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Sentinel



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All Fracked Up!

The Costs of LNG to British Columbia

Edited by Alice de Wolff and Delores Broten



Bypassing Dystopia

Hope-Filled Challenges to Corporate Rule

Author: Joyce Nelson



Beyond Banksters

Resisting the New Feudalism

Author: Joyce Nelson



Changing the Climate

With the Seeds We Sow

Author: Dan Jason



Politically Incorrect

How Canada Lost Its Way and the Simple Path Home

Author: Rafe Mair

Features



Hope and Alterlives

Dr. Max Liboiron is weaving together Indigenous studies, pollution research, and decolonial scientific practices.

Democracy at Stake

From media literacy in the age of mis- and dis-information, to electoral reform, chronic deficiencies of political will, and how the current system generates hopelessness... all signs point to the need for a massive shake-up in how we do politics.

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Delores Broten

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One way or another...

While our so-called leaders focus on even more growth, Earth herself is groaning under the over-extraction and exploitation behind every new doodad. Even with faltering supply chains, worker shortages, and pandemic-related contraction of some parts of the economy, greenhouse gas emissions keep going up. And the circus that was the UN COP26 climate negotiations in Glasgow produced little but “A two-week celebration of business as usual and blah blah blah,” to quote Greta Thunberg.

Exponential growth doubles, regularly. That meagre 2 or 3% economic growth means a doubling of the fossil fuel economy every 30 years or so. Renewables can’t catch up or keep up. That is why we should – and could, according to Canadian economic and energy analyst Vaclav Smil – cut fossil emissions in half by returning to a 1960s North American standard of living – for everyone globally.

Many of us have memories of those times, and they were just not that dreadful. Kids were free to roam, the stars were visible in the cities at night, food was mostly home-cooked and wholesome, mostly local. Luxury was a 5¢ paper bag of cherries from the corner store, watching TV with friends, or a picnic in the park up the street. The one you walked to.

We could survive and be happy with a shift like that, and so could all our fellow travellers on this spaceship Earth. We will be giving up this crazy fixation on growth one way or another. Why not make it a planned recovery?

–Delores Broten, Comox BC, November 2021

We are sorrowful to announce that Don Malcolm, *Watershed Sentinel* co-founder and beloved partner of editor Delores Broten, passed peacefully in September after a long and valiant struggle with dementia. His wit and companionship are deeply missed.

At the 'Shed

'Tis the season: Our popular calendar+subscription bargain for only \$30 is back! Don't miss out on this great deal to treat your friends, family and of course, yourself. Order via this issue's insert, call us at 250-339-6117, or visit www.watershedsentinel.ca

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Catch up on the fracking gossip: All four of our webinars on fracking from the last year are now available on our website and youtube channel. You can find them in both places by googling “Fracking BC: Report from the People.”

Let's do less paper! Subscribers, please give us a bit of help and keep an eye out for your first renewal notice by email... or beat us to it! Check your expiry date (on the mailing label, back cover) and renew by phone, mail, or online via our website.

What a little water will do!

River Refreshed

After years of neglect, Mexico's Colorado River Delta sprang back to life this summer following a water release of 11 billion gallons, as part of a laboriously negotiated accord between the US and Mexico. The volume is less than 1% of the Colorado's average flow, but has still transformed dry, lifeless areas into thriving habitat for Vermilion Flycatchers, Yellow-billed Cuckoos, and more of the 380 bird species that use the delta. Water-sharing agreements, that started in 1922 between seven US states and Mexico, have until now absorbed nearly every drop of the once-mighty river, barring it from reaching the Sea of Cortez.

—www.audobon.org
October 5, 2021

WHO cuts pollution limits

Clean Your Air!

The World Health Organization has slashed recommended limits for several air pollutants and urged countries to tackle air pollution to save millions from premature death. In its first update in 16 years, WHO halved limits for PM 2.5 and PM 10 particulate pollution and cut the limit for nitrogen dioxide, primarily produced by diesel engines, by 75%. The new recommendations reflect the large body of recent evidence showing the great harms of air pollution at levels much lower than previously thought. Airborne pollution is estimated to kill over 7 million people every year – cutting the average life expectancy of the global population by two years.

—www.theguardian.com
September 22, 2021

Global observatory launched

Methane Minding

The UN Environment Programme (UNEP), with EU support, has launched a new methane monitoring observatory to drive action on reducing the potent greenhouse gas. The International Methane Emissions Observatory will focus initially on the fossil fuel sector, then agriculture and waste. A recent UNEP assessment shows that low or no-cost reductions could cut methane emissions nearly in half, and proven reduction measures could shave 0.28C° from the forecasted rise in the planet's average temperature by 2050. Methane is responsible for at least one quarter of global heating to date, the UNEP says.

—[UNEP press release](http://www.unep.org)
October 31, 2021

Access to clean air, water, soil

Radical Rights

In a resolution that caused a rare round of applause in the normally staid Geneva forum, The UN Human Rights Council has made access to a clean and healthy environment a human right. Proposed by Costa Rica, the Maldives, Morocco, Slovenia, and Switzerland, the resolution passed comfortably with 43 “yea”s. Russia, India, China, and Japan abstained from voting, while the US could not vote as it is not party to the 47-member Council. Inger Andersen, Executive Director of the United Nations Environment Programme, called the victory “a breakthrough moment for environmental justice.”

—www.unep.org
October 14, 2021

California to ban small gas engines

Breathe Easier



©Richard Carabay

The sale of new gas-powered lawn mowers, leaf blowers, weed trimmers, and chainsaws will be prohibited as early as 2024 under a new legislation in California. The law will then require small-motor landscaping equipment to be zero-emissions

– in other words, battery-powered or plug-in. Small, non-transport engines cause as much smog-causing pollution in the state as light-duty passenger cars, proponents of the law said, making phase-out of the machinery pivotal in improving California's air quality.

—www.latimes.com
October 9, 2021

Financiers not buying the greenwash

Biomass Booted

UK Biomass electricity giant Drax has been booted from the S&P Global Clean Energy Index over doubts its wood-burning power plants are sustainable. The exit comes amid mounting skepticism in the financial sector that bioenergy production can be considered carbon neutral – a concern some green groups have voiced for years. Despite the concern, the UK is expected to continue supporting the company with billions in subsidies. Drax was one of Europe's largest coal power generators before converting four power plants to biomass, with tax breaks and £800 million in subsidies from the British government.

—www.theguardian.com
October 19, 2021

Letters

Gidimt'en Demanding Divestment

Related to your recent piece on how Indigenous resistance has staved off 25% of US and Canada's annual emissions ["Indigenous Peoples' 'Outsized Success' in Confronting Climate Chaos," Odette Auger, Sept 9, www.watershedsentinel.ca]: Gidimt'en Checkpoint has issued a formal letter to 36 institutional investors around the world financing both Coastal GasLink, a controversial pipeline project that threatens Indigenous rights, waterways, and Canada's climate commitments, and LNG Canada, the largest proposed LNG terminal in Canada, under construction on the BC coast at Kitimat.

The Gidimt'en Clan are title holders with the authority and jurisdiction to make decisions about their unceded lands, and Coastal GasLink is illegally proceeding without their consent. Gidimt'en Checkpoint is a reoccupation site of Cas Yikh (Grizzly Bear House) territory where Wet'suwet'en people are asserting their jurisdiction over their unceded land.

The letter demands investors and banks – such as JP Morgan Chase, Citibank, RBC, Scotiabank, BMO, Royal Dutch Shell, and CaixaBank – cease and withdraw all support from Coastal GasLink and LNG Canada, and highlights how financing the controversial project violates Indigenous rights and breaks any investor commitments to racial justice, reconciliation, and social responsibility.

In early October, solidarity actions with Cas Yikh, currently defending ancient cultural sites on their unceded territory from bulldozers building the pipeline, sprung up across Canada and internationally. Over 100 organizations across the

world have endorsed #DivestCGL letter. #DivestCGL mirrors the campaign that targeted insurance companies backing the contested Trans Mountain pipeline – that campaign saw 16 insurers cut ties with the pipeline.

—Jennifer Wickham
Gidimt'en Checkpoint, BC

Code Blue

Throughout the province our drinking water sources are no longer safe, our homes are threatened and destroyed by floods, wetlands disappear at an alarming rate, we fret about rivers and streams running dry and fish in the mud, and at times our children cannot safely swim in our local home waters due to increased algae blooms. For too long communities across BC have paid the price for government inaction.

The good news is that the Province has made protecting clean water a priority with its cross-ministry mandate commitments to create a Watershed Security Fund and Strategy. If these are properly implemented through Indigenous co-governance structures, there is real potential for these commitments to result in the local resources and solutions our region needs to get ahead and break the costly cycle of perpetual crisis response.

With our communities and families bearing the costs of inaction, we can no longer wait. Now is the time for the provincial government to follow through on their commitments. Go to www.codebluebc.ca to take action.

—Danielle Paydli
Cowichan Valley, BC

Justified Ain't Justified!

I notice your email is left justified rather than full justified like the columns in the magazine. That makes the emails easy to read and the magazine difficult to read!

The main point is that ragged right is consistent with using the same space between words. Full page justified text must allow the space between words or letters to vary. Non-uniform spacing between words decreases reading speed by as much as 11% (Trollip and Sales, 1986).

Does justified text have anything going for it for purposes of word-processed documents? Well, its defenders will tell you that it looks “professional.” But it's a phony professionalism in that it comes at the expense of readability. Readability should be the first priority of any kind of typesetting or word processing! Please cancel my subscriptions, thank you.

—Cliff Turner
Gabriola Island, BC

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:

Watershed Sentinel

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or online at www.watershedsentinel.ca

“Absolutely ludicrous”: UBCIC

Deferral Deadline

On November 2, the BC government announced that First Nations have 30 days to decide if they would like to temporarily defer old-growth logging on their territories, or require further discussion. If deferment is chosen, logging companies can voluntarily pause cutting or be ordered to stop under Part 13 of the *Forest Act*, the province said. The Union of BC Indian Chiefs called the 30-day deadline “absolutely ludicrous” and said the province’s plan lacks proper discussion, analysis, due diligence, and funding to support First Nations in a transition from logging revenues. An independent panel of experts mapped priority areas of biodiversity loss for logging deferrals this year, and the province’s analysis shows roughly 4,500 jobs would be affected if all areas flagged were to be deferred permanently. The BC Council of Forest Industries claims job losses could be far higher, topping 18,000.

—www.cbc.ca, Nov. 2, 2021

—www.timescolonist.com, Nov. 5, 2021

CEPA loses members, dissolves

Pipeline Pooped

The Canadian Energy Pipeline Association (CEPA) announced it will dissolve after losing a “critical mass” of members. Since 2016, CEPA lost Enbridge Inc., followed by Pembina Pipeline and TC Energy. President and CEO Chris Bloomer said the remaining members are diversifying into hydrogen, renewable natural gas, biofuels, and carbon capture and storage pipelines. According to the *Globe and Mail*, no companies are looking to build major new pipelines in Canada.

—www.theenergymix.com

October 7, 2021

NS fossil gas project stopped

Win For Water

After years of opposition, protests, court proceedings, and delays, Mi’kmaw water and land defenders are celebrating the cancellation of the Alton Gas project on the Shubenacadie River in Nova Scotia. A press release from Alton Gas, a subsidiary of AltaGas, confirmed the news: “AltaGas has decided not to continue with the development of Alton and to move forward with decommissioning the project.” The company had planned to store 10 billion cubic feet of fossil gas in man-made underground caverns created by flushing out salt deposits with river water, with the resulting brine released into the Shubenacadie River over years.

—www.cbc.ca

October 22, 2021

Saik’uz declare: no consent, no logs

The Right Way

The Saik’uz First Nation, located west of Prince George, have announced that logging companies and the BC government must obtain their free and informed consent before logging on Saik’uz traditional territory. Although they are not against forestry, the nation said, decades of logging have nearly wiped out the old-growth, and the Saik’uz now want the province to work with them to develop rehabilitation and restoration projects. “Starting today, things in our territory will be done our way, the right way. The best traditions of the past combined with the best forest resources management practices of today,” said Saik’uz Chief Priscilla Mueller.

—www.aptnnews.ca

October 19, 2021

Québec bans O&G extraction

BOGA Party

Quebec has joined Belize, Costa Rica, Denmark, France, Greenland, Ireland, and Spain in permanently banning oil and gas extraction, becoming the first North American member of the Beyond Oil and Gas Alliance (BOGA). Climate Action Network Canada said Quebec’s decision is “the result of YEARS of organizing and a signal for other provinces, Canada, and the rest of the world.” Not everyone was pleased with the announcement: the province is preparing to go to court against Utica Resources Inc., which is alleging damages estimated between \$500 million and \$3 billion.

