Pollution
Fish farms
Logging
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Fish for the Future

PROTECTING FISH HABITAT

Issues and solutions

T. BUCK SUZUKI ENVIRONMENTAL FOUNDATION

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Founded in 1981, the T. Buck Suzuki Environmental Foundation works to protect and improve fish life and fish habitat in B.C., ensuring that fish-bearing marshes, streams, rivers, lakes and marine waters are not polluted, dammed, diverted, wasted or degraded.

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ENVIRONMENTAL FOUNDATION

Introduction

Fish and the waters they live in are a vital part of the ecosystem. Together, they sustain our communities and define our environmental values.

FOR GENERATIONS OF BRITISH COLUMBIANS, fish and water have been symbols of the life and wild beauty of this province.

The thousands of streams bringing snowmelt down from the mountains also bring the season's salmon smolts, born in the gravel that spring. In summer, many of those rivers, whose headwaters reach in the Interior heartland of the province, run red with millions of sockeye returning to spawn, repeating a cycle of migration, death and rebirth that has continued for eons. Out at sea, the white froth from spawning schools of herring is only a hint of the life that teems below the ocean's surface or in the shoreline's shellfish beds.

All along our sea-carved coast, fish and the waters they live in are a vital part of the ecosystem. Together, they sustain our communities and define our environmental values.

But now in the opening years of a new century, the future of fish isn't as assured as it seemed to be a century ago, or even as it was to the last generation.

Rivers and streams face damage and occasionally even destruction from poor forest practices, uncontrolled urban development and pollution from a variety of sources. Hydro dam development can block fish passage, leading to the disappearance of important runs of salmon. Marine fish habitat is threatened by pollution, whether it's from sewage, industrial effluents or open netpen salmon farming. And new plans to extend oil and gas exploration to the waters off our coast pose a new threat to our fish stocks.

The issues involved in protecting our vital fish habitat are many, but we've focused on what we see as the key ones: forest practices, sewage and industrial pollution, fish farming, urban development and oil and gas exploration. Understanding those issues and devising strategies for habitat protection are vital to the future of our fish stocks.

Can it be done? The T. Buck Suzuki Environmental Foundation believes it can. Nearly 45 years ago, commercial and sports fishermen waged a campaign that carried across the coast in opposition to the Fraser River Board's engineering proposal to dam the Fraser River at Moran Canyon, just above Lillooet. The proposal was halted — and halted again in 1971 when fishermen campaigned against a renewed proposal advanced by B. C. Hydro.

Since then, the T. Buck Suzuki Environmental has helped block the Kemano II dam proposal, it has initiated legal actions for improved sewage treatment and participated in the review that led to major recommendations for environmental regulation of fish farms.

Many of the issues remain — but there are solutions. And with consistent work and public action, we can protect our fish habitat and assure a future for our fish.

Forest practices

NEARLY A CENTURY AGO, in 1907, the Adams River Lumber Company built a dam on the upper Adams River to transport logs down the river into Adams Lake in B.C.'s Interior. For weeks in the spring and summer, the company would release the water behind the dam, touching off a flash flood to spill the felled logs downstream. But the crashing torrent of water and timber would also sweep returning sockeye downstream with it. The dam itself barred the migration for what had been one of most prolific sockeye salmon spawning grounds in the whole Fraser River system. By 1921, not a single sockeye was seen in the upper Adams.

It's a long time since the destructive policies of that day, but poor logging and other forest practices continue to be the major cause of fish habitat loss in British Columbia today.

Logging and logging-related roadbuilding can block streams, especially small streams that are often home to coho salmon as well as cutthroat and Dolly Varden trout.

The loss of tree cover when stream banks are clear-cut can result in increases in temperature and sedimentation, both of which can be lethal to fish. It can also lead to flash flooding, debris torrents, even re-channelization of the stream. In some cases, landslides caused by logging damage in unstable areas have destroyed all usable salmon habitat.

Log storage in lakes and toxic herbicides often used in reforestation programs can also lead to the loss of fish stocks.

After many years of environmental campaigns over the practice of clear-cutting, many people believe that forest companies are doing things differently and are logging more selectively. Certainly, there have been improvements. But according to the most recent statistics compiled by British Columbia's Ministry of Forests, "fully 91 per cent of logging in B.C. is still clear-cutting."

