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Watershed

# Sentinel

Environmental  
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News from BC and the World

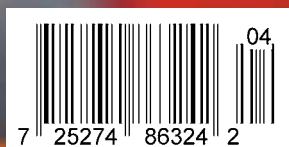


September - October 2015

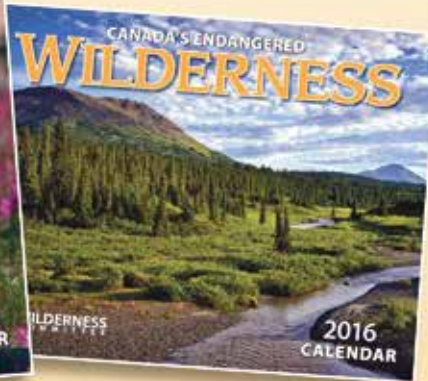
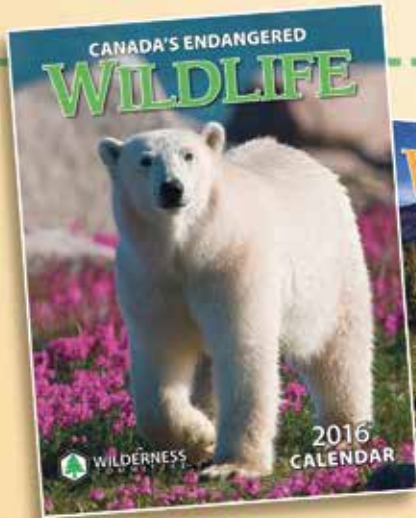
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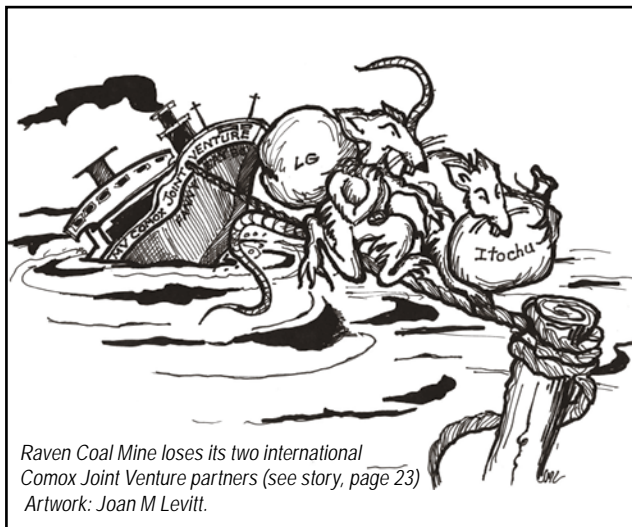
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FSC®-Certified paper, with vegetable inks.

Cover Photo by  
Ron Pogue



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# Watershed Sentinel

Publisher Watershed Sentinel Educational Society  
 Editor Delores Broten  
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Special thanks to Ron Pogue, Karen Birch, Norleen Lillico, Patricia Robison, Arthur Caldicott, Gloria Jorg, Dyane Brown, Norberto Rodriguez de la Vega, Anicca de Trey, Mike Morrell, Kathy Smail, Ray Woolam, the writers, advertisers, distributors, and all who send information, photos, and ideas.

Deep thanks to our Board of Directors: Anicca de Trey, Alice Grange, Mike Morrell, Norberto Rodriguez de la Vega, Susan Yates, and Lannie Keller. Published five times per year.

Subscriptions: Canada \$25 one year, \$40 two years; US \$35 per year, Electronic only \$15 a year

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

Member Magazine Assn of 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  
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## EDITORIAL

### Keep Your Eyes on the Ball

Once upon a time, I did a fund-raising course, and the instructor said words to the effect, Who says it is rude to talk about money? Answer: Those *with* the money. Now I am asking myself, Who says it is scandalous to vote strategically? It is, after all, only a form of negotiation and compromise, which makes life in community possible.

As we go to press, the Canadian federal election has seven weeks to go, emotions are running high, and the polls show a tight race which could easily return the Harper Conservatives to power. This result would be disastrous for the environment, in Canada and globally. Unfortunately, none of the opposition leaders except the Greens' Elizabeth May are showing any attempts at responsibility, negotiation, compromise, or consensus building – in other words, adult behaviour.

That leaves it up to us to follow Leadnow's strategic voting suggestions (see page 9), stop Harper, and ensure a healthy mix in Parliament. While we are at it, we should remember that the NDP have promised to bring in proportional representation to make all our votes count, which will benefit the Greens more than any other party.

Time to grow up. We may not get what we want, but we could get what we need.

*Delores Broten, Comox BC, August 2015*

### At the 'Shed

**Welcome!** If you have picked up this magazine as part of our new circulation initiative on the Horseshoe Bay/Langdale ferry, welcome. We hope you find something in these pages that inspires you. The free distribution is time-limited so if you want to stay in touch, use the subscription form enclosed, or order online at [www.watershedsentinel.ca](http://www.watershedsentinel.ca).

**The Fundraiser** at Indigogo is still on-going to pay for that extra ferry outreach – a huge thank you to those who have already contributed to get us afloat. We have some fabulous thank you gifts. You can check them out and donate online at <http://tinyurl.com/psop3qe> or follow the link from our website and our Facebook page. Or drop a cheque in the mail.

**Calendar Special!** Fall is in the air, and that means it is time once more to tempt you with our special gift subscription/calendar offer. You can order for a friend, a family member or yourself. The Wilderness Committee have outdone themselves again with beautiful wilderness photography.

**November Meeting:** The *Watershed Sentinel* and its allies, the Wilderness Committee, Sierra Club of BC, and Clayoquot Action, will be hosting a one-day activists' meeting in Comox in mid-November. Date and place to be announced. Stay tuned!

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**Next Issue Ad and Copy Deadline:** September 26, 2015





# Around The World

Compiled by Susan MacVittie and Delores Broten

## Islamic Declaration on Climate Change

In August, the Islamic Declaration on Global Climate Change was signed by 60 Muslim scholars and leaders of the faith who acknowledge that, despite the short-term economic benefits of oil, coal, and gas, humanity's use of fossil fuels is the main cause of global warming and calls on leaders and corporations to implement a strategy to phase out fossil fuels and commit to renewable energy.

—[www.commondreams.org](http://www.commondreams.org)  
August 18, 2015

## Alberta Clipper Protest

Activists came together in Washington, DC in August, to urge US Secretary of State John Kerry to stop the expansion of Enbridge's Alberta Clipper pipeline. Through a backroom deal with the State Department, Enbridge is proceeding with the expansion without going through the legally required environmental review process. Environmental and indigenous groups have gone to federal court to stop the expansion.

—*Energy Action Coalition*  
August 25, 2015

## Methane Emissions High

A new study published in *Environmental Science & Technology* found that natural gas gathering facilities lose about 100 billion cubic feet of natural gas a year, amounting to roughly eight times more than previous estimates used by the Environmental Protection Agency. The emitted methane "packs the same 20-year climate impact as 37 coal-fired power plants," and is 87 times as potent as carbon dioxide. The findings add to

a growing body of evidence showing that the proliferation of natural gas, even if capped, will only exacerbate climate change.

—[www.commondreams.org](http://www.commondreams.org)  
August 18, 2015

## Environmental Cost vs Profit

A United Nations sponsored report, *Natural Capital at Risk*, examined the money earned by industries and contrasted them with 100 different types of environmental costs. The report found that when the externalized costs were taken into effect, many industries would not make a profit. Sometimes the environmental costs vastly outweighed revenue, meaning that the world's most profitable industries (oil, meat, tobacco, mining, electronics) would lose money if they had to pay for the ecological damage and strain they are causing, the biggest losers being coal-mining and meat. For instance, cattle ranching in South America carries 18 times higher environmental cost than the revenue it brings in.

The majority of unpriced natural capital costs are from greenhouse gas emissions (38%), followed by water use (25%), land use (24%), air pollution (7%), land and water pollution (5%), and waste (1%).

—*Natural Capital at Risk*  
April 2013

## WTO Nixes India's Solar Push

At the end of August, the World Trade Organization (WTO) ruled against India over its national solar energy program in a case brought by the US government. India had planned to create 100,000 megawatts of energy from solar, and included incentives to



use locally-developed equipment.

The WTO ruled that India had discriminated against American manufacturers by providing such incentives, which violates global trade rules, and struck down those policies – siding with the US government. According to Indian media outlet *Livemint*, the US government has resorted to similar measures at the federal, state, regional, and local levels.

—*Nadia Prupis*,  
[www.commondreams.org](http://www.commondreams.org),  
August 27, 2015

## Hot and Hotter

According to the US National Oceanic and Atmospheric Association (NOAA), July was the hottest month ever recorded. Records date back to 1880. NOAA climate scientists said the new data "affirms what we already know: that the Earth is warming. The warming is accelerating and we're seeing it this year."

According to figures released by NOAA, the average temperature for July was 16.6° C (61.86° F). July also broke the record for ocean warmth. The average sea surface temperature was 0.75° C (1.35° F) above the 20th century average.

—*National Oceanic and Atmospheric Association*,  
August 20, 2015



# Nature Trust Acquires Salmon River

The Nature Trust of British Columbia is pleased to announce the acquisition of 165 acres in the Salmon River estuary near Campbell River on Vancouver Island, BC. This new

acquisition complements the adjacent 257 acres already secured by The Nature Trust and its partners since 1978.

The Salmon River estuary is the only significant area of coastal wetland habitat located on the relatively steep and rugged 250 kilometre stretch of coastline from Campbell River to the network of estuaries on the Quatsino lowlands. This strategic location provides critical habitat to numerous species of fish and wildlife, including Great Blue Heron, Marbled Murrelet, Northern Pygmy Owl, Roosevelt Elk, migratory waterfowl and eight species of salmonids. All five species of Pacific salmon are found in the river: Coho, Chinook, Chum, Pink and Sockeye. Anadromous steelhead, cutthroat and Dolly Varden char are all present, as well as resident trout and other native fish species.

“Like many Nature Trust projects, conservation of the Salmon River estuary has been years in the making,” said Dr. Jasper Lament, CEO of The Nature Trust of BC. “This business takes time and patience. We are very grateful to our conservation partners and to the many people who helped make this deal possible.”

“The Salmon River project is the latest purchase of conservation land made possible through the contributions of the anglers, hunters, guide outfitters and trappers of BC,” said Brian Springinotic, CEO of the Habitat Conservation Trust Foundation. “The securing of this high-value habitat will benefit a variety of species, as well as providing additional recreational opportunities.”

“The Fish and Wildlife Compensation Program is pleased to support this land purchase,” said Program Manager, Trevor Oussoren. “Strategic land acquisitions such as this play an important role in helping fish and wildlife for generations to come.”

Of the approximately 3,200 Roosevelt Elk in British Columbia, the vast majority live on Vancouver Island. Efforts continue to restore them to their historic range, but northern Vancouver Island, including the Salmon River, remains the core of their range in Canada.

Roderick Haig-Brown renowned conservationist, fly fisherman, and past director of The Nature Trust of BC was a great advocate for rivers. His daughters Valerie and Mary said, “We would not want to put words in our father’s mouth, but we do not doubt that he would be happy to see The Nature Trust continuing to protect critical lands along the BC rivers that he loved so much.”



The Nature Trust of British Columbia acquires ecologically significant land through purchase, donation, covenant and lease.

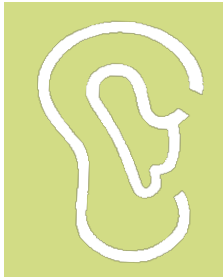


## Granby River July 2015

Manure and sediment muddies the water and can deposit fecal coliform bacteria and other microorganisms such as cryptosporidium and giardia. One cow can add up to 500,000 fecal bacteria to a stream each day if allowed direct access to the water. Water with 200 fecal bacteria per 100 millilitres is unhealthy for swimming and drinking water must have NO fecal bacteria.

—Angelica Herlihy





# Have You Heard?

*Compiled by Susan MacVittie and Delores Broten*

## **Loblaws To End Triclosan, Microbeads by 2018**

Loblaws has promised it will stop manufacturing household and cosmetic products that contain triclosan, phthalates or microbeads by the end of 2018. Triclosan is found in antibacterial soaps and body washes, toothpaste, and some cosmetic products, and is thought to contribute to antibiotic resistance. Microbeads are commonly used in facial and body scrubs, but are so tiny they aren't captured by water treatment systems and end up in lakes and rivers and fish.

—*Globe and Mail, June 12, 2015*

## **Kinder Morgan Hearings Postponed**

The National Energy Board (NEB) has postponed the Kinder Morgan hearings in Calgary and Burnaby until further notice, stating their concern over "public confidence in the impartiality of tribunal decision makers." Steven Kelly, who was appointed to the NEB by the Harper government on July 31, was a consultant who worked for Kinder Morgan on the Trans Mountain pipeline file. His 400 pages of evidence will be stricken from the hearing records.

—*Forest Ethics, August 21, 2015*

## **Shell Offshore Nova Scotia**

The agency tasked with approving or denying Shell's controversial deep-water drilling project off Canada's east coast includes a Tory-appointed official who worked for Shell for decades. Greenpeace Canada Arctic Campaigner Alex Speers-Roesch said: "Federal Environment Minister Leona Aglukkaq has already okayed Shell's plans to take up to 21 days to

cap a blowout, and it's up to the Canada-Nova Scotia Offshore Petroleum Board to stop this risky proposal. This conflict of interest makes it hard to believe it will really put public safety ahead of Shell's interests."

