Watershed Sentinel

GENUINE CANADIAN MAGAZINE

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Environmental News from BC and the World

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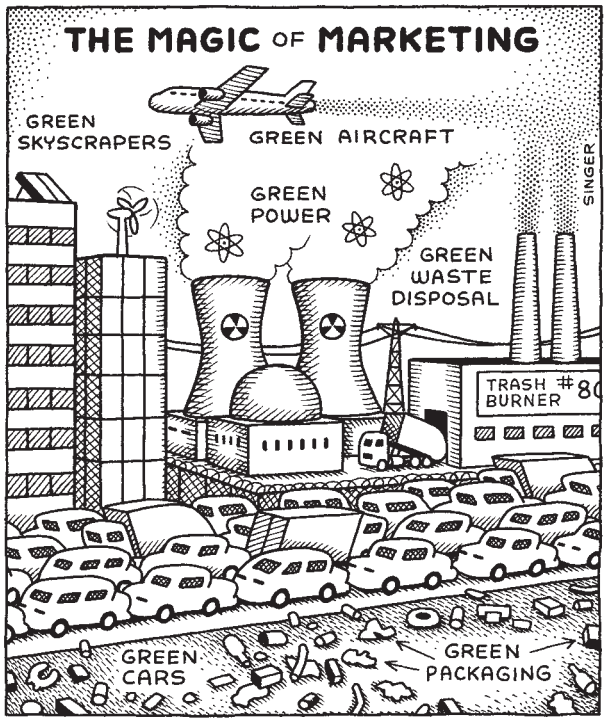
NO EXIT © Andy Singer



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EDITORIAL

Follow the Piper

Stick an ear out anywhere this past summer, and there was music – at festivals, dances, house parties, parks. Once again, musicians lead the way. Not for function, as they did before the printing press, singing the news and chanting history. Not in form, as when rock blasted a path for the Sixties Revolution. This time, it's the very structure of the craft, its delivery. The musicians touch us all, with a suitcase of self-produced cds and a reputation, local or regional, based on people and connections, their craft less a career fuelled by star power than a way of life. They don't need the music corporations anymore. And so with the loving produce of farmers and growers, once they find a way to reach their eager local customers, and with a plethora of local products. Ditto art, video, newspapers, magazines, blogs and the whole internet of ideas – speaking to the heart, projecting new concepts at the speed of light around the world, reflecting local concerns. And many of the practitioners in communities are making a living, not the big money, but enough to get by.

This is the new economy, the no-growth society, a-borning in the cracks and fissures of the old, and celebrated by minstrels.

Delores Broten, Comox BC, September 2009

Flying

It has been a little over a year since we published stories about the environmental impact of flying in airplanes (March-April 2008). I have spent much time thinking about these stories and have discussed them with many friends. While most people I know would consider themselves high on the scale of environmental awareness, I do not know of a single person that is willing to stop or even limit their flying. Some pretend ignorance, most consider flying as a right, almost all made some form of comment about "Why should I stop if everyone else is doing it?"

I suggest that flying in airplanes is the perfect modern day example for Garrett Hardin's classic paper, "The Tragedy of the Commons," (*Science:* Vol. 162 1968). Here we have a shared resource, the environment in which we live. We know that flying is among the most environmentally damaging activities we as individuals can choose to do. Acting independently, in our own self interest, we fly because if we don't, someone else will. The more we fly, the more benefit we as individuals receive, while the damage is shared by us all.

It has been over three years since I have been in an airplane. So far I have not been forced to choose…

Ian Moul, Comox BC, June 2009

Have You Heard?

Compiled by Delores Broten and Susan MacVittie

GM Corn Sows Doubts

In July, corn that contains eight genetically modified genes was approved for use in Canada for animal feed by the Canadian Food Inspection Agency. However, Health Canada has not assessed the safety of Monsanto's so-called "Smart Stax." The department told the *Globe and Mail* they didn't have to do so, because the two companies making the seeds, Monsanto and Dow AgroSciences, are expected to flag any safety concerns. But the companies haven't tested the seeds either, because they say they aren't required to. Health Canada approved the new corn based on previous testing on two genes at a time. Critics worry that combining a large number of foreign genes could lead to the creation of allergens or other deleterious substances.

—Globe and Mail, August 6, 2009

Asbestos Deaths

WorkSafeBC figures for 2007 show that of 140 fatalities in BC industry, 56 were the result of asbestos-related occupational disease, mainly mesothelioma, a cancer of the lining of the body cavity, which is almost exclusively linked to asbestos exposure. A recent review by UBC found that only one-third of mesothelioma cases were actually compensated – indicating that the disease is three times as prevalent as workplace statistics show.

Canada has refused to halt the export of Canadian-mined asbestos to developing countries, where it is used in construction materials and causes thousands of deaths a year.

—Toxic Free Canada, July 2009

Hormone-Disrupting Plastic in Pacific Ocean

Scientists from Japan have discovered that plastic debris in the ocean decomposes with surprising speed and can release toxic substances bisphenol A (BPA) and polystyrene (PS) oligomer (breakdown product) into the water. BPA and PS disrupt the functioning of hormones in animals and can seriously affect reproductive systems.

Each year as much as 150,000 tons of plastic debris washes up on the shores of Japan. Vast expanses of waste, consisting mainly of plastic, float elsewhere in the oceans. The so-called Great Pacific Garbage Patch between California and Hawaii consists mainly of plastic waste and is twice the size of Texas.

—American Chemical Society, August 16, 2009

Greening Our Travel: www.islandrideshare.com

by Herb Jones

It was my daughter who alerted me to the benefits of a rideshare program on the web when she went online and found a ride from Vancouver Island to Nelson. A woman in Victoria had registered on a Nelson rideshare site that she was traveling to Nelson on a certain date and that she had room for passengers. A quick phone call to the number listed beside the ride offer resulted in an agreement to meet at the ferry in Nanaimo. From there another passenger was picked up in Port Coquitlam and the trio traveled to their common destination enjoying one another's company and sharing some of the driving. For the owner of the vehicle, the ride meant spreading the carbon footprint for the travel amongst three people and having a significant part of the cost taken care of.

With a grant from Eco-Action Canada, a grassroots environmental organization on Denman Island has developed a rideshare site to serve the Comox Valley and beyond. The website, *www.islandrideshare.com*, registers new users who list their traveling preferences such as smoking/non-smoking, music, etc. and then allows them to add rides to take people where they are going, or to request a ride to a certain location within a specific time frame. The user friendly design gives a number of interesting options including the tracking of rides from a particular location (e.g. Courtenay) and the option of running of errands where an offer is made to deliver or to pick up items for a stay-at-home individual.

Getting the public to use this site has been slow as people are not in the habit of remembering to offer rides a day or more before they depart. It is hoped that support will be found in communities on Vancouver Island and the Gulf Islands and to this end advertising material is available either by emailing denmanisland@gmail.com, or writing to Renewable Energy Denman Island (REDI), 5300 Denman Road, Denman Island, BC V0R 1T0, or phoning 250-218-3492.

The Farce of Environmental Reviews

When activist Ingmar Lee took action against a Pacific Coast blasting project, he unveiled a system of environmental review designed to conceal and enable destruction

by Anne Sherrod

Many environmentalists feel that their most important role at this time is to help the public accept that global warming and peak oil are real and potentially deadly problems. We hope to persuade people that solving these problems will require radical change in a short timeframe. But what kind of radical change? Exploitative and dictatorial forces in society have historically claimed a need for rapid and radical action as an excuse for seizing more control.

The proposed Bute Inlet independent power project (IPP) is being justified as a producer of "green energy," yet it includes diversion of 17 streams, 445 kilometres of transmission lines, 314 kilometres of roads, 142 new bridges, 16 power houses and a substation – all in a coastal wilderness area teeming with wildlife and crucial fisheries. That's radical change, alright. The environmental damage stands to be massive. IPPs that will produce over 50 megawatts are subject to Environmental Assessments (EAs). Will EAs prevent or even significantly reduce the impacts of these developments?

They cannot tell us whether we actually need the new power badly enough to cause serious environmental impacts.

The Bute Inlet proposal will receive the highest form of federal environmental assessment currently available in Canada: a full public hearing and a federal panel review. But even at their best, Canadian and BC Environmental Assessments seldom turn down projects, even when there is extensive evidence of major environmental damage. Instead they offer "mitigation." In practice mitigation usually means minor adjustments to projects to lessen environmental damage, which may still remain major and irreversible.

Big Questions Unasked, Unanswered

Even the best environmental assessments cannot answer the larger questions that cloud the horizon of our transition to new energy sources. They cannot tell us whether we actually need the new power badly enough to cause serious environmental impacts. They cannot tell us whether the new power will truly reduce carbon emissions significantly enough to affect global warming, even though global warming is being used as an excuse to ignore other kinds of environmental impacts. They cannot tell us what are the best ways to address climate change.

This is why many knowledgeable observers are calling for an open, transparent, independent panel review of these questions. Such a review should establish basic environmental protection criteria first, before projects are proposed. Instead, a horde of corporate profiteers has been set loose to propose virtually anything that is technologically and financially feasible. The whole vast, expensive machinery of Environmental Assessment processes is then employed to serve them.

In its application for the Glacier-Howser Project the developer, "Purcell Green Power" (alias Axor Corporation), explains that the initial proposal for Howser Creek could not generate enough power to pay for the connection of the project to the provincial grid, so Glacier Creek and two tributaries were added. Now the area is threatened with two dams, the diversion of four creeks that will remove most of the water from them permanently, 16 kilometres of tunnel big enough to accommodate a dump truck, the dumping of a huge quantity of waste rock near streams and rivers, with potential acid drainage into the nearby creeks and lakes, seismic lines and the logging of 91 kilometres of corridor for transmission lines.

Inadequate Reviews Provoke Public Reactions

The proponent already had an Electricity Purchase Agreement from BC Hydro before the environmental as-

sessment process began. And Glacier-Howser did not receive the "best" kind of Environmental Assessment. This BC provincial EA provided no panel review, and gave the public only 45 days for review and comment of over 1,000 pages of environmental impact statement by the proponent.

This and other aggravating factors help to explain why, in June of this year, approximately 1,100 enraged citizens descended on a Glacier-Howser EA meeting in Kaslo. They lambasted the proponent, the EAO officials, the provincial government, and the project itself for three hours, sometimes articulately and technically, sometimes with hurled invective or in a deafening collective roar.

Around the same time, environmentalist Ingmar Lee was on Denny Island off the BC coast, studying sandhill cranes. One day in July drilling equipment arrived on the island. Geologists from several universities were studying batholith rock formations. They planned to drill holes in the ground at 16 locations across western BC, and conduct underground explosions of up to 1,000 kilograms of dynamite – an activity known to be potentially harmful to nearby wildlife.

Even at their best, Canadian and BC Environmental Assessments seldom turn down projects, even when there is extensive evidence of major environmental damage.

Lee frantically sought information to help him determine whether there were threats to the sandhill cranes. Many readers will know that when Lee was unable to find the kind of information that an environmental assessment should have provided, he banged the lock off the cover on the hole and cut the cord to the dynamite. The outraged scientists stated in the media that their project had gone through a full federal Environmental Assessment.

I wondered what kind of an Environmental Assessment could have taken place without anyone in the environmental movement knowing about it. I pored through the *Environmental Assessment Act*. Raincoast Conservation Society provided a written analysis by Ecojustice lawyer Lara Tessaro, who also provided a telephone consultation.

I was surprised to learn that there is no central body that administers federal Environmental Assessments. An EA could be conducted by any of 35 federal departments. If a department is interested in assisting a project with funding, it must conduct an EA. In such cases, the policeman charged with protecting the citizens is literally in cahoots with the potential criminals.

In the case of the batholiths seismic testing, the Natural Sciences and Engineering Research Council of Canada (NSERC) wanted to put funding into the research project. Thus it became the Responsible Authority for the Environmental Assessment. The EA started in November 2008. There was a legal requirement to post a notice on the EA Registry on the internet within 14 days. It apparently wasn't posted until 8 months later. And when it was posted, there were only two weeks left before a decision was to be made.

Public Review Discretionary

There are different kinds of federal environmental assessment. This one was what is known as a screening process. About 99% of EAs are screening processes. Under the rules for a screening process, public review is at the discretion of the Responsible Authority. Not surprisingly, NSERC decided against public review.

By law a screening process is supposed to produce a screening report. The report, or instructions where to find it, must be posted on the internet before a decision is made. On the day before the seismic tests, Raincoast Conservation Society and Ecojustice requested the document. They were told that it wasn't available because it needed editing. Ecojustice didn't receive the report until well after the explosion had occurred.

BC Permit Reviews Kept Secret

Despite the federal EA, it was BC's Integrated Land Management Bureau (ILMB) that issued the permits for the explosions. The ILMB's decision was based upon review of the screening report by BC government ministries and the federal Department of Fisheries and Oceans. When I asked the ILMB for the provincial government reviews, I was told I could not have the documents unless I went through the *BC Freedom of Information Act*. This can take up to 30 days.

According to a court ruling, the federal *Environmental Assessment Act* must provide citizens with information without making them go through a *Freedom of Information Act* request. But the ILMB informed me that BC had done no environmental assessment itself and had no links with the federal EA.

