ASPECTS OF THE GEOLOGICAL AND ECOLOGICAL HISTORY OF LAC SIR-JOHN AND ITS ENVIRONS

By Susan Anastasopoulos 2025

With contributions from many lake community members.

Contents

The following historical text is intended as a sequel to the original text, *A History of the Lac Sir-John Community*, 2023, by Susan Anastasopoulos and other lake residents. Accordingly, after having previously explored the history of the human lake community, this sequel presents (PART ONE) the history of the lake community's geological setting and (PART TWO) its changing ecological setting (PART TWO).

PART ONE: GEOLOGICAL BEGINNINGS

Why is this huge boulder sitting next to my entrance steps? How long has it been there? Where did it come from? How was it formed?

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These are questions which have puzzled me for over 40 years as I walk daily past this intriguing boulder. The exact answers may never be known; but some hypotheses can be considered.

The earliest rocks and Artica:

Let's begin at the beginning as the Earth was forming, about 4.5 billion years ago. By around 4.3 billion years ago, at the beginning of the Archean Eon[1] [2], the molten Earth had cooled enough that solid rock began to form.[3] The heavier material (basalt rock) would become the Earth's crust and serve as the primeval ocean floor, while volcanic activity spewed out lighter material which solidified into rocky mountains composed of igneous and high-grade metamorphic rocks forming the first dry land. These, the very first , were initially 3,700-12,000 meters high, and they created the first continent. This early continent, named Artica, was formed as large rocky cratons[4] began to clump together.

Mountains have roots deep into the basaltic crust of the Earth, like the roots of a tooth. Over millions of years, through erosion and glacial scrapping, the tops of these mountains were completely eaten away, leaving only their embedded roots.

The bedrock patches which we see exposed on some of our lake properties, especially on the northern side of Lac Sir-John (for example on the front lawns of #1770 and #1772 Ch. du Lac Sir-John, Entrance Three), may be remnants of the

[1] The casual reader may wish to initially skip reading some footnotes, and perhaps come back to them later.

[2] There are considered to be 4 "eons" in Earth's history: [1] Hadean Eon – Earth's surface is still molten. [2] Archean Eon – solid rocks are formed, but no life yet. [3] Proterozoic Eon – single-celled life. [4] Phanerozoic Eon – fossils of complex lifeforms appear in rocks. We live late in the Phanerozoic Eon.

[3] See the last page of Part One for a Timeline of Geological History and History of Lifeforms.

[4] Cratons consist of a thick rock crust which appears above the earth's surface and they extend roots reaching down several hundred kilometers into the mantle of the Earth.

roots of the these very first mountains. (It is as if your teeth were worn down to the roots). (More about the lake's display of bedrock and detached boulders on the north side later!)

About 2.5 billion years ago, through tectonic activity, Artica began to split up into parts of today's Laurentia, Greenland, Scotland and Siberia. Its remnants in North America today are called the Laurentian or Canadian Shield. Our local Shield rocks are thus amongst the oldest rocks on Earth. The rocks of the Laurentian Shield were formed between 4.3 and 2 billion years ago[5]. Examine them carefully

[5] Very early Earth, in the Hadean Eon, was bombarded for hundreds of millions of years, including, according to the "giant impact hypothesis", a major collision at 4.425 billion years ago with a Mars-size object, now named "Theia". That collision spun off Earth material that, together with material from Theia, came to form our moon and the collision tipped the Earth's axis to about 23.5 degrees (which allowed for our seasons, which have been facilitating life on Earth). At about 3.26 billion years ago, another giant space rock the size of Mount Everest, named "S2", crashed into the Earth's ocean generating a lava lake and a thick greenhouse atmosphere. A number of chemicals necessary for life were now released and concentrated in that early ocean, setting up the conditions for a "Great Leap Forward" in which the first lifeforms appeared. A lifeform is generally considered to be [1] something that must metabolise to survive, and [2] something that can reproduce – by cloning or sexually exchanging DNA.

There are only two "domains" of lifeforms: prokaryotes and eukaryotes. Bacteria belong to the more primitive prokaryotic domain of lifeforms, whereas, all animals, plants, fungi, and many other unicellular organisms belong to the eukaryotic domain of lifeforms. The first domain of lifeforms to evolve was the prokaryotes during the earliest years of the Proterozoic Eon around 3.5 billion years ago. Prokaryotes are variety of microorganisms, cells containing no nucleus and no membrane-bound organelles. Bacteria are a type of prokaryotes. The very first cells probably metabolized hydrogen sulfide and carbon monoxide. Eventually, photosynthesizing bacteria evolved, cyano-bacteria (commonly called blue-green algae – although they are not algae). Cyano-bacteria used sunlight, carbon dioxide and water to build sugars, releasing oxygen as a byproduct.

As cyano-bacteria exuded oxygen as a byproduct, they helped to generate the oxygen in our atmosphere. Pure oxygen is toxic to organisms with no protective membrane. Therefore, some single-celled organisms succeeded in creating membranes to protect themselves from the oxygen.

The second domain of lifeforms are the eukaryotes which first evolved about 2.2 to 1.8 billion years ago during the middle Proterozoic Eon. Eukaryotes are organisms whose cell contains an enclosed nucleus and a membrane enclosing its tiny organelles.

searching for fossils of previous lifeforms. These rocks are pre-Cambrian.[6] You will never find any fossils. Although life had begun very early (by at least 3.5 billion years ago), the first lifeforms were only single-celled life (bacteria for the first billion years; then later, single-celled algae appeared, and planktonic algae came to dominate the seas). These pre-Cambrian single-celled lifeforms had no hard outer crust or skeleton containing calcium which could create a visible fossil.[7]

The southernmost edge of the ancient continent of Artica now touches an area known as the Grenville Front Tectonic Zone. The Grenville Front separates the rocks of ancient Artica's Superior Province from the newer rocks of the Grenville Geological Province[8] to the south. The Grenville Front line runs from the north shore of Lake Huron through Ontario and Quebec, then on to Labrador.

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[6] Pre-Cambrian = the geological period before visible fossils of lifeforms appeared in rocks (before 540,000,000 years ago). All of time since the beginning of the Cambrian period (540,000,000) is considered to be in the Phanerozoic Eon. In Greek, phanerosis means to be apparent (to appear, to be visible, to manifest itself).

[7] A few animals with hard shells or skeletons first appear in the ocean during the Cryogenian geological period. Much earlier, between 3 to 3.5 billion years ago, simple multicellular lifeforms had appeared but lacking hard shells or skeletons they rarely could leave a fossil; however, some clumped together to create large communal formations called stromatolites which did occasionally leave fossils.

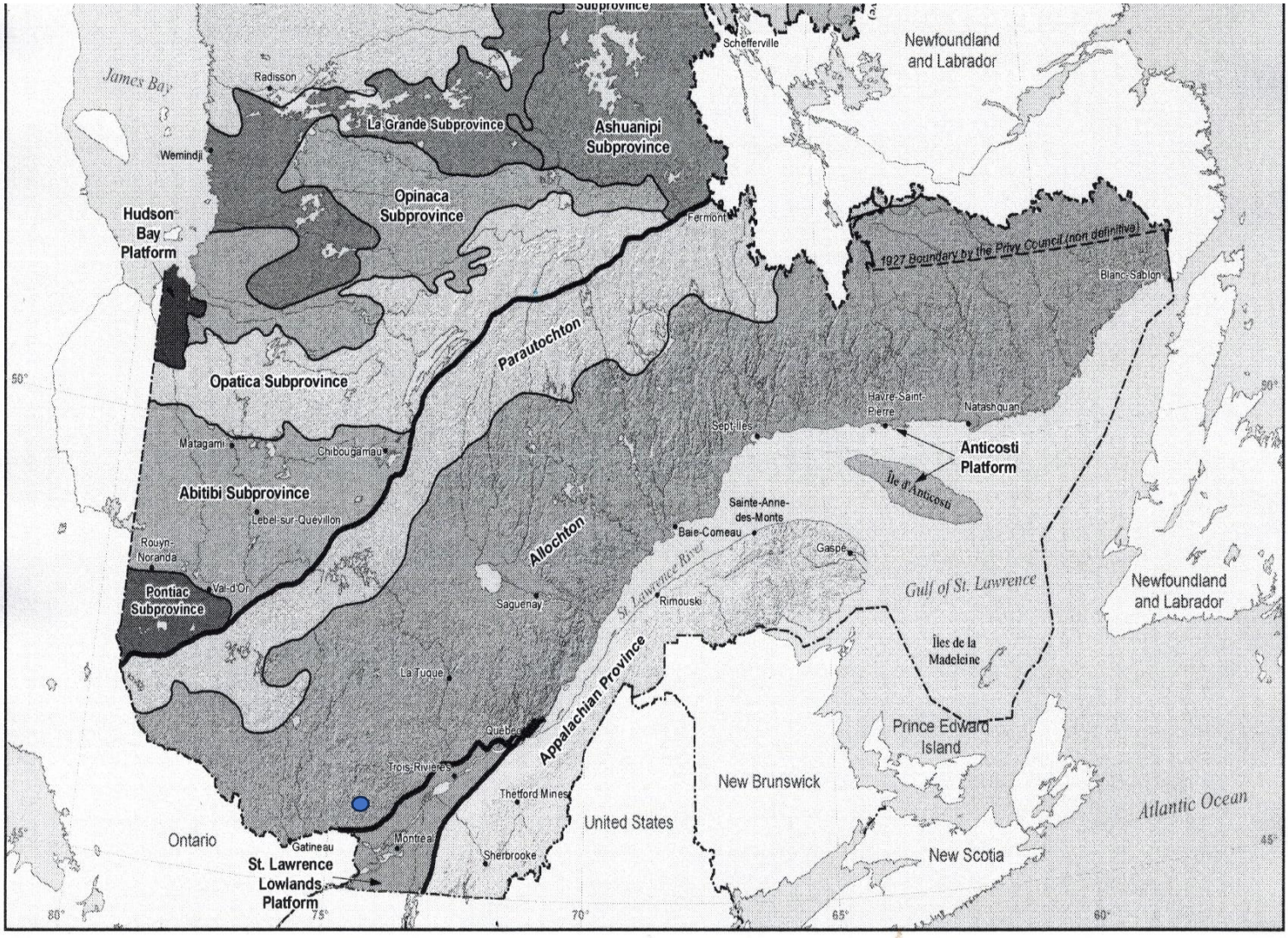
[8]The Grenville Front Tectonic Zone (GFTZ) separates the southern Grenville Geological Province from the northern Artica's Superior Province (the Superior Craton).

Grenville Geological Province lies southeast of the Grenville Front Tectonic Zone. Grenville Geological Province[1], extends from Lake Huron northeast to Labrador. It is bounded by the Grenville Front Tectonic Zone on the northwest and the St. Lawrence River/Seaway to the southeast.

Surface rocks in the Grenville Geological Province are composed of rocks mainly formed much later than the Laurentian Shield rocks (Earths' earliest rocks). In the Grenville Geological Province's northernmost section, the Para-autochthonous Belt, the rocks were formed during the Proterozoic Era's Grenville Orogeny (mountain creation period) between 1.25 billion and .95 billion years ago. The Para-autochthonous Belt is principally made of rocks originally derived from Artica's Superior Craton, which have been metamorphosed and reworked during the Grenville Orogeny.

Rocks to the south of the Para-autochthonous Belt , in the Allochthonous Belt, are various accreted terranes from elsewhere that have been thrust up upon or emplaced over the rock layers of Artica and the Para-autochthonous Belt rocks during various tectonic events (e.g. Uplifting and subduction) that have taken place.

The Grenville Front Tectonic Zone created an escarpment shown on this map by the thick black line running diagonally from southwest to northeast.)



St. Lawrence Platform
Hudson Bay Platform
Appalachian Province
Grenville Province
Churchill Province
Nain province
Superior Province

Metadata

Cartographic projection	Lambert conical

Realization

Geological compilation	Ghyslain Roy
Distribution	Ministère des Ressources naturelles Direction de l'information géologique du Québec

Note: This document has no legal value

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Let us examine this map. Directly south of this Grenville Front Tectonic Zone lies Grenville Geological Province. It is the land between the Canadian (Laurentian) Shield to the north and the Appalachian Geological Province south of the St. Lawrence River

Grenville Geological Province has three belts: 1. Para-autochthonous, 2. Allochthonous, and 3. the St. Lawrence Lowlands Platform of the Ottawa and St. Lawrence river valleys.

Lac Sir-John (see the blue circle on the above map) is located in Grenville Geological Province's Allochthonous[9] Belt (which begins about 250-300 km south of the Grenville Front Tectonic Zone). (This belt is located directly south of the Grenville Province's Para-autochthonous Belt.) The bedrock on the north side of our lake appears to be Laurentian Shield rock, but some rock which formed later is also found overlapping the top of the Shield rock. Boulders of Shield rock and some later-formed rock are often found at our lakeshore and lake bottom, especially along the lake's northern edge.

Even farther south in Grenville Geological Province lies its third belt, the St. Lawrence Lowlands Platform which consists of the river valleys of the Ottawa and St. Lawrence rivers.

South of the St. Lawrence Lowlands Platform begins another huge geological province, the Appalachian Geological Province, most of which is in the United States.[10]

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[9] Autochthonous refers to rocks that are native to their present location. In Greek, "chthonous" means "indigenous", so autochthonous means formed locally.

Para-autochthonous refers to sediments of intermediate/mixed characteristics – some formed locally and others from afar.

Allochthonous means a rock formation or deposit which originated at a distance from its present position (such as glacial drop stones). In Greek, "allo" means "other", so allochthonous means formed elsewhere.

[10] The bedrock north of the foothills of the Laurentians is Canadian Shield rock. Shield rock is Precambrian and very hard and acidic, consisting of predominantly migmatite gneisses and felsic igneous rocks. It was created between 4 billion and 2 billion years ago. Directly south of the Grenville Front Tectonic Zone, the rocks of the Para- autochthonous Belt include both the Laurentian Shield rock

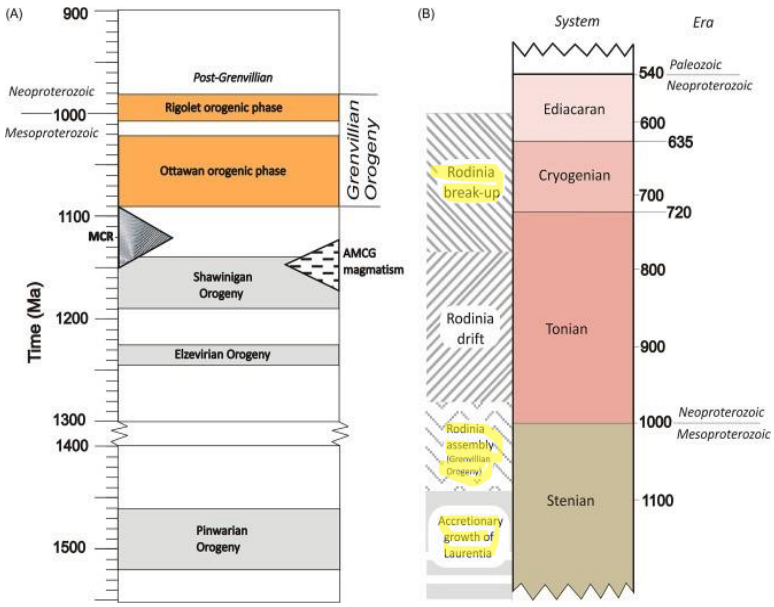
The Grenville Orogeny:

About 1 billion years ago, due to tectonic drift, a supercontinent called Rodinia was formed from the collision of three large continents: Laurentia (part of ancient Artica), Amazonia (to the south), and Baltica (to the east). This collisional assembling of Rodinia produced an extended period of violent mountain formation (orogeny) known as the Grenville Orogeny. Fragments of these other continents enveloped the margins of Laurentia as massive rock layer folding, faulting, uplifting and subduction progressed. That is part of the reason why there is a lot of uncertainty concerning the exact geological formative history (the time and place of formation) of the rocks we see here at Lac Sir-John. However, the Grenville orogeny certainly played a major part.

The rock layers from elsewhere which collided during the Grenville orogeny were also Pre-Cambrian (containing no visible fossils). And much later, the various rock layers created during the Grenville Orogeny were covered with other rocks formed elsewhere, but they all were eventually deeply eroded when everything became ice-covered during the Earth's 4 major periods of glaciation.[11]

and other rocks formed elsewhere which were added on top later. Occasionally, softer and less acidic rocks are found here, predominately sedimentary Ordovician Period limestones, sandstones and dolostones. These are at least 250 million years old.

[11] Diagram below showing both the Rodinia supercontinent and the Grenville Orogeny is from https://www.sciencedirect.com/topics/Earth-and-planetary-sciences/grenvillian-orogeny



Have you ever noticed the rock cliff (created by road construction) on the east side of route 329 heading north, as you approach the bridge over Lac Sir-John from the south. It has a red hew. Red indicates the presence of iron oxide (rusted iron particles) in the rocks' composition. This is not Laurentian Shield rock. Rocks on both sides of the highway north of the bridge are grey, more typical of Laurentian Shield rocks. This suggests that the lake lies along some kind of fault line where rocks of two quite different geological origins have been merged together in the remote past.

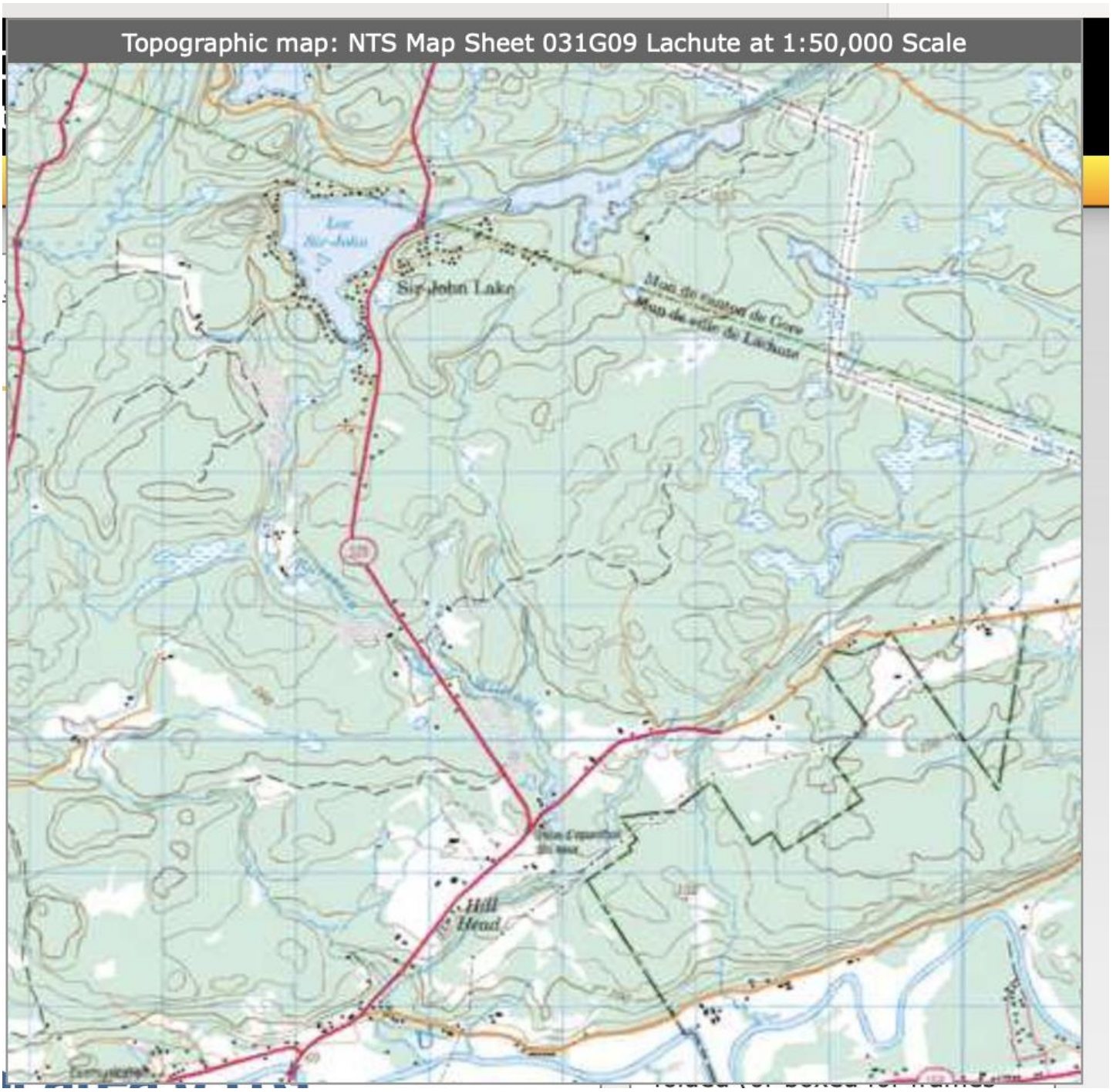
A second escarpment, one that you are very familiar with, is indicated on the above map by the lower thick black line. This line separates the Allochthonous Belt of Grenville Geological Province from the St. Lawrence Lowlands Platform. This is the escarpment you observe every time you start north up the 329 from the gas station. The small settlement at the base of the hill has been named "Hill Head". This second, more southerly, escarpment was once the shore of the Atlantic Ocean, and later the Champlain Sea. (The Champlain Sea was created

when post-glacial uplifting cut this westerly body of water off from the rest of the Atlantic Ocean.)

