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.
Gabriola Riparian Areas, February 24, 2012, Madrone.
RDN Berm Report, September 12, 2013.
RDN Water Level Management, September 14, 2021, Madrone.
RDN NHC/EDI Weir Replacement Study, April 12, 2023.
RDN/NTBC Coats Marsh Weir Management Proposal, May 2, 2023.
RDN NHC/EDI Decommissioning Plan, December 18, 2023.
RDN NHC Beaver Dam Risk Assessment, January 10, 2024.
RDN Coats Marsh Weir Pool Mitigation Plan October 2024.
RDN NHC Weir Demolition Plan May 2025.
RDN Final Weir Demolition Plan May 2025.

For an up-to-date complete list see here. For pertinent Gabriola Streamkeepers notes see here. There is a GSK Glossary.

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 .

Freshwater fish on Gabriola Island, BC

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

Coats Marsh – beaver dam stability.

Coats Marsh Management - paper on, weir decommissioning

Coats Marsh brief history.

Long-term precipitation (1944-2024) – statistics. Updated every month and used as the "normal" meaning average precipitation at Coats Marsh.

Field observations—2026 (Jan.—)

THIS FILE (Field Observations 2026) IS A SUPPLEMENT TO:

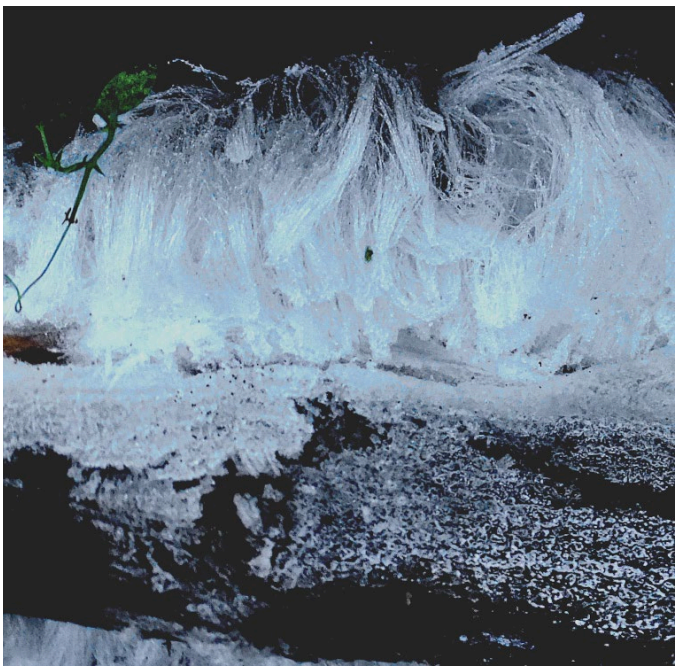
"Observations at Coats Marsh, Gabriola Island" File: 673.

For an up-to-date list of supplements see here . Previous file: 673zh.

January 15, 2026 (day 3834,3728+106):NGRG cum. 482.2 mm (norm. 637 mm). Cistern 140 mm SCB. [cal. datum: cistern +0.507 m].

Notes for the first two weeks of the year.

— Weather:



At times sunny and clear, yet unusually mild, but at a few sheltered spots in the woods, cool enough at night for hair-ice to form. Orion at its brilliant best. At other times, heavy rain. Enough to raise the lake level to a normal winter level, but not yet enough to cause flooding. Ring-necked ducks and a few mallards looking relaxed and comfortable, I didn't disturb them.

An occluded front bringing an inversion and thick blanket of dark clouds just a few tree-tops high. Mist rising from the sea in the morning. Further up the strait, a band of fog straddling the marine horizon, sharply defined, flat topped, reminding me of the impression the sight of the seemingly endless perpendicular cliffs of the Ross Ice Shelf had made on the early Antarctic explorers. The clouds and the sea forming a waveguide allowing Gabriolans to eavesdrop on unsuspecting strollers along the Mudge-Island beach across the narrows.

"Tho clouds oft darken the closing day
And round the north disordered lye
Like rocks with bases torn away
On nothing hung 'tween earth and skye". John Clare, Winter. 1820.

— Weirpool:

Photo previous page. With the high water level on the up-side of the beaver dam, flow over the natural spillways beginning to supplement the flow of the syphons. The large puddle in the drained weirpool linking up with Weirpool Creek with at the moment just a little more than a trickle flowing through it.

— Precipitation monitoring:

I'm having trouble with rainfall measurements. For some reason, the reports from Environment Canada, Entrance Island appear to be relatively lower than those from Nanaimo City Yard have been historically and my new gauge at El Verano supports this decline. I'll leave remarks to a 2025 update File: 698.

