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HOW YAZIDI REFUGEES KEEP
THEIR CULTURE ALIVE IN CANADA

EXPLORER **MARIO RIGBY**,
DIAMOND **INNOVATION IN N.W.T.**,
SKATING LEGEND **ELVIS STOJKO**
AND MUCH MORE!



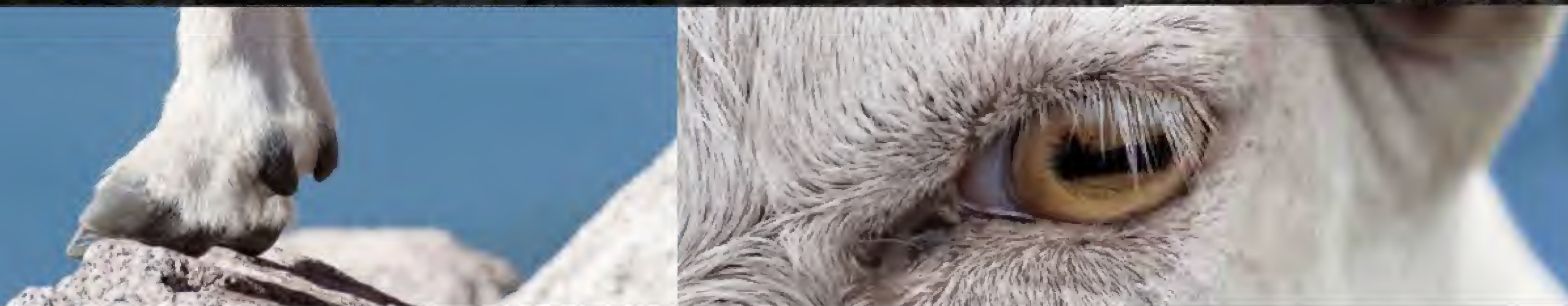
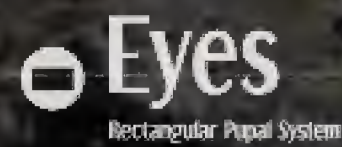
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JANUARY/ FEBRUARY 2020

ON THE COVER

An emperor penguin protects its chick on Antarctica's icy Ross Sea. The photo is featured as part of Canadian polar photographer Paul Nicklen's SeaLegacy project (page 34).
Photo by Paul Nicklen



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34 TURNING THE TIDE

Paul Nicklen, the renowned wildlife photographer and SeaLegacy co-founder, shares stunning images from the poles in a time of climate change
Words and photography by Paul Nicklen

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On its 90th anniversary, *Canadian Geographic* presents the 90 most influential explorers in the nation's recorded history
By Nick Walker

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Celebrating the RCMP's 100th anniversary by riding along with the force's little-known West Coast Marine Services division
Words and photography by Jill Heinerth



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A glimpse into the lives of Yazidi who've found refuge in Canada
*By Susan McClelland
with photography by Peter Power*

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March/April 2020 introduces Re:location, a new project highlighting the forced movement of Canadian communities, and more

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Figure-skating great Elvis Stojko revisits his happy childhood in the country near Newmarket, Ont.

CLOCKWISE FROM TOP: KRISTEN TEUNISSEN; JAVIER FRUTOS; MICHAELA BLONDIN; CHRIS BRACKLEY; KEVIN BOUFFARD; JAVIER FRUTOS

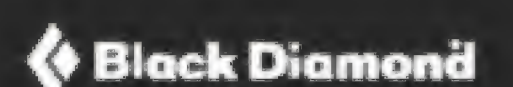
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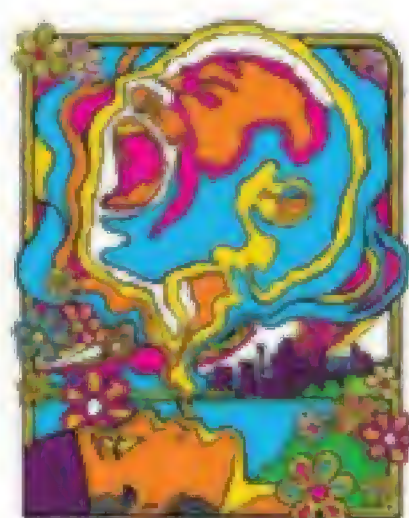
The legendary primatologist and conservationist reflects on her remarkable life's journey, the power of youth, and the necessity of hope.

cangeo.ca/jf20/jane

COMMENT

ON "STATE OF THE MARIJUANA NATION"

(September/October 2019)



I'm not against the decriminalization of marijuana, but I fail to understand why a major cannabis facility is being given the green light on the only bench of farmland in the North Shuswap, B.C. It is ironic that these intrusive

facilities are being forced on rural people, many of whom have sustained the land for decades, while those who have been given permission to destroy the land for the sake of profit will never have to absorb the impact of living near it.

*Deanna Kawatski,
author of Wilderness Mother,
North Shuswap, B.C.*



ON "HOW THE WORLD CAME TOGETHER TO PROTECT A B.C. INLET"

(Online, October 2019)

I was fortunate to spend most of the summer of 1987 working on a fishing

boat out of Powell River and working as far north as Hakai Pass. There is no question in my mind that this area ranks as one of the most beautiful on this planet.

*Terry LePage,
via Facebook*

The world can be a wonderful place. Given the right opportunity, the people of the world can be wonderful too.

*Evelyn M. Olenick,
via Facebook*

EXPLORE



MAPPING THE WORLD OF PLASTICS

As part of our 10,000 Changes program, we created an interactive map to showcase what countries and cities around the world are doing to tackle the problem of plastic waste. cangeo.ca/jf20/plastic



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We travel deep into the Sacred Valley, the heart of the formidable Inca Empire, exploring maze-like archeological sites and meeting locals who are keeping the language and traditions of the Incas alive.

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COVER VOTE



43%



29%



28%

Why, you might ask, did *Canadian Geographic* put an Antarctic species on its cover? First, because this image of an emperor penguin and its chick on the Ross Sea won the issue's reader cover vote handily. Second, because it best illustrates how Canadian photojournalist and marine biologist Paul Nicklen is putting his incomparable photos — from both poles — to work for worldwide ocean conservation through his non-profit SeaLegacy, which uses visual media to inspire action on climate change.

SOCIAL



#CAPTIONTHIS

John Pokocky snapped this pine marten leaping in a tree. Here are our favourite captions from @cangeo's Instagram community.

"Doin' it for the gram."
– @nik.dh

"I believe I can fly!"
– @jonathanfranchomme

"Look Mom! No hands!"
– @mcrae.lyne

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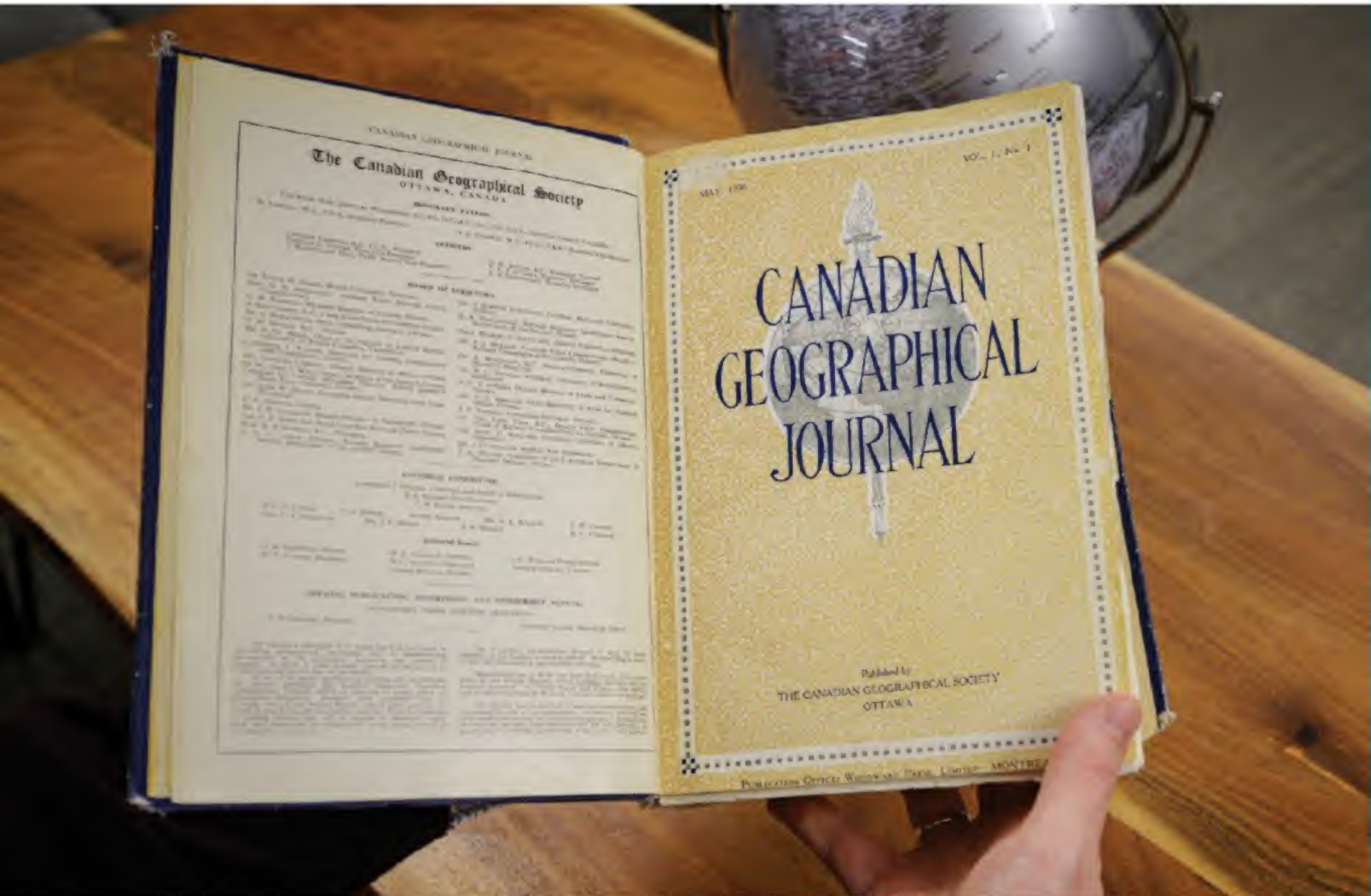
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CLOCKWISE FROM OPPOSITE, TOP: ALEXANDRA POPE/CAN GEO; MARINA JIMENEZ/CAN GEO TRAVEL; PAUL NICKLEN (ALL COVER OPTIONS); JOHN POKOCKY/CAN GEO PHOTO CLUB; DIANE SELKIRK; KERRY HODGSON.



A CALL FOR HELP

“TO OFFER A NEW MAGAZINE to a world already overwhelmed with a multiplicity of periodicals needs justification. The Canadian Geographical Society feels, however, that it has perfectly sound reason for doing so. Its purpose is to use the Journal as a means of information in the field of Geography, interpreting that subject in its widest sense.”

So noted the “Foreword by the Editors” in the May 1930 *Canadian Geographical Journal*, *Canadian Geographic’s* predecessor. As we celebrate a monumental anniversary in the magazine world — 90 years! — little has changed. Today, we publish multimedia content in a world overwhelmed by a multiplicity of media outlets. The goal of covering the subject of geography in its widest sense remains.

In the six years I’ve had the incredible privilege of overseeing this venerable brand alongside an amazing team,

Canadian Geographic has worked to establish a national bird, covered the historic discovery of Sir John Franklin’s HMS *Erebus* and won numerous National Magazine Awards for our stories, photography and maps, interviewing the nation’s brightest minds along the way. (There’s similar great content in this issue, which I’ll let you discover on your own.)

That original foreword concluded with the following request to readers: “a duty to help the Editors not only by pointing out defects but by suggesting ways and means of bringing the Journal closer to its ideal.” I echo that still, but add a responsibility: to be our greatest supporters at a time when our brand of journalistic storytelling is threatened. Let’s celebrate many more anniversaries together. 🌐

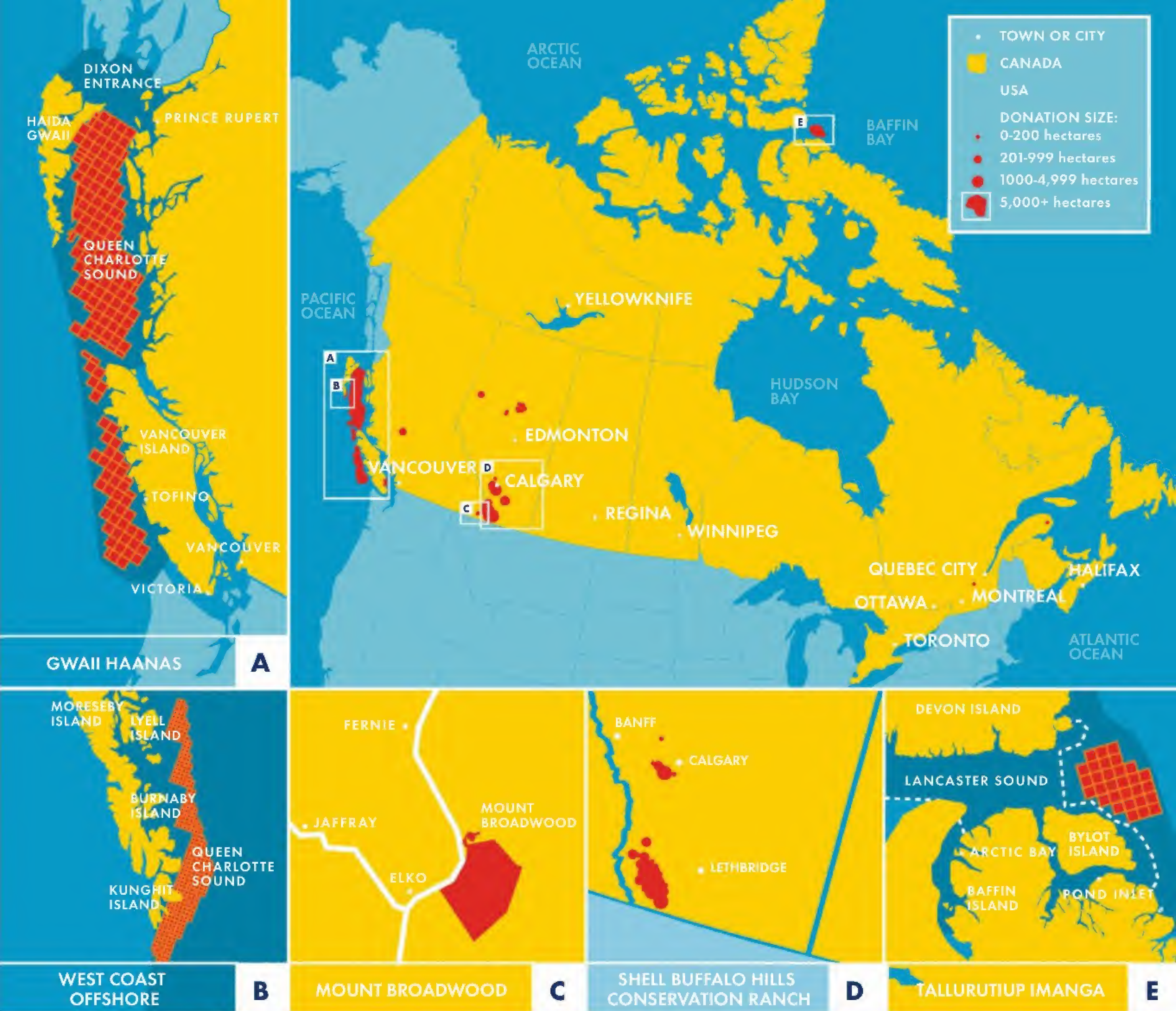
—Aaron Kylie



To comment, please email editor@canadiangeographic.ca or visit cangeo.ca.



For inside details on the magazine and other news, follow editor Aaron Kylie on Twitter and Instagram (@aaronkylie).



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BIG PICTURE

Celebrating Canada's Grandeur





PHOTO BY KRISTEN TEUNISSEN

A mountain goat perches on Whaleback Ridge in Little Yoho Valley, a small “hanging valley” in British Columbia’s Yoho National Park. While mountain goat populations in the province are classified as vulnerable, recent aerial surveys have shown that Yoho’s share of the sure-footed climbers has remained stable since the last surveys, performed in the 1970s.



Visit photoclub.cangeo.ca/photooftheweek to see the best images submitted to Canadian Geographic’s Photo Club, and follow @cangeo on .

EXPOSURE

Showcasing our photo community



PHOTO BY **KEVIN BOUFFARD**

Star trails create a dizzying effect above a cluster of ice-fishing huts on the frozen surface of the Ottawa River at Petrie Island in Orleans, Ont. The photographer (@ghostbehindthelens) stitched together 150 long-exposure photos from the same winter night to create this image of concentric arcs of starlight concentrated around the north celestial pole.



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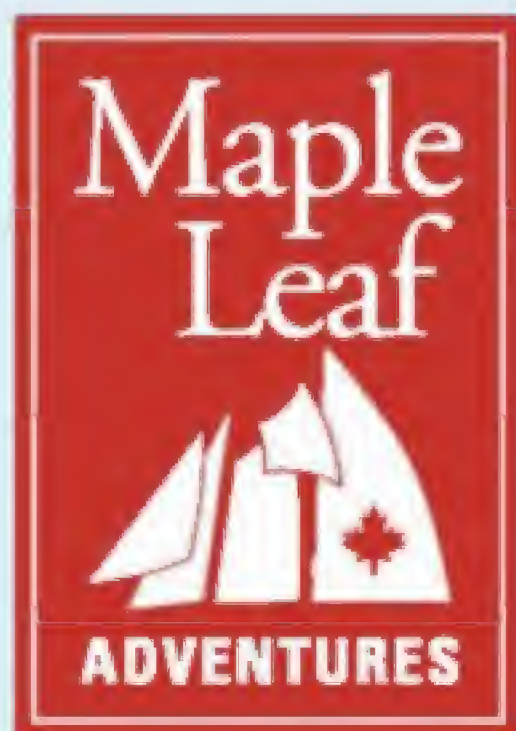
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IN A SNAP

Sharing Can Geo via Instagram



@jclemayphoto Jean-Christophe Lemay
Two bull woodland caribou fight in Parc national de la Gaspésie, Que.



@geiger.john John Geiger
Iceberg in Greenland




@kateluff Katelyn Luff
Abandoned shack in Allan, Sask.



@oliviagrace_photography Olivia Grace Duncan
Forest near Chadburn Lake Road, Whitehorse



@jessedurocher Jesse Durocher
Parc des Chutes-de-la-Chaudière, Lévis, Que.

