

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 migratory [ducks and geese](#).

### **Field observations—2019 (January—June)**

THIS FILE ([Field Observations 2019](#)) IS A SUPPLEMENT TO:

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

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

**2019 NOTES**

January 4, 2019 (day 1266, 1096+170): NanRG cum. 697.9 mm. Weir +732 mm WPB scale.

Water over the deck at the weir.

January 10, 2019 (day 1272, 1096+176): NanRG cum. 746.6 mm.



Stump Farm buildings all gone. Curious bat house structure atop a metal pole on a concrete pad at the site. Wonder if the bats will approve. It's good there is at least one shed, shack, or dilapidated cabin in the yards bordering the southern boundary of the marsh housing bats (*Myotis californicus*).

January 19, 2019 (day 1281, 1096+185): NanRG cum. 773.5 mm. Weir +347 mm WPB scale.

About half a dozen trumpeter swans. Group with unleashed dog at the water's edge at the East Path viewpoint wondering why all the wildlife was so far off! East Path Creek a trickle. NE Arm spillway appearing dry.

January 22, 2019 (day 1284, 1096+188): NanRG cum. 798.8 mm. Cistern +275 mm SCB.

Rain and mist; nobody about. Ducks all along the east shore. Buffleheads, widgeons, mallards, and ring-neckeds. East Path Creek flowing very

gently.

GaLTT prematurely flagging two potential trails from Coats Marsh East into the 707 CP along the NE Arm Trail extending into a high-usage deer fawning area at the east end of the NE Arm wetland, and from the 707 SW Golf Course Trail to the Coats Marsh RP Stump Farm Trail through an area identified in the current management plan as being of high wildlife value, sufficiently so that it was recommended by consultants that this area not be identified on park maps and that trails not be located in its immediate proximity.

No public or member information or discussion of the flagging and this while there are pending revisions to the 707 CP and Coats Marsh RP Management Plans, pending new management plans for the newly acquired 707 SW and Coats Marsh East, and the pending creation of a P4 zoning option as a priority item by the Islands Trust LTC.

GaLTT, while otherwise serving the community well, appears to have a "trails everywhere" policy with little regard to the needs of wildlife and preservation of at least some areas of Gabriola that do not have human use as the prime focus of their management.

January 24, 2019 (day 1286, 1096+190): NanRG cum. 798.8 mm. Weir +402 mm WPB scale.

Large flock of boisterous Canada geese. Measured depth of bed of Coats Marsh Creek immediately adjacent to the downstream face of the baffle. Two points, -3.23 and -3.15 m.

February 18, 2019 (day 1311, 1096+215): NanRG cum. 882.5 mm.

Lake has been iced over last week or so. Trails still snowy, packed by a few sets of bootprints (what! no skis?) and icy-snow still covering the salal understory despite the daytime temperatures being a few degrees above zero. Deer tracks surprisingly common; not a lot, always solitary, but you seldom see deer up here in the winter.

Small birds very vocal, winter wrens, fox and song sparrows, chickadees. Coats Drive resident reports varied thrushes. This is the second report of them I've heard in recent days. I've never seen a varied thrush on the island in all the years I've been here, flocks of them in winter invariably turn out to be robins, nor have I heard more than once their mournful hi-lo pitched calls with languid in-between pauses that are so common in summer in the otherwise silent coniferous forests on the North Shore Mountains.

March 8, 2019 (day 1329, 1096+233): NanRG cum. 903.2 mm.

Geological survey. On the face of it, Coats Marsh RP is not where you'd go to see interesting geology, unless that is hydrogeology is your interest. A few threadbare patches of Gabriola Formation sandstone (Cretaceous) around 65-million years old on the trails, and that's it. But what's usually missed is the glacial till. It represents what might be loosely characterized as a "disseminated mélange", rocks of differing sizes, differing lithologies, differing geographical origins, and differing ages going back over 300 million years from the Paleozoic to almost the present.

The two main players are first the numerous, admittedly unremarkable, basalt pebbles from the east coast of Vancouver Island, likely the Karmutsen Formation (Triassic); and second the giant plutonic erratic boulders that you can't avoid noticing, likely from the Coast Mountains (Cretaceous or more recent). But it's the minor players that provide the challenges.

