



Canadian Polar Commission  
Commission canadienne des affaires polaires

# CANADIAN POLAR COMMISSION 2013-14 ANNUAL REPORT





Cover:  
McGill University geography professor  
Wayne Pollard stands at the edge of highly  
saline Lost Hammer Spring on Nunavut's  
Axel Heiberg Island.  
(Photo: Dale Andersen)

Photo this page: Katriina O'Kane







● CANADIAN POLAR COMMISSION  
COMMISSION CANADIENNE DES AFFAIRES POLAIRES

---

Suite 1710 Constitution Square  
360 Albert Street  
Ottawa, Ontario K1R 7X7  
Canada  
Tel./Télé. : 613 943-8605  
Fax/Télec. : 613 943-8607  
E-mail/C.élec. : mail@polarcom.gc.ca  
www.polarcom.gc.ca

The Honourable Minister of Aboriginal Affairs  
and Northern Development  
Terrasses de la Chaudière  
10 Wellington Street  
North Tower, Room 2100  
Gatineau, Quebec  
K1A 0H4

Dear Minister:

On behalf of the Canadian Polar Commission, I am pleased to submit to you the Commission's annual report, which covers the period from April 1, 2013 to March 31, 2014.

Sincerely,

Nellie Cournoyea  
Acting Chairperson

Canada



## TABLE of CONTENTS

Mandate.....	6
Board of Directors .....	7
Chairperson's Message .....	8
Executive Director's Report .....	9
Strategic Outcome and Priorities .....	11
Financial Statement .....	23
Personnel .....	24





Photo: Katriina O'Kane





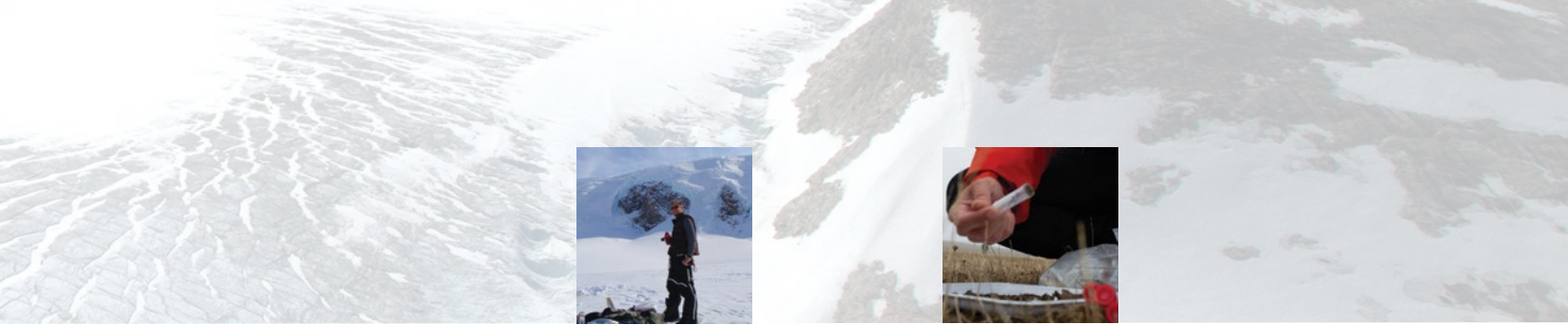
## MANDATE

Established in 1991, the Commission is Canada's primary polar knowledge agency, whose purpose is to promote the development and dissemination of knowledge of the polar regions (Arctic and Antarctic). It contributes to public awareness of the importance of polar knowledge to Canada; enhancing Canada's international profile as a circumpolar nation; and advising the Minister on any matter related to the polar regions.

In carrying out its mandate, the Commission builds and maintains polar knowledge networks, synthesizes knowledge to identify opportunities, issues and trends, and communicates knowledge and syntheses of research findings.

The Commission serves as Canada's primary point of contact with the circumpolar knowledge community, and is Canada's adhering body to the International Arctic Science Committee (IASC) and the Scientific Committee for Antarctic Research (SCAR).

In addition, the Commission maintains a liaison with research organizations and institutes throughout the circumpolar world, providing guidance into multilateral research projects relevant to Canadian interests.



## BOARD of DIRECTORS

The Board of Directors is the governing body of the Canadian Polar Commission.

Appointed by Governor in Council, they are responsible to Parliament through the Minister of Aboriginal Affairs and Northern Development. The Board provides direction and delegates authority to the Executive Director, who manages the Commission.

### Members

Bernard W. Funston, Chairperson  
(to 31/10/2013)

Nellie Cournoyea (Acting Chairperson)  
Inuvik, Northwest Territories

Barrie Ford  
Kuujjuaq, Quebec

Martin Fortier  
Quebec City, Quebec

Robert Gannicott  
Yellowknife, Northwest Territories

David Hik  
Edmonton, Alberta

Rob Huebert  
Calgary, Alberta

Maxim Jean-Louis  
Sudbury, Ontario

John Nightingale  
Vancouver, British Columbia

Darielle Talarico  
Whitehorse, Yukon

**Inset photos:**  
(Left) Luke Copland  
(Right) Katriina O'Kane



## CHAIRPERSON'S MESSAGE

Polar Knowledge is central to the mandate of the Canadian Polar Commission, and this is a pivotal time for polar knowledge in Canada.

