



November 2015

Welcome to the final edition of Streamlines for the year. Once again the subject matter is quite varied reflecting the range of interests of members.

Our President John Ness has prepared an article, *How Many Trees?*, based on a recent paper in *Nature*. It discusses the rate of destruction of forests around the world. Tying in with this, I've included some interesting facts from an issue of *Headstart* about trees and their importance to us.

The curious case of vine-cutting in Pullenvale Forest Park has prompted me to assemble information about the role of vines in dry rainforests from botanist Daniel Rekdahl's walk and talk through Pullenvale Forest Park in October.

Ants are amongst the most invasive species in the world – and the worst invasive ants are Tramp Ants such as the Fire Ants discussed in the May issue of *Streamlines*. In this issue, two other tramp ants, Yellow Crazy Ants and Electric Ants are described. Fortunately, as yet, they are restricted to North Queensland.

Finally, we have the second article on recycling plastics which explains why plastics must be separated and which plastics can and cannot be placed in our yellow-lidded garbage bins and why or why not.

Thank you to everyone who has contributed to *Streamlines* this year. I really value your efforts. To all our members, Seasons Greetings. May the festive season and the year that follows bring you joy, peace and happiness.

Helen Ogle
 Editor



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Pullen Pullen Catchments 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 2015

| | | | |
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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.

"The Pullen Pullen Catchments Group acknowledges the support of the Brisbane City Council for costs associated with the website, the printing of Streamlines and with running the working bee mornings in Anstead Bushland Reserve and Pullenvale Forest Park."

NEWS

Annual General Meeting Our AGM will be held at 3 pm on Sunday 6th December 2015 at the Pullenvale Environmental Education Centre, 250 Grandview Road, Pullenvale. All financial members are invited to attend and one can become a member at the AGM. Members have received nomination and proxy forms and are encouraged to apply for the committee or submit their proxy forms as advised. The meeting will be followed by our usual sumptuous afternoon tea. We hope to see you there.

As mentioned in the last Streamlines, an **Honorary Treasurer** is required. Tracy Barrie, the long term PPCG treasurer, will retire from this role after the 2015 AGM. Tracy has done an excellent job and has set up the accounts system to be fully computerised with on-line banking and payments. The role involves:

1. Preparing a short report for each committee meeting and attending the meetings
2. Operating the PPCG financial accounts, making payments to suppliers, submitting a quarterly BAS to the ATO and occasionally assisting with grant acquittals
3. Organising the yearly financial accounts.

The PPCG committee would welcome any nominations from members who feel they would be willing to take on this role. No formal qualifications are required and Tracy has set up a good system that is easy to use although attention to detail is necessary.

Moggill Creek Catchment Group Nursery I'd just like to emphasise that the Nursery is open by appointment only – contact Bryan Hacker on 3374 1468 or jbhacker@poerup.com.au to arrange a mutually convenient time. The Nursery supplies local native plants to PPCG members free of charge (see Streamlines May 2015).

Creek Catchment Officer Emma Maltby is our Brisbane City Council Creek Catchment Officer and attends committee meetings whenever she can. At the October meeting, she advised that a water testing database showing the results of all water testing done by catchment groups will be available to the public.

Pullenvale Forest Park Members were greatly disturbed when they arrived at the September working bee to discover that all of the large old native vines such as monkey pod and cockspur in the Park had been cut off about 1 m above the ground. Neither PPCG nor the Brisbane City Council was responsible and the matter is being investigated. The only good thing to come out of this damage is that the vines were cut, and not poisoned, so quite a few are already re-shooting although the regrowth will be quite different. We have moved our activities further into the park and are clearing vines and weedy shrubs from around the native plants so they have some chance of survival – hopefully the shock of exposure is not too much for them! An application to Council for a grant to clear the introduced weed vines Cat's claw creeper and madeira vine along the creek was successful and the work has been carried out by contractors. Working bees resume in February.

Anstead Bushland Reserve At the September Working Bee at Anstead, we weeded an area planted some time ago between the lookout and the water tank. There were two wonderful surprises on the day – a koala spotted high in a gum tree and a whole family coming to help. The children's enthusiasm and willingness to work was an inspiration. At the October working bee, 17 people planted 60-70 plants and installed informative labels. Informative brochures are available in weather-proof boxes at the picnic shed and beside the second entry from Hawkesbury Rd. Thank you, Brian for pursuing these projects and proposing the building of a formed path from the top of the ridge down to the Quarry and the establishment of a bird hide. Emma will follow up on the two latter projects with Council. The area cleared, planted and mulched by the Green Army looks wonderful. We hope the Council will be able to maintain this area. Working bees resume in February.