While I was waiting for a response to my *Freedom of Information Act* request, the scientists sent me their screening report and other documents, but all of the information was generated by them. I felt I had a right to know what the scientists of the Environment Ministry, whose salaries are paid by my tax dollars, had said about it. But after waiting two weeks for the government reviews, I was informed by the ILMB that the time limit had been extended another 30 days because:

"The requested records contain information that may affect the business interests or invade the personal privacy of a third party. To assist us in determining whether we may disclose this information, we are giving this third party an opportunity to make representations concerning disclo-

Continued on Page 6 ⇨

⇦EAs continued

sure." (ILMB, August 14, 2009)

Business interests? The scientists had claimed there were no business interests involved.

Environmental Assessment Hides Impacts

The provisions of Canada's *Environmental Assessment Act (CEAA)* on screening processes can function as a shelter to enable large projects to go forward without public review. The proposed Red Chris copper/gold mine project would cover 110 square kilometres in an area known as the "Sacred Headwaters," an area in northwestern BC that gives birth to three major salmon rivers. The mine would destroy fish habitat by damming these rivers and dumping toxic waste in the headwaters.

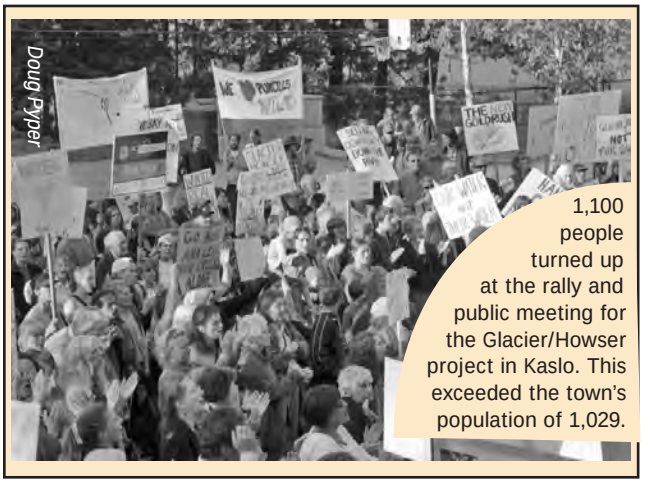
The *CEAA* requires a comprehensive Environmental Assessment process with public participation for a project so large. However, the Responsible Authority – the Department of Fisheries and Oceans (DFO) – excluded the mine itself from the project description, so that the EA would only look at the tailings pond, water drainage and a dynamite facility. Since the scope of the review no longer included a large mine, it was bumped down to a screening process with no public participation. Both the federal and provincial EA processes determined that the "project" thus defined would cause no significant environmental damage.

MiningWatch Canada, represented by Ecojustice, sued the government for violating the *Environmental Assessment Act* and won. The decision was struck down by the Federal Court of Appeal, but the case has now gone to the Supreme Court of Canada.

Amendments Exclude Most Projects

The spring 2009 newsletter of West Coast Environmental law reported that Canada is planning to downgrade its *Environmental Assessment Act* to reduce the number of assessments by 95%. This has already started. In March of this year, without any public notice, the federal government began a series of amendments to the *Act* that have excluded many kinds of projects, such as landfills, wastewater treatment plans, roads and highway construction, from review. One amendment allows the federal government to shift an EA process to the provincial government.

The *BC Environmental Assessment Act* was butchered in 2002 so that public participation and public access to information is no longer legally required, but only discretionary. According to a 2004 analysis by West Coast Environmental Law, the new *Act* "requires that where an EA occurs, the review must reflect government policy as defined by the government agency or organization for the identified policy area (s. 11(3)) … For example, the government has stated its intention to double oil and gas production in BC by 2011. Government could use the provision to dictate that an EA of a natural gas processing plant must support government's goal … regardless of environmental implications."



1,100 people turned up at the rally and public meeting for the Glacier/Howser project in Kaslo. This exceeded the town's population of 1,029.

Renewable Energy Ducks Reviews

In Ontario, the new *Green Energy and Economy Act* has removed requirements for environmental assessment from most renewable energy projects. It sets up a "Renewable Energy Facilitator Office" to fast-track "green energy projects." According to the *Gallon Environment Letter*, the agency will generally be exempt from the *Freedom of Information Act.*

The intent and result of all these problems is to keep the public from knowing the true extent of environmental damage. Environmental assessments as practiced in BC and Canada regularly certify projects, with tragic and dangerous environmental impacts, as being environmentally safe. Citizens continuing to protest these developments face huge hurdles. In cases of civil disobedience, the government or the developer can go to court and show that they have gone through all the hoops required by the law, and conducted "studies" that ensure the environment will be protected.

At this time, Ingmar Lee has been charged with mischief with the intent to injure others. The governments that bend, break and stealthily revoke our environmental assessment laws injure millions of Canadians, yet they are not charged with any crime. Against today's mega-onslaught of environmental destruction – Bute Inlet, the Enbridge pipeline across BC, the Red Chris Mine – Canada's disabled and dishonoured environmental assessment laws are helpless to prevent massive environmental damage.

♦

Anne Sherrod is Chair of the Valhalla Wilderness Society.

At press time, the ILMB declared another 30 day delay in Sherrod's FOI request, because "the interests of Ministry of Environment may be affected by disclosure...."

Climate Notebook

Rebates for Hybrids Don't Cause Change

Rebate programs do not cause the replacement of gas guzzlers with hybrid vehicles, according to a study from UBC's Sauder School of Business. In fact, since the introduction of hybrid rebates large vehicle sales have risen. The study also finds that two-thirds of hybrid purchasers were not motivated to do so by government rebates. Researchers say that governments could make greater environmental gains by purchasing carbon offsets or investing in green jobs and technologies.

—Globe-Net, August 10, 2009

Arctic Methane Escapes

Over 250 plumes of gas, mostly methane, a potent Greenhouse gas, have been discovered in the northerly flowing West Spitsbergen current near Norway. Scientists suspect that the methane is coming from reserves of methane hydrate beneath the sea bed, and the warming of the current by 1°C over the last thirty years may have contributed to its release.

Although, the methane bubbles observed were too small to reach the surface and escape into the atmosphere, some of the gas would be converted to carbon dioxide which can make the oceans more acidic.

Scientists predict that if methane begins escaping at similar rates throughout the Arctic, it would dramatically increase methane levels in the atmosphere.

—New Scientist, August 17, 2009

Pipeline Battle

An international coalition of environmental and native American groups are challenging a permit for an oil pipeline from Canada to the US.

The groups say the decision to allow construction of Enbridge Energy's Alberta Clipper – 326 miles of pipeline across northern Minnesota to Wisconsin and the Southern Lights pipeline to carry hazardous liquids back to Canada – contradicts President Obama's promise to cut global warming pollution and invest in clean energy.

Greenhouse gas emissions from tarsands production are three times that of conventional crude oil and tarsands oil contains 11 times more sulfur and nickel, six times more nitrogen and five times more lead than conventional oil. These toxins are released into the air and water when the crude oil is processed into fuels by refineries.

—Earthjustice, August 20, 2009

New Coal Mine on VI

Compliance Coal Corporation is proposing to open a new underground coal mine in the Tsable River watershed between Parksville and Courtenay on Vancouver Island.

The mine is estimated to produce 2.2 million tonnes of coal per year for 20 years. The coal will be shipped to Japan and Korea.

The project triggers both a provincial and federal environmental review and is now in Pre-Application status with the BC Environmental Assessment. Impact on groundwater, water usage and greenhouse gas emissions are expected to draw opposition, but citizens will have few opportunities to intervene in any substantial way through the formal regulatory process. Residents are urging people to contact their elected representatives.

—WS files

Solar Power (First) Nation Leads Way

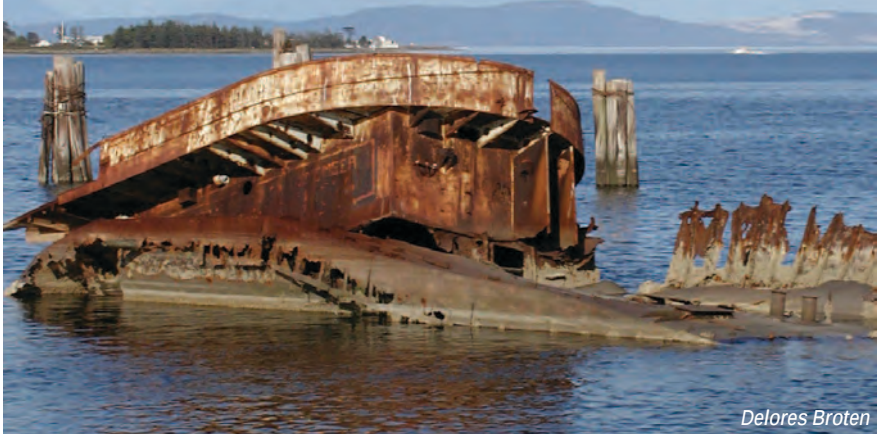
The T'Sou-ke First Nation, in Sooke, Vancouver Island, has unveiled a solar power project that will make it the largest solar energy producing community in BC. Solar energy will power the band office, fisheries building, canoe shed and 25 homes on the reserve. The band will also train nine members as solar panel installers.

Chief Gordon Planes says the $1.5 million project is intended to be a blueprint to help other communities reduce their carbon footprint. "We need to educate British Columbians [and] Canadians as a whole. We need to all get in the same canoe and go forward, and for us, like the potlatch style of giving away, we have information to give away, and this is where it starts," he said. Planes said the band intends to take its green ideas even further. The band is also looking at wind power and organic farming in the next steps of their economic and ecological evolution.

—CBC, July 2009

BC's Harbour Hulks

The Curse of the Black Dragon



Delores Broten

by Arthur Caldicott

Everyone on the coast sees them – the broken hulks of boats. They're almost as prevalent as discarded plastic containers, and far more perilous.

Derelict vessels are a maritime nightmare – an eyesore and navigational hazard, and the source of toxic substances such as gasoline, diesel, heavier fuels and lubricating oils, battery acids and metals, paints containing lead and copper, even sewage. These things leach, leak, and spill into our harbours and bays from neglected boats.

The boats sit at anchor or tied to a mooring buoy, avoiding moorage fees. For months or years, they don't move and no one is ever seen aboard. Rust and rot seeps out of them. Occasionally, an oil slick will appear around the hull. Then one day there's a storm and the next morning the vessel is grounded on nearby rocks, or has crashed into the local marina. Sometimes, folks simply watch the ship sink.

The environmental risks are very real and entirely predictable.

Not Our Department

No official agency will take any precautionary action, until one of these boats sinks or until the oil spills or the vessel becomes a navigational hazard. By then, the damage is often done.

The Canadian Coast Guard [CCG] may raise the vessel, and tow it to some place for disposal – if there's an oil spill risk. CCG can recover these costs with a claim to the Ship-source Oil Pollution Fund (SOPF). But no oil, no SOPF, and no Coast Guard.

"The solution is simple. We need to establish recycling for boats, just as we have for cars, tires, newspapers, tin cans and other products."

The annual report of the SOPF contains a lengthy list of these boats which have broken up or sunk in harbours on Canada's coasts. It makes interesting, if infuriating, reading.

Most of these incidents could have been avoided, had someone acted earlier. It's not like no one saw them coming.

The fact is, people in harbour communities on the coast look at these derelict ships every day, and they do complain – to local, provincial, and federal governments, to environment ministries and the Coast Guard. If they get a response at all, it's a deplorable game of bureaucratic hide-and-seek.

Tod Inlet is on the east side of Saanich Inlet, near Victoria. It has been accumulating derelict vessels – fishboats, sailboats, barges – for years. The Saanich Inlet Protection Society (SIPS) has been on the case – to get the derelicts removed, and have some controls put in place.

"We had no satisfaction from any level of government – just a lot of buck passing," says Frances Pugh, SIPS President. "Government agencies are absolutely not doing their jobs."

Out of frustration, the Central Saanich Maritime Society moved beyond writing letters to bureaucrats and ministers. It went to media. Reporters and cameras came to Tod Inlet.

Toward the end of June, the Coast Guard began removing the derelicts and now claims to be monitoring the situation.

Allan Adams, Maritime Society President, says, "It was a small victory." He points out that only two of the twenty or more derelicts were dealt with by the CCG: a sunken gillnetter was raised and towed to Ladysmith for demolition, and a crane was removed from a barge. The barge remains. A third boat was removed by its owner.

Stafford Reid is an expert in marine emergency preparedness, and he understands the disharmony and inaction that results when a number of different agencies from two levels of government have fingers in the derelict boat pie. Transport Canada licenses vessels, but it is the province's role to deal with the derelicts. "Essentially, they are wastes causing environmental pollution and nuisance," says Reid,

but "the province does not want to admit this as their mandate."

Recycling Program

Calvin Sandborn, Legal Director of the Environmental Law Centre at the University of Victoria says, "The solution is simple. We need to establish recycling for boats, just as we have for cars, tires, newspapers, tin cans and other products. The province should establish a recycling program for boats – funded by charging boat purchasers an 'Advance Disposal Fee.'"

Washington State's Derelict Vessel Removal Program (DVRP) has removed about 220 boats since it started in 2003, more than half the inventory of derelicts. The annual budget of about $750,000 is recharged by small fees on annual registrations and foreign vessel identification documents.

Removing the wrecks is one thing. There's still the problem of disposal. Pugh says that there are hundreds of old and unseaworthy fibreglass boats on the BC coast and in backyards across the province. Fibreglass lasts forever, unlike wooden and steel boats which eventually rot or rust back to nature.

By one report, the cost to have a 40-foot sailboat hauled to the dump and demolished, is from $5000 to $10,000. Victoria's Hartland Landfill will take your boat, in sections eight feet or less in all dimensions, for $95 per tonne, and in larger units, for $345 per tonne.

