Dr. Cécilia Barouillet (Ph.D.)
**Postdoctoral researcher**
VP Communication & Publication, International Society of Limnology (SIL)
Member of the organizing board, sedaDNA scientific society

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I am paleolimnologist & limnologist. I combine monitoring data, the paleolimnological approach and molecular biology technics to reconstruct the long-term ecological trajectory and historical functioning of lake ecosystems in response to environmental change and anthropogenic stressors at the local and global scale. I am specialized in the analysis of molecular dataset, modeling of long-term time series and multivariate datasets. I am particularly interested in finding ways to integrate the long-term perspectives offered by paleolimnological data into conservation efforts and management practices.

## SKILLS

### Personal Skills

Approachable - Cooperative – Determined - Devoted - Energetic - Friendly - Honest - Enthusiastic - Motivated - Flexible - Open-minded - Responsible - Curious – Organized

### Scientific Skills

Paleolimnology, Paleo-ecology, Freshwater Biology, Molecular Ecology, Statistical analysis, Analysis of time-series, Bioinformatic

### Languages

French (*First language*) - English (*Bilingual*) - Spanish (*Beginner*)

### Certification and Training

Driver's Licence - WHMIS Training - MED3 (Marine Emergency Duties for Small Vessels) – Pleasure Craft Operator Canadian Licence

### Software Skills

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| *Advanced* | R (RStudio) – ORIGIN - C2 –TILIA - Open Office – PRIMER – Canoco5 – Illustrator |
| *Intermediate* | Bash (Linux) – Mothur - ArcGIS - QGIS |
| *Beginner* | Julia – HTLM |

## ACADEMIC QUALIFICATIONS & POSITIONS

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| **2020-Today** | Postdoctoral Researcher at the Centre Alpin de Recherche sur les Réseaux Trophiques et Ecosystèmes lacustres (UMR CARRTEL, Thonon-les-bains), Institut National de Recherche pour l'Agriculture, l'alimentation et l'environnement (INRAE). |
| **2016-2019** | PhD Research at Queen's University (Enrolled directly from a M.Sc.)- *Kingston (ON), Canada*<br>**Supervisor:** Dr. Brian F. Cumming (*Queen's University, Ontario*) |
| **2014-2016** | M.Sc. Research at Queen's University (Enrolled directly to a PhD)- *Kingston (ON), Canada* |
| **2011-2014** | Licence BOPE (Biologie des Organismes, des Populations et des Ecosystems) at Université Paul-Sabatier Toulouse III - *Toulouse, France* |

## PUBLICATIONS

### Peer-reviewed publications

**2022** **Barouillet** C., M-E. Monchamp, S. Bertilsson, K. Brasell, I. Domaizon, L. S Epp, A. Ibrahim, H. Mejbel, E. Canisius Nwosu, J. K. Pearman, M. Picard, G. Thomson-Laing, N. Tsugeki, J. Von Eggers, I. Gregory-Eaves, F. Pick, S. A. Wood, E. Capo. Investigating the effects of anthropogenic stressors on lake biota using sedimentary DNA. *Freshwater biology, **00**,* https://doi.org/10.1111/fwb.14027
**Barouillet** C., V. Vasselon, F. Keck, L. Millet, D. Etienne, D. Galop, D. Rius and I. Domaizon. 2022. Paleoreconstructions of ciliate communities reveal long-term ecological changes in temperate lakes. *Scientific Reports **12***, https://doi.org/10.1038/s41598-022-12041-7

**2021** Laird, K. R., **Barouillet**, C., Cumming, B. F., Perrin C. J., and D. T. Selbie. 2021. Influence of glacial turbidity and climate on diatom communities in two Fjord Lakes (British Columbia, Canada). *Aquatic Sciences* **83**, https://doi.org/10.1007/s00027-020-00767-3

**2019** **Barouillet**, C. 2019. Long-term response of sockeye salmon (*Oncorhynchus nerka*) nursery lakes to climate and watershed management activities in British Columbia (Canada). PhD, Queen's University
**Barouillet**, C., B.F. Cumming, K.R. Laird, C.J. Perrin and D.T. Selbie. 2019. Influence of glacial flour on the primary and secondary production of Sockeye Salmon nursery lakes: a comparative modern and paleolimnological study. *Canadian Journal of Fisheries and Aquatic Sciences* **76**, https://doi.org/10.1139/cjfas-2018-0372

