

**Newport Forest**

Wednesday July 5 2011

1:30 - 6:10 pm

Weather: prec. 25 mm; RH 58%; BP 101.6 kPa; cld/sn; SSW 0 - 5 kmh; T 34° C

Purpose: maintenance

Participants: Kee

I came to the property with various little projects in mind, from repairs to the weather station to refurbishing the trail cams, which have been out of battery power for a week now. The only non-maintenance issue was to find out how many Green Dragons there were growing in the old Blind Creek bed.

Between breaks in the shady Nook from the brutal heat, I managed to replace all the little flags marking the Lower Meadow grid system by newer flags, each inserted into a small, one-foot stake. This makes the flags more noticeable and more permanent. I had forgotten to bring bird seed so my regular bird list for this type of visit was cut from 15 to 10 -- hardly worth noting. And then there were all those Blue Jays, old and young alike, cursing me in an unknown tongue.

I refurbished the trail cams, checking the settings, changing the batteries, changing the SD cards and repositioning the cameras. I was annoyed to see that once again a colony of tiny brown ants has established itself in Cam #1. That may explain why it's gone trigger happy lately. I was amazed to discover that the ants have somehow made their way into the very interior of the device. One crawled "out" for a look around -- from behind the lens!

I forgot to install the new rain gauge, but went instead to Edgar's Elbow, a bend in the trail where it crosses Blind Creek. I dug two test holes to see if by chance I came upon an ancient riffle from the former course of Fleming Creek. Nada. Then I checked the first 20 metres of the Blind Creek bed beyond the Elbow, surprised and delighted to find some 15 Green Dragon plants. They varied in height from 10 cm to about 40, the latter mature plants now forming their alien-looking flowers. The "flower" is a long yellow-to-red tongue from which the plant gets its name.

Besides the Green Dragons, we had another issue pending, namely Green Water. Not often do I get a chance to use a catchy subtitle like,

### **Green Water and Green Dragons**

In the report of April 18 I mentioned taking a water sample of Fleming Creek,

which was running greenish at the time. Having always assumed that algae were responsible for the green colour, I was determined to isolate the organism and, if possible, ID it. At home I concentrated the water sample by better than 1000-to-1, yet couldn't find a single alga! A colleague in the UWO Biology Dept. was surprised when I mentioned that no algae were present in the sample, even though it was green-ish. Everybody knows that green water is due to algae. Or do they?

Ron Martin, our eco-chemistry consultant analysed the crystals that I had found on the dried-out petrie dishes. Using Western's SEM facility, he discovered that the crystalline material on the bottom of the petrie dish was calcium sulphate. What did that have to do with the green colour? You may recall that we reported on this finding (or non-finding) in a special Bulletin dated June 24. There, Ron explained the presence of calcium sulphate as the result of calcium from groundwater combining with sulphur from acid rain or anoxic decomposition. I speculated on remnant chlorophyll, only to be shot down by one of our readers, as below. I have since found a much better potential source of sulphur compounds in the form of local ground water that is laced with sulphurous alkalines, an evil taste that locals have learned to tolerate in their well water. The area hosted the worlds first oil fields, beating Titusville by one year. It is underlain everywhere by oil and gas.

William Taylor, protozoologist U of Waterloo:

"I thought your piece on the green colour of creek water was interesting. (Actually, I enjoy all of the bulletins). Here's my 2 cents worth on the mystery.

"Rivers clearing after a spate commonly show a green colour. Fishermen sometimes refer to it as "steelhead green" as it coincides with the best time to catch these fish, which run rivers during a spate and become catchable as the water clears (but then get difficult to catch as it gets really clear).

"Like green lakes in the mountains, or Lake Couchiching near Orillia, I think the green colour is due to clay, the finest particulate fraction (defined as 0.2 - 2.0  $\mu\text{m}$ ) and the last to settle out. Limnologists define particles  $< 0.2 \mu\text{m}$  as "dissolved", which is arbitrary but also coincides with sizes that no longer scatter visible light. The colour effect is mechanical, and has to do with which colours are scattered by these fine particles and which are not. The green colour is attributed to  $\text{CaCO}_3$  by Wetzel in his limnology text, but  $\text{CaSO}_4$  may well do the same thing."

Donald Craig, professional forester and naturalist

"In reading your report I noticed you speculate that the green tint may be from chlorophyll leaching from plants as a result of pre-emergence herbicides. I cannot see how that would be

possible since i do not believe there is any chlorophyll without sunlight on the plant and pre-emergence herbicides kill the plant before it emerges from the soil.

“Lake water is blue and gravel pit water is usually a greenish colour because of silt or clay particles suspended in the water.

“Glacial lakes in the Rockies are usually more green than blue because of the glacial "flour" (clay) suspended in the water. I have noticed over the years that, as the autumn comes, The Sydenham turns from the colour of 2-cream coffee to a greenish blue. I suspect this may account for the colour of your creek.”

I think we can leave the mystery there for now. Lesson learned: not all green water (especially in the spring) is due to algae. There's some satisfaction in the thought that calcium sulphate is a potential source of the green colour (without necessarily making that claim). Ron and I have both learned something in the process. There's no denying the advantages of having professional readers!

### **On to the Green Dragons: . .**

In case some people are wondering just what we're excited about here, let me introduce everyone to the Green Dragon. Known in scientific circles as *Arisaema dracontium*, this plant is a member of the Araceae or Arum family, with better known members such as Skunk Cabbage and Jack-in-the-Pulpit. The flowers characteristic of this family share an odd common structure, as explained in the third image below.

The second image shows one of the larger Green Dragons encountered in today's visit. In general, the plant prefers a rich, humic soil, usually moist, often near rivers and creeks and generally on slopes. The plant is a perennial, storing energy in a tuber which may remain dormant for a year or more between emergences. The Green Dragon will grow well in full-to-partial shade.

Green Dragons are S-ranked S3 under the Ontario Natural Heritage ranking system. This means that they are vulnerable, owing in this case to being “rare” in most regions of Ontario. The Committee on the Status of Wildlife in Canada (COSEWIC) has given the Green Dragon its “SC” rating, meaning of special concern. i.e., it could be extirpated at some point. The plant is also known to occur on the Reservation land at Moraviantown. Jane Bowles undoubtedly knows about still other locales where it is known.

### **IMAGES:**



Greenish tint in Fleming Creek started early, as in this image taken on March 20 last.



The largest of the 15 Green Dragons was in bloom today. You can see the odd-looking flower emerging from its separate stalk in typical Arum fashion. A long yellow “tongue” emerges from the jaws of this fearsome beast.



image credit: Ray Smith USDA

Close up of the Green Dragon “flower”: It consists of an elongated “spathe”, partially surrounded by a sheath-like “spadix”.