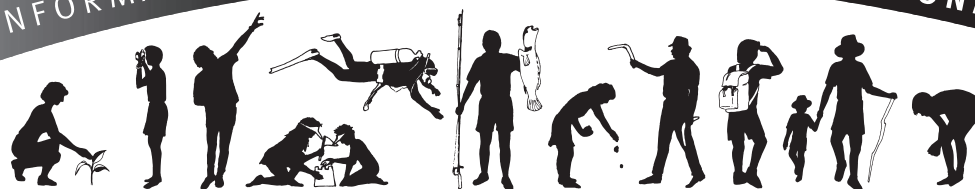


TROPICAL TOPICS

No.81
February 2004

AN INFORMATIVE NEWSLETTER ABOUT THE ENVIRONMENT



Notes from the Editor

'Isn't it beautiful!' On January 15, this was the unanimous response to a sudden and widespread night of torrential rain and thunder throughout much of the wet tropics. Inconveniences, from flooding to wet shoes, were overlooked as a feeling of relief overwhelmed residents tired of yet another prolonged dry season.

Having grown up in Ireland, I find this enthusiasm for rain amusing, but I have been here long enough to whole heartedly join in the celebrations. The effect of the rain has been dramatic and this *Tropical Topics* looks at the great benefits it brings to our region in this, the green season.

I would like to thank John Clarkson and Mike Trenerry (QPWS) Barbara Waterhouse and Louise Hucks (Australian Quarantine and Inspection Service) and Bill O'Connor (Bureau of Meteorology, Cairns) for their help with this issue.

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The grey and the green

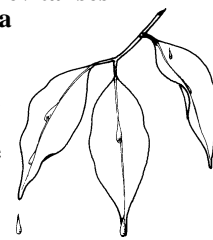
The green season, as the wet season has been dubbed, is a time of magnificent skylines, dramatic torrential rain and vigorous rushing rivers. It is also a time of celebration as summer rain, the life force of the tropics, revitalises plants and animals which have been suffering from the stress of a prolonged dry season.

For Cairns, in the middle of the wet tropics, 2002 was the driest year since records were first kept in 1887 (and Australia's fourth driest recorded year). Little relief came in 2003, which produced a poor wet season (the driest 'wet' in 87 years) and another prolonged dry season. By December 2003, Tinaroo Dam, on the Atherton Tableland, had dropped to less than 25 percent capacity, disappearing completely in many places. Copperlode Dam, which supplies water to Cairns, fell to almost 50 percent capacity.

After three years with below average rainfall, residents were concerned that the rains would fail again. However, downpours in mid-January broke the spell and rainfall for the month was near average, with a normal wet season expected.

Summer rain in the wet tropics comes from a convergence of weather patterns. The monsoon trough is a long band of activity formed where the south-east trade winds (blowing towards the north-west) meet equatorial westerlies (blowing towards the south-east). The collision of these two warm, wet, rising air streams results in heavy rain associated with thunderstorms and occasional tropical cyclones, which form over the ocean. The monsoon trough sometimes shows up on satellite images as a solid line of cloud but at other times is scattered and ill-defined. In some years, the monsoon trough does not go far south of Cooktown. In other years it reaches southern Queensland and even New South Wales.

Winter rain comes from south-easterly winds dropping their moisture as they rise up over the mountains of the Great Dividing Range.



The annual rainfall total varies, of course, from one year to the next. Sometimes the monsoon trough is more or less active than usual. Cyclones, which usually bring a large amount of rain in a short period, can greatly affect the total; some years no cyclones reach the east coast, while in other years we may receive rain from three or four. In El Niño years, the south-easterly trade winds tend to break down.

Essentially, rain patterns in the wet tropics are variable. Older residents talk about the wet seasons of the past, but they are remembering years when rainfall, for a number of reasons, was above average. There really is no typical wet season. Australia as a whole is subject to long, irregular climate patterns and the wet tropics is no exception. By the end of the wet season, our dams could well be full and overflowing again.

Recent annual rainfall totals for Cairns airport (average 1990mm)
2003-1269mm
2002-721mm
2001-1668mm
2000-3149mm
1999-2535mm
Babinda, one of the wettest towns in Queensland, receives an average of 4199mm a year and Innisfail 3558mm.



