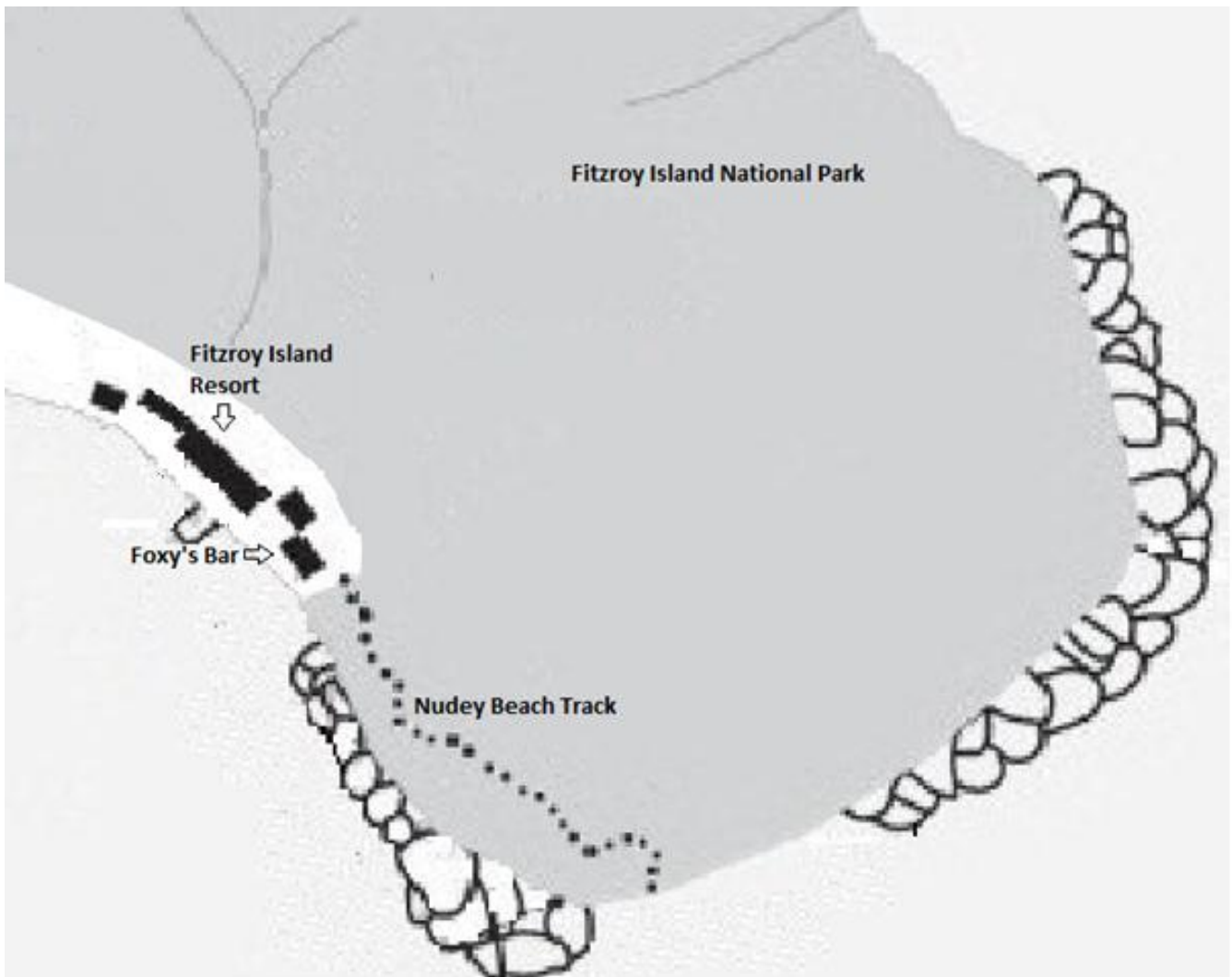


Self-Guided Nudey Beach Plant Adaptation Walk

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The track may not be exactly as it appears in this diagram

Take only photographs; leave only footprints

Nudey Beach Track: A Look into the highly competitive world of plants

Plants are not particularly kind to each other. In fact, in the green world most things are a competition and life is a constant battle of one-upmanship in order to survive. Fitzroy Island has nutritionally-poor soil, high salt water content and the hot winters tend to sap away a plant's meagre water supply over the dry season. What little nutrients and water are to be had are in high demand. Not every plant can dominate their surroundings by being biggest or the baddest; so each have developed little tricks that enable their continued survival. You will learn a few of these adaptations on your journey to Nudey Beach today.

1. Vines

Visual Sighting: smorgasbord of vines growing alongside track (marker on the left hand side)

Vines are a common sight along the Nudey Beach track. Once the seed sprouts the young vines work quickly to establish themselves within the forest. A seed already positioned in the branches has a distinct advantage over its forest-floor-growing counterparts as they are already partially-elevated toward the sunlight. Seeds that land amongst the forest debris have one trick to use to their advantage. Their sprouts snake their way toward the darkest portion of their surrounding horizon. This method allows the vine to locate large trees where they can begin to inch their way up its trunk and into its branches. They only have a brief window of opportunity to establish themselves; those that fail to attach to a larger tree will die. Once anchored, they quickly begin to climb toward the sunlight. They must keep a careful grip on their host for support. Different vines use different methods to do this- some have sucker roots to stick to the bark. Others use tendrils (specialised climbing apparatus) to wrap around smaller sections such as twigs and branches before gradually twisting the body of vine around its host. Vines with stem-derived tendrils are generally more successful at grasping larger trellises. Vines tend to be narrow and flexible with the heightened capability of growing at exceedingly high spurts. The ultimate aim of the vine is to reach the canopy and begin photosynthesis at an accelerated rate. As the plant has no need to rely on self-support, it has an advantage when competing with other forest plants such as young trees and shrubs. Why bother growing strong enough to support your own weight when you can cheat your way to the top?

2. White Starfish Orchid

Visual Sighting: tiny green spider-like plant growing on the bark of the Cluster Fig (marker on the left hand side)

This exquisite plant growing on the Cluster Fig is a leafless epiphyte. It is so easy to walk past without even registering that you are looking at a minute spider-like plant. Like all epiphytes (plants using other plants or materials as a 'base' from which to grow) it takes nothing from its host but stability. The flat roots contain chlorophyll so this remarkable plant is able to generate its own photosynthesis reaction. White Starfish Orchids grow in the summer and spring and lie dormant during the cooler months. It flowers sporadically throughout the year but incredibly all the White Starfish Orchids in the same immediate area will bloom simultaneously. There must be an air-carried pheromone that triggers their synchronised, unstructured bloom pattern. Flowers last between two hours to two days and have a nice, sweet smell.

3. Buttress Roots

Visual Sighting: tree with distinctive buttress roots (marker on the right hand side)

A common feature seen across the tropics is the distinct buttress roots of certain trees. Instead of penetrating to deeper soil layers, buttress roots create a widespread shallow root network across the surface. Most shallow roots would prove insufficient to support the weight of the taller trees however buttress roots provide a tall tree with enough strength and stability to withstand the impacts of severe storms. Yet their ability to withstand cyclonic winds is not their greatest contribution to the well-being of the tree. The greatest advantage to the buttress root system is that it allows the trees to control an efficient uptake of nutrients. This is the key to survival within the nutritionally poor and highly competitive environment. Buttress roots allow trees to maximise their personal allowance and actively compete with the rapid uptake of other plants. Basically buttress roots are the Benedict Cumberbatch of adaptations (in that they can do anything). These roots aid in water uptake and storage, increase surface area for gas exchange and collect leaf litter for added nutrition. In addition to the already mentioned features, buttress roots reduce soil erosion and simultaneously maximise nutrient acquisition during heavy rains. In short: they are the bees' knees.

4. Epiphyte – Bird Nest Fern

Visual Sighting: Bird Nest Fern growing low on tree by stone steps (marker on the left hand side)

As you saw earlier on the track, there is one category of plants that have evolved not to need soil at all. These are the epiphytes (meaning ‘air plants’) and they account for up to 25% of all tropical vascular plant species (vascular plants are terrestrial –land living- with their own specialised tissue used to conduct water and minerals through their system). Epiphytes wrap their specialised root system around a host tree; either on its trunk or along its branches, and live off the water and debris that fall around them. They take nothing from their host other than stability. You often see them growing on rocks and other hard surfaces as well.

The epiphyte you see before you (look upwards) is a Staghorn Fern. This fern has tuft roots that are supported by short rhizomes. The fern itself consists of two different kinds of fronds- basal and fertile. The basal fronds are the kidney-shaped base that shields the vulnerable root system from damage while the fertile fronds are the leaves; they perform the vital photosynthesis as well as reproduction. The fern survives by collecting nutrients from falling debris and rain; it is able to store moisture safely inside the basal fronds during the dry season.

5. Lichen

Visual Sighting: boulder covered in lichen (marker on the left hand side)

With their tiny stature and slow growth rate (many lichens grow at 0.5mm per year), lichen is at a distinct disadvantage to compete for sunlight. Instead they have created a special niche. Lichen grows in regions that other plants cannot. Lichen has been found in deserts, inside the Arctic Circle and at altitudes far too high for other flora to survive (the European space agency recently discovered that lichen can even survive unprotected in space!) Another trick that aids competition is that unlike most plants, lichen can tolerate irregular and extended periods of severe drought by entering a metabolic period of stasis. This means they halt all biochemical activity and effectively ‘wait out’ the tough period; becoming active again once conditions have improved. Lichen is not a parasite and does not harm its host. It merely uses the tree or rock as a form of substrate. Some lichens use chemicals to decompose the substrate over extended periods of time- this aids ‘weathering’ of rocks.

6. Liana Vine

Visual Sighting: woody vine encircling host (marker on the right hand side)

An additional plant characteristic of the forest is the liana vines (see also Secret Garden track stop #1). Unlike other vines, liana is not a species but a description given to a specific type of plant- just like the terms ‘shrub’, ‘bush’ and ‘tree’. Liana vines are long-stemmed, woody vines that can twist so tightly around the limbs of their host that they have been known to make some branches snap beneath their weight. Broken limbs and felled hosts help to open gaps in the canopy.

7. Leaf Structure

Visual Sighting: leaves of the surrounding flora (marker on the left hand side)

Many trees around you have similar-shaped leaves. Many have a graceful elongated ‘tail’ design that funnels water flow. Some of these plants are actively channelling the water toward their own root system while others are simply looking to direct water off their leaves as soon as possible. The reason for that is simple- in the tropics excess water encourages bacteria and fungus to grow. These can be dangerous. Around 200 bacteria species can infect plants and cause tissue decline. They become more active in hot and humid conditions (e.g. over the summers here). The bacterial pathogens invade the plants’ tissue and restrict its ability to channel water and nutrients through its system. Infected plants show signs of wilting or drooping. Another sign of a

bacterial infection is leaf spot. Leaf spot is caused when the attacking bacteria inject a toxic chemical to kill plant cells. The plant responds by purposefully killing the cells surrounding the bacteria; this remedy works like a 'fire break' to isolate the infection. Once the bacterium is successfully contained the affected portion of the leaf falls away, leaving a tell-tale hole.

