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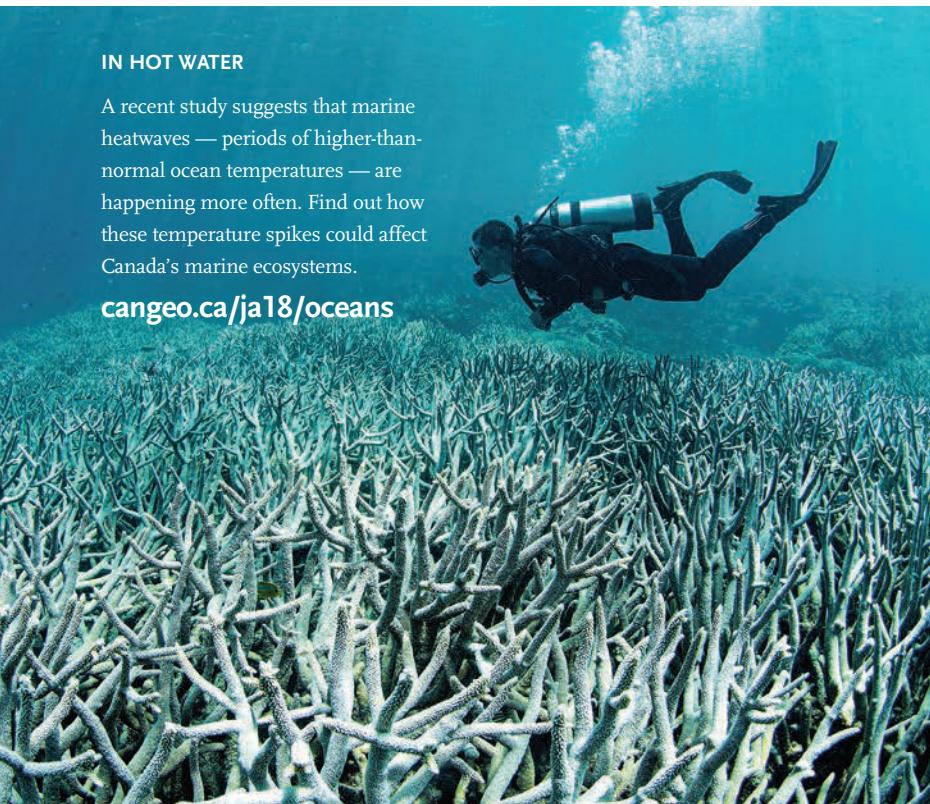
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cangeo.ca/ja18/oceans



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Earlier this year, the Métis of Fort McKay, Alta., purchased 150 hectares of land from the provincial government, becoming the first Métis community to own their land. Learn what the historic purchase means for the community and for Métis rights in Canada.

cangeo.ca/ja18/metis



PAINTING THE ISLAND

Canadian painter E.J. Hughes had a remarkable career spanning 70 years and a wide range of locations and subject matter, but his heart always remained on Vancouver Island. Learn more about his life and work.

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Balancing acts

I CRINGE EVERY TIME I pass Bobolink Ridge. I suspect whoever named the street near my home after the threatened bird species meant well. But I can't help but confront the unfortunate irony in the name: the street is in a new subdivision that replaced the open meadow of tall grasses where the endangered bird was found.

It's certain that urban development has impacted countless species across the nation. Margaret Munro's feature story (page 32) on balancing urban expansion in Vancouver with protecting the critically important habitat of the Fraser River delta is a prime example of the issues facing communities big and small across Canada.

Two examples encapsulate Vancouver's debate. On one hand, there's the promise of billions of dollars in new economic activity and thousands of additional jobs forecast in the Port of Vancouver's plan to the middle of the century. On the other, how will the 600 million to a billion young salmon that inhabit tidal marshes in the area and are already threatened by impacts from climate change and urban development pressures fare when the port's proposed 108-hectare infill expansion is complete?

Mayor Gregor Robertson has decreed Vancouver will be "the greenest city in the world by 2020." Presumably protecting the Fraser — the province's longest river — and the wildlife species that depend on it is a part of that plan. The rest of the country will be watching. Will it be a lead to follow? ☀

—Aaron Kylie

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

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PHOTO BY VICTOR LIU

Sunlight breaks through dark clouds to cast a glow over the Tombstone River Valley near the Talus Lake backcountry campground in Yukon's Tombstone Territorial Park. The park, which is about 85 kilometres northeast of Dawson, was established as part of the 1998 Tr'ondëk Hwéch'in Final Agreement between the federal government and the Tr'ondëk Hwéch'in First Nation. The park's Indigenous name is Ddhäl Ch'él Cha Nän, which translates as "ragged mountain land."



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PHOTO BY DON LAMONT

Lightning illuminates the sky above the twin spans of the Bluewater Bridge in Sarnia, Ont. The photographer captured this shot during a severe spring storm that spawned several tornadoes in Michigan, which is across the St. Clair River from Sarnia, and rainfall so heavy he couldn't see well enough to drive.



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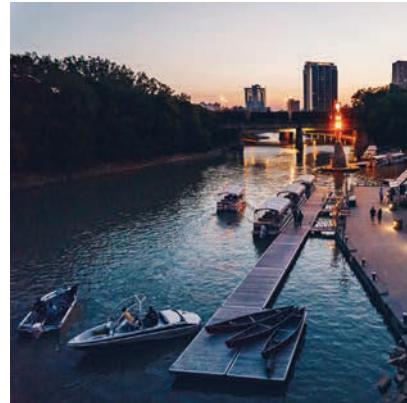
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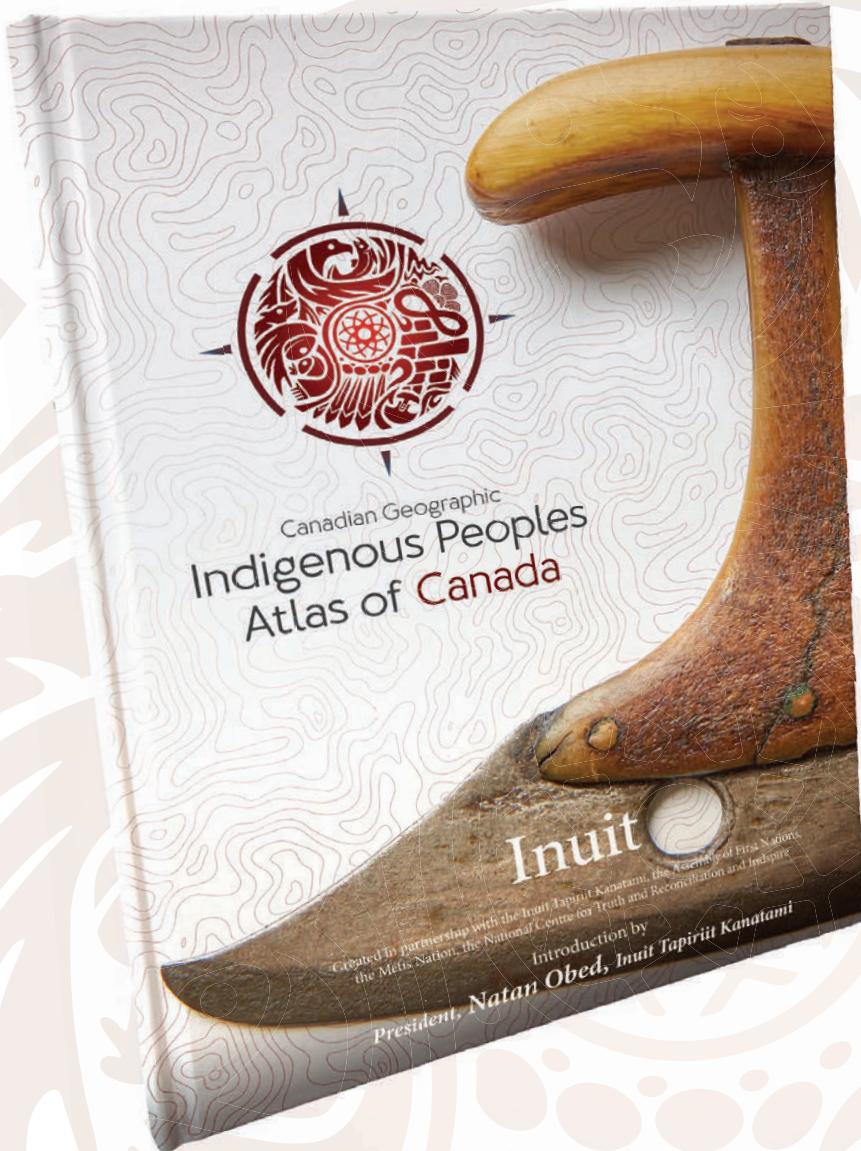
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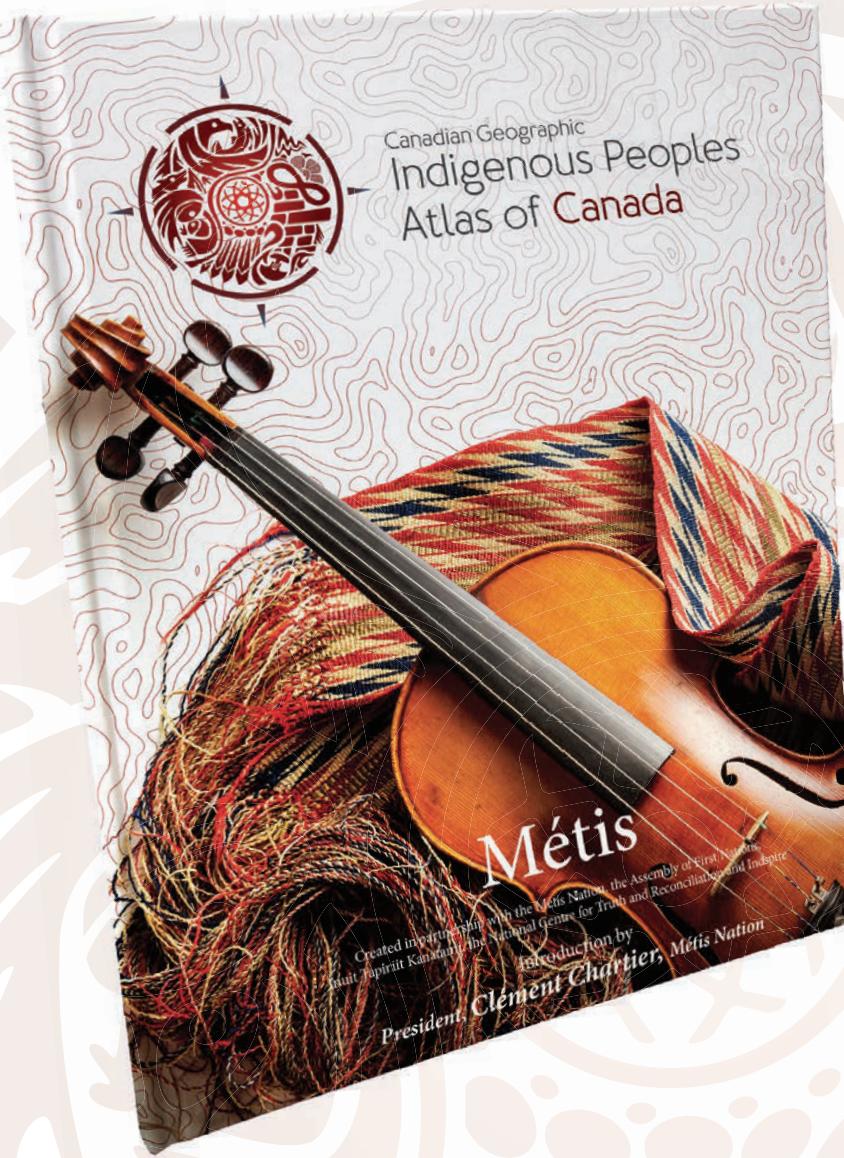
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Nunannguaq is the Inuit word for map. It means “representation of land.” Like other peoples around the world, we have always carried maps in our minds.

— MICHAEL KUSUGAK,
Acclaimed children’s author and Inuit storyteller





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Mapping our spaces, in both contemporary and historical practice, protects Indigenous peoples from imperial erasure.

— ADAM GAUDRY,
Métis scholar and professor at the University of Alberta



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Colleen Cardinal

The rights activist discusses her project to map the displacement of '60s Scoop adoptees

INTERVIEW BY MICHELA ROSANO

Between the 1960s and 1980s, an estimated 20,000 Indigenous children were taken from their homes and communities and placed in foster care or adopted to primarily white families. The effects of what is known as the '60s Scoop — an effort to assimilate Indigenous Peoples and culture in Canada — are still felt today, with Indigenous children continuing to be overrepresented in Canadian child welfare systems. Colleen Cardinal, a Plains Cree '60s Scoop survivor, co-founder of the National Indigenous Survivors of Child Welfare Network and author of the new book *Ohipikihaakan-ohpihmeh (Raised Somewhere Else)*, has embarked on a project to create an interactive map of the movement of '60s Scoop adoptees.

On the goal of the map

As I shared my own story online, more and more adoptees started contacting me,

telling me they were taken as far as England, New Zealand and Australia, so I decided to show our displacement at an international level on a map. I'm creating this in collaboration with academic Raven Sinclair's Pe-kwewin Project, which examines how Canadian policies resulted in a national Indigenous child removal system, the Indigenous community-focused Firelight Group and GeoLive, a University of British Columbia mapping project.

It's going to be shameful for Canada to see this, but it will be an important tool for us to educate, collect data and share our stories. Survivors will also be able to use the map to find information about themselves and their biological families.

On her personal connection to the project

My two sisters and I are from Saddle Lake Cree Nation, about 1½ hours northeast of

Colleen Cardinal is charting the displacement of '60s Scoop adoptees so the survivors can share their stories.

Edmonton. We were taken from our parents when I was a baby, put into foster care and then adopted and taken to Sault Ste. Marie, Ont. We were raised in an extremely abusive home. All of us had run away by the time we were 15 years old.

My older sister was murdered in 1990, a year after we repatriated [to Alberta]. Today, I volunteer with the Families of Sisters in Spirit organization to educate people about how child welfare policies have affected missing and murdered Indigenous women. A lot of us grew up in abusive homes, and we ended up fleeing those homes only to be killed by people we interacted with — there's a big connection there. Much of my work is inspired by my sister. She was a fighter.

On the scope of the '60s Scoop

Children were predominantly taken from Alberta, Saskatchewan and Manitoba, and

placed in homes in Ontario and the United States, although hundreds — perhaps even thousands — were also taken overseas.

We are the original people of the land. What were we doing being shipped all over the place? No effort went into keeping our families together and providing services for those who needed them or anything like that. We were advertised through newspapers and on television, like how you would for a pet. Those children are now adults who are looking to come home, and they don't even know where they're from.

On bringing '60s Scoop survivors together

Besides the loss of culture, the thing about being a '60s Scoop survivor and being raised in a non-Indigenous environment is that it makes you feel like you don't fit in anywhere and that you have no one to talk to. You don't feel like you fit in



with your white family — even though some families were great to the adoptees and provided love and support — and you may not have support from your biological family either. This map will build a community for '60s Scoop adoptees across Canada and internationally. It will say, "Look, here we are. We're over here." The government still needs to deal with us. We're still here. ☽

Colleen Cardinal (right) and her sisters Patti (left) and Gina in 1975, after being adopted.