Canada is chairing the Arctic Council, and Northerners are steadily gaining more political and economic power, most recently through devolution of lands and resource management responsibility to the Northwest Territories government. The Canadian High Arctic Research Station will open in Cambridge Bay in 2017, and will stimulate new northern research. Self government in the North is having a positive effect on government policies, including how research is done – northerners are getting more interested and involved in research, not just as field assistants, but also as planners and researchers. And, in Canada and around the world, interest in the Arctic and Antarctic is rising.

Keeping track of the state of polar knowledge in Canada – monitoring it and reporting to Canadians – is an important part of the Commission's mandate. In the northern regions of Canada there is a strong appetite for new knowledge that we can apply to improving the quality of life in across the North. And there is plenty of new knowledge being created by researchers, some working closely with people in northern communities, or living in the North themselves. This year the Commission launched a major report under this part of its mandate. The State of Northern Knowledge in Canada outlines, from a northern point of view, what research has accomplished over the seven years starting with International Polar Year, and what the knowledge needs are now and for the foreseeable future. It's the first report of its kind in Canada. If you are involved in planning, funding, or doing research in the North, I encourage you to read it.

Making information about polar regions readily available to Canadians is another part of the Canadian Polar Commission's mandate. The Commission has created three new ways to help people get access to knowledge, make connections with the experts, and find out about important conferences and events. You'll learn about these – the Polar Blog, the Polar Knowledge App, and the Canadian Polar Commission Facebook Page – in this annual report. I invite you to try them out.

In closing, I would like to thank outgoing Commission Chair Bernard Funston and acknowledge his leadership in catalyzing the reinvigoration of the Canadian Polar Commission as an important federal government agency that is contributing significantly to Canada's objectives pertaining to northern and polar issues.

Nellie Cournoyea (Acting Chairperson)

**Inset photos:**  
(Left) Katriina O'Kane  
(Right) Anne Hamilton





## EXECUTIVE DIRECTOR'S REPORT

I am very pleased to report that the revitalized Commission continues to make tremendous progress towards its strategic priorities, program delivery, and improvement of management practices and governance. Arctic Science Summit Week (ASSW), in April, 2013 in Krakow, Poland provided an excellent opportunity to raise the profile of our current initiatives, further strengthen our international connections, and build our engagement with the early career scientists that comprise APECS. Much of the success outlined in this year's Annual Report can be linked to connections made at ASSW.

We have achieved significant progress in strengthening the Canadian Network of Northern Research Operators, a vital element that supports the full spectrum of knowledge creation in Canada's north. Similarly, our efforts to advance the work of the Sustaining Arctic Observing Networks (SAON) initiative in Canada is contributing to enhancing monitoring efforts here and across the circum-arctic region. Both of these organizations are now better prepared to collaborate with the nascent Canadian High Arctic Research Station and its research program, aligned with Canada's overarching Northern Strategy.

We are very proud to have worked with hundreds of northerners and northern experts in the development of our State of Northern Knowledge in Canada report, and are looking forward to ensuring that it is used to guide future research efforts in Canada, and throughout the Arctic through the International Arctic Science Committee's third International Conference on Arctic Research Planning (ICARP III) process.

We have dramatically increased the profile of new polar knowledge in Canada through various media, including the Polar Blog partnership with Canadian Geographic, our Facebook pages, and the Polar Knowledge App. We have reached out to northerners with the Northern Eureka's series on CBC North radio, and have initiated work on a number of new public lecture events.

This year the Commission welcomed the Northern Scientific Training Program on board, and through it delivered financial support to almost 400 students at educational institutions across the country, and rolled out a new user-friendly on-line application system.

We are proud that we were able to bestow the Northern Science Award medal and prize upon laureate Dr. Gérard Duhaime, and thrilled that the presentation was made by the Governor General, His Excellency the Right Honourable David Johnston.

In closing, we have also made progress to further strengthen the management and operation of the Commission, and ensure its effective governance by our Board of Directors. I would like to extend my thanks, on behalf of the Commission, to outgoing Chair Bernard Funston, for his dedication to the revitalization of this organization and generous sharing of his polar knowledge and experience.

Dr. David J. Scott (Executive Director)

**Inset photos:**  
(Left) Luke Copland  
(Right) Pierre Fogal



Photo: Katriina O'Kane



Throughout this report we present postings from the Polar Blog, a series on polar issues and research presented by the Canadian Polar Commission in partnership with Canadian Geographic magazine. The Polar Blog appears online at [www.cangeo.ca/blog/polarblog](http://www.cangeo.ca/blog/polarblog), and select postings are published in issues of the magazine.



## Strategic Outcome and Priorities

Our goal, as Canada's primary national institution dedicated to polar knowledge, is to ensure that Canada fully embraces its place as a polar nation. To achieve its strategic outcome, increased polar knowledge, the Commission's work is guided by the three-year strategic plan developed by the Board for the period 2012-2015. The plan outlines the following priorities:

- Maintain and build active polar knowledge networks
- Synthesize polar knowledge to identify opportunities, issues and trends
- Effectively communicate polar knowledge and syntheses of research findings

THE CANADIAN POLAR COMMISSION THIS YEAR

### Strategic Priority 1: *Maintain and build active polar knowledge networks*

#### Northern Office in Yellowknife

Completing its first year in operation, the Commission's northern office in Yellowknife, Northwest Territories, has been central to its knowledge gathering, networking, and communication in the North. Accordingly the office, staffed by Northern Coordinator David Miller, has been active strengthening connections with northern decision-makers and organizations and in initiating a number of knowledge-sharing events, including a major northern traditional knowledge conference and a lecture series on Arctic issues. In collaboration with the senior science advisors of the Yukon, Northwest Territories, and Nunavut governments the northern office helped develop the Northern Science Advisors Forum, a vehicle for sharing information on Arctic research and research policy issues that meets quarterly. The northern office provided senior level support and liaison for the planning of the Government of the Northwest Territories' Science Agenda Research Partnerships Conference over the course of the six-month planning period prior to the April 2014 event.

