

THE CURRENT



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Newsletter of the Society of Canadian Limnologists

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Right: A flock of geese migrating above bluffs facing Lake Diefenbaker, Saskatchewan, the focus of our Research Highlight this issue. Photo credit: Dirk de Boer



SCL: What's in the works?

Jérôme Marty, President



Over the last 6 months, we have seen several positive changes with regards to science in Canada, including some good news for us limnologists. The creation of a new Ministry of Science are among many of the clear indications of a recognition that policy decisions should be supported by an evidenced-based approach, representing a significant step forward to promoting science in Canada. This month, the Minister of

Fisheries and Oceans announced a significant investment in aquatic sciences, with the hiring of 135 new technicians, biologists and scientists. This investment includes a renewed commitment to fund the IISD-Experimental Lake Area. These investments were among the first to be signed in Ottawa as part of the 2016 budget and we can hope for more good news from other departments involved with aquatic ecosystem science, policy, management and research.

I am happy to report on a number of ongoing initiatives that SCL is involved in. We are a member of PAGSE (the Partnership Group for Science and Engineering) and as such, participate in the regular meetings and initiatives of this group. PAGSE, with the input from its member societies, submits a letter to the government on the proposed federal budget every year. Recently, PAGSE met with the Minister of the Environment and Climate Change (ECCC) and the SCL executive provided them with a list of key issues in Canada related to freshwater. Our submission included the need for better coordination among the multiple federal departments working on freshwater policy in Canada. One of the suggestions for achieving such coordination would be through the development of a national water strategy. As a PAGSE member, we also joined the annual meeting of the Canadian Science Publishing (CSP). Members should note that the recently launched multidisciplinary open access journal FACETS, edited by Jules Blais (past SCL president) is waving publishing fees until the end of year.

This winter, the SCL organized its first online LimnoSeminar. Thank you to Matt Bogard for presenting his

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Peters Award lecture. We are looking forward to hosting more of these seminars (see page 6 of this issue for our upcoming lineup); it's a great way to stay to tell the society (and the world) about your research and connect with the society throughout the year.

In the coming months, we will obtain the legal advice required to incorporate the SCL. In a recent discussion with

the new president of the Canadian Society of Ecology and Evolution, the value of co-chairing conferences in ecology was highlighted and the incorporation of the society is needed to become a recognized partner at these conferences.

I hope to see many of you this summer in Torino, Italy at the next SIL conference. Saluti! 🍷

Ken Shortreed, In memoriam

Daniel Selbie

Ken Shortreed, a greatly-respected and long-serving researcher with Fisheries and Oceans Canada's Pacific Region Science Branch passed away suddenly at his home in Chilliwack on January 25, 2016.

Ken was a key part of freshwater (and marine) research with the department from 1973 until his retirement in 2009. He was based at the West Vancouver Laboratory until 1998 when he relocated to the Cultus Lake Laboratory near Chilliwack. In the 1970's, Ken worked on the well-known Carnation Creek Project studying the effects of logging on lower trophic levels in streams. Concurrently, he participated in several coastal oceanographic studies of the productivity of Georgia Strait, Howe Sound, and Burrard Inlet. In 1977, Ken began his limnological research in earnest, developing an ecosystem-based approach to lake assessment that enabled investigation of whole-lake fertilization as a Sockeye Salmon enhancement technique along with Dr. John Stockner and the Lakes Enrichment Program. This research became his passion, and from the 1980's his research focussed on understanding the multi-trophic ecological structure and functioning of lakes throughout BC and the Yukon to establish the controls on the productive capacity of these ecosystems to support Sockeye Salmon. Ken's efforts, along with those of Jeremy Hume and their team, culminated in comprehensive habitat-based methods of assessing and predicting juvenile Sockeye Salmon rearing capacity and optimal spawner escapements for British Columbia nursery lakes (The Photosynthetic Rate (PR) Model), along with a seminal scientific literature, which to this day continues to be broadly cited by researchers and graduate students working on limnology and freshwater fisheries around the world.

