

Churchill Marine Observatory.

In July, Shelly Glover, Minister of Canadian Heritage and Official Languages, and Manitoba Premier Greg Selinger, announced an investment of \$31.8 million to build the Churchill Marine Observatory (CMO). This multi-disciplinary research facility will allow researchers to study the impact of oil spills in sea ice, investigate issues facing Arctic marine transportation, and study climate change and associated extreme weather connected to Arctic-temperate teleconnections.

The research infrastructure funding is provided through the Canada Foundation for Innovation's (CFI's) Innovation Fund. Funding Partners in the CMO program include the Provinces

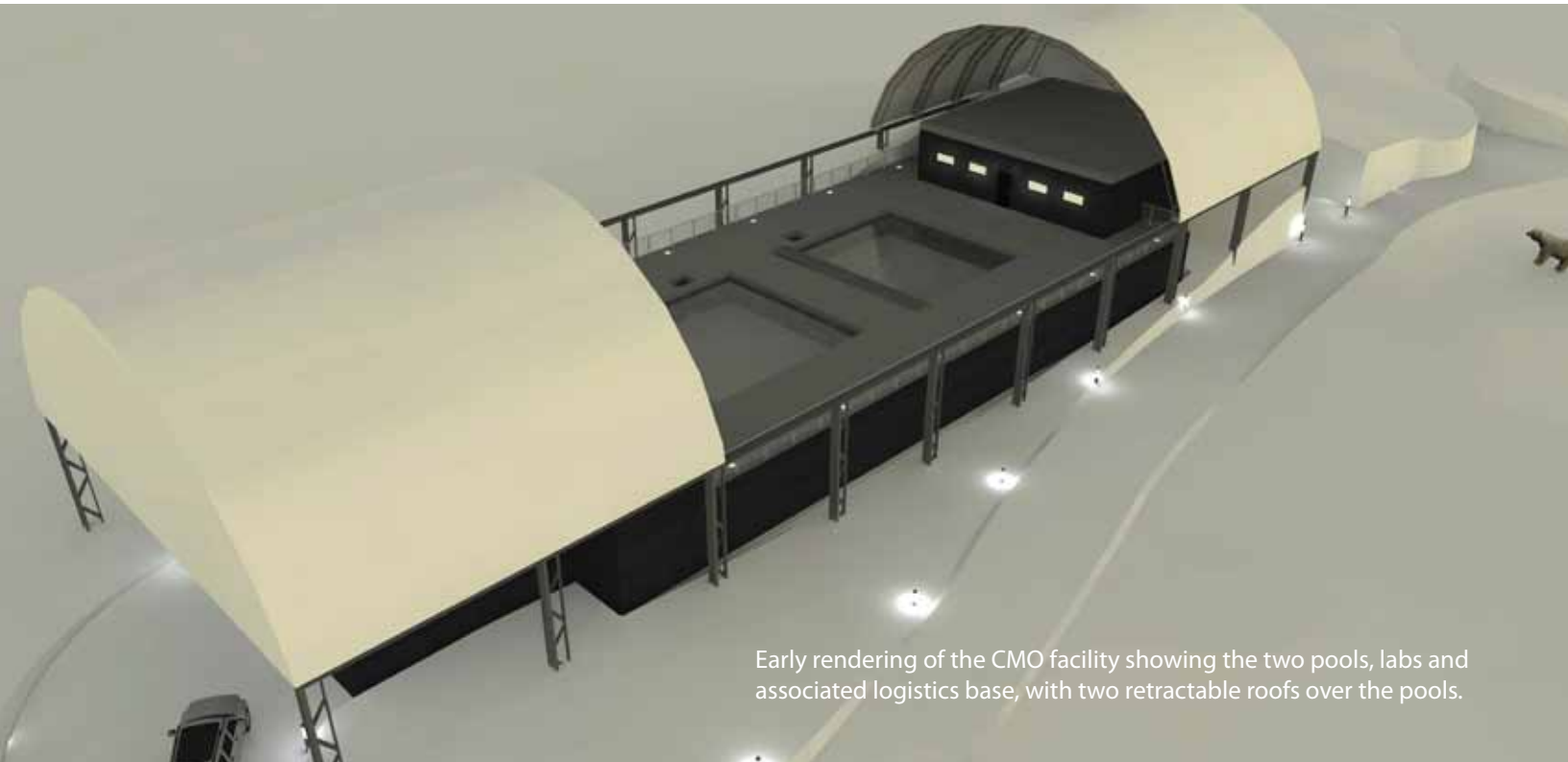
of Manitoba, Alberta, British Columbia, Quebec and Nova Scotia, Aboriginal Affairs and Northern Development Canada through the POLAR initiative, the Arctic Research Foundation, and several private, public, and non governmental organizations.

Dr. David Barber (Associate Dean (Research) in the Clayton H. Riddell Faculty of Environment, Earth, and Resources and Canada Research Chair in Arctic System Science) is leading the project. The CMO will be a unique, highly innovative research facility located in Churchill, Canada's only Arctic deep-water port. The observatory will position Canada as a global leader of research into the detection, impact, and mitigation

of oil spills in sea ice and the effects of climate change and extreme weather on people. The research will help address technological, scientific, and economic issues pertaining to Arctic marine transportation, oil and gas exploration, and development throughout the Arctic.