The North River (the river you cross just before you reach the gas station via route 329 going south) follows and borders this southernmost escarpment running from St. Jerome as far as Lachute. (The North River then turns south toward St-André Est.)[12] Just north of the North River, we begin our climb up this escarpment into the foothills of the Laurentian Mountains (and Lac Sir-John).

On the map just below, note the brown line near the bottom, just north of the North River, and the reddish-purple line that continues to the west. These lines indicate those small local roads, with which we are familiar, along the north side of the river; and, at river's edge, they are also following the edge of this southernmost escarpment. These are the first roads diverging to the left (Ch. Laurin) and to the right (Ch. de la Rivière du Nord) off route 329 after you cross the bridge just north of the gas station. You can make out the location of this bridge on the map.

[12] The North River is even longer. It begins northeast of Ste-Agathe and flows by Val David, Ste-Adele, Piedmont, Prevost, St-Jerome, and Lachute, finally emptying into the Ottawa River at St-André Est.



https://en-ca.topographic-map.com/map-h7jtp/Lachute/?center=45.6858%2C-74.30397&zoom=12&base=2&popup=45.72849%2C-74.30054

Early Lifeforms:

After more than 3 billion years had passed, around 650 million years ago in the late Cryogenian geological period, Earth was probably a gigantic snowball in space[13]. As the ice began to melt, the hydrogen peroxide (H2O2), which had been gradually accumulating in the ice for centuries[14], broke down into water (H20) and oxygen, dramatically increasing the amount of atmospheric oxygen. Now, complex multicellular life[15] could emerge in the sea. The first animals[16] appeared (sponges and then frond-like marine creatures) and by 470 million years ago, multicellular plants had evolved from algae.

Since this history focuses on ecological history, in addition to geological history, it is important to consider how biodiversity among animals and plants first arose. With the arrival of the "sexual revolution" some types of organisms were able to reproduce by exchanging DNA with another similar organism (of the same species), instead of simply splitting their own cell into two identical cells (cloning). An explosion of complex, multicellular could then occur. This is the Cambrian explosion of diverse life forms which began about 541 million years ago. Since then, the Earth has gone through the Age of Insects, followed by the Age of Dinosaurs, then the Age of Mammals. And in the process, it has experienced a series of at least 5 mass extinctions of species, each followed by rapid growth and diversification of the surviving species to fill the niches now abandoned by the

[13] At this time, around 650,000,000 years ago, the globe was either completely covered with glaciers or perhaps had a small band of open ocean near the equator. This period is termed the Cryogenian geological period. "Cryo" = cold in Greek.

[14] The sun's radiation converts some atmospheric water vapour (H_2O) hydrogen peroxide (H_2O_2).

[15] Multicellular life requires much more oxygen to pass from cell to cell. The resulting energy, from more oxygen, allowed animals to be able to move in search of nutrition and a predator-prey relationship would soon develop.

[16] Animals are those lifeforms which breath in oxygen to metabolise and exhale carbon dioxide. On the contrary, plants absorb carbon dioxide and use sunlight and water to photosynthesize sugary carbon-based nutrition and then exude the oxygen. Also, most animals are designed for mobility in order to seek both food and sexual partners for reproduction, also to avoid predators; unlike plants which are usually rooted to one place. However, some very early animals, like the sponges and frond-like creatures were rooted to one place. The family tree of animals goes back to single-celled bacteria, and that of plants goes back to single-celled algae.

extinguished species. By approximately 300,000 years ago, one of those newly flourishing species was a variety of the genus Homo, the species Homo Sapiens (modern humans)[17].

The Pleistocene Ice Age:

Skipping ahead billions of years, through numerous ice ages and the formation of several supercontinents which later broke up, we arrive at the late Cenozoic Ice Age which began about 34 million years ago. The most recent phase of this prolonged ice age is the Quaternary glaciation (the Pleistocene geological epoch) which has been in progress since about 2.58 million years ago.[18] During the Quaternary, ice glaciers about 2 miles thick (3 kilometers thick), repeatedly moved south covering Europe as far south as the Alps and Pyrenees and also covering North America as far south as central New York state (and covering the New York city area), the Ohio River and the Missouri River – the Laurentide ice sheet.

We are now living in an interglacial warm period of the Quaternary that began about 15,000-12,000 years ago. (It has been called the Holocene climatic optimum.) Usually, interglaciations last about 10,000 years, so we are well past due for another glaciation to begin, as many scholars in the 1970's anticipated. However, since the 70's, the effects of man-made global warming have become very obvious and have most probably postponed the arrival of the next glaciation. Since the Industrial Revolution began, gradual global warming has moved us from the Holocene (meaning recent) geological epoch to a new epoch now unofficially termed the Anthropocene epoch.

[17] Today's humans are of the Order (Primate), Family (Hominidae), Tribe (Hominini), Genus (Homo), and Species (Homo Sapiens).

[18] There have been 5 major ice ages in the Earth's history. The first began about two billion years ago and lasted 300 million years. The Cryogenic ice age was another. The most recent ice age began at least 26 million years ago and technically is still going on. Ice ages have glacial periods and interglacial periods (periods of temporary warming). Glacial periods typically last about 100,000 years and interglacial periods about 10,000 years. The most recent glacial period, the Wisconsin glaciation, began about 115,000 years ago and began its retreat about 12,000 years ago. Our agriculture-based civilization emerged in the Ancient Near East during an interglacial. Technically, it is time for another glacial period; however, man-made global warming has delayed the return of the next glacial period.

Impact of the Pleistocene glaciations on our lake area:

The Wanderers:

As these thick and heavy glaciers of the Laurentide ice sheet's most recent phase (the Wisconsin glaciation), passed over our area for at least 60,000 years, the glacial ice scoured down the remnants of the mountains of the Laurentian Shield and the mountains created by the Grenville Orogeny. Glacial ice scooped out a multitude of lake basins in the Laurentians, including the depression that would become Lac Sir-John. Kilometers-thick ice removed the topsoil and deposited it far to the south, much in central and southern New York state (now a rich agricultural area), rendering the Laurentians a very challenging topography for later pioneer would-be farmers. (Imagine the tireless, and largely futile, efforts of the nineteenth century Irish settlers who tried to farm the rocky land that is now Gore.) There are places where bare bedrock is exposed and you can still occasionally see the striated lines scratched on bedrock where a glacier had passed over, dragging a hard rock along below 3 kilometers of ice. These striated marks are visible in a few places if you are able to take a walk on a weekend in the nearby stone quarry just south of Lac Sir-John.[19]

The boulders, which were carried south for perhaps hundreds of miles, were finally dropped when the glacier melted back. They are known as the Errants or the Wanderers. They are scattered throughout the Laurentians, and some may have landed in what is now your yard. So, when you ask, as I often have, "Why is this huge boulder sitting next to my entrance steps? How long has it been there? Where did it come from? How was it formed?" you now have a clue to a possible answer to this mystery.

I speculate that the boulders scattered on my property were scrapped off an old Artican bedrock cliff, just behind my house, during the last glaciation, and they rolled toward the water-filled depression which is now called Lac Sir-John. [20]

[19] These striations are also visible in Central Park, NYC.

[20] Behind my house is a cliff with an extensive expanse of what appears to be Laurentian Shield bedrock, formed billions of years ago by volcanic activity when Earth's first rocks were forming into the first continent of Artica. The boulders on my property are so well-rounded that they may have been locally created volcanic globs, rather than wandering Errants carried from much farther north by a glacier.

Numerous similar roundish boulders are visible near the lake's shoreline and even under the water as you canoe by. Watch for them!

The picture below shows this bedrock cliff, extending down to the lake, on top of which sits the Decaires' new house, #1766. Ignore the row of boulders along the top since these were added later during construction of the house's patio.

They are so similar in appearance to that bedrock cliff just behind them that they may have just been detached from it by the last glacier as it was retreating. Three possibilities!

The above picture shows a portion of the exposed bedrock, scrapped down by a glacier, at Miep DeGroot's house, #1774, along the Entrance Three road. This bedrock is atop the same cliff shown in the previous picture.

The Lac Sir-John "Wall"

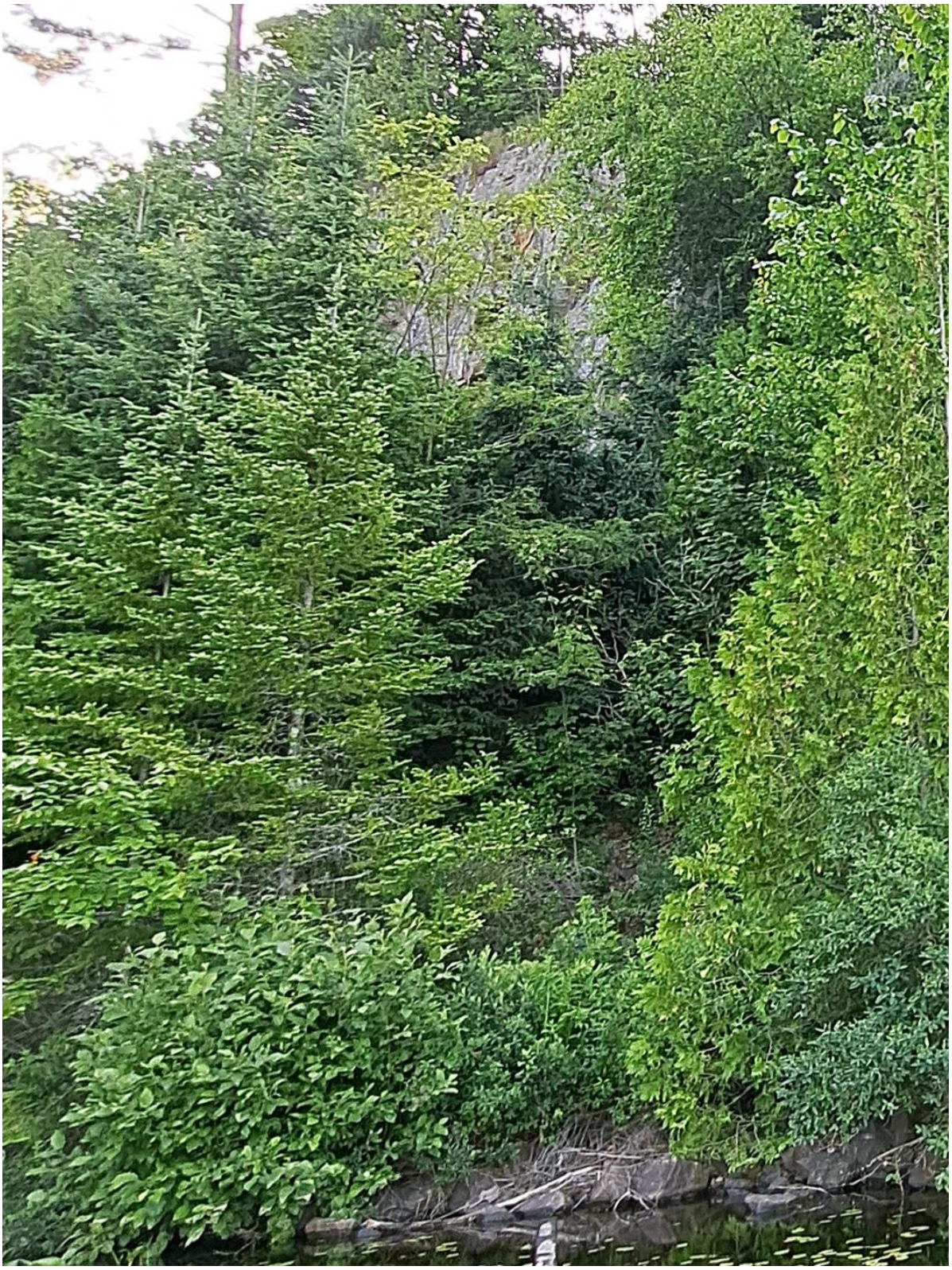
When boating near Boathouse Beach, have you ever noticed the sheer rock cliff, "The Wall", on the west side of our lake, just a little to the right of Boathouse Beach? (See the pictures below.) How was this wall created? Is this possible evidence of violent tectonic action right here in recent millennia? Perhaps a fault line runs through the deepest part of our lake, north of the island, and continues to run east under the route 329 bridge on to the Jean Marchand Dam, Beattie Lake, and beyond. Because of the sheerness of this cliff, which displays little sign

of erosion, I also suspect that this cataclysmic splitting and uplifting of the bedrock occurred in post-glacial times, perhaps even during the time that the Weskarini were living in southwestern Quebec.

I suspect that, instead of recent volcanic action, the creation of this sheer cliff is the result of a sudden geological event brought on by the gradual uplifting of the earth, once the compression created by weight of several kilometers of glacial ice was removed. This uplifting was probably uneven and may have generated faults resulting in the sudden uplifting of certain sections of bedrock. (Actually, this gradual uplifting is still occurring here, as the ground rebounds a few centimeters each year.)

How long ago, and how, was the hill topped by our famous Upper Lookout, with its sheer cliff, formed? Did it happen at the same time that the lower sheer cliff (The Wall) near Boathouse Beach was formed? From the top of the cliff at the Upper Lookout, the land drop continues on down under the water to the deepest part of the lake at about 21-22 meters deep. (See the bathymetric map of the lake later in this text.)

Therefore, I suspect that a local, geologically recent, fault continues to run under the lake and that this is what led to the creation of Lac Sir-John!



Near the top of this picture (taken from the lake), notice a part of the sheer rock cliff a little to the north of Boathouse Beach. The rest of the cliff, which extends down almost to the lake, is hidden by foliage.

The following picture shows “The Wall”, the continuation of this sheer rock cliff running from near the Entrance 1 to Entrance 3 ring road down to the lake. About a decade or so ago, the owners of the property in the foreground cleared away much of the vegetation and rock debris which rendered the “Wall” more dramatically visible.

Our watershed: (Local hydrography)

The most recent glaciation, the Wisconsin glaciation, began its final retreat in this area about 10,000 years ago. The retreat was eventful. When most of the Lower Laurentians had already become free of ice, the Wisconsin glaciation paused its

retreat for about 500 years. When it resumed its northward retreat, it left the St. Narcisse Moraine, a ridge of boulders sitting right on top of the mountains just northwest of St. Agathe. Melting waters had to carve out new channels. To the west, the Devil's River and later the Rouge River, flowed south since they could not pass through the St. Narcisse moraine. The Rouge is a navigable river and empties into the Ottawa River at Grenville. All rain and snow falling east of the St. Narcisse moraine flowed eastward toward St. Jerome, forming the North River, which then turned southwest towards Lachute (where the river becomes navigable beyond "les chutes" of Lachute). Then, the North River flowed on to St. André Est where it emptied into the Ottawa River.

Our local series of interconnected lakes to the northeast (Lac Barron, Lac Caroline, Lac Soleil, Lac Dawson, Lac William, and Lac Beattie, as well as Lac Echo and Lac Kenny to our northwest) all empty into Lac Sir-John.[21]

[21] The map which follows shows Lac Sir-John today, together with its lot divisions, as well as a number of nearby wetlands. The streams on the north side flow into Lac Sir-John. The stream at our lake's outlet, at the southern end of Little Lac Sir-John, flows into Williams Creek. The wetlands on the west do not flow into Lac Sir-John; nor do wetlands to the east, except via the body of water east of route 329 which is actually a continuation of Lac Sir-John. Lac Sir-John ends at the Marchand Dam, above which lies Lac

Beattie.

