

March/April 2016 In Our Catchment

Your Results

We had very little rain over the catchment in March and April, and many of our small creeks ceased to flow. April rainfall particularly was very low right across the catchment. There was a report of 20mm of rain in one event in March at lower Whiskers Creek (on the way to Captains Flat) and 50mm upstream. It caused a flash flood and carried some heavy logs downstream, showing how strong the flow must have been for a short time. There were also high flows recorded in April for Yarralumla Creek, which illustrates how much water can runoff large urban areas with so many hard surfaces, including building, roads, paths and concrete drains.

Water temperatures across the catchment varied from 10.5 to 26 degrees with lower temperatures all from sampling earlier in the day and higher in the catchment as you'd expect. Most water temperatures were around the ideal for water bugs to proliferate, which is why we've been sampling them over autumn.

pH varied from 6.5 to 8.5, with Woolshed Creek showing a lot of variation along its length in April. The Jerrabomberra Wetlands sites had some of the highest pH's across both months, but that's not unusual for those sites. Conductivity (EC) was not remarkable, though as you know it varies enormously from sub-catchment to sub-catchment and the lower catchment sites all tend to be high. One surprise for me is just how low the EC is in some of the dams at Watson, with ECs more typical of high catchment streams much of the time. At one site, the Waterwatcher commented on the extremely high EC (and it was for that site) of 190 micro-Siemens. That would be exceptionally low for many sites, so it really illustrates how parameters vary across the catchment.

A quick reminder about turbidity: if turbidity is less than 10 please record it as 9 NTU in our database. Our eyes are not capable of discriminating below that, even though some of our turbidity tubes have markings suggesting we can read 5 NTU or less.

The only real surprise in turbidity readings across the catchment was the Molonglo River at Yass Rd, which was poor (55 NTU) in April. Something was occurring between the Kings Hwy and Yass Rd which caused the very high turbidity, because the upstream site had low turbidity (9 NTU) and they were sampled on the same day by the same person. Stock have direct access to the Molonglo River immediately above the turbid site, so they may well be the cause.

Because of Australia's ancient geology, our rocks and soils are mostly very low in phosphorus, consequently total P in our water should be zero or very low, with some known exceptions such as wetlands which tend to accumulate P. The unusual site for March/Apr is Roberts Creek, a small rural creek which has been trending up for several months. It is a tributary of the upper Queanbeyan River, and the upper Queanbeyan has also been slightly elevated at times. Since turbidity has remained low it seems soil erosion is not the cause, so the most likely explanation is a poo source (septic, runoff from a cow shed...) or superphosphate applied to paddocks upstream.

Nitrates were generally low or zero at most sites. Very few sites across our catchment have good or excellent levels of dissolved oxygen. This is because of low flows and higher temperatures at some sites, many however have consistently low dissolved oxygen, making conditions poor for many forms of life in our waterways which would otherwise thrive and contribute to a much healthier and more diverse catchment.

I've just been rereading the comments you put in your waterwatch records over March and April. Many mention low flows at their site, and a few sites are dry. There's a lovely comment about seeing all the animal prints by the creek because this is the only spot they can drink at now. Another one mentions a tiger snake sunning itself beside the track - don't worry city folk, this was way out near Captains Flat and everyone was unruffled. Someone else comments on the watercress growing in the creek, as well as seeing a black wallaby and wombat holes. Others mention the bird life around their site, and some mention rubbish.

Colder water temps = warm up samples

Just a reminder that now we've hit the cold weather, we need to ensure Nitrate and Phosphorus test samples are warmed to above 18 degrees C. Putting them in your pocket works well, and sample tubes should be warmed before you add reagents, then for the 5 minutes whilst the reagents are working.

Autumn QA/QC wrap up

We had a grand time at the QA/QC (to quote one participant). I have provided a wrap up of the event. Thanks again to everyone who attended.

The Waterwatch QA/QC (Quality Assessment/Quality Control) event was held at the Burringiri Cultural Centre, Lake Burley Griffin, near Yarramundi Reach. This was our best one yet. The location was lovely, there was plenty of room, the weather was gorgeous, and lunch was delicious. Thank you especially to Woo for organising such a great day.

It was enjoyable, we learnt a lot, Dan's fish session was fascinating, and the results show that we are really improving the data we collect - see the attached report from Dr Dan (for those who are statistically minded). You'll see in the attached document that we are getting pretty good at measuring all our parameters. During a QA/QC we identify any problems with Waterwatch kits, discover the occasional misunderstanding, and our techniques get better and more consistent across the 5 catchments, so our Upper Murrumbidgee Waterwatch data gets more consistent, more reliable, and more accurate. This is true for all the Waterwatch coordinators, as well as you, our fabulous volunteers.

For the first time ever, we tested mystery turbidity solutions. I still haven't had a go at this (!), but there is something I'd like to say about turbidity: you can't necessarily tell from looking at the water how turbid it is. Sometimes it looks quite murky but it doesn't measure as particularly turbid, and sometimes it looks fairly clear but when you measure the turbidity it's not. I think this can be caused by tannins which come from plants growing nearby. I don't know what the cause is of the milkiness we sometime see, which happens at various sites at various times BUT it doesn't have much impact on the turbidity reading. So I think it's always worth measuring turbidity unless it is crystal clear.

