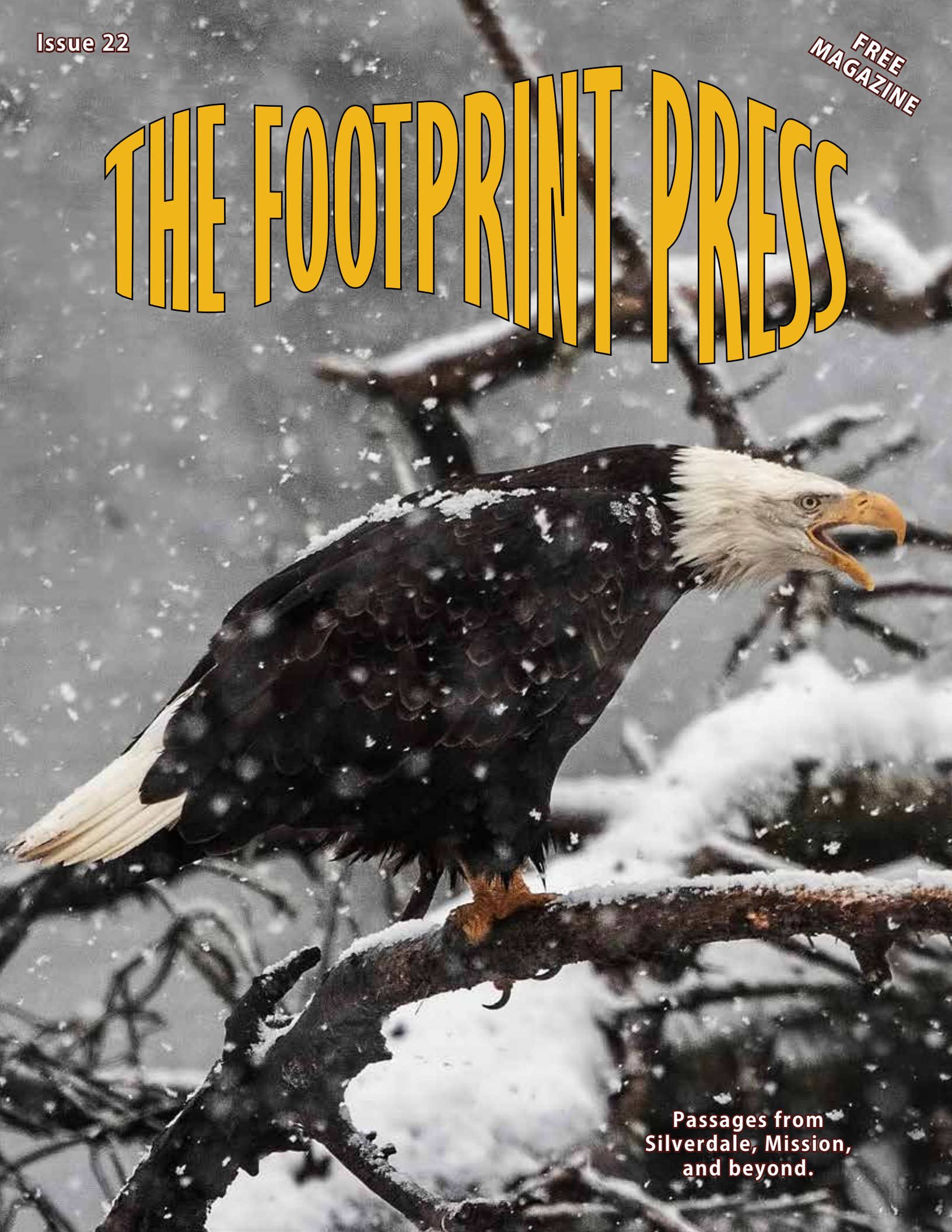
Issue 22

FREE MAGAZINE

THE FOOTPRINT PRESS



Passages from Silverdale, Mission, and beyond.

Message from the Editorial Committee

The forests of the earth protect and support life in a myriad of ways. Leaves from trees and plants create soil, and their root systems hold it in place. Without their embrace, the soil quickly desiccates and erodes away in enormous dustbowls or landslides. Trees also bring us fresh water by capturing and condensing water vapour from the atmosphere. They regulate the temperature of the planet by creating shade on hot days and warm their surroundings when it is cold. Literally, the planet's lungs, trees and other plants absorb carbon from the atmosphere and release oxygen into it. In doing so they create the air that we breathe and serve as a powerful force of nature that counteracts climate change. All the food we eat, the water we drink, and the air we breathe can ultimately be traced back to the services provided to us by trees and other plants.