Clearcuts increasing

Those figures were published in a report prepared by the Sierra Legal Defence Fund, ForestWatch, Public Service for Environmental Ethics and the B.C. Government and Service Employees Union in 2002. The same report pointed out: that the number of clearcuts is actually increasing along with the number of roads connecting them.

If that work was being done under more stringent environmental regulations, the damage might be minimized. But things are getting worse in the forest and regulations are being enforced even less frequently than before.

In a 1997 report, the American Fisheries Society reported that loss of habitat had led to salmon populations declines but expressed the hope that the new Forest Practices Code would lead to improved protection. The Code, passed by the NDP government in 1995, did set out some standards. They included requirements for buffer zones around fish-bearing streams where no logging could be done, even though the standards were less than half of those required in U.S. forests. Unfortunately, those minimum requirements don't provide adequate protection for streams or simply have not been followed.

A 1996 audit of 1086 streams carried out by Sierra Legal Defence Fund found that 83 per cent of streamside areas "were clear cut to the banks." At the same time, only 43 per cent of streams that were found to contain fish were actually classified as fish-bearing. The others were left vulnerable to damage from a variety of poor logging and roadbuilding practices.

Fisheries and Oceans points to danger

While commercial fishermen were being told in 1995 and 1996 to accept drastic reductions in their catches in order to preserve salmon stocks, the forest companies were continuing to destroy fish habitat.

Even the federal government has pointed out the danger posed by logging practices. In

February, 2000, the Pacific Region of Fisheries and Oceans Canada warned in a letter to the provincial Minister of Forests that small stream protection was inadequate. “The integrity of (small) streams, identified variously as S4, S5 and S6 streams under the Forest Practices Code, is critical to the long term health of our salmonid and fresh-water species,” the letter stated. “Current logging practices in this province rarely provide riparian leave strips or setbacks that adequately protect these streams.” Fisheries and Oceans outlined some minimum standards that should be maintained.

So far, the federal government has declined to use the powerful enforcement capability that it has under the federal Fisheries Act to enforce those standards and prevent the loss of fish habitat from logging damage by the forest companies. That should be one of the first steps taken to protect our fish habitat — especially since the province has put stream protection in even greater danger with its new “results-based” Forest and Range Practices Act, passed by the B.C. Liberal government in 2002.

For a start, the federal government should assert its authority under the Fisheries Act to protect fish habitat from logging damage

Under the new Act, many of the specific regulatory requirements of the Forest Practices Code will be removed and the companies will be entrusted to carry out their work environmentally to achieve an overall “result.” Instead of prevention, the code provides only for punishment after the fact. There are penalties for violations, but there will be little possibility of enforcement. The capacity of the provincial ministries responsible for enforcement has been reduced to near zero through budget cutting.

Habitat risk in red zone

In fact, the new Act, together with the 2002 cancellation of the Forest and Fisheries Renewal programs, pushes the danger to fish habitat into the red zone.

Clearly we need a new direction in the woods if we are to protect fish habitat and preserve the priceless heritage of Pacific salmon.

Where do we start?

The federal government should assert its authority to protect fish stocks and insist that fish-bearing streams be rigorously protected under the Fisheries Act to ensure no further logging damage is allowed.

Both the federal and provincial governments must restore funding to habitat protection and restoration program to halt the disastrous loss of fish habitat and rehabilitate damaged streams.

Beyond immediate protective action, British Columbia needs a new approach, based on ecosystem management and sustainable forest practices.

An ecosystem approach to forest management recognizes that all streams throughout a watershed are interconnected. Rivers and streams, lakes and estuaries provide essential habitat at different stages of the salmon life cycle. Designation of zones in which there is no timber harvest must be provided throughout a stream’s floodplain. Many scientists believe that the zone of riparian protection should be equivalent to at least two tree-heights distance from the edge of any stream.

Promoting sustainable forestry

Key elements of a sustainable forestry regime should also include:

- Provisions to ensure that the rate of cut is based on evaluation of the local forest ecosystem and its needs, not pre-set harvest quotas;
- Protection of the entire hydroriparian zone around a stream system, with no timber harvest in that zone and little or no road building;
- An integrated forestry planning process, with public input, to determine the rate of the annual harvest over time and clear identification of areas where logging can and cannot occur;
- No-harvest forest reserves, based on credible biological criteria, that are set aside before harvest areas are mapped;
- Provision for tree retention in all areas, including recognition that retention rates may need to be as high as 70 percent in particularly sensitive areas;
- Road-building regulations that are designed to minimize the impact of roads and bridges on streams.