While many species of fungi are good for plants, thousands species are harmful. Fungal infections are the most likely cause of an infection encountered in the forest. Fungal spores are tiny and light. They are highly mobile and can be transported on the wind or in rain, or via animals, insects and human beings. Once it penetrates the trees dermalogical defence, fungi attacks the organic material to break it down. Symptoms include leaf spot, mildew, wilting leaves and rotting or dead roots. As the disease takes hold the tree is subjected to a barrage of decay in the form of oak wilt, root rot, butt rot, heart rot and sap rot. Once the structural integrity of the tree is compromised it is incapable of supporting the weight of its own branches. Trunks become hollow and unstable, increasing the trees' risk of falling over.

As you can see, redirecting water can be a useful adaptation. However shape is not the only useful adaptation on the leaves. You'll notice that many of the leaves have a waxy coating. This is because plants are like us- they sweat. In the case of plants though it's called transpiring and it sounds ever more elegant than talking about sweaty plants. The leaves are dotted with stomata cells; specialist cells that open when the plant is hot. They release moisture (water vapour) back into the atmosphere. The trouble is; the plants around here don't know how many months will pass before it rains again. They want to avoid transpiring where they can. Many have developed a waxy surface which actively blocks stomata pores from opening. This restricts unnecessary water loss. Not a bad trick really. A final feature readily found on coastal plants is slightly curled leaves. By curling the leaf the plant reduces the quantity of surface area exposed to the sun at any given time. This limits the sun's ability to heat the leaf: another successful method of preventing unnecessary water loss through transpiration.

8. Paperbark (Melaleuca)

Visual Sighting: papery red tree (marker on the right hand side)

There are 300 species of Melaleuca in Australia; most are endemic to this country but a handful are found in Melasia and New Caledonia. Their common name, Paperbark, sprung from the typical Aussie habit of naming something what it looks like. Its bark looks superficially like paper; therefore the tree is a Paperbark. This is exactly the logic that earned the Australian Flatback Turtle its name (you can guess what shape its shell is). Paperbarks have a specialist root system spreading up to 15m deep and providing the tree with increased stability. This feature is especially useful in case of flood or torrential rain (which can create water-logged soil).

Paperbarks are remarkable trees. Their cells are flooded with silica; a useful adaptation for keeping the termites away. This is not the only bug they keep at bay- the oils contained within the bark work as an effective insect repellent. As the bark splits it releases chemicals that are thoroughly repulsive to most insects. This is not the barks only claim to fame. Its texture effectively retains moisture so that the bark does not burn during a bush fire. This means that the tree comes through fire relatively unscathed; the vulnerable inner bark is efficiently shielded despite the intense heat. Despite this extremely handy adaptation, the tree does not escape bush fire entirely unscathed. It will lose its leaves. However, it already has a solution. Little buds collect dormant underneath the bark of a limb where they will remain until the heat of a bushfire stimulates their sudden sprout. The sprouts are additionally feed through a store of starch contained within the thick papery layer of the outer bark. The deep root system allows the tree to tap into the island's underground aquifer in case a bush fire renders the top layers of soil bone dry.

Finally, Paperbarks have one final feature that allows them to be highly successful genus. They don't like to share. The tree actively injects the surrounding soil with chemical enzymes that suppress seed germination. This cheeky (but extremely resourceful) method ensured that competition from surrounding plants is kept at a

minimum. In this manner, the nutrients, water and other supplies that fall in its vicinity are taken up entirely by the Paperbark itself rather than a needy neighbour.

9. Salt Water Tolerance and other Vegetative Adaptations

Visual Sighting: surrounding vegetation (marker on the right hand side)

Stop for a moment and listen. Can you hear the ocean? The trees here are exposed to high levels of salt spray, prevailing winds, granite boulders (preventing or delaying natural growth) and live in nutritionally poor, unstable soil that would make it impossible for standard plants to survive. Just to make it more fun, the soil found in coastal areas tends to be highly saline and typically lacking in fresh water. In order to cope with the wash of climatic and environmental influences plants here have several adaptations that have proven key to their success. An increased thickness in the width of the leaves offers protection from the sun and salt spray that can cause dehydration. Leaves tend to be stiffer; this is an adaptation that enables plants to tolerate the destructive capabilities of the salt-spray. Many coastal trees produce large seeds. This increases the size and strength of the young saplings to give their best chance of survival. Many of the seeds are able to survive falling into the ocean; their surrounding fruit and shell withstands salt-induced desiccation and enables the plants to take advantage of coastal currents to propagate further along the coast from the parental plant (no parental plant wants to end up competing with thousands of its own offspring!) If the environmental conditions are especially harsh with excessive salt spray, drought conditions or other equally unpleasant circumstances, coastal seeds actually have the incredible ability to delay germination until conditions improve. A seed could potentially lie dormant for years and then suddenly spring to life when it considers the environmental factors have become favourable.

10. Alexandrian Laurel Ball Tree

Visual Sighting: Tree with dark chunky bark and large leaves (marker on the right hand side)

This tree is also known as a Beach Calophyllum. Its spherical-shaped seeds and tough shell allows seeds to float long distances away from the parental plant. Alexandrian Laurel Ball Trees typically grow in coastal habitats which means they are constantly exposed to strong breezes, salt spray and other harsh climatic conditions. Their short trunks act as a stabilising base; the design is so effective these trees are able to withstand cyclonic winds when they hit. It is believed that this tree has the incredible capability of self-fertilising. This remarkable ability allows Alexandrian Laurel Bell Trees to colonise a new island without the need for pollination.

11. Golden Orchid

Visual Sighting: small plant growing on rocks ahead (marker straight ahead in the rocks)

At this point of the journey most people are so bedazzled by the sight of Nudey Beach that they miss the beautiful Golden Orchid sitting right by everyone's favourite selfie spot. Golden Orchids are remarkable plants. As an epiphyte they are able to grow over any substrate -as you can see this one is flourishing from a rock. The noodle-like roots system not only systematically stabilises the plant but is also efficient at trapping dirt and nutrients. This is not its only use- as with any plant the roots transfer water and nutrients to the rest of the body - but these can store water in a similar manner to the way that succulent plants store water in their leaves.

But perhaps the most fascinating fact about the orchid is the flower; like all orchids it is a highly complex design that directs would-be-pollinators directly to the pollen granules. What we see as a few minute folds and crinkles in the petals are in fact an infra-red airstrip for insects and pollinators. It guides them to the correct approach to access the nectar but the nectar is only given as reward for first brushing the back against the

specialised lip coated in pollen. In this manner the insects pollinate the plants as they move from one to the next.

12. Pandanus Sapling

Visual Sighting: Clump of young Pandanus trees just before you enter the beach (marker on the left hand side)

As you walk along Nudey Beach you'll see just how tall and impressive these growing trees will become. Walking Pandanus boasts an array of distinctive features that give it a leg up when competing with other plants. First of all, its distinct prop roots (yet to develop on these fellas) afford the tree stability in soft sand and soggy soil. Walking Pandanus actively drop unwanted roots and re-sprout new ones (dormant but potential new roots show as little nodules along the side of the trunk) when they are not happy with their growth rate, stability levels or if they are only receiving limited sunlight. They earned the name 'Walking Pandanus' because they are actually capable of moving 2m in five years! The prop roots also contain specialised cells that dispel unwanted salt from the trees' system.

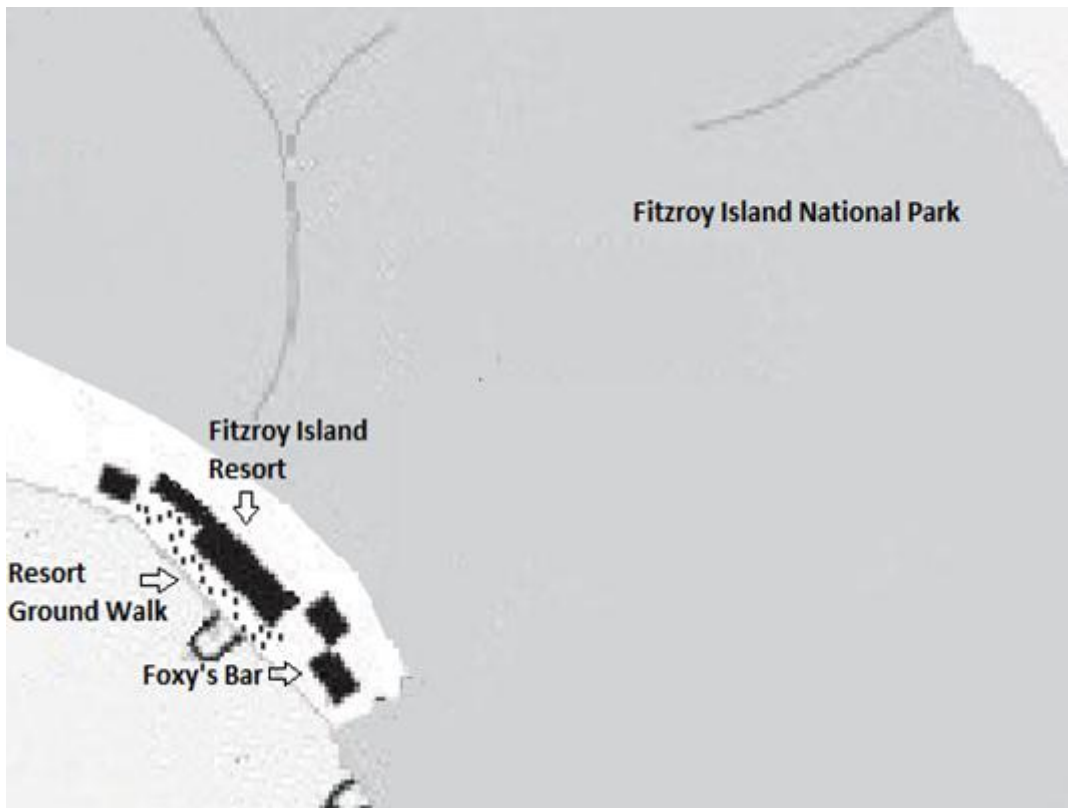
Walking Pandanus are also called 'Screw Palm' for the distinctive spiral-growth of new leaves. This pattern directs rainwater down the trunk of the tree towards its roots system. The leaves are protected from grazers by a series of spines growing along the edge and the central rib. Funnily enough, no one wants to eat something that will 'bite' you back! Pandanus trees are either male or female. It is too soon with these chaps but the female bares a round segmented fruit. A single fruit can contain between 38 and 200 kernels that are naturally buoyant. This enables the seed to travel via smaller water courses and of course through the ocean in order to propagate away from its parental plant.