Adams, Pugh, and Reid agree with Sanborn that a disposal fee is a solution. Reid adds, "Don't hold your breath…it took decades just to get monetary returns on pop and beer cans in BC."

♦

Arthur Caldicott is a writer and activist on energy issues in BC and a frequent contributor to the *Watershed Sentinel.*

Excerpts from the Annual Report of the Ship-source Oil Pollution Fund

The Ship-source Oil Pollution Fund (SOPF) was established with levies collected between 1973 and 1976 from shippers of oil products. It hasn't been collected since, but with accruing interest, there is now some $150 million in the fund. It is used to pay "last-resort" costs for damage caused by marine oil spills from ships or from untraceable sources, You can read more about it at *www.ssopfund.gc.ca*

The Black Dragon (Heung Ryong)

The *Black Dragon*, an old Chinese flag fishing vessel of some 120 feet in length, was involved in the smuggling of illegal immigrants to the West Coast at the end of 1999, seized by the authorities, and tied up at Port Alberni, BC. Crown Assets subsequently sold the *Black Dragon*, but she eventually ended up moored to a DND Navy buoy in Mayne Bay [Barkley Sound, south of Ucluelet]. On October 26, 2003 the vessel sank in about 120 feet of water and was boomed off. The vessel was raised by a Coast Guard contractor with great difficulty on December 5, 2003 and some hull repairs made in preparation for the tow to Ladysmith for disposal. On December 9, 2003 while undertow and in a position off Johnstone Reef [off Cadboro Bay, Victoria] the vessel sank again. It is understood that the CCG will not undertake further action regarding this sinking.

Cost to SOPF: $568,749.63 plus interest

Sea Shepherd II

In April 2004, the *MV Sea Shepherd II*, located in Robbers Pass, Tzartus Island [also in Barkley Sound], was in a derelict state and in danger of sinking. By May 11, 2004, 188 tonnes of a mixture of waste oil and diesel was pumped off the *Sea Shepherd II*, but some 16 gallons per hour of seawater was leaking back into the vessel. On May 26, 2004, the vessel was taken in tow, arriving at the Esquimalt graving dock the next day for break up. By June 17, 2004, seven large waste bins of oiled debris had been removed from the vessel. By July 30, 2004, the break up of the vessel had been completed.

Cost to SOPF: $331,892.31 plus interest

Rover No. 1

This 74-foot ex-tug went aground and sank in Genoa Bay [Cowichan Bay] on May 8, 2005. The vessel was raised and towed to Nanaimo Shipyards. It was determined that the vessel was in extremely bad condition and would need to be deconstructed to safely remove all the oil. By September 9, 2005, destruction of the vessel had been completed. Nanaimo Shipyards reported 4500 litres of oil was removed from the vessel.

Cost to SOPF: $64,740.15 plus interest

Ocean Tribute

Sunk at the dock in Ladysmith, on September 5, 2006. There was fuel oil in the water and absorbent pads were used to clean-up. It had been converted to a fish & chip restaurant. The owner hired a commercial contractor to raise the vessel. It was raised but sank again shortly thereafter. The vessel was not insured. The owner did not have the means to respond any further. Approximately 100 gallons of oily fluids were removed. The vessel was demolished.

Cost to SOPF: $25,806.29

The Lost Smell of Carrots

by Hannah Askew

I was beginning to wonder if I would make it out before nightfall. The makeshift road down to Sweet Pitt Farm was so steep and overgrown I had to abandon the car halfway down the mountain and push my way through the underbrush.

I planned to end the interview quickly, but when Tim slipped a fuzzy-skinned peach tomato into my reluctant hand, curiosity got the better of me. Biting into its soft, furry flesh was strangely like biting into a small animal, only once my teeth had pierced the skin I tasted the sweet, slightly acidic taste of tomato.

Tim grows over one hundred varieties of rare heirloom vegetables on a tiny plot of land overlooking Okanagan Lake. He describes himself as an artist "working in collaboration with Mother Nature" and is planning a display of his produce at the local art gallery. Visiting him at his farm made me feel like Dorothy leaving grey Kansas and arriving in technicolor Oz for the first time.

After I had finished swallowing the last of the strange peach-tomato, he showed me around. It was late October and there were pumpkins – orange, white, and blue – lying in a field waiting to be harvested. Past these and down a narrow path bordered with giant sunflowers, we came to a patch of root vegetables. Pulling up a fistful of yellow carrots, he handed me one to try. It tasted spicy, almost peppery.

"In Argentina, carrots smell like carrots. I can't understand why in Canada the carrots don't smell. Even when you press the carrots right up to your nose, there is still nothing. Why? It makes me feel that something is wrong."

Sweet Pitt Farm is a vibrant antidote to the homogeneity of the supermarket produce aisle or what biodiversity champion Pat Mooney refers to as "the plague of sameness." But Tim shrugged off my compliments when I exclaimed over the impressive variety on display in his fields:

"I guess I get bored easily," he said, "Carrots come in so many colours: white, red, yellow, purple, black. Why stick to just orange?"

Before visiting him, I'd had no idea that carrots could be anything but orange. Although I knew that many vegetable varieties existed outside of the ordinary supermarket ones, I'd never tried to visualize them. On an intellectual level, I realized that shrinking levels of agricultural biodiversity posed a danger – fewer varieties means greater vulnerability to pests, diseases, droughts and floods – but I'd never thought to think about the range of colours missing in the supermarket aisle.

The first time I heard anyone complain about sensual deprivation and Canadian produce was when I was in my mid-twenties at a party in Montreal. I was standing at the food table next to an Argentinian girl I didn't really know, innocently dipping baby carrots into a pot of hummus, when she suddenly turned on me and said: "I can't understand why in Canada the carrots don't smell. In Argentina, carrots smell like carrots. When you go to the market, you can smell the carrots in the air, everywhere. Here, when you go to the supermarket you smell nothing. Even when you press the carrots right up to your nose, there is still nothing. Why? It makes me feel that something is wrong."

Before heading over to Tim's farm, I had done some reading up on the depressing state of global agricultural biodiversity. Poring over reports by Environment Canada and the UN Food and Agricultural Organization, I had arrived at our meeting armed with statistics about how many tens of thousands of vegetable varieties have been lost in the last century. I planned to ask Tim about the importance of preserving heirloom seeds in the midst of climate change.

I soon realized, however, that he wasn't particularly keen on talking about his farm work from a scientific point of view. When I asked him about how his environmental beliefs impacted his farming practices, he yawned and said "I try not to analyze it too much."

Instead, what Tim wanted was for me to give myself over to the simple experience of seeing and smelling and tasting and touching his vegetables. Like the Argentinian girl at the party, he has a sensual relationship to food and wants others to also experience the joy of that relationship.

For those of us who live in big cities and depend on the nearest big chain supermarket for our groceries, the idea of having passionate feelings towards carrots and

other vegetables is an alien concept. The fluorescent glare of supermarket lighting over neat rows of uniform produce doesn't do much to ignite delight or enthusiasm. We may hold strong views on food policy (informed by movies such as *Food Inc*., or *The World According to Monsanto*) but, never having known anything different than the supermarket, we have no idea of how to go about falling in love with vegetables.

These days, I teach at a First Nations college in Vancouver. Many of the older students are residential school survivors and one of them told me that as a child he was routinely forced by the nuns to eat food that had begun to rot. Eventually he lost the ability to distinguish good food from bad. He didn't even realize this had happened until years later when his little daughter would catch him eating food that had sat in the fridge for too long. "Daddy, you can't eat that! It's no good anymore."

Although being limited to bland supermarket produce is a far cry from being forced to eat food that is actually rotten, there is a parallel for North American urbanites in that our taste buds have been conditioned to accept less than the best.

Tim says that the one of the most rewarding parts of his work is seeing people's spontaneous surprise and excitement when they visit his farm or encounter his produce at the local farmers market. He hopes that the people seeing his vegetables will be inspired to buy more food directly from farmers or maybe even try growing their own.

As the sun began to go down at Tim's farm, he said he had one more thing he wanted to show me before I left. He reached into his pocket and pulled out three tiny striped squash. He told me that they were called "Spinning Gourds" and that the Amish had been growing them for centuries to amuse their children. He put them down on a flat rock and with a flick of his wrist set them turning.

In the darkening light, I watched them spin. Tim stood beside me, still holding the root vegetables he had gathered earlier. Inhaling deeply, I realized that the air was filled with the sweet smell of fresh carrots. For the first time, I understood what I had been missing.

♦

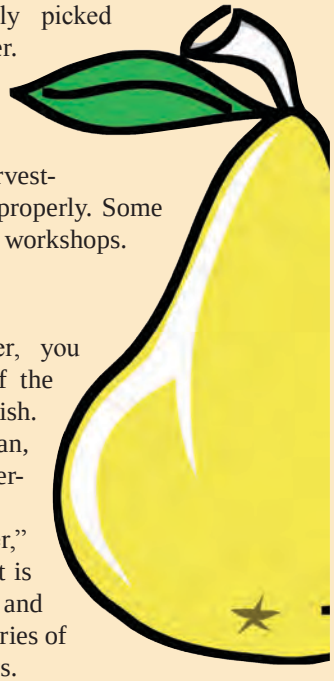
Hannah Askew is co-founder of Healthy Planet Kitchens and teaches at the Native Education College in Vancouver. She is working on her first novel.

Sharing the Harvest

by Susan MacVittie

Anyone who owns a mature fruit tree knows they can be so productive that it's tough to keep up with the harvest. Fallen fruit can lead to a smelly, rotten mess attracting and putting unwanted animals at risk (think bear 'removal') and is a waste of valuable food. There is a simple solution.

Volunteers and a couple of ladders are turning backyard fruit trees into a valuable source of food for the community. Fruit tree projects harvest fruit from private trees that would otherwise go to waste. The delicious fruit is then distributed among homeowners, volunteers, food banks and community organizations.



Produce is generally picked from July through October.

Every project has its own distribution process and training is usually provided to harvesters on how to pick fruit properly. Some groups even host canning workshops.

How It Works

- As a landowner, you will receive a portion of the harvested fruit if you wish. Your yard will be kept clean, wasp-free, and bear/deer-free at no expense.
- As a "fruit picker," you can get free fruit that is locally grown and fresh and assist in stocking the pantries of community food providers.

Fruit Tree Projects in BC

Vancouver: Erin Kastner, *info@vancouverfruittree.com*

Summerland: Michelle Stefan or Adrian Barry, 250-494-9722, *www.sadi.ca/fruit-tree.aspx*

Powell River: Ann Michaels, 604-485-4366;

prfruitproject@shaw.ca; www.sadi.ca/fruit-tree.aspxOct

Victoria: Lifecycles Fruit Tree Project, Danielle Stevenson, 250-383-5800, *fruittree.lifecycles@gmail.com*

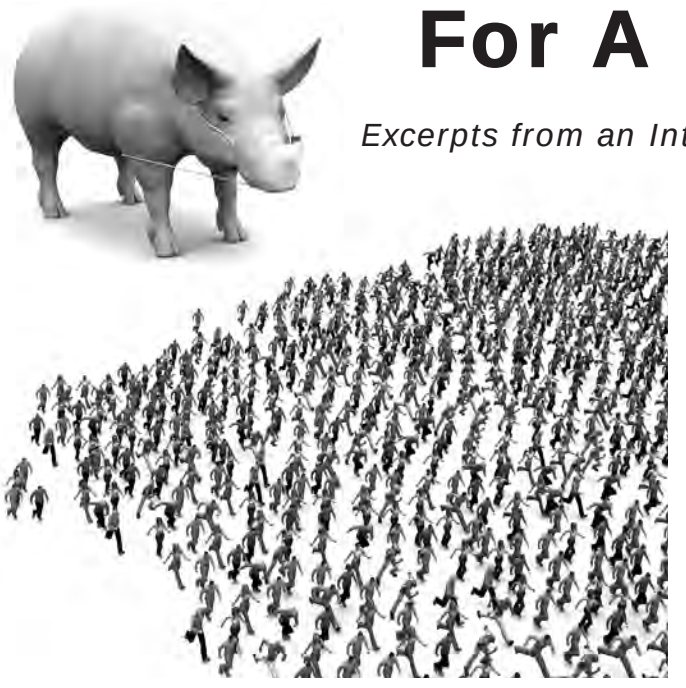
lifecyclesproject.ca/initiatives/fruit_tree/

Nanaimo: 250-816-4769, *gleaning@nanaimocommunitygardens.ca, www.nanaimofoodshare.ca/glean.htm*

Comox Valley: LUSH Valley, 250-331-0532

"A Whole Industry Is Waiting For A Pandemic"

Excerpts from an Interview with Epidemiologist Tom Jefferson



Reprinted from Der Spiegel, July 21, 2009 © Der Spiegel

The world continues to be gripped with fears of a swine flu pandemic. [Canada is purchasing 50 million doses of a new vaccine, at a cost of over $400 million, to be ready before December.] In an interview with *Der Spiegel*, epidemiologist Tom Jefferson speaks about dangerous fear-mongering, misguided money-driven research, and why we should all be washing our hands a lot more often.

Spiegel: Mr. Jefferson, the world is living in fear of swine flu. And some predict that, by next winter, one-third of the world's population might be infected. Are you personally worried? Are you and your family taking any precautions?

Tom Jefferson: I wash my hands very often – and it's not all because of swine flu. That's probably the most effective precaution there is against all respiratory viruses, and the majority of gastrointestinal viruses and germs as well.

Spiegel: Do you consider the swine flu to be particularly worrisome?