To quote **Dr. Norman Halden** (Dean, Clayton H. Riddell Faculty of Environment, Earth, and Resources):
"With such intense interest in Arctic exploration our CMO researchers will be at the global forefront of predicting the impact of, and response to, oil spills in the Arctic. Their research will inform what needs to be done not if, but when, this happens".

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Early rendering of the CMO facility showing the two pools, labs and associated logistics base, with two retractable roofs over the pools.

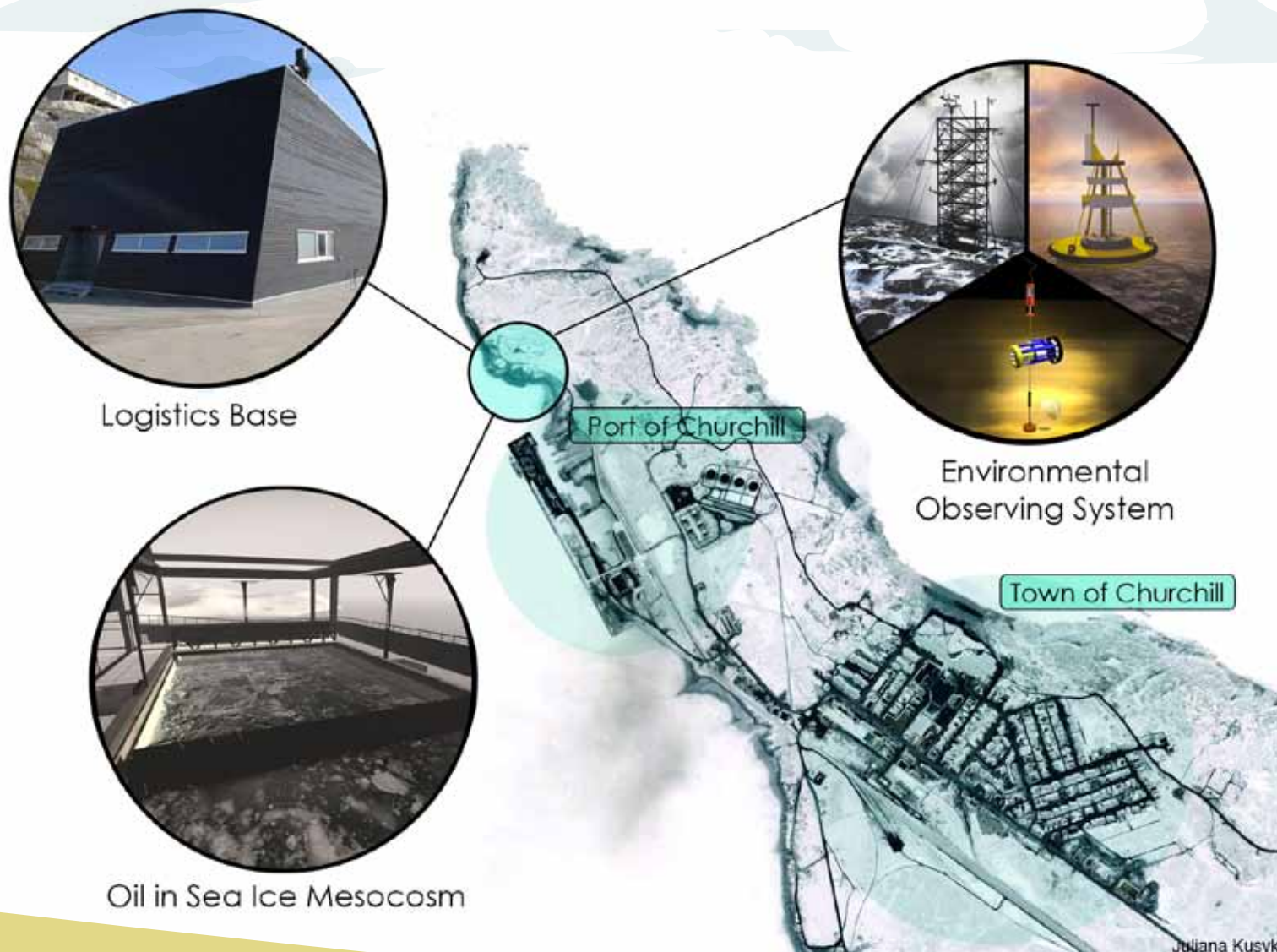
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Since the announcement in July, the CMO organization has begun the detailed planning of the facility in Churchill and begun to finalize the various partnerships in both the construction and operation of the facility. The team has begun the process of procuring all of the scientific instruments, surface craft, and a new larger research vessel used to support the science of CMO. Three new faculty positions will

be hired as part of the CMO program, two of which are targeted for industrial research chairs and one joint position between the Department of Electrical and Computer Engineering (ECE) and the Centre for Earth Observation Science (CEOS). These competitions are well advanced and these new faculty are expected to be in place for a 2016 start. Ten new technical positions will also be recruited to work on the acquisition

and installation of millions of dollars of research tools and instruments both at the CMO facility and in the Churchill Northern Studies Centre (CNSC) another partner in this project. The CMO team expects to begin construction of the new marine research base in the spring of 2016 with completion anticipated in 2017.