Vancouver Island did not arrive off the west coast until around 100 million years ago and it had a rich history as part of Wrangellia while still drifting across the Pacific Ocean from tropical climes. Wrangellia actually stretches across beneath the Strait of Georgia and surfaces most obviously around the entrance to Howe Sound, from where ice has brought interesting samples of metamorphic and metasomatic



rocks associated with its docking with the North America mainland as it was then. Ice has also brought us equally interesting samples of the oldest rocks of Wrangellia underlying the Karmutsen pillow lavas



and exposed on the Nanoose Peninsular as part of the Sicker Group (Devonian).

The picture *left* is just one example you can easily pick out of the till that has a very long and complicated history, impossible to unravel without geochemical and petrographic analysis, which I hasten to add I haven't done.

The white clusters are soft and powdery, a zeolite perhaps, possibly heulandite, but appearing to be just aphanitic

feldspar. The dark groundmass is mostly black, rather fibrous amphibole. Minor biotite is ragged and coated with limonite, and there are scattered small patches of colourless translucent quartz, some with fracture edges that are well-rounded, almost mammillary.

The odds are high that the amphibole is hornblende but it looks suspiciously like the less-common actinolite to me despite it being black rather than green. Amphibole is an alteration product of pyroxene, which is an essential components of basalt, so this could be a hydrothermal metamorphic, an amphibolite perhaps from Nanoose.

Inside however, the picture is rather different. Amphibole and fresh biotite are abundant, the white mineral is no longer soft and is clearly a feldspar, and quartz remains present but sparse, so this could be a well-weathered hornblende diorite grading into a hornblende tonalite. Stones like this can be picked up on the beach at Porteau Cove in Howe Sound.

Lots of questions that only more investigation can answer, too easy to be glib, and this is just one pebble.

There's more like this in <https://nickdoe.ca/pdfs/Webp691.pdf>.

March 15, 2019 (day 1336, 1096+240): NanRG cum. 916.8 mm.

re. Feb 18 note. Finally, the unmistakable call of a varied thrush in the forest at the west end of the RP.

March 21, 2019 (day 1342, 1096+246): NanRG cum. 916.8 mm.

Stump Farm No.1 Stream, the outlet from Canary Grass Meadow, is dry.



March 29, 2019 (day 1350, 1096+254): NanRG cum. 917.6 mm. Weir +277 mm WPB scale.

Coats Marsh Creek running feebly. Water is coming mostly from the pond leveller with just a slight spill over the sill. With no precipitation of late I guess there's equilibrium between the flow in the creek and the leakage through the beaver dam. The private property drain (Lot 5) is still running.

March 30, 2019 (day 1351, 1096+255): NanRG cum. 917.6 mm. Cistern +265 mm SCB, only a 10 mm drop since January despite the fact that it looks like this month will be very close to a record for lack of precipitation. Not since March 1965 has there been so little.

Sunny today. East Path Creek dry; probably has been for some time.

Dozens of ducks and a few geese out on the lake. Quite a busy place. The buffleheads have nearly all moved on, but there are ring-neckeds everywhere, plus a few mallards, the drakes looking splendid with their glossy green heads. I'm sure I heard a pied-billed grebe but couldn't see it. There were some, what I take to be Canada geese, in





twos and threes, on the small side and uncharacteristically mild mannered. There could be other species around, but one of the hazards of viewing diving ducks is that their wet plumage glistens in the sunlight and the camera falsely records it as white.

Quite proud I was that by using foliage as a blind, standing perfectly still most of the time, moving very slowly, and occasionally sinking to my knees,

I raised only a few alarm calls and avoided any "we're-out-of-here" flights. A bonus was visits from friendly and curious chickadees, song sparrows, wrens, and kinglets as I surveyed the scene, skulking amongst the snags at the water's edge.

April 5, 2019 (day 1357, 1096+261): NanRG cum. 928.3 mm.