Jefferson: It's true that influenza viruses are unpredictable, so it does call for a certain degree of caution. But one of the extraordinary features of this influenza – and the whole influenza saga – is that there are some people who make predictions year after year, and they get worse and worse. None of them so far have come about, and these people are still there making these predictions. For example, what happened with the bird flu, which was supposed to kill us all? Nothing. But that doesn't stop these people from always making their predictions. Sometimes you get the feeling that there is a whole industry almost waiting for a pandemic to occur.

Spiegel: Who do you mean? The World Health Organization (WHO)?

Jefferson: The WHO and public health officials, virologists and the pharmaceutical companies. They've built this machine around the impending pandemic. And there's a lot of money involved, and influence, and careers, and entire institutions! And all it took was one of these influenza viruses to mutate to start the machine grinding.

Spiegel: Do you think the WHO declared a pandemic prematurely?

Jefferson: Don't you think there's something noteworthy about the fact that the WHO has changed its definition of pandemic? The old definition was a new virus, which went around quickly, for which you didn't have immunity, and which created a high morbidity and mortality rate. Now the last two have been dropped, and that's how swine flu has been categorized as a pandemic.

There are more than 200 different viruses that cause influenza-like illness

Spiegel: But, year after year, 10,000-30,000 people in Germany alone die from influenza. In the Western world, influenza is the most deadly infectious disease there is.

Jefferson: Hold on! These figures are nothing more than estimates. More than anything, you have to distinguish between an influenza-like illness and a genuine flu, the real influenza. Both of them have the same symptoms: a sudden high fever, a sore throat, coughing, rheumatic pain in the back and legs, possible bronchitis and pneumonia. But real flus, real influenzas are only caused by influenza viruses, while there are more than 200 different viruses that cause influenza-like illness... Approximately 7 percent of influenza-like illness cases are caused by influenza viruses. It's a very small percentage. What I know is that real influenza is systematically overestimated.

Spiegel: And what about the 200 other kinds of viruses?

Jefferson: They're not as popular as influenza. Researchers are just not as interested in that. Take rhinovi-

rus, a horse-derived virus. It's the most commonly isolated agent in common colds. There are a hundred different types of these rhinoviruses. They usually only cause a normal runny nose, but they can be deadly, too. Or so-called RSV, the human respiratory syncytial virus, that is highly dangerous to infants and small children.

Spiegel: So why aren't researchers interested in it?

Jefferson: It's easy: They can't make money with it. With rhinoviruses, RSV and the majority of the other viruses, it's hard to make a lot of money or a career out of it. Against influenza, though, there are vaccines, and there are drugs you can sell. And that's where the big money from the pharmaceuticals industry is. It makes sure that research on influenza is published in the good journals. And that's why you have more attention being paid there, and the entire research field becomes interesting for ambitious scientists.

Spiegel: But is there any scientific reason to be interested in influenza viruses?

Jefferson: The strict focus on influenza is not only misguided; it's also dangerous. Do you remember something called SARS? That was a truly dangerous epidemic. It was like a meteor: It came and it went quickly, and it killed a lot of people. SARS took us by surprise because it was caused by a completely unknown coronavirus. Where did it come from? Where did it go? Or is it still here? We still don't know. There are lots of other strange things like that coming out. Every year, a new agent is identified. For example, there's something called bocavirus, which can cause bronchitis and pneumonia in small children. And there's something called metapneumovirus, which studies say is responsible for more than 5 percent of all flu-related illnesses. So, we should keep our eyes open in all directions!

Spiegel: Humans have better defenses today than they did in 1918, and it probably won't be long before we have a swine flu vaccine. Last week, Germany's federal government announced that it wanted to buy enough for 30 per cent of the population. How much do you think that will protect us?

Jefferson: When it comes to pandemic vaccination, as we say in English, the proof is in the pudding. The proof is in using it. We'll see. It does generate an antibody response, but will it really guard against the disease?

Spiegel: Are you pessimistic about that?

Jefferson: No, I'm just saying I think we're about to find out (laughter). Let's have this conversation again in about a year's time, shall we?

Spiegel: For a number of years, as part of the Cochrane Collaboration, you have been systematically evaluating all the studies on immunization against seasonal influenza. How good does it work?

Jefferson: Not particularly good. An influenza vaccine is not working for the majority of influenza-like illnesses because it is only designed to combat influenza viruses. For that reason, the vaccine changes nothing when it comes to the heightened mortality rate during the winter months. And, even in the best of cases, the vaccine only works against influenza viruses to a limited degree. Among other things, there is always the danger that the flu virus in circulation will have changed by the time that the vaccine product is finished with the result that, in the worst case, the vaccine will be totally ineffectual. In the best of cases, the few decent studies that exist show that the vaccine mainly works with healthy young adults. With children and the elderly, it only helps a little, if at all.

There are some people who make predictions year after year, and they get worse and worse. None of them so far have come about, and these people are still there making these predictions.

Spiegel: And what about Tamiflu and Relenza, two of the anti-flu medications that are being deployed against swine flu? How well do they really work?

Jefferson: If taken at the right time, on average, Tamiflu reduces the duration of a real influenza by one day. One study also found that it diminishes the risk of pneumonia.

Spiegel: Could these medications lower mortality rates associated with the flu?

Jefferson: That's possible, but it has yet to be scientifically proven....

Spiegel: In Germany, the government is supposed to stockpile flu medications for 20 per cent of the population. Do you see that as being sensible?

Jefferson: Well, at least there are much cheaper ways to accomplish a lot more. For example, school children should be taught to wash their hands regularly – preferrably after every class! And every airport should install a couple hundred wash basins. Whoever gets off a plane and doesn't wash their hands should be stopped by the border police. You could tell for example by putting an invisible, neutral dye in the water. And wearing masks can be sensible, as well.....

What's great about these measures is not only that they are inexpensive, but also that they can help against more than just influenza viruses. This method can fight against the 200 pathogens that bring about flu symptoms as well as against gastrointestinal viruses and completely unknown germs. One study done in Pakistan has shown that hand washing can even save children's lives. Someone should get a Nobel Prize for that!

♦

Interview conducted by Johann Grolle and Veronika Hackenbroch.

See the Cochrane Collaboration at *www.cochrane.org*

Biomass Nightmare

South America – Uruguay

European companies are outfitting ports on the US east coast to ship large volumes of wood chips to feed huge biomass furnaces

by Stephen Leahy

North Carolina's Scot Quaranda is terrified that the southern United States plans on becoming the Saudi Arabia of biomass. But isn't biomass a renewable source of clean and green energy?

"Not when you're burning trees," says Quaranda, the Communications Director of the Dogwood Alliance, a coalition of 70 citizens' organizations trying to prevent the South's remaining forests from being turned into tree plantations. Some 102 biomass/biofuel facilities are currently being built or planned in the region. A single facility could require millions of tons of biomass, mostly wood chips grown on the fast-growing loblolly pine plantations that already blanket the southern states from the Carolinas to Arkansas.

Chopping up a tree, shipping it hundreds or thousands of kilometres to burn it and then planting a tiny sapling to replace it is not carbon neutral.

No one seriously argues that tree plantations have anything like the biodiversity, ecological function or spiritual essence of natural forests, be they first or even second growth, but have they reduced pressures on old growth forests?

Net rates of deforestation did go down globally from 16 million hectares annually in the 1990s to 13 million ha/year in the past decade, according to the United Nations, Food and Agricultural Organization (FAO). FAO credits plantations with much of this, especially in China, Europe and North America. Although the best available global data, FAO statistics consider forested areas anything that has trees covering ten percent or more. And it doesn't do a good job sorting out primary forest from plantations or second growth, mainly because countries like Canada won't provide the proper data.

The southern US is the world's largest producer of pulp and paper, producing 20 percent of the world's paper. It wasn't always so.

Logged out by the 1920s and 1930s, secondary growth forests grew back, largely untouched, reaching an impressive 80 million hectares, mostly on private lands. Then in the late 1980s, the chip mills and plantations moved in and nearly one quarter of natural forests were cut and replaced with vast monocultures of loblolly pines that can be used for newsprint 8 to 12 years after planting.

"It's been ecodevastation here for the last 25 years. We have more threatened and endangered species than anywhere else in the US," Quaranda says. "Do plantations reduce pressure on natural forests? No, they are still being converted here. With massive government funding for biomass in various green energy provisions, even a down-sized pulp and paper industry is worried it won't be able to get enough wood fibre."

The Green Energy Threat

The Dogwood Alliance has worked hard to persuade big companies like Abitibibowater to halt all conversions. Now the new threats in the forest are energy companies and governments eager to be green.

Coal power plants are now burning wood chips, trying to greenwash their pollution, and genetically engineered (GE) eucalyptus trees have been developed to feed the cellulosic eth-

anol plants expected in the next few years. A quarter million cold-tolerant GE eucalyptus trees could be planted next spring in seven southern States if the US Department of Agriculture gives its final approval. "Eucalyptus are an alien species here, notorious for their high water use and prone to intense fires. I don't believe these trees will be sterile as claimed and the risks from genetic contamination are like a science fiction nightmare," Quaranda says.

European companies are outfitting ports on the US east coast to ship large volumes of wood chips to feed huge biomass furnaces, as Europe attempts to reduce carbon emissions because of climate change. For example, MGT Power Ltd., a British company, is building two 295-megawatt biomass plants in Newcastle and Teesport, England, providing enough electricity for 1.2 million homes. How much wood will be needed? Five million tons of wood chips a year, none of it from England.

Because trees are considered renewable energy the company claims carbon emission reduction of 2.4 million tons per year compared to burning coal.

"It's faulty carbon accounting to claim burning trees as carbon neutral or even close to that," Quaranda says. First of all, chopping up a tree, shipping it hundreds or thousands of kilometres to burn it and then planting a tiny sapling to replace it is not carbon neutral.

More importantly, plantations are notoriously vulnerable to fire and insect outbreaks. They require the use of chemicals made from fossil fuels, and nitrogen fertilizer releases nitrous oxide, a greenhouse gas 300 times worse than carbon dioxide.

Forest Stewardship Council

But MGT Power says it will only source wood chips from sustainable pine or eucalyptus plantations. It turns out that the Forest Stewardship Council (FSC) the "gold standard" certifier of sustainable forest management has indeed certified 8 million ha of plantations, mainly in South America and South Africa, as sustainable.

That's been controversial, to say the least.

"It's not possible to make plantations sustainable," says Ana Filippini, of the World Rainforest Movement (WRM), a global network of citizens' groups from the North and South defending the world's rainforests. "The FSC is undermining local peoples' struggles against monoculture tree plantations," Filippini said from Montevideo, Uruguay.

The WRM has been fighting FSC certification of plantations for over a decade.

In addition to all the environmental impacts of plantations, the WRM has documented the impacts on women in traditional communities when they lose their forests. "Women are responsible for getting wood and water from the forest, finding food and medicinal plants so they can take care of their families. They can't find anything inside a plantation. They lose their role and their lives become very difficult," she says.

Most plantations replaced natural forests in a cycle that continues even

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Kimberly-Clark's Conversion and NRDC

After years of vigourous encouragement from Greenpeace's Kleercut campaign, Kimberly-Clark announced in August that it will incorporate higher levels of Forest Stewardship Council-certified (FSC) fibre into the manufacture of its tissue products. Greenpeace declared victory and agreed to end the long-running campaign.

In response, the Natural Resources Defense Council issued a memo, agreeing politely that this was a step in the right direction, but noting that, although FSC forestry practices are "better than most other approaches to harvesting timber," they still allow serious ecological impacts. The memo reiterated that "disposable tissue products should be made from recycled fibres, which avoids forestry impacts entirely," and concluded:

"Kimberly-Clark's new policy is to ensure that 40 percent of its North American fiber is either recycled or certified by FSC by 2011. But its policy does not publicly commit to specific targets for increasing total recycled content or postconsumer recycled content. Currently…many competing tissue products have much higher levels of recycled content than this agreement offers.

"Kimberly-Clark's policy also allows Kimberly-Clark to use wood fibre from forest lands which have been converted to biologically impoverished monoculture tree plantations...."

—Natural Resources Defense Council, San Francisco, CA
www.nrdc.org

South Africa's Feral Eucalyptus

Formal alien tree plantations, consisting mainly of Eucalyptus spp., Pinus spp. and Mimosa (Acacia) spp. occupy approximately 1,500,000 hectares in South Africa. These plantations have been established within the high-rainfall belt along the eastern coast, mainly in areas with deep fertile soils.

An even greater area (an estimated 1,700,000 hectares) has become heavily infested with predominantly the same species, that have spread from poorly managed or abandoned formal plantations. These 'feral' tree plantations displace or shade out the natural fauna and flora; clog streams and wetlands, consuming vast amounts of water; and present ideal conditions for wildfires to start and spread into adjacent natural habitat, farmland, and human settlements.

—www.timberwatch.org

⇦*Plantations continued*

though FSC rules forbid this. Lack of data, enforcement, and certification companies that commit fraud in Brazil and elsewhere, make a mockery of FSC rules, says Filippini. For its part, FSC says certified plantations do a better job of safeguarding waterways and allow for some regeneration of natural forest. However there is much disagreement within the FSC. This year, Robin Wood, a German environmental organization that had long been a member, quit over the issue. The FSC is now reviewing its certification criteria on plantations but still insists certified plantations alleviate the pressure on natural forests.

