Stoney Creek Trail Report
No. 84 - March 2026

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The front photo shows a couple of red alders standing with their feet in the water near the Hearthstone entrance. They are perhaps 15 years old and not doing well. As saplings, they wouldn't have survived at all in conditions like this. How and why is the water flow in the creek changing??

Guess what this is: ➡️

(You can see what it is on Page 11).

It's been a very wet month. When these large puddles in the Bowl formed, the rainfall was already 20% more than normal. The chart on page 12 shows that we've had more than double the average March rainfall.

Ken Soneff of the United Church Earth Stewards invites you to attend a UCES event to be held on **April 11th** (see the poster). It will be a presentation on "Your Health and Climate Change" by **Aggie Black**, recipient of the Canadian Nursing Leadership Award.

Joan Septembre reminds us of the iNaturalist's City Nature Challenge, happening from **April 24th** to **27th** (see the poster). "We are planning a nature walk at Stoney Creek Park at 1 p.m. on **April 11th** to show you how to use the iNaturalist app. Anyone interested is welcome, but make sure you have the app installed on your phone already."

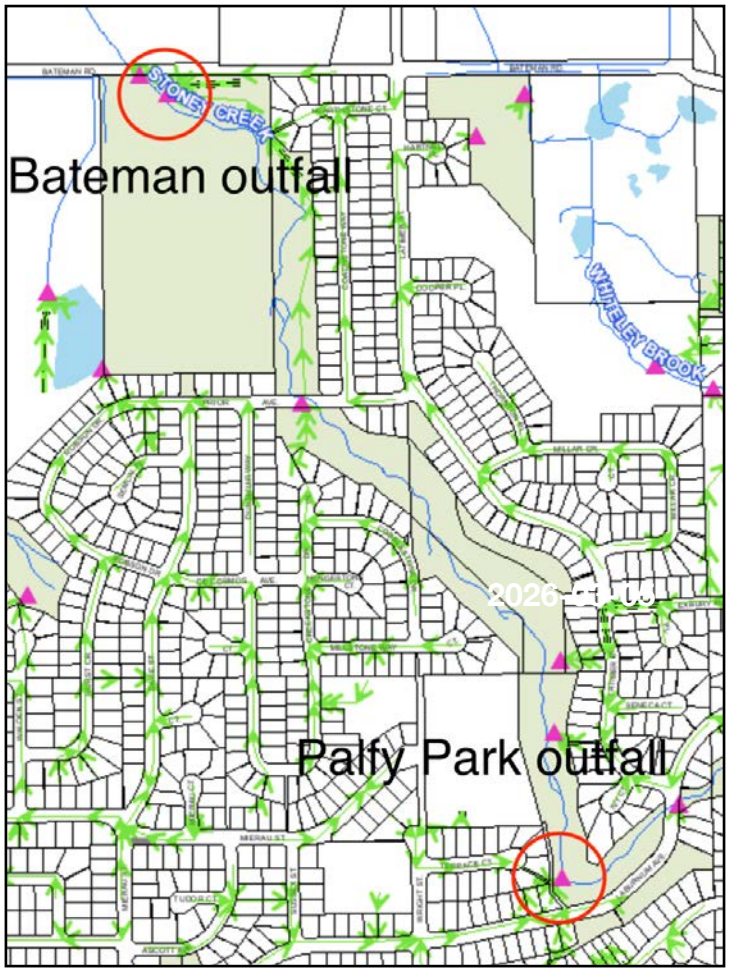
Camille Coray, Executive Director of the Great Blue Heron Nature Reserve Society, has offered to host a UCES meeting on the morning of **May 9th**, 10 a.m. to noon, at the Nature Reserve, 5200 Sumas Prairie Road, Chilliwack.

Coho vs. 6PPD-quinone Update

You will recall last month's trail report feature about 6PPD-quinone, the toxic chemical found in tire-wear particles that wash off roadways when it rains. Volunteers at the local hatchery wanted to know whether it might have been a factor in the large number of pre-spawn coho fatalities this past winter. They collected water samples and sent them to the Scholes Laboratory at the University of British Columbia for analysis. The results have been received, but they are technical and require some explanation.