SumOfUs, which is petitioning against the ruling, says regulators in the United States will require Shell to have blowout-capping equipment on site within 24 hours when it begins drilling off the coast of Alaska. Meanwhile, Shell Canada's blowout equipment will be no closer than Norway, 5,000 kilometres away.

—*Greenpeace, August 27, 2015, SumofUs.org*

## **Floating LNG at Bamberton?**

Vancouver-based energy company Steelhead LNG has signed an agreement with the Malahat First Nation to construct and operate a floating liquidified natural gas facility at Bamberton for shipment of BC gas overseas. The site was purchased by the Malahat First Nation last year, after several failed development attempts by private corporations. After resignation of the chief and council, the nation is in the midst of elections.

In 2014, Steelhead LNG signed an agreement with the Huu-ay-aht First Nation for a land-based LNG plant at Sarita Bay, on the west side of Vancouver Island, which would require a pipeline from northeastern BC.

—*Windspeaker, August 2015, Steelhead LNG: www.steelheadlng.com*

## **Fracking Earthquakes in BC**

A report by the BC Oil and Gas Commission said fracking has caused nearly 200 seismic events in the Montney Trend, which stretches from

the BC-Alberta border near Dawson Creek to the BC foothills.

The report that investigated fracking, the process of fluid injection into rock to extract natural gas, looked into quakes recorded between August 2013 and October 2014. Progress Energy, which is owned by Malaysia's Petronas, paused its operations after a 4.6 magnitude quake occurred 114 kilometres from Fort St. John, BC on August 17. Rich Coleman, BC's minister for natural gas development, said drilling must stop immediately and the commission must be notified if seismic activity reaches a magnitude of 4.0 or higher.

—*www.vancouverobserver.com August 27, 2015*

## **Malaysian Scandal Slows LNG**

The recent financial scandal involving Malaysian Prime Minister Najib in an alleged theft of US\$700 million of state funds has tainted the pursuit of BC liquefied natural gas (LNG) projects by the state owned energy firm, Petronas. In July, BC Finance Minister, Mike de Jong, visited Malaysia four days after the BC legislature passed the *Liquefied Natural Gas Project Agreements Act* to entice the Petronas' led Pacific NorthWest LNG consortium to invest \$30 billion to build a gas processing plant near Prince Rupert. The BC government gave the consortium a 25-year guarantee on costs related to royalty rates, tax credits, and carbon emissions. The oil and gas industry is in retreat as it faces low prices and high operating costs for the next few years.

—*www.asianpacificpost.com August 12, 2015*

# DRINKING From The River

*A visit to the Unist'ot'en Camp where First Nations are opposing LNG pipelines*

by Emma Lui

In July I returned from the 6th Annual Unist'ot'en Camp where diverse people came together to participate in and conduct workshops, to continue the construction of the Healing Centre, and to discuss how we could lend solidarity to the Unist'ot'en people fighting numerous oil and gas pipelines on their territory.

What is amazing about the place is that you can drink directly out of the river, which is called the Wedzin Kwah (also known as the Morice River, a tributary to the Skeena and Bulkley rivers). It is one of the few places left in the world where you can do that and that is why it's critical for us to support the Unist'ot'en people in their work to protect this river, the surrounding waters and land.

At the end of June, Chevron received permits to start clearing the path for construction of the Pacific Trails Pipeline (PTP), a 463-kilometre fracked gas pipeline that would run between Summit Lake and a liquefied natural gas (LNG) terminal to be built in Kitimat by Chevron.

There has been increased police presence in the area and RCMP tried to enter the territory only days after the camp ended. The Unist'ot'en website recently posted, "It is becoming clear that the situation here is moving toward an escalation point. Chevron has set up a base in Houston in order to do work on the section of Pacific Trails Pipeline that crosses our traditional territory." They are calling for people to stand with them on the front line against Chevron, make donations or organize solidarity actions.

"We are determined to protect this land for future generations, and in the process do our bit to shut down the toxic fossil fuel infrastructure that threatens all forms of living life on this planet."

— Unist'ot'en Camp

Last week, Chevron representatives tried to enter Unist'ot'en territory at a protocol checkpoint. They offered tobacco and a case

of Nestle bottled water (to a community that can drink directly from the river). Freda Huson, Unist'ot'en spokesperson, talked about the impacts of the PTP and affirmed the need for meaningful consultation and consent.

## 6th Annual Unist'ot'en Camp

At the 6th annual camp, there were workshops held on decolonization, healing and trauma, climate solutions, legal and media skills, intersectionality, and water and other topics.

AJ Klein (community activist and organizing assistant for the Council of Canadians), Teresa Diewert (Council of Canadians and Rising Tide activist), Raquel Park (Rising Tide) and I facilitated a workshop on intersectionality and different forms of oppression, water, and the Flood the System initiative. AJ walked people through what intersectionality is and the different forms of oppression that create the conditions for pipelines and fracking to occur. I talked about different water issues like fracking, drinking water advisories in indigenous communities, the Detroit water cut offs, and water as a commons. "Flood the System" will begin this fall and is a series of actions that will address these different forms of oppression.

Many people helped with the building of the Healing Lodge. As the Unist'ot'en Camp website states: "Many peo-



ple first get involved with the Unist'ot'en Camp because our stance is clear and no nonsense – there will be no pipelines built on Unist'ot'en land. But they soon realize that ... it is [also] a place of learning, of healing, of connecting with nature, of breaking with the legacy of colonization. Now this work will be expanded and consolidated through the establishment of a Healing Centre.”

The Healing Centre will focus on indigenous youth and have counselling rooms, meeting rooms, a kitchen, dining hall, and sleeping quarters.

### Extreme Energy in Northern BC

After leaving the camp, AJ and I participated in a meeting organized by the Terrace chapter of the Council of Canadians. Nearly 30 people attended from Terrace, Kitimat and Digby Island and many raised concerns about fracking and how the proposed LNG terminals would impact their communities.

The drive from the Unist'ot'en camp to Terrace was incredibly beautiful. We drove mostly along the Skeena River, which is being threatened by Petronas' LNG proposal and other projects, yet has one of the largest salmon runs in the world.

The next day, we traveled to Smithers to speak at a community potluck and townhall on extreme energy projects including tar sands, fracking, and Site C.

### LNG Terminals Along the Pacific Coast

There are up to 18 proposals to build LNG terminals along the Pacific Coast. Communities have raised concerns about tanker safety, impacts on salmon and other fisheries, the need for free, prior and informed consent of indigenous communities and how the expansion of fracking to supply the terminals will impact water sources, climate change, and public health.

Pacific NorthWest, led by Malaysia's state-owned Petronas, agreed to invest in a LNG project on Lelu Island in northwestern British Columbia. Its terminal could be operational by 2018 and would be serviced by the Prince Rupert Gas Transmission pipeline. The Lax Kw'alaams First Nation voted unanimously to reject the deal last month despite being offered \$1.15 billion for its approval.

At the beginning of July, a 140-page project development agreement between the provincial government and Pacific NorthWest LNG revealed that the consortium would be entitled to compensation – to the tune of \$25 million per year – if the BC government were to increase energy or environmental taxes.

CBC reported on July 21 that Christy Clark's government passed 25-year legislation during “an unusual summer legislative sitting to push through the bill.” The legislation gives the province authority to enter into LNG deals.

Being at the Unist'ot'en Camp was an incredibly moving experience and it was inspiring to see people with the courage to put their bodies on the line to defend

water, land, and our climate. Visiting communities that have fought tar sands pipelines and are ready to fight LNG terminals gives hope that despite the BC government being bent on expanding fossil fuels – including fracked gas – there is a strong movement of people that are determined to create a future lit with green energy, sustained by green jobs and progressive policies that protect our water for generations to come.



Emma Lui is a water campaigner for the Council of Canadians. FMI: [www.councilofcanadians.org](http://www.councilofcanadians.org)

*Photos by Jen Castro*





# Brigitte DePape

the little page that could

by Susan MacVittie

In 2011, while a participant in the Canadian Senate Page Program, Brigitte DePape silently held up a sign that said “Stop Harper!” during the Throne Speech in the Senate.

This action led to her prompt dismissal.

Suddenly, the quiet 21-year-old University of Ottawa student became a household name and represented what many Canadians were thinking.

In June, DePape visited Courtenay, BC where she moderated a panel for the event - Time For A Change: Public forum on the state of our democracy.

The *Watershed Sentinel* met with DePape to ask what motivated her to take such a risk and where it has led her.

## What motivated you to act in Parliament that day?

I wanted to make a change in my community and I thought that would lead to becoming a politician. When I was working in Parliament as a page I got disillusioned and discouraged by what I was seeing in terms of the Harper government and their policies. Especially around First Nation issues and climate change.

I had gone to the G20 that summer in Toronto and had also been a part of Climate Shift and learned about the impacts of climate change on people in the global south. I was studying International Development, so that was a concern to me. I witnessed the Conservative Senate rejecting the climate change bill, which was one of our few hopes to have some action on climate change in Canada. That was a turning point for me. I realized that we needed to do something.

I didn't know what to do. It's not my personality to disobey authority. I'm from Winnipeg and we are a progressive family, but we still abide by the rules.

I knew the Speech from the Throne was on national television and it was an opportunity to get the word out to many people who were also feeling that we need a change and feel powerless. I wanted to say we are in this together, and it doesn't have to be this way, and we can take action.

## What was the reaction?

The reaction was really mixed. Some Conservative MPs were booing and some people were clapping. I got a sense of what the polarized reaction would be like over the next few weeks.

I feel grateful to be a part of this tradition of non-violent

direct action, and to be building on the work that came before me. It is a part of democracy

## Were you worried about the impact on your future?

Yes, I was concerned. One of the hardest things was what my parents would think. I get many of my values from my parents and I love them a lot.

## What has happened over the last 4 years?

I graduated from the University of Ottawa and I have been active in social movements. I have learned a lot. I took part in the UN Youth Delegation to the climate negotiations with the Canadian Youth Climate Coalition.

I've been working with the Council of Canadians for a year as a campaigner for the Get Out the Youth Vote. We are collecting 10,000 vote pledges in strategic ridings. I think that young people have incredible power and we can bring about change, if we vote and are active in social movements. We've seen Occupy and Idle No More – a lot were young people on the front lines and I'm inspired by that.

And we are seeing real changes such as the Truth and Reconciliation of Canada recommendations about the missing and murdered indigenous women. Five years ago that was not possible. And now the progressive parties are saying this is a priority. And that is because people mobilized. These changes come about because people put pressure on the government and make their voices heard.

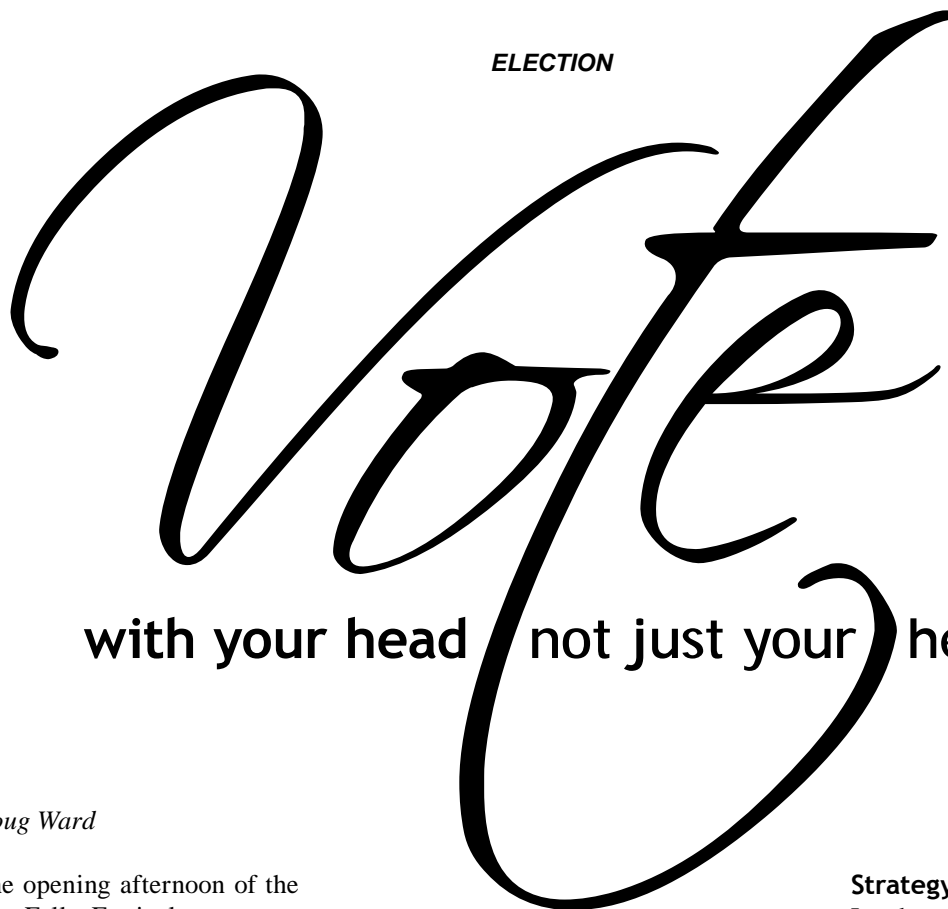
The Youth Voters Pledge: [www.canadians.org/iwillvote](http://www.canadians.org/iwillvote)



Susan MacVittie is managing editor of the *Watershed Sentinel*.



How  
Leadnow  
Will Push  
Strategic Voting  
to Defeat  
Tories



## with your head not just your heart

by Doug Ward

On the opening afternoon of the Vancouver Folk Festival, a young woman wearing a purple Leadnow T-shirt approached folkies at the event's main gate and asked them to sign The Pledge.

