The forgotten victims of the road

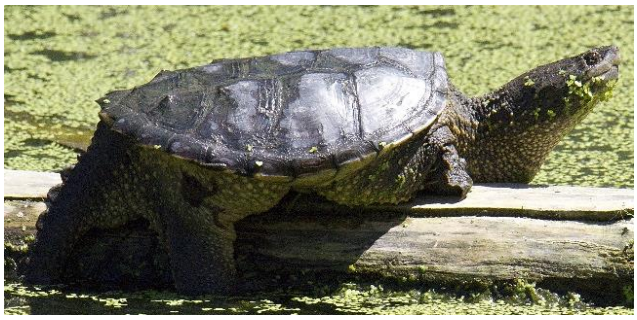
The territory of the Township of Stanstead is home to a wide variety of amphibian and reptile species. For thousands of years, they have inhabited wetlands on a permanent basis. However, the last decades of urban development have contributed to the rarefaction of their habitat. Similarly, the growing number of roads on our territory has fragmented ecosystems. In other words, animals are no longer able to move from one environment to another without having to cross roads. Amphibians and reptiles must therefore cross roads in order to move to the last remaining wetlands. It would be possible, and desirable, to include the preservation of this ecological connectivity in urban planning. Indeed, the conservation of biodiversity is essential, particularly to ensure the maintenance of the many ecological services we enjoy.

Our hidden residents

The species encountered on our roads can be separated into three main groups: turtles, snakes and amphibians. The first two are reptiles. Like amphibians, they are ectothermic, meaning that their body temperature is regulated by the ambient heat. There is also a similarity in reproduction since the young all begin their development in an egg. However, those of reptiles have a shell. Moreover, they all reproduce in the spring. On another note, reptiles are particularly characterized by their scaly skin. Furthermore, the presence of claws and teeth in some species is also attributable to this group. Amphibians, on the other hand, tend to have smooth, moist skin, with the exception of the toad. They actually breathe through their skin, while reptiles have lungs.

Turtles

Turtles, represented by nine species in Quebec, are easily recognizable by their shell formed of bony plates. In addition, rather than having teeth, they have sharp and powerful beaks. During the winter, turtles settle on the bottom of lakes or streams. When spring arrives, reproduction takes place in the water, after which the female will not lay her eggs until the following year. This period is from mid-May to the end of June, depending on weather conditions. Generally speaking, females will then look for sandy or gravelly sites to dig their holes.



Snapping turtle (Royalty-free image)

Among these species is the famous snapping turtle. The latter is the largest in fresh water. It can indeed reach 16 kg and 50 cm in length! The giant forked-billed turtle is easily recognizable by its long tail with spurs and by its height on legs. However, beware! It will not hesitate to attack you if you get too close to it. It can actually bite you from a distance equivalent to the length of its shell. So be careful not to disturb it by keeping a respectful distance.

Painted turtle (Royalty-free image)

If you want to see turtles, look at the rocks and logs on the surface of the marshes on sunny summer days. You may catch a glimpse of one of the most common turtles in Quebec: the painted turtle. With a shell up to 25 cm in length, it mainly stands out because of its colours. In fact, its head is striped with yellow while the rest of its body may have red and yellow stripes.

If you see a turtle on the side of the road, it is advisable to report it to "Project Carapace" at the address below. This initiative of the Nature Conservancy Canada helps to identify the areas most at risk for turtle collisions. Your participation is therefore of great importance and will certainly save many turtles this summer!

To report a turtle or learn more, visit www.carapace.ca

Snakes

As for snakes, eight species roam Quebec. They are easily recognizable by their unique bodies and means of locomotion. In addition, they are equipped with a tongue that allows them to capture air molecules in order to analyze their environment. This is why they take it out so frequently. One of the peculiarities of snakes is that most species are ovoviviparous, while the others are oviparous. In the former, the eggs hatch inside the body, while the latter simply lay them. Moreover, snakes fascinate by their ability to eat their prey alive. Needless to say that they have a jaw perfectly adapted to the ingestion of these large pieces. However, none of our snakes are poisonous, so you won't be part of its meal! Besides, wetlands are certainly excellent hunting sites for these eyelidless snakes. When winter arrives, they gather in deep burrows to take advantage of the warmth of the ground.

Be vigilant!

They love to bask in the sun, whether it's on forest paths or on the road! In fact, it's a great way to store energy.

Eastern garter snake (Royalty-free image)

At up to 1 m in length, the eastern garter snake is certainly the largest of the species you might encounter! It can be distinguished by the three yellow stripes along its body. However, it can be confused with the eastern ribbonsnake, which has the same stripes. For experienced observers, however, the latter is less robust and has a small white patch in front of the eye.

