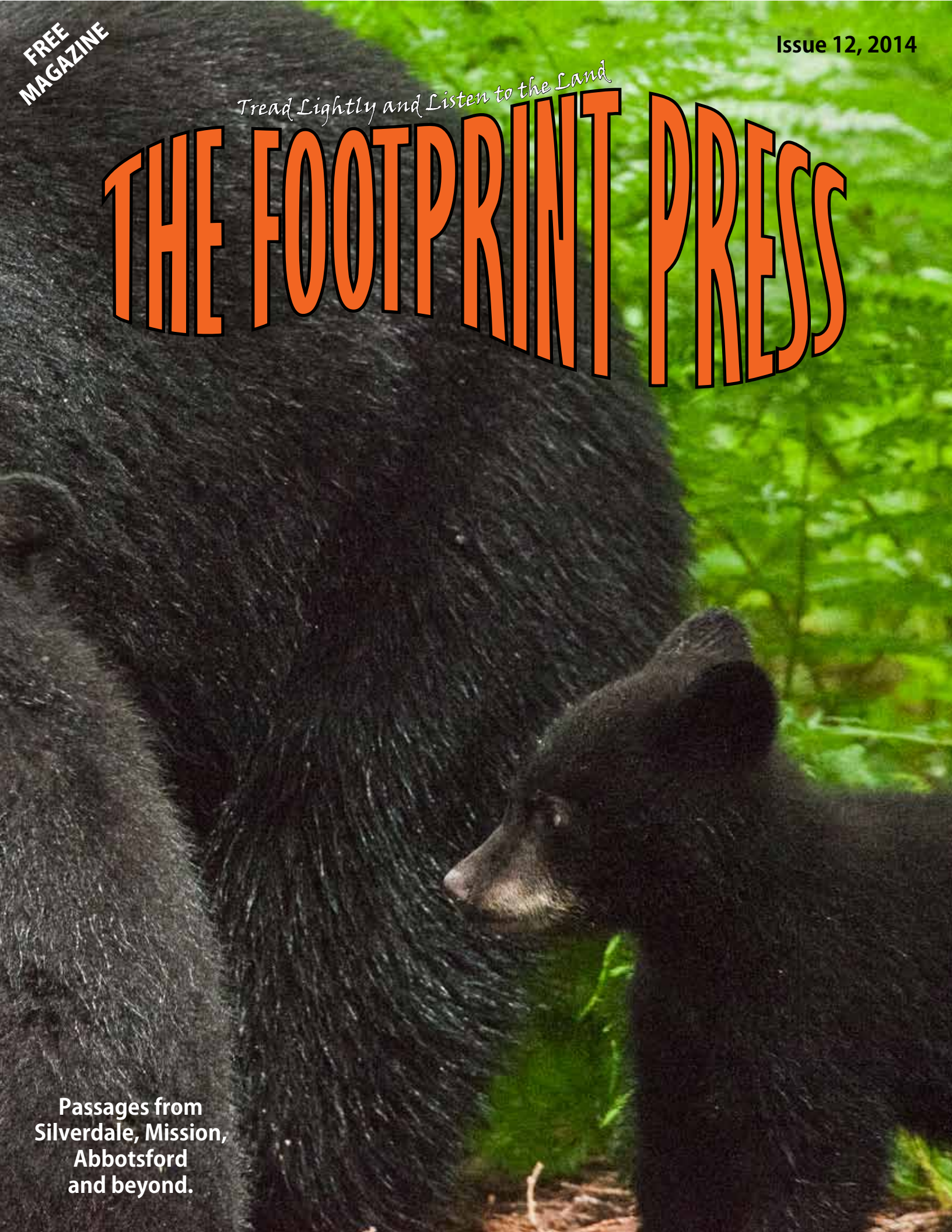
FREE MAGAZINE

Issue 12, 2014

Tread Lightly and Listen to the Land

THE FOOTPRINT PRESS



Passages from Silverdale, Mission, Abbotsford and beyond.

