Gabriola Streamkeepers—Water levels and quality

# Observations at Coats Marsh, Gabriola Island

—with notes on Coats Marsh Creek, East Path Creek, and Stump Farm Streams.

***References:***

RDN Coats Marsh Regional Park, 2011–2021 Management Plan, Appendix A.
RDN Coats Marsh Weir Assessment, June 1, 2020, SRM Projects.

Coats Marsh hydrogeology .

Water-levels' summary.

Coats Marsh RP and 707 CP Trail Maps: Maps Y and Z.

Gabriola Stream and Wetlands Atlas .

Coats Marsh Species Checklists .

Coats Marsh – human disturbance of breeding and migratory ducks and geese.

Coats Marsh Management - paper on.

Coats Marsh brief history.

Long-term precipitation (1944-2021) – statistics. Updated every month and used as the "normal" meaning average precipitation at Coats Marsh.

## Field observations—2023 (Jan.—Apr.)

THIS FILE (Field Observations 2023) IS A SUPPLEMENT TO:

"Observations at Coats Marsh, Gabriola Island" File: 673.

For an up-to-date list of supplements see here .

January 4, 2023 (day 2727, 2557+170): VieRG cum. 405.7 mm (norm. 572 mm).

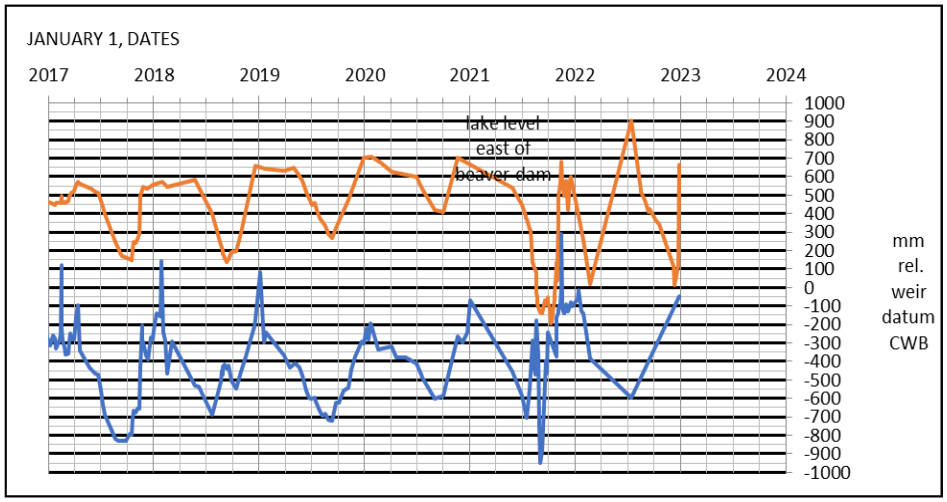
VieRG = Environment Canada Vancouver Island east (called "Nanaimo") total precipitation scaled by 0.95.

Day 0 (now 2727) = July 18, 2015. Cumulative for current rainfall-year, now at day +170, started on July 18, 2022 at day 2557 +0.

Trumpeter swans with curious mallards and ring-neckeds greeting them.

January 5, 2023 (day 2728, 2557+171): VieRG cum. 407.3 mm (norm. 578 mm).

Syphoning re-started despite for the second year having failed to significantly reduce stress on the weir.



January 12, 2023 (day 2735, 2557+178): VieRG cum. 519.1 mm (norm. 619 mm).

Large flock of ring-neckeds (40+). Much rain; occasional gusts of wind ruffle the canopy sending down sudden showers of splattering mega-drops.

January 18, 2023 (day 2741, 2557+184): VieRG cum. 553.8 mm (norm. 653 mm). Weir +582 mm WPB scale. [cal. datum: weir −0.065 m].

Canary Grass Meadow, once, long-ago, a permanent body of water, now a vernal wetland, at the moment a tawny sea of grass battered to the ground by the season's snow.

