



**Wet Tropics of Queensland
World Heritage Area
TOUR GUIDE HANDBOOK**
Compiled by Julie Carmody



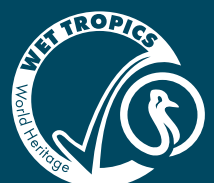
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Tour Guide Program

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About the Wet Tropics Tour Guide Program

The Wet Tropics Tour Guide Program provides a network for ongoing professional development and is open to anyone with an interest in presenting the unique qualities and values of the Wet Tropic World Heritage Area.

The program includes Field Schools and Workshops, an Online Training Course and network communications. Tour guides who complete the Online Course and attend one full Field School are eligible to become Wet Tropics Tour Guides. The Wet Tropics Tour Guide Program is delivered by Savannah Guides.

More information:

 www.wettropics.gov.au/tour-guide-training
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Maps

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Visitor Information Centres

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Traditional Owners

Jabalbina Yalanji Aboriginal Corporation, Mamu Aboriginal Corporation, Ngadjon Mitcha Jimmar-Mar Aboriginal Corporation, Malanbarra and Dulabed Yidinji, Djabugay Tribal Aboriginal Corporation and Dulguburra Yidinji Clan Group.

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1.0 | INTRODUCTION

The Wet Tropics of Queensland World Heritage Area and the Great Barrier Reef Marine Park are two exceptional World Heritage listed natural assets adjacent to each other in north Queensland, Australia.

The purpose of this handbook is to provide tour guides and interested others with information to aid in the delivery of interpretive information located at visitor sites within the Wet Tropics rainforests. There are more than 100 visitor sites in the Wet Tropics and this handbook provides site-specific information for 27 sites with high and low visitation.

Additional information provided in the handbook succinctly explains the reasons for World Heritage listing, the evolution and geological formation of the Wet Tropics, the criteria for a rainforest to be a rainforest, information for tour guides, information on the nasties to be aware of, and an explanation of the benefits of ecotourism.

The following information is provided for each site:

- **Site Location and Facilities** available;
- **Quick Facts:** Short snippets summarising the interpretative information included in the relevant section for each site;
- **Aboriginal History:** Information provided by traditional owners of the Wet Tropics regions. Please respect their land and stories. Further information can be obtained by contacting the Aboriginal tours or corporations listed for the site or by contacting the Wet Tropics Management Authority.
- **European History:** Information of an historical nature after European settlement including the origins of place names is provided;
- **Flora and Fauna:** Scientific names are provided for those who are interested;
- **Geology:** Much of the Wet Tropics is part of the Hodgkins Basin, therefore a section on the geological formation of the Wet Tropics of Queensland World Heritage Area can be found in Section 1.
- **Other Information:** Any other interesting information specific to the site is provided. For example, the outstanding mangrove environment at Marrdja Boardwalk is explained.

1.1 | Why are the Wet Tropics Rainforests World Heritage Listed?

The Wet Tropics of Queensland World Heritage Area (WTQWHA) was inscribed on the **UNESCO World Heritage List** in 1988 and covers an area of 894,420 hectares. The WTQWHA boundary measures approximately 3,000 kilometres.

The Wet Tropics fulfils four criteria for inclusion on the World Heritage List as a 'natural heritage' as defined under the World Heritage Convention:

- I. It contains superlative natural phenomena of exceptional natural beauty and aesthetic importance;
- II. It has outstanding examples representing the major stages of the earth's evolutionary history;
- III. It has outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial ecosystems and communities of plants; and
- IV. It has the most important and significant habitats for in situ conservation of biological diversity, including those containing threatened species.

(Goosem, 2002)



TROPICAL RAINFOREST
(PHOTO: WTMA)

The Wet Tropics of Queensland World Heritage Area was also listed on the **National Heritage List** for its natural and cultural attributes on 21 May 2008 for the following criteria:

- I. The place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history;
- II. The place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history;
- III. The place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history;
- IV. The place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:
 - a. a class of Australia's natural or cultural places; or
 - b. a class of Australia's natural or cultural environments;
- V. The place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.

Outstanding Values of the Wet Tropics

As a percentage of Australia's species, the Wet Tropics contains:

- 35% of all mammals
- 30% of all marsupials
- 100% of all monotremes
- 58% of all bats
- 25% of all rodents
- 40% of all birds
- 20% of all reptiles
- 29% of all frogs
- 58% of all butterflies
- 42% of all freshwater fish
- 65% of all ferns
- 30% of all orchids
- 37% of all conifers
- 12 out of 19 primitive flowering plant families (the Angiosperms) are found in the Wet Tropics

Did you know?

- ☞ More than 20 frog species are endemic to the Wet Tropics, many confined to very small areas. Due to their inflatable vocal sac below their lower jaw, only male frogs are able to call.
- ☞ The Wet Tropics has Australia's highest diversity of rainforest mammals, with 35% of Australia's mammal species found here including Australia's two monotremes, the platypus and echidna, 41 marsupials, 15 rodents and 36 bats.
- ☞ There are 162 species of reptiles in the Wet Tropics. They range from skinks measuring just four centimetres, to the country's largest reptile, the crocodile, which grows up to six metres long.
- ☞ There are 4 species of freshwater turtle in the Wet Tropics (eastern snake-necked turtle, saw-shelled turtle, snapping turtle, and Krefft's short-necked turtle). The most commonly seen is the saw-shelled Turtle.

1.2 | Evolution of the Wet Tropics

One of the reasons for the World Heritage listing of the Wet Tropics is its evolutionary World Heritage values. Although Australia contains less than one-thousandth of the world's tropical rainforests, these forests are some of the most significant ecosystems on earth. The WTQWHA is listed as the oldest surviving tropical rainforest in the world and has undergone many changes, expansions and contractions over time. It represents a major stage of the earth's evolutionary history – almost a complete record of the evolution of plant life on earth and the highest concentration of primitive flowering plant families in the world.

A Wet Tropics Evolutionary Timeline is available at **Appendix A**.

The Gondwana Connection

250 million years ago, every continent was joined into a super-continent known today as Pangaea. Pangaea broke into two smaller land masses known as Laurasia and Gondwana. Australia is part of Gondwana.

180 million years ago, Gondwana started to break apart into smaller continents. Australia finally broke away 50 million years ago. From then on, our plants and animals evolved in isolation from the rest of the world.

20 million years ago, as Australia was slowly moving north (at the same rate our fingernails grow c. 70mm per year), it collided with the Asian plate. This allowed some plants and animals to move between the continents.

120,000 years ago, consecutive ice ages occurred and the sea became ice bound. This caused the gap between Asia and Australia to narrow. The rainforest contracted and expanded while animals either adapted to the conditions or disappeared. The Wet Tropics became a refuge for ancient and unique plants and animals that couldn't survive anywhere else.

Geological Formation of the Wet Tropics

The geological history of the Wet Tropics region is one of dramatic changes interspersed with long periods of gradual, but steady transformation.

The story began about **420 million years ago**, at a time when Australia was still part of the ancient continent of Gondwana. The Australian land mass was very different then. The east coast was about 120-150 km west of the present coastline, running roughly from Cape Melville to west of Charters Towers. A trip

to present day Chillagoe had we been around, would have entailed a boat ride because it was well under the sea – as were present day Cairns, Atherton and Townsville. The coastal section of the Wet Tropics is therefore a relatively recent addition to the ancient Australian continent.

As always in geological processes, a redistribution of land was taking place. Gradually, but persistently, rivers running off the continent were carrying bits of it into the sea in the form of gravel, sand, and clay. This material was being deposited in an undersea basin, known as the Hodgkinson Basin, which lay off the coast possibly between it and another land mass even further to the east. About 160km wide this basin stretched 320km from north to south, roughly from Cooktown to Tully. Over a period of about 60 million years, sediments accumulated in this basin creating beds some 10km thick. Towards the edges, primitive corals and other marine organisms were creating mounds of limestone.

About **360 million years ago** the sediments in the Hodgkinson Basin was caught in a squeeze (see above). Major movements in the earth's crust put them under immense pressure as opposing forces pushed in from east to west. The accumulated sediments were compressed, folded and lifted far above sea level, creating a series of mountain ranges that would rival today's Andes or Himalayas in height. Coastal limestone accumulations were pushed up near to the old continent and can be seen today in the limestone formation of Chillagoe. Other sediments – sand, mud and gravel – formed the other mountain ranges, the immense pressure and heat transforming them in the process into tougher metamorphic rocks. These are the rocks which form much of the landscape we see in the Wet Tropics today.

From about **310 to 260 million years ago**, other events deep in the earth's crust caused further changes in the landscape. It is difficult to imagine rocks acting like liquids, but from time to time large pools of molten rock (magma) pushed up into the crust from as far as 50 km below the earth's surface. Less dense, and therefore more buoyant than the rocks above it, the magma squeezed up through them. In many places this material did not make it to the surface but slowly cooled and solidified to form bodies of granite deep underground. In the southern and western parts of the Wet Tropics some of the magma reached the surface, erupting explosively as volcanoes and spreading volcanic dust, ash and debris far and wide. This cooled rapidly to form hard rock known as tuff.

For over 100 million years there were no dramatic geological changes in the Wet tropics region. The mountains of the northeast coast continued to rise but were also subjected to the persistent processes of erosion. Rocks were broken down into sediments and carried by rivers to the sea. Gradually the granite, once deep below the surface was exposed, as rocks covering it were removed.

During this period Gondwana was breaking apart and Australia was drifting north. At that time the Australian continent extended much further east than it does now and included parts of New Zealand.

Then, about **100 to 67 million years ago**, movements in the molten mantle, deep below the earth's surface, stretched the continental crust above: it was pushed up, and like the crust of a cake rising in the oven, eventually cracked under the strain and broke into blocks. Some of these blocks sank below sea level – one forming the floor of the Coral Sea basin; another formed the Queensland Trough, a deep trench at the edge of the continental shelf. One block however, was raised well above sea level. The cliffs at its edge formed a sharp escarpment at the shoreline running the length of Australia's east coast at the edge of what is now the continental shelf.

Nothing stands still for long in geological time. Falling over the escarpment, eroding rivers continued their gradual but persistent reduction efforts. Little by little it was eaten away and the position of the escarpment shifted further and further west. Those sections with hard granite rock withstood the erosion process better than others. As a result the escarpment lost its linear line and became a wandering edge to the upland tablelands area. Tougher rocks remained as isolated hills and islands, such as the Whitfield Range and Walsh's Pyramid near Cairns, as well as the Fitzroy, Hinchinbrook and Magnetic islands, the Paluma Range, and Castle Hill in Townsville.

Sediments eroded from the higher mountains were (and still are) deposited on lower ground. At first, most would have been dumped over the cliff and straight into the sea, but as a coastal plain was created at the base of the mountains, sediments began to build up. The eastern section of this plain, now known as the continental shelf and partly occupied by the Great Barrier Reef was often dry land. Sea levels have fluctuated dramatically over the last two million years as much of the world's water was captured but the polar ice cap during the various ice ages and then released during interglacial periods. The present sea level is one of the highest on record. The actual size of the coastal plain has varied as the shoreline has advanced and retreated according to sea levels.

The next chapter in the geological story of the Wet Tropics was a violent volcanic one which was felt particularly on the Atherton Tableland. From about seven million years ago, vast amounts of lava flowed from a number of shield volcanoes, spreading over the landscape and cooling to form a dense layer of basalt. Later events were more explosive, creating volcanic cones and craters, which are a feature of the landscape today.

Evolutionary Data

Sediments

Studies of accumulated sediments of volcanic lakes (maars) on the Atherton Tableland have provided one of the longest and most detailed continuous vegetation and climatic records in the world.

Pollen

Fossil pollen records go back over 200,000 years. They have unparalleled continuity and detail for this period. They contain data of entire glacial cycles. The pollen contains direct evidence of plant extinctions in the late Quaternary period.

Biota

The biota of the area relate to eight major stages in the earth's evolutionary history. High endemism is a result of long isolation periods of ancient floras.

Age of the Pteridophytes

After fungi and algae, spore-producing plants such as clubmosses and ferns were amongst the first plants to adapt to life on land. Today, the richest concentration of ferns in Australia is found in the Wet Tropics with 250 fern species, 46 are endemic to this region.

Age of the Conifers and Cycads

Conifers and cycads were the first seed plants to colonise the earth. Australia is home to the world's smallest and tallest cycads. There are three families of cycads in the world and Queensland is the only place where they co-exist. The Wet Tropics contains the most ancient lineages of the conifers. Thirty-seven percent of Australia's species are found here and five of the 14 species are Wet Tropics endemics.

Age of the Angiosperms

Of the 19 angiosperm families described as 'primitive', 12 occur in the Wet Tropics, the highest concentration on Earth.

Break-up of Gondwanaland

There are many groups of fauna and flora are regarded as likely to be relics of Gondwana when it finally broke apart. Of these, two families of frogs, some geckos, and birds including the cassowary are thought to have Gondwanan origins.

Biological evolution and radiation during 35 million years of isolation

With isolation, marsupials evolved to occupy all niches, placental mammals

occupied the rest of the world. Resembling the placental mammals found elsewhere in the world, this occurred through convergent or parallel evolution.

Origin and radiation of songbirds

Evidence suggests that the world's songbirds evolved from Australian ancestors. Many of today's songbirds, such as bowerbirds and logrunners hold clues to this linkage.

Mixing of the continental biota of the Australian and Asian continental plates

The collision of the Australian and Asian continental plates brought together flora and fauna thought to be of common origin, but these had been evolving in isolation for at least 80 million years. Species that are thought to have arrived in Australia due to this collision include the yellow-bellied sunbird, placental mammals such as bats and rats, frogs and some plants.

Extreme effects of the Pleistocene glacial periods on tropical rainforest vegetation

During the Pleistocene glacial periods, the rainforest contracted rigorously causing extinctions, speciation, and changes in flora and fauna distributions. Sea levels also dropped low enough to allow ancestors of Australia's Aboriginal people to first arrive.

The Evolution of Unusual Species in the Wet Tropics

Musky Rat-kangaroo

The most primitive of the living kangaroos and the only extant member of its group today.

Marsupials

The ancestors of today's marsupials were giant possums, carnivorous kangaroos and marsupial lions.

Kangaroos

Evolved from possum ancestors and colonised the plains. Tree kangaroos went out on an evolutionary limb and became more specialised, returning to the trees.

Dry-adapted plants

More than 700 dry-adapted species such as eucalypts, banksias and grevilleas evolved from rainforest plants.



MUSKY RAT-KANGAROO
(PHOTO: WTMA)



PLATYPUS
(PHOTO: WTMA)

Platypus

The egg-laying platypus and echidna evolved in the rainforests of Gondwana, but due to their unique specialisation, travel to a dead end in the path of evolution.

Crocodile

The bones of an ancient species of crocodile (including arboreal species) from 40 million years ago were uncovered in Australia's tropics. This species is thought to have died out five million years ago due to climate change when evolution favoured the modern-day crocodile.

Ancient Plants

The Wet Tropics is inhabited by plants of very ancient lineage, extinct in most other parts of the world. Many plants found in the area are little changed from those which inhabited the forests of Gondwana. Of the 19 known families of flowering plants considered to have botanically primitive characters, 12 are found in the Wet Tropics making it the most significant area on earth for primitive flowering plants. By contrast, in all the vast tropical forests of South America there are only nine primitive families. (These statistics change every so often when botanists alter the way plants are grouped).

Ancient *Glossopteris* – Today's tree ferns and basket ferns

After the ice age which climaxed at the end of the Carboniferous period, approximately 285 million years ago, the climate warmed, allowing cool temperate swamps to form. These swamps heralded the Age of Ferns and supported abundant plant communities such as those in New South Wales which later formed huge coal deposits. In Australia today the richest concentration of ferns is found in the Wet Tropics. **Cooper's Tree Fern** (*Cyathea cooperi*), **Rebecca's Tree Fern** (*Cyathea rebecca*), the **Basket Fern** (*Drynaria rigidula*), the **Rough Maidenhair Fern** (*Adiantum hispidulum*) and the **King Fern** (*Angiopteris evecta*) are some examples of relict species from the Age of Ferns growing in the Daintree coast today.

Ancient Gymnosperms – Today's Kauris, Podocarps and Cycads

The early conifers first appear in the fossil record before the cycads at around 280 million years ago and joined with the cycads to form what is known as the Age of Gymnosperms. By the last Permian period 240 million years ago, plants were evolving root systems and colonising the drier hillsides away from the swamps. These were the early conifer, ginkgo and cycad ancestors. Cycads resemble palms, but are not related. Palms are flowering plants (Angiosperms), whereas cycads are non-flowering plants (Gymnosperms, literally meaning 'naked seed').

Cycads produce male and female cones on separate plants and the sperm in the pollen grain of the male has a tail like that in animal sperm. Once transferred to the female cone it swims to the egg in the female seed to fertilise it. This habit does not persist in the flowering plants. There are three families of cycads in the world and Queensland is the only place where they co-exist.

The seed cones of the **Zamia Palm** (*Lepidozamia hopei*) are huge – up to a metre long. The cones contain scores of seeds which are used as a food source for humans, even though they are toxic. Australian Aborigines found they could eat Zamia Palm seeds after careful preparation. One method is to bake the seeds in hot ashes for about 30 minutes, cut them in half, and then soak them in running water for 6-20 days. You wonder how much trial and error went on before they got the recipe right!

The **Zamia Fern** (*Bowenia spectabilis*) is the most toxic of cycads, but bush rodents still manage to eat its seeds. Until recently it was thought that cycads were wind-pollinated and this was probably the case during the early evolution of the group, but research has revealed that insects are the likely pollinators. *Bowenias* are pollinated by a weevil that lives only in the male cone, but visits seeds in the female cone to drink a sugar-rich drop on the ovule and in doing so, transfers pollen to it. The cycad cones are made more obvious to the wandering weevils by being thermogenic – they burn starch reserves to raise their temperature. Settlers obtained starch from the trunks of cycads for adhesive paste and laundry starch and considered it superior to the starch from rice or corn.

Primitive Flowering Plants

The **12 families of primitive flowering plants** found in the Wet Tropics are Annonaceae, Austrobaileyaceae, Eupomatiaceae, Hernandiaceae, Gyrocarpaceae, Himantandraceae, Idiospermaceae, Lauraceae, Monimiaceae (including Atherospermataceae), Myristicaceae, Trimeniaceae and Winteraceae families.

Basic differences between primitive flowering plants and advanced flowering plants:

- Flowers of primitive plants may be either male or female with flowers of one sex occurring on either a male or female plant, and usually grow singly in the leaf axil (the fork formed by the twig and leaf stalk).
- Plants of more 'advanced' species carry both sexes of flowers on the one individual plant, and the flowers grow in inflorescences (which are clusters of many flowers arranged in a variety of positions).
- Primitive floral parts (calyx, ovary, petals, stamens, pistil) are arranged spirally, whereas advanced floral parts are arranged in a circle around a central axis.
- Primitive leaf shapes are simple. Advanced leaf shapes are often compound.
- Advanced flowers are usually able to be pollinated by a variety of pollinators, whereas primitive flowers are often restricted to a specific pollinator.

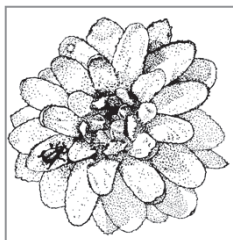
Some interesting 'primitive' flowering plants



Macassar Oil Tree, Perfume Tree, Ylang Ylang (*Cananga odorata*)

Family: *Annonaceae*

The yellow/pale greenish coloured flowers of the Ylang Ylang could be mistaken for unusual leaves, but their fragrance is delightful. In Malaysia the flowers are sold in markets. In Tahiti they are often used in leis instead of frangipanis and the trees are grown in plantations for the production of perfume.



Bolwarra (*Eupomatia laurina*)

Family: *Eupomatiaceae*

Bolwarra belongs to one of the oldest groups of flowering plants. The flowering process is fascinating. It is pollinated by beetles, as are magnolias, waterlilies and many other primitive flowering plants. Each waxy, creamy white flower opens for just two days in spring or summer. Flowering begins early on Day 1, when the cap slips off the flower which slowly opens to expose the female reproductive organs. The flower gives off a pleasant musky fragrance, a great drawcard for Elascodys beetles, which swarm in, crowding into the centre of the flower to feed, carrying pollen from other *Eupomatias* to fertilise this one. At the end of the day,

the 'petals' (most of which are actually fleshy sterile stamens called staminodes) slowly close over, marking the end of the flower's female phase. Day 2 is the male phase – the flower opens again to expose pollen for beetles to carry off to other flowers. By the end of the second day the whole process is over. The top of the flower falls to the ground, leaving the basal portion to develop into a many seeded fruit eaten by a variety of birds.

Sea Hearse (*Hernandia nymphaeifolia*; Syn: *Hernandia peltata*)

Family: *Hernandiaceae*

Although Sea Hearse trees are not common along the shore, they are very distinctive. The leaf is egg-shaped but tapers to a point and has its stalk inserted some distance from the margin (peltate). In the sprays of small flowers each female flower is flanked by two males. The fruit is a hard, black rounded structure marked with longitudinal ridges. Surrounding it is the particularly distinctive feature of the plant – a loose smooth cream envelope with a circular opening at the top through which the black fruit can be seen; this structure suggesting a carved coffin surrounded by a pale shroud, hence the unusual common name. The name 'Sea Hearse' is also used in Malaysia for a very closely related species.

Ribbonwood (*Idiospermum australiense*)

Family: *Idiospermaceae* or *Calycanthaceae*

This species occurs in two main populations – one south of Cairns in the Bellenden Ker region and the other along the Daintree coast. Research shows that the two populations are probably evolving on different lines; the Daintree coast population could be on their way to having trees of separate sexes. The flowers are like 'singles bars' for insects. Attracted by the bright colours and sweet scent, tiny beetles and thrips gather and squeeze their way into the centre of the blossom. Here they find a nice safe enclosed area, full of tasty pollen. Out of sight of predators, they can carry out their mating rituals and lay their eggs. When the eggs hatch, the larvae will have pollen and delicate flower tissues on which to feed. As the adults move around inside the flower, they pick up some of the sticky pollen and pass it on to the next receptive flower.



RIBBONWOOD
(PHOTO: WTMA)

Queensland Nutmeg (*Myristica globulosa* subsp. *muelleri*)

Family: *Myristicaceae*

Myristica is a genus containing only three species in the Wet Tropics, one of which we know as the **Queensland Nutmeg**. The rust coloured, egg-shaped fruit, 20 mm (¾ inch) in size, is the favourite food of the Pied Imperial Pigeon, hence its scientific name. Queensland Nutmeg (*Myristica globulosa* subsp. *muelleri*) could be used for the commercial production of the spice nutmeg but a similar species from the Solomon Islands is used instead. *Myristica fragrans* from the Moluccas yields the commercial spices nutmeg (seeds) and mace (arils). This 15

metre (50 foot) tree is another example of a primitive flowering plant, and has separate trees for male and female flowers. *Myristica ducula bicolor*, the scientific name of the **Torres Strait or Pied Imperial Pigeon** means ‘eater of Myristica’ or put more commonly, ‘eater of nutmeg’.

1.3 | What is a Rainforest?

The word ‘rainforest’ is an umbrella term for a great variety of forest types with different structures and collections of species. The forest type is dictated by environmental parameters such as altitude, soil composition, amount of rainfall and drainage. The rainforests in the Wet Tropics cross three major landscape types: the uplands and tablelands of the Great Dividing Range, the intermediate eastern escarpment, and the lowland coastal plain. Rainforests are closed, moisture loving communities of closely spaced trees. Rainforests differ from other closed canopy forests because of their abundance of epiphytes and lianes, the absence of herbs and grasses, and the amazing complexity of species. It is estimated that complex rainforests take 500 years to reach climax and once there, remain essentially the same and are self-perpetuating.

Most rainforest animals are only active during dawn and dusk, otherwise they are nocturnal. This is because the rainforest is usually so hot and humid during the day.

The Makings of a Rainforest

Rainforests generally experience:

- More than 1,500 mm rainfall annually, with rain patterns distributed fairly evenly throughout the year.
- Temperatures of at least 18°C daily without great fluctuations.
- Well drained, but generally infertile soils – most of the nutrients are held by the organic matter close to the surface.
- Excellent levels of sunlight in the canopy, but less than 15% of light penetrates the forest floor.

Rainforest Mechanics

Rainforest is dense, moisture dependent vegetation in which a variety of shade-tolerant plants grow beneath an almost closed canopy. Plant survival in the rainforest is not as easy it seems. Life in the Wet Tropics poses its own

challenges – high rainfall, intense sunlight, soils leached of nutrients, competition for food and light, and the occasional cyclone. The rainforest canopy is an interlocking network of sun-hungry leaves so dense that less than 15% of light penetrates through to the forest floor. Like the best solar panels, leaves tilt through the day to the most efficient light-catching position.

The leaves are sugar factories. Chlorophyll converts the sun's energy, splitting carbon and carbon dioxide to make glucose (sugar). Glucose fuels the plant and is the building block of cellulose from which the plant shapes its trunks, roots, branches, fruits and flowers. Leaves require lots of water to make sugar. During summer when sunlight is intense, transpiration is high and soils are saturated, these **giant rainforest trees can pump over 2,000 litres of water per day** back up to the canopy (Wet Tropics Management Authority, 2004).

'Rainforest' is any forest where some of these special plant forms occur:

Buttresses

Buttresses are the distinctive flanges at the bases of large rainforest trees. Trees are buttressed only in tropical and subtropical forests. Buttresses probably help trees breathe in waterlogged soil and enable them to take up nutrients from shallow soils. Buttress roots also support the tree.

Epiphytes

An epiphyte grows on another plant for support or anchorage. Epiphytes live in rainwater that is washed down tree trunks, and nutrients from animal droppings and rotting leaves. Orchids, ferns, mosses, and lichens are epiphytes.

Lianas

Lianas are climbing vines which grow from ground roots but use other plants for anchorage as they climb towards the sunlight. Extra nourishment comes from rainwater and rotting vegetation trapped in trunk crevices.

Strangler Figs

Strangler figs start from seed dropped in humus high in a canopy tree. They then send down prop roots which thicken, interlace, join and gradually strangle the host tree to death. This process can take 500 to 1,000 years.

Cauliflory

Cauliflory describes a cauliflower-like mass of flowers and fruit that grows directly from the trunk, branch or roots of a tree. As a result, birds, fruit bats and possums readily pollinate the flowers and disperse the seed once again allowing the species to flourish.

Palms

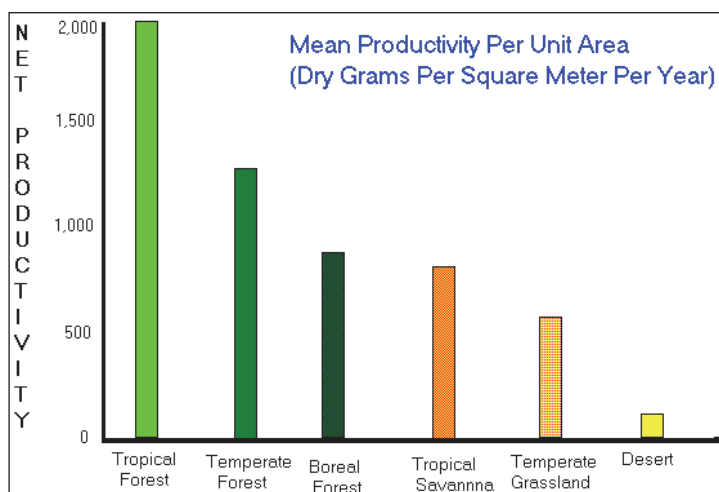
Palms with woody stems and few or no branches and surface roots at the trunk base grow typically in moist places of the rainforest.

[Source: Queensland Parks and Wildlife Service brochure, 'The nature of Queensland: rainforest', September, 2001]

Pedogenesis, or soil evolution, is the process by which soil is created. Leaf matter decomposes on the rainforest floor, creating nutrient-rich soil matter. This allows a sapling to quickly grow. For a young sapling, the bigger its leaves, the better are its chances of gathering light. Some forest trees produce young leaves which are very different from the mature leaves.

Photoflux density is the study of light levels through the rainforest canopy. The architecture of the forest is determined by the fierce competition for sunlight. Stretching high on tall straight trunks, trees don't waste energy on producing branches until they reach the canopy and are able to compete successfully with their neighbours for available light. The canopy is an interlocking network of sun-hungry leaves allowing only 3-15% of sunlight to penetrate. Each leaf is a solar cell. Although 75-80% of the sunlight that falls on a leaf is absorbed, only about 10% is actually captured by the chlorophyll and turned into energy (Tropical Topics, 1992, Vol. 1, 5).

Net biomass productivity is the difference between gross productivity (production of plant material by photosynthesis) and respiration. So long as the rate of production exceeds that of respiration, the plant will grow. Net productivity represents the amount of organic material produced by a plant and is closely related to a number of environmental factors such as climate, soils, and available nutrients. Net biomass production will be highest where there is an ample supply of moisture to meet the needs of plants. Biomass productivity is also high where soils are rich in nutrients and have a positive soil moisture balance. The figure below illustrates this well. With ample rainfall and sunlight, the tropical rain forest ranks the highest in terms of organic matter production.



REACH FOR THE SKY

Whether they are stretchers, climbers, jumpers, hitchhikers or sunfleck gatherers, all plants are aiming to capture the sun's rays. Here are some of the different strategies they use to reach for the sky.

Staghorn fern

This epiphytic fern has two distinct leaf types. 'Shield' leaves, which are green at first but become brown, are purely structural. They hold the plant in place and contain the roots. As new 'shields' grow on the outside, older ones decompose and provide food for the roots inside. The longer green leaves photosynthesise and produce spore— 'seeds' for the next generation.

Orchid

Many orchids are epiphytes. Their roots have a spongy sheath of special cells up to 18 layers thick which can absorb water and nutrients rapidly, taking advantage of a shower of rain or cloud or mist. Some orchids are leafless but have green roots which photosynthesise.

Basket fern

Surrounding a tree trunk. The brown bracket, or 'nest' leaves hold the plant together and trap leaf litter for food.

Woody liane

Often all we can see of the numerous lianes are woody stems heading up towards the canopy - they seem to have climbed up without visible support. Actually, as young plants they have wound themselves around saplings which have since died and disappeared. The evidence is the empty woody coils.

Bird's-nest fern

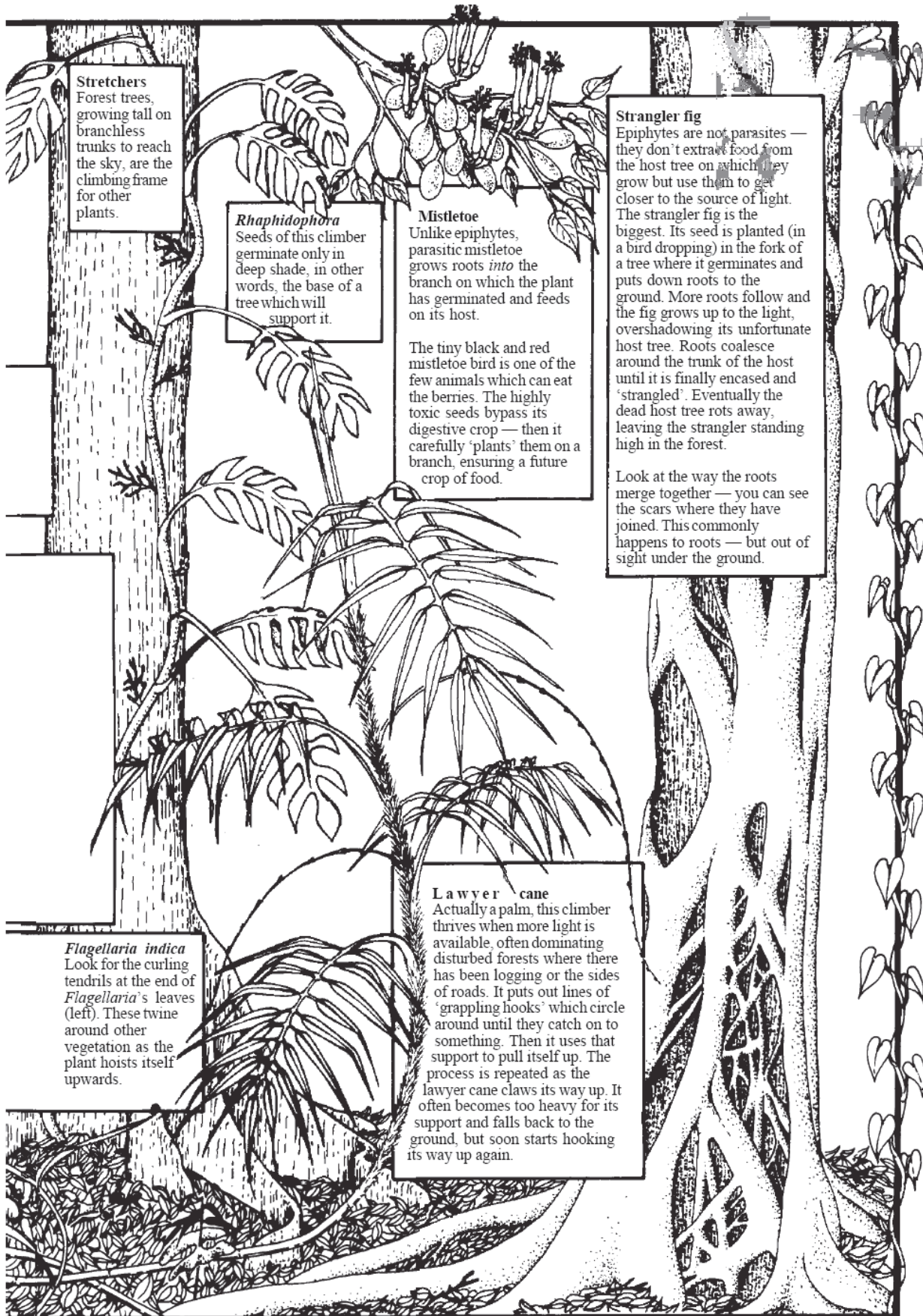
Another epiphyte commonly seen on the branches of forest trees. The leaves are arranged in a funnel to collect falling leaves, which provide it with nutrients, and moisture.

Pothos longipes

To make the best of low light levels, this plant produces what look like double leaves. In fact, each 'leaf' consists of a flattened stem, containing chlorophyll for the process of photosynthesis, and a proper leaf. It climbs up trunks using little claw-shaped rootlets. It is possible that some climbers using rootlets produce a chemical that adheres to tree bark.

Saplings, ferns and other understorey plants

These shade-loving plants feed on sunflecks.



Leaf Size and Shape

There are rainforest types that are often characterised by their leaf size. Trees, and in general leaves, become smaller as elevation increases, resulting in montane forests on mountain tops where 80% of the leaves are microphyll, measuring 2.5-7.5 cm long.

Microphyll = 2.5-7.5 cm (highlands)

Notophyll = 7.5-12.5 cm (uplands)

Mesophyll = 12.5-25 cm (lowlands)

Most simple leaves have a central 'vein' or midrib from which secondary veins branch off. These veins carry nutrients to and from the tissue of the leaf. The variety of leaf sizes and shapes within a single ecosystem suggests that the essential functions of a leaf can be performed by a wide range of structures. The 'perfect leaf' is the leaf each species uses to best occupy its preferred niche.

Some plants have found it expedient to alter their leaf shapes and have evolved a deeply lobed shape, dispensing with tissue furthest from the major veins (2).

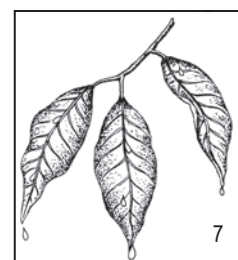
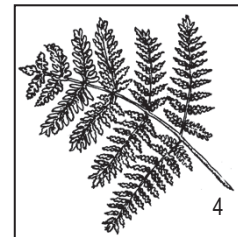
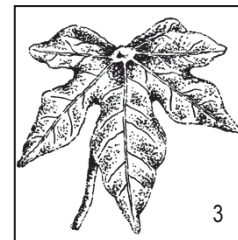
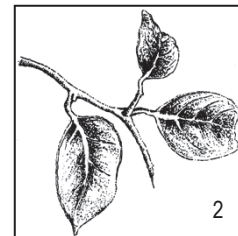
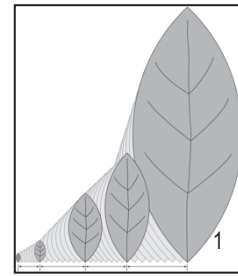
Other plants take this lobing around the secondary veins a stage further, so the original leaf takes on the appearance of a collection of smaller leaves, called leaflets, the leaf then being described as compound (3).

In bi-pinnate leaves the modification is taken a step further with leaflets formed around tertiary, rather than secondary, veins. Consequently what may look like a considerable number of small leaves may in fact be leaflets, all parts of just one compound leaf (4).

One way to distinguish a leaflet from a simple leaf is to look at the junction between the leaf bearing twig and the stalk of the leaf itself. With a simple leaf it may be possible to see a bud at this junction, while a bud will never be present at the junction between a leaflet and its stalk, which is in fact a primary or secondary vein (5).

Some trees, such as the *Darlingia darlingiana* produce young leaves which are very different from the mature leaves. For a sapling, the bigger its leaves, the better are its chances of gathering light. Young, large, lobed leaves gradually become less and less lobed until the mature leaves are a quite 'conventional' leaf shape (6).

Many rainforest leaves have a glossy upper surface and pointed leaf tips – known as drip tips – so water runs off quickly. This helps to prevent algae and lichens which are more likely to grow on a damp surface (7).



1.4 | Hints for Tour Guides

Without good communication skills, your interpretation messages are unlikely to succeed.

Understand your audience

It is important to tailor your activity to your audience; however there is usually a great mix of ages, experiences, expectations and nationalities in visitor groups. You need to be able to quickly sum up the major characteristics of the people in the group. The easiest way to find out about your group is to have an informal chat to them before you start.

Level of presentation

Many books recommend that you present your information at the Year 10 level (14-15 year age group understanding). In practice this may not help you to keep the attention of your mixed audience. Mixed groups respond better to information presented which follows a wave-form pattern. The wave-form is simply a trace of the difficulty level of your presentation. While the average difficulty of information can be gauged at the Year 10 level, it will also touch the expert and the simpler levels. Keep an eye on your audience and you'll soon learn to finetune the level of your presentation.

Tone of voice

Good speakers keep an audience's attention by modulating their voice rather than giving a presentation in a monotone of constant forceful or quiet speech. Mix the quiet tones in with the forceful, and remember that silence can be used with great effect. For example the first green ringtail possum spotted for the night may be the first rainforest possum most of the group has ever seen. A few moments of silence for people to enjoy their first glimpse of the animal can be more powerful than an immediate stream of life history information.

Your attitude

The way we express ourselves to others is coloured by our attitudes, our assumptions and personal beliefs. 'Having the right attitude' can be the difference between an 'OK' activity and a 'fantastic!' activity. Some pointers for developing a good attitude:

- **Be enthusiastic** – this is very appealing to an audience and can get them much more involved.
- **Feel confident** – a feeling of confidence will improve the image you project of yourself.
- **Be honest** – if you don't know something, don't just make up a story. This is where reference material can be very useful to have on hand.
- **Be sensitive** in how you present your activity, so the group does not feel ignorant or stupid.

- **Avoid prejudice** on any grounds (age, race, gender, nationality). Offending your audience will undermine any interpretative presentation no matter how good it is.
- **Keep your sense of humour**, because it can save a situation from getting out of control if things go wrong.

Visual impressions

Most of the impression we create is due to non-verbal communication or body language.

- **Maintain eye contact** with your group.
- **Use gestures** to help illustrate a point – these will usually spring from your enthusiasm.
- **Be friendly and approachable** – this puts people at ease and they are more receptive to you.
- **Maintain a tidy experience and good manners** as these will inspire your group's confidence in your abilities.

Choice of language

Good communication requires being understood, therefore avoid jargon. Try to use informal language so you don't sound like you are reading a prepared script. Where possible use concrete, unambiguous words rather than abstract words which are open to interpretation. Avoid overuse of words like 'maybe', 'perhaps' or 'I guess' – they undermine confidence in your credibility.

Key elements to effective interpretation

Keep it relevant

People learn the most when they are able to make clear connections from their previous knowledge and experiences to the information being given. This can be done best through analogies, metaphors, stories or even humour. This is where gaining background knowledge of your guest, their interests and previous experiences is useful.

Provide varied experiences and avoid repetition

Variety is important since humans pay greater attention to changes in their environment. To reduce repetition tell stories, ask visitors questions or mini quizzes, even use props if available. Most importantly, try to provide a multi-sensory experience.

Make it organised with clear, easy to follow structures

It is hard for a visitor to jump from topic to topic without much knowledge to begin with. Make sure you present things in a structured manner that is easy to understand for people of all backgrounds before jumping to the next subject.

Encourage visitors to get involved and give them opportunities to take control of their own experiences

Interactive experiences are most enjoyable for visitors and draw visitors into a learning frame of mind. As a result, they tend to really think about and respond to the information being presented. Good interpretation will make the information come alive and impact the guest's emotions, attitudes and values.

Understand and respect the audience

Learn about your visitors, their backgrounds and previous knowledge. This can help you target your information and provide personal connections. It has been shown that guides who can relate personally with their guests are often more effective, so it's important to get to know your guest and try to find a common interest.

Turning Information into Interpretation Examples

Personification

Make something come alive by humanising it.

Example: If this tree could talk, what stories would it tell?

Show cause and effect

Demonstrate or explain how one action can have ongoing and often unexpected effects.

Example: Forgotten plastic bags left lying around can kill goannas if they eat them while looking for food scraps.

Similes and analogies

Make comparisons and show similarities.

Example: A rainforest tree is an apartment building with many tenants living together.

Emphasize size

This makes things come alive and seem more significant.

Example: If you could shrink to the size of a termite, this mound would seem bigger than New York City.

Use physical aids

Physically show the similarities between two things.

Example: Compare our largest and smallest cycads.

Ask leading questions and open-ended questions

Examples: How would you survive in the rainforest?

What can save the cassowary from extinction?