### In preparation

**Barouillet** C., Capo E., Jenny J-P., Debroas D., Sabatier P., Domaizon I. Assessing the resilience and resistance of microeukaryote communities to eutrophication and climate change in large temperate peri-alpine lakes.
**Barouillet** C., Capo E., Domaizon I. Chapter 6: Protists DNA archives in lake sediments. *In Tracking Environmental Change Using Lake Sediments: Volume 6 - Sedimentary DNA. [Eds] Eric Capo, Cécilia Barouillet*, *John P. Smol*
Capo E., **Barouillet** C., Smol J.P. Chapter 1: Using sedimentary DNA to unravel past changes in biological communities Protists DNA archives in lake sediments. *In Tracking Environmental Change Using Lake Sediments: Volume 6 - Sedimentary DNA. [Eds] Eric Capo, Cécilia Barouillet*, *John P. Smol*
Capo E., **Barouillet** C., Smol J.P.Tracking Environmental Change Using Lake Sediments: Volume 6 - Sedimentary DNA.
Soares LMV, Desgue-Itier O, Domaizon I, **Barouillet** C, Jenny J-P. Integrating lake biogeochemical models into paleolimnological approaches: Case study of perialpine lakes over the period 1850–2100

### Research Report

Perrin C. J., **C. Barouillet**, B. F. Cumming, D. T. Selbie, K. R. Laird, B. Stables, J. Hume, S. Harris, A. Hebert, S. Bennett. 2017. Bridge River Water Use plan – Seton Lake aquatic productivity monitoring: progress in 2016.

Perrin C. J., **C. Barouillet**, B. F. Cumming, D. T. Selbie, K. R. Laird, B. Stables, J. Hume, S. Harris, A. Hebert, S. Bennett. 2016. Bridge River Water Use plan – Seton Lake aquatic productivity monitoring: progress in 2015.

Perrin C. J., **C. Barouillet**, B. F. Cumming, D. T. Selbie, K. R. Laird, B. Stables, J. Hume, S. Harris, A. Hebert, S. Bennett. 2015. Bridge River Water Use plan – Seton Lake aquatic productivity monitoring: progress in 2014.

## Peer-Review EXPERIENCE

Pre-publications reviews of 2 manuscripts for: (1) Journal of Limnology, (1) Journal of Paleolimnology, (1) Journal of Great Lake Research

## RESEARCH PROJECT

**2022-2024** Pole RD Ecla, Axe 1 Caractérisation et évaluation de l'état et des trajectoires des milieux lacustres, de leur biodiversité, et de leur fonctionnement – Mieux comprendre et caractériser le rôle des micro-prédateurs dans les réseaux trophiques lacustres – led with Dr. Isabelle Domaizon

**2020-2022** Pole RD Ecla, Axe 2a Surveillance, impact et adaptation au changement climatique – Réponse à long-terme de la diversité des communautés lacustres : diagnose des impacts climatiques et anthropiques locaux via l'application ADN sédimentaire – led with Dr. Isabelle Domaizon

**2016-2019** PSC Northern Fund 2016 – Babine Lake, BC, Sockeye Salmon nursery ecosystem structure, functioning and productive capacity: an integrated limnological, paleolimnological, and fisheries assessment – led with Dr. Brian F. Cumming, Dr. Kathleen R. Laird & Dr. Daniel T. Selbie

**2014-2016** Bridge River Water Use plan – Seton Lake aquatic productivity monitoring – led with Dr. Brian F. Cumming, Dr. Kathleen R. Laird & Dr. Daniel T. Selbie

## TEACHING & MENTORSHIP

### CO-AUTHORED THESIS

The response of Cladocera assemblages and size structure to multiple stressors in three Kawartha Lakes (Ontario) over the last 200 years. Shirui Li. MSc Thesis. Defended in 2021.

### MENTORSHIP OF UNDERGRADUATE THESIS

**2018-2019** **Haley Richardson –** What factors are causing a shift in *Daphnia* composition in the Adirondack Park (New York, USA)?

**2017-2018** **Madeleine Stein -** Understanding changes in subfossil Cladocera in response to multiple stressors at Pigeon Lake

**2016-2017** **Sydney Hennessy -** Assessment of regional changes in cladoceran zooplankton assemblages since pre-industrial times from reference lakes from the Experimental Lakes Area (Ontario, Canada)

**Aimee Bertin -** In search of a climate signal: changes in cladoceran assemblages since preindustrial times in minimally-impacted Adirondack references lakes

**2015-2016** **Donna Paznar** - Changes in cladocera assemblages throughout the Holocene in Wolf Lake (Adirondacks, New York, USA)

