

FREE  
MAGAZINE

*Tread Lightly and Listen to the Land*

Issue 10, 2013

# THE FOOTPRINT PRESS



Passages from  
Silverdale, Mission,  
Abbotsford  
and beyond.



The background image is a scenic landscape of the Fraser River. In the foreground, there's a wide, calm river with a large, dark, rocky island on the right side. The water is a deep blue-grey. In the middle ground, there's a lush green forest along the riverbanks. In the background, there are several layers of blue mountains under a pale, overcast sky. The overall tone is serene and majestic.

## *Message from the Editorial Committee*

**T**o celebrate the release of our 10<sup>th</sup> issue of the Footprint Press, we chose to return to our roots, our home and inspiration, the magnificent upper Fraser Valley ecosystem. Despite heavy industrial impacts to the lower Fraser river, the upper Fraser, from Mission to Hope, remains relatively healthy. The river, and its tributaries, support one of the largest congregations of bald eagles found anywhere in the world as well as a host of fish, wildlife, and plants, many of whom are endangered elsewhere but continue to thrive in this very special place. The “Heart of the Fraser” as it is known, is also prime habitat for endangered White Sturgeon and the iconic wild pacific salmon

The foundation for this tremendous diversity is literally built from rock- hence the alternative name of the Heart of the Fraser, the “Gravel Reach”. A complex interplay of the most

basic elements of life, rock and water, create such tremendous abundance that it sustained local First Nations people in great numbers before European settlers entered the picture. The river continues to produce life-giving sustenance for current populations of people and wildlife in a never-ending cycle of renewal, every year, in the form of the spring freshet. Ironically, this life-giving cycle has become the battle cry for those seeking to pilfer the Fraser’s heart. Fear and greed have blinded many to the values inherent in the river and its associated wetlands and tributaries. Some only see dollars in those sacred gravel beds. To prevent needless destruction of this magnificent river ecosystem, we must open our hearts and our minds to find a path which benefits all life. Science, not fear, must inform our decisions, for the sake of all who live here. **We must listen to the land, and listen to the river.**



# The Fraser River Gravel Reach

**T**he gravel reach of the Fraser River, between Mission and Hope, comprises one of the most spectacular freshwater ecosystems in British Columbia. Approximately 30 species of fish can be found in this stream, the most in any freshwater environment in B.C. The gravel reach is also home to the largest single salmon spawning run in the province (10 million or more pinks in some years), and the largest fish species in North America, the white sturgeon, reaching over 13 feet and weighing more than 1400 lbs. The gravel reach provides passageway and rearing habitat for literally billions of salmonid (trout, char and salmon) smolts that pass their way from the north, central and southern parts of the Fraser River watershed upstream of Mission, during their spring outmigration to the ocean. The gravel reach is also home to a rich plant ecosystem, including increasingly rare black cottonwood forests, 5 listed fish species, and a myriad of non-fish species including plants and animals, both common (e.g., mallard ducks, black-tailed deer) and at risk (e.g., blue herons, bald eagles).

The Fraser River gravel reach, sometimes referred to as the “Heart of the Fraser”, has important cultural aspects including 10,000 years of First Nations occupation and 150 years of European settlement. The land uses by these two cultures were, and continue to be, largely based on the high level of productivity of this landscape. While forest harvest occurred historically, and continues to take place in the gravel reach now, to a much lesser degree and currently in the form of cottonwood/poplar silviculture, agriculture remains the key economic driver for much of the surrounding historical floodplain of the gravel reach. The rich silt-laden soils, deposited by the Fraser River into the gravel reach, are the underpinning of farming in the eastern Fraser Valley. And, of course, many 100’s of thousands of recreational days occur each year in the gravel reach in the form of fishing, boating, camping and biking, which take place because of the beauty and richness of this unique environment.

As part of the more recent human development of this landscape and alteration of the ecosystem, much of the gravel reach has been diked for land use, specifically for farming, and more recently for the development of housing. This has important ecosystem implications as the rich biological aspects of the gravel reach were, and continue to be, dependent on the spring freshet flooding. The main-channel overbank inundation of the floodplain allows for fish, sediments, nutrients, insects and other biological and non-biological attributes, to be exchanged to and from the primary flows

of the main channel, to the backwaters and floodplains of the gravel reach, during April, May, June and July. The freshet flooding renews and revitalizes this landscape every spring freshet, supporting the Fraser’s extraordinary biological and fisheries diversity. This is an important point, as human intervention on this landscape, over the last 150 years, has continually pushed closer and closer to the main channel, keeping more and more flood-waters off the floodplain, with the intent of developing, either for agriculture, forestry, or human habitation, every last piece of floodplain surface that is available. The snowmelt flooding, while good for freshet-adapted ecosystems, is not good for houses, barns, roads and other human-constructed infrastructure.

To counteract the potential flooding of buildings, roads and fields, a diking system was built throughout the floodplains of the eastern Fraser Valley of the gravel reach, to be high enough, and strong enough, to withstand the flood of record (which occurred in the year 1894 and had a maximum volume of 17,000 cubic meters per second at Hope), plus a buffer of 60 cm. Also, large-scale bank hardening utilizing rip-rap (i.e., lining the banks with large angular boulders to prevent erosion) has been engineered and put in place for much of the gravel reach. Rip-

rapping large river banks is not good for river ecosystems. We now know that rip-rapping has profoundly negative impacts on fish production and aquatic environments including interrupting the recruitment of new gravels for spawning, as well as destroying foreshore vegetation.