Ken's work was consistently highly-relevant to the Department, contributing significantly to understanding the production dynamics and enhancement strategies for the most valuable commercial salmon species on Canada's West Coast. The "recipe" of integrated limnological surveys and hydroacoustic/trawl surveys executed by the Lakes Research Program provided one of the first, and most enduring applied tools partitioning habitat-linked life cycle production variation for a wide range of sockeye stocks and lake types. This allowed fisheries predictions without the requirement of multi-decadal series. This gave fisheries managers a tool, based upon the characteristics of specific nursery lakes, to



Ken Shortreed. Photo courtesy the Shortreed family (via Daniel Selbie).

evaluate alternate adult salmon escapement strategies in terms of optimal salmon production.

Ken's passion for the science he championed was rivaled only by his love of being out-of-doors. An avid hiker, hunter, and fisherman over his life, his passion was being on the water in British Columbia. Be it raft-based assessments of tiny coastal potholes, float plane access sites across southern Vancouver Island or the Central and North coasts, or the interior Fraser or Skeena nursery lakes, Ken was most at home pulling up a Van Dorn bottle, a CTD cast, or a plankton tow. The work itself was an adventure few get to experience, and Ken thrived on being out on the lakes that he so loved. He passed this passion on to a great number he worked with and mentored over the years.

Ken Shortreed leaves a rich legacy for current and future researchers, and an invaluable reference from which to build upon, particularly as large-scale forcings such as climate change exert new pressures on biological systems and the species which depend upon them. Like a fine vintage, the value of Ken's detailed work only increases through time.

Ken is survived by his wife Edith, his daughter Kelly Knill (Patrick), his son, Bill Shortreed, his grandchildren, Jaxson and Madison Knill and Kaya Shortreed, his mother, Jean Shortreed, his sister, Susan Evans, his nieces and nephews, Sarah, David Christopher and Katherine Evans, and his dog, Sadie. 🍷

Research Highlight Limnology of the Prairie Jewel: Lake Diefenbaker

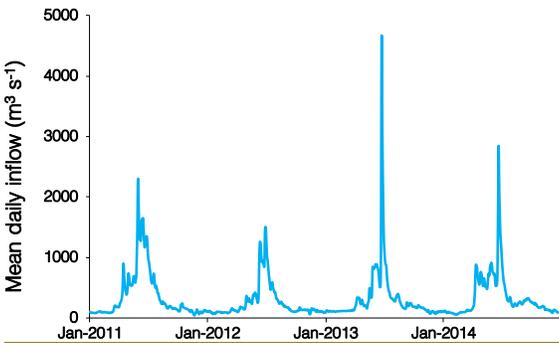
Jeff Hudson

University of Saskatchewan

The first three years of a collaborative research effort on Lake Diefenbaker (2011-2013) characterizing the reservoir's limnology and susceptibility to a changing climate were recently published in a special issue of the *Journal of Great Lakes Research* ([Vol. 41 supplement 2](#)). The collaboration included scientists from the Global Institute for Water Security (GIWS, University of Saskatchewan), the Universities of Regina, Waterloo, Minnesota and Oregon, and from the Saskatchewan Water Security Agency (SWSA), and represents the first comprehensive examination of the reservoir in 30 years.

Lake Diefenbaker is a reservoir in semi-arid southern Saskatchewan that began filling in 1967 with the completion of the Qu'Appelle and Gardiner Dams. The reservoir is approximately 180 km long, with a surface area of 390 km² and a maximum depth 60 m; when full, it holds 9 km³ of water. It is fed primarily by the South Saskatchewan River, and the vast majority of water leaves the reservoir through the Gardiner Dam.

As the largest source of water in Southern Saskatchewan, Lake Diefenbaker provides drinking water, irrigation, hydroelectricity, aquaculture, recreation and flood control, playing a



Hydrograph of water entering Lake Diefenbaker from the South Saskatchewan River. The 2013 peak flow event was associated with the Calgary flood (Data sources: Environment and Climate Change Canada, Alberta Environment & Saskatchewan Water Security Agency).



Satellite image of turbidity in Lake Diefenbaker after a major flow event in late June and early July (Landsat image, July 15, 2014; Photo credit: H. Yip)

pivotal role in the rapidly developing provincial economy.

