

Newsletter of the Society of Canadian Limnologists

This issue:

- President's message.....1
- Welcome to our new student executive!.....2
- Research highlight.....3
- Protecting Canadian waters.....4
- SCL meeting updates.....5
- 2013 award winners.....6
- Society update.....6
- Student update.....6
- Upcoming meetings.....7
- Recent citations.....7

Right: Recent picture of the ELA sign, at the intersection of Pine Road and Highway 17, Northwestern Ontario. The photo has not been edited or altered. Photo credit: M. Rennie



A eulogy for the Experimental Lakes Area?

By Jules Blais, President

On May 17, 2012, the federal government announced that it would end its support of Canada's Experimental Lakes Area (ELA). The tremendous outpouring of support for saving ELA in the months that followed included a petition signed by over 23,000 Canadians, letters and op-ed articles in countless newspapers, and major protests on Parliament Hill and in Winnipeg and Regina. On the eve of ELA's closure, we reflect on what Canada accomplished with this innovation and how Canadian research changed the world.

Back in the 1960s and early 1970s, lakes and rivers around the world were being overcome with toxic algae and bacteria blooms. This was a very serious problem that was threatening the world's freshwater supply and killing fish. There was every indication that humans were the cause; the problems were most severe downstream of large cities and towns and near wastewater treatment plants and sewage outfalls. The problem facing the world was that nobody knew how to stop it. We couldn't turn off our taps and stop our effluents from flowing into rivers and lakes. And the problems of eutrophication were getting worse every year. The world was headed for an environmental catastrophe.

Then some pioneering scientific research was done in Canada at ELA. Here, in northwestern Ontario, near Kenora, a set of 58 lakes was set aside for experimentation, where whole-lake ecosystems could be altered to see how they respond to different kinds of perturbations. Nothing like the ELA has existed before or since. ELA's unique contribution was its ability to manipulate entire ecosystems, becoming the only place in the world where environmental problems could be assessed at this scale.

Scientists started adding different kinds of fertilizers to lakes to see if any one might be having a greater effect than others. In one experiment, scientists divided a lake in two sides with a curtain, and added a source of carbon and nitrogen to both sides, but phosphorus to only one side. The outcome of this experiment was astounding. The side that received phosphorus started to choke with a massive toxic algal bloom, exactly what was taking place in lakes worldwide.

The implications of this research were vast. Within a few short years, regulations were put in place to restrict the amount of phosphorus in effluents, including a switch to phosphorus-free detergents and soaps. New technologies were

Continued on page 2

Continued from page 1

developed to remove phosphorus from wastewaters. And the quality of water improved dramatically all over the world. A global environmental catastrophe was averted, and ELA counted this among its accomplishments before its fifth birthday.

Since the 1970s, the ELA has informed environmental regulators about acid rain, climate change, and pollutants of emerging concern, including mercury from fossil fuel burning and the potential environmental impacts of new contaminants like synthetic estrogen and nanomaterials. The ELA has always been at the forefront of major environmental issues, continuing its tradition of finding solutions before the problems become insurmountable.

In March 2013, the Canadian federal government intends to end its support of the Experimental Lakes Area, and as this article goes to press, there is no indication that negotiations with any other operators are progressing to the point that someone else will be able to continue the work. The SCL executive has learned that the Department of Fisheries and Oceans has now obtained three quotes to decommission and demolish the ELA. In the process, it will abandon Canada's most important contribution to innovative

environmental science that once put Canada on the map as leaders of environmental innovation and stewardship.

The SCL executive has sustained its efforts to inform the public on the importance of ELA and what Canadians stand to lose if ELA is closed forever. Our letters to Minister Ashfield requesting updates on the progress in negotiating a transfer to a new operator are available on the SCL website (<http://uregina.ca/~scl>), but no news is forthcoming, even as the final deadline nears to two weeks away. Even independent university scientists who have planned experiments at ELA for the summer of 2013 are left in the dark about whether they will have permission to access the site. A major stumbling block in transfer negotiations appears to be the liability for site remediation, and whether a new operator would be expected to assume this responsibility. The government has not indicated its position on liability transfer to a new operator, despite repeated attempts at clarification.

