Fall 2013

NEWSLETTER

Co-Editors: Linda Cooper, Ingrid Birker & Anthony Howell

FROM THE DIRECTOR'S DESK

By David M. Green

Looking back on the past year, I realize that I've been away a lot. Nothing unusual; it's merely the pace of an active scientist and professor. In January and February, I was in Kenya to teach the Museum's course, REDM 405 (Natural History), in McGill's Field Studies in Africa program. It's a fabulous program with excellent students, and I feel privileged to be able to participate every two years. In May, I was with my graduate students and student volunteers at Long Point on Lake Erie where I have my ongoing project on the population biology and conservation of Fowler's Toads. This project has run for 25 consecutive years, generating a long-term database and a series of recent papers. I was in Albuquerque, New Mexico, in July for the annual Joint Meeting of Ichthyologists and Herpetologists. All that week in New Mexico, where you would expect it to have been hot as blazes, it rained, and I returned to Montreal to find I'd missed our annual summer heat wave. In September, I was in Mont-Orford, Quebec, to launch a new Canadian Herpetological Society as its founding co-president. In addition, I found the time to analyze data, write papers, complete a new book, teach and advise students, mow the lawn at home occasionally, and oh yes! be Director of the Museum and try not to get completely swamped. Nothing unusual, really. But I am just one of the six professors in the Museum with an active research and teaching program. The tremendous range of research and teaching activities ongoing at the Museum, both here and away, is astounding when you add it all together and think about it.

Through the work of its professors and their graduate students, our small but mighty Redpath Museum really has a global presence. **Tony Ricciardi's** work on invasive invertebrates extends throughout the lower St. Lawrence River. **Virginie Millien** and her students travel all across Québec to study populations of small mammals. **Rowan Barrett**, who arrived just this fall to be our newest faculty member, already has plans for research projects in Nebraska and the west coast of Canada. **Andrew Hendry's** research regularly takes him to Trinidad to study guppies, to the Galapagos Islands to study Darwin's finches, and to British Columbia to study stickleback fishes. He is also director of McGill's Panama field study semester. But **Hans Larsson** trumps all of us as a world traveler with his paleontological explorations in Saskatchewan, South America, West Africa, and the Canadian High Arctic where he searches for the remains of dinosaurs and other Mesozoic animals. The fabulous breadth of endeavor is taking the Museum to ever greater levels of scientific productivity and new knowledge. Every Friday morning, Museum professors and their students get together for coffee and to hear about each other's research. It's an exciting time!

ILLUSTRATION (above): From Urban Sketchers Montreal. This sketch by was done by Mark Taro Holmes and shows three other sketchers on the front steps of the Museum late last November. See more: www.urbansketchersmontreal.wordpress.com

BIODIVERSITY
By Andrew Hendry

Impossible Realities: Adaptive Radiations and the Suspension of Disbelief

An excerpt from Andrew Hendry's Research Blog: *http://ecoevoevoeco.blogspot.ca/*

Adaptive radiations occur when a single ancestral species radiates into multiple descendent species as a result of adaptation to different environments or resources. Adaptive radiations provide perhaps the clearest evidence for the role of adaptation in shaping the diversity of life – think Darwin's finches in Galapagos, Anoles lizards in the Caribbean, figs and fig wasps, Hawaiian silverswords, and so on. The typical assumption of this model of evolution is that a number of empty "niches" exist and that organisms evolve and speciate to fill them, after which the radiation ceases. However, a number of alternative possibilities exist, such as the evolution of one species creating a brand new niche that favors the evolution of still more species – diversity begets diversity.
These possibilities have been explored using a variety of methods. One method is to try to figure out how many possible niches are out there – and how many of them are filled. That is, do the 13 or so species of Darwin's finch correspond to the 13 different resources to which finches can possibly adapt? Stated another way, is the fact that marine finches and cave finches don't exist mean that these niches are not accessible to finches or that finches simply haven't gotten there yet?

Questions along these lines are often explored by investigators attempting to guesstimate what niches are possible for a given taxonomic group, thus enabling estimates of which niches have and have not been filled by a given adaptive radiation. But how does one establish the range of possibilities? That is, how does one determine whether a hypothetical niche (marine finches) is or is not possible (i.e., accessible to the adaptive radiation)? A common route to this determination is to estimate the range of biomechanically possible morphologies and then determine how much of this range is filled by extant organisms. Unfilled morphospace then means the radiation hasn't yet been completed – empty niches are still in waiting.