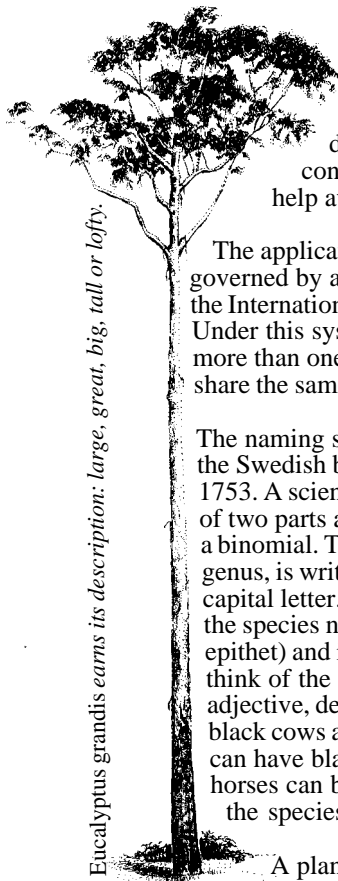
WET TROPICS
MANAGEMENT AUTHORITY



Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

It's all in the name

Cooper's wood, humbug, leather jacket, red almond, red ash, red tweedie, mountain ash, sarsparilla, soapbush, soapwood and foam bark. These are the common names for not several plants but just one, the rainforest pioneer tree *Alphitonia excelsa*. At least half of these names are also used for the other four species of *Alphitonia* found in north Queensland.



Eucalyptus grandis earns its description: large, great, big, tall or lofty.

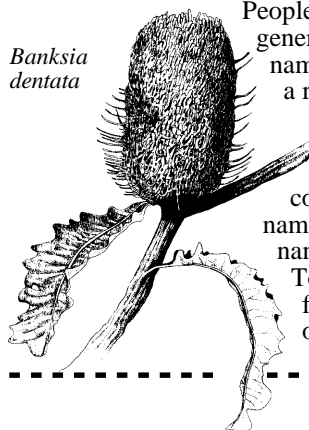
So, as we see here, not only are several common names often used for the same plant but sometimes the same common name can refer to several different plants. This can lead to great confusion. The use of scientific names can help avoid this.

The application of scientific names to plants is governed by an internationally accepted set of rules, the International Code of Botanical Nomenclature. Under this system one plant species can have no more than one name and no two plant species can share the same name.

The naming system we use today was popularised by the Swedish botanist Carl Linnaeus and dates from 1753. A scientific name consists

of two parts and is referred to as a binomial. The first part, the genus, is written with an initial capital letter. The second part is the species name (or specific epithet) and is written entirely in lower case. You can think of the genus as a noun and the species as an adjective, describing the noun. For example, there are black cows and there are brown cows. Similarly you can have black horses or brown horses. Cows and horses can be likened to the genus and the colour to the species.

A plant can be named after the person who discovered it, a noteworthy person, a patron, friend, lover, wife, husband or partner. These names end in *-ii* if the person is a man or *-iae* if the person is a woman, although the initial *i* is sometimes dropped for various reasons. *Miliusa traceyi*, a tree from several rainforest types on Cape York Peninsula, is named after the botanist Geoff Tracey. *Argophyllum verae* is named after the botanical illustrator, Vera Scarth Johnson. The species name can commemorate more than one person. In this case, the name will end in *-iorum* or *-iarum* although, again, the *i* is sometimes omitted. *Cupaniopsis cooperorum* is named after artist and authors Bill and Wendy Cooper.



Banksia dentata

People can also be commemorated in generic names. For example, *Banksia* is named after Sir Joseph Banks. *Gossia*, a recently described genus related to *Austromyrtus*, is named after former Queensland premier, Wayne Goss. The genus can combine both the first and second name as in *Lenbrassia*, which was named after Len Brass, a Toowoomba-born botanist noted for his work in many tropical parts of the world.

Names describing features of a plant usually have Latin or Greek roots. *Xanthostemon chrysanthus*, golden penda, the attractive yellow-flowered tree and floral emblem of Cairns, gets its name from the Greek *xantho-* meaning 'yellow' and *-stemon*, 'stamen', the male parts of the flower. *Chrysanthus* is another Greek word meaning 'golden-flowered'.

Eucalyptus grandis, the flooded gum or rose gum, gets its species name from the Latin adjective *grandis* which means 'large, great, big, tall or lofty', all perfect descriptions of this gum tree.

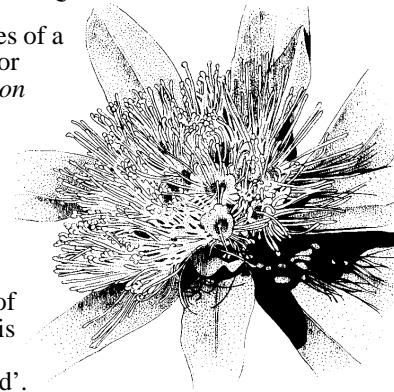
Sometimes a name indicates the country of origin, for example, *australiensis* meaning 'from Australia' (not to be confused with *australis*, which means 'southern') and *novoguineensis*, 'from New Guinea'. Notice these all end in *-ensis*, the Latin suffix indicating a country or place of origin.

The name could also indicate something about the place where the plant is commonly found. For example, in *monticola* the Latin ending *-cola* means 'dweller', so plants with this species name are mountain dwellers, from the Latin *mons*, 'a mountain'. Another way of indicating habitat is to use the ending *-arius*, indicating a connection. For example *arenarius* means 'pertaining to sand' (*arena*); *Xanthostemon arenarius* is a tree (with yellow stamens) from the sand dunes at Cape Flattery.

