November 2020

Alice Springs Field Naturalists Club Newsletter

This is Woolly Cloak-fern, *Cheilanthes lasiophylla*, near the Simpsons Gap bike path.
I saw masses of the more delicate Rockferns, *Cheilanthes sieberi*, along a rocky creek near Trephina. These ferns aren't hairy like the woolly cloak ones.
All these little ferns are called resurrection ferns because the chlorophyll in their leaves reconstitutes very quickly after rain. Leaves that have been dried up for months or years can turn bright green within hours of rain! - Meg Mooney

Meetings are held on the second Wednesday of the month (except December and January) at 7:00pm at the Olive Pink Botanic Garden Visitors Centre.

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NEWSLETTER

The next newsletter will be February 2021

The deadline for the February newsletter will be 23 January.

Please send your contributions to Barb Gilfedder: bjfedders@gmail.com

ALICE SPRINGS FIELD NATURALISTS CLUB

Sunday 8 November *Note change of date!*

Meet at **Ellery Big Hole** on Sunday, November 8 at 8.30am for a swim, bird watch and chat with Meg about the geology. Some of us will swim across the waterhole and go up through the gorge, possibly as far as the new Larapinta Trail shelter on the other side of the gorge. Contact Meg Mooney, 0404 564840.

Wednesday 11 November

General Meeting in the gazebo at Olive Pink Botanic Garden at 7.00pm.

Speaker: Nikola Van de Wetering

Wanna talk dirty? Coal may be a four letter word, but it's not as offensive as you may think. This unpopular black rock is potentially our best scientific tool for understanding how terrestrial life on Earth has adapted to past climate change.
Nikola Van de Wetering (MSc. BSc. GeoSci) is a rock and dead-things enthusiast previously of Queensland, fresh to Alice Springs. She was the host of Brisbane's 4ZZZ radio science-meets-punk show 'Hot Schist'. She now works in environmental consulting, and sound production at 8CCC Community Radio.

Saturday 28 November

ASFNC Christmas Breakfast at Alice Springs Telegraph Station. Bring a plate of finger food to share, your own drinks, possibly a chair or rug to sit on. Gate opens at 8.30am. *Happy Christmas everyone!*

AUSTRALIAN PLANTS SOCIETY - ALICE SPRINGS

apsalicesprings@yahoo.com.au

Saturday 31 October, from 8.30am Standley Chasm walk followed by refreshments at the cafe

Meet at Standley Chasm entrance and enjoy a walk along the creek to see how the valley is recovering after a bushfire completely burnt it out in January 2019.

Wednesday 4 November, 7.30pm Meeting at Olive Pink Botanic Garden.

Speaker – Doug McDougall "Gardens of New Zealand". In October 2019, Doug attended the BGANZ conference in Wellington, New Zealand. He will talk about his favourite speakers and show some of the amazing gardens and natural places he visited in Wellington and the South Island.

The other local Hibbertia

This one is currently called *Hibbertia* sp. Chewings Range. The flowers are similar to the much more common *Hibbertia glaberrima,* but the leaves are quite different. It is lovely to see that this one has been planted along the entrance walkway into the Desert Park from the car park. Look for it next time you visit and compare with *H.glaberrima* growing wild at Standley Chasm.

Alice Springs Field Naturalists Club Committee Members

President	Barb Gilfedder	8955 5452
Vice-President	Margaret Friedel	0417 849 743
Secretary	Connie Spencer	0429 966 592
Treasurer	Neil Woolcock	0428 521 598
Property Officer	Rosalie Breen	8952 3409
Member	Lee Ryall	0417 401 237
Public Officer	Anne Pye	0438 388 012

Other Club Responsibilities:

Newsletter – Barb Gilfedder bjfedders@gmail.com
Facebook Organiser – Meg Mooney moon3@iinet.net.au
Website - Robyn Grey-Gardner 8952 2207

To grow better native plants – befriend your local termites

Demonstration of 'the McEllister Planting Method' by Ian Coleman, Curator of Olive Pink Botanic Garden

Report by Fiona Walsh, Photos by Fiona Walsh, Anne Pye and Barb Gilfedder

Left: At Olive Pink Botanic Garden by the juvenile Ghost Gum grove, Ian Coleman (kneeling) dug down beside a seedling planted in April 2020
Right: From about an arm's length depth he withdrew a handful of soil to show Field Naturalist members the termites and other insects that had created a light soft soil which grows better, stronger native plants.

I declare a secret passion for termites, so was thrilled to hear Ian Coleman, Curator at Olive Pink Botanic Garden (OPBG), rave about termites at a tree planting demonstration (with a few disclaimers). Ian's infectious enthusiasm was complemented by sage and detailed insights from Alex Nelson. The Garden has integrated termites into their tree planting system with outstanding success. So, in 2020 they invested in The Garden's biggest ever planting program with more than 550 holes and 600 new plants.

