



**MUSÉE
REDPATH
MUSEUM**

MUSEUM HIGHLIGHTS 2017

VOLUME 1, ISSUE 1

From the Director's Desk

By Hans Larsson

This newsletter marks a turning point for us at the Museum, and I hope you enjoy reading about the changes, developments and highpoints of a somewhat turbulent year. We kick-started 2017 with a black tie gala in January, but the fall found us harbouring student and staff refugees from the asbestos crisis at Stewart Biology; absorbing residue from the construction of the pedestrian wrap-around terrace behind the Museum; and taking advantage of all our available space for collections, exhibits and people. We have tried to summarize some of these initiatives in this Highlights Newsletter for 2017. At the back of the newsletter, you'll see the many generous people and groups who have helped us with these projects. You can also find out how you can get involved. I look forward to seeing you at the Museum soon.



Redpath Museum Society (RMS)

By Lauren McAusland

In January 2017, the RMS helped plan and run the first Semi-Formal Gala held in the Museum since its opening in 1882. And what a great success it was! McGill alumni, faculty, and students enjoyed wine and hors d'oeuvres while listening to a baroque ensemble and learning

about objects and artifacts never-before displayed.

In addition to the Gala, members of the RMS were hard at work throughout 2017, volunteering at Museum special events including *Nuit Blanche* and *DJ and Dinosaurs: Freaky Friday*. You may have also seen RMS volunteers at the *Cutting Edge Lecture Series*, where they introduced and thanked speakers and prepared the receptions that followed. The RMS also trained two groups of student volunteers in January and September to lead informal guided tours of the Museum on Sundays. In September, the RMS elected a new executive team who planned the 2018 Gala at the Museum.



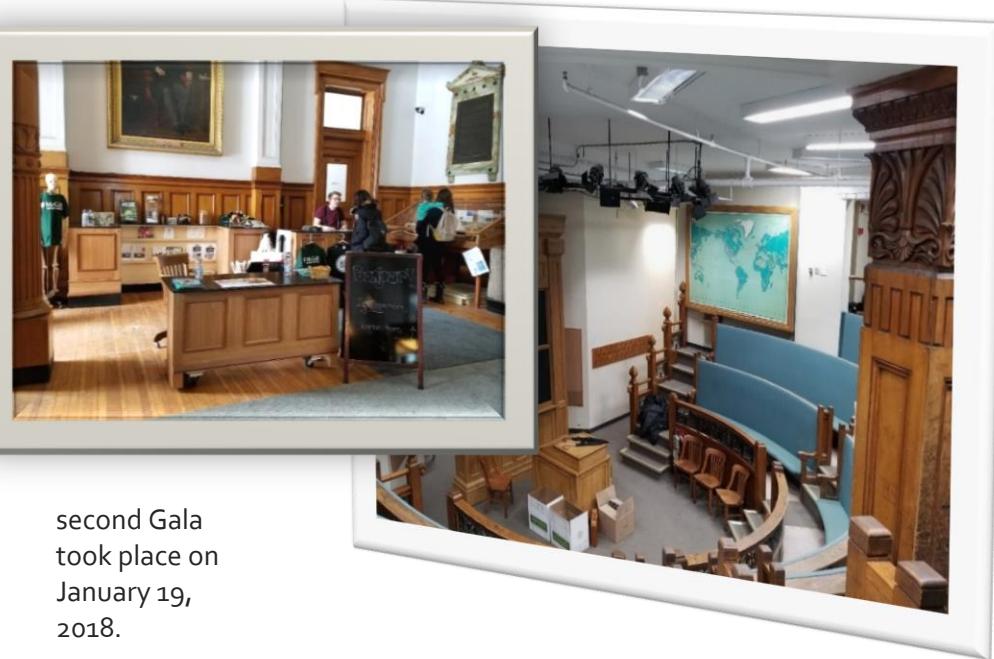
PHOTO: Gala participant Claire Heenan at the photo booth hosted by Steampunk Montreal.