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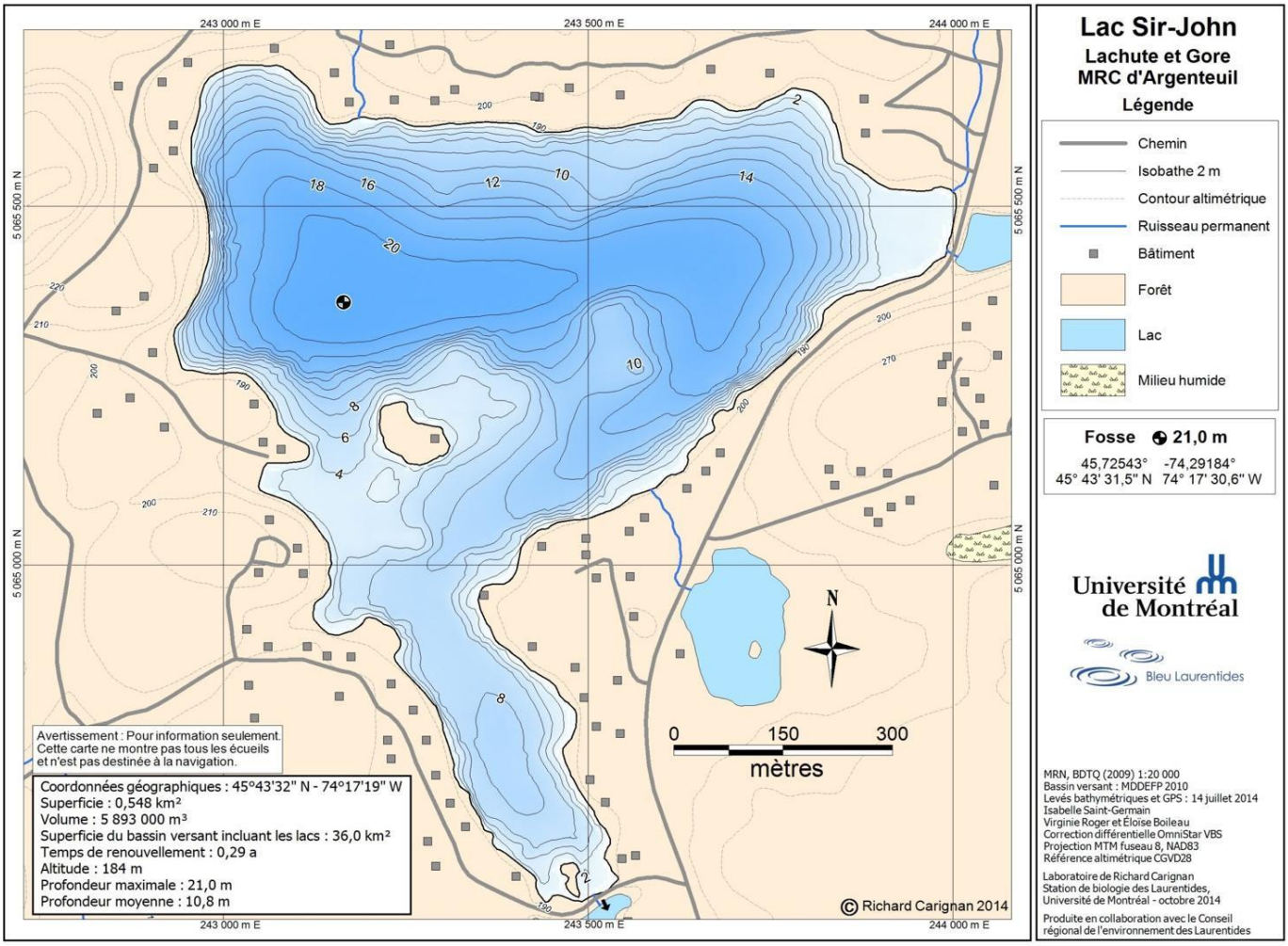


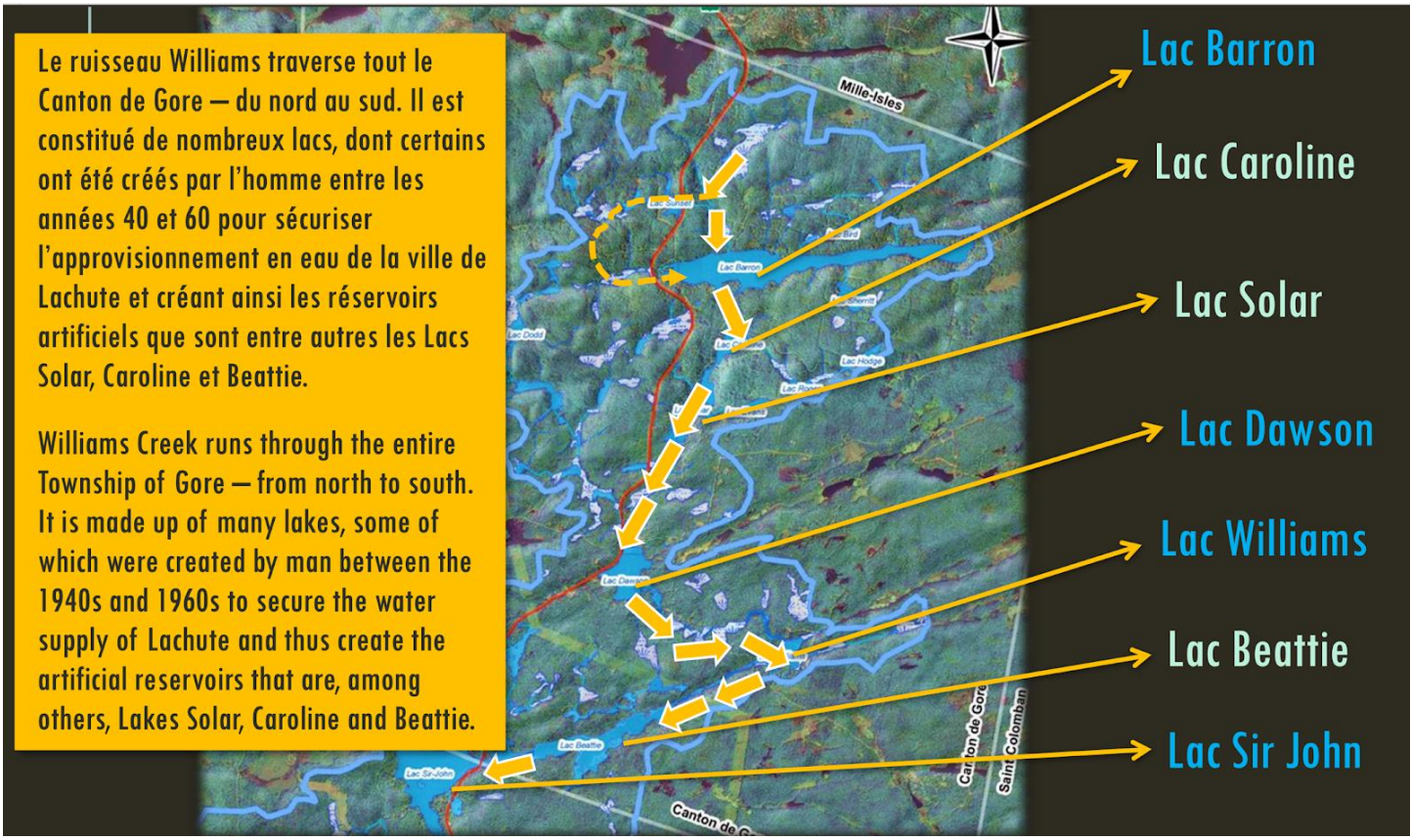
The above map is a topographic and bathymetric map of Lac Sir-John. The lake's maximum depth is 21 meters.

https://crelaurentides.org/lake/sir-john/#pid=1

Lac Sir-John is fed principally by streams from Lac Kenny and from Lac Beattie; however, there are (perhaps intermittent) springs at Spring Beach, Loggers Beach, and NorthStar Beach, as well as numerous underwater springs. Swimming in front of my property, one notices that there are places where the water is noticeably colder, fed by underwater springs, and even a spot where a spring brings warmer water.

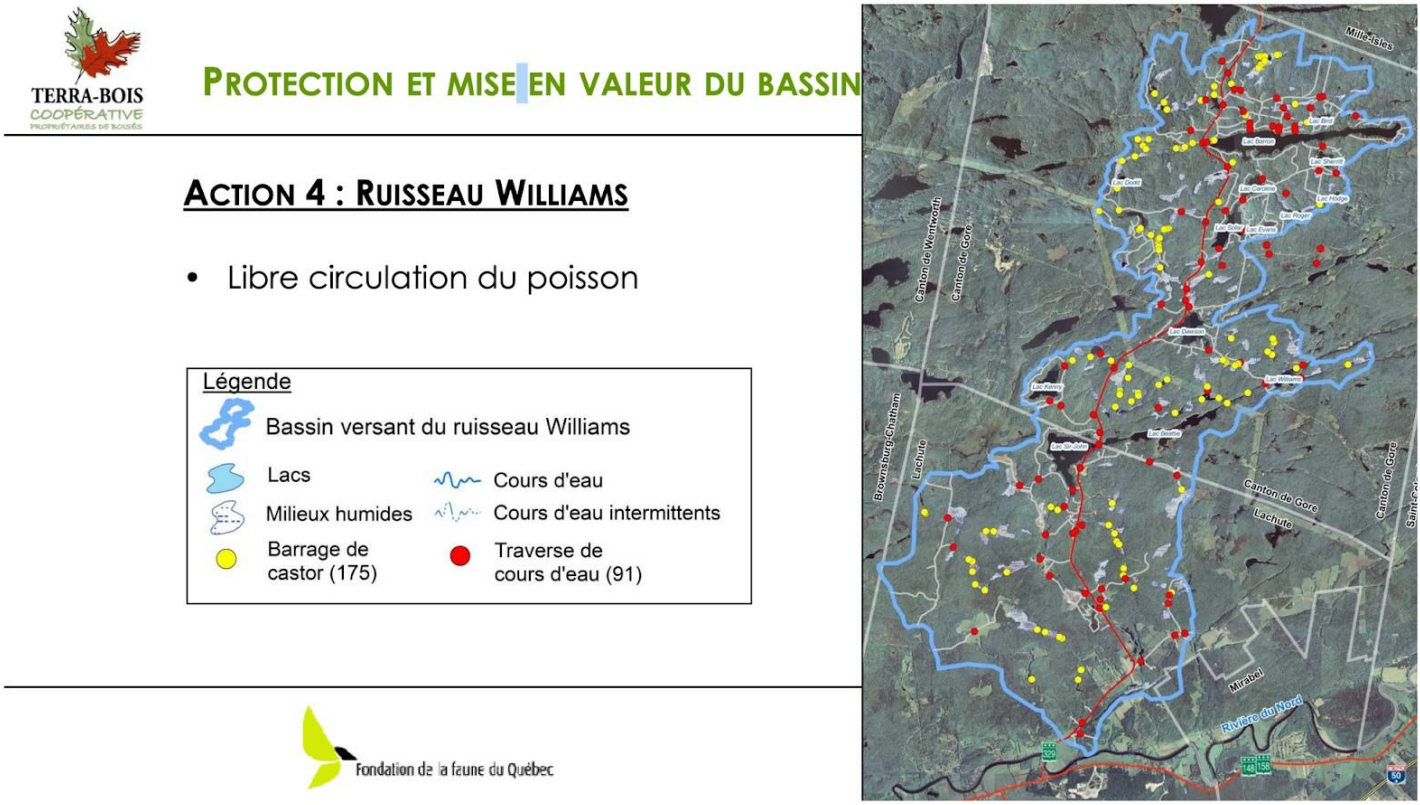
Below is an artistic rendition of this bathymetric map of Lac Sir-John.

Artwork by Cartography https://www.cardtography.ca/



https://www.cantondegore.qc.ca/storage/app/media/uploaded-files/Présentation%2011%20septembre%202022%20-%20Barrages%20municipaux.pdf

Lac Sir-John's waters eventually flow into the Williams Creek at the outlet of Little Lac Sir-John, and Williams Creek eventually flows into the North River. All these lakes, including Lac Sir-John, lie southeast of the St. Narcisse moraine. Lake Barron, Lake Dawson, and Lac Sir-John, as well as lakes Kenny and Echo, are glacially scooped-out lakes. (Lake Solar, Lake Caroline, and Lake Beattie are artificially created reservoirs, created in recent times by the city of Lachute.)



The Champlain Sea:

Beginning around 12,000 B.C., the last glacier began to melt back. All that glacial meltwater raised global sea levels so much that the Atlantic Ocean expanded right up to Hill Head at our local escarpment. (Hill Head is a little bit up route 329 once you have crossed the North River, just where the terrain begins to rise steeply.) During much of the thousands of years glacial melt period, an ice dam to the west blocked the Atlantic Ocean from reaching as far west as what is now Lake Ontario.

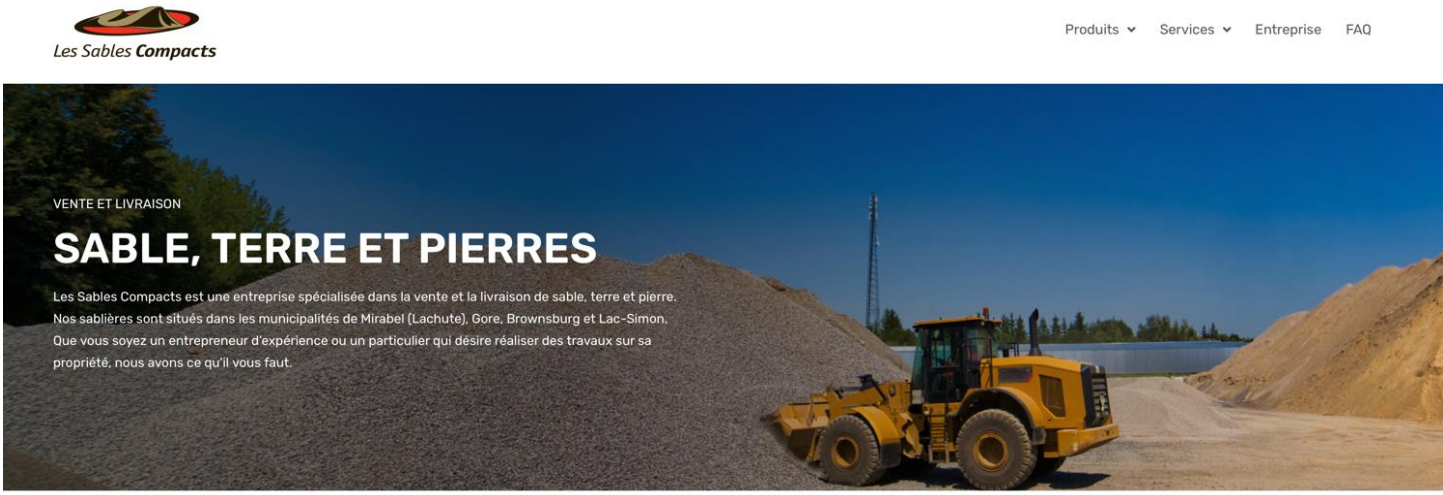
As you drive toward Lachute and gradually descend the escarpment, you are descending through previous beaches of the Atlantic Ocean. This arm of the Atlantic Ocean has been named the Champlain Sea (just as the Aegean Sea is an arm of the Mediterranean)[22]. Next time, as you drive down to the gas station, just imagine you are descending toward the ocean beach on a beautiful summer day.

[22] The Champlain Sea existed from 13,000 to 10,000 years ago. Gradually it became a freshwater lake about 9,000-3,000 years ago, when the ice dam broke, allowing fresh water from Lake Iroquois (Lake Ontario) to flow out towards the Atlantic Ocean; and finally, as the ice-free land rebounded more, it became just the Ottawa and St. Lawrence rivers. The salt water retreated eastward to beyond the

The next time you pass a sand or gravel filled construction truck, just think of all those sand and gravel pits south of route 158. How did the sand and gravel get there? Was this not through the grinding action of waves at the ocean bottom or beach edge? Fossilized whale bones have been found amongst the debris deposited at the bottom of the former Champlain Sea.

The photo below shows a sand pit which was once at the bottom of the Champlain Sea, just off the 158. Photo taken from Ch. Des Sources.

Quebec City area. You can still see the former edge of the Champlain Sea as you drive down Lansdowne Ave. in Westmount through "the Glen" to St. Jacques Street, and elsewhere in the Montreal area, or drive down to the gas station at the juncture of routes 329 and 158.

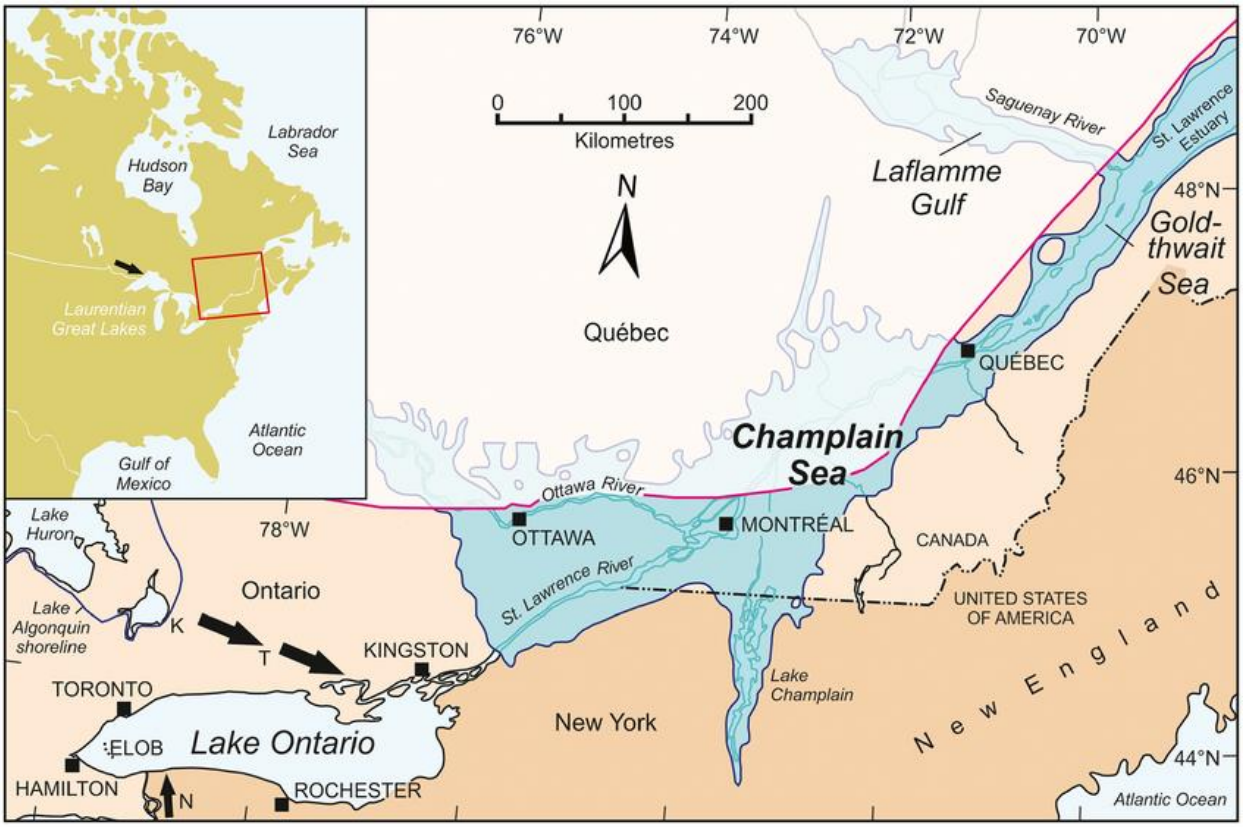


The above image shows contemporary commercial exploitation of local Paleolithic sand and gravel deposits.

Eventually, once the pressure of 3 kilometers of ice had been removed, the land gradually uplifted[23], and the Champlain Sea (of 13,000-10,000 years ago) began to drain away toward the Gulf of St. Lawrence, leaving behind terraces of former beaches, and finally, just the Ottawa and St. Lawrence Rivers to drain the region.[24]

[23] North of 40 degrees latitude, the land has rebounded 180 meters (591 feet). This gradual rebounding sometimes causes minor earthquakes, as we have occasionally experienced at Lac Sir-John. Also, from the glacial melting, sea-level has risen 35 meters (115 feet).

[24] Recall that farther west, a gigantic glacial ice dam blocked the drainage of glacial meltwater and seasonal precipitation from reaching the Atlantic Ocean. This created immense freshwater lakes to the south and west of the ice, such as Glacial Lake Iroquois (a greatly enlarged future Lake Ontario) and Glacial Lake Algonquin (greatly enlarged lakes Huron and Michigan). Glacial Lake Iroquois first drained to the sea through the Mohawk River and Hudson River in New York State, until the St. Lawrence valley became ice free. The ice dam, located in the west of the present St. Lawrence valley, broke around 12,000 years ago. Then, the water from Lake Iroquois suddenly rushed out down the St. Lawrence River, leaving in its place a much-shrunken lake, Lake Ontario. You can see the former beaches of Glacial Lake Iroquois at the Scarborough Bluffs of Toronto and just south of St. Claire St.; also, just south of Lake Ontario along the Ridge Road (NY route 104) from Syracuse to Niagara Falls.



https://www.researchgate.net/publication/328580444/figure/fig1/AS:11431281178953554@1691135190657/Regional-map-showing-the-extent-of-the-Champlain-Sea-CS-in-the-St-Lawrence-River.png

Glaciation and local humans:

Among the diverse post-glacial fauna which repopulated this newly exposed post-glacial land north of the Champlain Sea, were there perhaps members of the human species? Were any Indigenous people living in the Argenteuil region even before the Wisconsin glaciation (the most recent glaciation)? Probably not, but we can never know definitively since the 3-kilometer-thick ice sheet would have scrapped away any archaeological evidence. However, in 2021, we were able to verify, from recently discovered footprints, that modern humans were living much further south in America as early as 25,000 years ago. The Wisconsin glaciation covered the Laurentians from around 40,000 years ago until about 12,000 years ago. Once it retreated, it is most likely that people rapidly moved in, perhaps a branch of the Algonquin people called the Weskarini, the same people who inhabited our region during later colonial times until the Mohawks (a branch of the Iroquois confederacy) moved into our area and displaced them. The first traces of human habitation in our area date to about 6,000 years ago

TIMELINE – History of lifeforms, geological eras/periods/epochs, major geological events and mass extinctions:

For your convenience, I have created a timeline, inserted on the next page, showing three histories on one chart:

- The history of forms of life since the Earth's creation,

- The main geological eras, the geological periods within each era, and the geological epochs within a period, since Earth's creation. (Era, Period, Epoch)

- Some major geological events in Earth history and a few of the 6 major periods of mass extinctions of species are shown in the last column.