As the melancholic voice of folk legend Richard Thompson drifted through Jericho Park from a nearby workshop, Rachel Tetrault invited festival arrivals to join Leadnow's "Vote Together" campaign to defeat Stephen Harper's Conservative government.

Leadnow, which is modelled on the American liberal-left activist group MoveOn.org, is promoting the idea of strategic voting to defeat the Tories. Leadnow's pledge asks people to vote for the local candidate -- New Democrat, Liberal, even Green -- who has the best chance to defeat the Tory candidate in their riding.

Later that night at Jericho Park, a roar of approval erupted when an emcee suggested that this could be the last Vancouver Folk Festival with Harper as prime minister. About 200 "folkies" signed the Leadnow pledge that late July weekend, joining the approximately 40,000 people who have

committed to the group's strategic voting strategy across Canada.

Leadnow has volunteers in about 70 federal ridings where it fears the Conservatives could win with less than 50 per cent of the vote. They have paid staff running campaigns in 12 battleground ridings, including two new seats in Metro Vancouver -- Vancouver-Granville and Port Moody-Coquitlam.

"We are asking people to be very thoughtful about their vote," said Leadnow executive director Lyndsay Poaps. "Vote with your head, not just your heart."

Under the first-past-the-post electoral system, said Poaps, "if you vote your conscience, the exact opposite of what you want to happen -- can happen. We're trying to prevent that."

In other words, a vote for a NDP, Liberal or Green candidate without a serious shot at victory could hand a riding to the Conservatives even though a strong majority of voters in that seat are opposed to the Tories.

### Strategy for a flawed system

Leadnow is politically independent, but operates on the left side of the spectrum. Its current and past campaigns have included opposition to oilsands pipeline expansion, bail-outs for large oil companies, Bill C-51 (the *Anti-terrorism Act*), and the Conservative government's *Fair Elections Act*.

Leadnow argues -- as many other anti-Conservative groups do -- that Canada's electoral system is seriously flawed. Prime Minister Harper has been able to impose his right-wing policies on the country despite receiving only 39 per cent of the vote in the last election, and even less in the previous two elections.

"In 2011 a majority of Canadians voted for change, but the non-Conservative vote was split," said Poaps. Sixty per cent of the electorate voted against Harper, she added, but the Tory leader emerged with 100 per cent of the power in Ottawa.

Insights West pollster Mario Canseco said that the emergence of the NDP as a contender poses a challenge

*Continued on Page 10* ➔



↔ *Vote with Your Head continued*

to the Greens. “Will Green supporters rather vote for their Green candidate and get one or two more MPs on the plane to Ottawa with [party leader] Elizabeth May, or would they rather vote for NDP candidates who might be part of a government caucus that could create the environmental regulations they want?”

### **“We are trying to be helpful”**

But how are voters who want a change in government to gauge which candidate has the best shot at knocking off a Tory?

Leadnow acknowledges that predicting the prospects of candidates in campaigns is not an exact science. National poll results aren’t always an indicator of what will happen in specific ridings.

“We are going to sweat every decision,” said Poaps. “We are not being reckless. We are trying to be helpful.”

Leadnow plans to conduct polls in the 12 ridings where it has active campaigns so that voters who want to vote strategically can find out which local candidate has the best shot at victory.

“We aren’t saying you should vote for one party,” said Poaps. “We are going to take every riding on a riding-by-riding basis.”

Leadnow may ask supporters in some ridings whether they want to formally endorse a candidate in the campaign’s later stages.

The group is reminding supporters that the opposition parties – the NDP, the Liberals and Greens – have pledged to bring about electoral reform if the Conservatives lose power. So this could be the last election, Leadnow argues, where voters would have to mark their ballot strategically rather than choosing their preferred party.

“The electoral system is broken, and we want this to be the last election where we vote under these circumstances,” said Poaps. “Proportional representation and electoral reform are key priorities. We want to end this system now.”

So does BC’s Dogwood Initiative, an environmental group that is also pushing for strategic voting in the October election.

### **Dogwood surveys the coast**

Dogwood has hired Insights West to conduct polling in eight battleground ridings so that anti-Conservative voters know which candidate has the best chance to beat the Tories.

Dogwood Executive Director Will Horter said his group will help the 300,000 supporters in its database make educated voting choices but won’t give specific candidates its official blessing. “We are unlikely to be endorsing anybody. We have never endorsed anybody historically. Most people don’t take too kindly to being told how to vote. Voting is a personal exercise.”

Dogwood says that it has 2,800 volunteers in BC ridings that will be canvassing, trying to drive up voter participation around issues such as oil tankers and pipelines, plus government surveillance.

The rise of the NDP to the top of national polls in recent months means that many races, especially in urban ridings, could be tight three-way contests without the clarity many strategic voters might want.

Polling by Insights West for Dogwood, for instance, indicates that the three main parties are competitive in the two North Shore seats. So at this point, it’s not evident which opposition candidate is best positioned to knock off Conservative incumbents in the seats of West Vancouver and North Vancouver.

### **Supporters and foes**

Among those supporting strategic voting is Vancouver fundraising consultant Harvey McKinnon, who has ties with the NDP, but is supporting Liberal Joyce Murray in Vancouver-Quadra to defeat the Conservative candidate. “If the New Democrat could beat the Conservative, then I would vote NDP.”

But many NDP supporters oppose strategic voting, arguing that the Liberals typically campaign from the left but then govern from the right. Paul Moist, the national president of the Canadian Union of Public Employees, has rebuked Leadnow in a letter for trying to elect “so-called progressive candidates who can defeat the conservatives.”

“There are not large numbers of independent ‘progressive’ candidates out there unaligned with their party’s policies. Neither the Liberal Party of Canada nor the Green Party are progressive. Both parties have very right-wing economic policies, do not stand for working families, or public services. Only the NDP has a progressive platform.”

But other labour leaders are endorsing strategic voting, including Jerry Dias, national president of the 300,000-member Unifor. Dias has urged Unifor members to vote for the local candidate – NDP or Liberal – best positioned to beat the Conservatives.

Dias said that another Harper government would be disastrous for Canadian workers. “So, that in itself trumps going out there and putting support in a riding where we know that the New Democrats have no chance.”



Doug Ward is a Vancouver-based freelance writer and former reporter with the *Vancouver Sun*. Abridged from a story originally published on *TheTyee.ca*, August 11, 2015

# Mycofiltration Remediation

*Using mushrooms to remove toxics in our environment*

by Rex Weyler

In the summer of 2014, a large algae bloom threatened Hague and Gunflint Lakes on Cortes Island, BC creating an unpleasant smell and taste in the lake water. Repeated algae blooms can kill lakes or transform them to swamp conditions. Algae blooms virtually killed Lake Erie, between Canada and the US, Green Lake in Washington, Fern Ridge Lake in Oregon, and other lakes around the world.

We began testing the lake water and initially discovered various species of bacteria, diatoms, dinoflagellates, copepods, and potentially toxic cyanobacteria. The major bloom appeared to be *Volvox* algae. The large blooms suggested that our lake was processing an increased load of nutrients, typically phosphates and nitrates from human septic, gray water, animals, and detergents.

To help restore the lakes, the community has discouraged phosphate soaps, nitrate-heavy fertilizers, and clearing around the lake shores. Meanwhile, mycologist and Fungi Perfecti founder Paul Stamets, who has a home on Cortes, suggested myco-filtration fields below septic or farm fields. The popular and tasty Garden Giant mushrooms, *Stropharia rugoso annulata*, consume the very compounds we want to isolate from our lake: nitrates, phosphates, bacteria, and other organic debris.

In the 1980s, Stamets discovered that the Garden Giant mushrooms reduced bacteria runoff from upland pasture.



Garden Giant mycelium.



Paul Stamets

Garden Giant

coliform in the run-off had decreased to nearly undetectable levels. Stamets published his findings in 2005 and released his techniques to the public domain for free use by others. In 2012, Fungi Perfecti and Washington State University confirmed that mycofiltration, particularly with the Gar-

den giant mushrooms, can remove *E. coli* from synthetic stormwater in the laboratory (Taylor, et.al. 2014).

The mushrooms appear to produce crystalline structures that disintegrate in the presence of *E. coli*. The crystals then send a chemical signal through the mycelium, which attracts the bacteria, stuns them, and then consumes the incapacitated *E. coli*.

In an ecosystem, mycelium generally serves to decompose other organisms by secreting enzymes and acids that break down lignin and cellulose fibres that are structurally similar to some pollutants. Certain mycelium strains have proven effective in decomposing toxic gases such as sarin.

Oyster mushrooms have been shown effective in reducing the toxic polycyclic aromatic hydrocarbons from oil spills. The fungi work symbiotically with other microbes to break down the contaminants into carbon dioxide and water. Wood-decay fungi appear effective in breaking down chlorinated compounds that exist in pesticides. In 2007, oyster mushrooms proved helpful in cleaning up an oil spill in San Francisco, breaking down the oil until the soil was clean enough to be used for roadside landscaping.

Last winter, Stamets donated the mushroom spawn to get us started, and we incubated the first batch in Alder chips. The Linnaea Farm community on Gunflint Lake offered space to install the first remediation field. This spring, we spread the incubated mycelium and wood chips into beds below the septic and animal fields at Linnaea Farm, along a creek bed that runs into the lake. We also installed a site to grow out our own spawn, for future sites.

It will take us several years, and careful testing, to know if we are improving our lake conditions, but reducing nutrient and bacterial flow into the lakes will help restore these lakes as healthy ecosystems.

Rex Weyler is the author of *Blood of the Land*, *Greenpeace*, and the "Deep Green" column at Greenpeace International. He lives on Cortes Island, BC.



# A Conversation with David Suzuki

*We can't change nature, but we can change what we invent.*

by Delores Broten

When David Suzuki came to Comox in July as a stop on his Celebrating Coastal Connection tour, greeted by enthusiasts of all ages, the *Watershed Sentinel* took the opportunity to sit down for a chat about the economy and the state of the world.

**I heard you say once something to the effect that “we invented this economy, we can invent a different one.”**

What I say is that we face the reality that we live in a world defined by the laws of nature; in physics we know that you can't travel faster than the speed of light, we know about gravity, and the second law of thermodynamics. We live in the world, we don't complain, we can't change it. Laws of chemistry, laws of biology ... these are all things that dictate the reality of the world around us, but other things, for example, like borders that we draw around property or territory, we will go and die to defend those borders. But do you think salmon care whether they're going through BC or Alaskan Waters? They don't care!

The borders that we draw mean nothing to nature and yet we try to impose them. We say we're going to control

the salmon through some international treaty. We're not looking at it the right way, and then we invent ideas like capitalism, economics, markets, corporations, and we act as if they are forces of nature. Just read the paper! “Oh oh, market's not looking too good today.”

We invented the damn things [markets] and if they don't work we can change them. We can't change nature, but we can change what we invent.

Naomi Klein nails it in her book, *This Changes Everything*. She says, it is capitalism itself that's at the heart of it. I have spent decades fighting with forestry or fighting with fisheries saying “well, there are economic opportunities if we do things in another way.” Why do we let them [capitalists] shape the frame? As long as we let the discussion stay within the economic realm, we're screwed.

**Yes, that's the one thing I wanted to say to you when you first started the David Suzuki Foundation, that it was still trying to, as we used to say, “make capitalism nice.”**

Yeah, exactly, and that's what the green economy is all about, but it's still an economy based on growth. It's just, oh we gotta be more efficient and less polluting, but basically





it's still about creating stuff and growing. We can't grow forever in a finite world.

**Exactly. We know that; how do we teach that to others?**

Unfortunately, in Naomi's book, she doesn't take the next step. If capitalism is at the heart of our problem, then, how do we go about destroying it?

We've got to build something else, and she avoids that.

**It's a tough answer.**

It's very tough. But I just spent four weeks in France, in French immersion, and the guy in my class – there was only twelve of us – was an economist who's written a book about why the economy has to be destroyed. I said, Why isn't Naomi Klein citing you – he has many books out – and he said, "because the minute you start taking the position that I, Richard Smith take, you're accused of being a Marxist." And right away it makes it impossible to have the conversation.

**I've been thinking about how local musicians are now making a living in their own regions and I see that as part of some kind of way forward.**

Local economies have got to be the way. You know there was this LETS (Local Exchange Trading System) thing that came up. They've grown up in lots of communities and they kind of die out, and I think part of the problem is that lots of people, local merchants, will buy into it but the big multinationals will not accept local currencies.

**They wanted us to do that with the *Watershed Sentinel* – use a local currency – but my printer and the post office will not take that money.**

Yes, we've got both feet in these two worlds and it's really difficult.

We've got to take much more pride in being local and supporting our local producers and keep our money in the community.

**That's interesting because I asked all of our people what I should ask you, and what Joyce Nelson wanted to know, was whether you think the local food movements are a model for going forward.**

Yes, they're a part of it. They're huge, and the thing that excites me is that when you look at the urban agriculture movement, a lot of it is being driven by young people.

That's astonishing because we've got a generation of kids that have no idea that Kentucky Fried Chicken is a bird, that are so disconnected from the roots of their food.

So I find this very exciting.

**I find it very strange too because these are kids who have rarely been hungry, they've always had all the junk food they want, and yet these are the ones driving the food co-ops and the farms, and all that – they are all in their twenties and thirties.**

Yes, but they are the ones I think who understand that we can't go on the way we have been and who really see this as an opportunity.

