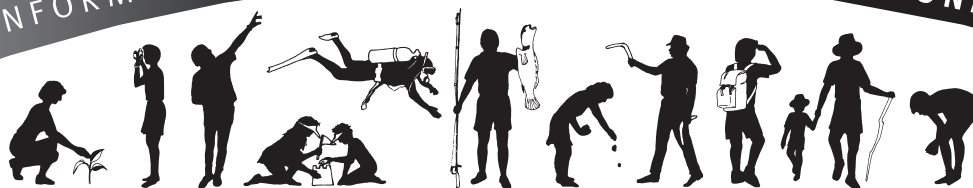


TROPICAL TOPICS

AN INFORMATIVE NEWSLETTER ABOUT THE ENVIRONMENT



Notes from the Editor

Welcome to the new look *Tropical Topics*. From now on those issues dealing with wet tropics material will feature the new design which includes a special 'Fact sheet' in the centre pages.

As mentioned in last year's survey, the format of the newsletter has also changed and now includes a greater variety of articles, rather than most material relating to a specific theme (although 'orange' – dry tropics – issues will remain theme-based).

Material included reflects the interests of readers who returned their survey forms and indicated topics on which they would like more information. There was a strong interest in bush tucker and bush medicine, so this newsletter features a 'Fact sheet' on bush tucker in the centre as well as a special warning on page one. The next green issue will feature a fact sheet on bush medicine.

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Toxic tales

It is extremely dangerous to experiment with bush tucker. Botanist and bush tucker enthusiast Tony Irvine recalls an incident which reminded him of the importance of being cautious.

"Fellow botanist, Bernie Hyland, and I had just returned to the laboratory at CSIRO in Atherton with a collection of *Triunia erythrocarpa* fruit. The species is related to macadamia; it is in the same family, Proteaceae. The fruit is spherical, 18-40 mm in diameter, and orange red with a longitudinal groove on one side. The flesh is white and contains an ovoid brown seed, about 15 mm wide.

"Bernie nibbled a small part of the seed, said it tasted okay and then spat it out. I also nibbled a small part of the seed. It had a similar taste to macadamia. I rolled it around in my mouth for a few minutes and decided, as it had a pleasant taste, to swallow it.

"I then went to do some sowing of seed in the potting shed. While I was working, I began belching a bit and then felt that I needed to go to the toilet but I didn't perform. I felt briefly that I wanted to vomit but again didn't perform. So I continued my seed sowing. It was an overcast day and a comfortable temperature but I noticed that my arms were beginning to sweat. I thought that was strange as it wasn't very hot. Within minutes, sweating began to increase over all parts of my body and shortly my clothes became saturated. I looked as though I had dived fully clothed into water for a swim. It was at this time, that I thought I should seek some medical attention.

"While waiting at the doctor's surgery I was sweating so much I began to shiver from loss of heat. As soon as the doctor saw me, he

examined my heart beat and immediately gave me an injection of atropine to stimulate my heart muscle as the effect of the toxin in the seed was to slow my heart beat down. I was sent straight to hospital where they monitored my condition. I received one more injection overnight when they felt that my heart rate had dropped too low for safety. The next morning when I woke up, I walked the three kilometres home.

"The total amount of the seed that I ate was equivalent to about nine cubic millimetres or 0.3 grams in weight. I was very fortunate the sampling had occurred at the office. If I had consumed it in the bush, I could have been in severe trouble. Imagine what would have happened if I had ingested a whole seed on the basis of its pleasant taste.

"The plant is commonly known as 'spice bush', a name that is also applied to *Triunia youngiana*, a species from southern Queensland and northern New South Wales with which it was confused. This is a dangerously misleading name for both species as it suggests edibility and human use. A far better common name for *T. erythrocarpa*, based on the above experience, would be 'toxic seed tree'. On looking through an array of references on common names, I cannot find any other plant in Australia with this common name, which makes the case for its use more compelling. It goes to show that pleasant tastes can be deceptive."



Cutting the road toll

How many animals die on our roads? Dr Miriam Goosem of the Rainforest Cooperative Research Centre set out to put a figure on it. She chose four stretches of road, each half a kilometre long. Two of them were straight and the other two had curves, which served to slow down traffic. She walked along these roads every week for over three years, picking up dead vertebrates.