The relationship between plants and animals goes back to the very beginning of life on earth and both have co-evolved in complex and surprising ways. Even wild salmon are creatures of the forest. They are born there and they die there, nourishing the trees with their bodies as the cycle of life continues. Indigenous people have long understood the value of the "rooted ones" as medicine to keep us healthy. Western science is just starting to learn some of the physical and mental health benefits that come from time spent in the forest. We feel better, and recover from health problems quicker, when we spend time in green spaces.

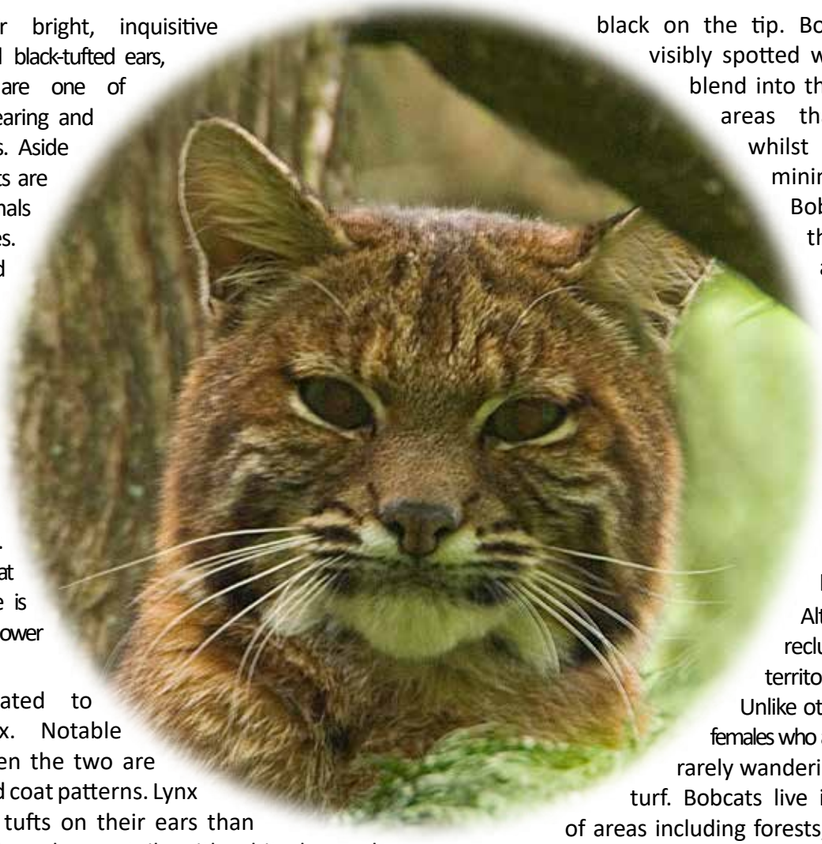
Given the priceless services provided by trees and plants, it is alarming how little protection we give them. Since human beings began clearing trees we have lost over half of the world's forests, most of which was logged in the past 50 years as human populations exploded. Deforestation is directly responsible for over 20% of the world's greenhouse gas emissions and billions of tons of carbon is released each year into the atmosphere when we cut and burn trees. With the loss of the forests there have been devastating changes to the balance of nature, including large scale extinction events, drought, desertification, flooding, insect and disease outbreaks, famine and ultimately social conflict and war.

Ancient people considered Oak trees and giant Redwoods to be sacred. Our local Indigenous people referred to Cedars as the "Trees of Life". It is time to get serious about protecting trees, plants and forests. We need them more than any of us realize, and we cannot live without them.

Black bear eating salmon photo courtesy Mike Stefiuk

Front cover- Bald eagle photo courtesy Rick Skerry, Mission

Lessons from our Local Wild Cats



With their bright, inquisitive eyes and black-tufted ears, bobcats are one of Canada's most endearing and mysterious creatures. Aside from mating, bobcats are shy, reclusive animals that live solitary lives. They tend to avoid humans with almost no incidences of conflict. Although not currently endangered in Canada, bobcats are routinely killed for their pelts and current trapping methods are not for the faint of heart. As a totem animal, bobcat reminds us that there is strength in silence and power in patience.