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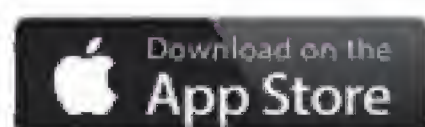
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Mario Rigby at The Royal Canadian Geographical Society headquarters in Ottawa, a stop on his cross-Canada cycling expedition.

Mario Rigby

The explorer shares insights from his cross-Africa trek and cross-Canada cycle, and on being accepted

INTERVIEW BY **AARON KYLIE**

Mario Rigby walked 12,000 kilometres across Africa (yes, walked) from South Africa to Egypt between late 2015 and early 2018, learning much along the way about local African communities. Later, he was recognized by the UN as part of its International Decade for People of African Descent initiative. In 2019, Rigby cycled across Canada to raise awareness for sustainable transportation, and this year he hopes to drive an electric car across Africa (and become the first to do so) to highlight sustainable travel and renewable energy. Rigby spoke with *Canadian Geographic* about his journeys.

On why he cycled across Canada

I'm promoting inclusion and diversity in the outdoor industry and for people who don't look the part of traditional outdoor enthusiasts. Growing up and getting into expeditions, I never saw anyone that looked like me, but outdoor activities are meant for everyone. That's how we left Africa. The first explorers were Africans who decided to go through Europe, Asia and around the globe. ▶



Watch a video version of this interview at cangeo.ca/jf20/rigby.

On being accepted as an explorer

That's slow progress. There is a lot of hesitancy. It comes down to funding, and that's very hard to find. The Explorers Club and Mountain Equipment Co-op here in Canada have supported me. There are a lot of companies that I've requested help from that rejected me, but someone doing half of what I've done gets 10 times more than what I asked for. That happens regularly.

On becoming an explorer

I was born in the Turks and Caicos but was raised in Germany. My stepfather had a huge interest in the outdoors, so it was something I was naturally inclined to enjoy, too. African people have been doing this forever. You see women with baskets carrying firewood for five hours a day, starting as early as 4 a.m., and then they have to work once they're finished doing that. And here we fetishize similar feats like they're these fantastic achievements.

On insights from his Africa trek

What I learned while crossing Africa is mainly about the diversity of people there. There are 3,000 to 4,000 tribes, and the tribal structures are quickly dying away. I learned about their ingenuity, how Africans have the opportunity to basically leapfrog into the third

industrial revolution. Everyone's carrying a smartphone. People are mobile and exchanging money via phone. And renewable energy, solar panels and windmills are abundant everywhere. In North America, it's going to be a lot harder to transition to a third industrial revolution.

On Project EVA

Project EVA is essentially to drive an electric vehicle around Africa and become the first person to do so. But it needs a lot of funding. Right now, I have a team and we're fixated on making it work for 2020. We want to promote renewable energy projects, as well as innovative technological projects that are happening in Africa.

'GROWING UP AND GETTING INTO EXPEDITIONS, I NEVER REALLY SAW ANYONE THAT LOOKED LIKE ME.'

On his future plans

Working with the UN Decade for People of African Descent initiative, we had the idea of retracing the West African slave trade route. I'll be doing this human powered, starting from



Explorer Mario Rigby poses for a photo with a group of children in South Africa during his cross-Africa expedition.

wherever the majority of my DNA is from. There will be five stages: Africa, the Atlantic Ocean, South America, the Caribbean and America. On each part, I'll do special events and will find out what happened in those areas with slavery, and with masters and other people that lived among the slaves. It's like closing the chapter of what it was like to be a slave and how that affects us today. 🌐

MARIO RIGBY

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Caribou protection

The U.S. Fish and Wildlife Service has given endangered status to the southern mountain woodland caribou. This subspecies, which has dwindled to just 1,200 animals in southern British Columbia, includes the southern Selkirk Mountains population that until recently spanned the B.C. border into Idaho and Washington, but has since been extirpated from the U.S. The service's ruling will see the protection of 12,145 hectares in the United States for caribou in the southern Selkirk Mountains. "Caribou can be brought back to the lower 48 states, but only if we safeguard their habitat," says Andrea Santarsiere, a senior attorney at the Center for Biological Diversity, who filed a lawsuit against the service for protection of the caribou's range.



Canada's sabre-toothed cat

A NEW STUDY of the collections at the Royal Ontario Museum by the University of Toronto found the northernmost fossil record of *Smilodon fatalis*, a sabre-toothed cat that weighed up to 280 kilograms and lived about 11,000 years ago in the late Pleistocene. The partial hand bone of *Smilodon's* forepaw pulled from a dig in Medicine Hat, Alta., was documented in the study, along with bones from three other large late-Pleistocene-era cats, including the American lion, bobcat and cave lion, a species previously thought to have lived only in Alaska and Yukon.



Bleach kills CWD

IN A WIN IN THE FIGHT against the fatal, brain-damaging chronic wasting disease killing members of the deer family in Canada and the United States, a study by the U.S. National Institutes of Health found that a five-minute soak in a 40 per cent solution of household bleach killed CWD prions (proteins) on stainless steel, which is one way to limit human exposure to the disease (though no cases of CWD have ever been reported in humans). Researchers coated wires with the disease to mimic contaminated equipment used by hunters and meat processors. The study also tried various bleach concentrations on contaminated deer meat, but this did not effectively remove the disease.



2.9 BILLION

The number of birds that have disappeared in Canada and the United States since 1970, according to a recent study by bird experts from across North America published in the journal *Science*. The results amount to about a 29 per cent decline in 48 years, with the greatest losses found in common species such as blackbirds, sparrows, finches and warblers. The decline has "major implications for ecosystem integrity, the conservation of wildlife more broadly and policies associated with the protection of birds and native ecosystems on which they depend."

'ECOLOGICAL train wreck'

Ryan Brook, an associate professor at the University of Saskatchewan, describes the potential impact of a growing population of wild pigs in the Prairie province if left unchecked. First introduced to Canada in the 1980s and '90s to diversify livestock species and supplement farmer incomes, wild pigs are now the most prolific invasive mammal in the country, causing major damage to vegetation, crops, waterways and other species. "Once these animals get established, getting rid of them is a real challenge," Brook told the CBC.



OPPOSITE PAGE: DAVID MOSKOWITZ; THIS PAGE, CLOCKWISE FROM TOP: HENRY SUTHERLAND SHARPE; RENE BOURQUE/CAN GEO PHOTOCLUB; GLOBALP/ISTOCK; STANLEY45/ISTOCK



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ARCTIC KINGDOM

Diamonds in the rough

There's more to the Northwest Territories' Gahcho Kué diamond mine than precious gems

BY MICHELA ROSANO



FLY 280 KILOMETRES NORTHEAST of Yellowknife, and the small lakes and stunted spruce of the taiga give way to a 1,292-hectare gravel field. In two open pits that step more than 20 storeys into the Earth like dusty coliseums, ancient bedrock is blasted and loaded onto trucks bound for a clump of nearby buildings. There the ore is crushed, sorted and processed to extract more than six million carats of Canadian diamonds each year.

The Gahcho Kué diamond mine, owned by De Beers and Mountain

Province Diamonds Inc., began production in 2017 and is the newest of three operating diamond mines in the Northwest Territories. Since the first diamond mine in Canada opened just 22 years ago, the country (and the Northwest Territories, in particular) has been prolific — Canada is now the third largest diamond producer by value and the second largest by carat in the world. And while Gahcho Kué made headlines for a 95-carat, cherry-sized stone pulled from its

deposits in 2018, there's far more than just diamonds there.

Gahcho Kué ("place of the big rabbits" in Dene Sułíné) rests in the traditional territory of six Indigenous nations: the Deninu Kué First Nation, Lutsel K'e Dene First Nation, North Slave Métis Alliance, Northwest Territory Métis Nation, the Tłı̨chǫ Government and the Yellowknives Dene First Nation. It's also just four kilometres from the newly established Thaidene Nëné National Park Reserve. In the winter, muskox, moose,

COURTESY DE BEERS GROUP. MAP: CHRIS BRACKLEY/CAN GEO

barren-ground caribou, foxes, wolves, wolverines, Arctic hares and ptarmigan speckle the flat, icy landscape. When the weather warms and the land bursts with berries, black bears, grizzly bears, geese, ducks and small birds come to feast, while lakes teem with trout and northern pike.

Traditional-knowledge monitors immerse themselves in this landscape for two weeks nearly every month to carefully measure the mine's impacts on wildlife and the people who depend on it. Stationed just north of the mine site, in a white cabin overlooking Fletcher Lake, these monitors are part of the first-of-its-kind traditional knowledge program at the Ni Hadi Xa Alliance (Dene Sų́líné for "people watching the land together"), formed in 2014 as an agreement between the six nations and De Beers. Rosy Bjornson, environmental manager for the alliance, explains how these auditors take the pulse of the land.

"They jot down what they see, what they hear. If they harvest something, they have to tell us how it tastes and if they see anything different about it."

Back at Gahcho Kué, Greg Dipple, a professor in the University of British Columbia's department of Earth, ocean and atmospheric sciences, measures impacts of another kind. Dipple recently completed a trial of an innovative approach to capturing carbon emissions from the mine and storing them in solid mineral form, made possible in part by a \$2-million grant from the federal government announced in July 2019.

Last August, as part of a series of field tests ending in March 2021, Dipple's team captured carbon dioxide emissions in a quarter tonne of tailings, or waste rock, from the mining operations. The technology, which Dipple says is being used at mine sites around the world, could have the potential to



make Gahcho Kué the world's first carbon neutral mine, or better, but that will take years.

"If we were to be 100 per cent efficient, we could trap 10 times as much CO₂ as is being emitted by the entire mining process. This opens up the idea that we could mine for the purpose of sequestering carbon," says Dipple, adding that this scalable technology could be a tool to fight climate change.

"By the turn of the century, we're going to have to be carbon negative as a society, and mining these kinds of rocks is one of the technologies being considered to reach that goal."

Next year, Dipple plans to run the test again, with the goal of capturing more carbon. While his trials are still in their infancy, the technology is already worth its weight in diamonds. ❄️



An aerial view of part of the Gahcho Kué diamond mine (OPPOSITE) where the University of British Columbia is working with miners on an innovative carbon capturing project (ABOVE).

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The Avro Arrow's rise and fall

How Cold War Canada planned to intercept hostile aircraft in its airspace

BY **STEPHEN SMITH**

A CROWD OF 10,000 turned out in Malton, Ont., in October 1957 to see the future of Canadian air defence as it rolled out of a closely guarded hangar for the first time. The *Toronto Daily Star* was on the scene at what's now Toronto Pearson International Airport for the debut of the Avro Arrow supersonic fighter: "Practically all eyes at yesterday's impressive ceremony marking the unveiling of Avro's revolutionary CF-105 were riveted to the unusual-looking, delta-wing superjet, which is expected to fly around 1,500 mph while carrying either an atomic weapon or a deadly nest of air-to-air Sparrow missiles."

It was a proud moment for Canadian innovation, industry and the nation at the height of the Cold War. In the aftermath of the Second World War, with a new foe in the Soviet Union testing nuclear weapons and developing long-range bombers, Canada focused on developing its own fighter aircraft. Taking the lead was A.V. Roe, a British-owned, Canadian-based firm, which debuted the trailblazing Avro CF-100 Canuck in January 1950. The only Canadian-designed fighter ever to be mass-produced, the Canuck soon took to the skies over Canada and Europe while, back at home, Avro's engineers worked on refining their designs.

This late-1950s Department of National Defence map shows how the Arrow might eventually have been deployed to intercept incursions by hostile aircraft into Canadian airspace. A series of radar installations seen here (the black dots outlined in yellow) was in place by 1957, including the southernmost Pine Tree Line; the Mid Canada Line, which fenced the 55th Parallel; and the Distant Early Warning (DEW) Line, netted across northern Canada. The latter was designed to give air-defence commanders at least two hours' notice that enemy bombers were inbound, allowing them to scramble their Arrows from airbases (the black dots outlined in red, we think, though archivists at Library and Archives Canada can't be sure) and airports (circled) across the country. Notes accompanying the map detail attack procedures: "Pilot steers for intercept and lock-follow mode for final kill."

In March 1958, test pilot Janusz Zurkowski shattered air-speed records in the first incarnation of the Arrow. Four more Mark 1 Arrows were completed and sent soaring over the course of the following year, even as Avro was developing the sleeker, faster, deadlier Mark 2. It wasn't to be. By February 1959, just over two years after the first Arrow was revealed, strategic realities and ballooning costs saw Prime Minister John Diefenbaker's government abandon the Arrow program outright to invest in missile defences. Some 14,000 Avro Aircraft employees lost their jobs following the cancellation. Plans and models and machinery were destroyed. By summer, every one of the grounded Arrows had been cut up and sold for scrap. 🌀

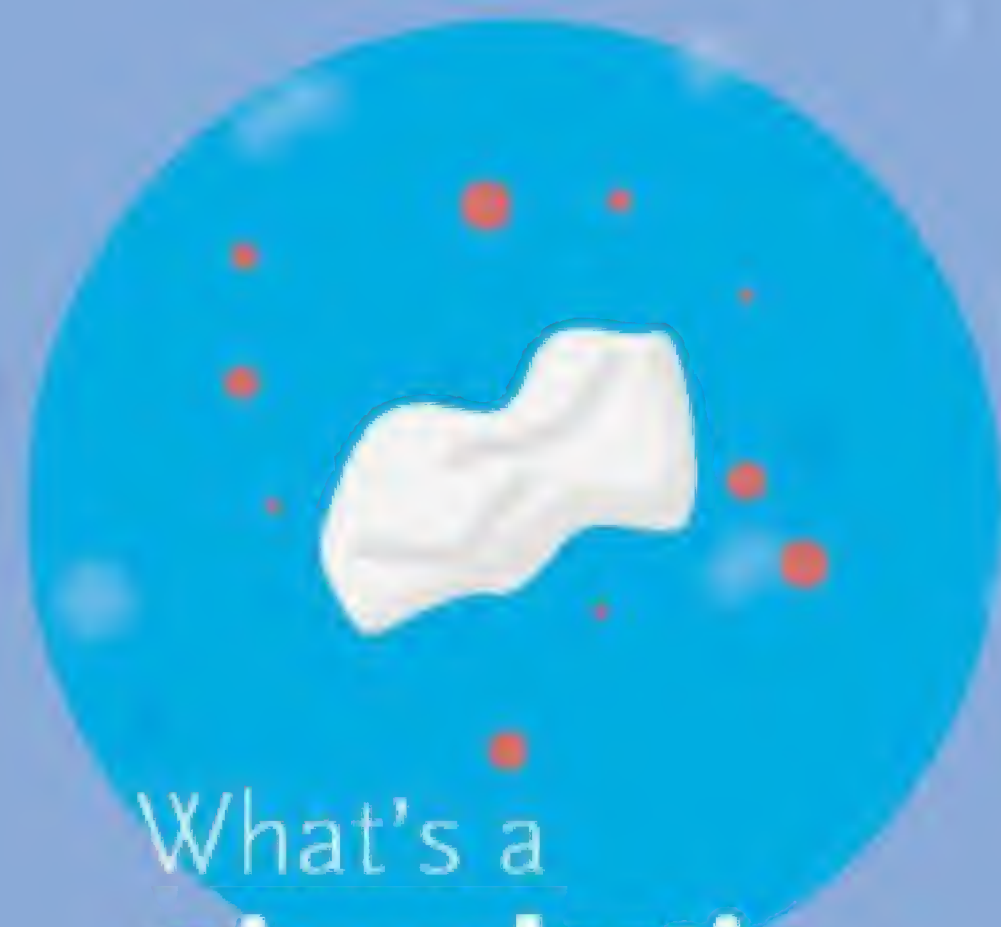
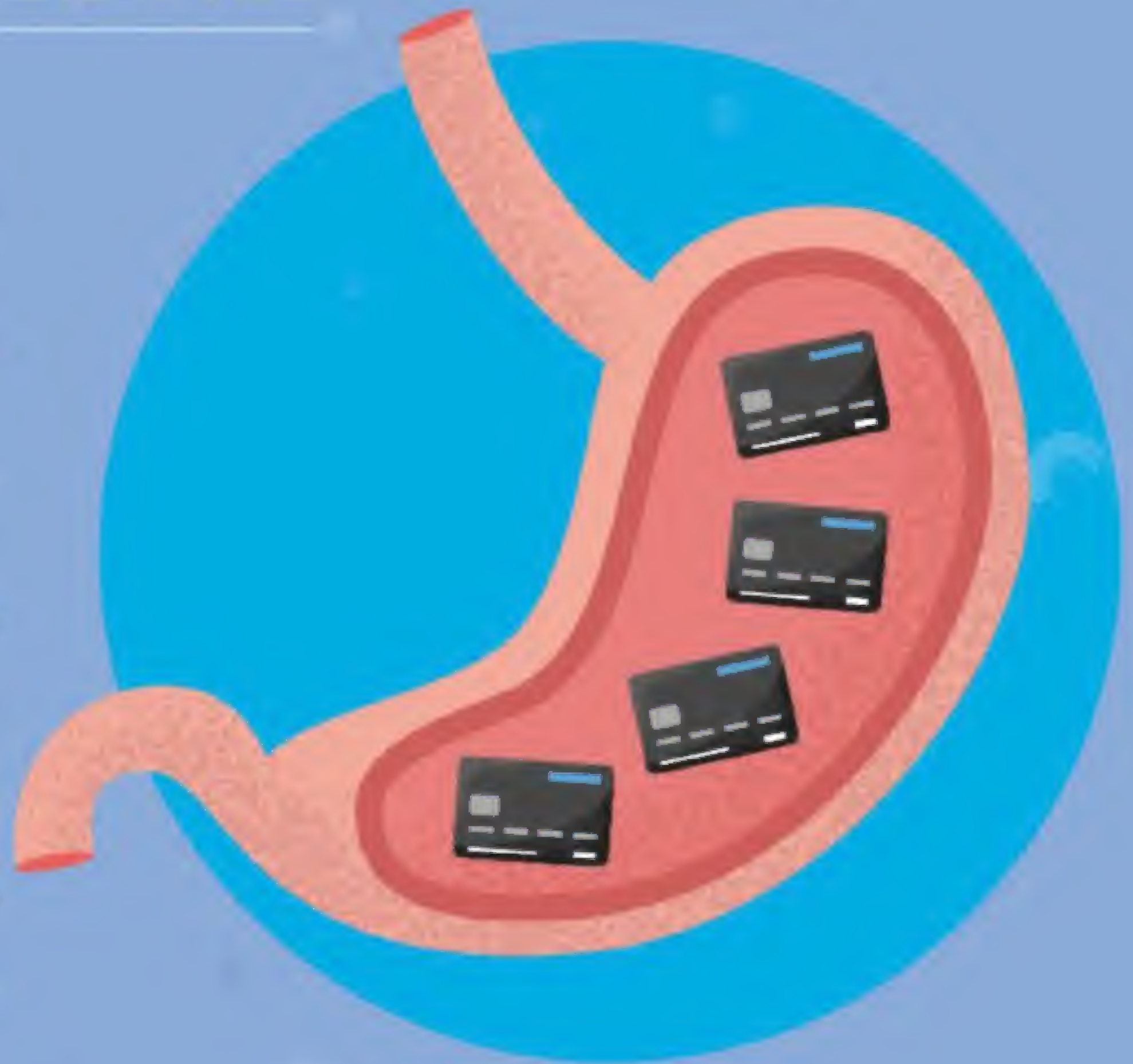


The plastic we eat

Microplastics are showing up in our food. Here's what you need to know and how to avoid them.