Conclusion

This short journey has highlighted the various adaptations that plants use in order to survive their harsh, highly competitive environment. Some, like the vines, cheat their way to the top by hitching a ride with well-established trees while others enter a metabolic state of stasis in order to wait out poor conditions. Some have changed the shape of their leaves to capitalise on water influxes while simultaneously promoting rapid air drying (to prevent infections). Life is a daily struggle and the little tricks used along the way are the reason the forests at Fitzroy Island are so lush despite the tough conditions. And now that you have arrived at your destinations- enjoy Nudey Beach! Named Australia's best beach for 2018 this gorgeous little gem is part of the national park so make sure to bring back every piece of rubbish with you. And just remember- it is nudey in name only so keep your bathers on!

Self-Guided Resort Grounds Plant Use Walk

© 2018



The track may not be exactly as it appears in this diagram

Take only photographs; leave only footprints

The Resort Grounds: A Relaxed Stroll into Traditional and Modern Plant

It is so easy to walk past a tree, bush or shrub without so much as a glance. Often if we do take the trouble to study the flora we are only appraising it based on its visual qualities. However the flora surrounding the hotel are species that have been used for tens of thousands of years as food, medicine and other comforts. Some may have even played a role in your own lives today without you even realising it. This is an easy stroll; but make sure you have water, insect repellent and keep an eye out for cars moving about.

But first a caution. Many of these plants are highly toxic in their native state. Throughout the course of this booklet you will not only discover their varied uses but in some cases you will also learn the fascinating techniques used to extract toxins and render the remnants useful. But you should never, ever try these for yourself. Gaining the skill to work with these plants takes years of training. This booklet is not a step-by-step guide and the information contained within will not teach you how to successfully use these plants yourself. It is here for general knowledge only. If you wish to learn the correct techniques to live off the land it is recommended that you consult an expert.

Seriously do not try these yourself. We cannot emphasise that strongly enough.

1. Beach Spider Lily

Visual Sighting: row of plants following footpath past Zephyr's (marker on the right hand side)

The Tasmanian Fire Department recommends planting Beach Spider Lily's around a property as they have an extremely low flammability rating. But the fact that this plant does not burn easily is not its only quality- its bulbous roots are harvested for food although it's toxic in its native state. To eat it before it is properly treated will induce vomiting which, it hardly needs saying, is not the best way to spend your holiday.

The bulb is collected and leached to remove the toxins. After this it can be safely consumed. They are mostly eaten for their high starch content. Starch has numerous health benefits. Starchy vegetables provide fibre, carbohydrates and are also rich in antioxidants (including vitamin C, beta-carotene, lutein and beta-cryptoxanthin. Say that name ten times fast I dare you). Antioxidants may lower your risk of developing cataracts or other causes of age-related blindness. They additionally actively aid in maintaining healthy bones, hair and skin. Starchy vegetables are also high in B-vitamins, particularly vitamin B-6 and folate (believed to reduce your chance of developing heart disease and stroke). B-vitamins also act as a mood stabiliser; creating a happy mood by increasing the brain's production of chemicals such as dopamine and serotonin, and reducing memory loss. If you're not sold on the benefits of starchy vegetables yet then wait for it - starchy vegetables also provide valuable minerals that your body needs to function efficiently. Their potassium and magnesium may help lower the risk of developing high blood pressure and heart disease. It can relieve premenstrual syndrome symptoms and help ensure bone health. Magnesium may also help ward off migraines. The mineral zinc contributes to eye and body tissue health. The alkaloids contained within the bulb are suspected to have potential anti-cancer qualities. In fact in Hippocrates time (BC 460-370), medical practitioners would use the oil collected from the flower in the treatment of uterine cancer.

In addition to the vast health benefits found through consumption, the Spider Lily has other medicinal qualities. The root can be boiled into a concentrated liquid form then applied in the treatment of swollen joints, ulcers and even tending to children suffering from nervous afflictions. Some communities use the decoction as an antidote for poison. The bulb is specially treated to transform it into a plaster-like substance and applied to burns.

2. Jungle Flame

Visual Sighting: 'hedge' around Zephyr's restaurant (marker on the left hand side)

This intriguing plant has many uses across the world. In the tropics it is commonly used as an attractive hedge or screen just as you can see it is being used here to give the Zephyr's garden a touch of seclusion. However in its native lands (India and Sri Lanka) this plant has important medicinal qualities. The roots are eaten to lessen the discomfort of stomach troubles and to cure dysentery while an extraction from the flowers and bark is used to relieve bloodshot eyes, clean sores and cure ulcers. Jungle Flame is used in numerous herbal remedies as the plant contains important phytochemicals that are antioxidative, antibacterial, antidiarrhoeal, antinociceptive, antimutagenic, antineoplastic, gastroprotective, hepatoprotective and have chemopreventive effects. It is used in several different forms – as a decoction, liquid extract, powder or poultice. The leaves can be turned into a decoction and used to rapidly rejuvenate wounds. It does this by increasing the tensile strength and tissue weight as well as increasing the collagen deposition of damaged tissue, thereby accelerating the rate of healing. The decoction can be used to treat hiccups, nausea and a sore throat. A decoction from the flowers is used to assist with high blood pressure, as well as regulating menstruation. The flowers and leaves are sometimes gathered to create a poultice for treating eczema, boils, bruises and swollen joints such as sprains.

3. Scrub Ebony

Visual Sighting: tree on the left of the bridge (marker on the left hand side of bridge)

The nondescript appearance of this tree hides its potent capabilities. The rounded orange fruit will blister and burn the mouth and throat if ingested; even though some people report eating it and finding it 'pleasant'. The difference may be determined by the ripeness of the fruit. I personally wouldn't try it; especially knowing its traditional use. Indigenous Australian's used the potency of the flesh to their considerable advantage. They would crush the fruit and toss it into water where it instantly killed the fish (see also #11). Take my word for it and do not try this in our creek. The fish in there are performing roles vital to the ecosystem and killing them can have unforeseen consequences for the island. In addition, the juices of the fruit stain the skin – as I can testify. I discovered this charming feature after prying one of the fruits apart to help with the identification of the tree. It took 48 hours for the bulk of the stain to wash away. I looked like I had a serious case of nicotine fingers! In fact one fingernail had a brown stain for nearly a month. In some places the wood is used to make musical instruments but even here you must be careful - the dust can cause dermatitis.

4. Cannonball Mangrove

Visual Sighting: tree with unusual growth pattern sitting right behind the Scrub Ebony (marker on the left hand side of bridge)

This remarkable mangrove is named for its curiously exploding fruit. Starting as a single round ball, the fruit consists of between 12 and 18 individual seeds. When the fruit drops into the water the seeds erupt into an irregular puzzle; earning the fruit the nickname 'Monkey-puzzle nuts'. This tree exists across the world and each Country has found different uses for it.

In the Philippines the wood is utilised in boat and building construction while the tannins are extracted from the bark and used to dye fishing nets, ropes and other textiles. The Chinese use the wood to build musical instruments and furniture, particularly furniture given as part of a bride's dowry. Fijians use the timber for fence posts, beams, poles and firewood while Vietnamese favour using the wood for delicate statue carvings. In Thailand people separate the flammable oil from the fruit to use in fire lanterns while those in Indonesia go a step further. They mix the oil with flour and the resulting concoction is used to make face masks and treat pimples. It additionally works as a mosquito repellent that simultaneously reduces the discomfort of insect bites and dysenteric fever. The thin bark is dark outside and red inside. It is used as a tanning agent it dyes cloth a deep amber colour and treating fishing nets. In some parts of Java it is rare to find a tree with its bark intact. In some regions the root is extracted as a remedy against cholera and dysentery; although the exact recipe is a carefully guarded secret. Throughout Australia the Rirratjingu people of northeast Arnhem Land use the pretty pink timber for ornamental carvings while the Iwaidja people of West Arnhem Land use the limbs to style long-stemmed smoking pipes, decorative boxes and other furniture pieces.

Turn back towards the ocean for the next plant, Raging Thunder hut on the left, resort on the right

5. Palm Cycad

Visual Sighting: plant behind the Raging Thunder hut (marker on the left hand side)

This impressive cycad is a remnant from the Jurassic period – they were there when Stegosaurus, Diplodocus and Allosaurus dinosaurs roamed the earth. These plants are so ancient they are either male or female. Australian Aboriginals would combine the soft innards of the male flower stalk with urine in a paperbark container. They would drop hot stones into the concoction to create an anti-septic that was specifically applied to deep tissue wounds such as spear wounds. The female cycad produces a deeply toxic 'fruit' (it's generous to call it a fruit). The flesh of this fruit was responsible for poisoning every 19th century explorer! One feast will bring on diarrhoea and vomiting; which you think would be enough to put you off. However, if someone continued to eat it the toxins gradually build up and bring on a condition known as the zamia staggers.

Putting it mildly, zamia staggers is tumours through the kidneys, liver, intestine, brain and it pretty well melts the spinal cord. It's a nasty way to go. And yet incredibly, Aboriginal women found a way to take this highly toxic fruit and make it edible. Traditionally you would not find a solitary cycad like this one but a collection of cycads living close to each other. The rule of thumb was that the women would collect around 2/3rd of an available food source. They were always careful to leave enough for the plants to propagate; leaving ample plants in the future to feed future generations (see also #9). After collection the fruits were roasted, then broken into segments and aired. These were pounded into smaller portions then placed carefully into a specially woven bag that effectively acted as a colander. It retained the fruit inside while it was positioned into a freshwater stream, leeching the toxins into the water. The women had to be very careful where they did this- if their camp was downstream then they had just poisoned its water supply and everyone would have to move. It was a highly efficient way to make an entire camp mad at you. After the toxics were gone the fruit was mashed into a pulp and baked over hot coals to make damper. This was a colossal effort – but it was well worth it. In the days before refrigerators food had a very limited shelf life. This was particularly true during humid tropical summers. Damper on the other hand could last up to a week and a half; taking the pressure off for finding food during the leaner times. In some parts of Queensland tribes used this special recipe as a test for girls to prove they were ready to become women. They had to make the damper and eat it themselves. If they got sick, they were not ready for womanhood.

Cycads fruit in abundance following a fire. If a local corroboree (gathering) was coming up people would purposefully burn the scrubland so that they had an abundance of fruit (therefore an abundance of damper to feed everyone with). Sometimes that fruits naturally would appear in huge quantities outside of corroborees. At these times the women could gather the excess fruit and store it inside woven baskets. These baskets were covered in bees wax to render them waterproof. The fruit would be stored inside the basket, suspended in water. This storage meant the damper could be made months after the fruit was picked.

Once abundant throughout Queensland, Palm Cycads have become endangered due to the wide-scale eradication efforts from farmers whose livestock have developed zamia staggers.

