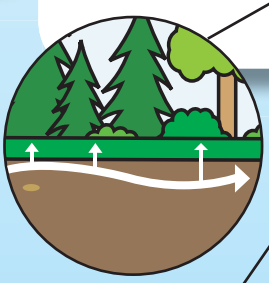
Shoreline vegetation prevents excessive warming of littoral areas.





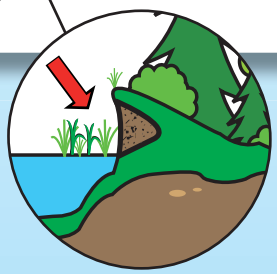
Filtration

Shoreline vegetation captures a large part of the sediment and nutrients (phosphorus and nitrogen) that could be washed into the lake. This helps limit excessive growth of algae and aquatic plants.



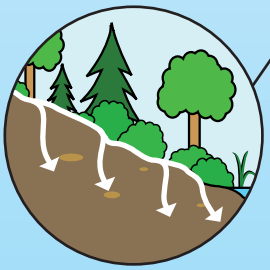
Erosion

Shorelines stabilize the banks and thereby limit erosion and landslides.



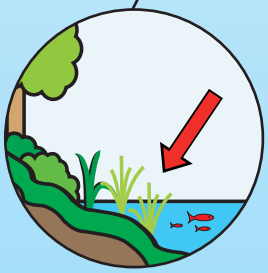
Retention

Shorelines reduce runoff velocity and facilitate water seepage into the soil.



Habitats

The shores of lakes and rivers provide essential habitat, food and shelter for wildlife.



To learn more : www.troussedeslacs.org

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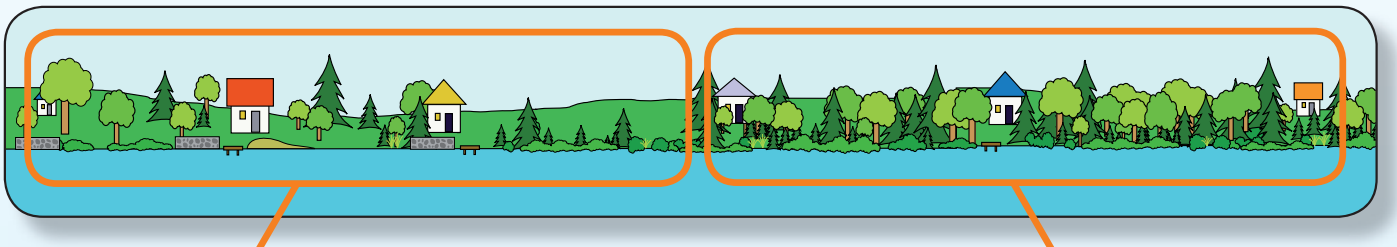
Gardening a Health Insurance

One of the way to ensure healthy lake is to preserve the shoreline.



Urban style landscaping

If your shore is deforested or has been artificially developed with lawns and stone walls, regeneration is essential. You can do this two ways.

1

- **Let nature take its course;** this is the easiest and most economical method.
- **Stop mowing the lawn near the shore** and let the shoreline regenerate (check your municipal regulations).
- **After only 2 or 3 years,** plants that are well adapted to shore conditions will grow up naturally. Be patient!

2

- **Plant indigenous species** that are well adapted to our climate and to a lakeside environment **in mid-June or late August,** preferably in the early morning or evening.
- **Don't use fertilizer or compost.** Fertilizers are bad for a lake's health and contribute to the proliferation of algae and aquatic plants (eutrophication).

Select plants that are best suited to your shore. They should be fast-growing, with a hardiness between 2 and 5 and have a root system capable of stabilizing the soil. Choose flowering and fruit-bearing plants. Not only will they brighten up your shore, but they will also attract insects and birds.

To the right, examples of plants well adapted to different environments are shown. However, other species can also be suitable for your property and your taste (colour, flowers, size…).