—nationalobserver.com, Nov. 1, 2021

—theglobeandmail.com, Sept. 22, 2021

Crypto-miners caught poaching gas

AB Bitcoin Bust



A bitcoin mining operation that secretly tapped gas wells for power for over a year has been hit with a \$7.1 million proposed fine by the Alberta Utilities Commission (AUC). Vancouver-based Link Global used four 1.25 MV gas generators to generate electricity from dormant gas wells at sites northwest of Edmonton and east of Calgary. The power was used to run computers that mine digital currency. The company failed to notify neighbours, the county, or the AUB, but authorities were tipped off by noise complaints.

—www.cbc.ca

Sept 30, 2021

Recycling Ghost Nets

Crafty repurposing of a deadly form of plastic pollution

by Kaylee Nitsiza

Nautical Waters is diving into confronting a certain contributing factor to plastic pollution: ghost nets. Founded by fifteen-year-old Natalie McIntosh, the small non-profit organization focuses on making our oceans cleaner by using ghost nets to create repurposed products. McIntosh is using plastic pollution to fuel a voyage into the depths of sustainability.



McIntosh was researching for a Science, Technology, Engineering, and Mathematics (STEM) class project when she discovered the existence of ghost gear – fishing gear that has been abandoned, lost, or otherwise discarded – and its relationship with marine life. “I couldn’t really get the thought of it out of my head because millions of animals were dying,” says McIntosh. She learned more about the issue, and then “decided to make a change.”

Fishing nets that have been lost or abandoned in the ocean are perceived as “ghost nets” based on their grave impact on the environment. The Food and Agriculture Association of the United Nations (FAO) explains the eerie term “ghost net”: “Ghost fishing occurs when lost or abandoned fishing gear stays in the ocean and traps fish or other marine life, indiscriminately killing whatever it catches.” A net can roam the ocean floor for hundreds of years, continuing to ensnare any marine life that it encounters. This poses a lethal risk to many aquatic species such as turtles, whales, sharks, and fish.

“With over 640,000 tonnes of ghost nets being retrieved every year from our oceans, we are focused on increasing awareness about this rarely discussed issue,” says McIntosh. She quotes the United Nations Environment Programme’s estimate that these

nets result in the deaths of more than 136,000 seals, sea lions, and small whales annually.

Inspired to shift the tides between marine life and plastic pollution, McIntosh reached out to local organizations across the East and West coast of Canada, such as Emerald Sea Protection Society in British Columbia and Coastal Action in Nova Scotia. This ultimately led to the found-

ing of Nautical Waters. McIntosh’s developing team primarily consisted of supportive family members. “But I would also say part of our team is our followers, because they’re the ones who really put Nautical Waters out there and tell people about it.”

Ghost nets retrieved by Nautical Waters are repurposed into many daily use objects. These conveniently crafted products are advertised to hundreds of followers on social media and sold online through their Etsy shop. McIntosh explains, “One of the things we do is take lobster rope and repurpose it into door mats. We also make baskets and bowls. We make different kinds of art as well as jewellery.”

McIntosh is working towards charitable status for Nautical Waters, and hopes to continue the conversation with a growing audience. Follow their contribution in retrieving these nets at www.nauticalwaters.com.

Kaylee Nitsiza is an Indigenous youth from the Northwest Territories, whose passion for storytelling and creative writing stems from her Tticho culture. She is currently a participant in the *Watershed Sentinel’s* Indigenous Junior Reporter Mentorship Program.

COP & Out

Half full or half empty, the hourglass is running fast

by Delores Broten

Did the 26th UN Conference of the Parties on climate change in Glasgow produce any useful results, other than boosting airline and travel industry profits?

Optimists insist there was a victory because, for the first time after 25 of these negotiations, the final consensus document discussed the need to reduce the use of fossil fuels. Pessimists are appalled that India insisted on changing the language about phasing out coal by 2050 to “phasing down.” Realists remember that India gets over 70% of its electricity from burning coal – electricity that it uses to make cheap goods for the West. Ultra-realists look at the emissions graphs and think it doesn’t really matter.

“In the end, everything becomes a bit of a fantasy,” said Philippe Ciais, a scientist with France’s Laboratory of Climate

There is a promise to cease and desist from “inefficient fossil fuel subsidies.”

and Environmental Sciences who tracks emissions based on satellite data. “Because between the world of reporting and the real world of emissions, you start to have large discrepancies.” (*Washington Post*, November 7, 2021)

Ciais was talking about the new scientific analyses which show that countries are under-reporting their emissions. Even the gloomy and urgent prognosis that nations must begin to cut greenhouse gas emissions now to halve them by 2030 is out

of line with the observed data. And that 2030 goal is to keep global warming to 1.5°C by 2050.

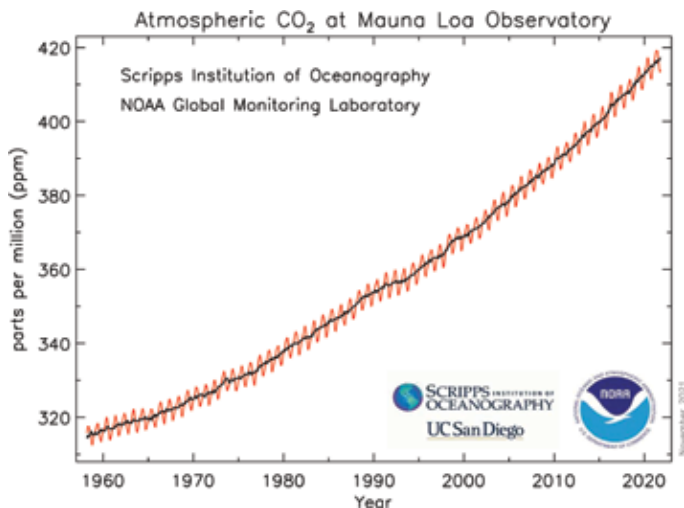
Realists contemplate the summer from hell here on the wet coast, with wildfires and deaths from heat stroke. Other places endured almost endless floods and landslides. The warming is now at 1.1°C.

The political rhetoric and promises are even more out of line, considering that only a handful of countries have fulfilled previous promises. As Kai Nagata wrote in the Dogwood Initiative newsletter (Nov. 6, 2021): “...dig beneath the headlines and you realize it’s mostly loopholes, denial, and delay.”

There is a promise to cease and desist from “inefficient fossil fuel subsidies,” as opposed, one supposes, to efficient ones. There is a promise to stop funding new fossil infrastructure in other countries, but not, of course, at home. There was no promise of funding for loss and damage to developing countries for the harm caused by wealthy nations’ emissions. There was aspiration to increase the Adaptation Fund to \$100 billion from its current \$1 billion.

There were deals to immediately lower methane emissions, which would immediately have a beneficial effect on the climate. Nonetheless, as *The Energy Mix* reported, “The world is still on course to warm by 2.4°C if all the countries’ promises in Glasgow are kept.”

The other bonus emerging from the global conflagration is that climate, forest, water, and justice activists from around the world met face-to-face. Hopefully they had time to build the trust necessary for stronger and stronger social movements, which will do the work the politicians and bureaucrats couldn’t.



GE Free (For All)

Industry's summer project: privatize seed regulation



The rationale for this move away from government product safety reviews to corporate safety assessments is based on assumptions about the safety of the new genetic engineering techniques, and the ability of product developers to successfully identify and screen out any unintended consequences from the process of genome editing. These assumptions are under dispute and the techniques of genome editing themselves are still under development. The National Farmers Union (NFU) said, “Both the CFIA and Health Canada present the current discussion around regulation of genetically modified plants as a safety issue, when in reality, it is an issue of power.”

It is not yet known where the consultations will lead but the proposals were already well-defined through department meetings with industry actors, and the UK government has recently chosen a similar path to remove regulation for genome editing.

by Lucy Sharratt

In the second summer of the pandemic, two government departments ran major public consultations on the future of regulating genetically engineered foods and seeds (genetically modified organisms or GMOs).

During the farming season, the Canadian Food Inspection Agency (CFIA) ran a consultation (May 19 – Sept 16) on removing itself from regulating many new genetically engineered seeds. The CFIA’s consultation overlapped with the end of Health Canada’s consultation (March

25 – May 24) on a similar proposal to do away with government safety assessments for many future genetically engineered foods.

The proposals are to remove government oversight from the introduction of genetically engineered foods and seeds that do not contain foreign DNA, produced through the new genetic engineering techniques called genome editing or gene editing (see “CRISPR Crunch,” *Watershed Sentinel*, April/May 2021). Companies would regulate their own products.

Industry expertise for corporate self-regulation

In developing their proposals, the departments showed a heavy reliance on industry expertise. Ahead of the public consultation, the CFIA and Health Canada held many meetings with industry representatives. These meetings included an “expert panel session” on October 16, 2020, “To seek expert input and perspectives on a list of scientific questions that have been identified by regulators and that are linked to the development of new regulatory guidance(...).” The meeting relied on

eight panelists – two from academia, two from Agriculture and Agri-Food Canada, and four from companies that sell genetically engineered seeds: Corteva, Bayer, Cibus and Calyxt. In fact, two of these four companies – Corteva and Bayer – together control approximately 41% of the global commercial seed market and 29% of the agrochemicals market.

This session was attended by 15 Health Canada employees, 18 Agriculture and Agri-Food Canada employees, and 20 from the CFIA. This is a high level of attendance to a meeting led by just a few experts, half of whom stand to profit from sales of regulated products. Of the five observers who also attended, three were from the biotechnology and pesticide industry lobby group CropLife Canada, whose members include the same four companies.

Blurring the public/private lines

The industry determination to shift from public to private regulation of seeds is illuminated by the new amalgamation of seed industry associations under the governance structure called “Seeds Canada.” In 2020, the NFU wrote to the Minister responsible for Consumer and Corporate Affairs to object to the use of “Seeds Canada” as a business name, arguing it was contrary to the *Canada Business Corporations Act Regulations*. Terry Boehm, former President of the NFU, said, “The name ‘Seeds Canada’ imitates the names of many government departments and agencies, such as Revenue Canada, Health Canada, Elections Canada ... and contravenes the regulation by implying the new organization is sponsored or controlled by or is connected with the Government of Canada.” Seeds Canada’s voting members are companies that profit from seed sales, including Corteva and Bayer.

“Both the CFIA and Health Canada present the current discussion around regulation of genetically modified plants as a safety issue, when in reality, it is an issue of power.”

— National Farmers Union

In their response to the proposals to remove government oversight from some GMOs, Seeds Canada told the CFIA that industry had the expertise to regulate itself: “The CFIA’s Plant Biosafety Office[’s] main safety concern is the potential capacity of a new variety to negatively impact the environment but it needs to be recognized that there are other institutions and industry-led processes or agronomic practices involved that enable environmental safety.” However, in their commentary, the NFU argued that, “Regulation is an element of our democratic governance system. Regulation puts boundaries around the activities of individuals and companies through a publicly accountable process.”

Lucy Sharratt is 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

Updates on this evolving issue and the consultation results are available at www.cban.ca/NoExemptions

Public furor over glyphosate triggers ministerial response

Days ahead of the federal election call, the Ministers of Health, Agriculture, and Environment together announced a pause on a proposal to increase Maximum Residue Limits of the herbicide glyphosate on some foods. This was a major concession to prolonged public pressure to stop glyphosate use. It also followed a political struggle over neonicotinoid pesticides and months of public reaction to Health Canada’s regulatory proposals on GMOs. The Minister of Health said, “Canadians rightfully expect transparency in any decision regarding pesticides use. Health Canada is a world-class regulator whose experts put the safety of Canadians first in everything they do. The decisions announced today will give them more tools to ensure pesticides used in Canada are safe and sustainable, based on the latest available scientific evidence.”

Groundwater

BC well licensing still stalled as deadline looms

by Gavin MacRae

The provincial deadline for non-domestic groundwater users to apply for a licence for their wells, or risk losing access to the water, is fast approaching.

As of March 1, 2022, unlicensed users will not be recognized under the “first in time, first in right” principle written

into BC’s *Water Sustainability Act*. In real terms that means long-established but unlicensed farm, ranch, commercial, and industrial groundwater users would be drawing water unlawfully, subject to fines and shut-offs, and could have their right to water usurped by newer, licensed groundwater users.

Despite these consequences, fewer than 5000 of the over 20,000 groundwater users in BC have applied for a licence, says Oliver Brandes, project lead at the POLIS Water Sustainability Project at the University of Victoria.