The BC Ministry of Water, Land and Resource Stewardship has established a freshwater guideline for 6PPD-quinone to protect aquatic life, including highly sensitive species such as coho salmon. The acute threshold is set at 10 nanograms per litre (**10 ng/L**). This is an extremely small concentration, roughly equivalent to a few grains of salt dissolved in an Olympic-sized swimming pool.

To measure toxicity, scientists use a benchmark called LC_{50} (lethal concentration for 50% of individuals). For coho salmon exposed to 6PPD-quinone, the LC_{50} is 41 ng/L, meaning that even this tiny concentration can kill half the fish within 24 hours. To put that in perspective, while 41 ng/L is catastrophic for coho, other species—such as chum salmon—can withstand concentrations hundreds of times higher, highlighting just how unusually sensitive coho are to this chemical.



Turning now to the water test results, on January 29 and 30 (before and after a substantial rainfall) two samples were collected at each of two locations. One was Bateman Pool, and the other was Palfy Park.

The Bateman Pool samples were close to the guideline threshold, with concentrations of **8.9 ng/L** and **12.3 ng/L**.

One of the two samples from Palfy Park was unintentionally lost. The other one, taken from the outfall where fire-fighting foam entered the creek in July 2024, registered a concentration of **137.2 ng/L**—*more than three times* the LC_{50} for coho.

These results suggest that 6PPD-quinone could certainly have been a contributing factor in the high mortality observed during the most recent spawning run.

The Effects of 6PPD-quinone on Coho

For Coho salmon, 6PPD-quinone is a fast-acting poison that disrupts several critical body systems at once, with catastrophic results. While **the exact mechanisms are still being studied**, Coho appear much less able than other salmon species to tolerate the compound.

The primary damage from 6PPD-quinone is to the coho's vascular system. The lining of blood vessels is compromised, causing them to leak. The blood-brain barrier, which normally blocks everything but essential molecules from entering the brain, breaks down. Plasma (the liquid component of blood) leaks into the brain, resulting in fluid buildup. The resulting neurological damage interferes with the fish's nervous system, leading to disorientation, loss of balance, and erratic swimming. In many cases, they die within a few hours. These symptoms, often observed after heavy rains wash road pollutants into streams, are known as "Urban Runoff Mortality Syndrome."

A related effect occurs in the circulatory system. As plasma leaks into surrounding tissues, the remaining red blood cells become more concentrated, causing the blood to thicken, making it harder to pump effectively. The fish's heart must work harder and may ultimately fail.

There is also evidence that 6PPD-quinone affects the respiratory system by damaging the gills, leading to gasping due to reduced oxygen intake. Because fish rely on a constant supply of oxygen, this disruption has rapid and serious consequences.

The combined effects—loss of internal balance, circulatory failure, and oxygen deprivation—overwhelm coho very quickly. They are uniquely sensitive because they appear to lack the specific enzymes needed to break this chemical down efficiently. A coho may die while a chum may survive because its body can neutralize the toxin before the blood-brain barrier fails.

Phlyctis argena "Lichen of the Month"

Phlyctis argena ("silver blister") is a crustose lichen, one that is attached inseparably to the surface it lives on, like a thin, pale crust. Commonly called Whitewash lichen, it is impossible to peel it off without damaging the surface underneath.

As you may recall, a lichen consists of a fungus and an alga living together in a mutually beneficial relationship: the fungus provides structure and protection, while the alga produces nourishment through photosynthesis.

Phlyctis argena is a very common species, found in temperate regions like coastal BC. It typically grows on the shaded side of deciduous trees, including the maple, red alder, and—as shown here—cottonwood. Occasionally, it can also be found on stone surfaces.

On close inspection, tiny granular blotches are visible; these are reproductive structures containing small clusters of fungal and algal cells.

More rarely, other structures may be present. These produce spores that can develop into fungi but don't automatically form new lichen colonies. For a new lichen to be established, a fungal spore must encounter and successfully pair with a compatible algal partner to re-establish the symbiotic relationship.