— East Path Creek:

Both East Path Creek (EPC) and the NE Arm spillway running at about 50% capacity at East Path, which is rather light given the amount of rain.

The upper of the two Appleyard Ponds full (it was empty Nov.3 last year, photo), but the down-steam one empty. As mentioned last year (Nov.23) there has been heavy machine work going on in the apple yard property including rock breaking.

East Path Creek is a major tributary of the Coats Marsh wetland. The course of EPC flows through Lot 4 on the northern side of Coats Drive between Stanley Place and the foot of the rise to the east where water

from McGuffies Swamp and High Point Meadows tumbles down to cross Coats Drive through a culvert from the south (File:661, GSK Atlas Map 2.21).[1] Currently the Coats Drive culvert is dry, as is a second minor culvert to the west carrying run-off from the road and land south of it.

The eastern approximate two-thirds of this Lot is a seasonal marsh-meadow and woody-swamp area (File: Binder673, Survey March 7,9,13 2016 marked "Winter wetlands". There are numerous references in this file to the area as the "SE Arm wetland".[2]

The pictures here and *previous page* show the ditch that has been dug down in places to bedrock where EPC runs through the SE Arm wetland. It is effectively draining the wetland and likely causing a significant change in its ecology.

January 24, 2026 (day 3843,3728+115):NGRG cum. 482.7 mm (norm. 687 mm). Cistern 129 mm SCB. [cal. datum: cistern +0.496 m].

[1] The creek is shown on the 1874/5 survey map of the island, File: 697, p.2.

[2] It is underlain by gleysol indicating that it was once part of a vast glaciofluvial meltwater lake that probably included the NE Arm and CM-RP lake.

Blue skies, wispy clouds, temperatures hovering around 0°C. Flock of 50+ ring-neckeds taking advantage of the open water. Scattered buffleheads, but they unlike the ring-neckeds always have the option of going down to the sea if the lake gets iced over. Just one or two mallards also, but during a half-hour observation no other species seen.

The tall shrubs (Indian-plum, not rare but not common) planted *en masse* in the weirpool area in bud, but the ground-level ones still thinking about it.

Broom thriving in the burn-pile clearings. Now above head high.

While the leaves of some deciduous plants become translucent and catch the light in the fall, not many go so far as to become transparent. But, that's what the vanilla-leafs (*Achlys triphylla*) sometimes do thanks to holes between some of the micro-veins.

January 29, 2026 (day 3848,3728+120):NGRG cum. 524.7 mm (norm. 712 mm). Cistern -204 mm SCB. [cal. datum: cistern +0.163 m].

No flow from EPC or the NE Arm. The lake level yo-yoing as the RDN mindlessly continues draining the lake regardless of the lack of precipitation. Few ducks seen.

February 05, 2026 (day 3855,3728+127):NGRG cum. 569.4 mm (norm. 749 mm). Cistern 141 mm SCB. [cal. datum: cistern +0.508 m].

Rain, fog, mist, and sunshine. Rain turning woodland trails and flail-mowed highways into canals or streamlets scouring them down to bedrock or hard lodgement till exposing their tree-root ribs; muddy sloughs; dimpled puddles; dams of rotting last-season's black and brown duff. The discarded alder leaves have now lost their green.

Flowers are showing in gardens this mild winter, but the wild ones being a bit more cautious.[3] Indian plum, as is its wont, being the first to make a showing. They're doing well in the RDN's weirpool orchard. Many frogs. Beaver has been around trimming willows but no sign of construction activity. Insects: occasional small clouds of gnats in beams of sunlight; and Chironomid midges, less than two millimetres in length, skipping like sand-hoppers on the surface of the water as if it were solid (winter-coat sleeve background in the picture).

As noted in the long-term-precipitation file File:698, the nature of the rainfall seems to be evolving. Rather than steady but continuous rain for a few days, the pattern has become more like several rainless days in succession accompanied by heavy rain for just portions of successive days. Despite this trend there appears to be no significant change in the accumulated amount of rain received. In January for example, we had 14 continuous days with precipitation less than 1 mm, but 7 with precipitation greater than 10 mm. The average for the month however was only 1% below the very-long-term average.

[3] I saw zero wildflowers on my walks. In my youth, mild winters would bring snowdrops, primroses, violets, and the blossoms of other herbaceous plants, and on my mother's February birthday, Loddon lilies on the banks of that river. Winters on Gabriola must have been once harsher than they are today.

