

# UArctic Student Forum.

This November, the Clayton H. Riddell Faculty of Environment, Earth, and Resources and the University of Manitoba hosted the annual UArctic Student Forum. The student forum gives students from UArctic member institutions a chance to meet other students with Arctic research interests and build Pan-Arctic partnerships. The purpose of the student forum is to draft a declaration document with recommendations for the UArctic Rectors to take into account when they are compiling their annual recommendations for the organization as a whole. The student forum focused on developing international partnerships throughout the Arctic. The forum also provides students an opportunity to strengthen overall student participation and involvement in UArctic. **Dr. Jill Oakes** (Department of Environment and Geography) facilitated discussion during the drafting of the declaration and **Colton**

**Inkster** (MA student, Department of Environment and Geography) and **Ameena Bajer-Koulack** (B. Env. Sc. student) worked hard in organizing the week's events. Students travelled to Riding Mountain National Park and were able to have a tour of the park provided by Paul Tarleton. Students stayed at Elkhorn Resort where they attended presentations given by Dr. Frank Deer (Faculty of Education) and **Dr. Mary Benbow** (Associate Dean (Academic) Riddell Faculty). After returning to Winnipeg the group went on a tour of the Manitoba Museum led by Kevin Brownlee and experienced a traditional First Nations sweat lodge made possible by Shannon Buck and Cheryl James of Thunderbird House. This year the students created a Facebook page that can be used for online communication of UArctic news and research opportunities. The students identified the need for continuity between these forums and they are working to achieve this goal.

Pictured: The 21 UArctic student delegates at Riding Mountain National Park came from 7 countries. Photo Credit: Jill Oakes.



# Awards and Honours.

The Canadian Mineralogist has honoured **Dr. Petr Černý** (Professor Emeritus, Department of Geological Sciences) with two special issues of the journal (Volume 50 Issues 4 and 5). The two issues, the result of the overwhelming response from the geology community to pay tribute to Dr. Černý, focus on his interests of mineral assemblages and evolution, petrology and geochemistry, and mineralogy and crystal structure and chemistry. Dr. Černý was also the focus of the journal in 1998, the only person to have been so honoured twice.

Lieutenant-Governor Philip S. Lee at Government House, Winnipeg, presented **Dr. Frank Hawthorne** (Professor, Department of Geological Sciences and Canada Research Chair in Crystallography and Mineralogy) with the Queen's Diamond Jubilee Medal.

**Dr. Clayton H. Riddell** (alumnus of the Department of Geological Sciences and honorary doctorate recipient from the University of Manitoba) received the Fraser Institute's prestigious T. Patrick Boyle Founder's Award in recognition of his entrepreneurial success, philanthropic pursuits, and dedication to free markets.

**Dr. Rick Baydack** (Professor, Department of Environment and Geography and Chair, Environmental Science and Studies (pictured right, photo credit: Leslie Goodman) was elected Vice President of The Wildlife Society. Dr. Baydack will serve one year in this position, then as President Elect; he will be installed as the 77<sup>th</sup> President of the Society in October 2014.



**Dr. Graham Young** (Adjunct Professor, Department of Geological Sciences) received the 2012 Bruce Naylor Award of the Alliance of Natural History Museums of Canada (ANHMC). Dr. Young is Curator of Geology and Paleontology at The Manitoba Museum and curated numerous exhibits including the Parklands/Mixed Woods Gallery, the World's Largest Trilobite, and most significantly Ancient Seas. The latter brings to life the marine ecosystem of 450 million years ago and received the Canadian Museums Association Award of Outstanding Achievement in Exhibits in 2011.

Pictured below (left to right), Lieutenant-Governor Philip S. and Dr. Frank Hawthorne. Photo credit: Dr. Tse Li Luk. Image left, cover of The Canadian Mineralogist (Volume 50 Issues 4).