The duff under deciduous trees—mostly alder and maple—at this time of year provokes thoughts of a problem facing both

physicists and philosophers, the very nature of reality about which there is no general consensus.[1]

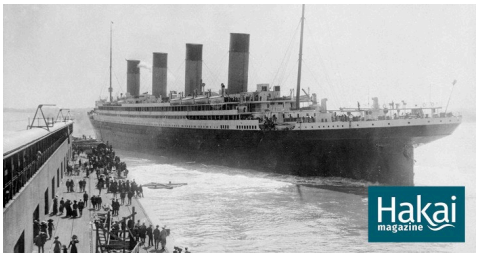
The small (old) beaver dam, a motley collection of debris sealed with mud, a metre or two upstream of the weir, is holding back enough of the flow from the weirpool to prevent flooding at the deck of the weir.

[1] The colour of rotting leaves transitions from green, through optional red/orange/yellow to brown, and from brown to dark brown (a sometimes-handsome bronzy colour), and to finally black. But is black a colour? Colours are not intrinsic properties of light. I'm reminded of this when I walk the trails at this time of year. My camera's electronic viewfinder "sees" some *black* dead alder leaves as being, not black as I do, but as being dark-green. If the human eye were to be equipped with an infrared-sensitive cone, what never-before-seen colour would these *black* leaves have? Nobody knows and the answer can't be imagined. So does this mean that philosophers' qualia are real? And are we to leave physicists to wrestle with the quandary that the seemingly flawless theory of quantum mechanics holds that objects may have properties that are not defined prior to them being "observed". Bell's theorem and entanglement. Stuff like that. Destination-less pondering while wandering destination-less trails.

The "lake" is close to being full with water gently moving through the

several spillways that the beaver allows in its bigger dam.

The syphons evocative of images of RMS *Titanic*.




January 31, 2023 (day 2754, 2557+197): VieRG cum. 572.4 mm (norm. 723 mm).

January precipitation 2% below the monthly normal.

An inch or two of snow overnight, precipitation changing throughout the day from light sleet to drizzle. Everything looking "normal" for the time of year (duck population, creeks running sedately, lake level fairly high).

Fairy laundry? (*left*, snow flakes caught in spiders' webs).

Word-on-the-street is that there is hair ice about,[2] so camera at the ready I went searching for it along the east end of the Marsh Trail near where it had been reported. But, no luck. By the time I was there, if there had been any where I was looking, it would have melted. Hair ice's formation depends on the presence of the what-we-used-to-call-jelly-fungus *Exidiopsis effusa* (*E.e*) but good luck trying to find ice-free pictures of that for guidance.[3]

The search was however not without interest. It's not often I study what's growing on rotting wood, this time on red alder.

The common crust fungus *Phlebia tremellosa*,[4] (gelatinous woodcrust, jelly rot), (*left*, *next page left* and *bottom*) I'd take to be angel wings, *Pleurocybella porrigens* without close-up inspection.[5] I used to eat them long ago, now ranked as poisonous. When you look at these supposed angel wings close-up, you find the cap, if there is one is paper-thin and stalkless, almost like a lichen, and the gills underneath? they just aren't there. There's nothing angelic about these fungi.

[2] "Hair ice" is related to "pipkrakes" which also appear in the park: File 673j, p.158, Feb. 2, 2017.

[3] *E.e* has not been identified in BC, but though not common *E.calcea*, *E.diversa*, and *E.plumbescens* have.

[4] Formerly *Merulius tremellosus*.

[5] Formerly *Pleurotus porrigens*.

Occasionally you see them sheetlike without a shelf, which if you're looking for *E.e* based on the one or two pictures shown on the Web, you might get excited about, but perhaps without evidence of hair ice, undeservedly so.(*bottom)* They sometimes grow on conifers which hair ice seldom if ever does.

While examining dead or dying deciduous trees in mid-winter, you might not expect to find oyster mushrooms; however, the winter oyster, *Sarcomyxa serotina*,[6] fruits in late fall and I think I found some growing alongside some jelly rot. Maybe because they aren't good to eat, they don't receive a lot of publicity.

[6] Formerly *Panellus serotinus* and before that *Pleurotus serotinus*.

Another serendipitous find on this snowy day was hairy parchment, *Stereum hirsutum*. The hairy surfaces of the imbricate caps not obvious without using a loupe or, better yet, a microscope. The hairs are the colour of the cap and densely matted like fur. Not rare, just hadn't taken notice of them before. If you don't look, you don't see.

February 6, 2023 (day 2760, 2557+203): VieRG cum. 611.1 mm (norm. 753 mm).