March was a near record low for lack of rain, and this winter's six-month total (Oct.2018 - Mar. 2019) has also been below average (811.1 vs. 871.2 mm since 1944), but at -7% it's well within the one-sigma range of +/- 21% variation. In the 1976/77 winter it was down to 505.7 mm.

Coats Marsh Creek close to ponding. Swallows are back over the lake. Violet-greens, lots of them. One pair of Canada geese and some buffleheads still here.

Some of the duck species that over-winter here are also seen on the sea. Interesting that the numerous American widgeons are not nearly so nervous these days of people passing by on the beach at False Narrows as they once were, and still are at the lake. They hang out on the seashore when all is quiet, and take to the water when anyone approaches, whistling to themselves, but if you give them time, they paddle out a bit, but don't take off in the startled fashion they do at the lake.

April 14, 2019 (day 1366, 1096+270): NanRG cum. 964.9 mm.

Politics! RDN-GaLTT busy downgrading the Coats Marsh RP trails by posting them as if they were 707 CP multi-use main trails. Expect a lot more traffic. Solitude, tranquility, and breathing room for wildlife appear these days, as it does globally, to count for little.

[File 690](#) Notes on the 707 CP Potlatch additions

[File 691](#) Geology of the extended area summary

[File 668](#) Hydrogeology of the extended area updated

[File 692](#) Flora of the extended area summary

[File 693](#) Fauna of the extended area summary.

April 19, 2019 (day 1371, 1096+275): NanRG cum. 978.0 mm. Weir +213 mm WPB scale.

Stump Farm No.1 Stream has been flowing again after the March drought.



Snakes looking very miserable in the cold rain showers. Fairy slippers likewise.



April 20, 2019 (day 1372, 1096+276): NanRG cum. 978.0 mm.

Beavers getting serious about damming the flow over the sill. They're using mud to plug the gaps between their sticks.

Duck in the weir pool, not shy. ID? Buffleheads around still, often among the snags, the males definitely becoming rambunctious. Although they're not likely to breed here, you never know.



My wildflower species count is approaching 100, so I'm taking what I can to bump up the count, even purple dead-nettles. I've never claimed the marsh is a biodiverse wonder; all such places can't be David-Attenborough show-pieces. Besides, I'm a secret admirer of weeds, so here it is.

April 23, 2019 (day 1375, 1096+279): NanRG cum. 980.7 mm.

Another type of violet in the gutter beside the trail just north of the regional park boundary and near the end of the Stump Farm Trail, round-leafed violet (no runners, and yes, round leaves). Hooded false morels not far away. Fairy slippers at their best.







OK here comes No.97, and it is a "weed" (meaning from England even though it has become quite rare there). Common this year. It grows in open mossy areas and looks a bit like Whitlow-grass. Tiny. *Teesdalia nudicaulis*, shepherd's cress. Especially abundant just outside the CM park along South Boulevard.





April 27, 2019 (day 1379, 1096+283): NanRG cum. 980.7 mm.

Woods awash with wind, the dappled shadows of the trees dancing, and every approaching gust sounding more ominous than the last as it roars through the treetops. Unusual bracket mushroom on an old-growth alder snag, with gills and appearing to have a stalk. *Crepidotus* sp., probably flat crep (*C. applanatus*).



A white spring: common chickweed, wild strawberries, lichen agaric, little western bittercress, anemones (Lyall's), plus cherry blossom, miners lettuce, candyflowers, English daisies, and more.







May 3, 2019 (day 1385, 1096+289): NanRG cum. 980.7 mm. Cistern +280 mm SCB.

Lake level high despite less than average rain this spring. The norm for this date is NanRG cum. 1016 mm. East Path Creek dry.

Pair of bald eagles circling the lake, not a duck in sight but I could hear mallards, pied-billed grebes, and Canada geese.

Soon after the eagles left, the ducks and geese appeared. Very

handsome looking hooded merganser drake, not well-captured by the camera. Pair of buffleheads. Pair of mallards. On shore, a flock of white-crowned and golden-crowned sparrows foraging in the grass together. English bluebells somebody has planted - could be worse.





May 5, 2019 (day 1387, 1096+291): NanRG cum. 980.7 mm. Weir +238 mm WPB scale.