# Funding.

**Dr. Jeffrey Masuda** (Department of Environment and Geography) and co-investigator Dr. Sonia Bookman (Department of Sociology) received a SSHRC Partnership Development Grant for \$199,565 to explore long-standing human rights issues facing people who live in Vancouver's Downtown Eastside. The neighbourhood has been the setting for human rights violations against a succession of its communities: the Coastal Salish First Nations, Japanese Canadians, the African-Canadian settlement known as Hogan's Alley, and most recently low-income residents who are trying to exercise their right to stay despite ongoing gentrification. The researchers will use stories of resilience, race, marginalization, and displacement, and partner with community-based arts and cultural organizations to highlight their struggles and triumphs.

## ARCTICNET

"ArcticNet is a Network of Centres of Excellence of Canada that brings together scientists and managers with their partners from Inuit organizations, northern communities, federal and provincial agencies, and the private sector. The objective of ArcticNet is to study the impacts of climate change and modernization in the coastal Canadian Arctic" (ArcticNet web page). The following researchers received funding for ArcticNet projects totaling \$567,120: **Dr. David Barber, Dr. Steven Ferguson, Dr. Tim Papakyriakou, Dr. Søren Rysgaard, Dr. Gary Stern, and Dr. Feiyue Wang**. Topics include Arctic geomicrobiology and climate change, the effects of climate change on carbon and containment cycling in the Arctic coastal and marine ecosystems, and the impacts of global warming on marine mammals

## NSERC DISCOVERY GRANTS

The following faculty received NSERC Discovery Grants totaling \$980,000:

**Dr. Andrey Bekker** (Department of Geological Sciences) – Co-Evolution of Life and Surface Environments Linked to Plate Tectonics and Mantle Evolution.

**Dr. Anton Chakhmouradian** (Department of Geological Sciences) – Implications of the tectonic setting, magma-wallrock interaction and postemplacement evolution of carbonatites for their rare-metal (REE, Nb, Ta, Zr and U) potential.

**Dr. Mostafa Fayek** (Department of Geological Sciences) – Radionuclide and mass transport in surface and in near-surface environments.

**Dr. John Hanesiak** (Department of Environment and Geography) – Surface-Atmosphere Couplings and Convection Processes.

**Dr. Nicola Koper** (Natural Resources Institute) – Effects of disturbance, habitat loss, and fragmentation on prairie birds and their ecosystems.

**Dr. Tim Papakyriakou** (Department of Environment and Geography) – Air-sea carbon cycling in mixed ice- ocean environments.

## IN THIS ISSUE

### Conferences

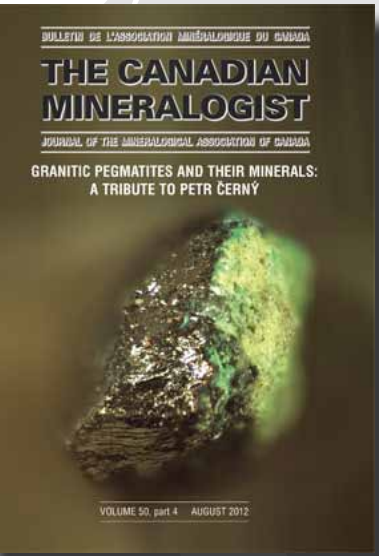
GAC-MAC  
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# Northern Manitoba Mining Academy.

Manitoba Premier Greg Selinger opened the Northern Manitoba Mining Academy (NMMA) on September 28, 2012 at the University College of the North in Flin Flon. This unique centre will focus on geological and environmental studies and will, to quote Mr. Selinger, “*ensure our province remains a North American leader in mining while addressing both current and future labour and skills shortages in the industry*”. The Academy is the result of a partnership that includes the Province of Manitoba, the Government of Canada, the City of Flin Flon, HudBay Minerals, the Northern Manitoba Sector Council, the University College of the North, and the University of Manitoba.

Facilities include a sample preparation laboratory to process mineral samples and undertake finer work such as the production of polished samples and thin-sections for the analysis of rock and ore samples. In addition, the academy also has a ThoroughTec Cybermine underground mining simulator in which users can experience operating a load-haul-dumper, also known as a scoop tram, in a virtual underground mine or an underground articulated dump truck.

