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Watershed

# Sentinel



Environmental News from BC & Beyond

# wilderness & wildlife matter



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**P24-25**  
**Skaloola** | The message of the northern spotted owl

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[www.nsobreedingprogram.com](http://www.nsobreedingprogram.com)

## Features



### Sała

An historic ceremony in Kwagu’ł territory to mourn our non-human kin – the forest and all life that depends on it.

### The Long Haul

We have to take the long view. Over decades and centuries, we see how movements to carve out space for wild things flare up, succeed, fail, or fizzle out. The real test is how we persevere.

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Cover Credit  
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Publisher Watershed Sentinel Educational Society  
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**Special thanks** to Gavin MacRae, Valerie Sherriff, Norberto Rodriguez, Michael Maser, Sally Gellard, Mike Moore, the writers, proofreaders, advertisers, distributors, and all who send information.

Deep thanks to our Board of Directors: Alice Grange, Norberto Rodriguez de la Vega, Susan Yates, Lannie Keller, Sally Gellard, and Carly Palmer.

We are grateful for the advice of our Editorial Advisory Board: Dan Lewis, Lucy Sharratt, Mark Worthing, Stephen Leahy, Jesse Cardinal, and Alice de Wolff.

Disclaimer: Opinions published are not necessarily those of the publisher, editor, or other staff and volunteers of the magazine.

Published five times per year.

Subscriptions: Canada \$25 one year,  
 \$40 two years; US \$35 per year, Digital (by PDF): \$15

Distribution by subscription, and to Friends of Cortes Island. Free at Vancouver Island and Vancouver area libraries, and by sponsorship in BC colleges, universities, and eco-organizations.

Member Magazines BC and Magazines Canada  
 ISSN 1188-360X  
 Publication Mail Canada Post Agreement  
 PM 40012720

Return undeliverable Canadian addresses to:  
 Watershed Sentinel  
 Box 1270, Comox, BC, Canada V9M 7Z8  
 250-339-6117  
 editor@watershedsentinel.ca  
 www.watershedsentinel.ca

We acknowledge the financial support of the  
 Government of Canada.



**When you want your message to reach thousands of concerned and active readers, please contact us** for our ad rates 250-339-6117; editor@watershedsentinel.ca  
 www.watershedsentinel.ca

**Next Issue Copy Deadline:**  
 October 9, 2024



## Editorial

Delores Broten

### Dust off the neo-cortex

**It was predictable.** Faced with threats on all sides, the human brain in most cases has reverted to flight or fight responses. Of course, not everyone has reacted with this prehistoric response, a useful one which, please note, has saved us many times in the past, and even currently in times of individual threat.

Now hate against the “other” is on the rise – wars, genocide, persecutions over land, religion, race, ethnicity. Political polarization threatens the democratic experiment. That kind of hate fest is always fun, like a sports event, for the human ape-child, until it is personally painful.

As of right now, however, it’s time for some adulting. All these human-caused responses pale against threats to planetary stability. Readers of the *Watershed Sentinel* know this well.

From climate change to forever pollution, from species extinction to topsoil depletion, forced migration and starvation threaten millions. With no exaggeration, these things are happening, right now. We see United Nations officials pleading for help almost every day.

It’s time to dig out and dust off the neo-cortex, put on our thinking caps, learn to co-operate, downsize, and devote ourselves to a livable world for all.

–Delores Broten, Comox, BC, September 2024

### At the ‘Shed

**Join our Facebook group!** Our news page is still blocked because of Canada’s revenue dispute with Meta, but the new **Friends of Watershed Sentinel** group is the place to be. Discuss articles, share stories, and get special event invitations. Pass it on to your networks – our watersheds need all the friends they can get! See our public group at [www.facebook.com/groups/watersheds](http://www.facebook.com/groups/watersheds).

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Climate risk for Aussie economy

## Losing Tourists

**Two-thirds of Australia’s tourist** attractions face disruption from climate change, endangering many of the country’s 620,000 tourism jobs, according to a report by Zurich insurance group and economic analysis firm Mandala.

With wine regions choked in bushfire smoke, rainforests inaccessible due to flooding, and tourists marooned at airports by severe storms, tourist areas are increasingly beset by extreme weather.

High-risk areas include Sydney’s Royal Botanic Gardens, the Great Ocean Road, and Kalbarri National Park in Western Australia.

—[www.theguardian.com](http://www.theguardian.com)  
September 8, 2024

Wildfire dementia link revealed

## Brain Pollution

**Exposure to even tiny amounts** of pollution from wildfire smoke dramatically increases the risk of dementia, according to a decade-long study of over 1.2 million people that was presented at the 2024 Alzheimer’s International Conference.

The new research shows particulates from wildfire smoke pose a far greater risk than tailpipe or factory particulate emissions. In quantified terms, the study found just one-millionth of a gram average increase in PM2.5 concentrations per cubic metre of air over a three-year period results in a 21% higher likelihood of a dementia diagnosis.

—[www.theenergymix.com](http://www.theenergymix.com)  
September 3, 2024

Hotter oceans stress predators

## Tracking Sharks



**Warming ocean waters** are driving sharks from their coral reef habitats and unbalancing the reefs’ delicate ecosystems, scientists from Lancaster University have discovered.

Researchers tracked over 120 grey reef sharks in a remote archipelago of the Indian Ocean from 2013 to 2020. When water temperatures spiked, sharks largely abandoned reefs for deeper water and did not fully return for up to 16 months after the stress event.

—[www.theguardian.com](http://www.theguardian.com)  
September 9, 2024

Dams removed to restore salmon

## Klamath Freed

**The Klamath River** runs unfettered once again from its headwaters in Lake Ewauna, Oregon, to the Pacific Ocean in California, after the largest dam removal project in America’s history.

The milestone came as the last of four hydroelectric dam projects was removed, unblocking more than 400 miles of salmon habitat and spawning grounds.

The dam removals are expected to rejuvenate the Klamath’s salmon populations, which fell drastically in recent years and left Spring Chinook nearly extirpated. A healthy commercial and sport fishery on the river is estimated at \$150 million in annual revenue

—[www.klamathrenewal.org](http://www.klamathrenewal.org)  
July 31, 2024

Powering up solar and wind energy

## New Renewables

**2023 saw 40%** of the world’s electricity come from zero-carbon sources, including 14% from solar and wind, according to analysis by BloombergNEF.

The milestone is set to be superseded yearly, as nearly 91% of added net power capacity is now from solar and wind, while fossil fuels now contribute only six per cent to growing power production – their lowest level ever.

“We have seen a step-change in renewable energy compared to a few years before,” said Sofia Maia, lead author of the report. “There’s now no question this is the largest source of new power generation, wherever you go.”

—[www.ecowatch.com](http://www.ecowatch.com)  
August 28, 2024

Ancestral homelands to be returned

## Shasta Revival

**California’s governor** has launched the largest land return in the state’s history. Gov. Gavin Newsom says he supports the return of 2800 acres seized from the Shasta Indian Nation a century ago and then flooded by Klamath River dams.

Ancestors of the Shasta Indian Nation lived near Copco Lake and Bogus Mountain long before settlers started keeping formal written records, according to Siskiyou County official documents. The land was known then as Kikacéki.

—[www.latimes.com](http://www.latimes.com)  
June 19, 2024

# Letters

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## Organic Waste Management, or Expensive Window-Dressing?

Finally organic waste management in the West Kootenay is real. The Regional District of Central Kootenay has built a state-of-the-art composting facility just south of Salmo that is now processing household organic material from Castlegar and other local communities.

Sadly, instead of following suit, Nelson continues to collect mixed waste with organics, while rolling out a program involving a very expensive countertop kitchen gadget that grinds and dehydrates organic waste.

In my opinion it is irresponsible for Nelson city council to continue with this costly experiment. The RDCK and all other local communities are finally taking organic waste management seriously and turning organic waste into usable soil, while Nelson spends millions of tax dollars hiring consultants and contractors to “window dress” some very real environmental issues that are not going to be solved by a kitchen gadget.

—Tom Prior  
*Kootenay Region, British Columbia*

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## The Watershed Sentinel welcomes letters

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

Anonymous letters will not be published.

Send your musings and your missives to:

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## BC's Public Transportation: Discriminatory, Ageist, and Embarrassing

We knew our BC public transportation system was bad, but not this bad.

First, a history of how it used to be: not world-class, but at least doable. We moved to the Comox Valley in 2002; at that time we had a train that traveled daily between Victoria to Courtenay. Our relatives and friends loved travelling that way, and I had visions of using it when I couldn't drive anymore. We also had a Greyhound bus system that serviced most of the Island. The fact that the Greyhound also had “bus depots” – places where you could actually buy a ticket in person and wait comfortably out of the elements – made for a system that gave all of us equal opportunity to move around in an affordable way.

Then, it seemed like overnight, we lost our buses and depots. At that time I remember reading a story about a west coast Indigenous Elder who had to travel from Tofino regularly for medical reasons, and too many times was left standing in the rain at either end.

Recently, we had a visitor (aged 89) from Victoria for a few days. She had a ride to Nanaimo, where she visited friends for lunch and then tried to catch a bus to Courtenay. She didn't realize you had to book 24 hours in advance, by computer. She wound up having to stay overnight, and arrived late the next day. We went to the bus website one day before her planned journey home... well, it was like diving down a rabbit hole – no luck. And if a person makes a mistake you can't try again for one hour. I finally found her a ride to Sidney, and she had to take public transportation from there to Victoria – at

89, and with a suitcase. I wonder how many others have just thrown their hands in the air and given up!

When I was much younger you could take a bus or a train almost anywhere in Canada, and for affordable prices. Now it's either fly or take that rather expensive train from Vancouver east, and that excludes too many of us.

We're now in a climate crisis and governments at all levels should be encouraging public transportation in Canada – but it just isn't happening. Right now our transportation system is discriminatory, ageist and embarrassing. I'll be sending my letter to the Transportation ministers at each level of government, and I encourage others who've been impacted to do the same.

—Rosemary Baxter  
*Courtenay, British Columbia*

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## A Stark, Eye-Opening Film

Last night I saw YINTAH, the film that you reviewed in your April/May 2024 issue and that the Sentinel Educational Foundation co-sponsored in Courtenay.

I found it terrifying and disheartening to watch the RCMP arresting the land defenders. How is it that as a society, we are willing to give rights to an abstraction (corporations) and not honour the rights of people, Indigenous people, who are standing in their homes?

—Chris Bruels (settler)  
*Merville, British Columbia*

How to manage an uprising

## Policing Protests

As protests erupted at Fairy Creek and Coastal GasLink work sites, the Province quietly began “streamlining” its response to civil disobedience, with a secretive arm of the Policing and Security Branch guiding the discussions.

Documents obtained through freedom of information requests show that Premier John Horgan’s office instructed the Public Safety Ministry in January 2022 to create a “Civil Disobedience Work Plan.” The government studied how to combat negative publicity about police actions that attracted scrutiny from First Nations groups, police watchdogs, human rights reporters, and the courts. It also considered creating an “Integrated Protest Response Team” to respond to civil unrest.

—[www.thetyee.ca](http://www.thetyee.ca)  
August 28, 2024

BC, First Nations class actions

## PFAS Lawsuits

The BC government and the Muskoday First Nation of Saskatchewan have filed separate class-action lawsuits against makers of “forever chemicals” for widespread drinking water contamination.