The Experimental Lakes Area is one of Canada's major scientific contributions in the global arena, attracting the world's best minds in international collaboration. The ELA is Canada's Hadron Collider, our space shuttle. Will this government really let it slip away to save \$2 million/year? ☹️

Introducing our new student executive



Francophone student representative
Jorge Negrin Dastis, PhD Candidate
 Département de sciences biologiques
 Université du Québec à Montréal



Anglophone student representative
Erik Szkokan-Emilson, PhD Candidate
 Laurentian University

Please join us in welcoming our two newest members to the SCL executive.

Jorge joins us from the Derry lab at UQAM, and has already been busy updating the SCL student forum (<http://sclforum.wordpress.com/>).

Erik is working away on his PhD at the Living with Lakes Centre at Laurentian University with John Gunn, and has taken the lead on setting up our Facebook page.

We look forward to more great contributions from our new student members, and are happy to have two enthusiastic and eager individuals filling this important role. ☺️

Special thanks to our outgoing student executive!

Vanessa Swarbrick, University of Regina
Morgan Botrel, Université de Montréal

Connect with SCL through social media

By Mike Rennie and Erik Szkokan-Elimson

The rumors are true: SCL has joined the modern age, and now has full-fledged Twitter and Facebook accounts.

The society initiated its Twitter account shortly after the last newsletter went out, and has been extremely well received. Since September 2012, we have gained over 400 followers, from Canada and globally, and we were thumbs-a-blazin' live-tweeting the annual meeting with CCFR under the hashtag #CanH2O13, along with many other enthusiastic attendees. You can follow us on twitter at [@Can_Limnology](https://twitter.com/Can_Limnology).

We have also switched our Facebook page over to a new format! The new page allows integration with Twitter, so that Facebook users can keep up with Canadian limnology news that we post. It is also a great forum for discussion amongst SCL members. The page has been well received with almost 100 followers in the first month, several from outside of Canada. If you have not already, please support us by 'liking' our Facebook page at: <http://www.facebook.com/SocietyOfCanadianLimnologists>. ☺️

Research highlight: Advancing Canadian Wastewater Assets

Improving wastewater treatment to protect ecosystem and human health

By Leland Jackson

Canada discharges more than 13 trillion litres of wastewater annually into natural ecosystems. Advancing Canadian Wastewater Assets (ACWA) is a unique, world-class research facility embedded within the City of Calgary's recently commissioned (2008) Pine Creek Wastewater Treatment Plant (WWTP).

An innovative partnership between the University of Calgary and the City of Calgary, ACWA's main goal is to advance wastewater treatment technologies to address increasing environmental and public health issues. Engineering modules will test novel wastewater treatment technologies at large scales, thereby avoiding scale translation issues associated with bench and pilot scale research and ensuring rapid adoption by wastewater utilities. These technologies include

parallel treatment trains with membrane bioreactors and conventional biological nutrient removal coupled to O₃, UV/H₂O₂, and membrane-based approaches (e.g., nano-filtration and reverse osmosis).

Effluent from the engineering modules will be discharged to 12 replicate, constructed, "natural" streams to test the impact of emerging pollutants on natural aquatic ecosystems. Four laboratories (one at Pine Creek and three at the U of C, including aquatic, stable isotope and microbiology laboratories) will enable researchers to analyze samples from the engineering and stream systems for pollutants, water quality and pathogens.

The research will improve our understanding of health risk assessment, and the study of environmental impacts and remediation to develop effective and sustainable water resource management strategies in Alberta and globally.

ACWA's research network currently includes scientists from across Canada and the United States from academia, government and industry. The University of Calgary has recruited two Tier I Canada Research Chairs, an NSERC IRC, a Tier II CRC, and will seek an

additional Tier II CRC within the next year to build additional research capacity. Because ACWA is embedded within the City of Calgary's Pine Creek WWTP, there is a high degree of flexibility to the research that can be conducted.