One of the most controversial issues associated with the gravel reach of the Fraser River over the last two decades has been the removal of sediment (sand and gravel) from the stream. Until the mid 1990s, the extraction of gravel from the reach had largely been for the aggregate industry to use for construction. But as the fisheries agencies began to enact more protection of this extraordinary ecosystem, and refused more and more authorizations to mine, the gravel miners began to push back and looked for other ways to “rebrand” their business. The rationale became “we need to remove the gravel for flood protection”. Note that the primary extraction technique for the gravel reach of the Fraser River involves the use of gravel-bar scalping. This means that the back-hoes and loaders simply remove the exposed sand and gravel sediments during the low-flow period in the winter months and truck them away. The large bars, incidentally, are extraordinary fish habitat during the higher-discharge seasons, as many juvenile Chinook salmon, mountain whitefish, sculpins, minnows and suckers use these environments for rearing.

It should be pointed out that because of the power of this stream’s flowing water, gravel moves around and both erodes and deposits (piles up) at various locations within the reach. Why might



this be of concern? Sediments of a variety of different classes—silt, sand, and gravel—pass through the gravel reach and/or deposit therein, as a natural part of the freshet. Most of the silt (about 20 million tonnes per year) that enters the gravel reach simply passes through the gravel reach to the Georgia Strait and is deposited there. Some of the annual sand budget (about 2 million cubic meters per year) settles into the gravel reach, but then similar amounts seem to erode as well, on average. Most of the sand-size class of sedimentary material passes through and settles in the Fraser River estuary downstream of New Westminster. Finally, there are about 200,000-300,000 cubic meters of gravel that appear to deposit in the gravel reach, from upstream of Hope. But this deposition is highly episodic in nature, is dependent on the prevailing flood conditions, and may, in part, simply be replacing any sand which erodes into downstream areas. In any event, the flood profile (computer-modeled flood elevation calculations that are made by professional engineers, and are compared relative to the engineered dike-height elevations) does not appear to be rapidly (or even slowly) increasing very much in the gravel reach as a result of sediment deposition over the last 50 years. Any gravel that might be deposited seems to be absorbed onto the undiked wide and long floodplain, or within the active channel stretching from Laidlaw to Mission.

To provide some recent history, I give the following: in order to politically facilitate the removal of this material for the aggregate industry, in the early part of the first decade, the government agencies in charge of flood protection collaborated with the mining industry to re-position the issue as a safety concern to the detriment of fish habitat. Ergo, “remove the gravel in the river and you will have better flood protection”. While it is difficult to get a good estimate

on the effects to fish habitat, it is certain that the extensive and pervasive gravel removal that was occurring between 2004 and 2010 caused significant damage to the fisheries environment. Furthermore, this activity was going to destroy this part of the Fraser River if allowed to continue. In fact, one of the most bizarre impacts occurred in 2006 when several million pink salmon alevins that were just about to come out of their redd gravels, were killed when a large side channel was mostly dammed to facilitate gravel removal off of Big Bar at Rosedale. Perhaps, however, cooler heads started to prevail as we have now had three years with none of this destructive activity in the gravel reach.

So, despite a three-year break in gravel removal, (2011-13 inclusive) why are some politicians continuing to call for a resumption of extraction despite the large-scale damage that it ultimately causes to this ecosystem, and, most importantly, despite a lack of engineering evidence that it results in any significant flood-control benefits? Well, “Just follow the money”, as they say in the movies, a catchphrase which refers to political corruption within government offices. At the end of the day, the hope is that cooler heads will finally prevail.

Everyone supports flood protection for human life and property in the gravel reach. However, no one should support the cavalier destruction of this extra-ordinary ecosystem, just to provide a few dollars in the aggregate industries’ pockets, and with no proven or demonstrated benefit to providing safety.

This exceptional part of the Fraser River, that we know as the gravel reach, or the Heart of the Fraser, needs to be protected, not only for our children and future generations, but because it is an inherently special and precious thing.

Dr. Marvin L. Rosenau,  
Instructor - BCIT Fish Wildlife and Recreation

# Working with nature can protect us from floods



**N**ews of the devastating floods in Alberta hit Canadians hard. We’ve all been moved by extraordinary stories of first responders and neighbours stepping in to help and give selflessly at a time of great need. As people begin to pick up their lives, and talk turns to what Calgary and other communities can do to rebuild, safeguarding our irreplaceable, most precious flood-protection assets should be given top priority.

The severe floods in Alberta used to be referred to as “once in a generation” or “once in a century”. As recent floods in Europe and India are added to the list, that’s scaled up to “once in a decade”. Scientists and insurance executives alike predict extreme weather events will increase in intensity and frequency. Climate change is already having a dramatic impact on our planet. Communities around the world, like those in Alberta, are rallying to prepare.

While calls are mounting for the need to rebuild and strengthen infrastructure such as dikes, storm-water management systems and stream-channel diversion projects, we’ve overlooked one of our best climate change-fighting tools: nature. By protecting nature, we protect ourselves, our communities and our families.

The business case for maintaining and restoring nature’s ecosystems is stronger than ever. Wetlands, forests, flood plains and other natural systems absorb and store water and reduce the risk of floods and storms, usually more efficiently and cost-effectively than built infrastructure. Wetlands help control floods by storing large amounts of water during heavy rains – something paved city surfaces just don’t do.