EONS AGES OF LIFE FORMS		GEOLOGICAL ERAS + Periods + Epochs			GEOLOGICAL EVENTS
CENOZOIC ERA	Ongoing	CENOZOIC ERA		Ongoing	
(Age of Mammals)	65,000,000		Anthropocene Epoch	1750 AD	6th mass extinction
Homo (genus)			Holocene Epoch		
Homo Sapiens	300,000		Pleistocene Epoch		
Homo Neaderthalensis	300,000		Pliocene Epoch		
Homo Erectus	2,000,000		Neocene Epoch	Ongoing	Quaternary ice age
Hominidae family			Oligocene Epoch	2,600,000	(the Pleistocene)
(Australopithicines)	3,300,000		Eocene Epoch		
			Paleocene Epoch		
MESOZOIC ERA	65,000,000	MESOZOIC	Cretaceous Period	65,000,000	Dinosaur extinction
(Age of Dinosaurs)	200,000,000	ERA	Jurassic Period	220,000,000	Pangaea begins
			Triasic Period		to break up
PALEOZOIC ERA	539,000,000	PALEOZOIC	Permian Period	252,000,000	late Permian mass
(Age of Insects)		ERA	Carboniferous P.		extinction
2st plants	470,000,000		Devonian P.	390,000,000	Caledonian orogeny
Cambrian explosion	541,000,000		Silurian P.		
of diverse species			Ordovician P.		breakup of Rodina
1st animals	720,000,000		Cambrian Period	538,000,000	
PHANAEROZOIC EON	Ongoing				
(time when fossils are apparent)	538,000,000				
		Pre-Cambrian P.	Ediacaran Period	570,000,000	
		(no fossils yet)		635,000,000	
PROTEROZOIC EON			Cryogenian Period.	720,000,000	Cryogenian ice age
(Age of single-celled life)				980,000,000	Grenville orogeny
Eucaryotes	1,800,000,000			1,250,000,000	(mountain building)
Prokaryotes	3,500,000,000				+ formation of Rodina
					supercontinent
ARCHEON EON				2,500,000,000	Artica continent forms
(No life yet)	2,500,000,000			3,800,000,000	Solid rocks+magnetic field
HADEAN EON	4,550,000,000			4,600,000,000	(no solid rocks yet)

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A glimpse of a local wetland in autumn.

PART TWO: ASPECTS OF THE ECOLOGICAL HISTORY OF THE LAC SIR-JOHN AREA: SIGNIFICANT INFORMATION ABOUT THE ECOLOGY AND HISTORICAL CHANGES AFFECTING LOCAL FLORA AND FAUNA: [25]

Definitions: *Let's begin with a few definitions*. *(Casual readers might skip to the next page.)*

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23 **Ecology** (from Greek: οἶκος, "house" and λογία, "study of")[A] is the study of the relationships between living organisms, including humans, and their physical environment. Ecology is a science which considers organisms at the individual, population, community, ecosystems, and biosphere level. Ecology is a branch of biology, and it is not synonymous with environmentalism (a movement which strongly favours protecting the environment). **Ecological** means relating to or concerned with the relation of living organisms to one another and to their physical surroundings.

Among other things, ecology is the study of:

- Life processes, interactions, and adaptations in an ecosystem.
- The movement of materials and energy through living communities.
- The successional development of ecosystems.
- Cooperation, competition, and predation within and between species.
- The abundance, biomass, and distribution of organisms in the context of the environment.
- Patterns of biodiversity and their effect on ecosystem processes.

(drawn from *Wikipedia* on "Ecology")

An **ecosystem** is a community or group of living organisms that live and interact with each other in a specific habitat (or environment). An ecosystem also includes the nonliving materials in that habitat, for example, water, rocks, soil, and sand.

24 **Taiga,** generally referred to in North America as a **boreal forest** or **snow forest**, is a biome (a community of plants and animals that occur naturally in an area) characterized by evergreen coniferous forests consisting mostly of pines, spruces, and larches.

The taiga or boreal forest has been called the world's largest land biome.[3] In North America, it covers most of Canada, Alaska, and parts of the northern contiguous United States.[

In the English language, **"boreal forest"** is used in the United States and Canada in referring to more southerly coniferous regions, while "**taiga"** is used to describe the more northern, mostly barren area south of the tree line, and **"tundra"** refers to the area even farther north where there are no trees. (drawn from Wikipedia)

Our lake is situated in a mixed-wood (deciduous and coniferous) sub-zone called an "ecotone", which means a transitional area. It is located in Quebec's bioclimatic domain (or ecoregion) 4, which includes the Laurentian foothills.[26]

An ecotone is a transitional area between two different plant communities and therefore shares some characteristics of both – in this case, some characteristics of both the Northern Temperate Forest zone and some of the Boreal Forest ecozone. This makes our Lac Sir-John location an especially interesting ecosystem.[27] For example, properties on the lake's north side are populated by red oak, sugar maple (at its northernmost limit), yellow birch, American beech, eastern hemlock, basswood (linden), and trembling aspen which are typical of the Hardwood Forest Sub-zone, as well as white birch, white pine, white cedar, white spruce, and balsam fir which are more typical of the Boreal Forest Zone.

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[26] Quebec has 3 vegetation zones and a number of bioclimatic domains (each characterized by a particular type of vegetation. The balance between vegetation and climate is the main factor which distinguishes one domain from another.

[1] The **Northern Temperate Zone** with 4 bioclimatic domains:

A. The **Hardwood Forest sub-zone** (region) with 3 bioclimatic domains: [1] the southern sugar maple-bitternut-hickory domain, [2] the sugar maple-basswood domain, and [3]the northern sugar maple-yellow birch domain.
B. The **Mixed Forest sub-zone** (region) with 1 bioclimatic domain: [4] the balsam fir-yellow birch domain.

[2] The **Boreal Forest Zone**

[3] The **Arctic Zone** (the tundra area north of the timber line)

The natural life cycle of a lake: some background information:

The chemical-biological changes within a lake's history offer a fine example of ecological succession. In its early stage, a lake contains little organic material and has a poorly developed littoral zone.[28] (Poorly developed means little vegetation in the littoral zone.) Particularly in temperate zones, such conditions

[28] The sensitive 'littoral' zone extends from the Spring high-water line to a point in the lake where the aquatic vegetation disappears.

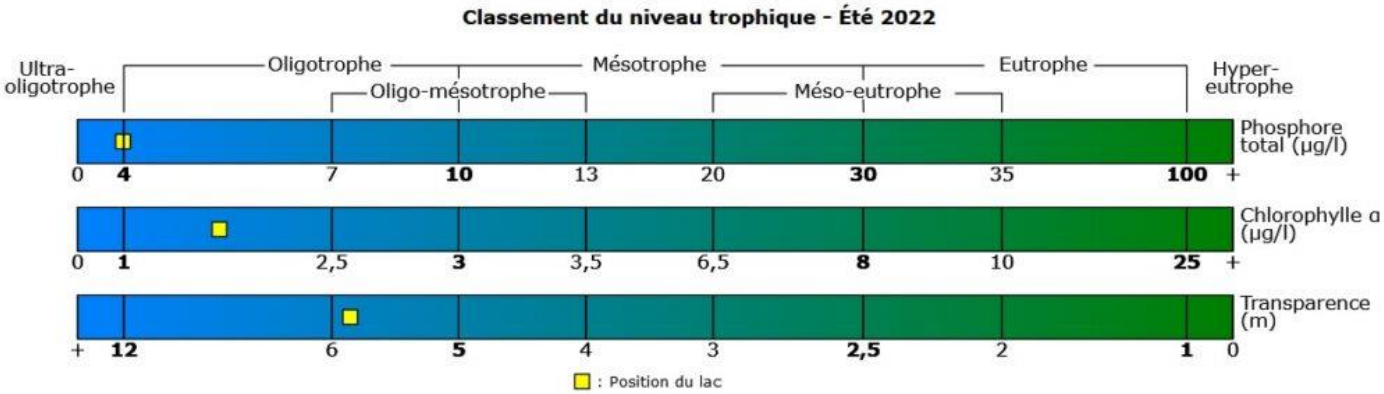
favour a plentiful oxygen content, and the lake is said to be oligotrophic (nutrient-poor with few aquatic plants and phytoplankton, but oxygen rich).

Oligotrophic lakes are those that are unproductive. (They produce little aquatic vegetation and plankton.) Their net primary production is only between 50 and 100 milligrams of carbon per square metre per day. This is desirable.

With time, as erosion progresses and as lake nutrient enrichment and organic content increase, the lake may become sufficiently productive of aquatic vegetation and plankton to place an excessive demand upon the water's oxygen content. When a lake is very rich in organic and mineral nutrients, supporting abundant plant life, oxygen depletion occurs in the process of plants decaying; a lake is then said to be eutrophic (vegetation rich and oxygen poor). The intermediate stage in this course of events is called mesotrophic. [29]

As eutrophic conditions develop, bottom sediments become enriched in organic material, and bottom plants spread throughout the littoral zone. As infilling proceeds, the plant-choked littoral zone spreads lakeward. Eventually the littoral zone becomes a marsh, and the central part of the lake diminishes to a pond. [30] When the lake finally ceases to exist, terrestrial vegetation may flourish, even to the extent of forestation.[31] This is the process by which a lake ages and finally

[29] Chart for considering the health status of a lake.



[30] We can observe eutrophication occur rather quickly when a pond, originally created by beaver, transitions relatively rapidly from a pond to a marsh and finally back to a terrestrial ecosystem.

[31] This information is mainly from the *Encyclopedia Britannica.*

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dies, called eutrophication. The aging process can be slowed down, but ultimately a lake will die and no longer be a lake.

Lake turnover:

A healthy lake cleans itself annually by the waters turning over twice a year, in autumn and in spring. Each turnover operates like an escalator. By summer's end, the surface water has absorbed lots of freshly dissolved oxygen (from waves) and is rich in algae, bacteria and phosphorus, a nutrient. Autumn's winds push the surface water to the lake's edges where it sinks, allowing oxygen-depleted water from the lake's depths to rise to the surface replacing the water which sank. As the former surface water sinks to the bottom, it takes down the harmful algae and bacteria to decompose. The phosphorus in them combines with iron (a natural metal found in lakes) to form a compound which now sinks and is deteriorated by oxygen and anaerobic bacteria as it falls to the bottom. Since the oxygen-rich surface water sinks to the bottom, the fish wintering there will have sufficient oxygen to breath during the lake's ice-covered winter.

In the spring, a similar escalator brings up bottom-water, now cleaned of bacteria, algae, and phosphorus, and by now oxygen-depleted. This new, fresh surface water is thus ready to begin a new cycle of absorbing oxygen, receiving phosphorus from the land's run-off water and supporting a new generation of algae, aquatic plants, and bacteria.[32]

Our lake:

Our lake is a natural lake which was formed as the last glacier retreated, about 10,000 years ago. In 1978, a study of our lake was made by Vanier College Fish and Wildlife Technology program (Technical Report No. 2, "A Preliminary Aquatic Study of Sir-John Lake, Quebec"). This study showed well-stratified waters with relatively high concentrations of oxygen. The phytoplankton contained species which are indicators of deep, cold, oligotrophic waters. Therefore, our lake was still relatively young in terms of lake health. In Vanier's 1978 study, aquatic

[32] Information drawn from "What causes lake turnover?", *Lilly Center for Lakes and Streams*, 2024

vegetation represented only approximately 5% of the total surface area of the lake. This feature is desirable. Is it likely that this is still true?

The Vanier study also reported that the distribution of fish caught in the 1978 study were as follows: 45% pumpkinseeds (sunfish), 17% yellow perch, 14% each of brown bullhead and rock bass, 8% smaller numbers of white sucker, smallmouth bass, lake herring, northern pike, and just a few lake trout.[33]

Changes in the fish population of Lac Sir-John:

[33] There is no known recent study of changes in the fish species percentages, only anecdotal reports from our fishers.

Introduction of smallmouth bass:

In earlier times, our lake teemed with lake trout. At some point in the 1940's or 1950's someone introduced smallmouth bass into the lake, and they have really proliferated. Both species are highly favored by fishers. By the 1990's, there were no more lake trout to be found. It is uncertain whether the decline of lake trout was due to smallmouth bass eating their larva, whether they were eaten by northern pike which live in the deep parts the lake, or whether they were victims of some other natural cause.[34] Fish of various species were so plentiful in the early 1980s, that my daughter used to just stand on the shore with a net and scoop up medium-sized fish.

Frogs were also much more abundant in the 1980s, but it seems that acid rain had a serious effect on amphibian populations, especially until the air pollution emitted from the metal smelter factories in Sudbury, Ontario was brought under control; more recently, the frog population at water's edge has been recovering. Since the 1980's, provinces have reduced their SO_2 remarkably, Quebec leading with a 60% reduction; thus, acid rain is no longer considered the major factor in species decline.

Our lake administration has recently become concerned about possibly increasing salinity of the lake water. When Lachute began snow and ice removal from our private roads a few years ago, the city hired a company, Charex Inc., which has been putting rather large quantities of grit mixed with salt (to prevent wet grit particles from freezing together) on our winter roads and on highway 329 along the east side of the lake. Eventually this salt will make its way into the lake and may be having a harmful effect on the lake environment, on the health of the lake's aquatic plants, the fish and other animal life. Association Lac Sir-John intends to begin monitoring changes in the lake's salinity and to bring this issue to the attention of the municipal government.

[34] According to the research of our avid lake fisherman, Clement Boisvert, smallmouth bass and lake trout can coexist because lake trout inhabit the deeper parts of the lake and smallmouth bass prefer the shallower waters.

In 2024, 3 yr. old Camryn Brew catches a 14" small mouth bass (unusually large for our lake).
Mid 1920,s - John Gall's father, Watson, and uncle, Jack Gall with a typical LSJ lake trout (Such trout hardly exist in today's LSJ)

Restocking of the lake around 2016-2017:

The biodiversity of the fish population was artificially changed again when an enthusiastic lake fisherman persuaded Sijolm Inc. and the Municipality of Gore to join him in financing the stocking the lake with 2 new types of fish: rainbow trout and a hybrid species that was part lake trout, part brook trout. The hope was that these species would not succumb to whatever cause had eliminated the indigenous lake trout by the 1990's. These adult fish, sold by a fish hatchery, were unable to reproduce (being either all male or all female); therefore, they would not permanently impact the biodiversity of the lake. They were imported solely to satisfy the desires of the fishers of the lake. Few trout survived for long.

Many fishers are Lac Sir-John residents, but there has been a serious difficulty in preventing fishers from outside from fishing in our waters. There is a worry that they will not follow our strict "Guidelines" designed to prevent the introduction of foreign, dangerous, or invasive species with their boats, gear, or bait. The use of

boat decals by our residents has helped to identify the outsiders and to request that they fish elsewhere. Also, the planting of shrubs and wild roses at the outsiders' usual boat launching site near the 329 bridge, the posting of warning signs, "no parking", "private road", "no entry – one way road", and increased patrolling have been somewhat effective.

Our trees and forest:

Our lake is situated in the Mixed-wood Temperate Forest ecozone, in the ecotone (transitional) area bordering on Canada's Boreal Forest ecozone. Hard, fossil-less Precambrian rock of the Canadian Shield appears in the bedrock outcroppings, particularly on the lake's northern shore. Soon after the retreat of the last glacier, the tree species which dominated our old-growth natural forest arrived, notably the coniferous white pine, fir, spruce, hemlock, and cedar, as well as deciduous oak, sugar maple, birch, bass, and beech. Different tree species deposit different nutrients into the soil. The species of tree which will grow well in a certain habitat is influenced by the soil pH[35] and by the orientation of the terrain's slope. For example, oak trees prefer a southern slope and thus thrive mainly on the northern coast of Lac Sir-John.

The main natural threats to a mixed-wood northern temperate forest such as ours are usually spruce budwood epidemics and forest fires. The forest dynamic most destructive of the hardwood forests to the south of us is windfall (windthrow)– high winds and occasionally tornados felling trees. Since the derecho of May 21, 2022, we now have become only too conscious that a windfall event, such as a derecho or tornado can, on rare occasions, can even happen here and severely devastate a mixed-wood northern temperate forest as well.

The secret life of trees:

The native trees of our forest are now known to communicate with each other through the emission of various chemicals to warn of dangers, etc. Some, like the beech, care for their nearby offspring by feeding needed nutrients to them through their root networks which are connected by fungal networks. While they

[35] Soil pH indicates whether the soil is acidic (low pH) or alkaline (high pH). At high pH values, the hydrogen ion concentration is low. Most soils have pH values between 3.5 and 10. In higher rainfall areas, the natural pH of soils typically ranges from 5 to 7. Our soil tends to be acidic, with a lower pH.

do compete for sunlight through the forest canopy of leaves, some trees also have lifelong friends with whom they intertwine their branches. Our trees do not like to live standing alone, they prefer to live in a densely populated forest. [36] In fact, much research is being done recently into the language (or communication techniques) of plants and into vegetal intelligence. It is now suspected that the growing tip of the root is the locus for plant intelligence.[37]

It would clearly be overly ambitious to attempt to explore, in this one text, all the categories of flora and fauna found amongst our lake area's rich biodiversity. [38] [39]Thus, this text will selectively provide a sample of a few interesting varieties of species present here; species which interact together in our lake-forest ecosystem.

Our rodents:[40]

At the lake, we observe an abundance of rodents: mice, voles, black, grey, and red squirrels, flying squirrels, chipmunks, beavers, and porcupine.

The beavers are our ecosystem's engineers, playing a hydraulic role in the creation of extensive wetland habitats. We are well aware of their repeated

[36] See Peter Wohlleben, *The hidden life of trees: What they feel, how they communicate*, Greystone books, 2015.

[37] See John C. Ryan and Patricia de Vieira (eds.), *The mind of plants: Narratives of vegetal intelligence* and Monica Gagliano and Patricia de Vieira, (eds.) *The language of plants, 2017*

[38] For an extensive list of the species identified by the biologist, Mathieu Madison, in his 2022 report on the species he found in the Lac Sir-John Private Nature Reserve territory, see pages 43-54 of *Caractérisation Écologique et Conservation* by Caltha Conseils Inc., July 2022 (available on the www.alsj.ca website)

[39] For a list of species officially classified as endangered or vulnerable in our nature reserve, species which were identified by Mathieu Madison, see pages 54-55 of *Caractérisation Écologique et Conservation* by Caltha Conseils Inc., July 2022 (available on the www.alsj.ca website)

[40] Rodents are characterized by a single pair of continuously growing incisors in each of the upper and lower jaws. Thus, they must gnaw frequently.

attempts to build their lodges on our northern shores and to construct a beaver dam at our southern outlet near the culverts at the causeway. The deer mice annoy us by seeking shelter from the cold and nourishment in our homes each autumn. The voles tunnel between the snow and the grass; we see their raised burrows on our lawns when spring arrives. Of course, we must always remember that we are just sharing their territory and that they were here long before us.[41]

The black and red squirrels are indigenous. Black squirrels are a subgroup of the grey squirrel, carrying a mutant gene. Black squirrels have a better cold tolerance and in the dense boreal forest environment their color offers better camouflage protection; however, in the last few decades, as the forests have been cleared for construction projects and the winters have become less harsh, the grey squirrels have been moving north into our territory. Although the smaller red squirrels are more aggressive and destructive of our houses, the newer arrivals (the grey squirrels) are more intelligent and therefore, most probably, will eventually prevail in this habitat.