How will this forest look in another 20 years?

Use mystery

Example: How is it that the fledgling buff-breasted paradise kingfisher can find its way to New Guinea after its parents have left?

Make sure you know the answers!

Animal and Plant Interpretation Hints

The following guide points will help the tour guide to describe a natural feature in the environment.

Noticeable features

- Physical characteristics
- Structure
- Life cycle / seasonal change
- Anomalies

Natural relationships

- With the surrounding environment
- With other plants and/or animals
- Scientific classification
- Survival skills

Importance

- Evidence of natural history
- Economic value: Indigenous and modern
- Conservation status

Final tips for great guiding

Read your audience

Look for non-verbal clues. Are they shuffling their feet or looking away? Time to finish up or change the subject!

Be flexible

Be prepared to cope with unexpected changes or interruptions.

Be prepared

- Be prepared for an emergency, such as if someone twists their ankle on the track.
- A guest may have a lot more knowledge on a subject than you do. Use this to your and the groups advantage to learn. Deal gently with ignorance.

Learn from your mistakes

If something goes wrong on one trip, use it to improve your next guiding experience.

Be interested in your guests

Show this by asking questions. Where are they from? What do they do? Why did they come here? Acknowledge when your guest is speaking to you and don't interrupt them.

Remember names

This makes a guest feel appreciated and as though you are listening to them, which makes them feel welcomed.

Be positive

No one likes a guide who preaches about the negative aspects of environmental care. Stick to the positive topics such as what is being done to help the rainforest. And remember to keep a sense of humour and smile!

Make eye contact when talking to your guests

This includes everybody, not just the ones who demand your attention.

Repeat the information

If someone asks a question, repeat it to make sure everybody heard it.

Make sure the group is comfortable

Are the insects biting them? Should you find some shade?

Point out photo opportunities and photo vantage points to guests.

Keep guests involved

Suggest things for your visitor to do, look for, or think about between stops to make them an active participant. You can ask questions to test a visitor's knowledge in a fun way, this is particularly useful if children are present and easier questions can be directed towards them.

Don't make up facts

If you don't know the answer, explain it was a good question and you aren't sure as to the answer. People would much rather prefer the truth. If you have some idea as to what the answer could be, you can give it as a possibility but make sure they know you aren't sure. You could try finding the answer by asking another guide or ranger you are in contact with or at places such as the Daintree Discovery Centre or National Park offices.

Learn another language

Many tourists are from overseas. To help make them feel more welcome, try to greet them in their own language and have a basic understanding of their culture. This will allow you to relate to your guest better. Some common words translated to German and Japanese are available at **Appendix B**.

Help out and monitor the visitor sites

It is recognised that tour guides make more frequent visits than land managers to most sites and are thus in a position to give an early warning of impacts.

Monitoring helps guides as well by providing an opportunity to involve visitors in site monitoring, providing a point of interest for their tour and increasing visitor awareness of their surroundings. There are a few ways to do this:

- Report rare bird or mammal sightings to the Department of Environment and Resource Management, call 1300 130 372.
- Make yourself aware of previous visitor behaviour, such as if they are leaving rubbish behind, feeding animals or damaging camp sites.
- Inform park rangers of invasive weeds or pests and of plant die-back.

Check your facts

Make sure you don't take the word of other guides as 'Gospel'. They may be continuing a trail of misinformation told to them.

Most importantly, keep on top of your game

Constantly upgrade your knowledge and use the comments in guest books for how to change your routine. Visit other sites and speak to seasoned guides to gain new ideas.

Common Mistakes

The Human Encyclopaedia

The walking, talking encyclopaedia spends a lot of time regurgitating facts, figures and Latin names. Guests normally wear a glazed expression due to information overload.

The Preacher

Beware of delivering the same speeches at the same spot at the same time every day. You will be bored, and your guests will be bored. Constantly update what you say. Introduce information in a different order. One local guide says that his secret to avoiding becoming 'stale' is to start every guided trip discussing something he's read in that morning's paper, and then working information in around that theme.

The Tall Tale Teller

Ever been tempted to tell some tall stories to make up for a gap in your knowledge? It's easy to do, but it's also easy to get embarrassingly trapped!

Metric Conversion

Size and area is provided in the handbook as metric. Here are some metric to imperial conversions to assist in explaining size.

1 hectare = 2.5 acres

1 metre = 3.3 feet

1 metre = 39.4 inches

1 mile = 1,609 metres

1 inch = 25.4 millimetres

30° Celsius = 86° Fahrenheit

Further Information

See **Appendix C**: Codes of Conduct.

See also:

Four Wheel Drive Australia

www.anfwdc.asn.au/codes_conduct.php

Four Wheel Drive Queensland

www.4wdqld.com.au

Guiding Organisations Australia

www.goa.org.au

Tour Guide Certification and Professional Development

Wet Tropics Tour Guide Program

The Wet Tropics Management Authority accredits Tour Guides who have attended a Wet Tropics Tour Guide Field School and completed a course in Flora, Fauna and Landscape; Indigenous Cultural Knowledge; and Commentary delivery. The program also maintains a communication network for tour guides.



Visit: www.wettropics.gov.au/tour-guide-training or www.savannah-guides.com.au

Savannah Guides

The Savannah Guides organisation operates the Wet Tropics Tour Guide Program as well as a range of professional development and certification activities across northern Australia.



Visit: www.savannah-guides.com.au

EcoGuide Certification

The EcoGuide program is run by Ecotourism Australia and covers both generic guiding skills plus EcoGuide specific minimal impact skills. To be eligible for certification, you will need at least 12 months experience as a tour guide or a recognised and approved guiding qualification (for example Certificate III or IV in tourism guiding) plus 3 months work experience.



Visit: www.ecotourism.org.au

1.5 | Safety and Comfort

Disclaimer: The following information provided herein is only advice. Seek professional advice from a qualified doctor or chemist in the event of contact with any of the following potential safety hazards.



STINGING PLANT
(PHOTO: CHAMBERS WILDLIFE
RAINFOREST LODGES)

Stinging Tree

Stinging trees are generally a problem along tracks and clearings where seedlings grow in response to the extra sunlight. The large heart-shaped leaves are often at ankle or arm height. The sting is a result of skin penetration by large hollow hairs on the leaves and twigs. The toxin will cause an initial slight itch followed by a severe prickling and then by intense pain. Pain may persist for several days and recur on exposure to cold or wet for up to two months.

- ☞ **Treatment:** Remove the penetrating hairs by applying and removing adhesive tape or a depilatory wax (hair remover). The hairs must be removed completely.
- ☞ **Did you know?** The leaves of the stinging tree are eaten by a moth.



SOUTHERN CASSOWARY
(PHOTO: WTMA)

Cassowary

The cassowary is a large flightless bird with powerful legs that it will use to defend itself or its young. If encountered, stand still – their eyesight is poor. In some areas birds have been fed and so associate people with food. Do not encourage them by feeding.

- ☞ Cassowary behaviour is unpredictable. Cassowaries are known to kick with their large clawed feet. This can inflict serious injuries to people and pets.
- ☞ If you encounter a cassowary, back away slowly and put something like a tree or a backpack between yourself and the bird, and then let it go on its way.
- ☞ Never approach cassowaries.
- ☞ Never approach chicks – male cassowaries will defend them.
- ☞ Never feed cassowaries – it is illegal, dangerous and has caused cassowary deaths.
- ☞ Always discard food scraps in closed bins and ensure compost bins have secure lids.
- ☞ Always slow down when driving in cassowary territory.

- ☞ Never stop your vehicle to look at cassowaries on the road.
- ☞ Keep dogs behind fences or on a leash.
- ☞ If the bird acts aggressively, attempt to look as large as possible by raising your arms overhead holding a camera, hat or bag. **DO NOT RUN.**
- ☞ Report cassowary sightings and incidents to your local Queensland Parks and Wildlife Service office, phone **1300 130 372**.
- ☞ **Did you know?** The last recorded human fatality in Australia from a cassowary was a 16-year old boy near Mossman in 1926. While running away from a bird which he (and/or his dogs) had been trying to attack he tripped and fell. The cassowary ran over him severing his jugular vein with its foot.

Snakes

There are six main snake families in Australia: elapids (venomous snakes), colubrids ('harmless' snakes), pythons, blindsnakes, filesnakes and seasnakes. If you are lucky enough to see a snake, leave it alone. They are protected and pose no threat to you unless harassed. Snakes seen up trees or those that climb when disturbed are either tree snakes or pythons and are non-venomous. They can still bite if handled!

- ☞ **Treatment:** Immediately apply a broad, restrictive pressure bandage. Keep the affected limb immobile and the patient at rest. Mark the bandage with a pen where the bite is. Transfer safely to hospital without panic.
- ☞ **Did you know?** In Australia there are only 10 species of colubrid snakes, and while they are venomous they are not considered very dangerous

Leeches

Related to earthworms, these small harmless creatures feed on blood after attaching themselves when people brush against plants, or walk through leaf matter or waterways where leeches live – particularly in the Wet Season.

- ☞ **Treatment:** After feeding leeches will drop off voluntarily, or can be encouraged to drop off using salt or heat or simply rolling them into a ball before flicking them off. Apply antiseptic cream to wound to reduce itch.
- ☞ **Prevention:** Apply tropical strength repellent over shoes and socks. Do not push through or camp in thick vegetation.

☞ **Did you know?** For over 2,000 years, leeches were needlessly applied for many ailments. Their use in Europe peaked between 1830 and 1850, but subsequent shortages led to a decline in their use. Today there is a real clinical application in that they are of great value to plastic surgeons when venous congestion of skin and muscle flaps is a problem.

Ticks

Ticks are parasitic insects that feed on blood by embedding their head into the body of the host. Where they attach often becomes swollen, itchy and sore.

☞ **Treatment:** Remove by applying tea tree oil (methylated spirits or repellent containing insecticide will also do) to suffocate the tick, before carefully removing with tweezers. Ensure the head is properly removed. A paralysis tick can cause nausea, dizziness and weakness. Seek medical aid if concerned about a tick bite.

Feral Pigs

Feral pigs (*Sus scrofa*) are rarely seen but are potentially very dangerous. Hide behind any available cover or climb out of reach if necessary.

☞ **Prevention:** Remove any rubbish from the National Park rather than bury it. The pigs will root out buried rubbish.

Scrub Itch Mite

These larval mites attack humans, causing a raised red area of skin around the barely visible attached mite. Skin folds and areas constricted by clothing such as waistbands are favoured areas. Intense irritation can follow. They are also a vector for scrub typhus.

☞ **Prevention:** Do not sit on the ground or logs without a ground sheet. Do not handle dead or rotting wood.

☞ **Treatment:** Apply an insect repellent to the attached mites. Remove and wash all clothing and bathe to dispose of any stray mites.

Wait-a-while

Wait-a-while is a climbing palm which uses spiny tendrils to climb up trees towards sunlight. This vine is so-called because once it gets hold of you it won't let go! The vine has lines of grappling hooks which catch anything they can and will rip skin and clothing if not careful. The hooks do not sting.

☞ **If caught**, do as the name suggests – be patient, back up and slowly remove the hooks before causing any damage.

Bullrout

The bullrout lives in slow-flowing freshwater streams and tidal estuaries along the eastern coast of Australia. The dorsal, anal and pelvic spines of this fish contain venom glands. If punctured, remove any sting barbs and place the inflicted area in hot water to relieve the pain. Seek medical attention if the pain does not subside.

Jellyfish

Several types of jellyfish, or marine stingers, are present in coastal and estuarine waters of tropical Queensland during the months of October-May. To avoid dangerous stings, it is best not to swim during these months. If you do, wear protective clothing such as a stinger suit and stay inside the designated stinger nets.

☞ **Treatment:** If stung, immediately pour at least two litres of vinegar over the adhering tentacles to deactivate the stinging cells. **This does not reduce the pain.** Do not rub the victim's skin, keep them immobile and use artificial respiration until medical assistance arrives.

Crocodiles

Crocodiles are potentially dangerous. Never take unnecessary risks in crocodile habitat. You are responsible for your own safety, so please follow these guidelines and be 'croc wise in croc country'.

☞ Obey crocodile warning signs – they are there for your safety and protection.

☞ Never swim in water where crocodiles may live, even if there is no warning sign present.

- ☞ Swimming or standing in water above knee-height near a crocodile warning sign or where estuarine crocodiles are frequently seen is illegal in protected areas (you can still enter the water if you have a reasonable excuse, e.g. launching a boat).
- ☞ When fishing, always stand a few metres back from the water's edge and never stand on logs or branches overhanging the water.
- ☞ Never clean fish or discard fish scraps near the water's edge, around campsites or at boat ramps.
- ☞ Stay well back from any crocodile slide marks. Crocodiles may be close by and may approach people and boats.
- ☞ Boats and vehicles must never be brought within ten metres of an estuarine crocodile in the wild – it is illegal unless part of a commercial crocodile viewing tour, or there is a reasonable excuse, e.g. where a creek is less than ten metres wide.
- ☞ Never dangle your arms or legs over the side of a boat. If you fall out of a boat, get out of the water as quickly as possible.
- ☞ Never provoke, harrass or interfere with crocodiles, even small ones.
- ☞ Never feed crocodiles – it is illegal and dangerous.
- ☞ Camp at least two metres above the high water mark and at least fifty metres from the water's edge. Avoid places where native animals and domestic stock drink.
- ☞ Never leave food scraps, fish frames or bait at your campsite. Always check that previous campers have not left these behind.
- ☞ Never prepare food, wash dishes or pursue any other activities near the water's edge or adjacent sloping banks.
- ☞ Be more aware of crocodiles at night and during the breeding season, September to April.

Bushwalking Safety

- ☞ Be prepared. Let someone know where you are going. Take a small first-aid kit, raincoat, a hat, water, a watch, insect repellent and sunscreen.
- ☞ Be weather aware. Queensland is vulnerable to extreme weather events including severe storms, cyclones and floods. For weather forecasts and warnings see the Bureau of Meteorology website: www.bom.gov.au/
- ☞ Take care near water. Rocks can be slippery, water currents strong, and submerged rocks and logs are common in creeks and rivers. Always check

for signs before swimming as hazards can include crocodiles, stingers and slippery waterfalls. Rivers, creeks and other waterways can quickly rise during a downpour in the wet season and become hazardous.

- ☞ Stay on the track. Read maps and signs carefully.
- ☞ Leave pets at home. Cats and dogs kill thousands of native animals every year. If you are travelling with pets leave them in a boarding kennel if you are planning to visit a National Park.
- ☞ Be considerate. Keep your noise down so that others can enjoy the bush.
- ☞ Be careful with fires. Use fireplaces or designated barbeque facilities.
- ☞ Take all of your rubbish with you.
- ☞ Check yourself for ticks at the end of the day. They can carry unpleasant diseases that can easily be avoided.
- ☞ Respect Indigenous culture. Rock art and other sites in parks and forests represent thousands of years of living culture with special significance to Indigenous people. These sites are easily damaged and are irreplaceable. Look at them, enjoy them, but please do not touch or damage these sites.
- ☞ Wear proper clothing. If you are hiking in the bush where poisonous snakes are prominent, make sure you are wearing high boots or long pants to help protect from bites.

Boating Safety

- ☞ Take plenty of fuel on board including enough for an emergency detour.
- ☞ Follow lifejacket laws and always be prepared for an emergency. Have a first-aid kit and a list of emergency contacts in the local area available.
- ☞ Keep the boat at a safe speed so that guests can enjoy the ride as well as to not scare away or injure any wildlife.
- ☞ Refuel on land unless in an emergency situation. This prevents unnecessary and dangerous water pollution.
- ☞ When you have children on board make sure parents understand that they should maintain constant supervision irrespective of whether they have swimming experience or a life jacket. You should also discuss an emergency plan should someone fall into the water, or if the boat is tipped or submerged.
- ☞ Be aware of the weather forecast. Depending on the weather, you may have to cancel a trip.

Wildlife Safety

- ☞ Never feed or play with animals. Human food can be harmful and some animals can become aggressive if they feel threatened. To avoid any injury, simply stay clear of wildlife.
- ☞ Keep your distance. If you see a wild animal, view them quietly and at a safe distance. This helps to keep the animal's stress levels down and prevents harmful animal attacks.
- ☞ Keep to the speed limit when driving and keep your eyes open. Wildlife such as cassowaries or wallabies are often seen crossing the road. Driving at a slow and careful pace can save their life and yours.
- ☞ Keep clear of riverbanks or areas where crocodiles are a potential danger.

Cyclone and Flood Advice

Northern Australia's cyclone season occurs between November and April each year and it's important to be prepared.

Cyclone Categories

Category	Typical Effects
1 Strongest wind gust less than 125 kph	Negligible house damage, damage to some crops, trees and caravans, and moorings may drag. e.g. Cyclone <i>Abigail</i> , crossing Cairns in 2001.
2 Strongest wind gust 125-170 kph	Minor house damage, significant damage to signs, trees and caravans, heavy damage to some crops, risk of power and communication failure and moorings may break. e.g. Cyclone <i>Steve</i> , crossing Cairns in 2000; Cyclone <i>Justin</i> , 1997.
3 Strongest wind gust 170-225 kph	Some roof and structural property damage, some caravans and crops destroyed, power failure likely, major damage to trees. e.g. Cyclone <i>Rona</i> , approx. 100 km north of Cairns 1999.
4 Strongest wind gust 225-280 kph	Significant roofing loss and structural damage, dangerous airborne debris, widespread power and communication failures. e.g. Cyclone <i>Joy</i> , offshore of Cairns 1990.
5 Strongest wind gust more than 280 kph	Extremely dangerous with widespread destruction. e.g. Cyclone <i>Larry</i> , 2005.

- ☞ **Note:** Cyclones can also bring with them heavy rains, flooding and storm surge.

Cyclone Watch

The Bureau of Meteorology issues a Cyclone Watch 48 hours before a cyclone's predicted landfall. Information is updated every six (6) hours.

From information released, make sure you understand where the cyclone is, what its movements are, how strong it is and what areas that could be affected by it.

Cyclone Warning

A Cyclone Warning is issued as soon as stronger winds are expected to affect coastal or island communities within 24 hours. It is important to know what is expected. A Cyclone Warning will tell you where the cyclone is, what its movements are, how strong it is and predict the areas that are being threatened.

Forecasts of heavy rainfall, flooding and storm surge associated with abnormally high tides are included where necessary.

Residents and visitors to Cairns should take immediate precautions necessary to safeguard their lives and property.

A Cyclone Warning is renewed every three (3) hours with hourly warnings issued if the cyclone moves close to the coast and poses a major threat.

Retrieved from:

www.cairns.qld.gov.au/cyclone-emergency-information

Hotlines

Queensland Parks and Wildlife Service – 24 hour Emergency wildlife line

☎ 1300 130 372

Queensland Parks and Wildlife Service – Marine animal rescues

☎ 1300 130 372

Wildlife rescue

☎ 1300 370 372

1.6 | Rainforest Aboriginal Groups of the Wet Tropics

There are more than 20 Aboriginal tribal groups with ongoing traditional connections to land in and near the Wet Tropics of Queensland World Heritage Area. Each group has customary obligations for management of their country under Aboriginal law.

Story places (natural features such as mountains, rivers, waterfalls, swimming holes, trees) within the Wet Tropics landscape are important to Rainforest Aboriginal people. These places have powerful meaning and properties. They may be considered dangerous to approach or take resources from, except in prescribed ways or by the right person. These places must be respected, not damaged and must be managed carefully by the guidance of the relevant Traditional Owners.

Aboriginal Group	Approximate Locality
Eastern Kuku Yalanji	Mossman to Wujal Wujal
Yirrakandji	Barron River
Gungandji	Yarrabah
Yidinji	Western side of Yarrabah range, Yungaburra to Atherton, Cairns South to Babinda
Mamu	Innisfail – Palmerston to Mungalli Falls
Djiru *	Mission Beach, El Arish
Gulnay*	Tully
Bandjin*	Hinchinbrook Island
Nywagi*	Lucinda/ Halifax
Wulgurukaba	Magnetic Island/ Paluma
Gugu Baden*	Greenvale/ back of Ingham
Warragamay*	Ingham
Warragnu*	Mt Garnet
Girramay*	Murray Upper/ Jumbun
Ngadjon	Malanda
Djabugay	Kuranda
KoKo Muluridji	Mareeba – west of Kuranda
Jirrbal*	Herberton/ Ravenshoe

*Girringun is the 'umbrella' group for 9 of the southern Aboriginal tribal groups.

2.0 | SITE INFORMATION

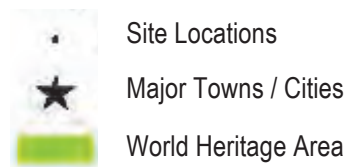
This Tour Guide Handbook provides interpretative information for 27 sites throughout the Wet Tropics of Queensland World Heritage Area (WTQWHA). The sites are provided in location order from north to south of the WTQWHA. The mix of both low and high visitation sites of focus in this Handbook was chosen by the Wet Tropics Management Authority to encourage quality interpretation and presentation of this unique and diverse natural asset.

Tour Guides are advised to check the Department of National Parks, Recreation, Sport and Racing (NPRSR) website regularly for park alerts. RSS Feeds for Park Alerts are now available from the NPRSR website and allow subscribers to receive up-to-date information continuously.

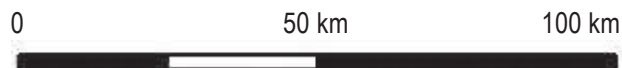
👉 www.nprsr.qld.gov.au/park-alerts/index.php

A map indicating the approximate location of each site is provided on the following page.

Map Legend



Map Scale

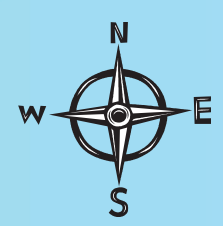


Disclaimer







- 👉 The following map is considered a sketch only.
- 👉 The data shown on this sketch is from a variety of sources.
- 👉 The accuracy of externally sourced data may not have been checked by the Wet Tropics Management Authority.



1. Black Mountain (Eastern Kuku Yalanji)
2. Kulki [Cape Tribulation] (Eastern Kuku Yalanji)
3. Dubuji [Myall Beach] (Eastern Kuku Yalanji)
4. Marrdja Botanical Walk (Eastern Kuku Yalanji)
5. Jindalba (Eastern Kuku Yalanji)
6. Alexandra Range Lookout (Eastern Kuku Yalanji)
7. Mossman Gorge (Eastern Kuku Yalanji)
8. Barron Gorge (Djabaguy)
9. Danbulla Drive (Dulguburra Yidinji)
10. Cathedral Fig Tree (Dulguburra Yidinji)
11. Goldsborough Valley (Malanbarra & Dulabed)
12. Lake Barrine (Dulguburra Yidinji)
13. Curtain Fig Tree (Ngadjon-Jii)
14. Lake Eacham (Ngadjon-Jii)
15. Babinda Boulders (Wanyurr Majay Yidinji)
16. Mount Hypipamee & Dinner Falls (Ngadjon-Jii)
17. Josephine Falls (Ngadjon-Jii)
18. Henrietta Creek & Nandroya Falls (Ma:Mu)
19. Crawford's Lookout/Mamu Canopy Walk (Ma:Mu)
20. Tully Gorge (Jirrbal)
21. Lacey Creek (Djiru)
22. Licuala (Djiru)
23. Murray Falls (Girramay)
24. Broadwater (Warrgamay)
25. Wallaman Falls (Warrgamay)
26. Jourama Falls (Nywaigi)
27. Big Crystal Creek (Nywaigi)



Key to Symbols Used Throughout this Document

 Campfires prohibited	 Swimming
 Camping prohibited	 Cycling
 No drinking water provided	 Fishing
	 Canoeing / kayaking
 World Heritage site	
 Information Centre on site	 Shower facilities on site
 Telephone on site	 Toilets available on site
 Park office	 Drinking water provided
 Wheelchair access	
 Scenic drive	 Camping permitted
	 Camping / car camping
 Barbeque facilities available (wood / fuel / coin operated)	 Camping – boat access
 Open fire place	 Suitable for caravans or camper trailers
 Picnic area	
 Picnic shelter	
 Natural lookouts	
 Constructed lookouts	
 Easy, short walks	
 Hiking	



BLACK MOUNTAIN
(PHOTO: WTMA)



CLOSE UP OF GRANITE
ROCKS, BLACK MOUNTAIN
(PHOTO: WTMA)

2.1 | BLACK MOUNTAIN (KALKAJAKA)



☞ The lookout to Black Mountain is about 30 km south of Cooktown on the Cooktown Development Road, or 4 km north of Helenvale.

Quick Facts – Black Mountain National Park

This park is approximately 600 hectares in area and protects an imposing mountain range of massive black granite boulders at the northern end of the Wet Tropics of Queensland World Heritage Area. The Black Mountain National Park is situated within the traditional country of the Kuku Yalanji Aboriginal people and is the source of many legends.

- ☞ The rocks are actually light grey granite but appear black because they are covered with algae.
- ☞ There are no public walking tracks around Black Mountain. Do not walk on the rocks!
- ☞ The Black Mountains form an ecotone (the transition or boundary between two different plant communities) between savanna woodlands that make up much of the Cape and the northern end of the World Heritage Listed Wet Tropics rainforest. You will see this marked distinction across the range.
- ☞ One frog species and two lizard species are found here and nowhere else, making this range one of the most restricted fauna habitats in the country.
- ☞ Queensland's Department of Environment and Natural Resources has been advised of at least four sites of particular mythological significance within the 'Black Mountains' as follows:

“There are at least four sites of religious or mythological significance on the mountain. These are the Kambi, a large rock with a cave where flying-foxes are found; Julbanu, a big grey kangaroo-shaped rock looking toward Cooktown; Birmba, a stone facing toward Helenvale where sulphur-crested cockatoos are seen; and a taboo place called Yirrbal near the foot of the range.”

Aboriginal History

Black Mountain is within the traditional country of the Kuku Bididji, Kuku Nyugkul and Kuku Buyun clans of the Kuku Yalanji Aboriginal people. Their name for the mountain is 'Kalkajaka' meaning 'place of the spear'.

Each Aboriginal language group in the Cooktown region has its own rich stories about '**Kalkajaka**' and its meaning in the landscape.

For more information on traditional Aboriginal stories please contact the traditional owners at **Jabalbina Yalanji Aboriginal Corporation**:

☞ **Telephone:** (07) 40 98 23 91

☞ **Email:** Jabalbina.Yalanji@bigpond.com

European History

When European colonists arrived late last century, they added to the many Aboriginal legends of the area with a few of their own. Stories abound of people, horses and whole mobs of cattle disappearing into the rocks, never to be seen again. Beneath the outer boulders lies a maze of passages and chambers — enticing to explorers of unusual places. The dark interior inside with sheer drops, pockets of bad air or unexpected encounters with snakes or bats can easily cause panic and injury to intruders entering that eerie underworld.

Adding to the mystery of the mountain, pilots report aircraft turbulence (thermal currents), and magnetic effects over Black Mountain and observers record loud bangs (cracking boulders) and mournful cries (wind and water moving deep inside).

☞ **Fact or Fiction?** There have been numerous reported sightings of the '**Queensland Tiger**', allegedly a resident in the mountain. This animal has been attributed to the death and mauling of cattle in the Cooktown area. Interestingly, the tiger is described as a large striped cat closely resembling the marsupial lion (*Thylacoleo carnifex*), which inhabited Queensland until 20,000 years ago when it is believed to have become extinct.

BIRDLIFE

Red-tailed black-cockatoos
(*Calyptorhynchus banksii*)

Sulphur-crested cockatoos
(*Cacatua galerita*)

Red-winged parrots
(*Aprosmictus erythropterus*)

White-rumped swiftlet
(*Collocalia spodiopygius*)
[Rare and endemic to Queensland]

Bar-shouldered doves
(*Geopelia humeralis*)

Peaceful doves
(*Geopelia striata*)

Scaly-breasted lorikeets
(*Trichoglossus chlorolepidotus*)

Rainbow lorikeets
(*Trichoglossus haematodus*)

Yellow honeyeaters
(*Lichenostomus flavus*)

Flora and Fauna

The apparently barren landscape supports a surprisingly large range of animals and plants which are specially adapted to this unusual environment. The green patches on the otherwise bare mountainside are large **fig trees**. Seedlings able to establish themselves in rock crevices extend long roots to draw water and dissolved nutrients from deep within the mountain.

Around the base of the mountain there are a number of plants normally found in rainforest. **Self-mulching ferns, umbrella trees and stinging trees** have adapted to these very different conditions. Monsoon forest, technically known as semi-deciduous mesophyll vine forest, grows around the edges of the rock masses. This vegetation is a haven for animals that venture from or to the rocky shelter of the mountain.

Black Mountain is home to the rare **Ghost Bat** (*Macroderma gigas*), Australia's only carnivorous bat. This bat is the largest of the microbat species in Australia and is also considered rare and vulnerable to extinction over most of its range. However, it is in reasonable numbers in the Black Mountain area because of the abundance of prey such as small insectivorous bats, lizards and frogs. The Ghost bat uses echolocation to capture its prey of mainly birds and small mammals. This is a cavernous bat which thermo-regulates its body temperature.

☞ **Did you know?** The boulders shelter three species found nowhere else in the world – the **Black Mountain Skink** (*Carlia scirtetis*), **Black Mountain Gecko** (*Nactus galgajuga*) and the **Black Mountain Microhylid Frog** (*Cophixalus saxatilis*). The worldwide distribution of these animals is, remarkably, less than six square kilometres (just over two square miles)!

The vulnerable **Black Mountain boulderfrog** (*Cophixalus saxatilis*) or rock haunting frog is the largest (about the size of a walnut) of Australia's microhylids – a group of frogs normally confined to the leaf litter of tropical rainforests. This large-eyed frog lays its eggs on land rather than in water. Adults tend to the eggs and young which hatch as fully formed froglets; they have no tadpole stage. The bright yellow female frog and the smaller mottled brown male are more easily heard than seen. Their call is a sharp tapping noise. They have acquired an almost crab-like ability to scuttle on the granite boulders, although they can still disappear in a series of leaps when alarmed. At night these frogs emerge to forage on the boulders of the mountain and in and about the scattered figs and fringing monsoon forest.

The rare **Black Mountain skink** (*Carlia scirtetis*) is a small lizard with longish legs and a distinctive duckbill-like snout. This slender skink is black in the shade

but glistens green in the sunlight. Its long limbs are flecked with yellow, and a golden stripe runs down the length of its back. The skink is often seen basking or hunting over the mountain's rocks during the day, except for the hottest hours when it retreats within the boulder jumble.

The **Black Mountain gecko** (*Nactus galgajuga*) is active only at night. This mottled purplish-brown, large-eyed, extremely agile gecko is very elusive. The species name, *galgajuga*, is a form of the Aboriginal name for the mountain, Kalkajaka.

Several other species of rock-dwelling lizards occur on the mountain, of which the **ring-tailed gecko** (*Cyrtodactylus louisianensis*) is probably the most spectacular. Heavily banded with light and dark stripes, this species occurs at only a few other localities.

Snakes are fairly common around and on the boulders and rocks. The giant **amethystine python** (*Morelia kinghorni*), which can grow to more than five metres in length; the **carpet python** (*Morelia spilota*); the **spotted python** (*Antaresia maculosa*); the **northern death adder** (*Acanthophis praelongus*); and the **brown tree snake** (*Boiga irregularis*) are all found here.

Black Mountain is rich with mammal fauna. Mammals that inhabit this mountain include several species of native rodents, marsupial carnivores and numerous bats.

The endangered **northern quoll** (*Dasyurus hallucatus*), **Godman's rock-wallabies** (*Petrogale godmani*) and at least three species of flying-fox, the **Queensland tube-nosed bat** (*Nyctimene robinsoni*), the **eastern blossom bat** (*Syconycteris australis*) and the **northern blossom bat** (*Macroglossus minimus*), all of which feed on fruits and nectar from the fringing monsoon forest, are common here.

In addition, the insect-eating bats, which roost in the extensive cave-like formations, include species of horseshoe bats, various sheath-tailed bats, various bent-wing bats, the little **north-eastern freetail bat** (*Mormopterus loriae ridei*), the **large-footed myotis bat** (*Myotis macropus*), and the minute **Finlayson's cave bat** (*Vespadelus finlaysoni*).

Geology

The giant piles of black granite boulders near Cooktown are the northern boundary of the WTQWHA. Black Mountain's rocks are actually **light grey granite** but appear black because they are covered in three main **blue-green algae** which fix nitrogen from the air and therefore help other vegetation to grow such as the fig trees through a symbiotic relationship. The boulders are rich in feldspar, mica and hornblende and, on very hot days, rain can cause the boulders to explode.

The hard granite that makes up the boulders of the black mountain range originally formed from magma from the earth's crust. As the softer surfaces eroded away the fractured magma became the mountains of boulders that can be seen today. If you look closely you will see that the boulders aren't actually black – they are grey but they are covered by a film of microscopic blue-green algae growing on the surface.

Geologists believe the boulders were once a molten mass which solidified deep below the earth's surface 260 million years ago. Erosion gradually exposed the granite plug and fractures began to form the boulders we see today.

Further Reading

Black Mountain (Kalkajaka) National Park: Nature, culture and history
www.npsr.qld.gov.au/parks/black-mountain/index.html

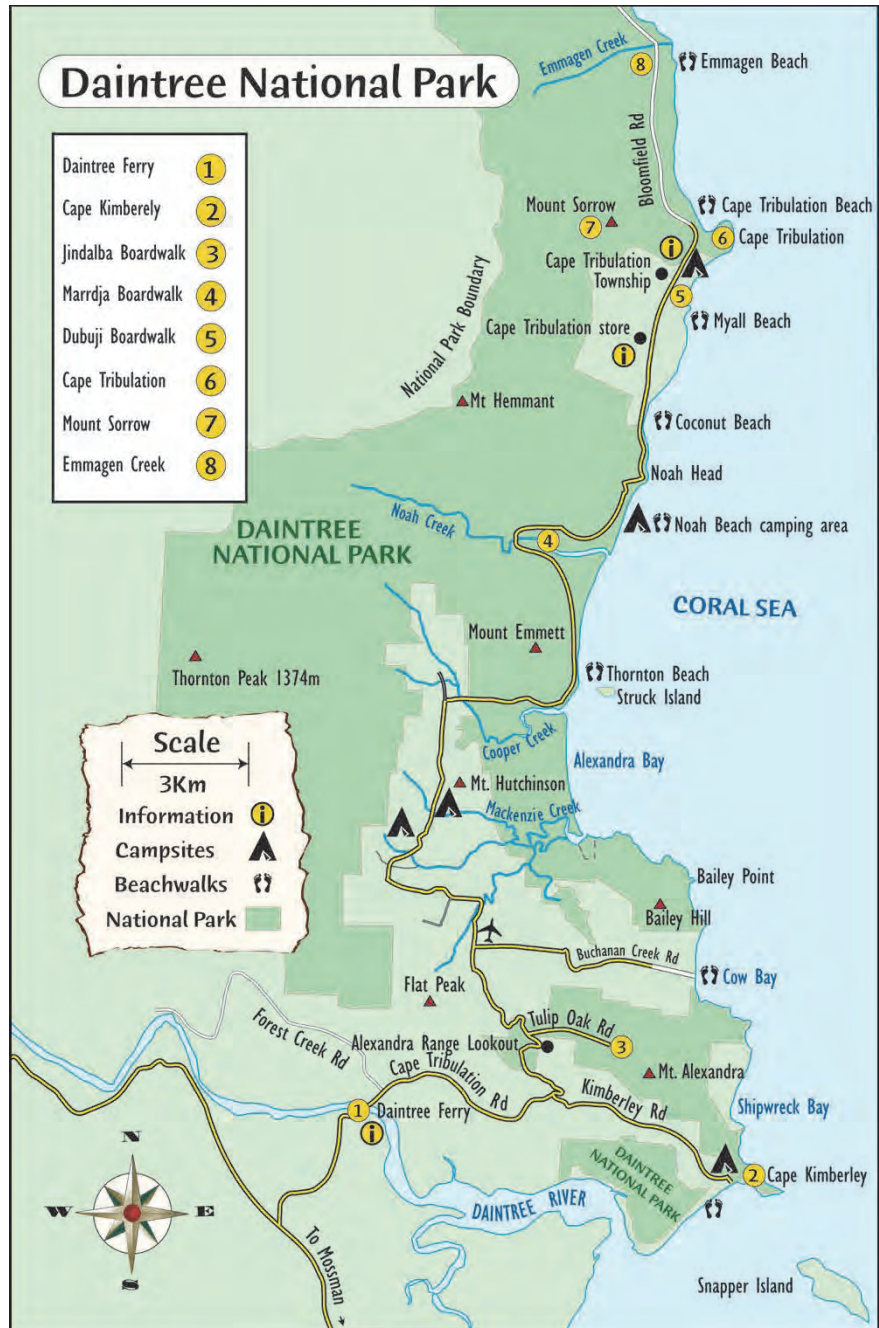


CAPE TRIBULATION BEACH
(PHOTO: WTMA)

2.2 | KULKI VISITOR AREA



Follow the Daintree to Cape Tribulation Road.
The Kulki-Cape Tribulation walk is well signposted at Cape Tribulation itself.



Kulki visitor area at Cape Tribulation offers a boardwalk leading from the picnic area to a viewing platform overlooking the ocean and beach. A short walk from the Kulki car park takes you to beautiful Myall Beach.

Quick Facts – Kulki Visitor Area

- ☞ It is here where the rainforest meets the reef. You can see the fringing reefs stick out of the water at low tide. These reefs were living until approximately 50 years ago but due to a range of environmental factors no longer have living hard corals. These reefs are included in the Great Barrier Reef Marine Park, and it is the only place in the world where two World Heritage areas meet.
- ☞ Cape Tribulation is known as Kurangee, 'the place of many cassowaries' by local Aboriginals and was 'renamed' Cape Tribulation by Captain James Cook as this as the place where his tribulations (troubles) began.
- ☞ Of all places in the Wet Tropics at which cassowaries may be observed in the wild, Kulki provides for better chances. Keep a look out for these magnificent birds but remember to keep your distance!
- ☞ It was here that protestors blockaded the Bloomfield Track – which was being graded in 1982 by the local council to access Bloomfield to Cooktown. Despite the protests the road was completed but due to all of the publicity the area was nominated and later included on the World Heritage List.
- ☞ Look out for the stinging tree here. The perfect positioning of sunlight and open tracks in this area provide for a concentration of the trees.
- ☞ The cassowary is Australia's heaviest flightless bird but the emu is taller!

Aboriginal History

Kulki is on the traditional land of the Eastern Kuku Yalanji. Kulki was a meeting place and a place where the traditional owners gathered tools, medicine and food.

For more information on traditional Aboriginal stories please contact the traditional owners at **Jabalbina Yalanji Aboriginal Corporation**:

☞ **Telephone:** (07) 40 98 23 91

☞ **Email:** Jabalbina.Yalanji@bigpond.com

European History

In 1770, **Captain Cook** sailed the Endeavour up the east coast, making a chart of the coastline. He struck a reef 40 kms northeast of the Cape, now called Endeavour Reef, and he named the point he had charted earlier in the day, "Cape Tribulation because here began all our troubles".

In the late 1970s, a group of local people formed the Cape Tribulation Community Council to lobby all levels of government for a National Park to be declared. In 1981, the Daintree National Park was declared by Sir Joh Bjelke-Peterson (pers. comm., L. Mason, 6 July 2009).

The Daintree Blockade

Approximately 2.5 kms from the Kulki turn-off heading north is Blockade Creek, unsigned except for a Daintree National Park sign just before the creek which is the site of the Daintree Blockade. During 1983 the Douglas Shire Council began to bulldoze a road from Cape Tribulation to Bloomfield. A huge public outcry developed into a major environmental battle and brought the Daintree to world attention, leading to World Heritage listing of the area. Despite strong opposition from the Queensland Government and the local council, the Wet Tropics rainforests were entered on to the World Heritage list in 1988.

Opening of Kulki

Kulki Visitor Area was opened in 1988 and was upgraded in 1997 with funds from the Daintree Rescue Program. Prior to this, the beach area was popular with nudist bathers, and included a road for vehicles accessing campsites further north. In the Easter holidays in 1980 a park officer reported 80 people were camping at the beach and suggested the fragile beach environment could no longer cope with this level of impact. Today, almost 400,000 people visit the site each year.

The 600 metre long **boardwalk** at Kulki leads from the picnic area up a ridge to the lookout named in honour of two senior Yalanji custodians, *Numbaji* and *Jinabaji*.

The **hybrid public toilets** use bacteria to break effluent down to five percent of its original mass. Waste is flushed using just 300 ml of water into a tank full of water. Bacterial action breaks down the solid waste which settles as sludge at the bottom of the tank. This is eventually pumped out every four to seven years. As waste enters the tank, the water level is raised. Displaced water flows from the top of the tank along a maze of pipes and is cleansed by a biofilm of micro-organisms over approximately 135 days. Once the effluent is treated the clean liquid is discharged into a holding tank for disposal. Ventilation to remove odours is provided by solar panel powered fans.

Flora and Fauna

The **stinging tree** or **Gympy gympi** (*Dendrocnide moroides*) frequently grows in clearings and along tracks. The leaves bristle with hollow hairs of silica which, when brushed, snap off and inject a powerful and irritating toxin into the skin. The

composition of this is not fully understood but it does cause intense pain which can last for months, recurring whenever the area becomes wet or cold. Dead stinging trees are also hazardous – when disturbed they release a cloud of stinging hairs which can cause severe problems if inhaled. It is a good idea to learn to recognise and avoid stinging trees. STINGOSE®, if applied **immediately** is said to relieve the pain. Try to remove the hairs with depilatory wax or adhesive tape. Aboriginal people used the sticky sap from the tree's roots to do this. For severe cases and if inhaled, seek medical attention.

☞ **Did you know?** Joseph Banks took some of the stinging tree back to the United Kingdom and recent tests show the toxin is still intact!