'60s Scoop adoptees can take part in this mapping project by submitting their information through the National Indigenous Survivors of Child Welfare Network (niscw.org).



Read the full version of the interview with Colleen Cardinal at cangeo.ca/ja18/cardinal.

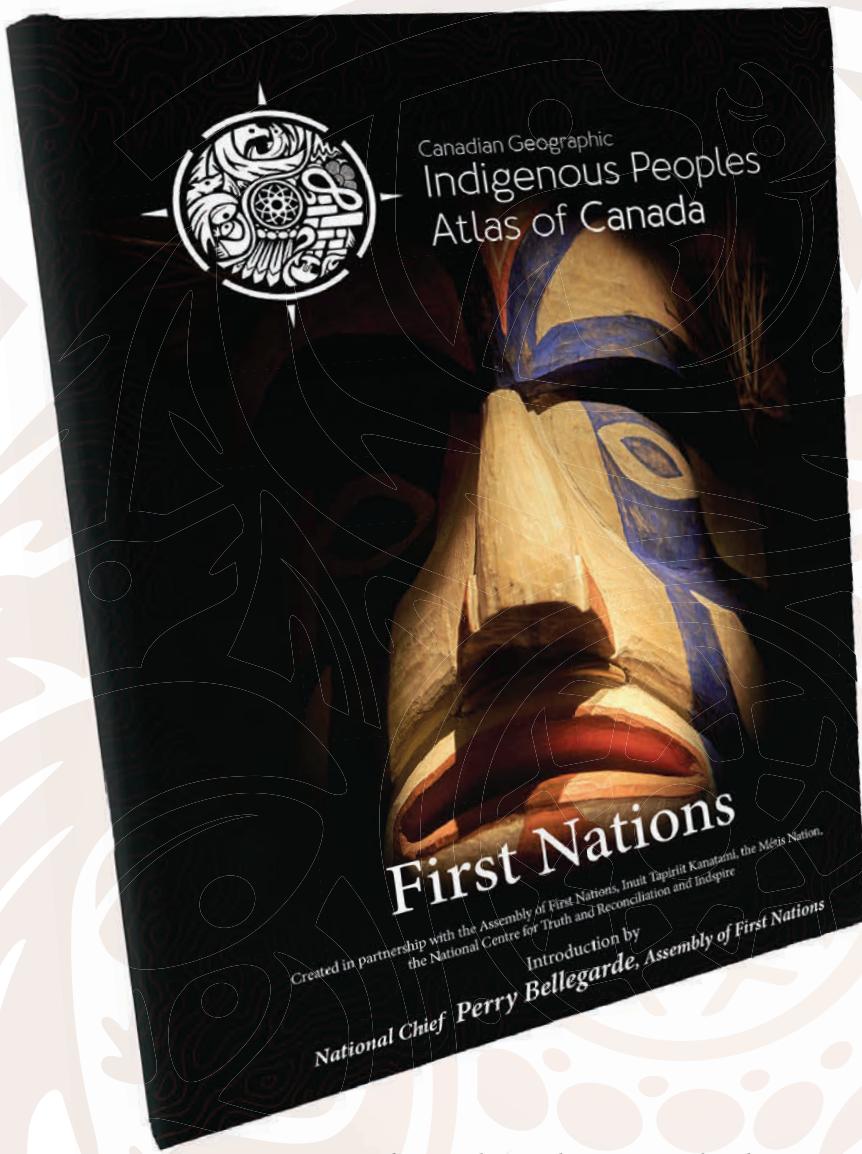
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— JULIAN BRAVE NOISECAT,
Member of the Canim Lake Band Tsq'escen and an award-winning writer



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DISCOVERY

WILDLIFE



'IT WAS SORT OF DISCOVERED BY ACCIDENT.'

Jamie Dunning tells the CBC how he found that the beaks of Atlantic puffins are fluorescent. The British ornithologist made the discovery when he shone a UV light on a puffin carcass and parts of the bird's beak lit up. Dunning told CBC that the fluorescence had some use but that he wasn't sure what that use might be. "The bill of a puffin is forged by generations ... of sexual selection," he said. "There's a lot going on there. That's why it's so colourful and pretty."



HERD MENTALITY

Drone footage of a caribou herd migrating between the mainland and Victoria Island in the Canadian Arctic shows that social interactions within the herd affects how it moves. Researchers tracked the trajectories of each caribou in the herd and then examined how its age, sex and social and reproductive status affected the herd's collective behaviour. The study found that the caribou didn't all behave similarly — upending a classic assumption in the field of collective behaviour.



'We have compelling evidence for the evolution of culturally inherited migration knowledge and behaviour.'

Greg O'Corry-Crowe tells the CBC about a study he co-authored that suggests beluga whales have their own culture. O'Corry-Crowe said that many genetically related beluga whales swim together each year or reconvene at certain locations in the Alaskan, Canadian and Russian Arctic. "The only way that can really emerge is if there is this sort of connection to site throughout your life that you're passing onto the next generation in some way," he said.

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The estimated amount blueberry producers in British Columbia's Fraser Valley will lose this year, according to John Gibeau, president of the Honeybee Centre in Surrey, B.C. Farmers could be facing the shortfall after beekeepers in British Columbia, Alberta and Manitoba said they wouldn't put thousands of colonies into the valley, citing concerns that the region's extensive blueberry fields don't offer enough nutritional variety to honeybees, making the pollinators vulnerable to disease.

ID'ing owl calls

Owl researchers may one day thank Julia Shonfield for saving them from spending long nights in the field and long days in the lab listening for the distinctive call of the raptors. That's because the University of Alberta graduate student has created an automated system that uses audio recorders and software to detect and count the bird's calls. Traditionally, researchers have done night fieldwork or left recorders running through the night to capture sounds, which they'd then have to spend hours listening to.



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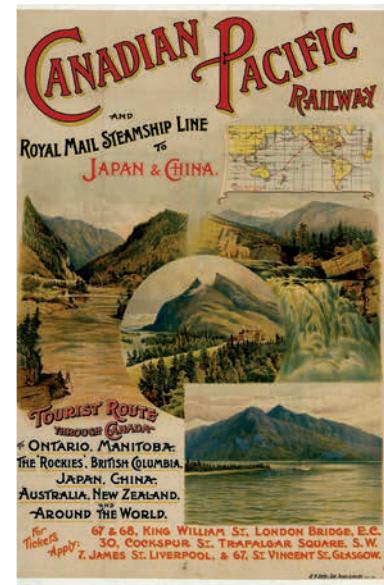
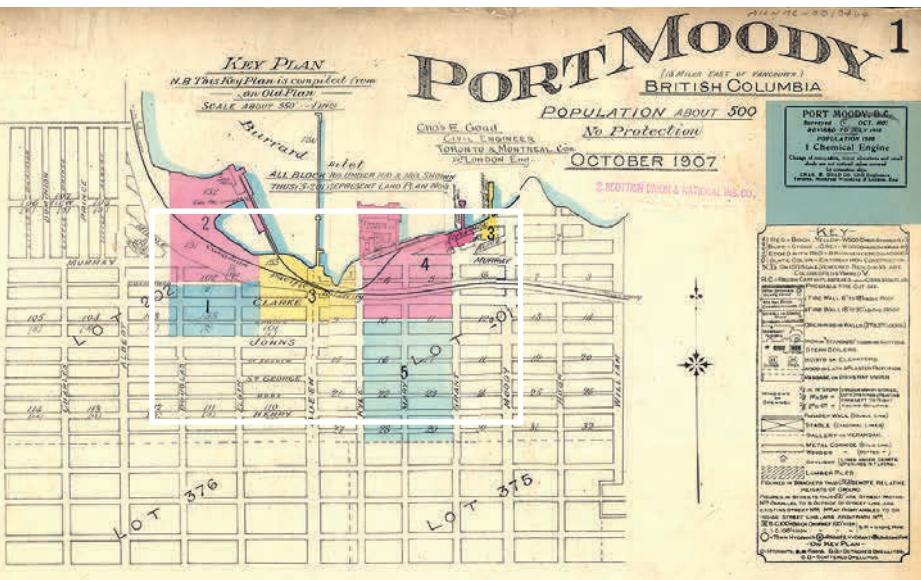
DISCOVERY

HISTORY

A port passed by

How Port Moody, B.C., missed out on becoming one of the world's great harbours

By Harry Wilson*



BY THE TIME this fire insurance plan of Port Moody, B.C., was created in 1907, the lumber-mill town at the eastern end of Burrard Inlet was well on its way to recovering from being royally screwed over by William Van Horne and the Canadian Pacific Railway.

At least that's what many of its residents believed had happened back in the mid-1880s when Van Horne, who was then the CPR's general manager and vice-president, oversaw the plan to extend the end of the line from Port Moody to what would become Vancouver.

When the federal government decided in 1879 that Port Moody would be the Pacific terminus of the line that was to knit Canada together, the news put the settlement in the national spotlight. But it also generated an intense bout of land speculation, with lots originally bought for \$15 later selling for as much as \$1,500.

This feverish gambling on real estate was fuelled by visions of the prosperity that was expected when booming Port Moody became — as many anticipated it would after the railway was finally

complete — the biggest city in Western Canada. More homes would be built! More businesses would be established! Grand hotels would rise! Ships would steam in and out of the inlet carrying international cargo and passengers! Money would be made hand over fist!

But Port Moody's geography dictated otherwise. "There was too little flat land for roundhouses and railyards," writes Terry Reksten in *The Illustrated History of British Columbia*. "Besides, Port Moody had little potential to become a great seaport; it lay far up Burrard Inlet, beyond the Second Narrows, a treacherous stretch of water where currents exceeding 6 knots sped through a narrow fairway."

Van Horne, who had planned for a luxury trans-Pacific steamship service to be based on Canada's west coast, saw for himself that Port Moody didn't match his vision when he visited the town in 1884. By February 1885, his plan to make Vancouver (then still known as Granville and clearly more suitable for the scale of the CPR's ambitions) the terminus was formalized. By the 1890s,

posters such as the one pictured above were being used internationally to advertise cross-Canada CPR journeys with connections in Vancouver for passage on CPR-owned vessels to China, Japan, Australia and New Zealand. Vancouver was a name on every traveller's lips.

Port Moody, meanwhile, was practically forgotten. Although it did welcome the arrival of the first passenger train to traverse Canada on the newly completed line on July 4, 1886 (Vancouver's first train arrived less than a year later), its fortunes continued to wane until the early 1900s, when lumber mills started to open and the once stagnant population began to grow — a development that helped dim the memory of what had been lost when the CPR followed the money farther west. ☽

*with files from Emily MacDonald, archivist, Library and Archives Canada



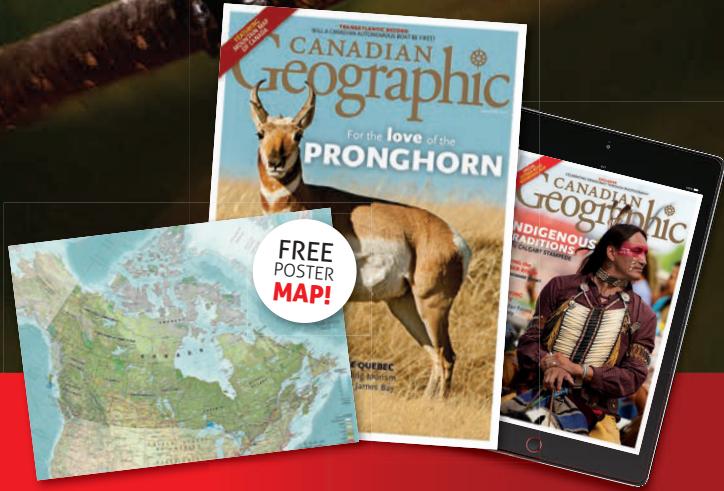
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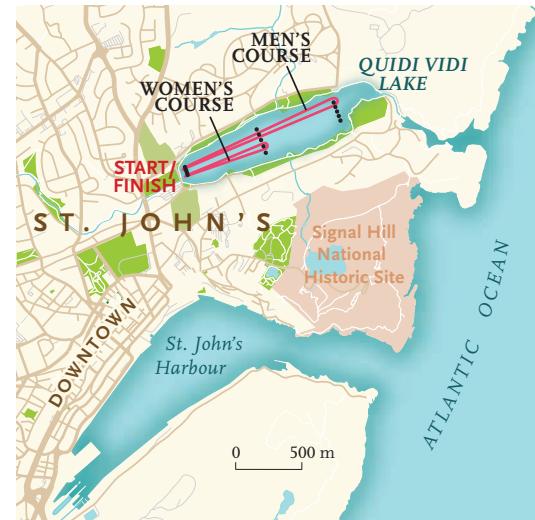
DISCOVERY

PLACE

A race most regal

The Royal St. John's Regatta celebrates 200 years

By Susan Flanagan



F"THE SILVER CUP was won by the Custom House boat in 25 minutes, a distance of about two miles. The day was remarkably fine, a great number of boats attended the race which rendered the scene particularly interesting."

Newfoundland's *Mercantile Journal* kept its description simple in its Sept. 24, 1818, report about a rowing race in St. John's that had taken place two days earlier; it was, after all, a spectacle timed to celebrate the 57th anniversary of the coronation of King George III. Fast forward to Aug. 1, 2018, however, and that contest — now known as the Royal St. John's Regatta — will be celebrating a much bigger anniversary.

Billed as the oldest organized sporting event in North America, the 200-year-old fixed-seat regatta regularly draws more than 40,000 spectators to Quidi Vidi Lake, where they spend money at charity booths, drink in the beer tent and watch crews of seven skim across the water. Unlike most boat races, though, men and women race

different distances (2.45 kilometres for men, 1.22 kilometres for women) and the contest is not a straight shot to the finish line. Instead, competitors must turn at a set of buoys before returning to the starting point.

And that's not the only unusual thing about the regatta — it's also the only civic holiday in Canada that's weather-dependent and decided upon by unelected officials. Every year at 5:30 a.m. on the first Wednesday in August, the regatta's committee meets behind locked doors and votes on whether the day is fine enough for racing. If it is, the holiday proceeds. If it isn't, the race is postponed and those who spent the previous evening playing regatta roulette — a.k.a. partying in the pubs that line George Street and betting their hangovers that the race will take place — must crawl out of bed and head to work. This tactic may have spawned another term bandied about during race week: the regretta.

This carnival atmosphere is part of

the event's enduring appeal, but it's still the rowers who are the stars of the show. Gerard Doran, a native of nearby Outer Cove who coxed two crews to regatta wins, says that whenever he competes he feels all eyes are on him. "Rowing in the regatta is a rite of passage growing up in Outer Cove," he says. "Your brothers rowed, your uncles rowed, your cousins rowed. Then when you do it yourself, you can't believe you're actually in it."

That connection to home is also what keeps Siobhan Duff, a member of the record-setting women's crew of 2003, returning to St. John's from Chattanooga, Tenn., where she works as a doctor. "Like so many expats, a big part of my heart has always been home, especially on Quidi Vidi Lake," she says. "Coming back here year after year has been my connection to Newfoundland." ☀



Watch drone videos of the 2017 Royal St. John's Regatta at cangeo.ca/ja18/regatta.

Lifetime experience #9

'I fell for the Arctic by seeing it through the eyes of explorers.'



