

Acadia Geology Alumni/ae Newsletter

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VIEW FROM ACADIA

This will be my final rambling on the front page of the Acadia newsletter to our alumni – once again addressed to alumni (and alumnae!) of Geology and Environmental Geoscience – as I will complete my term as department head next summer and pass the reins of the department over to the next person to occupy “the big office.” So I thought it might be an appropriate opportunity to reflect on how things have changed since I started at Acadia 30 years ago. The \$4 a year parking pass is now \$110 – but the lots are now paved and lit. The library has migrated from the main floor of Huggins, to the main library in the BAC, but now increasingly to an on-line resource. And of course professors have less aerobic exercise since they no longer have to write everything on a blackboard and erase it all before the next class.

They say a teacher always remembers his first class best, and although there have been several memorable classes since 1982, I have to agree that the first class I taught was an unforgettable cohort! First, it was a large class. I just checked my marks sheet for the December exams and I see I had 47 students in second-year optical mineralogy – and I note that I only gave out 2 A- marks and 4 marks in the B range. I really must apologise to 21 people who had D or E marks – it’s a good thing it was a full year course and someone else came along and marked a bit lighter in the winter term! Or possibly the rigour of the optics was such that almost everyone sailed through the second half of the course with ease. One can always hope so!

In the winter term I taught in the area of my speciality, metamorphic geology, and I still get reminded by David McMullin (who took that course as a grad student) of the multiple binders of notes he accumulated as he laboured through the details of the facies series, or prekinematic and postkinematic porphyroblasts terminology. We didn’t do course evaluations in those days (students found other ways to provide feedback!) but I am sure if we did the comments would be much the same as those I just read from 2012 – he talks too fast; this course has a lot of content; tough course but I learned a lot. I have tried to slow down, and I think I have succeeded to some

extent, for the last time I taught optics I had reduced the number of minerals covered from 180 to 110!

In 1982-83, Acadia still offered three-year BSc programs, and in order to accommodate those, but still teach a full Geology program, it was necessary to compress the program by running a hand specimen-based crystallography-mineralogy-petrology course in the first year, as well as Sandra Barr’s “Our Dynamic Earth” and “Earth History” courses. I was given the honour of teaching the second term of that course (the petrology part) to over 70 first year students. I shudder now to think how many students dropped Geology as a result of my delivery of endless rock names but I bet all of them remember how to plot ternary diagrams!

Enrolments in Geology programs have risen and fallen like waves on a seismograph since the 1980s, and currently seem to be on the rise once again. The department has responded to these huge swings in numbers by offering more sections in lean years (to entice more students into Geology) and more electives in the flush years (to manage the number of required elective courses). Sadly, the diversity of our courses has declined since the 1980s, in part because of limits on overload teaching in the department, and more recently because of retirements and the need to teach across both the Geology and Environmental Science curricula. However, we have maintained a solid core of courses, and having just reviewed all the course evaluations for the fall term, I can happily report that the positive comments outnumber the negative comments by a ratio approaching 10:1.

In 30 years, I have taught in 16 courses, and seen 480 graduates in Geology and 10 in Environmental Geoscience. Our records show that about 90% of you have at one point or another sent us news about your sojourn after Acadia, and more than half of you have used your degree to develop your career. As for me, it appears I have new fields to plough as I will be developing the new final year course in Environmental Science, as well as continuing to teach my current courses in Structural Geology, Tectonics, and Meteorology/ Climatology. It should be fun!

Rob Raeside

HAPPENINGS

With five programs running the Department of Earth and Environmental Science, there is always something or someone on the go. Here is a selection of the highlights from the year. Many of these items are reported on our web page, so if you want to see these activities in full colour, check out <http://ees.acadiau.ca>.

As soon as students are back in January, it is time to get abstracts submitted for both the local Atlantic Geoscience Society and the national Geological Association of Canada-Mineralogical Association of Canada meetings. As always, we had good representation at both conferences, with 24 students and 4 professors attending the AGS conference in Moncton and at least 15 current and former students and 2 professors at the St. John's GAC-MAC (see *Keeping In Touch* below for updates on some of them).

Over the February study break final year student Shaun Todd participated in a field course in Trinidad. This opportunity comes through the Dalhousie Petroleum Field Methods course, led by Dr. Grant Wach, which provides students with the opportunity to visit Trinidad and view the petroleum operations there, focusing on clastic sedimentology, sequence stratigraphy, and reservoir characterization. Participants "follow the sand grain to the sea," seeing examples of distal to near-shore environments. They then shift their attention from outcrop to core logging, sequence stratigraphy and reservoir characterization. In the midst of all that, they are in Trinidad during Mardi Gras and get to experience the tropical festivities of the season.

In March, we were pleased to learn that two named chairs which had been in abeyance for many years were once again being made available to the department. The J. Austin Bancroft Chair was awarded to Sandra Barr in recognition of her extensive research, teaching and service record in the department since 1976. Previously held by Dr. Reg Moore until 1992, the chair was endowed in 1963 in memory of Austin Bancroft, graduate of 1903, and professor in the early 20th century. The Edwin David King Chair was awarded to Rob Raeside, in recognition of his activities since 1982. The chair was endowed in 1930, in recognition of Edwin King, graduate of 1863, prominent lawyer in Halifax, and member of the Acadia Board of Governors for 46 years and was last held by Dr. Jack Colwell until he retired in 1999.