Pictured below: CMO location on Cape Merry, Churchill Manitoba. Circles show the main elements of CMO - namely the oil in sea ice mesocosm, the logistics base and the Environmental Observing System.



Science Outreach in Norway House Cree Nation.

Jonathan Challis is a new Vanier scholar, co-advised by **Dr. Mark Hanson** (Department of Environment and Geography), who is also a part of the CREATE H₂O program based at the University of Manitoba. The H₂O initiative aims to help address water security and sanitation issues on First Nations communities. One of the communities that is a field site of Jonathan's Ph.D. research is Norway House Cree Nation (NHCN), located at the top of Lake Winnipeg. Working with the community, Jonathan has been characterizing the contaminants found in their wastewater, and developing new approaches to sample these emerging chemicals of concern.

In the summer of 2014 and 2015, Jonathan mentored high school students from NHCN through the Verna J. Kirkness Science and Engineering program in the Faculty. This past summer two of these former Kirkness scholars, **Chadwin**

Scatch (a B.Env.St. student) and Hunter York, joined Jonathan to sample the wastewater treatment facility and surrounding surface waters. Chadwin and Hunter helped deploy passive samplers, sample water, and take water quality measurements. It was a great experience for them to learn about the water treatment system in their home community of NHCN, all the while reinforcing the skills and knowledge they gained through the Kirkness program. Hunter is entering his senior year of high school and Chadwin has entered his first year in the Faculty. Both of them are very impressive young students in their own right! Jonathan will return to NHCN in winter and summer 2016, and looks forward to working with Chadwin and Hunter again.

Pictured below: Hunter York (left) works with Jonathan Challis (right). Photo Credit: Mark Hanson.



The Sally and Keith Caldwell Teaching Assistant Award.

Each year thousands of students at the U of M benefit from a range of scholarships, bursaries, fellowships, and athletic awards. And now, thanks to the vision and generosity of the late **Keith Caldwell** [B.Sc./48, M.Sc./50], students and faculty in the Department of Geological Sciences will benefit from the addition of a new and rather unique student prize: the Sally and Keith Caldwell Teaching Assistant Award.

Designed to support the appointment of Teaching Assistants (TAs) in the Department of Geological Sciences, Caldwell's unique gift will play a critical role in ensuring faculty have appropriate support, graduate and undergraduate students have an outstanding learning experience, and the TAs themselves have the opportunity to develop the skills and leadership abilities that are essential for professional success.

A highly successful geological sciences alum himself, Caldwell earned a B.Sc. from the U of M in 1948, and a M.Sc. in 1950. His passion for geology then led to a 40-year career with Canadian Gulf Oil, and an additional 16 years serving on the boards of 10 small- to intermediate-sized oil and gas firms before he retired in 2006, at age 80.

Caldwell always believed strongly in education, and never needed much incentive to give to his alma matter. Even after relocating to Alberta, where he met his wife Sally and together they raised their family, he never forgot his Manitoba roots and continued to give to the U of M, making more than 23 gifts over the years.

But it wasn't until Dean Norman Halden joined him for lunch in Calgary in 2009 that a seed was planted for his greatest gift to the university yet. Five years later, Halden received a call from Caldwell somewhat out of the blue. Now in his 80s, Caldwell had decided to honour his late wife Sally and recognize his connection to the U of M by making a substantial donation to the Department of Geological Sciences. In very little time, the Sally and Keith Caldwell Teaching Assistant Fund was created.

To be considered for a Teaching Assistant Award, applicants must demonstrate passion and ability in their field of study and in the sub-discipline being taught. They must be high-achieving, outgoing, helpful, and invested in the teaching enterprise.

Although Keith Caldwell passed away early in 2015, before he could see the impact of his gift, these qualities are reflective of how he lived his life, and there's no doubt he would have been proud of those who received the award.

Pictured below: Sally and Keith Caldwell. Pictured bottom: (left to right), Dr. Norman Halden (Dean), Catherine Caldwell, Lauren Eggie (assistantship recipient), Jayni Caldwell, Jemma Harrison (assistantship recipient), Barb Caldwell and Mostafa Fayek (Head, Department of Geological Sciences).



Grateful for a world of opportunity, donors create scholarship for geophysics graduate students.

Having just returned to Canada after two weeks in Iceland, **Deb Pitman** [B.Sc (Hons.)/78] ardently scrolls through some breathtaking pictures from her most recent "**volcano chasing**" adventure. She is particularly pleased with a series of photos of her standing triumphantly in Reykjanes Ridge, arms spanning the craggy little valley as if she were pushing the Earth apart herself. Actually caused by two diverging tectonic plates, Reykjanes Ridge is part of the Mid-Atlantic Ridge, and sure to be on any respectable geology enthusiast's bucket list.