Phlyctis argena lichen can be readily identified using a simple chemical test: when a drop of potassium hydroxide is applied, it first turns yellow and then quickly shifts to a blood-red colour.

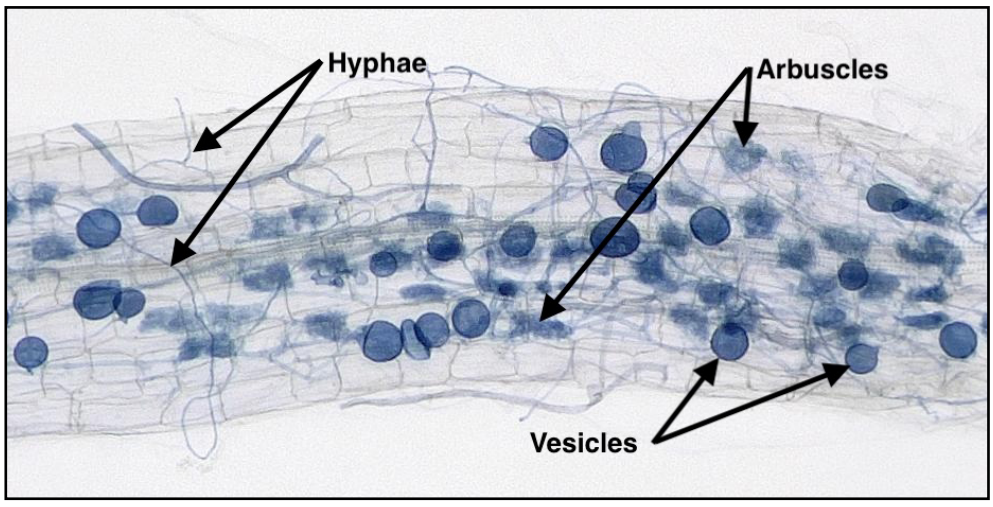
Hidden Networks Beneath the Forest Floor

If you were to dig into the soil around the trees in a forest, you would find much more than dirt and fallen leaves. Looking closely, you would see a mixture of plant roots and tiny white threads. These threads, called fungal hyphae, form a branching underground web known as a mycelium, which is the main body of a fungus.

Some fungi produce mushrooms, reproductive structures that release spores—somewhat like seeds in plants—that enable the fungus to spread and grow elsewhere. Many fungi, however, live entirely underground and never produce visible mushrooms.

In many ecosystems, fungal hyphae connect with the fine roots of plants to form a mutually beneficial partnership called a mycorrhizal network. In this relationship, the fungus helps a plant absorb water and nutrients from the soil—particularly phosphorus and nitrogen—while the plant supplies the fungus with sugars produced through photosynthesis.

Two of the most common types in these partnerships are arbuscular mycorrhizal fungi (AM) and ectomycorrhizal fungi (ECM). AM fungi, which penetrate root cells, are very widespread and found in many grasses, herbs, shrubs and trees. Unlike many forest fungi, AM fungi rarely produce visible mushrooms. They live inside and outside of plant roots and reproduce through spores that disperse through the soil.



AM fungi structures growing inside plant root cells:

- Arbuscules, complex structures in which the exchange of nutrients takes place

- Vesicles, bulbous structures where nutrients such as carbon are stored

In the Fraser Valley, AM fungi associate with a variety of plants, including some trees such as maples, as well as understory species such as stinging nettles and many ferns.

ECM fungi form a different kind of partnership. Their hyphae form a mantle around the outside of root tips—like a sock—rather than entering the root cells. Many of these fungi produce familiar fruiting bodies above ground—mushrooms and puffballs. They frequently partner with trees such as Douglas-fir, western hemlock, paper birch, and red alder, all found along Stoney Creek trail.