If you stayed for the early afternoon, you will have learnt lots about small native and introduced fish species in our local waterways. Dr Dan's presentation had us rapt and there were lots of questions, lots of amazed murmurs, lots of laughs, and we all have a much better idea of what to look for when we encounter small fish in our waterways. Dan's slides will go up on the Waterwatch website too, so we can use them for future reference. I'll send you a link to them in the next catchment update.

The Autumn Bug Blitz days

We have such an enjoyable time doing Bug Blitz days, and I still find water bugs I haven't seen before, so the thrill of discovery is still there. For instance, I finally saw a [Gordian worm](#) which, as sometimes described, could easily be mistaken for a piece of wire. It's also fascinating seeing the changes across seasons, when times are drier etc, and we tend to see similar changes across multiple sites.

Thank you to everyone who came and helped, and for letting us come out and sample water bugs at your place. A special thanks to John, who does 7 waterwatch sites and comes to help sample bugs at all sorts of places: it would be much harder and less interesting without your regular help and knowledge.

The award for the smelliest site goes to David St wetland. Phew! I'm so glad I didn't fall over whilst wading in there, I had some close calls. There have been no flows into it for some time, and it is the oldest urban wetland, so probably in need of some maintenance. It was such a pleasure going on to sample at Dickson wetland, which is clearly functioning well despite low water flows. We have some other real favourites too, mostly the beautiful sites higher up in our catchments, where the water is very clean and clear and there is great habitat for all sorts of water bugs. At one site we found a freshwater mussel as big across as my hand. You can come out to some of these other sites in spring if you let us know you're interested (we'll add you to the email list).

There were some excellent comments on water bugs from someone working for a US volunteer waterwatch program:

"... [M]acroinvertebrates or aquatic critters 'speak for the streams' by acting as water quality monitors. Put simply, certain aquatic critters function as indicators of water pollution. Some types have a high tolerance for pollution; therefore, if you only find that type of bug in your stream, your stream is not very healthy. However, there are others that cannot tolerate pollution; therefore if they are present you know that your water quality is good, and has been good for some time.

Stream biomonitoring is a good method for determining current and past impacts to water quality... Bill Deutsch was quoted in the Volunteer Monitor Newsletter saying, "If a pollution slug moves through on Monday and you monitor on Wednesday, the chemistry looks fine, but the bugs know better. They were there. They are mini-water quality meters, 24/7." (from *Who Speaks for the Streams?* <http://wp.auburn.edu/aww/who-speaks-for-the-streams/>)

Other News & Events

Queanbeyan platypus sculpture is the perfect 'billboard'

Queanbeyan has a lovely platypus sculpture on the banks of the Queanbeyan River. It features in David Ellery's *Canberra Times* article and photos, which were published on 8 March 2016. The article includes an interview with Woo:

<http://www.canberratimes.com.au/act-news/queanbeyan-platypus-sculpture-the-perfect-billboard-20160308-gnd7ka.html>

Saving Endangered Macquarie Perch

This is an interesting story that has been taken from the ABC news website...

<http://www.finterest.com.au/natives-and-introduced/noahs-ark-for-fish-in-bid-to-save-endangered-native-macquarie-perch/>

How Did Carp End Up in Lake Burley Griffin?

This is another great article in an excellent series called Curious Canberra on the local ABC website, where viewers/listeners get to pose a question which a local journalist then investigates:

<http://www.abc.net.au/news/2016-05-16/how-did-carp-end-up-in-lake-burley-griffin/7412888>

Carp (Featuring Barnaby Joyce)

Barnaby Joyce is a big fan of the carp herpes virus. For that matter, so am I! If you haven't already seen this very funny "mashup" video from the ABC Insiders website, it is well worth a look:

<http://www.abc.net.au/insiders/content/2015/s4458030.htm>

And Another Endangered Species – Murray Crayfish

ANU researchers Chris Fulton and Mae Noble's work on the endangered Murray Crayfish was featured in the New York Times in a short video (you may have to mute the sound while a short advert plays first):

<http://www.nytimes.com/video/science/100000004318838/sciencetake-a-crayfish-in-trouble.html?action=click>ype=vhs&version=vhs-heading&module=vhs®ion=title-area>

And Another One

Partnership protects endangered Southern Pygmy Perch

<http://southeast.ils.nsw.gov.au/resource-hub/newsletters/april-2016/partnership-protects-endangered-perch>

To finish, I want to thank the Waterwatcher and ex-Waterwatcher who undertook to put on bee suits and deal with European wasps at the upper Burra Creek waterwatch site. You are champions!

Thank you to all of you for getting out once more to sample water in our catchments, for keeping an eye on the health of our critical waterways (and every drop of water in our creeks is vital for some creature) and hopefully enjoying yourselves too.

Deb Kellock

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