An existing name may be modified. This is commonly used for generic names where a prefix such as *neo-*, 'new', or *pseudo-*, 'false', is added to an existing name, hence *Neolitsea* from *Litsea* and *Pseudopogonatherum* from *Pogonatherum*. Alternatively a suffix can be used, for example, *-astrum* added to *Malva* to form *Malvastrum* indicating 'an incomplete likeness'.

When inter-generic crosses have been created, names may be compounded. This commonly happens with orchids. For example, when *Epidendrum* was crossed with *Cattleya* the offspring became *Epicattleya*. Sometimes anagrams are formed by rearranging the letters of an existing name. Hence the name *Romnalda*, a grass-like plant from Mount Lewis, was coined by rearranging the letters of *Lomandra*, a plant which looks quite similar.

Acknowledgements to John Clarkson, QPWS



Xanthostemon chrysanthus



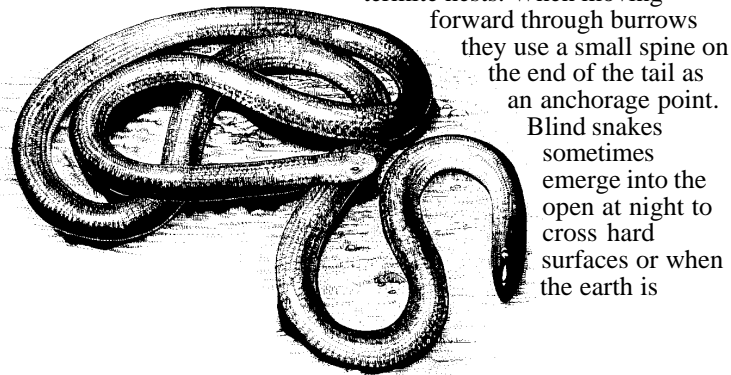
Neolitsea dealbata

Creature feature: Blind snakes

Blind snakes (*Ramphotyphlops* spp) are small, worm-like, non-venomous snakes with small eyes which feed mainly on ants and termites. There are about 30 species in various parts of Australia and perhaps eight in the wet tropics.

The larger species of blind snakes can grow to 40cm in length. All have smooth bodies with thick skin which is thought to protect them from the stings of ants, a useful characteristic since they specialise in invading ant nests and eating their eggs and larvae. Their small eyes are little more than light-sensitive spots below the body scales; more developed eyes would probably be vulnerable to ant attack and be at risk of abrasion as the snake wriggles through underground burrows. Curiously, however, embryonic blind snakes have normal-sized eyes, which suggests that their eyes became smaller as they evolved a burrowing lifestyle.

Blind snakes spend most of their time below the ground or in leaf litter, though some maintain permanent tunnels in ant or termite nests. When moving forward through burrows



they use a small spine on the end of the tail as an anchorage point. Blind snakes sometimes emerge into the open at night to cross hard surfaces or when the earth is

saturated by rain. They have even been observed swimming in clear water and some have been found quite high up in trees.

Studies of the feeding habits of blind snakes indicate that they follow the scent trails of ants which live in colonies. These ants leave pheromone markers as a guide for other individuals in the group. Blind snakes were observed placing their snouts on the trails and flicking their forked tongues as they followed them. They ignored trails of ants which are solitary foragers and therefore rarely leave a scent as a guide to their fellows. They also ignored trails of earthworms and termites. Some large blind snake species, protected by their thick scales, feed in the nests of ferocious stinging bulldog ants. Small ones, however, can be stung and die as a result.

Blind snakes live in all types of habitats from deserts to tropical rainforests. Some are restricted to very limited locations. Harmless, non-venomous and largely defenceless, they fall prey to bandicoots, birds, cats and other snakes, notably the black and white striped bandy bandy which is believed to feed exclusively on blind snakes.

In north America, screech owls carry local blind snakes to their nests where they are employed to feed on insect larvae which would otherwise parasitise the chicks.

Weed corner: Siam weed

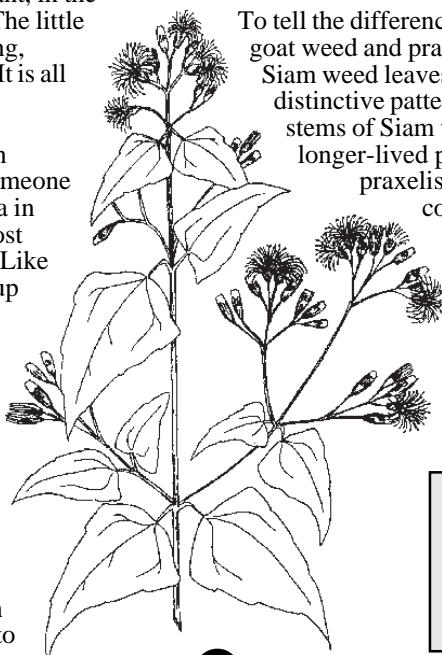
At first glance, Siam weed (*Chromolaena odorata*) looks rather like a large form of blue top or billy goat weed (*Ageratum* species), or praxelis (*Praxelis clematidea*). However, it is a very serious weed.