The Arctic was my very first love. I read a lot of exploration books as a teenager, and I fell for the Arctic by seeing it through the eyes of explorers — by seeing it as a stage where people could express emotions ranging from cowardice to endurance and, ultimately, face life or death. But if you ask me why I go to the Arctic now, there's a much simpler answer: to continue to see things I've never seen before.

As a naturalist, my whole life has been guided by the ability to get people excited about the natural world. When it comes to the North, I'm fascinated by how life has adapted over long periods of time to the extreme climate, and I love sharing my expertise on Arctic wildlife with passengers, especially when we can see it up close. Being able to experience the Arctic from a ship or a boat is a unique experience that gives you a perspective on the region that you can't get any other way.

On one trip, we were cruising in a Zodiac along the rocky shoreline of one of the Savage Islands, which are at the

mouth of Frobisher Bay, when we spotted a polar bear nearby. After it stared at us for about 15 minutes, the bear started walking, and as it reached a high point of the shoreline, the light hit it from behind, creating a golden halo around it. It was one of those magical moments that you just can't plan for.

—Franco Mariotti
Naturalist and guide
with One Ocean Expeditions
since 2015



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DISCOVERY

INFOGRAPHIC

The water you eat

A massive amount of ‘virtual water’ is moving around regions and crossing borders in our food and other products

By Nick Walker

Climate change, population growth and big industry. When you think about how these and other forces are reshaping the water needs of nations around the globe, you probably don’t picture a hamburger to help make sense of the issue. You’re more likely, perhaps, to imagine a future in which Canada and other water-wealthy countries supply water-scarce regions with fresh water by pipeline and tanker. After all, Canada has nearly seven per cent of the world’s renewable fresh water and less than half of one per cent of the world’s population — more renewable water per person than any other country.

But the hamburger here represents a different kind of mass water consumption already underway: the billions of cubic metres of water being taken out of numerous watersheds, poured into agricultural and industrial processes and products that are then moved around Canada or shipped off to other parts of the world. This is the far-ranging fate of “virtual water,” which refers to every drop consumed or polluted during growing, raising or manufacturing — be it a beef cow, a head of lettuce, a scoop of wheat or the fuel that powers transport vehicles.

There is no legislation to track or limit this kind of water consumption and displacement on mass industrial scales, and little is known about how much virtual water is being moved between water-scarce and water-rich regions of Canada, but the best *export* estimates are that more than 95 billion cubic metres (Bm^3) of virtual water — most of it tied up in grain, livestock and

fuels — leaves Canada each year (roughly 60 per cent of it going to the United States), while a little more than $35 Bm^3$ is imported in other products. That works out to an annual net loss of about $60 Bm^3$, or as the environmental non-profit The Council of Canadians frames it in their report *Leaky Exports: A portrait of the virtual water trade in Canada*, enough water to fill Toronto’s Rogers Centre stadium to the top 37,500 times.

Only Australia loses more water in this way. And although *Leaky Exports* was published back in 2011, no study of Canada’s virtual water footprint has been commissioned by a federal government to date. “We lack a comprehensive understanding of how our freshwater resources are being used and how that impacts different regions of our own country,” says Tom Gleeson, a hydrogeologist with the University of Victoria. This is about knowing how much virtual water we can afford to export, he says, whether to the United States, China or Jordan, but also about how we should be distributing water-intensive production between Canada’s regions.

Read on for more about the national virtual water picture, and to find out how a single item — in this case a cheeseburger — can have a big water impact. An important part of Canada’s water future involves everyone, from various levels of government to individuals, putting a value on this kind of water consumption. It may be “virtual,” but it’s no less real than the water in your tap. ☀

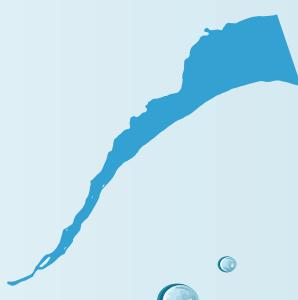


Canada's big WATER FOOTPRINTS

Every item, person, business, watershed and nation has a unique “water footprint.” For a hamburger, it’s all the fresh water required to produce its ingredients; for a person, it’s the total volume of water used for drinking, cooking and cleaning plus the virtual water tied up in all the goods and services they consume. A national water footprint is the sum of its citizens’ and industries’ water footprints. At almost **6,400 litres a day** per capita, Canadians have one of the largest water footprints on Earth — the vast majority of it coming from the virtual water content of the food we eat.

Imagining $60 Bm^3$ OF WATER
(Canada’s estimated net virtual water export)

**The full average flow of the
ST. LAWRENCE
RIVER FOR
70 DAYS**



**2.4 MILLION
OLYMPIC SWIMMING
POOLS:** enough to
cover more than
**50 PER CENT
OF NOVA SCOTIA**



THE 2,000+ LITRE CHEESEBURGER

By conservative estimates, the products that make up this cheeseburger account for more than 2,000 litres of water,* which is like filling a bathtub seven times or more than 330 toilet flushes. Even though agriculture accounts for just five per cent of Canada's total water withdrawal (compared to thermal power generation, at 67 per cent, the manufacturing sector, at 11 per cent, and households, at nine per cent) a full 83 per cent of the water it uses is not returned to the watershed.

 = 1% OF VIRTUAL WATER (VW) CONTENT OF CHEESEBURGER



CONDIMENTS

VIRTUAL WATER: **60-100 L**



The virtual water content of one teaspoon (around 5 ml) of mustard seed is about **6.5 litres**. Mayonnaise, meanwhile, is mostly oil and eggs: one litre of canola oil requires more than **3,000 litres of water** to produce, while a single egg takes about **140 litres**.



BACON (60 g)

VIRTUAL WATER: **230 L**



A safe estimate of the virtual water content of pork is about **3,280 litres/kg**. Canada has exported an average of 5.3 million hogs to the United States each year since 2013, which works out to more than **1.7 Bm³ VW**.



CHEESE (30 g)

VIRTUAL WATER: **150 L**

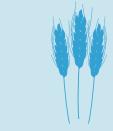


It takes about **5,000 litres of water** to make a kilo of cheese (factoring in the water behind the four to eight litres of milk required). In 2017, Canada exported more than 8,800 tonnes of milk and 10,000 tonnes of cheese, representing **50 million m³ VW**, but this does not take into account the 150,000 tonnes of other dairy products exported that year.



BUN (50 g)

VIRTUAL WATER: **70 L**

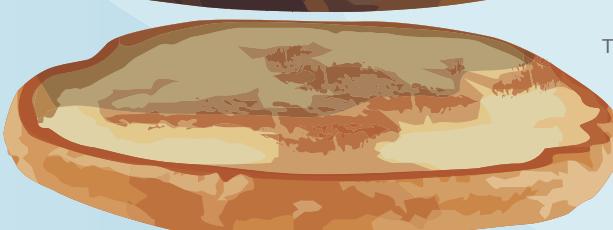
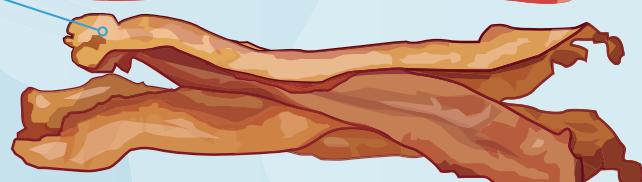
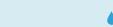


Canada exports an average of 17.7 million tonnes of wheat (grain and flour) each year, representing a massive **23.6 Bm³ VW**. Grains and oilseeds such as Canola are the country's largest agricultural exports. Crops and livestock raised on irrigated land (such as southern Alberta, which is Canada's most irrigated region) have the largest water footprints.



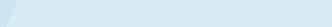
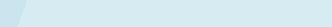
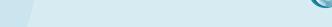
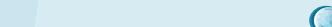
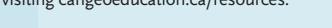
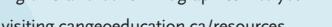
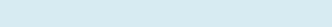
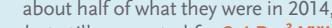
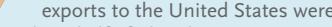
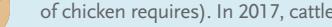
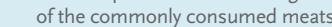
VEGGIES (35 g)

VIRTUAL WATER: **5-10 L**



BEEF (150 g)

VIRTUAL WATER: **1,615 L**



* Virtual water content estimates are based on global averages. Water consumption for different products varies across regions depending on water availability.



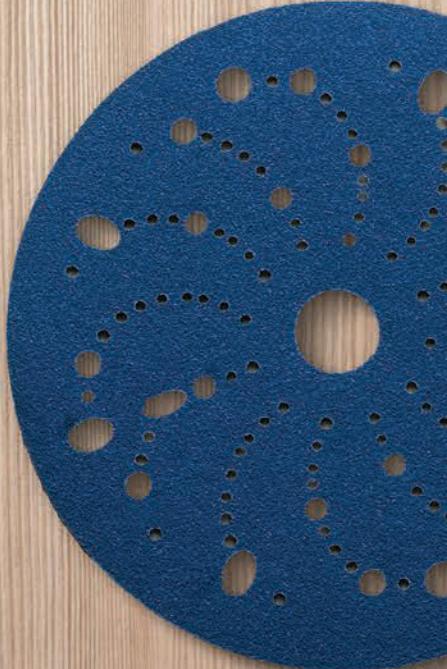
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Springtail secrets



A TINY SPECIES IN ANTARCTICA IS TEACHING SCIENTISTS ABOUT MONUMENTAL CHANGES

BY JOHN BENNETT

IN THE SHADOW of the massive West Antarctic Ice Sheet, tiny creatures harbour clues to ancient environmental changes at the southern end of the world — and to potential future changes around the planet.

Ian Hogg, an ecologist with Polar Knowledge Canada who lives in Cambridge Bay, Nunavut, works with a team of scientists from New Zealand and the United States to comb unexplored areas of Antarctica for information about present and past polar ecosystems.

While his colleagues focus on the microscopic inhabitants of the thin Antarctic soil, such as nematodes (roundworms) and eight-legged tardigrades, Hogg studies the giants of this ecosystem: springtails. A dozen of these six-legged arthropods would fit comfortably on your fingernail, but in the Lilliputian world of Antarctic land animals, says Hogg, “they’re the functional equivalent of elephants.”

Elsewhere in the world (the snow fleas that appear on the late-winter snow in Canada are a variety of springtail), springtails can drift from place to place on river or ocean currents. But in Antarctica, says Hogg, they stay put: “There are areas with no open shorelines and very little in the way of running water, so many springtail populations have been stuck right where they are for the last five million years.”

“When we look at their genetics,” he explains, “we can see how long different springtail populations have been separated from each other.” That provides the scientists with information about how long particular regions of Antarctica have been isolated and, as it is ice that separates the springtails, the behaviour of ice sheets.

The team’s research supports geological evidence that the West Antarctic Ice Sheet — which is two kilometres thick and nearly the size of Nunavut — collapsed

DNA from springtails (INSET) collected at soil-sampling sites (ABOVE) near the West Antarctic Ice Sheet is helping scientists trace millions of years of environmental change.

about five million years ago. This made it possible for some springtail populations to mix, and their gene pools expanded. The ice sheet eventually returned, and within the last million years has collapsed and returned again, mixing and separating springtail populations each time.

Glaciologists suggest that the ice sheet, which has been losing mass in recent decades because of the warming climate, may collapse again. This terrestrial environment grants ecologists a rare, uncluttered view of how an ecosystem operates.

“Compared to the Arctic, with its higher biodiversity and many varieties of animals large and small,” Hogg says, “the Antarctic systems are simple. That allows us to understand how they work and how they might respond to change in the future. Then we can take that information and apply it to more complex systems elsewhere on Earth.” ☀



Polar Knowledge
Canada

Savoir polaire
Canada



This is the latest in a blog series on polar issues and research (cangeo.ca/blog/polarblog) presented by Canadian Geographic and Polar Knowledge Canada, a Government of Canada agency with a mandate to advance Canada’s knowledge of the Arctic and strengthen Canadian leadership in polar science and technology. Learn more at canada.ca/en/polar-knowledge.

on the map

EXPLORING CARTOGRAPHY

The Great River

The Ottawa River is the heart of one of Canada's most ecologically and economically important watersheds

BY NICK WALKER

It has been *Kit-chi'sippi* ("the Great River") to the Algonquin nations, La Grande Rivière du Nord to the French and even nicknamed "the original Trans-Canada Highway" in recognition of its historic role as one of the most vital transportation and trade arteries in North America.

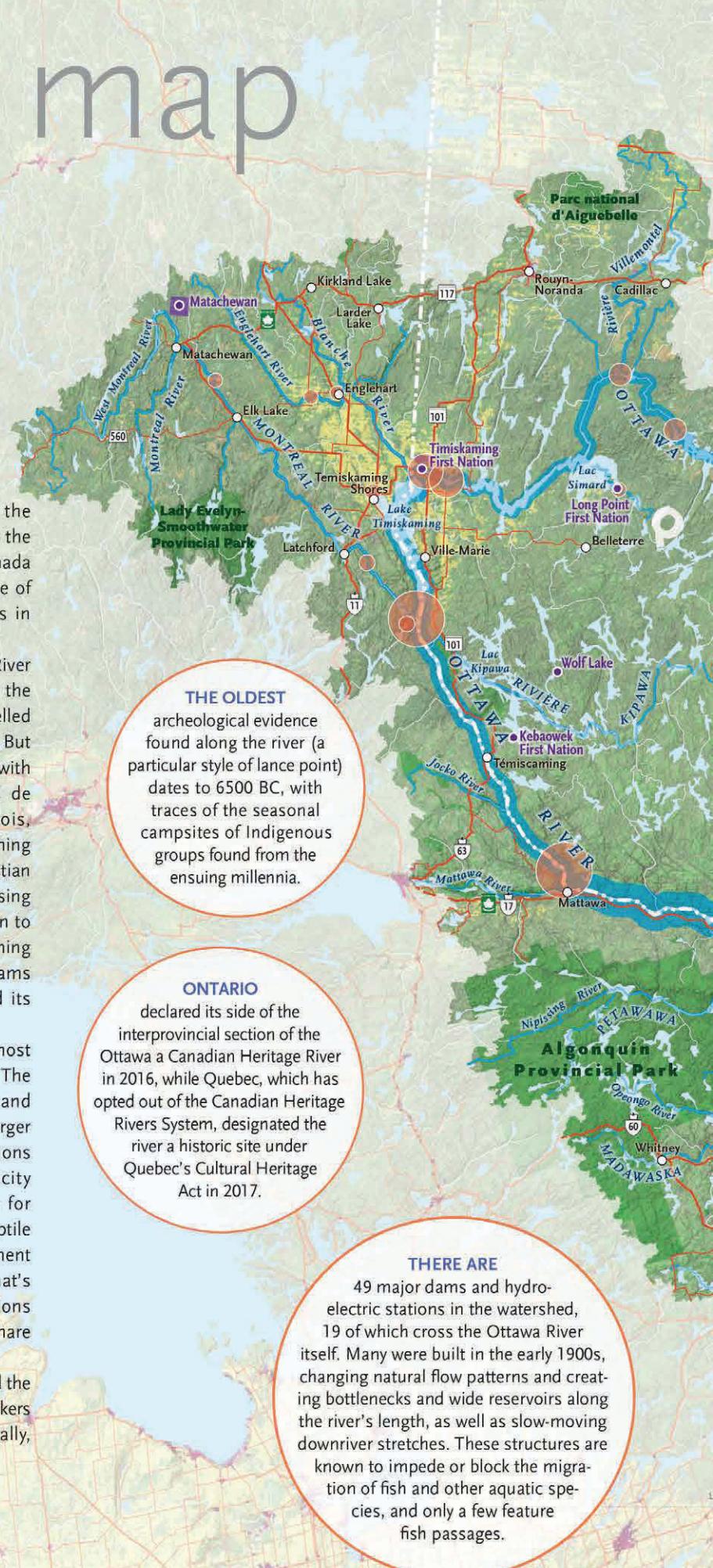
The history of human influence on the Ottawa River spans more than 8,500 years, stretching back to the early ancestors of the Algonquin people, who travelled the great river and lived and hunted along its banks. But large-scale change arrived just four centuries ago with explorers such as Étienne Brûlé and Samuel de Champlain and the legions of coureurs de bois, voyageurs and missionaries who were soon pushing upstream in search of new territories, furs and Christian converts. By the early 1800s, lumber barons were using the Ottawa to carry massive pine timber rafts down to the St. Lawrence, and as lumber camps and farming settlements grew into towns and cities, mills and dams were built to harness the power of the river and its tributaries and tame spring floods.