The Muskoday case says companies were deceptive and negligent in exposing indigenous communities to dangerous chemicals. BC’s claim says that the companies knew that, when used as directed, “toxic PFAS chemicals would contaminate the environment for centuries.” Both cases name prominent corporations including 3M and DuPont.

—[www.cbc.ca](http://www.cbc.ca); [www.napolilaw.ca](http://www.napolilaw.ca)  
June 21 and August 22, 2024

Site C Dam reservoir filling begins

## Flooding Farms

BC Hydro is flooding 55 square kilometres of river valley between Fort St. John and Hudson’s Hope, with water levels rising up to three metres a day. The \$16-billion Site C Dam megaproject is nearly complete, and expected to start generating hydroelectricity next year.

The Peace Valley Landowner Association, Prophet River First Nation and West Moberly First Nations have long opposed the project on environmental and land-rights grounds. Regardless, then-premier John Horgan approved dam construction in 2017 after Christy Clark’s Liberals kick-started the project in 2015.

—[www.cbc.ca](http://www.cbc.ca)  
August 28, 2024

Court case and pipeline blockade

## LNG Roadblocks

In late August, Gitanyow hereditary chiefs started blocking access to a work site for the Prince Rupert Gas Transmission pipeline. Trucks delivering equipment were forced to detour 300 kilometres through Terrace to reach the work camp location, which would house 1000 pipeline workers if completed. The pipeline from northeastern BC would bring fracked gas to the proposed Ksi Lisims LNG export terminal on BC’s north coast.

Also in August, Ecojustice filed for a judicial review of the project, saying the BC Energy Regulator broke its own rules about environmental assessments. Its claim says construction is going ahead with no assessment of cumulative effects on the environment and communities.

—[www.thetyee.ca](http://www.thetyee.ca); [www.ecojustice.ca](http://www.ecojustice.ca)  
August 28, 2024

TMX pipeline vs. Jasper wildfires

## Fire and Oil

Parks Canada diverted firefighting resources to protect the Trans Mountain Pipeline from an out-of-control wildfire in Jasper National Park in July, even though the estimated wildfire risk to the pipeline was “low.”

“Structural firefighters remain in the town and are working to save as many structures as possible, and to protect critical infrastructure,” a Parks spokesperson said. Firefighting priorities and resources are decided based on “values at risk.” Homes, businesses, and campgrounds are all values, as are oil and gas pipelines.

—[www.thenarwhal.ca](http://www.thenarwhal.ca)  
July 26, 2024

From threatened to “threatening”

## AB Grizzly Hunt



Alberta Premier Danielle Smith has given Todd Loewen, Minister of Forestry and Parks, the green light to issue permits to hunt grizzly bears considered a threat to humans.

Concerns about conflict of interest were raised when Loewen disclosed making over \$5000 from shares in an Alberta company that guides hunts for bears, wolves, coyotes, elk, and moose.

Hunting grizzly bears has been banned since 2006 due to their dwindling numbers. Grizzlies were officially listed as a threatened species in 2010.

—[www.readtheorchard.org](http://www.readtheorchard.org)  
July 11, 2024

# Alberta's Emergency

## Auditor blows the whistle on water mismanagement

by Watershed Sentinel staff, with files from Keepers of the Water

**With much of Alberta suffering through prolonged drought, wildfires, and water shortages, an auditor is blowing the whistle on a shocking lack of provincial planning, monitoring, and accountability for water decisions.**

Unless the province overhauls its systems, the Auditor General of Alberta's July report on Surface Water Management predicts, parts of the province may lose access to fresh, clean drinking water.

One group of water advocates is calling on Alberta to declare a state of emergency. With the situation growing ever more dire, Keepers of the Water (KoW) warns that the Province must find the resources necessary for immediate action to preserve ecosystems and human rights and stave off the potential collapse of aquatic life.

The Auditor General's report confirms what many suspected: that the Alberta

Department of Environment and Protected Areas has no effective systems to manage water resources in the province. Alberta's water licensing system, in place since 1894, is called "First-in-Time, First-in-Right" (FITFIR), meaning that when there isn't enough water to go around, the oldest licensees get their water while newer licensees have to wait or go without. Notably, water rights for Indigenous communities that pre-date European contact are not included in the system.

The report found that the Department of Environment and Protected Areas has failed to set water conservation goals in most watersheds and therefore cannot gauge whether existing water conservation objectives are working. It says the agency lacks the capacity for water pressure monitoring, risk assessments, and setting water conservation objectives. Water license approval and monitoring processes are ineffective and not enforced consistently.

Accessing industry's own data related to pollution from mining operations is difficult or impossible, and the public has very little information about the impacts of the tar sands mining industry on water, the environment, and human health. KoW continuously monitors rising water temperatures and falling water levels to assess the risk of collapse of aquatic life in Alberta's waterways.

KoW strongly advocates for co-management with First Nation and Métis communities in water management in Alberta. KoW Executive Director Jesse Cardinal says "Indigenous Peoples' right to water governance in our traditional territories is not just a solution, but the only way to ensure sustainability for all future generations. It's evident that now is the time to come together and work towards a common goal, ensuring our voices are heard, and Indigenous rights are respected."

Alberta has about 25,000 water license holders, holding up to 9.5 billion cubic meters of licenses. Even during a severe drought, Alberta cannot force license holders to share water allocations or use water responsibly.

The full Auditor General's report can be downloaded at <https://www.oag.ab.ca/wp-content/uploads/2024/07/2024-Surface-Water-Management-PA.pdf>

Two years ago, KoW started its own water monitoring program in the Athabasca watershed. The group collects data from 25 sites, including the Fort McKay area, which is surrounded by tar sands mining and leaky tailings ponds.



# Yukon Mine Failure

“Business as usual is literally killing our people”

by Odette Auger

In August 2024, the First Nation of Na-Cho Nyäk Dun escalated their response to an environmental catastrophe at Victoria Gold’s Eagle Gold Mine by applying to the courts to appoint a third party to manage the mine’s assets and affairs. The receivership application reflects the company’s inadequate response as the heap-leaching site continues to drain cyanide and other contaminants into Dublin Gulch valley and its groundwater.

“We have lost all confidence in Victoria Gold’s ability to effectively manage the response to this disaster,” said Chief Dawna Hope. “We are grieving the impacts of this catastrophic failure on our lands, waters, and wildlife. A change in control at the site is desperately overdue.”

Eagle Gold Mine, in the traditional territory of Na-Cho Nyäk Dun in the Dublin Gulch Valley, is responsible for a heap leach pad failure in June 2024. The failure released cyanide-laden water, contaminating nearby Haggard Creek, South McQuesten River, and beyond. The Na-Cho Nyäk Dun (“Big River people”) have always relied on the lands and waters of the South McQuesten River Valley for cultural practices and sustenance. The ongoing contamination is a direct threat to their way of life.

“We have seen our lands and waters suffer in the face of an inadequate response from the company. That stops now,” declared Hope. “We are glad that we now



“When will government recognize that the status quo is broken?”

Gold’s management removed.”

Bill Slater of Slater Environmental criticised Victoria Gold’s approach as reactive and insufficient. “Water treatment has been ineffective at achieving a safe discharge,” Slater stated in an environmental update August 15. The event highlighted the company’s response in addressing issues only after they have occurred rather than taking proactive measures. This approach, Slater explained, has led to increased contamination.

## Failure to comply

The Yukon government directed Victoria Gold to construct additional storage capacity for the contaminated water in mid-July. The company failed to comply, resulting in continued leaching of cyanide and other toxins into the groundwater and surrounding ecosystems, which led to the death of dozens of fish, including grayling, sculpin, and burbot. Site stabilization and physical safety actions also have not happened, explains Slater. “We haven’t seen efforts at groundwater collection except for seepage that flows directly

to surface and would flow into the stream if it weren’t collected,” he said.

Both the First Nation of Na-Cho Nyäk Dun and the Yukon government are pursuing legal action to remove Victoria Gold from management of the site, which the nation has emphasized is required both for immediate environmental remediation and to protect the long-term health of their territory.

The nation’s legal action is grounded in their rights as stewards of their traditional territory. They are calling for a moratorium on all mining activities in their territory until measures are in place to prevent future disasters, and urging the Yukon government to institute a public inquiry to investigate the disaster thoroughly.

“When will government recognize that the status quo is broken?” Chief Hope asked. “When will government recognize that business as usual is literally killing our people and destroying our way of life?”

Odette Auger (Sagamok Anishnawbek) is an award-winning independent journalist and storyteller living on Klahoose territory in the Salish Sea. Follow her work at [www.authory.com/OdetteAuger](http://www.authory.com/OdetteAuger)

# Herbicide Victory

## A step toward forests free of glyphosate

by Zoe Blunt

In a victory for ecosystems on north-east Vancouver Island, herbicide spraying was almost completely eliminated last year in Ma'amtagila and Kwakwaka'wakw Nations territory. This comes after Indigenous chiefs, elders, the public, and environmental groups spoke out against the practice of spraying glyphosate on previously-logged forestlands.

TimberWest planned to spray almost 10,000 hectares of replanted forest with glyphosate and triclopyr, both of which are toxic plant and fungi killers. But when the Wilderness Committee and the Awi'nakola Foundation obtained the government's annual report, they found the spray was reduced to only about three per cent of the planned area, or less than 260 hectares.

In 2023, Kwakwaka'wakw leaders and food and medicine harvesters raised the alarm about toxic herbicides on their lands. They called on the Province to update its *Integrated Pest Management Act* and give nations a veto over planned spraying.

Studies of glyphosate – the main ingredient in Roundup weed killer – show it harms species at risk, especially bees and amphibians. It's likely to cause cancer and may also trigger mutagenic and genotoxic effects. The logging industry sprays it on unwanted trees and plants to speed the growth of tree farms. Wildlife, traditional foods, medicines, and ecosys-



Map of **all** local chemical manual brushing in the '70s and '80s.

tems rely on these “unprofitable” native species that are killed by toxic herbicides.

It remains to be seen whether this victory is permanent or a one-off. “We spent a significant amount of time and money investigating and opposing glyphosate spray plans. It worked to halt most of the spray last summer, but what about the coming years?” asked Gigame Pudlidagame, Chief Brian Wadhams of Ma'amtagila First Nation.

“The government must meet with us to address the lack of consent from First Nations for operations impacting our territory. Industrial project decision making, such as glyphosate spraying, must align with UNDRIP including the need to achieve free, prior and informed consent. This means that a ‘no’ from a First Nation is respected.”

Glyphosate destroys the fungi, plants and bacteria that are crucial for healthy forests, according to Charlotte Dawe, Conservation and Policy Campaigner for the Wilderness Committee. “Removing these species from an ecosystem has devastating and cascading effects that impacts wildlife and humans far and wide.”

“The sale and use of glyphosate needs to be banned nation wide,” said Mark Worthing, Programs Director at Awi'nakola Foundation. “The fact that logging companies knowingly poison the land where trappers, gatherers, hunters and the general public spend time is yet another shocking example of why the forestry sector has lost its social license and desperately needs a paradigm shift.”

Zoe Blunt is a veteran water protector and the new *Watershed Sentinel* editor.

# High-Fibre H<sub>2</sub>O

## The invisible threat of asbestos in city water pipes

by Julian Branch

**A catastrophic water main break in Calgary on June 5 shook the nation's consciousness and focused attention on the fragile state of underground water infrastructure.**

The break affected over half the city's water supply and led to flooding, a boil-water advisory, and mandatory water restrictions for millions of residents.

