



2018 Report and projections for 2019

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CIEL director

In 2018 we opened our Center, something I'm quite proud of!

The public's response was very positive.

People were impressed and surprised by the quality and professionalism of the exhibits (if I may say so myself!), and in some cases had quite emotional responses to the exhibits, saying they were touched that we were trying to remember and preserve an epoch they built and lived in.

These responses were equally expressed on social media.

We ensured that CIEL's presence in on-line media was regularly updated by the publishing of posts on on-going research and discoveries. The public's interest for these science-related posts is undeniable, and encouraging.

CIEL hired a youth from the lake to guide and greet visitors at the Center. Maxamillion Yates did a great job, in french, english AND spanish! (this was done without the financial aid of government grants, since he was not eligible, going back to school in the USA.) Max worked for 6 weeks. For the rest of the season, I acted as guide, which limited my time on (in!) the lake!

So we are looking for a solution to this for 2019, either by hiring someone, or/and by developing a virtual audio-video guide.

Aside from the opening and staffing of the Center, below are CIEL's accomplishments for the past year.

- An exhibition and guided visits for the Arts et Culture event, August 4-5-6th.
- An exhibition and guided visits for the Journées de la Culture, 28-29-30 Sept.
- Conference by Martin Lominy on Fishing in Prehistory, 5th of August. (sold out)
- A day of museum exhibits and conferences at the Municipality of Gore, 20th of October. Covered by regional papers and T.V., co-organized with Les Sentiers De Gore.
- Ongoing collaboration with Ottawa University geographers for research on lacustrine marble erosion processes and xenoliths.
 - Retrieving of marble samples attached the year before along a buoyed line in the deepest part of the lake.
 - Filming of laboratory studies of samples at the Advanced Research Center in Ottawa.
 - Conference by Professor B. Lauriol and B. Faucher at the CANQUA-AMQUA 2018 meeting in Ottawa, on Lac-des-Seize-Îles's marbles and xenoliths (inclusions). This being the first conference on their study and hypothesis concerning the fact that LDSI might be a lot older than presumed.

This collaboration started with our discovery and filming of exceptional marble formations in the lake 3 years ago. The geographers research will lead to publication in scientific literature about a new concept of glacial, sub-glacial and post-glacial erosion.

Lac-des-Seize-Îles will be central to those studies.

- Milfoil Project

With the help of the MRC des Pays-d'en-Haut, Municipality of Lac-des-Seize-Îles and the Friends of the Lake association, CIEL's main preoccupation for 2018 was the milfoil issue.

- We removed all of the milfoil colonies in Lac Laurel that had been identified by M. André-Philippe Hébert and CRE Laurentides. (Regional Environmental Council)
- We developed, with the authorization of Ministère de la Faune, the installation of a milfoil barrier at the dam on Lac-des-Seize-Îles.
- We removed all of the milfoil around the main shoal in Lac-des-Seize-Îles (Kelly's shoal, or Big Bay Shoal).

In 2017 the annual count of lake trout eggs was between 4 and 7 eggs per square meter (optimistically) The primary reason being that milfoil was slowly but surely choking the spawning grounds. I'm pleased to report that this year, after the cleaning of the shoal, the egg count is up to greater than 35 per square meter!
The normal count for a healthy shoal is between 30 and 50 eggs per square meter.
My counting was done a bit early, and so I believe the actual final result to be over 40 per square meter.

- We presented 2 public workshops on milfoil management and one private one for a group of municipal residents. The response was great, specially from the young people.
- We worked with scuba divers Max and Alison Gilday from the lake to conduct an experiment in Raymond's Bay. We removed a small section of milfoil from the large colony in the bay
This experiment aims at verifying an observed response from the invasive plants to the removal of parts of some colonies. (they appear not to thrive when neighbouring plants are removed)
In 2019 we will see the results. This could be a new understanding of the "mechanics" of the plant and offer a new weapon against the milfoil invasion. We look forward to an on-going participation of these fine new divers!
- We located and inspected new milfoil colonies that need to be removed, being in high boat traffic areas. It is very important that they be addressed .

Our budget for milfoil projects was expended well before the work was completed.
The rest of the work was done voluntarily.

- Studies on lake trout

- Our video and photographic documentation of an unheard of behavior of trout in the lake ignited the interest of many biologists from Toronto and Ottawa universities. Those biologists are very interested in our pursuit of this phenomena related to an alternate spawn of a distinct trout population. This population could be genetically different from larger trout that spawn on shoals.

We have purchased instruments needed in the study (using personal money) and have produced related underwater filming.

- Discovery of a geologic phenomenon never before found in Québec.
Accretions (a gradual growth) of iron-manganese produced by bacteria were found in 2 areas of the lake.
They are now the subject of a new study at the Ottawa University.
Some of those accretions were dated by radio-carbon as being 1200 years old!
- We took samples for biochemical analysis of the lake's water for the RSVL program and took water clarity measurements every week, all summer. This was previously done by Lucie Barbeau.
Water clarity was quite good, despite an in-depth algae bloom, under the thermocline, (around 5-6 meters

We spoke in the milfoil workshops about the importance of not putting ornamental plants on docks or near water, as the nutrients in the earth invariably ends up in the lake and feed algae blooms.