Pond leveller barely trickling, Coats Marsh Creek dry at the observation point - probably has been for a while.

May 7, 2019 (day 1389, 1096+293): NanRG cum. 980.7 mm.

Saprophytes in and around the Stump Farm site found while broom bashing. Apparently not rare, but I don't see them every year.



Called spotted coralroot (*Corallorhiza maculata* ssp. *maculata*).

Red-flowering currant on the banks of the Stump Farm Number 2 Stream.





May 11, 2019 (day 1393, 1096+297): NanRG cum. 980.7 mm. Weir +229 mm WPB scale. Cistern +258 mm SCB

No rain this month. Levels falling at roughly 2mm/day, about normal for this time of year. Guess the beavers have patched their dam.

Pond leveller just trickling still, probably no more than 1 L/s or so. The private property drain (Lot 5) still running. The



weir bay level at the baffle is now an inch or two below the sill, and no sign of any leakage. No ducks in the weir pool; unusual.

Pacific sanicle moved from suspected to confirmed in the species lists. Quite common.



Two eagles again over the main marsh. Only activity a pair of Canada geese that came right over to the cistern to investigate, but didn't see me standing among the snags stock-still. Shortly after the eagles left, a mallard drake and a wood-duck couple ventured out. Interesting as they nest in tree cavities like the hooded mergansers.

Something new afflicting the

salal, and to a much lesser extent the Oregon grape too. Whole leaves turn a uniform tan colour and die, their stalks dried-out.

Widespread, but not ubiquitous. On the Oregon grape it does the same; a sharp contrast with the pathogen that's always been around that creates brilliant red and orange patches and dark spots on their leaves.

Related to exposure to the sun? It appears to be more prevalent along trails and in clearings than deep in the woods, but more study needed to prove that. Reported widely on Vancouver Island so more likely to be climate related than the spread of a disease.







May 18, 2019 (day 1400, 1096+304): NanRG cum. 990.5 mm.

GaLTT and the RDN have recently installed 45 posts in the area defined by the 707 CP, the Potlatch donor lands, and the Coats Marsh RP. These are additional to the existing 33 posts in the 707 CP. This project is one GaLTT and the RDN have planned together without public discussion or the involvement of POSAC.

Each post is 6 x 6 inches and 4 to 5 feet high. No signage attached as yet, but they are located at trail intersections, some being 707 CP MAIN trails, some 707 CP SIDE trails, some within Coats Marsh, some trails not yet assigned a status in the two donor parcels, and some trails within the old 707 CP that have been constructed "informally" by mountain bikers.

From left to right in the photos below, the sites of the posts are the 707 CP, 707 SW donor land, Coats Marsh RP, and Coats Marsh East donor land (see [File: 690](#) for more detail, and [File 680](#) if you're interested in the politics of all of this).



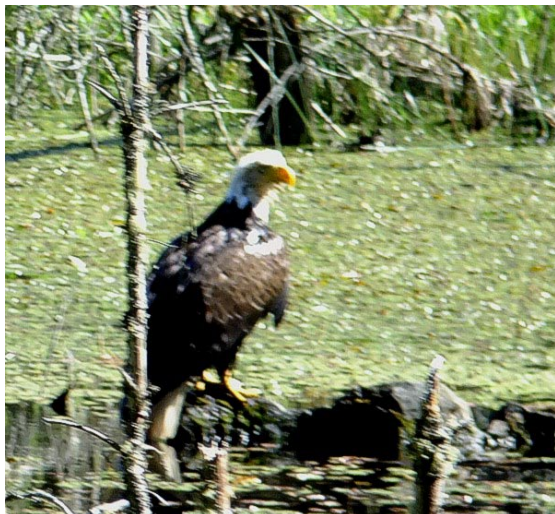
Something else to worry about is that there still is one pair of Canada geese on the lake. The lake does not need any non-migratory Canada geese right now. They can be very aggressive, usually not toward humans outside of urban areas, but toward other wildfowl species; they will harass ducks and kill their ducklings. I've heard the geese often in the evenings this last week while broom-bashing in the western burn-pile clearing. Geese are also becoming a problem in McGuffies Swamp at the headwaters of East Path Creek.