The study period included exceptionally high river flows through the reservoir, most notably during the Calgary flood of 2013 (inset hydrograph below). These conditions, which were followed by a fourth year of high flow in 2014, carried turbidity and large loads of nutrients into the reservoir each year (inset picture above). This seasonal turbidity lingered for months, and these events represent an emerging water quality issue for the reservoir, varying with the frequency and magnitude of high flows. For instance, the usually negative relationship between algal chlorophyll a and Secchi disk depth in lakes and reservoirs is actually positive for Lake Diefenbaker. This is the result of the strong overriding negative effect of turbidity on both phytoplankton and

water transparency. Consequently, the phytoplankton in Lake Diefenbaker alternated between light limitation (partly due to turbidity) and nutrient limitation. The extreme flows also deposited significant loads of nutrients (P and N) to the reservoir, and P in particular is retained in the bottom sediments (>80% retention). This is another emerging issue, especially if a changing climate results

in an increase in internal P loading through prolonged thermal stratification and reduced hypolimnetic oxygen. Under such conditions phytoplankton blooms may become more frequent.

Although the deep waters of Lake Diefenbaker became hypoxic during the study, it was not sufficient to accelerate the release of nutrients from the sediments. The study years were characterized by cool weather and rapid flushing, conditions that do not typically promote low oxygen conditions. The significance of this sediment P-storage on water quality may not be realized until extended drought and low flow conditions return to the reservoir.

[Drought was present during an earlier \(1984-85\) study on the reservoir](#), and was associated with anoxia in the lower hypolimnion and poorer water quality. In this past study, the reservoir was dominated by cyanobacteria (>75% of

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FAST FACTS:

WHO? Researchers from Saskatchewan, Ontario, Minnesota and Oregon

WHERE? Lake Diefenbaker, Saskatchewan.

WHAT? A three-year study to gain valuable data on Lake Diefenbaker.

WHY? To help determine the susceptibility of the reservoir to changing climatic conditions.

WEB: <http://www.sciencedirect.com/science/journal/03801330/41/supp/S2>

Youtube: https://youtu.be/cZ1xfBG_Dbk

Continued from page 3

biomass). However, during the rapid flushing conditions in the current study, diatoms and cryptomonads were the most abundant algal groups, comprising a combined 85% of the standing biomass.

Extreme weather events that promote drought or flood conditions are associated with declining water quality worldwide. On the one hand, major precipitation events in Lake Diefenbaker's watershed have resulted in significant levels of turbidity. Conversely,

drought also promotes poor water quality, associated with the dominance of cyanobacteria. The long-term trend (1984-2012) in Lake Diefenbaker suggests that both phytoplankton biomass (Chl a) and water transparency are in decline, suggesting that turbidity caused by high river flows appear to be having the greater effect on water quality. Climate models predict higher temperatures and possibly greater levels of precipitation for the prairies. Therefore, periods of drought and extreme flows will likely

have an increasing negative effect on water quality in the reservoir.

Our study has captured the behavior of the reservoir during years of rapid flushing. However, drought and low flow conditions represent another weather extreme experienced by the reservoir, conditions for which data on the limnology of the system is represented by a single year of drought in the distant past (1984). Further research during drought is warranted to help better characterize low flow years. ☺

Lake Monster? You Otter Think Again...

Alistair Fraser

(See [this link](#) for a more extensive blog post, with additional photos)

Limnologists prefer reality, yet, there is insight to be gained from one unreality: Ogotogo.

Reported occasionally since before European settlement, Ogotogo is usually described as a long serpentine monster which swims with the undulations of its body protruding above the water. A nice summary of observations is offered by a statue in Kelowna. Notice the vertical humps and dorsal fins.

It is those vertical undulations extending its body into the air that are bothersome, for they wouldn't facilitate swimming. Indeed, a real snake always employs horizontal undulations so as to allow its body to press against the water along its full length. It seems that if Ogotogo existed, it would not look as always illustrated, but would slither through the water using horizontal undulations.

Yet, Ogotogo is consistently reported as showing those vertical humps. If people were not seeing a lake monster, what were they seeing? Naturalists have known for decades that the answer is: a family of otters. However, no one seems to have explained why or when otters will occasionally look this way, so I will. A couple of crucial ideas are hull speed and gait.

