



Streamlines

Newsletter of the Pullen Pullen Catchments Group Inc.

November 2017

Welcome to the November edition of Streamlines, our final one for this year.

Graham Stirling's articles in the last three issues of Streamlines have highlighted the fact that a huge array of bacteria, fungi and microscopic animals play an important role in keeping our plants and soils healthy. In this issue, he describes the parameters we can measure ourselves to determine whether we have an active and diverse biological community in our soil.

Just for fun, we finish the year with a tongue-in-cheek, politically dubious article about foreign immigrants by one of our regular contributors. Okay, I promise to lift the tone of the newsletter again next year!

As we come to the end of another year, I'd like to thank everyone who makes it possible to produce Streamlines each quarter. A very big 'Thank you' to all contributors. There's not been an issue yet when I have felt pressured to produce all the copy. Brian Dean is my eagle-eyed proof reader, Nola Dean and Liz Dominguez ensure that Streamlines is uploaded onto the website and that members are advised, Shirley (Pullenvale Environmental Education Centre) cheerfully and quickly photocopies the copies to be mailed out. Thank you all for your amazing support and friendship.

All members are welcome to submit articles to Streamlines via helian@pretirementresorts.com.au. The deadline for the next issue is 15 February 2018.

Very best wishes,

Helen Ogle

Editor

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Pullen Pullen Catchments Group

A Landcare Group

Meetings

Meetings are held at 7pm on the first Wednesday of each month at Pullenvale Environmental Education Centre, 250 Grandview Road, Pullenvale.

Website

www.pullenpullencatchments.org.au

Working Bees

Pullenvale Forest Park – 2nd Sunday of the month, 8.30 – 11 am
Anstead Bushland Reserve – 4th Sunday of the month, 8.30 - 11 am.

Tools, gloves, etc are provided at Working Bees. Just wear sturdy boots, tough clothes and bring water and a hat!

Committee Members 2017

President:	John Ness	3202 7556	president@pullenpullencatchments.org.au
Vice President:	Richard Ponsonby	3202 9484	members@pullenpullencatchments.org.au
Treasurer:	Kaaren Ness	3202 7556	
Secretary:	Liz Dominguez	3202 7967	contactus@pullenpullencatchments.org.au
Committee Members:	Brian Dean	3202 8553	<i>Bushcare Coordinator, Anstead</i>
	Irene Darlington	0409 026 883	wildlife@pullenpullencatchments.org.au
	Ron Tooth	3374 1002 (W)	
	Ray Krafft	3202 6470	
	Lynn Brown	0417 648 050	<i>Bushcare Coordinator, Pullenvale</i>
Website Coordinator:	Nola Dean	3202 8553	contactus@pullenpullencatchments.org.au
Streamlines Editor:	Helen Ogle	3323 7407	editor@pullenpullencatchments.org.au
Creek Catchment Officer	Leah Hattendorff	3178 5337	Leah.Hattendorff@brisbane.qld.gov.au

Membership Options

Membership fees are:

- Annual Membership – \$10 per person payable on March 1 each year
- Life Membership – \$100 per person

We are delighted to accept donations.

- a) Send a cheque payable to PPCG to PO Box 1390, Kenmore, 4069 or
- b) Transfer the funds electronically to BSB 064 152, Account No.10107038 Ref: your name.



Dedicated to a better Brisbane

“The PPCG acknowledges the support of the Lord Mayor’s Community Sustainability and Environmental Grants Programs for a grant to help with administrative, bushcare and educational costs”

NEWS

PPCG notes with regret the passing of **Wilma Russell**, the last of the Anstead family still residing in Anstead. Wilma was born on the 16th February 1933, the second of four children of William (Bill) and Violet Anstead. Her family lived on a property on the corner of Kangaroo Gully Rd and Mount Crosby Rd and Bill supplied local residents with milk, chooks and eggs. Wilma married Eddie Russell and raised two children in their home on Chalcott St. Wilma was very helpful when the history of Anstead Bushland Reserve was being researched, kindly providing copies of photos and passing on her memories. Wilma passed away on September 25 and a service to celebrate her life was held on September 30. Our thoughts are with her family. (Information supplied by Ray Krafft)

Anstead Bushland Reserve Our September Working Bee was somewhat depressing as we concentrated on watering in the hope of helping at least some plants survive the hot weather and high winds prevailing at the time. What a welcome contrast in October! Following about 150mm of steady, soaking rain, we planted over 100 plants into beautifully wet soil on the one sunny day before another rainy spell. The down side was, of course, the carpet of weeds! The final working bee for the year will be held on November 26.