With the end of term in April comes a whole raft of special events – Ian Spooner was recognised by the Acadia Students Union with a teaching award (as well as three students in the department with Student



Sandra Barr and Rob Raeside with certificates identifying the chairs they were awarded.

Leadership awards). Eight students from the graduating class participated in the annual ring ceremony for the Association of Professional Geoscientists of Nova Scotia. In doing so, they take their second step (we hope their years at Acadia were the first step!) in the journey to become a Professional Geoscientist. The culmination of that first step, of course, comes at graduation when 40 degrees were awarded to graduating students. Of special note is the award of the Governor General's Gold Medal to Sara Akin, recognising her as the top student from any graduate program in the university.

Through the year we hosted several visiting speakers. Fraser Keppie (Nova Scotia Dept. of Natural Resources) visited as part of the Science Atlantic/Atlantic Geoscience Society tour, addressing the question, "how do supercontinents break up?" using the Central America-Caribbean area as an example. In March, Anton Chakhmouradian (University of Manitoba), GAC Hutchison Medal Winner, discussed "Carbonate magmas, plate collisions and 'vitamins for the industry'." In October, Patrick McAndless, VP Exploration at Imperial Metals challenged students to rethink their resumes with a talk entitled, "The secret to a successful career in geoscience" and Don Lawton (University of Calgary) was the CSEG Foundation 2013 Canadian Distinguished Lecture Tour speaker and told us about "Post-earthquake seismic reflection surveying, Christchurch, New Zealand."



Don Osburn and Rob Raeside at the Acadia summer general assembly

In the summer, Don Osburn retired from Acadia. After nearly three decades as technician in the Geology/Earth and Environmental Science Department, Don decided it's time to enjoy some of life's other "small fine pleasures". In the summer university assembly he was recognised along with other retirees for his long term in the department - some 70 masters students and 100 honours students owe some part of their theses to his skills, and all of us will miss him.

We were very pleased to be able to replace the indispensable Don Osburn with our new technician, Pam Frail, who joined us in August. Pam actually studied in Geology at Acadia many years ago, before departing into the realms of craft artistry and running her own jewelry business for many years. Her skills with rocks and minerals are now being put to use with the rock saws, grinders and polishers for thin section work.

The fall term has gone by in a flash for many of us. It seems no time, although it was the first weekend of term, since we were touring Cape Breton Island with the Fletcher Geology Club, driving down the subduction zone as we climbed into the Cape Breton Highlands, and admiring the folding, faulting and thrusting along the Cabot Trail. The second day of the trip was notably wet, but we enjoyed the volcanic rocks of the southeast coast and the huge waves breaking at Louisbourg lighthouse.

A large and enthusiastic group of students and faculty attended the 62nd annual Atlantic Universities Geoscience Conference (AUGC) in October, hosted by the Dawson Geology Club at Dalhousie University. The Acadia student team of Harris Ohland and Josh Caines placed second in the Challenge Bowl competition on Thursday evening, a geoscience-knowledge quiz event sponsored by the Canadian Society of Exploration Geophysicists. On Friday students participated in the various field trips offered.

At the formal presentations on Saturday Acadia was represented by oral presentations from honours students Josh Caines (An investigation of factors influencing drumlin erosion in Mahone Bay, Nova Scotia) and Drake Tymstra (A paleolimnological record of anthropogenic impact on water quality in First Lake, Lower Sackville, Nova Scotia), both supervised by Dr. Ian Spooner, and poster presentations by Nabil Shawwa (Employing contact metamorphism to assess the conditions of pluton emplacement in southwestern Kellys Mountain, Cape Breton Island, Nova Scotia - supervisor Dr. Rob Raeside) and Jason Willson (Strategies to avoid the nugget effect in soil samples from the Fifteen Mile Stream Gold Deposit, Nova Scotia - supervisor Dr. Cliff Stanley). Professor Sandra Barr was one of the speakers at the closing banquet held at Murphy's on the Water on Saturday evening, at which a great time was had by all participants. Her theme incorporated recognition of the 50th anniversary of Science Atlantic/APICS, wherein she reflected on the 37 AUGCs she has attended, and on the good luck and bad luck she has employed to advance her studies in geology.

Finally (and many would say at last!) we concluded the year with the formalization of our status with Sir Sandford Fleming College, in Lindsay, Ontario. For nearly 30 years, we have welcomed students from "Fleming" as they seek to enhance their technical diplomas with the degree from Acadia. Not only have Fleming students brought a wealth of practical experience (with courses like "Drilling and Blasting" on their transcripts!), they also bring many useful contacts from the Ontario mining scene.

Lots more detail about these events and more photographs to accompany them can be seen on the department's web pages at <http://ees.acadiau.ca>.