Laccaria laccata
(Deceiver)

Russula sanguinaria
(Bloody brittlegill)

Xerocomellus diffractus
(Cracked-cap bolete)

Douglas-fir

In autumn, if you see a little Laccaria mushroom, you are looking at the fruiting body of a much larger fungal network hidden underground. Russula and Bolete, not yet seen along the trail, are also ECM fungi.

Over 30 years ago, forest ecologist Suzanne Simard, now a professor at the University of British Columbia, discovered that underground fungal networks can connect multiple trees within a forest. Through these shared networks, trees can transfer small amounts of carbon, nitrogen and water between one another. (Carbon is fundamental to trees because it is the primary building material of plant life. Nearly everything a tree does depends on carbon). Simard's work showed that large, well-established trees support nearby seedlings via these networks. To describe them, she coined the term, "Mother Trees."

The Douglas-fir forests of British Columbia's interior have been central to research on underground mycorrhizal networks. Studies led by Simard and others compared logged areas where large trees were removed with experimental plots where older trees were retained. Seedlings growing near mature trees often survived and grew better, suggesting that intact underground networks may help young forests regenerate. This work gave rise to the popular metaphor, "Wood Wide Web."

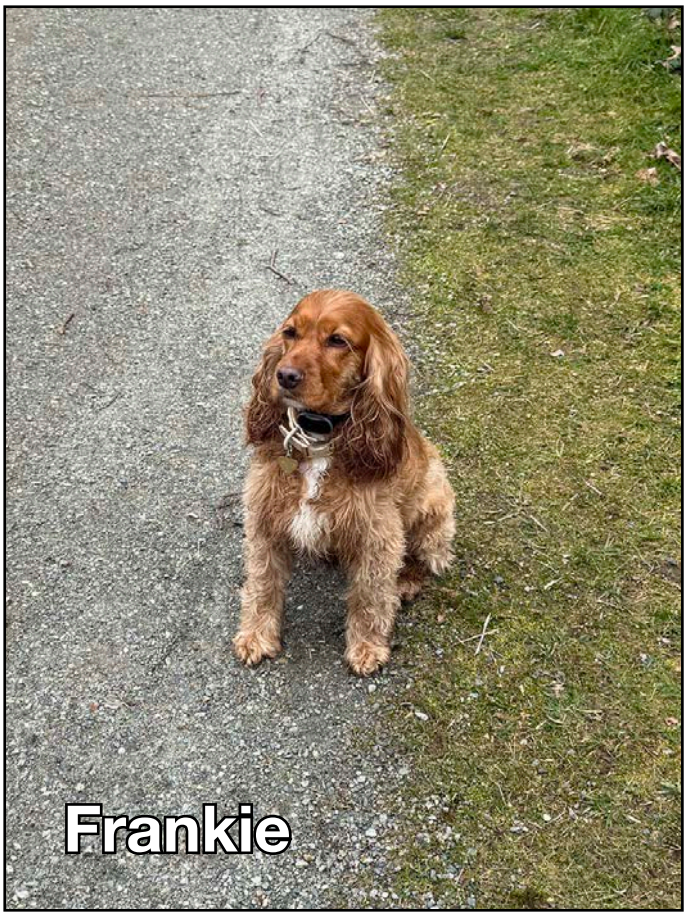
Paper birch

Red alder

Many of the bigleaf maples and red alders found along Stoney Creek Trail will be connected through fungal networks to neighbouring plants, forming complex living systems of roots and fungi working together. The maples associate with AM fungi, the red alders with ECM fungi. Red alders play a special role: they are a "pioneer" species, partnering with nitrogen-fixing bacteria that convert nitrogen from the air into a form plants can use, enriching the surrounding soil.

There are other intriguing discoveries at the frontier of plant research. Studies show that plants can transmit electrical signals through their tissues to respond to injury or stress. Experiments with the sensitive plant, *Mimosa pudica*, suggest plants may even show simple forms of learning and memory. Plants have surprisingly sophisticated ways of sensing, processing, and responding to their environment.

Trail Dog



"Frankie is a three year old female English Cocker Spaniel who came from a breeder in Alberta.

"She absolutely loves being outdoors. Nothing makes her happier than running off leash in Stoney Creek Park.