Bobcats are related to the Canada lynx. Notable differences between the two are in the ears, tails and coat patterns. Lynx have longer black tufts on their ears than bobcats. Bobcats have longer tails with white beneath the black tip, whereas lynx have shorter tails and only black on the tip. Bobcats' coats are visibly spotted which helps them blend into the rocky, forested areas that they prefer, whilst the lynx has minimal spotting. Bobcats are smaller than the lynx with an average weight of 7-14 kg: slightly more than a large house cat.

Bobcats possess keen sight, a strong sense of smell, and excellent hearing. They are agile dimbers and proficient swimmers.

Although largely reclusive, male bobcats' territories often overlap. Unlike other felines, it is the females who are most territorial; rarely wandering onto another's turf. Bobcats live in a wide variety of areas including forests, coastal swamps, desert and scrubland. This shy, solitary carnivore spends most of its life foraging for food. They patrol their territory at dawn and dusk which allows them to sneak up on rabbits, squirrels, and other small animals; pouncing when opportunity arises. A bobcat can take down a small or weak deer, but since they can only eat about 1.4 kg of meat at a time, this is uncommon. In such cases, they will drag the remaining meat away and hide it for later consumption.

Bobcats have litters of 1-6 kittens, usually in early spring. The kittens begin eating solid food at around two months old and begin learning to hunt at five months. Scientists estimate that a mother bobcat and her three kittens will eat a minimum of 3800 rats, 3200 mice and 700 rabbits in one year. Talk about natural rodent control!

Bobcats have few natural enemies. Occasional attacks from cougars and coyotes occur while attempting to snag young kittens, but as with much of our wildlife, the bobcats' greatest threat walks on two legs.

In addition to the threat of human development and urban sprawl, bobcats are not protected in many areas and are frequently killed for their fur. Although the population is currently not at risk, wildlife proponents are concerned with prevailing trapping methods. Canada no longer permits steel-jawed traps, but the alternatives are no less grisly, and all traps are inherently nonselective: they catch many unintended animals. Our government doesn't collect statistics, so there is no indication of how many pets are caught in traps across Canada. This is an issue, as it creates no motivation for trappers to report non-target catches, such as dogs and cats, or endangered species (which could result in penalization). Animals caught in leg-hold traps suffer broken bones, torn ligaments and many animals chew through their own limb to escape; especially mothers desperate to return to their young. Trappers are required to check these traps from every 3 days up to every 14 days, leaving the caught animal to endure extreme physical trauma, dehydration, exposure to severe weather, and predation by other animals, until the trapper returns.

Trapping enthusiasts may claim economic reasons for this endeavor, as well as suggesting that the industry supports indigenous populations, but less than 2% of Canada's indigenous population is involved in the fur trade.

As a totem animal, bobcats teach us that to obtain what we want, we must be willing to plot, adapt, and most importantly, exercise patience. Bobcats nudge us to be more playful in our daily life, breaking out of our predictable patterns. For those who dislike being alone, bobcats remind us that one is never alone. In the wilderness, one is surrounded by The Creator, ancestors, and familiar energies. The totem medicine of bobcats exposes individuals trying to conceal hidden agendas by patiently waiting for these people to unmask themselves, which they inevitably do. These messages, received through silent observation and patience, allow situations to unfold as they are meant to, and provide valuable lessons to us.

Bobcats are one of many wild inhabitants that help to keep our ecosystems balanced. In areas that are short on predators, smaller animals rapidly increase in population size. Can we contemplate more compassionate ways to celebrate this enigmatic creature? What other gifts

Bobcat photo courtesy Bruce Klassen, Silverdale

Bobcats photo courtesy Nick Lanfear, Surrey

does the bobcat share with us through totem medicine? Perhaps we can look to the bobcat as an important lesson in patience, independence, and resilience rather than a fashionable commodity.

Carrie Besko, Deroche

To view trapping incidents reported to the media involving companion animals being caught (and often killed) in traps please visit: http://thefurbearers.com/trapping-and-wildlife/trapping-incidents

Bobcat photo courtesy Mike Stefiuk

Sprawl Report: Mission needs a tree protection bylaw!