Another oyster-like mushroom on decaying alder; this one without a common name, *Scytinotus longinquus* ssp. *pacificus*.[7]

Off topic note: The Coats Marsh weir replacement has been estimated to cost about $955,000 by consultants hired by the RDN. The current budget is for $414,000 of which about $56,000 has already been spend on assessment studies and syphoning leaving a shortfall of around $597,000.

No word on the beaver's estimate. Not been seen for a couple of months.

[7] Also known as *Panellus longinquus* and *Pleurotopsis longinqua*. "Pink oyster" is a name already taken by a tropical species, so I'm going with "rosy oyster", which somebody has already suggested.

February 7, 2023 (day 2761, 2557+204): VieRG cum. 622.9 mm (norm. 757 mm). Weir +552 mm WPB scale. [cal. datum: weir −0.095 m]. Cistern -187 mm SCB. [cal. datum: cistern +0.180 m].

Draw down continuing. Lake now at the late-summer level and decaying watershield at the surface. Water needed for summer being syphoned away into Coats Marsh Creek. A few scattered buffleheads and a small flock of 20+ ring-neckeds. No other species seen.

Early signs of spring in the west burn-pile clearing. LBMs (how do they survive the hard frosts?). ID usually a bad guess: in grass and moss, *Conocybe*? Dunce caps. New crop of broom showing signs of life.

Meanwhile, the hair-ice project goes on. The mystery is that *Exidiopsis effusa* (*E.e*), widely acclaimed to be the fungus catalyst for the formation of hair ice, does not appear in any professional/academic list for either BC or Washington State.[8] Yet, rare though the weather conditions may be for the formation of hair ice, when it does occur it occurs in at least three separated locations on just Gabriola alone (Cox CP, Commons, and 707 CP). So, the fungus responsible may be rare, but not all that rare.

So based on reports, we should look for a fungus that resembles *E.e*, lives on decaying decorticated (barkless) alder branches, usually fallen, not more than a few inches thick; found on Gabriola in the same locales as hair ice; but not common. It's a tall order because there's no guarantee that such a fungus is fruiting in mid-winter. Holes in decaying alder are frequent, but at 1-mm diameter and scattered, they are likely the work of woodboring insects.

What does *E.e* look like? For the non-mycologist (myself included), at a glance, a mold on rotting wood. Not unlike some dust or crust lichens.[9] Commonly white, smoky, without the grayish-green tinges that the many patches of the lichen have on the bark of living alder trees (those patches that are so profuse and ubiquitous they make all our alders look like birch trees) (*right* and **A** *below*).

On looking around, I saw a few examples looking fried-egg white, but they were absent from the rotten branches on the ground where examples of hair ice had been reported. The only example that at least fitted the locale, habitat, and relative scarcity was the regular-looking mushroom with stipes and gills, *Marasmiellus candidus*. It fruited showily a week after the hair ice observations.

[8] The only article I've seen confronting *E.e*'s absence in N. America in the hair-ice context is by Jan Thornhill, Mycophile, March-April 2014. He records an unidentified *Pyrenomycetes* (flask fungi, including the *Hypoxylon* genus) as one possible *E.e* alternative.

[9] Translated from the French in the MycoDB global database of mycorrhizal fungi. Contribution by Eric Diaz. "When fresh (0.3 mm thick), forming like a soapy coating, very finely pellicular when dry. At first, appears as small irregular spots that eventually coalesce. Hymenial surface smooth and dull, separable into a thin fragile membrane, pruinose, light pink, peach-blossom, silvery-bluish, whitish-gray, pale discolored on drying. Irregular but clearly limited margin." Entry (*fiche*) with photographs. Another source https://www.verspreidingsatlas.nl/0400030.

Another sighting that was decidedly unlike a regular mushroom was on a decorticated standing but long-dead arbutus tree. I imagined it to be a dust or blemished lichen. Perhaps *Phlyctis argena* (whitewash lichen, a name given to several species)?

However, under the microscope (**B** *below*), it looks like scattered white "pom-poms" in the <100 µm dia. range with short bristles and matted together into a soft powdery network [mycelium?] of fine threads [hyphae?] that hold it together; it's easy to scrape off in a sheet despite its open structure. Quite different from the very common bark lichens on the island's red alders (*Ochrolechia*, *Rinodina*, *Lecidella* spp, etc.).