Sometimes I fear that these endeavors are doomed to failure – because it is usually impossible for us to determine what realistic empty niches are out there but have not yet been filled. This opinion first crystallized for me on my first trip to Africa and was brought back to mind by this week's trip to sample guppies in Trinidad. The key realization for me was that many organisms that currently exist would probably not have been considered possible if they hadn't already existed. The most obvious examples of these impossible realities are situations where one or a few species are highly divergent in morphology from other organisms – with giraffes first bringing the point home to me. Giraffes are so different from other organisms that I would bet that we would never imagine they could exist if they didn't already. Ditto for hippos and bombadier beetles and aye-ayes and emperor penguins and mudskippers and cookie-cutter sharks and gastric brooding frogs and hydrothermal vent organisms and so on. In other cases, it is a whole group that is so bizarre that we wouldn't believe them without the proof staring us in the face. Perhaps most striking, no one imagined dinosaurs – at least not in the depth and breadth of their majesty – before they had been revealed by fossils. And I would place deep sea angler fishes in a similar place. These bizarre creatures suggest to me that many other morphologies, presumably suited for very divergent niches, still exist out there and have not been filled.

PHOTO: **Beth** and **Felipe Perez** catching guppies.

The reason my trip to Trinidad brought this point back to mind was that a species exists there that is so

bizarre as to challenge credulity, except of course for the fact that it actually exists. Imagine a bird that lives in caves (some other birds – cave swiftlets – also do so), feeds at night (some other birds – nightjars – also do so), has chicks that can be melted down to make oil, and echolocates. Yes, indeed, the echolocate. They use a series of clicks and screeches to help them navigate in pitch darkness both inside and outside of their caves. Bats do it, but birds? Bizarre. Unprecedented. Impossible? I had long heard about oilbirds and had even seen (mostly heard) them fly by while camping at night in remote rivers of the northern range of Trinidad – but never before in 13 years of visiting Trinidad had I seen them in their caves. But this was finally that year, when **Felipe Perez** lead me on a 2.5 hour hike up into the mountains to one of their (few) caves.

From my field notes: We reached the cave well after dark and were coaxed along the last few hundred meters by an ever growing crescendo of loud clicks and screeches. We wormed our way down a tiny creek in a small canyon and into a boulder field that descended into the mouth of the cave. The cave was quite large and extremely noisy and a bit smelly and wet, with water dripping from the cave roof. It was not a horizontal cave like you see in the movies but rather seemed to go about 45 degrees down and into the depths – presumably having been wrought by the creek flow over eons. Along the walls of the cave were ledges that were full of screaming oilbirds. [Wikipedia notes: In Trinidad it was sometimes called *diablotin* (French for "little devil"), presumably referring to its loud cries, which have been likened to those of tortured men.]

They would either sit there and hurl imprecations or fly back and forth in and out of the cave opening or around inside the cave. It was quite spectacular and I wasted no time in getting out the camera. The photography conditions were quite difficult, however, as it was pitch black and the oilbirds were mostly far away – so Felipe would hold both headlamps pointing at a bird and I would use a telephoto with a big flash, which – after much trial and error – took some decent photos.

PHOTO: Echolocating oilbird, aka *diablotin*.

So, from snakes to oilbirds to dinosaurs to hippos to giraffes, it seems to me that the human imagination and even calculation is incapable of postulating the possible endpoints in an adaptive radiation. We either circumscribe the possible morphospace much more than the actual reality, or we postulate things that really aren't possible no matter what. I am not sure where this leaves the study of adaptive radiation except perhaps to the idea that the best judge of what is possible is what already exists, with the caveat that this is almost surely an underestimate of what is actually possible. Adaptive radiations are indeed stranger than fiction.

INVASIVE SPECIES ECOLOGY (Biological Invasions)
By Anthony Ricciardi

The Ricciardi Lab has been exceptionally active over the past year. Former student **Rebekah Kipp** (MSc, 2010) published an article from her thesis concerning the impacts of the round goby on molluscs in the St. Lawrence River, which was chosen as the "Elsevier Best Paper by a Young Scientist" for the *Journal of Great Lakes Research*. Several students from our lab presented their research at the International Conference on Aquatic Invasive Species held at Niagara Falls in April and at the annual general meeting of the Canadian Aquatic Invasive Species Network (CAISN), held at Kananaskis in May. Prof. Ricciardi gave a keynote talk at the Niagara conference. At the Kananaskis meeting, MSc candidate **Ahdia Hassan** presented her work comparing the incidence of socioeconomic impacts

among native and non-native freshwater species – which revealed that non-native species are more likely to become pests. Hers was judged to be among the top student presentations (2nd prize). MSc candidate **Jordan Ouellette-Plante** presented experimental work showing the remarkable ability of invasive zebra and quagga mussels in the St. Lawrence River to acclimate rapidly to changing turbidity conditions by altering their gill morphology. Both Ahdia and Jordan submitted their theses in the summer and will be graduating in spring 2014.