That’s only slightly higher numbers than in late 2019, when the *Sentinel* reported experts were already warning the licensing rollout was a “huge mess” stalled out at around 15% of users in compliance (“Desiccation Nation: Groundwater pumping drains rivers in BC and globally,” Vol. 29, No. 5.) Back then, the low numbers had forced the provincial government to extend their original 2019 deadline to 2022.

Well licensing is essential for the province to gauge groundwater extraction, which enables water management strategies to protect aquifers from depletion and to protect aquatic life against low stream flows in times of drought.

Brandes says there are several reasons why users still aren’t registering their wells: Garden variety procrastination, ineffective messaging from the province that has left some small-scale groundwater users “blissfully unaware” the deadline applies to them or unconvinced that licensing is a necessity, and a faction who believe they have an inherent right to pump groundwater that supersedes the common good, and don’t want government interference.

Water on BC’s Mind

Water is now the top environmental issue in the province, according to a public opinion poll released in October by the Real Estate Foundation of BC and the University of Victoria’s POLIS Water Sustainability Project.

Six in ten (62%) BC residents say they are concerned about pollution of lakes, rivers, and streams — ahead of all other environmental issues, including climate change (59%), declining salmon stocks (59%), and deforestation (55%).

The survey also finds increasing concern about community water sources. Two in three British Columbians (66%, up from 57% in 2018) now say they are concerned about the potential for a major water crisis in their community in the next few years. Concerns are highest on Vancouver Island, in the Lower Mainland, and in the Southern Interior, particularly among older adults (aged 65+).

Survey results also suggest that the public wants industry to shoulder more of the cost of protecting fresh water. More than three-quarters (77%) say that BC should make industry pay more to secure and restore BC watersheds.

Three in four (75%) British Columbians would like to see all water rental fees collected from industry dedicated to an independent Watershed Security Fund. Eight in ten (82%) say they want to see corporate polluters jailed and fined.

McAllister Opinion Research conducted the online survey of 1,012 English-speaking BC residents (aged 18 years or older) from September 17 to 20. The credibility interval is $\pm 3.1\%$ at a 95% confidence level. You can download the survey at:

www.refbc.com/sites/default/files/BC-Watershed-Security-Survey-2021.pdf

—Real Estate Foundation of BC and Polis

In a March 2021 letter to the Ministry of Forests, Lands, Natural Resource Operations & Rural Development, Brandes and Rosie Simms, a policy researcher and project manager at POLIS, advised the BC government to streamline the licence application process, prioritize groundwater use hotspots (such as the Okanagan, Southeast Vancouver Island, and the Lower Mainland), allocate more staff to the file, and conduct compliance checks to send a clear signal on the consequences of non-compliance.

Failure to institute a working groundwater licensing regime, Brandes says, will call into question BC's legitimacy to regulate water use.

“This government has made a lot of very strong and good commitments around watershed security ... to modernize land use planning, salmon strategy, *et cetera*. If you can't even regulate or manage groundwater, you can't do any of those things, and people begin to lose confidence in government as a manager of what is clearly a public resource. You get the classic tragedy of the Commons, with everybody either hoarding or doing their own thing. The salmon streams suffer, downstream users suffer, Indigenous users' rights are affected.”

But regardless of the stalled rollout, Brandes says concern over water as a scarce resource is mounting in BC after this summer's drought and heat – a scenario surely to be repeated in the years ahead.

Groundwater Drought Aftermath

by Jules Bernstein

Worldwide, an estimated two billion people depend on groundwater. However, excessive groundwater use combined with droughts has caused land surface to sink, damaging critical infrastructure including roads, buildings, and sewage and water pipes.

New University of California Riverside research shows groundwater takes an average of three years to recover from drought – if it ever recovers at all. For groundwater levels to recover after a drought, new precipitation requires time to percolate through the soil and recharge the depleted aquifer. The researchers show that this process can take several years longer in areas with deeper groundwater levels.

Published in the *Journal of Hydrology*, the new study is the first to examine groundwater response to droughts on a continental scale. Previous investigations of groundwater drought have relied most often on model simulations and covered smaller areas. This study relied on 30 years of daily measurements from 600 wells across the USA.

The researchers determined it takes on average two years for rainwater drought to become groundwater drought, though in some cases it takes as long as 15 years. Because of the long lag time, the effects aren't felt or seen immediately. However, they can be severe.

Groundwater drought combined with pumping can cause a gradual, uneven lowering of the land surface called subsidence. As the ground shifts and water level declines, contaminants in the soil such as arsenic can mobilize and poison the water. In coastal areas, aquifers depleted by drought and pumping can fill up with salty sea water, making them unusable for drinking or farming.

To reduce the damage from prolonged droughts, the researchers recommend storage of rain waters to recharge aquifers, improved irrigation efficiency, and less water-intensive crops.

—Press release, University of California, Riverside



Forest for the Trees

Climate-biodiversity crisis calls for transformational change

by Loys Maingon

*“This living flowing land
Is all there is forever”*
—Gary Snyder (1969)

COP26 opened with unprecedented dire warnings that followed up on the alarm from the UN Secretary-General Antonio Guterres that humanity is now in “code red.” In 2019 the scientific community called for “transformational change.” That never materialized.

It is becoming increasingly evident that climate change is developing a momentum of its own. Even the mechanistic models, which do not factor in feedback loops, make clear that climate change cannot be reversed, but only stabilized – even if we manage to limit fossil fuel consumption and our global CO₂ output.

In July, *Biodiversity and Climate Change: Workshop Report* was released by the IPCC (Intergovernmental Panel on Climate Change) and the IPBES (Intergovernmental Panel on Biodiversity and Ecosystem Services). This was the first official joint conclusion that the climate change crisis and the biodiversity crisis are in fact one and the same. They declared that one cannot address climate change without addressing biodiversity collapse.

Biodiversity, climate: same crisis

Endangered species protection is integral to addressing climate change. Nature is not here as a passive disposal system for



human pollution. Oceans and forests are not just “sinks” for 50% of our CO₂ production.

Nature is a complex living system which adjusts to shifting inputs and controls all of the planet’s biological, geological and

chemical cycling. As the chair of the report committee puts it: “Changes in biodiversity in turn affect climate, especially through impacts on nitrogen, carbon, and water cycles.” Preserving these dynamics is essential to addressing climate change and the future of humanity.

This relationship is non-linear. It is a web that humans share with other species. It creates a system of reciprocal obligations. When we interpret these organisms as providers of “ecosystem services” on which our survival depends, we tacitly acknowledge a contractual relationship that imposes fiduciary obligations on us, if not to other species, at the very least to future generations of our species.

Biodiversity and Climate Change is a timely acknowledgement of a shift in mainstream scientific thinking away from mechanistic models. In keeping with shifts in the scientific understanding of plant ecology, as illustrated by the work of Dr. Suzanne Simard and others, it confirms that plants are endowed with a measure of sentience, not that different from animals like humans. This planet is a living planet, and that the land about us is a living entity. It effectively states that an abiotic process, climate, is controlled by assemblages of biotic organisms of which human civilization is a beneficiary.

BC: “timber supply” über alles

When we realize that the forest is not a just a bunch of “resources” there for the taking, the game changes – which should modify our approach to forest management. The forest is a wood-wide web exchanging information, not just along the mycorrhizal network, but also acoustically with infrasound, and chemically with the release of aerosols and pheromones. The living world is a democratic information network we ignore at our peril, but to which science and Indigenous knowledge provide us access.

The amendments to the *Forest and Range Practices Act* introduced this year purport to “reshape” forest management in BC. In fact, they are a perpetuation of the same colonial-industrial mindset.

“Logging without collecting basic information on species present is a total **abdication of minimal science.**”

The *Forest and Range Practices Act* prohibits protecting wildlife or endangered species if it “unduly reduce[s] the supply of timber from British Columbia’s forests.” (Section 2 of the Government Actions Regulation, BC Reg 582/2004 to the *Forest and Range Practices Act*, S.B.C. 2002, c. 69).

This clause defines the actual intent and priorities of BC’s Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD), no matter how you “reshape” forest management. Shockingly, in BC endangered species “protection” lies with FLNRORD, a ministry mandated to allow species’ annihilation if they stand in the way of “the timber supply.”

This is a matter of considerable concern given the IPCC/IPBES urgent call to protect biodiversity, and the recent experience of species destruction at Fairy Creek. When Dr. Royann Petrell documented the previously-unknown presence of Western Screech owls (*Megascops kennicottii*), it became clear that BC Timber Sales and FLNRORD were not carrying out the biological assessments needed to ascertain which species, endangered or not, might be affected by logging.

Although the new amendments and FLNRORD tell us that they are proceeding “scientifically,” logging without collecting all neces-

sary basic information on species present in a management area to be logged is a total abdication of minimal science. Science does not matter when the overriding objective is “the timber supply.”

It is clear that FLNRORD is in deep conflict of interest and should not be allowed to oversee and control the fate of species at risk in BC. *Biodiversity and Climate Change* stipulates that the ongoing climate change and biodiversity emergencies need to be addressed together.

The responsibility for species at risk needs to be stripped from FLNRORD and moved to the Ministry of Environment and Climate Change where it rightly belongs.

Science calls for transformational systemic change. It is time to recognize our fiduciary obligations to a living world for future generations.

Loys Maingon is BC director, Canadian Society of Environmental Biologists.



Hope and Alterlives

Award-winning anticolonial research on pollution

by Odette Auger

Max Liboiron, Michif/Settler, starts their morning in the dark, running with their dogs and gathering food. Right now, that's rosehips and partridge berries. Then they start their day as an associate professor at Memorial University, in Beothuk and Mi'kmaq territory.

Dr. Liboiron is an Indigenous science and technology studies scholar of plastic pollution research. Liboiron is also the founder and director of the Civic Laboratory for Environmental Action Research (CLEAR). Liboiron has been recognized for early career excellence, and their

brilliance has a broad scope: in research, teaching, methodology – and hope.

On September 7, Liboiron was awarded one of the highest honours for early career academics. There's an interesting shift happening, when a researcher can



win an award from the Royal Society of Canada for their anticolonial science. Liboiron describes anticolonial sciences as being “characterized by how they do not reproduce settler and colonial entitlement to Land and Indigenous cultures, concepts, knowledges, and life.”

CLEAR marine science lab’s work is based on values of humility, accountability, equity, and anti-colonial research relations. CLEAR places “Land relations at the centre of our knowledge production, as we monitor plastic pollution in the province of Newfoundland and Labrador,” the website explains. “This requires critique but mostly it requires action.”

The community-based research specializes in how plastic pollution relates to food webs.

“We’ve stopped using toxic chemicals to process samples, which means there is a whole realm of analysis we can’t do. We also use judgmental sampling rather than random sampling in our study design, to foreground food sovereignty when we look at plastics in food webs,” says Liboiron.

“We don’t abstractly sample fish, we sample food – all that food has been eaten,” Liboiron says – meaning the samples are gathered from fishers as they clean their fish.

Pollution is Colonialism

Liboiron’s book *Pollution Is Colonialism* weaves together Indigenous studies, pollution research, and decolonial scientific practices.

In the book Liboiron describes pollution as “an enactment of ongoing colonial relations to Land,” adding that “Pollution is best understood as the violence of co-

The plastic-filled albatross is a symbol of hope, explains Liboiron. Of how we can thrive, despite the pollution, in this case.

lonial land relations rather than environmental damage, which is the symptom of violence.”

There are many ways to do environmental science and actions that are “specific, place-based, and attend to obligations,” says Liboiron.

Pollution is Colonialism explains how the “threshold theory” of pollution originated from a 1925 paper by H.W. Streeter and E.B. Phelps. Studying a specific stretch of the Ohio River, their theory of pollution was “that a moment existed when water could not purify itself and that moment could be measured, predicted, and properly called pollution,” explains Liboiron.

For almost a century now, it has served corporate interests as government regulations assume that “a body – water, human, or otherwise – can handle a certain amount of contaminant before scientifically detectable harm occurs.” The assimilation theory doesn’t account for plastics.

As Liboiron pulls “little pieces of burned plastic out of a dovekie gizzard,” they reflect, “the threshold theory of pollution and the future of plastics as waste look like bad relations.”

Liboiron expands upon these bad relations: “I mean the scientific theory that allows some amount of pollution to occur and its accompanying entitlement to

Land to assimilate that pollution. I mean colonialism.”

“The structures that allow plastics’ global distribution and full integration into ecosystems and everyday human lives are based on colonial Land relations, the assumed access by settler and colonial projects to Indigenous Lands,” for their own goals, writes Liboiron. Pollution science and activism need to “move beyond thresholds of allowable harm, beyond disposability, and beyond the access to Land that both thresholds and ‘away’ require.”