We are still desperately in need of a replacement Coordinator for the Reserve

Please contact Brian on 3202 8553 for more information

Pullenvale Forest Park We have had a busy year in Pullenvale Forest Park, firstly keeping all the planting from last year (near the parking lot) weed free. Then in September, the Green Army spent four days planting 400 plants in the area previously cleared of lantana. This is our small bird and mammal habitat project and we hope to repeat it in other lantana areas of the park. Although September is not the ideal time to plant and we had an extremely dry spell, we managed, with our usual working bee, contractors from Brisbane Bushcare, and Paul Devine from the Brisbane City Council, to keep the plants watered until some well-timed rain in early October. We also had a group of SCIP students who planted a further 60 trees and watered the whole area. It is looking wonderful, and we are hoping that we get some regular rainfall during the hot weather.

Airlie Road Park The trees planted in Airlie Road Park had a survival rate of around 90% partly due to hand watering over the extended dry period. Unfortunately, the park has been damaged by vehicles doing “wheelies” in the open area and also running over some small trees. A large number of wattles under the power line easement through the park have been ringbarked as well although this does not seem to be associated with the electricity supply company. The BCC has installed a boom gate at the entrance to the park and will be removing the ring barked trees so their help is appreciated.

Looking ahead, PPCG is renewing activities at the **Moggill Wetlands** beside Moggill Road. According to our Creek Catchment Officer, the wetlands are generally in good condition with a balance of open water and plant cover and good complexity of habitat which is reflected in an abundance of bird life. However, some areas are overgrown with vines, such as glycine and asparagus fern, and Chinese elms. PPCG failed to obtain a Community Conservation Assistance grant to pay for clearing and planting in this area but alternative funding will cover 10 day's work focussing on removing leucaena. In return, PPCG has committed to spending two Sunday mornings a year on maintenance in the Wetlands.

Funding has been provided by PPCG for a **Wildlife** carer at a release site to install water tanks to ensure a steady supply for animals during dry periods. We have also purchased a reconditioned computer for another wildlife carer's record keeping.

Promotion of PPCG. Pullenvale Marketplace has invited us to hold a promotional event next year. Currently, we are looking at March 17th with events and activities still to be decided. Members interested in helping would be most welcome!

REMINDER

Our Annual General Meeting will be held at 3 pm on Sunday December 3 at the Pullenvale Environmental Education Centre, 250 Grandview Road, Pullenvale. All members are welcome.

Life Member Marcelle Stirling, who is also a most accomplished botanical artist, will be presenting a very interesting talk about the history and techniques of botanical art as well as some of the personalities involved and her personal journey to become a botanical artist. Marcelle will display some of her paintings and have cards for sale.

Is My Soil Healthy? How Can I Assess its Biological Status?

Graham Stirling

Soil carbon

Soil organic matter is composed of about 58% carbon and it is the food source on which all soil organisms depend. Carbon is first utilised by bacteria and fungi, but when they are consumed by larger organisms, that energy is passed through the food chain to protozoans and microscopic animals such as nematodes and microarthropods. Thus, soil organic carbon is the first parameter that should be measured when assessing the biological status of a soil. Soil biological activity and diversity will increase as soil carbon levels increase.

Soil organic carbon is readily measured by analytical laboratories at a cost of about \$25 per sample. However, on their own, carbon analyses are not a good soil health indicator because attainable levels vary with soil type and the environment. For example, carbon levels greater than 4% are readily obtainable in a fertile clay loam soil whereas it may be difficult to achieve carbon levels of 1% in a sandy soil. Also, soil carbon levels in a cool climate will be higher than in warm climates because organic matter decomposes more slowly.

To interpret the results of an analysis done on your soil, the **attainable** carbon level must be determined. This is the maximum amount of carbon that could be stored in your soil under ideal conditions. The best way of assessing it is to look in your local area, find a well-managed grass pasture that is on the same soil type but has been undisturbed for many years, and measure the soil's carbon content.

Once the attainable carbon level is known, you are now in a position to determine whether your soil is as healthy as it could be. In most cases you will find that the carbon level is much lower than the attainable level. This means the soil no longer contains some of the organisms that maintain soil structure, suppress pests and pathogens and make nutrients available to plants.

CO₂ respiration

When organic matter is decomposed by soil microorganisms, carbon dioxide is respired. Since the rate of release of CO₂ from soil is related to the level of microbial activity, CO₂ respiration measurements provide an indication of soil microbial activity.

One way of assessing microbial respiration is to use the Solvita® CO₂-burst procedure. A sample of air-dried soil is weighed and the beaker containing the soil is placed in a screw-capped jar. The soil is

wetted, a CO₂ detection probe is added and the jar is then sealed and incubated for 24 hours. During the incubation process, the colour of the probe will change, depending on how much CO₂ is produced. A digital colour reader is then used to measure the amount of CO₂ in parts per million (Fig. 1 A, B).