Also discovered and not welcome is sweet vernal grass, imported for lawns, invasive, and becoming notorious on southern Vancouver Island for reducing the biodiversity of grasslands.





Three new wildflower species after a slow start this spring. Thyme-leaved speedwell, blue-eyed grass, and large-leaved avens (easily overlooked as yet another kind of buttercup); we have at least six *Ranunculus* (buttercup) species on Gabriola, which may be close to the number of botanists on the island who can reliably identify them all.



May 22, 2019 (day 1404, 1096+308):  
 NanRG cum. 993.9 mm. Weir +213 mm WPB scale.

Pond leveller just a drindle. Graphs in File 673 show the intake about 50 mm lower than it currently is. Corrected for the 2018/2019 season but left as is for earlier times.

Creeping buttercup confirmed. They're more robust-looking than the native species, but prefer meadows and grassy river banks so there're only





limited places in the park where they thrive.

Eagle in the weir pool.

Geese continue to be a disturbance. Saw three today, honking and hollerin' not sure what the threesome relationships are; I'm not an expert on such matters. The ducks certainly keep out of their way.

Less broom in the western burn-pile clearing and none now at Christine's old place.



May 25, 2019 (day 1407, 1096+311): NanRG cum. 998.0 mm.

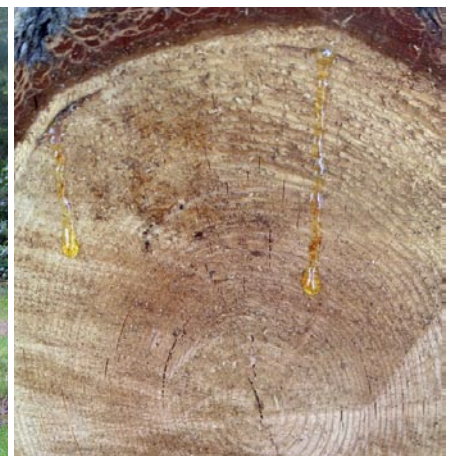
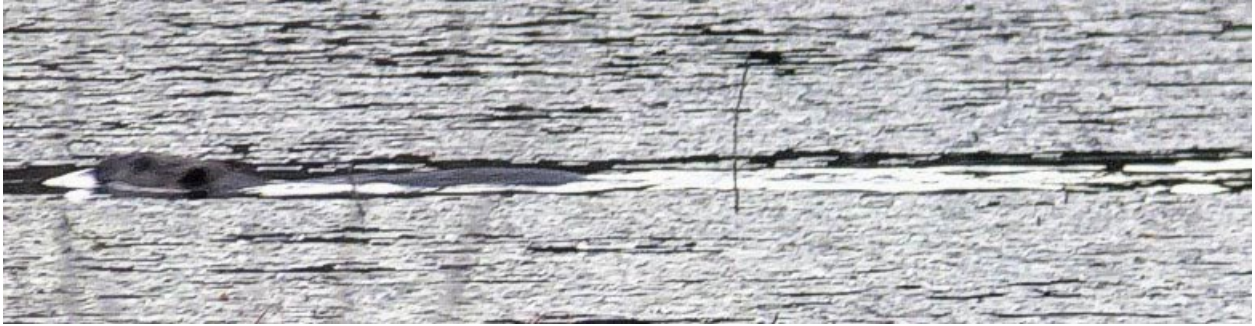
Mindless logging at the Stanley Place entrance of Coats Marsh East CP and inexplicably at the waterside within the Coats Marsh RP.

This is a good bird-watching area used by swallows, cedar waxwings, brown creepers, chickadees, red-winged blackbirds, and others for roosting, nesting, and sheltering among snags from hawks. Close to the entrance and as far as some visitors will want to go. I find this hard to distinguish from vandalism.

A beaver towing a long pole, moving like a freighter through the watershed. If humans do it, why not beavers.