### LECTURES

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| **2022** | M2 ECOMONT - module "Ecologie à large echelle : Retro-observation et Ecologie spatiale". | Rétro-observation et approches sedDNA en paléo-limnologie |
| **2022** | Summer School UNITA - USMB et Università di Torino, « Lakes and rivers ecological monitoring» (Thonon-les-bains, France) | Sedimentary fossils & genetic archives as a powerful tool to reconstr long-term biological changes |
| **2021** | Stage Master USMB ECOMONT (Thonon-les-bains, France) | Paleolimnology & sedimentary DNA: Reconstruct past environmental changes. |
| **2019** | BIOL335-Limnology and Aquatic Ecology (Queen's University, Kingston, Canada) | The effect of the Bridge River Diversion on the pelagic production of Seton Lake, a Sockeye Salmon nursery lake (British Columbia, Canada) |
| **2018** | Geography Course (University of Ottawa, Ottawa, Canada) | Long term environmental change in Freshwater Ecosystems) |
| **2018** | BIOL527-Community and Ecosystem Ecology (Queen's University, Kingston, Canada) | Perspective of graduate studies from a (veteran?) graduate student & sharing about my research |
| **2017** | BIOL303-Community and Ecosystem Ecology (Queen's University, Kingston, Canada) | Long term environmental change in Freshwater Ecosystems |
| **2016** | BIOL303-Community and Ecosystem Ecology (Queen's University, Kingston, Canada) | Long term environmental change in Freshwater Ecosystems |

### TEACHING EXPERIENCE

**2022** **Introduction to paleolimnology & sedimentary DNA analysis –** Field work demonstration, Lab experiment & Lecture

**2019-2020** **BIOL205 Mendelian and Molecular Genetics** – Laboratory Experiment & Working Groups

**2018-2019** **Head Teaching Assistant BIOL335 Limnology and Aquatic Ecology** - Laboratory Experiment, Lectures, organization of field work week-end for 25 students
**2016-2017** **BIOL422 Conservation Biology** – Working Groups
**2016-2017** **BIOL202 Diversity of Life II** - Laboratory Experiment
**2016-2017** **BIOL335 Limnology and Aquatic Ecology** - Laboratory Experiment
**2015-2016** **BIOL201 Diversity of Life I** - Laboratory Experiment
**2015-2016** **BIOL319 Introduction to Ethnobotany (Online Course)** – Working Groups
**2014-2015** **BIOL103 Introductory Biology of Organisms** – Laboratory Experiment & Working Groups
**2014-2015** **BIOL205 Mendelian and Molecular Genetics** – Laboratory Experiment & Working Groups

## SEMINARS & CONGRESSES

### Seminars

**2022** Studying the long-term dynamic of freshwater ecosystems through sedimentary DNA research: a potential tool for management and conservation – Limnological Institute, Konstanz Universität, Konstanz, Germany
**2021** Share personal experiences and advices about my first year after a PhD – Virtual Seminar, PEARL Lab, Kingston (ON), Canada
**2020** Etude paléolimnologique de l'influence du climat et des perturbations anthropiques sur les frayères à saumon rouge en Colombie Britannique (Canada) – UMR CARRTEL, Thonon-les-bains, France
**2019** Long-term response of sockeye salmon (Oncorhynchus nerka) nursery lakes to climate and watershed management activities in British Columbia (Canada) – Departmental Seminar, Department of Biology, Queen's University, Kingston (ON), Canada

### Congress Presentations

**2022**

**Barouillet** C., Gonzalez Trujillo J.D., Geist J., Gíslason G.M., Irvine K., Boon P.J. Summary of the workshop: *"Limnology at the crossroads: its role in freshwater conservation and management?" – SIL (International Society of Limnology), Berlin, Germany*

**Barouillet** C., Nwosu E., Capo E., Epp L., Domaizon I. Studying the long-term dynamic of freshwater ecosystems through sedimentary DNA research: a potential tool for management and conservation. – *SIL (International Society of Limnology), Berlin, Germany*

Soares, L.M.V., Desgue-Itier, O., Domaizon, I., **Barouillet**, C., Jenny, J-P. Integration of lake modeling, paleolimnological records and in situ measurements towards the reconstruction of dissolved oxygen concentrations in peri-alpine lakes over 250 years (1850–2100). – *IAL-IPA, Argentina (International Paleolimnological Association)*

Soares, L.M.V., Desgue-Itier, O., Domaizon, I., **Barouillet**, C., Jenny, J-P. Integrating lake modeling and paleolimnological records for long-term simulations of water quality in a deep peri-alpine lake. – *SIL (International Society of Limnology), Berlin, Germany*