Message from the Editorial Committee

The forests of the Fraser valley are a cherished refuge from the hectic pace of urban life. Nourished by the bounty of wild pacific salmon streaming deep into the forest along the tributaries of the Fraser river, the forest, in turn, provides food, and a haven, for a myriad of common, and at risk, species. Giant ancient trees are part of a complex system, which also includes plants with powerful medicinal properties, and tiny creatures, all of which have a purpose, and a function, within the system. The powerful forest ecosystem cleanses all of our water and purifies our air. But widespread, industrial scale logging threatens the home of thousands of eagles, and all that depend on our forests. Will we loose all of the forests' gifts and services just as we are beginning to realize their importance and value? Before its too late, will we learn to see the forest for the trees?

**Photo TJ Watts,
Ancient Forest Alliance**

**Wrap around cover photo: Black bear family in Silverdale,
Bruce Klassen**

The Medicine Walk

A Medicine Walk brings me to thoughts of teachers and thankfulness. I wouldn't be here doing a Medicine Walk without great teachers in my life, such as my mother, Ida (Wik-Tna a seq-Nakoo), meaning "Light Shining on the Water".

A Medicine Walk is traditional knowledge and ways to preserve food and medicine, along with good thoughts. A Medicine Walk is a walk respecting the healing practices of Mother Earth. Amongst First Nations people, natural medicine and its therapy, create a lifestyle of being: herb, tree bark , and roots. We are taught to respect the land because Nature's food feeds our spirit and fills our fridge and medicine cabinet. The elders say "Leave the forest the way it was because you wouldn't move anyone's house furniture".

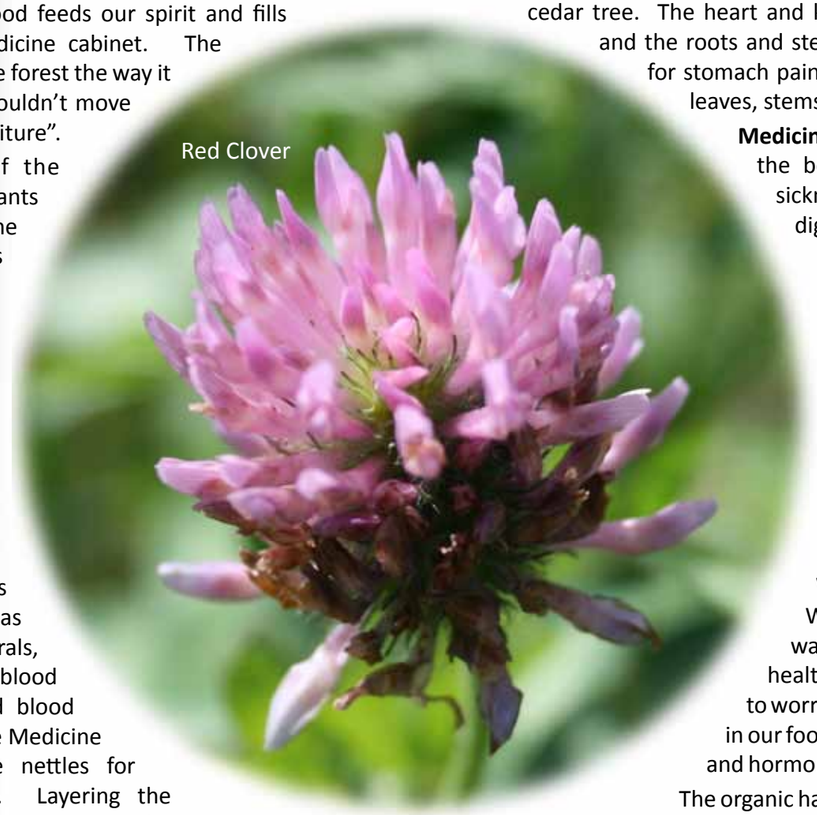
Here are some of the special medicinal plants found on a Medicine Walk in the forests of the Stó:lō Nation Territory, in the Fraser Valley.

Stinging Nettles

Stinging Nettles (Urtica diocia) are the greatest plant ever. The vibrant green Stinging Nettle has been an abundant food for First Nations. This natural spinach has calcium, iron, minerals, and functions as a blood cleanser, tonic, and blood sugar regulator. The Medicine Walk prepares the nettles for freezing or drying. Layering the beautiful nettle plant in a green lasagna texture, along with the sting, yields many medicinal uses. We use the plant as a spinach, steaming and adding butter or whatever taste buds enjoy, and also prepare it as a spice, sprinkled in our cooking like flakes of parsley.