Admin changes

By Caroline LeBlond

Marie La Ricca, Administrative Assistant for the past 30+ years, retired in January 2017. While she was at the Museum, she saw the introduction of computers at the University, managed major renovation projects in the galleries, worked under five directors, and played an important role in the growth of the Museum. She has passed the torch to Caroline LeBlond who started in her new responsibilities in June 2017. Sara Pimpneau, who was a support staff in the Admin office for the past eight years, left McGill in October 2017. Our new full time Administrative Coordinator, appointed in January 2018, is Ginette Dessureault.

In 2017, the Museum hosted multiple events such as the Biology graduate student Gala, the Canada Governor General VIP event and the Festival Trans Amériques. We started 2017 r with our first Winter Gala co-organized by the students of the Redpath Museum Society. The



second Gala took place on January 19, 2018.

The auditorium has been used for two major film productions. Revenues generated by the rental of our space will allow us to open the Museum on Saturdays for a trial period of six months in 2018!

The Museum has a **new gift shop since May 2017**. For sale are exclusive T-shirts designed by a McGill student, as well as stickers representing specimens of the Museum. The Museum Gift shop is located in the Entrance Hall/Lobby

area (see photo here). Drop in and pick up a free copy of our new collaborative childrens' science magazine: *Soucoupe volante*.

ACFAS @ MUSEUM

The Museum took part in the ACFAS (Association canadienne-française pour l'avancement des sciences) conference last May by putting out display and demo tables each day during the conference week. About 200 ACFAS delegates visited the Museum.

Saving space and still growing

By Anthony Howell, Collections and Space



The photos here show new collections and storage space for the herpetology and ichthyology wet collections, and the consolidation of the ornithology and paleontology collections into one space (right). The ongoing efforts to conserve and maintain the natural history collections at the Redpath received a major boost this year, and marked a positive step forward in modernizing the collections space. With the help of a federally funded museum grant, as well as financial



support from McGill sciences, two new projects were completed to install compact storage systems in the collections space of the Redpath Museum. Our goals were to consolidate multiple collections into one area, as well as improve the efficiency and accessibility of collection's material. The

project began back in April of this year, with much planning of the design and layout of the storage systems. The flexibility of space in a 135-year-old museum is minimal, so some creative leniency was needed in their development. In the end, each system was designed uniquely to fit each space, so as to maximize efficiency without compromising accessibility. The result was the reduced footprint of our collections, making more space available for growth. We were able to reduce the fragmented space occupied by the collections by over 40% and increase the available space for new collections material by nearly 31% in our herpetology and ichthyology collections. These new upgrades will dramatically help the Redpath organize and conserve its collections. **This project has been made possible in part through a grant from the Museum Assistance Program, Department of Canadian Heritage.**



PHOTOS: Students from the Barrett lab in the field in Nebraska and Brazil.

Antoine Paccard has added over 500 *Gasterosteus aculeatus* specimens from Newfoundland and Nova Scotia to the Redpath collections, which marks the Museum's first East Coast acquisitions for this species, as well as 40 *Gasterosteus aculeatus* specimens from Iceland, Norway, Germany, Switzerland, Alaska, Japan, and Russia, all of which represent new localities for this species within the Redpath collections. Rowan Barrett was also awarded a new investigator grant from Fonds de Recherche Nature et Technologies to continue his research on temperature tolerance in the three-spined stickleback. Finally, many members of the lab were heavily involved in new science outreach initiatives, including the Diversity in STEMM program organized by Charles Xu, and Rowan Barrett giving an interview with CBC Radio's program *The Current*.

In partnership with biologists at the University of Toronto and at Fisheries and Oceans Canada, we will use an innovative experimental approach that tests the impact of invasive fish relative to the baseline impacts of native fishes on the broader ecological community. We will conduct these tests in water temperatures projected for the Great Lakes basin under different warming scenarios, so that we can predict how invasion threats will vary with climate change. Among the focal species will be Asian carp (bighead carp, silver carp, grass carp), Prussian carp (a species of goldfish that is invading western Canada), and the Eurasian tench. Work by PhD candidate Sunci Avlijas has identified tench as an imminent invasion threat to the Great Lakes. The species is currently expanding its population in the St. Lawrence River and is spreading upstream toward Lake Ontario.

