

Watershed

# Sentinel



## GMO Regulatory Erosion



03

Environmental News from BC & Beyond

**Indigenous Peoples are standing up  
for our common future.**



*"There is no force in the country more powerful."  
— Jess Housty, Heiltsuk councillor*

## **Let's stand together.**

There's no doubt: **First Nations are on a winning streak in the country's courts.** With victories against Taseko Mines and Enbridge Northern Gateway Pipeline, and strategic campaigns against Coastal GasLink and the expansion of the tar sands, Indigenous Nations are pushing back against reckless industry and setting powerful precedents for ecological protection.

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## Features



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## Genome Editing

Canada is proposing to exempt certain gene-edited foods from safety assessments and tracking.

## In/Stability

The Site C decision had us thinking about the insanity of endlessly propping up something unstable to maintain... a sense of stability? Fossil jobs, military funding, GMOs... we look at some brittle holding patterns that could, should, or are beginning to give way.

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Fighting for the last slice in Brunette River forest

Cover Credit  
©MattSeymour



## Editorial

Claire Gilmore

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## The Uses of Crisis

A year ago, in the early days of the pandemic, there was a sense of possibility in the air. The massive disruption in “normal” was (and still is) bringing to light the kaleidoscope of dysfunctions and inequalities inherent in our late-stage capitalist systems, and it seemed for a while that confidence in the old order was shaken enough to allow parts of it to crumble – making room for new, healthier norms and systems to emerge.

A few things have shifted for the better, but on the whole it’s been extremely disappointing to watch governments pour their (our) resources into propping up failing industries, double down on the corporate welfare regime, and generally fail to grasp the opportunity to make even the most basic policy changes in the service of public health (I mean, would it really be too much to ask to phase out for-profit long-term care??).

As Nassim Taleb, author of *Antifragile: Things That Gain From Disorder* says, “if nature ran the economy, it would not continuously bail out its living members to make them live forever, nor would it have permanent administrations and forecasting departments that try to outsmart the future.” Well, in absence of nature-based governance, we in BC have the truly mind-boggling decision to continue work on the unneeded, geotechnically unstable, over-budget, under-overseen “Site C Clean Energy Project.”

The disaster capitalists have taken the maxim “never let a good crisis go to waste” to heart, and used it to great effect this past year in the endless project of furthering their grift. What if, in the spirit of nature, we reclaimed that maxim to allow brittle, fragile, and failing industries, projects, and mindsets to fall apart? To let things die, and new growth come in: crisis as an opportunity for regeneration.

—Claire Gilmore (WS managing editor), Cumberland, BC, March 2021

## At the 'Shed

**Welcome** to the members of our new Editorial Advisory Board, who allow us to glean from their experience and knowledge in their fields, to make a better magazine for us all. We are pleased to get such a generous helping hand from this mix of talented people: Mitchell Beer, energymix.com; Lucy Sharratt, Canadian Biotechnology Action Network; Ana Simeon, RAVEN; Dan Lewis, Clayoquot Action; Anna Kemp, Watershed Watch; Stephen Leahy, climate journalist; Jesse Cardinal, Keepers of the Water; Arzeena Hamir, Amara Farm. Members of the board will be advising the *Sentinel* on the most significant stories in their areas of expertise, for our issues every two months, as well as our e-newsletter which comes out in between print editions. It is going to be very interesting to see how the magazine develops with this new addition.

**Still growing family** We are looking for more writers and journalists to join our team. Pitch us your stories at [editor@watershedsentinel.ca](mailto:editor@watershedsentinel.ca), but check out our back issues and Writer’s Guidelines on the website first. No pitches for commercial products please.

**Our next (Summer) issue** will examine biodiversity – from government commitments to local implications. We welcome your contributions to this theme.

Weakening enviro regs during COVID

## Going Backward

**At least 22 countries** have weakened environmental regulations during the coronavirus pandemic, according to a report by the International Union for Conservation of Nature. Brazil, India, and the US are listed as the worst offenders, with rollbacks including job cuts for park rangers and anti-poaching patrols. Reduced vigilance has resulted in deaths among Indigenous communities, the report said. President Joe Biden's administration is expected to reverse the policy changes, but the situation in India and Brazil is less hopeful.

—*www.reuters.com*  
March 11, 2021

Protect nature, prevent pandemics

## Keep Bugs Wild

**Humanity plays** an “ill-fated game of Russian roulette with pathogens” unless governments’ post-COVID recovery plans include halting deforestation and illegal trade in wildlife, a coalition of health and environmental groups has warned. While trillions have been spent this past year to bolster health systems and boost economies, the Preventing Pandemics at the Source coalition said measures to protect nature costing just US\$27B a year could substantially reduce the risk of future COVID-scale pandemics by reducing human and livestock encroachment and contact with wildlife. COVID-19 is thought to originate from wild bats, and about two-thirds of diseases that infect humans – including influenza, HIV, Zika, West Nile, and Ebola – start in other species.

—*www.theguardian.com*  
March 9, 2021

Chlorofluorocarbon back in line

## CF-See ya!

**Emissions of CFC-11**, a potent ozone-depleting chemical, have dropped after spiking alarmingly in recent years, research by MIT and other institutions finds. The chlorofluorocarbon was once commonly used in refrigeration, insulation, and other products, but was banned in 1987 under the Montreal Protocol. In 2018, a surge in emissions of CFC-11 since 2013 was detected and traced to two provinces in eastern China. Now, researchers report levels of the chemical have dropped sharply, with much of the reductions traced to the very same regions of China – evidence the country is working to stamp out illegal production of the chemical.

—*MIT press release*  
February 10, 2021

Burning forests ain't carbon neutral

## Up in Smoke

**Over 500** international scientists have signed a letter urging world leaders to end policies that prop up the burning of trees for energy. The EU classifies wood burning as carbon neutral, but the destruction of forests, which are a carbon sink, creates a “carbon debt.” Signatories say that while regrowing trees to displace fossil fuels may eventually pay off the debt, “regrowth takes time the world does not have to solve climate change.” They say burning trees is also “carbon-inefficient” and likely to add 2-to-3 times as much carbon to the air as fossil fuels per unit of heat or electricity. Nearly €7B in annual subsidies for biomass energy in Europe have seen burning jump from 17 Mt to 26 Mt over five years.

—*www.commondreams.org*  
February 12, 2021

EU levy for offshore emitters

## CO2 Border Tax?

**Europe is a step toward** a carbon border levy that would shield EU companies from cheaper imports from countries with weaker climate policy, after a non-binding vote by the European Parliament. A carbon border charge is viewed as a key part of the EU's Green Deal, preventing high-emissions industries operating in less-regulated jurisdictions from enjoying an unfair advantage in the European market. A formal proposal is expected in June, and the target date for the start of the mechanism is 2023.

—*www.euractiv.com*  
March 10, 2021

Camels dying from ingesting plastic

## Desert Plague



**Plastic pollution** is killing camels outside Dubai, United Arab Emirates, according to new research. Plastic waste has been observed in over 300 dromedary camels in the region since 2008 – some with hard, suitcase-sized masses of plastic bags and other litter trapped in their digestive tracts. “We have to stop talking about plastic pollution as if it were confined to our oceans and start talking about global plastic pollution harming life everywhere,” said study author and 5 Gyres Institute co-founder Marcus Eriksen.

—*5 Gyres Institute press release*  
February 26, 2021

# Letters

## Herring Fishery Unconscionable

Baynes Sound and Lambert Channel hosts the only robust herring spawn remaining on the BC coast. The other six major herring spawning locations have been overfished, until they are either extinct or so depleted that a commercial kill fishery is not viable.

Herring are the keystone species of the Pacific food web and essential to its health. They are also an important traditional food source for First Nations. It is therefore unconscionable that DFO is again allowing a spring herring fishery of this one remaining spawning region, despite independent scientific evidence that it could threaten the marine ecosystem. It is unacceptable, when the federal government has pledged to actions of reconciliation with First Nations, that DFO is ignoring the pleas of First Nations chiefs and elders, and local communities, to put a moratorium on the fishery.

Adult herring spawn for as many as seven additional years. To kill the spawners of a depleted keystone species is absurd. Further, to use much of this product for feeding fish farms and making cat food is immoral.

Our communities around Baynes Sound and Lambert Channel used to flock to the beach to celebrate the herring spawn; now we go to the beach to mourn. Please make your opposition heard – tell DFO and Jimmy Pattison, who controls the herring industry, that they are putting our ecosystem at risk by allowing this devastating fishery.

—Dorrie Woodward  
Association for Denman Island  
Marine Stewards chair

## Doubly Denied, Feb/Mar 'Shed

I was a bit disappointed that the above short article didn't mention that the Jordan Cove LNG project is led by a darling of the Canadian oil patch – Pembina Pipelines.

The other project is a proposed methanol plant at Kalama, Washington State. It looks like the lead proponent is a Chinese government-owned company seeking to manufacture feedstock for its industries. This article ([www.opb.org/article/2020/09/02/kalama-methanol-plant-emissions](http://www.opb.org/article/2020/09/02/kalama-methanol-plant-emissions)) contains a smoking gun: "The plant would turn fracked natural gas from Canada into methanol that would be shipped to China to make plastics. Plans include a 3-mile pipeline for transporting natural gas." Your brief article probably should have mentioned that as well.

Just reading a few articles does point out that the exhaust (mostly "waste" gases, probably with some ultra fine particulate) from the proposed plant will be huge and as per the eruption of St. Helens, they will easily move toward Canada. I remember a very light layer of ash on my patio in Calgary when I was preparing it for repainting.

—Michael Jessen  
Parksville BC

*Editor's note - our news shorts are extremely short excerpts of topical articles, and thus limited in scope. We include the source and date in hopes that readers will do their own research to follow up on topics of particular interest to them – as our letter writer has done here.*

## Those Darn Postcards

I am a very concerned (fifth generation) citizen of this great country and I see more and more ways that the government, including government corporations, is driving the taxpayer deeper and deeper into debt. This is another small example: Every household to get a prepaid postcard courtesy of Canada Post.



Covid pandemic, many business closed, some forever. Citizens with no roof over their heads, or little to eat, no job, no hope for the future but you can spend over \$13.5 million on post cards! Boy, oh boy, someone in Ottawa better wake up. People need real help in all aspects of their lives right now and a piece of paper doesn't cut it. All your postcard does is add to our tax burden. If you really wanted to help people, invest in the people of Canada who need help with mortgage payments on their homes or businesses. So many need help in a variety of ways.

—Vel Anderson  
cyberspace

[More Letters on Page 17](#) ➔

## The Watershed Sentinel welcomes letters

but reserves the right to edit for brevity, clarity, legality, and taste.

Anonymous letters will not be published.

Send your musings and your missives to:

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## Canada drafts offset framework

# Credits, Anyone?

The Trudeau government has released draft regulations for companies buying and selling credits for projects that reduce greenhouse gas emissions. Environment and Climate Change Canada said all eligible projects must be in Canada and offer “real, additional, quantified, unique and permanent GHG reductions.” Officials called the draft regulations a milestone in implementing national carbon pricing, and said the system will reward green businesses, stimulate innovation and investment, and spur economic opportunities in agriculture, forestry, and waste management. Some observers, however, warned that without careful controls the system could be a way for heavy emitters to cheaply claim climate virtue.

—[www.theenergymix.com](http://www.theenergymix.com)  
March 8, 2021

## Call for seabed mining moratorium

# Knowledge Gaps

In an open letter to lawmakers, nineteen Canadian environmental organizations are calling on Canada to support a proposed moratorium on deep seabed mining until at least 2030, raised by the UN Secretary General’s Special Envoy for the Ocean. Canada is part of a 14-country panel that commissioned a report on deep seabed mining in 2020, which recommended such a moratorium. Scientists say large knowledge gaps prevent credible policy and regulatory development of deep seabed mining, and more research of its impacts to marine life are needed. Canadian companies Nautilus and Deep-Green have been at the forefront of the clamour to develop commercial seabed mining in international waters.

In February, Australia’s Northern Territory declared a moratorium on seabed mining in its coastal waters, affecting 17.5% of its coastal waters. The state noted concerns about potential impact on the environment, sacred Indigenous sites and marine industries.

—[www.reuters.com](http://www.reuters.com), February 4, 2021

—[www.miningwatch.ca](http://www.miningwatch.ca)  
February 3, 2021

## Habitat destruction stayed

# Spotted Owls

Logging will be deferred in two Fraser Canyon watersheds that provide habitat for Canada’s last three wild spotted owls under a “nature agreement” between BC and Ottawa. The announcement comes after a petition to federal Environment Minister Jonathan Wilkinson from environmental law firm Ecojustice on behalf of the Wilderness Committee. The deal will be developed over the coming year, with the federal government putting up an initial \$2 million in matched funds for as yet unnamed conservation efforts in BC. “This is something to celebrate,” Wilderness Committee protected areas campaigner Joe Foy said. “These are all really good, hopeful signs.”