Normally otters swim along the surface using their paddling gait where feet provide propulsion. While in this gait, otters would never be mistaken for Ogotogo. However, in this gait, swimming speed is capped by the hull speed, that is the speed at which the wavelength of the bow wave is equal to body length. If it were to swim faster, wavelength would increase causing the otter to endlessly swim uphill from trough to crest and this would take more power than it can



A statue of the Ogotogo in Kelowna, British Columbia. Photo credit: Alistair Fraser.

exert (a difficulty shared with everything propelled on the water, from muskrats to kayaks).

However, this speed limit, being caused by surface waves, is irrelevant underwater. To move faster, an otter family changes its swimming gait to one resembling porpoising where much time is spent below the surface. Now, propulsion results from body undulations. Underwater drag is reduced further by playing follow-the-leader.

This swimming mode is the otter family's ogotogo gait which can increase speed three times that of its paddling gait. Otters use it on the few occasions they wish to travel far quickly.

When a family is in its ogotogo gait, each otter must keep returning to the surface, where its upward-pointing nose may appear to a distant observer as Ogotogo's fin. The otter then dives again presenting us with Ogotogo's vertical humps. When the lead otter extends its head to establish travel direction we see Ogotogo's head.

It seems that humanity has created a new animal, Ogotogo, to account for a group of known animals, otters, which were merely using an uncommon swimming gait. ☺



An otter family in their "ogotogo gait" on Kootenay Lake. Photo Credit: Alistair Fraser.

Society update

Roberto Quinlan

SCL continues to remain strong, with a current membership of 122, including 46 students, which is well above our previous 5 year average membership of 106. Our current student membership constitutes 38% of the total membership, which is also well above the previous 5 year average of 29%.

SCL member attendance at the 2016 meeting in St. John's NL was low, which is often the case during coastal annual meetings. CCFFR 2016 organizers scheduled a full plenary slot for our 2016 Peters Award winner Matthew Bogard. The Executive decided that Peters Award winners would also receive a small permanent plaque, and recently sent them to all previous award winners (if you are a past Peters Award winner, look for your plaque in the mail!). ☺

Conference round-up: St. John's, 2016

Jérôme Marty

About 240 scientists attended the 69th SCL-CCFFR was held in St John's NF this year. The two-day conference started with three great lectures: Julia



Above: St. John's Harbour during the conference. Below: The colourful houses of St. John's. Photo credit: Steve Cooke.



Left to right: 2016 Peters Award recipient, Matt Bogard, Université du Québec à Montréal; Jérôme Marty; SCL President; 2016 Rigler Award recipient Bill Taylor, Professor Emeritus, University of Waterloo. Photo credit: Steve Cooke.

Baum from U. of Victoria gave the Stevenson lecture on the current state of marine conservation in Canada compared to other countries: we clearly have some work to do to better protect our oceans. This message was well taken by the newly-elected MP from St John's East who attended the entire conference. The Rigler lecture was given by Bill Taylor from U. Waterloo. The lecture gave an overview of methods and limitations of phosphorous measurements in lakes. Not many of us realized that in many lakes, over 70% of phosphorus is contained in fish.

For the first time at this meeting, the plenary talks included a lecture from the student receiving the Peters award. Congratulation Matt Bogard for a great talk on methane production in lakes (even under oxic conditions). This is now giving headaches to all of us deciphering carbon sources to consumers using carbon isotopes. Matt demonstrated that we have an excellent generation of new scientists coming up the ranks, equally capable of capturing our attention as our more senior plenary speakers.

The business meeting of the society was an opportunity to report on positive and encouraging numbers for the SCL. Our membership is growing, providing the financial stability to allow us to think about new projects. The membership voted in favor of a student travel award to support participation to the next SIL conference, this summer in Torino, Italy; and we are moving forward with the incorporation of the society to allow us to receive funding from a broader range of sources, and to finally, officially, exist as a society. Thank you to Alain Patoine (our VP francophone) for collecting information on how to incorporate and to Norm Yan for helping craft the wording required for the necessary revisions to our by-laws.

Next year the conference will be a big one, led by limnologists: we are heading back to Montreal.

Save the date: Jan 5-8, 2017 in Montreal!

