Cooperative
Freshwater Ecology Unit

Unité Conjointe
D'écologie D'eau Douce

2024
Annual Report

Vale LIVING WITH LAKES CENTRE
CENTRE POUR LA VITALITÉ DES LACS Vale

LaurentianUniversity
UniversitéLaurentienne

A Message from the Director
February 2025

Hello Co-op Unit friends and partners,

I am pleased to share with you the 2024 Annual Report of the Cooperative Freshwater Ecology Unit (CFEU) at the Vale Living with Lakes Centre (LWLC). This past year has been full of good news and big events.

I remain committed to the three main messages I highlighted in last year's Annual Report, focussed on supporting partnerships, faculty hires, and students. I am very pleased to report that our multi-partner NSERC Alliance Grant entitled, "Conservation and Restoration of Aquatic Diversity in the face of Legacy and Emerging Stressors" (aka CRADLES) was fully funded for three years. I was honoured to make a short speech on behalf of the team in a research funding announcement event attended by local politicians and the media. The Alliance application was led by our MECP (Brie) and MNR (Tom) scientists and myself, with colleagues from Queen's, Lakehead and Acadia, among other universities and NGOs, and is matched by Vale and Glencore SINO funds. The research funding will allow us to continue the Co-op's long-term work on lake and wetland recovery, and to elevate that work to the next level by setting recovery targets that can inform decisions about protected areas. CRADLES is also supporting the recruitment of students: in late 2024, we added 2 new MSc students to Tom's crew, with more recruitment forthcoming under the CRADLES umbrella, and Adam Lepage has transitioned into the Research Program Coordinator for the CRADLES work.

We welcomed three new faculty members in the LU School of Natural Sciences and the CFEU. Dr. Liz Favot is an Aquatic Zoologist whose primary office and lab space are in the Vale LWLC. Dr. Mateus Pepinelli is an Entomologist and Dr. Janice Kenney is an Environmental Chemist; both Mateus and Janice have their main space up on the main campus, but also have a shared space here at the Vale LWLC. We also welcomed NOHFC Intern Emma Meadows to the LWLC team in October 2024; she is picking up some of the lab manager tasks that Adam previously covered, plus she is helping to manage my research program. Our LU Environmental Sustainability Committee (ESC) members and the Nature Positive University (NPU) team continue to punch above their weight, hosting programs, acquiring funding, and making sure LU meets its promises to be nature positive.

The new faculty hires will contribute to a new undergraduate program, BSc in Environmental Solutions (ESOL). I reported last year that this program was under development by a small team

including Anastacia Chartrand (ESC, NPU), Jeff Gagnon (SoNS), and myself. I'm happy to share that the program proposal package is completed, that it was unanimously approved by SoNS, and is now moving through the next steps of the approval process. We hope to launch the program in September 2026.

A big milestone this past year was celebrating Dr. John Gunn's retirement and 21 years of service to Laurentian University and to Canada as a Tier 1 Canada Research Chair in Stressed Aquatic Systems. In true Co-op fashion, we held a party and BBQ in John's honour, inviting family and friends, as well as former and current students, staff, and colleagues. A lot of things have changed over John's 35+ years of commitment to the CFEU partnership, but his dedication to excellence in science and student training, building community and stretching a dollar, did not (and has not). He built a team, and then found a way to build us a home, for which we are forever grateful. As an Emeritus Professor, John continues to serve the CFEU as a Senior Fellow in Stressed Aquatic Systems here at the Vale LWLC.

Dr. Jackie Litzgus
Director, CFEU @ Vale Living With Lakes Centre

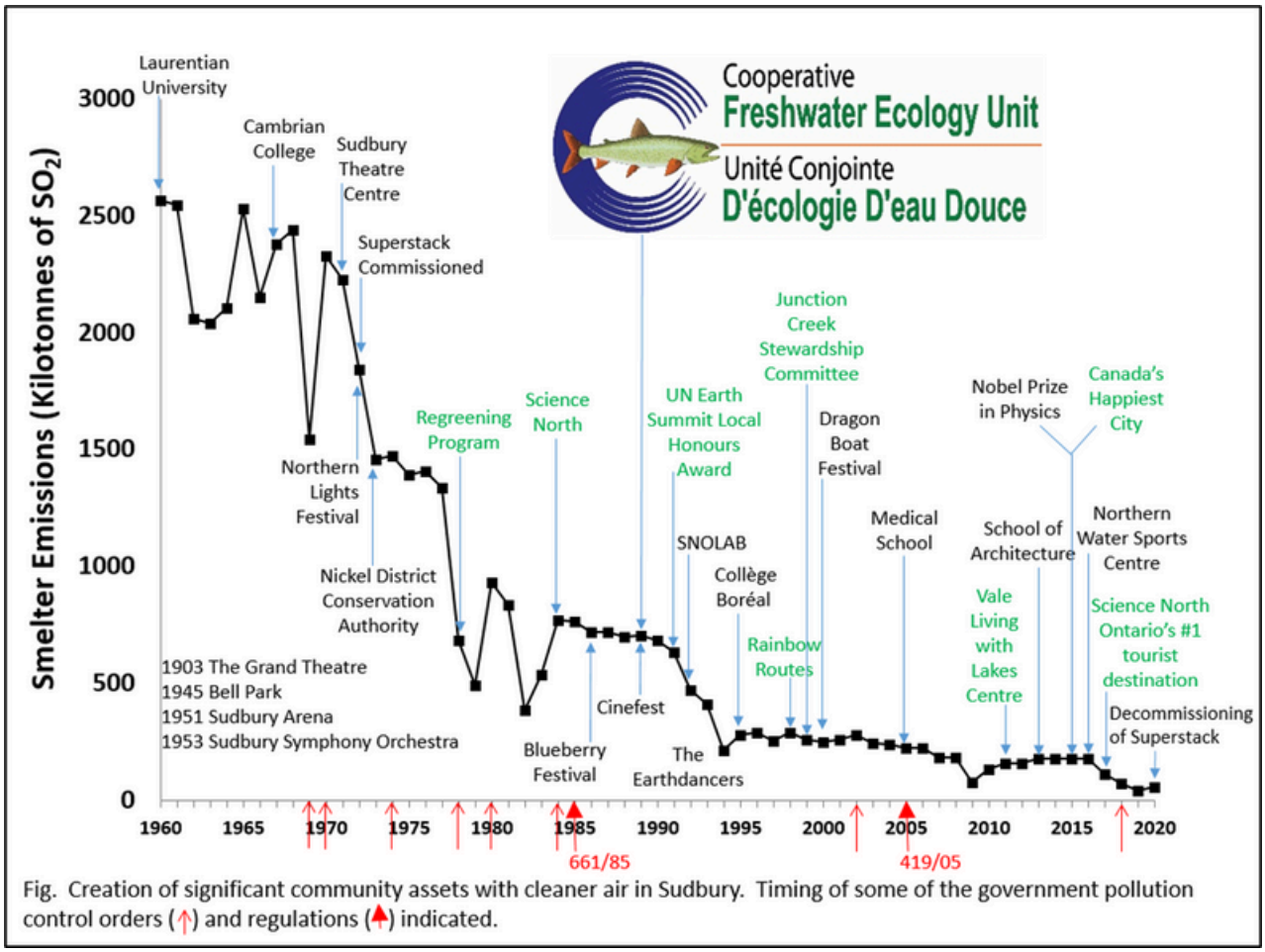

Fig. Creation of significant community assets with cleaner air in Sudbury. Timing of some of the government pollution control orders (↑) and regulations (▲) indicated.

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Awards and Recognition

We extend the warmest of welcomes to our three newest CFEU members, and Faculty in the LU School of Natural Sciences: Dr. Liz Favot, Dr. Mateus Pepinelli and Dr. Janice Kenney. We are very glad to have you on the team and filling our boat!

Congratulations to Dr. Pascale Roy-Léveillée, who received the Mackay Lecture Award from the Canadian Permafrost Association and Canadian National Committee for the International Permafrost Association. This lecture, named in honour of Canada's pre-eminent permafrost expert, the late Professor J. Ross Mackay, is given at each Canadian Permafrost Conference. Dr. Roy-Léveillée was also nominated by Université Laval for the provincial award: Étoile Montante 2025 FRQ – Secteur Nature et Technologie in Dec. 2024. Wonderful!

Congratulations to Dr. Peter Beckett, Dr. Nadia Mykytczuk and Dr. John Gunn who were all named recipients of the King Charles III's Coronation Medal. Drs. Beckett and Mykytczuk were awarded their medals on Feb. 28, 2025 and Dr. Gunn received his on March 21, 2025. We are very glad to see the dedication of our CFEU team members recognized in this way.

Congratulations to Drs. Alessandro Ielpi and Pascale Roy-Léveillée for having their collaborative paper on the migration of Arctic Rivers named one of the top 10 discoveries of the year 2023 by the magazine Québec Science https://www.quebecscience.qc.ca/sciences/les-decouvertes-de-2023/rivieres-grand-nord-migrent-moins-vite/ . The article entitled "Large sinuous rivers are slowing down in a warming Arctic", was published in Nature Climate Change. https://www.nature.com/articles/s41558-023-01620-9

Congratulations to Dr. Shaun Watmough who was appointed Director of the Environmental and Life Sciences Graduate Program, Trent University (July 2024-June 2027). Dr. Watmough was also a finalist for the 2023-2024 Decanal Award for Teaching Excellence.

Congratulations to the Nature Positive University and Environmental Sustainability Committee led by Dr. Hoi Cheu, who won the Voyageur Innovation Award at Research Week 2024 for their project on developing a Greenspace Management Plan for Laurentian University.

Awards and Recognition

Congratulations to Dr. Liz Favot for winning the North American Lake Management Society Dr. Ann St. Amand Early Career Award, which provided registration assistance to attend the annual symposium held in Lake Tahoe, Nevada, USA in 2024.

Congratulations to Dr. Erik Emilson who won the CFS Outstanding Achievement Award for his role in the development of the "2023 Blueprint for Forest Carbon Science in Canada". This government report, included in his publications for 2024, outlines the federal priorities for carbon science. Bravo!

Congratulations to Karen Oman, who was the inaugural staff recipient of the Dr. Daniel Archambault Research Service Award. This award was established in 2024 in memory of Dr. Daniel Archambault and recognizes Laurentian University faculty, staff and students for outstanding dedication and contributions to the academic research community. Thank you, Karen, for all that you do to keep the ship afloat and moving forward!

Student Scholarships, Fellowships, Bursaries

Ellis Albrecht

- Laurentian (Edwards/Gunn) was awarded an NSERC Undergraduate Summer Research Award

Adam Delage

- MSc Candidate Laurentian (Johnston) received the R.W. Drysdale Memorial Scholarship in Aquatic Science ($2000), the Dr. Thomas Peters Mining and Environment Masters Bursary ($5000), the Ruffed Grouse Society Wildlife and Conservation Bursary ($1500), and the Sudbury Franco-Ontarian Institute Graduate Award ($1500)

Jérôme Breton

- MSCom Candidate (Laurentian) and Supervisor Chantal Barriault were awarded a $6000 grant for a summer project conducted in French to present a paper at L'ACFAS (Association francophone pour le savoir) conference in Ottawa, in May 2024

Katerina Debruyn

- MSCom Student Laurentian (Barriault) was awarded a $15,000 School of Natural Sciences McLaughlan Foundation Graduate Bursary

Marianka Cantin

- MSc Candidate Laurentian (Johnston/Martinez) received an NSERC CGS-M ($27,000) plus a Michael Smith Foreign Study Supplement ($6,000)

Gabrielle Faucher

- MSc Candidate Laurentian (Johnston) received la Bourse d'études supérieures de l'IFO de Sudbury ($500), and the Dr. Thomas Peters Mining and Environment Masters Bursary ($5,000)

Student Scholarships, Fellowships, Bursaries

Emily Fields
- MSc Candidate Laurentian (Johnston) received the Society of Freshwater Sciences Endowment Award ($1,000) and the Power Corporation of Canada Scholarship ($5,000)

Ashley Grew
- MSc Candidate Queen's (Arnott), won the Biology Faculty Award of Excellence

Marissa Ingratta
- MSc Candidate Trent (Tanentzap), received an Entrance Award

Avery Morin
- Laurentian (Gunn), was awarded an NSERC Undergraduate Summer Research Award in 2024

Erin Ford
- MSc Candidate Queen's (Arnott), won a Craigie Fellowship

Justin Gross
- MSc Candidate Queen's (Arnott), won a Craigie Fellowship

April LaFlamme
- MSc Candidate Queen's (Arnott), won a Craigie Fellowship

Kate Pappin
- Laurentian (Edwards), was awarded an NSERC Undergraduate Summer Research Award

Erin Postenka
- MSc Candidate Laurentian (Litzgus), was awarded an NSERC CGS-M Scholarship

Andrea Gigeroff
- PhD Candidate Laurentian (Litzgus/Riley), was awarded an NSERC CGS-D Scholarship

Sarah Harrison
- MSCom Candidate Laurentian (Barriault), won second place at Laurentian's 3MT competition

Sabrina Lounsbury
- MSc Candidate Laurentian (Litzgus), won the St. Lawrence Seaway Climate Change Scholarship ($2,500)

Mary Yu
- MSc Candidate Laurentian (Litzgus), won the Jane Goodall Biodiversity Conservation Scholarship ($2,500) and a SoNS Scholarship ($15,000)

Community Outreach

Dr. Shelley Arnott participated in the following outreach initiatives in 2024:
- Participated in the 'Aquatic habitats talking circle' at the Curve Lake Cultural Centre, Apr 2024.
- Participated in 'Beyond Classrooms Kingston', a discussion about road salt with grade 7/8 students, Apr 2024.
- Gave a lecture entitled 'Freshwater Salinization – Why we need to use less salt' to the Kingston Rotary Club, Kingston, ON, Apr 2024.

Dr. Chantal Barriault participated in the following outreach initiatives in 2024:
- Interviewed for story about the rise of science communication as a field of study, and the role it plays in our daily lives. Physics Today Magazine, Nov 2024.
- Interviewed for an episode of "What on Earth", The unsexiest words that could save the planet by Anand Ram, CBC Radio, Oct 2024.
- Delivered presentation on collaborative research being conducted by MSCom students with Science North on their programs and exhibits to Science North's Science Program Committee.
- Served as consultant, contributor and reviewer for University Hospital Network Grant Project, "Closing the Global Cancer Research to Practice Gap: Advanced Training in Science

Community Outreach

Communication." Jun-Dec 2024. This free online course is now live on the Princess Margaret Cancer Campus website. https://pmcancercampus.ca/local/courseinfo/courseInfoPage.php?id=294

- Served as invited panelist for l'Association francophone du savoir (ACFAS) for session on the future of science communication education in Canada.
- Featured live on CBC Morning North for the 40th anniversary of Science North. Discussed her career as a Blue Coat and how it shaped her current career as Director of the Science Communication Graduate Program at LU and VLWL. Jun 2024.
- Interviewed as a former staff member of Science North for its 40th anniversary celebration. May 2024. https://ici.radio-canada.ca/nouvelle/2078992/musee-science-anniversaire-histoire-sudbury

Dr. Nathan Basiliko was a guest on 'The Secrets of the Forest' Series, episode "It's Alive!" on TVO Kids (TV Ontario) which aired in May 2024. https://www.youtube.com/watch?v=8RydKDGXnkU&list=PLVbCoy12PNVmVBfWvsCXA6zputBICgdn4&index=23

Dr. Peter Beckett is the Outreach Coordinator with the VLWLC. He served in the following capacities in 2024:

- VETAC: Chair
- Canadian Land Reclamation Association (Ontario Chapter): Director
- Junction Creek Stewardship Committee: Technical Advisor and Board Member
- Rainbow Routes: Environmental Advisor and Board Member
- Sudbury Naturalists: Co-chair
- Friends of Mashkinonje Park: President
- Reclamation Member of the Society of Ecological Restoration (SER) working group within the UN Decade on Ecological Restoration Framework
- Cambrian College Public Advisory Panel (Environmental Technician and Environmental Monitoring Programs)
- Member of the Mayor's 30x30 Task Force for the City of Greater Sudbury
- Director of the BioSki Skiing and Snowshoe Club

Dr. Beckett also participated in the following activities:

- Was featured in "Planting Hope: A Regreening Story" a 25-minute Science North documentary about Sudbury's environmental recovery available in English, French and Anishinaabemowin.
- Was featured in 'Developing Novel Peatland Restoration Solutions in Metal Polluted Landscapes – Nipissing University', American Geophysical Union TV, 5 Dec 2024 https://www.youtube.com/watch?v=-smiKnf-WU8
- Discussed 50 years of Healing and Restoring the Sudbury Landscape and visited the adjacent Reclamation Trail with 90 grade 11 students (in 2 sessions) from St Benedict's School, 28 Nov 2024.
- Gave a talk and tour at the Kelly Lake Hill to 35 students from the Restoration Program from Sir Sandford Fleming College, 18 Oct 2024.