6. Cardwell Cabbage

Visual Sighting: waxy shrub on beachfront, opposite the beach cabin (marker on the left hand side of road)

A prolific beachgoer, this shrub has multiple uses across its native range in Eastern Africa, Southern Asia, Papua New Guinea, Australia and the Pacific Islands. As its name suggests, the leaves can be steamed or eaten raw like a cabbage. However, be warned before you start munching – it tastes awful. The people of the Maldives only ate it during famine. Indigenous Australians' were not so particular and appeared to enjoy (or tolerate) the taste. The leaves contain saponins and coumarins which both have health benefits. Saponins boost the immune system, provide antioxidants and support bone strength. Saponins also produce fat-soluble molecules that actively aid the body in maintaining healthy cholesterol levels. You see, cholesterol produces bile which is necessary to aid with digestion. Saponins chemically react with bile making them bind together in an act that prevents the cholesterol from being reabsorbed in the bloodstream. The cholesterol is then ejected with the rest of the bodies' waste. Cholesterol medications use the same method.

Coumarins have anti-inflammatory, anti-spasmodic, anti-edematous properties (don't worry- I had to look it up too. It's a medical condition where excess body fluids are retained within tissue or body cavities) and boost vascular tonic effects. The leaves also contain the alkaloid scaevolin which has anti-viral properties. Eating them aid indigestion while drinking an infusion made with the juice helps to combat bad coughs, pneumonia and tuberculosis. The juices extracted from the leaves have been used to combat rabies and herpes simplex virus 1 and 2. In some countries they are used as contraception for women; said to induce sterility for up to seven years.

Aboriginals used the juice from the small, white fruit for multiple medicinal purposes. It is applied directly to bites and stings or can be heated and squeezed into the eyes to combat infection and corneal opacity ranging

from a minor irritation of the cornea to blindness. The warmed pulp is applied daily to act as an antibacterial cleanser for open sores. It is also highly effective against tinea. The broad leaves are heated and applied as a poultice to swollen joints - or placed directly on the temple for headache relief. Other medicinal qualities include the treatment of skin ailments (saponins lather like soap when mixed with water and so have been used to treat skin complaints such as eczema), elephantiasis and scrotal swellings. The bark has been applied to abscesses, bone fractures and used during menstruation.

The shrub's small stems are hollowed and used as pipes but in some countries they are also used for treating abdominal issues. The shrub is deliberately wounded to produce sap which is applied to sores. Some cultures consume the root; entrusting it to act as an antidote after feasting on poisonous fish and crabs. Others believe the root holds anti-cancer properties while others still apply the bark of the root to skin afflictions. The bark of the tap root is removed and combined with salt, then applied directly to open sores to fight infection. A liquid reduction is extracted from the plant and used in the treatment of beriberi, dysentery and syphilis. On top of all these uses, the shrub has been declared to have anti-diabetic, anti-pyretic (fever) and anti-coagulant (blood clotting) while simultaneously producing a skeletal muscle relaxant. All in all, this is an extremely useful plant to have around – provided you know how to cultivate the medicine properly. Spoiler alert: we don't. We just like to look at it and enjoy the soil stability it provides along the beach front in addition to the salt-spray protection it affords to less salt-tolerant plants growing behind.

7. Mistletoe

Visual Sighting: Brown Damson covered in Mistletoe (marker on the left hand side)

The fruit can be eaten (it is very sweet) but due to its adhesive nature it is almost impossible to spit the seed back out again. It can make or quite an entertaining afternoon. This peculiar mannerism has earned the mistletoe the tongue-in-cheek nickname 'Snotty Gobbles' in some Indigenous communities. This residual viscous substance is the key to the Mistletoe's success. A bird passing a seed needs to wipe its bottom on a branch in order to physically pull the sticky, glutinous strands out of its system. Envision it. I can't wait for the mistletoe to bloom so I can try it.

8. Native Hop Bush

Visual Sighting: small shrub on side of road underneath Brown Damson (marker on the left hand side)

The humble Native Hop Bush is currently the source of an exciting breakthrough in the recognition of traditional ownership of medicinal knowledge. The Native Hop Bush is traditionally used to treat pain and inflammation of the mouth; everything from toothache to ulcers. Fresh material is applied to the affected area every four hours. The Kuuku I'yu people drew the plant's healing properties to the attention of medical researchers who then realised that it contains novel anti-inflammatory compounds and extracts. It is believed that the chemical components (such as clerodane furano-diterpenoid – say that five times fast) offer an improved safety profile in the treatment of dermatitis and psoriasis. Dermatitis is an inflammation characterised by an itchy, red rash. Occasional blisters occur and the skin can thicken. Psoriasis is an inflammation personified with angry, red scaly tissue building up on the elbows, knees and elsewhere. Sufferers can also experience severe dandruff, sore and discoloured nails and arthritis in the joints. Scientists are working to harvest the organic plant matter and extract biological compounds for anti-inflammatory medicines. They are focusing on three scales- the therapeutic anti-inflammatory market, alternative therapies and natural personal care. Herbal cream products could be on shelves by 2021. But long-term drug development could take a decade to be approved. The 50-50 commercialisation agreement that exists between the university developing the treatment and the Indigenous Kuuku I'yu corporation is a credit to both parties in establishing beneficial business relationships and ensuring Indigenous Australians get the physical and financial recognition for their traditional knowledge.

9. Cordyline (genus)

Visual Sighting: evergreen in the garden (marker on the right hand side)

This plant is highly valued by New Zealand's Maoris. They dig up the root system (again, careful to take around two-thirds of the available source; thereby leaving enough for the plant to regenerate) and dry the tubers in the sun. The fibrous outside of the root is scrapped and burned, allowing the inside to slowly cook inside a ground oven. It traditionally took 12 - 18 hours to cook properly. Once cooked though the roots are removed from the oven, pounded, washed and squeezed to extract the sugar within. The roots and stems are a rich source of fructose (comparable to sugar beet). It is sometimes consumed alongside the roots of specific ferns; almost like a relish. Should the root be allowed to ferment it could be used to create an intoxicating drink. But the root is not the only portion of this plant to be utilised for food. The young shoots are eaten as a substitute for cabbage and the trunk is collected (killing the tree), dried, steamed (until the pulp becomes soft and both sweet and starchy to taste) and added as a sweetener to porridge and drinks. The leaves are gathered in the summer, scraped to remove the outer cuticles then left to soak in freshwater for 24 hours prior to cooking. As the leaves are rich in fibre they have become an important source for paper, twine, cloth, baskets and thatching.

10. Green Ants

Visual Sighting: green 'footballs' high in the trees (marker on the right hand side)

Look into the foliage around you – do you see some green soccer balls waving loftily from above? These are the nests of the Green Ants; an incredibly useful animal to have around! Many ant species rely on a chemical defence produced in their abdomen; in the case of Green Ants these chemicals have a pleasant citrus taste! This is why these ants are also known as Citrus Ants (or Weaver Ants as a reference to their nests). Fruit is seasonal, but a tasty ant is available all year! Aboriginals would bite the green bottom off, releasing the citrus through the mouth – but killing the ant. You don't have to kill them to taste them. Green Ants tend to be aggressive when they are defending their nests and defending food; the rest of the time they are exceptionally placid. If you can encourage an ant to climb on you and trap its head (this is the tricky bit – don't press too hard; remember the aim is to keep it alive) with your thumb. When the ant is stuck and can't escape the abdomen will rise so that the sharp point is facing upwards. Lick it with the tip of your tongue and hey presto – a concentrated squirt of citrus will erupt. Then you can just let the ant go. It can recharge overnight and you can lick it again tomorrow! It's extremely tasty, although far more intense to sample this way. If you get a particularly full one it can be bit like touching your tongue on a battery. The Aboriginals did not just rely on the ants for a nice snack though. They would collect the nests and dunk them into water; the drowning ants release their citrus flavour into the water making a nice cordial. Ten thousand years ago we were not so fortunate as today. The water on Fitzroy Island may look brown (due to tannins from the trees) but it is safe to drink and has a nice flavour. Not everyone had access to fresh water all those eons ago. Sometimes all you had to drink was a dirty mud puddle. If you could find something like a Green Ant nest to sweeten the taste; why wouldn't you?

If you also boiled the water it made a hot citrus tea that not only tasted good but alleviated headaches, sore throats and blocked sinuses. If you could likewise find a nice native bee hive you could add honey to the concoction and use it to soothe the throat as well; it's basically the bush version of drinking honey and lemon. If an infant child had a cough or cold the nursing mothers (or the wet nurse; within the tribe women would take turns minding children to allow the rest to assist with gathering food) would crush the ants and rub the ant-paste over their chests. This meant the baby inhaled the citrus scent like vics vapour rub; clearing the sinuses and relieving their cough.

Since the ants aggressively defend their host-trees, farmers in the Atherton Tablelands have started using them as a natural form of pest-control for their crops. A single colony can have up to 10 individual nests and they are constantly rebuilding every few months to prevent natural decay. The famers purposefully leave food scraps around to encourage the ants to rebuild in the same general area. The ants in return are wonderful bio-control

agent; no herbivore dare approach the crops they live in. It is a wonderful system; right up until harvest. Then I wouldn't want to be that farmer for all the world!

11. Indian Beech

Visual Sighting: tree growing on an angle encroaching on the right side of the jetty (marker on the left hand side of the track by the map)

Also known as the Fish Poison Tree, the inner bark and roots are grated and scattered on the surface of isolated rock pools to effectively remove the oxygen from the water. Stunned fish gradually rise to the surface making it a highly efficient way go fishing. Where natural pools are not available, hunters would use stones and other materials to create artificial pools. The fish enter these pools during the high tide and are isolated within after the water retreats. Should anyone be injured when handling poisonous fish; a black gum-like substance can be expunged from the bark and applied directly to the wound as a natural antiseptic. The bark is also transformed into rope while the wood splits easily and is used for firewood, posts and tool handles. The flowers are applied to gardens to act as compost for plants that require rich nutrients.

The oil and the residue collected from the fruits, seeds and sprouts are toxic to the human body if ingested (inducing vomiting) but many uses. The seed pod contains 25- 40% lipid; nearly half of which is oleic acid. Oleic acid works as an emulsifying or solubilising agent in aerosol products. It is widely used during the solution phase synthesis of nanoparticles where the oleic acid acts as a kinetic knob to control the nanoparticle's size and morphology. The oleic acid renders the oil perfect to use in lamps or simply to be used in soap. But its main use is as a lubricant; it has been developed for use in diesel generators. This is particularly prolific in parts of India where many of the population have limited supplies. Since 1997 several previously un-electrified villages have begun using the oil of the Indian Beech (also known as Pongamia oil) to create their own power grid; generating enough electricity to run irrigation pumps and power electric light bulbs. This discovery provides thousands of India's rural poor access to a cheap, renewable energy source. The remnants left over following the oil extraction are turned into fertiliser or animal feed for poultry and livestock.