We also took samples of water under the ice in the spring and in open water for the geographers studies. (Mr. Lauriol and Faucher)

- CIEL was asked to inspect and document the finding of a possibly prehistoric duggout canoe in an Outaouais region lake. We are very proud of this, as it really is a recognition of our growing expertise in underwater filming and archeology.
- Finally, CIEL was the object of many articles in regional papers and dive magazines.

2019 PROJECTS

We are certainly are not short of ideas, and there is plenty of work to be done!

- It is imperative that we find a solution hiring someone to staff the Center in the municipal hall. I cannot be present to greet visitors and pursue the work and research in the lake. Maxamillion will not be available next summer, or at least only for a short time.
We could install a virtual audio-video self guided system.
Visitors could obtain all the info on whole sections or artifacts on their phones or tablets.
This solution would eliminate the need to hire someone, although it would be less effective than a live guide. I will try to be present as often as I can.

CONCERNING FOLLOW-THROUGH ON THE MILFOIL PROJECT :

- Inspection and removal of an expected 5% regrowth in Lac Laurel
Estimated 5 days work, 3 divers. \$6000 plus air fills (\$350) transport/time (\$840)
- Inspection and removal of an expected 5 to 15% regrowth at Big Bay (Kelly's) shoal
5 days, one diver. \$2000 plus air fills (\$120) transport/time (\$540)
- Removal of milfoil on shoals near Cook Island (high traffic area towards foot of the lake)
4 days 2 divers. \$3200 plus air fills (\$200) transport/time (\$540)
- Removal of milfoil on the shoals around Prentice Island (high traffic area)
- One or 2 days work at the marina.
One diver, one assistant. \$640 to \$1280 plus air fills (\$50) transport/time (\$280)

These 5 actions are the most important/urgent.

Others are highly desirable :

- Removal of milfoil on 2 other lake trout spawning grounds.
Around 6 days, 2 divers. \$4800 plus air fills (\$300) transport/time (\$810)
- Removal of a problematic section of milfoil in Hammond Bay (a colony of plants invading the navigation alley leading to the boathouses).
3 days, one diver plus one assistant in kayak. \$1900 plus air fills (\$80) transport/time (\$280))
- Reinstallation of modified floating milfoil barrier at the dam.
One day work, 2 men. \$320.

CIEL would also like to pursue on-going research, which would require time and money.

This research until now has been conducted voluntarily with our own resources, and a few donations from visitors, residents, and Friends of the Lake.

Those projects have already contributed to making Lac-des-Seize-Îles known in archeology, geology and biology circles.

We are certain that this is only the beginning.

Coming CIEL publications and video documents will also contribute. One of these videos is almost finished and will be online by mid-february.

- Collecting of more samples and measurements for the geographers.
- Ongoing work with biologists Sylvain Miller and Anne Létourneau for the study of plankton and algae in the lake, and how to prevent blooms.
- Participation in the publication of articles in specialized magazines.
- Collecting of samples of iron-manganese accretions
- Pursuing of experiments on milfoil reaction to aggressive removal of parts of colonies
- Writing and publishing of an article in Canadian Geographic Magazine on lacustrine marble formations.
- Exhibitions for Journées de la Culture 2019
- Conference in Laval, QC., at the Centre d'Interpretation de l'Eau
- Conferences on different subjects at le CIEL. (Archeology, birds, geology)

- Filming of videos by Richard Lahaie

**These are all under way, or projected to start in the coming year.
We have other ideas but they will have to wait a bit longer...**

- Buying a bigger boat, suitable for more than one diver and equipment.

I would like to thank M. Hal Myers for the donation of a small aluminum boat last year, that can be used for one-diver trips.

Also thanks to M. Denis Charlebois for the use of a larger boat all summer long that we used for 2 and 3 divers outings and for the milfoil work.

- The creation of a coffee-table book on the underwater marvels of the lake. The sales of this photo-art book would serve as a means of financing some projects.

- The production of a large scale model of the underwater landscape of the lake and its main areas of interest.

- The study and collecting of pollen and sediment samples from the deepest point in the lake.

- Archeological searches in areas where we believe there is potential for discovery

- Studies on the laterality in bass and its role in fish hierarchy.
(Yes, there are righties and lefties in fish also!!!)

We could go on and on...!

But essentially, this paper looks to illustrate CIEL's activities, and that I humbly believe these activities can have an impact on the enhancement of Lac-des-Seize-Îles, culturally, ecologically, and socially.

For this, we need everybody's continuing collaboration and help.

THANK YOU.

Jean-Louis Courteau
Director, CIEL