A study of the Upper Mississippi and Missouri Basins showed wetland restoration would have provided enough flood water storage to accommodate excess river flows associated with flooding in the U.S. Midwest in 1993. Research done for the City of Calgary more than 30 years ago, made similar suggestions about the value of protecting flood plains from overdevelopment. When wetlands are destroyed, the probability of a heavy rainfall causing flooding increases significantly. Yet we're losing wetlands around the world at a rate estimated at between one and three per cent a year.

By failing to work with nature in building our cities, we've disrupted hydrological cycles and the valuable services they provide. The readily available benefits of intact ecosystems must be replaced by man-made infrastructure that can fail and is costly to build, maintain and replace.

Protecting and restoring rich forests, flood plains and wetlands near our urban areas is critical to reduce carbon emissions and protect against the effects of climate change. Nature effectively sequesters and stores carbon, helping to reduce greenhouse gas emissions. It also regulates water. Forested basins, for example, have greater capacity to absorb water than clear-cut areas, where higher peak stream flows, flooding, erosion and landslides are common.

How can we protect ecosystems rather than seeing conservation as an impediment to economic growth? The answer is to recognize their real value. The David Suzuki Foundation has evaluated some of Canada's natural assets. This approach calculates the economic contribution of natural services, such as flood protection and

climate regulation, and adds that to our balance sheets. Because traditional economic calculations ignore these benefits and services, decisions often lead to the destruction of the very ecosystems upon which we rely. Unfortunately, we often appreciate the value of an ecosystem only when it's not there to do its job.

Cities around North America are discovering that maintaining ecosystems can save money, protect the environment and create healthier communities. A study of the Bowker Creek watershed on southern Vancouver Island showed that by incorporating rain gardens, green roofs and other green infrastructure, peak flows projected for 2080 from increased precipitation due to climate change could be reduced by 95 per cent. Opting to protect and restore watersheds in the 1990s, rather than building costly filtration systems, has saved New York City billions of dollars.

Intact ecosystems are vital in facing the climate change challenges ahead. They also give us health and quality-of-life benefits. Responsible decision-making needs to consider incentives for protecting and restoring nature, and disincentives for degrading it.

As Alberta rebuilds and people begin to heal from the flood's devastation, it's time to have a discussion about adding natural capital to the equation.

**David Suzuki**

[www.davidsuzuki.org](http://www.davidsuzuki.org).

Dr. David Suzuki is a scientist, broadcaster, author and co-founder of the David Suzuki Foundation. Written with contributions from David Suzuki Foundation Communications Specialist Theresa Beer.

**Learn more from the David Suzuki Foundation about  
Fraser river dredging and gravel extraction:**

<http://davidsuzuki.org/issues/freshwater/science/industrial-impacts/fraser-river-fish-habitat-threatened-by-gravel-extraction/>

<http://davidsuzuki.org/blogs/panther-lounge/2013/03/missing-public-input-coming-to-the-fraser-river-gravel-mining-debate/>

<http://www.davidsuzuki.org/blogs/panther-lounge/2012/01/conservation-groups-hail-decision-to-postpone-fraser-gravel-mining/>



**Pinks Moving Upstream, Leanne Hodges**



**The Chehalis Flats Bald Eagle & Salmon Preserve**  
**A new local initiative**





Our back yard has gained international recognition for both bald eagle and salmon numbers. Now we must ensure the region's safety. Voila! The Chehalis Flats Bald Eagle & Salmon Preserve and the Harrison River Salmon Stronghold are born.

For over 15 years the Fraser Valley Bald Eagle Festival has been telling the world that the 4 – 5 kilometers along the Harrison River in Harrison Mills has the world's largest gathering of Bald Eagles. More recently, other international conservation organizations have defined the Harrison River lower drainage, including the Chehalis River alluvial fan flowing into the Harrison, as one of Canada's most important salmonid rivers, and have given it the designation of Canada's first Salmon Stronghold River. Our eagles and salmon have received international attention and the various local and regional conservation groups are coming forward to preserve this key habitat.

At the heart of Harrison Mills, the Harrison - Chehalis Flats is the yearly stopover for thousands of wintering Bald Eagles, in fact, in recent years, the world's largest annual concentration of eagles ever recorded. In less than a 2 km section of the Chehalis Flats, 7,362 eagles were counted and over 10,000 were present in the 5 km area normally defined as the Fraser Valley Bald Eagle Festival site. The eagles are here to feast on the abundant salmon carcasses washed up onto the gravel bars of the Chehalis and Harrison Rivers. The Harrison River, with its adjacent Chehalis River Flats, supplemented by the nearby Weaver Creek and other small tributaries, spawn the largest concentrations of Spring and Sockeye salmon in Canada, and are the spawning grounds for some of Canada's most successful Pink, Chum and Steelhead runs, the reason for defining this area as Canada's most important salmon region.

Increasing public awareness of this unique eagle-viewing area has created a need for focused intervention by stakeholders on behalf of the salmon and the Bald Eagles. We must ensure that the salmon, returning from 1 to 3 years at sea, have an undisturbed area on which to make their only effort to spawn



and rear their fingerlings before dying and contributing their bodies to nourish the river's insects, surrounding forests, bears and eagles. The eagles, most of which at that time, have just completed their southern migration of 1,600 to 2,400 km from Alaska and northern British Columbia, need these flats to feed, rest and socialize.