Medicinal uses: Allergies, baldness, amenorrhea, arthritis, asthma, bed wetting/incontinence, female hormones, fibromyalgia, kidney, libido, longevity tonics, menorrhagia, nutrition, osteoporosis, PMS, prostate.

Red clover (Trifolium pratense) is a common ground flower. Red Clover is great for balancing the sugar in the blood stream. The Medicine Walk process involves picking and drying red clover for hot or cold tea.



Red Clover

Medicinal uses: Blood purifier, menopausal symptoms, anti-inflammatory, skin disorders, whopping cough, hot flashes, arthritis, bronchitis, gout.

Devil's Club (Oplopanax horridum) is a plant of many healing properties such as a blood thinner for diabetes, and an anti-inflammatory. A lotion made from this plant has a traditional usage in sweat lodges.

Medicinal Uses: Heals wounds, bronchitis, boosts immune system, diabetes, spiritual protection, helps curb sugar cravings.

Wild Ginger (Asarum caudatum) is a great edible plant. Wild Ginger is found in moist areas such as under a cedar tree. The heart and kidney shaped leaves and the roots and stems make a great tea for stomach pains. Prepare by drying leaves, stems, and roots, for teas.

Medicinal Uses: Warms the body, coughs, motion sickness, colds, fevers, digestive disorders, and menstrual cramps/ pains.

*Contraindications- Wild Ginger should not be taken by pregnant women or anyone going into surgery, due to increased risk of bleeding. Do not combine this plant with anti-coagulants.

With all we love in walking the path of a healthy lifestyle, we have to worry about contaminants in our food, especially chemical and hormone shots in our meats.

The organic harvest of the Medicine Walk avoids chemical contaminants and threats to our health posed by Genetically Modified Organisms. The Medicine Walk is the antithesis of the genetic takeover. We oppose destroying and modifying Nature with fish genes in strawberries, scorpion genes in tomatoes, frog genes in potatoes etc. Whether you eat fruit, fish, or fowl, a true Medicine Walk is knowing what you are feeding your spirit, whether it's in a store, or in Nature's store.

Yvette John (P'eq' Sq'oyes Slha':li)
Stó:lō/Chawathil First Nation

Devil's Club

Wild Ginger

Ancient Forest Remnants in our midst

Our Chehalis – Harrison River complex is wondrous, whether you are looking for the best salmon spawning habitat in Canada, or seeking the home of the world's largest wintering collection of bald eagles. But nearby, just a kilometer to the west, is one of the Fraser Valley's oldest groves of Cedar, Hemlock, and Douglas Fir – the Echo Lake Ancient Forest of magnificent trees reaching 450 to 650 years of age or older. Some trees most certainly germinated well before Columbus discovered the Americas, some witnessing the retreat of the Fraser and Harrison River glaciers and others having ancestors pushing back towards 10,000 to 15,000 years ago, when the first humans started occupation of the valleys.

At this point, the ancient grove is only accessible via private property. This restricted access, however, helps to protect the area's most famous visitors from disturbance. Most fall, winter, and spring nights, hundreds of bald eagles use these great trees as their night roost. Here they glide in, silhouetted against the evening skies, from the Chehalis Flats feeding areas to the east, and from southward down the Fraser Valley, suddenly appearing over the cresting peaks of the surrounding steep-sided cirque. The eagles seem to slip in silently, taking up a protective position on the great branches, sheltered from the seasonal storms and winds.

With several annual tours of this ancient forest sponsored by the Ancient Forest Alliance, keeners can access these groves, bask in the silence of the moss, ferns, and great trees, or browse for unique orchids or amphibians. The only sounds are the calls of varied thrushes or plaintiff calls of loons on the adjacent Echo Lake. If you broach the lake shore you will also likely flush three or four pairs of magnificent wood ducks – or see them scurrying out past the fringe of reeds and water lilies among the fallen tree trunks.