Filiippini calls the argument that plantations protect old growth forests false for three reasons. First, plantations in the tropics are almost entirely for export markets in the north and they consist of pulp and low-quality fibre. Only old growth has high-quality hardwoods. Second, governments like Canada do not consider clear cuts of natural forests deforestation if the area is replanted. And such conversion forces local people to move elsewhere. Finally, most deforestation in the tropics is driven by conversion into cattle rangeland and large-scale soy farms or other cash crops, not plantations to provide tree fibre.

-- Advertisement for Eucalyptus --
Lockwood's Directory of the Paper and Allied Trades, 1986

In Canada

Climate and economics largely militate against fast-growing pine and poplar plantations in Canada, with a few exceptions in southern BC and Ontario. Simply put, it's too cold and far cheaper to cut existing old growth here, says Catharine Grant of Forest Ethics, an environmental organization focused on forest conservation. Governments require forest companies to "regenerate" forests but such lands remain impoverished in terms of biodiversity, ecological function and ability to provide timber. In the boreal forest region where all logging is old growth, companies "do nothing, in terms of regeneration, they just let it grow back" which might take 80 years, Grant says.

Canada's long legacy of "silviculture failure" forces companies to keep looking for old growth to cut. And yet the official FAO forestry statistics show Canada's forest cover is unchanged, despite cutting enough trees to produce 50-60 million tonnes of pulp, paper, softwood lumber and hardwood every year.

Forestry is an essential part of the Canadian economy but needs to be done far better, Grant says. Essentially, large tracts of untouched forest should be off limits because there are already huge areas of disturbed forests that could be far better used and managed. Although intensively-managed plantations have no biodiversity, they can provide needed wood fibre.

Like the Southern plantations, Canadian forests are also facing a new demand to meet future needs for energy – green energy.

BC Hydro recently signed four contracts for long-term supply of electricity from burning wood waste and beetle kill.

Ontario's huge 4,000 megawatt Nanticoke coal power plant, the largest in North America, may be converted to burning wood chips, in a nightmarish scenario right out of Lord of the Rings. Ontario plans to phase out all of its coal plants by 2014 as part of its carbon emission and air pollution reduction strategy.

"Burning is the most wasteful use of a tree," says Richard Brooks of Greenpeace Canada. "That is not the way for the forest industry to survive," Brooks said from his Toronto office.

Burning a tree puts its stored carbon into the air today in the hopes that a planted tree will absorb an equal amount of carbon 40 years into the future – providing it survives that long, says Brooks.

"We need carbon reductions today, not forty years from now. And the best way to do that is halt deforestation of old growth forests."

♦

Stephen Leahy is an environmental journalist from Uxbridge, Ontario

Restoring a plantation

Galiano Island has seen more than its share of clearcut logging over the decades, but now the Galiano Conservancy is leading the way on restoration of one of the most endangered ecosystems in Canada – Coastal Douglas Fir

Over the past two decades the Galiano Conservancy Association has focused on addressing issues of biodiversity loss and environmental sustainability on Galiano Island, the second largest of BC's Southern Gulf Islands. These efforts include a unique restoration project with a goal of helping to transform one of the island's degraded forest plantations into a healthy, resilient and connected forest ecosystem.

Galiano's position on the lee side of the Vancouver Island Mountain range combined with the moderating influence of the ocean lead to a mild and relatively dry climate. The Island's forests are characteristic of the Coastal Douglas Fir Biogeoclimatic Zone (CDF), an ecological classification that has recently been ranked as imperiled (a high risk of extinction) both provincially and globally. The CDF has the highest density of species of conservation concern in British Columbia. This conservation challenge is further intensified when considering the future impacts of climate change and has led to the CDF being identified as BC's highest priority for conservation.

Logging in its various forms and intensities has been a constant presence on Galiano Island for thousands of years. Qwxwulwi's, the Penelakut name for the restoration site, embodies the full spectrum of logging history. Over half of the island was operated as a commercial tree farm until the late 1980s, and though the island today has a relatively intact forest landscape, much of this forest shows the history of industrial timber extraction. From patchy clearings of high-grade logging from the 1900's, clearcut logging in the 1970s and 80s to the monoculture planting of Douglas Fir seedlings.

The industrial cycle was broken in 1998 when the Galiano Conservancy recognized the potential of the site to provide connectivity at the landscape scale and purchased the property for restoration. The removal of all vegetation from the site, the devastation to the forest floor and the establishment of a uniform single-aged, single-species plantation have set the forest on a trajectory where biodiversity and ecosystem processes function on a minimal level.

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⇦*Restoration continued*

A forest restoration plan was prepared in 2002, and two years later restoration treatments were initiated to help shift the plantation's successional trajectory towards a healthy mature forest.

After completing a detailed inventory of the plantation and comparing its ecological condition with nearby mature forest and some of the last remaining old-growth patches in our region, we devised a suite of restoration treatments. The goal was not the re-creation of the forest that existed prior to industrial logging, but the re-establishing of a healthier, more diverse, and resilient forest ecosystem.

Preliminary studies looking only at the vegetation have indicated that treatments are carbon neutral in the short-term but will likely increase carbon sequestration over the long-term. Researchers have also begun to examine the effects of restoration treatments on carbon sequestration in the soils.

Dispersing slash diversifies the forest floor and creates habitat

Using a 5-ton chain hoist for lift and a cable and pulley system for horizontal movement, rotting slash from windrows is dispersed across the barren forest floor. The organic material provides habitat for a variety of plants and wildlife, creates soil conditions conducive for the growth of mycorrhizal fungi and functions as a moisture sink during periods of summer drought. The unique, hand-powered, portable restoration system minimizes further damage to the site.

5 Years Later

The plantation has responded to restoration treatments with an increase in species richness and biomass. The moss layer was the first to respond to the increase in light resulting from thinning treatments. The grasses and herbs followed quickly, along with a flourish of shoots branching off of red alder stems. Salal, oceanspray and other shrubby species have been slower to respond; however, patches of these species are beginning to emerge and are expected to expand

Using a modification of the cable system, large, intact pieces of slash are stood up as wildlife trees creating forest structure that would otherwise take centuries to form.

throughout the stand over the next 5 years. Structurally, the restored areas of the plantation resemble a more natural condition with a mosaic or patchy distribution of dominant Douglas Fir trees, a revitalized sub-canopy of broadleaf trees and conifer saplings, wildlife trees of varying diameter throughout the site, and coarse woody debris across the forest floor. This newly created structural complexity equates to greater habitat diversity and availability, adding to the site's potential for supporting biodiversity.

A study of available soil nutrients found that levels of key soil minerals in the restoration site were more similar to those in an adjacent mature forest stand than in the untreated plantation. This study suggests that the restoration work increases microbial activity, creating a healthy soil system that more closely resembles a natural mature forest system.

Data from the monitoring program on this site indicates that ecological restoration has clearly increased the structural, compositional and functional diversity of the Douglas-fir plantation.

While restoration treatments at this site are benefiting the local ecology, it is the educational component of the project that reaches beyond Galiano's shoreline. Site tours and opportunities for in-depth study are offered to students and professionals from around the world. Forest restoration theory and techniques are also the focus of an ongoing youth educational program. The program incorporates hands-on restoration activities that provide students with a positive connection to the natural world. The Conservancy is now piloting programs that engage students in restoration projects in their home communities after visiting our site on Galiano.

Girdling is the most efficient technique for thinning. The cambium is removed in a band around the entire circumference of the tree with a specialized chisel, cutting off the transport of nutrients to the roots.

Topping creates a small-diameter wildlife tree while opening the canopy and allowing more light to reach the forest floor.

Planting native Galiano stock reestablishes understory cover and enhances genetic and species diversity.

Thinning treatments maximize diverstiy of vegetation and forest structure.

Culling plantation Douglas-fir trees creates gaps in the canopy allowing more light to reach the forest floor. This promotes growth of mosses, grasses, shrubs and other tree species. Any natural elements such as a red alder tree, a patch of salal or a small area of undisturbed soil around a stump that remain within the plantation are viewed as 'anchors' of diversity and provide a guide for choosing which plantation trees to keep and which to cull.

♦

For more information or to inquire about tours and educational programs contact:

Galiano Conservancy Association
RR#1 Sturdies Bay Road, Galiano Island, BC V0N 1P0
restoration@galianoconservancy.ca
Phone: 250-539-2424

Excerpted from the brochure by Galiano Conservancy

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Pesticides Implicated in Disappearance of Amphibians

by Anne Sherrod

New research has shown that pollution of the air by agricultural pesticides is a significant factor in the decline of amphibians. Two pesticides used in the San Joachin Valley of California are being carried by wind into the Sierra Nevada Mountains. There they were found in the snow, water and soil – and in the amphibians – of the Sierra Nevada national parks.

The study focused on the effects of endosulfan (an organochlorine) and chlorpyrifos (an organophosphate), on Pacific tree frogs and foothill yellow-legged frogs. The researchers concluded that the use of these chemicals in the San Joachin Valley posed a serious risk to amphibians in the Sierra Nevada Mountains 50-75 miles away. Other pesticides were also found, and the toxicity of all the compounds together is much greater than any one kind.

Pesticides can volatilize from the ground in warm agricultural areas, and be transported by wind until they fall to the ground again with rain or snow. This process, known as "global distillation," is responsible for the presence of organochlorine compounds in the Arctic, where they are concentrated in the fat of wildlife and aboriginal people.

Organochlorine pesticides, including endosulfan, have been found high in the Canadian Rocky Mountains, where winds most frequently come from agricultural regions in the Okanagan and Washington State. Samples from Mount Revelstoke Provincial Park and Yoho National Park indicate that "the highest pesticide concentrations are found in temperate mountain soils that are rich in organic matter and receive large amounts of cold precipitation" (Daly et al., 2007).

The yellow-legged frogs of the Sierra Nevada have now been decimated by the deadly *chytrid* fungus. But the slide towards extinction started from other causes, including levels of pesticides too low to cause death; instead they caused chronic effects on reproduction and development and (who knows?) perhaps immunity. This a warning bell for humans, who have pesticides invading their bodies not only from the food they eat, but also from water melting in snow packs high in the mountains.

♦

Sources: Daly, G.L., et al., "Pesticides in Western Canadian Mountain Air and Soil," *Environmental Science and Technology*, 2007 Sept. 1; 41(17):6020-5. Available at *www.ncbi.nlm.nih.gov/pubmed/17937276*

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From Our Readers

Yellowcake Trail

The article on uranium by Anna Tilman is well written and well researched. It is especially necessary to cover this issue today when nuclear power is being advertised as "clean" and "green." I congratulate you for your courage in allowing this explanation of the whole messy nuclear industry to be placed before the public. Based on the ads, people would otherwise be deceived into thinking there are no problems!

Actually the support industries for nuclear power emit many tons of CO2 into the air. The pollution of the nuclear reactor itself, while not emitting CO2, is radioactive particulates, gases and liquids, much more immediately dangerous to human health because they pollute the air, the water and food.

Dr. Rosalie Bertell, Toronto ON

Eye Witness to Hitching Birds

The myth of a hummingbird riding on a Canada goose may not be as far-fetched as people think. Ornithologists may think they know all there is about bird migration and yet, something is still going on in the isolated areas of James Bay. The phenomenon only happens in spring, not in fall. The birds go south from James Bay as early as August – weeks ahead of geese.

Attawapiskat in Northern Ontario is only accessible by plane. Bird experts have never been to Attawapiskat and have never seen a spring hunt. The people there have known about the phenomenon for a long time, as well as the peoples from the Quebec side of James Bay.

Patrick Tookate of Attawapiskat shot a snow goose which carried a small yellow bird, possibly a kinglet or warbler, inside its wing pit (scapulars). It happened on Akimiski Island (uninhabited) in the spring of 1997. It happened to another hunter in the 1960s at the same island. Patrick's father died of cancer last year. He told me he was with Patrick when he shot the snow goose with the tiny bird – he was amazed at the disbelief of bird experts. So Patrick is the only living proof now.

I admit I was in doubt of the phenomenon for many years because I've observed migrating birds slowly make their way north from Toronto to North Bay to Timmins without the help of Canada geese. But news of bird incidences in Attawapiskat kept surfacing.

I do not know where the James Bay birds are coming from, or if they are coming with geese flying long distances using one certain flyway, or even from one certain area in the US – but Patrick's bird came from somewhere.

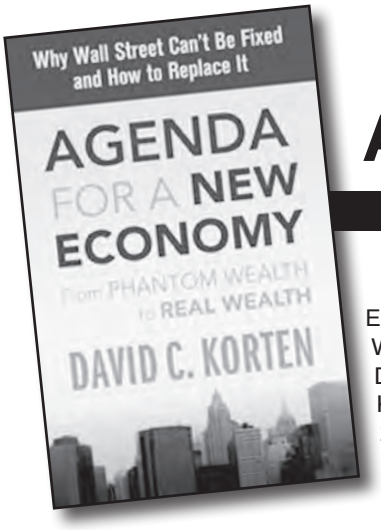
I was informed that ornithologists went to James Bay to find out but they never went to Attawapiskat, and unfortunately they concluded the accidental hitting of small birds was a coincidence – that the birds were following goose flocks and they have been known to do so.

But Louie Noah of Attawapiskat said birds would never follow goose flocks because of the cold conditions. The incidents with birds suggest they were actually inside feathers of geese.

The only way to find out would be to gather wingpit area feathers (scapulars) of both Canada and snow geese and have them analyzed for traces of urine and excrements of birds. It would be a great shame if the bird mystery is lost forever without people in the south knowing, due to changes to migration patterns from global warming. The phenomenon is Mother Nature at her very best.