It's no surprise then that Deb and her husband Ross chose to vacation on the "**Land of Fire and Ice**". Their shared love for geology has taken them around the world, and to some of the newest land formations on Earth. It has provided them both with rewarding careers. And it has inspired them to support the next generation of geology students at Deb's alma mater.

Deb's love for geology goes way back. She recalls how, as a child, she would puzzle over where the sand at her family cottage came from. It was a unique passion that her parents supported and nourished as she grew up. "**I remember my dad breaking open rocks with a sledge hammer so I could see what was inside,**" she says.

And as she progressed through school, newly

developing theories of plate tectonics only added to her interest. She delighted in how easily the world's continents could be pieced back together "**like a giant puzzle**" revealing millions of years of geological history.

Once in university, Deb enrolled in every first-year course that would get her into Geophysics. She speculates that she may have been the first student to have actually started and finished their degree in the department. "**Most people who end up in Geophysics didn't start there,**" she laughs. But her focus and determination paid-off.

After graduation, Deb went on to a very successful career in petroleum exploration, and started her own consulting company in Calgary. However, being one of very few women

in the industry had its challenges, especially when she decided to become a parent.

Up until the 1980s, Alberta's legislation had essentially forced women to quit their jobs if they wanted to stay with their newborns for longer than six weeks after birth. But in 1985, Deb and a small group of trailblazers helped change that law so that women could take 18 weeks of maternity leave without fear of losing their position or seniority. Over time others across Canada pushed for further changes. Currently, Alberta parents can take 37 weeks of paid parental leave in addition to 15 weeks of maternity leave.

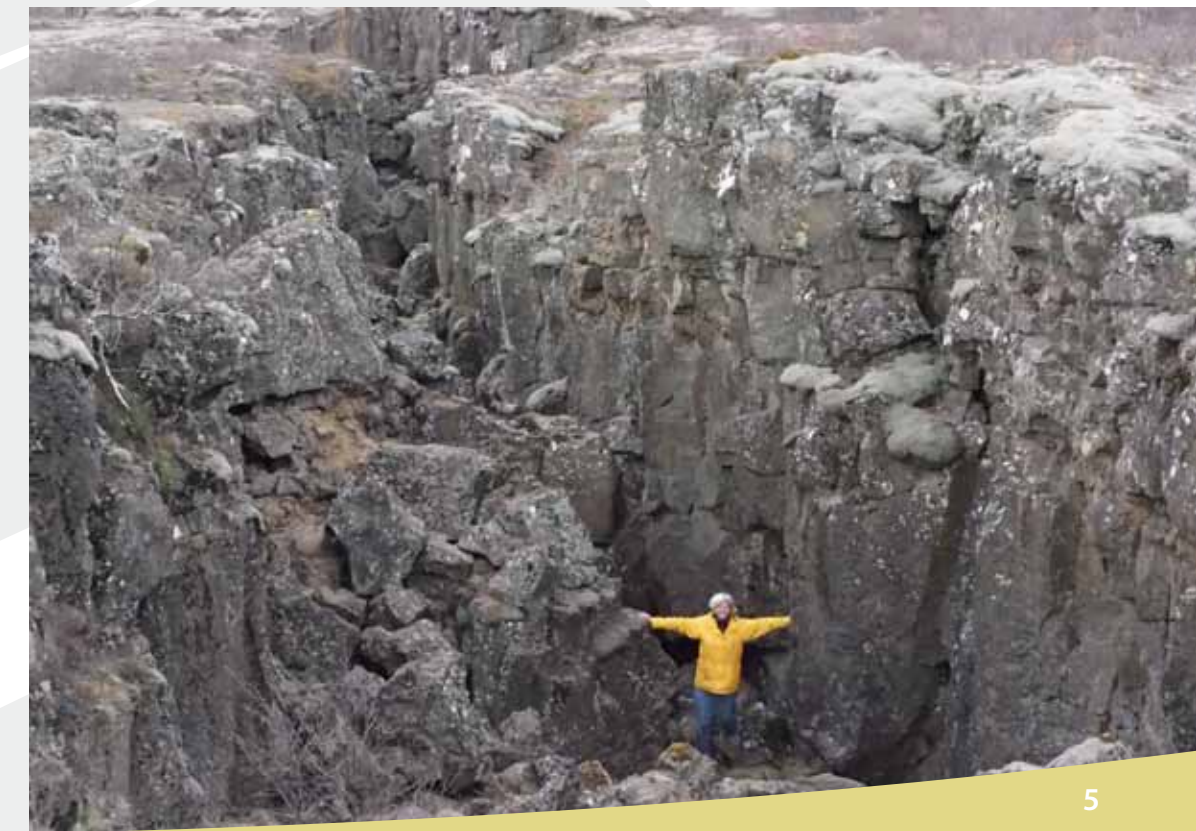
Deb credits this feat, and many of her life achievements to the knowledge, experience,

encouragement, and fellowship she gained during her studies at the University of Manitoba.

