

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.

[Coats Marsh hydrology](#) .

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](#).

Field observations—2021 (January—July)

THIS FILE ([Field Observations 2021-1](#)) IS A SUPPLEMENT TO:

“[Observations at Coats Marsh, Gabriola Island](#)” File: 673.

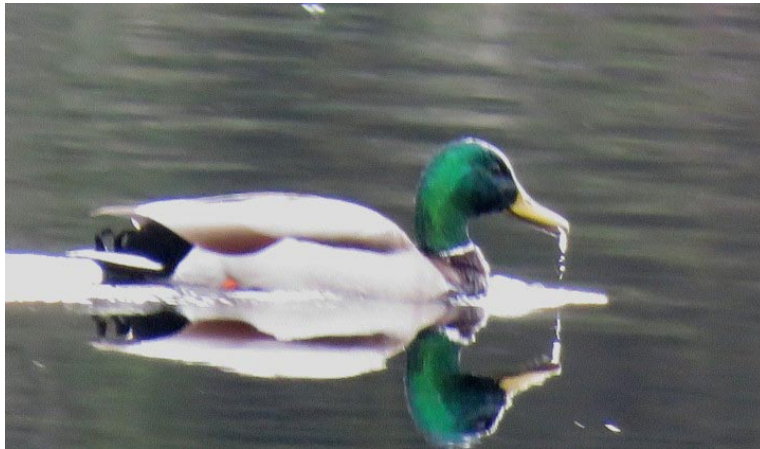
For an up-to-date list of supplements see [here](#) .

December 31, 2020 (day 1993, 1827+166): NanRG cum. 630.9 mm (norm. 535 mm).

January 31, 2021 (day 2024, 1827+197): NanRG cum. 860.8 mm (norm. 723 mm).

Rain in January 33% above long-term month's average. A wet month. Trails a veritable quagmire in places.

February 28, 2021 (day 2052, 1827+225): NanRG cum. 926.3 mm (norm. 849 mm).



Rain in February 46% below long-term month's average. You win some, you lose some.

A disappointing development is the decision by the Local Islands Trust Committee (LTC) to drop the creation of a P4 Land-Use Zone from its high-priority work list. P4 would have been a Park zone, which unlike all the existing Park zones (P1-P3), would give priority to wildlife habitat over human recreational usage, the Coats Marsh RP being among the three candidates on the island for such a new zoning, the other two being S'ul-hween X'pey (Elder Cedar Nature Reserve) and a little-known Burren's Acres Nature Reserve.



That the LTC with a "preserve and protect" mandate on "environmentally-friendly" Gabriola does not have such a zoning tool is a depressing anomaly.

In the view of the park managers of the Regional District of Nanaimo (RDN); the Nature Trust (TNT) of BC; the Gabriola Land and Trails Trust (GaLTT); and seemingly by omission the Parks and Open Spaces Advisory Committee (POSAC), there isn't enough of Gabriola's forested areas set aside for human usage, and Coats RP they maintain should make 50% of its area available for dog-walkers, bikers, horse-riders, and the potential for establishing new trails regardless of loss of undisturbed wildlife habitat, and in spite of a Park Management Plan for the RP that in spirit at least unmistakably sets aside Coats as primarily a nature reserve ideally suited for P4 protection.



Look forward to fewer breeding blue-winged teals, fewer breeding wood ducks, fewer breeding hooded mergansers; more non-migratory mallards and more Canada geese from the mainland habituated to human activity; less solitude; more lawn-weeds along the edges of trails and in the 4-feet; less interest in the natural history of the place as it becomes to be seen more as a fresh-air gym; and more special-interest groups, including I guess people like myself, arguing about their right-of-usage on over-crowded, rutted, *de-facto* "multi-use" trails named and signed like city streets, as Coats Marsh RP progresses toward becoming, not a wilderness area given over to the needs of nature, a place to explore and discover, but just another urban-style park.

Dropping the P4 project for the time being has meant no progress on eliminating the boundary that makes absolutely no sense ecologically between Coats Marsh East (now in the 707CP) and Coats Marsh RP which runs right through the eastern end of the lake.

On the other hand, welcome progress was made when the left-over remainder section (REM) of Coats Marsh East, potentially hosting a residence deep in the woods with a driveway through to Stanley Place, was added to the park by handing over money to the developer.

Top: REM NW corner looking from the east. Now redundant.

Middle: From the REM SE corner looking north. East boundary of Coats Marsh East.

Bottom: Enigmatic flagged point 50m NE of the REM NE corner, which puts it just outside the REM in the middle of the NE Arm wetland, which is not a good place for a trail.