In 1994 a sharp-eyed botanist spotted Siam weed growing at Bingil Bay, near Mission Beach. Infestations were then found around the Tully River. More recently it has been reported from Innot Hot Springs, Mossman and north of Townsville as well as Johnstone and Cardwell shires. Attempts are being made to eradicate this weed but it is important, in the meantime, that it is not spread any further. The little seeds have tiny barbs which stick to clothing, footwear, animals, vehicles and machinery. It is all too easy for them to hitch a ride.

Siam weed, in spite of its name, originated in Central and South America. In the 1840s, someone decided to plant it in their garden in Calcutta in India, and it has now spread throughout most tropical and sub-tropical areas of the world. Like many weeds, Siam weed grows very fast – up to 20mm a day, or 5m a year. It can rapidly invade and overwhelm other vegetation. Native forests as well as plantations of crops such as bananas, paw-paws, sugar and forestry are at risk in both the wet and dry tropics. It can also poison stock.

Using other plants as support, Siam weed can scramble through and up them to a height of 10m, smothering them under a blanket of growth. Without support, it grows like lantana, in a dense tangling bush 2-3m high. Shortening day lengths seem to

trigger flowering, generally from May to July, although it can happen at other times. Masses of white to lilac flowers turn pink as they mature. Dark seeds, 5mm long, with a parachute of attached bristles to facilitate transport by air or water, follow about two months later.



To tell the difference between Siam weed and blue top/billy goat weed and praxelis, look at the leaves and lower stems. Siam weed leaves are more triangular and the veins have a distinctive pattern somewhat like a pitchfork. The lower stems of Siam weed become woody as it is a much longer-lived plant than bluetop/billy goat weed and praxelis. If you see Siam weed growing, please contact your local council pest management officer or Department of Natural Resources land protection officer on 1800 803 788. If you are in the wet tropics, you can call the Centre for Wet Tropics Agriculture, South Johnstone, phone: 4064 1155 or the quarantine botanist, Australian Quarantine and Inspection Service, Mareeba, phone: 4048 4600.

Hint: When arriving in Australia from overseas, passengers can hand over footwear for cleaning at airports. This not only gets your boots clean, but removes weed seeds and diseases, preventing potential outbreaks.



Australia's Tropical Rainforests

WORLD HERITAGE

F A C T S H E E T

Revitalising rain

By the end of the dry season, our wet tropics is the not-so-wet and rather brown tropics. Suddenly, thanks to the rain, the area is green again and flourishing.

River levels are at their lowest at the end of the dry season. Pools are stagnant, oxygen levels are low and accumulated organic material is making the water increasingly acidic. When the rains start, volumes of water come rushing through the creeks, flushing them out and clearing channels. As waters spread beyond the banks, they carry the organic material and sediment, enriching the floodplain.



Life in tropical waterways has evolved with water pulses – times of low levels and times of flood. Many animals are sensitive to this and time their breeding accordingly. Nutrients, washed into waterholes by the first storms, fuel an increase in growth of algae and small invertebrates, a valuable source of food for the young of many species.

Early rains, therefore, are a trigger for many animals to breed.

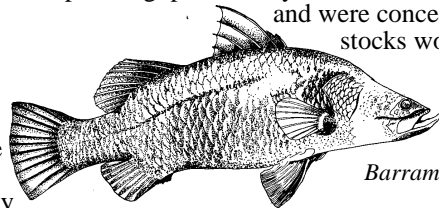


Rain stimulates **frogs** to breed. The males call as a reflex when rain falls and this attracts females, which may carefully choose the best singers for mating. Frogs have suffered particularly badly in the past few years due to poor wet seasons.

Those which did try to reproduce had difficulty in finding suitable watery breeding sites and, if successful, often lost their progeny when puddles dried up. Some females carried their eggs so long they were no longer viable when laid. In addition, lack of insect food led to malnutrition and many frogs died from diseases.

The onset of rain brings frogs out in the open as they optimistically make for the nearest water in the hope of mating. Most male frogs have an inflatable vocal sac below the lower jaw. When calling, the frog inflates this sac through holes or slits on either side of the tongue. Acting as a resonance chamber, the sac amplifies the frog's call; a small group of calling frogs can be heard up to a kilometre away. Although most frogs' vocal sacs inflate externally, in some species it inflates internally so the entire body of the frog swells up. Some male frogs do not have vocal sacs. These frogs tend to live in noisy, fast-flowing streams. Instead of attempting to compete with the background roar, they may signal their intentions by simply waving to prospective partners.