The book also discusses how any methodology is always part of Land relations, and therefore a very good place to start “to enact good relations (sometimes called ethics).” Liboiron describes the CLEAR lab in a tweet as “a methodology incubator for anti-colonial methods. From who we hire to how we dispose of animal parts, we figure out ways that settlers and Indigenous scientists can work in parallel.”

Liboiron specifies in *Pollution is Colonialism*, “The methodological question is: how do I get to a place where these relations are properly scientific, rather than questions that fall outside of science, the same way ethics sections are tacked on at the end of a science textbook?”

Continued on Page 16 ⇨

“How do I, as a scientist, make alterlives and good Land relations integral to dominant scientific practice?”

Albatross, alterlives, and hope

Remember the famously haunting image of the albatross, dead with exposed viscera, plastics filling its young body?

That photo is shared often, serving as an alarm and perfect powerpoint slide. Liboiron wants that to stop.

“Those images get me drove, as they say out here – they make me really angry,” says Liboiron. “Number one is that you’re showing the dead body of your kin, you don’t do that. Number two, they’re using a really fucked-up model of justice to say ‘if I don’t show you this gruesome image of this death, then justice won’t happen.’ If you have to traumatize people for justice, then your model of justice must be wrong.”

Thirdly, that image isn’t being used accurately, says Liboiron. Albatross don’t die from ingesting plastics. “Like many other bird species, albatross maintain their population by having lots of babies, and a lot of those babies die. But some small number of babies live on. It’s also how humans have kept our populations – back in the day, before vaccines.”

Most of the albatross live in one place, the Midway Atoll. They roost there, and return there every year. That is the one place in the world where marine birds are flourishing and increasing their population, says Liboiron. The increase is from an estimated 18,000 pairs in 1923 to 590,000 pairs in 2005.

“So it’s a really good example of ‘alterlife.’” Liboiron is using the term as coined by historian and technoscience

scholar Michelle Murphy, who describes the concept: “Alterlife embraces impure and damaged forms of life, pessimistically acknowledging ongoing violence, living within and against the worlds technoscience helped make. Alterlife is resurgent life, which asserts and continues nonetheless.”

“I use ‘alterlife’ instead of just saying something like: thriving in the world, even as a fucked-up world,” says Liboiron. “The idea of alterlife is that you don’t wait for the decolonial horizon to appear. You start working now, with what you have, to try and build the world you want – while also respecting that it is sick, and contaminated.”

“These birds that are totally full of plastic are some of the only marine birds that are flourishing – even though they’re also very full of plastic.”

The plastic-filled albatross is a symbol of hope, explains Liboiron. Of how we can thrive, despite the pollution, in this case. “A lot of folks say you only flourish if you’re pure,” says Liboiron. They note that there are many people who wouldn’t meet up to that term, or use it. “Whether it’s the ‘60s scoop or albatross or people with disabilities, that term is not available to us.”

How does Liboiron research pollution and teach environmental science to young people – without despairing?

Liboiron spends thirteen weeks of each semester teaching about theories of change and how there are multiple ones. Part of their work is teaching students “where do we put these little nuggets of information that come flying at us, so that we don’t end up under a giant pile of horrible facts?”

Expertise is feeding those into the larger picture, says Liboiron. “This is not the worst problem we’ve ever had to deal with, right. Intergenerationally we went through genocide in action. And, here we are,” they reflect.

“The larger picture isn’t that we’re all going to die,” says Liboiron. “The larger picture has a lot of different moving parts with a lot of unevenness and a lot of different ideas of justice and a lot of different long-term survivances.*”

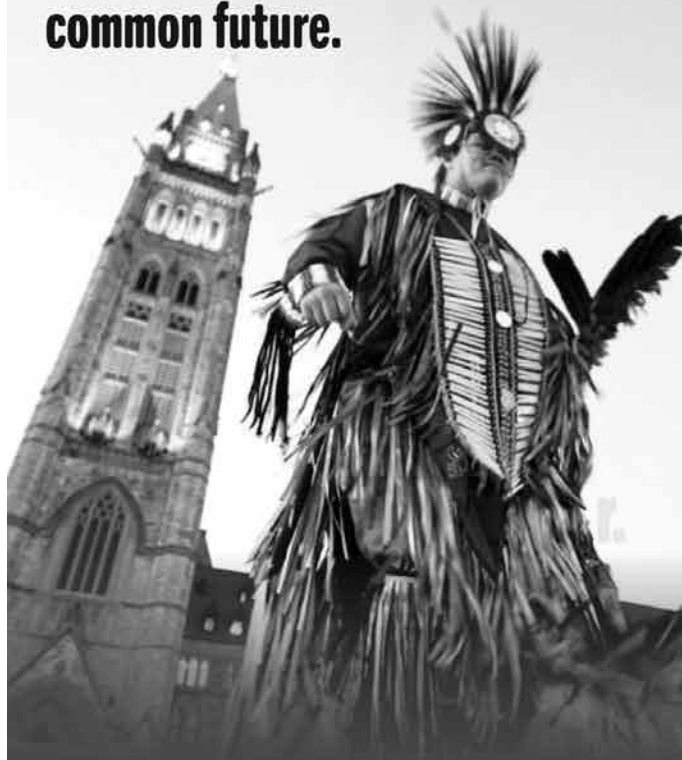
In Murphy’s view of alterlife, “the openness to alteration may also describe the potential to become something else, to defend and persist, to recompose relations to water and land, to become alter-wise in the aftermath.”

Liboiron shares, “We have some skills, and we have some knowledge to deal with very long-term and very grave problems – and still flourish, and laugh as part of our living.”

* *Survivance* is a commonly used term in Indigenous Studies: “Survivance is an active sense of presence, the continuance of native stories.... Native survivance stories are renunciations of dominance, tragedy and victimry.” –Anishinaabe cultural theorist Gerald Vizenor, in his 1999 book *Manifest Manners: Narratives on Postindian Survivance*.

A note on the singular “they”: While it has been criticized by grammar prescriptivists since the mid-18th century, it is widely used in modern English as, among other things, a gender-neutral personal pronoun, and has been used in English in several nuanced forms for centuries – the oldest appearing in writing around 1370 (about a century after the plural “they”).

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Gidimt'en

Upholding Wet'suwet'en Law

Gidimt'en Checkpoint press release

In mid-November, members of the Gidimt'en Clan evicted Coastal GasLink (CGL) employees from unceded Wet'suwet'en territory, upholding ancient Wet'suwet'en trespass laws and an eviction notice first served to CGL in 2020 by the Wet'suwet'en Hereditary Chiefs.

Employees were granted eight hours to peacefully evacuate the area, before the main road into the Lhudis Bin territory of the Gidimt'en clan was closed.

Sleydo', Gidimt'en spokesperson, commented on the eviction: "The Wet'suwet'en hereditary chiefs have never ceded, surrendered, or lost in war, title to this territory. That means that what they say goes. The eviction order from January 4th, 2020 says that CGL has to remove themselves from the territory and not return. They have been violating this law for too long."

The eviction also marked Day 50 of the establishment of Coyote Camp, where Gidimt'en members, under the direction of Chief Woos, have reoccupied Cas Yikh territory and successfully blocked Coastal Gaslink's efforts to drill beneath Wet'suwet'en headwaters.

The 1997 Supreme Court of Canada ruling in the Delgamuukw-Gisdaywa court case affirmed that Aboriginal title – the right to exclusively use and occupy land – has never been extinguished across 55,000 km² of Wet'suwet'en and Gitxsan territories. Despite this, in 2019 and again in 2020, the RCMP have trespassed onto Wet'suwet'en territory.

Sleydo' continued: "Wetlands have been destroyed. Our animals have been sick. We need to protect what is left for all the future generations. Wet'suwet'en law pre-dates Colonial Law. It has existed since time began in our territories, and we have that same fighting spirit that our ancestors fought so hard to keep alive in us so that we would be able to defend our future generations, this land and this water."

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Democracy

at

Stake

“The old is dying and the new cannot be born. In this interregnum a great variety of morbid symptoms can appear.”

—Antonio Gramsci

We were inspired to focus this issue on democracy after this fall’s snap election (dubbed by many “the most expensive cabinet shuffle in Canadian history”) resulted in basically no change to either parliament or the status quo. Sadder still, the drastically different thinking and policy approaches required face our multiple urgent, in-our-face crises were not forthcoming from any of the parties.

But we wondered what we’d gotten into as we started to realize just how broad a topic it is. From media literacy in this age of misinformation and disinformation, to electoral reform, the gap between what the people want and what they get, and how the current system generates hopelessness and apathy... whatever angle you look from, all signs point to the need for a cataclysmic shake-up in every aspect of how we do politics – a huge culture shift.

Science Matters

CBD gummy scam illustrates need for media literacy

by David Suzuki

Would you buy cannabis gummies from me? Apparently, hundreds of people would. Only trouble is, I don't sell them, and I'm not looking for business opportunities. But recent online memes, stories, and other disinformation have me not only selling and endorsing CBD gummies but also embroiled in a lawsuit with businessman Kevin O'Leary over them!

This got me reflecting on how and where people receive and process information. I've been a science communicator for more than half a century, so I've spent a lot of time thinking about how to get through to people. How do we ensure access to accurate, credible information so we can make informed decisions on issues that matter?

I've been fortunate to have worked many years at the CBC. As a public broadcaster, it's been producing quality content and upholding journalistic standards since before the Second World War – and helped me earn credibility as a communicator.

Today, I compare that type of relationship – one based on accurate and fair communication of relatively diverse types of evidence and viewpoints – to what I see online, on social media, and it's shocking. False information and scams abound, along with the worst political polarization in recent memory.

Fraud and misinformation have been around as long as we have, and perpetra-

tors have always seized on the best available technologies to reach people. But in under 30 years, the internet has become our main information source, and the ubiquity of social media has given rise to effective, inexpensive ways to spread information, from bad to good and everything in between.

“A democracy works best when people have access to **accurate, credible information.”**

Close to 60% of the world's population – 4.66 billion people – are active internet users. It infiltrates and informs every aspect of our lives.

Media literacy levels must match the sophistication of mass communication methods and big tech. But this isn't the case, and we're seeing the consequences, from increasing polarization to revelations about how platforms like Facebook, Instagram and WhatsApp foment division and conflict in the name of profit.

Environmentalists encounter the misinformation problem often. In 2021, a dwindling minority still reject the validity of climate science, despite an astounding amount of evidence proving the crisis is upon us and massive international scien-

tific consensus regarding the urgent and necessary path forward.

How can we come together, have informed conversations and enjoy the benefits of evidence-based decision-making? It's clearer than ever that a democracy works best when people have access to accurate, credible information.

We must see our information systems – news media, social media, etc. – as the foundations of democracy they are, and we must insist on keeping them, and the people who use them, healthy.

We should invest more public resources in ensuring our media industry is healthy, social media is properly regulated, and people are media literate enough to consume online information safely and responsibly. And we must take responsibility and get better at synthesizing information, considering various perspectives, and uniting behind solutions to the world's biggest problems.

It all begins with productive, respectful conversations based on good information. (And maybe some CBD – but not from me!)

David Suzuki is a scientist, broadcaster, author, and co-founder of the David Suzuki Foundation.

Young and the Zestless

Collective action can restore our faith in democracy



by Naia Lee

Every election, young people get to hear all the latest platitudes about the power of the youth vote.

It's true that we're the largest voting bloc in Canada. It's also true that we have little faith in democracy. Youth don't have much real experience with democracy in practice. As we navigate traditional family structures and our education system, we're often taught to obey authority without question. When we come of age, many of us aren't used to having ownership over our lives and our communities.

As a recent high school graduate, affordable housing activist, and now a climate justice organizer, I've worked on several electoral campaigns and engaged with politics in myriad ways. My most empowering experiences have been when I've worked with others to exercise our agency, build power and take collective action – actions like the climate strike and campaigns like the one aimed at passing Vancouver's Climate Emergency Action Plan.

Electoral cycles, on the other hand, just make me angry.

It took nine tries for a bill lowering the voting age to 16 to pass second reading in the Senate, and it's now in a lengthy consultation phase. During the September federal election, youth across the country were denied on-campus voting. And across the board there were few candidates with a vision that comes close to meeting our overwhelming current reality, let alone actually offering us hope.

Take the English-language leaders' debate. We just experienced a season with a hellish heat dome, town-destroying wildfires, the fourth wave of a deadly pandemic, and an ongoing drug poisoning crisis. On the TV screen though, it felt like the party leaders were living in an entirely different world than us.