—[www.thenarwhal.ca](http://www.thenarwhal.ca)  
February 25, 2021

## Eastern Island region at risk

# VI Ecocrisis

Eastern Vancouver Island has been named one of Canada’s nine “Ecocrisis” regions in a study by the Nature Conservancy of Canada. The conservancy looked at 77 ecological regions, taking

into account the number of endangered species, amount of parks and protected areas, and remaining wildlife habitat. The regions were then ranked on biodiversity and the threat from climate change. According to the study, Eastern Vancouver Island supports more biodiversity than anywhere else in the province, but the region is heavily populated and over 55 species are at risk, including the Oregon vesper sparrow, dense-flower lupine and common sharp-tailed snake.

—[www.nanaimobulletin.com](http://www.nanaimobulletin.com)  
March 10, 2021

## First Nations’ water not safe yet

# Still Boiling

Chronic underfunding has cut short the lifespans of water treatment infrastructure on reserve lands and put communities at risk, despite increased investments by the federal government in the past two years, an investigation by the Institute for Investigative Journalism and APTN News has discovered. Interviews with First Nations leaders, water operators, engineers and others show promised policy changes have been slow to materialize on the ground. Some First Nations are running water plants on shoestring budgets and forced to “juggle funding around” to deliver safe water. In 2015 the Liberal-led government promised to end long-term boil-water advisories in First Nations communities by March 2021, but last December recognized they wouldn’t meet that goal.

—[www.aptnnews.ca](http://www.aptnnews.ca)  
February 22, 2021

# Reconciliation Action

## SISÇENEM (Halibut Island) returned to W̱SÁNEĆ people



press release from W̱SÁNEĆ Leadership Council & The Land Conservancy of BC

The Land Conservancy of British Columbia (TLC) and the W̱SÁNEĆ Leadership Council are pleased to announce a landmark partnership agreement that will transfer title of **SISÇENEM**, a 9.67-acre island off the east coast of Sidney Island, BC, from the charitable land trust to the W̱SÁNEĆ Leadership Council as an act of reconciliation.

Also known as Halibut Island, the island was recently purchased by TLC for \$1.55 million. The transfer will be historically significant as the first of its kind between

a land trust and an Indigenous community in Canada. TLC will work together with the W̱SÁNEĆ Leadership Council to draft and register a conservation covenant and develop a co-management plan. The plan will incorporate Indigenous land management principles that provide access for culture, education, research, and monitoring purposes.

SISÇENEM is an important cultural place for W̱SÁNEĆ people. Located immediately east of Sidney Island and many W̱SÁNEĆ villages, SISÇENEM was a

place where W̱SÁNEĆ people would fish for cod, collect traditional medicines, and harvest camas. Most importantly for W̱SÁNEĆ people today, SISÇENEM will be a place where W̱SÁNEĆ people can be in peace.

Discussing SISÇENEM, W̱SÁNEĆ Elder SELILIYE (Belinda Claxton) reminisced about islands such as this and their importance for future generations: “I remember, we’d go from island to island. We went to harvest seagull eggs and boxwood and different types of medicine. Or, during minus tide we would get sea urchins and stick shoes (chitons)....

And, the fragrance of those wildflowers. Sometimes I get a whiff of it when I go out in the spring. It brings back such beautiful childhood memories. It was so natural and so pleasant to be able to see that when I was a child. This is the sort of experience I want my children and my grandchildren to have. I don't want them seeing it in the picture. There are not many places like this left."

Part of the same geologic formation as Sidney Island (Turonian), SISÇENEM is comprised of bedrock carved by the last glaciation, basal conglomerate, and sandstone outcrops containing exposed fossils of bivalves and mollusks, including the beautiful ammonite fossils. This geologic formation on Sidney Island and along Island View Beach led to the discovery of mastodon and other prehistoric mammal fossils.

SISÇENEM supports Garry oak, arbutus, and Douglas fir woodlands, and open wildflower meadows. Garry oak associated ecosystems support many of Can-

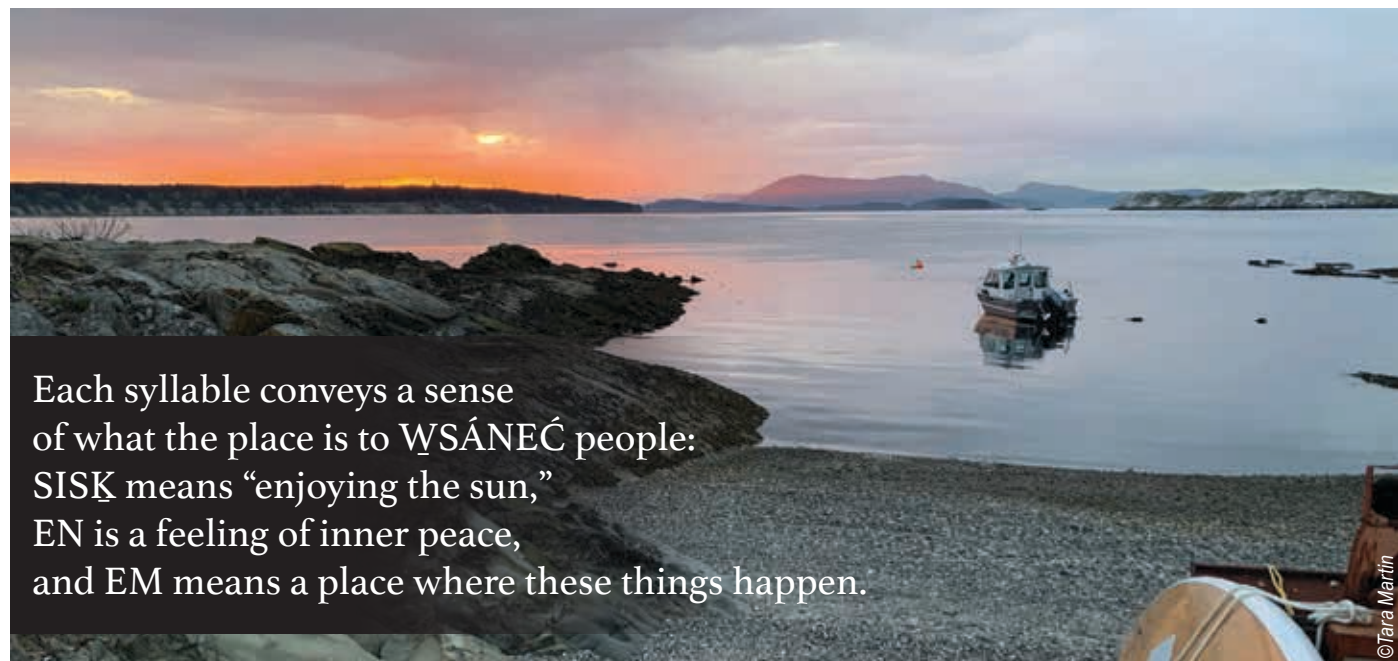
ada's species at risk including the common nighthawk (*Chordeiles minor*) and popcorn flower (*Plagiobothrys tenellus*). In the spring, the meadows are carpeted with KŁO,EL (Great Camas, *Camassia leichtlinii*), Fawn lily (*Erythronium Oregonum*), and Chocolate lilies (*Fritillaria affinis*). Due to the lack of deer browse on SISÇENEM, researchers have identified an abundance of native species with cultural significance such as KEXMIN (Indian consumption plant, *Lomatium nudicaule*) and KŁO,EL (Great Camas, *Camassia leichtlinii*).

The name SISÇENEM cannot be easily translated into English as a whole, but each syllable conveys a sense of what the place is to W̱SÁNEĆ people: SISK means "enjoying the sun," ÇEN is a feeling of inner peace, and EM means a place where these things happen. Roughly SISÇENEM means sitting out for pleasure of the weather.

"Everyone living in W̱SÁNEĆ Territory is a subject to the Douglas Treaties," says

Chief Don Tom, Tsartlip First Nation and W̱SÁNEĆ Leadership Council Chairman. "W̱SÁNEĆ people have Douglas rights and Aboriginal rights and title, and settlers have obligations to protect and honour those rights. This means that reconciliation is everyone's responsibility. The return of SISÇENEM to W̱SÁNEĆ people by The Land Conservancy – with the support of generous private donors and Dr. Tara Martin [of the University of British Columbia] – is a meaningful step in that direction. It shows that reconciliation doesn't have to wait for government's lead and that we can all do our part to protect the environment and help heal the W̱SÁNEĆ people. The phrase "Land Back" is no longer a euphemism. It's finally a reality,"

TLC will be raising funds this spring to support ongoing restoration and monitoring work on the island. For more information about SISÇENEM and how you can get involved, visit [www.conservancy.bc.ca](http://www.conservancy.bc.ca) or call TLC at 1-877-485-2422.



Each syllable conveys a sense of what the place is to W̱SÁNEĆ people: SISK means "enjoying the sun," EN is a feeling of inner peace, and EM means a place where these things happen.

©Tara Martin

# Salmon in Hot Water

## Tla'amin and Klahoose nations work to build stocks

by Odette Auger

Nestled into the head of the Hathhayim [Von Donlop] Park Trail on Cortes Island, BC, a forest of hemlock, fir and alder wraps around a small clearing recently levelled and fenced.

Soft water sounds come from a building with an open door. Inside, K'all-K'all Tina Wesley is leaning into a salmon incubator box. She's checking on 70,000 chum eggs, removing any that died. As fisheries manager for Klahoose First Nation (KFN), Wesley does this at the community's salmon hatchery every morning.

Wesley sees her hatchery work as one task of many, but an essential one to rebuild salmon stocks. "Hatcheries are key and important, it's returning back what we've taken," she says. "If you take enough to feed us through the winter, it's nice to be able to put it back."

There have been significant salmon stock declines in recent years. Hatcheries operating in the Tla'amin and Klahoose territory are working to rebuild stocks in the face of climate change. The hatcheries harvest eggs from spawning salmon and care for them through their development until they are ready for release or transplant into streams.

Every year, the Tla'amin hatchery's target is to release 60,000 coho, 100,000 chinook, and 1.5 million chum, according to hatchery manager Lee George. "We do our best to meet those targets, based on abundance."



"[Salmon is] part of our culture and our tradition, the traditional foods. Without it, it really starts eating away at our culture and it starts taking away a part of us."

—K'all-K'all Tina Wesley

Tla'amin hatchery emphasizes chum, because it is the dominant species in Tla'amin River, and they return in higher volumes.

The advantage of chum eggs is in their timing, explains Wesley. They start on land in incubator boxes and are transplanted to creeks in the spring. This is done before warmer temperatures can impact them. Additionally, the water levels are still high enough for them to survive.

Between climate change impacting early stages, and over-predation, not all will survive to return to spawn. With hope, the work continues at hatcheries.

### Working as sister nations

Forty thousand coral-coloured spheres glisten in the water. They are chum eggs, massed together as they like to be. These ones are tucked into a creek on Klahoose traditional territory.

The eggs started their journey at Tla'amin Hatchery, north of Powell River, on the Tla'amin Creek. Their territory covers an expanse from the upper Sunshine Coast through the Strait, with overlaps of sister nations. Lee George is the hatchery manager. He has spent over 32 years nurturing eggs through their early stages.

There are many factors impacting the salmon, one of which is warming waters. "Where it's colder, into the rivers and lakes where they're supposed to spawn ... the water's too warm, because of climate change," George says. "We're going to have really poor survival rates because of climate change."

George carries his Ayajuthem name *Nex-nohom* – meaning "community provider" – in high regard, he says. "At the end of the day, it's going to be a long hard bat-

tle over the next few years, and we need to work together to seek a common goal, and that's protect the resources for everybody to enjoy."

The Tla'amin hatchery harvests eggs from mature fish, known as broodstock, and begins the process of tending the growing eggs. When they have surplus, they share them to the smaller hatchery at Klahoose. The previous year had lower returns, and there were no surplus eggs to share with Klahoose. As a result, Klahoose didn't release any eggs in 2020.

But there is more involved in rebuilding salmon stocks than simply having more eggs, Wesley says. Some things she can improve, like providing the hatchery with power, light, fencing. But other concerns are out of her control – and they're on her mind as she takes temperatures and cleans mesh over drains at the hatchery.

Climate change is a larger issue that shows itself in water levels and stream temperatures. Wesley says the optimum temperatures for rearing salmonids are generally between 10°C and 16°C, but the actual range for fish in streams varies, along with food availability and the ability for individuals to obtain that food.

"When the waters are above 20°C for days it brings stress and lack of oxygen and they die," says Wesley. "Our hot summers have brought very warm temperatures to our waters, over 20°C."

"Another thing with the climate, you're also dealing with the water supply. One year, 2017, we ran out of water. So the fry were there and we need to keep them in water. We couldn't. So they got an early release."

Warming climate has reduced the snowpack, she says, and this is also on her

mind. "I'm a snow dancer," says Wesley, as she explains snowpack is essential for water levels. The chum need a steady supply of oxygenated, flowing water washing over them constantly in the incubator.

### Choosing chum

Of the salmon species, chum have a better chance of resiliency in facing climate change, says Cortes Island Streamkeeper Cec Robinson. Sockeye, he explains, need a lake system, and that's a system beyond what small hatcheries can address. Coho stay in their stream for a full year, so for part of the year they're at risk for low water levels and resulting warmer temperatures. Chum stay only a couple of weeks once they are hatched, and in the spring there is a better chance of cooler temperatures and higher water levels.