BY **SUSAN NERBERG**

Plastic pollution has become so pervasive in our environment that tiny particles, called microplastics, have infiltrated the water we drink and the foods we eat. One study found that each of us ingests up to five grams of plastic — the equivalent of a credit card — every week. Here are some examples of foods where microplastics are most common, how much plastic we're eating and what it could mean for our health.



What's a **microplastic particle** anyway?

Microplastics are fragments of plastic that measure five millimetres or less. They can often only be seen using a microscope, appearing like tiny filaments or thin hairs.



The microplastic **cycle**

When plastic products such as disposable bottles, cutlery and wet wipes make their way into the environment, they eventually shed and break down into microplastics. Studies have shown that some microplastics absorb chemicals from their surroundings, including persistent organic pollutants and heavy metals. These microplastics then act as carriers for toxins, which can travel up the food chain — the smaller the microplastic, the more easily it is ingested by different organisms, from plankton to fish to people.



Banking on **small change**

A study commissioned by the World Wildlife Fund found that people may be ingesting approximately 250 grams of microplastic per year, or just under 21 grams per month. While scientists agree that we eat and drink plastic on a regular basis, there are different estimates as to how much we put into our bodies. Some studies estimate we eat even more plastic than the WWF study found.

10000⁺ CHANGES™

This infographic is part of an ongoing series on plastic pollution. Learn more about what you can do at 10000changes.ca



Eating plastic

Microplastics are more common in water than in any other environment, which means fish, whales and other aquatic organisms are at much higher risk of ingesting them. Shellfish, particularly oysters and mussels, tend to contain more plastic than any other foods; because these bivalves are eaten whole, microplastics in their digestive system go directly into ours. After shellfish, sea salt has been found to have the highest levels of plastic.

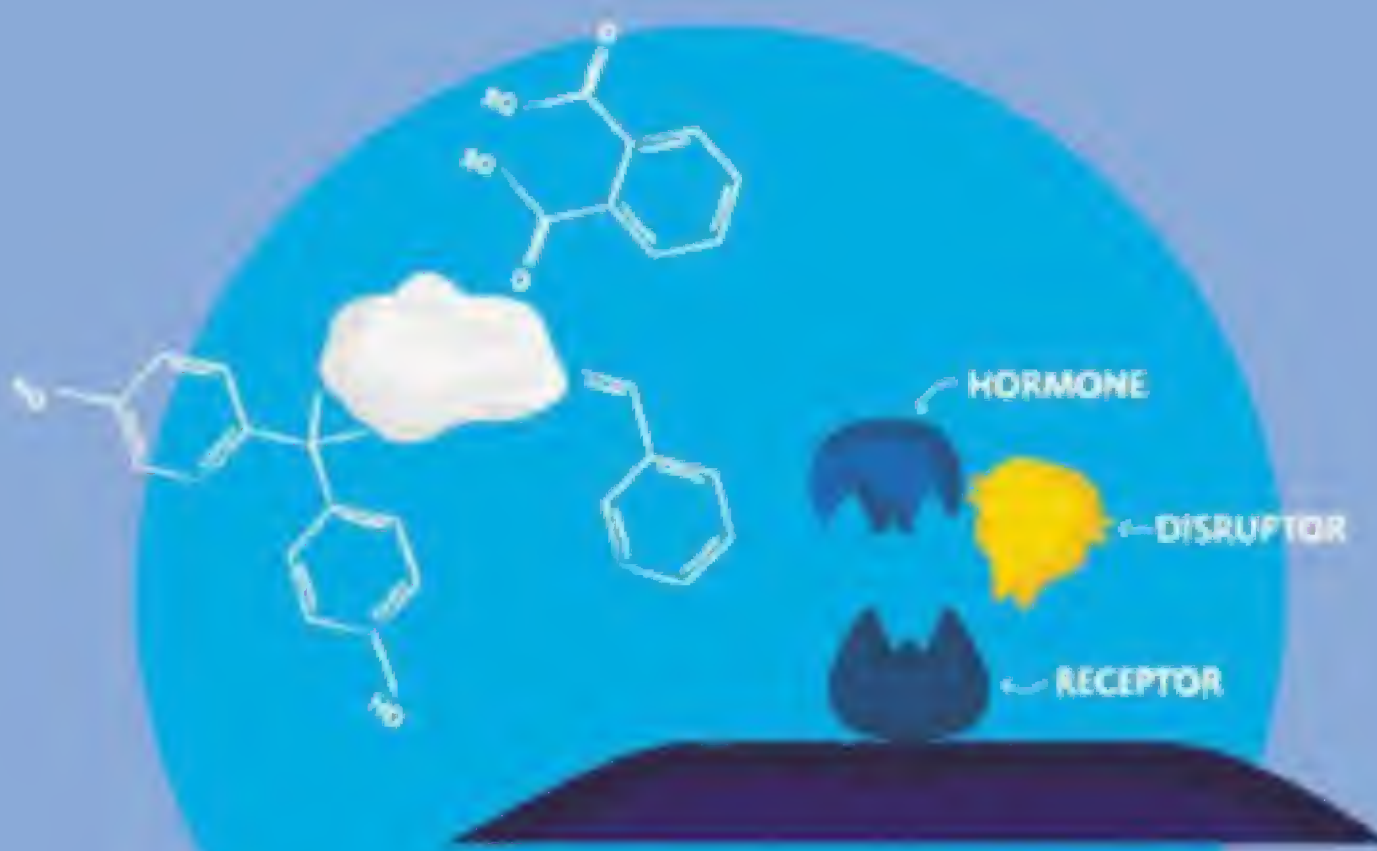
The case for tap water

A study published in the journal *Environmental Science and Technology* found that people who drink only bottled water ingest an additional 40,000 microplastic particles per year, compared with around 4,000 for those who drink tap water.



6 WAYS TO CUT DOWN THE PLASTIC IN YOUR DIET

1. Store leftover foods in glass containers, and heat them on a glass or ceramic plate.
2. Avoid single-use plastic bottles, and drink tap water out of a glass or stainless-steel reusable bottles instead.
3. Place loose produce in reusable produce bags instead of buying bundled fruits and vegetables wrapped in plastic packaging. Shop in bulk with glass and stainless steel jars.
4. Frequent house cleaning and vacuuming removes microplastic particles that have rubbed off synthetic textiles in furniture upholstery and rugs, helping to minimize the chance of them reaching your food — or your lungs.
5. If you regularly stop by your local coffee shop, bring a reusable ceramic, glass or stainless steel mug.
6. Tea drinkers beware — some teabags are made of plastic and can release an average of 11.6 billion microplastic particles per cup. Even paper ones can be sealed with a plastic glue. Switch to loose leaf tea and use a stainless steel mesh tea ball or strainer.



Will microplastic make us sick?

The jury is still out on whether eating plastic is bad for our health. Studies have shown that microplastics contain toxins themselves, such as phthalates (chemicals used to make plastic flexible), which have been linked to an increased growth of breast-cancer cells, and other chemicals such as bisphenol A (BPA), a known hormone disruptor. In mice, microplastics in food have been shown to pass into the liver, intestines and kidneys. From the intestines, these tiny particles could make their way into other organs, but the effects on health and disease are still being studied. A World Health Organization report in August 2019 said there is no solid evidence that the plastic we eat and drink causes harm, but that more research is needed to draw firm conclusions.

ON THE MAP

Exploring Cartography

Capital change

Ottawa researchers have harnessed 'deep mapping' to track years of gentrification across the cityscape

BY **CHRIS BRACKLEY**

WITH TEXT BY **NICK WALKER**

It's a force that transforms neighbourhoods and whole cities, but gentrification has always been notoriously hard to track. That's especially true in major urban centres, where city councils and planners must consider how the phenomenon can simultaneously reinvigorate older neighbourhoods and displace low-income families and small businesses.

In the past, researchers have looked at census results to track gentrification, but that data is coarse and updated only in census years. They've also sent out co-op students to make visual assessments of a handful of streetscapes and compare those assessments over years, but that's time-consuming and fails to paint the big, coherent pictures cities require.

Enter Michael Sawada, a professor of geography, environment and geomatics at the University of Ottawa. In a first-of-its-kind study published in 2019, he and students Lazar Ilic and Amaury Zarzelli trained a powerful new "deep-mapping" computer model to recognize visible signs of gentrification as it scanned hundreds of thousands of Google Street View images (from 2007 to 2016*) of more than 157,000 properties across the Ottawa neighbourhoods shown here. With

95 per cent accuracy, the model flagged street-side improvements ranging from fresh paint jobs and window, siding and fence replacements to extensions and entirely new houses. Expensive cars, new kids' parks and public art installations are also good indicators, "but the home," says Sawada, "is the atomic unit of gentrification."

In all, the study confirmed 3,483 instances of gentrification at 2,922 Ottawa properties over the course of the decade. The data, which pinpoints where and how fast gentrification is happening, reveals neighbourhood evolution but also challenges. Hintonburg, Mechanicsville and Westboro, all west of Ottawa's core, are at least locally famous for their ongoing intense redevelopment and, in some areas, densification, but the researchers also found gentrification in full swing in neighbourhoods such as Crestview-Meadowlands (nine kilometres southwest of downtown Ottawa). There, property values have skyrocketed in the last decade and it's not unusual to see a \$2-million home or two \$1-million homes rising where an original single-family bungalow stood. "That means some middle-class people who sell their old homes can't buy back into their neighbourhood," says Sawada.

The results of this project could be harnessed for addressing inequality — particularly for providing more affordable housing, says Ilic. "This is a major issue right now because there is simply a lack of it. But this data lets city planning departments look at the hot spots and say 'Ok, those are areas where there's a need for funding, or requirements need to be put in place for developers, because people are being pushed out.'"

* Google's terms of service changed in 2018, limiting the number of Street View images freely available to the researchers to 25,000 per month (they were previously able to download and cache 25,000 per day). In order to expand the study to other cities, Sawada's team is now testing the viability of crowdsourced geotagged images (mainly collected through dashcams) from Mapillary.



Gentrification 2007 - 2016



Turning the tide



A large, white, textured ice floe floats in deep blue water. The ice has a rough, layered appearance with some shadows and highlights. The water is a vibrant blue with gentle ripples. The text is overlaid on the upper right portion of the image.

Paul Nicklen, the renowned wildlife photographer and SeaLegacy co-founder, shares stunning images from the poles in a time of climate change

WORDS AND PHOTOGRAPHY BY **PAUL NICKLEN**

Polar bears on a sea ice floe in Nunavut.



IT IS A COLD WINTER DAWN in the northern fiords of Norway, far above the Arctic Circle. Our small inflatable boat pitches and rolls in the inky black sea as the waves and deep swells reach toward the barely lit horizon. It is high noon in January, and the sun will not rise above the skyline for another week. I strain my eyes and can barely make out the nearly two-metre-tall curved fins of large male orcas that slice effortlessly through the waves. Never in my wildest dreams could I have imagined being completely surrounded by a hundred orcas, faced with the imminent decision to enter their world or not. I am perched at the edge of the heaving boat, watching for the shape of their bodies to break the surface in order to get a read on their direction and behaviour. They are calling, and their complex communications reverberate through the hull, making us a loudspeaker for some of the most sophisticated vocalizations in our oceans. I have waited a lifetime for this moment. With the large underwater housing for my camera clutched firmly in my hand, slowly and silently, I slip over the side into the midst of the wild pod.

As a *National Geographic* photographer and the co-founder of SeaLegacy, a collective of photographers, filmmakers and storytellers working together to save our oceans, I use my camera to dispel myths about some of the most feared and misunderstood animals in the polar regions. I document animal behaviour and try to give wild creatures — especially those with an often undeserved reputation — a voice, an identity. My driving vision is to create work that speaks to the intersection of conservation, art and science — photographs that act as a beating heart for progress and change.

I am driven to spend weeks and months in two of the most extreme places on Earth — deep under the icy Arctic seascape and alone in the vast swirling blizzards of Antarctica. I was born to do this. My mind, body and soul are more at home here than anywhere else. Through the risks and challenges, my innate comfort on sea ice has become my strength, allowing me to open a window into the rarely seen world of both polar regions.

I grew up in the isolated and dramatic landscape of Baffin Island, Nunavut. We were one of four non-Inuit families living in the tiny community of Kimmirut with fewer than 200 people, where the frozen ocean, glacial mountains and Arctic sky meet in a single location. All my energy came from nature. My formative years were filled with exploring my polar playground, from the wild rides to forbidden places on my snowmobile to the quiet hours creating soapstone carvings of wildlife. I would spend my days exploring the shore of the ocean's edge in tidal pools or out on the sea ice, where I'd navigate the pressure ridges from massive tidal exchanges and read the ever-changing cracks in the sea ice. On clear winter nights, we would run, whistling and clapping under the dancing lights of the aurora borealis, the greens, reds and



Narwhals rest their tusks on each other's backs between feeding sessions in Lancaster Sound, Nunavut (PREVIOUS PAGE). Paul Nicklen (ABOVE) is the co-founder of SeaLegacy, a collective of photographers, filmmakers and storytellers that use their skills to inspire progress and change in ocean conservation.

blues sweeping down, swirling around us like arms that might grab us and pull us up into the night sky.

I still love to watch the light play shadow games, skipping across the sea ice. Being alone out there in the wind and cold, with the sting on my cheeks, always calms me and allows me to realize that I am truly home.

But our home is changing. Polar regions are fragile landscapes, and sea ice is melting at a rate far faster than scientists originally predicted. Collectively, it is still possible to reverse the dire circumstances that are causing the polar bears to starve, the displacement of the now-vulnerable walrus and the diminishing annual sea ice extent from the punishing rays of the sun, which accelerate the melting process so rapidly that the ecosystem is literally melting before our eyes. Sea ice is like the soil in a garden: without it, nothing grows.

I have dedicated my life to being a bridge between the majesty of the polar regions and you, wherever you are in the world. Through these images from my latest book, *Born to Ice*, I invite you to swim with a pod of narwhals as they feed in Lancaster Sound, Nunavut; to stand next to polar bears as they try to navigate dwindling sea ice; to feel the awe of being surrounded by thousands upon thousands of penguins who do not know to be afraid. I invite you to be immersed in both ends of the Earth. My journey now becomes our journey. Come with me. 🌐

Excerpt adapted from Born to Ice, by Paul Nicklen with Kim Frank, available in bookstores across Canada.



Read an interview with Paul Nicklen about his journeys to both poles at cangeo.ca/jf20/nicklen.



Emperor penguins, the world's largest penguin species, dive for fish, squid, krill and other crustaceans in Antarctica's Ross Sea.





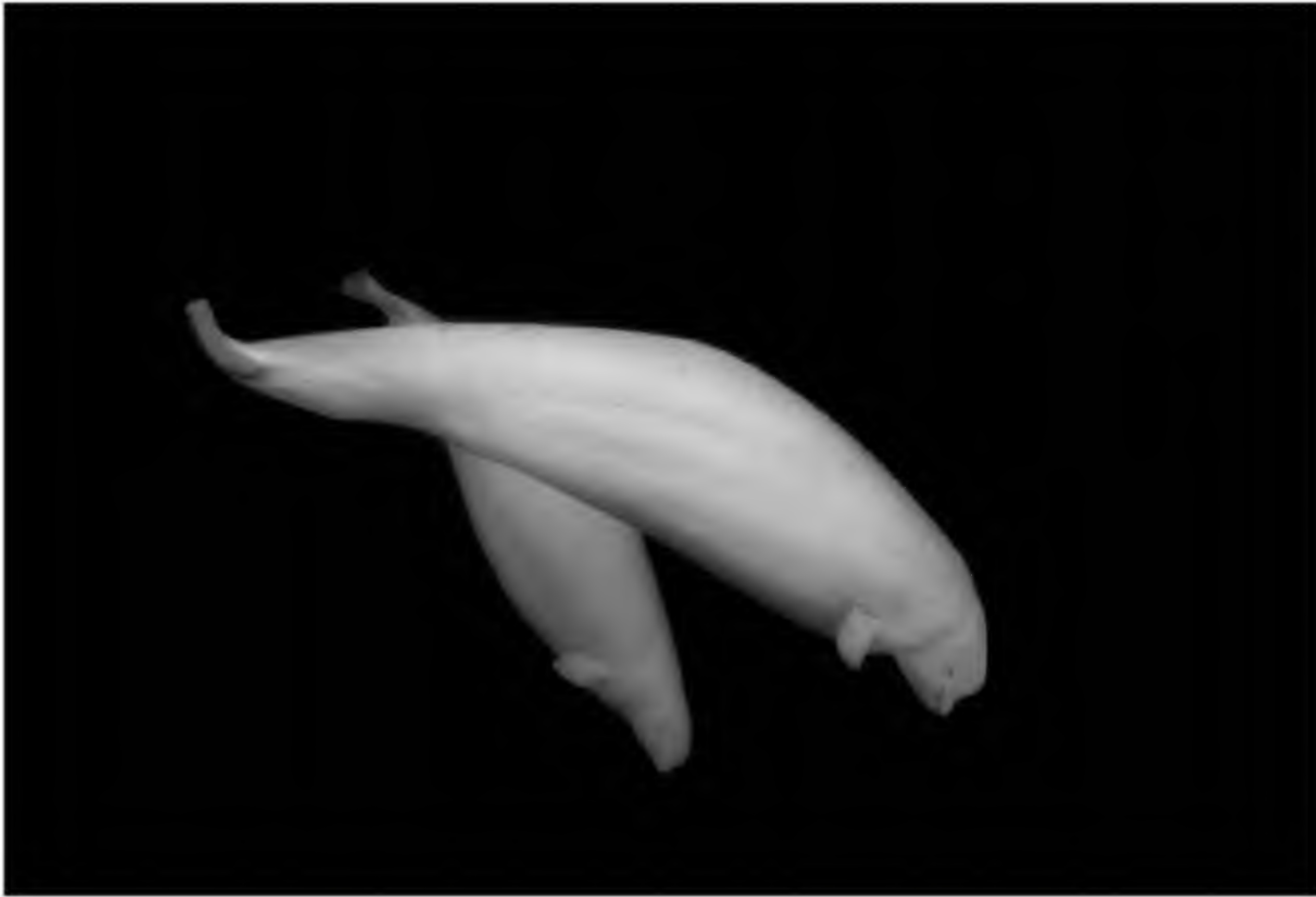
CLOCKWISE FROM ABOVE: A polar bear shakes icy water from its fur in Nunavut; a humpback whale lunges skyward as herring pour out of its mouth near Lofoten, Norway; a dominant male Kodiak bear gorges on salmon before the winter denning season in Alaska; a young harp seal in northern Quebec rests after feeding on its mother's rich milk.