But the unique delight is the great trees. As you approach this grove you pass the last clear-cuts, then a few stumps with great notches where the springboards were inserted nearly 100 years ago, so the logger could elevate himself and saw shoulder height above the widened stump. Then, and only when the ground becomes the ascending talus slopes of the surrounding cirque of steeply rising slopes to the cliff faces, do you find some of the remnant forest trees - saved only by the difficulty of access. But the moss lined paths offer easy access to the past. Over the first rise you enter a plateau of ancient trees, to the south side of the cirque. You might even find a string of Buddhist prayer flags strung between trees at a spectacular overlook of the Chehalis Valley to the north.

The Echo Lake Ancient Forest sits in the heart of Harrison Mills, the Bald Eagle wintering capitol of the world, and where the Fraser Valley Bald Eagle Festival hosts its annual ***Season of the Eagles & Salmon***. It also sits in the ancestral homeland of the Scowlitz and Sts'ailes First Nations – a region where nearby pit houses indicate a continual occupancy of longer than 6,400 to 10,000 years. The first settlers were living here because of the pristine rivers and the salmon and the great trees they help nourish.

The recent history of this area is much less honorable. Just after the middle of the 1800's when gold, was found up the Fraser River and particularly in the Cariboo, the English explorers and gold seekers, followed by the British Royal Engineers, and then followed by the commercial farmers, loggers, and fisherman, took up residence at the Harrison area. Farms, logging and then fish trapping became the businesses. By the late 1800's, homesteading claimed the shorelines – the highways of the day.

Echo Lake

Photo TJ Watts, Ancient Forest Alliance

The entire Fraser and Harrison valleys were harvested of virtually all of their lowland old growth trees. Today, this small stand of trees represents one of the only untouched old growth lowland forests left, (except for the small amount in parks). These few trees, mostly on Crown land, have largely missed harvest because they were behind a few private land purchases that hindered access to the old-growth stands. Fortunately the existing 3 families have resisted logging, but some of the few remaining old-growth trees on Crown lands have been included in a Woodlot License. These few trees could be cut in a single week. Here is the crux of the story.

Back about 2008, Tom Cadieux, one of the key landowners, Stephen Ben-Oliel, and myself, feeling pressed about the imminent threat to the cutting of the last few trees, got Global TV to voice our concerns. Ken Wu of the Ancient Forest Alliance saw the program and jumped into action. This resulted in about 55 hectares of these trees being given protection through an Old-Growth Management Area in early 2013. However the remaining 30 to 40 hectares are presently loggable. The logging company with the right to remove these trees is quite willing to trade this area for an alternative site. What is needed is for the Forestry Service to make this trade to give protection to these remaining old-growth and mature second-growth trees around Echo Lake, and to give the licensee a comparable area of second-growth timber. There is certainly something wrong with our society when one of the very last old growth ancient lowland forests in the entire Fraser Valley are not automatically protected! To think it is taking a 'campaign' to trade off this unique resource for an alternative is disgraceful! The Ancient Forest Alliance is also hoping that this incredible area could be protected under a proposed form of new legal protection being developed by the BC government, a "Big Tree Legal Tool" - a wondrous name for a program that could offer rare trees some further protection.

The Ancient Forest Alliance, on the last weekend of May, undertook a 'Biodiversity Blitz' of the Echo Lake. The objective was to initiate an effort to generate a species-inventory for the area. Here, we the public, got introduced to the flora and fauna by a host of biologists, botanists, naturalists, and ecologically sensitive tree climbers. What a marvelous two day affair! I even got to tell how the area is probably the world's largest night roost for eagles!

The Ancient Forest Alliance is one of our truly grass roots ecological movements, and needs our continued support.

David Hancock, Eagle biologist

For more information, please visit:
www.ancientforestalliance.org
Hancock Wildlife Foundation: for live streaming cams: www.hancockwildlife.org
Fraser Valley Bald Eagle Festival Society: www.fvbef.ca
http://www.gidapan.com/gagans/144329
Harrison Salmon Stronghold Partnership:
http://www.stsailes-devcorp.com/natural-resources/harrison-salmon-stronghold/
Chehalis Flats Bald Eagle & Salmon Preserve
http://fvbef.ca/preserve/

Photo TJ Watts, Ancient Forest Alliance

Tumblewood

Let me rest among these giant souls
that stand where trees once stood,
My greens break into blacky-blues
and dragonflies and the dusts of
beetle dung grow old withal.