The Canadian Network of Northern Research Operators (CNNRO, [www.cnnro.ca](http://www.cnnro.ca)) is a pan-northern federation of the operators and managers of the infrastructure, widely distributed across the Arctic and sub-Arctic, that serves Canadian and international researchers. The Commission recognizes that by improving communication and cooperation among these important components of Canada's polar

## A look at the complexities of reaping the rewards of Arctic resource development

by Mark Anderson in *The Polar Blog*



Photo: Isabelle Dubois/ArcticNet

Like much of Canada's Arctic, Quebec's Nunavik region boasts vast energy and mineral reserves. Inuit there are increasingly accessing the potential benefits from their development by negotiating agreements with companies whose projects bring guarantees of employment and local business development opportunities.

It's tempting to assume that this will bring an end to poverty in these communities, but although poverty in the North is decreasing as a whole, the reality is more complex.

According to Laval University sociologist Gérard Duhaime, who has worked with Aboriginal Peoples in Nunavik for more than 30 years developing accurate measures of living conditions (most recently as Canada Research Chair on Comparative Aboriginal Condition), the benefits of resource extraction flow to communities nearest a mine, but are not being reflected equally by all communities, or even by all members of a single community.

"If a mine decides to negotiate only with the very closest village, rather than all the villages in a region, you end up with economic disparity," he says. Likewise, when it comes to employment, "it increases the potential for certain households to consume more and have a better life." But those who can't work because they lack the education or skills, or are not interested in the specific opportunities, benefit less.

This, Duhaime says, can strain the social fabric. "You have an increase in social stratification. Instead of seeing yourself as a group, you begin to see yourself as different classes of people competing for the same resources."

Fortunately, Duhaime sees a new generation of Inuit leaders who are working to address these challenges — in part by negotiating more equitable and inclusive agreements with resource development companies.

"I'm quite optimistic," says the professor. "The younger generation have this ideology that if there is going to be change for the better, it must come from the people themselves, from their energy and involvement. Clearly, they're heading in the right direction."





Photo: Katrina O'Kane



knowledge creation enterprise and bringing enhanced coordination and efficiency to their operations, costs can be reduced and access improved for researchers conducting field-work. The Commission continues to provide guidance and secretariat support to the CNNRO, and as a result the network's leaders and membership were able to incorporate as a non-profit organization, elect a slate of directors, initiate a strategic planning exercise, and begin fundraising efforts. The CNNRO continues to contribute expert advice to the development of the Canadian High Arctic Research Station, and is raising its international profile and connections by representing Canada at the Forum of Arctic Research Operators (FARO, [www.faro-arctic.org](http://www.faro-arctic.org)).

### International Scientific Coordination

The International Arctic Science Committee (IASC) is a non-governmental organization that facilitates and promotes cooperation among countries that carry out Arctic research — anywhere in the Arctic, and in any field ([www.iasc.info/home/iasc](http://www.iasc.info/home/iasc)). The Canadian Polar Commission is Canada's adhering body to the organization, and its financial support enabled Canadian experts to participate on IASC's working groups: Terrestrial (Dr. Warwick Vincent, Vice-Chair), Marine (Dr. Humfrey Melling), Cryosphere (Dr. Martin Sharp, Chair), Atmosphere (Claude Labine), and Social and Human (Dr. Gail Fondahl, Vice-Chair). Julie Friddell has recently been appointed as the Canadian member to the IASC Data Steering Committee. The Commission convened a preparatory meeting involving the Canadian delegation to IASC's Arctic Science Summit Week (ASSW) 2013, and participated actively at IASC Council and other meetings during ASSW 2013. The Executive Director

represented Canada at the IASC Council meeting and supported the Council's decision to adopt a Statement of Principles and Practices for Arctic Data Management ([www.iasc.info/home/iasc/data](http://www.iasc.info/home/iasc/data)).

The Commission provided guidance on such topics as science-policy integration, career development, and involvement of northern communities in research, at workshops sponsored by the Association of Polar Early Career Scientists (APECS, [www.apecs.is](http://www.apecs.is)).

Successful research in the polar regions requires cooperation and collaboration; and the rapid changes under way in the polar regions— changes that affect the entire globe —can only be understood through widespread and coordinated monitoring. Sustaining Arctic Observing Networks (SAON), an initiative of the Arctic Council and IASC, is developing an international network of long-term, coordinated, pan-arctic observing and data sharing systems for information on environmental and socio-economic change. The SAON International Council includes representatives of the eight Arctic countries, the permanent participants in the Arctic Council, and the Arctic Council working groups, as well as members of IASC and the World Meteorological Organization. The Canadian Polar Commission now represents Canada on the SAON International Executive Committee, and it continues to provide coordination and secretariat functions for SAON's Canadian Ad Hoc Working Group. SAON Canada ([www.arcticobservingcanada.ca](http://www.arcticobservingcanada.ca)) is developing two strategic projects: the first, an inventory of existing monitoring sites and infrastructure in Canada's North, will provide the basis for an analysis of gaps in coverage; the second, a communications pilot project, will develop a "Results Bulletin" information product that will highlight the policy relevance of new knowledge being created by these monitoring networks, in partnership with the Canadian chapter of APECS. Both projects will launch in 2014.