Today, the Ottawa River basin is one of the most dammed and regulated catchments in Canada. The 1,271-kilometre main stem and its tributaries drain and sustain a 146,300-square-kilometre area (a region larger than England) that provides drinking water for millions of people, water for recreation, hydroelectricity production and other industries, and habitat for hundreds of fish, bird, mammal, amphibian and reptile species. Conservation efforts and water management are a dizzyingly complex issue in a watershed that's home to about 200 municipalities and First Nations communities, split between two provinces that share the water, but not policies for its governance.

This map was created by Canadian Geographic and the environmental research- and education-focused Chawker Foundation to put a spotlight on this ecologically, economically and historically critical waterway.



For an interactive version of this Ottawa River watershed map, visit cangeo.ca/ja18/ottawariver.





Ottawa's 1,271 kilometres, 681 lie entirely within Quebec, with the other 590 forming a natural provincial border.

WRIGHT'S TOWN (now Gatineau), Bytown (Ottawa) and many of the communities in the watershed arose from the logging industry. The volume of log driving was such that by 1898, nearly 20 metres of sawdust and logs had built up on the riverbed in some areas.

DELTA FORCES

Can nature and development coexist on the Fraser River Delta, the ecological hot spot that's home to ever-expanding Metro Vancouver?

BY MARGARET MUNRO
WITH PHOTOGRAPHY BY BEN NELMS



Barb Joe, a Tsawwassen First Nation Elder, stands on the shoreline where she played as a child (THIS IMAGE). The Fraser River Delta looks very different to Joe today as Metro Vancouver and its port continue to expand and more ships than ever ply the delta's waters (OPPOSITE).



THOUSANDS OF SNOW GEESE rise in a swirling white cloud and a wave of guttural honking reverberates across the Alaksen National Wildlife Area, a 349-hectare patch of wetland, woods and fields on the Fraser River Delta about 35 kilometres south of downtown Vancouver. Of the 54 national wildlife areas in Canada, Alaksen is one of only 10 open to the public, making it, as the federal government says, a great place to connect with nature — and on this crisp December morning, with a breeze blowing in from the sea, it lives up to that billing.

Black-crowned night herons hunch in bushes along the edge of a slough, sandhill cranes drop from the sky between fir trees and a shape-shifting cloud of dunlin streaks by in the distance. Raptors are here, too, reigning over the marsh. Four bald eagles are on patrol scaring up ducks, a pair of northern harriers floats low over a sea of bulrushes and a hawk swoops down to perch on a driftwood stump in the tall undulating grass. “It’s a rough-legged hawk hunting for Townsend voles,” says Anne Murray from her position atop a dike, binoculars up for a better look.

Murray would know. For decades, the Delta, B.C., resident and member of the board of directors of Bird Studies

Canada has been watching the more than 250 species of birds that can be seen here. And she is one of their fiercest defenders, a volunteer caretaker of the Fraser River Estuary Important Bird and Biodiversity Area, or IBA, one of the most important avian refuges in the Americas. It attracts up to 1.4 million birds a year — from the more than 500,000 western sandpipers that can drop onto its mudflats in a single day during spring migration to the snow geese, ducks, loons, grebes, plovers and raptors that use it as a balmy refuge when the snow falls in the rest of the country. “No other site in Canada supports such a diversity and number of birds in winter, and no comparable site exists along the Pacific coast between California and Alaska,” says the Canadian Wildlife Service.

But the estuary hosts more than just birds. It also provides vital habitat to 80 species of fish and shellfish and supports some of the greatest salmon runs on Earth. Millions of salmon bound for spawning grounds swim through the estuary every year, and 600 million to a billion young salmon seek shelter in the tidal marshes, where they feed and acclimatize to salt water before heading out to sea.

Atop a two-storey bird-watching tower in the George C. Reifel Migratory Bird Sanctuary, which is inside the IBA and overlaps the Alaksen National Wildlife Area, Murray takes in a sweeping view of the estuary that helps make Metro Vancouver a global ecological treasure. To the north, beyond the flocks of geese, the city is framed by snow-capped mountains. To the west are the mist-shrouded Gulf Islands and the deep-green waters of the Strait of Georgia, home to orcas, sea lions and dolphins. Up here, it's possible to imagine that Vancouver can coexist with nature.

In reality, threats to the estuary loom on almost every horizon.

METRO VANCOUVER, wedged between the Coast Mountains and the United States border, is one of Canada's fastest-growing cities. The metropolis, which includes 21 municipalities, is home to close to 2.5 million people, and another million are expected by 2040. Mayor Gregor Robertson has made bike paths, recycling and energy-efficient condos priorities in his bid to make Vancouver "the greenest city in the world by 2020." And Robin Silvester, president and CEO of the Port of Vancouver, says the city can have it all — a booming economy, a thriving community, a healthy environment and the "world's most sustainable port."

Laudable goals, but critics find them hard to square with the dangers the ever-expanding city poses to the Fraser estuary. Huge ships loaded with jet fuel

will soon start using the Fraser River to supply Vancouver International Airport's new \$110-million fuel depot, which will hold 80-million litres and connect to the airport via a 13-kilometre-long underground pipeline. And hundreds more vessels a year could

soon be transiting the estuary's increasingly busy waters to a new \$400-million riverside liquefied natural gas expansion project, a proposed coal-shipping facility and, in nearby Burrard Inlet, the marine terminus for Kinder Morgan's \$7.4-billion Trans Mountain oil pipeline extension.

"A spill could be disastrous," says Murray, looking out from the viewing platform to the shipping channel as a cargo ship sails by. Then she points south to the sprawling Roberts Bank port, which is just outside the protected wildlife area and could soon be

undergoing a \$2-billion expansion. Trains and transport trucks stream out to an artificial island where 137-metre-high megamax cranes resembling Imperial Walkers from *Star Wars* lift cargo on and off some of the world's biggest ships. The Port of Vancouver has already transformed critical bird habitat into shipping and transportation facilities and has ambitious plans to industrialize a lot more. "Developers just keep nibbling away — a port facility here, a highway there, a fuel-farm there," says Murray. Less than 30 per cent of the estuary's historic wetlands remain and dozens of its species — from salmon to shorebirds — are under threat, making the region one of the most imperilled ecosystems on the continent, a bright red spot on BirdLife International's global map of critically endangered sites.

Robertson, who steps down this fall after 10 years as Vancouver's mayor, says the importance of the estuary and surrounding Salish Sea cannot be overstated. "It's been the lifeblood of the community since people first arrived here," he says, stressing the estuary and its biodiversity must and can be protected and restored even as the city grows. He points to technologies reducing the environmental impact of sewage and transportation in Metro Vancouver and to the rewilding of small corners of the city as initiatives that can be built on, but notes that federal, provincial, local and First Nations governments and developers must work together to make protecting the estuary a priority. "We need everyone at the table to ensure things are done right and in an environmentally responsible way," says Robertson. "Right now, we have conflicting agendas," a reference to mega-projects such as the proposed expansions of the Roberts Bank port and the Trans Mountain pipeline. "The city has used every tool it has to stop the expansion," says Robertson of the pipeline. "It's a huge threat to our environment and our economy." The project, which the federal government is buying from Kinder Morgan for \$4.5 billion to ensure it gets built (despite fierce opposition in British Columbia), would triple the amount of oil carried by the pipeline and see a seven-fold increase in tanker traffic in the waters where the Fraser River meets the sea.

ESTUARIES ARE RICH, complex and dynamic ecosystems with far-reaching biological connections. An international research team only recently realized that an energy-rich slime known as biofilm growing on Metro Vancouver's mudflats is a critical food source for hundreds of thousands of shorebirds migrating between their winter haunts in Latin America and their breeding grounds in the Arctic.



LESS THAN 30 PER CENT OF THE ESTUARY'S HISTORIC WETLANDS REMAIN AND DOZENS OF ITS SPECIES ARE UNDER THREAT, MAKING THE REGION ONE OF THE MOST IMPERILLED ECOSYSTEMS ON THE CONTINENT.

FRASER RIVER



Clockwise from THIS IMAGE: Two juvenile bald eagles fight over food in a marsh near Delta, B.C.; a container ship docked at Roberts Bank port; Anne Murray in the George C. Reifel Migratory Bird Sanctuary.

THE FRASER ESTUARY, THOUGH BATTERED,
‘IS A MAGNIFICENT REGION RIGHT ON
OUR DOORSTEP. WE JUST NEED TO BE BETTER
AT SEEING IT AND APPRECIATING IT.’





The Fraser estuary, the largest on Canada's Pacific coast, formed when glaciers retreated about 10,000 years ago and meltwater roared out of the mountains, washing down massive amounts of sand and gravel, creating the delta where marshes, meadows and forests took root.

In 1808, explorer Simon Fraser paddled down the river into the estuary, where he met Musqueam people living surrounded by towering rainforest and wetlands alive with elk, bear, cougar, fish and birds. European settlers arrived decades later and began clearing forests, draining wetlands and harvesting fish and game that had sustained First Nations for close to 9,000 years. The transformation continues, with land in the estuary now the hot commodity.

Barb Joe is an Elder and knowledge-keeper in the Tsawwassen First Nation, which traces its history on the estuary back thousands of years. Her great-grandfather, Chief Harry Joe, was born in a longhouse in 1865, just down the road from where she lives in her people's traditional village.

Over coffee on the back porch of the First Nation's main office on a cloudy spring morning, Joe points to her great-grandfather's longhouse in a photograph dated 1922. It was one of seven that sat at the base of a forested bluff in a clearing looking out to sea over expansive marshes and mudflats.

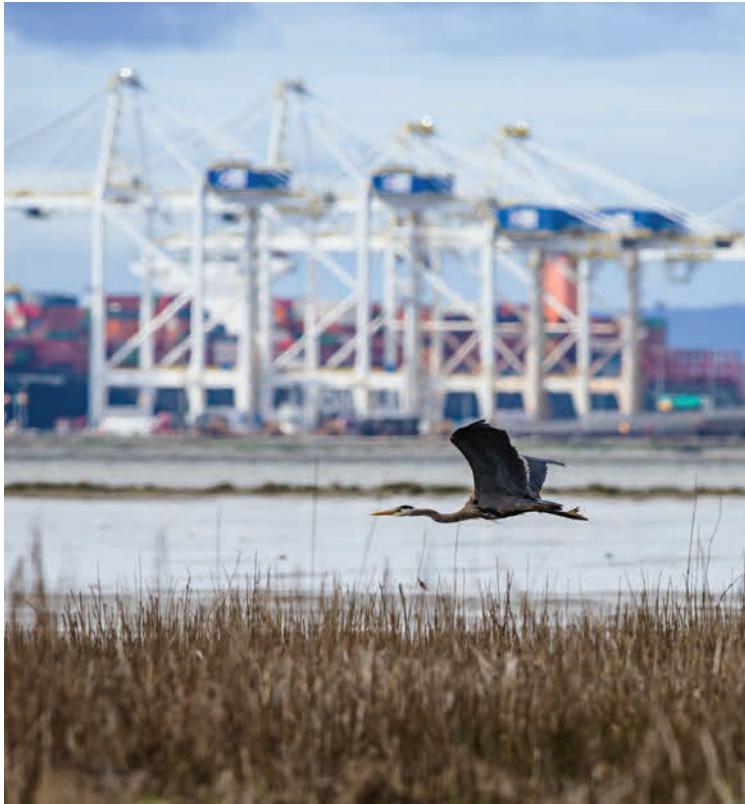
In spring, the Joe family feasted on eulachon, a herring-like fish so rich in oil it burns like a candle when dried, and so plentiful it spawned in the river

by the millions. Joe's ancestors hauled the fish out of the silty water, filling their cedar boats as flocks of diving ducks and gulls dived on the eulachon from above, and seals, sea lions and giant sturgeon took their fill from below.

In summer, her great-grandfather canoeed with the family

to camps along the river to harvest all five types of salmon returning from the Pacific — chinook, coho, chum, pink and sockeye. In fall, they harvested berries and migrating ducks. Come winter, the family was back inside the longhouse, sharing the large communal space built from giant cedars.

When Joe was born in 1953, much of the forest had been cleared to make way for farms, but tradition persisted. Her family still lived largely off the



BARB JOE, A TSAWWASSEN FIRST NATION ELDER, RECALLS HER MOTHER BOILING FRESH CRAB FOR PICNICS AS THE CHILDREN WARMED UP BY THE FIRE AFTER SPLASHING IN TIDE POOLS. IT'S A VERY DIFFERENT PLACE TODAY.

land — berries, ducks, geese, deer, clams, cockles, crabs, eulachon, salmon and sturgeon — and she recalls her mother boiling fresh crab for picnics as the children warmed up by the fire after splashing in tide pools.

It's a very different place today. Joe points north to where a slough, which the Tsawwassen people used as a shortcut to get to the Fraser River, was filled with soil to create farmland, forcing her ancestors to paddle a longer, more treacherous route through open water. Her great-grandfather's longhouse is also long gone, torn down to make way for Highway 17 to the BC Ferries' Tsawwassen terminal and a two-kilometre-long causeway that opened in 1960. A five-kilometre-long causeway opened in 1970, crossing the mudflats to a bulk coal terminal built on Roberts Bank that soon expanded to handle cargo. It is now one of the busiest ports in North America.

"We've been hemmed in on both sides," says Joe, the din of transport trucks and trains echoing across the water. Roberts Bank, which operates night and day 362 days a year, changed currents over the tidal flats, where coal dust and a long list of invasive species have joined the crabs in the tide pools where Joe splashed as a child.

PHOTOGRAPHS TAKEN from the *International Space Station* give a sense of the human footprint on the estuary today — a grey grid of highways, rail lines, residential areas, malls, warehouses and farms extending from the tidal flats more than 80



Clockwise from LEFT: Barb Joe takes in the view of the marshlands from a boardwalk on Tsawwassen First Nation land; a great blue heron skims across the water, with Roberts Bank port in the background; snow geese near the Alaksen National Wildlife Area.

kilometres inland. The braided arms of the Fraser River wind through the city past sewage treatment plants, cement factories and shipping docks, swirling plumes of fresh water sweeping over marshes and tidal flats and out to sea.

Most of the estuary's remaining marshes are designated as provincial Wildlife Management Areas and Wetlands of International Importance under the Ramsar Convention, a global treaty for the conservation of wetlands. But protecting the marshes on paper has not stopped big chunks of them from vanishing.