Recognizing just how valuable both of their undergraduate degrees have been, Deb and Ross have decided to establish an endowed scholarship at the University of Manitoba. This award will be available to graduate students studying in the Department of Geological Sciences with a focus on geophysics.

When asked why she chose to support graduate students, Deb sums it up by saying "**research is our future.**"

Pictured below: Deb Pitman standing in Reykjanes Ridge.



The 22nd Annual Conference of The Wildlife Society.

The Wildlife Society (TWS), the organization that represents wildlife professionals worldwide, held its 22nd Annual Conference in Winnipeg in October. The Society has a membership of about 10,000, largely from North America. The Wildlife Society's mission is to represent and serve the professional community of scientists, managers, educators, technicians, planners, and others who work actively to study, manage, and conserve wildlife and habitats worldwide.

Dr. Rick Baydack (Department of Environment and Geography, and Chair of Environmental Science and Studies in the Riddell Faculty) served as TWS President in 2014-2015, and relinquished his position at the conclusion of the Conference. The conference surpassed all expectations with 1564 attendees making it the 4th largest TWS conference and only the second time in Canada.

The Riddell Faculty provided a generous Gold Sponsorship donation that was announced at the Opening Plenary, where **Dr. Norman Halden** (Dean of the Riddell Faculty) officially kicked off the conference. The keynote speakers were Robert Warren (2015 Aldo Leopold Honorary Award Medal recipient), **Dr. Erin McCance** (Ph.D. graduate from the Department of Environment and Geography), Ovide Mercredi (former Grand Chief of the Assembly of First Nations of Canada and 2013 University of Manitoba Distinguished Alumni Award recipient), and Richard Louv (noted author of *'Last Child in the Woods – Saving our Children from Nature-Deficit Disorder'*, and *'The Nature Principle – Human Restoration and the End of Nature-Deficit Disorder'*). The theme of the plenary, *'Why*

Do Wildlife Matter?' provided an effective catalyst throughout the conference for sharing ideas, disseminating information, and observing how approaches used elsewhere may apply to individual circumstances. In addition, the networking and socializing activities associated with the conference were critical to ensuring its success, and the Winnipeg organizers did an outstanding job of providing not only a first-rate scientific program but also an exceptional array of local attractions and cultural experiences.

About 100 students from the Riddell Faculty as well as several of our faculty members were actively involved in all facets of the conference, serving on the Local Arrangements Committee, working as volunteers, and attending many of the scientific papers, posters and working group and networking sessions. Students attended the closing *'Manitoba-style'* networking social and had many positive things to say about their conference experience. To quote **Samantha Cortes** (B.Env.St.(Hons.)/15): *"I'm graduating tomorrow with my Environmental Studies degree, and this conference was an excellent opportunity to network with everyone that cares about wildlife, and it was an awesome time to engage with others on important wildlife topics that are happening right now. I'm very appreciative to be here — it was great."*

Pictured below (left to right): Dr. Rick Baydack, Dr. Norman Halden, Dr. Erin McCance and Ovide Mercredi. Photo Credit: Tara Wuennenberg.



Mentored Deer Hunt.

An alumnus of two of our programs, **Brian Kiss** (B.Env.St.(Hons.) Coop/2009 and M.Sc./2015) now works for Manitoba Conservation and Water Stewardship. He organized the two-day University of Manitoba 2015 Mentored Deer Hunt held at the Delta Waterfowl Minnedosa Field Station in November. Three students studying wildlife management and environmental studies in the Riddell Faculty attended, along with one youth from the Dauphin Fish and Wildlife Association. Of the five mentors participating, one was a Riddell undergraduate student **Bryan Girouard** (B.Env.St.) and three of our undergraduate students were new hunters (**Kristy Anderson, Jeffrey Caraulia, Jason Budzinski**, all in their Bachelor of Environmental Science programs).

Upon arrival the attendees were introduced to the world of white-tailed deer hunting via a classroom discussion on hunting regulations, deer biology, hunting gear *'show and tell'*, scouting and trail camera set-up, and ethical shot placement. Next the group headed outdoors for a muzzleloader operation, target practice, and a gun cleaning session. Once the students were comfortable with shooting, everyone geared up and headed out to ground blinds set up in the surrounding area for Saturday evening and Sunday morning hunts. Although no deer were harvested this year, most groups were able to at least observe multiple deer and coyotes from their blinds.

Pictured bottom: attendees of the mentored deer hunt. Photo credit: Brian Kiss.



The John Patterson Medal.

The John Patterson medal was presented to **Dr. Ronald Stewart** (Department of Environment and Geography) in an event in October well-attended by colleagues, faculty, and students. The award, including a certificate and a medal, was presented by Dr. David Grimes (Assistant Deputy Minister and Head of Environment Canada's Meteorological Service and President of the World Meteorological Organization).

The Patterson Distinguished Service Medal is presented each year for distinguished service to meteorology in Canada. The medal was established in honour of Dr. John Patterson (1872-1956), Controller (Director) of the Meteorological Service of Canada from 1929 to 1946. The list of recipients, since it was first awarded in 1954, features the nation's most accomplished individuals in the field.