## An Arctic researcher works to reduce the impact of trace contaminants in country food

by Mark Anderson in *The Polar Blog*

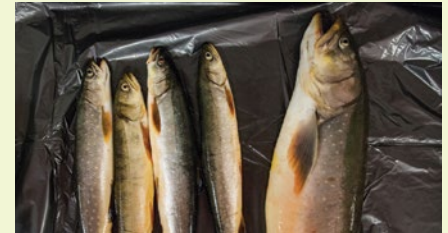


Photo: Katriina O'Kane

For Inuit living near the Arctic Ocean, hunting and fishing provide food for the table, and are vitally important to community life and culture. Though fresh and highly nutritious, country food comes with a price: mercury and other environmental contaminants, carried to the polar region by wind and ocean currents, concentrate in predators at the top of the food chain, including marine mammals and fish that comprise a large part of the Inuit diet.

But what if there was a way to consume the same amount of meat, and avoid the contaminants?

University of Montreal researcher Catherine Girard has been measuring the mercury levels in country food gathered in the Nunavut community of Resolute Bay, then feeding the samples into an artificial gut—a lab-based simulation of a human gastro-intestinal tract—to see how much mercury actually stays in the body after digestion, and whether anything can be done to reduce absorption rates. She's also experimented with preparing the contaminated samples in different ways, and adding other foods to the mix to see if they have an impact on the absorption rates (scientifically referred to as bio-accessibility) of mercury. Girard discovered that the ability to absorb mercury can be influenced by cooking techniques, and also by dietary practices.

"My preliminary work with the digestion lab indicates that consuming tea with contaminated fish can actually reduce the amount of mercury you're exposed to," she says. "In fact, it was surprising to see the degree to which tea works to reduce the bio-accessibility of mercury." This is a happy coincidence, as Inuit are some of the world's most avid tea drinkers.

Girard says that while her research is preliminary, it could lead to new guidelines for safer consumption of country foods — best practices in terms of how to prepare the food, and what to eat and drink with it. This will benefit the many Inuit for whom "eating local" means hunting and fishing on the sea and the sea ice.





As Canada's adhering body to the Scientific Committee on Antarctic Research (SCAR [www.scar.org](http://www.scar.org)) the Commission is responsible for representing Canada's national interests in Antarctic and bipolar science as well as for disseminating relevant information from SCAR to Canada's polar research community. As the global polar scientific community continues to promote an integrated, bipolar approach to its research activities, it is important for the Commission to ensure Canadians are aware of our scientific community's contribution to polar knowledge creation activities in the Antarctic and their relevance to the Canadian context. For example, Canadian researchers are active in SCAR coordination efforts through participation in its groups and committees, including the three Standing Scientific Groups: Geosciences (Drs. Luke Copland, P. Thayyil Jayachandran and Wayne Pollard); Life Sciences (Drs. Kathleen Conlan, Émilien Pelletier, Irene Schloss and Diana Varela); and Physical Sciences (Drs. Dermot Antoniades, Nathan Gillett, Thomas James, and Philippe Tortell). The Standing Scientific Groups coordinate international scientific research in their respective fields. Dr. Peter Pulsifer is a member of the Standing Committee on Antarctic Data Management and the Standing Committee on Antarctic Geographic Information. The Commission has begun its preparatory work for the XXIII SCAR Meetings and Open Science Conference that will be held in Auckland, New Zealand, in August and September 2014.

The Canadian Committee on Antarctic Research (CCAR, [www.polarcom.gc.ca/eng/content/canadian-committee-antarctic-research-ccar](http://www.polarcom.gc.ca/eng/content/canadian-committee-antarctic-research-ccar)) is Canada's National Antarctic Committee recognized under the provisions of SCAR. It advises on Antarctic research matters, ensures that the Canadian polar research community participates in Antarctic research planning activities, and encourages international cooperation in Antarctic and bipolar research.

This year the Commission has taken measures to re-energize the Antarctic portion of its mandate and consequently Canada's Antarctic efforts, with the goal of establishing a formal national program firmly in mind. As an initial step, it has appointed nine new members as well as a new Chair to CCAR, and is guiding and supporting the Committee in the development of a Canadian Antarctic research program.

The Commission also organized and conducted bilateral meetings with key international organizations including the British Antarctic Survey (Natural Environment Research Council's Arctic Office), the Norwegian Polar Institute, the Alfred Wegener Institute (Germany), the National Institute of Polar Research (Japan), and the Korean Polar Research Institute (KOPRI), to foster greater collaborations and partnerships in arctic research activities in general, and linkages to the Canadian High Arctic Research Station (CHARS) specifically. Commission officials also briefed the newly appointed Canadian Ambassador to Poland, Alexandra Bugailiskis, on Canadian northern and arctic knowledge and research-related activities and issues in preparation for her participation in a political panel at ASSW 2013, "Arctic Dialogue, Science-Policy Interface".

The Commission continued to provide guidance and assistance to the Canadian High Arctic Research Station (CHARS, [www.science.gc.ca/CHARS](http://www.science.gc.ca/CHARS)) on the development and implementation of its Science and Technology program, monitoring initiatives, and partnership plans. The new research station to be built in Cambridge Bay, Nunavut will complement and reinforce Canada's existing network of arctic and subarctic research facilities and ongoing federal, territorial, and academic research priorities. Through the station and its Science and Technology program, Canada will expand

## How an inventive Canadian experiment is exploring the possible effects of climate change in the Arctic

by Mark Anderson in *The Polar Blog*



Photo: Janice Lang, PCSP NRCAN

What impact will global warming have on tundra ecosystems in the Arctic? For the last two decades, University of British Columbia researcher Greg Henry has been endeavouring to find out. His method? A simple yet effective experiment that involves metre-square, open-topped Plexiglas chambers placed over bits of tundra, which raises the temperature of the plots by a couple of degrees, simulating a warmer climate.