PHOTO: Sunci Avlijas holds a tench caught in the Richelieu River, Quebec.



To understand the ecology of this species in different environments, we have undertaken an ambitious project that compares the morphology, population structure, and diets of invasive populations in distant geographic locations, including South Africa and the eastern and western USA. This past summer, Sunci and undergraduate research assistants Anna Potapova and Aimy Wang surveyed invasive tench in Washington state and discovered dense populations in some waterbodies.

Another highlight from this year is the publication of a paper in the prestigious journal *Trends in Ecology and Evolution*. It resulted from an exciting workshop that I organized last year at the University of Cambridge, where several of the world's leading ecologists convened to discuss the future of invasion science. We conducted a scan of some of the emerging scientific, technological, and sociopolitical issues likely to affect how invasive species are studied and managed over the next two decades. The issues we identified included emerging biotechnologies and agricultural practices, the rapid rise in invasive fungal pathogens, and the consequences of Arctic globalization.

Invasion Ecology and Aquatic Ecosystems lab

By Anthony Ricciardi

A highlight for our lab this fall was being awarded a new strategic grant to identify and prioritize invasive species that pose the greatest ecological threat to the Great Lakes.

Barrett lab

By Rowan Barrett

This year marks continued expansion of the Barrett lab, with two new personnel joining us at the Redpath Museum: PhD students Alan Garcia Efring and Mathilde Salamon. Existing members Tim Thurman, Sara Smith, Juntao Hu, Charles Xu (in photo with touch screen exhibit he created on STEMM and diversity), Ananda Martins, Marc-Olivier Beausoleil, and Antoine Paccard had a productive 2017, with multiple papers published or in press at the journals *American Naturalist*, *Molecular Ecology*, *Heredity*, *Journal of Evolutionary Biology*, *Annual Reviews in Ecology, Evolution, and Systematics*, and *Trends in Ecology and Evolution*.

Members also attended the Canadian Society for Ecology and Evolution meeting in Victoria. Antoine Paccard and Rowan Barrett gave invited seminars at Binghamton University, University of Florida, and the Université de Montréal. Rowan also gave the plenary talk at the Ontario Ecology, Ethology, and Evolution Colloquium and an invited talk at the Speciation Gordon Research Conference in Barga, Italy. The year was also marked by intensive fieldwork, with trips to the Bahamas for Anolis research by Tim Thurman and Rowan Barrett, East and West Coasts of North America for *Gasterosteus* fish research by Antoine Paccard and Sara Smith, Nebraska for *Peromyscus* research by Rowan Barrett, Charles Xu, and Juntao Hu, and Brazil for *Heliconius* research by Ananda Martins.

for invasion risks in the northern hemisphere. This was one of the most creative and productive meetings I have ever attended.

Eco-evolutionary dynamics lab

By Andrew Hendry

The Hendry lab continues its work on eco-evolutionary dynamics, where ecological change drives rapid evolutionary change, which then feeds back to influence ecological change. Field studies on interactions between Darwin's finches and plants in Galápagos (Sofia Carvajal-Endara and Daniel Reyes), between guppies and their parasites in Trinidad (Lea Blondel and Jonathas de Lira), and between stickleback fishes and their prey in various places along the West Coast of North America (Grant Haines), are ongoing. We have also added new projects on dolphins in Panama (Betzi Pérez), howler monkeys in Argentina (Lotte Skovmand), and native and invasive species in Montreal (Sarah Sanderson and Louis Astorg), Panama (Diana Sharpe, Felipe Perez-Jvostov), and Uganda (David Hunt). Receiving their PhD degrees in the last year were Krista Oke, who worked on parallel evolution in fishes (mainly salmon in Alaska); and Victor Frankel, who worked on host-parasite interactions in the Panama Canal. Former lab members receiving permanent positions in the last year include Joost Raeymaekers (Nord Univ., Norway), Martin Turcotte (Univ. Pittsburgh), Jean-Sébastien Moore (Univ. Laval), Luis De León (Univ. Massachusetts Boston), and Pierre-Olivier Montiglio (UQAM).