Squirrels take all my birdseed, making burrows under the snow to cache it, then come back for more. The birds are too intimidated by the squirrels to approach my feeder. In 2023, three grey squirrels, after first pretending to be cute and begging for food on my kitchen windowsill, then dedicated themselves to attacking the cedar wood siding of my house for about an hour early each morning, attempting to make a hole large enough to enter and enjoy the warmth of the house for the winter – most destructive.

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[41] Note from John Gall, July 3, 2024:

> "For all their importance in our Laurentian ecosystem, beavers can wreak havoc. Donnacona Island's western shore became the site of a beaver lodge around 2000. The island provided their construction materials. Over 20 mature trees were felled, including most of the island's hardwoods. A beautiful beech tree beside the house was chewed down; adding insult to injury, a majestic red oak was felled right at the site of the beaver lodge. I remember that beavers were also cutting trees on the mainland shores. The lake community decided to bid them farewell; I believe they were trapped.
>
> Around 1980, beavers were active at the Entrance No. 1 causeway where they started damming the culverts. Beavers are attracted to running water and the small culvert pipes were prime damming territory for them. The lake level rose. I remember being part of a work crew in dismantling the dams. I recall this had to be done a few times. The lake community won out. I don't recall the fate of the beavers."

Our other mammals:[42]

Let us just mention a few other mammals which all play their parts, together with we humans, in our lake-forest ecosystem:

The seven playful otters which swam past my house one October.

The red fox which often leaves tracks in the snow on the lake near the shoreline as she passes silently by.

The mink which daily passes along the shoreline in the late summer afternoons to fish, dipping gracefully in and out of the water.

The deer which come to our gardens, especially in the spring and summer, to sample our flowers and vegetables, and sometimes to nap on the grass.

The coyotes which come to Monique's backyard when she puts out food for feral cats.

The porcupine which necessitated Charley, John Bishop's dog, being rushed to the vet to have the multitude of porcupine quills removed from his poor nose.

The half-starved black bear once seen listlessly sitting outside my bedroom window.

The martin which unfortunately became roadkill near the bridge on route 329.

The wolf whose calls can be heard, on occasion, from a far distance, in the direction of Undermount Farm.

The moose whose tracks are occasionally seen in the mud of the Entrance Three road.

[42] In the Boreal Forest of northern Quebec, a large diversity in mammals are found, such as the black bear (*Ursus americanus*), the moose (*Alces alces*), the white-tailed deer (*Odocoileus virginianus*), the grey wolf (*Canis lupus*), the beaver (*Castor canadensis*), the caribou (or reindeer) (*Rangifer tarandus*), the red fox (*Vulpes vulpes*), the american mink (*Mustela vison*), the coyote (*Canis latrans*), the lynx (*Lynx canadensis*) etc. Despite the harshness of the boreal weather, many bird species also live in the area, like the Canada goose (*Branta canadensis*), the great horned owl (*Bubo virginianus*), the pileated woodpecker(*Dryocopus pileatus*), the great grey owl (*Strix nebulosa*), the red-tailed hawk (*Buteo jamaicensis*), the bald eagle (*Haliaeetus leucocephalus*), and several other species of falcons, owls and ducks. (UQAM CarBBAS CRSNG) Lac Sir-John is definitely south of the true Boreal Forest, yet, most of these species of fauna are also found around here, with the exception of caribou and lynx.

And let us not forget our many domesticated dogs and cats.

Finally, although not mammals, let us not forget the turtles which slowly cross route 329 en route back and forth between the swamp next to Beattie road and Lac Sir-John,[43] and the large, harmless garter snakes[44] which sometimes startle us while sunning on our rocks or, on rare occasions, even join us in swimming on the lake.

Our fungi, lichens, and mosses:

There are three kingdoms of living organisms: animals, plants, and fungi (fauna, flora, and funga); each distinguished by their mode of nutrition. Animals engulf food, digesting it internally, plants photosynthesize to create their food, and fungi secrete a digestive enzyme and then absorb the externally pre-digested nutrients. Some common types of fungi are mushrooms, molds, yeasts, and mildew. They live in air, water, the ground, on our skin, and in our bodies.

Most of the body of a visible mushroom is hidden in a vast underground network of tendrils called mycelium, which may extend for kilometers. As the tendrils of a mushroom can always continue to grow, these fungi are virtually immortal. The mushroom you see in your yard, or in the forest, is just the small fruiting, reproductive part of a fungus. Mushrooms feed on nutrients in plant roots, soil, decaying wood, and wood. By interacting with neighboring plant roots, these fungi perform a valuable process called soil carbon sequestration, capturing carbon from the atmosphere, and storing it into the soil for decades, if not hundreds of years. Fungi live within the root system of most plants metabolizing the sugar produced by plant photosynthesis, while helping a plant access water and nutrients from the soil, thus, since about four hundred million years ago, fungi have made it possible for plants to live outside of water. [45]

There is an old folkloric saying that mushroom abundancy can predict a winter's harsh intensity. How many fungi did you notice last autumn?

[43] That swamp used to be a part of Lac Sir-John before route 329 was constructed, and the turtles (being long-lived) seem to remember this.
[44] There are no poisonous snakes indigenous to Quebec; however, southern Ontario does have some rattlesnakes.
[45] *National Geographic*, "The Wondrous World of Fungi", April 2024, p.21

“Mushrooms galore, much snow in store. No mushrooms at all, no snow will fall.”

Our forests are replete with a wide variety of mushrooms. Over 150 distinct species grow in Quebec, including the tasty chanterelles, morels, and porcinis. So next time you walk the trails in our forested greenbelt, keep your eyes open! In mushroom foraging, beware of poisonous lookalikes.[46] One of the deadliest

[46] Pictures of some mushrooms from my property follow.

species, known as the “death cap”, is rapidly increasing its range in North America!

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Scientists have recently discovered that mushrooms send out electrical pulses in clustered regular patterns and now there is some speculation that mushrooms may actually chat with each other in a language of at least fifty different words (electrical pulse patterns).[47]

Lichens, which grow on rocks and trees, are actually a symbiotic partnership between fungi and blue-green algae (cyanobacteria). The fungus, with its roots in the bark, gets the water and minerals. The algae component does the photosynthesis to produce food for the fungus. Lichens (similarly to mosses) grow more prolifically on the north side of trees, and thus, may help you find your direction when lost on a cloudy day in part of our forested nature reserve.

Mosses, which also grow on our trees and rocks, are not lichens or fungi; they are actually non-flowering plants which produce spores for reproduction and have stems and leaves, but do not have true roots. Mosses provide shelter for insects and provide good insulation.

Northern mosses and lichens are now recognized to be highly effective carbon sinks.[48]

[47] A reporting in *Science* (2022) about a study from Royal Society Open Science

[48] A carbon sink is anything that absorbs and stores more carbon from the atmosphere than it releases.

Both lichen and moss on a rock on Gall's Island

Lichen and moss on an aged maple tree

Our avian neighbors:

Most of us are delighted to catch a glimpse of or listen to a call of members of our numerous bird species, (the only surviving dinosaur descendants), such as our loons with their haunting calls, our mallards, wood ducks (nesting in our trees), the bufflehead and hooded mergansers, sandpipers, kingfishers, the great blue heron at the lake's edge, the circling hawks, the families of mourning doves and wild turkeys crossing our roads, yellow-bellied sapsuckers and brown creepers; also, our less-welcome crows and cormorants. We hear the noisy cackling of large flocks of Canadian geese who land on our lake in the morning to rest up and sleep all day, before taking off for their nightly flight to the far north (in spring) or far south (in autumn). On rare occasions, the dazzling florescence of a scarlet tanager can be glimpsed high in the forest canopy near our encircling dirt road.

Our all-season neighbors include the American gold finch, friendly chickadees, nuthatches, blue jays, woodpeckers, (especially the spectacular 17" pileated woodpeckers which hollow out our tree trunks), and the occasional snowy owl. Robins are a sure sign of spring and hummingbirds (who over-winter in Central America and the Gulf Coast) reappear with the first red flowers in our gardens. Spring is also filled with the songs of migrating warblers which can more often be heard than seen.

In recent years, the number of birds here, as elsewhere in North America has declined dramatically due to loss of habitat, declining insect populations (due to agricultural pesticides[49]), bird viruses, and other factors. Predation by feral and domestic cats usually accounts for the largest number of bird deaths in North America.

Also, climate change may have recently led the local insect population to peak earlier in spring, before the migrating insectivore birds have arrived.

Despite this generalized radical decline of avian species, a few species have experienced a rapid recovery in both numbers and extended range. The bald eagle was on the eve of extinction in southern Quebec by the mid-twentieth century due to habitat loss and over-hunting, and yet, between 1966 and today, there has been a dramatic increase in the bald eagle population. As late as 2013, bald eagles were still listed among the "vulnerable " species in Quebec, but now they are removed from that list. By the summer of 2023, a bald eagle had appeared even at Lac Sir-John. Our new eagle perches in a tree atop the Upper Lookout. Bald eagles are quite sensitive to human activities, especially while nesting, and are generally found only in areas lacking significant human disturbances.

A second species to experience an even more dramatic comeback is the wild turkey. Turkeys were nearly extinct locally in the early 1900s due to habitat loss and over-hunting. Since 1984, efforts have been made to protect the native turkey, and recently there has been a rapid expansion in their numbers, including movement into a more northerly range. In the last few years, many of us have

[49] DDT was banned in the early 1970's, but other, less generally harmful pesticides continue to be used in agriculture. Here at our lake, the use of pesticides, especially near the water, is banned by our "Guidelines" and our ALSJ Bylaws.

observed bands of 12 or 24 turkeys wandering through our yards. Beware, they can be quite aggressive if provoked. Wild turkeys nest in trees, and in the winter prefer dense conifers for protection. They have now learned to co-habit with people, which is a win for biodiversity and conservation.

Restrictions on the shooting of migratory birds have recently brought about a strange new phenomena at the lake. The Canada geese seem to have learned of this protected status. In the summer of 2023, a pair of Canada geese did not bother to migrate further north as they had always done in the past. By late spring, multiple goslings had hatched and, being guarded at both ends of their group by watchful parents, they spent the summer on our lake; in 2024 a second family combined with the first family. (Total – at least 18.) These now-resident geese have become a nuisance at our beaches and yards, dropping large amounts of guano which our residents need to remove frequently. The guano acts as a fertilizer in the lake and could contribute to our recent increase in aquatic plants, thus hastening lake eutrophication. In 2023, successful efforts were made to encourage the geese to move eastward beyond the route 329 bridge. However, the combined flock now often return to the main body of the lake. The ALSJ Executive Committee has been studying various mitigation efforts to prevent the flock's future anticipated exponential increase.

Our humans:

During the Anthropocene Epoch of the Cenozoic Era, in the early 1960's, a new invasive species of carnivores arrived en masse along the coastline of Lac Sir-John, the human cottagers. The activities of this species have had an even greater impact on the ecosystem than the activities of the beavers (with their hydraulic engineering) and other animals. Instead of the narrow footpaths of the deer through the forest, this newly arrived species constructed wide gravel roads. Instead of nests and burrows, this species built large wooden structures for shelter. Forested areas near the lake were cleared and then planted with non-indigenous species of grass, flowers, and decorative trees; also, vegetables for their summer gardens. For over three decades, this alteration of the ecosystem continued with little restraint; however, in recent decades, with greater environmental awareness, more government regulation, and with the distribution

to every house of our lake community's "*Guidelines for harmonious Lac Sir-John community living"*, the pace of human alteration of our ecosystem has slowed. To date, a long-term goal of returning the shoreline to its natural condition, fully populated by indigenous species of trees and plant species has been only partially achieved.

Invasive and dangerous species in the Lac Sir-John area:

CAUSES OF SPECIES CHANGE: In recent years there has been significant species change, partly due to global warming, making new habitats available to species which had previously been confined to habitats further south and partly through the intentional or accidental importation of new species. Species change may also occur due to the arrival of a new pathogen or species which wipes out an existing local species, opening up new habitat in which another species may proliferate. Some of the newly arrived species in our locale are either invasive or dangerous (or both).

Eurasian milfoil, an imported species to Quebec, certainly ranks number one in our minds because even a small piece of this aquatic plant can soon make a lake unusable for swimming and boating, clogging the lake and choking out the other aquatic plant life. About 1/3 of Quebec lakes now have invasive Eurasian milfoil infestations. Thus far, Lac Sir-John has remained free of this invasive species, thanks largely to our lake community administration's efforts to educate the residents on preventive methods and to our efforts to keep out the entry of boats and fishing gear from non-residents. But how long can our efforts be successful? We are now experiencing the rapid spread of the indigenous big pond weed which can also choke the littoral.

Cyanobacteria (blue-green algae) are a naturally occurring and ancient species, one of the oldest lifeforms on the planet. As a photosynthesizing[50] species, they absorb carbon dioxide and give off oxygen. (They originally generated much of the oxygen in the Earth's atmosphere.) However, when they die, cyanobacteria

[50] Photosynthesis is the process by which plants use sunlight, water, and carbon dioxide to create energy in the form of sugar (sucrose) and give off oxygen as a byproduct.

release their toxin, presenting a danger to wildlife and humans who ingest water in which this toxin is present. Normally, one would have to ingest a large quantity of the toxin to be harmed. On occasion, our lake, like most Laurentian lakes, has experienced small chartreuse blooms; however, such blooms here have thus far been very, very limited.

It was the fear of a major bloom (which has never occurred) that led the municipal government of Lachute, about two decades ago, to seek out an alternative source of municipal water from the subterranean aquifer. Global warming may lead to more frequent blooms, since the conditions favorable to blooms are warm, slow-moving water, rich in nutrients from sources such as fertilizer run-off, septic tank overflow, and dishwasher soap rich in phosphates. Our document, *Guidelines for harmonious Lac Sir-John living,* and our other communiques with residents, have helped sensitize our residents about how to prevent such nutrient sources from entering the lake.

Fortunately, our waters have remained free of zebra mussels near our shore partly because of the shortage of calcium in our lake water[51] which would allow the building of their shells. (However, I have recently seen a large fresh-water mussel (3-4" in length) in my littoral sand when the lake's water level is very low.)

On the land, in the last decade, we have experienced the spread of poison ivy to a number of residents' properties. Poison parsley, which resembles Queen Anne's Lace, causes severe skin blistering. Also, the arrival and spread of Japanese knotweed (said to be the planet's most invasive plant) is still causing problems, despite annual attempts of our residents' work teams to eradicate it at one of our lake properties. Although not poisonous, purple loosestrife has recently arrived at the lake and, if unchecked, it can choke shorelines, ditches, and streams, outcompeting other shoreline species. In recent years, our administrations (previously Sijolm and now ALSJ) have organized Saturday morning work parties to help residents eliminate problem species. The affected resident pays for the

[51] Our lake water is normally slightly acidic. When the water is more acidic, it's harder for mollusks, such as zebra mussels, to use calcium to build and maintain their calcium carbonate structures (their shells). Freshwater acidification can occur when acidic inputs enter a body of fresh water through the weathering of rocks. Remember that, due to the scraping of glaciers, our rocky shores contain little soil (formed originally from decaying vegetation) which could make a lake more alkaline.

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materials, but volunteer residents do the work, often with refreshments awaiting them at the end of the work session.

Dangers from insect species: We need only mention the forest tent caterpillar infestations, such as the one we experienced for 6 weeks in 2017. The caterpillars first stripped the leaves from our forest canopy, then invading our house walls and balconies, even making swimming with them unpleasant when they fell off lakeside trees. Lyme disease, carried by the infected blacklegged ticks, has gradually spread north with global warming, eventually even crossing the St. Lawrence River, and West Nile disease, spread by mosquitos, may soon arrive here.

In 2024, Chinese mystery snails made their first appearance north of us at Lac Barron. These snails, with adults as large as golf balls, proliferate rapidly (perhaps up to 100 live and shelled babies born per female snail). They can survive at depths of at least twenty feet, can survive out of the water in dirt for a few months, and can even survive freezing temperatures for a few days. They are resistant to predation, outcompeting indigenous mollusks, and carrying parasites. Their large quantities and sharp broken shells near the shore would be difficult on swimmers' feet. As a population of Chinese Mystery Snails grows, the large amount of feces deposited in the lake changes the chemistry of the water, increasing nitrogen and phosphorus. Such an increase in nutrients encourages the increased growth of algae (phytoplankton) and a decrease in the number of zooplankton. [52]

[52] Note from Terry Brew, Lac Sir-John.

> "With global temperatures predicted to rise, and given the species adaptability and fecundity, *C. chinensis* can be expected to expand its range northward in North America. Additionally, rising temperatures are predicted to lead to an increase in rates of release of nitrogen and phosphorous compounds, impacting food webs by altering bacterial community structure and potentially leading to an increased risk of eutrophication where *C. chinensis* becomes established and abundant."
>
> *Source: Canadian Scientific Publishing*, Environmental Reviews, Volume 29, Number 2, June 2021, "A review of the non-indigenous Chinese mystery snail, *Cipangopaludina chinensis* (Viviparidae), in North America, with emphasis on occurrence in Canada and the potential impact on indigenous aquatic species"

These snails bioaccumulate contaminants (such as mercury, lead, manganese, cadmium, chromium, arsenic, copper, and nickel) often present in contaminated sediments, and may biotransmit these contaminants to their wildlife consumers.[53]

The perceived threat is that they may soon arrive at Lac Sir-John via the chain of lakes in the Williams Creek watershed. Lakes Barron, Solar, Caroline, and Dawson have weirs at their outlets, so all the water exits over the top of the weir potentially bringing the snails along. Water arriving via this route would eventually come over the top of the Marchand Dam into Lac Sir-John, potentially bringing the snails into our lake.

And finally, might not human lake-dwellers be regarded as a particularly dangerous and invasive species by other fauna and flora.

[53] *Source: Canadian Scientific Publishing*, Environmental Reviews, Volume 29, Number 2, June 2021, "A review of the non-indigenous Chinese mystery snail…."

The Anthropocene Epoch's impact on the Lac Sir-John area:[54]

The era of pioneer farming, lumbering and deforestation:

The original Weskarini people who had likely hunted, gathered, and fished in this area since the retreat of the last glacier were gradually displaced by the Mohawks (an Iroquois tribe). Today, only a small off-reservation community of Weskarini still exists around Montpellier, Quebec, in the Petit-Nation area of the Outaouais region. The Weskarini would have had a very small population density, and probably would have been just seasonal hunter-gatherers foraging near Lac Sir-John, having very little, if any, impact on the environment.