Since 1992, Henry and his student researchers have been using these chambers to warm seven different tundra ecosystems in Nunavut's Ellesmere Island and Daring Lake, N.W.T., in order to discover how individual plant species and different plant communities react.

His experiment has been replicated by scientists from around the world. Their data is showing that, for many species, warmer climates are breeding healthy, strong individual plants that flower early and produce large, fertile seeds. When they look at entire plant communities they're seeing more complex changes.

"In terms of biodiversity, we're finding that the woody plants, the shrubs, are taking over," says Henry. "They're increasing their cover and biomass and they're creating shade, which squeezes out ground-hugging organisms such as moss and lichens."

An increasingly woody tundra could raise ground temperatures: while shrubs absorb more carbon dioxide than moss or lichens — mitigating the effects of global warming caused by the greenhouse gas — their dark leaves and branches also soak up more heat from the sun.

"One prediction is that if the surface changes from a light-coloured tundra dominated by grasses, lichens and mosses, to a dark-coloured surface of shrubs, it could have the same warming effect as doubling the amount of CO<sub>2</sub> in the atmosphere," says Henry.

Outside the warming chambers, however, other factors are at play—especially caribou and muskox. These large herbivores consume tons of vegetation each year, and new research is suggesting that they may help limit the spread of shrubs that Henry and his colleagues are seeing.

Henry's research is showing how ingenuity, long-term monitoring and international coordination can bring new understanding of the changes occurring in the Arctic—changes that affect the entire globe.



Photo: Anne Hamilton

its capacity for collaborative international research projects to address the highest priority arctic issues. In March, Dr. Martin Raillard was appointed as Chief Scientist of CHARS.

The Commission worked closely with its United States counterpart, the U.S. Arctic Research Commission, to facilitate Canadian expert participation on a U.S. National Academies of Science (NAS) study team developing a report on emerging research questions in the Arctic. Jointly with colleagues at the NAS-Polar Research Board, the Commission organized sessions of the study team in Ottawa to enable team members to hear Canadian perspectives on emerging research issues. The Commission began organizing the fourth Canada-US Northern Oil and Gas Research Forum, slated to take place in Yellowknife, Northwest Territories, November 4-6, 2014 ([www.nogrf.com](http://www.nogrf.com)) with

its partners, Aboriginal Affairs and Northern Development Canada and the US North Slope Science Initiative.

The Commission has also worked this year with representatives from a number of other countries and international research institutes to facilitate partnerships and collaborations on arctic research. These include Korea, France, Italy, Norway, Finland, China, Germany (the Alfred Wegener Institute), the United Kingdom, and Japan.

The Commission organized the Ottawa portion of the Alfred Wegener Institute mission to Canada in May 2013. A delegation of scientists, including Institute Director Dr. Karin Lochte, met with key government and academic representatives to advance discussions on future collaborative projects and activities involving the Institute and Canadian research-based institutions. The Institute also participated in a meeting of the federal interdepartmental Committee of Assistant Deputy Ministers on Arctic

Science and Technology. The mission to Canada of the Alfred Wegener Institute has both strengthened existing arctic research partnerships between Canada and Germany and led to the establishment of new ones.

During the last quarter of the year, the Commission began work with the Embassy of Italy to organize a joint Canada-Italy Workshop on Arctic Science and Technology Collaboration. The workshop will take place in Ottawa on October 22, 2014 ([www.polarcom.gc.ca/eng/content/canada-italy-arctic-science-and-technology-collaboration-workshop](http://www.polarcom.gc.ca/eng/content/canada-italy-arctic-science-and-technology-collaboration-workshop)). The Commission is also an active member of the organizing committee for the Canada-Norway Transatlantic Science Week, planned for 27-28 October 2014 in Toronto.



## Strategic Priority 2:

### *Synthesize polar knowledge to identify opportunities, issues and trends*

This year the Canadian Polar Commission completed its landmark report on the State of Northern Knowledge in Canada. Produced under the Commission's mandate to monitor and report to Canadians on the state of knowledge of the polar regions, this report analyses the significant gains made since the beginning of International Polar Year 2007-2008, with a view to determining current knowledge gaps and fostering collaborative opportunities to address them.

The report focuses on the perspectives of northerners on progress to date and future knowledge needs, and is built on semi-structured interviews with 114 northern subject matter experts, two-thirds of them resident in Yukon, Northwest Territories, Nunavut, Nunatsiavut, and Nunavik. The information they provided was corroborated and supplemented through an extensive survey of peer-reviewed and grey literature, and reinforced by further expert consultation during the 18-month study.

In September 2013 the Commission organized and delivered four engagement workshops on its State of Northern Knowledge in Canada project. These involved officials from federal agencies and departments; academics and other experts; northerners and private sector representatives; and representatives from international missions in Ottawa. Discussions focused on the development of the report, as well as on research and knowledge issues and their linkages to policy and decision-making.