FACULTY AND STAFF NEWS

Sandra Barr found 2012 to be an especially busy, productive, and enjoyable year, both personally and professionally. Early in the year, she welcomed a new granddaughter, Aya Yamamoto Macdonald, a sister for Go and Kai and cousin for Kevin. Two MSc students and an honours student successfully completed their theses, and a new MSc student, Vincent Beresford, began in September. His project will continue her newfound interest in northern mainland Nova Scotia – is this the area that will finally resolve the mysteries of Avalonia? Travels outside the Maritime province during the year included attending conferences and/or meetings in St. John's, Hartford (CT), and Winnipeg. She continued in her roles with the Geological Association of Canada as Presidential Advisor and Book Editor. In the latter realm she was pleased (beyond pleased – thrilled!) to see the publication of Special Paper 49, not only from the perspective of GAC Book Editor but also as co-author of a chapter in the book on Canadian Appalachian geology. 2012 also saw the largest number of refereed publications of any single year in her career. Other highlights of the year included the establishment of research collaboration with Dr. Laurie Brown of the University of Massachusetts to try to extract paleomagnetic data from the Mira terrane of Cape Breton Island, and ongoing collaboration with acritarch and trace fossil specialists from Spain which resulted in renewed sampling in Newfoundland, northern Nova Scotia (funded in part by a grant from the Nova Scotia Museum), and southern New Brunswick. Continuing collaboration with geochronologists from Germany resulted in the presentation of the first hafnium isotopic data from Avalonia at the GAC-MAC meeting in St. John's. After that meeting she co-led (with Chris White, NSDNR) a field trip through the Meguma terrane of Nova Scotia which included participants from Australia, New Zealand, Germany, Belgium, and the UK, in addition to Canada. And finally, for the benefit of those who wonder how long she has been teaching at Acadia - since September 1976. And for those who wonder about retirement - not until she has to!

Pam Frail joined us as technician in August. Even on a three days a week basis, she quickly established her style, disposing of unused equipment, cleaning up the rock room lab, even to the extent of getting as

much of it repainted as we could afford! Having (re-)learned optics, she is now churning out thin sections and polished sections and working her way through the teaching collections attempting to get to grips with over 100 years of curation styles!

Lynn Graves is still in the department office, registering students; keeping lists; filing, filing and more filing of maps; and attempting to stay on top of everything in the department (easier said than done sometimes)! Daughters have moved in different directions; one, with husband and children to Colorado Springs where she spent the first two weeks of December 2012, looking after the older grandchildren while Mom and Dad were at the hospital delivering baby number three (yes, it was back to work for a rest!). The other daughter has moved 800 miles north of Winnipeg to Pukatawagan, so there will be another trip away sometime in the next two years. As always, she thoroughly enjoys her days at Big Island, never seems to be enough of them!

David McMullin continues in his largely teaching role. In the winter David continued to teach the labs and paleontology portion of the lectures in Earth History (1023). As Peir was on sabbatical, GEOL 2043, Petrology and Stratigraphy, was taught by Sandra, David, Rob, and Ian as a team, each taking a few weeks. David also taught the labs and managed the course as a whole. David once again took on Metamorphic Geology (3503), his area of specialization. The course continues to grow and change as David makes it his own. David managed the Field Methods course this year but didn't teach any of it because of a family emergency. Once again the course was full, with 24 students. Even with huge enrolments in the Fall, there is a continuing demand for an intersession Natural Disasters class, which this year David taught in the summer (June and July). In the fall he continued his involvement in the intro labs (1013) and co-taught Natural Disasters with Ian. Students seem to appreciate their quite different styles and once again we had a full class, at the 280 mark! On the research front, David has been collaborating with Sandra on some peculiar low-pressure metamorphic rocks from Kelly's Mountain, Cape Breton Island. David has also been co-supervising an undergrad with Rob. On a personal note, David jumped at an opportunity to spend two weeks on Sable Island at the end of December. The island,

nearly 50 km long, is truly a unique place from just about any standpoint and David got to experience the geology, ecology, and history of the island first hand.

Nelson O'Driscoll continues as the director of the Center for Analytical Research on the Environment (CARE) and his role in training through a shared NSERC CREATE graduate program in climate change research with several Atlantic universities. Graduate students Emma Vost (MSc) and Ravinder Pannu (PhD) graduated this year with theses examining mercury movements in freshwater and soil. Nelson welcomed new PhD student Sara Klapstein who is examining mercury and carbon dynamics in wetlands in collaboration with Dr. Risk (St.FX) and Dr. Ziegler (MUN). Nelson attended SETAC North America in Long Beach, California, with students Adam Godfrey and Erin Mann who presented their work. Erin and Nelson will be heading to the Arctic this March to continue research on UV effects on mercury in snow. Nelson is also looking forward to an upcoming sabbatical leave (2013-2014) during which time he will perform mercury research on salt marshes in Portugal.

Don Osburn retired from his technician position this year, and is enjoying life on the mountain, attending to the needs of home and family and we hope writing a few more songs!

Peir Pufahl was on sabbatical leave last year, and has provided a report on his travels later in the newsletter. He looks forward to leading the Bermuda field course again in May 2013

Rob Raeside continued into his final term as department head. Much of his time is involved with external societies – as secretary to the Council of Chairs of Earth Science Departments, he participated in meetings in Ottawa, and authored a paper on student enrolment trends in Geoscience Canada. He continued into a second term as chair of Science Atlantic, the regional group that oversees many of the student conferences in the Atlantic provinces, as well as other initiatives to ensure networking and collaboration among the universities. Rob also continued as coordinator and editor of the Mineralogical Association of Canada's short course series, and is heavily involved this winter in compiling a text on "Uranium: Cradle to Grave", looking at all aspects of the industry, from the exploration and mining, its use in power generation, medicine, and weapons industry, to its final disposal. The course will be given at the GAC-MAC meeting in Winnipeg in May.

Ian Spooner: this year I have been working with three honours students on water-related projects. My focus has been switching from climate change-related studies to human impact on natural systems, primarily lakes. I had a lot of fun this summer with Patrick Englehardt, Drake Tymstra and Josh Caines (all E&ES honours students) buzzing about in boats and stomping around in waders installing thermistors, taking lake sediment samples and measuring erosion on coastal sea cliffs.