**Dr. Norman Halden** (Dean, Clayton H. Riddell Faculty of Environment, Earth, and Resources) was involved in the design of the labs and framing the concept of a mineral preparation lab, including the details on the actual tools. To quote Rob Penner (Executive Director, University College of the North) “*when visitors tour the NMMA, and comment on the practical nature of our labs and well-planned choices of equipment, we are always pleased to give the University of Manitoba, and Norman in particular, lots of credit*”.

Pictured top right, Dr. Norman Halden at the ThoroughTec Cybermine underground mining simulator operating a load-haul-dumper; bottom right, Northern Manitoba Mining Academy; and bottom left, Rob Penner Executive Director, University College of the North addresses a tour group in the sample preparation laboratory. Photo Credits: Rob Penner.



# North American Prairie Conference.

The 23<sup>rd</sup> North American Prairie Conference, hosted and supported by the Clayton H. Riddell Faculty of Environment, Earth, and Resources was held at the University of Manitoba in August, 2012. **Dr. Nicola Koper** (Natural Resources Institute) and **Dr. Rick Baydack** (Department of Environment and Geography) co-chaired the event along with Dr. Doug Cattani (Department of Plant Science, Faculty of Agriculture and Food Sciences). More than 200 participants from across North America, including students, naturalists, biologists, and artists helped to make the event a success. Among the keynote and invited speakers were award-winning Saskatchewan authors Sharon Butala, Candace Savage, and Trevor Herriot, who read excerpts from their books about prairie conservation and colonialism, and Ojibway elder David Daniels, who discussed medicinal uses of prairie plants. Former Riddell Faculty adjunct professor **Dr. David Young** discussed

the origins and patterns of modern grassland land uses, and Dr. Wes Jackson, President of the Land Institute, talked about sustainability of prairie plant communities. Academic sessions were complemented by several field trips, including viewing the endangered species of the mixed- and sand-hills prairies west of Winnipeg, and the tall-grass prairies at the Tall Grass Prairie Preserve near Tolstoi, Manitoba. Participants also travelled by the historic steam locomotive of the Prairie Dog Central railway to the tall-grass prairies of the Living Prairie Museum at Grosse Isle. The conference organizers are working on a peer-reviewed publication capturing the event.

Pictured clockwise from right, Daryl Smith and Pauline Drobney at the Manitoba Tall Grass Prairie Preserve, Photo Credit: Rolлие Henkes, publisher of *Woodlands & Prairies Magazine*; bottom left Prairie Dog Central field trip and wild flower. Photo credits: Jo-Anne Joyce.