Nature friendly landscaping

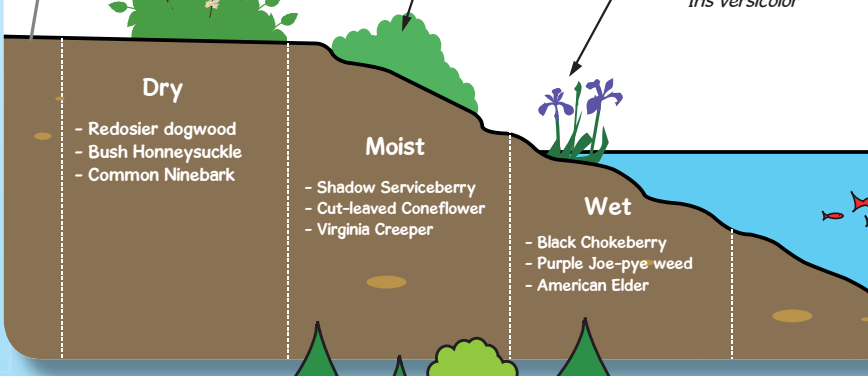
If your shore is in its natural state, congratulations! Keep it up. Your experience could be useful to your neighbours and lake associations. Get involved!

A visual guide can be useful as you work. Download this poster at www.crelaurentides.org

Sweet Gale
Myrica gale

Large-leaved Meadowsweet
Spiraea latifolia

Larger Blue Flag
Iris versicolor



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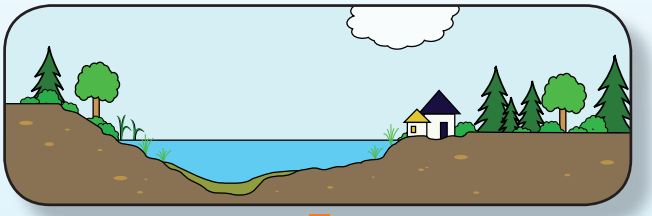
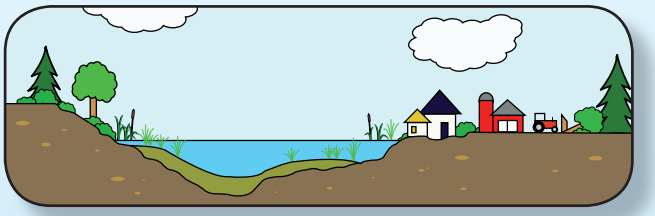
On the Menu: A Diet Low in Nitrogen and Phosphorus

Lakes are born, fill up, and eventually die. **This slow and natural process,** spans over tens of thousands of years. It is sometimes characterized by a surplus in nutrients, which stimulates the growth of algae and aquatic plants. Different human activities generate phosphorus and nitrogen, thereby accelerating the natural eutrophication process.The water is rapidly transformed into an unusable resource (drinking water) or a limited resource (recreational use for swimming, fishing, boating…).

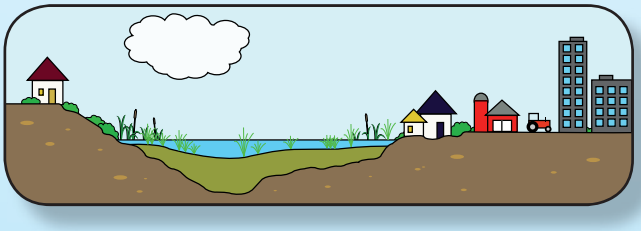
OLIGOTROPHIC:
- Clear water
- Low nutrient concentration
- Sparse plant and animal life



MESOTROPHIC:
- Poorer water quality
- Intermediate nutrient concentration
- Change in biological diversity



EUTROPHIC:
- Nutrient enriched water
- High biological productivity that may result in the loss of biodiversity



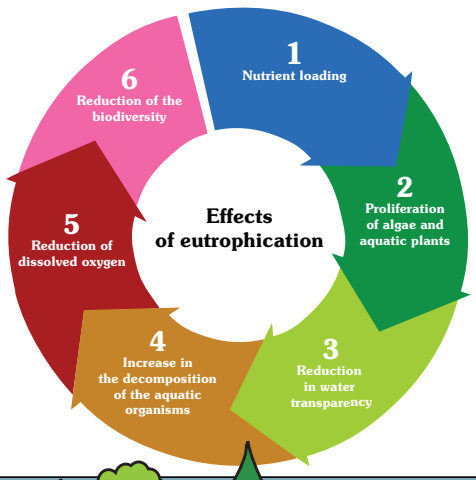
CAUSES:

Natural
- Watershed runoff
- Flooded areas

Human
- Use of fertilizers (rich in phosphorus and nitrogen)
- Using household products containing phosphates
- Discharge of waste water (industrial, private household)
- Shoreline modifications (absence of a natural shoreline, deforestation…)
- Altering waterways (canalisation, irrigation, filling, road ditches, etc)

Put your lake on a diet by limiting its supply of nitrogen and phosphorus. Here are some good practices you can adopt:

- Preserve your shoreline's natural vegetation and don't clear your land or make an artificial beach.
- Make sure that your septic system is in proper working order to limit leaks and pollution.
- Use of phosphate-free domestic products.
- Don't use fertilizers (even organic).
- Don't alter the natural course of streams.
- Practice healthy navigation! Some boating activities increase shoreline erosion.
- Make your municipality, your friends and your neighbours more aware. The environment is everyone's business!