The **Red Beech** (*Dillenia alata*) tree is one of the most striking trees of the coastal swamps, but it also found throughout coastal areas including hilltops some distance from the sea. It is the unusual flaky copper/pink to maroon bark that is most likely to attract attention. The bright yellow flowers are noticeable throughout the year, but last only one day and are followed by reddish capsules containing the seeds. Aboriginal people reportedly ate the flower petals and the white arils surrounding the fruit. Another common name for the tree is Golden Guinea Tree.

The young leaves, roots, flowers and buds of the **Cottonwood** (*Hibiscus tiliaceus*) can be eaten. The flowers are similar to a hibiscus but are bright yellow with a deep red centre. Local aborigines used the bark for skin complaints, rope and nets; sticks for fire making by friction; leaf infusion for wounds and ulcers; wood used for light boats and furniture.

The **Lace Monitor** (*Varanus varius*) is Australia's second largest lizard which can grow to over two metres in length. Lace monitors are often found around picnic areas where they scavenge amongst the rubbish. Away from human influence they will also scavenge any dead animal they find or catch live prey including anything from insects to possums. When nesting, the female will dig a hole in the side of a termite mound to lay her eggs. The termites then close up the hole keeping the eggs safe and at a constant temperature of 30°C. After 8-9 months the young will hatch and the female will actually return to dig them out. Drivers to Cape Tribulation should keep a look out for **young lace monitor lizards** on the road. These little 30 cm cobalt blue and yellow striped 'road gems' have probably hatched from their termite nests and have been reported in large numbers basking on the warm road – unfortunately with limited regard for traffic.

Termites (*Isoptera*) are responsible for breaking down dead wood in the rainforest, so they play a major role in the recycling of nutrients. They cannot digest the timber directly and rely on bacteria living in their guts. Some termites

make conspicuous mounds on the ground while others nest in trees. Termite society is divided into castes: the workers, which spread far and wide from the nest to gather food for the resident queen and king, and the soldiers which guard the colony. Termites' biomass is probably greater than that of all other forest-living animals.

The **Sand Bubbler Crab** (*Scopimera inflata*) feeds on organic matter sifted out from the sand pellets by using its mouth parts. The crab clears its burrow by packing the sand into rough balls and pushing it out of the burrow using its walking legs. The crab then picks up the sand ball by hugging it to its mouth with its claws and moves away from the burrow in a straight line up to 20 cm away discarding the pellet. Adults measure about 12 mm across the carapace. The sand bubbler crab was named by Alphonse Milne Edwards, 1873, a prominent French crustacean biologist.

The **Pandanus Stick Insect** (*Megacrania batesi*) is also called the **Peppermint Stick Insect**. It can often be seen along the boardwalk. Measuring up to 15 cm in length, with bright colours ranging from green through purple, bright blue and aqua, often with red antennae, this creature could be mistaken for a lolly! It is aptly named because of the peppermint smelling liquid which it sprays. Look, but don't touch, as reports have been made that the white liquid which it spurts can cause skin irritation and even temporary blindness.

Geology

Cape Tribulation is part of the Hodgkinson Province with metamorphic sediments and alluvial soils. The upland areas are granite intrusion over metamorphic and the main peaks are granite (pers. comm., S. Goosem, 22 June 2009).

The fringing reef at Cape Tribulation is easy to see from the lookout on a clear day.

Further Reading

Cape Tribulation, Daintree National Park

www.nprsr.qld.gov.au/parks/daintree-cape-tribulation/index.html

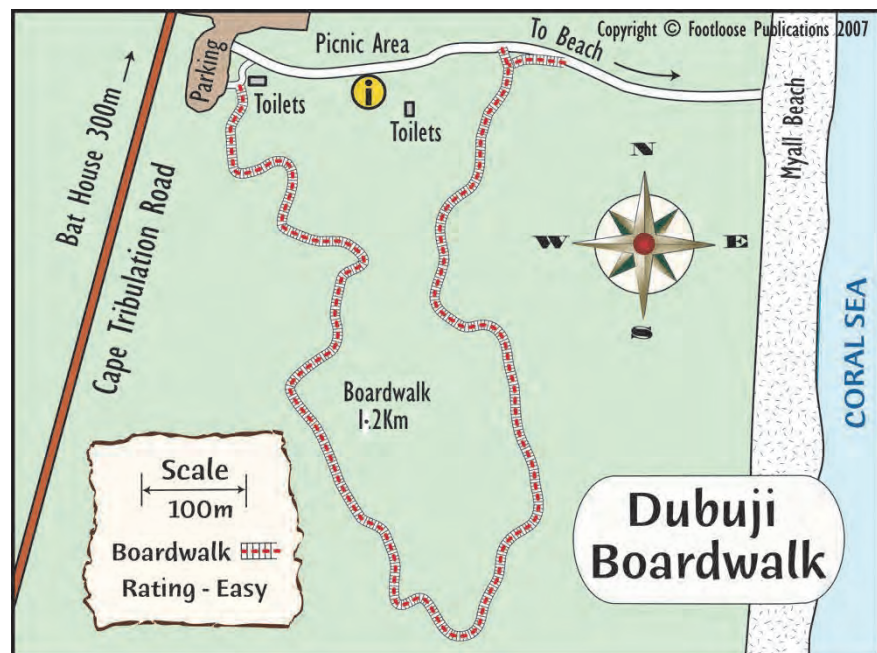
The Daintree Coast

www.wettropics.gov.au/kulki-cape-tribulation.html

2.3 | DUBUJI VISITOR AREA



☞ The Dubuji Boardwalk is on the Daintree/Cape Tribulation Road and abuts Myall Beach. The car park is signposted, not far south of the Kulki/Cape Tribulation turn off.



Quick Facts – Dubuji Visitor Area

- ☞ The block of land was originally called 'Camelot'.
- ☞ Dubuji was purchased through the Daintree Rescue Program in 1996.
- ☞ Forest like this is extremely rare as it's uncommon to find rainforest on sand and also intermittent with mangroves where there is no obvious ecotone (borderline between ecosystems).
- ☞ The timber of the Golden Guinea Tree (often called Swamp Mahogany) is white, not red like its papery bark.
- ☞ During the wet season, stop on the bridge along the walking track to observe turtles in the waterway (pers. comm., L. Mason, 6 July 2009).
- ☞ If you dig down into the beach there are remnants of fringing reef that prospered here some 3,000 years ago.
- ☞ Licuala fan palms are a distinctive feature of this site.

- ☞ Peppermint stick insects are prominent here and have caused a lot of the leaf damage that can be observed.

Aboriginal History

The Dubuji Visitor Area is on traditional land of the Eastern Kuku Yalanji. Dubuji is a Kuku Yalanji word meaning 'place of spirits'. Jalunwarra are the 'people of the ocean or sea'.

For more information on traditional Aboriginal stories please contact the traditional owners at **Jabalbina Yalanji Aboriginal Corporation**:

☞ **Telephone:** (07) 40 98 23 91

☞ **Email:** Jabalbina.Yalanji@bigpond.com

European History

The Dubuji Visitor Area has had an interesting history since colonisation. The forests were selectively logged for cabinet timbers in the **1940s and 1950s** by the Mason family. Only 9-12 tree species were selected for their timber value, including red cedar and silky oak. In the **1980s**, land developers clear-felled the land taking out more than the selected 9-12 species (pers. comm., Lawrence Mason, 6 July 2009).

In the **1970s** the lease was taken up by hippies who established a commune with fruit orchards and extensive gardens where there are now picnic tables and revegetation plots. The information shelter was built on the site of the original commune building! The commune disbanded in the early 1980s.

During the **1983-84 Bloomfield Road Blockade**, the police set up camp here with caravans, eating facilities, a dog squad and even a portable jail on wheels.

In **1996** the Daintree Rescue Program purchased the 28 hectare 'Camelot' block. Two years and the planting of 12,000 trees later, the Dubuji site was opened to visitors in 1998.

The boardwalk construction crew reported being watched by a young cassowary for about 20 minutes. This was the first time a cassowary had been sighted in the area for some time. Locals think it may have been chased from its father's territory to the north, and it may now include Dubuji in its home range, feeding on fruit and mangrove crabs at certain times of the year. In 2003, an adult bird was frequently encountered at the first bridge, and may be the same animal.

Flora and Fauna

Dubuji is diversified with vine forest, mangroves, sedge swamps and fan palms in this special forest. Spring fed creeks flow through the area. The rainforest type growing at Dubuji – **mesophyll vine forest on sand** – is now very rare. There is only about 370 hectares of this type of forest left in Australia. Even though Dubuji's forests harbour some rare and ancient plants, the forests only colonised this old beach area in the last 2,000-3,000 years. Buried just under the surface are corals of once fringing reefs.

Next to the path near the toilets, the **Brown Pine** (*Podocarpus grayae*) can be seen near the umbrella tree. Behind the toilets a tall **White Oak** (*Grevillea baileyana*) can be seen, as can the **Quandong tree** (*Elaeocarpus* species) near the toilets. All of these trees were planted during the revegetation program when the block was first bought. The **Brown Pine** is a primitive plant with dark pencil shaped leaves that are bright lime green when new. The leaves hang from the drooping branches. The fruit is a bluish hard nut carried on the end of a swollen red stem and is eaten by the cassowaries.



FAN PALM
(PHOTO: S. HOGAN)

One of the world's most attractive palms, the **Licuala Fan palm** (*Licuala ramsayii*) is prominent at Dubuji. The large pleated leaves on long stems are almost two metres across. It is common through lowland rainforest, often in swampy areas. Fan palms occur between Cape York and the Paluma Range north of Townsville. These palms are slow growing, eventually reaching a height of around six metres.

The **Sedges** (*Scirpodendron ghaeri*) at Dubuji are growing in the swamps close to the beach. The leaves are very long and lined with spikes. These plants are Australia's largest sedge. Frogs live on the edge of the swamps and will lay their eggs in the swamp where the growing tadpoles are sheltered behind sharp-edged sedge walls. Sedges can be differentiated from the Pandanus also found here – sedges grow in the swamp water and the pandanus grows on the edge of the swamp. Pandanus leaves are eaten by the Peppermint Stick Insect and you can easily see the damage they have made.

The **Black Palm** (*Normanbya normanbyi*) named after an early Queensland Governor is found only in a restricted area of North Queensland. It is a common palm in the Daintree area. This is an elegant palm with a slim straight trunk and small crown of compound leaves which are similar to the Foxtail Palm in that the leaflets surround the stalk. The stalks and the undersides of the leaves are whitish. Flowers are white or pink and the fruit is pink or red. The fallen fruit has an edible flesh full of pale fibres around a single seed and are enjoyed by cassowaries. Pollination remains a mystery as male and female flowers never

open together. The outside of the trunk is very hard and dense and was traditionally used for spears and clap sticks.

Black Bean (*Castanospermum australe*) is a beautiful dark wood once used for cabinet making. The Black Bean tree produces alkaloids with anti-HIV and anti-cancer properties.

The **Eastern tube-nosed bat** (*Nyctimene robinsoni*) enjoys fleshy fruit from the rainforest especially figs (*Ficus* spp.) and can be distinguished by their tube-like nostrils and bright yellow spots splashed across the wings. Babies are born between October and December with the young carried by the mother until they are quite large.

The **Striated Heron** (*Butorides striatus*) roosts in the low mangrove branches until the tide retreats and stalks the fish and crabs. These blue-grey wading birds with a black cap have a long pointed black and yellow bill with bright yellow or orange legs.

Evidence of **feral pigs** is a common sight at Dubuji. The locals of Cape Tribulation have noticed that where the feral pigs have dug up the ground, the orange-footed scrub fowl will run in quickly after the pig moves on to eat the bugs that were too small for the pigs to eat! (pers. comm., L. Mason, 6 July 2009).

Geology

Dubuji is a very wet site and maintains this wetness throughout the year. This provides a good environment for many endemic plants and a large proportion of the Wet Tropics primitive flowering plants (pers. comm., Goosem, 22 June 2009).

Crocodiles, Marine Stingers and Cassowaries

Be aware of these animals at this site and follow the simple guidelines (outlined in Section 1.5, page 26) for your safety and that of wildlife.

Further Reading

Cape Tribulation, Daintree National Park

www.nprsr.qld.gov.au/parks/daintree-cape-tribulation

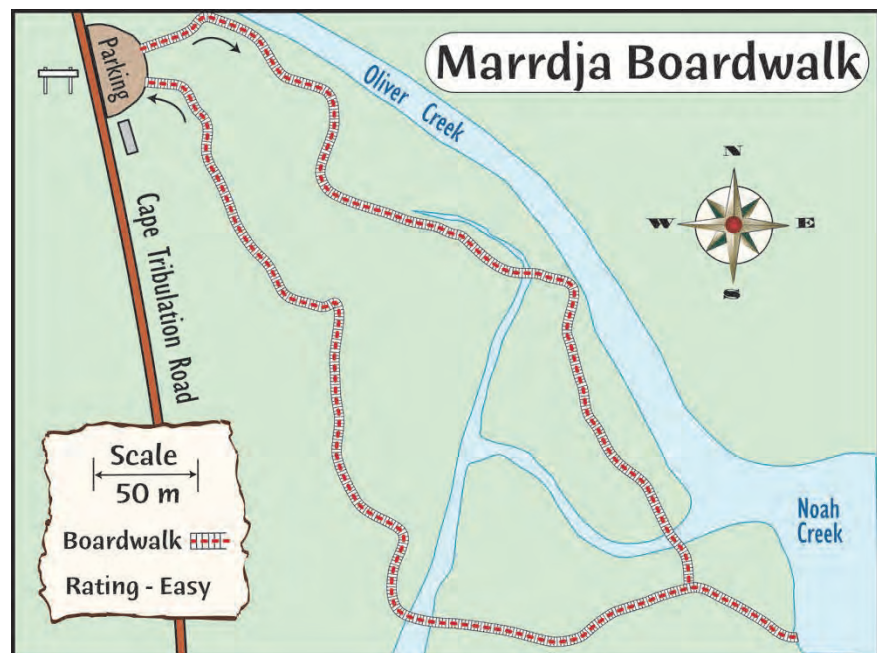
The Daintree Coast

www.wettropics.gov.au/dubuji-boardwalk.html

2.4 | MARRDJA BOARDWALK



☞ This well-designed loop begins and ends beside Oliver Creek. The Marrdja Boardwalk is on the Daintree/Cape Tribulation Road just north of Noah Creek.



Every stage in the evolution of land plants over the last 400 million years is represented in a very small area at Marrdja. The 1,100 metre path loops through rainforest and mangroves and out to a viewing platform over Noah Creek. The information signs along the botanical walk explain the evolution of land plants from the sea to the emergence of flowering plants, the break up of Gondwanan rainforests and the coming of humans.

Quick Facts – Marrdja Boardwalk

- ☞ Marrdja's rainforests shelter many descendants of the early land plants including fork ferns and tassel ferns.
- ☞ The primitive flowering plant Noahdendron can be seen from the boardwalk.
- ☞ In front of the car park at the end of the boardwalk is the native pepper vine (*Piper caninum*) – the peppercorns are ripe when green!
- ☞ Fiddler crabs and pistol shrimps make a noise like a percussion to scare each other away.
- ☞ The Golden Orchid is Australia's largest orchid.

- ☞ You may be able to hear the rifle bird, even if you don't see it. The sound it makes is a 'yaass yaass' which eventually becomes more of a song as its mating display continues. It has an amazing courtship display with males slapping their wings together while they are arched over their head.
- ☞ Look around at tree trunks at head height. Blending into the trunk colouration you may see a lizard perched very quietly. This is the **Boyd's Forest Dragon** and it is endemic to the Wet Tropics.
- ☞ Archerfish are found here. These fish are known for their habit of preying on land based insects and other small animals by shooting them down with water droplets from their mouth.
- ☞ From August to December there are great displays of flowering orchids at Marrdja particularly in the very tops of the **looking glass mangroves**.
- ☞ The area that can be observed where the rainforest transitions to mangrove is called the ecotone.
- ☞ The boardwalk is designed to be very interactive and details the rainforest and its history in the area.
- ☞ You may be able to see diggings on the forest floor – these are created by feral pigs.



BOYD'S FOREST DRAGON
(PHOTO: MARTA ESPINERA)

Aboriginal History

Marrdja Boardwalk is in Eastern Kuku Yalanji country. Marrdja ('mud-ja') is a Kuku Yalanji word meaning 'rainforest walk'. The traditional owners would like you to respect their wishes and not visit the 'blue lagoon' nearby.

For more information on traditional Aboriginal stories please contact the traditional owners at **Jabalbina Yalanji Aboriginal Corporation**:

☞ **Telephone:** (07) 40 98 23 91

☞ **Email:** Jabalbina.Yalanji@bigpond.com

European History

The original walking track was built by the Queensland Parks and Wildlife Service in 1989 with the help of labour supplied by Operation Raleigh volunteers (a UK-based organisation). The one-way track was extended to form a 1.1 kilometre loop in 1998 with funding from the Daintree Rescue Program.

☞ **Did you know?** Oliver Creek was once called ‘Arsenic Creek’ or ‘Cyanide Creek’ because there was a solid block of arsenic discovered at the headwaters many years ago (pers. comm., L. Mason, 6 July 2009).

Flora and Fauna

Every stage in the evolution of land plants over the last 400 million years is represented in a very small area at Murrumbidgee. Murrumbidgee’s rainforests shelter many descendants of the early land plants including lycopods, psilotums, fork ferns and tassel ferns.

The large trees with red bark that can be seen in the beginning section of the boardwalk before reaching Oliver Creek are actually **Red Beech** (*Dillenia alata*) trees, not **Ironwood trees**, so called for the big balls of silica in the tree which when hit with an axe will make the axe bounce back.

Selaginella (*Selaginella longipinna*) is a descendant of ancient fern-like plants. They are known from many fossils especially of the Carboniferous era when they and other plants formed the basis for the world’s largest coal deposits. One of over 600 species worldwide, selaginella has prostrate creeping branches resembling true fronds with 3-4 mm leaves in two layers held close to the stems.

The **Noahdendron** (*Noahdendron nicholasii*) is a primitive plant of the rainforest at Noah Creek and can be seen from the Murrumbidgee Boardwalk. Of the 19 families of the primitive flowering plants identified worldwide, 13 are found in the Daintree rainforest. Some like the Noahdendron are found nowhere else. Noahdendron can be recognised by the leaf-like stipules where the leaf stalks join the thin stems. The flowers are pink or red and hang in a bundle, while the fruits are bundles of brown capsules, each two-lobed, woody and covered with rusty hairs.



STRANGLER FIG
PHOTO: J. CARMODY

The **Watkin’s Fig (Strangler Fig)** (*Ficus watkinsiana*) grows to forty metres in height. Strangler figs enclose the host tree with aerial roots that grow down from a branch. The fruit is distinctive, purplish with pale spots. Many birds and the spectacled flying fox feed on the fruit. Catbirds rely on the fruit as their principal diet and carry the fruit to the tops of other trees where they eat them. An agnoid wasp is also needed to pollinate the fruit.

Orchids store water in their roots which look greyish-white when dry, their outer cells being filled with air. As soon as rain falls, these cells soak up water and become translucent. Orchid seeds are light enough to float on the slightest breeze. A single orchid pod may contain up to three million seeds. From August to December there are great displays of flowering orchids at Murrumbidgee particularly in the very tops of the looking glass mangroves.

Golden orchid (*Dendrobium undulatum*) flower sprays can grow to over a metre long, ranging from clear yellow to chocolate brown in colour. The stems can exceed two metres in length. This orchid can tolerate both sea salt spray as well as sheltered areas and can grow on rocks or trees. The Golden orchid is Australia's largest orchid.

The **Pencil orchid** (*Dockrillia teretifolia* syn. *Dendrobium teretifolium*) is easily distinguishable by its long pencil-like leaves that hang from the rhizome attached to the bark of a tree or a rock face. The flowers are cream to white in colour and form a lacy veil over the top of the plant.

The **Bottlebrush orchid** (*Coelandria smiliae* syn. *Dendrobium smiliae*) has a variety of white, purple and green tip flowers. This orchid likes rough-barked trees where its roots are able to penetrate between the bark layers. It prefers trees that are exposed to sunlight. It can form clumps up to one metre in diameter with long spindle-shaped like stems or pseudobulbs of a similar length.

Cycads first appeared about 230 million years ago at the time of Pangaea. Cycads reached their peak during the Jurassic Period (193-136 million years ago), along with the dinosaurs. At Murrumbidgee you can see Australia's smallest cycad, the **Zamia fern** (*Bowenia spectabilis*) which grows up to two metres, and the world's tallest cycad, the **Zamia palm** (*Lepidozamia hopei*), which grows up to 16 metres. Bowenias are by far the most toxic cycad in the world due to their high levels of mercury. The Zamia fern is included in the logo of the Wet Tropics Management Authority. The Zamia Palm, also known as **Hope's Cycad** is a rainforest cycad but likes reasonably good light levels and so tends to grow at the edge of the forest or along stream banks.

Ferns at Murrumbidgee include the **Basket Fern** (*Drynaria rigidula*) which can form huge clumps around trees. The brown bracket or 'nest' leaves hold the plant together and trap leaf litter and moisture. This epiphyte is common in the mangrove section. The common **Bird's Nest Fern** (*Asplenium australasicum*) is both an epiphyte and a lithophyte (grows on rocks) and can be seen along the boardwalk. The leaves catch litter and this helps feed the plant. If you look up under the large basket ferns you will quite often see a sunbird nest hanging down.



☞ **Did you know?** Ferns trace their lineage back over 300 million years, well before the flowering plants evolved. Fossil evidence indicates the existence of ferns in the Palaeozoic era.

Keep an eye out for the fruit of the **Lolly Vine** (*Salacia chinensis*) which grows as either a low shrub or as a scrambler in nearby mangroves or rainforest often

along stream banks. The red fruit when soft tastes very sweet, with the texture and taste similar to a lychee and slightly caramel. The translucent white flesh sticks to the single large seed even after much sucking. The fruit are also known as Snotty Gobbles!

The Australian native **Archerfish** (*Toxotes jaculatrix*) shoots strong jets of water to bring down insects and other small prey resting on vegetation overhanging waterways. It does this by pushing its tongue against a groove on the roof of its mouth to form a tube. It then snaps its gill covers shut, forcing out a powerful spurt of water. The jets of water can reach up to three metres, but the Archerfish is only accurate to about 1.5 m. The fish has good binocular vision with large eyes located close to its mouth, allowing it to judge distances and focus well. It learns to correct for refraction between the water and the air, usually shooting from directly below the target where there is the least amount of distortion. When the insect falls into the water the Archerfish is waiting to gobble it up.

Mudskippers can be seen along this boardwalk. They are completely amphibious but they can use their pectoral fins to walk on land. Mudskippers absorb water through their skin and from water they carry around in pouches covering their gills. At the first sign of danger they hurry into their water-filled burrows and use their goggle-eyes like periscopes. Male mudskippers attract females by raising brightly-patterned fins on their backs like little flags.



VICTORIA'S RIFLEBIRD
(PHOTO: CHAMBERS WILDLIFE
RAINFOREST LODGES)

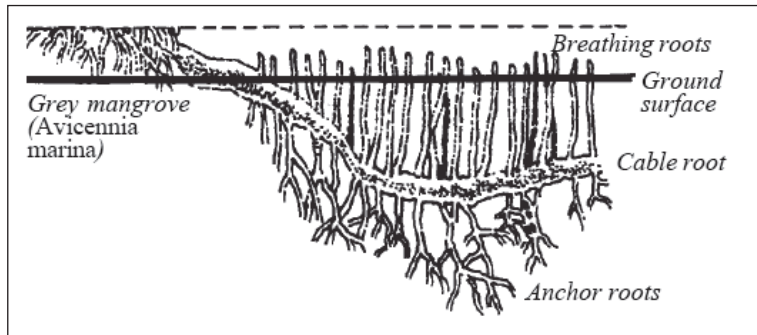
Victoria's Riflebird (*Ptiloris victoriae*) is a reasonably common resident of the Wet Tropics rainforest and its raspy, single note call ('ya-a-s-s-s') is unmistakable. An insect and fruit eater (and therefore, a seed disperser), the male riflebird is beautiful and bejewelled while the females have dull colours on the back and are pale with bars below. The males want the attention of as many females as possible and, if their iridescent green head and neck feathers and quilt-edged, velvet black body feathers aren't enough to do the trick, the mesmerising dance they perform from a tall tree usually seals the deal. This is the famous bird that stretches its rounded black wings upward and sways his body from side to side, flicking each wing upwards in time to his swaying.

The Mangroves of Marrdja

It is thought that mangroves evolved somewhere between Australia and New Guinea about 50-60 million years ago, and spread out from there to tropical regions worldwide. In warmer periods of the earth's history they probably covered a much larger area than they do now. Mangroves currently growing in cool areas such as in Victoria and South Australia are probably relicts of that warmer time. A high degree of species diversity of mangrove trees and shrubs (about 30 species) occurs in northeast Australia, comparable with the diversity of

those of Papua New Guinea and southeast Asia which are acclaimed as some of the richest mangrove areas in the world.

A mangrove is not a species, rather the name given to a community of unrelated plants living in areas which are inundated by tides – the common factor being that they have the **ability to live in salt water**.



Worldwide there are 69 recognised species of mangrove plants belonging to 20 families. In Queensland up to 34 mangrove species and three hybrids are known to occur.

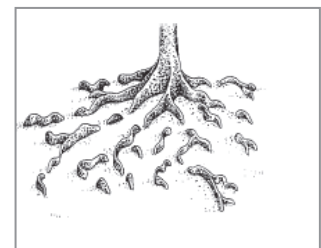
The most diverse mangroves occur in tropical areas where the water temperature is greater than 24°C in the warmest month, rainfall exceeds 1,250 mm annually and mountain ranges higher than 700 m are found close to the coast (the proximity of mountains ensures the rainfall).

Mangroves **protect the coast** by absorbing the energy of storm-driven waves and wind. While providing a buffer for the land on one side, mangroves also protect the sea on the other. Sediments trapped by roots prevent siltation of adjacent marine habitats. Mangrove plants have also been shown to absorb pollution, including heavy metals.

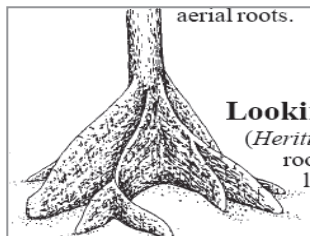
It has been estimated that up to 75% of fish caught commercially either spend some time in the mangroves or are dependent on food chains which can be traced back to these coastal forests.

Apart from coping with salt, mangroves also face common problems of water-logged, unstable and oxygen-deficient soils. Despite belonging to many different families mangrove plants have come up with surprisingly similar solutions. The roots of the mangrove support the tree and obtain essential nutrients and oxygen.

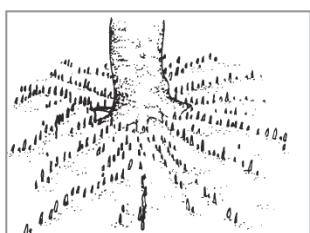
The **Cannonball Mangrove** (*Xylocarpus granatum*) is buttressed and the cable roots also appear above the ground in the fashion of knee roots. This mangrove produces a large fruit 20 cm in diameter, containing up to 18 tightly packed



seeds. On ripening it explodes, scattering the seeds which float away on the tide. They often end up on beaches. The cannonball mangrove is prized for its hard wood and used for boat building and cabinet timber as well as Aboriginal tools such as digging sticks, spears and boomerangs.



The seed of the **Looking-glass mangrove** (*Heritiera littoralis*) has a prominent ridge on one side. This may act as a sail when the seed is in the water. The looking-glass mangrove produces buttressed roots which are like flattened, blade-like stilt roots. The timber of the looking-glass mangrove is very strong. Aboriginals used the ground up seeds after preparation for satay pastes and the leaves as a contraceptive. The seeds are edible but toxic.



The **Grey mangrove** (*Avicennia marina*) grows a series of snorkels, or peg/pencil roots, known as pneumatophores. Experiments with a related *Avicennia* species have shown that those plants growing in coarse coral sand, with a good air supply to the roots, were able to survive after their pneumatophores were removed. However, those living in poorly aerated soil died when the pneumatophores were covered. In one situation, where they were covered with oil, the plants responded by growing aerial roots.

Geology

Due to the southeast facing funnel-shape of the Oliver Creek valley, Oliver Creek can rise very rapidly (pers. comm., L. Mason, 2009).

Further Reading

Cape Tribulation, Daintree National Park

www.nprsr.qld.gov.au/parks/daintree-cape-tribulation/

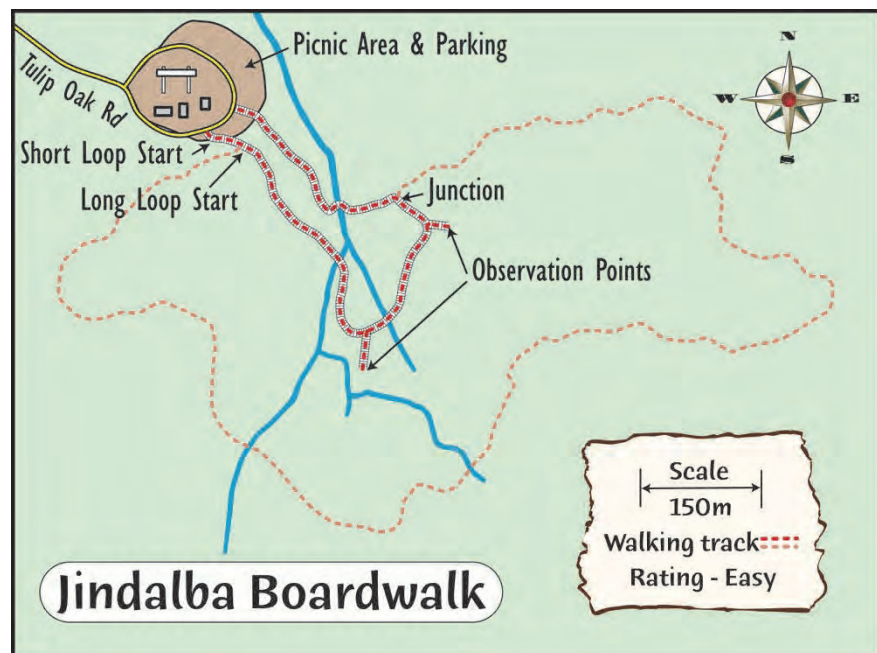
The Daintree Coast

www.wettropics.gov.au/marrja-boardwalk.html

2.5 | JINDALBA VISITOR AREA



The Jindalba Boardwalk is on the Daintree/Cape Tribulation Road, midway between the Cape Kimberley and Cow Bay Roads (3-4 km from either road). The car park is well signposted.



Quick Facts – Jindalba Visitor Area

- ☞ Jindalba was purchased in 1996 under the Daintree Rescue Program.
- ☞ More than 30,000 trees have been replanted.
- ☞ The fronds of the King Fern can be up to four metres in length and the spores of the King Fern can be easily seen under the leaves.
- ☞ Jindalba is the only visitor site north of the Daintree River with a freshwater creek.
- ☞ When you arrive here the Zamia palm – the world's tallest cycad – is quite prominent, along with the climbing pandan and the cassowary plum.

Aboriginal History

Jindalba is the traditional place name for this area, meaning 'foot of the mountain'.

For thousands of years the Eastern Kuku Yalanji crossed these ridges down to the Daintree coast. The Kuku Yalanji used this area extensively for food collection. Many nut cracking rocks can still be found in the area.

For more information on traditional Aboriginal stories please contact the traditional owners at **Jabalbina Yalanji Aboriginal Corporation**:

☞ **Telephone:** (07) 40 98 23 91

☞ **Email:** Jabalbina.Yalanji@bigpond.com

European History

In the **1880s**, pack horses and eventually wagons followed the Aboriginal pathways. There are still reminders of the many people who used these tracks with workers finding old nut cracking stones, trees blazed as markers and traces of old tracks.

The Jindalba Visitor Area was built on a 64 hectare block bought in 1996 by the Daintree Rescue Program. In the early **1900s** the forests were heavily logged for red cedar and by the **1950s** the flatter areas had been cleared for cattle grazing. More than 30,000 rainforest trees have been planted in a bid to return the area to its natural rainforest. Infrastructure for the Jindalba site was built in already existing clearings and revegetation is evident where forest creep is occurring.

Flora and Fauna

The huge fronds of the ancient **King Fern** (*Angiopteris evecta*) can grow up to five metres long and can be up to one metre in diameter at the base of the trunk. Even the crozier (the curled end of a new frond, named after the fancy hooked stick that bishops carry) is amazingly large. The fronds are kept erect by 'turgor', the pressure of the sap in the cells. Fronds and other parts of this fern have been preserved as fossils in coal formed 260-300 million years ago and don't differ greatly from those growing today. The aboriginals would sometimes eat small curled up fern leaves. Pigs are known to eat this fern, seeking its starchy rhizomes.



KING FERN
(PHOTO: TOURISM QUEENSLAND)

The **Zamia Palm** (*Lepidozamia hopei*), also known as **Hope's Cycad** is a rainforest cycad but likes reasonably good light levels, so tends to grow at the edge of the forest or along stream banks. This is the world's tallest cycad, growing to 16 m high.

The **Thick-leaved Rhipidophora** (*Rhipidophora hayi*) is a glossy, alternating leaf climber adhering to trees. It can be seen at almost all of the sites north of the Daintree River. It is found near sea level from the Bloomfield River to Innisfail and bears minute yellow clustered flowers on a spike.

Fungus Root (*Balanophora fungosa*) might look and sound like a fungus but it is actually a flowering plant that is a root parasite. It can be seen just above ground level during June and July next the boardwalk when the smell of the flowers will be apparent. The Kuku Yalanji calls this plant 'chumbil'.

You can see the **Supplejack** (*Flagellaria indica*) easily here at Jindalba. It is a long woody vine with stems up to 30 millimetres thick. The whip-like tendrils on the tips of the long leaves help the vine climb up to the rainforest canopy using other plants to support it. Small white fragrant flowers grow in a bunch at the tip of the vine.

The **Orange-footed Scrub Fowl** is the smallest of the mound building birds in North Queensland, yet builds the largest mound for its nest. These birds are megapodes, meaning 'big feet'. They rake up leaf litter vegetation with their strong orange legs to construct their massive nesting mound. These mounds can measure up to 12 m wide and 5 m high. Instead of sitting on their eggs, orange-footed scrub fowl allow the heat from the rotting vegetation in their mounds to do the incubation for them. During this time, the male tends the mound, adding or removing material to keep the temperature a constant 30.8 to 35.8°C.

Geology

Refer to Section 2.4 on Murrumbidgee Boardwalk, page 55.

After leaving Jindalba and travelling north to Cape Tribulation

The land on which **Cow Bay airstrip** is located was gifted to John Moffat who tried to grow maize. A kanaka, John Solomon, worked for Moffat and after Moffat's unsuccessful attempt at maize production, Moffat left and asked Solomon to look after his belongings. Solomon passed away while still looking after Moffat's possessions which were quickly thieved.

In 1927, three Mason brothers moved into Cow Bay just before the depression with the intention of producing enough food for Australia. With failure a reality, they moved to Cape Tribulation in 1932. Cow Bay is not named after the dugong or 'sea cow'; rather it is named after the cattle which used to roam freely along the beach (pers. comm., L. Mason, 6 July 2009).

Further Reading

The Daintree Coast

www.wettropics.gov.au/jindalba-boardwalk.html



DAINTREE RIVER MOUTH
(PHOTO: WTMA)

2.6 | WALU WUGIRRIGA (ALEXANDRA RANGE LOOKOUT)



☞ After crossing the Daintree Ferry, the turnoff to Alexandra Range Lookout is located approximately 7 kms from the ferry on the right-hand side.

Quick Facts – Alexandra Range Lookout

From the lookout 'as the pigeon flies', it is:

- 7 km to the mouth of the Daintree River;
- 4.5 km to Snapper Island;
- 24.5 km to Port Douglas; and
- 20 km to Cape Tribulation.

☞ The lookout is reputedly named after Princess Alexandra, an attractive Danish princess who married King Edward VII of Great Britain in 1863.

☞ At this location there is an amazing view to Snapper Island, the Daintree River mouth, Low Isles and the Coral Sea.

☞ The rare Bennett's tree kangaroo has been seen here on occasion. And while rare it is a good idea to keep an eye in the trees surrounding the lookout.

Aboriginal History

The Eastern Kuku Yalanji people are the traditional owners of the land. Walu Wugirriga means 'look out' ('wah-lu' 'oo-gid-ee-gah').

For more information on traditional Aboriginal stories please contact the traditional owners at **Jabalbina Yalanji Aboriginal Corporation**:

☞ **Telephone:** (07) 40 98 23 91

☞ **Email:** Jabalbina.Yalanji@bigpond.com

European History

Alexandra Range Lookout is part of a 38.3 hectare parcel of land bought by the Queensland government in 1993 (most of the land is below the escarpment). Prior to 1993, the increasing visitor use to the lookout was a concern for the private owner. The upgraded lookout was developed by the Wet Tropics Management Authority in consultation with the Douglas Shire Council, the local tourism industry and Kuku Yalanji representatives. By 1994 when the site was officially opened, 150,000 visitors per annum were stopping at the lookout. It is said, the lookout, Mount Alexandra (Thornton's Peak) and a few other local features of the Daintree were named after Princess Alexandra, an attractive Danish princess who married King Edward VII of Great Britain in 1863.

Flora and Fauna

The **Native Ginger** (*Alpinia caerulea*) directly in front of the lookout is a common rainforest ginger. Aborigines used the leaves to cook with. The flowers are cream or pink on a stalk above the end of the frond. This is followed by green berries which turn blue as they ripen.

A different lawyer vine can be seen directly in front of the lookout – **Claudie River Lawyer Vine** or **Iron Range wait-a-while** (*Calamus warburgii*). It is typically found in Cape York and is listed as *Vulnerable* by the State's *Nature Conservation Act 1992* and Commonwealth *Environment Protection and Conservation Biodiversity Act 1999*.

The **Ulysses Butterfly** (*Papilio ulysses*) is commonly seen from the lookout. This brilliant blue and black butterfly is attracted to red, blue and mauve colours. Locals have planted the caterpillar food plants Pink Evodia (*Melicope elleryana*), Yellow Evodia (*Melicope bonwickii*) and Little Evodia (*Melicope rubra*) to attract the butterfly to their garden.

Flocks of **Pied Imperial-pigeons** (*Ducular bicolor*) (also known as Torres Strait Pigeons or Nutmeg Pigeons) may be seen flying from Low Isles to the mainland up the Daintree River and over the surrounding rainforest. The bird returns to northern Australia from Papua New Guinea in August/September and departs in March/April after nesting in a large breeding colony on Woody Isle.

Metallic Starlings can be found in this area. The adults have brilliant red eyes and a long tail and green glossy back plumage. Some years they nest in this area which are quite conspicuous as the nests are globular nests in shape with a 'colony' of up to 100 nests in a single tree.



LUMHOLTZ TREE KANGAROO
(PHOTO: WTMA)

The **Bennett's tree kangaroo** (*Dendrolagus bennettianus*) resides in upland and lowland rainforest north of the Daintree River in an area of only about 70 km by 50 km. The Bennett's tree kangaroo is larger than the Lumholtz's tree kangaroo and has slightly more uniform colouration and patterning than that of the Lumholtz's tree kangaroo. This rare solitary creature is seldom found on the ground. If startled, it jumps to the forest floor and bounds like a normal kangaroo. All tree kangaroos can move their hind legs independently, which terrestrial kangaroos can't do.

The Views

Daintree River

Maps still show plans for a township called Whitby – after the town where Captain Cook's ship the *Endeavour* was built. The town never eventuated in the Daintree due to reduced land access; however one person may currently live there. The Daintree River is 120 km long. The distance from the ferry crossing to the river mouth is 9.5 km by river and 7 km as the crow flies. Estuarine crocodiles have been found as far as 68 km upstream.

Snapper Island

Originally spelt 'Schnapper', Snapper Island is part of the traditional sea country of the Eastern Kuku Yalanji. The island rises 99 m above sea level and is surrounded by fringing reef. It was declared a National Park in 1939 and included within Hope Islands National Park in 2000. Degraded areas have been revegetated with seedlings raised from seeds collected in droppings of the Pied Imperial-Pigeon.

In the early **1900s**, Jerry Doyle operated a lime kiln on the island fired by wood from the Daintree and ferried over on a vessel called the 'Nellie'. Lime was once produced by burning coral in lime kilns. The lime was needed to increase soil fertility which becomes depleted after a few sugar cane seasons. Bêche-der-mer (sea cucumber) processing (boiling) may also have been undertaken here. The watercourse stonework from an early Chinese market garden is still visible on the island today.

Low Isles

Low Isles are comprised of a 1.6 hectare sand cay (Low Isle) and a 45 hectare coral shingle cay covered in dense mangroves, called Woody Isle (Low Woody by the locals) and is situated 15 km northeast of Port Douglas.

The **banana farms** you can see to the left of the Daintree River are growing on land which was previously a cattle farm.

The town of **Whitby** was surveyed on 20 December 1886 by Charles Gardiner inside the bar of the Daintree River. The town was used for ships coming into the river to pick up timber, mainly cedar, for export. However, a number of ships sunk near the town. A sawmill was erected at Whitby but in 1888 with timber operations virtually ceasing, the town was deserted.

Geology

Alexandra Range Lookout is approximately 205 metres above sea level. As a comparison, Mount Alexandra, which is further north on the way to Cape Tribulation (Thornton's Peak), is 482 metres high.