Cortes Island Streamkeepers is a project of Friends of Cortes Island Society, a local environmental charity. Robinson says the streamkeepers reasoned with DFO through the DFO community advisor, and successfully won them over to trying chum fry in local streams.

"In the summertime, you know, we're having hotter and hotter summers, unfortunately the streams are getting lower now compared to their historic level," says Robinson. "The chum and the pinks – they go in, and there's a couple of weeks when they swim up out of the gravel, and then they're gone."

They leave for the open oceans, "and that happens in the spring when there's lots of water. So it doesn't bother them if the whole stream gets warm and low in the summertime."

Continued on Page 10 ➡

The latest research on Pacific salmon freshwater migration confirms “there are population-specific differences in temperature and flow tolerance thresholds,” says Fisheries and Oceans Canada.

The switch to chum is not widespread, says Robinson. DFO focuses hatcheries on raising the chinook and coho – which are what sport fishermen prefer.

“The focus has been on coho and springs (chinook) because they’re the flashy ones,” says Robinson. “To recognize the dire need and then shifting, I think it’s critical. Climate change is going to make that switch in focus imperative.”

“With the situation of the sockeye not returning and the closures, the nation has been relying heavily on the salmon returning to the Tla’amin river and the species that’s more appetizing to them is the chum,” explains George.

Similar to the hatchery at Tla’amin, Robinson emphasizes public awareness and education. “I wish people would fall in love with the fish,” says Robinson. He says when people build a personal relationship, “that’s when they want to look after them. That’s what I zhope. Ultimately, you can’t just rely on the DFO or any organization. It has to be a bigger movement. That would be a dream.”

### Returning to their ancestral home

The journey for K’all-K’all Tina Wesley started with growing up in Toba Inlet, part of Klahoose First Nation’s Traditional Territory. She left home at 17, and gathered education and fisheries experience. She hoped to bring these skills home to her community if an opportunity arose. “Coming back was a long life goal and opportunity that I had waited for. Coming back home, and taking on a position for protecting our resources, is huge for me.”

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“At the end of the day, it’s going to be a long hard battle over the next few years, and we need to work together to seek a common goal, and that’s protect the resources for everybody to enjoy.”

—Nexnohom Lee George, Tla’amin hatchery manager

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Her Ayajuthem name *K’all-K’all* means “cedar maker.” She shares how her grandmother and father explained the meaning of this name. While she talks, she uses a protective gesture of wrapping a cape around someone, “K’all-K’all.” She protects, and cares for her family and community.

“[Salmon is] part of our culture and our tradition, the traditional foods. Without it, it really starts eating away at our culture and it starts taking away a part of us,” she says. Wesley speaks about this food and resource by drawing the full circle. Feeding people and animals includes nourishing land and culture.

“Imagine all the other little hatcheries and the bigger hatcheries, that we’re all putting our input into providing future sustenance. Anything to contribute to help bring it back and keep going and moving forward. It’s bringing them home.”

This past fall, Wesley noticed 30 eagles sitting by a small stream that runs from beside the hatchery into the estuary. “I went for a walk, to go check it out and here’s all these chum going up our little creek. It was just neat to see that, they always returned home where they come from.”

Wesley believes those fish were from eggs that had slipped through the drain in the old system, or maybe eggs that were not quite dead in the culling and had survived.

“They survived and found their way through the drain, through the gutter and eventually trickled to our stream. They survived and then returned to this little stream in the fall.”

Like Wesley returning home with skills to help protect her nation’s resources, the escaped eggs worked hard to find their way home.

Odette Auger, Sagamok Anishnawbek, is a guest on Klahoose, Homalco, Tla’amin territories. She is a Local Journalism Initiative Reporter and works with IndigenEYEZ, First People’s Cultural Council project, and Cortes Radio. Her journalism covering Indigenous health, Vancouver Island, and Indigenous art can be found at IndigiNews, the Discourse, APTN, and the Toronto Star, among other places.

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# Genome Editing

## Canada plans to exempt some new GMOs from regulation

by Lucy Sharratt

**There is a new international fight over the regulation of genetically engineered (genetically modified or GM) foods, plants, and animals. New genetic engineering techniques called genome editing, or gene editing, have opened up negotiations over national regulation, leading some countries to exempt certain genome editing techniques from government oversight. Canada is about to become one of them.**

How to assess the potential health risks of genetically engineered foods has remained a live question in the scientific literature, despite widely publicized claims that there is scientific consensus on safety. In fact, 2021 is the twentieth anniversary of the report of The Royal Society of Canada's Expert Panel on the Future of Food Biotechnology, which recommended significant changes to Canada's regulation of genetically modified organisms (GMOs), to improve transparency and ensure the use of independent high-quality science in risk assessment. The core recommendations were never implemented, and the Royal Society's unaddressed critiques continue to shadow regulation in Canada.

With over twenty years of experience regulating genetically engineered foods and plants, Health Canada and the Canadian Food Inspection Agency (CFIA) now say they need to update how they assess safety. The departments say they want to provide

“clarity” to companies, especially because “some products developed using gene editing techniques may not meet the regulatory definition of ‘novel’” and may not therefore need to be subject to safety assessment.

### Canada to remove some regulation

Health Canada and the CFIA are proposing to exempt some genome-edited foods and plants from risk assessment, and reduce oversight for some others. The proposals are a key part of new draft regulatory “guidance” due out for public review this spring.

The drafting of the proposals is guided by priorities already embedded in Canada's GMO regulatory system. In 1994, the Federal Regulatory Plan identified biotechnology as a target area “to reduce the regulatory burden on Canadian business and individuals.” In 2017, the federal budget set in motion a similar regulatory reform agenda, leading to Innovation Canada's 2018 panel report calling for action to bolster agri-food competitiveness by “re-forming regulators' mandates to include innovation, growth and overall sector competitiveness as a core consideration.” Specifically, the report identified the need to modernize Canada's regulatory approach for new technologies such as genome editing, “to ensure it continues to provide an efficient and predictable pathway to commercialization.”



*Continued on Page 12* ➔

## What is genome editing?

Genome editing is a collection of new genetic engineering techniques that aim to insert, delete, or otherwise change a DNA sequence at a specific, targeted site in the genome (the entire set of genetic material in an organism, including DNA). These techniques, such as CRISPR, are in the news because they are extremely powerful, opening up new potential for medical treatments and leading to experiments with a wider range of plant and animal species for agriculture.

Generally, genome editing uses “DNA cutters” that are guided to a location within an organism’s DNA and used to cut the DNA. This cut DNA is then repaired by the cell’s own repair mechanism, which creates “edits” or changes to the organism. Sometimes additional genetic material (a repair template) is inserted to direct the DNA changes that occur when the cell repairs itself. The most frequently used genome editing technique is CRISPR, but other techniques follow similar principles.

First-generation genetic engineering techniques insert genes, at random locations, to permanently become part of the host organism’s genome, creating new DNA sequences that often confer a desired trait, such as herbicide tolerance. In contrast, with genome editing, the inserted genetic material makes changes to the genome but does not necessarily have to become incorporated into the resulting GMO.

## Unexpected effects

Genome editing is widely described as being precise because of its ability to target a specific site in the genome for change.

However, this targeting is only one part of the engineering process. Genome editing can be imprecise, causing unexpected and unpredictable effects. Many studies now show that genome editing can create genetic errors.

These techniques can create changes to genes that are not the target of the editing system. For example, the CRISPR-Cas9 system can make unexpected cuts to other areas of DNA. Genome editing can also inadvertently cause extensive deletions and complex rearrangements of DNA.

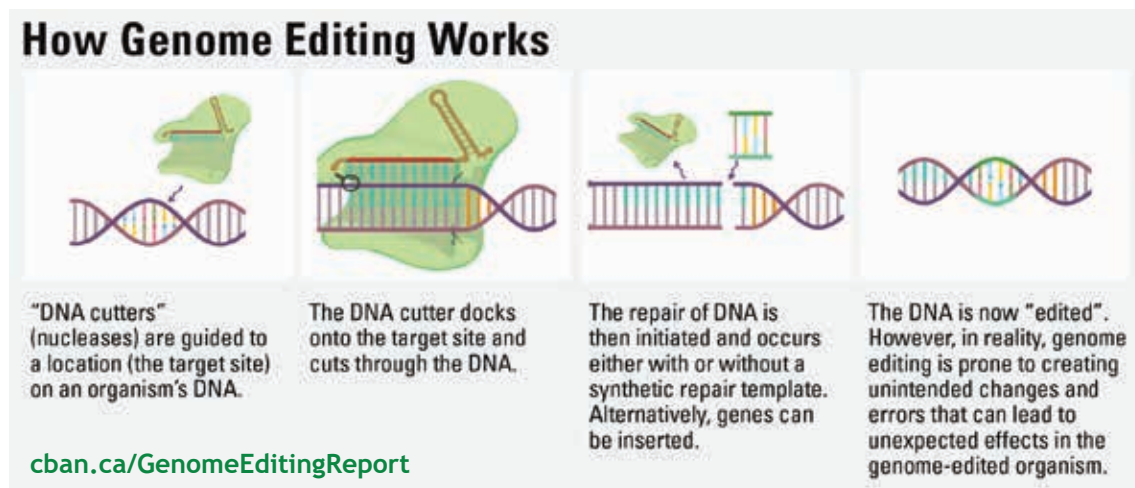
Sometimes intended changes created by genome editing are described as “mutations” because only very small parts of DNA are altered and no novel genes have been intentionally introduced. However, even small changes in a DNA sequence can have big effects. Jonathan Latham, editor of *Independent Science News*, asks, “Will we ever know enough about any DNA sequence to accurately describe changing it as ‘editing’?”

The functioning of genes is coordinated by a complex regulatory network that is still poorly understood. This means that it is not possible to predict the nature and consequences of all the interactions between altered genetic material and other genes within an organism. For example, one small genetic change can impact an organism’s ability to express or suppress other genes.

## Industry self-regulation

Health Canada says it wants to “better facilitate a risk-based approach where oversight (i.e., level of review, data requirements, etc.) is commensurate to the level of risk.” This objective directly reflects the conclusion of the biotechnology and seed industry that a “tiered

evaluation system, commensurate with the level of potential risk, should be adopted by CFIA and Health Canada.” This approach would be based on a predetermination of safety, where regulators would have already decided that the products of some GM techniques pose no



inherent risks and can therefore forgo safety evaluation. Other GM foods and plants would be given a quicker turnaround time.

In the new draft proposals, the CFIA is expected to list all the genome editing techniques that it concludes are safe to use. Products of these techniques could avoid regulation as long as the product developer decides they do not express a dramatically new (“novel”) trait, and do not pose any potential health or environmental risk.

If Health Canada and the CFIA finalize this route, Canadians will be eating some genetically engineered foods that have not undergone any government safety assessment and are sold without any notification or public tracking. The changes would put Canada on one side of the global debate over redefining genetic modification, alongside the US, Australia, Argentina, and Japan, with other trading partners including the European Union on the other.

### No foreign DNA, no problem

The need for independent government oversight and testing was reaffirmed in 2019 when, despite assurances from the product developer, foreign DNA was unexpectedly found in genome-edited hornless cows. Unwanted DNA can unexpectedly integrate into the host organism during the genome editing process. In the case of these cows, the developer assumed the inserted DNA had disappeared, but did not actually check. The foreign DNA was detected because of a US government side-project.

However, the absence of foreign DNA in a GMO is not an indication of safety. Health Canada and the CFIA appear set to focus on the presence of foreign DNA as a key indicator of risk, but this threatens to leave other potential risks undetected and unassessed. The science is clear that even if there is no foreign DNA remaining in the end product, any genetic (or epigenetic) changes need to be detected and evaluated.

### A GM future

Genome editing often comes up in reporting over speculative technological fixes to the climate crisis, such as engineering “carbon-hungry” trees. The new techniques are also pitched as a solution to biodiversity threats such as invasive species via the powerful technology called “gene drives.” Gene drive organisms are genome edited to intentionally push particular genes through an entire population in the wild, causing the new genes to eventually be inherited by all offspring in subsequent gener-

ations. For example, gene drives could be used to stop insect or weed populations from reproducing effectively. Unlike the confined use of GMOs in agricultural production, gene drive organisms are expressly designed for intentional, long-lived release into the wild. Once such gene drive organisms are released, they cannot be recalled.

With increased power to engineer organisms, and to engineer whole populations and entire ecosystems, it is time to revisit not just how we regulate genetic engineering for safety but how we decide the role of the technology in our society.

For updates, to find out if the public consultation is now underway and what proposals Health Canada is making to change GMO risk assessments, see [www.cban.ca/regulation](http://www.cban.ca/regulation). Visit [www.cban.ca/NoExemptions](http://www.cban.ca/NoExemptions) for discussion and more analysis.

A fully-footnoted version of this article is available on our website at [www.watershedsentinel.ca](http://www.watershedsentinel.ca).