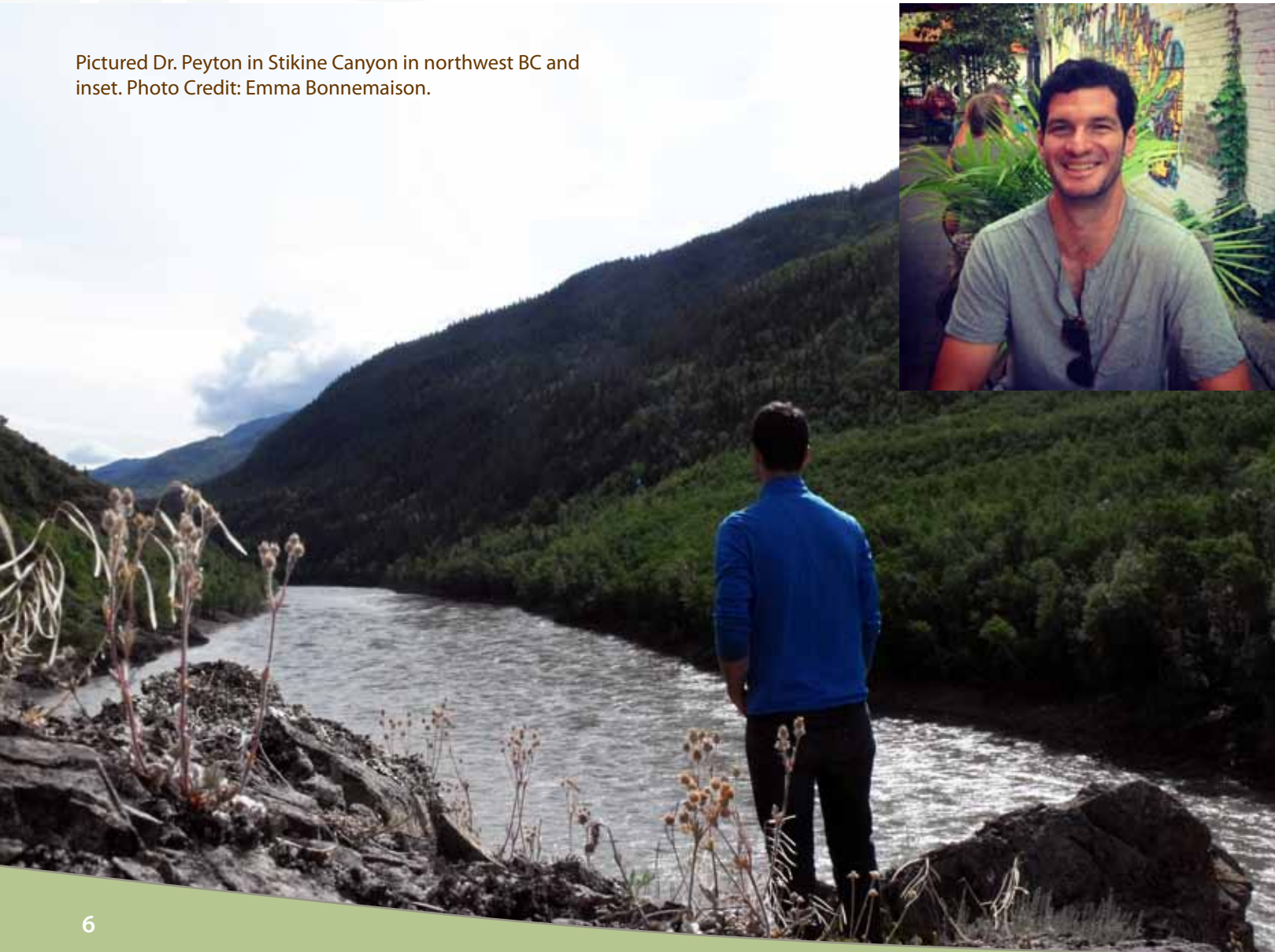
# New Faculty Profile: Jonathan Peyton.

**Dr. Jonathan Peyton** has joined the Department of Environment of Geography at the University of Manitoba from the Department of Geography at the University of British Columbia in Vancouver. His research lies at the intersection of environmental geography and political ecology and develops a cultural and historical approach. Over the past few years he examined a series of resource development conflicts in northwest BC, a region that is currently the site of intense mining exploration and controversy over energy projects. Dr. Peyton situates the current conflicts against the legacies of previous megaprojects – both failed and realized – to understand their social and environmental side effects as well as their legacies for future developments. By analyzing the compounding effects of state planning, environmental assessment, technological expertise, scientific data management, corporate enterprise, and popular debate,

he argues that institutional factors, development controversies, and environmental debates change the discourse of nature, both locally and in metropolitan contexts and set some of the terms of environmental change.

His current research is on the policy implications of northern energy infrastructure megaprojects in subarctic North America. This project asks how envisioned northern energy projects influence the course of North American energy policy. This work is northern in focus but will place the north in relation to broader continental energy policy and geopolitics. Dr. Peyton also plans to develop a focused project on the socio-environmental impacts associated with hydraulic fracturing technology in northern BC, Alberta, and Saskatchewan as oil and gas companies increasingly turn to the production of shale and other unconventional gases.

Pictured Dr. Peyton in Stikine Canyon in northwest BC and inset. Photo Credit: Emma Bonnemaïson.



## GAC-MAC Winnipeg 2013:

The Geological Association of Canada – Mineralogical Association of Canada Joint Annual Meeting

The Geological Association of Canada – Mineralogical Association of Canada (GAC-MAC) Joint Annual Meeting is the premier national geoscience conference. The 2013 meeting will take place May 22<sup>nd</sup> to 24<sup>th</sup>, at the Convention Centre in downtown Winnipeg.