In 1989, Sean Boyd, a research scientist with Environment and Climate Change Canada, monitored transects across bulrush marshes for one of his snow geese studies. In 2011, he pulled on his waders and repeated the survey, only to find large swaths of marsh had "disappeared completely." Part of the Sturgeon Bank Wildlife Management Area, beside the main shipping channel in the river, was hardest hit, with a large part of the bulrush marsh there replaced by a

mudflat nearly five kilometres long and up to half a kilometre wide in places.

"Quite frankly, we can't figure out what's going on," says Boyd, who has been poring over old maps with provincial wetland specialists and port engineers. They suspect a combination of factors is responsible, including severe storms, overgrazing by snow geese, rising sea levels and dredging that clears millions of tonnes of sediment the Fraser drops every year in the shipping channel.

A lot more marsh is expected to disappear in the years ahead, as the sea level is forecast to rise by as much as 1.2 metres on the estuary by 2100 as the climate changes. "The Fraser River Delta is particularly at risk, as valuable tidal habitat will be squeezed between the rising waters and coastal dikes; significant amounts of habitat will inevitably be lost," says one federal report. Key migratory bird stops — the tidal mudflats and wetlands — could be under water as the dikes protecting farms and low-lying residential areas are raised to prevent water inundating some of Canada's most expensive real estate. Reports warn of \$20-billion to \$30-billion losses if the dikes don't hold.

An even more immediate squeeze is occurring on dry land, where the city is grappling with both an

FRASER RIVER



Otto Langer (RIGHT) near the airport's new riverside fuel depot. Langer says a jet-fuel spill would endanger species downstream, such as the western sandpiper (ABOVE).



affordability crisis — the average Vancouver home now tops \$1 million — and a looming shortage of industrial space. Environmentalists, condo builders, industries, First Nations, farmers and different arms of government are increasingly at odds over the undeveloped lands that remain.

PROTECTING THE ESTUARY has always been challenging. The Fraser River Estuary Management Program was created in 1985 to do just that, bringing together federal, provincial, First Nations and local governments. Stephen Harper's Conservative government dismantled the program in 2013, transferring review and oversight of many development projects to the Vancouver Fraser Port Authority, a federal body that controls much of the estuary's waterfront and water. The port has cleared logs off beaches, dealt with derelict boats, reduced emissions from ships and explored how vessel traffic affects the 76 endangered southern resident orcas that remain in local waters. The port has also green-lighted several costly and contentious projects, and is championing several more that could radically alter the estuary.

"We're in the midst of a new industrial era," says Otto Langer, the former head of habitat assessment in British Columbia and the Yukon for the Department of Fisheries and Oceans. Before retiring, Langer spent decades pursuing polluters of the estuary. Now he's better known for defending the estuary from mega-projects.

Margaret Munro (@margaretmunro) writes about science and the environment. Her stories have appeared in *Nature*, *Scientific American* and *the Globe and Mail*. Ben Nelms' (*bennelms.ca*) photography appears regularly in *the Globe and Mail*, *the New York Times*, *Maclean's* and *Sports Illustrated*.

Langer climbs into his SUV at his home in Richmond, a city just south of Vancouver, and heads for the Fraser River, passing a new mall, condo developments and giant riverside parking lots. More than a thousand new Hyundai vehicles, fresh off cargo ships, fill one field, while Volkswagens cover the next. He takes a sharp right and pulls up to the river.

"The new jet-fuel farm," Langer says, looking over a muddy construction site where Vancouver International Airport's fuel depot is taking shape. It has a prominent spot on Langer's list of 14 major threats to the estuary, which also includes the new liquefied natural gas storage facility lit up with blinking lights just across the river on Tilbury Island, the planned \$15-million shipping terminal to export coal to Asia at Fraser Surrey Docks and the proposed expansions of the Roberts Bank port and the Trans Mountain pipeline.

The airport's fuel depot stands out because it "will allow barges and tankers of highly toxic and flammable jet fuel to enter the Fraser River for the first time in history," says Langer. He leads a group that fought and lost a legal challenge in 2015 to overturn a provincial government certificate that Langer says allowed the project to proceed after the Harper government reduced the scope of the environmental assessment process through sweeping changes made in the name of harmonization. "It was a farce," says Langer, noting that the certificate was issued despite widespread concern about the jet-fuel farm.

Langer has seen first-hand how jet-fuel spills can affect aquatic life and linger in the environment. He says a spill would not only endanger residents at the nearby Riverport Flats housing complex, but also the marshes and Alaksen wildlife area downstream. And accidents have happened. In 2014, the German container ship *Cap Blanche* ran aground nearby in the fog, an incident that didn't result in a spill. A year

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Chief Bryce Williams of the Tsawwassen First Nation (ABOVE) has overseen lucrative development deals, including one to build the Tsawwassen Mills outlet mall (RIGHT).



later, however, the bulk grain carrier MV *Marathassa* spilled 2,800 litres of fuel in Vancouver's English Bay, creating a slick that cost the government more than \$2.5 million to clean up.

Robin Silvester, president and CEO of the Port of Vancouver, has ambitious plans to turn Vancouver into an even bigger hub for trade. His downtown office overlooks a harbour crammed with container docks, grain terminals, shipyards, hotels, condos and a giant convention centre. There is little room to grow and cruise ships are getting so big some can no longer fit beneath the Lions Gate Bridge spanning the harbour entrance.

The port sees much more potential for expansion on the estuary, with its large tracts of wide-open

farmland and expansive wetlands. In the last decade a new network of rail lines, highways and overpasses has been built leading to the port at Roberts Bank. Silvester is also contemplating a new cruise ship terminal for the estuary and supports a contentious

plan for a 10-lane \$3.5-billion bridge to replace the four-lane George Massey Tunnel, which lies on the bottom of the south arm of the Fraser River like a speed bump. The congested tunnel not only slows down traffic and transport trucks, but also limits the size of ships entering the river.

Silvester says billions of dollars in economic activity and thousands of jobs depend on port expansion. His vision, laid out in a Port 2050 forecasting report, includes spending billions more dollars expanding the port and transportation infrastructure. He warns

against what he calls the "local fortress" scenario, in which Vancouver cuts ties with world markets, the economy languishes, and the city becomes a backwater where the wealthy "retire and retreat."

The port, which has also raised the alarm over the city's growing shortage of industrial land, has been buying up property, including 95 hectares of farmland, long protected from urban sprawl by British Columbia's agricultural land reserve. When Malcolm Brodie, the mayor of Richmond, objected to the idea of historic riverside farms being paved over for port facilities, Silvester pulled rank, telling Brodie the port wasn't bound by the province's rules. "As a federal body here at Port Metro Vancouver, we have supremacy," said Silvester.

The port, along with some of the city's biggest developers, has found more willing partners among First Nations, which control large tracts of land on the estuary. In 2009, the Tsawwassen First Nation reclaimed 724 hectares as part of a treaty settlement, much of it prime farmland removed from the agricultural land reserve. Chief Bryce Williams and the Tsawwassen First Nation's executive council have overseen commercial and industrial deals that have already generated millions for their community, and he says they're keen to make more.

Former cabbage fields have been transformed into Tsawwassen Mills, a shopping mall that aims to rival West Edmonton Mall as a consumer destination. A housing development, where 99-year leases on two-bedroom townhouses start at \$619,900, is taking shape beside the mall, on streets named after hawks, herons and shorebirds. Dump trucks, backhoes and rollers are burying another 120 hectares of farmland under 3.5-metre-thick layers of fill, creating Tsawwassen industrial land, which is for lease in front of the port at Roberts Bank. A logistics centre, sewage treatment facility and a container examination facility are among

THE PORT, ALONG WITH SOME OF THE CITY'S BIGGEST DEVELOPERS, HAS FOUND MORE WILLING PARTNERS AMONG FIRST NATIONS, WHICH CONTROL LARGE TRACTS OF LAND ON THE ESTUARY.

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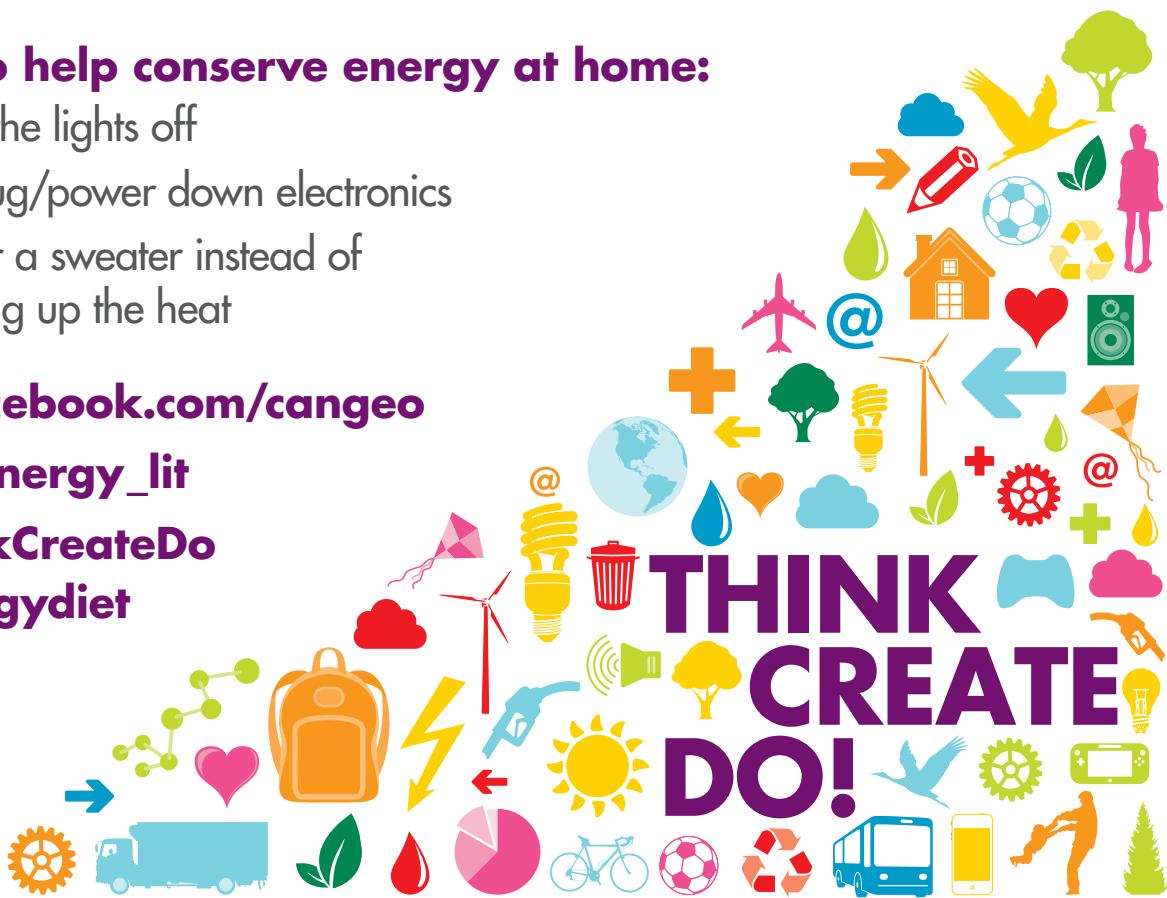
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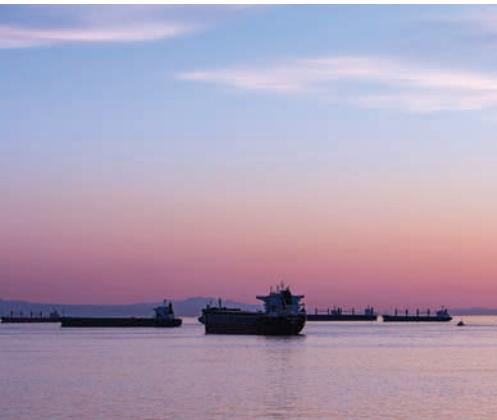
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FRASER RIVER



Container ships moored in English Bay, near downtown Vancouver (ABOVE). Western sandpipers swirl en masse above Brunswick Point, near Roberts Bank port (RIGHT).



the buildings that now sit where shorebirds used to feed at high tide and owls hunted at night.

Williams expects demand for industrial space to grow along with the port. The port's current expansion plan, now undergoing federal environmental review, would create a 700-metre-wide, 1.7-kilometre-long artificial island next to the existing facility to handle more cargo ships. Environment and Climate Change Canada told the review panel in February that the port expansion's impact on western sandpipers could be "potentially high in magnitude, permanent, irreversible and continuous." Flocks of hundreds of thousands of the migrating shorebirds touch down in April to feed on biofilm growing on the tidal flats in front of the port.

MANY CREATURES in the estuary have already seen alarming declines, including foundational species such as eulachon, which crashed in the 1990s. While eulachon are returning to some rivers on British Columbia's central and north coast, the fish is still close to historic lows in the Fraser, where its population is listed as endangered. Meanwhile, wildlife experts have recommended that the eight subpopulations of the Fraser's sockeye salmon and the sea-going steelhead trout that pass through the estuary and are "at imminent risk of extinction" also be listed as endangered. The Fraser's white sturgeon, which can prowl the river bottom for more than 100 years and can grow as long as six metres, is so threatened that any that are caught must be released. Habitat loss and river dredging are said to have been contributing factors in the declines, along with overfishing, mismanagement, climate changes and poorly understood phenomena in the ocean.

A total of 23 bird species that depend on the diminishing wild spaces in and around the estuary are also at risk, including the federally listed great

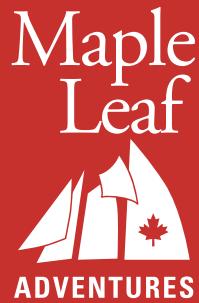
blue heron, barn swallow and western grebe. And while few birds are as adaptable as the pigeons, crows and starlings thriving amid Vancouver's growing forest of glass towers, the likes of marbled murrelets need ancient trees with mossy limbs to lay their eggs, while barn owls depend on wide-open spaces and shorebirds are partial to tidal flats.

University of Victoria conservation biologist Laura Kehoe is working on a project to identify the most cost-effective actions to conserve the most species per dollar spent on the Fraser estuary over the next 25 years. "There is still hope, but we are on the brink of losing species and the knock-on effects of that could be quite serious," she says, referring to the way the estuary's birds and fish can affect an ecosystem's food web hundreds or even thousands of kilometres away.

Part of the problem for the Fraser estuary is what Kehoe calls a tendency to take an "all or nothing approach to nature." People are more likely to point to pristine areas such as British Columbia's Great Bear Rainforest as magnificent ecological hot spots and lobby to have them protected. The Fraser estuary, though battered, "is a magnificent region right on our doorstep," she says. "We just need to be better at seeing it and appreciating it."

At the Alaksen wildlife area, Murray is making the same point, when she stops mid-sentence and raises her binoculars to check out a busy flock flitting by. "Common redpolls," she says, as about a dozen fluffy pink-breasted birds alight on a treetop. They have flown south to escape the cold and have stopped here in a diminishing island of habitat. Across the marsh, a flock of dunlin wheels up and vanishes, heading south toward the port. ☀

See more of Ben Nelms' photos of the Fraser River Delta at cangeo.ca/ja18/fraser.