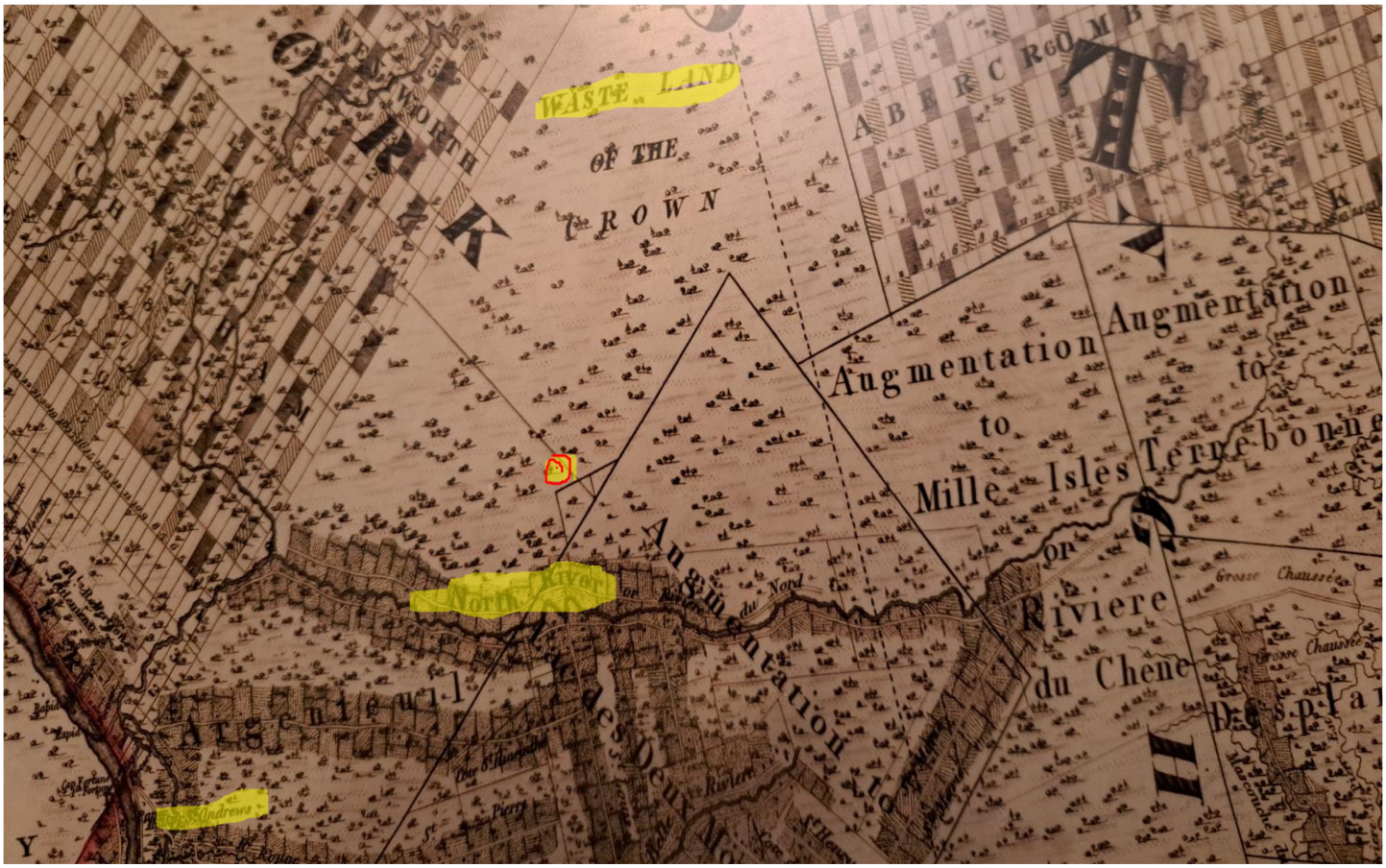
By the 1830's, the Mohawks, and other Iroquois peoples displaced here from upstate-New York following the American Revolution, were being confined to small reservations. In our area, pioneer farmers began to replace them, clearing the forests to establish farmland.

Pioneer farmers, mainly Scots and Irish Protestants[55], began to arrive in the early nineteenth century. Settlers south of the Gore township line would have needed to purchase their land from the then-owners of the Sir John Johnson seigneury (the Seigniory of Argenteuil). Those homesteading in the Gore territory, north of Lac Sir-John, began as squatters who were able to homestead, without purchasing costs, on Crown land, since Gore township was unceded land.[56]

[54] The Anthropocene is the geological era in which humans have very significantly altered the environment. It is the era since the Industrial Revolution began.

[55] Irish Protestants, going north from Grenville to homestead on crown land, settled first in Wentworth, then Gore, then north to Mille Isle and finally Morin Heights. Irish Catholics settled farther east in St. Columban (nearer St. Jerome). Scots often disembarked at St. Andrews (Andrew being the patron saint of Scotland).

[56] Unceded land was land which neither the king of France (and thus New France) nor later the British monarch had ceded (granted) to some nobleman as a seigneury.



The above map is the earliest in existence, dating from 1815.[57] St. Andrews (St. André Est), an early port of arrival, located where the North River (Rivière du Nord) empties into the Ottawa River, is highlighted in yellow near the bottom left of the map. Land in Gore and Lachute, north of the North River (highlighted in yellow), had not yet been surveyed in 1815.

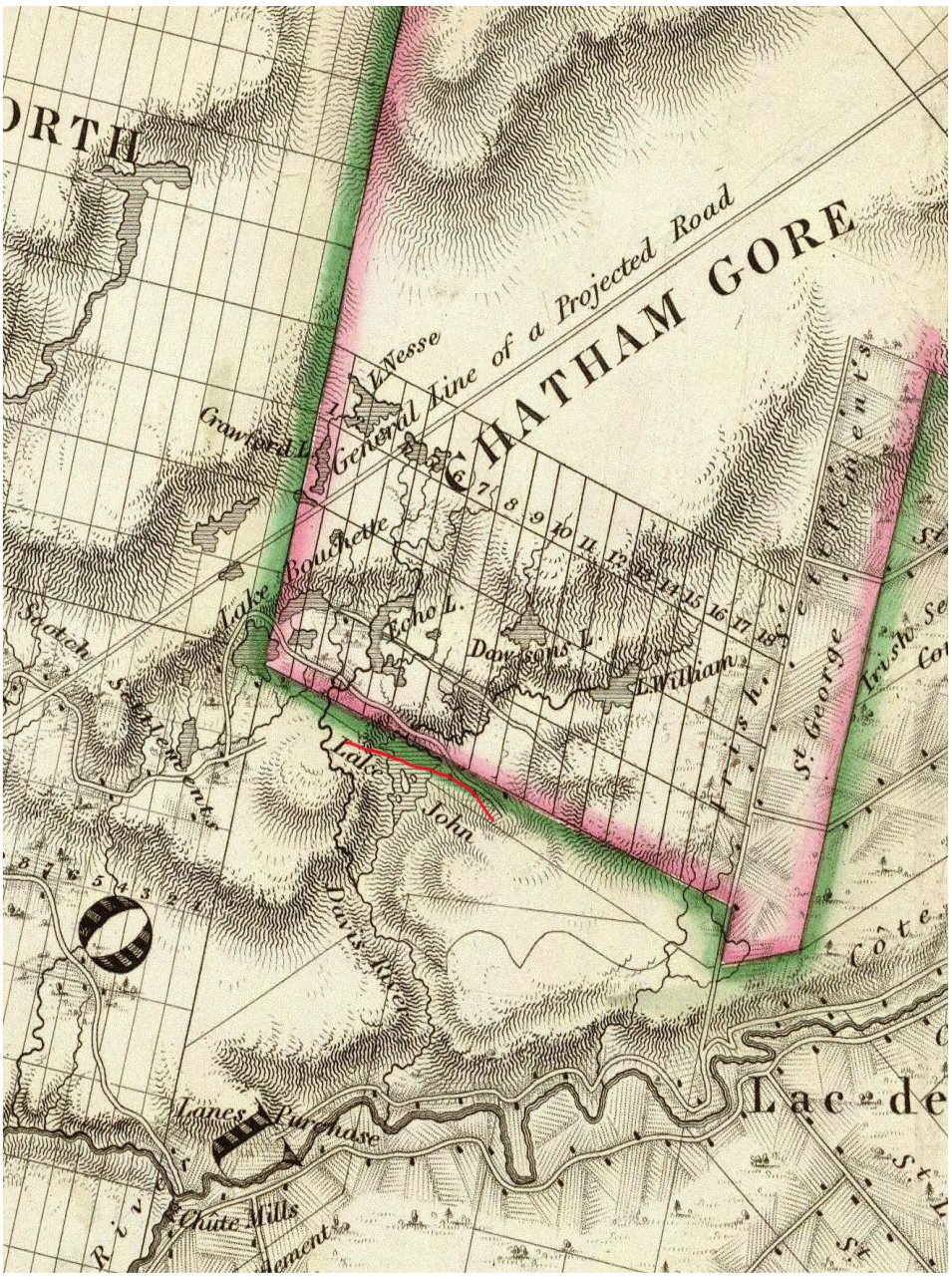
On this 1815 map, Lac Sir-John (location shown in yellow with a red circle), which was in the Seigniory of Argenteuil belonging to Sir John Johnson, does not even appear, nor do lakes Kenny, Echo, Dawson, and Barron. Note that the area of the present township of Gore is labelled “Wasteland of the Crown” and only trees (forest) are shown, even in the area south of Lac Sir-John in the Seigniory. Deforestation had not yet begun, but was about to begin. Further west, the township of Wentworth is already subdivided into 100 acre lots ready for

[57] Photographed from a very early map owned by Jean-François Hamilton of Gore.

homesteaders, They could acquire letters patent for a lot from the Crown after they cleared the forest, resided on the lot, and farmed 7 acres for 7 years.

Our lake first appears on a surveyor's map of 1831 commissioned by Joseph Bouchette, Surveyor-General of Lower Canada. It was called Lake John. On the 1831 map, the land north of the Seigniory of Argenteuil, beginning at the north shore of Lac Sir-John, was now divided into surveyed rectangular Crown lots, ready to be cleared and settled. Included are the forests surrounding lakes Echo (shown including Lake Kenny), Dawson, William, and Clear Lake (called Lake Bouchette). Our lake area, being in Seigniory land rather than Crown land, was not divided into homesteading lots.

See the Bouchette 1831 map below. Can you find Lake John, Chute Mills (which became Lachute), Williams Creek (which was then called Davis River and which flowed from the outlet of today's Little Lac Sir-John, joining the North River near Hills Head), the Scotch settlement to the west and the Irish Catholic settlement to the east. Note the trail which runs just north of Lac Sir-John. Hikers today have noticed what appears to be an old lumber road running just south of the Le Sommet hill. Was it actually a trail for arriving settlers, with carts, to use?



Early farmers experienced little success in the Lac Sir-John area due to the lack of adequate topsoil over the Laurentian Shield bedrock and the ruggedness of the terrain.[58] One exception would appear to be the farm where Christopher

[58] Many early 19th century Gore settlers, unable to establish productive farms, turned to cutting trees and burning the wood to sell the ashes to Montreal for use in the manufacture of soap. When the trees were gone, many families were forced to move elsewhere. There was rural depopulation in Gore by the

Sweeney's Undermount Farm is presently located, a relatively flat depression filled with post-glacial soil. Its fields would have supported some crops, including hay for the horses. Also, when walking through the woods from the farm toward the stone quarry, one comes across apple trees gone wild from what was obviously once an apple orchard.

Lumbering began early as settlers cleared the land for farms. Most domestic and commercial construction was of wood: houses, barns, fences, mills, etc. Wood provided winter heating, as well as fuel for cooking. Pioneer farmers could find seasonal employment cutting trees for lumber companies during the winter.[59] A number of local sawmills were established. Dirt roads began to snake through the forest scarring the formerly homogeneous old-growth forest landscape.

As the forest industries expanded, timber began to be exported from our region. The majestic white pines were much sought-after by Britain for shipbuilding, especially for tall masts. Clear-cut lumbering in the forests behind our lake was extensive and occurred over successive decades beginning in the 1890's, perhaps even earlier. Timber could be dragged down to Loggers' Beach in the winter and dragged across the lake on log-bearing sleds (or floated when thawed) to be carted away to market (probably from today's Entrance Two where there was a meadow, and stables were kept for horses). The lumbering industry gave huge impetus to building railways going to Lachute and elsewhere in the Laurentians from the 1880's on.

In the 1960's, Mr. Romer had a business partner, Mr. Robertson, who was active in lumbering in this area. He made more money in lumbering than Romer made in selling lots at Sir John's Lake Estates! It remains unknow whether Mr. Robertson himself, or others, were responsible for any destruction of the old-growth forest in what is now the greenspace of Lac Sir-John's private nature

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mid-19th century. This is according to Steve Vachon of Kerr Farm near Lac Hughes. According to Jean-François Hamilton of Gore, many farmers moved on to the better soils of the Eastern Townships.

[59] At Long Lake, now called Lac Barron, seasonal lumbermen would spend the winter lumbering in the virgin forest. On a good day, two men could cut up to 100 large logs. Then, horses hauled the logs along a downhill winter lumber road to Evan's mill at Lac Dawson. This winter road continued south and then across Lac Sir-John to its outlet, along Seigneury Road, and on to Hill Head (near the North River), then finally on to Lachute for manufacture. Information from Naylor Mount as quoted in "Chronicles of a Country Church", Lakefield , Quebec, by Louise Johnston of Lac Sir-John, 1985.

reserve. According to our local biologist specialized in ecology, Mathieu Madison, only a small area of old growth forest, located in a remote marshy area of the Lac Sir-John Private Nature Reserve, escaped the lumberman's saw. A twentieth century forest fire in the Entrance One road area was also responsible for part of the destruction of our old-growth forest.

When the original forest was cut down, fast-growing birch and poplar trees had their opportunity, followed by slower growing sugar maples, beech groves, and some oak (especially on the southern slopes). Coniferous hemlock, cedar, spruce, fir, and some white pines also grew up. Yet even today, walking in our forest greenspace in the vicinity of Loggers' Beach, one can occasionally still spot huge stumps of old-growth white pines which had been cut down for lumber in those early days. A number of these tall, spectacular, large white pines can still be spotted around the lake, many towering on Gall's Island (formerly Donnacona Island) where lumbering never occurred.[60]

One ecological impact on the human species of the lumbering industry, as pioneers moved further up the Ottawa River in the late 19C, was the relegation of the remaining Algonquins to small reserves, so that the timber industry could exploit their former hunting and camping territory. These Algonquins, such as the Weskarini, had occupied a vast territory north of the Ottawa and St. Lawrence rivers ever since the retreat of the last glacier. This would have included our lake area with its potential for hunting and fishing.

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[60] Unfortunately, the derecho storm of May 22, 2022, brought down most of those stately old white pines.

John Gall has suggested that on Donnacona Island (Gall's Island) the tree succession may be as much as 1000 years behind that of the mainland. When he lived there as a child, trees were mainly those of the Boreal Forest Zone, which today we usually observe much further north in Quebec. Perhaps they are remnants of an earlier, colder, post-glacial time**.** The island's soil layer is very thin and very acidic; therefore, tree succession is much slower with less access to decaying vegetation than on the mainland. On the mainland, the biome of trees is more typical of a mixed-wood temperate forest.

Quebec's northern boreal forest is dominated by coniferous tree species, like the black (*Picea mariana*) and the white (*Picea glauca*) spruces, the balsam fir (*Abies balsamea*), the tamarack or larch (*Larix laricina*), and some deciduous species such as the white birch (*Betula alba*), the balsam poplar (*Populus balsamifera*) and the aspen (*Populus tremuloides). (*UQAM CarBBAS CRSNG)

The ecological impact of Norman Romer's 1960's development – Sir John's Lake Estates:

What might it have felt like for an observer in the summer of 1960 to see the pristine forest shoreline of Lac Sir-John being destroyed, violated by chain saws, never to be intact again?

Let us consider a reflection written by a long-time cottager on Donnacona Island, Fred Mayer, John Gall's uncle, about the year when Norman Romer began to clear the lakeshore to construct cottages. On Sept. 24, 1960, Uncle Fred wrote the following:

> "Apparently, time without changes cannot be reconciled, and one only has to view the handiwork of Mr. Romer's hired "steel monsters" to fully comprehend such an axiom.
>
> It cannot be denied that Lake Sir John (or at least part of it) has become a "development," though we have been told through the medium of skillful propaganda that it is, at all costs, to be a dignified one.
>
> A lover of nature, the great God Pan (if he exists!) and those of us who have had the great pleasure to have known this little bit of peace and tranquility, Lake Sir John, when it was more deserving of the term, can only view with a certain alarm the activities of the past summer.
>
> The verdant shoreline has been desecrated, and much like a woman who has been assaulted indecently, yet not through self choice, shows her nakedness, and in the middle of it all – "the ubiquitous model-home" which you and I can buy for next to nothing down, and the rest when a vigilante of the "exclusive" club catches us!! "Progress," some will say, and this word does fill many a large gap. And yet,

though “pity” might be a better expression, it can be hoped that the new weekend settlers can and will in some way make up for that which they have taken away. New friends will arrive. We welcome them.” F. C. Mayer[61]

Views about the ecological impact of Norman Romer’s 1960s development project, “Sir John’s Lake Estates” seem to vary amongst the remaining earliest residents whom I have consulted. Some suggested Romer had no environmental conscience; that he had clear-cut the lots before sale, that he permitted artificial concrete walls at water’s edge, that he encouraged waterskiing at fast speeds, etc. And that he planned to sell 200 more house lots with accompanying access roads and beaches, a plan that would result in the destruction of the surrounding forest (that forest which is now our Lac Sir John Private Nature Reserve). The backlash by the original property owners against this ambitious residential development scheme led to the formation of SIJOLM Inc. in 1967. SIJOLM Inc. was formed to buy this land from Romer and save the forest from development.

Others maintained that he was quite concerned about the environmental impact, retaining some trees on the lots, requiring certain standards in construction, preventing subdivision of lots, limiting boat motors to 5 horsepower, forbidding wave-creating joyriding on the lake, and incorporating other measures to protect the environment into the lake community’s first rules and regulations, those of the Sir John’s Lake Club. Romer required that all new purchasers first had to be approved for membership in the Club and had to agree to abide by the Sir John’s Lake Club rules and regulations before they could complete a property purchase. (This unfortunately permitted unfair discrimination; however, it also prevented reckless and environmentally damaging building and other activities.)[62]

[61] Taken from a note sent to me by John Gall. July 3, 2024

[62] Below is an advertisement in the Montreal Gazette for lots in Romer’s development.

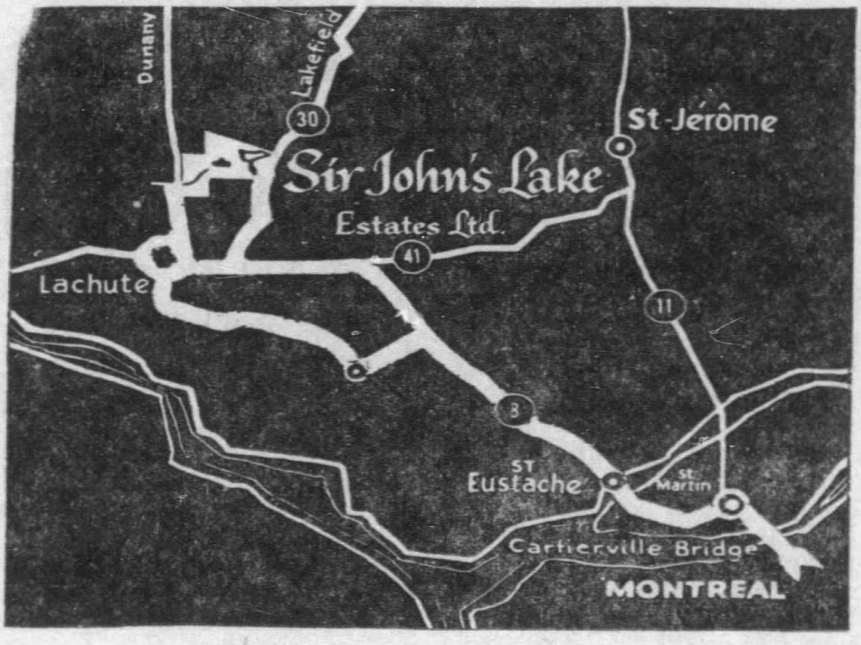
Sir John's Lake

The Ideal Location Estates Ltd.

for your Country Home

We are pleased to announce the opening of this beautiful 1400 acre Estate as a private Club, where members may purchase a site for their country home on one of the loveliest lakes in the Laurentians.