The rainfall on Entrance Island (ENT) is becoming substantially less than that at Nanaimo City Yard (NCY) and on El Verano (EV), possibly because the showers of heavy rain are more localized than they used to be, and for some reason heavy showers miss the off-shore island. So much so that for 2026 onward, ENT will no longer be used along with NCY to estimate Gabriola 100m AMSL precipitation but will instead be replaced by scaled readings at EV using a modern gauge and, as before, together with scaled readings at NCY.

The EV readings show a much better daily correlation with the NCY readings with accumulations less, but consistently less, than the yard readings while the ENT readings show substantial lower readings, which appear to be growing lower each passing year, and with often seemingly uncorrelated daily differences with the NCY and EV readings.

February 08, 2026 (day 3858,3728+130):NGRG cum. 584.1 mm (norm. 764 mm).

A second flower. One single dandelion in the western burn-pile clearing. [later: none found blooming anywhere on Gabriola]. Nothing yet on the broom. Canada geese passing by making a racket.

Log (fragment of a white-rot deadfall, probably alder) put aside two or three years ago because it was sporting a good showing of hair ice now showing lots of fruiting fungus.

Likely turkey tail (*Trametes versicolor*). A polypore (*above right*), fine hairs dense on cap's upper surface, zoned (*above left*). Possibly a coincidence, but segments of the same log (left) showed no hair ice and are not showing fungus either, only lichen.

Very large mushroom bursting out of the ground. Rather startingly. An *Amanita* species, maybe an *A. aprica*, which I have seen in these woods before, or less likely an unusual yellowish variant (var. *formosa*) of the usually red, *A. muscaria*. Doesn't look like an *A. pantherina* to me.

Guess it won't be long before somebody destructively plucks it to see what's underneath that cap.

February 11, 2026 (day 3861,3728+133):NGRG cum. 585.0 mm (norm. 778 mm).

All very quiet. Only an occasional raven and skeins of hundreds of geese heading toward the sea making sounds. Everything in the forest is waiting quiescently. Will it snow? or is this the end of an unusual winter?

February 17, 2026 (day 3867,3728+139):NGRG cum. 598.4 mm (norm. 805 mm).

Syphons off. Coats Marsh Creek ponded but not flowing. Trumpeter swans reported.

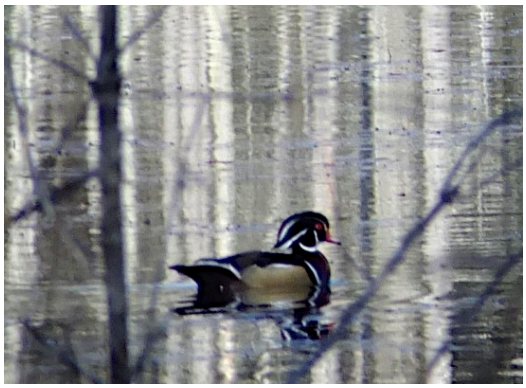
Caddisfly larvae in the Weirpool Creek's flooded parafluvial area. Most of them are hiding in hollow, or hollowed out, rotting reed stems, their presence obvious because of movement and tracks in the mud. Some larvae are using rotten twiggery for their homes; others a collection of muddy detritus. They're bright green, hoping predators will think they're uninteresting shoots. Their presence a good sign; caddisfly grubs require clean, unpolluted water.

March 1, 2026 (day 3879,3728+151):NGRG cum. 630.9 mm (norm. 854 mm). Cistern 174 mm SCB. [cal. datum: cistern +0.541 m].

Precipitation in February 26% below long-term average. Annual rainfall this year so far, now 12% below long-term average. Intermittent creeks are behaving like ephemeral creeks this season.

[Figures compensated for unequal numbers of days in months and years].

With syphons closed, surprising to see Coats Marsh Creek at the Marsh Trail culvert still flowing strongly. About the same as with the syphons open, but not less. Although the lake is brim full, in the northern half at least, it's not high enough to generate flow across the dam; the water is instead flowing unseen, but noisily, through or beneath the dam. It is flowing through linked pools in the weirpool area to join the creek downstream of the dam. Something for the beaver to repair.



Many ducks out on the water, including one or two wood ducks, along with two Canada geese. Elsewhere on Gabriola in the pastures of the Great Swamp (Somerset Farm) there must be over two hundred of these geese.

The Indian-plum (*Oemleria cerasifomis*)

planting a little behind compared to those on the island lower down. Maybe not enamoured of their southern exposure and the lack of rain. They seem to prefer a moister, sword-ferny, shaded environment than an exposed salal, ocean-spray one. There are, for example, spindly thickets of them thriving in the Martin Brook riparian area (Merlin's Trail).