Two families of mallards (three hens, one drake) together with a small brood of four to five ducklings; many fewer than usual. A lone hooded merganser, a hen, no brood, and a pair of wood ducks also without young. No sign of geese this evening. Violet-green swallows and plenty of insects after the rain earlier today.





Tears?









Monkey flowers and forget-me-nots out in abundance together, as they commonly are, in the now-dry watertracks of East Path Creek near the ancient willow tree.



May 29, 2019 (day 1411, 1096+315):  
NanRG cum. 998.0 mm.

Off the beaten path in Canary Grass Meadow and in the SE Arm Wetlands a new rose species. Aptly named swamp rose (*Rosa pisocarpa*).

Surprisingly not off the beaten path, a lone rather bedraggled camas, along



the Marsh Trail. Wonder how it got there all on its own.



Another find, bur chervil (*Anthriscus caucalis*). Tiny flowers and finely cut leaves needing a loupe to appreciate them.

One person's description of the leaves is: "basal and cauline, with short, stiff hairs, gradually reduced upward, petiolate, the blade bipinnately dissected, with small ultimate segments".

Another's, JCG's choice, is "fretty" :

See, banks and brakes  
Now, leavèd how thick!  
lacèd they are again  
With fretty chervil...

John Manley Hopkins

Perfect.

May 31, 2019 (day 1413, 1096+317): NanRG cum. 998.0 mm. Weir +171 mm WPB scale. Level at baffle 235 mm below sill.

Pond leveller now dry and level at the baffle well below the sill but private property drain still flowing gently. Another low rainfall month, but not exceptionally so, 17.3 mm compared to May's average of



45.2 mm. It has been less in ten of the last 75 years and has varied from 5.0 mm (2015) to 145.7 mm (1984).

Bat house is a success (see January 10). Feces on the concrete pad belong to bats, not mice (cm scale). Full of chitin from fragments of the undigested exoskeletons of insects, some chitin straw-like but articulated, and some making the stools shiny, the stools crumbling when crushed. Just needs a bit of landscaping around the pad now.

June 1, 2019 (day 1414, 1096+318): NanRG cum. 998.0 mm. Cistern +211 mm SCB.

Lake loss due to evapotranspiration starting to exceed replenishment by precipitation, as is usual this time of year.

Sunny with a soft cooling breeze. Not a lot to see on the lake; several solitary ducks way off, only a wood duck and a mallard recognizable among them but several smaller diving ducks scattered here and there too. Pied-billed grebes additive as always; heard but not seen.

June 7, 2019 (day 1420, 1096+324): NanRG cum. 998.0 mm.

Explored Little Creek, a tributary of Stump Farm Number 1 Stream, which in turn flows into Coats Marsh Creek and on into Hoggan Lake.



Some of Little Creek's reaches have banks and support hydrophytes; some reaches are poorly-defined watertracks difficult to follow in summer; and it flows just below the surface over sandstone bedrock at the Three Gates Trail. There's a culvert beneath the Mainline Trail at Randy Hollow.

As a consequence of this diversity, I've just known

various spots on woodland trails over the years as "a little creek" without recognition that they are all linked. Bikers have built a small wooden bridge across Little Creek and a cobble causeway across the Upper Little Creek which follows the floor of a dell down to Randy Hollow. Both useful and unobtrusive.





Found skunk cabbage, surprisingly rare in the RP, and yellow-flags (obnoxious weeds!) in the wetland around where Stump Farm Number 1 Stream meets Coats Marsh Creek, and a new species of sedge (*Scirpus microscarpus*) in Little Creek. Small though it is, Little Creek has

standing water in places, just follow the deer trails to find it.

Confirmed that Stump Farm Number 2 Stream is a tributary of Stump Farm Number 1 Stream. Not perfectly clear where the source of Stump Farm Number 2 Stream lies. Its upper reaches have been ditched as part of logging road construction at some time in the last century, and watercourses are now obscured by thick bush.

The confluences are:

Little Creek into Stump Farm #1 = 49°09.400'N, 123°49.065'W

Stump Farm #2 into Stump Farm #1 = 49°09.373'N, 123°49.075'W

Stump Farm #1 into Coats Marsh Creek = 49°09.366'N, 123°49.165'W.