A recent survey revealed that many successful executives and professional people are desirous of acquiring a place in the country, if they could find one which can be reached without a long, tiring, drive, and assures them of privacy and congenial neighbours.



If you are in this category, we believe that **Sir John's Lake Club & Estates** will meet your every requirement. Only 40 miles from the Cartierville bridge on good paved roads to the gates of the Estate, with no tolls to pay, it is as secluded as though it were hundreds of miles from civilization—yet it is only 10 minutes from the modern town of Lachute, and the famous Lachute Golf Club with its two championship courses.

In the well-appointed Club House, members may meet, entertain their friends, stay overnight; there is swimming, boating, fishing, water-skiing; riding-stables and miles of beautiful bridal paths. A nine-hole golf course, tennis courts, and other facilities are being prepared. In fact, everything needed for gracious country living is here for you to enjoy.

For an appointment to visit Sir John's Lake Club & Estates at your convenience, without obligation, or for further particulars and a descriptive pamphlet,

Please telephone Norman Romer at UN 6.-1114 in Montreal or Lo 2-2960 in Lachute

The Jean Marchand Dam:

Photo courtesy of Pete DeGroot

Construction of the Jean Marchand Dam:

The Jean Marchand Dam, later also called the Beattie Dam, was constructed in 1971. The small lake, east of route 329 but connected to Lac Sir-John by the waters flowing under the 329 bridge, is actually geographically a part of Lac Sir-John. At its east end, the Marchand Dam was constructed, and behind it, to the east, was thus created a large artificial reservoir lake known as Lac Beattie. Rock Poulin, one of our lake residents and a superb, internationally renowned hydraulic engineer, was actively involved in planning the dam.

What was the purpose of the dam? It was never used to generate hydroelectricity. Instead, the City of Lachute was anxious to have a reservoir created to store water that could be used in times of drought to supply the city with water. Another factor may have been the need for a secure water source for the new Mirabel airport. The city of Lachute, until about 7 years ago, drew its drinking water from a chain of interconnected lakes controlled by weirs (essentially small dams) at their outlets: principally Lac Barron, Lac Caroline, Lac Solar, Lac Dawson, Lac William, and finally, Lac Sir-John. The area drained by these lakes, the streams which flow into them, and the interspersed wetlands is known as the Williams Creek Watershed.

Prior to the construction of the Marchand dam in 1971, a much smaller dam had been constructed at the southern outlet of Little Lac Sir-John in 1943. (Little Lac Sir-John is the body of water immediately south of our causeway[63], near Entrance One.) During the Second World War, the Ayers woolen goods factory in Lachute had greatly increased production of blankets and uniforms for the soldiers and the factory required a steady, secure source of water to run the textile mills. It was for this purpose that the small dam was constructed, during the war, at the outlet to regulate the flow into Ruisseau Williams (Williams Creek) from which Lachute drew its water supply.

Since the construction of the Jean Marchand Dam, the water level of Lac Sir-John has been regulated by the City of Lachute through its control of both the inflow of Lac Beattie water into our lake via the large dam and its control over the raising and lowering of the lake level by the small dam at the outlet end of Little Lac Sir-John.

A series of other small weirs are located at the outlets of that series of lakes in the Williams Creek Watershed north of our lake, lakes whose water eventually flows into Lac Sir-John. Thus, the quality of the water leaving these lakes ultimately affects the quality of water in our lake.[64]

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[63] The causeway near Entrance One was an artificial construction of Norman Romer, built to allow access to the lots he was selling on the far side of the lake. At first, there was simply a bridge over that part of the lake.

[64] Lac Caroline and Lac Solar (located between the natural lakes Lac Barron and Lac Dawson) are artificial lakes created by Lachute to regulate the water supply for Lachute and therefore each has a weir at its

Changes brought about by the construction of the Marchand Dam:

The repercussions of the construction of the Jean Marchand Dam on the ecosystem were significant. The lake level rose by close to one meter. Shoreline erosion and the flooding of some lakeside properties resulted. For example, Norman Romer's original house next to the water was severely damaged, and in the 1970's, he successfully sued Lachute for property damage. However, in retaliation, the city condemned his water-damaged house and required it to be demolished.[65] The Gall's "Little Island" lost half its land due to the rise in water level, and the family successfully had its land value and taxes substantially reduced.[66] The clarity of the lake water diminished because of all the decaying vegetation, including trees, that were now permanently submerged after the water level rose by a meter.

The opening of the Beattie Lake Park:

In 2022, the municipalities of Lachute and Gore jointly opened a public park on the south shore of Beattie Lake just next to the top of the Marchand Dam. This park would allow Lachute residents access to a lake for a fee. An extensive trail network was built, and boats were provided by the park, partly in order to avoid the risk of park-goers introducing the very invasive species, Eurasian milfoil, which might make its way downstream into Lac Sir-John.

Prior to the opening of this park, the level of the water in Lac Beattie fluctuated tremendously from winter to summer. With the spring melt, the water would come over the top of the dam and by late summer, the lake had shrunk, leaving an extensive expanse of dry land. (Remember, the dam was built to function as a reservoir for Lachute's water supply.) Lachute used to carefully regulate the small dam at Little Lac Sir-John's outlet so that our lake's water level always remained

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outlet, controlled by Lachute. A board can be removed from the top of a weir to lower the lake level behind it; and conversely, adding one or more boards on top will raise the lake level. Note, that all water leaving a lake with a weir flows over the top of the weir (including anything in the surface water, such as an invasive species).

[65] According to Christopher Romer, Norman Romer's grandson.

[66] Information in this paragraph comes from John Gall.

high enough, even when almost no water was arriving from the dam via Lac Beattie.

After Lachute switched to deriving its water from the underground aquifer, and after the park had opened, Lachute's priority switched to keeping the Beattie lake water level high, at the top of the dam in all seasons to facilitate boat launching and swimming. This has had a negative impact on the residents of Lac Sir-John. All water now comes only over the top of the dam, and the top water layer, which is exposed to the sun, is warmer. This is believed to be a factor in the recent proliferation of excessive aquatic growth in our lake and the flourishing of Canadian pond weed (an indigenous aquatic plant formerly rare in Lac Sir-John, but now invasively expanding its habitat along our shores).

With the Beattie Lake water level now kept permanently at the dam's top, the city has no longer regularly been adjusting the Little Lac Sir-John outlet dam, and our lake has been experiencing radical fluctuations in the water level. Some residents have experienced flooding at times of high water levels, difficulty pumping water from the lake when levels are too low, and difficulty maintaining their docks at a proper level. Wildly fluctuating water levels create more erosion of the shoreline and make it impossible for the loons to reproduce successfully, since loons nest on land and then cannot walk to their nest when the water level drops.

Our lake residents are concerned that so much constant pressure of water (ten million cubic meters) on the dam, when formerly the water was only at the dam's top in during the spring melt, could shorten the life of the dam and eventually cause it to collapse. Dams of this type are expected to have a lifespan of about 100 years, if well built and well maintained. The Marchand Dam was built 53 years ago. This dam features two steel gates about halfway up so that water can be released periodically without always flowing over the dam's top. Only one gate still works, since even steel eventually rusts. Both gates have been badly in need of replacement for some years, but the city has been delaying.[67]

The municipality of Lachute has been negligent in regularly adjusting the outflow of the lake at the small dam at the outlet.[68] Our administration has repeatedly

[67] Information researched by Terry Brew. Average steel gate life is 30-50 years and more than 50 years have now passed.

[68] This dam features a guillotine-like blade at mid-level that can be raised or lowered as needed. Thus, the water should not need to come over its top.

contacted the city officials requesting more frequent adjusting of this dam, whenever needed (for example after a heavy rainfall). The city's response has been spotty. Recall that Lachute no longer depends on Lac Sir-John for its municipal water supply; therefore, its interest in regulating the dams has declined.

Our Executive has requested that the city proceed with a high-quality inspection of the Jean Marchand dam. Such inspection is required by law every decade. Lachute did commission a 2023 study of the two dams by Stantec Experts. The study concluded that it would be virtually impossible to provide both a steady lake level for the park and a good lake level for our lake residents at all seasons. Ultimately, it remains a political issue as to which of the two parties should have the right to a good lake level, the approximately 75 preexisting residences of Lac Sir-John or a new municipal park.

The LSJ Environment Protection Committee of the 1990's:

The LSJ Environmental Protection Committee was created in 1990 including Cheryl Amundsen, Pat Harries (former Lac Sir-John residents) and John Gall. The committee's main concern was overdevelopment along Lac Sir-John's shoreline and its impact on lake water quality. John Gall remained coordinator of the committee for most of the 1990s. The committee liaised with Fédération des associations pour la protection de l'environnement des lacs (FAPEL) and Programmes des lacs, and it provided advice to our residents on provincial laws/guidelines for the protection of our lake environment. In 1992, John put together a set of guidelines, *Protection of the Environment: Guidelines for Lac Sir-John*. It focused on measures to protect the shoreline. During the 1990s, on a few occasions, municipal inspectors were called in because of residents' violations of regulations protecting the shorelines. It was a "hot topic" at the lake. A lot of education was needed to inform residents about the importance of re-naturalizing the shoreline, about the Lachute and Gore environmental bylaws, and especially about regulations from the Quebec Ministry of the Environment.

John Gall's recent observations:

Three decades after the founding of the LSJ Environmental Protection Committee in 1990, in the autumn of 2023, John Gall returned briefly to the lake and canoed around the lakeshore. His observations are cause for reflection on our degree of progress.[69] He observed:

> "I have the perspective of observing Lac Sir-John's ecosystem since the 1950s along with family observations since the 1880s to offer a big picture take on changes to the natural environment.
>
> If the lake water were really pure, it would be drinkable which it has not been since about the 1940s when my ancestors stopped drinking it. Also, as an aside, I think it is relevant to note that low coliform counts don't mean the water supports animal life well – animal life at Lac Sir-John has gradually deteriorated in diversity and quantity since Beattie Dam (Jean Marchand Dam) was built in 1971.
>
> When I canoed around the lake in September 2023, I felt a little dismayed that many waterfronts have lost their native shoreline vegetation. In addition to this loss, Lac Sir-John's shoreline is challenged by the highway, the causeway, steep shoreline gradient, high residential density, and fertilized lawns. (Lawns are poor barriers to erosion and take away land best reserved for native plant species and trees.)
>
> While few new homes have been built recently, I noticed that many have new additions, probably putting more stress on septic systems. The rocky substrate and steep gradients rising from the shoreline increase the chance of faulty or overtaxed septic systems seeping into the lake.
>
> The construction of Jean Marchand Dam in 1971 was transformative (negatively so) in changing the lake ecology. Williams Creek and its inlet to Lac Sir-John used to be a bountiful breeding ground for all kinds of flora and fauna – incredible to canoe through in the 1960s. This creek directly fed our

[69] John Gall's comments come from email discussions with Susan Anastasopoulos on Nov. 22 and 23, 2023. His comments draw on his knowledge of ecology as a Vanier College graduate, observations growing up at Lac Sir-John, and from his years as Environment Coordinator.

lake with nutrients and wildlife. I think the dam and cold inlet water, along with the drastic increase in water levels, have reduced this bounty and biodiversity.

I notice that fish populations in the lake seem to be down (less fish seen rising to the surface and very little fish activity near the shorelines) when I visit. I also suspect that fish species diversity has declined. I don't see as many aquatic invertebrates along the shoreline when I visit the lake, and amphibians are drastically reduced. Factors related to climate change and shoreline degradation may likely be factors.

Warmer temperatures also pose many threats, including algal blooms. De-naturalized shorelines and lawn fertilization will make these blooms more likely too. I think lawns should be strongly discouraged.

Although awareness about shoreline re-naturalization has improved since the nineties, I notice many stone walls and minimal shoreline vegetation along stretches of the shoreline. I draw your attention to Paul Baillargeon's property. Back in the early-mid 90's, he had a bare stone wall completely surrounding the peninsula of his property. He got the idea to naturalize behind the wall with a thick row of native shrubs (sweet gale, I think). I remember his pride when he told me that he was going to do this. Needless to say, I had a big smile!

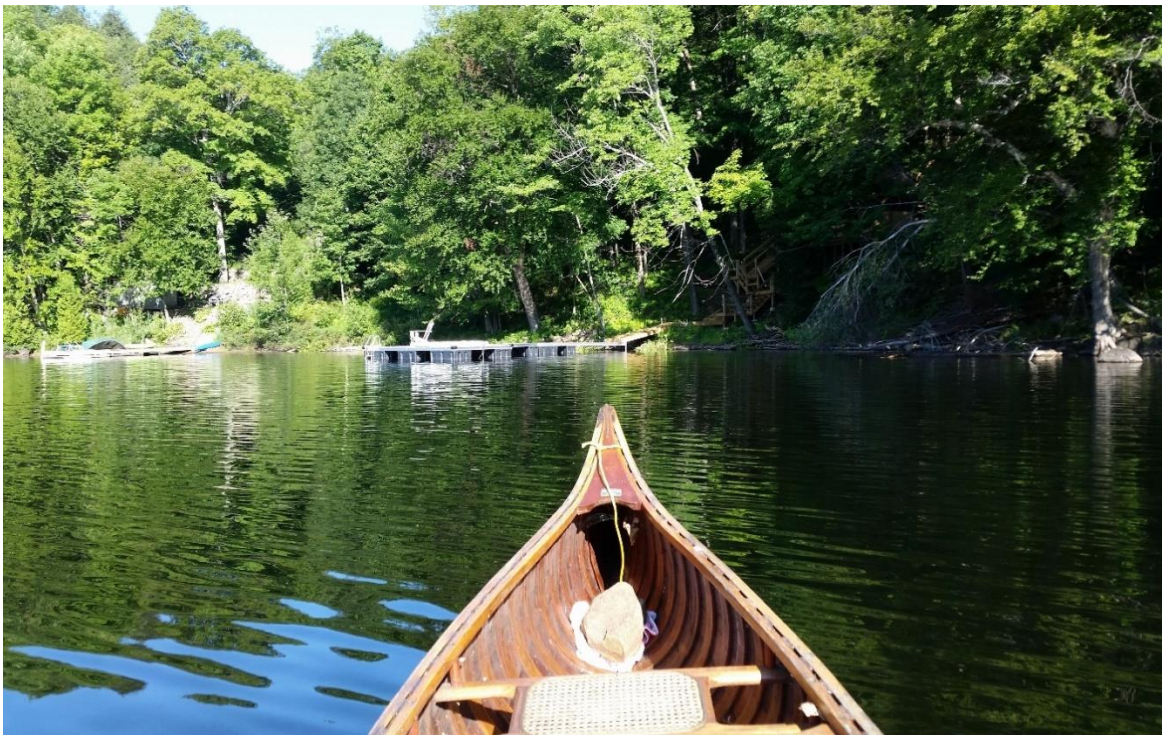
According to the law, there should be 10-15 m of naturalized land extending back from the high-water mark and a maximum opening to the shoreline of 5 meters (for docks, boats, etc.) Only some properties comply with the legal minimum of 10-15 meters. Lac Sir John is especially vulnerable to shoreline erosion due to the steep gradient and rocky shorelines, which means the 10-15 m. minimum should be adhered to.

Fortunately, Lac Sir-John has the lookout mountain which has a good stretch of native shoreline. But the Entrance 1 causeway and 329 bridge and denuded or minimally vegetated shoreline stretches are encroachers.

I suggest that ALSJ could serve by example in re-naturalizing large portions of its 7 common beaches. Beaches are anathema to shoreline protection. Perhaps 75% of the beaches could be naturalized, with a 5m window for swimmers and one or two other windows for boat access at each beach. (I'd be happy to participate in any beach naturalizing program.)

What I notice at Lac Sir-John may also be indicative of many Laurentian lakes. On the other hand – the fact that loons and other fish-eating waterfowl are visitors is a positive indicator that there are at least some fish.

The shoreline is truly the lungs of the lake. Lac Sir-John is truly a jewel! Wouldn't it be wonderful to honour it (and its Indigenous ancestry) with a ribbon of life all around its edges?"



In 1996, John Gall teamed up with Vanier College's Aquatics professor, Brian Scully, to write the *Lac Sir-John Volunteer Water Quality Monitoring Program Handbook*. Vanier College started annual water quality testing at our lake. John did sampling/testing in collaboration with the Lachute Filtration plant which analyzed the sampling. Lachute did this job pro bono because it was in Lachute's interest to know the water quality of our lake (which at that time supplied the Lachute drinking water). John usually sampled from several sites 2 or 3 times from June to September. The sampling included fecal coliform counts as well as total coliform counts. Vanier students only did the total counts, at the time. Fecal

coliform was a better indicator of septic sewage presence in the lake water. A team was formed to help with the water sampling. This team included Hélène Beauchamp, John Bishop, Line Jolicoeur, John Hamelin and others.[70] In more recent years, Doug Dempster was in charge of the water quality testing (along with Vanier students) and at present, our Environment Officer, Mariam Bowen, has assumed this responsibility.

With the initiative leading to the formation the not-for-profit corporation, Association Lac Sir-John, in the summer of 2023, an improved water-testing arrangement was adopted, including Lac Sir-John's participation in the RSVL[71] sampling program which measures water transparency, total phosphorus, chlorophyll, and dissolved organic carbon (from wood and leaves, and decomposed plant and animal material) to determine the health of a lake. [72]

It is worth noting that our local lakes in the Lower Laurentians have warmed by +.03 degrees Celsius in the last 15 years.[73]

A recent study has revealed that Lac Sir-John ranks among the three top lakes which are richest in biodiversity of flora and fauna in the MRC Argenteuil![74] Let's keep it that way.

[70] Most information in the above section comes from John Gall.

[71] RSVL = Réseau de surveillance volontaire des lacs, or in English VLMP = Quebec's volunteer lake monitoring program.

[72] Doug Dempster noted, in a 2020 Lac Sir-John newsletter, that for over a decade, organic material in the lake has been reducing water clarity and created an organic film on top of rocks in the lake. John Gall remembers reduced water clarity as far back as the 60s and 70s. Organic material is natural and does not pose any health risk. It does however make the water brown. Organic material comes from one of four sources: water coming over the top of the Marchand dam, autumn tree leaves, small streams entering the lake and recent high lake water levels that wash soil from the shoreline into the lake.

[73] "Dunany newsletter", Jacques Pigeon, June, 2023

[74] Species richness refers to the variety of different species found in a particular habitat. Biodiversity within a habitat refers to much more, including species richness within a given habitat, as well as the abundance of individuals within each species in that habitat (and genetic diversity among the individuals within a species), ecological diversity within that habitat, and functional diversity within that habitat (the interactions between the biota in that particular ecosystem).

The 2002-2025 battle over a planned residential development near the marshland and adjacent hilly ridge (Les Sommets) south of Kenny Lake:

This marshland and adjacent hilly ridge (Les Sommets) are a part of the watershed into Bishop's Creek which flows into Lac Sir-John.