Engineering technologies will be modular 'plug and play'. Water for the streams can be from a variety of sources (Bow River, secondary effluent, advanced treatments) and can be routed back through Pine Creek for treatment, if required. Industries will participate in 'proof of concept' experimentation for emerging technologies at large scale, with demonstration of (presumably) environmental and human health benefits. For more information please visit:

www.ucalgary.ca/acwa/ 

FAST FACTS:

WHO? Leland J. Jackson, Professor, Department of Biological Sciences, University of Calgary and Director of ACWA.

WHERE? University of Calgary, Calgary, Alberta.

WHAT? Investigating waste treatment technologies in replicated experimental streams at industrial and ecologically relevant scales.

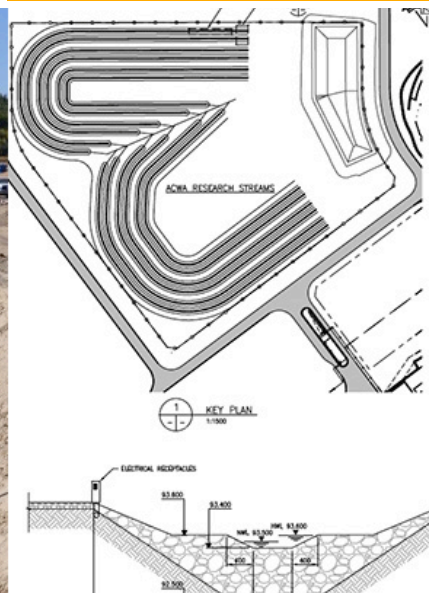
WHY? To improve our understanding of health risk assessment, and the study of environmental impacts and remediation to develop effective and sustainable water resource management strategies.

EXPERIMENTAL STREAMS:

- Streams are each ~325 m in length, 1 m deep and 3.5 m wide. Each stream will be constructed to have 10 pool/riffle combinations
- Streambed will remain thawed allowing overwintering of benthic invertebrate populations
- Streams can receive Bow River water, treated secondary effluent or effluent post advanced treatment
- 12 streams provide true experimental replication
- Streams can be dosed with emerging compounds with biological activity
- Streams can be seeded with native species or species with well defined genetic profiles

ENGINEERING MODULES:

- Two, parallel, 0.175 mega litre/day lines (should reduce adoption delays by utilities due to uncertainties in scale-up)
- Ability to test advanced wastewater treatment, including ultra- and nano-filtration, advance oxidation (H₂O₂/UV and O₃), biofilms, plus new emerging technologies
- Experimental technology can be pushed to failure to identify design limits
- Effluent will be fed to experimental streams



Construction of the \$35 million facility is underway, and is slated to be commissioned in September 2013. Left: completion of clay liner in one of the experimental streams. Right: Engineer's schematic of the experimental streams. Credit: Nuno Fragoso, ACWA Project Manager. More pictures of the ongoing construction can be found at the ACWA website: www.ucalgary.ca/acwa/

Protecting Canadian waters

The fight for Sandy Pond

By John Gibson, SCL member and DFO Emeritus

The Sandy Pond Alliance, a volunteer group of scientists and others (www.sandypondalliance.org) are taking the Canadian federal government to court over the potential destruction of Sandy Pond, a pristine lake near Placentia Bay, Newfoundland. Hearings in the case began in the Newfoundland Supreme Court February 27–28 [*Editor's note: see update below*].

The present federal government has considerably weakened the provisions of the Fisheries Act, which previously forbade “harmful alteration, disruption or destruction of fish habitat”. In 2002, the introduction of Section 5 (Mining and Minerals Effluent Regulations) in Schedule 2 changed the Act to allow discharge of deleterious substances into water bodies. Under recent amendments, the minister can now designate lakes as exempt from the Fisheries Act. Governor in Council decisions preclude access to public information. If it is legal to do this, literally the flood gates are open; there would be nothing to initiate Environmental Assessments for lakes deemed exempt from the act. The first pristine lakes to be destroyed under the ‘Schedule 2’ regulation were two lakes in central Newfoundland (Trout Pond and an unnamed adjacent lake) in 2006. Despite many letters, meetings, support from competent scientists and others, the loss of the lakes proceeded.

Sandy Pond was included in Schedule 2 in 2009 to allow a Brazilian mining company (Vale) to use the lake as a ‘Tailings Impoundment Area’ (TIA) for toxic wastes, a cheaper alternative than building the usual confined reservoir.