Four students graduated in May: **Lisa Jones** (PhD), **Sunci Avlijas (**MSc), **Rowshyra Castaneda** (MSc), and **Andrea Reid** (MSc). Lisa has started a postdoctoral position with Fisheries and Oceans Canada. Rowshyra is currently helping to manage our lab, and she is leading a new research project in the St. Lawrence River. Two new students arrived in September: **Dustin Raab** and **Andrea Morden**. Dustin is a PhD candidate working on fish invasions of Great Lakes tributaries; he is co-supervised by Dr. Nick Mandrak, a research scientist at Fisheries and Oceans Canada. **Andrea Morden** is an MSc candidate working on populations of the Asian clam *Corbicula fluminea* (one of the world's most invasive aquatic species) in north temperate lakes. Both students are funded by CAISN. They join current PhD students **Katie Pagnucco** and **Josie Iacarella**, and MSc students **Kayla Hamelin** and **Emilija Cvetanovska**.

Earlier this year, **Katie Pagnucco** was invited to join the Great Lakes Futures Project — a multi-disciplinary collaboration that aims to forecast the future ecological state of the Great Lakes based on trends involving changing drivers (e.g. climate change, contaminants, water use, invasive species). Katie led a team that investigated the invasive species driver. They have recently produced an exciting paper that assesses current trends and future scenarios of the vulnerability of the Great Lakes to further species invasions.

MSc candidate **Emilija Cvetanovska** is investigating the environmental tolerances of the Asian clam, which is typically found in warm climates and believed to be limited by low winter water temperatures. In recent years, the clam has expanded its range further north than previously expected – both in Europe and North America. An overwintering population has existed in Lake George, New York, since 2009. In Canada, a population has been established in the St. Lawrence River since at least 2009, in artificially heated waters downstream of the Gentilly-2 nuclear power plant. Emilija is conducting laboratory experiments that compare the cold tolerance of Asian clams collected from different populations. She found that the population in the St. Lawrence River has a much lower tolerance to cold temperature compared to the population in Lake George. These results have recently been confirmed in the field: after thermal plume was removed following the closure of Gentilly-II, clams in the St. Lawrence River suffered mass mortality. However, clams in Lake George continue to survive winter. Emilija has started a second series of experiments that will compare cold tolerance in other populations in New York and the southern United States.

This summer, **Josie Iacarella** completed field work in the U.K. in collaboration with Dr. Jaimie Dick, Queen's University Belfast. Jaimie's lab and ours are collaborating to develop a novel approach to link the behavior of invasive aquatic predators to their ecological impact. Josie conducted a series of experiments comparing predation rates of invasive crustaceans across environmental gradients. She is testing new hypotheses to explain context-dependent variation in invasive species impacts.

PHOTO: **Josie Iacarella** (PhD candidate, Ricciardi Lab) in the field in Ireland.

In collaboration with the Quebec Ministère de l'Environnement, **Kayla Hamelin** completed a field survey of invertebrates (including Asian clams) in the thermal plume of the Gentilly-II power plant prior to its closure in December 2012. Her work has revealed

patterns linking the distribution, abundance, and diversity of native and non-native invertebrates to temperature, flow velocity, and substrate characteristics along a 3-km downstream section of the plume. She is planning to submit her thesis in December.