Lucy Sharratt is the co-ordinator of the Canadian Biotechnology Action Network (CBAN), which brings together 16 groups to research, monitor, and raise awareness about issues relating to genetic engineering in food and farming. CBAN is a project on the shared platform of the MakeWay Charitable Society. [www.cban.ca](http://www.cban.ca)

### Key resources:

Canadian Biotechnology Action Network, *Genome Editing in Food and Farming: Risks and Unexpected Consequences*, 2020. [www.cban.ca/GenomeEditingReport](http://www.cban.ca/GenomeEditingReport)

Canadian Food Inspection Agency, *Gene editing techniques*. Accessed February 20, 2020. <https://www.inspection.gc.ca/plant-varieties/plants-with-novel-traits/gene-editing-techniques/eng/1541800629219/1541800629556>

Canadian Biotechnology Action Network, *Are GM Crops and Foods Well Regulated?* 2015. [www.gmo inquiry.ca/regulation](http://www.gmo inquiry.ca/regulation)

The Royal Society of Canada’s Expert Panel on the Future of Food Biotechnology (at the request of Health Canada Canadian Food Inspection Agency and Environment Canada), *Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada*, Jan 2001. <https://rsc-src.ca/en/elements-precaution-recommendations-for-regulation-food-biotechnology-in-canada>

# Bad Faith

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## Fish farms dispute transition that's been coming for years

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by Wild First

BC's fish farm companies repeatedly say that Minister Jordan's 2021 decision to phase out fish farms from the Discovery Islands, and not allow further restocking, was reckless. Local mayors are protesting the decision and the companies are in court to get the decision overturned. The truth is everyone who was paying attention saw this coming for years.

## Timeline:

### 2012

In 2012, Mr. Justice Cohen concluded in *The Uncertain Future of the Fraser River Sockeye* (Vol. 3, p25.) that:

- “Net-pen salmon farming in the Discovery Islands poses a risk of serious harm to Fraser River sockeye through the transfer of diseases and pathogens.
- “If, by that date, [September 30, 2020] DFO cannot confidently say the risk of serious harm is minimal, it should prohibit all net-pen salmon farms from operating in the Discovery Islands.”

### 2015

In 2015, in *Morton v. Canada*, Mr. Justice Rennie found that:

- the Minister had unlawfully sub-delegated to industry licensees his authority to stock farms, and
- DFO had not adhered to the precautionary principle, saying that the arguments DFO made “are inconsistent, contradictory and, in any event, fail in light of the evidence.”

# 2018

In his 2018 Spring Report, the Commissioner for the Environment and Sustainable Development stated that DFO:

- “had not made sufficient progress in completing risk assessments for key diseases, which were required to assess the effects of salmon farming on wild fish”;
- “did not sufficiently enforce its Aquaculture Activities Regulations to minimize harm to wild fish”; and
- “was vulnerable to claims that it prioritized the development of the aquaculture industry over the protection of wild fish.”

In 2018, in *Namgis First Nation v. Canada*, Mr. Justice Manson found that DFO’s management of fish transfers of “Atlantic salmon smolts to aquaculture facilities involves no supervisory control or objective criteria with respect to testing for [salmon viri] PRV or HSMI” and that ‘Namgis First Nation had “established a serious risk of irreparable harm on a number of fronts: that fishery being at serious risk, given the depleted wild salmon populations in the Asserted Territory; and the recent science establishing the connection between PRV and HSMI and the resulting risk of disease and mortality. All of this is proof of a real and non-speculative likelihood of irreparable harm to [‘Namgis].”

In 2018, the Independent Panel on Aquaculture Science concluded that DFO was not up to the task of evaluating evidence and science in policy decision-making without bias, and recommended that DFO appoint a Departmental Science Advisor and establish an External Advisory Committee on Aquaculture.

In June 2018, the Premier of British Columbia announced: “Effective June 2022, the Province will grant Land Act tenures only to fish farm operators who have satisfied Fisheries and Oceans Canada (DFO) that their operations will not adversely impact wild salmon stocks, and who have negotiated agreements with the First Nation(s) in whose territory they propose to operate.”

In December 2018, the Premier announced that, due to the lack of consent for their ongoing operations from ‘Namgis First Nation, the Kwikwasut’inuxw Haxwa’mis First Nations, and Mamalilikulla First Nation, fish farms in the Broughton Archipelago would be phased out through an orderly transition of four to five years.

# 2019

In February 2019, Madam Justice Strickland, of the Federal Court, quashed DFO’s previous policy not to test for PRV or

prohibit introductions and transfers of fish infected with PRV on four independent grounds:

- DFO failed to reasonably interpret its core mandate under the *Fisheries Act* – the protection and conservation of fish.
- DFO didn’t adhere to the precautionary principle: to anticipate, prevent, and attack the causes of environmental degradation and not use scientific uncertainty to excuse inaction.
- DFO breached its constitutional duty to consult and accommodate ‘Namgis First Nation.
- DFO failed to consider the risk to wild Pacific salmon when regulating PRV, the virus responsible for one of the leading causes of death in fish farms globally.

# 2020

In March 2020, the Canadian Science Advisory Secretariat (CSAS) released its report on nine populations of Fraser

River sockeye that the Committee on the Status of Endangered Wildlife in Canada (CoSeWiC) had designated as threatened or endangered. CSAS found that all sources of harm should be reduced to the “maximum extent possible” for all nine of those designatable units: Early Stuart, Bowron, Weaver, Birkenhead, Portage, Late Stuart, Upper Barriere, Taseko, and Widgeon.

In July 2020, in *‘Namgis First Nation v. Canada*, Mr. Justice Pelletier, writing for the Federal Court of Appeal, held that DFO breached the duty to consult with respect to a policy of general application; issuing stocking licences in reliance on that policy also breached the duty to consult: “It would offend common sense to hold otherwise.”

Given these events, all stakeholders should have been aware that significant policy change was coming for DFO and the open-net pen salmon farming industry.

The Prime Minister delivered that course correction in his mandate letter of **December 13, 2019**, charging Fisheries Minister Bernadette Jordan to: “Work with the province of British Columbia and Indigenous communities to create a responsible plan

Continued on Page 16 ➡

to transition from open net-pen salmon farming in coastal British Columbia waters by 2025.”

Moreover, respecting the **September 30, 2020** deadline Mr. Justice Cohen set would be the first step in that course correction the Prime Minister mandated.

Despite the the clarity of the policy direction, Mowi, Cermaq, and Grieg decided to take the business risk of growing smolts even though they did not have licences to put those fish in the water. Now, they claim that in acting to protect and conserve wild Pacific salmon, and to prevent the sterilization of multiple First Nations’ Aboriginal right to fish, the Minister acted recklessly. They want to suspend the Minister’s decision at the expense and risk of wild fish and the Indigenous Nations they claim to respect. They want someone else to insure their risk.

This has happened before. **In 2004** Mowi wanted to stock the Church House fish farm with Atlantic salmon, despite the original licence being for Pacific, Chinook salmon. DFO amended the licence without consulting Homalco First Nation. Homalco filed an application for judicial review, and sought an injunction to prevent the stocking Mowi (then Marine Harvest) was trying to push through over the Christmas holidays.

**On Christmas Eve, 2004**, in *Blaney et al. v. Minister of Agriculture et al.*, Mr. Justice Pitfield granted the injunction and prevented the stocking until the Court had made its decision in the judicial review. Mowi asked the Court for an “undertaking in damages.” In effect, Mowi asked the Court to make Homalco put up money to compensate Mowi for fish it might have to cull if Homalco lost the judicial review. Mr. Justice Pitfield saw through it:

“Marine Harvest appears to have made a business decision, as it was perfectly entitled to do, to proceed with the production of smolts for which it did not have homes or for which it would not have had a home in the absence of the licence amendment. It was fully aware of the circumstances under which it was able to operate its business. In those circumstances, it is not appropriate, in my judgment, for the Band to be required to post a bond.”

The Court saw through such tactics at the time, as observers should now: no one was responsible for the costs of Mowi’s bad decision but Mowi.

For companies engaged in industrial scale agriculture, culling is a cost of bad management. That is especially true when your

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Culling farmed fish is the cost of doing business  
– it’s the price fish farms pay for poor animal  
husbandry and poor business decisions.

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industrial feedlots have no barrier between them and the ecosystem wild fish depend on. Culls have been ordered from Chile to Norway, from Tofino to Newfoundland. Culling farmed fish is the cost of doing business – it’s the price fish farms pay for poor animal husbandry and poor business decisions.

The fish farming multinationals in question took a business risk by growing fish when they didn’t have licences for the farms they planned to put those fish into. They conducted their business as if they had a right to stock 100% of their farms 100% of the time – regardless of the risk to wild salmon, or Aboriginal rights, or to licensing obligations.

They didn’t have that right. They had a privilege to apply for future aquaculture licences and stocking licences.

The Minister can only grant those licences if it is in the proper management and control of the fishery to do so. The proper management and control of the fishery means prioritizing conservation and protection of fish and preserving Aboriginal rights. It means not letting populations go extinct and extinguishing Aboriginal rights that have been practiced for millennia.

The fish farming multinationals took a business risk, hoping for profits. They bet wrong. They should have hedged their bets by reducing capacity or preparing for a contingency that everyone saw coming – a transition to modern sustainable aquaculture through land-based closed containment. But they didn’t.

Reprinted with permission from [www.wildfirst.ca](http://www.wildfirst.ca). The original with full footnotes is available at [www.wildfirst.ca/news/timeline](http://www.wildfirst.ca/news/timeline)

# Letters

## A sceptic speaks

As part of the 1970s citizen revolt that stopped two nuclear reactors Hydro had started at Chemainus, Vancouver Island, I was reassured by Joyce Nelson on mini-nukes.

But I'm alarmed at Shawn Willett's superficial research on 5G. The wealth of information on radio-frequency health impacts, and the emerging link with COVID, deserve a look, rather than dismissal as "conspiracy theories." I was also alarmed by Stuart Parker's lack of research on vaccines, also resorting to name-calling: anti-vaxxers. The link with autism is well-known. Robert Kennedy Junior details thousands of injuries and deaths from other "vaccines." We now see the same from COVID "vaccines." [Ed. - Not to our knowledge.]

The causes of climate change also call for a broader look. The IPCC dictate on (civilian) CO<sub>2</sub> has long been challenged by scientists who quit the IPCC. Many point to the solar maximum sun cycle, now moving into solar minimum, and cooling. And the COVID global coup d'état...?

—Hildegard Bechler  
Langley BC

## Thanks

My thanks for the continued great work that your team creates in the *Watershed Sentinel*! And it's very readable! Keep up the great work.

—Jim Wentworth  
Kamloops BC

## Online Tools to Reinforce Your Own BS Detector

by Stephen Leahy

**We're in the middle of a storm of lies, distortions, and misinformation.** It's going to get worse when it comes to vaccines, climate change, alternative energy, and other solutions to bring about a transition to a sustainable, zero-carbon future.

I've been navigating through this mire for 25 years, including the recent Texas black-out. A subscriber prompted me to share with you some Need-to-Know tools I use to keep my BS detector robust and well-tuned. No tool is perfect. I use multiple ones to look behind the curtain and debunk false claims.

**The how-to handbook tool:** *The Debunking Handbook 2020* from George Mason University. It's a 12-page guide on how to debunk misinformation by 22 academics – yep, misinformation and propaganda is so pervasive today it's become an academic discipline.

**The big picture tool:** *Merchants of Doubt* – a documentary film (and a book) on the tobacco industry roots and how the whole climate denial industry operates.

**Sharpen your BS-detection instincts tool:** The "Cranky Uncle" game uses cartoons and critical thinking to fight misinformation. It's a free app and fun to use while challenging. Great even for kids.

### The best fact checker tools:

- *FactCheck.org*: US-focussed but excellent for coronavirus misinformation.
- *PolitiFact*: rates the accuracy of claims by elected officials and others who speak up in American politics. Won the Pulitzer Prize.
- *AFP Fact Check*: fact check fake photos and videos as well. This is the best for non-USA fact checks.
- *Snopes*: one of the first – covers a huge range of topics.

### Media watchdog tools:

- *Climate Feedback* is a worldwide network of scientists sorting fact from fiction in climate change media coverage.
- *MediaMatters* is a liberal site with ties to the US Democrats for monitoring, analyzing, and correcting conservative misinformation in the US media. I use them occasionally and it helps to be aware of their bias.
- *Media Bias / Fact Check* is a database that assess bias and accuracy of over 3600 media sources. ([www.mediabiasfactcheck.com](http://www.mediabiasfactcheck.com))

—Excerpted with permission from "A Perfect Storm of Misinformation: How to improve your BS detector," Feb 25, 2021, Need To Know by Stephen Leahy ([www.leahy.substack.com](http://www.leahy.substack.com))



The recent decision to go ahead with the Site C dam had us thinking about the insanity of endlessly propping up something unstable for the sake of continuity, or... certainty... or... a sense of stability.

When you have a “sunk investment” in something that is a) built on a shaky foundation, and b) steadily becoming more and more problematic – whether it’s a dam built on shales, an economic system built on inequality and endless extraction, or an increasingly toxic relationship or behaviour – you face a choice: either double down, or cut your losses in order to liberate your resources going forward.

From Site C to fossil jobs, military funding, and GMOs, this section examines just few of the endless areas where a brittle holding pattern could, should, or is beginning to give way.