Mission is bestowed with superior natural beauty. Its extensive forest canopy includes mature conifers, some of which are hundreds of years old, making Mission the green jewel of the Fraser valley. Proximity to trees has proven mental and physical health benefits for Mission residents, increases property values, and raises the quality of life of citizens. Trees and forested areas also provide important habitat for birds and wildlife, including several listed species known to live in Mission's forested areas. Trees in riparian areas contribute to healthy streams and wetlands by providing shade and food for frogs, other amphibians, and fish. The Stave river, Silvermere lake, Silverdale wetlands, and several tributaries of the Stave and Fraser rivers are important spawning areas for wild salmon and provide rearing habitats for salmon and sturgeon fry.

Given the sensitivity of Mission's natural environment, it is surprising and alarming that, unlike virtually every other community in the Fraser valley, Mission has little or no tree protection. Only the Silverdale area has a tree bylaw, adopted in July 2006 as an emergency response to reports of Genstar development company logging, prior to required environmental studies and base map being completed.

Sadly, large clear cuts can be seen all over Mission including off Stave lake street, Keystone avenue, Nelson and Wilson street, which was recently logged and then put up for sale. Tree cutting before development approval has even occurred on environmentally sensitive Silvermere island, close to nesting eagles during a very critical time for these birds. This rampant cutting of our community's trees is unfortunate, as destruction of forested areas for development prior to public engagement, proper environmental assessment, and development permits, risks harming Mission's listed and endangered species.

On Nov. 6/17 CAUSS received a call alerting us to extensive logging of mature cottonwood trees within the riparian area of the Fraser river. The trees were cut for about 500 meters, to the waterline, in the location of the Mission raceway. CAUSS alerted Mission staff who initiated a formal complaint to the provincial RAPP reporting line. According to records obtained under Freedom of Information, the Natural Resource officer, Michael Sidow, who attended the scene was told that the owner had contacted DFO but had received no authorization to do the clearing and had not contacted the province or received a provincial permit. The officer apparently ticketed the owner for a contravention under the Water Act. The ticket for destroying such an extensive amount of riparian area was a mere $230, served at a local Tim Hortons. Despite evidence of serious harm to the shoreline, the records do not indicate any order for restoration or replanting.

On April 16/18, CAUSS was alerted to logging of aged cedar and other significant trees on the property adjacent to Hayward street and the Lougheed Highway. To our knowledge, disturbance caused by the logging, use of heavy equipment, and removal of stumps was done without consent of First Nations, despite archeological evidence of 10,000-year-old artifacts on the site, known internationally as the "Hayward connector" site. We alerted Kwantlen First Nation and Missions' Environmental Manager Barry Azevedo who advised us that the area was subject to Silverdale's tree protection bylaw. However, Mission bylaw officers claimed that because many of the logs and stumps had been removed, they could not be sure that a provision in the bylaw, which allows 5 trees/acre to be cut to a maximum of 50 trees/parcel per year without a permit, had been exceeded.

A few weeks later in May /18, citizens reported that logging was now occurring on Silvermere island, arguably the most environmentally sensitive area in all of Mission. To our knowledge, there had been no development application submitted yet and this disturbance had not been directed by a qualified environmental professional despite knowledge that the area supports several species at risk and contains a watercourse. We were sent photos and reports by several citizens showing numerous large cedar, fir and maple trees which had been cut all over the east side of the island- many of them hundreds of years old. This disturbance had been occurring during the sensitive bird nesting season. We were told by renowned eagle biologist, David Hancock, who has monitored two eagle nests located on the north and south sides of the island for over 10 years, that this was a critical time for eagles who had newly hatched chicks and was shocked that trees had been cut less than 10 meters from both eagle nests. The province's ***Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia (2013)*** recommends a minimum setback of 200 meters during the breeding season.

This destructive and disruptive activity on the east side of the Island is completely at odds with the good work Mission had done to partner with the Fraser Valley Watershed coalition, Seyem' Qwantlen Business group and others, to enhance salmon habitat on the west side of the same island. We contacted Drew Atkins of Seyem' Qwantlen Business group who confirmed that no consent for the logging had been given from Kwantlen First Nation despite the environmental and cultural significance of the Island, and despite them owning the west side of Silvermere island. Barry Azevedo, Mission's environmental manager told us the Silverdale tree bylaw does not apply to Silvermere island, and therefore there was little the District could do.