"She does have one challenging habit—she tends to bark at people who aren't accompanied by a dog. Her owner has been working diligently on this with a beep-and-vibrate training collar, and the results have been fantastic—she's getting much better every day!

"Frankie's love of the park is unmistakable; she is always eager for a walk, and her energy and enthusiasm are a great motivator for me to get outside, enjoy nature, and stay active."

Odd & Ends (1/2)

Signs of Spring on Hemlock Hill

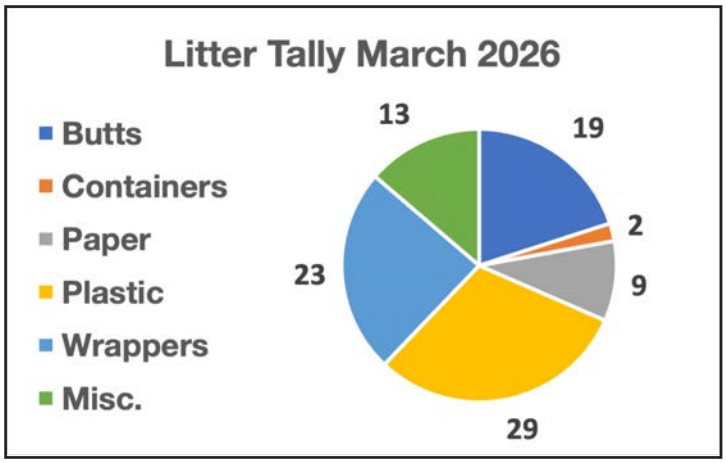
1. Bitter cherry blossoms
2. Tender needles on the only remaining larch sapling
3. New leaves on a Japanese quince
4. An emerging stinging nettle shoot
5. Indian plum, an early bloomer

New Growth Elsewhere

6. An early dandelion in a warm spot near the Hearthstone entrance
7. One of the many skunk cabbages near Bridge 5

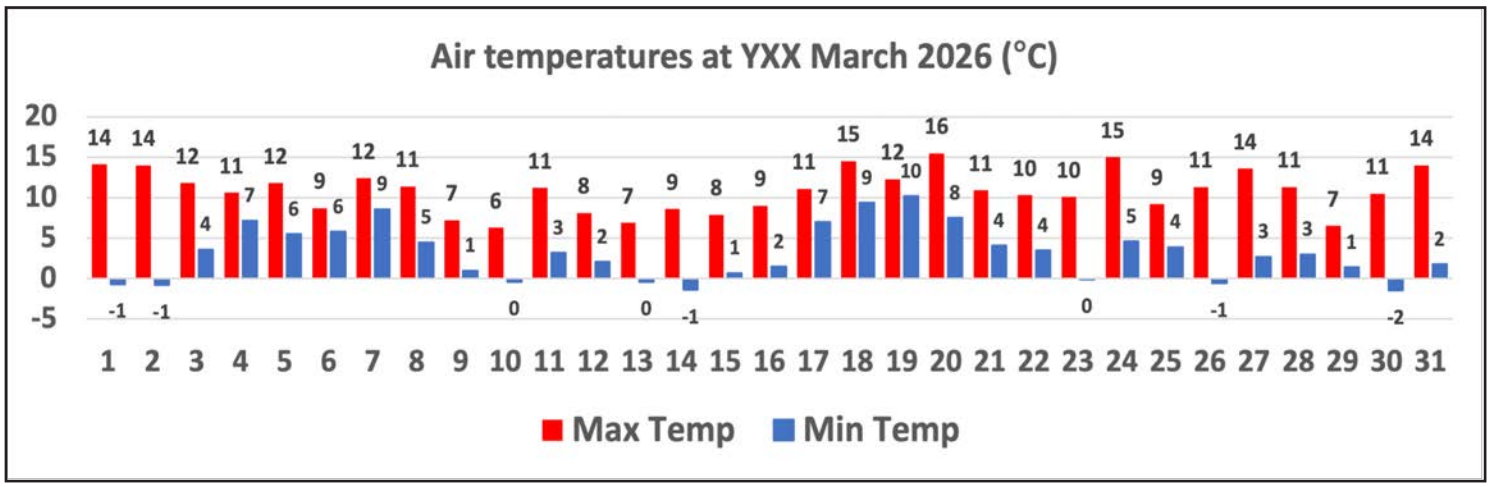
Odd & Ends (2/2)