Sincere thanks to the RDN and to GaLTT for quietly getting on with this and protecting at least a part of the East Path Creek catchment area and eliminating the need for a new trail around this anomalous REM.

The REM boundaries have been heavily taped over the years. Developers' surveyors like red and orange; the realtor surveyor pink; the RDN blue with a second reddish colour; and GaLTT usually uses yellow. GaLTT does nowadays thoughtfully mark the tape to indicate who owns it. People who put up plastic tape in the woods anonymously for no readily identifiable purpose are not always very interested in taking it down again when it's done its job, whatever that was.

Arbutus is suffering badly this year and the NE Arm wetland is unusually dry for March.

March 31, 2021 (day 2083, 1827+256): NanRG cum. 957.3 mm (norm. 969 mm).

Rain in March 72% below long-term month's average. This winter (last six months) precipitation has been 2% below long-term average, but the total for the first three months of this year has been 19% below average despite the heavy rainfall in January. February and March have been very dry.

Ominous news is that Canada geese seem to be settling in on the lake. They can become very aggressive toward other waterfowl in the breeding season, worthy of being regarded as an [invasive species](#).

April 8, 2021 (day 2091, 1827+264): NanRG cum. 958.3 mm (norm. 986 mm).

...speaking of which, it's not just salal and Oregon grape that are threatened by [daphne laurel](#), which thankfully I've yet to see in the park. These are white fawn lilies whose habitat is threatened



elsewhere on the island. Fairy slippers are threatened this way too.



The violet-green swallows have arrived at the lake.

April 18, 2021 (day 2101, 1827+274): NanRG cum. 963.6 mm (norm. 1002 mm).

All creeks and the two springs dry, probably have been for several days.

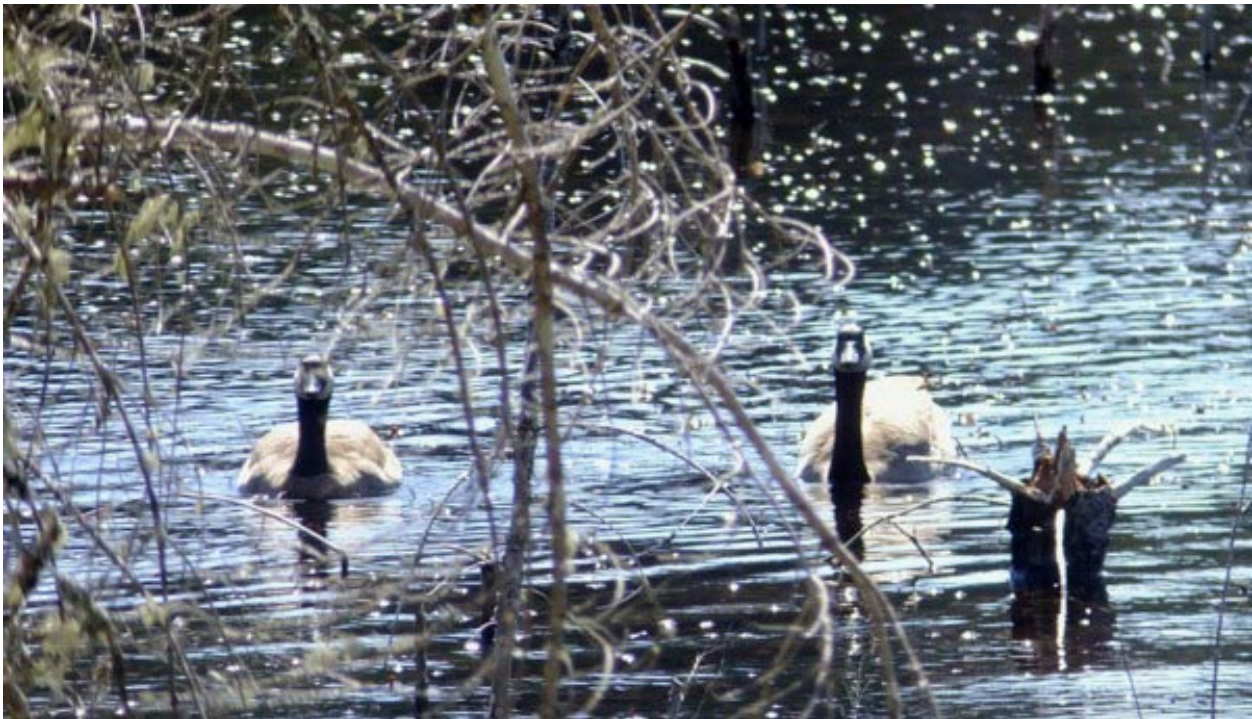
No sign of bats at the bat-house at Stump Farm though they are on Phyllis Reeve's place near-by.