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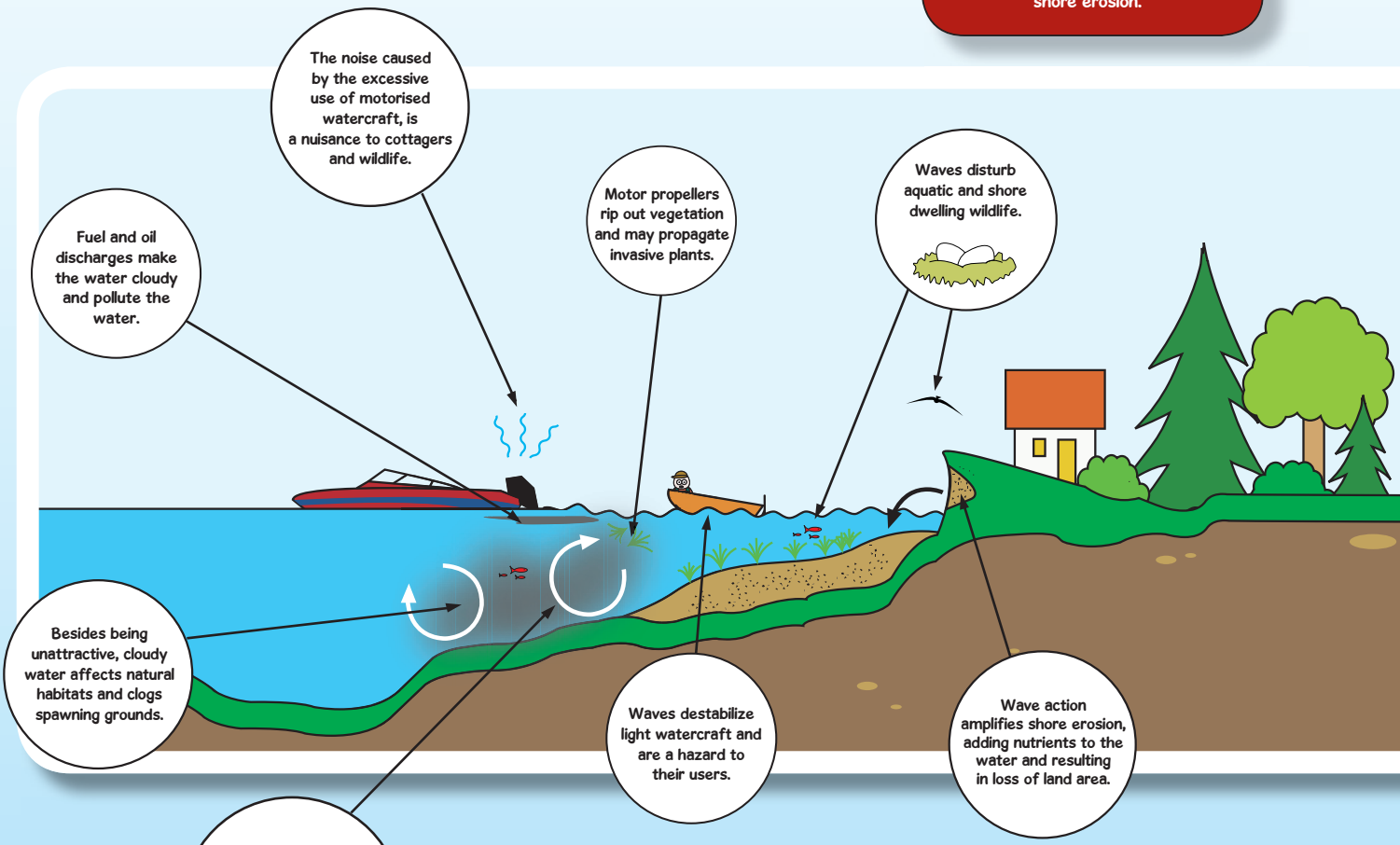
Are You a Healthy Navigator?