The way that “affordability” and “carbon tax” were tossed around as uninspired buzzwords made it feel like we were living inside a giant bubble of cognitive dissonance.

A particular low point came when Liberal Leader Justin Trudeau declared that “one of the enemies of progressive politics is cynicism.” He's not wrong. But he's also a huge source of that cynicism.

The Liberal party has repeatedly claimed to be a climate leader, while jeopardizing our futures. When Trudeau is accountable to polluting oil and gas corporations instead of us, he shows us that we can't trust anything he says. Young people see right through his formula. And thanks to him, we're losing confidence in our democracy, too.

This isn't just an election cycle problem. Young people's cynicism about democratic processes is connected to a crisis of faith about the way we do politics and make change.

Younger millennials and generation Z were most commonly taught about change-making through individualized corporate activism, as seen in the WE "movement" (and its colossal failures). Rather than addressing the primary causes of global inequality, WE built a brand encouraging passionate young people to "save" children in other countries.

Narratives like WE's advertise a market-based approach to solutions, and constrain our collective imagination in a way that only political parties do more effectively. Both use the guise of progressivism to distract us from real issues in our communities, and to stifle our understanding of what change is realistically achievable.

When youth are told to put our unflinching trust in the democratic process – and then it fails to deliver – it's hard not to be increasingly skeptical of democracy, let alone our control over it.

Despite our cynicism, though, we're not without hope. Young people know that we need to change how our society engages with democracy. "Get out the vote" campaigns and even voting itself hardly give anyone a real sense of agency. But learning how to organize will.

Researcher and organizer Jonathan Smucker describes organizing as the act of creating "a cohesive political force that can contest power." Voting becomes the very last thing that you do. Your focus is on exposing root causes, politicizing the everyday spaces you're a part of, and pressuring leaders to keep their promises.

"We just experienced a hellish heat dome, wildfires, a deadly pandemic, and an ongoing drug poisoning crisis. On the TV screen, it felt like the party leaders were living in an entirely different world than us."

Smucker also reminds us that knowing what is wrong with society is very different from understanding how to change it. But it's exactly that understanding which can counter hyper-individualized, neoliberal "activism" and restore our trust in collective action.

When we engage in a conversation about how someone's life will be materially improved by a broader solution, and when we come together with thousands of others, we take back control of democracy. When we volunteer for champions who see the value of people power and political power, we're ensuring that the fate of our communities is in our own hands.

In doing so, we can build movements that popularize real solutions and push our leaders to actualize them, instead of professing false hope that a group of out-of-touch candidates will deliver.

The COVID-19 pandemic has decimated lives, and recent climate impacts have given us a taste of future chaos. Yet we also know that we can transition our energy system and create communities where we all have what we need to thrive.

If everyone, including young people, envisions the task ahead of us as a collective project, we can reimagine what is possible for society. If we build the power to actually make it happen, we can reframe what we deserve from our government. Only then will we be able to reclaim our faith in democracy.

Naia Lee is a student and an organizer with Sustainabiliteens and Climate Strike Canada. Find her on Twitter @naiaehlee.

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What's the Hold Up?

Most Canadians want just transition & fossil emissions cap



by John Woodside

A new poll from Abacus Data shows Ottawa lagging behind what a majority of Canadians want when it comes to climate action and implementing a just transition for fossil fuel workers.

The poll, released Oct 14, shows two-thirds of Canadians want the federal government to take bolder, faster action to respond to climate change, including phasing out taxpayer subsidies to the fossil fuel industry, investing in renewable energy, and introducing the just transition legislation promised years ago.

Specifically, it found more than 60% of Canadians want to see a cap placed on oil and gas emissions, a plan to stop taxpayer subsidies to oil and gas companies, “swift” implementation of a

just transition policy, and investment in renewables. Fifty-nine per cent said they don’t want a dollar more given to the Trans Mountain pipeline expansion project (TMX).

The poll makes it clear that a majority of Canadians understand the implications of climate change and the economics of a changing energy landscape, and want to see the federal government align itself to this reality.

Moreover, the poll found about 60% of Canadians are “frustrated” with Prime Minister Justin Trudeau specifically for not yet implementing a 2015 promise to stop taxpayer subsidies to the fossil fuel industry, and a 2019 promise to introduce just transition legislation. As such, 65% of Canadians want climate action to be a priority in the government’s first 100 days.

Recently, Ottawa launched a just transition consultation to inform the legislation and has said it will phase out subsidies to the fossil fuel sector, but despite the promises, billions are still handed over to the industry every year. A recent analysis found federal Crown corporation Export and Development Canada gives \$13.3 billion per year in public finance for fossil fuels annually on average, and that is one of many avenues for the sector to get public dollars. A report from Environmental Defence earlier this year calculated at least \$18 billion was given to the fossil fuel sector in 2020 alone.

“Canadians voted for more climate ambition and action – now it’s time for Prime Minister Trudeau to listen to them, and there is no time to waste,” said Caroline Brouillette, domestic policy manager with the Climate Action Network, in a statement. “Mandate letters, soon to be issued from the prime minister, and the throne speech must reflect climate as a key priority,” she added.

The Prime Minister’s Office did not return a request for comment.

Regionally, the poll found the most support for climate action in Quebec and British Columbia, while the Prairie provinces had somewhat less support. Still, even in Alberta, which had the

least support out of any province for climate action, a majority want to see more done.

Fifty-two per cent of Albertans polled supported a cap on oil and gas emissions, compared to 31% who were against, and 17% who were unsure or neutral. Similarly, 52% supported ending taxpayer subsidies to the fossil fuel sector, compared with 28% who were against, and 20% who did not know or were neutral.

When it comes to introducing just transition legislation, most Albertans can see the writing on the wall. Sixty-one per cent support just transition legislation, compared to 17% who were against it, and 22% who were unsure or neutral.

The poll also found broad cross-party support for these measures. For people who support the Liberal Party, 72-78% want to cap emissions, phase out subsidies, and implement a just transition, compared to 71-75% of people who support the NDP, 73-74% of Bloc Québécois voters, and 67-77% of Green Party supporters.

Nearly a majority of Conservative Party supporters wanted to see action, with 49% wanting just transition legislation, 47% wanting a cap on oil and gas emissions, and 44% wanting to see a phase-out of public subsidies to the fossil fuel sector.

“Despite the promises, **billions have been handed over** to the fossil fuel sector – \$18 billion in 2020 alone.”

“Canadians have sent roughly the same MPs back to Ottawa to get the job done on climate. All parties in the House can and should contribute to moving the climate legislative agenda forward,” Équiterre director of government relations Marc-André Viau said in a statement.

“Hopefully, MPs got the message, and they will now put partisan politics aside and work together in the 44th Parliament.”

The online poll surveyed 1,500 Canadians from Oct. 1 – 4 and was commissioned by Stand.earth. It has a margin of error of 2.53% 19 times out of 20.

John Woodside is a Local Journalism Initiative Reporter for the *National Observer*, where this article was originally published.

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WHAT REALLY MATTERS TO YOU?

- ✓ A clean energy future
- ✓ A more just world
- ✓ A secure retirement

Germany and Canada

Pro-rep affects democracy far beyond the numbers

by FairVote Canada

In September, Canada had a snap election. With the support of about 32.6% of Canadian voters, Trudeau's Liberals secured 160 seats – just ten short of a majority. We have another Liberal minority government.

Across the ocean, Germany also just had an election. The contrast to Canada's election couldn't be more stark. It wasn't just in the numbers – it was in the politics.

The difference pro-rep makes

Germany has elections every four years. With proportional representation, they always result in a coalition government. Parties always govern together.

An early election is possible in Germany, but it has only happened once since 1990. When parties know none of them can grab all the power, the incentive to call an early election evaporates. Meaningful cooperation becomes the best path forward. That's what voters expect.

In Canada, with first-past-the-post, those incentives are turned on their head. Since 1990, we've had five early elections. It's the system. We alternate between false majority governments – where one party gets all the power with about 39% of the vote – and minority governments.

Our minority governments tend to last only about two years. This is because our

biggest parties look at minorities as an inconvenient (and unpleasant) accident – a detour on the road to having complete control of Parliament. As soon as one party is up a few points in the polls, someone will trigger an early election (and all parties will blame each other for it).

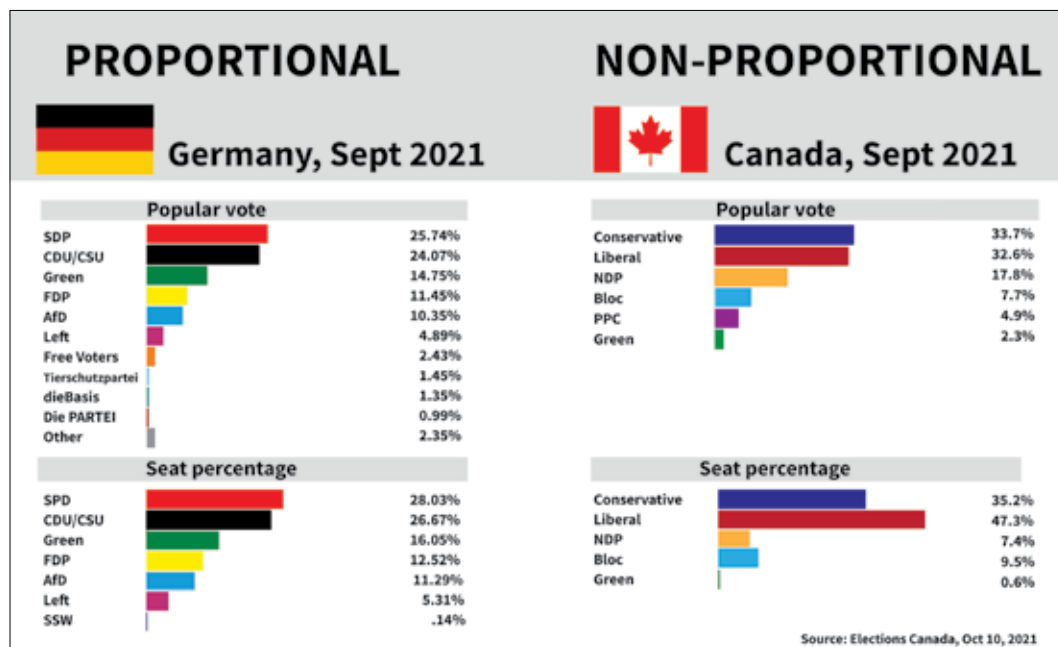
How did the elections turn out differently?

In Canada, 62.25% of eligible voters showed up. In Germany, 76%.

In Canada, this election was characterized by the usual divisive fearmongering. An exit poll conducted immediately after the election showed a whopping 49% of voters were voting to stop a party they dislike, rather than to elect a party they support. In Germany, voters could vote for the parties and candidates they believed in, knowing their vote would contribute to a proportional result.

In Canada, only 48% of voters made any difference. Most voters elected no-one, whereas in Germany, 91.4% of votes went towards electing an MP – and helped determine the makeup of Parliament.

Despite all this, by far the biggest contrast is in what happened AFTER the election.



Co-operation vs total power

The differences between first-past-the-post and pro-rep were laid bare in the responses of the leaders and their teams.

In Canada, Gerald Butts (former Principal Secretary to Justin Trudeau) took to Twitter, bragging about how the “geniuses” at the data company hired by the Liberals had excelled at micro-targeting a handful of voters in swing ridings. Their measure of success? Delivering the Liberal Party the most seats with the fewest votes – a 50-seat bonus over their popular vote. The Liberals were a mere 16,870 votes short – in 11 swing ridings – of achieving 100% of the power. Butts declared himself “awestruck.”

How did Justin Trudeau react to the results on election night? By telling Canadians that they had (again) given his team a “clear mandate.”

In Germany, the contrast in the message from the party leader most likely to be the next Chancellor couldn't be more stark. Olaf Scholz of the (centre-left) Social Democratic Party (SPD) described the

“If you want to form a government together, you have to have trust, because later we will have to solve many tasks that were not foreseeable at the time of the coalition negotiations.”

—Olaf Scholz, SPD, probable next chancellor

meaning of the election results like this: “With their votes, they have made three parties stronger: the Social Democratic Party, the Greens, and the Free Democratic Party. This is a message to these three to get the job done and move to form a government together.”

Reflecting on his former coalition partner (the party he just defeated): “Ms. Merkel has a successful government record, and even as a Social Democrat, it is not difficult for me to acknowledge that. We were, after all, part of the coalition in three of the four Merkel governments and pushed through many things that were important to us.”

Reflecting on his future hopes for the “big tent” parties, he goes on to say: “Of course I would also like to see a conservative big tent party that has its own answers to the questions of the 21st century. That would be worth every effort.”

