



February 2025

Welcome back to another interesting and busy year in our creek catchments. But first, some sad news. Irene Darlington, our well-loved and very dedicated wildlife carer passed away on February 23. She will be sorely missed in the wildlife care arena. John Ness has written a brief eulogy and Irene’s own descriptions of her journey into wildlife caring can be found in the Streamlines Archives on the website in the May and August 2023 issues.

On a happier note, we start the New Year with a new Secretary. Yes, Liz finally has a replacement – Georgina Robinson who is already setting a fine example and developing ways of doing things that work for her. Welcome, Georgina! It’s impossible to find words to describe the contributions Liz made to the running of PPCG – writing agendas, taking and distributing minutes, filling in grant forms, redirecting incoming information to the most appropriate people, keeping us all on target, in line and informed, to mention a few. Thank you, Liz.

Karen Roberts also left our Committee at the end of 2024. Thank you for so many contributions in so many different ways to the life of our group. We’re looking forward to having you around offering support although not on the committee. Esther, welcome back from maternity leave. Three boys sound like quite a handful!

In the November 2024 issue of Streamlines, hoop pines in Woodward Place Park were described as ‘emergent forest giants’. These particular plants are thought to be more than 200 years old. They stabilise creek banks, prevent erosion, provide habitat, offer visual amenity and much more. The question was raised as to whether hoop pines tolerate fire or regenerate after fire. Read the article commencing on page 5 to find out. When Jim Williams heard about this item, he added some very interesting historical notes on another local occurrence of hoop pine. Further historical connection to local hoop pines is described in an article from The Ipswich Tribune. Incidentally, the hoop pine is PPCG’s logo.

All members are invited to submit articles to Streamlines via helian1946@gmail.com. The deadline for the next issue is 15th May 2025. Please note the new email address.

Helen Ogle,
Editor

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Pullen Pullen Catchments Group

A Landcare Group

Website www.pullenpullencatchments.org.au

Meetings are held at 6 pm on the first Tuesday of each month at Pullenvale Environmental Education Centre, 250 Grandview Road, Pullenvale unless advised otherwise. **Note the new meeting day!**

Committee Members 2025

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Membership Options

Annual Membership – \$20 per person payable on February 1 each year; Life Membership – \$100 **per person** payable any time.

New members:

1. Visit PPCG website - www.pullenpullencatchments.org.au
2. Click on Membership
3. Follow the prompts to complete the registration form which will automatically add you to our database.

New and Renewing members:

Pay your membership and donate electronically to PPCG at BSB 064-152, Acc: 10107038. PLEASE ensure you include your surname and initial as a reference so we can reconcile your payment with your registration.

Working Bees Tools, gloves, etc are provided at Working Bees. Just wear sturdy boots and sunsafe clothing and bring water and a hat! Morning tea is provided.

Anstead Bushland Reserve – 1st Sunday of the month, 8:30 – 10 am (April-September), 7 – 9:30 am (October-March); Additional sessions on Saturday afternoons and Friday mornings are also held during the year.

Pullenvale Forest Park – 2nd Sunday of the month, 8:30 – 10 am

Woodward Place Park – 3rd Sunday of the month, 8:30 – 11 am (April-September), 8:30 – 9:30 am (October-March)

See also the Events Calendar on the website (<https://www.pullenpullencatchments.org.au/events-calendar/>)



"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"

Dedicated to a better Brisbane

Vale Irene Darlington, animal carer extraordinaire



The PPCG's long term native animal carer sadly passed away on Sunday 23 Feb. Irene had dedicated most of her life to the rescue, care, rehabilitation and relocation of wildlife and was a skilled practitioner as well as educator in this. In this role she was actively involved with the PPCG for over 15 years. Her life is a vivid example of the concept elegantly expressed by John Donne, quite a few centuries ago and paraphrased here: "No person is an island/ entire of itself/ each is a piece of the continent/a part of the main." Irene extended this concept to include all the native animals that struggle to coexist with humans and did her best to include them as "part of the main" because "we are all involved in animal kind" to broaden John Donne's major point a little. Irene will be sadly missed but hopefully her work will continue on.