Faculty and staff of the Department of Geological Sciences are actively involved in the planning for this conference. A diverse technical program of symposia, special sessions, general sessions, and short courses is being planned for Winnipeg 2013. Field trips will explore a cross section of Manitoba geology, social events will reflect the life and hospitality of the Prairies, and there will be a program of outreach to teachers and the public. Conference details can be found at [www.gacmacwinnipeg2013.ca](http://www.gacmacwinnipeg2013.ca)

**“Manitoba Night”**, a Reunion of the Department of Geological Sciences, will take place Wednesday, May 22, 2013 from 8:00 to 11:00 PM, at the Winnipeg Convention Centre. Reunion details will be available at [www.umanitoba.ca/geoscience](http://www.umanitoba.ca/geoscience)

Pictured below, **“Pirate Island - Paint Lake”** painting credit: Nancy-Lynne Hughes and inset GACMAC logo.





## PCAG.

*It's Not Just About the Prairies!* was the theme of this year's meeting of the Prairie Division of the Canadian Association of Geographers Conference held at the Heartland Inn in Winkler, Manitoba. From September 28-30, 2012, the Department of Environment and Geography hosted the 36<sup>th</sup> annual event with over 100 registrants giving over 53 presentations. Sessions examining social geography, physical geography, environmental geography, climate, urban geography, and techniques-based geography were well attended, including twenty participants from the University of Manitoba. The two specialized field trips to the Canadian Fossil Discovery Centre in Morden, and the Neuberghthal Mennonite Street Village, Gnadenthal and Reinland highlighted the uniqueness of the region in both geological and cultural terms and were enjoyed by all.

The conference's success can be attributed to the excellent teamwork of the organizing committee and volunteers including **Karina Cardona Claros, Jenna Drabble, John Hu, Dr. John Iacozza, Dr. Jeffrey Masuda, Dr. Ann Marie Murnaghan, and Cheryl Sobie. Dr. Janna Wilson**, who also acted as the banquet host and logistics coordinator, provided excellent leadership that resulted in this successful event. The conference, banquet, photo competition, and general meeting went off without a hitch, and all the participants had a lot of fun in the beautiful fall weather in Winkler.

Outcomes from the conference will be published in the upcoming edition of *Prairie Perspectives*, a peer-reviewed, regional geographical journal of the Prairie Division of the Canadian Association of Geographers. Further details about publishing in this outlet can be found at <http://pcag.uwinnipeg.ca>.

**PCAG 2013 will be hosted by the University of Regina and is scheduled to be held in Esterhazy, Saskatchewan in the Fall.**

Photo Credits: Jason Jorgenson.



## Graduate Student Experience.

**Erin McCance** (PhD student, Department of Environment and Geography) attended The Wildlife Society 19th Annual Conference October 13-18, 2012 in Portland, Oregon. This was made possible with the support of the Canadian Section of the Wildlife Society, a University of Manitoba Graduate Student Travel Grant, and her advisor, **Dr. Rick Baydack** (Professor, Department of Environment and Geography). With over 1800 wildlife specialists attending, the conference, the event provided the opportunity for her to connect with peers, meet new people, and learn about the wide scope of great work being undertaken in the field. The conference allowed Erin to engage in discussion about her work with those that have considerable expertise in her research focus area and acquire their feedback on her work to date.

Erin's research focuses on the increasing white-tailed deer populations in urban areas and the implications for human-wildlife conflict including deer-vehicle collisions. Working with her advisor Dr. Rick Baydack and Dr. David Walker (Department of Environment and Geography) she undertook a comparative analysis of deer movement patterns in Winnipeg and the rural area of Riding Mountain National Park. Erin presented both a poster and an oral presentation on her research at the conference.

Erin is a member of the 2015 TWS Annual Conference Arrangements Committee, which will be held in Winnipeg. Attending the conference in Portland provided her with different ideas and approaches to apply to the event in Winnipeg.