A deep lake of 37.83 ha, Sandy Pond supports three fish species: brook trout (*Salvelinus fontinalis*), a relict dwarf rainbow smelt (*Osmerus mordax*) and American eel (*Anguilla rostrata*). The piscivorous brook trout grow very large, 3–5 lbs, providing exceptional recreational angling. The proposed TIA

flooded area would cover 74 ha, and inundate 45 ha of existing aquatic habitat. In contrast, Vale calculated 18.11 ha of lost fish habitat requiring compensation for the three fish species in the lake. Using the same variables and references as the proponent, I re-calculated the ‘Habitat Equivalent Units’ to be 76 ha (brook trout, 25.5 ha; smelt, 34.8 ha; eel 15.7 ha). In contrast, Vale’s inadequate compensation plan was finalized three years after acceptance of the Environmental Impact Study, and consists mainly of removal of a partial vegetation barrier on a lake in Conception Bay, purporting to compensate for 12.12 ha of the lost 18.11 ha, even though no new habitat is created, and no evidence to show that the lake is not presently at carrying capacity with brown trout (*Salmo trutta*), salmon and smelt. Further questionable ‘compensation’ is 7.4 ha with enlarging two bog ponds, and 0.2 ha with placing spawning gravel in Salmon Cove River. Also a naive plan is to “relocate appropriate fish species of Sandy Pond to watersheds where the species already exists”. Fishery Managers have known for decades that if the fish survived, there would be reduced fitness of the receiving stock and loss of local specific adaptive strategies. This ‘compensation’ cannot replace a unique ecosystem.

Our court case is important in that we hope we can save other lakes across the country from similar vandalism. We welcome your support in this vital legal challenge to save fish and aquatic habitats in Newfoundland and Labrador and throughout Canada.

UPDATE: March 8, 2013: In court at the end of February, our lawyer argued directly against ‘Schedule 2’ of the Metal Mining Regulations of the Fisheries Act, an offensive regulation allowing use of pristine waters for dumping toxic wastes. He argued that the schedule is fundamentally contrary to the very spirit and intent of the



A Sandy Pond brook trout. They are a different ‘shape’ than ‘normal’ trout, and with their postglacial isolation, may be genetically unique. Their destruction would be contrary to Canada’s declaration to support the UN Convention on Conserving Biological Diversity. Photo credit: D.E. Messervey.

Fisheries Act. He parried with four lawyers, one representing the Attorney General of Canada, two representing Vale, and one representing the Mining Council of Canada in partnership with the Mining Council of British Columbia. The Vale interveners argued that our affidavit be disallowed. Our lawyer won the argument that our affidavit be allowed. We await the judge's decision. ☺

Do YOU have a story to share? Consider contributing to the next issue of *The Current*. Send ideas, photos or contributions to scl@uregina.ca. We look forward to hearing from you!

The river and land sustain us:

Overview of SCL/CCFFR/SWS conference (Windsor, January 3–5, 2013)



By Alison Derry

The 2013 annual SCL/CCFFR/SWS meeting was held on January 3 to 5 at the St. Clair College Centre for the Arts in Windsor, Ontario. It was a well-attended meeting, with over 600 participants. Trevor Pitcher (University of Windsor) chaired the Local Organizing Committee. The Science Program Committee was comprised of John Gunn (Laurentian University), Andrew Muir (Great Lakes Fishery Commission), and Alison Derry (SCL rep on the committee, Université du Québec à Montréal).

Meeting presentations were kicked off by the 2013 F.H. Rigler Memorial Award Lecture by Ray Hesslein (retired scientist at the Experimental Lakes Area), who spoke about 40 years of carbon research at ELA. The 2013 J.C. Stevenson Memorial Lecture was awarded to Steven Cook (Carleton University), who spoke about the future of fisheries and aquatic ecosystems in Canada. Other keynote speakers included M. Burrows (International Joint Commission) and Norm Yan (York University). Norm provided especially engaging advice for young aquatic ecologists in an increasingly complicated, multi-stressor world (Figure 1).