The fairy slippers (calypso orchids) are in flower but seem smaller than usual.

Ravens being remarkably conversational at the western

entrance. Need a microphone rather than a camera.

About ten Canada geese on the lake. These are not shy, they swim toward you, so they're unlikely to be migratory stop-overs. Aggressive urbanites? accustomed to being fed?



April 30, 2021 (day 2113, 1827+286): NanRG cum. 979.5 mm (norm. 1011 mm).

Rain in April 64% below long-term month's average. For a while there it looked like we were going to break the record set in 1973 when it was 92% below average. Total for the first four months of this year now 25% below average.

May 2, 2021 (day 2115, 1827+288): NanRG cum. 979.5 mm (norm. 1014 mm).



The few-millimetres-at-a-time showers in late April have brought out May flowers and a welcome buzz of 4-winged bumble bees and their 2-winged mimics (*Eristalis flavipes* with tell-tale reddish-orange band; you try counting wings to detect the difference). Violets yes, but the park lacks the sandstone flats and rocky bluffs that are the abode of shooting stars, sea blush, blue-eyed-Marys, and white fawn and chocolate lilies this time of year.

Band-tailed pigeons, most often seen along South Boulevard just across the border in the 707-SW CP. Shy but given to chattily cooing.

I've taken down flags between Posts 75 and 83. Old (brittle and faded) orangey-red tape. Probably put there before the REM purchase.

May 5, 2021 (day 2118, 1827+291): NanRG cum. 981.9 mm (norm. 1019 mm).

Pied-billed grebes are back. Their attention-grabbing calls unmistakable; sometimes rivalling those of peacocks.

I remember two years ago there was concern over the die-off of salal with no consensus as to what was causing it ([May 11, 2019](#)). I had the impression back then that salal along the edges of trails was suffering more than plants deeper in the woods. At the time my speculation was that perhaps the trails were acting as wind funnels carrying the fungal spores.

This year it's arbutus (Pacific madrone, *Arbutus menziesii*) that is suffering badly. Perhaps caused by a leaf-spot fungus like *Elsinoë mattirolanum* (in BC?) or *Phacidopycnis washingtonensis* (in WA for sure); more than a dozen other possibilities. It's not a new foliar blight, just very bad this year. Maybe worsened by the well-above-average, but not exceptional, rain in January followed by a very dry February, March, and April. Mean spring temperatures have been normal with a brief -7°C low on Feb.12 with snow for a couple of days after.

Clues: - it starts as dark leaf spots, each becoming visible on both sides of the leaf as the tissue between the veins is thinned;
- the veins are also afflicted;
- the discoloration spreads from the spots and turns the whole leaf dark-brown;



- the leaf eventually drops off, usually intact but shriveled;
- the dead leaves and leaf-litter are sometimes "dusted" grey;
- the pathogen seems to affect both leaves and their stems (petioles);
- the lower leaves on the tree suffer most. Could be that it spreads upwards from the ground, but then again it might just be that the micro-climate at the crown of the tree is not so pathogen-friendly, or alternatively, the resistance and annual growth at the top is more vigorous. Less-than-knee-high seedlings are devastated;
- similar but not identical spots are seen on salal (*Gaultheria shallon*) but salal isn't suffering anywhere near as much this year and it may be due to a different species. Many leaf-spot fungi are



narrowly host-specific;

- badly affected branches may still bear healthy flowers
- new growth is only lightly affected which bodes well for the survival of the taller trees;
- it seems to be everywhere, no tree seems unaffected no matter how isolated it may be.

Note in this view, which is fairly typical, bare branches at the bottom, brown leaves further up, and the year's new growth at the top.

Picture of leaf-litter and duff next page.

On closer examination describing dead leaves you sometimes see as being "dusted"

is misleading. The "grey" is more like the crustose lichen that you see on alder bark; impossible to rub-off with your finger. The leaves most affected are desiccated and brittle. Under a microscope, the "grey" looks like surficial flakes made up of grains of powdered sugar (epidermal cells on the remains of the cuticle) and on soaking in water and drying you see hairs (fungal mycelium?), still only coating the surface though.



A secondary
dead-leaf
decomposer
perhaps? A
distraction?
I'm out of my
depth here.

Microscope
snap shots
next page.



Fine "hairs" like this only observed in the "grey" areas. The "red fringe" *opposite middle* may or may not be the same; my microscope is not good enough to be sure of that.