Further Reading

Snapper Island, Hope Islands National Park

www.nprsr.qld.gov.au/parks/hope-snapper/index.html

The Daintree Coast

www.wettropics.gov.au/Daintree

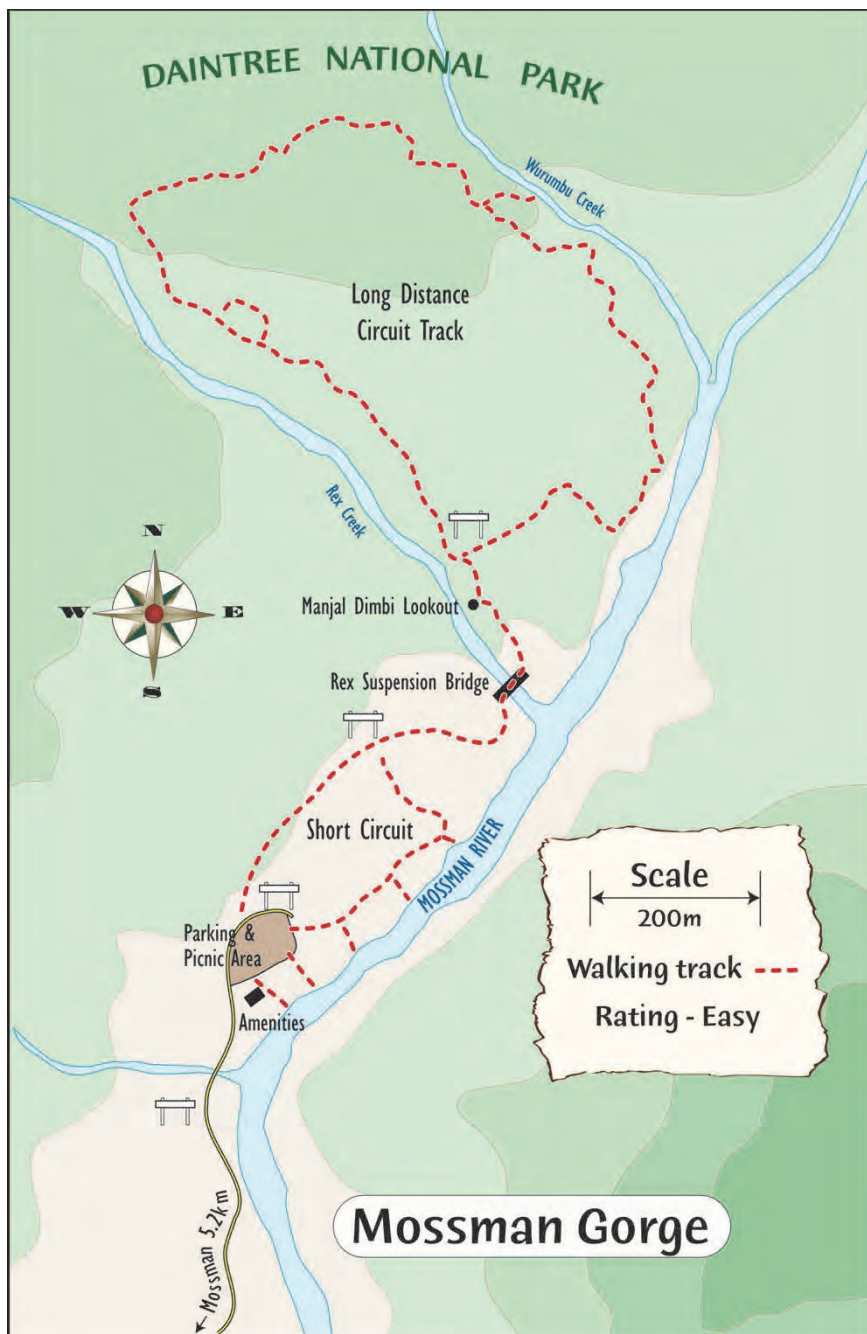


MOSSMAN GORGE
(PHOTO: J. CARMODY)

2.7 | MOSSMAN GORGE



From Mossman, take the road to Mossman Gorge (about 4 km). There is a car park at the end of the road which is often full at busy times.



Quick Facts – Mossman Gorge

- ☞ This is Eastern Kuku Yalanji country.
- ☞ The size of the Mossman Gorge section of Daintree National Park is 56,500 hectares.
- ☞ Tree-kangaroos, musky rat-kangaroos, platypus and Boyd's forest dragons are known to inhabit the Mossman Gorge section of Daintree National Park.
- ☞ As you walk along the path you will see a large impressive cycad at the suspension bridge. The site also contains quite a few wait-a-while and stinger trees so watch out!
- ☞ If you are touring at night you have a chance to see leaf-tailed geckos which are regularly spotted around this site at night. Leaf-tailed geckos have a prominent black and white striped tail.
- ☞ Only 50 individual trees of the Mossman Quandong are known to exist – all in the Mossman region.

Aboriginal History

The Kuku Yalanji, the traditional owners of Daintree National Park, welcomes you and asks that you respect their special place. Their traditional country extends from near Cooktown, south to Mossman and west to the Palmer River. For the Kuku Yalanji, many natural features of the landscape have spiritual significance, including Wundu (Thornton Peak), Manjal dimbi (Mount Demi), Wurrumbu (The Bluff) and Kulki (Cape Tribulation).

Bamanga Bubu Ngadimunku Incorporated (BBN Inc.) is the incorporated association that manages the land, resources, business, employment and education needs of the Mossman Gorge Aboriginal Community.

For more information on traditional Aboriginal stories please contact the traditional owners at **Jabalbina Yalanji Aboriginal Corporation**:

☞ **Telephone:** (07) 40 98 23 91

☞ **Email:** Jabalbina.Yalanji@bigpond.com

Kuku Yalanji Dreamtime conducts interpretive cultural walks through the national park and their adjoining land. Tours depart Monday to Friday at 9:00 am, 11:00 am, 1:00 pm and 3:00 pm. Tours depart on Saturdays 9:00 am and 11:00 am.

☞ **Telephone:** (07) 40 99 70 00

☞ **Website:** www.mossmangorge.com.au

European History

The first adventurers at Mossman were the timber-cutters. According to legend, the first white man was Dean Hart, 'a native of Jamaica and of a mahogany colour'. Hart and his half-brother Ken Keen selected what is now the western half of Mossman. The eastern half was selected by Thomas Wilson who supplied the transport by sailing from Port Douglas up the river. Don Hart was the first man to trial growing sugar cane, and was followed by a Miss Parker who selected Brie Brie Estate and built a small sugar mill. The venture proved unprofitable at the time.

The town of Mossman was established as the result of the discovery of the Mossman River by the explorer George Dalrymple. Dalrymple named the Mossman River after Hugh Mosman, an explorer and mining man and a member of a prominent southern family.

Flora and Fauna



The **Mossman Quandong** (*Peripentadenia phelpsii*) is a rare tree with white flowers which honeyeaters enjoy. These can be expected to bloom in July. The serrated edged flower petals can be seen on the road into Mossman Gorge. Fewer than 50 individual trees are known – all of them in the Mossman region. The ones known in the Mossman region are from a planting program previously undertaken to replant these trees and they were then named the Mossman Quandong for the community.

The **Daintree Penda** (*Lindsayomyrtus racemoides*) is a lowland rainforest tree that attracts attention (notably about July) when the pale mauve to bright purple new leaf growth appears. The fragrant flowers are cream or white with five petals. The tree grows large simple leaves with the new growth hanging in limp spirals.

The **Orange-thighed Tree Frog** (*Litoria xanthomera*) grows to 55 mm and is distinguishable by the bright orange colour on the inside of its thighs, flanks and irises. These small green frogs have a long moaning 'aaa-rk' followed by softer trills. These frogs mainly live in the dense rainforest.

Lesueur's Frog (*Litoria lesueuri*) can be usually observed in Mossman Gorge at night. These frogs are a grey to brown to coppery colour with darker flecks or blotches usually present on the body. They grow 4.5-7 cm long. There is a dark streak from the snout to near forelimb. The fingers are unwebbed but the toes are fully webbed.

The **Northern Red-throated Skink** (*Carlia rubrigularis*) is a grey brown skink up to 14 cm in length. Breeding males have a rich red flush to the sides of the neck. They forage in leaf litter, on fallen logs and tree buttresses for invertebrates. The females lay 1-2 eggs per clutch, sometimes communally. They are heliothermic – they will quickly flatten their body to intercept maximum radiation and routinely exhibit tail-waving behaviour while foraging.



RED-THROATED SKINK
(PHOTO: JCU WEBSITE)

Geology

Much of the 56,500 ha Mossman Gorge Section of Daintree National Park includes rugged, largely inaccessible slopes of the Main Coast Range and Carbine Tableland, adjoining Mount Windsor and Mount Lewis. It is these steep mountain ranges that trap moisture blown in from the ocean and ensure frequent rainfall, maintaining the rainforest and ultimately feeding the Mossman and Daintree Rivers.

Over millions of years, the Mossman River has carved a steep-sided valley from the upper reaches to the coastal lowlands. Through this valley, crystal clear water cascades amongst large granite boulders which have been washed down from the hills during times of heavy flood.

In the short walking tracks that wind upstream the river, you can observe the rounded boulders of the granite brought down from further inland.

Further Reading

Mossman Gorge, Daintree National Park

www.nprsr.qld.gov.au/parks/daintree-mossman-gorge/index.html

Mossman Gorge

www.wettropics.gov.au/baral-marrjanga-mossman-gorge-rainforest-circuit.html



BARRON FALLS
(PHOTO: WTMA)

2.8 | BARRON GORGE NATIONAL PARK



- ☞ The Barron Falls Lookout walk begins 5 km outside of Kuranda. Follow the road signs to Barron Falls.



Quick Facts – Barron Gorge National Park

- ☞ Barron Gorge National Park was established in 1940 and is 28 square kilometres in size.
- ☞ Barron Gorge Hydroelectric Power Station was the first to be built in Queensland in 1935, but was moved downstream to its present site in 1963. The station powers the equivalent of 36,000 houses and annually saves 260,000 tonnes of greenhouse gas emissions.
- ☞ The Barron Gorge is an impressive natural feature of the Wet Tropics.

Aboriginal History

The Traditional Owners ask that you take care and respect their country during your visit.

The park is part of the traditional lands of the Djabugandgi Bama (local Aboriginal people) who maintain a close spiritual connection with this country. Before Europeans arrived, Bama traversed this country, developing trails linking the coast to the uplands. These historic trails now form sections of a walking track

network. The area is known as Djirri Nyundu Nyrrumba and includes Barron Gorge National Park.

The Aboriginal name for the Barron River was 'Buna' and the Falls were known as 'Din Din'.

To the Djabugay people, the 'Creation Era' (Dreamtime) describes the events surrounding the making of the world. In Djabugay country, 'Bulurru' is the 'spirit of creation, the sacred past, the word and the law to be followed'. As the 'Bulurru' ancestors journeyed across the land, stories, songs and ceremonies were recorded and have been passed down from generation to generation.

The greatest ancestor of all is Gudju Gudju, the Rainbow. Gudju Gudju could transform into ancestors such as Budaadji, the carpet snake, who created all rivers and creeks of Barron Gorge National Park. During the wet season, Gudju Gudju's presence is most profound in his rainbow form. The voice of Bulurru, the creation spirit, can be heard through Gudju Gudju in the sound of thunder.

On 17 December 2004, the Federal Court of Australia handed down the Djabugay people's native title determination over Barron Gorge National Park. This is the first park in Queensland to have a native title determination which recognises the interests and rights under customary law and tradition that already exist. A formal Indigenous Land Use Agreement has been registered to ensure that park management and native title interests are properly integrated.

European History

The **Barron River** was originally named **The Silvers** by John Doyle when he came across it in **1876**. Later that same year, police inspectors R.A. Johnstone and A. Douglas named it in honour of Thomas Henry Bowman Barron, Chief Clerk of the Queensland Police Department.

Gold rushes in the **1870s** drew thousands of prospectors to the region from all over the world. Cairns was founded as a port and the Douglas and Smith's tracks were established through Barron Gorge as the first links between the goldfields and the port. Miners even fossicked in Barron Gorge itself – remains of mining shafts and diggings can still be found. From the late **1800s**, the network of walking paths was adopted by gold miners, cattle drovers, timber haulers and railway workers to cater for drays and pack-horses. Evidence of these past users can be seen along the tracks – Aboriginal nut cracking stones, miners' bottle dumps and the remains of shanties and rail workers' camps.

Valuable **red cedar** (*Toona ciliata*), known as 'red gold', was logged in the Barron Gorge in the **1880s** and sometimes sent down the river – over the falls! It became obvious that a better means of transport for timber and also minerals, produce and cattle was needed. The Barron Valley was selected as the site for a rail link to the Atherton Tableland.



PICTURESQUE RAIL BRIDGE OVER
STONE CREEK, KURANDA
SCENIC RAILWAY
(PHOTO: WTMA)

Construction of the **Cairns-Kuranda Railway** was, and still is, an engineering feat of tremendous magnitude. On 10 May 1886, the first sod of soil was turned by the then Premier of Queensland, Sir Samuel Griffith. The line was to total 75.1 km and included 15 tunnels, 93 curves and dozens of difficult bridges above ravines and waterfalls. This formidable task was undertaken between 1886 and 1891 by 1,500 men in steep, rocky terrain, dense forest and seasonal wet weather conditions. Incredible by today's standards, much of the original construction work was done by hand. In 1891 the Cairns-Kuranda Railway line was opened to passenger travel. The **Kuranda Scenic Railway** train travels from Cairns to Kuranda returning twice daily.

Kuranda was surveyed in 1888 in anticipation of the development that would accompany the arrival of the railway. On 23 October Thomas Behan filed the survey of a town near Middle Crossing and filed the name Kuranda. His assistant Edwards is said to have suggested the name but had actually suggested Kurunda – a word from the Burnett River tribes where Edwards had picked up their dialect after he had been shipwrecked in the Wide Bay area and had lived with the Aboriginal tribes of the Burnett area.

The present **Barron Gorge Hydroelectric Power Station** was commissioned in 1963. The original site further upstream was officially opened in 1935 – at the time being Queensland's first hydroelectric power station. The original site was largely dismantled and decommissioned in 1959. Water flows from the Kuranda Weir on the Barron River down to turbines spinning at 600 revolutions per minute. Operated by the Stanwell Corporation Ltd, a \$28 million refurbishment completed in 2006 will extend the power station's life for another 40 years. The station has a generating capacity of 60 megawatts. Energy production is 11,000 volts (11kV) stepped up to 132,000 volts (132kV) by transformers in the power station switchyard. Only by a release of water or during flood events can tourists today have some idea of the former grandeur of the falls. The Barron River is a popular **white water rafting** site with the power station releasing water at certain times of the day.

The **Skyrail Rainforest Cableway** spans 7.5 km over Wet Tropics rainforest. Construction began in June 1994 after seven years of feasibility studies, environmental reports and other assessments. Skyrail opened in August 1995 and had 47 gondolas with the capacity to carry 300 passengers per hour. In

1996, they purchased an additional 67 gondolas to meet demand and increased capacity to 700 passengers per hour.

Flora and Fauna

The park encompasses a diversity of plant communities stretching from the coastal lowlands to the valleys and mountains on the Atherton Tableland. The area, however, is renowned for its tropical rainforests along with the seasonal rain and mist upon which it depends. Other plant communities in the park include open woodlands, with groves of **she-oaks** (*Allocasuarina* species such as *A. torulosa* and *A. littoralis*), found on the foothills and upland slopes. Grassland patches grow on the coastal foothills and adjacent to the railway line. Patches of upland heath are restricted to the plateau and peaks.

Mammals	Birds	Butterflies	Reptiles and frogs	In the water
Striped possums	Emerald doves	Cairns Birdwing butterfly	Pythons	Barramundi
Long-tailed pygmy-possums	Wompoo pigeon (distinctive 'wallock-a-woo' call)	Ulysses butterfly	Lace monitors	Jungle perch
Lumholtz's tree-kangaroos	Brush-turkeys		Giant green tree frog	Catfish
Musky rat-kangaroos	Orange-footed scrubfowl			Eels
Platypus	Cassowary			Estuarine crocodile (unlikely to be found upstream from Lake Placid)
Echidna				
Bats				
Spectacled flying-fox				

Sourced from: Department of Environment and Resource Management (2009)

Geology

The landscape of Barron Gorge National Park began to form about 400 million years ago under the sea, when Australia was still part of the great super-continent, **Gondwana**. Ancient rivers carried sediments to the coast, which was then more than 100 kilometres west of its present position. Earth movements at the edge of the continent uplifted and compressed the sandwich of sediments and volcanic rocks, forming the metamorphics – low-grade slates, greywackes and siltstone. Subsequently, the Barron River eroded areas of weakness and a deep gorge was formed.

The Barron River rises from the rainforests of Mount Hypipamee National Park, the river winds 60 km across the Atherton Tableland through one of Australia's highest rainforest belts, before entering the Barron Gorge, which twists through between the Macalister and Lamb ranges. The river then falls 250 metres onto the narrow coastal lowlands and flows out to the Coral Sea, just north of the Cairns Airport.

Further Reading

Barron Gorge National Park

www.npsr.qld.gov.au/parks/barron-gorge/index.html

Barron Gorge Hydro

www.stanwell.com/barron-gorge-hydro.aspx

2.9 | CATHEDRAL FIG



☞ Danbulla Forest Drive can be reached from the Gillies Highway to the southeast or through the village of Tinaroo on the northwestern edge of the lake. The road is narrow in places and may deteriorate in heavy rain. Watch out for other road users including cattle, wildlife and forestry trucks. The Cathedral Fig Tree car park is signposted, only about 5 kilometres off the Gillies Highway, about 1 kilometre after the dirt road begins.

Quick Facts – Cathedral Fig

- ☞ The deciduous Cathedral Fig (*Ficus virens*) measures 48 m in height and 44 m girth. Its crown extends over 2,000 m.
- ☞ Its root system extends over 1 hectare, and it's estimated to be about 500 years old.
- ☞ Ten different types of epiphytes and vines live on the fig's trunks or branches.
- ☞ The Cathedral Fig is part of Danbulla National Park and State Forest.
- ☞ The Cathedral Fig has the reputation of being the best place on the Atherton Tablelands to hear the morning chorus of birds singing as the sun rises.
- ☞ The tree provides for a range of animals to live within its mass due to the variety of niches available in the twisted roots and branches.

Aboriginal History

The Cathedral Fig is situated on Dulguburra Yidinji traditional country. Local Aboriginal people call the Cathedral Fig 'gulari' (© Dulguburra Yidinji language name only).

- ☞ For more information about Dulguburra Yidinji, contact dulguburra01@hotmail.com

European History

Refer to Section 2.13 on Danbulla Drive for the European history of the area (page 98).

Flora and Fauna

The **Watkin's Fig (Strangler Fig)** (*Ficus watkinsiana*) grows to 40 metres in height. Strangler figs enclose the host tree with aerial roots that grow down from a branch. The fruit is a distinctive purple in colour with pale spots. Many birds, as well as the spectacled flying fox feed on the fruit.

Catbirds rely on the Watkin's Fig fruit for their principal diet and carry the fruit to the tops of other trees where they eat them. During June and November you can find the Cathedral Fig's red fleshy fruit scattered across the ground. These fruits provide an important food source for many animals during the dry season.

The **Spectacled Flying-fox** (*Pteropus conspicillatus*) is commonly seen either hanging from the rainforest canopy or flying to get their next meal. Spectacled flying foxes are found in large squabbling colonies. They are large black flying foxes with rings of pale yellow fur around the eyes and across the back of the neck and shoulders. Living in permanent tree-top camps, flying foxes have a complex social system and use more than 20 different calls for communication. Older males guard the perimeters of the camp on the lookout for eagles and pythons which are their main natural predators. Along with other fruit bats, this animal plays an extremely important role in pollination and seed dispersal in our rainforests.

Musky Rat-kangaroos are seen regularly at the Cathedral Fig tree. Musky rat-kangaroos live in both lowland and upland forests to about 1,200 metres altitude. On average they are only about 230 mm in length and about half a kilogram in weight. These are the smallest of the macropods. Musky rat-kangaroos generally keep to themselves but sometimes groups can be seen under fruiting trees. Their diet consists mainly of fruit, insects and fungi.

The **Yellow-footed antechinus** (*Antechinus flavipes*) is the most widespread antechinus, ranging from northeastern Queensland to southwestern Western Australia. Gestation is about one month with up to 12 babies being born. Young live in the pouch for up to five weeks before moving into the nest and staying there for up to 12 months. Studies have shown that the female antechinuses sometimes eat their own young, not because they are hungry but more due to sexual discrimination. First-time mothers tend to eat most of their female offspring, however the second time round will kill their male offspring.

☞ **Did you know?** Six species of possum are known to live in or about the Cathedral Fig including the **Long-tailed Pygmy Possum** (*Cercartetus caudatus*) and the **Striped Possum** (*Dactylopsila trivirgata*). Both will readily feed on the flowers of the Bumpy Satin Ash tree as well.



SPECTACLED FLYING-FOX
(PHOTO: MIKE TRENNERY /
WTMA)



STRIPED POSSUM
CARRYING ITS YOUNG
(PHOTO: WTMA)

The **Striped Possum** (*D. trivirgata*) has striking black and white stripes along its body and a white tip to its tail. It is a solitary animal usually seen alone. During the day, the striped possum snoozes happily in a bed of leaves inside a tree hollow or clump of ferns. These nocturnal possums eat flowers, fruits, beetle larvae and pollen. It will also bite into fallen logs or dead branches to get at borers or grubs. The striped possum lives only in the upland and lowland regions of the Wet Tropics region of north Queensland.

The **Long-tailed Pygmy Possum** (*C. caudatus*) has a tail (135 mm) longer than its body length (106 mm) and is biscuit-brown in colour with a black 'Batman' mask across its eyes. These nocturnal possums eat nectar, native fruit and insects. Breeding twice a year, females have 1-4 young born around January and February and sometimes a second litter from late August to early September. The young leave the nest when they are roughly 45 days old. The long-tailed pygmy possum has large brown eyes and mouse-like ears and is also found in New Guinea.

Geology

The rocks of the Danbulla Forest Reserve and tableland area consist largely of metamorphics and granites. These metamorphic rocks originated during the Devonian period, approximately 420 million years ago.

Further Information

Danbulla National Park and State Forest

www.nprsr.qld.gov.au/parks/danbulla/index.html

2.10 | CURTAIN FIG



Just one kilometre from the Yungaburra township, turn south toward Malanda and look for the car park entrance about three kilometres on your left.



Quick Facts – Curtain Fig

- ☞ The Curtain Fig National Park protects endangered mabi forest.
- ☞ The Curtain Fig is estimated to be about 500 years old. It is a Strangler Fig (*Ficus virens*), fallen into a neighbouring White Fig tree.
- ☞ The curtain of aerial roots drop 15 metres to the ground. The curtain effect results from one tree leaning against another tree on a 45-degree angle. The strangler vine then grew along the oblique angle of the leaning tree, dangling 15 metres to the ground to create the curtain effect.
- ☞ There are four photo viewing points located along the boardwalk surrounding the tree.
- ☞ Basalt boulders can be seen on the forest floor.
- ☞ There are several large stinging trees located here near the boardwalk.
- ☞ Lumholtz tree-kangaroos, green ringtail and coppery brushtail possums have all been sighted here.
- ☞ Leaf-tailed geckos, golden orb spiders, bandicoots and echidna are also present.
- ☞ Owls are often seen on fence posts when leaving the mabi forest.

Aboriginal History

The Curtain Fig is within the traditional country of the Ngadjon-Jii Aboriginal people.

European History

It is estimated the Curtain Fig is about 500 years old and the curtain-like effect stands 40 metres tall with a circumference of 39 metres. Parts of the dead host tree are still visible. This magnificent strangler fig features an extensive curtain of aerial roots that drop 15 m from the canopy to the ground.

The Curtain Fig was protected by a reserve in the early **1930s**. It then became the Yungaburra State Forest before being gazetted as part of the Crater Lakes National Park in December 1994, covering an area of 195 hectares. Curtain Fig National Park protects endangered mabi forest and the Curtain Fig tree.

Flora and Fauna



GREEN RINGTAIL POSSUM
(PHOTO: WTMA)

The **Green Ringtail Possum** (*Pseudocheirops archeri*) has extremely soft greenish fur, a pointed face, small ears and a white belly. The greenish fur is from fine banding of black, yellow and white hairs. There are white patches under their eyes and ears and two silvery stripes along their backs. The tail is strongly prehensile. The Green ringtail is found in dense rainforest above 300 metres altitude. Unlike other possums which prefer a den, Green ringtails roost during the day on an open branch, curling up in a ball with its head down amongst the canopy. Although nocturnal, they will occasionally feed during the day as well. The Green ringtail is the only possum known to eat the leaves of several species of figs and the giant stinging tree.

The **Rufous Owl** (*Ninox rufa*) can sometimes be seen sitting on the fence posts as you are leaving the Mabi forest. The owl has large yellow eyes that focus forward. These nocturnal birds have narrow dense reddish-brown barring on underparts and darker barring on the upperparts. They are classed as *Rare* within the State of Queensland.

The **Yellow-breasted Boatbill** (*Machaerirhynchus flaviventer*) is a small black and yellow flycatcher with a short, disproportionately wide bill. The tail is cocked. They are usually seen in pairs, working their way through foliage in the mid to upper rainforest strata. These birds have a soft trilling call.

Keep an eye out for a **Leaf-tailed gecko** (*Phyllurus iris*) with its flattened, carrot or leaf-shaped tail. These geckos are the masters of camouflage and have scattered spiny scales on the body, limbs and tail. The body is brownish with numerous dark blotches.

The **Golden Orb Weaver Spider** (*Nephila* spp.) is enormous, with the female measuring up to 5 centimetres in body length. She builds a large 1 m diameter orb web of strong golden silk between trees. All orb weaving spiders make suspended, sticky, wheel-shaped orb webs. Webs are placed in openings between trees and shrubs where insects are likely to fly. The strong silk has a golden sheen, possibly making it attractive to insects. The male is a tiny black spider much smaller than the female, which hangs around on the edge of the web.

The **Stinging Tree** (*Dendrocnide moroidesi*) is found throughout the Wet Tropics rainforests particularly where extra light can penetrate the forest floor. This notorious plant can inflict severe pain and should be avoided. The fine silica hairs on the stem and leaves act like small syringes and continue to inject venom for several days. There is no real effective treatment. Cooling of the skin where

stung even several months later can produce a tingling sensation. The large leaves are heart-shaped and the edges of the leaves serrated. Applying 'plastic skin' and pulling it off can help remove some of the hairs. Aboriginal people used the sticky sap from the roots to do this.

Geology

About one million years ago the voluminous flows from shield volcanos in the Atherton Basalt Province ceased to be the dominant style of eruption, and were replaced by gas-charged eruptions that fragmented the lava and threw it high in the air. The resulting 'fire fountains' would have been spectacular sights. The fragmented lava cooled and solidified in flight, forming basalt that contained abundant small gas bubbles or 'vesicles'. This type of basalt is known as 'scoria'. The very gas-rich ('vesicular') nature of the basalts can be seen in the rocks on the forest floor surrounding the Curtain Fig Tree.

Further Information

Curtain Fig National Park

www.nprsr.qld.gov.au/parks/curtain-fig/index.html

The Curtain Fig Tree

www.wettropics.gov.au/curtain-fig-tree.html



AERIAL VIEW OF LAKE BARRINE (PHOTO: WTMA)

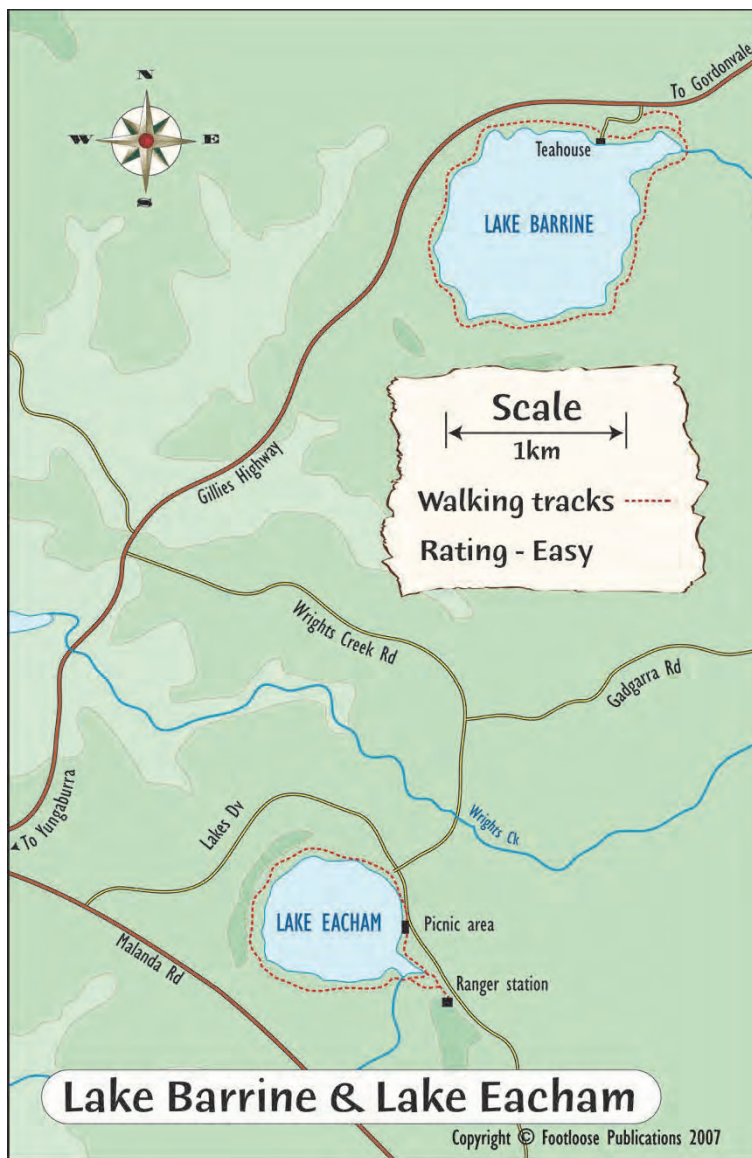


THE POPULAR LAKE BARRINE TEAHOUSE (PHOTO: WTMA)

2.11 | LAKE BARRINE



The turn off to Lake Barrine is directly off the Gillies Highway about 8 km from the top of the Gillies Range and 8 km from Yungaburra.



Quick Facts – Lake Barrine

- ☞ Lake Barrine is the largest of the crater lakes on the Atherton Tableland, situated 730 metres above sea level.
- ☞ The lake measures roughly 1 km in diameter, with a rim height of 27 metres and maximum depth of 65 metres.

- ☞ Formed over 17,000 years ago following a volcanic eruption, the lake is filled only by rainwater.
- ☞ Twin giant kauri pines can be found here and are remnants of a species which dominated these forests over thousands of years.
- ☞ There are a variety of unique flowering plants in the gardens surrounding the lake (bat plant, powderpuff).
- ☞ Wompoo doves are often found in the Quandong tree located in the visitor car park.
- ☞ The pest fish species Tilapia is now found in the lake.

Aboriginal History

The traditional owners of Lake Barrine are the Dulguburra Yidinji people. They welcome you to their country and ask that you respect their special place. The flora and fauna of Lake Barrine are of high significant cultural value to the Dulguburra Yidinji.

- ☞ For more information about Dulguburra Yidinji, contact dulguburra01@hotmail.com

European History

Lake Barrine was apparently discovered by Constable Hanson and Edward Creber Putt in the early 1880s.

Crater Lakes National Park, which protects both Lake Barrine and Lake Eacham, was gazetted in December 1994 and covers an area of 974 hectares.

The Lake Barrine Teahouse has been family owned and operated for three generations by the Curry family. George Curry fell in love with the lake while surveying the region in the pioneering days. He and the local council and forestry department formed what was then called the Lake's Trust, which sought to protect the lake and surrounding land from logging. In 1923, George applied for a grant and was given a perpetual leasehold over one acre of land on the shore of Lake Barrine. Living on the edge of the lake in a corrugated iron hut, George first showed visitors around the lake in a row boat. The timber teahouse was originally built in the 1930s as a dance hall and has since had many uses including an aquatic centre, guest house, school and a convalescent home during World War II.

BIRDWATCHING

Lake Barrine is ideal for seeing waterbirds and rainforest bird species.

Look out for the:

Victoria's Riflebird
Double-eyed Fig
Parrot
Bridled Honeyeater
Tooth-billed
Bowerbird
Wompoo dove
Australian Pelican
Whistling duck
Pacific Black duck
Hardhead Duck
Brush Turkey

Flora and Fauna

Amongst Australia's largest trees, the 1,000 year old **twin Kauri Pines** are located 150 m from the teahouse along a wheelchair accessible path. Naturally speaking, it is rare that two trees competing for food and sunlight should survive and grow so close together. Each Kauri Pine has a circumference of over six metres!

The twin kauris are **Bull Kauri** (*Agathis microstachya*). A rare species, the bull kauri is a primitive plant found only on the Atherton Tableland between 600-1,000 metres above sea level. The species has a brown flaky bark that sheds as coarse scales. At 45 meters height, the two trees are close to the maximum height for this species (50 m). The leaves have parallel veins and the fruits resemble those of the Queensland Kauri Pine.

The **Bat Flower** (*Tacca chantrieri*) or Devil Flower (found in the gardens of Lake Barrine Teahouse) is native to Southeast Asia. The purple-black flower is bat-like in colour and shape. It is quite a complex plant with interesting side bracts of dark shiny green and white leaves. After flowering, berries are produced.

The **Powderpuff Lilly Pilly** (*Syzygium wilsonii*) is a graceful weeping lilly pilli which can be seen in the car park. The tree produces white or cream berries from October to January and is a favoured cassowary food. It is normally found in rainforest from Whyanbeel near Mossman to Hinchinbrook Island.

The **Wompoo Dove** (*Ptilinopus magnificus*) is the largest fruit pigeon (or dove) in the Wet Tropics. The dove's call is distinctive and it can often be heard with its loud baritone calls of 'wompoo' or 'wallock-a-woo' resonating through the forest. A good time to catch sight of this important seed disperser is when the Quandong fruits are falling. The blue, olive-sized fruits are a favourite and numbers of Wompoos will gather to feed in the airy branches. The Wompoo can disperse a wider range of rainforest seeds since it can include seeds too large for the smaller fruit doves and other fleshy-fruit eaters. The Wompoo only lays one egg. It has green upperparts, a greyish-white head, purple breast and yellow belly. These pigeons are also very fond of the ripe fruit of the **Ylang Ylang** or Perfume Tree.

Long-finned eels (*Anguilla reinhardtii*) are mostly carnivorous, feeding on fish that live in the lake. They can grow up to two metres in length. Baby female eels (elver) climb their way up waterfalls and even concrete weirs over 700 m to reach Lake Barrine. When they are around 15 years old they make the journey back down the Mulgrave River to the Coral Sea and across to near New Caledonia to mate and die. Adults gather and spawn in deep channels at about 300 m depth. Eels breathe through their skin and so as long as they stay wet they can remain

out of the water for hours. Eels find food through the use of smell and pressure sensors seen as white dots on the sides of the body detect changes in water currents.

In 2007, **Tilapia** was found in Lake Barrine. Tilapia is a member of the Cichlid family, originating from Africa. Two species are declared a noxious pest – Tilapia (*Oreochromis mossambicus*) and Black Mangrove Cichlid (*Tilapia mariae*). Both are mouth brooders – the female retains her eggs and hatchlings in her mouth until the fry are about five days old. Tilapia is an aggressive, territorial fish that breeds rapidly, has a high survival rate and will eat almost everything including invertebrates, other fish and their eggs. As a result they have a severe impact on native fish.

Geology

Lake Barrine is **maar** volcano averaging about one kilometre in diameter. Despite such a wide crater the walls are less than 30 m high, so it is not until you are actually inside the crater that it becomes a notable feature of the landscape. A **maar** is a broad, low-relief volcanic crater that is caused by an explosion when groundwater is exposed to hot magma.

Lake Barrine is the largest of the crater lakes on the Atherton Tablelands as is estimated to be 10,000 years old. The lake was formed when molten hot magma in the centre of the earth rose to the surface and heated the water table. The intense hot steam that resulted from the boiling water table was trapped underground, until massive explosions signalled its release. Huge cracks appeared in the ground and the trees that once lathed the mountainside were levelled and burnt. Over hundreds of years, water filled the craters and the trees grew back, creating the tranquil lake we see today.

Further Information

Lake Barrine, Crater Lakes National Park

www.nprsr.qld.gov.au/parks/lake-barrine/index.html

Volcanic Lakes, Wet Tropics

www.wettropics.gov.au/tablelands.html

Lake Barrine Rainforest Cruise and Teahouse

<http://www.lakebarrine.com.au/>

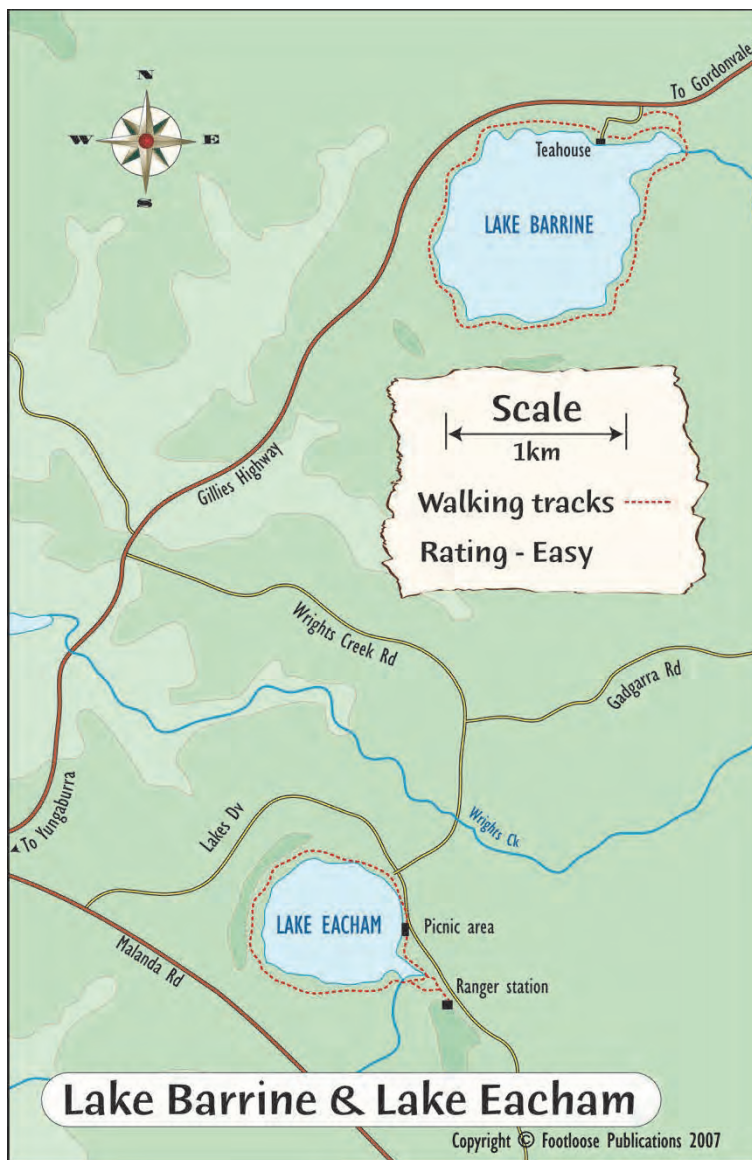


LAKE EACHAM
(PHOTO: WTMA)

2.12 | LAKE EACHAM



☞ Turn south off the Gillies Highway between Lake Barrine and Yungaburra, following the signs for about 3 kilometres to Lake Eacham.



Quick Facts – Lake Eacham

☞ Smaller than Lake Barrine, Lake Eacham measures 840 metres in length by 720 metres width, has a maximum depth of 66 metres, and has a rim height of about 30 metres.

- ☞ The lake is fed by underground springs, which is why it maintains a constant water level. It is isolated from other watercourses, making it an enclosed catchment.
- ☞ Due to the introduction of exotic fish to the lake, the native Lake Eacham Rainbow Fish was thought to be extinct – however due to hobbyists keeping the species in their aquariums the lake was able to be restocked and you can see the fish here today.
- ☞ Swimming is permitted at Lake Eacham.

Aboriginal History

The Traditional Owners of Crater Lakes National Park – Lake Eacham Section, the Ngadjon-Jii, welcome you to their country and ask that you respect their special place.

Ngadjon-Jii are the Traditional Owners of Bana Wiingina (Lake Eacham). The Ngadjon-Jii account of the formation of this country is similar to that of the Yidinji people. Warren Canendo, a Ngadjon-Jii artist, tells the story of the formation of Lake Eacham:

“Two young fellas were trying to spear that wallaby. But they missed and hit a flame tree. That’s a sacred tree. The young fellas not supposed to be out hunting. They weren’t initiated. Their elders told them to stay put, not go out hunting. But they didn’t listen. When they pulled their spear out, part of a grub came out with the spear, which was a witchetty grub. They started cutting down that tree to get more grubs. When they cut down that tree, the ground began to shake. Those two fellas had made Yamini [rainbow serpent] angry. Then the sky turned orange, then all these people back at the camp, the earth went from underneath them, sucked them in, whoosh, they all got drowned. Where they were camped became Bana Wiingina (Lake Eacham).”

Aboriginal stories of the eruption of Lake Eacham describe the forest at the time as ‘open scrub’. A subsequent study of pollen records from the lake’s sediments confirms this view, suggesting the rainforest formed on the tablelands only around 7,600 years ago.

European History

Late 1800s European settlers arrived at Lake Eacham and cleared a large amount of rainforest for timber and farming purposes.

- 1888**.....Lake Eacham (the lake and narrow band of shoreline vegetation) proclaimed a 'scenic reserve' for its natural beauty and recreational significance.
- 1934**.....Gazetted as a National Park.
- 1943**.....Used as an amenities centre for members of the Australian Military Forces. Concrete paths, toilets, picnic tables and fireplaces built.
- 1950-1974** Power boating and water skiing permitted on the lake.
- 1978**.....Kiosk and diving platform removed.
- 1994**.....Lake Eacham and Lake Barrine combined under one name: the Crater Lakes National Park.