'I have dedicated my life to **being a bridge between the majesty of the polar regions** and you, wherever you are in the world.'





CLOCKWISE FROM TOP: Two beluga whales drift in the dark, inky waters of Lancaster Sound, Nunavut; elephant seal bulls battle for dominance at Gold Harbour, South Georgia; water gushes off the Nordaustlandet ice cap in Svalbard, Norway.





CANADA'S GREATEST EXPLORERS

ON ITS 90TH ANNIVERSARY, *CANADIAN GEOGRAPHIC* PRESENTS THE 90 MOST INFLUENTIAL EXPLORERS IN THE NATION'S RECORDED HISTORY

BY **NICK WALKER**



FOR THIS 90TH anniversary of *Canadian Geographic*, we asked a panel of The Royal Canadian Geographical Society's Explorers-in-Residence and Honorary Vice-Presidents to give us Canada's greatest explorers, dead or alive, mariner, mountain climber, polar trekker, anthropologist or astronaut. The only condition? Their picks must have been born in Canada or lived here long enough to qualify for citizenship by today's standards.

So here are those greats, anchors in a list of 90 men and women stretching from the 16th century to today. All have performed great feats and forged new relationships with the natural world. All have taken bold steps, whether in the service of pure discovery, science and education, the environment, king and country or personal glory. All are human, and to at least some extent products of their time, their cultures and the various technology available to them. As deep-sea explorer Joe MacInnis says, "There are as many versions of 'explorer' as there are explorers."

As for the essential questions "What is an explorer?" and "Who is the best at it?" there are no real answers. "But it is worthy of the chase," says MacInnis. "That very act alerts us to the importance of exploration as a means of expressing personal curiosity, asking questions and building answers to those questions."

For the sake of the chase, then, and to embark on the discussion, here are our choices. And look for our pick for the single "Greatest Canadian Explorer" on cangeo.ca, after a live debate on the topic with RCGS Explorers-in-Residence (on Feb. 4, 2020, at 50 Sussex Drive, in Ottawa). This will be an individual who exemplifies so many of the qualities vaunted in the pages that follow, it's almost impossible to categorize them.

The RCGS Compass Rose (🌐) indicates a Fellow of the Society.

Who would be in your top 90? Who would be number one? Let us know on [@CanGeo](https://twitter.com/CanGeo). See this full list and more photos at cangeo.ca/jf20/explorers.

PANELISTS

Wade Davis 🌐
Honorary Vice-President

Johnny Issaluk 🌐
Explorer-in-Residence

Joe MacInnis 🌐
Honorary Vice-President

Adam Shoalts 🌐
Explorer-in-Residence

Jill Heinerth 🌐
Explorer-in-Residence

George Kourounis 🌐
Explorer-in-Residence

Alanna Mitchell 🌐
Can Geo contributing editor

Ray Zahab 🌐
Explorer-in-Residence

ROBERTA BONDAR* 🇨🇦

1945- | Sault Ste. Marie, Ont.



BY **JILL HEINERTH**

RCGS Explorer-in-Residence

HER FRESH-PRESSED tan flight suit was adorned with new Canadian space emblems that matched her red turtleneck. It was in 1983, as I graduated from high school, that I got to see what a Canadian woman astronaut looked like. That might seem inconsequential today, but when the National Research Council of Canada created the Canadian Astronaut Program and selected Roberta Bondar in the first class, I was elated. Here was an example of a woman exploring her fullest potential in a male-dominated niche. Of 4,300 applicants for the first crew spots, only 11 per cent were women.

In the photo, Bondar just looks like part of the team, outfitted in the same flight suit as her five male colleagues. But she had already blasted through the glass ceiling of space. Serving as the first neurologist in orbit, her expertise would be instrumental to medical research both on and off Earth.

In January 1992, she flew on Space Shuttle *Discovery* while Canadians celebrated their second fellow citizen in space. But that eight-day mission

encouraged more than an interest in spaceflight and the study of medicine: it stimulated new explorations in artistic expression. After her career in space, Bondar studied nature photography at the celebrated Brooks Institute of Photography, Calif., later publishing several books and participating in national and international photographic exhibitions. She also established The Roberta Bondar Foundation, a non-profit that supports conservation and environmental stewardship through art.

Roberta Bondar's example has inspired a new generation of multidisciplinary explorers who are able to communicate about our natural world through talents that merge the science of the extremes with fine art. It was her exploration of outer space that inspired me to dive deep into the planet, exploring the water-filled recesses and deep oceans of inner space. ✦

**Representing all Canadian astronauts. Since the country's space program was founded in 1983, 14 Canadians have earned spots as CSA astronauts, flying on 17 missions and frequently serving in mission control and other critical roles.*

ALEXANDER HENRY "THE YOUNGER"

1765-1814 | Western Canada

Criss-crossed the nation between Lake Superior and the Pacific coast in the employ of major fur companies, exploring and, most importantly, writing the finest record of any northern fur trader.

SYLVESTER JOE

Unknown-1839 | Newfoundland

A famous Mi'kmaq hunter and explorer who guided William Cormack, the first Euro-Canadian to cross Newfoundland. Together they searched for signs of the lost Beothuk people.

WILLIAM CORMACK

1796-1868 | St. John's

Naturalist and humanitarian who crossed Newfoundland with Mi'kmaq guide Sylvester Joe while attempting to locate survivors of the extirpated Beothuk people.

CATHARINE PARR TRAILL

1802-99 | Lakefield, Ont.

Author and botanist who performed early studies of Canada's natural history. Wrote *Studies of Plant Life in Canada*, *The Backwoods of Canada* and other works about life as a pioneer.

SUSANNA MOODIE

1803-85 | Belleville, Ont. / Toronto

Author and anti-slavery activist. Wrote *Roughing It in the Bush* and other works about pioneer life in Upper Canada's backwoods and clearings.

IPIRVIK & TAQULITTUQ

ca. 1837-81 / ca. 1838-76 | Qikiqtaaluk, Nunavut



A couple from Baffin's Cumberland Sound area who interpreted and hunted for, guided and taught survival skills to Charles Francis Hall (who sought signs of Franklin and Frobisher) and other explorers. They were exhibited by Hall on lecture circuits, but returned to the Arctic for his disastrous final expedition, which they survived.

THIS PAGE, TOP: ROBERTA BONDAR; BOTTOM LEFT: SMITHSONIAN INSTITUTE LIBRARIES/PUBLIC DOMAIN; BOTTOM RIGHT: T.W. SMILLIE/PUBLIC DOMAIN; OPPOSITE, CLOCKWISE FROM TOP: KNUD RASMUSSEN SOCIETY/PUBLIC DOMAIN; CHRIS CRAN/RCGS; NATURAL RESOURCES CANADA, PHOTO 112040; ICE MAN: CAPTAIN BOB BARTLETT/PUBLIC DOMAIN; PREVIOUS SPREAD: BAFFIN PADDLE & CLIMB 2019/RCGS.

KNUD RASMUSSEN*
1879-1933 | Cross-Arctic



BY **WADE DAVIS**
RCGS Honorary Vice-President

A COLLEAGUE of Rasmussen's once remarked: "No matter whether it was Greenlanders or [Inuit] in Canada and Alaska, he came as one of them. They unfolded their soul to the greatness and warmth of his being, and in return he received their simple tales of life and its struggles with the mysterious powers, their wild legends and fine poetry." Raised a product of two worlds, fluent in both Greenlandic

and Danish, Rasmussen was accepted equally by shaman and scientist. As a person, he preferred hardship to boredom, danger to inactivity, the knife blade of hunger to the dull satisfaction of gluttony. Most importantly, he was an explorer of both place and people, and this is what made him great.

Above all, he was curious about the entire civilization of the "Polar Eskimo." Between 1912 and 1933, he launched the seven Thule expeditions from the Arctic trading station he had built at Cape York, Greenland. (Over

more than 20 years of harrowing travel and exploration, only two men died on Rasmussen's watch. Few could match such a record.) It was the Fifth Thule Expedition (1921-24) that established him as the greatest scholar in the history of Arctic ethnography, for he had conceived to "attack the great primary problem of the origin of the Eskimo race." In 3½ years, he travelled more than 30,000 kilometres, traversed the top of North America and became the first to cross the Northwest Passage by dogsled. There had been nothing like it since Lewis and Clark. From this expedition came a 10-volume account condensing his insights and discoveries, natural history, prehistory and archeology, linguistics and ethnography.

Unlike so many other explorers, he had no interest in self-aggrandizing yet pointless adventures. The history and culture of the Inuit was his Holy Grail. ✦

**Rasmussen spent less than three years in Canada, but his discovery of the interrelation of Inuit across the Arctic was so momentous, we are fast-tracking his "citizenship" and including him here. — Ed.*

ARTHUR PHILEMON COLEMAN 🌟

1852-1939 | Lachute, Que.

A renowned geologist, mountaineer and academic whose explorations of Rocky Mountain ranges, the Great Lakes and other regions introduced many to Canada's geological wonders.

ROBERT BARTLETT

1875-1946 | Newfoundland



An Arctic mariner and cartographer who undertook more than 40 expeditions, including the 1913-18 Canadian Arctic Expedition, adding much to our understanding of the North.

ALICE E. WILSON 🌟

1881-1964 | Cobourg, Ont.



Canada's first woman geologist and the foremost expert on the geology and paleontology of the Ottawa and St. Lawrence river valleys. She became a celebrated scientist despite having few of the opportunities available to men in her field.

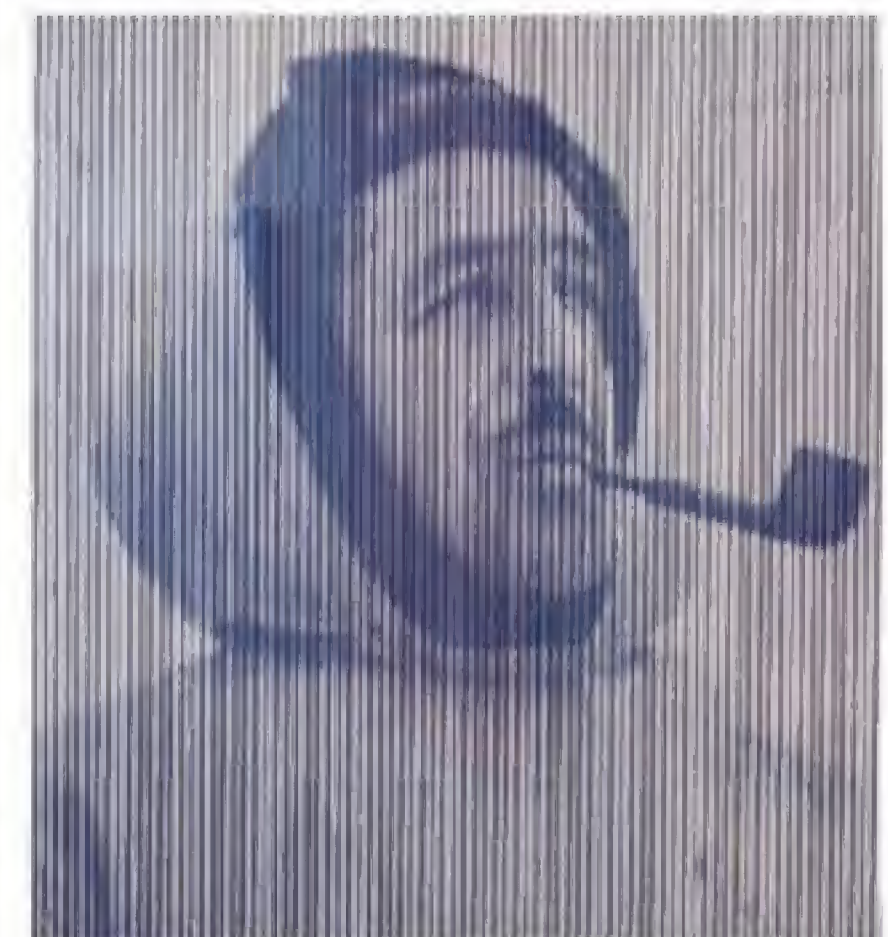
J. DEWEY SOPER 🌟

1893-1982 | Guelph, Ont. / Edmonton

Famed naturalist known best for his discovery of the elusive breeding grounds of the blue goose on southern Baffin Island — after a six-year search that depended on Inuit traditional knowledge.

YVES FORTIER 🌟

1914-2014 | Quebec City



Explored and mapped the remote North, and in 1955 led the largest multidisciplinary research expedition then undertaken, surveying 260,000 sq. km of the High Arctic. He was later named director of the Geological Survey of Canada.

DAVID GRAY 🌟

1945- | Metcalfe, Ont.

Arctic wildlife biologist, writer and documentarian who has studied the behaviour of birds and mammals across the archipelago. He also led the 2013 search for the remains of the 1913-18 Canadian Arctic Expedition.

JOHN ENGLAND 🌟

1946- | Edmonton

Scientist and specialist in northern environmental change who has spent 50 years studying the Arctic Archipelago and mentoring numerous students in and out of the field. He was instrumental in the founding of Canada's northernmost national park, Quttinirpaaq.

PHILIP CURRIE 🌟

1949- | Edmonton



World-renowned paleontologist and Royal Tyrrell Museum founder. He has named dozens of dinosaur and pre-dinosaur species, and was integral to several game-changing discoveries and theories, including that dinosaurs were feathered and that some hunted in packs.

NATALIA RYBCZYNSKI 🌟

1971- | Ottawa



Paleobiologist and Canadian Museum of Nature research associate who has highlighted climate change from the Pliocene to the present. She discovered a High Arctic camel species and *Puijila darwini*, a forerunner of today's ocean-going seals.

SAMUEL DE CHAMPLAIN

1567-1635 | New France

BY **ADAM SHOALTS**

RCGS Explorer-in-Residence

ALTHOUGH THE ICONIC image of Samuel de Champlain is in a birchbark canoe, Champlain was a man with salt water in his veins. The boy from the port of Brouage went to sea as a small child. Later, as a sea captain, he would successfully cross the Atlantic Ocean 27 times, never once losing a ship. His map-making abilities and navigation skills were the stuff of legend. Even today, his maps hold up well when compared with modern charts, especially his impressive charting of the Atlantic seaboard.

LOUIS JOLLIET

1645-1700 | Quebec City

Considered the first significant Canadian-born explorer (of European descent). As the king's hydrographer, he mapped the Mississippi River and much of Lake Superior, the area from Saguenay to Hudson Bay, and the Labrador coast.

Equally adaptable on sea and land, Champlain won the respect of his Indigenous counterparts by learning to paddle and navigate a birchbark canoe, one of the few explorers of the time to do so. Historians such as David Hackett Fischer praise Champlain's approach to relations with Indigenous Peoples, in sharp contrast to other explorers of the era. Unlike his predecessor Jacques Cartier, Champlain sought to befriend, rather than antagonize, First Nations. He did so by forging alliances with dozens of Indigenous groups — alliances that made New France and, ultimately, Canada, possible.

From his ship, he charted much of what is now Atlantic Canada, as far south as Massachusetts, and north to the tip of Newfoundland. By birchbark canoe, he travelled as far west as Lake Huron, and paddled two Great Lakes. He overwintered in the interior with the Wendat, learning the language of his new allies and satisfying his boundless thirst for knowledge. Indeed, as much as an adventurer, Champlain was also a bibliophile who loved learning. He wrote prolifically on all and sundry, from leadership and seamanship to flora and fauna, and especially of his deep interest in Indigenous cultures. A tough and shrewd leader, he could, as happened at his fledgling settlement of Quebec, act with resolution to put down dissension in the ranks, but was also quick to pardon and forgive. His legacy is perhaps best summed up by his famous epithet: *le père du Canada*. ✦

DAVID THOMPSON

1770-1857 | Longueuil, Que.

Called "the greatest land geographer who ever lived," this fur trader, explorer and cartographer mapped more than 4.9 million sq. km of North America, including most of Western Canada. He depended on First Nations for guidance and learned several Indigenous languages.

PETER WARREN DEASE

1788-1863 | Quebec
Fur trader and explorer in the Athabasca and Mackenzie districts. Later, on three expeditions along the Arctic coast, he surveyed all but a small part of the Northwest Passage.

EDWARD BELCHER

1799-1877 | Halifax
Halifax-born naval surveyor and explorer who mapped the Pacific and Bering coasts and more distant regions. Led the largest British Admiralty expedition to find John Franklin and rescued Robert McClure in the process.

INNOOKPOOZHEJOOK

Unknown-ca. 1900 | Kitikmeot, Nunavut
A widely travelled member of the Netsilingmiut and the most important source of data on the lost Franklin expedition in the 1850s and '60s. Provided extensive knowledge of the expedition's fate to John Rae and later Charles Francis Hall, and drafted a key map of the sites of evidence.

JOSEPH-ELZÉAR BERNIER

1852-1934 | Lévis, Que.



One of Canada's greatest mariners, leading numerous government expeditions into the Arctic Archipelago and asserting Canada's claim to all islands between the mainland and North Pole.

JOSEPH BURR TYRRELL

1858-1957 | Weston, Ont.
A geologist, explorer, cartographer and historian who trekked across and mapped vast regions of the North for the Geological Survey of Canada, discovered rich fossil beds in Alberta and extensive coal deposits in Canada's West.

MINA BENSON HUBBARD

1870-1956 | Bewdley, Ont.
After her husband's loss and death in Labrador's wilderness, she returned and travelled across the wild region, becoming the first Euro-Canadian woman to do so and creating the first maps of the Nascaupsee and George River system.

CHARLES CAMSELL

1876-1958 | Fort Liard, N.W.T.



One of Canada's foremost geologists and surveyors, founder of The Royal Canadian Geographical Society. He led the exploration of the unmapped North in the 1910s and was commissioner of the Northwest Territories.

C.S. WRIGHT

1887-1975 | Toronto
A physicist, glaciologist and Antarctic explorer who was part of Robert Falcon Scott's Antarctic expedition of 1910-13 (and discovered Scott's body after he failed to return from the pole). He investigated ice formations and ground radiation, and mapped Victoria Land's mountains.

SELMA BARKHAM

1927- | Ottawa



Through pioneering archival and archeological searches, she discovered the existence of a 16th-century Basque whaling industry in Labrador and Quebec. Her research brought worldwide attention and UNESCO World Heritage Site status to the region.