Boating gives us a different perspective on the world, **but this recreational activity can have a negative impacts on the lake.** Everyone must take responsibility to protect wildlife, plants and the quality of lake water.

The wake is a temporary trail left by a watercraft as it moves through the water. This wave action causes shore erosion.



Kill two birds with one stone!

Practise environmentally friendly recreational activities like swimming, kayaking, pedal-boating… This way you will preserve YOUR health and that of your lake.

What you can do:

- Consult your municipality and the applicable regulations (operators permit, code of ethics, boat washing…).
- Limit your speed and navigate in the deeper waters, away from the shore, swimming areas and other boats.
- Opt for four-stroke engines, they pollute less than two-stroke engines.
- Switch to an electric motor.
- Ensure proper maintenance of your motor and avoid spills when adding fuel and oil.
- Distribute passengers uniformly in your boat, too much weight in the rear increases the height of the wake.
- Put your boat in the water at a designated boat ramp.
- Don't throw away your garbage – take it with you!

To learn more: www.troussedeslacs.org

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Sceptical About Your Septic Facilities?

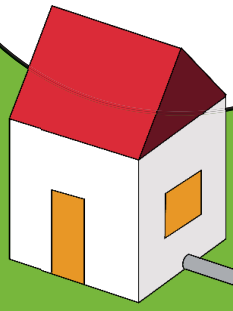
Untreated or improperly treated **wastewater threatens the lake's biological equilibrium and represents a risk to the human health and quality of life.** Septic systems may discharge contaminants like phosphorus and pathogenic microbes. Excessive phophorus supply is harmful to lakes and rivers because it promotes the excessive growth of algae and aquatic plants. Here are some suggestions that are simple to implement and that will preserve YOUR health and that of the lake.

Respect the capacity of your septic system by reducing water consumption and allowing for "down times" so oxygenation can take place. The bacteria that purify water need oxygen to work effectively.

Spread out your consumption over the day and the week. Don't waste water:

- Repair leaks.
- Take showers instead of baths.
- Turn off the tap when brushing your teeth and washing food.
- Install water saving devices.

The toilet should not be used to **dispose of substances that do not decompose naturally** (or that break down extremely slowly) like cigarette butts, medicines, paint, sanitary napkins. Some chemical products (Javel, Borax…) can actually destroy the useful bacteria in your septic system.



Pump it out!

Every 2 years for permanent residences.

Every 4 years for seasonal residences.

Use **phosphate-free** domestic products.

Drainage field

Septic tank

Stop cuting grass and plant indigenous vegetation on the shoreline. Plants will filter and absorb some of the nutrients.

Do not compromise the aeration of your drainage field with asphalt or tiles, and don't park vehicles. Do not use this area as a playing field or to plant trees.

Acquired rights?

Some older facilities do not conform to current standards. You may have a sump and no drainage field. You are permitted to maintain this type of facility under certain conditions only if it is not a source of pollution or contamination to surface and drinking water. It is recommended that you install a newer system that meets provincial regulations. Did you know that the lifetime of a well-maintained septic system might not exceed 20 years? How old is yours? Have you had it inspected recently? Check with your municipality.

If you're planning to install a septic system, be sure to respect the regulations (minimum distance from a well, lake or property…). Consult your municipality and the government regulation Q-2, r.8. You'll be less sceptical and better informed.

To learn more: www.troussedeslacs.org

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A Green World in a Watery Universe!

We can identify two life forms that contribute to the health of a lake, **algae** and **aquatic plants**. Algae are usually microscopic organisms without roots. Aquatic plants, also know as macrophytes, are visible to the naked eye, living under water, or near the shore.