Can you hear the contrast between their political culture and ours as Scholz reflects on his former coalition partner, potential coalition partners, and his hopes for the kind of political diversity that is good for Germany? It's not all about him. It's not all about victory for his party.

Try to imagine Justin Trudeau saying any of these things right after the election.

Right now in Germany, three parties are negotiating the “traffic light” coalition. (Red = Social Democratic Party, Yellow = Free Democratic Party, and the Greens). Immediately after the election, the parties jumped into negotiations. First the two smaller parties, the Free Democratic Party and the Greens – who have substantial policy differences – met alone. The result? FDP leader, Christian Lindner, posted: “In the search for a new government, we are seeking out common ground and bridges over our divisions. And we are even finding some of those things. Exciting times.” Then the three parties began negotiating together.

Political Systems and COVID-19 Outcomes

A peer-reviewed study published in October has identified proportional representation as a key factor in better outcomes on COVID-19. Researchers studied 42 countries (mainly OECD members), matched to three pandemic time points, and examined the effects of demographic and socioeconomic indicators, societal values, public trust, healthcare systems, and national-level political systems.

According to the study authors, “The strongest, and least anticipated, findings come from the political characteristics.” Among their key findings: Specific political system features, including proportional representation electoral systems and the absence of a strong single-party majority, were consistent features of the most successful national responses.

The authors had this to say about the connection between voting systems and COVID-19 response: “Turning to electoral systems, the six countries keeping their death rate growth below 50% all had proportional representation electoral systems, with the top two having customized variants.”

—When Covid-19 first struck: Analysis of the influence of structural characteristics of countries – technocracy is strengthened by open democracy, Rigby, Zdunek, Pecoraro, Cellini, and Luzi, Oct 4, 2021, <https://doi.org/10.1371/journal.pone.0257757>

Continued on Page 26 ⇨

Scholz reflected on the ingredients for successful collaborative government: “If you want to form a government together, you have to have trust, because later we will have to solve many tasks that were not foreseeable at the time of the coalition negotiations.” He added, “One lesson from real life is that genuine affection is the result of serious engagement.”

How are the negotiations going? According to Svenja Schulze, member of the SPD leadership committee and current Environment Minister: “It’s a very trusting, very serious atmosphere, and we are talking very intensively about policies ... you can sense this unity.”

Snap election: the people prefer proportional

New data from the Angus Reid Institute finds that for many, the result of September’s federal election would have provided more satisfaction had it been under a different seat allocation method. When shown the seat distribution under first-past-the-post (FPTP) and proportional representation (PR) systems, three-in-five (61%) say they preferred the hypothetical makeup of the House under the latter. Almost every region of the country leans at least slightly toward PR when choosing between the two. The split, however, is near even in Quebec (51% PR, 49% FPTP).

Prime Minister Justin Trudeau has been criticized over the past six years by those who expected his promise of proportional representation in the 2015 election campaign to come to fruition. While he argued there was “no consensus” for reform after he first got elected with a majority government, Trudeau said he was open to electoral reform again near the end of the most recent campaign.

—www.angusreid.org

A motion in motion: national citizens’ assembly on electoral reform

On June 22, 2021, three federal parties (Liberals, NDP and Bloc) voted for NDP Democratic Reform Critic Daniel Blaikie’s motion at the Procedures and House Affairs committee to study a National Citizens’ Assembly on Electoral Reform. (The Green Party also supports this, but did not have a seat on the committee.) The vote passed 7 - 4, with only the Conservatives voting against it.

According to Anita Nickerson of Fair Vote Canada, September’s snap election meant the motion was tossed out, but “My guess is that we could see the motion to study a citizens’ assembly back in the winter or the spring.” Fair Vote states on their website (www.fairvote.ca), “We will do everything in our power as a grassroots citizens’ campaign to put electoral reform back in the spotlight.”

Try to imagine this in Canada: Three parties, immediately after an election, sitting face to face in earnest, talking “intensively about policy.” Seeking to find common ground. To build “trust” and “unity.” If it’s hard to imagine, it’s because first-past-the-post makes it all but impossible, even with a minority government.

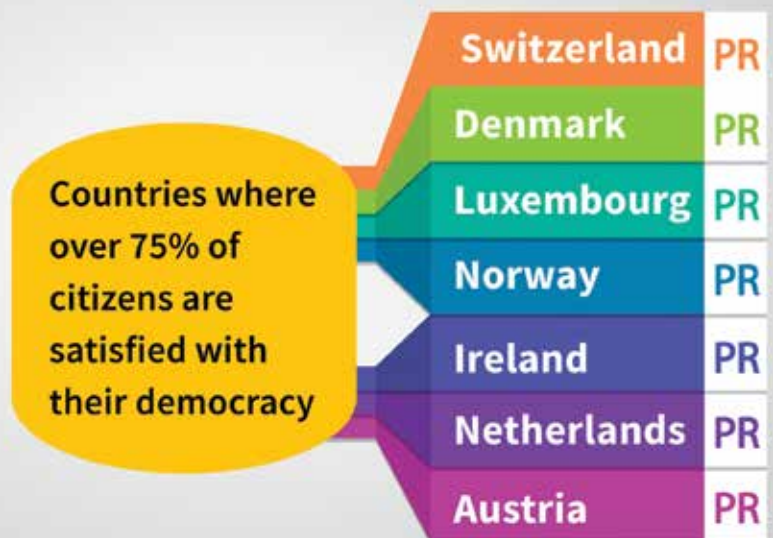
In Canada, NDP leader Jagmeet Singh was soon publicly threatening to withhold NDP votes on legislation, saying Trudeau didn’t seem the least bit interested in having a conversation.

Conservative leader Erin O’Toole publicly assured voters that his party was ready for another election in 18 months.

Yes, Canada, we have a minority government. No, we do not have proportional representation. Not by a long shot.

Adapted from www.fairvote.ca/2021/10/14/germany-and-canada-a-sharp-contrast-in-what-democracy-can-be/

Global Satisfaction with Democracy Index 2020



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Cambridge University, Centre for the Future of Democracy

Marañón Ser Vivo!

Groundbreaking lawsuit aims for river's legal personhood

Press Release, International Rivers

Huaynakana Kamatahuara Kana, a Kukama women's federation in the lower Marañón Valley, Peru, has filed a groundbreaking legal action demanding that the Peruvian government recognize their river as a legal person, or "Ser Vivo" (Living Being). A coalition of national and international organizations including the Institute for Legal Defense, International Rivers, and the Earth Law Center are providing legal aid and support. A coalition of Canadian lawyers and academics have presented an *amicus curiae* in defense of the petition.

For many Indigenous people like the Kukamas, their rivers are living beings with rights that should be recognized and protected. The Marañón River is the source of food, water, and transportation for the Kukama people; it is also the center of their spiritual universe. After watching their river suffer contamination over decades, especially from systemic oil spills that have destroyed its fragile ecosystem and fisheries, the Kukama women decided to take legal action.

On September 8, the women's federation and their lawyers filed a legal action in a Peruvian court to have their river recognized as a legal person. The petition accuses various government entities of violating the fundamental rights of the Marañón River, including Petroperú, the state-run oil company, the Ministry of the Environment, and the Ministry of Energy and Mining.



**"We do not live on money.
We live from what we
grow on our land and our
fishing. We can not live
without fish."**

—Isabel Murayari, Board Member,
Huaynakana Kamatahuara Kana

The Kukama women are asking for recognition of specific rights for the Marañón River including: the right to exist, to flow, to live free from contamination, to feed and be fed by its tributaries, and to be protected, preserved, and restored.

These rights are in accordance with the Universal Declaration of the Rights of Rivers. Growing comparative jurisprudence worldwide, such as Colombia's Atrato River, New Zealand's Whanganui River and Canada's Magpie River, is providing rights for rivers.

Huaynakana was founded in 2001 to promote the rights of Kukama-Kukamiria women and protect their environment and culture. The federation represents women from 28 Indigenous communities in the district of Parinari on the Marañón River in Peru's northern Amazon region.

Canadian lawyers and academics from three universities filed an *amicus curiae* in the Peruvian court on September 29 to support Huaynakana's lawsuit. The document shows how various provincial governments have recognized the right of Indigenous people to manage their own resources. The *amicus* describes the growing importance of Indigenous law within the environmental impact assessment process in Canada.

Huaynakana's members say their river must also be protected because of its cultural and spiritual value. Huaynakana Board Member Isabel Murayari adds that the women filed their legal action to protect the river for their children and grandchildren.

The lawsuit also calls on Petroperú to carry out maintenance and repairs on its leaky North Peruvian Pipeline, and for the establishment of local river basin management committees to ensure the participation of Indigenous people in the administration and conservation of their water resources.

Earth Jurisprudence

We don't organize the land, the land organizes us

by Mike Bell

The term Earth Jurisprudence means Earth laws. When most of us think about laws we tend to think about human laws. But human laws generally do not recognize Earth as having its own laws. Our environmental laws for the most part are designed to determine and perhaps limit the amount of damage we can do to Earth or to the environment.

I discovered Earth Law when in 1980 our family moved to Baffin Island in the high Arctic. I was hired as superintendent of social services for the Baffin region. When I first got there I thought of land as “real estate.” But later when I flew around to the thirteen communities to discuss our services, I learned something else.

I would be in community meetings and, with the help of an Inuktitut interpreter, trying to get feedback on our services. Inevitably the elders would get up and say, “Learn from the land.” In every community they would repeat their mantra. I realized they weren't talking about real estate. They were talking about something else, something that was living.

A few years later, I opened my consulting firm in the Northwest Territories. On one occasion I was asked to help a Dene community develop their own land claim. Southern corporations were trying to move in and access their carbon resources.

The first morning we had a discussion about how they wanted to protect and organize their land. The discussion was getting nowhere. At one point during the coffee break an elder came to me and said, “Mike, sorry about the confusion. This discussion about organizing the land was difficult for us. In our culture we don't organize the land. The land organizes us.”

In the 1990s, in the run-up to the creation of Nunavut, the Inuit homeland in the high Arctic, there was a great deal of discussion about laws. Here is a comment from Inuit elder Mariano Aupilaarjuk:

“We are told today that Inuit never had laws or maligait (“things that have to be followed”). Why? Because they

are not written on paper. When I think of paper I think you can tear it up and the laws are gone. The maligait of the Inuit are not on paper. They are inside peoples' heads and they will not disappear or be torn to pieces. Even if a person dies, the maligait will not disappear. It is part of a person. It is what makes a person strong.”

The first time I heard the term “Earth Jurisprudence” was in 2000 at a Gaia Foundation workshop in Virginia. The conference opened with Thomas Berry outlining the basic principles of an Earth Jurisprudence. Here they are. (I've taken some steps to simplify the language.)

1. The planet Earth is a single community. Earth, the human species and the other-than-human species have rights.
2. Rights originate from where existence originates. The fact that something comes into existence gives it the right to exist.
3. The natural world and its species get their rights from the same place humans get their rights – from the universe that brought them into existence.
4. The universe is a communion of subjects, not a collection of objects. As subjects, the members of the Earth community are capable of having rights.
5. Every component of the Earth community has three rights: the right to exist, the right to habitat, and the right to fulfill its role in the ever-renewing process of the Earth.
6. All rights are species-specific and limited. Rivers have river rights. Birds have bird rights. Insects have insect rights. Humans have human rights.
7. Rights must be seen within the context of the laws guiding the natural world and the Earth community. Every member of the community is dependent upon every other member for what it needs for its own survival and nourishment. This mutual nourishment includes predator-prey relationships.
8. Human rights do not cancel out the rights of other species or components of the Earth.
9. Human rights and laws flow from the rights of Earth and its laws. Humans do not give rights to Earth. Earth gives

rights to us humans through the universe by bringing us into existence.

10. In a special manner, humans have a right to have the natural world provide the wonder we need for human intelligence, the beauty we need for human imagination, and the intimacy we need for human emotions.

A sense of direction

There is an old story about a young couple out for a drive who get lost. They stop in a gas station to ask for directions. The attendant comes out, they tell him where they want to go and ask him for directions. He pauses for a moment, looks down the road and says, “You can’t get there from here.”

Getting to an Earth Jurisprudence is much like that. You can’t simply decide to take the usual route – using our current jurisprudence systems and laws that prioritize property and dominance, in the hope that they will lead us to an Earth Jurisprudence system. We are earthlings. We must accept this reality. It is Earth Jurisprudence that must govern the creation of our legal systems.