I have also been working with Glyn Davies (ENVS) investigating short term environmental change on the Upper Avon River, Nova Scotia. In that study we are trying to better understand why brook trout were, for a long time, absent in the watershed. Our initial findings suggest that the stories of the long term residents of the area (the oral history) may be a critical component in developing effective experimental design. I have always liked stories and in this project I get to hear a lot of them. This is one project where my fly rod is a necessary research tool!

This coming summer I am hoping to head to western Newfoundland to investigate large scale landslide activity in the Tablelands. I will also be back in the Tantramar Marsh and on Second Lake in Sackville, NS, looking at metal accumulation in small lakes.

Cliff Stanley spent the year active in research and teaching endeavours. As usual, he taught Economic Geology (4803) and Geochemistry (3103) last winter followed by Mineralogy (2133) and Geophysics (3823) this past fall. He also supervised the successful M.Sc. thesis for Tanzanian student Ronald Massawe, who studied the litho-geochemistry of the Bisha volcanic hosted massive sulphide (VHMS) deposit in western Eritrea. Ronald's work resulted in a rigorous hydrothermal alteration model describing how the host rocks to the deposit reacted with hydrothermal fluids, and demonstrated that the felsic volcanic host rocks had an anomalously sodic composition. He also discovered a new style of hydrothermal alteration within the immediate footwall of the deposit (aluminous alteration) that is characterized by the presence of either chlorite or chlorite+andalusite+muscovite±calcite, and revealed how an albite-muscovite-chlorite invariant point controlled hydrothermal alteration. Dr. Stanley also supervised the B.Sc. honours thesis research of Kacper Halama, who studied the weathering profile above the Bisha VHMS deposit, revealing that weathering was responsible for the downward transport and enrichment of Au into a horizontal zone within the ferruginous portion of the weathering profile. The mineralization is located immediately above a supergene Pb zone containing

very fine-grained galena and siderite gangue, which itself occurs immediately above supergene Cu mineralization.

This past summer, Dr. Stanley examined the litho-geochemistry of the immediate host rocks to the McIlvenna Bay VHMS deposit in the Flin Flon greenstone belt, Saskatchewan, a property owned by Foran Mining Corp. of Vancouver. Moreover, this month Dr. Stanley commences the supervision of a new graduate student, Steven Kramar, who will be studying the lithostratigraphy of the Hanson Lake block of the Flin Flon greenstone belt which comprises the regional stratigraphy that hosts the McIlvenna Bay deposit. Finally, Dr. Stanley has been supervising B.Sc. honours student Jason Willson, who is studying novel ways to analyze only the finer-grained gold particles in soils in order to avoid the nugget effect. This work is being done in the Eastern Shore of Nova Scotia at the 15 Mile Stream gold deposit, and is being undertaken in the CARE trace element laboratory with the collaboration of Dr. John Murimboh (Dept. of Chemistry). Fieldwork involved the collection of 75 large soil samples over the deposit, and was undertaken with the support of Acadia Mining Corp. Jason expects to present the results of this research at the AGS meeting in Dartmouth later this winter.

GRADUATE STUDENTS

In what must be a first in many years, we experienced a total turn-over of graduate students this past summer. Everyone in program in the previous year finished and defended their theses, leaving all the graduate offices vacant for a few days until the September enrolment came in. The students who finished in 2012 were:

Sara Akin: Evolution of the Earacheedy Basin: a paleoceanographic and sedimentological framework for Paleoproterozoic iron formation, Frere Formation, Western Australia; *supervisor: P. Pufahl*

Ronald Massawe Litho-geochemistry of the Bisha Volcanic-Hosted Massive Sulphide Deposit, Eritrea; *supervisor: C. Stanley.*

Raya Puchalski: Petrology of the Trafalgar Plutonic suite, northern Meguma terrane, Nova Scotia; *supervisor: S. Barr.*

Hilary White: Evolution of the Tantramar Marsh: a paleolimnological perspective; *supervisor: I. Spooner.*

Louis Zsamboki: Geophysical modeling in the Cabot Strait between northeastern Cape Breton Island, Nova Scotia, and southwestern Newfoundland, Canada; *supervisors: S. Barr, S Dehler (GSC-Atlantic)*

Joining us in the fall were **Vincent Beresford**, who came from Juniata College, Pennsylvania, and is working with Sandra Barr on plutons in the Cobequid Highlands, and **Justin Drummond**, who stayed on at Acadia after his BSc degree to work with Peir Pufahl on phosphorite in Brazil. We also have **Charity Moulard** in the Applied Geomatics program who will be investigating extreme weather events and shellfish harvesting, and starting officially as a graduate student in January, but here all fall was **Steven Kramar**, who will be investigating the geochemistry of mineral deposits at Snow Lake, Saskatchewan, with Cliff Stanley.

HONOURS STUDENTS

Three students submitted their honours theses in Geology in the spring of 2011. **Kacper Halama** worked with Cliff Stanley on X-ray diffraction of the weathering zone of the Bisha Zn-Cu-Au Volcanic Massive Sulphide Deposit, Eritrea; **Amy MacFadzen** worked with Sandra Barr on the petrology of the Indian Lake and Leadbetter Road plutons, Antigonish Highlands, Nova Scotia; and **Mariella Nalepa** investigated the form and age of the Bloody Creek crater, southwestern Nova Scotia with Ian Spooner and Peter Williams. In addition two students working with Ian Spooner completed theses in Environmental Science: **Allison Healey**, on the effect of short-duration rainfall on the surface water quality of Thomas Brook, Kings County, and **Dewey Dunnington**, on environmental change in the Missaguash Marsh, Nova Scotia-New Brunswick border.