# In/Stability

# Delaying the Inevitable

## Pretending energy jobs will return makes transition harder

by Jim Stanford

**Like most industries in Canada, fossil-fuel businesses have suffered painful job losses during the COVID-19 pandemic and resulting recession. Plunging global prices and steep reductions in capital spending have led to major job cuts. Fossil fuel industries — oil, natural gas, coal, and related activities — lost 17,500 jobs in 12 months up to September 2020.**

Unlike other sectors, few of those lost fossil fuel jobs will ever come back. Several oil companies have announced permanent staff cuts and downsizing. They know the pandemic merely accelerated a structural change in global energy that was already evident. Advances and cost reductions in renewable energy technologies mean fossil fuels cannot compete on cost, let alone sustainability. And worldwide progress in emissions reduction continues.

It is now undeniable: fossil fuels will disappear from most uses in the foreseeable future. And fossil-fuel industries will never again be an engine of economic growth and job creation in Canada. Conventional wisdom portrays Canada as fundamentally dependent on extraction and export of natural resources — and fossil fuels are presently the biggest of these “staple” products.

The statistical reality, however, is very different: fossil fuel jobs constitute less than 1% of overall employment in Canada. From 2014 through 2019, fossil fuel industries lost 33,000 jobs, and their already small share of total employment fell by one-quarter, all while Canada’s overall labour market strengthened.

The phase-out of fossil fuels will occur over decades, which gives us time to plan for effective and fair employment transitions. We can enlist the normal mechanisms of change and adjustment that occur all the time in Canada’s diverse, fluid labour market. At least four million Canadians change their employment status every year, changing jobs or careers, starting work or retiring. In that context, managing the phase out of the remaining 150,000 fossil fuel jobs over a 20-year period is neither unprecedented nor impractical.

The sooner we start planning for this transition, the easier it will be. Most existing fossil fuel workers will retire over the next two decades, because they are older, on average, than the typical worker. That natural turnover can take care of most of the gradual downsizing required, while younger employees keep working as the industry downsizes. Experience in other jurisdictions (ex: Germany’s 20-year shutdown of black-coal mining) proves this can occur without a single involuntary layoff.

The most challenging aspect of the transition will be supporting regional communities that currently depend heavily on fossil fuel jobs. Even there, the challenge is not as daunting as often claimed. More than half of those jobs are located in large cities, where diverse alternative opportunities are available. The 17 smaller census-defined communities where fossil jobs account for over 5% of employment can and must be supported, with ambitious incentives for regional diversification, retraining, and relocation. The overall cost would be small relative to other energy investments, and spread over many years.

The phase out of fossil fuel industries is already occurring around the world. We aren’t doing any favours for workers by pretending we can stop it. Denying and delaying the inevitable, will make the ultimate pain worse. Then, when an inevitable reckoning is forced upon us by global markets, the dislocation will be sudden, destructive, and out of our control.

It is both more compassionate and more effective to get ahead of this transformation. And the first step is to acknowledge that it is happening.

Jim Stanford is an economist, director of the Centre for Future Work in Vancouver and author of the January 2021 report, *Employment Transitions and the Phase-Out of Fossil Fuels*. A version of this article first appeared in the *Globe and Mail*.

# Big Muddy

## Reports reveal Site C is on a plan-as-you-build basis

### Timeline

**1973:** Search for new dam location on the Peace River, Site C location selected, as “topographically and geologically preferable.”

**1978:** Preliminary design work for an earthfill dam, “as a concrete gravity dam was not feasible based on the type and strength of the foundation bedrock.”

**1975-2014:** Site investigations “state of the art and extensive.”

**1983:** Project deferred, amid “unresolved issues” with dam design.

**2009:** “BC Hydro concluded that the historic design for Site C required optimization to meet current seismic, safety and environmental guidelines.”

**2010:** Site C dam announced as a \$6.6 billion project.

**2011:** Design update “to rotate the spillway and generating station to extend at a right angle to the dam, parallel to the valley wall on the south bank, and include a large concrete buttress under these structures.”

**2014:** Project approval, with a budget of \$8.775 billion.

**2015 – present:** Construction begins with mapping and monitoring of geological conditions.

**2018:** Movement detected “on a bedding plane below the bedding plane through which the shear key intersects.” Budget increased to \$10.7 billion.

**January 2020:** Conclusion that “more significant foundation enhancements would be required.” Neither the fixes nor the cost were determined.

**Fall 2020:** Solution chosen, consisting (roughly) of deeper anchoring of the concrete buttresses and more waterproofing of the earth-filled dam. “At that time, the Technical Advisory Board and Project Assurance Board both supported and approved the recommended mitigation measures put forward by BC Hydro.” The report summary concludes “In the coming months, BC Hydro will advance the right bank foundation enhancement measures to final design, to allow detailed cost estimating and scheduling to be carried out.”

**February 2021:** Budget increased to \$16 billion, with many technical issues still to be resolved going forward.

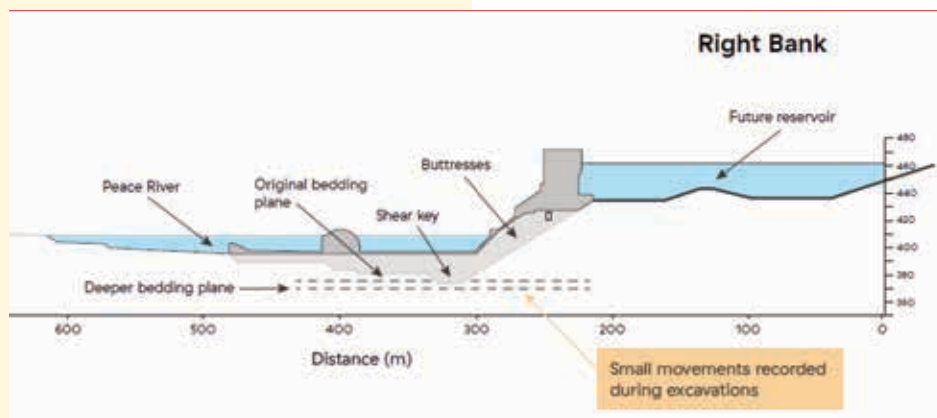
Source and quotes: *Site C Clean Energy Project: Geotechnical Safety Overview Report*, February 2021, including John W. France, P.E., D.GE, D.WRE and Kaare Hoeg, PhD, Report No. 1, January 22, 2021 and Report No. 2, February 15, 2021, [https://news.gov.bc.ca/files/Site\\_C\\_Geotechnical\\_Safety\\_Overview\\_Report.pdf](https://news.gov.bc.ca/files/Site_C_Geotechnical_Safety_Overview_Report.pdf)

by Delores Broten

At the end of February 2021, BC Premier John Horgan reaffirmed the Province’s commitment to the completion of the Site C dam, the third and most contentious on the Peace River.

The decision was announced along with the release of three reports – two technical reviews, and one project assurance review.

Reading the reports, especially in conjunction with the confident tone of the



accompanying press releases, started out as an exercise in absurdity. But as I went along, I was reminded more and more of my partner's approach to cabin design. That could be summed up as: "Let's just get the roof on, and we'll worry about the rest later."

Under all the layers of fancy reports and risk assessments and engineering studies, Site C is on a "plan as you build" basis.

Worse, the financial governance and risk assessment planning has been heavily laden with inconsistencies and incongruities, according to the January 27, 2021 summary report of former deputy finance minister Peter Milburn's *Site C Project Review*. Milburn is careful to point out that this was not the result of incompetence but rather the impact of unexpected challenges, resulting in "very difficult engineering and technical challenges" – although he also notes that the site has been known for its instability for decades.

In 2017, BC Hydro instituted two steps to improve project governance, a Project Assurance Board to provide enhanced oversight and due diligence, and the hiring of multinational professional services network Ernst & Young "to provide dedicated budget oversight, timeline evaluation, and risk assessment analysis for the duration of the project." (The ability of the BC Utilities Commission to oversee the project and determine whether it's in the public interest, stripped by the previous BC Liberal government, was never reinstated by the NDP.)

### Project Assurance Board

Unfortunately, according to the Milburn report, some interviewed members of the Project Assurance Board (PAB) themselves realized that the board lacked necessary skills in commercial negotiations

and strategy, large civil construction, and/or senior project management experience.

Further, members of the PAB were BC Hydro Board members. Milburn comments wryly, "Half of the PAB's members performing due diligence on the project also belong to the BC Hydro Board providing direction for the project. These overlapping roles can make independent oversight challenging."

"It is also worth noting that the Chair of PAB from January 2018 until September 2018 was also the BC Hydro Chair. Following this, an official previously responsible for a substantial portion of the project filled the PAB Chair."

In addition, "A number of PAB members expressed concern that the substantive issues were not coming before them and that management curtailed their mandate."

### Ernst & Young

In May 2018, Ernst & Young produced a report which analyzed deficiencies in BC Hydro's project controls and risk management, including information provided to the PAB. Shortly after, BC Hydro fired the accounting firm, but then re-hired it with a more limited scope.

At this point, the reader is presumably gasping. According to the Milburn report, "Ultimately, BC Hydro determined the amount and type of oversight they would receive from EY. This appears inconsistent with the concept of independent oversight and with BC Hydro's commitments to government."

The story winds on through emerging geological issues and continual redesign. In the case of the latest movements of the dam's bedding planes, "The Project

first observed this geotechnical issue in August of 2018.... Yet PAB members expressed 'surprise' in early 2020 when BC Hydro informed them that the problem required robust mitigation.

"From a governance and oversight perspective, our team feels that the PAB should have been actively involved in the review of mitigation measures. One of the primary roles of the PAB is to review risk issues and provide strategic advice on mitigation."

The Milburn report has a lot to say about loopholes in the complicated risk management for such a complex construction, including this eye-popper: "It is unclear where the costs and schedule implications of managing the risks are actually being tracked and managed." The Milburn team concluded that the Cost Risk Analysis system is neither accurate nor well understood, based on their interviews. When Ernst & Young prepared a slide deck with suggestions on how to improve the risk assessment and management, the company did not get to present their work to the Project Assurance Board, whose job it is to communicate with the provincial government.

No wonder the big muddy just keeps growing.

We leave the last word to BC Premier Horgan, as quoted by columnist Vaughn Palmer in the *Vancouver Sun*, "I am confident that the numbers that we put forward today are certain for today."

Peter Milburn, Summary, *Site C Project Report*, [https://news.gov.bc.ca/files/Milburn\\_Summary\\_Review.pdf](https://news.gov.bc.ca/files/Milburn_Summary_Review.pdf)

# Dammed If We Do

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## West Moberly First Nations mount Site C treaty challenge

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by Ana Simeon

**There were warning signs aplenty. Back in 1973, before Site C was even on the table, a major landslide at Attachie, roughly half way between Hudson's Hope and Fort St John, blocked off the whole Peace River for two days. In 2018, a fracking-induced tremor stopped work at Site C while workers were evacuated. A year later, another landslide hit Old Fort, just one kilometre downstream from Site C, prompting the evacuation of its residents. Each and every time, the BC government responded with an infusion of cash and a renewed determination to forge ahead, costs be damned.**

After BC Hydro revealed serious geotechnical issues at the dam site in July 2020, many of us had hoped that hard geological reality would get through to the Horgan government, even though arguments about treaty rights, food security, or even basic principles of fiscal prudence had fallen on deaf ears. After all, even the criminally insane have lucid intervals. Others, of a more cynical bent, predicted that Horgan would decide to go ahead with river diversion while waiting for further geotechnical reports. It would be business as usual.

Depressingly, the cynics were right: on February 26, the Premier announced that BC is moving ahead with a new dam design, complete with a new price tag of \$16 billion. This is entirely in keeping with successive BC governments' record of secrecy when it comes to BC Hydro

and all its works: for decades, regulatory oversight was sidelined and BC Hydro's deferral accounts used to hide a multitude of sins. In the Peace region in particular, the consequence has been unprecedented environmental destruction, enabled by a deep-seated colonial disdain for the treaty relationship. At the end of the day, the tragic reality is that our democratic checks and balances have failed.

### A stubborn love

Fortunately, there is much more to the story of the Peace than colonial bullying and dysfunction. People with deep roots in this land don't give up easily. Their stubborn love of place spans generations, outlasting mere governments.

The Dunne-za people of West Moberly First Nations carry the knowledge and wisdom of innumerable generations of ancestors who fished, hunted, and travelled the Peace on their seasonal round. Their relationship to *Wochii* – Our Big River – (the name for the Peace in Dunne-za language) is foundational to their culture and their way of life.

West Moberly's settler neighbours have their own roots in the fertile benchlands of the Peace, on family farms worked by their grandparents and great-grandparents before them. Over the past ten years, the two groups have forged a strong alliance that has drawn support and inspired passionate activism across BC, Canada, and even internationally.

This support has grown to become a political force in its own right, with the potential to transform the colonial dynamic in Treaty 8 territory.

### A game-changing legal challenge

Barely minutes after the Premier's press conference on February 26, West Moberly First Nations came out with their own announcement that they're pressing on with a comprehensive treaty challenge over Site C. Their previous legal efforts had secured a judicial decision that the full case against Site C must be heard in March 2022, well before any steps are taken to flood the valley. This historic 120-day trial is our last, best chance to stop Site C and restore the Peace River valley to its natural state.