What was a surprise is that this is not nearly as uncommon as I at first thought. A little later I found that it, occasionally but not rarely, grows, out-of-sight, on the <u>inside</u> of alder bark that is being shed from decaying trees. This unsunned environment is not where you'd expect to find organisms like lichen that rely on photosynthesizers (green algae and/or cyanobacteria). So, not a lichen, but maybe a species of <u>white rot</u>.[10]

Hair ice strands are only about 20µm thick so looking for individual holes isn't going to be successful even if they exist. Some trees in the vicinity do however sport intriguing arrays of holes (*left*) not linear enough to be the work of sapsuckers. Maybe created by the

[10] <u>White rot</u> breaks down the lignin in wood, leaving behind holocellulose, which is spongy and soft. <u>Brown rot</u> does mostly the converse, leaving lignin intact and breaking down the holocellulose. <u>Soft rot</u> affects only dead wood and acts mostly as brown rot, but includes some breakdown of lignin. It is not as aggressive as the white and brown rots, but is less sensitive to biological resistance to decay, and to environmental constraints.

fruiting bodies of something deep in the wood. No idea.

*Lecidella* spp., crustose lichens, create little black dots and are said to live around here perhaps on alder, but the correlation with the dots and the crustose lichen I see is puzzling. Crustose fungi that might be here in BC are *Diatrypella verruciformis*, *Hypoxylon fuscum*, and those in fn.3, particularly *Exidiopsis plumbescens*; but maybe they're too rare to be what we're looking for. I'm lost. Time to move on.



A: *Ochrolechia* lichen on alder bark
B: unidentified ? *see text*

A (donuts, apothecia) 1 mm;
B (white dots, soralia?) 50-100 µm.

February 13, 2023 (day 2767, 2557+210): VieRG cum. 634.8 mm (norm. 785 mm). Cistern -234 mm SCB. [cal. datum: cistern +0.133 m].

Draining continuing. Only remnants of the usual winter duck population present.

Somebody expecting a lot of rain?

February 18, 2023 (day 2772, 2557+215): VieRG cum. 645.0 mm (norm. 808 mm). Cistern -185 mm SCB. [cal. datum: cistern +0.182 m].

Coats Marsh Creek ponded but unexpectantly not flowing. Lake level has risen a couple of inches. Ring-neckeds at the west end, at least 20 of them. East Path Creek, NE Arm outflow, Stump Farm Streams, no flow. All points to syphoning has probably stopped.

Adding to the effort to get to know the fungi on decaying wood, just so that if I ever do see hair ice I'll have some idea what to look for, I'll document this crustose species (salmon colour when dry as in the photograph, orange when wet). Seems to be rare on Gabriola but there is some within the CM ecosystem. Maybe *Peniophora incarnata*? but I'm no expert at this. Just an interested but uninformed rambler.

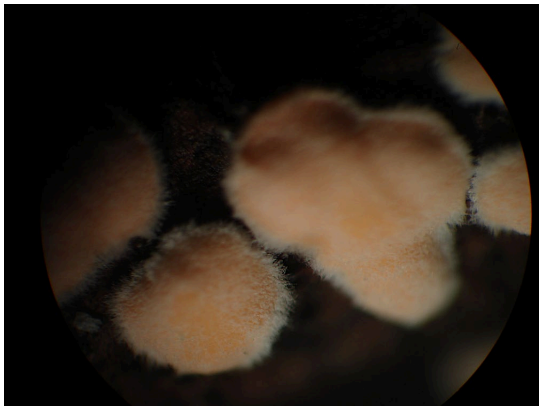
Sun warm, we're two-thirds of the way from winter solstice to spring equinox.

February 24, 2023 (day 2778, 2557+221): VieRG cum. 660.7 mm (norm. 833 mm).

Snow 2-3 days ago, start of Lent. About 6 inches. Time to pull on my bought-in-Alberta boots and go trudging into a world full of untrodden places. Too cold for hair ice but established where to look. Snow glistening like icing sugar in the sun and the tall shrubs and branches of trees arched low over the path, daring you to creep underneath without provoking an icy shower.

Green burgundy stink bug, *Banasa dimidata*, hibernating under peeling alder bark.