Ian and Alex shared their knowledge with fourteen members of the Alice Springs Field Naturalists Club, at a morning tour on Saturday 10 October. Their experiences are relevant to any local gardener, Landcarer and to our local Town Council. Ian is a horticulturalist by training. Alex is a second generation local, natural historian and has been both staff and volunteer at OPBG. Alex and Ian, in turn, credited Des Nelson, Peter Latz and Frank McEllister for what they termed 'the McEllister method'. Ian also spoke with respect of Jerome Davy, the chief digger and others who labour to dig the large holes for trees within the garden as part of a public service program.
The method Ian and Alex shared is below in a step-by-step guide - but a bit of termite biology first. 'Termites are the largest organism in Australia' says Ian, meaning that in terms of biomass they outnumber (or used to outnumber) kangaroos or cattle in terms of gross weight. But termites are tiny and mostly live underground or out of daylight, so are largely invisible to us surface dwellers. We have about 48 species of termites within 100 km of Alice Springs, there are (at least) 380 species in Australia and more than 3,000 species internationally. 'The entire desert ecology is shaped by termites' Ian says. Desert ecologists describe termites as 'a driver' of desert ecosystems. I think of them as the krill of the desert as lots of things eat them. Termites are a conversion point; they eat plants and animals eat them. And like earthworms elsewhere, they also turn dead plants, from timber to grass, into mulch. Therein lies their hidden value within the arid zone garden.

Left: An example of termites showing soldier and worker castes. These were at the Spencer Hill Landcare area in March 2020. They are a species that may eat Buffel seeds and grass. Right: The soil excavated from within the Ghost Gum hole was wriggling with various species of ants and other insects that had created a light friable soil and reduced dry plant materials to a nutritious dark humus. The open loose soil structure allows better water infiltration and stronger plant root growth.

The McEllister planting method for your garden

Here's a summary of the innovative method used at The Garden. It could be tried in any garden, park or bushland restoration area in central Australia.

Ingredients:

- shovel and hard yakka
- bulk compost from any varied plant-derived materials preferably desiccated: wood chips, any animal manure – horse, camel, cattle, even dog poo, shredded newspaper and cardboard, food scraps including orange and onion peel, dried Buffel Grass, hay, small sticks and leaves including Eucalyptus. These materials should be more dry than moist and the more aged the better. *
- the freshest water possible (chlorine and high pH in the water will kill beneficial organisms). Rain water is ideal.
- sulphur
- 'Seasol' seaweed solution

Steps:

1. Accumulate your compost over months.
2. Plan ahead where you want new plants to grow months BEFORE you buy the plants. *
3. Dig a deep, wide hole – at least 70 cm deep and 50 cm wide. Dig several holes concurrently if you have a large garden.
4. Fill the hole about two-thirds with the collected material intermixing it with the soil dug from the hole.
5. Add about 50mg or a handful of sulphur and mix that into the soil too (read why later).
6. Back fill the hole to about 5 cm below the surrounding surface level.
7. Construct a 5-10 cm high bund around the hole and pack it so it will hold water.
8. Fill the hole to just below the maximum height of the bund with the freshest water possible, rain water if possible. (read why later).
9. Leave it for a few months and refill it with water at least once in that time.
10. Then establish irrigation with drippers (OPBG bury about 8L/hr flow drippers).
11. Plant into the hole.
12. Add 20ml Seasol Seaweed solution to a 9 litre watering can – and water the plant.
13. Then maintain appropriate watering regime to the plant.

With mulch in the foreground, soil to back fill on the left, Ian demonstrates the new planting method now standard at the garden. He also noted that to the left below the excavated soil pile was a low termite nest (termitarium) and by it was a very healthy Desert rose, Gossypium sturtianum *(out of sight). This indicates that it may benefit from being close to a termitarium.*

** About the compost: To pile bulk compost then dig but not plant for months later requires planning and a long-term outlook rather than quick gratification from planting then hoping your tree will grow. Effort and patience are rewarded. Also, it's better not to include heartwood material as its too hard. At The Garden, they deeply bury food scraps from the Bean Tree Café.*

Why does this method work?

OPBG has planted 600 tree and shrub seedlings using this method this year. Why might it work? Some facts are known, and questions remain. Ian and Alex each described how they came to recognise the roles of termites within the functioning of The Garden. The short answer is that the work of termites makes the soil friable, that is, lighter and more crumbly in texture. Termites turn and tunnel through moist soil. They create air spaces that water, nutrients and roots can follow, so they give the soil structure. Friable soils allow water to better soak and spread. Then the roots of new plants can grow their way deeper and more quickly into the cooler layers of a soil profile. Termites can and do dig down to bedrock but mostly occupy upper layers. Termites also break down the mulch to release nutrients. Importantly, they convert the mulch to soil carbon compounds (humus) useful to the plants. Perhaps we can imagine termites as the best of underground road builders who create a network of superfine highways that plant roots can follow.