Annual General Meeting 2024

Our 2024 Annual General Meeting on December 8 was a most enjoyable affair. Paul King from the Invasive Species Council not only talked about Fire ants, how they got here, why we need to get rid of them and how, but also some escaped garden weeds which have become a problem in bushland.

Jon Tacey and Jim Williams were winners of hampers donated by local parliamentarian Dr Christian Rowan and Councillor Greg Aderman. Jim assured us that it was the first time he'd ever won a raffle so I hope you enjoyed the contents, Jim.

The afternoon tea lived up to expectations!



John Tacey and Jim Williams with their hampers

Trees and Clouds

John Ness

Trees are the primary drivers in the maintenance of the biosphere doing the basic work of converting solar energy, carbon dioxide and water into the complex carbohydrates and oxygen that all other terrestrial life depends upon. With the removal of carbon dioxide from the atmosphere and their pivotal role in the water cycle, trees perform a fundamental role in the regulation of the climate. Recently, it was found that trees contribute another service to climate regulation.

One of the strongest, although relatively short lived, greenhouse gases is methane (CH₄) and the methane emitted by human activities, livestock and natural biological decay is the second most significant contribution to global warming after carbon dioxide. For decades, there has been a problem with accurately accounting methane levels and recently it was found that trees absorb methane at a level which is sufficient to achieve

a reasonable balance of the methane global budget. Without this additional contribution by trees to reducing methane levels, the world would be warming even faster.

Another challenge to accurately modelling the global climate is determining cloud cover. In general, clouds reduce atmospheric temperatures due to the reflection of incoming solar radiation although the effect of clouds on climate is very difficult to model as the effects on incoming and outgoing radiation have a complex dependency on the location and structure of the cloud, the position in the atmosphere, the time of day/night etc.

Clouds basically form when water vapour condenses on small particles, typically 5-100nm in diameter (1nm is one billionth of a metre), and change the light transmitted through the collection of water droplets. If the water droplets merge into sufficiently large ones, then the droplets will fall as rain. On average in a cloud there are 100-200 million particles per cubic metre, called cloud condensation nuclei, on which water droplets can form. While this number is very large the particles are very small such that based only on geometry considerations about ten thousand billion of them could be squashed into a cubic mm, that is a cube 1mm x 1mm x 1mm in size!

Clouds may look ephemeral but a relatively small one only 1km in diameter and say 300m thick will weigh around 500 tonnes whereas a full-blown storm cloud covering say 10km and several km thick may weigh around 10,000 times that! The condensation nuclei can come from dust, forest debris, smoke and pollutants, ocean spray, volcanoes etc but it has long been considered that there is more cloud formation than can be explained by the estimated levels of condensation nuclei.

Recently a large collaborative project, principally led by Germany, undertook a series of measurements of gases and particle concentrations over the Amazon and compared the data with simulations of particle formation in a cloud chamber ^{[1][2]}. This provided convincing evidence that trees may once again come to the rescue and supply the missing particles that are thought necessary to realise the measured global cloud cover.

It has been known for many years that trees emit the hydrocarbon, isoprene(C₅H₈), a bigger brother of methane, but since isoprene is a gas, it is not obvious how it could be involved in particle formation. The amount of isoprene emitted globally is significant at around five hundred million tonnes or about the same as methane emissions but isoprene does not last long, only a few hours when exposed to sunlight and certain atmospheric gases.

Measurements over the Amazon rainforest have shown that large quantities of isoprene are carried upwards, particularly during thunder storms, into the upper troposphere to around 15km in height. Above about 8km, the atmosphere is very cold (around -30°C decreasing to -60°C with height). The isoprene reacts with nitrous oxides generated from lightning to form complex and ever larger molecules which, at these very cold temperatures, condense into particles which can rapidly grow in size.