Pollution

OVER THE LAST CENTURY, fish stocks along the coast have had to share the once-pristine waters with a growing number of pulp mills, manufacturing plants, oil refineries and sewage outlets — and the volume of pollutants has grown every year.

Sewage: a torrent of toxic discharge

By far the worst is the discharge of sewage into marine waters and the Fraser River — even into small streams in some cases.

Every year, the Greater Vancouver Regional District dumps a volume of treated sewage into Georgia Strait that is equal to 10,000 times the amount spilled by the Exxon Valdez in Prince William Sound in 1989. In Victoria's Capital Regional District, the volume may be less but it spews out into Juan de Fuca Strait raw and untreated.

Throughout the Lower Mainland, the problem is compounded by what are known as Combined Sewage Outfalls (CSOs). They are older storm drains that are still connected to sewers and discharge raw sewage and runoff chemicals from streets directly into Burrard Inlet and the Fraser River whenever there is a heavy rain.

All of that sewage, whether it is from the treatment plant or the outfall, is laced with toxic chemicals. Contrary to what many people believe, many chemicals are not removed by sewage treatment processes. Sewage routinely contains heavy metals such as lead and mercury, endocrine disrupting chemicals such as 4-nonylphenol, organochlorines and more.

Research carried out by Fisheries and Oceans over 20 years has shown that sewage is toxic to fish. In many cases, the lethal impact is immediate —following a heavy rain, there will often be reports of fish kills in areas adjacent to sewage outfalls. But more often, the impact is unseen and subtle, documented clearly in research studies but out of sight to the public. Exposure to endocrine-disrupting chemicals that are found in sewage effluent been shown to have "gender-bending" effects, producing fish with that have both male and female hormones and impaired reproductive capacity. There is also strong evidence that chemicals in sewage are affecting salmon's migration behaviour, threatening their future.

With the population on the south coast growing rapidly, there is an urgent and immediate need to upgrade sewage treatment facilities. Some parts of the GVRD have been moved to secondary treatment but the Iona and Lions Gate facilities continue with primary treatment only. The CRD has not even reached the level of primary treatment, putting the region far behind cities such as Calgary, whose tertiary treatment facilities should be the standard for the rest of the country.

GVRD should move on sewage upgrade

In fact, Fisheries and Oceans Canada told the GVRD in February 2001 that it must come up with a firm plan to upgrade the Lions Gate and Iona sewage treatment facilities and a "firm timeframe whereby Combined Sewage Outfalls … would be eliminated." The GVRD has yet to come up with that plan.

The T. Buck Suzuki Environmental Foundation has worked with the Sierra Legal Defence Fund to pursue a private prosecution under the Fisheries Act to compel regional districts to upgrade their facilities and bring them into compliance with the legislation. Prosecutors dropped those actions in the past but further legal action may be necessary if our fish stocks are to be protected.

Tertiary sewage treatment should be the objective for major centres in British Columbia. In addition, government should support pilot projects to test alternative sewage treatment technologies, such as solar aquatics, that could provide the highest standard of treatment for many smaller centres across the province.

PULP POLLUTION

FROM HOWE SOUND TO THE NORTH COAST, from the Sechelt Peninsula up into the Interior of the province, some 17 kraft pulp mills continue to discharge the toxic byproducts of pulp manufacturing into local waters. According to Environment Canada, 641 billion litres of pulp million effluent is pumped into rivers and marine waters every year. It contains a variety of toxins, most of them derived from chlorine that is used as a bleaching agent in the pulp manufacturing process.

That effluent is toxic to zooplankton, a key source of food for fish, as well as shellfish. It has also been shown in studies to cause genetic changes and immune system damage in juvenile salmon.

Over many years, campaigns by fishermen and environmental groups have resulted in stricter regulations. Investment by the pulp companies in improved effluent treatment has reduced toxic discharge. But in 2002, the provincial government backed away from a scheduled" zero AOX" regulation that would have virtually eliminated toxic organochlorines from pulp mill discharge. That regulation would have compelled the entire industry to move, as mills in many other countries have already done, to cleaner, more environmentally sustainable methods using oxygen bleaching. Instead, many mills will continue to be among the worst polluters on the North American continent.

PESTICIDES

PESTICIDES AND HERBICIDES, many of which contain cancer-causing, as well as endocrine-disrupting chemicals, can also have devastating impact on any species of fish. Usually the chemicals enter rivers and streams from runoff in agricultural areas such as the Fraser Valley, or in areas along railway rights-of-way where spraying is done to control insects or weed growth.