When Severn, my elder daughter was born, Tara and I decided that we wanted to show our kids that food was seasonal, so we decided on just a ritual of going to the Okanagan every year and picking cherries so for 35 years we've been going every year. This year I called the organic orchard where we pick and I said, "We're coming for the first of July [as usual]," and he said, "Sorry but the cherries are three weeks early and they'll be finished."

And then I hear about the chinook in the Puntledge River and the drought, and they are going to carry those fish into the hatchery.

This is the world that we have created.

**And the worst part is that in another ten or twenty years it will seem normal.**

I say to the Japanese, "Can you imagine Japan without fish? Why isn't Japan leading the fight to protect the ocean?" They say, but there's lots of fish [at the market] and I say, fifty years ago those fish would have come from Japanese waters. Today they are coming from halfway around the world! But to them it's the same fish.

That's why the movement to local is so important.

**We reached out to the activist group, Beyond Boarding, which your grandson co-founded, and when people talk to us about young people we say that there's people doing it, they are just doing it in a different way.**

They are connected to social media in a way that boggles my mind. Some of the youth are quite upset about the state of the world.

**So, David, that brings me to my last question: How do you feel about the state of the world?**

I think it's very dire, and I'm going to cite three people today who say it's too late, and then say, You can't say it's too late because we don't know enough to say that.

It is very late, but you always have to have hope. The hope is, we don't know enough to be able to say the end is here.



# Glass Sponge Reefs

*Creating a Marine Protected Area for the “living dinosaurs”*



Kim Conway



Sabine Jessen CPAWS BC

by Panos Grames

British Columbia's coastal waters are home to one of the most stunning marine features on the planet: glass sponge reefs. They were thought to have gone extinct 60 million years ago – but then geological scientists found some near Haida Gwaii in the late 1980s. When paleontologist Manfred Krautter of the University of Stuttgart in Germany

heard of their discovery, he said, “It was like finding a living dinosaur.” They’ve since been found in the Salish Sea (Georgia Strait and Puget Sound). Although glass sponges are found in other parts of the world, Canada’s Pacific coastal waters are the only place they’ve been discovered growing in reefs.

The name may conjure small and delicate structures clinging to rocks, but glass sponge reefs are actually very large. Those in Hecate Strait cover more than 1,000 square kilometres of seabed and can reach 21 metres high – slightly taller than the Great Sphinx of Giza. With an estimated age of 9,000 years, the reefs are older than the Sphinx, too!

The rocky seabed and glacial history of coastal BC is ideally suited for these magnificent structures. Besides the cold water and low light, sponges need a strong surface to stick to, and the rich material left behind by glaciers help their development. In turn, the reefs provide habitat for rockfish, prawns, crab, and other bottom-dwelling sea creatures.

The “glass” of the glass sponge is actually made from silica, put together in such an efficient structure that researchers suggest it be used to improve design for construction and fibre-optic technology.

The good news for these rare reefs is that Fisheries and Oceans Canada is in the final stages of establishing a marine protected area (MPA) in Hecate Strait, and recently closed fisheries on reefs in Howe Sound and the Strait of

Georgia. The bad news is that activities such as fishing and laying cables will be allowed in the proposed protected area, which could damage the reefs; and the area is not part of a coherent strategy to look after oceans.

A well-designed marine protected area does much more than protect a single species; it makes ocean ecosystems more diverse and better able to recover and adapt to human pressures, including providing resiliency against climate change. Research shows that the most effective MPAs are networked, large, well-enforced, and have no-take zones for fishing.

Although steps to immediately protect this globally significant ecosystem are helpful, plans to allow fishing immediately adjacent to and above them shows a narrow purpose and lack of consideration for the broader ecosystem. A comprehensive plan – like the one recently agreed to

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“They were thought to have gone extinct 60 million years ago.”

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by the province of BC and 18 coastal First Nations [Marine Planning Partnership for the North Pacific Coast] is a better way forward.

It’s been almost two decades since Canada committed to establishing a network of MPAs covering 10 per cent of coastal and marine areas. Currently, less than three per cent of BC’s coastal waters have any kind of protection, and almost all of them allow fishing. While proposals to protect the reef structures get us closer to meeting the 10 per cent target, the coherent planning necessary to provide useful protection on an ecosystem level is lacking. It raises the question, “Why just protect the sponges when there’s an interconnected ecosystem above and beside them?”

We have a lot to learn about these fascinatingly complex glass sponge reefs and their amazing ability to clean ocean waters and provide habitat. We need time, and the sponges need full protection, for us to begin to understand the important role they play.



Panos Grames is a communication specialist with the David Suzuki Foundation: [www.davidsuzuki.org](http://www.davidsuzuki.org)



by Dan Lewis

Before the dust had even settled on Mount Polley, mine owner Imperial Metals was active again in Clayoquot Sound. This finding was announced in *Who's Knocking?*, a report on mineral tenures in the Clayoquot Sound UNESCO Biosphere Reserve. The report, released by Clayoquot Action in partnership with Fair Mining Collaborative, details who is looking for minerals in Clayoquot Sound, and what types of minerals they are looking for.

Twenty years ago when someone said "Clayoquot," protests against clearcutting of old growth forests came to mind. At that time nobody thought anybody was crazy enough to propose an open-pit copper mine in the heart of Clayoquot Sound.

Fast-forward twenty years, and somebody is crazy enough to make such a proposal: Imperial Metals. That's right, Imperial Metals, which operates Mount Polley Mine, home to one of the largest mining disasters in the world, has been exploring for two mines in Clayoquot Sound, in unceded Tla-o-qui-aht and Ahousaht First Nations territories.

*Who's Knocking?* shows that 5.8% of Clayoquot Sound is under some form of mineral title, with a total of 257 claims held by 23 licensees.

This January Premier Clark announced millions of dollars in funding to fast track the permitting and approval of new mines. Since the Mount Polley disaster, her government has

# Against Tailings Dams

## *Imperial Metals in Clayoquot Sound*

approved several new mines, including Red Chris, a contentious Imperial Metals mine in the Sacred Headwaters region of Tahlitan First Nations territory.

The BC government appointed the Mount Polley Review Panel to determine why the dam failed. Their January 2015 report firmly rejected "any notion that business as usual can continue." They called for an end to underwater storage of toxic tailings behind dams that could fail, causing irreparable environmental damage. They recommended shifting to "best available technology" (BAT) such as dry-stacking tailings. The Panel acknowledged that while safer technologies might be more expensive, cost estimates for conventional tailings dams do not include the costs associated with failures like Mount Polley.

Despite committing in January to fully implement their recommendations, in May BC's Minister of Mines, Bill Bennett, reneged on that promise, saying "I don't think that's in the cards ... to adopt a policy where all you can use to manage tailings is dry-stack tailings."

Storage of toxic tailings is a challenge that will not go away. With the world's best ore bodies already mined out, we are scraping the barrel to get the last bits of valuable metals out of the ground. This translates into much larger quantities of mine tailings than were produced in the past.

A common-sense approach to best practices would begin by acknowledging that some areas, such as Clayoquot Sound, or the headwaters of the Adams River in Neskonlith territory – world famous for its sockeye salmon run – are just too special to mine. The government needs to designate "no-go" zones which are off-limits to all mining activities including exploration.

As BC's retired Director of Wildlife, Jim Walker, wrote in 2011, "... as more and more of the province is developed, the ecological, societal and economic value of undeveloped areas increases dramatically ... British Columbians do not want all the few remaining pristine areas accessed, no matter what the economic benefits or technical assurances."

It's time to ensure that any mining which does occur in British Columbia does not put at risk "The Best Place on Earth."



Dan Lewis is executive director of Clayoquot Action in Tofino BC. Thank you to Glasswaters Foundation for helping fund the *Who's Knocking* report.





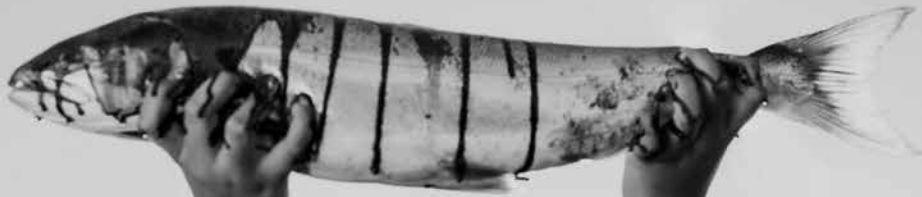


Photo by Paulina Otylia

# TOWARDS RECONCILIATION

*Working with First Nations to challenge the Northern Gateway pipeline*

*by Andrea Palframan*

This spring, the Truth and Reconciliation Commission released a searing report, calling on each and every one of us to take action to heal relationships between settlers and First Nations.

As the report acknowledges, the process of unpacking our collective history is messy, challenging, and essential. Being an ally to First Nations means wading into the discomfort zone and carrying out the painful, cathartic work of discovering and confronting one's own personal prejudices. Moments that offer a chance to move from remorse to remedy are precious indeed.

Pull Together may offer one such opportunity to put reconciliation into action. The campaign is an initiative of Sierra Club BC and RAVEN Trust to raise funds and support for the legal challenges of seven First Nations against Enbridge's Northern Gateway.

Pull Together offers a new way forward for First Nations and their allies who share a commitment to protect BC from tar sands pipelines and tankers. It's an example of what happens when people, moved by a hunger for justice, are given a means to act in accordance with the priorities and leadership of indigenous people.

As a result of that call, communities across the province have been coming out in full force to stand behind First Nations. Pull Together has motivated organizers, businesses, and community groups who understand the power, and principle, of standing with First Nations to protect salmon rivers and the beauty and abundance of this wild west coast.

According to Jess Housty, a Heiltsuk councillor who raised \$6,000 for Pull Together, "I know we have an incredible amount of influence, on the legal side of things. But from a community development perspective, I know what our resources are and I know what our responsibilities are."

"The thought of a lawsuit added on top of that is such a capacity strain. I have a huge amount of admiration for my community, and for many other communities, that never hesitated to take on Enbridge. But I've spent a lot of years hearing from allies, over and over again – 'don't worry, First Nations have got this.' And I wondered where and how and when the support would come."

Pull Together became a pathway for allies to offer that support. Individuals contributed by donating, fundraising online, or organizing community events. Dozens of businesses have jumped on board the campaign, making the

connection that oil and gas expansion is bad for local economies in the long run. "It's really important to not just cheer for First Nations from the sidelines, but to actually participate in enabling their legal fight," says Daniel Terry of Denman Island Chocolate. Denman Island Chocolate's Simply Dark Pull Together bars have been sold across the province, Kitasoo-owned Spirit Bear Lodge donated a retreat in the Great Bear Rainforest, and Moksha and Modo studios across North America have made Pull Together the centrepiece of their Speak Your Peace campaign, pledging to raise \$65,000 through yoga classes and in-studio events.

### Reckoning with Reconciliation

Striving to be an ally and recognizing Aboriginal title means more than making changes in our personal lives. It also means changing how we organize in our communities. Those of us working with First Nations are being asked to listen and follow, rather than assuming we know what is best. As reconciliation encourages a rethink of colonial styles of governance within all institutions, so too do environmental organizations need to re-think their approach.

"Sierra Club BC took a risk launching Pull Together," says campaigns manager Caitlyn Vernon. "As an organization actively campaigning on many fronts across the province, with never enough resources, choosing to check our organizational ego at the door and fundraise for First Nations instead may have meant that much-needed donations went elsewhere. Yet these are the risks we all need to take, if we are truly serious about reconciliation."

Such solidarity efforts are paying off. Pull Together has so far raised over \$500,000 so that the Heiltsuk, Kitasoo/Xai'xais, Gitga'at, Haida, Gitksana, Nadleh Whut'en, and Nak'azdli Nations have the resources they need before court hearings are held this fall.

"Aside from the simple fact that we all stand to benefit when First Nations act to protect their traditional territo-

Pull Together offers a new way forward for First Nations and their allies who share a commitment to protect BC from tarsands pipelines and tankers.



ries, at the root of it, solidarity is not just about standing with First Nations and supporting them to speak up or to organize – it also, and often, means standing behind," says Vernon.

"There's a lot of trust required on our part when we reach out to folks to partner with them," says Housty of her role on the Heiltsuk council. "The most important thing I try to tell people is that we are equal partners, or we're not working together."

Pull Together may be an outlier – raising \$500,000 in less than a year is an off-the-charts success – or the campaign may signal a shift in how we are learning to stand together against powerful corporate interests. The legal challenges have the power not only to stop Enbridge, but to advance First Nations rights in this country.

We hope the cooperation and solidarity that are flourishing, thanks to the gracious leadership of uncompromising First Nations elders and community leaders, can grow and sustain our movement. We need guts to stand up to Big Oil, but to stand shoulder to shoulder with First Nations – as individuals, each on our own path to reconciliation – takes humility, not heroism.

The call for reconciliation means we must do more than just talk: it means that, after marching together, we must also walk. The good news is that every step we take outside our comfort zones brings us closer together.



Andrea Palframan is a Pull Together campaigner. For more information: [www.pull-together.ca](http://www.pull-together.ca)



# Energy Transition

by Delores Broten

## *The Top 10 Global Trends*

There has been a small tickle of elation creeping into a few places of punditry on the internet these days, a nagging question. Could it be that 2015 will be the year that, in retrospect, it is clear that the fossil fuel tsunami wrecking the world was turned aside?

There seems little ground for such an outrageous hope if one is mired in the grassroots trenches, fighting a coal mine or a coal port, or watching the oil and gas corporations run the country. But this year's annual report on energy trends from Clean Energy Canada provides some room for optimism and renewed effort.