Fig. 1. A) Screw-capped jar, a beaker of air-dried soil and a foil pouch containing a CO₂ detection probe. B) Soil samples incubating in sealed jars and a digital colour reader to measure the amount of CO₂ produced in ppm.

For those who don't want to purchase a digital colour reader, the colour of the probe will give a reasonable indication of the level of microbial activity. If CO₂ respiration is low, then the probe will be grey in colour. However, if the soil is healthy, the colour will change to yellow, indicating a high level of microbial activity (see Fig. 2).

Nematodes and Microarthropods

Bacteria and fungi contribute most of the microbial biomass in soil. However, larger organisms such as nematodes, springtails and mites are more useful biological indicators because they are easier to quantify in soil and their numbers and diversity are influenced by the food sources available to them and by changes in the environment. If organic inputs are low, if pore spaces have disappeared due to compaction, or if soil is disrupted by tillage, there will be low numbers of these animals and limited biodiversity.

1. Nematodes

These microscopic worms are the most numerous multicellular animals in soil. Most species are less than 1 mm long but they are readily extracted from soil using techniques that rely on their motility (Fig 3). Healthy soils are dominated by free-living species that feed on bacteria and fungi or prey on other organisms. If these nematodes are present at population densities greater than 25 nematodes/g soil, the soil will be in relatively good condition. In contrast, a soil that is dominated by plant parasites and only supports low numbers of free-living nematodes would be considered unhealthy (Fig. 4).



Fig. 2. CO₂ detection probes showing that microbial activity in four test soils increased markedly from left to right.



Fig 3. Nematodes are extracted from soil by spreading a sample on a mesh basket covered with tissue paper, placing the basket in a tray and adding water. Nematodes move through the tissue paper to the water below and are recovered by pouring the water through a sieve with apertures less than 50 µm.

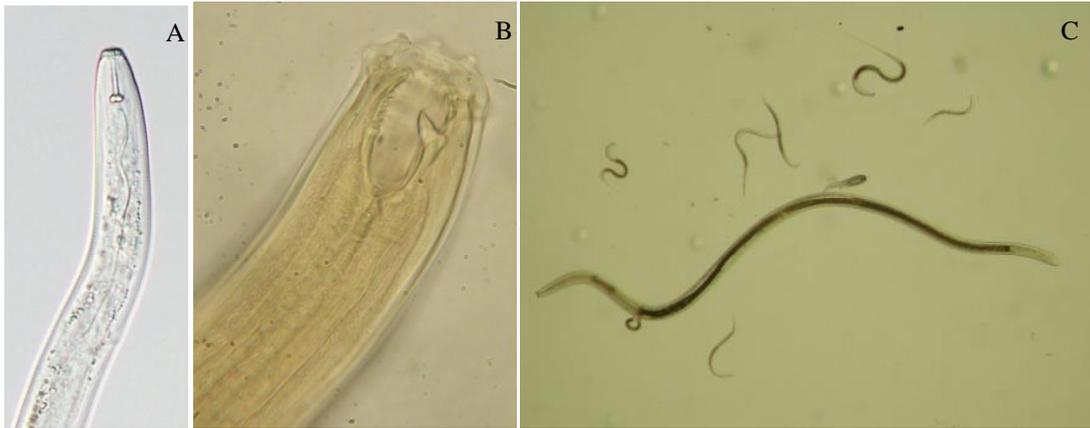


Fig. 4. Healthy soils will contain low numbers of plant-parasitic nematodes (A) that use their feeding spear to injure plant roots. The nematode community in such soils will be dominated by predatory nematodes that use a tooth to prey on other nematodes (B) and by small free-living species that feed on bacteria and fungi and large nematodes that can utilise many different food sources (C).

2. Microarthropods

These small animals are relatively easy to extract from soil using the Tullgren funnel method (Fig. 5). Soil is placed in a funnel and a light above creates a temperature gradient and dries the soil, causing the arthropods to move downwards and fall into a collecting vessel. In the warm Brisbane climate, a light may not be necessary because temperatures are high enough to dry the soil in the funnel within a few days.

Springtails and mites are the most common microarthropods in soil and healthy grassland soils may support as many as 300,000 of these animals per square metre. There is enormous taxonomic diversity within this group of animals (Fig. 6), but what is important from a soil health perspective is that a soil contains numerous species with many different feeding habits.



Fig. 5. A makeshift method of extracting microarthropods from soil



Fig 6. A healthy soil will contain a diverse range of mites. Image kindly supplied by Dr David Walter. The white line at the bottom is 1 mm long.