The next day, June 6, the Green Party of Canada and Prevent Cancer Now (PCN) held a news conference on Parliament Hill to draw attention to one type of water pipe in particular: asbestos cement water pipes. These pipes deliver water to millions of Canadians.

The Green Party and PCN are calling on the federal government to regulate asbestos in water as is done in the United States. Health Canada maintains there

is no evidence that ingested asbestos is harmful.

"If you have no evidence that there's a real health danger from asbestos in our drinking water, you'll never get the evidence if you don't measure, you don't study, and you don't check," said Green Party Leader Elizabeth May.

"At a minimum, we should start testing drinking water for levels of asbestos. Then we could identify the hotspot communities where the priority is to remove those pipes quickly," May said.

But the enormous cost of replacing these pipes is a stumbling block for municipal governments. *The Globe and Mail* highlighted the issue in a July opinion piece titled "The Pressing Need to Fix Water Pipes." The op-ed argues, "Allowing these systems to decay further, because of the political challenges to generate new funding, is the worst sort of short-term thinking. Because the costs will only go up."

Case in point: in 2006, the City of Regina commissioned a study that showed it would have cost about \$150 million to replace all the old asbestos cement water pipes in the system. The bill for that today

could total over a billion dollars. The city estimates it might take a half-century to replace or reline all the asbestos cement water pipes in Regina.

The City of Regina installed asbestos cement water pipes from the mid-1940s to the 1980s. An FOI request for city documents revealed that from 2010 to 2022, 2,477 of Regina's asbestos cement water pipes failed. Despite that remarkably large number, a 2017 study on asbestos cement water pipe breaks in Regina claimed "most of [the pipes] are still strong and meet American Society for Testing and Materials standards," according to the city's records.

Asbestos cement water pipes were the subject of several National Research Council studies between 2005 and 2012. One 2010 study in particular said severely deteriorated asbestos cement pipes can shed fibres into the water and pose a cancer risk. But research on the topic was halted after 2012, and Canadians were never warned of the potential danger.

When it comes to asbestos pipes and drinking water, governments can't continue to kick the can down the road. Infrastructure deficits and public health impacts must be addressed before the next disaster strikes.

Julian Branch covered health, environmental issues, and politics for decades as a journalist. He tracks news on this issue at [https://x.com/asbestos\\_in](https://x.com/asbestos_in).



# Wild Salmon in Court

## First Nations petition to review federal fish farm decision

by Desiree Mannila

**On July 30, Kwakwaka'wakw hereditary chiefs held a press conference in Vancouver announcing their application for a judicial review of Canada's decision to allow ocean-based fish farms to through 2029. Representatives from 'Namgis and Kwikwasut-inuxw Haxwa'mis First Nations shared their reasons for launching the court action, including lack of consultation, their inherited obligation to the environment, and precautionary stories from those now in the spirit world.**

We spoke with Kwakwaka'wakw hereditary chief Ernest Alfred at his dock on northern Vancouver Island. With his phone in one hand, tinkering with his boat with the other, Alfred is heading to a reported collision with a humpback within his traditional territory. "It's not my job, it's just something we do. It's a responsibility." He says this is what separates the volunteer ocean-protectors from hired monitors such as DFO – "[Whales] are part of us. Not just the marine environment, but part of who we are as people."

Alfred takes a moment to recount a memory from early childhood, the moment he fell in love with orca – or *max'imux* in kwakwala, the language of Kwakwaka'wakw people). He describes waking up to the sound of orcas surrounding his father's boat. From the porthole, they were barely visible under the moonlight; however, at the boat's bow, phosphorescence illuminated the sea and the orcas dipping below him. "I was really young,

but it had a huge impact, and that took me and my love for Orca."

### Respect for the web of life

Fish farms were first introduced to British Columbia's coast in 1971, rapidly expanding to over one hundred farms in the 2000s. Industry giants such as Mowi Canada West, Cermaq Canada, and Grieg Seafood took advantage of the pristine conditions of the open ocean and promoted an image of an industry that facilitates food security and economic benefits.

"Our people were told stories that if you were to abuse anything, or if you don't give thanks, things could be taken away," Alfred says. "If you're going to show disrespect to the salmon, they're going to react. And sure enough, we almost lost them."

Alfred describes the Hada River, nestled in the territory of the Musga'magw Dzawada'enuxw. The river was once known to see annual salmon returns between 40 and 50,000 – however, at one point only 27 salmon returned. "We were seeing those numbers go down. That's why we got involved, because it was so urgent."

Following the removal of farms in the Broughton Archipelago, Hada River was blessed with the return of more than 10,000 salmon. And salmon weren't the only ones to return – they brought with them a "staggering" presence of whales, bears, birds, and herring. "As a

keystone species, everything falls apart once you remove [salmon], that sacred species," Alfred notes. "It's not just the health of the forest, bears, or the whales, it's all of us. Everything relies on salmon, from the biggest whales to the biggest trees, the smallest of insects. It's the web of life that our people understand. You can't put a dollar amount on that."

### Unity in resistance

Back at the press conference in Vancouver, Dan Lewis of Clayoquot Action weighs in on fish farms and what led him to take action. "Lots of boat traffic, viruses, fish die-off, fish escapes, sea lions being murdered – it's a terrible industry."

Between Cermaq and Creative Salmon, Friends of Clayoquot Sound says up to 20 open-net fish farms are still operating in Clayoquot Sound.

"Wild salmon are the backbone of the coast," says Lewis. "They sustain ecosystems. They fertilize the trees that make the air we breathe." He lists the effects of fish farms: "They're pushing wild salmon to the brink of extinction ... through pathogens, parasites, pesticides, and pollution. They're harming the clam beds, they're harming crustaceans like crabs, shrimp and prawns – those are affected by the pesticides that attack the sea lice."

Lewis recalls stories from local Indigenous members. "You could walk across the river on the backs of salmon without

getting your feet wet.” But today, “you can see the bears going hungry. It used to be, when you got to the mouth of a river, there were gulls, eagles, and bears and a cacophony of exuberant feeding. Now it’s just silent.” He draws hope from positive changes in areas that removed fish farms from their territories. “The salmon will come back if we just get out of their way. We know that removing fish farms works.”

The impact of fish farms can also be seen within the pens. Lewis notes instances of catastrophic die-offs of farmed fish. Hundreds of thousands of farmed fish have succumbed to their environment – deaths attributed to viruses, delousing agents, and algae blooms. Through Clayoquot Action’s investigations, Lewis says he’s seen the destruction of countless herring trapped in the pen. Lewis says he’s “thrilled” about the Nations’ court action, understanding that “salmon farming is a transboundary issue. Salmon swim, they don’t stay in one territory. I hope they win.”

A common theme at the Vancouver press conference was moving aquaculture out of the ocean. Alfred refers to Kuterra, ‘Namgis First Nation’s land-based salmon farm – “We’re trying to protect our salmon, but also proving a point: that we can do things in a different way.”

While the future health of British Columbia’s coast is largely in the hands of the government, it is clear that people from all walks of life are uniting to advocate for the protection of those who cannot speak for themselves.

Pax̌ala, Desiree Mannila is a proud member of the Da’na’x̌da’xw Nation and staff reporter for the *Watershed Sentinel*.



Salmon brought with them a  
“staggering” presence of  
whales, bears, birds, and herring.

# Sała

## Mourning trees, non-human kin, and way of life



by Odette Auger

**On August 26, an historic, unprecedented Sała (mourning ceremony) was held in Kwagu’ł territory on north Vancouver Island. This is the first time that a Sała has been held to mourn non-human kin – our forest and all the life that depends on it.**

Normally held at the beginning of potlatch days, the ceremony serves to lift grief and remove negativity in order to do community work in a good way. Carefully considered and planned by a group

of young Kwakwaka’wakw hereditary chiefs, this Sała was open to all peoples, including non-Indigenous.

Hereditary Chief Maswayalidzi David Mungo Knox (Kwagu’ł) hosted the gathering in a clearcut near his community, T’sakis (Fort Rupert). His voice rings out across “the ugliness that the Ministry [of Forests] allows industry to do.” Knox calls it “another cultural genocide – without our Cedar trees, we can’t be us.”

The Kwagu’ł ancestral lands are “being completely cleared, faster than anything else globally,” said Hereditary Chief Makwala, Rande Cook (Ma’amtagila). Only 19-20% of the original old-growth forest remains on Vancouver Island (including parks), according to data from Sierra Club BC.

“Every tree in here had a use, every tree had a spirit – that’s all gone now,” explains Matt Ambers, designated chiefs’ speaker at the ceremony. “Everything

that we did come from the forest. Everything that we built, all our regalia, all of our ceremonial items came from the forest. It's a really scary time."

The idea for the Sała emerged as Knox and Cook worked with the Awin'akola charitable foundation, which uses a cross-disciplinary research approach to forest preservation. In their work, the team kept finding themselves in clear cuts. "One year we were in an old-growth forest, the next year it was gone," says Cook. "We were literally chasing our future possibilities, and all of the healing that comes from these forests and our culture." They realized they weren't taking time to grieve.

Jaskwaan Bedard (Haida) on the board of Awi'nakola. The Haida word women use for cedar is "*dii k'wáay*, older sister," she says. "Showing your heart by mourning is an important step for healing."

The Sała was the culmination of a week of field visits with researchers, including ecologist Rachel Holt, and Suzanne Simard (author of *Finding the Mother Tree*). Awi'nakola's interdisciplinary approach meant the gathering drew participants from all across the continent, from curators to librettists to land stewards.

Kelly Richardson uses art to communicate to hearts when science does not. "We do not need more data, honestly. We're past that point. It's a matter of inspiring action, even if it's just reevaluating what you exist in this world for," she says.

### Truth on the ground

As we enter a massive clear cut, the body of a black bear lies on the side of the road, "poached, but they left his paws," notes biologist Helen Davis. The group clambers over logging debris. It's difficult to

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**"Everything that we built, all our regalia,  
all of our ceremonial items came from the forest.  
It's a really scary time."**

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find footing, and Davis reminds us of baby bears leaving generational dens to follow their mom through crisscrossed layers of wasted logs and slash piles. We walk towards an island of trees left as a buffer for a protected bear den.

The location was chosen to "show a really bad, under ten-metre buffer zone where the salmon are spawning," says Knox. One of his ancestral chiefs recommended the McKenna-McBride Commission of 1913-1916 leave a 500-metre buffer zone on each side of the rivers, for all five watersheds in Kwagu'ł territory. "Lucky if we get five to ten meters right now." Knox's powerful voice rings out across the clearcut. He invites the gathering to imagine how different the north island would be now, had that recommendation been taken. "Shame on government for not listening to the people of the land," says Knox.

The chiefs sit in regalia in front of a painted screen, gracing the grey expanse of gravel road and slash piles with colour. A long, painted T'amidzu (drum log) lies in front of them to share. The site is cleansed with eagle down, sprinkled by each of the hereditary chiefs in turn, and women dance among the eagle down, creating a sacred space for this important work.

Over time-honoured mourning songs, the chiefs begin to speak.

### Nothing left to give

"Hereditary chiefs hold a big responsibility to the land, and it is their right to ensure it is used in a good way," says Speaker Matt Ambers.