Just 2km of roads yielded more than 4000 dead vertebrates during the 38-month study. Of these, 500 were mammals, 3060 amphibians, 450 reptiles and about 90 birds. More deaths occurred near gullies and creeks which are presumably popular gathering and crossing points – and potentially good places to provide underpasses. Mortality also increased on roads with narrow clearings – animals are more inhibited about crossing wide roads.

Although it would seem that animals are therefore safer next to wide roads, there are also serious disadvantages. Both wide roads and powerline corridors act as barriers, preventing animals, particularly small mammals, from moving to other territories to breed. Populations then become increasingly isolated from each other and the animals may fail to breed and die out, or they may inbreed, reducing genetic diversity.

A number of strategies are being tried to allow animals to cross roads safely. In several places rope bridges have been built across roads and are being used by arboreal animals such as possums (see *Tropical Topics* 74 p7).

When the East Evelyn road, near Millaa Millaa, was being upgraded the Department of Main Roads included three special underpasses. They have been furnished with logs, rocks, branches and ropes to provide cover from predators and off-ground comfort for arboreal species. Areas adjacent to the entrances are being revegetated to give animals a safe, covered approach. Users of the tunnels are leaving their

calling cards – footprints on patches of sand in the middle. So far, possums, pademelons, rodents and a number of ground birds have been recorded. Feral cat prints have been found but, thankfully, they are rare and these predators don't seem to be frequenting the tunnels.

On the Mission Beach to El Arish road, where too many cassowaries are hit by vehicles, the Department of Main Roads has used optical illusion to slow traffic. The road has been widened, but a red colouring in the bitumen at the edges gives the impression of a dirt shoulder. Believing the road is narrower than it is, drivers go more slowly. However, if necessary, they have plenty of room to pull over. Paler bitumen marks cassowary crossings and rumble strips across the road on either side encourage drivers to slow down. On the Mission Beach to Tully road diagonal bars at each side of the road give the impression that it is narrower than it is. In addition, white lines across the road near cassowary crossings serve to slow traffic. Occurring at decreasing intervals, they give drivers the impression of speed and have been shown to slow traffic by up to 11kmh.



Creature feature: bandicoots

Bandicoots are often mistaken for rats – but actually more closely resemble rabbits. They are about the size of rabbits, they hop like rabbits and they breed even faster than rabbits.

Unlike rabbits, however, bandicoots are native marsupials. Their fur is brown, their noses long and their tails short – or often missing, bitten off during aggressive encounters between the rather territorial and solitary adults.

Bandicoots forage at night, digging conical holes in the ground with their strong, clawed forefeet. They then probe the holes with long noses in search of invertebrates such as beetle grubs and worms. They also eat soft roots, berries, grass seed and other vegetable matter. By day they snooze in leafy nests on the ground.

Three species are found in the wet tropics. The commonly seen northern brown bandicoot (*Isoodon macrourus*) (below) is at home in cleared areas, lawns and cane fields. The long-nosed bandicoot (*Perameles nasuta*) (right) prefers rainforest and higher areas but also frequents gardens and compost heaps. The southern brown bandicoot (*I. obesulus peninsulae*) has recently been discovered in sclerophyll woodland at Lamb Range, west of Cairns. This is thought to be an extension of the



population found at the tip of Cape York. (Southern brown bandicoots, (*I. obesulus*) are found in southern Australia.)

Bandicoots breed often and have the shortest pregnancy of any animal. The young are born just 12 and a half days after their parents mate (rabbits are born after 30 days), two to four tiny newborns finding their way into their mother's pouch to continue their development. During this journey they are attached by long umbilical cords to a rudimentary placenta within the mother's womb – an unusual feature in marsupials, found only in bandicoots and koalas. The mother's pouch opens backwards, a design which prevents it from becoming filled with dirt while she is digging for food. Females can produce their first litter at the age of four to five months, repeating the production every seven weeks.

Rapid reproduction is necessary because bandicoots appear on the menu of a number of predators including pythons, dingos, goshawks and owls. They are also a favoured host of ticks, but are apparently immune to the toxins which cause paralysis in other animals.



Palms

Palms are strongly associated with the tropics. In fact, they can grow in some relatively temperate climates, their limit being about 40 degrees latitude north or south. Here, in the wet tropics, we have an interesting abundance of these lovely plants – about half of Australia's 57 palm species grow in rainforest.