The report's immediate objective is to inform Canadians, especially those living in Canada's North, of the state of northern knowledge so they can better influence future efforts to address priority knowledge gaps, and to assist decision-makers in identifying and acting on those key knowledge gaps most critical to northerners and the Canadian North. It also addresses the issue of northern capacity with a view to increasing northern involvement in research at all levels, from the establishment of policies and priorities to fieldwork. The report has four cross-cutting themes:

- Preparing for Large-Scale Resource Development
- Increasing Community Sustainability;
- Strengthening Resilience; and
- Understanding Environmental Change.

The report highlights new knowledge that can be used to address many of the issues northerners have identified as important: among them mental wellness, the high cost of living, maximizing the benefits of resource development while minimizing the environmental impacts, and more integrated, long-term environmental monitoring. It also suggests areas where further new knowledge would be beneficial. The report is available at [www.polarcom.gc.ca/sites/default/files/snk\\_report\\_english.pdf](http://www.polarcom.gc.ca/sites/default/files/snk_report_english.pdf) and is Canada's initial contribution to the Third International Conference on Arctic Research Planning (ICARP III), to be held during Arctic Science Summit Week 2015 in Japan. The report will be released in April 2014, and engagement activities are planned for 2014-15.

## High Arctic glacier researcher works to help predict the impacts of climate change

by Mark Anderson in *The Polar Blog*



Photo: Luke Copland

Each spring for the last six years, Wesley Van Wychen has foregone the comfort of his Ottawa home to spend weeks living in one of the planet's most remote, inhospitable and unusual environments: Nunavut's Devon Ice Cap in the Canadian High Arctic.

Van Wychen, a 29-year-old PhD candidate and a member of the University of Ottawa's cryospheric research team, is one of the world's leading experts on Arctic glaciers—how they move, and whether their rates of movement are changing with the climate. The answers to these questions are more than academic. Scientists have long predicted that melting Arctic ice will result in rising sea levels—with potentially devastating consequences for coastal communities—and glaciers are a big part of the equation.

"We know the Canadian Arctic is losing a lot of ice through surface melt and runoff, but we don't quite know how much is lost due to the mechanical break-off of icebergs from glaciers," says Van Wychen. By measuring the speed and thickness of some 40 glaciers that flow into the Arctic ocean, he and his team will be able to estimate how much ice is actually breaking off into icebergs, which will aid in making sea level projections.

Van Wychen is particularly interested in so-called surge glaciers, which basically lose traction and slip down the sides of mountains. One such glacier has been measured to increase its rate of flow from 10 to 15 metres per year to more than a kilometre per year. If the number and frequency of surge glaciers increases, so too would the amount of ice entering the ocean.

"We're generating baseline data we can use for future predictions," says Van Wychen, "but we don't have enough data going back in time to be able to say for certain that glacial flow rates have increased due to global warming."

In the meantime, it's reassuring to know that researchers such as Van Wychen are venturing to the farthest reaches of our poles to gain a better understanding of the potential impacts of climate change.

### Strategic Priority 3:

#### *Effectively communicate polar knowledge and syntheses of research findings*

In order to more effectively reach a greater number of Canadians, this year the Canadian Polar Commission launched three new communications channels: the Polar Blog, the Canadian Polar Commission Facebook page, and the Polar Knowledge App.

The Polar Blog, developed through the Commission's partnership with the Royal Canadian Geographical Society, appears bi-weekly on the Canadian Geographic website ([www.canadiangeographic.ca/blog/category.asp?catID=10](http://www.canadiangeographic.ca/blog/category.asp?catID=10)) and bimonthly in each issue of Canadian Geographic magazine. Highlighting the work of Canadian polar researchers, it brings a wide variety of timely and pertinent polar knowledge stories to the approximately four million people that make up Canadian Geographic's readership.

In October the Commission launched its Facebook pages in English and French. Response was both immediate and positive. Statistics provided by Facebook indicate that the bulk of the Commission's Facebook visitors range from 18 to 34 years of age, well aligned with the students and early-career polar researchers who are a key target group in the Commission's communications and awareness strategies.

Recognising that the majority of Canadians are using smartphones and tablets to obtain information, the Commission has developed an iPhone application and mobile-optimized website that delivers one-stop access to a wide variety of information from across the spectrum of polar knowledge, from Canada and around the world. The Polar Knowledge App ([www.polarcom.gc.ca/eng/content/polar-knowledge-app](http://www.polarcom.gc.ca/eng/content/polar-knowledge-app)) makes it easy to find polar knowledge experts by name, keyword, specialty, and location; locate polar research facilities and monitoring sites; learn about upcoming

polar events; discover polar projects and programming; get information on communities located in the North; identify new funding sources; and read the Polar Blog. The application also gives users quick access to important new publications such as the report on the State of Northern Knowledge in Canada. The Commission is encouraging additional Canadian and international polar knowledge organizations such as the British Antarctic Survey, the US National Science Foundation, and the Climate and Cryosphere project to make more information available via the app. At year-end, work was continuing towards a formal launch of the app at ASSW in Helsinki in April 2014, during an Association of Polar Early Career Scientists workshop.

Working with CBC North radio, the northern office initiated and developed "Northern Eureka's", a series of first-person stories that featured arctic scientists recounting the pivotal experiences that inspired their northern research careers. The series was heard across the North during the summer of 2013. The northern office initiated a collaboration with the Tłı̨chǫ Government and Prince of Wales Northern Heritage Centre to plan and fundraise for Hłàà Kati: A Festival of Traditional Knowledge, which will take place in September 2014. The Commission initiated this project and chaired meetings of the partners. In another partnership, with the University of British Columbia's Green College, the northern office initiated development and fundraising for a year-long, eight-part arctic research lecture series. This is a pilot project for an eventual three-year 24 national lecture series planned to launch in September 2014.