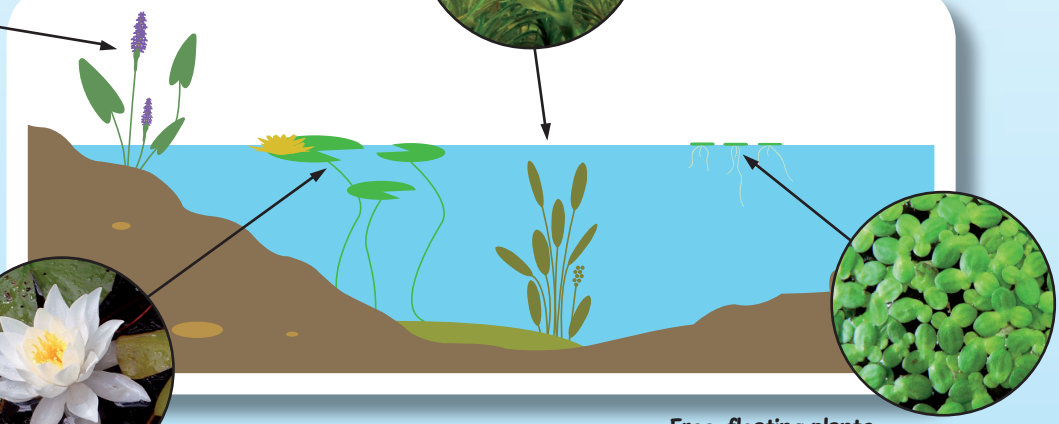
Aquatic vegetation maintains ecosystem functions:

- Provides food, shelter, and reproduction areas for aquatic wildlife.
- Filters water by absorbing excess nutrients.
- Buffers wave action and protects shorelines from erosion.
- Stabilizes sediment with their root systems.
- Leaf cover helps to stabilize temperatures in the littoral zone

There are four categories of aquatic plants:

Emergent plants
Plants that are rooted in sediments, with some parts (leaves and flowers) growing above the water, i.e: Pickerelweed, Three-way sedge.

Submerged plants
The whole plant develops under water their roots are anchored in the sediments, i.e: pondweeds, waterweed.



Floating-leaf plants
Their roots are anchored in the sediment, with their flowers and leaves floating on the surface, i.e: Tuberous water-lily, Floating bur-reed.

Free-floating plants
These are not rooted in the sediment but rather float on the surface and move freely through the water, i.e: Common duckweed.

Harmful invasive species:
Eurasian watermilfoil is a submerged species that is not native to Québec. It has adapted to our environment and has few natural predators. It can invade lakes, threanten native species.

Be careful not to confuse it with Whitish watermilfoil, which is a native species that represents no danger to the environment.

Eurasian watermilfoil *(Myriophyllum spicatum)*
More than 12 segments

Common watermilfoil *(Myriophyllum sibiricum)*
11 segments or less

It is normal that the growth rate of aquatic plants to fluctuate amongst seasons and year to year. To prevent their proliferation, nutrients loading (the addition of phosphorus and nitrogen imputs) must be limited.

Many actions can be taken:
- Preserve the shoreline's natural vegetation.
- Avoid using fertilizers (even organic).
- Make sure that your septic system meets regulatory requirements and have it emptied regularly.
- Use phosphate-free domestic products.