Another species present in our territory is the red-bellied snake. As its name suggests, its brownish body conceals a brightly coloured belly. Unlike its predecessors, it's only 40 cm long. In fact, this size is similar to that of the Ring-necked Snake. The colour of the collar, either yellow or orange, is often the same as its belly. Of all the garter snakes, this is the only one that lays eggs.

Ring-necked snake (Royalty-free image)

Declining

Some of our snakes are unfortunately likely to be designated as threatened or vulnerable:
Eastern ribbonsnake - Ring-necked Snake

Amphibians

This group consists in anurans, which include frogs, tree frogs and toads, and salamanders. However, there are some major differences between them. In addition to their physical appearance, it is at the reproductive level that they differ. In fact, several species of salamanders perform courtship displays to seduce females. Moreover, fertilization is internal whereas it is external in frogs. After this stage, all will lay their eggs in the water. Once winter arrives, most anurans take refuge at the bottom of the aquatic environment. However, others, such as toads, will instead burrow into the ground. In fact, they have substances that act as an antifreeze in their cells to prevent them from freezing. As for salamanders, terrestrial salamanders take refuge in the ground while aquatic salamanders remain at the bottom of the water.

McGowan Swamp gray treefrog, *Photo: Pierre Simard, 2020*

On our roads, the American toad, spring peeper and spotted salamander are proving to be very common. Without observing it, you have certainly already heard the chirping of the spring peeper. This is a high-pitched, short cry that males repeat to attract females. From April to June, this melody can be heard from far away, especially on warm evenings. It seems that the power of its singing reaches 90 decibels, the equivalent of a lawnmower! It is even possible that too much exposure to these sounds can damage the human ear. If you are lucky enough to see it, you will see that it has a dark X on its beige-brown back.

Its body covered with yellow pimples ensures the recognition of the spotted salamander. You may encounter it under logs or rocks, and even in your firewood! It's precisely why it's called a burrower. At up to 25 cm in length, it is the largest ground salamander in Quebec.

Spotted salamander (Royalty-free image)

American toad (Royalty-free image)

On another note, one of the largest anurans in Quebec, the American toad also roams our roads. Its body can measure up to 11 cm in length, and it is known for the "warts" strewn about its body. These are actually toxin glands that enable it to defend itself against predators. In addition, you are probably familiar with its singing, which often accompanies that of the tree frogs on beautiful spring evenings. It is a series of long, high-pitched trills, each lasting about 30 seconds.

Not strictly speaking a salamander, the green newt is unique. It is easily spotted because of its broad tail and back dotted with red dots circled in black. It lives mostly underwater except for its larval phase. Indeed, the aquatic larva reaches a stage where it comes out of the water, when it becomes a red elf. It can then take up to three years before it returns to the water in its adult form.

Red elf (Michael Righi, derived from Flickr)

Green newt (Judy Gallagher, derived from Flickr)

A perilous migration

The return of the beautiful spring days marks the beginning of the period when amphibians and reptiles make many trips. Indeed, some are looking for a partner, the females are looking for a nesting site while the young explore new territories. However, these movements often take place in the same place, creating migration corridors. Such areas have been identified in the Township of Stanstead. Thus, due to the heavy traffic, the mortality rate of these animals is significant each year. Unfortunately, the Narrows Road north of Fitch Bay is an example of this.

What if we would share the road?

After hibernating throughout the winter, the turtles return to the wetlands. However, females instinctively choose roadsides as a nesting site because of their proximity to wetlands and their soil suitable for egg-laying. Unfortunately, these movements on the road network greatly increase the risk of collision. In fact, it is from the end of May and throughout the month of June that females risk crossing our roads frequently in search of egg-laying sites. As a result, a large number of them die each year. For a species like the snapping turtle, which can live up to 50 years, a mortality rate of only 5% of mature adults can threaten the survival of a population.

In turn, amphibians suffer heavy losses. Indeed, a wide variety of species cross our roads, including the Narrows Road, on spring nights in search of their ideal partner. This is especially true on warm evenings with light rain or drizzle. This is when we find the highest mortality rate. Snakes are also victims of this phenomenon, also looking for new hunting territories and a partner for reproduction.

Dedication in the field

On the night of Friday, May 29, 2020, volunteers surveyed critical road areas for amphibians. The 500-metre stretch adjacent to the pond below the Lovering Lake dam is representative of the situation. In fact, 46 amphibians belonging to 8 species were counted on the road. Only 13 of them were alive and crossing the road, while the 33 others did not survive their road passage.