Other highlights include our leadership in the \$1.65M NSERC CREATE BESS (Biodiversity, Ecosystem Services, and Sustainability) training grant; Andrew Hendry's participation as a lead author for the Global Assessment being conducted by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES); and the publication of many papers in peer-reviewed scientific journals. Some discoveries reported in these papers include that evolution is particularly rapid in urban environments; variation within species can be just as important for ecosystem services as can variation among species; the

Galapagos flora was assembled in surprising ways; and that evolution in fishes is not as predictable as many authorities have suggested.

Andrew Hendry's own biggest highlight of the year was the publication of his 7-years-in-preparation book *Eco-Evolutionary Dynamics*, which received advance praise from many top evolutionary biologists and ecologists. It has since been reviewed favorably by four different journals. Apart from these testimonials, his favorite part of the whole process has been the fun tongue-in-cheek



social media thread, in which various readers have found creative ways to show how the book is particularly effective at curing insomnia!

Small mammals and climate change lab

By Virginie Millien

For the past 10 years at McGill's Gault Nature Reserve, about 40 kilometres east of Montreal in the St. Lawrence valley, biologist Virginie Millien has been studying two similar, coexisting species: the deer mouse and the white-footed mouse. Both are common in eastern North America. But while the deer mouse can be found in Canada's northern reaches, the white-footed mouse is a more southerly species, rarely found north of the St. Lawrence River. New research from the Millien lab shows that milder winters have led to physical alterations in these two species of mice in southern Quebec in the

past 50 years – thus providing a textbook example of the consequences of climate change for small mammals. The findings from the Millien lab also reveal a stark reversal in the proportions of the two mice populations present in the area, adding to evidence that warming temperatures are driving wildlife north. Millien's team compared data from the past decade with specimens collected by McGill researchers as far back as the 1950s and discovered that the skull shapes of both mouse species have changed over time. The changes in the two species paralleled each other, but have been more pronounced in the white-footed mouse – with the result that the cranial shapes of the two species have become more distinct. At the same time, the white-footed mouse has been moving farther north as winters get milder at a rate of around 11 kilometres per year. While nine of 10 specimens caught in the reserve by researchers in the 1970s were deer mice and only 10% were white-footed, those proportions are now reversed.

One question that remains to be settled is whether the changes are genetic, and will be passed on to future generations – actual evolution – or whether they represent "plasticity," the capacity of some species to adjust to rapid environmental change. For Millien, the old-growth forest of the Gault Nature Reserve on Mont Saint Hilaire in Quebec's Montérégie area similarly provided a kind of insulated, open-air lab. "When I arrived in Quebec from France 15 years ago, I was working on the evolution of island mammals," she recalls. "I was pretty disappointed, because there was little opportunity to find islands close to Montreal. Then I saw a picture of the Montérégian hills by NASA in the winter: these were islands of forest within a matrix of agricultural field and urban areas. I had found my study system."



PHOTO: White-footed mouse at Mont Saint Hilaire.

What made these wooded hills particularly special was that Millien also had access to museum specimens from the same locations, collected in the 1950s through a McGill field survey and in the 1970s by Peter Grant, who did work on small mammals at Gault while he was a biology professor at McGill. With its 1,000 hectares of old-growth forest, "Gault is unique" in southern Quebec, says Millien, who has also been director of the Reserve since last year. "It provides an opportunity for researchers to study the effects of climate change, putting aside the added disturbance of human activities".

Fossil Preparation lab

By Chantal Montreuil

In the summer, amongst the noise and vibration from the Leacock / Redpath Museum roadway construction, the paleo-prep lab was moved upstairs to the main floor teaching lab and, on occasion, to the Museum's entrance hall. With help from Shalom Brody and Kevin Zhao, we did some ad hoc public outreach. Taking advantage of a more quiet day (Tuesdays) gave us the chance to focus more on interacting with the public than on our special events day. Sifting through countless sand samples looking for small fossils of salamander, turtle, fish and on occasion dinosaur fragment was a huge success with our visitors.