Peter Metatawabin , Toronto ON

The Watershed Sentinel welcomes letters but reserves the right to edit for brevity, clarity, legality, and taste. Anonymous letters will not be published. Send your musings and your missives to: Watershed Sentinel, Box 1270, Comox BC V9M 7Z8 editor@watershedsentinel.ca



Agenda for a New Economy

Wall Street can't be fixed – the teachable moment has arrived

Agenda for a New Economy: From Phantom Wealth To Real Wealth, David Korten, Berrett-Koehler Publishers, Inc. 2009. ISBN: 978-1-6059-289-8, $20.95, 196 pages

Review by Norm Reynolds

The most disturbing thing I learned from the government's response to our current financial and economic meltdown is how easily the money flows when things aren't going well for wealthy people. Seven billion, ten billion, going on a trillion dollars, to bail out greed-gone-amok financial institutions. All so easily tossed away trying to patch up a financial system that, according to David Korten's new book, *Agenda for a New Economy,* just can't be interested in the massive loss of jobs and homes, degrading poverty and the destruction of Earth's ecosystem.

From the front cover to the last page, Korten's relentless theme is that Wall Street can't be fixed – period. According to Korten, the dismantling of Wall Street is a necessary step in restoring democracy's ideal of a truly engaged and empowered citizenry.

The new, highly abstracted financial instruments of the last few years sent the financiers into frenzy over a dream of creating limitless wealth without having to produce anything other than more money. Manufacturing, which had been the mainstay of production and job creation, fell to 12 percent of GDP while financial services became the leading economic sector. Wealth became ever more concentrated in the hands of a few. Wall Street recorded unprecedented gains as it sucked the life out of the global economy. However Wall Street can no more survive without a functioning economy to drain than a tumour can propagate without a body to feed on.

Building a New Economy

The great thing about *Agenda for a New Economy* is that it is just that. While Korten carefully documents the failings of Wall Street, the second half of the book is about building a new economy that puts money and business in the service of people and the planet.

Clearly the whole Chicago School of Economics argument that everything of value can be commoditized and humanity can achieve its highest potential when "free" markets operate outside of the control of democratically elected governments is mortally wounded. It has been shown to be the road to financial, social and environmental collapse. Now is the time – the time to speak up – for a whole new vision of an economy that will ensure financial stability, environmental sustainability, economic justice, and peace for generations.

In its place Korten calls for a new economy that mimics healthy ecosystems that are "locally rooted, highly adaptive, and self-reliant in food and energy." In the new economy, trade between neighbours and nations would be fair and balanced. Resources would be preferentially allocated to improve the lives of those who need it most. Economic policy would be evaluated on its ability to create strong sustaining and sustainable communities. There would be little room for casino-styled speculation.

Korten rounds out his criticism of Wall Street with a strong, positive alternative, developing Government-Issued Money, Community Banking, Real-Wealth Investment, Middle Class Fiscal Policy, and Responsible Enterprise as the five pillars for restoring an economy that nurtures people, builds vital communities and functions in balance with Earth's natural ecosystems.

Korten rounds out his criticism of Wall Street with a strong, positive alternative

But *Agenda for a New Economy* is first of all a call to action – a call to every one of us that dreams and plans for a better future. With the collapse of high finance, the teachable moment has arrived for a short time. Either we will individually and collectively take up the call for a new agenda or it will remain little more than a fascinating read on the back shelves of what could have been.

Considering the ability of vested interests to organize false, but effective, resistance to programs like the health-care proposals of Presidents Clinton and Obama, we clearly cannot wait for some white knight to take up this most profound social transformation. Either we will get together and speak up as a movement of dedicated citizens at this critical juncture in the evolution of our social systems, or economic reform will soon be forgotten behind big money propaganda. Enthusiasm for change will be lost behind the smoke screen of a technical patch for a system that, by its core intention, cannot be made to serve equitable and just social relations nor a sustainable relation to our Earth.

♦

Norm Reynolds is a social and environmental activist in the Comox Valley, and a Lay Chaplain for the CV Unitarian Fellowship.

Deep-worker submersible being lowered from mother ship. Jennifer Lash at the helm.

Close-up view of polyps of Primnoa (Red Tree Coral).

Finding Coral Saving Coral

Marine Protected Areas And Fisheries

by Mike Morrell

In June this year, the Living Oceans Society's "Finding Coral" expedition set out from Vancouver on a two week cruise to the North Coast to document BC's deepwater corals. The chartered research vessel *Cape Flattery* carried Living Oceans Society's (LOS) staff from their base in Sointula along with invited marine scientists and technical support people. The investigators used two deep-diving manned submersibles capable of carrying observers as deep as 500 metres. The free-ranging submersibles were equipped with manipulator arms, lights and cameras, which allowed their pilots to observe, document and collect samples of what they found.

Six different submersible pilots, including Jennifer Lash, Executive Director of LOS, dove at 7 locations in Queen Charlotte Sound, Hecate Strait, Haida Gwaii and the northern mainland coast. They documented at least 16 species of corals ranging from solitary orange true corals less than 3cm in diameter to the spectacular red tree corals (*Primnoa*), whose branching colonies can reach a height of over 2 metres. The website *www.finding-coral.com* provides videos and still images as well as written accounts of the voyage; the videos of Day 9 (a coral forest in Juan Perez Sound) and Day 10 (a more general account of deep sea corals) are particularly worth watching.

The Corals

BC's deepwater corals are fascinating and strikingly beautiful. They live attached to rocky bottom at depths of hundreds of metres. They may attach to small cobbles or to large bedrock outcrops, but they are not found on sandy or silty bottom. Because their habitat is so difficult for observers to reach, our corals are hard to study and their biology is poorly known.

Deepwater corals are related to, but different from, the much better studied tropical reef-forming corals. All of them belong to the phylum that includes jellyfish and sea anemones, and all have tentacles with stinging cells for collecting food. Many species of both groups are colonial: tiny individual polyps share a common rigid skeleton. Unlike the tropical corals, our deepwater corals do not form massive stony reefs, but some kinds occur in large groups referred to as forests or meadows. Like the tropical corals, the larger deepwater coral colonies create complex habitats that are utilized by many other species, including fishes, brittle stars, crabs, shrimps and many other kinds of invertebrates. The diverse communities associated with coral forests are unique to this habitat and are significant elements of deepwater ecosystems. Large coral colonies grow very slowly, and the larger ones may be a century or more old.

Threats to Corals

Worldwide it appears that damage by fishing gear is the principal threat to deepwater corals. All gear fished on the bottom probably has an impact, and the consensus of fisheries scientists is that otter trawls dragged along the bottom for flatfish, rockfish and other bottom-dwellers are among the most damaging.

Most of what is known about coral distribution in BC is based on observations of the incidental catch or by-catch by bottom trawls. Since 1996 all groundfish trawlers in BC have been required to hire onboard observers who record all the target catch as well as the unintended bycatch of corals, sponges and other non-target species in every tow of the net. In 2004, LOS researcher Jeff Ardron analyzed trawl observer reports from 1996 through 2002. Ardron's analysis showed that, in the six year period, trawlers took at

least 295 tonnes of deepwater corals and sponges in the process of harvesting 234,000 tonnes of the fish species they were seeking.

In a paper published by DFO in 2006, Ardron and DFO scientist Glen Jamieson showed that 95% of the catch of corals and sponges was taken in 12 areas which together comprise about 7.5% of BC's continental shelf and slope. Some of these areas were preferred fishing grounds for the trawl fleet; together, these areas of high bycatch accounted for 24% of all trawl tows and 30% of their total catch during the period of the study. Ardron and Jamieson recommended that the 12 areas be considered for protected status for conservation of coral and sponge habitats.

Attempts at Coral Protection Are Not New

In 2000, DFO proposed voluntary trawling closures of four areas of critical habitat for reef-forming glass sponges, which, like corals, form complex deepwater habitat that supports a unique community. The closed areas were made mandatory through fishery regulations in 2002. These areas accounted for about one third of the combined coral and sponge bycatch, but they are not adequate to eliminate most of the impact on corals. DFO acknowledges the need for more protection for coral and has drafted a policy to protect more areas. However, detailed documentation of the locations in need of protection is currently a missing link in the process. DFO is now in the process of defining ecologically and biologically significant areas on the North Coast of BC that merit special management but has made little further progress on documenting the distribution of deepwater corals.

The Living Oceans Society expedition to collect further information about the corals was an attempt to move the process along and to raise public awareness.

Marine Protected Areas on the BC Coast

Marine Protected Areas (MPAs) are areas of ocean designated and managed for the protection of special features. They are used increasingly by management agencies around the world for marine conservation. Canada currently holds about 9,000 square kilometres under some type of protection on the west coast; this amounts to just under 2% of Canada's Pacific waters. Although in the 1993 UN Convention on Biodiversity Canada committed to protecting 10 to 30% of federal waters in an MPA network by 2012, currently less than 0.5% of Canadian federal waters on both coasts are protected. For comparison, the US now has 5% of its waters in federal MPAs and Australia protects 10%.

In BC, DFO has designated all waters of the continental shelf and slope from northern Vancouver Island to the Alaska border as a priority area for marine planning. DFO calls the area the Pacific North Coast Integrated Management Area (PNCIMA). The strategy is to engage all stakeholders and interests (including First Nations, government, fishermen and environmental groups) in developing an ecosystem-based management plan for the area. The public process began last March with a two-day meeting in Richmond attended by 300 people.

Although the PNCIMA area has been designated a priority region in DFO's Oceans Action Plan since 2004, federal funding to support the project is uncertain. As a new project in a federal department whose budget is already inadequate, PNCIMA's future seems precarious.

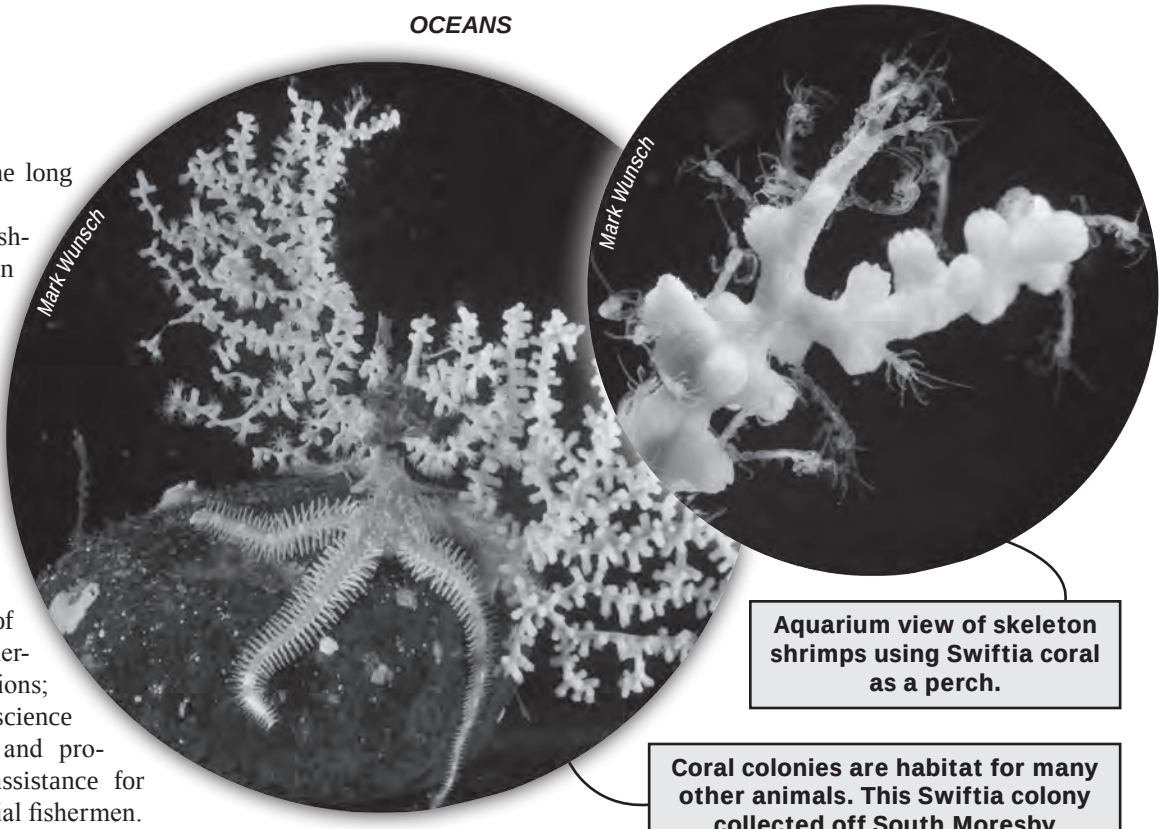
Fisheries

The creation of MPAs that prohibit fishing is likely to translate into lower catches, at least in the short term. But if protected areas are well designed, catch may not decline by much. If MPAs are part of a comprehensive plan that includes good fishery and habitat management outside of the MPAs, fish catches may actu-

Continued on Page 26 ⇨

Part of a forest of Red Tree Coral (Primnoa) at 1,000 feet in Juan Perez Sound, South Moresby Island.

Living Oceans Society



Aquarium view of skeleton shrimps using Swiftia coral as a perch.

Coral colonies are habitat for many other animals. This Swiftia colony collected off South Moresby hosts a brittlestar (photographed in shipboard aquarium).

ally increase in the long run.

The BC fishermen's union (UFAWU – CAW) has passed a policy resolution in support of MPAs for conservation purposes. The union's support is conditional on an MPA process that incorporates the knowledge of commercial fishermen and First Nations; is based on sound science and clear goals; and provides transition assistance for affected commercial fishermen.