Let me rest among the salmonberry
and the tumblewood of cotton, ash
and hemlock, fir and cedar.
And let the wind stir of pine above
the fall reawaken me in early
greens and sapling dress, anon.

Kevin Taylor, Surrey

"Supernatural B.C.", Gary Haggquist, Cultus Lake

Chrissy Courtney, UFV

the chambers of the queen

the ladybug's burning soul. the fly
on the windowsill bowing to the sun.
the moth fluttering through ragged corners
of insomnia. the shivering web, the spider
hoarding time. the mosquito sipping its
loving cup. the snail mesmerized by the
beauty of its shell. listen to them –
the dragonfly bumbling its bottle nose,
listen, all the little ones, put your ear
to clover and pebble, the worm swimming
through earth's moist lungs, the centipede's
military march, the grasshopper's circus
leap. the dung beetle bathed in the aroma
of our yesterdays. the bee's bedroom sealed
with honey. the slug's sticky pilgrimage.
just listen, clack and crick, whirl and
whimsy, our world's a vast spill of
little creatures, love them. love

the words. the drowsy good morning.
the first gasp of romance. the order, the
racist grunt. the razor reason, the pointless
quarrel, the speech blurred by static.
the lies of honour. the drunken joke,
the story told at day's end, listen to them,
put your belly to moss and clay, the
brutal slur, the greeting, the cheer,
the jeer. the scorn too awkward
for the tongue. the compassion
whispered through rainfall. the words,
listen, infinite creak and crack, the world's
a splendid infestation, crawling through
blood and weed and stone. sleeping
in the pupa of a child's heart. emerging
from the eggs of spendthrift spring.
they've been here forever. open
the cochlea, the drum, love them.
the eons have no power. as the sun

fades purple and chill over the last
eroding footprint. as an ant,
hauling the husks of speech
into the chambers of the queen.

Robert Martens, Abbotsford

Balancing Fraser River Economies and Ecosystems

At its March 3rd /14 meeting, Mission Council unanimously carried to third reading an end to our community's moratorium on barging, and also the industrial rezoning of a property located at 31870 Duncan Avenue, bordering the Fraser River in Mission. The application address was previously known and mapped as Environmentally Sensitive Area # 18, and is adjacent to prime Sturgeon and Salmon habitat in the Fraser River. For the lay public, if you were just looking at the agenda item for re-zoning, you would not know that the zone change could include a toxic waste facility.

On May 16th /14, the Mission Record posted an ad for an application to the province for up to 60,000 tons a year of hazardous soil remediation for the same Duncan Avenue property. The list of contaminants to be remediated at the facility included "light/heavy extractable hydrocarbons (LEPH/HEPH), polycyclic aromatic hydrocarbons (PAH), volatile organic compounds (VOC), benzene-toluene-ethylbenzene-xylenes (BTEX), volatile petroleum hydrocarbons (VPH), dissolved metals, chlorophenols, non-chlorinated phenols, and sulphate and/or sulphide". The public was asked to submit comments within a 30-day period based on the small ad that did not include the benefit of any detailed studies.

At the June 10th/14 Mission Town Hall meeting, Council once again unanimously supported this application for hazardous soil remediation. They touted the benefit of a few new jobs, getting trucks off the highway, and the support of one local, well-known, environmental supporter. In contrast, there are several local people, fishing, environmental, and tourism groups, that are opposed to increased barge traffic or any toxic recycling facility next to the Fraser River. That was very evident

with an application for hazardous waste recycling in Chilliwack (see R. Clapton, Footprint Press Issue 11).

Contrary to Council extolling using the river to decrease truck traffic, there are several resource plans afoot that could greatly increase rail, trucking and barge traffic through the Valley, adding risk to transportation safety. At a recent FVRD meeting, Mission's mayor and some Council, were in favor of transporting US Coal through the Valley on our already over capacitated rail lines (coal that US residents don't want to support shipping in their own country as they divest from dirty fuels). The provincial Liberals have touted a super cycle of logging that includes logging old growth areas. There is, as well, the planned Aggregate Pilot Project that could easily overburden highways, rail lines and the Fraser River with extra barging. Once Mission Council lifts the current moratorium on barging, they will lose the ability to moderate river use at a safe and balanced level. Rapid resource extractions often impact longer term, local, sustainable, and value-added industries and jobs.