The session themes for the meeting were diverse and multi-disciplinary, including Great Lakes Fisheries and Environmental Policies; Experimental Lakes Area (ELA) Research; Wetland and Land/Water Linkages; Aquatic Ecosystem Services; Genetic Diversity and Adaptation; Contaminants and Trophic Transfer; Multiple Stressors; Invasive Species; Climate Change; Carbon Flux and Nutrient Cycling; Migration, Mixing, and Dispersal; Disturbed Ecosystems, Threatened Species, and Restoration; Salmonids as Sentinel Species; Northern Ecosystems; and General Contributed Papers.

Everyone was treated to the award-winning film “Mysteries of the Great Lakes” following the banquet dinner. The film is distributed by Science North and can be purchased at the following link:

www.sciencenorth.ca/greatlakes

A good time was had by all (especially in the hospitality lounge—okay, we can leave out that part)! We look forward to seeing you at SCL joint-hosted meetings in Yellowknife and Montreal in 2014!

SCL meetings in 2014

There will be two SCL joint-hosted meetings in 2014:

1. CCFFR/SCL meeting in Yellowknife, Northwest Territories, January 3–5, 2014 at the Explorer Hotel. Meeting organizers: Pete Cott, Lorraine Brekke, and Bruce Hanna.

Website: <http://www.uwindsor.ca/glier/ccffr/> (currently under development)

SCL contact: Alison Derry (science program committee) derry.alison@uqam.ca

This meeting will have a northern focus, with possible session themes on Climate Change and Oil Sands, among others. There will also potentially be workshops on Traditional Ecological Knowledge.

Norman's advice

1. work within an EPM
2. Assume targets will change
3. Embrace multiple sub-disciplines
4. alter dated conventional methods
5. Assume physics, chemistry and ecology all matter
6. Communicate with the public
7. Track both damage and susceptibility to damage
8. Pounce on unexplored opportunities
9. Choose to be hopeful
10. Foster non-authoritarian government

Figure 1. Norm's advice for young aquatic ecologists (EPM is Environmental Protection and Management).

The banquet dinner will be held on Saturday, Jan. 4, with the "Taste of the North" Dinner Buffet (Arctic char, muskox, and other northern delectables). Cocktail hour entertainment will be provided by the Tlicho Drummers (an Aboriginal drumming troop). Entertainment after dinner will be provided by Lee Mandeville, a Métis fiddling champion and recording artist, currently producing his 4th fiddle album. Lee is proud to demonstrate and represent Northern Métis culture in his travels throughout Canada and internationally. Lee will be joined by George Mandeville and Ted Mildenerger.

We look forward to catching the northern lights with you in January 2014.


2. Canadian Societies of Limnology, Ecology, Evolution, and Zoology (CSLEEZ) meeting in Montreal, Quebec, May 25–29, 2014, Centre Mont Royal, Montreal, QC.

Host societies: Canadian Society for Ecology and Evolution, Canadian Society of Zoologists, Society of Canadian Limnologists.

Host universities: McGill University, Université du Québec à Montréal, Université de Montréal, and Concordia University.

SCL contacts: Alison Derry and Beatrix Beisner, Université du Québec à Montréal.

derry.alison@uqam.ca

An exciting, four-day scientific program is being assembled that will feature cross-disciplinary research in ecology and evolution, and will showcase a half-day symposium on aquatic research in Canada. The 2014 Peters award winner for best student-authored paper in aquatic sciences will give a special presentation at this meeting. SCL will sponsor a special invited plenary on one day of the conference. A website is currently being developed for this event that will provide you with more information in the near future. We look forward to seeing you at this dynamic event in May 2014! 



Congratulations to our award recipients for 2013!

By Michael Rennie

The Frank Rigler and Rob Peters Awards were given at the annual meeting in Windsor this past January. Ray Hesslein received the Frank Rigler award, the highest honour given by the society, recognizing the ground-breaking research he was involved with and led at the Experimental Lakes Area.

Zofia Taranu received the Rob Peters Award, recognizing the best student paper published in the previous year.

Congratulations to both of our very deserving recipients! We will announce a search for candidates for both awards in the fall of 2013. 🌐



Top: 2013 Rigler Award recipient Ray Hesslein, Emeritus Scientist, Fisheries and Oceans Canada, being presented with the award by Jules Blais. His talk: “40 years of carbon research at the Experimental Lakes Area.”