The great gatherings of salmon and eagles attract many naturalists, hikers, kayakers, jet-boats, helicopters and foot traffic that are impacting the salmon spawning and rearing, and the eagles' need for sustenance and rest, otherwise known as "safe loafing".

Most of the disruption of the salmon and eagles is simply by people not recognizing how their presence - walking, kayaking or boating - is so negatively impacting the wildlife. In fact, it was not until we had live streaming cams covering these spawning grounds and the eagles' feeding and loafing area, that we realized how much human disturbance was actually happening.

What happened next is quite marvelous and satisfying. Several of the Harrison-Chehalis area conservation groups met informally, and decided to immediately initiate a "public education campaign" to let the world know of our great resource that needed more concern. The "Chehalis Flats Bald Eagle & Salmon Preserve" was instantly born. The Fraser Valley Bald Eagle Festival, the Hancock Wildlife Foundation, the Harrison Mills Regional Association, the Harrison River Salmon Stronghold and the Sts'ailes then met with various fisheries and eagle biologists, who gave us their best opinions on the impacts of human disturbances. The groups then decided to immediately initiate an educational campaign under the name of the "Chehalis Flats Bald Eagle & Salmon Preserve".

The objective of the Chehalis Flats Bald Eagle & Salmon Preserve, is to inform people of the damage that walking across the Flats does to disturb the mating and spawning salmon, the grinding up of the eggs and fry, and how the eagles need to sit quietly and not be constantly disturbed and flushed from the gravel bars. In short, please keep off these delicate flats during the short period of October through February. The trails and bars bordering the Harrison River are safe walking and fishing areas. We just ask to please honor the salmon and eagles by not walking, kayaking or boating across the shallow flats.

Our campaign includes several distinct efforts: (a) producing a Website on which the background concerns and comments can be posted [www.fvbef.ca](http://www.fvbef.ca), (b) making available speakers to talk about the wonders of the Chehalis Flats, (c) creating a poster to place at adjacent water edge areas, which is printable from the website or distributable at meetings. In other words, we have initiated a program to spread the word of this incredible resource that needs your respect.

David Hancock, Eagle biologist



# The Raccoons in the Neighbourhood

In the face of their attempts to live amongst us, the biggest problem raccoons might have is that they just plain look guilty. After all, in our society, anyone running around with a black mask on at nighttime, is likely up to something. However, in my experience, another name for raccoon should be “innocent scapegoat”.

Despite not actually seeing it happen, owners of cats often blame their pet’s bite wounds, injuries, and mysterious disappearances on the animal least likely to have actually been the culprit. Raccoons are generally deemed guilty by association and circumstantial evidence. Just having been seen in the neighbourhood seems to make raccoons the likely suspect for a myriad of misdeeds. For example, cats seen by veterinarians for bite wounds have almost invariably had them inflicted by another cat, but the owner often feels otherwise. The raccoon often takes the hit. In reality, these highly intelligent critters are much more peace loving than most people have been led to believe. If your pet is in a fight with a raccoon, you can bet he or she started it.

The image as a scoundrel is hard for the raccoon to shake when the prejudices against him are stacked, even by the government. If you were to look up raccoons on the British Columbia Ministry of Environment website, you would find them on the Conservation Officer Service pages listed under “Nuisance Fauna”. The raccoon shares this unenviable list with other important animals in the ecosystem, including skunks, porcupines, fox, beaver and even birds of prey.

As a consequence of our proclivity to blame raccoons for suspicious circumstances, and our reluctance to live in peace with them in the Fraser Valley, a wildlife rehabilitation centre in Langley B.C., Critter Care Wildlife Society, admits an overwhelming number of injured and orphaned raccoons each year. In fact, as many as 350 raccoons are submitted annually to Critter Care.

Staff at Critter Care say that the number one concern people express to them is that the raccoons in the neighbourhood will harm their children and their pets. Most orphan raccoons submitted to Critter Care are a result of a trapped or killed mother raccoon, dog attacks, or having been hit by an automobile. Tragically, perhaps due to their reputation as a “pest”, some people seem to feel it is okay to inflict horrific pain and suffering on these sentient creatures, tales of which often cause staff in rehabilitation centres to feel ashamed to be human. It seems labels such as pest, nuisance, and dangerous are some of the raccoon’s biggest enemies.

Are raccoons truly pests, and is people’s fear of them justified? It is our perception of wildlife in the neighbourhood, true or untrue, that most influences our willingness to coexist with them.

By definition, to be a pest, one needs to be damaging, annoying, or cause disease.

Damage is objective – it is what it is. It’s how we feel about it that matters. Annoying is subjective. The loss of ornamental fish from the backyard pond to raccoons might be devastating to some people’s psyche, demanding drastic action to rid the neighbourhood of the offender. Others might accept the fact that their pond fish represent an irresistible natural draw and source of food. They may take steps to protect the fish such as the use of screens or netting, or accept some losses will occur. How a person acts on the subjective feelings of being fearful, angry or annoyed, ultimately will affect how one deals with the masked bandit. Raccoons and everyone else would benefit from a more rational approach.