The particles are then spread over a large area and with the larger size (up to 50nm in diameter) gradually return to the lower atmosphere up to thousands of kilometres from the initial source. With this process, the tropical forests in South America, Africa, parts of SE Asia and northern Australia (eucalyptus are champion emitters of isoprene) are now thought to be major contributors to the cloud condensation nuclei quantities necessary to explain the aggregate levels of global clouds.

So besides the recently discovered role of trees in reducing methane levels, trees have an additional role in cloud formation and the resulting effects on global temperatures and rainfall that further confirms the key part trees have in maintaining an atmosphere that will support the existence of life.

[1]. "New particle formation from isoprene under upper tropospheric conditions" (>50 authors):
Nature Vol 636 Dec 5 2024 pp115-123

[2]. "Isoprene nitrates drive new particle formation in Amazon's upper troposphere"
Nature Vol 636 Dec 5 2024 pp 124-129

Hoop Pine (*Araucaria cunninghamii*)

Helen Ogle

Hoop pine (*Araucaria cunninghamii*), named in honour of the botanist and explorer Allan Cunningham who collected the first specimen in the 1820s, is found in dry rainforest areas from the Macleay River in New South Wales, through Queensland and into Papua New Guinea. It is slow-growing and known to live up to 450 years.

Hoop pine is a symmetrical, cone-shaped tree with a straight cylindrical trunk growing to a height of 60 m. Its bark is dark brown to black. Bark in young trees is smooth and can peel off in 'hoops' around the circumference of the trunk giving the plant its name. The stem bark exudes resin, which possesses anti-microbial properties. The long branches are whorled (i.e. a number of branches arise at the same level of the trunk) with clusters of small branches at their ends. The leaves are concentrated at the ends of the branches forming large clumps. The leaves are crowded together and are fine and pointy.



Hoop pine tree showing straight growth and long branches with clumps of leaves at the end



'Hooped' bark on a young tree



Whorled branches

Hoop pine is a gymnosperm like pine trees and reproduces by producing cones. The male and female cones are usually produced on the same tree. Male cones form dense clusters of cylindrical spikes usually in the lower parts of the tree while female cones are round and occur near the top of the tree. Female cones are brown when mature and 8-10 cm in diameter. Their position near the top of the tree allows the seed to be dispersed by the wind.



Male cones



Leaves, young and mature female fruit

Hoop pine is very adaptable and can grow on a range of soils provided the annual rainfall exceeds 760 mm. It is usually found at elevations between 0 and 1000 m, does not tolerate water-logging, is very sensitive to fire and prone to cyclone damage.

Hoop pine is an attractive tree, especially when planted in groups but needs considerable room for growth. It has many uses. In earlier days its timber was used for ship masts and spars. The resin was used as cement by indigenous people and the seeds in the female cones are eaten by birds. In more recent times, hoop pine bark has become popular as mulch because the resin-impregnated bark is more resistant to decay than wood.

Hoop pine produces premium grade softwood so commercial plantations have been established through south-east Queensland. The wood ranges in colour from pale cream to yellow brown with fine grain and even texture, it is free from knots and varies little in colour between sapwood and heartwood. Its ease of use has made it popular for general construction purposes and for a variety of non-architectural and non-building purposes, such as the manufacture of musical instruments, drafting instruments and brushware.