These actions, and many other incidents, reveal a serious loophole in Mission's development approval process as it pertains to protection of environmentally and culturally sensitive areas. Therefore, on May 23/18, CAUSS sent formal correspondence to Mr. Azevedo and Mission Council urging staff to adopt a comprehensive and enforceable tree protection bylaw as recommended in our new Official Community Plan which describes the need for tree protection and measurement of the tree canopy (see section 4.1.15) and creation of a tree protection policy or bylaw (4.1.17). The letter was discussed at the June 4th/18 council meeting. We were encouraged when council requested staff report back with options to address tree cutting in a comprehensive and fair manner. However, CAUSS is growing increasingly concerned that to date, over 5 months since the letter appeared on the agenda, no staff report has come forward, and planning staff have begun to express reservations about the "costs of tree bylaw enforcement".

We clearly need a District wide enforceable tree bylaw to close the loophole in the development planning process. Mission's existing tree bylaw is not enforceable. The current allowance of cutting 5 trees/acre to a maximum of 50 trees/parcel/year without a permit is far too high, particularly in cases where the loggers remove stumps as they go. The current bylaw only applies to Silverdale, and therefore is unable to control tree cutting in other areas, including those undergoing comprehensive and neighbourhood planning. If Mission intends to unleash a tide of speculation in Silverdale with an influx of tax payer funded infrastructure planning, Mission must also take steps to ensure that the loophole in the development approval process created by having an unenforceable tree bylaw is corrected. Otherwise our environmental policies are meaningless. Simply telling developers that they may not receive approvals if they clear their properties prior to submitting a development application would not deter those intending to sell their properties after land clearing.

Without an enforceable tree bylaw, the district has no way of stopping or controlling destruction of sensitive or culturally important areas as we have sadly learned from the Hayward connector, Silvermere Island and other areas of Mission.

Without an enforceable tree bylaw our much-valued tree canopy could be lost prior to a development application being submitted, thereby bypassing the requirements for tree retention.

Without an enforceable tree bylaw, destruction of sensitive areas could also occur prior to neighbourhood planning studies being completed, thereby eroding Mission's ability to protect habitat of at-risk species.

Our helplessness in stopping the cutting of trees on the Hayward connector and Silvermere Island signifies that the bylaw should be given high priority. There is evidence that delaying implementation of tree protection bylaws can result in an acceleration of logging prior to the bylaw taking effect.

The fact that most communities in the Fraser Valley already have tree protection bylaws in place proves that adopting one will not stop development. Tree bylaws are a basic and fundamental planning tool, necessary for any community professing to develop in a responsible manner. Indeed some communities like Abbotsford are concerned that they are rapidly losing their tree canopy and are calling for stronger tree protection bylaws. https://www.abbynews.com/news/abbotsford-has-lost-more-than-7-of-its-tree-cover-since-2005/

Ironically it is the abundance of our trees that may lead some to take them for granted. However, the time to protect trees and sensitive habitat is while they still exist.

Council needs to act now if we are to safeguard Mission's environmental heritage and protect our trees!

Tracy Lyster, CAUSS, Mission

Citizens concerned about the lack of tree protection in Mission should contact planning staff and Mission Mayor and Council.

Dan Sommer, Director of Development Services

Email: dsommer@mission.ca
Phone: 604-820-3747

Mission Mayor and Council

Email: info@mission.ca

Bald eagle photo courtesy Rick Skerry, Mission

The Heart of the Fraser Being Destroyed by Development

Every spring hundreds of millions of juvenile salmon make their way down the Fraser River past Mission to the Pacific Ocean in order to rear in marine environments before they come back as adults. Indeed, in some years this value exceeds 1 billion baby fish.

With the exception of the salmon that are part of the Stave, Coquitlam, Pitt/Alouette and Salmon (Langley) rivers, all of these anadromous species (i.e., fish born in fresh water that migrate to the ocean) produced upstream of Mission pass through a network of islands and wandering channels that make up the physically-complex habitat area from Mission to Hope. Scientists refer to this stretch of the Fraser River as the "gravel reach" as this is the substrate-type that dominates the stream-bottom composition.

Advocates of protecting this astonishingly important and productive keystone part of the Fraser River now refer to it as the *Heart of the Fraser*.