Dr. Stewart, who is both a Fellow of the Royal Society of Canada and a Fellow of the Canadian Meteorological and Oceanographic Society (CMOS), focuses on extreme winter and summer weather, precipitation and regional climate. He has led numerous Canadian and international research activities addressing these issues. Dr. Stewart has served as President of CMOS and led Canada's involvement in the International Union of Geodesy and Geophysics for several years. He was a member of the international Global Energy and Water Exchanges project (GEWEX) Scientific Steering Committee and has led global initiatives on regional climate within the World Climate Research Programme, developing new ways to examine hydrometeorological extremes around the world.



Student Award.

Taras Zaporozan (B.Sc. Hons. (Physics)/2007, University of Winnipeg and B.Sc. Geological Sciences Hons. (Geophysics)/2012, and current M.Sc. student) is the 2015 recipient of the Bill Nickerson Education Award, a national award from the Canadian Society of Exploration Geophysicists (CSEG). As part of the award, he received five days of CSEG DoodleTrain courses in Calgary during November 2015.

Bill Nickerson, who passed away in March 2015, was a highly respected member of CSEG and was the guiding force behind the successful creation of the CSEG DoodleTrain. To quote the

CSEG website: *"His broad and practical understanding of the oil and gas industry coupled with his rich experiences teaching and studying at university were at the root of his passion".* To quote Taras: *"Winning the Bill Nickerson Education Award was an honour and a privilege, as it provided me the opportunity to attend the DoodleTrain courses offered by the Canadian Society of Exploration Geophysicists (CSEG). The topics covered enhanced my knowledge of the application of geoscience in industry, for example, rock physics for geophysical reservoir characterization and recovery monitoring, reservoir geophysics applications, and interpretation of the subsurface through recent sand models."*

The Ed Leith Cretaceous Menagerie – An Update.

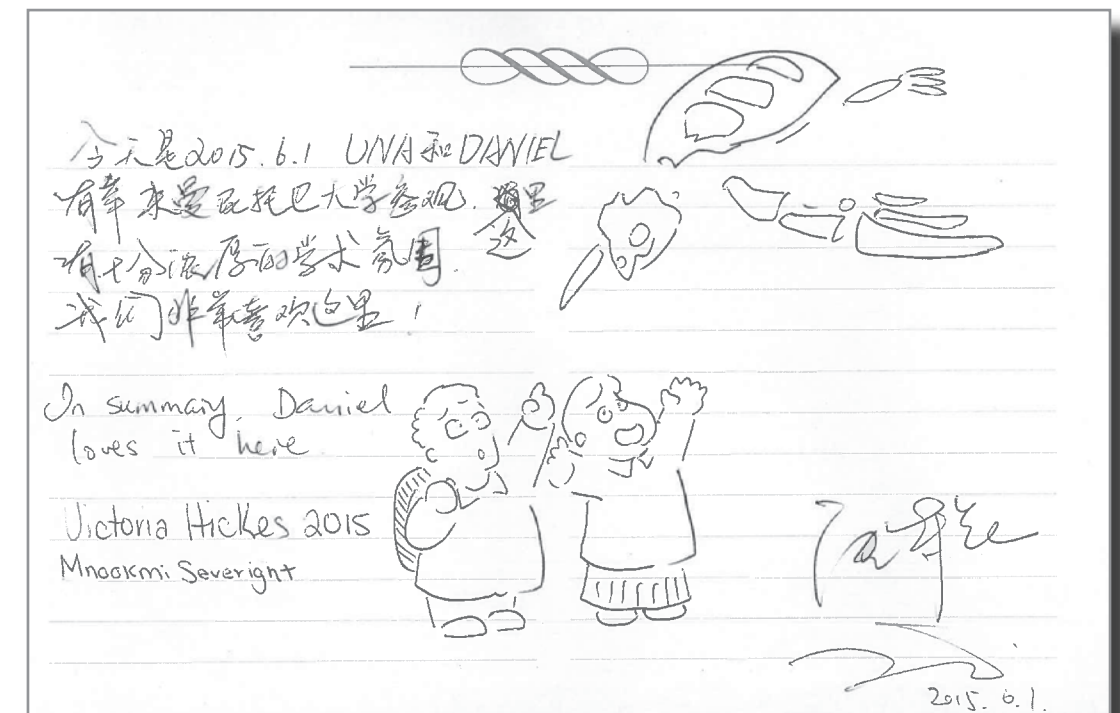
The Ed Leith Cretaceous Menagerie, located on the ground floor of the Wallace Building, opened in 2003. It is a gathering place for students and visitors and contains four spectacular skeletal replicas of gigantic creatures of the Cretaceous Period as well as several interpretative panels. The gallery is dedicated to **Ed Leith** who taught in the Department from 1935 to 1971 and who continued to contribute to outreach, archival collections, and paleontological research during his long tenure as an Emeritus Professor.

This important feature of the Wallace Building was built entirely by donations from faculty and students but especially alumni.