West Moberly's civil claim alleges that Site C and the two previous dams on the Peace River infringe their rights under Treaty No. 8 to hunt, fish, trap, and carry out their traditional lifestyle free from "forced interference." Because of the enormous amount of land already taken up by the reservoirs of the two previous dams on the Peace River, the section of the Peace valley between Hudson's Hope and Fort St. John, which would be flooded by Site C, is the last patch of terrain where West Moberly members are able to exercise their treaty rights.

## Large-scale hydro: a study in environmental racism

Few British Columbians know that every third kilowatt they consume comes from Indigenous territories that were flooded with no consultation and scarcely any notice. The W.A.C. Bennett and Peace Canyon dams created large reservoirs (the Williston reservoir alone sprawls over almost 1,800 km<sup>2</sup>) that flooded hunting grounds and obliterated burial sites, ancient gathering places, and other spiritually important areas.

West Moberly elders recall witnessing a sea of caribou, “like bugs on the landscape.” With their migration routes submerged under the Williston and Dinosaur reservoirs, the caribou dwindled to a handful of tiny herds, one of which (the Burnt Pine herd) has since been extirpated. Grizzly bears, buffalo, mountain goat,

mountain sheep, and moose were all impacted by flooding from the dams.

Then there’s the fish. Methylmercury (from the decaying vegetation submerged by the dam) has now been accumulating in fish within the reservoirs and surrounding watershed for over 50 years. The BC government admits that lake trout, bull

trout, and dolly varden from the Williston reservoir may be unsafe to eat and has posted warnings to that effect.

But what about the rest of the watershed, fed by the Peace, Crooked, and Parsnip rivers, which flow out of the reservoir? What about the health of West Moberly

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“Having biomass in the water does not constitute a meaningful right to fish. **The fish have to be healthy enough to eat.** My understanding of treaty rights is that they don’t just guarantee fish ‘protein’ or ‘biomass,’ but a meaningful right to fish. That means protection for the species we prefer and the habitat they require.”

—Chief Roland Willson

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*Continued on Page 24* ➡



and other Indigenous populations whose traditional diets rely so much on fish? Studies on the Crooked River conducted by West Moberly show that methylmercury contamination extends well beyond the reservoir into the watershed generally, making the fish unsafe or less safe to eat.

### Your stake in the Peace

With a solid majority in the Legislature, and a high popularity rating based on his government's handling of the pandemic, Premier Horgan had a once-in-a-lifetime opportunity to set British Columbia on a path to true reconciliation. He has chosen to squander it. And let's face it: even if the government had issued a last-minute stay of execution for the Peace, the deeply rooted colonial disrespect for treaty rights within the corridors of power, and the lack of understanding of the vital ecological role of living rivers, would not have changed just because this particular dam happens to be built on unstable shales. The same thing could still happen tomorrow to the next river that BC Hydro sets its sights on.

On the other hand, a deep reckoning with the colonial past and present is precisely what West Moberly's historic case is about. Their legal challenge goes right to

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“The court has promised us a judgement before any flooding of the Site C reservoir can begin. The trial preparation is intense and costly. It's the last place we want to be, but we've never been more sure that **Site C is a violation of our Treaty rights**. If the Premier hasn't been forced to cancel the project by the time our case is decided, the court will have the opportunity to do that for him.”

—Chief Roland Willson

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the heart of the constitutionally-protected treaty relationship, and the government's fiduciary obligation for “loyalty and care” toward treaty partners when authorizing industrial development on treaty territory.

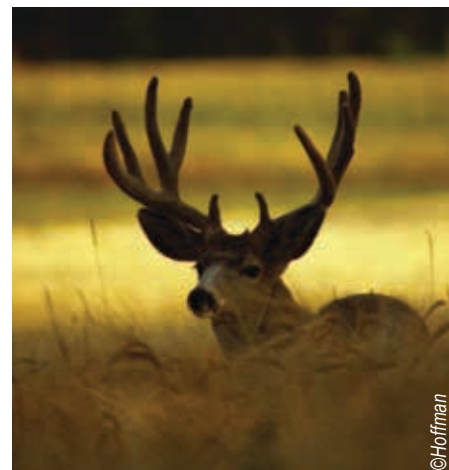
What happens to the Peace valley affects us all – whether through the environmental and climate impacts, the lack of food security, or the enormous bill that will fall on taxpayers and ratepayers, even those who haven't been born yet

If you don't want to see the Peace River turned into a series of reservoirs, join a groundswell of support for West Moberly First Nations' legal challenge at <https://raventrust.com/campaigns/sitec> and get

your own literal “stake in the Peace.” For all donations above \$100, Peace Valley farmers Ken and Arlene Boon will plant a yellow stake in the hillside above Bear Flats, a bend in the Peace with a handy sandbar which bears, moose, and other wildlife use to cross the river, and which would be flooded by the Site C reservoir.

Your stake will be joining 1,300+ others surrounding the Boons' house and standing on guard for treaty territory in a palpable show of support and solidarity.

Ana Simeon is Fundraising Campaigns Director at RAVEN, Canada's only Indigenous legal defence charity. Before joining RAVEN, Ana was Peace Valley campaigner with Sierra Club BC.



# Pandemic Priorities

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## It's time to reallocate the billions spent on jets and warships

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by Jim Cooperman

**One might think that the pandemic, which has so far resulted in the death of over 20,000 Canadians along with major health complications for thousands more and spiralling economic and mental health crises affecting millions, would provoke government leaders to revise the country's priorities. It is now blatantly obvious that the real threats facing our society are not military in nature but environmental – from minuscule viruses to the dangers of climate change. Warships, jet fighters, and tanks will be useless to fight forest fires, droughts, floods, pandemics, and cyberattacks.**

Currently, Canada is set to spend \$60 billion on warships for the navy. The latest news is that the delivery of the first of fifteen new Type-26 frigates will be delayed until after 2030, despite the fact that this project began over ten years ago. Meanwhile, the navy is struggling to maintain its existing, rusting fleet.

Yet another unnecessary expenditure is the plan to purchase 88 new fighter jets at a cost of \$216 million per aircraft, for a total of \$19 billion. Next year, if the government proceeds, there will be additional high – and ongoing – costs for training and maintenance, as well as to pay for the enormous amount of carbon-emitting fuel required to fly these war machines. There is no credible threat now or in the future that would require these jets, other than missions directed by the United States as part of their never-ending petro-wars.

One of the rationales used to justify Canada's military expenditures is that we must abide by international commitments due to our membership in NATO. In order for Canada to reduce its military expenditures, it would also need to convince other NATO members to shrink their costs as well by revising the existing agreements. Currently, Canada spends approximately 7.9% of its total budget on the military. Last year the bill was \$21.9 billion (and former US President Trump berated Canada for not spending enough).

If demilitarization were to succeed in Canada, it would still be possible to continue with the role of peacekeeping. Providing logistical assistance, negotiation expertise, and medical aid can produce more positive outcomes than sending in the fighter jets. A good example is Cuba, which sends doctors around the world to help struggling countries cope with war and natural disasters.

It is more than obvious that we need to also invest in the infrastructure and the public system to address both the current pandemic and potential future ones. There is a desperate need for more low-income housing. Many First Nation communities are still without adequate drinking water, and there are numerous examples of pollution impacting Indigenous communities. Canada has pledged to increase protection of natural spaces to 30% in the coming years; money redirected from the military could also be used to help achieve this goal.

Recently, US President Joe Biden announced plans for a Civilian Climate Corps Initiative to employ thousands of young people to help reduce carbon emissions, plant trees, restore shoreline and degraded landscapes, and undertake other climate change adaptation measures. Under Biden's executive order, the Departments of Interior and Agriculture and others have 90 days to present a plan to "mobilize the next generation of conservation and resilience workers."

Certainly, Canada could emulate this program, especially if more funds were redirected from current military hardware acquisition plans. It is time that Canada realizes that we are living in a new century, with crises that require a different mindset than what was the status quo during the Cold War and the preposterous, wasteful, and destructive "war-on-terror."

One can only hope that our inability to adequately defeat a virus due to our lack of preparedness will awaken our leaders to the necessity for redirecting our priorities from militarization to programs that truly protect our citizens and help us better cope with an uncertain future.

Jim Cooperman is a community activist and author of *Everything Shuswap*. This article adapted with permission from his blog, [www.shuswappassion.ca](http://www.shuswappassion.ca)

# Mexico vs Monsanto

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## Ban on glyphosate and GM corn has rocked agribusiness

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by Timothy A. Wise, Inter Press Service

Mexican president Andrés Manuel López Obrador quietly rocked the agribusiness world with his New Year's Eve decree to phase out use of the herbicide glyphosate and the cultivation of genetically modified corn. His administration sent an even stronger after-shock two weeks later, clarifying that the government would also phase out GM corn imports in three years and the ban would include not just corn for human consumption but yellow corn destined primarily for livestock.

Under NAFTA, the United States has seen a 400% increase in corn exports to Mexico, the vast majority genetically modified yellow dent corn.

The bold policy moves fulfill a campaign promise by Mexico's populist president, whose agricultural policies have begun to favour Mexican producers, particularly small-scale farmers, and protect consumers alarmed by the rise of obesity and chronic diseases associated with high-fat, high-sugar processed foods.

In banning glyphosate, the decree cites the precautionary principle and the growing body of scientific research showing the dangers of the chemical, the active ingredient in Bayer/Monsanto's Roundup herbicide. The government had stopped imports of glyphosate since late 2019, citing the World Health Organization's warning that the chemical is a "probable carcinogen."

The prohibitions on genetically modified corn, which appear toward the end of the decree, have more profound implications. The immediate ban on permits for cultivation of GM corn formalizes current restrictions, ordered by Mexican courts in 2013 when a citizen lawsuit challenged government permitting of experimental GM corn planting by Monsanto and other multinational seed companies, on the grounds of the contamination threat they posed to Mexico's rich store of native corn varieties. The import ban cites the same environmental threats but goes further, advancing the López Obrador administration's goals of promoting greater food self-sufficiency in key crops.

### Chronicle of a decree foretold

Such policies should come as no surprise. In his campaign, López Obrador committed to such measures. Unprecedented support from rural voters was critical to his landslide 2019 electoral victory, with his new Movement for National Renewal (Morena) claiming majorities in both houses of Congress.

Still, industry and US government officials seemed shocked that their lobbying had failed to stop López Obrador from acting. The pressure campaign was intense, as Carey Gillam explained in a February 16 *Guardian* exposé on efforts by Bayer/Monsanto, industry lobbyist CropLife, and US government officials to deter the glyphosate ban. According to email correspondence obtained by the Center for Biological Diversity through *Freedom of Information Act* requests, US officials in the Trump Administration were in touch with Bayer representatives and warned Mexican officials that restrictions could be in violation of the revised *North American Free Trade Agreement*, now rebranded as the *US Mexico Canada Agreement (USMCA)*.

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**The bold policy moves fulfill a campaign promise by Mexico's populist president, whose agricultural policies have begun to favour Mexican producers, particularly small-scale farmers, and protect consumers alarmed by the rise of obesity and chronic diseases associated with high-fat, high-sugar processed foods.**

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According to the emails, CropLife president Chris Novak last March sent a letter to US Trade Representative Robert Lighthizer, arguing that Mexico's actions would be "incompatible with Mexico's obligations under USMCA." In May, Lighthizer wrote to Graciela Márquez Colín, Mexico's minister of economy, warning that GMO crop and glyphosate matters threatened to undermine "the strength of our bilateral relationship." An earlier communication argued that Mexico's actions on glyphosate, which Mexico had ceased importing, were "without a clear scientific justification."

Nothing could be further from the truth, according to Victor Suárez, Mexico's Undersecretary of Agriculture for Food and Competitiveness. "There is rigorous scientific evidence of the toxicity of this herbicide," he told me, citing the WHO findings and an extensive literature review carried out by Mexico's biosafety commission Cibiogem.

And even though most imported US corn is used for animal feed, not direct human consumption, a study carried out by María Elena Álvarez-Buylla, now head of CONACYT, the government's leading scientific body, documented the presence of GM corn sequences in many of Mexico's most common foods. Some 90%

of tortillas and 82% of other corn-based foods contained GM corn. Mexico needs to be especially cautious, according to Suárez, because corn is so widely consumed, with Mexicans on average eating one pound of corn a day, one of the highest consumption levels in the world.

While the glyphosate restrictions are based on concerns about human health and the environment, the phaseout of GM corn is justified additionally on the basis of the threat of contamination of Mexico's native corn varieties and the traditional intercropped milpa. The final article in the decree states the purpose is to contribute "to food security and sovereignty" and to offer "a special measure of protection to native corn."

The ban on GM corn cultivation has been a longstanding demand ever since the previous administration of Enrique Peña Nieto granted permission to Monsanto, DuPont, Syngenta and a host of other multinational seed companies to begin experimental planting in northern Mexico. Such permits were halted in 2013 by a Mexico court injunction based on a claim from 53 farmer, consumer, and environmental organizations – the self-denominated *Demanda Colectiva* – that GM corn

*Continued on Page 28* ➞

cultivation threatened to contaminate native varieties of corn through inadvertent cross-pollination.