Raccoons occur throughout the Americas and in Canada they range virtually coast-to-coast (except Newfoundland and some parts of the Rockies). Habitats include hardwood swamp, forest, farmland and marshes. Although they forage over a diversity of habitats, raccoons are seldom found far from water, inhabiting moist situations, especially stream banks and shorelines. They swim well and also climb with agility. Generally, males are larger than females, and northern animals are larger than southern ones. In Florida, the average adult male weighs about 3 kg. In B.C., weights range from 4.5 to 13.5 kg. A 28.3 kg raccoon was recorded in Wisconsin. The weight varies seasonally, as raccoons build up a layer of fat to see them through the winter. This fat accumulated by autumn gorging may comprise as much as half the animal’s total body weight. Despite being classified as a carnivore, raccoons have an omnivorous diet that naturally consists mainly of crayfish, crabs, other arthropods, frogs, fish, insects, earthworms, grubs, nuts, seeds, acorns, and berries. In the neighbourhood, their attraction to pet food, corn, garbage and poultry often puts them in conflict with people. Although mainly nocturnal, raccoons are known to forage during the day as well.

Defense of territory from other raccoons is not a well-developed trait, but unrelated animals tend to avoid one another. Nonetheless, as many as 23 individuals have been found in the same winter den, and about the same number have congregated around artificial feeding sites. While southern raccoons tend to be active all year round, northern raccoons like to sleep much of the winter away, although they do not hibernate.



Raccoons are highly intelligent, with a well-developed sense of touch. The skillful use of their hands has presented challenges for staff at Critter Care Wildlife Society to keep them from picking the latches of their enclosures. Its name, “raccoon”, comes from the Algonquian word arakun meaning “scratching with his hand”, and lotor, from the species name *Procyon lotor*, refers to a habit of washing food with his paws. We like to attribute human traits to animals, but the observation that raccoons wash their food under water is actually just an elaborate means of gathering the food with their hands, and is often an exaggerated action in captive animals.

As a denning animal, the natural place for raccoons to spend the day is usually a hollow tree, with an entrance more than 3 meters above the ground. The den may also be in a rock crevice, an overturned stump, a burrow made by another animal, or the most dangerous place of all in the neighbourhood, a human building. Sharing buildings with raccoons is where a lot of people draw the line. With costs of approximately \$300 per raccoon for wildlife exterminators, some people take things into their own hands, and it often does not end





well for the raccoon. The BC Wildlife Act allows a person to hunt or trap wildlife on their property that is a menace to a domestic animal or bird, but raccoons cannot be hunted or killed without a permit. Critter Care staff often see and hear of the inhumane way that some people take matters into their own hands, contributed to by the pervasive attitude that they are “pests”. It seems that once the label of pest is attached, some people take that as license to justify whatever means of extermination they can inflict.

A horrific example relayed to me by Critter Care staff is the fellow who submitted baby raccoons that he had put into a trash can for 12 days, and discovered them still alive after that, which prompted his belated dubious compassion to submit them to Critter Care.

Are raccoons dangerous? Any animal that feels threatened or is attacked will fight for its life. As primarily a scavenger, it is in fact rarely the raccoon that does the attacking. Indeed, many people often report the neighbourhood raccoons eating peacefully out of the cat’s food bowl with the cat sitting beside it watching amusedly. Raccoons do not attack cats or dogs as prey – they are not fast enough or built for taking such a high-risk food gathering strategy.

Of danger to raccoons in the neighbourhood are two deadly diseases transmitted to them by pets –

distemper and parvovirus. Conversely, there are two zoonoses (transmitted to people) of note in B.C. that raccoons can carry. Baylisascaris procyonis, is an intestinal roundworm present in a high percentage of raccoons. Raccoons establish community latrines – sites where they repeatedly deposit fresh feces which may have eggs of the roundworm in them. For a person to become infected one must ingest the eggs and severe infection is rare. There have been only 18 known cases of Baylisascaris procyonis infection in humans, all in North America.

The other zoonosis of concern is Leptospira bacteria which causes kidney damage and is commonly carried by wild animal reservoirs including raccoons, and shed in urine into the environment. People and pets can become infected by ingesting contaminated water. However, raccoons, as suspicious looking as they are, are only one of many species that can spread Leptospirosis. The list of other suspects includes cattle, horses, pigs, dogs, rodents and other wildlife. Rabies, which is occasionally seen in raccoons in Ontario, has never been detected in raccoons in B.C.

Co-existence takes a little bit of effort, but for most people, the joys of urban and suburban biodiversity are worth it. Poultry can be protected by fences with overhangs, or hot wires hooked to electric fence chargers. Control and securing of garbage is a responsibility of yours to your human and wildlife neighbors. Fish ponds can be protected with wire screening, and we should put our pet food inside. The use of poison to kill any wildlife is illegal and inhumane. To keep these climbing acrobats out of buildings, close off access points (only once they are gone), and eliminate tree access to rooftops by pruning overhanging limbs

How we share the neighbourhood is based on our perspective. If that perspective is shaped by ignorance of the truth about raccoons, they are in trouble. If we understand that raccoons are not after our pets, that they are not normally aggressive, that they are dangerous to us only when threatened or cornered, that disease transmission is rare, and that there are ways to raccoon-proof your living space, then perhaps knowing these amazing creatures are around can actually enhance our lives. Unfortunately, it always seems to be about us, doesn’t it?

**Ken Macquisten D.V.M.**

Dr. Ken Macquisten is a practicing pet and wildlife veterinarian in Abbotsford. He is founder of the Grouse Mountain Refuge for Endangered Wildlife and the Kicking Horse Grizzly Bear Refuge, lead vet for the Northern Spotted Owl breeding project, and is on the Recovery Team for the Oregon Spotted Frog.