WATER QUALITY TEST 26/1

Wx: clear sky, air temp. 9°C, air pressure 756.2 mm Hg.

Weirpool Creek (below dam leakage inflow):

sample 1: pH: 6.9 [obs. 6.93 @6.9°C][4]
sample 2: pH: 7.5 [obs. 7.42 @6.5°C]
Comment: with almost no buffering variation to be expected.

EC: The OBEST read 0 @6.5°C
Comment: Faulty? Checked OK back home. Bring the HANNA next time.

ORP: +17.5 mV
Comment: low, needs investigating, meter not calibrated.

sample 3: DO: . [obs. 83% @8.1°C]; 8.81 mg/L (meter), 9.75 (calc.).
sample 4: DO: . [obs. 86% @8.5°C]; 9.92 mg/L (meter), 10.00 (calc.).
Comment: surface water.

Final comment: Looks like rainwater.

March 3, 2026 (day 3881,3728+153):NGRG cum. 631.2 mm (norm. 861 mm).

WATER QUALITY TEST 26/1a

As for WQ Test 26/1 with Hanna.[5]

EC_{25}: 69 µS/cm; EC_M (calc. EC measured at T=9.7°C) = 47 µS/cm

Additional test of puddle:
EC_{25}: 57 µS/cm; EC_M (calc. EC measured at T=10.6°C) = 40 µS/cm

Additional test pond in EPC just below EP culvert.

EC_{25}: 64 µS/cm; EC_M (calc. EC measured at T=9.4°C) = 43 µS/cm

Final comment: OBEST probably has calibration error for very low conductivity. Conductivity confirms no groundwater component.

Flow in Coats Marsh Creek considerably up from two days ago, the extra water coming from several flows through spillways in the dam masking any water flowing beneath the dam surface. There has been no precipitation in the past two days, and no inflow from the NE Arm or EPC. Can only surmise the easterly wind is pushing water an inch or two higher at the dam and/or the water is warmer today.

[4] With OBEST, no temperature sensitivity: corr. pH = $0.0547*pH_{OBS}\text{^}2+0.4099*pH_{OBS}+1.4251$.

[5] Assuming HANNA reads EC_{25} using
$EC_M = EC_{25}*0.889*10\text{^}(A/B)$; $A=1.37023*(T-20)+8.36E-4*(T-20)^2$; $B=109+T$.

Bronze medal for third spring flower to be seen in the CM-RP this year. Shepherd's purse (*Capsella bursa-pastoris*). Weirpool Creek riparian.

March 4, 2026 (day 3882,3728+154):NGRG cum. 631.6 mm (norm. 861 mm).

WATER QUALITY TEST 26/1b

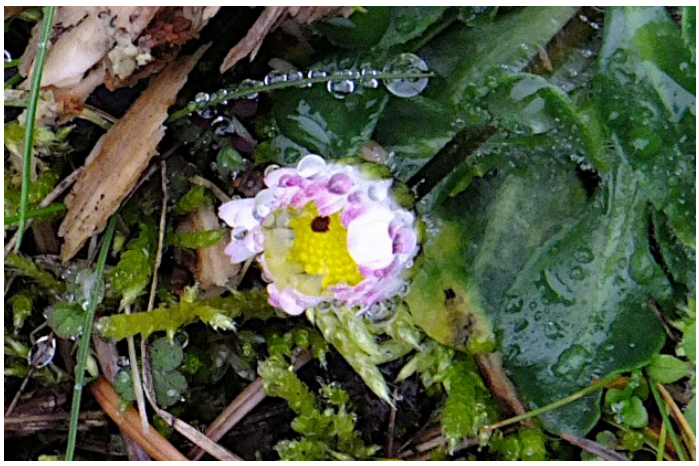
Wx: raining.

Weirpool Creek (below dam leakage, inflow as for yesterday):
OBEST meter after ORP calibration.
ORP: +55 mV @6.8°C

EPC (as for yesterday, no flow):
ORP: +184 mV @6.1°C
pH: 7.2 [obs. 7.13 @7.7°C]

Final comment: ORP relatively low. No photosynthesis helping maintain DO levels? or aerobic bacteria? or rotting aquatic vegetation? or rock chemistry (iron) in the weirpool? or fertilizer run-off pollution? More research.

◊ previous file



Daisies (*Bellis perennis*) have been flowering for a few weeks on greensward near the coast, but until today I've not seen one up here, and I know where to look. This pink-tipped flower is the first of the year, drenched, and eager no doubt to see the sun. Welcome little flower to my world.