*Photo: Katriina O'Kane*





Photo: Katriina O’Kane

The Commission hosted a polar information session at the annual conference of the Canadian Science Writers’ Association (CSWA, [www.sciencewriters.ca](http://www.sciencewriters.ca)) in Montreal in June, 2013. Four polar researchers from diverse disciplines gave short, lively presentations to the audience of science writers and journalists from across the country. The collaboration established a link with the CSWA: its first tangible result was an article featuring the Commission in *Above and Beyond* magazine ([www.issue.com/arctic\\_journal/docs/ab\\_arcticjournal\\_janfeb2104](http://www.issue.com/arctic_journal/docs/ab_arcticjournal_janfeb2104)), written by one of the writers who attended.

The Canadian Polar Commission is committed to encouraging the young researchers who represent the future of polar knowledge in Canada, and to supporting them as they lay the groundwork for their careers. The Commission collaborates with APECS to create learning opportunities, and collaborates as well with the Association of Canadian Universities for Northern Studies (ACUNS), hosting its secretariat at the Commission’s Ottawa office.

The Commission takes pride in its active involvement on the awards committee of the Canadian Northern Studies Trust, which annually reviews applications from hundreds of students across the country, for eleven scholarships, fellowships and awards. One of these is the annual Canadian Polar Commission Scholarship, which this year was awarded to Erica Oberndorfer, an outstanding doctoral candidate from the Geography and Environmental Studies department at Carleton University. Ms Oberndorfer is working with Inuit in Makkovik, Nunatsiavut (Labrador) to investigate cultural and ecological relationships between people and plants.

## Emerging satellite and imaging technologies may help limit the increasing risks to Arctic shipping and exploration

by Mark Anderson in *The Polar Blog*



Courtesy TheArcticProject.org/Canadian Geographic

As Arctic summer sea ice recedes in the face of climate change, new opportunities are emerging for commercial shipping, energy exploration and tourism. Those activities are a challenge, however, because of a lack of detailed, timely information on how much, and what kind of ice, vessels or drilling platforms may encounter at any given time.

“There’s less ice in the Arctic than there used to be, but it’s potentially more hazardous, because we have ice floes colliding with one another,” says Randall Scharien, a post-doctoral researcher at the University of Manitoba’s Centre for Earth Observation Science. “You have thin ice that’s colliding and becoming thick ice, which could damage vessels or drilling rigs.”

One solution to mitigating such hazards is the use of ever-more-advanced radar satellite imagery, which unlike optical images (photos) can “see” Arctic ice in the dark and through clouds, and could one day be able to differentiate between relatively harmless thin, soft ice, and thick, hard ice, which could be dangerous. Scharien, a leading expert in radar satellite image interpretation, has developed a new technique that uses radar data to map melt ponds, which affect the strength of sea-ice and the amount of sunlight it reflects. This technique boosts understanding of ice and helps improve the models used to predict climate change.

Scharien says that new imaging technologies and the use of multiple satellites working together—“satellite constellations”—could greatly reduce much of the current guesswork and danger from Arctic navigation.

“When it comes to radar satellite technology, the images carry much more information than they used to, which means we have many more options than we used to,” says Scharien. Now, he says, it is a matter of finding the right combination of technologies and constellations that will give us solutions to these particular problems.

The long-term result? Helping to more safely open up the Canadian Arctic to all sorts of new possibilities.





Photo: Katriina O'Kane



## Delivering the Northern Scientific Training Program and the Northern Science Award

On April 1 2013, the Commission began administering the Northern Scientific Training Program, at the request of the Minister of Aboriginal Affairs and Northern Development Canada. This program, which has been operating for over fifty years, provides financial support for student researchers to partially offset the high cost of conducting research in the North. In response to requests from university students and professors for an improved application process, the Commission developed a new cross-platform online system that has improved the application and reporting process for the hundreds of researchers who apply for NSTP funding annually. This new system also simplified the collection of data, and facilitated the reviewing process used by the faculty members who determine which of their institution's applications are submitted for possible NSTP funding. In 2013-2014 the Northern Scientific Training Program distributed nearly one million dollars in funding to help support the northern field research of 378 students at 34 universities across the country.

The Northern Science Award, created by the Department of Indian and Affairs and Northern Development to commemorate the centenary of the first International Polar Year (1882-83), is awarded annually and recognizes a significant contribution by an individual or group to understanding of the Canadian North, and to transforming that knowledge into action. The Commission also began administering this initiative at the request of the Minister, effective April 1 2013. The award, which includes a prize of \$10,000 and the Centenary Medal, was given in 2013 to Laval University sociologist Dr. Gérard Duhaime, whose drive to find ways to improve the lives of people in northern communities has made him one of the world's leading social scientists.

The Northern Science Award was presented to Dr. Duhaime by the Governor General, His Excellency the Right Honourable David Johnston, at the Royal Canadian Geographical Society's annual College of Fellows Dinner in November 2013.

## Strengthening Management and Governance

In 2013-14 the Canadian Polar Commission continued its efforts to improve efficiency and effectiveness of its operations in the spirit of the Clerk of the Privy Council's Blueprint 2020 vision, which foresees a capable and high performing Public Service that embraces innovation, transformation and continuous renewal. The Commission has adopted the Common Human Resources Business Process (CHRBP), the standard and comprehensive blueprint for human resources operations of the Government of Canada, and has already implemented many of the associated best practices.