June 13, 2019 (day 1426, 1096+330): NanRG cum. 998.4 mm Weir +91 mm WPB scale.

No surface water at the baffle; mud 340 mm below sill. Private property drain still dribbling.

June 15, 2019 (day 1428, 1096+332): NanRG cum. 998.4 mm Cistern +151 mm SCB.

Lake level perfectly normal for time of year despite lack of rain. Reeds in flower and going to seed; several newly-identified sedges including Falkland Island sedge and beaked sedge (I think, I'm not an expert) in the Coats Marsh Creek catchment area.

Purple finches joined me among the snags; staying long enough and close enough for me to make perfectly sure they weren't house finches.





Top: *Carex macloviana*; Bottom left: *Carex rostrata* (in standing water); Bottom right: *Carex obnupta*.  
Next page bottom: *Juncus bufonius* (toad rush, common).

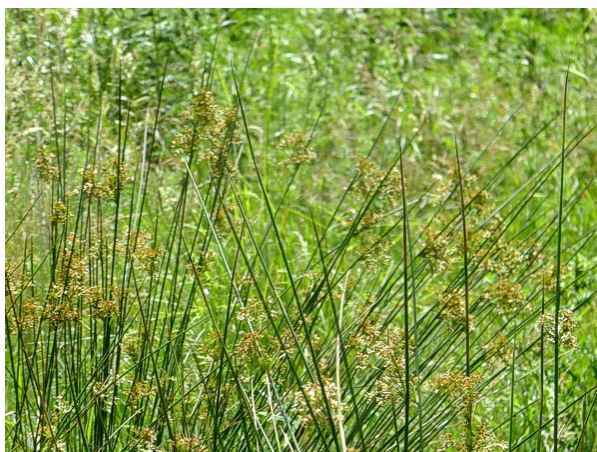




Blue dashers common even away from water, more females than males, their lack of blue belying their name.

A patch of kneeling angelica in the boggiest section of a minor drainage channel in the Little Creek/Stump Farm #1 Stream catchment area.

Bikers are admonished for making ruts in trails, but some ruts, water-filled in winter, are becoming micro-ecosystems. Larger ones are places to look for American brooklime.







June 24, 2019 (day 1437, 1096+341): NanRG cum. 1003.4 mm Weir +49 mm WPB scale. Ocean spray putting on quite a show this year. A bride expected at any moment...







...but not this painted lady.

Pied-billed grebes at the lake still. A bold squirrel on the Marsh Trail.

June 29, 2019 (day 1442, 1096+346):  
NanRG cum. 1022.8 mm Weir +47 mm  
WPB scale.

Delightful evening spent wet-footed and hidden among the canary grass, rushes, and snags at the water's edge in the east burn-pile clearing. Forewent the end-of-month lake level measurement for fear of flushing some of the ducks not all yet in post-breeding mode.



A small flock of wood ducks only partially visible among the reeds (seen were two females, one male, and some juveniles, so close I daren't even reach for my camera for fear of alarming them); western kingbirds (?) using a tall snag to launch their forays on the numerous insects; three new species





of wildflower (all escapees), rose campion, musk mallow, and one new to me, hedge bindweed (*C. sepium*) near the water, its flowers much bigger, over three inches across, than the too-familiar neglected-garden pest (*C. arvensis*).



Beavers active, one startlingly puncturing the serenity by making an extraordinary series of three loud splashes, akin to splashes made by cobbles tossed high in the air before hitting the water. In the sea, you'd say it was the work of a small harbour seal. Why? a mystery. Otherwise, the beavers quietly browsing among the watershield and water smartweed doing a fair imitation of ducks seen at a distance.

The air off the lake noticeably more sultry than in the forest. Not a lot of rain this month, but not exceptionally dry, 24.8 mm compared to June's average of 41.4 mm. It has been drier eighteen times in the Junes of the last 75 years (25%) and rainfall for the month has varied from 4.8 mm (1950) to 128.3 mm (1946).

Told by the RDN Parks that number of bats they counted at Stump Farm site bat house was 42. ◇

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