How Many Trees?

John Ness

Trees work hard using solar radiation to convert water and carbon dioxide into sugars and cellulose, materials that animals then consume, and generating the free oxygen that animals need for the energy derived from the slow combustion of food. Trees have been engaged in this useful service for a billion years or more. This is one reason we have so much oxygen and an environment so suitable for life. Given the human propensity to remove trees, some fundamental questions are how many trees are there, how are they distributed and how fast are they being removed. It used to be estimated that there were around 400 billion (thousand million) trees or about 60 trees per person but some recent work indicates that there are nearly 400 billion trees in the Amazon basin alone.

Consequently, a large scale study based on over 400, 000 ground measurements on every continent except Antarctica – no one has found many trees in Antarctica recently! – and backed by satellite data has revised this estimate to around 3000 billion or 3 trillion trees. This is about 420 trees per person. A tree is defined as a plant having a diameter of 100mm or more at a height about 1.5m above the ground. Since there are estimated to be around a 100 billion visible stars in the Milky Way Galaxy, earth has more trees than stars in the galaxy.

Does this number make sense? Consider a 1ha square block. This is 100m by 100m. If trees were spaced on a grid just under 3m per side then there would be 1000 trees per ha. If the spacing was decreased to 1m there would be 10,000 trees per ha. Trees spaced at 3m can grow quite large but trees on only a 1m spacing would be quite limited in size. Tropical rain forests have the maximum plant material per ha but the trees tend to be quite large so the number of trees per ha is not the maximum. In the tundra and boreal forests of the northern hemisphere, tree density can exceed 1000 per ha and this density then decreases with forest type (temperate, montane, dry tropical, moist tropical, etc) to around 200 trees per ha in deserts and dry grasslands.

The total area of land on the earth that could grow trees is around 140 million square km. A square km is equivalent to 100 ha so there are 14 billion ha of land that could grow trees. At an average tree density of 400 per ha, this would amount to a total of 6 trillion trees. It is estimated that prior to humans taking up farming there were about this number of trees in the world so that over about 10,000 years humans have been responsible for reducing the number of trees by about 50%. The distribution of trees per country now depends not only on the geography of the country but also on the environmental policies of the countries concerned.

Worldwide the tropical rainforests contain the most trees at around 800 billion due to the total geographical area but this is not all that far ahead of the boreal forests of Europe and Canada with around 750 billion. Germany has around 8 billion trees whereas Sweden has about 30 billion as the tree density is higher and Sweden has a major forestry industry. Japan is one of the few countries where there are considered to be many more trees now than 150 years ago following quite deliberate policies to stop removing trees on the main islands of Japan.

Australia and mainland USA are similar in area and with roughly similar environmental policies but the US has around 400 billion trees, probably nearly 10 times as many as Australia, due to the much higher tree densities over most of the USA.

Globally, around 200,000 square km of forest cover is being cleared per year which gives an estimate of around 15 billion trees being lost per annum. Most of these trees are being removed in the tropical areas where tree densities average around 750 trees per ha. This also means that the forests where total plant material is a maximum are unfortunately the areas under attack.

At this rate of removal, the earth would be cleared of trees in about 200 years. Considering it took well over 10,000 years to wipe out the first 3 trillion trees, 200 years to finish the job would be rather impressive!

There are some signs that the rate of clearing is slowing and there are programs worldwide such as the international “Billion Trees Campaign” and the numerous local “Million Trees” initiatives but the whole-scale clearing and burning of forests is the fundamental problem. In the time you have taken to read this article around 100,000 trees will have been killed except if you are reading it on a Sunday morning when PPCG volunteers are planting trees in which case the net rate of destruction will be reduced to around 99, 850!

Reasons to Love Trees

- *An acre of average trees gives almost 20 people clean air and shade annually*
- *One large tree can provide enough oxygen for up to 4 people’s daily needs*
- *A building can reduce its air conditioning needs by 30% if trees are properly placed*
- *A mature trees removes almost 70 times more pollution than a newly planted tree*
- *The net cooling effect of a young, healthy tree is equivalent to 10 room-size air-conditioners operating 20 hours a day.*



But wait, there’s more:-

- *Annually, 10 million tons of newspapers are tossed into landfills. If just half of that was recycled, it would save 75 million trees and 7 000 gallons of chemicals*
- *Replacing your toilet paper with recycled paper (NOT recycled toilet paper, as one wit suggested!) would save 200 000 trees*
- *Recycling paper needs 64% less energy than creating new paper.*

From Headstart, CourierMail, Tuesday 24 February 2015

Role of Vines in Dry Rainforest Communities

Helen Ogle and Daniel Rekdahl

The plant community along Pullen Pullen Creek in Pullenvale Forest Park (PFP) is classified as a dry rainforest. Dry rainforests develop where conditions are not suitable for the development of rainforest. In this case, the soil is not fertile enough and the rainfall not regular enough for rainforest to grow.