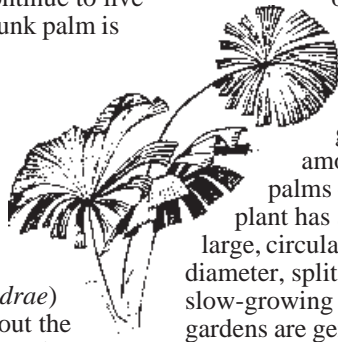
The living, growing part of a palm is at the top of the trunk with the trunk functioning rather like an extension of the root system. Most trees can be pruned at the trunk and continue to live but if the top of a single-trunk palm is cut off the plant dies.

Palms adopt a number of growth forms. Some have a single trunk, some are clumping and others are scrambling.

Alexandra palm

(*Archontophoenix alexandrae*) grows commonly throughout the wet tropics from sea-level to about 1200m. It is particularly abundant in swampy areas where it enjoys periodic flooding. The red fruits, held on bunches of stalks, are a popular and reliable food for birds notably the pied imperial-pigeon which migrates to breed in Australia in summer while the palms are fruiting. The Bangalow palm

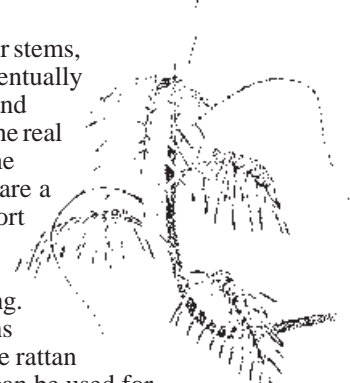
(*Archontophoenix cunninghamiana*) is very similar but its feathery leaves are green underneath instead of white or grey and its flowers are pinkish instead of white.



Fan palm (*Licuala ramsayi*) forests, where these lovely plants grow in colonies, are among the most picturesque palms of the wet tropics. Each plant has a single trunk topped with large, circular leaves, up to 2m in diameter, split into segments. Although slow-growing – plants grown in resort gardens are generally shrub-like – it can eventually reach 20m in height. Fan palms prefer swampy lowland positions.

Wait-a-while palms (*Calamus* spp.) are notorious scrambling plants of the wet tropics. Their searching, hooked stems have stopped many a bushwalker in their tracks, causing them to wait a while for release. These whip-like tentacles are

actually flower stems, which may eventually bear flowers and edible fruit. The real purpose for the hooks is to snare a suitable support for their upwardly mobile climbing. Prickly sheaths enclose pliable rattan stems which can be used for basket and furniture making. These plants do not fit many people's stereotypical image of a palm but their characteristic feathery fronds are a giveaway.



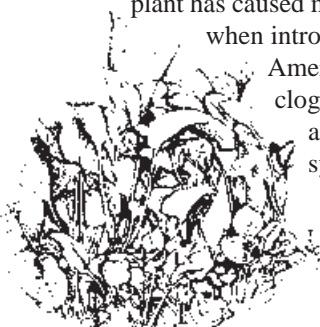
Although often grouped together, cycads and palms are not related. Cycads, despite their palm-like appearance, are ancient non-flowering plants while palms are more modern and produce flowers.

Weed corner: *Limnocharis*

Some weeds are well-known for the problems they have caused – most responsible gardeners are aware of the evils of lantana, Singapore daisy and thunbergia (blue sky vine). The problems caused by carelessly discarded ornamental aquarium plants, such as salvinia, are obvious for all to see where they have covered the surface of freshwater lakes with dense mats of vegetation.

Less well-known are the sleepers – garden plants which have the potential to cause problems but haven't got out of control yet. Many of these are environmental timebombs – but there is still a chance to stop them if we are aware of their appearance, keep a sharp eye out for them and inform the authorities if we do.

Limnocharis flava is a plant which is creating particularly grave concerns. Native to South America, this water plant has caused major problems when introduced to North America and Asia, clogging waterways and drainage systems. Each plant can produce a million seeds a year, which move easily with



flowing water. *Limnocharis flava* anchors itself in mud at the bottom of freshwater lakes and waterways, the stems and leaves emerging up to a metre above the water level. It has large oval-shaped leaves (left) and five to 15 yellow, cup-shaped flowers (right).