Looking back at my notes, I'm embarrassed to see how confidently I identified species of plants and insects, backed up by not much more than pictures in popular nature guidebooks, a search on E-flora and E-fauna, or a rummage through Google images. I should have been a great deal more cautious, especially when species' possibilities number in the hundreds, as with lichens for example, even after hundreds more have been eliminated because they don't live here on the coast, are too rare, or you'd need a microscope or DNA analysis to sort them. So here are a few pictures of epiphytes and saprobes on mostly red alder bark I took in the Little Creek and East Path Creek catchment areas, without any definitive ID., just suggestions: *Ochrolechia laevigata* [not *Thelotrema*?], *Rinodina hallii*, *Lecidella elaeochroma*, *Trentepohlia aurea* [not GaLTT trail-mark paint], *Phlyctis argena*?[whitewash]. On dead conifer *Aleurodiscus grantii*. *Graphis scripta* is very hard to find in the RP area, though occasionally seen elsewhere on the island.



February 28, 2023 (day 2782, 2557+225): VieRG cum. 688.0 mm (norm. 849 mm).

Precipitation for February 3% below its monthly long-term average. Annual 2% below average for this time of year.

Lake access snowed in at the moment, but I doubt that it's seriously frozen.

March 1, 2023 (day 2783, 2557+226): VieRG cum. 693.6 mm (norm. 852 mm). Cistern +55 mm SCB. [cal. datum: cistern +0.422 m].

Mossy maze polypore, *Cerrena unicolor*, on dead wood on the ground near Stump Farm.

Lake level up.

March 5, 2023 (day 2787, 2557+230): VieRG cum. 716.3 mm (norm. 867 mm).

Another bug, this one quite awake, quite harmless, not at all interested in things with backbones, hunting in the moss and lichen on an old grand-fir stump. Bdellidae family, possibly *Neomolgus littoralis*, a relatively large mite, called a snout mite, though more than two kilometres from any beach where they're commonly found.

More epiphytes and saprobes in the Little Creek catchment where the soil is poorly drained, and alder is the dominant tree (*Alnus rubra*). Redcedar (*Thuja plicata*) and Douglas-fir (*Pseudotsuga menziesii*) co-exist, and grand fir (*Abies grandis*) is abundant and was logged way back. Arbutus and maple are virtually absent; hemlock rare, holly thriving.

Brown rot, looks like *Porodaedalea pini*, no doubt along with others. Crust fungi, ~~*Ganoderma*~~ sp.?? Tiled something, chalky; on the inside of grand-fir bark(? but not oak) well-rotted stump. Familial lichens, *Lecanora* sp. left? Bracket fungi, likely white cheese polypore, *Tyromyces chioneus*, nice smell, wrongly IDed in Webp673m.pdf.

March 9, 2023 (day 2791, 2557+234): VieRG cum. 722.1 mm (norm. 881 mm). Cistern +278 mm SCB. [cal. datum: cistern +0.645 m].

Numerous ducks, nearly all ring-neckeds with a few mallard couples. Inlet creeks all running with snow melt. About six percent of our precipitation falls on average as snow.

Noticed that my fungi species list doesn't include the large bracket fungus, red-banded polypore, *Fomitopsis pinicola* (*above* and to the *left*).

Similar to the artists' polypore, *Ganoderma applanatum*, (*above* and to the *left*) also found in the RP area. This species has lots of brown dust-like spores; that's a finger test on the underside. Large ones only seen on very old trees, which are sadly rare.

*Left*: Coral-like fungus, *Ramaria* sp., on Douglas-fir litter in East Path Creek catchment area (dated Apr.25).

Lake level back up to the normal, brim-full high at the beaver dam.

March 14, 2023 (day 2796, 2557+239): VieRG cum. 739.8 mm (norm. 898 mm).

A few more notes on the hair-ice stuff before I get back to the ducks.

Yellows (2) wood-rotting, decorticated hosts not identified. Too conspicuous to be likely to be involved in hair-ice production.

A very strange one, not only from its appearance but from its host which appears to be a remnant of old unpeeled scaly bark near the moss'd base of an old *Arbutus menziesii*.[11]

Pores somehow torn to reveal the tubes.