DEREK FORD

1935- | Orillia, Ont.
Leading academic cave explorer responsible for pioneering studies of caves as records of climate and geomorphic evolution. Developed a comprehensive and influential theory for the origin of cave systems.

JOHN POLLACK

1949- | Bonnington, B.C.



A GPS surveyor and researcher with the Institute of Nautical Archaeology, specializing in difficult conditions around the globe. Led a multi-year mission to find, study and map abandoned Klondike-era sternwheelers in the Yukon River.

MARC ST-ONGE

1955- | Ottawa



Has led geological mapping and research projects from the Coppermine River, N.W.T., and Baffin Island, Nunavut, to Tibet and Nepal. Lead author on more than 120 geological maps, including the Geological Survey of Canada's first-ever maps in Inuktitut. Discovered the world's oldest rocks in the N.W.T. in the 1980s.

NICHOLAUS VIEIRA

1980- | Banff, Alta.
World cave explorer and guide who spends 200-plus days underground each year. Leader of the multi-year expedition to map Raspberry Rising, a cave in Glacier National Park, B.C., confirmed as the country's longest marble cave.

OPPOSITE, CLOCKWISE FROM BOTTOM LEFT: NATALIA RYBCZYNSKI; ALBERTA ORDER OF EXCELLENCE; THÉOPHILE HAMEL/PUBLIC DOMAIN. THIS PAGE, CLOCKWISE FROM BOTTOM LEFT: LIBRARY AND ARCHIVES CANADA, PA-118126; RCGS ARCHIVES; GEOFF BELL; MARC ST-ONGE; CANADIAN GEOGRAPHIC ARCHIVES.

HENRY LARSEN 🌟

1899-1964 | Vancouver

BY **GEORGE KOUROUNIS**
RCGS Explorer-in-Residence

PERHAPS NO PART of Canada's Far North has had such a pull on explorers as the Northwest Passage. The promise of a trade route connecting the Atlantic and Pacific oceans was an irresistible beacon for nations, which sought proof of a way through, and for explorers who longed to be the first to accomplish the feat. Funny to think, then, that the first Canadian — and second person ever — to complete a crossing did so as a side activity to his essential duties of patrol and freight transport to remote outposts.

Henry Larsen was so enamoured with our nation that he emigrated from Norway in 1927. Already an accomplished sailor, his deep love for the sea and the vastness of the Arctic moved him to join the RCMP when his Canadian citizenship became official. Assigned to the RCMP schooner *St. Roch*, he and his ship became a critical Canadian presence in the North for decades.

Larsen first captained *St. Roch* through the Northwest Passage in 1940-42, becoming the first to do so from west to east and only the second (after his compatriot Roald Amundsen) to make it through the ice-clogged route at all. Other world firsts: in 1944, Larsen sailed the passage both ways in a single season (a momentous feat at the time); six years later, he completed a circumnavigation of North America.

Larsen was not one to express excitement about his accomplishments, which he had carried out in the line of duty. Yet they were of such significance to our understanding of Canadian geography that in 1959 The Royal Canadian Geographical Society presented him with its very first major award, the Massey Medal. ✦

ALOHA WANDERWELL

1906-96 | Winnipeg

A filmmaker, author, pilot and adventurer who was the first woman to circumnavigate Earth's land portions by car. She travelled through 80 countries and shot documentary reels, including the earliest film of Brazil's Bororo people.

MATTY MCNAIR 🌟

1951- | Iqaluit

Renowned Arctic guide and polar adventurer. Led the first all-female expedition to the North Pole, skied to the South Pole and crossed Greenland's ice cap and Ellesmere Island. A founding member of the International Polar Guides Association.

BERNARD VOYER 🌟

1953- | Montreal

Polar explorer and mountaineer who was the first to ski across Ellesmere Island, the first Canadian to ski east to west across Greenland and to complete the "Explorers Grand Slam" (unassisted trips to both poles and all Seven Summits).

PAUL LANDRY

1955- | Montreal

Veteran Arctic guide, explorer and mountaineer. Part of the first team that reached Antarctica's Pole of Inaccessibility without motorized craft. Earned Canada's Medal of Bravery for saving hikers trapped in a river in Auyuittuq National Park.

SHARON WOOD

1957- | Canmore, Alta.

Mountaineer and guide who in 1986 became the first North American woman to reach the summit of Mount Everest — and the first woman ever to do so by a new route along the west ridge, and without the assistance of a Sherpa.

JULIE ANGUS & COLIN ANGUS 🌟

1974- / 1971- | Victoria



Prolific world adventurers: Julie was the first woman to row across the Atlantic Ocean and the first Canadian woman to cross any ocean this way; Colin was the first person to complete a self-propelled global circumnavigation. Their company Open Ocean Robotics develops autonomous boats used for research.

MEAGAN MCGRATH 🌟

1977- | Sudbury, Ont.



An aerospace engineer with the Canadian military who's the only Canadian woman to climb two versions of the Seven Summits, and the first Canadian to ski solo to the South Pole, which she completed in 40 days.

ERIC & SARAH MCNAIR-LANDRY

1984- / 1986- | Iqaluit

Brother and sister polar guides and explorers. Sarah was the youngest person to travel to both geographic poles, while Eric set a world record for longest distance kite-skied in 24 hours. Together, they have kite-skied across the Northwest Passage and crossed Ellesmere Island by dogsled.

RICHARD WEBER 🌍

1959- | Yellowknife



BY **RAY ZAHAB**
RCGS Explorer-in-Residence

ONE AFTERNOON, 20 years ago, there was a knock at my apartment door. It was Richard Weber. He was my landlord at the time, but also already one of the greatest polar explorers that has ever lived.

He was just coming by to hang out for a while. Let me put this into perspective: you are a young hockey player, and Wayne Gretzky stops in for coffee. Or if you prefer, you're a budding actor, and Meryl Streep shows up. Among Richard's multiple incredible feats: becoming the first person to reach the North Pole from both sides of the Arctic Ocean (1988); becoming the first unsupported expedition, with Russian teammate Misha Malakhov, to reach the North Pole and return to land (1995) — an achievement that has never been repeated; and, along with me and Kevin Vallely, breaking the world speed record for an unsupported expedition to the South Pole (2009). Richard is a true polar legend.

He is also tremendously humble and down-to-Earth. But that hasn't stopped others from recognizing him

with multiple awards, among them the Order of Canada and two Meritorious Service Medals. But perhaps this Canadian icon's greatest achievement is being dad to his equally athletic sons, Tessum and Nansen, who along with their mother, Josée (another legendary Canadian athlete), continue to guide and inspire those who seek adventure, and host them on Arctic Watch expeditions across the North.

Over the years, Richard and I have talked about his journeys many times. But he has also always proven genuinely interested in what I had planned — a real mentor. One day in 2007, for example, when I had just completed a 7,500-kilometre running expedition across the Sahara Desert, he asked to see a map of my route. He paused for a moment and said "Wow! Ray, that's quite an accomplishment."

If I were that budding actor, Streep just told me I nailed my lines; if I were that young hockey player, Gretzky just told me I had skills. Richard was then, and is to this day, one of my greatest heroes and a friend I admire and respect. And, I believe, one of the greatest explorers ever to touch foot in snow. ✦

SIMON FRASER

1776-1862 | St. Andrews West, Ont.



Charted much of B.C., and descended the perilous Fraser River with voyageurs and Indigenous guides while seeking new trade routes to the Pacific — a journey still considered one of the greatest feats in European exploration.

CHIC SCOTT 🌍

1945- | Banff, Alta.



International mountaineering great, guide and historian. He was the first Canadian to break into the international climbing scene, guiding in the Alps, and later made many Canadian first ascents and major ski traverses in the Rockies and Columbia Mountains.

RAY ZAHAB 🌍

1969- | Chelsea, Que.



Global adventurer and ultramarathoner who has run more than 14,000 km through the world's most extreme environments, including the Sahara and Gobi deserts, Antarctica, Lake Baikal and Baffin Island. His foundation harnesses "adventure learning" to empower and educate youth.

ALEXANDER MACKENZIE

1764-1820 | Montreal / Lower Canada

LAVAL ST. GERMAIN

1968- | Calgary

Mountaineer and endurance adventurer: climbed the Seven Summits and the highest peaks of almost 20 countries; was the first Canadian to climb Mount Everest without supplemental oxygen; and set the speed record for rowing solo across the Atlantic Ocean (53 days).

GEORGE KOUROUNIS

1970- | Toronto



Storm chaser and *Angry Planet* host who specializes in documenting natural disasters and extreme weather all over the globe, including Kansas tornadoes, Gulf of Mexico hurricanes, B.C. forest fires and an erupting volcano in Vanuatu.

SIMON DONATO

1976- | Canmore, Alta.

Ultra-endurance athlete, geologist, television host and founder of Adventure Science, which combines ultra-endurance athletics and field-based research such as health studies and large-scale archeological searches.

MYLÈNE PAQUETTE

1978- | Montreal



Ocean navigator and the first North American to row solo across the North Atlantic (a more than four-month journey) in the more difficult west-to-east direction. She is a member of the Climate Reality Leadership Corps.



BY **ADAM SHOALTS**
RCGS Explorer-in-Residence

THIRTEEN YEARS BEFORE Lewis and Clark crossed North America to the Pacific Ocean, Mackenzie did it with fewer resources, with less fanfare, and over a more difficult route.

This hardscrabble explorer learned adversity young: born on the wild and forlorn Isle of Lewis, off Scotland's northwest coast, at age 10 he was sent to North America, and by 16 he was on his own in the rough and tumble world of the fur trade. Mackenzie proved a quick study; he would eventually learn to speak five languages, including two Indigenous languages that would serve him well. Resourceful, resolute and daring, at age 25 he set off in a birchbark canoe with the audacious goal of crossing North America.

En route, Mackenzie traversed thousands of kilometres of difficult and diverse terrain, from immense forests to snow-capped mountains, blackfly-infested swamps and wind-swept tundra. Ultimately, Mackenzie wound up not on the Pacific Ocean, as he had hoped, but instead on the

Arctic Ocean, following the great river that now bears his name to its outlet.

Unlike many explorers, Mackenzie led by example, sharing in the hard labours of exploration — paddling canoes, portaging and taking on dangerous tasks such as scrambling ahead along cliffs or tracking his canoe with ropes up raging mountain torrents — winning admiration and respect in the process. Not content with what he had accomplished, Mackenzie spent four years improving his mapmaking abilities before setting off in 1793 with a small party into the unknown — again with the aim of crossing North America.

This time he succeeded, traversing the Rocky Mountains to the Pacific before retracing his route back (he remains the first known person to have done so). Perhaps most impressively, in an era when violence was the norm, in all his wanderings across tens of thousands of kilometres and through a bewildering diversity of landscapes and cultures, Mackenzie never once shed blood, and helped provide the foundations for a transcontinental nation. ✦

JOE MACINNIS 🌐
1937- | Toronto



BY **JILL HEINERTH**
RCGS Explorer-in-Residence

OUTSIDE OF EXPLORATION circles, Joe MacInnis is not a household name. He should be. He appears on crew lists for many of the most significant deep-ocean dives ever made — projects that informed us about history, pushed the limits of human endurance and shaped techniques and leadership for safe operations in extreme environments. He is a true Renaissance man, and I am unsure whether to call him a scientist, an artist or both.

I first learned of his expeditions when I read a *National Geographic* magazine chronicling the discovery of HMS *Breadalbane*, the world's northernmost shipwreck. I soon realized that was the least of his accomplishments. MacInnis is the quintessential explorer, applying his endless curiosity to challenges of technology, under-

standing the human body, and documenting the hidden geography of our ocean's great depths. He learned to scuba dive in 1954, placing him among the pioneers of the underwater world. As a young physician at Toronto General Hospital, he treated a construction worker afflicted with decompression illness. This led to his decision to pursue a specialty in diving medicine.

Leading the first scientific dives at the North Pole, diving to *Titanic* and supporting James Cameron as project physician on the Deepsea Challenger expedition — a solo dive to the deepest point on Earth — are but a few of MacInnis's iconic accomplishments. An author and photographer, he shares his leadership expertise in one of his well-known books, *Deep Leadership: Essential Insights from High-Risk Environments*. Perhaps his most important legacy, however, is the Man-In-Sea expeditions with inventor and entrepreneur Edwin Link. They were the

equivalent of oceanic Apollo Missions in scope and significance.

Diving partners including Pierre Trudeau, Philippe Cousteau and Farley Mowat inspired MacInnis to expand his efforts in writing and ocean conservation policy. He has worked with the CBC on filming projects around the world and has won international acclaim at film festivals.

As an explorer, researcher and artist, few individuals have done more to enhance our knowledge of deep-ocean environments and the human capacity to explore such places. For me, he has served as a role model and an example that doing what you love ignites the human spirit. ✦



MATHIEU DA COSTA

1589-1619 | Quebec City



Explorer and multilingual interpreter who was the first recorded free black person in Canada. Worked with European traders, explorers and Indigenous groups, possibly travelling with Samuel de Champlain.

ÉTIENNE BRÛLÉ

1592-1633 | Upper Canada

Interpreter and guide, and the first European beyond the St. Lawrence. As the first Frenchman to live with Indigenous Peoples, he ranged widely around the Great Lakes region with members of his adoptive Algonquin community.

PIERRE-ESPRIT RADISSON

1636-1710 | Trois-Rivières

Fur trader and explorer for both France and England. Early in his career, was captured by and assimilated into an Iroquois community, later surviving torture after a failed escape. Eventually co-founded the Hudson's Bay Company.

PIERRE GAULTIER DE VARENNES, SIEUR DE LA VÉRENDRYE

1685-1749 | Trois-Rivières, Que. / Montreal

A military officer, fur trader and explorer who opened vast regions from Lake Superior to Western Canada (including what's now the northern U.S.) to the French fur trade. His four sons expanded on his explorations of the West.

JOSEPH LAFRANCE

1707-45 | Fort Michilimackinac, Que.

Métis fur trader who explored inland routes between Montreal and York Factory, on Hudson Bay. Estimated to have canoed more than 27,000 km throughout Canada over his career.

SAMUEL HEARNE

1745-92 | Northern Man. / Northern Sask.



The first European to reach the Arctic Ocean and Northwest Passage by an overland route, part of an otherwise entirely Dene party. Went farther North than any other European at that time.

JACQUES RAPHAEL FINLAY

1768-1828 | Northeast Saskatchewan

Métis scout and interpreter who guided David Thompson across the Continental Divide and located the Columbia River.

PETER FIDLER

1769-1822 | Fort Dauphin, Man.

HBC surveyor and fur trader who mapped regions from Hudson Bay to Lake Athabasca and the Rockies. Overwintered with a Chipewyan community, learning their language.

FRANÇOIS BEAULIEU II

1771-1872 | Salt River, N.W.T.

Yellowknife tribal chief, Arctic guide and advisor to both Alexander Mackenzie and John Franklin; was the reason Franklin's 1825 Arctic expedition was the most successful of its time.

MARIE-ANNE GABOURY

1780-1875 | Maskinongé, Que.

First woman of Euro-descent to travel to Western Canada, living on open plains with her husband, other voyageurs and Indigenous Peoples. Settled in Red River, Man. Was Louis Riel's grandmother.

ERLAND ERLANDSON

1790-1875 | Port Hope, Ont.

A Danish sailor and HBC clerk who, with Indigenous guides, became the first European to travel by land across the Labrador Peninsula, crossing from the Hudson Strait to the Atlantic.

GUY LALIBERTÉ

1959- | Quebec City

Founder of Cirque du Soleil and the first Canadian space tourist, visiting the International Space Station and returning aboard *Soyuz TMA-14*. He dedicated his journey to raising awareness of water issues affecting Earth.

JILL HEINERTH

1965- | Carleton Place, Ont.



A leading cave diver and documentarian, and the first person to enter and film Antarctic iceberg-cave ecosystems. She has gone farther into underwater caves than any other woman, and created the first 3D underwater cave system map.

MARIO RIGBY

1985- | Toronto



Walked and kayaked south to north across Africa to highlight the continent's communities, and cycled Canada west to east to encourage greater diversity in exploration and the outdoor industry.

ADAM SHOALTS

1986- | Fenwick, Ont.



A solo northern explorer, naturalist and author who completed a 3,000-km-plus journey across Canada's Arctic, a strenuous exploration of the Hudson Bay Lowlands' Agassiz River and more. Has been called Canada's Indiana Jones.

CLOCKWISE FROM TOP LEFT: BLACK CULTURAL CENTRE FOR NOVA SCOTIA/PUBLIC DOMAIN; LIBRARY AND ARCHIVES CANADA/MIKAN 2900241; ROBERT CARTER/RCCS; MARIO RIGBY; ROBERT CARTER/RCCS.

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LOUIE KAMOOKAK

1959-2018 | Gjoa Haven, Nunavut



BY **ALANNA MITCHELL**
Can Geo Contributing Editor

WHEN LOUIE KAMOOKAK was about seven, his father took him to see his first human skeleton, half-hidden in a makeshift coffin set on the wild mosses of King William Island, Nunavut, near the edge of the Northwest Passage. It was the remains of one of the early fur traders, a fellow known as Russian Mike.

The story was that Mike had made a lot of moonshine, done a lot of fighting, fallen into terrible trouble and finally shot his dogs and himself.

But the seven-year-old, though terrified, took a good look at the bullet's entry wound in the bleached skull and concluded that it had gone in from the top, not the bottom. So this was more likely a murder than a suicide.

It was the start of a five-decade career in self-taught forensic archaeology — although, Kamookak once told me, most Inuit dislike being around dead bodies. At the time, he was showing me and a group of teens what was left of Russian Mike, whose bones had been scattered by the foxes.

Kamookak, one of Canada's finest Inuit oral historians, lived in the right place for someone who loved solving forensic mysteries. King William Island was where the lost sailors of Sir John Franklin's doomed expedition, having abandoned HMS *Erebus* and *Terror*, walked to their deaths, ill, starving and eventually cannibalistic.

For decades, Kamookak scoured his home island and the surrounding areas, carefully tracking evidence about where the Franklin sailors had been. He catalogued the placement

of artifacts such as china and spoons, then graves and even skeletons. I always thought he coaxed Franklin's secrets out of the barrens themselves.

He coaxed them out of his relatives, too. Patiently, year after year, he would listen to the oral history the Elders told of the Franklin horrors, passed down over the generations.

Kamookak was convinced that these stories needed to be taken into account if Franklin's ships were ever to be found, if the record were ever to be put to rights. He painstakingly matched the ancient Inuit geographical names of his region with the ones the non-Inuit had replaced them with, the better to figure out what the old stories said. He helped Parks Canada decide where to search for Franklin's ships in 2014, and his advice proved instrumental in finding *Erebus* that year.