In this special section on energy, we tour through the good, the bad and the ugly, from the economic waste of fossil subsidies to the toxic waste of the nuclear industry on the shores of the Great Lakes. We take a passing nod at fading coal companies, and stop to contemplate the struggle to save BC farmland from the Site C dam. We follow BC's lost resource money, and we take a look at those somewhat encouraging energy trends, followed by interesting news on renewable energy developments and a plug for our friends at Beyond Boarding and their Northern Grease video. It's a whirlwind peek at a momentous subject, and, despite the grim statistics, it illustrates that all the grassroots actions and community efforts are gaining some traction.

### 1

#### Renewable energy investment surges

Massive global investments in efficiency, plus solar, wind, hydro, and other clean technologies appear to have stalled the global growth of carbon pollution. In total, investors poured twice as much money into new renewable-electricity projects than into new fossil fuel projects.

There is now enough renewable electricity produced to power roughly half of all homes on Earth. Put another way, the world's current total supply of renewable electricity could have powered nearly everything on the planet in 1980.

Despite this good news, in 2013 fossil fuels comprised 87 per cent of the world's primary energy consumption, and low-carbon sources – including nuclear, hydropower, wind, solar, and biomass – made up just 13 per cent. That ratio hasn't changed since 1999, which means our energy supply hasn't actually become any cleaner.

### 2

#### Solar and wind prices are dropping

The International Renewable Energy

Agency figures suggest that new solar and onshore and offshore wind will compete directly with fossil fuels in most markets by 2025. The costs of bringing new wind and solar plants online continues to decline around the world. In 30 countries, electricity from residential solar panels is now cheaper than wholesale grid electricity.

Over the past five years, solar module costs have dropped by 73 per cent.



**3 Tesla's battery revolution**  
The new generation of cheaper, smaller, better batteries could prove a transportation game changer. Tesla Motors plans to have its Gigafactory running in 2017, supplying 35 gigawatt-hours of batteries for an estimated half-million vehicles that Tesla expects to be building annually as of 2020. Tesla expects its gigafactory batteries will be 30 percent cheaper than average prices today. Accessible batteries will mean cheaper electric vehicles and make it easier to build more wind and solar generation. —*Bloomberg New Energy Finance (2015) Energy Storage Market Lithium Ion Batteries; International Energy Agency Energy Perspectives (2014) Total Storage Capacity.*

**5 Climate diplomacy rising**  
The world's two largest climate polluters, the USA and China, have agreed to cooperate and work towards separate targets. China intends to peak greenhouse gas emissions around 2030 and will work to increase the share of non-fossil fuels (including nuclear) in its total energy mix to around 20 per cent by 2030. The United States set a new stronger target to reduce emissions across its economy.

**6 Wind spreads like wildfire**  
Wind surged back to stronger levels of investment in 2014. Last year, a new wind turbine began rotating somewhere on the planet every 20 minutes. China now has 100 GW worth of turbines within its borders and houses one third of the world's installed wind capacity.

**7 Developing world plugs in to renewables**  
Investments by developing countries in renewables were almost equal to investments by advanced economies – USD\$131 billion to USD\$138 billion, up 36 percent from last year, according to Bloomberg New Energy Finance.  
Coal remains India's largest source of energy, but in 2014, India committed to deliver electricity to every citizen in India, and said it will install 175 GW of renewable energy by 2022 to make it happen. India should join the top five builders of renewable energy in 2015.

**4 100 per cent renewable energy goals**  
Forty-five countries and 60 Fortune 100 firms have adopted 100 per cent renewable electricity targets, as have more than 45 cities around the world, including Vancouver, Sydney, Copenhagen, and San Francisco.  
Stanford University professor Mark Jacobson has developed 100 per cent renewable energy plans for every US state. Each plan shows how renewable energy alone could power everything.

**9 Global clean energy economy surging**  
The global clean energy market is now C\$790 billion. Under a business-as-usual scenario, Canadian cleantech revenues will still grow to C\$18 billion by 2022, but if Canada competes in its weight class, revenues could swell to \$34 billion over the same period.

Turbines, solar panels, hydro-electric stations, geothermal power plants, and other renewable energy facilities are iconic indicators of a clean-economy shift – but the bigger clean energy picture encompasses a wide range of products and services such as biofuels, energy efficiency software, green buildings, electric vehicles, and smart grids.

**10 Divestment movement gains new allies**  
From Stanford University to the World Council of Churches, wealthy organizations are shunning investment in dirty energy. The Rockefellers, caretakers of a family fortune built on the backs of the Standard Oil empire, announced divestment of \$50 billion from fossil fuels over the next five years.

hopeful, they aren't getting nearly enough play in Canada's media, or anywhere else in this country.

## Conclusion

Energy systems, markets, and societal values are rapidly changing in response to climate disruption – and those mitigation efforts may be starting to move the needle.

Given that Canada is a resource economy and one of the world's leading fossil fuel suppliers, the implications of this shift for our future competitiveness are profound. While these societal shifts are incredibly

Excerpted from *Tracking the Global Energy Revolution 2015*, Clean Energy Canada, ([cleanenergycanada.org](http://cleanenergycanada.org)). The companion to this report, *Tracking the Energy Revolution – Canada*, will be released in September.

# NUCLEAR DUMP TROUBLE

Alex Indigi

*Where else would one put nuclear waste but near the shores of Lake Huron?*

by Joyce Nelson

It took less than a month for the Harper government to realize it has another major election issue on its hands.

On May 6, a federally appointed Joint Review Panel (JRP) approved the environmental assessment of the controversial Ontario nuclear waste disposal site proposed as a Deep Geologic Repository (DGR) next to Lake Huron. The announcement was immediately met with howls of outrage on both sides of the Canada-US border.

Current federal Environment Minister Leona Aglukkaq was scheduled to announce a decision by early September, but suddenly on June 3, the Canadian Environmental Assessment Agency (CEAA) launched a 90-day “public comment period” until September 1, extending the deadline for a federal Cabinet decision until December, after the federal election.

Ms. Aglukkaq’s spokesman said the comment period would allow for “more public participation.” But according to the CEAA website, the public was allowed to comment only on “potential conditions related to possible mitigation measures,” not on whether the project should proceed.

## The Plan

The proposal by provincial Crown corporation Ontario Power Generation (OPG) is to bury low- and medium-level nuclear wastes from Ontario nuclear power plants in chambers drilled into limestone 680 metres below the surface and under the Bruce

Responsibility, calls the plan “absurd.” Former Ontario nuclear scientist Dr. Frank Greening has slammed the idea as “idiotic” and “dangerous.” Water expert Maude Barlow calls the proposed DGR “absolutely the most terrible idea I can think of.” Even the JRP’s own consultant, Dr.

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“... long-term safety plans are based, in part, on new technologies that have not yet been invented.”

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nuclear site at Kincardine – 400 metres from Lake Huron. The waste will come from the Bruce, Pickering, and Darlington nuclear sites – currently home to 18 Candu reactors.

According to CBC News (May 7), after construction, “the operations phase would last about 40 years, followed by a decommissioning period of five or six years, which would include the installation of a ‘concrete monolith’ at the base of the shafts, then sealing the shafts and removing the surface buildings.” During the Abandonment Phase, the “OPG assumes that some kind of institutional control over the abandoned repository would last for up to 300 years.”

Dr. Gordon Edwards, founder of the Canadian Coalition for Nuclear

Peter Duinker, told the hearings that OPG’s environmental analysis was “not credible, not defensible” and “not reliable.”

## “Flawed Project/Flawed Review”

By mid-July, 80,000 people had signed a petition to stop the project, and 164 communities on both sides of the Canada-US border had passed resolutions opposing the DGR.

Construction of the site could begin by 2018, but the OPG has said it will not go ahead with the project over the objections of the Saugeen Ojibway Nation, on whose territory the DGR would be located. Saugeen First Nation Chief Vernon Roote told the press on May 8, “Of course we are opposed

to it. In our community that I represent ... there are no members that are agreeable to the burial at this site at this time.”

In mid-May, one hundred public interest groups wrote an open letter to Ontario Premier Kathleen Wynne and the Ontario legislature, asking that the Ontario government, “as the sole shareholder of the proponent, Ontario Power Generation,” direct OPG to “withdraw its proposal.”

### Current Storage

Currently, low- and intermediate-level nuclear waste is stored in surface or near-surface facilities at the Western Waste Management Facility, which is located on the Bruce site and overseen by the Nuclear Waste Management Organization (NWMO).

When JRP hearings temporarily ended in 2013, *Kincardine News* reporter Steven Goetz noted (November 4, 2013) that OPG “failed to demonstrate any urgency [for the DGR] and acknowledged the status quo – holding the material in storage containers on the surface – is safe for now. OPG told the panel the project is needed due to its ‘desire to provide a long-term solution for the waste’ and ‘the interest of a municipality in hosting.’ In other words: they want to get rid of it and the Municipality of Kincardine will let them,” Goetz wrote.

It was the Kincardine council that approached OPG about a possible long-term waste facility in 2001.

That was the same year that Bruce Power was hived off from OPG by the Conservative Mike Harris government to become a private power company, leasing the eight Bruce nuclear reactors from OPG under a public-private partnership (P3).

Bruce Power’s two major shareholder-partners are TransCanada Corporation and Borealis Infrastructure (investment arm of the Ontario Mu-

nicipal Employees Retirement System). Borealis bought Cameco’s stake in January 2014.

The Bruce site’s assets (including the nuclear waste) remain owned by OPG, while Bruce Power gets the profits from selling the nuclear-generated electricity.

*Report on Business* (March 2015) stated that Bruce Power “was perceived by many [DGR opponents] as a central player in the debate,” but “the company has never had any role in nuclear waste disposal.” In the next paragraph, however, the author wrote that “Bruce Power pays OPG to store [the nuclear waste].”

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“OPG assumes that some kind of institutional control over the abandoned repository would last for up to 300 years.”

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Neither Bruce Power nor OPG would answer my questions about waste-storage fees, so I looked at OPG’s annual reports. OPG’s income category “Regulated – Nuclear Waste Management Segment” gives an overall dollar-figure that includes used nuclear fuel and low- and intermediate-level wastes. The reports show that the amount OPG has been receiving for storage has been steadily rising: 2011: \$57 million; 2012: \$107 million; 2013: \$113 million; 2014: \$121 million.

In April 2014, Bruce Power’s CEO Duncan Hawthorne told the *Toronto Sun* that he’s interested in taking over the Darlington and Pickering nuclear plants – suggesting intentions to expand private nuclear operations. Hawthorne has also publicly referred to his “100-year plan” and a desire for a “Bruce C.”

It’s also useful to recall that Bruce Power’s other major shareholder, TransCanada Corp., envisages its proposed Energy East tarsands pipeline as needing some 70 electrical pumping-stations (at least 20 in Ontario) to push the heavy piped dilbit to the East Coast.

As well, nuclear industry analysts maintain that no more reactors will be built in North America until the waste-disposal problem is solved.

Apparently, there is a lot riding on getting this first DGR approved.

### Nuclear Juggernaut

Former nuclear scientist Dr. Frank Greening told me that many individuals and groups made “excellent” JRP presentations against the DGR, “but by and large our concerns were just ignored,” he said. “It’s like talking to a brick wall and they call it ‘public hearings.’ We have an illusion of debate,” he said, “but the CNSC and the nuclear juggernaut has its way every time,” partly because of “the revolving door” in the industry.

JRP Chair Dr. Stella Swanson was previously a member of the Scientific Review Group advising the 1998 Seaborn Panel, which spawned the Nuclear Waste Management Organization (NWMO).

Dr. Greening said, “The NWMO is supposedly an independent body, but it’s really OPG in disguise,” while “the Canadian Nuclear Safety Commission is the enabler of the nuclear industry.” It was “disturbing during the [JRP] hearings to see the CNSC sitting beside the OPG, as though they were co-proponents.”

“It’s a big old-boys club,” Dr. Greening told me, “and they get annoyed when people like me come along and raise issues.”

In 2014, Dr. Greening challenged OPG’s radioactivity figures for the

Continued on Page 22 ➡



⇨ *Nuclear Dump continued*

wastes, finding them to sometimes be “1,000 times lower” than the actual radioactivity level that can be expected.

He also said that OPG “hadn’t considered the chemistry of the wastes, which are not that stable.” The nuclear wastes “might as well have been Kleenex the way they were treating them” in their proposal, he told me.

It was the chemistry of the nuclear wastes that led to a nuclear accident at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico.

### Epic Fail of DGRs

As Beverly Fernandez, co-founder of Stop the Great Lakes Nuclear Dump, puts it, “There are only three deep geological repositories on our entire planet that have actually held nuclear waste, and all three of these have failed.”

In New Mexico on February 14, 2014, a fire broke out in a WIPP storage chamber and a drum of nuclear waste ruptured – exposing 22 workers on the surface to radiation. The WIPP has been closed ever since.

An investigation found blunders and missteps, including the fact that a contractor used a wheat-based

kitty litter to stabilize the waste in the drum. The rotting wheat created enough heat to cause a chemical reaction, leading to the rupture. Because hundreds of drums contain the organic material, there is no way to rule out further ruptures.

Asse II, a former salt/potash mine in Germany, was turned into DGR in 1967. Some 126,000 drums of nuclear waste were stored in the underground cavities, which began leaking irradiated water only 20 years later. By 2007, investigations resulted in what *Spiegel Online* called “the biggest environmental scandal in postwar German history.”

Morsleben, an old salt/potash mine in the former East Germany, contains 36,753 cubic metres of low- and intermediate-level nuclear waste, now leaking. The German government regularly conducts emergency backfilling to prevent cave-ins.