Is this Burrowing Bettong or Bilby diggings? South of a mulga grove, these holes dug by workers at Olive Pink have been back-filled with a mulch – soil - water mix then left for some months to allow the termites to work below ground before seedlings are planted.

Ian and OPBG staff have dug down alongside some of their plants grown by this method to examine termites and diverse insects. Ants, in their diversity, have complex relations with termites ranging from symbiotic to enemy. The presence of ants at depth can be an indicator of termite activity. (Termites are also known as 'white ants' which is a misleading name as, like cockroaches, termites are in the order Blattodea whereas ants, like bees, are in the order Hymenoptera). Termites have their own ecosystems with fungi, bacteria, protozoa and diverse lifeforms to help them break down plant materials – all are more active in moist soils.

Alex noted that at OPBG and in many places around Alice and the region, soils have been eroded and stripped of their top or A-horizon layer through European land uses, so the harder poorer B-horizon is exposed. This makes it difficult for native plants to establish. This 'termite-community' method helps to restore top soils. By working at depth, termites are safer from heat, desiccation and their enemy ants. However, in humid conditions termites do move to the surface to feed on dead plants. But don't termites cause damage to trees, houses and more? Yes, some species can but only to dry materials so not to green living trees (at least in arid environments). And what about houses? Here was Ian's disclaimer that yes, we need to be careful to keep dry plant material away from houses with timber frames. Northern Territory houses have, and should have, metal termite barriers and other prevention measures.

Alex explains that in 2007, there was a single chest-high Emu Bush, Eremophila longifolia *in this area. By leaving leaf mulch at the surface for them to consume, termites are likely to have created a subterranean system of tunnels that may have helped the root suckers of this grove of Emu Bush spread more readily.*

For Field Naturalists, the speakers brought attention to termites as an often overlooked or even maligned insect within desert ecosystems. The topic of Buffel Grass and termites wove in and out. Alex and Ian were clear that dried Buffel could be added to the mulch and when at sufficient depth (maybe more than 20 cm) was unlikely to regrow. For the Landcarers, Ian noted that termites could harvest and eat pulled Buffel more easily when it is left spread on the surface rather than piled up. Also, observations by Alex and myself of

a) termites being active in dead Buffel and

b) termitaria in the quartzite hills being one of the few natural things that seemed to be growing through recent harsh hot seasons had us wondering how and what species of termite was eating the Buffel. Something to be explored…

The vital topics of water and watering at The Garden and in our town were a focus of Ian's opening and closing remarks. Rainwater is best for native plants and probably animals and humans too. However, OPBG is largely reliant on mains thus ancient artesian water. pH (the measure of how acidic to alkaline something is) is very different in rain and ground water. It ranges from 6.3 (rain) to 8 (groundwater). Native plants prefer neutral to low pHs. Long-term watering with Alice Springs mains water causes an increase in pH to create alkaline or worse sodic soils. This is why Ian and co. add sulphur when they backfill the holes full of termite fodder. The sulphur breakdown reduces the high pH. One participant noted that sulphur is toxic to insects and many critters, so it is a trade-off that requires small amounts of sulphur and good soil mixing.

Ian offered a lot of information about water rates for different plant establishment ages and weather seasons at Olive Pink Botanic Garden. The main point from that was that strong desert species plants need daily to weekly watering regimes that are adjusted according to plant establishment, age and rainfall.

What next for the human - plant - termite community at The Garden? Humans will continue planting from above ground with the knowledge the termite community below ground will be busy. Alex and Ian are keen to trial curvy trenches with deep mulch for termites to reach already establish plants and help re-establish native grasses and other smaller plants.
'Are there commercial opportunities on each of these fronts?' asked Ian. He wants investigations both into carbon sequestration through termite activity and into better use of the town's organic wastes (manures, wood chips, food compost) in ground rather than dumped.

Amongst other things, I'm wishing Alice Springs CSIRO collections of local termites can be found so as we can better identify the diversity of termite species, their different guilds and roles in The Garden. After the talk, I dug more enormous holes in my own bush garden - much easier to dig when the soil is moist after the recent rain.

So, next time you want to plant trees to give you good shade and pleasure, think ahead, shred your cardboard, pile the chook and dog poo then dig a few holes, soak them well with rain water and choose your native plants to plant a few months later. Then watch nature return to your garden.

Thanks to Ian and Alex for their talks and demonstrations!

Written by Dr Fiona Walsh. Fiona is a desert ethnoecologist and Mparntwe/Alice resident for 27 years. When at CSIRO, she co-authored a 2016 research article about desert pavement termites published in a prestigious science journal. Fiona received a 2020 Australian Academy of Science award to research Aboriginal cultural and ecological knowledge of pavement termites.