Concerns have already been raised about safety, river accidents, damage to fishing and nets, and tourism. Shore erosion is known to be exacerbated by the wake from barges. Riprap on the bank of the river also impacts spawning areas. Top experts agree that dredging the river has little lasting effect on flood risk, as river currents will rapidly fill in dredged hollows (see M. Rosenau, Footprint Press Issue 10). Add barging toxic waste and storage on the Fraser river flood plain, with the added earthquake risk, and you could easily decimate tens of millions of dollar's worth of sustainable existing jobs, and lose irreplaceable habitat.

In the past there have at least been some overriding checks and balances in the Fisheries Act and other forms of legislation, but recent federal omnibus bills have gutted many of the protective measures to our navigable waters and environment. Can we gauge the future based on the past without those protective measures in place? The most common comments received in a recent public meeting on Riparian Area Regulations, was that industries self-regulating has been ineffective. Remember that self-regulated train bridge that washed away in the Calgary flood last year? That bridge was just industry tested. The ineffectiveness of self-regulating was the topic of a recent report from the Ombudsman* The burdens of emergency response and clean-up costs often fall on local governments and taxpayers. Putting the onus on the public also does not work, as they do not have the resources to measure water and air quality or toxic chemicals such as Benzene. Benzene is just one of the 60,000 tons/year of ingredients of concern that is mentioned in the application.

Transporting and locating up to 60,000 tons of toxic soil waste for reclaiming, in a known floodplain and earthquake prone area is a dire issue. One of the reasons that the FVRD and other private solid waste companies send their regular waste to drier climate areas is because it is harder to contain toxic leachate in wet climate areas. Toxic waste should not be anywhere near the Fraser River, one of most important remaining salmon and sturgeon habitats left in the world, and the pathway to many other important habitats. Adding insult to the Fraser River threat would be transporting toxic substances on a river that has already been adversely affected by accidents. The planned escalation of barge traffic would just exacerbate the risk and safety to current sustainable river users, habitats, and economies.

Calgary certainly was not prepared for last year's flood event. Even the rail bridge, that was reportedly just inspected, washed away. Too many questions need to be asked of all levels of government relative to health, sustainable habitat and safety impacts to the existing long-term economies that compete for space in safely navigating the river. Is it realistic to risk the tens of millions of dollars of viable economies like tourism and fishing, that are based on the need for a healthy ecosystem and stable habitat? How much of the up to 60,000 tons of contaminated soil/year would be on site at any one time? Will the waste be barged on the river or transported by rail or truck? Who has studied the effects of what more barges on the river would do to the safety of other operators, as well as what the wake of more barges would do to shoreline stability and fish habitat? Will Council's plan to lift the moratorium on barging tip the balance of the river, and abdicate control and vision of a more eco-friendly tourism-based future along the waterfront?

In a world of polarized extremes, it seems that some people's dream of a few more jobs could end in a nightmare of destruction of a sustainable economy, jobs, and habitat - habitat that has been the backbone for thousands of families, for many years before there even was a town called Mission.

Wendy Bales,
Area C Director, Fraser Valley Regional District

*https://www.ombudsman.bc.ca/images/resources/reports/Public_Reports/Striking_a_Balance_Report.pdf

Leaves are not Litter

I smile when thinking of how, in many ways, the basics of Naturescaping are diametrically opposite to traditional methods of gardening! The Naturescape gardener does not merely cultivate a static landscape of plants but, rather, works with Nature to nurture an intricate diversity of life forms within a vibrant garden ecosystem.

Remembering the autumn leaves whipped about in the winds in the days before writing this article, I think of attitudes to leaves themselves. While perfectionist gardeners fret at the sight of chewed or discoloured leaves, habitat gardeners celebrate the fact that it was likely the larvae of butterflies or moths that made those "unsightly disfigurations". Many of these caterpillars would have provided sustenance for resident Chickadees, Nuthatches, Wrens, migrating Warblers, and many other species desperately in need of this invertebrate life.