Pictured below: Waterfall, Photo credit: Erin McCance, inset Erin McCance (left) and Jen Syrowitz, a Master of Environment student, Department of Environment and Geography. Photo credit: Tim Davis.





# China Recruitment Visit.

With globalization and the World Trade Organization moving goods and resources around the planet the term “*internationalization*” has taken on greater significance in universities. Many argue that some level of student exchange and mobility is necessary to maintain diversity in our scholarship. To that end the University of Manitoba and the Riddell Faculty have engaged with the China Scholarship Program to recruit students from China interested in pursuing Ph.D. studies at the U of M. **Dr. Feiyue Wang** (Department of Environment and Geography) and Dean **Norman Halden** attended a workshop in Beijing in November. This is a very well organized event where student CVs and interests are recorded in a database and professors and students can set up one-on-one meetings to discuss the specifics of any potential projects in a wide range of subjects – not surprisingly environment, resources, and mineral production are subjects of considerable interest to us and the people of China. The event itself is high-energy where potential students and university representatives can exchange interests, ideas, and experience. It promotes positive interactions leading to constructive exchanges even if the outcome does not result in a project.

This year saw new opportunities for the Riddell Faculty representatives. They were invited to make presentations to staff and students at Beijing Normal University, the China University of Geosciences, and Peking University, to describe our University, the Riddell Faculty, and our programs. The talks were well attended and well received. We have received several applications and there are continuing discussions around exchange programs. Our Chinese hosts were extremely

hospitable, the culture and history were breathtaking, and the food was excellent!

We look forward to a continuing relationship with these institutions and hope we can return the hospitality soon.

Pictured top right, Dr. Norman Halden discusses graduate research with a candidate. Pictured bottom, Dr. Norman Halden and Dr. Feiyue Wang give a presentation to potential students. Photo Credits: Feiyue Wang.



# Alumni Profile.

**Dr. Darla Zelenitsky** (B.Sc. University of Manitoba (1991), M.Sc. University of Calgary (1995), and Ph.D. University of Calgary (2004)) recently garnered significant attention for her work on a group of dinosaur fossils found near Drumheller, Alberta. Appointed as assistant professor at the University of Calgary in 2008, she has shown that Ornithomimus shows primitive occurrence of wing-like structures in some individuals and traces of filamentous feathers. Although these species are not the direct ancestors of modern birds, this pushes back the earliest wings by about 10 million years.

Dr. Zelenitsky’s interest in paleontology began when she was just four years old with her interest being sparked by

books on prehistoric life and visits to the Manitoba Museum. Once at the University of Manitoba she recalls “*an excellent learning environment fostered my love for paleontology*”, opportunities to go on field trips, plenty of hands on experience, and a number of professors involved in research in the field. To quote Dr. Zelenitsky “*in particular, Dr. Bob Elias (Department of Geological Sciences) and the late Dr. George Lammers (Adjunct Professor, Department of Zoology) provided tremendous support and encouragement in pursuit of my career goal*”.

Currently, Dr. Zelenitsky is continuing her research on the feathered dinosaur specimens from Alberta and on the region of the brain in dinosaurs that is associated with the sense of smell. She

aims to provide students with similar opportunities that she had so that they receive hands on experience with fossils and can take part in fieldwork in Alberta’s badlands or in field trips to museums. “*Today, thanks to the University of Calgary, I am one of a handful of dinosaur paleontologists who are employed in this field in Canada. The learning environment provided early on in my career at the University of Manitoba was instrumental towards fulfilling my childhood dream of becoming a dinosaur paleontologist*”.

Pictured left, ornithomimid dinosaur, Photo Credit: Royal Tyrrell Museum; right, Dr. Zelenitsky in the badlands where feathered dinosaurs are found. Credit: Chris Debuhr.





# Co-operative Education Student.

**Angela Howells** (B. Env. Sc. (Hons) Coop) joined the Riddell Faculty in the fall of 2009 and is excited to be graduating in February of 2013. Her coop work term positions included work as a Nature Interpreter at Oak Hammock Marsh, a Senior Interpreter at St. Norbert Provincial Park, and her current position as Assistant Park Planner for Manitoba Conservation and Water Stewardship.