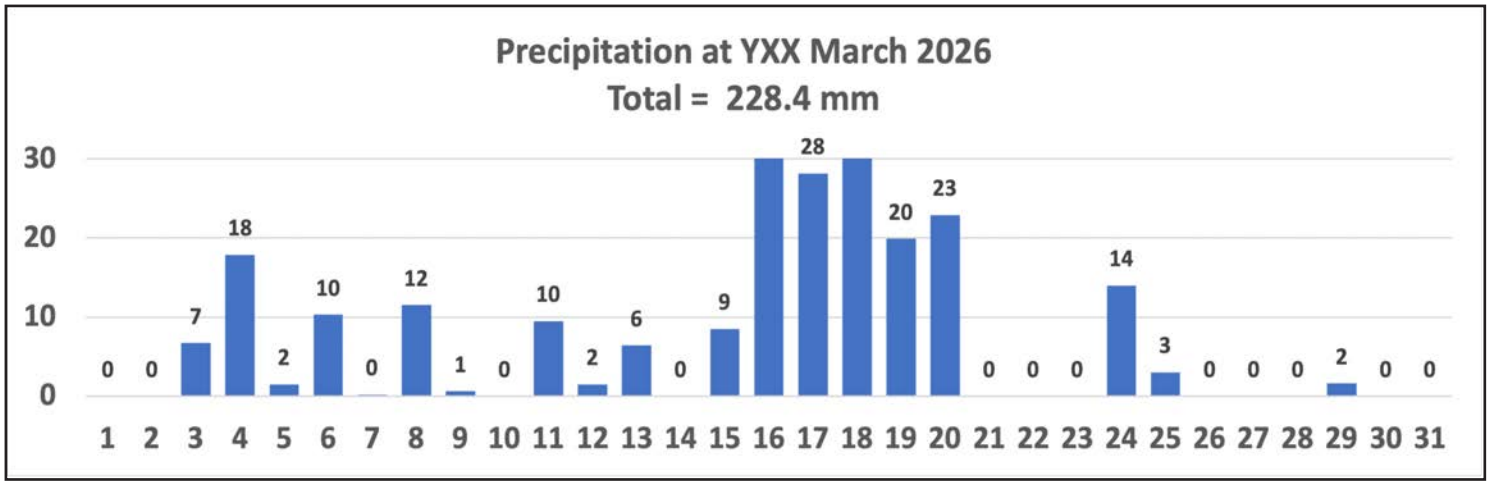
1. The purpose of the moss covered concrete tile above Bridge 2 is a mystery.
2. The creek above Bridge 2 after a heavy rain
3. This red alder near Sadie's bench apparently fell due to a weakened root system.
4. This is explains the mystery photo on Page 2. It's the bark on a paper birch.
5, 6. Doggy bag dispensers, old and new, at the Bowl
7. This dental cleaning tool is another of the very odd things discarded on the trail now and again.