**2021**

**Barouillet C.,** Vasselon V., François K., Millet L., Etienne D., Galop D., Rius D., and Domaizon I. Changes in ciliate communities reveal functional modification of lakes ecosystem over the last century. – *SIL (International Society of Limnology) 2021, Online, Oral Presentation*

Rotschi J., Domaizon I., Gregory-Eaves I., Lami A., **Barouillet** C., Etienne D., Messager, E., Jenny J-P. The paradox of increasing long-term carbon sequestration in lake ecosystems despite reoligotrophication: the case of four large French perialpine lakes– *SIL (International Society of Limnology) 2021, Online, Oral Presentation*

**Barouillet C.,** Rotschi J., Jenny J., Lami A., Etienne D., Domaizon I. Reconstructing the long-term dynamic of pigmented communities in freshwater ecosystems using qPCR. – *EGU (European Geosicences Union) 2021, Online, Oral Presentation*

Rotschi J., Domaizon I., Gregory-Eaves I., Lami A., **Barouillet** C., Etienne D., Messager, E., Jenny J-P. The paradox of increasing long-term carbon sequestration in lake ecosystems despite reoligotrophication: the case of four large French perialpine lakes – *EGU (European Geosicences Union) 2021, Online, Oral Presentation*

**2019**

**Barouillet C**., Meyer-Jacob, C., Mushet, G.R., Hennessy, S., Bertin, A., Cumming, B.F. Dissolved organic Carbon concentrations exert a stronger control on the cladoceran community composition of boreal lakes than warming. – *ASLO 2019 Joint Meeting (Puerto Rico, USA), Oral Presentation*

**Barouillet C**., Meyer-Jacob, C., Mushet, G.R., Hennessy, S., Bertin, A., Cumming, B.F. Dissolved organic Carbon concentrations exert a stronger control on the cladoceran community composition of boreal lakes than warming. Brock University – *The 11th Ontario Québec Paleolimnological Symposium (St Catherines, ON, Canada).*

**Barouillet C**., Bertin, A., Hennessy, S., Meyer-Jacob, C., Mushet, G.R., Cumming, B.F. Can we track the effect of warming on the cladoceran communities of minimally-impacted lakes? – *Canadian Conference for Fisheries Research / Society of Canadian Limnologists annual meeting (London, ON, Canada), Oral Presentation*

**2018**

**Barouillet C**., D. T. Selbie, K. R. Laird, P. R. Leavitt, C. J. Perrin, and B. F. Cumming. Paleolimnological investigation of the impact of the bridge-river diversion on primary and secondary producers in Seton Lake. – *Brock University – The 11th Ontario Québec Paleolimnological Symposium (St Catherines, ON, Canada)*

**2017**

**Barouillet C**., D. T. Selbie, K. R. Laird, P. R. Leavitt, C. J. Perrin, and B. F. Cumming. Paleolimnological investigation of the impact of the bridge-river diversion on primary and secondary producers in Seton Lake. – *Canadian Conference for Fisheries Research / Society of Canadian Limnologists annual meeting (Montréal, QC, Canada), Oral Presentation.*

**2016**

**Barouillet C**., D. T. Selbie, K. R. Laird, P. R. Leavitt, C. J. Perrin, and B. F. Cumming. Paleolimnological investigation of the impact of the bridge-river diversion on primary and secondary producers in Seton Lake. – *Queen's University – The 9th Ontario Québec Paleolimnological Symposium (Kingston, ON, Canada), Oral Presentation.*

**Barouillet C**., D. T. Selbie, K. R. Laird, P. R. Leavitt, C. J. Perrin, and B. F. Cumming. Paleolimnological investigation of the impact of the bridge-river diversion on primary and secondary producers in Seton Lake. – *Lillooet – Workshop for the BC Hydro and SER Bridge River Diversion Monitoring Program-6. 2016, Oral Presentation.*

**Barouillet C**., K. R. Laird, B. F. Cumming, D. T. Selbie, P. R. Leavitt, and C. J. Perrin. Has the productivity of Seton Lake (British Columbia, Canada) changed since the development of a hydroelectric power project? – *WatIF International Graduate Conference 2016 (Kingston, ON, Canada), Oral Presentation.*

**Barouillet C**., K. R. Laird, B. F. Cumming, D. T. Selbie, P. R. Leavitt, and C. J. Perrin. Paleolimnological investigation of the impact of the bridge-river diversion on primary and secondary producers in Seton Lake, a sockeye salmon lake in British Columbia (Canada). – *ASLO 2016 Summer Meeting (Santa Fe, USA), Oral Presentation.*