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Clockwise from LEFT: Dancer Geoffrey Crow Eagle of the Piikani Nation; William Baptiste (left) and Stephen Wolfail of the Stoney-Nakoda First Nation at the 2017 rodeo competition; a fancy dancer from the Tsuut'ina Nation; a teepee at Indian Village.

STAMPEDE NATIONS

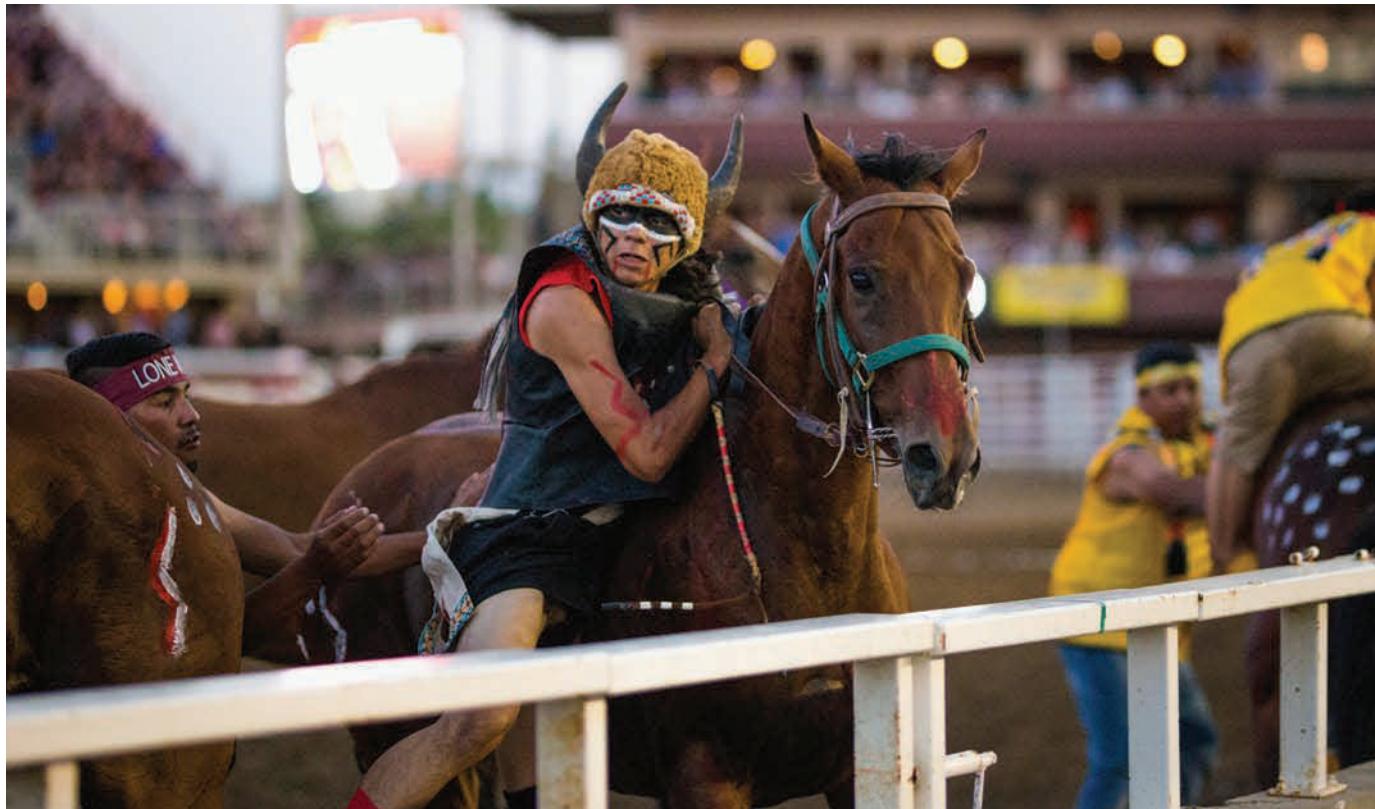
Beyond the rodeo and the chuckwagon races,
the Calgary Stampede is one of the country's longest-
running public celebrations of Indigenous cultures

STORY AND PHOTOGRAPHY BY JENN FAST





Clockwise from ABOVE: Andee Coy Winnipeg of the Siksika Nation prepares for a jingle dance performance at Indian Village; Indigenous dancers and students from The Young Canadians School of the Performing Arts during a show called "Together"; Kal Jackson, a member of the Piikani Nation, atop his horse during the Indigenous relay-race demonstration; Gerald Sitting Eagle, a Siksika Elder and the former chair of the Stampede's Indian Events committee.



Over 140 years ago, the Blackfoot Confederacy, the Tsuut'ina Nation and the Stoney-Nakoda Nation all came together in confluence at Blackfoot Crossing. They made a treaty that was designed to permeate and penetrate generations ... from here to the end of time.” Blackfoot filmmaker Cowboy Smithx’s voice booms from a video screen showing a sprawling aerial view of southern Alberta’s Blackfoot Crossing at the Calgary Stampede’s TransAlta Grandstand Show.

Smithx was a key part of the creative team for the 2017 show, an elaborate 75-minute stage performance held each night during the Stampede. One of his roles was to ensure Indigenous acts were properly represented. Aptly titled “Together: A Show 150 Years in the Making,” the Grandstand Show incorporated the most Indigenous acts in Stampede history, including three-time world champion hoop dancer Dallas Arcand and a call to ceremony spoken entirely in Blackfoot by Elder Peter Weasel Moccasin before Smithx’s video.

“I’m here to remind all of you, Treaty People of number 7,” Smithx’s voice continues, “that we are here to renew our



relationship with *Iiniistsi*, the Blackfoot word for treaty. Peace, harmony and moving forward, creating new bridges, new beginnings and a future ... It’s time to move forward and it’s time to build this country together.”

Billed as the greatest outdoor show on Earth, the Calgary Stampede is renowned for its high-stakes rodeo competitions, exciting chuckwagon races and extravagant stage performances enjoyed by

more than a million people for 10 days each July. But beyond its large-scale productions, the Stampede has become one of Canada’s largest public showcases of First Nations cultures.

AMERICAN RODEO promoter Guy Weadick founded the Calgary Stampede in 1912 with the dream of hosting a large frontier celebration and cowboy championship contest that included the





Indigenous dancers hold hands before the start of the Youth Pow Wow competition.







Harland Smalleyes, a dancer representing the Stoney-Nakoda and Blackfoot First Nations, performs during the 2017 Stampede.



participation of Indigenous Peoples. Under the federal government's Indian Act, introduced in 1876, it was illegal for Indigenous Peoples to leave their reserves without a permit, let alone display their cultures in front of an audience. So Weadick turned to politicians, Senator James Alexander Lougheed and R.B. Bennett, who later became Canada's 11th prime minister, to exert pressure on the government for an exemption — and he got it. During the very first Stampede, some 1,800 people from the First Nations of Treaty 7 led the parade and competed in rodeo events.

That tradition lives on today, as families from the Treaty 7 First Nations set up camp in 26 teepees at Indian Village in Enmax Park, a 6.4-hectare green space along the Elbow River in Stampede Park. For centuries, the area was an essential gathering place for Plains Peoples. Now, camping at Indian Village has become an annual pilgrimage for many, dating back to the first Stampede, and kept alive from

one generation to the next. Teepees represent each of the five Treaty 7 First Nations and are open to the public, as teepee owners tell stories and answer visitors' questions.

This tradition isn't without criticism, however. For some, the Stampede's inclusion of Indigenous Peoples hasn't always felt genuine. In particular, Indian Village, both in name and concept, is a work in progress.

WE ARE HERE TO RENEW our relationship with *liniistsi*, the Blackfoot word for treaty ... It's time to move forward and it's time to build this country together.'

"I think the Stampede is moving in the right direction, in regard to authentic inclusion of Indigenous voices," says Smithx. "I still think the Indian Village concept is highly problematic. It perpetuates antiquated notions and stereotypes we, as contemporary Indigenous artists, attempt to dismantle through our creative works. But I can see an evolution of the Indian Village coming within the next few years."

While the Indian Village name remains — teepee owners opted to keep

Xakiji (Chief) Lee Crowchild (LEFT) of the Tsuut'ina Nation. Family heirlooms (RIGHT) on display at Indian Village.

it for its historical significance — that could change in the future, and a dialogue between teepee owners and the Stampede remains open on all aspects of the pavilion.

Elsewhere in the 83-hectare Stampede Park, Indigenous cultures and traditions are more prominent than ever. For the first time in Stampede history, seven chiefs from the Treaty 7 First Nations opened the 2017 celebrations as parade marshals.

"I think that [asking us to marshal the parade] was a really good first step. For the longest time, the Stampede was 10 days of cowboy-Indian mentality," says Xakiji (Chief) Lee Crowchild of the Tsuut'ina Nation. "It's about getting more First Nations people involved in other parts of the Stampede. Be visual, be up in the Grandstand, be in the midway working, be the head of some of these crews, not just reduced to Indian Village."

Indigenous youth also kicked off the 2017 Stampede rodeo competition, showcasing their horsemanship skills in exciting displays of speed, agility and precision

Jenn Fast (jennexplores.com) is a Calgary-based photographer and travel writer. Follow her on Instagram @jennexplores.

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as they raced around the track during the official grand entry. Later in the competition, the audience was treated to a new Indigenous relay race demonstration. This high-adrenalin competition on horseback saw four teams — Lone Wolf of the Piikani Nation, Okan Warriors of the Siksika Nation, and Young Money and the Carlson Team of the Blackfoot Confederacy — race around the track three times, ending each lap with the riders leaping off their bareback horses onto others in a lightning-fast exchange.

“I’ve really enjoyed the relay racing,” says Gerald Sitting Eagle, an Elder from Siksika Nation and the former chair of the Stampede’s Indian Events committee. “It’s a race our people used to do in the past — a messenger would go from one camp to another and jump from one horse to another so they’d have fresh horses all the time. Now, it has become competitive. This year at the Stampede was a trial. I hope the crowd tells the Stampede to keep it!”

THE RHYTHM of a steady drumbeat resonates throughout the park. A chorus of male voices rises in a collective chant as young women in fringed shawls hop, kick and twirl in the Women’s Fancy

Dance competition at the Indian Village stage. The audience, clad in cowboy boots and hats fresh from the rodeo, is captivated by the traditional event. The smell of cooking bannock from a nearby booth fills the air.

Close by, a couple of teenage boys emerge from a teepee in feathered bustles and intricate beadwork designs, ready to participate in the Prairie Chicken dance competition. Prairie chickens are

Clockwise from TOP LEFT: The midway; Caius Bullbear (right) and Sheldon Scalplock dance at the Indian Village Pow Wow; spectators wait for a chuckwagon race to begin.

Creator’s creation. When you hit it, everyone gets up and dances and it’s alive. Your heart beats harder when you hear that drum.”

Back at the Grandstand stage, Smithx’s video ends with the Stampede’s slogan, “We’re greatest together.” The stage goes dark, and the audience erupts in cheers and applause. Following musical performances by Adam James and Jann Arden, Smithx’s video was a powerful reminder of the intent of Treaty 7: peace and moving forward.

“Inclusion and celebration of First Nations cultures has never been more important,” says Smithx later. “In the wake of Canada 150, I’ve witnessed a national identity crisis from coast to coast. This is an exciting time to be alive. The new generation of diverse voices have the beautiful task of setting a new standard for our collective identity as a nation. The time is now.” ☽

DRUMMERS TREAT THEIR drums well because the skin comes from an animal — from the Creator’s creation. Your heart beats harder when you hear that drum.’

believed to have healing powers, and dancers imitate their movements in feathered outfits, using bells to capture healing medicines. The boys are among more than 300 dancers from all over North America who come to participate in the Stampede’s annual Indian Village Pow Wow competition.

Song and drum are paramount to these events. “Drums are sacred to us,” says Gerald Sitting Eagle. “Drummers treat their drums well because the skin comes from an animal — from the

See more photos of the 2017 Calgary Stampede at cangeo.ca/ja18/stampede.



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KLEINES KANADA

(SMALL CANADA)

A quarter century after
Canadian Cold War-era bases closed
in Germany, strong pockets of our
home and native land still stand

BY JOSEPH FREY
WITH PHOTOGRAPHY BY ADRIAN PETER MACIJIWSKY

THERE'S A MEMORIAL to Canadian military personnel in Lahr, Germany, beside the offices of the city's lord mayor. It's a simple yet elegant stone column adorned with bronze-coloured plaques — including a maple leaf and the heraldic crest of the city's former Canadian military base — that was erected by the citizens of Lahr in recognition of the Canadians who were garrisoned there during the Cold War. One of its inscriptions reads: "Friends – Neighbours – Allies."

It's not the only Canadian memorial in a European town, but it serves to mark the unique nature of this city of about 47,000 in the country's southwestern corner. "Lahr is the most Canadian place in Germany," says the city's lord mayor, Wolfgang Müller. "We were the only city in Germany to discuss the Canada-European Union Comprehensive Economic and Trade Agreement in our local parliament and back it with a positive vote," he continues, offering just one example of the city's many Canadian connections.

The memorial to Canadian military personnel outside the lord mayor's office in Lahr, Germany.



Clockwise from TOP LEFT: An old sign from CFB Baden-Soellingen; Spruce the moose at the Luftwaffenmuseum (German Canadian Air Force Museum); Canadian Gerald Lemay, who served at CFB Baden-Soellingen and has lived in Germany ever since; Kevin Grainger, who likewise worked at the base and stayed; the exterior of the Luftwaffenmuseum; street signs in Söllingen.



The Baden Hills Golf und Curling Club, which the RCAF built in 1962, flanks the former base.

"The Canadian Armed Forces helped provide Germany with security and safety during the Cold War, and the city of Lahr also appreciated Canada's support for German reunification after the Berlin Wall came down," says Müller. "Talks were held in Ottawa that made German reunification possible. We appreciate it."

August 2018 marks the 25th anniversary of Canada pulling its combat troops out of a reunified Germany. What eventually became known as Canadian Forces Base Lahr was transferred to Canada from the French Air Force in March 1967 and served in support of NATO during the Cold War. Meanwhile, what became Canadian Forces Base Baden-Soellingen, located near the farming community of Söllingen 70 kilometres north of Lahr, had been performing a similar purpose since September 1953. I was among the thousands that called the installations home over the years, having served a couple of weeks in autumn 1989 at CFB Lahr during my career in the armed forces. I knew first-hand that strong pockets of Canadians had emerged in both communities, and I was eager to return a quarter century after the bases had closed. There I discovered that the two areas still carry numerous hallmarks of Canadian culture, not only in memorials, but in infrastructure and most importantly, people — namely former Canadian soldiers and aircrew who started new lives in Germany.

DEUTSCH-KANADISCHES Luftwaffenmuseum (translation: German Canadian Air Force Museum) is the only museum in Europe dedicated to Canada's contribution to the Cold War. It's housed in a former Royal Canadian Air Force HAS (hardened aircraft shelter) on the site of CFB Baden-Soellingen. The museum, which is filled with the different types of jet fighters Canadians flew in Germany between 1953 and 1993, is funded by donations and run by local German and Canadian volunteers.



With its RCAF flags, squadron insignias, hand-painted scenes of military aircraft in flight, a mounted moose head and air force uniforms, the museum is reminiscent of an RCAF jet fighter base in either Germany or Canada during the latter half of the 20th century.