Decision-making about their forests is happening "far from here with people who do not know the traditional people of these lands. Who have never stepped on these grounds, have never breathed this air, who have never just respectfully asked how to build a relationship," explains Cook.

"Many millions of dollars have been taken," out of this area, Cook says. He explains how potlatches involve lengthy preparations, gathering, harvesting, and preparing goods from their territories to distribute wealth. He gestures to the logging debris, saying, "We have no more wealth. We have nothing else to give."

Women mourners wearing black cloaks come out from behind the screen, heads encircled with hemlock boughs, leading two young children wearing carved mourning masks by the hand. The masks are beautifully painted, but with a downcast mouth, and tears spilling from the eyes. The women sit on a plank bench in a row in front of the singing chiefs, and the children sit on the ground in front. A mourning song of many generations and

*Continued on Page 14* ⇨

↳ *Sala continued*

deep loss rises up from the chiefs, and the women weep. It's a powerful invitation to allow for grief and let it wash over us.

## Land and reconciliation

Hereditary Chief Kwakwabalas, Ernest Alfred says, "Today is about unifying. Even though we carry heaviness in our hearts for what's happening to our lands and our waters and our people, we need to find the strength to carry on."

The chiefs have witnessed the power of resistance in removing fish farms. "Mother Nature knows how to heal," Alfred says. They've seen what hard work, determination and resilience can do, and they take strength, he says, from knowing "We are part of a global movement."

"They want us to be individualistic, but we're not going to give them the satisfaction," says Knox. "We're all dealing with the effects of resource extraction and all the territories together."

The chiefs spoke on the embedded disconnect between levels of government and the value of an Indigenous lens of interconnection. For example, logging too close to streams is not just a forestry matter, as it impacts salmon also.

Cook pinpoints a glaring gap in the *Truth and Reconciliation Act*, that there is "nothing in regard to land. The government doesn't want to give up the land. It's all just compensation for the amount of harm," he explains. "But until land is actually given back, when we can begin to heal and actually do the work, there is no reconciliation."

Active reconciliation to Cook looks like opening doors to non-Indigenous collaborators, working "together for the sole purpose of healing the land, because the land is everything," he says. "Then we can start to identify what it means to be Canadian under Indigenous values. If we can share our value system now and invite people into our governance and

why these things have mattered and why protecting the land is so important, then those values will sustain and we'll build stronger communities – and we can move from there."

## Leaving the door open

A grieving ceremony normally closes with a cleansing; for example, a cedar brushing to take care of people's spirits. The chiefs decided to leave this gathering open, for people to carry this experience as motivation to activate and make change. The women who sat as mourners during the ceremony had hemlock encircling their heads for protection. The sorrow is absorbed by the bough tips, and will later be burned.

Sala is also about having faith, as an act of releasing spirits from our grief, so they can move on to the other side. "The trees have spirits," reminds Cook. "The ceremony is really about calling those spirits back."

"It's going to take five hundred to a thousand years to get a healthy forest back again," Cook says. "We are not just out fighting for just the trees and our kin. It's really our way of life."

Standing among the fireweed, Chief David Knox offers a message of hope, "We've always had the solutions. It just fell on deaf ears."

Odette Auger (Sagamok Anishnawbek) is an award-winning independent journalist and storyteller living on Klahoose territory in the Salish Sea. Follow her work at [www.authory.com/OdetteAuger](http://www.authory.com/OdetteAuger).

Special thanks to Agathe Bernard for her photography in this piece. [www.agathebernardstudio.com](http://www.agathebernardstudio.com)



# The Politics of Mining

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## Policy questions for your local candidates

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by Nikki Skuce

**Where do BC politicians stand on new mining laws? Transitioning to a renewable-energy economy means increased demand for BC minerals and metals. With the provincial election set for October 19, it's time to get candidates on record about urgent mining issues.**

### **Modernizing the *Mineral Tenure Act***

The courts have ordered BC to modernize its *Mineral Tenure Act* (MTA), the cornerstone of mining laws in the province. This is an opportunity to overhaul a system that dates back to the gold-rush era and grants mineral exploration rights without considering Indigenous rights and other land-use priorities.

The MTA must be reshaped to respect free, prior, and informed consent of Indigenous peoples and address contemporary environmental and social concerns.

Political parties should explain how they plan to ensure that the new MTA respects environmental limits, recognizes Indigenous rights, protects biodiversity and adapts to contemporary land-use values.

**Question:** With the Supreme Court now mandating reform to the claim-staking process, how would your government move forward with modernizing the Mineral Tenure Act?

### **Enhancing safety and oversight**

The Mount Polley disaster a decade ago is a stark reminder of what's at stake when it comes to environmental protections. Will the parties commit to implementing robust regulatory frameworks to prevent similar environmental catastrophes? Their platforms should show how they plan to improve oversight, enhance penalties for non-compliance, and ensure that mining activities do not compromise ecosystem health. Voters need to understand each party's commitment toward more responsible mining.

**Questions:** One of the key challenges with mining is managing mine waste and tailings ponds. What will your government commit to do to ensure mine tailings safety?

Would your government commit to reducing the risk of tailings failures by creating a strategy to “de-risk” and reduce the number of tailings dams in the province?

### **Ensuring the polluter pays**

In recent years, the Province somewhat improved its reclamation security policy and reduced public liability for mine site rehabilitation. But the public is still on the hook in some circumstances, and over 1800 historical mine sites in the province still need to be cleaned up.

After the Mount Polley mine disaster, the company responsible was not fined or penalized, and affected communities received no compensation. Environmental advocates are calling for an industry-pooled fund to clean up abandoned mines and pollution and compensate impacted communities.

**Questions:** How would your government deal with the hundreds of historical mine sites littering the province?

Would your government support an industry-pooled fund to support communities impacted by mining disasters or pollution?

### **Broadening the conversation for transition minerals**

A sustainable energy transition must be built on a foundation of responsible mining that can secure supplies of metals and minerals in innovative ways, by recycling, reusing, reducing overall demand, and re-mining tailings.

**Question:** What would your government include in a “critical minerals” strategy to protect water and reduce risks from mining during the energy transition?

Nikki Skuce is co-chair of the BC Mining Law Reform Network, and Director of the Northern Confluence Initiative based in Wet'suwet'en territory in Smithers, BC.

# The Everything Place

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## A trip to the Edmonton Waste Management Centre

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by Leif Gregersen

**The Edmonton Waste Management Centre sprawls across 233 hectares in the northeastern outskirts of the city. With twelve waste processing buildings, two research centres, sewage and biosolid lagoons, plus a special area for composting, it's a city unto itself with 400 workers, from administrators to sorters to truck drivers.**

The Centre generates a lot of products for sale, but the goal is making positive change rather than profit by finding a useful purpose for waste.

The complex has a place for everything. In the composting areas, food scraps and organic waste are spread out and fermented, creating biogas which is used to generate electricity. Storage lagoons hold biosolids: human waste recycled into nitrogen-rich fertilizer. Even the massive former landfill has tunnels through it to collect gases used to generate energy.

Another building is dedicated to separating electronics components to be broken down for their valuable metals: aluminum computer cases, copper wiring, even gold from computer motherboards.

Our tour guide, Public Education Specialist Neil Burkard, told us about a young boy getting a tour of the centre on his birthday with his friends just because he loved trucks. The Centre has almost every kind of truck on site, and a pilot project is planned to switch to all electric vehicles in two years.

Burkard answered nearly every question put to him on the tour. But there are questions that waste management experts all over the world are still trying to find solutions for. We are unable to recycle solar panels in any significant (or profitable) way. Our facility cannot recycle lithium electric-vehicle batteries. Burkard joked that if someone develops a cost-effective way to recycle lithium, they would be as wealthy as Elon Musk.

The tour moved on to the huge recycling building where much of the sorting is done by hand. We stood on an observation platform a few feet from a sorting machine with an AI “brain.” The machine’s robot arms moved like spider legs, sorting and picking at breakneck speed while a conveyor belt moved waste through. Apparently, the machine was much slower when it was new, but used its learning abilities to become faster and more efficient than any human sorter.

The long-term plan is to bring in more of these AI-learning machines. Neil admitted this would reduce the facility’s workforce by around 50 people, but added that those 50 positions will be filled again as the Centre’s operations gear up.

It’s hard to imagine standing in front of a fast-moving conveyor belt sorting trash all day, weighed down with coveralls, boots, and hard hat. It was morning, but the temperature was already nearing 32 Celsius. Neil said they once had huge fans

to cool people off, but they blew trash off the belts. Now, large semi-truck sized doors are opened to promote airflow. Our guide also explained that workers take more breaks on hot days and switch between sorting and cleaning.

The Centre’s goal is to sort 2.3 metric tonnes of waste per hour. Ideally, materials get sorted when they come in, but there are days when too much waste comes in. The solution is to stockpile materials with a front-end loader and move the piles to wherever they can be stored until a slow day when they can catch up on the backlog.

The next building held sorted piles of plastic and other recyclables. Burkard told us about some alarming waste-management trends. For example, a few short years ago, newsprint made up a large part of the recycling stockpiles, but now it’s barely an issue. He pointed out a pillow that someone had put into a recycling bin, something he called “wish-cycling” – when someone has good intentions, but the item they put in their recycling bin is not recyclable, causing difficulties in the sorting process.

Later, we drove past storage units full of electronics ready to be shipped to a facility in Ontario. There were thousands of computers, keyboards, and hard drives. The Centre’s partner company Quantum takes anything with a battery or a cord to be refurbished, repaired, sold, or donated.

I secretly wished I could come back here and pick through some of the equipment that looked more modern than what I use for my work.

We proceeded to the alternative fuels building, where Neil showed us a product called “fluff,” also known as Refuse Derived Fuel (RDF). Materials left over from other recycling efforts are processed until they have broken down to thumb-sized pieces. Once the metal is removed by magnets, fluff is used instead of coal or natural gas to heat rotary kilns and make cement from limestone and carbon in a West Edmonton plant. The material – mostly cellulose from wood and paper products – is burned at a temperature of 900 degrees, a “clean burn” with no harmful emissions. By 2027, the Centre aims to produce 20 metric tonnes a day of RDF fluff.

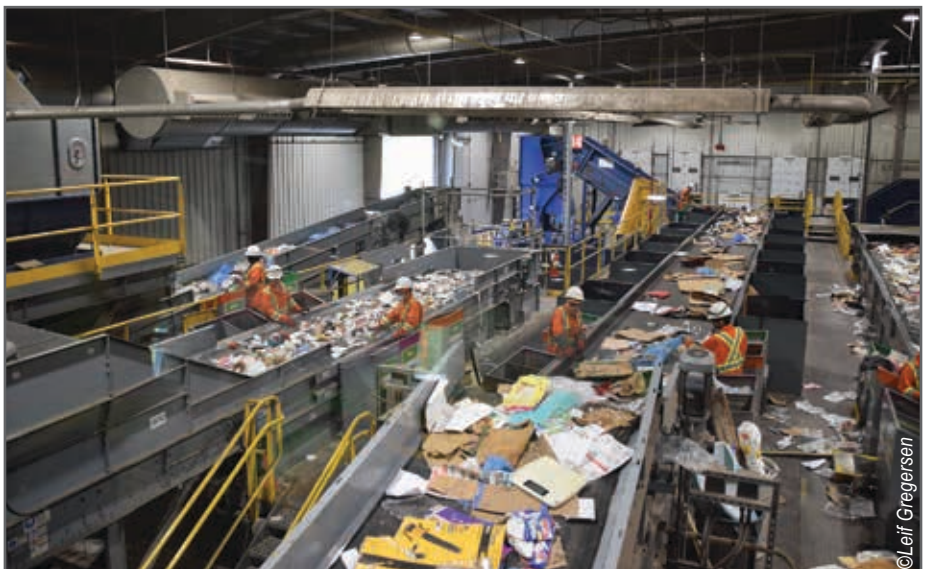
A great deal of effort goes into using every bit of waste. But not all municipalities share the same goal. For example, Neil mentioned that New York City still allows garbage to be barged to international waters and dumped into the ocean.