To learn more: www.troussedeslacs.org

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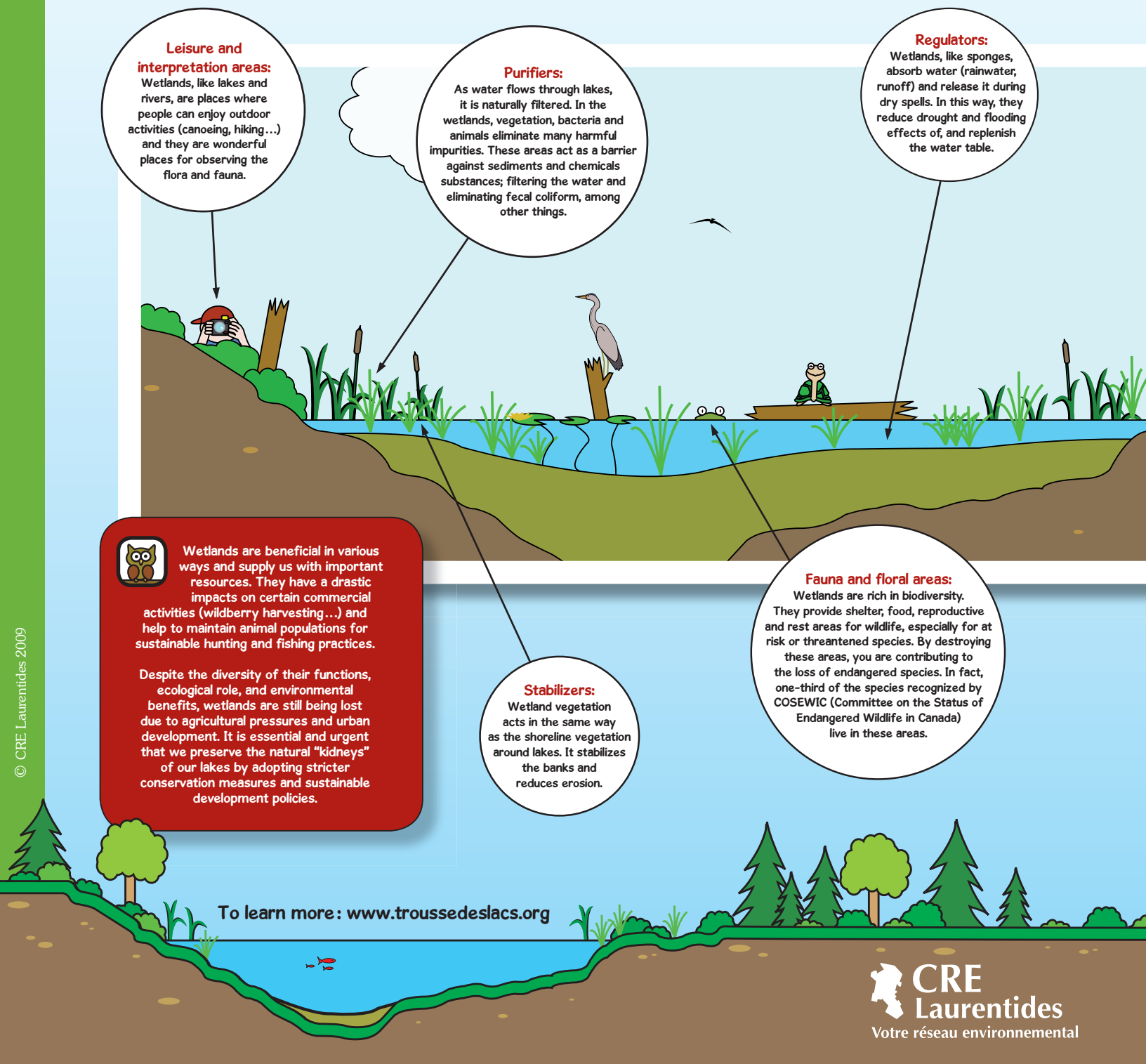
Does Your Lake Have Good Kidneys?

Wetlands are areas of **transition between aquatic ecosystems (lakes and rivers) and land ecosystems (fields and forests).** There are various categories of wetlands: marshes, ponds, peat bogs, and swamps, and all wetlands share the following three characteristics:

- The presence of water for varying lengths of time.
- Shallow water, with levels varying from year to year.
- Plants adapted to oxygen-poor soil.

Nearly 70% of wetlands in Canada were lost due to human development in the most populated regions of the country. **Yet, they remain the best natural filters of lakes and rivers, acting as kidneys while serving many other important functions.**



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Does Your Lake Have The "Blues"?

Cyanobacteria or "blue-green algae" are aquatic microorganisms. When they die, some species release natural poisons called cyanotoxins. **Cyanobacteria are naturally present in lakes. They become a nuisance when they reproduce rapidly and in great numbers to form a mat, or bloom that is visible to the naked eye.** This phenomenon shows symptoms of the deteriorating of lake's health.

There are no magic products or techniques to prevent cyanobacteria blooms. Any type of intervention must be approved by the Ministère du Développement durable, de l'Environnement et des Parcs (MDDEP), and requires a certificate of authorization. It is extremely important that we change both our own individual behaviour and the practices of our community.

We cannot predict when a bloom will appear; however, the main contributing factor is an excessive amount of **phosphorus** due to:

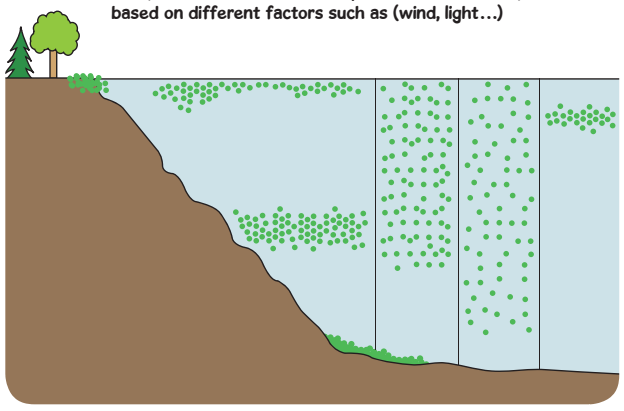
- Effluents from septic systems
- Fertilizers (organic and chemical)
- Products that are phosphate-based
- Deforested or artificially developed shorelines
- Certain activities such as agriculture, fishing, and forestry…
- The modification of riverbeds and the draining of wetlands

Stagnant or barely running water and elevated temperatures are other contributing factors.