Irene Gregory-Eaves

Come join us for what promises to be a truly exciting CCFFR-SCL meeting in Montreal, January 5-8th, 2017.

We have booked the Hyatt Regency (<http://montreal.hyatt.com/en/hotel/home.html>) in downtown Montreal for the event and have secured an excellent hotel room rate of \$129/night for double occupancy.

To help build this meeting, we're looking for special session and workshop proposals from you! Please submit your special session or workshop title, along with a 250 word summary and the list of 5 potential speakers/contributors to Marco Rodriguez via email (marco.rodriquez@uqtr.ca) by June 15th 2016. We especially encourage submissions from researchers in early stages of their career.

Check out the meeting website (<http://www1.uwindsor.ca/glier/ccffr/ccffrcrp-2017>) soon for more details re. abstract submission deadlines, hotel booking link, planned activities and conference registration. ☺

Member Recognition

Dr. Karen Kidd, University of New Brunswick was recently announced as a Tier 1 Canada Research Chair in Chemical Contamination and Food Webs.

Dr John Smol, Queen's University recently received the [Bergmann Medal from the Royal Canadian Geographic Society](#).

Congratulations to all our members on their achievements! ☺

@Limnoseminar

SCL Launches new web-based seminar series

Alexandre Poulain

Inspired by successful web-based seminar series such as [@Microseminar](#) and [@Phyloseminar](#), the SCL is hosting a series of monthly online live broadcasts to share research in the field of Limnology. Please do not hesitate to visit [Microseminar](#) and [Phyloseminar](#) pages for more info and access to great scientific content!

The format is open, accessible to all and freely available, with all seminars archived on YouTube and linked to on the [SCL web page](#). Content is welcome in both french and english. The series is organized and hosted by Alexandre Poulain ([@RedoxRoxDetox](#), [@Limnoseminar](#)).

We are encouraging all scientists to share their latest research in the field of aquatic sciences, from the inspirations of senior colleagues and mentors to early career scientists, for whom this is a great opportunity to showcase their research.

Please contact us via twitter, message us at [@LimnoSeminar](#) or contact us by email at comms@socanlimnol.ca or apoulain@uottawa.ca if you are interested in doing a seminar!

Our first speaker was Matt Bogard from the Université du Québec à Montréal. Thanks for breaking the ice Matt! Matt is the 2016 recipient of the Rob Peters Awards. This award recognizes the best aquatic sciences paper published in the preceding year by a Canadian student or a student working in Canada. His talk focused on: Oxidic water column methanogenesis and can be found [here](#) or on the [SCL website](#).

We have a very exciting line up of speakers over the next few months:

June 2016: [Gwyneth MacMillan](#), Université de Montréal ([@gwynmac](#)): Title TBD.

August 2016: [Andrea Kirkwood](#), University of Ontario Institute of Technology ([@KirkwoodLab](#)): Urban stream Ecology.

September 2016: [Helen Baulch & Rebecca North](#), ([@RebeccaNorth2](#)) University of Saskatchewan and Global Institute for Water Security: Winter Limnology.

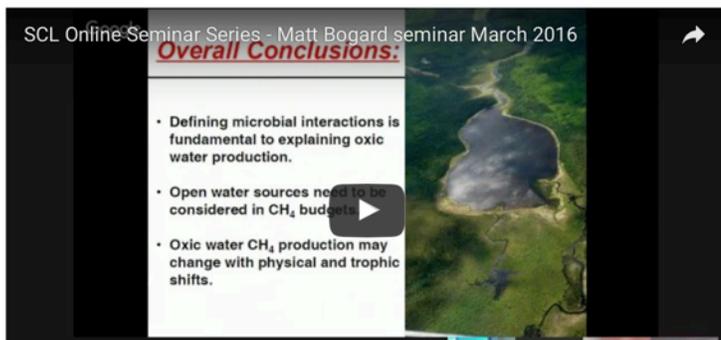
October 2016: [Katrine Turgeon](#), McGill University ([@KatrineTurgeon](#)): Effects of impoundment and water level regulation on aquatic ecosystems.