Community Outreach

- Led a half-day regreening tour for 20 delegates during the OECD Mining Conference organized by the Greater Sudbury Development Corporation, 11 Oct 2024.
- With Tina McCaffrey, participated in the 'Cities in Bloom' Capreol Regreening discussion and gave a Sudbury Jane Goodall Trail Tour, 13 Jul and 13 Aug, 2024.
- Gave a tour of Regreening areas to Dr Chris Lenhart, University of Minnesota. He later requested regreening information for use in teaching, Jul 2024.
- Was featured in 'Sudbury research project aims to restore damaged peatlands, boost climate change fight' by Lyndsay Aelick, Northern Ontario CTV News, 17 Jun 2024. https://www.ctvnews.ca/northern-ontario/article/sudbury-research-project-aims-to-restore-damaged-peatlands-boost-climate-change-fight/
- Was featured in 'Research project aims to restore peatland carbon sink in Sudbury, Ont.' by Jonathan Migneault, CBC News, 14 Jun 2024. https://www.cbc.ca/news/canada/sudbury/peatland-restoration-sudbury-1.7235846
- Gave a talk about Sudbury Landscape Restoration and led a regreening tour for several delegates from the University of Manchester and University of Limerick, participating in the International Peatland Workshop at the Living with Lakes Centre, 21-23 May 2024.
- Gave his annual regreening presentation to 29 students in Cambrian College College's Environmental Monitoring and Impact Assessment Program, 22 Mar 2024.
- Led a webinar on the Backdrop for Peatland Restoration in Sudbury for the International Peat-Metal Research Group, 20 Mar 2024.
- Gave a presentation on Sudbury Landscape Restoration to 70 students in the ARCH 2526 class at the School of Architecture, 14 Feb 2024.

Dr. Erik Emilson served on outreach committees in 2024:

- City of Sault Ste. Marie Environmental Sustainability Committee
- Sault College School of the Natural Environment Advisory Committee

Dr. Liz Favot participated in the following outreach initiatives in 2024:

- Participated in the Nepahwin Lake Stewardship Group paleolimnology study and event "Nepahwin Lake: Past, Present and Future: A case study of the effects of urbanization on City of Greater Sudbury lakes".
- Gave a lecture and lab tour demonstration for Up North on Climate's Partnership for Indigenous Climate Change Adaptation (PICCA) visitors to explore how and why we need to monitor lake response to climate change and how interpretations of microfossils in lake sediments can contribute.
- Gave a seminar for "EMRB Talks #124: Tracking Cyanobacterial Blooms in Ontario Lakes", Ministry of the Environment, Conservation and Parks, Environmental Monitoring and Reporting Branch (EMRB). Seminar was presented in collaboration with Ministry scientists C Holeton and A Paterson.
- Was featured in "Blue-green algae expected to be found in Peterborough waters this

Community Outreach

summer", Global News interview, 16 Jul 2024. https://globalnews.ca/video/10627892/blue-green-algae-expected-to-be-found-in-peterborough-waters-this-summer

- Contributor to the "LeDNA: Global measure of biodiversity by sampling environmental DNA from lakes", gathering data from Lake Nipissing. Her team covered over 130 km of water and their sample will be representative of Wasi, Duchesnay, Sturgeon, and South River inflows, and the French River outflow. Nipissing will be one of 34 Canadian lakes in the program. You can learn more about this project here: https://www.nature.com/articles/d41586-024-00520-y
- Contributed to community volunteer-based science monitoring through the Ontario Lake Partner Program, collecting water samples and water clarity measurements through May-October on Lake Nipissing.

Kim Fram actively posted climate change awareness and adaptation material on the UpNorthOnClimate Facebook page.

Dr. John Gunn participated in the following public outreach initiatives:

- Member of the Mayor's 30x30 Task Force for the City of Greater Sudbury
- Was featured in "Sudbury professor awarded King's Coronation Medal for environmental leadership", Dan Bertrand, CTV News, 9 Feb 2025. https://www.ctvnews.ca/northern-ontario/article/sudbury-professor-awarded-kings-coronation-medal-for-environmental-leadership/
- Was featured in "King Charles medal 'crowning achievement' for Sudbury researcher", Sudbury.com, 7 Feb 2025.
- Was featured in "Planting Hope: A Regreening Story" a 25-minute Science North documentary about Sudbury's environmental recovery available in English, French and Anishinaabemowin.
- Gave presentation "Global Lessons from Sudbury Story", to the Muskoka Naturalists Club, 11 Nov 2024.
- Gave presentation "Yours to Discover Through STEP" as part of a Lockerby Highschool Science Engagement Session, 11 Oct 2024.
- Gave presentation "Global Lessons from the Sudbury Story", as part of an Env.Geo. Tour/Mining Leadership event, 28 Sept 2024.
- Gave and Invited Lecture "Global Lessons from the Sudbury Story", to class at Georgetown University in Washington, DC, 23 Sept 2024.
- Gave presentation "Fish Recovery in Sudbury" as part of an Ontario Streams Training Course, 9 Sept 2024.
- Was featured in "John Gunn helped Sudbury recover from its environmental degradation", Hugh Kruzel, The Sudbury Star, 26 Aug 2024. https://www.thesudburystar.com/news/local-news/john-gunn-helped-sudbury-recover-from-its-environmental-degradation
- Gave public presentation 'My time telling fish tales', at the Doran Planetarium, Laurentian University, 18 Mar 2024.

Dr. Tom Johnston served as an advisor to the Clearwater Lake Stewardship Committee.

Community Outreach

Adam Lepage served as a member of the Regional Phragmites Work Group for S'Swakamok/Sudbury.

Dr. Jackie Litzgus participated in the following public outreach initiatives in 2024:

- Gave an invited presentation to the Credit Valley Conservation Authority Biologist-Ecologist Meeting online entitled "Ontario's turtles are in trouble."
- Served as a SHAD Program Workshop Leader
- Was featured in "Laurentian researchers awarded $2.2M in funding", The Sudbury Star, 19 Oct 19 2024. https://www.thesudburystar.com/news/local-news/laurentian-researchers-awarded-2-2m-in-funding

Dr. Colin McCarter participated in the following outreach initiatives in 2024:

- Was featured in "Wildfire arsenic release study is an 'alarm bell,' says author" by Emily Blake, Cabin Radio, 10 Jun 2024. https://cabinradio.ca/185933/news/yellowknife/wildfire-arsenic-release-study-is-an-alarm-bell-says-author/
- Was featured in 'Developing Novel Peatland Restoration Solutions in Metal Polluted Landscapes – Nipissing University', American Geophysical Union TV, 5 Dec 2024. https://www.youtube.com/watch?v=-smiKnf-WU8
- Was featured in 'Research project aims to restore peatland carbon sink in Sudbury, Ont.' by Jonathan Migneault, CBC News, 14 Jun 2024. https://www.cbc.ca/news/canada/sudbury/peatland-restoration-sudbury-1.7235846

Dr. Mateus Pepinelli participated in the following outreach activities in 2024:

- Was featured in 'This Laurentian University researcher is collecting DNA from the air inside beehives', by J Migneault, CBC News, 16 Nov 2024. https://www.cbc.ca/news/canada/sudbury/environmental-dna-beehives-1.7383612
- Was featured in 'Sudbury, Ont., researcher is collecting bee DNA to better understand how plants are impacted by climate change', by A Beauchemin, Cottage Life, 28 Nov 2024. https://cottagelife.com/general/sudbury-ont-researcher-is-collecting-bee-dna-to-better-understand-how-plants-are-impacted-by-climate-change/
- Was interviewed about Airborne eDNA on CBC Radio.

Dr. David Pearson participated in the following outreach initiatives in 2024:

- Was featured in article "Algae on lakes at west end of Sudbury likely to remain despite $34M upgrade to wastewater plant" CBC news, 30 Oct 2024. https://www.cbc.ca/news/canada/sudbury/pollution-sewage-contamination-phosphorous-1.7367242
- Was featured in article "Science North celebrates 40 years of making memories" Tyler Clark, Sudbury.com, 19 Jun 2024. https://www.sudbury.com/local-news/science-north-celebrates-40-years-of-making-memories-9108044

Community Outreach

- Was featured in article “That time Sudbury's Science North left Princess Diana 'blushing'” Jason Marcon. Innisfil Today.ca, 30 Jul 2024. https://www.innisfiltoday.ca/local-news/that-time-sudburys-science-north-left-princess-diana-blushing-9281754
- Was featured in article “Here's some of the history of Science North as it turns 40” Jason Marcon. Collingwood Today.ca, 29 Jun 2024. https://www.collingwoodtoday.ca/local-news/heres-some-of-the-history-of-science-north-as-it-turns-40-9138398
- Was featured in article “'You're kind of stuck': Northern Ontario's most southern ice road may not open this winter” Erik White. CBC news, 22 Jan 2024. https://www.cbc.ca/news/canada/sudbury/ice-roads-northern-ontario-temagami-bear-island-1.7091021

Dr. Charles Ramcharan serves as the Coordinator of the Laurentian Community Garden.

Michelle Reid participated in the following outreach initiatives in 2024:

- Co-delivered Northern MedTalks 2024 with Science North and Eastlink. Michelle also led the event logistics and coordinated experiential learning deliverables associated with SCOM 5136 and SCOM 5066. The live event featured 10 presentations and was broadcast on Eastlink Community TV and live streamed on YouTube. 350 people attended the live event in person. You can watch the recording of the event here: https://www.sciencenorth.ca/medtalks.

Michelle delivered the following guest workshops and training sessions:

- Communicating Research with Non-Specialists: Interviewing for Radio for BIOL 5056
- Communicate Research with Posters: How to design for understanding and engagement for NATS 3106
- Communicating Research Through Presentations: Video and Slide Design Skills for NATS 4005
- Present With Intent: Communication Skills for Research Presentations for Laurentian Research Week - 103 graduate students

Dr. Pascale Roy-Léveillée was interviewed for and featured in these news stories in 2024:

- “Valuing Indigenous Knowledge in permafrost research” by M Jamal, in Undark, 10 Jan 2024. https://undark.org/2024/01/10/indigenous-permafrost-research/
- “The upsurge of landslides in Nunavik under study”, mySCience.ca, 2 Oct 2024. https://www.myscience.ca/news/wire/la_recrudescence_des_glissements_de_terrain_au_nunavik_a_l_etude-2024-ulaval
- “La fonte du pergélisol et ses conséquences inattendues sur les rivières Nordiques », Radio-Canada Ohdio, 18 Jan 2024. https://ici.radio-canada.ca/ohdio/premiere/emissions/phare-ouest/segments/entrevue/471461/cafe-climatique-avec-pascale-roy-leveillee-migration-des-rivieres-nordiques

Community Outreach

Chantal Sarrazin-Delay participated in the following outreach activities in 2024:

- Led 2 outdoor, hands-on aquatic ecology workshops during Camp Chikepak, a week-long camp for children 9-14 from Mushkegowuk Council communities, 4-17 Aug 24
- Posted outreach material on the UpNorthOnClimate Facebook page.

Dr. Graeme Spiers served as a member of Vegetative Enhancement Technical Advisory Committee for the City of Greater Sudbury (VETAC).

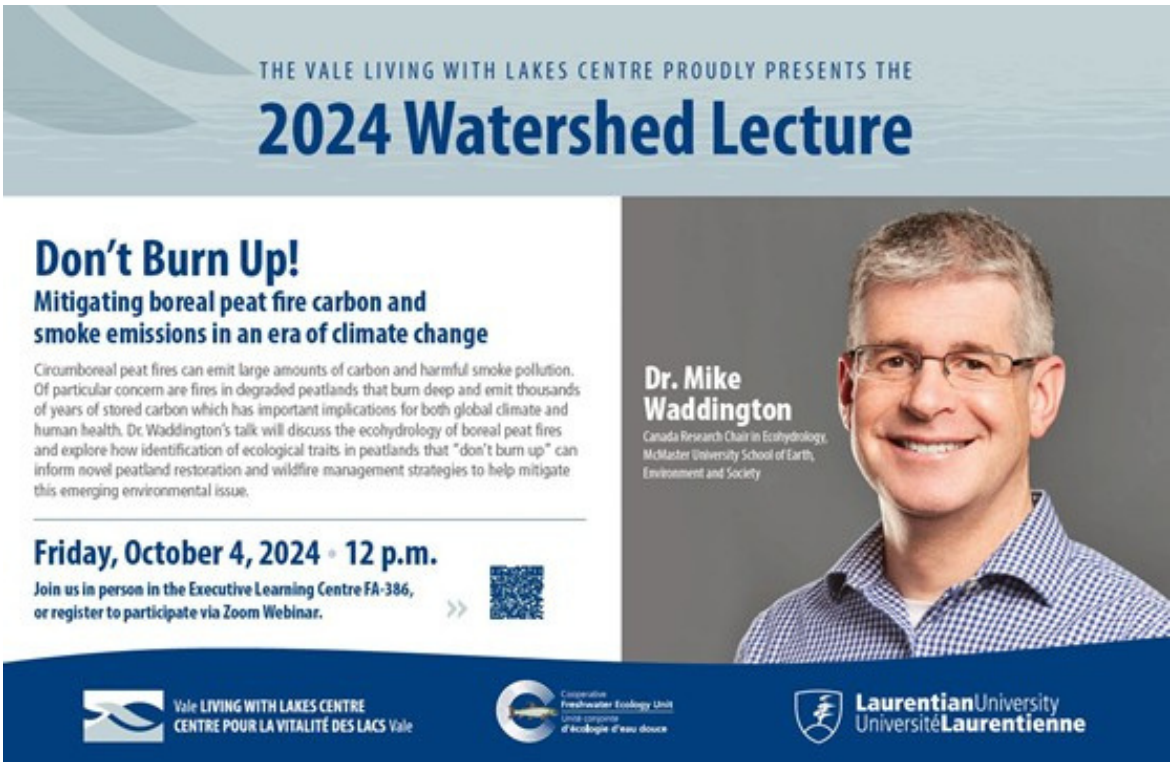
Dr. Pete Whittington participated in the following outreach activities in 2024:

- Was featured in 'Developing Novel Peatland Restoration Solutions in Metal Polluted Landscapes – Nipissing University', American Geophysical Union TV, 5 Dec 2024. https://www.youtube.com/watch?v=-smiKnf-WU8
- Was featured in 'Sudbury research project aims to restore damaged peatlands, boost climate change fight' by Lyndsay Aelick, Northern Ontario CTV News, 17 Jun 2024. https://www.ctvnews.ca/northern-ontario/article/sudbury-research-project-aims-to-restore-damaged-peatlands-boost-climate-change-fight/
- Was featured in 'Research project aims to restore peatland carbon sink in Sudbury, Ont.' by Jonathan Migneault, CBC News, 14 Jun 2024. https://www.cbc.ca/news/canada/sudbury/peatland-restoration-sudbury-1.7235846

Dr. Norman Yan participated in the following engagement activities in 2024:

- Served as a member of the Friends of Muskoka Watershed
- Was a guest on the episode 'Ecological Restoration as Community Care', on At Home in Muskoka, 20 Jun 2024. https://www.muskokacommunitylandtrust.org/blog1/norman-yan

2024 Watershed Lecture with Dr. Mike Waddington



Dr. Mike Waddington, Canada Research Chair in Ecohydrology and a Professor in the McMaster University School of Earth, Environment and Society, gave the annual Watershed Lecture on Friday, October 4, 2024 entitled: 'Don't Burn Up! Mitigating boreal peat fire carbon and smoke emissions in an era of climate change'.

Dr. Waddington has over 35 years of research experience in boreal wetlands and over 25 years of expertise working on boreal wetland restoration projects. He has published over 180 peer-reviewed articles on topics that include peatland hydrology, wildfire hydrology, and wildlife ecohydrology. He lives in Nobel, Ontario home to the Nobel Peat Prize and the NOBEL Water Observatory that is part of the Global Water Futures Observatories. He is a self-proclaimed map geek and an active adventure runner and adventure racer.

On the same day, Dr. Waddington, hosted LU graduate students for the Watershed Student symposium. Lake Centre and School of Natural Sciences students presented their research projects and Dr. Waddington provided feedback and guidance.

Watershed Lectures can be found on our website at: https://laurentian.ca/living-with-lakes/research/annual-watershed-lecture-series

Environmental Sustainability Committee

2024 Year in Review

Celebrating achievements in sustainability and community engagement

NATURE POSITIVE UNIVERSITIES LAURENTIAN

2024 Highlights

Student Community Garden | **Greenspace Management Plan** | **Bird Strike Elimination**



With support from a TD Grant, we established a Student Community Garden at the Vale Living with Lakes Centre, offering students their own plots and sharing surplus harvest with the food bank and campus community. We also began filming a short video series, exploring the importance of sacred plants through the teachings of the medicine wheel with Chevaun Toulouse, Sagamok.

Using prize money from the Voyageurs Innovation Challenge, our team collaborated with advisors to draft a long-term protection plan for the Laurentian Greenspace and enhance trail safety with wayfinder signs and maps.



With support from the A.P.E. Fund through the Jane Goodall Institute, we launched a campaign to reduce bird strikes on campus. This included a window art mural by student Sam Benard-Barry and the installation of dot strips at the Vale Living with Lakes Centre (VLWLC) and Laurentian University's Arboretum to make windows more bird-friendly.

Established **16 plots** in the new student community garden at the Vale Living with Lakes Centre.