12. Walking Pandanus

Visual Sighting: tree with unusual prop roots located behind row of boulders (marker on the right hand side)

This is an incredible tree; nearly every part of it can be used in some manner. Across its natural range different Aboriginal communities utilised the individual parts of the tree for various uses. It is only today with the release of bush tucker information that we are now aware of its multiple uses. Like the Palm Cycad before, Walking Pandanus are either male or female. This one is a male. The male grows what would be generous to call a 'flower' (it looks like a tangle of dead leaves intertwined in the foliage) that has a sweet scent. Traditionally Aborigines mix the flower with coconut oil to rub over their bodies as a perfume. It is considered to be an aphrodisiac.

The female produces a ginormous fruit that looks like a segmented soccer ball. The 'segments' are individual kernels. A single fruit can have been 38 and 200 kernels. Inside each kernel is two nuts that contain 50% saturated fat and 34% protein; a high-energy yield. It is not easy to break into the kernel. The fruit of the Walking Pandanus is particularly potent; when it first ripens it has an appealing warm orange colour and a pleasant odour. However be warned- the fruit of some species have a sweet flavour (in fact in many countries today they are used to flavour sauces and desserts). Not this species. In the case of the Walking Pandanus, the pulp will burn the lips, blister the tongue and induce violent diarrhoea. You've got to feel for the poor soul that discovered that the hard way. You need to break into the kernel to access the nut within. But this is easier said than done. Some of my friends once snapped a hacksaw blade while trying to break into the kernel. Rather than rely on brute force, Aborigines carefully roasted the kernels. This rendered them brittle enough to easily snap apart using a sharpened bone fragment, stingray barb or even a handy stick. The nut within can be eaten

raw (although this can irritate the mouth) or roasted. They taste similar to an almond. Some tribes would pound the nuts to make a damper. The leftover kernel fibres act as a useful form of dental floss to get that niggling bit of goanna meat out of your teeth. In some parts of Micronesia the kernels are collected and treated for making jewellery. It is possible to eat the stalk of the fruit but this is rather woody and a bit like gnawing on a plank of wood. Not especially enjoyable or recommended but if you're part woodpecker and have always fancied splinters in your teeth; go for it (just not while on the island – it's hard to get dental surgery here). This was not the only use for the fruit. The freshly-dropped seeds could be collected and placed into a specially woven waterproof basket. The fruits were left to ferment in the water contained within; the result was a mildly alcoholic beverage likened to a cider. The pulp left in the liquid is high in beta carotene and vitamin A; preventing deficiencies within the body. It is not known if this drink was first created before or after Aborigines tasted true alcohol.

If you look into the leaves you can see that they are tightly spiralled. If there's no freshwater nearby and a person was facing dehydration they can eat the bottom two inches (the white bases) which taste like cabbage and are full of hydrolytes. You can reach the white centre by either pulling at an individual leaf or by slashing all the outer leaves away; exposing the white cabbage-like insides. This can be eaten raw, or if you were less worried about hydrolytes and just wanted something to eat, they can be cooked. In some parts the white centre is pounded into a paste and used as an antiseptic for shallow sores and wounds. When a tree is first developing, a person can pluck the bitter inner leaves growing from the centre of the core and eat them to settle stomach complaints such as dysentery, diarrhoea and cramps. Alternatively, a person could crush the inner stems to extract the juice, mix it with water and gargle for a pain relief of toothache and mouth ulcers. As you would expect; mouth pain was a common malady centuries ago before people knew how to really care for their teeth. Many plants were used to temporarily numb the pain; this was particularly important in the case of rotting teeth. If you've ever had a root-canal performed; I'm sure you can appreciate the importance of numbing agents. That said, removing this part of the sapling will kill the tree so it was only used when no other alternative medicines were available. The tough outer leaves were collected, crushed, and then bound tightly around the temples to aid with headache relief. The strong, fibrous leaves are perfect for weaving- once you have removed the barbed edges. Women would strip them into smaller segments and take days breaking down the rigidity within. They would achieve this by soaking bundles in water, then twisting them first one way and then the other around the hand. Once the fragment was malleable they could begin weaving the straps into baskets, mats, dilly bags, jewellery, ropes or nets. While it was active the Yarrabah Mission, first founded near Cairns in 1892 (now a township in its own right), was always crucially short of funds. The Mission's women used pandanus leaves to weave each occupant a mattress to sleep on. The entire weaving process can take months.

Hollowed branches are collected and transformed into didgeridoos or fire carriers- the cavernous inside was perfect for smouldering embers to stay alive while the tribe moved camp. Today the branches are heavily relied on through the Pacific Islands for constructing homes, building ladders – they're even used as hard pillows! The sap is used as a glue source and the wood used in compost. The core of the trunk is buoyant; after the outer bark is removed it can be used to make rafts. One of the greatest examples of this comes from this very island. In 1905 the Yarrabah Mission Court expelled 30 residents to live in a community here on Fitzroy Island called Kobahra. Kobahra became Yarrabah's official penal colony. Residents were sent here for varying offenses (mostly if they were deemed a bad influence) and their stay could range from anything between one month and several years. People still tried to escape. In 1911 two girls lashed a raft together and propelled themselves into the ocean. They were picked up by a ship in the Grafton Passage and taken to Cairns. Initially the girls said that their intention was to board a train to Townsville and escape south from there. However, once they realised they were being taken back to Cairns they knew they would be reported as runaways to the authorities. Their story promptly (and intelligently) changed. They claimed they had been planning to reach King's Beach (opposite Welcome Bay) and traverse the mountains to Yarrabah in order to report that the island had run out of food. Like the rest of Yarrabah, Kobahra was regularly short of food and it was a viable reason. They were returned to the island, having avoided detection for the true purpose of their flight, with ample supplies. Kobahra was closed in 1912 due to ongoing issues - including food shortages.

After all that, this incredibly versatile tree still has one more feature that can be employed: the fanciful prop roots themselves. These are used to make dyes, or scraped and pounded to extract the juice. Combined with the sap collected from the base of a banana plant, this concoction is drunk to treat blennorrhoea and conjunctivitis. In the Pacific Islands the young root is heated and crushed to extract the hot juice which is applied directly to treat bites and wounds delivered by fish. The prop roots are also heavily relied on to create basket handles, paintbrushes, skipping ropes and wall support for buildings. All in all, the Walking Pandanus is an incredibly useful tree; you would be hard pressed to find another with such a myriad of uses.

13. Hibiscus

Visual Sighting: glossy green shrubs with showy red flowers lining the path above the row of boulders (marker on the right hand side)

Hibiscus plants exist all over the world and it is no surprise that many countries have found some sort of use for select parts. In China the oils from the vivid red flowers are extracted and used to soften and soothe the skin while throughout India a concoction from the flowers and leaves are ground into a paste and applied as a natural shampoo to prevent hair loss and dandruff. It additionally leaves a protective layer of oil around the core of the hair follicles. Throughout Africa the petals are plucked and used in an herbal tea while the flowers are dehydrated in Jamaica; boiled, then cooled and drunk with ice. This concoction is called "Jamaican Water" and is popular for its colour, tanginess and mild flavour. With a little added sugar it tastes like cranberry juice. This makes it popular with dieters and people with kidney issues. In the Caribbean the flower is transformed into a jam while people living in Mexico fancy the flowers in a dehydrated state where they are considered a delicacy. Children throughout the Philippines crush the leaves and flowers and strain the sticky juice within. By dipping drinking straws into the remaining residue the children are able to blow bubbles; what child doesn't love blowing bubbles? Finally, hibiscus bark contains strong fibres. Strips are ripped from the plant and left in sea water until the remaining organic material has rotted away. The portion left behind can then be used to make paper. In Polynesia these fibres are also used to make grass skirts.

14. Cottonwood

Visual Sighting: tree with large 'heart-shaped' leaves located on beach edge (marker on the left hand side)

The Cottonwood (also known as Sea Hibiscus or Native Rosella) is another tree with multiple uses. Indigenous Australians created a tea from the petals, bark and roots that was used to lower fevers, treat high blood pressure, relieve coughs, kill bacteria, ease menstrual cramps, reduce the pain of childhood and treat hair loss. What a tea!!! Today the Native Rosella is used in jams and sweet foods; you may get a taste if you dine at the Ochre bush tucker restaurant located on the waterfront in Cairns. Young shoots, roots and leaves can be eaten as a vegetable. Fluid collected from the young sprouts is used as an antiseptic for rashes and if you add sapwood the result also works on boils and open lesions. The inner bark can be stripped and used to bind wounds or transformed into nets, ropes and fishing line. Aboriginals cut the straight sprouts and left them to dry in the sun. The dried sticks were perfect for spears, woomeras and firesticks. In other countries the Cottonwood is used for carving, as firewood or to create boats. The wood is malleable and easy to work with so it used to make high quality wooden furniture. The tough outer bark is used to seal cracks in the sides of boats.

15. Golden Orchid

Visual Sighting: Orchid attached to tree in garden bed above row of boulders (marker directly opposite on the path)

Swallowing the seeds of the orchid can produce sterility in men while the dried roots are perfect for weaving. The stems can be squeezed to extract a juice which is then used as glue; it can also be applied to burns.

16. Beach Sheoak

Visual Sighting: tree with needle-like 'leaves' located on beach edge (marker on the left hand side)

The tree can be deliberately wounded to induce sap; this is eaten as a toffee (another year-round treat). Alternatively the sap can be dropped into water to sweeten it like a cordial or – incredibly- dissolved in water; then heated and cooled. The resulting concoction congeals to make a primitive jelly; considered to be a genuine delicacy 100 years ago. Several friends have tried this and their description of the flavour does not encourage me to want to run out and try it for myself. As the most polite of them explained - we are used to far sweeter food today. An infusion of the inner bark and water can be used as a mouthwash to relieve toothache and sore throats – but it was extremely important not to swallow so as to avoid digesting splinters. The wood of the Sheoak, or Casuarina, is used for spears and woomeras, or burnt to produce charcoal. But one of my favourite uses for this tree is the nut. Once again, Sheoaks (or Casuarinas) are either male or female (see also #5 and #12). The two trees here are both females; they produce the seed pods. If the men were out hunting and there was no freshwater source nearby they would simply pop the nut into their mouths. This simple act tricks the body because the mouth recognises that a foreign object is inside it and so it immediately begins to stimulate the saliva glands in an attempt to break it down. Of course, you can't dissolve a nut. So the natural reaction is to start swallowing the excess saliva. This effectively fools the body from registering dehydration- the body realises that it is swallowing fluids and thinks that it is drinking. Of course, it is actually just swallowing its own juices. It's very important to note- sucking on the seed pod does not prevent dehydration itself. But with this simple trick, people can ward off the effects of dehydration for long enough to find a fresh water source.