November 2016: [Catherine Girard](#), Université de Montréal ([@cath__girard](#)): Bioaccessibility of methylmercury from fish: the role of the Inuit diet and microbiome

November 2016: [Jennifer Barrow](#), McGill University: Quantifying phytoplankton responses to an experimental gradient of macrophyte abundance and nutrient press.

January 2017: [Linda Campbell](#), Saint Mary's University ([@LM_Campbell](#)): Title TBD.

Thanks for helping us with this project; the schedule is as open as there is interest in presenting. With LimnoSeminar, we hope to provide not just a great platform for research but also an important legacy for the next generation of Canadian limnologists. 



What you can expect to find on our Limnoseminar page on our website. Check it out for past talks, and those scheduled soon! Want to give your own? E-mail or tweet us!



Left: Mitchell Brook at the outlet of Loon Lake, Dartmouth NS in near infra-red. impacted by historical mining & recent urban development, Mitchell Brook connects to the famous Shubenacadie Canal system between the Halifax Harbour and the Bay of Fundy. Photo credit: Linda Campbell.

Do YOU have a story to share in the next issue of The Current? Have an idea for a blog? Send ideas, photos or contributions to:
comms@socanlimnol.ca.

Student spotlights

Dan Gregoire and Nicolas Fortin St-Gelais

Lauren Hayhurst, MSc student with Dr. Michael Rennie, Lakehead University



In a sentence or two, please describe your current research project:

My research objective is to determine the indirect effects of a whole-ecosystem environmentally-relevant release of nanosilver on the energetics and nutrient cycling of Yellow Perch and Northern Pike.

When and why did you become

interested in limnology?

I grew up spending summers on Lake of the Woods, and remember headlines about how whole-ecosystem research studies conducted at the nearby Experimental Lakes Area (ELA) were changing federal policy on major issues such as eutrophication. Despite my Prairie roots, I was always attracted to the lakes, rocks, and trees of the Shield region, and was determined to make a habit of being in cabin country during weekdays - not just enjoy it on a weekend basis. Studying freshwater ecosystems at ELA was the perfect way of marrying my passion to the landscape.

What is one of your fondest memories performing research in limnology?

A portion of the field sampling for my Master's involves angling for Northern Pike. I never get tired of people offering to help me go fishing for the day! I often arrange fishing derbies during each of my field seasons in order to collect a sufficient number of pike on both my reference and experimental lakes. Even sampling after-hours late into the evening, I can hardly consider it "work".

Why did you decide to study in Canada?

I think Canada has some of the best opportunities to study freshwater ecosystems across such a range of environmental features and landscapes. After working on marine systems for two summers on the east coast, I began to get more interested in inland water bodies and began to better appreciate freshwater ecosystems. Pristine freshwater lakes and rivers are integral to this country's landscape and living, and I want my research to the conservation and protection of these iconic Canadian resources.

Patrick Kennedy, MSc student with Dr. Michael Rennie, Lakehead University



In a sentence or two, please describe your current research project

My current research is focused on how differences in prey community structure affect the life history variation of aquatic apex predators common to the Canadian Boreal Shield.

Why did you decide to study in Canada?

As an American, coming to study in Canada seemed like an unusual choice to many of my friends and family back home. However, I have wanted to visit and study here ever since high school, drawn to the vast amount of relatively untouched nature; all of my previous experience in aquatic ecology was in a large urban center (Chicago) or rural Illinois. The water bodies were all heavily polluted or overrun with invasive species. What a difference to experience an area that was still relatively pristine. So far, it has been an unforgettable experience.

What inspired you to become a scientist/limnologist?

I have always had a strong interest in ecology. As I progressed through my undergraduate degree, I became more and more interested in aquatic ecology. I was given the opportunity to help with an agricultural stream ecology project focusing on denitrification in constructed wetlands, which was a great experience. After that, I took an internship where I helped monitor streams, rivers, and lakes across northern Illinois, which involved sampling water, collecting and identifying macro-invertebrates and fish and conducting macrophyte surveys. I learned a ton in such a short time; it was fascinating. The energy and excitement I felt reminded me of my childhood as I explored the ins and outs of nature for the first time. After that job I knew exactly what I wanted to do with my life.

What are your most favorite and least favorite things about graduate research?