WORLD CULTURES DIVISION
By Barbara Lawson
Facial Reconstructions of Three Ancient Egyptians

In 2012-2013, a project was carried out creating 3-dimensional facial reconstructions approximating how the Redpath Museum's three human mummies would have appeared in life. The reconstructions were based on high-resolution 3D radiological images that had been generated at the Montreal Neurological Institute in 2011. From this examination and subsequent radiocarbon analyses of the two Theban mummies, dates were revised as follows: the Theban male (RM 2718) - Ptolemaic Period (332-30 BCE), the Fayum female (RM 2720) - mid-Roman Period (96-161 CE), and the Theban female (RM 2717) - Late Roman Period (230-380 CE). Cranial and mandibular skeletal CT scan data were processed by Andrew Wade and Andrew Nelson, physical anthropologists at the University of Western Ontario, to virtually remove all tissue and fabric and reveal the skulls of the mummies. The stripped-down CT scan data was sent to a 3D printer at the Engineering Technology Department of John Abbot College and copies made by Mark Ewanchyna, each skull taking approximately 10 hours to print. The printed skulls were then hardened using an epoxy resin and mounted on stands, serving as models for the work of forensic artist, Victoria Lywood, also affiliated with John Abbott College. Tissue depth markers, based on measurements of modern Egyptians, were attached to the models and non-hardening clay was applied according to the depths indicated to flesh out the faces. Prosthetic eyes were inserted and the surface of the model skulls were painted by Lywood to reflect skin tones appropriate to the Mediterranean, North African, and Sub-Saharan mixture of Egyptian populations. Lywood also painted features and made appropriate wigs based on coiffures detected through the mummy wrappings by the physical anthropologists and confirmed by historical sources. The facial reconstructions were unveiled in January 2013 amid intensive media interest and are now on permanent display in the World Cultures gallery.

PHOTO (above): Mounted 3D Printed Skulls with Tissue Depth Markers. Photo credit: M. Ewanchyna.
PHOTO (left): Facial Reconstructions by Forensic Artist Based on CT Scans. Photo credit: V. Lywood.

World Cultures Research

History of Redpath Mummy Collection: An overview of the past 150 years of this important Redpath collection, including a review of early examinations and exhibits, was completed by World Cultures curator Lawson in 2012-2013. This detailed account, including a wealth of new information, provides a fascinating context for the recent CT scan examinations and reconstructions described above and will be a feature article in the upcoming issue of McGill's *Fontanus* series.

Face Jug in Redpath Collection Attributed to Miles Mill Potters: Several years ago, Lawson identified a figural vessel of unknown provenance in the World Cultures collection as a rare and prized "face jug" made by an African-American potter in South Carolina during the nineteenth century. This was confirmed by a University of South Carolina curator and identified as having been manufactured

1850-70 in the Edgefield District. Recent work by the Georgia Archaeological Institute shedding light on the manufacturing process and also on the origin of known vessel styles now provides a more exact attribution for the Redpath jug to the Edgefield Miles Mill pottery (South Carolina), 1867-1872. The Redpath jug also shows strong indications of being made by the same hand as an example in the Metropolitan Museum of Art.

Naukratis Project: Archaeologists at the British Museum are working to re-unite and re-contextualize about 17,000 objects from Naukratis located in the Nile delta of Egypt now distributed among over 60 institutions worldwide, including about 140 artefacts at the Redpath Museum. The study includes material found at Naukratis from the 7th through the 1st century, providing a solid foundation for a new analysis of the site's history and development as an Egyptian, Greek, and Roman town and a center of cross-cultural contact. The project includes current excavation at Naukratis and also a reassessment of nineteenth century archaeology which will eventually be published as an online catalogue. For more details about the project, see: http://www.britishmuseum.org/research/research_projects/all_current_projects/naukratis_the_greeks_in_egypt.aspx.

The Casey Wood Collections Project:
Nick Whitfield, a postdoctoral fellow in the Department of Social Studies of Medicine (McGill), has been reviewing the Redpath collection of Sri Lankan *materia medica* assembled by Dr. Casey Wood in the early twentieth century. **Anna Winterbottom**, a postdoctoral fellow in the Indian Ocean World Centre (McGill), working on the early modern history of medicine in the region, has also been examining this material. These researchers have just begun a blog related to Casey Wood and his collection at: http://blogs.mcgill.ca/caseywoodcollectionsproject/about-the-authors/

World Cultures Donations

Donations to the World Cultures collection during 2012-2013 included a an Egyptian polychrome wooden mask, Borneo basketry and Iban *ikats*, 168 Coptic textiles and pieces of Egyptian cartonnage (mentioned in 2011, but not officially donated until 2012), a Papua New Guinea Middle Sepik ceremonial panel (see photo on right), 29 Mesoamerican ceramics mostly from Mexico, and several textiles from Baluchistan (see photo below).

PHOTO: Dromedary Saddle Blanket in situ, Baluchistan circa 1970, Professor **Philip Salzman** (McGill) Donation.
Photo credit: P. Salzman.