Native alders are sometimes considered messy trees because of their chewed leaves. In fact, they are one of our most important trees for biodiversity because of the insect life that abounds on them! Many insect species are plant specific for their larval habitat – butterflies and moths in particular – and often the alder is the plant of choice.

When leaves reach the ground we have another cause to celebrate! The eggs, larvae or pupae of many invertebrates may ride down with them, to complete their life cycle on the ground. Others burrow beneath for shelter and sustenance. The leaves themselves are rich vegetative material that will maintain the natural fertility of the land as they are processed by a multitude of organisms – that will also enrich the soil as their life cycle completes. Towhees, Song Sparrows, and Juncos may scratch through the cover, finding small processor treasures while adding their fertile contribution as well. I marvel at how much is "swallowed up" into the land by spring – contributing to a rich organic soil that will promote healthy plant growth beyond!

It is a very satisfying conclusion to the gardening season to tuck plants cozily into a blanket of leaves (quietly raked, not noisily blown!). Large leaves such as maples may need some refining for small spaces, but smaller leaves such as birch, hazelnut, and alder are fine as they are. Knowing the life that may already be underway on the leaves, I prefer to keep them intact as much as possible, awaiting the metamorphosis of whomever is developing on or within. No leaf burning for the habitat gardener!

If you run out of places to put your leaves, perhaps you could create a dedicated leaf pile – a "build it and they will come" project. It is fun to discover who makes use of this special habitat – invertebrate species such as centipedes, millipedes, springtails, who will attract others such as salamanders, birds and tiny shrews. Experiment and discover the life in a leaf!

Sylvia D. Pincott

Getting to know our local species at risk: The Elusive Giant

"Eek!", some may shriek, while others, the brave ones, might investigate the large, reptilian-like tail of a creature scuttling beneath the cover of fallen leaves. This scenario could occasionally occur as you enjoy a walk along the forest paths of the Chilliwack River Valley, Cultus or Chilliwack Lakes, the Ilumchen Ecological reserve, or traveling through Vedder Mountain trails. A fortunate few, could glimpse long amphibian bodies hurtling into fast-flowing mountain streams, and ponder about what animal they had just seen.

Those amphibious creatures would almost certainly be members of a Red-listed species known as Dicamptodon tenebrosus, or more simply, Pacific (Coastal) Giant salamanders.

This elusive amphibian, sometimes called the hippopotamus of salamanders due to its large size, is found only in small, specific areas on North America's West coast, from Southwest B.C., their Northern range within 14.5 km of the Canada-US border, through the Coast and Cascade Mountain ranges, Washington state, Oregon, and Northern California. In B.C.'s Chilliiwack area, they are known to frequent moist sites from sea level, to elevations reaching 2,160m. B.C. Pacific Giant salamander populations have been estimated at 13,000 terrestrial adults, compared to the water-dwelling 4,500 to 9,000 neotonic adults.

The Pacific Coastal salamander, while active during the Spring and Fall months, is dormant

NorthWestern Salamander

"Salamander", Gary Haggquist, Cultus Lake

during Winter. The terrestrial salamanders usually stay undetected by spending most of their lives hidden away in burrows, or the preferred cover of abundant leaf and rotted wood litter, fallen trees, rocks, or logs. However, during warm, rainy times, they will venture from the relative safety of their cover, in search of food. It is reported that 70% of their movements are between dusk and dawn, avoiding dry spells, except in cool temperatures.

The terrestrial Giant salamander's aquatic counterparts, (neotones), usually found annually in their habitat of rapid-flowing mountain streams, may be easier to detect. They are located mainly in forests, including mature and old growth, in or near cool, pristine, fast-moving fishless-mountain streams, or clean, fresh water lakes, ponds or marshes. Neotones are larvae that have continued growth into adulthood, becoming slightly larger than the terrestrial Giant salamanders, and maturing without losing their external larval gills. They basically spend their entire lives in their streams of hatching. This process is called neotony. These very sedentary, streamlined salamander types, rarely move more than a few meters from their watery world, while terrestrial adults may venture 10 to 50 m, scuttling those meters in relatively short times. The neotones have uniformly brown heads, sides and backs, and are a few centimeters larger than their ground-based relatives. For unclear reasons, neotony is thought to be genetically, or environmentally caused amongst these amphibians, and is more prevalent in the B.C. populations.