The best part about graduate research is the freedom. I love having the ability to set my own hours, design some of my own projects, and dive into bodies of literature that relatively few people have looked at. It is an enthralling process in which you ultimately become an expert on your topic. My least favorite part about graduate research is living on a stipend, but who doesn't feel that way? 🤖

Do YOU want to be in the next student spotlight?
Let us know! comms@socanlimnol.ca

Diving into Canadian Limnology field courses

Shelley Arnott

One of the best ways to learn about lake ecosystems is to paddle out on a lake and peer into the water. Under the old adage that “doing is better than watching” when it comes to learning, and with an ever increasing focus on water-related issues, it’s now even more important that students have opportunities to get out in the field and gain hands-on experience with lake ecosystems; it’s one thing to learn about the theory, but actually collecting and analyzing those samples often helps cement the reality behind that theory.

A number of field courses offered at many universities across Canada provide small groups of students an incredible opportunity for experiential learning in breathtaking and diverse landscapes. Students are immersed in limnological research for one to two weeks, gaining practical experience while developing a deeper understanding of ecological concepts and environmental issues. Students have the opportunity to visit field sites that have played prominent roles in the development of Canadian limnology and water-related policies, including the Experimental Lakes Area in northwestern Ontario, the Delta Marsh Field Station on the south shore of Lake Manitoba, Killarney Park and Sudbury in northern Ontario, Queen’s University Biology Station, the Great Lakes, and the Station de Biologie des Laurentides in the Laurentians, to name just a few.

In Ontario, university students can enroll in a variety of courses offered through 15 universities associated with the Ontario Universities Program in Field Biology (OUPFB). Through OUPFB, students can choose from courses offered by M. Rennie at Lakehead University (Aquatic Ecology and Experimental Limnology), K. Drouillard at University of Windsor (Great Lakes Field Biology), S. Arnott at Queen’s University (Environmental Change in Lake Ecosystems), J. Gunn at Laurentian University (Restoration Ecology), as well as



Limnology field courses give students important hands-on skills for learning how to properly handle, preserve and analyze samples, all of which can be valuable skills for future work in the environmental sector or in graduate school.

several other wetland, river, aquatic insect, and fisheries courses. In addition, many other field courses (for example, at UQAM’s field station in St. Michel-des-Saints, QC) incorporate limnology as part of a larger field course that also incorporates ornithology, plant ecology, entomology and animal behaviour. As part of NSERC-CREATE programs, some graduate-level courses are also being developed, for example, ÉcoLac’s course on fluvial and lake ecology (see attached advertisement at the end of this newsletter).

While details vary among courses, in general, students visit a diversity of habitats where they develop expertise in sample collection, data analysis and interpretation, all while developing a deeper understanding about lake ecosystems. With their new-found knowledge and experience, students design and execute independent studies that test new hypotheses that were generated during the course.

Although I have highlighted just a few of the many courses offered in Canada, it goes to show you that there are lots of opportunities across Canada to get your ‘feet wet’ and learn about limnology! If you or your students are interested in taking a Limnology field courses in Canada, don’t hesitate to contact SCL (comms@socanlimnol.ca) and we’ll help you find the one nearest you. 🌊

Upcoming meetings

SCL meetings

- [2017 with CCFER, Montreal, QC January 5-8](#)

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SIL meetings

- [2016 SIL Congress](#), 31 July-5 Aug, Torino, Italy

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Other meetings

2016

- [2016 Canadian Geophysical Union, May 29-June 2, Fredericton, NB](#) (with Canadian Meteorological and Oceanographic Society, joint congress)



If you’re interested in any of the Ontario Limnology courses described here, you can get more information at <http://www.oupfb.ca/>. Check out the back two pages of this issue for a unique graduate-level Limnology course with ECOLAC.