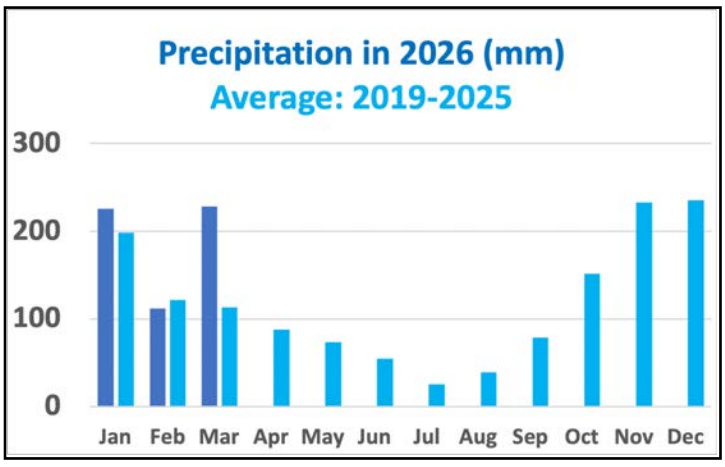


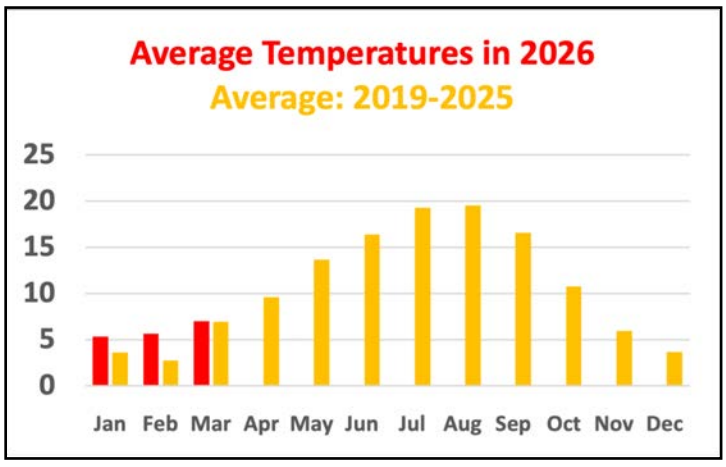
Total litter items = 95

Containers: bottles, bottle tops, cans, coffee cups, lids, juice boxes.
Paper: tissues, napkins, posters, newspaper, receipts, cardboard, etc.
Plastic: dog waste bags & shreds, other items made of plastic.
Wrappers: candy wrappers, foil, cellophane.
Miscellaneous: clothing, glass, chewing gum, dog balls & fragments, etc.









For reference, I use these custom place-names:

YOUR HEALTH & CLIMATE CHANGE

AN EVENING OF DISCOVERY & QUESTIONS

With special guests Aggie Black, RN & Dr. Tim Takaro

DATE: SATURDAY, APRIL 11, 2026 @ 6:30 PM
DOORS OPEN AT 6:00

PLACE: TRINITY MEMORIAL UNITED CHURCH,
33737 GEORGE FERGUSON WAY, ABBOTSFORD

Admission by donation, with all proceeds going towards tree planting that protects your health and our planet.

An initiative of the United Church Earth Stewards. For more details, https://www.trinitymemorialuc.com/programs-and-groups/united-earth-stewards

Join the

City Nature Challenge

April 24 - 27, 2026

Do you want to explore nature where you live AND make a difference for the planet?

Join people all over the world in documenting nature in cities. Challenge yourself and others to see how many different kinds of **WILD** birds, snails, lizards, or even weeds you can spot living in your neighborhood.

Wild means that it wasn't put there, and is not being taken care of by people.

Participating is free and easy!

1. Download the iNaturalist app & make an account.
2. Take photos or record sounds of **WILD** plants & animals.
3. Upload your observations to share with the iNaturalist community.
4. Learn more as your finds get identified!

MORE INFO: https://inaturalist.ca/projects/city-nature-challenge-2026-abbotsford

Abbotsford Events:

April 11 @ 1 pm - **iNaturalist training walk** at Stoney Creek Park - meet at the Bateman Park parking lot off Bateman Road.

April 25 @ 9 am - **iNaturalist Bioblitz at Hogan Family Nature Park** 28631 Debruyne Road, Abbotsford (west side of Bradner Rd., several blocks north of Fraser Hwy). Join Abbotsford Mission Nature Club members to observe, identify, and record fungi, plants and animals. Dress for the weather!

Make observations Apr. 24-27 on your own as well!

Please have the iNaturalist app downloaded on your phone prior to these events

CITY NATURE CHALLENGE IS ORGANIZED BY

CALIFORNIA ACADEMY OF SCIENCES

NATURAL HISTORY MUSEUM LOS ANGELES COUNTY