Andrew Wright photo courtesy Watershed Watch Salmon Society

This Heart of the Fraser floodplain feature, of many channels and islands, was once massive as the river flooded across much of the Fraser Valley during the largest of spring freshets. These ecologically rich floodplain features have largely been lost (est. >90%) due to diking, draining and armouring. Nevertheless, around five groups of floodplain islands between Hope and Mission still remain but these are now also under threat.

The Heart of the Fraser is home to around 30 species of fishes, and also a myriad of plants, invertebrates, mammals, and other organisms that make it one of the most unique assemblage of organisms of its type on earth. Many of these organisms are listed as "Species at Risk". Indeed, around the world, large gravel-bedded rivers with unimpacted mid-channel islands are very rare and considered to be an endangered physical ecotype.

Part of the ecological function of having these large islands unarmoured and undiked is to allow the spring freshet to flood over top of them with water, during the snowmelt months and allow them to be accessed by juvenile salmon that are migrating downstream. This is highly productive habitat for these fish during this important transitional phase.

The inundated islands and floodplains outside of the dikes are often used by many rearing juvenile salmon particularly Chinook, Coho and Sockeye salmon. Still, many other species of fishes and floodplain organisms are also adapted to this key and critical aspect of off-channel flooding as well. The floodplain vegetation, the warmer water, insects and abundant nutrients all combine to make this a rich nursery area for the many plants and animals that live here. Another freshet-adapted species is the White Sturgeon and during the spring freshet the spawners in the lower Fraser River mostly reproduce within the large secondary side channels that make up the inner perimeters of these islands. The recently hatched free-feeding and swimming larvae may also be utilizing the tops of the islands for a short period during freshet after transforming from a yolk sac larvae, but before becoming a White Sturgeon fry and moving into the main channel.

Unfortunately, almost no research has been conducted for many of these fish-use aspects of their Heart of the Fraser habitat biology and our knowledge of what little remains of this once-spectacular floodplain ecosystem is woefully inadequate. The British Columbia Institute of Technology's Fish Wildlife and Recreational Program is an exception to this and has been one of the few groups that has been studying this issue. It has been gathering such knowledge and we are working hard to expand the information base.

One of the dominant remaining habitat features within the Heart of the Fraser has been the large undeveloped, un-diked and un-developed islands adjacent to the main channel of the stream and mostly occurring in the Agassiz-Chilliwack-Mission area. Until recently, a number of these large islands within the Heart of the Fraser were utilized by the pulp and paper industry as softwood plantations under the aegis of Tree Farm License (TFL 43).

Figure 1. Extra-ordinary damage to the floodplain ecosystem on Strawberry Island at Nicomen Slough, Mission

While the environmental management of these islands during the years of forestry production was not ecologically perfect, these features remained undiked, unarmoured and were allowed to naturally aggrade and erode, aspects which are critical to the proper ecological functioning of this stream environment. However, over the last several years, with the sale and subsequent purchase of a number of these islands for agricultural interests, some of the islands have been rapidly cleared for farming, including Strawberry, Carey and Herrling islands (see Figure 1).

One of the issues regarding the clearing of these islands has been the damage to the riparian and freshet flooded areas. This activity appears to be Serious Harm violations under the habitat provisions of the *Canada Fisheries Act*. Despite numerous efforts at communication to the various authorities and Minister responsible under this important legislation, it appears little is being done to address this outstanding *Canada Fisheries Act* issue. It is important to write or call Hon. Minister of Fisheries and Oceans Canada, Jonathan Wilkinson, and let him know your objection to this damage.

A second issue that is current and ongoing are applications for permanent bridges to these islands in order to have year-round access. Construction of bridges to these islands would make it economical to develop them into farms similar to the mainland agricultural infrastructure that we currently see in the Fraser Valley. This would also destroy the last vestiges of one of the world's most unique salmon and sturgeon ecosystems, that being the Heart of the Fraser. Currently, under *British Columbia Water Act* legislation, there are applications to approve bridges on Carey and Herrling islands. Concerned people need to call and write their Hon. Minister of Forests, Lands and Natural Resources Operations and Rural Development, Doug Donaldson, and emphasize that he must reject any applications for the development of such bridges.

If these islands continue to be cleared and developed, the Heart of the Fraser will be forever damaged for our children and grandchildren. The development of these islands will be the final destruction of a unique salmon and sturgeon ecosystem that used to be valley-wide, from Hope to Mission.