Flora and Fauna

The story of the **Lake Eacham Rainbowfish** (*Melanotaenia eachamensis*), which is very similar to the Eastern Rainbowfish, living in the lake is intriguing. It is a mystery as to how any fish arrived in Lake Eacham, let alone the Lake Eacham Rainbowfish. Unfortunately, for the small Lake Eacham Rainbowfish species, other larger native fish were introduced into this closed system and eventually these larger fish ate the Lake Eacham Rainbowfish into extinction... or so it was thought. However, hobbyists had been illegally collecting the fish from Lake Eacham and were very successful in breeding them. These private collections became the source stock to reintroduce the fish to the lake. However, the larger introduced native fish were still living in the lake and proceeded to eat the entire population of introduced stock. It is futile to continue restocking the lake whilst the predators are still at large. Fish researchers working in Wet Tropics rivers and streams have found the Lake Eacham Rainbowfish in the Tully, Herbert and Johnstone Rivers and Dirran Creek. Some of them are the genetically pure version that used to occupy the closed Lake Eacham but others are hybrids caused by interbreeding with the Eastern Rainbowfish.

Lake Eacham supports over **180 bird species** for all or part of the year.

Look out for:

- Wompoo Fruit-dove *Ptilinopus magnificus*
- Victoria's Riflebird (endemic)..... *Ptiloris victoriae*
- Lewin's Honeyeater *Meliphaga lewinii*
- Spotted Catbird..... *Ailuroedus melanotis*
- Chowchilla (endemic) *Orthonyx spaldingii*
- Australian King-Parrot *Alisterus scapularis*

Also seen around the lake are:

Lumholtz Tree Kangaroo	<i>Dendrolagus lumholtzi</i>
Green Ringtail Possum	<i>Pseudochirops archeri</i>
Lemuroid Possum	<i>Hemibelideus lemuroids</i>
Musky Rat-kangaroo	<i>Hypsiprymnodon moschatus</i>
Herbert River Ringtail Possum	<i>Pseudochirulus herbertensis</i>
Amethystine Python	<i>Morelia kinghorni</i>
Saw-shelled Turtle.....	<i>Elesya latisternum</i>
Eastern Water Dragons	<i>Physignathus lesueurii</i>
Boyd's Forest Dragons	<i>Hypsilurus boydii</i>
Red-legged Pademelon.....	<i>Thylogale stigmatica</i>

Amethystine pythons can grow to five metres in length and preys on mammals, birds and other reptiles. On average they grow three metres in length but there are reports of an 8.5 m specimen found near Gordonvale. Look for them high in the trees, curled on the forest floor or occasionally swimming in the lake. Pythons lay up to 47 eggs at one time which the mother protects and incubates by coiling herself around them, even producing heat by shivering her body. These pythons are also known as **scrub pythons**. It is one of the most commonly seen snakes in the Wet Tropics. Its name is derived from the iridescent sheen overlying its brown and yellow body.

The **Lumholtz's Tree Kangaroo** is known by the Ngadjon-Jii as **mabi**. These rare arboreal marsupials show an apparent preference for trees such as the Black Bean or Moreton Bay Chestnut, Candlenut, Grey Bollywood and Milky Pine. Tree kangaroos have a long thick tail – not prehensile like that of possums. Up in the trees they can easily jump from branch to branch and on the ground will hop away like any other kangaroo. They mostly feed at night on leaves, fruit and flowers. They are generally solitary animals but on occasion have been seen in family groups.

Tooth-billed bowerbirds (*Scenopoeetes dentirostris*) are a common resident of upland rainforest above 600 metres, sometimes lower in winter. It is usually seen singularly. They are medium-sized and olive-brown in colour, paler below.

During the breeding season from October to January each male maintains a display court – a small cleared area about one metre in diameter on the forest floor. This he adorns with a dozen or more large freshly-picked green leaves turned upside down. His extensive, varied and remarkable repertoire can be heard throughout the rainforest. The tooth-billed bowerbird is elusive for the rest of the year when it remains high in the canopy. These birds are endemic to the Wet Tropics.

Lewin's Honeyeater (*Meliphaga lewinii*) is a common bird of the Wet Tropics. It is a bold lively bird that is rather aggressive and is usually seen singly or in pairs. These birds are an active feeder of insects, nectar and fruit.

The **Musky Rat-kangaroo** (*Hypsiprymnodon moschatus*) is the smallest and most primitive member of the kangaroo family. Unlike other small mammals, it is active by day and can be seen at Lake Eacham and Lake Barrine. It has possum-like features, such as a big toe which allows it to climb over fallen trees and branches. Although related to the kangaroo, it does not hop but moves along on all fours often at high speed. At night it sleeps in a leaf nest against a tree buttress. With a family tree dating back to at least 20 million years, they are considered the most primitive of living kangaroos.

Geology

Lake Eacham is a **maar**, or volcanic lake, formed by a steam explosion more than 10,000 years ago. It is 66 metres deep at its core and is fed by underground springs which enable it to retain a constant water level. The lake is isolated from any other water course making it an enclosed catchment. The lake maintains a crater rim that prevents run-off either into or out of the lake – maintaining clear water clarity. No streams flow into or out of the lake, with water only lost through seepage and evaporation. The water level fluctuates only four metres between wet and dry seasons.

Lake Eacham is the smaller of the two crater lakes. Within quite small areas, differences in soil type, drainage characteristics or past disturbances have resulted in profound changes in forest type and a number of rainforest communities can be seen along the 3 kilometre track around the lake. At the start of the track heading clockwise, there is evidence of rainforest clearing during World War II. Grey-green wattles dominate the canopy and a large number of young rainforest species fill the understorey, both evidence of recent clearing.

Further Information

Lake Eacham, Crater Lakes National Park

www.nprsr.qld.gov.au/parks/lake-eacham/index.html

Volcanic Lakes, Wet Tropics

www.wettropics.gov.au/lake-eacham.html

2.13 | DANBULLA FOREST DRIVE



☞ The Danbulla Road is 28 kilometres long and suitable for conventional vehicles. The eastern entrance to the road is on Boar Pocket Road, just near the top of the Gillies Highway, about 60 kilometres or just over one hour's drive from Cairns. The western entrance to Danbulla Road is reached via the township of Kairi.

Quick Facts – Danbulla Drive

- ☞ Danbulla National Park and State Forest covers more than 37,950 hectares.
- ☞ The endemic Hoop Pine (*Araucaria cunninghamii*) has been replanted here in the past 50 years and have successfully re-established in an area that was completely cleared.
- ☞ Lake Tinaroo was completed in 1958 and water was released from it in 1959.
- ☞ Lake Tinaroo is regularly stocked with barramundi and sooty grunter fingerlings.
- ☞ When Tinaroo Dam was created it was flooded ahead of time (due to an early wet season) and large areas were not cleared. You can still see telephone poles, many dead trees and in some places equipment where builders were caught unawares!
- ☞ Lake Euramoo is a unique maar volcano because of its dumbbell shape caused by two explosions.
- ☞ The two brick fireplaces known as The Chimneys are from Bill Hanley's house.

Aboriginal History

The Traditional Owners of Danbulla are two clan groups of the Yidinji people — the Dulguburra Yidinji and Tableland Yidinji.

The traditional home country boundaries of the **Dulguburra Yidinji** encompass the Yungaburra district, Boar Pocket, Danbulla, Tinaroo and Kulara. The lush forests and clear running streams of the area have always provided the Dulguburra Yidinji with an abundant source of food. This area also contains sacred sites for spiritual enrichment and ceremonial places for certain cultural rites. The Dulguburra Yidinji use a combination of food gathering techniques and

their success is largely attributed to their knowledge of the country and seasonal patterns of plants and animals.

The flora and fauna of Danbulla National Park and State Forest are of high significant cultural value to the Dulguburra Yidinji.

☞ For more information about Dulguburra Yidinji, contact dulguburra01@hotmail.com

Wyamburra, once the site of the Danbulla settlement was an important living and meeting place for the **Tableland Yidinji**. As Europeans arrived to cut timber and start agriculture, the Tableland Yidinji people moved to areas now known as Tobacco Hill and Kairi. The Danbulla forest drive is part of a network of traditional tracks used by the Yidinji to access seasonal food and attend neighbouring ceremonies. Traditionally these people climbed to the top of Platypus Rock to view their land and look out for the campfires of visitors.

European History

The name **Tinaroo** is believed to have been created by John Atherton who was one of the area's early settlers. It is reported through popular legend that upon discovering alluvial tin at the headwaters of the creek, John Atherton shouted "Tin, Harroo!" to his prospecting mate – hence the name. Building of the dam began in 1953 with the aim to build a dam wall 45.1 metres high; enabling a dam capacity of 400,000 megalitres (three quarters the size of Sydney Harbour). By 1958 it was structurally complete and in October 1959 water began to flow from it to the outlying areas. It was the first large dam in Queensland built primarily for irrigation.

History of Danbulla

At its peak during World War II, Danbulla was home to a community of around 40 families with a population of between 150 and 200 people (excluding troops).

In **1917** the then Forestry Department released parcels of land to be used for farming. As in other parts of the Atherton Tableland, new settlers were faced with the task of clearing their land and building houses before they could start farming. Early indications were that Danbulla would develop into a prosperous farming community supported by a profitable timber industry.

In **1922** the district school inspector recommended that a school for 25 pupils be built and that a male teacher be appointed. The Lake Euramoo State School was built and received its first pupils in May 1924.



THE CHIMNEYS
(PHOTO: J. CARMODY)

Tom Clark and Bill Hanley operated a small steam-powered sawmill on the banks of Robson Creek. Bill Hanley built a house near Lake Euramoo. All that remains of this house now are the two brick fireplaces, pictured, which today are known as **The Chimneys**. The mill and houses were relocated to Kairi when the mill closed in the early 1950s.

In **1935** the community had outgrown the public school. Towards the end of the 1930s the government's Public Estate Improvement (PEI) program up into the Lamb Range began. Road workers and their families moved into the district to extend the network of timber roads. In 1939 another teacher was finally appointed and the school building was extended to accommodate 59 students.

By **1942** Danbulla was one of a number of jungle training areas used on the tableland by the Australian Defence Force. For the next two and a half years, Danbulla was a busy place with the army presence creating a market for farm produce and a hectic social scene. At the height of the army presence there were between 100,000 and 150,000 troops scattered about the tableland. One of the large recreation igloo buildings from the Danbulla camp was relocated to Malanda after the war and is now the Malanda Show Pavilion.

When the war ended in **1945** and the troops left, the shift in emphasis from butter to whole milk production was a problem for Danbulla farmers disadvantaged by their distance from the factory at Malanda.

Severe drought devastated Danbulla farmers during **1946-47**. It also became clear that, apart from two small patches of rich volcanic soil near Lake Euramoo and Kauri Creek, Danbulla soils were generally very poor. Once the nutrients from the burned and rotted rainforest were used, productivity of the soils declined. Timber supplies were also dwindling and by the early **1950s** most of the accessible rainforest area had been logged.

In the **late 1940s**, word had spread that Tinaroo Dam was to be constructed and that Danbulla was earmarked for land resumptions. From this point the Danbulla community declined as people left the district. The school closed in December 1958 and the last residents departed soon after.

Flora and Fauna

Danbulla National Park and State Forest covers more than 12,000 ha of eucalypt and acacia forests, pine plantations and Wet Tropics World Heritage rainforest. Danbulla is an upland refugial area, supporting rare, high altitude rainforest and wet sclerophyll forest. Some of these forests occur at altitudes exceeding 1,200 metres and contain several flora species that are related to the first flowering plants. The high altitude rainforests are of particular significance for rare plant

families such as *annonaceae*, *apocynaceae*, *euphorbaceae*, *myrtaceae* and *proteaceae*.

First established in 1947, the Hopp and Carribean pine plantations in the Danbulla State Forest now cover 1,100 hectares and undergo a 30 to 45-year planting, maintenance and harvesting cycle.

Fauna at Danbulla

Endangered	Rare	Vulnerable
Spotted-tailed quoll (<i>Dasyurus maculatus gracilis</i>)	Herbert River ringtail (<i>Pseudocheirus herbertensis</i>)	Yellow-bellied glider (<i>Petaurus australis reginae</i>)
Northern bettong (<i>Bettongia tropica</i>)	Green ringtail (<i>Pseudochirops archeri</i>)	Spectacled flying-fox (<i>Pteropus conspicillatus</i>)
	Lemuroid ringtail (<i>Hemibelideus lemuroids</i>)	
	Atherton antechinus (<i>Antechinus godmani</i>)	
	Mareeba rock wallaby (<i>Petrogale mareeba</i>)	
	Rusty monitor (<i>Varanus semiremex</i>)	
	Thornton Peak skink (<i>Calyptotis thorntonensis</i>)	
	Bartle Frere skink (<i>Bartleia jigurru</i>)	

At dusk, watch the forest edges for the **Red-legged pademelons** (*Thylogale stigmatica*). This small macropod is most active between dusk and dawn, eating leaves from a wide range of plants, grasses, and occasional fruit. When resting, the pademelon leans against a rock or a tree with its tail folded between its extended hind legs. Its head rests on its tail or the ground beside it when asleep. Pademelons can be noisy, thumping their hind feet as a warning and making a harsh rasping sound to resolve disputes.

Once widespread, the **Northern bettong** (*Bettongia tropica*) is listed as an endangered animal, and is only found in four small populations in north Queensland. The eucalypt forest of Danbulla is one of these populations. These small members of the kangaroo family feed on truffles (underground fungi) almost exclusively. This unique feeding behaviour helps maintain forest health by spreading truffle spores, essential for the health of many trees. Look for these tiny, delicate kangaroos along the roadsides in the eucalypt forest.

Declines of **Australian rainforest frogs** were first noticed in the late 1970s. In the Wet Tropics, seven species endemic to the area declined or disappeared in the 1990s and three remain missing. Only one of these species remains in the Tinaroo area – the **tapping green-eyed frog** (*Litoria genimaculata*). The exact reasons for these catastrophic declines are not known, although a fungal infection is thought to be the main contributor to the decline of stream-dwelling frog populations. A recovery plan for the stream-dwelling rainforest frogs of the Wet Tropics has been developed and focuses on eight endangered species.

The variety of habitats at Danbulla has created many opportunities for **birdwatching**, with more than 200 species recorded for the area. Many birds are attracted to the large lake, its tributaries and marshes. These areas are natural breeding sites for both resident birds and summer or winter migrants.

Migrant birds	Nocturnal birds
Whiskered tern (<i>Chlidonias hybridus</i>)	Southern boobook (<i>Ninox novaeseelandiae</i>)
Little curlew (<i>Numenius minutus</i>)	Barking owl (<i>N. connivens</i>)
Marsh sandpiper (<i>Tringa stagnatilis</i>)	Rufous owl (<i>N. rufa</i>)
Little ringed plover (<i>Charadrius dubius</i>)	Barn owl (<i>Tyto alba</i>)
	Lesser sooty owl (<i>T. multipunctata</i>)

The **Lesser sooty owl** (*Tyto multipunctata*) will glide through the rainforest soon after dusk, picking possums and gliders from branches, as well as rats, bandicoots and other mammals from the ground. They are often spotted on an exposed branch, carefully searching the forest and floor for its next meal. The characteristic 'dropping bomb' call is probably the first sign that a lesser sooty owl is nearby.

The exceptionally long toes of the **Comb-crested jacana** (*Irediparra gallinacea*) are the secret behind its ability to walk and run on floating water-plants. On land, jacanas are delicate and graceful, gently rocking their head back and forth as they walk. You can see the Comb-crested jacana at the water's edge as they feed on aquatic insects, plants and seeds.

The call of the **Black-faced cuckoo-shrike** (*Coracina novaehollandiae*) lives in open forests and woodlands and searches the foliage for large insects, fruit and the nestlings of other birds. They are partly nomadic and partly migratory, roaming widely in loose flocks formed late in summer and autumn. In early spring the flocks disperse and adult birds return to the breeding territory of the previous season.

The **Purple swamphen** (*Porphyrio porphyrio*) grips onto reed stems to support its weight while it walks through waterside vegetation. Although it can swim, it prefers to walk, as it searches for young reeds to eat. The reeds are bitten off at the base and gripped with a foot while being eaten. Herbs, seeds, fruit, eggs, insects, spiders and molluscs are all on the swamphen's diet.

Often seen soaring over the waters of Lake Tinaroo is the **White-bellied sea-eagle** (*Haliaeetus leucogaster*). Stopping at favourite perches in their permanent range, pairs often sing a duet in the morning and evening. Hunting is either from perches or the air diving on fish, turtles, snakes, water birds, nestlings and rabbits. Purple swamphens are a particular favourite on the menu of the Lake Tinaroo white-bellied sea-eagles.

Pied Monarchs (*Arses kaupi*) are endemic to the Wet Tropics and moderately common in lowland rainforests. They are usually seen in pairs and feed mostly on tree trunks and branches by flitting rapidly over them to flush out insects. These small black and white birds have an erectile frill on the nape, a wide black breastband on white underparts and a blue eye-ring.

Geology

Platypus Rock comprises a number of exposed granite tors (rock outcrops formed by weathering) which provide limited views over the lake and tableland. The distinctive Mareeba granite, southeast of Mareeba, and the Tinaroo granites, which form the mountains north of Tinaroo Dam, have been dated at between 260 and 270 million years old.

Lake Euramoo is of special geological significance, occupying a volcanic landform called a **maar**. Unlike other volcanic lakes, Lake Euramoo is unique because of its dumbbell rather than regular circular shape. This unusual formation is the result of two overlapping craters that were formed by double explosions, possibly at the same time. Lake Euramoo's steep sided rim forms a closed catchment. Lake Euramoo is one of the youngest geological features on the Atherton Tablelands, believed to be only 10,000 years old. Lake Euramoo is of high cultural significance to the Dulguburra Yidinji.

Further Information

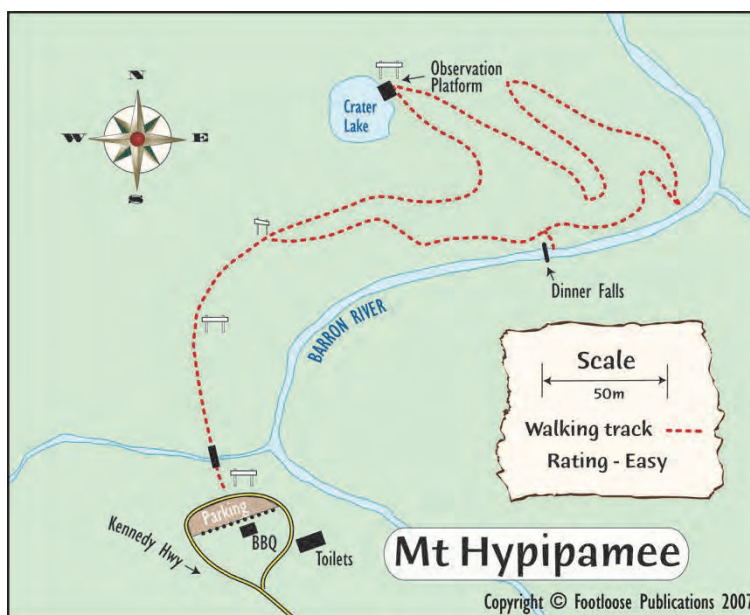
Danbulla National Park and State Forest

www.nprsr.qld.gov.au/parks/danbulla/index.html

2.14 | MOUNT HYPIPAMEE CRATER AND DINNER FALLS



- ☞ Mount Hypipamee National Park is 25 km south of Atherton along the Kennedy Highway on the way to Ravenshoe.
- ☞ Dinner Falls Circuit adjoins the walk to the crater at Mount Hypipamee National Park. An easy 400 metre (800 metre circuit) bitumen walking track leads through the rainforest to a viewing platform above the crater. A viewing area for Dinner Falls is further upstream along the river. From the falls is a short climb back up to the Crater walk.



Quick Facts – The Crater and Dinner Falls

- ☞ Mt Hypipamee Crater formed when trapped gas exploded through solid granite creating a cylindrical pipe.
- ☞ It is thought this is the only open volcanic conduit landform that can be seen in the world (Lottermoser *et al.* 2008).
- ☞ The Crater has sheer granite walls rising 58 metres above the lake, is 61 metres in diameter and the lake is 82 metres deep.
- ☞ Dinner Falls are at the headwaters to the Barron River.

Aboriginal History

The national park was established in 1908 under the sponsorship of Mr Ringrose of Herberton. There was a debate at the 'crater trust' meetings during the 1930s as to what to call 'the crater' – the 'Herberton Crater' was one suggestion but it was wisely decided to call it the traditional Dyirbal name, Mount Hypipamee. A request was written to the Reverend Gribble of Palm Island to find the origin of the name. The name Hypipamee is a corruption of the Aboriginal word, 'nabbanabbamee' which is connected with a legend of two young men who cut down a sacred candlenut tree, only to be swallowed up by a large hole in the earth – the crater.

European History

The Crater was first discovered by accident in 1879 when Weate and his party nearly fell into it. They were heading towards the Mulgrave River on a five-month gold prospecting expedition.

Mount Hypipamee was gazetted as a National Park in 1939 and covers an area of 364 hectares (900 acres). In 1988 it was included within the Wet Tropics of Queensland World Heritage Area.

The **Barron River's** original Aboriginal name is 'Bibhoora'. The river gained its current name in 1875 when two police sub-inspectors, Johnstone and Douglas, named it after T.H. Barron, chief clerk of police in Brisbane. The river was actually discovered (but not named) by James Venture Mulligan in 1874. Over time, some of the Mitchell River's former headwaters were diverted by natural forces into the Barron River. These include the Clohesy River and other tributaries that used to flow northwest to the Gulf of Carpentaria. The Barron's headwaters start in the Crater National Park near Mount Hypipamee at an altitude of 1,200 metres.

Flora and Fauna

Several different forest types are found in Mount Hypipamee National Park. As climatic conditions at this higher altitude are wet and cool, the rainforest found around the carpark and along the crater track has a number of plant species similar to plants typically found in the sub-tropical rainforests of southern Queensland and New South Wales. Towards the crater, the forest opens up and the nearby ridge is dominated by wet sclerophyll forest - a transition forest between rainforest and the dry open woodland to the west

The **Coppery Brushtail, Green Ringtail, Herbert River Ringtail and Lemuroid Ringtail Possums** are all commonly seen at Mount Hypipamee and all are

endemic to the Wet Tropics. There are three gliders also known to be at Mt Hypipamee – the **Sugar Glider** (*Petaurus breviceps*), **Greater Glider** (*Petauroides volans*) and **Feathertail Glider** (*Acrobates pygmaeus*). Sometimes **Striped Possums**, **Long-tailed Pygmy Possums** and **Lumholtz's Tree-kangaroo** are also seen.



LEMUROID RINGTAIL POSSUM
(PHOTO: WTMA)

The **Lemuroid Ringtail Possum** (*Hemibelideus lemuroids*) is listed as Near Threatened in Queensland (*Nature Conservation Act 1992*). They are a rich chocolate brown colour with paler, greyish-brown underparts and a pale ring around each eye. The muzzle and ears are short and tail long which is bushy for its entire length. This possum lives in tall, moist, mature rainforest at 450 metres above sea level and is nearly always found in a family group leaping and scrambling noisily between trees, feeding mainly on leaves. Its diet consists largely of mature rainforest tree foliage, particularly cabinet timbers targeted by loggers. It does free-fall leaps of up to three metres between branches by leaping with all legs spread like a glider and using its tail as a rudder. Thus you are more likely to hear them crashing around the canopy before you see them. The breeding season occurs between August and November and the single young rides on its mother's back for a number of months. Its reluctance to come down to the ground reduces its ability to move to other areas when its home is disturbed and of the leaf-eating possums, it is the least able to survive in remnant patches.

The **Coppery Brushtail Possum** (*Trichosurus vulpecular johnstonii*) is the largest of the rainforest possums. Restricted to the uplands of the Atherton Tableland, it is a sub-species of the common brushtail found across Australia. Brushtails have large triangular ears compared to ringtails, which have small rounded ones. Colours vary from grey to yellowish brown to a rich copper, with or without a white tail tip. They consume a variety of fruits, flowers leaves and insects and live in tree hollows.

The **feathertail glider** is smaller than a house mouse and zips around with astonishing agility and speed, feeding on nectar from blossoms, small insects and tree sap where larger animals have done the excavation work. Gliding up to 20 metres or more, these gliders use both a flap which stretches from elbow to knee and their wide, flattened tails. Their aptly named tails have little fur on the top and bottom, but long stiff hairs on the sides. They are used to steer, balance and anchor the owner. Gecko-like pads on their toes, with fine grooves, allow them to cling to vertical surfaces, including glass.

The **Chameleon Gecko** (*Carphodactylus laevis*) is large and found only in Australia's tropical rainforest. This gecko looks and acts like a chameleon with its slow, jerky movements and an unusually flattened body. It has a distinctive

carrot-shaped tail marked with strong white bands. They will sit and wait head down on trees for their prey. The Chameleon Gecko can discard and regrow its tail.

Green-eyed tree frogs (*Litoria genimaculata*) usually have a brownish-green body with rust-coloured blotches that match lichen-covered rocks along creeks and streams they tend to live near. This species gets its name not for having green eyes, but rather for a line of brilliant green that often adorns the brow of each eye. They are also distinguishable by a row of skin flaps along their arms and legs, which resembles a serrated knife. Their population is healthy in the region's lower elevations, but for unknown reasons may have disappeared completely from the higher-altitude areas. They have suffered serious declines in the past, possibly due to a fungus or virus, but their numbers have rebounded, and they are not currently threatened or endangered.

Boyd's Forest Dragon (*Hypsilurus boydii*) lives only in the tropical rainforests of northeastern Queensland. Growing to a length of 50 cm, it has a row of large tooth-like spines running around the throat with prominent flattened scales along the back, those behind the neck being greatly enlarged. They eat beetles, spiders, crickets and lots of ants, and will also eat earthworms. These lizards spend much of their time perching on the side of a tree just one or two metres from the ground staying very still on the tree trunk. Once an insect is spotted, the lizard will leap off the tree trunk to catch the unsuspecting prey. The male has a home range of about 1000 sq. metres and the female slightly less.

Mount Hypipamee is a good place for **birdwatching**, particularly for upland rainforest birds, some of which are endemic. Scrub turkeys, as well as Lewin's and bridled honeyeaters, are common around the picnic area. In spring and early summer, visitors may spot the magnificent male Victoria's riflebird – one of Australia's birds of paradise – displaying from an exposed perch. Golden bowerbirds, spotted catbirds and toothbilled bowerbirds are also to be seen here.

Mountain Thornbills (*Acanthiza katherina*) are a common rainforest resident above 600 metres. Endemic to the Wet Tropics, they forage amongst the mid-upper strata of the rainforest persistently twittering as they move about. They have a flitting undulating flight. These small birds are greenish-brown with a chestnut rump and whitish eye.

Geology

Mt Hypipamee Crater was caused by an explosion of volcanic gases blasted its way through solid granite less than one million years ago, creating a cylindrical pipe over 60 metres in diameter. Fragments lie scattered over the surrounding

rainforest floor, but the pipe itself was reamed clean of debris, leaving behind the open volcanic conduit. This is thought to be **the only place in the world where such a landform can be seen**. Angular blocks of granite as large as refrigerators can be found in the surrounding rainforest, giving testimony to the power of the explosion that hurled them there.

The composition of the surrounding rainforest is affected by soil type. On rich, red basaltic soils, near the bridge, the forest is particularly diverse. Where the track splits to Dinner Falls, the soils are derived from granite, resulting in more uniform trunk sizes and smaller leaves. Towards the crater, the forest opens up and the nearby ridge is dominated by wet sclerophyll forest – a transition forest between rainforest and the dry open woodland of the drier country to the west.

Possum Spotlighting

As possums are nocturnal animals, the best way to find them at night is to look for their eyeshine with a spotlight. Although eyeshine can be picked up with a small torch, to view the animal a 30 watt spotlight (in conjunction with binoculars) is best. Always place the spotlight directly in front of your face so you can look along the beam, otherwise you often miss the eyeshine. Once an animal has been located and identified, swing a red filter, such as a single layer of red cellophane, over the white light. Although this dims the light a little, possums are far less disturbed by the red light and will continue their activities while you watch. While looking for animals try to remain quiet and listen for any sound of possums crashing around in the canopy or eating leaves or fruit. Thoughtless spotlighting can cause distress to animals.

Rainforest possums have different coloured eyeshine depending on the species. With practice the colours and brightness can be used to help identify the different species; lemuroid ringtails have the brightest eyeshine – a brilliant white/yellow glare – Herbert River ringtails have a pink/ yellow eyeshine, green ringtails a dimmer red eyeshine and brushtails and striped possums have a pinkish eyeshine. Sometimes the colours appear different if the animals are not looking straight at you or if they are juveniles, so use the eyeshine merely as an indicator.

Further Information

Mount Hypipamee National Park

www.nprsr.qld.gov.au/parks/mount-hyipamee/index.html

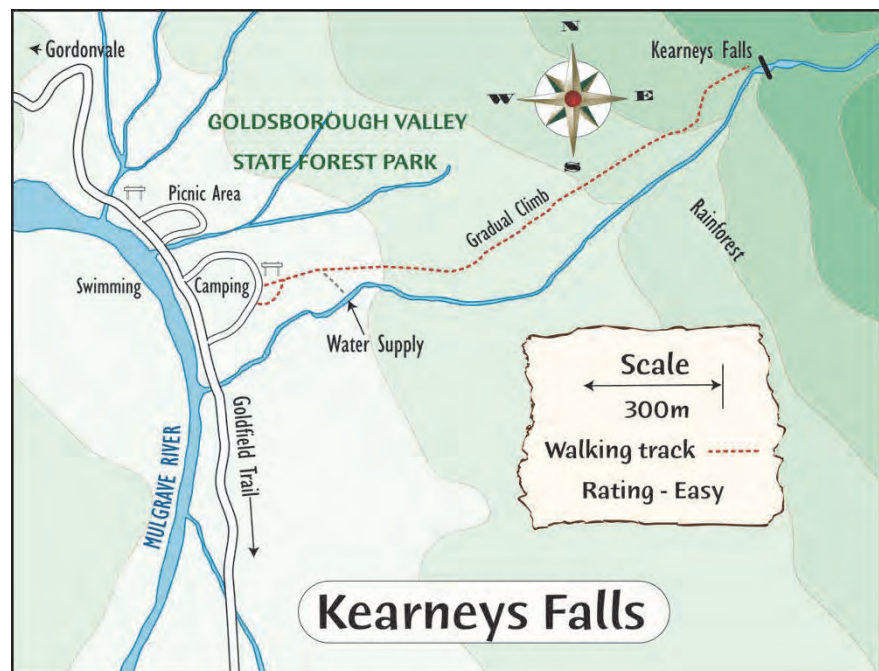
The Crater

www.wettropics.gov.au/dinner-falls-circuit.html

2.15 | GOLDSBOROUGH VALLEY



☞ From Cairns travel 23 km south to Gordonvale and turn right onto the Gillies Highway. Continue along the highway for about six kilometres and turn left onto Downings Road at the sign-posted Goldsbrough Valley turn-off. Cross Peets Bridge and continue for 16 km to the Goldsbrough Valley camping and day-use areas.



Quick Facts – Goldsbrough Valley

- ☞ Goldsbrough Valley is the traditional country of the Yidinji Aboriginal people.
- ☞ Goldsbrough Valley is situated within Wooroonooran National Park.
- ☞ In the 1870s miners arrived to dig gold out of the creek beds. There were 17 hotels in the town at that time. While the town became a 'ghost town' after the gold rush many of the miners moved to the surrounding areas to try their hand at sugar cane.

Aboriginal History

Goldsborough Valley is the traditional country of the Malanbarra ('mul-un-bur-ru') Yidinji, one of six clans of the Yidinji Aboriginal tribe. Before European settlement over 400 Yidinydji people lived in the tribal area. Up to 20 Traditional Owners lived in this area called Jalngganji ('jul-ung-gan-ji') or 'with milky pine'.

Malanbarra translates to 'rocky river bed people' and refers to the rocks of the Mulgrave River. The Malanbarra have lived in the area for thousands of years.

Aboriginal Translations:

- ☞ Mulgrave River – Bana Baddi ('bu-nu, bur-di')
- ☞ Kearneys Falls – Wajil ('wuh-chul')
- ☞ White Apple Fighting and Corroboree Ground – Buloba Gurubal ('boo-low-buh, goo-roo-bul')

The *Buloba Gurubal* (White Apple Fighting and Corroboree Ground) was used to settle disputes among different clan groups using spears, sword-shaped fighting sticks and shields although rarely resulting in death. This ground was also used for dancing and corroborees with up to 300 Yidinji people from all of the clans. The site continues to be used today for a range of traditional purposes including meetings, ceremonies and educating the Malanbarra young people about their culture.

European History

Goldsborough was one of the earliest settled districts in northern Queensland with gold being the motivating influence.

Gold was first found here in 1879 by W. Diecke. During the 1870s alluvial gold workings ranged along the Mulgrave River and Toohey and Butchers creek tributaries. By the 1880s reef mining was also in operation and two settlements developed on what became known as the Mulgrave Field: Top Camp on Butchers Creek and Fanning Town on the junction of the Mulgrave River and Toohey Creek, but known locally as Lower Camp to distinguish it from the Top Camp where the Orient Mine was located.

Fanning Town was laid out by Warden Mowbray who named it Fanning after Major P.B. Fanning, Police Magistrate at Port Douglas 1884-1886. The name Fanning Town was later changed to **Goldsborough** by Warden Morgan, the Land Ranger stationed at Port Douglas. Between 1879 and 1886, the Mulgrave Field produced 3,894 ounces of gold.

It is thought that the Goldfields trail across the divide to the Babinda Boulders was used by pioneers during the early gold explorations; this trail is now available for hiking (pers. comm., S. Goosem 10 August 2010).

Kearneys Falls and **Kearneys Flat** were named after grazier Frank Kearney, who lived in the area while mining was still flourishing. He died a lonely death on his property sometime around 1920. His grave can be found on the western side of the Mulgrave River.

Flora and Fauna

The **Buff-breasted Paradise Kingfisher** (*Tanysiptera sylvia*) (formally the White-tailed Kingfisher) appears during the wet season (November to early April) after spending winter in central New Guinea. These birds arrive overnight to mate and lay eggs within termite mounds on the forest floor. They soon become quite vocal as pairs re-establish territories. They prey on insects, lizards and frogs which are taken mostly from the ground. Its long ribbon-like white tail, bright red bill and legs, orange underbelly and blue wings are a spectacular sight in the rainforest. The adults leave in late March/April followed by their young a little later.

The **Musky Rat-kangaroo** (*Hypsiprymnodon moschatus*) is the only marsupial in Australia which is active during the day. This mammal is the smallest and most primitive kangaroo in the world. Their nest is made from leafy twigs gathered and transported in their short prehensile tails. They usually have several nest sites situated near or under buttressed tree roots. Musky rat-kangaroos are omnivores, eating fallen seeds and fruits, fungi and insects. When rainforest fruits are available though they will eat nothing else and when plentiful they will often scatter hoard seeds (hoard seeds are buried haphazardly, dug up and eaten later). Not all seeds are recovered by the animal and therefore the Musky Rat-kangaroo aids in the process of rainforest regeneration.

Beware of **Bullrouts** (*Notesthes robusta*) in the Mulgrave River! These freshwater stonefish have venom glands at the dorsal, anal and pelvic spines which will inflict an excruciatingly painful sting. The Bullrout has a large head with seven spines on the operculum. It has a big mouth with a protruding lower jaw. It has variable colouration from pale yellowish to dark brown, with blotches and marbling of dark brown, red-brown, grey or black. These markings sometimes form broad irregular bands. The bullrout can grow to 30 cm in length, but is more commonly seen up to about 20 cm. Wear old sandshoes if swimming in the river.

The **Eastern Water Dragon** (*Physignathus lesueurii*) can sometimes be seen sitting on a branch above the river. When disturbed they will drop into the water. They have a large head, a fat body, a row of spines along the back and a strong tail which assists in swimming. To help in aquatic environs, the Eastern water dragon has nostrils on top of its snout and a tail which is compressed laterally for easier swimming.

Geology

Goldsborough Valley is fundamentally a granite landscape. The granite can be observed at day use areas and along the walk to Kearneys Falls. However, along the boulders track a change to a basalt geological base occurs. In this basalt area, you will be able to observe a change in the soil to a red color. Notice that these red soils support richer vegetation compared to the granite areas (pers. comm., S. Goosem, 10 August 2010).

Further Information

Goldsborough Valley, Wooroonooran National Park

www.nprsr.qld.gov.au/parks/wooroonooran-goldsborough-valley/index.html

Goldsborough Valley

www.wettropics.gov.au/wajil-walk-kearneys-falls.html

BEWARE

People have been injured and killed at the Boulders.

The rocks are exceptionally slippery, the water cold, and flash floods with sudden increases in water levels, are

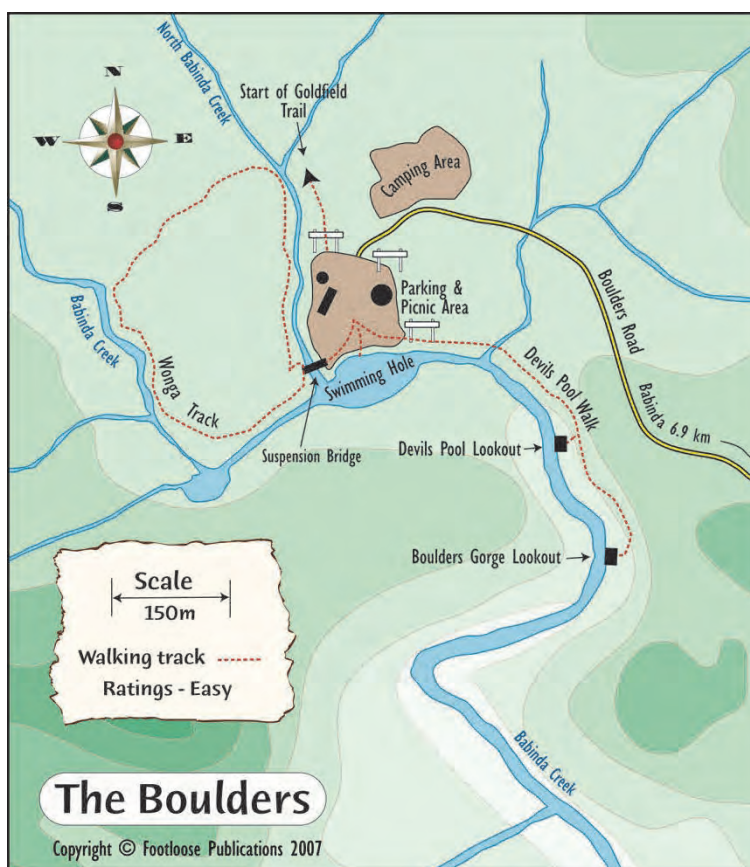


BABINDA BOULDERS
(PHOTO: WTMA)

2.16 | BABINDA BOULDERS



- ☞ The Babinda Boulders are located at the base of Mt Bartle Frere (Chooreechillum) – Queensland's highest mountain (1622 m).
- ☞ Turn off the Bruce Highway about 65 kilometres south of Cairns to Babinda township. In Babinda follow Munro Street through the middle of town and drive the 7 kilometres down the Boulders road until you reach the carpark and picnic area.



Quick Facts – Babinda Boulders

- ☞ The average annual rainfall recorded at The Boulders is 4,616 mm.
- ☞ Falls of up to 600 mm within 24 hrs has been previously recorded.
- ☞ The Boulders is managed by the Cairns Regional Council.
- ☞ The forest around The Boulders contains most of the cabinet timber species for which North Queensland is famous, such as Red Cedar (*Toona ciliata*) and Queensland Maple (*Flindersia brayleyana*).

- ☞ Some of the watering holes along the rainforest track are quite secluded, but watch out for the rapidly changing water levels in the wet season.

Aboriginal History

The Yidinji (Idinji) tribe lived in the Babinda Valley. The Yidinji tribe were Stone Age Aboriginal pygmies who lived and worked through the intricate mangrove systems on the coast. Many of the plants were important food plants of the local Aborigines; some were eaten raw while others underwent extensive preparation. The name 'Babinda' is a corruption of Yidinji word 'binda' meaning 'where the water falls'.

Aboriginal translations:

- ☞ 'Babinda' – mountain water
- ☞ 'Chooreechillum' – Mount Bartle Frere

Legend of the Boulders

Legend has it that the Yidinji tribe lived in the Babinda Valley and in the tribe was Oolana, a very beautiful young woman. Also in the tribe was Waroonoo, a very old, wise and respected elder. It was decided that these two should be given in marriage to one another. Some time later a wandering tribe came through the valley and as was the friendly custom of the Yidinji, they made the strangers welcome, inviting them to stay. In the visiting tribe was Dyga, a very handsome young man. At first sight, Dyga and Oolana fell in love. So great was their attraction for each other they arranged to meet secretly. Knowing full well that their desire for each other would never be permitted, they ran away. Oolana knew she could now never return to the Yidinji as she was rightfully married to Waranoo. They journeyed well up into the valley; spending wonderful happy days together and they camped under Chooreechillum, near the waters edge.

The two tribes searched for them and it was at this spot (Babinda Boulders) where they came upon the two lovers. The wandering tribesmen seized Dyga, forcing him away, called how they had been shamed and how they would travel far away and never return. The Yidinji had taken hold of Oolana and were dragging her back, forcing her to return with them to the rest of the tribe. Oolana suddenly broke away and violently flung herself into the gentle waters of the creek, calling and crying for Dyga to return to her there, however the wandering tribe had gone and with them her handsome lover. At the instant Oolana struck the water, a tremendous upheaval occurred. The land shook with terror and sorrow as Oolana cried for her lost lover to come to her. Her anguished cries spilled out as rushing water came cascading over the whole area. Huge boulders

were thrown up and she disappeared into them. Oolana seemed to become part of the stones as if to guard the very spot where it all happened.

So it is to this very day, her spirit remains. Some say that at times her anguished calls cry out, calling her lover to return – and that wandering travellers should take care lest Oolana calls them too close to her beautiful waters, for she is forever searching for her own lost lover.

There have been 17 drowning fatalities at the 'Devil's Pool' since 1959 – all young men.