The plant was discovered in the Centenary Lakes in Cairns in June 2001. It has since been found in a freshwater creek in Smithfield, north of Cairns, and in cultivation, including a pond at the Cairns Casino. People are known to have unwittingly taken plants from Centenary Lakes to put in their own gardens and there are fears that it could become popular in 'Balinese-style' water gardens.

During the last 12 months a few more plants have been found in ponds in the Cairns to Port Douglas district and, of

particular concern, several have been found growing wild in the Mulgrave River, near Babinda. In Townsville, a sizeable wild population has been found in the Black River area, to the north of the city, and another in the city in Anderson Park, near Pimlico High School. There is concern that some may have been distributed through gardening networks.



There is still a chance to control the spread of this extremely dangerous plant. If you find any, please contact the Centre for Wet Tropics Agriculture, Ph: (07)40461143 or (07)40461111.



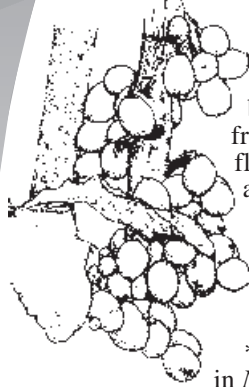
Australia's Tropical Rainforests

WORLD HERITAGE

F A C T S H E E T

Bush tucker

Bush tucker has become big business. Restaurants are serving entire menus based on Australian native foods and it is now possible to buy a number of preparations made from native plants in supermarkets.



Davidson plum (*Davidsonia pruriens*) produces large blue-black plum-like fruit on the trunk and branches. Although very bitter, these fruits make excellent jam and a 'full-flavoured, dry, red wine'*. They are also being used as a flavouring in commercial yoghurt, and can add flavour and colour to icecream, drinks and sauces. The juice can even be used in the place of vinegar in salad dressing.

*A recipe for the wine can be found in *North Queensland Native Plants* published by the Society for Growing Australian Plants. Wines can also be made from the fruits of lilly pillies (*Syzygium* spp.), carabeen (*Aceratium* spp.) and tamarind (*Diploglottis* spp.)

The **flowers** of a very large number of Australian plants are pollinated by birds and produce abundant nectar to attract them. Humans too, enjoy this sweet treat, obtained by licking the flowers of grevilleas, banksias, tea trees, eucalypts and even grass trees. Swishing the flowers in a container of water produces a sweet drink – or soak them for a few hours in the fridge (to stop them from fermenting). Alternatively, dip a bunch of flowers in your billy tea instead of using sugar.

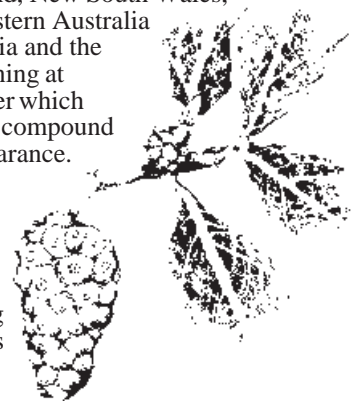
The yellow, white or pink flowers of the **native rosella** (*Hibiscus heterophyllus*), can be eaten raw in salads – although they have a rather slimy texture and may carry a load of insects. This shrub, found in coastal and drier rainforest, is a versatile one. The flower buds can be eaten raw or stewed and made into jam – hence the common name. The leaves can be eaten raw when young or cooked and used in the same way as spinach or cabbage. The roots can be cooked and used like parsnips. Flowers and young leaves of the related, and similar, cotton tree (*Hibiscus tiliaceus*) – found in coastal districts, can also be eaten.



The yellow flowers of the **kapok tree** (*Cochlospermum* spp.) are edible and said to be tasty, if slimy, to eat. They have a reasonably high vitamin C content. The main root can also be eaten after roasting.

Cheesefruit (*Morinda citrifolia*) has a wide distribution, growing in north Queensland, New South Wales, Northern Territory and Western Australia as well as many parts of Asia and the Pacific. White flowers, opening at different times, form a cluster which eventually becomes a large compound fruit with a distinctive appearance.

Up to 8cm across, it is pale green with a bumpy, shiny surface. The fruit is edible, but usually eaten unripe because it has a strong, unpleasant smell like rotting cheese when ripe. Devotees say it is perfectly palatable, as long as you hold your nose, tasting of blue cheese with a touch of hot mustard. It is sometimes combined with macadamia nuts and sold as a salad dressing. The fruit has a high vitamin C content and is said to have medicinal benefits.