**2015**

**Barouillet C**., K. R. Laird, B. F. Cumming, D. T. Selbie, P. R. Leavitt, and C. J. Perrin. Paleolimnological investigation of the impact of the bridge-river diversion on primary and secondary producers in Seton Lake, a sockeye salmon lake in British Columbia (Canada). – *International Paleolimnology Symposium 2015 (Lanzou, China), Oral Presentation.*

**Barouillet C**., B. F. Cumming, D. Selbie, K. R. Laird and Peter R. Leavitt. Investigating the long-term influence of the Bridge-River Diversion on Sockeye Salmon nursery ecosystem productivity in Seton Lake, British Columbia: A comparative paleolimnological study. – *Water Symposium (Kingston, ON, Canada), Oral Presentation.*

**Barouillet C**., B. F. Cumming, D. T. Selbie, K. R. Laird and Peter R. Leavitt. Paleolimnological Assessment of the Bridge River Diversion and Climate Change on Sockeye Salmon in Seton and Anderson lakes, British Columbia, Canada. –

*Canadian Conference for Fisheries Research / Society of Canadian Limnologists annual meeting (Ottawa, ON, Canada), Poster presentation.*

### Congress Session Convener

Reconstructing eco-environmental dynamics from sediment records and ancient DNA – 2022, SIL (International Society of Limnology) – Chairs: **Barouillet** C., Belle S.
Deciphering past aquatic ecosystem dynamics using sedimentary ancient DNA – 2022, JASM (Joint Aquatic Science Meeting) – Chairs: Spanbauer T., Monchamp, M-E., Capo E., & **Barouillet** C.
Impacts of climate change in Aquatic Ecosystems – 2019, CCFFR-SCL _ Chairs: **Barouillet** C., & Cumming B. F.

## VOLUNTEER EXPERIENCE

**2021-present** Vice-President in charge of Communication & Publication for the International Society of Limnology (SIL)
**2020-present** Member of the Organizing Board of the sedaDNA scientific society (Coordinator of e-coffee & the African sedaDNA working group
**2020-present** Membre du Comité d'Administration de l'Association Française de Limnology (AFL)
**2020-2021** Co-chair of the Equity, Diversity and Inclusion Joint Committee for CCFFR (Canadian Conference for Fisheries Research) and SCL (Society for Canadian Limnologist)
**2018-2022** Francophone Student Representative for SCL
**Summer 2017** Co-lead piston coring field work for the University of Glasgow (1 month) – Regina (SK), Canada
**2015-2016** Program Coordinator for the Water Initiative for the Future International Graduate Student conference 2016 – *Kingston (ON), Canada*
**2013-2014** Volunteer at PEARL - *Queen's University, Kingston (ON), Canada*
**2013-2014** Volunteer at Plaxton Laboratory - *Queen's University, Kingston (ON), Canada*
**2011-2013** Manager at Sentier Nature (a protected area owned by the ecologist and naturalist association, Veracruz) - *Paul Sabatier University, Toulouse, France*

## SCIENTIFIC EVENTS, OUTREACH & WORKSHOPS

2022
Workshop – "Limnology at the crossroad: its role in freshwater conservation and management?" – Phil Boon, Cécilia **Barouillet**, Juan-David Gonzalez Trujillo, Geist Jürgen, Gisli M. Gislason, Ken Irvine.

2021
Lecture for secondary school students – Jurassique Parc sous les eaux: un voyage dans le temps avec la paléolimnologie – Cécilia **Barouillet**.
Workshop - "Indigenous Relations in Research" - Emily Stewart, Kristen Coleman, Andrea Kirkwood, Cécilia **Barouillet**. CCFFR-SCL Congress 2021 Virtual Workshop.
Symposium – 1st Symposium of the African sedaDNA working group – Cécilia **Barouillet**, Eric Capo. sedaDNA scientific society.

2020
Workshop – "Science Communication: Beyond the Manuscript" - Organizer(s): Kristen Coleman, Cécilia **Barouillet**. CCFFR-SCL Congress 2020.

2019
Panel Discussion – "Tips to get a job in Aquatic Sciences" – Organizer(s): Cécilia **Barouillet**, Kristen Coleman. CCFFR-SCL Congress 2019.

2016
Science Pub Night - How to integrate science into public policy? – Organizer(s): Cécilia **Barouillet**. Kingston (ON), Canada - Event organized for Evidence for Democrary E4D (Canada) which aims to bring together students and professors from across departments in an informal pub atmosphere to discuss current issues in science).