“It is difficult to imagine a worse place to grow GM corn than Mexico,” said Adelita San Vicente, the lead spokesperson for the plaintiffs who is now working in López Obrador’s environment ministry, when I interviewed her in 2014 for my book, *Eating Tomorrow*. Such contamination was well-documented, and the courts issued the injunction citing the potential for permanent damage to the environment.

As Judge Walter Arrellano Hobelsberger wrote in a 2014 decision, “The use and enjoyment of biodiversity is the right of present and future generations.”

### **Mexico’s self-sufficiency campaign**

Mexico’s farmer and environmental organizations were quick to praise the decree, though many warned that it is only a first step. “These are important steps in moving toward ecological production that preserves biodiversity and agrobiodiversity forged by small-scale farmers over millennia,” wrote Greenpeace Mexico and the coalition “Without Corn There is No Country.”

Malin Jonsson of *Semillas de Vida* (Seeds of Life), one of the plaintiffs in the court case, told me, “This is a first step toward eliminating glyphosate, withdrawing permits for GM maize cultivation and eliminating the consumption of GM maize. To end consumption we have to stop importing GM maize from the United States by increasing Mexico’s maize production.”

Mexico imports about 30% of its corn each year, overwhelmingly from the United States. Almost all of that is yellow corn for animal feed and industrial uses.

López Obrador’s commitment to reducing and, by 2024, eliminating such imports reflects his administration’s plan to ramp up Mexican production as part of the campaign to increase self-sufficiency in corn and other key food crops – wheat, rice, beans, and dairy. Mexican farmers have long complained that since NAFTA was enacted in 1994, ultra-cheap US corn has driven down prices for Mexican farmers. The proposed import restrictions would help López Obrador’s “Mexico First” agricultural policies while bringing needed development to rural areas.

### **Will US administration block action?**

Industry organizations on both sides of the border have complained bitterly about the proposed bans. “The import of genetically modified grain from the US is essential for many products in the agrifood chain,” said Laura Tamayo, spokeswoman for Mexico’s National Farm Council (CNA), who is also a regional corporate director for Bayer. Bayer’s agrochemical unit Monsanto makes weedkiller Roundup and the GMO corn designed to be used with the pesticide.

“This decree is completely divorced from reality,” said José Cacho, president of Mexico’s corn industry chamber CANAMI, the 25-company group that includes top corn millers like Gruma, cereal maker Kellogg, and commodity trader Cargill.

Juan Cortina, president of CNA, said his members might sue the government over the bans. “I think there will need to be legal challenges brought by all the people who use glyphosate and genetically-modified corn,” he told Reuters, adding that he also expects US exporters to appeal to provisions of the USMCA trade pact to have the measures declared illegal.

Industry sources also warned that Mex-

ico would never be able to meet its corn needs without US exports and that US farmers would be harmed by the presumed loss of the Mexican export market. Others quickly pointed out that Mexico was not banning US exports, just GM corn exports. US farmers are perfectly capable of producing non-GM corn at comparable prices, according to seed industry sources, so the ruling could encourage the development of a premium market in the United States for non-GM corn, demanded by US consumers for years.

Such pressures may present an early test for President Joe Biden and his nominee for US Trade Representative, Katherine Tai. Tai helped get stricter labor and environmental provisions into the agreement that replaced NAFTA. Will the Biden administration respect Mexico’s right to enact policies designed to protect the Mexican public and the environment while promoting Mexican rural development?

Victor Suárez certainly hopes so. “Our rationale is based on the precautionary principle in the face of environmental risks as well as the right of the Mexican government to take action in favor of the public good, in important areas such as public health and the environment.”

Timothy A. Wise is a senior advisor with the Institute for Agriculture and Trade Policy, a non-profit research and advocacy organization that promotes sustainable food, farm and trade systems, with offices in Minnesota and Switzerland.

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## Oil &amp; Gas outlook losing lustre

## Fossil Fails

A group of the world's largest oil companies – including Chevron, Exxon-Mobil, Shell, and Total – have been put on notice by international credit rating agency S&P Global Ratings that they could soon see their ratings downgraded over concerns about the climate crisis and the global push toward low-carbon energy. The agency downgraded the outlook, but not the rating, for BP and Suncor Energy to “negative,” meaning S&P could cut their rating in future. A downgrade typically causes the cost of borrowing to rise and can mean some investment funds drop the company's bonds.

For ExxonMobil, the news comes as the company reports its first annual loss since its merger with Mobil in 1999. The oil giant lost US\$22.4 billion in 2020, with revenue plunging \$83.4 billion, or 31.5%, to \$181.5 billion.

At BP, geologists, engineers, and scientists working to find more oil have been cut to under 100 from more than 700 a few years ago. The contraction in exploration is part of a climate-driven overhaul, and seen as the starkest sign to date of the company's shift away from oil and gas.

Meanwhile, police unions in New York are pushing back against divesting their pensions away from fossil fuels. “We see our funds as needing to be managed with one goal in mind and that's maximizing the rate of return,” said Patrick Cullen, president of the New York State Supreme Court Officers Association.

—[markets.businessinsider.com](https://markets.businessinsider.com), Jan 27, 2021

—[www.reuters.com](https://www.reuters.com), January 24, 2021

—[www.cnn.com](https://www.cnn.com), February 2, 2021

—[www.vice.com](https://www.vice.com), March 2, 2021

## Paris' new underground scene

## Shrooms not Cars

Idle parking garages in Paris, France are being converted to organic farms growing shiitake, oyster, and white button mushrooms, as well as a type of chicory grown in darkness that is a French delicacy. The crops are delivered via bicycle to local grocers. It's one of several initiatives the city is supporting as part of “Reinventing Paris – The Subterranean Secrets of Paris,” a program to convert abandoned underground spaces in the city to civic-minded projects. Parking garages beneath old apartment blocks have been seeing little use as car ownership dwindles in the French capital, with some becoming haunts for illegal activity.

—[www.goodnewsnetwork.org](https://www.goodnewsnetwork.org)

February 16, 2021

## QC river granted legal personhood

## River Rights

In a Canadian first, the Magpie River in northern Quebec has been granted legal personhood through resolutions by the local Innu council and municipality of Minganie. The river now has nine distinct rights and can be assigned legal guardians, the groups said. World renowned for white water rafting, the Magpie is a “perfect test case” of the legal designation in Canada, said the Montreal-based International Observatory on the Rights of Nature. Treating natural places as persons under the law has become increasingly common in some places, in particular New Zealand, where Maori groups created the new legal status working alongside the country's federal government.

—[www.ctvnews.ca](https://www.ctvnews.ca)

February 23, 2021

## US energy capacity goes renewable

## Power Shift



Wind and solar are set to make up 70% of new power plant capacity built in 2021 in the United States, according to the US Energy Information Administration. Solar leads with 39%; wind follows with 31%. Natural gas, though the dominant fuel for electricity production, is expected to account for only 16% of new power capacity. The numbers include only utility-scale projects, not private installations, and suggest the power industry has now embraced renewables to the extent that they will dominate new construction.

—[www.greentechmedia.com](https://www.greentechmedia.com)

January 14, 2021

## Mining in UNESCO reserve shut down

## Big Mine Ban

In a historic referendum appended to Ecuador's Presidential election, more than 80% of the electorate of Cuenca, the country's third-largest city, voted to ban mining within the drainage basins of five nearby rivers. The land, declared a UNESCO biosphere reserve and adjacent to a national park, nevertheless has 43 concessions for metal mining by firms from Canada, Australia, Peru, and Chile. The result of the referendum – backed by 14 grassroots organizations and approved by Ecuador's constitutional court – is legally binding and the next president is bound to implement the ban.

—[www.opendemocracy.net](https://www.opendemocracy.net)

February 15, 2021

# Ships in the Salish Sea

## Gulf Islands are hosting an international shipping backlog

by Peter Ommundsen

**An overflow of large cargo ships awaiting entry to the Port of Vancouver has overwhelmed the Southern Gulf Islands and has brought a multitude of environmental concerns. Coal and grain ships anchor at some 33 different Gulf Island locations, often for several weeks, and ship congestion has increased more than ten-fold since 2008, a trend that is not sustainable.**

Multiple risks are associated with anchorages. Anchor chains scour the highly productive sea floor (benthic) ecosystem and release suffocating turbidity plumes. Constant ship generator noise can disorient marine life, bilge water may contain invasive species and disease organisms, and anti-fouling compounds can leach into seawater. Bright lighting can disrupt planktonic migration, and air pollution can impact ocean acidity and human health.

One anchored bulk carrier ship produces about ten tonnes of greenhouse gases per day. Pollution can concentrate locally because of a low ventilation index in the Southern Gulf Islands (classified a “high smoke sensitivity zone” by the province). Accidental ship movements from anchor dragging can result in collisions, groundings, and spills of fuel oil. According to the Transportation Safety Board, there have been 102 reports of anchor-dragging since 2015.

The huge ship backlog that has been displaced from Vancouver into sensitive Sal-



ish Sea habitats has created a quandary for the Port of Vancouver and for Transport Canada. The Port of Vancouver is supposed to be “responsible for maintaining efficient movement of marine traffic and cargo” and has a goal to become “the world’s most sustainable port.” Specific aspirations of the port include climate action, protection of aquatic species, supporting species at risk, reduction of underwater noise, and preventing the spread of invasive species. The mandate letter for the Minister of Transport includes “making Canada’s major ports among the most efficient and cleanest in the world.”

The Southern Gulf Islands Trust Area,

where the ships are forced to anchor, is of high conservation value and has been mandated for protection by the Islands Trust Act. The Trust Council has asked for closure of the anchorages, noting that the Trust Area “is one of the most productive marine ecosystems in the world and includes the highest density of species at risk in Canada.”

Parks Canada has proposed a “Southern Gulf Islands National Marine Conservation Area,” a category of protected area that meets an international standard of being “conservation focused with nature as the priority.” Coast Salish First Nations have expressed concern that

“anchorages in these inside waters and narrow passages between islands pose an unacceptable risk to the ecological integrity that sustains our food resources, which are critical to the long-term livelihoods and well-being of our members.” Fisheries and Oceans Canada has proposed the Southern Gulf Islands as an “Environmentally and Biologically Sensitive Area.”

### Why is this happening?

It has been argued that there is a common law right of a ship to anchor anywhere. But this refers to anchoring for a reasonable purpose (such as a weather emergency) and for a reasonable time frame. In fact, Section 301 of the Navigational Safety Regulations prohibits anchoring in designated areas, and several sections of the *Canada Shipping Act* provide means of restricting anchoring locations.

The Port of Vancouver cites three reasons for ship congestion. There are weather-related delays, as with loading grain in the rain, but this problem has been solved elsewhere and requires acquisition of adequate safety equipment for workers.

A second reason for ship congestion given by the port is growth in trade. This is contradicted by a report from the Centre for Marine Affairs, showing a ten-fold increase in ship congestion in the Southern Gulf Islands Trust Area while total bulk carrier arrivals in Vancouver increased by only 10%. The question has been raised as to why growth in trade should require longer lineups of ships if a port is managed efficiently.

A third reason given for ship congestion is upstream supply chain delays. Although significant investments have been made in supply chains, ship congestion has increased. This raises the question of whether exporters overestimate the

capacity of supply chains and whether adjustments in expectations could avoid vessel bottlenecks. Port traffic management may require increased public accountability, as ship congestion adversely impacts public resources, public health, the natural environment, and the economy. Prairie farmers have had to absorb tens of millions of dollars in a given year in payments to ships for delays in loading.

Ship congestion escalates when vessels arrive early or arrive into a growing lineup, with the cumulative loading time of all previous ships resulting in weeks at anchor in the Gulf Islands. Other ports have dealt efficiently with ship congestion. For example, Newcastle, Australia, prohibits ship arrival earlier than 48 hours prior to the estimated time of loading. The Newcastle vessel arrival system is recognized worldwide and has won commendation from the United Nations.

Solutions await expeditious leadership from Transport Canada, the Port of Vancouver, and industry to set targets, regulate vessel arrivals, and ensure oversight of port logistics, scheduling, and loading. Three years ago,

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**Constant ship generator noise can disorient marine life, and bilge water may contain invasive species and disease organisms.**

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Transport Canada initiated an “interim protocol” for the purpose of studying the issue, but there has been no reduction in anchoring. Transport Canada also commissioned studies from the World Maritime University, but these results have not been available to the public.

While the shipping industry has dozens of registered lobbyists, citizens have formed non-profit groups calling for more efficiency at port and an anchorage-free new National Marine Conservation Area. These groups include No Freighter Anchorages <https://nofreighteranchorages.ca> and Protect the Islands Sea <https://protect-the-islands-sea.org>

Peter Ommundsen is a member of the Centre for Marine Affairs board of directors.