Dr. Marvin L. Rosenau, B.Sc., M.Sc., D.Phil.

Instructor in the Fish Wildlife and Recreation Program (FWR) at the British Columbia Institute of Technology (BCIT).

You can let your concerns be known by **signing the petition** for the Defend the Heart of the Fraser campaign https://www.heartofthefraser.ca/.

Also see https://www.facebook.com/heartofthefraser/

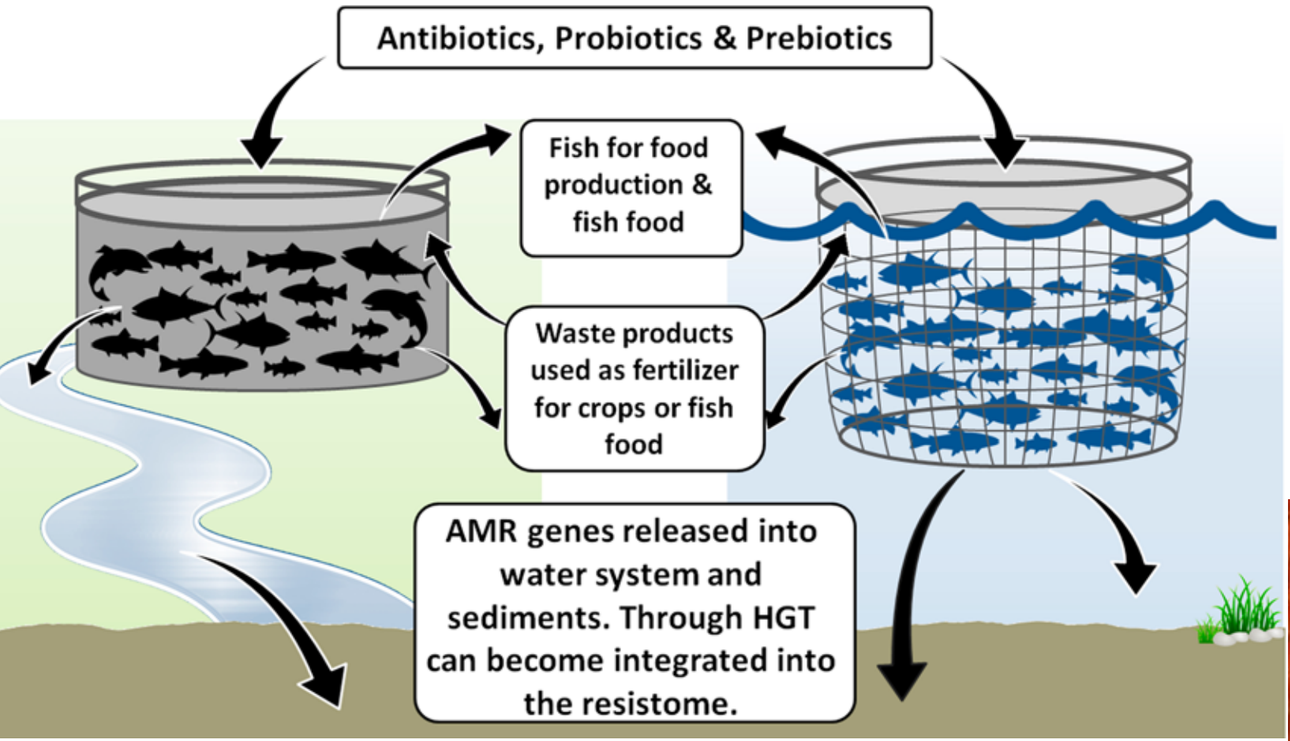
Minister of Fisheries and Oceans Canada, Jonathan Wilkinson,

Email: JONATHAN.WILKINSON@PARL.GC.CA

Hon. Minister of Forests, Lands and Natural Resources Operations and Rural Development, Doug Donaldson,

Email: doug.donaldson.MLA@leg.bc.ca

Sturgeon Sky-Ronnie Dean Harris



Pathways of antimicrobial resistance (AMR) genes from closed and open aquaculture systems into the water and sediment environmental resistome (From Watts et al, 2015)

Antibiotic resistance in open-net salmon farms and the threat to human health

It is well understood that the use of antibiotics in open-net pen salmon aquaculture promotes antibiotic resistance. Conventional salmon farms are termed 'antibiotic resistance hot spots' and contribute to the increasing failure of human medicines. Many of the antimicrobials authorized for use in farmed fish (e.g., oxytetracycline, fluorfenicol, and amoxicillin) are all medically important for human use. The persistence and proliferation of antibiotic resistance in the environment represents a global health crisis, with a current estimate of 700,000 antibiotic resistant deaths annually and estimates indicate this will increase to 10 million deaths per year in 2050 (Watts et al, 2017).