Cyanobacteria observed through a microscope

Source: David Bird, (UQAM and GRIL)

The possible distributions of cyanobacteria in a deep lake, based on different factors such as (wind, light…)



Adapted from the MDDEP, 2005

If a bloom of cyanobacteria has been identified in your lake, the public health director recommends to adopt the following health measures:

- Avoid direct exposure with contaminated water (swimming, showering, recreation, etc).
- Do not eat fish or other aquatic organisms from area.
- Do not use water for cooking or drinking.
- Prevent domestic animals from being exposed to the contaminated water in the affected areas of the lake.

Blooms generally have an olive-green color but may sometimes be redish or purple in colour. Learn to recognize cyanobacteria by reading the MDDEP's identification guide (www.mddep.gouv.qc.ca/eau/eco_aqua/cyanobacteries/guide.htm). If you think you have cyanobacteria in your area, take photos and notify your regional MDDEP office and your municipality. WARNING! Boiling water does not destroy cyanotoxins, on the contrary, it kills all the cells and releases the toxins.

Good practices to limit phosphorus loading:

- Make sure that your septic system is adequate and empty it regularly.
- Avoid using fertilizers (even organic).
- Use of phosphate-free domestic products.
- Preserve your shoreline's natural vegetation by avoiding urban style landscaping such as lawns, retaining walls, concrete…
- Encourage environmentally friendly activities.

To learn more: www.troussedeslacs.org

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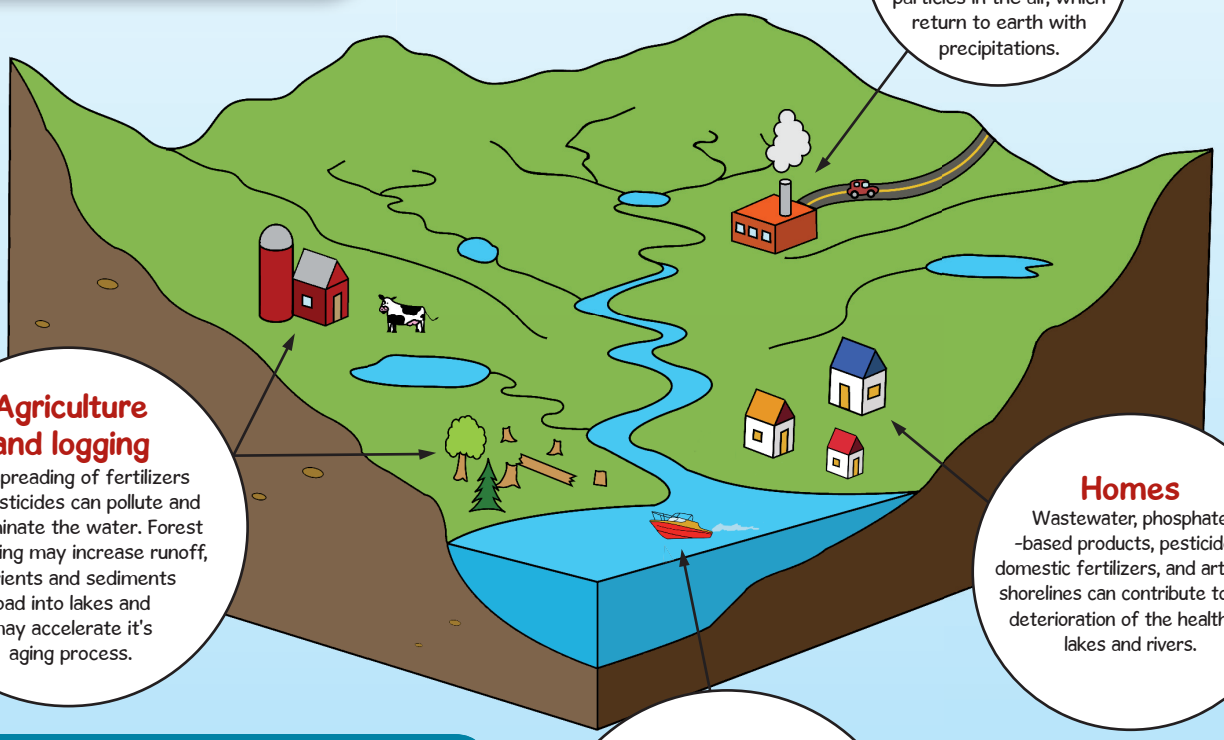
Every Drop Counts!