Physically, the adult salamander is reported to be one of the largest of its kind, attaining a length of up to 35 cm, although the tail comprises half of that size. Resembling the Barred, (formerly called the Tiger) salamander, in appearance, its somewhat slimy, reptilian-like skin, usually a black or brown colour, is mottled with gold, gray or copper markings. It has a large head, a gular (skin fold) along its throat, blunt, shovel-shaped nose, large-pupiled "buggy" eyes, stout legs, and front feet ending in 4 finger-like toes, (the back feet has 5). A laterally flattened tail, with a brown or off-white underside, completes the large, long body. Faded markings are indicative of increased age.

Terrestrial Giant salamanders emit low-pitched growls, or dog-like yelps when harassed, disturbed or injured. Also interesting, is the use of its dark, toughened toenails to dig with, or climb to heights of 2.5 m up trees or shrubbery.

Described as voracious, cannibalistic feeders, the diet of adult Pacific Giant salamanders includes lizards, slugs, snails, small garter snakes, frogs, tadpoles, small fish, larvae, other salamanders, and small mammals, like shrews, voles, and mice.

Pacific Coastal Giant Salamander

Though breeding activities amongst the Pacific Giant salamanders remain a relative mystery, based on field and aquaria observations, it is thought that courtship occurs in hidden underwater nests in mountain streams and that reproduction attempts take place at some point between May and October, once every two years. Through his spermatophere, (sperm case), the male deposits approximately 16 external sperm packets, picked up by the female's cloaco, (female reproduction apparatus), which are then used to fertilize her 135 to 200, 1 1/2 cm eggs. These eggs are laid, dozens at a time, in assorted partially underwater nest chambers or individually under rocks or logs.

Female Pacific Giant salamanders, appear to tend and stay with their eggs until hatching begins up to 200 days later, usually in the Fall. When hatching occurs, the young larvae are between 33 and 35 mm long, dark, with white undersides, gills, tail fins, and shovel-shaped heads. Larval survivorship to adulthood is estimated at between a dismal 1% to 4%. Predation and desiccation have been noted as the foremost causes of larval deaths. While some hatchlings may leave the nest at this point, others can take much longer to transform into adult terrestrial salamanders, and still others never transform into true adult salamanders, spending most of their lifetime in the water as neotones. The lifespan of Pacific Giant salamanders is unknown. However, studies of similar-sized aquatic salamanders suggest that they may live up to 25 years.

During their nightly feeding forays, Pacific Giant salamanders may fall prey to salmonoid fish, (salmon and trout species), large garter snakes, water shrews, river otters, raccoons, weasels, hawks, bears, coyotes, and even those of their own species! However, predator or territorial confrontations are met by adults through biting, tail lashing, or secreting unpleasant skin odours. In B.C., most of the Pacific Giant salamander habitat range has been lost, or at least drastically affected by human encroachment and increased logging. As creatures sensitive to habitat disturbances, their survival decreases when the forest canopy is diminished, and streams are filled with the eroded, suffocating soils. These occurrences result in "microclimatic" changes, causing physical stress to all terrestrial amphibians, resulting in decreased health, or death.

Pacific Giant salamanders appear on the B.C. government's Red List of threatened and endangered species. Nationally, they are deemed "threatened" by the Committee on the Status of Endangered Wildlife in Canada. Useful conservation measures of this amphibian are critical in saving the species from extinction, directly, and primarily resulting from current forestry procedures. Major numbers of this salamander species call forestry-based crown lands home, so further protection may be available through the old growth management areas, and riparian management recommendations.

Concerned citizens can also help the Pacific Giant salamanders survive by protecting habitat, and by reporting your personal observations regarding the range, populations, and habitats of these salamanders, and other amphibians, to biologists. Therefore, helping this salamander species survive, is contingent on humans learning as much as possible about them, and offering them life-sustaining protection.

Val Pack, Mission

THE FOOTPRINT PRESS

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