Worked with a global network of **over 730 institutions** in the Nature Positive University Alliance

Over 300 participants joined community greenspace events

8 kms of greenspace trails maintained

Retrofitted **27 windows** with dot strips and art to reduce bird collision rates

Environmental Sustainability Committee

Engaging with community for a sustainable future

NATURE POSITIVE UNIVERSITIES LAURENTIAN

Community Engagement Events

Hosted a Bioblitz event at Lockerby Composite School.

Rainbow Schools

Presented at the Rainbow District School Boards Eco Summit to share on various topics about sustainability, the environment, best practices and climate change.

Invited Youth Rangers to assist with dot strip application for bird safe windows.

réseau biodiversité au CAMPUS biodiversity network

Joined the global Campus Biodiversity Network on iNaturalist to promote community-science observation and protection of biodiversity on campus.

Collaborated with Rainbow Routes and Coalition for a Liveable Sudbury to provide several community hikes in the Laurentian Greenspace.

Information booth at Junction Creek Stewardship Committee (JCSC) Water Event

Participated in JCSC Festival

Tallied litter to support JCSCs Catch Basin Litter Trap project

Connecting People & Nature

Installed 3 benches in the Laurentian Greenspace, providing scenic views of Bennett Lake and an experimental research peatland.

Maintained 8km of greenspace trails including brush removal to improve visibility and installation of wayfinding markers and mapping to improve safety.

Provided a tour to the Minister of Colleges and Universities to share Nature Positive initiatives on campus.

Partnered with the Doran Planetarium on outreach events with local highschools.

Shared Green Leaf of Hope pins with graduates, symbolizing their personal commitment to strengthening their connection with nature beyond university.

Planted 5 honorary degree trees as dedication to 2024 honorary degree recipients.

Volunteered at the Sudbury Camino

Organized a bird walk for Laurentian students

Partnerships & Funding

NATURE POSITIVE UNIVERSITIES

Living With Lakes Centre / Centre pour la vitalité des lacs

Conservation Sudbury

Jane Goodall Institute

NSERC CRSNG

TD Friends of the Environment Foundation

UNEP environment programme

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Sudbury Long-Term Inland Lake Monitoring (MECP)

The Ministry of the Environment, Conservation and Parks (MECP) at the Cooperative Freshwater Ecology Unit (CFEU) leads 2 main lake monitoring programmes as complementary components of the long-term Inland Lake Monitoring Program: Intensive Sentinel Lake monitoring and Extensive Spatial Lake monitoring. The lead scientistic on these programmes is Dr. Brie Edwards.

The Intensive Sentinel programme is a set of 11 lakes sampled monthly through the ice-free season for a wide range of physical, biological and chemical parameters (water chemistry, Secchi disc water clarity, temperature/oxygen profiles, zooplankton, and phytoplankton), which provide a greater variety of data sampled more frequently, on a smaller group of lakes. In 2021, this program moved to an alternating cycle for 9 of the lakes, such that 5 lakes are sampled in the first year and 4 in the next, with the remaining 2 lakes continuing to be sampled every year.

The Extensive Spatial programme is a set of 44 lakes, located within a 100 km zone around Sudbury. These lakes were all acidified to below pH 5.5 in the early 1980s but are now in various stages of recovery. These lakes are sampled once annually during the period from late June through July. The data are intended to provide information on regional patterns in water quality and lake recovery in the lakes near Sudbury.

Associated with the Spatial lakes are a set of 24 Reference lakes, all of which fall within the historical acid deposition zone yet remained non-acidic during the original lake surveys in the 1980s. These lakes have historically been visited cyclically in the same mid-summer window, for three consecutive years per cycle with approximately 10-20 years between cycles (1981-1983; 2003-2005 and 2016-2018). For both Spatial and Reference lakes, sampling for water chemistry occurs on every visit, and sampling for other parameters (physical and biological) occurs periodically.

In 2024, the Sentinel Lake program fulfilled its 4th year of the new rotating sampling regime and all of the Spatial lakes were sampled. In addition, we completed a 3-year cycle of chemical, biological and physical sampling through the Reference lakes (8 lakes were sampled in each of 2022, 2023, 2024). In addition to the standard chemical parameters monitored for these programmes, samples for PFAS, Pharmaceuticals, and Microcystin were collected from 6 of the Sentinel lakes in August, in order to establish baseline conditions for these emerging concerns.

MECP's student researchers also provided sampling support for a chemical, physical and biological assessment and invasive spiny water flea species scan of Killarney Provincial Park, in collaboration with Ontario Parks, Dr. Shelley Arnott (Queen's), Dr. Erik Emilson (NRCan) and Dr. Alison Derry (UQAM). We further collaborated with Dr. Liz Favot to collect paleolimnological sediment cores in two Sentinel lakes – Clearwater and Whitepine (MacLeod).

Database management activities during 2024 included: 1. Polishing a subset of the Sentinel chemistry data set, in preparation for increasing the data available on the Province's open data

portal, data.ontario.ca, 2. Updates to the Zooplankton and Phytoplankton databases to complement chemical and physical data and support environmental effects based assessments in Sentinel lakes, the development of internally facing interactive dashboards, and eventual posting to the open data portal, 3. In addition, several data requests were addressed from partners and collaborators. Support for other projects, including graduate student projects, was also provided (data, expertise and logistics).

These monitoring programmes continue to be a critical component of Canadian and international efforts to assess the effects of acid deposition and the responses of lakes to sulphur emission controls, as well as numerous emerging concerns for Boreal Shield waters. Results from these sampling programmes have been presented and interpreted by CFEU partners and numerous collaborators.

Northern Benthic Biomonitoring (MECP)

Biological indicators such as benthic macroinvertebrates (BMI) are useful in gauging the degree of impact due to human activities. The Reference Condition Approach (RCA) to bioassessment is implemented when traditional before-after/upstream-downstream designs are not feasible and is based on the premise that when a site is to be assessed, its BMI community is compared to that of many minimally impacted reference sites with similar habitat characteristics. Effective implementation of the RCA design requires a large network of reference sites encompassing many habitat types from which to best match a site of interest. Such a network is currently maintained by the MECP's Ontario Benthic Biomonitoring Network (OBBN).

The Northern Benthic Biomonitoring program based in Sudbury at the CFEU, initially termed "Freshwater Invertebrate Research Network of Northern Ontario (FIRNNO)" was designed to assist the metal mining industry in locating suitable reference sites to meet the Environmental Effects Monitoring (EEM) requirements of the Fisheries Act.

Since 2003, BMI data for over 400 sites have been collected in the vicinity of 4 mining centers including Red Lake, Hemlo, Sudbury and Timmins, along with accompanying water chemistry as well as site, channel, and watershed level habitat data. Between 2013 and 2018, sampling was extended to include more than 200 additional sites as part of MECP's Ring of Fire (ROF) Baseline Environmental Data Collection Program. Crews from the Co-op Unit and Marten Falls First Nation worked collaboratively to collect samples from across the Attawapiskat River Basin and Upper Albany River Basin, distributed across both the Hudson Bay Lowlands and Boreal Ecozones, with a subset of sites selected for temporal repeat sampling. These data provide information on the unique freshwater environments that potential resource extraction activities could impact.

The Northern Biomonitoring Program also includes a set of 16 Sudbury area Sentinel Stream locations, consisting of both local reference and impacted sites, which have been monitored every 4 years since 2005 (next iteration to come in 2025). In 2024, sampling was conducted at 8 additional sites with historical sampling information in the Sudbury region to expand our set of

long-term monitoring locations. We were happy to have Dr. Mateus Pepinelli join us at several locations to assist in the surveys and search for interesting blackfly populations. Taxonomic enumeration and identification of benthic community samples was initiated to enable updated assessments of community responses to changing environmental conditions in these additional locations.

Now integrated into the broader OBBN, the programme objectives include the maintenance of an accessible database of BMI abundance and chemical/physical habitat characteristics for Northern Ontario lakes and streams, and use of these resources to assess and monitor anthropogenic effects on surface waters by detecting any change in BMI community structure. Community data is now available on the province's open data portal, data.ontario.ca.

Northern Fisheries Research Program (MNR)

This program improves our understanding and aids the management of the fish populations that support the recreational, commercial and subsistence fisheries of northern Ontario. The program is led by Tom Johnston (MNR) and has included a variety of projects examining the biology, ecology, and ecotoxicology of northern fish populations. Work on this program in 2024 was primarily directed at two fields of research:

i) Assessing fish biodiversity recovery at the drainage basin scale. This work was supported in 2024 by MNR Aquatic Research and Monitoring Section and NSERC. The geographic focus of this work is on Near North waters, particularly in the historical acid-deposition zone of NE Ontario.

ii) Reproductive ecology of northern fishes. This research was funded in 2024 by the MNR Aquatic Research and Monitoring Section and NSERC. We carried out a second controlled-breeding experiment to determine the influence of parental traits on gamete quality and egg survival for an inland lake trout spawning stock.

Contaminants in Fish Studies

Dr. Gretchen Lescord, Assistant Professor in the School of Forests, Fisheries and Geomatic Sciences at the University of Florida and adjunct professor in the School of Natural Sciences (SoNS) at Laurentian, has led an impressive team of graduate students over the last couple of years tackling several pressing issues related to contaminants in fish in Ontario. Calvin Kluke MSc, completed a statistical study of the landscape and biological community factors that affect arsenic bioaccumulation in a number of fish species across northern Ontario. His recently published paper showed that migratory species that access marine food resources in James and Hudson Bays have elevated levels of arsenic (https://doi.org/10.1139/cjfas-2022-0106). MSc student Adam Lepage did a novel follow-up analytical study to Calvin's study to determine which chemical species of arsenic occur in various species of fish to determine if elevated values expressed as total arsenic actually contain the more toxic forms. His paper was published in

Environmental Toxicology and Chemistry (https://doi.org/10.1002/etc.5817) while his associated literature review (http://doi.org/10.1139/er-2024-0011) was recently recognized as Editor's Choice in Environmental Reviews.


Editor's Choice | Review

A review of arsenic speciation in freshwater fish: perspectives on monitoring approaches and analytical methods

Authors: Adam T. Lepage, Brian Laird, Kelly Skinner, John M. Gunn, and Gretchen L. Lescord | AUTHORS INFO & AFFILIATIONS

Publication: Environmental Reviews • 18 September 2024 • https://doi.org/10.1139/er-2024-0011

MSc Student Taylor Nicholls, a community member from Wahnapitae First Nation, recently completed her thesis from an assessment of contaminants in fish from lakes used by her community for subsistence fishing. This project has attracted considerable media attention and is a collaborative project with Dr. Brian Laird at the University of Waterloo, who will be addressing any potential health implications of excessive consumption of particular size and species of fish.

You can read some of the news coverage here:
(https://www.google.com/amp/s/beta.ctvnews.ca/local/northern-ontario/2023/1/13/1_6230121.amp.html)

Conservation Biology of Herpetofauna

The Litzgus Lab continued its work in the field of conservation biology, with a focus on amphibians and reptiles – some of the most globally imperiled species. We are currently living in the planet's sixth mass extinction event. Species extinctions are correlated and accelerating, and have severe implications for human society through degradation of ecosystem services. Thus, there is a compelling need to understand and predict population dynamics of at-risk species in natural environments and in environments modified by human activities. Demography links the processes that affect individuals to patterns that occur at the population level which in turn affect organismal and genetic biodiversity. Thus, vital rates data need to be considered in the design and implementation of management plans informed by population models for conserving Species At Risk (SAR).

Turtles are at particular risk of extinction; of the ~350 species world-wide, 2/3 are declining in numbers because of habitat loss and harvesting for the pet and traditional medicine trades. Because of their life history traits (long generation times, delayed maturity, low reproductive success), turtles are especially prone to population declines when adults are lost from indirect

(eg, habitat loss and fragmentation) and direct sources of mortality (eg, vehicle strikes on roads, harvesting), because population persistence relies on the iteroparity of long-lived adult females.

The long-term vision of the Litzgus research program is to use empirical data to inform conservation policy and recovery actions for SAR herpetofauna, to aid in protecting critical habitats and long-term population viability of these species. The work that supports this vision is organized into 3 themes that encompass population dynamics and individual behaviour, tests of the impacts of habitat modification and efficacy of associated recovery actions, and spatial ecology studies. Decades-long mark-recapture datasets for several at-risk turtle species facilitate robust demographic modeling to project population viability. Field-based methods (visual encounter surveys, live-trapping, nest site surveys, telemetry) are coupled with modeling to describe and project community and population patterns over time in response to catastrophes (eg, mass mortality events, poaching) and human modification of landscapes (eg, roads, railways, windfarms). The Litzgus Lab research program has included tests of threat mitigation strategies using experimental field approaches, including Before-After-Control-Impact (BACI) designs to test the efficacy of exclusion fencing and ecopassages to reduce road mortality and connect fragmented populations. The program also includes collaboration and knowledge co-creation with First Nation communities. These studies have produced data that have been applied to species conservation, thus addressing environmental needs by supporting recovery actions and policy for reptile species listed by federal (COSEWIC) and provincial (COSSARO) bodies, and ostensibly protected by SARA and the Ontario ESA.

Highlights from projects completed in 2024 include the results of Jonathan Choquette's PhD dissertation, in which he used systematic literature review, occupancy modeling, artificial hibernation, retrospective analysis of zoo data, and population viability modeling to evaluate the effectiveness of various in situ and ex situ conservation techniques with the overall goal of improving the success of conservation translocations for temperate zone snakes, with a focus on the Eastern assasauga (*Sistrurus catenatus*). Jonathan identified specific translocation tactics that influence the outcomes of snake translocations, thus providing guidance for conservation practitioners. He found that snake detection probabilities were highest for team visual encounter surveys in spring and summer, he validated the

suitability of reintroduction sites based on artificial hibernacula that he designed, he tested factors associated with improved reproductive output in zoo-bred female snakes, and he conducted a population viability analysis to investigate competing snake reintroduction scenarios. Brooke Carroll's MSc work in partnership with Magnetawan First Nation used turtle community census data to assess the efficiency of different survey methods for turtles to help the community prioritize habitat protection in the face of the widening of Hwy 69. Brooke located 772 turtles and found that survey efficiency (number of turtles caught per unit sampling effort) increased with warming temperatures in early spring, and that using multiple sampling methods may help decrease taxonomic and size biases. Aidan Maloney's MSc work in partnership with Henvey Inlet First Nation and Blazing Star Environmental investigated the potential impacts of windfarm operations and wildfire on herpetofauna biodiversity, anuran calling behaviour, and snake health. Aidan found that anuran diversity, evenness, richness, and relative abundances were lowest in windfarm sites, whereas metrics in wildfire sites did not differ from those in control sites, and squamate total abundance was lowest in sites impacted by both the windfarm and wildfire. The Litzgus Lab also continued its long-term partnership with Bruce Power to monitor at-risk turtles near their operations. In 2024, Jackie's NSERC Discovery Grant entitled, "Population ecology and behaviour inform the conservation of reptiles" was funded for 5 years and will support the training of 2 PhD, 5 MSc, 12 UG students.

The Watershed Ecology Team: Federal partners at the Canadian Forest Service (Natural Resources Canada, NRCan)

The Watershed Ecology Team generates science to inform best practices and policies for sustainable forest management in Canada, with a specific focus on a watershed-based approach to forest management.

The team, led by Dr. Erik Emilson, brings a watershed perspective to forest harvest, silviculture, afforestation, and reforestation. An industry-partnered project in New Brunswick is ongoing to investigate the role of forest structure as a 'press' disturbance (in response to harvest and silviculture), versus the effects of management events themselves as 'press' disturbances on water quality and aquatic ecosystem condition.

The team also brings a watershed perspective to the management of natural forest changes, including that brought on by insects and wildfire, and the interactions with climate change and carbon cycles. Dr. Emilson is currently leading a large-scale project in Gaspésie, QC with industry and provincial partnerships to understand the role of defoliation by spruce budworm on the structure and function of headwater streams. In addition, the group is exploring the impacts of wildfire and wood-ash amendment on headwaters.

The Watershed Ecology Team also operates a molecular ecology laboratory, with capacity in eDNA and RNA extraction, several molecular assays related to microbial functions and activities, radioisotope tracer analyses and assays, and greenhouse gas analyses. In addition, the group has

analytical capacity for molecular water analyses, and has an ongoing equipment loan agreement with LWLC to share resources for spectral analyses of dissolved organic matter.

Ontario University Program in Field Biology (OUPFB)

The OUPFB Program offered both domestic and international field courses this year; however, Laurentian did not contribute a field module in 2024. Dr. Liz Favot now serves as the OUPFB Coordinator for Laurentian University with assistance from Karen Oman and we are excited to share that Dr. Favot will be offering a field course through the program in 2026.

Laurentian's OUPFB Class of 2019 in Killarney Park, ON.

Science Communication at the Vale Living With Lakes Centre

www.laurentian.ca/program/science-communication
Master's and Graduate Diploma in Science Communication (MSCom, G.Dip)

The Science Communication Graduate Program continues to contribute to the projects, research, and education of graduate students at the Vale Living with Lakes Centre. We do this through partnering on research projects and communication products that highlight the work being done by CFEU researchers and VLWLC scientists.

A total of 15 students graduated with a Master's of Science Communication in the fall of 2024. A total of eight part-time students were part of the program this year. In September 2024, we welcomed eight new full-time students from across Canada, and three international students, one from Bhutan, one from China, and one from Alaska, USA.