The fruits of **lemon aspen** (*Acronychia acidula*) are very sour, but can be stewed with sugar, used in tarts and puddings, made into jams and sauces or the juice used in salad dressings. It is a popular flavouring in commercial yoghurt made in north Queensland.

Fair dues

There is concern that indigenous people, who did all the original research to discover what is edible and what is not – and a lot of our rainforest plants are extremely toxic – are not going to benefit from the economic boom.

However, some projects aim to turn that around. Six indigenous TAFE trainees have been employed in Innisfail to collect rainforest fruits and propagate them for a bush tucker nursery and orchard. The plan is to plant these beside exotic fruit trees so the fruit can eventually be harvested and processed for sale by the Mamu Aboriginal Corporation.

A scholarship at James Cook University in Cairns is being offered for an Indigenous post-graduate student to work for three years on the domestication of bush tucker species with commercial potential. The project will involve interaction with the Djabugay Community at Kuranda, west of Cairns.

Millions of years in the making. Protected forever.

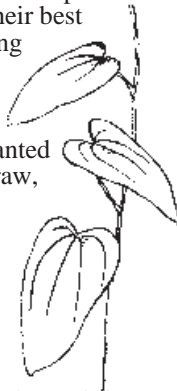
The **tar tree** (*Semecarpus australiensis*) is related to the cashew tree. It produces yellow or red fleshy fruits (which, strictly speaking, are thickened stems) with a seed (actually the fruit) attached to the end of each. This tree produces a toxic sap which can cause severe blistering of the skin and should never be touched. The 'fruits' and 'seeds' are also toxic. However, the latter can be eaten after processing. The poisonous skin must be burnt off – taking care not to be affected by the smoke – and peeled off without touching. The cooked seeds are very tasty. The fleshy orange 'fruit' parts are said to be sweet and are eaten, but only after baking. The skin may be toxic and Aboriginal people when handling it protect their hands with clay. This is definitely a tree to be wary of.



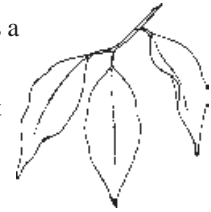
Toxic plants abound in the rainforest, but many such as black beans and cycad seeds have been used as staple foods by Aboriginal people, following a lengthy processing involving cooking, scraping and leaching with running water. The abundance of these foods and the high carbohydrate content make this worthwhile. Excess, processed food could be wrapped and stored in cool streams. Use of these toxic foods may have enabled large groups to gather for ceremonial and social purposes.

No one knows where this knowledge originated or when, but recent archaeological investigations have discovered nut shells dating back 1000 years alongside artefacts which were probably used for processing. A number of these shells were of toxic species, such as black bean, black and yellow walnut and black pine. Their use may have encouraged settlement within rainforests; while there is evidence of occupation at Mt Mulligan, west of Mareeba, 35,000 years ago, investigation of rainforest sites have provided dates of around 5000 years ago. Did use of toxic foods as staples allow occupation of rainforests?

Wild **yams** are the potatoes and carrots of bush food. Long yam (*Dioscorea transversa*) is a common traditional staple food across the tropics where it grows at rainforest edges. The plant is a twining vine with heart-shaped leaves (right). The yams are said to be at their best when the leaves have turned yellow. Finding the root involves searching for the point where the plant enters the ground and then digging down for maybe a metre. The top of the tuber and the vine stem are replanted for future crops. Small yams may be eaten raw, but most are boiled or roasted in the fire or oven after being washed and rubbed to remove the hairs on the skin. Not all yams are as edible. Some are toxic and must be leached in water before they can be eaten.



Lemon myrtle (*Backhousia citriodora*) is a bushy shrub with lemon-scented leaves which contain citral, an essential oil used in perfumed soaps and cooking. Indeed, it makes up 90 percent of the oil, compared with just 3 percent in lemon oil. Endemic to Queensland, it can survive as far south as Melbourne and is now being grown commercially. Fresh leaves can be used to make lemon tea. Dried leaves can be used to flavour fish or chicken, in deserts such as custards and sorbets, and to make tangy sauces or replace lemon grass in Asian recipes.