The museum brings joy and inspiration to so many people of all ages from so many places. Visitors to the museum come not only from Manitoba and Canada, but also from 28 other nations including Argentina, Korea, and Uzbekistan. Students find the museum not only interesting but also a valuable place to reflect

and relax. Comments in the guest book range from *"Great way to finish an exam - please keep this for a long time! One of the best buildings"* to *"WOW! I wish I was in Geology!"* There are also many comments from parents and children ranging from *"The kids loved coming here and seeing all the rocks and fossils"* to *"This is the best, someday I want to dig up fossils"* and even *"Who would win in a fight between the 4 creatures? I think the ugly fish might"*. Recently staff from the Department of Geological Sciences noticed an interesting entry in the guest

book (pictured below). Thankfully, **Dr. Feiyue Wang** (Department of Environment and Geography and the Centre for Earth Observation Science (CEOS)) was able to translate: *"Today is June 1, 2015. Una and Daniel for privileged to visit the U of M. It had a heavy academic atmosphere. We liked here very much"*.



Environmental Studies.

The Riddell Faculty is often asked to explain the nature of Environmental Studies as it differs from Environmental Science. Environmental Studies focuses on the social, institutional, political, and legal aspects surrounding environmental issues and concerns. Through an interdisciplinary approach, environmental issues relating to human population, sustainable resource development, pollution conservation, environmental health, and, endangerment and preservation of species are explored. Such interdisciplinary and diverse approaches, however, lead to a wide range of potential careers.

Three of our recent Environmental Studies graduates have established quite different careers while benefitting from some distinctive features of the degree.

Lindsey Banman (B.Env.St.(Maj.)/2014) is the Environmental Programs Coordinator at HyLife Ltd, Canada's leading pork producer. She became interested in this type of environmental work in her program and could see a future for herself in these areas of rapidly growing global importance. Lindsey credits the real world projects and in-the-field experiences as well as opportunities to meet with professionals specializing in different environmental fields. To quote Lindsey: ***"My professors and instructors were also terrific mentors and were a huge help with connecting me to specific people to network with along the way."***

Amanda Huculak (B.Env.St.(Hons.)Coop/2009) is the Co-founder and Director of Educational Experiences at Travel Roots, a boutique travel company that promotes socially responsible travel around the globe. She had always loved to travel, and for her degree her focus area was Sustainable Tourism. To quote Amanda: ***"If planned and managed properly there is a real opportunity to travel a bit off the beaten track, support small local businesses, contribute to local community development initiatives, and have an incredible travel experience"***. Further information about Travel Roots can be found at www.travelroots.org

Sean Goertzen (B.Env.St.(Hons.)/2012), following graduation served on the Mayor of Winnipeg's Environmental Advisory Committee where he explored innovative ways for the City of Winnipeg to reduce nutrient loading into Lake Winnipeg. In 2013, Sean went to the University of Toronto to pursue a Masters in Public Policy. On top of his passion for environmental and socioeconomic issues, Sean built a skill set in policy analysis and development that he put to use working in the Ontario Ministry of the Environment and Climate Change. Currently he is participating in the Manitoba Legislative Internship Program.

Pictured right (top to bottom): Lindsey Banman , Amanda Huculak and Sean Goertzen.