Trawlers are not interested in catching coral. Much of the coral habitat is on rough rocky bottom which they try to avoid. The uneven bottom can damage trawl gear, and coral entangled in the net is very difficult to remove.

Bruce Turris is Executive Manager of the Canadian Groundfish Research and Conservation Society, representing the groundfish trawl industry. According to Turris, the trawlers do not oppose MPAs to protect coral aggregations and other sensitive bottom habitats. He points out that it was the trawl industry that initially located the glass sponge reefs, and they worked with DFO to formalize the closures. Later they voluntarily enlarged the sponge closure areas in Hecate Strait. What is important to the industry is that they be part of the process of defining the boundaries of closure areas. They are now working with DFO, ENGOs and other stakeholders in developing a sponge and coral protection strategy under the federal *Oceans Act.* The trawlers and other commercial fishing interests are also participants in the Pacific North Coast Integrated Management Area process.

The situation isn't always that clear. Early in the Finding Coral expedition, the LOS vessel *Cape Flattery* encountered several trawlers working off Cape St James at the south end of Haida Gwaii. In her online report for June 12, Jennifer Lash reported on a close encounter between *Cape Flattery* and one of the trawlers that felt to her like intimidation, though she noted the possibility that the trawler might just have been curious about "the new boat on the block."

Norman Sigmund, the skipper of one of the trawlers, *Viking Moon,* said that he was indeed curious, since he didn't recognize the vessel and initially thought it might be a blackcod vessel setting fish traps that the trawlers would want to avoid. Sigmund said there was never any intention to harass or intimidate the LOS expedition. The trawlers established radio contact with *Cape Flattery* a few hours after the incident, and there were no further problems.

Lash ended her report with the hope that "Maybe we can all take a deep breath and chart a new course." LOS is providing new information on corals and their communities and is raising the public profile of the situation. DFO is sponsoring a public process leading to ecosystem-based management. All parties seem to be at the table. Hopefully, these are the elements of a new course.

♦

Mike Morrell is is an independent fishery biologist and a member of the Watershed Sentinel Board. He lives on Denman Island.

For more information see the Living Oceans Socety website:
www.findingcoral.com

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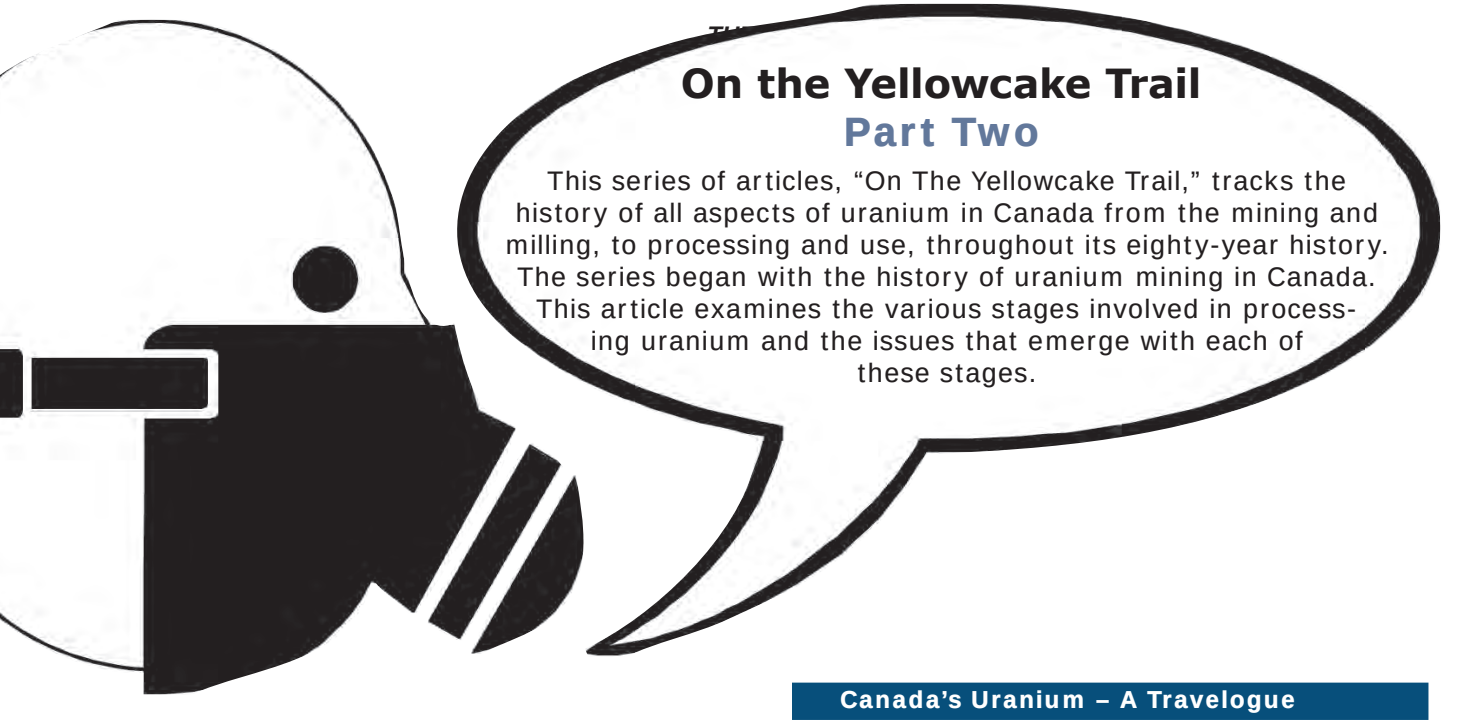

On the Yellowcake Trail

Part Two

This series of articles, "On The Yellowcake Trail," tracks the history of all aspects of uranium in Canada from the mining and milling, to processing and use, throughout its eighty-year history. The series began with the history of uranium mining in Canada. This article examines the various stages involved in processing uranium and the issues that emerge with each of these stages.

by Anna Tilman

The nuclear industry paints a rosy picture of its operations, portraying itself as a well-planned, controlled and safe industry, and the answer to climate change. But the track record of flooding and spills at mine sites, cost overruns, delays, leaks and shutdowns at nuclear plants, and the catastrophic nuclear "accidents" at Chernobyl and Three-Mile Island, are in stark contrast with that positive image.

At every stage in the nuclear chain, from extraction to processing and use, vast amounts of radioactive waste and other highly hazardous wastes are produced. Spills and leaks commonly occur, marking treacherous places in the yellowcake trail that remain deadly for hundreds of thousands of years.

Nuclear waste is the Achilles' heel of the industry. The radioactive wastes resulting from mining and milling uranium are endemic, as is the nuclear waste (spent fuel) produced by reactors, which contains so many extremely dangerous radioisotopes, such as plutonium. There is no safe way to permanently store radioactive nuclear waste.

The current recession has put a damper on the nuclear renaissance, at least in Ontario. Plans to build a nuclear reactor at Darlington have been postponed indefinitely and proposals by Bruce Power, a private company, to build two new nuclear power stations have been abandoned. Of course the future of the somewhat tarred Atomic Energy of Canada Limited is also in doubt, as the federal government is hell-bent on privatizing it.

But mining and exploration for uranium are going on full steam ahead, and Bruce Power is marching westward, seeking opportunities in areas with better economies than a "have-not" Ontario.

Canada's Uranium – A Travelogue

Canada's uranium, as yellowcake and in other more purified forms, travels the globe. How it gets to these various destinations is another matter.

From the mines and mills in Saskatchewan, casks of yellowcake are shipped about 3000 kilometres to Ontario. Some of the yellowcake may be shipped directly to the US and possibly to France.

Approximately 85% of Canada's uranium yield is exported. Since nearly all the uranium produced in Canada is sold under confidential long-term contracts, information on amounts shipped and to what countries is not forthcoming – at least not to the public.

The ore from the uranium mines is shipped by truck to the mills. Trucks bring the yellowcake from the mills to Saskatoon. The yellowcake travels most likely by truck from Saskatoon to the refinery in Blind River, Ontario. The Blind River refinery also gets shipments of yellowcake for processing from around the world. Most of the purified uranium is trucked from Blind River to Port Hope, 600 kilometres away. The rest is sent to the UK for enrichment. This is as much as we know.

Any road or rail travel must go through a number of towns en route. What emergency measures are in place in case of accidents or major spills? How is such transportation insured? To what degree are any incidents or accidents reported publicly?

In one case, two transportation trucks carrying uranium hexafluoride from Cameco's Port Hope facility were photographed in the public parking lot of a gambling casino near Milton, Ontario. Likely the trucks were on the way to the US enrichment plant in Kentucky.

On Aug. 4, 2009, the Canadian Press reported an incident where two truckers were exposed to radiation in

2008 while hauling a radioactive device for six days across the country. Apparently, the device had not been securely locked in place before transit, causing it to shift from a shielded to an unshielded position en route. A preliminary investigation by the Canadian Nuclear Safety Commission (CNSC) found that the drivers received about 35% more radiation in their six-day trip than the regulated public dose limit for one full year.

How many more such incidents go unreported?

Churning Out the Yellowcake and the Waste

Mining and milling are at the forefront of the nuclear chain. As in any mining operation, they go hand-in-hand. Mining extracts the raw uranium ore from rock and milling processes the ore to produce yellowcake.

At the mill, usually located at or near mine sites, the ore is crushed, then treated with strong acids and other chemicals to selectively leach out the uranium from the ore and dry it to a fine sand-like powder, uranium oxide concentrate U_3O_8 – yellowcake (about 70% pure uranium).

Natural versus Enriched Uranium

Any element (i.e., a pure substance, such as iron, copper, gold, carbon) usually contains different kinds of atoms, called isotopes. The difference lies only in the number of neutrons in the nucleus. The chemical properties are identical.

Some isotopes are unstable and radioactive, which means they decay into other elements, emitting alpha and beta particles and gamma rays from the nucleus. These three kinds of radiation, known as ionizing radiation, are highly energetic and able to break chemical bonds. This gives them the ability to damage or destroy living cells.

In its natural state, uranium consists of three isotopes, known as U-238, U-235 and U-234, all of which are radioactive. Over 99% is U-238, and only about 0.7% is U-235, and about 0.005% is U-234.

U-235 is key to starting a nuclear reaction and keeping it **going. It is the only naturally occurring isotope that is fissile,** that is, able to sustain a "chain reaction," a reaction in which **the splitting (or fission) of an atom of U-235 by a neutron results** in the release of a tremendous amount of energy and neutrons, which in turn split other U-235 nuclei, releasing more and more energy and neutrons and so on.

Most nuclear reactors and weapons require "enriched" uranium as fuel, that is, uranium with a higher concentration of U-235 than what exists in natural ore. In order to enrich uranium, repetitive energy-intensive measures are used to weed **out U-238 bit by bit from uranium hexafluoride (UF_6),** thereby increasing the portion of U-235. The bulk of waste, or by-product, is depleted uranium (DU), which is almost entirely U-238. DU is **not used as a fuel for fission reactors, but to make weapons,** including atomic warheads, bullets, missiles and armour.

Finally, the yellowcake is packed into 55 US gallon steel drums, similar in size to oil barrels, each containing about 400 kilograms of yellowcake, ready to begin its long journey to be further refined.

Yellowcake is one product of the mills, the other is waste. Throughout all stages of processing, copious amounts of water are used, and numerous toxic chemicals used in processing are unleashed. Usually the liquid waste is about double the quantity of the solid waste.

The leaching agent, typically sulphuric acid, extracts uranium from the ore and along with it, several other substances, including heavy metals, such as molybdenum, lead, arsenic, mercury, manganese and cadmium.

Since a relatively small fraction of uranium is actually contained in the ore, the rest of the ore is radioactive waste. The vast amounts of wastes, known as tailings, are discharged from the mills into ponds or piles nearby. The tailings contain all the original constituents of the ore, including long-living radionucleides, thorium-230 (half-life of 80,000 years) and radium-226 (half-life of 1600 years), which represent about 85% of the initial radioactivity of the ore. The tailings also contain about 5-10% of the uranium not extracted by the milling process.

The radium in waste rock and tailings continuously decays to the radioactive gas radon-222, which can readily escape from the interior of the tailings. Radon releases are a major hazard that continues after uranium mines and mills are shut down. Just to prevent seepage of radon gas from the interior of the tailings, the waste must be stabilized by at least two metres of cover soil.

The mix of constituents in the tailings can undergo various reactions which contribute to additional hazards. The poisoning of fish and plants downstream from the mines and mills is due not only to radioactive substances that accumulate in the sediment but also to heavy metals and process chemicals, whose effects are noticed long before the effects of radioactivity.

From the Mills to Ontario....and Beyond

Because yellowcake is about 70% uranium, further processing is required to remove impurities before it can be used. From the mills in Saskatchewan, casks of yellowcake travel to Ontario, the only province in Canada where yellowcake is refined for further use. Each load hauled by truck contains about 17 tonnes of yellowcake.

Some of the yellowcake may also be shipped directly to the US and other locations overseas, but neither the destinations nor the means of transport are publicly known.

Ontario hosts the largest uranium refinery in the world,

Continued on Page 30 ⇨

⇦*Yellowcake Trail continued*

the Blind River refinery on the north shores of Lake Huron, and the oldest existing one, in Port Hope, on Lake Ontario. Both are owned by the Cameco Corporation, a dominant and influential force in the two communities.

The Blind River facility, first opened in 1983, processes yellowcake not only from Saskatchewan, and formerly Ontario's mines, but from all over the world.