An indigenous QPWS staff member recalls that "Christmas wasn't Christmas without a **brush turkey egg**," and still hankers after this taste from her childhood. The eggs were used in Christmas puddings but apparently tasted best after being baked in the coals of the fire. Weighing an average 180g each, this took an hour or so.

Kernels of the widespread **candle nut tree** (*Aleurites moluccana*) are about 60 percent oil. In many countries this is extracted and used in paints and varnishes, as a wood preservative and for lighting. The nuts themselves will burn with a sooty flame and can be pulverised and moulded into a candle. Aboriginal people found them useful when lighting fires in wet weather and the oil is useful for fixing ochre for painting.

There are about sixty **lilly pilly** species in Australia, all with edible fruit. **Riberry** is the name given to the fruit of *Syzygium luehmannii*, one of the tastier of the rainforest lilly pillies and one which is finding popularity as a commercial bush food with trees now being grown in orchards. A large proportion of the fruits are seedless so can be used whole and are popular due to their red colour and spicy flavour – the plant is related to the clove tree which is a *Syzygium* species from Indonesia. The fruits can be made into jam or sauces to be served with meat or with puddings or ice cream. They can also be cooked in tarts or used raw in fruit salads.

The nuts are also extremely nutritious, containing more than 4200 micrograms of thiamine per hundred grams. Only certain processed yeast products such as vegemite contain more. However, the raw nuts have a reputation for causing stomach upsets and are avoided by some Aboriginal groups. Others, however, roast them in the fire to render them edible. This destroys a toxin in the oil, although some nuts contain cyanide, so should be treated with care. The nuts are ground and used in Asian cooking, notably in laksa. For Aboriginal people, the rotting wood of this tree is known to be a good source of very popular grubs – edible moth larvae. Sometimes the trees were ring-barked to hasten this process.

Safety First
As is the case with fungi, while some rainforest plants are edible others can be deadly poisonous, even in tiny quantities. Even experienced bush tucker enthusiasts have been caught out (see page 1). Do not experiment.

Please also bear in mind that all plants and animals in national parks are protected and cannot be collected without a permit.

Cedar bay cherry (*Eugenia reinwardtiana*) produces a red cherry-sized fruit which is one of the nicest bush fruits. It has a large seed and a thin, but very tasty flesh which can be eaten raw.



QUESTIONS & ANSWERS

Q How do I tell the larvae of a cane beetle from other insect larvae, for example Mueller's stag beetle?

A The most commonly found larvae in the garden are either rhinoceros beetles or cane beetles. The rhinoceros beetle larva has a translucent body with fine reddish hairs all over it, a black head capsule and very short legs. It can grow up to 80mm long. The cane beetle larva has milky/cream coloured body with a brown head capsule and extra long legs. Stag beetle larvae are quite different, with Mueller's found in decomposing logs.

Acknowledgements to Sue Hasenpusch, Australian Insect Farm

Q Please identify the difference between Leichhardt tree and Leichhardt pine. I have seen both. One has 'corky' bark, the other smooth. Both have golf ball-size globular flowers (below).



A The Leichhardt tree is *Nauclea orientalis*, which grows across the north of Australia and is particularly common in lowland rainforests close to streams. It is also called cheesewood and sometimes, confusingly, Leichhardt pine. It has a deeply furrowed bark.

The Leichhardt pine with the smooth bark is probably *Anthocephalus*

chinensis. It occurs from south-east Asia to Australia and is known as burrflower tree, kadam, kelampayan, laran and labula depending in which country it is growing. It belongs to the same family (Rubiaceae) as *Nauclea orientalis* and has similar flowers. In Australia it occurs on the east coast about north of Ingham. Some was cut for timber in the early days and used as a replacement for pine.

Acknowledgements to Garry Sankowski of Yuruga Nursery

Q Is cannibalistic behaviour between frog species normal? For example a white-lipped tree frog eating rocket or other green tree frogs?



A Adult frogs are active predators eating mainly insects but also small lizards, snakes, birds, mice and other frogs. Basically anything which moves is likely to end up as food. It is not unusual for frogs to eat smaller species and juveniles of their own kind.

Unfortunately, frogs will also attempt to eat cane toads. A Savannah Guide from Undara recently investigated the source of a scream heard from the bottom of one of the lava tubes and found a green tree frog, blown up like a balloon, screaming and rolling in agony – with a small cane toad hanging out of its mouth. It did not live long enough to learn from its mistake.