As I left the facility after my tour, I thought about how things had changed. As a boy, I often rode my bike with friends to the city dump in St. Albert to scavenge for anything fun or useful. The idea of 10-year-olds rummaging in the trash is enough to make me cringe now. What Edmonton is doing will forever change the concept of a city dump that just keeps getting piled higher and higher.

Author Leif Gregersen is a writer, teacher, and public speaker who has written 12 books.



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# The Long Haul

We have to take the long view. We have to zoom out far enough to see the arc of history and the scale of what we've lost. The centuries-long march of colonization, the relentless drive to exploit Mother Earth, the constant creep of development. Growth for its own sake, like a cancer.

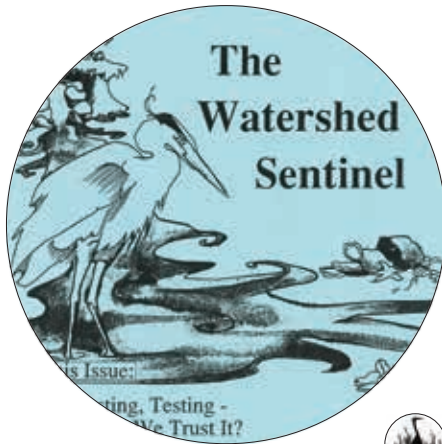
But against that grim backdrop, brilliant sparks leap out. Blinding flashes strobe the landscape with supernatural power and clarity, illuminating thousands of faces burning with passion, carving out space for wild things, calling on us to save the web of life itself. These are the moments, days, months, that change history.

Over decades and centuries, we see how movements flare up and fizzle out. The real test is how we persevere. Every campaign has its spark: trigger events that shock the conscience of the public, flash points that force us to look despair in the face. And every time we start to make real progress, the backlash strikes. That's when so many burn out and fall away. But that's the moment when we must dig in and hold fast. Because victory comes only after the battle.



# Why the Heron?

## A talisman for our times



by Delores Broten

So many herons have carried the *Watershed Sentinel* logo over the years, from ink sketches to full-blown colour portraits. Lucky donors receive thank-you cards featuring Leanne Hodge's magnificent *Great Heron Blues*.

Why? The short story is, as Leanne wrote: "The Great Blue Heron population acts as a bellwether for the health of our mutual homes."

When my partner Don Malcolm and I decided to start a little magazine in 1990, we searched for names, and over the winter holiday we had a list of about 20 candidates. We wanted something about the environment, and about standing on guard, as news publishers do. Hence the name, *Watershed Sentinel*.

But the herons? Scientists had been monitoring heron success in reproduction and dioxin levels in egg shells since 1982 at

four sites: UBC, Crofton, Sidney Island, and Nicomekl in Langley. The sites had comparable success rates.

But in 1987, the 59 active nests at Crofton failed to hatch an estimated 179 eggs, judging from the shells on the ground. Further, the eggs were stabbed in abnormal patterns, indicating the adults were destroying the eggs.

By 1988, a national dioxin survey by Environment Canada and Fisheries and Oceans Canada revealed high dioxin and furan levels in crabs, prawns, and shrimp in Howe Sound and near Prince Rupert, causing fisheries closures. Further sampling revealed high levels of contamination near other chlorine-bleaching pulp mills on the BC coast, and more closures followed.

It was, for Indigenous and settler coastal peoples dependent on shellfish and other

fish – like the oyster workers on Cortes Island, where the magazine was created – a gradually-expanding nightmare.

The federal government did move rather swiftly, and passed regulations in 1992 that caused mills to invest in process changes as well as install secondary treatment to improve effluent.

Gradually the closures were narrowed or lifted. Some areas still do contain dioxin in the sediments but closures today relate mostly to sewage or red tide. The herons are recovering, after delivering their warning message about danger in the watersheds.

And that's the story of the heron as *Watershed Sentinel's* logo.

With thanks to all the artists, from Lisa Gibbons to Leanne Hodges, who have helped us present our heron talisman.

# From Ozone to POPs

## Getting our global act together: history proves it's possible

by Delores Broten

The story of the ozone “hole” is an inspiring example of global action in the face of a global ecological threat. And the action was, as these things go, relatively speedy.

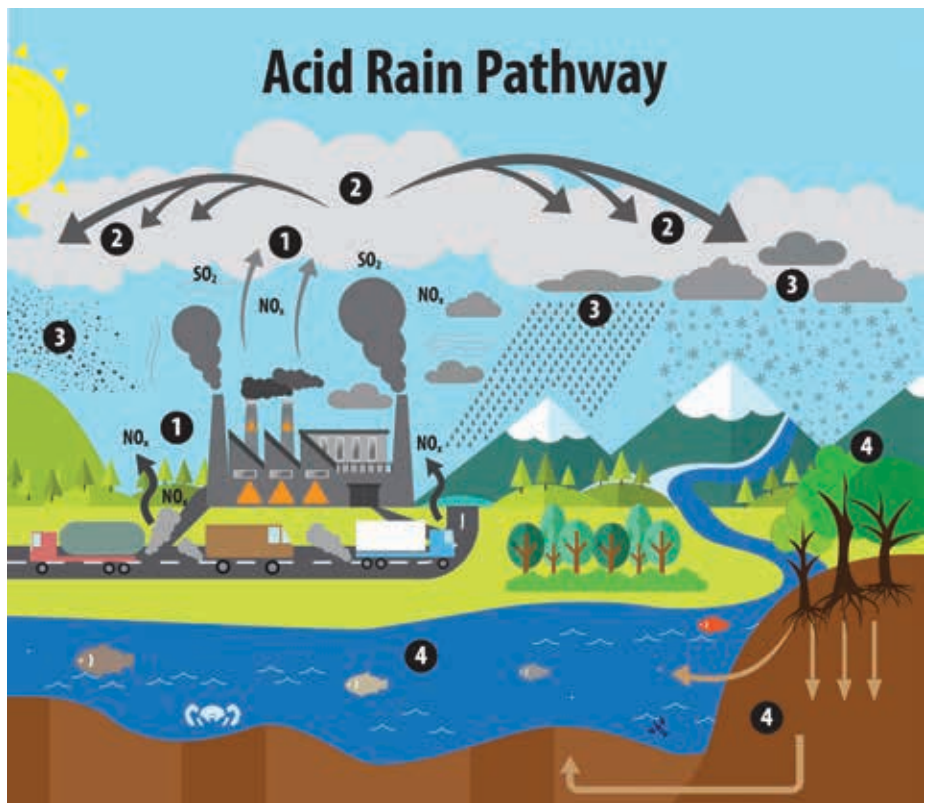
The ozone layer, a layer of gas high above the earth that blocks harmful ultraviolet rays from reaching us, was only discovered in the early 20th century.

In the meantime, industrial society continued developing, and chlorofluorocarbons (CFCs) were used in everything from refrigerants to solvents to aerosol sprays, with no suspicion about their dark side.

Then in 1974, Sherwood Rowland and Mario J. Molina reported that chlorofluorocarbons (CFCs) could damage the ozone layer. It was early science; nonetheless, the large US company SD Johnson shocked the chemical industry by removing CFC-containing aerosols from all their products in 1975.

In the early 1980s, a young British researcher in Antarctica compared ozone records over a decade and found that, since the late 1970s, there had been a systemic decline in the amount of spring ozone. By 1984, the ozone layer over Halley Research Station in Antarctica was only about two-thirds as thick as it had been in earlier decades.

Eventually 19 countries, including major emitters, signed the *Montreal Protocol* in



1987. It allowed ten years for countries to reduce CFC production by 50%, but as the situation became clearer, the Protocol was amended in 1990 to agree to a total phase-out by 1996. It also established a fund to compensate less-developed countries for their expenses. This led China and India to sign on.

Some of the second-generation replacement substances, such as hydrochlorofluorocarbons (HCFCs), are due for complete phase-out due by 2030.

The Protocol required a scientific assessment every four years. The latest, in 2022, found that the slow process of ozone layer recovery was finally underway, with an expected recovery by 2040 to 2066 over various parts of the world. It also found, as a bonus, that the curtailment of chemical releases avoided .5°C of global warming, but warned that attempts at geoengineering should consider inadvertent future effects on our protective ozone layer.

## Acid rain

In the 1970s, forests began to die and lakes became sterile in eastern Canada and the United States. People feared that maple syrup would be a thing of the past, due to the impact on maple trees. The cause was popularly named “acid rain.”

The *Canada-US Air Quality Agreement (AQA)*, signed in 1991, was designed to reduce the transboundary contributions to acid rain caused by the air pollutants sulfur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NOX). The countries also agreed to work together on acid-rain-related scientific and technical cooperation, and produce progress reports every five years. In 2000, the Agreement was amended to include transboundary ground-level ozone. Both Canada and the US have made major reductions in air pollution and continue their monitoring.

- As of 2020, emissions of sulphur dioxide in Canada and the US decreased by 78% and 92%, respectively, from 1990 emission levels.
- Between 2000 and 2020, emissions of nitrogen dioxide in Canada and the US decreased by 65% and 72%, respectively, in the transboundary ozone area.
- In the Canada-US border region between 2001 and 2020, annual ozone levels have decreased by 21% in Canada and 26% in the US.

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“The story behind the discovery of the ozone hole,” [www.ukri.org](http://www.ukri.org)

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*Review and Assessment of the Canada-U.S. Air Quality Agreement (AQA) 2023*, Environment and Climate Change Canada, US Environmental Protection Agency (En4-651/2024E-PDF)

## Persistent Organic Pollutants

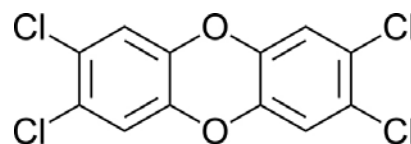
The *Stockholm Convention on Persistent Organic Pollutants* (the POPs treaty) represents a massive international effort to stop the global circulation of carbon-based toxics, such as DDT, which can persist for a century. The *Stockholm Convention* includes guidance on substitutions, funding for newly developing countries, and a scientific committee to examine and add new substances. The list started with 12 chemicals: nine pesticides, PCBs, dioxins, and furans, and has now expanded to 31 chemicals.

Canada took a lead role in promoting the Stockholm Convention, and was the first nation to sign in 2001. Signatories now include 186 countries, but the first POPs negotiations were between non-governmental activists around the world, who then all lobbied their governments with the same agenda.

These persistent toxins travel through air and ocean currents and are deposited in the Arctic and Antarctic. Unfortunately, climate change means that the historical stores of POPs at the poles are now being re-liberated as ice and peat thaw.