PHOTO: Middle Sepik Ceremonial Panel, Papua New Guinea, circa 1960, **M. Jean-Claude Bertounesque** Donation. Photo credit: Redpath Museum.

Accessioning, photographing and cataloguing these new Redpath accessions has been greatly assisted by volunteer **Daniel Gagnon**, MA in Egyptology (University of Toronto). **Annie Lussier**, a McGill honors student in Anthropology with a minor in Art History, also provided invaluable assistance rganizing archival materials during 2012-13.

In addition to the above, the Redpath received a major donation of approximately 400 artefacts from Afghanistan and neighboring areas, accompanied by notes, slides, books and additional documentary material acquired during the 1960s and 1970s by Canadian Ghislaine Lecours, who was a researcher for a project to develop regionally appropriate educational materials in Afghanistan. The collection was delivered in July by the Canadian Museum of Civilization and the task of unpacking and inventorying this important donation has just begun. Of particular significance is the fact that these objects, notes, and images document Afghanistan and surrounding areas at a time preceding intensive globalization and also before the devastation wrought by decades of social upheaval and warfare. Prior to this addition, the Islamic World was very little represented in the World Cultures holdings.

COLLECTIONS ACTIVITY

By Anthony Howell

Collections

The collections are undergoing a state of "refreshing", as storage methods and mediums are updated continuously, and conditions for organizing and maintaining specimens have improved. This past summer, the basement underwent a purge that resulted in a much-needed cleaning of its collections. This included non-specimen material that took up dozens of square feet of space, now used to store collections material.

Specific collections have been outfitted with new, in-house made cabinet trays that better organize specimens as well as consolidate any wasted space in the collections. This has resulted in a much tighter, cleaner, and more efficient collection.

PHOTO: Parts of the mammal collection stored in plastic trays (left) and in-house made study skin trays (right).

And throughout the summer, the museum collection of type fossils - long overdue for a re-organization and consolidation - has been worked on to better store and protect the material. Type collections are composed of specimens that were the first used to describe their respective species, and are among the most valuable (academically) and important parts of any museum collection.

PHOTO: Type collections in new storage mediums.

Collection Management Projects

The large-scale project of relocating specific portions of the collections to an offsite facility are well underway. The first phase of this move will be completed by the end of 2013 and will see several thousand specimens relocated to a safe, secure, and environmentally controlled storage facility, only minutes from the museum. This will free up some

much- needed space at the museum, both for collections material and for students working on research at McGill.

PHOTO: The shell collections, composed of over 30,000 shells, on the 3rd floor of the museum is one part of the collections being moved offsite this Fall. Over the summer, waves of tireless students, volunteers, and collections staff have been preparing this material for relocation.

Volunteers/Work-study/Internships

The collections team has had some much needed help this past year from work-study students, interns, and volunteers. In addition to the annual Vanier interns who started in February, the collections has added work-study students **Sophie Wolvin** to help prepare the collections for relocation, **Isabell Fendley** to aid in collections management and **Robyn Biggar** to help organize and consolidate the mineralogy collections.

Travail Sans Frontieres, located in the Plateau, was established in 1982. The museum has established a collaboration with *Travail Sans Frontières*, a provincially-funded, Montreal-based organization that helps match potential candidates with employment in their fields. As a result, the Redpath acquired the services of **Johanne Gagnon**, intern in this program, for four weeks during the summer.

Editor's Congratulations:

Last year, **Anthony Howell** won the prestigious Principal's Award for Administrative and Support Staff. This annual program at McGill University provides staff the opportunity to promote, acknowledge, and commend the exceptional performance of their peers. The nominator was the Museum Director, David Green, who describes Anthony as "a restless innovator, pushing the bounds of collections management. Not only does he ensure that objects are properly cared for, often managing storage, conservation, and record-keeping simultaneously, but he has been a forerunner in modernizing a very old collection, has lead projects that relocate specimens to superior storage spaces, and is intricately involved in the development of new areas for the expanding collections. Even though he is barely into the first chapter of his career at the Redpath Museum he has gone well beyond the letter of his mandated duties since his appointment in 2008."