It looks like a picture I've seen of *Daedalea quercina*, but that fungal species doesn't grow here, and grows on oak, a tree rarely found in these inland woods. A better guess might be imbricated timber polypore (*Fomes fomentarius*).

The inset, *left*, shows what might be a fungus beetle (*Dacne californica*?) on the fungus, if so, it's body length is about 3 mm. The height of the fungi array, *above left*, is 100 mm. The mycelium resembles that shown on pp.ZA475/6, also found on arbutus.

[11] Arbutus (madrone) is frequently severely afflicted with leaf molds, but, unless very old, its trunk seldom hosts lichens and fungi other than perhaps those fungi that look like a thin white or black dusting.

Some examples of crust fungus occasionally seem to have mycelium visible; either that or they have a cobweb-like adornment generated by an insect or spider. It's unlikely they are hair ice on account of the above-zero air temperatures.

*Far left*: Feb.1, 2023 +2°C

*Near left*: Mar.5, 2023 +8°C

*Below left*: Feb.16, 2023 +5°C

Finally, two pictures of a crustose fungus on wood lying very close to where I'm told hair ice was seen. But, as many references explain, "identifying the species of such fungi on the basis of purely macroscopic features is scarcely imaginable" (*Fungi of Switzerland* volume 2/#239).

March 24, 2023 (day 2806, 2557+249): VieRG cum. 746.0 mm (norm. 928 mm).

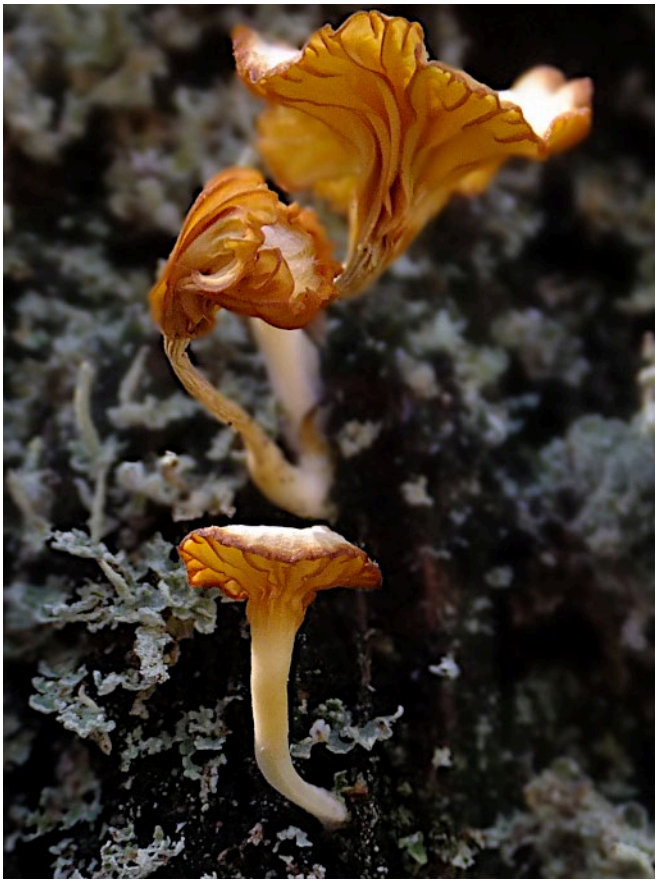
Buffleheads on the lake. They've been mostly absent this winter, though there are lots down at False Narrows. The number of different species of waterbirds has been unusually low. No widgeons is another example, though again there have been flocks down at the narrows.

Mallard couples.

Seclusion requested.

March 31, 2023 (day 2813, 2557+256): VieRG cum. 754.4 mm (norm. 947 mm). Cistern -75 mm SCB. [cal. datum: cistern +0.292 m].

Dry month. Precipitation 39% below long-



term average. Cumulative annual to-date now 12% below normal. Winter precipitation (Oct.-Mar.) for 2022/2023 was 15% below average.

Level down to the late-summer level in 2019. Far too much to be caused by evapotranspiration.

*Lichenomphalia umbellifera* (lichen agaric) among lichen growing on a rotting redcedar stump. Has the habit of turning itself into a funnel shape as it ages, like an umbrella being blown inside-out in a gust of wind.