Many **fish**, particularly those in lagoons, breed after the first storms. Some, such as sooty grunter and certain catfish, make their way upstream seeking flowing water which they need for breeding. Other fish, such as barramundi, ox-eye herring and jungle perch, move in the opposite direction swimming downstream as soon as the rivers begin to flow well. They must breed in salt or brackish water; their sperm, eggs and/or larvae cannot survive in fresh water. Although some young barramundi will spend their lives in estuaries, most move upstream within their first two months and remain in fresh water until they are mature and ready to breed themselves. Wet season floods facilitate their journeys. Early in 2003, fishers noticed serious delays in barramundi mating and spawning, presumably due to the extended dry season, and were concerned that future barra stocks would suffer as a result.



Barramundi

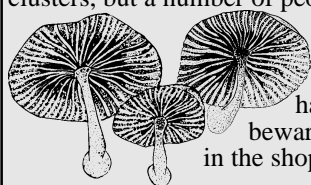
Waterbirds in Australia tend to be nomadic, their movements dictated by rainfall. When the wet season begins they spread out, moving away from the shrunken pools and billabongs which served as a refuge during the long dry season. Flooding provides ideal conditions for many of these birds to breed. Indeed the sexual cycle in some ducks is triggered by an increase in water level. In southern Australia, where most rain falls in winter, this may be spring while in the north it occurs as the wet season sets in.



Australian white ibis nest in coastal wetlands. They wait until water reaches at least a metre in depth in their breeding grounds, just to be sure it will not dry up. The male defends his territory aggressively and the pair nests on a platform of vegetation in low bushes. If the adventurous young fall in the water, they are able to swim to safety.

January rains led to an explosion of **fungal fruiting**.

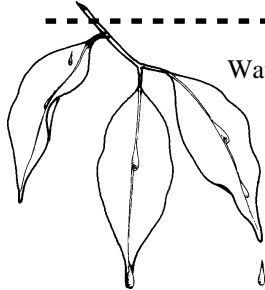
Mushrooms have been popping up in decorative clusters, but a number of people have been given hospital treatment after eating them. Consuming the wrong mushroom can have fatal results so beware! Eat only what you buy in the shops or grow yourself.



When the rains start, **maggie geese** feed on young shoots of grass until wild rice seeds provide enough food for them to breed, usually from March to June.

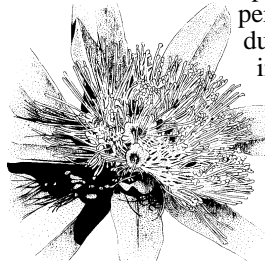
Millions of years in the making. Protected forever.

AUSTRALIA'S TROPICAL RAINFORESTS WORLD HERITAGE



Water soaking into the roots of the **plants** leads to a flush of growth, the new leaves on many tropical plants glowing pink, red or bronze. The pigment, anthocyanin, which creates this colourful display, may act as a sunscreen to protect the tender young leaves as they are developing. The leaves of most rainforest plants taper to a point at the end. This 'drip-tip' serves to drain the water quickly off the leaf. Lichens and algae, which would interfere with the leaf's ability to photosynthesise, are less likely to grow on dry leaves. Warm, dry leaves are also able to photosynthesise more efficiently than cold, wet ones.

Many trees flowered prolifically during the dry – a common response to stress – so they are now producing fruit in abundance for birds and other animals. However, tropical plants flower and produce fruit all year round, otherwise fruit- and nectar-dependent animals would not survive to perform their dispersal and pollination duties. Summer rains, therefore, also instigate flowering. Golden penda



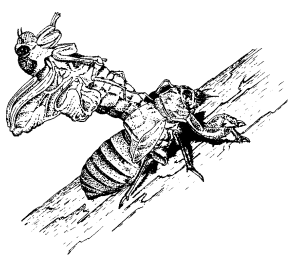
Golden penda

Insects thrive in response to summer warmth, humidity and rain, their rush to breed forming the basis of a flourishing food chain which includes frogs, fish, insectivorous bats, birds and reptiles in its links.

A shower on a humid evening may inspire winged **termites** to spill out from their nests. Appearing in sudden clouds, most of these sexually active adults have a limited future. Birds wheel and swoop, darting at the winged bonanza. Those termites which escape lose their wings when they fall to the ground but, if they are able to mate, may establish a new colony.

Beetles, their development from larvae accelerated by summery conditions, become suddenly abundant at the beginning of the wet season. The timing of their appearance has led to many being called Christmas beetles, but this title belongs not to one species but to several, each area having its own 'Christmas beetle'. Flower scarabs are particularly noticeable as they fly by day, buzzing in large numbers around blossoming plants.

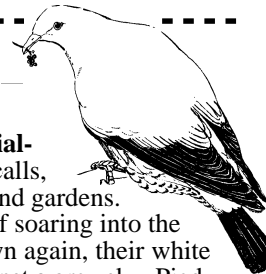
Having spent years living below ground, **cicada** larvae respond to warm humid weather by climbing up vertical supports and splitting out of their skins as winged adults. Summer days can be dominated by the deafening sound of singing males. They can only perform if the air temperature is high enough and fall silent when it drops below a certain level.



"There is no such thing as the wrong weather, just the wrong clothes," Billy Connolly.