Anthony reiterates that even though he enjoys working with the collections his most enjoyable moments are with people:

"It is really satisfying to be able to help people who come to the museum for specific research purposes. For instance, recently an Argentinian researcher in Palaeozoic sponges dropped in unexpectedly after she delivered her son to start his program in music at McGill. I was able to show her Dawson's Devonian sponges collected from the Gaspé in the late 1800s. They were organized, labelled, and even assembled with the accompanying glass plate photo-documentation from the 1890s. It made me feel good that she would remember the Redpath Museum as a place where she was treated well."

PHOTO: **Anthony Howell**, Redpath Museum collections manager, repairing a small exhibit box of insects. Photo credit: Natalia Toronchuk.

VERTEBRATE PALEONTOLOGY
By Robert Carroll

During 2013, I authored two chapters in the book *Morphology and the ancestry of Turtles*. One chapter is entitled "Eugene S. Gaffney: A Professional Biography" (pp. 3-8), and the other is called "Problems of the ancestry of turtles" (pp. 19-36). At the same time, **Hans Larsson** and I have begun preparing a second edition of the standard text book "Vertebrate Paleontology and Evolution", which was originally published in 1988, but is now very much out of date.

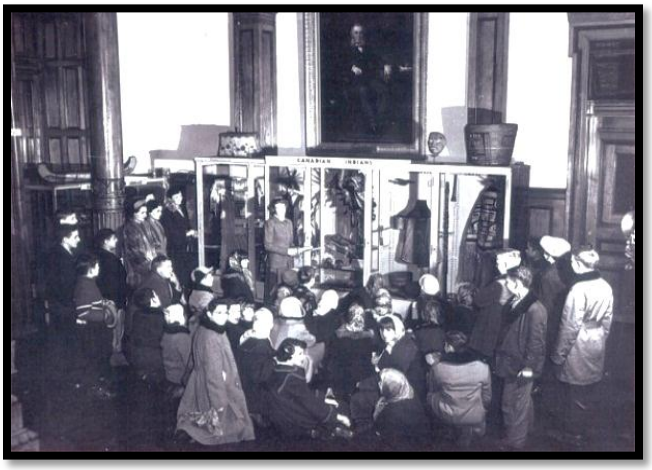
PUBLIC PROGRAM AND SCIENCE OUTREACH
By Ingrid Birker

It's all about the numbers -
Since the last issue of the *Redpath News* in the Fall of 2012, the public program has provided a wide range of talks, activities, workshops, staged readings, flashlight tours and special events to about **61,000** visitors. This number includes the attendance figures for events such as *Freaky Fridays* (attended by 747 people), *Cutting Edge* lectures (attended by 609 people), and the annual climax event on *Montreal Museums Day / La journée des Musées Montréalais (*with 4810 visitors on one single afternoon!).
Last year our team of **Welcome Desk volunteers and student educators** enlightened over **16,000 people on Sunday afternoons alone**. We screened 46 different Science documentary films for about 1000 people. A total of **31 different Family Discovery Workshops were held with over 3000 family members.** Our team of Sunday afternoon volunteers is capably managed by **Janina Szuszkowska** and **Andrew Mestan**. We regret losing Sunday volunteers **Breda Burke** and **Susan Schachter** but welcome **Pat Brabant** and **Caroline Cantin** to the crew.
During the week our Museum educators, namely **Bruno Paul Stenson, Jacky Farrell, Mireille Marie, Pierre diCenzo, Sara Pimpaneau** and **Fredéric Belley,** gave stimulating and enlightening guided tours to over **6200 students**. The team of Science Outreach educators **visited 50 different venues and over 3000 students** in regions as far as Dollard des Ormeaux, Pointe-aux-Trembles, St. Lazare, Pincourt, Beaconsfield, Lasalle, Kirkland, and Lachine.**Thirty-five different sessions of Saturday Science were held at Westmount**, and 7 lunch-hour science workshops were given at **Edinburgh School** in Montreal West (by **Jacky Farrell).** The new *Rock On! Mineral kit* was used by a total of 600 students last year at Pinewood Elementary School in Mascouche, École secondaire Calixa-Lavallée in Montreal Nord, Ecole secondaire du Coteau, St. Paul's School in Beaconsfield, at the Westmount Science Camp, Pearson Adult Education Centre (PAC) and Children's World Academy in Lasalle. We even had a chance to give science outreach on a rocky beach near Ste. Flavie in Gaspe! This took place in early August *on the Beach* at the Parc de Mitis. The Stones and Fossil tours attracted about 60 family visitors this summer and hundreds of campers.

ILLUSTRATION (left): The Bongo by Mark Taro Holmes of Montreal Urban Sketcheres. 2012.