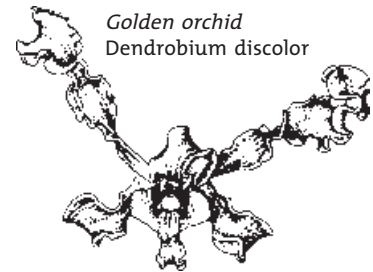
Sideline

The acid-eaters

It is well-known that plants breathe in air through the stomata – or pores – in their leaves. The carbon dioxide component is then split into carbon and oxygen. Using energy captured from sunlight by the green part of the leaves (chlorophyll) and hydrogen derived from water, the plant then produces sugar glucose – food. The process is known as photosynthesis.

During the night, when sunlight is not available, plants continue to breathe but the majority consume more oxygen than carbon dioxide. (The quantities are so small it is not necessary to remove flowers or plants from the bedroom, as was the custom in the past.)

However, there are some plants which continue to absorb carbon dioxide during the night. Most of these are plants which are prone to dehydration. They include many cacti, certain bromeliads (including pineapple) and native rock lilies (*Dendrobium* spp. – below). If they open their pores to absorb carbon dioxide during the day they are in danger of losing water. So, they do so during the night instead.



Of course, during the hours of darkness, there is no sunlight to provide energy for the conversion of carbon dioxide into sugar. The plants, therefore, store the carbon dioxide in the form of acid, converting it back into carbon dioxide gas the next day when it can be utilised. However, if rainfall is high, and dehydration not a threat, they can switch to normal daytime photosynthesis mode.

Although botanist, Benjamin Heyne, observed in 1813 that the leaves of certain succulents tasted tangy in the morning but not later in the day, the mechanism has only recently been understood.

Read more about this, and other things that plants do at night, in **After dark** by Tim Entwisle in *Nature Australia* Vol 27 No 5, Spring 2002.

TOURIST TALK

ENGLISH	GERMAN	JAPANESE	
bush	im Wald	yasei no	野生の
tucker	Eßbares	tabemono	食べ物
jam	Marmelade	jam	ジャム
tuber	Knolle	kaikei	塊茎
leach	auslaugen	kosu	滲す
botanist	Botaniker	shokubutsu gakushya	植物学者
edible	eßbar	shokuyou ni naru	食用になる
palm	Palme	yashi	ヤシ
rabbit	Kaninchen	usagi	うさぎ
underpass	Tunnel	chikadou	地下道

Out and about



The late wet season has led to an increase in numbers of many butterfly species, as fresh growth on host plants supports more caterpillars. **Australian rustics** seem to be particularly abundant at the moment, their bright colours catching the eye as they flutter around in the sunshine, close to the ground, in glades and rainforest margins. The uppersides of their wings are dominated by a wide, golden orange band bordered with a contrasting dark brown band on the wing edge and a lighter brown band next to the body.

The caterpillars feed on fresh shoots of brown birch (*Scolopia braunii*) and native coffee bush (*Breynia oblongifolia*). They are an attractive green with a yellow stripe, grey mottling and rows of thin, branched spines. The pupa, which often hangs down from a mature leaf, is also bright green with black spines attached to silvery spots. If touched, the pupa reacts vigorously, swaying back and forwards.

Tropical Topics newsletters are coming on line! Some of the more recent issues can be found, as PDFs, on the Environmental Protection Agency's website at: <http://www.epa.qld.gov.au/environment/park/heritage/> and select Wet Tropics at the top of the screen.

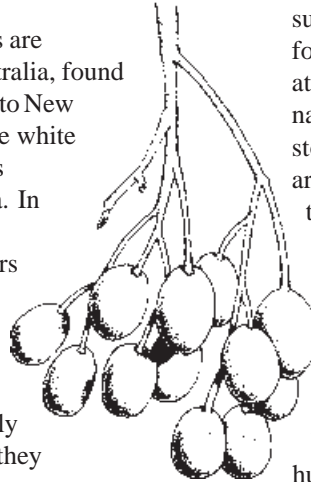
'Orange' issues, dealing with dry tropics/savanna topics (Nos. 64, 68, 71 and 73) can be found on the Cooperative Research Centre for Tropical Savanna Management site at http://savanna.ntu.edu.au/publications/tropical_topics.html

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Caterpillars of the **white cedar moth** (*Leptocneria reducta*) can, at this time of year, completely strip the leaves from **white cedar trees** (*Melia azedarach*). Unfortunately for humans, the caterpillars are covered with long, dense, irritating hairs which cause skin rashes. Since the trees are commonly planted as ornamental specimens, in streets, parks and gardens, contact with the caterpillars is common.