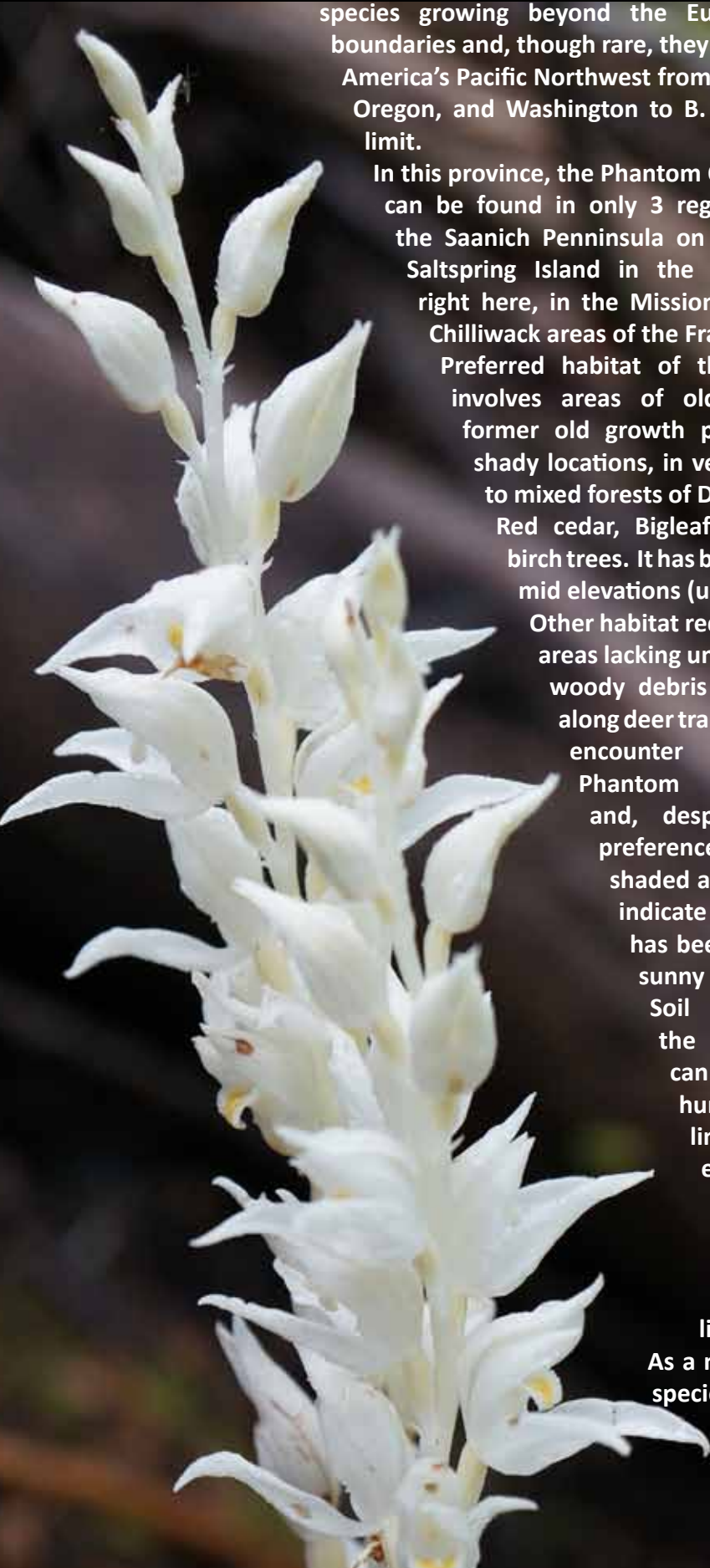
# Getting to know our local Species at Risk: The Elusive Ghost Flower

**H**iking through a cool forest is an enjoyable, and healthful activity at any time of the year, especially on warm days in May, through to the hot Summer days of late July or early August. During those months, these activities can be particularly rewarding when capturing the sight of a rare species.

The Phantom Orchid, named (Cephalanthera Austenode), aka the Snow or Ghost orchid, is a perennial member of the Orchidaceae family. It is considered “most unusual of native orchids”, and a very rare orchid species, of 48 native orchids, listed in the ‘Native Orchids of the Pacific Northwest and the Canadian Rockies’.

Growing on waxy white stems attaining a height of up to 65 cm, there are 2 to 3 white leaves, each with a bract-like appearance, wrapping their 3 to 6 cm lengths around the stems. Atop the plant, growing in a loose cluster, are 5 to 20 vanilla-scented white flowers. The entire plant is snow white, with the exception of each flower being adorned inside by a sac-like yellow gland. The rest of the pointed sepals, (outer protective leaf like parts), and petals are from 2 to 20 mm long.

The Phantom Orchid is considered to be the only one of the Cephalanthere



species growing beyond the European and Asia boundaries and, though rare, they are found in North America’s Pacific Northwest from California through Oregon, and Washington to B. C., their northern limit.

In this province, the Phantom Orchid populations can be found in only 3 regions: Victoria and the Saanich Peninsula on Vancouver Island, Salt Spring Island in the Gulf Islands, and right here, in the Mission, Abbotsford, and Chilliwack areas of the Fraser Valley.

Preferred habitat of this orchid usually involves areas of old growth forests, former old growth patches, and cool, shady locations, in very close proximity to mixed forests of Douglas fir, Western Red cedar, Bigleaf maple, or Paper birch trees. It has been found in low to mid elevations (up to 2,100 meters).