# For Peat's Sake!

## Coming together to protect Northern Saskatchewan muskeg



The beaver works hard as part of the interconnected web that makes up the muskeg.

by Valerie Barnes-Connell

**What is muskeg, and why is it important to protect it? Many residents of La Ronge, Saskatchewan and the surrounding area are finding out, and they are concerned about a proposed peat moss mining project near their homes.**

The word muskeg is taken from the Cree *maskek* and the Ojibwe *mashkiik*. Peat is formed when dead mosses and other plants slowly form layers of compacted material, which can be many metres thick. Much of northern Saskatchewan and other northern parts of Canada and

the circumpolar area are covered with muskeg, also called bogland or peatland.

### Peat mining comes to Saskatchewan

In November 2018, Lambert Peat Moss Inc. made a proposal to the Saskatchewan government for a peat harvesting development on four parcels of muskeg south of La Ronge, totalling up to 2619 hectares (approximately 6472 acres) over an 80-year period. The project would involve clearcutting trees, stripping the land of stumps and vegetation, construction and

maintenance of roads and drainage ditches, harvesting peat moss, and restoration of the landscape.

There has been some peat mining in Saskatchewan since the 1950s, but there is a growing awareness of its harmful environmental and sociocultural effects. A community engagement meeting held by Lambert in September 2020 caught the attention of Miriam Körner, a local author, artist, and wilderness guide, who alerted other community members. A number of concerned residents formed the group For Peat's Sake: Protecting Northern Saskatchewan Muskegs and created a Facebook page of the same name that now has more than 1000 members.

Group members began to inform themselves and share information about the many valuable properties of muskegs. They reached out to other local residents and groups such as local trappers, Lac La Ronge Indian Band (LLRIB), and Métis Nation Saskatchewan, and organized a campaign of contacting government officials and the media, and a speakers' series and film presentations on their Facebook page.

Elder Eleanor Hegland offered her thoughts on the importance of muskeg at a community gathering and ceremony. She grew up and still lives on the muskeg, and taught culture and language in LLRIB schools for several years. She remembers as a young child digging in the muskeg and being taught by the elders not to destroy it, "because it cleans our water; it gives us life; to them the muskeg was

sacred.” She also noted that many plants that people have used for medicine for hundreds of years grow in muskeg, and said, “That’s the thing, it’s our pharmacy ... for a lot of people, the land provides.”

## Carbon bomb

Climate activists and others have identified many reasons to preserve muskeg intact. As Eric Reder of Wilderness Committee puts it, “I don’t like to use war analogies, but mining peat is like releasing a climate change bomb.” Environmental analyst Roger Harrabin explains, “A wet, pristine peat bog soaks up CO<sub>2</sub> and, unlike trees, has no limit to the amount of carbon it captures ... But a dry, degraded bog ... is a big source of CO<sub>2</sub> as the carbon in the bog oxidizes.”

Lambert pledges to reclaim and restore the mined peatlands: “The Decommissioning and Restoration Plan will aim at re-establishing vegetation cover and restoring hydrology so that the sites will be on a trajectory that will lead to the return of peatland ecological functions and services.” A close reading of this statement raises doubts. At the rate that peat accumulates (approximately 1mm per year) how long will it be before the peat recaptures the amount of carbon it stored prior to mining? Several lifetimes, at least.

## Flood, drought, and fire

Muskeg serves to mitigate both flood and drought conditions, as moss and peat soak up or release water. Wildfires have swept through boreal regions in the last several years, and bogs can act as fire breaks. However, mined fields, drained of water and stripped of vegetation, lose all of these beneficial properties. They burn readily – and once started, peat fires can burn underground for months and even years. If Lambert is permitted to go

ahead with its plans, the La Ronge area could see an increased risk from forest fires, which alarms many local people in light of the 2015 wildfire season that resulted in the evacuation of 14,000 people. Ironically, a mined field in one of Lambert’s properties in Québec was burned over in a wildfire in the summer of 2020 .

## Biodiversity

The area that Lambert proposes to mine is home to woodland caribou, which have been in decline for decades and are listed as “threatened” under the federal *Species at Risk Act*. It will be important to consider the cumulative effects of peat mining and other land disturbances in the area, together with climate change, in order to understand the potential effects of Lambert’s proposal on this population.

## For peat’s sake

Many residents of the La Ronge area, Indigenous people and settlers alike, value the muskeg for much more than tax revenue for provincial coffers, employment for 25 people (which may be seasonal), and “offsets” for caribou habitat, which would involve restoration of areas outside of the disturbed area. Hegland speaks of using the muskeg as a healing tool in her teaching days. When she had a student who had a bad weekend at home, she would take them to the muskeg behind the school. She would lie with them in the muskeg and tell them to “Let it go... it’s healing for the kids....

The many layers of the muskeg, the rich composition of plant life and water, teaches interconnection of all life, people, animals, birds, plants.... Why it really bothers me so much, what are we going to leave our great grandchildren?”

In the video called “Standing Together to Protect Muskeg: *ta-kistîhtamahk ikwa-ta-manâcihtâyahk wâpâstâskamikwa*,” Körner summarized a view that was common to many group members by saying, “The Western industrial view of land as a resource to be exploited clashes with the Indigenous view of land being sacred.”

The project is currently in the environmental assessment process with the Saskatchewan government, but the group is advocating for a federal process. Some members have expressed the view that consultation is not a satisfactory way for corporations and government officials to engage with First Nations and Métis. They would prefer a more cooperative approach, with the aim of protecting the values that they assign to the land, not simply its use value.

Valerie Barnes-Connell lives in LaRonge, Saskatchewan.



# Watermelon Snow

The Arctic's breathtaking beauty and heartbreaking losses



©Watershed Sentinel

Review by Susan Yates



***Watermelon Snow: Science, Art, and a Lone Polar Bear***  
by Lynne Quarmby

McGill-Queen's University  
Press, October 2020  
Hardcover \$24.95  
ISBN: 9780228003595

On the last day of October I received in the mail a book I'd been eagerly awaiting: *Watermelon Snow: Science, Art, and a Lone*

*Polar Bear*. Written by scientist, educator, and environmen-

tal activist Lynne Quarmby, it is an extraordinary book in so many ways.

Since the beginning of November, *Watermelon Snow* and its author have gone (virtually) from Gabriola Island, BC to *The New Yorker's* Climate Crisis Newsletter moderated by world-renowned climate activist Bill McKibben. It's no surprise that Quarmby's paean to the high Arctic and its breath taking beauty and heartbreaking climate-induced losses has caught the attention and respect of global leaders in climate action. The book is impossible to put down once you begin the journey.

The author's quest begins in June 2017 on the tall ship *Antigua*, with 28 artists, one other scientist, 12 crew members, and one

dog. She will be looking for watermelon snow, or more specifically the microscopic red algae that turn snowfields pinky-red, increase the rate of snow-melt, and may amplify global warming. All of the participants are interested in global and current issues, but it soon becomes clear that no one is as impassioned as Quarmby on the topic of climate change.

Quarmby moves between evocative descriptions of her journey to the Svalbard archipelago, her microbiology lab at SFU, her political engagement, and the ever-present fear about environmental crises that numbs most of us to states of inaction. Chapters in the book alternate between the Arctic expedition and what I think of as “life back in the temperate zone,” where science is in the lab and politics are on the front line.

*Watermelon Snow* moves the reader to greater understanding not just about the science and politics of global warming, but even more to sympathy with the author as someone who has spent most of her adult life inextricably linked with the need to do more, try harder, and exhaust all efforts in attempts to lessen the human impact on climate change. But the cost of this work is a reminder that even while watching enormous ice shelves thunder into the sea, or a starving polar bear search for food, desperation will not accomplish the most important task we have right now on planet Earth.

In her recent interview with McKibben, Quarmby describes her experience with grief about global warming: “I have direct experience with unproductive despair. After several years of climate activism driven by fear, panic, and anger – two arrests, being sued [for \$5.6 million] by a pipeline giant [for peaceful protest], and a run for a seat in Parliament ... I was suffering from a failure to grieve – a failure to acknowledge that, for many things I love, it is too late. By slowly opening myself to grief, I began to find some peace. The question became: how to live in this world with this knowledge? For me, it means engaging with others on issues that matter. I work on letting go of the old life – a fossil fuel-driven world – and embracing a vision of a better future. I sit with the grief, vigorously defend the truth, and engage in politics.”

Journalist Melissa Gismondi describes in a *Walrus* article that for some people climate grief begets a kind of “homesickness” called solastalgia. She writes, “Solastalgia is about grief and

mourning and sadness and anguish, but if people are grieving it’s coming from a place of love, and that’s coming from a commitment to the natural world and the environment around us.”

Such commitments are my idea of a wise leader, never mind a compelling author, and I have wondered whether Quarmby’s passion and unwavering moral stance could have improved the tenor of Parliament had she won in 2015 as a Green Party candidate for the federal riding of Burnaby North-Seymour.

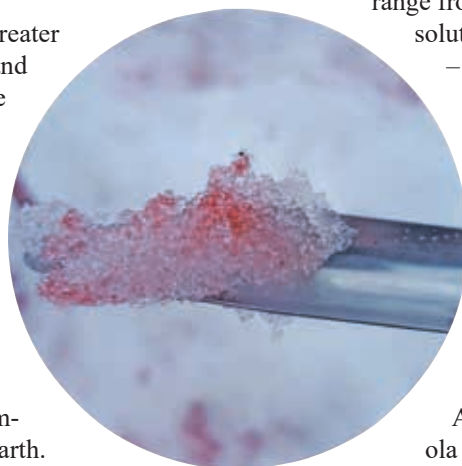
Quarmby’s shipmates on the *Antigua* are mostly artists, and their presence provides interesting company, ideas, and sometimes tension. The effects of climate change are never far from any of the participants’ minds, and their projects and discussions range from bizarre geo-engineering ideas to political solutions that require radical changes in lifestyle – and deep soul-searching for Quarmby and some of her fellow voyagers.

The disastrous results of human hubris (have we all forgotten the lessons in those Greek myths?) are brought to light; so are the hard questions that ask why we refuse to change political course even when faced with deadly climate events.

At the launch of *Watermelon Snow* on Gabriola Island, fellow climate activist Steven Earle commented, “Lynne has hit the nail on the head with this book, because while climate change is full of cold hard science, some of it is a real struggle to get your head around. In writing about it one must appeal to the hearts as well as the minds of the readers.”

That she does, with alacrity; *Watermelon Snow* is a literary and scientific tour de force, right from the incantatory opening poem by Mary Oliver (“The Uses of Sorrow”) to the final words, “I keep on, embracing the responsibility of being human at this singular moment in the history of the Earth.”

Susan Yates has been active in environmental and social justice groups for 47 years, inspired and encouraged by working with others whose energy, determination, and visions for the future offer hope for a better world. A longer version of this review was published in *Focus on Victoria* in January 2021.



# Wild Times

## The Last Slice

by Joe Foy

**When it comes to wild nature, it seems like we finally pay close attention once it gets down to that last slice – as is the case now in too many places around the world, including right here at home.**

A few years back my wife and I were travelling in the province of Sabah in Malaysia. The region is known for its amazing rainforests and diverse wildlife like Asian elephant, rhino, and orangutan. But it hit me hard to see that much of the old forest was gone – converted to agriculture and palm oil plantations. Only slices of wild nature remain. I was filled with a mixture of sadness that so much had been lost – but also happy and grateful to be able to experience some of those last slices – thanks to the foresight of those who had protected them.

Where I live in the Sapperton neighbourhood of New Westminster, a last slice fight is brewing just down the hill from me. How it will end is anyone's guess. A few minutes' walk from my front door is a natural miracle made possible by years and years of volunteer efforts on a little stream with brown tinted water. The Brunette River and its salmon stretch all the way from the Fraser River right across Burnaby and into East Van where they

delight and amaze people. Wild salmon are not Asian elephants – but they are super cool and people love to see them in the neighbourhood.

What makes this all the more amazing is that the Brunette River forest is squeezed tight between the freeway, Skytrain, rail line, sewer line, and a ton of housing and streets – but it still lives to sustain the city's largest remaining urban salmon stream.

Now big oil wants to take their slice too.

The Trans Mountain pipeline expansion project has set up camp near the Brunette River and is getting ready to clearcut the trees in a long swath bordering the rail line and freeway. People here are upset and angry. Tree forts have been built in big old cottonwoods and maples to express disapproval of the tree felling. Sadly, people who stand in the way of Big Oil in the Brunette forest risk arrest.

Of course the tree felling is only part of the story. Increased oil tanker traffic and greenhouse gas emissions because our federal government is addicted to tar sands exports is a far greater threat to wild salmon – and us – in the long run.



Meanwhile on southern Vancouver Island another last slice fight is heating up with people demanding protection for wild nature there. The valley of Fairy Creek, located near Port Renfrew, stands out as starkly as any of the last slice areas in Malaysia. It's surrounded by clearcuts, tree plantations, and logging roads and is a chance to save a slice of the ancient forest valleys that once blanketed the South Island. The watershed doesn't harbour orangutans, but some of the trees that grow in the little valley are mind-blowing old – well over a thousand years – far older than any of the trees in Malaysia's surviving wild rainforests. A logging company wants to log it. The people say no. What will happen now?

If there is such a thing as natural justice, then surely it must include holding on to the last slices of wild nature for future generations. How is wild nature here and around the world to be healed if the last slices are not left to inspire and inform?

Joe Foy is the protected areas campaigner for the Wilderness Committee.



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