Some birds visit the wet tropics only at this time of year, to breed.

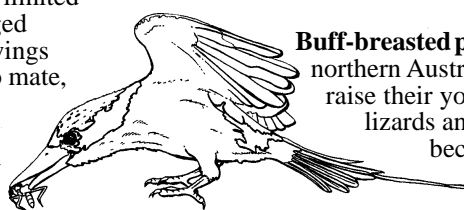
Beautiful white and black **pied imperial-pigeons**, with their soothing cooing calls, are a summer feature of our forests and gardens. These birds have a delightful habit of soaring into the sky and then suddenly dropping down again, their white plumage sometimes highlighted against a grey sky. Pied imperial-pigeons disappear at the end of the wet season, having come to Australia from New Guinea to take advantage of fruiting trees and predator-free offshore islands for nesting. The parent birds take it in turns to visit the mainland to feed each day, one staying with the egg or chick. In the evening large flocks can be seen winging their way home. In the past these flocks were truly enormous, but shooting and rainforest clearing have seen a dramatic decline in their numbers with only a few hundred nesting in places where once there were up to 100000.



Metallic starlings, with black iridescent plumage and prominent red eyes, dash at breakneck speed from fruiting tree to fruiting tree in exuberant flocks, sometimes hurtling low along streets at such speed that pedestrians, cyclists and drivers alike are inclined to duck and cringe, certain they will be hit. These sociable birds build colonies of messy, globular nests, often dangling by the hundred from street

trees. Their lively comings and goings and noisy chattering are a prominent feature of summer in the tropics.

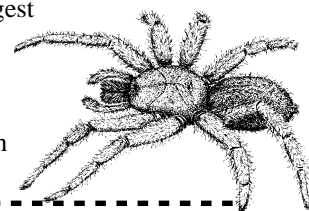
Although most starlings return to New Guinea by April, some can be seen in the wet tropics through much of the winter. These may be juvenile birds, or they may be starlings which nest further south and as part of the northwards migration fly only as far as the wet tropics for winter.



Buff-breasted paradise-kingfishers fly to northern Australia from New Guinea to raise their young on the insects, frogs, lizards and snails which suddenly become bountiful in the wet season.

Heavy rains can cause **subterranean creatures** to make an unexpected appearance above ground. Blind snakes (see p3) and worms slide out of their flooded burrows to avoid drowning. Walkers in upland rainforests may come across the extraordinary Queensland blue worm which can grow to 60cm with a 2cm diameter, although there are reports of some individuals reaching two metres in length. It varies in colour from turquoise to grey-blue.

Whistling spiders are also forced out of their burrows by flooding and may wander into houses to give the occupants a fright. Australia's largest spiders, they normally stay out of sight during the day in metre-deep silk-lined burrows. Although their bite is not considered life-threatening, it can be painful and cause sickness.

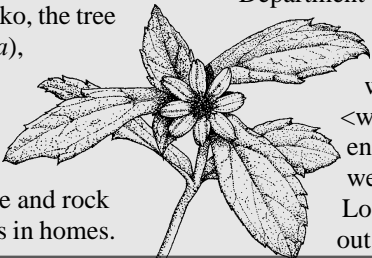


QUESTIONS & ANSWERS

Q We live in Brisbane. As a kid I remember dark-coloured geckos that made little or no sound. The ones we have here (only this year) are very pale, almost translucent, and make a very loud chirping sound. What’s the difference? I’ve heard that the pale ones are imports (from I-don’t-know-where) and the dark ones are native.

A The house gecko (*Hemidactylus frenatus*) is an imported species which may have entered Australia from south-east Asia before Europeans arrived. However, its ability to hitch a ride on vehicles and with freight has enabled it to spread more rapidly in recent times and it now lives in most coastal towns in northern Australia, including Brisbane. It seems to be totally dependent on human habitation, disappearing from abandoned houses. This particular gecko can change colour quite dramatically from very pale at night to fawn or grey, with flecks and mottling, during the day. It can be distinguished from native geckos by the small spines on the sides of its tail and its loud chattering call. This is probably the gecko you are finding in your house.

A similar native gecko, the tree dtella (*Gehyra dubia*), also known as the dubious dtella, has a much softer call. Although its natural habitat is tree and rock crevices, it also lives in homes.



Singapore daisy

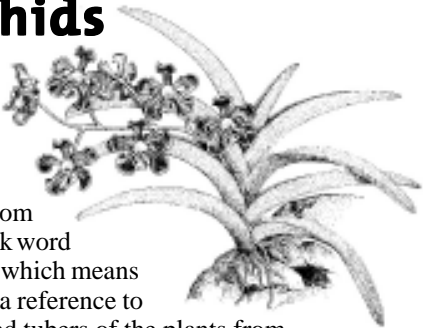
Q Is there anything you can do to prevent the spreading of Singapore daisies?