A drainage basin or watershed is the entire area which is drained by a lake or river and its tributaries. It acts like a funnel, collecting all the water within the area and channeling it into a lake. Its area is defined according to natural barries (topography) NOT by humans, road maps, or administrative decisions. Each river, lake and wetland has its own watershed basin that may also be part of a larger drainage basin.

Everyone is responsible for the environment, and it is essential that water is managed collectively. We must stop acting individually and work together. Even those who do not live near bodies of water must join in and preserve water for the health of our lakes, rivers, and mankind.



Industries

Releases toxic compounds in the air and water. Emissions from motorized vehicles also send toxic particles in the air, which return to earth with precipitations.

Agriculture and logging

The spreading of fertilizers and pesticides can pollute and contaminate the water. Forest harvesting may increase runoff, nutrients and sediments load into lakes and may accelerate it's aging process.

Homes

Wastewater, phosphate -based products, pesticides, domestic fertilizers, and artificial shorelines can contribute to the deterioration of the health of lakes and rivers.

Tourism and holiday resorts

Certain boating activities, intensive use of fertilizers on golf courses, artificial shorelines, the use of phosphate-based products, and deficient or substandard septic systems, are all detrimental to water quality.

Shore dwellers are not the only ones responsible for the problems confronting lakes. ALL human activities (residential, agricultural, logging, etc.) within the watershed may have a direct impact on water quality. Whether it is the draining of a wetland to construct a road, the clearing of trees to build a residential complex, the modification of waterways, or the elimination of a stream's natural shoreline, every land-use related actions affect the natural flow and quality of surface waters.

Watershed agencies of the Laurentians:

Abrinord
www.abrinord.qc.ca

Agir
www.agirpourladiable.org

Cobali
www.cobali.org

To learn more: www.troussedeslacs.org

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For Our Lakes' Health... and for Our Own!

We tend to think that water is an inexhaustible natural resource here on Earth. But, even though our blue planet is covered with water, this resource is not always accessible or usable. It may be blue, but most of it is salt water. Only 0.3% of the freshwater is available, and mostly found lakes or streams. Even though water is renewed through precipitation, it is becoming increasingly difficult to obtain non-contaminated drinking water; a fact which constitutes a major issue for us today.

Many problems affect our lakes: improper landscaping of the shorelines, pollution, cyanobacteria... There are no miracle solutions but there are a few recommendations that may help improve the quality and health of our lakes.

- Preserve a 10 to 15 metre-wide littoral buffer zone. Reforest it with indigenous plants that are adapted to a riparian environment (river banks and lake shores).
- Don't use fertilizers (even organic).
- Avoid urban-style landscaping on your property. Materials such as concrete are impermeable and cannot store and filter water.
- Don't waste water. Repair leaks and learn how to manage your consumption.
- Make sure your septic facility meets regulatory requirements and is in good condition. Empty it regularly!
- Use phosphate-free domestic products.
- Don't alter the natural course of streams.
- Vegetation, algae and aquatic plants are useful. Do not weed your lake!
- Learn to recognize a cyanobacterial (blue-green algae) bloom.
- Maintain wetlands.
- Practice healthy navigation! By opting for recreational activities like kayaking, you will maintain both our lakes' and your own health.
- Spread the word in your community, group of friends, family, neighbours, and all other people in your watershed.

Protecting our lakes is a collective responsibility

These are only a few examples; there are other good practices that need to be implemented too. Everyone must do their share! In addition to individual practices, we must take action as a society and reach a higher level. For example, we need to think about sustainable land development, learn how to manage road ditches, and improve agricultural and logging practices. It is possible to enjoy our lakes, and if we work together to maintain their health, we will also maintain our own!

Get involved in a lake protection. Assess the lake's health with the **Trousse des lacs.**

which you can get online at
www.troussedeslacs.org

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