The Board of Directors of the Commission conducted quarterly meetings during 2013-14. At its meetings in the North, it meets with key regional and local representatives to better understand their priorities, challenges and views on key northern issues. At meetings in Inuvik, Board members were briefed by representatives of the Inuvialuit Regional Corporation, Inuvialuit Game Council and Joint Secretariat, Aurora Research Institute, Gwich'in Tribal Council, Town of Inuvik, and the Hamlet of Tuktoyaktuk. In Yellowknife the Board met with the Northwest Territories (NWT) Minister of Finance, Environment, and Natural Resources, the Honourable J. Michael Miltenberger, to discuss numerous current issues, including the NWT Lands and Resources Devolution Agreement, as well as with representatives from the Dechinta Bush University Centre for Research and Learning, and the Institute for Circumpolar Health Research.

## An innovative project is using Arctic greenhouses to build food security and community well-being

by John Bennett in *The Polar Blog*



Photo: Ellen Avard

Food is expensive in the Arctic. Whether you're gassing up your snowmobile to go seal hunting for your dinner or browsing the shelves at the grocery store—where a cabbage can cost more than \$20—feeding a family well can be challenging. Hunting and fishing are still important, but nowadays Inuit eat more “market food” than ever before. The least nutritious food is also the least expensive, and many Inuit live on low incomes. Heart disease and obesity are rising, while communities struggle with youth suicide and other social problems linked to rapid change.

Ellen Avard, a PhD candidate from Quebec City's Laval University, is working with the Nunavik community of Kuujuaq, in northern Quebec, on a project that simultaneously builds food security and community well-being—using greenhouses.

As part of a team of volunteers and local and regional organizations, Avard helped revitalize an existing greenhouse and community garden, and a new greenhouse was built. Using the practical knowledge they gained, she and her team are aiming to develop a new northern food system that works alongside the existing food system, producing high-quality, low-cost fruit and vegetables while teaching people to garden by tending to a variety of crops.

The Kuujuaq greenhouses can grow most vegetables common in southern Canadian community gardens, although tomatoes need to be babied (the buildings aren't yet heated for cold-weather use).

“People have demonstrated real interest in greenhouse-based food production,” says Avard. “They see it as a way to improve the supply of fresh food—and an opportunity to learn new skills and create jobs. They also see parallels with traditional activities like berry picking.”

A community compost project, the brainchild of Avard and volunteer Marc-André Lamontagne, collects local food waste to make rich soil, which can otherwise be difficult to come by in the North. Operated by Ungava Supervised Apartments, it doubles as a social reintegration project, employing people with disabilities.

“I'm convinced that community agriculture will become part of a new northern food system that provides better, cheaper food and also contributes to socio-economic stability,” says Avard. Others agree. Inspired by Kuujuaq's success, the Nunavik communities of Salluit and Kangiqsujuaq are planning their own greenhouse projects.



Photo: Katriina O'Kane



## Extracts from the Financial Statements for 2013-14 reported to the Receiver General and Parliament

	Program	Internal Services	Contributions (in dollars)	TOTAL	
				2014	2013 Restated (note 1)
<b>Operating expenses</b>					
Salaries and employee benefits	\$871,427	\$231,645	\$ -	\$1,103,072	\$906,625
Professional and special services	27,595	72,228	60,320	160,143	266,685
Travel and hospitality	120,697	1,175	24,660	146,532	189,108
Accommodation	83,445	22,182	6,640	112,267	135,418
Board of Directors' Fees	26,790	-	-	26,790	71,955
Printing and publishing	50,951	13,544	-	64,495	34,463
Office supplies	22,974	6,108	63,380	92,462	27,834
Memberships	26,668	-	-	26,668	27,660
Amortization of tangible capital assets	17,950	4,771	-	22,721	23,360
Contributions	1,096,000	-	20,000	1,116,000	20,000
Telephone and telecommunications	9,018	2,397	-	11,414	11,783
Net cost of operations before government funding	\$2,353,515	\$354,050	\$175,000	\$2,882,565	\$1,714,891

### 1. Restatement of prior years' accounts receivable

In 2013-14, it became apparent that the creation of an accounts receivable related to employee benefits for the fiscal year 2011-2012 and fiscal year 2012-2013 was not justified. The balance created did not then and does not meet the definition of an asset nor a receivable as there never was a future benefit nor a realizable value. The effects of the correction of this error on the 2012-2013 financial statements are presented in the table below.

	2013 as previously stated	Effect of the adjustment	2013 Restated
Accounts receivable	\$72,499	(\$49,927)	\$22,572
Program expenses/net cost of operations	1,664,964	49,927	1,714,891
Departmental net debt	54,609	49,927	104,536
Departmental net financial position	(4,537)	(49,927)	(54,464)
Increase in salaries and employee benefits	856,698	49,927	906,625



## PERSONNEL

Dr. David J. Scott (Executive Director)

Jean-Marie Beaulieu (Senior Science Advisor)

John Bennett (Manager, Communications and Information)

Sandy Bianchini (Administrative Assistant)

Susan File (Research Analyst)

Julie Fortin (Finance Officer)

David Miller (Northern Coordinator)

Marc Meloche (Senior Policy Analyst)

Nathalie Robillard-Bergeron (Advisor, Northern Scientific Training Program)

Rhonda Turner (Manager, Northern Scientific Training Program)

Dr. Tara Zamin (Research Analyst)