From wildfires and climate change to vaccines and pandemics, the many science-based social issues we face today continue to put a spotlight on the importance of effective and impactful science communication. Graduates from our program are still highly sought after. In September 2024, eight of our 12 graduates had landed jobs in their field by the end of the year. The demand for professionally and academically trained science communicators ensures our program's sustainability. We are still uniquely positioned as the only Science Communication graduate program in Canada. In addition, we developed a Thematic Minor at the undergraduate level in the fall of 2024 that includes a new 1st year Introduction to Science Communication and Society course. The Minor and new course will likely be approved in 2025, with students starting in Fall

2026. Offering such opportunities at the undergraduate level will contribute to our recruitment efforts and sustain our application rates.

Grant-supported projects:
Chantal Barriault was part of the School of Natural Sciences faculty team that was awarded the provincial Training and Equipment Renewal Fund (TERF, Ministry of Colleges and Universities). The successful grant proposal included $90,000 for a Science Communication Recording Studio and Science Communication Multimedia Production Labs in the Fraser Building. Michelle Reid was provided with teaching relief to manage the design of the labs, and purchasing of all equipment for the new labs.

Student achievements:
The Science Communication graduate students continue to benefit from belonging to the Vale Living With Lakes Centre. Collaborations between the Science Communication program and Lakes Centre's graduate students and researchers allow CFEU and VLWLC research to be the focus of SCOM student projects and assignments. The Science Communication students developed and produced short radio interviews in collaboration with the Master's in Biology students, created public-facing briefing documents based on the NSERC Alliance CRADLES grant announcement, and supported the renewal of the LWLC website, social media, and NPU through their GRA contributions.

Our students played an integral role in the success of Laurentian's Research Week in February 2024. Under the guidance and leadership of Michelle Reid, the students were judges of the Graduate Research Symposium (for SCOM 5066) and provided social media coverage of the entire week's schedule of events (for SCOM 5136).

In collaboration with our partners at Science North, the students worked alongside researchers from Health Sciences North, the Northern Ontario School of Medicine, and Public Health Sudbury and Districts to produce the 4th annual Northern MedTalks 2024. The combined viewership of the in-person and live streamed audience exceeded 300 people, with many more individuals tuning in over Eastlink Community TV and watching the recorded event. The event will continue for its 5th offering in April 2025.

Up North on Climate - Northern climate change and adaptation

Since 2012, Up North on Climate (UNOC) has promoted climate change education and supports Indigenous-led climate change adaptation in the north. We have been privileged to collaborate with many First Nation Councils, Indigenous communities, and like-minded organizations in Ontario and beyond.

In 2024, Chantal Sarrazin-Delay stepped into the role of UNOC Program Lead, taking over from Professor Emeritus Dr. David Pearson who stayed on the team as Associate Lead, Science and Communication, with a less time-demanding role.

PICCA and the PICCA Climate Action GeoHub

Since 2019, UNOC has collaborated with five northern Ontario Tribal Councils and Grand Council Treaty 3 as part of the Partnership for Indigenous Climate Change Adaptation, PICCA. PICCA strives to weave together Indigenous and western knowledges to support the development of climate resilient Indigenous communities on their Traditional Lands.

In 2024, we continued to build our online adaptation knowledge-sharing network, ACClimateNow, and produce adaptation resources appropriate for First Nation audiences. In 2024 we received funding through the NRCan Climate Change Adaptation Program to continue creation of the PICCA Climate Action GeoHub, a co-designed ArcGIS-based online hub that aims to be a one-stop site for climate change adaptation information relevant to Indigenous groups. The GeoHub, which was started with funding from the NRCan BRACE program (2019-2022), combines co-developed resources, Indigenous climate stories, western science, and publicly available open data. The project will also provide funding for a Climate Change Specialist in each Partner Council. The NRCan funding will continue through to 2026.

Nokiiwin Tribal Council – Collaborative Community Watershed Planning and Climate Change Adaptation

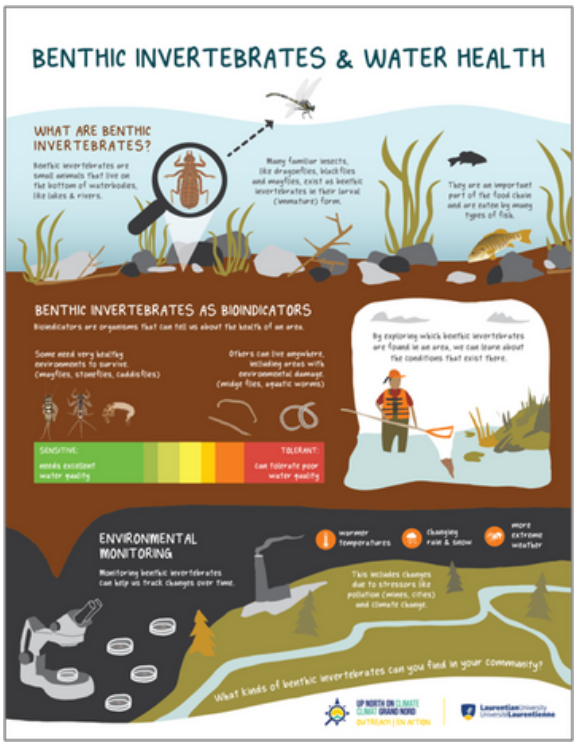
Throughout 2024, work continued on the Collaborative Community Watershed Planning and Climate Change Adaptation project with Nokiiwin Tribal Council. This included training for youth and Climate Change Champions in each community in benthic invertebrate sampling and identification for environmental monitoring, as well as the creation of updated climate change vulnerability reports. Community engagement sessions were also held to share information about the project and gather input from members on climate change challenges and adaptation solutions for their community. The project came to a close in December 2024.

Four Rivers Environmental – *Blastomyces* in northern Ontario

UNOC continues to collaborate with Four Rivers Environmental as they work to learn more about the *Blastomyces* fungus in and around Matawa communities. This included participating in the Four Rivers Environment Gathering in December 2024, to speak to attendees about *Blastomyces* in northern Ontario, as well as working towards publication of our *Blastomyces* literature review.

Canadian Feed the Children – Community Gardening

UNOC is collaborating with Canadian Feed the Children to create an infographic that encourages and supports gardening activities in First Nation communities as a means to increase food security, food sovereignty, and health. Work on this project is continuing into 2025.



UNOC Outreach with Goodman School of Mines

In summer of 2024, UNOC partnered with Goodman School of Mines to bring science outreach activities to schools, Indigenous communities, festivals, and events throughout northern Ontario. The UNOC Outreach activity involved using benthic invertebrates as indicators of environmental health and explaining the important role they can play in environmental monitoring. We also worked to create illustrated, plain-language handouts for both the UNOC and Goodman School of Mines outreach activities. Special thanks to UNOC summer student Charly Leclair for leading the UNOC Outreach activities at so many of these summer events. Funding for this work was provided by the Ontario Vehicle Innovation Network.

Knowledge and resource sharing

All resources created by UNOC are posted and freely available on our website, UpNorthOnClimate.ca. This includes our Quick Guide graphics, 2-page Infosheets, Adaptation Framework, Climate Change Word Guide, and more. Up North on Climate also maintains a public Facebook page with weekly posts sharing information and our climate change and adaptation resources. Finally, we continue to moderate ACClimateNow, a closed Facebook Group for those in Tribal Councils and First Nation communities with responsibilities touched by climate change.

Upcoming in 2025

We are excited to continue our work on the PICCA Climate Action GeoHub and to continue collaborating with, and learning from, the Climate Change Specialists and Tribal Council Partners who will work with us as part of this project. We are also looking forward to being involved with the Muskegowuk Coastal Resilience project that is slated to begin in early 2025; this project is in the final stages of approval.

Killarney Park Lake Charr Repatriation Studies

In 2024, we continued to explore the remarkable adaptability of lake charr (*Salvelinus namaycush*), this time focusing on fish living on an invertebrate-only diet, as we continue to restore lake charr populations in the acid-damaged Killarney Provincial Park lakes. Our experiments tested both embryo stocking through the ice (see Figure below) as well as the release of hatchery-reared yearling trout in fishless lakes, well in advance of attempting to rebuild additional parts of the food web. In 2021, the Ruth-Roy embryos were from a single-family source of Killala charr, with the same genetic stock introduced to Lumsden Lake as 1+ fish in 2022. In 2023 both Lumsden and Ruth-Roy received a mixed pool of embryos from multiple stocks of ELA charr. The two study lakes, Ruth-Roy and Lumsden, had no prey fish present for many decades but had undergone significant pH recovery in the past 25 years. Ruth-Roy had increased in pH from 4.85 to 5.8 between 1996 and 2022, while Lumsden increased from 5.19 to 6.0 during this same period. DOC also rose in both lakes (RR from 0.5 to 3.7 mg/L; Lumsden from 1.5 to 3.7 mg/L), a change which has provided sunblock protection against damaging UV radiation and allowed *Chaoborus* to thrive in these clear fishless lakes. The large standing crops of *Chaoborus* appeared to have been critical food items to support the rapid growth of lake trout in Ruth-Roy introduced as embryos through the ice in early March 2021. Rapid growth rate continued for these fish into 2023 (2+ fish = max size 1200 g) but stomach analysis and zooplankton sampling in the fall of 2023 suggested that the *Chaoborus* populations, particularly the vulnerable C. *americanus* species, may now have been largely decimated by the feeding trout. The second stocking of embryos in March 2023 also showed good growth as YOY fish but these small fish were feeding mainly on *Chironomidae* at the time of sampling.

In Lumsden Lake, the patterns were somewhat different, with both the YOY from the Feb 2023 embryo stocking event and 2+ fish (introduced as stocked hatchery 1+ fish in 2022) growing well, while still feeding mainly on *Chaoborus*, which were also still present (including C. *americanus*) in the zooplankton hauls. The Lumsden results suggest that this lake may either have a lower overall population of feeding trout that protected the *Chaoborus* from rapid decimation or perhaps has other lake characteristics that support more persistent *Chaoborus* populations. These exciting preliminary findings were presented in a poster paper (Rising Sun-Block DOC Protects *Chaoborus* from UV Radiation and Triggers Rapid Growth of Juvenile Lake Charr (*Salvelinus namaycush*) in an Otherwise Fishless Lake) by Adam Lepage and John Gunn at the Society of Canadian Aquatic Science in Hamilton on Feb. 19-22, 2025.

Atikameksheng Anishnawbek Partnership Project

Atikamekseng Anishnawbek is located within 20 km of the Copper Cliff smelter, with its once very dusty nearby associated tailing piles, and was the first location in Sudbury where federal scientists came to study pollution effects from the mining industry on local ecosystems (Beamish et al. 1975; DFO technical report). In 2022, we consulted with AAFN community leaders and agreed to conduct a reassessment of the status of water chemistry and fish communities within the reserve. The studies included standardized netting assessments (BsM), water testing at a local lab (Testmark), collection of fish tissues for contaminant analysis at Western University, and, in partnership with Dr. John Smol at Queen's University, paleolimnological studies of past changes as recorded in the sediment records. The paleolimnological studies support the work of two graduate students (MSc candidate Julia Paton; PhD candidate Emma Graves). The contaminant studies contribute to the work of CFEU's Dr. Gretchen Lescord, Adam Lepage, and John Gunn. The studies received enthusiastic support from the community and active involvement in all aspects of the sample collection efforts by AAFN staff of the Lands Department. A community meeting and lovely dinner was held on March 6, 2023 where Dr. Gunn presented the findings to date and transferred data files and samples to AAFN for safe keeping as per our confidentiality agreement.

The illustrated necklace was gifted to Dr. Gunn at that time. A second virtual community information session was held on November 8, 2023 to update the community on the results of the contaminant studies (Adam Lepage) and paleolimnological studies (Julia Paton).

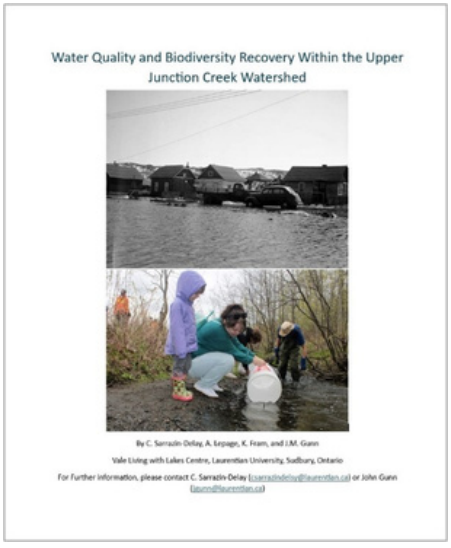
Conference presentations and publications are now proceeding, for example the co-authored presentations and publication listed below:

Lepage AT, GL Lescord, R Paishegwon, L Richer, C Assance, TA Johnston, BA Branfireun and JM Gunn. Trace elements in fish from an industrial region near Sudbury, Ontario. Canadian Ecotoxicity Workshop, Ottawa, ON. 2-6 Oct 2023.

Lepage AT, GL Lescord, R Paishegwon, L Richer, C Assance, TA Johnston, BA Branfireun, DE Ponton, and JM Gunn. 2024. Rethinking Consumption Advisories: Additive Toxicity of Trace Elements in Fish from an Industrial Region. Society for Freshwater Science, Philadelphia, USA, June 2-6, 2024.

Lepage AT, R Paishegwon, TA Johnston, DE Ponton, BA Branfireun, JM Gunn, and GL Lescord. Rethinking Fish Consumption Advisories: Considering Additive Toxicity of Trace Elements in Freshwater Fish. Can. J. Fish. Aquat. Sci. Submitted.

Nickel District Conservation Authority/ Laurentian University Partnership Program



CFEU has established a 3-year partnership program between Nickel District Conservation Authority and LU to share information from student and faculty research projects to assist with the management of conservation lands. In Year 2, we focused on water quality and aquatic biodiversity studies conducted within the Upper Junction creek watershed , an area with several NDCA properties and many areas of significant natural asset value to the community. The watershed has a history of severe environmental damage from mining, forestry and urban development activities but is now showing

the positive impacts of investments in pollution control on water quality improvements and biological recovery (including 19 new species of fish). Some key findings were:

1. The long history of forestry, mining and urban development led to massive soil erosion, metal contamination and biodiversity loss in the Upper Junction Creek watershed with widespread impacts of catastrophic floods and habitat damage.

2. Construction of flood control dams, lime plants on industry effluent streams, installation of sanitary sewers, community-based tree planting efforts (2.3 million trees) and massive investments to reduce atmospheric deposition of acid and metals (> 95%) have produced remarkable beneficial effects.

3. Monthly monitoring by the Junction Creek Stewardship Committee (lab support from Vale) shows order-of-magnitude reductions in acid and metals, with levels now approaching Provincial Water Quality objectives (PWQO).

4. Significant biodiversity recovery has been detected in recent decades with the return of many sensitive species of benthic invertebrates and fish. For example, in 1965 the watershed had only a single species of fish (brook stickleback; confined to the least-impacted Maley tributary area) but now has 20 species, including stocked brook trout.

5. Much improvement has been recorded and the watershed now has many valued walking trails and other assets, but it remains highly vulnerable to climate extremes in the years ahead.

Wetland Restoration Project – Nipissing NSERC Alliance Missions Grant

Dr. Colin McCarter, CFEU Member, SoNS adjunct professor, and Canada Research Chair (CRC) in Climate and Environmental Change at Nipissing University, was awarded a 3-year $1.7 M NSERC Alliance Grant to lead a collaborative climate change and peatland restoration study in Sudbury, with the LU Greenspace experimental wetlands among the principal study sites. Partnering with the City of Greater Sudbury and Vale Base Metals, along with researchers Drs. Pete Whittington (Brandon University), Ellie Goud (St. Mary's University), Nathan Basiliko (Lakehead University), John Gunn, Janice Kenney and Peter Beckett (Laurentian University), the project is examining how metal and sulfur pollution from historical mining activities in Northeastern Ontario have impacted carbon storage, greenhouse gas emissions, as well as soil and water quality in wetlands. A key goal is also to determine whether traditional or new ecosystem restoration techniques are needed to restore both the biodiversity and ecosystem services of severely polluted wetlands. In 2024, we applied ~35,000 kg of restoration material on three different trial restoration techniques to assess the potential for Sphagnum moss reestablishment in severely polluted wetlands. Concurrent to our field trials, we are starting (March 2025) a parallel greenhouse experiment to accelerate our understanding of the biogeochemical, hydrological, microbiological, and ecological processes controlling Sphagnum moss reestablishment. We

continued our work along a Sphagnum moss recovery gradient, measuring greenhouse gas (CO2 and CH4) fluxes, water quality, and mercury biogeochemistry, and we began a new study on how historical lime application has impacted the ecological evolution of small depressional peatlands in Daisy Lake Provincial Park. The information gathered will be important to help us understand how to protect our environment and community from climate change, while unravelling how best to restore these polluted wetlands across the Sudbury basin.

BSc in Environmental Solutions (ESOL) program

The BSc in Environmental Solutions (ESOL) program, aiming for launch in September 2026, is advancing through the Institutional Quality Assurance Process (IQAP). After receiving unanimous approval from the School Council and the Provost, the program proposal is now being reviewed by two external experts.