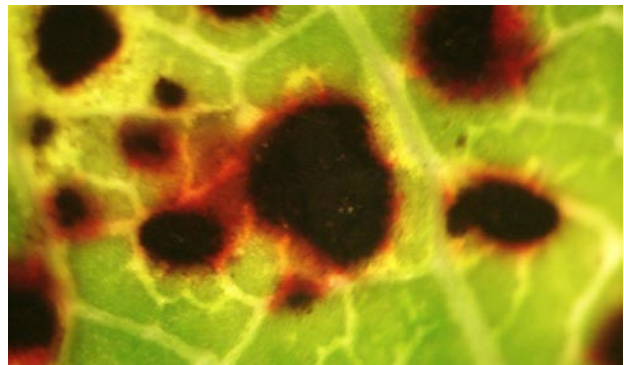


Some spots look tar-like but smaller and less so than those caused by *Rhytisma arbuti*.



Above: Not apparent in this 2-D picture is that some of the darker-brown areas have been hollowed out leaving veins standing proud (spongy mesophyll gone?).

Below: Features on the floor of the hollows viewed from the top surface of the leaf may be surviving remnants of the guard cells that were around the stomata on the lower surface.



Above: seen in transmitted light
Below the same area in reflected light.



CAUTION: I am NOT an expert on plant biology. Please do not cite me as one. Comments are speculation only and may be completely inaccurate and have not been reviewed by anyone who is an expert. Help would be appreciated.

May 15, 2021 (day 2128, 1827+301): NanRG cum. 988.8 mm (norm. 1036 mm).

A delightful, brisk day, the unruly wind strong enough to buffet the shubbery and sway even the lowest branches of the trees thereby hiding my movements from watchful eyes out on the lake. A duck with ducklings, balls of fluff scuttling about in all directions but tied to mother as if by the force of gravity. Without alarming them, I watch her and her family busy among the reeds at the water's edge. A hooded merganser, the sun in my face isn't helping me see and my camera is useless in this light. Dragonfly wings are coruscating.

The ever-present danger this time of year is that if you force the young ones out into the open, they become easy prey for the eagles.



Humans, including myself, need to severely ration their presence here.

Looking at last May's pictures, I noticed one that might have been a blue-winged teal. But no, the blue on her wing too blue, a MS WINDOWS blue-screen blue. More likely a mallard. Haven't seen a teal at the marsh for two or three years now.



Very scarce this year are monkey flowers, and I've yet to see a river of blue forget-me-nots that usually grow in the dried-out rivulets.



The bat house at Stump Farm is vacant again. The bats preferred the cottage and old barn. Swallows seem fewer than in earlier years too; not sure about the insect population, which was definitely down last year. Have to ask the redwings.



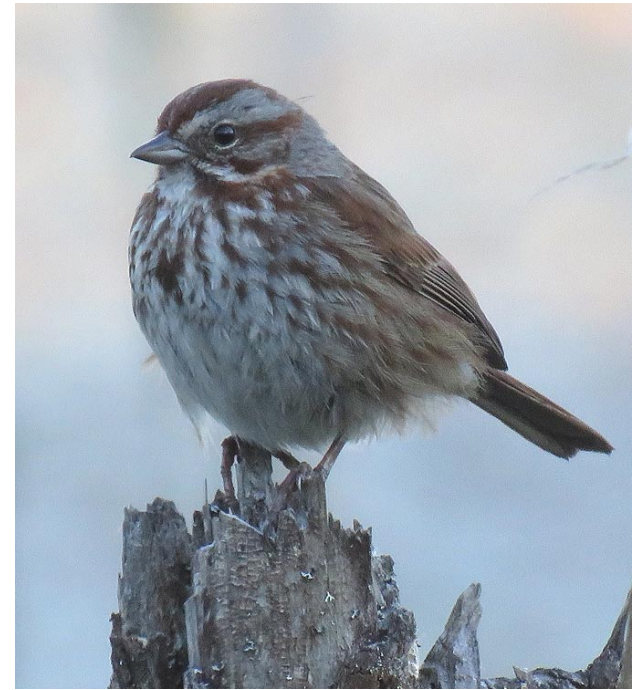
Wild strawberries (*Fragaria virginiana*) are doing well though increasingly having to compete for their share of the trail-side habitat with English daisies and other lawn-loving miscreants.



Blossoms on the Oregon grape are "noticable" this year, but strangely, there're hardly any on the big-leaf maples.

May 20, 2021 (day 2133, 1827+306): NanRG cum. 989.0 mm (norm. 1044 mm). Evening.









Lots of grebes, song sparrows, mergansers, swallows, and redwings (that's a female). The swallows appear to be constantly on the move, but they do make brief stops on snags, usually always the same one in shallows not easily accessible from the shore. They all share the same snag, so there can be quite a gathering there from time-to-time.