A A strong herbicide, Metsulfuron methyl, is said to work, sprayed on leaves at a rate of 10g/100L water with an added wetting agent. This chemical is sold by the brand name of ‘Brush Off’. However, it is not really desirable to spray toxins, particularly near water (and Singapore daisy loves creek banks) or where frogs venture. A local scientist claims to have had great success by spraying the plant regularly with his own urine, so that may well be worth a try. Otherwise, you can try pulling the runners out physically, repeatedly. Take care when mowing or slashing and with disposal, otherwise you may spread the problem. Either burn waste or leave it in a black plastic bag in direct sun for a few days before adding to the refuse bin. Singapore daisy does not grow well in shade, so you could try a combination of shading and physical removal.

A series of weed control sheets, produced as a joint effort by the Wet Tropics Management Authority and the Queensland Government’s Department of Natural Resources and Mines, are available on a CD and from the website <www.nrm.qld.gov.au/pests/environmental_weeds/weed_info_series.html> Local councils can print them out on request.

Sideline
Orchids

The word ‘orchid’ comes from the Greek word ‘*orchis*’ which means testicle, a reference to the paired tubers of the plants from which the group got its name, about 2300 years ago. This is one of the largest of flowering plant families with at least 230 species found in the wet tropics. They grow in a wide variety of situations, some of them on the ground and some as epiphytes on trees or on rocks (lithophytes).

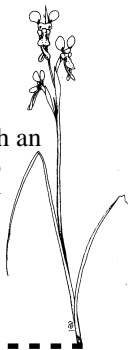


Many orchids are pollinated by insects which are provided with special ‘landing platforms’ on the flowers. The labellum (lip), as this is called, is actually part of the top of the flower but, in most species, the flower twists round during development so that the labellum is more conveniently situated for visiting insects.

Some orchids use sexual deception to trick male insects into visiting them. They mimic the shape and scent of female insects and deposit packets of pollen on males which are fooled into trying to mate with them. Presumably they are slow to learn, because they then carry this to the next flower, performing sexual services for the orchid instead.

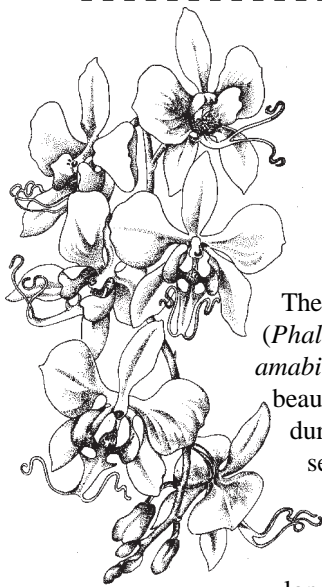
One seed capsule may contain as many as four million tiny seeds, as fine as dust. Unlike the seeds of other plants they do not contain any nutrients for the germinating plant. Instead, the seed must meet up with a mycorrhizal fungus. The two set up a mutually beneficial relationship without which the orchid seed would not germinate and grow. Only a small proportion of the seeds gets lucky.

Epiphytic orchids have roots with an outer spongy layer of cells, up to 18 layers thick, which can rapidly absorb water. Mycorrhizal fungi may also reside there. Swollen stems, and some leaves, store water and food reserves.



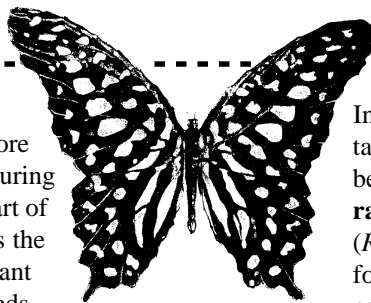
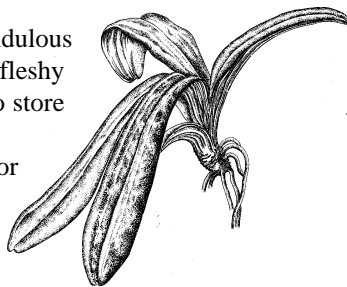
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Out and about



The **moth orchid** (*Phalaenopsis amabilis*) produces its beautiful flowers during the wet season, from about December to April. Borne densely on a long, arching stem, each flower measures up to 8cm across. The broad, flat petals, which are thought to resemble a moth's wings, are pure white with a little yellow on the lip.

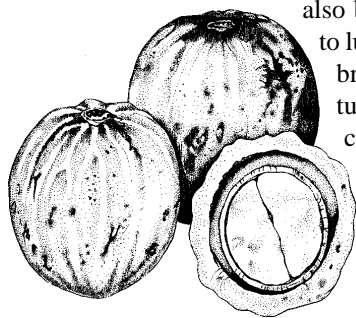
Large, pendulous leaves are fleshy and able to store water and nutrients for the plant. These orchids are epiphytes, growing in partial shade on the lower branches of rainforest trees and sometimes, as lithophytes, on rocks in areas of high rainfall. They are found in lowland rainforests and on lower slopes in the wet tropics as well as at Iron Range and the McIlwraith Range of Cape York Peninsula and in New Guinea.