A key highlight of the program is its partnership with Cambrian College's Environmental Monitoring and Impact Assessment Graduate Certificate Program (EMPD), allowing students in the ESOL program to graduate after 4 years of study with a university degree and a college graduate certificate. The proposed program will feature eight newly developed courses and will offer bilingual capacity for students wishing to obtain their bilingual certificate. The program also includes Indigenous environmental content developed by Indigenous Scholars. The program's development has been federally funded through a MITACS Business Strategy Internship, supported by the City of Greater Sudbury.

The ESOL program has been shaped by extensive consultation and a thorough feasibility study that was conducted by the Academica Group. This study included an environmental scan and consultations with industry leaders, past graduates, and prospective environmental students. The environmental scan highlighted the growing demand in the environmental sector, which estimated a total of 1.4 million jobs in Canada by the end of 2024, representing 7% of the total workforce. A job posting analysis showed a 397% increase in monthly postings over the past five years, underscoring the sector's rapid growth. Industry consultations identified four major trends shaping the field: increased Environmental, Social, and Governance (ESG) awareness, climate change and decarbonization efforts, evolving legislation and regulations, and technological advancements. These findings have been pivotal in ensuring the ESOL program aligns with labour market needs and prepares graduates for impactful careers in the environmental sector.

The ESOL Program Development Team L to R: Dr. Jeff Gagnon, Anastacia Chartrand and Dr. Jackie Litzgus

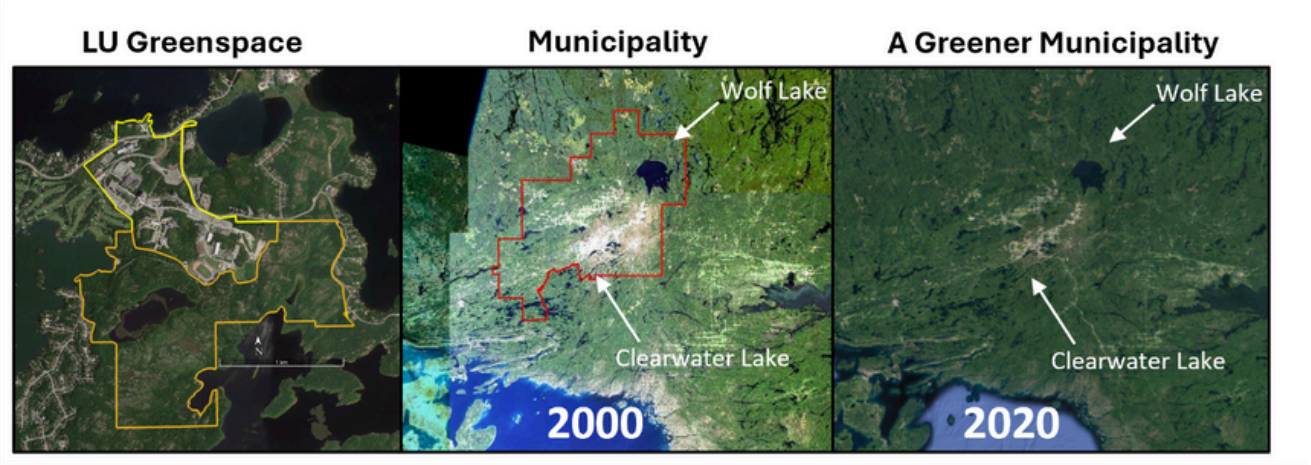
30x30 Task Force and LU Greenspace

Mayor Paul Lefebvre has established a 30x30 Task Force to respond to Canada's commitment at the COP 15 Biodiversity meeting in Montreal (Dec 2022) that we protect 30% of our land and water by 2030 (i.e., 108,913 ha within a 363,064 ha municipality). He views this challenge as an opportunity to be the first in the country to achieve this goal within a municipal area itself. Drs. Gunn and Beckett serve on the committee and are promoting several actions including:

1. The LU Greenspace to become an approved 30 x 30 protected area within the university campus. To this end, the Environmental Sustainability Committee, following winning funding support at the Innovation Challenge during 2024 LU Research Week and conducting extensive community consultation, developed a comprehensive LU Greenspace Management Plan for the University and Board of Governors to consider having a conservation easement established on this property for long-term protection. If approved, the LU Greenspace will continue to be a highly valued central place for university and public recreational use, biodiversity assessment, education, and restoration ecology research, to show the value of protected areas. This initiative will also focus international attention on the Sudbury Regreening Program.

2. The native lake trout (charr) lakes within the municipality become the highest priority waters for protection, given their unique history of impacts and subsequent restoration efforts. The lake charr, a glacial relict species, is a rare species in Ontario occurring in only 2% of lakes.

The iconic cold-water "old growth" species historically occupied 38 lakes (>10%) within the municipality, with a combined surface area of 22,286 ha, a potential series of protected waters that could represent as much as 20.5 % of our overall protection goal for the municipality. Included among these special lakes, whose basins retain crown ownership, are the two main drinking water surface sources in Sudbury (Wahnapitei Lake, Ramsey Lake). Remarkable recovery of naturally reproducing populations of trout has been achieved in many of these lakes in recent decades as pollution levels have declined, but continued monitoring and restoration efforts (e.g., hatchery stocking) are still needed in approximately 13 of the lakes, including Nepahwin Lake, a lake adjoining the LU Greenspace.



Conference Organizing, Program Coordination and Editorial Activities

Barriault, C
• Served on the Dean of Graduate Studies hiring committee • Served on the Science Program Committee of the Board of Trustees for Science North • Reviewer for Journal of Science Communication, International Journal of Science Education (Part:B Communication and Public Engagement and Journal of Public Understanding of Science.
Basiliko, N
• Associate Editor, Soil Research • Associate Editor, FEMS Microbiology Letters
Edwards, B
• Associate Editor for the Journal Lake and Reservoir Management

Conference Organizing, Program Coordination and Editorial Activities

Emilson, E

- Associate Editor for the Canadian Journal of Forest Research

Favot, E

- Associate Chair “Paleolimnology I & II” concurrent sessions at the 2024 North American Lake Management Symposium, South Lake Tahoe, California/Nevada, U.S.A.
- Co-chair “Application of long-term knowledge and data in solving aquatic environmental problems” session at the 2025 Society for Canadian Aquatic Sciences conference, Hamilton, ON, 2025
- Region 11 (Eastern Canada) Director, North American Lake Management Society, including chairing the Early-career Researcher Working Group, and participating on the Education and Outreach, and Justice, Equity, Diversity and Inclusion committees
- Peer-reviewer for manuscripts submitted to the Journal of Paleolimnology and the Journal of Lake and Reservoir Management

Gunn, J

- Faculty Co-chair for the Environmental Sustainability Committee
- Faculty Advisor for the Nature Positive University Team at Laurentian
- Served on Selection Committee for Vice President Academic and Provost.

McCarter, C

- Vice President, Canadian Geophysical Union (CGU), Biogeosciences Section (2023-Present)
- Member, CGU, Equity, Diversity and Inclusivity Committee (2021-present)
- Served on the Conference Planning Committee for Canadian Geophysical Union Annual Meeting in Ottawa (2024) and organized the Biogeosciences academic oral and poster sessions
- Article Editor for Mires and Peat (2023-present)

Ramcharan, C

- Associate Editor, Frontiers in Environmental Science

Reid, M

- Served on the planning committee for Laurentian Research Week 2024. In addition to her planning contributions, she coordinated and trained judges of the Graduate Symposium (for SCOM 5066) and led social media coverage by students of the entire week’s schedule of events (for SCOM 5136).
- Serves as a member of the Centre for Research in Occupational Safety and Health

Conference Organizing, Program Coordination and Editorial Activities

Swanson, H

- Associate Editor, Arctic Science

Tanentzap, AJ

- Associate Editor of Nature Scientific Reports
- Associate Editor of Journal of Vegetation Science
- Associate Editor for PLoS Biology

Watmough, SA

- Director of the Environmental and Life Sciences Graduate Program, Trent University
- Editorial Board Member for Science of the Total Environment
- Instructed a 1-week field course for Trent students in Barbados
- Reviewed 30 journal articles

Partners and Collaborators

- Acadia University
- Algonquin Wildlife Research Station
- Appalachian State University
- Blazing Star Environmental
- Boniferro Millworks
- Brandon University
- Canadian Feed the Children
- Canadian Kraft Papers
- Carleton University
- City of Greater Sudbury
- Clergue Forest Management
- Cornell University
- Dept. of Fisheries and Oceans Canada
- Domtar Inc.
- Dorset Environmental Science Centre
- Dryden Forest Management Company
- Environment and Climate Change Canada
- Experimental Lakes Area IISD
- Forest Protection Limited
- Friends of Killarney
- Georgian Bay Mnidoo Gamii Biosphere
- Glencore Sudbury INO
- Goodman School of Mines
- Grand Council Treaty 3
- Great Lakes Forestry Centre, NRCan
- Henvey Inlet First Nation
- IMDEA Agua, Spain
- Institute of Baltic Sea Research
- Irving Pulp and Paper
- Keewaytinook Okimakanak (Northern Chiefs) Tribal Council and member First Nations

Partners and Collaborators

- Laurentian University
- Magnetawan First Nation
- Manitoulin Streams Improvement Association
- Matawa First Nations Management, Four Rivers Environmental Services Group and member First Nations
- McGill University
- McMaster University
- Memorial University
- Mercer-Peace River
- Ministère des Forêts, de la Faune et des Parcs (MFFP)
- Mount Allison University
- Mushkegowuk Tribal Council and member First Nations
- Natural Resources Canada
- Nipissing University
- Nokiiwin Tribal Council and member First Nations
- OMECP
- OMNRF
- Ontario Forest Research Institute (MNR)
- Ontario Parks
- Pattern Energy
- Queen's University
- Rayonier Advanced Materials
- Resolute Forest Products
- Scales Nature Park
- Science North
- Shawanaga First Nation
- Shibogama Tribal Council and member First Nations
- St. Mary's University
- The Resilience Institute (TRI)
- Thunder Bay Pulp and Paper
- Toronto Metropolitan University
- Toronto Zoo
- Trent University
- UK Centre for Ecology and Hydrology
- University of Birmingham
- University of Cambridge
- University of Copenhagen
- University of Florida
- University of Guelph
- University of New Brunswick
- Université Laval
- Université du Québec à Montréal
- University of Sherbrooke
- University of Toronto
- University of Toronto @ Scarborough
- University of Uppsala
- University of Waterloo
- University of Winnipeg
- US Forest Service
- Vale Ltd.
- Wahnapitae First Nation
- Weenusk First Nation
- Western University
- Weyerhauser Canadian Timberlands
- Wildlife Conservation Society Canada
- Wildlife Preservation Canada
- Wilfrid Laurier University

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Fram K and C Sarrazin-Delay. 2024. Benthic macroinvertebrate communities before rehabilitation of Kagawong River site KAG142, Cooperative Freshwater Ecology Unit report, Sudbury, ON, 13pp.

Leach JA and EJS Emilson. 2024. Land use and water-use changes: Forest Change. In Synthesis of freshwater science in Canada: An overview toward informing discussion on prioritization of freshwater science activities. Environment and Climate Change Canada.

Lepage AT. 2024. Scots Pine (*Pinus sylvestris*) at Laurentian University: An invasive species report. Laurentian University Environmental Sustainability Committee, Sudbury, ON. 9pp.

Smyth C, JS Metsaranta, M Fortin, S Le Noble, H MacDonald, J Wolfe, C Boisvenue, J Laganière, J Krakowski, X Zhu, D Paré, P Tompalski, EJS Emilson, K Webster, M Dosanjh, L Venier and J Edwards. 2024. 2023 Blueprint for forest carbon science in Canada. Natural Resources Canada, Canadian Forest Service.

Up North on Climate. 2024. Animbiigoo Zaagi'igan Anishinaabek, Adapting to a changing climate, 2024 Watershed Update, For consideration in preparing a community-based climate change adaptation plan. Climate Change Impact and Adaptation Study for the North publications. Sudbury, ON. 134pp.

Up North on Climate. 2024. Biinjitiwaabik Zaaging Anishinaabek, Adapting to a changing climate, 2024 Watershed Update, For consideration in preparing a community-based climate change adaptation plan. Climate Change Impact and Adaptation Study for the North publications. Sudbury, ON. 118pp.

Up North on Climate. 2024. Bingwi Neyaashi Anishinaabek, Adapting to a changing climate, 2024 Watershed Update, For consideration in preparing a community-based climate change adaptation plan. Climate Change Impact and Adaptation Study for the North publications. Sudbury, ON. 122pp.

Up North on Climate. 2024. Fort William First Nation, Adapting to a changing climate, 2024 Watershed Update, For consideration in preparing a community-based climate change adaptation plan. Climate Change Impact and Adaptation Study for the North publications. Sudbury, ON. 119pp.

Up North on Climate. 2024. Netmizaaggaming Nishinabeg, Adapting to a changing climate, 2024 Watershed Update, For consideration in preparing a community-based climate change adaptation plan. Climate Change Impact and Adaptation Study for the North publications. Sudbury, ON. 145pp.

Sarrazin-Delay C, AT Lepage, K Fram, and JM Gunn. 2025. Biodiversity recovery within the Upper Junction Creek watershed: Evidence of the conversion of a deadly environmental hazard into a high-valued community asset. Cooperative Freshwater Ecology Unit, Laurentian University, Sudbury, ON. 61pp.

Conference Presentations

Ambeau T, J Baxter-Gilbert, J Litzgus, M Rasmussen, J Riley, D Seburn, A Smolarz, A Yagi, K Yagi and C Davy. Life in the third dimension: sexual size dimorphism in an endangered turtle. Canadian Herpetological Society, Sidney, BC. 20-22 Sept 2024. Lightning talk.

Arnott SE and 20 others. Intraspecific variation in Daphnia pulicaria/pulex complex response to salt: a multi-region study. Association for the Science of Limnology and Oceanography, Madison, WI. Jun 2024.

Auclair-Fournier É, M Garneau and P Roy-Léveillée. A reconstruction of peat and carbon accumulation in a degrading lithalsa field near Kangiqsualujjuaq, Nunavik (Northern Quebec, Canada). ArcticNet's ArcticChange 2024, Ottawa, Canada. 9-12 Dec 2024.

Auclair-Fournier É, M Garneau and P Roy-Léveillée. Vegetation succession and its impact on carbon accumulation in a thermokarst landscape in Nunavik (Northern Quebec, Canada). 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024.

Auclair-Fournier É, P Roy-Léveillée and M Garneau. Vegetation succession and carbon accumulation in a permafrost thaw-affected peatland in the vicinities of Kangiqsualujjuaq in Nunavik (Northern Quebec, Canada). Congrès des étudiants du Geotop, Montréal, Québec, Canada. 22-24 Mar 2024.

Barriault C, J Breton and E Gauthier. Défis et opportunités: reconnaissance et intégration de la formation en communication de la science à l'Université Laurentienne. 91e congrès ACFAS - l'Association francophone du savoir. Ottawa, ON. May 2024.

Basiliko N. Wastewater treatment at pulp mills and opportunities for biosolids utilization. Northwestern Ontario Water and Wastewater Conference, Thunder Bay, Canada. Oct 2024. Invited.

Basiliko N. How pollution control, soil reclamation, and afforestation are restoring the Sudbury, Ontario landscape and sequestering carbon. Canadian Land Reclamation Association - 14th Annual Ontario Mine Reclamation Symposium and Field Trip, Sudbury, Canada. Sept 2024. Invited.

Basiliko N. From "Moonscape" to the happiest city in Canada: How pollution control, soil reclamation, and afforestation are restoring the Sudbury, Ontario landscape (and sequestering carbon). Annual meeting of the Canadian Society of Soil Science, Vancouver, Canada. Jun 2024.

Basiliko N. Soil biogeochemistry and microbiology research at Lakehead University. "Investigación en biogeoquímica y microbiología del suelo en la Universidad Lakehead". I Simposio international sobre la salud del suelo. First international symposium on soil health, at Central University of Ecuador, Quito and Riobamba, Ecuador. Apr 2024. Invited.

Beckett P, G Spiers, J Lavigne, N Basiliko, M Hebert and O Baudet. 50 years of pollution controls, soil amendments, and afforestation are restoring the landscape of Sudbury, Ontario, Canada. Society of Ecological Restoration, North American Conference, Vancouver, 24-28 Oct 2024.

Conference Presentations

Beckett P, J Seaward, N Basiliko and L Harris. Sphagnum re-establishment in smelter-impacted peatlands in Sudbury, Ontario, Canada: The Potential for Restoration. 14th European Conference on Ecological Restoration, Tartu, Estonia, 26-30 Aug 2024.

Cardinal RM, É Auclair-Fournier, M Garneau and P Roy-Léveillée. Assessing carbon and mercury storage in organic-rich wetlands near Nunavik communities. ArcticNet's ArcticChange 2024, Ottawa, Canada. 9-12 Dec 2024.

Cardinal RM, B Branfireun and P Roy-Léveillée. Methylmercury concentrations in a degrading lithalsa field near Kangiqsualujjuaq, Nunavik (Québec), Canada. 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024.

Carroll B, S Noganosh and J Litzgus. Effects of methodological and temporal factors on efficiency of sampling freshwater turtle communities. Canadian Herpetological Society, Sidney, BC. 20-22 Sept 2024.