Through her current position as Assistant Park Planner Angela developed a website which provides visitors with information regarding the backcountry campsites available in Nopiming Provincial Park as part of **“Tomorrow Now - Manitoba’s Green Plan”**. This position has also provided her with the opportunity to explore many of Manitoba’s provincial parks, including a five-day trip to visit some of the parks in the northwest region.

In April, Angela completed her honours thesis in which she used geographic information systems to examine the relationship between socio-economic factors, such as income, and proximity to community gardens. She has completed her coursework and recently accepted admission to the Master of Science program through the Department of Environment and Geography.

Currently Angela is coordinating the keynote speaker and breakout sessions for the MEIA Career Expo. **“This is a great example of the professional networking opportunities available to students in the Coop program. Events such as this are important because they put you in touch with potential employers and help you to build relationships that can help you get hired after graduation.”**

Pictured below Angela beside a model yurt at Bakers Narrows Provincial Park where she was visiting as part of the public consultations for the management plan for the park Photo Credit: Cathy Hummelt.



# CEOS Undergraduate Student Experience.

A number of undergraduate students had the opportunity to participate in Arctic research both on the University of Manitoba campus and in the field. Their exposure to ongoing and cutting-edge research is often an important bridge from their undergraduate studies to their future as graduate students and researchers. Two students’ stories illustrate the diversity of experiences and the impact upon their views of the Arctic environment and the importance of research.

**Heather Stark** spent the summer months exploring a new life of research and fieldwork in a background study of sea ice trends in the Beaufort Sea and then aboard the CCGS Louis S. St-Laurent.

The background study consisted of examining a series of reports published in the 1970s by the Department of Fisheries and Oceans, including information concerning the thickness, extent, and movement of sea ice. Once aboard the CCGS Louis S. St-Laurent Heather was responsible for regular meteorological observations and maintaining radiation sensors and a skyward looking camera. In addition, she also participated in on-ice activities, in which she collected radiation data along a transect line on the ice floe.

Heather will begin her Masters degree this September under the supervision of Dr. David Barber at CEOS. **“Having the**

**opportunity to be on board the Louis and partake in such a diverse scientific study has opened my eyes to how important it is to constantly and continually research the ever-changing Canadian Arctic. Being in the field for those five weeks has affirmed my goal of entering into a career of research, particularly into the study of Arctic sea ice.”**

**Megan Shields** during her four-month summer coop work term with the Centre for Earth Observation Science (CEOS) worked on a project to examine sea ice melt pond evolution using remote sensing technologies. As part of this she also spent two months participating in the field study Arctic-ICE (Arctic Marine Ice Associated Ecosystem in a Changing Environment) in the Resolute Passage, near Resolute Bay, Nunavut. Science teams travelled daily to the ice camp in the Resolute Passage near Sheringham Point by snowmobile. Megan worked as part of a team looking at the thermodynamic processes that control the relationships between different surface topographies (snow, ice, and meltwater) at the ice-atmosphere and ice-ocean interfaces. The data will ultimately be used to develop a deterministic approach for examining and differentiating microwave interactions with sea ice during the Arctic melt season.

Pictured below, Resolute Bay. Photo credit: Megan Shields.





# Aboriginal Issues Press.

**Colonial Encounters in the Fur Trade** provides insights useful to understanding the background to the crisis facing many First Nations communities today. Author Robert 'Wes' Heber outlines changing relationships between First Nations peoples, trading companies, churches, and the state during his time as a fur trader (1959-

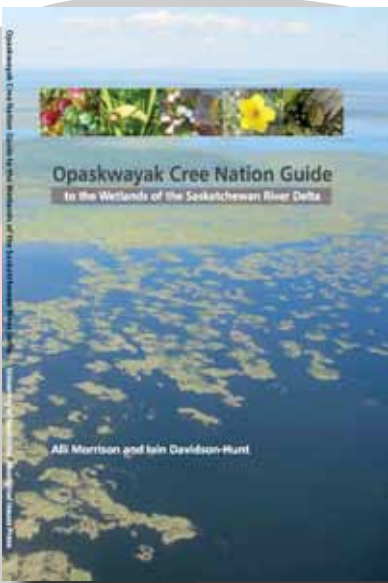
Colonial Encounters in the Fur Trade  
1959-1961



Robert Wesley Heber

1961). The book depicts the declining influence of the churches and the fur trade, and the impact of policies for

governance of Aboriginal communities – a time of increasing colonial control and imposed change, which continue to plague First Nations of northern Canada.