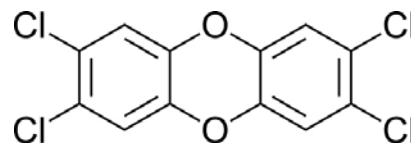
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## Environmental and Health Effects of POPs

- Persistence for long periods in the environment
- Travelling long distances and depositing far away from their sources of release
  - Accumulating in the fatty tissues of living organisms
  - Causing complications like cancer and birth defects
  - Triggering adverse effect on the ecosystem and biodiversity
  - Potentially disrupting immune and reproductive systems and impairing cognitive response



# Forest to the Sea

## New protections for West Coast land and waters

by Watershed Sentinel staff

**Decades of work by countless environmental advocates came to fruition this summer when the BC government proposed new protected areas extending from the forests of Clayoquot Sound to undersea canyons in the deep ocean.**

The BC government, along with the Ahousaht and Tla-o-qui-aht First Nations, announced in June that more than half of Clayoquot Sound's ancient forests are finally getting permanent protection. Ten new conservancies will safeguard 760 square kilometres of forests and watersheds. The Ahousaht and Tla-o-qui-aht First Nations will manage the sprawling landbase with the help of foundation funding.

"The establishment of conservancies will ensure that clearcut logging has no place in these important old-growth forests," declared Elmer Frank, Chief Councillor, Tla-o-qui-aht First Nation.

Groves of 1000-year-old cedars and firs on Meares Island, once part of Tree Farm License 54, will be preserved. Meares was a hotspot in the late '80s and early '90s when First Nations and non-Indigenous advocates came together to block clearcut logging in Clayoquot Sound. The protests peaked in 1993 with the arrests of more than 850 people and worldwide media attention. Despite this massive campaign, however, industrial logging has continued in Clayoquot Sound's old-growth valleys.

### Tang.ḡwan – ḡačx"iqak – Tsigis

In the deepest part of BC's coastal waters, undersea trenches and mountains teem with mysterious marine life. Underwater thermal vents spewing super-heated mineral water and dozens of ancient volcanic mountains over 1000 meters tall create an incredibly diverse environment for a vast array of animals and plants.

A new Marine Protected Area (MPA) aims to preserve this network of life. Each seamount, or underwater mountain, is home to its own unique ecosystem. Strange, unknown animals of the abyss are found in the deep trenches, while the shallow seamounts provide habitat for more coastal species. Rare cold-water coral and sponge forests thrive here, along with dense schools of fish. The seamounts are also crucial stopping places for transient animals such as sharks, whales, and seabirds.

### Groves of 1000-year-old cedars and firs will be preserved.

"The Haida Nation recognizes the importance of Canada's designation of the Tang.ḡwan – ḡačx"iqak – Tsigis Marine Protected Area. In October 2022, the Haida Nation designated the portion within Haida

territory as a Haida Heritage Site," said Gaagwiis Jason Alsop, President of the Council of the Haida Nation.

### Great Bear Sea Protected Area

In 2023, a partnership between the Mamalilikulla First Nation, Fisheries and Oceans Canada, and BC's Ministry of Land, Water, and Resource Stewardship established a marine refuge off the coast of the Great Bear Rainforest. Now they have a much bigger goal: protecting habitat for over 30 species at risk, including herring, abalone, blue whales, basking sharks, and ancient glass sponge reefs.

This summer, the federal government committed \$200 million to make this goal a reality. The BC government pitched in \$60 million, plus \$75 million from investors and foundations, for a total of \$335 million in an ongoing fund. The initiative adds 14,000 square kilometres of new protected areas.

In all, about 30% of the area will enjoy various degrees of conservation, a huge leap from the 3% now off-limits to industrial activity and large-scale commercial fishing.

Tang.ɣwan –  
ḥačx<sup>w</sup>iqaq – Tsigis  
Marine Protected  
Area

Proposed  
Great Bear Sea  
MPA Network

Proposed  
Conservancies in  
Clayoquot Sound

Haida Gwaii

Vancouver Island

Tofino

Exclusive Economic  
Zone boundary

US Border

# Skaloola

## The message of the northern spotted owl



by Joe Foy

**According to Spô'zêm Nation traditional understanding, the spotted owl is a messenger. Above all else, remember that.**

Skaloola, the northern spotted owl, has lived in the forests of the Salish territories since the old times when the boundaries between humans and animals were blurred.

The Spô'zêm Nation (formerly known as Spuzzum) is a Salish tribal group, part of Nlaka'pamux territory in BC's Fraser Canyon. Chief James Hobart, in his submissions on the Spotted Owl Recovery Strategy to the government of Canada last year, explained how Skaloola came to be in the form we see today:

*Long ago, when creatures were still human, Skaloola the*

*Owl stole children. Hiding in the edges of our villages, Skaloola would watch for our children who wandered too far away or stayed out too late after dark. Skaloola would snatch our children up and put them into a sack carried on his back and run away into the mountains with them.*

*Then one day, Creator sent Coyote the Transformer to the Nlaka'pamux to deal with all the people who were dishonest, lazy, cruel, or not living in a good way. Those ones were transformed into animals so they would not be able to harm other people.*

*Skaloola, thief of children, became one of the transformed ones. He became a night bird who would be too small to carry off our children. In his transformed state, Skaloola was once again a friend to people, and is our kinfolk who would warn us of impending danger.*

These days, the last known wild-born spotted owl in Canada lives in Spô'zêm Nation territory. Spô'zêm has found itself at the centre of the fight to bring Skaloola back from the brink of disappearing. Spô'zêm has stepped up.

How did it come to this? The short answer: blame Canada.

Confederation happened when some of the eastern provinces first joined together in 1867. Soon after that, plans were drawn up to build a railroad to the Pacific shore and bring British Columbia into the confederation. The completion of the Canadian Pacific Railway was the link to what became the city of Vancouver almost two decades later.

With "Canada" now layered over Indigenous Nations' territories, and with a brand new railway in place, the logging industry quickly began to expand and spread inland from the coast.

The old growth forests of Skaloola, from Lillooet to the US border and from the crest of the Cascade Mountains to Howe Sound, were mapped out and parcelled off over time to logging companies that began to cut down the old trees at a faster and faster pace with each passing year.



A large portion of the remaining wild adult owls were captured and caged in a Fort Langley facility.

Joe in recently logged federally mapped spotted owl critical habitat along the Silver Skagit road near Hope, BC.

Early forest conservation efforts included establishing Garibaldi Provincial Park in 1920. But in a pattern that would repeat itself time and time again, the new park boundaries were skewed towards alpine meadows, peaks, and glaciers, leaving most spotted owl forest habitat outside of park protection – and thus open to logging.

In the early 1900s, prior to the spread of industrial logging operations, the government of Canada estimates that the spotted owl population may have numbered 500 pairs.

The spotted owl was first assessed by the Committee on the Status of Endangered Wildlife in Canada as Endangered in 1986. By 1991, it was estimated that fewer than 100 potential breeding pairs lived throughout the owl's range in the Salish territories.

By 2004 an estimated 25 adult spotted owls were left. A provincial captive breeding and reintroduction program started operating in 2007, resulting in a large portion of the remaining wild adult owls being captured and caged in a Fort Langley facility.

As of September 2023, there were 37 known spotted owls in BC. One wild-born owl was last confirmed in the forest in 2022, two captive-bred owls were released in 2023, and 34 owls are in the captive breeding facility, including seven chicks born in 2023.

Throughout this narrative, one thing has remained constant. BC has continued to issue logging permits for spotted owl habitat and Canada has failed to stop them.

But maybe, just maybe, things are about to change.



Spô'zêm Chief James Hobart speaking at the recent First Fish Ceremony.

Canada is in the final stages of putting in place a Spotted Owl Recovery Strategy, including a map of critical habitat requiring protection. The rough numbers are as follows: 200,000 hectares of critical habitat that are mostly already protected in parks and other forms of semi-protected forests. And a further 200,000 hectares of critical habitat of forests that are currently not protected at all.

This didn't just happen, of course. Since 1986, submissions by First Nations, tens of thousands of letters from people all over, countless protests and demonstrations, and multiple court challenges finally pushed Canada into proposing a recovery strategy.

So what is the message of the spotted owl?

Well, I think it is this: Canada broke the forest in the Salish territories by allowing BC to log too much. Canada needs to fix what they broke. Canada needs to work in partnership with the Salish Nations to ensure that BC's old growth logging stops and that all 400,000 hectares of spotted owl critical habitat identified are protected – now.

I'm thinking humanity is going to need the good counsel of Skalooloolo in the years ahead.

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

# Gulf Islands Trust

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50 years of saving the Islands from becoming Manhattan

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by Theresa O’Leary

“The island of Manhattan in New York City.” That’s what the Gulf Islands on the coast of British Columbia would look like if the *Islands Trust Act* hadn’t been created 50 years ago, according to Islands Trust Trustee Susan Yates. The longtime Gabriola Island resident says, “Practically every square inch of the ecologically vulnerable islands would be covered in asphalt and buildings.”



©Ester Strijbos - Gabriola Island

Now, as the unique governing body known as the Islands Trust turns 50, the veteran Trustee is grateful for what has been accomplished as a result of its work.

For the past half-century, the Trust and its elected Trustees have kept watch over land use on the 13 islands that form the Trust Area along the Salish Sea: Bowen, Denman, Gabriola, Galiano, Gambier, Hornby, Lasqueti, Mayne, North & South Pender, Salt Spring, Saturna, and Thetis.

In 1974, under the direction of the BC's governing New Democrats and Dave Barrett, the *Islands Trust Act* became law. "The Object of the Trust is to preserve and protect the trust area and its unique amenities and environment for the benefit of the residents of the trust area and of British Columbia generally, in cooperation with municipalities, regional districts, improvement districts, other persons and organizations and the government of British Columbia," reads the Act.

Earlier, a standing committee had examined the vulnerability of the Gulf Islands to commercial large-scale land development. The Social Credit party already had limited subdivisions across the islands to a 10-acre minimum lot size. That step in 1969 was spurred by a number of contentious developments, according to Peter Lamb, former Salt Spring Island Trustee and author of the *Islands Trust Story*.

"Magic Lake Estates on North Pender Island has created over 1200 city-sized lots. Mudge Island, a small island near Gabriola Island, has mushroomed into 185 half-acre lots. Other large subdivisions are planned or approved for Mayne, Bowen and Salt Spring islands. Equally alarming is a University of British Columbia study that predicts rapid, intensive private development on the islands," Lamb wrote.

In 1974, committee members concluded the Gulf Islands "are too important to the people of Canada to be left open to exploitation by real estate developers and speculators," identifying "large subdivisions and over-development as the priority concern." All parties agreed about the value of the islands with their fragile micro-ecological systems.

### Rapid growth

Yates hopes the Province will hold firm to its commitment to preserve and protect the Gulf Islands for future generations of British Columbians and Canadians. Population data show intense

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## Access to the essential resource of water is often the focus, as it's in short supply on these small islands.

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growth on the islands, even with the protections provided by the Islands Trust. In 1976, two years after the Trust was created, around 9500 people lived in the Trust Area. As of 2021, more than 30,000 people reside there. In the two decades between 1991 and 2021, the population grew by an astounding 61.7%

Yates said those numbers worry her, "Pressure from developers is more intense now than it was in the mid '70s." Even the provincial government has changed the rules due to the housing crisis, to encourage specific types of development such as allowing alleyway homes in Vancouver and transforming single family properties into multiple living units.