Flittering half-white carpet moths in the understory, and small clouds of smuts dancing in fleeting shafts of sunlight.

Buds are breaking open everywhere, but the woodland flowers are being more cautious than the flora down along the southern coast where bitter-cherry and salmon-berry blossoms are ahead by at least two weeks.

April 6, 2023 (day 2819, 2557+262): VieRG cum. 780.5 mm (norm. 962 mm). Cistern -218 mm SCB. [cal. datum: cistern +0.149 m].

Drizzle. The two major inlets (East Path Creek and NE Arm) are dry but the outlet Coats Marsh Creek is running.

Lake level down; it's up-and-down like a yo-yo these days. Open water diminishing. Numerous ducks but all seem to be buffleheads or mallards though two hooded mergansers reported. Transient Canada geese.

April 9, 2023 (day 2822, 2557+265): VieRG cum. 819.4 mm (norm. 969 mm). Weir +503 mm WPB scale. [cal. datum: weir −0.144 m].

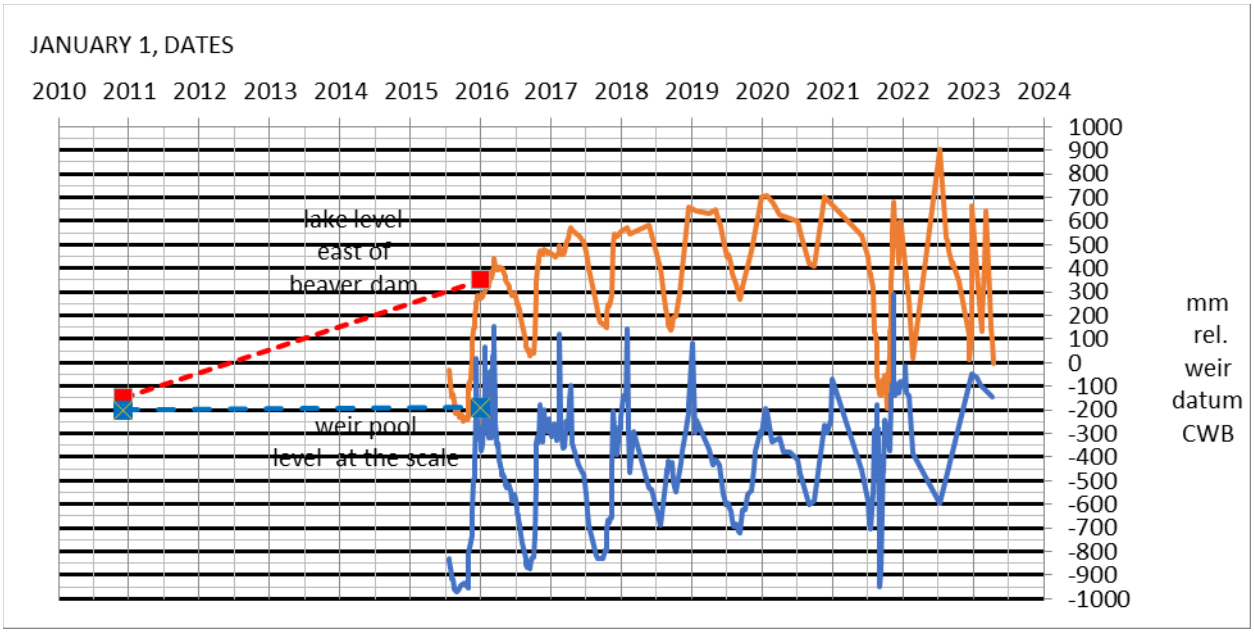
April 10, 2023 (day 2823, 2557+266): VieRG cum. 821.2 mm (norm. 971 mm). Cistern -272 mm SCB. [cal. datum: cistern +0.095 m].

Swallows, snakes, and syphoning.

April 17, 2023 (day 2830, 2557+273): VieRG cum. 833.2 mm (norm. 986 mm). Cistern -372 mm SCB. [cal. datum: cistern −0.005 m].

Swallows. Cold blustery SE wind buffeting the canopy. Spitting rain.

The RDN's needless draining of the marsh continues despite this being the start of the ducks' breeding season, tree-cavity-nesters hooded mergansers and wood ducks included. Creeks not running but ponded.