**Opaskwayak Cree Nation Guide to the wetlands of the Saskatchewan River Delta** by **Alli Morrison** and **Dr. Iain Davidson-Hunt** (Natural Resources Institute) acts as an educational tool for the Opaskwayak

Cree Nation to enhance their understanding of the ecologically diverse wetlands found within the Saskatchewan River Delta. *“All water bodies have food for different species of animals – beavers, muskrats, moose, deer, rabbits, and also human life. The rivers are also important; they feed the bodies of water to keep them alive. Without water, nothing lives.”*

Annually, the Aboriginal Issues Press (AIP) publishes peer reviewed sole-authored or multi-authored manuscripts from all disciplinary and multi-disciplinary perspectives. Completed manuscripts and ideas for theme publications for possible publication are welcome. Publications are available at wholesale prices from the Clayton H. Riddell Faculty of Environment, Earth, and Resources. All sales profits are contributed to the Aboriginal Issues Press Scholarship, which offers up to five scholarships annually.

## THE ABORIGINAL ISSUES PRESS SCHOLARSHIP

The Scholarship received 12 applications in 2012 and the selection committee awarded five awards of \$1000.00 each. The winners for the 2012-13 academic year are:

**Carlos Idrobo**, **Alli Morrison**, and **Natasha Penneys-Szach** (Natural Resources Institute), Agnes Pawlowska (Department of Native Studies), and **Breanne Reinfort** (Department of Environment and Geography).

The AIP Scholarship is made possible by profits from the sales of its publications as well as a yearly contribution from the Clayton H. Riddell Endowment Fund.

# Frost Flowers Blooming Again at SERF.

For the second time in a year, a major frost flower event occurred at the Sea-ice Environmental Research Facility (SERF). Dubbed *“the earliest blossom in the Peg”* by **Dr. Feiyue Wang**, lead scientist of SERF, the flowering event started on December 24 and lasted until the 29<sup>th</sup>. Watching the ice crystals grow and taking daily measurements became part of Wang’s routines during this holiday break.

Officially opened in February 2012, SERF is the first and only outdoor experimental sea ice facility in the country. It allows Wang and his co-investigators **Dr. David Barber**, **Dr. Tim Papakyriakou**, **Dr. Søren Rysgaard**, all from the Centre for Earth Observation Science (CEOS), to study geophysical and biogeochemical processes and properties of various forms of sea ice including frost flowers under controlled conditions. Major discoveries from the 2012 experiments included microwave scattering patterns of frost flowers, the evolution of pH in frost flowers and with ice growth, and the presence of ikaite ( $\text{CaCO}_3 \cdot 6\text{H}_2\text{O}$ ) minerals in the sea ice environment, among many others.

A new international experiment will take place at SERF from January 10 to 31, 2013, involving scientists from Canada, USA, Denmark, Greenland, and Germany. For more information, please contact Dr. Feiyue Wang.

Pictured below: Dr. Feiyue Wang collecting frost flower samples for study. Photo credit: Beibei Lu; inset Frost flowers grown at SERF. Photo credit: Juliana Kusyk.





# Picturing the Planet.

As a regular feature "Picturing the Planet" brings inspiring and informative images taken by our students, staff, and faculty. This image was captured **Matt Hebert** a third year student in Environmental Studies in Cape Coast, Ghana during a study abroad experience organized through the World W.I.S.E. Resource Centre here at the University of Manitoba. Matt studied at the University of Ghana and it is during one of his many adventures that he captured this image while at the Slave Castle of Cape Coast. Local fisherman are shown bringing in their morning catch giving us a unique perspective of food security and every day life in coastal West Africa.

Photo Credit: Matthew Hebert.



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