Here I meet Canadians Gerald Lemay, a former aircraft technician originally from Quebec City who arrived in 1953, and Kevin Grainger, a former aeroengine technician who grew up in Dartmouth, N.S., and was posted to Baden-Soellingen in 1986. Both served as members of the RCAF.

Lemay is a bit of a legend with the museum's volunteer staff, as he's believed to be the first RCAF member of the Cold War deployment to have married a German. He met his future wife on his first day at the base's mess hall where she was a waitress.



"I had to learn dancing so fast," says Lemay with a laugh. Together they had nine children, six boys and three girls. Five of the boys still live in Germany, while one son moved to Lévis, Que. All three daughters married RCAF officers and moved to Canada when their husbands were redeployed from Germany.

WITH ITS RCAF FLAGS, SQUADRON INSIGNIAS, A MOUNTED MOOSE HEAD AND AIR FORCE UNIFORMS, THE MUSEUM IS REMINISCENT OF A CANADIAN FIGHTER BASE.

Curling Club, which the RCAF built in 1962 alongside the base's runway. (There's a commemorative plaque at the second tee in tribute to the Canadian founders.)

Joseph Frey (@Joseph_G_Frey) writes about field sciences, history and geography for publications such as the Globe and Mail, Time, Geographical and DIVER. Adrian Peter Macijiwsky (bonterrardigital.com) is a Toronto-based photographer and videographer.

Clockwise from TOP: the former CFB in Söllingen, now an active commercial airport; barracks at old Canadian Forces Base Lahr; a group of Canadians and Germans who worked at CFB Lahr gather for a weekly lunch.

Grainger tours me around the small communities surrounding the former base. The neighbourhood of what was once Canadian military housing is still known today as Kleinkanada (small Canada), and numerous streets in the region share the names of Canadian places — Ontariostraße, Albertastraße and Cabot Trail. "CFB Baden-Söllingen had a big influence on the surrounding towns," says Grainger. "The economy was booming; restaurants and local businesses were filled with Canadians."

IT'S A 70-KILOMETRE TRIP from the former CFB Baden-Söllingen south to Lahr through the narrow Rhine River Valley. It's dotted with small communities surrounded by well-tended fields of golden-green grains, corn and potatoes. Strawberries, white asparagus and sunchoke, a potato-like root used in making schnapps, are also grown in the area. Just to the west is the Rhine River, which along this stretch forms the border between France's Alsace region and Germany's southwestern state of Baden-Württemberg. To the east, it's not more than a stone's throw to the foothills of the picturesque Schwarzwald, or Black Forest.

I meet John Adey, son of an RCAF firefighter, for lunch at Gasthaus & Pension Bruckerhof a few kilometres north of Lahr

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in the serene foothills of the Black Forest. Adey, who spent his youth growing up on five different air force bases in Canada and Germany before his father was posted to CFB Lahr in 1969, is part of a group of retired Canadian military personnel and Germans who worked with the Canadian Forces in Lahr that gathers for lunch at the restaurant every Wednesday.

Today, nine have shown up. Their conversations revolve around children and grandchildren in Germany and Canada, German and Canadian politics, retirement issues and fond reminiscences of their youth spent with the military.

After lunch, Adey drives me around Lahr and points out Canadian connections. There's the totem pole in the city park and a modern art sculpture near Café Burger representing the unity of the Canadian and German communities — both donated by the Canadian Forces.

THERE'S A TOTEM POLE IN THE CITY PARK AND A MODERN ART SCULPTURE NEAR CAFÉ BURGER REPRESENTING THE UNITY OF THE CANADIAN AND GERMAN COMMUNITIES — BOTH DONATED BY THE CANADIAN FORCES.

Some of the former base's structures have been torn down, and others, such as the Black Forest officers' mess where I spent quality time with fellow officers, now houses software start-up firms. One street looks vaguely familiar, and Adey points out two buildings that used to be the transient officers quarters. I recall staying in the second building. Physically, neither building has changed, but they're now home to Syrian refugees.

A lot has changed around the former CFB Lahr, and I don't recognize much. Many of the Canadian military barracks have been redesigned and renovated into apartments and as such are unrecognizable. One redeveloped area is called Canada Ring, and one of the four new streets running through it is named after former prime minister and Nobel Peace Prize laureate Lester B. Pearson.

Some of the former



Clockwise from top LEFT: Wolfgang Müller, Lahr's lord mayor, who calls the city "the most Canadian place in Germany"; two former barracks of CFB Lahr that have been converted into apartments.

It's later that day that I meet with mayor Müller. As we talk about the positive economic impact that more than 10,000 Canadian military personnel and related civilian employees and their dependents had on the local economy, it strikes me that the Canadian experience brought a social cohesion to the city.

Today, Lahr has a population of 47,000, not much larger than when the Canadian Forces were here, and while Canadians made up about 40 per cent of Lahr's pre-1994 population, 40 per cent of the city's current population are still migrants. It's the Canadian example of the acceptance of others that helped Lahr adjust to the impacts of the base closure and to take in more than 10,000 migrants from other countries, Müller believes.

"We lived with French Canadians, English Canadians, Canadians with immigrant backgrounds and Canadians from various provinces," says Müller. "This helped the citizens of Lahr understand how to live with people from various cultures. It was a contribution to tolerance and understanding." Could there be a more fitting Canadian legacy? ☽



Check out an interactive map of Canadian memorials around the world at cangeo.ca/ja18/memorialmap.

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ONE OCEAN EXPEDITIONS EXPANDS THE FLEET

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The privately owned and proudly Canadian cruise specialist, One Ocean Expeditions, will soon be expanding its ice-strengthened, purpose-built fleet to include RCGS Resolute. The new vessel will increase capacity and head into new destinations in 2019, including South and Central America and the Islands of the North Atlantic, with enhanced expedition cruise programming of an environmental, scientific, educational and active nature.

One Ocean Expeditions is carrying a maximum of 146 passengers in comfort, combining an array of premiere amenities with OOE's unique small-ship programming, educational opportunities and numerous activities, tailored to guests' individual interests. This new addition joins One Ocean Navigator / Akademik Ioffe and One Ocean Voyager / Akademik Sergey Vavilov, carrying 96 and 92 passengers respectively. RCGS Resolute has the capacity to host and operate an increased number of programs simultaneously, ensuring the small-group comfort and intimacy found on all OOE vessels.

With a name of historic proportion, fitting for a small expedition cruise vessel of robust industry reputation, RCGS Resolute is named after the Inuit town of Resolute, in Nunavut territory, which in turn was named after the Merchant Navy vessel, HMS Resolute by Canadian settlers. Built in 1850, the merchant Navy vessel was lost in the Arctic ice from 1854-55, when it was then discovered by the U.S. and returned to the British Royal Navy from 1856. Her lineage continues with several of her relics residing in the White House's Oval Office.

Along with her historical roots, OOE's RCGS Resolute is proud to carry the ship prefix of The Royal Canadian Geographical Society (RCGS), OOE's exclusive marine travel partner in education, environmental science, and exploration. With this longstanding partnership, OOE guests have the exclusive opportunity to learn from and interact with RCGS Fellows including world-renowned scientists, educators, researchers, naturalists, marine biologists, artists, historians and photographers on board.

RCGS Resolute will be sailing into Sydney, Nova Scotia on Canada's East Coast, for her "recommissioning" October 19th, 2018. RCGS Resolute's inaugural voyage will depart from Ushuaia, Argentina, November 16th, 2018 on the "Antarctica - Off the Beaten Track" voyage. On this trip guests can enjoy ski touring, snowshoeing, extended hiking, overnight camping, expedition photography, sea kayaking and Zodiac cruises in Antarctica in its most pristine condition.



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GRAND PRIZE

June Szasz

Downtown Vancouver and Burrard Inlet are immersed in fog on an autumn evening. Taken from the Cypress Mountain Lookout, situated in the riding of West Vancouver-Sunshine Coast-Sky Country, the image actually encompasses two other ridings, Vancouver Centre and Vancouver East.

Riding

PRESENTING THE WINNING IMAGES FROM
CPAC AND CANADIAN GEOGRAPHIC'S
DEMOCRACY-THEMED PHOTO COMPETITION



"Now more than ever before, we recognize that democracy is precious but fragile, even in mature democracies like Canada."

So said Catherine Cano, president and general manager of the Cable Public Affairs Channel (CPAC), at the unveiling of CPAC and *Canadian Geographic's* *Route 338* Giant Floor Map of Canada's federal electoral districts last fall. That map is now touring schools across the country, engaging students of all ages in discussions about democracy, citizenship, government and human rights.

At the same time, we challenged all Canadians to think about the geography of democracy by entering the Show Us Your Riding photo competition. After identifying their riding on the interactive, online version of the *Route 338* map (route338.ca), our Photo Club members were encouraged to head out into their communities and capture images that spoke to the riding's unique history, landmarks, flora and fauna, cultural activities and, of course, how democracy is manifested there. We received hundreds of great submissions, but the images featured here represent the best of the bunch as chosen by our judges: David Lauer, senior communications manager with CPAC, Jenny Chew, *Canadian Geographic's* graphic designer, and Andrew Meade, a photojournalist with the *Hill Times*.



CATEGORY WINNER | LANDSCAPES

Michael Winsor

A perfectly calm evening produces vivid reflections at the Barbour Living Heritage Village in the riding of Bonavista-Burin-Trinity, N.L.

SHOW US YOUR RIDING

CATEGORY WINNER | FLORA & FAUNA

Terry Nash

A great horned owl assumes a defensive position by ruffling its feathers to increase its apparent size. This owl was photographed at the Alberta Birds of Prey Foundation Visitors Centre, a licensed raptor rescue and conservation organization located in Coaldale, Alta., in the riding of Lethbridge.



CATEGORY WINNER | DEMOCRACY

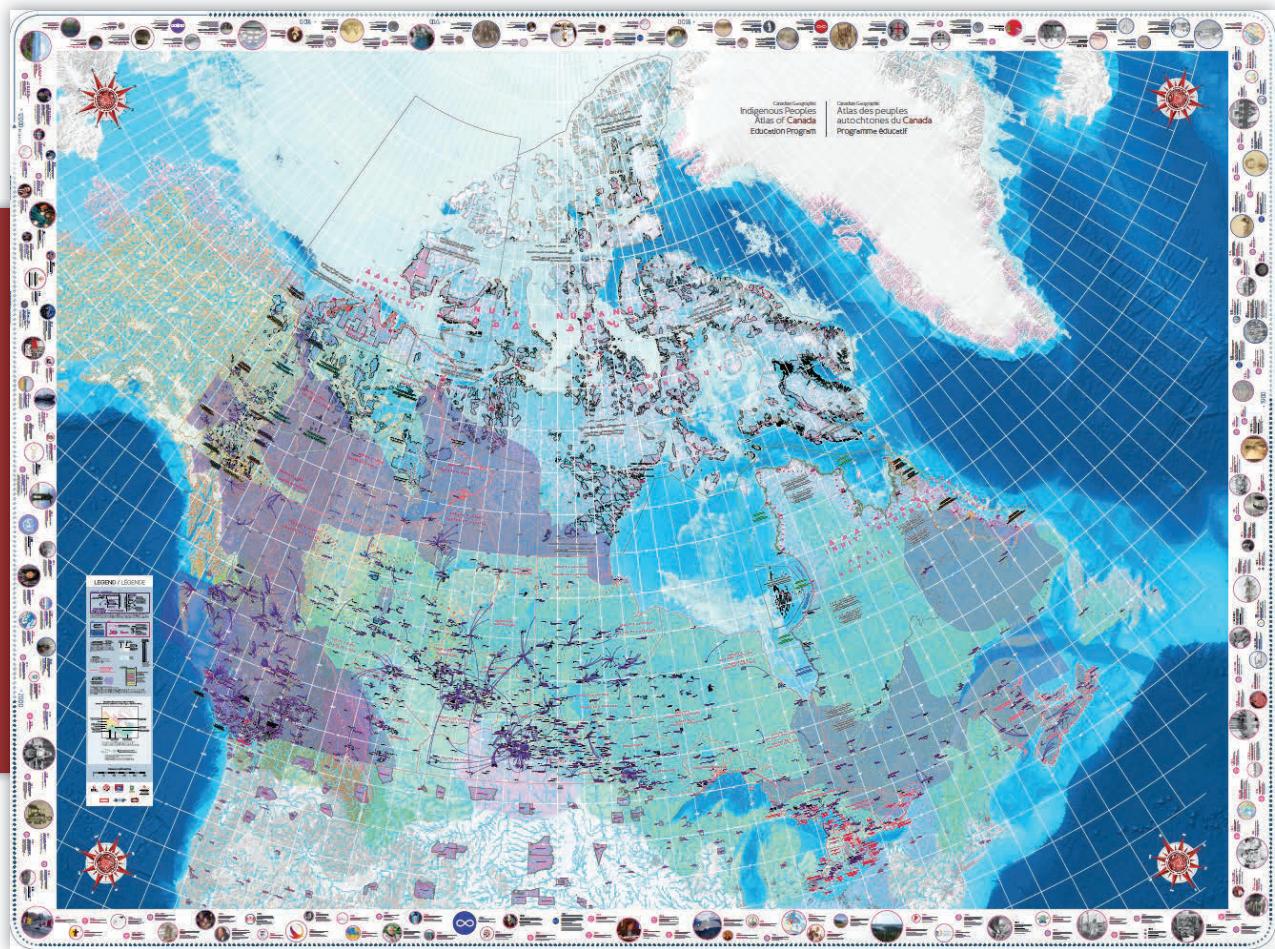
Jay Watts

Striking tenants of Akelius buildings protest what they feel was an unfair process of dispute resolution over above-guideline increases at an Ontario Social Justice Tribunal. The protest was part of a longer rent strike organized by tenants in the neighbourhood and riding of Parkdale-High Park in Toronto that began on May 1, 2017, and led to a number of negotiated settlements over rent increases and repairs for buildings in the rapidly gentrifying neighbourhood.



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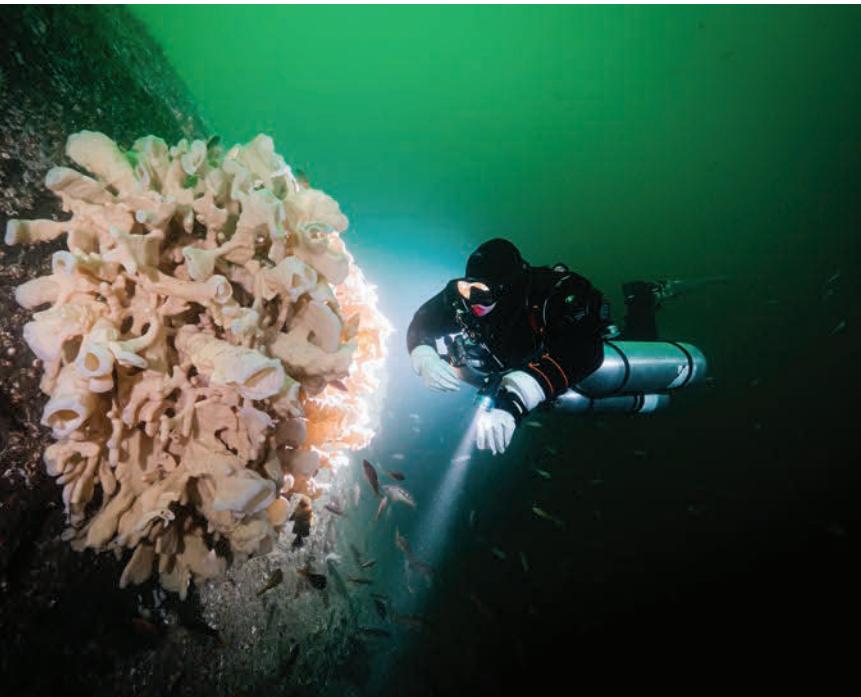
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CATEGORY WINNER | CULTURE & RECREATION

Eli Wolpin

Technical diver Daniel Wittrock peers into a cloud sponge deep underwater in Whytecliff Park, Canada's first marine protected area, located in the riding of West Vancouver-Sunshine Coast Sea To Sky Country. Cloud sponges are a silica-based reef-forming animal that live at depths of 30 metres or more. They host many species within their folds and serve as nurseries for rock fish, seen schooling around Wittrock.