17. Golden Cane

Visual Sighting: clumping cane growing amongst the Hibiscus (marker on the right hand side)

This is a remarkable plant. During the 1980's NASA conducted a Clean Air Study on several plant species as a means of maintaining clean air in the international space station. During the course of their research they discovered that the Golden Cane acts as an effective air filter and humidifier. It removes xylene and toluene from the air at an efficient rate of one plant per 100 square feet of home or office space. Xylene and toluene are chemicals commonly found in household and industrial products. They can cause poisoning if they are ingested, if the fumes are inhaled and/or if they make contact with the skin. All in all, they are handy chemicals to remove from the air around you. In addition a 1.8m Golden Cane transpires 1L water in a single day. Not too shabby hey.

18. Necklace Pod

Visual Sighting: young shrub with small leaves located on beach edge underneath Coconut Palm and Walking Pandanus (marker on the left hand side)

This charming plant is known by some as a Coastal Wattle. How it got this misleading name is unknown as the true Coastal Wattle can be eaten while the Necklace Pod will quickly reduce any consumer into a quivering, vomiting mess with simultaneous explosive bowel movements. These are really not two plants that you want to mix up!!! How they came to be known to some as a Coastal Wattle is a very dangerous mystery. Don't make the mistake of trying to eat this one. However, setting aside its potent emetocathartic toxins, the Necklace Pod was used in several traditional medicine recipes. The leaves, roots and seeds are relatively rich in alkaloids. This is their natural defence mechanism against herbivore grazers. Alkaloids are bitter-tasting complex molecules containing nitrogen. They are often dangerous to eat but have several useful medicinal qualities. The most famous are caffeine, morphine, codeine, nicotine and quinine. The Necklace pod is rich in the quinolizidine group of alkaloids. Broadly speaking, these have a vast range of pharmacological uses including oxytocic (used in anaesthesia), antipyretic (used to break fever), antibacterial, antiviral, and hypoglycemic (low blood sugar) qualities. The dried seed contains up to 2% cytosine which is structurally similar to synthesised drugs used to treat tobacco addiction. But before you reach for the seeds to cure your smoking cravings remember- cytosine

can interfere with breathing to the point of causing death. The cytisine has led to the seeds being used in some areas as a natural insecticide.

Despite the fact the seeds are emetocathartic (inducing vomiting and diarrhoea); Filipino and Malayan people often swallow one or two (sometimes the roots and leaves are also employed) to purge the body of unwanted toxins. And everything else you have in there. This is a far meaner method of purging the body than the old prune juice. Some people rub the seed's oil externally over an injured body part to soothe painful bones. Those living in Eastern Malaysia use the pulverised seeds in the treatment of dysentery and cholera. The ground seeds are even ingested in some regions as an antidote to eating poisonous marine life. Smaller doses are applied to treat the sting of a poisonous fish. This powdered medicine was also used to treat haemoptysis (coughing of blood), painful urination and gonorrhoea (don't ask). Extracting and swallowing the seed oil acts to break mucus up and move infection off the chest.

Throughout the yesteryear a decoction of the seeds and roots was given to treat liver disorders, particularly those producing bile. However you have to be an expert to be able to successfully reduce the toxic seed into a useable form; this plant is far too dangerous if you get it wrong. This scares off (rightfully so!) most interested parties. The wood is hard and heavy and can be used for making small objects.

19. Shell Ginger

Visual Sighting: ginger plants growing to the left of the stairs (marker on the right hand side)

A native to East Asia, Shell Ginger is an evergreen perennial (a plant with vegetative structures that survive year after year rather than shedding its leaves and re-sprouting new growth). It earned its name from the shell-like delicate flowers combined with the fact that this plant is commonly confused with a ginger. Though it is not a ginger, the leaves are used to make an herbal tea which is rich in antioxidants and drunk for its hypertensive (treating high blood pressure), diuretic (expelling excess water and salts from the body) and anti-ulcerogenic (preventing the creation of ulcers) properties. The leaves and rhizomes have also been shown to be effective to fight HIV as well as being anti-diabetic. They contain anti-oxidants and are also effective at combating high blood pressure. The leaf blades are used throughout Asia for wrapping Zongzi- traditional rice dumplings. Brazilians bathe with crushed flowers and leaves as a means of fighting fever while others will digest portions of the root to combat indigestion, flatulence, vomiting, stomach pain, colic and diarrhoea. It is also consumed to treat malaria.

20. Fungi

Visual Sighting: decomposer fungi on rotting wood (marker on the right hand side)

There is an estimated 13 000 individual species of fungi in Australia. While some are poisonous (reactions vary from hallucinations to severe illness to death), others form the basis for several traditional uses. Different forms of shelf and plate fungi were eaten; some as a dietary staple. They could be eaten raw or thrown into a fire and roasted. Some species were tossed onto hot coals to produce a smoke as they slowly burned. The smoke was carefully inhaled to treat coughs, headaches and blocked sinuses. By removing the fungus after it was slightly charred, Aboriginals could scrape fragments off the main body to drop into water. This blend was drunk as another means to treat coughs, chest infections and sore throats. It also broke fever and counteracted diarrhoea. Other fungus were to release juice that blended with saliva and numbed sore mouths. It also released agents to counteract the bacteria causing the issue. This concoction could be rubbed inside the mouth of an infant to treat oral thrush or as a tool to aid with teething. A person has to be sure when eating or using fungus in traditional uses. There are still many cases of poisoning today; reactions vary from irreversible blindness to organ failure and death. So really, don't try this yourself. Stick to mushrooms you find on the market shelves.

21. Oyster Plant

Visual Sighting: collection of attractive purple-green plants with fleshy leaves (marker on the right hand side of path)

This fleshy herb is a classic example of the efficiency of native Australians. Oyster Plants are not indigenous to this country; they come from South America and are highly toxic. They were introduced to the country as an attractive garden plant – however this plant is a clear case of look but don't touch! This plant packs a serious punch. If ripped its fleshy leaves leak latex that causes the skin to erupt in a stinging, itchy rash. Early settlers actually used it as a primitive blusher – women would rip a leaf and smear the latex across their cheek to bring on a 'healthy red glow'. Talk about beauty is pain!!!! As someone who once spent half an hour moving through a cascade of Oyster Plants I cannot recommend the experience. The red rash was spread from my ankles to my thighs and the painful stinging didn't stop for 36 hours. Seriously- don't test this plant.

If that's what it does by touch, you wouldn't expect that anyone would be crazy enough to eat it but someone did. Thanks to them we now know that eating it causes painful chemical burns to the mouth and throat. And yet Aboriginals found a way to take this highly toxic, nasty little plant and use it for the greater good. And what's more; they did it in a matter of decades rather than centuries! They collected the flowers and leaves into a concoction (other ingredients are kept a tightly-guarded secret) and used the combination to treat sores, colds, whooping cough, nasal bleeds and blood in the stools. They made a poultice from the crushed leaves and applied the paste externally to swollen joints to reduce inflammation and swelling. At the start of this booklet we advised to never try these things yourself. This plant is a classic example of why. Not only does it take years of practise and serious skill to be able to transform a toxic plant into something useful; but often we don't know the full 'recipe' as it were. When the Elders first started to part knowledge to the wider society they often held back a key detail; be it an ingredient or a cooking technique. This meant that the general knowledge of how to use plants was out there but the specific knowledge was retained within the family unit. And fair enough too. But it means that we cannot emphasise this enough- never try these things for yourselves.

Of course, back in their native homerange the locals have also found several uses for this herb. A decoction of dried leaves is used to treat hemoptysis (coughing up blood), bacillary dysentery, lymphatic tuberculosis, asthma and psoriasis (an auto-immune disease). When the plant was introduced to Thailand the people there found a way to utilise its potency in the treatment of fever, cough and bronchitis.

22. Spiny Headed Mat Rush

Visual Sighting: grassy shrub near main entrance to garden (marker on the left hand side as you enter garden)

Aboriginal women spent hours harvesting the minute seeds of the Spiny Headed Mat Rush. They gathered them in large quantities and pounded them into a powder to make damper. When the grass is young and yet to become fully established, it leaves taste like bubble gum as a sweet and tasty treat for young and old alike. The flowers contain copious amounts of nectar so they were often sucked like a lollipop or dipped into water as a sweet cordial. Like the Pandanus before it (refer to #12), pulling out the leaves of a mature plant grants access to hydrolytes to prevent dehydration. We only have one here so please don't pull its leaves out! The women had other uses for the leaves as well. Split leaves were tied into bundles and soaked. This rendered them pliable enough to make baskets and other woven goods such as nets. Early settlers used the leaves to make paper.

23. Solitaire Palm

Visual Sighting: palms positioned strategically around garden (marker straight ahead)

The Solitaire Palm is an interesting tree in that it fruits continuously. This means that the fruit, though it has very little flesh (~1mm), is a tasty little treat that is available year round. The Aborigines would simply climb that

palm to collect it. Here on the island we have a much easier way – we wait for the Sulphur Crested Cockatoos to bite off a strand and drop it to the ground. Thanks to these messy eaters many people have sampled this particular treat. It tastes like an extremely mild lemon; some find that it has a slight tomato-like after taste. I personally try not to eat the peel. The inner core of the trunk (called the 'Heart of the Palm') can be removed and eaten either raw or roasted, but this will kill the tree so it was generally only used when there was precious few alternatives available. The hard wood was used by some tribes for carving weapons and clap sticks. If hollowed, the trunk made a handy container or water bucket.

24. Bandicoot Berry

Visual Sighting: glossy shrub on opposite side of path (marker on the far end of garden, slightly to the right)

There are three parts of this shrub that are collected and consumed- the leaves, berries and roots. Tender young shoots are eaten as a vegetable while in Sri Lanka the mature leaves are cooked and eaten with rice as a form of traditional medicine to treat haemorrhoids, intestinal worms and other gastro vascular issues. They bruise the leaves and mix them with sesame oil. This concoction is used to dress wounds and ulcers. The juice is squeezed from the berries and applied directly to warts while the pith act as a diuretic as well as treating acute cystitis (bladder and urinary tract infections) and strangury (painful bladder blockages). In Goa (India) the young shoots are chewed to provide temporarily relief from severe cough while a decoction of the shoots is applied directly to sores. The leaves are roasted and applied to the head (alongside the juices) as a cure for dizziness and vertigo. Some people pound the young leaves and extract the juice to drink as digestive. The same people boil the roots to produce a concentrated liquid. This is used as a cure for stomach ache, colic, dysentery and diarrhoea. In Sri Lanka the concentrated liquid is consumed to treat colic but some drink it to relieve thirst and dehydration.