About 20 years ago, Rock Poulin, our internationally renowned hydraulic engineer whose lake house bordered the stream from Kenny Lake, helped prevent the creation of an artificial lake (to be called Lake Phillip) between Lac Kenny and Lac Sir-John. This new lake was to begin where the present marshland south of Lac Kenny, supposedly created by a beaver dam, is located, and was to extend westward parallel to Lac Kenny. Waters leaving this artificial lake would flow south and empty into Lac Sir-John on its north shore (via Bishop's Creek), thus affecting our lake water; water which is used by a number of our households. The real estate company responsible (CADUS) had been formed by a group of German investors planning a residential development, Project Lakefield, throughout the area between Lac Kenny and Lac Sir-John.

The CADUS investors feared the German economy would suffer severely following German reunification, because the German Federal Republic would have to support the much poorer population of former East Germany (the German Democratic Republic). Apparently, the purpose of this development was to provide a safer investment and perhaps a Canadian refuge to which group members could relocate should tough times arrive for them in Germany. This was the time when the Project Lakefield people (CADUS) were trying to turn the tree-filled marsh into an artificial lake they referred to as Lake Phillip.

A judge, who was also a Lac Kenny resident, was concerned when he saw the trees in the marsh being cut. This judge contacted our resident, Rock Poulin, who conducted a huge amount of research and analysis on the potential negative consequences of this project. This judge also contributed to the effort.

There was a meeting between the Lac Kenny residents' association and the Project Lakefield people. Rock Poulin showed up with his extensive report and

they saw how complete and scholarly it was. The company in charge of the project pulled the plug on any further development and decided to wait.

The risk remained that the developer could wait it out until the opportunity came back.[75]

Since the blocking of this Project Lakefield in 2002, the land near the marsh and Bishop's Creek to Lac Sir-John has been sold and resold by several different real estate developers, but fortunately the forested land has remained largely pristine. Unfortunately, over the last decade or so, this marshy wetland (the so-called Lac Philippe), so valuable to numerous native species, has been blocked up at its south-eastern outlet, supposedly by a natural beaver dam, thus altering the natural flow of water out of the marsh eastward, then south through Bishop's Creek into our lake. Some of that marsh's water now also exits from the western end and eventually ends up in the East River (which ironically is west of us). Thus, unusually, this marsh-become-lake has two outlets.

More recently, a developer purchased the surrounding area intending to build a large number of small rental cottages. This rental cottage project along the marshland and stream was blocked in the summer of 2021 by residents of lakes Kenny and Echo. However, later in 2021, the land was sold to a new developer, Nicholas Ploffe-Desjardins, of GSLL Inc., who has been attempting to sell lots for about 15 houses along the crest of a hill located just south of the beaver-created lake and just north of and overlooking our lake. (As well, this developer has been as selling many more residential lots in an area farther east, just north of Rainbow Road).

Of special concern to our lake residents this "Les Sommets" planned development would be located along the crest of a pristine hill directly behind Lac Sir-John's north shore houses and our private nature reserve, which is only about 100 feet deep at that point. This development would be located in the watershed which drains directly into Lac Sir-John, principally via Bishop's Creek. Any eventual effects on the flora and fauna of this sensitive wetlands area, so near to our lake, would only appear in the future; as would any effects on our lake water, aquatic vegetation, and lake wildlife. It is anticipated that there would be a significant increase in nutrient-rich sediment entering Lac Sir-John via Bishop's Creek

[75] Information in the above paragraphs comes principally from Rocky Poulin (Rock Poulin's son) via Susan Bishop.

(certainly during the construction of the 60-foot wide access road and the deforestation needed to construct new houses, and probably long-term).[76]

This would accelerate the over-expansion of aquatic plant growth in our lake and contribute to its eutrophication (the process by which a lake eventually dies). Also, chemicals related to construction activities could not easily be filtered out, endangering marine life and numerous Lac Sir-John residents who rely on access to drinkable lake water (filtered and purified by their in-house water purification systems).

This residential development project has been actively opposed by our ALSJ, as well as the property-owners association of Domaine Lakefield (SPDL), and Conservation Lakefield (a nature preservation charity). ALSJ developed and submitted to Gore a detailed report on the potential environmental impact, including how the development plan contravened Gore's own Environmental Plan

[76] Picture below shows the stream from Kenny Lake flowing into Lac Sir-John.

and numerous other environmental restrictions. ALSJ also presented its case to Gore's mayor. SPDL collected over 650 signatures on its petition of opposition. Conservation Lakefield (a registered charity) is presently attempting to raise funds to purchase the land from the developer. If successful, this land would be transformed into a perpetual nature reserve. It would connect with our Lac Sir-John private nature reserve and other adjacent nature reserve land to the west and north, land already acquired by Conservation Lakefield; therefore, providing a large protected natural habitat for flora, fauna, and funga.

Thanks to the well-coordinated efforts of ALSJ, SPDL, and Conservation Lakefield, on June 17, 2024, Nicholas Desjardins signed a document accepting the offer to purchase presented by Patrick Demars, then president of Conservation Lakefield. If adequate donations and grants can be obtained by Dec. 2025, for the sum of $500,000 plus taxes, "Les Sommet" will be sold to Conservation Lakefield to be protected in its natural state in perpetuity; our lake water will remain purer and our pristine hilly viewscape preserved. With legal expenses, etc., a total of about $650,000 will be needed. Conservation Lakefield estimated that about half could be funded by grants, but the remainer would need to come from private doners.

In the autumn of 2024, our ALSJ member, Susan Bishop, undertook a massive fundraising campaign at our lake, visiting almost every residence. Her efforts have been extremely successful and by year's end, amazingly, over $120,000 have been donated by our generous residents and their families. At the time of this writing, it appears that we are well on the path of perpetually saving from development the "Summit" hill and the wetlands lying between the hill and our lake. Our residents have already been actively blazing new trails to the Summit, trails which Conservation Lakefield has pledged to make permanently available for use by our residents.

Establishing the Lac Sir-John Private Nature Reserve:

During the years of Covid 19, when many city people were looking for places in the Laurentians to avoid Covid and to work from home, a number of our residents began to think seriously about how to protect our privacy and permanently protect the Sijolm greenspace from the temptation to sell it to a developer. They saw the densification that was happening just north of us at Domaine Lakefield

where the developer was hoping to sell up to 500 residential lots, (and elsewhere in the Laurentians), and they saw all the new houses going up all along route 329. The Sijolm Executive Committee, together with the Board of Trustees, which was tasked with representing the interest of the shareholders, explored diverse options. They considered placing a moratorium on land sales (which could always be terminated) and donating the land to some kind of permanent conservation arrangement with a land conservation organization. The latter would mean Sijolm, the shareholders, and residents would ultimately lose control to the land conservation organization or possibly eventually the Quebec government. This land would also become open to the public.

Eventually, a superior option was discovered. If Sijolm simply asked the Ministry of the Environment of Quebec to "recognize" the land as a "private nature reserve in perpetuity." Sijolm could remain the owner of the forested greenspace and could offer our residents exclusive private access to the forest permanently. A further attraction of this option was that the municipal evaluation of the land was expected to drop to zero or close to zero, since the land could never be sold for development and therefore would have negligible commercial value. That benefit would save Sijolm approximately $6,000 a year in municipal property taxes.

Mathieu Madison's role: Sijolm Inc. was most fortunate to obtain the assistance of an outstanding local biologist and specialist in environmental management, Mathieu Madison, whose company, Caltha Conseils Inc., in July 2022, produced for us an extensive report which both set forth the ecological characterisation of the forested Sijolm property and developed a strategy of conservation for the property.[77] Mathieu personally walked all areas of the proposed nature reserve, carefully photographing and recording the characteristics of each ecological zone and all the species he observed. He even used a drone to study the characteristics of the tree canopy. In conclusion, his report found the natural milieus present in this territory to be of high ecological value, and thus, worthy of being preserved in perpetuity.

The issue: The issue remained as to whether the shareholders would be willing to give up the possibility of selling the land for a profit in exchange for saving the

[77] Mathieu Madison's report is available on the public access portion of the www.alsj.ca website. Its official title is *Caractérisation Écologique et Conservation* by Caltha Conseils Inc., July 2022

forested area as a permanent nature reserve, which would be good for the environment and would make a small contribution to combating climate change. A nature reserve would also permanently offer a lovely forest vista and the opportunity to immerse oneself in nature by walking its trails.

The Sijolm Board of Trustees believed that this decision was far too important to be made by the five Trustees alone. They wanted to honour their fiduciary duty to represent the interest of the shareholders by consulting them directly. Trustee Janet Donald spent months carefully tracking down all shareholders who could be located. In addition, notices seeking shareholders were placed in French and English newspapers in Montreal and also in an Ottawa paper. Eventually, Sijolm was ready to call a Special General Meeting of its shareholders for Sept. 8, 2022.

At the Special General Assembly, prior to the vote, Mathieu Madison delivered, in an impressive PowerPoint presentation, a review of the special natural features he had identified and he answered a multitude of questions from shareholders.

The decision: For the overwhelming majority of shareholders, the choice was obvious. At the Special General Assembly held Sept. 8, 2022, shareholders holding 83% of the shares voted (in person or by proxy) in favour of applying to the Ministry of the Environment to have Sijolm's greenspace recognized as a private nature reserve in perpetuity, and, in a vote on a second resolution, shareholders of 85% of the shares voted in favour of imposing a moratorium on the sale of any of this land until that recognition from Quebec arrived.

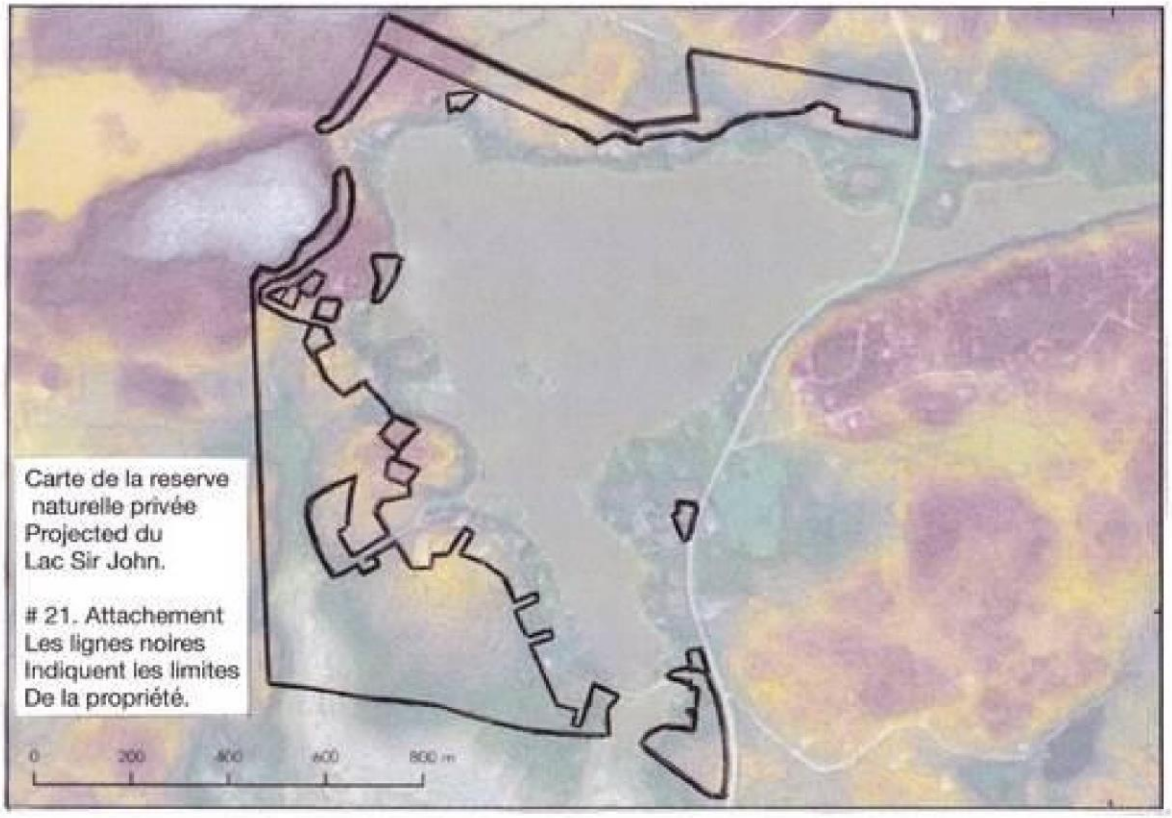
Trailblazing and the application: As the excitement of creating a perpetual private nature reserve grew and the team of Terry Brew, Mariam Bowen, and Doug Dempster set to work preparing the detailed application for the Ministry of the Environment, groups of residents joined work parties on Saturday mornings to prepare walking paths through our forest. Credit goes especially to Peter Nicholson and Mariam Bowen for leading the trailblazing and for carefully marking the footpaths.

It took a complete year to prepare the application of about one thousand pages (containing 383 separate files). The separate deeds of all the various pieces of land, originally purchased separately, which would go into the nature reserve had

to be located and scanned.[78] Numerous essays needed to be written and Sijolm was required to identify for which specific purposes the land could be used, and what activities would be forbidden or allowed in the nature reserve. At last, in October of 2023, the application to have our Lac Sir-John Private Nature Reserve recognized by the Quebec Ministry of the Environment as a private nature reserve in perpetuity was officially submitted to the Quebec government.

A wait-time of several years was anticipated before formal recognition; however, SIJOLM began immediately to refer to this forested buffer zone as the Lac Sir-John Private Nature Reserve.

[78] Sijolm Inc. property designated for the Lac Sir-John Nature Reserve is outlined in black on the following map.



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10 minutes of forest destruction on May 21, 2022; the "derecho":

Around 3:00 PM on May 21, 2022, a powerful derecho storm swept across Lac Sir-John.

A derecho (/dəˈreɪtʃoʊ/, from the Spanish word "derecho" [deˈretʃo], meaning "straight" as in a straight direction) is a widespread, long-lived, straight-line windstorm. It is associated with a fast-moving group of severe thunderstorms known as a mesoscale convective system.[79]

Derechos are wind swaths which are often about 650 Km long and 100 Km wide. This particular derecho began in Michigan, crossed Ontario north of Toronto, then hit Ottawa and entered Quebec just north of Montreal. Tornadoes often form within derechos but are hard to precisely identify as such. We, at the lake, certainly must have experienced one or more small tornadoes.

Accompanying the derecho, as it swept through our forests, was a mini tsunami. A huge wave was pushed up by the wind and swept across the lake lifting and displacing rafts, docks, and boats. Witnesses said that the lake became as rough as the ocean. Sand at the shallow bottom near the shore of the lake was swept away by the strong waves.

Within 10 minutes, massive destruction occurred around Lac Sir-John. Trees went through residents' roofs and balconies. Philippe Laurent and his wife, Catherine, were boating and about to go further out around the island, when one of them noticed dark sky on the horizon. As the rapidly moving storm winds arrived, they barely made it home in time to rush into the basement. Then a tree came crashing through the roof into their dining room and another on their balcony. Libby Barrett was trapped at home for 3 days without food, water, electricity, or any means of communication. Everyone has a story! A number of residents went door to door to check on others. Residents were traumatized, yet resilient. Many thanks to our Roads Director, Wayne Chambers, for staying on top of the situation and seeking help immediately.

[79] Wikipedia

Worst hit with felled trees was the Entrance Three northern lake road and its adjacent properties. It took 6 days of neighbors working with their chain saws to open Entrance Three so that Hydro-Quebec could restore power to homes. Our principal hero was Chris Cormier who worked with his chain saw clearing trees blocking the back road from Entrance One for 6 hours, even after dark and surrounded by blackflies, just get home. The following days, Chris continued to cut the trees lying across the road until Entrance Three was opened. Chris was joined by a number of our valiant men, especially his neighbour, Stefan Pommet, to liberate us from our trapped condition.

Telephone and internet services were not restored to the northern section for two and a half weeks and the tower for internet reception for the southern section of the lake was felled in the storm, so that a month after the storm, internet had still not been restored to the southern section (due to a damaged tower part which was on back order).

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Association Lac Sir-John's plans to address the future adverse impact of disasters, emergencies, and road damage brought on by global warming and climate change:

During the summer of 2023, a new, not-for-profit organization was formed by lake residents, Association Lac Sir-John (or ALSJ). All lake residents were invited to become members. At present, it is the Association Lac Sir-John that is engaged in many efforts to address many local environmental problems and to prepare for disasters and emergencies brought on by climate change.

The ALSJ Emergency Plan:

With the realization that climate change stemming from global warming would likely bring more frequent severe weather, in the autumn of 2023, the President of Association Lac Sir-John, Douglas Dempster established a special task force headed by Livio Merlo to help prepare the lake community to respond to emergencies such as windstorms, ice storms, severe snowstorms, prolonged power outages, forest fires, and flooding. Additionally, recently, our roads have been subjected increasing damage from unusually heavy rainstorms brought on by atmospheric rivers and stalled storms.

At the ALSJ Annual General Meeting of October 20, 2024, Association members unanimously approved a new ALSJ Emergency Plan. Our plan includes advance preparedness methods for various types of potential emergencies, warning methods, an emergency contact list and map, both immediate and sustained actions to be taken, an emergency ALSJ chain of command, resources available, and much more.

The ALSJ Roads Improvement Master Development Plan:

To tackle the escalating problem of road damage, another task force headed by Wayne Chambers drafted a 25-page Roads Improvement Master Development Plan, which was also unanimously adopted by the members at the October 20, 2024 ALSJ AGM.

Because our roads were poorly constructed with a round stone base over six decades ago, because ditches have not been kept properly cleared, and because

climate change has brought damaging heavier rainfalls, and because of initial improper snow removal techniques by Charex Inc. (which, while plowing our roads, removed the top gravel layer leaving only a dirt/mud base), our roads were very subject to a multitude of potholes, etc. Our roads improvement plan calls for the gradual rebuilding of our roads properly over a period of approximately a decade. The plan divides the Sijolm roads into seven sections, and 19 separate projects have been identified. Total cost is estimated to be up to $200,000. This cost will require a significant increase in annual dues and probably a substantial fund-raising effort.

Recent joint regional efforts to address the challenges arising from the local impacts of climate change, such as radically fluctuating water levels, harmful invasive species, and the deforestation of local forests for residential development:

In the last few years, our lake administrations, first under Sijolm Inc. and now under the Association Lac Sir-John, have joined several local and regional organizations to share information and cooperate in addressing the challenges arising from the local impacts of climate change, new harmful invasive species, radically fluctuating water levels, and the deforestation of local forests for residential development. These organizations include the association of lakes on the Williams Creek Watershed, the Alliance of Gore lakes, and Abrinord. Joining Abrinord means ALSJ will be participating in the protection of water resources for the entire watershed which flows into the North River (as does Williams Creek), which in turn flows into the Ottawa River near St. André Est.[80]

[80] Abrinord, the watershed organization of the Rivière du Nord, is one of the 40 watershed organizations (OBV) officially recognized by the government of Quebec in the *Law affirming the collective nature of water resources and promoting better governance of water and associated environments*. The organization is responsible for planning and coordinating integrated water management in the area entrusted to it. Founded in 2003, Abrinord constitutes a consultation and planning table whose primary mandate consists of developing a Water Master Plan (PDE), updating it, as well as promoting and monitoring its implementation.

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It is my hope that this history will continue to be updated by future generations of Lac Sir-John natural history enthusiasts. Susan Anastasopoulos 2025

Merganser fledglings rest on my waterfront's "Duck Rock". (below).

A faint wintery trace of fauna life…. (below)

Acknowledgements:

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And yes, summer always returns, bringing to us its renewed rich variety of flora and fauna. This Luna Moth, resting on my windowsill, is seen as a symbol of love, beauty, rebirth, and purity.