May 24, 2021 (day 2137, 1827+310): NanRG cum. 990.2 mm (norm. 1050 mm).

Spots of rain pitter-pattering on the salal. Camas blooming, just a few plants, but a cheery sight nevertheless. Surviving arbutus shrugging off the fungal infection. Pond leveller is dry.





Broom, a shrub of heaths and moorlands, and on Gabriola the fringes of soil-less sandstone plains, anthropogenic wasteland, roadsides, and sandy infertile soil left by the rivers of meltwater at the end of the last ice age. We're lucky to have broom here rather than gorse (furze). Gorse, a similar species to broom, grows in similar habitats, but comes armed with vicious thorns. I remember it with great hostility on the Commons of my childhood in England.

Picture taken in May 2016 in one of the burn-pile clearings in the park before being bashed by that other invasive species. There's very little broom blooming anywhere in the park this year, but undeterred seedlings continue to push up through the grass in the clearings and at the Stump Farm site.

May 30, 2021 (day 2143, 1827+316): NanRG cum. 1001.0 mm (norm. 1059 mm), Weir +195 mm WPB scale. Cistern +171 mm SCB. [cal. datum: weir -0.452 m, cistern +0.538 m, $\Delta = 0.99$ m].

Water levels at the lake quite normal. Beavers are good water managers.

June 1, 2021 (day 2145, 1827+318): NanRG cum. 1001.0 mm (norm. 1062 mm). Rain in May 51% below long-term month's average. Total for the first five months of this year now 28% below average.





No, not another picture of a dead leaf; some kind of Geometrid moth, a *Peromizon* maybe, looking a bit uncomfortable in the broad daylight.

Small grey-to-brown mouse, very long slate-grey furry tail with some white underneath. A Keen's mouse? Been killed, possibly by an owl or raven. It was gone the next morning.

Not just Oregon grape blooming prolifically this spring, are too the wild roses and the salals with their bell-flowers arrayed like dropples on a twig or the brim of

sun-hat caught out in a sudden shower.

Moss is so dry it crunches like snow underfoot.



June 4, 2021 (day 2148, 1827+321): NanRG cum. 1001.1 mm (norm. 1067 mm).

To develop a knowledge of moths I'd need another lifetime. The Pacific coast alone has over three thousand species. This time of year, the most oft-seen in daylight-visits is the small white glyph moth, *Protodeltote albidula*. They hang out in numbers in wet grassy places, especially where canary grass grows.

Not the best of fliers; easy to follow when disturbed; but they seldom settle after a short flutter in a way that suits the camera's eye.

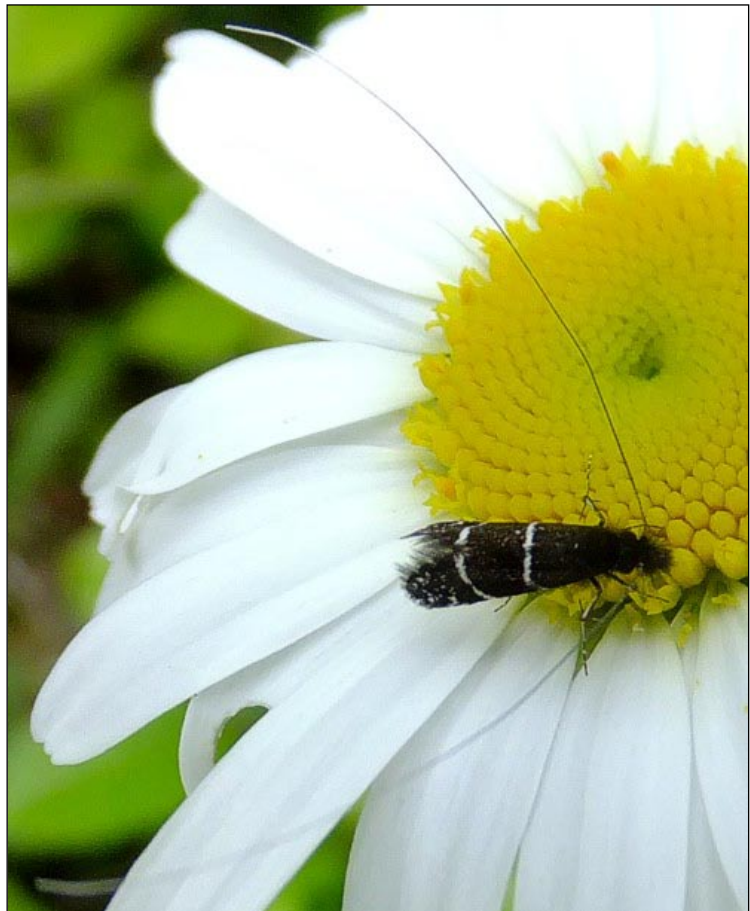
Another I see is the ocean-spray fairy moth, *Adela septentrionella*, with its ridiculously long antennae; what use are they? Right now, ocean spray is not yet out, but oxe-eye daisies appear to do while they wait.