PHOTO: A fossil tooth from a freshwater Ray (*Myledaphus bipartitus*).

Mineralogy Collection

By Peter Tarassoff

Peter Tarassoff manages the museum's mineral collection as Honorary Curator of Mineralogy. He has written an illustrated

guide to the Museum's mineral exhibits entitled *Treasures from the Earth*, a gallery guide and introduction to minerals (in press). Financial support was provided in part by the Canadian Geological Foundation.



PHOTO: Serendite mineral from Mont Saint-Hilaire.

Outreach and beyond

By Ingrid Birker and Jacky Farrell

Highlights this year include the completion of the SPF-funded portion of the Survival Workshops and implementation of a fee-based version for staff and students on the downtown campus. Four workshops on traditional skills (fire by friction, tracking, shelters, foraging, etc.) and nature connection were offered each term.

Generously funded by the Dean of Science for this academic year, our goal is for participant fees to make this program self-sustaining starting in September 2018.

Aside from the survival workshops, outreach continues to deliver hands-on educational activities and programs to **over 30,000 people every year**, through hands-on

discovery workshops in local schools and libraries and through videoconferencing.

An average of 500 people visit the Museum almost every Sunday afternoon.

Our contract with the Canadian Wildlife Federation (CWF) urban programs serves over 3,600 participants each year. These programs include: Wild Migrations (at-risk species migratory routes and related activities on a giant floor map), Wild Spaces (pollinator program, school gardens and field trips to Mount Royal with Les Amis de la Montagne), Wild Outside (teen leadership program), and Wild Family Nature Club (connecting families to nature and to each other). In 2017, we created a new "marine-themed" day focusing on the Museum's aquatic collections and resources. This included a special presentation by guest speakers and graduate students with their lab apparatus; activities on a giant floor map of Canada; examination of marine and aquatic specimens; hands-on water testing with *Let's Talk Science*; and a preschool specialist explaining marine life for our youngest visitors. We delivered this "marine life" day at the Museum three times: for the C3 Expedition and Aquavan visits (two of the signature Canada 150 projects; over 250 and 500 visitors, respectively) and for Science Literacy Week in September (over 290 visitors). In the spring, we received a grant from the CWF to develop two teaching gardens at McGill that will focus on pollinators and native plants. We will be working with First People's House and McGill's gardeners to develop educational signage and outdoor activities in 2018.



PHOTO: Jacky Farrell in action with the C3 floor map outside the museum in summer 2017.

Special projects and exhibits

The Redpath Museum Gift Shop, which opened for the first time on Museums Day 2017, is now located in the entrance lobby area. Stop by to see our exclusive Museum T-shirts, books and more. New items to arrive this spring!

The *STEMM Diversity @ McGill* project installed two Touch screens at the Museum in early October 2017 as part of Ada Lovelace Day. This student-driven initiative at the Redpath Museum promoted diversity in Science, Technology, Engineering, Math, and Medicine and consists of an online exhibit featuring interviews of diverse students and faculty discussing their personal experiences and opinions relating to the roles of gender and ethnicity in STEMM. These interviews were conducted by students and staff at the Redpath Museum in collaboration with Student Television at McGill (TVM). The two interactive touch-screen kiosks showed interviews, podcasts, articles, and images of women and minorities in STEMM at McGill. The website and STEMM touch screens have attracted about **20,000 page views / month.**

This project won the McGill Award for Equity and Community Building, recognizing the work of students committed to advancing equity, inclusion and community engagement at McGill. The award committee noted that this project "was outstanding, showing achievement, initiative and impact in the domains of equity, inclusion and community building. The **Diversity in STEMM Colouring and Activity Book** that was created by MSc Biology candidate Jessica Ford to accent this project is available for sale (\$7) in the Redpath Museum Gift Shop.



PHOTO: Charles Cong with the STEMM exhibit at the Redpath Museum in 2017.



The *Pteranodon origami model* created by Robert Lang in 2007 was on display for the summer of 2017 at the Villa Bagatelle in Sainte Foy-Sillery-Cap-Rouge as part of the exhibit, *L'origami sous tous ses plis*. This exhibit was seen by **7,000 visitors**.