On-going thesis work is being done by **Josh Caines:** An investigation of rates and combining factors influencing coastal erosion of glacially deposited features, Mahone Bay, Nova Scotia; **Patrick Englehardt**, A multi-proxy limnological characterization of mercury and lead sequestration in a spectrum of wet ecosystems in the Border Marsh region of New Brunswick; **Drake Tymstra**, A paleolimnological approach to assess the extent and magnitude of anthropogenic influence on First Lake, Lower Sackville, NS; all supervised by Ian Spooner. **Jason Willson** is studying gold geochemistry of soils at Fifteen Mile Stream Gold Deposit, Nova Scotia with Cliff Stanley, and **Nabil Shawwa** is investigating the low grade metamorphic contact aureole of southwestern Kellys Mountain, Cape Breton Island, Nova Scotia with Rob Raeside.

FLETCHER GEOLOGY CLUB

Financial assistance provided by a Logan Grant from the Geological Association of Canada and Prospectors and Developers Association of Canada enabled the club to provide some financial support for 24 students to attend the Atlantic Geoscience Society meeting in Moncton, New Brunswick, on February 3-4. Additional support was received from the departmental Cheslock Fund. As part of that trip, twelve of the Acadia students participated in a tour of an underground potash mine in Sussex, New Brunswick, as guests of Potash Corp. In early March 10 members of the club attended the PDAC meeting in Toronto.



In September 2012 18 students and two faculty members travelled to Cape Breton Island for a two-day field trip which was planned and organized by the Fletcher Club with the help of faculty.

In October 2012, club members attended the annual Atlantic Universities Geoscience Conference (AUGC) hosted by Dalhousie University in Halifax. Two of the students made oral presentations based on their honours thesis work and two others presented posters. Several club members also attended the annual “Geology Matters” conference in Halifax organized by the Nova Scotia Department of Natural Resources.

Social events promoting geology are a very important aspect to the club’s success. As well as a number of smaller events, the club was active in planning hikes, movie nights, and dinner events. Additionally, the club annually hosted the annual Christmas Dinner Potluck in December as well as a year-end department banquet in collaboration with the Environmental Science Student Club.

Community events the club has been involved with include assisting the Canadian Blood Services by serving refreshments during their twice-a-year blood drives on campus.

Christiane Theriault, President 2012-13

TECTONIC ART by Josh Goss

Written up on the Acadia Geology Alumni Facebook page is an interesting excerpt about Josh Goss (BSc 2006), who undertook to apprentice blacksmithing after he left Acadia.

Joshua Goss makes objects out of metal and plastic that resemble hard-edged modernist sculptures and models of International and Prairie Style architecture.

A series of five flattened triangles, horizontally bisected with vivid red stripes, cascades like a three-dimensional Frank Stella. Dozens of rectangular tiles, stacked in sprawling clusters, range elegantly like Frank Lloyd Wright’s *Falling Water House*.

Goss is not concerned with anything as recent as modernism, however, but rather with the kind of ancient geological processes that cause mountains to rise and

strata to form and faults to open up in the earth. As an artistic analog, he subjects layers of iron and steel to pressure, cutting, heating and slicing, and sometimes juxtaposes them with colored plastic or clear Plexiglas. The precise results are as unpredictable as those of their geological inspiration.

So why the modernist echoes? Stella was after something fundamental and provable with his stripe paintings, and Wright sought the essential—that’s not so far from nature after all.

—Lori Waxman 7/23/12
5:22 PM



PEIR PUF AHL & FAMILY: TRAVELS IN OTHER HEMISPHERES

The past 18 months have been exciting and eventful for the Pufahl family. The beginning to a busy sabbatical started in July 2011 when Peir wrote a successful NSERC Discovery Grant to continue investigating economic phosphorites in Brazil. While Peir was toiling away Christa taught Applied Geomorphology (GEOL 2703), a course that she really enjoys, during the fall term.

The Pufahls were Australia-bound in January 2012, where they spent five months enjoying sunshine, the beach and life in Western Australia. Home base was Fremantle, just south of Perth. While in Oz, Peir worked with his friend and colleague, Dr. Franco Pirajno at the Geological Survey of Western Australia where he was a Visiting Scientist. The focus of their research was to understand the geology of Paleoproterozoic iron ore deposits in the Earraheedy Basin.

During their stay, Christa, Peir and Callum visited Tim Cross and family as well as a number of renowned geological sites in Western Australia. Tim is an Acadia alumnus that now works for RioTinto in the iron ranges of the Pilbara. Significant geology stops included the world-famous stromatolites of Shark Bay and Lake Thetis and the Lake Clifton

thrombolites. They also explored carbonates while snorkeling at Rottneest Island and on the Ningaloo Reef at Coral Bay.

In July, it was New Zealand-bound to spend time with another friend and colleague Dr. Catherine Reid, at Canterbury University in Christchurch. Peir was a Visiting Professor for the month at Canterbury and worked on coastal phosphatic deposits with Nick Thomson, a PhD student he and Catherine are co-supervising. Our time in Christchurch provided a first-hand look at the earthquake damage and chance to experience a few ongoing aftershocks.



Peir and Franco's Land Cruiser in the Outback.



Our street in Fremantle, WA.