Butterflies become more common during the first part of the year as the flush of plant growth feeds increasing numbers of caterpillars.

Green spotted triangle butterflies are most frequently seen from January to May. This is a tropical butterfly, found only north of Mackay to the Torres Strait in Australia. It also lives in New Guinea and in south-east Asia, through to India. Living mainly in the rainforest, this butterfly flies with a distinctive rapid, nervous manner, pausing for only a moment to sip nectar from a flower before fluttering off again. Male and female look alike, their black wings heavily marked with bright green. The lower surfaces are duller, with some red spots. Caterpillars feed on a number of plants in the Annonaceae family, notably fairies basket (*Pseuduvaria froggattii*) as well as cultivated custard apple and sour sop trees.

Toxic fruits of **Queensland walnut**, also known as the black walnut (*Endiandra palmerstonii*) ripen between December and April. This large tree, with a spreading canopy, grows in lowland and upland rainforests between Tully and Cairns and produces excellent timber. The fruits, which are about 6cm across, are green to red and ribbed. They contain a large seed which, although poisonous, is an important traditional Aboriginal food. After correct processing and cooking it is said to taste like bread. The ground seeds could



also be used to lure brush-turkeys for capture.

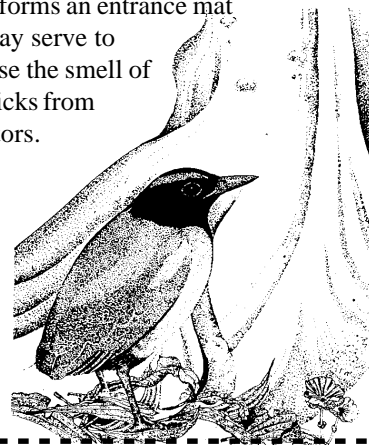
In spring and summer tasty red fruit can be found on **native raspberry** bushes

(*Rubus* spp). This plant often takes the form of a scrambling shrub, its branches covered with small thorns, and tends to grow in disturbed forests and roadsides. White flowers are followed by the raspberries which are popular with birds. The leaves often have a metallic, bronze sheen on the underside. Several species are native to Australia but one import, *Rubus alceifolius*, from south-east Asia, has been declared a weed due to its aggressive lantana-like growth habit and tendency to choke tracks and rainforest edges.



The call of the **noisy pitta** is seen as heralding rain. Sounding like a questioning 'walk-to-work?', the call is usually repeated twice, pairs using it to keep in contact in the dense forest. This call is the best indication that these lovely birds are around, although they fall silent after the breeding season. In spite of their quite colourful plumage they are very unobtrusive as they fossick around the forest floor in search of invertebrates. Piles of empty snail shells are an indication of pitta presence, the birds bashing them open on favourite stones or pieces of wood.

Pairs nest during the early wet season, building a domed construction usually on the ground and often in the buttresses of trees. Sometimes a patch of moist mammal dung, collected by the birds, forms an entrance mat and may serve to disguise the smell of the chicks from predators.



Tropical Topics on the web

Some recent issues of Tropical Topics are now available on line, on the Environmental Protection Agency website. These are issue 64 and issues 68 – 80. They can be found at:

<www.epa.qld.gov.au/parks_and_forests/world_heritage_areas/wet_tropics/>

BOOKSHELF

A Year in Australia's Tropical Rainforests

Stanley Breeden with illustrations by William Cooper
Simon & Schuster Australia (1992)
This personal diary, with exquisite illustrations, captures the natural events of the wet season.

Freshwater fishes of Far North Queensland

Brett Herbert & John Peeters
DPI Queensland (1995)
An informative guide to the fish of the wet tropics.

Reader's Digest Complete Book of Australian Birds

Reader's Digest (1993)
This book provides detailed information on bird behaviour and breeding.

Australian frogs:

A natural history
Michael J. Tyler
Reed Books (1994)
This book is full of information about frog behaviour and habits.

Australian snakes:

A natural history
Richard Shine
Reed Books (1994)

Tropical orchids of Australia

P.S. Lavarack and B. Gray
Thomas Nelson (1985)
This is a general book on tropical orchids with details of 25 choice species.

Native orchids of Australia

David L. Jones
Reed Books (1988)
This book has an introduction to the

biology and cultivation of orchids and descriptions of all known species.

Australian indigenous orchids (two volumes)

A.W. Dockrill
Surrey Beatty and Sons (1992)
There are descriptions and drawings of all Australian orchids.

DNR&M pest fact sheets

Siam weed

Quarantine pocket guide

Northern Australia Quarantine Strategy
This is a guide to pests, diseases and weeds, including Siam weed, which may be found in northern Australia.

Website

The Bureau of Meteorology website has a wealth of information about weather and climate. See: www.bom.gov.au

Opinions expressed in *Tropical Topics* are not necessarily those of the Environmental Protection Agency.

While all efforts have been made to verify facts, the Environmental Protection Agency takes no responsibility for the accuracy of information supplied in *Tropical Topics*.

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