Research carried out by Fisheries and Oceans in Newfoundland and New Brunswick found that both salmon and herring stocks suffered population declines following spraying with pesticides containing 4-nonylphenol, a common ingredient found in pesticide products. In the Columbia River valley of the U.S. Pacific Northwest, chinook salmon and other marine and aquatic species have suffered reproductive damage linked to widespread agricultural pesticide use.

AT-SOURCE PREVENTION

EVEN WITH TOP-LEVEL TERTIARY SEWAGE treatment, many substances, including endocrine-disrupting chemicals, cannot be removed from effluent. They can only be controlled by removing them from manufacturing processes or keeping them from getting into the waste stream in the first place.

Many environmental groups are working on at-source pollution prevention. Their work also helped win passage of the Canadian Environmental Protection Act 1999, which has led to some controls over many toxic chemicals. The latest is endocrine-disrupting nonyl phenols and their ethoxylates (NPEs). Environment Canada is proposing to phase out the use of NPEs in cleaning products — the largest source — within five years and to eliminate their use in other products in the long term. Much more needs to be done.

Municipal and city governments can be an extremely effective force in controlling pollution through bylaws that limit the release of toxic substances into sewer systems. Many local governments have already taken action to ban the use of pesticides within their municipalities and those initiatives will spread as more people understand the negative impact on the environment as well as human health.

Ordinary citizens can play an important role in pollution prevention that protects fish stocks. These are some of the ways:

- Keep toxins out of your neighbourhood storm drains, including cleaning products, leftover paint or motor oil
- Avoid the use of pesticides or herbicides on your lawn and garden
- Use the safest, most environmentally-friendly cleaning products that you can.

Netpen fish farming

A DECADE AND A HALF AGO, when salmon farming had barely begun in British Columbia, the T. Buck Suzuki Environmental Foundation sent a delegation to Norway, the country that had pioneered salmon aquaculture. The warnings that delegation members sounded then have resonated ever since.

In Norway, they found that the impact of diseases and parasites, which may have been relatively small on salmon species in the wild, suddenly became magnified in the densely populated netpens used by the salmon farming companies. They found that wastes from the fish created a near-wasteland underneath those netpens, often drastically altering the benthic (seabed) environment.

Certainly improvements in salmon aquaculture have been made since then, but fundamental problems and risks remain: the transfer of disease to wild fish, environmental degradation under farm sites, high levels of antibiotic use, and colonization of local streams by escaped farm salmon. Salmon farming is also unsustainable — it takes three to five kg of other fish to make the feed to produce only one kg of farmed salmon.

Some of the worst fears of disease transfer were realized in 2002, when pink salmon returns to rivers in the Broughton Archipelago collapsed, following two years of severe sea lice outbreaks. The lice populations had exploded in the area's salmon farms, and had infected the juvenile pink salmon as they passed the farms on their migration out to sea. In a special report on the issue issued in November, 2002, the Pacific Fisheries Resource Conservation Council linked the pink salmon stock collapse to the sea lice outbreak in salmon farms and recommended that the salmon farms be fallowed — emptied of salmon — during the spring when juvenile wild salmon are migrating out to sea.

Review recommendations not implemented

The Foundation also participated in the 1997 Salmon Aquaculture Review (SAR), which conducted an exhaustive study of the industry. SAR made numerous recommendations to improve the industry's environmental performance, including prevention of fish escapes, strict disease control, measures to prevent pollution under the netpens and a precautionary approach to farm siting. To date, not even half of the SAR's 49 recommendations have been implemented. Only six have been fully implemented.

Despite that, the provincial government made the decision in 2002 to lift the moratorium on new farm sites, allowing the industry to expand to new areas, including the North Coast. Companies are also launching new ventures to farm additional species, including halibut and sablefish. The environmental risk is increasing.

Aquaculture must be sustainable

Regulation and reform of the industry is essential if we are to ensure a future for our wild fish stocks. At the very least, the recommendations of the SAR must be fully implemented. But finfish aquaculture must also be moved to a more sustainable base, which requires that companies:

- Develop technology that eliminates the risk of disease transfer to wild fish and escapes of salmon into the wild;
- Guarantee fish farm waste is not released into the wild;
- Develop fish feed that doesn't deplete global fish stocks;
- Ensure that wildlife is not harmed as a result of fish farming;
- Eliminate the use of antibiotics in fish farming;
- Respect the views of coastal residents and not locate farms where First Nations or other communities object.