Other habitat requirements involve areas lacking underbrush, or large, woody debris pieces. If hiking along deer trails though, one may encounter randomly-browsed Phantom Orchid stems and, despite this orchid’s preference for heavily shaded areas, some reports indicate that this plant has been seen growing in sunny locations!

Soil requirements of the Phantom Orchid can be forest floor humus, or calcareous, lime-rich soils, as evidenced by their growth in shell middens (refuse heaps), limestone tailings, and even lime-rich compost.

As a microheterotrophic species, unable to obtain essential nutrients directly



through sunshine, and the resulting chlorophyll, (in a process known as photosynthesis), this white, parasitic orchid plant is classified as a saprophyte, (living on dead or decaying organic matter, like Fungi). Therefore, due to the absence of photosynthesis, it lacks any semblance of green, and is basically snow-white in appearance. Consequently, in order to obtain the required nutrients for growth and survival, it must rely, not only on the decaying plant and animal materials found in the soil, but also on a unique growing association. A 3- way partnership, with a fungi, a specific member of the Thelaphoaceae family, and with a presently unidentified coniferous or deciduous tree species, thought to be at least 1 of the 4 tree species, previously mentioned, supplies the necessary nutrients. Another critical feature of the Phantom Orchid is that, in order to complete its lifecycle, most of this orchid's structure grows underground. Long-reaching rhizomes (creeping, root-producing stems), grow beneath the earth, along with those root structures of both its symbiotic fungi and tree partner.

The Phantom Orchid usually reaches the flowering extent of its lifecycle in early August, or in some areas, as late as early September. Capsules, enclosing seeds for dispersal, may occur, and the once snow-white, long stems, age to a yellow-brown colour. Fresh Phantom Orchid stems, beset with new flowers, can then begin their growth. This can occur between early August until mid-November, though estimates vary. However, this process rarely occurs in B. C., due to what is thought to be factors involving climate, or minimal amounts of suitable pollinators.

Red-listed in B. C., (indigenous species or subspecies that are extirpated, endangered, threatened in B. C.), with legal consideration as Endangered/Threatened, under the B. C. Wildlife Amendment Act, the Phantom Orchid has federal legal protection under the Species At Risk Act, (SARA). Under these Acts, it is considered "illegal to kill, harm, or remove any endangered, or threatened species". Further, modified changes to features affecting habitats of protected species, may require SARA authorization.

Due to their symbiotic partnership, habitats containing intact, shade and specific mixed species of mature forests, and the necessary fungi growing relationships, appropriate habitat for the Phantom Orchid species is rare.

As with most species at risk, emerging human development endangers the Phantom Orchid's survival. Examples of human intrusions into this

orchid's habitat include logging, removal of dead or decaying materials, depletion of its partnership plants, hydrology, soil and shade requirements, as well as mountain biking, off road motorized vehicles, and gathering of native plant species.

Due to the orchid's reliance on the fungi and tree partnership, it is unable to be cultivated. Further, it is an orchid species which spends the majority of its life underground, as does its fungi partner, and roots of its partner tree; the orchid can remain dormant for up to 17 years! Although this factor aids in its ability to wait for ideal growing conditions before announcing its location by sending up plant growth, it is also endangered in areas of proposed or actual development. Its potentially long dormancy, renders it difficult, or even impossible, to assess how many, and where the Phantom Orchid will emerge come Spring. Given this circumstance, the entire plant could be accidentally ripped from its growing soil.

Additional threats include possible disturbance, or even removal, of the life-giving plant partners, along with their lengthy roots, the decline of pollinating insects, the often harsh, unsuitable growing conditions in B. C., and its much smaller populations of flowering Phantom Orchids than its American neighbours. Also, the parent plant may not always set seed, and the Phantom Orchid is a poor competitor with other plants.

The Fraser Valley Conservancy is interested in being contacted with information pertaining to Phantom Orchid populations growing in B. C., particularly of those in the Fraser Valley. The organization strongly requests that, upon seeing this Phantom plant, it be left strictly untouched, and one should note the plant's population, general condition, habitat, and influential factors affecting them, (eg. proximity to hiking trails, new developments, etc).

Through recognizing this rare native orchid, (differentiating it from the similar-looking Indian-pipe), by learning facts about it, following guidelines associated with its care, and by supporting and requesting that conservation measures be undertaken, much can be accomplished in continuing the Phantom Orchid's survival, and expanding its boundaries of growth.

If you would enjoy learning more about the Phantom Orchid, please contact the Fraser Valley Land Conservancy, or online sources such as: Species and Ecosystems of Conservation Concern, Phantom Orchid...; and Native Orchids of the Pacific Northwest and the Canadian Rockies. Additional reference books about North American wild orchids, though in limited sources, are available at the local library.

Val Pack , Mission

# SPRAWL REPORT: WAITING FOR GENSTAR

Many citizens have been asking us, "What ever happened to the big Genstar development in Silverdale?" They recall the dizzying pace that characterized the development's approval process, and wonder why there has been no word since 2009.

To recap, the Genstar hearings lasted 7 days, the longest public hearing in Mission's history. Hundreds of citizens raised legitimate concerns about impacts of the development to the area's wildlife, to the aquifer that current Silverdale residents rely upon for their water, and to the taxpayer due to the exorbitant infrastructure costs needed to support a satellite development located so far from existing services. One of the submissions by CAUSS' lawyer, Jenny Biem, warned Council that the combination of 2 legal agreements between Mission and Genstar: the Phased Development Agreement (PDA) and an Escrow agreement, created a loophole

that could result in the loss of agreed upon amenities. To the shock of everyone present at the hearings, not one Councilor requested staff address any of citizens' concerns. Instead, Council unanimously agreed to adopt the PDA and 6 of 7 councilors voted to adopt the development plan Dec.22/08.