European History

The area was called Babinda Creek by the first white settler and the township that sprung up was named after the creek. Babinda was surveyed into smaller freehold portions by Percy Rutherford on 6 July 1914. Before this Babinda was a private town. This township was gazetted on 6 March 1915. The Babinda Creek Falls was originally named the Hume Black Falls by Archibald Meston in 1889, after Maurice Hume Black (1830-1899), secretary for Public Lands, 1888-1890.

- 130 years ago (1875)**Explorers arrived in the area
- 120 years ago (1885)**White settlers, timber, coffee, bananas, cotton, peanuts, tobacco, cattle, gold, self-sufficiency
- 90 years ago (1885)**Sugar cane mill established
- 70 years ago (1930)**The Depression, travelling boxing tents, swim carnivals
- 1940-1950s**Population influx
- 1960s**.....Harvesters arrived, population decreased
- 1980s**.....Computers in mill, workforce decreased, closure of some government offices
- 2011**.....Babinda Sugar Mill closed

Flora and Fauna

This is some of the most complex and diverse tropical jungle vegetation in species composition and variety of life forms that occurs in northeast Queensland. The forest around the Babinda Boulders contains most of the cabinet timber species for which North Queensland is famous, such as Red Cedar (*Toona ciliata*) and Queensland Maple (*Flindersia brayleyana*).

The animal life of this area is every bit as complex and diverse as the plant life. Almost every type of bird that occurs in the jungle of northeast Queensland can be heard frequently and seen occasionally at Babinda Boulders.

Hydrology and Geology

- ☞ Babinda Boulders experiences on average 4,616 mm of rainfall annually. Up to 600 mm of rain has been recorded within a 24 hour period.
- ☞ Water flow surges can occur in Babinda Creek after heavy rainfall in upstream areas. Be alert in wet season stormy weather.
- ☞ The Boulders are huge spheroidal outcrops of granite along Babinda creek.

Other Points of Interest

The **Babinda State Hotel** in Munro Street was the first State built and State owned hotel in Queensland. By the *Temperance Act of 1911*, Babinda was to become a model temperance area in Queensland and as a result the hotels of Babinda and Harvey's Creek were closed. In 1916, during the term of the Ryan Government, the New Babinda Hotel was opened up under State ownership. The hotel remained the property of the State until 1929 when its ownership was assumed by private enterprise.

The **Babinda Visitor Information Centre** building originally housed the police station, part of the police and court complex immediately to the north across Munro Street. The original police station was built in 1915, but destroyed by a cyclone in 1918. The replacement building was erected in 1919. It was moved to its present site and converted to the Babinda Visitor Information Centre in 1995.

The **Babinda Sugar Mill** was established after years of lobbying by the farmers of the Russell district. The mill was the first Central Mill built under the Sugar Works Act 1911 and opened in 1915. The town of Babinda grew up alongside the mill. The mill went through prosperous decades in the 1920s, 30s and 50s and has greatly altered its technology. In 1989 Bundaberg Sugar bought the mill from the farmers' co-operative.

Further Information

Babinda Visitor Information Centre, Munro Street, Babinda.

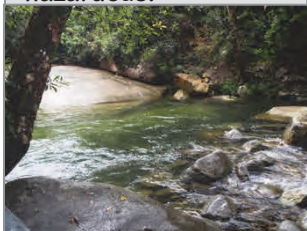
www.cairnsconnect.com/region/babinda.php

BEWARE

Access to the top pool and surrounding area is prohibited.

Serious injuries and deaths have occurred at Josephine Falls.

Natural hazards including slippery rocks, rapidly changing water levels (flash flooding) and submerged objects make this site hazardous.



ROCKSLIDES,
JOSEPHINE FALLS
(PHOTO: J. CARMODY)



JOSEPHINE FALLS
(PHOTO: WTMA)

2.17 | JOSEPHINE FALLS



☞ Turn west off the Bruce Highway south of Miriwinni (68 km south of Cairns, 20 km north of Innisfail).

The road is signposted and the drive to the car park is 8 km long.

Quick Facts – Josephine Falls

- ☞ Josephine Falls is within Wooroonooran National Park.
- ☞ It has a great natural rock water slide!
- ☞ The falls is fed by rain falling on Queensland's highest mountain – Mount Bartle Frere.
- ☞ The average rainfall recorded at Bartle Frere is 8,000 mm. The highest recorded rainfall on Bartle Frere was 11,850 mm in 1999.
- ☞ The endemic and endangered Australian Lacelid Frog is known to live and breed here.
- ☞ Below the waterfall are several swimming holes surrounded by boulders and a popular water slide down a smooth sloping rock face between falls.

Aboriginal History

Josephine Falls is traditional country of the Ngadjon-Jii. The Noongyanbudda Ngadjon ('noong-yan-budda-nud-jun') local Aboriginal people maintain a close spiritual connection with the Bartle Frere area and Josephine Falls, and they welcome you to their country.

From the Noongyanbudda Ngadjon Elders:

"The Noongyanbudda Ngadjon-jii lived as hunter-gatherers around the upper Russell River and foothills of Chooreechillum [Bartle Frere]. Life revolved around the forests, the animals and the seasons. Traditional life was very practical. Family groups camped beside the river close to seasonal food. Gunyas [shelters] were made of palm fronds, ginger leaves and branches.

"Our people ate nuts, fruit, tubers, fish, scrub turkeys, eggs, possums and carpet snakes. They buried nuts underground at the camps when there were plenty around, and dug them up when they were out of season.

“Our people knew what time to eat the wildlife, when they were fat enough to eat and not breeding. Everything was centered around the seasons. In the time of the jigaru [thunderstorms], moongarra [Australian brush-turkeys/scrub turkeys] began nesting and everybody looked forward to a change in diet to bumboo [turkey eggs]. When certain trees flowered it was time to catch fish. Our people knew about food by reading the seasons.

“When the men went hunting, they always asked permission of the animal spirits first before killing animals for food. They took only what they needed. All families had animal totems they would not hunt. Our old people never killed animals in their breeding season and never killed female animals.”

(Department of Environment and Resource Management, 2009)

European History

Chooreechillum was named Bartle Frere by George Elphinstone Dalrymple, leader of the 1873 North-East Coast Exploring Expedition. He named the mountain after Sir Edward Bartle Frere, a noted botanist and the then president of the Royal Geographical Society in London.

From 1886, Christie Palmerston, explorer and prospector, travelled over much of the upper Russell River area, making contact with the Noongyanbudda Ngadjon-jii and enlisting their reluctant help to climb Bartle Frere. Palmerston became familiar with aspects of the Noongyanbudda Ngadjon culture, which he recorded in his diaries. Palmerston and two associates, George Clarke and William Joss, discovered gold on the upper Russell River and its tributaries. A gold rush followed but conditions were very harsh and the gold was not easily obtained.

Eventually the Noongyanbudda Ngadjon-jii moved into the western part of their country. Many of the men then worked with European miners, farmers and timber-getters while the women often worked as domestic helps. From the beginning of the 20th century, mining, farming and timber-getting dominated traditional Noongyanbudda Ngadjon lands. The early European settlers saw the ‘scrub’ lands as hostile jungle that had to be conquered and ‘put to good use’. The Bellenden Ker Range, including Bartle Frere, was made a National Park in 1921.

Flora and Fauna

The **Atherton Palm** (*Laccospadix australasica*) is an elegant understorey species which normally grows above 800 metres (2,600 feet) altitude. With a trunk hardly bigger than a walking stick, the Atherton Palm is also aptly referred to as the

Walking Stick palm. It is a primitive looking plant which is the only representative of its genus and is endemic to the Atherton Tableland west of Cairns. It is an understory species of the rainforest, only reaching a maximum height of 2-3 metres.

Although the **Walking Stick palm** usually has a single trunk with fronds extending out from the upper portion, it can have multiple trunks. This unusual habit for a plant is not confined to localities as both single and multiple trunked specimens can exist in the same place. The flowers grow on a long spike that drapes down and outward from the plant. They are replaced by brilliant red, berry shaped seeds tightly packed along the length of the spike.

The **Potato Fern** (*Marattia oreades* syn. *Ptisana oreades*) is not easy to distinguish from the King Fern but Potato Ferns tend to grow in clumps and stain blue/purple when cut. The moisture-loving potato fern has weeping fronds up to two metres long. Fronds usually sprout from near ground level, trunks (butts) developing slowly. Like tree ferns, both these giant ferns have an ancient history. Fossils well over 300 million years old, and very similar to the modern versions, have been found on most continents. They predate the dinosaurs.

The **Australian Lacelid Frog** (*Nyctimystes dayi*) tadpole has a large mouth disc which covers over 50% of its lower body surface. This allows it to hang on in turbulent fast flowing water while it feeds on algae on the rocks. This Queensland endemic frog is listed as Endangered. Breeding occurs from September to April. Females can lay more than 100 eggs in a clump on or under rocks at or below the waterline. Tadpoles from eggs laid in early summer complete development in 3-4 months. Adults are generally located on rocks and vegetation adjacent to the stream.

Geology

Josephine Creek starts as a trickle high on the southeast side of Bartle Frere. By the time it reaches Josephine Falls, the trickle has become a substantial creek which at times turns into a raging torrent. It eventually flows into the Russell River. The water coming straight off the mountain is surprisingly cold. Combined with mountain air, which is channelled down the valley, this creates an unusually cool microclimate. This has encouraged certain plants which are normally more at home at higher, cooler altitudes to flourish, including the **Atherton Palm** and **Potato Fern**. In the Josephine Falls picnic area, visitors are able to observe the pinkish-grey granite usually coarse grained with some large crystals of feldspar.

Further Information

Josephine Falls, Wooroonooran National Park

www.nprsr.qld.gov.au/parks/wooroonooran-josephine-falls/index.html



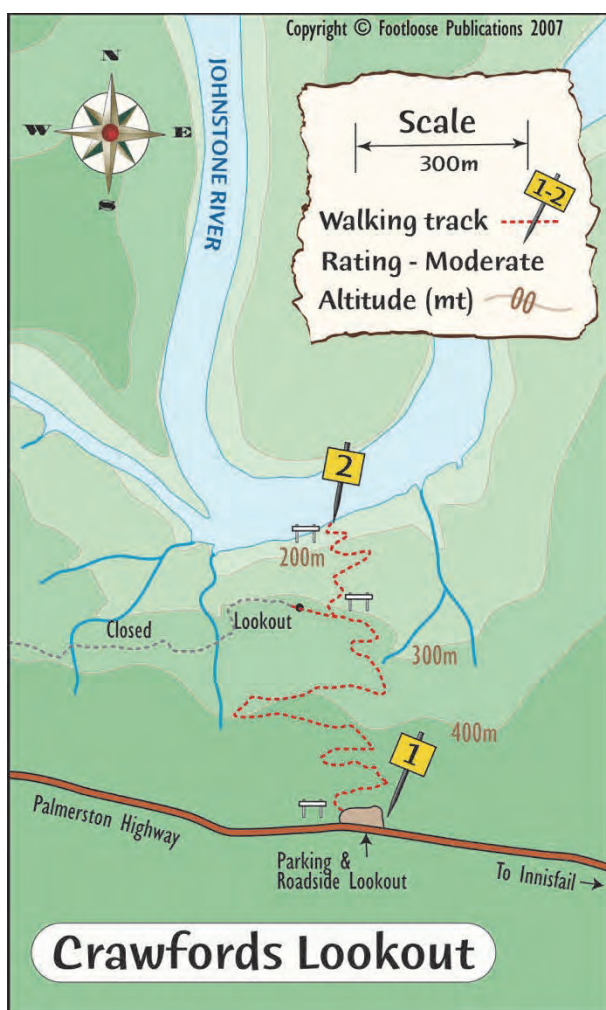
CRAWFORDS LOOKOUT
(PHOTO: WTMA)

2.18 | CRAWFORDS LOOKOUT AND MAMU RAINFOREST CANOPY WALKWAY

Crawfords Lookout



Mamu Rainforest Canopy Walkway



Wooroonooran National Park (Palmerston section) is situated on the Palmerston Highway, midway between Innisfail and Millaa Millaa (63 km).

The series of connected walks near the Palmerston Highway can be found between **Crawfords Lookout** on the eastern edge and Henrietta Creek, 5.5 km west toward Millaa Millaa. The Tchupala Falls Trackhead carpark can be found about 2 km west of Crawfords Lookout. Goolagan Creek is only about one kilometre east of Henrietta Creek.

The **Mamu Rainforest Canopy Walkway** is situated on the Palmerston Highway, midway between Innisfail and Millaa Millaa (63 km). It is situated on the eastern edge of the World Heritage Area near Crawfords Lookout.

Quick Facts – Crawford's Lookout and Mamu Rainforest Canopy Walkway

- ☞ Crawford's Lookout was named after Victor G. Crawford.
- ☞ The view from Crawford's Lookout takes in the North Johnstone River valley.
- ☞ The 1.6 km walk from Crawford's Lookout leads to the North Johnstone River Lookout.
- ☞ The Mamu Rainforest Canopy Walkway opened on 24 August 2007.
- ☞ The plastic from more than 900,000 recycled 2-litre milk bottles was used for the decking of the Mamu walkways.
- ☞ Both Crawford's Lookout and the Mamu Rainforest Canopy Walkway are within Wooroonooran National Park.



CANOPY LOOKOUT
(PHOTO: WTMA)



MAMU RAINFOREST
CANOPY WALKWAY
(PHOTO: WTMA)

Aboriginal History

Crawford's Lookout and Mamu Rainforest Canopy Walkway are situated on the traditional country of the Mamu Aboriginal people. The homeland of the Mamu Aboriginal people extend from the mountains to the coast. Within Mamu country, five clan groups share a common language and have traditional responsibilities for different areas. This rainforest is Waribara clan country. Waribara means 'people belonging to the gorges'.

The Mamu people's five clan groups carry native title responsibility over the range of Mamu country:

- **Mandubarra Clan** people from the Liverpool Creek catchment area to the coast;
- **Waribara Clan** people from the mountains and gorge country of the North Johnstone River;
- The **Bagirbara Clan** from Eubanangee Swamp and Woopen Creek to Flying Fish Point;
- **Dugulbara Clan** from the South Johnstone River catchment; and
- **Dyiribara** – a shared area, and now the heart of Innisfail.

In return for welcoming you here, Mamu:

- **Expect** that you recognise the 1,000 generations' history and knowledge from our people living in this country;
- **Request** that you properly respect their country and impact on it in responsible ways – don't remove things, and take your rubbish with you; and
- **Urge** you to acknowledge the Spiritual Ancestors who reside here and watch us all.

Be safe while you are on Mamu country – look after their country and their Spirits will look after you.

European History

Crawfords Lookout was named after Victor G. Crawford, a one time Johnstone Shire engineer.

The Palmerston Highway from Innisfail to Millaa Millaa is named after Christie Palmerston. Christie Palmerston (1851-1897) was born in Melbourne. He was a jungle man who often travelled with the Aborigines, prospecting and exploring the area, opening it up for timber, sugar and mining. The **Northern Kauri Pine** (*Agathis robusta*) and a **Laurel tree** (*Endiandra palmerstonii*) are also named after him.

Flora and Fauna

The brilliantly coloured blue and black **Ulysses Butterfly** (*Papilio ulysses*) is commonly seen in rainforest openings, such as lookouts. The underside is cryptic making it difficult to see when the butterfly is at rest with its wings folded back. Locals plant caterpillar food plants to attract this butterfly to their gardens. The Ulysses butterfly is attracted to red, blue and mauve colours and will sometimes come to rest on visitors' clothing.

The biodiversity of the North Johnstone River is classified as endangered. The regional ecosystem is subject to regular, variable disturbance and is highly susceptible to weed invasion. Less than 30% of the biodiversity remains unaffected by severe weed invasion (pers. comm., B. Rampton, 2 June 2009).

Geology

Wooroonooran National Park is a mountainous park which includes Queensland's two highest mountains, Bartle Frere (1,622 m) and Bellenden Ker (1,592 m). The area receives **more rainfall** than any other place in Australia. The high mountains intercept moisture-bearing winds from the ocean, causing them to drop the moisture in the form of rain. Tropical monsoon activity brings heavy downpours in summer. An annual average rainfall of 6,411 mm has been recorded at the weather station on Bellenden Ker, with 11.85m falling in 1999.

The mountains also intercepted Tropical Cyclone *Larry*, a severe category 4 storm which hit the coast on 20 March 2006. High winds lashed the forest, stripping off leaves and branches and felling numerous trees. Although the forest is recovering, some damage will be visible for many years.

Mamu Rainforest Canopy Walkway

The **Mamu Rainforest Canopy Walkway** opened in August 2007. This man-made aerial rainforest walk utilised the damage caused to the rainforest by

Cyclone *Larry*, resulting in the construction of the 340 m aerial walkway, 40 m cantilever walkway and 37 m high observation tower without the felling of any trees. Interpretative signage provided along the walkways, views of the North Johnstone River and the ability to see birdlife at eye level provides an enjoyable attraction. The return walk is 2.5 km. You will need at least one hour to enjoy all that the Mamu Rainforest Canopy Walkway has to offer.

Facts and Statistics

- ☞ About 156 tonnes of hot dipped galvanized steel was used to construct the elevated walkway, along with almost 22,000 bolts.
- ☞ About 563 cubic metres of concrete was used in the tower footings.
- ☞ The plastic from more than 900,000 2-litre milk bottles was used in the recycled plastic walkway decking.
- ☞ Steel structures were pre-fabricated off-site in Innisfail and Cairns, pre-assembled on-site, and then erected with a self-erecting tower crane.
- ☞ More than 3.5 m of rain fell during construction.
- ☞ The walkway is built to withstand cyclonic winds.
- ☞ The walkway cost \$10 million and took 16 months to build.

Mamu Rainforest Canopy Walkway is open 7 days a week from 9.30 am to 5.30pm, with the last entry permitted at 4.30pm. It is open everyday except Christmas Day and during severe hazardous weather.

- ☞ Telephone: (07) 40 64 52 94
- ☞ Fax: (07) 40 64 52 93
- ☞ Email: mamu.rainforestcanopywalkway@derm.qld.gov.au

Further Information

Mamu Tropical Skywalk

www.nprsr.qld.gov.au/parks/mamu/index.html

Wooroonooran National Park

www.nprsr.qld.gov.au/parks/wooroonooran/index.html

2.19 | HENRIETTA CREEK AND NANDROYA FALLS



- Henrietta Creek is approximately 33 km up the Palmerston Highway from Innisfail. The 6.6 km Nandroya Falls Circuit begins to the west of the Henrietta Creek camping area. You can cross the creek at the bridge to reach the trackhead. The walk winds about 700 metres into the rainforest before forking to form a circuit. The left hand fork is shorter (~1.5 km) and continues past Silver Falls to reach Nandroya Falls. The right fork is longer (~3.5 km) and winds along Douglas Creek. The two routes meet just below Nandroya Falls.
- Watch out** for leeches, stinging trees, and signs with misleading distances by the side of the track.



Quick Facts – Henrietta Creek and Nandroya Falls

- ☞ Henrietta Creek and Nandroya Falls are situated within Wooroonooran National Park.
- ☞ Wooroonooran National Park is one of the largest National Park estates in Queensland, covering 113,727 hectares.
- ☞ Large buttress roots from the very large trees are an identifying feature at this site.
- ☞ At Nandroya Falls, Douglas Creek has a 50 metre narrow drop waterfall.

Aboriginal History

The Waribara Clan and Dulgubara Clan people who lived in and near the Palmerston area have a special connection to this place. Refer to Section 2.18 on the Mamu Rainforest Canopy Walkway, page 121.

European History

In **1882**, explorer and prospector Christie Palmerston walked from Innisfail to Herberton with Aboriginal guides in 12 days, an incredible feat in those days. The highway follows the route he took and the park section and highway are named in his memory.

Henrietta Creek had one of the largest quantities of gold: 47.805 kg was extracted in **1899**. As the area was settled, heavy clearing took place and pack trails were developed for timber extraction. The clearing opened up the area for a wealth of agricultural practices as the red volcanic soil and dark loam provided a rich source of nutrients. Roses, wine grapes, maize, corn, coffee, tea, tropical fruits and nuts are grown in the area today.

The Palmerston Track was realigned in the **1930s** to eliminate the many winding curves. The Beatrice to Henrietta Creek section took two years to complete as work was hampered by rain. In **1933** only 17 'fine' days were recorded. By **1935**, the Palmerston Road was officially opened as a sealed single lane road.

Flora and Fauna

Rainforest reaches its greatest diversity here in this high rainfall area. More than **500 rainforest trees** occur here, including **Blackbean** (*Castanospermum australe*), **Milky Pine** (*Alstonia scholaris*), **Watergum** (*Tristaniopsis exiliflora*) and **Red Tulip Oak** (*Argyrodendron peralatum*). Many species of wildlife live in this part of the park, including the tiny musky rat-kangaroo, double-eyed fig-parrot and chowchilla. A track leaving from the opposite side of the Henrietta Creek campground leads to a platypus spotting site on the banks of Henrietta Creek, 400 metres downstream from the campground.

Milky Pine (*Alstonia scholaris*) is a straight tree and the wood is light in colour and in density. Also called **White Cheesewood**, it has been used by many cultures to treat such diverse problems as malaria, toothache, rheumatism and snakebite. By the late 19th century three alkaloids had been identified from the bark. Aboriginals in the Wet Tropics made a bark decoction for fevers such as Ross River and malaria, worms, stomach disorders, tonic, bowel complaints, influenza and diarrhoea. Milky Pine is an efficient pioneer believed to live for as much as 300 years. The foliage is an important food for the Lumholtz's Tree Kangaroo.

Native banana trees (*Musa banksii*) can be seen around Henrietta Creek, especially on the short walk to Gooligan Creek swimming hole. The plant grows to 6 metres and is similar to commercially cultivated bananas, except these native plants produce very slender bananas with many seeds. The bananas ripen from February to July and are very sweet to eat when fully ripe. Native bananas have a red sap and they grow from seed not suckers like other bananas.

At Nandroya Falls, introduced **Balsam plants** flower in late spring and although attractive are still an introduced weed. How they came to be at Nandroya Falls is a mystery (pers. comm., S. Goosem, 6 July 2009).

Double-eyed fig parrots (*Cyclopsitta diophthalma macleayana*) are Australia's smallest parrot measuring only 13-15 cm. These mostly green short-tailed parrots with red and blue markings on the head feed on fruiting clusters of figs, buttonwood and ironwood. The male has more red than the female. They excavate nesting chambers in the end of dead trunks and branches of rainforest trees. The female incubates the eggs and both parents raise the chicks. There are three sub-species of double-eyed fig parrot in Australia. *Cyclopsitta diophthalma macleayana* is found in North Queensland and listed as endangered (Nielsen, 1996). Although difficult to see in the rainforest due to their small size and mostly green plumage, you can identify them by their short, sharp whistle.

The **Musky Rat-Kangaroo** is the smallest of all macropod species averaging only about 230 mm in head and body length and weighs about half a kilogram. It forages on the forest floor during the day for fruits, seeds, fungi and invertebrates. At night it sleeps in a nest of leaves lined with lichen and ferns, often between the buttress roots of a tree. The musky rat-kangaroos (along with cassowaries and fruit bats) are probably the main dispersers of rainforest seeds, often burying seeds and fruit for future meals.

The **Chowchilla** (*Orthonyx spaldingii*) is an endemic active, ground dwelling bird found in the uplands usually above 450 metres. The chowchilla is usually in pairs or family groups scratching for insects in the leaf litter. These birds run across the rainforest floor and seldom fly. From dawn its resonant, rapid, rhythmic calls are a feature of most upland rainforest. It is also known as the **Northern Logrunner**.

Geology

Basalt rocks can be seen along the walking tracks and at Nandroya Falls. Formed from volcanic activity, this rock type creates a fertile soil and a particularly rich form of rainforest. Many spectacularly large trees often with impressive buttresses are seen along the track. Leeches are common on basalt soils and in wet weather can be quite a nuisance.

Further Information

Henrietta Creek Camping Area

www.nprsr.qld.gov.au/parks/wooroonooran-palmerston/camping.html

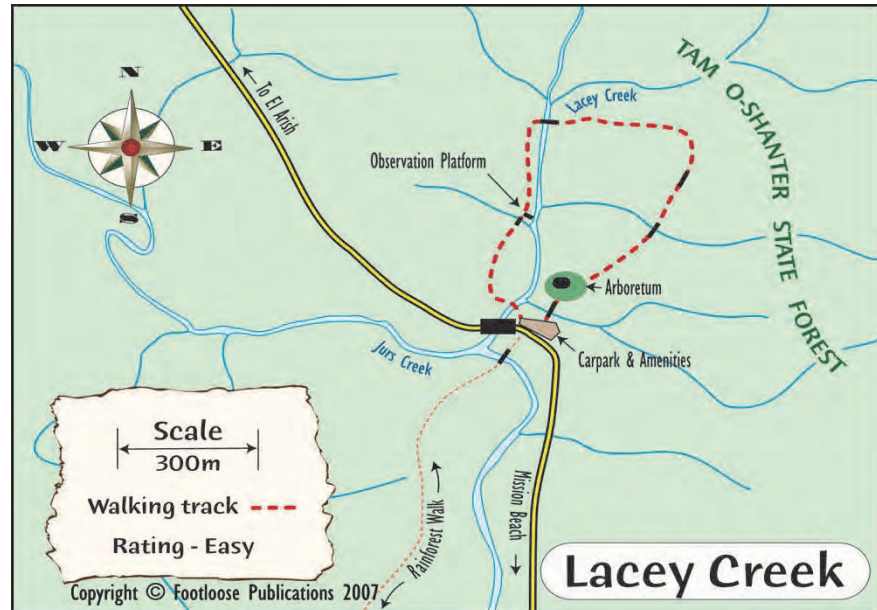
Henrietta Creek to Goolagen Creek

www.wettropics.gov.au/henrietta-creek-to-goolagan-creek.html

2.20 | LACEY CREEK



The 1.2 km Lacey Creek Circuit is on the road between Mission Beach and El Arish, about 7.5 km out of town after leaving the Mission Beach Visitor Centre. There is a carpark, toilets and picnic area on the northern side of the road where the walk begins.



Quick Facts – Lacey Creek

- ☞ The arboretum has cassowary food trees and interpretative signage.
- ☞ White Bollygums, Alexandra Palms and Cassowary Pines are common around Lacey Creek.
- ☞ Jungle Perch are active in the creek.
- ☞ Lacey Creek is within Djiru National Park (formerly Tam O'Shanter National Park).
- ☞ This is cassowary country, so if you look out you might see cassowary droppings on the forest floor as there are a good number of its food trees around this site.

Aboriginal History

The Djiru are the traditional owners of the area around Mission Beach. Djiru National Park was an important hunting and foraging area, and to the east, Bingil

Bay was a traditional campsite, meaning ‘a good camping ground with fresh water’. Cone-shaped shelters (mijas) were constructed using lawyer cane or saplings covered with bark and palm fronds.

“No wabu, no wiju, no gunday”

(No forest, no bushtucker, no cassowary)

The cassowary is part of the Djiru culture. Some of the Djiru used to hunt the cassowary for food. One cassowary could feed 10 people. The Djiru have dreamtime stories about the cassowary and they mimic them in their dance.

European History

Djiru National Park (formerly Tam O’Shanter National Park) was named after Edmund Kennedy’s ship, the *Tam O’Shanter*. Edmund Kennedy is the first known European land explorer to have landed at Kennedy Bay before travelling south to present-day Cardwell. This was the start of his Cape York overland expedition.

Tam O’Shanter National Park was gazetted in December 2005 to protect 4,125 hectares of lowland forest including a rare fan palm forest at the Licuala day-use site. Tam O’Shanter National Park was changed to Djiru National Park on 9 December 2009 to reflect the traditional owners of the area. This area is home to a large number of endangered cassowaries.

Flora and Fauna

The **White Bollygum** (*Neolitsea dealbata*), also known as Grey Bollywood, is a butterfly attracting small tree with distinctive foliage. The leaves are usually white underneath although often the white coating has been rubbed off from wind brushing the leaves against each other. Young leaves are coppery in colour. The fruits are small and turn red or black when ripe. Many bird species enjoy the fruit including the Brown Cuckoo Dove, Green Catbird and White-headed pigeons.

The **Cassowary Pine** (*Barringtonia calyprate*) has fluffy white flowers which open as new leaves emerge. These trees grow in lowland rainforest from Ingham north to the Torres Strait islands and New Guinea. The large green or blue oval shaped fruit can be seen between December and January.

Saw-shelled turtles (*Eiseya latisternum*) are found in these rivers. They are among the few native animals able to eat the introduced and toxic cane toad without ill effects. They normally feed on pandanus fruit, crustaceans, small fish and molluscs. Saw-shelled turtles have a serrated edge along their carapace, or shell. They are active throughout the day, swimming and basking in the sun.

During courtship from spring to summer, males will approach female saw-shelled turtles with a series of head bobs. The shell length of an adult is up to 20 centimetres and brown in colour, but much darker specimens have been seen, possibly because of algae growth on the shell.

Look out also for the **Giant petalurid dragonfly** (*Petalura ingentissima*), one of the world's largest. It has a large black body and transparent wings with a span of 16 cm. Nymphs live in burrows in the creek bank.

Black and blue damselflies are also a common sight around the sunlit sections of Lacey Creek. Dragonflies and damselflies can fly forwards, sideways and backwards.

☞ **Did you know?** Dragonflies are the fastest insect flyers, reaching speeds of 58 km per hour!

Jungle Perch (*Kuhlia rupestris*) are an active and inquisitive fish. It has distinctive dark blotches on upper and lower lobes of the tail – hence its other name, flagtail. Jungle perch must breed in saltwater; the juveniles will migrate upstream in January. They eat mainly fallen insects on the surface of the water along with figs, crustaceans and small fish.

Lawyer Cane or 'wait-a-while' (*Calamus sp.*) thrives when more light is available. The name 'wait-a-while' is so called because once it gets hold of you, it won't let you go! This plant is a most efficient climbing palm and often inhabits areas of disturbed forest or forest edges. Its lines of 'grappling hooks' wave around until they catch on to a support enabling it to grow towards the sunlight. Often it becomes too heavy and falls back to the ground, only to start its way up again! Although troublesome to humans, some small birds such as the Grey headed and Pale-yellow Robin build their nests in the vine and are grateful for protection provided by the sharp thorns. When the outer bark with spines is shed, the rattan cane which remains can be used commercially to make furniture.

The **Bumpy Satinash** (*Syzygium corniflorum*) produces, as the name suggests, apple-sized fruit which grows from the tree trunk. The flesh is edible but insipid. Maybe that's why Aborigines call it 'wada' (water) apple. The flowers and fruit are eaten by cassowaries.

The **Native Nutmeg** (*Myristica insipida*) maintains its primitive branches (growing on the tree trunk) even when it reaches a mature state. These trees can be easily spotted on the area (pers. comm., S. Goosem, August 2010).

Cassowary Food Trees

Cassowaries eat the fruits and berries of over 230 different plants, distributing the seeds in their droppings. Some of the fruits are poisonous to other animals. The

survival of many rainforest trees is tied to the survival of the cassowary which distributes the seeds in their droppings.

Examples of the following **cassowary food trees** are provided at Lacey Creek:

Common Name	Fruiting Season	Fruit Description
Umbrella Tree	October-May	Red to black berries in clusters from the branches
Solitaire Palm	April-November, January	Red fruit
Cassowary Satinash	April-November	Pink to reddish berry
Brown Gardenia	January-August	Large yellow fruit filled with small seeds
Powderpuff Lilly pillly	October-January	White or cream berries
Leichardt Tree	December-July	Brown fruit
Cassowary Pine	December-January	Green or bluish oval-shaped fruit
Cluster Fig	Any time of year	Yellow fruit sprout from trunk, branches or roots (cauliflory)
Ylang-ylang	March-November	Green to black clustered berries (smell of nutmeg and linseed oil when cut)
Bumpy Satinash	September-June	White to pinkish red berries off trunk or branches

Geology

Lacey Creek has a constant water flow; hence it can be visited any time of the year. The surrounding area sits mainly on porous soils which support common lowland rainforest. However, vegetation may vary depending on the soil's drainage; as a result you will also find some swampy areas and sedges (pers. comm., S. Goosem, 10 August 2010) The Lacey Creek picnic area is located in the Russell-Mulgrave Shear Zone, which separates old metamorphic rocks (to the east) and younger sedimentary rocks (to the west).

Further Information

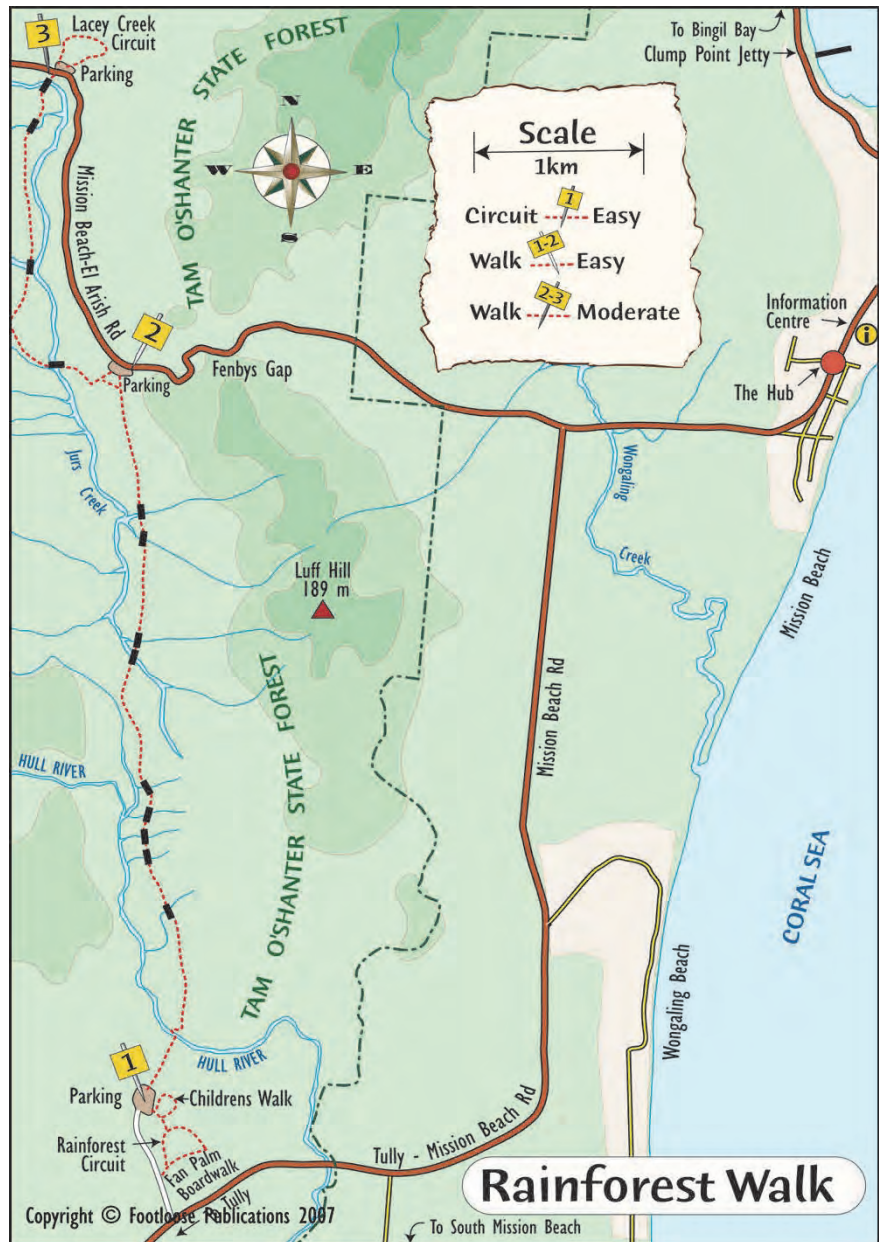
Lacey Creek Circuit

www.wettropics.gov.au/lacey-creek-circuit.html

2.21 | LICUALA RAINFOREST WALK



The dirt road to Licuala State Forest Park is signposted, 9 km along the road to Tully from Mission Beach. The walks start at a picnic area one kilometre up the dirt road.



Quick Facts – Licuala Rainforest Walk

☞ THIS IS CASSOWARY COUNTRY!

- ☞ Licuala Fan Palms (*Licuala ramsayii*) grow to over 20 metres high, with a leaf diameter of 1.2-2 metres.
- ☞ There are two short walks at Licuala – the Rainforest Circuit and the Children’s Walk (350 m).
- ☞ The rare fan palm forests of Mission Beach make up about one half the total fan palm forests in all of Australia.
- ☞ The Children’s Walk is a short continuation of the Licuala Rainforest Circuit and is designed especially for kids. Follow the cassowary’s foot print along the trail to find a surprise nest of cassowary eggs.
- ☞ The use of insect repellent is recommended before stepping out to do these walks. Also, watch for cassowaries along the dirt road and around the picnic area. Please do not share your lunch with them as some birds have become problematic, accosting visitors for food.

Aboriginal History

The Djiru Aboriginal people are the Traditional Owners of the area around Mission Beach. Djiru National Park was an important hunting and foraging area and, to the east, Bingil Bay was a traditional campsite meaning ‘a good camping ground with fresh water’. Cone-shaped shelters (*mijas*) were constructed using lawyer cane or saplings covered with bark and palm fronds.

The Djiru traditionally hunted and gathered food from the sea and neighbouring islands using bark canoes and outriggers to catch sharks, dugongs, turtles and fish. Birds’ eggs, shellfish and crayfish were also collected from nearby islands.

The Hull River Aboriginal settlement (a government settlement, not a mission) was set up in the early 20th century at South Mission Beach but was abandoned after being ruined by a cyclone in 1918. The people moved south to Palm Island.

European History

The first known land exploration by a European occurred in 1848 when Edmund Kennedy landed at Kennedy Bay, from his ship, the *Tam O’Shanter*, before

travelling south to present-day Cardwell and Edmund Kennedy National Park. This was the start of his Cape York overland expedition.

The Cutten brothers who arrived on 1 April 1882 were the first permanent European residents of Mission Beach. They developed one of the first major agricultural ventures in north Queensland, growing bananas, coffee, tea, sugar, tobacco, coconuts, citrus and pineapples in the fertile valleys around Bingil Bay where they established a settlement.

Flora and Fauna

Licuala Fan Palm (*Licuala ramsayii*)

Licuala will often grow in swampy areas, but there are some occurrences at higher altitudes. Fan palms occur between Cape York and the Paluma Range, north of Townsville. The Licuala palm provided Aboriginal people with an edible cabbage, and the leaves were used for wrapping food or for thatch. Licuala Fan Palms prefer constant moisture at the roots and do not need many nutrients.

Southern Cassowary (*Casuarius casuarius johnsonii*)

- ☞ The cassowary is potentially dangerous and must be treated with caution. Stay well clear but do not run away from them if confronted. Back away slowly. Do not feed cassowaries.
- ☞ This well known bird of the rainforest is the **only species of cassowary currently found in Australia** (fossil records reveal a dwarf cassowary that existed in Australia during wetter conditions). These magnificent birds were listed as a nationally endangered species in 1999.
- ☞ The cassowary belongs to a primitive family of birds (ratites) known for their inability to fly. The name cassowary comes from two Papuan words, 'kasu' which means 'horned', and 'weri' which means 'head'.
- ☞ Usually the first indication that a cassowary is near is a low rumble, described as 'gargling with a throat of marbles'.
- ☞ Most cassowaries are about 1.5 metres tall although they can reach up to 2 metres in height. It is difficult to tell the sexes apart. Females are generally bigger, weighing up to 60 kg compared to the average 35 kg male. The males have longer tails and females often have brighter red and blue neck wattles (the colour intensity can change with mood).
- ☞ The casque is a tough keratinous layer of skin covering a core of firm cellular foam-like material similar to Styrofoam and is thought to indicate age and dominance. It is not a crash helmet!

- ☞ These huge birds are the main distributors of the seeds of more than 70 species of trees whose fruit is too large for most other forest dwelling animals to eat and relocate. Some of these seeds are also toxic, but pose no threat to the cassowary due to its rapid digestive system for fruits (10 hours between 'lift and drop') which appears to be supported by an overactive liver and an unusual combination of stomach enzymes.
- ☞ The claw on the inner toe of each foot is a large straight spike about 120 mm long which the cassowary can use as a weapon if necessary.
- ☞ The male looks after the clutch of 3-5 eggs on the nest for about 50 days, and then the hatched young for the first 9 months, after which it chases them away to fend for themselves. The newly hatched chicks are striped black and cream with pale brown heads and tiny wattles, but no casque. The female abandons the nest after laying the eggs and the raising of the chicks is the responsibility of the male!
- ☞ Cassowaries have been reported to live up to 40 years.

Geology and Hydrology

The Licuala Rainforest Walk site is predominantly lowland forest and swamp area.

The wet season in Mission Beach begins around December and ends around June. Over the course of the wet season, Mission Beach receives around 2,793.1 millimetres of rain. By comparison, in the dry season from July to November, less than 525.3 millimetres of rain falls in total. At the height of the wet season in March it rains on average 21 days in that one month. Indeed, Mission Beach has experienced as much as 441 millimetres in a single January day. The wettest month on record is January with 2,748.6 millimetres of rain recorded.