Callum and a giant termite mound, Outback, WA.



One of our favourite beaches, Shell Beach, WA.



Christa at Shark Bay, WA.



Thrombolites, Lake Thetis, WA.



Hiking the Fox Glacier, South Island, NZ.



Patch reef, Ningaloo Reef, Coral Bay, WA.



Coastal South Island, NZ.

The Pufahl family also visited the Southern Alps where the highlight was a day hiking on the Fox Glacier. They were thrilled to see many of the geomorphological features for which New Zealand is famous.

After returning to Wolfville at the end of July, Peir headed back to the southern hemisphere 10 days later. He spent August in central Brazil with his MSc students Justin Drummond and Mariana de Souza Carvalho who are studying the sedimentology of phosphorite ores.



Justin and Mariana working on their theses in Brazil



Rebuilding Christchurch's Central Business District.

September brought a busy start to a new academic year for both Peir and Christa. In addition to teaching, the family excitedly prepared for the arrival of one final Australian souvenir in early February, a new baby!

Peir will be kept especially busy in 2013 with the arrival of his new MSc student Renee Delisle in early January, his associate editorships with the journals *Sedimentary Geology* and *Sedimentology*, and presenting a number of invited lectures in the USA, Brazil, and China. The Pufahls are already looking forward to their next sabbatical ...

WHERE ARE THEY NOW?

Amy Tizzard

Each year we ask a graduate to write an article on his/her past and current activities since leaving Acadia. This year we feature Amy Tizzard, who studied at Acadia from 2001-2003 as a BSc (Honours) student.

Assuming that we have all survived the Mayan Apocalypse, 2013 marks the 10-year milestone since the class of 2003 marched out of Huggins Science Hall and into the wide-world of geoscience. Now a senior geologist at Mercator Geological Services in Dartmouth, NS, my career path has been a "great circle" since graduating from the geology program at Acadia. To begin with, the path I took to Acadia's undergraduate geology program was not the traditional route, but was definitely a well-trodden path. Like many others (search geology+Acadia+Fleming on LinkedIn!), after completing two diploma programs at Fleming College in Ontario I was interested in continuing my education and contacted several schools regarding a transfer. Acadia geology not only offered the best transfer scenario, but also a chance to move back home to Nova Scotia.

In the early part of summer 2002 I was lucky enough to have Rob Raeside as an honours supervisor with the goal of mapping the basement-cover contact in the southeastern Cape Breton Highlands. The second half of the summer was spent on central Baffin Island with the Geological Survey of Canada with the task of mapping surficial geology across several 250 k map sheets. After an amazing summer of mosquitos, fjords and rock licking, I found that geological mapping and field work were a great fit for my love of the outdoors and offered the best prospect of being paid to go heli-hiking.

To follow through on the mapping theme, after graduation I packed my car and headed west to begin a Masters degree at the University of Victoria. Like Acadia, the geology department at UVic was quite small; however, I ran into several other recent Acadia geology graduates there, one of whom turned out to be a family relative whom I had never met until we were teaching a field school together on Vancouver Island (Jason MacKenzie '96 - second cousin, once removed). Note: the familial discovery that unfolded in front of the field school did nothing to help the stigma held in BC that everyone from Nova Scotia is related to one another.

My thesis mapping area was located in Yukon where the Yukon Geological Survey graciously adopted me as one of their own and helped further refine my mapping skills. My induction into Yukon life was swift. On my first week in the field a grizzly bear all but consumed my tent and all my belongings

whilst leaving the neighbouring tent untouched (which ironically contained chocolate bars). The bear was thereafter referred to as the "long-john bear of the Yukon" since it left a set of distinct claw marks down the back side of my favourite pair.

After 3 years of living "off-campus" in the Yukon, complete with a library of bear stories but no completed thesis, I jumped at the opportunity to be a structural geological mapper in search of gold in the Australian outback. It was -44°C when I boarded the plane in Whitehorse and +37°C when I arrived in sunny Perth. I was quickly ushered to an area in the Pilbara region of Western Australia where the people appeared to be speaking another language, which, I was assured, was actually English. On my second rotation to site I brought a dictionary of Australian slang which helped iron out some of the language barrier: "Don't be a gallah ya snap-frozen Yank, this one's a bonza!". Sorry, what?

As a consultant geologist I was able to experience a number of terrains (and terranes!) and commodities in the outback and abroad. In 2008, however, I decided to move back to Nova Scotia and finish writing my Masters thesis. Naturally, I took another mapping job straight away in Botswana.

Distractions aside, after the brief stint in Botswana it was finally time to finish my Masters thesis. So the next step was, logically, to become a beekeeper. Not knowing if I even had a bee sting allergy, I began beekeeping armed with only a mosquito net and "Beekeeping For Dummies". I quickly fell in love with the soap opera life of the colonies and soon my apiary grew to 30 hives, providing over 2000 pounds of honey and the requirement for industrial-scale equipment. Considering the number of times I had to run around the house to evade an upset colony (my own fault), I think that beekeeping should be reclassified from a hobby to a sport. I've also discovered that the magic number of stings before I have a serious reaction is 16; 4 stings is enough to make me quite cantankerous.

The market for geology is not as strong in Nova Scotia as it is in Australia and western Canada so after finally completing my Masters degree I decided to explore some other, more local, employment options. Like many of my fellow graduates from Acadia geology, I ended up taking the GIS program at the Centre of Geographic Science in Lawrencetown, NS,

but not before one last stint to Australia to work in diamond exploration in the Northern Territory.