Bottom: 2012 Peters Award winner, Zofia Taranu, (PhD candidate, Queen’s University), for her paper Taranu *et al.* 2012. Predicting cyanobacterial dynamics in the face of global change: the importance of scale and environmental context. *Global Change Biology* 18: 3477-3490.

Society update

By Roberto Quinlan and Michael Rennie

As of March 6, 2013, SCL has 96 members, of which 21 identified themselves as students. This is an increase in the membership from 2012's total of 85 members, of which 20 were students. While the student numbers in both years are comparable, it does not reflect the very high turnover within this category (students graduating and either moving on or registering as regular members, and new students joining).

At the 2013 Annual Meeting in Windsor, 70 participants identified affiliation with SCL up from 45 at the 2012 meeting in Moncton. Twenty-nine of these were students identifying as SCL or whose supervisors were SCL members.

Twenty-one students self-identifying as SCL conference attendees were awarded \$4,450 from the Clemens-Rigler Travel Fund, with awards ranging from \$125 to \$400, and an average award of \$212 per student.

The society also introduced two new changes around membership fees. One was to offer a 2-year membership, which is our most affordable way to renew membership

in the society. Second was the explicit recognition at the business meeting of allowing postdoctoral fellows to pay student membership fees. We hope that both these changes will help to retain student members as they graduate from their programs, and help to increase the membership of the society overall. 🌐

SCL student update Come check our our blog!

By Jorge Negrin Dastis

As graduate students, our main mission is to provide the student membership with a common online platform for sharing information and for calling attention to hot topics related to limnology: the SCL student forum (<http://sclforum.wordpress.com>). Here students can interact through a real-time Internet based platform, where they can establish contacts with other freshwater researchers in Canada and internationally. In addition to the benefits of such interaction and enriching collaborations, the platform ultimately extends for students scientific debates concerning limnology research, identifying common knowledge gaps and getting the most updated information concerning new developments in the field.

Up to now, we have been very pleased providing our members and the broader internet community with these endeavours via our blog platform, where you can find information and interact around the following categories:

- Discussion
- News
- Photo contest (contributions accepted until September 1, 2013)
- Student Spotlight
- Jobs

The student blog has now evolved to be more interactive by including new content sections to make the navigation more user friendly and to provide the latest news and information on:

- Announcements
- Calls
- SCL meetings
- Awards
- Events
- Publications

We invite you to be active users of the blog and gain advantage from it as much as possible as a potential new window for future opportunities! 🌐

March 18–24, 2013 is **Canada Water Week**. Visit <http://canadawaterweek.com/> for events in your area, and a link to their “I love my lake” campaign. Follow the hashtag #CanH2O on twitter.

Upcoming meetings

(meeting websites hyperlinked where available)

SCL meetings

- **2014** (with CCFFR/SWS) [Yellowknife, NWT January 3–5](#)
- **2014** (with CSEE, CSZ) [Montreal, QC \(tentatively May 16–21\)](#)

SIL meetings

- **2013** [SIL 32nd Congress, August 4–9, Budapest, Hungary](#)


Other meetings

- **2013** [Ontario Ecology Ethology and Evolution Colloquium, May 2–4, London, ON](#)
- **2013** [Canadian Society for Ecology and Evolution, May 6–10, Kelowna, BC](#)
- **2013** [Canadian Society of Zoologists, May 13–17, Guelph, ON](#)
- **2013** [Society of Wetland Scientists, June 2–6, Duluth, MN](#)
- **2013** [Meeting of the International Association of Great Lakes Research, June 2–6, West Lafayette, IN](#)
- **2013** [Aquatic Ecosystem Health and Management Society, June 17–20, Victoria, BC](#)
- **2013** [American Society of Ichthyologists and Herpetologists, July 10–15, Albuquerque, NM](#)
- **2013** [Dragonfly Society of the Americas, July 12–14, Prince Albert, SK](#)
- **2013** [98th Annual Meeting of ESA, August 4–9, Minneapolis, MN](#)
- **2013** [143rd Annual Meeting of AFS, Sept. 8–12, Little Rock, AR](#) 

Recognizing our members

Congratulations to our members for recent recognition of their efforts!