Spotted salamander picked up on the road and moved to an adjacent path with little traffic. *Photo : Pierre Simard, 2020.*

It is therefore essential to pay special attention to the presence of these perpetual residents when you are on the roads. It is important to consider that the sectors listed below are indicated since there is field work that has been done during critical periods. As a result, it is likely that the presence of small animals on our roads is much more widespread. Tables 1 and 2 show you the critical areas according to the groups.

Areas at risk for reptiles

Turtles	Snakes
All bridges and roads adjacent to a wetland are critical areas.	Forest trails : ✓ Bunker road ✓ Vallière ✓ Brown's Hill ✓ Amy ✓ Tomifobia ✓ Merrill ✓ Vancourt ✓ Marcoux

Table 1. Areas with high mortality rates for turtles and snakes.

Areas at risk for amphibians

Amphibians	Lovering Lake Dam Area	Fitch Bay Village Area (Fitch Bay Road)	Fitch Bay Village Area (Narrow's Road)	Fitch Bay Marina Area (Narrow's Road)	Narrow's/Merrill Junction Area
American toad	X				
Spring peeper	X	X	X	X	X
Wood frog	X		X	X	
Green frog	X				
Northern Leopard Frog		X			
Spotted salamander		X		X	X
Green newt					X

Table 2. Most observed amphibian species by sector.

Références

Anderson, D., Martin, C., Parrella, A. (2019, 29 mars). Something wild : why are peepers so loud ?. *New Hampshire public radio*. Repéré à https://www.nhpr.org/post/something-wild-why-are-peepers-so-loud-0#stream/0

L'Atlas des amphibiens et reptiles du Québec (AARQ). (2020). Tortue serpentine. Repéré à https://www.atlasamphibiensreptiles.qc.ca/wp/tortue-serpentine/

Conseil régional de l'environnement du Centre-du-Québec (CRECQ). (s. d.). Connectivité. Repéré à http://www.crecq.qc.ca/upload/contenu-fichiers/Biodiversite/corridor/fiche%201_1.pdf

Conservation de la Nature Canada (CNC). (2020). Tortue peinte. Repéré à https://www.natureconservancy.ca/fr/nos-actions/ressources/especes-en-vedette/reptiles-et-amphibiens/tortue-peinte.html

Conservation de la Nature Canada (CNC). (2020). Tortue serpentine. Repéré à https://www.natureconservancy.ca/fr/nos-actions/ressources/especes-en-vedette/reptiles-et-amphibiens/tortue-serpentine.html

Desroches, J.-F., Rodrigue, D. (2004). *Amphibiens et reptiles du Québec et des Maritimes*. Waterloo, Québec, Canada : Éditions Michel Quantin.

Environnement et Changement climatique Canada. (2016). *Plan de gestion de la tortue serpentine (Chelydra serpentina) au Canada* [Proposition]. Repéré à https://www.registrelep-sararegistry.gc.ca/virtual_sara/files/plans/mp_snapping%20turtle_f_proposed.pdf

Espace pour la vie Montréal. (2020). Tortue peinte. Repéré à https://espacepourlavie.ca/faune-biodome/tortue-peinte

Fédération Canadienne de la Faune. (2020). Tortue https://cwf-fcf.org/fr/ressources/encyclopedies/flore-faune/faune/amphibies-et-reptiles/turtles/painted-turtle.html

Fédération Canadienne de la Faune. (2020). Tortue serpentine. Repéré à https://cwf-fcf.org/fr/ressources/encyclopedies/flore-faune/faune/amphibies-et-reptiles/turtles/common-snapping-turtle.html

Gouvernement du Québec (2020). *Effets du bruit environnemental sur la santé.* Repéré à https://www.quebec.ca/sante/conseils-et-prevention/sante-et-environnement/effets-du-bruit-environnemental-sur-la-sante/mesure-du-bruit/

Ministère des Forêts, de la Faune et des Parcs (MFFP). *Liste des espèces désignées comme menacées ou vulnérables au Québec.* Repéré à https://mffp.gouv.qc.ca/la-faune/especes/liste-especes-vulnerables/

Stewart, K., A. (2013). *Contact zone dynamics and the evolution of reproductive isolation in a north american treefrog, the spring peeper (pseudacris crucifer)* (Thèse de doctorat). Université Queen's, Kingston, Ontario, Canada. Repéré à Contact-zone-dynamics-and-the-evolution-of-reproductive-isolation-in-a-North-American-treefrog-the-spring-peeper-Pseudacris-crucifer.pdf