In Réunion (a small French island in the Indian Ocean) the locals utilise the roots to induce sweating. The Jakuns (of the Malay Peninsula) use a poultice created from the leaves to apply to body pains and alleviate the discomfort. They create a paste from the roots which is applied to relieve skin complaints such as rashes or allergic reactions. The Marma of the Chittagong Hills Tract in Bangladesh combine the root paste with the roots of two other plants to treat swollen glands and boils. In other parts of India the root is medicinally used in the treatment of ringworm, open wounds and sores, ulcers, warts, cystitis, diarrhoea, dysentery, burns, dental complaints, haemorrhoids and fever. In general the roots are considered to have anticancer properties, be rich in antioxidants and have antidiabetic, antidiarrheal, antidyenteric and antispasmodic properties. It should therefore be no surprise that researchers confirmed the plant to have antioxidant, anticancer, antimicrobial, cytotoxic and analgesic assets. In fact, studies into the leaves found they contain 23 known chemical compounds including 11 hydrocarbons (used in fuel combustion), phthalic acid (dyes, perfumes and artificial sweetener), palmitic acid (soaps and cosmetics), 1-eicosanol (cosmetics), solanesol (the starting material in synthesis of high-value bio-chemicals used to treat cardiac insufficiency, muscular dystrophy and anaemia as well as Tourette's syndrome, Alzheimer's disease, Parkinson's disease, ulcerative colitis and attention deficit disorder). The leaves also contain farnesol (present in essential oils and perfumes), three phthalic acid esters (found in food packaging), gallic acid (an organic acid used in several medicines), lupeol (an anti-inflammatory agent), beta-sitosterol (present in many medicines that target pain and swelling) and ursolic acid (used by the body for the regulation of cell growth). And we're still not done yet. With yet further screening scientists were able to isolate more chemicals including carotenoid (a red/orange pigment rich in antioxidants and with anti-cancer qualities) and nine other compounds. Finally, the roots have been identified as containing alkaloids (used in medicine including quinine which is used to prevent malaria), carbohydrates (finally- something normal that we all know), steroids, triterpenoids (used for chemoprevention and in the treatment of mammary tumours), flavonoids (anti-inflammatory), glycosides (found in medicine, condiments and dyes), anthraquinone glycosides (used to relieve constipation), tannins, resins, and saponins (present in detergents). All in all, this is a highly useful bush if you're a medical professional who knows how to extract the necessary components. Around here we just think they're pretty.

Turn back toward the water

25. Strangler Fig

Visual Sighting: large tree obviously strangling the trees around it (marker in front of tree)

Even by the standards of ten thousand years ago, the fruit of the Strangler Fig was considered unpalatable; especially in comparison to other members of the fig family. Its bitter flavour hardly makes amends for the hundreds of tiny seeds contained inside that will stay in your teeth for the next week. Some people have an allergic reaction to the latex touching their skin, and if the juices are transferred from the hand to the eye it can cause serious eye irritation. Australian Aboriginals harvested the bark from the young aerial roots and used these to make fishing line, nets, bags and baskets. The Special Air Services encyclopaedia of survival recommends drying the aerial roots for smoking. Their hollow characteristic enables perfect smouldering and the smoke when inhaled calms the body and provides temporary pain relief from injuries.

26. Black Palm

Visual Sighting: two palms lining the path to the gazebo (marker straight ahead when facing beach cabins)

The hard wood of this proud palm was traditionally used to make spears and clap sticks. Today the wood is used in construction.

27. Tamarind

Visual Sighting: large tree outside of gazebo (marker on the right hand side of gazebo path)

A native to Africa, the fruit is an important food source as it boosts food security, improves the nutrition for villagers, fosters rural development and supports sustainable land care. Mature Tamarinds such as this one can produce up to 175kg of fruit annually. The fruit is rich in acid, sugar, vitamins, phosphorous and – unusual for a fruit - calcium. The combination of phosphorous and calcium means that excessive consumption can have a laxative effect which is most unfortunate as this is one tasty fruit and the most likely to start a brawl in the staff village as everyone likes to eat them. Studies have found that fruit of the tamarind can lower cholesterol in hen eggs. Today the flesh of the Tamarind is commonly cooked and strained to produce a sweet- yet tart- syrup that is used for flavouring food and drinks. It is also present in Worcestershire and HP sauce.

If soaked overnight the flesh and seed separate easily – the remaining concoction of liquid and pulp are rich in vitamin C and were drunk to alleviate colds. The pulp can be used to massage the head and relieve headaches, tired limbs and sore or aching body parts. The ripened fruit is used to counteract the poison in African yams, rendering them safe for human consumption. In Nigeria the freshly steamed bark and leaves are used in a decoction with potash (potassium rich mined salts) to treat stomach disorders, general body pain, jaundice and yellow fever. It can also be used as a skin cleanser and blood tonic. The flowers can be soaked in water to create a refreshing drink or cooked alongside the young leaves of saplings to eat as a green vegetable.

It was traded during the ancient times which led to a world-wide distribution. Today's largest consumers of the products are Asia and South America.

Conclusion

Isn't nature wonderful? If you look back you can see that you haven't actually travelled far from the hotel lobby and yet the uses of the trees, shrubs and plants between here and there are incredibly versatile. It is testimony to the resilience and resourcefulness of those of yesteryear when a person had to create their own food, medicine and other products as opposed to today when we merely conjure it off the supermarket shelf. If you wish to learn more about traditional bush use or other elements mentioned in this self-guided walk it is recommended to hit your local bookshop. Happy reading!

Bonus Material: Fitzroy Island Organic Tropical Fruits

Few people realise that the tropical fruits found on Fitzroy Island are the result of the period in which Fitzroy Island was home to Yarrabah Mission's penal colony Kobahra. Kobahra was active from 1905 to 1912 when it was finally shut down due to a lack of provisions. Though these beautiful fruits were not enough to sustain life more than a century ago, they now create a delightfully fresh touch to the island to synch the image of tropical paradise.



The Mango, *Mangifera indica*

Description: Mango trees can grow up to 35–40m and are capable of fruiting for 300 years.

Ecology: The fruit is eaten and seeds dispersed by flying foxes.

Edible Qualities: Mangos contain a variety of antioxidants, nutrients, vitamins and fibre. It is one of the most popular tropical fruits today and was just as popular in the ancient times. When they were first introduced to the American colonies in the 17th century they had to be pickled to survive the journey by boat. In Australia the first tray of mangoes is sold at auction for charity to mark the start of the season.

Medicinal Uses: Research is underway to test the effectiveness of the mango phyto-chemicals in preventing laboratory models of prostate and skin cancer. Cuban scientists have found that the extract of the bark from branches can affect the blood parameters in the elderly.

Other Uses: The plants and leaves are used throughout India as floral decorations at weddings, religious ceremonies and public celebrations.

Other information: Be very careful around mangoes as the oils in the leaves, stems, sap and skin can cause contact dermatitis and anaphylactic reactions in some people. The sap will burn the skin if not immediately washed off. It can also stain clothes.



Paw Paw, *Carica papaya*

Description: Papaya is a large, tree-like plant that grows 5-10m tall. It has spirally-arranged leaves that only grow on the top of the trunk.

Ecology: Look closely at the lower trunk and you can see scars from when the tree first bore leaves and fruit. To protect itself from insect attacks the peel of the fruit has a chemical signature to its enzymes that repels insects until it ripens. This high production of antifungal chemicals protects the tree from fungi but not from ring spot- a virus that causes premature moulting and leaf malnutrition leading to the death.

Edible Qualities: The fruit of the paw paw is high in energy and vitamins. It can be eaten raw or cooked and the young leaves can be eaten as a vegetable. The fruit itself is high in pectin and is a key ingredient in jelly. Ground seeds are an effective substitute for black pepper. It is recommended that you eat ripe paw paw in smaller quantities as excessive consumption can turn the skin yellow. But it is far more dangerous to eat large quantities of unripe fruit as this can induce miscarriage and affect infants in nursing mothers. It is thought to be the concentration of latex present in unripe fruits that cause this effect. Studies have found that small doses of unripe fruit will not harm an unborn baby.

Medicinal Uses: With high antioxidant properties paw paw prevents cholesterol oxidation and is believed to be effective as a preventative against strokes, heart attacks and diabetic heart disease. Eating paw paw after a meal aids with digestion and prevents bloating (it is marketed in tablet form). The fruit is believed to

strengthen the immune system against colds and flu. It is recommended that you eat papaya and drink the juice after a course of antibiotics as it replenishes the good intestinal bacteria. The leaves are used to make a tea to treat malaria while the papain-rich latex is used to treat a variety of ailments from rashes, cuts, stings and burns to more serious issues. It has anti-inflammatory properties that can relieve the pain of rheumatoid arthritis and alleviate pain from sports injuries.

Other Uses: The stem and bark is used in rope production. The latex is included as a component in powdered meat tenderisers. The fruit has been harvested for use as a hair conditioner but should be used sparingly as the latex content can provoke allergic reactions in some people.

Other information: The seed extract has been studied for the effects of its toxicity which may induce kidney failure. Studies have found that the seeds have a sterilising effect on male monkeys and could possibly have the same effect on men. This was especially evident when consumed in vast quantities - but only in unripe fruits. While filming Indiana Jones and the Temple of Doom Harrison Ford ruptured a disc and was treated using a series of papain injections.



Avocado, *Persea americana*

Description: The tree grows to 20m and ideally grow in well-aerated soils >1m deep. Avocado trees only grow in subtropical or tropical climates and their fruit is climacteric. This means that they technically mature on the tree but they only ripen after they fall.

Ecology: Avocado trees are vulnerable to bacterial, viral, fungal and nutritional diseases due to excesses or deficiencies of key minerals. Disease can affect all parts of the plant, causing spotting, rotting, cankers, pitting and discoloration.

Edible Qualities: The fruit of horticultural cultivars has a markedly higher fat content than most other fruit. 75% of an avocado's energy comes from fat, most of which (67%) is monounsaturated fat. This means avocado are an important staple when access to other fatty foods (high-fat meats and fish, dairy products, etc.) is limited. On a weight basis, avocados have 35% more potassium (485mg/100g) than bananas (358mg/100g). They are rich in folic acid and vitamin K, and are good dietary sources of vitamin B6, vitamin C, vitamin E and pantothenic acid. Avocados have a high fibre content of 75% insoluble and 25% soluble fibre.

Medicinal Uses: One preliminary study found that a high intake of avocado lowered blood cholesterol levels. Specifically, after a seven-day diet rich in avocados, mild hypercholesterolemia patients showed a 17% decrease in total serum cholesterol levels. They also had a 22% decrease in LDL (harmful cholesterol) and triglyceride levels and a 11% increase in HDL levels (helpful cholesterol). A 2013 epidemiological report showed that American avocado consumers had better overall diet quality, nutrient levels, and reduced risk of metabolic syndrome. A Japanese team synthesised the four chiral components of avocado and are investigating its uses in potential anti-cancer activity. Extracts of avocado have been studied in laboratory research to assess potential for lowering risk of diabetes mellitus.

Other Uses: Throughout Iran the avocado pulp is used as a rejuvenating facial cream.