Feeding at night, the caterpillars hide during the day in crevices or in shelter around the base of the tree. One way to prevent them from reaching the foliage is to encircle the trunk with sticky tape (sticky side out) or a metal collar with an overhanging lip which encourages the caterpillars to collect underneath.

While the moths are endemic to Australia, found from Cooktown to New South Wales, the white cedar tree grows throughout Asia. In Australia it produces clusters of yellow fruits (right) from about March to June. Although birds feed eagerly on these fruits, they are toxic to humans.



Pothos (*Pothos longipes*), a common rainforest vine, produces bunches of bright red fruit during the wetter months. The trunks of many trees, particularly in wet upland forests, are surrounded with a complex network of pothos stems and leaves which climb with the aid of clinging roots.

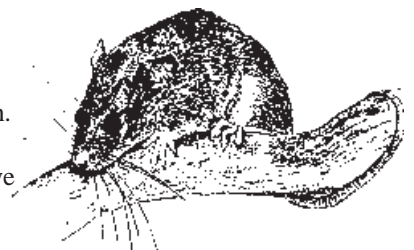
Unlike many vines, which push upwards looking for brighter light, this plant is able to flourish in shade. To do this successfully, it has an unusual method for gathering light. Each flat leaf is attached to an equally flat stem, just a narrow 'waist' indicating where one stops and the other starts. Both parts are equipped with photosynthetic cells to collect light and convert it to food.

Inconspicuous white flowers eventually become oval red fruits, each about 1cm long, which are eaten by birds such as cassowaries, fruit-pigeons and Victoria's riflebirds. They are edible for humans, but are lacking in taste.

Grassland melomys tend to start breeding about March, though the exact timing may be influenced by rainfall. These little native rodents are among the most common in Queensland. They live in open grassland and in woodland where there is a grassy understorey but are now abundant in cane fields where they cause extensive damage by nibbling on the cane.

Nests are neat, spherical structures, 20-30cm in diameter, constructed from grass leaves and woven around erect grass stems, usually about a metre from the ground. Often there are two entrances. The female usually produces two to three young but as many as five have been found. If the family is disturbed the babies cling tight to their mother's nipples as she flees from the nest – a useful survival strategy in case of grassfires.

In order to breed, the melomys mother needs to feed on protein-rich grass seeds; sugar cane is not enough. Cane farmers have therefore been finding that if they shade out grassy margins of the cane fields with native trees they have fewer rats in their cane.



BOOKSHELF

Bush Tucker

Australia's Wild Food Harvest
Tim Low
Angus and Robertson (1992)

Bush Food

Aboriginal Food and Herbal Medicine
Jennifer Isaacs
Weldon Publishing (1989)

Useful Wild Plants in Australia

A.B. and J.W. Cribb
Collins (1981)

All the above books look at bush tucker from all over Australia.

The Mullunburra

People of the Mulgrave River
Nungabana, George Davis
Cassowary Publication

This booklet introduces the Mullunburra people and describes traditional gathering, hunting, fishing, cooking and other activities.

A Guide to Traditional Aboriginal Rainforest Plant Use

The Kuku Yalanji, Mossman Gorge
Bamanga Bubu Ngadimunku Inc.
(1995)

This booklet looks at 24 different plants and their uses as well as giving notes on Kuku Yalanji language and information on rainforest calendar plants.

Garrimal Wuju Wabungga

Summer fruit of the rainforest
Eel cooking in the rainforest

Jirrbal and Girramay people of Jumbun (1992)

These booklets describe bush food use in Murray Upper, near Cardwell

Grow your own Bushfoods

Keith and Irene Smith
New Holland Publisher (1999)

This book includes information about the plants, growing tips, cooking suggestions and recipes.

Website: www.teachers.ash.org.au/bushtucker/index.html

This site has numerous interesting links, including a good one to the Queensland branch of the Society for Growing Australian Plants (SGAP).

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