From extensive studies in Chile published over the last decade, we know that elevated levels of bacteria with antibiotic resistance are found in marine sediments from salmon aquaculture and non-aquaculture sites. This suggests that dispersion of antimicrobials used in salmon aquaculture has created selective pressure to promote antibiotic resistance in areas of the marine environment far removed from the initial site of use of these agents (Shaw et al, 2014). The prolonged use of antibiotics in aquaculture increases the selective pressure on bacterial populations, even with low dose use of antibiotics as in Canadian aquaculture. Due to antibiotics being relatively stable and non-biodegradable, residual antibiotics can remain in marketed fish and shellfish for human consumption. Researchers have measured low but significant levels of tetracycline (oxy- and 4-epioxytetracycline), macrolide (virginiamycin), and sulfonamide (sulfadimethoxine/ormetoprim) antibiotics in samples of farmed salmon from 11 countries including the US, China, Mexico, Thailand, Scotland, and Canada (Done and Halden, 2015).

The transfer of antibiotic resistant genes therefore from farmed fish to human and animal pathogens would have a detrimental effect on fish (both wild and farmed) and human health. Even when antimicrobials not associated with antimicrobial therapy in humans are selected for use in aquaculture, once the acquisition of antibiotic resistance to one antimicrobial within a class occurs, cross-resistance often follows. The clear and transparent use of antibiotics, as well as the development of farming methods that do not require antibiotic use, is urgently needed in Canadian salmon aquaculture.

Dr. Claudette Bethune

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When dining in or out, always choose wild salmon

OUR ROUTES

It was late at night in the tall grass
The stars - my windows
My blanket - the sky above
I was in the womb of Love

Earlier in the day I sat in the shade
Of my own family tree
Wondering where to place me

Through these hard times,
I faced hard times blind
I didn't know
Because in my mind,
I took a turn at every sign
Now I hear the wind blow

And I can branch in all directions
And I can plant my roots
And watch them grow

Rob Taylor, Maple Ridge

Rooted One- Corrine Devi https://www.facebook.com/yougivemelovegasms

Interesting facts about the native trees of the Fraser valley

Western Red Cedar

-these trees can live for 1,000 years
-the inner bark was traditionally used to make rope and baskets
-mold does not grow on the bark
-it is British Columbia's official tree

Douglas Fir

-many creatures eat the seeds of this tree including squirrels, shrews and winter wrens
-named after Scottish explorer/botanist David Douglas
-the Fir is one of the sacred trees of the Celts and a symbol of honesty and truth
-the word fir comes from the Old Norse word fyri (part of the word fyriskogr) meaning fir wood
-the life span is 500-1,000 years

Western Hemlock

-this tree is an important food for deer and elk
-the bark was traditionally used by some Coast Salish people to make a dye to colour mountain goat wool and basket materials
-the life span is 400-500 years

Astounding facts about trees

The earth has more than 60,000 tree species.
More than half of all the species exist in only one particular country and are therefore very vulnerable
Adding 1 tree to an open pasture can increase its bird biodiversity from zero to as high as eighty.

On average, one tree produces nearly 260 pounds of oxygen each year. Two mature trees can provide enough oxygen for a family of four.- *Environment Canada*

Ann Murdoch, Mission

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The Footprint Press is published by the Citizens Against Urban Sprawl Society (CAUSS), as a non-profit community magazine. Articles, artwork and photography, are submitted by local activists, scientists, First Nations and other dedicated people, wishing to share their vision of a more just and informed society, and who seek to live harmoniously with nature in a shared environment. Circulation is 2000+. The paper can also be viewed on-line, in colour, at FootprintPress.ca or contact us at b.causs@gmail.com or 604 820-7592. Donations to help cover our printing costs are appreciated but not solicited. The opinions expressed in this publication are those of the authors and do not necessarily reflect the publishers as a whole or individually.

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Eagle mask, Rocky LaRock, Sts'ailes