Hoop pine timber

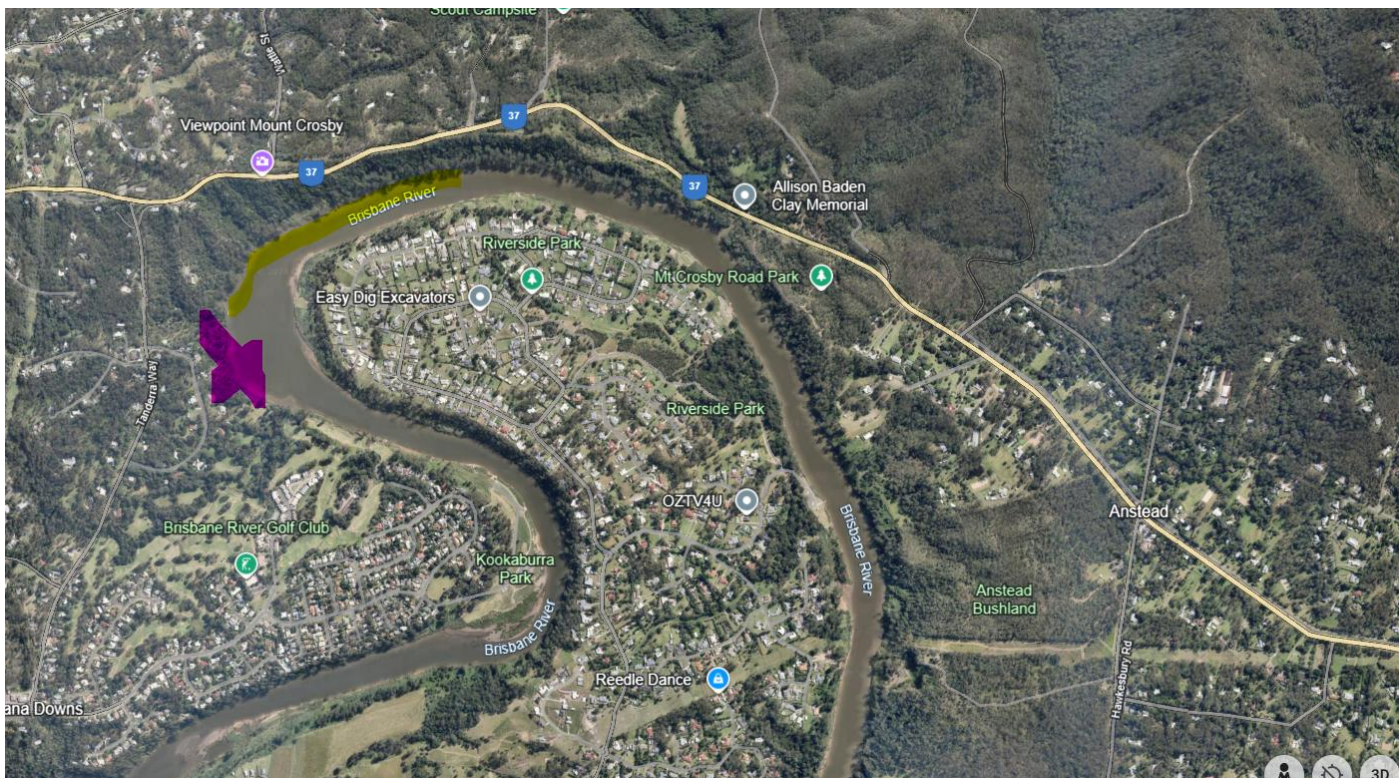
Compiled from information supplied by Australian National Botanic Gardens, Business Queensland, Gymnosperm database (great range of photographs), Queensland Department of Agriculture, Fisheries and Forestry, Gympie District Landcare Group and Wikipedia.

Hoop Pines at Karana Downs

Jim Williams

I have tried to track down the reference by John Oxley to the hoop pine on the steep cliffs of the Brisbane River at Karana Downs during his explorations. I came across this some 30 - 40 years ago and it was a description that could only have been the land south of the Mt Crosby Rd "Camel Humps" (Barnes Hill). The sharp bend in the river with vertical cliffs are unique to the area he was describing. I've been unsuccessful so far in tracking that down, so maybe it could have been Cunningham or another early explorer. However, I really did believe it was Oxley.