Now my main role at Mercator Geological Services is to help bridge the gap between geology and GIS technologies for commodity targeting in the mineral exploration industry. The majority of my work is for companies operating abroad so I am still able to travel a lot, see new places and have more encounters with wildlife. On a recent trip to Australia, for example, I was greeted in the middle of the night by a 1 metre long snake that was slowly slithering in through a non-functioning air conditioner mounted on the wall. After a brief moment of hysteria and a search for the designated snake handler in camp, we found that the snake had decided to curl up under the covers of my bed. Needless to say, I'm glad I woke up when I did. The snake was successfully removed from my bed and I slept with the lights on for the remainder of my trip. On a second trip to the same site I caught one of the employees in the process of hiding a rubber snake in my room. I'm very appreciative of their hospitality.



I am forever grateful to the quality of education and mentorship I received at Acadia. The mapping and structural geology associated with my honours project in Cape Breton definitely helped focus my career path which, in turn, has provided me with many amazing opportunities to experience "off the beaten path" around the world. The next thing on my horizon is climbing Mt. Kilimanjaro in February 2013. I hear there is some good obsidian near the top.

Amy Tizzard

KEEPING IN TOUCH

If you have an item of interest, or any news of your activities (or those of your classmates), please let us know. We will try to incorporate as much as possible into future newsletters. Send details to Dr. Barr or Dr. Raeside at the Department of Earth and Environmental Science (sandra.barr@acadiu.ca, rob.raeside@acadiu.ca).

Harun Alrashid Mohamad Idris (BSc 2010) wrote from an oil rig somewhere in the middle of South China Sea at the start of the monsoon season, so things were not that great with the rough sea and winds (he was sea-sick most of the time). He reported that two other Malaysians from his cohort were gainfully employed: **Annas Abdul Aziz** was back home from Iraq after 2 months on a well-sitting assignment and **Afiqah Bin Radzi** was following their footsteps in becoming a wellsite geologist. Harun wrote it was fun being on a rig. He got the chance to meet a lot of people from all over the world including Canada and share experiences/stories when the weather was killing them with its strong winds and waves. To relax, he was cruising the web and happened to stop by E&ES webpage and dropped in to say "hi" to all.

Diane Baldwin (MSc 1991) was encountered at the GAC-MAC conference in St. John's. She works in the NWT Geoscience Office, and gave a talk on summer camps she coordinates at the Tundra Ecological Research Station at Daring Lake, NWT.

Geoff Baldwin (BSc 2007) is nearing completion of his PhD thesis on Precambrian glaciations in rocks from the MacKenzie Mountains, and was winner of the Canadian Sedimentology Research Group Middleton medal for his poster at the GAC-MAC conference in St. John's, where he also presented a talk on his work.

Paul Barker (BSc 2005) was reading about the early days of plate tectonics, which made him think of his time at Acadia. He wrote that life has been crazy as they had their second baby on Feb 3rd, Noah Christopher Barker, 9lbs, 20.5" – quoting Paul he was a "chunky monkey". Last November Paul moved from Toronto to California to work at ESRI on their mobile GIS team to help manage and design their tablet/smartphone software on Android/iOS.

Rafael Cavalcanti de Albuquerque (BSc 2007) wrote that he finished his MSc at SFU on aqueous geochemistry and moved to Brazil. He is working for Schlumberger Water Services inside a Vale facility in São Luís, on the northern coast of Brazil. The team that he works with is responsible for helping manage

water resources for Vale in São Luís and along the Carajás railway, which runs from the Carajás iron ore mine in Para State to the Vale seaport in São Luís (almost 900 km long!). He gets to do a bit of hydrogeology, a bit of geochemistry and lots of getting things done. He also collaborates a bit on other projects for Schlumberger which are more focused on geochemistry. He has enjoyed the move back to Brazil even though he now lives in a part of the country that he had never been in before.

Gordon Clarke (BSc 1989) was promoted to VP Exploration for North Arrow Minerals. In the press release, we learn Gordon came to Acadia with a Minerals Technology Diploma from Sir Sandford Fleming College, and later graduated from the University of New Brunswick with a MSc Degree in Geology. While a geological technologist he worked for Urangesellschaft, Westfield Minerals, GeoSearch Consultants, Echo Bay Mines and Covello, Bryan and Associates. He became a principal in Covello, Bryan and Associates, which subsequently became Aurora Geosciences. In 2003 he joined Diavik Diamond Mines, where he worked as senior mine geologist and superintendent exploration. Gordon is a registered Professional Geologist in the Northwest Territories and Nunavut and lives in Yellowknife. Here at Acadia we continue to be grateful for his 2004 donation of a suite of samples from Diavik kimberlite pipes (although so far we have found no diamonds in them!).

Lori Cook (MSc 2006) was encountered at the GAC-MAC conference in St. John's, where she was very visible as a conference photographer. She is manager of Petroleum Geoscience (Geophysics) in the Petroleum Geoscience Division in the Energy Branch of the Newfoundland and Labrador Department of Natural Resources.

Edwin Escarraga (MSc 2010) and **Raya Puchalski** (MSc 2012) both work for Fladgate Exploration Consulting Corporation based in Thunder Bay. They sent the photo below – two unforgettable MSc students, for sure!