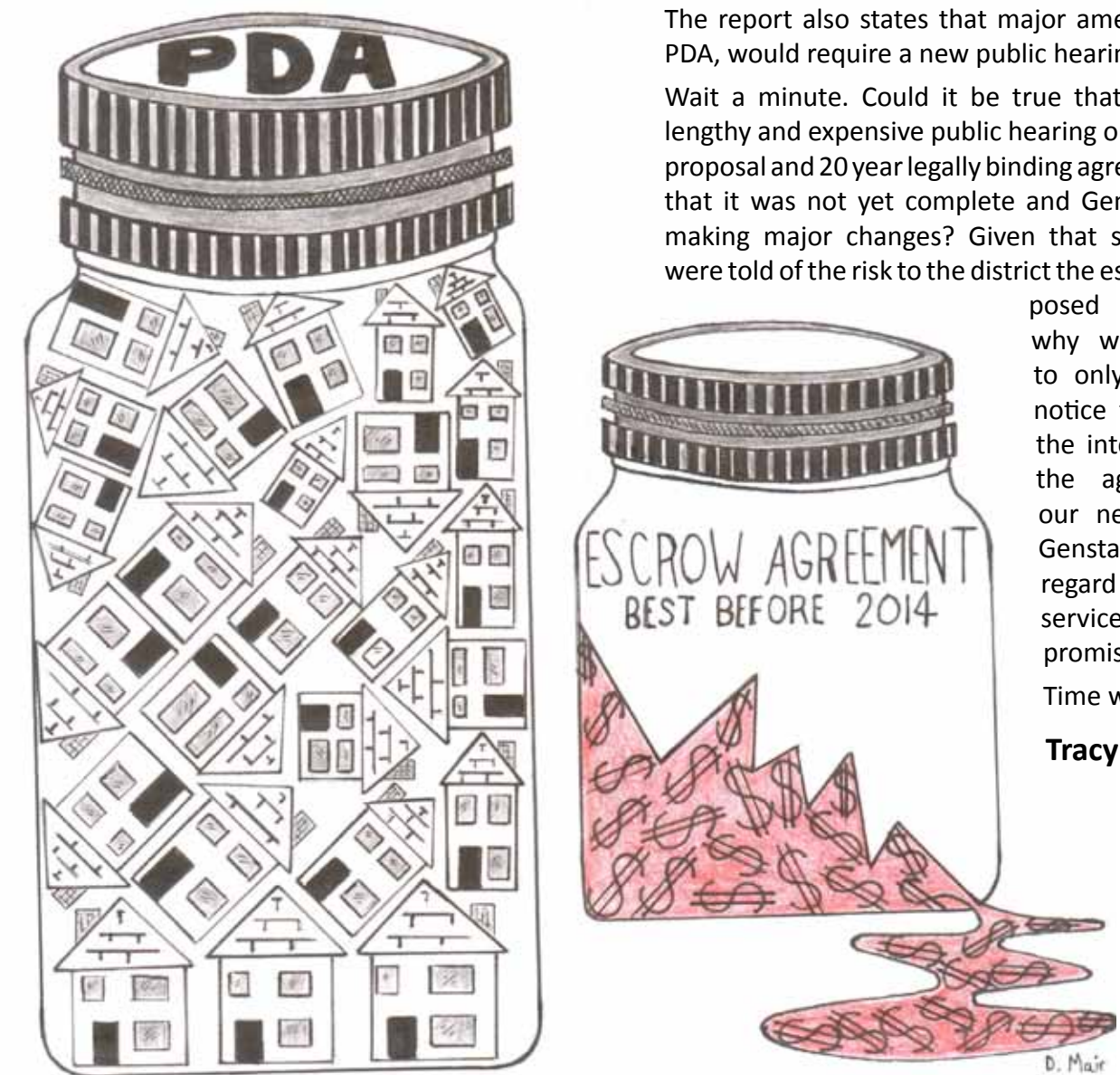
And then we waited... Flash forward. A special council meeting was held July 10/13. Only 24 hours notice was given to the public. The meeting lasted a total of 3 minutes and was not recorded on Council's webcam. Without any apparent discussion, Council voted to cancel the Escrow agreement. Five days later, at the regularly scheduled committee of the whole meeting, July 15/13, a district staff report explained why the agreement had been cancelled. According to the report, the purpose of the escrow agreement "was to allow the developers to make changes to the PDA in the future as that was deemed a time-sensitive matter at the time". The report also states that major amendments to the PDA, would require a new public hearing.

Wait a minute. Could it be true that Mission held a lengthy and expensive public hearing on a development proposal and 20 year legally binding agreement, knowing that it was not yet complete and Genstar anticipated making major changes? Given that staff and council were told of the risk to the district the escrow agreement

posed 4 years ago, why was it necessary to only give 24 hours notice to the public of the intention to cancel the agreement? Will our new council hold Genstar to its word in regard of financing the services and amenities promised in the PDA?

Time will tell.

Tracy Lyster, CAUSS





Raccoon masks,  
Betty Joe  
Mission

#### THE FOOTPRINT PRESS

The Footprint press is published as a non-profit community newspaper. Articles are submitted by dedicated residents 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+.

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