Our 'virtual visitors' are also increasing as we provide more on-line resources such as teacher's kits and classroom activities. Our public reach has extended to an electronic audience that far surpasses the number of visitors that come to the real museum every day. According to Google analytics, our on-line educational exhibits and Teacher's resources attract close to **26,000 page views every month**. Hundreds of visitors from as far away as Turkey and India search for information about Redpath Museum fossils, rocks, biodiversity, geology, and world cultures. This audience moves around the site and downloads free educational materials such as booklets about Montreal's fossils and building stones:
www.mcgill.ca/redpath/ressources/buildingstones/
OR math activity sheets based on tree measuring:
www.mcgill.ca/files/redpath/Trees.And.Math.pdf
OR interactive mineral and rock sample kits:
http://www.mcgill.ca/redpath/ressources/geology/
OR uses educational slide shows about earthquakes, dinosaurs and paleoecology, aquatic invasive species,

amphibians and reptiles, volcanoes, minerals and Quebec fauna: www.mcgill.ca/redpath/exhibits/web/. The Museum's social media sites such as our Facebook, Twitter, and Pinterest pages were created by student interns in the summer of 2012. You can like us and keep track of what we are doing here: https://www.facebook.com/pages/Redpath-Museum/308943939115940 and here: https://twitter.com/RedpathMuseum. In the real world we still pride ourselves on reaching the public with traditional educational "publications" such as popular articles, manuals, calendars, postcards and booklets. We have even contributed to scholarly publications: a paper by Ingrid Birker entitled *A Case study of how accessible science learning works at the Redpath Museum/ McGill University* was published in **Proceedings of the Colloquium on Learning X,** in March 2013.



Our small photo exhibit entitled ***"Montreal - Ville d'histoire"*** was created last year in honour of the Redpath's 130 Anniversary and garnered a nomination for the Governor General's History Award for Excellence in Museums. It was co-produced with the Friend's Council President **Bruno Paul Stenson. PHOTO (above)** from the exhibit shows a guided tour in 1955. From McCord Museum MP-000035.

The biggest highlight for the public program division this past year was the development and creation of live streamed video conferences (VC) for classrooms far from Montreal. This VC project kick-started with a grant from the Ministère de la culture et communication (awarded Fall 2012) to develop VC in collaboration with the LEARN Quebec organization of 37 Community Learning Centers (CLCs). After four months of development we prototyped our first VC entitled "Sara the Triceratops" to 3 different schools in April and May. You can watch our promotional video on **YouTube (the Redpath Museum channel):** http://www.youtube.com/watch?v=2RZHCy_LHmw&feature=youtu.be.

REDPATH MUSEUM COMMITTEES (2010 – 2013) The following Museum Committees were struck in December 2011. All committees, except the Promotion & Tenure committee, are constituted for three-year terms.

Safety Committee: ANTHONY RICCIARDI – Chair. MARIE LA RICCA, Graduate student (to be named)

Curriculum Committee: ANDREW HENDRY – Chair. All Academic personnel.

Space Committee: HANS LARSSON – Chair. All Academic and non-academic personnel.

Exhibits Committee: Chair. INGRID BIRKER, ANTHONY HOWELL, BARBARA LAWSON, HANS LARSSON

Collections Committee: BARBARA LAWSON – Chair. ANTHONY HOWELL, HANS LARSSON, VIRGINIE MILLIEN, JEANNE PAQUETTE

Publications Committee: LINDA COOPER – Chair. INGRID BIRKER, ANTHONY HOWELL, BARBARA LAWSON

Promotion & Tenure Committee: Director of the Museum – Chair. All tenured Academic personnel.

The Friend's of the Redpath Museum COUNCIL MEMBERS

Bruno Paul Stenson	*President*
David Brown	*Past President*
Emily Bamforth	*Recording Secretary*
Ingrid Birker	*Museum Liaison*
Janina Szuskowska	*Welcome-Desk Liaison*
Andrew Mestan	*Treasurer*
David Green	*Museum Director*
Hans Larsson	*Member Without Portfolio*
Pamela Miller	*Member Without Portfolio*
Joyce McNamara	*Member Without Portfolio*
Helen Meredith	*Member Without Portfolio*

By-Laws of the Council of The Friends of The Redpath Museum were adopted in 2011 and can be found here: https://www.mcgill.ca/redpath/gettinginvolved/friends