Brent Ferguson (BSc 1997) and his wife Heather Ferguson (also an Acadia Grad - BSc in biology 2000) and had their first child, Gavin Neil Ferguson, on July 21, 2011 and now can't imagine life without him. They live in Burlington, Ontario, where Brent works with Stantec Consulting Ltd. as Senior Geoscientist and an associate in their Environmental Services Division.



Edwin and Raya hamming it up (as always) in the core lab.

Kaesy Gladwin (BSc 2001) was encountered at the GAC-MAC conference in St. John's. He completed his MSc at the University of Victoria and is now senior geologist with Sabine Gold and Silver Corp., Vancouver, living in the Georgian Bay area, but spending much time in Nunavut exploring for gold and silver. He also serves as a councillor for the Geological Association of Canada.

Joe Guerin (BSc 2004) transferred to Aberdeen, Scotland, for a 3 year assignment with the Alberta based company (Talisman Energy). He used the opportunity of arrival in Scotland to get married in Marischal College over the holidays, in Aberdeen. Although both he and his wife are Canadian, they called it a "semi-destination wedding".

Russel Hiebert (MSc 2005) is working on his PhD at the University of Manitoba. He gave a talk at the GAC-MAC in St. John's based on his thesis work the Voisey's Bay nickel deposit in Labrador.

Qusaie Karam (BSc 1999) is working as an aquatic ecotoxicologist at Kuwait Institute for Scientific Research. He obtained his PhD from Newcastle-upon-Tyne University in UK and is doing research with respect to the effect of hazardous chemicals pertaining to the oil industry such as the water-accommodated fraction of Kuwait crude oil, oil dispersants and dispersed oil on multiple trophic levels of marine biota such as fish, sea urchins, clams, etc. Although he finds it a challenging field of study, he describes his work as developing a test system that can assist in the toxicity assessment of oil spills against marine organisms. Being a graduate of the double major

degree in Geology and Biology, he is using his experience by working both as a marine geologist and marine toxicologist, sometimes with the chance to train college students on environmental issues and projects.

Alex Kaul (BSc 2010) was encountered at the GAC-MAC conference in St. John's. He is working on his MSc at Memorial University and gave a talk at the conference on the iron ore deposits at Labrador City.

Steve King (MSc 2002) was encountered at the GAC-MAC conference in St. John's. He is Exploration Manager for Cliffs Natural Resources based in Toronto, and works mainly on prospects in Newfoundland and Labrador.

Crystal Laflamme (BSc 2007) was encountered at the GAC-MAC conference in St. John's. She is completing her PhD at the University of New Brunswick on rocks from the Melville Peninsula, Nunavut.

Robert (BSc 2005) and **Cassie (Gaudet, BSc 2010) Lodge** both attended the GAC-MAC conference in St. John's. Robert is finishing his PhD at Laurentian University on geochemistry and volcanology of Archean rocks in northern Ontario, and Cassie is completing a BA in Psychology.

Dave Lowe (BSc 2005) is completing his PhD at the University of Ottawa, and gave a paper at the GAC-MAC conference in St. John's on his studies on Cambrian-Ordovician sedimentary rocks from the St. Lawrence lowlands.

Perry MacKinnon (BSc 1982) is chief geologist for NSGold Corporation. His work was featured in an article in "Atlantic Business Magazine" (November/December 2012) which highlighted the work that his company is doing in Cheticamp-Fisset Brook-Rocky Brook area of Cape Breton Island.

Dave Mosher (BSc 1983) is a regular part of the geological community in the Maritimes, working as senior scientist at the GSC-Atlantic. However, he has his fingers in many pies, as witnessed by his contributions to papers on submarine geology offshore Nova Scotia, Labrador, and in the Arctic Ocean at the GAC-MAC conference in St. John's.

Jean-Luc Pilote (MSc 2011) was encountered at the GAC-MAC conference in St. John's. After a year working in Ontario, he has started a PhD program at Memorial University on mineral deposits in the Baie Verte area of Newfoundland.

Chris Stevens (BSc 2010) is completing his MSc at Carleton University, and hoping to head to Australia in the near future. He gave a talk at the GAC-MAC in St. John's based on his MSc thesis project on Tertiary magmatic events in the Fish Creek Mountains in north-central Nevada.

Marcus Waring (BA, MA 1965) writes from Brazil where he spent his career to tell us, "The exploration business is booming here in Brazil, and I have hardly had a day off for some 18 months now. I am an in-house consultant for the Canadian junior Mbac Fertilizers, presently drilling what promises to be a world class REE deposit at Araxa MG."

Chris White (BSc 1984) is an adjunct faculty member at Acadia, as well as senior geologist with the Nova Scotia Dept. of Natural Resources. He attended the GAC-MAC conference in St. John's, where he presented a talk co-authored with Sandra Barr on his recent mapping of the Antigonish Highlands.

Colin Zwicker (BScH 2003) and **Karen Johnson** (BSc 2003) live in Redlands, California, where they both work for ESRI. In May, 2012, they welcomed the arrival of their son Cameron Colin. Congratulations Colin and Karen.

PASSINGS

Virginia Innis, secretary and administrative assistant in the Department of Geology through much of the 1990s, died on Sunday, January 15, 2012. Virginia started working at Acadia after she and her husband moved to the Annapolis Valley from Halifax where she worked in the Halifax Law Courts and subsequently in the Civil Engineering Department at

TUNS. All of us in the department at that time will recall her long (especially on stormy days) sojourns sitting on the bench in the northeast corner of the building in the late afternoon, waiting for her husband and son to pick her up on their way through Wolfville after their commute from Halifax.