With no working example of a successful DGR, Dr. Greening says that OPG “really have no justifications [for the project] except that they have a willing host.”

In fact, by volunteering as host, Kincardine saved OPG and the NWMO from having to search for another site.

### Money Talks

As this “flawed review” of a “flawed project” has proceeded, the revelations have ranged from the astonishing to the ludicrous.

For example, in March 2013, Stop the Great Lakes Nuclear Dump reported that “OPG is paying \$35.7 million to Saugeen Shores, Huron-Kinross, Arran Elderslie, Brockton [and] Kincardine. All are [municipalities] adjacent to the Bruce Nuclear Power Plant site. Ten and a half million dollars have already been paid even before approval to construct the dump is received.”

Erika Simpson, political science professor at the University of Western Ontario, recently noted that the payments to these municipalities will continue for decades “so long as they provide their co-operation in support of the environmental approvals and licensing applications....”

### “Doubling the Waste”

In 2011, OPG proposed to transfer 200,000 cubic metres of low- and intermediate-level nuclear waste into the DGR. But during the 2013 hearings, OPG expressed their intent to double the amount of waste and “seek a licence amendment after they receive a project approval based on the original volume,” according to the open letter.

OPG wants to store “de-commissioning wastes” (including reactor cores) produced when existing nuclear plants are eventually dismantled.

When hearings resumed, the *Toronto Star* reported (August 8, 2014) that OPG “has publicly acknowledged that its long-term safety plans are based, in part, on new technologies that have not yet been invented.”

As of May 2015, according to the open letter, “the final use and size of the proposed DGR remain unknown.”

### Solutions?

Dr. Gordon Edwards calls the DGR plan “simply a corporate strategy for terminating liability” because “corporate bodies cannot tolerate the concept of never-ending liability.” Edwards advocates a “policy of Rolling Stewardship” by which the waste would be “constantly monitored and kept in a retrievable condition [above-ground] indefinitely.”



Joyce Nelson is an award-winning freelance writer/researcher and the author of five books.

### Using the Great Lakes for Dilution

In 2014, an “independent expert group” (hired by Ontario Power Generation) filed a report with the Joint Review Panel claiming that the “immense” waters of the Great Lakes would greatly dilute any radiation-bearing water that might leak from the DGR, so there was no need for concern. The group was chaired by William Leiss, an environmental risk expert affiliated with the University of Ottawa and past president of the Royal Society of Canada.

# Raven Mine Thwarted

by Arthur Caldicott

In September 2011, BC's Premier Christy Clark said, "The Province is committed to eight new mines ... by 2015."

One of her elusive eight was probably the proposed Raven Mine on Vancouver Island, BC. Announced by Compliance Energy Corp. in 2009, the project was a joint venture of three companies, with Compliance holding 60%, and Japan's Itochu Corporation and Korea's LG Corporation each holding 20%.

All the stars were aligned for the Raven project. Coal prices were scorching and coal mines were being pitched in all four corners of the province. The coal fundamentals for Raven indicated a marketable product, and two huge Asian customers were invested in the project. Clark had just approved Compliance Energy's Chairman, James O'Rourke, for the 2011 Order of BC; and had appointed Don McRae, the MLA for the Comox Valley, as her Minister of Agriculture.

McRae, more than anyone, was Clark's eyes and ears on ground zero for the Raven mine. But the Premier was clearly not getting the message that the project was facing near universal opposition in both the Comox and the Alberni valleys (the coal was to be shipped out of Port Alberni), from local governments, from stakeholder groups like the BC Shellfish Growers Association, and citizens groups like CoalWatch. Nor was she getting the message that Compliance Energy was making an ass of itself – demonstrating stunning ineptness, foot-in-mouth disorder, missing deadlines, issuing misleading statements, and being anything but credible, professional, or businesslike.

By mid-2015, the Raven project had all but collapsed. The first application to the BC Environmental Assessment Office (EAO) had been rejected in 2013. The company withdrew its second application in March 2015, with the unusual and inexplicable complaint that it had "received some misinformation circulating in some communities." On June 26, Compliance filed a news release announcing that the two joint venture partners had withdrawn from the joint venture, and that its "efforts had been thwarted."



By this time, Compliance Energy owed \$1.1 million in payables, and had a deficit of \$19.6 million. Its shares were trading for half a cent and

there were more than 78 million of them issued and outstanding – virtually worthless confetti.

That same day, June 26, was Compliance Energy's Annual General Meeting, at which the directors passed two important resolutions. The first was to consolidate all those shares on 1 for 10 basis, leaving 7.8 million new shares. The second was to spin-off Compliance Coal Corp., the subsidiary company which held the Raven mine project, as an independent company, taking with it the Raven "asset."

The company that should have died by its own misadventures, will persist in some kind of securities dormancy, undead, until it appears unbidden and unwelcome in some other community. This is nothing more than a vehicle to sell shares which enrich O'Rourke and his cohorts in the business. While what it does may be entirely within the law, its consequences are entirely parasitical and negative: presenting potentially huge environmental risks, causing enormous distress to communities where it has never been welcomed, using up hundreds of hours and tens of thousands of dollars of public resources in the form of local and provincial government time and environmental and mining regulatory agencies.

Compliance Energy is already in the process of reinventing itself to continue its dirty work, with another project in another community. The Raven project will go dormant until coal prices rise again.

Two communities – the Comox Valley and Port Alberni – are exhausted after the six year struggle, but they are also invigorated: those years of intense engagement have indeed "thwarted" the company.



Energy analyst Arthur Caldicott is a regular contributor to the *Watershed Sentinel*.

# Saving the Peace Valley from Site C

by Ana Simeon

*Annual Paddle for the Peace brought hundreds to protest construction of the Site C dam*

We hold hands for a prayer led by a West Moberly elder, then chaos erupts. Canoes and kayaks are piled three layers deep on the riverbank at Halfway Bridge, and still more are being wrestled off trucks and cartops. Lifejackets are zipped, gear stowed. The drums' heartbeat steadies and connects us as each paddler finds her/his stroke, pushed and pulled by the eddies and currents. The Peace shimmers with colour. Signs and banners at the 10th Annual Paddle for the Peace proclaim our purpose: to save the Peace Valley and stop Site C dam from being built.

As we put in, the July skies clear and the breeze picks up, and for a while we have to paddle hard. Our canoe finds a strong current and we let the river carry us, savouring each moment.

All too soon we land at Bear Flats, a favourite hangout for grizzly bears (although not, we learn, at this time of year). We are welcomed by more drumming, and a curious beaver whose lodge nearby now sports a banner proclaiming "Ban the Dam, You Turkeys!"

For the first time in a decade, there is a strong media presence at the Paddle indicating that the tide is finally turning as more and more diverse voices are raised in opposition to the dam. The previous week, Metro Vancouver called on the BC government to put a two year moratorium on Site C, pending review by the BC Utilities Commission and the Agricultural Land Commission. Site C has also come under international scrutiny: the UNESCO World Heritage Committee has initiated a monitor-

ing mission to investigate threats to the Peace Athabasca Delta, and asked Canada

to put on hold any resource projects that would cause irreversible impacts to this World Heritage Site.

The impressive line-up of speakers, including Grand Chief Stewart Phillip, Assembly of First Nations Regional Chief Shane Gottfriedson, and David Suzuki, affirms the paddlers' resolve to do everything we can to stop the Site C madness. Several speakers gulp tears as they speak of their love for this place, the vibrant First Nations cultures, the miracle of farmland in the boreal zone producing semi-tropical fruits and vegetables. Feelings surge and swell, anchored by our collective energy and strength. Above all, I feel anew my love for this beautiful valley, which has become a part of me now – a part that I cannot abandon until this threat is lifted.

The threat is very real. BC Hydro is determined to blast ahead. Old-growth forest along the river is slated to be logged this summer, taking with it the eagle nests along the river, and disturbing the calving grounds for moose, elk and deer in the middle of the calving season. This is a blatant infringement of the Treaty 8 Nations' treaty rights to fish, hunt and practice their culture on the land "as long as the sun shines, the grass grows and the rivers flow." Will Site C become yet another episode in the shameful story of betrayal by colonial governments? Surely we ought to have learned something by now! After the Truth and Reconciliation Commission, after the Supreme Court of Canada's decision on aboriginal title ... has nothing changed?





In the night I listen to thunder. Thunder is a force of nature, a display of power: thunder in the sky, the thundering hooves of tens of thousands of bison who used to live in the Peace valley long ago. The Paddle, too, is a kind of thunder, a force that will not be gainsaid. Then rain comes down in a downpour, soaking the parched fields and meadows. In the distance a pack of coyote howls. As long as the pack stays together they survive and thrive. Obscurely reassured, I fall asleep.

The next morning I wake to overcast skies and billowing mists over the river. When the mist lifts, it reveals sandbars that couldn't be seen the day before: the W.A.C. Bennett and Peace Canyon dams are letting through less water today, determined according to goodness knows what arcane formula to "optimize" power output, with no thought of ecological needs. This is the crux of the Mikisew Cree/Athabasca Chipewyan case against Site C, and the focus of their petition to UNESCO: not enough water is reaching the Peace/Athabasca delta to sustain the ecological integrity of its wetlands, home of the endangered whooping crane and unique wood buffalo. The impact is already dire, with two dams, and will become significantly worse if Site C is built.

### The People vs. the Site C Dam

Listening to the local people worry about what might happen in the next few weeks or months – old-growth trees felled, eagle nests coming down, giant bulldozers digging their teeth into the fragile sediments and formations created by eons of wind and water – is like contemplating the dismemberment of a friend, in slow motion. Richard Bullcock, former chair of the Agricultural Land Commission, called it a "sin against humanity." It is hard to fathom such deliberate destruction.

"Cowboys and Indians are coming together to protect the Peace River Valley –

and save British Columbians a lot of money." —Elder George Desjarlais, West Moberly First Nations

All of us cowboys and Indians together – farmers, ranchers and First Nations, supported by thousands of British Columbians – are a force to be reckoned with. And First Nations rights and title, affirmed by the highest court in the land in the Tsilhqot'in decision last summer, give Treaty 8 a strong position to fight a legal battle, and win.

The BC and federal governments have dug themselves into a hole. They didn't listen to the Joint Review Panel or to the Treaty 8 First Nations. They ignored the opposition by Peace Valley landowners, local governments and thousands of British Columbians. Now they're dealing with multiple lawsuits and scrutiny from the international community.

The Treaty 8 legal challenges to the Site C decision are the best chance of stopping Site C. RAVEN Trust has set up a special legal fund for the court cases in provincial and federal court, which began on July 21. People can donate, fundraise online or organize an event to help raise funds for this strategic campaign to Protect the Peace.

Let's stand with Treaty 8 First Nations. Together, we can stop Site C.

2015 is the year that Site C will go down! Please Join the Circle at [nosite-c.com](http://nosite-c.com).



Ana Simeon is the communication engagement coordinator for Sierra Club BC.

*Photo by Andrea Morison*



# The Real Deal on BC's Prosperity Fund

by Arthur Caldicott

## Sovereign Wealth Funds

Norway has the biggest, worth US\$882 billion in June 2015. With a population of 5.1 million, that works out to \$173,000 per person. There are dozens of other such funds, reflecting many of the world's petroleum producing nations.

Closer to British Columbia, Alaska has a famous one, worth \$54 billion. Alberta's is even better known, albeit as the poster child for Sovereign Wealth Funds (SWF) abuse; yet it still clocked in at the end of March with \$17.9 billion.

Norway puts all petroleum revenues into its "Government Pension Fund – Global." On average, it removes four per cent of the fund per year for the national budget, ensuring that the capital is not touched. Its purpose is to replace future diminishing petroleum revenues in the national budget – a "national pension," or "deferred revenue."

Alaska's Permanent Fund is also protected for the future, but each Alaskan also receives a dividend cheque annually. The dividend was \$1884 per person in 2014. The fund receives 50 per cent of all mineral leases, bonus payments, and royalties, royalty sale proceeds, and net profit shares (but not corporate taxes). During the 1999 recession, government wanted to bite into the fund for its state budget. Put to a vote, 84 per cent of the people said, Don't touch it.

Alberta's Heritage Fund, created in 1976, is a battered survivor of endless raids by government. In 1982 natural resource revenue transfers were cut from 30 per cent to 15 per cent, in 1987 they were halted altogether, and the capital in the fund has been bled continuously.

## BC, Making Alberta's Heritage Fund Look Good

In BC, the concept has never progressed beyond empty talk. In 2013, Premier Christy Clark announced the British Columbia Prosperity Fund: \$100 billion dollars in the next thirty years from LNG, provincial debt wiped out, sales tax gone, climate change mitigated, and prosperity. Don't hold your breath.

Bill 30 – the *Liquefied Natural Gas Projects Act*, passed in July, is legislation written with and for Petronas, proponent of Pacific Northwest LNG. The Bill entitles Petronas, owned by the the scandal-rocked Malaysian government, to

## CLASSIFIEDS

### PROVINCE seeks SWF

for long-term commitment. Real deal only. Must have means. No empty promises. No LNG. If you're serious, then so are we.

compensation for any increases by future BC governments in gas royalties, greenhouse gas emission controls, or carbon taxes. For Petronas, Premier Clark and LNG Minister Rich Coleman, and BC's taxpayers, are the gift that keeps on giving.

There is still nobody building any LNG capacity in BC. No LNG = no Prosperity Fund.

## Bird in the Hand: Bonus Bids, Deferred Revenue

Yet, BC did have a good start on a "prosperity fund." Government has kept mum, because they are busy spending it as fast as they can.