CATEGORY WINNER | HISTORY

Paige Marcinkoski

An abandoned homestead in Camrose County, Alta., serves as a reminder of Ferry Point, a once-thriving settlement in the riding of Battle River-Crowfoot, southeast of Edmonton. Like many other Prairie settlements, when the railway bypassed it, Ferry Point faded away.



View the runners-up and honourable mentions at cangeo.ca/ja18/democracy



A word about our prize sponsors

It took more than the talents of our readers to make the *Show Us Your Riding* photo competition a success. We appreciate the generous support of our prize sponsors and thank them for their participation.

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Love for pronghorns

Alanna Mitchell's article ("For the love of pronghorns," May/June) perfectly blends storytelling — the tale of her family was as engaging as that of the pronghorns' struggles — with a helpful perspective on the need for protection of this animal and its habitat. I also appreciated that Mitchell refused to judge yesterday's practices in biology by today's values and ideals.

Shawn Brix
Norwood, Ont.

I was pleased to read Alanna Mitchell's article on pronghorns in the May/June issue. On occasion, usually during road trips across the Prairies, I have glimpsed these lovely creatures and marvelled at their beauty. Like Mitchell, my father also had an excellent pronghorn specimen; Mr. Pips, however, graced the living room wall in my parent's home for many years. When our farm was sold, I claimed him and he now

watches our comings and goings from his lofty perch in my own home.

Jennifer K.L. Janzen
Winnipeg

Plight of the caribou

Sadly, by the time I received the May/June issue with the article about the plight of the mountain caribou ("Pen Project," Discovery), their number had dropped even lower.

There are now only three females in the South Selkirk herd and only four animals (three males, one female) in the South Purcell herd. This means caribou are now extirpated in those two areas.

Efforts to enhance their chances of restoration have failed miserably several times; in the recent past, 20 caribou were added to the South Selkirk herd, with only one surviving for most of a year. I have been involved with

efforts to restore this fine animal in south-eastern British Columbia since 1981. In my opinion, all efforts have been ineffectual due to a lack of commitment on the part of the provincial government, which has for decades reduced funding for fish and wildlife management.

Richard Green
Nelson, B.C.

Read an update on the state of Canada's woodland caribou at cango.ca/ja18/caribou. —Ed.

Correction:

On the "In a snap" page in the May/June issue, the caption for the photo by Jake Graham incorrectly identified the location shown as Torngat Mountains National Park, N.L. Jake's picture is, in fact, of Gros Morne National Park, N.L.

COVER VOTE

How we chose this issue's cover



"Oki [hello]. I am from the Land of the Blood Tribe-Blackfoot Confederacy. It is a real privilege to have a Blood Tribe member on the cover of *Canadian Geographic*! May the Wilderness Angels be with you always and forever." That message came from Ang Fox, a reader and member of the same First Nation as Eugene Brave Rock (above left), who appears in traditional regalia on this issue's cover. The other two cover option subjects, Clayton Cardinal (above middle), of the Cree Nation, and Harland Smalleyes, representing the Stoney-Nakoda and Blackfoot nations, received their share of fan mail in our regular cover vote, but Brave Rock took 43 per cent of the tally. Perhaps it had to do with his star power. Born and raised in southern Alberta, Brave Rock takes part in Indigenous celebrations at the Calgary Stampede and other cultural events across the West, but he is also a prominent actor, recently appearing in *Wonder Woman* as Napi (an undercover Blackfoot demigod).



Not already receiving our cover vote email? Visit cango.ca/newsletter and sign up for the *Canadian Geographic* newsletter to get in on the action.

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Comments may be edited for length and clarity.

WHAT'S THIS?

Recognize this mystery object and how it relates to Canadian geography and history?



- Visit cangeo.ca/whatsthis for a hint, to enter your guess and for a chance to win one of three copies of the special issue *Ultimate Canadian Instagram Photos*.*
- Follow us on [@CanGeo](https://twitter.com/CanGeo) for more hints.
- The deadline is August 13.
- The correct answer will appear in the September/October 2018 issue.

*Three winners will be randomly selected from all correct responses.

Canadian Geographic and the Canadian Heritage Information Network have partnered to showcase important artifacts from Canadian history and geography. Each object comes from one of the museums in CHIN's national network.



LAST ISSUE'S OBJECT: Dog parachute

In the fall of 1954, a stray dog appeared outside the hangar of Royal Canadian Air Force Squadron 418 in Edmonton. It accepted food and was soon adopted by the squadron and given the name Butch. Butch was given the honorary title of Leading Aircraftsman (LAC) and became 418's mascot, accompanying crews across Canada before being honourably discharged and retired to a nearby farm. Butch's custom-made parachute is the only known RCAF-approved dog parachute in existence. ☺

With files from the Alberta Aviation Museum. Learn more about this artifact and others by visiting albertaaviationmuseum.com



Explore more stories from Canada's past through cangeo.ca/whatsthis.



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YOUR



CHRIS CRAN'S EXPLORE EXHIBIT TO OPEN IN JUNE

Renowned Calgary-based artist and RCGS Fellow Chris Cran has created a series of paintings of leading Society figures that will be exhibited in the Upper Gallery at 50 Sussex Dr. this summer. Cran, who was recently featured in a major exhibit by the Art Gallery of Alberta and Ottawa's National Art Gallery, is known for challenging perception and playing with illusion, for exploring and overturning traditional artistic genres and contemporary movements alike.

Paintings and works on paper will include Society greats such as founder Charles Camsell, geologist and cartographer Joseph Burr Tyrrell (above), geologist Alice E. Wilson and astronaut Roberta Bondar.

—Nick Walker



MEC NOW THE OFFICIAL OUTFITTER OF THE RCGS EXPEDITIONS PROGRAM

Two of the biggest names in exploration have teamed up to help make Canada better known to Canadians and the world. Now, when explorers carry the RCGS flag out into this country's wildest spaces, they'll do so with gear and financial support from Mountain Equipment Co-op.

Read about the expeditions that will receive support in 2018 at cangeo.ca/ja18/mec.

—Alexandra Pope

CLOCKWISE FROM TOP LEFT: CHRIS CRAN/RCGS; LINDSAY RALPH/CAN GEO EDU; CAN GEO; JAVIER FRUTOS/CAN GEO; MEC

NEWS FROM THE ROYAL CANADIAN GEOGRAPHICAL SOCIETY

THE 2018 CAN GEO CHALLENGE CROWNS A WINNER



The third time was the charm for an Ottawa teen who claimed victory in the final of the 2018 Canadian Geographic Challenge, Canada's national student geography bee. William Chapman, a Grade 9 student from Bell High School, had qualified as a finalist twice before, but admitted to feeling stunned after securing first place by a single point at the Canadian War Museum on May 28.

Host and RCGS Explorer-in-Residence Mylène Paquette (see page 78) guided finalists through seven tough rounds of questions. The top three competitors earned cash prizes and an East Coast cruise with One Ocean Expeditions, and all took home new Air Canada luggage. For more about the Challenge and to watch CPAC's coverage of the event, visit cangeo.ca/ja18/challenge.

—A.P.



SHOW US YOUR CANADA PHOTO COMPETITION ON UNTIL AUG. 24

Canadian Geographic and Innovation, Science and Economic Development Canada have launched the *Show Us Your Canada* photo competition, a special initiative celebrating Canadian tourism. Because 2018 is the official Canada-China Year of Tourism, there's never been a better time to show off your favourite spots — and discover new ones. Bardish Chagger, the minister of small business and tourism (RIGHT), announced the competition before the Canadian Geographic Challenge final on May 28, which also marked the first day of National Tourism Week.

To submit your best shots of Canada and for information about prizes such as Air Canada tickets to China, visit tourism.canadiangeographic.ca.

—A.P.





FEATURED FELLOW: MYLÈNE PAQUETTE



Mylène Paquette is the RCGS's newest Explorer-in-Residence.

When Mylène Paquette decided to confront her fear of water, she didn't just take a swimming lesson — she set out on a 5,000-kilometre solo trek across the North Atlantic Ocean in a rowboat. The Montrealer completed the journey from Halifax to Lorient, France, in 129 days in 2013, becoming the first North American to make the crossing. Paquette continues to push boundaries in the water, participating in ice canoe races and working with organizations to protect the St. Lawrence River. On May 28, she was named an Explorer-in-Residence of The Royal Canadian Geographical Society.

On setting her cross-Atlantic record

The weather made it so difficult. My land team and I discussed giving up every week. For the first 50 days, I was mostly trapped on my bed, helmet and harness on, waiting for better conditions to row. After 50 days, I had only made it to just south of Newfoundland.

The easiest part was the rowing. The hard part was not giving up. When

mid-September arrived, I was still right in the middle of the ocean during hurricane season. One of the biggest lessons I learned on my journey is that even in a big storm, keeping a positive attitude will make your life much easier.

On becoming an Explorer-in-Residence

Last year, I was honoured to meet Jill Heinerth, the RCGS's first Explorer-in-Residence, so when I was asked to be part of the program I was really excited. I have plans to explore more of Canada, including an expedition through the Northwest Passage (although I can't discuss details yet), and I'm excited about the new public platform this gives me: I train for ice canoe races on the St. Lawrence River year-round, and it's important for me to spread the word about protecting it.

On ice canoeing's history and challenges

Ice canoeing is hundreds of years old. Samuel de Champlain wrote about how Indigenous people crossed the frozen

St. Lawrence River by canoe. The first ice canoe race was in 1896 from Quebec City to Lévis, a competition that became an annual event in 1965. There are now six other races across Quebec. My team is named *Vive Montréal 375*.

Racing is very difficult. You have to jump out of the canoe onto big pieces of ice, run alongside the canoe as you push it, then jump back in and row in the open water. It's much more dangerous than rowing across the Atlantic.

On protecting the St. Lawrence

The St. Lawrence River is an environmentally critical waterway treasured around the world. It's home to 27,000 species, and nearly half of Quebec's population gets its drinking water from the watershed. There are plans to expand the Port of Quebec City but many are worried that we don't have a strategy to protect the river if something such as an oil spill happens. We must make people aware of the health of this river.

—Interview by Michela Rosano



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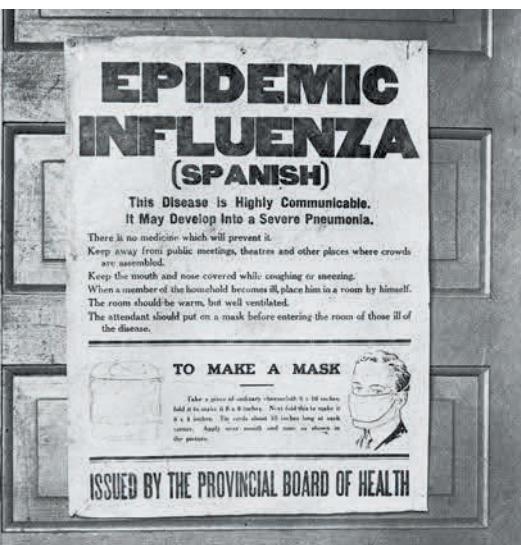
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next issue

SEPTEMBER/OCTOBER 2018



Canadian Geographic looks back at the 1918 Spanish Flu



Spanish Flu patients and volunteers at Collège La Salle in Thetford Mines, Que., in 1918 (TOP). A 1918 poster about the influenza epidemic in Alberta (ABOVE).

In the winter of 1916-17 in Étaples, France, an outbreak of influenza tore through a dirty and crowded British military base of 100,000 soldiers squeezed onto just 12 square kilometres. Winter flu viruses were common, making seasonal rounds throughout camps on the Western Front and around the globe during the First World War — but this one was different. The virus now known as the Spanish Flu killed 10 to 20 per cent of the (mostly young) people it infected, often in as little as 48 hours. And as troops returned home from the front lines after the war, the disease spread, quickly turning into a global pandemic that would eventually kill an estimated 50 million people worldwide. The base at Étaples is just one of the theorized ground zeros for the world's deadliest flu pandemic.

As acclaimed science writer Alanna Mitchell explains in her story about the origins and effects of the Spanish Flu in the September/October issue of *Canadian Geographic*, Canada was among the hardest-hit countries, losing some 50,000 people to the illness. But, as Mitchell also notes, great losses prompted great changes (the creation of the federal Department of Health in 1919 was spurred by the outbreak) and helped pave the way for today's scientists to better prepare for the next global pandemic.

"The Spanish Flu was possibly the most lethal infectious disease in human history and certainly the worst since the Black Death in the Middle Ages, yet it's barely punctured the public consciousness," says Mitchell. "Historians have ignored it until recently and virologists still don't know for sure where it started or how it spread. It killed far more than the 17 million killed in the First World War, but the tragedy of those deaths has been subsumed by the tragedy and drama of the war. A century later, all those dead are finally starting to get a voice." ☽



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our country

REVEALING CANADA



Sheila Copps

The former politician thinks back to childhood days spent exploring Cootes Paradise Marsh in Hamilton, Ont.

Cootes Paradise Marsh, on the western flank of Hamilton Harbour, is a hidden jewel. When people pass the Skyway Bridge, they see the city and the steel mills and Hamilton's industrial heritage, but Cootes Paradise, a protected wetland, feels like a snapshot from the past because it hasn't been touched. French explorer René-Robert Cavelier de La Salle made contact with Indigenous people in this area in 1669, and I can just imagine that it looks the same now as it did then.

Cootes Paradise is a huge swath of land with many nooks and crannies and an abundance of wildlife — it's actually part of a UNESCO World Biosphere Reserve. Its physical beauty, where the calm water of the bay meets the Niagara Escarpment, is what moves me the most. When I was in elementary school, I used to go on hikes there with my friends. We were free-range kids in those days, so we took the bus from our east-end homes as far as it would go and then walked the rest of the way. We had a ball playing around the marsh, the adjacent Royal Botanical Gardens and the trails.

Hamilton has a lot of birch trees, and they seem to really thrive at Cootes Paradise. I remember spending hours just looking up at those gigantic birches while making whistles with the broadleaf grass that grows in the marsh, and I used to love swinging from the long rope vines that grow on some of the trees. One day, we completely lost track of time; all of a sudden, we looked up and it was dark. It was a magical day, like something out of *Adventures of Huckleberry Finn*. ☀

—As told to Michela Rosano



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SYLVIA EARLE, OCEANOGRAPHER



JAMES CAMERON, EXPLORER



UNDER THE POLE EXPEDITIONS



TRIESTE, 1960



DAVID DOUBILET, PHOTOGRAPHER

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