Further Information

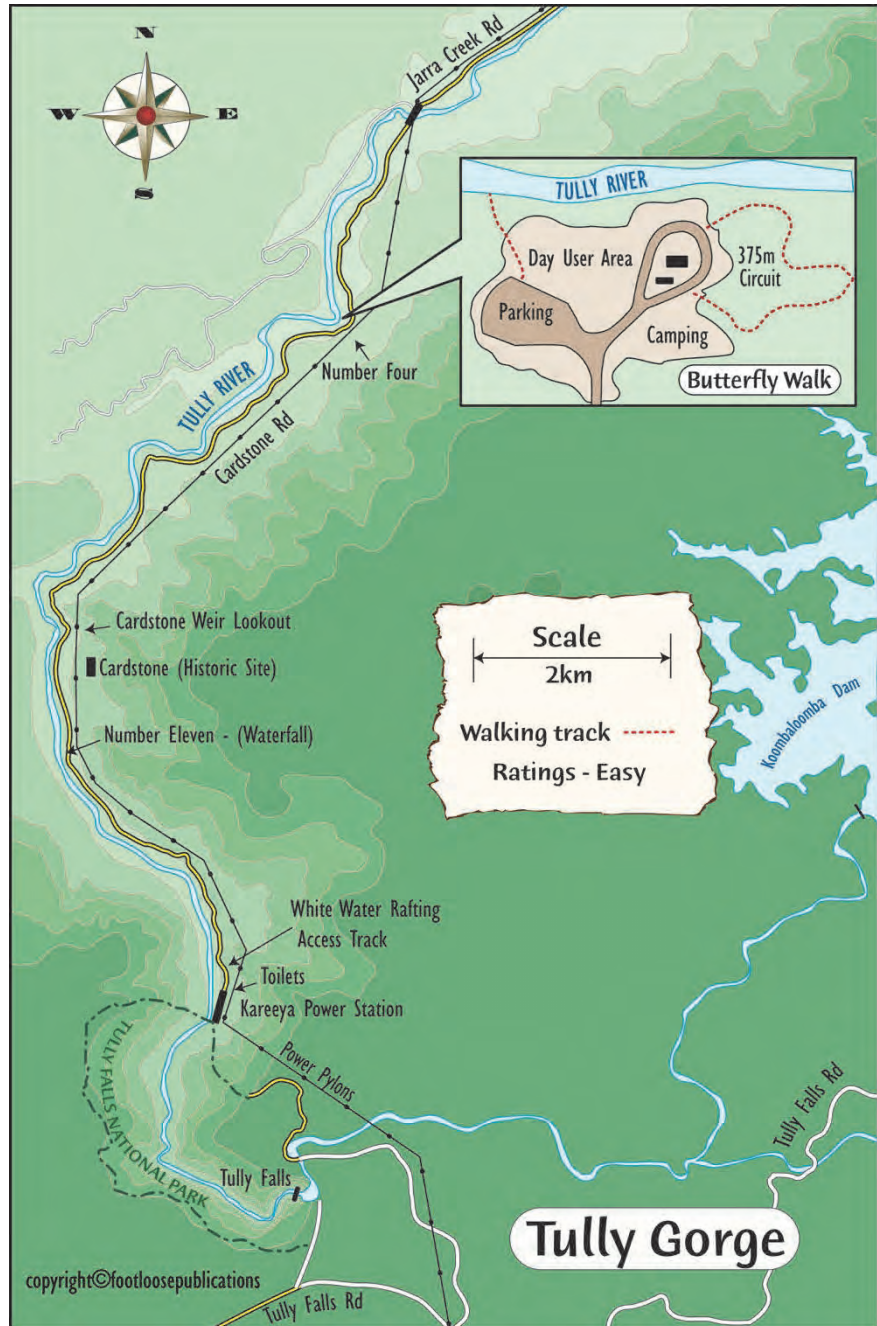
Licuala Rainforest Circuit

www.wettropics.gov.au/licuala-rainforest-circuit.html

2.22 | TULLY GORGE



Follow the signs from Tully west up to Tully Gorge, a 51 km drive. The Butterfly Walk is in the day use area, a few kilometres past the bridge over the Tully River.



Quick Facts – Tully Gorge

- ☞ The Tully Gorge is a fantastic site for aerobic activities (walking, cycling, kayaking, rafting).
- ☞ Tully Gorge is situated in what is known as Australia's wettest area. The annual heavy rainfall ensures that there is plenty of white-water on the Tully River.
- ☞ Kareeya Power Station was commissioned in 1957.
- ☞ Numerous butterfly species can be seen here.
- ☞ The rainforest walk is wheelchair accessible.

Aboriginal History

Tully Gorge is in the traditional country of the Jirrbal people.

European History

The Tully area was first settled in the **1870s** by sugar cane and cattle farmers. The river was named in 1872 after the surveyor-general, William Alcock Tully, and was originally called the Mackay River. The town of Tully was surveyed in 1883 (originally called Banyan) but it did not develop until the largest sugar mill in Australia was established in 1925. The road into Tully Gorge was created in conjunction with the Kareeya Power Station when it was commissioned in 1957.

The **Kareeya Power Station** was commissioned in 1957. 'Kareeya' is an Aboriginal word meaning 'big water'. It has a capacity of 86.4 megawatts (MW) which is the equivalent of supplying 86,000 homes at full capacity. The water is released from Koombaloo Dam on the Tully River and stored in the Tully Falls Weir before flowing to the hydro-electric station.

Koombaloo Dam was built in 1960. It has a standard capacity of 180,000 megalitres and can manage an additional capacity of 25,000 megalitres using a rubberdam extension (an inflatable rubberised tube which is fitted along the crest of the spillway).

The **Tully Gorge National Park** was originally gazetted in 1963 as an area of 502 hectares. Today with forest reserves attached to the estate, Tully Gorge National Park is 60,235 hectares (pers. comm., B. Rampton, 24 April 2009).

Whitewater rafting is a popular activity at Tully Gorge, as is kayaking, cycling and walking. The road that runs alongside the Tully Gorge up to the Kareeya Power Station was purposely built when the Kareeya Power Station was commissioned.

Flora and Fauna

Tully Gorge is well known for the wide variety of butterflies that come here to breed, mainly between the months of September and February. The Butterfly Walk takes you along a gravel path through rainforest and a boardwalk through swampy sections with a variety of palms. Interpretive signs will inform you about the many butterflies which live in the rainforest, their foods and life cycles. Keep an eye out for the butterflies too!

The **Herbert River Ringtail Possum** (*Pseudochirulus herbertensis*) are found in cool wet rainforests over 400 metres above sea level. This species was only distinguished from the Daintree River ringtail Possum in 1989. When young they have a pale brown coat and a long dark strip on their heads and upper backs. After a year or so, the Herbert River ringtail Possum changes colour to almost black on top with varying amounts of white on their chest and belly. These possums usually use tree hollows, epiphytic ferns or mistletoe as dens to rest during the day. This animal is the emblem for the Queensland Parks and Wildlife Service!

A very rare ground-dwelling mammal is the **Northern Bettong** or **Tropical Bettong** (*Bettongia tropica*). This strictly nocturnal animal has been found at only a few places in the Wet Tropics but not normally in rainforest, preferring the more open forest types on the drier western side of the Great Dividing Range. Looking a bit like a small kangaroo bent forward but having a pointed face shape, it feeds mostly on fungi (truffles) and seems to have a special digestive system to obtain nutrients from this unusual diet. The Northern Bettong is listed as Endangered, with distribution appearing to be limited by the availability of fungi and potentially, cockatoo grass and lilies, all of which are critical food resources. The distribution of these resources appears to be limited by vegetation associations with fire. Areas that remain unburnt in the tall, wet sclerophyll forest component of Northern Bettong habitat soon lose some or all of these resources.

Butterflies



CAIRNS BIRDWING
BUTTERFLY (PHOTO: WTMA)

Tully Gorge is great for spotting butterflies. Keep an eye out for:

- ☞ **Orchard Swallowtail Butterfly** – also known as the Large Citrus Butterfly or Orchard Butterfly;
- ☞ **Cairns Birdwing** – also known as the Cooktown Birdwing or Northern Birdwing;
- ☞ **Orange Plane Butterfly** – also known as the 'Orange Plane';

- ☞ **Tailed Emperor Butterfly** – has the upperside colour cream with pointed tails;
 - ☞ **Green-spotted Triangle Butterfly** – adults fly very rapidly in sunny clearings or along forest edges;
 - ☞ **Narrow-winged Awl** – also known as Brown Awl or Migratory Skipper;
 - ☞ **Blue Triangle Butterfly** – has a bright turquoise-blue central band on the upperside;
 - ☞ **Banded Demon Butterfly** – has a conspicuous white median band on the front wing; and
 - ☞ **Ulysses Butterfly** – official name is Ulysses Swallowtail and is also called Mountain Blue Butterfly.
- ☞ **Did you know?** Butterflies have chemical sensors on their feet and abdomen tips which ‘taste’ plants to find the correct ones on which to lay their eggs!



ULYSSES BUTTERFLY
(PHOTO: WTMA)

The colours and patterns of butterfly and moth wings are produced by many tiny scales which overlap like tiles on a roof. The wings of a large butterfly can hold a million and a half of these scales. Butterflies are cold-blooded and their dark colours help to soak up warmth from the sun in cool environments.

Geology

Two different types of rocks can be observed in either side of the gorge; volcanic rocks on the south and granite on the north. Granite sediments are medium to coarse grains; when suspended in water it settles rapidly and also captures other particles on the way resulting in clean crystal clear water (pers. comm., S. Goosem, 10 August 2010).

Further Information

Tully Gorge Butterfly Walk

www.wettropics.gov.au/tully-gorge-butterfly-walk.html

Tully Gorge National Park

www.nprsr.qld.gov.au/parks/tully-gorge/index.html

Kareeya Hydro

www.stanwell.com/kareeya-hydro.aspx

2.23 | MURRAY FALLS

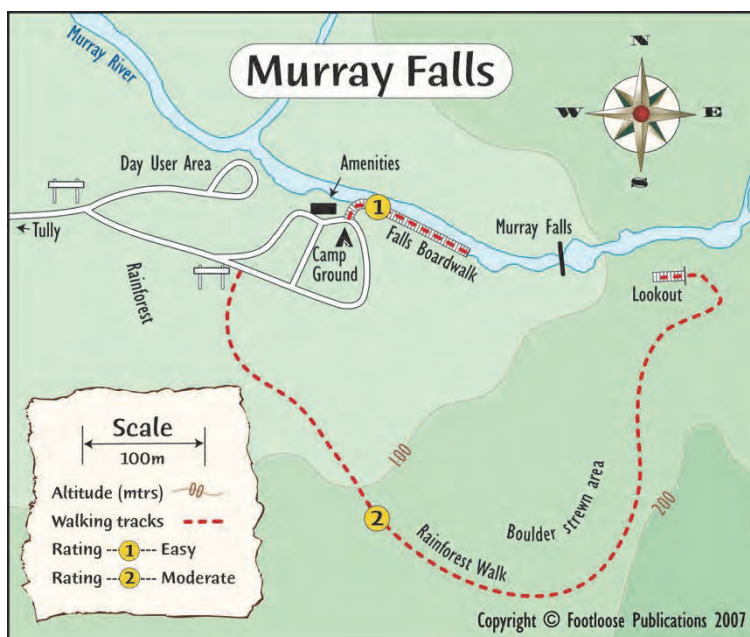


MURRAY FALLS
(PHOTO: J. CARMODY)



MURRAY FALLS
CAMPGROUND
(PHOTO: J. CARMODY)

☞ Murray Falls is well sign posted from the Bruce Highway. Turn off at Murrigal, about 14 km south of Tully, or at Bilyana, about 22 km north of Cardwell. These roads meet and either way, it is about 20 km from the highway to the Murray Falls campground. The last few kilometres are on a dirt road.



WARNING In the day-use area there are a number of access points to the Murray River. The water is often fast flowing and the rocks slippery. Access to the river upstream of the day-use area is not permitted. Slippery rocks make it dangerous and serious injuries have occurred. Observe the sign-posted restricted access area.

Quick Facts – Murray Falls

- ☞ Murray Falls is in the Girramay National Park (formerly Murray Upper National Park).
- ☞ The waterfall is a 30 metre drop.

Aboriginal History

The Girramay Traditional Owners welcome you to their country, a land of waterfalls and lush tropical vegetation. Murray Falls is a culturally significant site for the local rainforest aboriginal people of the Jumbun community.

At Murray Falls, two important traditional walking tracks intersect. One track leads south to the Kennedy Valley and then to the Herbert River. The other continues up the Murray Valley to the Kirrama Range and on to the Atherton Tableland. The creeks and rivers around here provided a food source of crustaceans, fish and turtles. Blackbean and cycad seeds were gathered from the rainforest and the toxins removed through a complex system of detoxification.

Jumbun Aboriginal Tours

Keeping place tours, guided rainforest walks, cultural demonstrations, camping and story telling. Hear their stories from the 'jujaba' or creation time, including how fire was obtained when the enterprising Spangled Drongo snatched the fire from selfish Brown Snake but was attacked, creating Split Rock, clearly visible from Murray Falls – and left the drongo with a forked tail!

Contact Marcia Jerry or Robert Grant on

(07) 40 66 55 69 or (07) 40 66 56 54

Tours are by request starting at 10.00 am for a standard 2½ hour tour.

European History

The Murray River was named after Lieutenant John Murray of the Native Mounted Police, who was sent to the Cardwell district in early 1865. Murray was said to be a 'keen observer, a first class bushman with a thorough understanding of the blacks' ... 'He was a kindly, humane man and although well disciplined, his troopers were very fond of him' (Jones, 1961: 106).

Murray Falls was originally within State Forest and was gazetted as a National Park in December 2005 covering an area of 21,550 hectares. The site was renamed Murray Falls, Girramay National Park in 2010.

Flora and Fauna

The **Black Bean** (*Castanospermum australe*) has a beautiful dark wood that was once used for cabinet making. It has yellow/orange flowers on the major branches and is often difficult to see behind the shiny compound leaves. Black Bean is pollinated by flying foxes and birds. The large seeds are carried in a pod of 1-5 seeds. It is said the tree produces alkaloids with anti-HIV and anti-cancer properties.

Murray Upper National Park offers excellent opportunities for viewing wallabies, possums and a variety of reptiles. Bring binoculars and watch for fruit doves, sulphur-crested cockatoos, rainbow lorikeets, honeyeaters, kookaburras and forest kingfishers. During the day, look for the endangered **sharp-snouted day frog** as it basks in the sun by the river and listen for its high-pitched call. Also listen for the rasping call of the endangered **mountain mistfrog**.

The **Sharp-snouted Day Frog** or **Sharp-snouted Torrent Frog** (*Taudactylus acutirostris*) is classed as Endangered in Queensland. Merely 30 millimetres in size, the frog is rich olive-brown in colour with scattered paler flecks. Broad black bands run along the side of the body. Interestingly, its toes have no webbing. In the past these frogs were considered abundant, often seen on rocks during the day beside fast flowing streams. And away from the water during wet weather. The cause of this frog's decline remains unknown. The last recorded sharp-snouted day frog sighting was in 1994.

The **Mountain Mistfrog** (*Litoria nyakalensis*) is a moderate sized robust treefrog of olive-brown or grey-brown colour, sometimes with irregular darker olive markings. The finger and toe discs are large and conspicuous, with the fingers having slight webbing and the toes being fully webbed. This frog was once widely distributed across the upland ranges of the Wet Tropics, but is now one of seven species of frogs occurring in the upland rainforest streams of northeastern Queensland which have undergone rapid and substantial population declines in the last decade. The Mountain Mistfrog is now listed as critically endangered as it has not been located since 1990.

The **Forest Kingfisher** (*Todiramphus macleayii*), although common, is still a spectacular bird to sight. These immaculate looking birds have two-toned blue upperparts and white underparts and a white collar (not entire in females). They have a large black bill with two prominent white spots on the forehead. They can often be seen sitting on powerlines, posts and open limbs.

Geology

Murray Falls is located in the foothills of the Kirrama Range. The falls are over grey granite which in some areas contains large fragments of dark rocks (up to 30 cm), suggesting the mixing of different magmas. These features can be observed in horizontal blocks in the swimming pools adjacent to the day use area.

Further Information

Murray Falls, Girramay National Park

www.npsr.qld.gov.au/parks/murray-falls/index.html

2.24 | BROADWATER

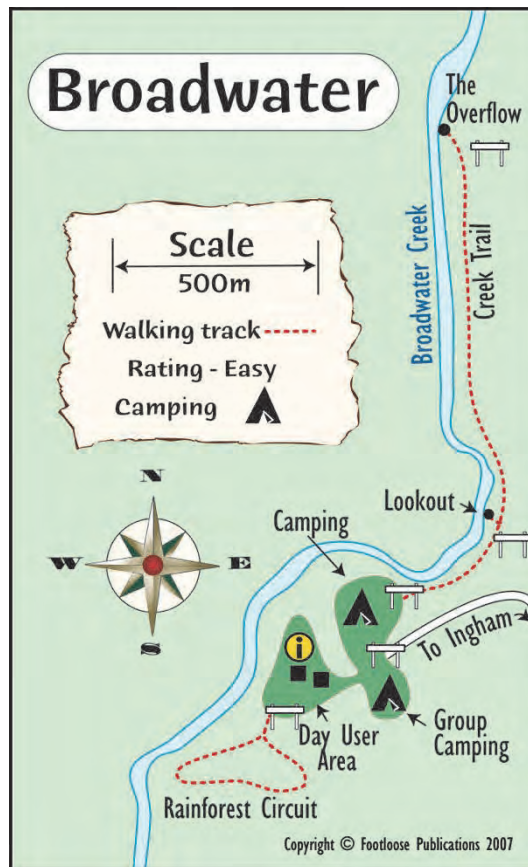


BROADWATER NATIONAL PARK
(PHOTO: WTMA)



BROADWATER NATIONAL PARK
(PHOTO: WTMA)

☞ Broadwater is a scenic camping and picnic area 45 kilometres (1 hour) west of Ingham in the Abergowrie State Forest. Turn inland off from the Bruce Highway, 5 kilometres to the north of Ingham, just after the Herbert River bridge. It is 46 kilometres to the campground at Broadwater National Park. Fifteen kilometres of the road is unsealed, but generally in good condition. Check road conditions before leaving Ingham.



Quick Facts – Broadwater

- ☞ The White Fig is at least 50 metres tall.
- ☞ Broadwater is in cassowary territory.

Aboriginal History

- ☞ Broadwater is in the traditional country of the Warrgamaygan Aboriginal people.

European History

Broadwater is in Abergowrie State Forest, which was first gazetted in 1965. The Queensland Parks and Wildlife Service (QPWS) manage the area to conserve its natural, cultural and historic values. Abergowrie State Forest covers 5,455 hectares.

Flora and Fauna

Two distinct vegetation communities are found at Broadwater — rainforest and open forest. There is a small area of **rainforest** adjacent to the day-use area where a large white fig (*Ficus virens* var. *sublanceolata*) commonly known as the Broadwater Fig can be observed from a wheelchair-accessible track. Fan palms, black beans, Alexandra palms, pink-flowered evodias, birds nest ferns and staghorn ferns are just some of the plants in the rainforest. The noisy pitta, wompoo pigeon, emerald dove, orange-footed scrubfowl, spotted catbird, white-tailed rat, yellow-footed antechinus and the Hercules moth are all found here.

The open **dry sclerophyll forest** has a grassy understorey where agile wallabies can often be seen. This forest is dominated by forest red gum, brown salwood and swamp mahogany. Rufous owls, blue-winged kookaburras, forest kingfishers, feathertail gliders, lace monitor lizards and brushtail possums are often seen at Broadwater.

The **White Fig** (*Ficus virens*) towers above the rainforest canopy and is thought to be over 200 years old. The tree provides food, shelter and nesting sites for many rainforest animals. The fleshy orange-brown fruit is abundant in the dry season and enjoyed by pigeons, parrots, fruit bats and possums. Rainbow lorikeets feast on the fermenting fruit. The buttress roots provide shelter for Noisy Pittas and the nocturnal Rufous Bettong build their nests amongst the roots.

Staghorns (*Platycerium superbum*) have two kinds of fronds. Evergreen nest leaves are produced first and press tightly against the host, covering the root system. Eventually a small antler is produced. Long slender fronds of a large specimen may dangle for up to two metres. These true fronds produce spores at the first fork. Fruit and dead leaves continually fall from the canopy and some of them land between the nest fronds, forming pockets of litter. As each new nest frond grows on the outside, it presses the older ones into the centre of the fern. If you could see right into the heart of the fern, you would find the roots of the staghorn ferreting through the decomposing layers of nest fronds and leaf litter and extracting the nutrients most plants get from the soil. The amount of humus collected by some epiphytes may be so great that they support earthworms, centipedes and other organisms that usually live in the soil.

The nocturnal **Striped Possum** (*Dactylopsila trivirgata*) is rare and shy. Their favourite food is beetle larvae found in rotting tree trunks. Their sharp incisor teeth and claws and long tongues help to pull off the wood to find the larvae. During the day pairs of striped possums often sleep in large clumping plants found high in the forest or in a leafy nest inside a tree hollow. The possum feeds on leaves, fruit, small vertebrates and the honey of native bees.

☞ **Did you know?** Striped Possums have been seen tapping branches with their front feet when searching for food. This tapping may reveal hollow parts of the wood where beetle larvae are to be found.



THE CATBIRD,
SO CALLED BECAUSE OF
ITS CAT-LIKE CRY
(PHOTO: WTMA)

The wailing, baby-like or cat-like territorial cry is often the first sign that a **Spotted Catbird** (*Ailuroedus crassirostris*) is nearby. Pairs of these distinctly green birds feed together within their territory, flitting and hopping through the rainforest in search of fruit. Occasionally they also dine on insects, leaves, shoots, flowers, frogs and nestlings of other birds. At night the pairs roost in vines or clumps of dense foliage. Spotted catbirds are the only member of the bowerbird group that do not have an elaborate courtship.

The **Noisy Pitta** (*Pitta vericolor*) is a medium-sized, short-tailed bird of the rainforest floor. It has blue shoulders, a black throat and mask extending to the back of the head, buff breast, green back and wings, black patch on the belly and a red lower belly. Their flight is fast and low over the ground. This bird will flick its wings and tail if alarmed.



HERCULES MOTH LARVAE
(PHOTO: WTMA)

A **Lace Monitor Lizard** (*Varanus Varius*) averages 1.5 metres in length and is typically dark blue with many scattered cream, yellow or white scales. The lace monitor is arboreal and will often seek shelter in tree hollows or hollow logs. Their tails are extremely long – almost twice the length of their head and body. They feed on birds, insects, reptiles, small mammals, carrion and nesting birds' eggs. The female will dig a hole in the side of a termite mound to lay her eggs. The termites then close up the hole keeping the eggs safe and at a constant temperature of 30°C. After 8-9 months the young will hatch and the female will actually return to dig them out.



MATURE HERCULES MOTH
(PHOTO: WTMA)

The **Hercules Moth** the Hercules (*Cosinocera hercules*) is the largest moth in the tropical rainforest with a wingspan of around 30 centimetres. The caterpillar is impressive at 12 centimetres long, bearing long yellow spikes from each segment of its pudgy, pale green body. The caterpillars feed off leaves of the Bleeding Heart (*Homalanthus novoguineensis*) and Celerywood (*Polyscias elegans*). The moths are various shades of brown with both males and females having triangular transparent 'windows' and a white triangle edge dusted onto the wings. The male's wings have long tapered tails while the female's wings lack the tails

but they are larger in overall area. After the adult female emerges and her wings unfold and dry, she will emit pheromones to attract a male. After mating, she will fly away, lay her eggs and die shortly after.

Geology

Pink granite, white quartz and black basalt river stones are visible through the clear water.

Further Information

Broadwater, Abergowrie State Forest

www.nprsr.qld.gov.au/parks/murray-falls/index.html

Broadwater State Forest

www.wettropics.gov.au/broadwater-fig-tree.html

Broadwater Creek Walk

www.wettropics.gov.au/broadwater-creek-walk.html

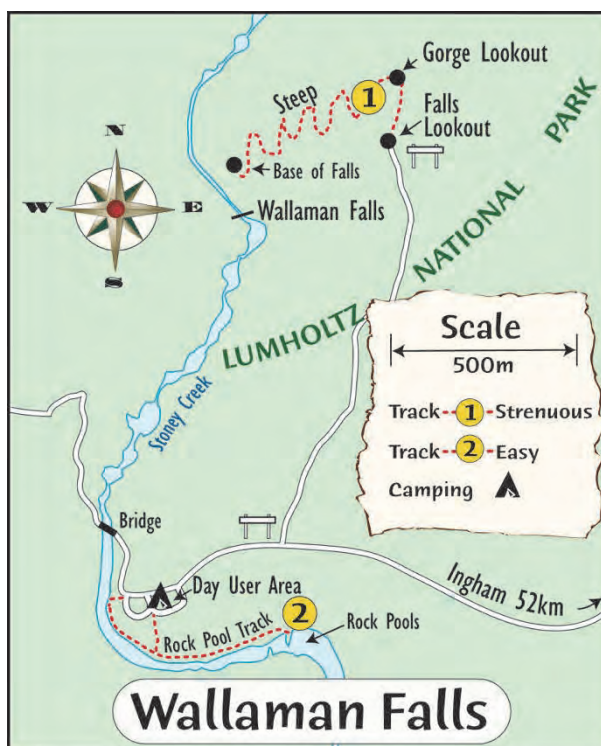


WALLAMAN FALLS
(PHOTO: WTMA)

2.25 | WALLAMAN FALLS



Wallaman Falls is located 51 km south west of Ingham. Travel west from Ingham along Abergowrie Road to Trebonne. From here, the route is well signposted. While part of the road is unsealed, it can still be accessed using a conventional vehicle. Care is required on the range, which is slippery when wet. Towing caravans is not recommended.



Quick Facts – Wallaman Falls

- ☞ Wallaman Falls is the largest single drop waterfall in Australia, tumbling 305 metres. Its total height is 340 metres, and the falls itself sit 540 metres above sea level.
- ☞ The pool at bottom of the waterfall is 20 metres deep.
- ☞ Wallaman Falls is commonly (but now illegally) used by base jumpers.

Aboriginal History

Wallaman Falls is part of the traditional lands of the Warrgamaygan Aboriginal people.

'Nginba Warrgamaygan Ngarji': They hope you enjoy your visit and respect this sacred place. In the past the creek provided a permanent water source ensuring food supply even in the driest conditions. It also sustained their spirituality. This connection continues today.

'Wallaman' means 'big water'.

European History

During the **1800s**, European settlers began moving into the area in and around Wallaman Falls during the 1800s, and started cattle grazing, gold, tin and copper mining and the timber industry. Relics of the timber industry are scattered across the park. Remains of timber cutters and forester camps are still evident at Wallaman Falls.

During the early years of settlement, the closest port for farmers' cattle was Bowen, 360 km to the south. In the early **1860s**, a group of pastoralists including George Dalrymple and the Scott brothers established a port in Cardwell and built a road connecting the new port to their properties. This road roughly followed the traditional Aboriginal track.

Aboriginal walking trails which were later followed by European explorers – including Dalrymple, Kent and Sullivan – played an important role in the opening of supply routes to the Kirrama Range area. Cattle stations, tin miners and timber cutters serviced these tracks.

Wallaman Falls is situated in the Girringun National Park (formerly Lumholtz National Park). Girringun National Park covers an area of 204,280 hectares and was gazetted in 2003 (pers. comm., B. Rampton, 24 April 2009).

Flora and Fauna

Several of the region's vegetation types are represented in Girringun National Park. These include upland rainforest, mesophyll rainforest and tall open forest. Casuarinas, eucalypts and grass trees colonise the nutrient poor soils around the rim of Wallaman Falls, while palms, umbrella trees and figs prefer the more fertile

soils of the rainforest. The constant humidity in the gorge supports a dense rainforest and a rich mosaic of mosses, lichens and epiphytes.

The bird-attracting red flowers of the **Weeping Bottlebrush** (*Callistemon viminalis*) are a common sight along Stony Creek. Commonly found along waterways and frequently overhanging the water, the flowers are usually bright pink or red but can be white or cream. The small seed capsules which follow flowering encircle the stems. It grows to a height of 15 metres and flowers from June to February.

Rose Gum (*Eucalyptus grandis*) is one of the superb eucalypt species in Australia. They grow on ridges above 600 metres or on the edge of rainforest. The timber of this species is often marked by Scribbly Borers and grubs. The heartwood is pink to pale red-brown. The Rose Gum or Flooded Gum is also known as the 'widow maker' as it can drop its branches without warning. They can grow to a height of 70 metres and flower from April to August.

Cadaghi (*Corymbia torelliana*) (previously *Eucalyptus torelliana*) has fibrous bark at the base of the trunk with smooth greenish bark of the upper trunk and limbs. Masses of white flowers precede rounded 'gum nut' fruit. The smooth bark is shed late in the year. The Cadaghi has a unique seed dispersal mechanism called 'mellitochory' in which the seeds are spread by small and stingless native bees. The tree poisons the soil around it so that only the seeds that fall at a distance from the trunk will germinate.

Fauna of the Herbert River and its tributaries	Fauna around the campsite	Fauna at night
Platypus	Crimson rosella	Common brushtail possum
Eastern water dragon	Golden whistler	Sugar glider
Kreff's turtle	Lewin's honeyeater	Red-legged pademelon
		Bandicoot
		Frogs calling

The **Platypus** (*Ornithorhynchus anatinus*), along with the echidna, are monotremes. These are the only mammals in the world that lay eggs and suckle their young with milk. Although the platypus can be found through much of the Wet Tropics, they are often seen in Stony Creek upstream from the falls. The rear foot spur of the male platypus is connected to a venom gland in the thigh. The venom glands are most active during the spring breeding season. In northern Queensland, platypus mate in August. Platypus eat insect larvae, freshwater shrimp and crayfish. A baby platypus is not called a puggle, a

common misconception. There is no official name for a baby platypus, but a common suggested name is 'platypup'. The tail acts as a stabiliser when the platypus swims. Fat is stored in the tail for food scarcity and for females when nesting. Electroreceptors on the bill search out food when they are turning over the mud on the bottom of the creek. They can eat the equivalent of their own body weight within 24 hours.

The **Golden Whistler** (*Pachycephala pectoralis*) is a 17 cm tall bird that has an olive-green back, yellow underparts and a black head. It has a prominent white throat with a black band across the breast. It is a common breeding resident in rainforest usually above 300 metres. During the breeding season males are easily located by their constant song. These birds are usually seen singly, sometimes in pairs. They search through foliage for food.

Geology

Several major geological events created the landscape that you see today at Wallaman Falls. About 50 million years ago, movement in the earth's crust formed the edge of the continent that lies against the Coral Sea. An earlier Herbert River flowed towards the west but now has an east flowing course.

Continuous erosion caused the Herbert River Falls to retreat by around 40 cm every 100 years. Stony Creek, a tributary of the Herbert River drops 305 metres to form Wallaman Falls.

Walks of Wallaman Falls

Wallaman Falls provides a gateway to the Wet Tropics Great Walk. With 110 km of walking opportunities, including short and overnight walks, there is something for everyone.

The **Banggurru walk** is an 800 metre return 'easy' walk that takes about 45 minutes to complete. The Banggurru walk ('Bun-gu-roo', meaning 'turtle') provides an opportunity for the whole family to experience some of the beauty of the Wet Tropics World Heritage Area, in the rainforest along the banks of Stony Creek.

The **Jinda walk** ('Yin-da', meaning 'falls') is a 1.6 km return 'moderate' walk to the base of the falls. Allow two hours to complete the trail. Be prepared for a steep descent and ascent on unstable surfaces. A moderate level of fitness is required.

The **Buujan Quiinbiira walk** ('Boo-jun quin bee-rr-ar') is a 37½ km one-way trek, graded 'difficult'. Allow two days to complete the journey. The walk forms an overnight section of the Wet Tropics Great Walk from Wallaman Falls to Yamanie Section pick-up.

The **Jagany walk** ('Jar-gar-nee', meaning 'goanna') is a 56.8 km one-way trek, graded 'difficult'. Allow three days to complete the journey. The Jagany walk also forms a section of the Wet Tropics Great Walk, from Wallaman Falls to Henrietta Gate.

The **Gugigugi walk** ('Goo-ji goo-ji', meaning 'butterfly') is a 38.3 km one-way trek, also graded 'difficult'. Allow two days to complete the journey. The trail is another overnight section of the Wet Tropics Great Walk from Henrietta Gate to Yamanie Section pick-up.

Further Information

Wallaman Falls, Girringun National Park

www.nprsr.qld.gov.au/parks/girringun-wallaman/index.html

Wallaman Falls

www.wettropics.gov.au/wallaman-falls-gorge-lookout.html

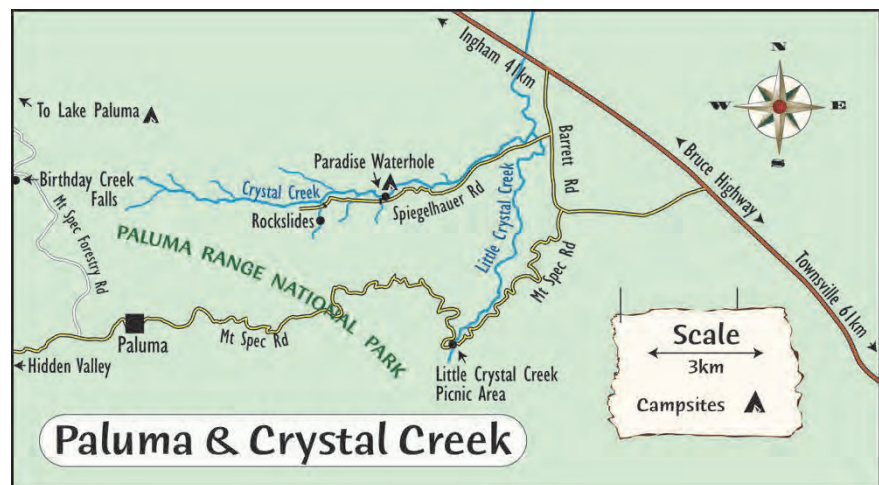


BIG CRYSTAL CREEK
(PHOTO: WTMA)

2.26 | BIG CRYSTAL CREEK



☞ About halfway between Townsville and Ingham, turn inland off the Bruce Highway to Paluma. It is approximately 5 km to the turnoff to Paradise Waterhole. Follow the signs from there past Paradise Waterhole. Rockslides can be reached by parking at the locked gate and walking a few hundred metres to the start of the track going up the hill on your left.



Quick Facts – Big Crystal Creek

- ☞ Big Crystal Creek is situated in the Paluma Range National Park.
- ☞ A series of natural rockslides are very popular with visitors.
- ☞ Mean annual rainfall at Crystal Creek is between 1,000 and 1,500 mm.

Aboriginal History

The Traditional Owners of Paluma Range National Park, the Nywaigi (or Nawagi) Aboriginal people have lived in this area for thousands of years.

The Nywagi people know Paluma Range as 'Munan Gumburu', which means 'Misty Mountain'.

European History

The **Paluma township**, once known as Cloudy Clearing, developed after tin was discovered in the area in 1875. Tin mining peaked in 1905 but soon declined due to poor access, high transport costs and low tin prices. Deep in the forest the memories of the old tin miners are preserved in names such as Johnstone's Hut Clearing and Bullocky Tom's Track, which leads from Garde's Battery and Mine.

It is thought the township of Paluma is named after the HMS *Paluma*, a Queensland colonial government survey ship that worked along the North Queensland coast in the 1880s and 1890s.

McClelland's lookout commemorates the overseer who, as part of an employment scheme during the depression of the 1930s, built Paluma Road and the bridge across Little Crystal Creek. The stone bridge is an enduring tribute to the stone masonry of those times.

Mining for wolfram was recorded at Crystal Creek (previously called Saltwater Creek) in 1898. But wolfram only really became payable after 1900. In 1904, 200 miners working for wolfram were located at two camps – the main camp being at Crystal Creek and another smaller camp at Ollera Creek. The mining of wolfram and other associated metals all but ceased when prices slumped in 1920.

During World War II, Paluma's altitude of almost 1,000 metres, overlooking Halifax Bay, was soon recognised as strategically attractive and around 50 US Troops were stationed there for 18 months. The Troops installed a radar unit that was used to detect and track Japanese bombers, then alert Townsville before an attack. The military history of the Paluma area has been captured in a series of signs, scattered through Paluma's township.

Paluma Range National Park was gazetted in December 1994 and covers an area of 69,500 hectares.

Flora and Fauna

Eucalypt woodland, with ironbarks, bloodwoods and poplar gums, grows on the lower, drier areas of the Paluma Range National Park. Another prominent tree is the cocky apple; its delicate pink-white flowers can be seen from September to November. Riverine vegetation, with casuarinas and melaleucas, grows along the creek. Peaceful doves, Willy wagtails, laughing kookaburras and agile wallabies

are often seen here (Department of Environment and Resource Management, 2009).

The **Cocky Apple** (*Planchonia careya*) is a common understorey tree of open forest. The flowers have pink and white stamens that form a delicate sphere which open at night and fall early, so are often not seen. The fruits are large green berries which are eaten by cockatoos. It grows to 15 metres tall and flowers from September to November with the fruit (50-90 mm) appearing from December to January.

About half way up the range, at Little Crystal Creek, where eucalypt forest merges into rainforest, hoop pines can be seen lining the creek on the rainforest margin. Visitors may be fortunate enough to find bowers – the display areas of male bowerbirds. The **golden bowerbird** builds a tall lattice structure decorated with flowers and lichen. The **tooth-billed bowerbird**, by contrast, simply clears a patch of forest floor for his court and lays down freshly cut leaves. The golden bowerbird is considered to be one species at immediate risk due to climate change.

Geology

Crystal Creek starts below Paluma at an elevation of 192 metres. It drops around 188 metres over its 17.5 km length. The **Paluma Range** marks the southern limit of the Wet Tropics World Heritage Area. A grey, volcanic rock called rhyolite occurs here. It can be seen near sea level to the top of the Paluma Range suggesting it is up to 900 metres thick. It is part of a widespread sheet of volcanic ash that was produced by huge and violent volcanic eruptions, perhaps about 350 million years ago. Between the layers of this rock are other layers of sediments which show that rivers, lakes and swamps formed between different eruptions. There is also erosion-resistant granite which has intruded into the rocks.

Further Information

Mount Spec, Paluma Range National Park

www.nprsr.qld.gov.au/parks/paluma-mount-spec/index.html

Big Crystal Creek (Rockslides)

www.wettropics.gov.au/big-crystal-creek-rockslides.html

- ☞ Frogs are abundant in the little rock pools, evidenced by the large number of tadpoles usually found.
- ☞ This site is great for bird watchers, with the morning chorus being quite a display.

Aboriginal History

The Jourama Falls section of Paluma Range National Park is the traditional homeland of the Nywagi. The Nywagi people know Paluma Range as *Munan Gumburu* which means 'Misty Mountain'.

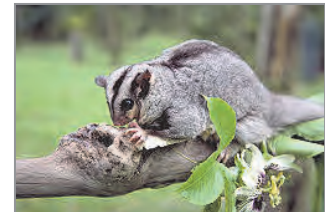
European History

Refer to Section 2.26 'Big Crystal Creek' for European history.

Flora and Fauna

The Jourama Falls section of Paluma Range National Park has recorded a total of 260 plant species. Closed forest communities cover over 60% of this section. Rainforest plants, including palms, umbrella trees and fig trees, fringe Waterview Creek. The open forest beyond Wtareview Creek is home to the endangered Mahogany Glider.

The **Mahogany Glider** (*Petaurus gracilis*) is endemic to tropical north Queensland and critically endangered due to their lowland habitat being greatly reduced by tree clearing. They have a very limited range from the Hull River near Tully to Crystal Creek. They occur in habitat below 120 metres and are highly mobile, dependent on continuous open forest or woodland to range freely. These gliders are soft grey or brown in colour with a black stripe on their head and body and the tail is long. They eat nectar, tree sap, tree gum, lichens and invertebrates. The Mahogany Glider actively feeds at night, particularly in the vicinity of flowering eucalypts and grass trees.



MAHOGANY GLIDER
(PHOTO: WTMA)

The brilliant blue and black **Ulysses butterfly** (*Papilio Ulysses*) can often be seen around the red flowers of the weeping bottlebrush trees overhanging the creek. The underside is cryptic making it difficult to see when the butterfly is at rest with its wings folded back. The Ulysses butterfly is attracted to red, blue and mauve colours and will sometimes come to rest on visitors' clothing. The males are attracted by blue colours.

The moist conditions of the rainforest-fringed creek attract a variety of birds such as azure kingfishers, pied monarchs, **noisy pittas** and northern fantails. During

the summer months you may even see buff-breasted paradise-kingfishers which migrate all the way from Papua New Guinea to nest. Beyond the creek, towards the foothills, the rainforest gives way to drier open woodland. Stands of poplar gum, bloodwood and Moreton Bay ash dominate the canopy with an understorey of cocky apple trees and tall grasses. Woodland birds such as laughing kookaburras, forest kingfishers and a variety of honeyeaters are often seen.

Jourama Falls at dusk is an excellent site to spot the **Large-tailed Nightjar** (*Caprimulgus macrurus*). This medium-sized dark coloured bird has intricately patterned plumage with a thin white crescent on each side of the throat and white bristles about the bill.



AZURE KINGFISHER
(PHOTO: WTMA)

The **Azure Kingfisher** is often seen along freshwater streams in rainforest perched on a low branch, over or beside the water. Usually alone, the azure kingfisher dives into the water for fish, small crustaceans and tadpoles. They breed from October to March digging a tunnel 45-70 cm deep into the side of the river bank high above the water. Both the male and female dig the tunnel. Colouring is deep blue head, back and wings with completely orange underparts.

During the evening, nocturnal birds become active and may be seen with spotlights. The distinctive 'mo-poke' call of the **Southern Boobook Owl**, along with the wood-chopping sound of the **Large-tailed Nightjar**, can provide a lead to their location. The **Tawny Frogmouth** also occurs in the area and is sometimes seen during the day roosting on lower tree branches.

Geology

Jourama Falls is the main cascade on Waterview Creek fed by water from the rainforest on the Seaview Range. Jourama Falls flows down pink and grey feldspar rich granite and black igneous rock.

Further Information

Jourama Falls, Paluma Range National Park

www.nprsr.qld.gov.au/parks/jourama-falls-paluma/index.html

Mount Spec, Paluma Range National Park

www.nprsr.qld.gov.au/parks/paluma-mount-spec/index.html

Jourama Falls

www.wettropics.gov.au/jourama-falls.html

3.0 | WHAT IS ECOTOURISM?

☞ “**Ecotourism** is ecologically sustainable tourism with a primary focus on experiencing natural areas that fosters environmental and cultural understanding, appreciation and conservation”.