Here's how it works.

Government gets most of its petroleum revenues from two sources: royalties, based on production, and bonus bids – what companies are willing to pay for petroleum tenures in BC's monthly auctions.

With the development of horizontal directional drilling and fracturing, a rush was on: shale and tight formation plays were the new boom, and one of the most exciting was in northeastern BC – the Montney, and Horn River Basin.

In 2004, bonus bids were \$280 million. In 2005, \$556 million; 2006, \$607 million, 2007, \$1.2 billion and in 2008, \$2.4 billion flooded into provincial coffers. BC's Auditor General told government to implement a deferred revenue account, in order to spread the money over nine years.

From 2008 through 2011, the deferral account held around \$4.3 billion, about 11 per cent of the annual budget.

Every year since, the government has drawn down the deferred revenue account as quickly as the rules allow, putting \$800 million in its budgets as revenue from bonus bids. Behind the scenes, the real bids weren't anything like the drawdown: \$287 million in 2011, then \$115 million, and only \$3.7 million in the first four months of the current fiscal year.

But there is still about \$2 billion in the account. A government could declare those funds as the seed money for BC's real prosperity fund, and stop spending it on subsidies for an industry that needs no help from us.



Energy analyst Arthur Caldicott is a regular contributor to the *Watershed Sentinel*.

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# Canada's Fossil Fuel Subsidies

by Mitchell Anderson

*We're a world leader in giveaways, a fact rarely noted when federal budgets are debated*

While Canada slashes budgets for research, education, and public broadcasting, there is one part of our economy that enjoys remarkable support from the Canadian taxpayer: the energy sector.

The International Monetary Fund estimates that energy subsidies in Canada top an incredible \$34 billion each year in direct support to producers and uncollected tax on externalized costs.

These figures are found in the appendix of a major report released in 2013 estimating global energy subsidies at almost \$2 trillion. The report estimated that eliminating the subsidies would reduce global carbon emissions by 13 per cent. The stunning statistics specific to this country remain almost completely unreported in Canadian media.

Contacted by *The Tyee*, researchers from the IMF helpfully provided a detailed breakdown of Canadian subsidies provided to petroleum, natural gas, and coal consumption. The lion's share of the \$34 billion are uncollected taxes on the externalized costs of burning transportation fuels like gasoline and diesel – about \$19.4 billion in 2011. These externalized costs include impacts like traffic accidents, carbon emissions, air pollution, and road congestion.

The report also referenced figures sourced from the Organisation for Economic Co-operation and Development (OECD) showing an additional \$840 million in producer support to oil companies through a constellation of provincial and federal incentives to encourage fossil fuel extraction. This brought total petroleum subsidies in Canada in 2011 to \$20.23 billion – more than 20 times the annual budget of Environment Canada.

In comparison to other countries, Canada provides more subsidies to petroleum as a proportion of government revenue than any developed nation on Earth besides the United States and Luxembourg.

Natural gas consumption also enjoys billions in subsidies in Canada. The IMF estimates that un-priced carbon emissions from burning natural gas added up to \$7.3 billion per year. There's another \$440 million in producer support

and \$360 million in other un-taxed externalities, all of which tops \$8.1 billion. This tax giveaway on natu-

ral gas alone is 44 per cent more than Canada provides in international aid every year.

What about coal? Canada consumes over 30 million tonnes per year. While we currently export over half our domestic production, the IMF study only considered externalized costs within our own country. They found that the coal industry receives \$4.5 billion in annual subsidies – almost all of this is un-priced carbon and sulfur dioxide emissions. This generous largesse towards the dirtiest of fuels is about four times what the CBC receives in public support every year.

## Or We Could Spend That On ...

What could Canada do with an extra \$34 billion a year? Both Vancouver and Toronto are struggling with how to fund long overdue upgrades to public transportation. Subway construction comes in at about \$250 million per kilometre, meaning we could build about 140 kilometres of badly-needed urban subway lines every year. Light rail transport (LRT) is about one-quarter of the cost of subways, meaning for the same money we could build about 560 kilometres of at-grade transit infrastructure.

This foregone revenue in less than two years could fully fund the Big Move transit plan for southern Ontario, providing affordable access for 80 per cent of people living from Hamilton to Oshawa. Toronto's transit system has languished for decades. This sorely needed infrastructure would save the average household thousands in wasted time sitting in traffic, and Canada's economy billions in reduced congestion costs.

The proposed Vancouver subway line to the University of British Columbia could be built using less than two months of the subsidies provided every day to the energy sector. Forty kilometres of rapid transit in Surrey could be had for about the same amount.

What about green energy infrastructure? Adding solar

and wind capacity provides some of the best job-generation per dollar of any option available – more than seven times the employment from an equivalent investment in oil and gas extraction. Extrapolating the findings from a 2012 report on green jobs, \$34 billion could create 500,000 person years of employment and install more than 150,000 megawatts of clean generating capacity. Canada currently ranks 12th in the G20 on green energy investment and has been steadily falling behind our competitors.

Canada's infrastructure deficit of crumbling roads and outdated water and sewage treatment is pegged at \$171 billion. This backlog could be wiped out in five years with the revenue we are subsidizing to the energy sector.

Of course, not all things of value can be measured by bricks and mortar. Thirty-four billion dollars each year could provide \$10-a-day childcare for 5.5 million children ages 0 to 5. Canada's child care costs are currently the highest in the OECD.

### No Free Lunch In Energy Costs

For all the complaining Canadians do about fuel prices, it's ironic to note the IMF essentially says we are undervaluing the true cost of gasoline by about \$0.30 per litre. Compared to other nations, Canada enjoys some of the cheapest gas in the developed world. Fuel in Italy and Germany is almost double our price at the pump. Ever think it's odd that bottled water at the gas station costs more than the fuel you just put in your tank?

Consider for a moment all the costs of finding and extracting crude oil, shipping it across the globe, refining it into gasoline and trucking it to your neighbourhood. Not to mention the billions spent by some countries projecting military power into volatile oil-producing parts of the world and the very human price of those interventions. Ad-

ditional un-priced costs after petroleum is burned, such as climate change, traffic congestion, road accidents and air pollution make gasoline perhaps the most subsidized substance on Earth.



Ricky22 - Flickr.com

Less than half of Vancouverites in their early twenties today have chosen to get a driver's license, down from 60 per cent 10 years ago.

Every decision based on artificially low energy prices can have years of unintended consequences. If gas is cheap, people will choose to buy cars rather than take transit, clogging both our roads and emergency rooms. Transportation accidents alone cost Canada \$3.7 billion each year. Every vehicle bought based on low fuel prices will produce years of carbon emissions, and every owner over the life of that vehicle will have an interest in voting for cheaper gas.

The opposite, of course, is also true. Less than half of Van-

couverites in their early twenties today have chosen to get a driver's license, down from 60 per cent 10 years ago. Better public transit and more expensive car ownership seem to be the main factors driving this remarkable demographic shift.

The IMF can hardly be accused of being a left-leaning, alarmist organization. Through this valuable research, they make the case that there is no free lunch in energy costs, and we exclude these externalized costs at our peril.

A country can be judged on what it chooses to tax and what it chooses to subsidize. And by that yardstick, this nation currently seems to care more about cheap energy than almost anything else.



Mitchell Anderson writes about industry and the environment for *The Tyee* and others. This article was first published on *thetyee.ca*, May 15, 2014.

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# BEYOND THE TESLA POWERWALL

*How energy storage is shaping up in Ontario*

*by David Dodge and Duncan Kinney*

There are not many entrepreneurs who can command a room like Elon Musk. When he stepped onto a stage in May to unveil the Powerwall, the audience oohed and aahed and dutifully pre-ordered more than 38,000 of Tesla's new home battery systems.

And while Tesla gets the headlines, other energy storage players shouldn't be jealous. Musk just gave the nascent industry a billion dollars worth of free press. And in Canada it's Ontario that's leading the way in deploying energy storage systems in the field. While the Tesla Powerwall won't be available to the public until next year, Panasonic Eco Solutions and a couple of other partners are doing an interesting pilot project in Oshawa.

They're installing 30 systems that combine solar photovoltaic and batteries: a six-kilowatt solar system with batteries that can store up to 10 kilowatt-hours.

"Most utilities see storage as something that is coming. Oshawa Power is being very progressive and trying to learn more about the technology, how it's going to interface with their grid and how customers are going to use it," says Sylvie Briz of Panasonic Eco Solutions.

*"...you can manage your electricity needs in the most cost effective way and help make the overall electricity system more resilient and better for everybody."*

Without all the hoopla, Panasonic has also started pilot projects in Australia. They're installing eight-kilowatt-hour lithium ion battery storage systems that can provide two kilowatts of electricity in homes. The system is scaled for a five-kilowatt home solar system and can help double the home's rate of self-consumption of solar electricity.

And deployment really is the key.

No one knows what niche energy storage will fill in the energy market until it's deployed in sufficient numbers.

"Storage can play in dozens of different areas of the electricity market, whether it's just providing backup, whether it's time shifting, whether it's bulk storage for holding wind energy – when the wind's blowing and we don't need it – or solar energy when we want to deploy it at a later time. Whether it's

just doing voltage regulation or grid regulation. Sorting it out and coming up with rules once they nail that, I think it's going to open up this whole world of innovation," says Tyler Hamilton, editor of *Corporate Knights* magazine.

Ontario is testing a range of battery applications. They've funded 34 megawatts worth of projects with technologies ranging from batteries to flywheels to even hydrogen and thermal storage.



Ontario plans to roll out 50 megawatts of energy storage and while it doesn't compare to California's pledge to install 1,300 megawatts, it's still a very good start.

And if you are confused about using megawatts to describe a battery system, you are not alone. Utilities and governments use megawatts as a matter of habit and familiarity, while battery manufacturers typically use the more accurate term megawatt (or even gigawatt) hours.

### The Energy Storage End Game is Residential

While utility-scale projects are the ones getting big dollars right now, if storage goes big, it will be because of the residential market.

Jason Rioux is a vice-president at NRStor, an energy storage company in Ontario. They're involved in a two-megawatt flywheel project featuring Temporal Power's technology, but they've also partnered up with Tesla to sell and deploy their residential and commercial products.

"The closer you get to the load, the more value you can deliver to rate payers, and so we see a lot of opportunity for grid scale projects to solve grid scale problems. But we also see residential projects distributed out amongst all of the load centres across the province or across the country to be able to deliver significant benefit back to the system," says Rioux.

"This is just the beginning. The cost of these technologies will continue to decrease and be more economic to more people."

In management circles it's called the experience curve and it's a real thing. More manufacturing capacity brought the price of solar modules way down, and the same thing will happen to batteries. Tesla is building Gigafactory One in the Nevada desert right now. It will be the world's largest battery factory at 10 million square feet, costing \$5 billion.

And at full manufacturing capacity it will be able to pump out 50 gigawatt-hours worth of batteries a year.

But it's not just storage that's going to change how our energy system works. A whole suite of next-generation energy services are set to come online. John Gorman, the president of the Canadian Solar Industries Association, sketched out the best vision of this future that we've heard yet.

"I'll just tell you how personally excited I am about a future that is literally right around the corner. When you look at Ontario, for example, where you're a home owner

who has solar on your rooftop, a storage battery in your garage, a smart meter on the side of your house, an electric vehicle in the garage, and smart apps on your telephone that allow you to control your appliances, you can manage your electricity needs in the most cost effective way and help make the overall electricity system more resilient and better for everybody," says Gorman.

And when established companies are making big bets on storage over natural gas peaker plants you know you've hit a tipping point. Energy storage is going to change everything.



David Dodge is an environmental journalist and produces *Green Energy Futures*, a website dedicated to stories about the transition to green energy. Duncan Kinney is the editor of *Green Energy Futures*.



David Dodge

"This is just the beginning. The cost of these technologies will continue to decrease and be more economic to more people."

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# SOLAR SHINING

Jonathain Cohen

by Delores Broten

There is a lot of talk of new materials and new applications for solar these days. Some of them are kinky, and some whimsical. Nonetheless, small scale solar is already making improvements in people's lives, especially in developing countries.

One example is Ramadas' solar-powered push cart, in Puducherry, India. Ramadas designed the cart himself, and now sells smoothies, with his cooler and mixer powered by the panels which provide a roof for the cart. ([vikaspedia.in/energy/best-practices/solar-applications](http://vikaspedia.in/energy/best-practices/solar-applications))

Green Energy Africa launched a program where Masai women haul solar panels into remote villages and install them, saving trees and kerosene. David McNair reported on *takepart.com*: "The women are provided with energy-efficient lights, solar panels, and rechargeable batteries at a discount, which they in turn sell for a profit. They are also trained to help install the panels and lights at individual homes. To date, 200 women are participating across five village groups; together, they've installed solar-powered units in more than 2,000 homes." Small stuff in the bigger scheme of things, but a big deal to those who are benefiting.

Closer to home, the T'Sou-ke First Nation has become a solar community and a leading light on Vancouver Island, enjoying not only economic development and displaying

ecological leadership, but benefiting from the ecotourism their projects have generated.

And the breakthroughs just keep on coming for larger applications.

**The Cochin International Airport** in Kerala, southern India, is the world's first solar-powered airport, although it is still hooked to the grid for an emergency supply. It started in 2013 with solar panels on the terminal roofs, and now has over 46,000 solar panels covering 45 acres and producing 12 megawatts.