From the trees an aspirated "hwit" from a Pacific-slope flycatcher (I think), but will it pose for the camera? no it won't.

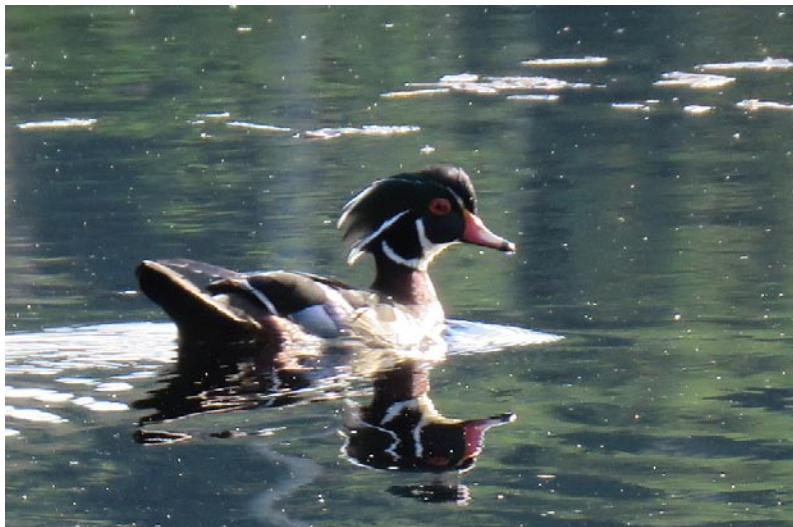
A lone male wood duck, and a mallard supervising a large family on the lake.

Heard a sad tale of how within living memory there were hundreds of ducks and other water birds on Gabriola's wetlands.





Occasional duck hunting by long-time residents was not unusual. Now all gone because of drainage, development, and loss of undisturbed habitat.



What's left in Coats Marsh is just a vestige of what used to be.

June 14, 2021 (day 2158, 1827+331): NanRG cum. 1036.7 mm (norm. 1082 mm).

A female wood duck (*next page*) with two, possibly three, young ones. Proof positive that they breed here. Wood ducks nest in tree cavities away from the water, so





maintaining a generous protective buffer zone around the lake is an important habitat conservation issue for them.

Twin flowers everywhere; tropical-looking honeysuckle; and a blue dasher, a name that is a little behind the times, the "blue" being the colour sported only by mature males. And if you were wondering about the blue dasher's scientific name *Pachydiplax longipennis*, it refers to their "long wings".



Although common in North America, blue dashers are a dragonfly species whose survival is of concern in BC (blue-listed).

And woodland tarweed (*Anisocarpus madioides*), a strange alien

but native plant, this one with fifteen separate fully-functioning florets in the disc of the ray flower (in bud left, flowering right). Unmistakably tidier and pleasingly coiffed compared with that unkempt dandelion tribe. It's said to have a pungent smell but I've never detected that. My nose only senses a faint whiff of tree-sap with overtones of licorice and something they put in Pears soap.

Common along trails in the park but rare in BC outside of the Gulf Islands and adjacent Vancouver Island.

June 19, 2021 (day 2163, 1827+336): NanRG cum. 1041.1 mm (norm. 1088 mm).

Yellowthroat warblers are back for the summer, nesting in the verdant, snaggy, and swampy fringes of the lake.

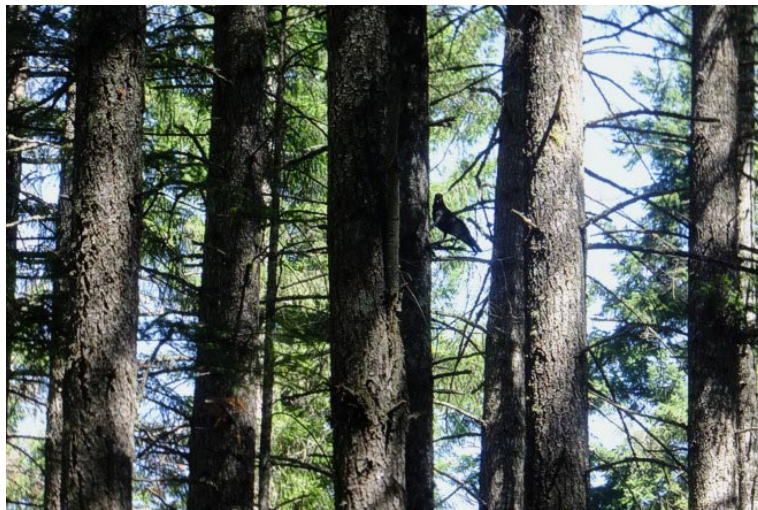


New plant species in small patches amongst the towering and flowering canary grass, which is a major threat to all of Gabriola's wetlands. Bog St. John's wort (*Hypericum anagalloides*), a native marsh plant not to be confused with the common garden-escapee sort (*H. perforatum*).