Yates wonders if the Gulf Islands can withstand the current forces of change. From 2016 to 2021, "Salt Spring's population increased 10.5%," to the point it now has a BC Transit bus service. It's jokingly called a suburb of Vancouver.

According to the latest Census data, from 2016 to 2021, Gabriola Island underwent a similar expansion, with a growth rate of 11.5%.

But Gabriola isn't even the fastest growing island. Mayne Island's growth rate was 37.9%. Galiano's was 33.5%. "Pretty alarming when you consider the growth rate for all of BC was 7.6%, which is normally considered quite high," Yates explains.

After serving as a Trustee for four terms during the past 38 years, Yates keeps an eagle eye on development from her home on Gabriola, where her carbon footprint is deliberately small. She has witnessed firsthand controversies and complaints from hopeful new residents, commercial real-estate development companies, and pushy developers. Access to the essential resource of water is often the focus, as it's in short supply on these small islands. Large-scale condo developments and attached townhouse complexes would put immense pressure on water systems.

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## Like a park

For many British Columbians, the Gulf Islands are like a provincial or national park, somewhere they visit as children on vacations or on school trips. It takes a ferry or two to get to the islands, so it requires some planning, whether you're traveling from the Lower Mainland or Vancouver Island. Some critics suggest the islands are just for the wealthy who can afford a summer home on the ocean.

But Yates defends the protected nature of the Trust area, "The Gulf Islands are a treasure for all British Columbians. Not everyone can live on the islands, but they are available for visits by any BC resident who is appreciative of protected lands," she says.

## Biodiversity and Douglas fir

For those unfamiliar with the Gulf Islands and why they're special enough to deserve protection, the Islands Trust website informs the public that scientific assessments by Biodiversity BC confirmed the importance and fragility of the Trust area. The Coastal Douglas fir zone, which includes the islands, is considered "imperilled."

"It is among the rarest of all biogeoclimatic zones in BC, contains the highest density of species of global and provincial conservation concern and has the highest percentage (97%) of ecological communities of provincial conservation concern," the website notes. The Trust area is home to 36 endangered ecosystems and 218 at-risk plant and animal species.

Since its inception, critics have targeted the Islands Trust. It has faced review several times. In 1982, the governing Social Credit Party introduced a bill that essentially would have ended the Trust. The plan, authored by Minister of Municipal Affairs Bill Vander Zalm, was publicly condemned by the *Vancouver Sun*. "Abolishing the Islands Trust would be like removing the Beefeater guard from the Crown jewels in the Tower of London. It would be an invitation to plunder a one-of-a-kind treasure house," read the *Sun*. The *Times Colonist* wrote, "To abandon the islands now to the varying and uncertain mercies of seven different regional districts is reckless and foolish."

In the end, efforts to shut down the Islands Trust failed. Instead, they sparked a groundswell of support for its continued protection, keeping the *Islands Trust Act* in place, albeit with amendments.

## A new threat

A new threat now looms over the Islands. This past spring, 34 former Island Trust trustees wrote a letter to the current Trust Council outlining their deep concern about potential changes occurring around the definition of the term "unique amenities" in the *Islands Trust Act*. The unique amenities reference was always understood to mean the ecological features of the Trust area, such as the endangered Douglas Fir and other ecosystems.

The letter expresses concern about the definition being changed to allow Islands Trust to manage things like housing, infrastructure, livelihoods and tourism. Until now, regional districts and government agencies have handled these areas.

The letter-writers, all of whom had served as Trustees, remind the current Trustees that "The Trust is limited to regulating land use in order to preserve and protect the natural environment and rural character of the Trust Area for all residents of BC, a duty specific to its intended purpose and function as a 'trust.'"

The letter bluntly warns that an expansion of the power and responsibilities of the Islands Trust Council through this change of language in the Act "has the potential of influencing or compromising environmental policies."

As Yates reflects on 50 years of the Islands Trust, one question is on her mind: "Can Islands Trust survive and withstand the constant and growing pressure to allow property owners and developers to build, build, and build?" She acknowledges regretfully that some Trustees were elected because they wanted to end or reduce the Trust's control over land use and development.

Given the high population growth rate of the islands, Yates says, "No wonder we feel such pressure from human development across the Trust Area." She worries the BC government will cave under the expectations of homeowners and developers and start fiddling with the Trust.

But in the end, she is hopeful the instinct to "preserve and protect" the Gulf Islands that sparked the creation of the *Islands Trust Act* five decades ago will hold strong in 2024 and beyond.

Theresa O'Leary is a semi-retired award-winning CBC News reporter, editor, and documentarian, writing stories across Canada, the US and Europe for the past 40 years. She is currently writing her first book.

# Wins and Losses

## Lessons learned from conflict and compromise

by Zoe Blunt

**Those who were on the front lines 20 and 30 years ago have urgent lessons for the activists of today.**

After decades of campaigning, we have yet to achieve the most crucial forest reforms: preserving all remaining ancient forests; an end to raw log exports; creating sustainable, value-added forest economies, and returning land to Indigenous people.

We won dozens of victories over the years. But the West Coast's patchwork of parks and conservancies falls short of protecting enough low-elevation forests and habitat corridors for large predators like grizzly bears and wolves. They need more than isolated pockets of biodiversity.

Clearcut logging is still standard operating procedure. Forest tenures aren't required to supply local mills that keep

communities employed. BC's raw log exports are over 6 million cubic metres each year.

"I believe the NDP did an amazing thing for this province by doubling the park system in the '90s. However, they failed to follow up by bringing in truly sustainable logging practices or ending the export of raw logs," Dan Lewis of Clayoquot Action summed up in a review of BC's "War in the Woods" ("CORE, SHARE, Clayoquot Summer: The fight for BC forests in the '90s," *Watershed Sentinel*, Oct-Nov 2020).

### The haves and the have-nots

In the 1980s and '90s, the political landscape was dominated by small volunteer-based groups. They were nimble, feisty, and ready to deploy diverse tactics. Many took aim at giants, and sometimes they won.

At the same time, the bigger environmental groups were learning to manage their campaigns like businesses. They set goals that could be achieved quickly in order to declare a victory and move on to the next. They found that winning often meant making deals with government and industry. Thus came the rise of the Environmental Non-Governmental Organization (ENGO), alongside what some have labeled, sarcastically, the "Non-Profit Industrial Complex."

Activist Bill Moyers described the different roles of campaigners almost 40 years ago in his seminal work, "Movement Action Plan." His organizing model describes how some activists seek to collaborate with industry and government. Others are principled no-compromise idealists, and the best results are achieved when the people in different roles work together. In the Great Bear Rainforest talks, resource corporations made a place

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at the bargaining table for ENGOs, while excluding the grassroots.

In the beginning, there was unity. Three of the biggest, best-funded and most business-like international ENGOs formed the Rainforest Solutions Project (RSP) and agreed to an equal partnership with Nuxalk hereditary chiefs and the House of Smayusta to protect the forests of BC's Central Coast. But when the Province and the RSP made their big announcement in 2006, the Nuxalk chiefs – along with many grassroots groups – were left out.

In the end, the Great Bear Rainforest Agreement protected only 32 per cent of the land, with many areas left open to mining, roads, hydroelectric projects, and other industrial uses – a far cry from the publicly-announced goal of 44 to 50 per cent protection needed to save species diversity.

But RSP approved the deal without consulting their former partners. At the time, Sierra Club's Lisa Matthaus, speaking for the RSP, conceded it was inadequate. "The protected areas alone are not sufficient, but this is a political compromise."

## Divide and conquer

How did this happen?

"I remember Don McMillan of Interfor telling me that the industry had a plan for us," Dani Rubin, former director of BC Environmental Network, said in 2006. "It's pretty clear now that the corporate strategy was to divide the environmental movement by electing to negotiate only with the pragmatists, leaving the rest of us out in the cold."

To get their seats at the big table, the ENGOs agreed to give up their biggest bargaining chips: protests and markets campaigns. There were no more high-profile blockades of logging operations, no lobbying wood buyers, and no public criticisms of the process.

This decision pulled the rug out from under the smaller volunteer groups. "They made the Central Coast an environmental-protest-free zone," according to Qwatsinas, the late Nuxalk hereditary chief who was part of the RSP protocol. "How are you going to set forth your demands at the table when your will is broken?"

While direct action strategies like blockades and boycotts have an immediate, although sometimes temporary, impact on logging operations, negotiations do not. The Great Bear talks dragged on for years, and the rate of deforestation only increased. Qwatsinas and others said that companies were slashing and burning faster than ever to maximize profits ahead of any new restrictions. It's a dynamic familiar to forest campaigners. Qwatsinas called it "talk and log."

Blockades and boycotts hurt the companies where it counts: in the bottom line. Financial pressure can force them to make substantial concessions to stop the pain. "Customers don't want to buy their two-by-fours or their pulp with a protester attached to it. If we don't end [the protests], they will buy their products elsewhere," Bill Dumont, chief forester at Western Forest Products, told the *Vancouver Sun* in May 2000.

## The revolution will not be funded

In the lead-up to the Great Bear compromise, RSP groups accepted \$120 million from the Rockefeller Foundation. That's

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when they started to lose touch with their core values, according to Vancouver Island activist Ingmar Lee.

“I just believe that we should be working together against these incorrigible forces of destruction rather than working together with them,” he said in 2006. “I have always advocated a broad spectrum of environmentalist effort, but the grassroots activist community has been excluded from the project from the start.”

Widespread disillusionment about the Great Bear compromise in 2006 echoed the gloom that followed the collapse of the government-sponsored Commission on Resources and the Environment talks on Vancouver Island in 1994. CORE set out to build a consensus between business and environmentalists for sustainable forestry and old growth protection. But on the West Coast, the few places that won official protection were the ones made famous by protests and blockades.

What could we achieve if we committed to real solidarity between the haves and the have-nots? In 2011, mainstream groups and radicals united to fight a sprawling vacation-home development along Juan de Fuca Marine Trail Park on Vancouver Island. The coalition made a conscious decision to stick together by dividing up the work: the big non-profits would be the reasonable ones open to negotiation. The direct-action groups were the muscle, the no-compromise enforcers. Any deal would need the support of both protest groups and ENGOs to be viable. Observers said it was a lost cause, but we won that campaign decisively.

Water protectors and no-pipelines campaigners launched the Caravan to Unis'tot'en Camp in 2012 to bring supplies, resources, and crowd-funding to Wet'suwet'en people whose lands were

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## To get their seats at the big table, the ENGOs agreed to **give up their biggest bargaining chips:** protests and markets campaigns.

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seen as a path to get dilbit to tankers on the coast. They sought an alliance with the better-funded organisations. But non-profit staffers told us they only support elected chiefs and band offices, not hereditary chiefs, not people who lived on the land in their traditional way.

Twelve years later, that attitude has reversed. The executive directors who dismissed the Caravan from their well-appointed boardrooms are now working with hereditary chiefs and Indigenous environmentalists, an arrangement that benefits the land, the water, the wildlife, and the people.

RSP investors, ENGOs and philanthropists helped start dozens of business-ess, launched a hundred new Guardian programs, created a thousand jobs, and brought in hundreds of millions in investments and development.

But like governments and political parties, philanthropists have their own priorities, and those can change overnight. Grant money is promised and then canceled. The pursuit of big money can warp the priorities of even the most principled groups. And billionaires just don't support radical economic change.