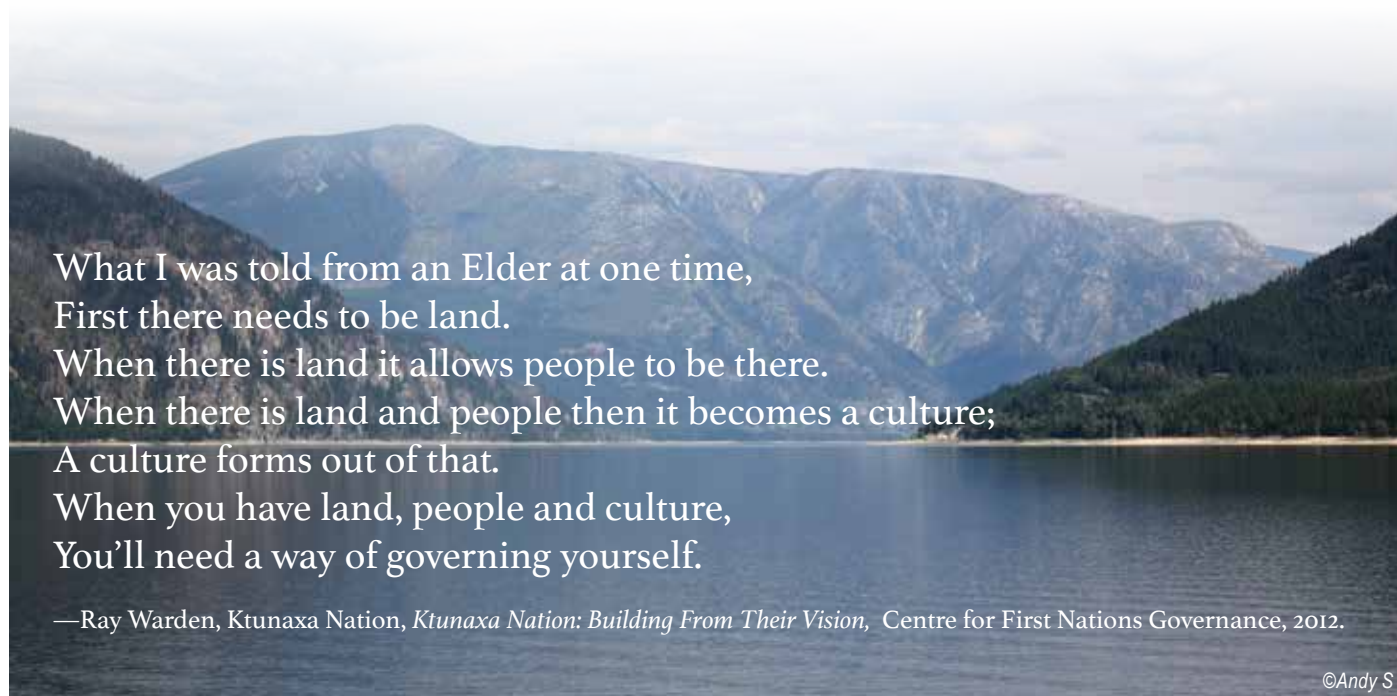
Scientists tell us that the Earth came into existence about four billion years ago. From that time to now, the living Earth has

created us and other species. We have all depended upon Earth for our continued existence through the process of evolution. More recently with the development of neoliberal economic systems, we humans have begun to determine which species and resources will exist for our benefit, and which will not.

Today, climate change is threatening our continued existence. Many of our human laws are complicit in this situation. It is imperative that we stop what we are doing and instead introduce laws that develop and sustain a mutually enhancing relationship between ourselves and Earth.

We do need to adapt some of our current systems for the short term – but we must also introduce Earth Laws. Communities all over the world are engaged in this Earth Jurisprudence effort. It is a difficult struggle – we find ourselves existing between two worlds – but it is possible.

Mike Bell is co-ordinator of the Comox Valley Climate Change Network.



What I was told from an Elder at one time,
First there needs to be land.
When there is land it allows people to be there.
When there is land and people then it becomes a culture;
A culture forms out of that.
When you have land, people and culture,
You’ll need a way of governing yourself.

—Ray Warden, Ktunaxa Nation, *Ktunaxa Nation: Building From Their Vision*, Centre for First Nations Governance, 2012.

©Andy S

Once

by Anne Hopkinson

Once you see a glass sponge reef
you always see it,
fragile and strange, alive,
a structure like tubular vases made by drunken elves,
lopsided and droopy,
a world of animals fused together on a barren seabed.

Once you learn its story you retell it,
its origins in Jurassic times,
its composition of spicules,
a rare and tenuous community of creatures,
filtering bacteria and plankton in ocean currents,
unique, an essential habitat
for rockfish, crabs, and shrimp.

Once you read the law, you doubt its strength.
Trawlers' weighted nets drag the bottom
and crush the reef in passing.
Drills swirl sediment
to choke and smother
a glass sponge reef.

Once you sail Hecate Strait, you love it,
calm seas at dawn, waves whipped by storms.
In Georgia Strait and Howe Sound
smaller reefs line the bottom.
Boat traffic churns above them,
anchors like wrecking balls hit the reef.
Count the ships, figure the damage.

Think of stewardship, of centuries,
our fragile contract with nature:
the only glass sponge reefs in the world.
You sign that petition, send that letter, stand
at the legislature, not once – once is not enough –
but again and again
until the law is strong, until it is enforced.

Citation:

© Anne Hopkinson, reprinted by permission of the author.
“Once” first appeared in *Refugium: Poems for the Pacific*, ed.
Yvonne Blomer, Caitlin Press, 2017.

Cumulative Effects

Precedent-setting win for Blueberry River First Nations

by Ben Parfitt

In 1914, the Fort St. John Beaver Band selected land for a reserve in what is now northeast British Columbia. The land was known in the Dane-zaa language as *Suu Na chii K'chi ge*, or “place where happiness dwells.”

But happiness is in short supply these days. A sprawling network of natural gas industry wells, clearcuts, and massive hydroelectric dams and reservoirs have turned the old reserve and surrounding lands into an industrial sacrifice zone where the caribou are all but gone, and moose, marten, and fisher are few and far between.

Sadly, the writing was on the wall decades ago that this would happen. But provincial government ministries and agencies, which approve such developments, never paid serious attention to the issue of “cumulative effects.”

The result was that a key provision of Treaty 8, a document signed by members of the Canadian government and the region's First Nations in June 1899, was violated. That provision was that First Nations could hunt, fish, and trap as before.

Fast forward to June of this year, and the long-awaited outcome of a precedent-setting case before the BC Supreme Court, where the Blueberry River First Nations, descendants of the Fort St. John Beaver Band, sought redress from the provincial government for cumulative damages to their lands.

“In 23 years the Commission did not once decline a fossil fuel company's request to frack a gas well, or punch a road through the forest, or build a massive earthen dam to divert freshwater, or sink a hole into the earth to store millions of litres of toxic water... Not once.”

Anyone wanting a sense of just how seriously out of step provincial agencies such as the Oil and Gas Commission are when it comes to protecting treaty rights should read Madam Justice Burke's *Reasons for Judgement* closely, in particular her dissection of the captured Commission's actions.

Consider just one thing she noted: in 23 years, the Commission did not once decline a fossil fuel company's request to frack a gas well, or punch a road through the forest, or build a massive earthen dam to divert freshwater from streams, or sink a cavernous hole into the earth to store millions of litres of toxic water, on the grounds that such developments could harm or destroy wildlife habitat. Not once.

Justice Burke's judgement is a landmark decision. She ruled that the province unjustifiably infringed on Blueberry River's treaty rights to the point where few “meaningful” opportunities to hunt, fish and trap remained. She also ordered the province to work “diligently” with the Nation to negotiate changes that would recognize and respect its treaty rights.

Lastly, she gave the government six months to conclude those negotiations, after which it would have to stop issuing any new permits that authorized industrial activities that further undermined Blueberry River's rights.

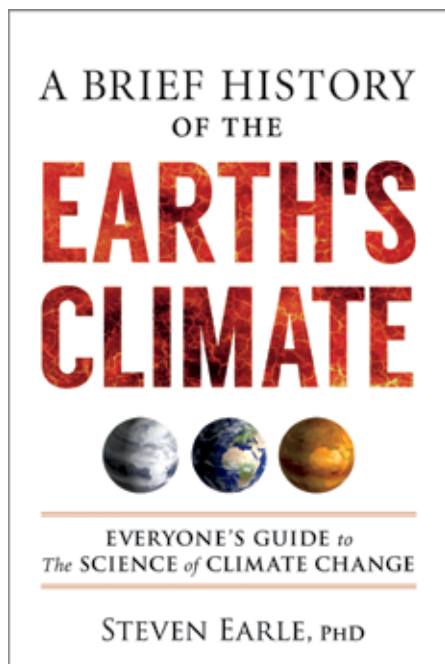
In July, BC Attorney General David Eby did the honourable thing and said that the government would not appeal and instead negotiate.

The big question now is whether the government will do the even more honourable thing and sit down with all Treaty 8 First Nations. Because Blueberry River's issues aren't unique. Just ask their cousins in West Moberly First Nations about their ongoing legal battles with the province and BC Hydro over a little government-backed project called Site C.

First published in *BC Solutions: News and commentary from the CCPA's BC Office*, October 6, 2021. Ben Parfitt is a Victoria-based journalist and long-time analyst with the BC Office of the Canadian Centre for Policy Alternatives.

Climate Change

A brief history for all of us



*A Brief History of the Earth's Climate:
Everyone's Guide to the Science of Climate Change*

Stephen Earle, New Society Publishers, Gabriola Island BC, 2021.
Paperback - 208 pages, \$19.95, pdf \$13.00
ISBN: 9780865719590

field, alternatively feeling jolts of hope and stabs of despair.

Earle makes complex scientific information understandable, explaining things like the greenhouse effect, insolation, albedo, atmospheric pollutants, climate feedback loops, and geologic time with succinct clarity. He even tackles the arguments posed by climate change deniers, offering undeniable scientific evidence and logical reasons to counter such beliefs, while acknowledging that some climate change skeptics' arguments are pertinent to this book.

The premise of this book is that in order to understand the anthropogenic aspects of climate change, we need to understand the earth's long history of natural climate change. Chapter Three, for example, on plate tectonics and continental drift, told me about a whole supercontinent (Rodinia) that arrived about 400 million years earlier than Pangaea and its distant land mass relative Gondwanaland.

Solar evolution is another topic that would have drawn a blank in my scientific ledger, and I learned that the evolution of the sun over billions of years has affected the earth, but despite a 40% increase in solar

intensity over eons, the earth as a living sphere has managed to keep the climate within a range that supports life in all of its extraordinary forms. Only as recently as within the last century have humans so altered the planet's life-sustaining oceans, continents, and atmosphere that we have reached a terrifying tipping point.

Long- and short-term changes of ocean currents affect the earth's climate (and our weather cycles). Earle describes how the Gulf Stream in the Atlantic Ocean, which changes over hundreds of years, and the El Nino variations in the Pacific Ocean, are formed and why they might appear to ameliorate climate warming. Such appearances are not to be relied on, because they are temporary oscillations with no evidence of long term mitigation.

Volcanology is another topic Earle delves into, where we learn that despite the dramatic climate effects of all known explosions, even the largest eruptions in historical times have led only to cooling, not warming. Typical volcanic eruptions do emit CO₂ but the amount released is insignificant compared to the emissions from burning fossil fuels.

review by Susan Yates

In September, an excellent book came my way, *A Brief History of the Earth's Climate: Everyone's Guide to the Science of Climate Change*, by Steven Earle, a teacher of earth sciences for almost four decades who lives on Gabriola Island, where he is constantly on the move (by foot and bicycle) working on ecojustice projects and solutions for climate change.

I was hooked on this book right from the preface that begins with the moving poem "Let Them Not Say" by Jane Hirsh-

If you're curious about the history of extraterrestrial impacts on the earth, check out Chapter Eight. Most people know about the big blast-out in the Yucatan peninsula, and perhaps Manicouagan in Quebec, but there have been many others, and the main reason we don't see a lot of craters on the earth's surface is because, unlike the moon, the earth is (still) a geologically active planet. This sounds scary enough, but again, it turns out that despite the devastation to life from prehistoric collision events (about 75% of species went extinct during the Cretaceous-Paleogene events), what we are doing now to our environment leads to terrain that could be much worse.

Does 1°C of warming matter? After all, nobody really cares if tomorrow is a degree warmer than today. But this is about being 1°C warmer every day, on average, for as far as we can see into the future. It really does matter if, as Earle says, "Your children are starving because your crops are shriveled by drought, your fresh water has dried up, your life savings have been wiped out by a wildfire, your entire community has been destroyed by a flooding river, or a landslide, or a superstorm ... [it matters] to hundreds of millions of people whose cities, farms, and homes are threatened by sea-level rise."