(Ecotourism Australia, 2011)

The Five Principles of Ecotourism

1. Nature-based products and markets;
2. Uses ecologically sustainable operations and management;
3. Includes environmental education (interpretation) for staff and tourists alike;
4. Is locally beneficial (economic benefits for local people / communities); and
5. Supports nature conservation (nature tourism experiences / operators, research, fees).

Being an Ecotourism Business

These are a few hints operators can follow to unite conservation, communities and sustainable travel in their business and to provide guests with an optimal experience during their stay. If a business would like to become eco-accredited, take a look at the Ecotourism Australia website to see what it takes and fill out an application! <http://www.ecotourism.org.au/>

There are eight principles that a company must abide by to become ecotourism accredited:

- It focuses on personally experiencing nature in ways that lead to greater understanding and appreciation;
- It integrates opportunities to understand nature into each experience;
- It represents best practice for ecologically sustainable tourism;
- It positively contributes to the ongoing conservation of natural areas;
- It provides constructive ongoing contributions to local communities;
- It is sensitive to, interprets and involves different cultures, particularly indigenous culture;
- It consistently meets client expectations; and
- It's marketing is accurate and leads to realistic expectations.

Monitor

Tour operators represent the first level of visitor monitoring and are very important components of a visitor monitoring system for alerting land managers of problems, triggering immediate action and further intensive monitoring.

- ☞ Assist rangers and land managers in identifying problems such as invasive weeds or feral animals.
- ☞ Increase awareness of changes in the environment.
- ☞ Provide an early warning to trigger intensive survey work.
- ☞ Provide information to trigger land management actions.
- ☞ Help monitor sightings for rare or endangered animals such as cassowaries.
- ☞ Involve locals in monitoring – it's a great way to bring them 'on side' and to ensure that your business is not impacting negatively on the local environment.

Basic Ecotourism Principals for Operators

Promote Safety

- ☞ Obey the laws and regulations of public and private lands, including guest behaviour, vehicle use and boat use, as well as the culture, heritage and environmental values of the area.
- ☞ Be mindful at all times of Duty of Care and other health and safety issues. Be proactive in taking measures to maximise guests' personal safety – they will greatly appreciate it.
- ☞ Provide staff with first aid and CPR training and make sure they understand the procedure during emergency situations.

Minimise Impact

- ☞ **Avoid overcrowding.** Taking too many people to an area can be damaging to the environment as well as to your visitors' experience. Work with other companies and follow the permit system to help avoid overcrowding at sites.
- ☞ **Use greenhouse friendly products,** including washing and packaging materials.
- ☞ **Recycle.** Provide recycling bins for guests to use. This can help to show them the importance of recycling.

- ☞ **Use recycled material.** Doing this for your promotional material sends an environmental message to your clients.
- ☞ **Reduce carbon emissions.** Promote carpooling between staff members, provide driver training to increase fuel efficiency, use greener vehicles, use solar power or more energy efficient light bulbs as well as occupancy sensors which ensures that lights are only in use when needed.
- ☞ **Use fans or an open building** to keep guests cool. Air conditioners take a lot of energy to run, and are often used unnecessarily.
- ☞ **Offer volunteer projects** monthly, such as reforestation or a rubbish pick up to help the environment. This allows for locals and guests to work together and contribute, and helps to boost your company's image.
- ☞ **Clean your vehicles and equipment** thoroughly before each trip to avoid carrying weeds and pathogens into National Parks and sensitive areas.
- ☞ **Set business standards and targets and monitor progress** toward them to help increase environmental performance and to identify where improvements need to be made.
- ☞ **Reduce the need for brochures.** If you give out brochures, design them to use maximum space, don't print in excess, and think about using the internet and word of mouth to promote your business.
- ☞ **Use reusable equipment** for water bottles or plates to send a message to the visitor, reduce waste and become more cost efficient.
- ☞ **Pack the icebox** in the morning when it can be 20 degrees cooler than in the evening. This can save a considerable amount of energy while keeping food and drinks cold. While doing this, think about how you can avoid over-packaging of food and drinks.
- ☞ **While on tour, use non-perishable foods** that do not require refrigeration.

Build environmental and cultural awareness and respect

- ☞ **Explain to visitors** why they should turn off their vehicle engines when stationary – it reduces fuel usage, produces fewer emissions into the natural environment and lets guests enjoy hearing the wildlife around them.
- ☞ **Provide props and posters** at the welcome centre to spark guests' interest in what they may see on the tour.
- ☞ **Respect Aboriginal community and heritage** sites and help guests to understand the importance of these sites.

- ☞ **Arrange for local Aboriginal guest speakers.** This gives the guests an insight into their culture and lets them learn information most guides can't provide.

Provide positive experiences for both visitors and hosts

- ☞ **Don't rush the visitors.** Arrange tours so that visitors don't feel too hurried. Allow time for relaxation and reflection in specific areas.
- ☞ **Keep it exciting!** Driving to the same sites daily leads to a high risk of 'burnout' among the guides. Burnout can be avoided by keeping guides exposed to new information and by offering them alternative trips.
- ☞ **Provide guides with a 'little black book'** for notes about the day which builds up a useful collection of information – this can include anything from nature entries, what was good or bad about the day, or even a funny saying that popped up during the day.
- ☞ **Provide a reference library** for guests and guides including books, magazines, newsletters, bird tapes and videos.
- ☞ **Learn about your visitors' particular interests.** If the tour desk staff can draw out this information and pass it on, the guides can have a chance to re-orient their tour accordingly which will allow the guests a more pleasurable experience.
- ☞ **Provide a professional service** with an objective understanding of the place visited, free from prejudice and propaganda.
- ☞ As a representative of the host country **make visitors feel welcome.** Don't show negative feelings towards our country or theirs and always try to promote the area as a great destination!
- ☞ **Do not provide false information.** Provide all goods and services as presented in the tour itinerary and promotional material.
- ☞ **Stay Positive.** Do not criticise another operator or their guides. Tourists don't want to hear negativity on their tour, so keep it to yourself.

Provide direct financial benefits for conservation

- ☞ Tourists are often very keen to help with donations towards the environment. Pledge a sum of money for each passenger, or offer a donation collection to help local wildlife such as cassowary conservation or wildlife care.

Provide returns for Aboriginals and local businesses

- ☞ **Hire Aboriginal guides** who have first hand experience in the area. Guests are often interested in their experiences, culture, and stories from growing up within the area.
- ☞ Let your guests **enjoy the local cuisine** made by small businesses in the area.
- ☞ **Support the local 'bed and breakfast'** venues if staying overnight.
- ☞ **Offer free or discounted ecotourism experiences** for local schools or special interest groups.
- ☞ **Encourage local craftspeople** to make artefacts for your customers to buy as mementoes of their trip.

Raise sensitivity to host countries' political, environmental, and social climate

- ☞ International guests are often interested in the social and political differences when dealing with the environment. Consider using local newspaper articles to spark an interest in current events as it applies to the area; this can also be a point of conversation during drives from one site to the next.

Continually increase knowledge

- ☞ **Arrange for guest speakers** with specialist knowledge. This can often provide an inspirational spark for guides.
- ☞ **Provide a guestbook.** It can serve as a good insight into the visitors' experiences and provides feedback on the tour which can be relayed at regular staff meetings.
- ☞ **Hold training and professional development activities** for guides to update their knowledge and skills.

Preparing the guests

- ☞ Visitors always appreciate knowing what to wear and what to bring. This may include appropriate footwear, sunscreen, insect repellent (that could perhaps be eco-friendly), as well as how long the tour should last, if any extra money is required, and if food and beverages are provided.
- ☞ Remind parents in a gentle manner that supervising children is their responsibility.
- ☞ If guests forget to bring sunscreen or insect repellent, provide these needed supplies to be purchased at a fair price.

4.0 | ADDITIONAL FLORA

Ant Plants

Ant Plants (*Myrmecodia beccarii*) are a tuber that lives on tropical trees such as paperbarks and mangroves, which depend on certain ants for food. The ant plant has short, bulb-like stems with many natural holes and two types of tunnels. The smooth-walled tunnels are where the ants reside and the rough-walled tunnels are where the ants store their rubbish (remains of insect prey, ant corpses and droppings). These tunnels absorb the valuable nutrients from the waste of the ant and feed the plant. The Apollo Jewel Butterfly is dependent on these plants, spending its larval stage inside the ant plant. The ants care for the larvae which, in return, have the caterpillars secrete a sugary liquid to feed the ants. The butterfly larvae eat the ant plant tissue and leaves. The caterpillars cut an escape hole before pupating and flying off quickly as adults. *Myrmecodia beccarii* is the species which can be found near Cairns. Another four species are found only in Cape York. They were first collected by Joseph Banks in 1770.

Fungi

Fungi are not plants. They have no chlorophyll and cannot convert energy from sunlight. Most fungi absorb food through a network of fine threads – hyphae – which spread through decomposing organic material, actually speeding up decomposition by the production of enzymes which enter the material they are feeding upon. Without fungi, rainforest ecosystems would break down. Most fungi are great recyclers, digesting dead plants and animals and turning them into nutrients. Other fungi are mycorrhiza and some plants can't live without them. Mycorrhiza live in close association with the fine roots of the tree, drawing water and nutrients out of the soil for the tree to use. In return the tree provides nutrients for the fungus, an arrangement that suits both parties.

Visitors may sometimes see **Bridal Veil Fungi** (*Dictyophora indusiata*), which belong to a group of fungi called stinkhorns. The **Lacy Bridal Veil** can usually be smelt long before being seen! This is because it relies on flies for pollination. Flies are attracted to the decay smelling slime which is exuded from the cap of the fungus and its spores are dispersed when they stick to the feet or mouthparts of the flies. The fungus emerges from moist soil during the night and usually collapses and dies within 24 hours.

Bracket Fungi (*Ganoderma aplinatum*) is one of Australia's largest bracket fungi and will grow up to 50 cm across. Each year it grows a new fertile layer outside the one from the year before – you can count the layers in the brackets, like tree rings, to see how old the fungus is. Brackets brown as they mature.

Tree Species

Mueller's Silky Oak (*Austromuellera trinervia*) produces long pinnate leaves, each leaf more than half a metre in length at times, with three veins prominent on each leaflet, hence the specific name *trinervia*. The fragrant flowers form cream or yellow spikes. A small percentage of flowers develop into fruit capsules sometimes as big as a human hand. Mueller's Silky Oak is a primitive plant, and is regarded as a 'living fossil'. This 'oak' is a member of the Proteaceae family which includes Grevilleas, Banksias and Waratahs. These trees can be seen from Mardja Boardwalk.

Fragrant Boxwood (*Xanthophyllum fragrans*) is a moderately rare species. This is a large tree that produces heavy crops of large and fragrant white to yellow blossoms. Its fragrance is winning this tree a place in the nursery trade. *Xanthophyllum* means 'yellow leaf', an allusion to the fact that the only other Australian *Xanthophyllum* often displays yellow leaves on the tree, while *fragrans* means 'fragrant'.

Hairy Mary (*Calamus australis*) can be recognised by the purple tint of new fronds. Although it resembles a wait-a-while it has a smaller frond of 25-63 leaflets. The stems are thickly covered with fine spines and the fruits are small balls hanging in bunches up to two metres long. The fruit is eaten by the cassowary and fruit pigeons. Aboriginal people used *Calamus* vines for rope, framework for shelters, eel and fish traps.

The **Vicious Hairy Mary** (*Calamus radicalis*) has long sharps which are flat. The spines can produce a musical note if plucked. The fronds are larger than the Hairy Mary with 80-126 shiny leaflets. The fruits and flowers are similar to the Hairy Mary.

The **Slender Climbing Pandan** (*Freycinetia excelsea*) is a climber with roots appearing along the stem. It climbs high up into the canopy. The small orange fruit is similar to breadfruit but much smaller and usually appears from December to April.

5.0 | FERAL ANIMALS AND PLANTS

Cane Toads

The **Cane Toad** (*Bufo marinus*) was introduced around Gordonvale, Cairns and Innisfail in 1935. Some 3,400 young toads were released to control the grey-backed cane beetle, which was damaging sugar cane crops. Unseasonal breeding occurred and within 6 months over 60,000 young toads had been released. Their introduction represents a spectacular failure of an attempt at biological control. The toads made no impact on the cane beetle but have become a major menace to the environment. They eat insects, native frogs, small mammals and reptiles. A cane toad's poison is contained in glands on its shoulders. If squeezed, the poison can squirt up to one metre and can cause great pain and temporary blindness if it gets in the eye. The toad's eggs and tadpoles are also toxic. Some animals such as water rats, black butcherbirds, kookaburras and crows turn the toads on their backs and eat the poison-free parts such as legs and livers. The natural rate of spread is now 30-50 km each year in the Northern Territory and about 5 km a year in northern New South Wales.

Feral Pigs

Initially brought over by Captain James Cook, feral pigs are considered a major agricultural and environmental pest. Agricultural losses are estimated to cost \$70 million a year due to pigs eating and trampling crops and damaging fences and roads. They dig up large areas of forest, eat roots, trample saplings, rub and ringbark trees, erode stream banks and contaminate water. Pigs are a threat to the endangered cassowary and are thought to prey on their eggs, though evidence is yet to be uncovered. However they are known to hunt out and eat turtle eggs! Special cassowary-friendly pig traps have been designed to reduce the chance of cassowaries being caught in them.

Feral and Domestic Cats

Cats are the most widespread pest in Australia, occupying almost every environment. While they tend to avoid undisturbed rainforest, as settlement increases in the rainforest, so do cat numbers. The average feral cat weighs 4 kg and needs to eat the equivalent of 10 small animals per day. At the moment, CSIRO scientists are attempting to use a modified virus to immunise foxes against their own sperm or eggs, effectively sterilising them. This method could

possibly be used for feral cats. The recent introduction of an exotic cat species, the Bengal Cat, is cause for concern as it may contribute genetic material to the feral population leading to a more efficient and destructive predator. Also, while feral cats shun water, the Bengal cat takes to it like a duck!

Feral Deer

Feral deer populations in the Wet Tropics are still at a stage where they can be managed, if not eradicated. The problem with feral deer is that they breed rapidly; they damage the environment through browsing, grazing, trampling and ringbarking, dispersing weeds and degrade water quality through wallowing and contamination. They have the potential to spread diseases and parasites and they pose a threat to public safety on roads. **Rusa deer** is the dominant feral species in the Wet Tropics region.



CHITAL DEER
(PHOTO: DNRMW)

If you see deer when out travelling, try to record:

- The location;
- The time / date of sighting;
- Species (if known);
- Numbers (if possible);
- What the deer were doing;
- Whether they were previously seen at that location before;
- Whether they were in an open or fenced area; and
- If you saw any identification tags or brands?

☞ **Deer Spotting Hotline:** 1800 119 829

6.0 | CALENDAR OF THE WET TROPICS

Items marked with an asterisk (*) sourced from the Daintree Discovery Centre Times Newsletter, Issue 3, 2008.

January

- ☞ The Kuku Yalanji people refer to the period between December and March as the 'proper wet time'. Fruit bats can be seen feeding on ripe **Davidson Plums**. The first **Hercules Moths** appear.*
- ☞ The **Candle Nut Tree** (*Aleurites molucanna*) produces white fragrant flowers which can be smelt in the air between January and March.
- ☞ **Mango Pine** (*Barringtonia calyptate*) is in fruit this month. The green or blue fruit smell of mango and are eaten by cassowaries. Due to the smell of the wood, this tree is also sometimes known as the 'Corned-beef wood tree'.
- ☞ **Northern White Beech** (*Gmelina fasciculiflora*) is in the middle of its fruiting season. It's striking purple fruit when crushed gives off a smell of bleach and stains the fingers brown.
- ☞ **Brown Pine** (*Podocarpus grayae*) is a primitive tree. While closely related to the pine tree, it does not grow a cone; instead it grows a bluish hard nut at the end of a thicker red stem. This nut is enjoyed by cassowaries.
- ☞ The **Orange and Black Cruiser Butterfly** males and **Blue Triangle Butterfly** can be seen near damp leaves or still pools in the summer months beside rainforest streams.

February

- ☞ **Water Rats** have been recorded mating in February near Cooper Creek. Their pre-dawn activity is accompanied by a great deal of squealing.
- ☞ **Noisy Pittas** will be busy raising nestlings this month. The nest is an igloo of sticks built between buttress roots. There is sometimes a doormat of moss or dung.
- ☞ **Buff-breasted Paradise Kingfisher** nestlings will be squawking vociferously from within termite mounds in the rainforest urging their parents to keep up the food supply. Fledglings will emerge from the nursery now or in early March, gaining size and flying skills before setting off for New Guinea in April.

- ☞ **Native ginger** (*Alpinia caerulea*) fruits are ripe from February to May. The fruit is a dark blue berry with white pulp and numerous inedible seeds. Aborigines used this plant as bush tucker and the leaves were often used for wrapping meat prior to cooking, or as roof shelters.
- ☞ The first day of February marks the end of the closed **barramundi** fishing season.
- ☞ The **Pornupan Mangrove** (*Sonneratia caseolaris*) has lovely, but short-lived red flowers that will be scattering long red stamens on tidal waters this month. The flower has a mass of stamens each about 4 cms long. When the stamens fall, the large green calyx lobes spread out like a star with a disc-like fruit developing in the middle.

March

- ☞ The **Moth Orchid** (*Phalaenopsis amabilis*) will produce some of its distinctive white flowers during March. So called because of its broad white petals, it is now regarded as rare because of heavy poaching by traders in recent decades. Flowering is recorded between March and August.
- ☞ **Kwila** or **Queensland Teak** (*Intsia bijuga*) will decorate beaches with their flowers during March. The single broad bright pink petal and several reddish stamens are followed by large flat pods containing brown seeds.
- ☞ The **Kuranda Quandong** (*Elaeocarpus bancrofti*) produces mature fruit known as the Daintree Nut during March. Flowers are also seen at this time of year suggesting the fruit takes almost 12 months to mature.
- ☞ **Crocodiles** will start to haul themselves out of the water more frequently by day to bask in the sun.
- ☞ **Pied Imperial Pigeons** and adult **Buff-breasted Paradise Kingfishers** will be heeding seasonal signs and heading north to New Guinea after their half-year sojourn in Australia.
- ☞ The huge glossy leaves and red flowers of the **Umbrella Tree** (*Schefflera actinophylla*) appear from March to October. Birds love to eat the fleshy fruit and spread the seeds in their droppings.
- ☞ The **Mangrove Heron** or **Striated Heron** can be seen this month tending eggs or chicks along coastal rivers. Up to four blue-green eggs are laid in a bowl-shaped nest of twigs on the branch of a tree.

April

- ☞ The cassowary is particularly partial to the round pink fruit of the **Satin Ash** that ripens from March/April through to September/October, depending on the season.*
- ☞ The **Atlas Moth's** late-emerging adults may be seen this month. One of the world's largest moths, with a wingspan of more than 20 cm, the adults can not feed as they have no proboscis. Atlas moth caterpillars feed on leaves of the **Bleeding Heart Tree** (*Omalanthus populifolius*).
- ☞ The **Looking-glass Mangrove** (*Heritiera littoralis*) has small orange flowers at this time of year.
- ☞ Migratory waders will fly north this month to enjoy the Northern Hemisphere summer. The **Eastern Curlew** and its smaller relative, the **Whimbrel** will head for the coasts of Korea and the coastline around Vladivostok.
- ☞ The **Pencil Cedar** (*Palaquium galactoxylum*) sets clusters of short-stemmed creamy flowers in its lofty crowns and will be visited by honeyeaters and butterflies. A tasty, egg-shaped pale yellow fruit will be ripe towards the end of the year.
- ☞ The **Briar Oak** (*Musgravea heterophyll*) will have dropped spent stems of its flower spikes across the forest floor. Although the flowers are cream coloured, the flower buds have an orange-brown appearance.

May

- ☞ **Saw-shelled turtles** spend more time sunning themselves on rocks.*
- ☞ **Celerywood** (*Polyscias elegans*) will be starting to fruit this month through to November (flowering occurs from February to July). The small purple-black berries attract a variety of birds including Bower Birds and the Green Catbird.
- ☞ The **Stinging Tree** (*Gympi gympi*) should be showing raspberry like fruits hanging in clusters from the stem this month. The shrub or small tree grows in areas of the rainforest where extra light can penetrate, along roadsides or clearings.

June

- ☞ **Fungus Root** (*Balanophora fungosa*) might look and sound like a fungus but it is actually a flowering plant that is a root parasite. During June and July the smell of the flowers will be apparent as they open just above ground level.

- ☞ **Cassowaries** begin their breeding season this month. The female usually lays their 3-5 eggs from June to October, although chicks have been recorded as early as May and as late as January.*
- ☞ **Yellow Mahogany** (*Dysoxylum parasiticum*) will be sprouting its cauliflory flowers this month. The flowers are fragrant, white or cream and up to 20 mm long.
- ☞ **Bolwarra** (*Eupomatia laurina*) also known as the **native guava** is a primitive shrub carrying its distinctive dry berries containing numerous seeds this month. The leaves are aromatic when crushed.
- ☞ **Red Cedar** (*Toona ciliata*) puts on a flush of pink foliage followed by sprays of small white or cream flowers in open sprays. Red cedar is a winter-deciduous tree. Due to its soft, light and beautiful cabinet timber, this valuable tree is also known as 'Red Gold'.
- ☞ At Jindalba, the large blue egg-shaped fruit of the **Cassowary Plum** can be seen lying alongside the boardwalk.

July

- ☞ The **Silver Quandong** (*Elaeocarpus angustifolius*) purple-blue fruit will begin ripening this month. The flesh of this tree often called Blue Quandong is an important food for many forest inhabitants including the cassowary, spectacled flying foxes and wompoo pigeon.
- ☞ **Antechinus** are sometimes seen running around in daylight during July – August. At this time males are searching for females during the mating season. While successful mating leads to motherhood for females, the event puts an end to a male's life.
- ☞ The **Mossman Quandong** (*Peripentadenia phelpsii*) is a rare tree with white flowers which honeyeaters enjoy. These can be expected to bloom in July. The serrated edged flower petals can be seen on the road into Mossman Gorge. Fewer than 50 individual trees are known – all of them in the Mossman region.
- ☞ The **Idiot Fruit** (*Idiospermum australiense*) will be flowering during July – February. The red flowers close to 2 cm in diameter will fade to white as they age. The fruit of this primitive plant are tennis ball size and poisonous to all known birds and animals.
- ☞ The **Cassowary Plum** (*Cerbera floribunda*) will be shedding fruit of an astonishing blue-purple colour in good quantities this month. The poisonous sap of the fruit flesh is only tolerated by cassowaries and white-tailed rats.

- ☞ Caterpillars of the **Four O'clock Moth** can be seen on the foliage of the **Corkwood Tree** (*Carallia brachiata*) this month. The caterpillar is either green or yellow with black dots and is known for its rigid semi-erect pose it adopts if disturbed.

August

- ☞ **Pied (Torresian) Imperial Pigeons** fly in from New Guinea and leave again between March and April.*
- ☞ Wompoo Fruit Pigeons begin to breed.*
- ☞ Mating season for **Striped Possums** ends.*
- ☞ The **Golden Bouquet Tree** (*Deplanchea tetraphylla*) will be flowering with its striking yellow flower heads the size of dinner plates. The nectar rich flowers in the crown of the tree attract birds and butterflies and flying foxes at night.
- ☞ The **Coral Tree** (*Erythrina variegata*) has vivid red flowers from almost bare branches. The tree has thorny branches and the trunk is pithy and light.
- ☞ **Bombax** or commonly called the **Silk Cotton Tree** (*Bombax ceiba*) has large waxy red flowers and a tree in full bloom makes a memorable sight. The thick-petalled cup-shaped flowers are followed by woody capsules containing seeds embedded in a silky fuzz explaining its common name.
- ☞ **King parrots** can be expected to be seen feeding on the small purple-black 'plums' of *Planchonella brownlessiana* and the spatter on the ground below with remnants of their meal is visible. This common understorey tree belongs to the *Sapotaceae* family which included the cultivated star apple.

September

- ☞ **Spectacled Flying Fox** breeding season begins about now.
- ☞ The **Pied Imperial Pigeons** also begin to breed*. These striking black and white birds are now returning from New Guinea to nest. Pied Imperial Pigeons raise one young at a time.
- ☞ The **Milky Pine** (*Alstonia scholaris*) will begin to show masses of white blossom in its crown this month. The small strongly scented flowers are followed by unusually narrow elongated capsules, sometimes more than 30 cm long, which split to release windblown seeds.
- ☞ **Bumpy Satinash** (*Syzigium corniflorum*) has fruit from September to January on the trunk (cauliflory). The fruit can be as large as an apple,

contains a large brown seed and are favoured by cassowaries. The flesh is edible but insipid, so called 'wada' (water) apple by Aborigines.

- ☞ **Amethystine Pythons** (*Morelia amethystina*) have been reported mating this month. A single female may be attended by more than one male.
- ☞ Breeding season for **estuarine crocodiles** is from September to April. Between November and March, the crocodile builds a nest mound of vegetation and soil near the banks of a watercourse.

October

- ☞ **Striped possums** feed on flowering Black Bean trees.*
- ☞ The first of the **Golden Orb spiders** start to appear.*
- ☞ The Buff-Breasted Paradise Kingfishers fly in from New Guinea.*
- ☞ Silky Oaks (*Grevillia robusta*) flower.*
- ☞ The majority of **Herbert River Ringtail Possum** babies are born during October. Females generally give birth to twins, which are a pale cinnamon colour for the first 8 months.
- ☞ The polygamous males of the **Satin Bowerbird, Golden Bowerbird and Tooth-billed Bowerbird** will begin their breeding rituals of singing, mimicking and ornament displays to attract as many females as possible this month. A fresh collection of large green leaves bitten off each day is laid on a small patch of cleared ground in front of the bower.
- ☞ The palatable orange, pink, red or black berries of the **Corkwood tree** or **Corky bark** (*Carallia brachiata*) will be ripening this month. The fruit is eaten by many frugivorous birds including the Pied (Torresian) Imperial Pigeon.
- ☞ The **Native Gardenia** (*Randia fitzalanii*) should be flowering this month. The 5-petal sweet scented white blossom on this 3-6 metre bush can be often seen near watercourses and along rainforest margins.

November

- ☞ The fruit of the **Pencil Cedar** should be ripe this month. The small flattened fruit that turn black/purple is favoured by many birds, Musky rat-kangaroos and Herbert River Ringtail Possums.
- ☞ The **Australian Brush-turkey** and the **Orange-footed Scrubfowl** will have been busy since August gathering leaf litter for the compost heaps to incubate their eggs. Some early birds may have begun in spring.

- ☞ **Cluster Figs** (*Ficus racemosa*) fruit from November to March. The ripe yellow, orange or red figs are in large bunches on the trunk and larger limbs. Many bird species and flying foxes will enjoy the fruit.
- ☞ **Dollarbirds** should have arrived from New Guinea and can often be seen dashing around the sky at dusk chasing insects.
- ☞ **Buff-breasted Paradise Kingfishers** will also arrive from New Guinea for their breeding season. Previously called white-tailed kingfishers they lay their eggs in a termite mound.

December

- ☞ In 2006, the Daintree recorded almost 6 metres of rain!*
- ☞ **Fire flies** visible at night*. Fire flies are actually flying beetles!
- ☞ **Antplants** (*Myrmecodia beccarii*) should produce their small white flowers now. These strange tuber plants are inhabited by tiny ants which feed the plant through their excrement.
- ☞ **Boyd's Forest Dragon** will be mating this month. Eggs are laid in a shallow burrow where the canopy is open. Incubation is approximately two months. These have been observed on the forest floor at Mossman Gorge.
- ☞ The **Giant Climbing Orchid** (*Pseudovanilla* syn. *Galeola foliate*) creamy-yellow and pink flowers are easy to see through the rainforest now. The orchid starts at ground level and climbs rapidly to heights of up to 15 metres on decomposing wood. They have a honey scent which attracts native bees.
- ☞ **Brown Currajong** (*Commersonia bartramia*) grows masses of white or cream fragrant flowers resembling snow. It is also known as the **Scrub Christmas tree**.
- ☞ **Smith's Tamarind** (*Diploglottis smithii*) fruit can be seen now. The fruit is green or yellow-skinned which splits to reveal bright orange flesh concealing a black seed.

Further Reading – Nature Diaries

Skyrail Nature Diaries

www.skyrail.com.au/rainforests/skyrail-nature-diary

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Internet Resources

Birdlife Australia

www.birdlife.org.au

Department of Environment and Heritage Protection

www.ehp.qld.gov.au

Ecotourism Australia

www.ecotourism.org.au/

Marine and Tropical Sciences Research Facility (MTSRF) *Tourism Barometers*

www.rrrc.org.au/publications/tnq_factsheets-html

Rainforest CRC

www.jcu.edu.au/rainforest/publications.htm

Reef & Rainforest Research Centre

www.rrrc.org.au

Wet Tropics Management Authority

www.wettropics.gov.au

Wet Tropics Management Authority *Rainforest Explorer*

www.wettropics.gov.au/rainforest-explorer

Wet Tropics Management Authority *Tropical Topics*

www.wettropics.gov.au/tropical-topics

8.0 | GLOSSARY

- Alluvium** Sediments deposited by modern rivers and creeks.
- Angiosperms** A flowering plant, with enclosed seeds.
- Amphibolite** A dark metamorphic rock consisting mainly of amphibole minerals and plagioclase feldspar. Commonly metamorphosed from basalt or dolerite.
- Basalt** A dark grey or black, fine grained rock, which usually erupted as lava flows but also occurred in dykes, sills and plugs.
- Biota** Plant and animal life of a region.
- Caenozoic** The most recent of the three classic [geological eras](#), and covers the period from 65.5 million years ago to present day.
- Carboniferous** The period of geological time from 360 to 300 million years ago.
- Cretaceous** The period of geological time from 145 to 65 million years ago.
- Conifers** Cone-bearing trees.
- Cycads** Palm-like plant of the Cycadaceae family. Cycads produce male and female cones on separate plants and the sperm in the pollen grain of the male has a tail like that in animal sperm. Once transferred to the female cone it swims to the egg in the female seed to fertilise it.
- Devonian** The period of geological time from 415 to 360 million years ago.
- Diatreme** Volcanic vent or pipe drilled through enclosing rocks by the explosive energy of gas-filled magmas.
- Erosion** The process by which rock and earth materials are loosened, worn away and removed from the Earth's surface.
- Gneiss** Coarsely banded black and white metamorphic rock; pronounced 'nice'.
- Gondwanaland** The ancient super-continent which existed in the south of the globe before 200 million years ago.
- Gymnosperms** Having seeds unprotected by seed-vessels – 'naked seed' plants.
- Humus** Organic constituent of soil, formed by the decomposition of plant materials.

- Igneous rocks** Rocks formed from solidification of molten rock (magma) generated within the Earth, either in intrusions (plutonic) or in the surface (volcanic).
- Krasnozems soils** These soils are typically red, deep, well-structured, acid and porous soils. They have relatively high clay contents and tend to display a gradual increase in clay with depth.
- Maar** A volcano formed by the explosive interaction of rising magma and underground water. A large crater is formed as the depth of the water/magma interaction becomes deeper. An abundant supply of water is required to sustain the eruption.
- Macropod** Member of superfamily including kangaroos, wallabies and rat kangaroos.
- Magma** Molten rock generated at depth in the crust or upper mantle.
- Marble** Limestone recrystallised by heat and fluids.
- Megabat**..... The megabats are vegetarians, and feed mainly on nectar and fruit. Megabats don't use sonar or echolocation. They depend on vision and an excellent sense of smell to find their food. Megabats wrap their wings around themselves and don't hibernate.
- Metamorphism**..... Transformation and recrystallisation of rocks by pressure and heat; hence **Metamorphic rocks**.
- Microbat** Microbats are small bats of less than 170 grams, with a wingspan of less than 30 cm. They are insectivorous and carnivorous. They roost in dark places, such as crevices, caves, tree holes, folded leaves, under bark and even in roofs. They roost with their wings folded against their sides and their heads pointing down. They hibernate during cold months. Microbats navigate by sonar or echolocation, producing pulses of high pitched sound and navigating by listening for the echoes. Therefore microbats often have large, sensitive ears.
- Microclimate** Climate of a small area.
- Operculum** Fish's gill-cover; plate or flap closing an aperture of mollusc's shell when animal is retracted; similar structure in plants and eggs of some insects.
- Paleozoic**..... A geological era from 543 to 251 million years ago. Subdivided into six geologic periods. From oldest to

youngest, they are the Cambrian, Ordovician, Silurian, Devonian, Carboniferous and Permian periods.

- Pedogenic** Material formed by pedological processes (soil forming processes).
- pH**..... A measure of the acidity or alkalinity of a substance. pH 1 is highly acid, pH 14 is highly alkaline, pH 7 is neutral.
- Pleistocene**..... The epoch of geological time from 1.8 million to 10,000 years ago.
- Pliocene**..... Highest division of Tertiary period or system, period from 5 to 1.6 million years ago.
- Prehensile** Capable of grasping.
- Pteridophytes**..... Fern or similar plant.
- Remnants** Little or few that remain(s). Surviving trace of.
- Rhizomes**..... Prostrate or subterranean rootlike stem emitting both roots and shoots.
- Schist**..... A medium to coarse grain metamorphic rock, with a well defined layering, or foliation of different minerals.
- Scoria**..... Fragments of lava, usually basalt, containing abundant gas bubbles; ejected during gas-rich eruptions of volcanoes; hence **Scoria cone**.
- Seepage**..... Movement of water in soils.
- Sedimentary** Derived from sediments (sands, silts, muds, etc.) laid down mainly by rivers lakes and seas.
- Shield volcano** A broad volcano with gentle slopes formed by lava oozing out of a central vent and flowing quickly away; named after resemblance to an upturned warrior's shield.
- Silurian** The period of geological time from about 440 to 415 million years ago.
- Tertiary** The period of geological time from 65 to 1.8 million years ago.
- Thermogenic**..... From *thermogenesis*: production of heat in human or animal body.
- Thermo-regulation**. The maintenance of an optimum temperature range by an organism.
- Tropical geomorphology** ..The study of weathering and landform development in warm climates.

XanthozemsPredominantly yellow, friable, strongly-structured clay soils with moderate horizon differentiation and gradational texture profiles.

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APPENDIX B: USEFUL WORDS TO KNOW

Sourced from: Environmental Protection Agency (1998-2004) 'Tropical Topics'.

English	German	Japanese
beetle	käfer	kochurui
butterfly	schmetterling	chor
canopy	baum-kronen	zaikan
cassowary	casuar	hikuidori
community	gemeinschaft	shya kai
dragonfly	libelle	tonbo
explosion	explosion	bakuhatsu
frog	frosch	kaeru
fungus	pilz (schimmel)	kin rui
grasshopper	heusschrecke	batta
harmless	harmlos	mugai na
lichen	flechte	chi i
marsupial	beuteltier	yuutaimokuno
megabat	-	megabat
microbat	fledermaus	komori
mud skipper	schlammspringer	mutsu goro
nocturnal	nächtlich	yakoseino
owl	eule	fukurou
pigeon	taube	hato
platypus	schnabeltier	kamonohashi
pouch	beutel	onaka no fukuro
rainforest	regenwald	nettai u rin
regeneration	regeneration	san sai
snake	schlange	hebi
to borrow	sicheingraben	ana or hour
volcano	vulkan	kazan
World Heritage	welterbschaft	sekai isan

APPENDIX C: CODES OF CONDUCT

Australian Tour Guide's Code of Practice

- ☞ To provide a professional service to visitors – professional in care and commitment, and professional in providing an objective understanding of the place visited – free from prejudice or propaganda.
- ☞ To ensure that every effort is made to present true and accurate facts and ensure that a clear distinction is made between this truth and stories, legends, traditions or opinions.
- ☞ To act honestly, fairly and professionally in all dealings with all those who engage the services of guides and with colleagues working in all aspects of tourism.
- ☞ Ensure that guided groups treat with respect the natural, cultural and heritage environments and minimise impacts on these at all times.
- ☞ As representatives of the host country, to welcome visitors and act in such a way as to bring credit to the country visited and promote it as a tourist destination.
- ☞ Regularly update and upgrade my guiding skills and knowledge through training and professional development activities.
- ☞ Declare to customers any relevant personal commercial interests, including commissions, and never force visitor purchases or solicit tips.
- ☞ Be mindful at all times of Duty of Care and other Health and Safety issues.
- ☞ Provide all goods and services as presented in the tour itinerary and promotional material.
- ☞ Abide by all national, state or territory legislation governing the operation and conduct of tours, tour operators and tour guides.
- ☞ I will demonstrate the Australian Tour Guides' Code of Guiding Practice in my own actions and encourage its implementation across the industry through my interactions with tourism businesses, organisations and other Tour Guides.

☞ For further information, visit the Guiding Organisations Australia website:
www.goa.org.au

Australian National Four Wheel Drive Council

Code of Conduct: Off-road Driving

- ☞ Obey the laws and regulations for Recreational Vehicles that apply to public lands.
- ☞ Respect the cultural, heritage and environmental values of public/private land, by obeying restrictions that may apply.
- ☞ Respect our flora and fauna. Stop and look, but never disturb.
- ☞ Keep to formed vehicle tracks.
- ☞ Keep the environment clean. Carry your own, and any other, rubbish out.
- ☞ Keep your vehicle mechanically sound and clean to reduce the environmental impact.
- ☞ Adopt minimal impact camping and driving practices.
- ☞ Seek permission before driving on private land. Do not disturb livestock or watering points, leave gates as found.
- ☞ Take adequate water, food, fuel, basic spares and a first aid kit on trips. In remote areas travel with another vehicle and have Royal Flying Doctor Service, or equivalent, radio contact.
- ☞ Enjoy your recreation and respect the rights of others.
- ☞ Plan ahead and lodge trip details with a responsible person.
- ☞ Support four-wheel drive touring as a responsible and legitimate family recreational activity. Consider joining an affiliated four-wheel drive Club.

Code of Conduct: On-road driving

- ☞ Obey all the laws and regulations that apply to vehicles on public and private roads.
- ☞ Respect the rights of others to use and share the road space – acknowledge that your vehicle may be wider and higher than others, so keep as far left of the road as possible so as to allow a following driver some oncoming line of sight before fully committing his vehicle to the opposite side of the road.
- ☞ Keep a safe distance between vehicles – acknowledge that increased weight and tyre choice can affect braking distance. When following a smaller vehicle, increase the distance so that its mirrors have adequate vision beyond the larger vehicle.

- ☞ Break up convoys into groups of no more than 5 vehicles with larger separation between groups. Leave overtaking space between groups – be aware of overtaking vehicles and their requirements when moving through the group.
- ☞ Take care when cornering – acknowledge that increased weight combined with a raised centre of gravity can affect vehicle handling.
- ☞ Take care when reversing - check blind spots and ensure that no one has walked behind your vehicle before you reverse. If necessary get out of the vehicle to make sure the area behind is clear.
- ☞ Be aware of vision limitations and be particularly observant near children to avoid accidents.
- ☞ Ensure your vehicle complies with relevant State legislation in relation to roadworthiness and modifications.
- ☞ Keep your vehicle clean and in good mechanical condition to reduce the environmental impact.
- ☞ Acknowledge that your four-wheel drive is a legitimate choice of lifestyle or family vehicle. Consider joining an affiliated four-wheel drive Club.

☞ For further information, visit:

Four Wheel Drive Australia

www.anfwdc.asn.au/codes_conduct.php

Four Wheel Drive Queensland

www.4wdqld.com.au

APPENDIX D: WET TROPICS ENDEMIC SPECIES

Vertebrate species endemic to the Wet Tropics

- ☞ Green Ringtail Possum (*Pseudocheirus archeri*)
- ☞ Lemuroid Ringtail Possum (*Hemibelideus lemuroids*)
- ☞ Daintree River Ringtail Possum (*Pseudochirulus cinereus*)
- ☞ Herbert River Ringtail Possum (*Pseudocheirus herbertensis*)
- ☞ Coppery Brushtail Possum (*Trichosurus vulpecular johnstonii*)
- ☞ Long-tailed Pygmy Possum (*Cercartetus caudatus*)
- ☞ Boyd's Forest Dragon (*Hypsilurus boydii*)

Bird species endemic to the Wet Tropics:

- ☞ Atherton Scrubwren (*Sericornis kerri*) – uplands
- ☞ Bower's Shrike-thrush (*Colluricincla boweri*) – uplands
- ☞ Bridled Honeyeater (*Lichenostomus frenatus*) – uplands
- ☞ Chowchilla (*Orthonyx spaldingii*) – uplands
- ☞ Fernwren (*Orescopus gutturalia*) – uplands
- ☞ Golden Bowerbird (*Prionodura newtoniana*) – uplands
- ☞ Grey-headed Robin (*Heteromyias albispectus*) – uplands
- ☞ Lesser Sooty Owl (*Tyto multipunctata*) – not confined to uplands
- ☞ Macleay's Honeyeater (*Xanthotis macleayana*) – not confined to uplands
- ☞ Mountain Thornbill (*Acanthiza katherina*) – uplands
- ☞ Pied Monarch (*Arses kaupi*) – not confined to uplands
- ☞ Tooth-billed Bowerbird (*Scenopoeetes dentirostris*) – uplands
- ☞ Victoria's Riflebird (*Ptiloris victoriae*) – lowlands and uplands

There are another ten birds with subspecies restricted to the Wet Tropics area and these are:

- ☞ Australian King Parrot (*Alisterus scapularis minor*)
- ☞ Boobook Owl (*Ninox novaeseelandiae lurida*)
- ☞ Brown Gerygone (*Gerygone mouki mouki*)
- ☞ Double-eyed Fig Parrot (*Cyclopsitta diophthalma macleayana*)
- ☞ Eastern Whipbird (*Psophodes olivaceus lateralis*)
- ☞ Grey Fantail (*Rhipidura fuliginosa frerei*)
- ☞ Pale-yellow Robin (*Tregellasia capito nana*)
- ☞ Satin Bowerbird (*Ptilonorhynchus violaceus minor*)
- ☞ Spotted Catbird (*Ailuroedus melanotis maculosus*)
- ☞ Yellow-breasted Boatbill (*Machaerirhynchus flaviventer secundus*)