Chiasson D, N Bhiry and P Roy-Léveillée. Post-drainage evolution of Wolverine Lake, Old Crow Flats, Yukon. ArcticNet's ArcticChange 2024, Ottawa, Canada. 9-12 Dec 2024.

Chiasson D, N Bhiry and P Roy-Léveillée. Post-drainage evolution of an old drained lake basin in Old Crow Flats, Yukon, Canada. 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024.

Clark A, C McCarter, A Furukawa, EJS Emilson and JA Waddington. Effect of peat burn severity on peatland DOC export and quality following wildfire. CGU Annual Conference, Ottawa, ON. Poster. Student Award Winner.

Crisias H and P Roy- Léveillée. Properties of Tyrrell Sea glaciomarine silts and clays: State of knowledge and data gaps. 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024.

Cushon A and P Whittington. The influence of regenerating forests on peatland catchment hydrology in Sudbury, Ontario. Peatland Science Symposium, Biogeoscience Institute, Kananaskis, AB. 19 Feb 2025 Poster.

Eebo F, C McCarter and A James. 2024. Estimating the fraction of young water in streamflow in mesoscale Precambrian Shield catchments in Northeastern, ON, CA. Canadian Geophysical Union Annual Meeting, Ottawa. Poster.

Emilson EJS, M McCaig, K Kidd, KS Ju, R Maranger, C McCarter, S Ouimet, HK Sidhu, E Smenderovac, M Stastny and L Venier. Consideration of downstream aquatic consequences of defoliation in outbreak management strategies. North Central Forest Pest Workshop, Sault Ste. Marie, ON.

Emilson EJS, K Kidd, KS Ju, R Maranger, M McCaig, C McCarter, S Ouimet, HK Sidhu, E Smenderovac, M Stastny and L Venier. Understanding the response of downstream aquatic ecosystems to defoliation by Eastern Spruce Budworm to inform outbreak management strategies. SCAS Annual Conference. Fredericton, NB.

Conference Presentations

Favot EJ, KM Rühland, AM Paterson, W Dodsworth, JP Smol and F Pick. 2024. Multi-century environmental change and cyanobacterial dynamics inferred from lake sediments in Three Mile Lake, Ontario, Canada. North American Lake Management Symposium: Flood & Drought, Fire & Ice: Managing Lakes Under Changing Climates. South Lake Tahoe, California/Nevada, U.S.A.

Fields EN and TA Johnston. 2024. Watershed perspectives: Fish biodiversity patterns in six drainage basins of the historical acid-damaged region of NE Ontario, Canada. Annual meeting of the Society for Freshwater Science, Philadelphia, PA, USA, 2-6 Jun 2024.

Fields EN and TA Johnston. 2024. Examining the efficiency of gill net-based community surveys for fish biodiversity assessment in northeastern Ontario shield lakes. Annual meeting of the Society of Canadian Aquatic Sciences, Fredericton, NB, 21-24 Feb 2024.

Ford E, Z Dulić, SE Arnott, I Sassenhagen, J Isanta-Navarro, JL Rodriguez Gill, P Urrutia Cordero and S Langenheder. Impact of salinization rate on zooplankton community diversity at two lakes in Sweden. Association for the Science of Limnology and Oceanography, Madison, WI. Jun 2024.

Gagnon S, K Turner and P Roy-Léveillée. Recent advances in research investigating permafrost conditions, geomorphology, and lake hydrology in Old Crow Flats (YT, Canada). 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024.

Garibaldi M, O Hararuk, K Webster, H He, EJS Emilson, K Bona, A Cassidy, D Thompson and Y Zhang. Simulating carbon dynamics in permafrost peatlands: progress on the development of the CaMPPer. ArcticNET 2024, Ottawa, ON.

Gauthier S, J Gérin-Lajoie, A Simon and P Roy-Léveillée. Participatory mapping to assess the importance of wetlands to the northern community of Kangiqsualujjuaq. ArcticNet's ArcticChange 2024, Ottawa, Canada. 9-12 Dec 2024.

Gigeroff A, JL Riley, J Baxter-Gilbert and J Litzgus. Investigating the presence of gartersnakes (*Thamnophis sirtalis*) on the island of Newfoundland. Canadian Herpetological Society Virtual Conference.

Gigeroff AES, JL Riley, J Baxter-Gilbert and JD Litzgus. Update on the invasion of Common Gartersnakes (*Thamnophis sirtalis*) in Newfoundland. Canadian Herpetological Society, Sidney, BC. 20-22 Sept 2024.

Gigeroff AES, J Baxter-Gilbert, JD Litzgus and JL Riley. Colour variation of invasive Common Gartersnakes (*Thamnophis sirtalis*) in Newfoundland. Canadian Herpetological Society, Sidney, BC. 20-22 Sept 2024. Poster.

Gunn JM. Learning from Lake Charr. Society of Canadian Aquatic Sciences, Hamilton, ON, 19-22 Feb 2025.

Gunn JM. Restoring industrially impacted peatlands. International Workshop on Restoring Industrially Impacted Peatlands, Sudbury.23 May 2024.

He H, EJS Emilson, K Webster, K Bona, A Cassidy, M Garibaldi, O Hararuk, D Thompson and Y Zhang. Tracking dissolved organic carbon loss from wetland-dominated systems: empirical data synthesis and model concepts development for the Hudson Bay Lowlands. ArcticNET 2024, Ottawa, ON. Poster.

Conference Presentations

Johnson C, SE Arnott and J Rusak. Multi-stressor effects of chloride and calcium on Canadian lake zooplankton community assemblages. Association for the Science of Limnology and Oceanography, Madison, WI. Jun 2024.

Ju KS, KA Kidd, C Mitchell and EJS Emilson. Effects of forest defoliation by insects on in-stream carbon and mercury cycling. Society for Freshwater Science Annual Meeting. Philadelphia, PA.

Kirkwood A, P Roy-Léveillée, N Basiliko, M Richardson, M Packalen and J McLaughlin. Spatial variation of Hg storage in the Hudson Bay Lowlands. ArcticNet's ArcticChange 2024, Ottawa, Canada. 9-12 Dec 2024.

Kirkwood A, P Roy-Léveillée, N Basiliko, M Richardson and L Harris. Mercury storage and cycling in thawing permafrost peatlands of the Hudson Bay Lowlands. 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024.

Kirkwood A, P Roy- Léveillée, M Richardson, M Harris and N Basiliko. Modelled peat depth and mercury storage in the Hudson Bay Lowlands. Peatland Ecology Research Group Symposium. Québec, QC, Canada Quebec City, Canada.

Lepage AT, E Wright, and JM Gunn. Rising sun-block DOC protects chaoborus from UV radiation and triggers rapid growth of juvenile lake charr (*Salvelinus namaycush*) in an otherwise fishless lake. Society of Canadian Aquatic Sciences, Hamilton, ON, 19-22 Feb 2025. Poster.

Lepage AT, GL Lescord, R Paishegwon, L Richer, C Assance, TA Johnston, BA Branfireun, DE Ponton, and JM Gunn. Rethinking consumption advisories: Additive toxicity of trace elements in fish from an industrial region. Society for Freshwater Science, Philadelphia, USA. 2-6 Jun 2024.

Lescord GL, J Simard, J Seguin, CE Farrell, A Litinov, HA Macleod, EJS Emilson and C O'Connor. Hydroelectric generating stations alter dissolved organic matter (DOM) quality and benthic macroinvertebrate abundances in a large northern river. Society for Freshwater Science Annual Meeting. Philadelphia, USA. 2-6 Jun 2024.

Levenstein B, J Levy, WA Monk, R Steeves, N Gagné, TM Porter, M Hajibabaei, EJS Emilson, A Bush, E Lacroix and DJ Baird. Combining community-based monitoring with DNA metabarcoding to study riverine biodiversity in benthic macroinvertebrate communities of the Canadian Maritimes. SCAS Annual Conference. Fredericton, NB.

L'Hérault E, M Allard, F Calmels and P Roy- Léveillée. Near real-time ground temperature monitoring networks using Low Power Wide Area Network (LoRaWAN): challenges and opportunities in northern Quebec and Yukon. 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024

Lounsbury S, T Burke and J Litzgus. Snakes at the skate park: A novel half-pipe fence design for mitigating road mortality of Eastern Foxsnakes (*Pantherophis vulpinus*) in eastern Georgian Bay, Ontario. Canadian Herpetological Society, Sidney, BC. 20-22 Sept 2024. Winner - Best Lightning talk.

Maslard D, M Garneau and P Roy-Léveillée. Impact of vegetation succession on thermal conditions and carbon dynamics in the Saniqimatik Valley, Nunavik, Canada. ArcticNet's ArcticChange 2024, Ottawa, Canada. 9-12 Dec 2024.

Conference Presentations

Matula E, EJS Emilson. E Smenderovac, J Fonvielle, DK Thompson and AJ Tanentzap, A. Wildfires change dissolved organic carbon composition in boreal headwater streams. ASLO Annual Conference, Madison, WI.

McCarter C. Lurking in smoke and flame: Exploring how wetland wildfires are releasing our toxic industrial legacy. Brandon University Environmental and Health Sciences Seminar Series. 25 Oct 2024. Seminar.

McCarter C. NSERC Alliance Grant: Mining atmospheric CO2: Assessing the efficacy of novel carbon sequestration strategies in smelter damaged ecosystems to achieve net zero GHG emissions. International Workshop on Restoring Industrially Impacted Peatlands, Sudbury, ON. Invited.

McCarter C. Solute transport in peat and peatlands. University of Leeds Peat Club. Leeds, UK. 14 Mar 2024. Invited.

McCarter C. Releasing our toxic legacy: How wetland wildfires are releasing historical industrial pollution to our air, land, and water. 16th Annual Undergraduate Research Conference, North Bay, Ontario, March 22nd-23rd. Keynote. McCarter C, O Sutton and J Waddington. Quantifying peat fire metal emissions of our stored toxic industrial legacy. 35th International Geographical Congress, Dublin, Ireland, 25-30 Aug 2024.

McCarter C, P Beckett, E Goud, P Whittington, N Basiliko, F Pendea, J Seward and J Gunn. 2024. Learning how to restore peatland function in a toxic metal and metalloid polluted landscape. 35th International Geographical Congress, Dublin, Ireland. 25-30 Aug 2024. Poster.

McCarter C, S Sebestyen, E Nater and R Kolka. Methylmercury export from a headwater peatland catchment decreased with cleaner emissions despite opposing effect of climate warming. 16th International Conference on Mercury as a Global Pollutant, Cape Town, South Africa. 22-26 Jul 2024.

McCarter C, S Ketcheson, H Huang and C Mitchell. The importance of hydrogeomorphic setting for total mercury and methylmercury export from fen wetlands in western Canada. Canadian Geophysical Union Annual Meeting, Ottawa.

McLean C and C McCarter. 2024. Effects of acidic forest soil restoration liming on the ecohydrology and geochemistry of downstream degraded peatlands. International Workshop on Restoring Industrially Impacted Peatlands, Sudbury.

McLean C, J Dech, E Goud and C McCarter. 2024. The role of peatland margins in vegetation recovery from historical nickel and copper smelting operations. Canadian International Workshop on Restoring Industrially Impacted Peatlands, Sudbury. Poster.

McLean C, J Dech, E Goud and C McCarter. 2024. The role of peatland margins in vegetation recovery from historical nickel and copper smelting operations. Canadian Geophysical Union Annual Meeting, Ottawa. Poster.

Mitchell CPJ, H Huang, WY Lam, V Mangal, C Lajoie, R Mackereth, S Melles, KA Kidd and EJS Emilson. Forest harvesting impacts on methylmercury production in and export from central Canadian boreal watersheds. 16th International Conference on Mercury as a Global Pollutant. Cape Town, South Africa.

Conference Presentations

Monk M, A Bush, B Levenstein, J Levy, R Steeves, N Gagne, T Porter, M Wright, M Hajibabaei, EJS Emilson, E Lacroix and D Baird. Strengthening our ability to detect change from streams to landscapes using eDNA for bioassessment. SCAS Annual Conference. Fredericton, NB. Poster.

Montgomery M and C McCarter. 2024. Assessing CO2 and CH4 gas flux in peatlands across a metal-contaminated recovery gradient. International Workshop on Restoring Industrially Impacted Peatlands, Sudbury.

Oduro A and P Whittington. Mining atmospheric CO2: Peatland restoration in a smelter damaged ecosystem. Peatland Science Symposium, Biogeoscience Institute, Kananaskis, AB. 19 Feb 2025 Poster.

Pawson K and C McCarter. 2024. Metal transport processes of industrially sourced toxic metals along a peatland recovery gradient. International Workshop on Restoring Industrially Impacted Peatlands, Sudbury.

Pawson K, A Clark, J Waddington and C McCarter. 2024. Mercury transportation and storage in unburned and burned Precambrian shield bedrock peatlands. International Workshop on Restoring Industrially Impacted Peatlands, Sudbury. Poster.

Pawson K, A Clark, J Waddington and C McCarter. 2024. Mercury transportation and storage in unburned and burned Precambrian shield bedrock peatlands. Canadian Geophysical Union Annual Meeting, Ottawa. Poster.

Pearson D and C Sarrazin-Delay. Climate impacts in northern communities and some useful tools: Climate Atlas and PICCA Climate Action GeoHub, Northern Ontario First Nation Environmental Conference. Thunder Bay. 2-3 Oct 2024. Invited.

Pearson D. PICCA Climate Action Geohub booth and break out group. Mushkegowuk Research and Knowledge Sharing Summit. Timmins. 21-24 Nov 2024.

Pearson D. Climate change in the Homelands. Four Rivers Environment Gathering. Thunder Bay. 3-5 Dec 2024. Invited.

Pearson D and C Sarrazin-Delay. Climate adaptation. Presentation and workshop. Cree Regional Climate Forum. Ouje-Bougoumou. 9-11 Apr 2024. Invited.

Pepinelli M, AR Biganzoli, K Lunn, P Arteaga, A Zayed, D Borges and EL Clare. Can we track honey bee foraging and health through colony air? Entomological Society of Ontario Meeting. 4-6 Oct 2024

Pepinelli M, AR Biganzoli, K Lunn, P Arteaga, A Zayed, D Borges and EL Clare. Airborne eDNA to track honey bee foraging and health. BeeCON, York University. Oct 2024.

Postenka E, C Davy and J Litzgus. Rare events and long-term datasets: A unique opportunity to study the impacts of wintertime wetland drawdown on turtle populations. Centre for Applied Sciences in Ontario Protected Areas (CASIOPA) Annual Conference, Waterloo, ON. Lightning talk.

Rahman T and P Roy-Léveillée. Permafrost landscape evolution in the Barrens of Northern Manitoba. ArcticNet's ArcticChange, Ottawa, Canada. 9-12 Dec 2024.

Rahman T, D Froese and P Roy- Léveillée. Ice-wedge development in the Barrens of the Hudson Bay Lowlands, northern Manitoba. 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024.

Conference Presentations

Rahman T, D Froese and P Roy-Léveillée. Développement des coins de glace dans les Barrens au nord du Manitoba. 44e Colloque annuel du Centre d'études nordiques 2024, Quebec City, Canada.

Reid M. Northern MedTalks: Co-creating powerful presentations with medical professionals to engage public audiences. Public Communication of Science and Technology Teaching Forum - Participatory Approaches for Teaching Science Communication. 7 Mar 2024.

Rodriguez Gill JL, Z Dulić, E Ford, G Guangbine, A Guttormson, J Isanta-Navarro, S Langenheder, M Mullins, J Rodrigo, I Sassenhagen, A Singh, P Urrutia Cordero, A Zhjeqi and SE Arnott. Site-specific differences, but not exposure profiles drive the responses of primary-producers to freshwater salinization. Association for the Science of Limnology and Oceanography, Madison, WI. Jun 2024.

Roy-Léveillée P. Local expressions of global change: Impacts of permafrost thaw in the Canadian North. ArcticChange 2024, Ottawa, Canada. 9-12 Dec 2024. Plenary Keynote.

Roy-Léveillée P. Permafrost dynamics and landscape evolution in the thermokarst plain of Old Crow Flats. 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024. Opening Keynote.

Roy-Léveillée P. La gémorphologie des plaines pergélisolées et la résilience du Nord face au dégel / Permafrost geomorphology and northern resilience to thaw. Congrès des étudiants du Geotop, Montréal, Québec, Canada. 22-24 Mar 2024. Invited.

Sarrazin-Delay C. PICCA Climate Action Geohub booth. Four Rivers Environment Gathering. Thunder Bay. 3-5 Dec 2024.

Sarrazin-Delay C, K Jorgensen and W Neegan. Blastomycosis in Constance Lake: Spreading awareness and research. Four Rivers Environment Gathering. Thunder Bay. 3-5 Dec 2024. Invited.

Sarrazin-Delay C. Gardening in a changing climate. Climate Change Forum. Metis Nation of Ontario. Virtual. 11 May 2024. Invited.

Seward J, P Beckett, S Bräuer, P Roy- Léveillée, EJS Emilson. S Watmough, L Harris and N Basiliko. Sphagnum re-establishment in smelter impacted peatlands and a novel sphagnum transplant experiment. Canadian Geophysical Union Annual Conference, Ottawa, ON. 26-29 May 2024.