Existential anxiety

It also matters to all of us who stare down existential anxiety every day and every sleepless night, worrying about species who can no longer survive the destruction of our planet's ecosystems. Earle doesn't mince words when it comes to what we must do: "Although we have created a wide range of environmental problems, climate change is far more significant and dangerous ... unless we come to grips with it, every other environmental threat will become largely irrelevant."

The earth as a living sphere has managed to keep the climate within a range that supports life.

Earle quotes fellow scientist, activist, and writer Lynne Quarmby (author of *Watermelon Snow: Science, Art and a Lone Polar Bear*, published last year) with this memorable passage: "There is a yawning chasm of difference between how bad things will get if we continue business-as-usual and how bad they will be if we get off fossil fuels as soon as possible." What will it take, besides a paradigm shift in personal resolve and political action, to avoid the dreaded tipping point?

Current economic and political systems deriving from colonial land grabs and resource abuse instead result in complicated and farcical plans for carbon offsets, and ways to get to net zero emissions by so-and-so date, which is mostly government subterfuge to avoid doing something now, or, as Ms. Thunberg would say, "blah blah blah."

Earle offsets these depressing aspects of modern capitalism with practical ways to lead by example in the book's last chapter, "What Now?" He reminds us of the near-heroic efforts health care workers, medical researchers, and even government policy makers made, in order to control the pandemic that has cost us so much (and I don't mean financially) and says, "Surely we can bring the same kind of resolve and effort into the fight against climate change, which poses a much greater risk to our existence here on Earth."

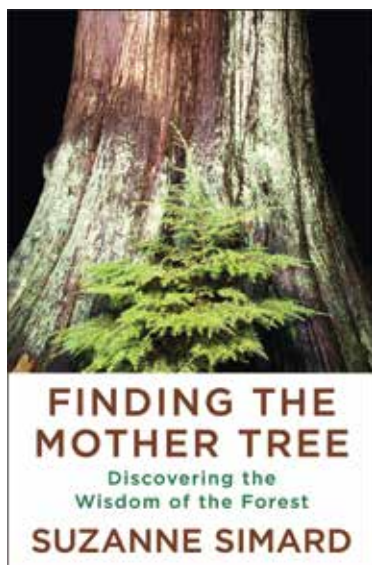
Please look for this book at your favourite independent bookstore. As Jerry Seinfeld says, "A book store is one of the only pieces of evidence we have that people are still thinking."

Susan Yates has been active in environmental and social justice groups for 48 years, inspired by working with others whose energy, determination, and visions offer hope for a better world.



Wisdom of the Forest

Interspecies co-operation leads to healthier forests



review by Michael Maser

Finding the Mother Tree: Discovering the Wisdom of the Forest

Suzanne Simard,
Penguin Canada, 2021
Hardcover \$34.95
ISBN - 13:
9780735237759

The colonial story of British Columbia is inextricably linked to the business of logging trees and then undertaking to restore forests through replanting.

Industry and government repeat a story about how forestry is sustainable in perpetuity if done correctly. In practice, BC forestry today is conducted in a state of perpetual overcut – harvesting far more cubic feet of timber than young trees are accumulating in new growth. This troubling equation is made worse through the depletion of new forest health, from the effects of climate change coupled with outmoded forestry practices and myopic re-planting procedures.

No one knows this better than Dr. Suzanne Simard, professor of forest ecology at the University of British Columbia and author of *Finding the Mother Tree: Discovering the Wisdom of the Forest*, published earlier this year.

The Mother Tree documents both Simard's personal journey, beginning in the Monashee mountains where she was raised in a logging family in the 1960s, and her remarkable research quest into forest health.

Numerous challenges and achievements are woven into her story but the energy of the book spirals around her discovery that forest ecosystems are predominantly co-operative. Veteran

“mother trees,” Simard discovers, are real, dotting healthy forests and utilizing an extensive network of symbiotic mycorrhizal fungal webbing to provide nutrients to their seedlings and to other tree varieties, too.

Simard's discovery ranks with similar discoveries that have elaborated how previously ignored or overlooked ecosystems like estuaries or coral reefs are, in fact, vital crucibles for preserving and sustaining biodiversity.

Just as compelling as mother trees, however, is Simard's meticulous research revealing how BC's future forests are imperilled by ongoing reforestation practices. To this end, silviculture companies – with government sanction – are decimating soil health and mycorrhizal networks through widespread herbicide application. This practice is carried out in the belief that other species such as alders and berries growing in new clearcuts impede the growth of coniferous seedlings.

This belief is dispelled by Simard's research which has repeatedly shown how interspecies co-operation actually leads to healthier forest growth. She is adamant that such culling practices need to change if we want growing forests to thrive in the face of changing environmental factors. Her discoveries – including learning how BC's Indigenous cultures accumulated wisdom and practiced sustainable forest management for millennia – bolster her closing message:

“By noting how trees, animals, and even fungi – any and all non-human species – have agency,” she writes, “we can acknowledge that they deserve as much regard as we accord ourselves. We can continue pushing our earth out of balance, with greenhouse gases accelerating each year, or we can regain balance by acknowledging that if we harm one species, one forest, one lake, this ripples through the entire complex web.”

Simard's message is one we urgently need to heed.

Michael Maser is a writer-researcher living in Gibsons BC.

Oikos - Winter

Winter calls us to rest deeply and pay attention

by Michael Maser

***Glittering snow:
The wind swirling
Frozen moonlight.***
- Toshimi

Unlike other seasons, winter doesn't entice us with a comforting embrace as much as it clasps us in its grip. Through its arrival with lashing rains, biting winds, and wet snow, it commands us, "pay attention."

Ignore this warning and you may face harsh consequences; heed it, and you meld into a geo-climatic symphony as dramatic and inspiring as any of Beethoven's compositions. Winter storms originating in the Pacific invite us to experience a primal roar of climatic fury followed by a forgiving silence as storms abate. Indeed, the pattern of raging-and-abating storm cells pummeling the land matches our own pattern of respiration: inhale-hold-exhale-hold. To wit: we know well the "grip of winter."

Almost every human culture recognized a family of wintry gods and goddesses, appearing in tales describing how these gods clutch us, chill us with their hoary breath, and change us into icy statues when we fail to appease them. To attend to winter's capricious moods, then, is to attend to these gods and pay them the homage they exact.

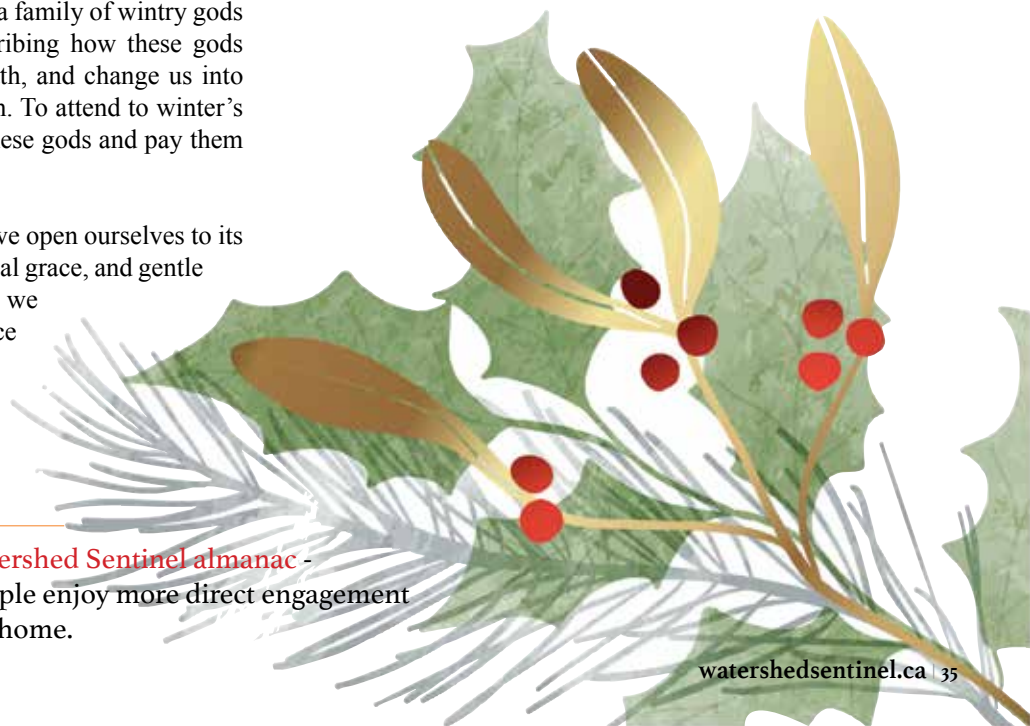
When we attend to winter thoughtfully, we open ourselves to its myriad gifts: its crystalline beauty, ethereal grace, and gentle power. With the arrival of snow and ice, we experience its stark and distinct existence that entrances us when we immerse ourselves in nivean worldscapes – skiing, skating, skidding – and when we observe it carefully through windows.

While winter calls us to shelter and draw inward to reflect on our own existence, when we do look outward, we see a world transformed and often sheltering in some form of repose, resting, gestating, conserving energy. Of course, there's another active world, too, where organisms exhibit remarkable adaptations to wintry ways, through camouflage, layers of fat and added fur, and appendages advantaged by deep snow.

More than anything, the gods and goddesses orchestrating winter's unfolding pageant would have us attend to it by bundling up and pushing through our doors to fully engage it, fortified with an extra toque or scarf, and a poke of trail mix. By heading to the beach, forest trail, or ski run, gazing at the incandescent sky or frozen moon as you would your favourite painting, and perceiving the myriad, subtle changes happening all around. This is the essence of re-connecting.

Michael Maser lives in Gibsons, BC

Welcome to *Oikos* - a quarterly **Watershed Sentinel** almanac - written with the goal of helping people enjoy more direct engagement with nature, wherever you may call home.



Wild Times

Kootenay Colours

by Joe Foy

I carefully stirred my first cup of morning coffee while attempting to fish out a raft of pine needles floating on the surface. As the caffeine kicked in, I slowly woke up to the reality of the place I was in.

The whole sky was full of needles swirling in the breeze, slowly descending to the ground. They weren't pine needles – they were larch tree needles. I was in the middle of a West Kootenay old growth forest on the lower slopes of the Purcell Mountain Range. Below me Kootenay Lake shimmered to the distant horizon. The whole scene was a quilt of vibrant greens and blues and bright fall colours unique to this part of the planet. The most brilliant colours were the swaying yellow and gold larch trees, which will eventually shed all their needles before winter.

Locally this forest is known as the Argenta Face, a 6,000 hectare endangered wild area surrounded by the boundary

of the Purcell Wilderness Conservancy Provincial Park and the shoreline of Kootenay Lake. When the provincial park was designated, the Argenta Face was left out, which was a crying shame. The little community of Argenta sits tucked into the forest at its northern end and Johnson's Landing lies to the south. The village of Lardeau gazes at the Argenta Face from across Kootenay Lake. These communities have always looked out for the Argenta Face as best they can.

People around these parts come here to hike, hunt, bird watch, or to simply take pictures. I had come to camp for a few days to allow the old forest of the Argenta Face to seep into my bones a bit. I slept curled up in the back seat of my truck at night and wandered the forest during the day. Right near where I made my camp, southern mountain caribou – almost as rare as Sasquatch now in this part of the Kootenays – had been hunkered down in this forest only a couple of winters ago.

Elk, cougar, black bear, and grizzly move through here going about their business as they always have, so best to keep one's eye peeled and ears open.

Logging companies too prowl here – and their bite is bigger than the biggest beast. The provincial government's own logging operation, BC Timber Sales, in years past has mauled parts of the Argenta Face, leaving clearcuts and logging roads in their wake. Thankfully, most of the Argenta Face has never been logged.

The Argenta Face is a fire forest – fires have regularly come to these mountainsides in the past. Some of the tree species that live here are fire resistant – like Douglas fir and larch. Old timers of these species have thick cork-like bark that allows some to survive for centuries despite multiple fires.

But now a privately-owned logging company has permits and widespread plans to log there. The Argenta Face forest is full of areas too landslide-prone to log, too important to the region's viewshed to log, and too important as deer habitat to log.

Logging could start at any moment. Premier Horgan needs to put in place an old growth logging deferral now for the entire Argenta Face – so talks on how to best protect it can begin with the First Nations whose territories encompass this forest. Long may the old forests of the Argenta Face bedazzle with their wild mystery and brilliant Kootenay colours. The premier's email: premier@gov.bc.ca



©Joe Foy

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