At the Blind River refinery, the yellowcake is purified and processed to produce uranium trioxide (UO_3), a high-purity form of uranium suitable for further processing.

Incineration – the Path of Destruction

In 2007, the Canadian Nuclear Safety Commission (CNSC) gave Cameco approval to upgrade its existing incinerator at the Blind River refinery so that it could burn radioactively-contaminated by-products generated at Blind River and Port Hope.

Uranium, a metal, cannot be destroyed by incineration.

It is pyrophoric, that is, it can catch fire even at normal temperatures when it is in fine particles. Incinerated, it will burn at 3,000 to 6,000 degrees centigrade and the uranium particles turn into ceramic uranium.

> "Ceramic uranium is not soluble in body fluids after being breathed into the lungs. This metal vapour will solidify in the cooling air and form respirable particles. Some particles will be nanometre in size (a nanometre is 1 billionth of a metre), so small that they can pass through the lung-blood barrier, escape from the blood vessels and enter into the cells. They can also pass through the blood-brain barrier and enter into the brain itself. These particles have been found in seminal fluid and in the female where they can cross the placenta and cause havoc to the developing embryo or foetus. These metal fumes also pose an immediate danger for the residents of downwind communities."
>
> *—Burning Radioactive Waste: Blind River and the CNSC Decision, International Institute of Concern for Public Health, March 17, 2007*

Recovery of Left-over Uranium

Cameco is currently seeking approval from CNSC to re-mill "recyclable" products from its Blind River and Port Hope facilities, trucked back to its Key Lake mill in Saskatchewan. These products contain approximately 4% uranium, mostly, but not all, derived from yellowcake from Saskatchewan.

Once again, yellowcake hits the road – back to where most of it came from.

Blind River to Port Hope

From Blind River, UO_3 is trucked 600 km to Port Hope where it is converted into two forms. About 20% is

Blind River and Port Hope – the tale of two communities

The two communities are unique in many ways, Port Hope being located in southern Ontario's urbanized surroundings, Blind River, much more isolated and by a native community. Much is heard of and known about issues in Port Hope, with its contaminated fill and schools seeping radon. Less is heard about Blind River, with the increasing levels of uranium in soil and 80 kilometres of contaminated Serpent River watershed.

At the same time, the two communities have much in common, from their major employer, and the struggles and conflicts they face because of the refineries, to concerns over health and the environment, and economic viability. These issues are divisive at times, and play into the hands of the nuclear industry.

The largest uranium refinery in the world is located just west of the town of Blind River, nestled at the mouth of the Mississagi River on the North Channel of Lake Huron. The refinery exists there as a result of government intervention.

Situated on the shores of Lake Ontario, with the charm of a picturesque nineteenth century town, Port Hope is the "heart" of the nuclear processing industry in Canada and has been so for almost eighty years, since it was first a radium refinery and then converted to prepare uranium for the "Manhattan Project."

Controversy over the health effects from Cameco's Port Hope operations abounds. Two reports prepared by Health Canada for the CNSC concluded that overall cancer and death rates in Port Hope were comparable with similar-sized jurisdictions in Ontario.

Very different conclusions were drawn by Dr. Eric Mintz, an epidemiologist retained by the Port Hope Community Health Concerns Committee (PHCHCC) to do an independent analysis of the data in the two Health Canada/CNSC studies.

powdered uranium dioxide (UO_2), used to fuel Canadian Deuterium Uranium (CANDU) heavy water reactors in Canada and abroad. The other 80% is turned into uranium hexafluoride (UF_6), known as "hex," which is used to enrich uranium for fuel in light water reactors. Since there are no enrichment plants in Canada, all of the "hex" produced is transported in steel shipping containers to enrichment plants in the US, Europe and Japan. Since 2006, about one-quarter of the Blind River UO_3 (5,000 tonnes) is being shipped to Springfields, UK, where it is converted to UF_6 which is then sent to enrichment facilities in Europe.

Cameco, through its Port Hope and UK operations, is the world's largest conversion supplier, accounting for 35% of the western world capacity. Its Port Hope Conversion Facility is the world's only commercial supplier of fuel-grade (unenriched) UO_2.

Fuel Fabrication

The last stage in processing the original yellowcake is the transformation of powdered UO_2 to reactor fuel. UO_2 is first pressed into small cylindrical shapes and then baked at a high temperature (1600 °C) to produce hard ceramic pellets. The pellets are ground down and placed in zirconium alloy tubes which are especially resistant to corrosion. Finally the tubes (also called fuel rods) are grouped into bundles.

Cameco's facility Cameco Fuel Manufacturing Inc., (formerly Zircatec Precision Industries Inc.) in Port Hope produces fuel pellets and bundles. General Electric–Hitachi operates a plant in Toronto which produces fuel pellets which are then sent to its Peterborough plant where fuel bundles are produced.

Tritium and the River

At the end of July, draining of Ontario's Chalk River reactor was completed, ending the leakage of radioactive tritium into the Ottawa River and the air. The most recent leak began in May, and stopped production of radioactive isotopes used for medical testing. In November 2007, the UK Health Protection Agency (HPA) said the danger from tritium could be twice as high as thought and recommended re-evaluating safety limits for exposure. Tritium, radioactive hydrogen with a half life of 12.5 years, is an essential component of the H-bomb, used in medicine, and widely released from nuclear power plants.

—Ottawa Citizen, July 29, 2009, NewScientist.com, November 29, 2007

Now, the yellowcake trail takes a very different path, in the form of fuel bundles which are shipped to Canadian nuclear power generating plants and CANDU-type reactors around the world.

♦

Anna Tilman has researched several toxic issues, especially mercury. She is a Board member of the International Institute of Concern for Public Health.

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Read More on Line at *www.watershedsentinel.ca*

*** The Story of Blind River and Port Hope**
*** Full annotated version of this article**
*** The Isotope Crisis and the Chalk River Reactor**

Upcoming issues will follow the Yellowcake Trail to nuclear power and nuclear weapons

Wild Times


Wilderness Committee

Joe Foy on the Blaeberry River at Thompson Falls, near Golden BC. There is a private power scheme to divert the river around the falls, which local people strongly oppose.

Vacuuming Rivers ...and Wallets

by Joe Foy

A fellow I knew once told me how he spent a summer selling vacuum cleaners door to door in small towns on the prairies. He soon developed a simple three step programme. First, he would get invited into the home. Second, he would find dust under the sofa and in the corners. He'd talk and talk about potential health effects, until the dust bunnies under the couch took on the proportions of King Kong. And third, he just happened to have the solution to the "dust problem" in the trunk of his car – a brand new vacuum cleaner. In the wink of an eye people were making monthly payments on vacuum cleaners they didn't even know they needed!

That's exactly what is going on in BC right now with our wild rivers.

The BC Liberal government of Gordon Campbell has teamed up with private power companies to sell us unreliable hydro-power we can't use, can't afford, and don't want. And so far they are doing pretty good for themselves, with signed long-term contracts worth 31 billion dollars and hundreds of wild rivers staked for future power projects. If the massive Bute Inlet project goes through, the public will be on the hook to the private power guys for more than $50 billion, which is larger than the provincial debt! Ever so grateful, the private power guys have been donating to the BC Liberals like crazy.


Fire Creek being "prepared" for river diversion.

So, how did they do it?

It's been pretty much like selling vacuum cleaners. First, the provincial government invited the private power companies into the province by bringing in the 2002 Energy Plan.

The 2002 Energy Plan manufactures the need for private hydro-power by restricting BC Hydro's ability to plan and build new hydro power plants. BC Hydro has been ordered to buy power from the private guys, in long-term contracts at far above market rates. And Hydro has been ordered to buy a lot of power, in part because Hydro is no longer allowed to rely as much on Port Moody's Burrard Thermal power plant as a back-up for winter-time peak power use or for an emergency. The result has been a staking gold rush on BC's wild mountain rivers, as companies make plans to dam and divert them for power production.

But BC's wild mountain rivers freeze up in the winter months, which makes private power a lousy, unreliable, and expensive winter backup power source.

And that's exactly what the BC Utilities Commission (BCUC) ruled on July 27 when they stated that the BC government should rely on Burrard Thermal as a back-up power plant instead of the private power guys, and do more to conserve power.

The BCUC rightly concluded that, though the Burrard plant has a massive power potential, it sits idle for most of the time, like a spare tire in the back of a car. And, with the upgrading of the power line from BC Hydro's Mica Dam and Revelstoke power plants to the Lower Mainland, the need to fire up Burrard Thermal will decrease even more. The BCUC also rightly points out that power conservation is always less expensive and better for the environment than new power production and that consequently BC Hydro should focus more on conservation.

The impacts from a private river diversion project are long lasting, and include permanent loss of fish and wild life.

Plutonic Power Projects at Bute and Toba

Pull the plug on private power

River diversion makes very high cost and unreliable power, making it virtually useless as a backup source.

The BCUC ruling is a breath of fresh air in a province tired of the stink of the private power scam. Their ruling could end up saving a lot of BC's wild rivers from being needlessly dammed and diverted.

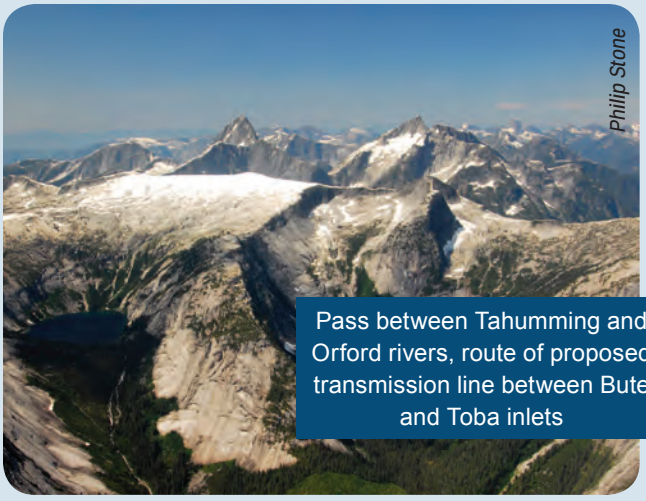
There are many ways that we in BC can lower our greenhouse gas emissions. Allowing the private power guys to bankrupt BC Hydro by forcing it to buy expensive, useless, unreliable power and ruin our rivers and streams is not one of them.

Expanding transit, not freeways, will have the biggest impact of all. A healthy BC Hydro – one of the planet's cleanest power companies – is our government's greatest public policy tool in the fight to lower our emissions.

I think that the thousands of British Columbians who have attended public meetings and written to oppose private power projects on the Pitt, Glacier, Howser, Bute and hundreds of other watersheds, want Premier Campbell to pay attention to the BCUC ruling and pull the plug on private power.

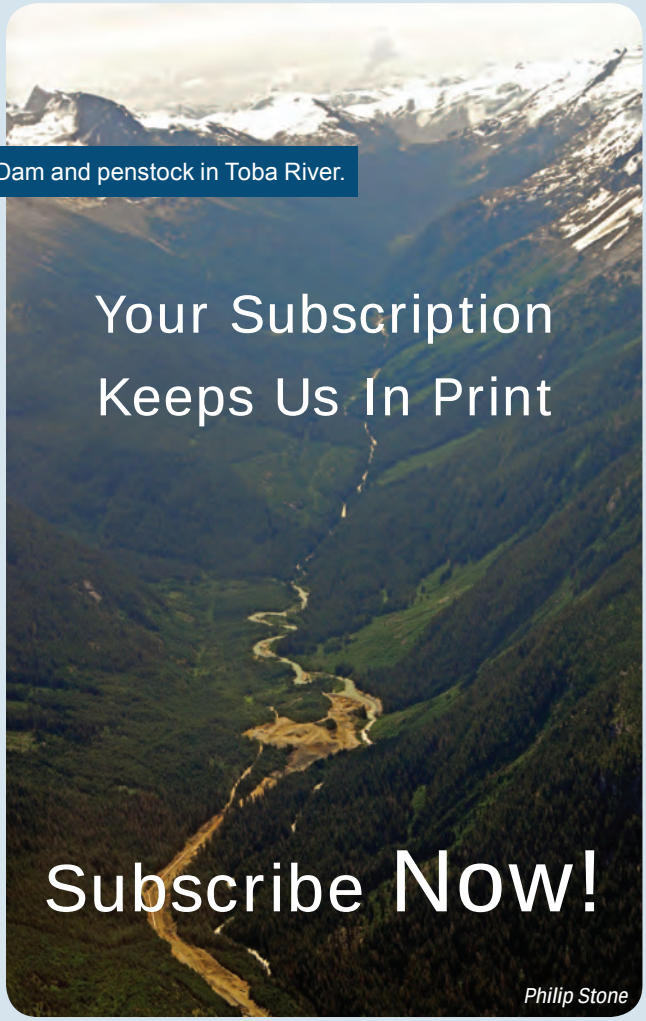
♦

Joe Foy is Campaign Director for the Wilderness Committee, Canada's largest citizen-funded membership-based wilderness preservation organization, which has 28,000 members from coast to coast.



Philip Stone

Pass between Tahumming and Orford rivers, route of proposed transmission line between Bute and Toba inlets



Dam and penstock in Toba River.

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Powerhouse excavation on Toba River;

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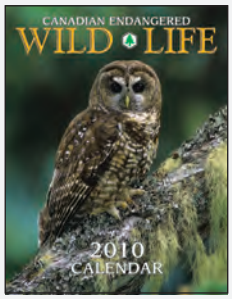

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