**Google has an app** for you if you live in the San Francisco Bay Area, Fresno CA, or Greater Boston MA. "Project Sunroof" will tell homeowners how much panel to install and how much money they will save over 20 years. When you enter your address, Project Sunroof looks up your home in Google Maps and computes how much sunlight hits your roof in a year. It takes into account:

- Google's database of aerial imagery and maps
- 3D modeling of your roof
- Shadows cast by nearby structures and trees
- All possible sun positions over the course of a year
- Historical cloud and temperature patterns that might affect solar energy production

Google intends to expand the

service around the US and world, and will receive a commission when users click on a solar company.

## Solar Highway Panels

And then in August *wired.com* reported on the marvellous new invention being trialled by a university in The Netherlands – translucent solar panels which can be tinted and used in all kinds of public structures, including as highway sound barriers. The panels use a new kind of renewable energy technology called luminescent solar concentrators (LSC) – made of sheets of plastic which capture different wavelengths of sun energy depending on the colour of the plastic. The plastic then sends the light to the solar cells on the edge of the sheets. The panels are less efficient than normal solar cells, but much more esthetically appealing.

## Solar Windows

Michigan State University has used the same LSCs to make transparent solar windows. Again, the plastic collects the energy and transfers it to solar cells at the edge of the window. These windows are now verging on production through a company called Ubiquitous Energy. ([www.extremetech.com/extreme/188667-a-fully-transparent-solar-cell-that-could-make-every-window-and-screen-a-power-source](http://www.extremetech.com/extreme/188667-a-fully-transparent-solar-cell-that-could-make-every-window-and-screen-a-power-source))



# Northern Grease



John Muirhead

*A beautiful, fun film that takes an earnest look at communities affected by energy projects in BC*

Jasper sums up the (mis)adventures, “It was a bit of a doozy – I didn’t know what I was in for.”

Yet, the film is more than just the antics of a talented group of videographers with a healthy dose of humour and a passion for playing in the great outdoors. It explains what fracking is, the issues surrounding it, and pipeline developments. It

by Susan MacVittie

In 2013, a few members of the Beyond Boarding collective, a group of BC snowboarders, surfers, artists, and friends that strive to stand up against environmental and social injustices, decided to embark on a journey throughout British Columbia and Alberta to gain a better understanding of Canadian resource extraction projects.

Their film, *Northern Grease*, follows Tamo Campos (Dr. Suzuki’s grandson), John Muirhead, Lewis Muirhead, Jasper Snow Rosen, Landon Yerey, and Hannah Campbell, as they travel in a vegetable oil fueled bus for eight months documenting the towns, the people, and the land that are affected by practices such as fracking, pipeline projects, and the tar sands.

Beginning in the emerald rainforest of Vancouver Island, the crew carves some waves in the west coast surf, cooks freshly caught fish, and ends up setting up camp in a local junkyard to work on what will be the first of several bus breakdowns.



Marshall Chupa

**NORTHERN Grease**

also puts a face and gives voice to community members across BC who are dealing with pipeline proposals running through their backyard. Folks like farmers, Tim Ewert from

“The fact that these impacts on communities are labelled as prosperity makes me disgusted at the path our government is pushing for. They are putting economy before ecology and the people of British Columbia - the foundations of what makes this province so beautiful.”

-Beyond Boarding

Wildwood farms in Pouce Coupe, and Ricky Kniefel in Hazelton, who are using alternate energy sources such as solar and animal power. And members of the Tahltan Nation, the Klabona Keepers, who have set up camp on their traditional summer hunting grounds in the Sacred Headwaters to stop mining and gas projects slated for their northern wilderness paradise – home to three of the largest undammed salmon bearing rivers in North America: the Stikine, Naas, and Skeena rivers. (For more info, go to our website [www.watershedsentinel.ca](http://www.watershedsentinel.ca)). The film also gives viewpoints from tar sand and pipeline workers, students ... and even a mayor.

No matter what your take on the oil and gas industry is, this film showcases some of the most breath-taking wild places in British Columbia that many have yet to see.

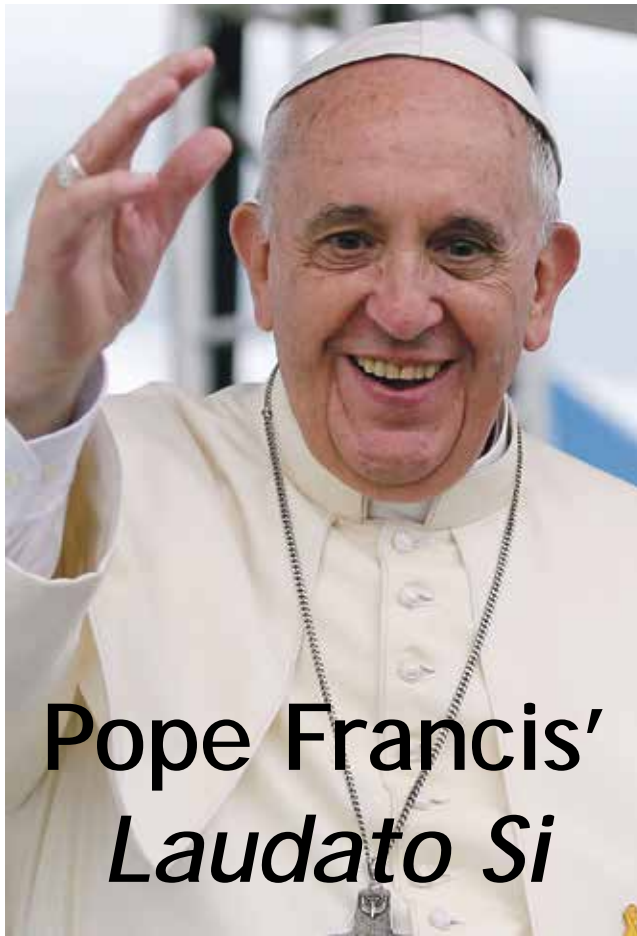
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To download a copy of the film: [www.reelhouse.org/beyondboarding/northern-grease](http://www.reelhouse.org/beyondboarding/northern-grease)



Susan MacVittie is managing editor of the *Watershed Sentinel*.





# Pope Francis' *Laudato Si*

*Toward a New Consciousness*

*by Mike Bell*

Several years ago, when Pope Francis decided to write an encyclical on the environment, he knew he had a big problem, the biggest of all problems – climate change. It was a civilization problem. It was especially a problem for poorer countries where millions of climate refugees were on the move, seeking water, or fertile ground for their crops, or escaping wars being fought over the impacts of climate change.

Climate change presents a real challenge for faith groups. They have always been involved in social issues, but in terms of climate, the greatest of all impacts on the poor throughout the world, there has been a deafening silence.

In deciding to address this issue, perhaps Francis recalled Einstein's famous observation, "We cannot solve problems with the same thinking we used to create them." Undoubtedly, he realized that we needed a new way of thinking about our environment, a way of thinking that would provide a new context and consciousness for dealing with climate change.

He realized that religions and faith groups were estab-

lished and emerged out of a totally different age. They all appeared in the Holocene period that began some 11,000 years ago with the receding ice shields. It was a period of great stability that saw the creation of cultures, cities, farming, and major religions. When people got up in the morning they saw the same world they saw when they went to bed the night before.

But, as the scientists tell us, the Holocene age came to an end at the start of the industrial revolution. We have now entered the Anthropocene Age. Unlike the natural eras that preceded it, we have seen the emergence of a new consciousness based upon irreversible transformations. When we get up on the morning we think we see the same world that we saw the night before, but we don't. Everything is changing. So, we have a new context.

This new context requires a new way of thinking about who we are in relation to the world in which we live – a new consciousness. Francis describes this consciousness in *Laudato Si*. It has three defining characteristics.

First, Earth is not just something "out there" – our environment, home. It is part of us. We are earthlings. Earth is what Thomas Berry called "our greater self."

Second, we live in a totally integrated Earth. Everything is linked and connected with everything else. So we cannot deal with a single element, say the environment, without showing how changes in environment affect the economy, cultures, governance, and so forth.

Third, because we are earthlings living in an inter-connected world, we have a moral and ethical responsibility to care for Earth. We must hold ourselves accountable for what we are doing to it. This responsibility extends especially to the poor.

## Looking Beyond *Laudato Si*

I found *Laudato Si* to be a great source of hope. It is not a Deus Ex Machina sort of hope. It is a very practical, down to earth hope that St. Augustine of Hippo described many centuries ago.

"Hope has two beautiful daughters; their names are Anger and Courage. Anger at the way things are, and Courage to see that they do not remain as they are."

I think *Laudato Si* will be Francis' legacy. He will be remembered as the pope who really knew how to pope.



Mike Bell is a former monk and Roman Catholic priest, with MAs in theology and communications. He is a semi-retired community organizer living in Comox, BC.

*Photo: Korean Culture and Information Service (Jeon Han)*

EARTH

# A SHUDDER BEFORE THE BEAUTIFUL

*by Tuomas Holopainen*

Awake, oceanborn  
Behold this force  
Bring the outside in  
Explode the self to epiphany

The very core of life  
The soaring high of truth and light

The music of this awe  
Deep silence between the notes  
Deafens me with endless love  
This vagrant Island Earth  
A pilgrim shining bright  
We are shuddering before the beautiful  
Before the plentiful  
We, the voyagers

Tales from the seas  
Cathedral of green

The unknown, the grand show, the choir of the stars  
Interstellar theatre play, the nebulae curtain falls  
Imagination, evolution, a species from the vale  
Walks in wonder in search of the source of the tale



Tuomas Holopainen is the composer and keyboard player in the symphonic metal band from Finland, Nightwish.





A Perfect Life

by Joe Foy

Sitting on the shores of Fish Lake, breathing in the pine scented air, surrounded by the sounds of the breeze in the trees and a distant loon calling, life felt just about perfect.

I was there to join a weekend celebration in honour of the first anniversary of the Tsilhqot'in Nation's announcement to create a 300,000 hectare tribal park in the surrounding wilderness of the Chilcotin Plateau. Several of the Chiefs attended the event, and explained their efforts as they consulted with their neighbours and discussed what the rules would be to govern the new protected area they call *Dasiqox*.

Expanding a protected area system in a way that bridges and buffers existing protected areas as well as new ones, that is proposed and managed by Aboriginal people, is a hot topic these days – both here in BC and around the world.

Most parks are just too small to contain and sustain the wild plants and animals that live within the park boundaries. The signs and symptoms of wildlife under siege are everywhere. Consider the high profile story of Cecil the Lion who was lured out of his African park refuge, across the boundary lines into the sights of a bow hunter who killed and beheaded him. Or the recent story of a BC guide outfitter convicted of allowing a “cli-

ent” to shoot a grizzly bear that had been attracted by bait. Parks here and abroad need wide buffer areas and connecting corridors between parks to keep wildlife populations safe and healthy.

Even plants are at risk – especially the really big ones known as old-growth trees. For a number of years

The Tsilhqot'in Nation and other aboriginal groups around the planet are pointing the way to new forms of protected areas.

now the BC government has quietly been allowing logging companies to survey provincial park boundaries. Why would logging companies want to pay for expensive on-the-ground surveys of provincial park boundaries you might wonder? The answer is that logging companies are increasingly “shaving” the last old-growth trees right up to the very edge of the park boundary line. The result is something that biologists call the “edge effect” – a risk of increased blowdown and soil erosion in the park, and loss of habitat that sustains wildlife.

There has got to be a better way. And there is. The Tsilhqot'in Nation and other aboriginal groups around the planet are pointing the way to new forms of protected areas that can allow wild nature to survive and thrive

while providing livelihoods for surrounding rural communities.

To use the example of the Dasiqox Tribal Park, it provides bridging habitat between a number of existing provincial parks including Ts'il'os, Nunsti, Big Creek, Eleven Sisters, and South Chilcotin Mountains. The effect is to create a much larger region where wild plants and animals can survive and thrive. And the point of the Tsilhqot'in Nation's ongoing discussions is to make sure the local economy survives and thrives too.

We need more of this kind of thinking – here in BC and in other countries. Conservation biologists tell us that if the world is to retain grizzlies, salmon, rhinos, lion, and all of the other wondrous creatures big and small, then nations are going to need to set aside half of their total area for nature. Clearly we need additional types of protected area designations – and all nations need to speed up the pace of new protected area creation in the global race against the extinction clock.

Looking out from the shores of Fish Lake, the view was clear. A perfect life isn't without wildlife.



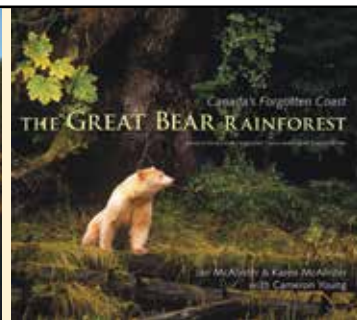
Joe Foy is the national campaign director for the Western Canada Wilderness Committee, Canada's largest citizen-funded membership based wilderness preservation organization.



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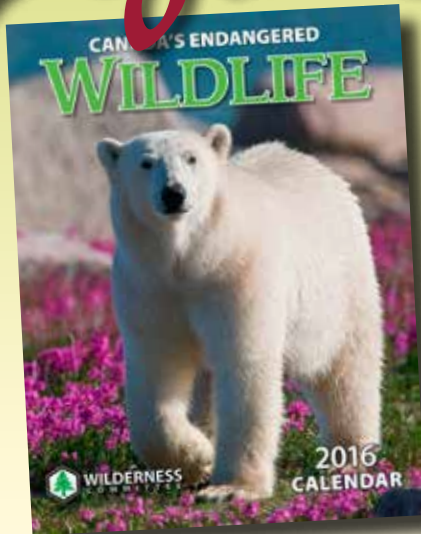
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