Urban development

THE POPULATION OF BRITISH COLUMBIA has grown exponentially in the last quarter century and every upward shift on that population graph has meant more urban development — housing, shopping malls, highways and warehouses. Wetlands are paved over and creeks are diverted into culverts impassable to fish. Small streams dry up early in the spring as streambank vegetation is removed and groundwater is lost to development. Storm drain runoff pollutes rivers and streams — even marine areas.

Over the last century, 82 per cent of the salt marshes in the Fraser River estuary have disappeared as industrial and residential buildings have gone up and roads have been built to service them. In addition, 95 per cent of the wetlands in the North Arm of the Fraser River have been lost to urban development. A detailed study conducted in 1997 by Fisheries and Oceans Canada found that 117 of the 779 streams that originally existed between Hope and the Strait of Georgia had been completely lost to urban development. Another 375 streams were classified as endangered.

Development affects many species

Chinook and coho salmon face the greatest risk from development since they spend longer periods in fresh water than other salmon species. Coho often inhabit small streams year round. But urban development has an impact on many fish species.

Maintaining fish habitat requires a two-pronged approach — rehabilitating streams that have been degraded through development, and controlling urban development to ensure that it doesn't lead to further habitat loss.

Many initiatives during the 1990s were successful in cleaning up urban streams and rebuilding fish populations before funding was cut by both the federal and provincial governments in 2001. Many groups are working hard to convince Ottawa and Victoria to restore that funding and the programs it supported.

In January 2001, the provincial government introduced one significant measure aimed at protecting urban streams. Known as the Streamside Protection Regulation, it directs municipalities to maintain a protected riparian area alongside fish-bearing streams to ensure habitat is not lost to development. Developers have lobbied to have the regulation scrapped, but streamkeeper groups are also pressing municipalities to keep regulations in place and ensure that streams are protected for the future.

Municipalities leading the way

In fact, some municipalities, such as the District of North Vancouver, have for many years had their own regulations. They include requirements for a protected setback area around all streams, as well as provisions to ensure that stream flows and water quality are taken into account during the planning process. Those regulations must become more widespread if vital fish habitat is to be maintained.

Storm water is another area where municipalities are on the front line when it comes to protecting fish. Development of parking lots, roads or building roofs create what are known as "effective impervious areas" (EIAs) that prevent rain from soaking into the ground as groundwater. Storm drains themselves can carry pollutants, including motor oil and other toxic substances.

Municipal councils can take a pro-active approach to habitat protection by taking an ecosystem-sensitive approach to planning to ensure stream flow protection in planning. The regular use of filters on storm drains — especially when road building or other construction is underway — as well as education programs that encourage residents to keep toxins out of the drains are also important measures on which municipalities can take leadership.

Oil, climate change

AFTER THREE DECADES OF QUIET, the clamor to open up offshore oil exploration is again being heard in the lobby rooms of government, posing yet another threat to fish stocks.

In 1971, as oil prices were soaring and the U.S. was moving to tap the vast Alaskan oil reserves, the Canadian government wisely decided to impose a moratorium on oil exploration off the West Coast. Ten years later, the B.C. government issued an order-in-council imposing its own moratorium on oil drilling.

Both governments acted for the same reason that prevails today — a major oil spill, which is virtually the inevitable result of exploration and development, would devastate our coastal ecology and damage our fish stocks for generations.

Oil companies made earlier attempts to have the moratoria lifted but they were dropped as millions of litres of black crude oil washed ashore following the catastrophic Grays Harbour and Exxon Valdez oil spills. Now, after the images of fouled coastline and oil-blackened birds have faded from public memory, advocates of oil exploration are saying that technology can solve many of the problems.

No technological fix

Put to close analysis, however, that claim has little credence. A report prepared for the provincial government in 1996 by a private consultancy group, The Canadian Oceans Frontiers Research Foundation, acknowledged that there was no reliable information on the "distribution, abundance and behaviour" of marine species in the waters where exploration would take place. It also warned that no "acceptable levels of environmental risk" had been developed for offshore oil and gas exploration.