Dry rainforests have two tree layers – a more or less continuous canopy and individual trees that stand above the canopy (emergents). Trees in the canopy layer characteristically have leaves 75-125 mm long (notophyll leaves). In PFP, the emergent trees are hoop pine (*Araucaria cunninghamii* var. *cunninghamii*), Blue gum/Forest red gum (*Eucalyptus tereticornis*) and river sheoak (*Casuarina cunninghamiana*). Below the canopy layer are large woody vines and often thorny or spiny shrubs generally with small leaves. Ground ferns and epiphytes are fairly rare.

In PFP, the vines are conspicuous. The most abundant native (as opposed to weed vines of which there are several!) vines are monkey rope (*Parsonsia straminea*), cockspur (*Maclura cochinchinensis*) and Wonga wonga vine (*Pandorea pandorana*).

Vines use other plants for support and can grow quickly as they do not need to form a strong trunk to support their upward growth. They grow up taller trees and then form a curtain around them as new branches grow out and hang down. Although vines may kill small trees by strangling their stems, they generally reach a point of balance on larger trees at which the tree is not adversely affected and the

vine can thrive as well. They use trees simply for support and do not take any nutrients or water from the plant on which they are growing.



Monkey rope vine, leaves and fruit



Cockspur, leaves and fruit



Wonga wonga vine, flowers and leaves

Vines are an integral part of the plant community and have many roles. In addition to producing energy for the ecosystem through photosynthesis, their leaves, flowers and fruit provide food for a range of animals. The environment inside the curtain around each tree is moister, shadier and more consistent than outside the curtain and the curtain provides protection from predators for small birds and animals. Vines also reduce damage to the canopy during severe weather and slow down its deterioration because they hold the canopy together.

Disruption of native vines by removal or death leads to many changes in the community. Loss of leaves reduces the amount of energy being produced at the base of the food chain which, in turn, affects the amount of energy available for each successive level of the chain. It also reduces the amount of oxygen in the atmosphere and decreases the humidity in the microclimate around the trees. Birds and small animals no longer have the protection afforded by the vines. Many animals lose their food sources.

Storms or heavy winds will cause far more leaf and branch drop because the canopy is no longer held together. This will in turn change what happens in the litter layer of the forest and the recycling of nutrients as there will be far more litter than usual. With vines removed, populations of the predators that help to keep them in balance with other components of their environment will be reduced. This means that when the vines begin to regrow, there will be nothing to prevent them from growing rampantly causing destruction.

So let's appreciate our native vines for the role they play in their environment and NOT destroy them unnecessarily.

Tramp Ants

Helen Ogle

Tramp Ants get their name from their ability to 'hitch a lift' to a new location on materials such as timber, soil, vegetation, garden waste, pot plants, building materials and earth moving equipment, transported by humans. They have the potential to impact on our outdoor lifestyle, unique environment and agriculture. Three tramp ant species are currently the subject of surveillance and eradication efforts by Biosecurity Queensland – Fire Ants (see Streamlines May 2015), Yellow Crazy Ants and Electric Ants. Fortunately for us, Yellow Crazy Ants and Electric Ants are only present around Cairns – at the moment!

Yellow Crazy Ants (YCA)

YCA are one of the world's 100 worst invasive species. They have multiple queens and can form densely populated super-colonies. They produce new queens during the wet season and spread out from the source colony by 'budding', moving up to one metre a day. At high densities, YCA invade houses, patios and children's play equipment looking for food and nesting sites. As the density of ant numbers increases, the ability of residents, and particularly children, to use and enjoy their homes and play areas becomes restricted.

Unlike other ants that bite or sting, YCA spray formic acid to defend themselves or subdue prey. The acid can burn or irritate broken skin and can cause temporary blindness if sprayed in the eyes.

Adult YCA are yellowish-tan or orange-yellow with a brown abdomen (sometimes striped), about 5mm in length, with very long legs and antennae and a long slender body. They are half the size of the common green ant and have erratic, frantic, "crazy" movement. Any ants that are black, dark brown or dark red are unlikely to be Crazy Ants.