I remember walking with him across the southern edge of his island during that multi-day expedition with the Inuit teens, following, as he said, in the footsteps of Franklin's men. It was as if he could still feel their spirits, restless on the land and maybe malevolent.

He was fiercely, shyly proud of the fact that the students wanted to spend time with him on the land. He would recount the tales in a nearly incantatory tone, word for word, the same every time, offering up his wisdom as a gift to the next generation, but never forcing it on people. A born teacher. ✦

Reprinted from the May/June 2018 issue, written after Kamookak's death in March.

TO THE EXPLORERS WE WILL NEVER KNOW

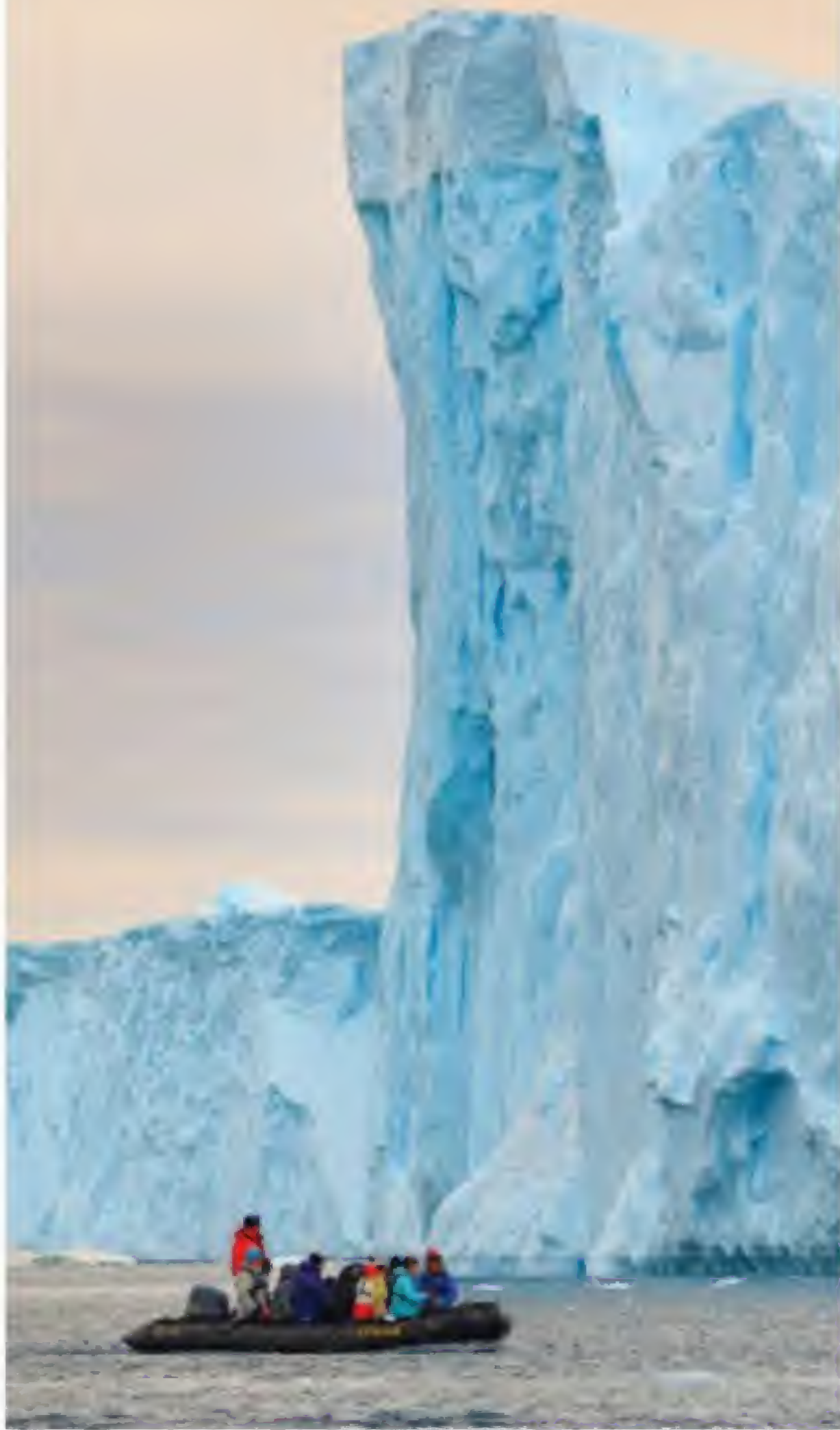
We can showcase only those who made it into the books. Countless exploration greats predate recorded history, though they were truly the first to set foot in North America by Beringia, to dip a paddle in Lake Superior, to stand awestruck beside Niagara Falls or push on to a new Arctic island to found a hunting camp.

And many have been left out since record-keeping began — Indigenous people and women especially — though they explored with the same curiosity and powerful drive to seek and to share new knowledge, and no doubt accomplished feats of exploration that, through no fault of theirs, will never be celebrated.





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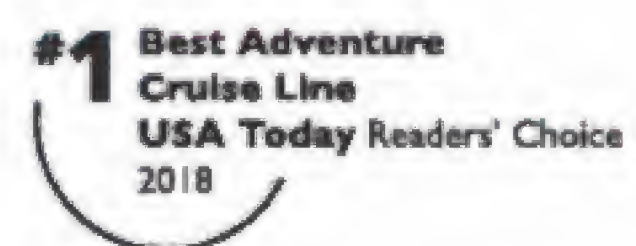


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VILHJALMUR STEFANSSON 🌟

1879-1962 | Arnes, Man.



A celebrated Arctic explorer, ethnologist, lecturer and writer, leader of the 1913-18 Canadian Arctic Expedition. He discovered several major Arctic land masses and inspired more interest in the North than anyone else in his day.

CHRISTOPHER ONDAATJE 🌟

1933- | Toronto / Chester, N.S.

Adventurer, biographer and collector of traditional stories from Sri Lanka and elsewhere. He retraced the routes of Victorian-era explorers to attempt to determine the true source of the Nile.

WADE DAVIS 🌟

1953- | West Vancouver, B.C.

Anthropologist, ethnobotanist, photographer and author whose fieldwork has taken him to some of the world's most remote places, studying Indigenous cultures and their use of psychoactive plants, and the global decline of biodiversity.

ED BURTYNSKY 🌟

1955- | St. Catharines, Ont.



The renowned photographer and co-founder of The Anthropocene Project, documenting nature transformed by human industry. He harnesses technology such as augmented reality to communicate with global audiences.

JAMES RAFFAN 🌟

1955- | Guelph, Ont.

World backcountry explorer, author and authority on the North and canoeing. He put a human face on climate change by traversing more than 17,000 km along the Arctic Circle, uncovering circumpolar stories of changing societies and landscapes.

JEAN LEMIRE 🌟

1962- | Cap-aux-Meules, Que.

Global sailor, biologist and documentarian who brought attention to climate change by leading scientific missions across the Northwest Passage and wintering in Antarctica, and who travelled the world discussing the state of biodiversity as part of the UN-sanctioned 1000 Days for the Planet mission.

TA LOEFFLER 🌟

1965- | St. John's

Educator, mountaineer and expert in the field of gender and outdoor education; has reached the highest points of Nepal, North Africa, Greenland and Antarctica, sharing expeditions with classrooms across the world.

JEFF FUCHS 🌟

1968- | Manotick, Ont.

The first westerner to trace the ancient 5,000-km Himalayan Tea Horse Road trade route and the nomadic salt route. His writing and photography record Indigenous mountain cultures, oral histories and his obsession with tea.

PAUL NICKLEN 🌟

1968- | Tisdale, Sask. / Nanoose Bay, B.C.

A decorated polar photojournalist, ecosystem specialist and marine biologist, and a co-founder of SeaLegacy, a non-profit that uses visual media to further ocean conservation and inspire action on climate change.

FRANK WOLF

1970- | North Vancouver

Wilderness adventurer, documentarian and writer. He was the first to canoe across Canada in one season, and has completed a diversity of other expeditions, including skiing Arctic islands and canoeing, ocean kayaking, cycling and trekking incredible distances.

JOHNNY ISSALUK 🌟

1973- | Chesterfield Inlet, Nun. / Iqaluit



Legendary Inuit games athlete, actor and international Inuit ambassador who has climbed the highest points in Nunavut and scuba dived the Northwest Passage. Visits schools across Canada each year to share Inuit traditions.

PASCALE OTIS

1978- | Quebec City / Cambridge Bay, Nun.



Migratory bird biologist, Arctic and Antarctic field researcher and videographer who once wintered off the Antarctic Peninsula on a yacht, sharing her adventures and the impacts of climate change with a global audience.

ROB STEWART

1979-2017 | Toronto

Known for acclaimed documentaries *Sharkwater* and *Revolution*, this writer, photographer and conservationist informed global audiences about the impacts of shark-finning, ocean health and environmental collapse.

KATE HARRIS 🌟

1982- | Atlin, B.C.

Adventurer, author, photographer and conservationist who cycled 10,000 km across Asia's ancient Silk Road. Through her international journeys, she encourages thinking "beyond borders."

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BILL LISHMAN 🌟

1939-2017 | Toronto, Ont.



BY **JOHNNY ISSALUK**
RCGS Explorer-in-Residence

IT WAS A HUMBLING moment, the first time I met Bill. He was sitting at a side table on the *Students on Ice* ship prior to our adventure through the Northwest Passage in 2008-09. I had no idea he was a great explorer who had

flown through Canada's skies alongside some of our most famous birds.

Not until halfway through the expedition did I realize that the film *Fly Away Home* was not only based on a true story, but that Bill was Father Goose. I was amazed by everything he had accomplished with the Canada geese and later whooping cranes: he

saved the latter species, which was almost extinct, by teaching them to migrate, and he did it in airplanes that he built — after learning to fly despite being colour blind.

Thus, our friendship began. When I was in Ontario I would visit him at his igloo-influenced home on Lake Scugog, called Purple Hill, which he had designed partially underground to be efficient and environmentally friendly. At Purple Hill there were always projects: once, we built a stage in the backyard adorned with tree branches, which was used that evening for celebratory song and dance.

He was an accomplished sculptor, motorcycle racer and explorer, of both poles and the world over — and not merely for the sake of exploration. He wanted to better understand what we need to do to help our world survive.

I miss my talks with Bill, the wisdom he shared so we might all live as best we can. To me, he will always be one of Canada's greatest explorers. ✦

ISOBEL MOIRA DUNBAR 🌟

1918-99 | Ottawa



Pioneering glaciologist and ice researcher, who in the 1950s became the first woman to travel on government ice breakers. Was among the first to use remote sensing for data collection.

FRED ROOTS 🌟

1923-2016 | East Sooke, B.C.

Geophysicist and diplomat, led or was part of numerous scientific expeditions at the poles and around the world. He was senior geologist for the first international scientific study of the Antarctic region (1949-52), and later conceived the Polar Continental Shelf Program.

DAVID SCHINDLER

1940- | Edmonton



Renowned environmental scientist who pioneered large-scale investigations of whole lakes as director of the Experimental Lakes Area, Kenora, Ont. His acid rain research and other studies have resulted in specific protection measures for world freshwater resources.

PHIL NUYTTEN 🌟

1941- | Vancouver



Deep-sea explorer and inventor of diving equipment and submersibles that have allowed humans to dive deeper, more safely. The founder of companies such as Nuytco Research Ltd., his hard-suits (the Newtsuit and the Exosuit) are used by explorers and navies around the globe.

ELON MUSK

1971- | Kingston, Ont.

SpaceX's CEO and chief designer, working toward crewed interplanetary space travel and rapidly reducing the expense of spaceflight. SpaceX was the first private company to launch, orbit and recover a spacecraft and to send a craft to the ISS.

CLOCKWISE FROM TOP: BILL LISHMAN; NUYTCO RESEARCH LTD.; DAVID SCHINDLER; PUBLIC DOMAIN.

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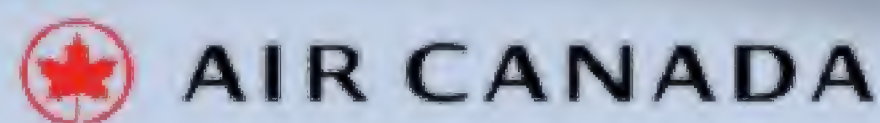
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JAMES CAMERON

1954- | Kapuskasing, Ont.



BY **JOE MACINNIS**
RCGS Honorary Vice-President

WHEN I'M JUDGING an explorer on their merits, I have five criteria: who they put on their team; the nature of their task; the technology they use or invent to accomplish it; the terrain with which they engage; and the question “How majestic is their story?”

Based on that list, my answer is overwhelmingly James Cameron. He’s led six major deep-sea science and engineering expeditions: three to *Titanic*, one to *Bismarck*, one to Pacific and Atlantic hydrothermal vent systems and, of course, one to the Challenger Deep (his solo dive to the bottom of the Mariana Trench).

Start by looking at his teams. He pulls in the best minds — from NASA, from the Russian Academy of Sciences, from universities all over. He wants to be challenged. So when you’re on an expedition with Cameron,

standing at the daily engineering meeting, you’re looking at a room of real cognitive and emotional talent.

And what can I say about his tasks? He’s gone down to 4,000 metres, then 11,000 metres. And crucially, he’s combined those feats with art and science because every expedition has ended with a stunning documentary. His primary objective? To inspire a love of science and engineering in young people.

Then we come to technology. Cameron used Russian *Mir* submarines to dive on *Titanic*, but then he built his own. His 11-kilometre solo dive to the ocean’s deepest point, in 2012, was done in a sub that came out of his mind. I remember him first talking about the idea for his *Deepsea Challenger* submersible in 2003. Over the years, he took it to sketches, which he and his team then took to computer graphics, to blueprints, to models, and finally to the real beast. He’s also invented lighting and camera systems, and was an

advisor to NASA on the cameras and lights used on Mars.

Finally, his stories. Cameron’s documentaries *Ghosts of the Abyss* (investigating *Titanic*) and *Aliens of the Deep* (exploring life in Atlantic and Pacific mid-ocean ridges and volcanic vents) were groundbreaking, but not to be forgotten are his feature films in which

‘CRUCIALLY, CAMERON HAS COMBINED HIS FEATS WITH ART AND SCIENCE.’

the ocean is central: *The Abyss* and *Titanic*. For all its gifts, *Titanic* in particular shifted our understanding of the ocean and its power. Meanwhile, I would argue that *Avatar* is the most important environmental film ever made in terms of audience reach. How many hundreds of millions saw that? As Cameron will tell you, it was informed by insights he gained exploring those deep-sea vents years before. ✦

LEFT: ANGELA GEORGE/WIKIMEDIA COMMONS (CC BY-SA 3.0); CHARLIE ARNESON

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LAW ON *the sea*

AS THE RCMP CELEBRATES ITS 100TH ANNIVERSARY,
RIDE ALONG WITH THE FORCE'S LITTLE-KNOWN
WEST COAST MARINE SERVICES DIVISION

STORY AND PHOTOGRAPHY BY **JILL HEINERTH**

Patrol vessel *Inkster* serves
as a floating home base
for the RCMP's West Coast
Marine Services unit.



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RCMP constable Mike Reid has just changed out of his uniform at the end of a seven-day patrol when his phone rings. It's 8:30 p.m. The call to his Prince Rupert, B.C., office is about a man with life-threatening injuries at a residence in the small community of Kitkatla, about 45 kilometres to the southwest. Instead of flying home, Reid puts on his duty belt and foul-weather gear to take an investigation team in a 5.4-metre-long, open-deck, rigid-hull inflatable boat, or RHIB, across the dark, unsettled waters.

In Kitkatla, two coastal detachment officers rush to the scene, calling in an air ambulance for the gravely injured man, but the 34-year-old victim quickly succumbs to his injuries. A single officer now detains a homicide suspect at a tiny community jailhouse, while the second

officer secures the scene. A crowd gathers beyond the police tape, but neither officer can leave their post or respond to questions until Reid and the other officers arrive.

When they do, they provide support and launch an investigation that will be handed off to the North District's major crime unit. There is never a question of whether the RCMP will get to a scene. It's a matter of how quickly. Along British Columbia's coast, where many towns and villages are accessible only by boat or plane, and adventurous boaters ply the bountiful, emerald waters, passing fly-in fishing lodges and reclusive cabins nestled in quiet coves, that's not a simple matter. In this region, however, it is the responsibility of the RCMP's little-known West Coast Marine Services division.



THIS TIGHT-KNIT GROUP of just 20 law enforcement officers, two engineers and two administrative staff police a 95,000-square-kilometre area, including two international borders, 27,000 kilometres of shoreline and a population of four million people. The West Coast Marine Services' mandate is broad. The 20 members, as the RCMP calls them, rotate in and out, a week at a time on three crews, enforcing the criminal code, the Canada Shipping Act and border control between Washington State and Alaska. They may also support officers temporarily living in coastal villages such as Klemtu (226 kilometres south of Prince Rupert), provide vessel safety inspections, perform joint operations



Constables Mike Reid, Dale Judd and Russ Warren patrol the waters of Haida Gwaii, B.C. (ABOVE), as part of the marine division of the RCMP (RIGHT) that services remote West Coast communities such as Hartley Bay (BOTTOM RIGHT).

with Coast Guard search and recovery or do outreach through school visits and community events.

Law enforcement on the water requires multiple talents. Most of the service's members have 10 to 15 years of general RCMP duty before they apply for a "safe patrol," where they

Jill Heinerth ([@jillheinerth](https://www.instagram.com/jillheinerth)) is a world-renowned diver and the inaugural Explorer-in-Residence of The Royal Canadian Geographical Society. Her memoir, *Into the Planet: My life as a Cave Diver*, was published in September 2019.

ride along with the service for a week of orientation and assessment. Each officer must be prepared to crew and operate any one of 96 watercraft, such as an RHIB, a cabin cruiser or a live-aboard catamaran, part of the inventory in communities along the coast. In one week, an officer might also drive a forklift, an RHIB, a motorbike or a quad, then cook a meal, repair a vessel's electrical system or fight a fire. At times, they travel by dirt bike to warn off-the-grid homesteaders of an approaching forest fire or fly with Department of Fisheries and Oceans officers to surveil salmon poachers. They may provide security during a pipeline protest or transport the prime minister to a remote community.

In all cases, they serve as mediators, educators and protectors, preferring to give out a business card rather than a ticket. Many of the communities





they serve are mostly Indigenous, and each year, Indigenous leaders review and execute a letter of expectation with the RCMP so traditional practices and governance are honoured and supported in each village. Marine services officers must work well as a close-knit team with the communities they support.