Our fossil plant *Archeopteris* is on the road for Canada 150 as part of a travelling exhibit, *Museum's Choice: Fossil Favourites from Across Canada*. Produced by the Alliance of Natural History Museums of Canada (ANHMC), in partnership with the Canadian Museum of Nature (CMN) and the Royal British Columbia Museum (Royal BC Museum), this nationally travelling exhibit featuring some of Canada's most impressive, famous and significant fossils or replicas will cross the country for three years. The specimen from the Redpath Museum, *Archeopteris gaspiensis*, is 280 million-year-old fossilized frond collected and named by Sir John William Dawson. It grew in the Devonian forests of what is now the Gaspé of

Quebec. In 1871 Dawson found and designated *Archeopteris gaspiensis* as the Type or name bearer of these types of early vascular land plants. Dawson's published report was sent to Charles Darwin, and Darwin's response is contained in a letter on exhibit at the Museum in the Dawson Gallery, beside an exhibit about the fossil plants of the Gaspé.



PHOTO: *Archeopteris gaspiensis*, the Type specimen found by Sir John William Dawson in 1871. On tour across Canada until 2020.

Over 84,000 people visited the Redpath Museum in 2017.

Support from our Friends

We devote this page as a special thanks to all of our donors, sponsors and **Friends**. If you would like to help us to extend the impact of the Redpath Museum for future generations, please contact Hans Larsson, Museum Director, at hans.ce.larrsson@mcgill.ca or phone him at 514-398-4086, ext. 3188.

Generous support year round is from the **Friends of the Redpath Museum / Le Conseil des Amis du Musée Redpath**. This group promotes the public program of the Museum. Its members help to organize fund-raising and publicity and act as volunteers on Sunday afternoons. Membership is open to all those interested in the public activities of the Museum. Please write to redpath.museum@mcgill.ca if you are interested in joining our Friends.

Abe Levine (1924-2017) one of the Museum's proudest benefactors and a true Friend died in August. We remember him for the donation of the exhibit *Conchologycitus - the Abe Levine Shells*, located on the second floor of the Redpath Museum.



Bird Protection Quebec (BPO) for providing funds to renovate the Quebec Biodiversity dioramas located in the Dawson Gallery.

The **Drummond Foundation** for helping us to build our new Welcome Desk in the Entrance lobby of the Museum.

The **Canadian Wildlife Federation** for a three-year contractual position to enhance family nature education, and for the special grant to establish a Pollinator Garden and a traditional herbal garden on the grounds near the Museum. These two gardens will be planted in 2018

Redpath Sugar for generous sponsorship of the Redpath Museum Gala held on January 19, 2018.

Canadian Geological Foundation for financial support to print and publish the new Mineral Gallery Guide, *Treasures from the Earth*.

Generous support to produce our new Museum Colouring and Activity book (in press) from the family of the **late Jennie Turczmanowycz**, a long – time Welcome Desk volunteer at the Redpath Museum and McGill Chemistry graduate.

The **Canada C3 project** for the funding of all the elements of our **Canada C3 Museum Hub** in 2017. This included the giant C3 floor map and the educational materials associated with it, along with the construction and design costs of the two Touch screens .



Heures d'ouverture

Lundi au vendredi: 9 h à 17 h
 Samedi* et Dimanche: 11h à 17 h
 Jours fériés : FERMÉ
***NOUVEAU:** Ouvert les samedis
 du 7 avril au 26 août, 2018

L'adresse

Le Musée se trouve au centre-ville de Montréal sur le campus de l'Université McGill :
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 Montréal (Québec) H3A 0C4
 téléphone: 514-398-4092
 courriel: redpath.museum@mcgill.ca

**Opening Hours**

Monday to Friday: 9am-5pm
 Saturdays* and Sundays: 11am-5pm
 Public holidays : CLOSED
***NEW :** Open on Saturdays from Apr. 7 through Aug. 26, 2018

Address

The Redpath Museum is located in downtown Montreal on the McGill University campus at:
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