YCA nest on the ground in soil and prefer areas with access to water or some moisture. They nest in and below woody debris and rocks, at the bases of trees, or underneath leaf litter. In suburban areas, they have been found in rock walls, pool filters, garden beds, mulch, baled hay, plant pots, fence lines and carports.

Electric Ants

Electric ants or Little Fire Ants attack eggs and hatchlings and are blamed for reducing species diversity, reducing overall abundance of flying and tree-dwelling insects, and eliminating populations of spiders in various parts of the world. They are also known for their painful stings which can result in skin irritations, pimples, rashes and itching which may last for 3-4 days. Severe allergic responses to bites have also been reported. They are considered to be perhaps the greatest ant species threat in the Pacific region.

Electric ants are tiny – about 1.5 mm long, golden brown in colour and usually slow-moving. They are social, often found clustered in heaps and form foraging trails.

They do not have nests but establish colonies under stones, in garden waste, leaf mould, swimming pools and water courses and may be in wall cavities, clothing, bedding or camping gear. They can be found in wet or dry conditions, can survive in water and may sting you in your swimming pool!

Moving any material that has been in contact with soil poses a serious risk of spreading electric ants.



Yellow Crazy Ant



Electric or Little Fire Ants

Control

As with Fire Ants, control involves monitoring reports from the public of sightings and suspected sightings as well as surveillance by trained field officers and, in the case of electric ants, sniffer dogs. Movement of high risk materials is regulated. When infestations are discovered, chemical baits containing an ant-attractant and an insecticide are laid. The ants take the baits back to their nests where the insecticide kills them.

Note: Information compiled from the Queensland Government website

Recycling Plastics

The challenges with recycling plastics

When different types of plastics are melted together they tend to separate into different phases, like oil and water, and set in these layers. The phase boundaries cause structural weakness in the resulting material, which limits their ability to be used widely. This is why plastics must be sorted into types before being melted down for reuse.

Which plastics can be recycled in Brisbane?

Deciding whether your plastic items can be recycled is easy.

- all **rigid or firm plastics** numbered 1-6 can be recycled in our yellow-lidded recycling bins
- however, type 6 polystyrene plastics (commonly coded **EPS – expanded polystyrene**) are NOT recyclable in our yellow-lidded bins, but they are recyclable by private recyclers
- **type 7 plastics** are NOT recyclable in our yellow-lidded bin, even if they are rigid. Type 7 plastics vary significantly in material type and composition, so they melt differently and cannot be turned into pellets for recycling. Put these in your general waste bin.
- **soft plastics**, such as cling wrap, chip packets and plastic bags, are not recyclable in our yellow-lidded recycling bins, despite sometimes being labelled as plastic types 1-6. They are not recyclable because they jam the machinery at the recycling facility during the sorting process. Place these soft plastics in your general waste bin.
- while **plastic bags** are made from a Type 4 plastic, they are not recyclable in our yellow-lidded bins. However, they can easily be recycled by taking them to your local supermarket and placing them in the designated collection bins. However, reuse is always better than recycling, and avoiding them altogether is better still. If you acquire a large quantity of plastic bags, consult Council's Recycling Services Directory for advice on companies that recycle commercial quantities

Degradable or biodegradable

Products are increasingly being made from degradable or biodegradable packaging. However, this does not necessarily mean they are better for the environment or assist in reducing waste in landfills.

So what's the difference?

Degradable plastics are made from oil and gas, and are designed to break down physically through chemical reactions. This degradation can be caused by heat or exposure to UV light. However, because they are still petro-chemical products, they will always exist in the environment, just in smaller and smaller pieces. There is a significant disadvantage to degradable products: when these plastics come into contact with moisture, the degradation process ceases altogether, and the item remains in its current state until the product dries out again, when it will recommence degradation. A common example of this is the degradable plastic bag - when it comes into contact with water, instead of breaking down it stays in its current state and is no better than any other plastic bag that will be around forever. This issue also means that degradable plastics bags are not suitable for composting.

Biodegradable plastics are made from plant or animal sources, and are designed to break down through the action of naturally occurring micro-organisms such as bacteria. Over time and with exposure to UV light, water, micro-organisms or oxygen, these plastics will eventually be converted back into a natural state. While this often sounds 'greener', there are significant disadvantages to biodegradable waste. When disposed of in landfill, the micro-organisms that are required to begin the break-down process are not able to survive in the oxygen depleted environment, so the waste breaks down extremely slowly creating methane gas and taking up valuable landfill space. These products require oxygen and micro-organisms to break down, so unless you have a compost bin at home or access to a commercial composter, you should avoid these products and choose reusable or recyclable products instead.

Summarised from publications by Brisbane City Council.