The lesson is to build deep-rooted coalitions within communities and between bioregions. And if ENGOs keep their promises to hereditary chiefs and hold space for grassroots organizations, imagine how much we all could win.

Zoe Blunt is a veteran water protector, tree-sitter, and blockader. She is the new editor of *Watershed Sentinel*.

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— Class Action Against Slash Smoke

# Uncertain Tides

“Digital experience lab” brings climate scenarios to life



by Claire Majors

Unless one is actively experiencing a natural disaster, the threat of climate change doesn't usually appeal to the human sense of survival in an urgent way. We have evolved to react strongly to immediate dangers that can be perceived by the senses rather than abstract scientific data.

In an effort to bring that data to life for people outside of the science community, the Flanders Marine Institute in Ostend, Belgium, has created an interactive climate installation, *Uncertain Tides*, which

offers a visceral experience of how potential climate change scenarios would affect our planet.

Ester Srijbos heard about *Uncertain Tides* while visiting family in Belgium and arranged to see the new exhibit, which is not currently open for public drop-in viewings. The exhibit consists of two small rooms called the “digital experience lab,” which is housed in a World War II bunker.

In the first room, “the control room,” the

viewer is invited to turn a dial that virtually pours CO<sub>2</sub> into the atmosphere as the consequences are depicted on a wall-sized screen split into eight different windows. The starting point of the simulation represents the current quantity of CO<sub>2</sub> in the atmosphere, around 400 parts per million (ppm). (For context, pre-industrial CO<sub>2</sub> levels were stable around 280 ppm for almost six millennia.) As the dial turns and the CO<sub>2</sub> level rises in increments of 50 ppm, the screens start to show AI-generated images of swarming jellyfish, toxic algae blooms, melted per-

mafrost, tsunamis, earthquakes, and fires. To counteract the gloom, a few pictures of hope flash across some screens, including nature-based coastal protection solutions like dune facilitation and seaweed farms as well as offshore wind farms, a popular energy source in Ostend.

“When you talk to people about climate change, they kind of get this glare in their eye,” Strijbos says, reflecting on how easy it is for people to avoid the subject because of its complexity. “But right away, when you turn that dial up, you really see it with your eyes. We are getting these sunsets where the sun is really dark red. You recognize that this is happening and we are in it.”

### Visualizing volatility

Bart De Smet, a Senior Science Officer at the Flanders Marine Institute, created this project with a colleague, three artists, and plenty of input from climate scientists. He says that the title of the exhibit refers to the volatile details of our future: “We are very certain about climate change taking place, but we are quite uncertain about the scenarios.” That is to say, scientists have many predictive models, but possible outcomes shift with changeable variables. For example, De Smet says, “[A] problem might be that the Gulf Stream will change or even stop, so that might influence our weather system here.”

The exhibit is designed to evoke this uncertainty both visually and aurally – the frenzy mounts with every click of the dial and the music becomes increasingly unsettling, “like a bad phone line,” Strijbos says. As the simulation reaches its maximum of 650 ppm, the images blur and glitch, evoking the precarity of the future. The last set of screens includes an imagined speech from the president of a sunken island, broadcast from the metaverse.

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“The viewer is invited to turn a dial that virtually pours CO<sub>2</sub> into the atmosphere.”

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“The higher it goes, the more uncertain everything becomes,” De Smet says. “It’s not a good story.” As painful as it may be to face, providing a physical dial for controlling CO<sub>2</sub> emissions is intended to make visitors reflect on how real these possibilities are and how much control we have over what scenario we end up in.

### Canaries of the sea

In the second room, plankton swim across screens covering all four walls. It’s the perspective you’d get on the ocean if you were looking through a 360-degree

*Continued on Page 34* →



©Ester Strijbos

time-travelling microscope. Time-travelling because, like the control room, this installation begins with the current state of affairs and quickly deteriorates to illustrate how marine flora will change along with the climate. The ocean becomes more colourful, as organisms like *Noctiluca scintillans* infest the sea and turn the water a hauntingly electric blue. The images are generated by AI that was trained on scientific input from the Flanders Marine Institute.

De Smet explains that plankton is the focus of the Flanders Marine Institute's research, because they are the "canaries of the sea." As the lowest members of the food web, plankton are early indicators of ocean changes like increasing temperature, acidification, and deoxygenation. Although the images in this exhibit are dreamt up by a machine, they are authentic to what the scientific community has been warning the public about for decades. "It can be very difficult to watch or see, but that will be the reality if we go on like now. It's not science fiction," says De Smet.

*Uncertain Tides* is a conversation starter and a launching pad. "We want to showcase what's possible and then attract people to do collaborations with us," says De Smet. One researcher, for example, is interested in conducting experiments by showing people images of coastal and urban environments in the lab and measuring stress levels. The exhibit will hopefully also welcome school groups soon.

Translating data into a visual exhibit had a lasting impact on Strijbos, and she hopes that similar installations will be inspired by this one. She likens it to talking to people about the holocaust versus taking them to see a former concentration camp, where they can feel the story in their body. "For a moment in time, you're

in it and it really does something to you," she says. Seeing is believing – it's only human nature. Maybe if we can open our eyes to what climate catastrophe truly looks like, we can come together with renewed energy to stop cranking the dial on CO<sub>2</sub> emissions. As frightening as uncertainty is, it holds some room for hope.

1) <https://www.noaa.gov/news-release/carbon-dioxide-now-more-than-50-higher-than-pre-industrial-levels>

Claire Majors is a freelance writer and editor and a settler on the unceded territory of the Lək̓ʷəŋən (Songhees and Esquimalt) and WSÁNEĆ Peoples.

### **FRAGILE, 3D mural by Leon Keer, Oostend Belgium.**

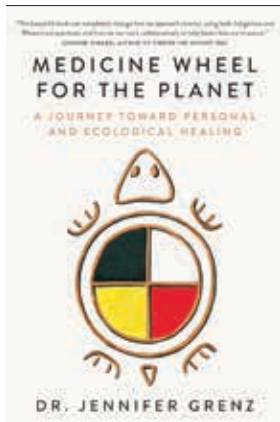
The trompe l'oeil mural shows three Delft Blue vases. The images used on the vases each depict a different story on the effect of climate change. The title of the piece, *FRAGILE*, refers on the one hand to the vulnerability of our planet and on the other to the fragility of the ceramic. Created with help of artist Massina, this mural measures 22 x 7 meters. It is located opposite the Flanders Marine Institute.

– <https://www.leonkeer.com/3d-mural-fragile-by-leon-keer-thecrystalshipfestival/>



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**ISBN: 9781517916466  
280 Pages**

**University of Minnesota Press,  
2024**

by Michael Maser

**Dr. Jennifer Grenz, assistant professor in the Department of Forest Resources Management at the University of British Columbia, is a very busy woman.**

Heading up the Indigenous Ecology Lab at UBC, she draws on her ancestry from the Lytton and Bonaparte First Nations and a background (including a PhD) in conventional science, to address environmental issues at the confluence of climate change, invasive species, colonialism and ecological restoration. All areas rife with circumstantial and relational tension. It's no wonder she values the Indigenous mythology of the frog, an animal recognized for its adaptability to changing circumstances.

Grenz chooses the frog as a personal totem in her potent new book, *Medicine Wheel for the Planet*, to symbolize how she seeks to adapt to the differing worlds of Western science and Indigenous knowledge. In both worlds, she offers insights reflecting her deeply held beliefs that most models and projects of restoration ecology are deeply flawed and doomed to fail.

Ecological knowledge held by Indigenous knowledge keepers holds clues about land healing but it continues to be mainly dismissed in discussions dominated by academics, industrialists and government officials. “Sacred” is how she describes this

knowledge, “information acquired from our deep relationship with the places we are from.”

For many years before she entered academia, Grenz worked in the realm of invasive ecology. She drew on her background in Western botany and tackled numerous projects throughout the province, digging out the plants deemed as harmful invaders. In work teams and also alone, she toughened up her blisters and deepened her expertise. She observed the very real and dynamic forces of climate change on landscapes, plant communities, and animal species.

Eventually, she cocked an ear to listen to Indigenous elders who passed along insights to her. She learned how BC First Nations have a integrated relational ecology that has always included food production, natural cycles including fire and drought, and gestures of reciprocity to nurture the lands as the lands nurtured their communities.

Grenz includes numerous personal stories, dreams, and epiphanies that challenged the foundations of her knowledge and beliefs. One such belief is the frame put on invasive species like Japanese Knotweed – to remove it at all costs. Another is the attitude that centres on the notion of “Eden” or pristine restoration, harkening to a period pre-contact, when landscapes existed in mythical balance.

Both of these beliefs, and many others profiled in the book, are out of sync, Grenz asserts, because they don't reflect the reality of rapidly-changing ecosystems. Nor are they likely, she believes, to help human cultures find a more stable balance in the future as we are challenged to adapt.

Grenz urges anyone involved in land healing – from weed-pulling to policy-making – to rethink entrenched beliefs, restoration goals, and funding models as our collective Indigenous and non-Indigenous communities stumble our way into an uncertain future.

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

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# Wild Times

## A Perfect Storm

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by Joe Foy

I recently had an “Oh, what now?” moment while riding my bike to work. Ever watchful for danger, I was coming around the west end of Burnaby Lake when the bushes on the side of the road started to shake. Emerging from the green, a big black bear ambled onto the road and shuffled, seemingly without a care in the world, in the general direction of the lakeshore.

I stopped the bike. A truck coming toward me also stopped. The bear walked between us, looking neither left nor right, until reaching the other side and disappearing into the green once more.

I gave the truck driver a nod and a smile, happy that we had both witnessed something very Vancouver. A bear in the middle of Metro Van, population 2,683,000. Amazing. Beautiful. Awe inspiring. Hopeful.

The next time I rode through, there was a bright yellow bear-in-area sign beside the bike route. Somehow, the sign made the bear’s presence official. Sanctioned. Valued.

I can’t get that bear encounter out of my mind. It seems that we and the bear are facing a perfect storm – one where irreplaceable stuff may get lost in the whirlwind if we don’t keep our wits about us.

The bear and I met because forward-looking land-use planning by the governments of Burnaby, Metro Vancouver, and BC had created both the bike route I was riding on and the parks and forest corridors that the bear was following - all powered by the votes of people who value wild nature where we live.



©Joe Foy

But now BC has passed a law requiring municipalities to greatly increase housing density, regardless of existing community-designed plans. There is a deadline for compliance, which most cities have met. Mayors are not allowed to say “no.”

I have seen this kind of anti-democratic voice-silencing before and it gives me chills. For too many years, provincial forest managers were unable to say “no” to logging company plans. That has recently changed, but people in our neck of the woods face decades of dealing with the damage of logging done wrong, in the wrong places, causing lost wildlife habitat, wrecked streams, and landslides.

Now as a consequence of BC’s heavy hand, power has begun to shift in our cities, diminishing the voices of the community ballot box and making the voices of developers much louder.

If development happens wrong and in the wrong places, what happens to future urban wildlife corridors that still need to be enshrined in law? What happens to urban salmon streams and the forests that filter their water and hold their banks safe from erosion? What happens when developers call the shots?

The thing is, we do need to build denser communities. We do need to protect urban wildlife and the habitat they rely on. But we can’t do either of these properly by diminishing community democracy.

A perfect storm is coming. Best we keep our wits about us. Best we pay attention.

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

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