In fact, numerous research studies by U.S. researchers have shown that even minute amounts of oil — as low as one part per billion — can results in birth rate declines and stunted growth among juvenile fish, including salmon and herring. The effect is felt throughout the marine ecosystem, from shellfish through large groundfish such as halibut. And even after an oil spill has been cleaned up, toxic substances known as polycyclic aromatic hydrocarbons (PAHs) remain.

Even the seismic testing used to map potential deposits of oil and gas has been shown to affect various fish species. Chevron, one of the companies proposing to explore in Hecate Strait off the Queen Charlotte Islands, has stated that its initial tests would cover 5,200 kilometres of ocean floor. Every three to six km along that distance, the company could fire as many as 36 seismic guns at high pressure every 15 seconds, creating an effect like a firing range.

CLIMATE CHANGE

THE NEW PROPOSALS TO OPEN UP OFFSHORE oil and gas exploration also come at a time when the world's faces a new environmental crisis — global warming. The evidence from the world scientific community is irrefutable: without action to curb greenhouse gas emissions, global temperatures will rise at an accelerating pace.

A report produced by the U.S. Natural Resources Defense Council in 2002 showed that nearly half the fish habitat in the U.S. could be lost over the next 80 years through global warming. Other reports have warned that sockeye could be eliminated from all waters south of Alaska by 2050.

Canada has ratified the 1997 Kyoto Accord on Climate Change, which calls on Canadians to reduce greenhouse gas emissions by 5.2 per cent by the year 2010. Programs to achieve that goal will move us towards energy conservation but if we are to protect our fish stocks and fish habitat, those programs can only be a starting point. We should insist that the moratorium on oil and gas exploration be maintained and look at every opportunity to reduce fossil fuel use by developing alternative energy, including wind and tidal power.

Hydro dams, mining

HYDROELECTRIC POWER PROJECTS IN B.C. may not have wreaked the destruction on fish stocks that they have on rivers such as the Columbia in the U.S. But they still exact a toll in reduced water flows and altered fish habitat — and new private generating proposals may bring new environmental risks.

For years, B.C. Hydro took 30 per cent more water than its water licence permitted out of the Cheakamus River, to the detriment of pink salmon stocks. A subsequent audit found that dozens of salmon runs had been compromised by B.C. Hydro's overuse of water. And that's only part of the picture — there are currently 40,000 water licences registered in the province, each one of them granting the holder the right to access to British Columbia's rivers and lakes. In the cases of some B.C. rivers, every litre of water is allocated to licence-holders.

Private power generation

Private power generation policies proposed as part of the B.C. Hydro de-regulation have also raised concerns about the impact on the environment and fish.

One of the consequences of looking to private producers for new power generation is that there is less emphasis on conservation, which most environmentalists agree is the most effective way to meet energy demand. The Energy Task Force, in its report in November 2001, also recommended that coal be used more widely for power generation — a recommendation that flies in the face of the Kyoto Accord and the urgent need to address the issue of global warming.

Micro-hydroelectric power projects that use run-of-the river generators to provide power are emission-free. But there are few guidelines on how they will be used in smaller streams. As one installation in Pemberton's Miller Creek demonstrated, sedimentation can affect spawning habitat. And even the smaller dams and water release system for streamside generation will have a significant impact on water flows — and fish habitat.

Any proposed private energy projects that have potential impacts on fish must be subject to rigorous environmental assessment to ensure that fish stocks are not paying the price for private power.

MINING

BETWEEN 1964 AND 1966, two joint venture mining companies strip-mined copper ore out of the side of Mt. Washington, at the headwaters of the Tsolum River. Although the mine only operated for two years, it has left a legacy of destruction that continues today. The big runs of pink, coho, chum and steelhead that once thrived in the river are now virtually extinct as a result of highly toxic acid mine drainage (AMD) that continues to pour out of the mine site years after the closure.

Up the Island at Westmin Resources' Myra Falls silver-zinc mine, previous owner Western Mines continued to dump mine tailings into Buttle Lake in Strathcona Park despite warnings about growing lake pollution. It was only stopped by Fisheries Act charges and a subsequent conviction.

The cases demonstrate the environmental problems of mining in B.C. Toxic tailings and AMD — the chemical result of water and oxygen reacting with exposed sulphide ores — are virtually inevitable whenever hard rock mining is carried out in the rainy climate of coastal British Columbia.

The environmental impact must be measured and addressed before any prospective mine in launched. That must include holding mining companies responsible for treating any AMD, and for paying the full environmental cost of containment and cleanup. The full force of the Fisheries Act should also be applied to protect fish habitat.

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