EVERY SHIFT BRINGS fresh challenges. The latest tour of the patrol vessel *Inkster*, a robust but aging 20-metre aluminum catamaran that acts as a floating home base for the service, included responding to a fatal crash of a Cessna 208 Caravan on uninhabited Addenbroke Island, about 100 kilometres north of Port Hardy. Officers watched for aggressive grizzly bears potentially looking for an easy meal in the rainforest

canopy of cedar, spruce and fir. Five survivors and four deceased were pulled from the wreckage, hoisted onto a Cormorant helicopter for evacuation to Port Hardy. When the Transportation Safety Board arrived, the service's officers helped with the investigation by talking to the owners of the floatplane, gathering evidence and documenting the poor weather conditions that preceded the crash, while the *Inkster* served as a logistics platform.

For boat skipper corporal John Stringer, such weeks begin after an eight-hour commute from his home in Salmon Arm to a nondescript industrial building in Nanaimo. Even after 38 years on the job, the stalwart, affable man is eager to get to work. Behind the building's giant roll-up door, there's already a flurry of activity.

At zero-seven-hundred hours, Stringer dispatches his two crewmates to get ready for their week-long

patrol, which can cover some 3,200 kilometres of coastline. They pack their gear, repair broken equipment and launder bedsheets. At a morning briefing, 10 officers and two civilian support staff hand off reports that need follow-up and review the logistical plans for the patrol.

It starts with Stringer and constables Reid and Russ Warren flying north to Bella Bella to swap with *Inkster's* outgoing crew. Upon arrival, Reid and Warren spring into action, transferring hundreds of kilograms of equipment from truck to plane to pickup to RHIB, then ultimately to *Inkster*. At sixteen-hundred hours, the pair rendezvous with an RCMP floatplane to support a joint operation with DFO, leaving Stringer to prepare *Inkster* to move to the community of Klemtu.

Simply tying up at the dock is an important symbol of support in this small, water-access-only village. In



Constable Reid chats with Elder Ken Edgar (LEFT) from Klemtu (ABOVE). WCMS officers serve many First Nation communities, such as Hartley Bay (TOP RIGHT), and often have to repair equipment in the field (BOTTOM RIGHT).



CONSTABLE DALE JUDD from Haida Gwaii's Queen Charlotte detachment recalls a particularly memorable call from his six years of work with the marine service. Boaters near Bella Bella reported seeing a de Havilland Beaver aircraft careen into the foggy wooded shoreline at low tide. *Inkster* and a nearby Coast Guard ship scrambled to reach the scene from 15 nautical

miles (about 28 kilometres) away. Upon arrival, RCMP members triaged four severely burned victims on *Inkster's* deck. As masters of logistics, Judd and his team quickly fetched vacationing physicians from a nearby fishing charter, bringing advanced emergency medical care to the victims. After stabilizing them, the two most severely injured were taken out by medevac. Had *Inkster* not been in the right place at the right time, the rising tide might have swallowed up the plane and its trapped passengers.

the late evening, the three-person crew walks the town, sometimes joining in on impromptu basketball games or giving out stickers to kids. They remain on call overnight. If they're lucky, the radio will stay silent, and they can begin the logistical dance all over again at dawn.

RCMP MACGYVER

Given the environment in which it works, the West Coast Marine Services is hard on gear, and things inevitably break. One of the service's three floating home bases, P/V *Inkster*, is due for replacement soon, so power supplies break, bilge pumps falter and sometimes the radar goes out

just when the crew reaches low water in a tight channel. Technical aptitude and expertise are therefore essential for the service's officers. Without hesitation, they grab a wrench or break out charts and calipers to plot their navigation. On one morning in Prince Rupert, the service's

constable Mike Reid had to make an unplanned run to the hardware store to pick up a tube of quick-cure marine epoxy to patch a hole in a rigid hull inflatable boat. An hour later, after careful troubleshooting, he was off the dock and heading back to *Inkster*.



The harbour in Hartley Bay, B.C. (ABOVE). Serving this and other remote towns can involve shipping in tons of gear (RIGHT).

From investigating serious crimes to helping disabled vessels or chatting with kids on skateboards, Reid says he loves his work. “I enjoy being able to see how people live. I love the history here. Whether I am talking to an Elder in the village or a greenhorn fisherman, being on the water makes people happy. Talking about the beauty of this place breaks down barriers and opens a conversation.”


As he watches whale blows from *Inkster’s* wheelhouse, Stringer adds, “emergencies in a marine setting can be very intimidating. Bad weather can turn small problems into full-blown emergencies. That is where we shine.” 🌊



See a photo essay of the renowned RCMP Musical Ride at cangeo.ca/jf20/rcmp.

ADVENTURES

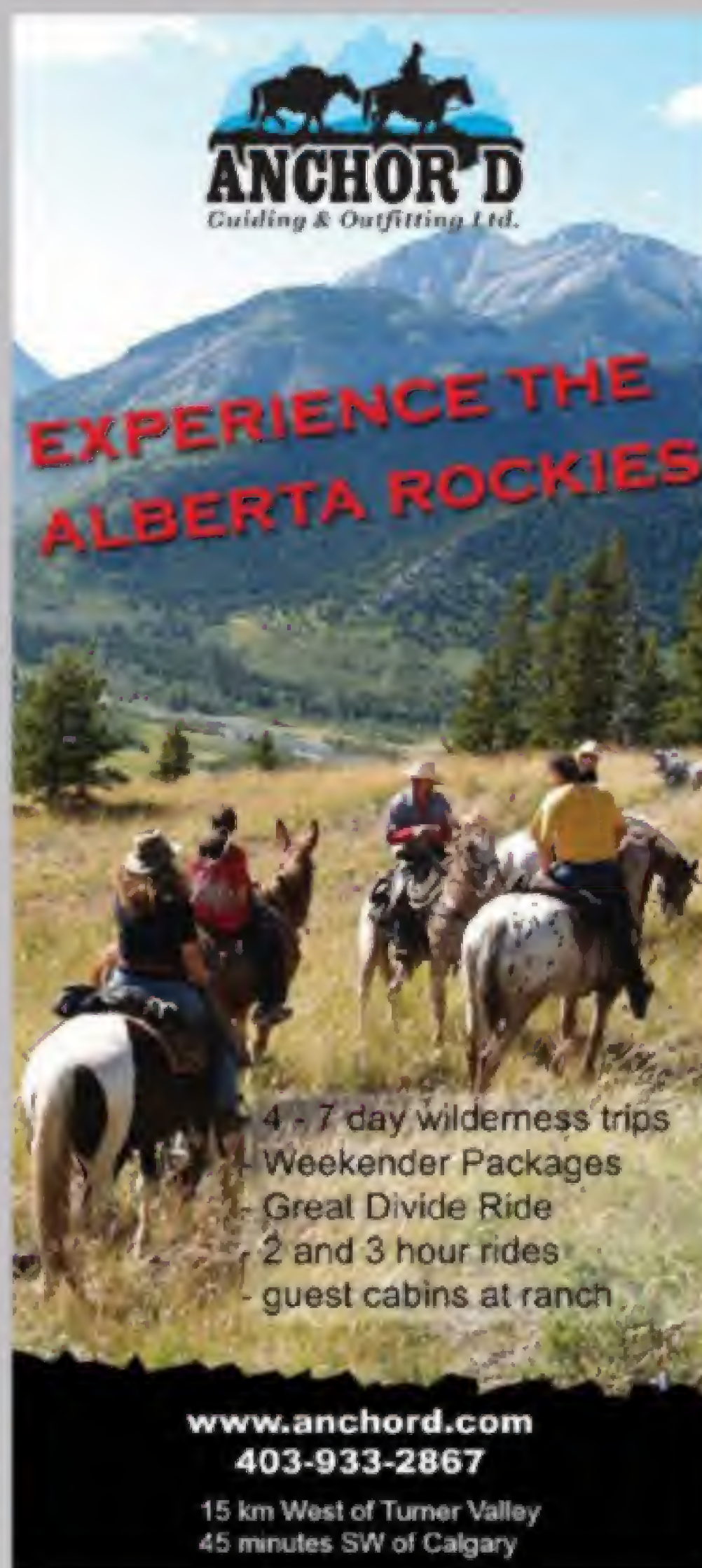
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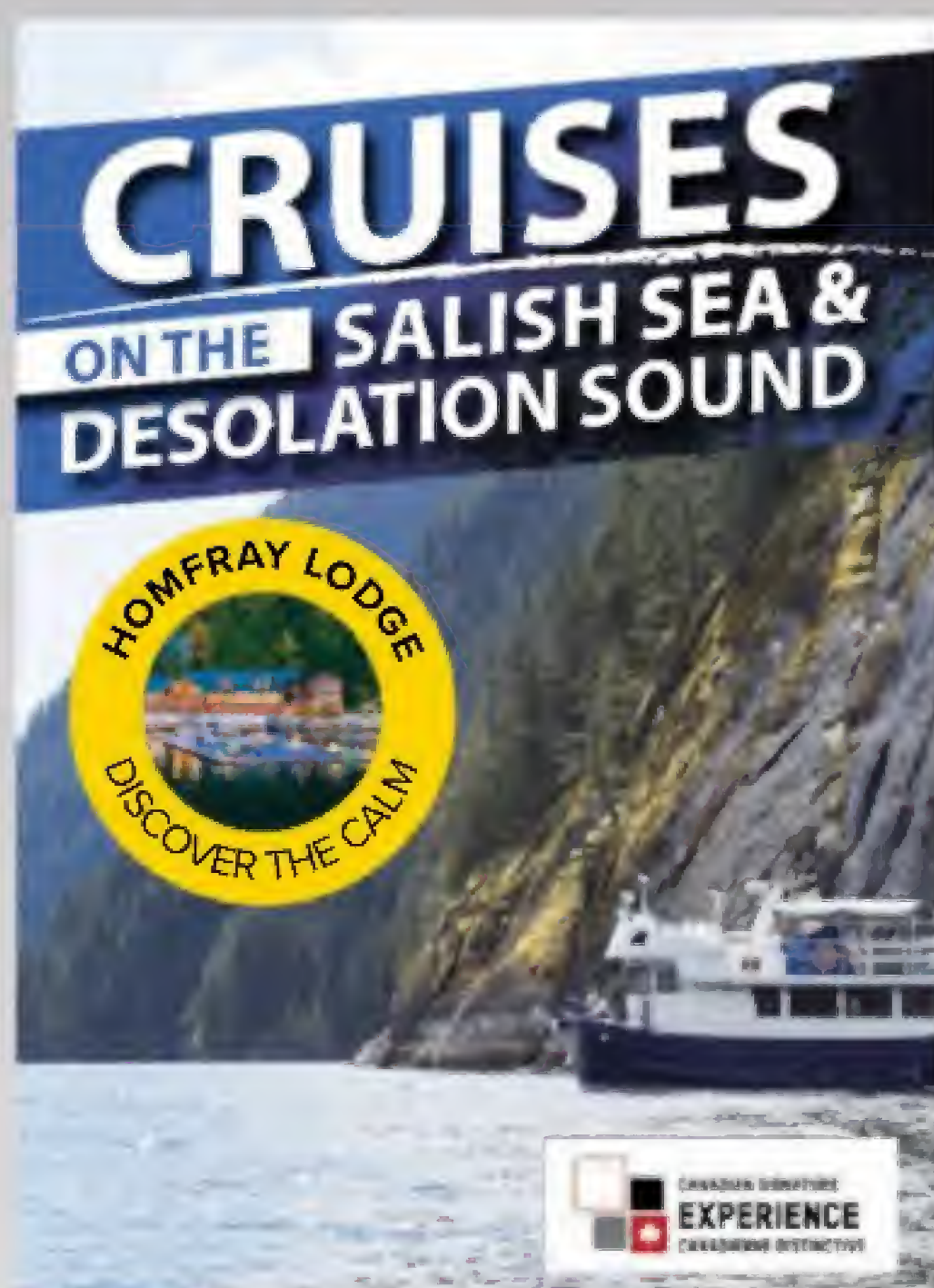
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Never **FAR FROM** *FORGETTING'*

A GLIMPSE INTO THE LIVES OF YAZIDI
WHO'VE FOUND REFUGE IN CANADA

BY **SUSAN MCCLELLAND**
WITH PHOTOGRAPHY BY **PETER POWER**



Essw Hayder



Viyn Kobat



Shami Blasini



Kayn Miskin



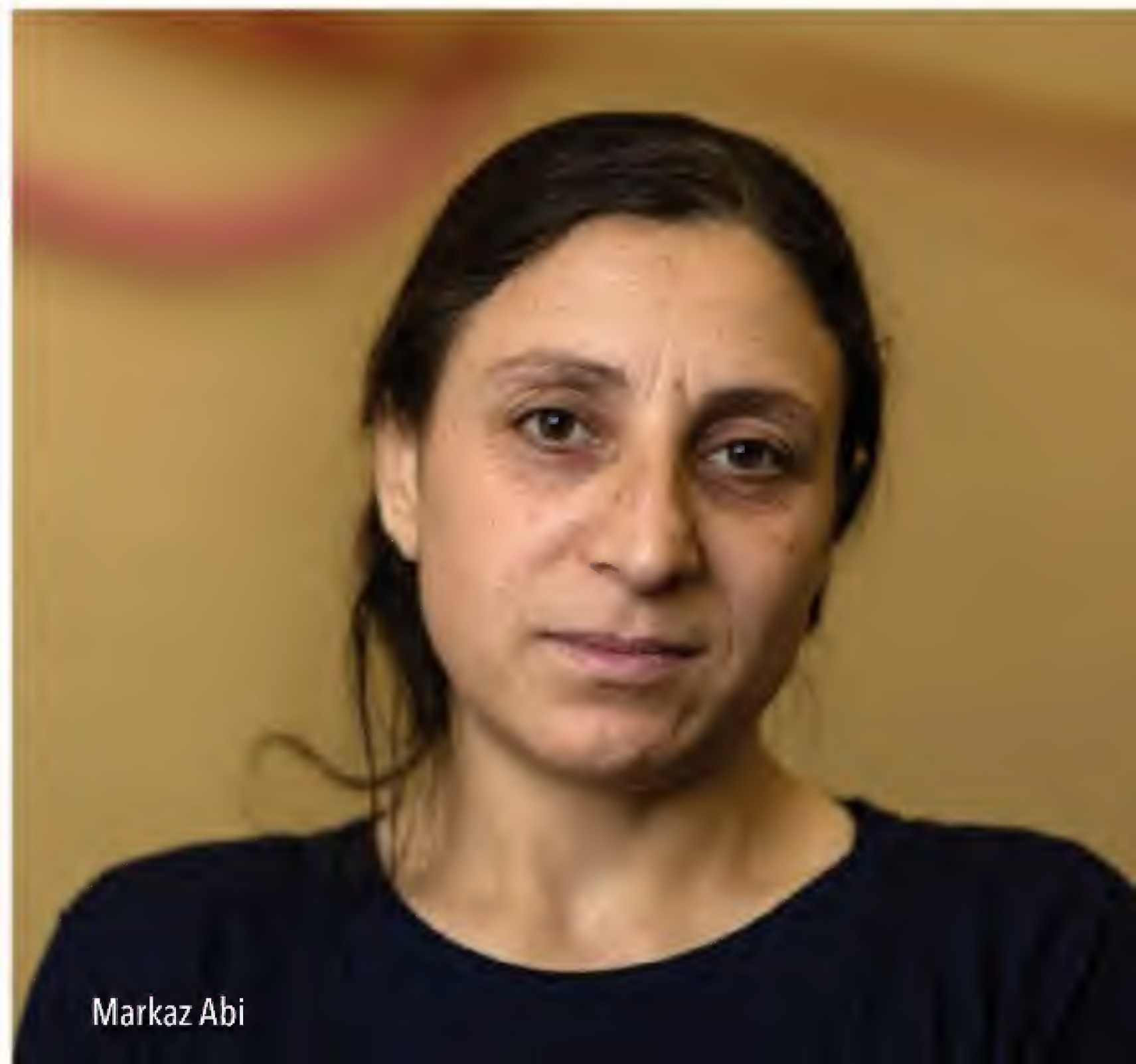
Mirza Mohamud



Sheerzad Hayder



Qasm Mohamud



Markaz Abi



LIKE A SPOTLIGHT IS TRAILING HIM,

Hayder Essw weaves in and out of a crowd of about 150 gathered for the Yazidi festival *Rejiet Ezi* in the basement of the United Church in Richmond Hill, Ont. He's dressed no differently from many of the men in attendance, in traditional Yazidi clothing with a red-and-white checkered *jamadani* headscarf. Approaching middle age, with lines on his cheeks but a youthful spring in his walk, Essw greets politicians, supporters and children alike with his wide smile, melting eyes and a warm handshake.

The tables he passes are covered in candies and gooey cakes that after three days of fasting, the Yazidi partygoers eat as a boon before their main meal. Married women, some in traditional Yazidi dress, others sporting classic Western evening attire, grip each other's hands as they lean in and catch up. From the kitchen, aromas of *dolma*, a Middle Eastern stuffed leaf

dish, and warm lamb fill the room. Essw's son Araz fumbles with a boom with a camera tacked on the end to film the dancing that will soon follow; all the while, the young hug and kiss each other's cheeks.

Rejiet Ezi, one of the most important celebrations in Yazidi culture, occurs around December 14. The date changes each year and is calculated on the Yazidi calendar, which by some elders' accounts may be one of the first calendars in existence (it starts on a Wednesday in mid-April). An oral tradition, Yazidi spirituality and customs are retained by only a few, and so many at the event are uncertain what *Rejiet Ezi* is really about. Essw's brother, Zuher, says that since *Rejiet Ezi* comes near the longest night of the year, or winter solstice, "we fast, as if to remind ourselves of the winters of our lives. We pray for the sun and then we feast, assured that light is returning to the bareness of Earth."

On this night, Essw is the light, the patriarch of Toronto's Yazidi community. His family was the first to arrive in this city in 2009, but not the first in Canada. Until recently, about 50 families had settled around London, Ont., having left the Nineveh plains in Iraq where the Yazidi have lived for thousands of years. But in the past three years, about 1,200 more Yazidi have joined them in Canada, sponsored as United Nations refugees, survivors of the 2014 genocide perpetrated by the Islamic State of Iraq and the Levant (known as ISIL in the West, DAESH to Middle Easterners). Celebrations such

Susan McClelland (smcclelland.com) has written for The Walrus, The Guardian and The Sunday Times Magazine. Her young adult book, A Cave in the Clouds, chronicles the abduction of a young Yazidi woman. Peter Power (peterpower.ca) shoots for the Global and Mail, Maclean's and The Canadian Press.



Many Yazidi refugees have settled in Canada (PREVIOUS PAGES). They continue to celebrate traditions such as *Rejiet Ezi*, which includes prayers (LEFT) and dancing (TOP). Hayder Essw (ABOVE, in red headscarf) is a Yazidi patriarch in Toronto, where his mother Shami Blasini (TOP RIGHT) has joined him.

as this one in Richmond Hill are now being played out in rented community centres, churches and homes in cities across the country, particularly Calgary and Edmonton, where the federal government has placed the refugees. Alongside the food, the traditional Yazidi dance *dilan* and Middle Eastern hospitality, lives — like *Rejiet Ezi* itself — are emerging from darkness.