almost never see the red variety away from the farms at the south end. Cooley's hedge nettle in bloom, but I'm darned if I



can find it so in the RP. I know there are extended-family patches in damp places in the Little Creek catchment area, but my luck in finding them within the RP itself has not been good. The species has no ambitions of becoming invasive.

June 25, 2021 (day 2169, 1827+342): NanRG cum. 1041.1 mm (norm. 1096 mm).

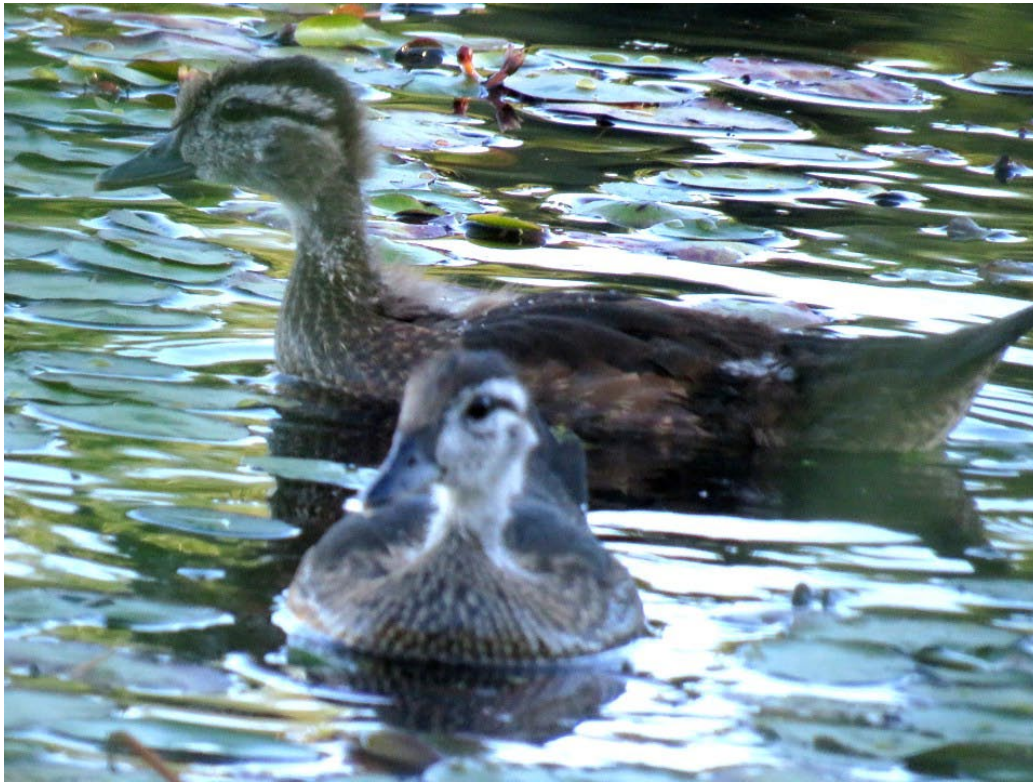
A lovely strong smell of mint at the old Stump Farm site, near the water hole in the now-dry stream-bed.



A red clover blossom near-by, just one - not headline news, but I



Lots of dragon and damselflies this year. The dragon flies sometimes seem to have mastered the art of flying more than any bird. Just watch the "catch-me-if-you-can" dances of the skimmers as pairs thread between the sheltering snags at a speed and with a dexterity that no avian predator could match. Only elite NHL hockey players can evoke the same "did you see that!" kind of admiration.





Other dragon-fly species hover assertively just a few feet in front of your face, staring at you, but somehow aware that they should no closer go. Can't help thinking that maybe they're secret government drones looking to see if you're doing something they could tax or forbid.

Blood-red meadowhawks, possibly *Sympetrum madidum* (red-veined) judging by the black legs, mostly just loitering on their favorite perches. This species is well-suited to life on Gabriola in that they sometimes lay eggs in creek beds that in the summer are dry.