Other information: Some people suffer allergic reactions to the avocado. They fall into two main categories: those with tree-pollen allergy develop symptoms in the mouth and throat shortly after eating. The second allergy is known as latex-fruit syndrome. It is related to a latex allergy and symptoms include generalised urticaria, abdominal pain, and vomiting and can sometimes be life-threatening. Avocado leaves, bark, skin and the pit have all been found to be harmful to animals. Cats, dogs, cattle, goats, rabbits, rats, guinea pigs, birds, fish and horses can be severely harmed or even die from ingestion. The fruit is poisonous to some birds as well.



Cheesefruit, *Morinda citrifolia*

Description: A member of the coffee family, Cheesefruit grow in a variety of habitats ranging from shady forests to sandy shores. It reaches maturity in 18 months and yields between 4 and 8kg of fruit each month.

Ecology: This tree is especially attractive to green tree ants which make nests from the leaves of the tree. These ants protect the plant from some plant-parasitic insects. The smell of the fruit also attracts fruit bats, who play a role in dispersing the seeds. The *Drosophila sechellia* (a fruit fly) feeds exclusively on these fruits.

Edible Qualities: The fruit is famous for being one of the most disgusting smells in the Australian bush but the fruit is meant to be tasty (if you can overcome the rotten cheese smell). The flavour is likened to custard apple mixed with camembert; with a consistency likened to kiwi fruit. It is rich in vitamin C which is one of the reasons that the juice is highly sought after. Both the flesh and the seeds can be eaten raw or cooked and the young leaves are also edible. They are eaten as a vegetable throughout Asia. The leaves can be used to wrap food during the cooking process.

Medicinal Uses: The young leaves and fruit are crushed and inhaled or rubbed on the chest as a cure for coughs, colds, flu, diarrhoea and fever. The fruit is noted for its slight anaesthetic affect in the throat while eaten and can be crushed to apply to sores. The green fruit, leaves, and root/rhizomes were traditionally used in Polynesian cultures to treat menstrual cramps, bowel irregularities, diabetes, liver diseases, and urinary tract infections.

Other Uses: The roots yield a yellow pigment and have been used by Aboriginals as a dye for weaving baskets and mats.

Other information: In 2005, two scientific publications described incidents of acute hepatitis caused by ingesting *the Cheesefruit*. One study suggested the toxin

to be anthraquinones (try to pronounce it), found in roots, leaves and fruit while the other paper named the juice as the cause. This was, however, followed by a publication showing that noni juice 1) is not toxic to the liver even when consumed in high doses, and 2) contains low quantities of anthraquinones, which are potentially toxic to liver tissue.



Coconut, *Cocos nucifera*

Description: Capable of reaching 30m in height, a tall coconut palm tree growing on fertile lands can yield up to 75 fruits per year but more often yields less than 30. Unlike other plants there are no tap roots or root hairs but a fibrous root system with strands.

Ecology: The fruits can survive long distances by travelling with marine currents which has led to a wide-spread distribution. Coconuts are found in more than 80 countries worldwide, most of which are considered to be a natural dispersal. Due to their high tolerance, they have become a threat to many mangrove systems by outcompeting the individual trees and replacing entire ecosystems. Australian researchers found that the coconut shells are used regularly by octopus as shelter and a means of defence against predators. This behaviour is also observed in Indonesia.

Edible Qualities: The oil can be used in cooking either in liquid form like vegetable oil or as a solid like butter. The sap from the flower is known as Toddy and is collected twice a day in Asia. If left it will ferment to become a palm wine- or Coconut Vodka. Newly germinated coconut contains an edible fluff the same consistency as marshmallows called a coconut sprout. The sap can be boiled to create sweet syrup or reduced to yield sugar.

Medicinal Uses: Research has found that coconut oil will decrease cholesterol in rats. The peel is suspected to contain anti-cancerous compounds and the juice of the immature coconuts has oestrogen-like

characteristics. In Pakistan the coconut is used to treat rat bites while Brazilians use the husk fibres to make herbal tea to treat inflammatory disorders. The roots can be used in a concoction to treat diarrhoea and dysentery. Aboriginals rub the oil found in boiled coconut flesh into their skin to prevent it from cracking and drying in the sun.

Other Uses: The stiff mid-ribs of the leaves are used to make brooms, mats and baskets. When dry the leaves are burned as the ash can be used like lime to supplement soil. The husk and shells can be used as fuel or charcoal as they are considered a superior source of carbon. The dried half-shells can be used as a floor buffer while fresh husks transform into dishes, bowls, buttons or musical instruments. The oil is used in soaps and cosmetics- including Cocobutter. It is found in shampoo, cleansers and hand-washing liquid to name a few (by-products are used in dynamite.) Ground shell is used as an exfoliate while the trunks are expended as an ecologically-responsible substitute for endangered hardwood species. During the World War II coconut shells were used for emergency blood transfusions in the field as the inside of the coconut is sterile until opened and the milk mixes easily with blood. Modern statistics show that on average three people a year will die from coconuts falling on their heads.

Other information: The oldest fossilised remains of a modern coconut are dated between 35-55 million years and were found in Australia and India. Some people contract dermatitis and/or an anaphylactic reaction from the coconut palm. Throughout the Philippines and Malaysia the coconut palm is farmed using Southern Pig-tailed Macaque's (a monkey) to collect the fruits and compete in an annual competition to find the best harvester.



Starfruit, *Averrhoa carambola*

Description: A wooded tree growing between 5-12m, the Starfruit is an evergreen native to Asia but has spread world-wide distribution throughout the tropics.

Ecology: The sweet flower attracts a multitude of pollinators from moths to ants and virtually every insect in between. These in turn attract birds so the trees are buzzing with life during the flowering period. Caterpillars attack the young leaves and flowers while the fruit is vulnerable to moth larvae, fungi and other infections.

Edible Qualities: Starfruit is rich in antioxidants, potassium and vitamin C. They are highly valued for the crisp, juicy flesh and mild flavour which are likened to a combination of apple, pear and grape. They are recommended to be eaten when they have first ripened and some traces of green remain- although consumption immediately after the green has disappeared is also safe. The flesh is used extensively in cooking while the juice is extracted for use in drinks, sherbet sweets and seasonings.

Medicinal Uses: The fruit has a high level of oxalic acid which makes it an effective laxative while traditional medicine use the flesh to lower fevers and treat various skin conditions.

Other Uses: The high acid content of the fruit makes the juice a tough cleaning agent. It can be used to remove rust stains from cloths and to clean tarnished metals. It can also be used as the agent to set dyes on fabrics. The wood is used as timber although some countries prefer to utilise it as firewood, while others value the appearance and use it primarily as a ornamental tree.

Other Information: The oxalic acid can make the fruit dangerous to people suffering from kidney disorders and can lead to kidney failure, the development of kidney stones and the need for dialysis. Symptoms include hiccupping, vomiting, nausea, confusion and in some cases- death.

Bonus Material: Fitzroy Island Bad Boys

Introducing the two coolest, most hard a** plants on the island- the Beach Sheoak (see Plant Use Walk stop #16) and the Strangler Fig (see Plant Use Walk stop #25).

***Ficus virens*. Common names: Strangler Fig or Banyan tree**

Characterised by its large aerial and prop roots, this tree is a genuine bad boy. Like all figs, the Strangler relies on pollination via wasp (see Rainforest Ecology stop #18). The reproductive strategy is one of the strangest and most dependant symbiotic relationships found in nature. Fig wasps are only able to reproduce in the hollow spaces inside the fruit and the fig can only be pollinated by the wasp, which is covered in pollen when it leaves the fruit. Due to the wasp having a short life cycle the fig must fruit often and one type of wasp will only use one particular species of tree. In order to ensure survival, the figs must fruit throughout the year. In doing so they support many animals through lean seasons.

But what makes this tree a genuine bad boy is that, as its name suggests, it literally strangles the life out of others. Birds eat the fruit and gradually break the flesh down throughout their digestive track. The seed is pooped out, generally in the hollow of another tree. As the fig begins to grow it pushes toward the sunlight to take over the canopy while aerial roots simultaneously thrust downwards toward the soil. Once the roots are established and the young plant has access to water and nutrients; it can accelerate its growth and concentrate on dominating the canopy. At the same time it is stealing its hosts sunlight, the Strangler simultaneously entwines its body around the trunk and limbs of the host tree, eventually engulfing it completely. The host gradually loses its energy supply from the sun, its nutrients and water inflow from the soil and all the while it is being slowly strangled. It never stood a chance. As it dies it naturally decomposes and just to add insult to injury- its broken remains feed the Strangler with a flood of nutrients which enables the tree to grow strong enough to support its own weight. But killing one tree is not enough- this tree is the floral equivalent of a psychopath. It continues to grow each year; spreading out more aerial roots and looking for new hosts to engulf. The Cathedral Fig and the Curtin Fig in the Atherton Tablelands are testimony to the sheer size these trees can accomplish given the opportunity.

***Casuarina equisetifolia*. Common name: Coastal Sheoak or Whistling Pine**

Casuarinas, or Sheoaks, look like pines but they belong to a different family. It was awarded the common name 'Sheoak' by the early settlers who thought that the wood looked like oak but was much harder to work with- so they naturally decided it must be a female! There is so many cool things about this tree- it does NOT like to share! Let's begin with the 'needles'- look closer. Do you see the little white bands? Hold the needle in two hands and gently twist the ends in opposite directions until the needle pops apart. Now hold it up in front of a finger- do you see how one end is pointy and one end looks like a crown? The individual spikes of the crown are the leaves! By counting the number of leaves in a single whorl it is possible to identify the species of Sheoak that you're looking at. We have had a botanist do that and confirm this is a Beach Sheoak. But back to how cool this tree is- the needle in your hand is called a branchlet- the leaves are so small the sun can't heat them enough to sweat (refer back to Plant Adaptation walk stop #7); not only that but the cylindrical shape of the branchlet ensures that at any given time, only half the leaves are in direct sunlight. This further reduces the odds of transpiring. Basically- Sheoaks are the Fort Knox of plants. Water is not getting out if they don't want it to. And it's not just water they can hold onto. Most trees are incapable of accessing atmospheric nitrogen. They are forced to enter into a symbiotic relationship with fungi in order to exchange nitrogen for carbohydrates (amongst other things). But not the Sheoak. It's not sharing and it's not relying on anyone but itself! This is one of the few plants with nodules in its root system that enable it to access nitrogen on its own. This gives it a serious competitive edge. Speaking of competitive - when the branchlets decompose they introduce a chemical component into the soil that inhibits the growth of other plants. All water and nutrients that fall around the Sheoak are for it alone. It is really not interested in sharing or having close neighbours. It doesn't even like animals. The pollen of the male Sheoaks is dispersed by wind, as are the seeds. The seed pods literally explode into the breeze where the papery-wing allows it to float far from the parental plant. There is no need for insects or other animals to become involved- that is beneath the Sheoak! All in all, this tree packs a serious punch.