Simon A and P Roy-Léveillée. Compensation measures for the loss of wetlands and bodies of water in Nunavik. ArcticNet's ArcticChange 2024, Ottawa, Canada. 9-12 Dec 2024.

St-Amour A, M Allard and P Roy- Léveillée. Electromagnetic signatures in glaciofluvial and glaciomarine deposits in permafrost, Nunavik. 12th International Conference on Permafrost: Integrating Perspectives of Permafrost Thaw, Change, and Adaptation, Whitehorse, Canada. 16-20 Jun 2024.

Stastny M, EJS Emilson, S Heard, L-P Comeau, M McCaig, K Kidd, L Venier and C Wagg. Spruce budworm and ecological functioning of forest watersheds. 2024 Pest Forum. Ottawa, ON.

Stastny M, EJS Emilson, L Venier, K Kidd and S Heard. Spruce budworm and ecological functioning of forested watersheds. Healthy Forest Partnership EIS Open House Webinar. Virtual.

Conference Presentations

Tétrault M, V Maire and P Roy-Léveillée. Assessment of the vulnerability of organic carbon to mineralization due to climate change in northern wetlands. ArcticNet's ArcticChange 2024, Ottawa, Canada. 9-12 Dec 2024.

Thibeault S, K Moxley, J Hathaway and JD Litzgus. Population demography and spatial ecology of a central Ontario population of Spotted Turtles (*Clemmys guttata*). Canadian Herpetological Society, Sidney, BC. 20-22 Sept 2024.

Watmough S. What's up with the water: understanding water quality in Muskoka. Muskoka Summit of the Environment, Bracebridge, ON. 4 Oct 2024.

Watmough S and McDonough. The response of vascular plants in xeric Boreal forests to atmospheric nitrogen deposition depends on precipitation. Canadian Geophysical Union Annual Conference, Ottawa, ON. 26-29 May 2024.

Watmough et al. Some lessons learned from wood ash additions to forest soils in Muskoka-Haliburton. Haliburton Forest Research Day. 13 May 2024

Watmough et al. Enhanced rock weathering of wollastonite for carbon capture at Haliburton Forest, Ontario. Haliburton Forest Research Day. 13 May 2024

Webster K, K Bona, EJS Emilson, D Thompson, O Hararuk, M Garibaldi, H He, A Cassidy and Y Zhang. What's new in the camp-ground? Peatland carbon modelling in the Hudson Bay Lowlands. Mushkegowuk Research and Knowledge Sharing Summit, Timmins, ON.

Yu M, S Bols, J Trottier and J Litzgus. Movement behaviour and long-term population assessment of Wood Turtles (*Glyptemys insculpta*) in central Ontario. Canadian Herpetological Society, Sidney, BC. 20-22 Sept 2024. Poster.

Yu M, S Bols, J Trottier and J Litzgus. The power of long-term datasets for monitoring populations of long-lived turtles. Centre for Applied Sciences in Ontario Protected Areas (CASIOPA) Annual Conference, Waterloo, ON. Lightning Talk.

Research Grants

Arnott, S

- CFI. Environmental and climate change observatory of Ontario (ECCO-Ontario): Infrastructure for research into biotic responses to climate change and other stressors. Co-applicant with PI S. Lougheed and 6 others (2024-2029)
- Mitacs and Friends of Killarney Park. A foundation for success: understanding current environmental conditions and emerging risks to support successful ecosystem recovery and biodiversity gains in Killarney Park lakes. Arnott PI with Derry, Edwards (2024-2026)
- South Frontenac Ecosystem Grant. Littoral Zone Study of Devil Lake. PI Devil Lake Association (2024-2025)
- NSERC International Alliance Catalyst. Impacts of urban multiple stressors in aquatic and terrestrial ecosystems (2024-2025)

Research Grants

- NSERC Alliance. New genomics and aerial drone tools for monitoring, managing and mitigating threats in aquatic ecosystems. Co-applicant with PI S. Lougheed and 2 others (2023-2025)
- NSERC Discovery. A multi-scale approach to identifying the ecological impact of co-occurring environmental stressors (2019-2025)
- i-LINK. A global analysis of the impacts of freshwater salinization on aquatic biodiversity (GLOBALSALT). PI M. Cañedo-Argüelles and 6 others (2023-2024)

Basiliko, N

- Mitacs Accelerate (and Resolute Forest Products). Planning paired-watershed-scale biomass boiler ash utilization trials to support bioenergy waste diversion, forest regeneration, and aquatic ecosystem health. Basiliko (sole PI) (2025)
- NSERC Collaborative Research and Training Experience (CREATE). Canadian Training Program on Nature-Based Solutions for Ecosystem Restoration. D Khasa (PI), L Rochefort, M Mazerolle, J Dessureault-Rompré, T Gumiere, D Torkamaneh, S Sivarajah, K Afif (U Laval), S Chang (U Alberta), M Isaac (U Toronto), and N Basiliko (2024-2029)
- Mitacs Accelerate (and SAPPI North America). Managing the greenhouse gas burden of pulp and paper wastes at Sappi North America. N DeMartini and Basiliko co-PIs (2024-2026)
- CFI, John Evans Leaders Fund and ORF - Small Infrastructure. Research infrastructure for multitrophic studies of boreal forest landscapes. Basiliko (PI) with A Thomson and S-I Lee (Lakehead) (2023-2028)
- NSERC Alliance. Mining atmospheric CO2: Assessing the efficacy of novel carbon sequestration strategies in smelter damaged ecosystems to achieve net zero GHG emissions. McCarter PI, Co-Applicants: N Basiliko, P Whittington, M Goud. Collaborators: J Gunn, P Beckett (2023-2025)
- Lakehead University International Partnerships Grant. Bridging Ecuadorian and Canadian Perspectives in soil health: a new partnership to support soil conservation research. Basiliko (PI) with B McClaren, A Diochon (Lakehead)and R Kolka (USDA Forest Serv.) (2023-2024)
- Mitacs Accelerate (and Canadian Kraft Paper Industries). Novel treatments and end uses for kraft mill residuals: on-mill-site post-doctoral research for improved dewatering and energy recovery and developing targeted soil amendments for agriculture, silviculture, and land reclamation. DeMartini and Basiliko co-PIs (2022-2024)
- NSERC Discovery. The tiny majority: how microbes mediate ecosystem functioning under anthropogenic stressors in boreal environments (2019-2025)
- NSERC Innovation Links Grant. Constraints on northern aggregate mine reclamation and novel reclamation strategies for enhancing biodiversity and ecosystem functioning with M Hebert, M Nellis, R Rochon, S Bouchard, R Craig (Collège Boréal), G Spiers, and P Beckett (Laurentian) (2021-2025)

Research Grants

Beckett, P

- NSERC Innovation Links Grant. Constraints on northern aggregate mine reclamation and novel reclamation strategies for enhancing biodiversity and ecosystem functioning with M Hebert, M Nellis, R Rochon, S Bouchard, R Craig (Collège Boréal), and G Spiers and Basiliko (Laurentian U) (2021-2025)
- NSERC Alliance. Mining atmospheric CO2: Assessing the efficacy of novel carbon sequestration strategies in smelter damaged ecosystems to achieve net zero GHG emissions. McCarter PI, Co-Applicants: N Basiliko, P Whittington, M Goud. Collaborators: J Gunn, P Beckett (2023-2025)

Edwards, B

- NSERC Alliance. Conservation and Restoration of Aquatic Diversity in the face of Legacy and Emerging Stressors (CRADLES) with Vale, Glencore, MECP and MNR. Litzgus PI, Co-Applicants: B Edwards, T Johnston, J Smol and M Rennie (2024-2027)
- CFEU funding for Post Doctoral Fellow
- MITACS Accelerate, A foundation for success: Understanding current environmental conditions and emerging risks to support successful ecosystem recovery and biodiversity in Killarney Park lakes. S Arnott PI, B Edwards collaborator.

Emilson, E

- Genomics Research Development Initiative. Genomic Adaptation and Resilience to Climate Change (the GenARCC Project) (2022-2025)
- Healthy Forest Partnership. Spruce budworm pest management as a conservation tool for critical habitats and ecological integrity of forest watersheds. Co-Lead with M. Statsny (2018-2025)

Favot, E

- Laurentian University Start-up Grant (2024-2027)

Gunn, J

- NSERC Canada Research Chair Tier 1 in Stressed Aquatic Systems (2003-2024)
- NSERC Discovery, Terrestrial ecosystem services and recovery of damaged aquatic systems (2016-2024)
- Conservation Sudbury. LU/NDCA Partnership Program (2023-2025)
- NSERC Alliance. Conservation and Restoration of Aquatic Diversity in the face of Legacy and Emerging Stressors (CRADLES) with Vale, Glencore, MECP and MNR. Litzgus PI, Co-Applicants: B Edwards, T Johnston, J Smol and M Rennie (2024-2027)

Research Grants

- NSERC Alliance. Mining atmospheric CO2: Assessing the efficacy of novel carbon sequestration strategies in smelter damaged ecosystems to achieve net zero GHG emissions. McCarter PI, Co-Applicants: N Basiliko, P Whittington, M Goud. Collaborators: J Gunn, P Beckett (2023-2025)

Johnston, T

- NSERC Discovery Development Grant Program. The trophic niche in aquatic food webs (2024-2026)
- Ontario Ministry of Natural Resources and Forestry, Aquatic Research and Monitoring Section. Northern fisheries research (2004 – present, renewed annually)
- NSERC Alliance. Conservation and Restoration of Aquatic Diversity in the face of Legacy and Emerging Stressors (CRADLES) with Vale, Glencore, MECP and MNR. Litzgus PI, Co-Applicants: B Edwards, T Johnston, J Smol and M Rennie (2024-2027)

Lescord, G

- National Research Council Canada, Northern Challenge Program Grant. Real-time monitoring of contaminants in food fish and water. A. Tanentzap Co-I (2023-2026)
- First Nations Environmental Contaminant Program (FNECP). Understanding contaminants of potential concern in fish from traditionally-important water bodies around Wahnapitae First Nation. Granted to Wahnapitae First Nation with G. Lescord and B Laird as scientific partners (2022-2024)

Litzgus, J

- NSERC Alliance. Conservation and Restoration of Aquatic Diversity in the face of Legacy and Emerging Stressors (CRADLES) with Vale, Glencore, MECP and MNR. Litzgus PI, Co-Applicants: B Edwards, T Johnston, J Smol and M Rennie (2024-2027)
- NSERC Discovery. Population ecology and behaviour inform the conservation of reptiles (2024-2028)
- NOHFC. Internship in Conservation and Biodiversity Restoration. (2024-2025)
- Vale Ltd. Cooperative Freshwater Ecology Unit project support including the CRADLES project (2024-2027)
- Glencore Sudbury Integrated Nickel Operations. CRADLES program support (2024-2027)

Research Grants

McCarter, C

- NSERC Alliance. Mining atmospheric CO2: Assessing the efficacy of novel carbon sequestration strategies in smelter damaged ecosystems to achieve net zero GHG emissions. McCarter PI, Co-Applicants: N Basiliko, P Whittington, M Goud. Collaborators: J Gunn, P Beckett (2023-2025)
- NOHFC, Workforce Development Program: Analytical Trace Metal Technician (2024-2025)

Mykytczuk, N

- NOHFC (through MIRARCO with support from Vale Global). Industrial Research Chair in Biomining and Bioremediation (2023-2028)
- Mining Innovation Commercialization Accelerator (2023-2025)
- NSERC Discovery. Understanding variability in microbial biomining and bioremediation consortia; adaptation mechanisms for multiple extremes (2019-2025)

Pearson, D

- Matawa First Nations Management: Blastomyces literature review and resource production with C. Sarrazin-Delay (2022-2025)
- Great Lakes Program, Canada- Ontario Agreement, Ministry of the Environment, Conservation and Parks with Nokiiwin Tribal Council: Collaborative Community Watershed Planning and Climate Change Adaptation with C. Sarrazin-Delay (2023-2025)

Pepinelli, M

- Atkins Innovation Fellowship. Developing a non-invasive eDNA device to track Climate-Change-Induced Shifts in Plant-Pollinator Networks (2024-2025)

Roy-Léveillée, P

- Administration régionale Kativik (ARK). Icing mechanisms in Quaqtaq, Contrat (2024-2029)
- Research Chair in permafrost geomorphology in Nunavik, Ministère de l'Environnement et de la Lutte aux Changements Climatiques (2020-2025)
- NSERC Discovery. Permafrost aggradation and degradation in relation to disturbance in isostatically uplifted (2022-2027)
- CFI Equipment. Dynamiques géomorphologiques des plaines pergélisolées en dégradation et rétroactions environnementales (2022-2025)
- NTCF Northern Arctic Funding. PermaRail: A Transdisciplinary Approach to Increasing Railway Resilience to Permafrost Terrain Changes in a Warming Climate Co-applicant with J Hayley (2021-2028)

Research Grants

- NSERC Strategic Partnership Grants for Networks. Permafrost Partnership Network for Canada. Co-PI (2019-2024)

Sarrazin-Delay, C

- Matawa First Nations Management: Blastomyces literature review and resource production with C. Sarrazin-Delay (2022-2025)
- NRCan Climate Change Adaptation Program: PICCA GeoHub and micro credentials, (2024-2026)
- Great Lakes Program, Canada- Ontario Agreement, Ministry of the Environment, Conservation and Parks with Nokiiwin Tribal Council: Collaborative Community Watershed Planning and Climate Change Adaptation with C. Sarrazin-Delay (2023-2025)
- Ontario Vehicle Innovation Network with Goodman School of Mines (Summer 2024)
- Canadian Feed The Children: Infographic development (2024-2025)
- Manitoulin Streams Improvement Association: Benthic invertebrate assessment (2024-2025)

Spiers, G

- NSERC Innovation Links Grant. Constraints on northern aggregate mine reclamation and novel reclamation strategies for enhancing biodiversity and ecosystem functioning with M Hebert, M Nellis, R Rochon, S Bouchard, R Craig (Collège Boréal), and P Beckett and N Basiliko (Laurentian U) (2021-2025)
- MITACS-Testmark, MITACS Accelerate Grant. Development of passive sampling devices for natural and artificial radionuclides in the context of pre- and post-deployment of small nuclear reactors in remote areas. Spiers (PI, LU) with Caron (CoI, RMC), Chabonneau (Testmark Project Lead) (2022-2024)

Swanson, H

- NSERC Alliance. Conservation and Restoration of Aquatic Diversity in the face of Legacy and Emerging Stressors (CRADLES) with Vale, Glencore, MECP and MNR. Litzgus PI, Co-Applicants: B Edwards, T Johnston, J Smol and M Rennie (2024-2027)

Tanentzap, AJ

- NSERC Disovery and Northern Research Supplement. Ecological importance of organic matter in a warming world (2023-2028)
- National Research Council Canada, Northern Challenge Program Grant. Real-time monitoring of contaminants in food fish and water. G Lescord Co-I (2023-2026)
- National Research Council Canada. Real-time monitoring of contaminants in food fish and water (2023-2026)

Research Grants

- CFI John R. Evans Leaders Fund Partnership grant. Environmental Microbiology culturing and sequencing facility (2022-2027)

Watmough, SA

- NSERC Alliance. Enhanced weathering of wollastonite for carbon dioxide removal at Haliburton Forest, Ontario. Co-PI with Power (2025-2027).
- NSERC Alliance Missions. The mixed blessings of rare earth elements as critical minerals. Co-Pi with 5 others (lead H. Dang) (2024-2027)
- Environment Canada. Targeting non-point sources of nutrient delivery in the Lower Rainy River basin Co-PI with C. Eimers (2024-2027)
- Rio-Tinto. Environmental effects monitoring for S deposition in Kitimat (2024-2027)
- NSERC Discovery. Can nutrients put the breaks on carbon capture? (2022-2027)
- Google, 2023 Google Carbon Removal Research Award. A demonstration project to remove 1000s of tonnes CO2 through enhanced weathering for sustainable forests. Co P.I. with 2 others (Power, Planavsky) (2023-2026) Climate change and forest carbon capture (2022-2026)

Whittington, P

- NSERC Alliance. Mining atmospheric CO2: Assessing the efficacy of novel carbon sequestration strategies in smelter damaged ecosystems to achieve net zero GHG emissions. McCarter PI, Co-Applicants: N Basiliko, P Whittington, M Goud. Collaborators: J Gunn, P Beckett (2023-2025)

Yan, N

- Canada Water Agency. Promoting Freshwater Health in Muskoka: Community-Led Reductions in Road Salt Usage (2024-2026)

Theses Completed

PhD

Choquette, Jonathan, PhD. Improving Conservation Translocation and Ex Situ Breeding Techniques for the Recovery of a Temperate Zone Rattlesnake. Laurentian University (Litzgus/Pitcher)

Kirkwood, Adam, PhD. Mercury storage and cycling in permafrost peatlands of the Hudson Bay Lowlands. Carleton University (Roy-Léveillée Co-sup.)