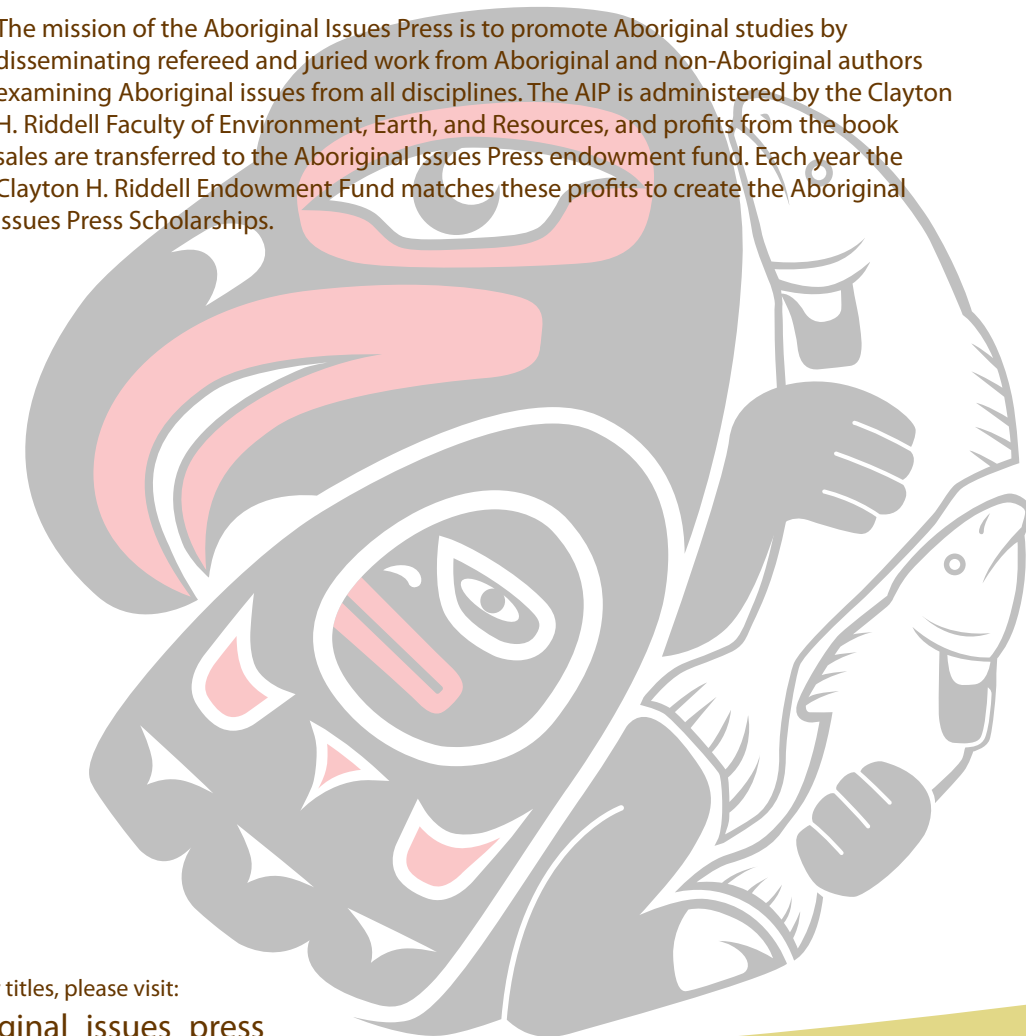
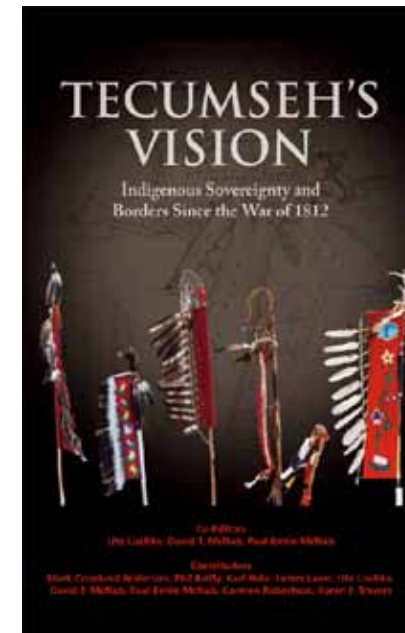


Aboriginal Issues Press.

Recently, the Aboriginal Issues Press (AIP) released two new titles. ***"Tecumseh's Vision: Indigenous Sovereignty and Borders Since the War of 1812"*** is co-edited by Ute Lischke, David T. McNab, and Paul-Emile McNab. It is a compilation of chapters by scholars from across Canada and the USA illustrating the history of ***"the more than two hundred year relationship between Indigenous peoples and its borders from the war of 1812-1814 up until the Idle No More movement that swept across Canada in 2012 to 2014"***. The chapters cover a wide array of topics including an analysis of online comments following articles on the Idle No More movement, the work of Anishinaabe artist Norval Morrisseau, and the representation of Anishinaabe children in the writings of Louise Erdrich.

"My Silent Drum" By Ovide Mercredi is a collection of poetry and thoughts. To quote the author: ***"I wrote these words, in a style that is free, based on an idea that becomes a short story. It may not be poetry as expressed from the perspective of Euro-Canadian literature, the words and thoughts are mine as one Indigenous voice drumming... silently"***. The foreward, by President and Vice-Chancellor of the University of Manitoba Dr. David Barnard describes Ovide Mercredi as: ***"a leader in the communities where he has lived, in our province of Manitoba, and at the national level as National Chief of the Assembly of First Nations"***. Dr. Barnard concluded: ***"These poems help us to think about our nation and ourselves"***.

The mission of the Aboriginal Issues Press is to promote Aboriginal studies by disseminating refereed and juried work from Aboriginal and non-Aboriginal authors examining Aboriginal issues from all disciplines. The AIP is administered by the Clayton H. Riddell Faculty of Environment, Earth, and Resources, and profits from the book sales are transferred to the Aboriginal Issues Press endowment fund. Each year the Clayton H. Riddell Endowment Fund matches these profits to create the Aboriginal Issues Press Scholarships.



For more information or to order these and other titles, please visit:
umanitoba.ca/environment/aboriginal_issues_press

Picturing the Planet.

As a regular feature "*Picturing the Planet*" brings inspiring and informative images taken by our students, staff, and faculty. This image shows a group of boreal woodland caribou moving through the boreal forest in the Sahtú region of the Northwest Territories. Dene people describe t̥q̥dz̥ı (boreal woodland caribou) as being darker colored, larger and heavier than zekw̥ę (barren-ground caribou). The image was captured by **Jean Polfus**, a Ph.D. student in the Natural Resources Institute. Her research focuses on non-invasive population genetics and traditional knowledge of caribou populations in partnership with communities in the Sahtú Region of the Northwest Territories, Canada.