- **2016 International Association for Great Lakes Research**, June 6-10, Guelph, ON #IAGLR2016
- **2016 Association for the Sciences of Limnology and Oceanography**, June 5-10, Santa Fe, New Mexico
- **2016 International Statistical Ecology Conference**, 28 June -1 July 2016, Seattle, WA
- **2016 ASIH meeting**, 6-10 July, New Orleans, LA
- **2016 Canadian Society for Ecology and Evolution**, 7-11 July St. John's NL
- **2016 Ecological Society of America**, 7-12 August, Ft Lauderdale, FL
- **2016 American Fisheries Society**, 21-25 August, Kansas City
- **2016 Interfaces Against Pollution (IAP2016)**, Lleida, Spain, Sept 4-7th
- **2016 SETAC North America/ World Congress**, Orlando, FL, Nov 6-10
- **2016 North American Lake Management Society, 36th Annual Symposium**, Nov 1-4, Banff, AB
- **2016 AGU Fall Meeting, 12-16 December**, San Francisco, CA
-
- 2017**
- **2017 Canadian Society for Zoology**, [Winnipeg, MB, May](#) 

Recent Citings

Do you have recent publications from the last 6 to 12 months that you'd like highlighted in the the next issue? Send it to comms@socanlimnol.ca.

Ady, F. and Patoine, A. 2016. **Impacts of land use and climate variability on algal communities since ~1850 CE in an oligotrophic estuary in northeastern New Brunswick, Canada**. *Journal of Paleolimnology*, 55:151–165. <http://dx.doi.org/10.1007/s10933-015-9871-1>

Celis-Salgado, M.P., W. Keller, N. D. Yan. 2016. **Calcium and sodium as regulators of the recovery of four Daphnia species along a**

gradient of metal and base cations in metal contaminated lakes in Sudbury, Ontario, Canada. *Journal of Limnology* 75 (s2) 36-49. DOI: [10.4081/jlimnol.2016.1271](https://doi.org/10.4081/jlimnol.2016.1271)

Charette C. and A.M. Derry. 2016. **Climate alters intraspecific variation in copepod effect traits through pond food webs**. *Ecology* 97: 1239-1250. <http://onlinelibrary.wiley.com/doi/10.1890/15-0794.1/abstract>

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COURS ÉCOLOGIE FLUVIALE



Programme de formation FONCER du
CRSNG en écologie lacustre et fluviale

Incluant une mission scientifique à bord du *Lampsilis*

Date limite pour s'inscrire :
01 août 2016



L'objectif principal de ce cours est d'organiser et de mener une **mission scientifique** portant sur le fleuve Saint-Laurent à **bord du navire de recherche *Lampsilis***. Ce projet sera centré autour d'hypothèses élaborées en groupe, avant le départ. En s'appuyant sur des lectures préalables et des données déjà existantes, les étudiants élaboreront un protocole précis d'échantillonnage des différentes composantes écologiques (poissons, invertébrés, macrophytes, sédiments, mesures physico-chimiques, etc.) qui seront mesurées lors d'une mission de deux jours à bord du *Lampsilis*. La dernière portion du cours se déroulera au laboratoire du Centre RIVE (UQTR) où les étudiants présenteront, à la fin du cours, une synthèse des résultats obtenus. Veuillez prendre note que ce cours est offert aux étudiants des cycles supérieurs uniquement (M.Sc. & Ph.D.).

- Frais d'inscription au cours GEO6001 (3 crédits) pour la session d'automne 2016 : ~ 300 \$
- Frais d'inscription additionnels de mission : 1600 \$
- Hébergement à vos frais disponible du 5 au 10 septembre (détails à venir sur notre site internet)

Informations :

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COURSE FLUVIAL ECOLOGY



NSERC CREATE training program
in Lake and Fluvial Ecology

Including a scientific mission on the *Lampsilis*

Application deadline:
August 1st, 2016



The main objective of this course is to organize and conduct a **scientific mission** on the St. Lawrence River **on the research vessel *Lampsilis***. This project will be centered on hypotheses developed by the group, before departure. Based on preliminary readings and existing data, students will develop a specific protocol for sampling different ecological components (fish, invertebrates, macrophytes, sediments, physicochemical measurements, etc.) that will be measured through a two-day mission on the *Lampsilis*. The last portion of the course will take place in the laboratory of the RIVE Center (UQTR), where students will present a summary of their results at the end of the course. Please note that this course is available for graduate students only (M.Sc. & Ph.D.).

- Course registration fees for GEO6001 (3 credits) for the autumn session 2016: ~ \$300
- Additional registration fees for the mission: \$1600
- Accommodation available from September 5 to 10 at your expense (more details to come on our website)

Information:
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