Earthworms

Earthworms (Fig. 7) are one of the most useful soil health indicators because they are easy to count and they play many important roles in soil: creation of macropores that increase water infiltration rates and improve soil porosity and drainage; decomposition of plant residues; redistribution of organic matter within the soil profile; stimulation of microbial activity (by making plant litter more acceptable to microorganisms); and production of nutrient-rich casts.

All that is needed to assess earthworm populations is a shovel about 20 cm wide. Dig some holes to a depth of about 30 cm, count the number of earthworms and calculate the average number of earthworms per 20 cm x 20 cm hole. Multiply that figure by 25 to give the number of earthworms per square metre. Healthy soils should contain at least 270 earthworms/m².



Fig. 7. Earthworms have a number of roles in soil, but one of the most important is to create macropores (see arrows) that allow air to diffuse, water to infiltrate and smaller animals to move throughout the soil profile.

With these simple and inexpensive tools we can assess for ourselves the quantity and quality of biological activity in our soils.

The Immigrant Problem – A Personal Point of View

Albert Ross aka Brian Dean

Yes, well, I think it's only fair to warn you that I don't intend to *mince words* on this touchy topic. I'm going to tell it like it is, warts and all, and to hell with *political correctness* and namby-pamby defamation laws whatever they might be. At least if you're reading this it means the editor has had the guts to publish it, which isn't bad considering she's a sheila. No, I'm talking about all the trouble we're copping from all those *uninvited migrants* – the ones we didn't ask to come but just drop in without so much as a by-your-leave and then proceed to act as if they own the place! As for the immigration authorities, they just turn a blind eye to these queue-jumpers. Coast watch? Totally ignored; they may as well not exist. And I'm not just talking about the ones who sneak in on boats; no, most of these just breeze in *by air*, casual as you like.

They come from all over, these jokers; Asia, Africa, South America, you name it, when conditions in their neck of the woods become "unsupportable". Ha! How do we know that? Mind you, I've got nothing personally against any of those foreign places (me and the wife often have a Chinese or a Tikka Marsala on a Saturday night) but if they have to come here they should at least try to fit in with the Aussie way of life and get along with those who were *born* here and have a right to *live* here, thanks very much. This *is* Australia after all, isn't it?

But no, they don't even *make the effort*, do they? In fact they seem to expect food and accommodation as if it was their right, *and* they don't hesitate to shove the local residents aside to stake their claim to whatever's going!

The classic case is that mob down Sydney way; they come from India and they're black as the ace of spades. I know, I know. I know what you're going to say but look, I personally don't care what colour they are – black, yellow or white; striped, spotted or brindled, they ought to know how to behave, but they don't, do they? I said I'd tell it like it was, didn't I?

I had a mate, true-blue he was. Come over on the "Oronsay" in '55, he did. Now *he* had the right idea, I reckon. "I'd shoot the bastards" he'd say, "Not all of them of course – you'd never get away with it – just enough to let the rest of 'em know they're not welcome, 'to encourage the others' as that Froggie chap said". And you know, I reckon if we'd taken *his* line we wouldn't be in the strife we are today. And I'm not a violent bloke, not at all.

Look, I'll give you another example, closer to home. The other day me and the wife were walking in Anstead Reserve and we could hear this racket coming from down near the picnic area – jabbering and chattering, Gawd knows what they were on about. But there they were, dozens of 'em, having a right old Breakfast Bash, dashing about and squawking but what riled us both was they were going through the *rubbish bins* after scraps of food! Well, they might carry on like that in Outer bloody Mongolia or wherever it is they come from, but this is Australia, mate!

Next thing we spot a couple of 'em *having relations* right there in the open, and another one went and did his business right *outside* the toilets! Well, you couldn't take kiddies to places like that, could you? I mean, really, somebody should do something about it. Which is why I'm writing this to PPCG members because frankly, I don't think the Government is going about it in the right way. I mean, it's all very well to say they'll never settle here but blind Freddie could see they already have! So many of 'em you can't hardly tell which is the dinki-di and which the foreigner! Oh, "introduced species" perhaps I should say; well they should be introduced back to where they came from, I say.

But give me a good old chook any day – they've been here for yonks, they lay eggs and they taste nice – they *really* pull their weight. Not like those useless Tibetan bottle-necked fly-scratchers or whatever you call them. Not that I've got anything against Tibetans, personally, mind; it's not *their* fault they're foreign, after all.



As the craziness of the Christmas period overtakes us, remember that Airlie Road Park, Anstead Bushland Reserve and Pullenvale Forest Park offer peace, space and the opportunity for respite.

Very best wishes to you and your families for Christmas and the New Year.