“We are never far from forgetting,” says Markaz Abi, a widow from the genocide raising her four young children in a small bungalow not far from the Richmond Hill church. Abi’s eyes are perennially swollen from tears and she clings to her cellphone that holds photos of 40-plus dead relatives,





almost all young men. She repeats, “We are never far from forgetting what has happened to us.”



ESSW'S FATHER, HUSSINE, an elder and wisdom keeper, says the Yazidi trace their origins back to the beginning of Earth, specifically to the region along the Tigris-Euphrates River often referred to as the birthplace of civilization. They consider themselves direct descendants of Adam. Many of their cultural practices provide glimpses into the spiritual beliefs of the earliest documented cultures. Despite reports that the Yazidi incorporate elements of the Persian spiritual practice Zoroastrianism, Sufi Islam and Christianity into their belief system, their spiritual leaders in the Yazidi Holy Land, Lalish, in northernmost Iraq, consider it the other way around. Monotheistic (with a belief that God and his archangels created Earth) and persecuted (they have faced 74 genocides), the Yazidi have passed on their knowledge to the others, says Hussine. Those who know Yazidi spirituality, its mysticism, belief in reincar-

nation and purification of the soul, see parallels in Buddhism, Sikhism, Hinduism, Kabbalah and the teachings, meditation and miracles of Jesus Christ.

One thing is certain, though: “the most recent Yazidi genocide didn’t just target a people,” says Lyn May, chair of Richmond Hill’s United Church outreach committee, which provides help to the refugees. “This was an attempt by ISIL to eradicate our collective history.”

It was August 2014 at the end of *Chile Havine*, or the Forty Days of

‘The most recent Yazidi genocide didn’t just target a people. This was an attempt by ISIL to eradicate our collective history.’

Heat — another celebration that sees many Yazidi on holidays and back in their traditional home villages to honour their ancestors — when ISIL invaded Yazidi villages near the small city of Sinjar in northwestern Iraq. ISIL refer to the Yazidi as *Abadat Shaytan*, or devil worshippers, explains Khalid Aboulela, a Sufi-Islamic scholar living in Canada.

The *Rejjet Ezi* festival sees friends reconnect (ABOVE) and practice the traditional *dilan* dance (TOP RIGHT). In Canada, Yazidi refugees also reflect on lost loved ones, such as Markaz Abi’s husband, whose name is tattooed on her hand (BOTTOM RIGHT).

Contemporary genocides against the Yazidi have been fuelled in part by their reverence to the archangel Tawuse Melek, also known as the Peacock Angel — many Yazidi homes have pictures of both Lalish and peacocks. In the Qur’an, the devil is described as an angel who refused God’s command to bow to Adam. And Tawuse Melek was such an angel. When God made Adam, he gathered his angels together and asked them to bow. All did, except Tawuse Melek, who said that he had made a vow to only bow to God. According to Yazidi belief, God made Tawuse Melek the chief of all angels.

ISIL, however, have taken Islamic stories of Iblis, the devil, and deduced it to be Tawuse Melek. “Based on their conclusion, they determined that the Yazidi deserved death and slavery,” he says, explaining where ISIL is drawing their rationale, albeit



wrongly, for the most recent atrocities. “But the Prophet Muhammad said all people were to be treated with kindness and deserving of legal status and rights,” counters Aboulela. “All humans have souls.”

It’s estimated that as many as 5,000 Yazidi men were brutally killed and that ISIL abducted an estimated 6,000 Yazidi women and girls — to be married off to fighters or sold in sex-trafficking operations. Younger children were taken, too, the girls to act as servants, the boys to be groomed as child soldiers. According to the UN, 3,000 Yazidi females are still thought to be in ISIS’s hands and thousands of males are still missing.



AS ORAL STORYTELLERS, the Yazidi are poetic, so it’s no surprise that Essw describes the persecution of his people as the winter of their souls. His own journey out of Iraq began in 2007, with his then eight-year-old son, Sheerzad. Sheerzad has an incurable disease — *Epidermolysis bullosa*, a rare genetic condition that results in the blistering of the skin and internal organs. Without treatment and as a cultural minority in Iraq, Sheerzad

was unable to access proper medical care and was wasting away, his body covered in painful lesions.

Desperate, Essw took him to see a doctor at an American army base. Sheerzad was given some medication and began to show signs of recovery. Essw’s Arab neighbours became leery of his involvement with the Americans and labelled him a spy. Essw feared for his and his family’s safety. And for good reason. Around the same time, terrorists shot 23 Yazidi men travelling on a bus, and suicide bomb attacks were set off, likely by radicalized individuals who would go on to form ISIL in Iraq, in local Yazidi villages, claiming as many as 1,200 lives. “It was one of those moments I wish on no father,” says Essw. “I had to decide to leave my family to save them.”

Essw and Sheerzad left their village, Babira, near Mosul, in part on foot and in part crammed into battered cars with other refugees, until they managed to sneak through the Sinjar and Zagros mountains into Turkey.

In Turkey, Essw and Sheerzad were imprisoned and faced deportation as refugees. “But a prison guard asked me to tell my story,” explains Essw. “I said that no matter how many times Turkey tried to send us back, I



would return. I would not stop until Sheerzad had a chance of living past the age of 10.” Essw’s story was well publicized after that, attracting the attention of the Turkish Humanitarian Relief Foundation and Turkish President Recep Tayyip Erdogan, who helped Essw’s immediate family leave Iraq. After Sheerzad received the necessary care, the United Nations took over and settled the family in Toronto.

Essw and his family brought very little with them, but one spiritual token they could not do without was the *Berat*, which can be found in a white cotton bag in their Richmond Hill home. The *Berat* is soil culled from a cave called the *Shikefa Berata*



A trio of well-dressed Yazidi youngsters poses for a photo during the *Rejiet Ezi* festival, which ends a period of fasting.

in Lalish. It's believed that the *Shikefa Berata* is from another planet, explains Imad Farhan, the son of Fawaz Farhan, a Yazidi author and historian living in Germany. The cave is opened once a year when the energy inside is said to have reached its peak.

"We say through the *Berat* our angels can hear us," adds Essw's father, Hussine. The *Berat* contains healing properties. "We believe in God and that he created his seven archangels and each has a specific task or duty," continues Hussine. "When Earth was being formed, Gabriel came so close to the planet that the angel's vibration altered its formation and that is how Earth got ready for humanity," he says. "Gabriel is our messenger between humans and God."



BACK IN TORONTO, at the *Rejiet Ezi*, Essw's son Sheerzad, now 19, sits on stage while his father introduces the speakers for the evening. The boy is healthy, although still the size of a child. A Grade 12 student, he, like other Canadian boys his age, isn't quite sure what he wants to do when he grows up, but he loves video games.

Mirza Ismail, head of the Toronto-based Yazidi Human Rights Organization International, takes the microphone and talks about the courage of Nadia Murad, the young Yazidi woman from Kocho who first spoke about her abduction experience to the United Nations. Murad won the 2018 Nobel Peace Prize alongside Congo's Dr. Denis Mukwege for their work fighting sexual violence. Murad has a cousin in the room, Fatuma, who now lives in Toronto. A month earlier, Fatuma was sent a video from ISIL saying that her teenage brother was still alive and if she raised several thousand dollars, she could buy him back. Since that initial correspondence, Fatuma has heard nothing else and fears that her brother has been moved — or has died in recent shelling in Syria.

While these Yazidi are grateful to be safe in Canada — especially since the United States' withdrawal from Syria unleashed Turkish forces against the U.S.'s former Kurdish allies near the Yazidi homeland and increased the threat of ISIL's return in the region — the Yazidi who have arrived in Canada since 2016 say they have mixed feelings about their new country. Immigration has separated

families, scattering sisters and children, mothers and grandfathers across various countries — Germany has accepted the largest number of Yazidi refugees — and camps for internally displaced people across Kurdistan.

There are efforts by the Canadian government to reunite immediate family members, but the pain of separation, given all the trauma this tightly knit community has experienced, is all-consuming. Furthermore, the Yazidi, who were largely small farmers and tradespeople, have to learn new trades, after first learning a new language, with children often quickly surpassing their parents in speaking English and navigating Canadian systems.

The Essw family spends most of their time, pro bono, shuffling Yazidi parents to teacher meetings, translating at doctors' appointments, shopping for basic supplies and finding housing. Above all, the Yazidi need psychological trauma care. Most of the women have experienced multiple sexual assaults, beatings and humiliations. The children have seen family members butchered in front of them.

Two hundred years ago, Imad says, a Yazidi man named Mam Isso predicted there would be difficult times coming for the Yazidi. He had a prophecy of their pain and sorrow. He also predicted the whole world would hear about the Yazidi through Kocho, the home village of Murad and where the worst atrocities against the Yazidi were committed. While the Yazidi are scattered more than ever, questions have arisen as to whether their homeland will, anytime in the foreseeable future, be safe. It is ceremonies such as the *Rejiet Ezi* that are keeping this gentle, peaceful and important culture alive. 🌱

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The Royal Canadian Geographical Society's College of Fellows Annual Dinner is the standout event of the year for hundreds of people who share the Society's passion for making Canada better known to Canadians and the world. But 2019's event, held Nov. 21 at the Canadian Museum of History in Gatineau, Que., was even more special, as the Society celebrated 90 years of exploration, curiosity and storytelling.

Space exploration was the overarching theme of the evening, with 2019 marking the 50th anniversary of the Apollo 11 moon mission as well as the 90th anniversary of the RCGS. Dr. Roberta Bondar, Canada's first woman astronaut and an RCGS Honorary Vice-President, introduced fellow astronauts Harrison Schmitt and Andrew Feustel as they accepted their Gold Medals, while Canadian Space Agency astronaut David Saint-Jacques returned the RCGS expedition flag he had taken with him to the International Space Station on Expedition 58/59.

Schmitt delighted the crowd by tossing out foam "moon balls" and sharing his experience as the last living human on the moon, while Saint-Jacques amazed with a presentation about his mission and the perspective it has given him on our planet. "This is our home in the vacuum of space," he said, "and we have to take care of it."



THE 2019 MEDALLISTS

The RCGS awarded medals to 36 exceptional honourees this year — among them astronauts, educators, artists, former heads of state, explorers and scientists — at a special ceremony at its Ottawa headquarters on Nov. 21. For the full list of medallists visit cangeo.ca/jf20/awards.

THIS PAGE: BEN POWLESS/RCGS. OPPOSITE: ASTRONAUT GROUP, JOE CLARK, ANTHROPOCENE PROJECT TEAM AND NATIONAL CHIEF PERRY BELLEGARDE AND VALERIE RALPH; ALL OTHER PHOTOS: BEN POWLESS/RCGS



Want to save your place at the 2020 RCGS College of Fellows Annual Dinner? Buy tickets to next year's event at rcgs.org/CFAD.



OPPOSITE PAGE, CLOCKWISE FROM TOP: The Grand Hall; RCGS President Gavin Fitch; Explorers-in-Residence Jill Heinerth and Adam Shoalts. THIS PAGE, CLOCKWISE FROM TOP, INSET: Apollo 17 astronaut Harrison Schmitt throws a "moon ball"; NASA astronaut Drew Feustel and wife Indira Devi Bhatnagar; Dr. Roberta Bondar; David Saint-Jacques returns his RCGS Expedition Flag; National Chief of the Assembly of First Nations Perry Bellegarde and Valerie Galley; former Governor General David Johnston; Richard Wiese, President of the Explorers Club; MC Evan Solomon; RCGS CEO John Geiger (right) presents the Society's Gold Medal to National Geographic President and CEO Michael Ulica; The Anthropocene Project team; Algonquin drummer Steve Wawatie; ambassadors Hanne Fugl Eskjær (Denmark) and Anne Kari Hansen Ovind (Norway), Lt.-Gov. of Ontario Elizabeth Dowdeswell, Minister Catherine McKenna and artist Leanne Shapton and her daughter; past Prime Minister Joe Clark.



NEW RCGS FELLOWS

The Society inducted 133 new Fellows into its ranks. This year's class includes country singer Paul Brandt, journalists Julian Brave NoiseCat and Steve Paikin, giraffologist Anne Innis Dagg, historian Margaret MacMillan, and Tlingit artist Keith Wolfe Smarch.





FEATURED FELLOW: JANE GOODALL



Jane Goodall is a living legend. Known best for her pioneering work studying chimpanzees in Tanzania's Gombe National Park, the world-renowned primatologist and conservationist is also the bestselling, award-winning author of books such as *In the Shadow of Man* and *Reason for Hope*. The Jane Goodall Institute, which focuses on chimpanzee research and protection and collaborative work with communities, now has 34 locations around the world, while her Roots & Shoots program, which is inspiring youth to become conservationists and compassionate leaders, is in nearly 60 countries. Here Goodall, who received The Royal Canadian Geographical Society's Gold Medal in September, discusses her legacy.

On how she became interested in animals

I was born loving animals. I had a supportive mother. I watched animals; I read books about animals.

When I was 4½ years old, I went to stay on a farm in the country. My job was to collect the hens' eggs, and I

began asking everybody, "But where does the egg come out of the hen?" And nobody told me, so I waited in the henhouse until, four hours later, a hen came in and laid an egg. Mom didn't know where I was. She could have gotten mad at me, but instead she sat down to hear the wonderful story about how a hen lays an egg.

On the conference that turned her from researcher to activist

That meeting, which was four days in Chicago in 1986, we had a session on conservation. It was shocking. We watched secretly filmed footage on conditions in captive situations, such as medical research and the cruel training of entertainment chimps — taking them from their mothers, beating them. I left that conference an activist.

On what she's working on now

We've got 34 Jane Goodall Institutes around the world and they've all got different research projects. The main one that I'm involved in

is the TACARE program to protect forests, because one of the very best ways to mitigate climate change is to protect and restore them. We work with the local people to improve their lives and help find ways for them to make a living without destroying the environment.

On what individuals can do

Every day we make choices, don't we? And if we start learning a little bit about these things, we can make more ethical decisions. One of the best things to change is your diet. As more people around the world eat more meat, there are billions of animals in factory farms. The cruelty is horrendous. Areas are cleared to grow the grain to feed them. Fossil fuel is used to get the grain to the animals, the animals to the abattoir, the meat to the table. Large amounts of water are needed. And then the animals themselves produce methane, a very dangerous greenhouse gas. Eating a little bit less meat makes a very big difference. 🌱

—Interview by Michela Rosano

CAN GEO TALKS

PRESENTS

Canada's greatest explorers



FEBRUARY 4, 2020, 7 P.M.
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Join a panel of Canadian adventurers — including Royal Canadian Geographical Society Explorers-in-Residence Jill Heinerth, George Kourounis and Adam Shoalts — as they debate Canada's greatest explorers. From Samuel de Champlain to James Cameron, this lively discussion is sure to entertain and inspire.

Reserve your tickets at
cangeo.ca/greatestexplorers

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Founded in 1929, the Society is a non-profit educational organization. Its object is to advance geographical knowledge and, in particular, to stimulate awareness of the significance of geography in Canada's development, well-being and culture. In short, the aim is to make Canada better known to Canadians and to the world.

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COMING UP



OPERATION CARIBBE

Ian Coutts hitches a ride aboard the Royal Canadian Navy's HMCS *Yellowknife*, Canada's part in an international effort to stop the movement of drugs in the Caribbean and eastern Pacific. Look for this feature story in the March/April 2020 issue.

CAN GEO TALKS

Who do you think is Canada's greatest explorer? Join the discussion with Royal Canadian Geographical Society Explorers-in-Residence Jill Heinerth, George Kourounis, Adam Shoalts, Johnny Issaluk and others at a special event on February 4 at 50 Sussex in Ottawa. For tickets, visit rcgs.org/programs/speaker_series



RE:LOCATION

Contributing editor Julian Brave NoiseCat and photographer Christian Fleury share insights and images from Oujé Bougoumou, Que., in the March/April 2020 issue as part of *Canadian Geographic's* community Re:location project, highlighting the history, challenges and outcomes of towns across the country forced to move and re-establish elsewhere. cangeo.ca/relocation



CAN GEO KIDS

In our latest *Can Geo Kids More Ultimate Animals* special issue, we delve into Canada's animal and plant species and their significance to Indigenous Peoples, with fun games and puzzles, stories about wildlife and much more! On newsstands in January.



Subscribe or renew today at canadiangeographic.ca/subscribe or by calling 1-800-267-0824. The March/April 2020 issue hits newsstands on Feb. 17, 2020.



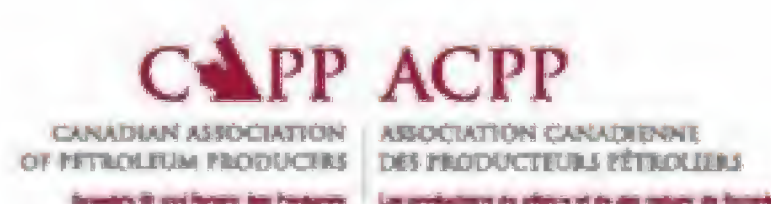
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OUR COUNTRY

Revealing Canada



Elvis Stojko

The figure-skating great revisits his happy childhood in the farming country near Newmarket, Ont.



What's your favourite Canadian place? Tell us on Twitter (@CanGeo) using the hashtag #ShareCanGeo.



Or share it with us on Facebook (facebook.com/cangeo).

The first 10 years of my life were spent on a 50-acre hobby farm in Queensville, Ont., north of Newmarket. I had a very happy childhood, full of imagination and exploration. When you're little, 50 acres is huge; I spent most of my free time biking, climbing trees, and crawling through the barn with my friends, making forts or jumping from the rafters into giant bales of hay.

Even though it was a hobby farm, there was a lot of work to do. We had horses, dairy cows, pigs, rabbits, geese, chickens and a huge organic garden. I was too little to lift the hay bales, so I got to drive the truck.

The farmhouse was already 100 years old when my parents bought it, before I was born. There was a little cubby under the stairs off the family room, and that was my hideout. I would hang out in there and draw on the inside of the door with crayon, and when I was seven, I signed my name.

We moved to Richmond Hill when I was nine because I was skating in the Toronto Cricket Club by then and my competitive career was taking off, but all the subsequent owners of the house have left my signature in the cubby, which is pretty cool.

I've travelled the world and I was fortunate to have lived in Mexico for 12 years, but my wife and I recently purchased 100 acres in the Kawartha Lakes area, and it really feels like coming home. I can stand in the middle of the forest and close my eyes and listen to the wind in the trees, and just feel that beautiful exhaustion that comes from being outside all day. 🌿

—As told to Alexandra Pope

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