The old cistern, an unusual sight this time of year.
Skunk cabbage at Stump Farm.

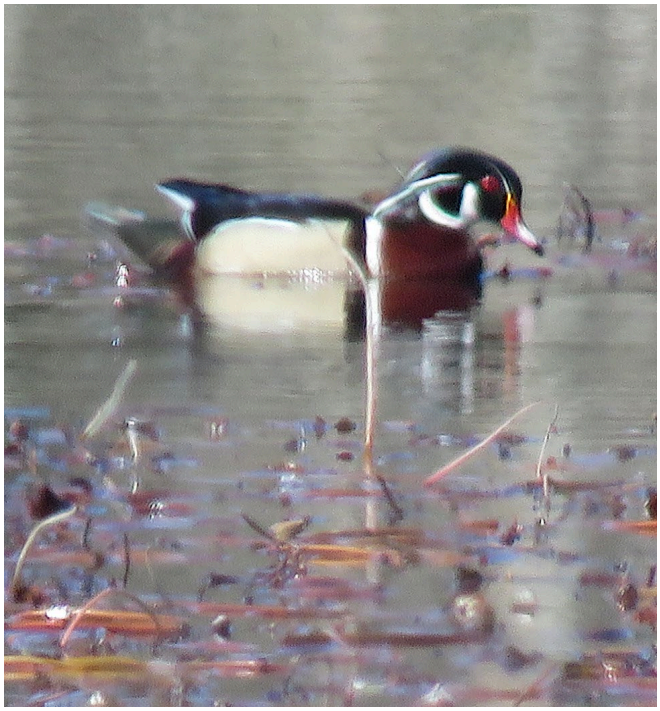
Veiled polypore, *Cryptoporus volvatus*, a species that rots recent deadfalls. It has evolved an unusual method (for a fungus) of spore dispersal. It provides shelter inside for wood-boring beetles, which emerge covered in spores from their hidey hole through a small hole in the underside.

April 25, 2023 (day 2838, 2557+281): VieRG cum. 868.1 mm (norm. 1002 mm). Cistern -407 mm SCB. [cal. datum: cistern −0.040 m].

Coats Marsh Creek still running. Last year the RDN stopped syphoning in mid-March for the summer, to protect red-legged frogs they said. Not this year though, the marsh still being drained, assuming, that is, that there isn't an unrepaired hole in the beaver dam. Preparation for work on the weir in the fall? Who's to tell when hardly anybody outside the Nanaimo Offices knows what's going on.

Ducks in pairs, nearly all either mallards or buffleheads. Buffleheads as potential breeders in the marsh is interesting. It would be a first, and they would be the third species to nest in tree cavities.

Canada geese seen (they come and go), and one male wood duck but there may well be one or two more. Swallows (violet-greens) but very few ravens.



Yellow-rumped warblers visit this time of year and hang-out in the same small area by the lake. Usually audoboni spp. but this may be a myrtle spp.

April 26, 2023 (day 2839, 2557+282): VieRG cum. 869.2 mm (norm. 1003 mm). Weir +437 mm WPB scale. [cal. datum: weir −0.210 m].

*Left*: That's the beaver's lodge. High and dry, like a medieval castle with a dry moat.

Not seen the beaver for many months, but somebody has been working on both the large dam and the smaller one by the weir.

Fairy slippers (*Calypso bulbosa*) in flower and the candyflowers (*Claytonia sibirica*) among the alders just starting, but there has been no sign of the slender toothworts (*Cardamine nuttallii*) despite them having put on quite a show wherever cedar grows this spring at the south end of the island.

Daffodils in the clearings — a symbol of the suburbanization of this nature reserve perhaps.

Two "wild" turkeys (feral roamers from the village area) just outside the park in the lower Coats Marsh Creek area.

Possibly a golden eagle at the weir. They've been seen there before but the juveniles of golden and bald eagles are hard to tell apart. This one had feathered legs, a distinctly banded tail, and wasn't bald.

April 30, 2023 (day 2843, 2557+286): VieRG cum. 869.4 mm (norm. 1011 mm).

Heavy showers this month. Monthly precipitation 81% above long-term average and cumulative annual to-date now also above average, but only just, by 1%.

One syphon at least and Coats Marsh Creek running. Checked April 27.

◊ previous file next file