In contrast to the drones, the smaller damselflies show the same fearless friendliness of the chickadees, though they wouldn't appreciate the comparison, some alighting on your hand where they pose for pictures. This hatch were Pacific forktails (*Ischnura cervula*, male and female).

The blue dashers have their powder-blue outfits on.



Duck families are fine, the juveniles, not yet fully fledged but using their wings as they skitter across the watershed. Several families with at least six surviving ducklings.

The clearings all white with daisies, some with matching white foxgloves. Yellow hairy cat's-ears in between.

June 28, 2021

The air is hot (40°C max.) and dry (RH 21% min.). Hardly a breeze; no suthering from the canopy; no shadows of leaves dancing on the bare-bone trails; and no hint of air fresh from a journey over a wavy sea. There's just sun, and yet more sun.

The tall canary grasses with their long needle-thin stems are top-heavy with inflorescence. Most stand still, but some gently sway in local thermal turbulences, whilst others nod in response to visits by passing insects.

The greenswards are browning, some bread-crust brown; others more golden like Corona Extra, a Mexican lager; and as the grasses bleach, still others are turning the cloudy yellow of a Bavarian weißbier. And their multitude of seed heads endlessly quiver in a macro version of Brownian motion.

The shrubbery is for long periods motionless, seemingly smugly remaining green in the coolness of the understory, but despite its bravado, the berries there are sparse. Once in a while there's a frond that flaps and vibrates with vigour, driven by a faint flow of air that for fleeting



July 2, 2021
 (day 2176,
 1827+349):
 NanRG cum.
 1041.1 mm
 (norm.
 1105 mm).

Rain in June,
 all in the
 first half of
 the month,
 only 2% below
 long-term
 month's
 average.
 Almost as
 normal as it
 gets. Total
 for the first
 six months of
 this year now

moments is exactly right to
 excite in it an animated
 resonance.

26% below average.

Weir 60 mm WPB scale. Cistern
 +78 mm SCB.

[cal. datum: weir -0.587 m,
cistern +0.445 m, $\Delta = 1.03$ m].

Have to hand dig down through mud on the downstream side of the beaver dam near the baffle to read the scale. May not be accurate.

The lake looking like late-August in early-July.

July 14, 2021 (day 2188,
1827+361): NanRG cum. 1041.1 mm
(norm. 1115 mm). Weir -38 mm WPB
scale. Cistern +19 mm SCB.
[cal. datum: weir -0.685 m,
cistern +0.386 m, $\Delta = 1.07$ m].

There are still young ducklings on the lake. Probably mallards, but I'm not sure. A late second attempt at a family?

I enjoy the bentgrass this time of year. It grows in dense patches, its diffuse panicles with branches so spider-web thin they're hard to see. The purple-brown spikelets small, appearing to float like specks in a shaft of sunlight, the whole so airy you can see right through it, like the cluster of galaxies (ACO

S 295) seen by NASA's Hubble Telescope. Impossible to capture in a 2-D image.

Douglas-firs are showing unusual red-flagging this year, especially those exposed to the sun along the open stretches of the main trails.

The arbutus have fully recovered from their fungal attack.

July 16, 2021 (day 2190,
1827+363): NanRG cum. 1041.1 mm
(norm. 1116 mm). Weir -50 mm WPB
scale. Cistern +8 mm SCB.
[cal. datum: weir -0.697 m,
cistern +0.375 m, $\Delta = 1.07$ m].





July 17, 2021 (day 2191, 1827+364 = 2192-1): NanRG cum. 1041.1 mm.(norm. 1117 mm). July to July rainfall is -7% below normal, not at all unusual.

Date	NanRG	Weir pool	Lake level (cal.)
Jul. 17 2016	1306 mm	-660 mm	.027 + .212 = +239 mm
Jul. 17 2017	1277 mm	-687 mm	.185 + .212 = +397 mm
Jul. 17 2018	1143 mm	-671 mm	.202 + .212 = +414 mm (extrapolated)
Jul. 17 2019	1043 mm	-619 mm	.225 + .212 = +437 mm (extrapolated)
Jul. 17 2020	864 mm	-473 mm	.336 + .212 = +548 mm (interpolated)
Jul. 17 2021	1041 mm	-702 mm	.158 + .212 = +370 mm

The contrast between 2018-2019 and 2020-2021 is interesting. Despite the almost identical amount of precipitation over the annual seasons (July to July), the lake level is down this year. A reflection maybe of the fact that this season, more of the rain fell in winter, so runoff was greater, and the spring has been dry and hence evapotranspiration higher. It's hard to capture the vagaries of weather with statistics.

THAT CONCLUDES THE SIXTH YEAR OF OBSERVATIONS AT THE MARSH ◇

[Previous file.](#) [Next file.](#)