The hoop pine in this location (yellow line on image) was easily felled into the river and floated down stream to the Rafting Ground Rd saw mill. There are still some naturally occurring Hoop Pines at this location (albeit relatively small) which can be seen from the lookout on Barnes Hill. This area is a "fire shadow" as the landform suddenly drops almost vertically down to the Brisbane River. My understanding is that the significant width of the Brisbane River provides a "fire containment" to the south and any fire coming from the north, west and east would not travel down the cliff. There are many species of dry rainforest trees that grow here. It is a very interesting place to visit and very difficult to access, which ultimately has kept it intact, to some degree. Also, there was a saw mill located upstream (purple cross approximately on image).



Location of hoop pine (yellow) and sawmill (purple) below Barnes Hill, Karana Downs

I took the photograph below from Barnes Hill in 1983 and although it does not show the vegetation or the steep cliff, it still gives an insight into the topography (and how much residential development has occurred!).



Significant and historic, Landowner flabbergasted by new revelations

Lara Hart

'A Hoop pine tree at Pine Mountain has been identified as a living link to the 1824 expedition of John Oxley and Allan Cunningham. The tree and its significance was revealed several months ago to property owners who were oblivious to its history.

The 32 hectare (80 acre) block of land belongs to Shane Hancock and his husband Darren. The couple run a llama farm from it. "When we bought the property we had no idea of its history and it wasn't told to us by the family who'd owned the land for generations," Shane said.

"Earlier this year, Dr Gary Bacon contacted us as the landholders and cited that John Oxley and Allan Cunningham crossed the Brisbane River into the Pine Mountain area and discovered the pine trees. "[The explorers] were on their trip going west, heading outside of greater Brisbane because they hadn't developed Brisbane at that stage, it was just a speck on the map."

Dr Bacon, a noted Queensland forester, told the couple that September 21 was the date Cunningham and Oxley crossed the Brisbane River at their location to collect samples. "His research identified our tree as being significant," he said. "It was a lovely piece of history to understand that it happened here, because according to the [explorers'] diaries and maps, our property is where they crossed the Brisbane River."

Diaries also reveal an Aboriginal man showed them where best to cross the river, but only showed part of the way because the scrub was far too thick. "The reason they crossed at our point of the river is Pine Mountain has a peak, making it a good vantage point," Shane said.

The revelation also had a big 'wow' factor. As a child Shane learned all about Cunningham and his explorations. "While Cunningham was an influential explorer, he was a botanist first and foremost," he said. "His exploration came as a result of his botany work. "John Oxley was a surveyor for the colony in NSW, he was on the expedition because he'd been told there was a large river that entered the Moreton Bay area.

"They actually overshot that and went into the Pine River catchment, then said 'no, this isn't the size we thought would be in this area', went back and found the opening to the Brisbane River." Oxley had been sent by King George IV to explore this part of the continent and Cunningham was assigned to him as the botanist.

Diary entries show the geography of the area described as being "thick and impenetrable". "There would have been hoop pines everywhere, these huge ancient trees that had never been touched by man, the indigenous people didn't harvest trees and cut them down," he said.

"The [explorers] collected the samples and sent them back to Kew Gardens in England. Those samples are still sitting in the botany museum at Kew, to think they were collected off our farm is quite amazing."

Diaries used by the men are still in existence today. Dr Bacon has studied them and has copies of entries and maps the men made when coming through the area.

"Our tree is very big, the biggest pine tree on our property and the district," Shane said. "It's reached its full maturity and has a flat top. It's estimated to be well over 250 years old. "I never take it for granted, I admire it. "We've had some significant storms come through in the past 10 years we've lived on the property, a couple of branches have blown off of it which always makes me upset.

"It's a big beautiful tree that's been standing here for so long and holding its own, but at the same time it's had storm damage, but it hasn't been compromised."

Ipswich City Council have commissioned a plaque that will be presented to the men sometime in the near future. "The anniversary snuck up on everybody without anyone really thinking about what we could possibly do to celebrate it," Shane said. "It's a living link back to our early history."