Kontou, Danai, PhD. Evolution in Muskoka Daphnia populations. University of Cambridge (Tanentzap)

Sandor, Sarah, PhD. How microbes evolve adaptations to different organic matter sources. University of Cambridge (Tanentzap)

MSc

Cardinal, Rose-Marie, MSc. Mobilisation du mercure dans une tourbière à lithalses en degradation, Nunavik. Université Laval (Roy-Léveillée)

Carroll, Brooke, MSc. Quantification of turtle capture efficiency and the impact of development on plant communities within community-selected priority areas in Eastern Georgian Bay. Laurentian University (Litzgus)

Deslauriers, Catherine, MSc. Régime thermiques de palses et lithalses à Kangiqsualujjuaq, Nunavik. Université Laval (Roy-Léveillée Co-sup.)

Fields, Emily, MSc. Assessing Fish Biodiversity in Northeastern Ontario Drainage Basins: Methodological and Landscape Effects (Johnston)

Maloney, Aidan, MSc. Impacts of Wildfire and Windfarm Construction and Operation on Herpetofauna Community Ecology. Laurentian University (Litzgus)

Martins, Diana, MSc. Geoecological evolution of a thawing subarctic landscape, Kangqsualujjuaq. Université de Lisbonne (Roy-Léveillée Co-sup.)

Matula, Erin, MSc. Wildlife impacts on aquatic dissolved organic matter. Trent University (Tanentzap/Emilson)

Nicholls, Taylor, MSc. Indigenous Partnered Research on Contaminants in Subsistence Fish from the Sudbury Basin. Laurentian University (Lescord/Gunn)

Theses Completed

MSCom Major Research Papers/Projects, Laurentian University

Akinfeleye, Peluola. MSCom. Coverage of environmental Issues in Nigerian television media: A study of Channels television, Africa Independent Television and Nigeria Television Authority.

Bardell, Gordon. MSCom. Visual impairment accessibility in earth science museums.

Breton, Jérôme. MSCom. Understanding the relationship between fisherman and government scientists: The fisherman point of view.

Croft, Melissa. MSCom. News coverage and public opinion: A case study of the 23andMe data breach.

Harrison, Sarah. MSCom. Mental health on Facebook: An exploration of messaging by Ontario's Public Health Units.

Lalande, Benoit. MSCom. Learning with live animals at Science North.

Loane, Ethan. MSCom. AI Academia: STEM researchers' conceptual models of ChatGPT.

Pilon, Marie-France. MSCom. What's bugging you?: Investigating public attitudes towards insects and the factors that shape them.

Shaw, Emma. MSCom. TikTok tactics: Exploring how science communicators on TikTok can establish credibility and relatability with their audiences.

VanCamp, Maddy. MSCom. Jane Goodall's Reasons For Hope: A case study in the use of best practices for hopeful documentary filmmaking.

Van Leeuwen, Julie. MSCom. The Regreening of Sudbury: Understanding the knowledge, attitudes and perceptions of young adults living in Sudbury.

Vijayakumar, Vishnu. MSCom. Social marketing communication framework for public communications promoting individual emission reductions.

Theses Completed

Undergraduate

Beckwith, Neil. BSc Thesis. The suitability of the gibbsite dissolution constant for critical loads assessment in British Columbia. Trent University (Watmough)

Bouffard, Michaela. BSc Thesis. Demographic analysis of a coastal population of Spotted Turtles on Long Island, NY. Laurentian University (Litzgus)

Caruso, Steven. BSc Thesis. Dilution is the Solution to Pollution? Compounding Anthropogenic Effects on a River System: A Kapuskasing River Study. Nipissing University (McCarter)

Conway, Devon. BSc-F Thesis. Equipment effects on boreal forest soils: a review. Lakehead University (Basiliko)

Desaulniers, Jessica. BSc Thesis. Impact of human infrastructure on health and clutch size of female Blanding's and snapping turtles. Laurentian University (Litzgus)

Duan, Xinran. BSc-F Thesis. Pulp mill biosolids and soil aggregate stability. Lakehead University (Basiliko)

Gross, Justin. BSc Thesis. Adapting to anthropogenic influence: Exploring adaptive potential through standing genetic variation in changing freshwater ecosystems. Queen's University (Arnott)

Jacobsen, Willem. BSc Thesis. Organic matter relationships and factors controlling soil organic matter in Saskatchewan. Trent University (Watmough)

McLean, Campbell. BSc Thesis. The Role of Peatland Margins in Vegetation Recovery from Historical Nickel and Copper Smelting Operations. Nipissing University (McCarter)

Pawson, Kyle. BSc Thesis. Mercury Transportation and Storage in Unburned and Burned Precambrian Shield Bedrock Peatlands. Nipissing University (McCarter)

Simon, Alicia. BSc Thesis. Mesures de compensation pour la perte de milieux humides au Ninavik. Université Laval (Roy-Léveillée)

Socransky, Liam. BSc Thesis. Sperm Quality in Relation to Male Attributes in a Wild Lake Trout (Salvelinus namaycush) Population. Laurentian University (Johnston/Martinez)

Song, Yifan. BSc-F Thesis. Microbial responses to pulp mill biosolids as a soil amendment. Lakehead University (Basiliko)

Stewart, Ella. BSc Thesis. The effects of salt on D. pulicaria reproduction life history traits, trade-offs and survival. Queen's University (Arnott)

HQP Supervised

Undergraduate

Albrecht, Ellis. BSc Thesis in progress, Laurentian University (Edwards)
Berman, Ben. BSc Thesis in progress, Queen's University (Arnott)
Davidson, Stephanie. BSc-FThesis in progress, Lakehead University (Basiliko)
Forde, Abbie-Rose. BSc Thesis in progress, Queen's University (Arnott)
Handley, Lauren. BSc Thesis in progress, Trent University (Co-sup. Watmough)
Lanoue, Jean Paul. BSc Thesis in progress, Trent University (Watmough)
Mably, Sophie. BSc Thesis in progress, Queen's University (Arnott)
McKinnon, Bailey. BSc Thesis in progress, Laurentian University (Favot)
Pappin, Kate. BSc Thesis in progress, Laurentian University (Edwards)
Schroeder, Eve. BSc Thesis in progress, Nipissing University (McCarter)

MSc

Auclair-Fournier, Édith. MSc Thesis Student, Université Laval (Roy-Léveillée Co-sup.)
Beckwith, Neil. MSc Thesis Student, Trent University (Watmough)
Bewsh, Victor. MSc Thesis Student, Trent University (Watmough)
Cantin, Marianka. MSc Thesis Student, Laurentian University (Johnston/Martinez)
Chiasson, Danielle. MSc Thesis Student, Université Laval (Roy-Léveillée)
Corbière, Nicole. MSc Thesis Student, Laurentian University (Roy-Léveillée/Basiliko)
Criasis, Hemma. MSc Thesis Student, Université Laval (Roy-Léveillée)
Cushon, Anna. MSc Thesis Student, Brandon University (Whittington)
Dasne, Anne Sylvie. MSc Thesis Student, Trent University (Watmough)
Delage, Adam. MSc Thesis Student, Laurentian University (Johnston)
Faucher, Gabrielle. MSc Thesis Student, Laurentian University (Johnston)
Festus, Eebo. MESc Thesis Students, Nipissing University (McCarter)
Foley, Kaylen. MSc Thesis Student, Trent University (Watmough)
Ford, Erin. MSc Thesis Student, Queen's University (Arnott)
Grew, Ashley. MSc Thesis Student, Queen's University (Arnott)
Gross, Justin. MSc Thesis Student, Queen's University (Arnott/Rusak)
Guilder, Jordan. MSc Thesis Student, Trent University (Watmough)
Huth, Adelaide. MSc-F Thesis Student, Lakehead University (Basiliko)
Ingratta, Marissa. MSc Thesis Student, Trent University (Tanentzap)
LaFlamme, April. MSc Thesis Student, Queen's University (Arnott)
LaFrance, Celine. MSc Thesis Student, Queen's University (Arnott/Derry)
Lau, Vincent. MSc Thesis Student, Trent University (Tanentzap)
Lefebvre, Zachary. MSc Thesis Student, Université Laval (Roy-Léveillée)
Lounsbury, Sabrina. MSc Thesis Student, Laurentian University (Litzgus)
Mackenzie, William. MESc Thesis Students, Nipissing University (McCarter)
Mangelli, Wren. MSc-F Thesis Student, Lakehead University (Co-sup. Basiliko)
Maslard, Dorine. MSc Thesis Student, Université Laval (Roy-Léveillée)
McLean, Campbell. MESc Thesis Students, Nipissing University (McCarter)
Mihell, Brock. MSc Thesis Student, Laurentian University (Johnston/Martinez)
Mitchell, Samantha. MSc-F Thesis Student, Lakehead University (Basiliko/Pendea)
Montgomery, Megan. MESc Thesis Students, Nipissing University (McCarter)
Oduro, Akwasi. MSc Thesis Student, Brandon University (Whittington)

HQP Supervised

Pawson, Kyle. MESc Thesis Students, Nipissing University (McCarter)
Postenka, Erin. MSc Thesis Student, Laurentian University (Litzgus)
Siket, Katherine. MSc Thesis Student, Trent University (Tanentzap)
Tayyebi, Fatemeh. MESc Thesis Students, Nipissing University (McCarter)
Thibeault, Stephane. MSc Thesis Student, Laurentian University (Litzgus)
VanDenDiepstraten, Heather. P/T MSc Thesis Student, Laurentian University (Litzgus)
Yu, Mary. MSc Thesis Student, Laurentian University (Litzgus)

PhD

Britt, Meg. PhD Thesis Student, Laurentian University (Litzgus/Lougheed)
Burtt, Julie. PhD Thesis Student, Laurentian University (Barriault)
Conquer, Shelby. PhD Thesis Student, Trent University (Watmough)
Gigeroff, Andrea. PhD Thesis Student, Laurentian University (Litzgus/Riley)
Johnson, Caelan. PhD Thesis Student, Queen's University (Arnott/Rusak)
Kapoor, Dhruv. PhD Thesis Student, Trent University (Tanentzap)
Lavigne, Jonathan. PhD Thesis Student, Lakehead University (Basiliko/Beckett)
Milli, Celeste. PhD Thesis Student, University of Cambridge (Tanentzap/Emilson)
Munford, Kimber. PhD Thesis Student, University of Guelph (Glasauer/Mykytczuk)
Ngoma, Emmanuel. PhD Thesis Student, Laurentian University (Mykytczuk)
Osborne, Chetwynd. PhD Thesis Student, Trent University (Watmough)
Rahman, Tabatha. PhD Thesis Student, Université Laval (Roy-Léveillée)
Ramirez, Karla. PhD Thesis Student, Lakehead University (Co-sup. Basiliko)
Thompson, Paul. PhD Thesis Student, Queen's University (Arnott)

Postdoctoral Fellows

Badewa, Emmanuel. PDF, University of Toronto (Oelbermann/Basiliko)
Braga, Lucas. PDF, University of Cambridge (Tanentzap)
Chan-Yam, Kelly. PDF, University of Toronto (Co-sup. Basiliko)
Fonvielle, Jérémy. PDF, University of Cambridge (Tanentzap)
Gagnon, Samuel. PDF, Université Laval (Roy-Léveillée)
Guo, Minger. PDF, Trent University (Watmough)
Kolmakova, Olyesya. PDF, University of Cambridge (Tanentzap)
Levasseur, Patrick. PDF. Lakehead University (Basiliko)
Rodríguez-Uña, Asun. PDF, University of Cambridge (Tanentzap)
Schalkowski, Rebecca. PDF, Laurentian (Edwards/Favot)
Starr, Sommer. PDF, University of Cambridge (Tanentzap)

Research/Field Assistants

Adkinson, Kevin. Research Technician, Trent University (Watmough)
da Cunha Juchem, Isabel. Forest Biologist. Great Lakes Forestry Centre, NRCan (Emilson)
Cerf, Marie. MSc Intern for INSA Lyon at Trent (Tanentzap)
Chartrand, Derek. Lab Technician. Great Lakes Forestry Centre, NRCan (Emilson)
Côté, Raphaël. Research Assistant, Université Laval (Roy-Léveillée)
Demers, Brytanie. Research Assistant, Université Laval (Roy-Léveillée)
Fauché, Tifaine. MITACS Globalink Intern, Nipissing (McCarter)
Greco, Danielle. Forest Ecologist. Great Lakes Forestry Centre, NRCan (Emilson)

HQP Supervised

Hache, Raija. Environmental Technologist. Great Lakes Forestry Centre, NRCan (Emilson)
Lachance, Jean-Philippe. Research Assistant, Université Laval (Roy-Léveillée)
McCaig, Madison. Watershed Analyst. Great Lakes Forestry Centre, NRCan (Emilson)
McLean, Campbell. Summer Research Assistant, Nipissing (McCarter)
Miles, Andreah. Summer Research Assistant, Nipissing (McCarter)
Montgomery, Kimberly. Project Facilitator, Nipissing (McCarter)
Pawson, Kyle. Summer Research Assistant, Nipissing (McCarter)
Schroeder, Eve. Summer Research Assistant, Nipissing (McCarter)
Schumann, Olivia. MITACS Globalink Intern, Nipissing (McCarter)
Smenderovac, Emily. Watershed Ecologist. Great Lakes Forestry Centre, NRCan (Emilson)
Stoneley, Tomas. MITACS Globalink Intern, Nipissing (McCarter)
Wald, Sarah. Summer Intern. Great Lakes Forestry Centre, NRCan (Emilson)
Woodman, Samuel. Watershed Geoinformatics Specialist. Great Lakes Forestry Centre, NRCan (Emilson)

Staff and Faculty

External

Arnott, Shelley
Queen's University

Basiliko, Nathan
Lakehead University

Emilson, Erik
Canadian Forest Service, NRCan, Sault Ste. Marie, Cross-appointed Faculty LU

Roy-Léveillée, Pascale
Université Laval

Swanson, Heidi
Wilfrid Laurier University

Tanentzap, Andrew
Trent University

Watmough, Shaun A.
Trent University

Vale Living With Lakes Centre

Barriault, Chantal
Director, Science Communication Graduate Program, LU

Chartrand, Anastacia
P/T NPU Coordinator (Gunn) and P/T Bachelor of Environmental Solutions Program Development Assistant (Litzgus)

Edwards, Brie
MECP Research Scientist/Cross-appointed Faculty LU

Fram, Kim
Research Associate and Taxonomist, UNOC, LU

Favot, Liz
Assistant Professor, SONS, LU

Gunn, John
Canada Research Chair in Stressed Aquatic Systems, LU (Jan-Jul 2024), CFEU SRF in Stressed Aquatic Systems (Jul-Dec 2024)

Giroux, Michelle
Research Technician, MNR

Haslam, Lee
Senior Fisheries Technician, MNR

Staff and Faculty

Heneberry, Jocelyne
Monitoring Coordinator, MECP

Litzgus, Jackie
Director of CFEU, Vale Living With Lakes Centre

Morin, Avery
P/T NPU Coordinator and Summer NSERC USRA Student (Gunn)

Pepinelli, Mateus
Assistant Professor, SONS, LU

Johnston, Tom
MNR Senior Research Scientist/Cross-appointed Faculty LU

McAuliffe, Cassidy
Communication Specialist, UNOC, LU

Mykytczuk, Nadia
Exec. Dir. Goodman School of Mines, CEO and President MIRARCO

Reid, Michelle
Master Lecturer, Science Communication Graduate Program, SONS

Lepage, Adam
Research Project Coordinator (CRADLES)

Meadows, Emma
NOHFC Intern, Conservation and Biodiversity Restoration of Aquatic Systems

Oman, Karen
Business Manager, LU

Sarrazin-Delay, Chantal
UNOC Program Lead, Adjunct Professor, LU

Senior Research Fellows (SRF)

Beckett, Peter
SRF in Ecosystem Restoration, VLWLC (Emeritus Laurentian University)

Keller, Bill
SRF in Northern Studies, Vale Living with Lakes Centre (VLWLC)

Pearson, David
Associate Lead, Science and Communication, UNOC and SRF in Climate Adaptation, VLWLC (Emeritus Laurentian University)

Ramcharan, Charles
SRF in Freshwater Biology, VLWLC (Emeritus Laurentian University)

Rosseland, Bjorn
SRF in Ecotoxicology, VLWLC (Emeritus Norwegian University of Life Sciences)

Spiers, Graeme
SRF in Pedology, VLWLC (Emeritus Laurentian University)

Yan, Norm
SRF in Aquatic Ecology, VLWLC (Emeritus York University)

Staff and Faculty

Field Technicians and Research Assistants

Albrecht, Ellis
Summer NSERC USRA Student (Gunn/Edwards)

Desaulniers, Jessica
NPU Summer Field Assistant (Gunn)

Faucher, Gabrielle
MNR SEO student (Johnston)

Fergani, Jazmin
Summer NSERC USRA Student (Mykytczuk)

Fields, Emily
MNR Research Technician (Johnston)

Leclair, Charly
UNOC Outreach Summer Assistant (Sarrazin-Delay)

Pappin, Kate
Summer NSERC USRA Student (Edwards)

Paquette, Quinn
NPU Summer Field Assistant (Gunn)

Rodriguez, Macy
Summer NSERC USRA Student (Litzgus)

Trudeau, Bradleigh
NPU Summer Field Assistant (Gunn)

Cooperative Freshwater Ecology Unit
Unité Conjointe D'écologie D'eau Douce

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