Norman Yan was inducted to the Royal Society of Canada, November 2012.

Warwick Vincent received the Margalef Award for Excellence in Education from the Association for the Sciences of Limnology and Oceanography 

Recent citations

We like to use this space to recognize recent publications (past 6–12 months) by our members in the peer-reviewed literature. If you'd like to share a publication for the next issue (Fall 2013), please e-mail it to scl@uregina.ca.

Gray, D. K. and S. E. Arnott. 2012. **The role of dispersal levels, Allee effects, and community resistance as zooplankton communities respond to environmental change.** *Journal of Applied Ecology* 49:1216–1224. doi: 10.1111/j.1365-2664.2012.02203.x

Labrecque, V., Nürnberg, G., Tremblay, R. & Pienitz, R. 2012. **Internal phosphorus load assessment of Lake Nairne, Charlevoix, Quebec (Caractérisation de la charge interne de phosphore dans le lac Nairne, Charlevoix, Québec.** *Revue des Sciences de l'Eau*, 25(1) : 77–93. doi: 10.7202/1008537ar

Leon, L.L., Smith, R.E.H., Malkin, S.Y., Depew, D., Hipsey, M.R., Antenucci, J.P., Higgins, S.N., Hecky, R.H., Rao, R.Y. 2012. **Nested 3D modeling of the spatial dynamics of nutrients and phytoplankton in a Lake Ontario nearshore zone.** *Journal of Great Lakes Research* 38 (suppl. 4), 171–183.


Loh, P.S., Molot, L.A., Nürnberg, G.K., Watson, S.B, Ginn, B. 2013. **Evaluating relationships between sediment chemistry and anoxic phosphorus and iron release across three different water bodies.** *Inland Waters* 3: 105–108. doi: 10.5268/IW-3.1.533

Mueller, K.K., S. Lofts, C. Fortin and P G.C. Campbell (2012). **Trace metal speciation predictions in natural aquatic systems: incorporation of dissolved organic matter (DOM) spectroscopic quality.** *Environmental Chemistry* 9: 356–368. doi: 10.1071/EN11156

North, R.L., D. Barton, A.S. Crowe, P.J. Dillon, R.M.L. Dolson, D.O. Evans, B.K. Ginn, J. Hawryshyn, H. Jarjanazi, J.W. King, J.K.L. La Rose, L. Leon, C.F.M. Lewis, G.E. Liddle, Z.H. Lin, F.J. Longstaffe, R.A. Macdonald, L. Molot, T. Ozersky, M. Palmer, R. Quinlan, M.D. Rennie, M.M. Robillard, D. Rode, K.M. Ruhland, A. Schwalb, J.P. Smol, E. Stainsby, J.J. Trumpickas, J.G. Winter, J.D. Young. 2013. **The state of Lake Simcoe (Ontario, Canada): the effects of multiple stressors on phosphorus and oxygen dynamics.** *Inland Waters* 3: 51–74. doi: 10.5268/IW-3.1.529

Rennie, M.D., Ozersky, T. and Evans, D.O. 2012. **Effects of formalin preservation on freshwater benthic invertebrate isotopic values over decadal time scales.** *Canadian Journal of Zoology*. 90: 1320–1327. doi: 10.1139/z2012-101

Rogers, L.A., Scindler, D.E., Lisi, P.J., Holtgrieve, G.W., Leavitt, P.R., Bunting, L., Finney, B.P., Selbie, D.T., Chen, G., Gregory-Eaves, I., Lisac, M.J. and Walsh, P.B. 2013. **Centennial-scale fluctuations and regional complexity characterize Pacific salmon population dynamics over the past five centuries.** *Proceedings of the National Academy of Sciences of the USA*, early on-line. doi: 10.1073/pnas.1212858110.

Symons, C. C., S. E. Arnott, J. N. Sweetman. 2012. **Crustacean zooplankton communities exert low grazing pressure on phytoplankton communities in Subarctic lakes and ponds.** *Hydrobiologia* 694:131–141. doi: 10.1007/s10750-012-1137-6.  FIN