(Olive Pink Botanic Garden built a fertigator watering system a few years ago. Liquid fertiliser and water pH adjustment using acids can be delivered, along with required amount of water, to targeted garden areas. Interestingly, it can be set, changed and monitored live from a smartphone. Ed.)

Frogs responding to rain at Wigleys

By Fiona Walsh

Rafts of frog spawn at Wigley gorge were seen after the rain early last month. It was possibly Main's Frog as I heard one calling nearby. They had 36 mm of rain in Eastside over the three days but there was no surface flow at Wigley. With the heat and pool sizes, I don't know if there'd be enough water at Wigleys for the tadpoles to emerge and adult frog stages to reproduce.

A quick guide to *central Australian Ptilotus species* – *Barb Gilfedder*

Ptilotus arthrolasius

Ptilotus calostachyus

Ptilotus clementii

Ptilotus decipiens

Ptilotus exaltatus

Ptilotus gaudichaudii

Ptilotus helipteroides

Ptilotus incanus

A quick guide to central Australian Ptilotus species – Barb Gilfedder

Ptilotus latifolius

Ptilotus nobilis

Ptilotus obovatus

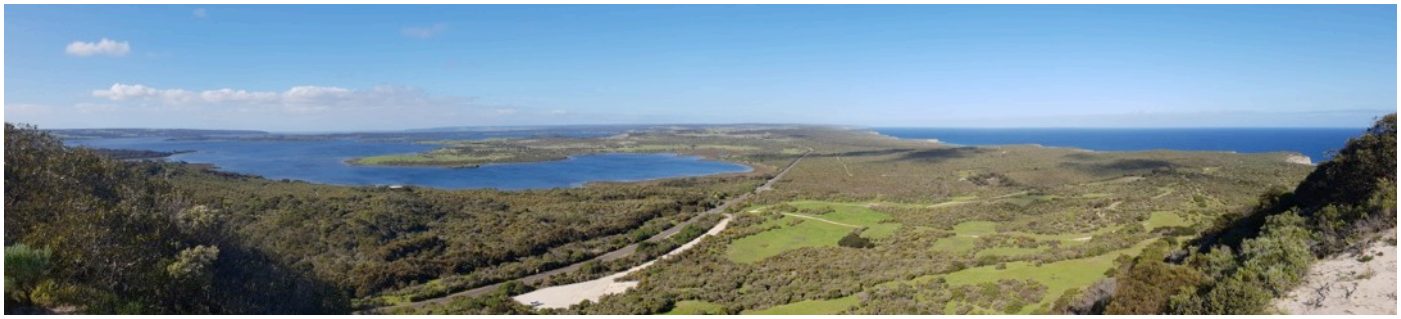
Ptilotus polystachyus

Pilotus schwartzii

Ptilotus sessilifolius

Ptilotus whitei

Ptilotus xerophilus



Beautiful Kangaroo Island – now in recovery mode

By Anne Pye

In September I visited Kangaroo Island for the first time. Flying over it with the plane there were plenty of green patchwork paddocks mostly bounded by tree verges, as well as more swampland than I had expected. It was only when you got on the ground and had a drive around, particularly in the western part of the island that it was possible to see how badly burnt so many of the verges were….even relatively close to farm houses that had evidently been saved from very close blazes in the January 2020 fires which burnt over half of the island. While on some the gums had reshot over a metre tall already, many others were burnt so badly the gums will surely fall over in the next year or two and it had been so hot that only the Yaccas survived. However I am told that when the Yaccas flower in response to the fires that this brings in the insects and hopefully starts the germination process of the seeds left under the ash…

I was lucky while I was there because not only was the farmland looking lovely green and wet but also there were lots of local natives out in flower, including the local Acacias, Thryptomene and Calytrix, as well on one walk, there were lots of little orchids (pictured).

On that same walk along the coast near American River, I saw more male (ie blue) Superb Fairy-wrens that I have ever seen in one go, all scattered along the shrubs that fringed the walk. I also saw the endangered Glossy Black Cockatoos a few times, one morning in the gums opposite where I was staying, and later, other small groups flying around various parts of the island. And there were plenty of Pelicans, Cormorants and Black Swans of course.

Over on the western side of the island, it was the season for Fur Seal and Sea Lion pups, which were lying around in their crèche groups.

There was a reasonably large Monitor when I ventured off a walk around one of the salt lagoons, and I glimpsed a couple of the local dark woolly Wallabies – about the same size as our Euros. And I did see three Echidnas while I was there – including one which waddled across the road and then had to stretch up to reach up the 8cm or so of sandy verge on the side of the road before it could continue waddling on its way.